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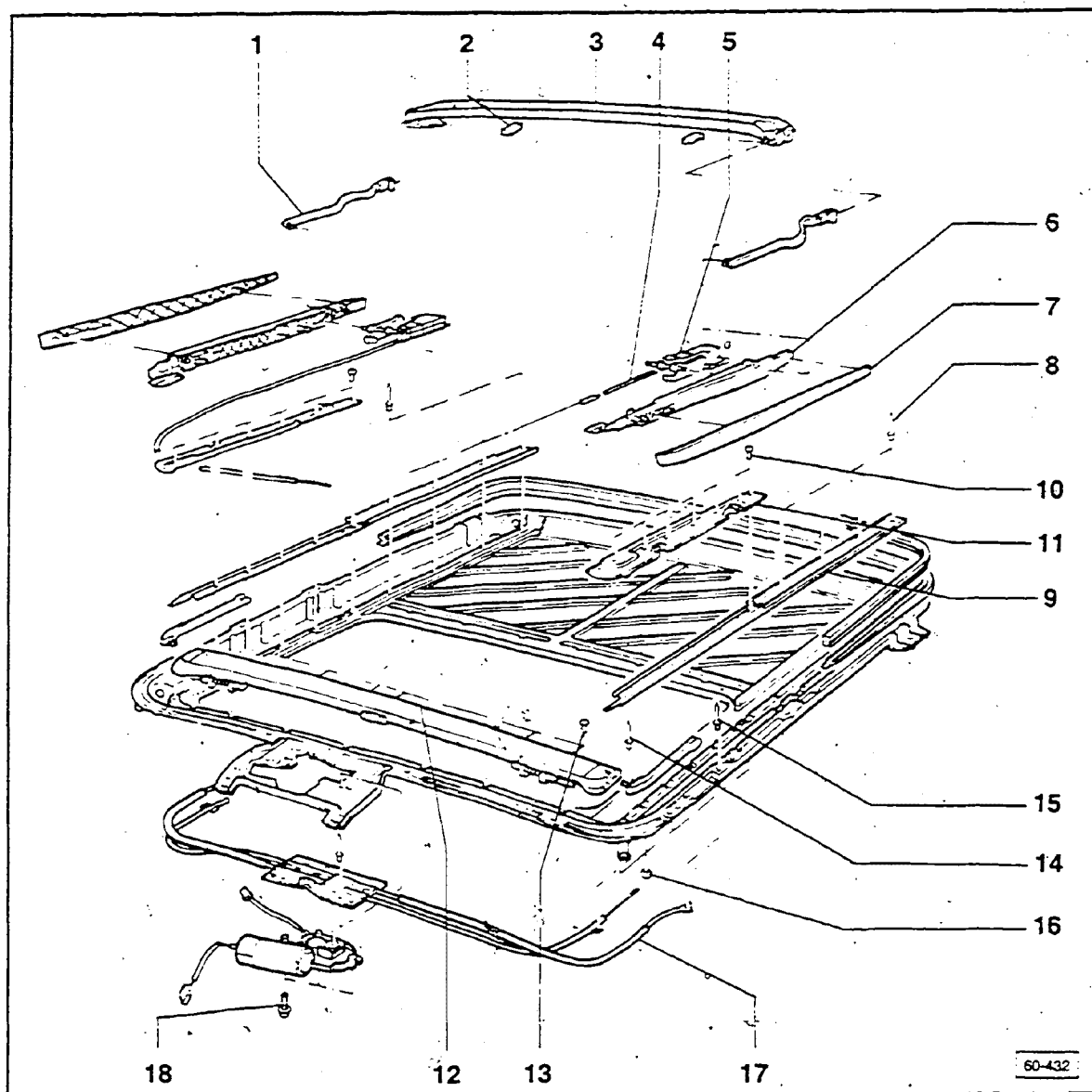
- adjusting 60.46
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Water drain hose

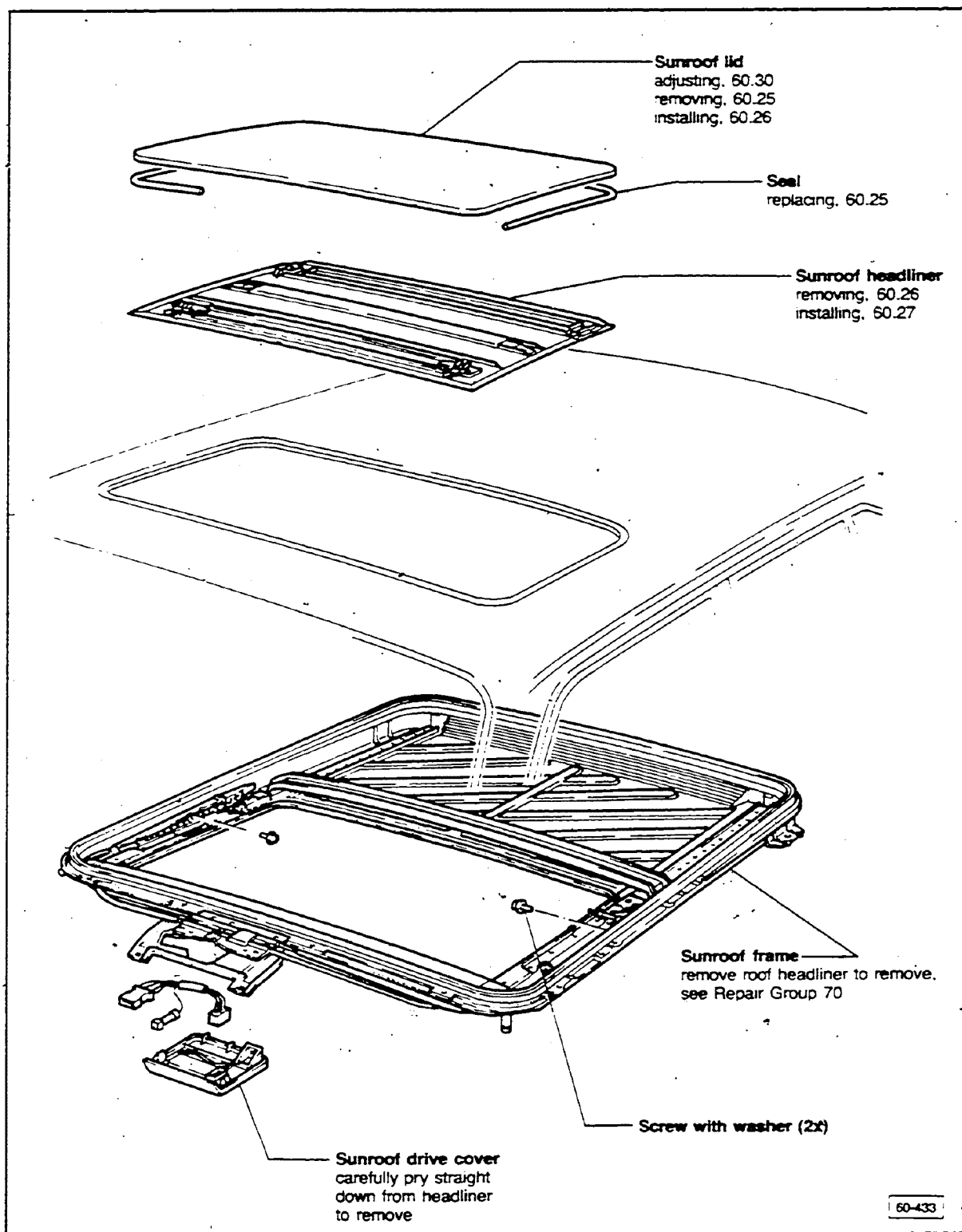
- cleaning 60.50

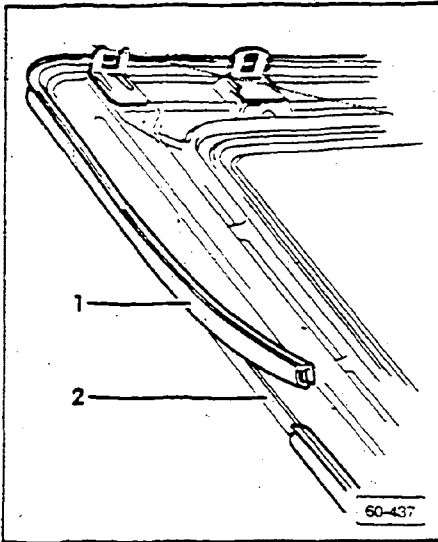


- 1 — Connector rod
- 2 — Slide (2x)
- 3 — Rear water drain tray
remove guide with lift channel
before removing drain tray
- 4 — Cable
- 5 — Rear guide with cable
removing, 60.29
- 6 — Guide with lift channel
removing, 60.29

- 7 — Side cover
to adjust, loosen retaining screws
and push side cover tight against
lid seal, re-tighten screws
- 8 — Hollow rivets
- 9 — Guide channel
riveted in place
remove frame and drill out
rivets to remove
- 10 — Countersunk screws (7x)
- 11 — Guide cover

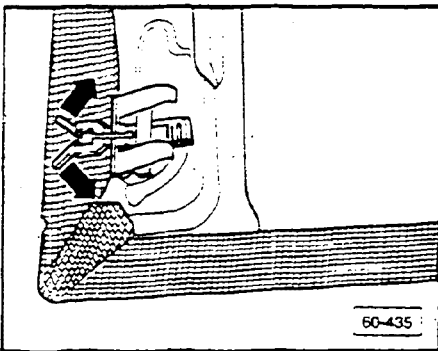
- 12 — Wind deflector
unhook lifter arm before
removing
- 13 — Countersunk screw
- 14 — Hollow rivet
- 15 — Hollow rivet
- 16 — Nut
- 17 — Cable guide tubes
drill out rivets to remove
- 18 — Screw with washer (3x)





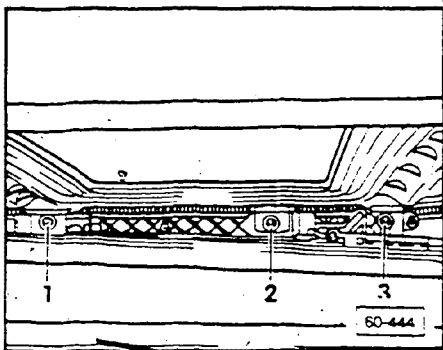
Sunroof lid seal, replacing

- remove sunroof lid
- pull off seal 1 and remove adhesive residue from flange 2
- apply seal adhesive (commercially available) to inner lip of flange 2
- install seal 1 and cut off excess so that seal ends butt together

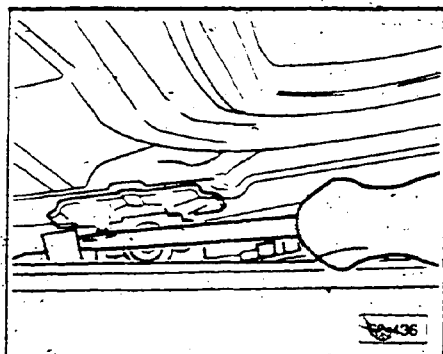


Sunroof lid, removing

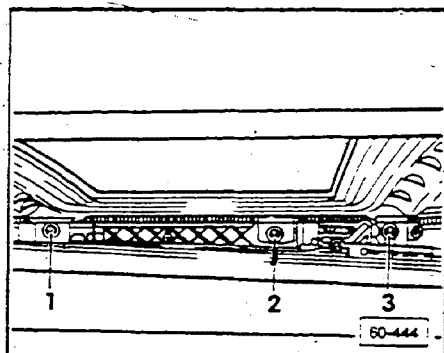
- open sunroof rearward approximately 10 cm (4.0 in.)
- spread both sunroof headliner retaining clips (located on top front side of sunroof headliner) in direction indicated (arrows) and disengage sunroof headliner
- slide headliner rearward far enough to expose sunroof lid retaining screws
- close sunroof



- remove lid retaining screws 2 (left and right side)
- loosen screws 1 and 3 on both sides

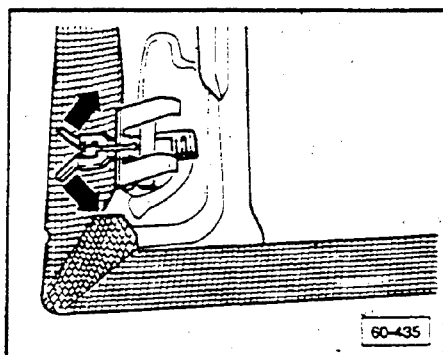


- release lid retaining clips (left and right side) with a screwdriver
- lift out sunroof lid from top



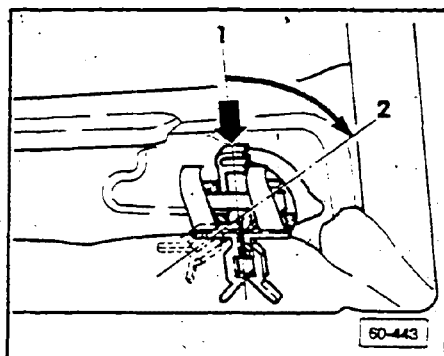
Sunroof lid, installing

- lower sunroof lid through opening onto guides and engage lid retaining clips
- insert sunroof lid retaining screws 1, 2, and 3 on both sides
- adjust sunroof lid to proper height, 60.30
- tighten sunroof lid retaining screws
- install sunroof headliner, 60.27

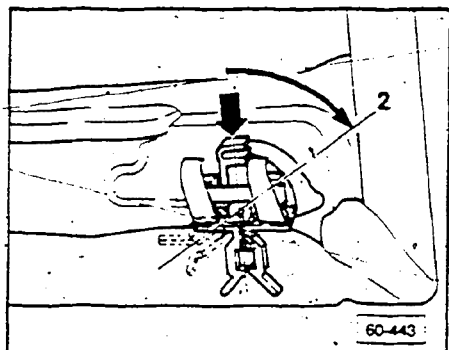


Sunroof headliner, removing

- open sunroof rearward approximately 10 cm (4.0 in.)
- spread both sunroof headliner retaining clips (located on top front side of sunroof headliner) in direction indicated (arrows) and disengage sunroof headliner
- push sunroof headliner partially rearward



- push release tab (arrow) and turn clips 45° to position 2
- close sunroof then open to tilt position
- push sunroof headliner forward as far as possible
- lift sunroof headliner over rear water drain tray and remove through rear of sunroof opening



Sunroof headliner, installing

- open sunroof to tilt position
- turn sunroof headliner retaining clips (left and right side) 45° to position 2

CAUTION

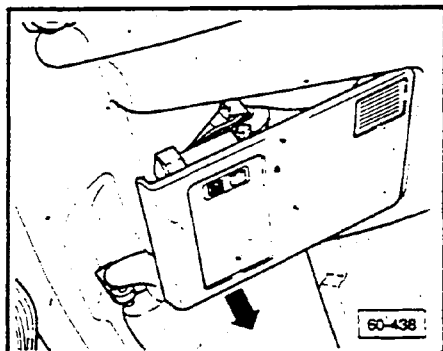
ALWAYS turn headliner retaining clips to position 2 before installing the sunroof headliner.

- guide sunroof headliner through rear of sunroof opening and slide forward as far as possible
- push rear of sunroof headliner over rear water drain tray
- slide sunroof headliner rearward approximately half way and turn retaining clips back to original position 1
- close sunroof
- push sunroof headliner forward until retaining clips engage

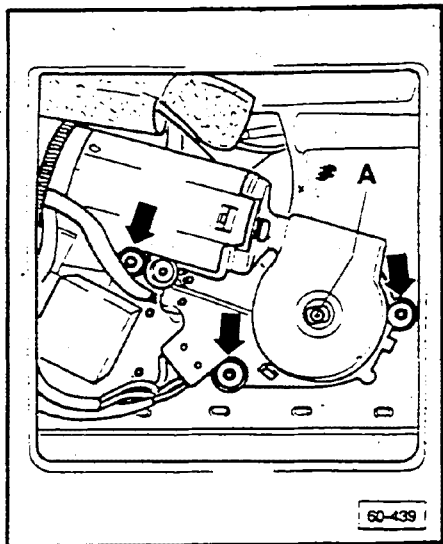
CAUTION

Sunroof lid **MUST** be closed when pushing sunroof headliner forward to ensure proper engagement of the rear headliner tilt pins.

Sunroof motor, removing/installing



- close sunroof
- carefully pry sunroof drive cover straight down (arrow) starting with front edge
- remove electrical connections and remove cover



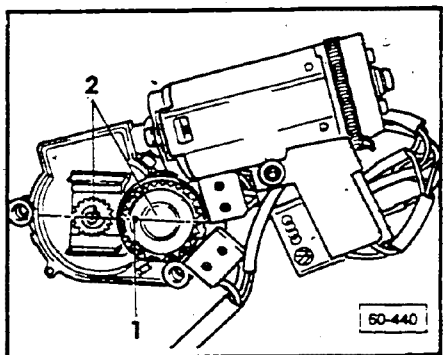
- remove bolts (arrows) and remove sunroof motor
- install in reverse order of removal

CAUTION

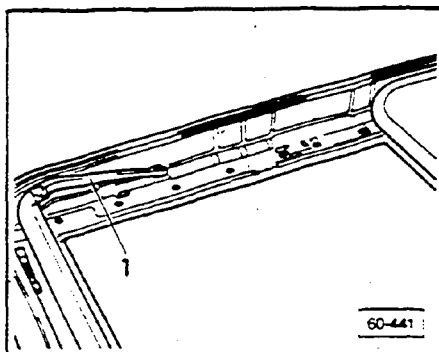
ALWAYS adjust sunroof motor to "0" position before installing. Install sunroof motor with sunroof lid closed.

Sunroof motor, adjusting

Adjust sunroof motor to "0" position as follows:



- insert a 4 mm allen wrench into manual adjustment hole A on bottom of motor drive housing
- turn allen wrench (gear) until hole 1 lines up with center of both gears 2

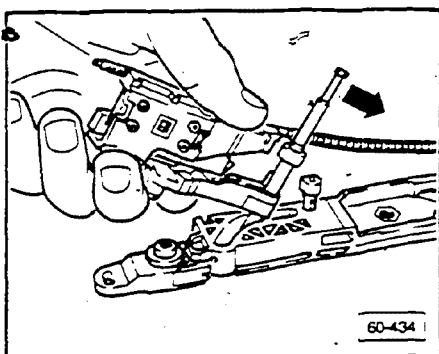


Guide with lift channel and rear guide with cable, removing

- remove sunroof lid, 60.25
- push sunroof guides (left and right side) evenly to rear of guide channels
- unhook lifter arms 1 from sunroof frame
- remove screws and lift out guide covers
- slide guides forward and lift from guide channels
- detach connector rods from rear water drain tray
- remove guides with cables and slide out cables from cable guide tubes

To remove rear guide with cable from guide with lift channel:

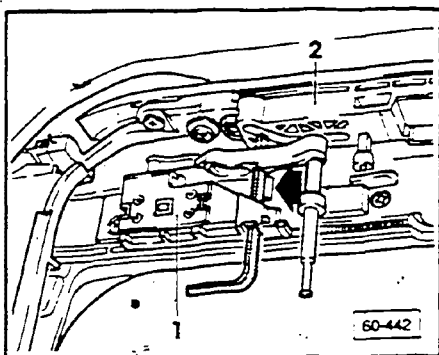
- center rear guide in slot of lift channel
- pull rear guide up while twisting in direction indicated (**arrow**)
- to install, place rear guide in center of slot and tap lightly with a hammer to seat

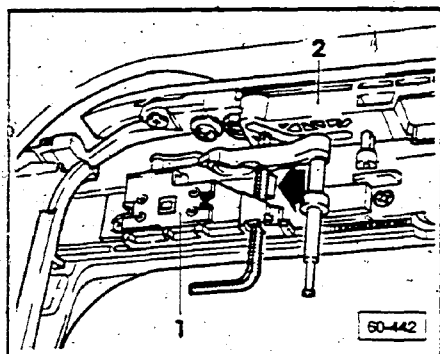


Cable parallelism, adjusting

To adjust cable parallelism, the sunroof lid must be removed.

- remove sunroof lid, 60.25
- remove sunroof headliner, 60.26
- remove sunroof motor, 60.28
- detach connector rods from rear water drain tray
- push guides with lift channel (left and right side) from front to back
- insert a 4 mm allen wrench through rear guide with cable 1, through alignment notches in guide channel (**arrow**) and into guide with lift channel 2 (left and right side)

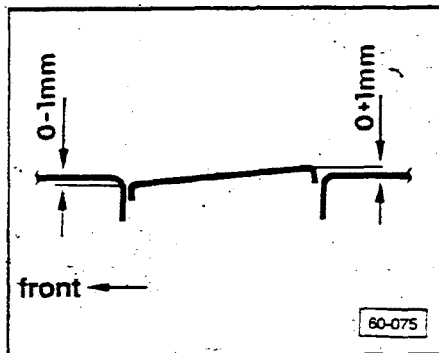




- push rear guide with cable 1 and guide with lift channel 2 rearward (with allen wrench installed) until tight against stop (left and right side)
- install sunroof motor, 60.28

CAUTION

Adjust sunroof motor to "0" position before installing, 60.28.



Sunroof lid, adjusting

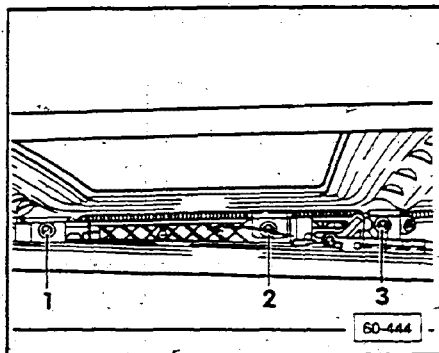
Adjust front of sunroof lid lower than roof line and back of sunroof lid higher than roof line to prevent wind noise.

Front height

- loosen screws 1 and 2 and adjust front height according to illustration 60-075
 - must be 0-1 mm below roof line

Rear height

- loosen screws 2 and 3 and adjust rear height according to illustration 60-075
 - must be 0-1 mm above roof line



Front water drain hoses, cleaning

Front water drain hoses are routed through the A-pillars and discharge above the front door lower hinges.

- clean front drain hoses through sunroof opening

Note

For cleaning front hoses, it is recommended that an auxiliary tool be used — for example a 230 cm (90.5 in.) long probe made from the cores of speedometer cables.

Rear water drain hoses, cleaning

Rear water drain hoses are routed through the C-pillars and discharge into the water drain channel underneath the rear hatch.

- clean rear drain hoses from discharge end after opening hatch
- carefully blow compressed air through outlet end of hose to clean

THIS FRAME INTENTIONALLY LEFT

BLANK

Sunroof, troubleshooting

Electrical

Note

Refer always to the appropriate wiring diagram.

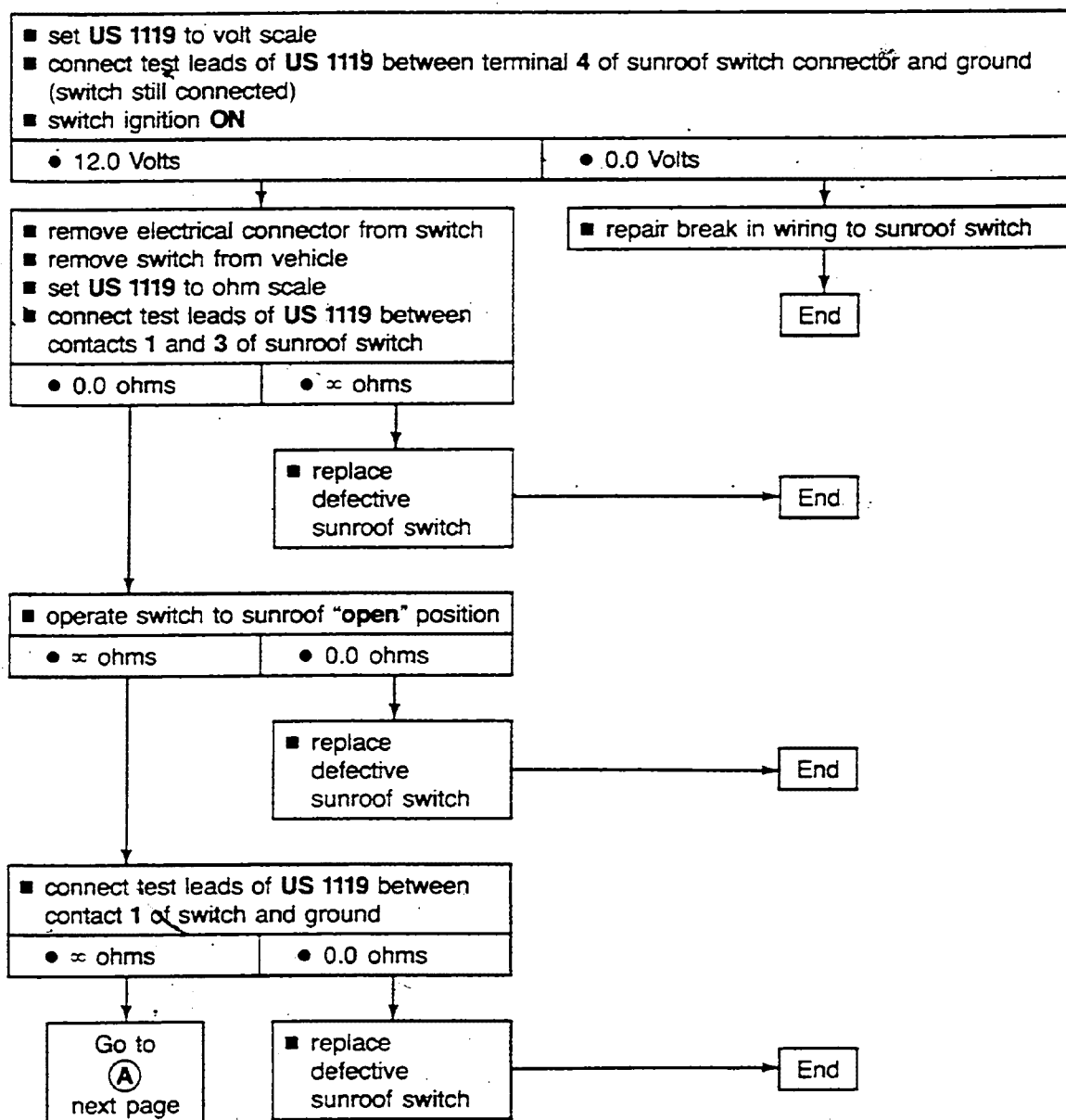
Test conditions

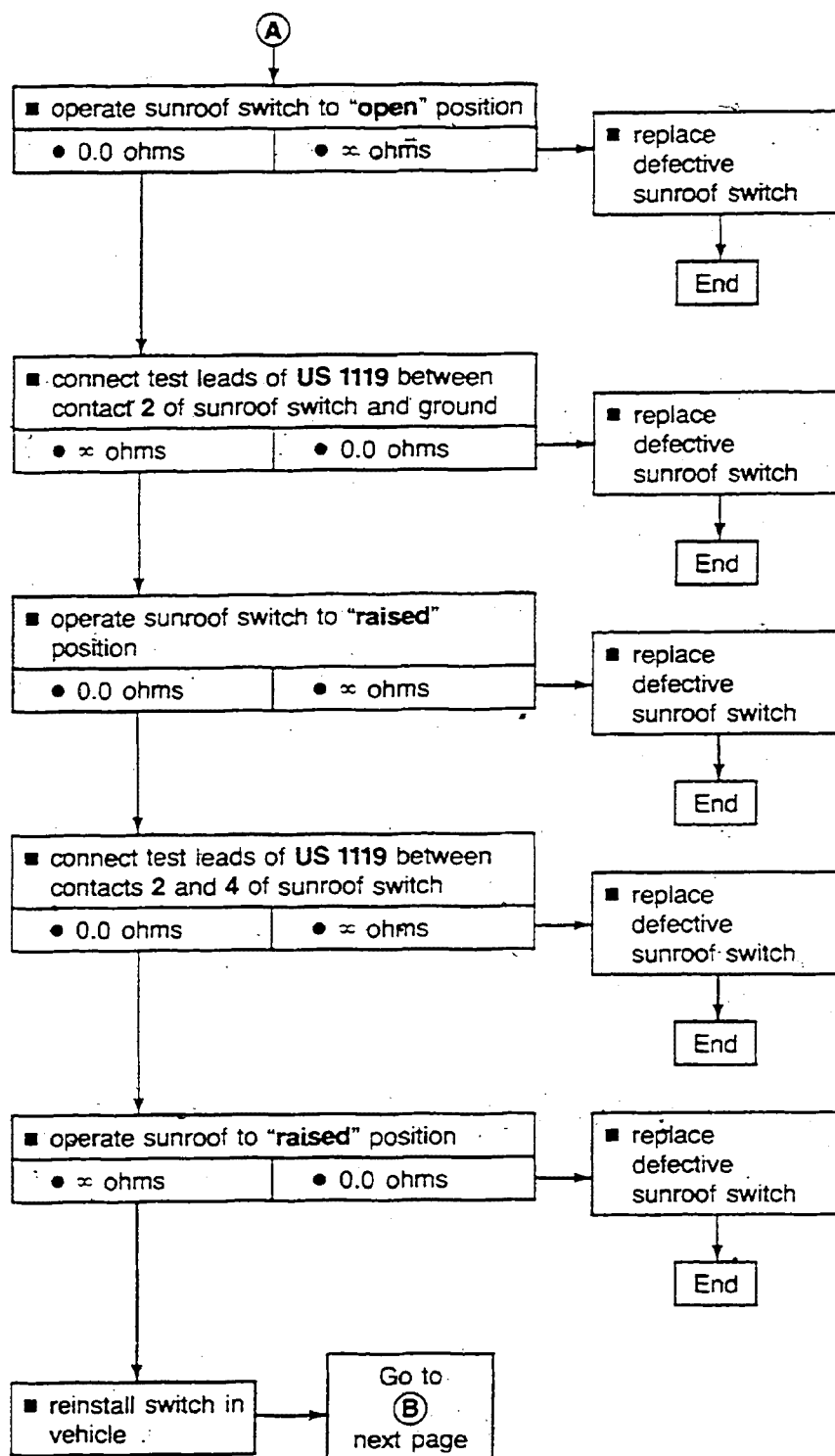
- interior light, sunroof motor cover removed
- fuse for sunroof motor **OK**
- battery **OK**

Tools required

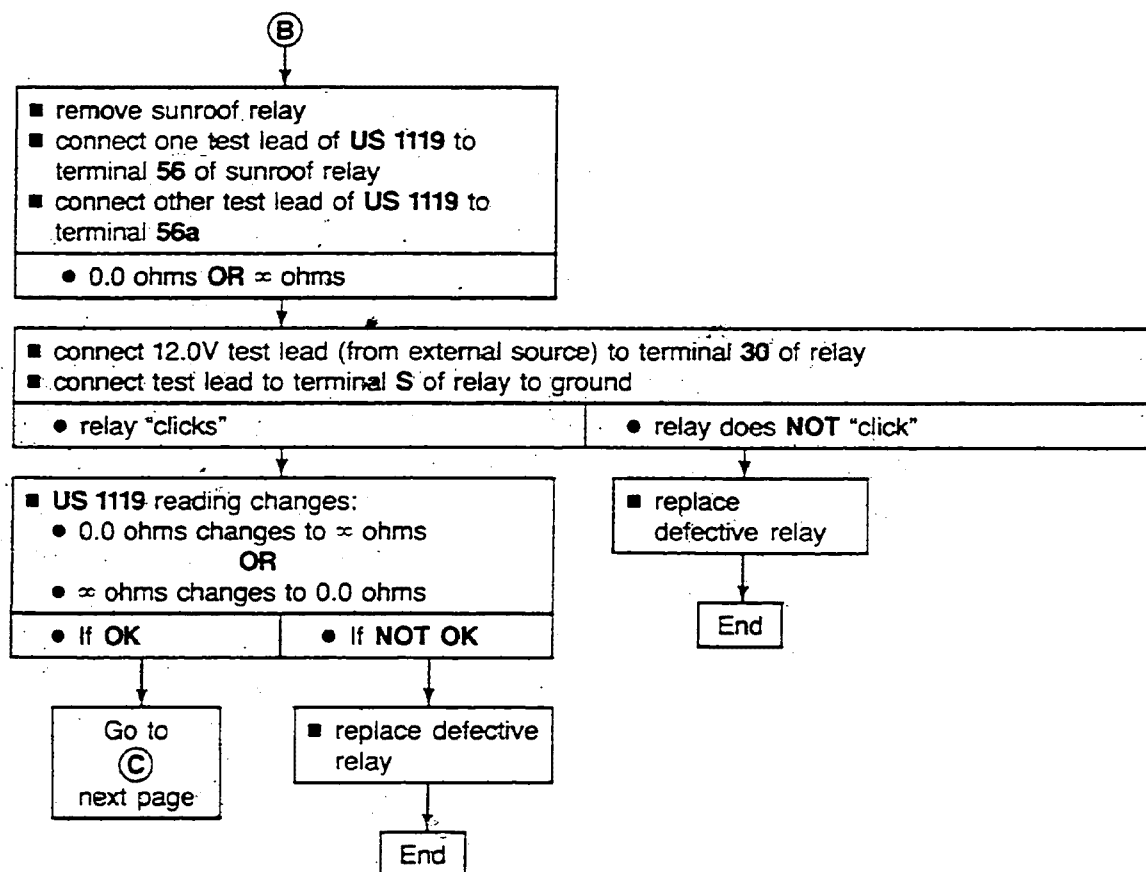
- multimeter US 1119

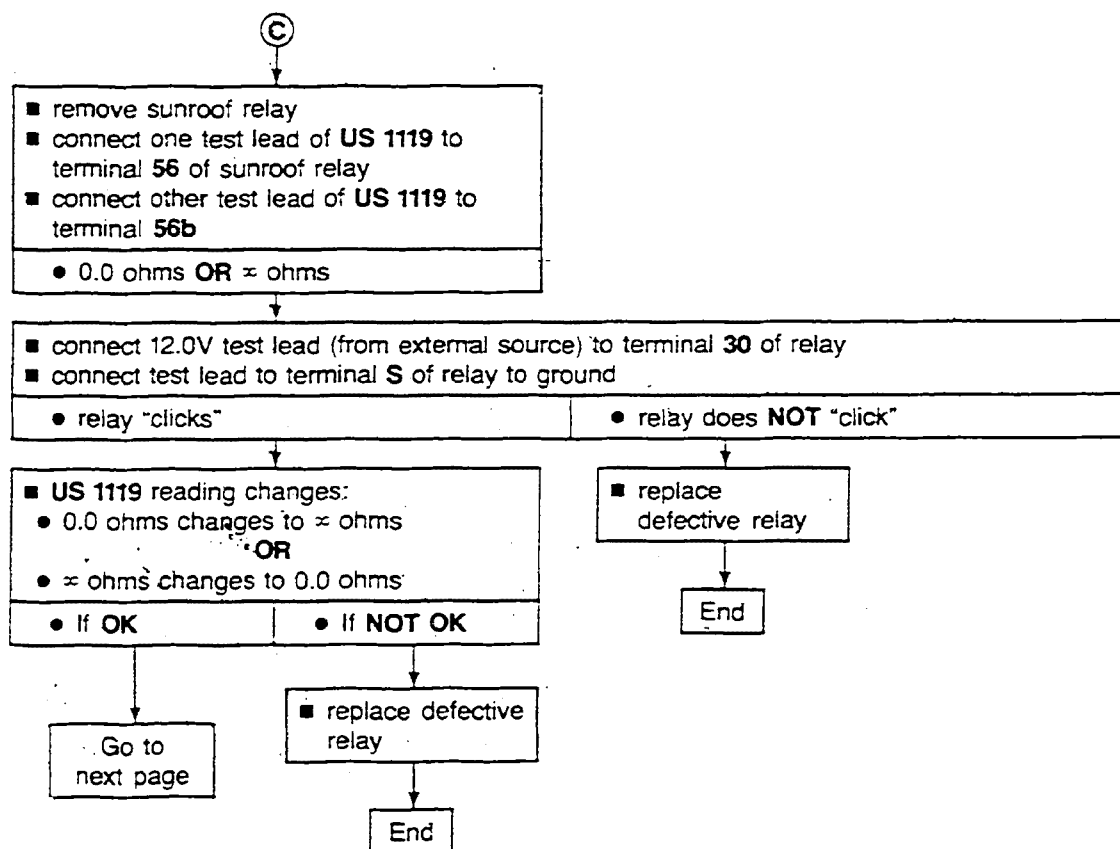
Sunroof switch, checking



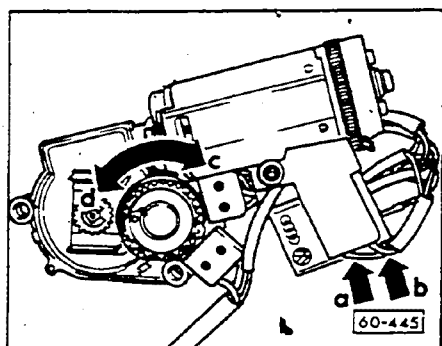


Sunroof relay, checking





Sunroof motor, checking



- remove sunroof relay
- remove sunroof motor

using 12.0 V external power supply:

- connect negative (–) lead of power supply to motor terminal a
 - blue wire
- connect positive (+) lead of power supply to motor terminal b
 - violet/black/brown wire

motor runs
clockwise (c)

motor **does not** run
clockwise (c)

- replace defective motor

End

- connect positive (+) lead of power supply to motor terminal a
 - blue wire
- connect negative (–) lead of power supply to motor terminal b
 - violet/black/brown wire

motor runs
counterclockwise (d)

motor **does not** run
counterclockwise (d)

Go to
next page

- replace defective motor

End

Microswitches/wiring harness, replacing

If sunroof switch, sunroof relay and sunroof motor work properly:

CAUTION

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

- replace microswitches and microswitch wiring harness, Part No. 895 998 003
- drill out four microswitch mounting rivets with 3 mm (approximately 1/8 in.) drill
- install microswitches
- secure wires with tie wrap to keep them from touching drive gear

CAUTION

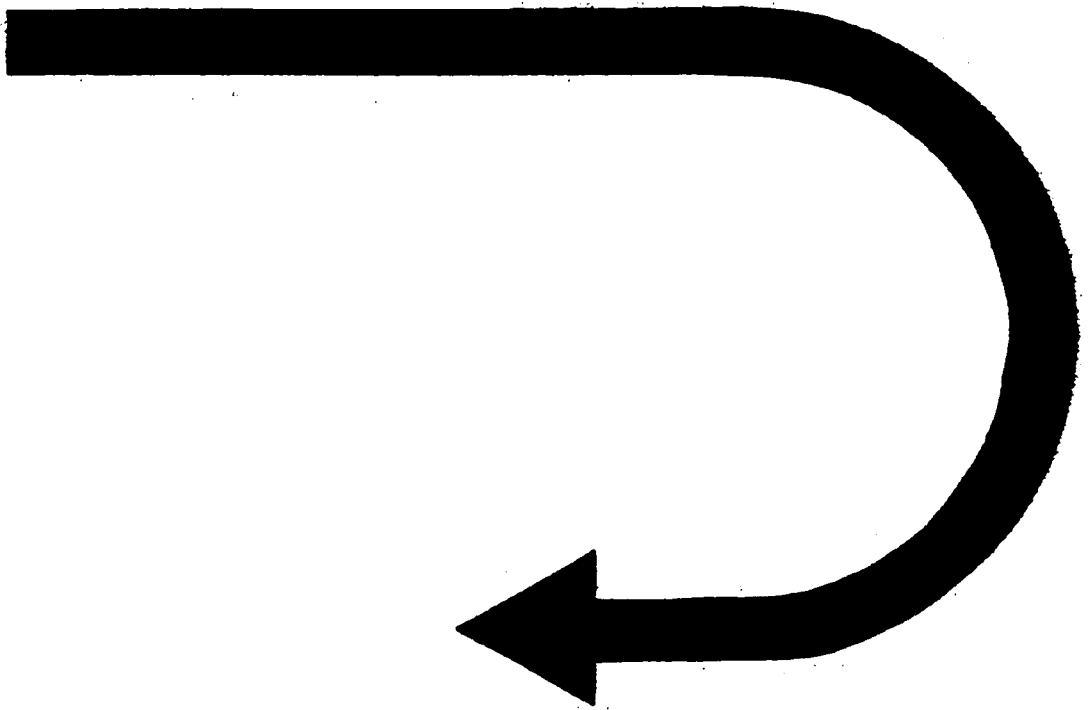
When installing white microswitch:

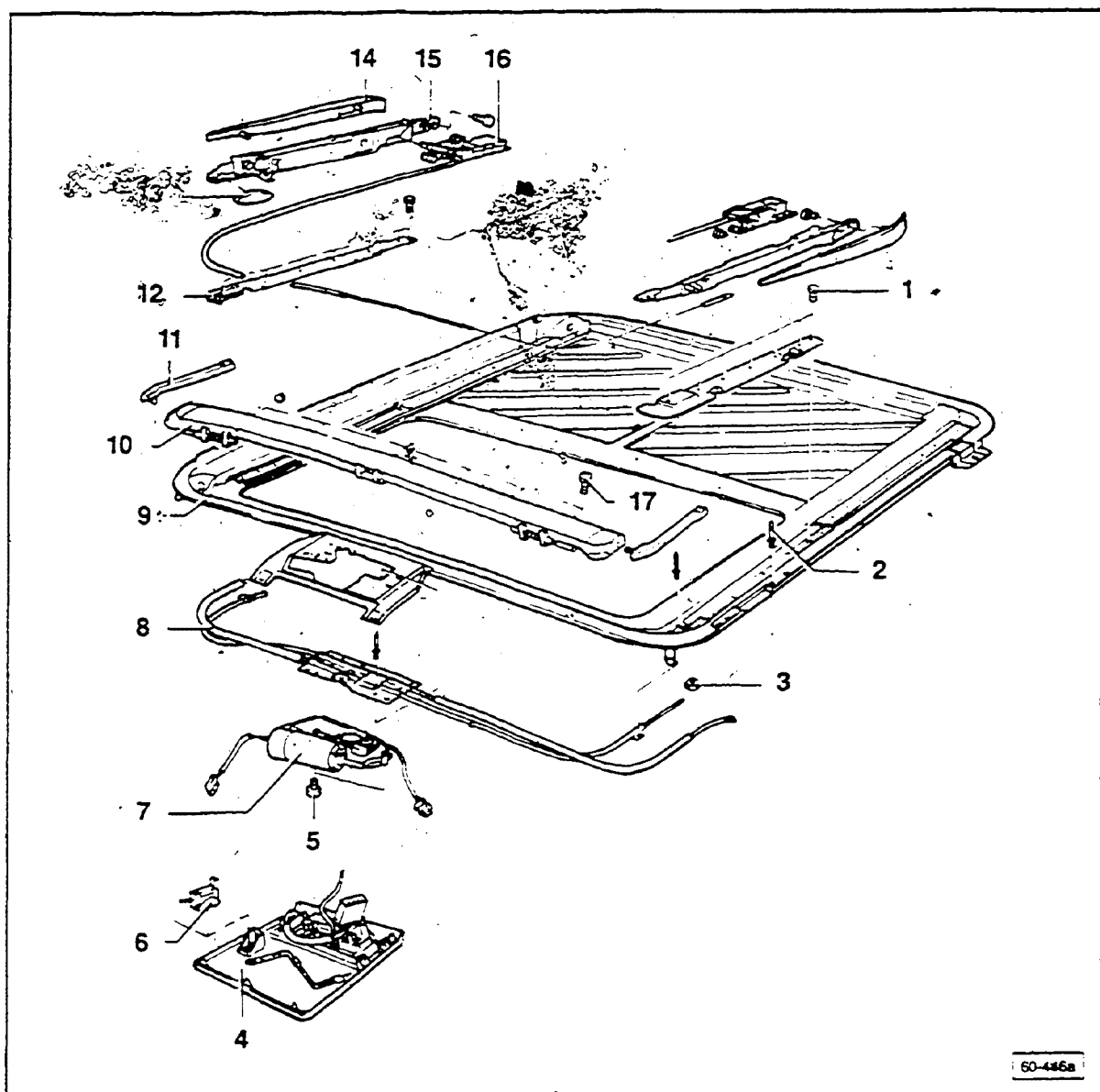
- use two M2 x 16 mm bolts

When installing blue microswitch:

- use two M2 x 12 mm bolts

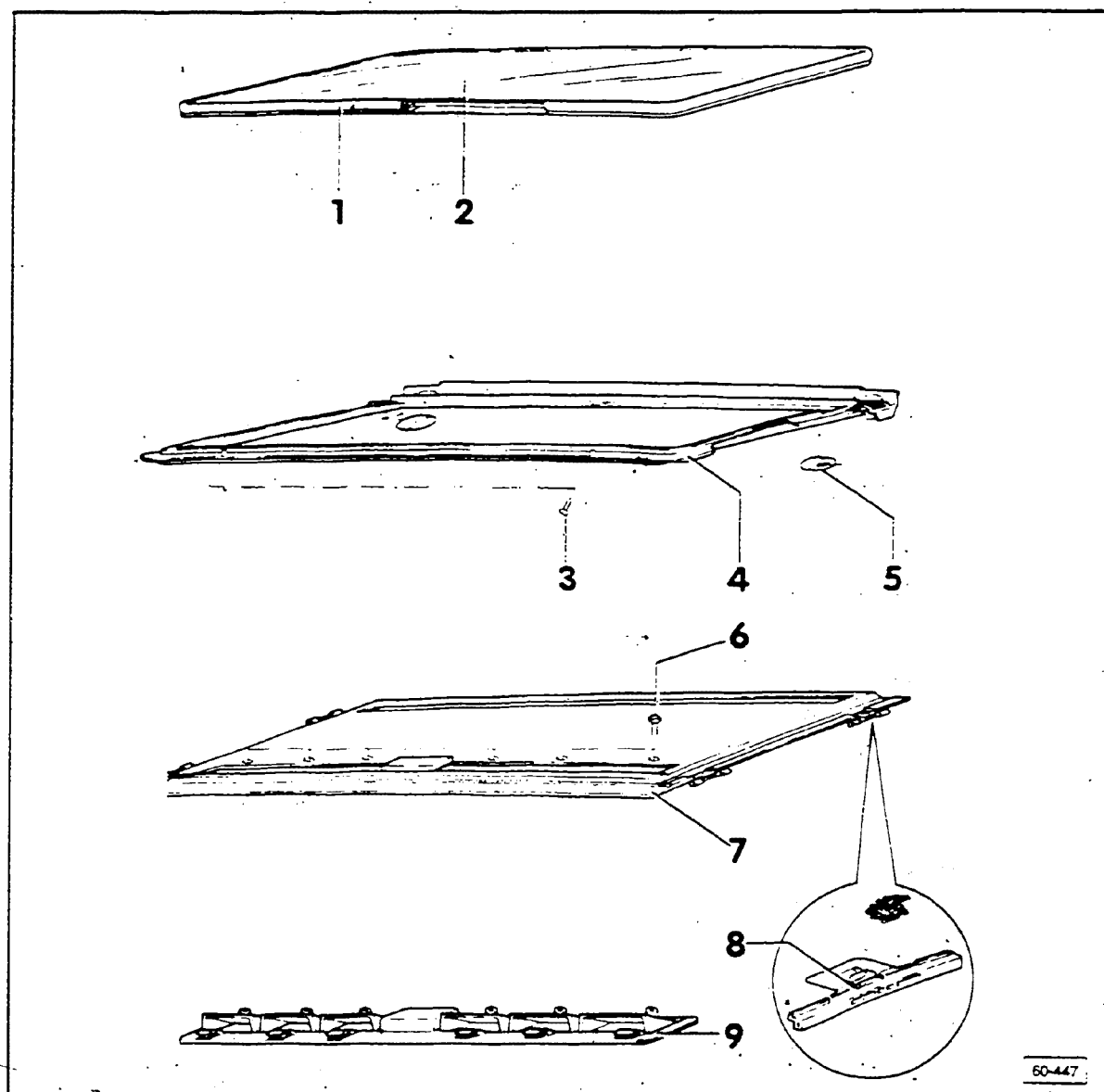
CONTINUED IN THE
BEGINNING OF NEXT ROW





- | | |
|---|--|
| 1 — Screw | 8 — Cable guide tube
drill out rivets 2 to remove |
| 2 — Pop-rivet
drill out to remove cable guide tubes | 9 — Sunroof frame
remove headliner panel first |
| 3 — Nut | 10 — Wind deflector
remove tilt linkage 11 first, then remove screws 17 |
| 4 — Sunroof drive cover
with automatic preselector switch | 11 — Tilt linkage |
| 5 — Bolt w/washer — 2.0-3.0 Nm (17.7-26.6 in. lb) | 12 — Guide channel |
| 6 — Temperature sensor | 13 — Slide |
| 7 — Sunroof motor w/automatic preselector
• removing/installing, page 60.46
• checking "0" position | |

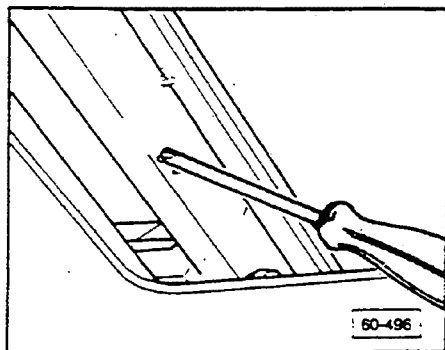
- 14 — **Side cover**
to adjust, tilt up sunroof panel, press side cover upwards to make contact with roof panel seal and tighten screws
- 15 — **Guide with lift channel**
removing, page 60.47
- 16 — **Rear guide with cable**
 - removing, remove sunroof panel and guide with channel
 - removing rear guide from guide plate, page 60.47
- 17 — **Screw**



- 1 — Seal
 - installing, page 60.49
 - pull seal from roof panel to remove
- 2 — Sunroof panel
 - removing/installing, page 60.43
- 3 — Screw 1.0 Nm (8.9 in. lb)
- 4 — Sunroof frame
 - removing/installing, page 60.44

- 5 — Slide
- 6 — Screw
- 7 — Sunroof headliner
- 8 — Slide
- 9 — Molding
 - remove before taking off sunroof panel

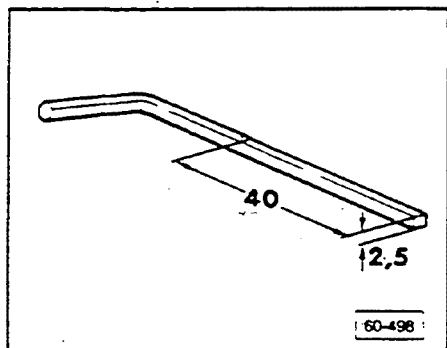
Guide plate "0" position, checking



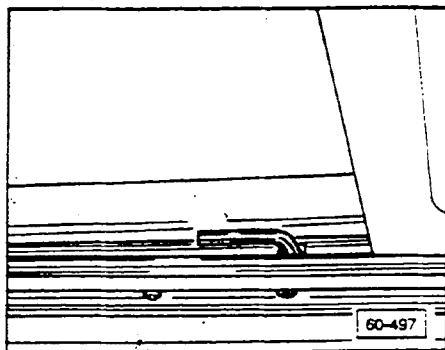
- open sunroof
- remove trim frame screws (as shown).
- tilt sunroof up at rear
- push trim frame, sunroof headliner to rear until aligning hole for "0" position is visible in the guide rails for headliner.
- close sunroof

CAUTION

Do not open sunroof with trim frame pushed back. Trim frame and glass panel will be damaged.



- modify 4.0 mm allen wrench, as shown
 - wrench supplied for emergency sunroof operation may also be used for checking "0" position

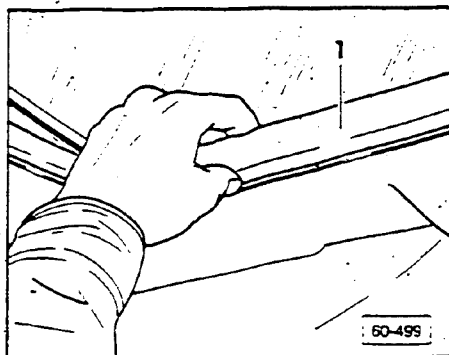
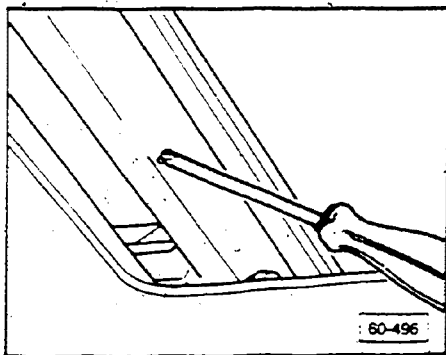


- insert wrench (modified) through hole in guide rail to check "0" position
- wrench must be inserted between the markings on guide rail through rear guide and into guide plate

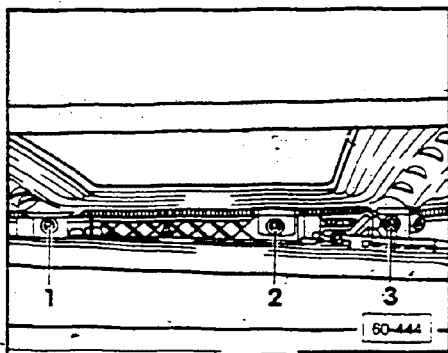
Sunroof panel, removing/installing

Removing

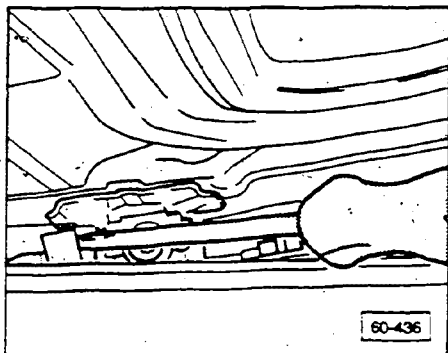
- open sunroof half way
- remove trim frame screws (as shown)



- tilt sunroof up at rear, pull back trim frame 1



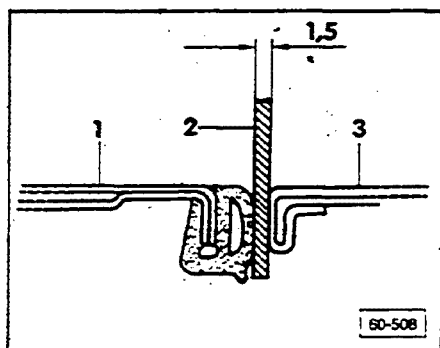
- remove tilt mechanism screws 2 from both sides
- loosen, but do not remove, screws 1, 3



- open retaining clips (left/right sides) with screwdriver
- lift out sunroof panel

Installing

Reinstall in reverse order of removal, noting the following:



Sunroof panel 1 is pretensioned against front roof edge to prevent leaks.

- insert plastic strip 2 between rear roof edge 3 and panel 1
 - strip width of panel, 1.5 mm (1/16 in.) thick
- reinstall sunroof panel
- slightly tighten retaining screws
- adjust panel height, fully tighten retaining screws

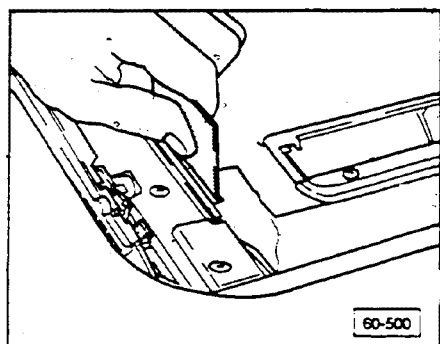
Sunroof headliner, removing/installing

Removing

- remove sunroof panel
- push retaining clips inward (as shown) with strip of metal or similar tool
- lift out sunroof headliner

Installing

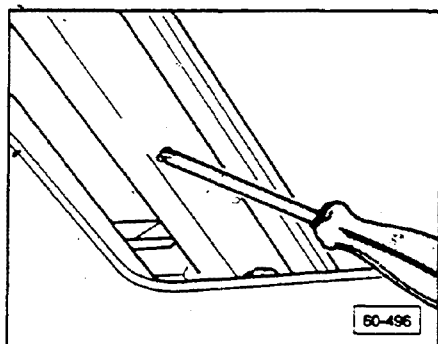
- insert sunroof headliner into guide rail on one side, while pressing retaining clip toward guide rail on opposite side



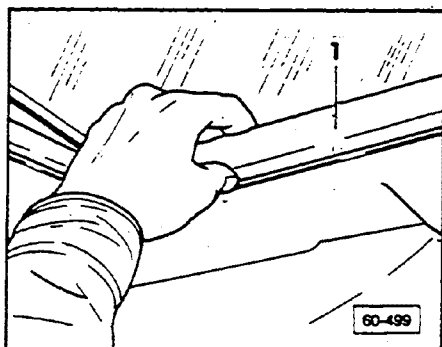
Sunroof trim frame, removing/installing

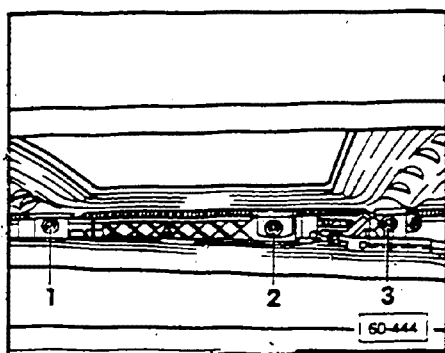
Removing

- open sunroof half way
- remove trim frame screws
- tilt sunroof up at rear

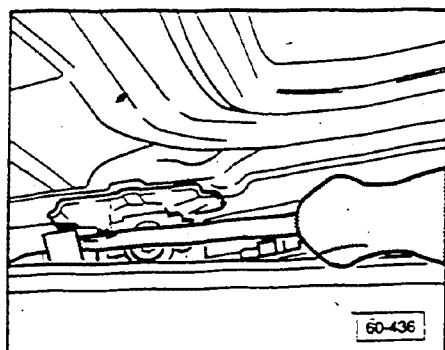


- pull back trim frame 1

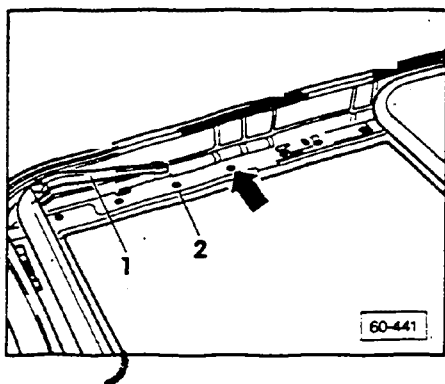




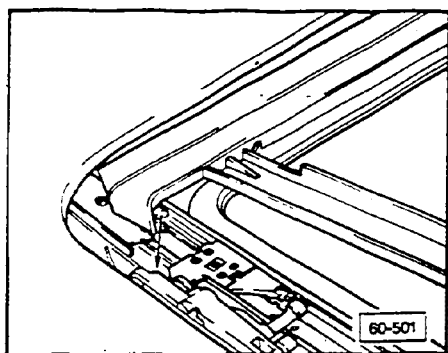
- remove screws 2 from tilt mechanism from both sides
- loosen, but do not remove, screws 1, 3



- open retaining clips (left/right sides) with screwdriver
- lift out sunroof panel from top



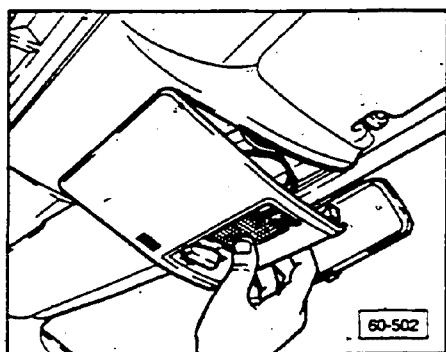
- unhook tilt linkage 1
- remove guide with lift channel from side section
- remove screws (arrow) and take off guide 2



- remove motor, cable drive
- pull trim frame toward front, lift from guide rail

Installing

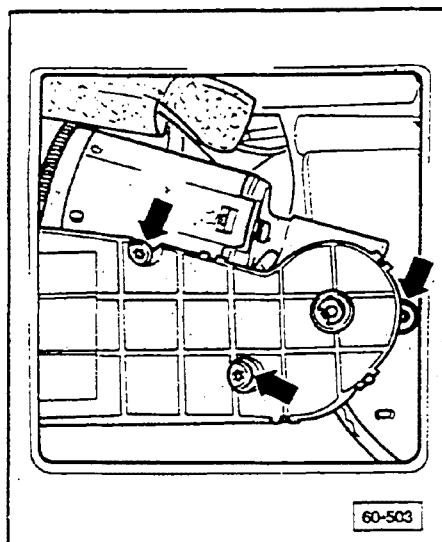
Reinstall all components in reverse order of removal.



Sunroof motor, removing/installing

Removing

- close sunroof
- carefully pry sunroof drive cover off
- remove electrical connections
- remove cover



- remove screws (**arrows**), take out sunroof motor

Installing

Reinstall sunroof motor in reverse order of removal, noting the following:

CAUTION

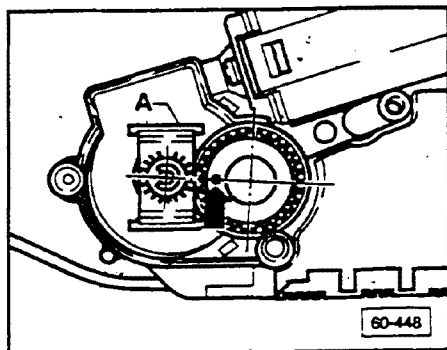
Always adjust sunroof motor to "0" position before reinstalling. Install motor with sunroof panel closed.

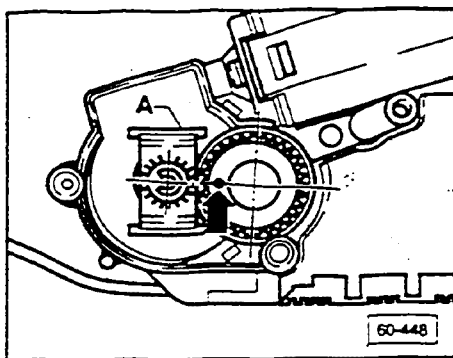
- torque sunroof motor screws
2-3 Nm (18-27 in. lb)

Sunroof motor, checking/adjusting

Checking

- remove motor, do not disconnect
- turn sunroof motor switch to "0" position
 - motor will automatically run to "0" position, and microswitch will switch off
- hole (**arrow**) must be in line between the two center points





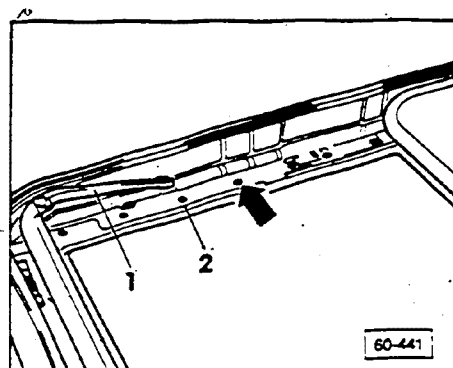
Adjusting

- insert wrench supplied with vehicle for sunroof into center of gear A
- turn until alignment is attained

Note

Moving gear may be difficult. Do not use excessive force.

Guide with lift channel, removing/installing



Removing

- remove sunroof panel
- remove sunroof motor
- push sunroof guides (left/right) evenly to rear of guide channels
- unhook lifter arms 1 from sunroof frame
- remove screws (arrows)
- lift out guide covers
- slide guides forward and lift from guide channels
- remove guides 2 with cables

Installing

Reinstall all components in reverse order.

Rear guide with cable, removing/installing

Removing

- center rear guide in slot of lift channel
- pull rear guide up while twisting (arrow)

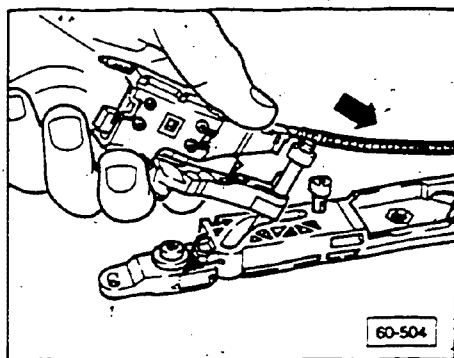
Installing

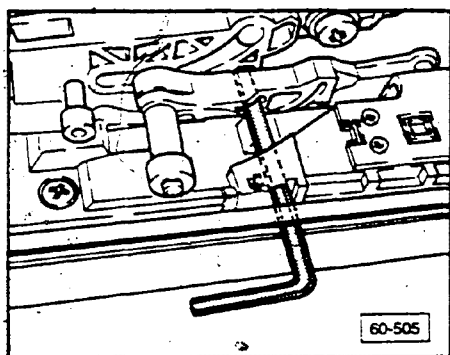
Reinstall in reverse order of removal, noting the following:

- place rear guide in center of slot and tap lightly with hammer to seat

Cable parallelism, adjusting

- remove sunroof panel
- remove sunroof panel headliner
- remove sunroof motor
- disconnect connector rods to water drains
- push guides with lift channel (left/right sides) from front to back



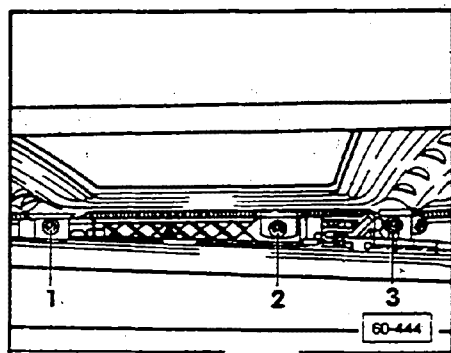
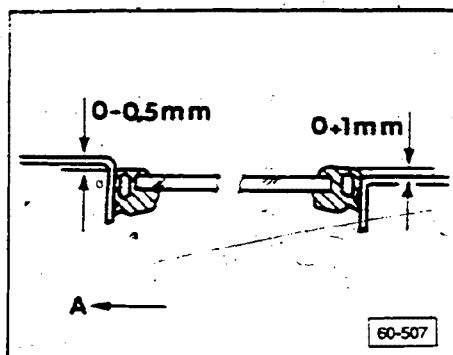


- insert modified 4.0 mm (5/32 in.) allen wrench through rear guide with cable, through alignment notches in guide channel with cable in "0" position
 - crank provided for emergency manual operation of sunroof may be used
- push rear guide with cable and guide with lift channel rearward (with allen wrench installed) until tight against stop (left/right side)
- reinstall motor in "0" position
 - torque 2-3 Nm (18-27 in. lb)
- remove allen wrench from both sides
- reconnect water drain connector rods
- reinstall sunroof panel, headliner panel

Sunroof panel, adjusting

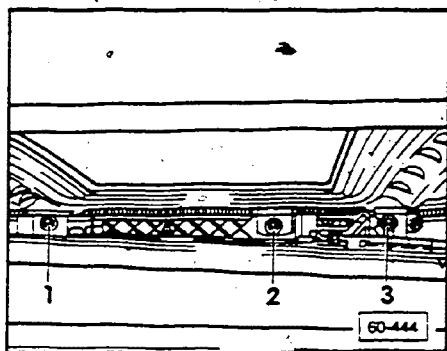
Note

Adjust front of sunroof panel lower than roof line and back of sunroof panel higher than roof line to prevent wind noise.



Front height

- loosen screws 1, 2 and set height according to illustration 60-507
- retighten screws
 - 4-5 Nm (35-44 in. lb)



Rear height

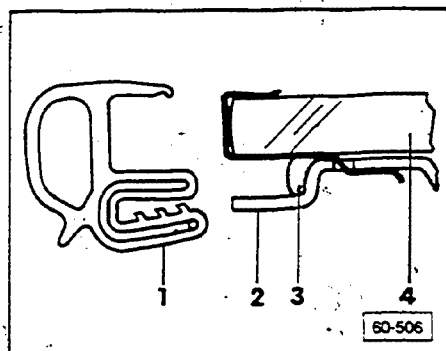
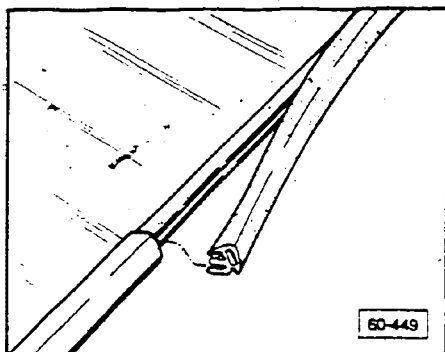
- loosen screws 2, 3 and set height according to illustration 60-507
- retighten screws
 - 4-5 Nm (35-44 in. lb)

Sunroof panel seal, replacing

- remove sunroof panel
- pull off old seal

CAUTION

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



- apply sealing compound 3
Part No. **AKD 476 KD 505** or equivalent into frame 2 as shown
- fit panel seal 1 to glass panel 4 starting from rear of panel at center

Note

Excess adhesive may be removed with 3^M All Purpose General Adhesive Cleaner or Equivalent.

- cut seal to correct length after installing
- test roof panel for water leaks

Front water drain hoses, cleaning

Front water drain hoses are routed through the A-pillars and discharge above the front door lower hinges.

- clean front drain hoses through sunroof opening

Note

For cleaning front hoses, it is recommended that an auxiliary tool be used — for example a 230 cm (90.5 in.) long probe made from the cores of speedometer cables.

Rear water drain hoses, cleaning

Rear water drain hoses are routed through the C-pillars and discharge into the water drain channel underneath the rear lid.

- open rear lid
- clean rear drain hoses from discharge end
- carefully blow compressed air through outlet end of hose to clean

Power glass sunroof with automatic preselect, troubleshooting

Note

Always refer to appropriate wiring diagram.

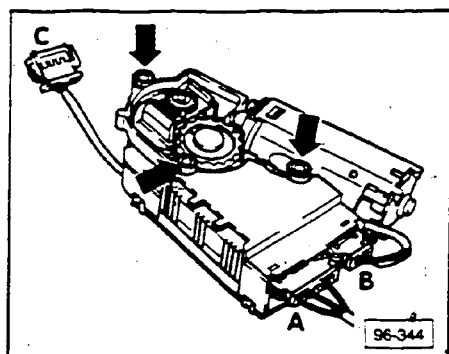
Test conditions

- battery **OK**.
- circuit breaker in auxiliary relay panel **OK**
- fuse **12 OK**
- sunroof motor drive cover, interior light removed

Tools required

- tester multimeter **US 1119** or **FLUKE 83**
- Connector Test Kit **VW 1594**

Sunroof does not work



CAUTION

DO NOT damage, enlarge or bend connector terminals or cavities by forcing probes into them when performing electrical checks. Use Connector Test Kit **VW 1594** to make the necessary electrical connections.

Power to sunroof motor, checking

- disconnect 5 point connector **A** from control unit
- switch ignition **ON**
- set tester to volt scale
- connect tester between terminal 2 and 5 of connector **A**
 - must be approximately 12.0 V
- connect tester between terminal 2 and 4 of connector **A**
 - must be approximately 12.0 V

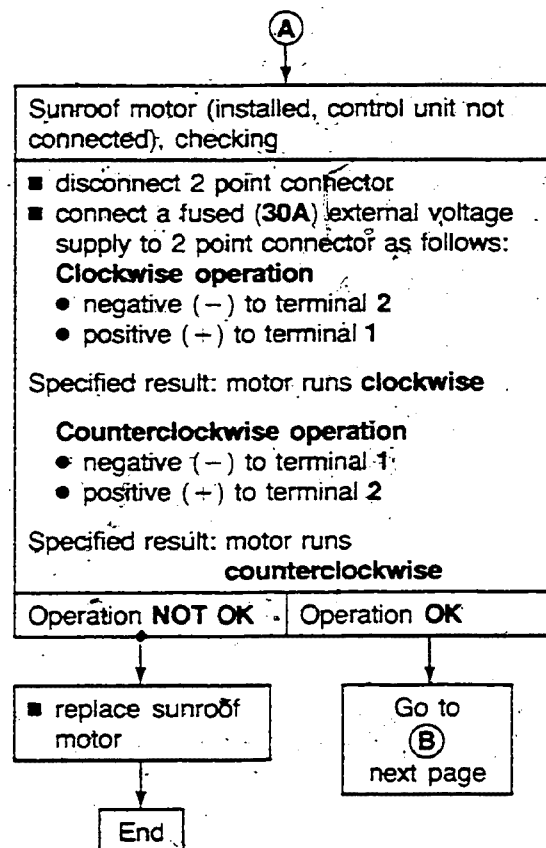
Voltage measurement **NOT OK**

Voltage measurement **OK**

- check and repair wiring according to wiring diagram

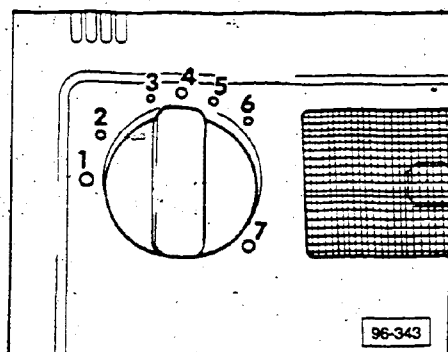
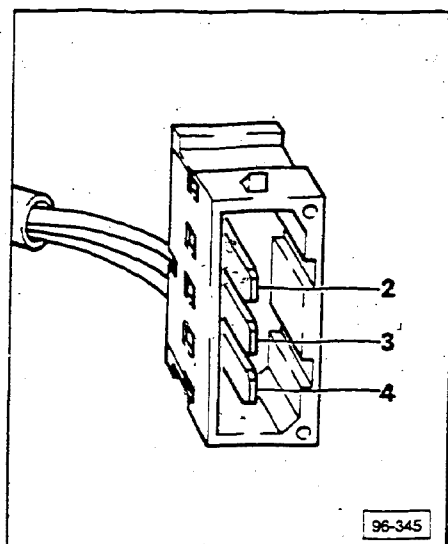
Go to
(A)
next page

End



Ⓑ

Sunroof does not move to preselected positions



Sunroof control switch (E139), checking

- disconnect 4 point connector
- set tester to 20 K ohm scale
- connect tester between terminals 2 and 3 of 4 point connector
 - must read approximately 5 K ohm
- connect tester between terminals 2 and 4, and set sunroof control switch to following position in turn:

Position	Specified reading (in K ohm)
1	0.6
2	1.1
3	1.85
4	2.2
5	2.55
6	3.0
7	4.6

Specified readings
OK

Specified readings
NOT OK

- replace control unit, two pages forward

End

- replace sunroof control switch (E139), next page

End

Sunroof control switch (E139), removing/installing

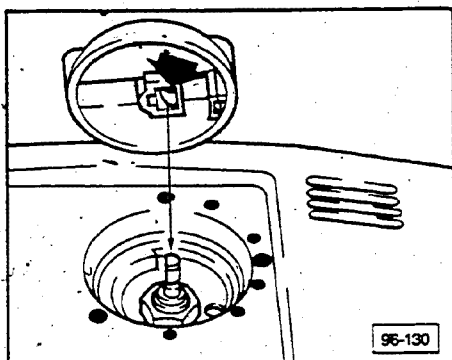
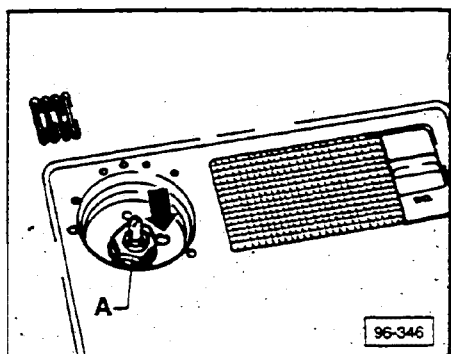
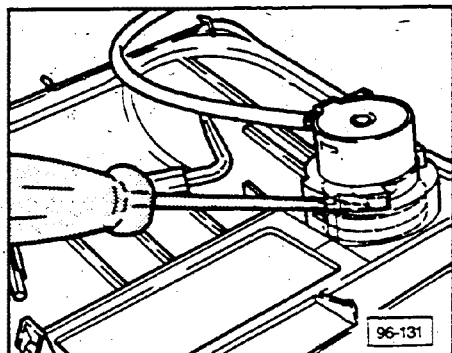
Removing

- remove sunroof drive cover
- remove interior light assembly
- turn control switch until slot is visible in housing
- insert screwdriver, as shown, up to shaft
- carefully pry off control switch knob
- remove nut, take out switch

Installing

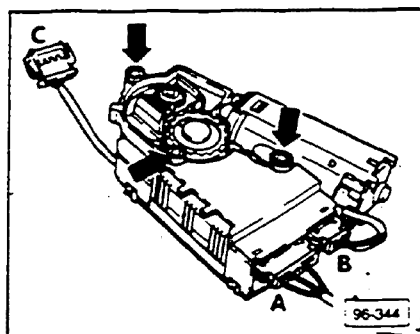
Reinstall in reverse order, noting the following:

- ensure lug (**arrow**) on sunroof control switch engages in slot in cover
 - torque **A** 1.5 Nm (13 in. lb)



- press knob onto shaft
 - retaining spring (**arrow**) must face rounded side of shaft
- check sunroof for proper function

Sunroof control unit, removing/ installing



Removing

- remove sunroof motor
- disconnect plugs A, B, C
- remove bolts (arrows), take off control unit

Installing

Reinstall in reverse order of removal, noting the following:

Note

Sunroof motor must be set to "0" position **before** installing into vehicle

- set control switch to position 4
- switch ignition on
 - motor will automatically move to "0" position
- reinstall sunroof motor into vehicle