

54 Hood, Sun Roof

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54 12 004 ADJUSTING SUN ROOF

Description:

This sun roof can be operated as a

A) sliding roof and

B) lifting roof.

Switching to lift is only possible with the lid closed.

For electric sun roofs by way of a microswitch with the control switch in "close" position.

For manual sun roofs after overcoming a pressure point.

Ideal Sun Roof Lid Settings:

Height:

Front = 1 mm (0.040") deeper than roof panel.

Rear = 1 mm (0.040") higher than roof panel.

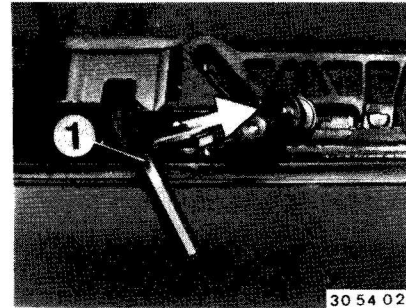
Axial Setting:

Equal distance at front and rear between lid and roof – approx. 0.2 mm (0.008"), check with plastic gauge.

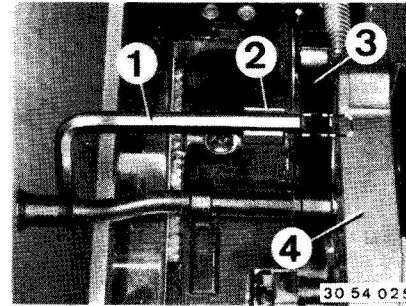
Check Velvet Strips:

V = Front with sealing lip

H = Rear without sealing lip



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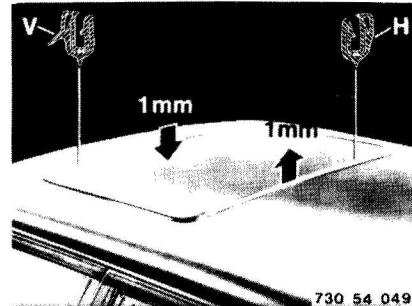
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Sun roof closed = position 0.

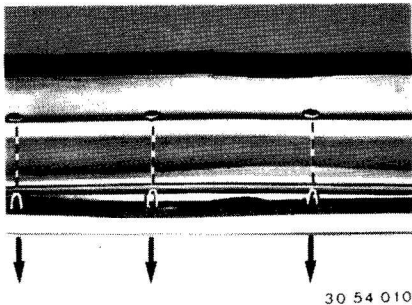
Lock sun roof in position 0 on left and right sides with a 4 mm key (1).

Note:

Place key (1) in holder of guide pin (2) and insert in hole of operating lever (3) and gate (4).



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Open sun roof lid about 5 cm (2").

Press off front roof liner frame.

Close sun roof lid and slide back roof liner frame completely.

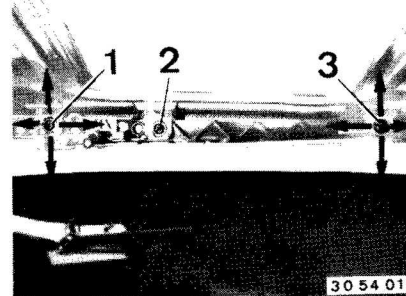
Installation:

Close sun roof lid.

Pull roof liner frame forward uniformly.

Open sun roof lid slightly, while holding roof liner frame by hand.

Press in holding clamps for front roof liner frame.



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Loosen screws (1 ... 3) on left and right sides with Special Tools 00 2 102/103. Slide and adjust sun roof in slots.

Note:

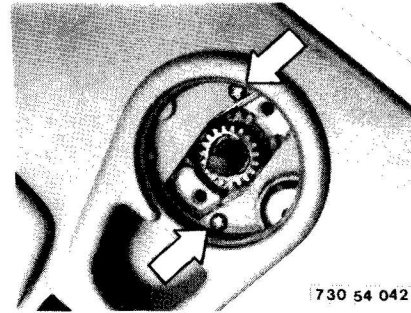
Replace self-locking screws.

Tightening torque: 3.5 Nm (2.5 ft. lbs.)

54-2

54 12 020 REMOVING AND INSTALLING SUN ROOF WINDER

Close sun roof lid to pressure point (do not lift lid).
Unscrew bolt and remove escutcheon.



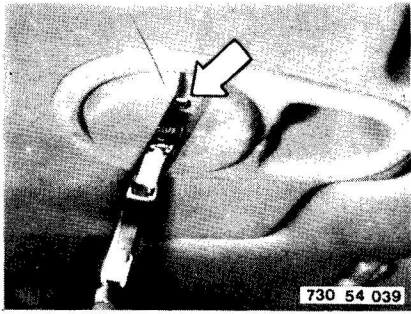
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54 12 050 REMOVING AND INSTALLING RECESS PLATE FOR SUN ROOF WINDER

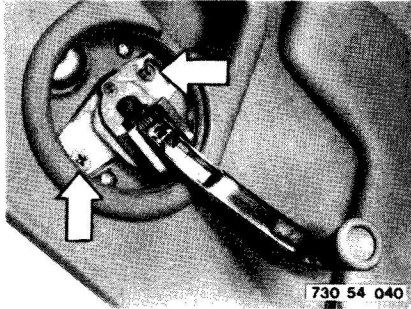
Remove and install sun roof winder 54 12 020.
Unscrew bolts and remove recess plate

Unscrew bolts and remove winder.

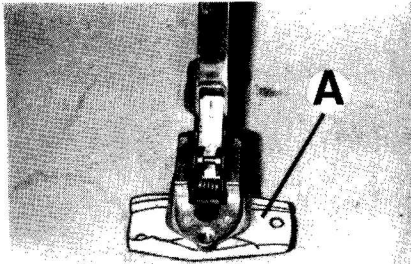
Installation:
Large opening (A) faces rear.



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54 12 100 REMOVING AND INSTALLING SUN ROOF LID

Close sun roof lid but for about 5 cm (2"). Press off front roof liner frame. Close sun roof lid and slide back roof liner frame completely.

Installation:
Close sun roof lid. Pull roof liner frame forward uniformly. Open sun roof lid slightly, while holding roof liner frame by hand. Press in holding clamps for front roof liner frame.

Unscrew bolts on left and right sides with Special Tools 00 2 102/103. Lift off sun roof lid.

Installation:
Adjust sun roof 54 12 004. Replace self-locking bolts.

54 12 120 REPLACING SEAL FOR SUN ROOF LID

Remove and install sun roof lid 54 12 100. Pull off seal on lid.

Installation:
Install seals with adhesive*.

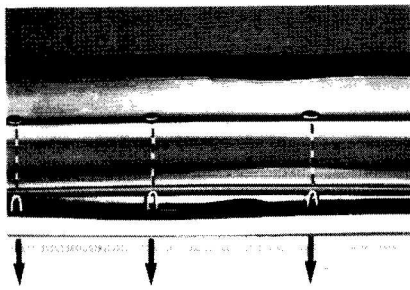
V = Short front velvet strip (sealing lip faces forward)
H = Long rear velvet strip

54 12 130 REMOVING AND INSTALLING OR REPLACING ROOF LINER FRAME FOR SUN ROOF LID

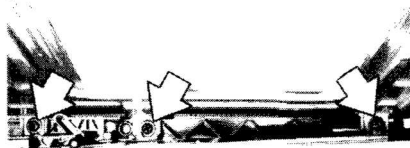
Remove and install sun roof lid 54 12 100.

Unscrew screws on left and right sides. Remove cover rails (1) and guide pins (2). Guide pins (2) are marked with L for left or R for right.

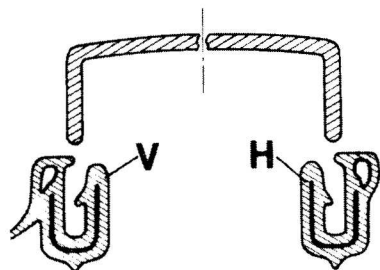
Pull cables out of guides. Pull roof liner frame forward and remove. If applicable, unrivet and rivet connecting rods (1). Use a piece of tape on both sides in area of rivets (to avoid rattling noise).



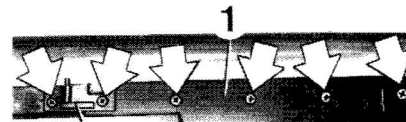
30 54 010



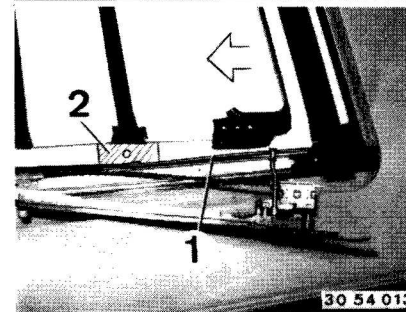
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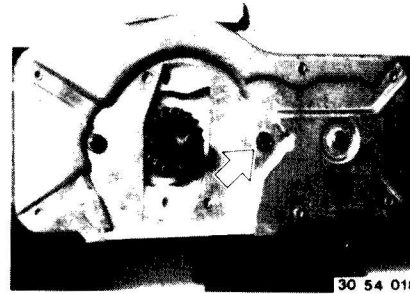


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54-4

54 12 230 REMOVING AND INSTALLING OR REPLACING GEAR FOR (MANUAL) SUN ROOF

Remove clamping strip.



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Unscrew bolt and take off gear.

Installation:

Set gear to 0 (pressure point).

Pull off trim carefully.
Unscrew left and right bolts.

Installation:

Paste trim.

Close roof.

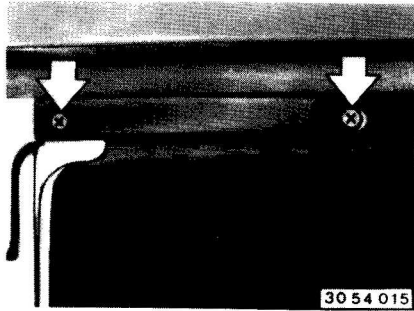
Remove and **install** recess plate 54 12 050.

Remove sun visors with holders.

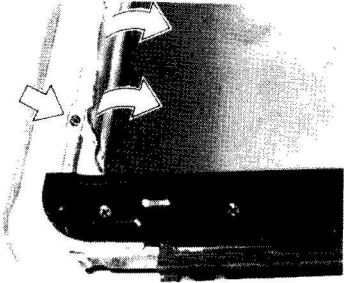
Pull off edge guard partially.

Installation:

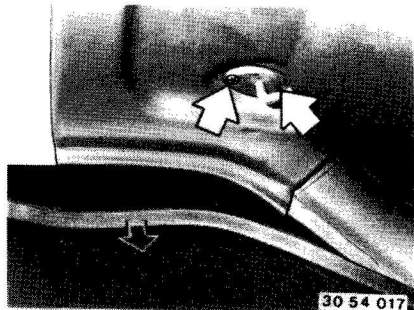
Insert rubber cover in plate for inside mirror.



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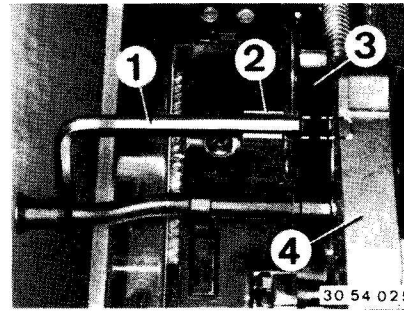
54 12 240 REPLACING BOTH DRIVE
CABLES FOR MANUAL SUN
ROOF

Remove and install sun roof lid 54 12 100.
Remove and install recess plate 54 12 050.

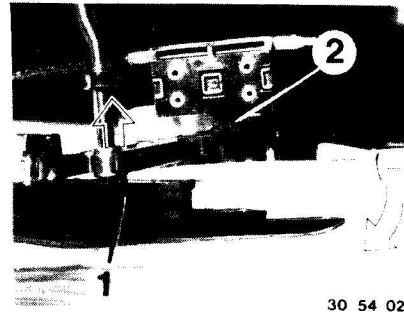
Loosen bolt.

Unscrew left and right bolts.
Remove cover rails (1) and guide pins (2).
Guide pins (2) are marked L = left or R = right.

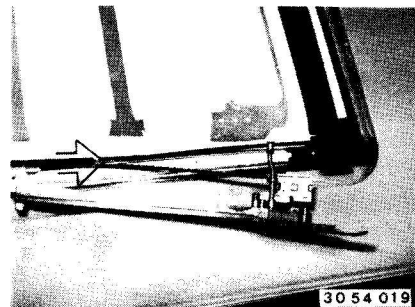
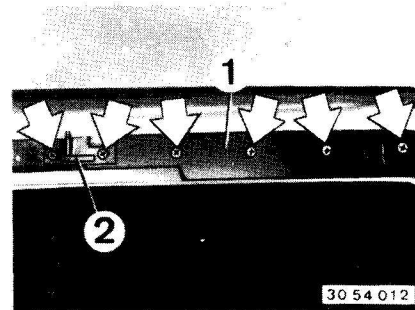
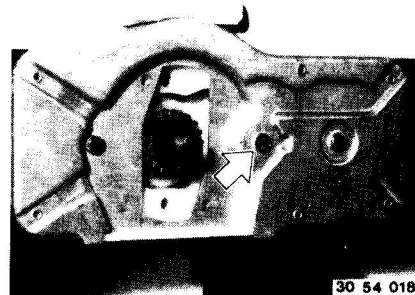
Pull drive cables out of guide tubes.
If applicable, loosen gear mounting bolts
further to make drive cables accessible.



Installation:
Place 4 mm hexagon key (1) in holder of guide
pin (2) on left and right sides and insert in holes
of operating lever (3) and gate (4).
Set gear to 0 (pressure point) and tighten bolts.



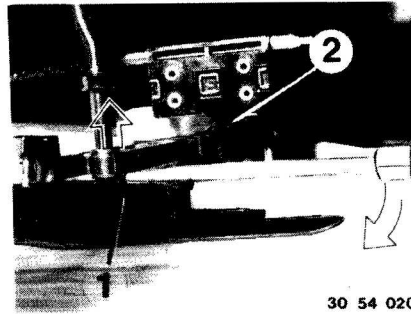
Press gate (1) off of drive cable (2).
Drive cables (2) are marked L = left or R = right.



54-6

54 12 241 REPLACING BOTH DRIVE CABLES FOR ELECTRIC SUN ROOF

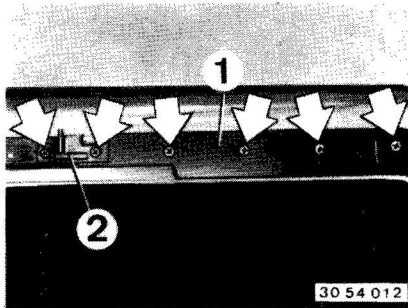
Remove and install sun roof lid 54 12 100.
Remove and install motor/gear unit for sun roof 54 13 010.



Press gate (1) off of drive cable (2).

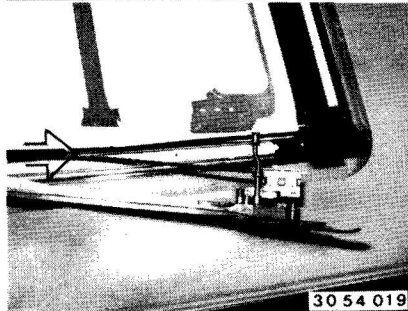
30 54 020

Unscrew left and right bolts.
Remove cover rails (1) and guide pins (2).
Guide pins (2) are marked L = left or R = right.



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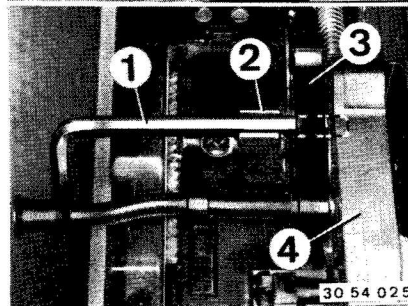
Pull drive cables out of guide tubes.



30 54 019

Installation:

Place a 4 mm hexagon key (1) in holder of guide pin (2) on left and right sides and insert in holes of operating lever (3) and gate (4).
Set motor/gear unit to 0 and tighten bolts (54 13 010).



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54 12 250 REPLACING LEFT OR RIGHT GATE FOR SUN ROOF

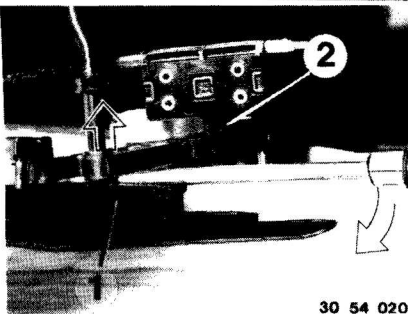
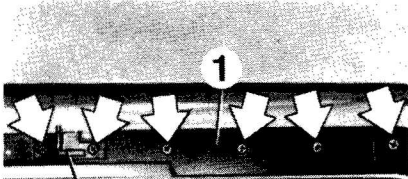
Remove and install sun roof lid 54 12 100.

Unscrew bolts.

Unscrew left and right bolts.

Take off cover rails (1) and guide pins (2).

Guide pins (2) are marked L = left or R = right.



Pull cable out of guide.

Press gate (1) off of drive cable (2).

Transfer and lubricate slides with grease*.

54 13 010 REMOVING AND INSTALLING OR REPLACING MOTOR/GEAR UNIT FOR SUN ROOF

Detach clamping strip.

Pull off trim carefully.
Unscrew left and right bolts.
Installation:
Paste trim.

Remove control switch.
Remove sun visors with holders.
Pull off edge guard partially.

Close sun roof.
Manual Operation:
Unscrew nut (1) and turn drive shaft (2) with a socket wrench.
Close roof.

Disconnect plugs.
Unscrew bolts and remove motor/gear unit.

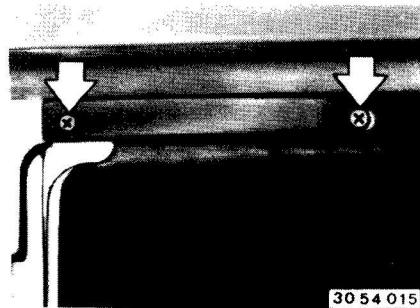
Installation:
Mark of switching gear (1) must be aligned with mark of control gear (2).
Lubricate teeth of pinion, control gear and switching gear with grease*.

Adjusting Motor/Gear Unit:
Unscrew nut (1) and adjust with socket wrench as described above.
Tighten nut to $450 \pm 35 \text{ Nm}$ ($39 \pm 3 \text{ in. lbs.}$).
Check function.

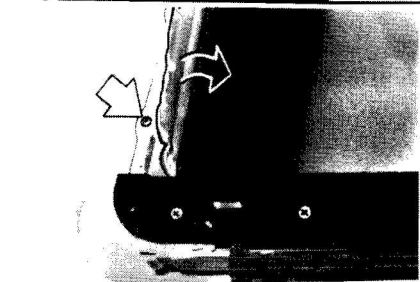
54 13 012 REPLACING MICROSWITCH FOR SUN ROOF MOTOR

Remove and install motor/gear unit 54 13 010.
Drill out hollow rivets and rivet on new micro-switch.

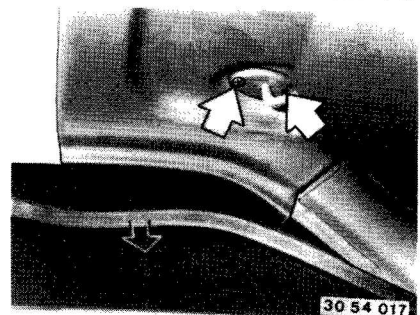
* Source: HWB



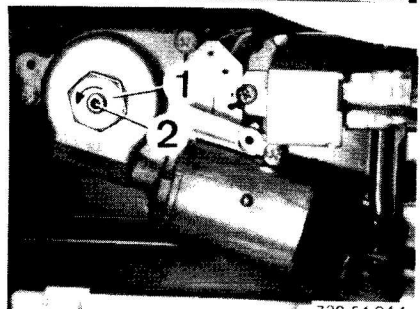
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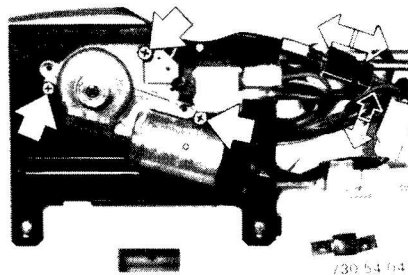
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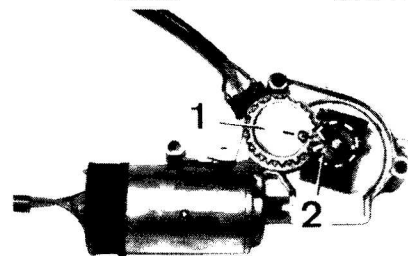
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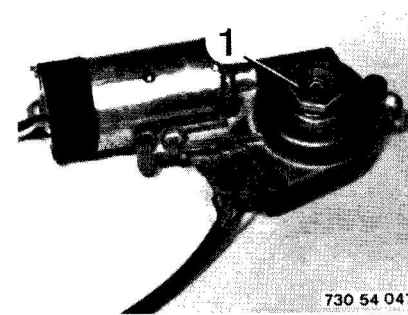
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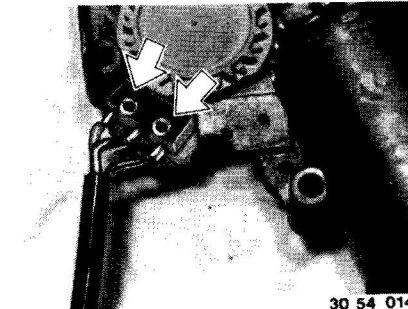
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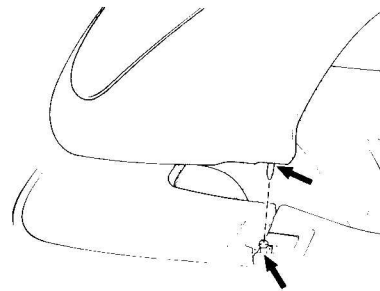
TROUBLESHOOTING SLIDING/LIFTING SUN ROOF

Condition	Cause	Correction
Rattling noise	<ul style="list-style-type: none"> a) Maladjusted b) Guide tubes knocking against each other c) Roof liner frame knocking against sun roof lid when open d) Connector for water drain knocking on guide rail e) Too much play of sliding shoes and upper guiding pin. 	<ul style="list-style-type: none"> a) Adjust sun roof b) Wrap tape around guide tubes c) Paste foam rubber on corners of sun roof frame d) Paste tape on rivets and guide linkage e) see Service-Information 54 01 84 (298)
Sun roof can be lifted, but does not slide	<ul style="list-style-type: none"> a) Pins on gate holders bent 	<ul style="list-style-type: none"> a) Replace gate holders
Sun roof lifts onesidedly	<ul style="list-style-type: none"> a) Drive cables maladjusted in position 0 b) Rear guide turns on drive cable 	<ul style="list-style-type: none"> a) Adjust drive cables in position 0 b) Lock drive cable in front of and behind guide with punch marks or by squeezing
Grinding noise when opening and closing	<ul style="list-style-type: none"> a) Sliding rails and plastic parts lubricated 	<ul style="list-style-type: none"> a) Remove grease and/or replace sliding shoes
Grinding noise when lifting	<ul style="list-style-type: none"> a) Front seal dry b) Contact force on front seal excessive 	<ul style="list-style-type: none"> a) Lubricate seal with vaseline b) Adjust lid
Water leaking through roof liner area	<ul style="list-style-type: none"> a) Sun roof maladjusted in position 0 b) Seals loose/damaged c) Wrong seal installed (front/rear seals differ in shape) d) Drain hoses plugged e) Guide rails and cover plates seal insufficiently on roof frame f) Corners in rear roof opening leak g) Hose outlets plugged with sealing compound foam 	<ul style="list-style-type: none"> a) Adjust sun roof in position 0 b) Paste/replace seals c) Install original spare parts d) Clean drain hoses e) Seal guide rails and cover plates f) Seal corners g) Clean hoses

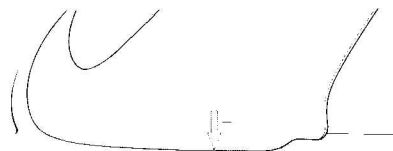
Condition	Cause	Correction
Exhaust odor in passenger compartment	a) Check flaps do not close	a) Service flaps
Whistling noise with sun roof closed	a) Excessive gap between roof and sun roof front or rear	a) Replace rubber seals or adjust sun roof lid
ELECTRIC SUN ROOF		
Drive motor does not run	a) Fuse blown b) Control switch defective c) Wire harness has a break d) Drive motor defective	a) Replace fuse b) Replace control switch c) Check or replace wire harness d) Replace drive motor
Drive motor runs, but sun roof lid does not move	a) Insufficient contact force of slip clutch	a) Adjust slip clutch
Sun roof does not lift	a) Relay defective b) Maladjusted	a) Replace relay b) Adjust sun roof in position 0
Sun roof goes immediately to lift position when closed	a) Microswitch defective	a) Replace microswitch on drive motor

54 21 ... INSTALLING HARDTOP

Mount hardtop with pins in the take-ups.



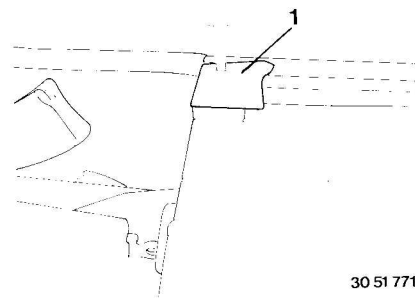
30 51 776



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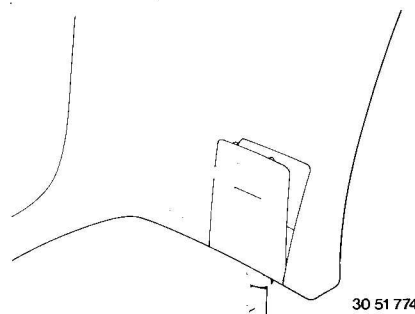
Adjust distance between hardtop and body to 5 ... 6 mm (0.197 to 0.236").
Turn the locking screw with an open-end ring wrench until the lock is noticed to engage.
Engage the front locks.

Wind down side windows completely.
Fold in top.
Close top lid.
Pull out plug (1).



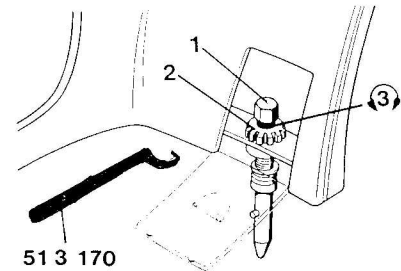
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Fold down covers for rear fasteners on the hardtop.



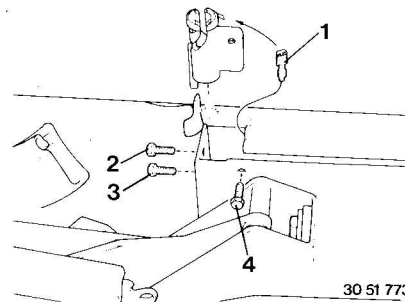
30 51 774

- 1 Locking screw
- 2 Knurled nut for locking with Special Tool 51 3 170
- 3 Adjusting screw



51 3 170

30 54 050



30 51 773

Note for Hardtop Take-ups:
Connect lead (1) for rear window defogger.
Screw on left and right hardtop take-ups each with three screws (2 ... 4).

Note:
Lock bolts with Loctite.
Lubricate slip contacts with light coat of contact grease.

INFORMATION FOR REPAIRING HARDTOPS

The conditions mentioned below for hardtop repairs conform with legislation in the Federal Republic of Germany. Always conform with the pertinent legislation of other countries.

This repair manual is provided for qualified workers and assumes their skill, conscientiousness and sense of responsibility. The instructions are limited to factory approved repairing methods as well as associated tips and measures to make the work easier.

Only general working procedures are described in these instructions. The scope of work and order of procedures will always have to be adapted to the pertinent damage condition.

Only such damage, which does not have influence on the strength and rigidity of the hardtop, may be repaired. The following types of damage may not be repaired on the honeycomb structure of the hardtop in the interest of safety.

- a) Damage on body mounting points.
- b) Damage in immediate vicinity of body mounting points.
- c) Ruptures.
- d) Cracks extending through the honeycomb structure with a length of more than 100 mm (4").
- e) Cracks in the surface of the honeycomb structure, which extend from corners and edges.
- f) Holes larger than 2500 mm² in size.
- g) Moisture must not have penetrated into the honeycomb structure.

A hardtop with this type of damage or similar must be replaced.

Required Materials and Equipment:

- Ultraviolet lamp*
- Ultraviolet light hardening fiber filler*
- Ultraviolet light hardening final filler*
- Sandpaper, grain size P 100 and P 220*
- Saddler's knife (standard tool)
- Rubber roller - approx. 25 mm dia., approx. 100 mm wide (standard tool)
- Gloves*
- Goggles*
- Mask*
- Repair patches* (match color of hardtop skin)
- Cement TIVO 3433/26*
- Hardener TIVOCUR bc 80 11*
- Plastisol*, colorless
- Glass rod*
- Satin-finished clear lacquer*

* Source of Supply: HWB

SAFETY PRECAUTIONS!!

Protective Measures:

- Wear workclothes to cover bare skin.
- Extract grinding abrasion.
- Wear goggles and mask while grinding.
- Work only in well ventilated rooms.
- Wash hands frequently.
- Keep food stored separately.
- Do not eat, drink or smoke while working.
- Do not inhale vapors.

First Aid:

Take off dirty clothes immediately. If dust has gotten in eyes, rinse out with plenty of water and go to a physician. Tab coated skin and wash with plenty of water. If great amounts of vapors are inhaled, go outdoors in the fresh air and, if necessary, visit a physician.

Information on Toxicology:

Systems containing styrene will irritate eyes, skin and the respiratory track. No injurious effects are known as long as handling is correct.

Measures In Case of Fire:

Fire extinguishing agents: water mist (no water stream), powders, foam, CO₂ and halon.

Scrapping:

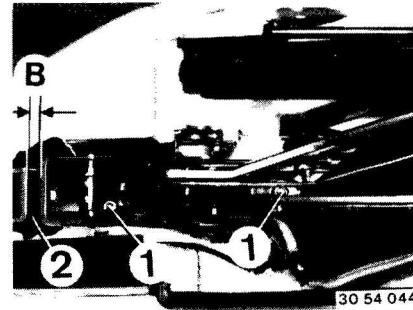
Never let it get into drink water systems.
It can be brought to the normal refuse station after hardening.

Procedures:

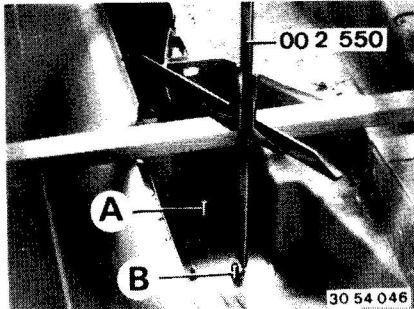
1. Place repair patches on the damaged surface and hold them in position with adhesive tape. Cut out patches and roof skin together with a saddler's knife (at right angles to the surface being repaired).
2. Remove old cement and clean the repair surface.
3. Repair damaged point in the honeycomb structure with a fiber filler and harden with ultraviolet light. Then apply a coat of final filler and harden with ultraviolet light.
Note:
If damage is deeper, apply the filler in layers and harden with ultraviolet light.
4. Grind and clean repair surface.
5. Mix cement and hardener in ratio of 15 to 1.
6. Apply a thin coat of the mixed cement on the repair surface and back of patches.
7. Allow about 15 minutes drying time for the cement.
8. Apply patches (edges butted) and press on firmly with a rubber roller.
Important!
If applicable, remove any cement squeezed out on the sides (don't smear it!).
9. Dip a glass rod in Plastisol and coat the butt edges thoroughly.
10. Allow about 15 minutes drying time for the butt edges (dust dry).
11. Clean part of or the entire hardtop with an alcoholic solution (2 %) or watery solution on soap basis.
12. Paint part of or the entire hardtop with clear lacquer.

54 - 16

Adjusting Top:
Place rails on left and right side panels.
Rails must bear on metal – pull off the rubber partially.

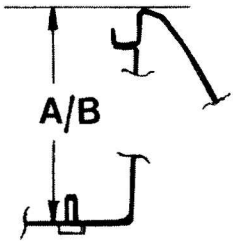


Hold top with nuts (1) – it must still be possible to move the top.
Close the top and adjust distance (B) on the front mounting points with shims (2), which are available in thicknesses of 1 mm (0.039").
Tighten top nuts.



Measure distance from side panel (lower edge of rail) to bearing surface of top console at both threaded pins with Special Tool 00 2 550.

Adjust distance
A = 181 mm (7.126") - front threaded pin
B = 159 mm (6.260") - rear threaded pin
with shims which are available 1 mm (0.039") thick.



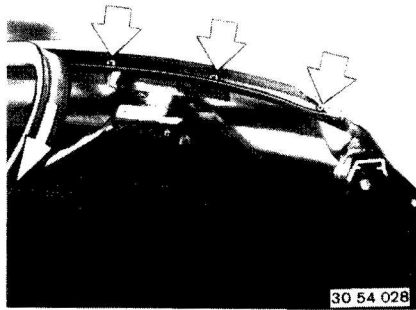
30 54 047

Center the top to the side panels.

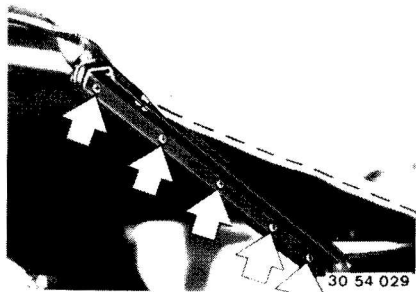


30 54 048

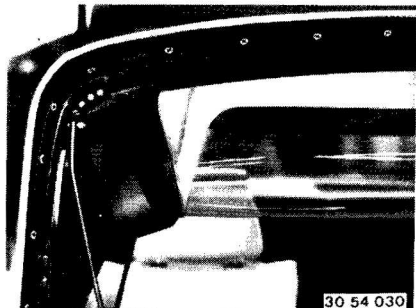
54 31 020 REPLACING TOP (CANVAS)



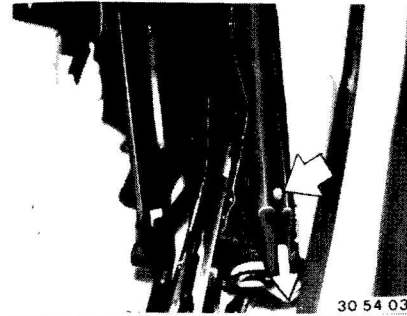
Pull off rubber seal.
Unscrew rail.



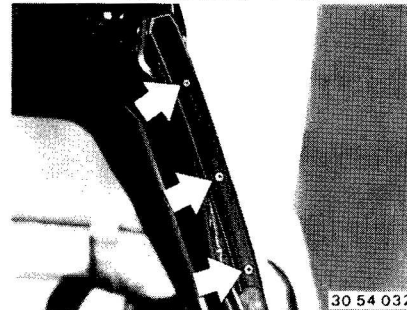
Unscrew rail — remains on cable.
Installation:
Replace screws.



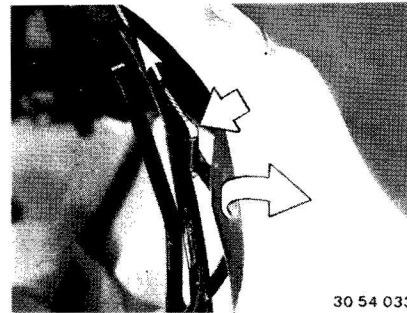
Pull off rubber seal.
Unscrew rail.



Drill out rivets and pull off window guide.



Remove rail.
Installation:
Replace screws.

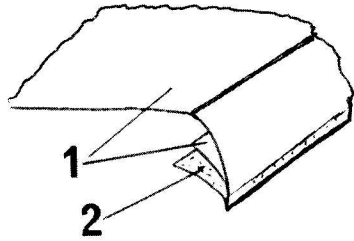


Pull top off of frame.
Disconnect cable and pull it out together with the rail forward.

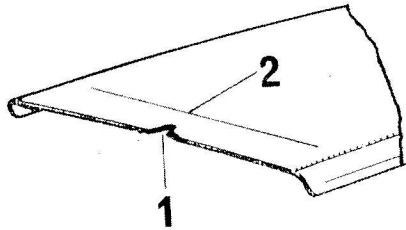
Pull top off of frame and hoopsticks.
Clean frame and hoopsticks with a solvent* to remove residual adhesive.

* Source: HWB

Note:
Secure window protection on inside and outside with masking tape.
Refer to instructions for application of cement*.



30 54 026

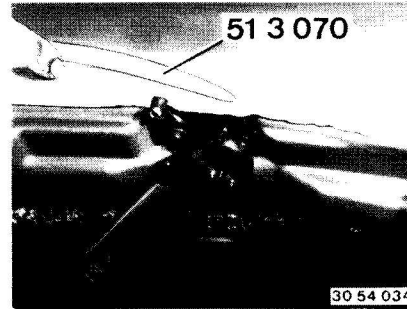


30 54 027

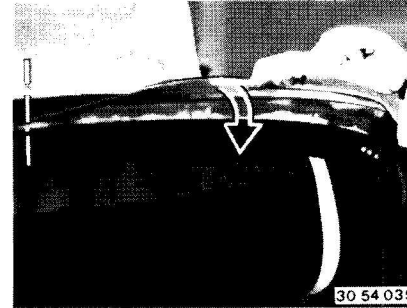
The control banners (2) permit alignment of top edges and must only be cemented after top (1) has been cemented on the frame.

Cement the top, beginning at center (1). Mark (2) must run precisely along the front frame edge.

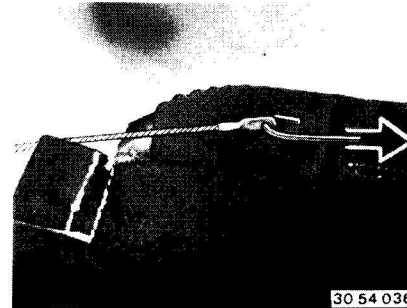
* Source of Supply: HWB



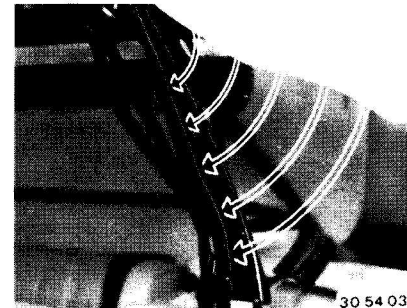
Press on top without folds with Special Tool 51 3 070.
Apply sealing compound* along the rail and on corners.
Mount rail and pull on rubber part.



Cement top on frame at rear.
Check center mark and proceed from the center.



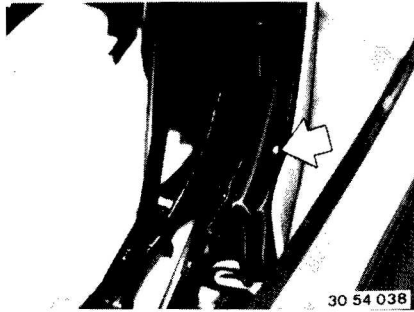
Pull in cable with a piece of welding wire and connect it on the spring.



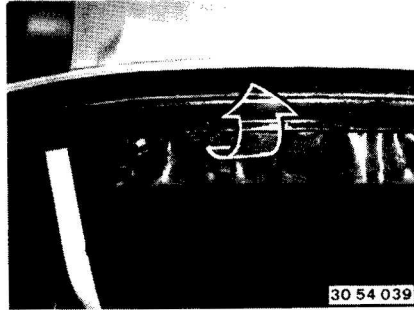
Cement the top.

* Source of Supply: HWB

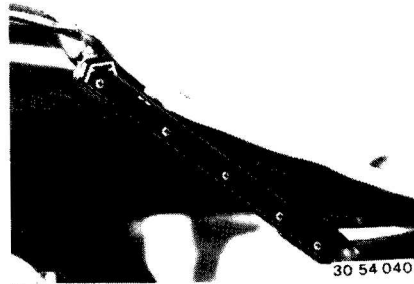
Mount rail.
Slide window guide into rail, using a special
lubricant*.
Secure with a rivet and cement side on frame.



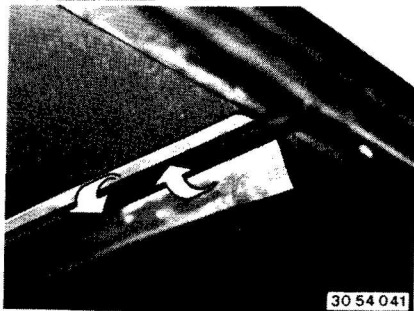
Cement the banner.
Mount rail and pull in rubber seal.



Mount rail and pull in rubber seal (use
special lubricant*).



Close top.
Cement top on hoopsticks – beginning with
short banner.



* Source: HWB