

ACCESSORIES & EQUIPMENT

Slide/Tilt Roof - Repair Instructions - X6

SUNROOF

54 0 ... REPAIR INSTRUCTIONS FOR BONDED SEALS

1. General information on handling rubber seal profiles:

- If seals reveal partly detached protective film on delivery, they must not be bonded.
- Store seals at 15°C to 25°C.
- If, during the handling, the protective film has come off before bonding, it can still be bonded.
- Bonding at room and object temperature >20°C. Temperatures between 40 and 50°C significantly increase initial adhesion.
- Seals, which are subjected to temperatures above 80°C after gluing, will be very difficult to remove.

2. Damage pattern and repair

1. Partially detached bond (rubber-adhesive tape or adhesive tape-paint)

- Up to 120 mm for retouching without auxiliary resources
- Up to 200 mm repaired with pressing-on tools on straight surfaces

a. Cleaning damaged areas:

- Degrease bonded area with adhesive cleaner (refer to BMW Parts Service) and remove other residues.

NOTE: Use necessary cotton- or fluff-free paper towel once only.
When using solvent:
expose repair area to air for at least 2 minutes.

b. Applying adhesive:

- With a fine nozzle, apply a wafer-thin bead to adhesive tape.

NOTE: Use contact adhesive (e.g. Terokal 2444)

CAUTION: Avoid contact to skin!

Do not apply adhesive to visible painted surfaces.

c. Pressing on rubber seal:

- Press down seal using contact pressure (forced pressure not necessary) for at least 1 minute.

CAUTION: Load can only be applied to the bond after a period of 2 minutes. This waiting time is absolutely essential.

2. Larger defects (mechanical damage and larger separations of seal)

- Complete **replacement of rubber seal** necessary

a. Peeling off damaged rubber seal:

- Pull off rubber seal slowly at an angle up to 20° under uniformly strong tension.

NOTE:

Make sure the connection between adhesive tape and seal is retained.

If the connection between adhesive tape and seal is detached: Carefully and slowly detach adhesive tape at an angle of 20° from roof opening or lid.

When existing seals are being peeled off with a hot air blower: Do not damage paintwork.

Do not detach rubber-adhesive tape connection if at all possible.

b. Cleaning bonded area:

- Degrease bonded area with adhesive cleaner (refer to BMW Parts Service) and remove other residues.

NOTE:

Use necessary cotton- or fluff-free paper towel once only.

When using solvent:

expose repair area to air for at least 2 minutes.

c. Detaching protective film from bonded area:

- Detach protective film from rubber seal in sections.

CAUTION: Once the protective film has been removed, do not under any circumstances touch the exposed bonded area.

d. Applying rubber seal:

- Apply rubber seal on roof opening edge beginning at rear centre. Use upper lip as application edge. Press on seal continuously by hand. Carefully unwrap seal at radii without tension and press down (critical area).

NOTE:

If positioned incorrectly, the seal can still be pulled off, repositioned and pressed on again.

e. Establishing seal joint:

- Mark contact point at joint by pressing down loose end on seal of already bonded end. Then cut and press down loose end at same height.

NOTE: Small areas of seal can remain stuck to adhesive tape of loose end.

f. Pressing on seal:

- Press on seal using a roller
- Adhesive tape width up to 5 mm Application pressure approx. 5 N
- Adhesive tape width up to 10 mm Application pressure approx. 10 N

Sliding sunroof seal only:

- Press against seal strongly with a roller. Application pressure approx. 70 N.

E36 sliding sunroof seal only:

- Application pressure approx. 30 N.
- Tear off tear-off lip at rear and side in area of narrower flange.

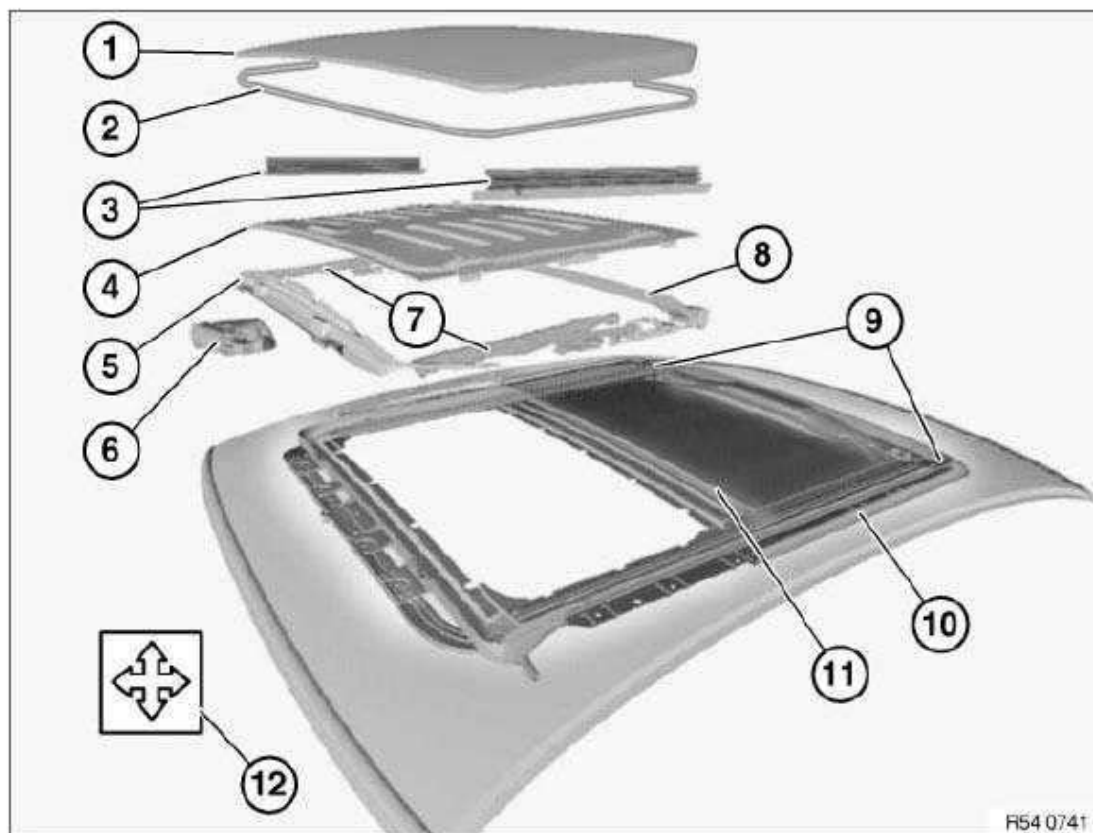
NOTE: Firm thumb pressure has approx. 35 N/cm²

3. Checking rubber seal

- Check the bonded seals for correct positioning and perfect adhesion. The bonding can be checked by pressing back the sealing lip.
- The force required to peel off the seal immediately after gluing must be greater than 10 N/cm.

MECHANICAL SUN ROOF COMPONENTS

54 12 .. OVERVIEW OF GLASS SLIDE/TILT SUNROOF



- | | | | |
|---|--|----|-----------------------------------|
| 1 | <u>Glass slide/tilt sunroof lid</u> | 7 | Mechanism: <u>actuator/spacer</u> |
| 2 | <u>Seal for slide/tilt sunroof lid</u> | 8 | Water drain |
| 3 | <u>Rubber gaiter</u> | 9 | Corner piece, rear |
| 4 | <u>Headliner/cover frame</u> | 10 | <u>Seal for frame</u> |
| 5 | <u>Wind deflector/release lever</u> | 11 | <u>Frame</u> |
| 6 | <u>Drive unit</u> | 12 | <u>Adjustment, initializing</u> |
| | | — | Water drain hose |

Fig. 1: Overview Of Glass Slide/Tilt Sunroof
 Courtesy of BMW OF NORTH AMERICA, INC.

54 12 003 ADJUSTING GLASS SLIDE/TILT SUNROOF LID

Special tools required:

- 00 9 315 .
- 00 9 341

See MAINTENANCE AND GENERAL INFORMATION - SPECIAL TOOLS -- X6 .

Close glass sunroof lid (zero position).

Ideal adjustment:

○ **Distance:**

- Distance (A) between lid and roof at front and rear must be the same.
- Slide in special tool 00 9 341 between seal and lid. This check (sliding in and pulling out the special tool) must be subject to tightness.

○ **Height:**

- Front - flush to 1 mm deeper
- Rear - flush to 1 mm higher

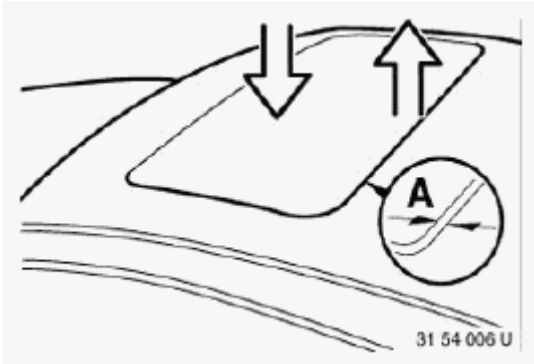


Fig. 2: Identifying Distance (A) Between Lid And Roof
Courtesy of BMW OF NORTH AMERICA, INC.

Remove **gaiter** on left and right, see **54 12 015 Replacing left or right gaiter for glass slide/tilt sunroof.**

Close sunroof lid again (zero position).

Slacken screws (1) on left/right so that sunroof lid (2) can still just be adjusted.

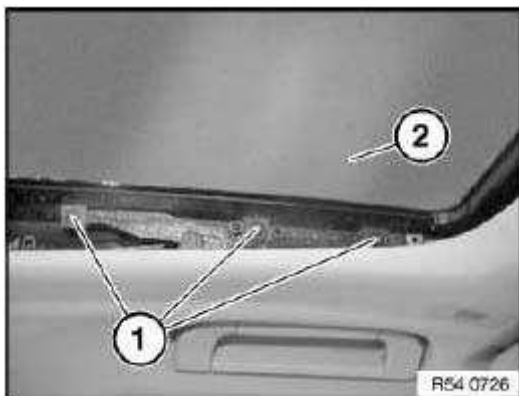


Fig. 3: Identifying Screws And Sunroof Lid
Courtesy of BMW OF NORTH AMERICA, INC.

Height adjustment:

Adjust height of sunroof lid (1) to roof (2) with special tool **00 9 315** (gap wedge).

Press sunroof lid at front and rear up or down until ideal position is reached.

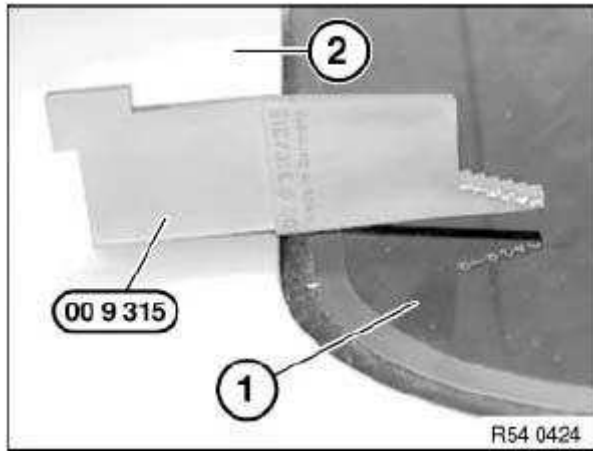


Fig. 4: Adjusting Height Of Sunroof Lid To Roof Using Special Tool 00 9 315
Courtesy of BMW OF NORTH AMERICA, INC.

Distance setting:

Slide sunroof lid towards front/rear until ideal position is obtained.

When ideal position is obtained:

- Tighten screws (1)
- Check function and adjustment of glass sunroof lid (2).

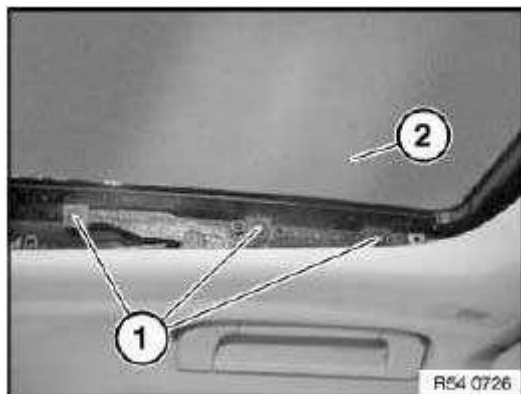


Fig. 5: Identifying Screws And Sunroof Lid
Courtesy of BMW OF NORTH AMERICA, INC.

54 12 015 REPLACING LEFT OR RIGHT GAITER FOR GLASS SLIDE/TILT SUNROOF

Move glass sunroof lid into "lift position".

Slide roofliner (floating) slowly towards rear until stop can be felt.

E65, E66: A = approx. 60 mm

E60, E61: A = 0 mm

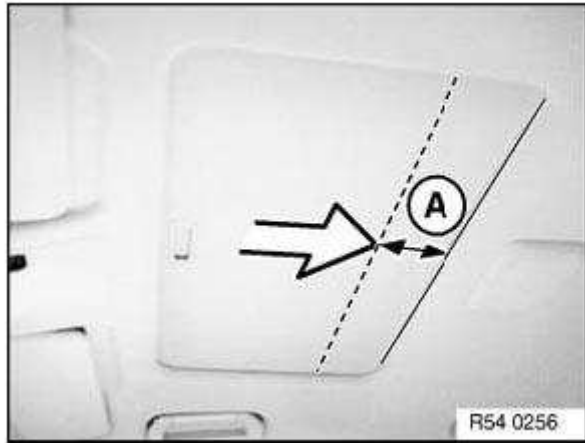


Fig. 6: Sliding Roofliner

Courtesy of BMW OF NORTH AMERICA, INC.

Pull out gaiter (1) at rear starting from glass sunroof lid (2).

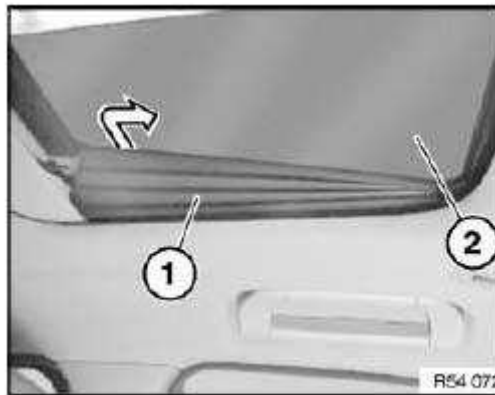


Fig. 7: Pulling Out Gaiter

Courtesy of BMW OF NORTH AMERICA, INC.

Remove gaiter (1) as follows:

A Unclip at front

B Slide forwards and remove

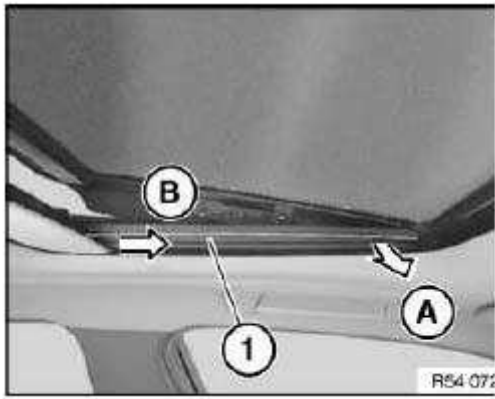


Fig. 8: Removing Gaiter

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Retainer (4) and guide pin (2) must not be damaged.

Slide guide pin (2) into holder (1). Retainer (4) must engage in holder (3).

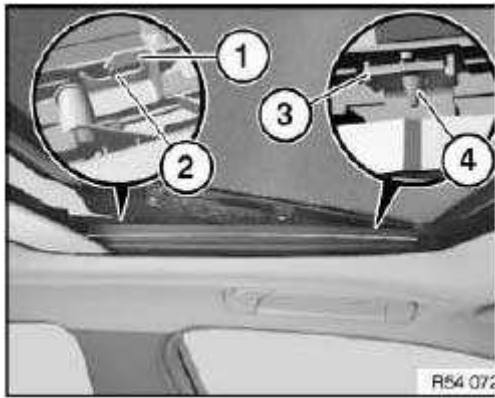


Fig. 9: Identifying Retainer, Guide Pin And Holder

Courtesy of BMW OF NORTH AMERICA, INC.

54 12 115 REMOVING AND INSTALLING GLASS SLIDE/TILT SUNROOF LID

Necessary preliminary tasks:

- Remove **gaiter** on left and right, see **54 12 015 Replacing left or right gaiter for glass slide/tilt sunroof.**

Release left and right screws (1).

Remove glass sunroof lid (2) towards top.

Installation:

Replace screws (1).

Insert screws (1) but do not tighten down yet.

Adjust and initialize **sunroof lid** , see **54 12 003 Adjusting glass slide/tilt sunroof lid** or **54 0 ... Notes on steel and glass slide/tilt sunroofs (initialization/normalization/learning of characteristic curve)**.

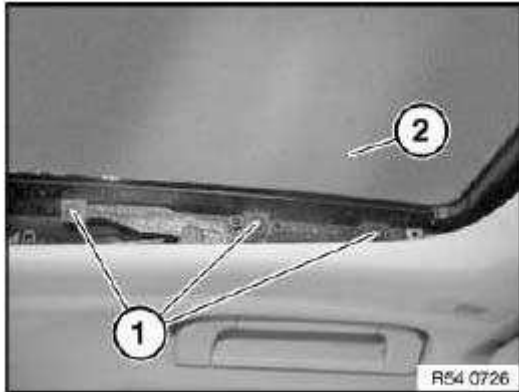


Fig. 10: Identifying Screws And Sunroof Lid
Courtesy of BMW OF NORTH AMERICA, INC.

54 12 117 REPLACING SEAL FOR GLASS SLIDE/TILT SUNROOF LID

Necessary preliminary tasks:

- Follow **repair instructions** for bonded seals on slide/tilt sunroof, see **54 0 ... Repair instructions for bonded seals**.
- Open glass lid completely

Begin removal at contact edge (rear center):

- Peel off rubber seal
- Clean bonded area

Installation:

Also begin at specified point of contact edge for installation:

- Stick on rubber seal in sections
- Establish seal joint
- Press on seal

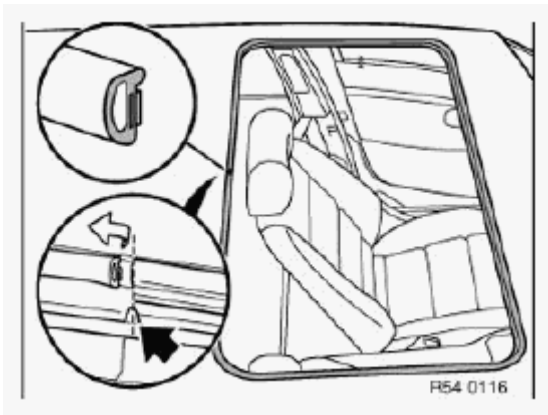


Fig. 11: Removing Rubber Seal

Courtesy of BMW OF NORTH AMERICA, INC.

54 12 136 REMOVING AND INSTALLING/REPLACING HEADLINER FOR GLASS SLIDE/TILT SUNROOF LID

Installation:

If headliner is difficult to move, apply a light coat of Renax GL1 (manufactured by Fuchs) to guide duct.

Remove glass sunroof lid , see **54 12 115 Removing and installing glass slide/tilt sunroof lid.**

Slowly pull headliner (floating) fully towards front.

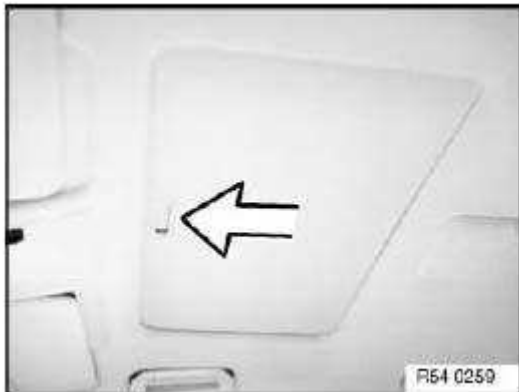


Fig. 12: Pulling Headliner (Floating)

Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Slowly slide spring slider (2) towards rear.

NOTE: **Make sure all parts are clean. If necessary, wear gloves.**
 Remove headliner (3) towards top.

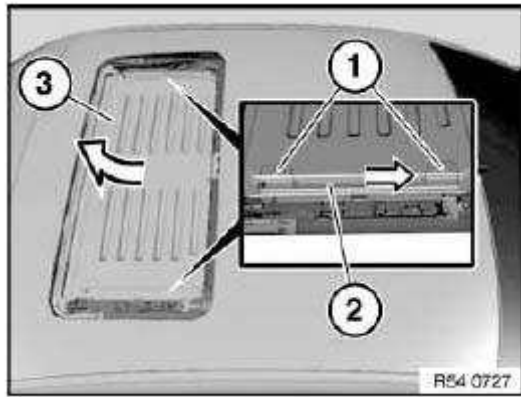


Fig. 13: Removing Headliner

Courtesy of BMW OF NORTH AMERICA, INC.

54 12 138 REMOVING AND INSTALLING/REPLACING RAIN CHANNEL FOR GLASS SLIDE/TILT SUNROOF

Necessary preliminary tasks:

- **Remove** complete glass slide/tilt sunroof (frame), see **54 12 211 Removing and installing complete glass slide/tilt sunroof (frame)**.

Carefully unlock holders (1) with screwdriver (3) on left/right and unclip setting lever (2) of rain channel towards top.

Remove rain channel.

Installation:

Make sure setting lever (2) is correctly engaged in holders (1).

Check function.

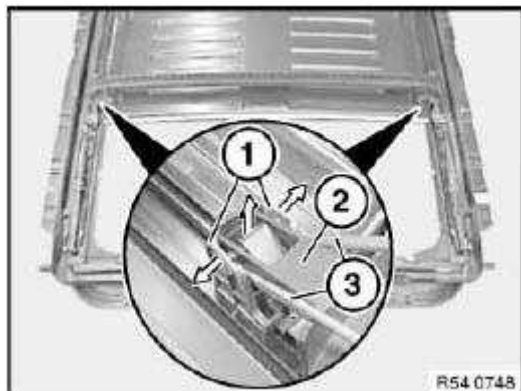


Fig. 14: Removing Rain Channel

Courtesy of BMW OF NORTH AMERICA, INC.

54 12 211 REMOVING AND INSTALLING COMPLETE GLASS SLIDE/TILT SUNROOF (FRAME)

Necessary preliminary tasks:

E65, E66, E71 only:

- Remove **roofliner** , see **51 44 011 REMOVING AND INSTALLING/REPLACING ROOFLINER (VERSION WITH SLIDE/TILT SUNROOF)** .
- Move front seat back/down as far as possible.

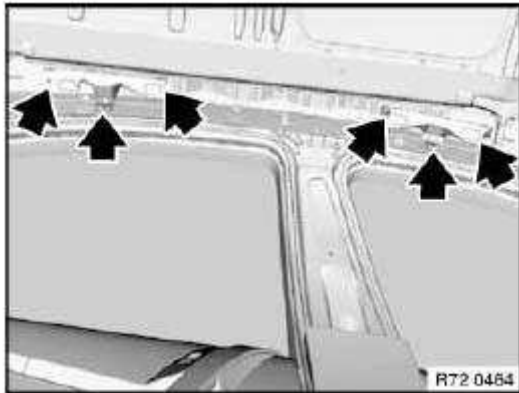


Fig. 15: Locating Holder Screws

Courtesy of BMW OF NORTH AMERICA, INC.

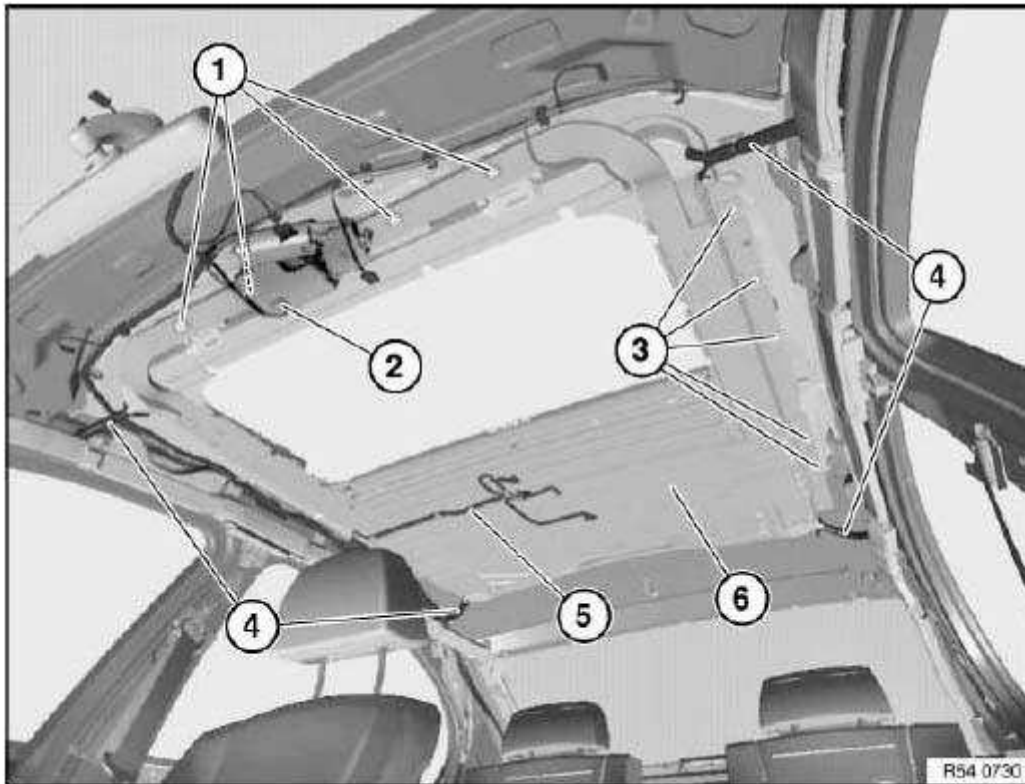


Fig. 16: Identifying Slide/Tilt Sunroof And Related Components
 Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Remove glass slide/tilt sunroof with aid of a second person.
 Do not damage any surrounding parts when removing glass slide/tilt sunroof (6).

- Detach water drain hoses (4)
- Unlock and disconnect plug (2)
- Disconnect cable (5) from glass slide/tilt sunroof (6)

Installation:

Do not crush any cables when installing the glass slide/tilt sunroof.

- Release screws (1)
- Release screws (3)
- Carefully lower glass slide/tilt sunroof (6) and guide out completely through rear door

Installation:

Secure all screws (1) with shims (2).

If the standard screws no longer grip, use "repair screws" with a larger thread diameter.

NOTE: Due to robot assembly, all screws (1) are secured with washers (2) in production. These washers (2) are not absolutely necessary during manual assembly. They are however useful for positioning the frame on the body with 4 screws.

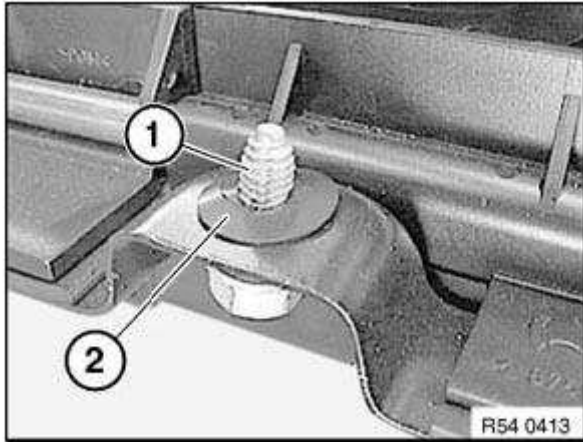


Fig. 17: Identifying Screw And Shim

Courtesy of BMW OF NORTH AMERICA, INC.

54 12 270 REMOVING AND INSTALLING/REPLACING ADJUSTER FOR GLASS SLIDE/TILT SUNROOF LID

Remove glass sunroof lid.

Close glass sunroof lid (zero position).

Unhook lever (2) from adjuster (1).

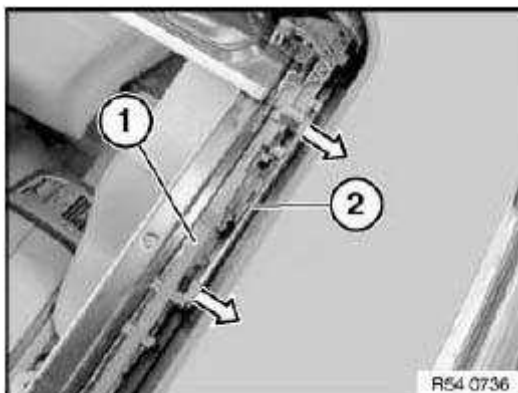


Fig. 18: Unhooking Lever From Adjuster

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Locking catches (1) of lever (2) must not be damaged.

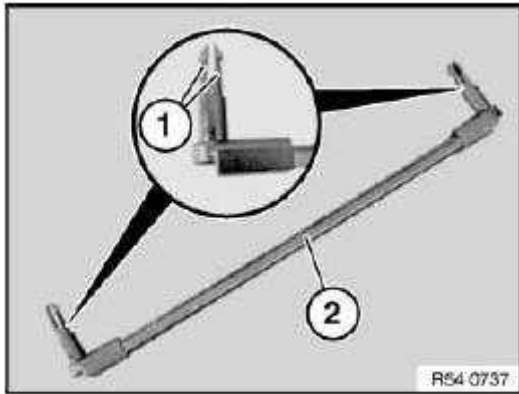


Fig. 19: Identifying Catches Of Lever
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

When glass sunroof is in zero position, marking (1) on adjuster must be positioned over marking (2) on slider.

If necessary, move adjuster or slider.

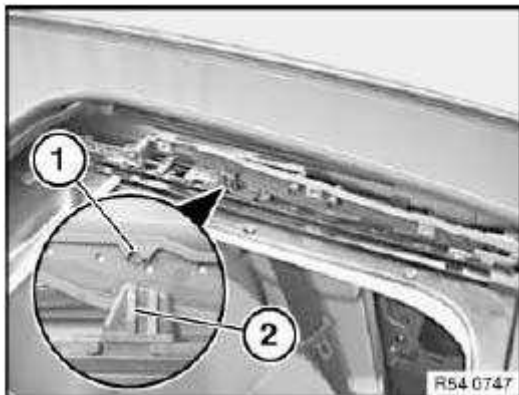


Fig. 20: Identifying Marking On Adjuster And Slider
Courtesy of BMW OF NORTH AMERICA, INC.

Move glass sunroof lid into "lift position".

Pull adjuster (3) and carriage (1) together towards rear until adjuster (3) can be unhooked from slider (2).

Grip slider (2) in so doing.

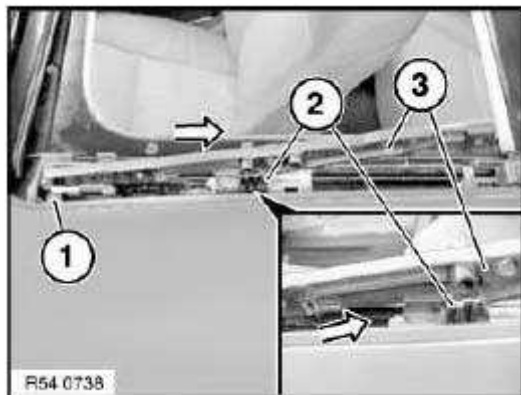


Fig. 21: Pulling Adjuster And Carriage
Courtesy of BMW OF NORTH AMERICA, INC.

Twist adjuster (1) upwards.

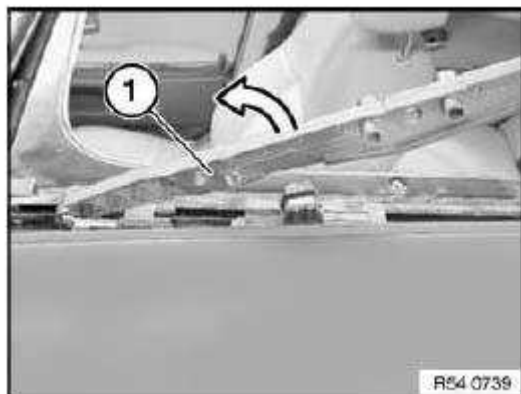


Fig. 22: Twisting Adjuster Upward
Courtesy of BMW OF NORTH AMERICA, INC.

Unhook adjuster (1) from carriage (2).

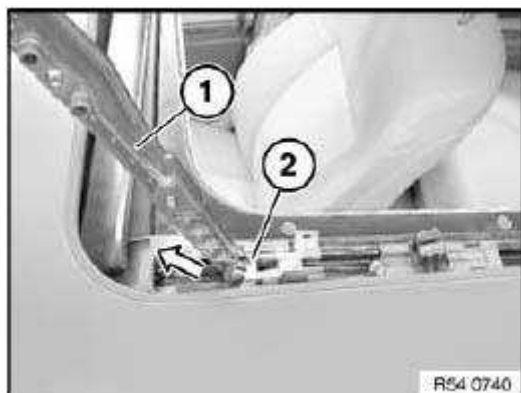


Fig. 23: Unhooking Adjuster From Carriage

Courtesy of BMW OF NORTH AMERICA, INC.

54 12 497 REMOVING AND INSTALLING/REPLACING DRAFT DEFLECTOR FOR GLASS SLIDE/TILT SUNROOF

Open glass sunroof lid.

Lever out springs (1) on left/right.

Pull draft deflector (2) towards rear out of mounting (3).

Installation:

Carry out function check.

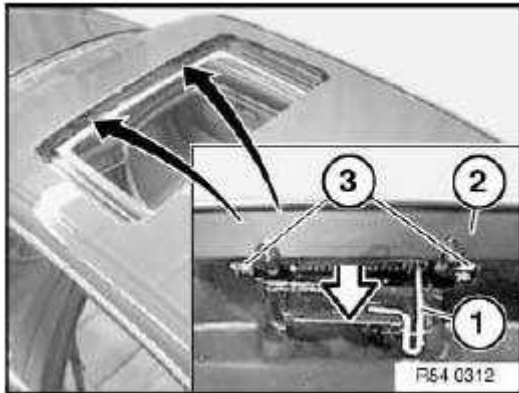


Fig. 24: Pulling Draft Deflector

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Insert retaining pins (1) of draft deflector (2) into mountings (4).

Spring (3) must snap into place correctly.

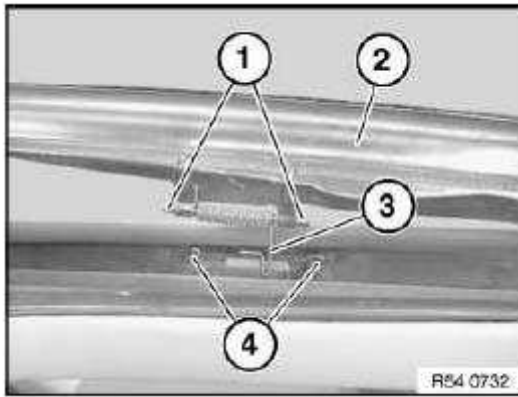


Fig. 25: Identifying Retaining Pins Of Draft Deflector
Courtesy of BMW OF NORTH AMERICA, INC.

Position draft deflector (1) vertically and pull together with levers (2) on left/right upwards out of mounts (3).

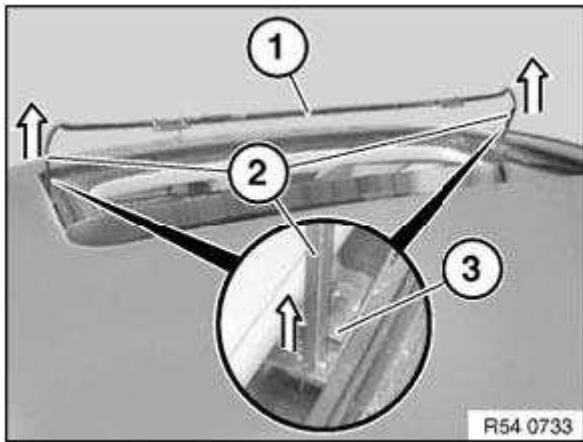


Fig. 26: Pulling Draft Deflector
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Turn lever (1) until lock (3) is flush with opening (2) and feed lever (1) out of draft deflector (4).

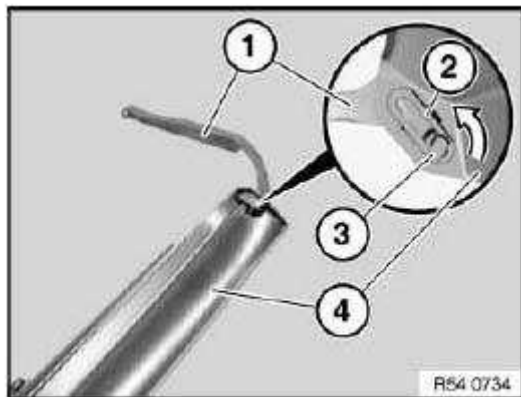


Fig. 27: Removing Draft Deflector Lever
 Courtesy of BMW OF NORTH AMERICA, INC.

ELECTRICAL SUN ROOF COMPONENTS

54 0 ... NOTES ON STEEL AND GLASS SLIDE/TILT SUNROOFS (INITIALIZATION/NORMALIZATION/LEARNING OF CHARACTERISTIC CURVE)

NOTE: Initialization comprises:

- Normalization
- Learning characteristic curve

The mechanical end positions are recorded and stored during normalization.

The characteristic curve is learnt immediately after normalization.

When the characteristic curve is learnt, the mechanical closing forces of the slide/tilt sunroof are recorded and stored for correct operation of the anti-trapping mechanism.

NOTE: Then carry out an initialization:

- if the slide/tilt sunroof has been mechanically moved by means of the emergency actuator
- in the event of malfunctions, e.g. no one-touch function, no opening or no comfort function possible
- after disengagement of the drive unit
- after work is carried out on the mechanism of the slide/tilt sunroof
- after the control unit has been replaced

WARNING: • There is no anti-trapping protection during initialization.

Normalization:

- Press and hold the switch in the "Lift" direction
- In the event of delayed starting or sudden stopping of the slide/tilt sunroof, continue pressing the switch in the "Lift" direction

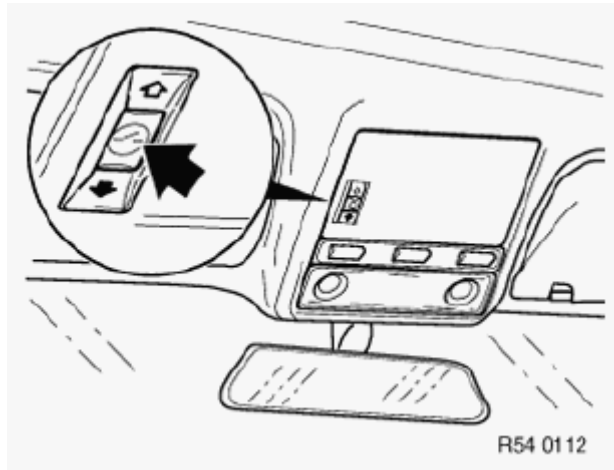


Fig. 28: Locating Slide/Tilt Sunroof Switch
 Courtesy of BMW OF NORTH AMERICA, INC.

- After reaching the lift end position (A), keep the switch pressed for approx. 15 seconds further
- Normalization is completed when the slide/tilt sunroof in lift end position (A) presses again briefly in the direction of position (B).

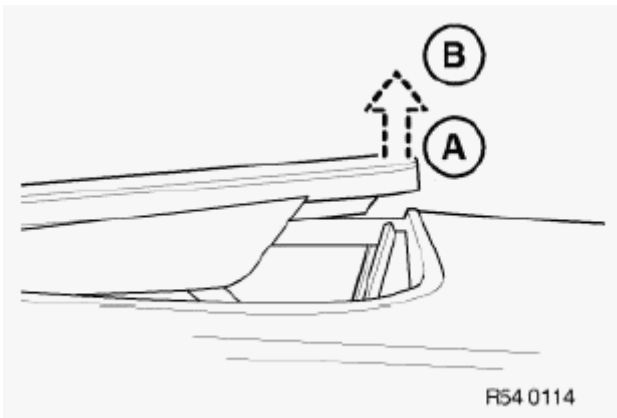


Fig. 29: Direction Of Pressing Slide/Tilt Sunroof
 Courtesy of BMW OF NORTH AMERICA, INC.

Learning characteristic curve:

The curve is learnt manually in the following steps:

- After normalization, keep switch pressed in "Lift" direction.
- The slide/tilt sunroof stops for 5 seconds in the final raise position after normalization. It then moves into the "Closed" position (learning of the "Closing from raising" curve)

- The slide/tilt sunroof then moves into the "Open" end position and immediately back into the "Closed" position (learning of the "Closing" curve)
- Release switch.

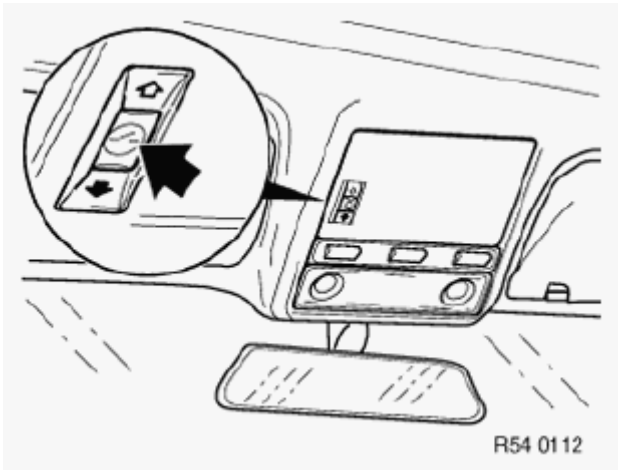


Fig. 30: Locating Slide/Tilt Sunroof Switch
 Courtesy of BMW OF NORTH AMERICA, INC.

- NOTE:**
- The entire operation lasts approx. 75 secs.
 - Learning of the curve is terminated when the switch is released
 - If the switch is released in the meantime, the entire procedure must be repeated
 - On completion of successful initialization, the corresponding messages in the check control and the control display go out
 - Carry out function check (tip function, anti-trapping protection and, if necessary, comfort function)

TIGHTENING TORQUE

SLIDE/TILT ROOF TIGHTENING TORQUE

Application	Specification
Drive to Cassette (54 13 1AZ)	2.5-3.5 N.m