ACCESSORIES & EQUIPMENT

Body - Operating Fluids

1.0 SEALING COMPOUNDS

Seam Sealer, Sikaflex 221 may be used to seal adjoining sheet metal parts which create creaking noises due to interactive contact. High-adhesion, polyurethane-based, black-colored.

Sikaflex 221 Sealer

BMW Part No. 81 22 9 407 533

Other sealants for body panels are found in Group 97 (Body Cavity Sealings and Undercoatings).

2.0 LUBRICANTS

BMW offers several lubricants which are formulated for specific components. Some of these lubricants also appear in the "Universal Lubricants" group.

3.0 DOOR HINGES AND PIVOTS

Moly spray for quieting squeaks and similar noises. (former BMW Part No. 81 22 9 400 720)

BMW PART NUMBER SPECIFICATION

3M	Part No. 8876
Loctite	Part No. 24378

4.0 DOOR BRAKES

Grease for any sliding contact area, especially door brake mechanisms. (former BMW Part No. 81 22 9 407 629)

BMW PART NUMBER SPECIFICATION

3M	Part No. 8878
Loctite	Part No. 20029

5.0 DOOR LOCKS

Lock cylinder lubricant prevents locks from jamming in sub-freezing temperatures. Insert tip of spray can directly into keyslot.

(former BMW Part No. 81 22 9 407 421)

BMW PART NUMBER SPECIFICATION

3M	Part No. 8878
Wurth	Part No. 893051
Loctite	Part No. 20029

6.0 (HKL) AUTOMATIC TRUNK LID LIFT HYDRAULIC FLUID

E65/E66 Automatic Trunk Lid Lift Hydraulic Fluid

BMW Part No. 51 24 7 066 901

4100 BODY

41 0 0 CONTENTS OF BODY, GENERAL

General Information

- **QUALITY STANDARD**
- **WORKSHOP EQUIPMENT**

Safety regulations

- **SAFETY AT WORK**
- Information on **VEHICLE PROTECTION**
- **INFORMATION ON HAZARDS**

Materials

- **MATERIALS SCIENCE**
- **EXPENDABLE MATERIALS**
- **USE OF MATERIALS** in outer skin

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- **CHASSIS, SUSPENSION AND STEERING**
- **FOLDING ROOF**
- Vehicles with Hybrid drive

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- **FRAME DIMENSIONS**
- **GAP DIMENSIONS**

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- Installation of shaped parts See **4100... INSTALLING A CAVITY ACOUSTIC BAFFLE (EXPANDED)** or **4100... INSTALLING A CAVITY ACOUSTIC BAFFLE (NOT EXPANDED)**

- Position of shaped parts See or **4100... POSITION OF SHAPED PARTS FOR CAVITY ACOUSTIC BAFFLE**

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- **VEHICLE IDENTIFICATION NUMBER, GENERAL**
- Stamping vehicle identification number See or **4100... STAMPING VEHICLE IDENTIFICATION NUMBER (NEEDLE STAMPING UNIT)**

Repair techniques

- **REPAIR STAGE 1** All repairs that only provide for replacement of screwed/bolted components and planishing operations.
- **REPAIR STAGE 2** Repairs that are carried out by bonding and riveting without the use of a straightening bench.
- **REPAIR STAGE 3** Repairs that are carried out by bonding and riveting with the use of a straightening bench or welding.

Corrosion protection

- **GENERAL INFORMATION**

Paintwork

- **GENERAL INFORMATION**
- **INFORMATION/WARNING LABELS**

41 00 ... BLIND RIVETS

1.0 Recommended tools and equipment

- Blind riveting tongs
- Rivet head extension

Setting blind rivets

- Refer to repair instruction for rivet size.
- Position bore holes for blind rivets as specified in repair instruction. If necessary, carry over the positions of the rivets to the new component.
- Drill holes (0.2 mm bigger than the outside diameter of the rivet. Example 4.2 mm dia. for 4 mm rivet and 6.7 mm dia. for 6.5 mm rivet).
- Deburr holes.
- **APPLY ADHESIVE** .
- Insert blind rivet. If necessary, remove adhesive that has emerged.

Position blind rivet tool vertically. Use rivet head extension if accessibility is poor.

- Rivet blind rivet with blind rivet tool. In the meantime clean rivet head if fouled with adhesive. Risk of damage to rivet head by penetrating adhesive.
- Seal blind rivets with **SEALANT D1** (risk of corrosion).
- Seal cavities after painting vehicle with **CAVITY SEALANT** (risk of corrosion).

41 00 ... BONDING ON PAINTED SURFACES

IMPORTANT: Conform with safety regulations See 4100... SAFETY AT WORK or 4100... INFORMATION ON HAZARDS!

Overview of topics:

1. Equipment
2. Expiry date of consumables
3. Preparation of surface
4. Bonding coat
5. Hardening times
6. Subsequent treatment
7. Disposing of adhesive

1.0 Equipment

- **CLEANER R1**
- Adhesive as specified in repair instructions
- **CARTRIDGE GUN**

2.0 Expiry date of consumables

- Glue cartridge is marked with a date.
- Do not use adhesive after this date.

3.0 Preparation of surface

3.1 Preparation of surface on vehicle

- Establish a level bonding surface (e.g. grinding). Do not remove primer entirely.

  Do not grind/sand bonding surfaces.

- If necessary, pre-clean bonding surfaces with cavity sealing wax remover.

  Clean bonding surfaces with cleaning agent R1.

- Allow cleaned surfaces to dry for approx. 5 minutes.

  Bonding surfaces must be completely dry.

3.2 Preparation of surface on new part

- Do not remove primer.

  Do not grind/sand bonding surfaces.

- Clean bonding surfaces with cleaning agent R1.
- Allow cleaned surfaces to dry for approx. 5 minutes.

  Bonding surfaces must be completely dry.

4.0 Adhesive application

- Processing temperature of glue cartridge 18 °C - 30 °C.
- Object temperature, vehicle and new parts, min. 15°C.
- Do not use any compressed-air-operated cartridge guns.
- Insert glue cartridge in cartridge gun, remove cap and allow both adhesive components to emerge. Strip adhesive components uniformly and attach mixing tube.
- Allow approx. 10 cm of mixed adhesive to emerge and then apply the mixed adhesive first on one side of the bonding surface.
- After applying the adhesive, check whether an adhesive component has emerged at the back of the cartridge. If yes, break off the bonding procedure. Clean new part. Use new glue cartridge. Contact national hotline.
- Potlife of mixed adhesive approx. 2 hours. A change of mixer is only necessary if over a period of 30 minutes no material has flowed through the mixer.
- Join components and secure in position.
- Remove excess adhesive.

5.0 Hardening times

- **Do not move the vehicle before the adhesive has hardened.**

  Check the degree of hardness of the adhesive with a fingernail.

  If the adhesive cannot be pressed in any further with a fingernail, the vehicle may be moved (without engine force) for further processing applications (e.g. painting).

- Vehicle **strength for driving applications** is achieved after:

  48 hours at min. 15 °C object temperature (corresponding to approx. 18 °C room temperature).

or 1 hour in the spray booth (spray booth temperature 80 °C/object temperature 60 °C).

- When using radiant heaters, make sure that the object temperature does not exceed 85 °C. Excessively high temperatures will destroy the adhesive.
- Remove contamination caused by adhesive residue immediately.

  Hardened adhesive can only be removed mechanically.

6.0 Subsequent treatment

- Reseal areas which are cavity-sealed as standard.

7.0 Disposing of adhesive

- Hardened adhesive is disposed of as normal waste.
- Empty glue cartridges are disposed of as normal waste.
- Non-hardened adhesives and mixtures of adhesive and solvent and the like must be disposed of as hazardous waste.

These regulations apply to the Federal Republic of Germany.

For other countries, comply with the (possibly differing) nationally applicable regulations.

41 00 ... BONDING STEEL ON STEEL

IMPORTANT: Conform with safety regulations See 4100... SAFETY AT WORK or 4100... INFORMATION ON HAZARDS!

Overview of topics:

1. Equipment
2. Preparing the surface
3. Bonding coat
4. Hardening times
5. Subsequent treatment

1.0 Equipment

- Sandpaper
- **CLEANING AGENT R1**
- **ADHESIVE K1**
- **CARTRIDGE GUN**

2.0 Surface preparation

- For better adhesion, remove oxide film and paint from the adhesive areas with a stainless steel wire brush or special sandpaper.
- Clean bonding surfaces with cleaning agent R1.
- Allow cleaned surfaces to dry for approx. 5 minutes.

  Bonding surfaces must be completely dry.

3.0 Adhesive application

- Processing temperature of glue cartridge 18°C - 30°C.
- Object temperature, vehicle and new parts, min. 15°C.
- After applying the adhesive, check whether an adhesive component has emerged at the back of the glue cartridge. If yes, break off the bonding procedure. Clean new part. Use new glue cartridge. Contact national hotline.
- Join components and secure in position.
- Remove excess adhesive. Do not use solvent cleaning agents.

4.0 Hardening times

- Refer to **NOTES REGARDING ADHESIVE K1**

5.0 Subsequent treatment of bonding surfaces

- Protect the repair area with cavity sealant.

41 00 505 CHECKING FRONT BODY STRUCTURE

Necessary preliminary tasks:

- Remove **FRONT UNDERBODY PROTECTION**

Structural damage can be identified by measuring with a beam trammel.

Here, symmetrically arranged points on the vehicle are measured in diagonal sequence.

If the two measured values are identical, there is no damage to the vehicle.

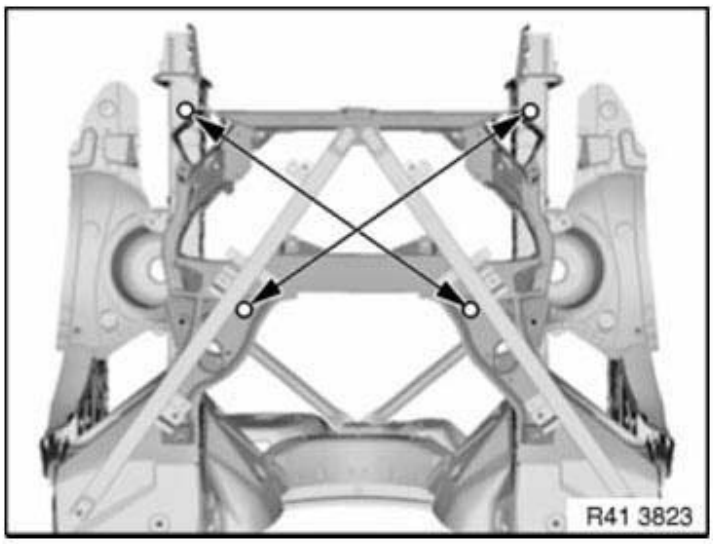


Fig. 1: Measuring Symmetrically Arranged Points In Diagonal Sequence On Vehicle
Courtesy of BMW OF NORTH AMERICA, INC.

In front area use conical adapter (2) at bore hole (1).

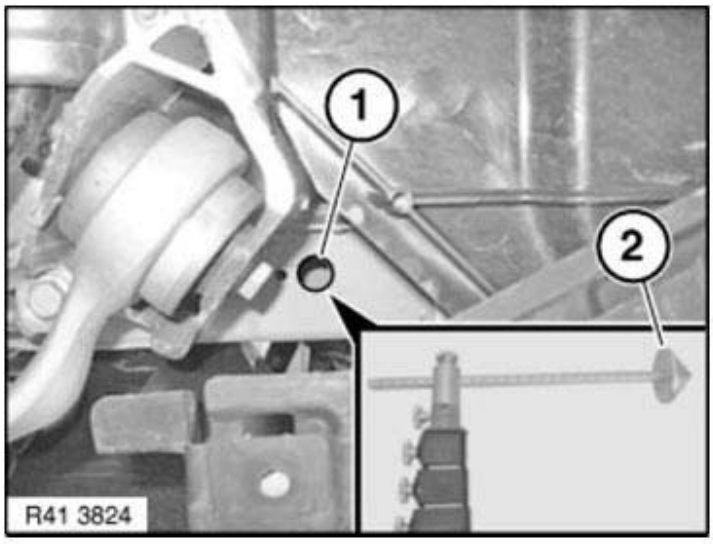


Fig. 2: Identifying Conical Adapter And Bore Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Use 8 mm dia. bore hole (1) on front axle support.

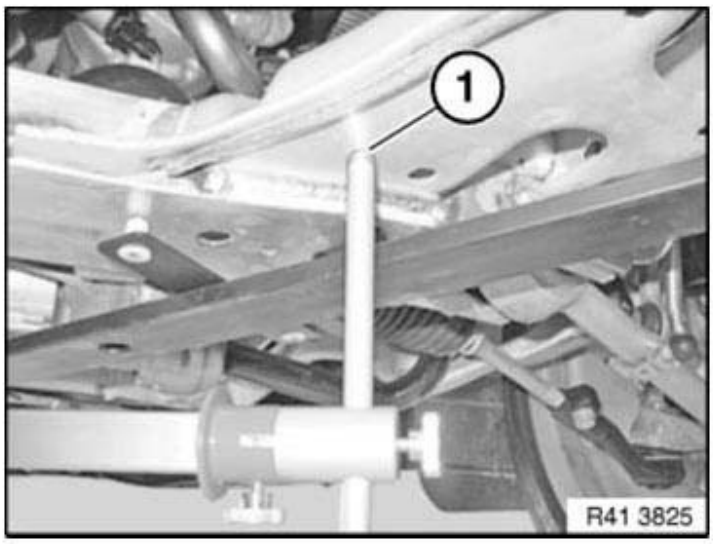


Fig. 3: Identifying Bore Hole On Front Axle Support
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 510 CHECKING REAR BODY STRUCTURE

Necessary preliminary tasks:

- Remove **REINFORCEMENT PLATE FROM REAR AXLE**

Structural damage can be identified by measuring with a beam trammel.

Here, symmetrically arranged points on the vehicle are measured in diagonal sequence.

If the two measured values are identical, there is no damage to the vehicle.

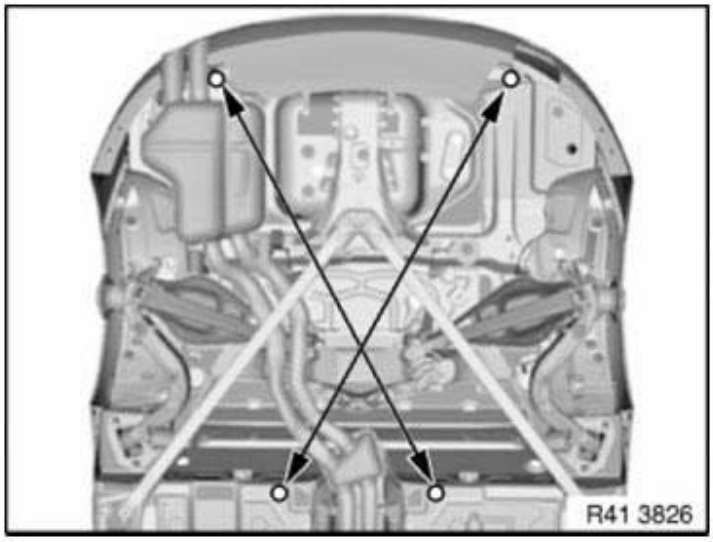


Fig. 4: Measuring Symmetrically Arranged Points In Diagonal Sequence On Vehicle
Courtesy of BMW OF NORTH AMERICA, INC.

In rear area use adapter (2) on threaded bolt of impact plate (1).

NOTE: If necessary, make recess in adapter yourselves.

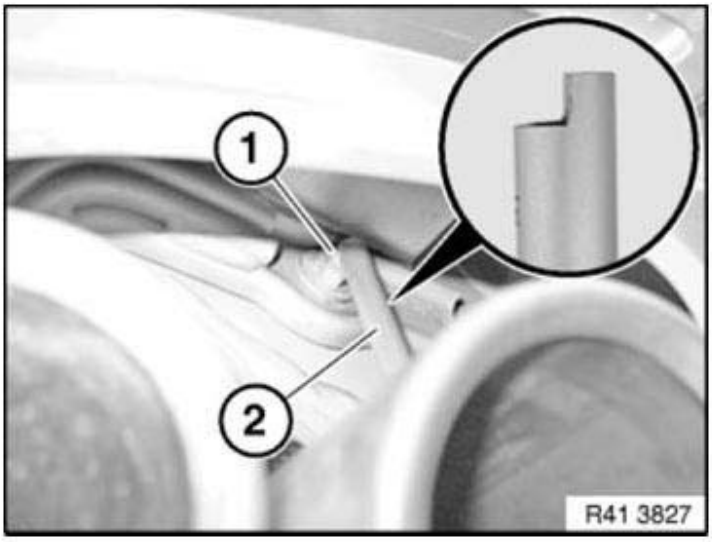


Fig. 5: Identifying Adapter And Impact Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Use conical adapter (1) at attachment point of reinforcement plate.

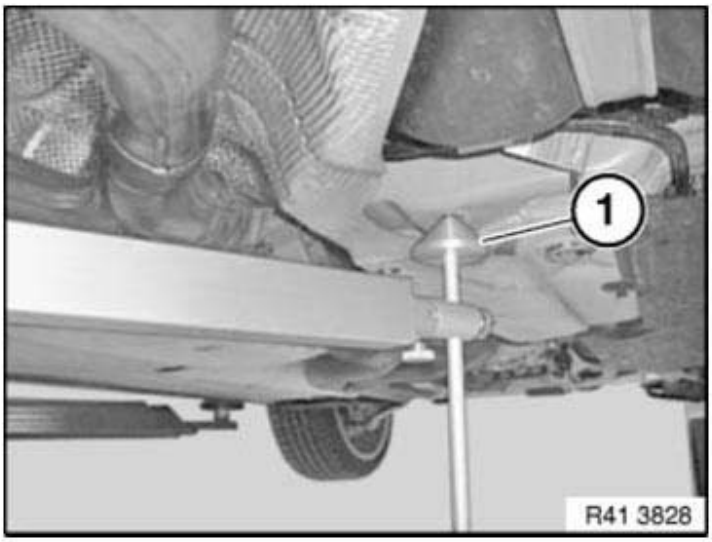


Fig. 6: Identifying Conical Adapter
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... CORROSION PROTECTION

NOTE: **Following repairs, the corrosion protection work already begins with the correct removal of the PVC undercoating, anti-drumming layer and seam seals. The PRODUCTS RECOMMENDED by BMW are optimized with regard to corrosion protection.**

1.0 Removing and applying sealing materials

1.1 Removing sealing materials

IMPORTANT:

- **Do not burn off PVC material (sealing compound) with a gas burner or similar or heat to temperatures above 180 °C. This would generate highly corrosive hydrochloric acid and release harmful fumes.**
- **The new lining does not form a satisfactory bond with burnt PVC material which means that subsequent subsurface rust may set in.**

Remove PVC material with a rotating steel brush, or heat PVC to maximum 180 °C with a hot air blower and scrape off with a spatula.

1.2 Applying sealing materials

All weld joints sealed off with body sealing compound in original state must be primed and sealed off again thoroughly after repairing. Replace damaged or removed anti-drumming layers.

NOTE: **Spray gun required for body sealing compound (order no. 81 49 0 300 887).**

2.0 Cavity preservation of sheet-metal parts

Carry out cavity preservation after all body repairs.

Concluding cavity preservation is the most important part of all corrosion protection measures.

Use the cavity protection spray only for smaller-scale straightening work where the parts in question are easily accessible. Use the Vaupel **PRESSURE CUP GUN** for all other repairs. Cavity protection agent is available in different container sizes.

Use the relevant probes with tubes for the different cavity areas.

Required tools can be found in the Aftersales Assistance Portal (ASAP) - Service/Technology - Workshop Equipment (Start BMW) - Shop Workshop Equipment or at www.bmwgroup-wep.com.

IMPORTANT: **Incorrectly performed cavity protection can, especially in the case of steel/aluminium joints, give rise to a non-calculable product liability and safety risk.**

The best repair is worth nothing if the subsequent cavity protection measures are not conscientiously carried out.

2.1 Cavity preservation of steel parts

New doors and lids must be sealed with cavity protection agent after being painted.

New sheet-metal parts or cavities, weld seams and folds formed by new sheet-metal parts must be sealed with cavity protection agent after being painted.

The cavities affected must be sealed with cavity protection agent after all straightening work.

2.2 Cavity preservation of aluminium parts

New doors, lids and side panels made of aluminium are not sealed with cavity protection agent.

After all straightening work on aluminium components, the cavities affected must be sealed with cavity protection agent after being painted.

After all welding work (E52 only) on aluminium components, the cavities affected must be sealed with cavity protection agent after being painted.

Cavities, seams and folds formed from new sheet-metal parts must be sealed with cavity protection agent after being painted.

41 00 ... EMC SCREWS

(EMC = Electro-Magnetic Compatibility)

1. Purpose

- **EMC SCREWS** are used in the Bonding/Riveting repair method to re-establish bonding transition.
- They assume the function of welded joints, which ensure transition to ground between the individual components.
- The punch or blind rivets used in the repair do not guarantee permanent bonding transition between the individual components!
- The EMC screws ensure the operational reliability and safety of the electrical/electronic components following repairs!

2. Procedure, aluminium front end

- Each welded joint which is opened must be replaced by at least 2 EMC screws.
- Position the 2 screws on the flange on which the weld seam has been separated. In the event of partial replacement, position the screws in the area of the component overlap.
- In the case of repairs using partial replacement, the number of EMC screws described in the repair instructions must be fitted.

- Drill holes to a diameter of 4.2 mm and insert screws.
- Seal EMC screws with PU sealing material (risk of corrosion).

3. Procedure, steel body

- Install the number of EMC screws described in the repair instructions.
- Drill holes to a diameter of 4.2 mm and insert screws.
- Seal EMC screws with PU sealing material (risk of corrosion).

41 00 ... FRAME ALIGNMENT CONTROL DIMENSIONS, BODY

Dimensions in mm.

Measurement tolerances:

- < or = 1000 mm ± 1 mm
- < or = 1000 mm ± 2 mm

The control points shown serve to check the body and the straightening attachment.

Underbody view 1

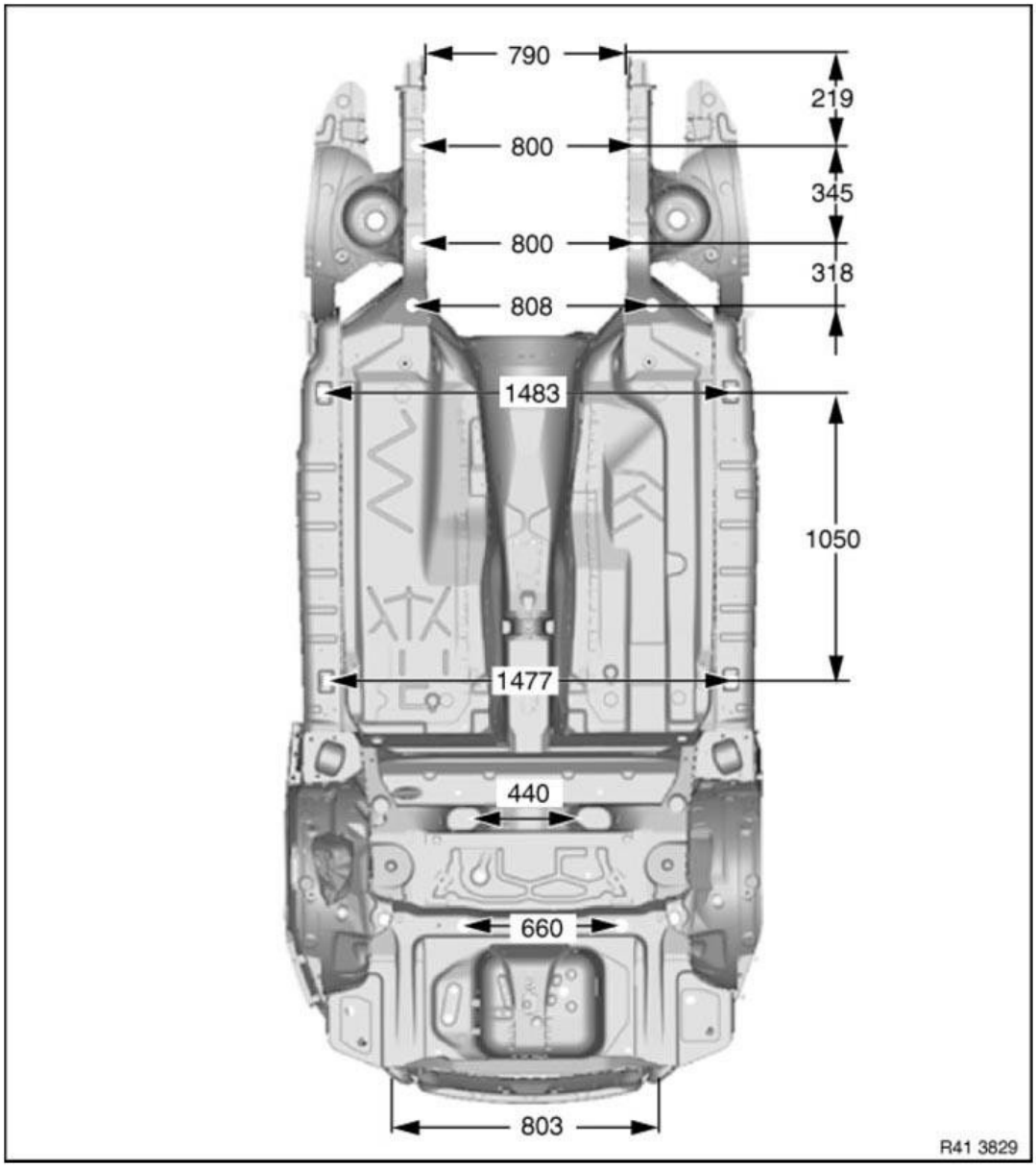


Fig. 7: Frame Alignment Control Dimensions - Underbody View 1
Courtesy of BMW OF NORTH AMERICA, INC.

Underbody view 2

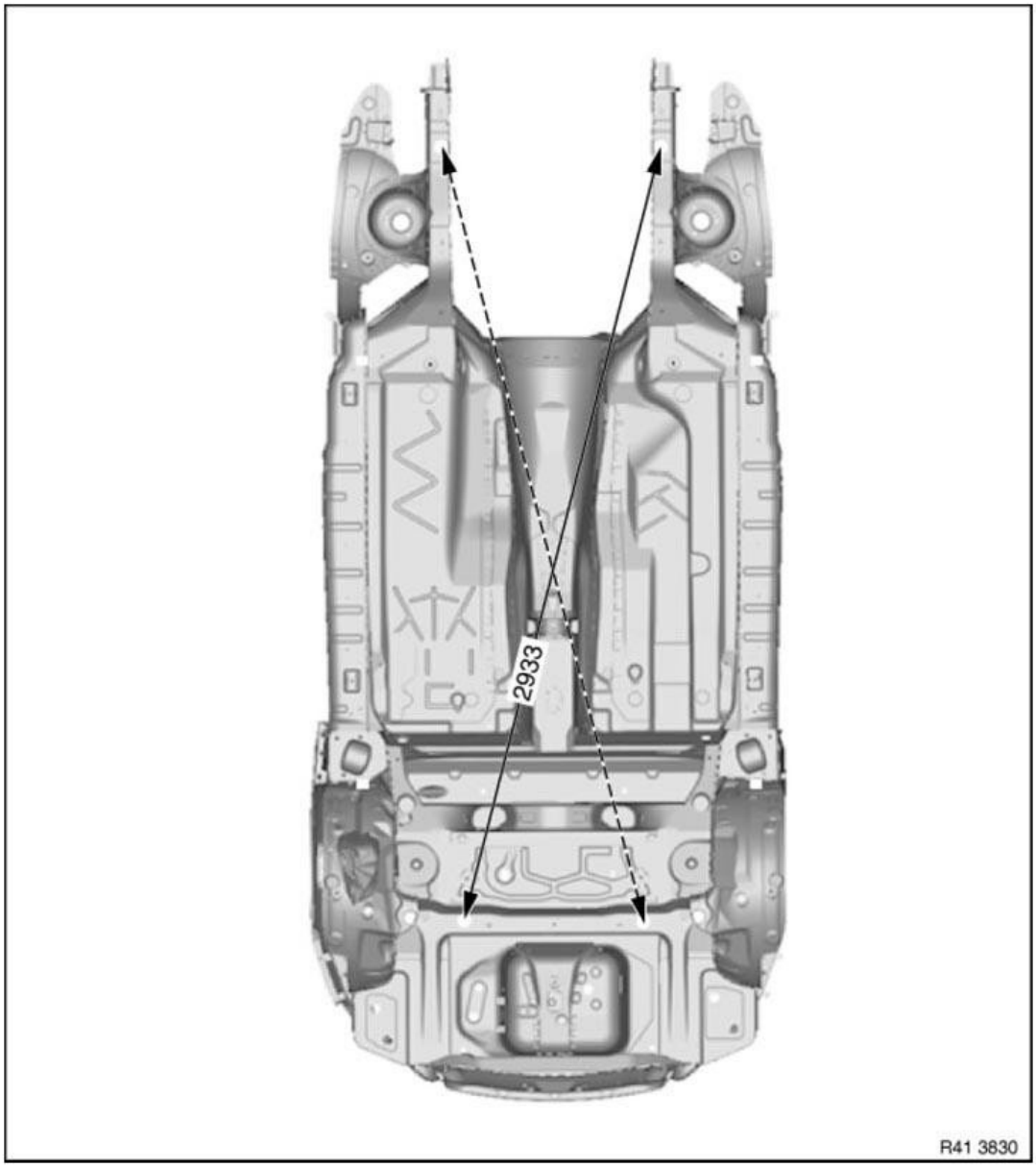


Fig. 8: Frame Alignment Control Dimensions - Underbody View 2
Courtesy of BMW OF NORTH AMERICA, INC.

Top view, front end

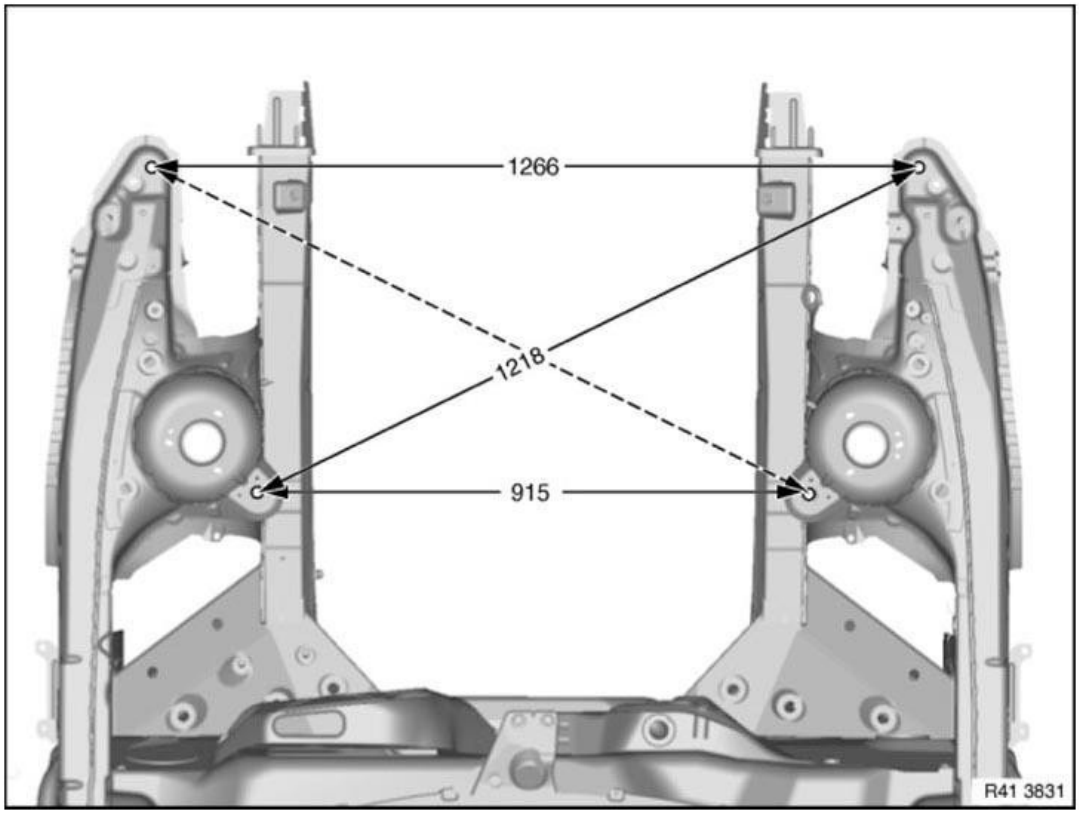


Fig. 9: Frame Alignment Control Dimensions - Top View (Front End)
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... GAP DIMENSIONS, BODY

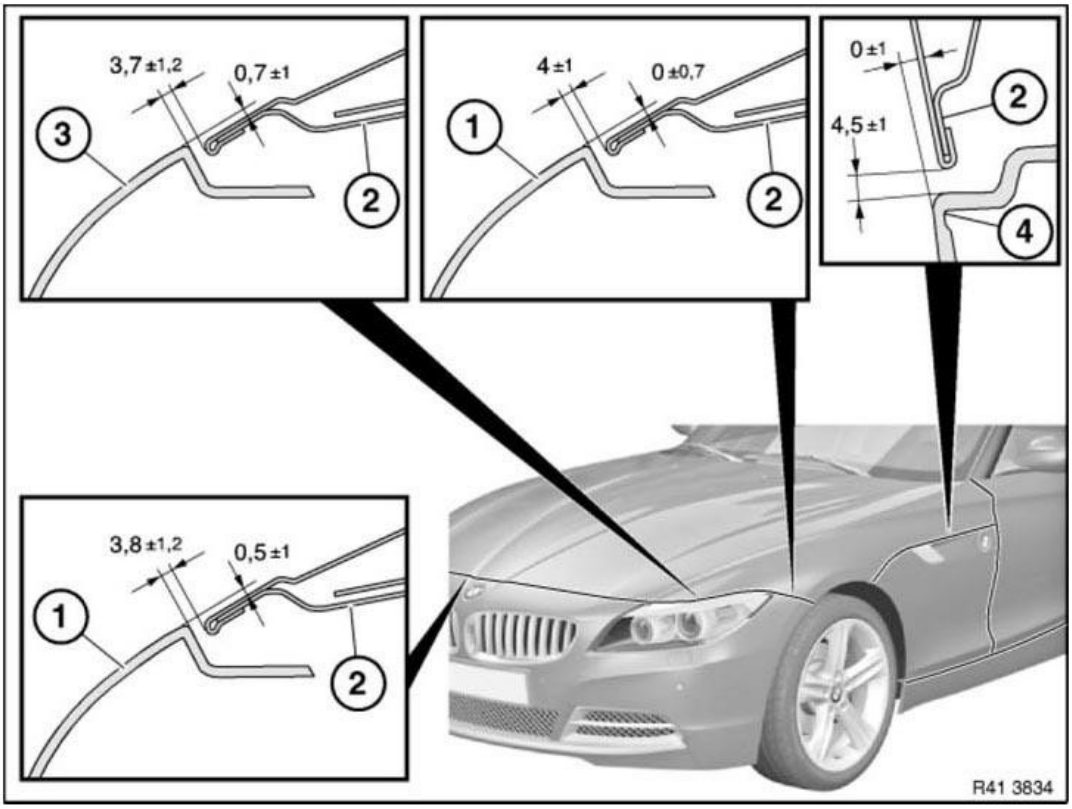
The dimensions specified in this document are applicable at an object temperature of 20 °C. The aim of adjustment is to achieve a uniform gap.

Symmetry of the gaps between left and right sides of the vehicle has top priority.

The door gaps must not deviate between the front and rear gap by more than 1.0 mm.

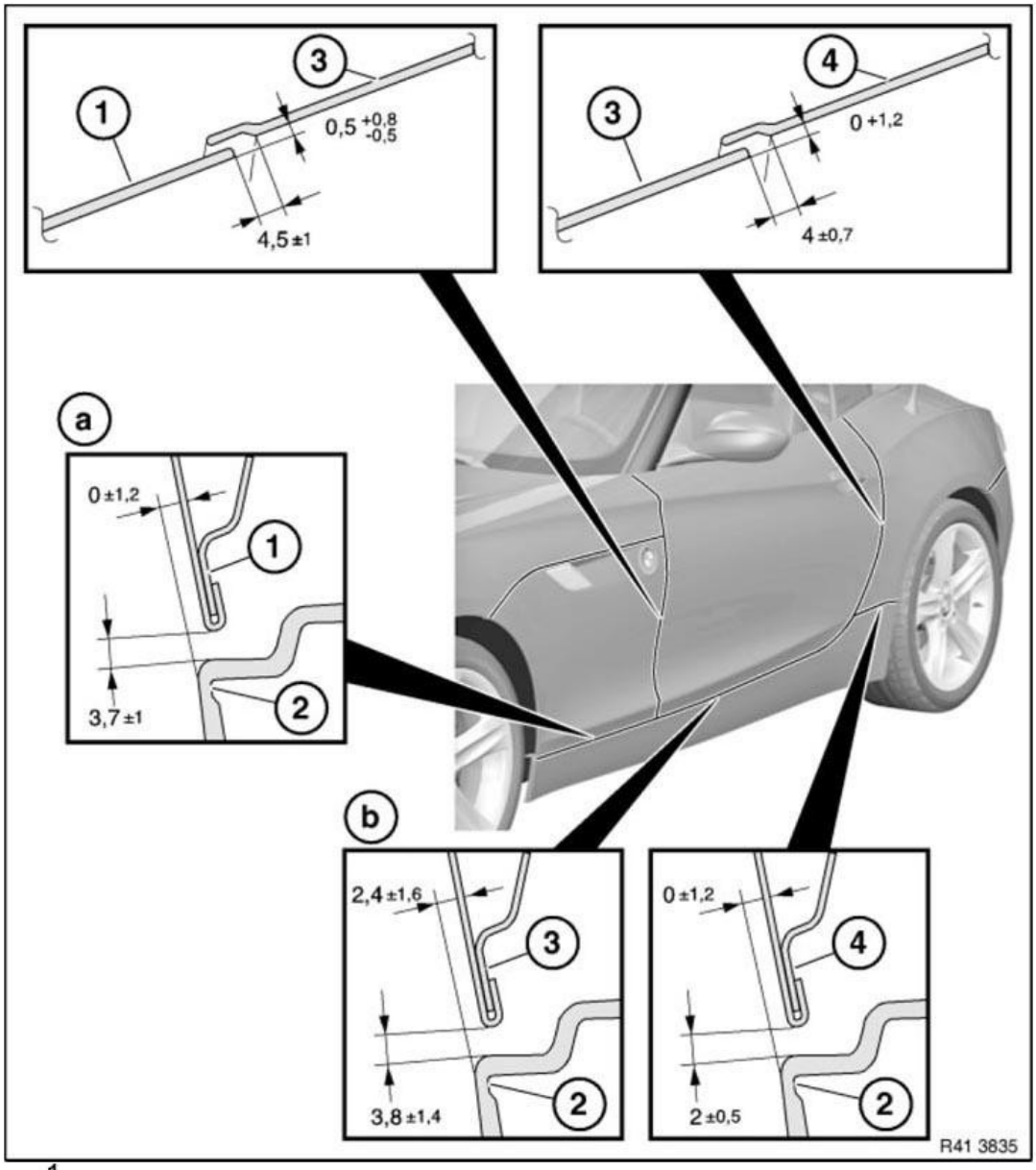
No gap dimension are specified for components which cannot be adjusted.

Dimensions in mm



1. Panel, bumper, front
2. Engine bonnet/hood
3. Headlight
4. Side wall, front

Fig. 10: Identifying Gap Dimensions Of Panel, Bumper, Engine Bonnet/Hood, Headlight And Side Wall
Courtesy of BMW OF NORTH AMERICA, INC.

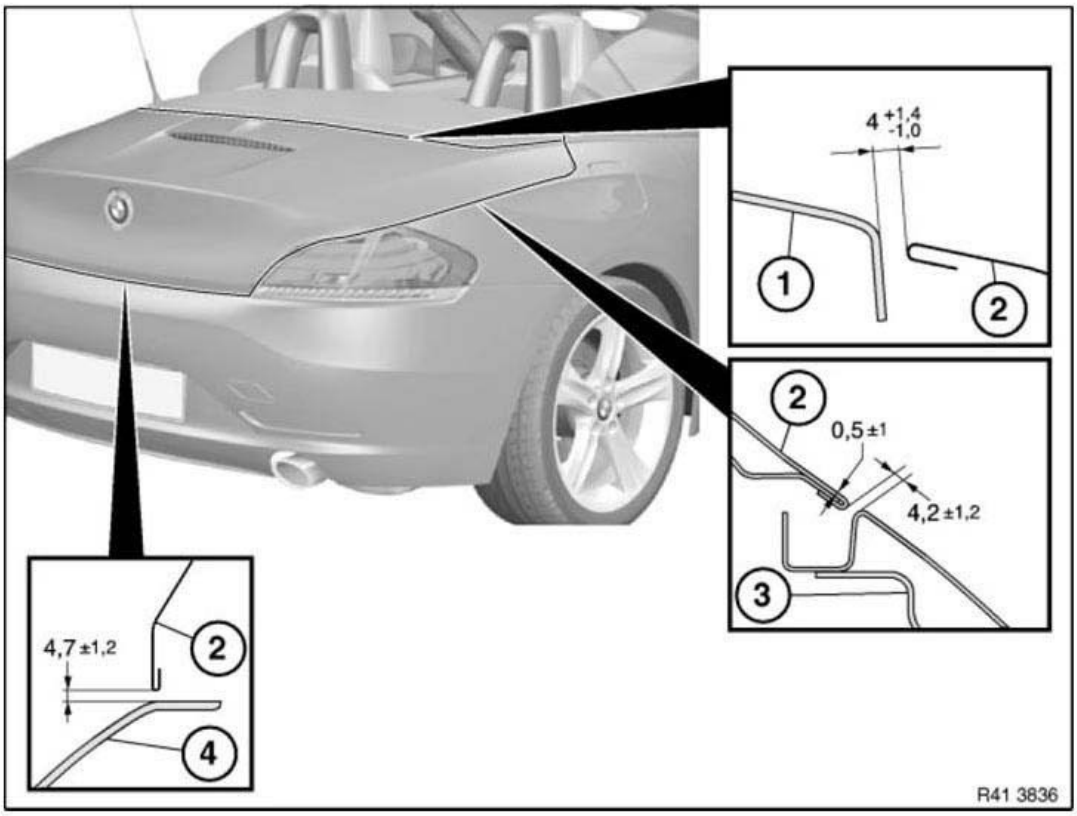


1. Side wall, front
2. Trim for side member cover
3. Front door:
4. Rear side panels

Fig. 11: Identifying Gap Dimensions Of Side Wall, Trim, Front Door And Rear Side Panels
Courtesy of BMW OF NORTH AMERICA, INC.

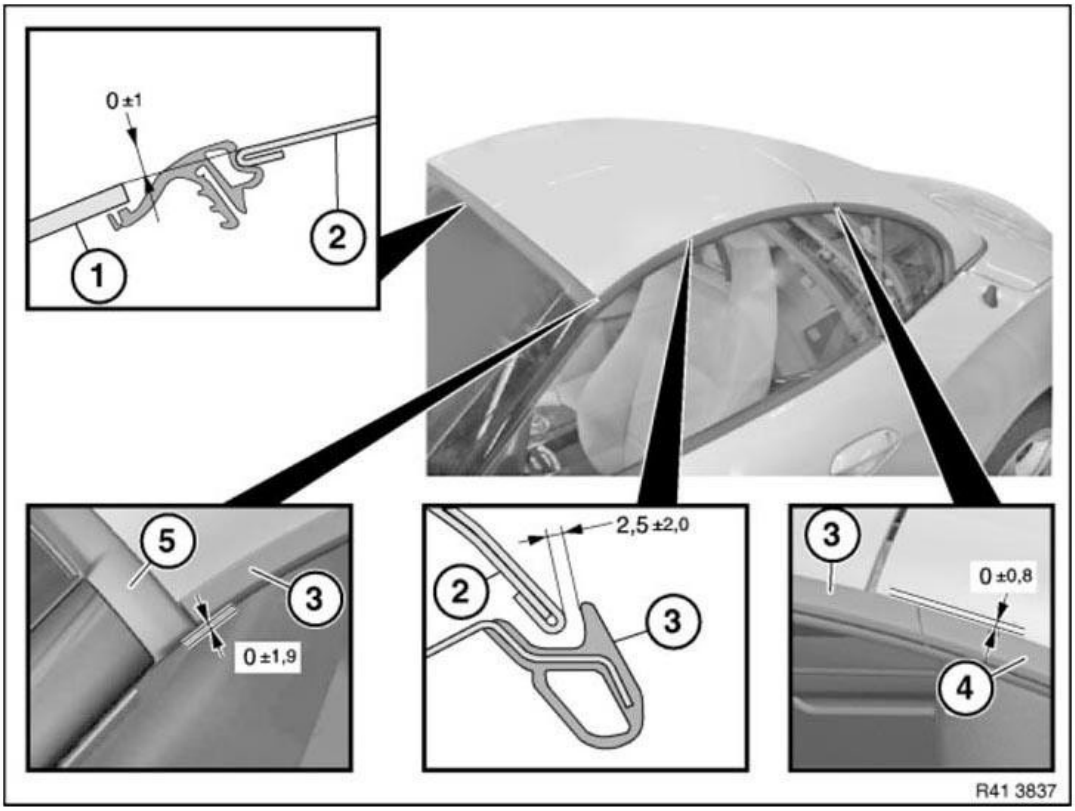
Dimension (a) is increased in the rearward direction to 2.7

Dimension (b) 5.0 is reduced from door centre in the rearward direction to 0±1.3



1. Trim strip, soft top compartment lid
2. Rear Lid
3. Rear side panels
4. Panel, bumper, rear

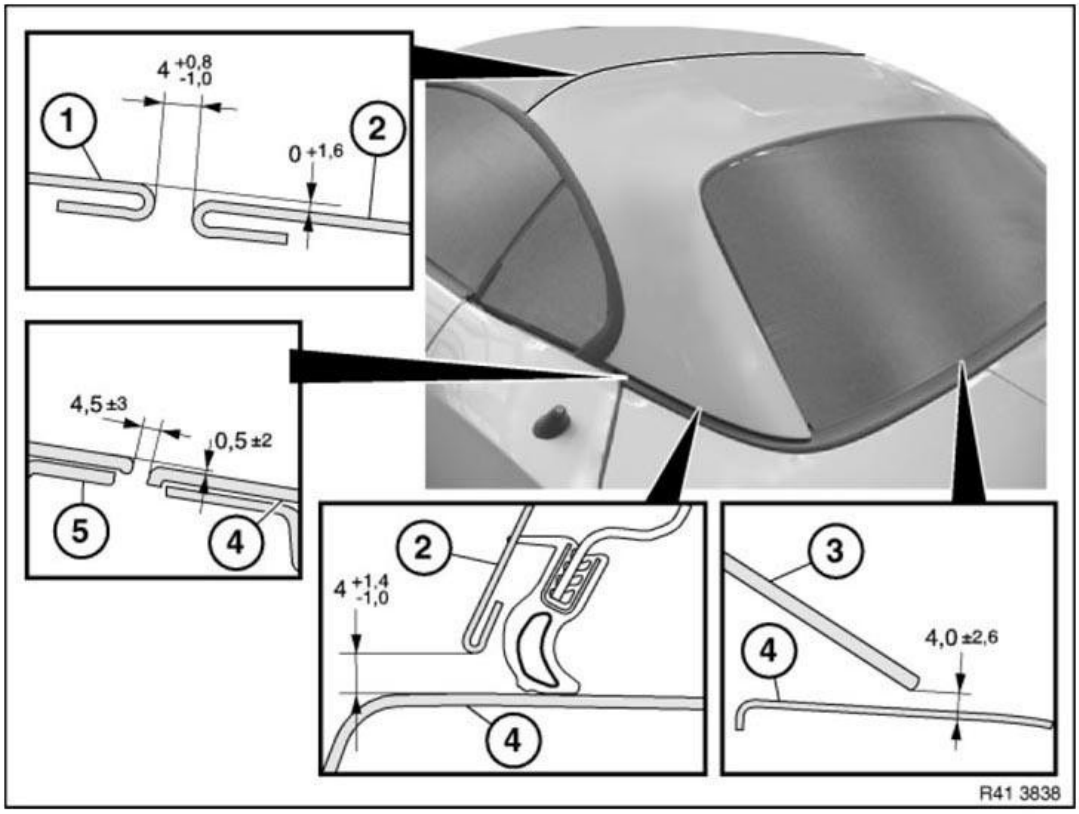
Fig. 12: Identifying Gap Dimensions Of Rear Lid, Panel, Bumper, Trim And Rear Side Panels
Courtesy of BMW OF NORTH AMERICA, INC.



1. Windscreen
2. Roof shell, front
3. Seal for front roof shell
4. Seal, roof shell, rear:
5. Seal, windscreen frame

Fig. 13: Identifying Gap Dimensions Of Windscreen, Roof Shell (Rear And Front), Seal And Windscreen Frame

Courtesy of BMW OF NORTH AMERICA, INC.



1. Roof shell, front
2. Roof shell, rear
3. Rear window
4. Trim strip, soft top compartment lid
5. Window cavity cover strip, rear

Fig. 14: Identifying Gap Dimensions Of Roof Shell (Rear And Front), Rear Window, Trim Strip And Window Cavity Cover Strip
Courtesy of BMW OF NORTH AMERICA, INC.

99 00 ... GENERAL INSTRUCTIONS ON PAINTING

General instructions and classification of paint stages are described on the KSD-CD (notes-general information on flat rate unit data, passenger car explanation for FR specifications for painting).

The marked area serves as the starting point for painting. This area may differ from the illustration for technical painting reasons.

Touching-up areas are taken into account.

41 00 ... GRINDING ALUMINIUM PARTS

1.0 Recommended tools and equipment

Grinding on the outer shell:

- To carry out grinding work by hand or machine, you must use the recommended tools and equipment.

  The work area can be cleaned with conventional extractor systems (low dust concentration).

Grinding work on the structure (except Z8):

- To carry out grinding work by hand or machine, you must use the recommended tools and equipment.

  The work area can be cleaned with conventional extractor systems (low dust concentration).

Z 8 Spaceframe structure:

- To carry out machine grinding on the structure, you must use the recommended device with grinding dust extractor facility.

  The work area must be cleaned with the recommended explosion-proof extractor system.

  High dust concentration, **explosion hazard!**

2.0 Grinding outer shell and structure

Do not use any abrasives (grinding wheels, paper, etc.) which contain iron (risk of corrosion).

Always replace abrasives which have already been used to treat steel (risk of corrosion).

Use stainless steel wire brushes only (risk of corrosion).

Reduce speed of grinding machines. Excessive speeds cause a smearing effect.

Do not use coarse abrasive grains (only =. 80).

Do not grind notches into the material (risk of cracking).

Do not grind the material thin.

41 00 ... GRINDING STEEL PARTS

1.0 Recommended tools and equipment

- Tools are recommended for manual grinding work.
- Machines/equipment are recommended for machine grinding work.

2.0 Grinding outer shell and structure

Always replace abrasives which have already been used to treat aluminum (risk of corrosion).

Do not grind the material thin.

41 00 ... GUN FOR CAVITY SEALING

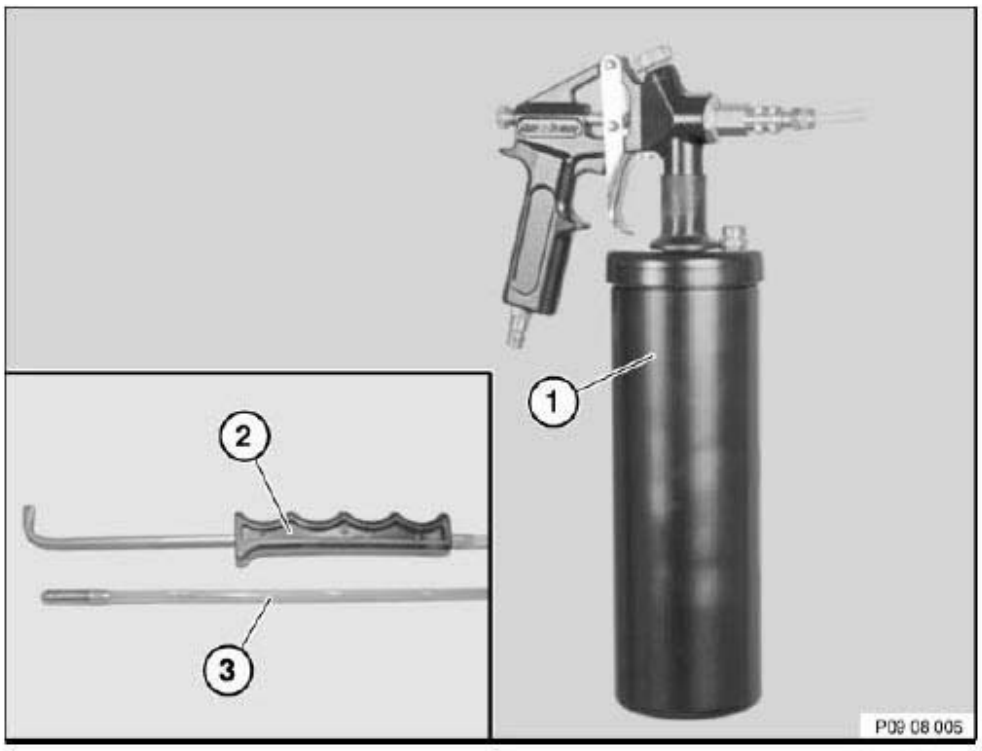


Fig. 15: Identifying Vessel Gun, Angle Nozzle And Round Spray Nozzle
Courtesy of BMW OF NORTH AMERICA, INC.

1.0 Scope of delivery

- Owner's Handbook
- Pressure vessel gun (1) for cavity sealing
- Spray set, consisting of spray hoses: angle nozzle (2) and round spray nozzle (3)

IMPORTANT: Before start-up, read Owner's Handbook and safety instructions.

2.0 Start-up

- Open pressure vessel and introduce cavity sealant in form of a 1-litre can.

  Close pressure vessel.

- Connect spray hose to quick-connect coupling.
- Connect apparatus to compressed air supply.

Working pressure 2-6 bar, max. 8 bar!

3.0 Mode of operation

NOTE: Unlike previous apparatus, it is possible here to alter the spray pattern with the air flow control screw (large knurled screw)!

- Twisting the air flow control screw in decreases the air flow and thus reduces the material spray mist.

  This facilitates optimum working when preserving open components/surfaces.

- Twisting the air flow control screw out increases the air flow and thus the material spray mist (for closed cavities).
- The trigger lever has two stages.

  Stage 1 - discharge of air only.

  Stage 2 - discharge of air and material.

- After finishing work, press the first stage to clean the spray hose with compressed air.
- When storing, remember to twist the air flow control screw closed to prevent the material from drying out.
- Clean the gun prior to extended periods of non-use (approx. 2 weeks and upwards).
- To ensure that the spray hoses function properly, do not store the hoses coiled up e.g. in the frame side member area!

Store spray hoses stretched out.

4.0 Application examples

- Use the matching spray hoses for the different cavities or surfaces.
- Example - doors and lids:

  Spray hose with angle nozzle. Reduce air flow to keep spray mist to a minimum.

- Example - frame side member:

  Long spray hose with round spray nozzle. Depending on the type, increase the air flow slightly.

- Always keep the spray mist to a minimum so as to avoid fouling and bad smells.

5.0 Safety instructions

- Do not inhale spray mist.
- Use only in well ventilated rooms.

- Working pressure max. 8 bar.

41 00 ... HANDLING AIRBAGS AND RESTRAINT SYSTEMS

1.0 Airbags and restraint systems

- In the case of vehicles with airbags and restraint systems observe the relevant **SAFETY INSTRUCTIONS** .
- When straightening work is carried out on the body there is a risk of airbags being accidentally activated when the battery is connected.

  Because of this risk the battery negative lead must be disconnected prior to all repair work on the body.

41 00 ... HANDLING ELECTRICAL AND ELECTRONIC EQUIPMENT

1.0 Battery

- Explosion hazard in the vicinity of the battery during welding and grinding work. The battery must be removed.

2.0 Control units

- The following risks exist when the battery is connected:

- Damage to control units resulting from welding work on the body or a line short circuit.
- Accidental activation of airbags during straightening work on the body.

Because of these risks the battery negative lead must be disconnected prior to all repair work.

- Control units are designed for a temperature of 65 °C. The temperatures in a spray booth do not pose any problems. If a vehicle is in the spray booth at a displayed temperature of 80°C, the actual temperature of the vehicle is = 60 °C (object temperature).
- Protect control units against effects of heat >65 °C (e.g. during welding and drying work with an infrared radiator or hot air blower).

3.0 Electrical wires and wiring harnesses

- Protect electrical wires and wiring harnesses against damage (e.g. during straightening and grinding work).
- Protect electrical wires and wiring harnesses against effects of heat >65 °C (e.g. during welding and drying work with an infrared radiator or hot air blower).
- Do not kink electrical wires.

41 00 ... INFORMATION/WARNING LABELS

Missing or damaged information/warning labels (e.g. tyre inflation pressure) must be replaced.

--> Overview of **INSTALLATION LOCATIONS**

41 00 ... INFORMATION ON HAZARDS

1.0 Aluminium

HAZARDS INFORMATION CHART

Hazards/effects	Measures/regulations
Repair stage 1: (replacement of bolted components, dent removal) Repair stage 2: (repairs with bonding and riveting)	○ When a vehicle outer skin is ground, aluminium dust accumulates in small amounts. This dust can be removed with conventional exhaust extraction unit.
Repair stage 3: (repairs with welding) ○ Explosion hazard due to high concentration of fine aluminium dust. Arising e.g. during straight-through grinding of coated components in the base material and large-surface grinding of bright-finish components. ○ Explosion hazard due to swirling up of fine aluminium dust in cavities. Created by the necessary, thorough cleaning of machining surfaces and tools before and after machining aluminium.	○ Avoid high concentration of fine aluminium dust by means of continuous extraction. ○ Use explosion-proof exhaust extraction unit ○ Do not use compressed air when cleaning the workbay. ○ Avoid swirling up dust when cleaning the workbay.
○ Spontaneous combustion of fine aluminium dust when ignition and fire sources are drawn in. E.g.: hot swarf, grinding sparks, cigarettes, etc.	○ Do not operate ignition and fire sources in the intake area of exhaust extraction unit.

41 00 ... INFORMATION ON METAL FILLER

IMPORTANT: Note the following information before starting to apply metal filler!

- Country-specific safety and industrial safety regulations
- Material safety data sheet of manufacturer
- Processing instructions on the packaging

Storage

Dry at 15°C to 25 °C.

Shelf life

The packaging is marked with a date.

Do not use the metal filler after this date.

Surface pre-treatment

Grind surface to a metallic bright-finish. The surface must be clean, dry and free from grease.

Clean the surface with a cleaning agent R1 and let it vent for 2-3 minutes.

Processing

The working temperature of the metal filler must be at least 18°C.

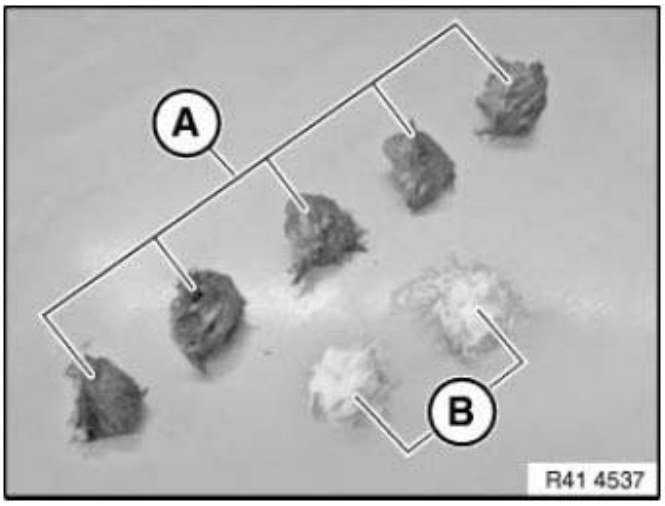


Fig. 16: Identifying Metal Filler And Hardener
Courtesy of BMW OF NORTH AMERICA, INC.

A = Metal filler

B = Hardener

NOTE: The mixture ratio refers to the volume.

Mix metal filler in mixture ratio of 5:2. Mix components thoroughly and free of pores.

IMPORTANT: Do not stir components. Danger of air pockets in metal filler!

Working life of the metal filler is approx. 45 minutes.

Applying filler

Apply pressure to apply a thin layer of metal filler. Carefully coat all edges in gaps with filler.

Then fill gap completely with filler. Apply filler with about 30% excess because the filler will significantly shrink during hardening. A second application of metal filler is not possible due to poor adhesion.

IMPORTANT: Use a narrow spatula to fill the gaps. Apply the filler in one draw if possible. Danger of formation of pores in gaps!

No restrictions related to the layer thickness.

Hardening time

The metal filler must be hardened using a short-wave infrared heater.

- 10 minutes at 50 °C - pre-hardening (avoid formation of bubbles/blisters and pores)
- 10 minutes at 75 °C - 1st stage hardening
- 10 minutes at 85 °C - 2nd stage hardening (avoid material shrinkage)

IMPORTANT: In the first 10 minutes, the temperature of 50°C may not be exceeded. In contrast, a temperature that is too low may be equalized by extending the time.

NOTE: When the heater is used for the first time, the distances that match the temperature must be determined.
Switch the heater on and change the distance until the surface temperature of the metal filler no longer changes for a period of 2 minutes. Measure the temperature with a temperature gauge. When optical temperature gauges are used (Epsilon value 0.92-0.95), the heater must be switched off briefly during the measurement. Record the measurement

Post-processing

WARNING: When grinding, wear a fine dust mask with particulate filter P2-P3!

After cooling, the metal filler can be machined.

Pores and faulty spots that become visible after grinding the surface must be closed with polyester filler (BMW Colour system).

Special procedure for pores:

Use a Ø4.2mm drill. Turn the drill by hand to expand the pores in v shape. by t

Fill cavities with polyester filler.

Paintwork

Perform paintwork according to the specifications in the painting handbook.

Metal filler disposal

Hardened metal filler is disposed of as normal waste.

Empty packaging is disposed of as normal waste.

Non-hardened metal filler and mixtures of metal filler with solvent and the like must be disposed of as hazardous waste.

These regulations apply to the Federal Republic of Germany.

For other countries, comply with the (possibly differing) nationally applicable regulations.

32 00 ... INFORMATION ON REPLACING STEERING GEAR AFTER ACCIDENT DAMAGE

Situation

In the event of accidents or driving conditions similar to accidents, shocklike loads can cause different types of damage to steering gears. When a steering gear is externally undamaged, it is sometimes only possible to identify damage with great difficulty and with great effort. However, damage of this nature poses an unacceptable risk to the vehicle because it can result in failure of the steering system.

Because of the disproportionate amount of effort involved, it is generally not sensible to check thoroughly all the individual components of the steering gear and as an alternative it is necessary to take into account other components which can be checked more easily.

Procedure

The steering gear must be replaced if one or more of the following points apply:

A. Visible or noticeable damage to the steering gear
    - Version with electric steering gear (EPS): Examine in particular the control unit with all plug connections for damage and hairline cracks.
B. Unacceptable torque increase and jamming when the steering gear is turned from lock to lock (without hydraulic/electrical assistance)
C. Permissible tolerances exceeded during axle/wheel alignment (include alignment record with invoice/report if necessary)
D. Fire damage
E. Damage, permanent deformation or fractures to:
    - Wheel rims in the event of a negative result from the wheel/axle alignment check

- Spring struts, steering knuckles, wheel carriers
- Control arms
- struts or diagonal members or stabilisers with this function
- Body-side screwing/bolting points for wheel guide/control components
- Front axle support
- Pitman arms
- Tie rods
- Steering gear fixtures
- Steering Column

This guideline is binding for all accident repairs to BMW and MINI vehicles.

NOTE: **If the steering gear replacement work which is required for safety reasons is refused by the customer or an insurance company for cost reasons, a memorandum to that effect must be drawn up and countersigned by the party bearing the costs of the accident repair.**

IMPORTANT: The vehicle's type approval will be invalidated whenever the function of any of its safety components is compromised!

64 00 000 INFORMATION ON USING CLEANING AGENT/PAINTS (PERSONAL PROTECTION EQUIPMENT)

WARNING: Use of cleaning agents/paints not compliant with instructions can cause serious injuries or burns!
Handling cleaning agents/paints can trigger allergic skin and respiratory reactions!

IMPORTANT: Observe following instructions:

- **Store cleaning agents/paints only in a secure cabinet.**
- **Keep cleaning agents/paints away from naked flames and other sources of ignition.**
- **Protect cleaning agents/paints from high temperatures and direct sunlight.**
- **Always keep an eye bath on hand, change the water regularly (once a month).**

IMPORTANT: Observe following instructions before use:

- **Manufacturer's instructions (on container/packaging)**
- **Hazard warnings (on container/packaging)**

- **Manufacturer's instructions on package insert**
- **Material safety data sheet of manufacturer**
- **Product information in EPC**
- **National market regulations**

IMPORTANT: Observe following instructions during use:

- **Do not eat, drink or smoke while working with these products.**
- **Avoid direct contact with skin and eyes.**
- **Wear personal protective clothing/equipment.**
- **Ensure that all enclosed areas are well ventilated or extract fumes directly.**
- **Immediately change working clothes soiled with cleaning agent/paint.**
- **After finishing work, wash your hands and apply protective skin cream.**

IMPORTANT: Follow hazard warnings and wear personal protection equipment!
First Aid:

- **If product comes in contact with eyes, immediately flush with running water for about 10 - 15 minutes. Seek the advice of eye specialist.**
- **In the event of skin contact and where applicable an allergic skin reaction, clean the affected areas immediately with soap and water and then apply silicone-free skin cream. Seek advice of physician.**
- **If an adhesive product is swallowed, rinse mouth/parts of mouth thoroughly with running water. Drink 1-2 glasses of water. Do not induce vomiting. Consult a doctor.**
- **After inhaling vapours ensure ample supply of fresh air. Keep calm, keep respiratory tracks clear and call doctor.**

Recycling

Dispose of cleaning agents/paints in a professional manner!

Observe national/country-specific disposal regulations.

41 00 ... INFORMATION ON VEHICLE PROTECTION

- Vehicle parts located in the repair zone or threatened by heat, sparks or dust, must be removed or covered. For suitable covering material

IMPORTANT: Do not use flammable or dirty material for covering.

41 00 ... INSTALLATION SOLUTION FOR STRAIGHT SHANK/HEXAGON RIVET NUT

Protection measures!

- Wear safety goggles
- Wear protective gloves

Hexagon/straight shank rivet nut (up to thread 8) with hand rivet gun ZS308

IMPORTANT: Risk of damage!
Failure to comply with these instructions may result in the drill bit slipping and causing significant paintwork damage.

1. Mark position of bore and then punch-mark component

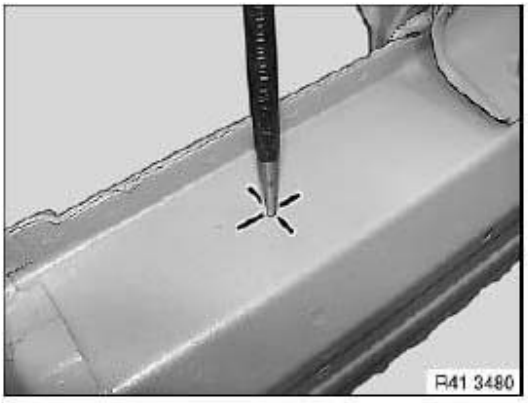


Fig. 17: Marking Bore Position
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: If the determined drill bit diameter is not observed:

- **the knurling on the straight shank rivet nut is rendered useless**
- **the component will be damaged when the straight shank rivet nut is inserted**

Determining suitable drill bit:

Depending on the rivet nut shank diameter, the next drill bit diameter higher (5/10 step) can be used.

E.g. with a shank diameter of 10.1 mm, the 10.5 mm drill bit can be used. The 11.0 mm drill bit must not be used.

2. Drill bore with determined drill bit and deburr, pilot-drill with a smaller drill bit if necessary



Fig. 18: Drilling Bore Using Drill Bit
Courtesy of BMW OF NORTH AMERICA, INC.

3. Clean component, eliminate paintwork damage if necessary



Fig. 19: Identifying Cavity
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: To avoid corrosion, stop chips/swarf by means of cavity sealing.

Follow INSTRUCTIONS ON CORROSION PROTECTION .

4. Preserving cavity

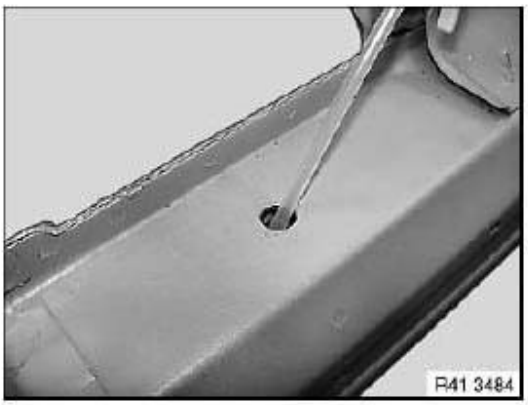


Fig. 20: Preserving Cavity
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Follow manufacturer's operating instructions.
Make sure straight shank rivet nut correctly contacts component.

5Set rivet nut with hand rivet gun

NOTE: According to the manufacturer, the pictured tool is suitable up to an M8 thread.

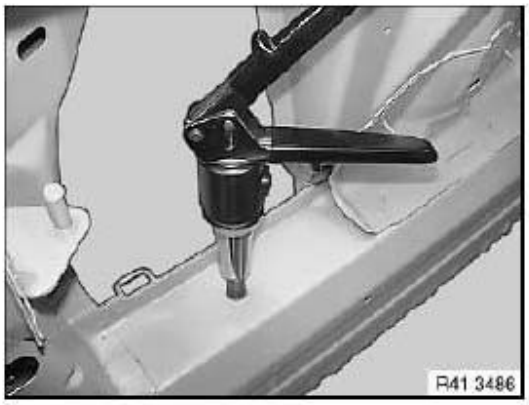


Fig. 21: Setting Rivet Using With Hand Rivet Gun
Courtesy of BMW OF NORTH AMERICA, INC.

Hexagon/straight shank rivet nut (up to thread M12) with hand rivet gun MB512

IMPORTANT: Follow manufacturer's operating instructions.
Make sure hexagon rivet nut correctly contacts component.

Set rivet nut with hand rivet gun

NOTE: According to the manufacturer, the pictured tool is suitable up to an M12

thread.

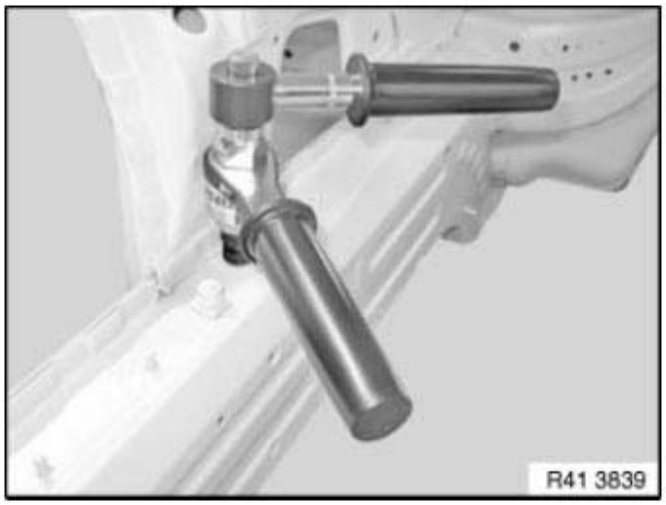


Fig. 22: Setting Rivet Nut With Hand Rivet Gun (MB512)
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... INSTALLING A CAVITY ACOUSTIC BAFFLE (EXPANDED)

NOTE: Carry over schematic representation to the relevant vehicle type.

The following repair represents the procedure for an already expanded cavity bulkhead.

The cavity bulkhead remains on the body in this instance.

Before these work steps, prepare the new part so that it is ready to install (adapting, cutting to size, applying welding primer etc.).

Clean contact surface (1) with cleaning agent R2.

Apply a bead (2) approx. 15 mm high of **SEALANT D1** to contact surface (1).

In order to avoid run off of the sealant when bonding to a vertical surface, a thin coat of sealant on both sides of the surface may be necessary.

Fit, secure and weld up new part.

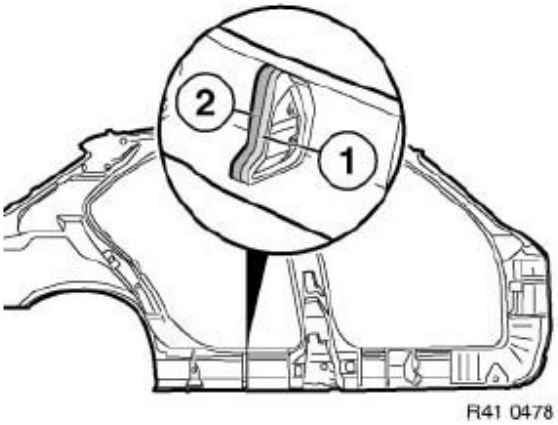


Fig. 23: Identifying Contact Surface Sealant Applying Area
Courtesy of BMW OF NORTH AMERICA, INC.

WARNING: Ensure adequate ventilation over entire processing period.

41 00 ... INSTALLING A CAVITY ACOUSTIC BAFFLE (NOT EXPANDED)

NOTE: Carry over schematic representation to the relevant vehicle type.

The following repair represents replacement of a cavity bulkhead.

Before these work steps, prepare the new part so that it is ready to install (adapting, cutting to size, applying welding primer etc.).

Sand contact surface of cavity acoustic baffle (1) with coarse-grained sandpaper (grain 50-100).

Clean contact surface (1) with cleaning agent R2.

Apply a bead approx. 15 mm high of **SEALANT D1** to contact surface (1).

If necessary apply sealant D1 somewhat thinner on each side, to prevent the sealant from running.

Attach cavity bulkhead in specified position (see old part).

Fit, secure and weld up new part.

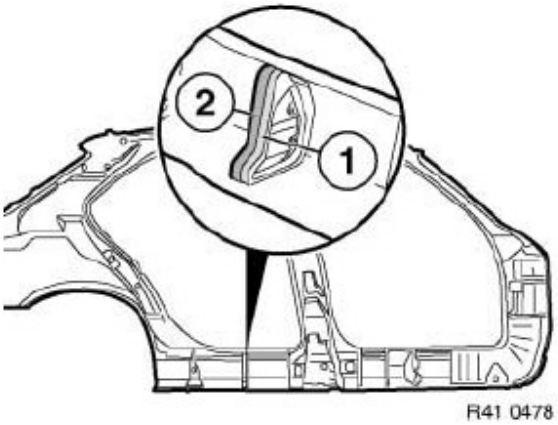


Fig. 24: Identifying Contact Surface Sealant Applying Area
Courtesy of BMW OF NORTH AMERICA, INC.

WARNING: Ensure adequate ventilation over entire processing period.

41 00 ... MATERIALS SCIENCE

1. Aluminum

1.2 Material influences

MATERIAL INFLUENCES

Causes	Effects/remedies
A galvanic element is created under the effects of moisture by contact with materials such as copper, tin, nickel, iron and zinc.	This plating process causes aluminium to be removed from the joint.
	This results in surface corrosion or pitting.
	New parts and accessory parts which have been approved by the BMW Group for aluminum (screws, washers, nuts etc.) have undergone special surface treatment.
	Such parts must not be replaced by conventional parts.
	NOTE: **Damaged parts lose this protection and must be specially coated or replaced.** **Damage caused by contact corrosion is excluded from the warranty.**
Materials also used for work on steel components can implant steel particles in the softer surface of an aluminium component.	Surface corrosion or pitting occurs. A separate tool kit is available for processing/machining aluminum.
Surfaces are attacked when fluxing agents are used.	Soldering is not permitted for joining aluminum

	components.
	Risk of corrosion from chemical factors.
Aluminum/steel grinding dust from adjoining work areas.	This results in surface corrosion.
	Erection of protective barriers.

1.3 Machining properties

MACHINING PROPERTIES

Properties of aluminum compared with steel	Effects
Aluminum parts are magnetically neutral.	Attachment with magnetic tools/working aids is not possible.
Elasticity is only 1/3 as high.	Convertibility is limited in comparison with steel.
Elongation failure is approx. 50% slighter.	Overstretching the material results in strain-hardening and an increased tendency of cracking.
Electrical conductivity is almost 4 times higher.	Electric welding procedures require different equipment (MIG welding).
Material expansion during heating is twice as high.	The material expands more markedly. Shorter heat treatment is necessary for removing dents.
Thermal conductivity is 3 times higher.	Heat is drained more quickly. Adjoining working areas are affected more heavily e.g. during welding.
Microstructural change between 200°C and 250°C.	Elongation characteristics and thus plasticity are improved.
	Strength is reduced. **IMPORTANT:** **No heat treatment when working on the vehicle structure! Temperature cannot be monitored to sufficiently exact levels in garages.**
Aluminum shows no annealing colors.	The melting point is 650°C. Once the melting temperature has been reached, the material begins to flow without any further indications.
	The temperature can only be estimated by means of the paint coloring and the surface warpage. **IMPORTANT:** **Do not use thermal applicators. Not suitable for garage use because the paint runs too quickly.**

1.4 Mounting

ALUMINUM SPECIAL FEATURES

Characteristic features of aluminum	Special measures
Corrosion (ageing) in damp environments.	Store aluminum parts in a dry place.

Contact corrosion in event of contact e.g. with steel parts.	Always store aluminum parts separately or in isolation from steel parts.
Susceptibility to paint infiltration.	Do not damage protective surface layer since this would cause oxidation.
	Failure to comply with this requirement would result in more painting work.

41 00 ... NOTES ON ADHESIVE K1

IMPORTANT: Note the following information before starting to apply adhesive!

- Country-specific safety and industrial safety regulations
- Material safety data sheet of manufacturer
- Processing instructions on glue cartridge

Storage

Dry at 15°- 25 °C.

Shelf life

The glue cartridge is marked with a date.

Do not use the adhesive after this date.

Surface pre-treatment

The **PRE-TREATMENT** depends on the material to be bonded and its coating.

Required cartridge gun

Overview of glue cartridge guns

Do not use any compressed-air-operated cartridge guns.

Preparing the glue cartridge

Opened glue cartridges may be used again before the expiry date as long as a new mixing tube is used.

The working temperature of glue cartridge must be at least 20°C.

Insert glue cartridge into cartridge gun, remove cap and allow both adhesive components to emerge. Strip adhesive components uniformly and attach mixing tube. Only use mixing tubes supplied with glue cartridge.

Approx. Allow approx. 10 cm of mixed adhesive to emerge and then apply the mixed adhesive first on one side of the bonding surface.

Pot life of mixed adhesive approx. 2 hours. A change of mixer is only necessary if over a period of 1 hour no material has flowed through the mixer.

Adhesive application

Read the vehicle-specific repair instructions to determine the thickness and positioning of the adhesive bead.

After applying the adhesive, check whether an adhesive component has emerged at the back of the glue cartridge. If yes, break off the bonding procedure. Clean new part. Use new glue cartridge. Contact national hotline.

Remove contamination caused by adhesive residue immediately.

Hardened adhesive can only be removed mechanically.

Hardening time

Do not move the vehicle before the adhesive has hardened.

Check the degree of hardness of the adhesive with a fingernail.

If the adhesive cannot be pressed in any further with a fingernail, the vehicle may be moved (without engine force) for further processing applications (e.g. painting).

Vehicle **strength for driving applications** is achieved after:

48 hours at min. 15 °C object temperature (corresponding to approx. 18 °C room temperature).

or 1 hour in the spray booth (spray booth temperature 80 °C/object temperature 60 °C).

When using radiant heaters, make sure that the object temperature does not exceed 85 °C. Excessively high temperatures will destroy the adhesive.

Disposal of adhesive

Hardened adhesive is disposed of as normal waste.

Empty glue cartridges are disposed of as normal waste.

Non-hardened adhesives and mixtures of adhesive and solvent and the like must be disposed of as hazardous waste.

These regulations apply to the Federal Republic of Germany.

For other countries, comply with the (possibly differing) nationally applicable regulations.

41 00 ... NOTES ON ADHESIVE K2

IMPORTANT: Note the following information before starting to apply adhesive!

- Country-specific safety and industrial safety regulations
- Material safety data sheet of manufacturer
- Processing instructions on glue cartridge

Storage

Dry at 15°-25 °C.

Shelf life

The glue cartridge is marked with a date.

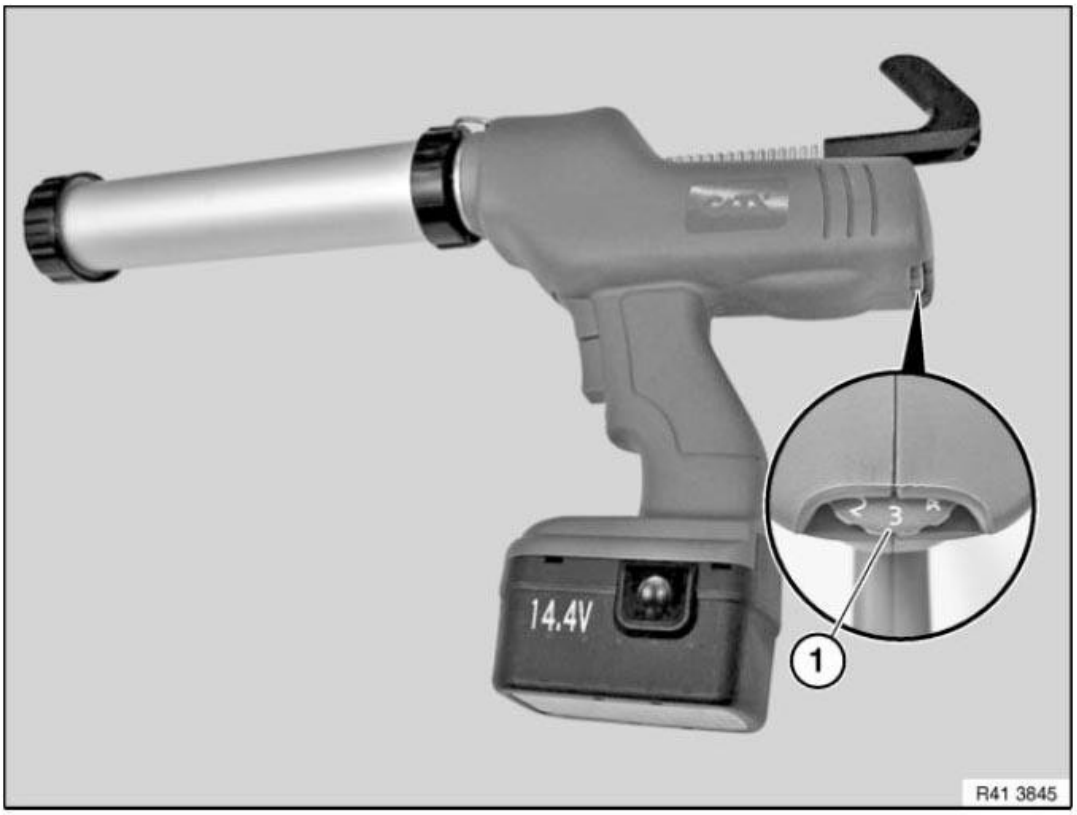
Do not use the adhesive after this date.

Surface pre-treatment

See vehicle-specific repair instructions

Required cartridge gun

CARTRIDGE GUN 81 43 2 159 881/883



1. Speed control

Fig. 25: Identifying Cartridge Gun With Speed Control
Courtesy of BMW OF NORTH AMERICA, INC.

1. Speed control

IMPORTANT: Set speed control (1) to interval stage 3 to prevent overloading the cartridge gun.

Preparing the glue cartridge

Opened glue cartridges may be used again before the expiry date as long as a new mixing tube is used.

The working temperature of glue cartridge must be at least 20°C.

Working life of adhesive is approx. 20 minutes.

IMPORTANT: At working temperatures above 30°C, the working life of the adhesive is reduced to 10 minutes!

Insert glue cartridge into cartridge gun, remove cap and allow both adhesive components to emerge. Strip adhesive components uniformly and attach mixing tube. Only use mixing tubes supplied with glue cartridge.

Approx. Allow approx. 10 cm of mixed adhesive to emerge and then apply the mixed adhesive first on one side of the bonding surface.

Adhesive application

Read the vehicle-specific repair instructions to determine the thickness and positioning of the adhesive bead.

After applying the adhesive, check whether an adhesive component has emerged at the back of the glue cartridge. If yes, break off the bonding procedure. Clean new part. Use new glue cartridge. Contact national hotline.

Remove contamination caused by adhesive residue immediately.

Hardened adhesive can only be removed mechanically.

Hardening time

See vehicle-specific repair instructions

Disposal of adhesive

Hardened adhesive is disposed of as normal waste.

Empty glue cartridges are disposed of as normal waste.

Non-hardened adhesives and mixtures of adhesive and solvent and the like must be disposed of as hazardous waste.

These regulations apply to the Federal Republic of Germany.

For other countries, comply with the (possibly differing) nationally applicable regulations.

41 00 ... NOTES ON ADHESIVE K3

IMPORTANT: Note the following information before starting to apply adhesive!

- **Country-specific safety and industrial safety regulations**
- **Material safety data sheet of manufacturer**
- **Processing instructions on glue cartridge**

Storage

Dry at 15°- 25 °C.

Shelf life

The glue cartridge is marked with a date.

Do not use the adhesive after this date.

Surface pre-treatment

See vehicle-specific repair instructions

Required cartridge gun

Overview of glue cartridge guns

Preparing the glue cartridge

Do not prepare the glue cartridge until just before applying the adhesive.

The working temperature of glue cartridge must be at least 18°C.

Pot life of adhesive is approx. 10 minutes at 25 °C.

Insert glue cartridge into cartridge gun, remove cap and allow both adhesive components to emerge. Strip adhesive components uniformly and attach mixing tube. Only use mixing tubes supplied with glue cartridge.

Before starting to apply adhesive, allow approx. 1 mixing tube length of mixed adhesive to emerge. Only then apply the mixed adhesive to one side of the bonding surface.

Opened cartridges may be used again before the expiry date as long as a new mixing tube is used.

2-component adhesive application

Read the vehicle-specific repair instructions to determine the thickness and positioning of the adhesive bead.

Hardening time

See vehicle-specific repair instructions

Adhesive disposal

Hardened adhesive is disposed of as normal waste.

Empty glue cartridges are disposed of as normal waste.

Non-hardened adhesives and mixtures of adhesive and solvent and the like must be disposed of as hazardous waste.

These regulations apply to the Federal Republic of Germany.

For other countries, comply with the (possibly differing) nationally applicable regulations.

41 00 ... NOTES ON ADHESIVE K4

IMPORTANT: Note the following information before starting to apply adhesive!

- **Country-specific safety and industrial safety regulations**
- **Material safety data sheet of manufacturer**
- **Processing instructions on glue cartridge**

Storage

Dry at 15°- 25 °C.

Shelf life

The glue cartridge is marked with a date.

Do not use the adhesive after this date.

Surface pre-treatment

See vehicle-specific repair instructions

Required cartridge gun

Overview of glue cartridge guns

Preparing the glue cartridge

Do not prepare the glue cartridge until just before applying the adhesive.

Opened glue cartridges may be used again before the expiry date as long as a new mixing tube is used.

The working temperature of glue cartridge must be at least 18°C.

Working life of adhesive is approx. 10 minutes.

Insert glue cartridge into cartridge gun, remove cap and allow both adhesive components to emerge. Strip adhesive components uniformly and attach mixing tube. Only use mixing tubes supplied with glue cartridge.

Before starting to apply adhesive, allow approx. one half mixing tube length of mixed adhesive to emerge. Only then apply the mixed adhesive to one side of the bonding surface.

2-component adhesive application

Read the vehicle-specific repair instructions to determine the thickness and positioning of the adhesive bead.

Hardening time

The bonded connection will be resistant after 30 minutes.

Disposal of adhesive

Hardened adhesive is disposed of as normal waste.

Empty glue cartridges are disposed of as normal waste.

Non-hardened adhesives and mixtures of adhesive and solvent and the like must be disposed of as hazardous waste.

These regulations apply to the Federal Republic of Germany.

For other countries, comply with the (possibly differing) nationally applicable regulations.

41 00 ... NOTES ON ADHESIVE K5

IMPORTANT: Note the following information before starting to apply adhesive!

- **Country-specific safety and industrial safety regulations**
- **Material safety data sheet of manufacturer**
- **Processing instructions on glue cartridge**

Storage

Dry at 15°- 32 °C.

Shelf life

The glue cartridge is marked with a date.

Do not use the adhesive after this date.

Surface pre-treatment

See vehicle-specific repair instructions

Required cartridge gun

Overview of glue cartridge guns

Preparing the glue cartridge

The working temperature of glue cartridge must be at least 20°C.

Opened glue cartridges may be used again before the expiry date as long as a new mixing tube is used.

Insert glue cartridge into cartridge gun, remove cap and allow both adhesive components to emerge. Strip adhesive components uniformly and attach mixing tube. Only use mixing tubes supplied with glue cartridge.

Before starting to apply adhesive, allow approx. 1 mixing tube length of mixed adhesive to emerge. Only then apply the mixed adhesive to one side of the bonding surface.

Pot life of adhesive is approx. 60 minutes at 23°C.

Adhesive application

Read the vehicle-specific repair instructions to determine the thickness and positioning of the adhesive bead.

After applying the adhesive, check whether an adhesive component has emerged at the back of the glue cartridge. If yes, break off the bonding procedure. Clean new part. Use new glue cartridge. Contact national hotline.

Remove contamination caused by adhesive residue immediately.

Hardened adhesive can only be removed mechanically.

Hardening time

Do not move the vehicle before the adhesive has hardened.

Check the degree of hardness of the adhesive with a fingernail.

If the adhesive cannot be pressed in any further with a fingernail, the vehicle may be moved (without engine force) for further processing applications (e.g. painting).

The procedure may be accelerated by using a radiant heater. Let the adhesive harden for 30 minutes at 85°C. The component can then be processed in the joint areas.

Vehicle **strength for driving applications** is achieved after:

24 hours at a minimum object temperature of 23°C.

or 1 hour in the spray booth (spray booth temperature 80 °C/object temperature 60 °C).

When using radiant heaters, make sure that the object temperature does not exceed 85 °C. Excessively high temperatures will destroy the adhesive.

Disposal of adhesive

Hardened adhesive is disposed of as normal waste.

Empty glue cartridges are disposed of as normal waste.

Non-hardened adhesives and mixtures of adhesive and solvent and the like must be disposed of as hazardous waste.

These regulations apply to the Federal Republic of Germany.

For other countries, comply with the (possibly differing) nationally applicable regulations.

41 00 ... NOTES ON CLEANING AGENT R1

Use only cleaning agent R1, as other cleaning agents cab be emollient/moistening or may start to dissolve the cathodic dip paint primer.

41 00 ... NOTES ON REPAIRING THREADS

IMPORTANT: Install Helicoil thread inserts so that they are flush with the original thread.

NOTE: Damaged threads may be repaired with Helicoil thread inserts. Comply with the PROCEDURE described in the example.

REPAIRING THREADS REFERENCE CHART

Screw connection	Vehicle	Bolting point (s)	Helicoil thread insert
Front axle support to engine support	E46	All	M12x1.5x18
	E53	All	M12x1.5x18
	E60, E61, E63, E64	Front, middle	See repair elements
		Rear	M12x1.5x18
	E65, E66, E67	All	M12x1.5x18
	E70, E71, E72	All	M14x1.5x21
	E83	All	M12x1.5x18
	E85, E84, E86, E89	All	M12x1.5x18
	E81, E82, E87, E88	All	M12x1.5x18
	E90, E91, E92, E93	All	M12x1.5x18
	E92 with S65	All	M10x1.5x15
Bracket, wishbone, to engine support	E46, E85, E86, E89	All	M10x1.5x15
Rear axle support to side member	E46	All	M12x1.5x18
	E53	All	M14x1.5x21
	E60, E61	All	M14x1.5x21
	E63, E64	All	M14x1.5x21
	E65, E66, E67	All	M14x1.5x21
	E70, E71, E72	All	M14x1.5x21
	E83	All	M12x1.5x18
	E84, E85, E86, E89	All	M12x1.5x18
	E81, E82, E87, E88	All	M12x1.5x18
	E90, E91, E92, E93	All	M12x1.5x18
Bearing support, trailing arm to side member	E46, E83, E85, E86, E89	All	M12x1.5x18

41 00 ... OPENING ADHESIVE BONDS

1. Opening spot-weld bonds

OPEN WELD SPOTS .

WARNING: Extract vapours and gases.
Use personal protective clothing/equipment.

Heat connecting flange with a hot-air blower. Heat components to max. 250 °C object temperature.

Release connection flange with chisel.

Remove adhesive residue from connecting flange.

2. Opening adhesive bonds

If necessary, open existing **PUNCH OR BLIND RIVETS** .

Roughly cut out damaged component.

WARNING: Extract vapours and gases.
Use personal protective clothing/equipment.

Heat adhesive flange with a hot-air blower. Heat components to max. 250 °C object temperature.

The component can be peeled with the aid of pliers. Do not damage adjacent components.

Remove adhesive residue from connecting flange.

3. Opening adhesive bonds on aluminium roofs

Procedure is described in detailed in the relevant repair instructions.

4. Opening adhesive bonds on carbon-fibre-reinforced plastic parts

Procedure is described in detailed in the relevant repair instructions.

41 00 ... OPENING BRAZED JOINTS

The "Bonding and Riveting" repair method involves replacing the watertight brazed joint with adhesive.

This gives rise to a new procedure for opening brazed joints.

Grind brazed seam with a belt grinder. This keeps the influence of heat in the area around the brazed seam as small as possible.

IMPORTANT: Never use a gas flame.

All traces of brazing solder do not have to be removed.

Do not grind body panels thin.

41 00 ... OPENING RIVETED JOINTS

Different rivet types are used on BMW vehicles.

1. Opening blind rivets

1.1 Opening blind rivets (N1 and N2)

Grind off blind rivet head with a belt or angle grinder. Do not grind off base material. Remove rivet remnants with a drift punch.

1.2 Opening blind rivets (N3 and N6)

Drill out blind rivet head with a 5 mm dia. drill bit. Do not damage base material. Remove rivet remnants with a drift punch.

2. Opening punch rivets

2.1 Opening punch rivets by extraction

This procedure is used on the reduced-weight aluminium front end.

Recommended tools and equipment:

- Stud welding apparatus with gas bottle containing inert gas (82 % argon, 18 % CO 2).
- Stainless steel stud
- Universal riveting tool

Grind off paint and dark grey coating of punch rivets.

Position bolt centrally on the rivet and weld on vertically. The area in which the bolts are welded on should be between the two grounding terminals. Position both terminals, if possible, on the top side of the metal plate on which the rivet is located.

Extract bolt with welded-on rivet using universal riveting tool. Use a large plastic nose piece if not otherwise specified in the repair instructions. Check plastic nose piece prior to use for wear.

Plastic nose piece must rest on sheet metal all round; if necessary, grind off plastic noise piece in collision area.

Do not push riveting tool forcefully onto special-steel bolts.

Do not use riveting tool to bend special-steel bolts.

Pay particular attention to central positioning of the bolt when using the small plastic mouthpiece.

Follow the equipment manufacturer's instructions for use.

2.2 Opening punch rivets by drilling out

Drill out rivets with a 6 mm dia. carbide drill bit.

Punch rivets can be drilled out on both sides. When drilling from the protruding rear side, spot-drill the rivet shank only and remove the rest with a rivet punch.

Use a drift punch to remove punch rivet remnants in the aluminium (risk of corrosion).

Clean vehicle to remove chips (risk of corrosion).

41 00 ... OPENING WELD JOINTS

1. Opening weld spots (resistance pressure spot welding)

Sheet steel panels made from high- and super-high-strength materials make great demands on the tools used.

Only with special carbide milling cutters can weld spots be drilled out on these sheet panels.

Use BTR/BOR milling cutters only in conjunction with Vario Drill spot-weld remover. Sourcing reference for spot-weld remover and BTR/BOR milling cutters

- **Procedure:**

  If necessary, surface-grind existing unevenness with a belt or angle grinder in the area around the weld spot.

  Set punch mark in centre of weld spot. Set 8 mm dia. weld spot drill bit on punch mark and drill through top metal sheet.

  NOTE: Because the weld spots may have surface-hardened, grind them if necessary with an angle grinder and paper grinding disk.

  Use a chisel to separate the sheet metal flange and remove the component.

  Follow the special procedure for **SPOT WELDS** .

2. Opening MAG weld seams and MIG brazing seams

- **Procedure:**

  Grind off weld seams with a belt or angle grinder. Do not grind the base material thin.

Use a chisel to separate the sheet metal flange and remove the component.

3. Opening laser weld seams

Laser weld seams are used in the roof outer skin area.

- **Procedure:**

  Roughly cut roof outer skin in the roof channel to improve accessibility.

  Place angle grinder with grinding disc on laser weld seam and grind through top metal sheet. Be careful not to cut through and damage sheet metal underneath.

  Remove sheet metal flange.

41 00 ... OVERVIEW OF ADHESIVE CARTRIDGE GUNS

Adhesive gun 83 19 2 149 522

Obtainable via Electronic Parts Catalogue.

Usable for adhesives K4, K5a.

Including insert 1:1 and 2:1.

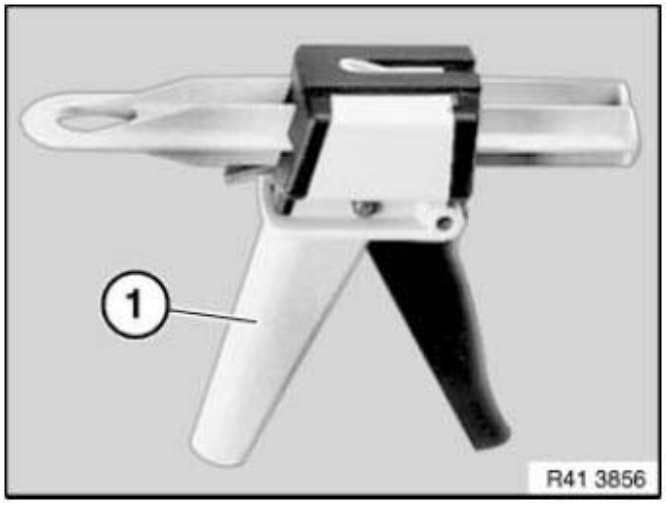


Fig. 26: Identifying Adhesive Gun (83 19 2 149 522)
Courtesy of BMW OF NORTH AMERICA, INC.

Adhesive gun 81 49 0 443 166

Usable for adhesive K3.

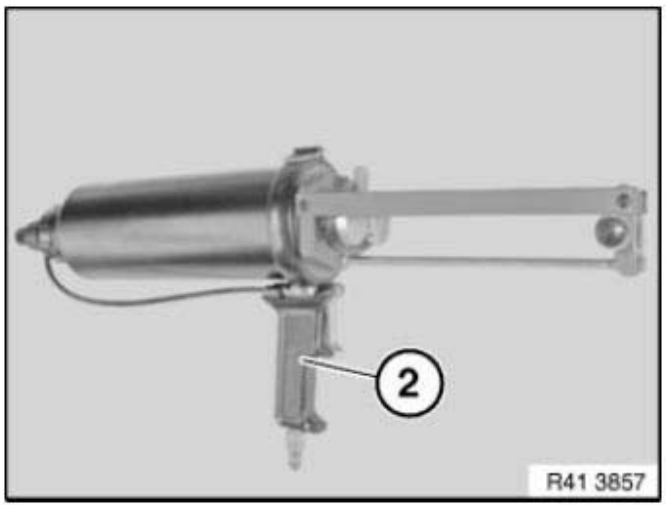


Fig. 27: Identifying Adhesive Gun (81 49 0 443 166)
Courtesy of BMW OF NORTH AMERICA, INC.

Adhesive cartridge gun 81 49 2 159 881/883

Usable for adhesives K1, K2, K5b, sealant D1 and window glass adhesive.

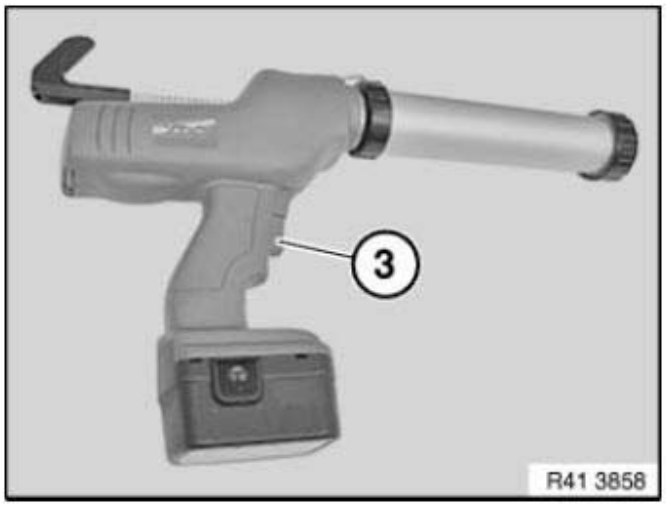


Fig. 28: Identifying Adhesive Cartridge Gun (81 49 2 159 881/883)
Courtesy of BMW OF NORTH AMERICA, INC.

Adhesive cartridge gun 83 30 0 494 836

Usable for structural foam HS2.

NOTE: Special tool number 41 3 010

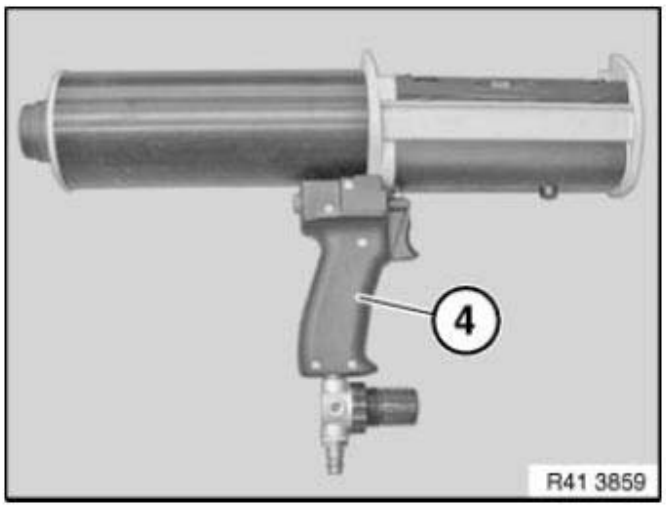


Fig. 29: Identifying Adhesive Cartridge Gun (83 30 0 494 836)
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... OVERVIEW OF CONSUMABLES (ELECTRONIC PARTS CATALOGUE)

1.0 Adhesives

ADHESIVES REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Adhesive K1	Body adhesive K1	83 19 0 413 015	195 ml
Adhesive K2	Body adhesive K2	83 19 2 156 847	195 ml
Adhesive K3	Body adhesive K3 83	19 0 417 144	2 x 300 ml
Adhesive K4	Body adhesive K4	83 19 2 149 520	50 ml
Adhesive K5a	Body adhesive K5a	83 19 2 158 654	50 ml
Adhesive K5b	Body adhesive K5b	83 19 2 157 298	195 ml
Adhesives K5a and K5b are the same adhesive in different package sizes.			

1.1 Primer

PRIMER REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Primer P1	Primer P1	83 19 0 302 556	50 ml
Primer P2	Primer P2/Gas cartridge	83 19 0 302 555	50 ml

1.2 Cleaning agent

CLEANING AGENT REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Cleaning agent R1	Cleaning agent R1	83 19 2 157 286	125 ml
Cleaning agent R2	Cleaning agent R2	83 19 0 417 324	500 ml
Cavity sealing wax remover	Cavity sealing wax remover	83 12 0 390 086	500 ml

1.3 Fillers

FILLERS REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Metal filler	2C metal filler	83 19 2 154 175 US version: 83 19 2 163 602 Asian version: 83 19 2 163 603	

2.1 Rivets

RIVETS REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Blind rivet N1 Hemlock 813	Blind rivet N1	83 19 0 301 414	dia. 6.5 mm; clamping range 2.8-4.8 mm
Blind rivet N2 Hemlock 815	Blind rivet N2	83 19 0 301 419	dia. 6.5 mm; clamping range 4.8-6.8 mm
Blind rivet N3	Blind rivet N3	83 19 0 301 421	dia. 4 mm; clamping range 1-3 mm
Punch rivet N4	Punch rivet N4	83 19 2 158 080	dia. 3 mm; length 4 mm
Punch rivet N5	Punch rivet N5	83 19 2 158 079	dia. 5 mm; length 5 mm
Blind rivet N6	Blind rivet N6	83 19 2 158 655	dia. 4 mm; clamping range 3-5 mm

2.2 Plastic nuts

PLASTIC NUTS REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Cap nut	Plastic nut	51 16 1 943 122	Dia. 18 mm
Cap nut	Clip nut	07 14 7 139 081	Dia. 30 mm

3.0 Primer

PRIMER REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Primer	HS-AK multibase filler 2K spray	51 91 0 432 612	200 ml; pot life 5 hours
Primer	EP base filler 2K spray	51 91 0 432 615	200 ml; pot life 8 hours
Welding primer	INOX spray welding primer	83 40 0 409 992	500 ml

4.0 Sealant

SEALANT REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Sealant D1 Sprayable sealant	Seam sealing	83 42 0 428 349	310 ml

5.0 Cavity preservation

CAVITY PRESERVATION REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Cavity sealant	Cavity sealant spray	83 42 0 428 190	400 ml
Cavity sealant	Cavity preservation	83 42 0 428 348	1000 ml

6.0 Cavity foam

CAVITY FOAM REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Cavity foam HS1	Cavity foam	83 42 9 410 694	400 ml
Structural foam HS2	Structural foam	83 19 0 007 361	420 ml

7.0 EMC screw (electromagnetic compatibility)

EMC SCREW REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
EMC screw	Screw	83 19 0 301 639	SF Plus M5x15

8.0 Twist drill

TWIST DRILLL REFERENCE CHART

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Drill bit	Twist drill	83 19 2 166 461	4.2 x 119 mm
Drill bit	Twist drill	83 19 2 166 462	6.8 x 156 mm
Drill bit	Twist drill	83 19 2 166 463	4.2 x 55 mm
Drill bit	Twist drill	83 19 2 166 464	6.8 x 74 mm

41 00 ... POSITION OF SHAPED PARTS FOR CAVITY ACOUSTIC BAFFLE

Cavity sealing is carried out in specific body areas in order to reduce internal noise and to reduce condensate. To do this, shaped parts are inserted in the cavities. These shaped parts adapt themselves optimally due to heating of the body to approx. 180 °C by expansion to the shape of the cavities.

Because it is not possible to heat the body to this extent for a body repair, a different procedure See **4100... INSTALLING A CAVITY ACOUSTIC BAFFLE (EXPANDED)** or **4100... INSTALLING A CAVITY ACOUSTIC BAFFLE (NOT EXPANDED)** has been specified for this situation.

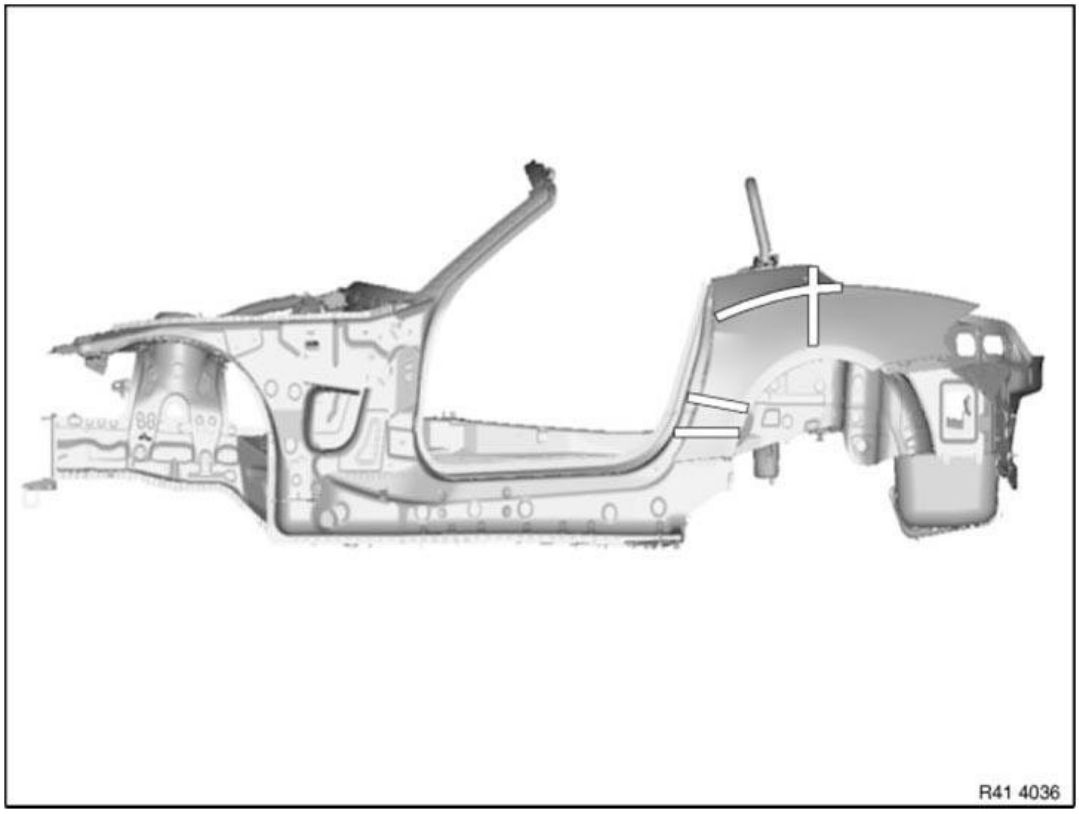


Fig. 30: Identifying Cavity Acoustic Baffle Shaped Parts Position
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... PROCEDURE FOR FOLDING HARDTOP AFTER AN ACCIDENT

The hardtop may be under tension after the vehicle has incurred damage following an accident. Moving the hardtop by hydraulic means may result in irreparable damage. For this reason, the hardtop may only be moved manually until the damaged has been repaired.

IMPORTANT: It is not possible to check the correct operation of the folding roof on the damaged vehicle.

Different procedures are required, depending on the degree of damage which the vehicle has incurred. The repair instructions for emergency operation See **5437290 HARDTOP EMERGENCY OPENING** or **5437295 EMERGENCY CLOSING HARDTOP** describe only the complete sequences for manually opening and closing the hardtop.

When removing the roof module and/or the rear module, it is possible to move the hardtop manually into the necessary intermediate positions in each case.

WARNING: Risk of injury due to the heavy weight of the hardtop!
Since the hydraulic system may have to be depressurized during manual movement of the hardtop, there is an increased risk of injury by trapping. Secure the hardtop permanently and adequately against unintentional movement.

After body repairs to the vehicle

All the hardtop components screwed/bolted to the body are precisely screwed/bolted to the vehicle at the factory by means of gauges. This affects above all the base plates and consoles of the roof and rear modules. To minimize extensive adjustment work after a body repair as much as possible, only remove those components which are screwed/bolted to a damaged body part.

- Gauge the base plates *only* after a body repair to the cowl panel.

41 00 ... PUNCH RIVETS

The "Bonding and Riveting" repair method involves the use for the first time of punch rivets in the repair. This requires new tools and procedures.

The punch rivets are matched in size to the material thickness and quality used at the respective connection point.

1.0 Recommended tools and equipment

- Punch rivet tool

Setting punch rivets

- Mark the positions of the rivets on the vehicle. Set punch rivets at roughly equal spacings.

Punch rivets do not require a predrilled hole. They are pressed directly into the full material.

- Insert punch rivet in riveting die. Position punch rivet tool on sheet metal parts to be riveted.

  Riveting direction:

  Always from new part to used part.

  Deviations are specified in the vehicle-specific repair instructions.

- Rivet punch rivets with punch rivet tool. In the meantime clean riveting die and matrix if fouled with adhesive.
- Seal punch rivets in moist area (e.g. wheel arch or carrier support) on both sides with **SEALANTD1** (risk of corrosion).
- Seal cavities after painting vehicle with **CAVITY SEALANT** (risk of corrosion).

41 00 ... QUALITY STANDARD

- The overall requirements relating to a vehicle can only be implemented by including "all" components. This applies in particular to the body. With regard to an optimum crash result, it is necessary to maintain the structural measures.

  It is absolutely essential to observe the procedures set out in the repair instructions. Any deviation from these procedures will only be permitted after prior consultation with and approval by BMW. Should you have any questions, please contact the country-specific Hotline.

  The use of non-approved repair steps or tools may have serious consequences for the structure of the vehicle (e.g. in the event of a crash). In the end, this can result in safety and product liability risks which cannot be calculated.

  Corrosion protection measures during and after repairs are absolutely essential to maintain the value of the vehicle.

- Use only genuine BMW parts and approved auxiliary devices, materials and operating fluids when carrying out repairs.

41 00 ... REINFORCEMENT PLATE (BONDED)

In the case of a partial replacement piece, a body component is cut at a point described in the repair instructions.

A reinforcement plate is bonded in to ensure sufficient strength.

Observe notes on **REPAIR STAGE 2** .

NOTE: The following graphics serve as general illustrations of reinforcement plate repair work. They apply to sectional repairs to the structure.

Mark component in accordance with measurement a and cut.

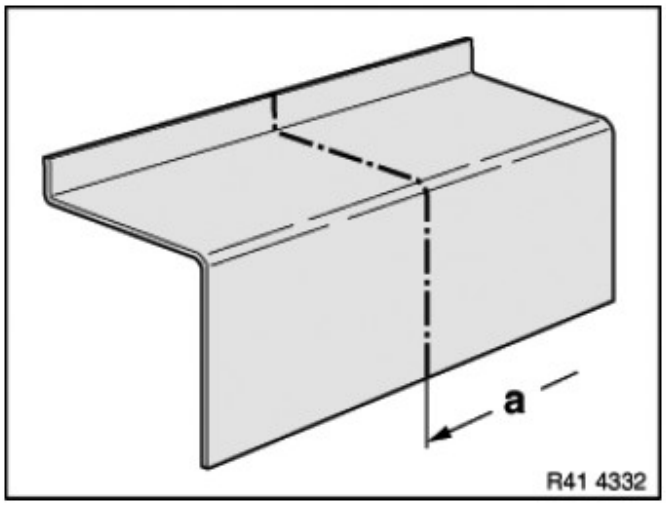


Fig. 31: Identifying Component Cutting Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part

Cut new part (1) in accordance with cut on vehicle and if necessary adjust to fit with straightening attachment or universal mount.

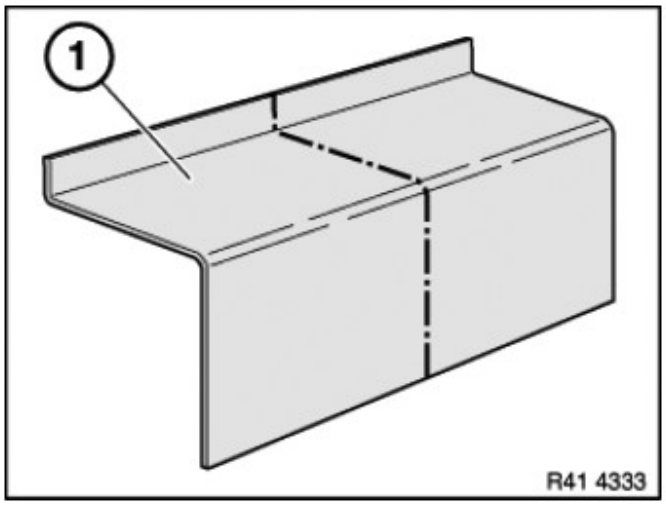


Fig. 32: Identifying Cutting Position
Courtesy of BMW OF NORTH AMERICA, INC.

Make reinforcement plate (1) from trim of new part (2).

Length of reinforcement plate is 80 mm.

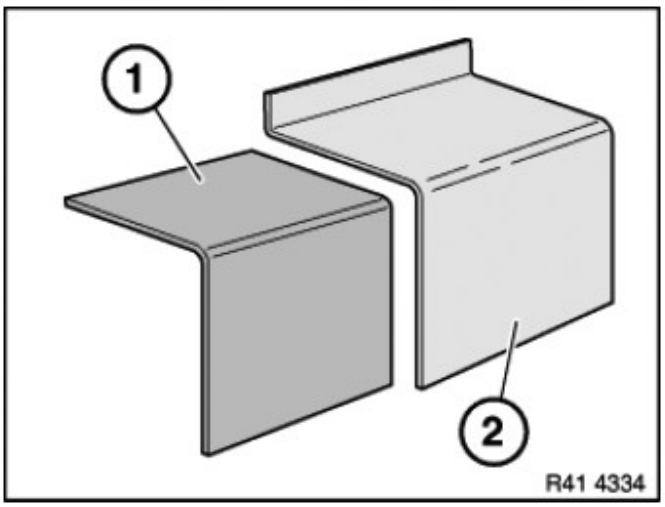


Fig. 33: Identifying Reinforcement Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Slide reinforcement plate (1) half-way into component on body and fasten with 2 self-tapping screws (2).

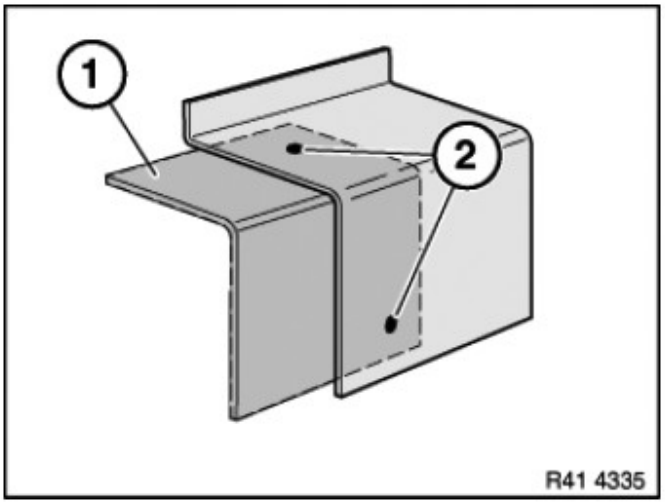


Fig. 34: Sliding Reinforcement Plate Half-Way Into Body Component
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust new part (1) to fit and set 4.3 mm dia. bore holes (2).

Remove new part again.

Release self-tapping screws (3).

Remove reinforcement plate.

Drill out bore holes (3) for screws to 4.3 mm dia.

Deburr all bore holes.

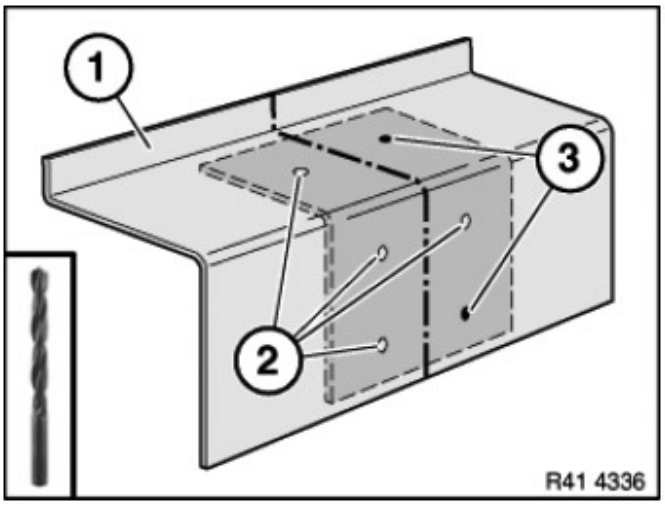


Fig. 35: Identifying Bore Drilling Position
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new part and body in area of bonding surfaces.

Installing reinforcement plate

Clean all bonding surfaces with cleaning agent R1.

Apply adhesive (1) to reinforcement plate bonding surface.

Carefully slide reinforcement plate half-way into body component (2).

IMPORTANT: When joining reinforcement plate, make sure there is sufficient adhesive on bonding surfaces.

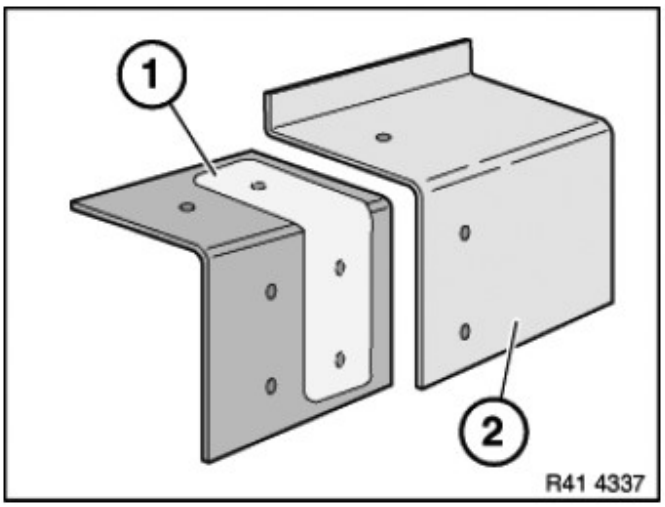


Fig. 36: Identifying Adhesive On Reinforcement Plate Bonding Surface
Courtesy of BMW OF NORTH AMERICA, INC.

Rivet reinforcement plate (1) up to half-way with blind rivets N3 (2).

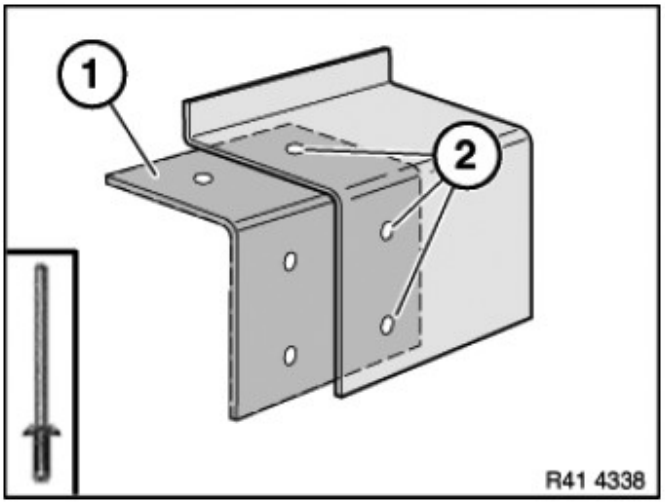


Fig. 37: Riveting Reinforcement Plate Up To Half-Way With Blind Rivets N3
Courtesy of BMW OF NORTH AMERICA, INC.

Apply adhesive (1) to reinforcement plate bonding surface.

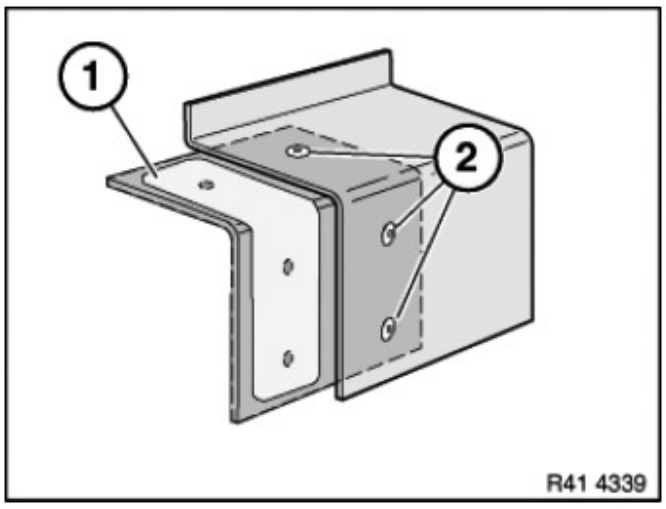


Fig. 38: Identifying Adhesive On Reinforcement Plate Bonding Surface
Courtesy of BMW OF NORTH AMERICA, INC.

Install new part (1) with straightening attachment or universal mount and rivet with blind rivets N3 (2).

After adhesive has hardened, flatten adhesive area and seal blind rivets.

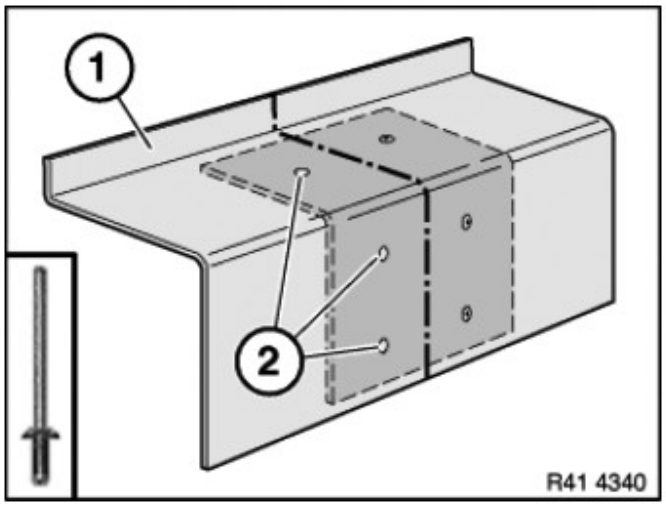


Fig. 39: Installing New Part Using Blind Rivets N3
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... REINFORCEMENT PLATE WITH STUD BOLT (BONDED)

In the case of a partial replacement piece, a body component is cut at a point described in the repair instructions.

A reinforcement plate is bonded in to ensure sufficient strength.

Reinforcement plates are available as new parts and must also be used.

NOTE: **The following graphics serve as general illustrations of reinforcement plate repair work. They are applicable to sectional repairs in the outer skin area.**

Overview of reinforcement plates:

1. Reinforcement plate, sill
2. Reinforcement plate, C-pillar
3. Reinforcement plate, universal
4. Reinforcement plate, C- or D-pillar
5. Lock nuts (not pictured)
    - Plastic nut _ 18 mm, part number 1 943 122
    - Clip nut _ 30 mm, part number 7 139 081

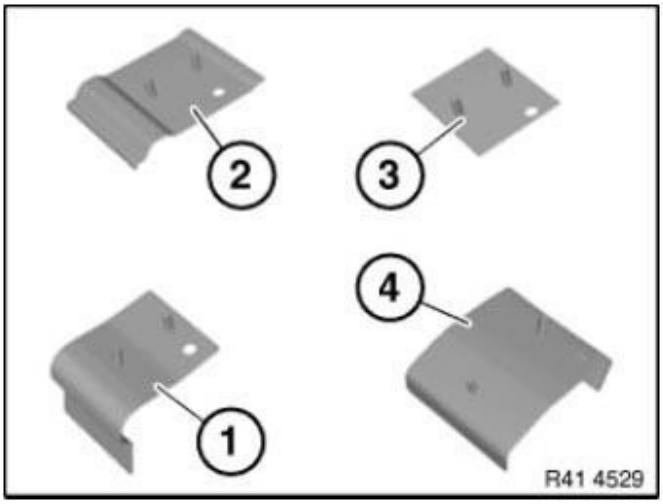


Fig. 40: Identifying Reinforcement Plate Sill, C-Pillar, Universal And C- Or D-Pillar
Courtesy of BMW OF NORTH AMERICA, INC.

Mark component in accordance with dimension a and cut.

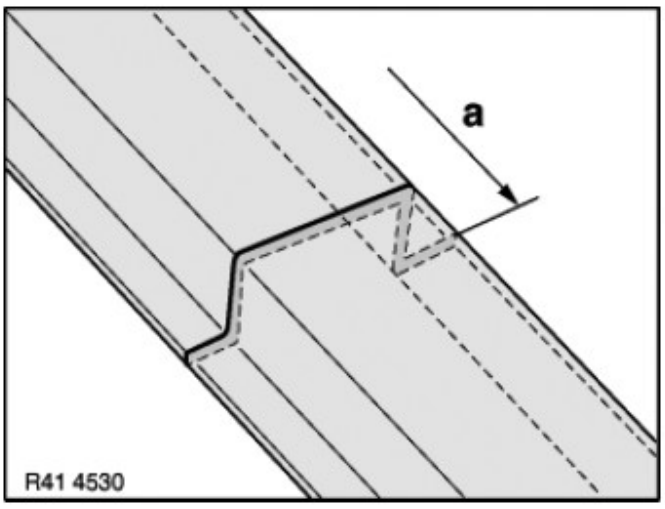


Fig. 41: Identifying Component Cutting Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part

The reinforcement plates must if necessary be reworked and cut to size.

Adjust reinforcement plate (1) to fit in component (2) on vehicle.

Make recesses (3) for stud bolts (4) in a semicircular shape.

Diameter of recesses approx. 10 - 12 mm.

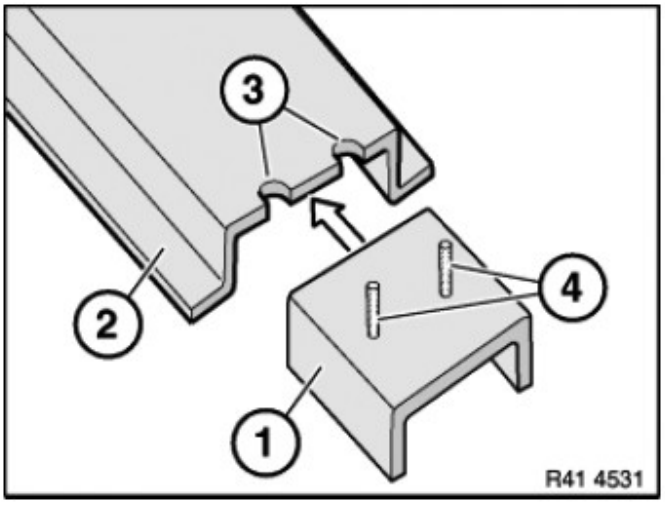


Fig. 42: Adjusting Reinforcement Plate On Vehicle Components
Courtesy of BMW OF NORTH AMERICA, INC.

Secure reinforcement plate by screwing on lock nuts (1).

Fit new part (2). Make recesses (3) in new part in a semicircular shape.

Diameter of recesses approx. 10 - 12 mm.

Remove reinforcement plate again.

NOTE: Width of joint between new part and component on vehicle approx. 3 - 8 mm (at least 30 mm flange width per side).

Plastic nuts should be screwed on once before applying adhesive (no thread in new plastic nut)!

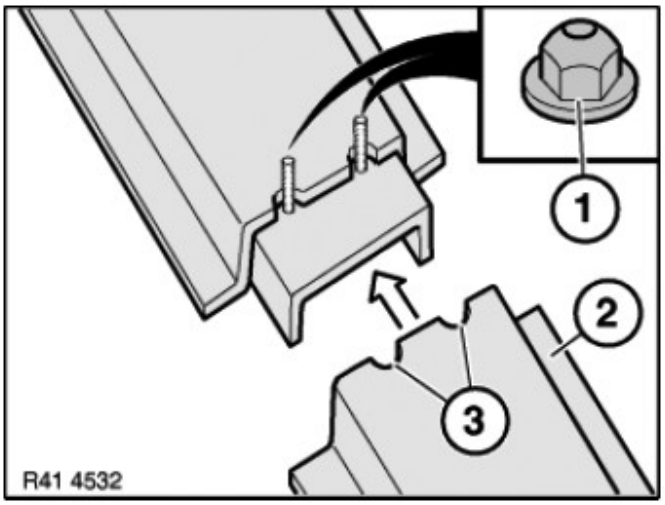


Fig. 43: Fitting New Part
Courtesy of BMW OF NORTH AMERICA, INC.

Round off cutting edges (1) on joint by grinding.

(2) Component on vehicle

(3) New part

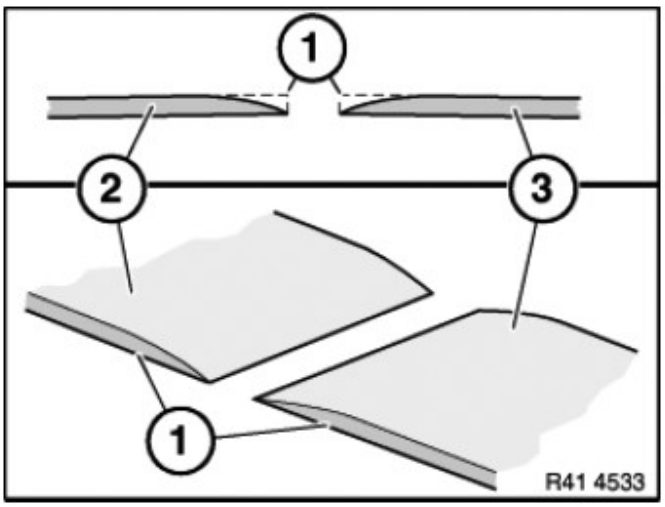


Fig. 44: Identifying Cutting Edges, Vehicle Component And New Part
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new part and body in area of bonding surfaces.

Procedure for using universal reinforcement plate

The universal reinforcement plate needs to be adapted. The plate must be divided if the distance between the pins is too great.

Dimension a is between 40 and 80 mm depending on the space available.

Secure plates with N4 punch rivets.

NOTE: Ensure the rivet is positioned correctly! Rivet head is on the adhesion side!

Rivet the plate to the inside of the flange!

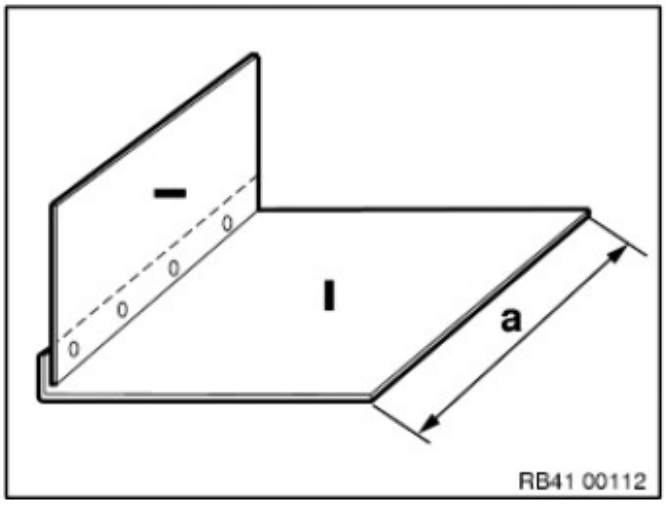


Fig. 45: Identifying Universal Reinforcement Plate Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Installing reinforcement plate

Clean all bonding surfaces.

Apply adhesive to reinforcement plate in area (1). Apply more adhesive in the radii to avoid air pockets.

Carefully slide reinforcement plate into component on vehicle and secure by screwing on nuts (2). Screw on nuts a few turns only.

IMPORTANT: When joining reinforcement plate, make sure there is sufficient adhesive on bonding surfaces.

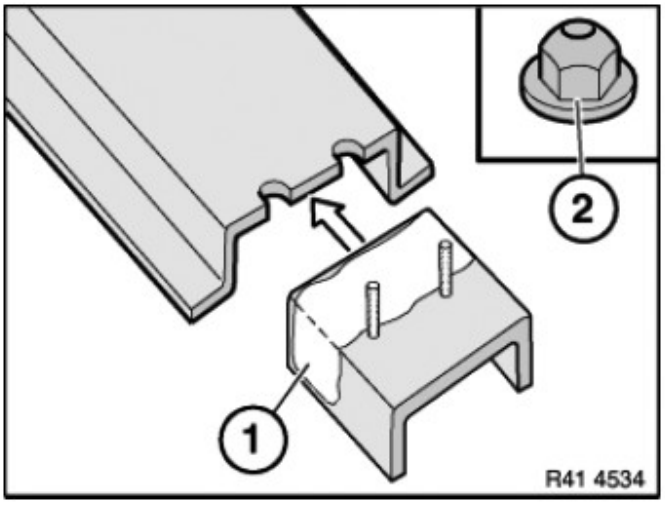


Fig. 46: Applying Adhesive To Reinforcement Plate Bonding Surface

Courtesy of BMW OF NORTH AMERICA, INC.

Apply adhesive to reinforcement plate bonding surface (1). Apply more adhesive in the radii to avoid air pockets.

Fit new part (2).

Align new part to adjoining component and secure with gripping pliers.

Tighten nuts.

Tightening torque **41 14 1AZ.**

IMPORTANT: Check that the transition of the components is OK at the separation point. Corrections can only be made before the adhesive has hardened. Straightening at a later stage is not possible.

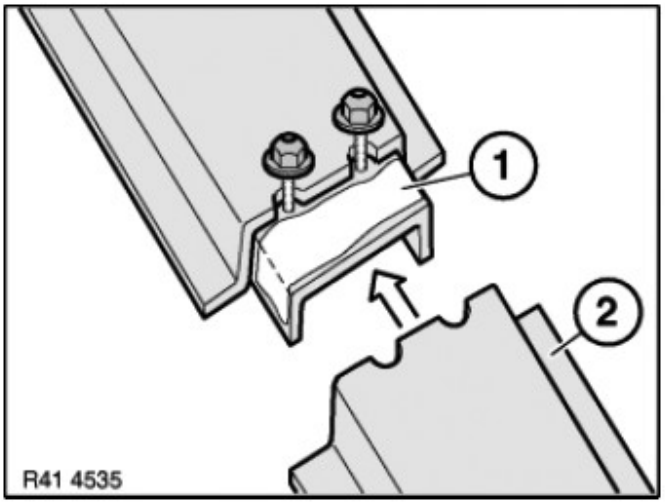


Fig. 47: Fitting New Part
Courtesy of BMW OF NORTH AMERICA, INC.

Concluding tasks at separation point:

After adhesive has hardened:

In area visible to customer:

Cut off stud bolts with bodywork saw.

Completely remove adhesive residue in joint (1).

Round off sharp edges by grinding.

IMPORTANT: Avoid heating the separation point by excessive grinding. Reworking by pressing not permitted!

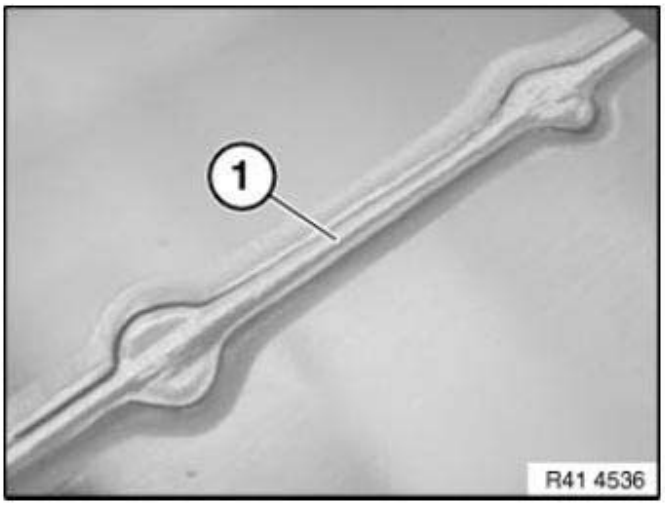


Fig. 48: Identifying Reinforcement Plate Joint
Courtesy of BMW OF NORTH AMERICA, INC.

Only the BMW-approved **METAL FILLER** should be used on the joint.

METAL FILLER - INSTRUCTIONS FOR USE

Not in area visible to customer:

Examples: The joint is covered by sill trim panel, windows, seals, etc.

Grind off stud bolts and surplus adhesive flush. Do not use metal filler. Paint area as specified in BMW Painting Handbook.

NOTE: After painting, the joint becomes visible as the adhesive shrinks. This has no affect on the quality.

41 05 800 RELEASING BONDED FOLDED SEAM CONNECTIONS

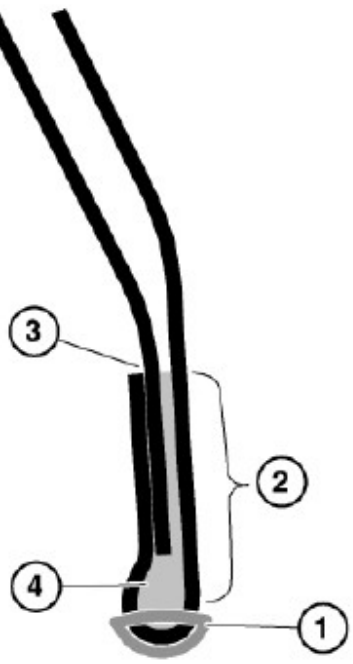


Fig. 49: Removing Bonded Folded Seam Connections
Courtesy of BMW OF NORTH AMERICA, INC.

- Remove area (1) of bead edge on wheel arch bend with a one-hand angle grinder and rough grinding wheel.
- Heat area (2) with hot air blower.

CAUTION: Extract vapours and gases.

- Release connection flange with chisel.
- Grind adhesive residue (4) off wheel arch connection flange.

CAUTION: Wear a grinding dust mask.

- Remove remnants of sealing material in area (3).

41 00 ... REPAIR SOLUTION FOR STRAIGHT SHANK/HEXAGON RIVET NUT

Protection measures!

- Wear safety goggles

- Wear protective gloves

IMPORTANT: To prevent the material from tapering, do not drill out the rivet head.

1. Carefully spot-drill rivet head with a larger drill bit/countersink

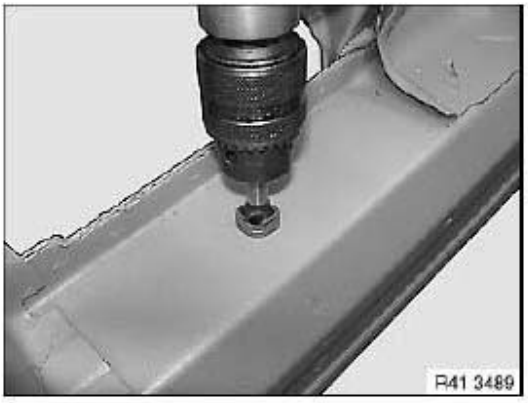


Fig. 50: Drilling Rivet Head Using Larger Drill Bit/Countersink
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Avoid paintwork damage

2. Knock rivet head away with a chisel



Fig. 51: Knocking Rivet Head Using Chisel
Courtesy of BMW OF NORTH AMERICA, INC.

3. Drive through rivet shank into cavity, remove if necessary



Fig. 52: Identifying Rivet Shank Cavity
Courtesy of BMW OF NORTH AMERICA, INC.

4. Clean component, eliminate paintwork damage if necessary



Fig. 53: Cleaning Component To Eliminate Paintwork Damage
Courtesy of BMW OF NORTH AMERICA, INC.

If the rivet shank can be removed:

IMPORTANT: To avoid corrosion, stop chips/swarf by means of cavity sealing. Follow INSTRUCTIONS ON CORROSION PROTECTION .

5. Preserving cavity

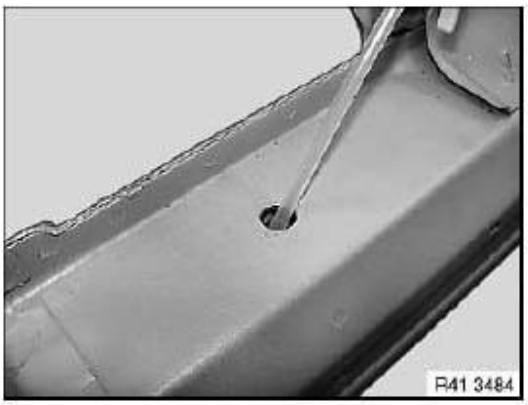


Fig. 54: Preserving Cavity
Courtesy of BMW OF NORTH AMERICA, INC.

If the rivet shank cannot be removed:

WARNING: Risk of injury!
Observe NOTES ON CAVITY FOAM .

IMPORTANT: To avoid corrosion and rattling noises, stop chips/swarf and rivet nut shank with cavity foam.
Remove foam remnants with isohexane (benzine).



Fig. 55: Preserving Cavity
Courtesy of BMW OF NORTH AMERICA, INC.

5. Stop rivet shank by means of specific foaming

6. Set rivet nut with hand rivet gun

NOTE: Fit rivet nut as quickly as possibly, ideally before the cavity foam hardens.

Hexagon/straight shank rivet nut (up to thread M8) with hand rivet gun ZS308

IMPORTANT: Follow manufacturer's operating instructions.
Make sure rivet nut correctly contacts component.

NOTE: According to the manufacturer, the pictured tool is suitable up to an M8 thread

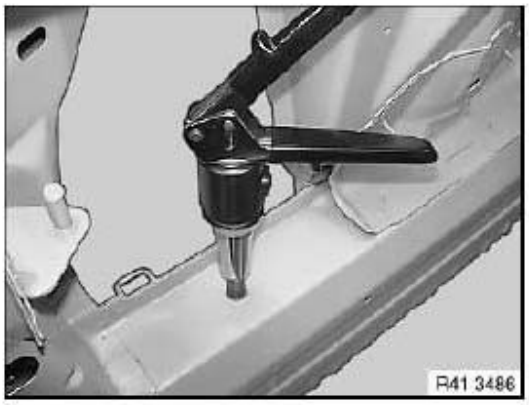


Fig. 56: Setting Rivet Using With Hand Rivet Gun
Courtesy of BMW OF NORTH AMERICA, INC.

Hexagon/straight shank rivet nut (up to thread M12) with hand rivet gun MB512

IMPORTANT: Follow manufacturer's operating instructions.
Make sure rivet nut correctly contacts component.



Fig. 57: Setting Rivet Nut With Hand Rivet Gun (MB512)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: According to the manufacturer, the pictured tool is suitable up to an M12 thread

41 0 REPAIR TECHNIQUES, REPAIR STAGE 1

All work which provides only for replacement of screwed/bolted components and planishing operations.

Repair techniques

- Straightening outer skin
  - Straightening aluminium parts See or **4100... STRAIGHTENING ALUMINIUM PARTS ON OUTER SKIN**
  - Straightening steel parts See or **4100... STRAIGHTENING STEEL PARTS ON OUTER SKIN**
  - **METAL FILLER**
- Grinding
  - Grinding aluminium components See **4100... GRINDING ALUMINIUM PARTS**
  - Grinding steel parts See or **4100... GRINDING STEEL PARTS**
- Repair elements
  - Steel thread repairs See ; **4100... REPAIR SOLUTION FOR STRAIGHT SHANK/HEXAGON RIVET NUT** or **4100... NOTES ON REPAIRING THREADS**

41 0 REPAIR TECHNIQUES, REPAIR STAGE 2

Repairs that are carried out by bonding and riveting without the use of a straightening bench.

Repair techniques

- Removing used part
  - **OPENING WELDED CONNECTIONS**
  - **OPENING BRAZED CONNECTIONS**
  - **OPENING RIVETED CONNECTION**
  - Opening bonded connection See **4100... OPENING ADHESIVE BONDS** or **4105800 RELEASING BONDED FOLDED SEAM CONNECTIONS**
  - **GRINDING ALUMINIUM COMPONENTS**
  - **GRINDING STEEL COMPONENTS**
- Sectional repairs
  - Reinforcement plate (bonded) See **4100... REINFORCEMENT PLATE (BONDED)** or **4100... REINFORCEMENT PLATE WITH STUD BOLT (BONDED)**
  - **METAL FILLER**
- Installing new part
  - Notes on consumables See **4100... OVERVIEW OF CONSUMABLES (ELECTRONIC PARTS CATALOGUE)**; **4100... NOTES ON CLEANING AGENT R1** or **4100... INFORMATION ON METAL FILLER**

    - Notes on adhesive See **4100... NOTES ON ADHESIVE K2**; **4100... NOTES ON ADHESIVE K3**; **4100... NOTES ON ADHESIVE K1**; **4100... NOTES ON ADHESIVE K4** or **4100... NOTES ON ADHESIVE K5**
    - **BONDING ON PAINTED SURFACES**
    - **BLIND RIVETS**
    - **PUNCH RIVETS**
    - Cavity sealing See **4100... INSTALLING A CAVITY ACOUSTIC BAFFLE (EXPANDED)** or **4100... INSTALLING A CAVITY ACOUSTIC BAFFLE (NOT EXPANDED)**
    - **EMC SCREWS**
- Miscellaneous
    - **REPAIRING PLASTIC PARTS**
    - **BONDING GLASS PANES**
    - **BLIND RIVET NUTS AND BOLTS**

41 0 REPAIR TECHNIQUES, REPAIR STAGE 3

Repairs that are carried out by bonding and riveting with the use of a straightening bench or welding.

Repair techniques

- Straightening structure
    - **STRAIGHTENING ALUMINIUM COMPONENTS ON THE STRUCTURE**
    - **STRAIGHTENING STEEL COMPONENTS ON THE STRUCTURE**
- Removing used part
    - **OPENING WELD JOINTS**
    - **OPENING BRAZED CONNECTIONS**
    - **OPENING RIVETED CONNECTIONS**
    - **OPENING BONDED CONNECTIONS**
    - **GRINDING ALUMINIUM COMPONENTS**
    - **GRINDING STEEL COMPONENTS**
- Sectional repairs
    - **WELDING IN REINFORCEMENT PLATE (STEEL PLATE)**
    - Sectional repair (steel) with repair element

      Sectional repair (aluminium) with repair element
- Installing new part
    - Welding aluminium components
    - **WELDING STEEL COMPONENTS**
    - **SPOT-WELD BONDING STEEL COMPONENTS**
    - **SOLDERING STEEL COMPONENTS**

- Notes on consumables See **4100... OVERVIEW OF CONSUMABLES (ELECTRONIC PARTS CATALOGUE)** or **4100... NOTES ON CLEANING AGENT R1**
- **NOTES ON ADHESIVE**
- Bonding aluminium on steel
- **BONDING STEEL ON STEEL**
- **BLIND RIVETS**
- **PUNCH RIVETS**
- Cavity sealing See **4100... INSTALLING A CAVITY ACOUSTIC BAFFLE (EXPANDED)** or **4100... INSTALLING A CAVITY ACOUSTIC BAFFLE (NOT EXPANDED)**
- **EMC SCREWS**

41 00 ... REPAIRING PLASTIC PARTS

1.0 General information

- Economic efficiency must always be checked prior to repair.
- Only the following painted **COMPONENTS IN THE OUTER SKIN AREA** are approved for repair:
  - Bumper trims (exception: E52)
  - Sill trims
  - Front side panels
  - Hardtop/roof
  - Convertible top compartment lid
  - Rear lid
- Prerequisite for professional repair:
  - Only minor deformations (without microcracks, usually visible in the paint)
  - Only minor damage, e.g. abrasions, cracks and holes up to 2.5 cm long
  - No damage (cracks) to the edge of the component!

CAUTION: The following are not approved for repair:

- **Fuel tanks, reservoirs for liquids/fluids (e.g. windscreen washer unit, brake fluid, coolant expansion tank, etc.)**
- **Headlight mountings (pedestrian protection)**

2.0 Shaping plastic parts

- Plastic parts can be reshaped using a hot-air blower.
- Microcracks can occur in the plastic if plastic parts are deformed. After the component is reshaped and then painted, the cracks may become visible again on the surface after a period of time.
- The component must be replaced if microcracks can be identified in the area of deformation.

3.0 Bonding plastic parts

IMPORTANT: Conform with safety precautions See 4100... SAFETY AT WORK or 4100... INFORMATION ON HAZARDS!

- **A plastics repair box is offered for cost-effective and time-value-compatible repairs.**
- **The plastics repair box contains the step-by-step instructions for repairing plastic parts.**

41 00 ... SAFETY AT WORK

1.1 Working with aluminium dust

- Wear a fine dust mask.
- E52 only: Use an explosion-proof extractor system
- Note national regulations.

First Aid

If product comes in contact with eyes, immediately flush with running water for about 10 -15 minutes. Seek the advice of eye specialist.

In the event of skin contact and where applicable an allergic skin reaction, clean the affected areas immediately with soap and water and then apply silicone-free skin cream. If necessary, consult a doctor.

If an adhesive product is swallowed, rinse mouth/parts of mouth thoroughly with running water. Drink 1-2 glasses of water. Do not induce vomiting. Consult a doctor.

After inhaling adhesive vapours ensure ample supply of fresh air. Stay calm. Keep air passages open. Consult a doctor.

00 SAFETY INFORMATION FOR WORKING ON VEHICLES WITH AUTOMATIC ENGINE START-STOP FUNCTION (MSA)

WARNING: If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.
An automatic engine start is possible.

Observe safety precautions when working on MSA vehicles

Before carrying out practical work on the engine, always ensure that the MSA functionality is deactivated so as to prevent automatic engine starting while work is being carried out in the engine compartment.

MSA function is deactivated by

When working with diagnosis tools

- Observe instructions in diagnosis tool
- Deactivate MSA by means of button (1) in passenger compartment
- Open seat belt buckle and driver's door

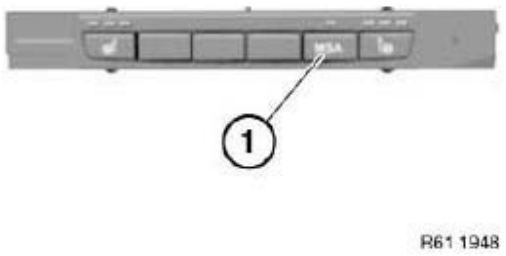


Fig. 58: Identifying MSA Switch
Courtesy of BMW OF NORTH AMERICA, INC.

- Open engine bonnet/hood and ensure that engine hood/bonnet contact is not in workshop mode
  - Workshop mode

    A = 10 mm

  - Basic setting (engine hood/bonnet open)

    B = 7 mm

  To make sure that the engine hood/bonnet contact is at the basic setting, if necessary press the hood/bonnet contact up to the limit position before starting work and slowly release.

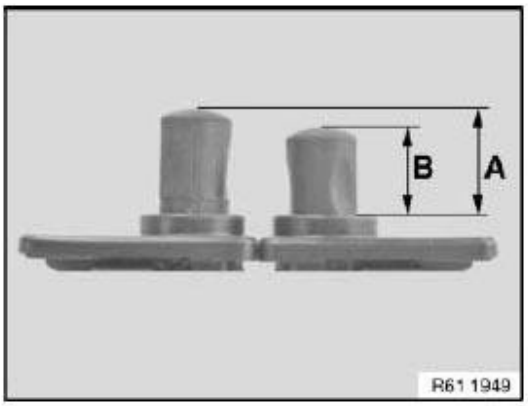


Fig. 59: Identifying Basic Setting For Engine Hood/Bonnet Basic
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... SEPARATING CUT DETERMINATION WITH A TEMPLATE

In the case of a partial replacement piece, a body component is cut at a point described in the repair instructions.

A template may be used for the exact position determination for the separating cut.

The template is made from the reinforcement plate and can be reused.

Carry over schematic diagram at the separation cut C-pillar to the relevant vehicle type.

Remove stud bolts (1).

Set bore holes Ø 4 mm at the positions of the removed stud bolts.

If applicable, place additional bore holes in the area of the edges.

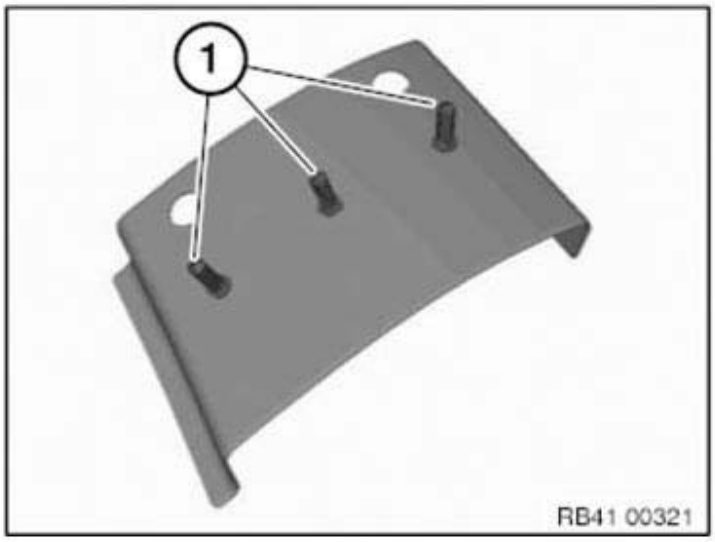


Fig. 60: Identifying Stud Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

Insert the template (1) into the new part (in direction of arrow) until it is flush (without gap).

Carry over the positions of the holes (2) to the new part.

Remove reinforcement plate again.

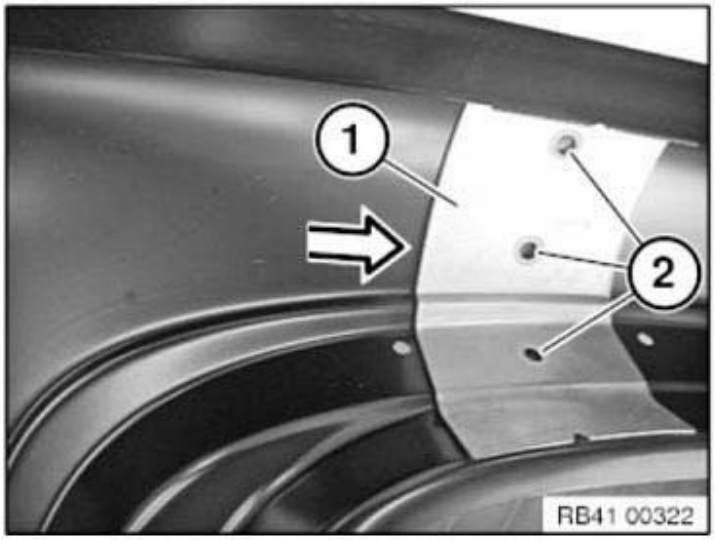


Fig. 61: Inserting Template Into New Part
Courtesy of BMW OF NORTH AMERICA, INC.

Connect marks (positions of holes) to the separating cut line (1).

Carry out the separating cut.

Tear and separate the separating cut on the vehicle according to the new part.

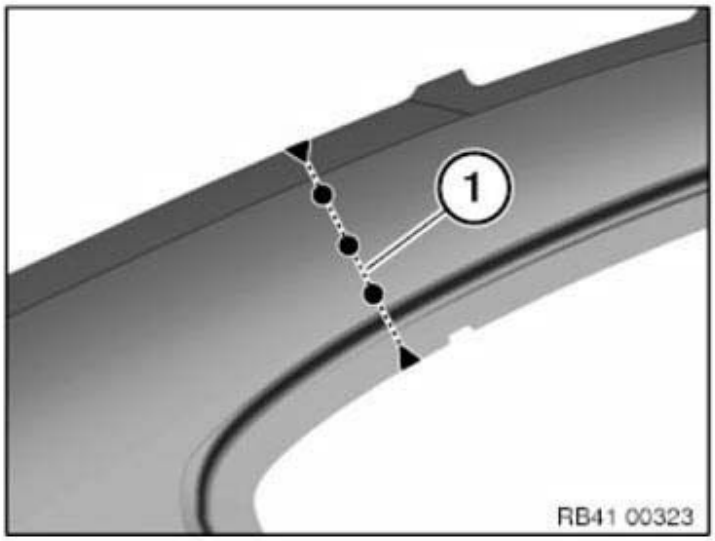


Fig. 62: Connecting Position Of Holes Through Separating Cut Line
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... SETTING BLIND RIVET NUTS AND BOLTS

- Studs welded as standard are always replaced by blind rivet bolts.

- Drill holes (0.2 mm larger than the outside diameter of the blind rivet nuts or blind rivet bolts).
- Blind rivet nuts and studs must have a special coating for anti-corrosion purposes

Use the blind rivet nuts and bolts supplied in the case of the manual riveting tool for steel only!

- It will no longer be possible to set a blind rivet nut if the drilled hole is too big. In this event, set a clip nut. This nut tightens itself automatically when screwed to the component.
- Insert blind rivet nuts or bolts and **TIGHTEN DOWN WITH RIVET TOOL** .
- Seal blind rivet nuts and blind rivet bolts with **SEALANTD1** (risk of corrosion).

41 00 ... SOLDERING STEEL COMPONENTS

IMPORTANT: Comply with the following topics from "Body, General":
Safety regulations See 4100... SAFETY AT WORK or 4100... INFORMATION ON HAZARDS.
Handling electrical/electronic equipment, airbags and restraint systems See 4100... HANDLING AIRBAGS AND RESTRAINT SYSTEMS or 4100... HANDLING ELECTRICAL AND ELECTRONIC EQUIPMENT.

1. General information

- For repair cases the following method will implemented:
  - Gas brazing
- *The MIG soldering procedure is not used in repairs for strength reasons. MIG soldered/brazed seams used in series production are replaced in repairs by MAG weld seams.*
- Brazed areas from vehicle production are bonded with the same method.

2. Work materials

- Tube pack and torch (gas torch)
- Brazing solder
- Gas bottles (oxygen and acetylene)
- Welding goggles

3. Preparation

- Remove the paint and zinc coating in an area of approx. 30 mm around the seam to be soldered.

4. Implementation

- Execute brazed seam without overheating the solder and with low heat dissipation. If necessary, use heat protecting paste.

5. Subsequent treatment of brazed joints

- Remove burnt residual zinc completely. Align and grind visible connection faces.
- Remove burnt paint with a stainless steel wire brush.

6. Notes on melting/tinning

Only applicable within the European Union!

European used-car regulations prohibit the use of tin containing lead in motor vehicles introduced after 01.07.2003!

Even out unevenness smaller than 2 mm with filler according to painting handbook

If an exceptional unevenness is larger than 2 mm, use **METAL FILLER** .

Only perform in visible areas of the outer skin and on the carrier support.

All areas which have covers on the vehicle are not to be processed.

41 00 ... SPOT-WELD BONDING STEEL PARTS

IMPORTANT: Comply with the following topics from "Body, General":
Safety regulations See 4100... SAFETY AT WORK or 4100... INFORMATION ON HAZARDS.
Handling electrical/electronic equipment, airbags and restraint systems See 4100... HANDLING AIRBAGS AND RESTRAINT SYSTEMS or 4100... HANDLING ELECTRICAL AND ELECTRONIC EQUIPMENT.
Welding steel parts.

- The spot-weld bonding process is used starting from the E65 to increase vehicle rigidity. In partial bodywork areas, a 1-component adhesive is applied to the spot flanges and this is followed by resistance pressure spot welding. The adhesive is hardened only after the paint drying process (at approx. 180 °C).
- In the case of repairs, adhesive is not applied to the spot flanges. The number of welding spots is doubled as a substitute for the omitted adhesive.
- The following processes are used as a substitute for spot-weld bonding:
  - MAG welding (**M** etal **A** ctive **G** as welding)
  - Resistance pressure spot welding (referred to in the following and in the repair instructions as spot welding).
- Adhesive is not applied between the spot flanges on new parts in the case of 2- or multi-sheet joints. Areas which cannot be reached by the spot-welding tongs can be joined by MAG spot welding. The number of welding spots is doubled as a substitute for the omitted adhesive.

  Exceptions (e.g. E65) are described in the relevant repair instructions. Apply welding spots to existing welding spots on new part. This is necessary because the adhesive between the spot flanges of the new part acts as an insulator.

-

CAUTION: Extract smoke and fumes during welding work.

-

41 00 ... STAMPING VEHICLE IDENTIFICATION NUMBER (NEEDLE STAMPING UNIT)

Read and comply with **GENERAL INFORMATION** .

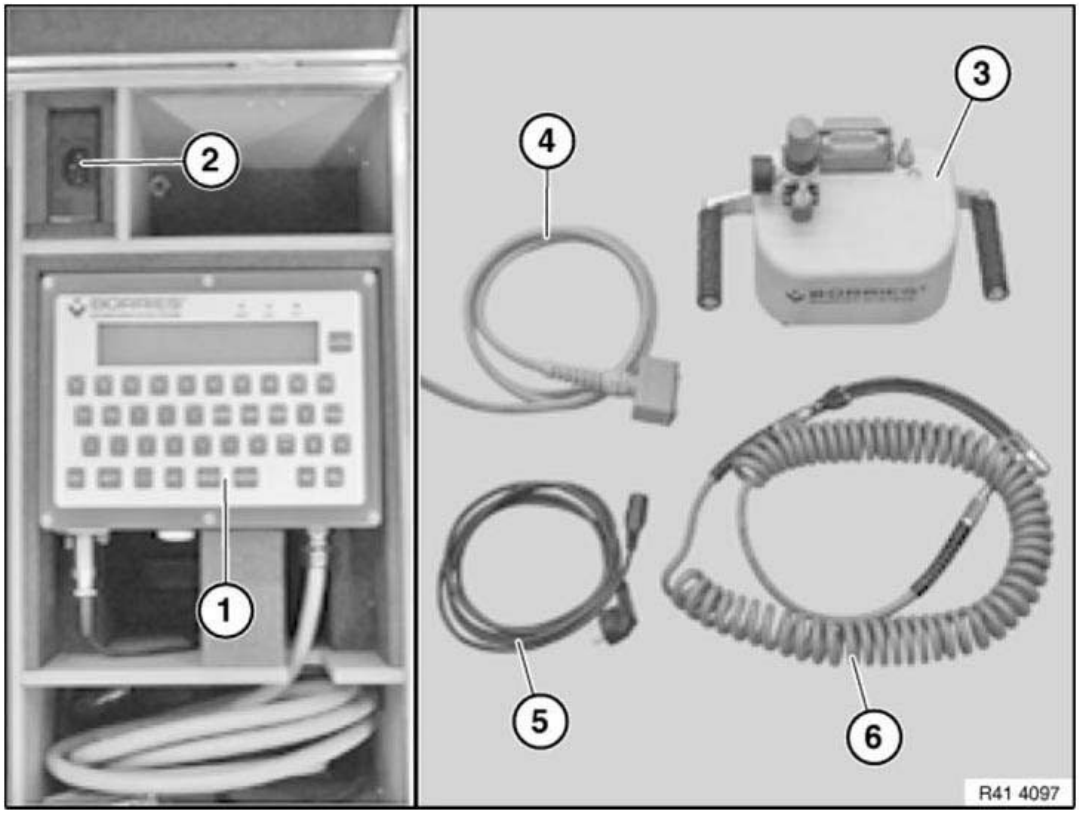


Fig. 63: Identifying Display, Mains Adapter, Needle Stamping Unit, Connecting Cable And Power Cable
Courtesy of BMW OF NORTH AMERICA, INC.

- (1) Display
- (2) Mains adapter
- (3) Needle stamping unit
- (4) Connecting cable
- (5) Power cable
- (6) Compressed-air hose

NOTE: A compressed-air connection is also required.

- **Operating pressure approx. 4 bar**
- **Use only dried, oil-free air**

Procedure for additional vehicle identification number

- Cross through original vehicle identification number.

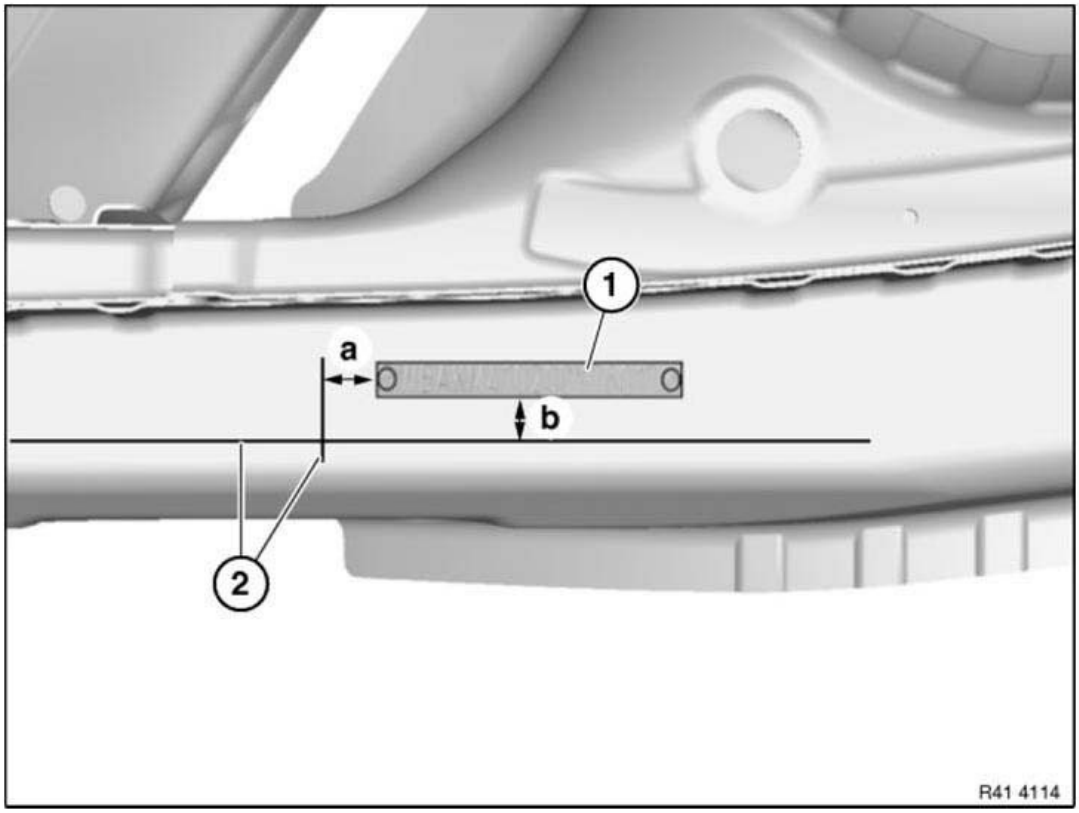


Fig. 64: Identifying Original Vehicle Identification Number And Position Lines
Courtesy of BMW OF NORTH AMERICA, INC.

(1) = original vehicle identification number.

Mark position lines (2) in accordance with specified dimensions/measurements.

Measurement a = 12 mm

Measurement b = 10 mm

Display input:

- Select Layout 5 with arrow button.
- Enter vehicle identification number with F10.
- Press "ENTER" button.

NOTE: With Layout 5 the vehicle identification number (line 1) is crossed through.



Fig. 65: Identifying Display
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Perform stamping operation with position lines in advance on a test sheet.

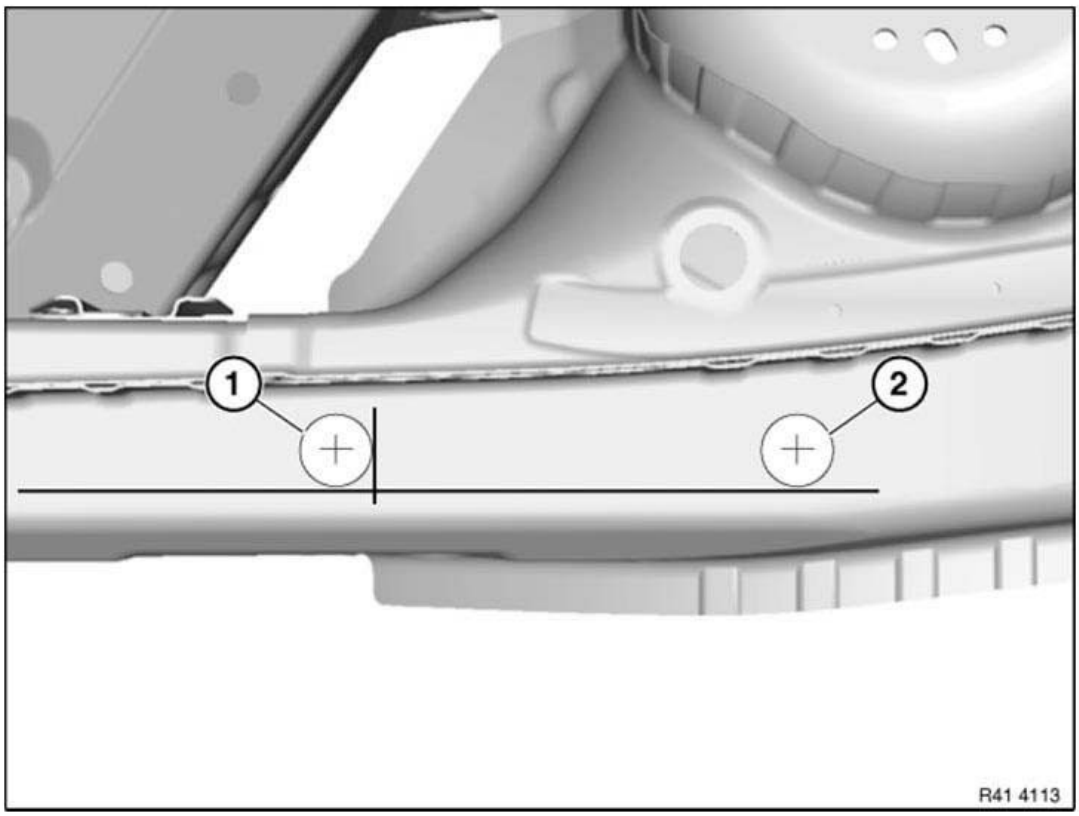


Fig. 66: Adjusting Needle Stamping Unit Suction Feet Positions
Courtesy of BMW OF NORTH AMERICA, INC.

Move suction feet of needle stamping unit to positions (1) and (2) shown.

- First adjust position (1)
- Then adjust position (2)

Press pushbutton (1) for vacuum pressure.

Then start stamping operation with pushbutton (2).

After completing the stamping operation, switch off vacuum and set unit down.

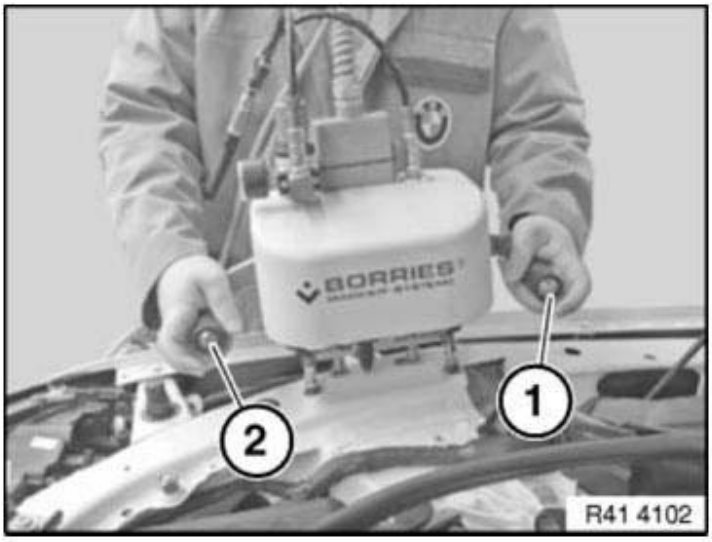


Fig. 67: Stamping Vehicle Identification Number
Courtesy of BMW OF NORTH AMERICA, INC.

Stamping second vehicle identification number

NOTE: The second vehicle identification number is stamped at the height of the spring strut dome.

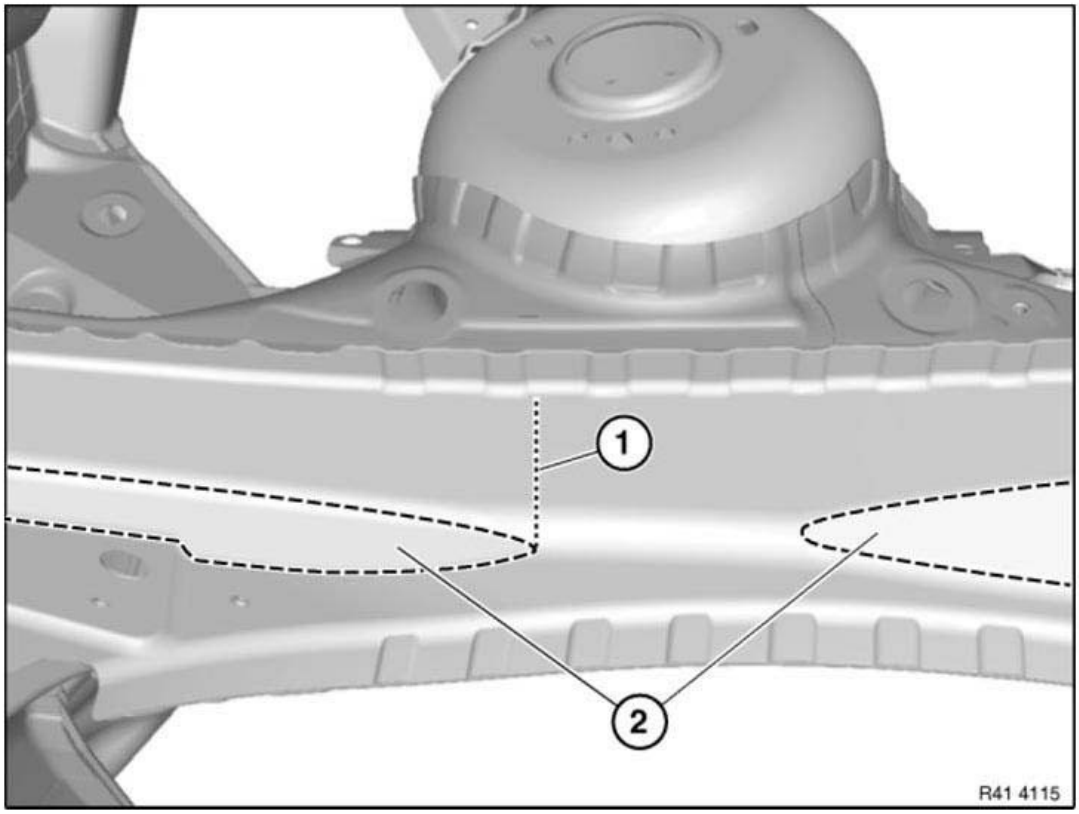


Fig. 68: Marking Help Line In Accordance With Reference Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

Mark help line (1) in accordance with reference surfaces (2).

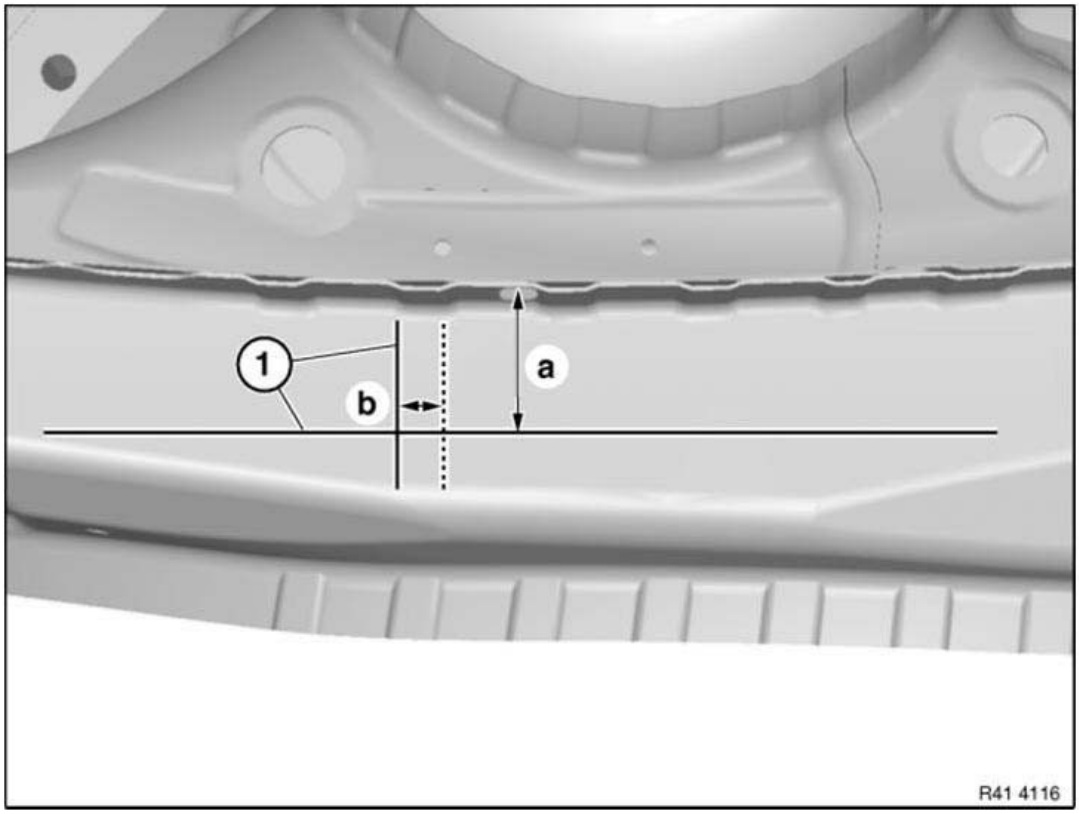


Fig. 69: Marking Position Lines In Accordance With Specified Dimensions/Measurements
Courtesy of BMW OF NORTH AMERICA, INC.

Mark position lines (1) in accordance with specified dimensions/measurements.

Measurement a = 45 mm

Measurement b = 15 mm

Display input:

- Select Layout 1 with arrow button.
- Press "ENTER" button.

NOTE: With Layout 1 the already entered vehicle identification number is stamped in line 1.



Fig. 70: Identifying Display
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Perform stamping operation with position lines in advance on a test sheet.

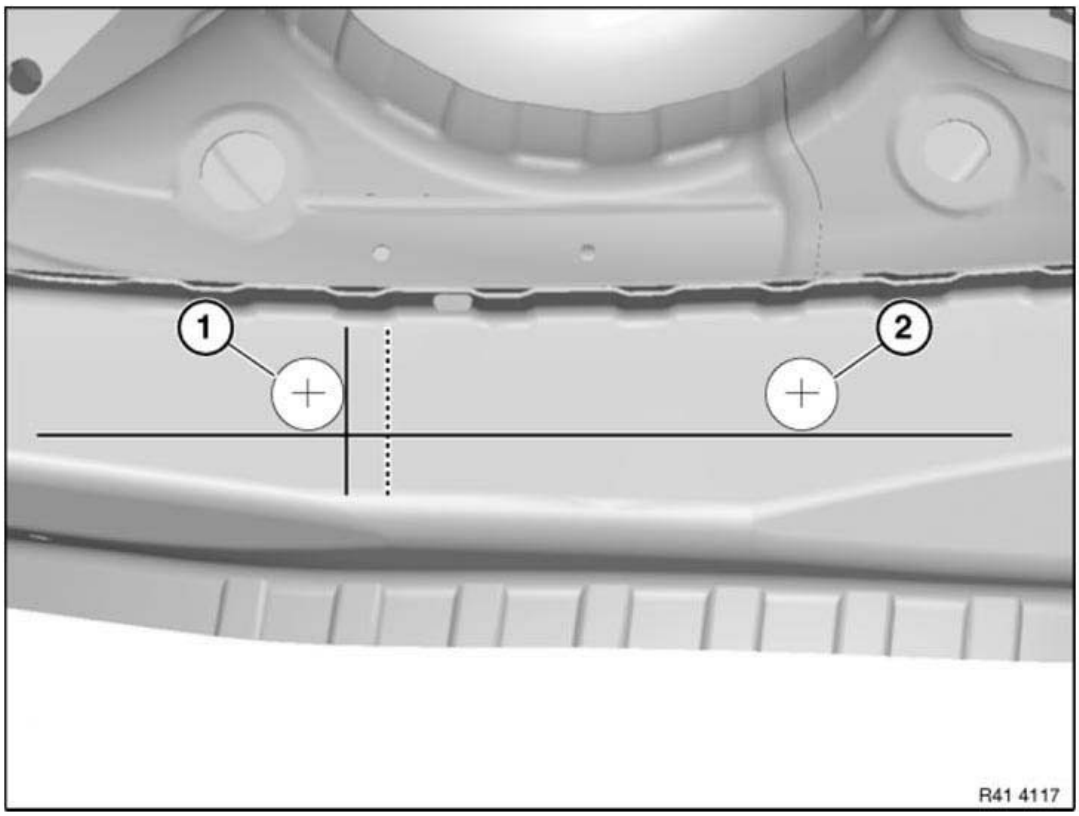


Fig. 71: Adjusting Needle Stamping Unit Suction Feet Positions
Courtesy of BMW OF NORTH AMERICA, INC.

Move suction feet of needle stamping unit to positions (1) and (2) shown.

- First adjust position (1)
- Then adjust position (2)

Press pushbutton (1) for vacuum pressure.

Then start stamping operation with pushbutton (2).

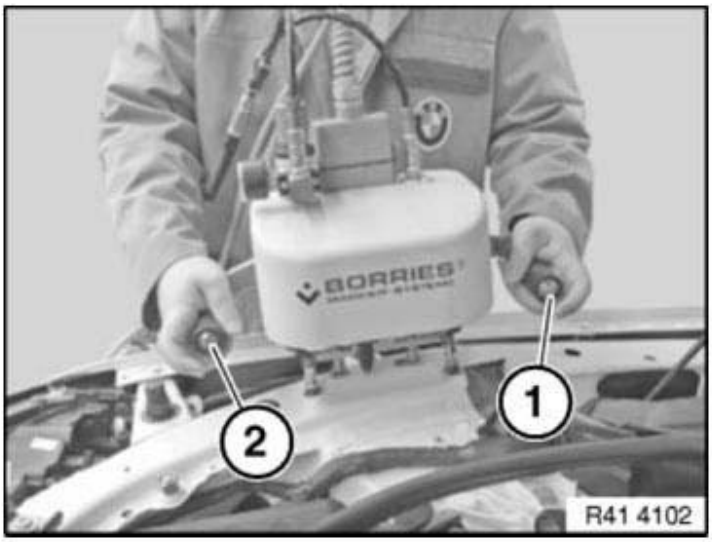


Fig. 72: Stamping Vehicle Identification Number
Courtesy of BMW OF NORTH AMERICA, INC.

Following layout functions are available:

LAYOUT FUNCTIONS REFERENCE CHART

Layout selection	Vehicle identification number
Layout 1	In line 1
Layout 2	In line 2
Layout 3	Turned through 180° in line 1
Layout 4	Turned through 180° in line 2
Layout 5	Cross through in line 1
Layout 6	Cross through in line 2

41 00 ... STRAIGHTENING ALUMINIUM COMPONENTS IN STRUCTURE

- **Reshaping or heating extruded sections and cast parts is not permitted!**

  Failure to comply with this requirement would have the following results:

In the case of reshaping, weld seams (E52) or glued connections (E60, E61, E63, E64) tear in the surrounding area.

In the case of reshaping, the material loses up to 40 % of its original strength.

In the case of heating, the material loses up to 40 % of its original strength.

The adhesive is destroyed at temperatures =120 °C (E60, E61, E63, E64).

Extruded sections and cast parts which show visible or measurable signs of deformation must be replaced.

Perform the check for deformation with the aid of the straightening system.

For optical testing, strip adjoining components in cases of doubt.

Extruded sections are used in the E52 as engine supports, door pillars, side members, etc.

Extruded sections are used in the E60, E61, E63, E64 as engine supports.

Cast parts are used in the E60, E61, E63, E64, E70, E71 as spring supports.

- Reshaping of extruded sections and cast parts may only be used to achieve optimum joining of connecting faces (e.g. when bulkhead is damaged). Reshaped parts must be replaced.
- Repairs which affect the mounting points of mechanical assemblies and chassis components must be carried out on the straightening bench. Use the vehicle-specific straightening attachment set or vehicle-specific data sheet.

  Straightening attachment supports and data sheets are also available for the top section, e.g.: door pillars, convertible top mounts, cowl, rear lid hinges, etc.

- Check windshield and rear window apertures for curvature by inserting the original glass.
- Take the gap dimensions for doors, engine hood and rear lid from the vehicle-specific gap dimension diagram.
- Exceptions on the E60, E61, E63, E64:

  Carrier support and bulkhead may be straightened if they do not have any cracks, sharp-edged damage or holes. After repair work, check parts again for cracks.

  Examine adjoining adhesive flanges for peeling off. If necessary, seal and preserve with **SEALING COMPOUND** .

  Observe the frame alignment control dimensions for the carrier support.

  Any repairs to the bulkhead if cracked outside the approved repair scopes are only permitted after consultation with and approval by BMW. Should you have any questions, please contact the country-specific Hotline.

41 00 ... STRAIGHTENING ALUMINIUM PARTS ON OUTER SKIN

1.0 Recommended tools

- Use only those tools specially intended for aluminium repairs.
- Do not use any tools that have already been used for steel repairs (contact corrosion).
- Do not use any sharp-edged tools (notch effect).

2.0 Straightening outer shell

- "Cold" straightening: Press dents out from their centre and smooth in an outwards direction with gentle taps.

  In the case of small, soft dents (hail and parking damage), this is also possible without damaging the paintwork. This work requires a special tool and a trained worker.

- "Hot" straightening: Heat dents in their central point only with a gas flame or hot air blower. Then quench the material with a wet cloth. Heating can only be detected by warpage of the material. The colour of the paint does not change.
- In the case of damaged areas which are only accessible from one side, stud welding can be used. The aluminium stud welded on in the centre of the damaged area is beaten out with a hammer until the dent is eliminated. The stud is then ground off.
- Avoid notching and cracking.
- Avoid hardening and overstretching.
- Avoid heating and overheating the outer shell over large areas.

41 00 ... STRAIGHTENING STEEL COMPONENTS IN THE STRUCTURE

- High-strength and super-high-strength steel plates as a rule cannot be reshaped. Reshaping only serves as a preparatory measure to replacing the component in order to achieve optimal joining of the connection points.
- Bearing body components such as e.g. engine supports, door pillars, side members etc. with deformations which can no longer be returned to their original shape by "cold straightening" must be replaced.

  Heating bearing body components for better reshaping is not permitted!

  Failure to comply with this requirement would result in a loss of original strength of up to 40 %.

- **The body must be anchored as follows for reshaping:**

  If using vehicle-specific/universal straightening attachment sets (Carbench/Celette/Car-O-Liner), it is necessary to secure the body **additionally** with 4 retaining clips to the spot flange of the entrance or to the 4 jacking points. The spot flange (if available) is to be preferred.

  If using universal electronic or mechanical straightening systems (Car-O-liner/Celette), it is necessary to secure the body with 4 retaining clips to the spot flange of the entrance or to the 4 jacking points. The

spot flange (if available) is to be preferred. In **addition** anchor at least 2 points with the securing set.

Failure to comply with these instructions will result in damage to the body during reshaping in non-damaged areas. Vehicle-specific straightening attachments and universal mounts may be damaged.

- Repairs affecting the mounting points of assemblies and chassis/suspension components must be carried out on the straightening bench with the matching straightening attachment set or specification sheet for the vehicle.

  Straightening attachments and specification sheets are also available for the top section, e.g.: door pillars, convertible top mounts, cowl, rear lid hinges, etc.

- Check windshield and rear window apertures for curvature by inserting the original glass.
- Take the gap dimensions for doors, engine hood and rear lid from the vehicle-specific gap dimension diagram.

41 00 ... STRAIGHTENING STEEL PARTS ON OUTER SKIN

1.0 Recommended tools

Only use those tools designed for steel repairs.

2.0 Straightening outer shell

- "Cold" straightening: Press dents out from their centre and smooth in an inwards direction with gentle taps.

  In the case of small, soft dents (hail and parking damage), this is also possible without damaging the paintwork. This work requires a special tool and a trained worker.

- "Hot" straightening: Heat dents in their central point only with a gas flame until bright red hot. Then quench the material with a wet cloth.
- Stud welding can be used in the case of damage where access is only possible from one side. Weld on the stud in the middle of the damaged area. The steel pin or shim is driven out using a hammer until the depression is removed. The stud, pin or shim is then ground or twisted off.
- Avoid cracking.
- Avoid hardening and overstretching.
- Avoid heating and overheating the outer shell over large areas.
- If, after steel parts have been straightened, the surface shows no dents larger than 2 mm, these dents may be touched up with knifing filler.

  Dents larger than 2 mm must be treated with filling solder.

NOTE: Only applicable within the European Union!

European used-car regulations prohibit the use of tin containing lead in motor vehicles introduced after 01.07.2003!

- For safety vehicles, follow the special notes and information in the repair instructions.

41 00 ... USE OF MATERIALS IN OUTER SKIN

The following illustration is a schematic representation of all the body variants.

Apply this illustration to the relevant vehicle.

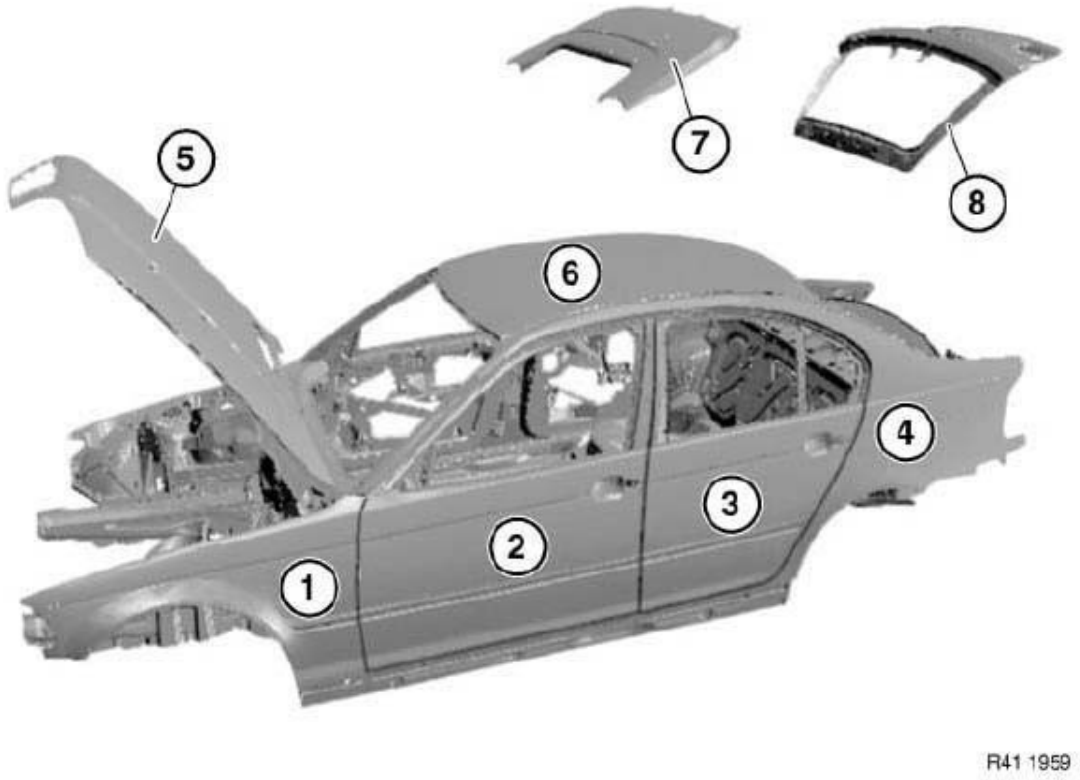


Fig. 73: Identifying Body Components
Courtesy of BMW OF NORTH AMERICA, INC.

All components not listed in the table below are composed of established sheet steel qualities.

BODY COMPONENT MATERIAL REFERENCE CHART

Component	Vehicle	Material
(1) Side panel, front	E52 (Z8)	Aluminium
	E60, E61	Aluminium
	E63, E64	Plastic (thermoplastic)
	E65, E66:	Aluminium
	E70, E71, E92, E93	Plastic (thermoplastic)

	E89 (Z4)	Aluminium
(2) Front door	E36/C (M3)	Aluminium or steel
	E36/2 (M3)	Aluminium or steel
	E52 (Z8)	Aluminium
	E63, E64	Aluminium
(4) Side panel, rear	E52 (Z8)	Aluminium
(5) Engine compartment lid	E38 (750i)	Aluminium or steel
(5) Engine compartment lid	E46/C (M3)	Aluminium
	E46/2 (M3)	Aluminium
	E52 (Z8)	Aluminium
	E60, E61, E63, E64	Aluminium
	E65, E66, E70, E71	Aluminium
	E85 (Z4)	Aluminium
	E92 (M3)	Aluminium
	E89 (Z4)	Aluminium
(6) Hardtop/roof	E36/C	Aluminium
	E36/7 (Z3)	Plastic (glass fibre/epoxy resin)
	E46/C	Aluminium
	E46/2 (M3 CSL)	Plastic (CFK)
	E52 (Z8)	Plastic (PU)
	E85 (Z4)	Plastic (SMC)
	E63 (M6)	Plastic (CFK)
	E89 (Z4)	Aluminium
(7) Soft top compartment lid	E46/C	Magnesium
	E64 Plastic	(SMC)
(8) Rear lid	E46/2 (M3 CSL)	Plastic (SMC)
	E52 (Z8)	Aluminium
	E63, E64	Plastic (SMC)

41 00 ... VEHICLE IDENTIFICATION NUMBER, GENERAL

In the event of repair 2 procedures are used, depending on the vehicle. Refer to the vehicle-specific repair instructions for the correct procedure.

1. General notes for stamped vehicle identification numbers

The vehicle identification number is stamped with a special tool. There are different special tool numbers and stamping procedures for the various vehicles. Refer to the relevant repair instructions.

In repair work, the vehicle identification number is always stamped into a replacement vehicle identification number surface. The replacement surface is usually situated under the original VIN surface.

The IGEF number (bodyshell number) is omitted when the wheel arch is replaced.

In the event of component or body replacement by the BMW garages/workshops, clearly delimit the vehicle identification number at front and rear by stamping a + in place of the BMW badge.

If a VIN is stamped into the replacement surface in addition to the original VIN (e.g. if the original VIN has been tampered with), the following applies: The original VIN must be crossed out. To do so, stamp the letter I from the punch digits lengthways through the original VIN.

IMPORTANT: Do not use an angle grinder in conjunction with a cutting disk!

The protective film used as standard is omitted after the VIN has been manually stamped in. Paint area in accordance with BMW Painting Handbook. Ensure that layer thicknesses are small.

Observe national/country-specific regulations.

2. General notes for embossed vehicle identification numbers

This procedure is used on all newly launching model series from model year 09/2008 (exception X1).

For the repair new parts with an embossed vehicle identification number can as a rule be ordered from the BMW Parts Department. If this is not possible, observe country-specific regulations.

The IGEF number (bodyshell number) is omitted when the wheel arch is replaced.

If a VIN is embossed into the replacement surface in addition to the original VIN (e.g. if the original VIN has been tampered with), the following applies: The vehicle-specific repair instructions describe the procedure.

The protective film used as standard is omitted after the VIN has been embossed. Paint area in accordance with BMW Painting Handbook. Ensure that layer thicknesses are small.

Observe national/country-specific regulations.

41 00 ... WELDING IN REINFORCEMENT PLATE (STEEL PLATE)

In the case of a partial replacement piece, a body component is cut at a point described in the repair instructions.

A reinforcement plate is welded in to ensure sufficient strength.

Follow notes for welding steel parts.

NOTE: The following illustrations serve as general illustrations of reinforcement plate repair work. They are applicable to all cutting repairs.

Mark component in accordance with distance A and cut.

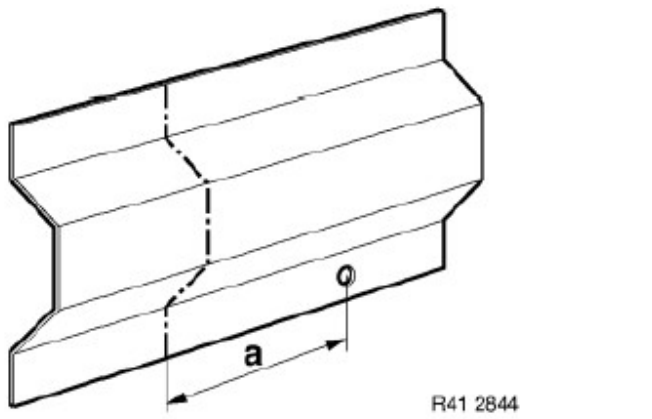


Fig. 74: Identifying Component Cutting Distance
Courtesy of BMW OF NORTH AMERICA, INC.

Cut new part (1) in accordance with cut and if necessary adjust to fit with straightening attachment or universal mount.

Installation:

Adhere to a gap at severance cut of approx. one to max. two material thicknesses in order to ensure welding with the reinforcement plate and to facilitate a more tolerant fit.

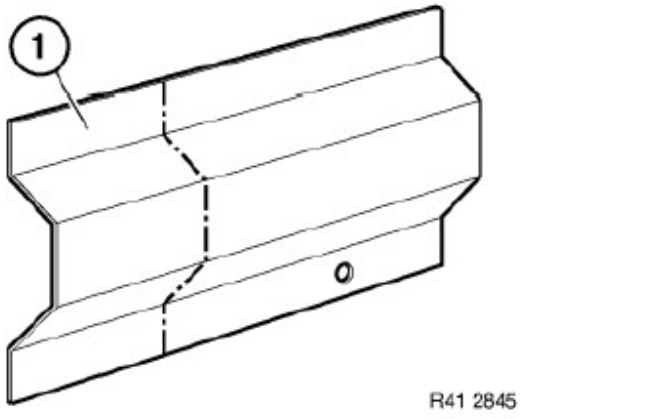


Fig. 75: Identifying Cut Position Of Part
Courtesy of BMW OF NORTH AMERICA, INC.

Clean inner and outer sides of connecting areas (1) on new part and (2) on body.

Coat inner sides with welding primer.

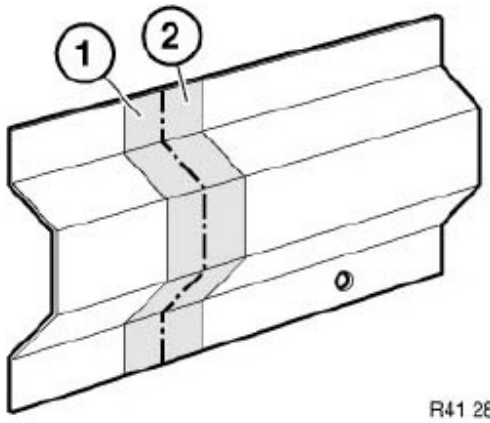


Fig. 76: Identifying Inner And Outer Sides Of Connecting Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Drill holes (1) and (2) at distance of 25 mm to each other.

Hole diameter approx. 8 mm.

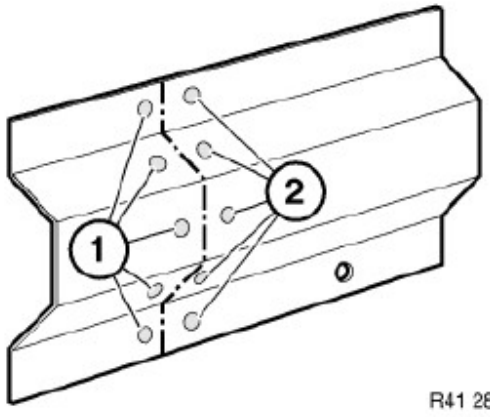


Fig. 77: Identifying Drill Holes
Courtesy of BMW OF NORTH AMERICA, INC.

Make reinforcement plate (1) from trim of new part.

If necessary, make further reinforcement plates.

Length of reinforcement plates is min. 40 mm.

Coat reinforcement plates (1) and (2) on both sides with welding primer.

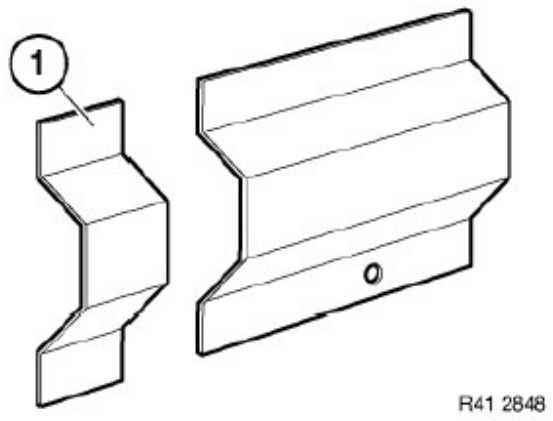


Fig. 78: Identifying Reinforcement Plates
Courtesy of BMW OF NORTH AMERICA, INC.

Push reinforcement plate (1) into component on body up to half way and plug-weld (3).

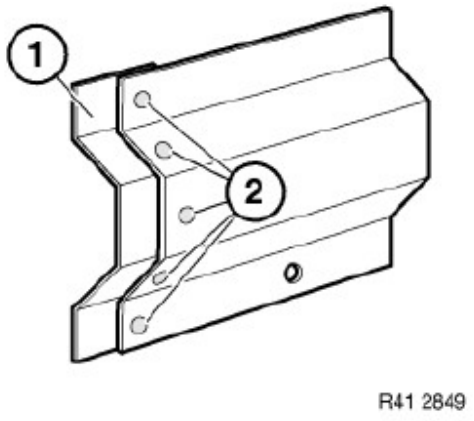


Fig. 79: Pushing Reinforcement Plate Into Body Component
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, adjust new part (1) to fit with straightening attachment or universal mount and plug-weld (2).

MAG weld joint (3).

Grind and clean weld seam and plug weld spots.

Only visible areas of the outer skin and worn areas on the support carrier must be tinned.

All areas which have covers on the vehicle are not to be tinned.

NOTE: Only applicable within the European Union!

European used-car regulations prohibit the use of tin containing lead in motor vehicles introduced after

01.07.2003!

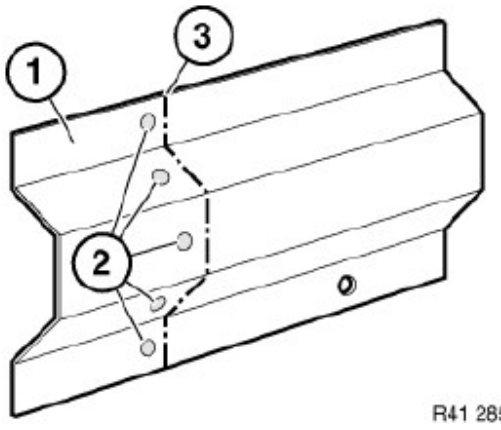


Fig. 80: Identifying Plug-Weld And MAG Weld Joint
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... WELDING STEEL COMPONENTS

IMPORTANT: Comply with the following topics from "Body, General":
Safety regulations See 4100... SAFETY AT WORK or 4100... SAFETY AT WORK.
Handling electrical/electronic equipment, airbags and restraint systems See 4100... HANDLING AIRBAGS AND RESTRAINT SYSTEMS or 4100... HANDLING ELECTRICAL AND ELECTRONIC EQUIPMENT.

1. General information

- The following procedures are used for repairs:

- MAG welding (**M** etal **A** ctive **G** as welding)
- Resistance pressure spot welding (referred to in the following and in the repair instructions as spot welding).

- Take the number and location of weld spots and MAG weld seams from the separated part. Replace areas inaccessible to spot-welding tongs with MAG plug/spot welds at the same distance. Diameter of bores for plug/spot welds 8 mm.
- In the case of emissions extraction, observe a minimum distance of 30 cm for MAG welding during the welding process. Otherwise the inert gas would be drawn off.
- Follow the equipment manufacturer's instructions for use.

2. Work materials

- MAG welding:

- Steel welding apparatus (see **WORKSHOP EQUIPMENT**).

- Steel welding wire - G3SI1 (SG2) or alternatively G4SI1 (SG3)
- Welding mask
- Gas bottle containing inert gas (82 % argon, 18 % CO 2)

- Resistance pressure spot welding:

- Spot-welding apparatus (see **WORKSHOP EQUIPMENT**).
- Protective goggles

3. Preparations for MAG and spot-welding

- Remove the paint coating in an area of approx. 30 mm around the weld seam or spot.
  - The zinc coating underneath must be removed during the MAG welding operation.
  - It is not necessary to remove the zinc coating underneath during spot-welding.
- Remove the paint coating on the reverse side of the weld seam or spot.
  - Contaminants will otherwise enter the weld pool via the root of the weld seam.
  - An insufficient electron flow prevents an optimum spot-weld joint.
- Coat all metal overlaps and weld spot flanges with welding primer.
- To determine the optimum electrode contact force for spot-welding, carry out spot-weld shear tests on sample metal sheets.
- In order to keep the electron flow short during MAG welding on the body, you must if possible attach the ground terminal directly to the component to be welded.

4. Welding

- During MAG welding, the weld gap must be kept as small as possible. The larger the weld gap, the lower will be the strength of the joint.
- During spot-welding, the metal flanges to be joined must be placed as close together as possible without gaps.

The larger the gap, the lower will be the strength of the joint.

Minimum gap between welding spots 25 mm.

5. Subsequent treatment of weld joints

- When grinding a weld seam, do not grind thin the base material next to the seam.
- After joining, clean all weld seams and spots with a stainless steel wire brush.
- Remove burnt paint with a stainless steel wire brush.
- All weld joints sealed off with body sealing compound in original state must be primed and sealed off again thoroughly after repairing. Replace damaged or removed anti-drumming layers.

41 00 ... WORKING WITH 2-COMPONENT PU CAVITY FOAM

Sourcing reference for cavity foam.

Properties of cavity foam:

- 2-component PU foam, solvent-free.
- Excellent flow capacity, enabling complete sealing of cavities.
- Good strength, preventing slipping in cavities.
- Low water absorption, preventing corrosion.
- Ideal for use as insulating and sealing compound

Information on dangers/hazards

- Avoid eye and skin contact.

  Wear protective goggles, solvent-resistant protective gloves and protective clothing.

- Do not inhale.

  Apply in well ventilated rooms only.

- **WARNING: Application time after mixing: within 8 minutes!**

  Completely empty open can after use.

- Remaining amounts which are not used can cause the can to explode on account of a chemical reaction (buildup of heat)!

  Alternatively, cool the can containing the non-removed remaining amount for several hours in cold water.

- Do not eat, drink or smoke during this operation.
- Keep heat and ignition sources well away.
- Read the manufacturer's information on hazards/dangers (printed on the can) prior to application.

Application instructions

- Use by date on can.

  Do not use the spray can after the Use by date on the can has expired. After the Use by date the properties of the cavity foam will no longer meet the requirements of the BMW Group.

- Cavity sealing of repair area possible after an air drying time of 1 hour.
- Backing surface must be

  clean and free from

dust,

grease,

oil and stripping agent.

- Application temperature at least 15 °C. Optimally 20 °C.
- Remove fresh, non-hardened PU foam with adhesive cleaner 208.

  Hardened PU foam can only be removed by mechanical means (machine).

- Excess, hardened PU foam can be disposed of as residual waste.

  Cans which are not entirely empty and unused whose Use by date has expired are classed as hazardous waste.

  Observe country-specific waste-disposal regulations.

- Observe the manufacturer's application instructions (printed on the can).
- **IMPORTANT: Foam expands many times over as it sets (change in volume).**
- Setting takes approx. 30 minutes. Mechanical processing (e.g. drilling, cutting, etc.) is then possible.

41 00 ... WORKSHOP EQUIPMENT

Minimum workshop equipment requirements in order to ensure the correct and expert performance of body repairs:

The tools listed below **must be used.**

All repair stages:

WORKSHOP EQUIPMENT - ALL REPAIR STAGES

	Steel		Aluminium	
Tool(1)	**Structure**	**Outer skin**	**Structure**	**Outer skin**
Vaupel pressure cup spray gun for cavity preservation	x	x	x	x
(1) Sourcing reference **BMW Workshop Equipment Catalogue**				

Repair stage 1:

WORKSHOP EQUIPMENT - REPAIR STAGE 1

	Steel		Aluminium	
Tool(1)	**Structure**	**Outer skin**	**Structure**	**Outer skin**
Body tool trolley	x	x		x

Aluminium bodywork tool assortment			x	x
(1) Sourcing reference **BMW Workshop Equipment Catalogue**				

Repair stage 2:

WORKSHOP EQUIPMENT - REPAIR STAGE 2

	Steel		**Aluminium**	
Tool(1)	**Structure**	**Outer skin**	**Structure**	**Outer skin**
Body tool trolley	x	x		
Bodywork saw	x	x		
Belt sander	x	x	x	x
Single-handed grinder	x	x	x	x
Welding spot remover	x	x		
Universal riveting tool	x	x	x	
Punch riveting tool	x	x	x	
CARTRIDGE GUN for adhesives	x	x		x
(1) Sourcing reference **BMW Workshop Equipment Catalogue**				

Repair stage 3:

WORKSHOP EQUIPMENT - REPAIR STAGE 3

	Steel		**Aluminium**	
Tool(1)	**Structure**	**Outer skin**	**Structure**	**Outer skin**
Body tool trolley	x	x		
Aluminium bodywork tool assortment			x	x
Bodywork saw	x	x		
Belt sander	x	x	x	x
Single-handed grinder	x	x	x	x
Welding spot remover	x	x		
Drill	x		x	
MAG welding apparatus	x	x		
MIG welding apparatus			x (E52 only)	
Spot welding apparatus	x	x		
Gas welder		x		
Straightening system	x		x	
Stud welding apparatus	x		x	
Flame coating set			x	
Universal riveting tool			x	
CARTRIDGE GUN for adhesives	x	x	x	
(1) Sourcing reference BMW Workshop Equipment Catalogue				

IMPORTANT: In vehicles from model year 2001, higher-tensile and high-tensile steels are used in certain areas.
It is essential to check whether the spot-welding apparatus used conforms to the technical requirements of the currently recommended welding sets. Should you have any questions, please contact the country-specific Hotline.
The use of technically obsolete equipment may have serious consequences for the structure of the vehicle (e.g. in the event of a crash). In the end, this can result in safety and product liability risks which can not be calculated.

Use and restrictions:

Definition of recommendation:

All currently recommended spot welding sets comply according to the latest information with the requirements relating to reliable welding of today's and future BMW Group vehicles. A spot welding unit will loose its recommendation as soon as tests with materials and material combinations designated for future use in BMW Group vehicles return negative results. All previous application before the withdrawal of the recommendation shall remain unaffected.

BMW DEVICE DESIGNATION CHART

	Device designation	**Manufacturer**
Group 1 Devices currently no longer recommended	CR500	Car-O-Liner
	Spot9000	Tecna
	ATL 400V	Wielander&Schill
Group 2 Devices currently recommended	MIDIspot QSVM9000	Celette(1)
	MIDIspot QSVM9000	Elmatech(1)
	CR600 QSM	Car-O-Liner(1)
	MIDIspot QSVM12000T	Car-O-Liner
	Multispot MI-100 Control	Elektron
	MIDIspot QSVM12000T	Elmatech
(1) no longer produced		

Application options and restrictions of above devices.

BMW DEVICE DESIGNATION CHART - APPLICATION AND RESTRICTIONS

Vehicle	**Group 1**	**Group 2**
All convertibles from E64	x Except A-pillar, B-pillar, sill	x
All model series from E70	x Except B-pillar	x

NOTE: Status October 2009

All vehicles not mentioned can be repaired with the equipment of Group 1 and Group 2.

4111 SUPPORT MEMBERS

41 00 ... PROCEDURE FOR FOLDING HARDTOP AFTER AN ACCIDENT

The hardtop may be under tension after the vehicle has incurred damage following an accident. Moving the hardtop by hydraulic means may result in irreparable damage. For this reason, the hardtop may only be moved manually until the damaged has been repaired.

IMPORTANT: It is not possible to check the correct operation of the folding roof on the damaged vehicle.

Different procedures are required, depending on the degree of damage which the vehicle has incurred. The repair instructions for emergency operation See **5437290 HARDTOP EMERGENCY OPENING** or **5437295 EMERGENCY CLOSING HARDTOP** describe only the complete sequences for manually opening and closing the hardtop.

When removing the roof module and/or the rear module, it is possible to move the hardtop manually into the necessary intermediate positions in each case.

WARNING: Risk of injury due to the heavy weight of the hardtop!
Since the hydraulic system may have to be depressurized during manual movement of the hardtop, there is an increased risk of injury by trapping. Secure the hardtop permanently and adequately against unintentional movement.

After body repairs to the vehicle

All the hardtop components screwed/bolted to the body are precisely screwed/bolted to the vehicle at the factory by means of gauges. This affects above all the base plates and consoles of the roof and rear modules. To minimize extensive adjustment work after a body repair as much as possible, only remove those components which are screwed/bolted to a damaged body part.

- Gauge the base plates *only* after a body repair to the cowl panel.

41 11 141 REPLACING COVER FOR LEFT OR RIGHT FRAME SIDE MEMBER (PARTIAL REPLACEMENT BETWEEN A- AND B-PILLARS)

Read contents of **BODY, GENERAL** .

Remove or cover those vehicle components in the repair area which are susceptible to heat or dust.

Use only approved **SPOT-WELDING APPARATUS** for repairs.

Following new body parts are required:

- (1) Outer rocker panel

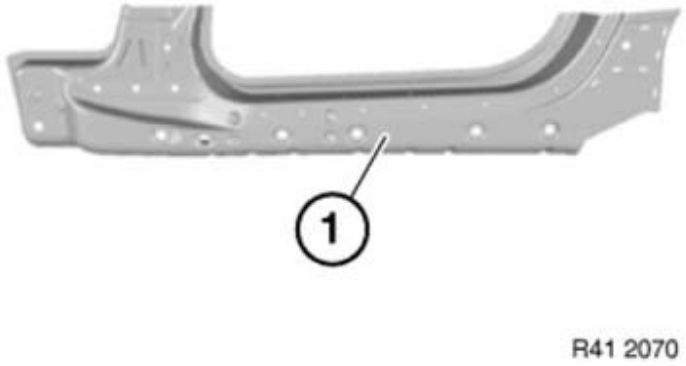


Fig. 81: Identifying Outer Rocker Panel
Courtesy of BMW OF NORTH AMERICA, INC.

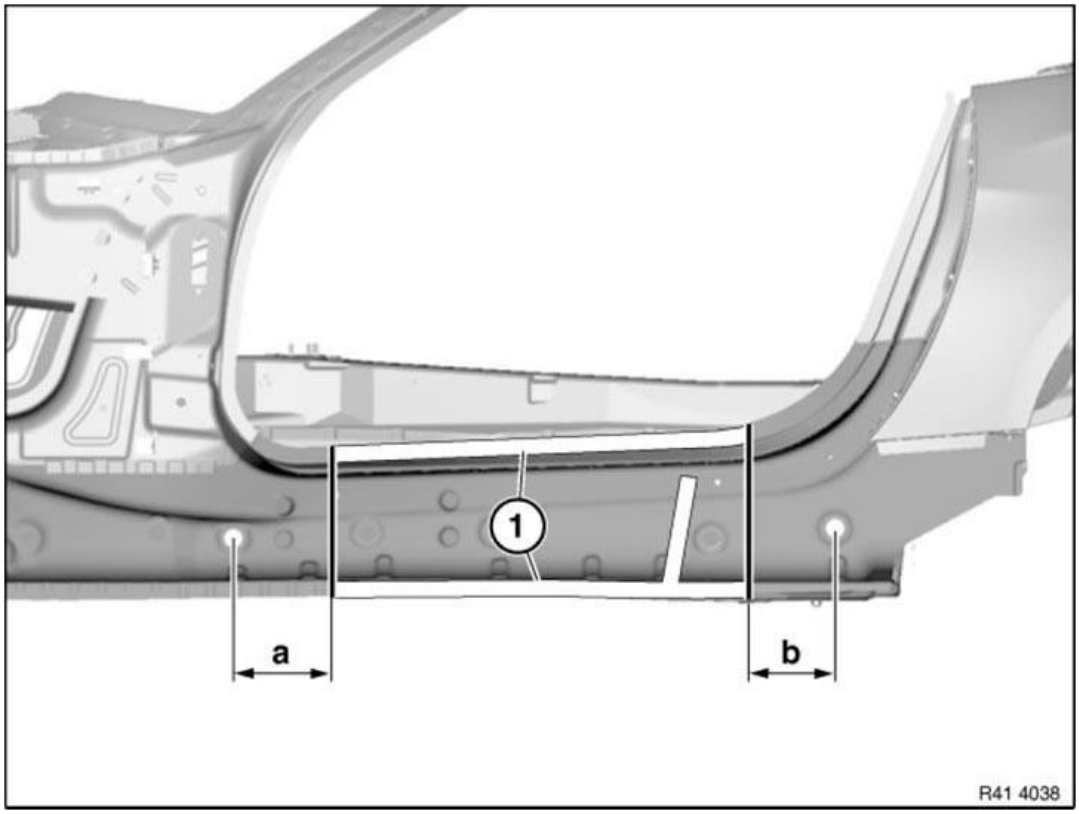


Fig. 82: Identifying Weld Joints Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cuts in accordance with specified measurements and cut.

Distance a = approx. 150 mm behind bore dia. 25 mm.

Distance b = approx. 130 mm before bore dia. 25 mm.

Release weld joints in areas (1) and remove outer rocker panel.

Installation:

Weld in **REINFORCING PANELS** at all severance cuts.

41 11 155 REPLACING COVER FOR LEFT OR RIGHT SIDE MEMBER (PARTIAL REPLACEMENT, DOOR PILLAR)

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on this vehicle. Observe specific procedure See **4100... SPOT-WELD BONDING STEEL PARTS** or **4100... OPENING ADHESIVE BONDS**.

Place vehicle on straightening bench.

Necessary preliminary tasks

- Remove **FRONT SIDE PANEL**
- Remove rear side panel See **4135111 REPLACING REAR RIGHT SIDE PANEL** or **4135101 REPLACING REAR LEFT SIDE PANEL**
- **REMOVE DOOR**

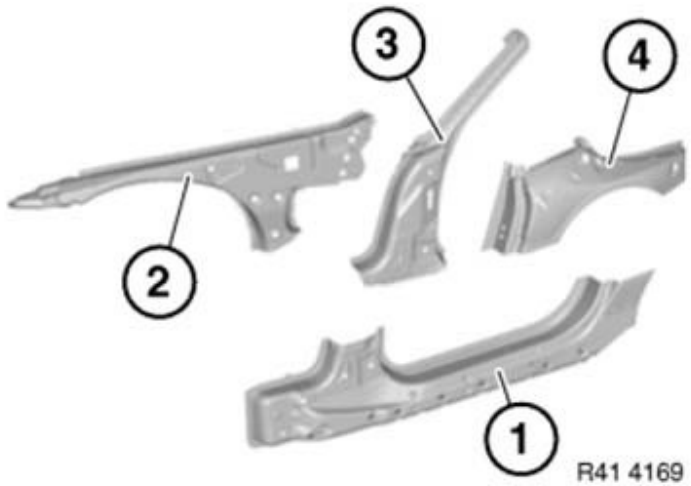


Fig. 83: Identifying Entrance, Carrier Support, Wheel Arch, A-Pillar And B-Pillar
Courtesy of BMW OF NORTH AMERICA, INC.

- (1) Entrance, outer
- (2) Carrier support, wheel arch
- (3) A-pillar, outer

- (4) B-pillar, outer

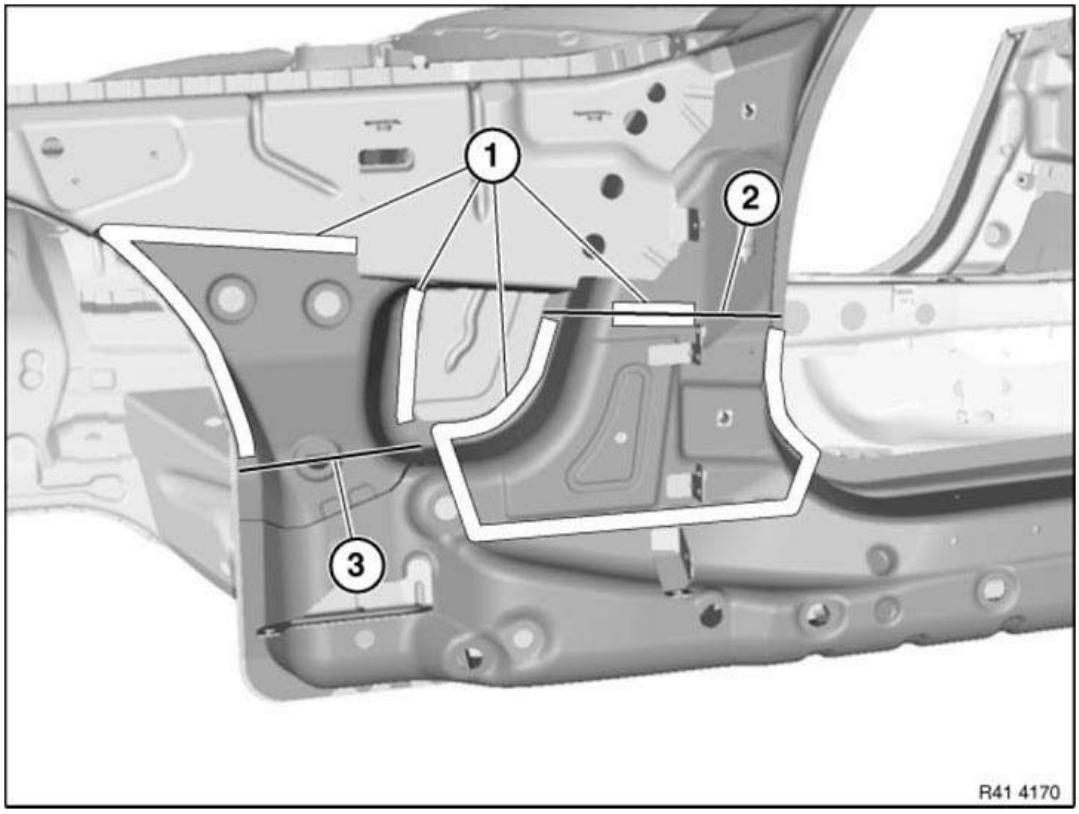


Fig. 84: Identifying Weld Joints And Spot-Welded Adhesive Joints Areas With Cuts
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints and spot-welded adhesive joints in areas (1).

Mark severance cuts (2) and (3) and cut.

IMPORTANT: Cut only outer plates.

Installation:

No reinforcing panel is welded in at severance cut (2).

Execute severance cut (2) so that there is an overlap to new entrance part.

Open weld joints in areas (1).

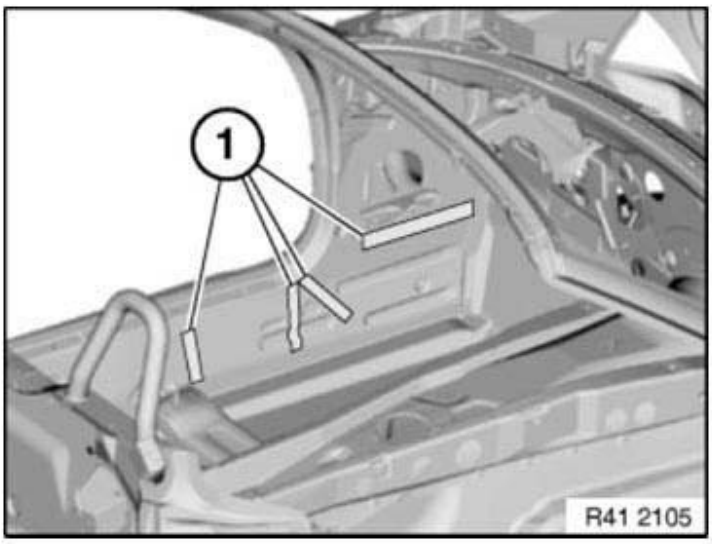


Fig. 85: Identifying Weld Joint Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) and cut.

Open weld joints and spot-welded adhesive joints in area (2).

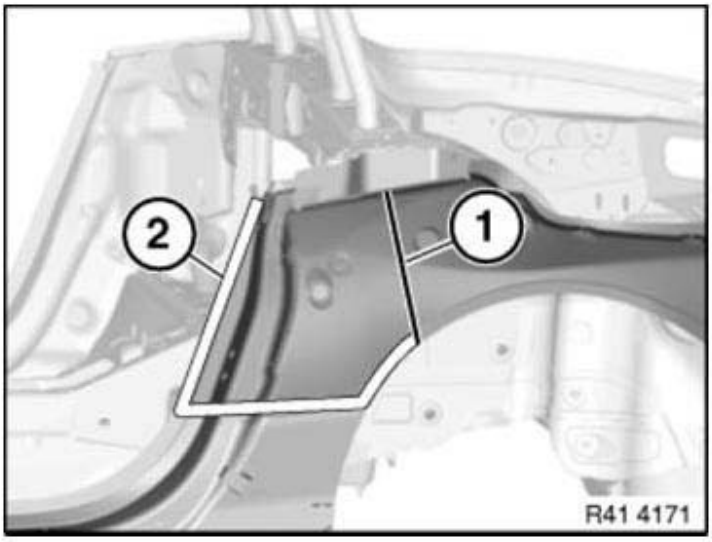


Fig. 86: Identifying Weld Joints And Spot-Welded Adhesive Joints Areas With Cuts
Courtesy of BMW OF NORTH AMERICA, INC.

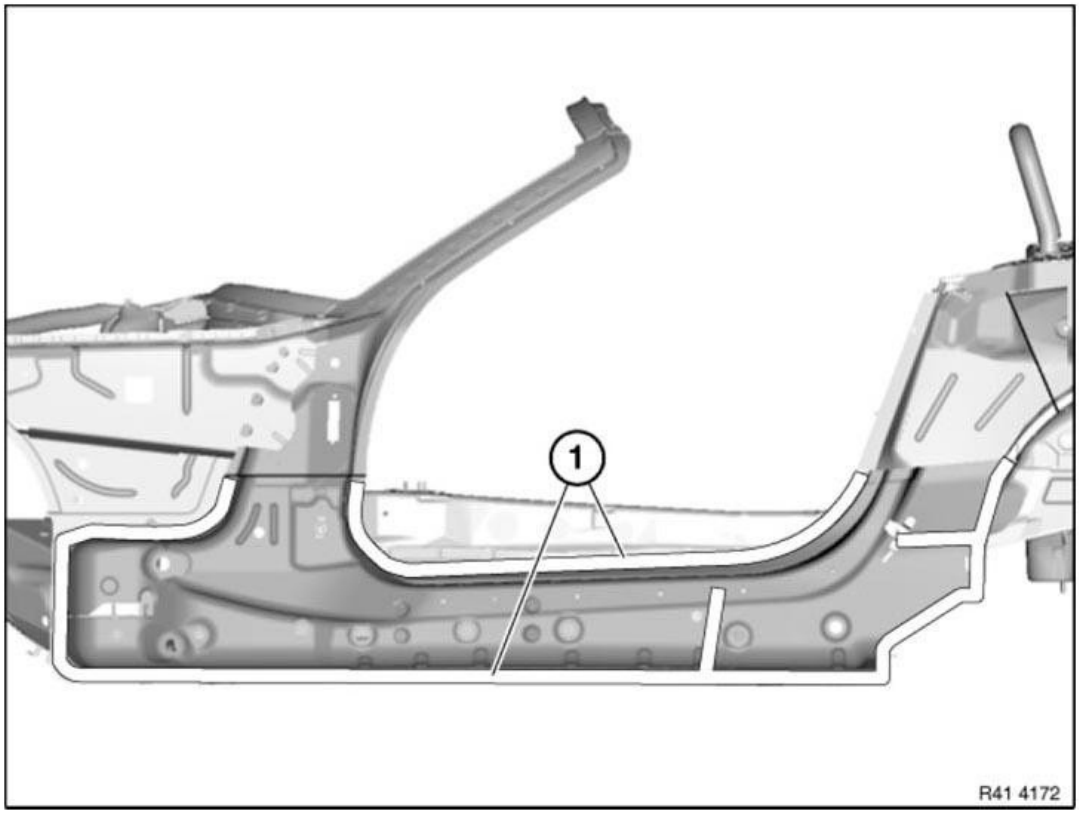


Fig. 87: Identifying Weld Joints And Spot-Welded Adhesive Joints Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints and spot-welded adhesive joints in area (1).

Installation:

Slide **outer entrance** underneath remaining A-pillar.

Adhere to specific procedure with regard to spot-welded adhesive joints.

When welding the new part, make sure that the adhesive joints of adjoining components are not damaged by the application of heat.

41 21 512 REPLACING DOOR PILLAR INNER SECTION (DOOR PILLAR REMOVED)

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on the E85. Observe specific procedure See **4100... SPOT-WELD BONDING STEEL PARTS** or **4100... OPENING ADHESIVE BONDS**.

Place vehicle on straightening bench.

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

- (1) Support, A-pillar

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N1	4
CleanerR1	1
Sealing compoundD1	

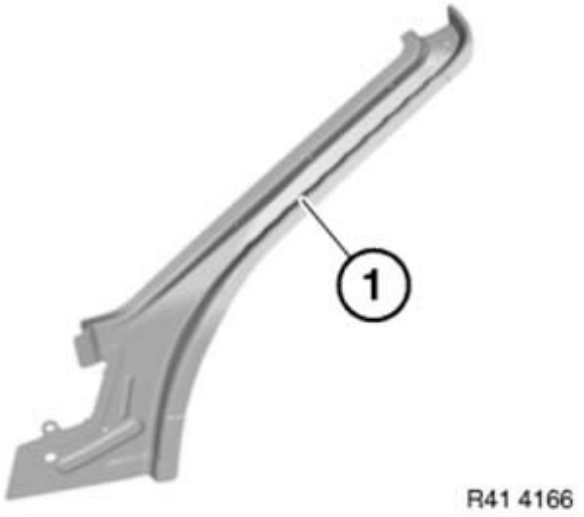


Fig. 88: Identifying Support And A-Pillar
Courtesy of BMW OF NORTH AMERICA, INC.

View from inside.

Open weld joints in areas (1).

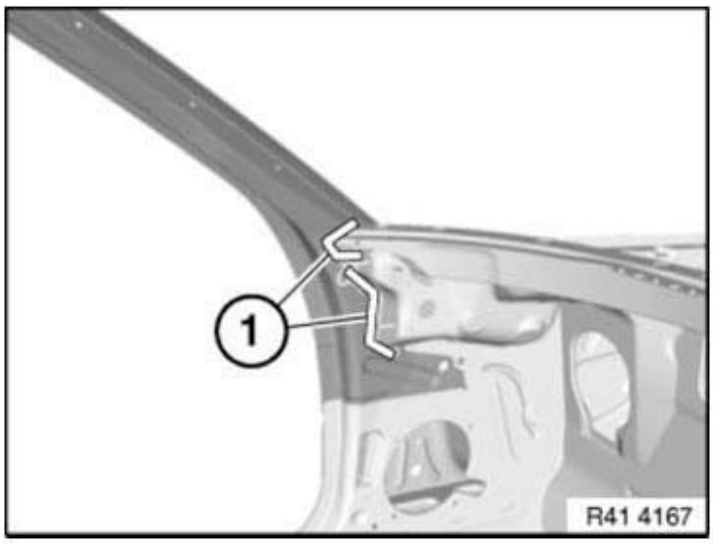


Fig. 89: Identifying Weld Joint Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

Open spot-weld bonded joints in area (2)

Installation:

Adjust new part to fit with straightening attachment or universal mount.

Apply adhesive K5a in area (2). Rivet new part with 4 blind rivets N1. Before applying adhesive, clean bonding surfaces with adhesive cleaner.

Observe fitting of door pillar when selecting the rivet positions.

When welding the new part, make sure that the adhesive joints of adjoining components are not damaged by the application of heat.

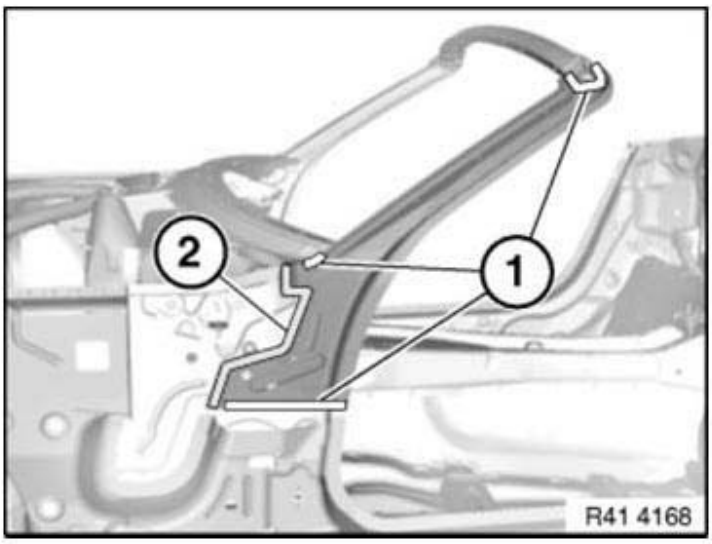


Fig. 90: Identifying Weld Joint Areas And Spot Weld Bonded Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 048 REPLACING FRONT LEFT ENGINE SUPPORT (WITHOUT WHEEL ARCH) (PARTIAL REPLACEMENT BEFORE BULKHEAD)

Read contents of **BODY, GENERAL** .

Use only approved **SPOT-WELDING APPARATUS** for repairs.

Place vehicle on straightening bench.

- (1) Engine support, front

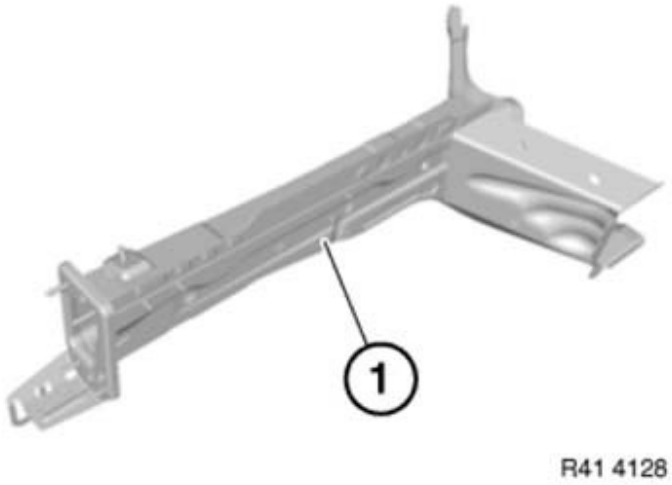


Fig. 91: Identifying Engine Support
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in area (1).

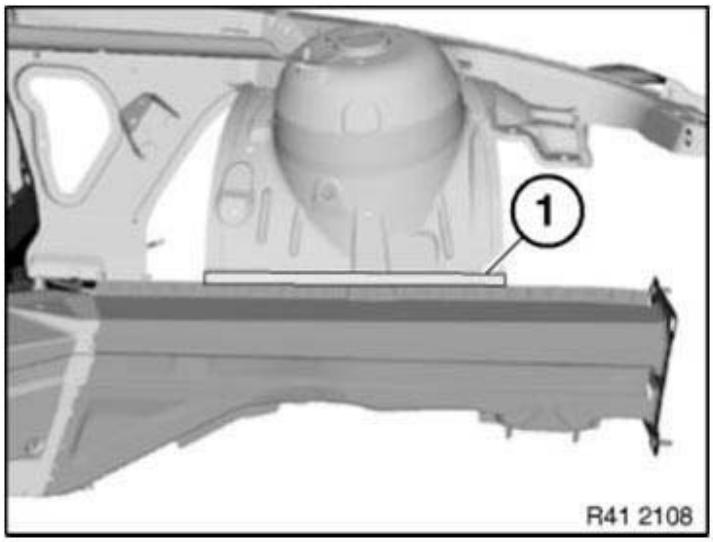


Fig. 92: Identifying Weld Joint Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

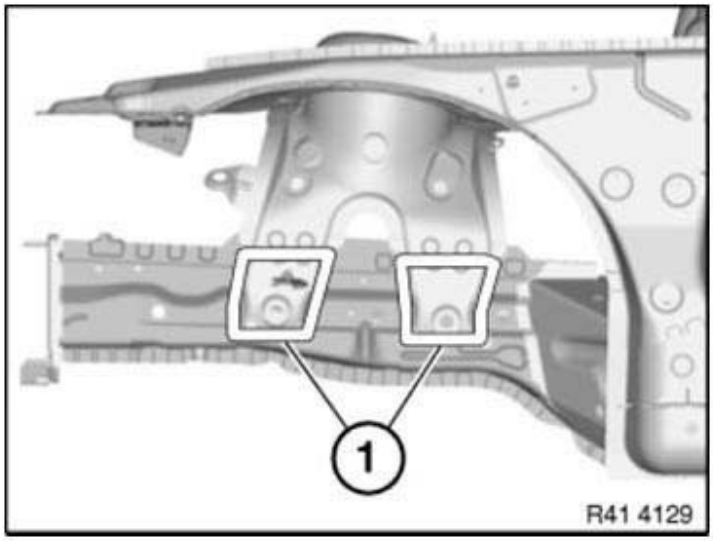


Fig. 93: Identifying Weld Joint Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) and cut.

IMPORTANT: Cut outer metal sheet only.

Installation information:

- **WELD IN REINFORCEMENT PLATE AT** at severance cut.

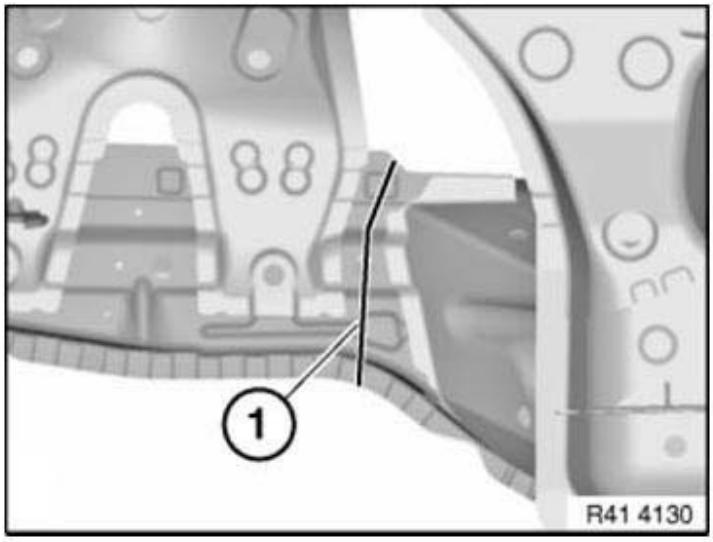


Fig. 94: Marking Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in area (1).

Remove engine support.

Installation:

Adjust new part to fit with straightening attachment or universal mount.

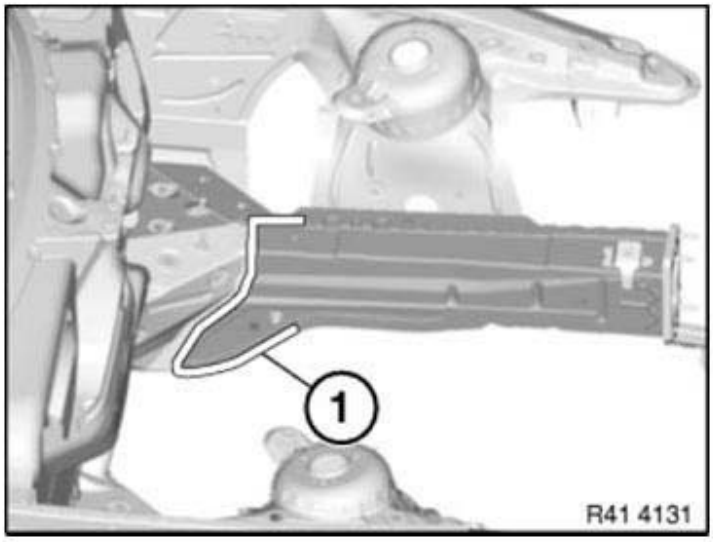


Fig. 95: Identifying Weld Joint Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 015 REPLACING FRONT LEFT OR RIGHT ENGINE BRACKET WITH WHEEL ARCH

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on this vehicle. Observe specific **PROCEDURE** .

Use only approved **SPOT-WELDING APPARATUS** for repairs.

Place vehicle on straightening bench.

- (2) Wheel arch, front
- (1) Carrier support, wheel arch

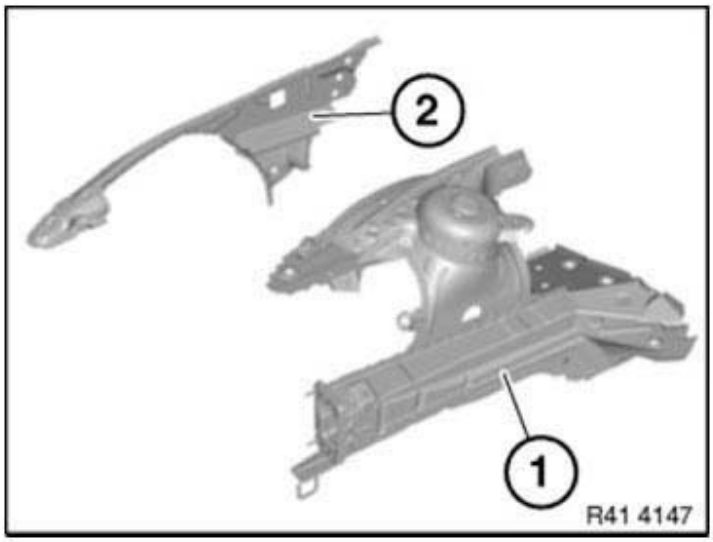


Fig. 96: Identifying Wheel Arch (Front) And Carrier Support
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) and cut.

IMPORTANT: Cut outer metal sheet only.

Open weld joints in area (2).

Installation information:

- Sheet section is needed again to seal bulkhead carrier support.
- **WELD IN REINFORCEMENT PLATE** at severance cut.

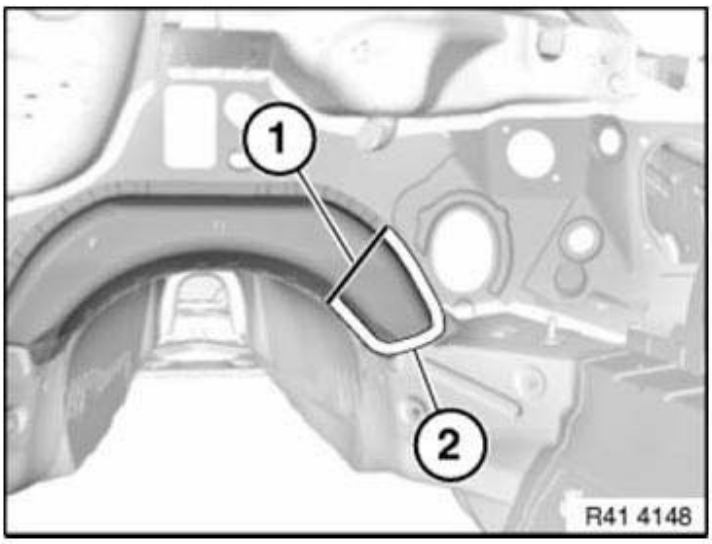


Fig. 97: Identifying Weld Joint Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

Open spot-weld bonded joints in area (2)

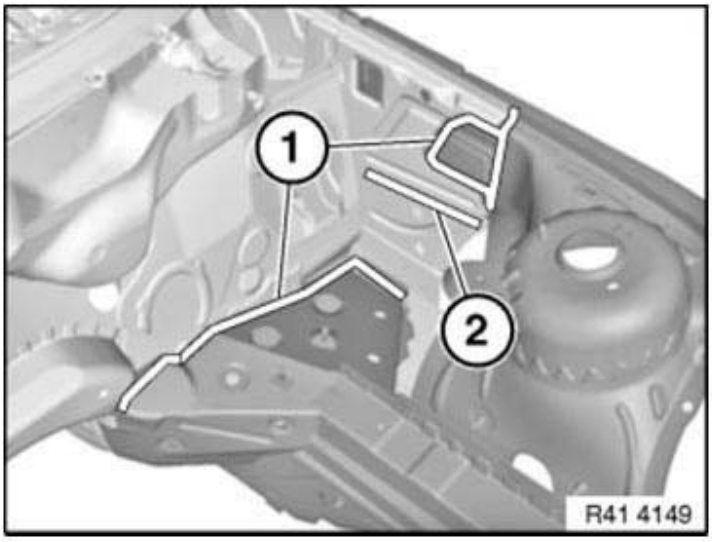


Fig. 98: Identifying Weld Joints Areas And Spot-Weld Bonded Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

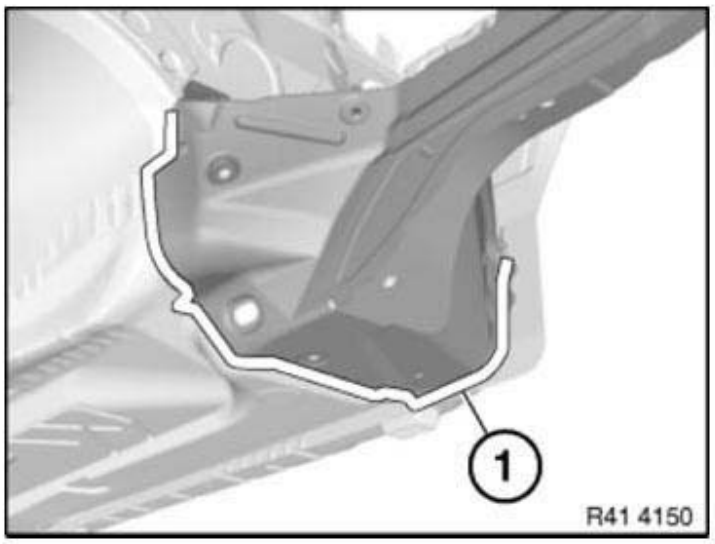


Fig. 99: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

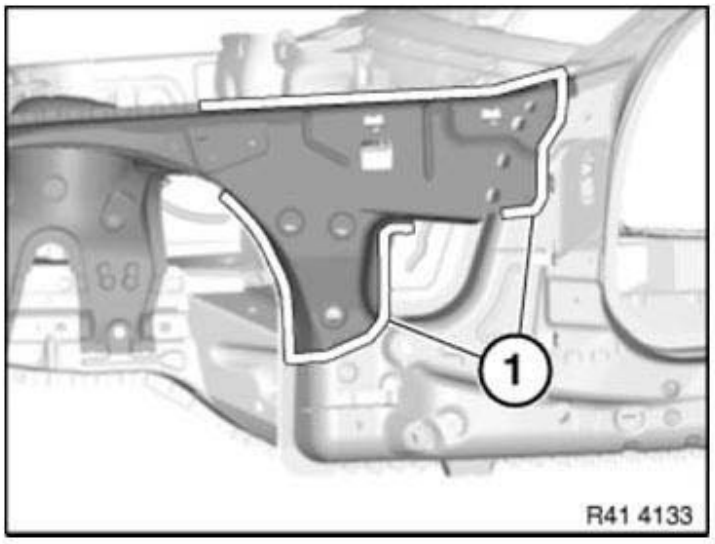


Fig. 100: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

Remove wheel arch with carrier support.

Installation:

Adjust new part to fit with straightening attachment or universal mount.

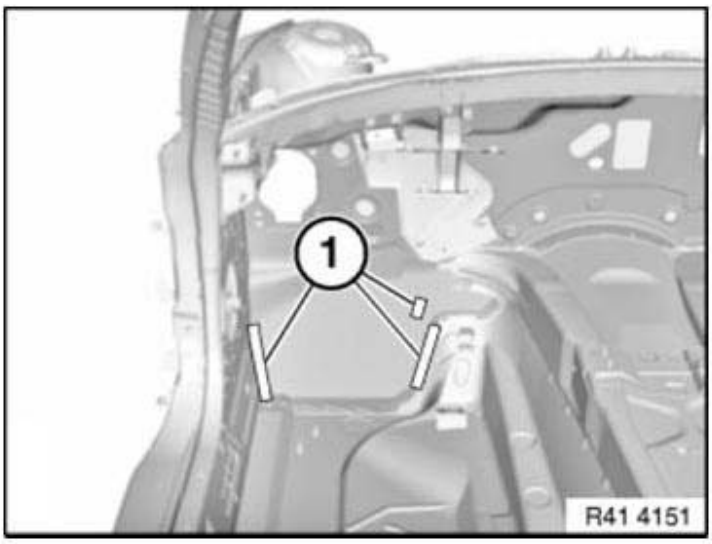


Fig. 101: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 516 REPLACING FRONT LEFT OR RIGHT SUPPORT CARRIER (PARTIAL REPLACEMENT, FRONT SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

STRIP DOWN VEHICLE .

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

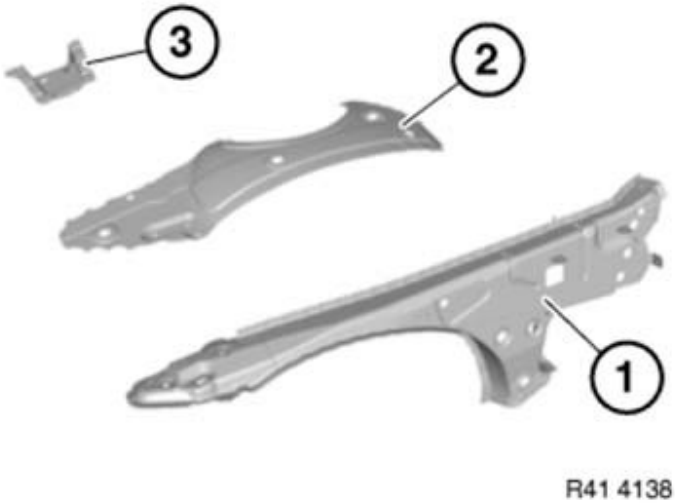


Fig. 102: Identifying Support Carrier, Wheel Arch, Front And Carrier Support, Wheel Arch, Inner

Courtesy of BMW OF NORTH AMERICA, INC.

- (1) Support carrier, wheel arch, front,
- (2) Carrier support, wheel arch, inner
- (3) Bracket, diagonal strut, carrier support

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N1	12
Punch rivets N5	12
CleanerR1	1
Cavity sealing wax remover	1
Sealing compoundD1	

Removing carrier support

View from below.

Mark severance cut (1) in accordance with specified measurements and cut.

Measurement a = 80 mm

Measurement b = 50 mm

IMPORTANT: Cut outer metal sheet only.

Open weld joints in areas (2).

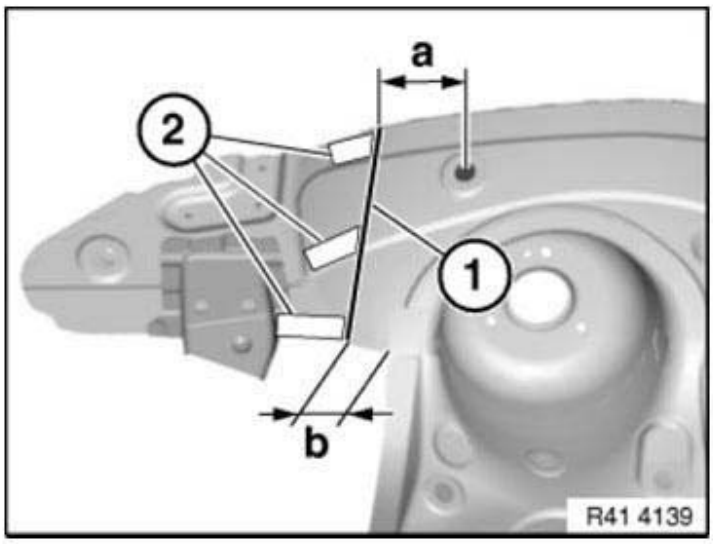


Fig. 103: Identifying Weld Joint Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Roughly mark severance cut (1) and cut.

Remove carrier support section (2).

Open weld joints in area (3) from below.

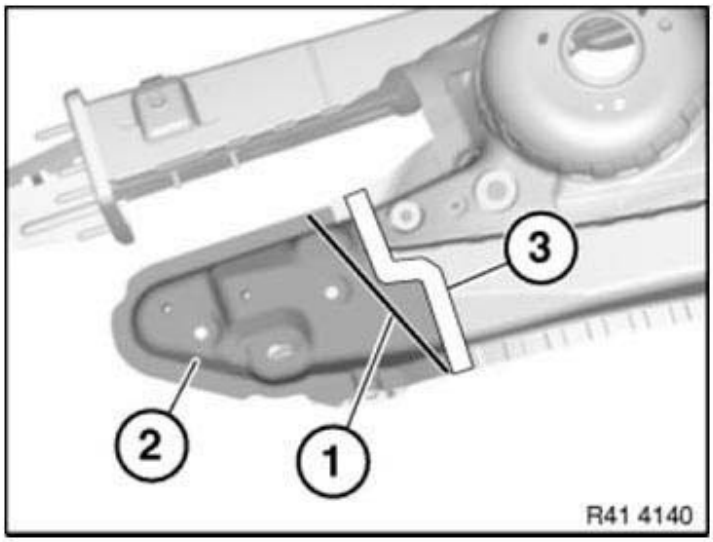


Fig. 104: Identifying Carrier Support Section With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part

Open weld joints in area (1).

Mark severance cut (2) in accordance with severance cut on vehicle + 20 mm extra material and cut.

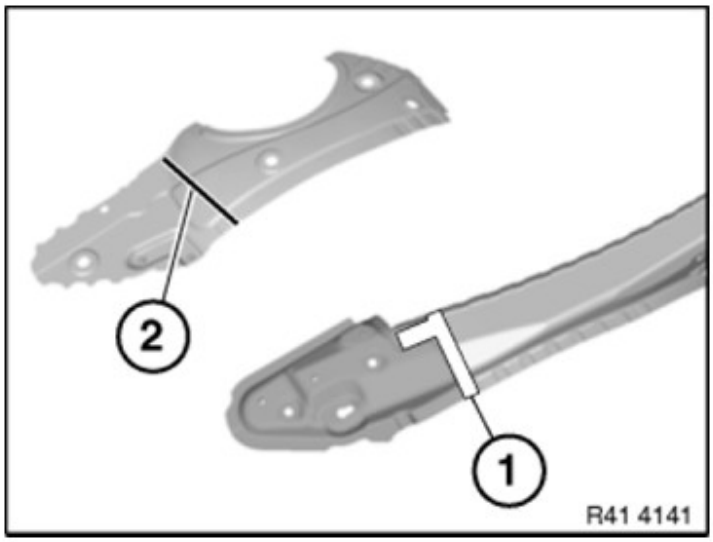


Fig. 105: Identifying Carrier Support Section With Weld Joints Area And Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Offer up new parts with attachments and fix in place.

Set four 6.8 mm dia. holes for blind rivets N1 in area (1).

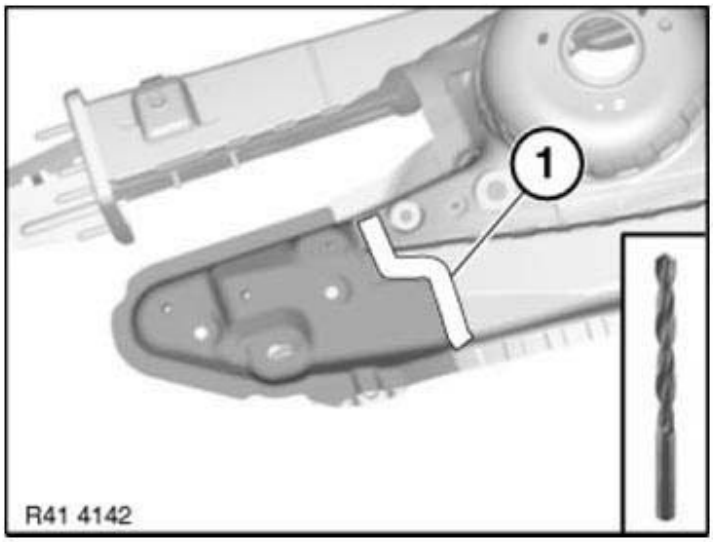


Fig. 106: Identifying Weld Joint Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

View from below

Diagonal strut must be fitted in order to adjust holder (1) to fit.

In areas (2) set eight 6.8 mm dia. holes for blind rivets N1.

Remove new parts again and deburr holes.

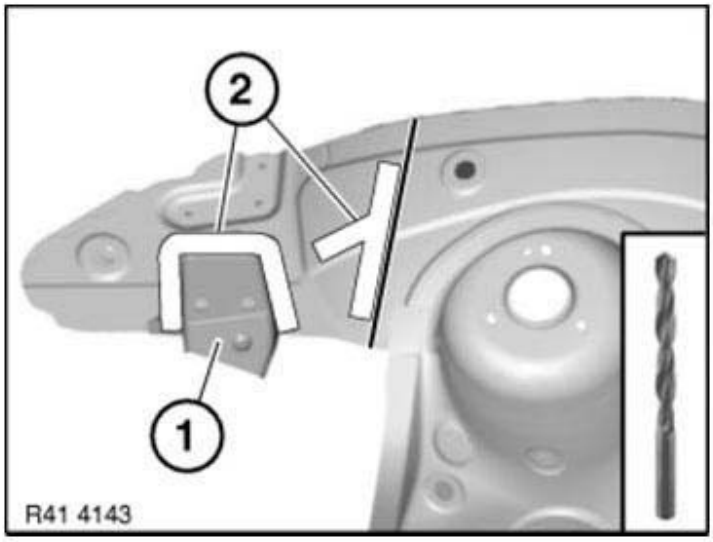


Fig. 107: Identifying Holder And Rivets Areas
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new part and body in area of bonding surfaces.

Installing carrier support

Clean all bonding surfaces on vehicle and on new part with cleaning agent R1.

Apply adhesive K5a to bonding surfaces.

Attach new part and attachments and rivet with blind rivets (1).

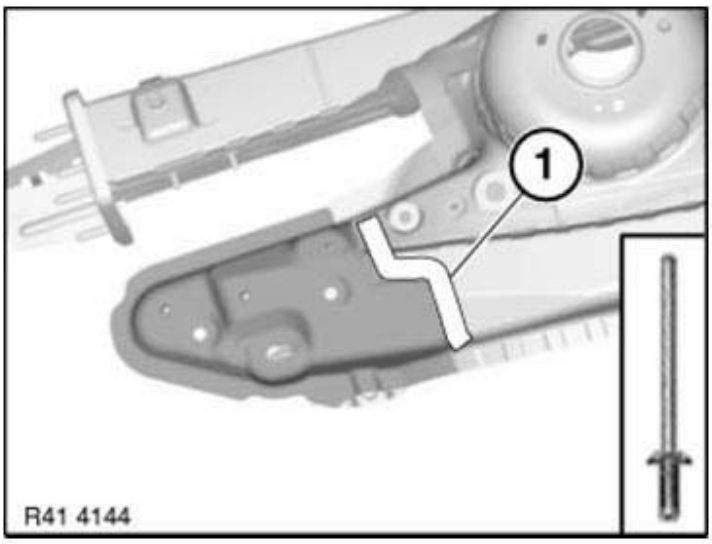


Fig. 108: Identifying Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Clean all bonding surfaces on vehicle and on new part with cleaning agent R1.

Apply adhesive K5a to bonding surfaces.

Mount new part and rivet with blind rivets (1).

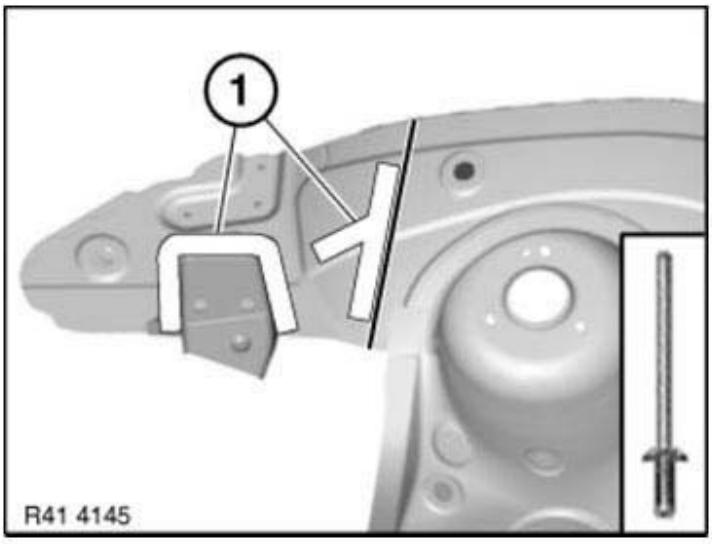


Fig. 109: Identifying Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

In area (1) rivet new parts with 12 punch rivets N5.

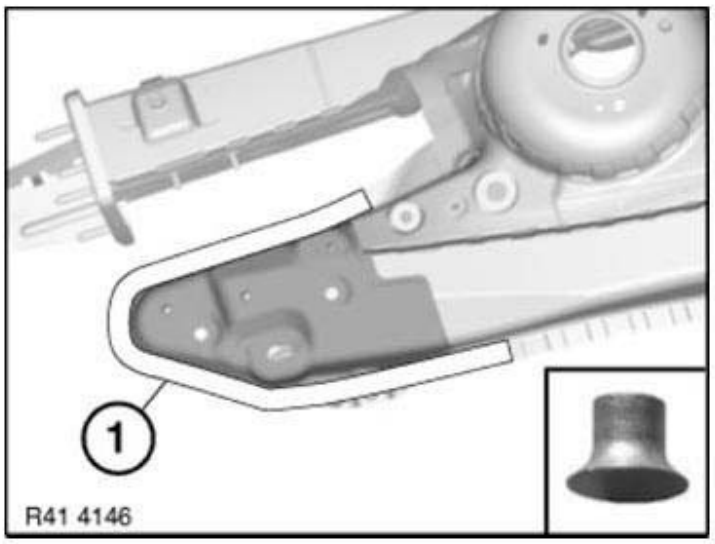


Fig. 110: Identifying Rivet Area
Courtesy of BMW OF NORTH AMERICA, INC.

Seal adhesive areas and blind rivets in accordance with right side of vehicle with sealant.

41 11 733 REPLACING FRONT LUGGAGE COMPARTMENT FLOOR CROSS-MEMBER (LUGGAGE COMPARTMENT FLOOR COMPLETELY REMOVED)

Read contents of **BODY, GENERAL** .

Use only approved **SPOT-WELDING APPARATUS** for repairs.

Place vehicle on straightening bench.

Following new body parts are required

- (1) Cross-member, luggage compartment floor, front

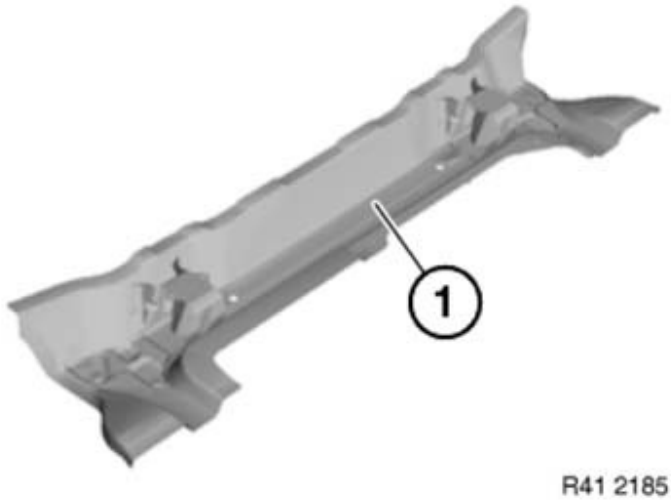


Fig. 111: Identifying Cross Member, Luggage Compartment Floor, Front
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in area (1) on left and right sides of car.

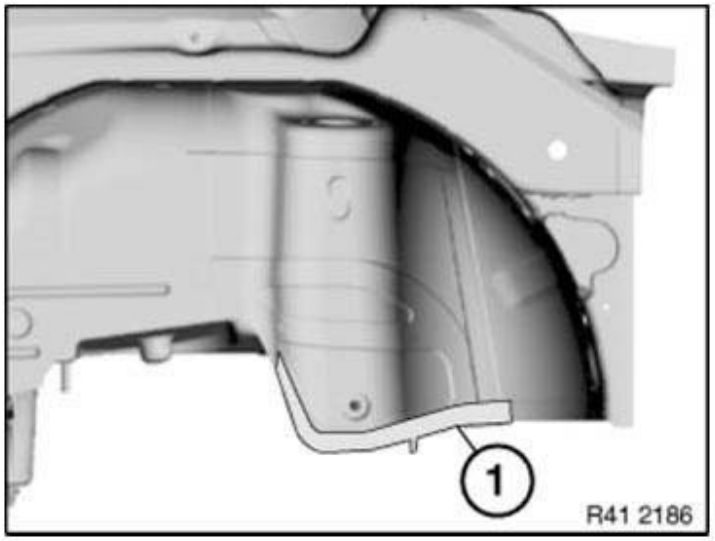


Fig. 112: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

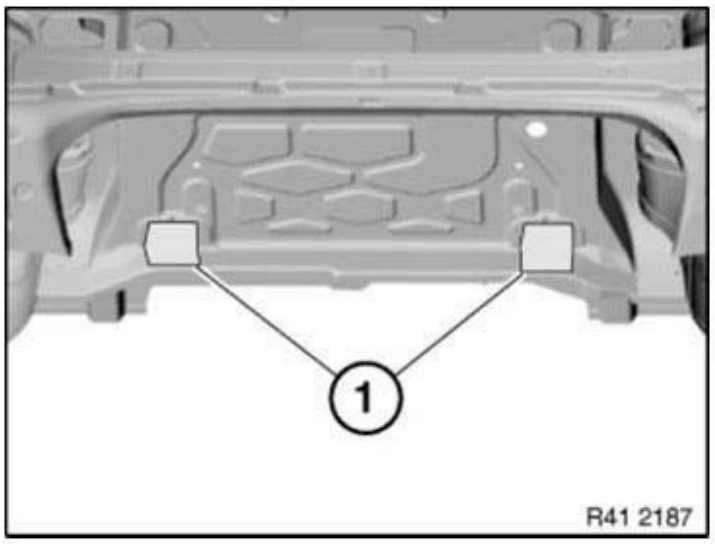


Fig. 113: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: View from vehicle floorpan

(1) = direction of travel

Open weld joints in areas (2).

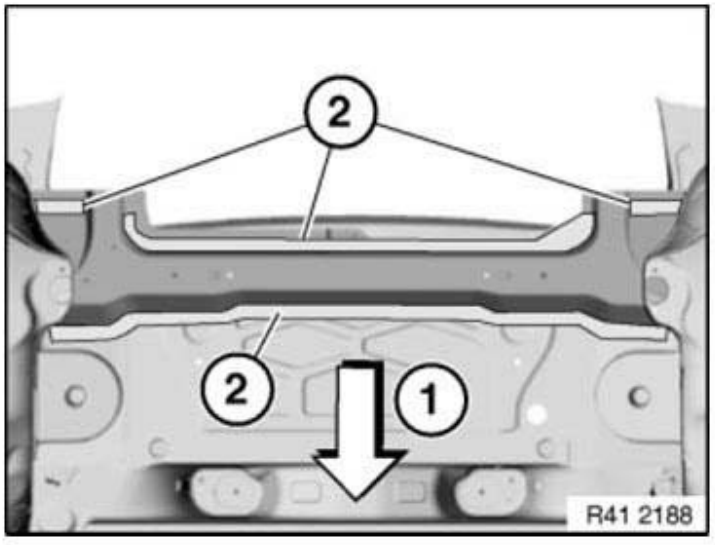


Fig. 114: Identifying Travel Direction And Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 028 REPLACING LEFT ENGINE CARRIER (PARTIAL REPLACEMENT BEFORE FRONT AXLE)

Read contents of **BODY, GENERAL** .

Remove or cover those vehicle components in the repair area which are susceptible to heat or dust.

Use only approved **SPOT-WELDING APPARATUS** for repairs.

Place vehicle on straightening bench.

- (1) Partial section, engine carrier

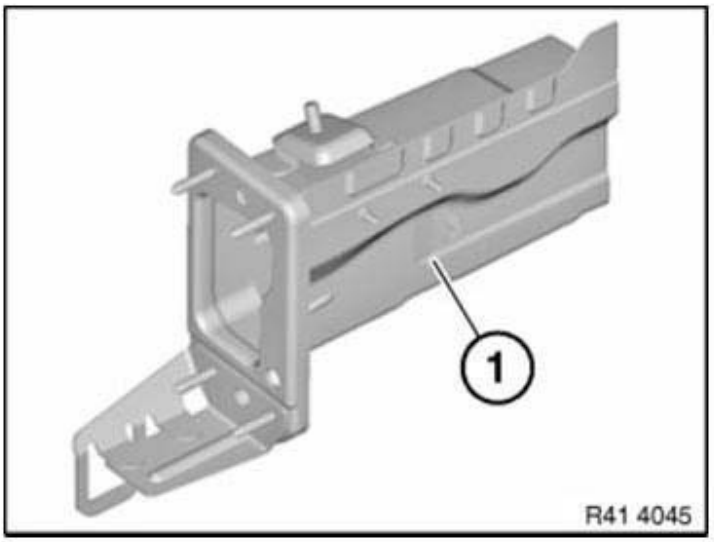


Fig. 115: Identifying Engine Carrier Partial Section
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) in accordance with measurement a and cut.

IMPORTANT: Cut outer metal sheet only.

Measurement a = approx. 15 mm in front of bore dia. 20 mm.

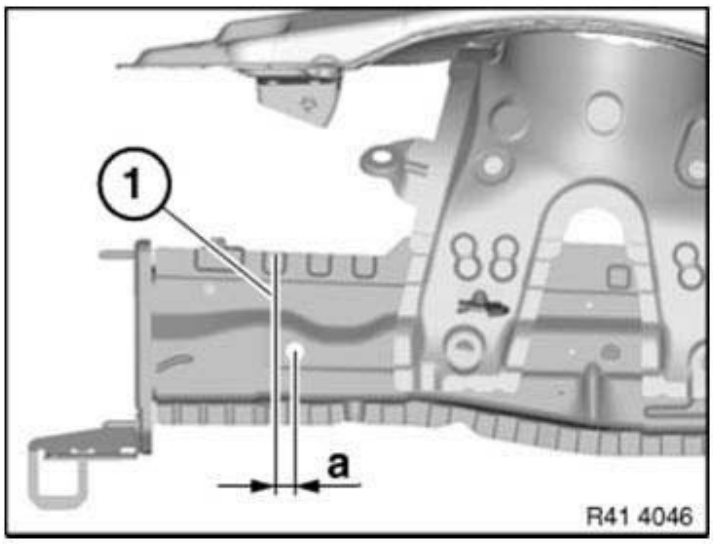


Fig. 116: Marking Severance Cut In Accordance With Measurement
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) through 15 mm dia. bore and cut.

Preparation of new part:

Mark severance cuts in accordance with vehicle and cut.

Installation:

Adjust new part to fit with straightening attachment and universal mount.

Weld in **REINFORCEMENT PLATES** at severance cuts.

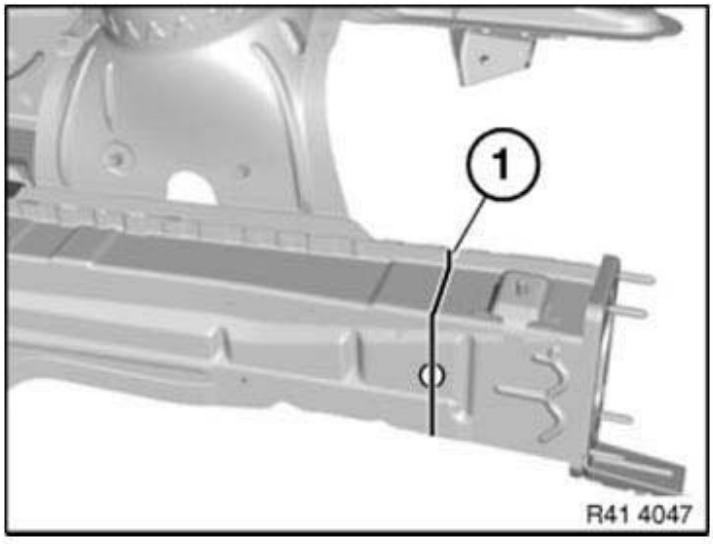


Fig. 117: Marking Severance Cut In Accordance With Vehicle
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 516 STRIPPING OPERATIONS - REPLACING LEFT CARRIER SUPPORT

NOTE: Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.
The following list basically represents the removal sequence.

- Remove front panel (FR number: 4133040)
- Remove intake silencer housing (FR number: 4135111)
- Remove left spring strut (FR number: 3131000)
- Remove left wishbone (FR number: 3112000)

4112 LUGGAGE COMPARTMENT FLOOR

41 00 ... PROCEDURE FOR FOLDING HARDTOP AFTER AN ACCIDENT

The hardtop may be under tension after the vehicle has incurred damage following an accident. Moving the hardtop by hydraulic means may result in irreparable damage. For this reason, the hardtop may only be moved manually until the damaged has been repaired.

IMPORTANT: It is not possible to check the correct operation of the folding roof on the damaged vehicle.

Different procedures are required, depending on the degree of damage which the vehicle has incurred. The repair instructions for emergency operation See **5437290 HARDTOP EMERGENCY OPENING** or **5437295 EMERGENCY CLOSING HARDTOP** describe only the complete sequences for manually opening and closing the hardtop.

When removing the roof module and/or the rear module, it is possible to move the hardtop manually into the necessary intermediate positions in each case.

WARNING: Risk of injury due to the heavy weight of the hardtop!
Since the hydraulic system may have to be depressurized during manual movement of the hardtop, there is an increased risk of injury by trapping.
Secure the hardtop permanently and adequately against unintentional movement.

After body repairs to the vehicle

All the hardtop components screwed/bolted to the body are precisely screwed/bolted to the vehicle at the factory by means of gauges. This affects above all the base plates and consoles of the roof and rear modules. To minimize extensive adjustment work after a body repair as much as possible, only remove those components which are screwed/bolted to a damaged body part.

- Gauge the base plates *only* after a body repair to the cowl panel.

41 12 535 REPLACING COMPLETE REAR LUGGAGE COMPARTMENT FLOOR (TAIL PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Place vehicle on straightening bench.

NOTE: **This repair instructions comprises the procedures for repair stages 2 and 3 See 410 REPAIR TECHNIQUES, REPAIR STAGE 2 or 410 REPAIR TECHNIQUES, REPAIR STAGE 3.**

- (1) Cross-member, luggage compartment floor
- (2) Mounting, impact absorber
- (3) Mounting, RHT (hard top)
- (4) Luggage compartment floor
- (5) Side member, rear
- (6) Luggage compartment well
- (7) Mounting, tension strut

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N1	21
CleanerR1	1
Sealing compoundD1	

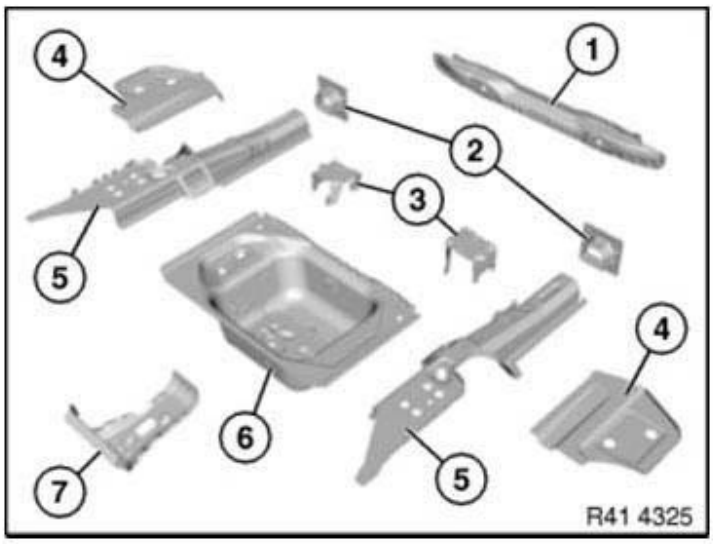


Fig. 118: Identifying Cross-Member, Luggage Compartment Floor, Mounting, Impact Absorber, Luggage Compartment Floor, Side Member, Luggage Compartment Well And Tension Strut
Courtesy of BMW OF NORTH AMERICA, INC.

View from vehicle underbody:

Open weld joints in areas (1).

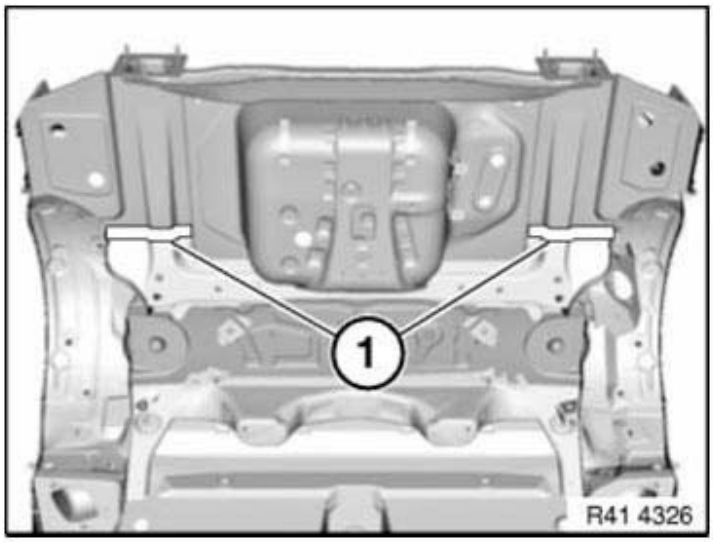


Fig. 119: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

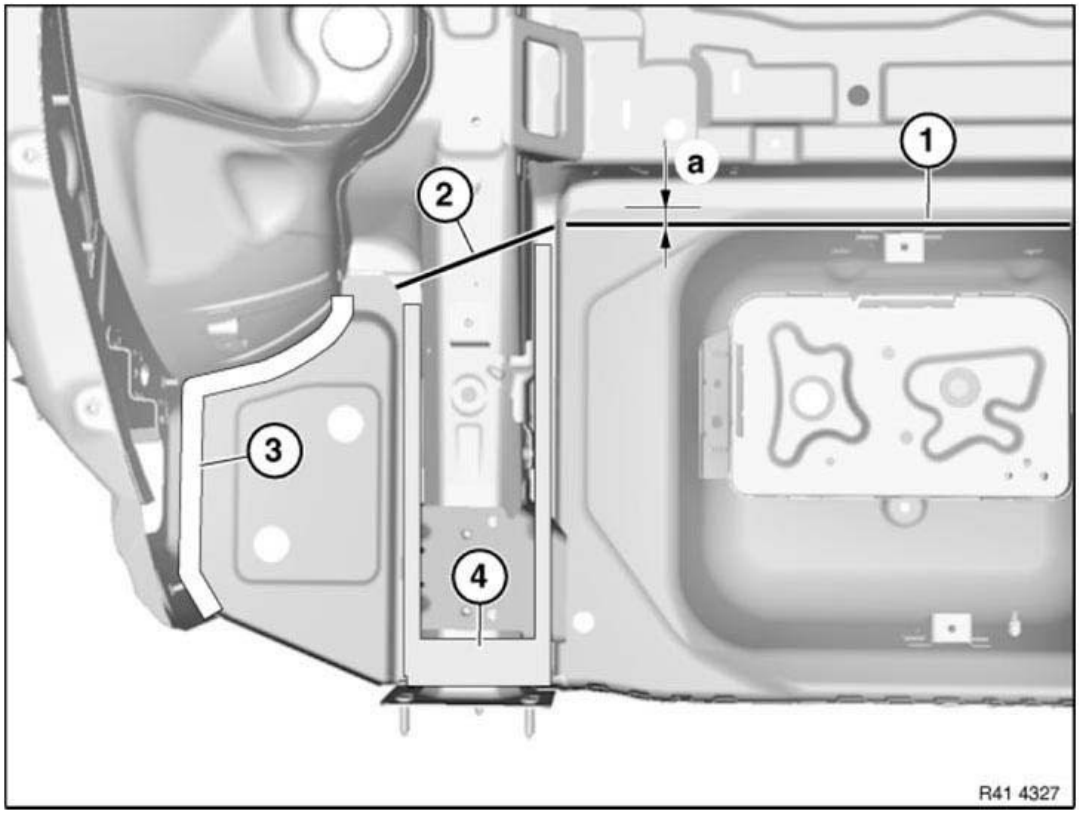


Fig. 120: Identifying Weld Joint Area With Severance Cut And New Components Weld Area
Courtesy of BMW OF NORTH AMERICA, INC.

Operation is described on the left side. Right side identical.

Mark severance cut (1) in accordance with measurement and cut.

Measurement a = 20 mm from luggage compartment floor, front.

Mark severance cut (2) and cut.

Open weld joints in area (3).

Remove trunk floor.

Installation:

Adjust luggage compartment floor to fit with straightening attachment or universal mount.

Before welding in, also adjust tail panel, rear lid and rear lights to fit.

Tension strut mounting is bonded to luggage compartment well and riveted.

Weld in **REINFORCING PANEL** at severance cut (2).

Weld new components in area (4) additionally.

Mark new luggage compartment well part in accordance with severance cut (1) on vehicle + 20 mm extra material and cut.

New part preparation, tension strut mounting

View from below.

Adjust tension strut mounting (1) with mounted torsion struts (2) to fit and secure.

Set twenty one 4.2 mm _ holes for blind rivets in adhesive flange area.

Remove new part again and deburr holes.

NOTE: 6 holes are sufficient for positioning the component.
Make all further holes for blind rivets if necessary on removed components.

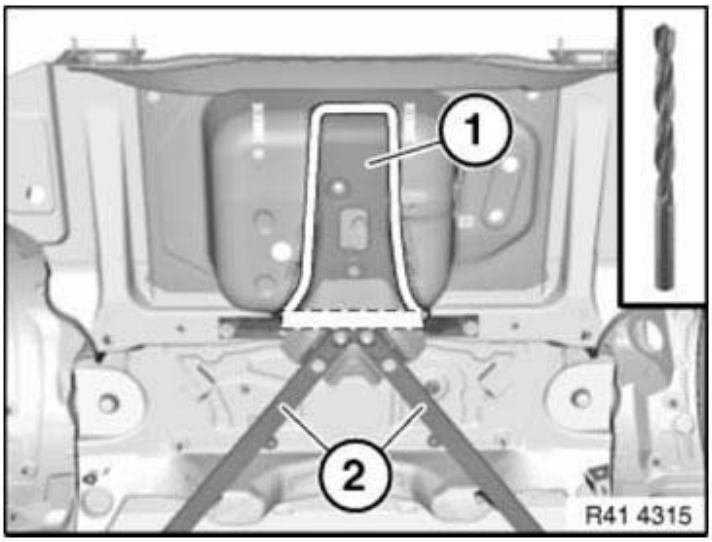


Fig. 121: Identifying Tension Strut Mounting And Mounted Torsion Struts
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new parts and body in area of bonding surfaces.

Installing tension strut mounting

Clean all bonding surfaces (1) with cleaning agent R1.

Apply adhesive K5a to bonding surfaces (1).

Rivet tension strut mounting (2) and luggage compartment well (3) with blind rivets N3.

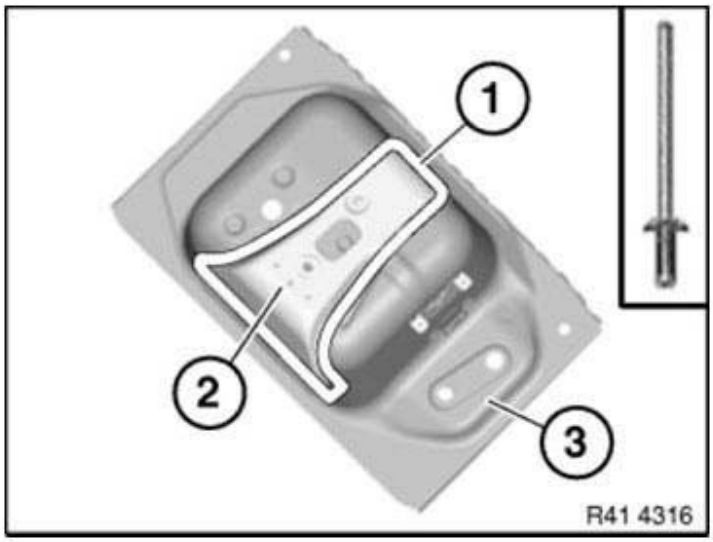


Fig. 122: Cleaning All Bonding Surfaces With Cleaning Agent
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 733 REPLACING FRONT LUGGAGE COMPARTMENT FLOOR CROSS-MEMBER (LUGGAGE COMPARTMENT FLOOR COMPLETELY REMOVED)

Read contents of **BODY, GENERAL** .

Use only approved **SPOT-WELDING APPARATUS** for repairs.

Place vehicle on straightening bench.

Following new body parts are required:

- (1) Cross-member, luggage compartment floor, front

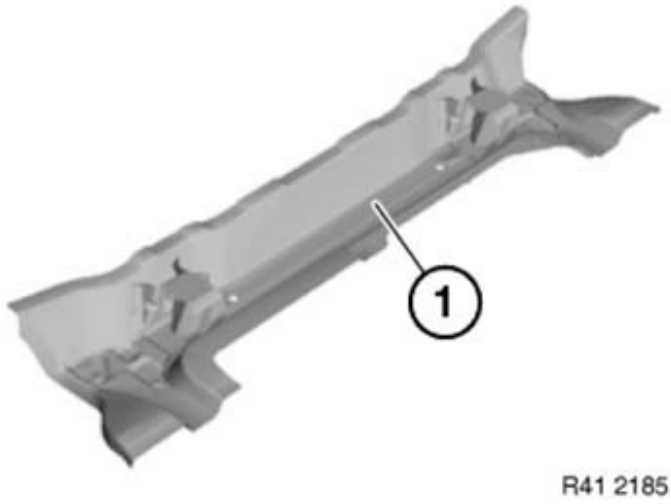


Fig. 123: Identifying Cross-Member, Luggage Compartment Floor, Front
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in area (1) on left and right sides of car.

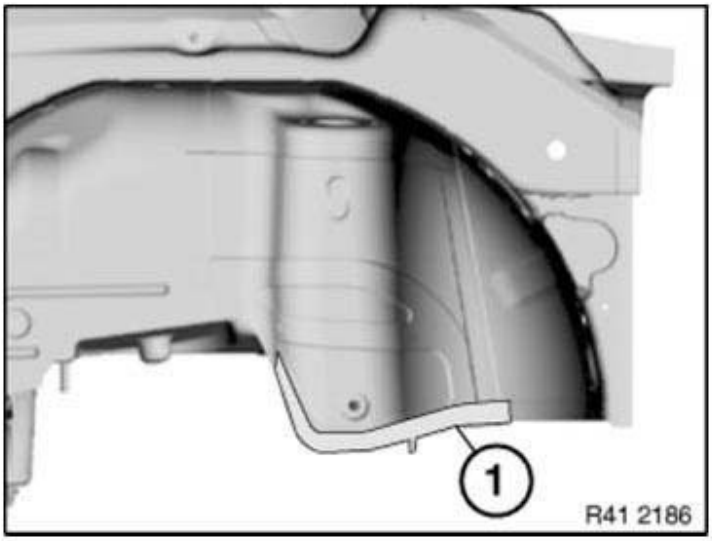


Fig. 124: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

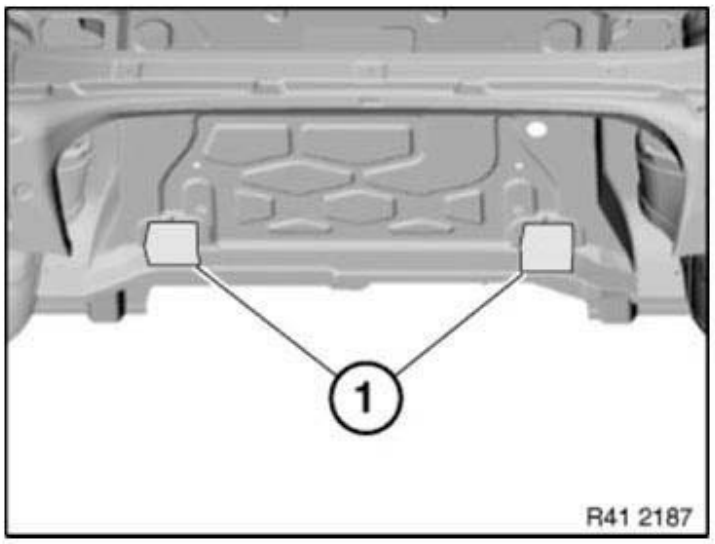


Fig. 125: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: View from vehicle floorpan

(1) = direction of travel

Open weld joints in areas (2).

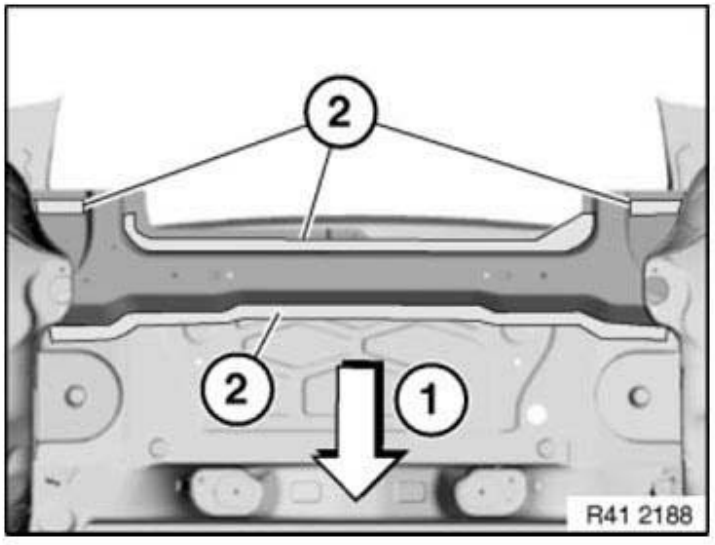


Fig. 126: Identifying Travel Direction And Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 12 653 REPLACING LUGGAGE COMPARTMENT FLOOR, LEFT SECTION (TAIL PANEL AND SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Strip down vehicle.

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) Luggage compartment floor, left section
- (2) End plate, rear ventilation, left

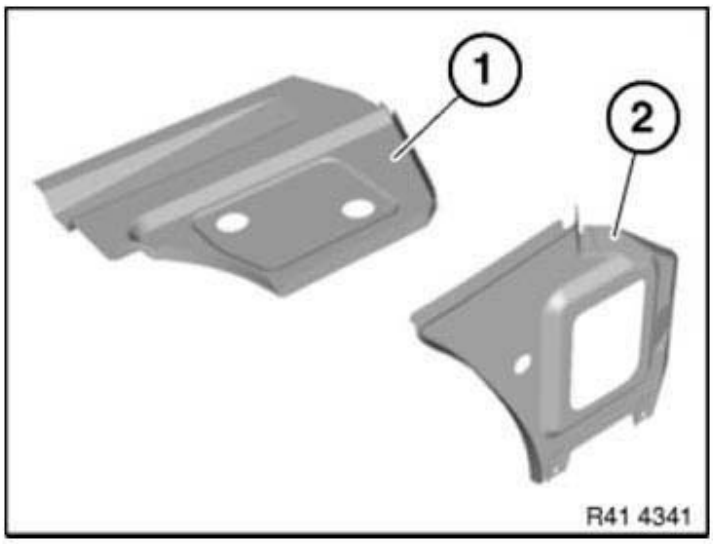


Fig. 127: Identifying Luggage Compartment Floor, Left Section And End Plate, Rear Ventilation, Left
Courtesy of BMW OF NORTH AMERICA, INC.

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N3	9
Blind rivets N6	6
Punch rivets N4	4
CleanerR1	1
Sealing compoundD1	

Removal of luggage compartment floor

Open weld joints in area (1).

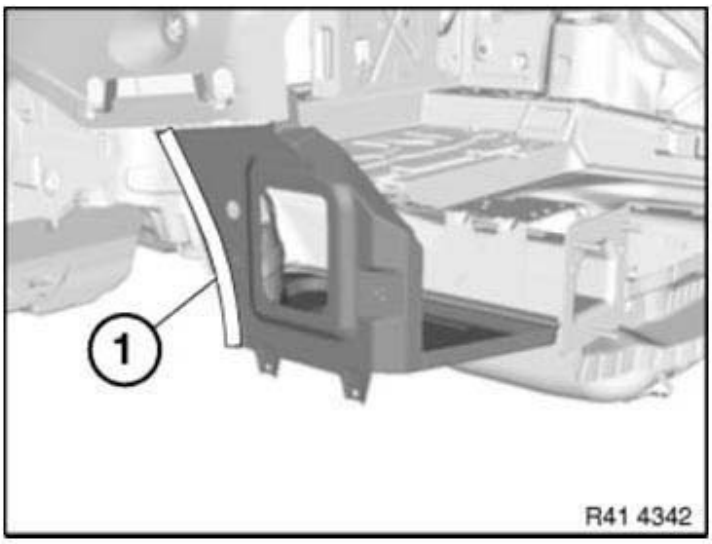


Fig. 128: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

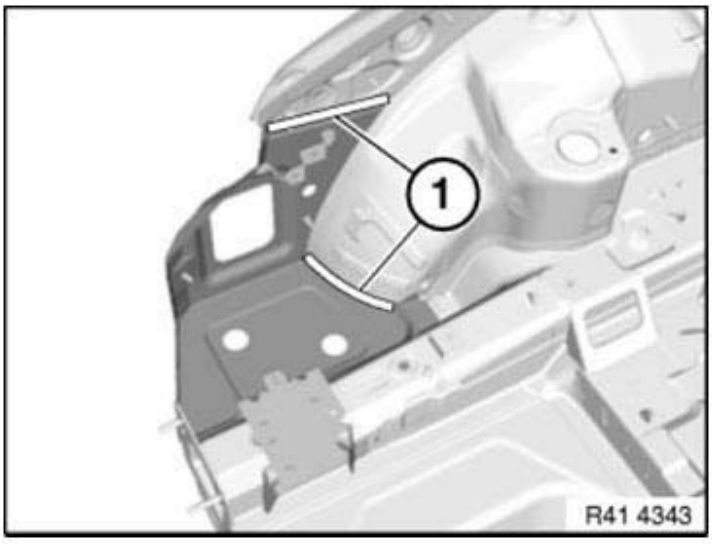


Fig. 129: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) in radius and cut.

Remove luggage compartment floor and rear ventilation end plate.

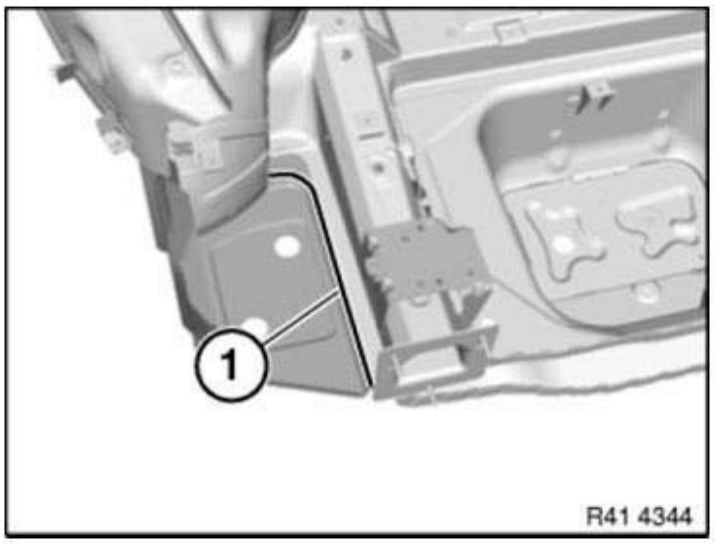


Fig. 130: Marking Severance Cut In Radius
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Mark new luggage compartment floor part in accordance with severance cut on vehicle + 20 mm extra material and cut.

Adjust new parts in combination with tail panel to fit and secure.

Set nine 4.2 mm dia. holes for blind rivets in areas (1).

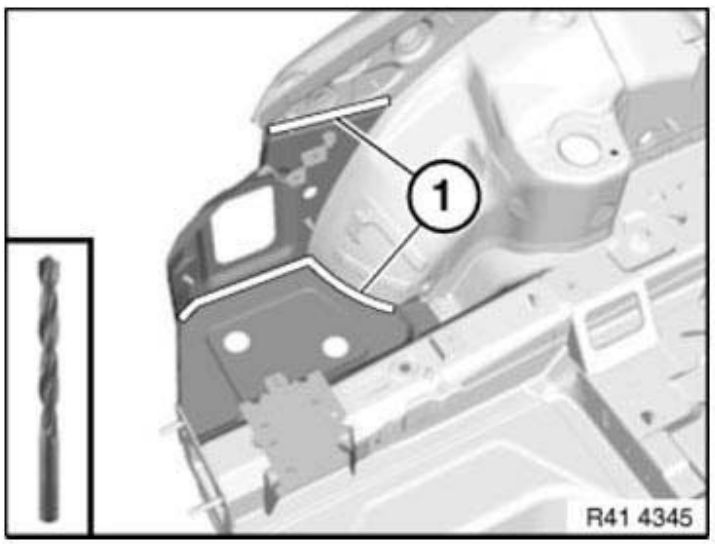


Fig. 131: Identifying Rivets Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Set six 4.2 mm dia. holes for blind rivets in area (1).

Remove new parts again and deburr holes.

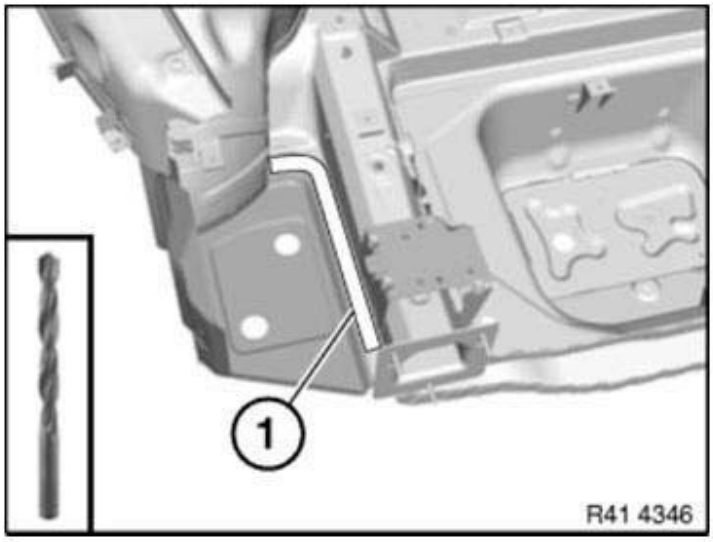


Fig. 132: Identifying Rivets Areas
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new parts and body in area of bonding surfaces.

Installation of luggage compartment floor

Clean all bonding surfaces (1) on new parts and on vehicle with cleaning agent R1!

Apply adhesive K5a to all bonding and rivet surfaces (1).

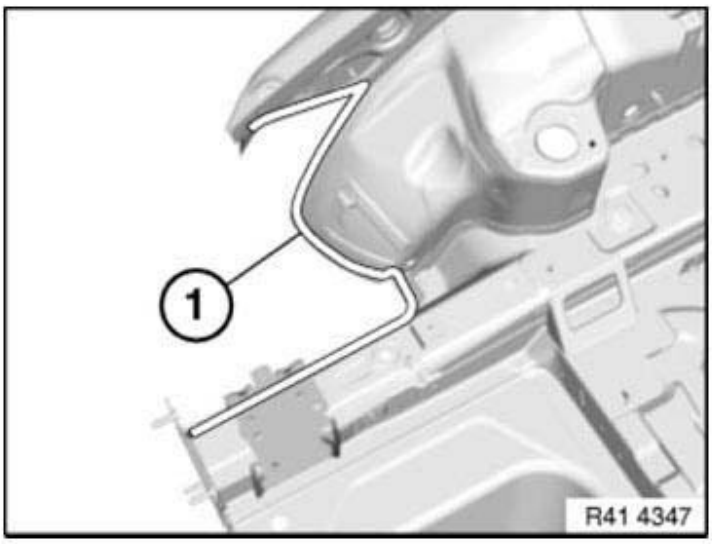


Fig. 133: Cleaning All Vehicle Bonding Surfaces With Cleaning Agent
Courtesy of BMW OF NORTH AMERICA, INC.

Install new parts and rivet in area (1) with blind rivets N6.

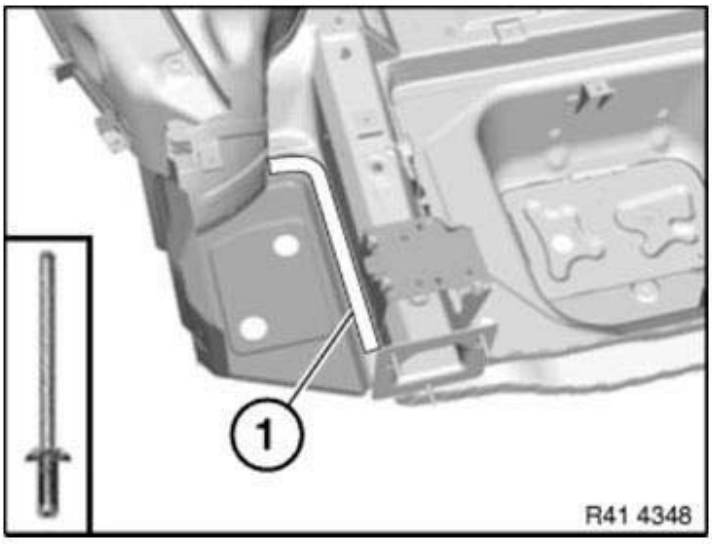


Fig. 134: Installing New Parts And Rivet Using Blind Rivets N6
Courtesy of BMW OF NORTH AMERICA, INC.

Use blind rivets N3 in areas (1).

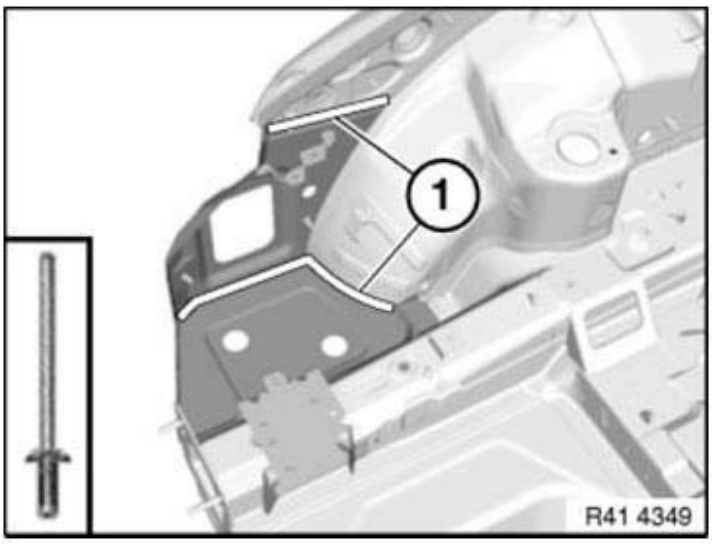


Fig. 135: Identifying Rivet Area With Blind Rivets N3
Courtesy of BMW OF NORTH AMERICA, INC.

Use 4 punch rivets N4 in area (1).

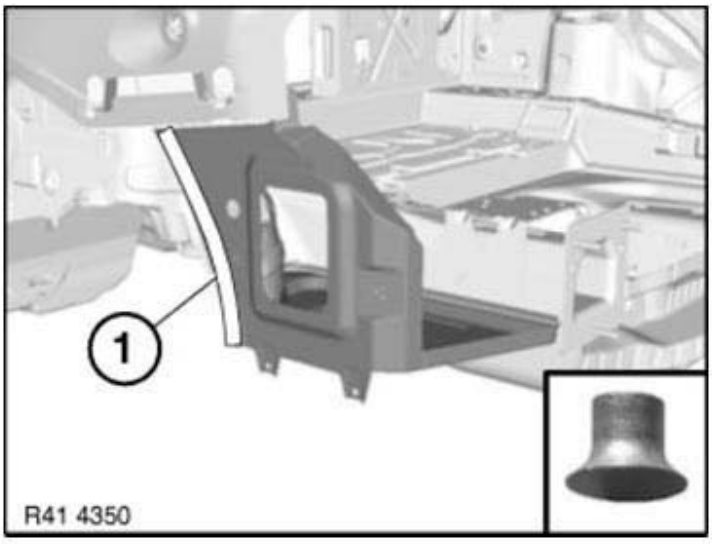


Fig. 136: Identifying Rivet Area With 4 Punch Rivets N4
Courtesy of BMW OF NORTH AMERICA, INC.

41 12 557 REPLACING LUGGAGE COMPARTMENT FLOOR, MIDDLE SECTION (TAIL PANEL REMOVED)

Read contents of **BODY, GENERAL** .

STRIP DOWN VEHICLE .

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) Mounting, tension strut
- (2) Luggage compartment well
- (3) Cross-member, luggage compartment floor, rear

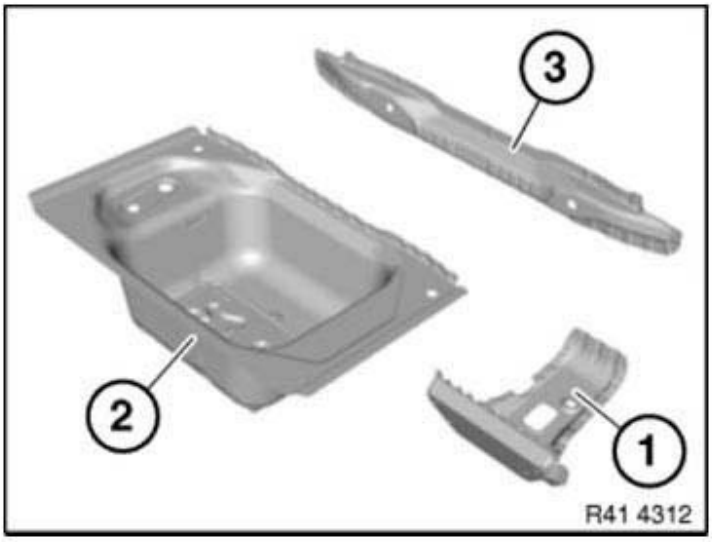


Fig. 137: Identifying Mounting, Tension Strut, Luggage Compartment Well And Cross-Member, Luggage Compartment Floor, Rear
Courtesy of BMW OF NORTH AMERICA, INC.

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5b	1
Blind rivets N3	21
EMC screws	2
CleanerR1	1
Sealing compoundD1	

Removal of luggage compartment floor

View from below.

Operation is described on the left side. Right side identical.

Open weld joints in area (1).

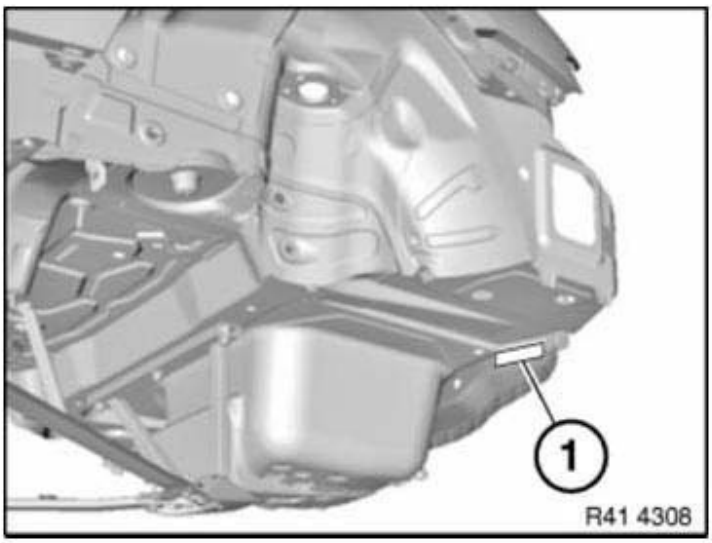


Fig. 138: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

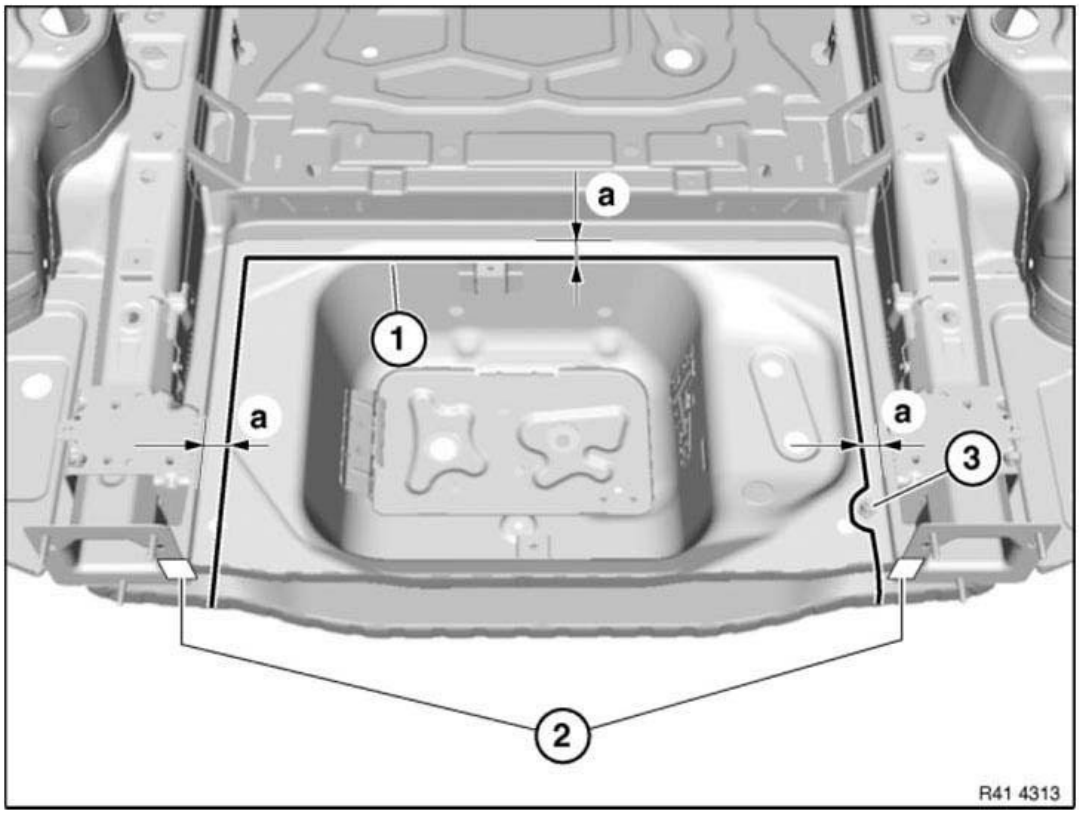


Fig. 139: Identifying Weld Joint Area With Severance Cut And Earth Support Point
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) in accordance with measurement and cut.

Measurement a = 20 mm

Open weld joints in area (2).

Remove luggage compartment well and cross-member.

NOTE: Earth support point (3) remains on vehicle.

New part preparation

Mark new luggage compartment well part in accordance with severance cuts on vehicle + 20 mm extra material and cut.

Set down luggage compartment well (1) from above and adjust in combination with cross-member (2) and **TAIL PANEL** to fit and secure.

Set fourteen 4.2 mm dia. holes for blind rivets in area (3).

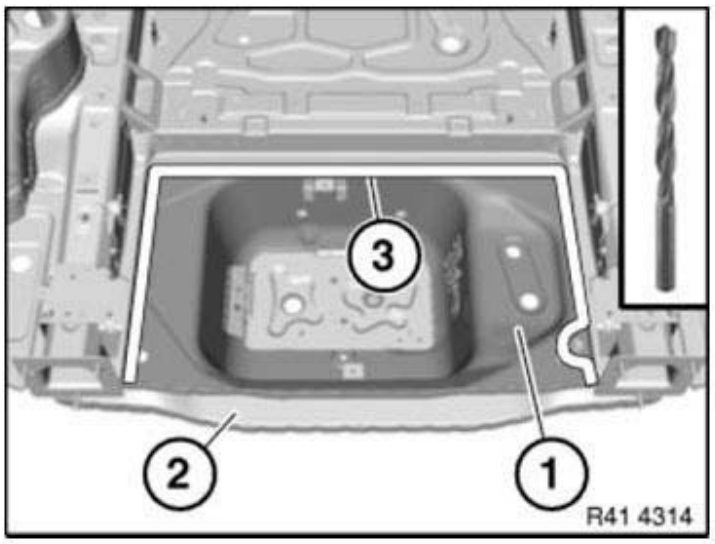


Fig. 140: Identifying Luggage Compartment Well, Cross-Member And Rivet Area
Courtesy of BMW OF NORTH AMERICA, INC.

Set three 4.2 mm dia. holes for blind rivets in area (1).

Set four 4.2 mm dia. holes for blind rivets in areas (2).

Set holes for blind rivets with adjusted tail panel in area (3).

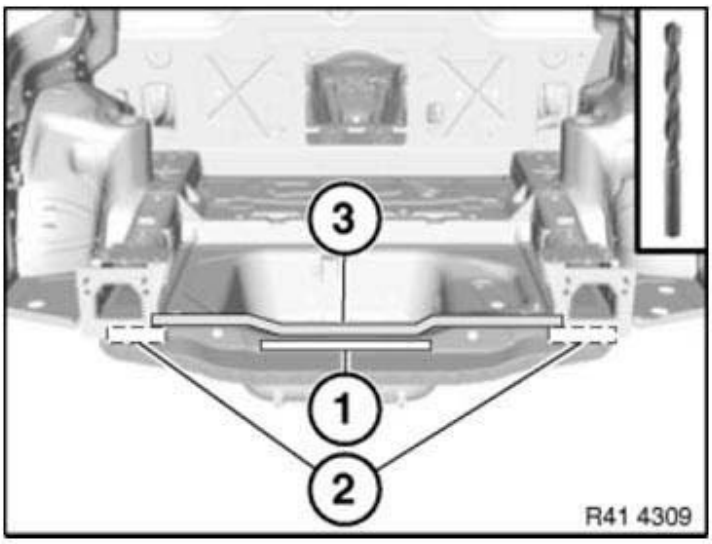


Fig. 141: Setting Holes Diameter For Blind Rivets Area
Courtesy of BMW OF NORTH AMERICA, INC.

View from below.

Adjust tension strut mounting (1) with mounted torsion struts (2) to fit and secure.

Set twenty one 4.2 mm dia. holes for blind rivets in adhesive flange area.

Remove all new parts again and deburr holes.

NOTE: 6 holes are sufficient for positioning the component.

Make all further holes for blind rivets if necessary on removed components.

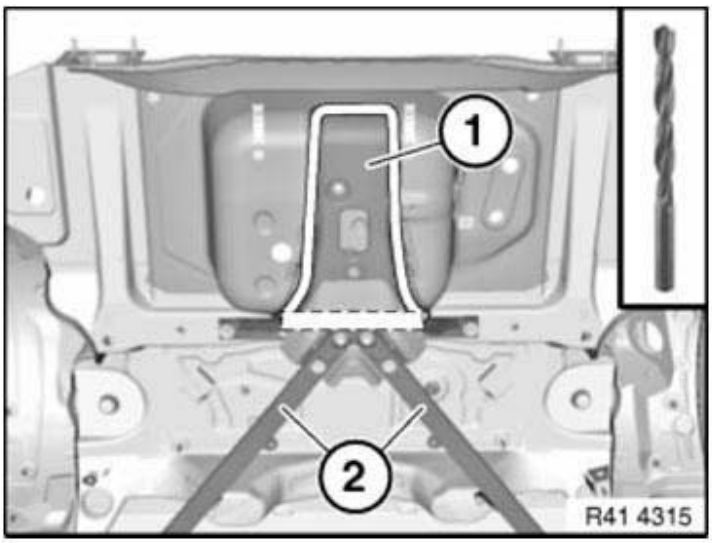


Fig. 142: Identifying Tension Strut Mounting And Mounted Torsion Struts
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new parts and body in area of bonding surfaces.

Installation of luggage compartment floor

Clean all bonding surfaces (1) with cleaning agent R1.

Apply adhesive K5b to bonding surfaces (1).

Rivet tension strut mounting (2) and luggage compartment well (3) with blind rivets N3.

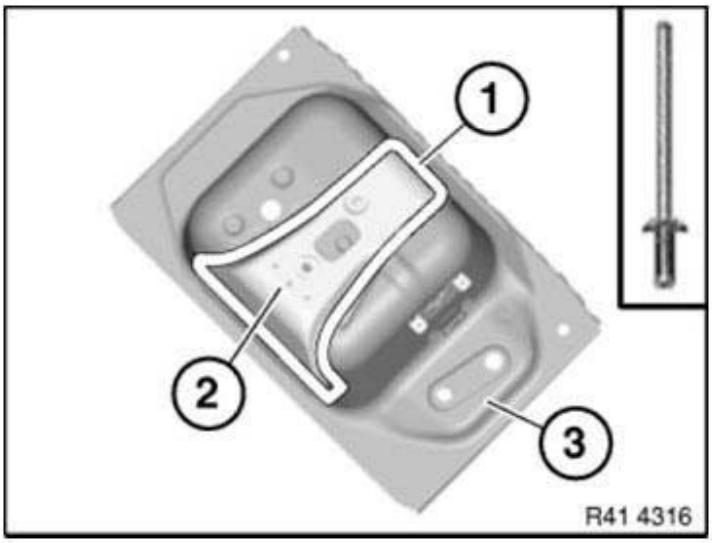


Fig. 143: Rivetting Tension Strut Mounting And Luggage Compartment Well Using Blind Rivets N3

Courtesy of BMW OF NORTH AMERICA, INC.

Clean all bonding surfaces (1) on new part and on vehicle with cleaning agent R1.

Apply adhesive K5b to bonding surfaces (1) and to corresponding bonding surfaces on new part.

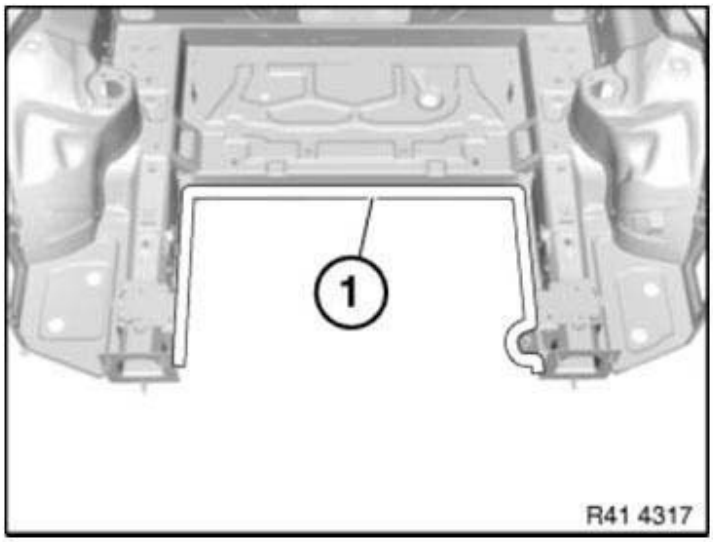


Fig. 144: Clean All Vehicle Bonding Surfaces With Cleaning Agent
Courtesy of BMW OF NORTH AMERICA, INC.

Fit luggage compartment well (2) and rivet in area (1) with blind rivets N3.

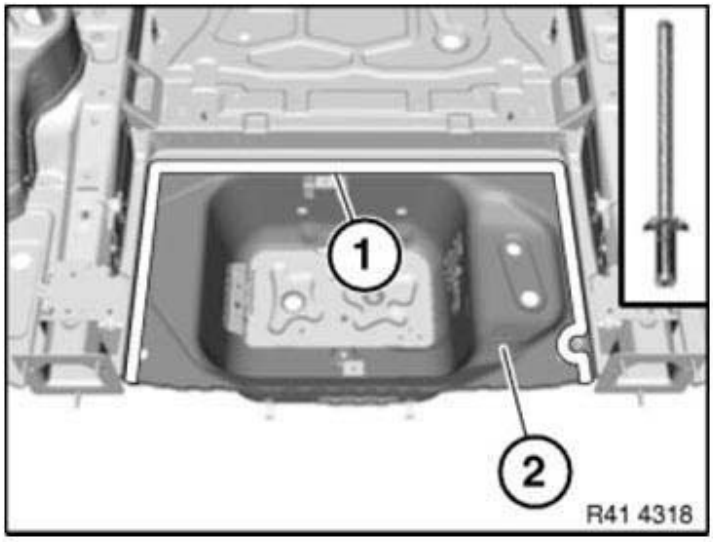


Fig. 145: Identifying Luggage Compartment Well And Rivet Area Using Blind Rivets N3
Courtesy of BMW OF NORTH AMERICA, INC.

Installation of cross-member

Clean all bonding surfaces on new part and on vehicle with cleaning agent R1.

Apply adhesive K5b to bonding surfaces (1) and to corresponding bonding surfaces on new part.

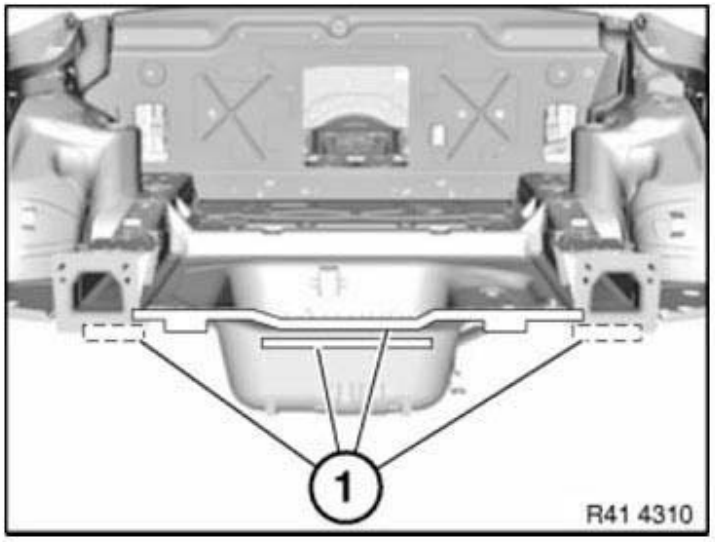


Fig. 146: Applying Adhesive K5B To Bonding Surfaces For Cleaning
Courtesy of BMW OF NORTH AMERICA, INC.

Install cross-member and rivet in area (1) with blind rivets.

Rivet cross-member in combination with tail panel in area (2).

IMPORTANT: When installing the cross-member, make sure there is sufficient adhesive on the bonding surfaces.

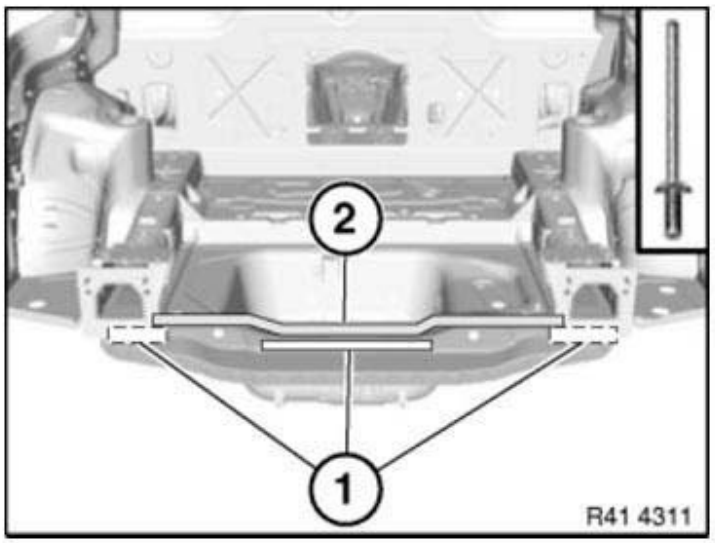


Fig. 147: Installing Cross-Member And Rivet In Area Using Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: After adhesive has hardened:
Install 2 EMC SCREWS in area of side member/rear cross-member.

41 12 548 REPLACING REAR CROSS-MEMBER ON LUGGAGE COMPARTMENT FLOOR (TAIL PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Strip down vehicle.

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) Cross-member, luggage compartment floor, rear

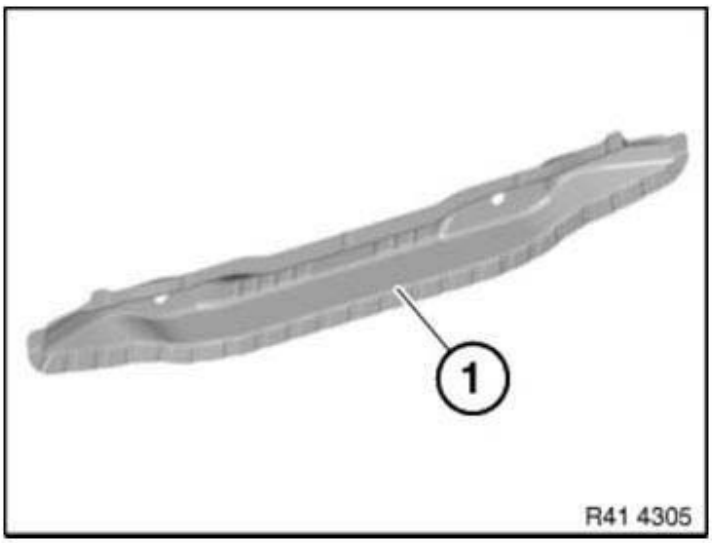


Fig. 148: Identifying Cross-Member, Luggage Compartment Floor, Rear
Courtesy of BMW OF NORTH AMERICA, INC.

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N3	7
CleanerR1	1

Cavity sealing wax remover	
Sealing compoundD1	

Removing cross-member

Open weld joints in areas (1).

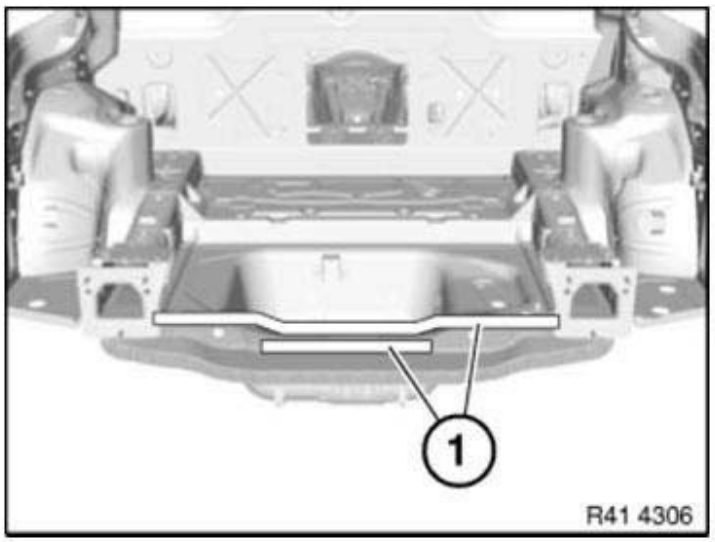


Fig. 149: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

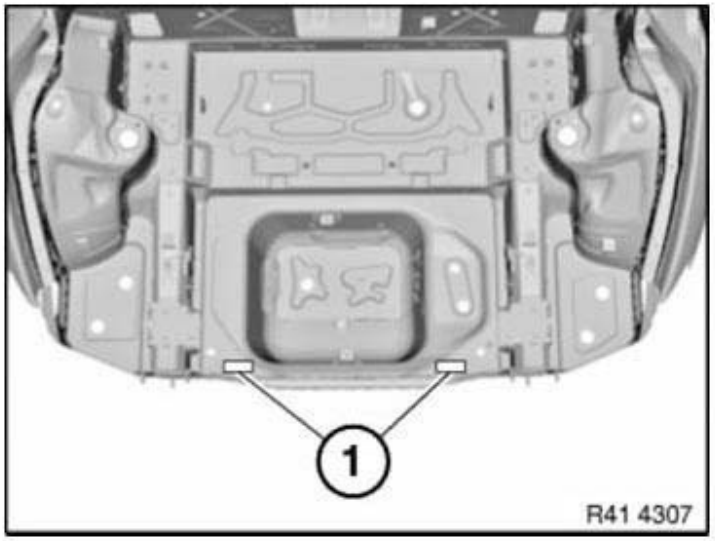


Fig. 150: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

View from below.

Operation is described on the left side. Right side identical.

Open weld joints in area (1).

Remove cross-member.

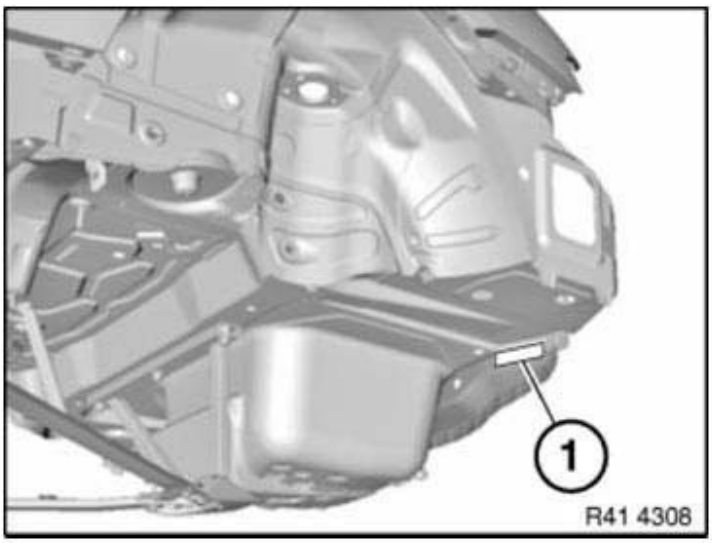


Fig. 151: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Adjust cross-member in combination with tail panel to fit and secure.

Set three 4.2 mm dia. holes for blind rivets in area (1).

Set four 4.2 mm dia. holes for blind rivets in areas (2).

Set holes with adjusted **TAIL PANEL** in area (3).

Remove new parts again and deburr holes.

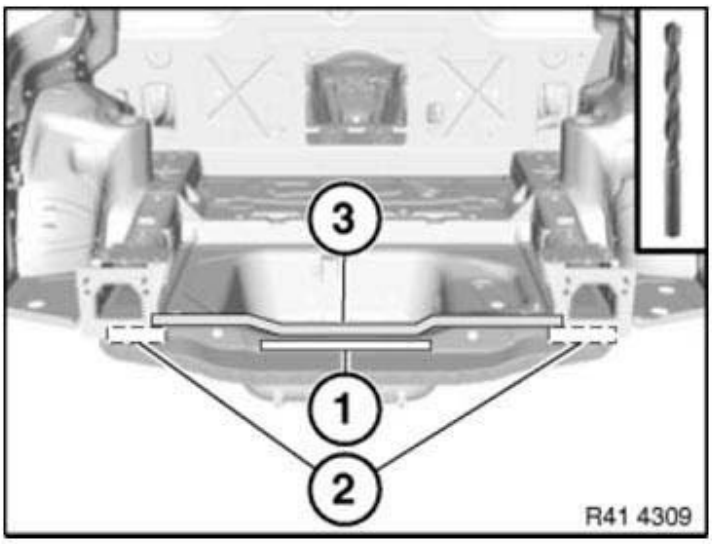


Fig. 152: Setting Holes Diameter For Blind Rivets Area
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new parts and body in area of bonding surfaces.

Installing cross-member

Clean all bonding surfaces on new part and on vehicle with cleaning agent R1.

Apply adhesive K5a to bonding surfaces (1) and to corresponding bonding surfaces on new part.

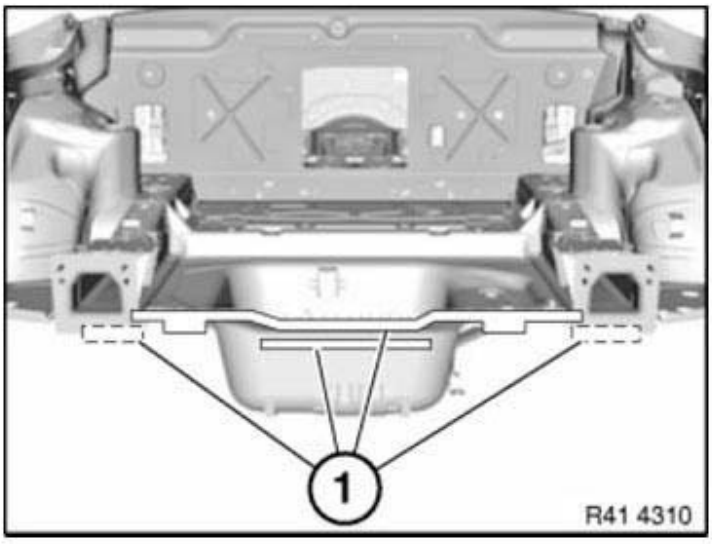


Fig. 153: Applying Adhesive K5A To Bonding Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

Install cross-member and rivet in area (1) with blind rivets.

Rivet cross-member in combination with tail panel in area (2).

IMPORTANT: When installing the cross-member, make sure there is sufficient adhesive on the bonding surfaces.

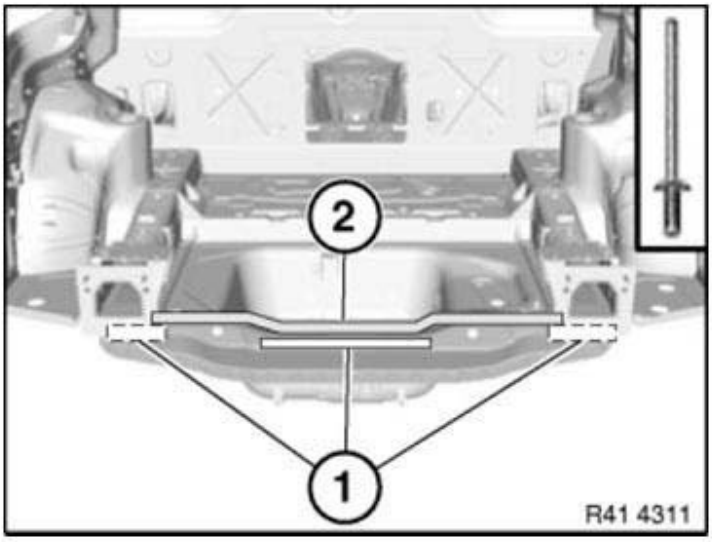


Fig. 154: Installing Cross-Member And Rivet In Area Using Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

41 12 557 STRIPPING OPERATIONS - REPLACING LUGGAGE COMPARTMENT FLOOR, MIDDLE (TAIL PANEL REMOVED)

NOTE: Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.

The following list basically represents the removal sequence.

- Remove exhaust system (FR number: 1800020)
- Remove heat shield
- Remove battery (FR number: 6121010)
- Remove hydraulic unit (engine) for retractable hard top (FR number: 5437185)

Release snap fasteners (1), disconnect lines.

Unfasten screws (2).

Remove carbon canister (3).

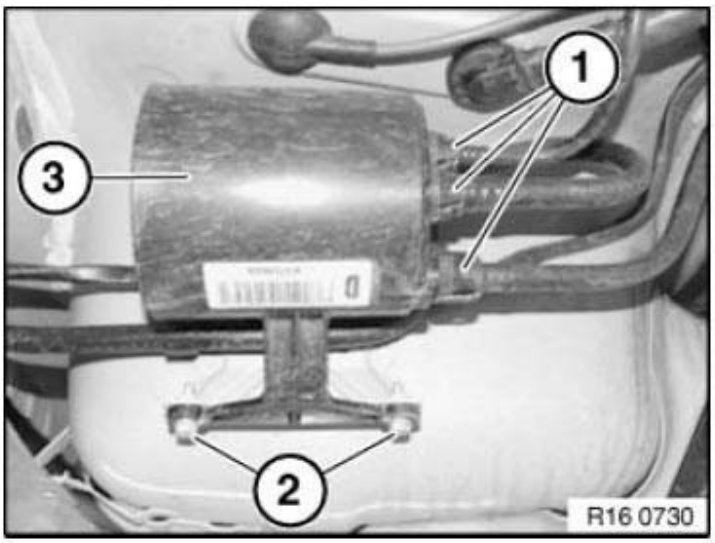


Fig. 155: Identifying Snap Fasteners, Screws And Carbon Canister
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug (1) and pull cable through luggage compartment floor.

Release screw (2).

Remove positive point.

Unscrew nut (3).

Remove earthing cable.

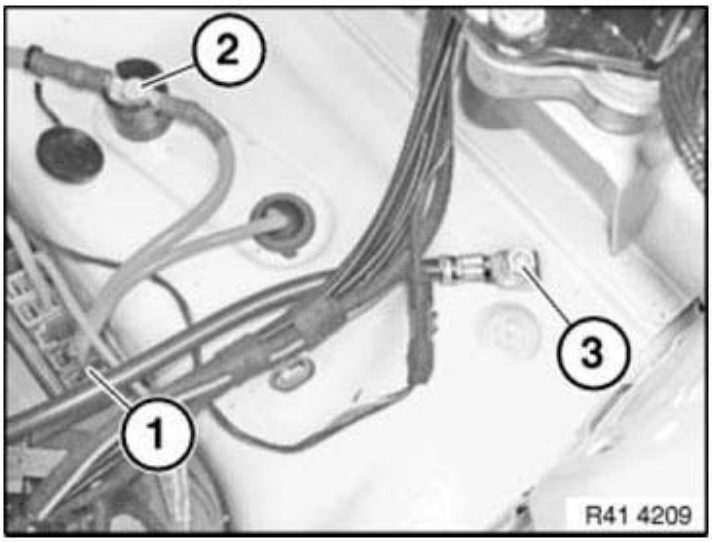


Fig. 156: Identifying Plug, Screw And Nut
Courtesy of BMW OF NORTH AMERICA, INC.

4114 WHEEL WELLS

41 00 ... PROCEDURE FOR FOLDING HARDTOP AFTER AN ACCIDENT

The hardtop may be under tension after the vehicle has incurred damage following an accident. Moving the hardtop by hydraulic means may result in irreparable damage. For this reason, the hardtop may only be moved manually until the damaged has been repaired.

IMPORTANT: It is not possible to check the correct operation of the folding roof on the damaged vehicle.

Different procedures are required, depending on the degree of damage which the vehicle has incurred. The repair instructions for emergency operation See **5437290 HARDTOP EMERGENCY OPENING** or **5437295 EMERGENCY CLOSING HARDTOP** describe only the complete sequences for manually opening and closing the hardtop.

When removing the roof module and/or the rear module, it is possible to move the hardtop manually into the necessary intermediate positions in each case.

WARNING: Risk of injury due to the heavy weight of the hardtop!
Since the hydraulic system may have to be depressurized during manual movement of the hardtop, there is an increased risk of injury by trapping. Secure the hardtop permanently and adequately against unintentional movement.

After body repairs to the vehicle

All the hardtop components screwed/bolted to the body are precisely screwed/bolted to the vehicle at the factory by means of gauges. This affects above all the base plates and consoles of the roof and rear modules. To minimize extensive adjustment work after a body repair as much as possible, only remove those components which are screwed/bolted to a damaged body part.

- Gauge the base plates *only* after a body repair to the cowl panel.

41 14 511 REPLACING COMPLETE REAR LEFT WHEEL ARCH (REAR LEFT SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on this vehicle. Observe specific **PROCEDURE** .

Place vehicle on straightening bench.

Following new body parts are required:

- (1) B-pillar, outer left

- (2) Wheel arch, rear, outer half, left
- (3) Wheel arch, inner rear left
- (4) Side section, inner left
- (5) Cavity acoustic baffle, window cavity (not pictured)

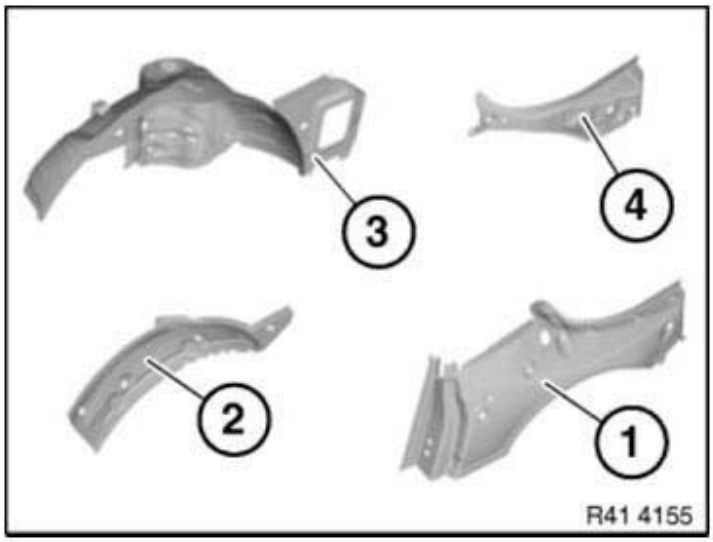


Fig. 157: Identifying B-Pillar, Outer Left, Wheel Arch, Rear, Outer Half, Left And Wheel Arch, Inner Rear Left
Courtesy of BMW OF NORTH AMERICA, INC.

Open spot-weld bonded joints in area (1)

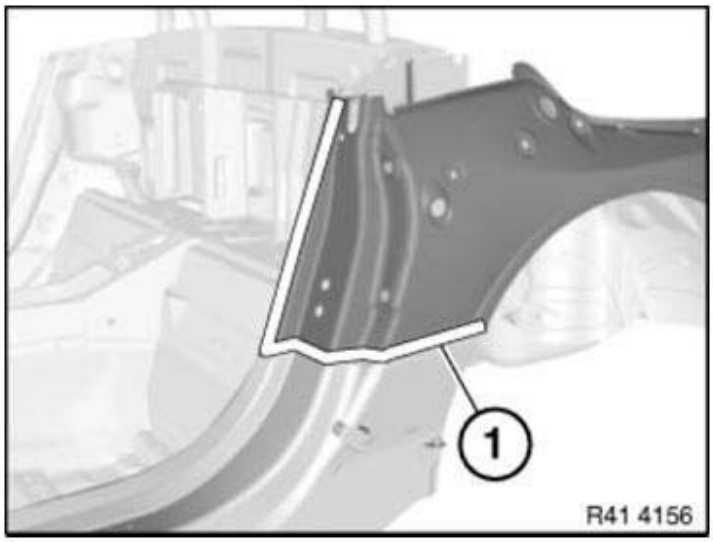


Fig. 158: Identifying Spot-Weld Bonded Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

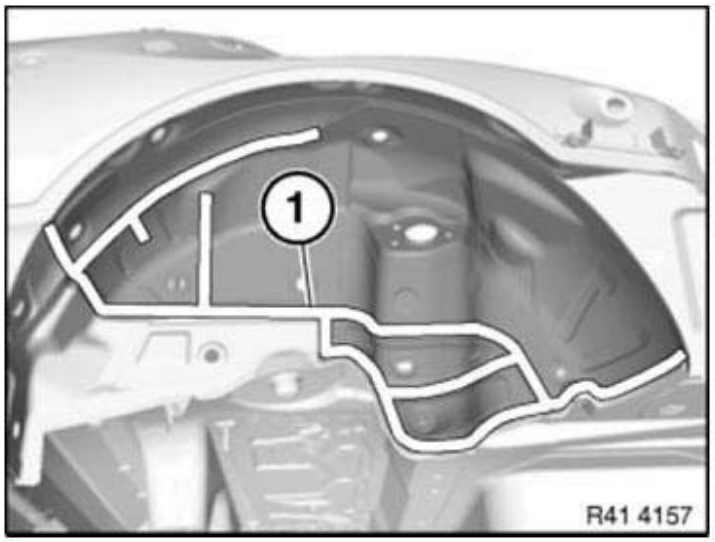


Fig. 159: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

Open brazed joints in area (2).

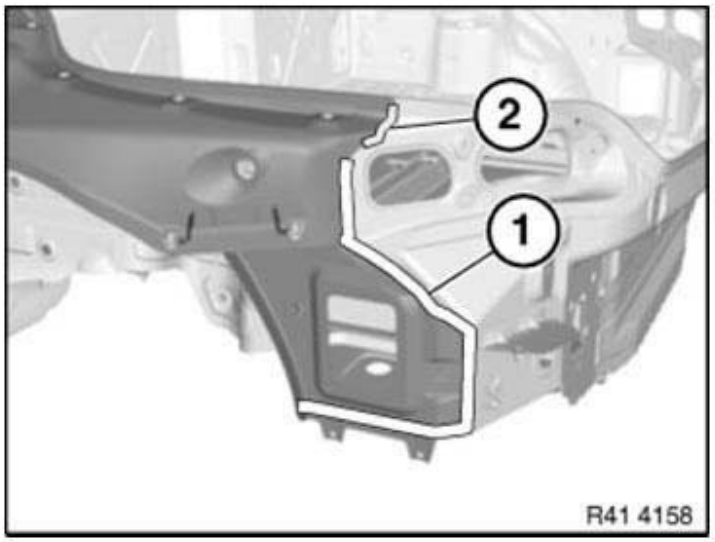


Fig. 160: Identifying Weld Joints Area And Brazed Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

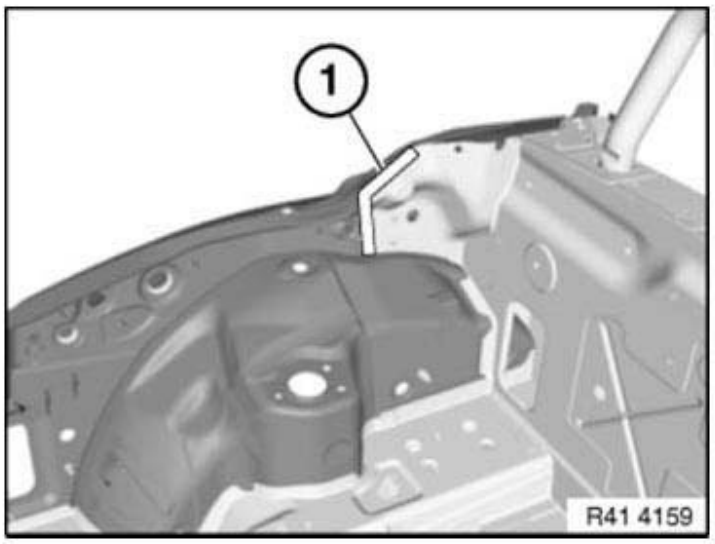


Fig. 161: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Adjust new part to fit with straightening attachment or universal mount (soft top securing mount).

BOND new part in area (1).

Set two **BLIND RIVETSN3** in area (1).

Weld new part in accordance with body.

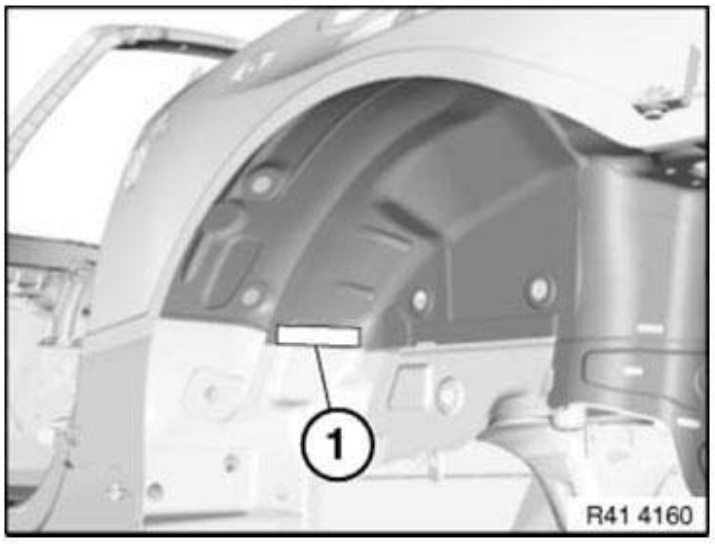


Fig. 162: Identifying Rivet Area With Blind Rivets N3
Courtesy of BMW OF NORTH AMERICA, INC.

41 14 020 REPLACING FRONT LEFT OR RIGHT WHEEL ARCH

Note the special vehicle identification number procedure when replacing the front right wheel arch (order the new body part with the vehicle identification number, if necessary)!

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on this vehicle. Observe specific **PROCEDURE** .

Use only an approved **SPOT-WELDING APPARATUS** for repairs!

Place vehicle on straightening bench.

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required

- (1) Wheel arch, front
- (2) Carrier support, wheel arch, front,

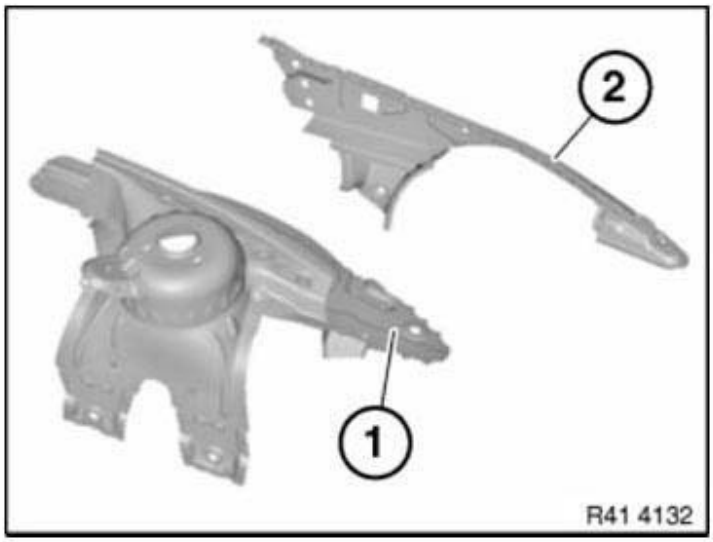


Fig. 163: Identifying Wheel Arch, Front And Carrier Support, Wheel Arch, Front
Courtesy of BMW OF NORTH AMERICA, INC.

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K1	1
Blind rivets N1	32
Cleaning agent R1	1

Sealant D1	

Open welded connections in areas (1).

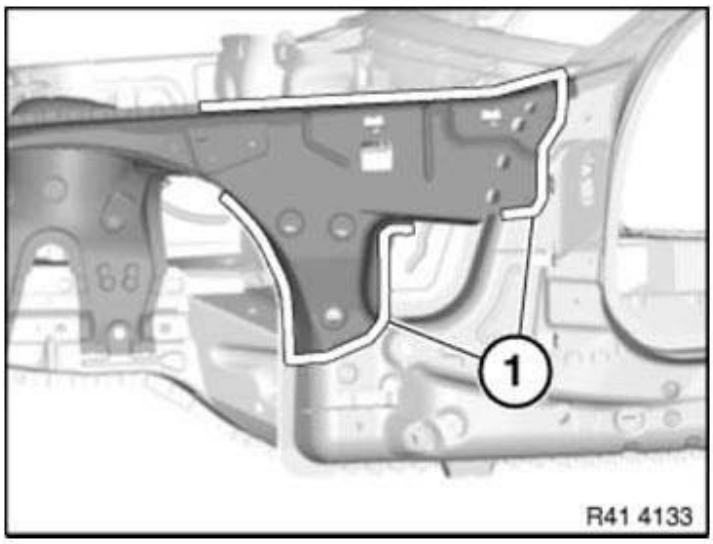


Fig. 164: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

IMPORTANT: When opening welding spot joints, do not damage panel underneath.

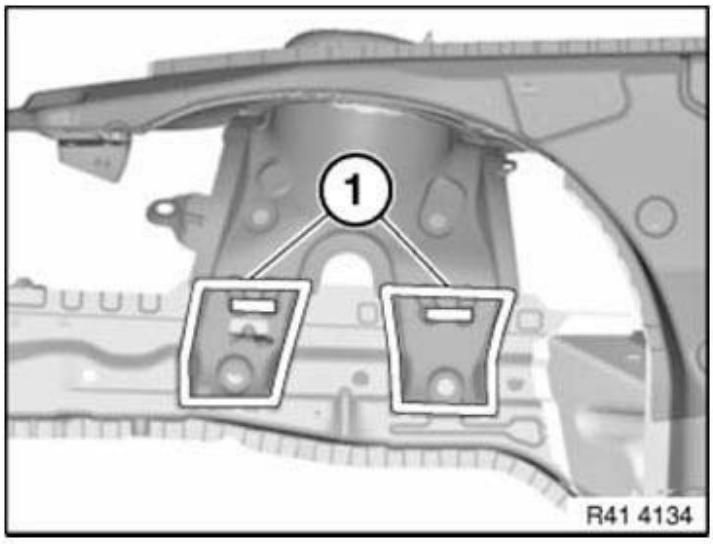


Fig. 165: Identifying Spot-Weld Bonded Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

Open spot-welded adhesive joint in area (2).

Remove wheel arch with carrier support.

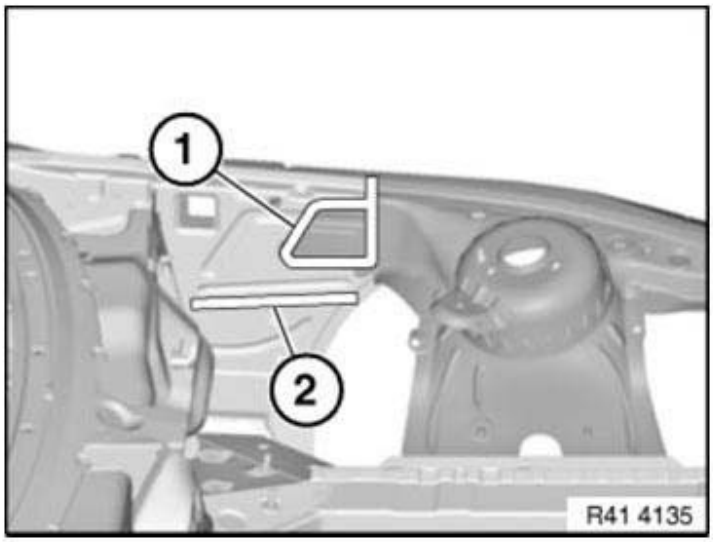


Fig. 166: Identifying Weld Joints Areas And Spot-Weld Bonded Joints Areas
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Adjust new part to fit with alignment bracket or universal mount and secure.

In areas (1) set thirty two 6.8 mm dia. bore holes for blind rivets N1.

NOTE: Number of blind rivets must correspond to number of opened welding spot joints.

Remove new part and deburr bore holes.

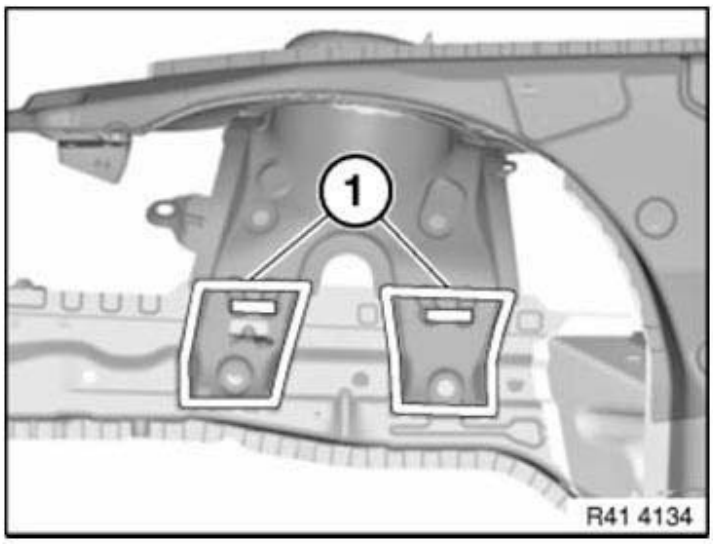


Fig. 167: Setting Holes Diameter Using Blind Rivets N1
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new part and body in area of bonding surfaces.

Installing wheel arch and carrier support

Clean all bonding surfaces on vehicle (1) and on new part with cleaning agent.

Apply K1 adhesive to bonding surfaces (1).

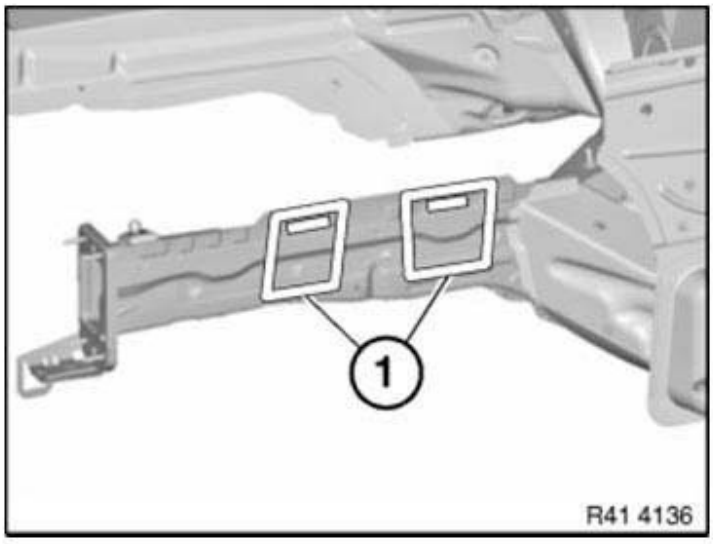


Fig. 168: Applying K1 Adhesive To Bonding Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

Install new parts and rivet with blind rivets N 1 (1).

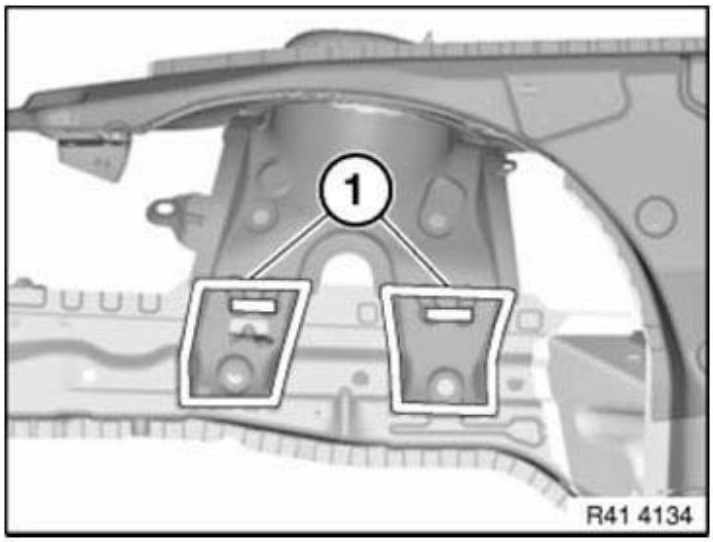


Fig. 169: Installing New Parts And Rivet Using Blind Rivets N 1
Courtesy of BMW OF NORTH AMERICA, INC.

41 21 518 REPLACING LEFT B-PILLAR (REAR LEFT SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on this vehicle. Observe specific **PROCEDURE** .

Following new body parts are required:

- (1) B-pillar, outer left

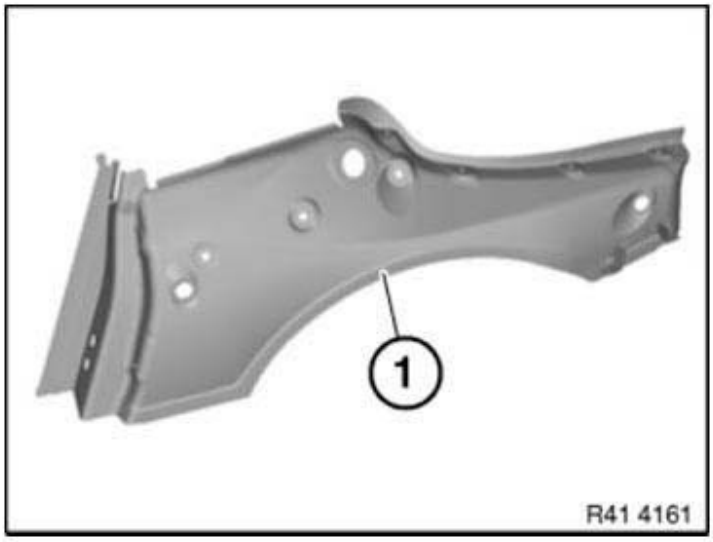


Fig. 170: Identifying B-Pillar, Outer Left
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

Open brazed joint in area (2).

Installation:

Apply sealant to **CAVITY ACOUSTIC BAFFLE** (3).

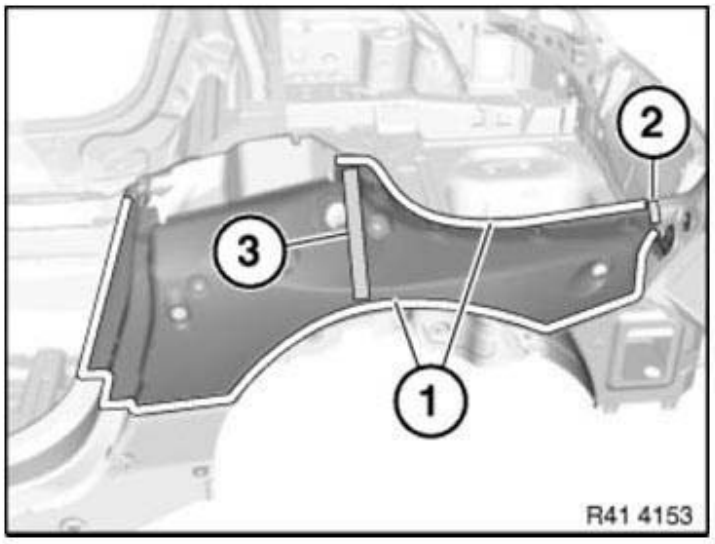


Fig. 171: Identifying Weld And Brazed Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 14 502 REPLACING REAR LEFT OUTER WHEEL ARCH SECTION (REAR LEFT SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on this vehicle. Observe specific **PROCEDURE** .

Following new body parts are required:

- (1) B-pillar, outer left
- (2) Side section, inner left
- (3) Cavity acoustic baffle, window cavity (not pictured)

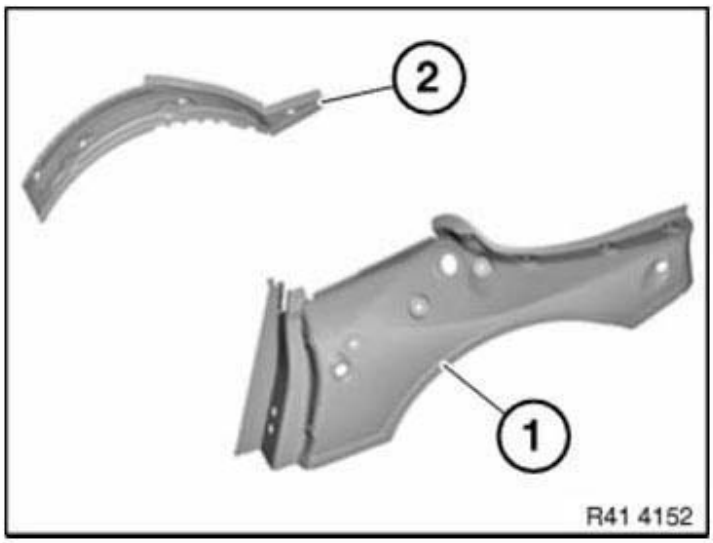


Fig. 172: Identifying B-Pillar, Outer Left, Side Section, Inner Left And Cavity Acoustic Baffle, Window Cavity
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

Open brazed joint in area (2).

Installation:

Apply sealant to **CAVITY ACOUSTIC BAFFLE** (3).

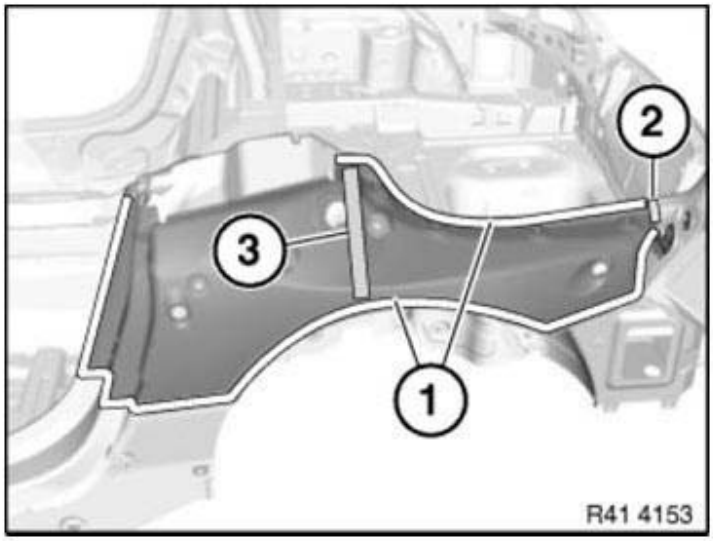


Fig. 173: Identifying Weld And Brazed Joints Area With Cavity Acoustic Baffle
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) in accordance with measurement and cut.

Measurement a = 20 mm from inner wheel arch section.

Open weld joints in area (1).

Installation:

Weld new part overlapping.

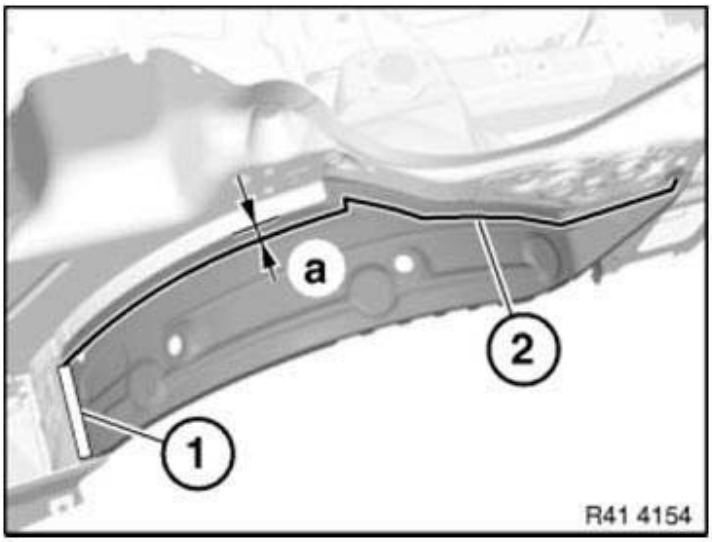


Fig. 174: Identifying Weld Joint Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... STAMPING VEHICLE IDENTIFICATION NUMBER (NEEDLE STAMPING UNIT)

Read and comply with **GENERAL INFORMATION** .

The needle stamping system 360 - VRM - BMW is required to stamp the vehicle identification number.

Order number: 81 43 2 155 736

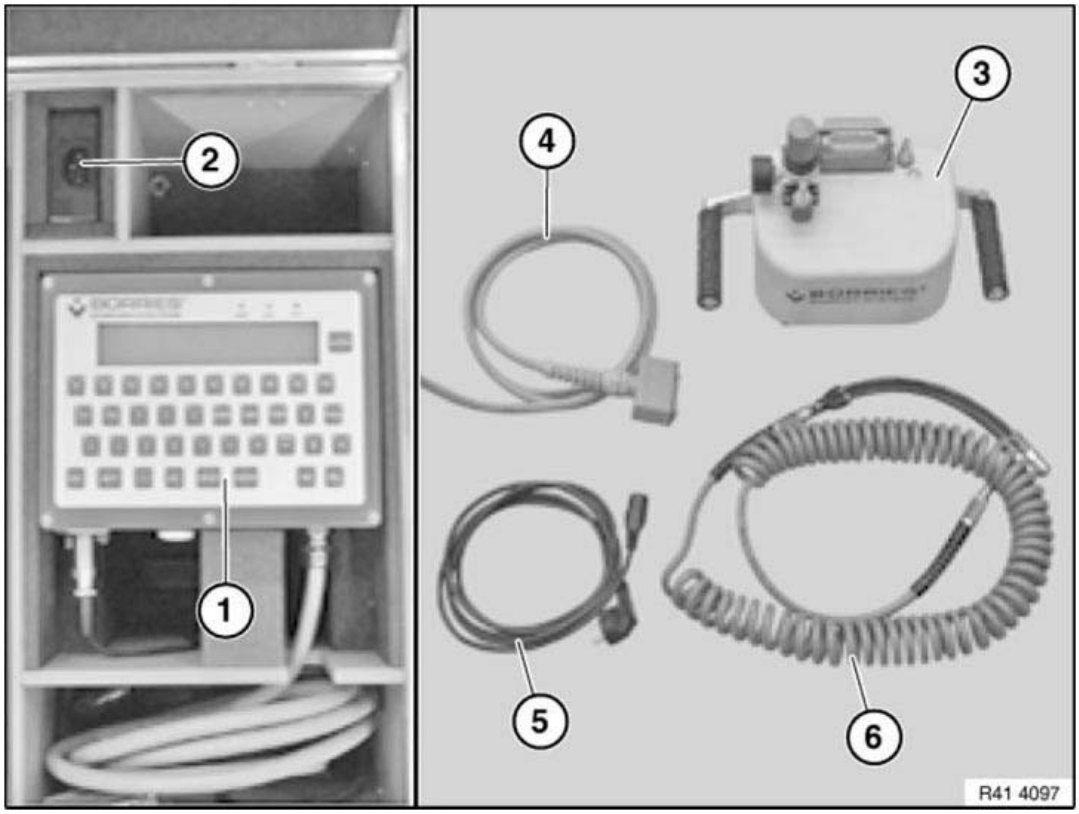


Fig. 175: Identifying Display, Mains Adapter, Needle Stamping Unit, Connecting Cable And Power Cable
Courtesy of BMW OF NORTH AMERICA, INC.

The needle stamping system 360 tool set comprises:

- (1) Display
- (2) Mains adapter
- (3) Needle stamping unit
- (4) Connecting cable
- (5) Power cable
- (6) Compressed-air hose

NOTE: A compressed-air connection is also required.

- **Operating pressure approx. 4 bar**
- **Use only dried, oil-free air**

Procedure for additional vehicle identification number

- Cross through original vehicle identification number.

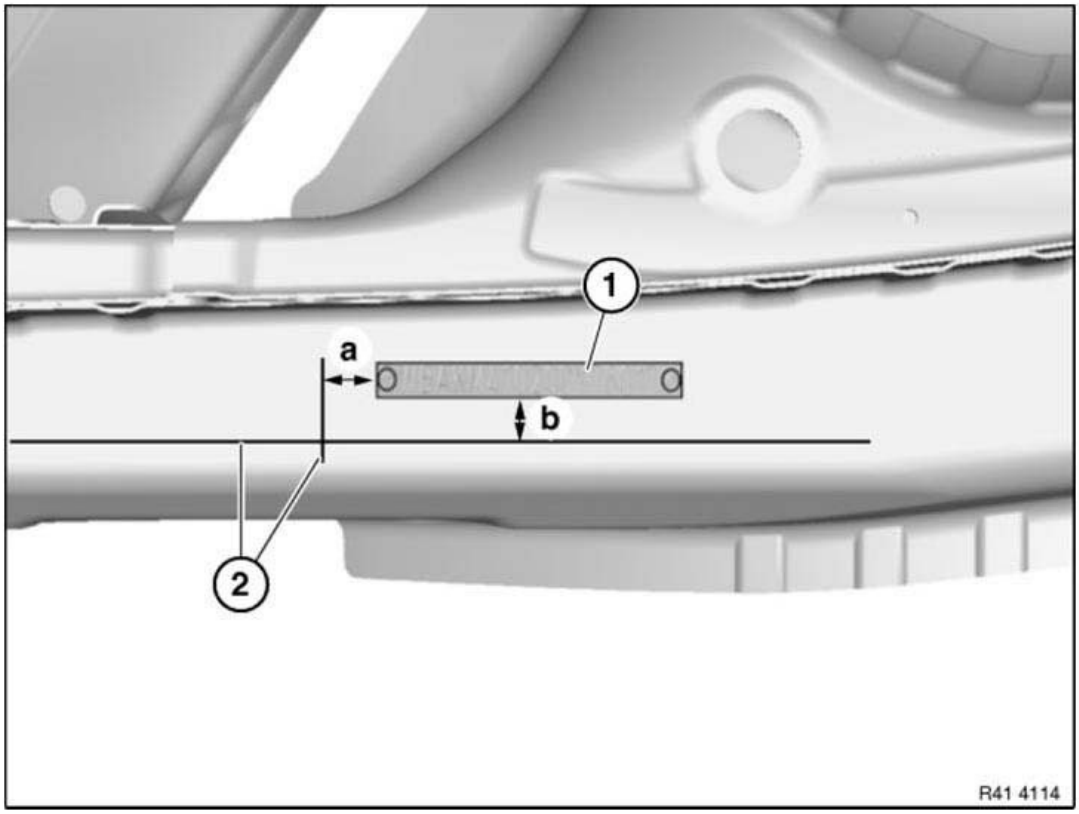


Fig. 176: Identifying Original Vehicle Identification Number With Position Lines
Courtesy of BMW OF NORTH AMERICA, INC.

(1) = original vehicle identification number.

Mark position lines (2) in accordance with specified dimensions/measurements.

Measurement a = 12 mm

Measurement b = 10 mm

Display input:

- Select Layout 5 with arrow button.
- Enter vehicle identification number with F10.
- Press "ENTER" button.

NOTE: With Layout 5 the vehicle identification number (line 1) is crossed through.



Fig. 177: Identifying Display
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Perform stamping operation with position lines in advance on a test sheet.

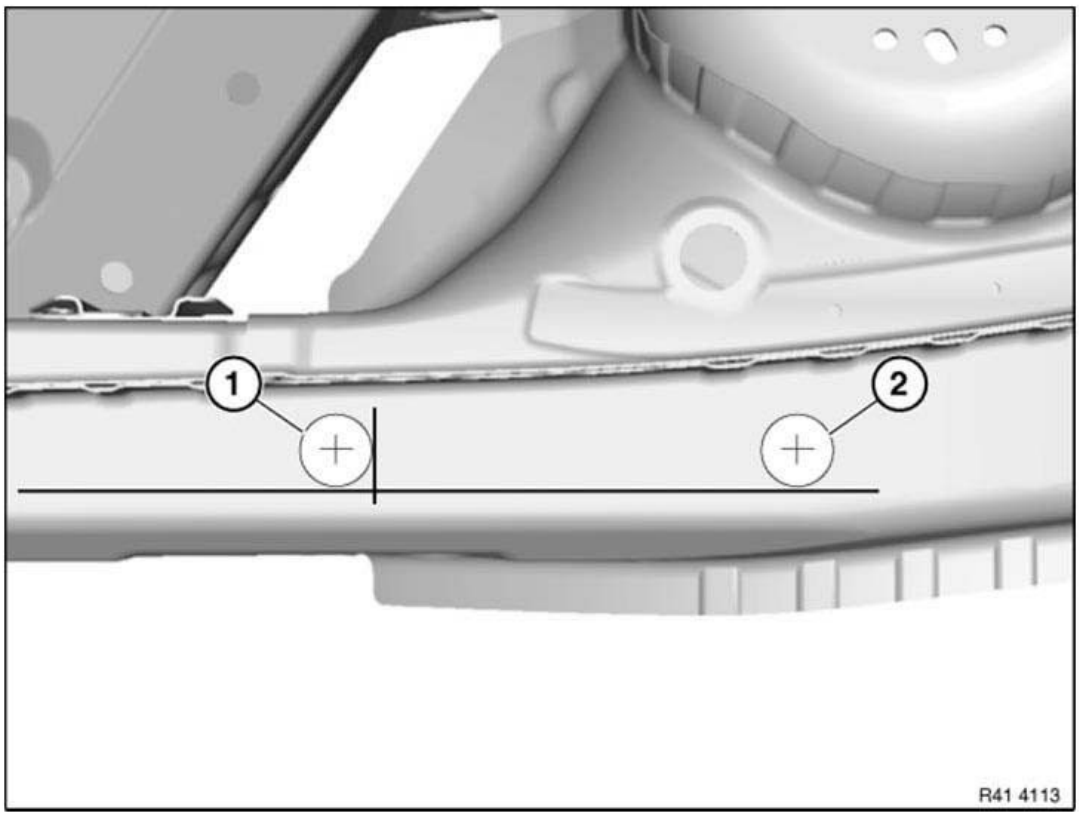


Fig. 178: Identifying Needle Stamping Unit Suction Feet Positions
Courtesy of BMW OF NORTH AMERICA, INC.

Move suction feet of needle stamping unit to positions (1) and (2) shown.

- First adjust position (1)
- Then adjust position (2)

Press pushbutton (1) for vacuum pressure.

Then start stamping operation with pushbutton (2).

After completing the stamping operation, switch off vacuum and set unit down.

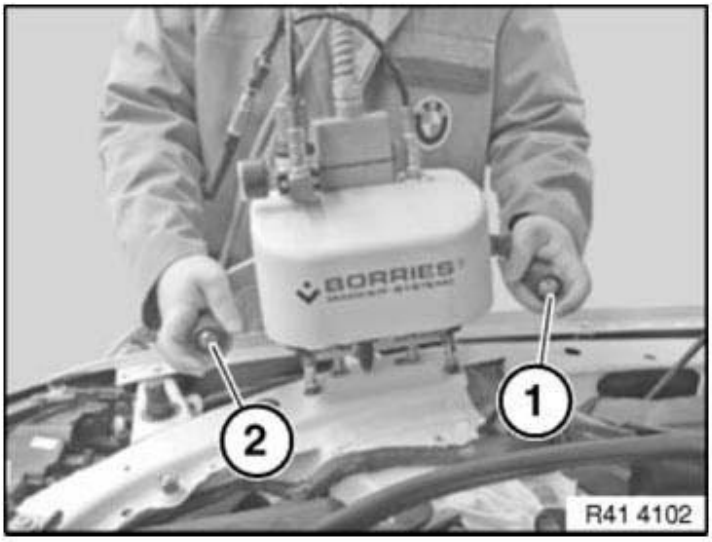


Fig. 179: Stamping Vehicle Identification Number
Courtesy of BMW OF NORTH AMERICA, INC.

Stamping second vehicle identification number

NOTE: The second vehicle identification number is stamped at the height of the spring strut dome.

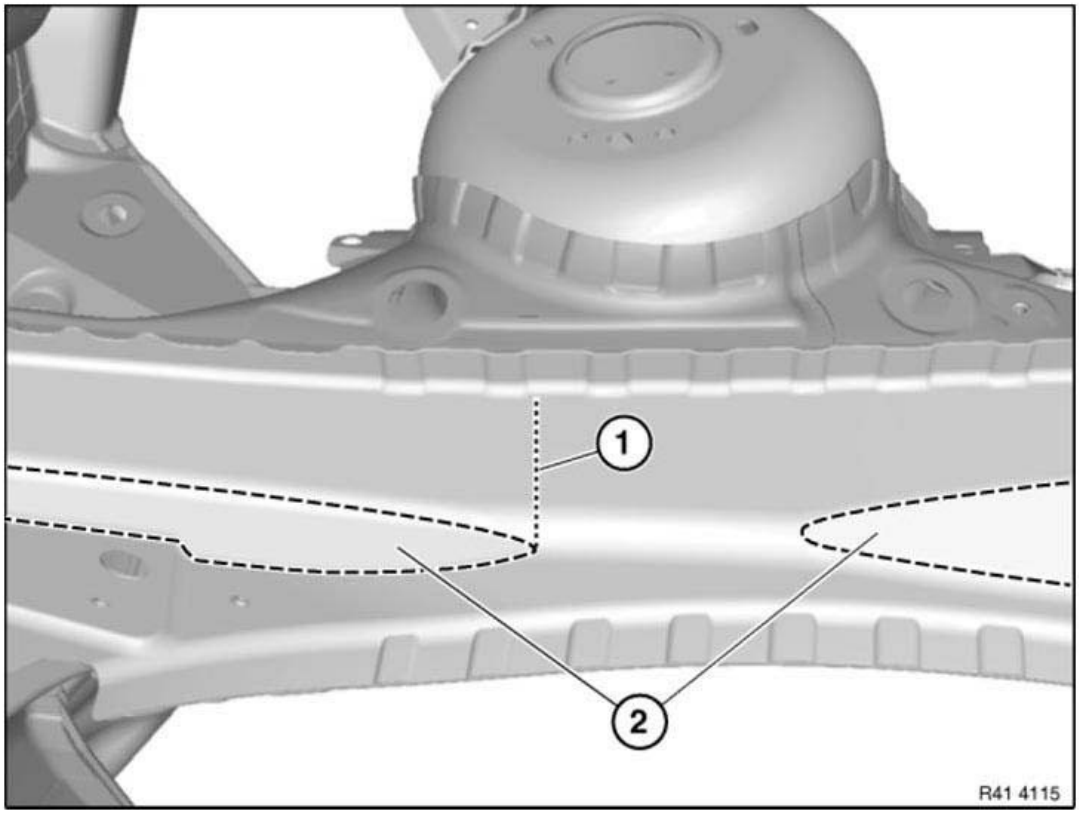


Fig. 180: Marking Help Line In Accordance With Reference Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

Mark help line (1) in accordance with reference surfaces (2).

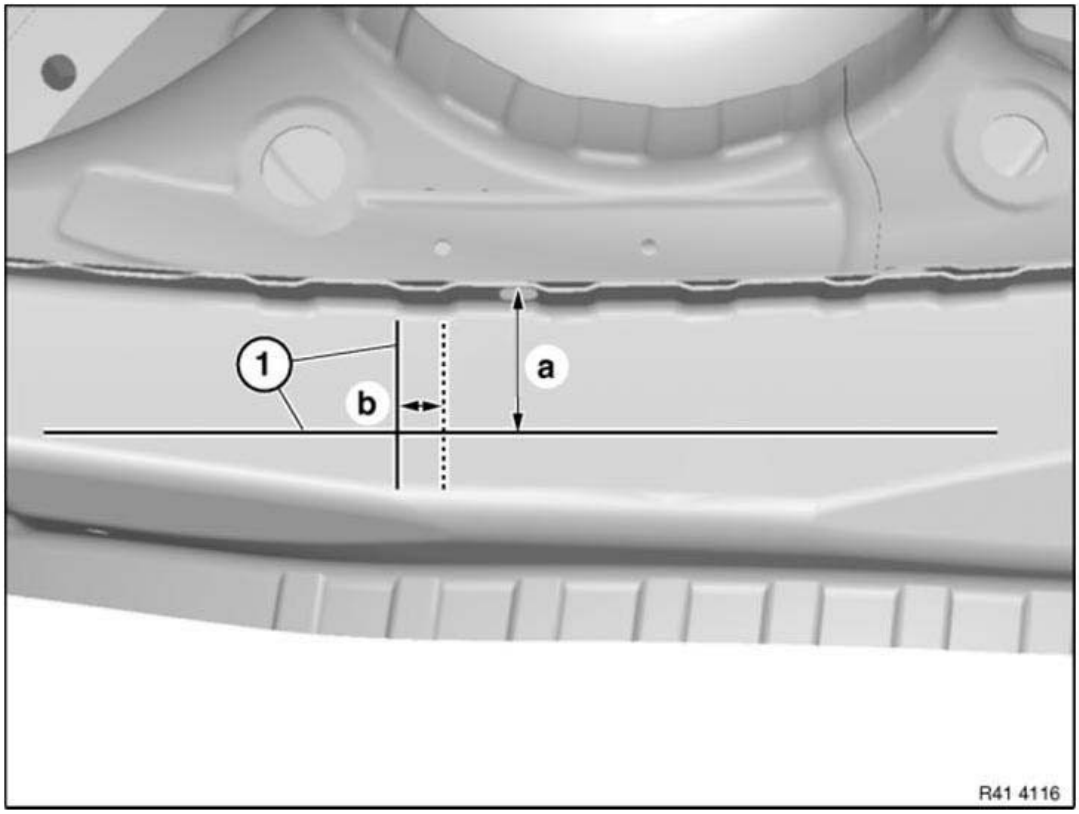


Fig. 181: Marking Position Lines In Accordance With Specified Dimensions/Measurements
Courtesy of BMW OF NORTH AMERICA, INC.

Mark position lines (1) in accordance with specified dimensions/measurements.

Measurement a = 45 mm

Measurement b = 15 mm

Display input:

- Select Layout 1 with arrow button.
- Press "ENTER" button.

NOTE: With Layout 1 the already entered vehicle identification number is stamped in line 1.



Fig. 182: Identifying Display
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Perform stamping operation with position lines in advance on a test sheet.

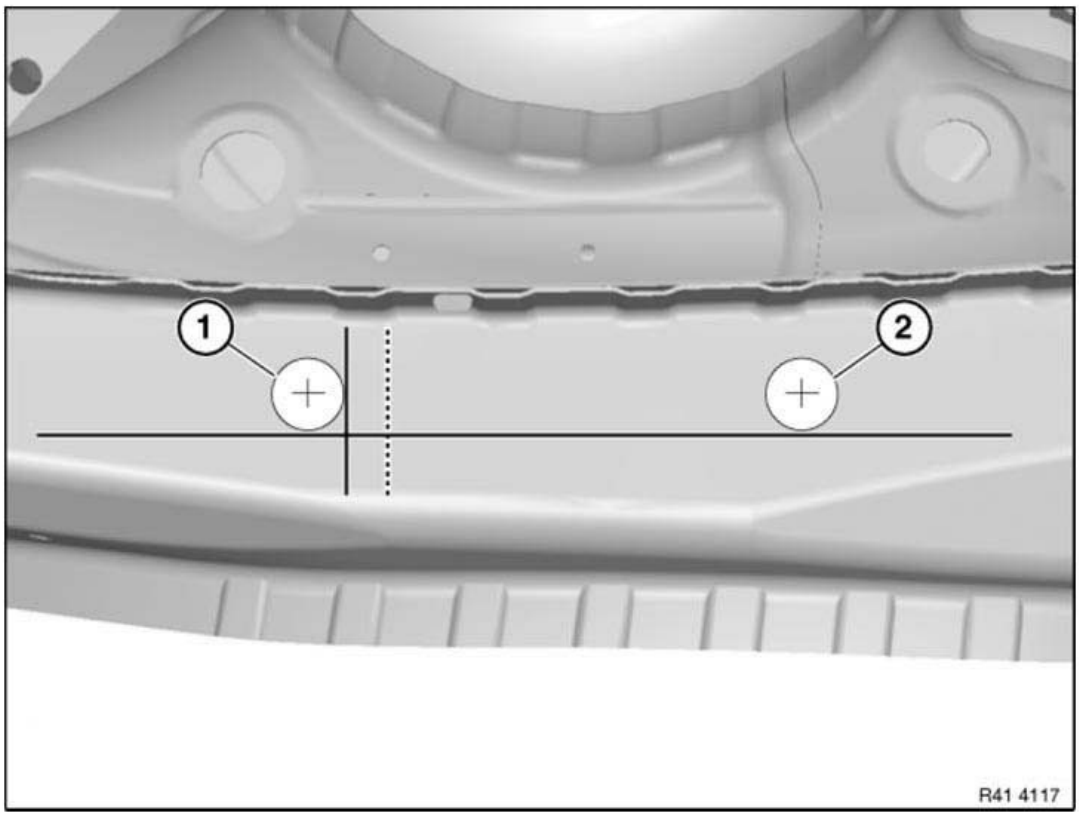


Fig. 183: Identifying Needle Stamping Unit Suction Feet Positions
Courtesy of BMW OF NORTH AMERICA, INC.

Move suction feet of needle stamping unit to positions (1) and (2) shown.

- First adjust position (1)
- Then adjust position (2)

Press pushbutton (1) for vacuum pressure.

Then start stamping operation with pushbutton (2).

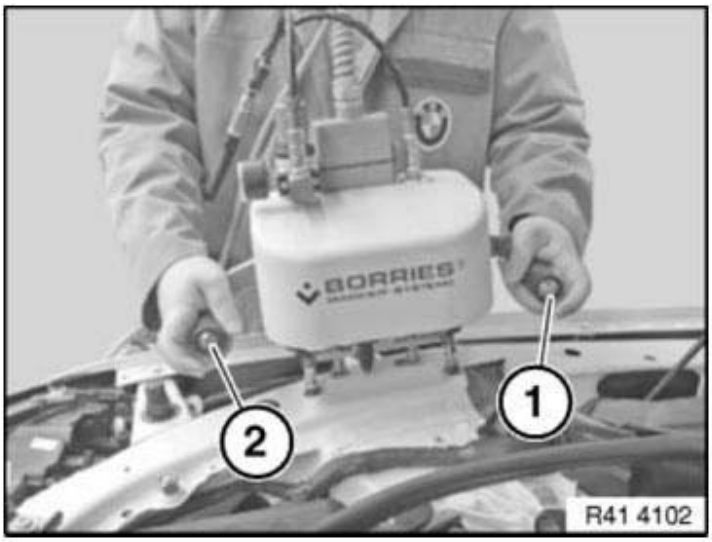


Fig. 184: Stamping Vehicle Identification Number
Courtesy of BMW OF NORTH AMERICA, INC.

Following layout functions are available:

LAYOUT FUNCTION CHART

Layout selection	Vehicle identification number
Layout 1	In line 1
Layout 2	In line 2
Layout 3	Turned through 180° in line 1
Layout 4	Turned through 180° in line 2
Layout 5	Cross through in line 1
Layout 6	Cross through in line 2

41 00 ... VEHICLE IDENTIFICATION NUMBER, GENERAL

In the event of repair 2 procedures are used, depending on the vehicle. Refer to the vehicle-specific repair instructions for the correct procedure.

1. General notes for stamped vehicle identification numbers

The vehicle identification number is stamped with a special tool. There are different special tool numbers and stamping procedures for the various vehicles. Refer to the relevant repair instructions.

In repair work, the vehicle identification number is always stamped into a replacement vehicle identification number surface. The replacement surface is usually situated under the original VIN surface.

The IGEF number (bodyshell number) is omitted when the wheel arch is replaced.

In the event of component or body replacement by the BMW garages/workshops, clearly delimit the vehicle identification number at front and rear by stamping a + in place of the BMW badge.

If a VIN is stamped into the replacement surface in addition to the original VIN (e.g. if the original VIN has been tampered with), the following applies: The original VIN must be crossed out. To do so, stamp the letter I from the punch digits lengthways through the original VIN.

IMPORTANT: Do not use an angle grinder in conjunction with a cutting disk!

The protective film used as standard is omitted after the VIN has been manually stamped in. Paint area in accordance with BMW Painting Handbook. Ensure that layer thicknesses are small.

Observe national/country-specific regulations.

2. General notes for embossed vehicle identification numbers

This procedure is used on all newly launching model series from model year 09/2008 (exception X1).

For the repair new parts with an embossed vehicle identification number can as a rule be ordered from the BMW Parts Department. If this is not possible, observe country-specific regulations.

The IGEF number (bodyshell number) is omitted when the wheel arch is replaced.

If a VIN is embossed into the replacement surface in addition to the original VIN (e.g. if the original VIN has been tampered with), the following applies: The vehicle-specific repair instructions describe the procedure.

The protective film used as standard is omitted after the VIN has been embossed. Paint area in accordance with BMW Painting Handbook. Ensure that layer thicknesses are small.

Observe national/country-specific regulations.

4121 SIDE FRAME AND DOOR PILLARS

41 11 141 REPLACING COVER FOR LEFT OR RIGHT FRAME SIDE MEMBER (PARTIAL REPLACEMENT BETWEEN A- AND B-PILLARS)

Read contents of **BODY, GENERAL** .

Remove or cover those vehicle components in the repair area which are susceptible to heat or dust.

Use only approved **SPOT-WELDING APPARATUS** for repairs.

Following new body parts are required:

- (1) Outer rocker panel

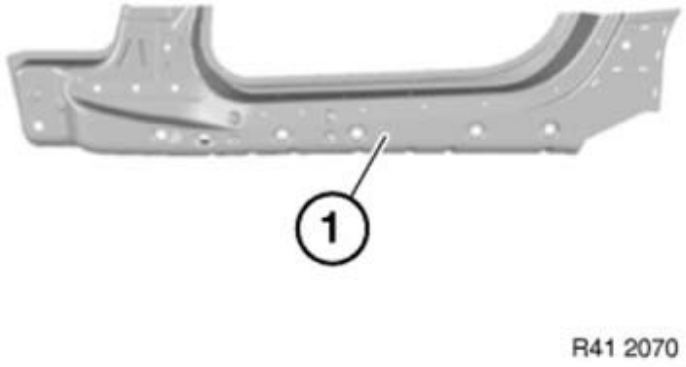


Fig. 185: Identifying Outer Rocker Panel
Courtesy of BMW OF NORTH AMERICA, INC.

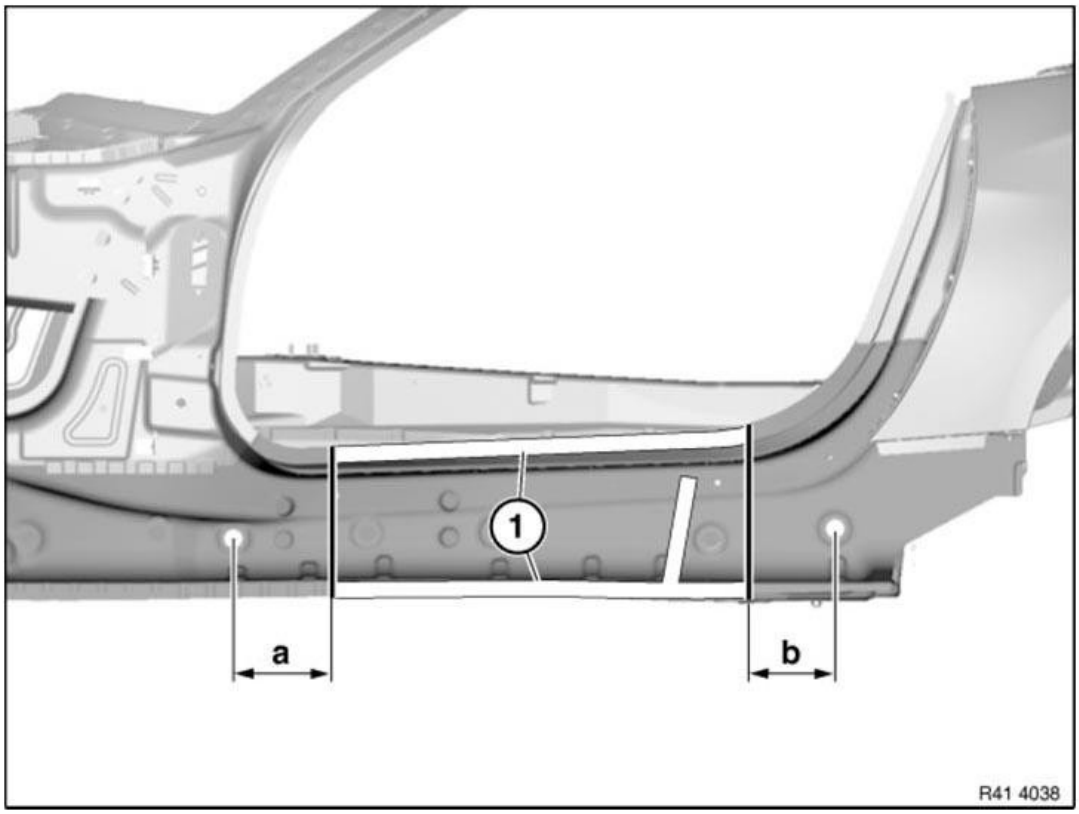


Fig. 186: Identifying Weld Joint Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cuts in accordance with specified measurements and cut.

Distance a = approx. 150 mm behind bore dia. 25 mm.

Distance b = approx. 130 mm before bore dia. 25 mm.

Release weld joints in areas (1) and remove outer rocker panel.

Installation:

Weld in **REINFORCING PANELS** at all severance cuts.

41 11 155 REPLACING COVER FOR LEFT OR RIGHT SIDE MEMBER (PARTIAL REPLACEMENT, DOOR PILLAR)

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on this vehicle. Observe specific procedure See **4100... SPOT-WELD BONDING STEEL PARTS** or **4100... OPENING ADHESIVE BONDS**.

Place vehicle on straightening bench.

Necessary preliminary tasks

- Remove **FRONT SIDE PANEL**
- Remove rear side panel See **4135111 REPLACING REAR RIGHT SIDE PANEL** or **4135101 REPLACING REAR LEFT SIDE PANEL**
- **REMOVE DOOR**

Following new body parts are required:

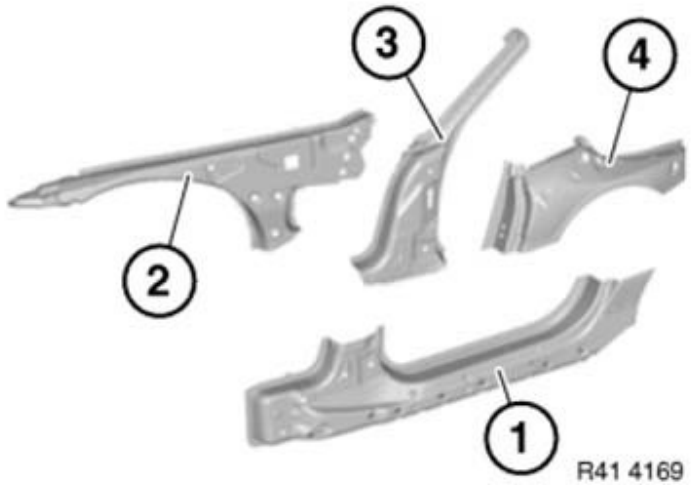


Fig. 187: Identifying Entrance, Outer, Carrier Support, Wheel Arch, A-Pillar, Outer And B-Pillar, Outer

Courtesy of BMW OF NORTH AMERICA, INC.

- (1) Entrance, outer
- (2) Carrier support, wheel arch
- (3) A-pillar, outer
- (4) B-pillar, outer

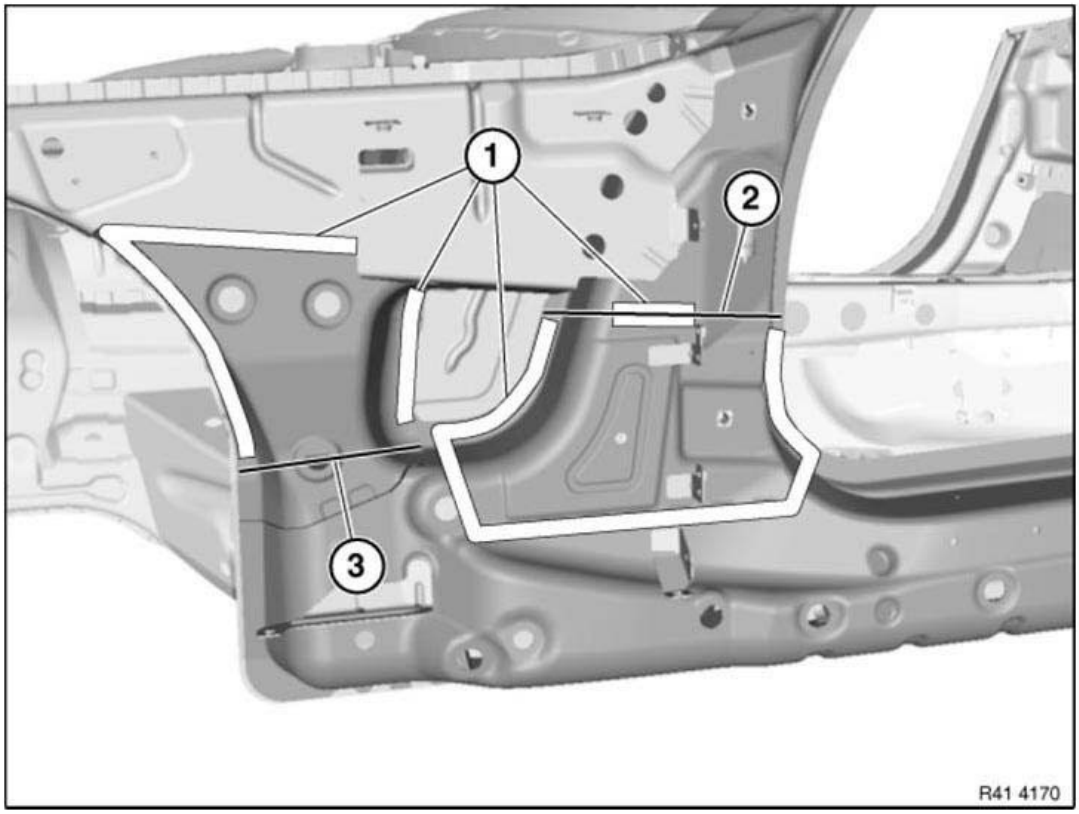


Fig. 188: Identifying Weld Joints Areas And Spot-Weld Adhesive Joints Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints and spot-welded adhesive joints in areas (1).

Mark severance cuts (2) and (3) and cut.

IMPORTANT: Cut only outer plates.

Installation:

No reinforcing panel is welded in at severance cut (2).

Execute severance cut (2) so that there is an overlap to new entrance part.

Open weld joints in areas (1).

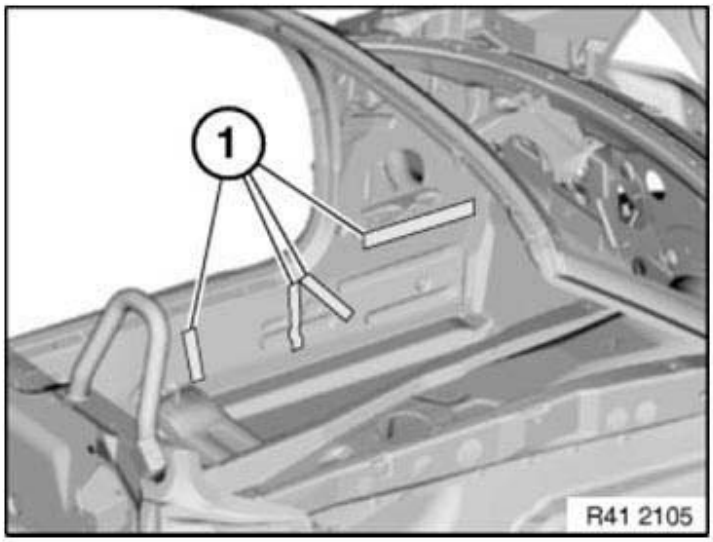


Fig. 189: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) and cut.

Open weld joints and spot-welded adhesive joints in area (2).

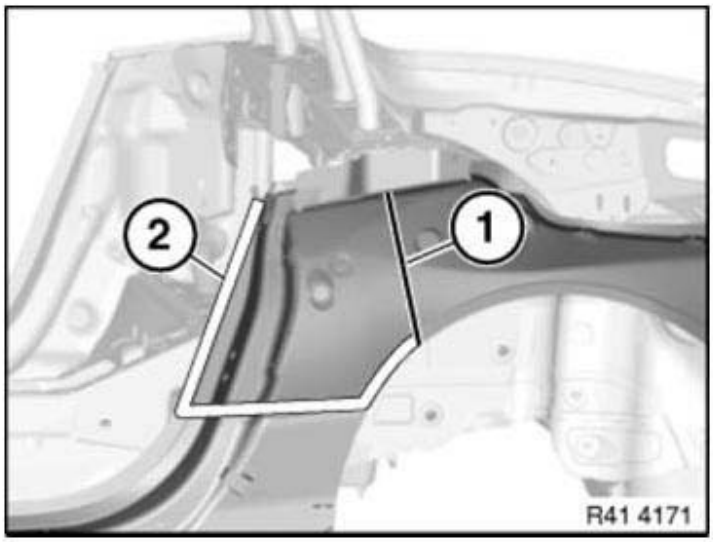


Fig. 190: Identifying Weld Joints Areas And Spot-Weld Adhesive Joints Areas With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

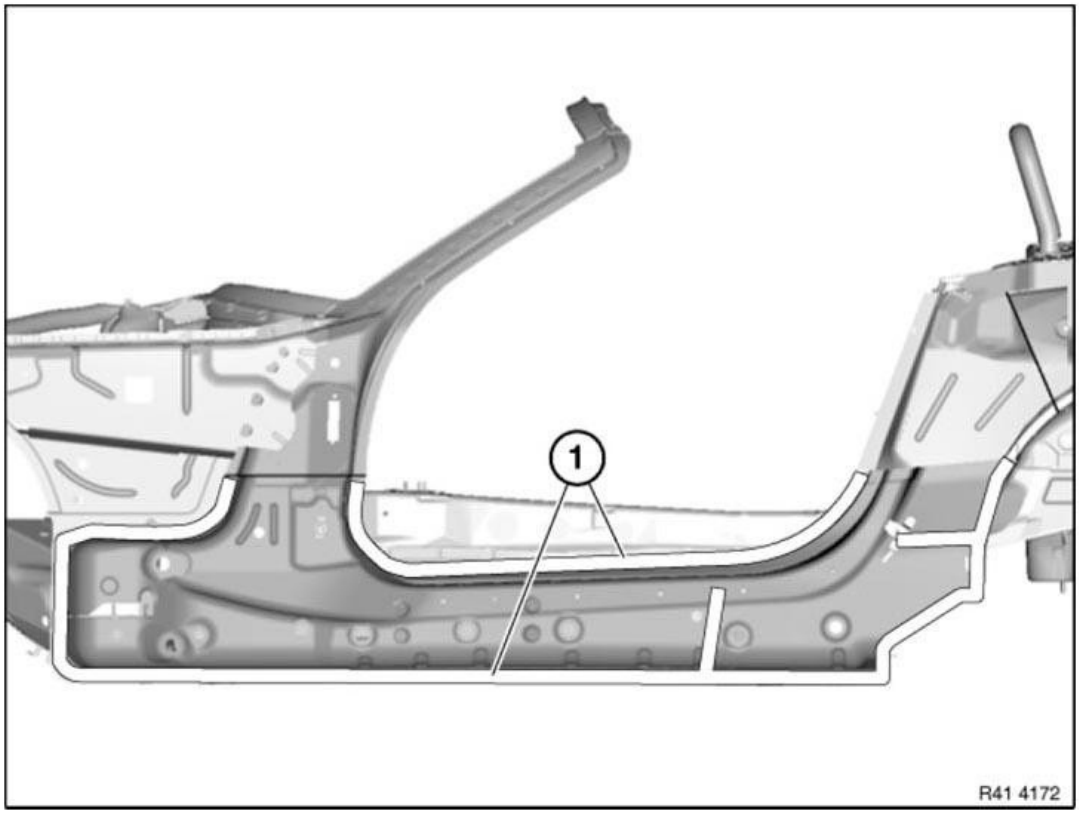


Fig. 191: Identifying Weld Joints Areas And Spot-Weld Adhesive Joints Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints and spot-welded adhesive joints in area (1).

Installation:

Slide **outer entrance** underneath remaining A-pillar.

Adhere to specific procedure with regard to spot-welded adhesive joints.

When welding the new part, make sure that the adhesive joints of adjoining components are not damaged by the application of heat.

41 21 512 REPLACING DOOR PILLAR INNER SECTION (DOOR PILLAR REMOVED)

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on the E85. Observe specific procedure See **4100... SPOT-WELD BONDING STEEL PARTS** or **4100... OPENING ADHESIVE BONDS**.

Place vehicle on straightening bench.

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) Support, A-pillar

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N1	4
CleanerR1	1
Sealing compoundD1	



Fig. 192: Identifying Support, A-Pillar
Courtesy of BMW OF NORTH AMERICA, INC.

View from inside.

Open weld joints in areas (1).

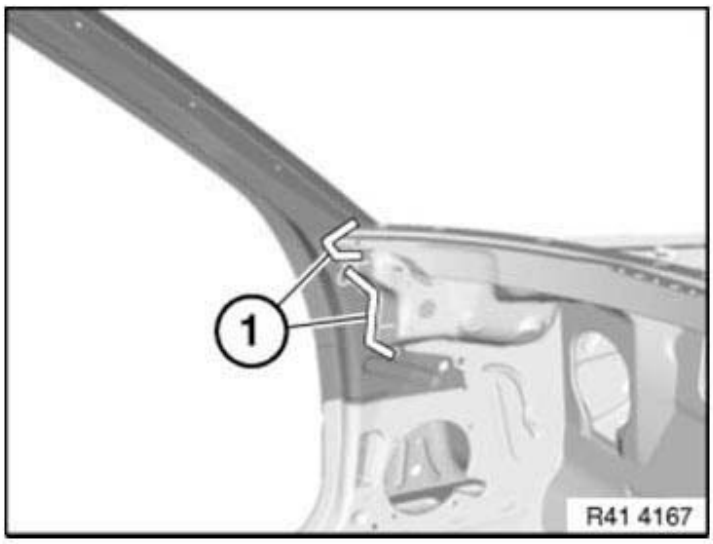


Fig. 193: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

Open spot-weld bonded joints in area (2)

Installation:

Adjust new part to fit with straightening attachment or universal mount.

Apply adhesive K5a in area (2). Rivet new part with 4 blind rivets N1. Before applying adhesive, clean bonding surfaces with adhesive cleaner.

Observe fitting of door pillar when selecting the rivet positions.

When welding the new part, make sure that the adhesive joints of adjoining components are not damaged by the application of heat.

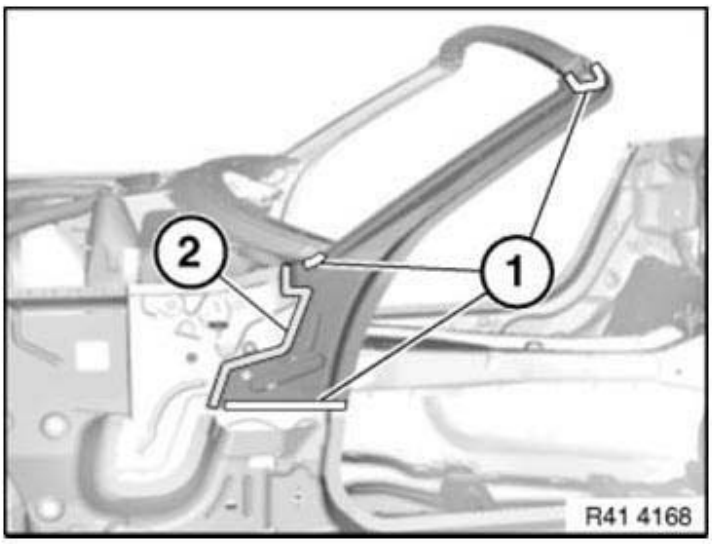


Fig. 194: Identifying Weld Joints Areas And Spot-Weld Bonded Joints Areas
Courtesy of BMW OF NORTH AMERICA, INC.

41 21 540 REPLACING FRONT LEFT OR RIGHT DOOR PILLAR (FRONT SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on this vehicle. Observe specific procedure See **4100... SPOT-WELD BONDING STEEL PARTS** or **4100... OPENING ADHESIVE BONDS**.

Place vehicle on straightening bench.

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) A-pillar, outer left
- (2) Support carrier, wheel arch, left

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N1	1
Cavity sealing wax remover	1
CleanerR1	1
Sealing compoundD1	

NOTE: New outer A-pillar part does not contain a reinforcing tube.

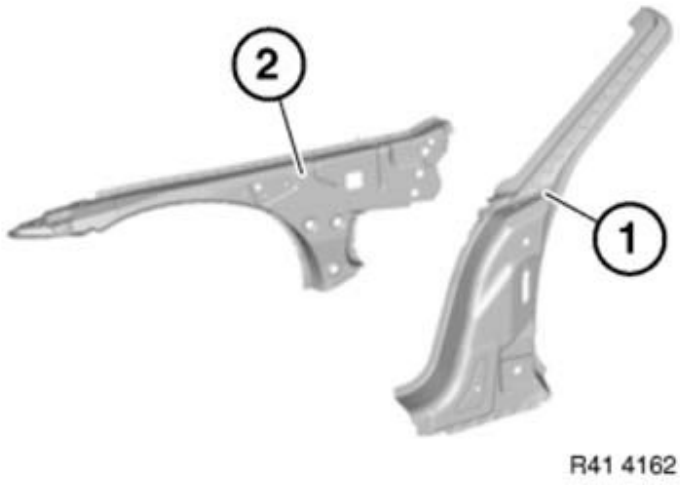


Fig. 195: Identifying A-Pillar, Outer Left And Support Carrier, Wheel Arch, Left
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) in accordance with measurement a and cut support carrier.

Measurement a = 115 mm from hole dia. 25 mm.

IMPORTANT: Cut outer metal sheet only.

Open weld joints in area (2).

Installation:

Weld in **REINFORCEMENT PLATE** at severance cut.

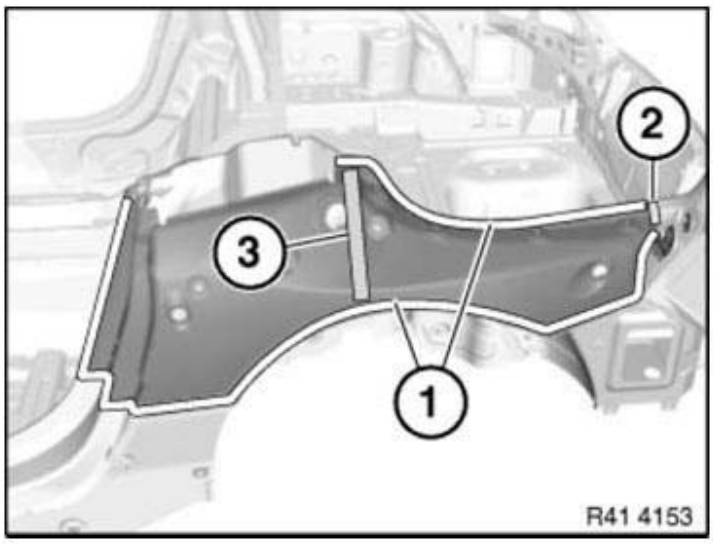


Fig. 196: Identifying Weld Joints Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Open spot-weld bonded joints in area (1)

Open weld joints in area (2).

Open brazed joint in area (3).

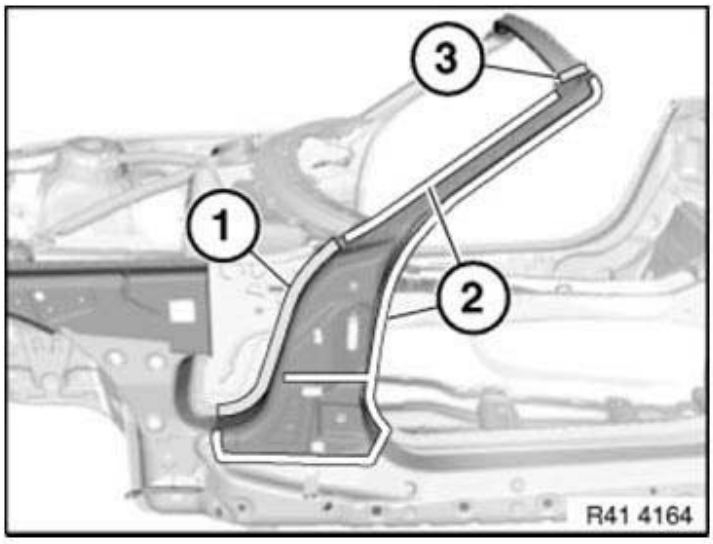


Fig. 197: Identifying Weld Joints And Brazed Joints
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Adjust new part to fit with straightening attachment or universal mount.

Adhesive is omitted in areas (1). Observe specific **PROCEDURE** and seal this area with utmost care.

Apply **ADHESIVE K1A** in area (2). Rivet new part with blind rivet N1. Before applying adhesive, clean bonding surfaces with adhesive cleaner.

When welding the new part, make sure that the adhesive joints of adjoining components are not damaged by the application of heat.

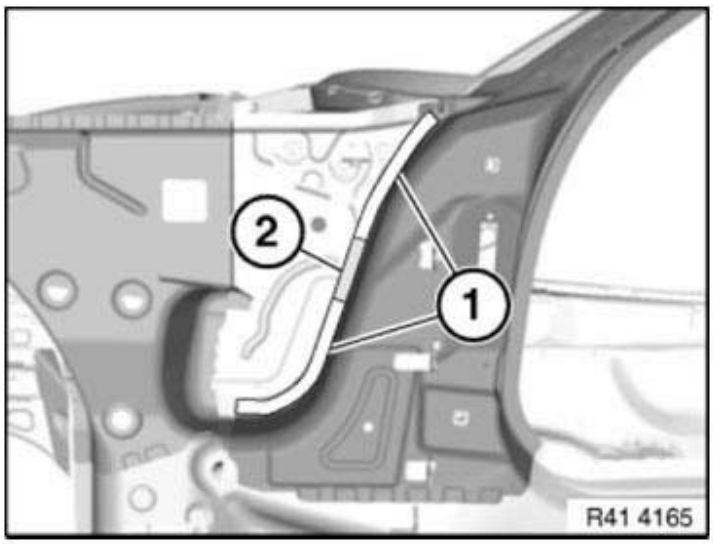


Fig. 198: Applying Adhesive k1a In Rivet Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 21 518 REPLACING LEFT B-PILLAR (REAR LEFT SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on this vehicle. Observe specific **PROCEDURE** .

Following new body parts are required:

- (1) B-pillar, outer left

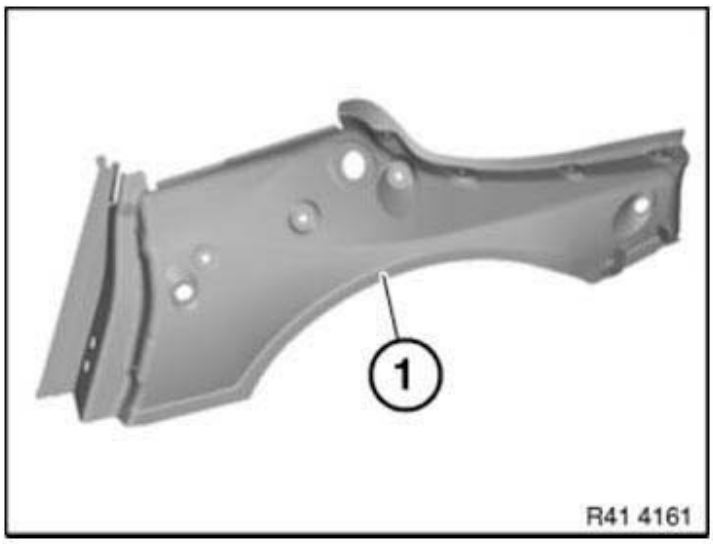


Fig. 199: Identifying B-Pillar, Outer Left
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

Open brazed joint in area (2).

Installation:

Apply sealant to **CAVITY ACOUSTIC BAFFLE** (3).

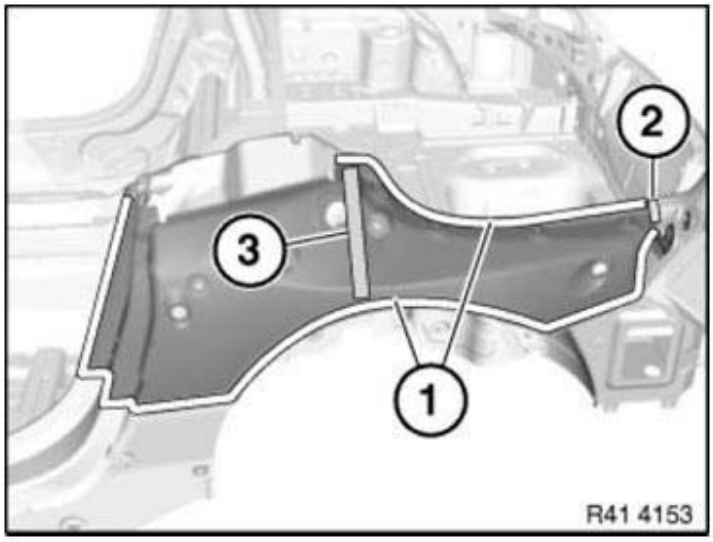


Fig. 200: Identifying Weld And Brazed Joints With Cavity Acoustic Baffle
Courtesy of BMW OF NORTH AMERICA, INC.

4132 DASH COWL

41 00 ... PROCEDURE FOR FOLDING HARDTOP AFTER AN ACCIDENT

The hardtop may be under tension after the vehicle has incurred damage following an accident. Moving the hardtop by hydraulic means may result in irreparable damage. For this reason, the hardtop may only be moved manually until the damaged has been repaired.

IMPORTANT: It is not possible to check the correct operation of the folding roof on the damaged vehicle.

Different procedures are required, depending on the degree of damage which the vehicle has incurred. The repair instructions for emergency operation See **5437290 HARDTOP EMERGENCY OPENING** or **5437295 EMERGENCY CLOSING HARDTOP** describe only the complete sequences for manually opening and closing the hardtop.

When removing the roof module and/or the rear module, it is possible to move the hardtop manually into the necessary intermediate positions in each case.

WARNING: Risk of injury due to the heavy weight of the hardtop!
Since the hydraulic system may have to be depressurized during manual movement of the hardtop, there is an increased risk of injury by trapping. Secure the hardtop permanently and adequately against unintentional movement.

After body repairs to the vehicle

All the hardtop components screwed/bolted to the body are precisely screwed/bolted to the vehicle at the factory by means of gauges. This affects above all the base plates and consoles of the roof and rear modules. To minimize extensive adjustment work after a body repair as much as possible, only remove those components which are screwed/bolted to a damaged body part.

- Gauge the base plates *only* after a body repair to the cowl panel.

41 21 540 REPLACING FRONT LEFT OR RIGHT DOOR PILLAR (FRONT SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Spot-weld bonding is used on this vehicle. Observe specific procedure See **4100... SPOT-WELD BONDING STEEL PARTS** or **4100... OPENING ADHESIVE BONDS**.

Place vehicle on straightening bench.

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required

- (1) A-pillar, outer left
- (2) Support carrier, wheel arch, left

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N1	1
Cavity sealing wax remover	1
CleanerR1	1
Sealing compoundD1	

NOTE: New outer A-pillar part does not contain a reinforcing tube.

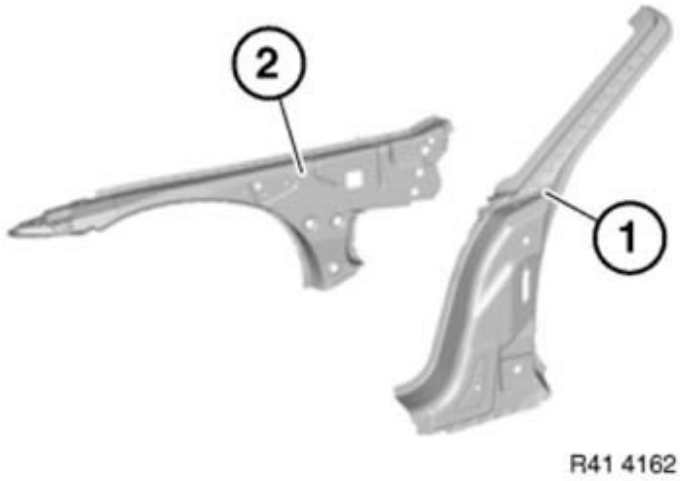


Fig. 201: Identifying A-Pillar, Outer Left And Support Carrier, Wheel Arch
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) in accordance with measurement a and cut support carrier.

Measurement a = 115 mm from hole dia. 25 mm.

IMPORTANT: Cut outer metal sheet only.

Open weld joints in area (2).

Installation:

Weld in **REINFORCEMENT PLATE** at severance cut.

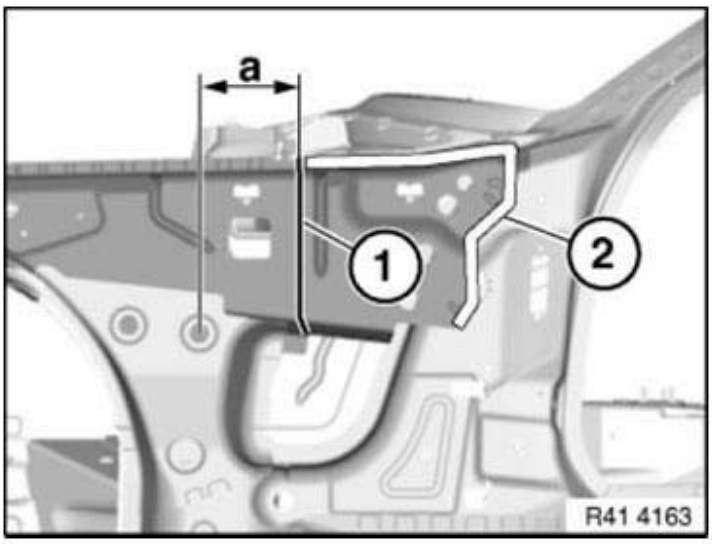


Fig. 202: Identifying Weld Joints Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Open spot-weld bonded joints in area (1)

Open weld joints in area (2).

Open brazed joint in area (3).

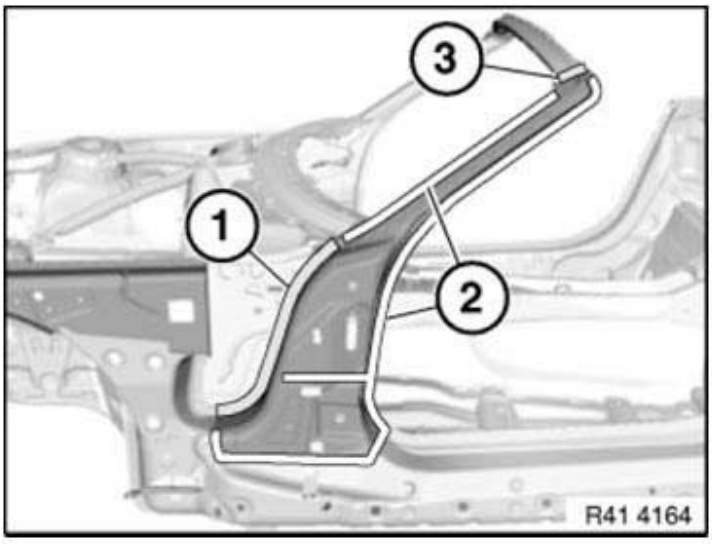


Fig. 203: Identifying Weld Joint And Brazed Joint
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Adjust new part to fit with straightening attachment or universal mount.

Adhesive is omitted in areas (1). Observe specific **PROCEDURE** and seal this area with utmost care.

Apply **ADHESIVE K1A** in area (2). Rivet new part with blind rivet N1. Before applying adhesive, clean bonding surfaces with adhesive cleaner.

When welding the new part, make sure that the adhesive joints of adjoining components are not damaged by the application of heat.

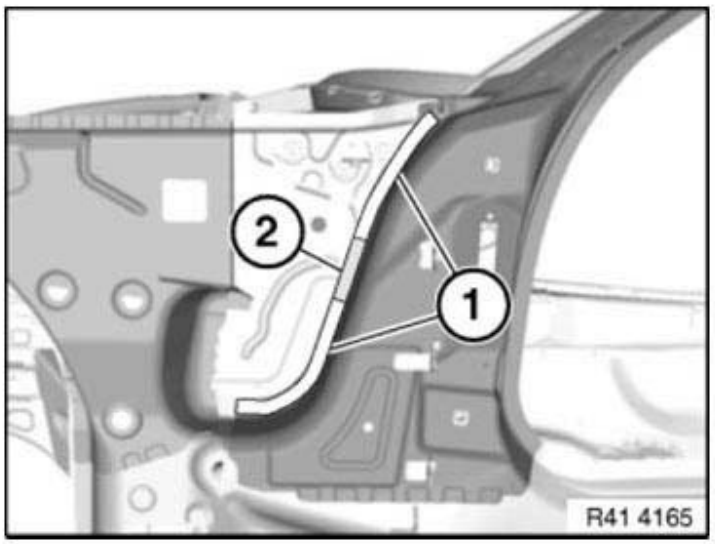


Fig. 204: Applying Adhesive K1a In Rivet Area
Courtesy of BMW OF NORTH AMERICA, INC.

4133 FRONT TRIM PANEL

41 33 040 REPLACING FRONT WALL

Read contents of **BODY, GENERAL** .

Following new body parts are required:

- (1) Front panel

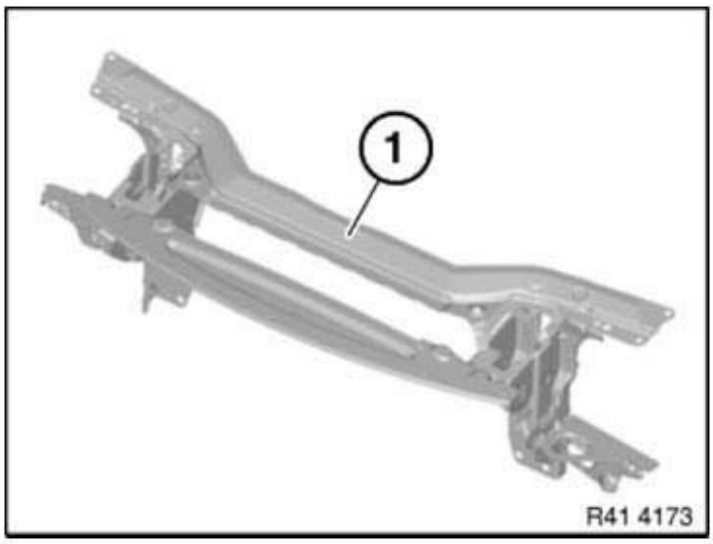


Fig. 205: Identifying Front Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and remove front panel.

Tightening torque **41 33 1AZ** .

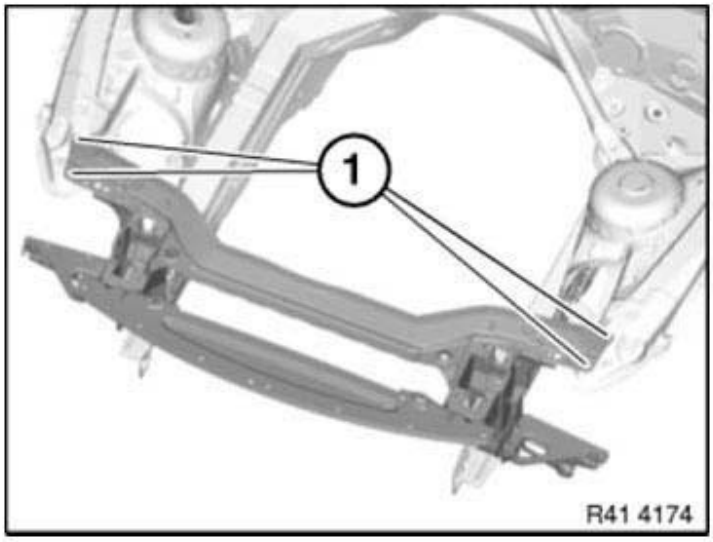


Fig. 206: Identifying Front Panel Screw
Courtesy of BMW OF NORTH AMERICA, INC.

41 33 051 REPLACING LEFT FRONT PANEL

Necessary preliminary tasks

- Remove **DEFORMATION ELEMENT FOR BUMPER**

- Remove **CROSS-MEMBER UPPER SECTION**
- Remove **FRONT BUMPER MOUNTING**
- Remove engine compartment lid lock See **5123110 REMOVING AND INSTALLING/REPLACING LEFT BONNET LOCK** or **5123100 REMOVING AND INSTALLING/REPLACING RIGHT ENGINE HOOD/BONNET LOCK**
- Remove sensor See **6577532 REMOVING AND INSTALLING/REPLACING FRONT LEFT SENSOR (US VERSION ONLY)** or **6577534 REMOVING AND INSTALLING/REPLACING FRONT RIGHT SENSOR (US VERSION ONLY)**

Release screws (1).

Tightening torque **51 64 1AZ** .

Remove headlight mounting (2).

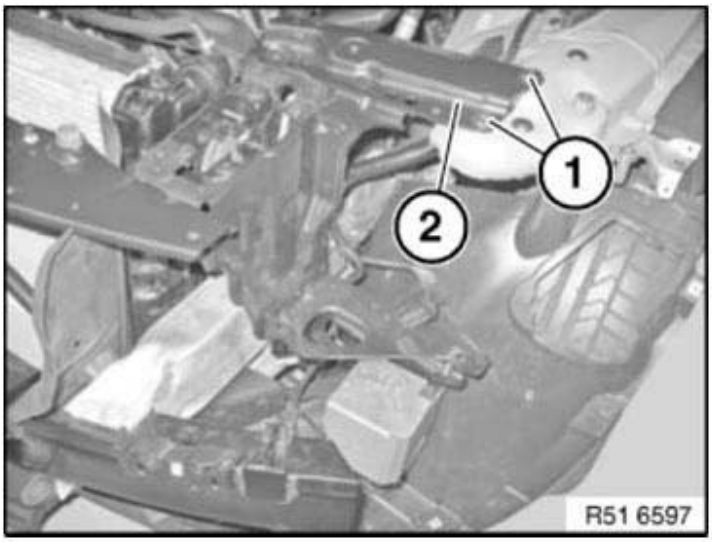


Fig. 207: Identifying Headlight Mounting With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

41 33 052 REPLACING RIGHT FRONT PANEL

Operations correspond to:

REPLACING LEFT FRONT PANEL

4134 REAR TRIM PANEL

41 11 516 REPLACING FRONT LEFT OR RIGHT SUPPORT CARRIER (PARTIAL REPLACEMENT, FRONT SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

STRIP DOWN VEHICLE .

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) Support carrier, wheel arch, front,
- (2) Carrier support, wheel arch, inner
- (3) Bracket, diagonal strut, carrier support

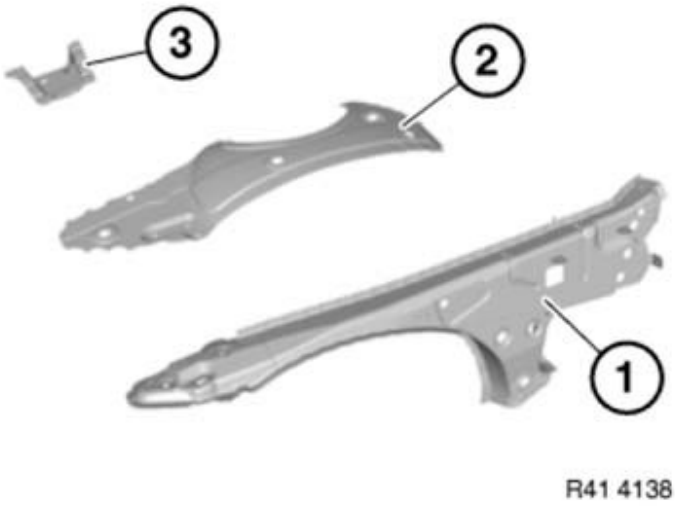


Fig. 208: Identifying Support Carrier, Wheel Arch, Front And Carrier Support, Wheel Arch, Inner
Courtesy of BMW OF NORTH AMERICA, INC.

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N1	12
Punch rivets N5	12
CleanerR1	1
Cavity sealing wax remover	1
Sealing compoundD1	

Removing carrier support

View from below.

Mark severance cut (1) in accordance with specified measurements and cut.

Measurement a = 80 mm

Measurement b = 50 mm

IMPORTANT: Cut outer metal sheet only.

Open weld joints in areas (2).

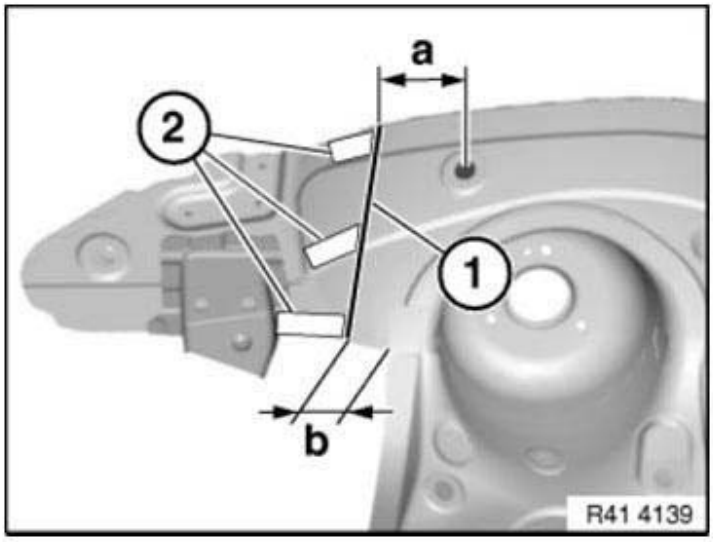


Fig. 209: Identifying Weld Joints Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Roughly mark severance cut (1) and cut.

Remove carrier support section (2).

Open weld joints in area (3) from below.

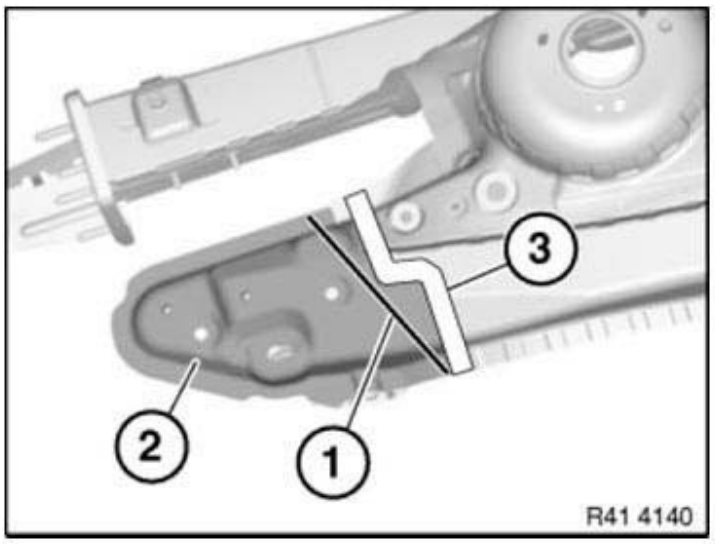


Fig. 210: Removing Carrier Support Section With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part

Open weld joints in area (1).

Mark severance cut (2) in accordance with severance cut on vehicle + 20 mm extra material and cut.

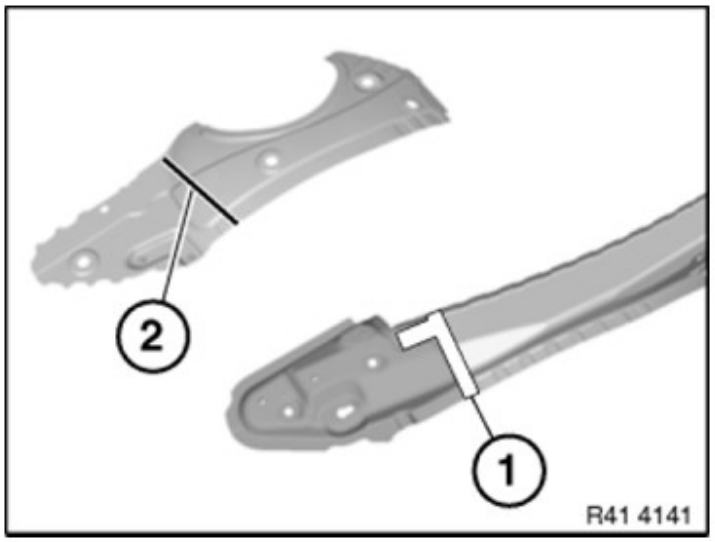


Fig. 211: Identifying Weld Joints Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Offer up new parts with attachments and fix in place.

Set four 6.8 mm dia. holes for blind rivets N1 in area (1).

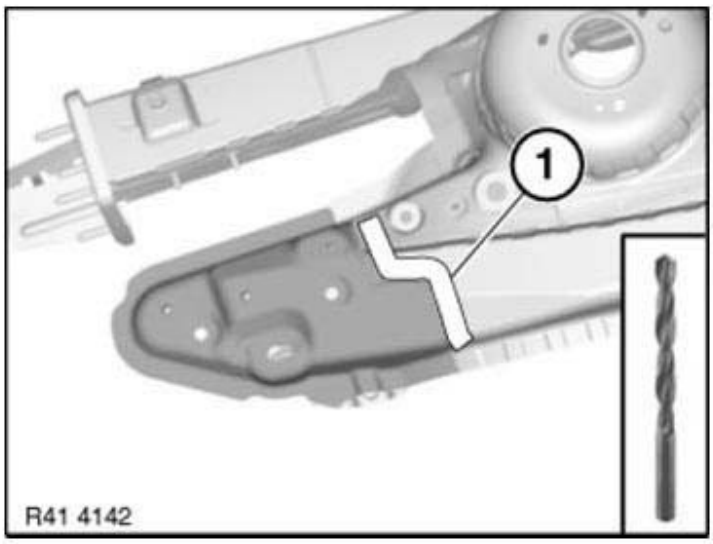


Fig. 212: Setting Four Diameter Holes For Blind Rivets N1
Courtesy of BMW OF NORTH AMERICA, INC.

View from below

Diagonal strut must be fitted in order to adjust holder (1) to fit.

In areas (2) set eight 6.8 mm dia. holes for blind rivets N1.

Remove new parts again and deburr holes.

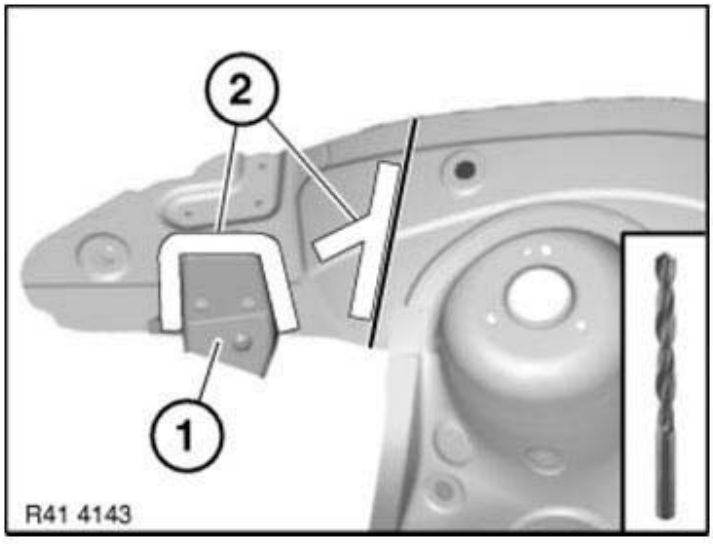


Fig. 213: Identifying Holder And Rivets Area
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new part and body in area of bonding surfaces.

Installing carrier support

Clean all bonding surfaces on vehicle and on new part with cleaning agent R1.

Apply adhesive K5a to bonding surfaces.

Attach new part and attachments and rivet with blind rivets (1).

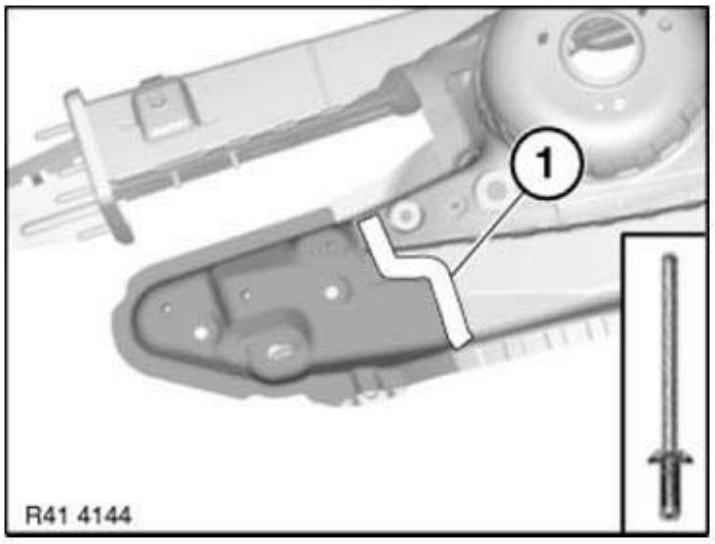


Fig. 214: Installing New Part, Attachments And Rivet Using Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Clean all bonding surfaces on vehicle and on new part with cleaning agent R1.

Apply adhesive K5a to bonding surfaces.

Mount new part and rivet with blind rivets (1).

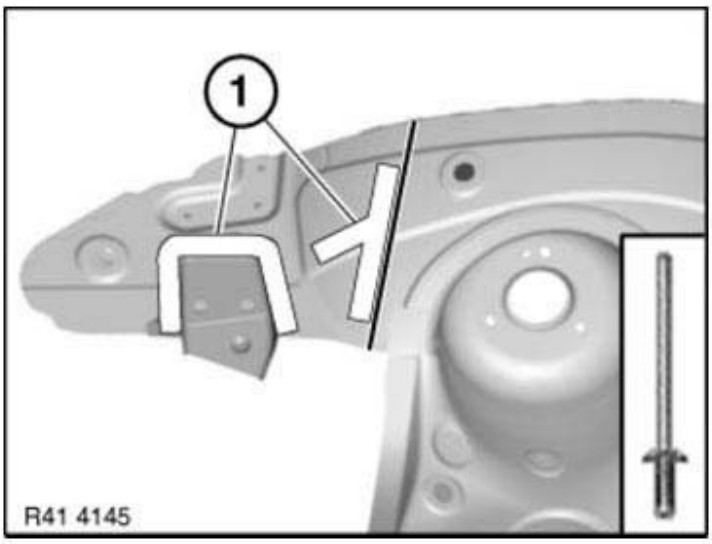


Fig. 215: Mounting New Part And Rivet Using Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

In area (1) rivet new parts with 12 punch rivets N5.

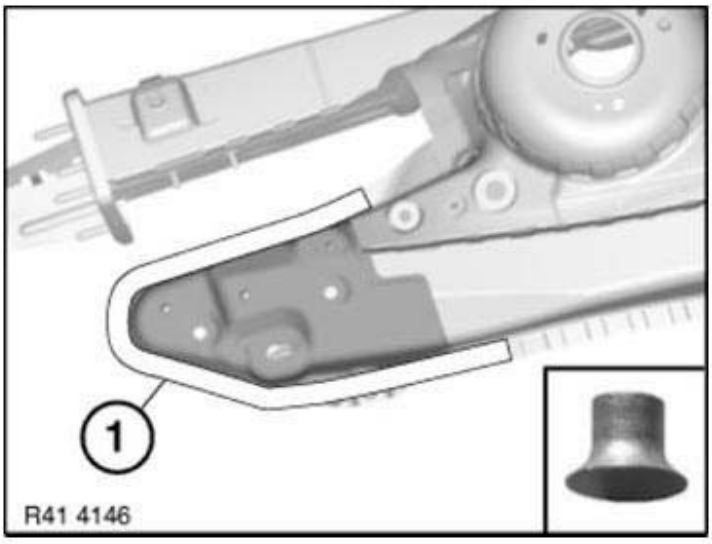


Fig. 216: Identifying Rivet Area With 12 Punch Rivets N5
Courtesy of BMW OF NORTH AMERICA, INC.

Seal adhesive areas and blind rivets in accordance with right side of vehicle with sealant.

41 12 653 REPLACING LUGGAGE COMPARTMENT FLOOR, LEFT SECTION (TAIL PANEL AND SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Strip down vehicle.

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) Luggage compartment floor, left section
- (2) End plate, rear ventilation, left

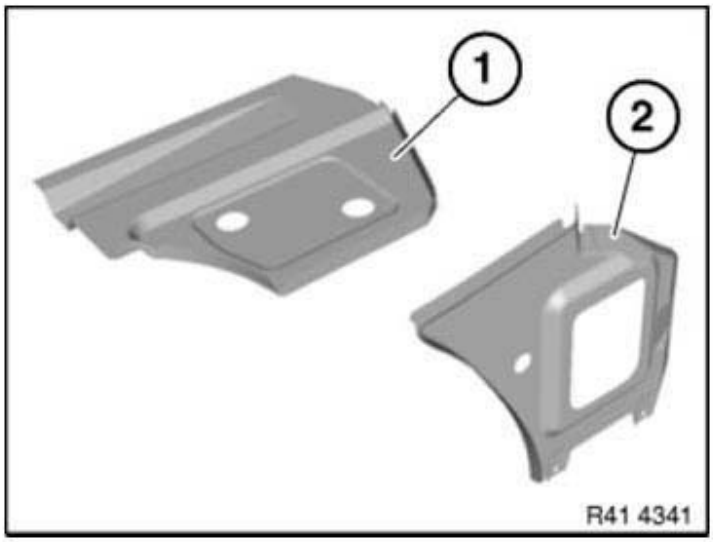


Fig. 217: Identifying Luggage Compartment Floor, Left Section And End Plate, Rear Ventilation, Left
Courtesy of BMW OF NORTH AMERICA, INC.

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N3	9
Blind rivets N6	6
Punch rivets N4	4
CleanerR1	1
Sealing compoundD1	

Removal of luggage compartment floor

Open weld joints in area (1).

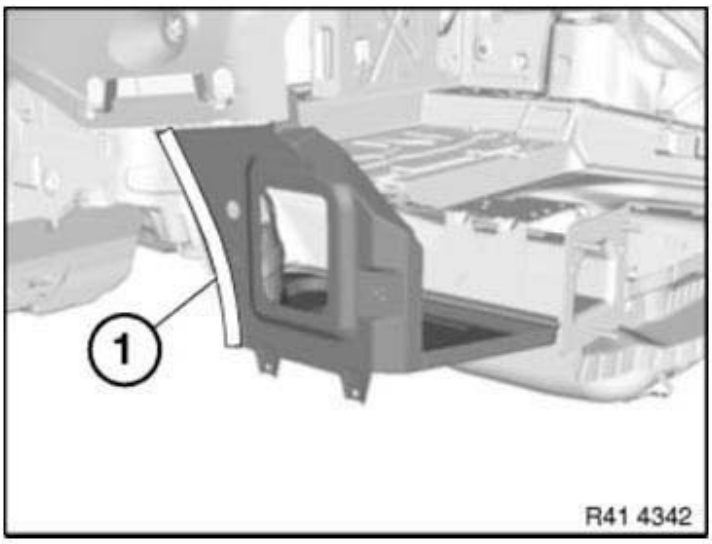


Fig. 218: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

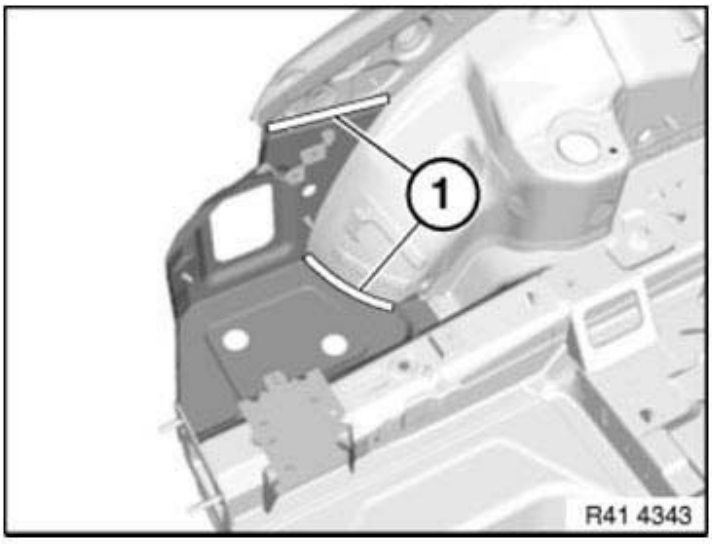


Fig. 219: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) in radius and cut.

Remove luggage compartment floor and rear ventilation end plate.

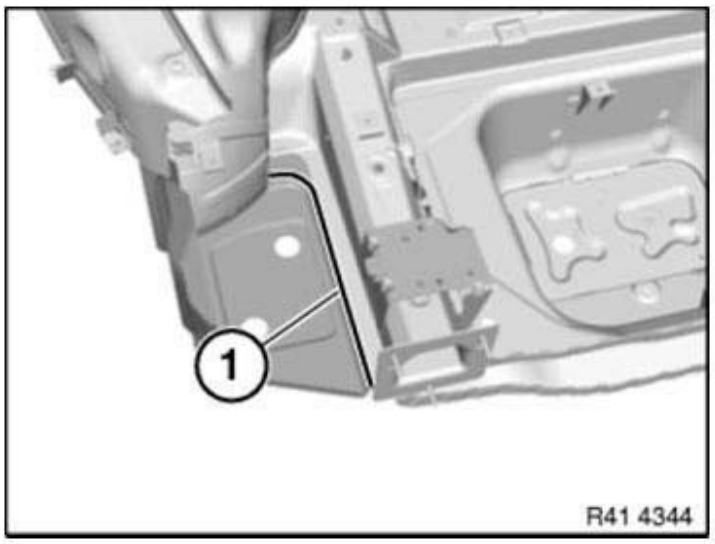


Fig. 220: Marking Severance Cut In Radius
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Mark new luggage compartment floor part in accordance with severance cut on vehicle + 20 mm extra material and cut.

Adjust new parts in combination with tail panel to fit and secure.

Set nine 4.2 mm dia. holes for blind rivets in areas (1).

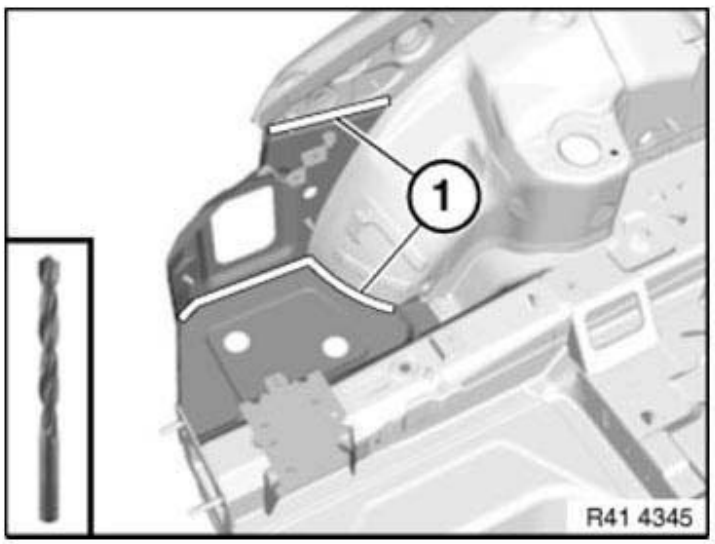


Fig. 221: Identifying Rivet Area
Courtesy of BMW OF NORTH AMERICA, INC.

Set six 4.2 mm dia. holes for blind rivets in area (1).

Remove new parts again and deburr holes.

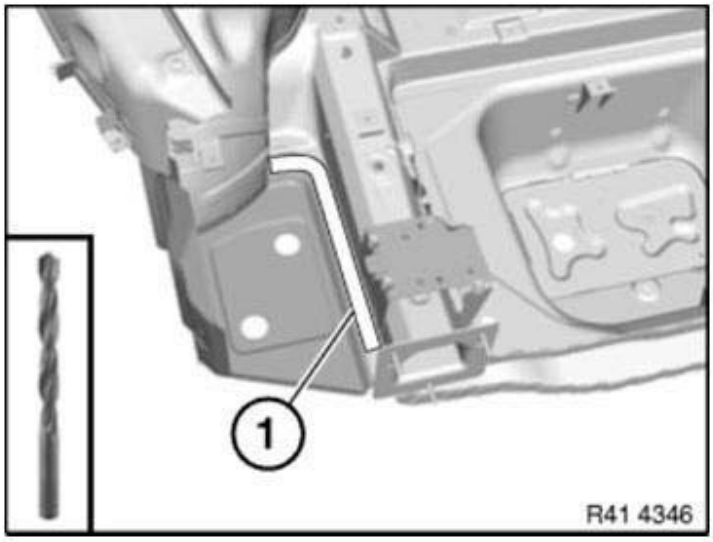


Fig. 222: Identifying Rivet Area
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new parts and body in area of bonding surfaces.

Installation of luggage compartment floor

Clean all bonding surfaces (1) on new parts and on vehicle with cleaning agent R1!

Apply adhesive K5a to all bonding and rivet surfaces (1).

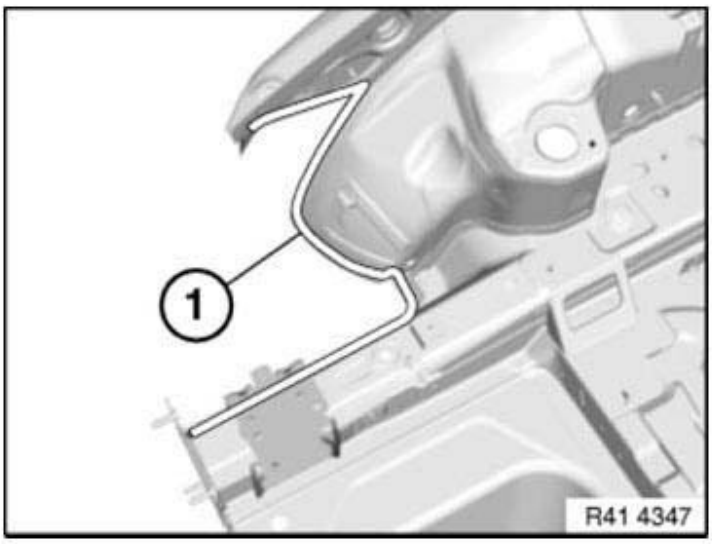


Fig. 223: Applying Adhesive K5a To All Bonding And Rivet Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

Install new parts and rivet in area (1) with blind rivets N6.

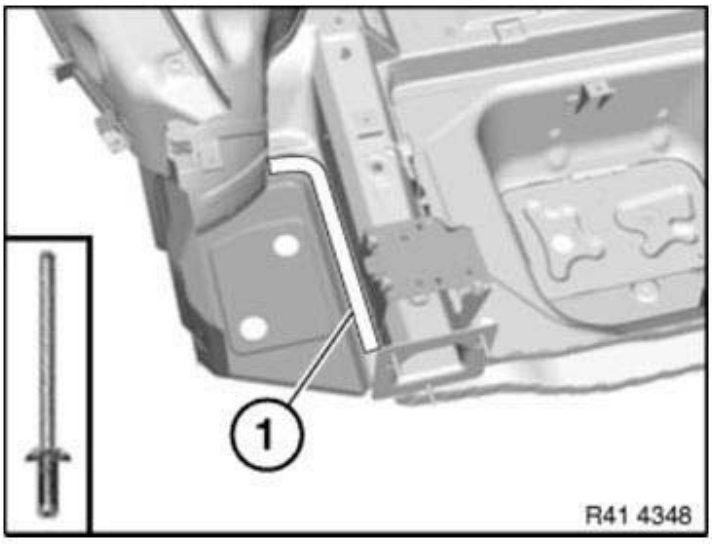


Fig. 224: Installing New Parts And Rivet In Area Using Blind Rivets N6
Courtesy of BMW OF NORTH AMERICA, INC.

Use blind rivets N3 in areas (1).

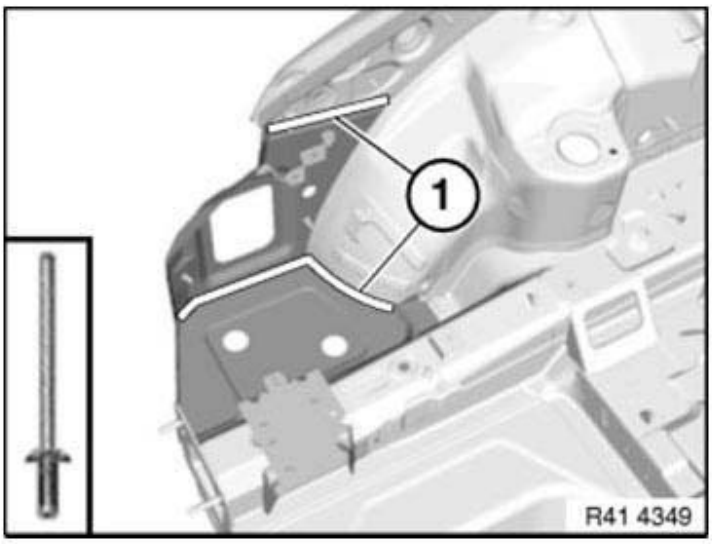


Fig. 225: Identifying Rivet Area With Blind Rivets N3
Courtesy of BMW OF NORTH AMERICA, INC.

Use 4 punch rivets N4 in area (1).

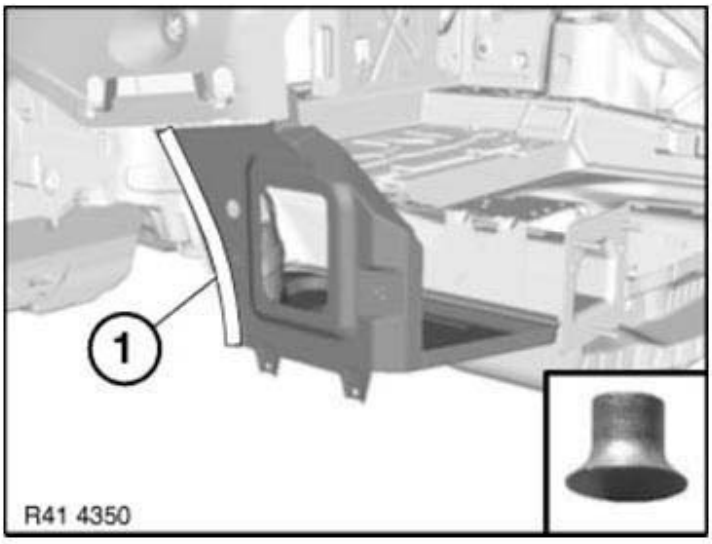


Fig. 226: Identifying Rivet Area With 4 Punch Rivets N4
Courtesy of BMW OF NORTH AMERICA, INC.

41 12 557 REPLACING LUGGAGE COMPARTMENT FLOOR, MIDDLE SECTION (TAIL PANEL REMOVED)

Read contents of **BODY, GENERAL** .

STRIP DOWN VEHICLE .

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) Mounting, tension strut
- (2) Luggage compartment well
- (3) Cross-member, luggage compartment floor, rear

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5b	1
Blind rivets N3	21
EMC screws	2
CleanerR1	1
Sealing compoundD1	

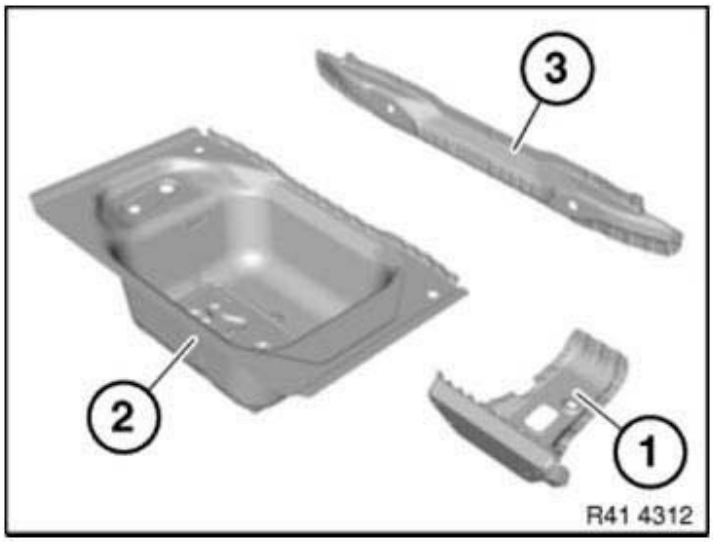


Fig. 227: Identifying Mounting, Tension Strut And Luggage Compartment Well
Courtesy of BMW OF NORTH AMERICA, INC.

Removal of luggage compartment floor

View from below.

Operation is described on the left side. Right side identical.

Open weld joints in area (1).

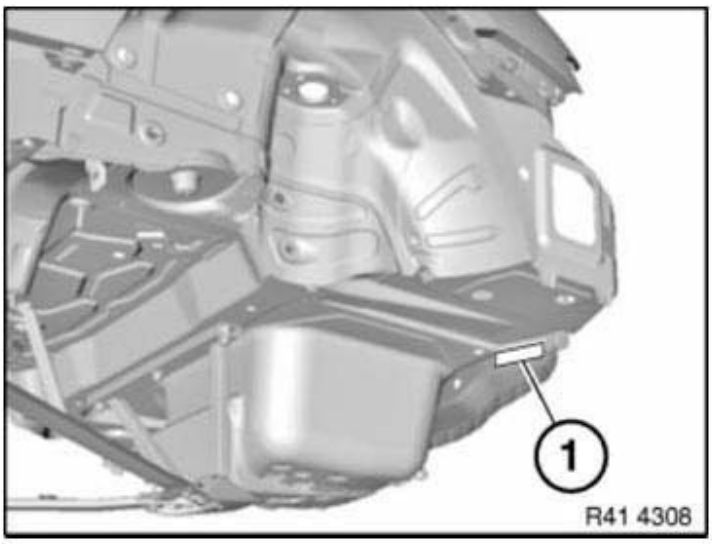


Fig. 228: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

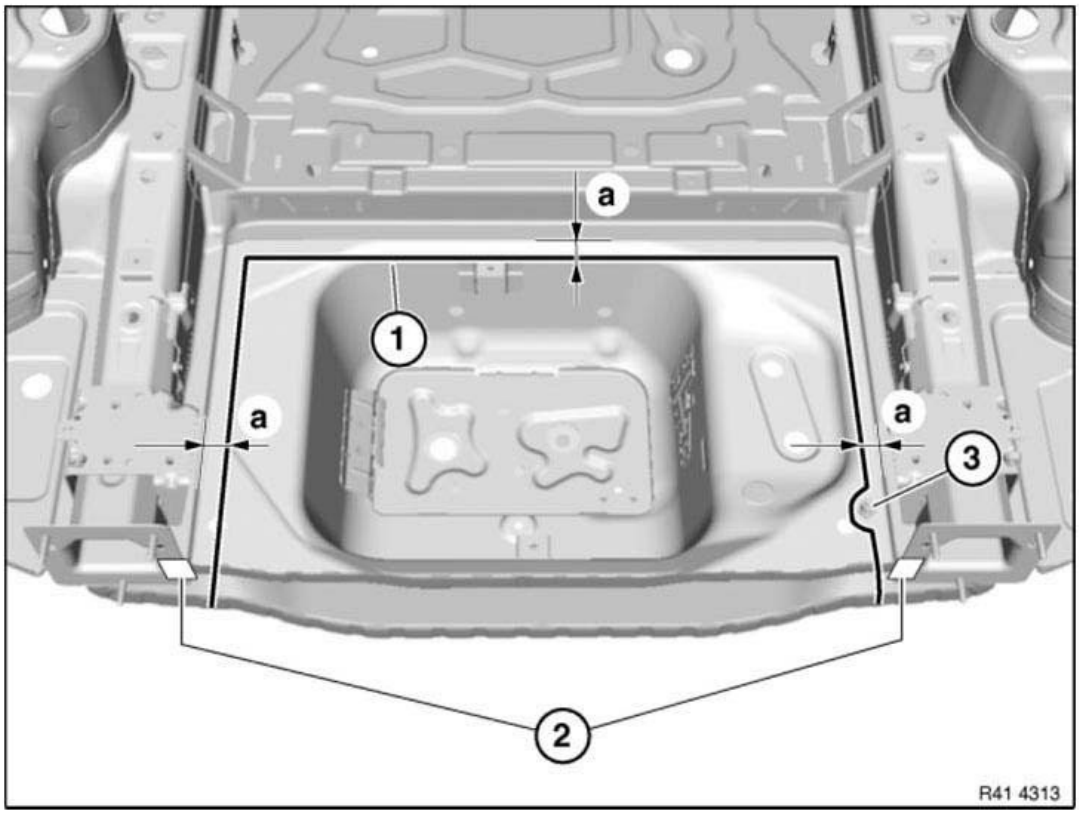


Fig. 229: Marking Severance Cut In Accordance With Measurement
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) in accordance with measurement and cut.

Measurement a = 20 mm

Open weld joints in area (2).

Remove luggage compartment well and cross-member.

NOTE: Earth support point (3) remains on vehicle.

New part preparation

Mark new luggage compartment well part in accordance with severance cuts on vehicle + 20 mm extra material and cut.

Set down luggage compartment well (1) from above and adjust in combination with cross-member (2) and **TAIL PANEL** to fit and secure.

Set fourteen 4.2 mm dia. holes for blind rivets in area (3).

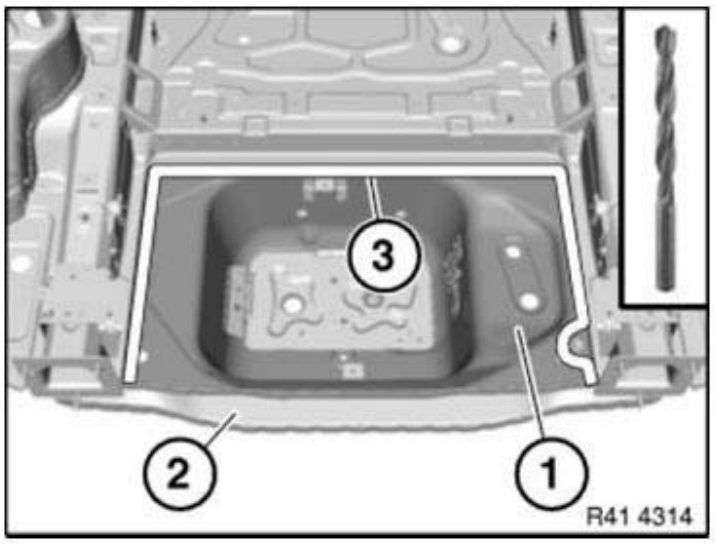


Fig. 230: Identifying Luggage Compartment Well, Cross-Member And Blind Rivets In Area
Courtesy of BMW OF NORTH AMERICA, INC.

Set three 4.2 mm dia. holes for blind rivets in area (1).

Set four 4.2 mm dia. holes for blind rivets in areas (2).

Set holes for blind rivets with adjusted tail panel in area (3).

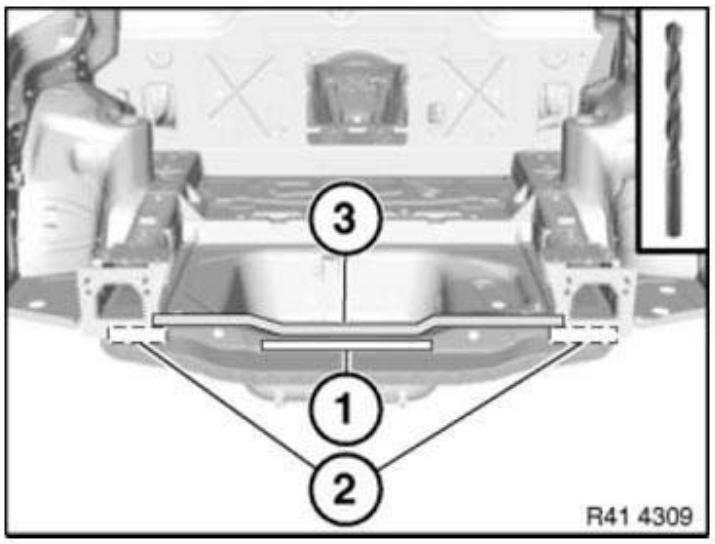


Fig. 231: Setting Holes Diameter For Blind Rivets In Area
Courtesy of BMW OF NORTH AMERICA, INC.

View from below.

Adjust tension strut mounting (1) with mounted torsion struts (2) to fit and secure.

Set twenty one 4.2 mm dia. holes for blind rivets in adhesive flange area.

Remove all new parts again and deburr holes.

NOTE: 6 holes are sufficient for positioning the component.
Make all further holes for blind rivets if necessary on removed components.

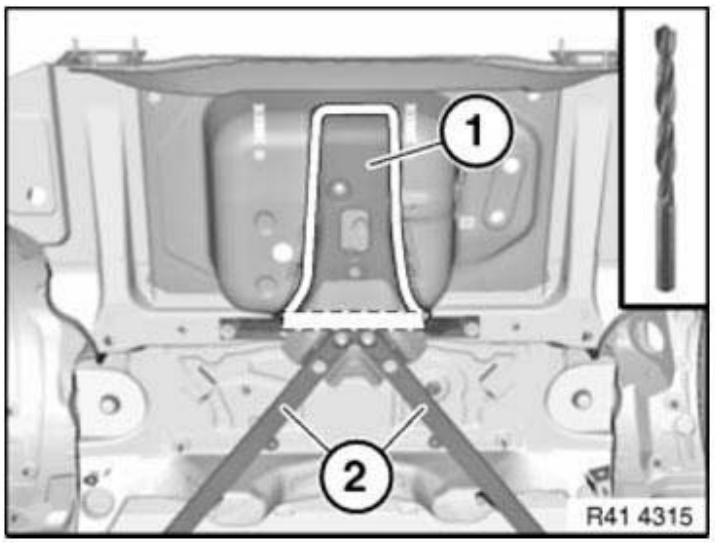


Fig. 232: Identifying Tension Strut Mounting And Mounted Torsion Struts
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new parts and body in area of bonding surfaces.

Installation of luggage compartment floor

Clean all bonding surfaces (1) with cleaning agent R1.

Apply adhesive K5b to bonding surfaces (1).

Rivet tension strut mounting (2) and luggage compartment well (3) with blind rivets N3.

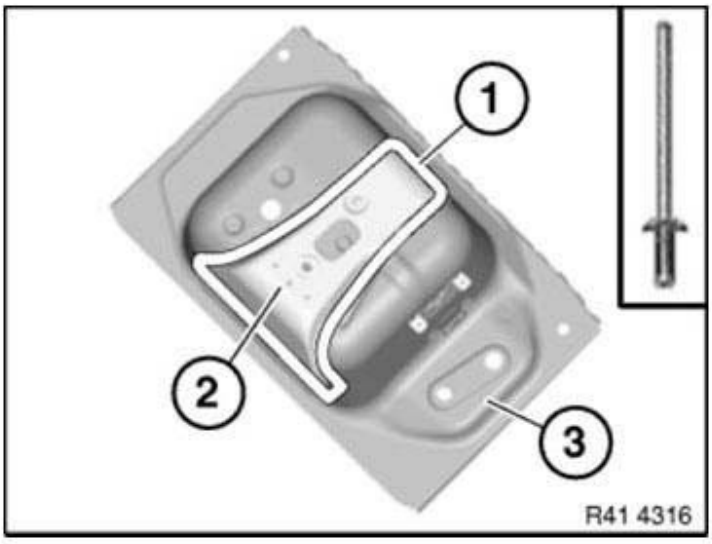


Fig. 233: Rivetting Tension Strut Mounting And Luggage Compartment Well Using Blind Rivets N3
Courtesy of BMW OF NORTH AMERICA, INC.

Clean all bonding surfaces (1) on new part and on vehicle with cleaning agent R1.

Apply adhesive K5b to bonding surfaces (1) and to corresponding bonding surfaces on new part.

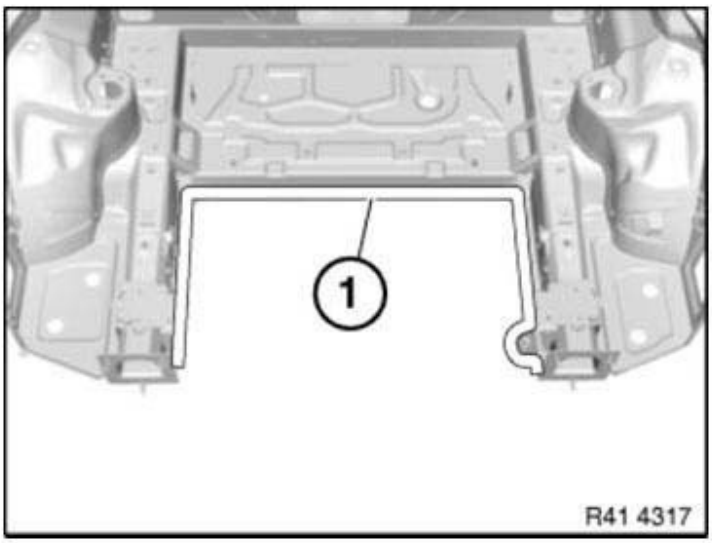


Fig. 234: Applying Adhesive K5B To Bonding Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

Fit luggage compartment well (2) and rivet in area (1) with blind rivets N3.

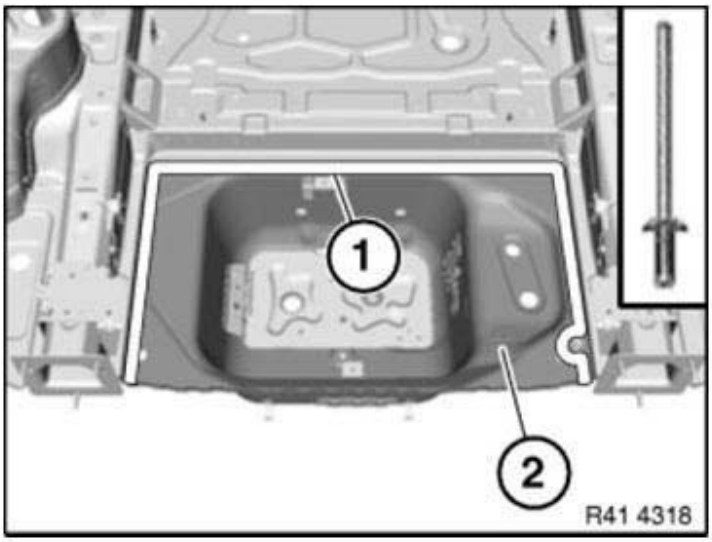


Fig. 235: Identifying Luggage Compartment Well And Rivet Area Using Blind Rivets N3
Courtesy of BMW OF NORTH AMERICA, INC.

Installation of cross-member

Clean all bonding surfaces on new part and on vehicle with cleaning agent R1.

Apply adhesive K5b to bonding surfaces (1) and to corresponding bonding surfaces on new part.

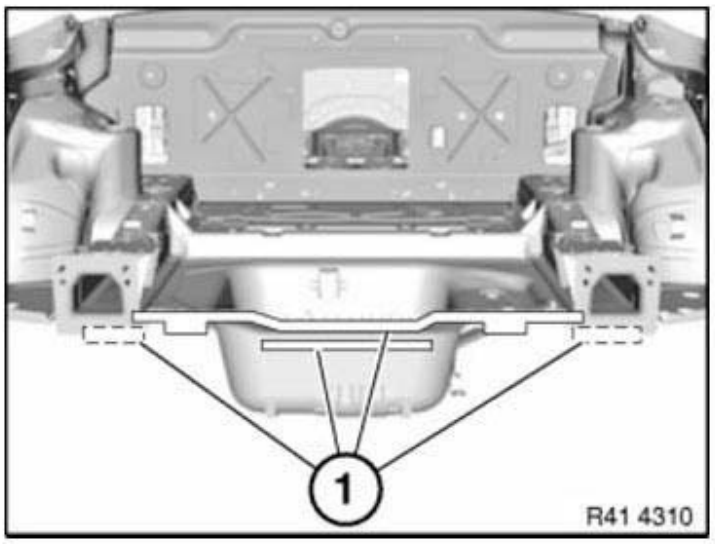


Fig. 236: Applying Adhesive K5A To Bonding Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

Install cross-member and rivet in area (1) with blind rivets.

Rivet cross-member in combination with tail panel in area (2).

IMPORTANT: When installing the cross-member, make sure there is sufficient adhesive on the bonding surfaces.

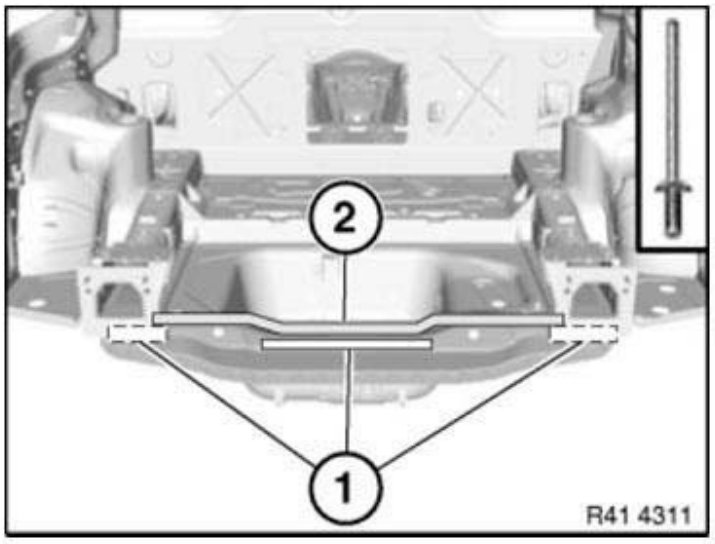


Fig. 237: Installing Cross-Member And Rivet In Area Using Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: After adhesive has hardened:

Install 2 EMC SCREWS in area of side member/rear cross-member.

41 12 548 REPLACING REAR CROSS-MEMBER ON LUGGAGE COMPARTMENT FLOOR (TAIL PANEL REMOVED)

Read contents of **BODY, GENERAL** .

Strip down vehicle.

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) Cross-member, luggage compartment floor, rear

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N3	7
CleanerR1	1
Cavity sealing wax remover	
Sealing compoundD1	

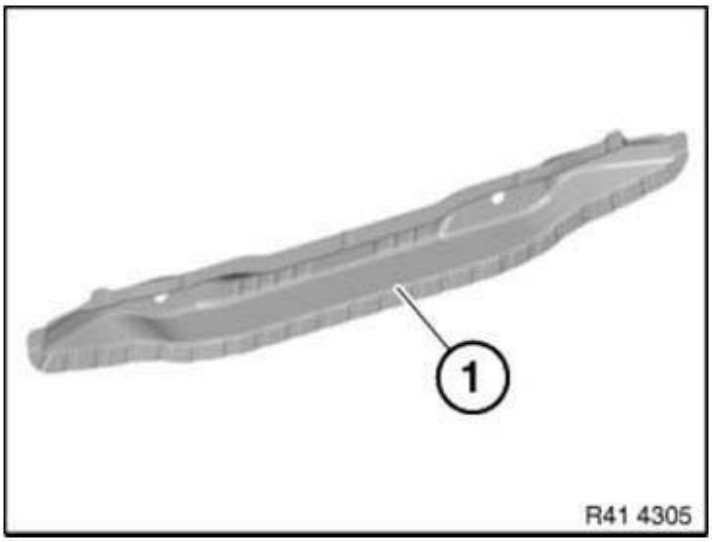


Fig. 238: Identifying Cross-Member, Luggage Compartment Floor, Rear
Courtesy of BMW OF NORTH AMERICA, INC.

Removing cross-member

Open weld joints in areas (1).

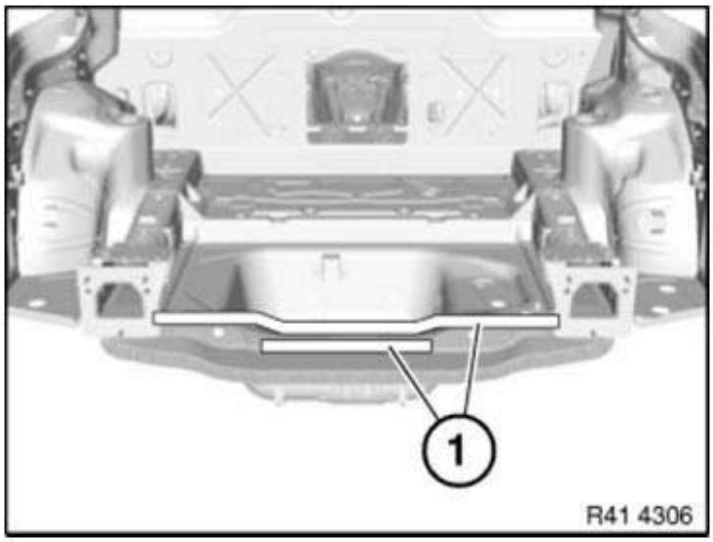


Fig. 239: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joints in areas (1).

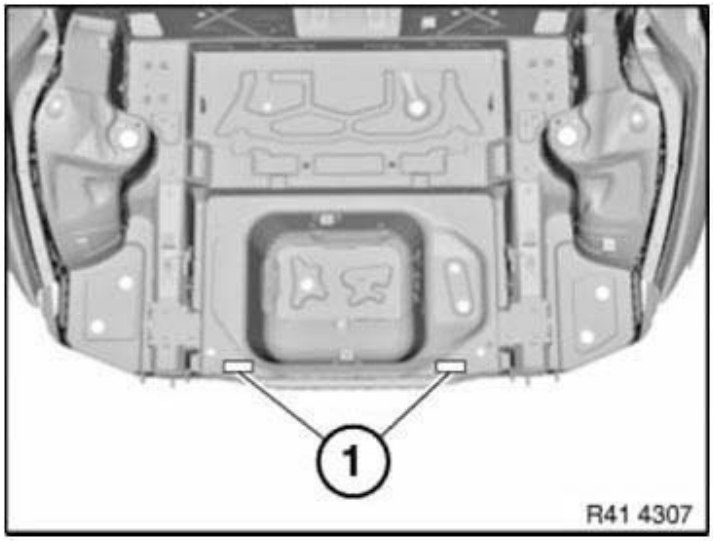


Fig. 240: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

View from below.

Operation is described on the left side. Right side identical.

Open weld joints in area (1).

Remove cross-member.

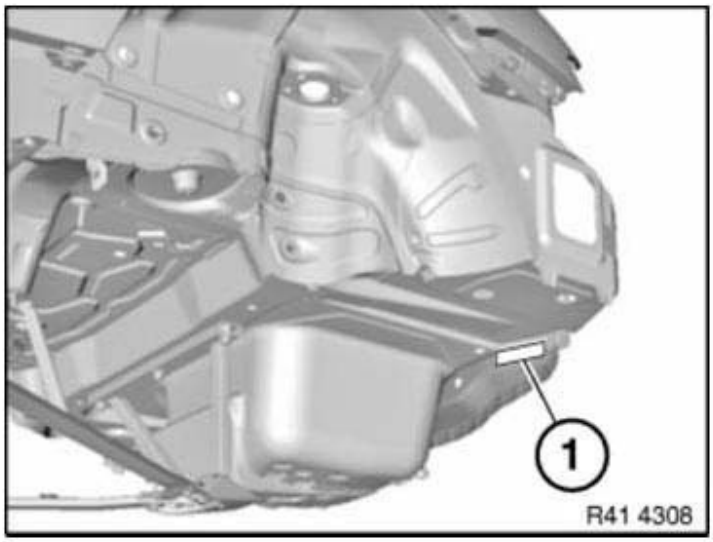


Fig. 241: Identifying Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Adjust cross-member in combination with tail panel to fit and secure.

Set three 4.2 mm dia. holes for blind rivets in area (1).

Set four 4.2 mm dia. holes for blind rivets in areas (2).

Set holes with adjusted **TAIL PANEL** in area (3).

Remove new parts again and deburr holes.

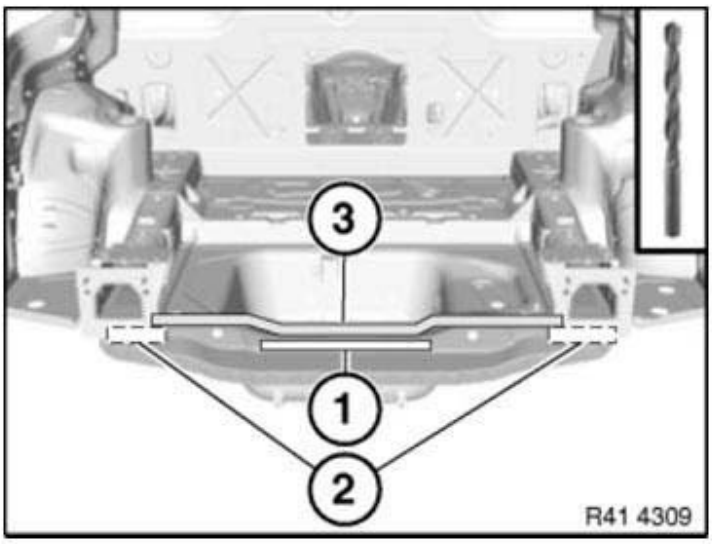


Fig. 242: Setting Holes Diameter For Blind Rivets Area
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new parts and body in area of bonding surfaces.

Installing cross-member

Clean all bonding surfaces on new part and on vehicle with cleaning agent R1.

Apply adhesive K5a to bonding surfaces (1) and to corresponding bonding surfaces on new part.

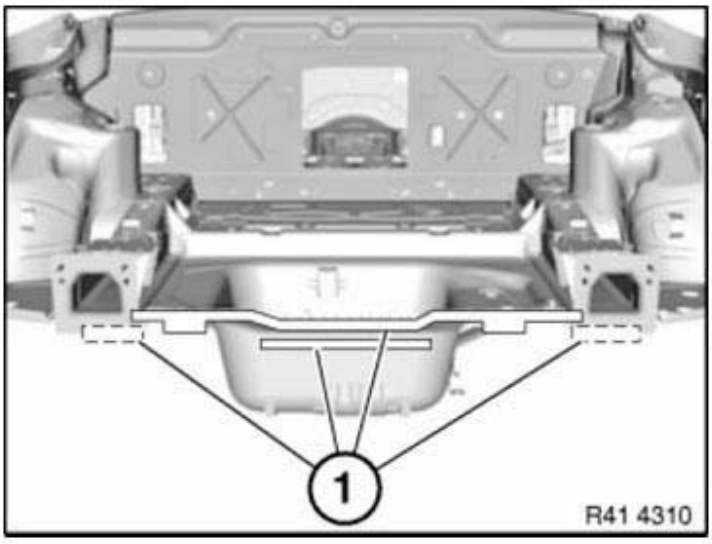


Fig. 243: Applying Adhesive K5A To Bonding Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

Install cross-member and rivet in area (1) with blind rivets.

Rivet cross-member in combination with tail panel in area (2).

IMPORTANT: When installing the cross-member, make sure there is sufficient adhesive on the bonding surfaces.

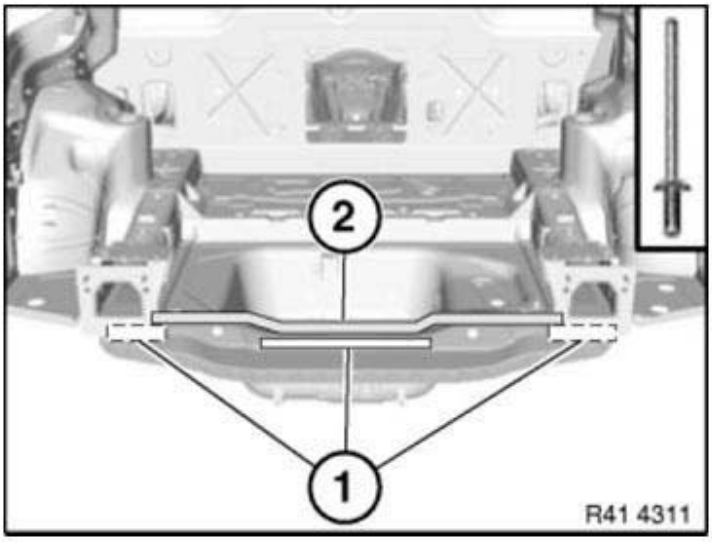


Fig. 244: Installing Cross-Member And Rivet In Area Using Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

41 34 041 REPLACING TAIL PANEL

Read contents of **BODY, GENERAL** .

STRIP DOWN VEHICLE .

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required

- (1) Rear trim, complete

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5b	1
Blind rivets N3	16
Blind rivets N6	8

Punch rivets N4	15
EMC screws	2
Cavity sealing wax remover	
Cleaning agent R1	1
Sealant D1	

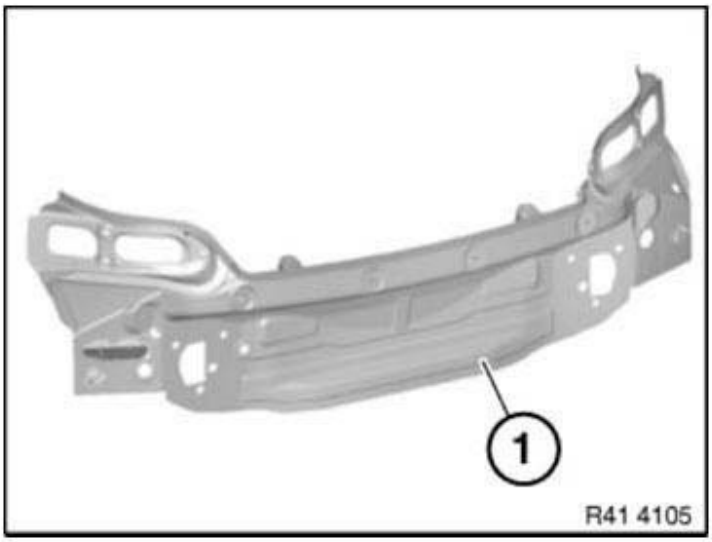


Fig. 245: Identifying Rear Trim, Complete
Courtesy of BMW OF NORTH AMERICA, INC.

Removing rear trim panel

Operation is described on the left side. Right side identical.

Picture show side panel removed for an improved overview.

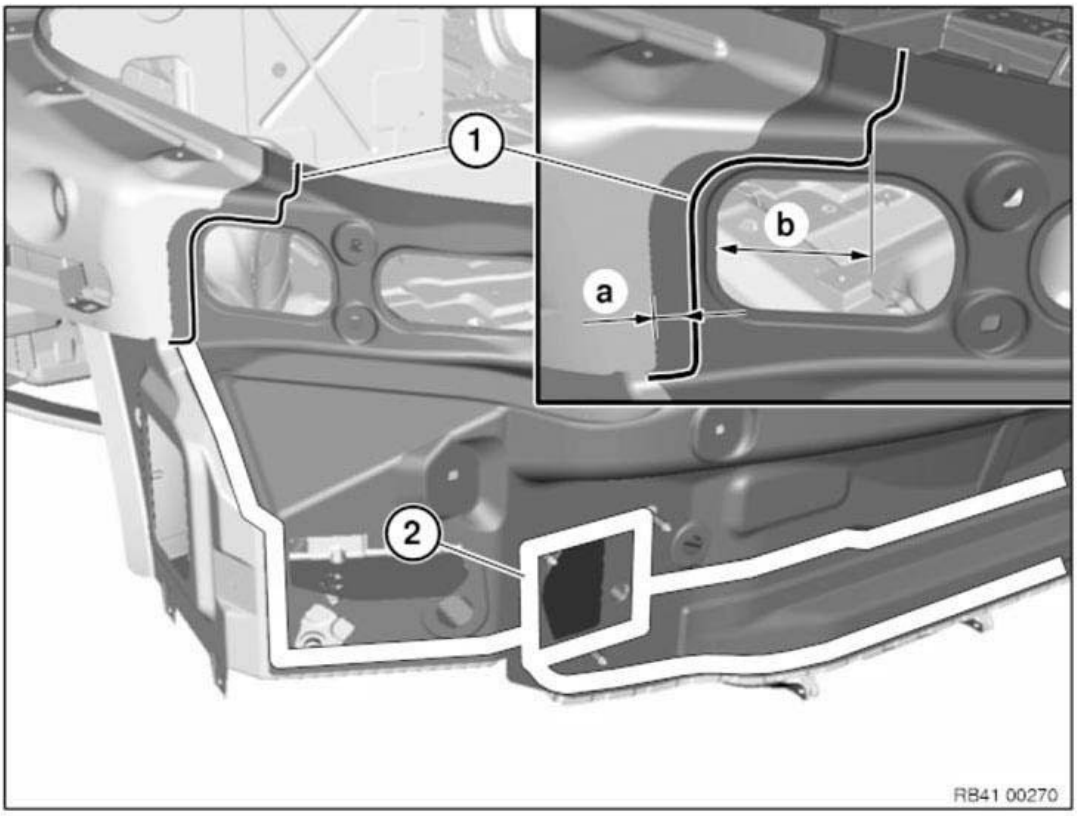


Fig. 246: Marking Severance Cut In Accordance With Specified Measurements
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) in accordance with specified measurements and cut.

Dimension a = approx. 20 mm from component edge of wheel arch.

Dimension b = approx. 60 mm from the edge of recess.

Open welded connections in area (2).

Remove rear trim panel.

NOTE: Install new part overlapping in area of severance cut.

New part preparation

Mark severance cuts on new part according to vehicle with approx. 20 mm extra material (adhesive flange) and cut.

The new part must not cover the adjacent wheel arch component. Adjust flange area accordingly.

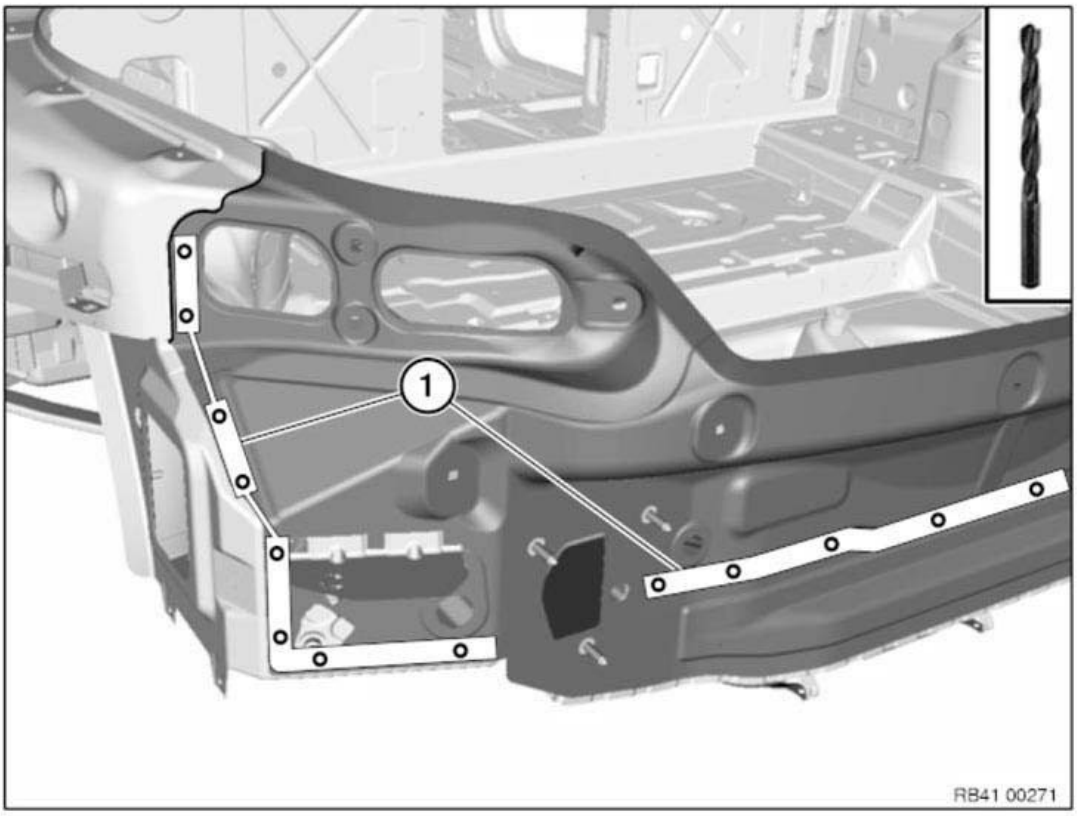


Fig. 247: Marking Severance Cuts On New Part According To Vehicle
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust rear trim panel to fit and secure.

In areas (1), set 24 holes with a diameter of 4.2 mm for blind rivets.

Remove new part again and deburr bore holes.

IMPORTANT: Do not grind new parts and body in area of bonding surfaces.

Installing rear trim panel

Clean all bonding surfaces on new part and on vehicle with cleaning agent R1.

Apply adhesive to bonding surfaces (1).

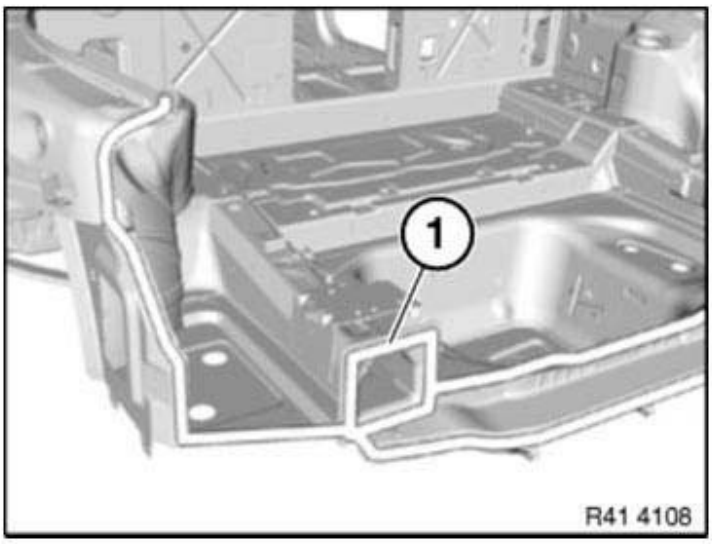


Fig. 248: Applying Adhesive To Bonding Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

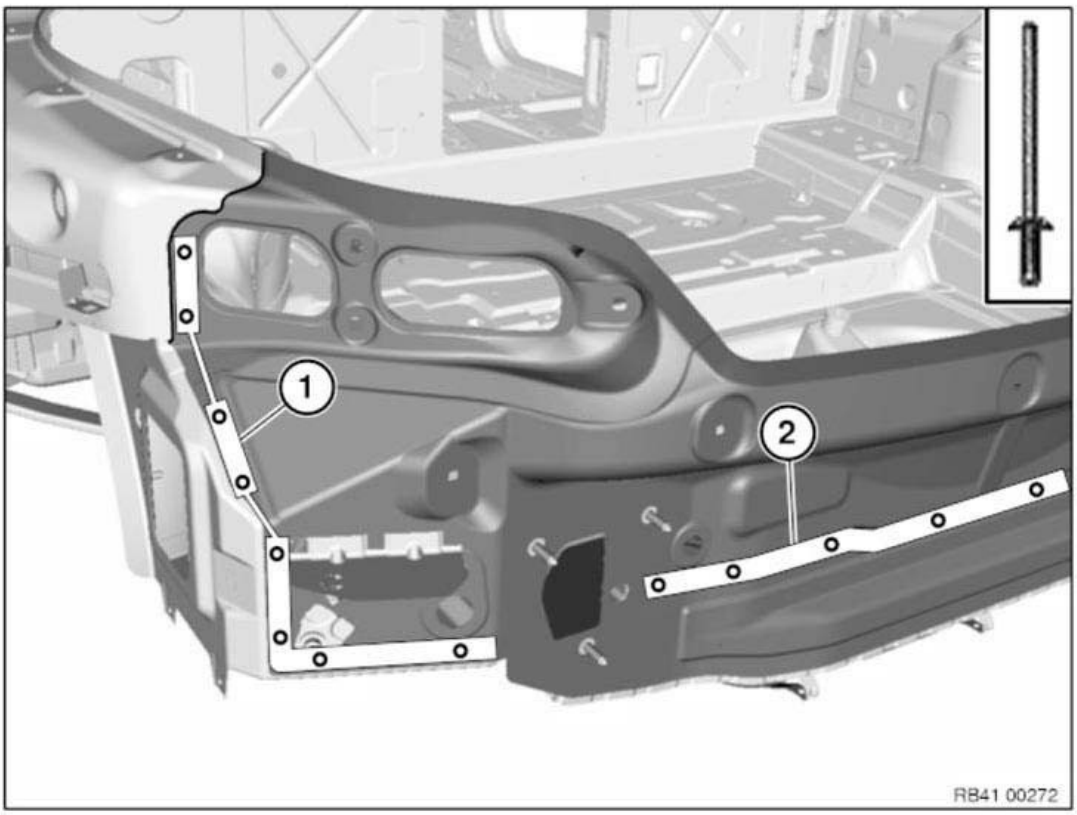


Fig. 249: Installing Rear Trim Panel And Rivet Using Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Install rear trim panel and rivet with blind rivets.

In area (1), use blind rivets N3.

In area (2), use blind rivets N6.

NOTE: When mounting rear trim panel, make sure there is sufficient adhesive on bonding surfaces.

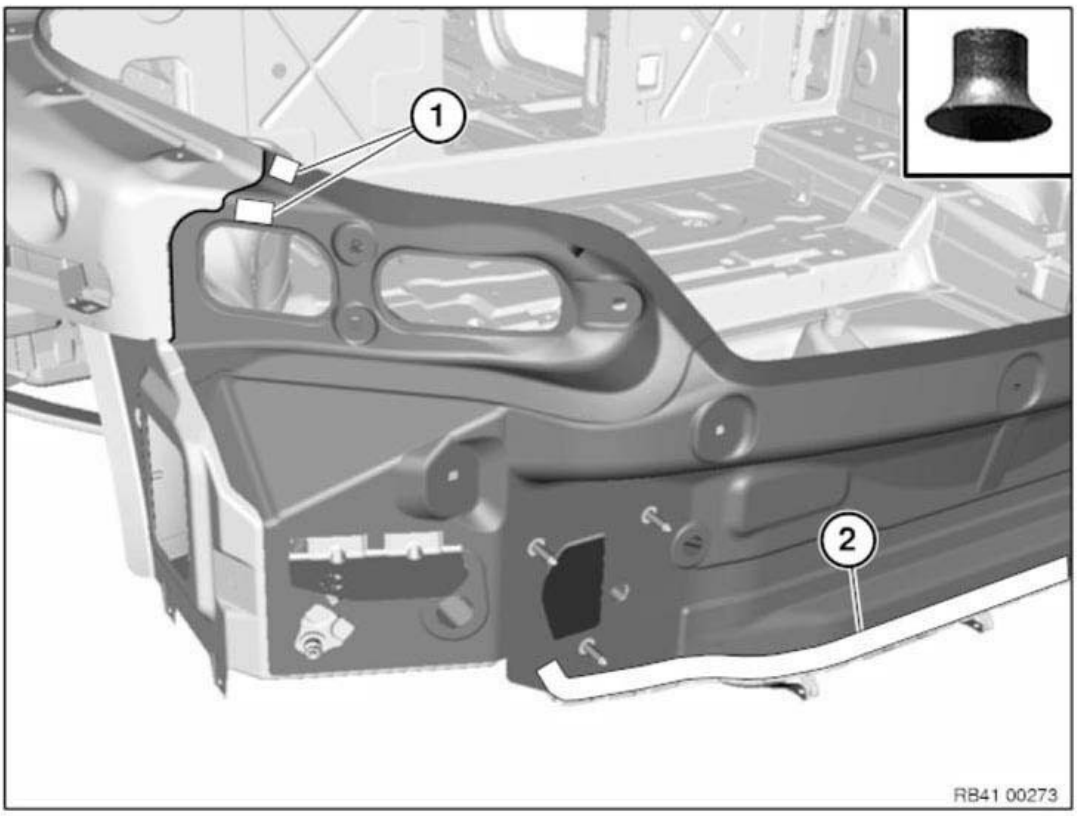


Fig. 250: Identifying Rivet Rear Trim Panel With 2 Punch Rivets N4 And 11 Punch Rivets N4
Courtesy of BMW OF NORTH AMERICA, INC.

In areas (1), rivet rear trim panel with 2 punch rivets N4.

In area (2), rivet rear trim panel with a total of 11 punch rivets N4.

NOTE: After hardening of the adhesive install two EMC SCREWS in area (2).

Press rear trim panel in areas (1) and remove emerging adhesive.

Then mount support for bumper trim to secure rear trim panel.

IMPORTANT: Prevent emerging adhesive from coming into contact with support.

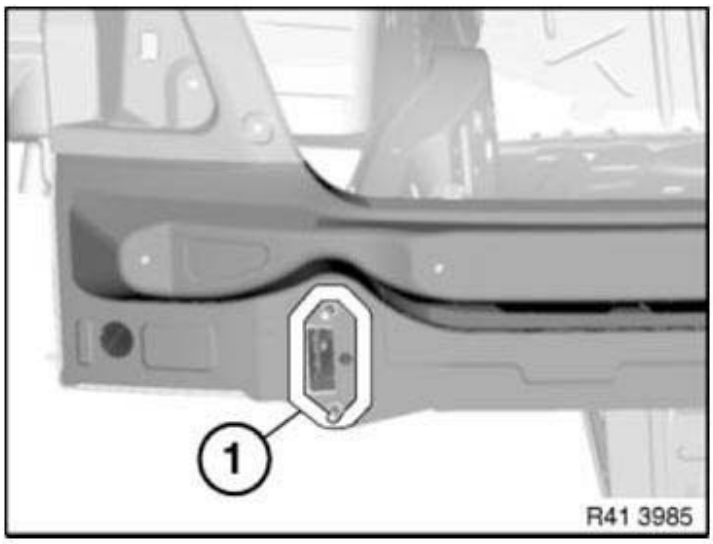


Fig. 251: Identifying Rear Panel Adhesive Application Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 34 041 REPLACING TAIL PANEL

Read contents of **BODY, GENERAL** .

STRIP DOWN VEHICLE .

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) Rear trim, complete
- (2) Rear left side panel (not shown)
- (3) Rear right side panel (not shown)

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5b	1
Blind rivets N6	26
Punch rivets N4	13
EMC screws	2
Cavity sealing wax remover	
Cleaning agent R1	1
Sealant D1	

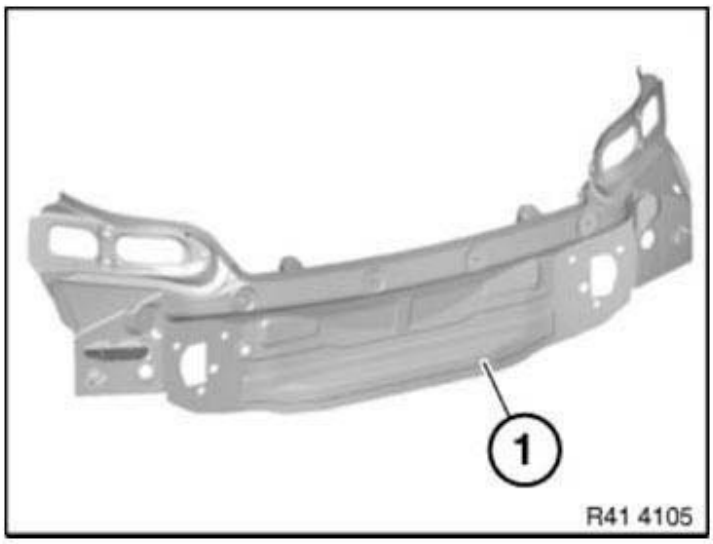


Fig. 252: Identifying Rear Trim, Complete
Courtesy of BMW OF NORTH AMERICA, INC.

Removing rear trim panel

Operation is described on the left side. Right side identical.

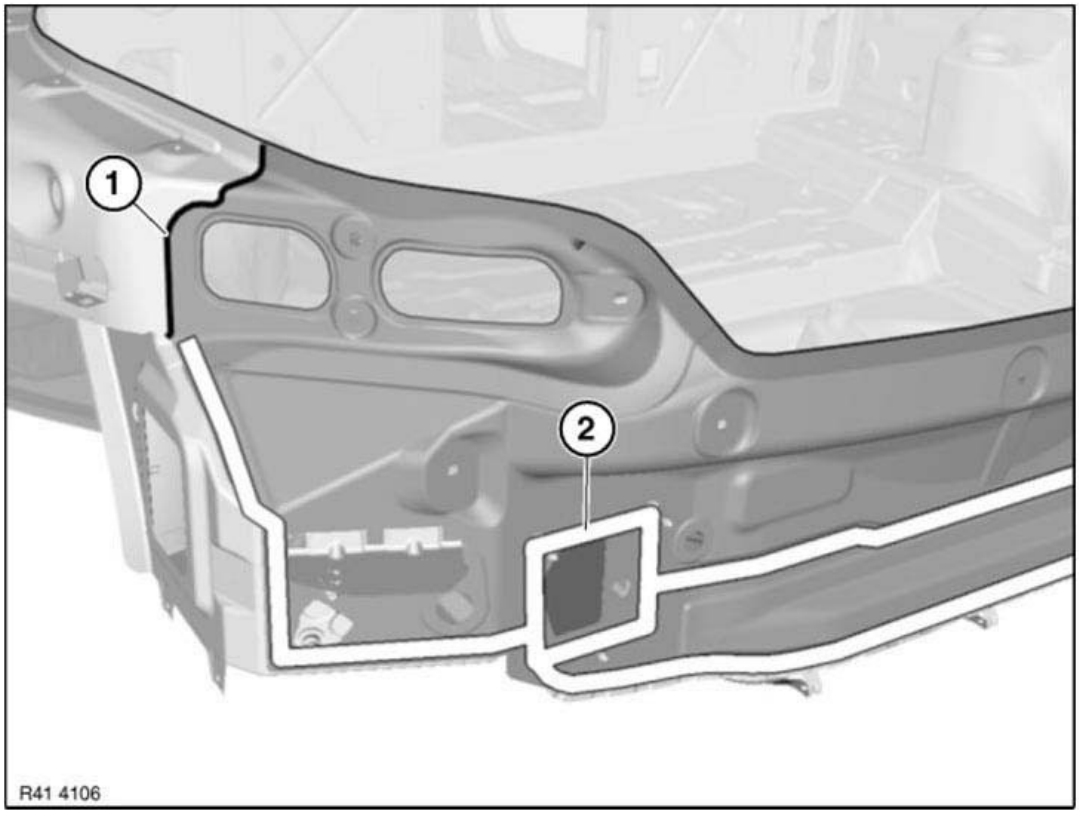


Fig. 253: Marking Severance Cut To Wheel Arch Component Edge
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) next to wheel arch component edge and cut.

Open welded connections in area (2).

Remove rear trim panel.

New part preparation

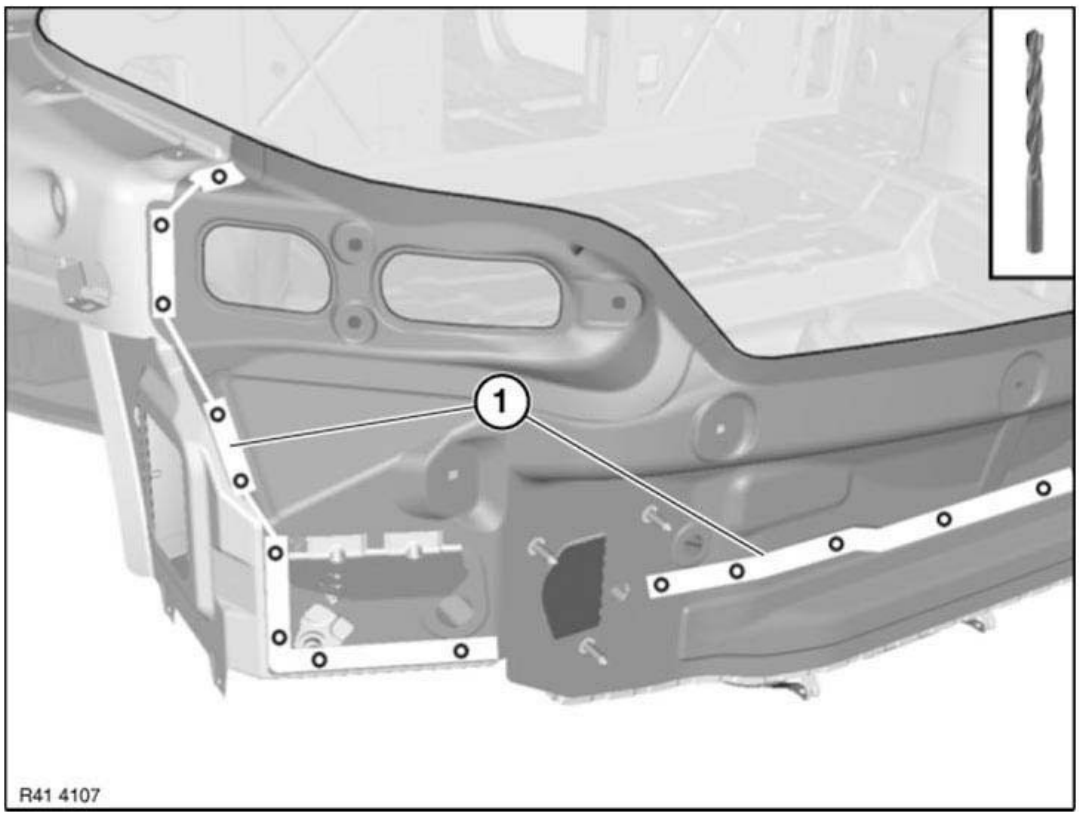


Fig. 254: Setting Holes Diameter For Blind Rivets In Area
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust rear trim panel to fit and secure.

Set 14 4.2 mm dia. holes for blind rivets in area (1).

Remove new part again and deburr bore holes.

IMPORTANT: Do not grind new parts and body in area of bonding surfaces.

Installing rear trim panel

Clean all bonding surfaces on new part and on vehicle with cleaning agent R1.

Apply adhesive to bonding surfaces (1).

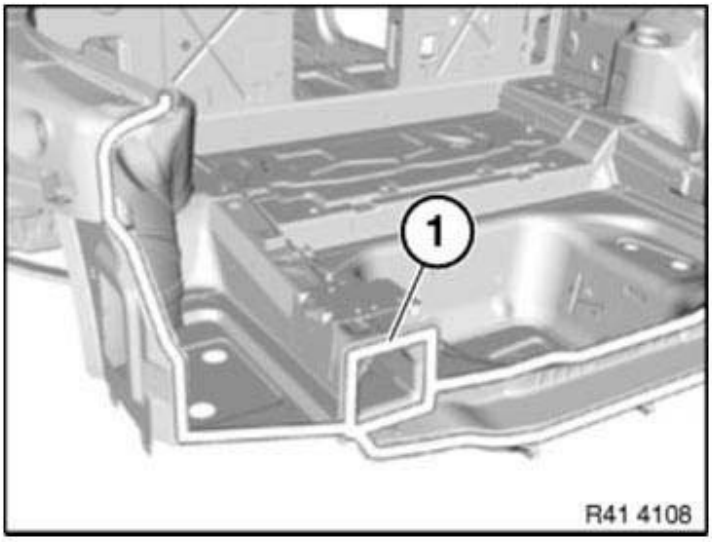


Fig. 255: Applying Adhesive To Bonding Surfaces
Courtesy of BMW OF NORTH AMERICA, INC.

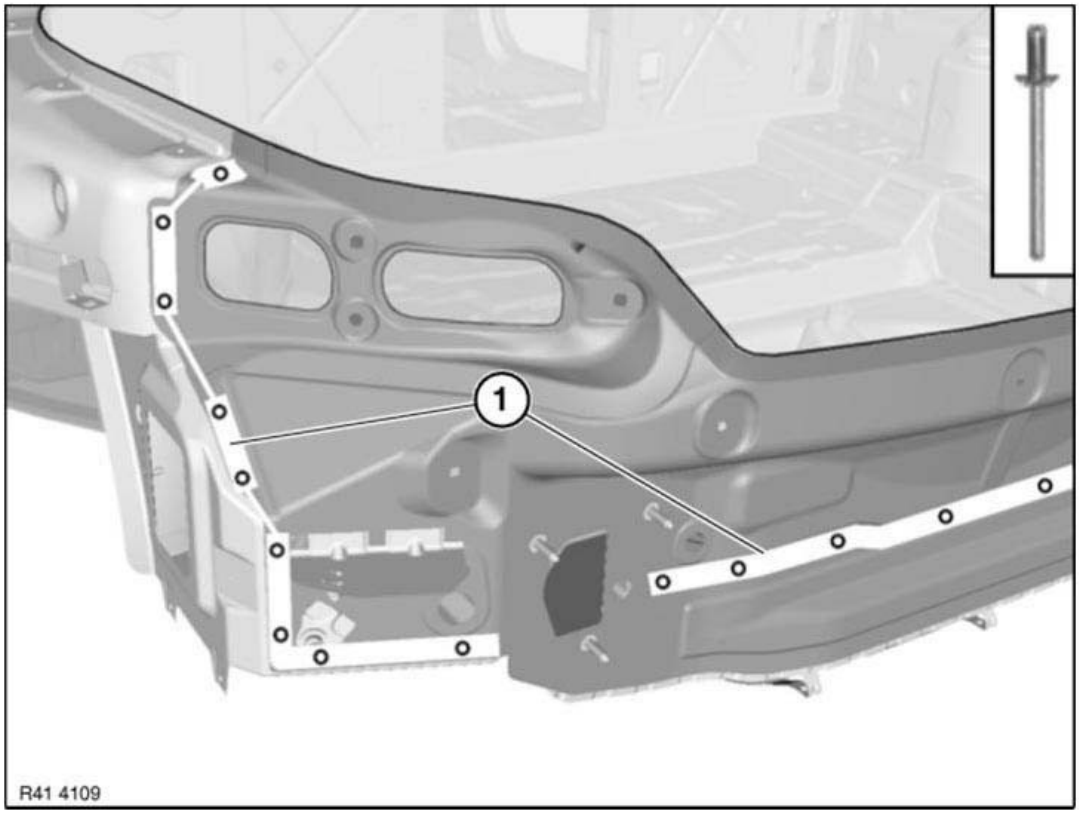


Fig. 256: Mounting Rear Trim Panel And Rivet Using Blind Rivets N6
Courtesy of BMW OF NORTH AMERICA, INC.

Mount rear trim panel and rivet with blind rivets N6 (1).

NOTE: When mounting rear trim panel, make sure there is sufficient adhesive on bonding surfaces.

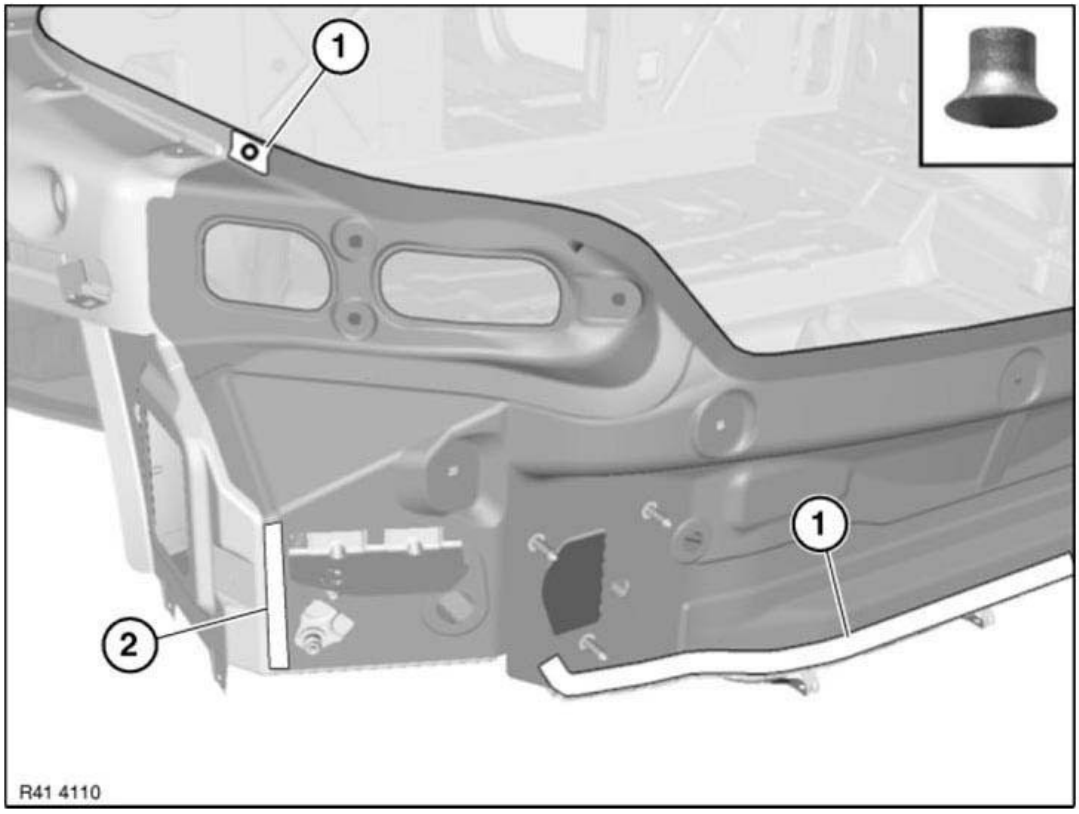


Fig. 257: Identifying Rear Trim Panel With 11 N4 Punch Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Rivet rear trim panel with a total of 11 N4 punch rivets in areas (1).

NOTE: After hardening of the adhesive in area (2), install one EMC SCREW in each case.

Press rear trim panel in areas (1) and remove emerging adhesive.

Then mount support for bumper trim to secure rear trim panel.

IMPORTANT: Prevent emerging adhesive from coming into contact with support.

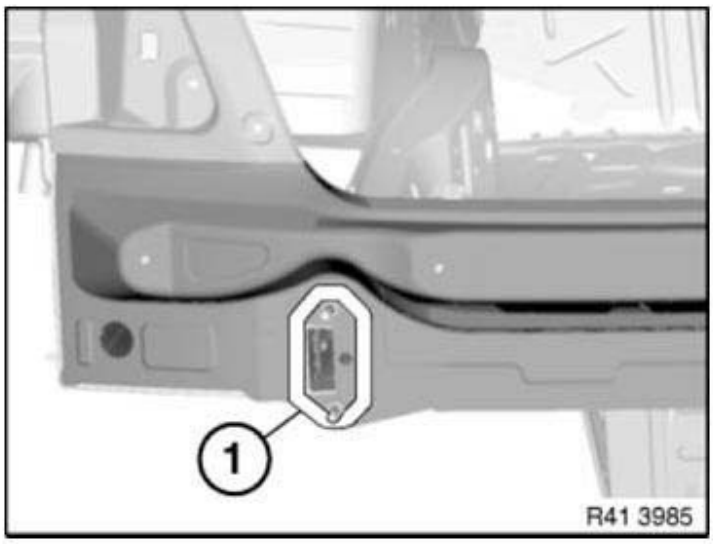


Fig. 258: Identifying Rear Panel Adhesive Application Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 516 STRIPPING OPERATIONS - REPLACING LEFT CARRIER SUPPORT

NOTE: Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.
The following list basically represents the removal sequence.

- Remove front panel (FR number: 4133040)
- Remove intake silencer housing (FR number: 4135111)
- Remove left spring strut (FR number: 3131000)
- Remove left wishbone (FR number: 3112000)

41 12 557 STRIPPING OPERATIONS - REPLACING LUGGAGE COMPARTMENT FLOOR, MIDDLE (TAIL PANEL REMOVED)

NOTE: Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.
The following list basically represents the removal sequence.

- Remove exhaust system (FR number: 1800020)
- Remove heat shield
- Remove battery (FR number: 6121010)
- Remove hydraulic unit (engine) for retractable hard top (FR number: 5437185)

Release snap fasteners (1), disconnect lines.

Unfasten screws (2).

Remove carbon canister (3).

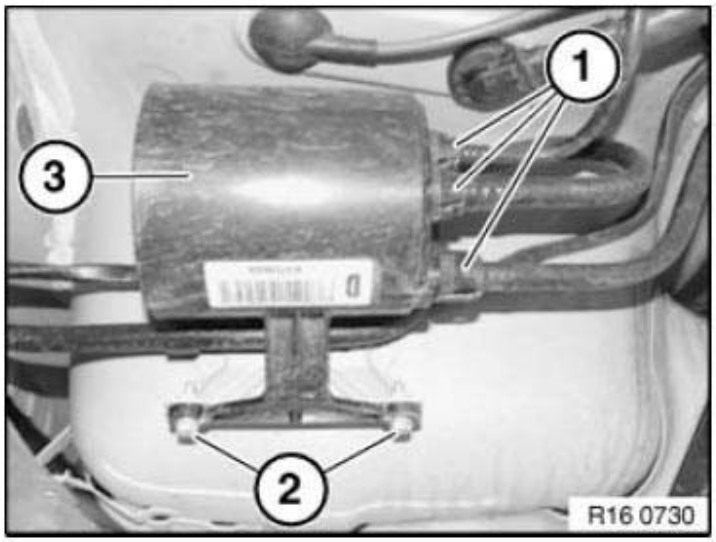


Fig. 259: Identifying Snap Fasteners, Screws And Carbon Canister
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug (1) and pull cable through luggage compartment floor.

Release screw (2).

Remove positive point.

Unscrew nut (3).

Remove earthing cable.

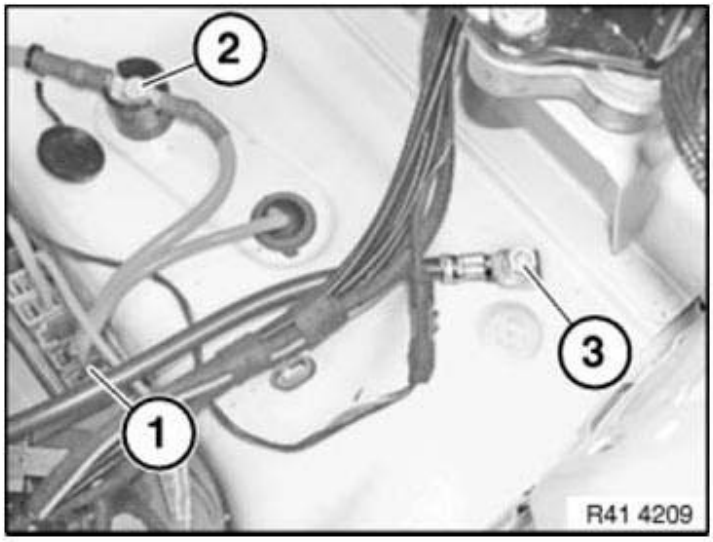


Fig. 260: Identifying Plug, Screw And Nut
Courtesy of BMW OF NORTH AMERICA, INC.

41 34 060 STRIPPING OPERATIONS - REPLACING TAIL PANEL

NOTE: Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.
The following list basically represents the removal sequence.

- Remove rear bumper trim (job number: 5112156)
- Replace rear left side panel (job number: 4135101)
- Replace rear right side panel (job number: 4135111)
- Remove left luggage compartment wheel arch panel (job number: 5147151)
- Remove right luggage compartment wheel arch panel (job number: 5147161)
- Remove luggage compartment floor trim panel (job number: 5147131)
- Remove battery (job number: 6121010)
- Upper tail panel trim (job number: 5146050)
- Release tailgate seal

Release left and right screws (1).

NOTE: Do not adjust barrel screws.

Installation note:

Refer to installation notes on removing and installing rear module (5437160).

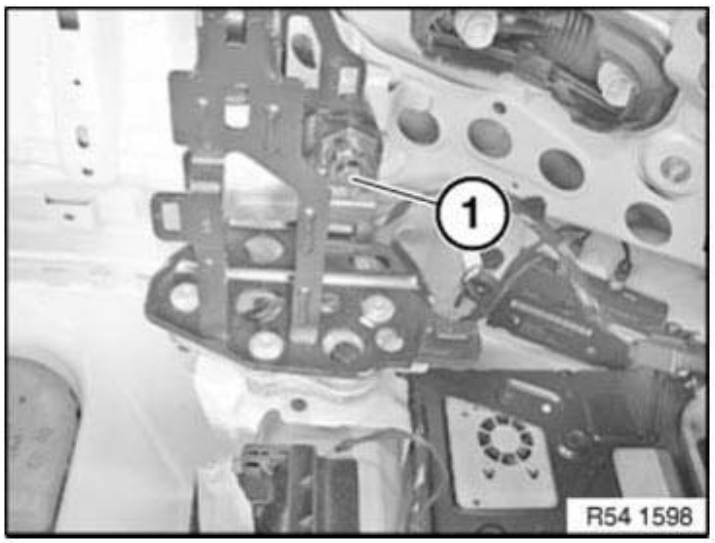


Fig. 261: Identifying Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Graphic shows the left side, the procedure for the right side is identical.

Disconnect connector (1).

Slacken nut (2).

Remove amplifier (3).

Remove guide (4).

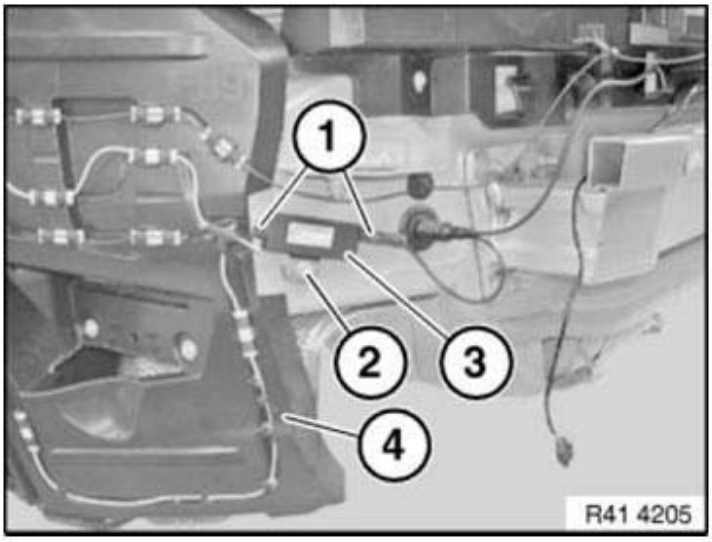


Fig. 262: Identifying Slacken Nut, Connector, Amplifier And Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect connector (1).

Release cable (2) from holders.

Remove guide (3).

Remove bumper carrier (4).

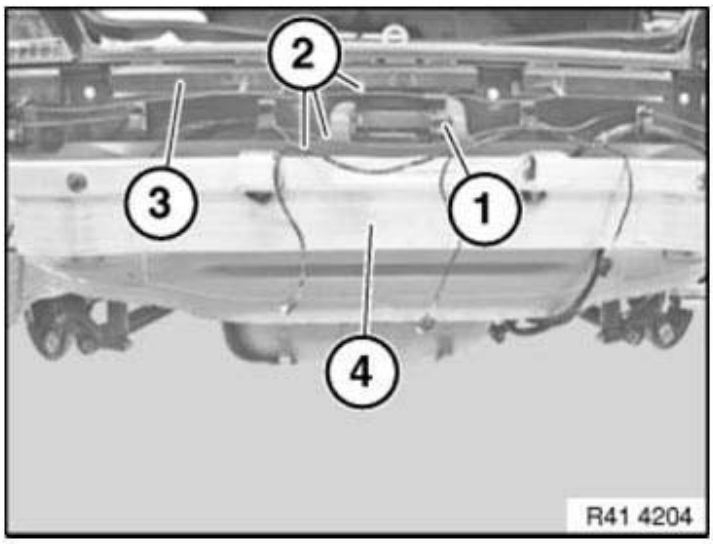


Fig. 263: Identifying Cable, Connector, Bumper Carrier And Guide
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect cable (1) on left and right from parking brake actuator.

Lay loose wiring harnesses through tail panel inwards.

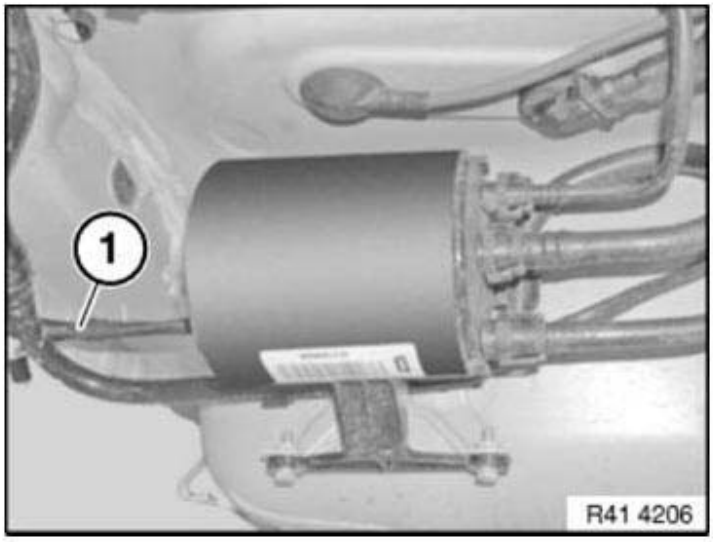


Fig. 264: Identifying Parking Brake Actuator Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect connector (1).

Remove control unit (2).

Remove guard plate (3).

Remove DAB tuner (4).

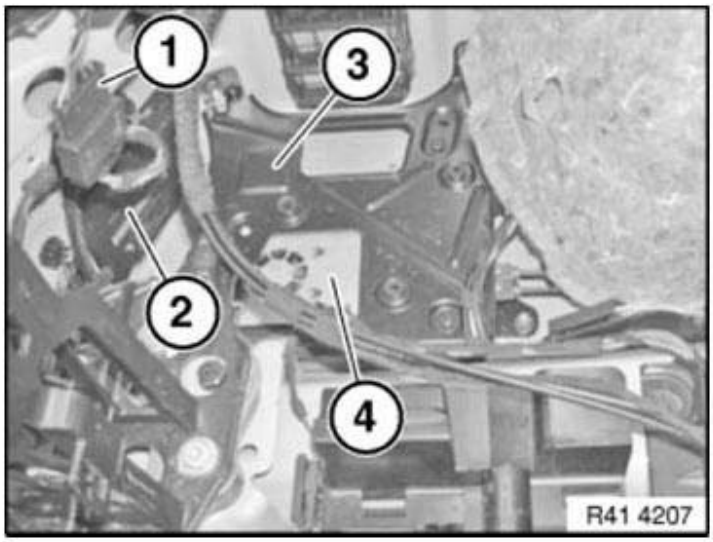


Fig. 265: Identifying Connector, Control Unit, Guard Plate And DAB Tuner
Courtesy of BMW OF NORTH AMERICA, INC.

Lay wiring harnesses (1) with control units towards front.

Remove storage trays (2).

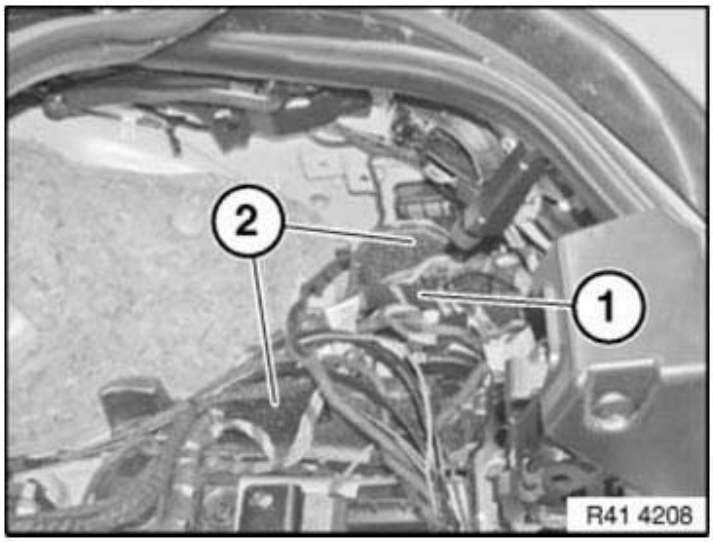


Fig. 266: Identifying Wiring Harnesses And Storage Trays
Courtesy of BMW OF NORTH AMERICA, INC.

4135 SIDE PANELS

41 00 ... REINFORCEMENT PLATE WITH STUD BOLT (BONDED)

In the case of a partial replacement piece, a body component is cut at a point described in the repair instructions.

A reinforcement plate is bonded in to ensure sufficient strength.

Reinforcement plates are available as new parts and must also be used.

NOTE: The following graphics serve as general illustrations of reinforcement plate repair work. They are applicable to sectional repairs in the outer skin area.

Overview of reinforcement plates:

1. Reinforcement plate, sill
2. Reinforcement plate, C-pillar
3. Reinforcement plate, universal
4. Reinforcement plate, C- or D-pillar
5. Lock nuts (not pictured)
    - Plastic nut _ 18 mm, part number 1 943 122
    - Clip nut _ 30 mm, part number 7 139 081

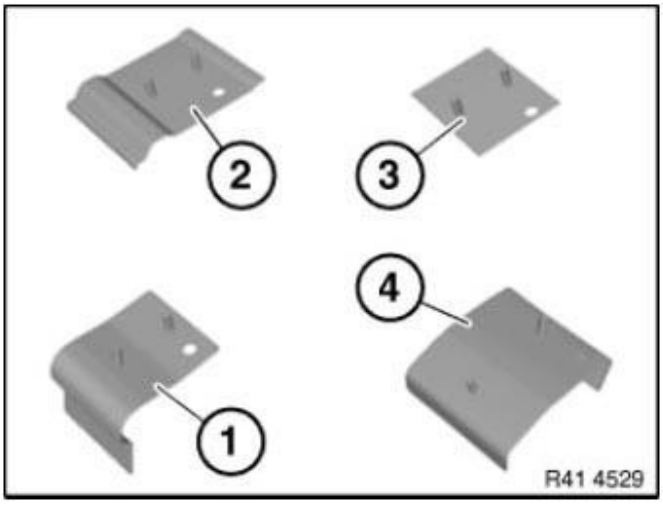


Fig. 267: Identifying Reinforcement Plate Sill, C-Pillar, Universal And C- Or D-Pillar
Courtesy of BMW OF NORTH AMERICA, INC.

Mark component in accordance with dimension a and cut.

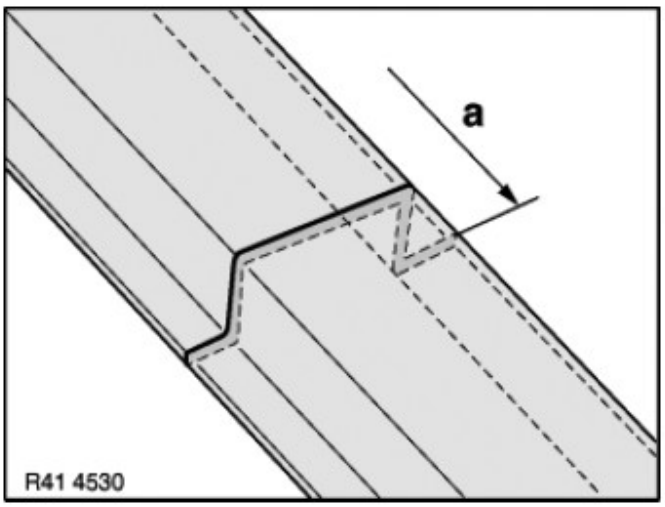


Fig. 268: Identifying Component Cutting Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part

The reinforcement plates must if necessary be reworked and cut to size.

Adjust reinforcement plate (1) to fit in component (2) on vehicle.

Make recesses (3) for stud bolts (4) in a semicircular shape.

Diameter of recesses approx. 10 - 12 mm.

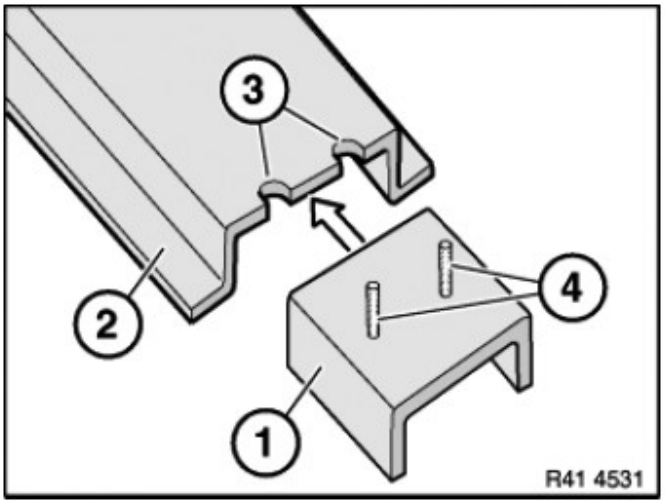


Fig. 269: Adjusting Reinforcement Plate On Components Of Vehicle
Courtesy of BMW OF NORTH AMERICA, INC.

Secure reinforcement plate by screwing on lock nuts (1).

Fit new part (2). Make recesses (3) in new part in a semicircular shape.

Diameter of recesses approx. 10 - 12 mm.

Remove reinforcement plate again.

NOTE: Width of joint between new part and component on vehicle approx. 3 - 8 mm (at least 30 mm flange width per side).
Plastic nuts should be screwed on once before applying adhesive (no thread in new plastic nut)!

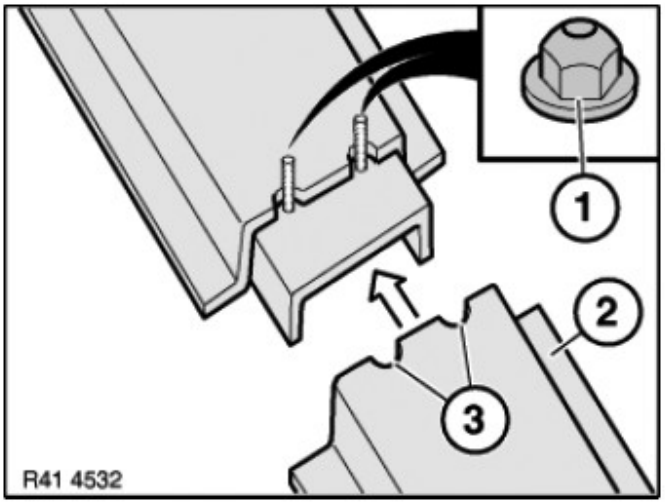


Fig. 270: Fitting New Part
Courtesy of BMW OF NORTH AMERICA, INC.

Round off cutting edges (1) on joint by grinding.

(2) Component on vehicle
(3) New part

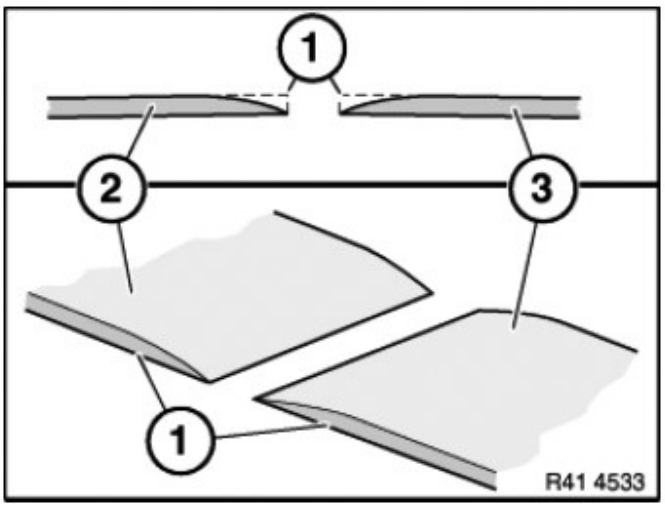


Fig. 271: Identifying Cutting Edges, Vehicle Component And New Part
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new part and body in area of bonding surfaces.

Procedure for using universal reinforcement plate

The universal reinforcement plate needs to be adapted. The plate must be divided if the distance between the pins is too great.

Dimension a is between 40 and 80 mm depending on the space available.

Secure plates with N4 punch rivets.

NOTE: Ensure the rivet is positioned correctly! Rivet head is on the adhesion side!

Rivet the plate to the inside of the flange!

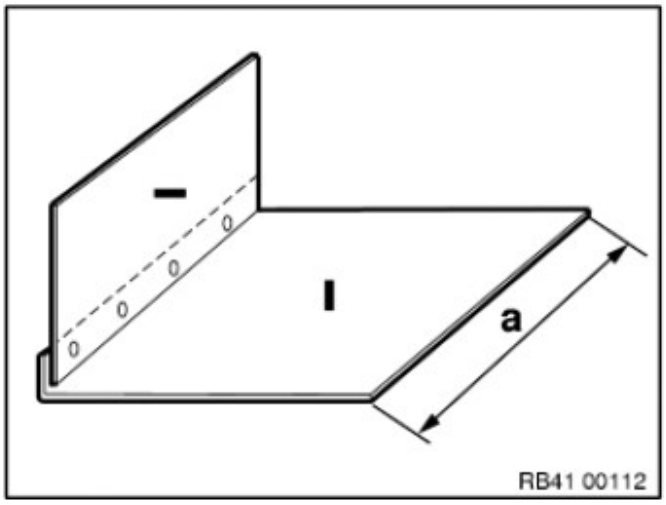


Fig. 272: Identifying Universal Reinforcement Plate Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Installing reinforcement plate

Clean all bonding surfaces.

Apply adhesive to reinforcement plate in area (1). Apply more adhesive in the radii to avoid air pockets.

Carefully slide reinforcement plate into component on vehicle and secure by screwing on nuts (2). Screw on nuts a few turns only.

IMPORTANT: When joining reinforcement plate, make sure there is sufficient adhesive on bonding surfaces.

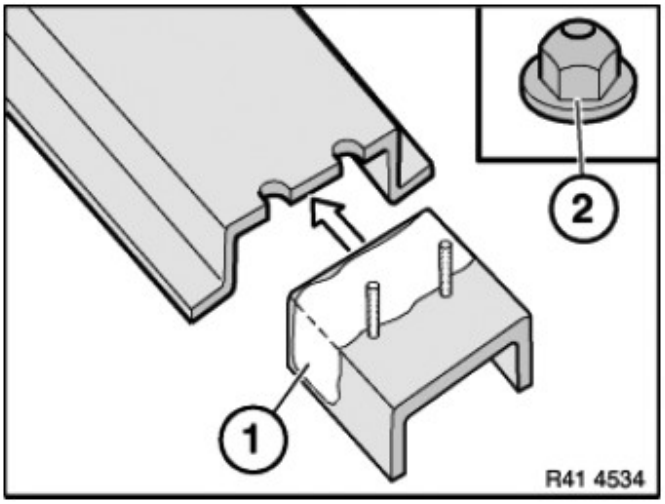


Fig. 273: Applying Adhesive To Reinforcement Plate Adhesive

Courtesy of BMW OF NORTH AMERICA, INC.

Apply adhesive to reinforcement plate bonding surface (1). Apply more adhesive in the radii to avoid air pockets.

Fit new part (2).

Align new part to adjoining component and secure with gripping pliers.

Tighten nuts.

Tightening torque **41 14 1AZ.**

IMPORTANT: Check that the transition of the components is OK at the separation point. Corrections can only be made before the adhesive has hardened. Straightening at a later stage is not possible.

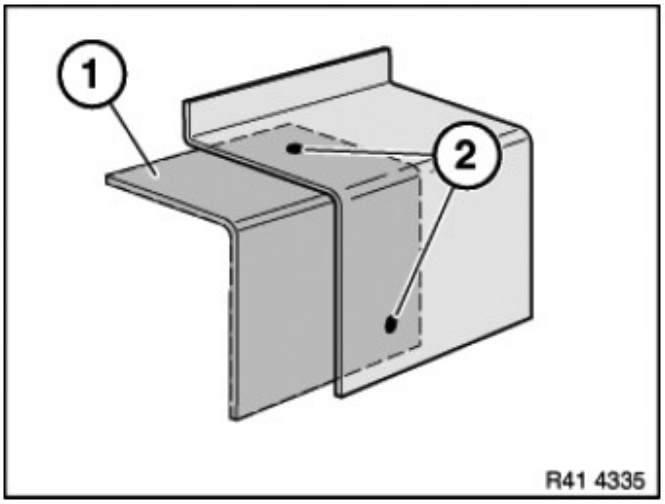


Fig. 274: Sliding Reinforcement Plate Into Body Component
Courtesy of BMW OF NORTH AMERICA, INC.

Concluding tasks at separation point:

After adhesive has hardened:

In area visible to customer:

Cut off stud bolts with bodywork saw.

Completely remove adhesive residue in joint (1).

Round off sharp edges by grinding.

IMPORTANT: Avoid heating the separation point by excessive grinding. Reworking by pressing not permitted!

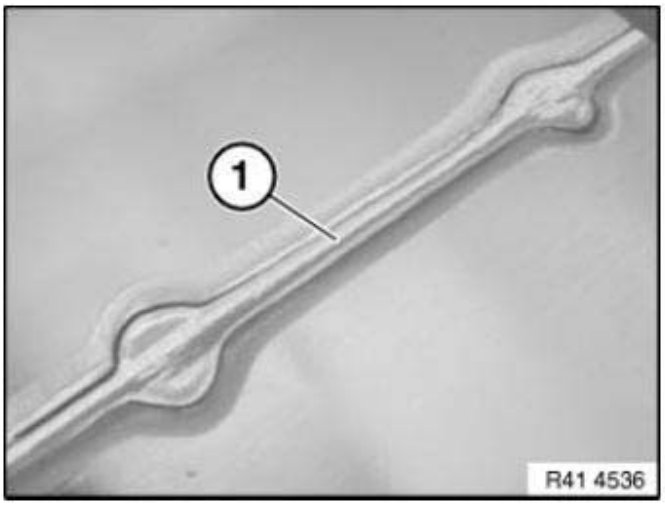


Fig. 275: Identifying Reinforcement Plate Joint
Courtesy of BMW OF NORTH AMERICA, INC.

Only the BMW-approved **METAL FILLER** should be used on the joint.

METAL FILLER - INSTRUCTIONS FOR USE

Not in area visible to customer:

Examples: The joint is covered by sill trim panel, windows, seals, etc.

Grind off stud bolts and surplus adhesive flush. Do not use metal filler. Paint area as specified in BMW Painting Handbook.

NOTE: After painting, the joint becomes visible as the adhesive shrinks. This has no affect on the quality.

41 35 000 REMOVING AND INSTALLING/REPLACING FRONT SIDE PANEL, LEFT OR RIGHT

Read contents of **BODY, GENERAL** .

Observe **GAP DIMENSIONS** .

IMPORTANT: Do not damage adjoining body components.

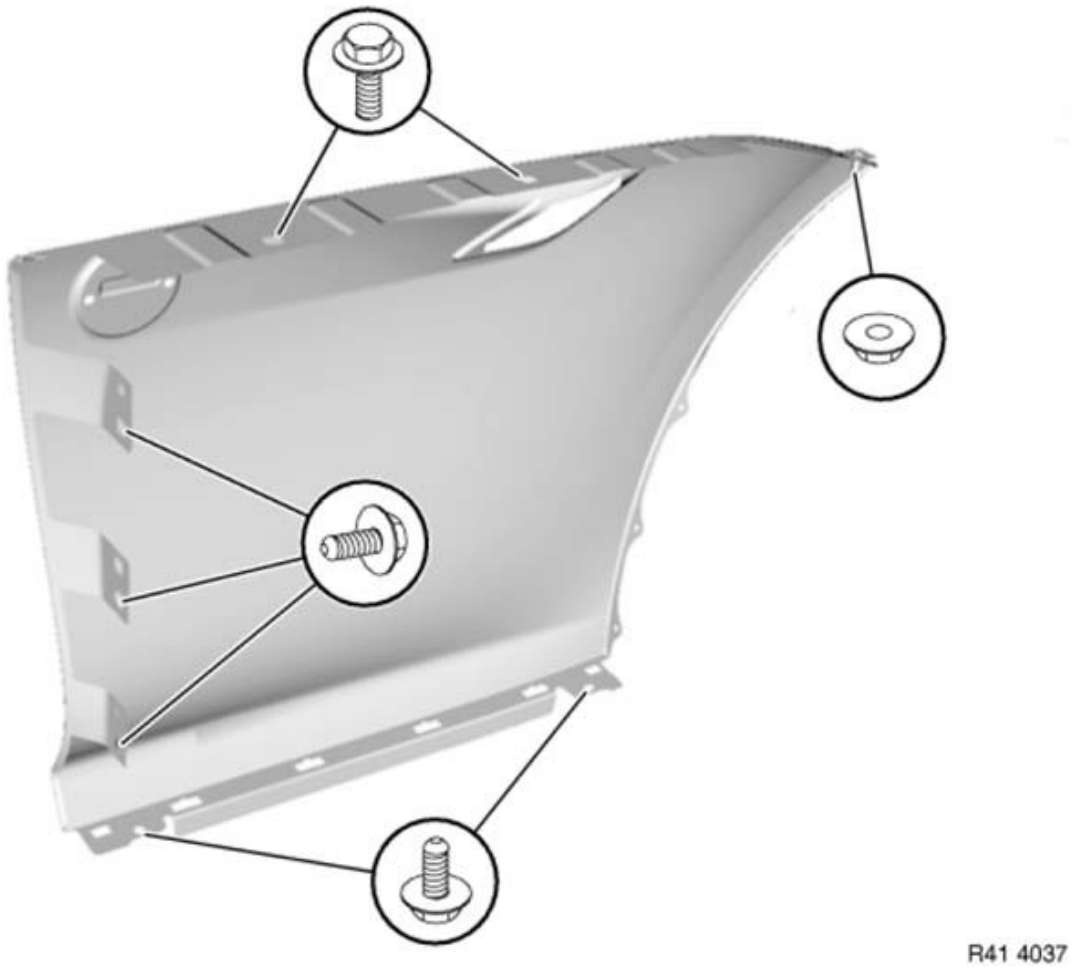


Fig. 276: Inner View Of Front Side Panel With Holders
Courtesy of BMW OF NORTH AMERICA, INC.

Inner view of front side panel with holders.

Tightening torque **41 35 1AZ** .

41 11 516 REPLACING FRONT LEFT OR RIGHT SUPPORT CARRIER (PARTIAL REPLACEMENT, FRONT SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL** .

STRIP DOWN VEHICLE .

NOTE: Observe new procedure for bonding and riveting (REPAIR STAGE 2) .

Following new body parts are required:

- (1) Support carrier, wheel arch, front,

- (2) Carrier support, wheel arch, inner
- (3) Bracket, diagonal strut, carrier support



Fig. 277: Identifying Support Carrier, Wheel Arch, Front And Carrier Support, Wheel Arch, Inner
Courtesy of BMW OF NORTH AMERICA, INC.

Following **CONSUMABLES** are required:

CONSUMABLES REFERENCE CHART

Material	Quantity
Adhesive K5a	1
Blind rivets N1	12
Punch rivets N5	12
CleanerR1	1
Cavity sealing wax remover	1
Sealing compoundD1	

Removing carrier support

View from below.

Mark severance cut (1) in accordance with specified measurements and cut.

Measurement a = 80 mm

Measurement b = 50 mm

IMPORTANT: Cut outer metal sheet only.

Open weld joints in areas (2).

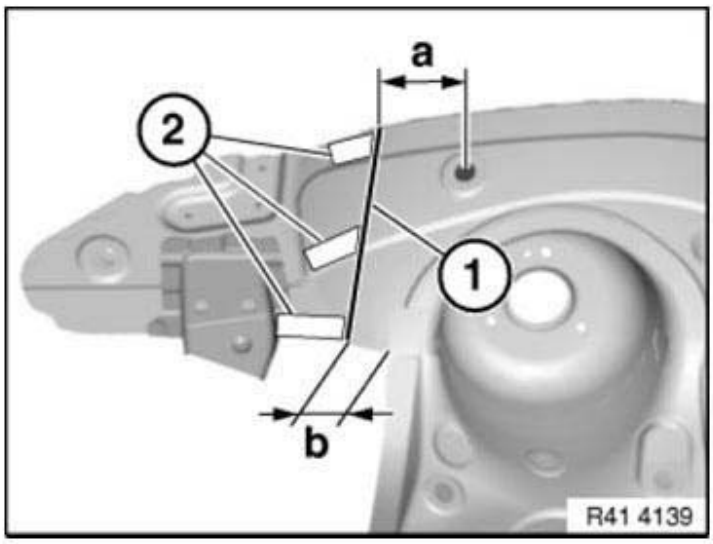


Fig. 278: Identifying Weld Joint Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Roughly mark severance cut (1) and cut.

Remove carrier support section (2).

Open weld joints in area (3) from below.

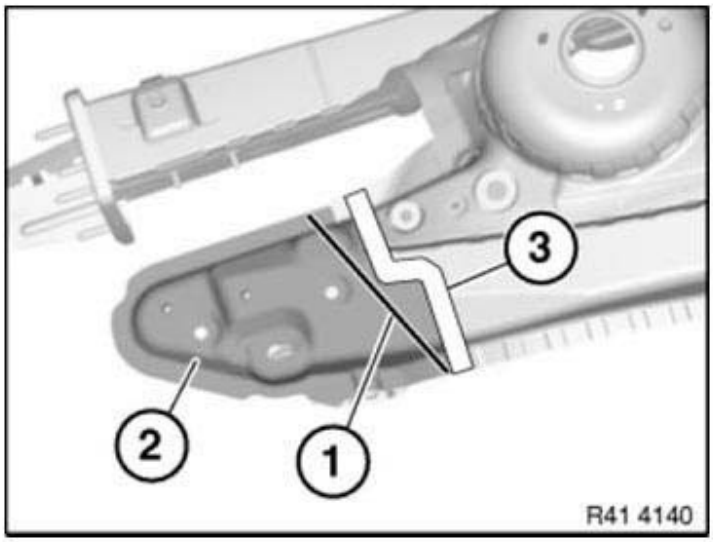


Fig. 279: Removing Carrier Support Section With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part

Open weld joints in area (1).

Mark severance cut (2) in accordance with severance cut on vehicle + 20 mm extra material and cut.

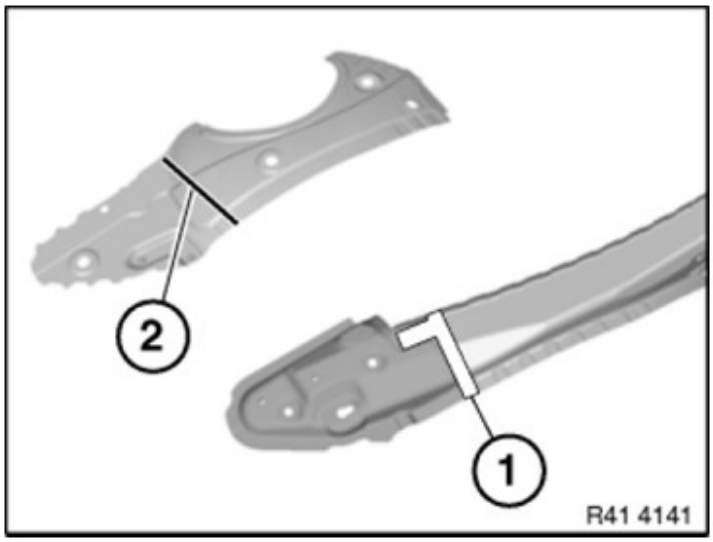


Fig. 280: Identifying Weld Joints Area With Severance Cut
Courtesy of BMW OF NORTH AMERICA, INC.

Offer up new parts with attachments and fix in place.

Set four 6.8 mm dia. holes for blind rivets N1 in area (1).

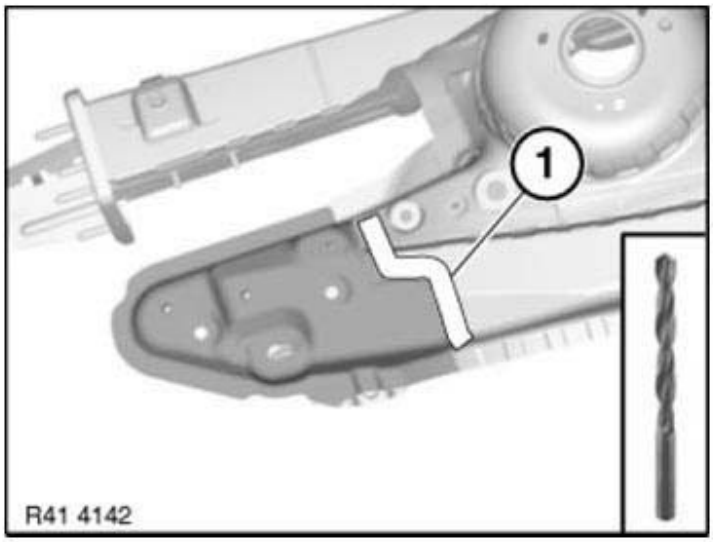


Fig. 281: Setting Four Diameter Holes For Blind Rivets N1
Courtesy of BMW OF NORTH AMERICA, INC.

View from below

Diagonal strut must be fitted in order to adjust holder (1) to fit.

In areas (2) set eight 6.8 mm dia. holes for blind rivets N1.

Remove new parts again and deburr holes.

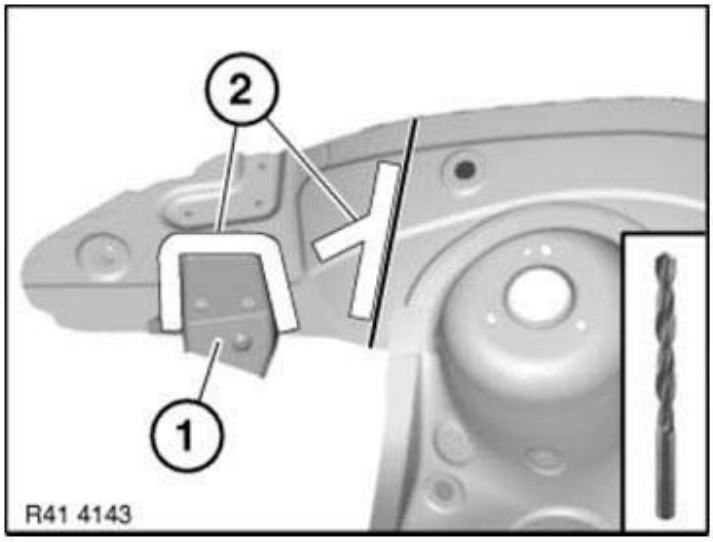


Fig. 282: Identifying Holder And Rivets Area
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind new part and body in area of bonding surfaces.

Installing carrier support

Clean all bonding surfaces on vehicle and on new part with cleaning agent R1.

Apply adhesive K5a to bonding surfaces.

Attach new part and attachments and rivet with blind rivets (1).

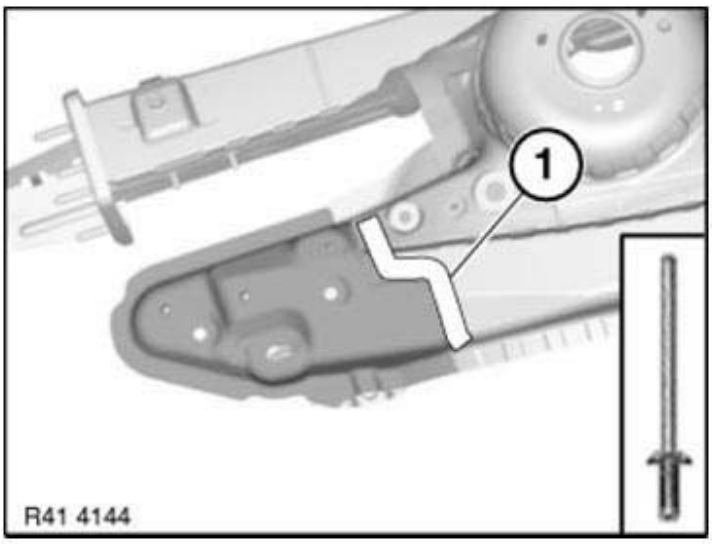


Fig. 283: Installing New Part, Attachments And Rivet Using Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Clean all bonding surfaces on vehicle and on new part with cleaning agent R1.

Apply adhesive K5a to bonding surfaces.

Mount new part and rivet with blind rivets (1).

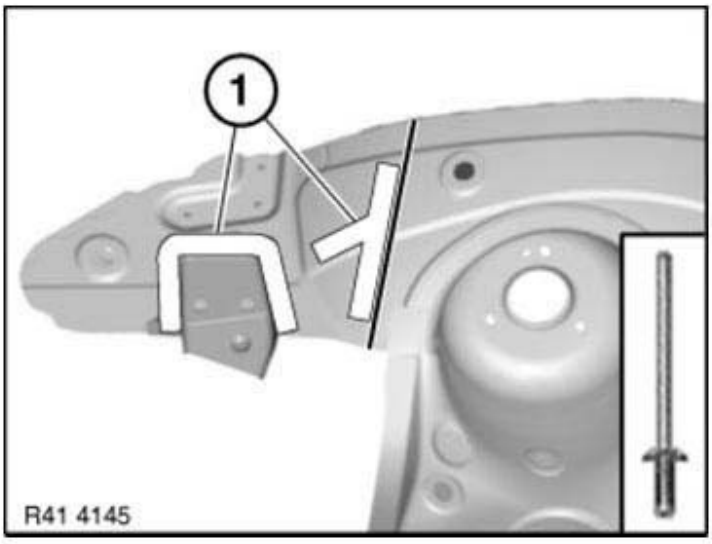


Fig. 284: Mounting New Part And Rivet Using Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

In area (1) rivet new parts with 12 punch rivets N5.

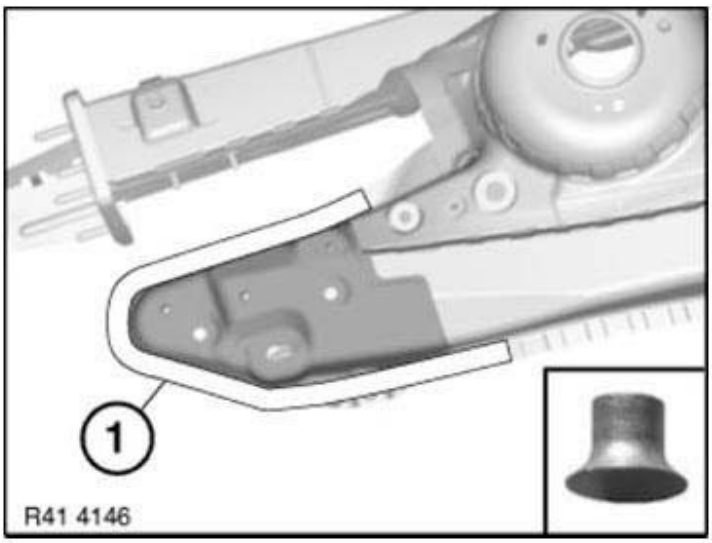


Fig. 285: Identifying Rivet Area With 12 Punch Rivets N5
Courtesy of BMW OF NORTH AMERICA, INC.

Seal adhesive areas and blind rivets in accordance with right side of vehicle with sealant.

41 35 101 REPLACING REAR LEFT SIDE PANEL

IMPORTANT: Do not damage adjoining body parts.

Installation information:

GAP DIMENSIONS serve as basis for adjustment tasks.

Partially detach trim panel (1).

Unlock and disconnect plug (2) for aerial.

Feed aerial line through hole (3).

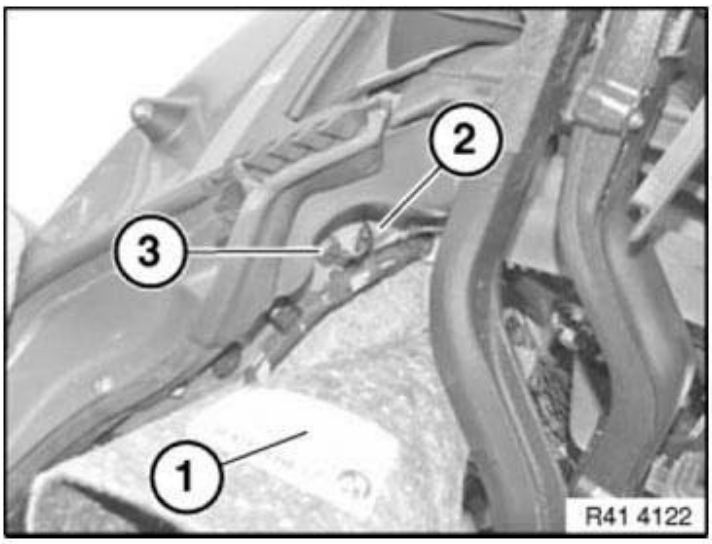


Fig. 286: Identifying Trim Panel, Aerial Line And Plug
Courtesy of BMW OF NORTH AMERICA, INC.

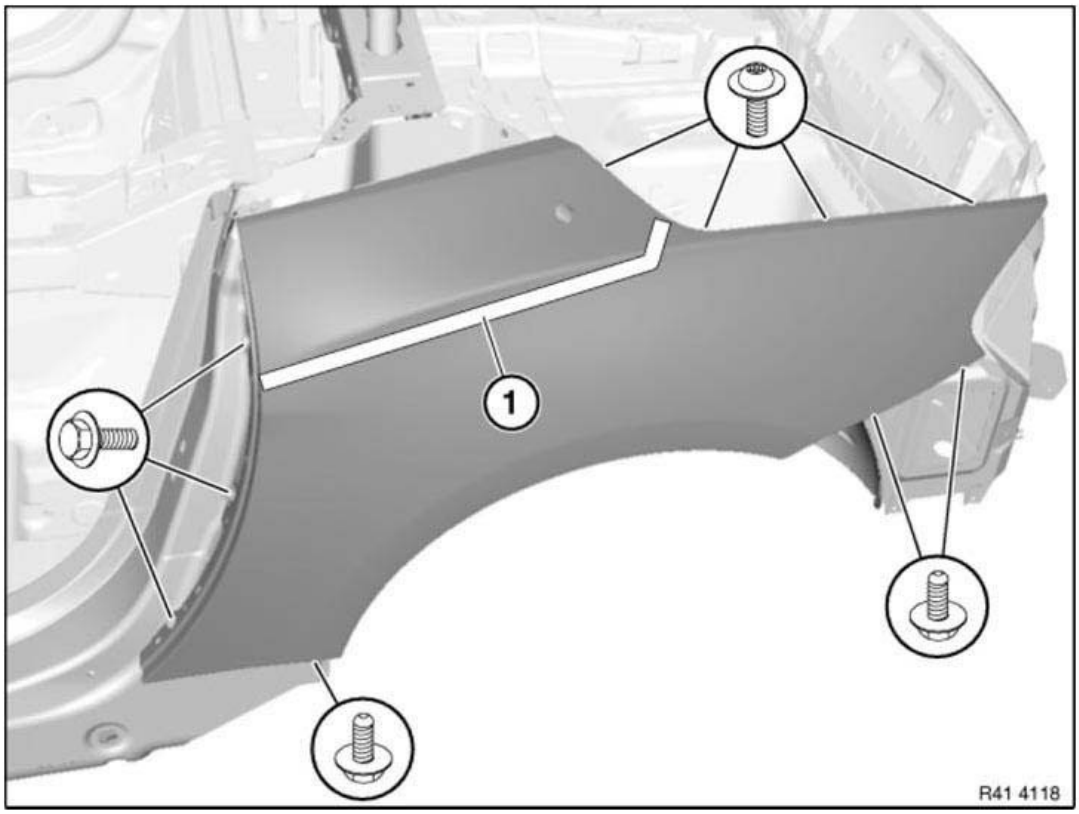


Fig. 287: Removing Cavity Acoustic Baffle With Hot-Air Blower
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws.

Tightening torque 41 35 5AZ .

IMPORTANT: Risk of damage!

Heat side panel in area of cavity acoustic baffle (2) with hot-air blower and carefully remove.

Installation:

Apply sealant to cavity acoustic baffle.

Also apply sprayable sealing compound on inside of side panel in area (1). Width approx. 50 mm.

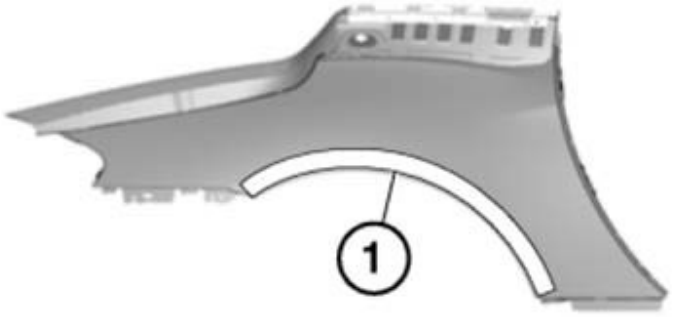


Fig. 288: Identifying Side Panel Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 35 111 REPLACING REAR RIGHT SIDE PANEL

IMPORTANT: Do not damage adjoining body parts.

Installation information:

GAP DIMENSIONS serve as basis for adjustment tasks.

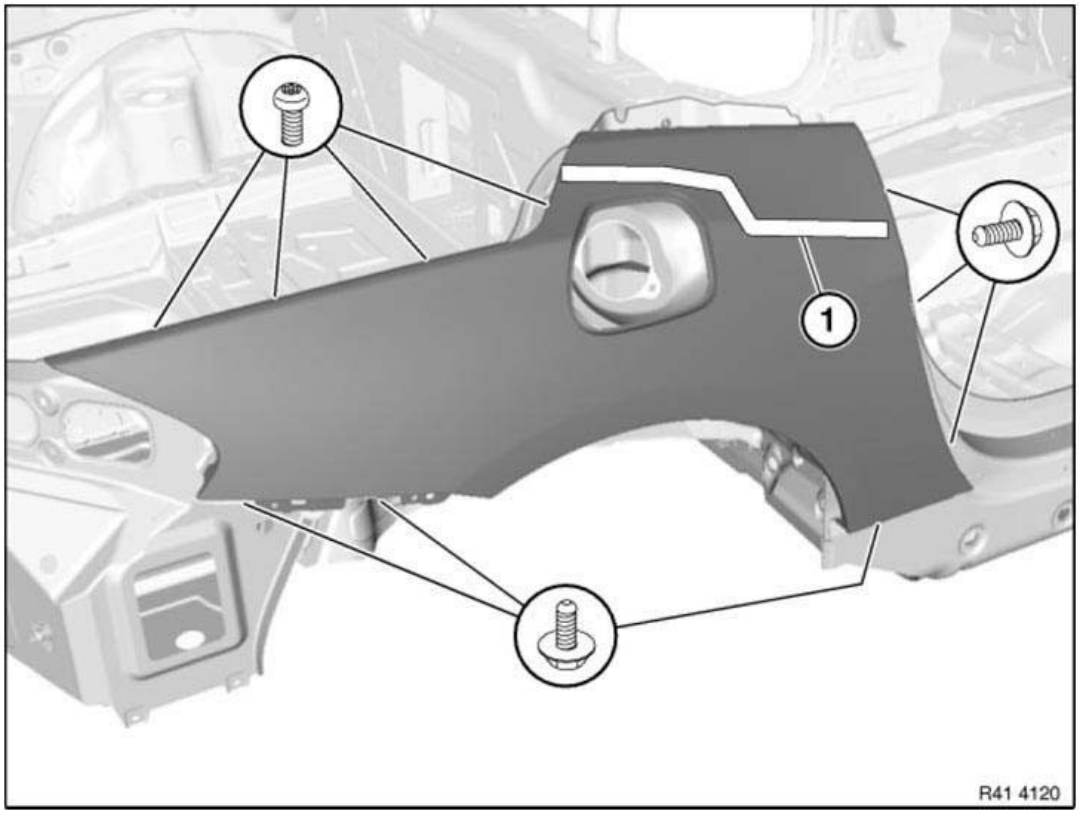


Fig. 289: Removing Cavity Acoustic Baffle With Hot-Air Blower
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws.

Tightening torque 41 35 5AZ .

IMPORTANT: Risk of damage!
Heat side panel in area of cavity acoustic baffle (2) with hot-air blower and carefully remove.

Installation:

Apply sealant to cavity acoustic baffle.

Also apply sprayable sealing compound on inside of side panel in area (1). Width approx. 50 mm.

When reusing the side panel:

- If necessary, apply sealing compound in area (2) between side panel and reinforcement (3).

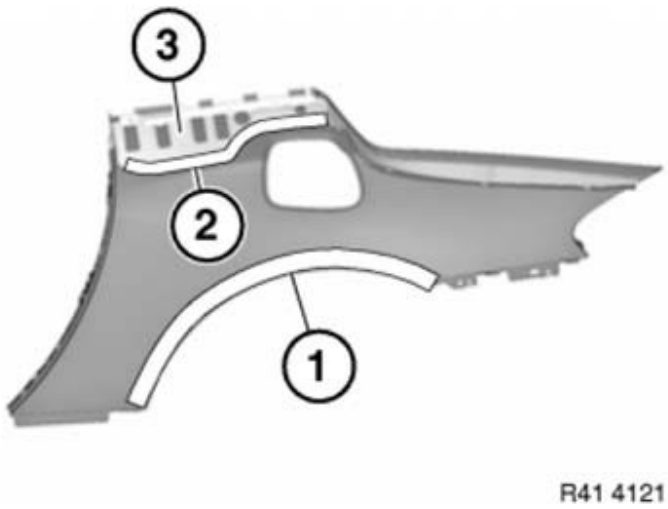


Fig. 290: Identifying Side Panel With Area Between Side Panel And Reinforcement
Courtesy of BMW OF NORTH AMERICA, INC.

4151 FRONT SIDE DOORS

41 51 004 ADJUSTING LEFT OR RIGHT FRONT DOOR

IMPORTANT: Do not damage adjoining body parts.
Minor corrections (realignment work) are permitted if the existing adjustment options are not sufficient.

NOTE: Observe GAP DIMENSIONS .
The door must be provided with all attachment parts for correct adjustment.
Adjust screwed body parts from rear to front.

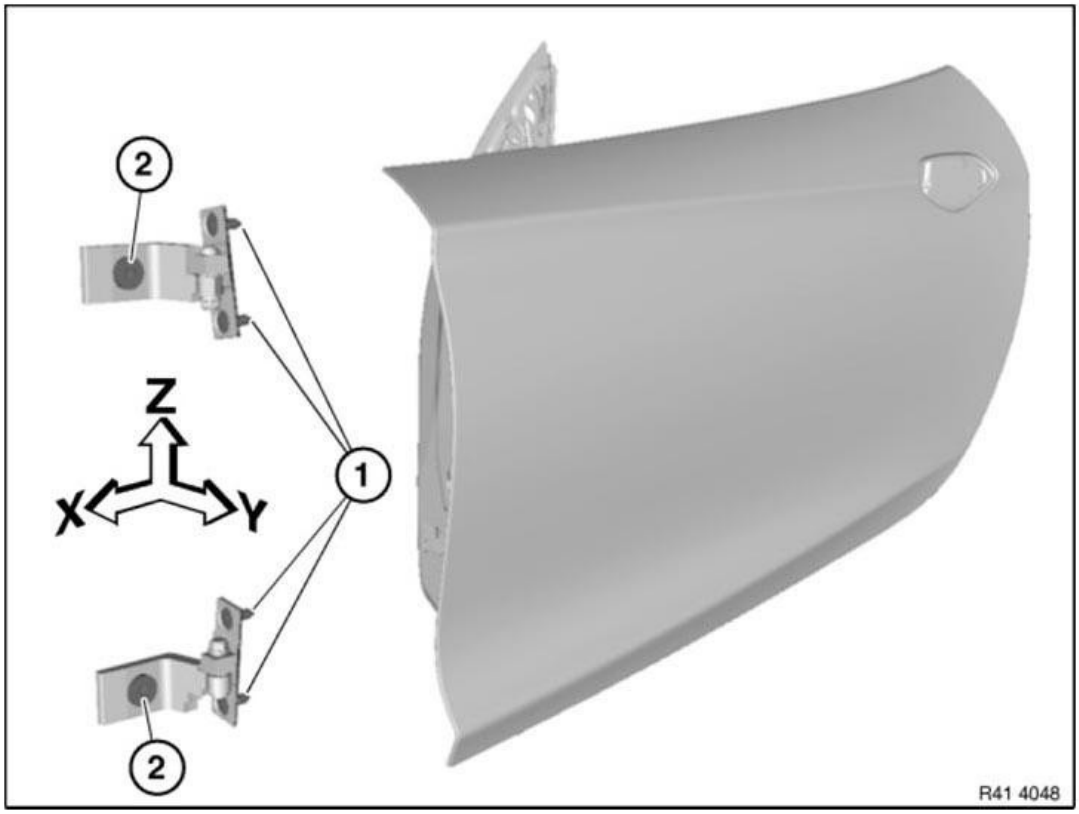


Fig. 291: Identifying Slacken Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Slacken lock striker, remove if necessary.

Height adjustment (Z) :

Slacken screws (1) until door can still just be moved. Adjust height of door.

If the range of adjustment is not sufficient, also slacken screws (2) and adjust height of door.

NOTE: Carry out adjustment in longitudinal direction (X) and in transition to side panel (Y) for hinges only, as otherwise height adjustment is lost.

Adjusting in longitudinal direction (X):

Slacken screw (2) on upper hinge and adjust door in longitudinal direction. Then adjust door at lower hinge in longitudinal direction.

Adjusting in transition to side panel (Y):

Slacken screws (1) on upper hinge and adjust door in transition to side panel. Then adjust door at lower hinge in transition to side panel.

Tightening torque **41 51 2AZ AND 41 51 3AZ** .

Check that adjoining body parts are flush in terms of height and correct if necessary.

NOTE: Vertical adjustment of door must not be influenced by lock striker. When the door is closed, the lock striker must not touch or scrape against the door lock. Look out for scratches.



Fig. 292: Identifying Door Mark
Courtesy of BMW OF NORTH AMERICA, INC.

Slacken screws (1) until lock striker can still just be moved.

Move lock striker sideways in order to adjust transition between door and rear side panel.

Tightening torque **51 21 3AZ** .

NOTE: When the door is closed, the lock striker must not touch or scrape against the door lock. Look out for scratches.

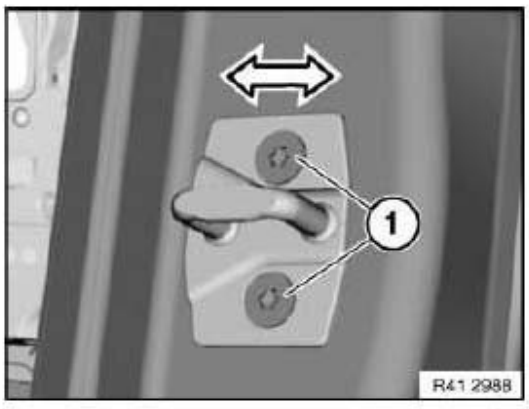


Fig. 293: Adjusting Transition Between Door And Rear Side Panel

Courtesy of BMW OF NORTH AMERICA, INC.

After installation

If the hinge is slackened on the body side, the area of the hinge must be sealed in a u-shape with sealant (1).

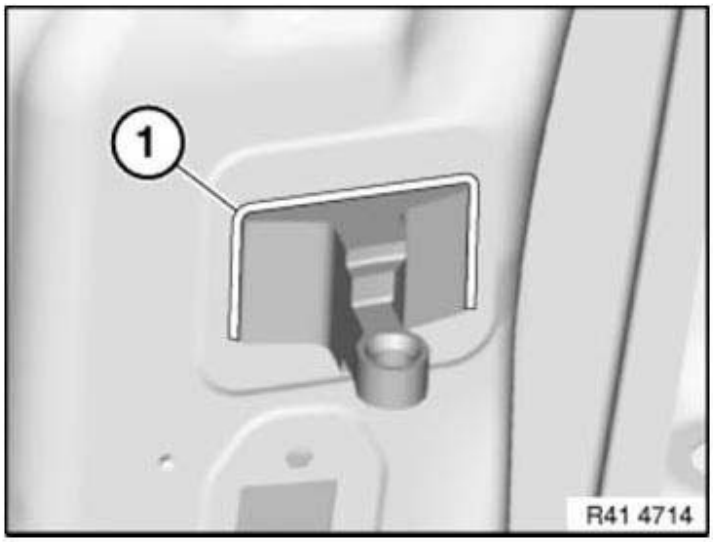


Fig. 294: Identifying Hinge Sealant Applying Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 5. ... REMOVING AND INSTALLING DOOR

IMPORTANT: Do not damage adjoining body parts.

The illustrations are schematic representations and are to be applied to the relevant vehicle type.

Release screw on connector frame.

Tightening torque **41 51 4AZ** .

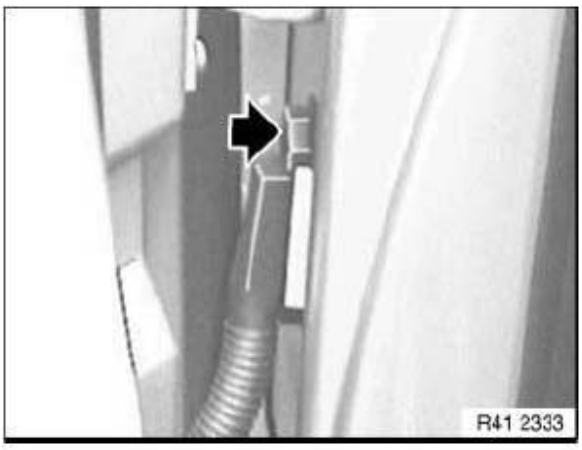


Fig. 295: Locating Screw On Connector Frame
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Secure door against closing.

Release screw (1) on door retainer.

Tightening torque **51 21 3AZ** .

Open door up to stop.

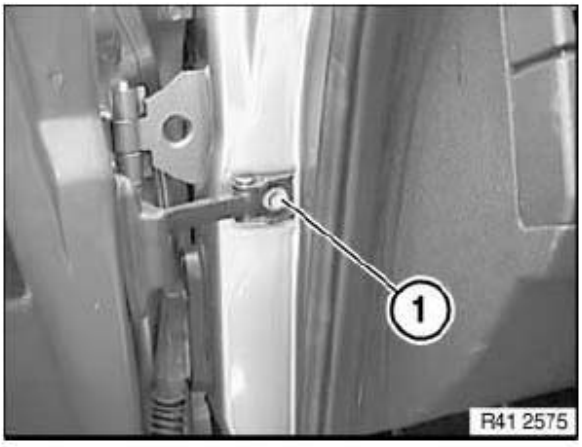


Fig. 296: Identifying Screw On Door Retainer
Courtesy of BMW OF NORTH AMERICA, INC.

Release nuts between both hinge elements at top and bottom.

Tightening torque **41 51 1AZ** .

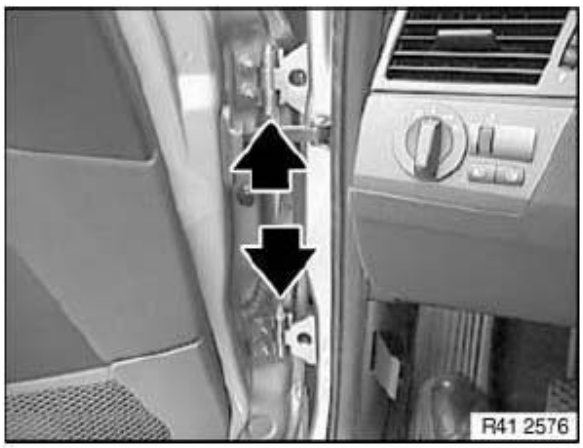


Fig. 297: Locating Hinge Elements
Courtesy of BMW OF NORTH AMERICA, INC.

Pull plug connection from door pillar, unlock by pulling out bar and detach.

Unhinge door by moving upwards and placing it on a suitable surface.

Installation:

If necessary, adjust **DOOR** .

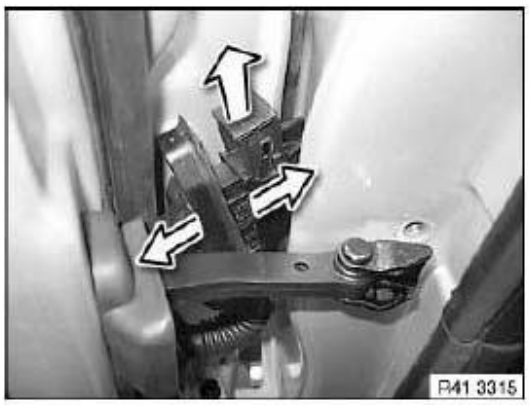


Fig. 298: Pulling Plug Connection From Door Pillar
Courtesy of BMW OF NORTH AMERICA, INC.

4152 REAR SIDE DOORS

41 5. ... REMOVING AND INSTALLING DOOR

IMPORTANT: Do not damage adjoining body parts.

The illustrations are schematic representations and are to be applied to the relevant vehicle type.

Release screw on connector frame.

Tightening torque **41 51 4AZ** .

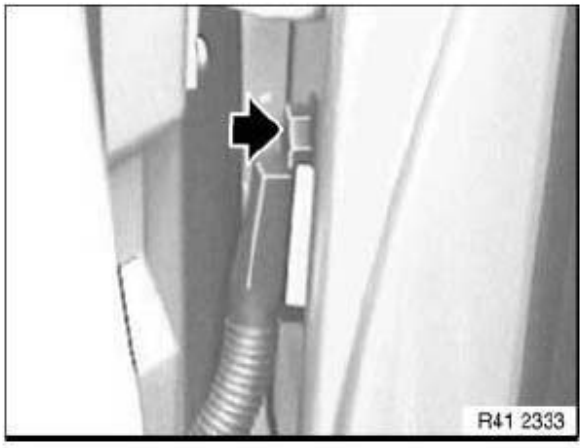


Fig. 299: Locating Screw On Connector Frame
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Secure door against closing.

Release screw (1) on door retainer.

Tightening torque **51 21 3AZ** .

Open door up to stop.

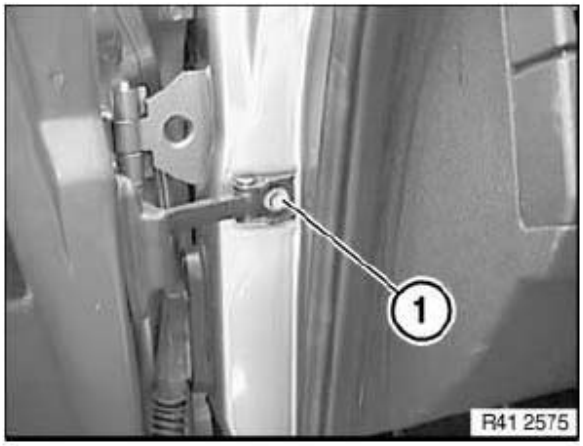


Fig. 300: Identifying Screw On Door Retainer
Courtesy of BMW OF NORTH AMERICA, INC.

Release nuts between both hinge elements at top and bottom.

Tightening torque **41 51 1AZ** .

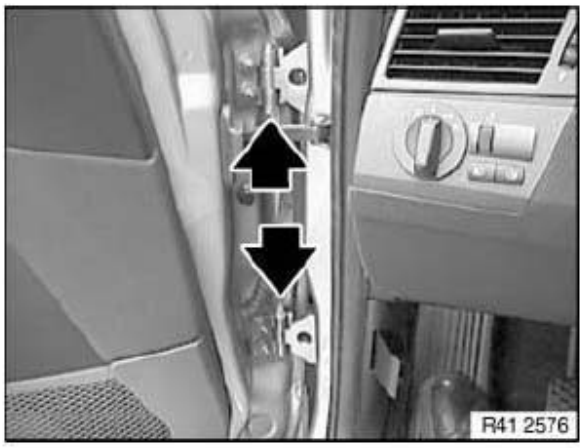


Fig. 301: Locating Hinge Elements
Courtesy of BMW OF NORTH AMERICA, INC.

Pull plug connection from door pillar, unlock by pulling out bar and detach.

Unhinge door by moving upwards and placing it on a suitable surface.

Installation:

If necessary, adjust **DOOR** .



Fig. 302: Pulling Plug Connection From Door Pillar
Courtesy of BMW OF NORTH AMERICA, INC.

4161 FRONT LID

41 61 014 ADJUSTING ENGINE BONNET/HOOD

Do not damage adjoining body parts.

Minor corrections (rework) are permitted if the existing adjustment options are not sufficient.

NOTE: Observe GAP DIMENSIONS .
Carry over schematic representation to the relevant vehicle type.

Check stop screw of bonnet hinge on left and right.

NOTE: Pressure spring of stop screw must not be damaged or missing, replace hood/bonnet hinge if necessary.

The stop screw is preset at the factory and must not be used for adjustment!

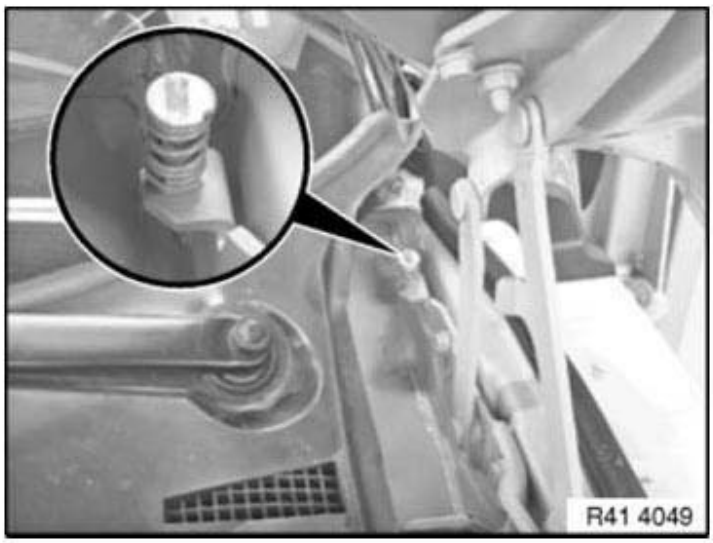


Fig. 303: Identifying Bonnet Hinge Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Loosen screws (1) and (2) on left and right hinges.

Hood lid must be able to be moved.

Tightening torque **41 61 1AZ** .

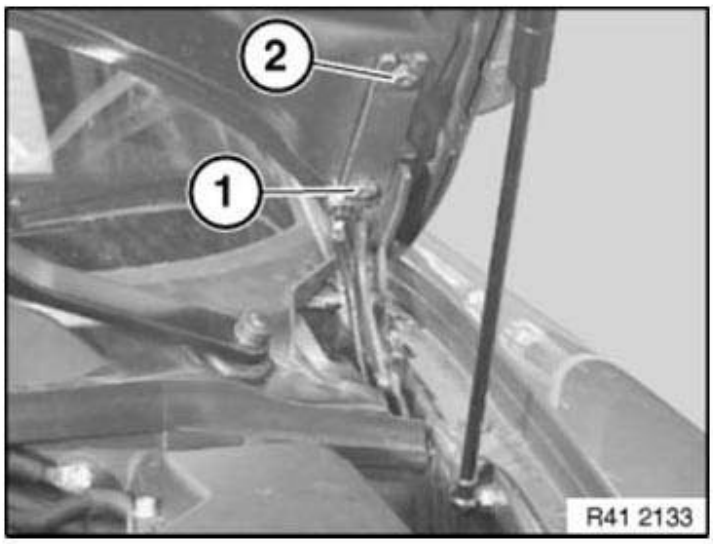


Fig. 304: Identifying Hinge Screws
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: If the adjustment range is not sufficient, release retaining screws of engine hood hinge on body and move hinge.
Tightening torque 41 61 2AZ .

Adjust height to front panel by turning nut (1).

NOTE: Arrester hooks must snap into place in locks!

The engine hood/bonnet is correctly adjusted in the front area by a combination of pulling the arrester hooks and pressing the stop buffers.

Adjust **BUMP STOPS** .

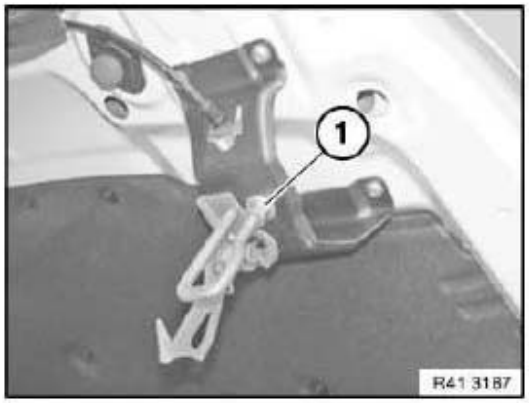


Fig. 305: Adjusting Height Using Turning Nut
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust transition of hood/bonnet to side panel by means of buffers (1) and (2).

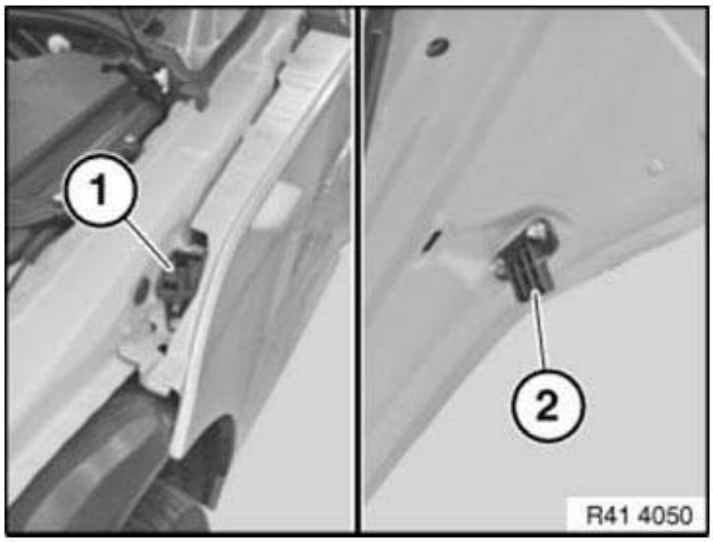


Fig. 306: Identifying Side Panel Buffers
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Check function of arrester hook.

After installation

41 61 000 REMOVING AND INSTALLING HOOD/BONNET

Read contents of **BODY, GENERAL** .

Necessary preliminary tasks:

- Disconnect all cable plug connections

WARNING: Risk of injury!
Support engine hood in fully opened position with suitable apparatus.

IMPORTANT: Removal of the hood/bonnet must be carried out with the assistance of a second person.

NOTE: Carry over schematic representation to the relevant vehicle type.

Disconnect gas-pressure damper from engine hood/bonnet (1).

Release nuts (2) and (3).

Tightening torque **41 61 1AZ** .

Remove hood lid.

Installation:

Install engine hood at screw locations to on hinge. This dispenses with the need for adjustment after installation.

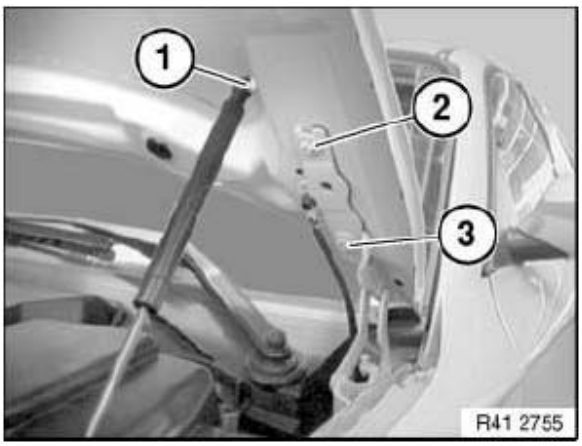


Fig. 307: Identifying Gas-Pressure Damper With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

If this is not possible, **ADJUST ENGINE HOOD** .

4162 REAR LID

41 62 014 ADJUSTING REAR LID

Read contents of BODY, GENERAL .

The E89 GAP DIMENSIONS serve as the basis for adjustment work.

NOTE: Stop screw (1) must not be damaged or missing.

The stop screw is preset and must not be used to adjust the rear lid.

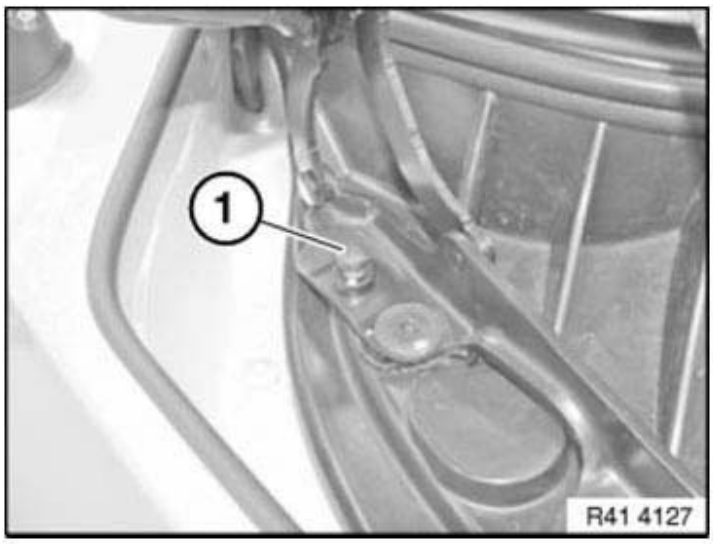


Fig. 308: Identifying Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Slacken screws (1) until such stage that the rear lid can still be moved.

Adjust rear lid laterally and longitudinally.

Height adjustment of rear lid with spacer plates. If this is not sufficient, adjust **KINEMATICS BOX** .

Retighten all screws.

Tightening torque **41 62 1AZ** .

Adjust **REAR LID LOCK** .

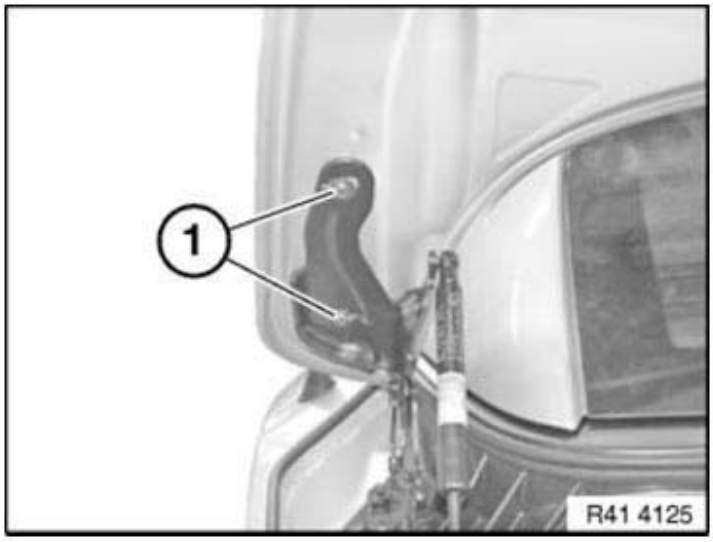


Fig. 309: Identifying Slacken Screws
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 505 CHECKING FRONT BODY STRUCTURE

Necessary preliminary tasks:

- Remove **FRONT UNDERBODY PROTECTION**

Structural damage can be identified by measuring with a beam trammel.

Here, symmetrically arranged points on the vehicle are measured in diagonal sequence.

If the two measured values are identical, there is no damage to the vehicle.

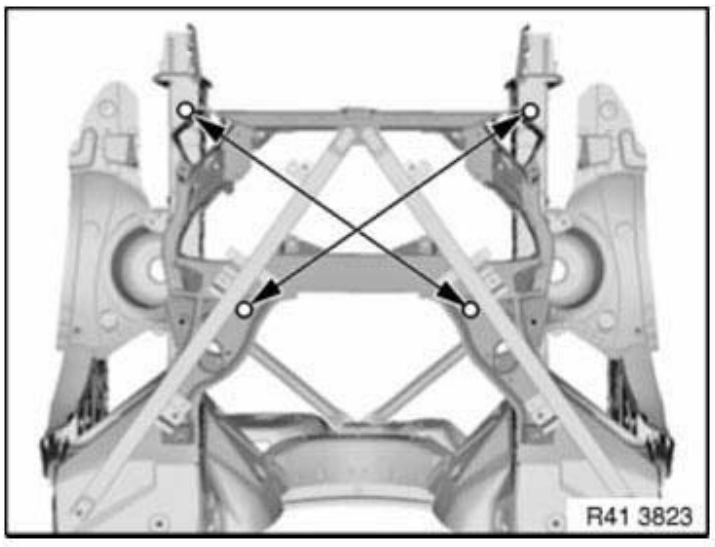


Fig. 310: Measuring Symmetrically Arranged Points In Diagonal Sequence On Vehicle
Courtesy of BMW OF NORTH AMERICA, INC.

In front area use conical adapter (2) at bore hole (1).

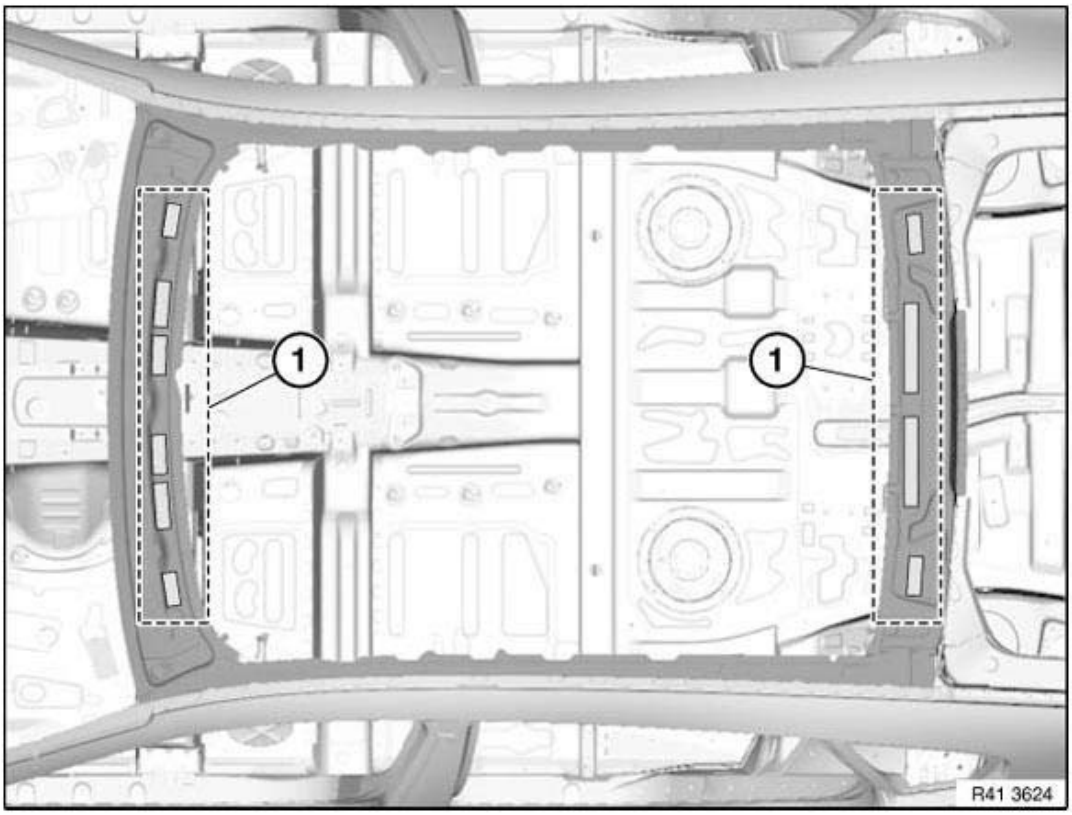


Fig. 311: Identifying Conical Adapter And Bore Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Use 8 mm dia. bore hole (1) on front axle support.

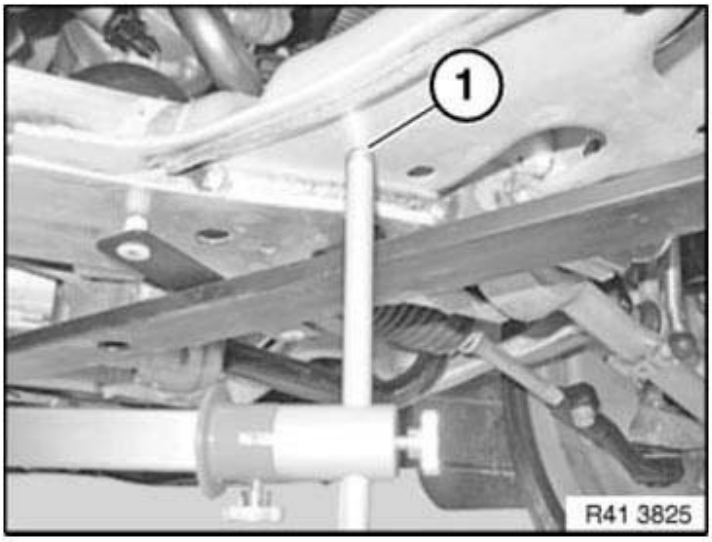


Fig. 312: Identifying Bore Hole On Front Axle Support
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 510 CHECKING REAR BODY STRUCTURE

Necessary preliminary tasks:

- Remove **REINFORCEMENT PLATE FROM REAR AXLE**

Structural damage can be identified by measuring with a beam trammel.

Here, symmetrically arranged points on the vehicle are measured in diagonal sequence.

If the two measured values are identical, there is no damage to the vehicle.

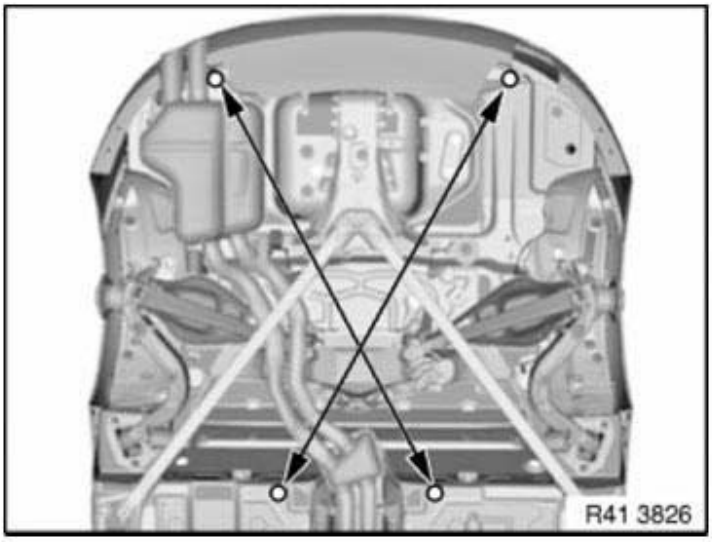


Fig. 313: Measuring Symmetrically Arranged Points In Diagonal Sequence On Vehicle
Courtesy of BMW OF NORTH AMERICA, INC.

In rear area use adapter (2) on threaded bolt of impact plate (1).

NOTE: If necessary, make recess in adapter yourselves.

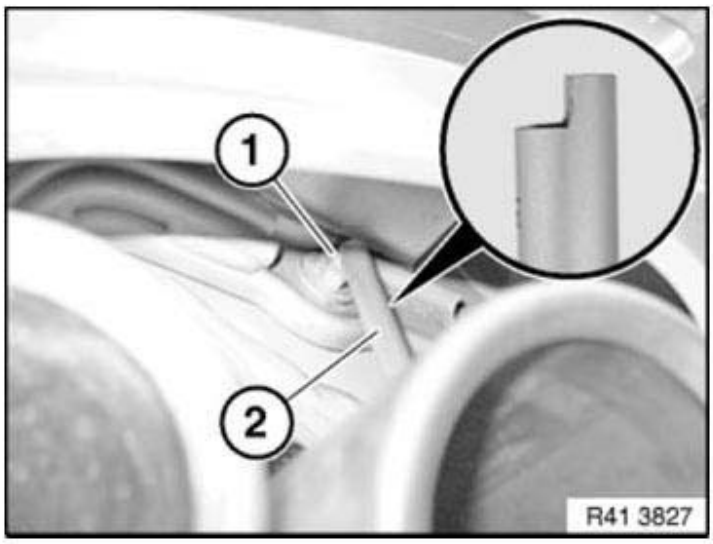


Fig. 314: Identifying Adapter And Impact Plate Bolt
Courtesy of BMW OF NORTH AMERICA, INC.

Use conical adapter (1) at attachment point of reinforcement plate.

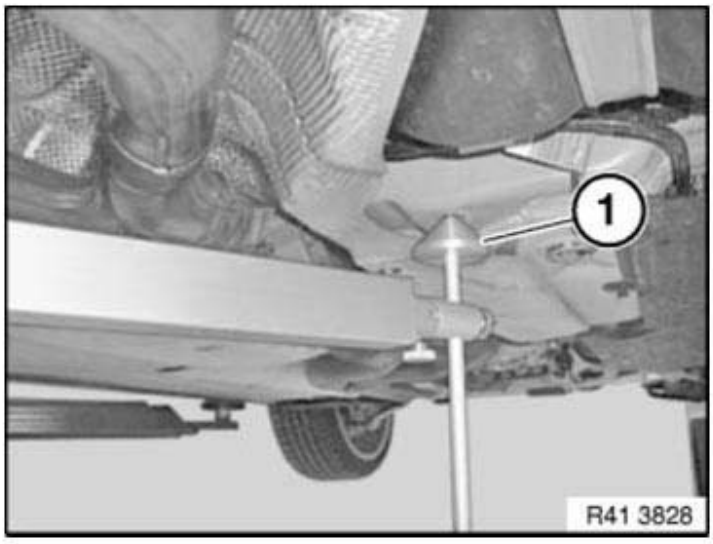


Fig. 315: Identifying Conical Adapter
Courtesy of BMW OF NORTH AMERICA, INC.

41 62 519 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT HINGE FOR REAR LID

Read contents of BODY, GENERAL .

Remove **GAS PRESSURE SPRING** (1).

Unfasten screws (2).

Tightening torque **41 62 1AZ** .

IMPORTANT: Secure rear lid against falling down, remove if necessary.

Release screws (3).

Tightening torque **41 62 3AZ** .

Remove hinge.

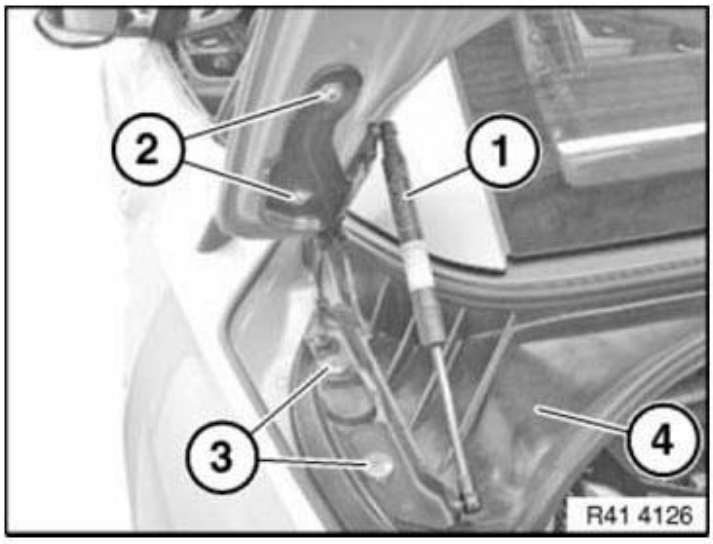


Fig. 316: Identifying Gas Pressure Spring, Screws And Sealing Compound
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace sealing compound between hinge and rear module (4).

Adjust rear lid on the basis of the **E89 BODY GAP DIMENSIONS** .

41 62 000 REMOVING AND INSTALLING REAR LID

Read contents of **BODY, GENERAL** .

Necessary preliminary tasks:

- Remove **PANEL FOR REAR LID**
- Disconnect all plug and socket cable connections on rear lid.

Operation is described on the left side. Right side identical.

Release screws (1).

Tightening torque **41 62 1AZ** .

Remove rear lid.

Installation:

Adjust **REAR LID** .

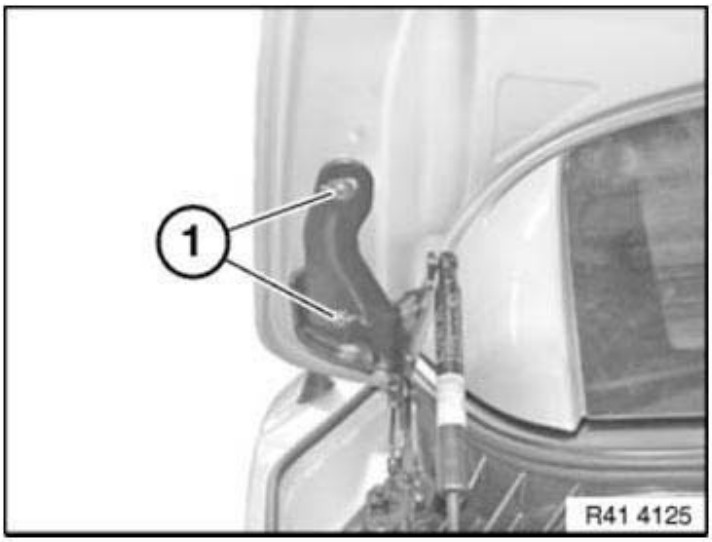


Fig. 317: Identifying Slacken Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Replacing rear lid

On vehicles without an additional aerial, designated opening (1) must be sealed with 40 x 40 mm masking foil.

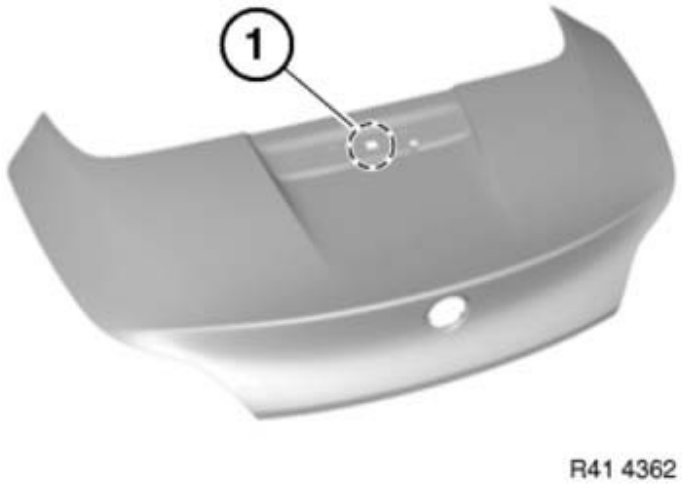


Fig. 318: Identifying Rear Lid
Courtesy of BMW OF NORTH AMERICA, INC.

4163 OTHER FLAPS

41 63 000 REMOVING AND INSTALLING FLAP FOR FUEL FILLER NECK

NOTE: The illustration is a schematic representation and is to be applied to the relevant vehicle type.

Open fuel filler flap.

Lever out lock (2) and detach fuel filler flap (1) in direction of arrow.

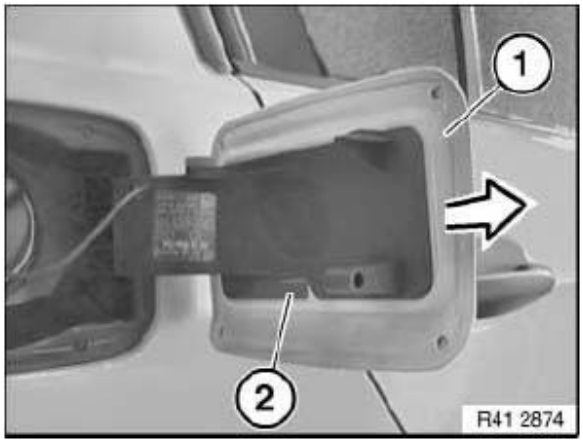


Fig. 319: Removing Lock And Fuel Filler Flap
Courtesy of BMW OF NORTH AMERICA, INC.

41 63 060 REMOVING AND INSTALLING SOFT TOP COMPARTMENT LID

Necessary preliminary work

- Connect battery charger
- Remove **TRIM PANEL FOR TAILGATE**

Close both locks by hand.

NOTE: On closing the second door lock, the Soft Close function must lock audibly. Closing the locks is necessary so that the soft top system remains ready for operation.

Slowly close the tailgate until the tailgate locks are at the strikers.

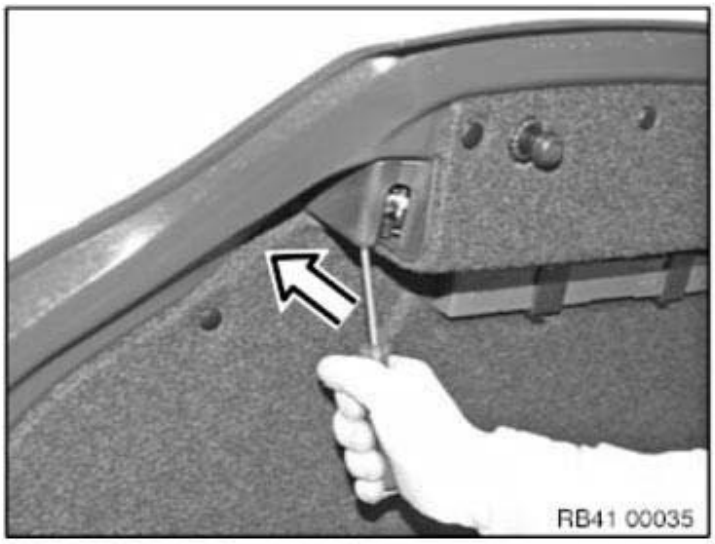


Fig. 320: Closing Both Locks
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Risk of damage!
A tailgate that is not properly closed can damage the soft top!
Only move the soft top with extreme caution.

Open soft top.

Stop opening procedure in the position shown.



Fig. 321: Opening Soft Top
Courtesy of BMW OF NORTH AMERICA, INC.

Open tailgate. (without operating the opener)



Fig. 322: Opening Tailgate
Courtesy of BMW OF NORTH AMERICA, INC.

Detach wiring harness (1) from tailgate and guide through soft top compartment lid.

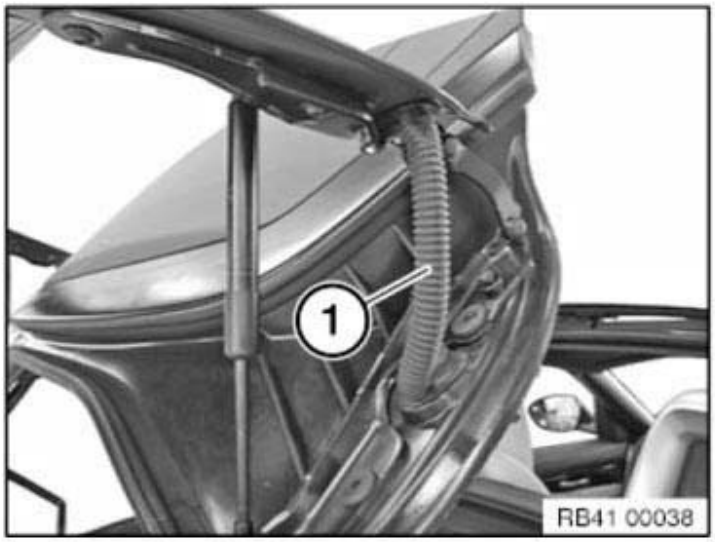


Fig. 323: Identifying Wiring Harness With Tailgate
Courtesy of BMW OF NORTH AMERICA, INC.

Carry over the work step shown symmetrically to the other side of the vehicle.

Pay attention to the spacer plates on the underside of the soft top compartment lid!

Release bolts (1) and remove soft top compartment lid in combination with the tailgate.

Tightening torque **41 62 3AZ** .

Place soft top compartment lid and tailgate on a suitable surface.

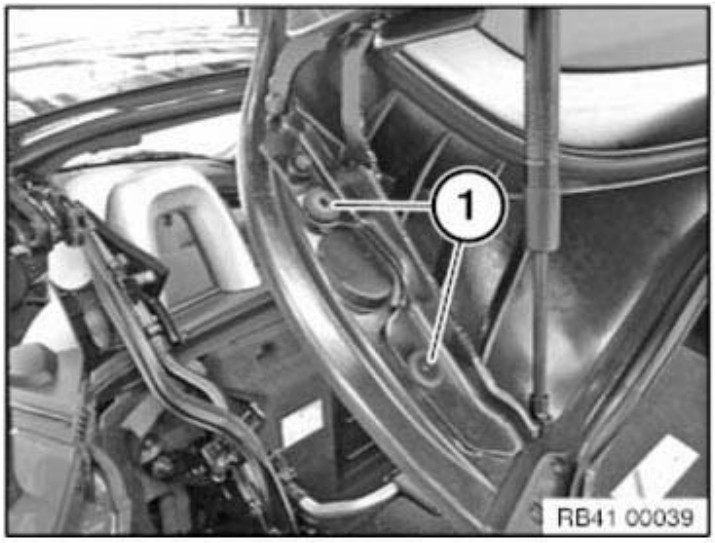


Fig. 324: Identifying Soft Top Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

General view of underside of soft top compartment lid.

Release nuts (1) and take the tailgate off the soft top compartment lid.

Tightening torque **41 63 3AZ** .

Installation note:

- For pre-adjustment, carry over the spacer plates. If necessary, adjust soft top compartment lid according to **GAP DIMENSIONS** . Prerequisite: Tailgate correct preadjusted on soft top compartment lid.
- After installation, unlock the locks of the tailgate by operating the opener.

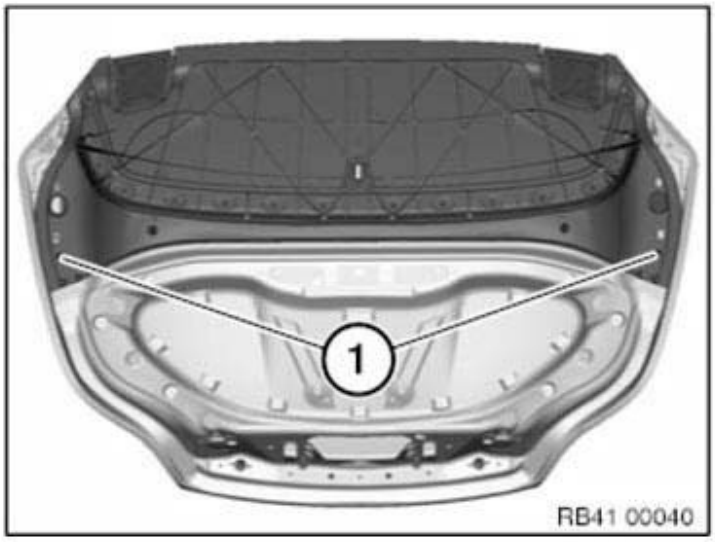


Fig. 325: Identifying Tailgate Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 360 REMOVING AND INSTALLING/REPLACING SEAL FOR REAR LID

Necessary preliminary tasks

- If necessary, open folding roof
- If necessary, open luggage compartment lid

The right side is removed in the same way as the left side.

Release screws (1).

Remove seal (2).

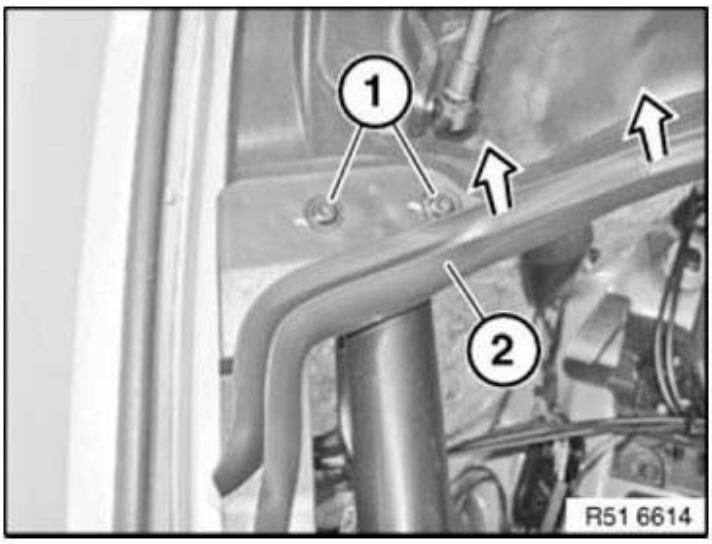


Fig. 326: Removing Screws With Seal
Courtesy of BMW OF NORTH AMERICA, INC.

The right side is removed in the same way as the left side.

Release screw (1).

Lever off seal (2).

Lever off seal (3).

Installation:

- Observe **FITTING OF SEALS**

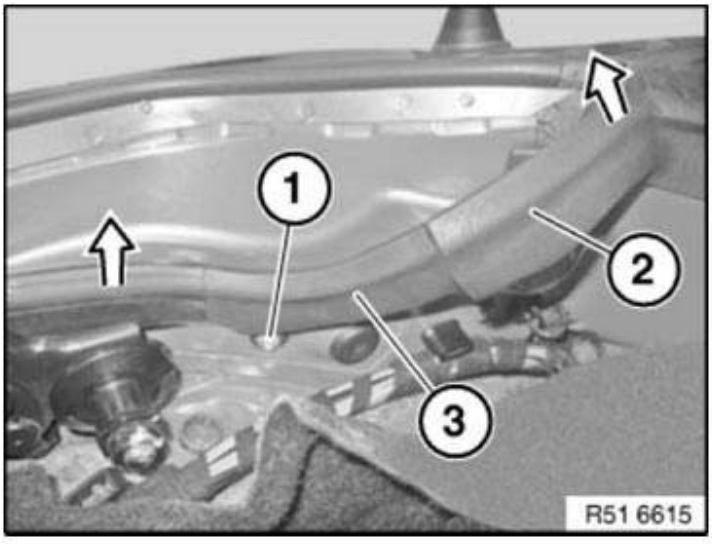


Fig. 327: Removing Screws
Courtesy of BMW OF NORTH AMERICA, INC.

41 63 002 REPLACING COVER BOWL

Necessary preliminary tasks

Remove **FLAP FOR FUEL FILLER NECK (1)** .

Turn cover (1) through approx. 90° and lever out in direction of arrow.

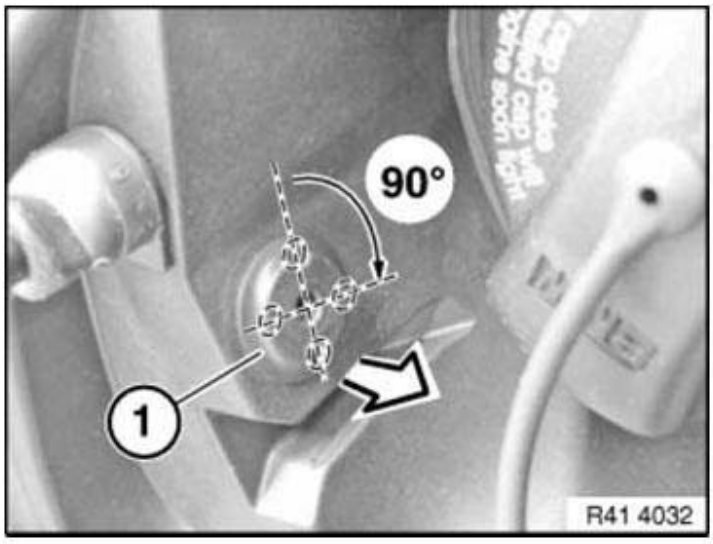


Fig. 328: Removing Cover With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1).

Press retaining strap (1) inwards and remove.

Remove fuel tank cap.

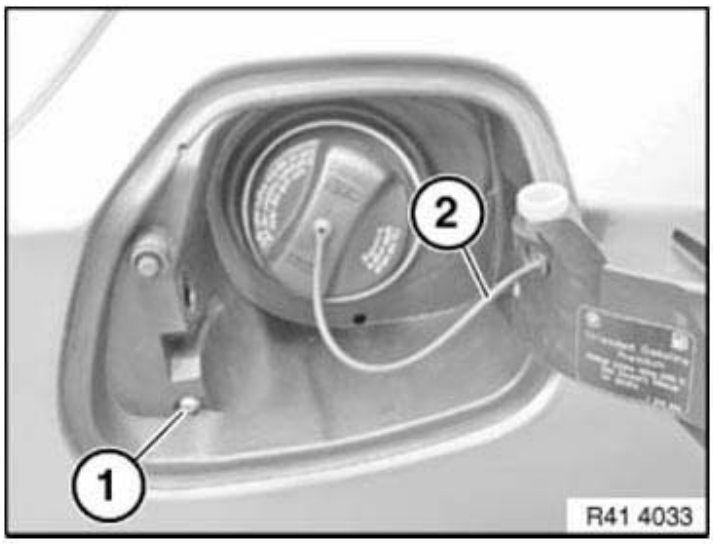


Fig. 329: Identifying Screw And Retaining Strap
Courtesy of BMW OF NORTH AMERICA, INC.

Press rear cover housing in direction of arrow downwards a little and then pull outwards.

In so doing, lift seal (1) over fuel filler neck ().

If necessary, apply suitable antiseize agent between seal and fuel filler neck.

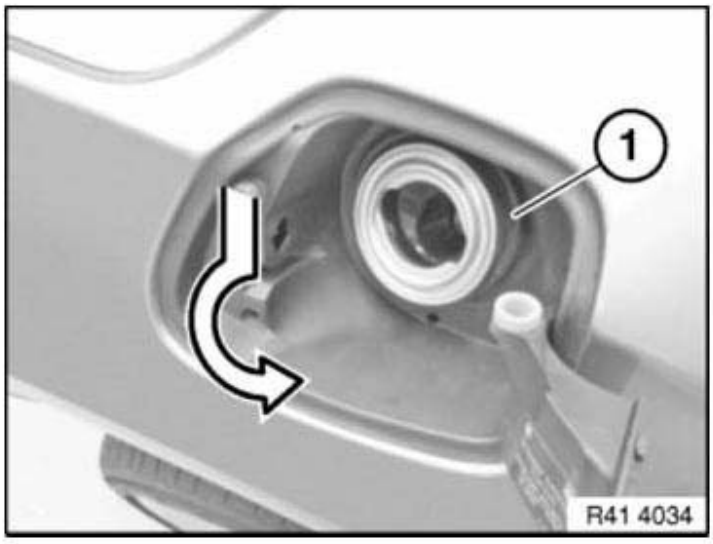


Fig. 330: Lifting Seal Over Fuel Filler Neck
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Locks (1) on left/right of cover (2) must not be damaged.

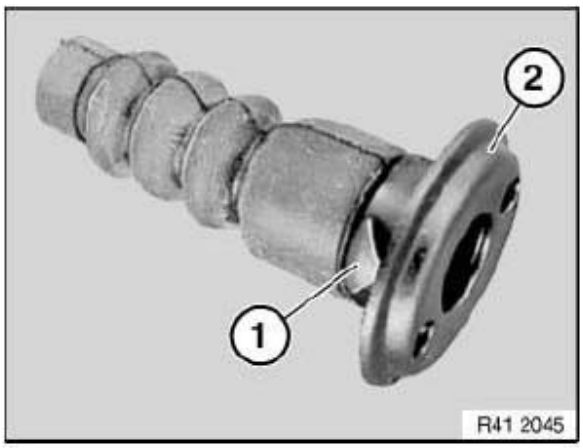


Fig. 331: Identifying Locks And Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Following parts of cover housing not be damaged or missing:

1. Catches, top/bottom
2. Spring
3. Catch, fuel tank flap
4. Seal

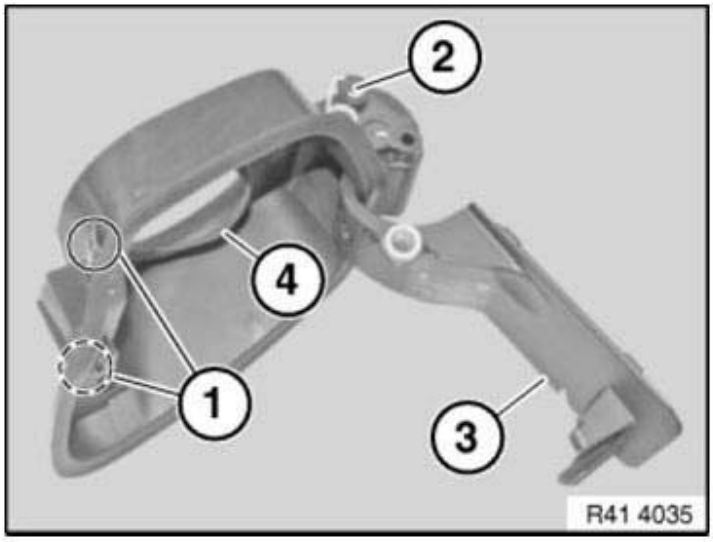


Fig. 332: Identifying Catches, Spring, Fuel Tank Cap And Seal
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, apply suitable antiseize agent to seal and fuel filler neck.

ACCESSORIES & EQUIPMENT

Body Cavity Sealing and Undercoating - Operating Fluids

1.0 GENERAL INFORMATION ON PRESERVATION MEASURES

The classic quality of BMW automobiles is based on the long-term comprehensive research and testing, the design, the applied materials and the manufacturing procedures in modern production plants.

BMW recommends cleaning the engine, engine compartment, vehicle underside, axles and engine/transmission at least twice annually, and then waxing the car or repairing the wax coating. This should be performed before or after the period of salt usage on streets.

New cars parked outdoors should be waxed at BMW centers before delivery to customers. This is to avoid deposits damaging to the paint finish, such as air-born rust particles, chemical dust, oil saturated soot, sulfur dioxide (acid) rain, etc. settling on the horizontal surfaces. Bird and insect droppings as well as tree resin could mar the paint finish, forming spots, swelling and pitting in the paint coat.

Wax films on the engine, engine compartment and A pillars (hinge areas) are intentional and prevent corrosion. Such wax film should not be removed.

Unwaxed cars should be washed at least once each week. Parked cars must never be protected with plastic or other nonporous material covers. This will damage the paint finish due to condensed water in conjunction with plastic softener diffusion and scratching.

2.0 BODY CAVITY SEALING

It is only necessary to rewax or seal the affected area after repairing the body.

Only BMW approved products may be used to comply with the six year warranty against rust perforation. These products protect cavities effectively and permanently against corrosion. Their excellent coating and waterproofing properties let them flow into all inaccessible corners and folds for unsurpassed overall protection.

Underbody and Body Cavity Sealing Compound

For sealing of body cavities, such as doors, A-pillars, front, side and cross members, etc.

(Former BMW Part No. 81 22 9 407 479)

3M Part No. 8891

Wurth Part No. 892080

Also: Wurth "Brushable Seam Sealer", Part No. 8901021.

3.0 BODY CORROSION PROTECTION

To comply with the six year warranty against rust, specially selected waxes and additives produce an elastic, temperature-proof, corrosion inhibiting protectant. The corrosion protection thickness should measure a maximum of 30 microns, but can be varied as desired by repeating the spraying procedures accordingly.

Procedure:

Clean underside of car to remove grease, oil and dirt. Cover rotating parts and parts not undercoated, such as driveshaft, brake discs, brake hoses, springs, exhaust pipes, etc.

After completion of body repairs, the affected areas must have corrosion protection reapplied. This applies, also, if the BMW Annual Check shows that the corrosion protection has to be repaired.

UNDERBODY SEALING

Quick-drying, rubber-based, paintable. Compatible with PVC-based undercoat, front apron and door sill coatings. (Former BMW Part Nos. 81 22 9 407 001, 81 22 9 407 521/522)

3M Part No. 8883

Wurth Part No. 892072

Loctite Part No. 81833 (or PX135EA)

CRC Part No. Siloo 28A

Also: Wurth "Body Seal, beige", Part No. 0892091 U.

BODY SEALANT, LIGHT

Sealing compound for all joints and seams, can be painted over. Good adhesion, free of shrinkage, resistant to heat and cold temperatures, permanently elastic.

(Former BMW Part Nos. 81 22 9 400 013 and 81 22 9 407 313)

3M Part No. 8361

Wurth Part No. 893430

SEAM SEALER, WHITE

Elasto-plastic sealing compound based on polyacrylate.

Applications: Protection of door and hood panel seams.

(Former BMW Part No. 81 22 9 407 675)

3M Part No. 8361

Wurth Part No. 890100025

Also: Wurth "Gray Seam Sealer", Part No. 089228 U.

TRANSPARENT WAX

Prevents corrosion on painted and non-painted metal surfaces. Serves mainly for treating edges and folded-over seams. (Former BMW Part No. 81 22 9 400 711)

3M Part No. 8892

Wurth Part No. 893082

ANTI-CHIP COMPOUND

Sprayable coating compound for outside and inside. For sealing, noise-insulation and as protection against flying stones.

Quick-drying can be painted over, permanently elastic, heat and cold-resistant.

(Former BMW Part Nos. 81 22 9 407 001 and 81 22 9 407 416)

3M Part No. 8964

Wurth Part No. 893075

Loctite Part No. 81833/PX135EA

4.0 OTHER FLUIDS

ADHESIVE REMOVER

(Former BMW Part No. 81 22 9 407 388)

3M Part No. 8984

RUST REMOVER

(Former BMW Part No. 81 22 9 407 121)

Wurth Part No. 89091801

ACCESSORIES & EQUIPMENT

Body Equipment - Operating Fluids

1.0 ADHESIVES/SEALANTS FOR GLASS

Sikaflex 255 Adhesive is a single component polyurethane with a minimum curing time of 4 hours at 72°F/22° C and 38% relative humidity.

The windshield or rear window must be installed within 10 minutes of applying the adhesive or a skin will form on the adhesive's surface and reduce the adhesive effectiveness.

Sikaflex 255, BMW Part No. 81 22 9 407 497 Cold Kit, or

Sika Ultrafast, BMW Part No. 83 19 9 407 714 in conjunction with Heater, BMW Part No. 83 19 9 407 820.

2.0 OTHER FLUIDS

Cleaning E53 black glossy exterior ornamental trim please use Meguiar's Mirror Glaze Number 9 Professional Swirl Remover 2.0

Glass treatment, all models: Aquapel® Glass Treatment, BMW Part No. 83 19 9 408 523.

3.0 CONTACT CEMENT

A powerful adhesive for leather and leatherette, rubber moldings, felt linings, insulating materials, convertible top adhesive, etc.

(former BMW Part No. 81 22 9 407 524)

3M 1357High Performance Contact Adhesive

4.0 INSTANT ADHESIVE FOR RUBBER, METAL AND PLASTIC SURFACES.

Applications: Rubber profiles on windows, doors, bumpers (soft and hard rubber), seals, inner covers, buttons and controls (plastic/plastic, plastic/steel), circuit elements (electronics), rear lights, turn indicators, ornamental strips and moldings.

(former BMW Part No. 81 22 9 407 143)

BMW PART NUMBER SPECIFICATION

3M	Part No. 8155
Loctite	Part No. 49450

5.0 LOCTITE 380

Black cyanacrylate adhesive for joining metals, but also rubber, PVC etc.

Particularly recommended for attaching rubber door seals on the BMW 5 Series (E34). (former BMW Part No. 81 22 9 407 394)

BMW PART NUMBER SPECIFICATION

3M	Part No. 8155
Wurth	Part No. 893 4103
Loctite	Part No. 38050

6.0 GLASS ADHESIVE

BMW Part No. 81 22 9 407 497.

7.0 PREMIUM LEATHER CARE KIT

BMW Part No. 81 11 024 455.

5100 GENERAL

51 00 ... NOTES ON COMPONENT BONDING ADHESIVE TAPE

1. General notes

- Bonding at room and object temperature of >+18 °C.
- Newly painted parts may only be bonded after a drying time of at least 24 hours.
- Optimal bonding/attachment to the background surface is achieved after approx. 48 hours. Components must not be exposed to mechanical strain beforehand (car wash, strength test, etc.).
- Do not touch bonding surface.
- It is not the length of time that pressure is applied but rather the force of pressure applied that is crucial.
- Detaching the adhesive tape after pressing destroys the adhesive layer.
- After being pressed on gently, adhesive tape can be pulled off again up to 3 times.

2. Auxiliary materials and tools

- **CLEANING AGENT R1 OR CLEANING AGENT R2** (sourcing reference: BMW Parts Department)
- Fluff-free cleaning cloths
- Pressure roller

3. Preparations

- Remove all adhesive residue or clean new part thoroughly
- Clean the areas to be bonded immediately before bonding to remove silicone and grease residues.

NOTE: Observe air drying time > or =1 minute.

4. Bonding

4.1 Components without pre-fitted adhesive tape

- Pull off liner* from adhesive tape
- Position adhesive tape on component and stick on
- Press down adhesive tape over entire adhesive area
- Continue with Point 4.2

* Liner is the protective film on the adhesive tape

4.2 Components with pre-fitted adhesive tape

- Pull off liner* from adhesive side (if adhesive area is large, do not pull off liner completely)
- Align component in correct position on vehicle
- Press down component over entire adhesive area

* Liner is the protective film on the adhesive tape

51 00 ... NOTES ON FITTING WINDOW GUIDE SEALS

1. Work safety when handling anti-friction agent G13*

- Wear protective goggles, protective gloves and if necessary an apron.
- Do not eat, drink or smoke in the area of processing/application
- Ensure rooms are well ventilated.
- Keep heat and ignition sources well away
- In event of skin contact: Wash areas of skin affected with soap and water immediately, change work clothing which has been fouled with anti-friction agent immediately (keep spare work clothing in reserve)
- In event of eye contact: Rinse eyes immediately with plenty of water and seek medical advice
- Observe safety data sheet (see Aftersales Assistance Portal (ASAP) Service/Technology Safety Data Sheet 7 digit part number)

2. General notes

- Use only the BMW-approved anti-friction agent for fitting
- Application only at room and object temperatures between 18 and 25 °C
- Anti-friction agent dries at different rates depending on the quantity, temperature and ventilation and becomes sticky
- Anti-friction agent can only be used for fitting and not for fault elimination (e.g. grating)
- Newly painted parts may only be brought into contact with the anti-friction agent after cooling
- Optimal bonding/attachment to the background surface is achieved after approx. 48 hours. The window guide seal must not be exposed to mechanical strain beforehand (car wash, strength test, etc.).

IMPORTANT: To avoid grating noises, do not use soapy water (low-surface-tension water with washing-up liquid) or anti-friction agent containing silicone

3. Auxiliary materials and tools

- Spirit, cleaning cloth, plastic squeegee, needle
- Anti-friction agent G13* (manufactured by Zestron) part no. 83 23 0441 032

(*sourcing reference: BMW Parts Service)

4. Preparations

- Heat and remove anti-friction agent residues with a hot air blower or clean new part thoroughly

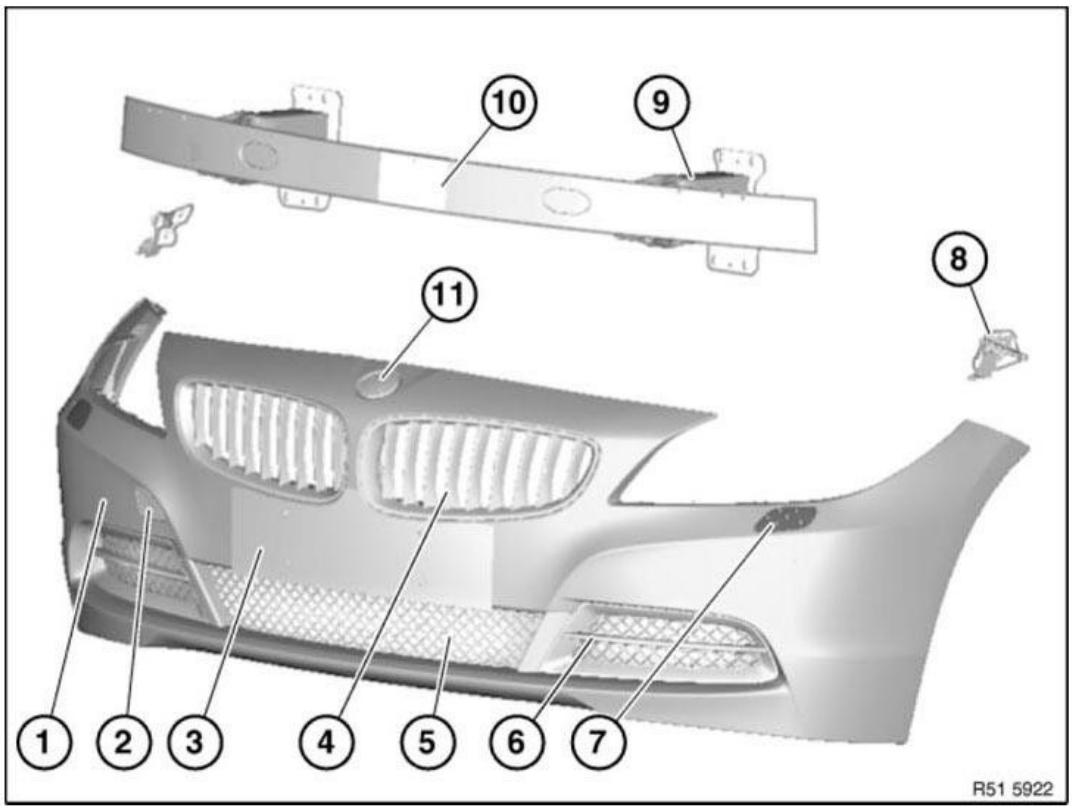
- Immediately prior to fitting, clean the work area with spirit in order to remove silicone and grease residues

NOTE: Air drying time approx. 1 minute

5. Assembly

- Apply a thin coating of anti-friction agent to the reverse side of the window guide seal only
- Perform fitting within 30 minutes of applying anti-friction agent
- Anti-friction agent dries after fitting and becomes sticky

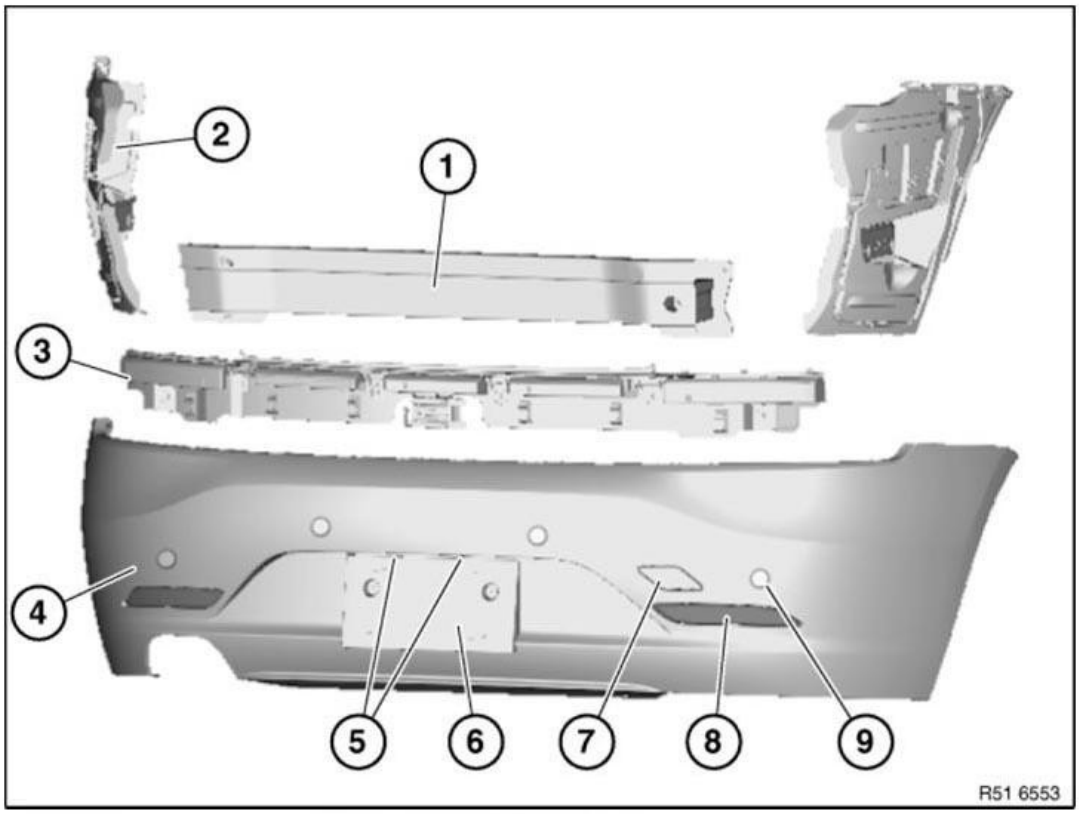
51 11 ... OVERVIEW OF FRONT BUMPER



1	Bumper trim	6	If necessary: fog lamp
2	Cover on towing eye	7	Cover for headlight washer system
3	License plate baseplate	8	Holder for bumper
4	Trim grille	9	Deformation element
5	Trim grille, bottom	10	Carrier/absorber
		11	Badge

Fig. 1: Overview Of Front Bumper
Courtesy of BMW OF NORTH AMERICA, INC.

51 12 ... OVERVIEW OF REAR BUMPER



1 Carrier
2 Guide, side
3 Guide, middle
4 Bumper trim
5 License plate lights
6 Baseplate for license plate (US/Japan only)
7 Cover on towing eye
8 Reflector
9 Ultrasonic transducer

Fig. 2: Overview Of Rear Bumper
Courtesy of BMW OF NORTH AMERICA, INC.

51 21 ... REMOVING AND INSTALLING/REPLACING STORAGE COMPARTMENT IN LEFT OR RIGHT FRONT DOOR

Necessary preliminary tasks

- Remove **FRONT DOOR TRIM PANEL**

Release screws (1) on door trim panel (2).

Open storage compartment and remove.

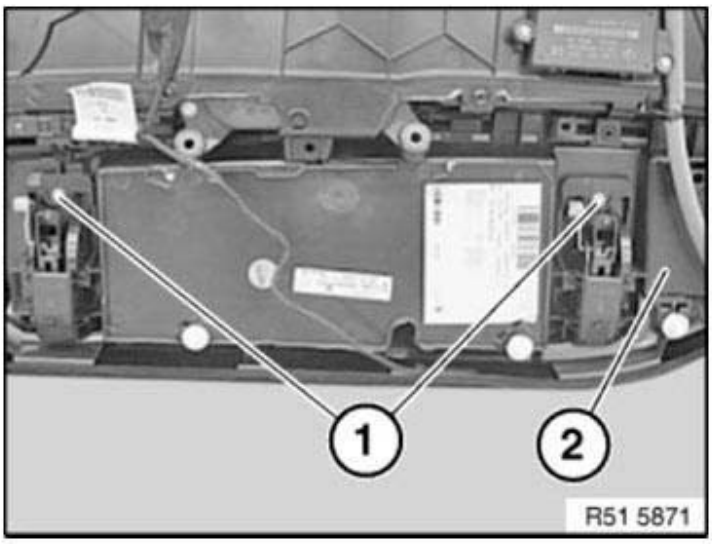


Fig. 3: Identifying Screws On Door Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

00 SAFETY INFORMATION FOR WORKING ON VEHICLES WITH AUTOMATIC ENGINE START-STOP FUNCTION (MSA)

WARNING: If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start stop function is active.

An automatic engine start is possible.

Observe safety precautions when working on MSA vehicles

Before carrying out practical work on the engine, always ensure that the MSA functionality is deactivated so as to prevent automatic engine starting while work is being carried out in the engine compartment.

MSA function is deactivated by

- Deactivate MSA by means of button (1) in passenger compartment
- Open seat belt buckle and driver's door

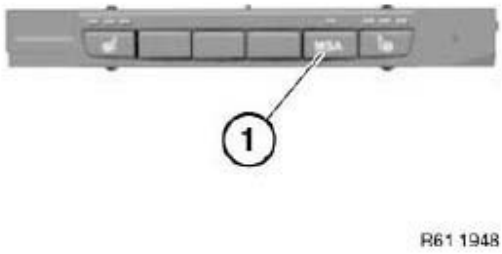


Fig. 4: Identifying MSA Button

Courtesy of BMW OF NORTH AMERICA, INC.

- Open engine bonnet/hood and ensure that engine hood/bonnet contact is not in workshop mode
  - Workshop mode

    A = 10 mm

  - Basic setting (engine hood/bonnet open)

    B = 7 mm

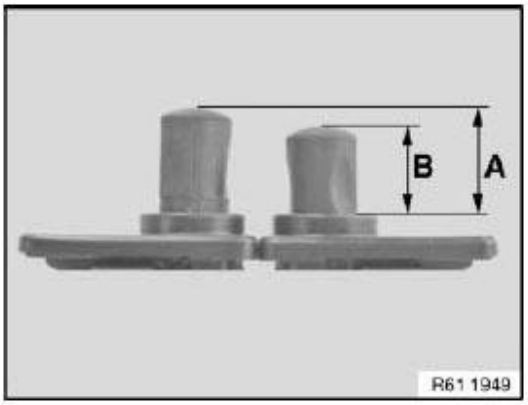


Fig. 5: Identifying Basic Setting For Engine Hood/Bonnet Open
Courtesy of BMW OF NORTH AMERICA, INC.

To make sure that the engine hood/bonnet contact is at the basic setting, if necessary press the hood/bonnet contact up to the limit position before starting work and slowly release.

When working with diagnosis tools

- Observe instructions in diagnosis tool

NOTE: For further information on automatic engine start stop function (MSA):

51 00 ... SAFETY INSTRUCTIONS FOR WORKING ON CARS WITH AIRBAG SYSTEMS

WARNING: If work is carried out in area of airbag systems, e.g. on:

- **Door trim panels**
- **Interior trims**
- **Instrument panel etc.**

the ignition must be turned off in each case.

- **The ignition must always be off.**
- **The ignition key must be removed from the ignition lock.**

This eliminates the risk of injury.

51 00 ... SERVICE POSITION OF ENGINE HOOD/BONNET

NOTE: Only the special tool pertaining to the model series can be selected.

SPECIAL TOOL REFERENCE CHART

Model series	Special tool
E89	**51 2 170 SUPPORT**

WARNING: Risk of injury and damage!

Engine hood/bonnet must be held by a second person helping.

NOTE: The right side is removed in the same way as the left side.

Special tool can only be used on housing (1) of gas spring strut.

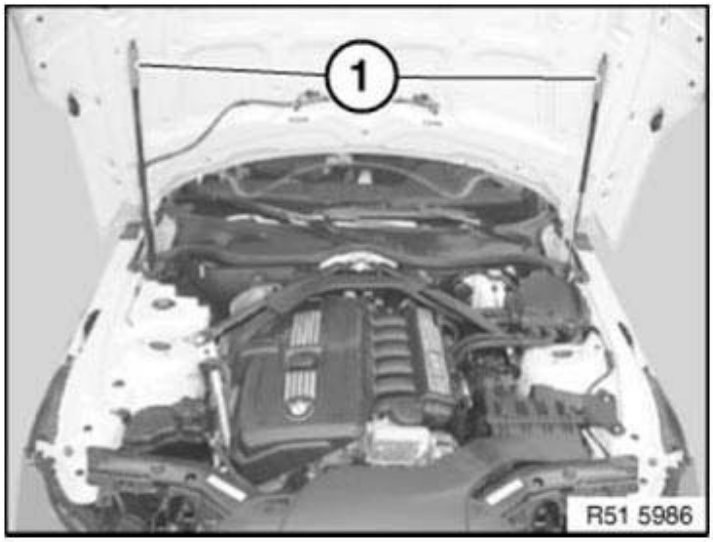


Fig. 6: Identifying Housing Of Gas Spring Strut
Courtesy of BMW OF NORTH AMERICA, INC.

Release **GAS SPRING STRUT** on left/right housing side.

Slide special tool (1) over housing (2) of gas spring strut.

Clip ball socket of special tool on ball stud.

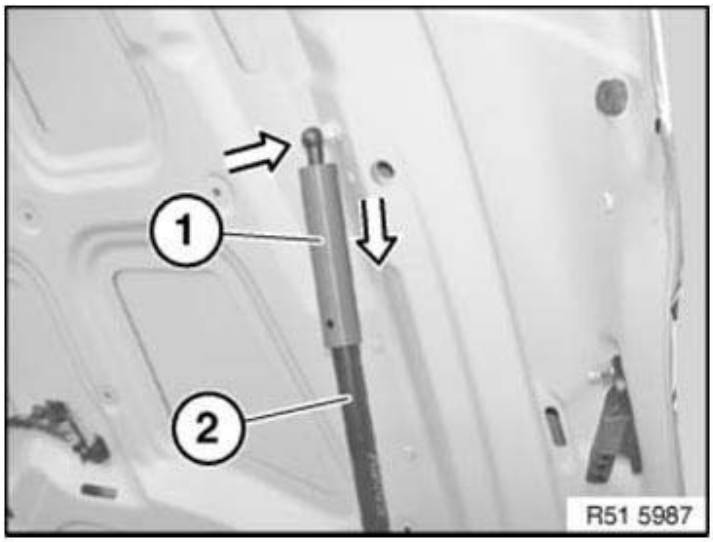


Fig. 7: Sliding Special Tool Over Housing Of Gas Spring Strut
Courtesy of BMW OF NORTH AMERICA, INC.

5111 FRONT BUMPER

51 11 158 FITTING NUMBER/LICENSE PLATE

Align drilling hole template blank (1) to front radiator grille middle (2) and stick on.

NOTE: Make the marking on adhesive tape so as to avoid damaging the vehicle.

Mark holes in accordance with number/license plate baseplate.

Secure number/license plate baseplate with corresponding screws.

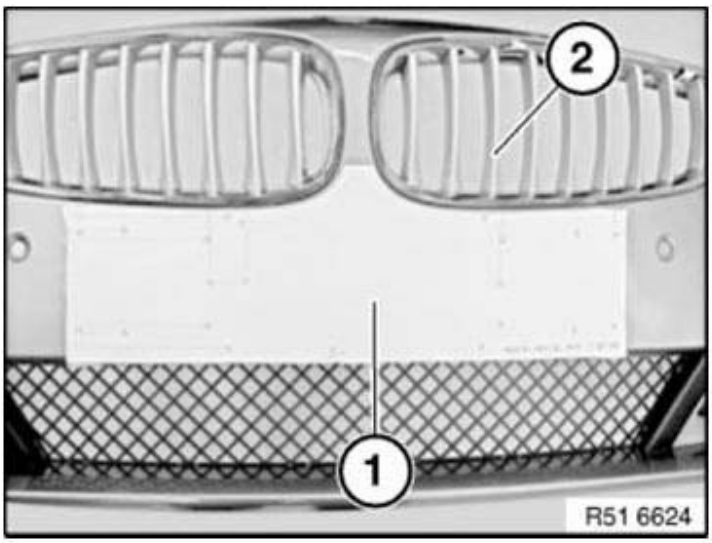
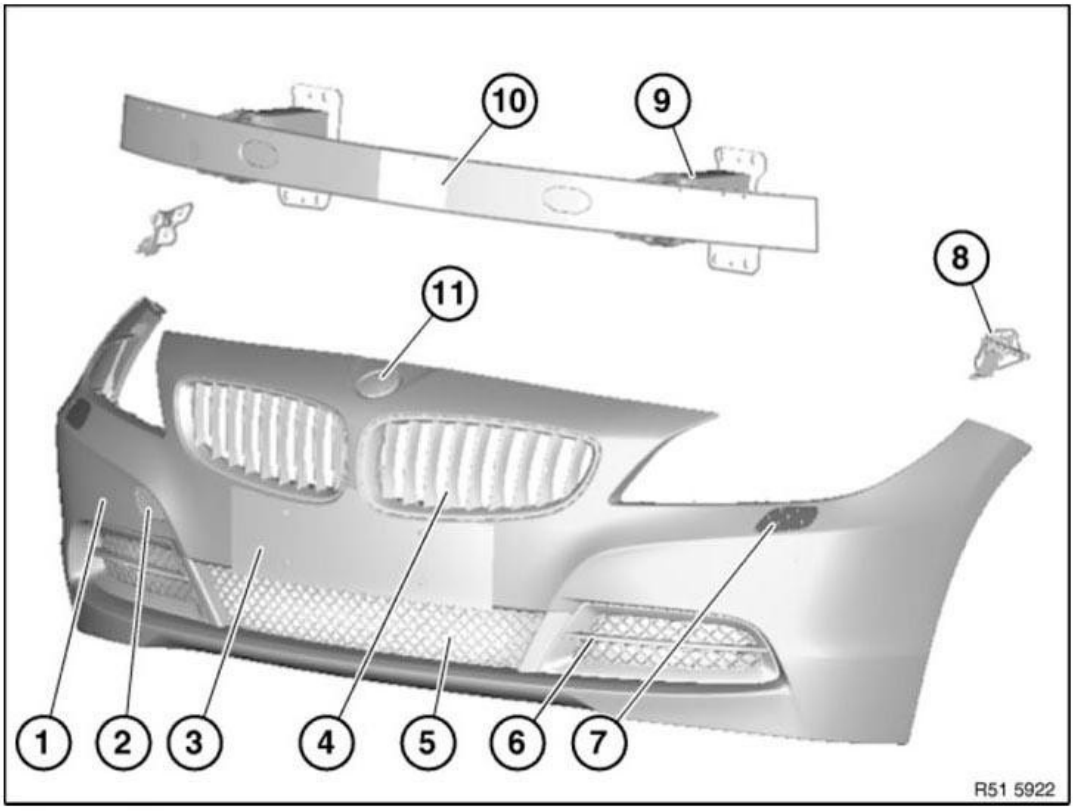


Fig. 8: Identifying Drilling Hole Template Blank And Front Radiator Grille Middle
Courtesy of BMW OF NORTH AMERICA, INC.

51 11 ... OVERVIEW OF FRONT BUMPER



1 Bumper trim
2 Cover on towing eye
3 License plate baseplate
4 Trim grille
5 Trim grille, bottom
6 If necessary: fog lamp
7 Cover for headlight washer system
8 Holder for bumper
9 Deformation element
10 Carrier/absorber
11 Badge

Fig. 9: Overview Of Front Bumper
Courtesy of BMW OF NORTH AMERICA, INC.

51 11 156 REMOVING AND INSTALLING FRONT BUMPER TRIM

Necessary preliminary tasks

- Remove **COVER FOR HEADLIGHT WASHER SYSTEM** on left and right

Remove seal in area (1).

Release screws in area (1).

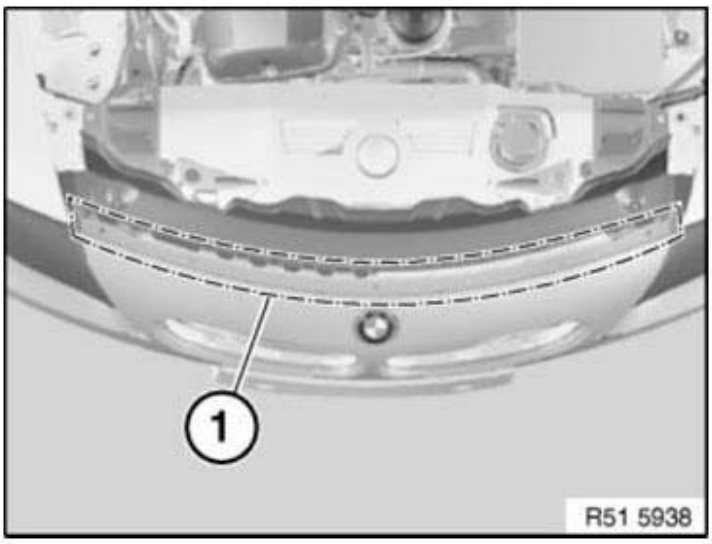


Fig. 10: Identifying Seal And Screws Areas
Courtesy of BMW OF NORTH AMERICA, INC.

The right side is removed in the same way as the left side.

Release screws (1).

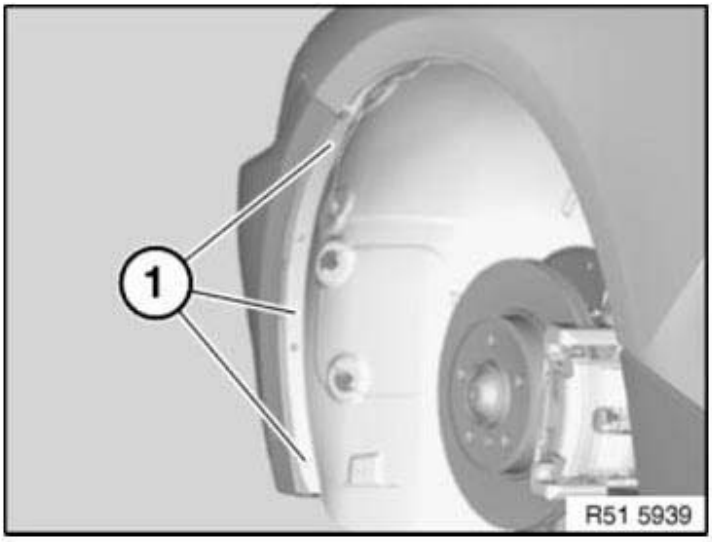


Fig. 11: Identifying Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

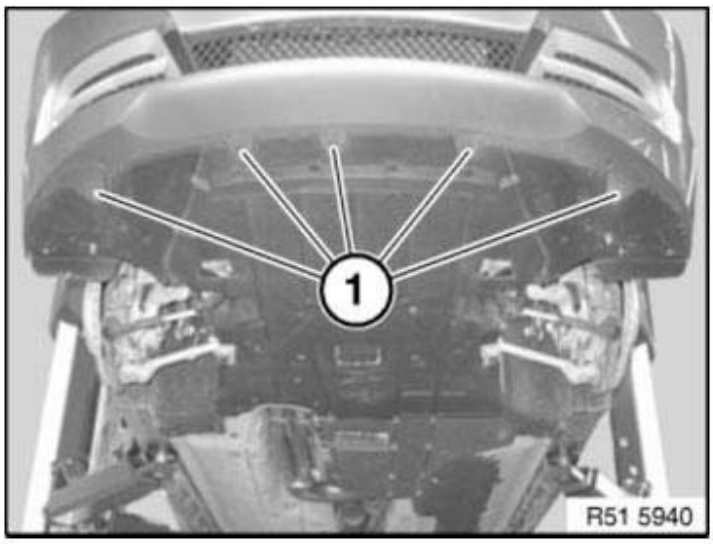


Fig. 12: Identifying Screws
Courtesy of BMW OF NORTH AMERICA, INC.

The right side is removed in the same way as the left side.

Lift off wheel arch cover (1) in upper area.

Unfasten screws (2).

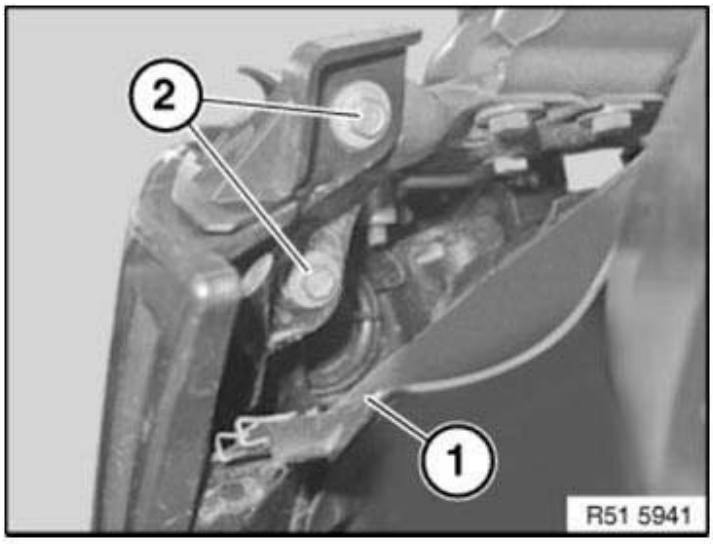


Fig. 13: Identifying Wheel Arch Cover With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

The right side is removed in the same way as the left side.

Unclip bumper trim (1) in area (2) in direction of arrow.

Pull bumper trim (1) forwards slightly and disconnect plug connections.

Remove bumper trim (1) straight forwards with a 2nd person helping.

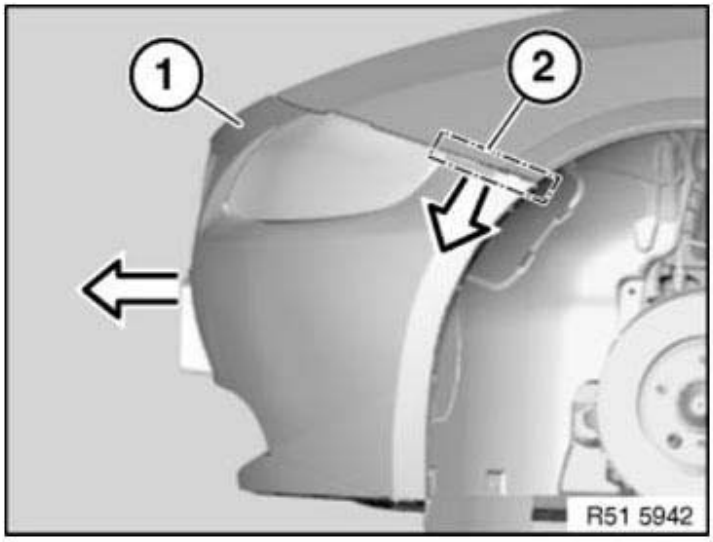


Fig. 14: Removing Bumper Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 11 050 REMOVING AND INSTALLING/REPLACING CARRIER FOR FRONT BUMPER TRIM

Necessary preliminary tasks

- Remove front **BUMPER TRIM**

Remove shock absorber (1).

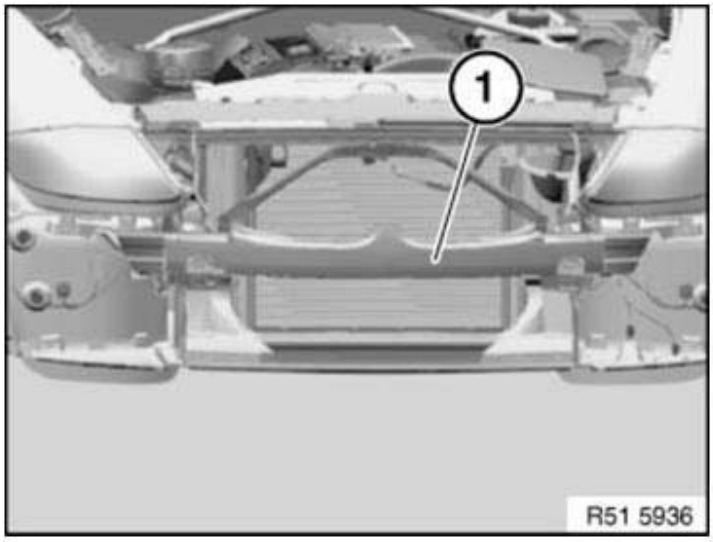


Fig. 15: Identifying Shock Absorber
Courtesy of BMW OF NORTH AMERICA, INC.

Release nuts (1) on left/right.

Tightening torque **51 11 5AZ** .

Remove carrier (3).

Installation:

Insert spacer element (2) in bumper carrier on left side of vehicle.

Guide screws through spacer element (2).

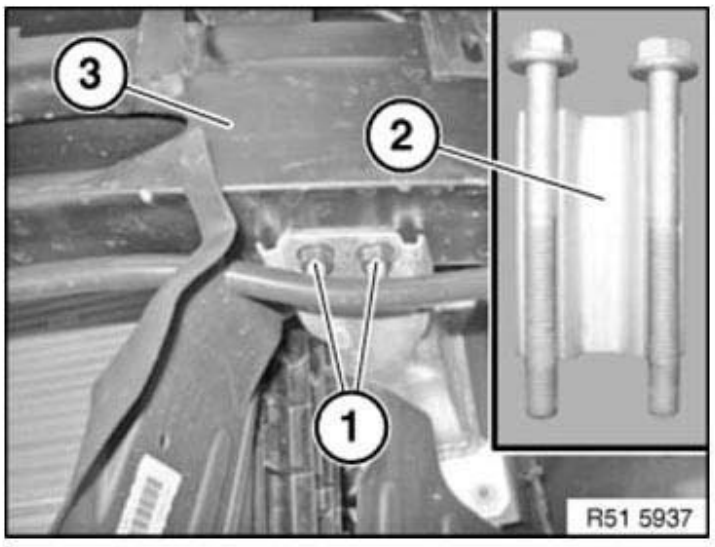


Fig. 16: Identifying Spacer Elements With Nuts And Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

51 11 ... REMOVING AND INSTALLING/REPLACING COVER FOR HEADLIGHT WASHER UNIT ON LEFT

Pull out spray nozzle (1) by cover (2) slightly.

IMPORTANT: When releasing cover (2), grip spray nozzle (1) firmly and then allow to slide back slowly (risk of damage).

Release cover (2) from spray nozzle (1).

Installation:

Retaining lugs (3) must not be damaged.

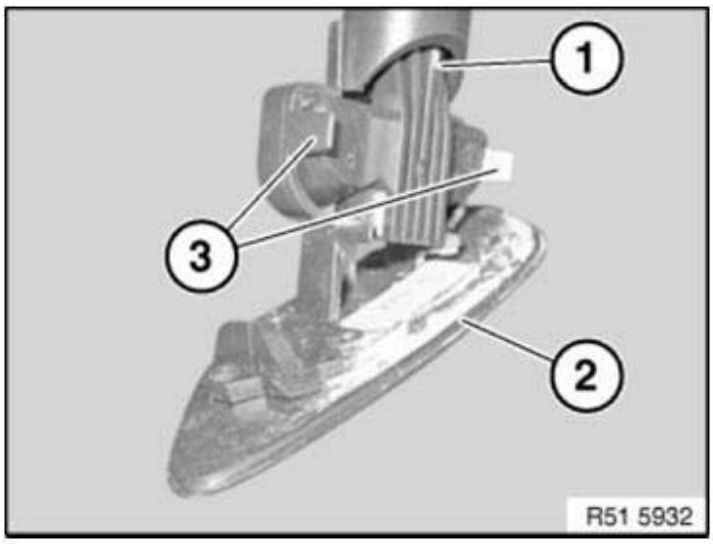


Fig. 17: Identifying Spray Nozzle With Cover And Lugs
Courtesy of BMW OF NORTH AMERICA, INC.

51 64 035 REMOVING AND INSTALLING/REPLACING CROSS-MEMBER UPPER SECTION (CONNECTION OF BOTH FRONT WHEEL ARCHES)

Necessary preliminary tasks

- Remove intake duct on intake silencer housing. See **13 71 000 REMOVING AND INSTALLING/REPLACING INTAKE FILTER HOUSING (N52K)** or **13 71 000 REMOVING AND INSTALLING/REPLACING INTAKE FILTER HOUSING (N54)**

Release screws (1).

Tightening torque **51 71 23AZ** .

Remove cross-member (2).

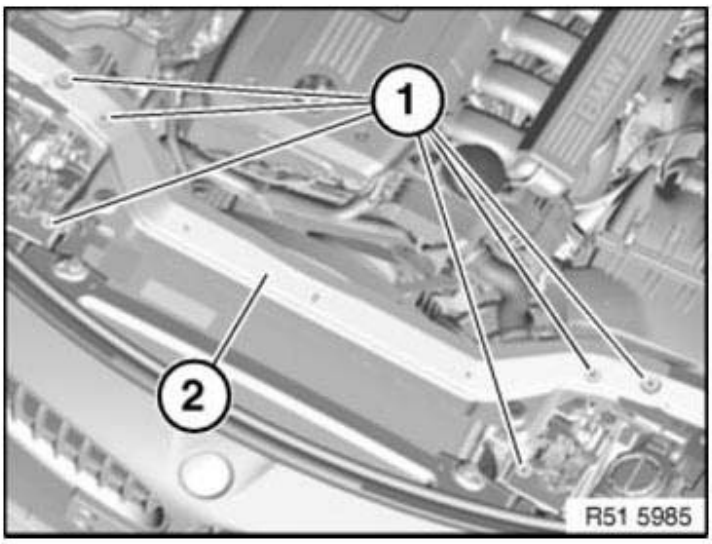


Fig. 18: Identifying Cross-Member With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 64 040 REMOVING AND INSTALLING/REPLACING FRONT BUMPER MOUNTING

Necessary preliminary tasks

- Remove **BUMPER TRIM**
- Remove intake duct on intake silencer housing. See **13 71 000 REMOVING AND INSTALLING/REPLACING INTAKE FILTER HOUSING (N52K)** or **13 71 000 REMOVING AND INSTALLING/REPLACING INTAKE FILTER HOUSING (N54)**

Release screws (1).

Tightening torque **51 11 2AZ** .

V-support (2) remains on vehicle.

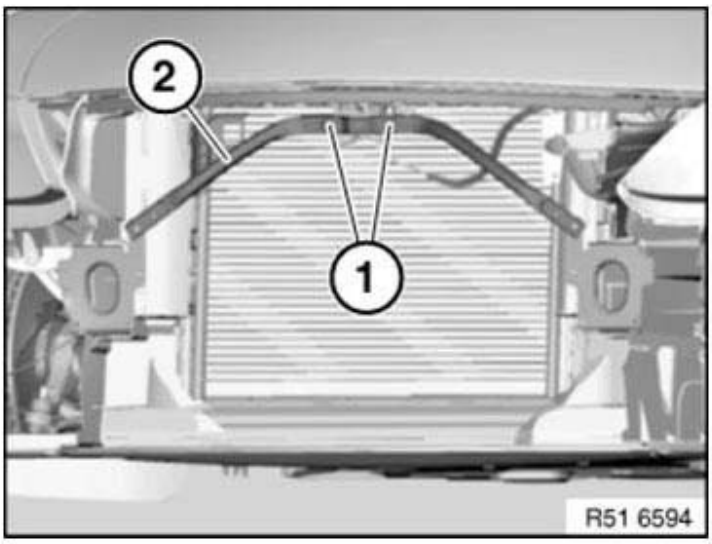


Fig. 19: Identifying V-Support With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 11 1AZ** .

Remove bumper mounting (2).

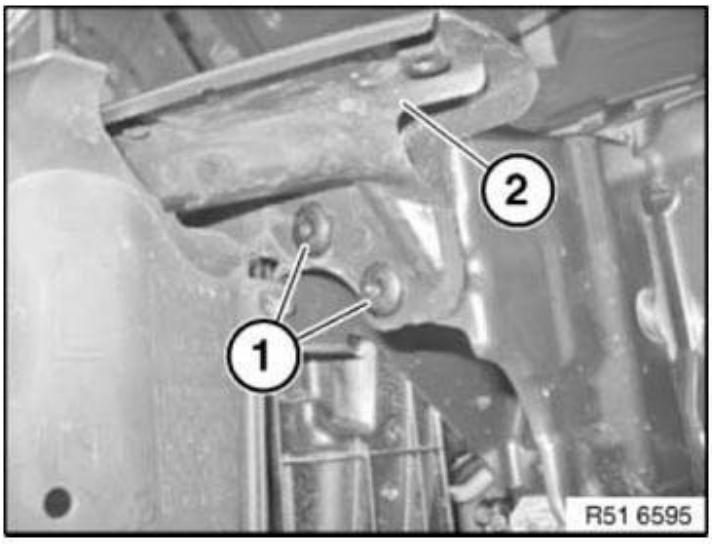


Fig. 20: Identifying Bumper Mounting And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 038 REMOVING AND INSTALLING/REPLACING FRONT LEFT OR RIGHT WHEEL ARCH COVER (FRONT SECTION)

NOTE: **Prior to removing, pay attention to the exact installation position with respect to the adjoining components.**

Necessary preliminary tasks:

- Remove **FRONT WHEEL**

Unscrew all bolts.

Unscrew nuts (1).

Remove cover (2).

Installation:

Make sure cover (2) is correctly seated.

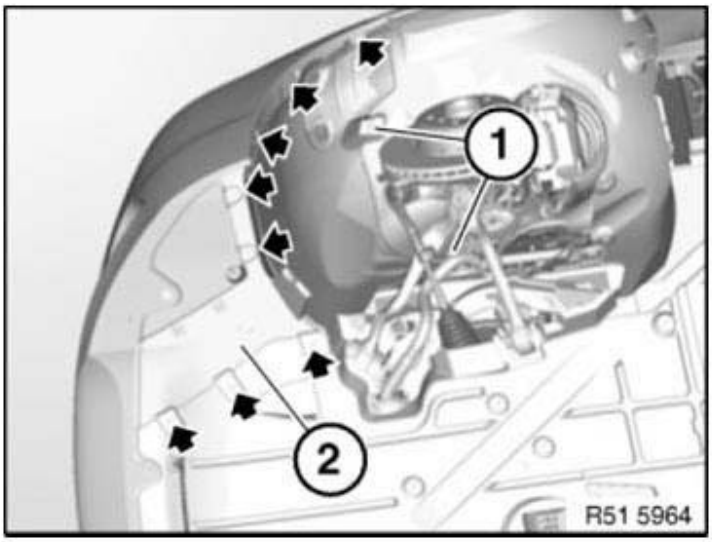


Fig. 21: Identifying Wheel Arch Cover With Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Feed out wheel arch cover (2) towards bottom.

Installation:

Make sure wheel arch cover (2) is exactly seated.

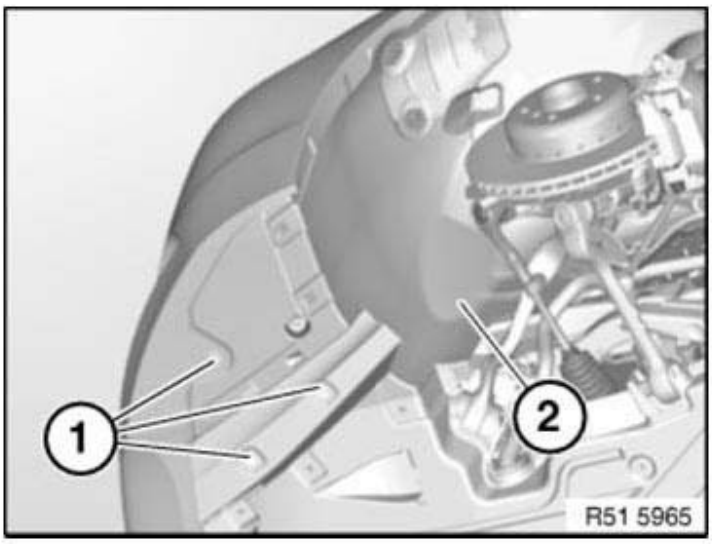


Fig. 22: Identifying Wheel Arch Cover With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 039 REMOVING AND INSTALLING/REPLACING FRONT LEFT OR RIGHT WHEEL ARCH COVER (REAR SECTION)

NOTE: Prior to removing, pay attention to the exact installation position with respect to the adjoining components.

Necessary preliminary tasks:

- Remove **FRONT WHEEL**

Release all nuts.

Release screw (1).

Lever out clips (2).

Remove cover (3).

Installation:

Make sure cover (3) is correctly seated.

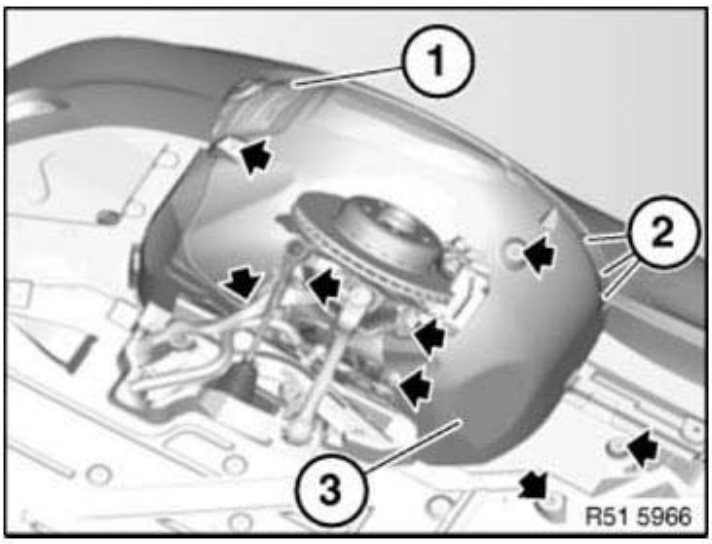


Fig. 23: Identifying Wheel Arch Cover With Screw And Clips
Courtesy of BMW OF NORTH AMERICA, INC.

51 64 010 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT V-SUPPORT

Necessary preliminary tasks

- Remove **BUMPER TRIM**

NOTE: Pictured without bumper trim carrier.

Release screws (1).

Remove V-support (2).

Tightening torque **51 11 2AZ** .

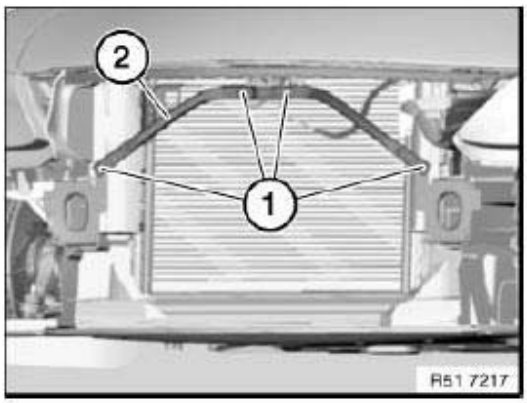


Fig. 24: Identifying V-Support And Screws

Courtesy of BMW OF NORTH AMERICA, INC.

51 11 770 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT DEFORMATION ELEMENT FOR FRONT BUMPER

Necessary preliminary tasks

- Disconnect **BATTERY NEGATIVE TERMINAL**
- Remove **CARRIER** for bumper trim at front
- Remove **HEADLIGHT**

Release screws (1).

Tightening torque **51 11 2AZ** .

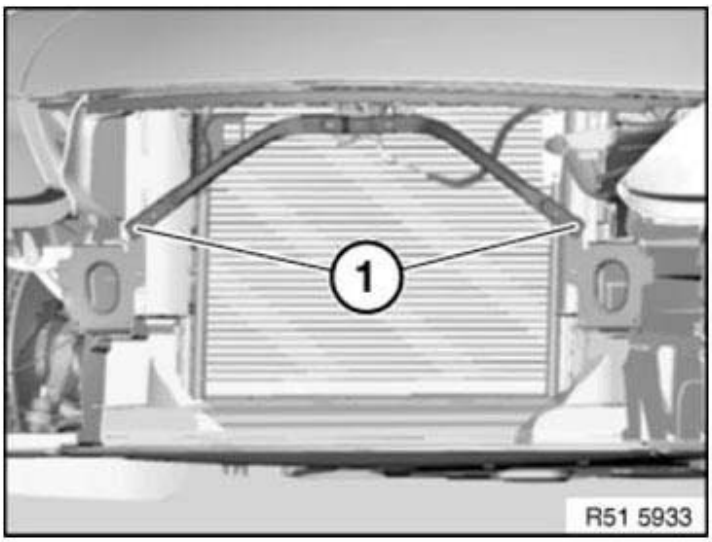


Fig. 25: Identifying Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Remove expander rivets (1).

Remove and replace expander rivets (2).

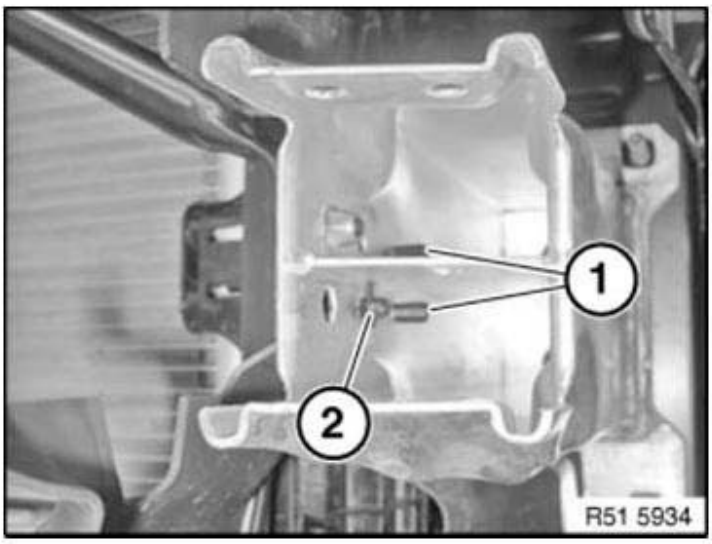


Fig. 26: Identifying Expander Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Slacken nut (1).

Tightening torque **51 11 3AZ** .

Drill out rivets (2) and do not replace any more.

Remove deformation element (3) towards front.

IMPORTANT: After assembly: Adjust headlight.

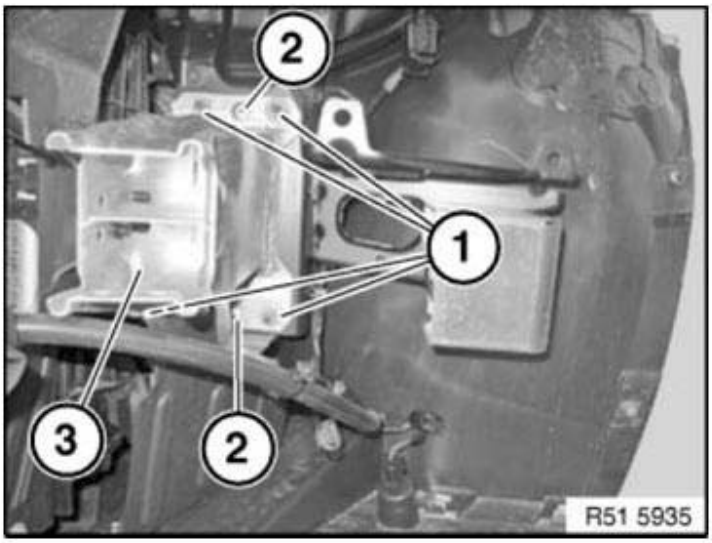


Fig. 27: Identifying Deformation Element With Nut And Rivets

Courtesy of BMW OF NORTH AMERICA, INC.

51 71 ... REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT DIAGONAL STRUT

Necessary preliminary tasks

- Remove **FRONT UNDERBODY PROTECTION**
- Remove **COOLANT EXPANSION TANK**
- Remove **INTAKE FILTER HOUSING**

Release screws and nuts (1).

Tightening torque **51 71 27AZ** .

Remove diagonal struts (2).

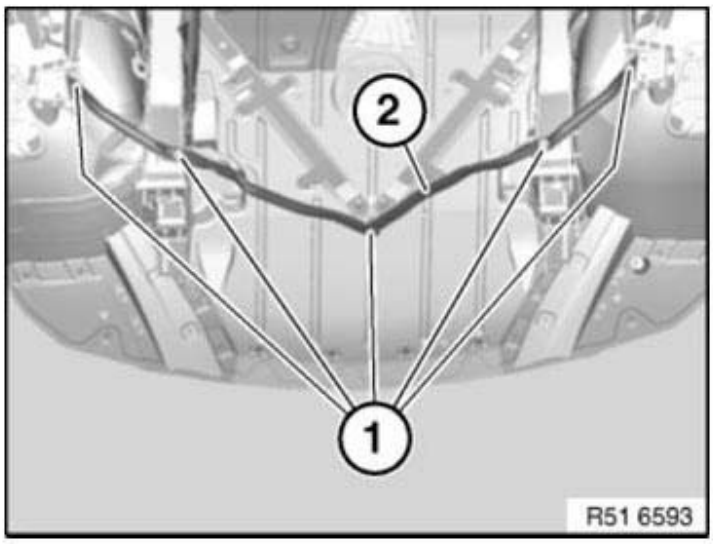


Fig. 28: Identifying Diagonal Struts With Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

51 11 180 REMOVING AND INSTALLING/REPLACING TRIM GRILLE IN BUMPER TRIM

Necessary preliminary tasks

- Remove front **BUMPER TRIM**

Release fastening elements in area (1).

Separate cable holder (2) from trim grille (3).

Remove trim grille (3).

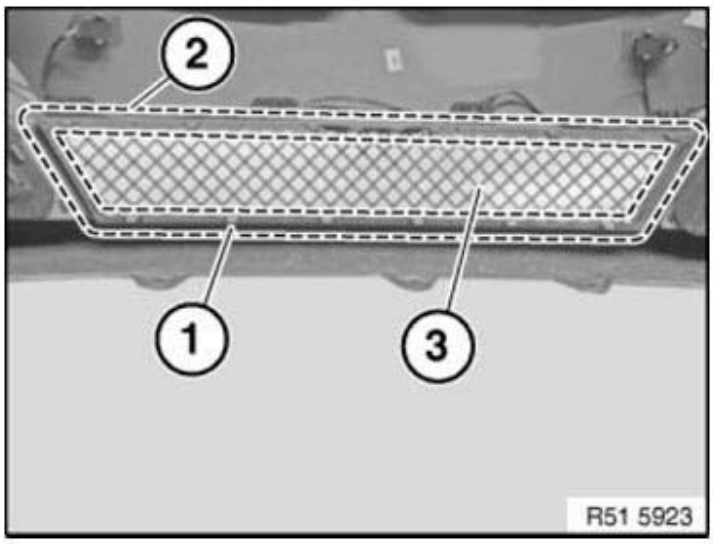


Fig. 29: Identifying Fastening Elements Area With Cable Holder And Trim Grille
Courtesy of BMW OF NORTH AMERICA, INC.

51 11 183 REMOVING AND INSTALLING/REPLACING ORNAMENTAL GRILLE IN BUMPER TRIM (SIDE LEFT OR RIGHT)

Necessary preliminary tasks

- Remove front **BUMPER TRIM**

Unclip trim rod (1) and trim frame (2) in area (3) and remove towards front.

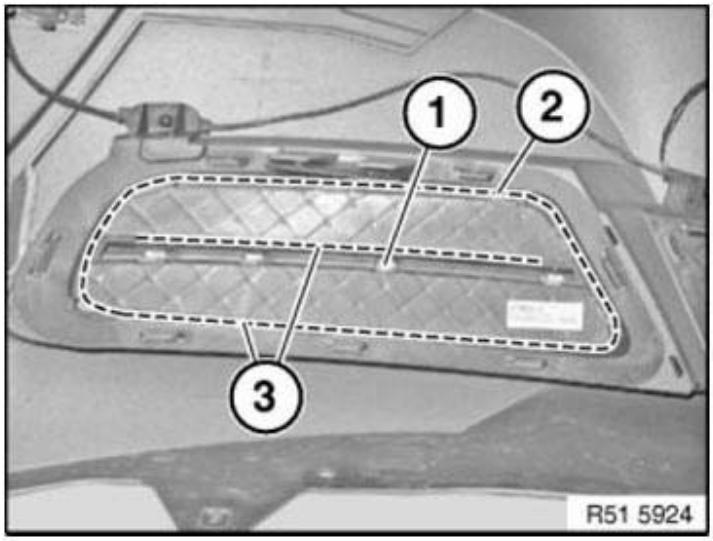


Fig. 30: Identifying Trim Rod And Trim Frame Area
Courtesy of BMW OF NORTH AMERICA, INC.

Release cable connection (1).

Unclip ornamental grille (2) in area (3) and remove.

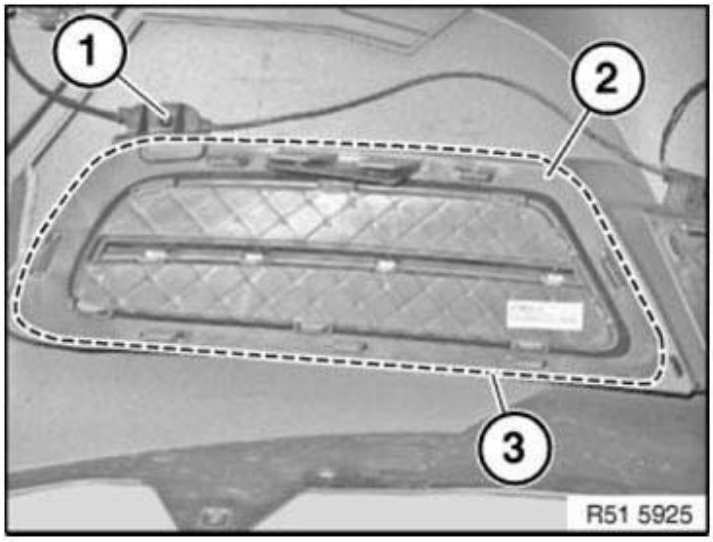


Fig. 31: Identifying Cable Connection With Ornamental Grille Area
Courtesy of BMW OF NORTH AMERICA, INC.

51 11 157 REPLACING FRONT BUMPER TRIM

Necessary preliminary tasks

- Remove front **BUMPER TRIM**

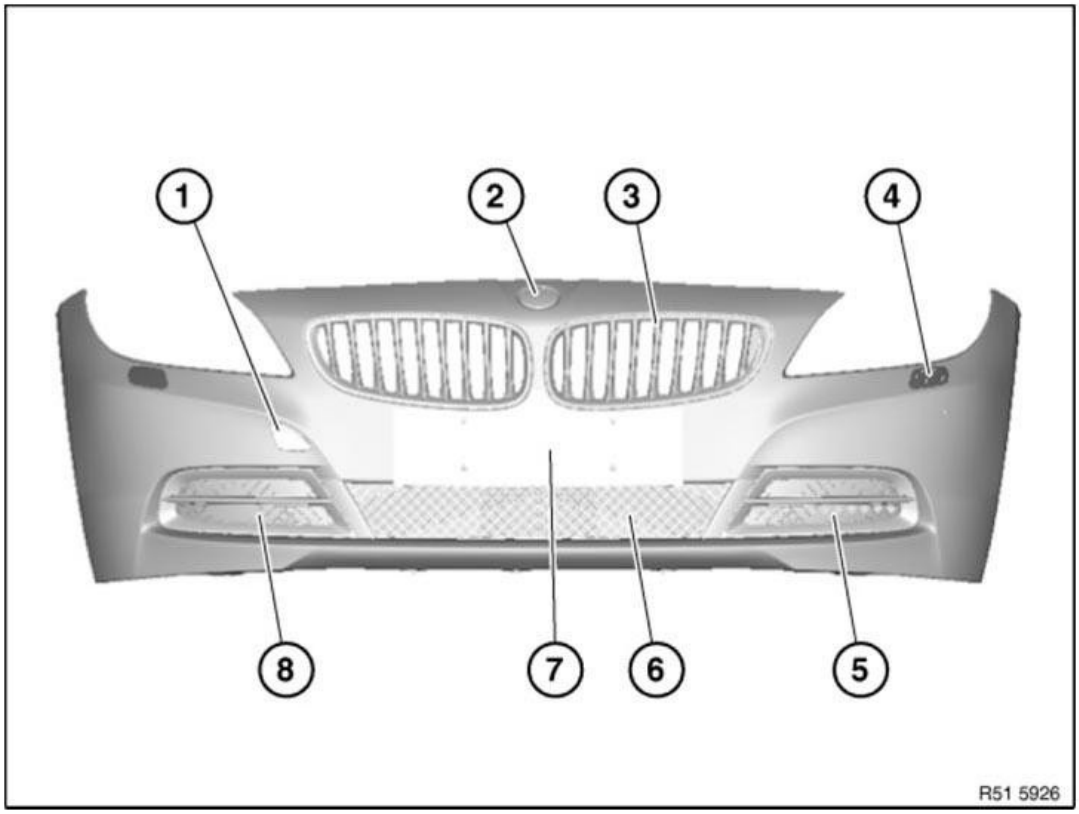


Fig. 32: Identifying Front Bumper Trim Components
Courtesy of BMW OF NORTH AMERICA, INC.

Remove cover cap (1) for tow lug.

Remove **BMW BADGE (2)** .

Remove **FRONT RADIATOR GRILLE (3)** on left/right.

If necessary, remove **HIGH-PRESSURE NOZZLE (4)** of left/right headlight cleaning system.

Remove **ornamental grille in bumper trim (side left or right)** on left/right.

Remove **MIDDLE TRIM GRILLE (6)** .

Remove **LICENSE PLATE HOLDER (7)** .

If necessary, remove fog lamp (8) on left/right.

If necessary, remove side reflector or dummy part on left/right.

51 11 701 REPLACING HOLDER FOR FRONT BUMPER AT FRONT LEFT OR RIGHT

Necessary preliminary tasks

- Remove front **BUMPER TRIM**

Release screws (1).

Tightening torque **51 11 4AZ** .

Remove holder (2).

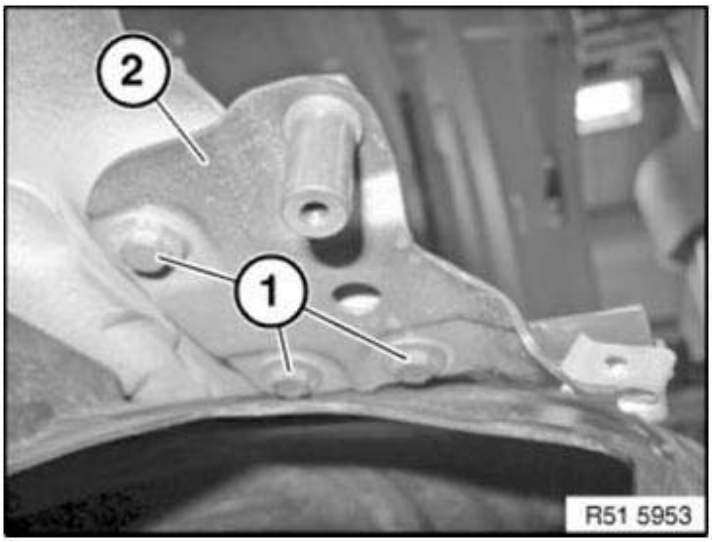
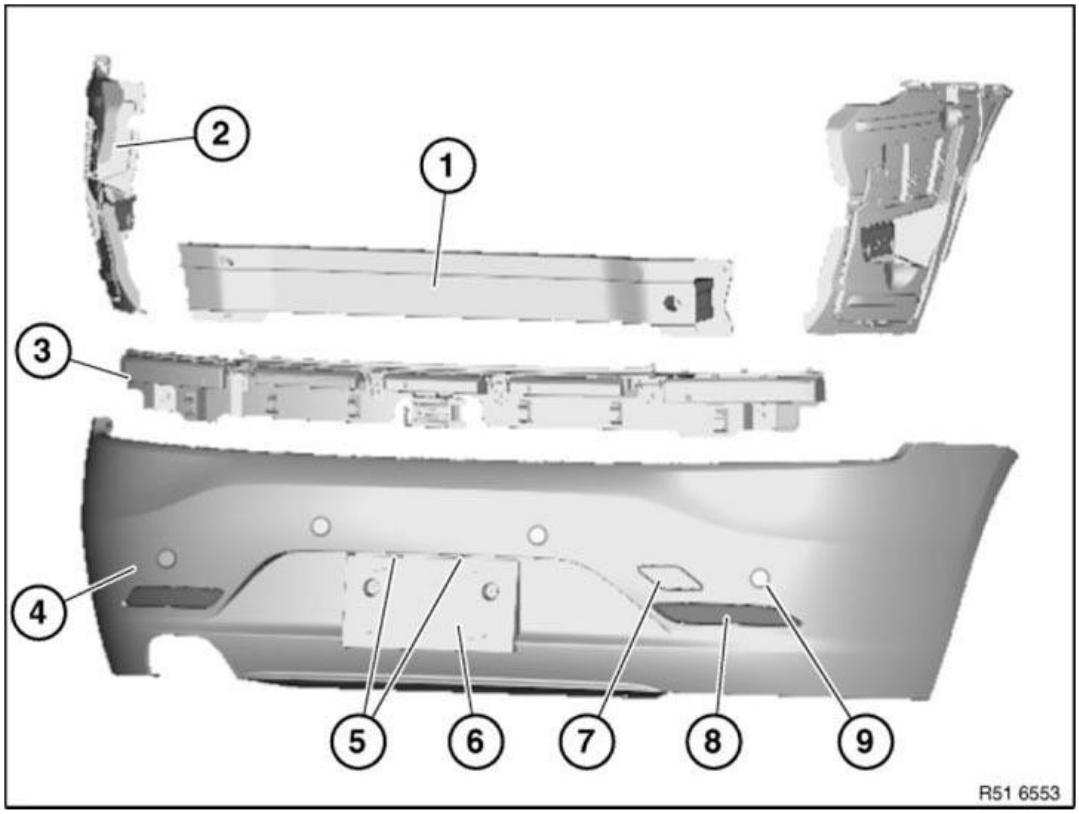


Fig. 33: Identifying Holder And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

5112 REAR BUMPER

51 12 ... OVERVIEW OF REAR BUMPER



1 Carrier
2 Guide, side
3 Guide, middle
4 Bumper trim
5 License plate lights
6 Baseplate for license plate (US/Japan only)
7 Cover on towing eye
8 Reflector
9 Ultrasonic transducer

Fig. 34: Overview Of Rear Bumper
Courtesy of BMW OF NORTH AMERICA, INC.

51 12 156 REMOVING AND INSTALLING REAR BUMPER TRIM PANEL

NOTE: The right side is removed in the same way as the left side. Shown here with removed wheel for a better overview.

Release screws (1) on bumper trim (2) (number of screws varies, depending on engine version).

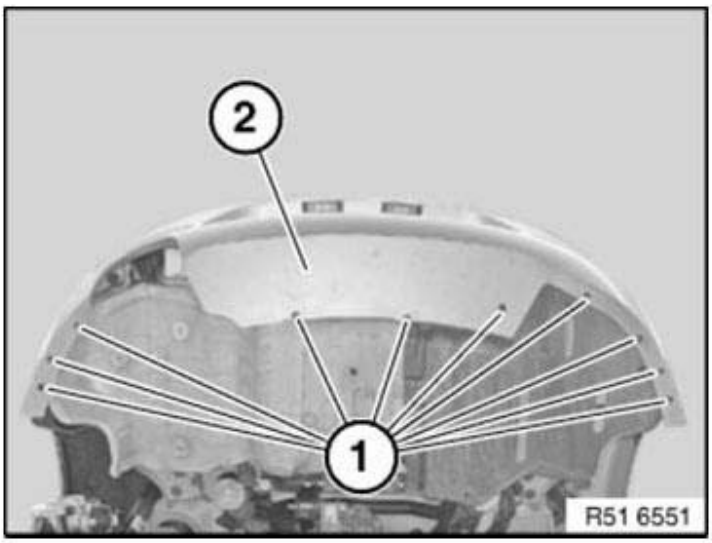


Fig. 35: Identifying Screws On Bumper Trim
Courtesy of BMW OF NORTH AMERICA, INC.

Loosen screws (1) on wheel arch panel (3).

Fold wheel arch panel (3) slightly to the side.

Loosen vertically mounted bolts (2) located inside behind it from the bumper trim.

Repeat the work step on the right.

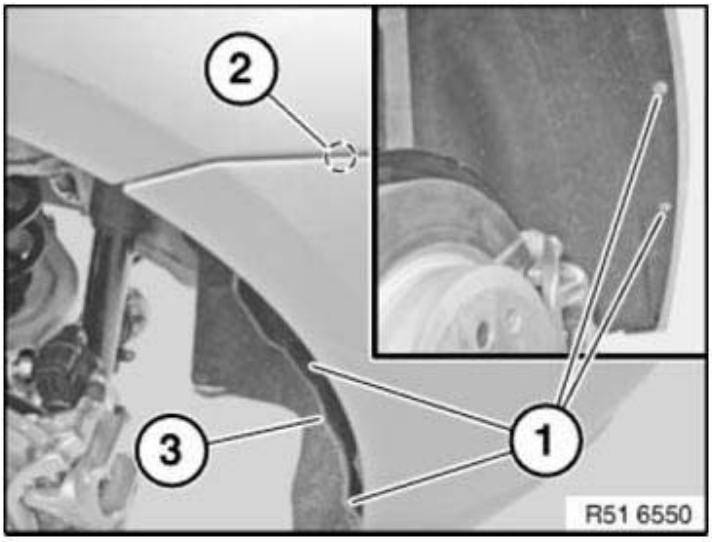


Fig. 36: Identifying Wheel Arch Panel With Mounting Bolts And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Proceed with special caution due to a risk of damage to the retaining tabs (3).

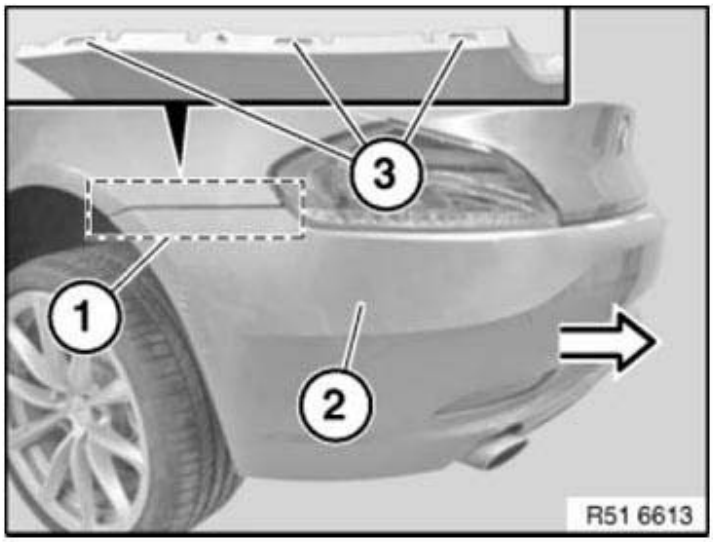


Fig. 37: Pulling Bumper Trim
Courtesy of BMW OF NORTH AMERICA, INC.

Pre-treat the zero gap in area (1) left and right with universal lubricate spray (sourcing reference BMW Parts Department). Immediately wipe off any excess universal lubricant spray (sourcing reference BMW Parts Department).

Heating with hot air blower or IR radiator, etc., is not permitted.

Carefully unclip retaining tabs (3) from the left and right bumper trim (2) outward.

IMPORTANT: First, ensure that the right and left retaining tabs (3) have been unclipped and then pull the bumper trim (2) to the rear (direction of arrow).

Slightly pull the bumper trim (2) back with an assistant to disconnect the plug connections on license plate lamps and reversing sensors, if available.

Completely remove bumper trim panel (2).

Installation note:

Visually inspect the gap dimensions after installing the bumper trim panel (2).

51 99 510 REMOVING AND INSTALLING REAR NUMBER/LICENSE PLATE

Release screws (1) and remove number/license plate.

Installation:

Screw number/license plate directly onto rear bumper (2).

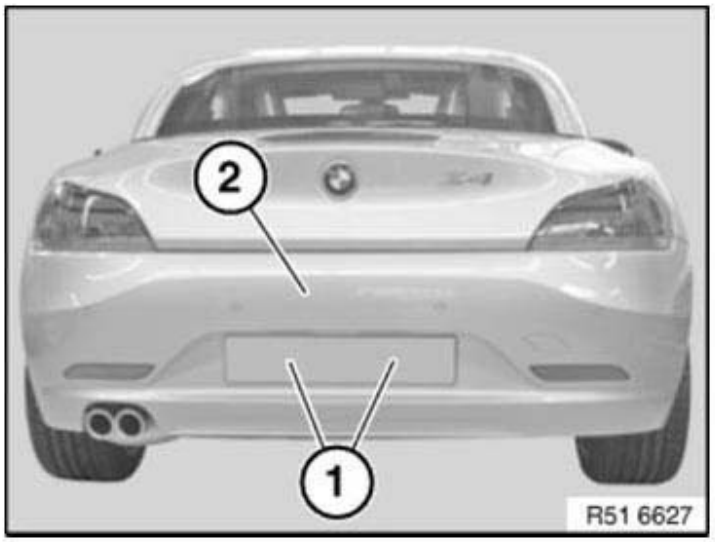


Fig. 38: Identifying Rear Bumper With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 12 050 REMOVING AND INSTALLING/REPLACING CARRIER FOR REAR BUMPER TRIM

Necessary preliminary tasks

- Remove rear **BUMPER TRIM**

Release nuts (1) on left and right.

Remove carrier (2) straight towards rear.

Tightening torque **51 12 3AZ** .

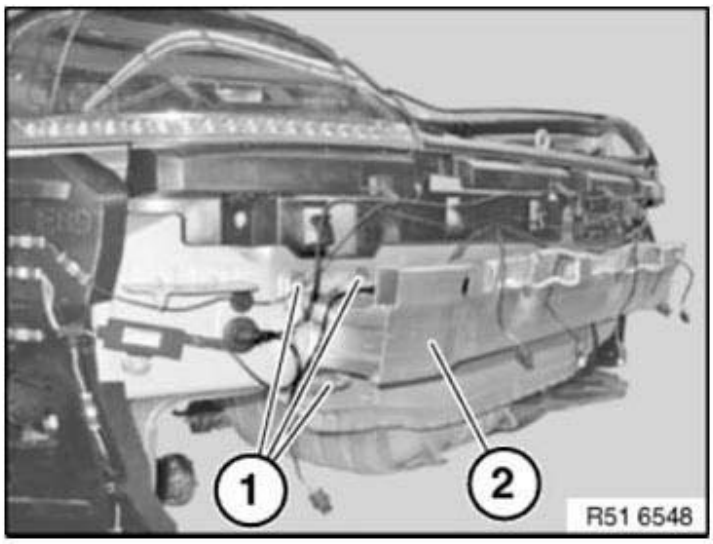


Fig. 39: Identifying Rear Bumper Trim Nuts And Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, remove sealing plate (1) between carrier and body (2).

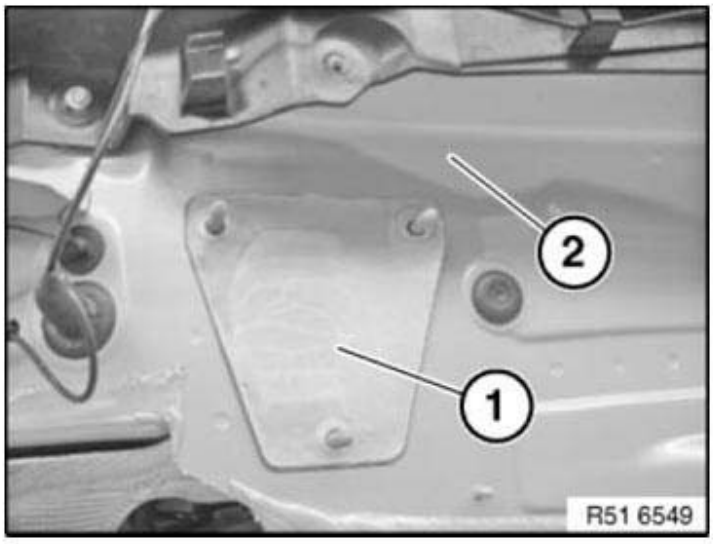


Fig. 40: Identifying Sealing Plate On Body
Courtesy of BMW OF NORTH AMERICA, INC.

51 12 825 REMOVING AND INSTALLING/REPLACING GUIDE FOR REAR CENTRE BUMPER

Necessary preliminary tasks

- Remove rear **BUMPER TRIM**

Detach wiring harness (1).

Unfasten screws (2).

Remove guide for bumper (3).

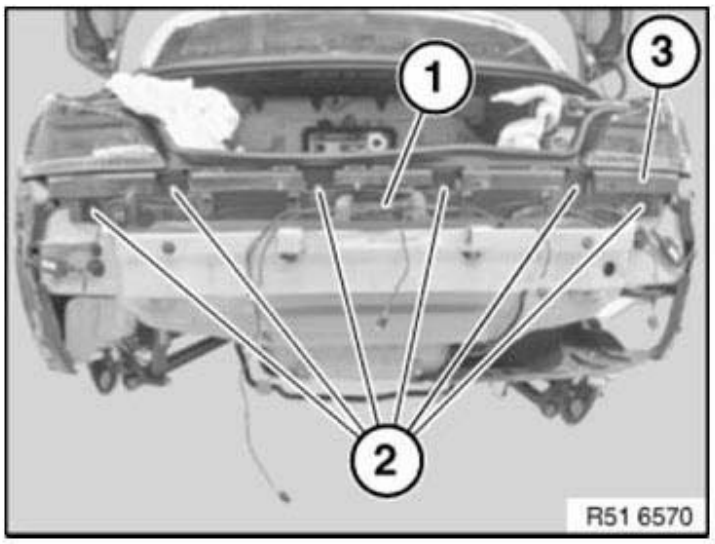


Fig. 41: Identifying Rear Center Bumper With Wiring Harness And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 12 828 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT GUIDE FOR REAR BUMPER

Necessary preliminary tasks

- Remove rear **BUMPER TRIM**

Detach wiring harness (1).

Unfasten screws (2).

Remove guide for bumper (3).

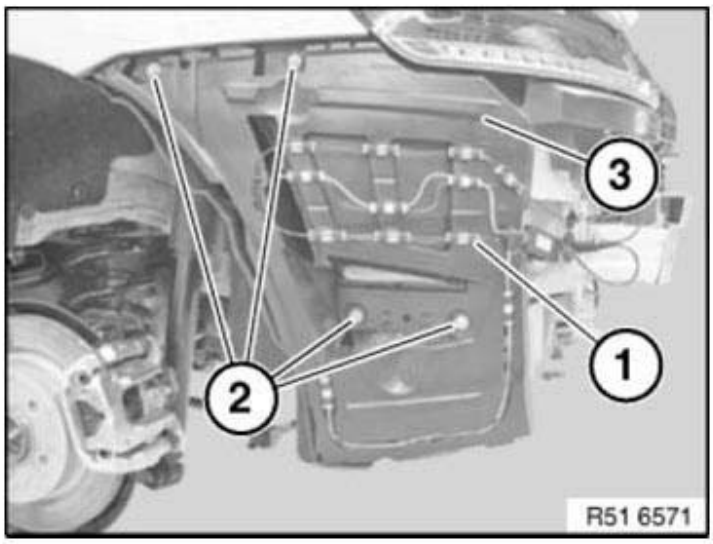


Fig. 42: Identifying Rear Bumper With Wiring Harness And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 041 REMOVING AND INSTALLING/REPLACING REAR LEFT OR RIGHT WHEEL ARCH COVER

Necessary preliminary tasks

- Remove **REAR WHEEL**

Release all nuts (1).

Remove cover (2).

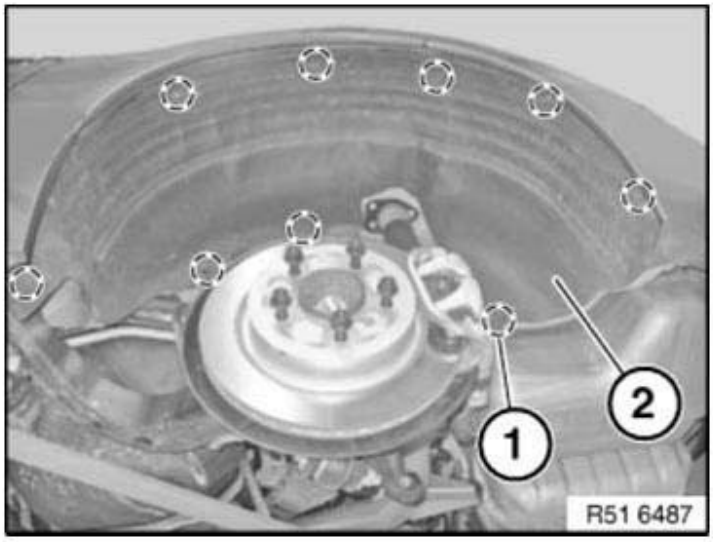


Fig. 43: Identifying Wheel Arch Cover And Nuts

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Carefully lift in wheel arch cover (1) with special tool 00 9 317 .

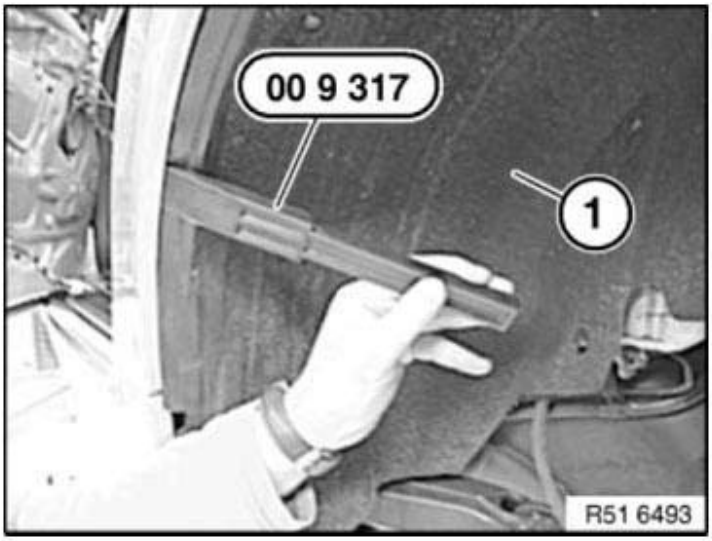


Fig. 44: Lifting Wheel Arch Cover Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

51 12 157 REPLACING REAR BUMPER TRIM

Necessary preliminary tasks

- Remove rear **BUMPER TRIM**

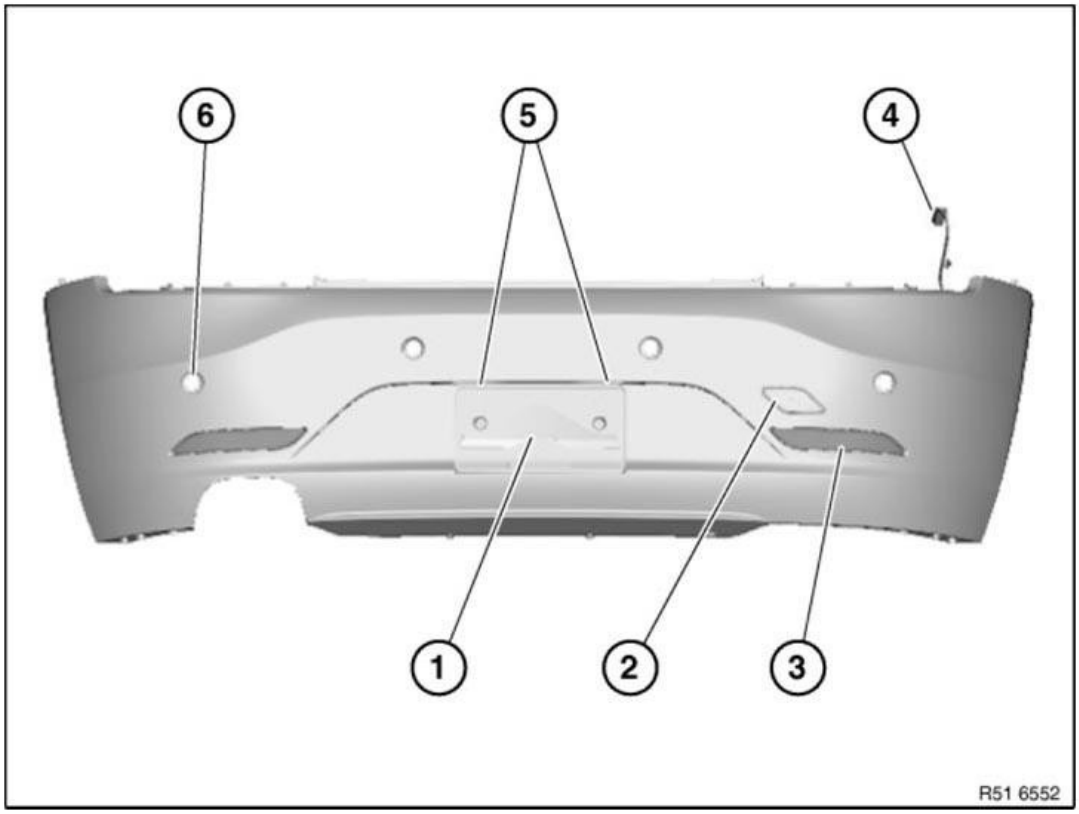


Fig. 45: Identifying Rear Bumper Trim Components
Courtesy of BMW OF NORTH AMERICA, INC.

Remove **LICENSE PLATE HOLDER (1)** .

Remove cover cap (2) for tow lug.

Remove **REAR REFLECTOR (3)** .

Remove **LICENCE PLACE LIGHTS (5)** .

Version with PDC:

Remove all **ULTRASONIC TRANSDUCERS (6)** .

Remove wiring harness (4) for ultrasonic transducers.

5113 TRIM, COVERS, HANDLE TRIM

51 13 ... ADJUSTING WINDSCREEN FRAME SEAL TO ROOF SHELL SEAL

Release outer screw (1) of windscreen frame seal (3).

2 = banjo nut

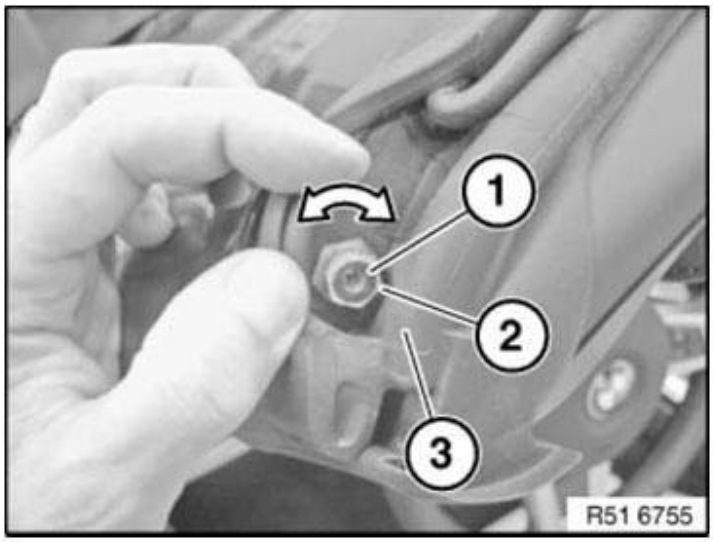


Fig. 46: Removing Outer Screw Of Windscreen Frame Seal
Courtesy of BMW OF NORTH AMERICA, INC.

Turn banjo nut top adjust windscreen frame seal (1) flush with roof shell seal (2).

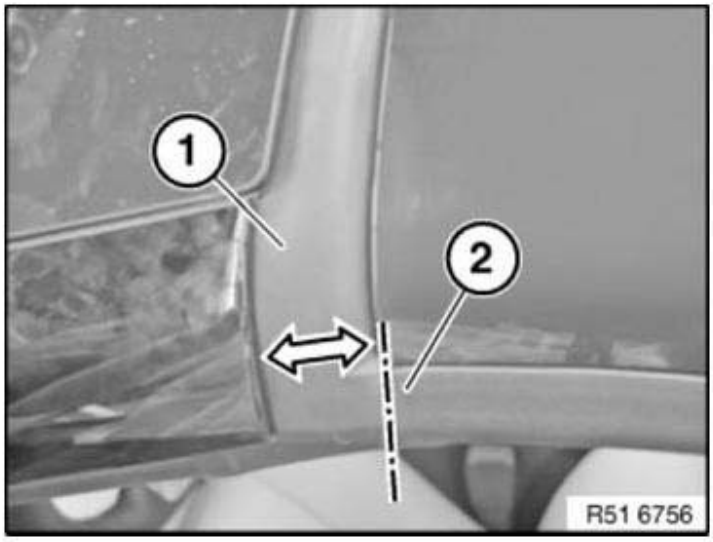


Fig. 47: Adjusting Windscreen Frame Seal With Roof Shell Seal
Courtesy of BMW OF NORTH AMERICA, INC.

Sectional view for improved clarity

Banjo bolt (1) alters the relative position of vulcanized aluminum sheet (2) to windscreen frame edge (3).

Installation:

After adjustment, secure banjo bolt (1) again against twisting with Loctite.

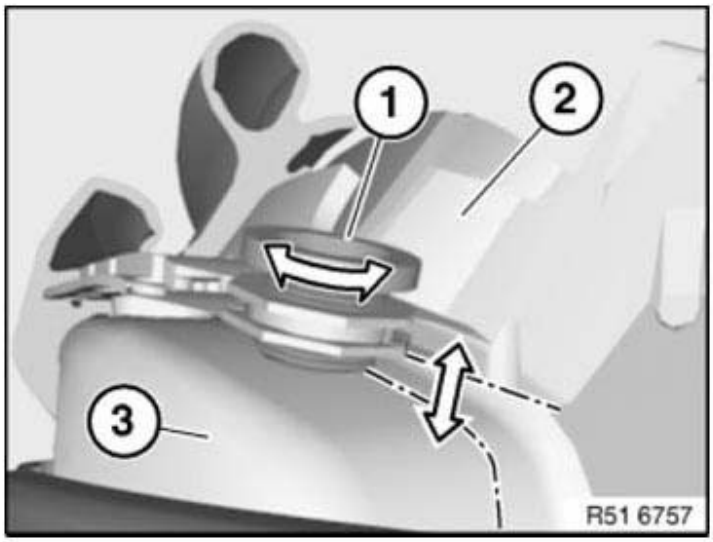


Fig. 48: Securing Banjo Bolt
Courtesy of BMW OF NORTH AMERICA, INC.

51 13 115 REMOVING AND INSTALLING/REPLACING COWL PANEL COVER

Necessary preliminary tasks

- Remove **BOTH WINDSCREEN WIPER ARMS**

Disengage catch (1).

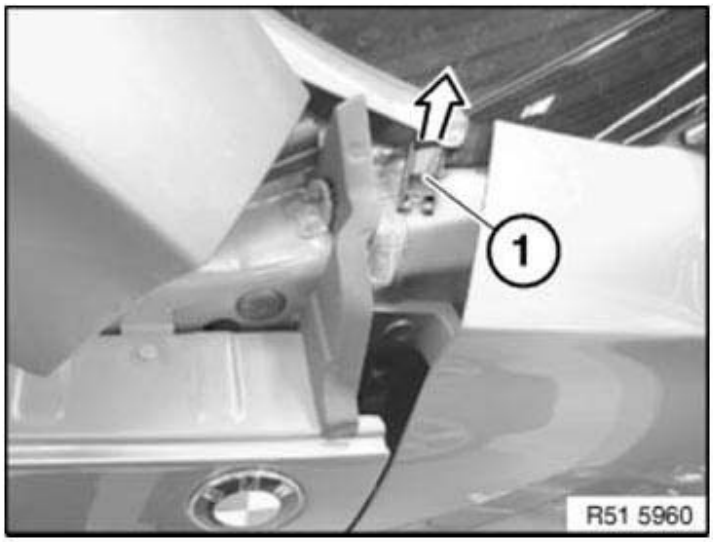


Fig. 49: Removing Catch
Courtesy of BMW OF NORTH AMERICA, INC.

Release cable from cable holder (1).

Remove clips (2) and remove cowl panel cover.

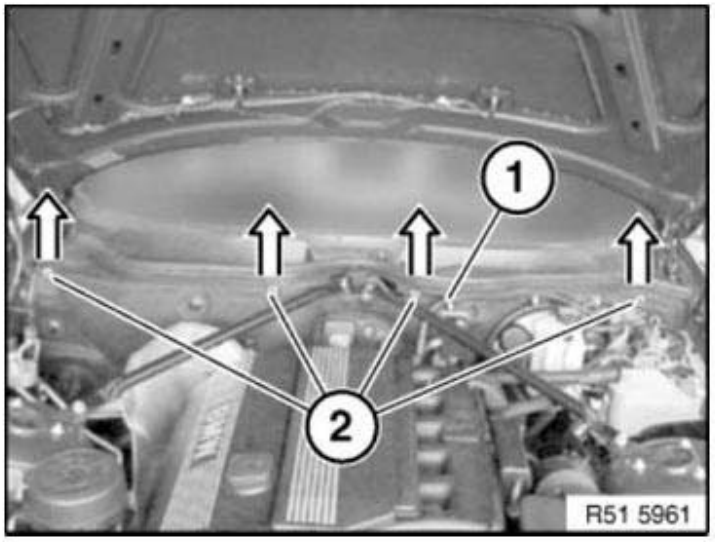


Fig. 50: Removing Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, replace defective grommets (1).

Check holder (2) for correct seating.

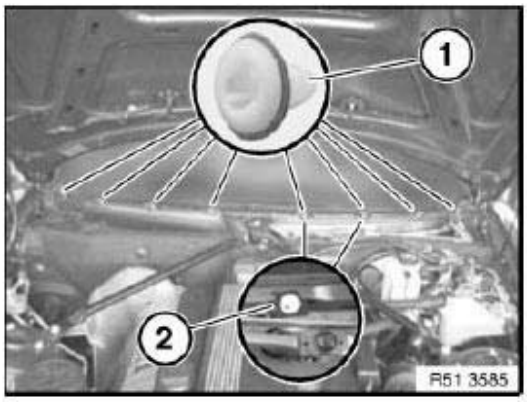


Fig. 51: Identifying Defective Grommets With Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Clips (1) must not be missing or damaged.

Retaining tabs (2) must not be damaged

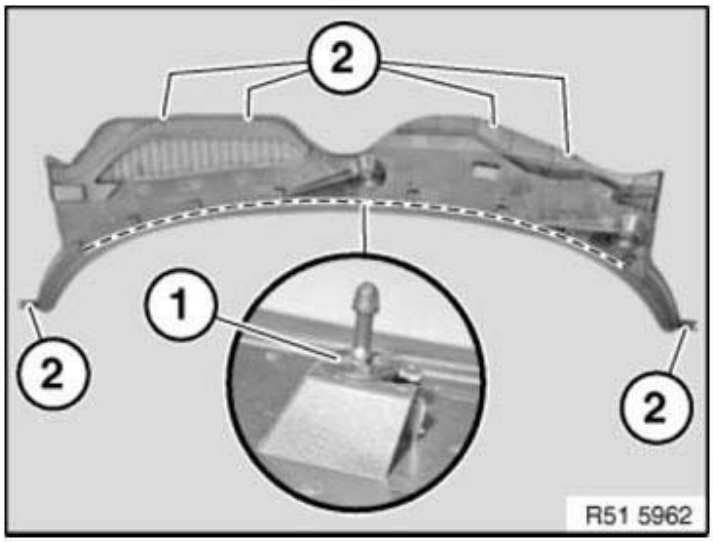


Fig. 52: Identifying Clips And Retaining Tabs
Courtesy of BMW OF NORTH AMERICA, INC.

51 13 312 REMOVING AND INSTALLING OR REPLACING TRIM STRIP ON ROOF GUTTER AT LEFT OR RIGHT

Release screws (1) on windscreen frame seal (2).

Remove windscreen frame seal (2) at side from A-pillar trim panel (3).

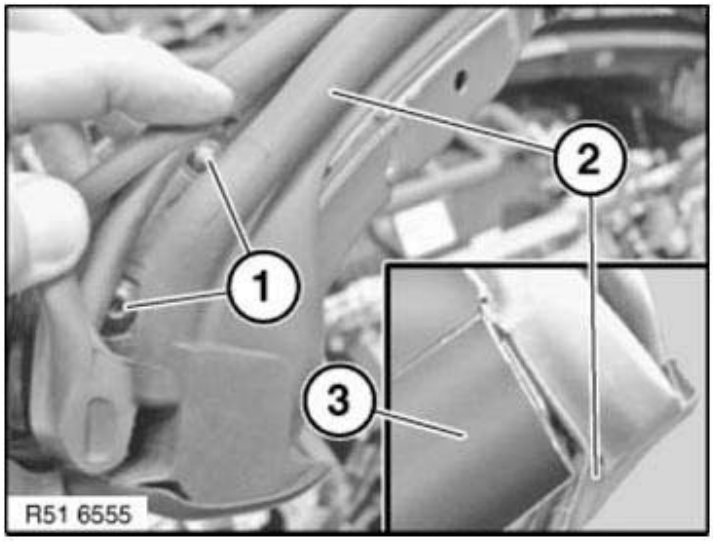


Fig. 53: Removing Windscreen Frame Seal From A-Pillar Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Release main seal (1) from A-pillar (2).

Release screws (3).

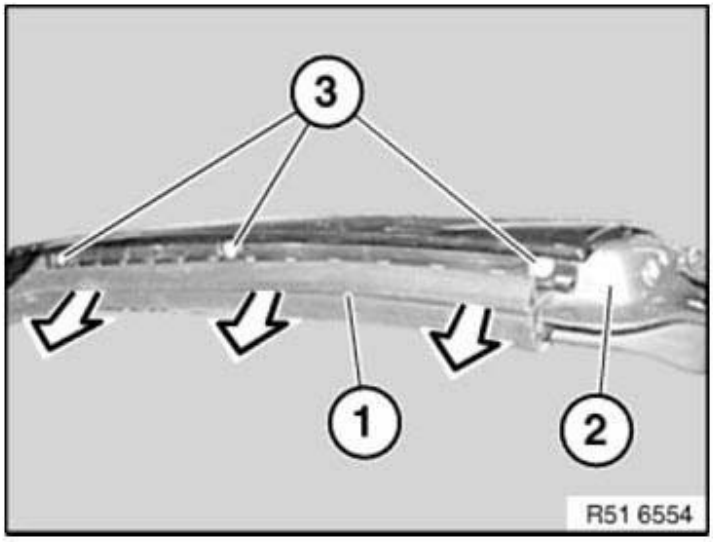


Fig. 54: Removing Main Seal From A-Pillar
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip A-pillar trim panel (1) from strip clips (2).

Installation:

Strip clips (2) must not be missing or damaged.

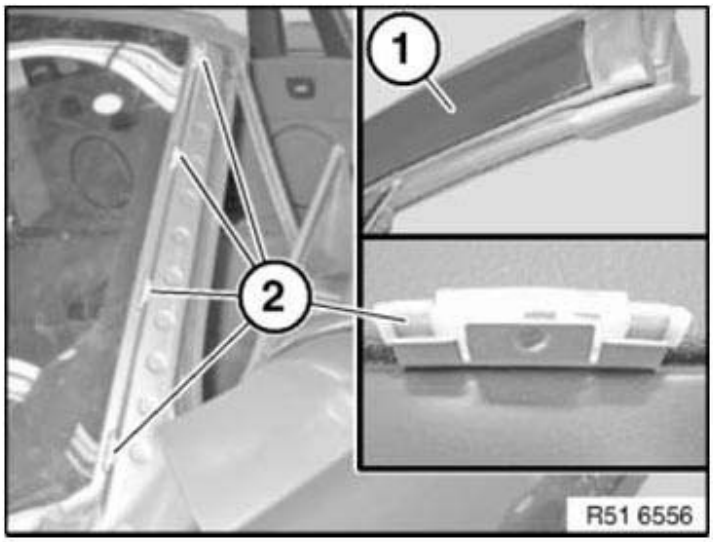


Fig. 55: Identifying A-Pillar Trim Panel With Strip Clips
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: A-pillar trim panel rib (1) must not trap sealing lip (2). Only then will gutter strip (3) function properly.

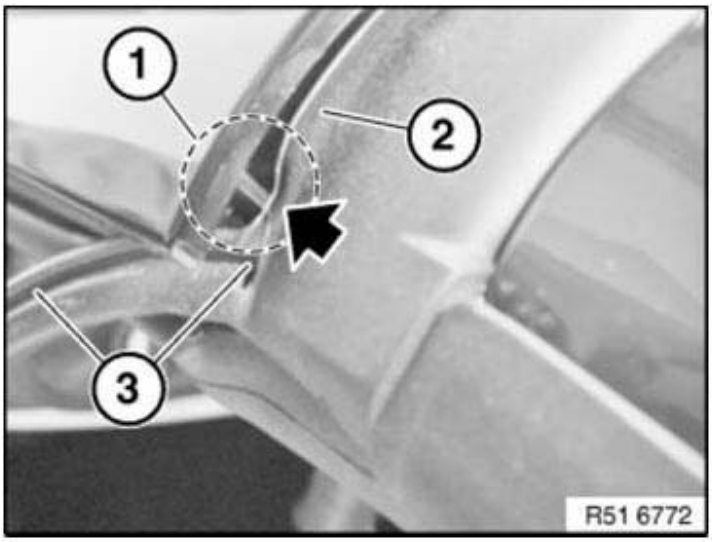


Fig. 56: Identifying A-Pillar Trim Panel Rib, Sealing Lip And Gutter Strip
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

First clip in A-pillar trim panel (1), then screw down. Here, A-pillar trim panel (1) rests cleanly and is flush with windscreen frame seal (2).

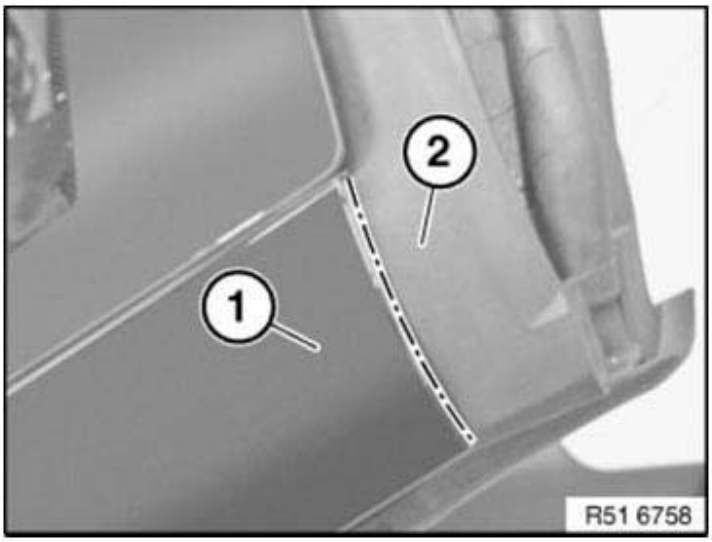


Fig. 57: Identifying A-Pillar Trim Panel And Windscreen Frame Seal
Courtesy of BMW OF NORTH AMERICA, INC.

51 13 435 REMOVING AND INSTALLING/REPLACING ADDITIONAL BRAKE LIGHT, REAR LID COVER

Necessary preliminary tasks

- Remove **REAR LID TRIM**

Unscrew nuts (1).

Tightening torque **51 13 8AZ** .

Unfasten plug connection (2) and disconnect.

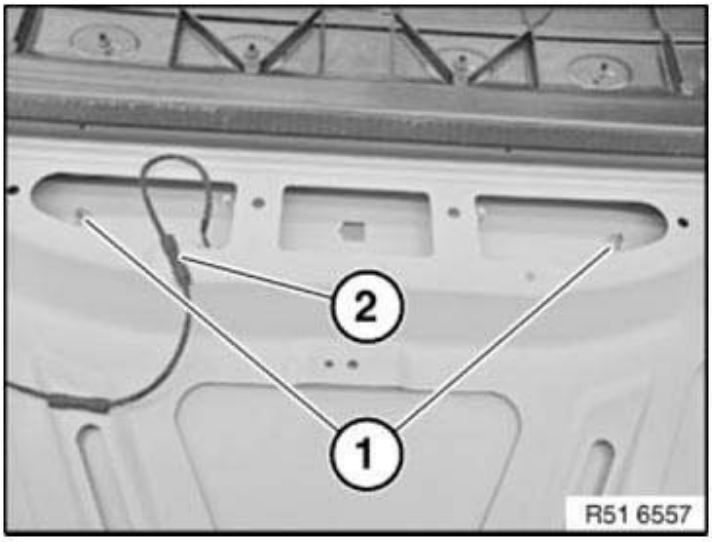


Fig. 58: Identifying Plug Connection And Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Raise and unclip additional brake light (1) with special tool 00 9 317 .

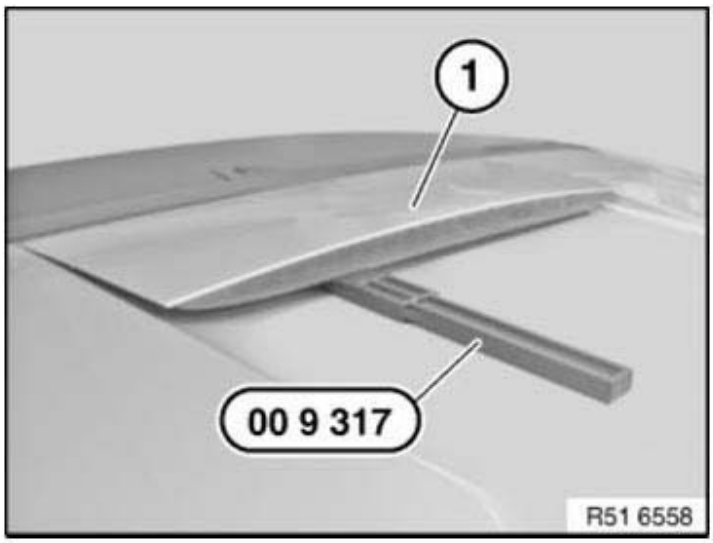


Fig. 59: Removing Additional Brake Light Using Special Tool (009 317)
Courtesy of BMW OF NORTH AMERICA, INC.

Remove additional brake light (1).

Replacement:

Subsequent operation described in **REMOVING ADDITIONAL BRAKE LIGHT** .

51 13 001 REMOVING AND INSTALLING/REPLACING FRONT RADIATOR GRILLE, MIDDLE LEFT OR RIGHT

NOTE: Protect bumper trim against paint damage.

Release catches at marked point by pulling gently in direction of arrow and remove front radiator grille middle (1).

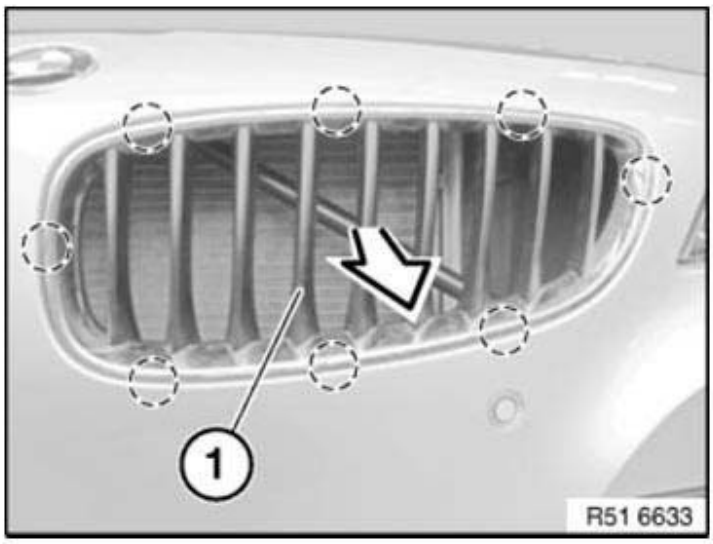


Fig. 60: Pulling Catches
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

All catches and guides on middle front grille must not be damaged.

Press on chrome ring to push front radiator grille (2) into bumper trim.

Fixtures (1) must engage correctly.

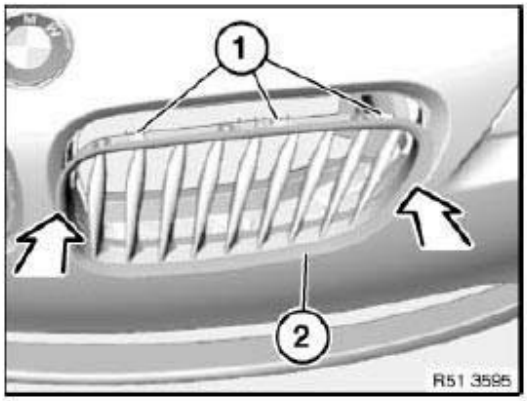


Fig. 61: Pushing Front Radiator Grille Into Bumper Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 46 072 REMOVING AND INSTALLING/REPLACING LOWER PARTITION PANEL

Necessary preliminary tasks

- Clamp off **BATTERY LEAD FROM NEGATIVE TERMINAL**

- Remove **CENTRE CONSOLE** .
- Remove **UPPER PARTITION TRIM PANEL**
- Remove **REAR SIDE TRIM PANEL (BOTTOM)**

NOTE: Both seats are shown removed for purposes of clarity.

Professional HiFi system only:

Release mid-range speaker screws (2).

Unlock plug connection for mid-range speaker and disconnect.

Remove mid-range speaker.

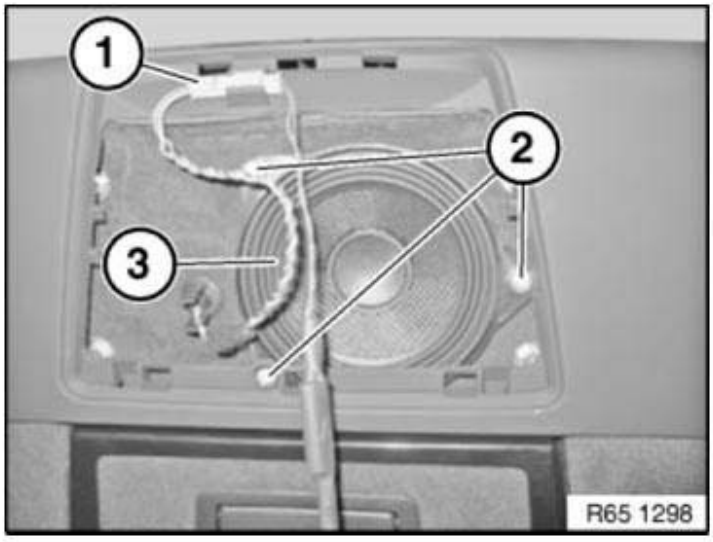


Fig. 62: Identifying Mid-Range Speaker Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 46 7AZ** .

Remove clips (2).

Raise protective caps for storage net holder and release screws (3).

Tightening torque **51 46 7AZ** .

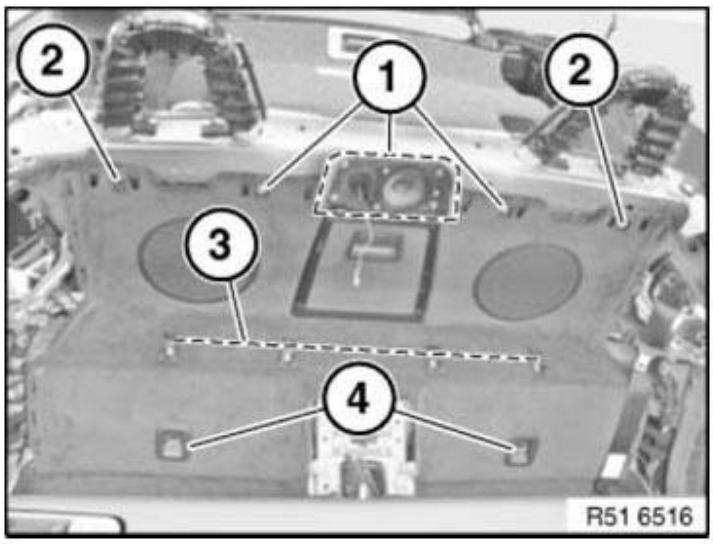


Fig. 63: Identifying Screws And Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Release partition panel (1) at catches (2). Disconnect necessary plug connections.

Remove partition panel (1).

Replacement

Modify covers or lashing eyes (4).

Professional HiFi system only:

Modify speaker covers of bass speaker on left and right.

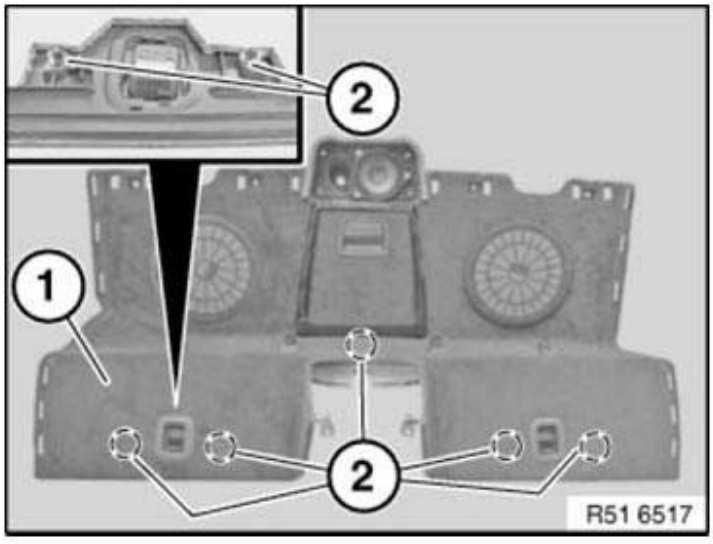


Fig. 64: Identifying Partition Panel With Catches
Courtesy of BMW OF NORTH AMERICA, INC.

51 43 125 REMOVING AND INSTALLING/REPLACING REAR BOTTOM LEFT OR RIGHT SIDE TRIM PANEL

Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.

Necessary preliminary tasks

- Remove **REAR SIDE TRIM PANEL**
- Remove **FRONT DOOR SILL COVER STRIP**

Release screw (1).

Partially detach door seal (2).

Carefully pull out trim panel (3) and remove.

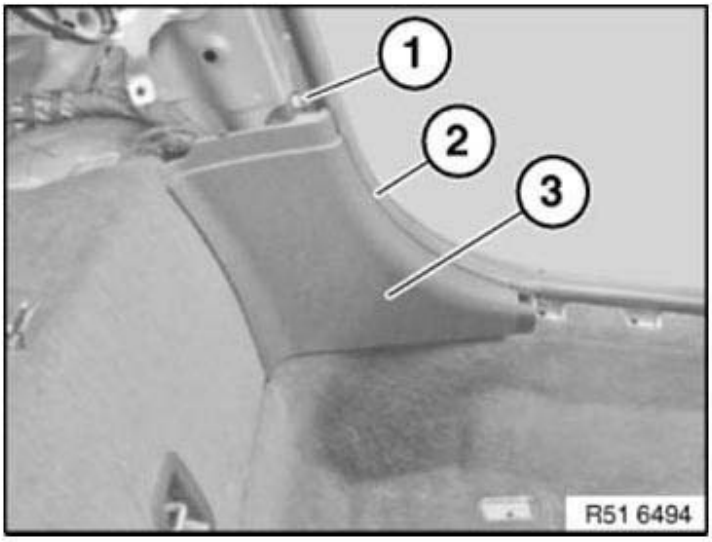


Fig. 65: Identifying Door Seal, Trim Panel And Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, reattach clip (1) prior to installation.

Clip (1) and retaining lugs (2) must not be damaged.

If necessary, replace side trim panel.

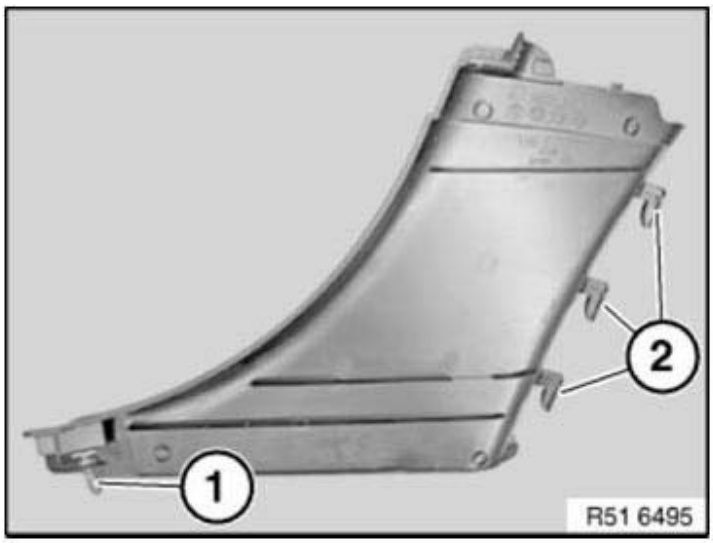


Fig. 66: Identifying Clip And Retaining Lugs
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 ... REMOVING AND INSTALLING/REPLACING REAR LEFT OR RIGHT WHEEL ARCH SPLASH GUARD

Release screw and nut (1).

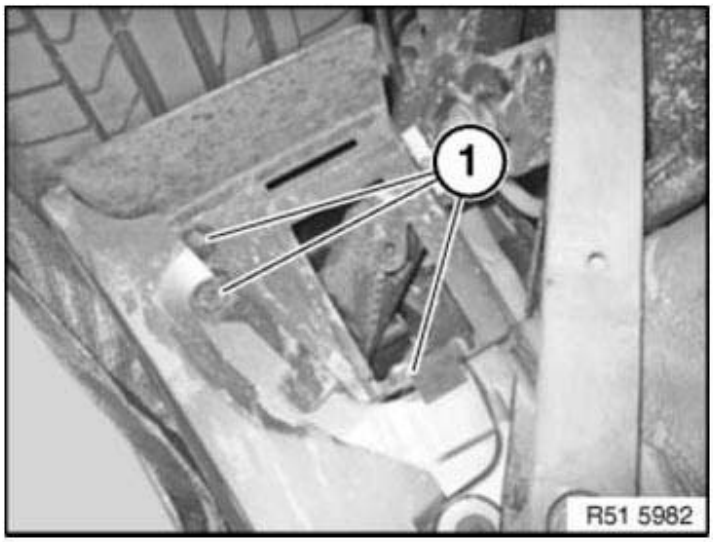


Fig. 67: Identifying Wheel Arch Splash Guard Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Release cable holder (1).

Remove splash guard (2).

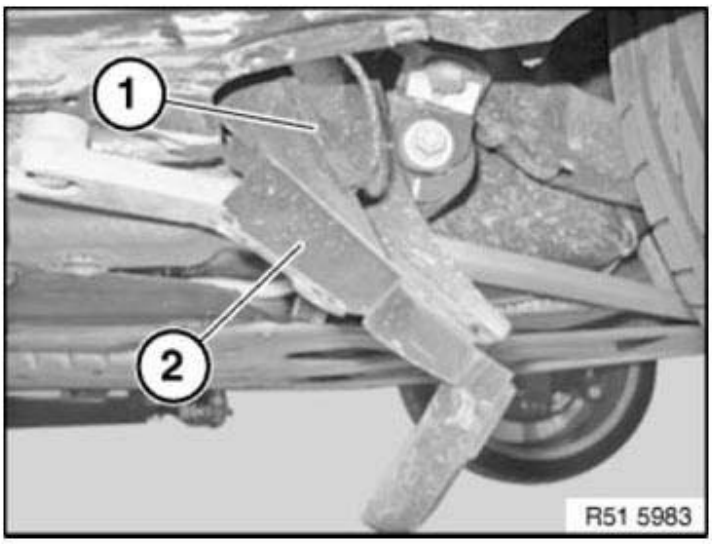


Fig. 68: Identifying Cable Holder And Splash Guard
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Engage lug for cable (1) on stud (2).

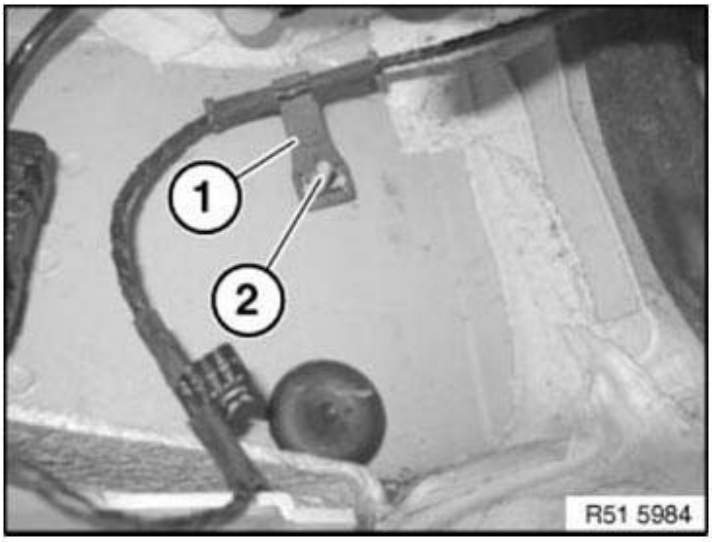


Fig. 69: Identifying Cable On Stud
Courtesy of BMW OF NORTH AMERICA, INC.

51 46 070 REMOVING AND INSTALLING/REPLACING UPPER PARTITION PANEL

Necessary preliminary tasks

- Remove **REAR SIDE TRIM PANELS**

- Remove **ROLLOVER PROTECTION COVER BRACKET**
- If necessary, place backrests in vertical position and move seats fully forwards

Release screws (1).

Lever out caps for lashing eyes and release screws (2).

Tightening torque **51 46 6AZ** .

Professional HiFi system only:

Remove **TWEETER** (3)

Lift out upper partition wall panel (4) at an angle.

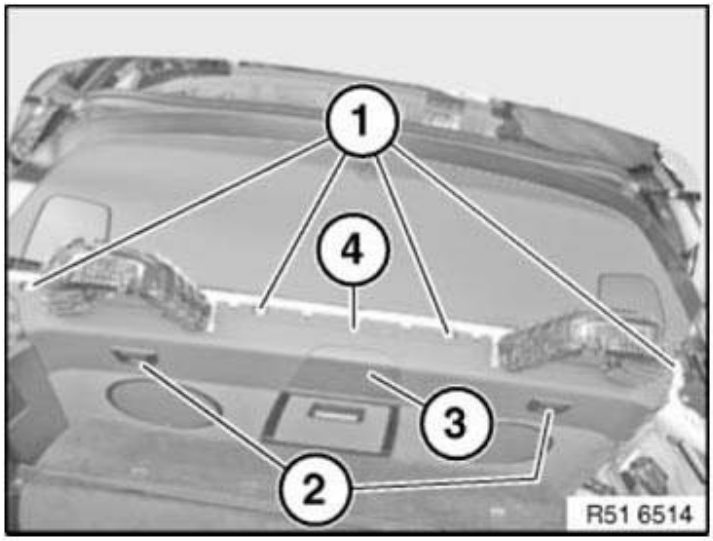


Fig. 70: Identifying Middle Trim And Upper Partition Wall Panel With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

If necessary, replace middle trim (3).

Installation:

Locking hooks (1) on front partition wall panel (2) must not be broken.

If necessary, replace upper partition wall panel (2).

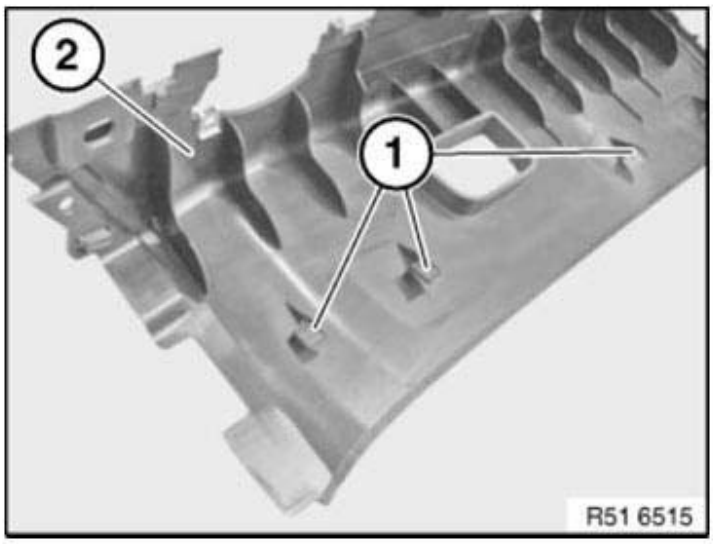


Fig. 71: Identifying Hooks On Front Partition Wall Panel
Courtesy of BMW OF NORTH AMERICA, INC.

5114 BMW EMBLEMS, MODEL EMBLEMS

51 14 013 REMOVING AND INSTALLING/REPLACING BMW BADGE ON FRONT LEFT OR RIGHT SIDE PANEL



Fig. 72: Removing BMW Badge Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

51 14 000 REPLACING FRONT BMW BADGE (REMOVING AND REPLACING)

Necessary preliminary tasks

- Remove **CENTRE RADIATOR GRILLE**

Release sheet metal nuts (1).

Remove badge towards front.

Installation:

Carefully tighten sheet metal nuts (1).

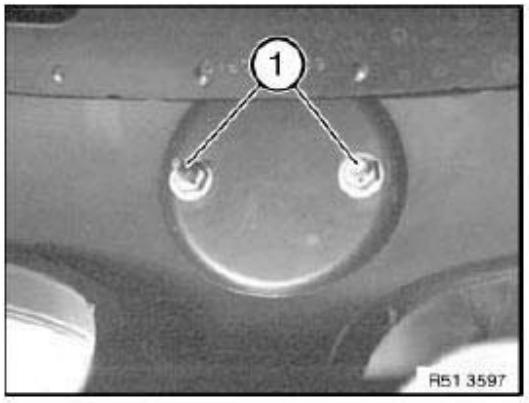


Fig. 73: Identifying Sheet Metal Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

5115 BUMPER STRIP

51 71 447 REMOVING AND INSTALLING OR REPLACING PANEL FOR COVER ON LEFT OR RIGHT SIDE MEMBER

Release screws (1 and 2).

Release clips (3).

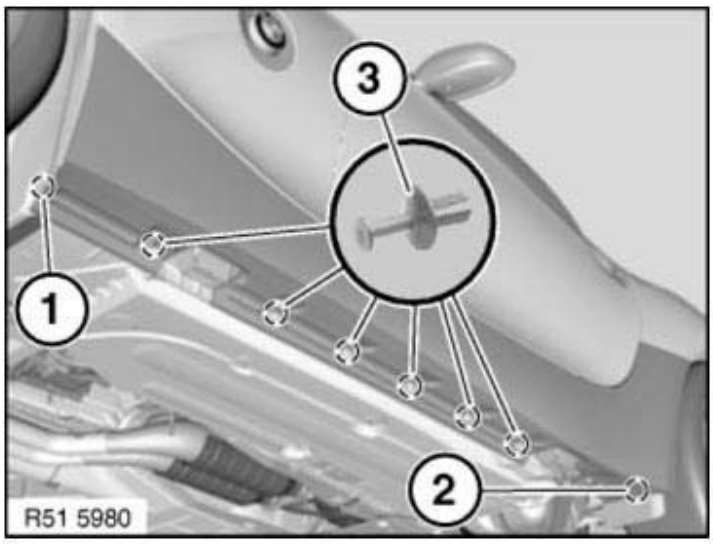


Fig. 74: Identifying Screws And Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip panel (1) in areas (A and B) from holders in direction of arrow.

Release panel (1) at clips (2) and remove in direction of arrow.

Installation:

Catches of panel (1) in areas (A and B) must not be damaged.

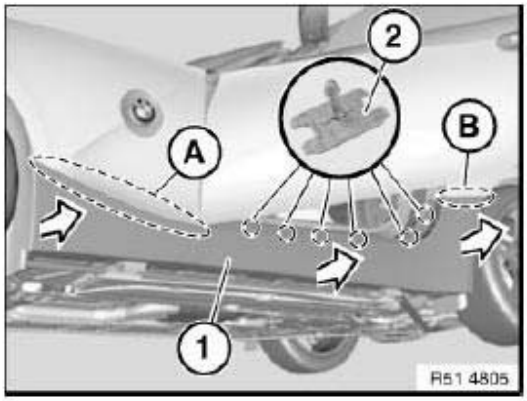


Fig. 75: Removing Panel From Holders
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Holders (1 and 2) must not be damaged.

If necessary, detach clips (3) from body and attach to panel for cover on side member.

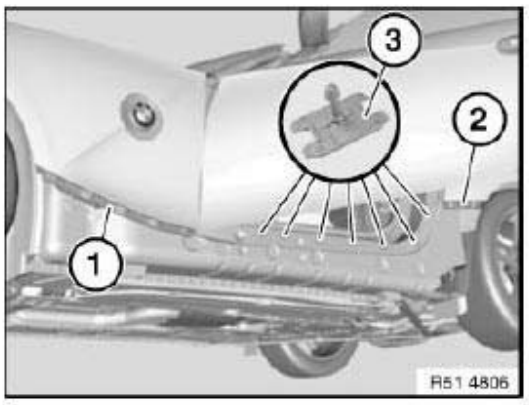


Fig. 76: Identifying Holders And Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure seal (1) is correctly seated on body and after assembly pay attention to **GAP DIMENSIONS** .

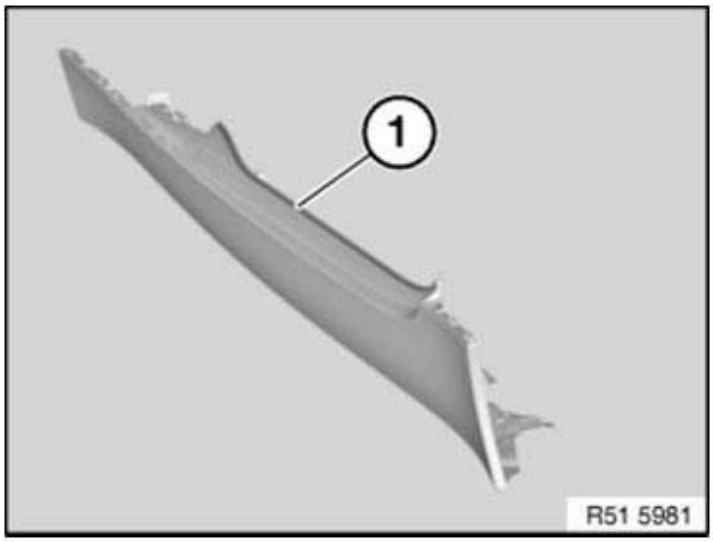


Fig. 77: Identifying Seal On Body
Courtesy of BMW OF NORTH AMERICA, INC.

5116 MIRRORS COVER SASH TRAYS SHELVES TRAYS

51 16 165 REMOVING AND INSTALLING COMPLETE CENTRE CONSOLE

Necessary preliminary tasks

- Remove **TRIM FOR STORAGE COMPARTMENT**

IMPORTANT: Read and comply with notes on HANDLING WIRING HARNESSES and cables.

Switch off ignition before disconnecting plug connections.

NOTE: Seats are shown removed for purposes of clarity.

Remove rear cover (1) from centre console (2) towards top.

Disconnect plug connection underneath.

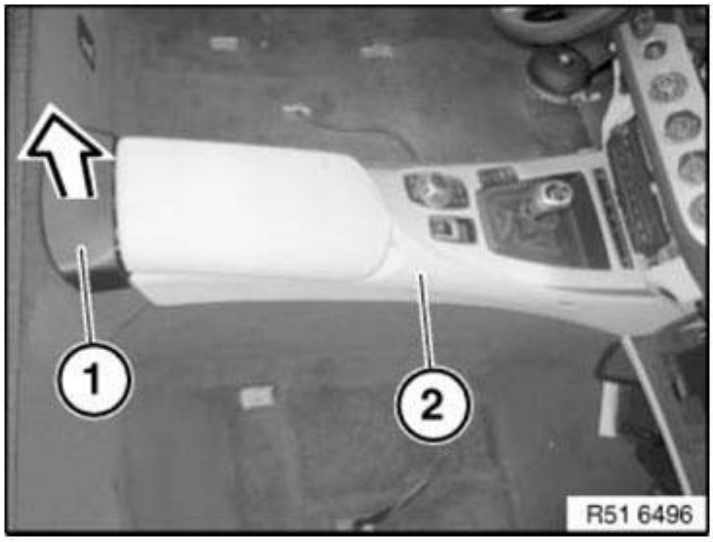


Fig. 78: Removing Rear Cover From Centre Console
Courtesy of BMW OF NORTH AMERICA, INC.

Release front screws (1).

Tightening torque **51 16 16AZ** .

Unlock and disconnect cable (2).

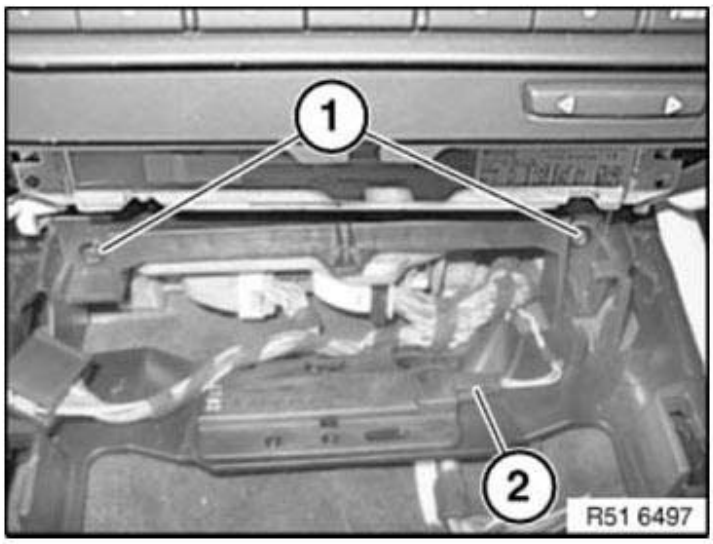


Fig. 79: Identifying Front Screws And Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Release rear nuts (1).

Tightening torque **51 16 16AZ** .

Release screw (2).

Tightening torque **51 16 17AZ** .

Raise centre console (3) and unlock and disconnect plug connections underneath.

NOTE: Height of fastening point can be regulated by compensating bush underneath screw connection for centre console.

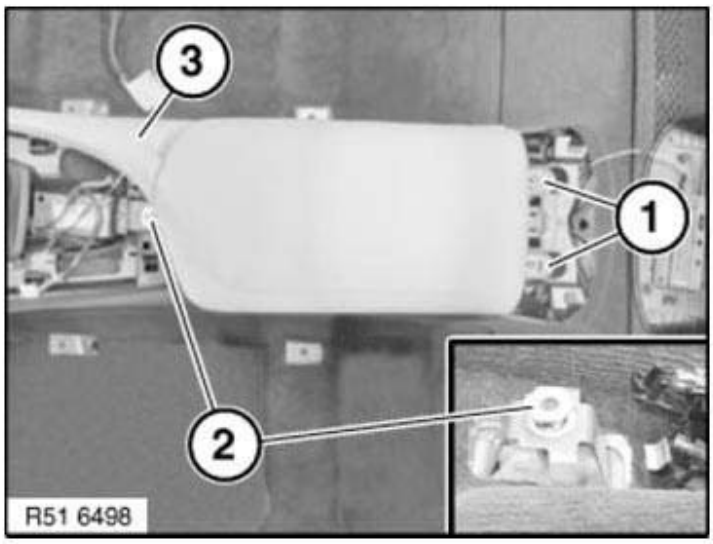


Fig. 80: Identifying Centre Console With Rear Nuts And Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip cable guide (1) from centre console (2).

Raise centre console (2) and unlock and disconnect plug connections on underside.

Remove centre console (2).

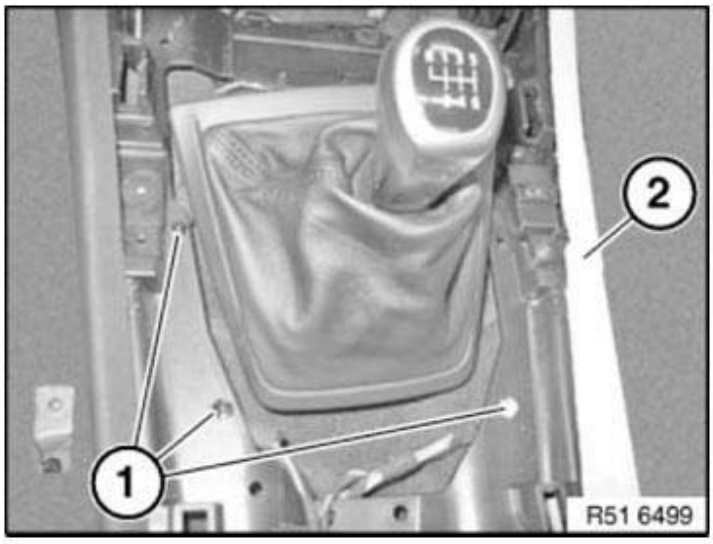


Fig. 81: Identifying Cable Guide Of Centre Console
Courtesy of BMW OF NORTH AMERICA, INC.

51 16 063 REMOVING AND INSTALLING OR REPLACING INTERIOR REARVIEW MIRROR

Version with remote control for central locking:

If necessary, disconnect negative lead from **BATTERY** .

Expand two-part cover (1) by pressing from below. Feed out split cover (1) on mirror base plate in each case remove in outward direction.

If necessary, disconnect plug connection underneath.

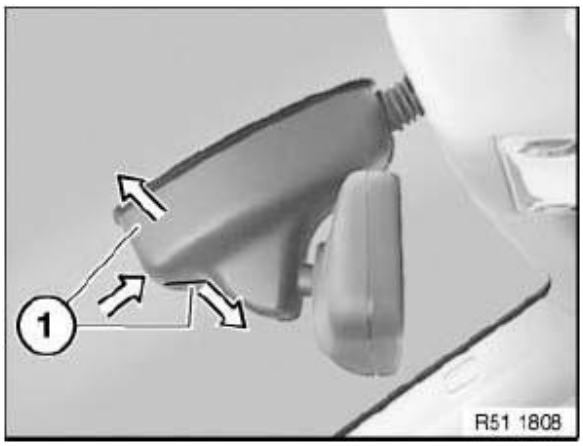


Fig. 82: Expanding Two-Part Cover
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Risk of damage!

Do not pull mirror (1) off windscreen; instead, carefully turn approx. 45° clockwise to snap out of mirror base (2).

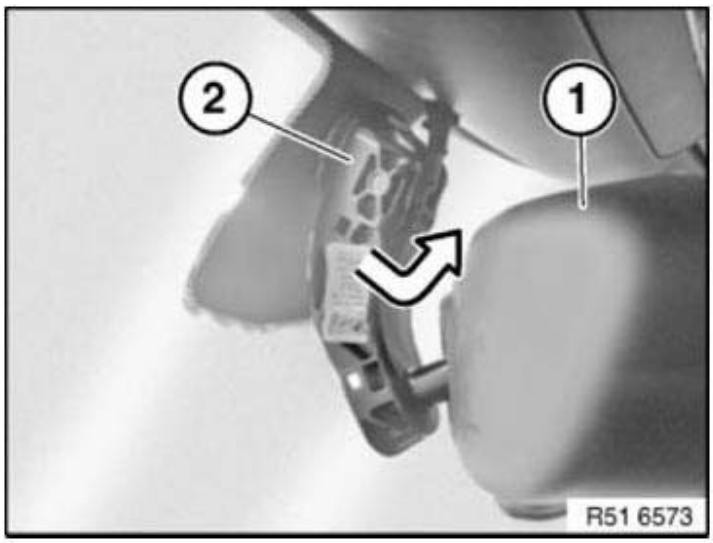


Fig. 83: Pulling Mirror Off Windscreen From Mirror Base
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Fit mirror base plate on mirror base turned through approx. 45° (see graphic) and snap audibly into place by turning anti-clockwise carefully in direction of arrow.

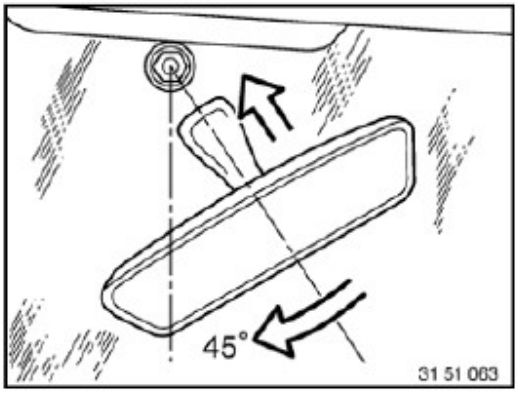


Fig. 84: Turning Mirror Base Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Only replace with version with remote control for central locking

Initialize all transmitters (ignition keys), refer to Owner's Handbook.

Only when replacing mirror with FLA (high-beam assistance) for vehicles from build date 09/2009 onward

Replace CAN connector (3-pin).

Unpin and dispose of existing connector.

Install newly coded connector part number 6 905 977 (sourcing reference: BMW Parts Department) in same way as existing connector.

51 16 000 REMOVING AND INSTALLING OR REPLACING MIRROR ON LEFT OR RIGHT FRONT DOOR

Remove corner trim (2) in upward direction from triangular mirror section (1).

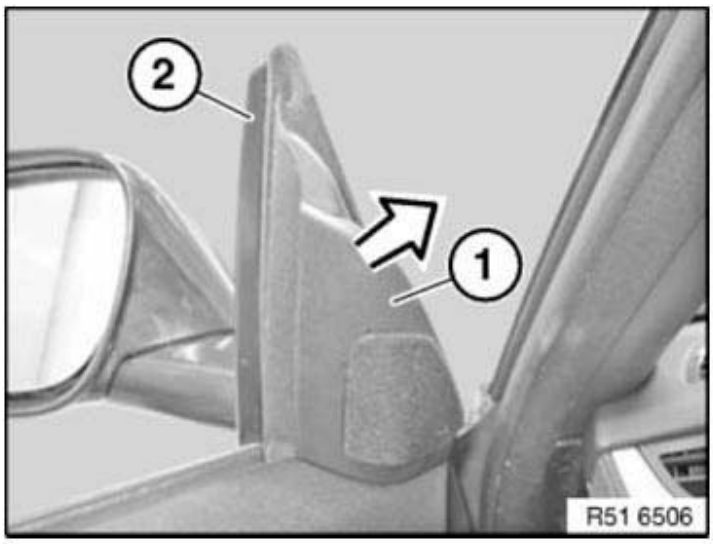


Fig. 85: Removing Corner Trim From Triangular Mirror Section
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 16 1AZ** .

Unlock and disconnect plug (2).

Remove mirror (3).

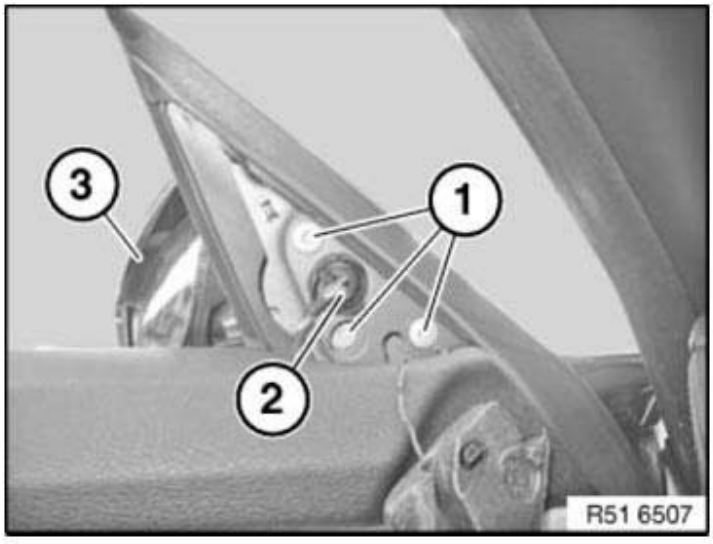


Fig. 86: Identifying Mirror, Plug With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement only

Due to the thread-tapping screws, the tightening torque of the new mirror is increased by 2 Nm.

Tightening torque **51 16 1AZ** .

Installation:

Check function.

51 16 080 REMOVING AND INSTALLING OR REPLACING SUN VISOR AND LEFT OR RIGHT COUNTER SUPPORT

Release screws (1) and remove counter support (2) in direction of arrow.

Installation:

Make sure fixtures (3) of sun visor and counter support (2) are correctly seated in mountings.

Check function.

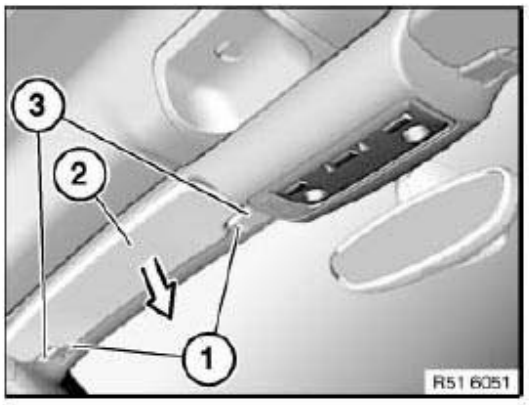


Fig. 87: Removing Counter Support
Courtesy of BMW OF NORTH AMERICA, INC.

51 16 366 REMOVING AND INSTALLING RIGHT GLOVEBOX WITH HOUSING

Necessary preliminary tasks

- Remove **LOWER INSTRUMENT PANEL TRIM**

Release screws (1).

Remove lower glovebox trim (2).

Remove side trim (3).

- If necessary, remove **AIRBAG FRONT PASSENGER KNEE PROTECTION**

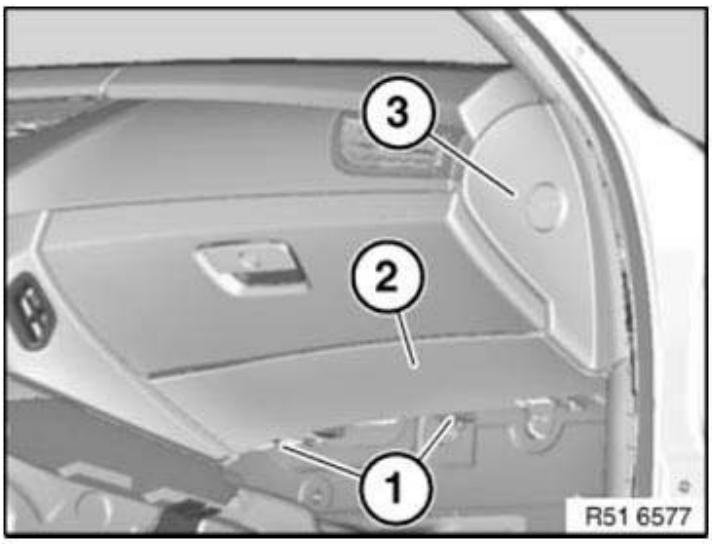


Fig. 88: Identifying Lower Glovebox Trim With Side Trim And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: To be able to show screw position better, graphic shows glovebox cover removed.

Release screws (1).

Remove glovebox (2).

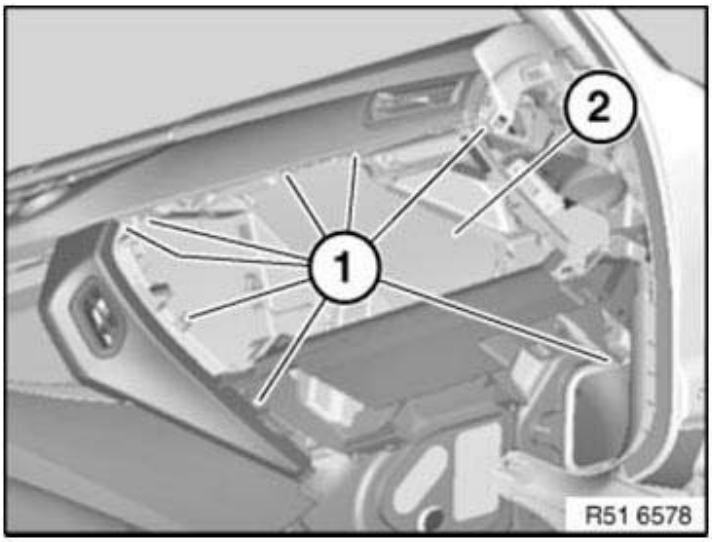


Fig. 89: Identifying Lower Glovebox Trim With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 16 212 REMOVING AND INSTALLING TRIM FOR STORAGE COMPARTMENT

Lever off gaiter trim (1) upwards with special tool 00 9 317 .

Lever off trim for storage compartment (2) towards top.

Unlock cable connections underneath and disconnect.

Remove trim for storage compartment (2).

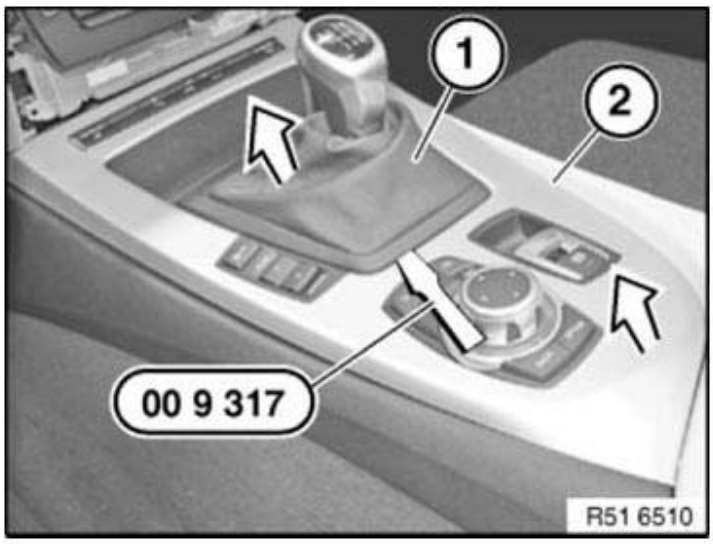


Fig. 90: Removing Gaiter Trim Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 314 REMOVING AND INSTALLING/REPLACING CARPET FOR PASSENGER COMPARTMENT

Necessary preliminary tasks:

- Remove **SEATS**
- Remove footwell side trim panels See **5143075 REMOVING AND INSTALLING/REPLACING SIDE TRIM PANEL, FOOTWELL, ON A-PILLAR, RIGHT** or **5143070 REMOVING AND INSTALLING/REPLACING SIDE TRIM PANEL, FOOTWELL, ON A-PILLAR, LEFT** on left and right
- Remove **HEATER/AIR CONDITIONER**
- Remove **ACCELERATOR PEDAL MODULE**
- Remove **LOWER PARTITION TRIM PANEL**

Replacement

Unclip footwell net (1) on front passenger side.

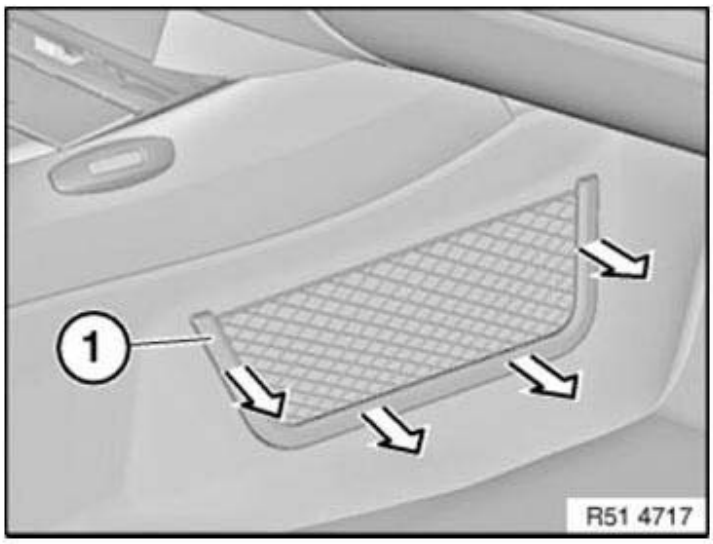


Fig. 91: Removing Footwell Net
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, replace damaged retaining clips.

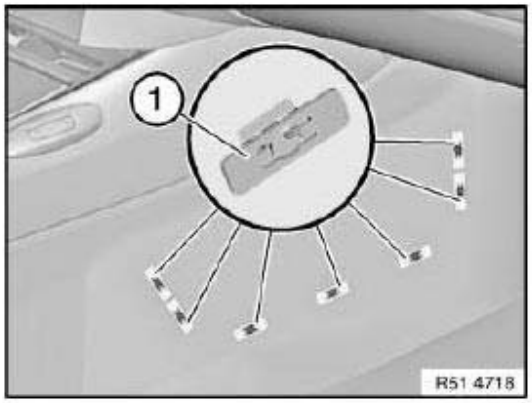


Fig. 92: Identifying Damaged Retaining Clips
Courtesy of BMW OF NORTH AMERICA, INC.

51 16 206 REMOVING AND INSTALLING/REPLACING CENTRE ARMREST

Necessary preliminary tasks

- Remove **CENTRE CONSOLE** .

If telephone optional equipment installed:

- Remove **EJECT BOX**

Raise mat insert (1) with suitable tool and remove.



Fig. 93: Raising Mat Insert
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and remove storage compartment (2).

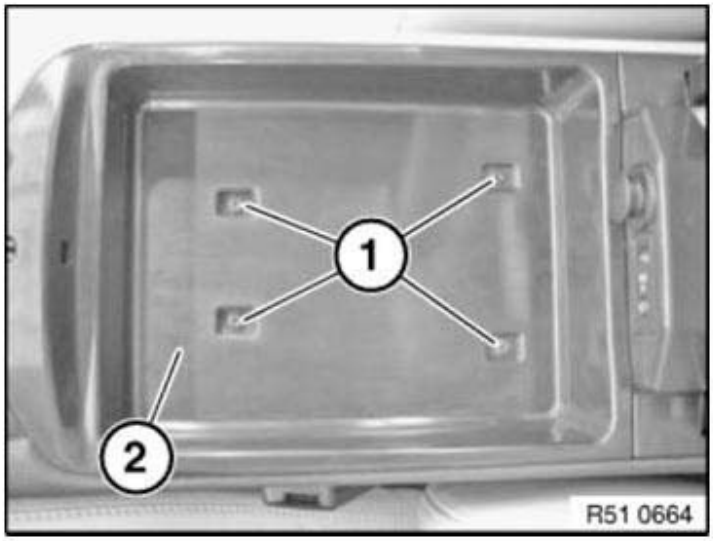


Fig. 94: Identifying Storage Compartment With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

If telephone optional equipment installed

Raise both mat inserts (1) with suitable tool and remove.

Installation:

Mat inserts (1) are installation-encoded (2).

Note different diameters when installing.

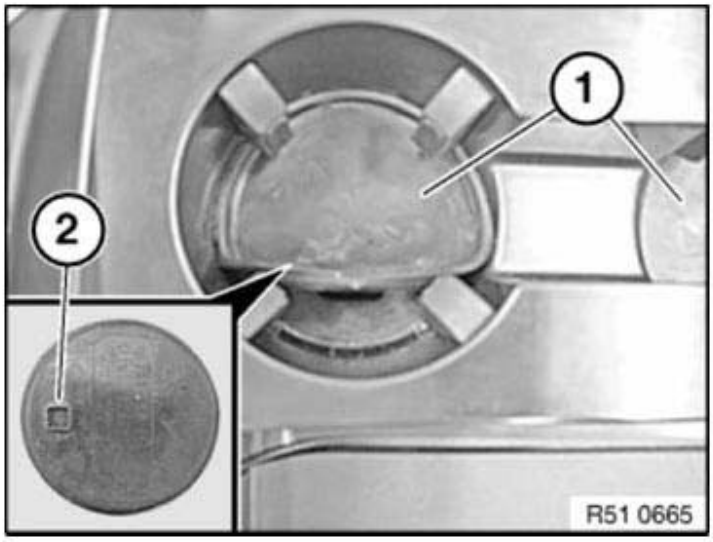


Fig. 95: Identifying Installation-Encoded Mat Inserts
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Remove storage compartment (2) from centre console (3).

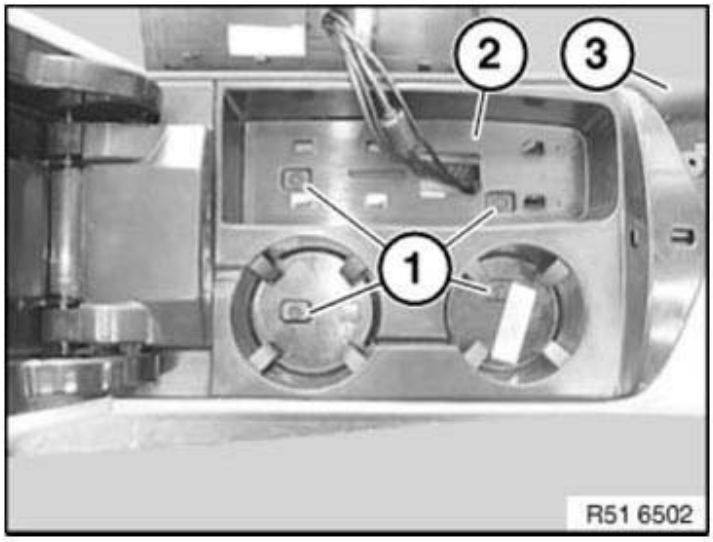


Fig. 96: Identifying Storage Compartment, Centre Console With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) from underside of centre console.

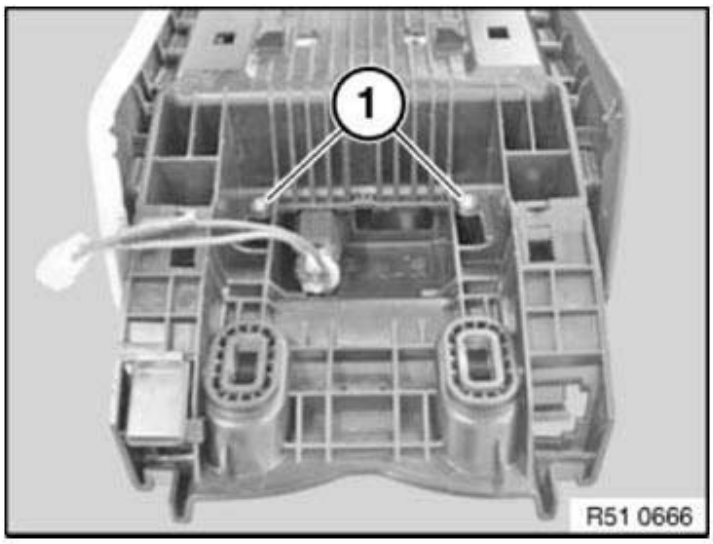


Fig. 97: Identifying Centre Console Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Raise cover (1) slightly and remove.

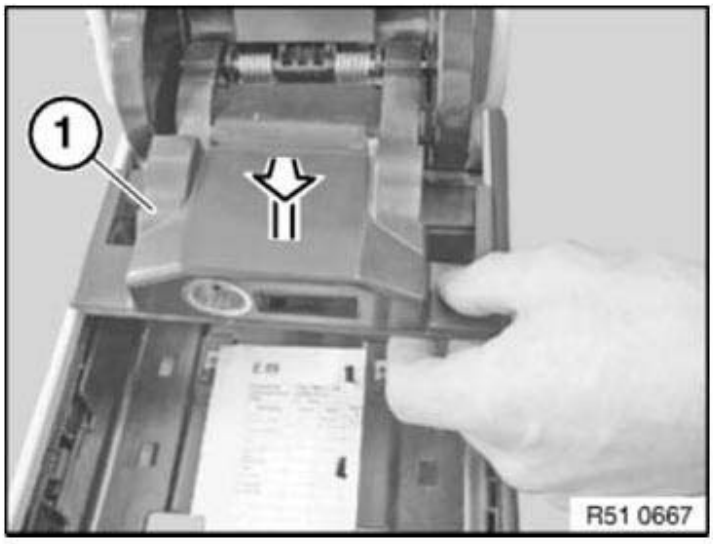


Fig. 98: Raising Cover
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Centre armrest shown closed for purposes of clarity.

WARNING: Spring (1) is under pre-tension.

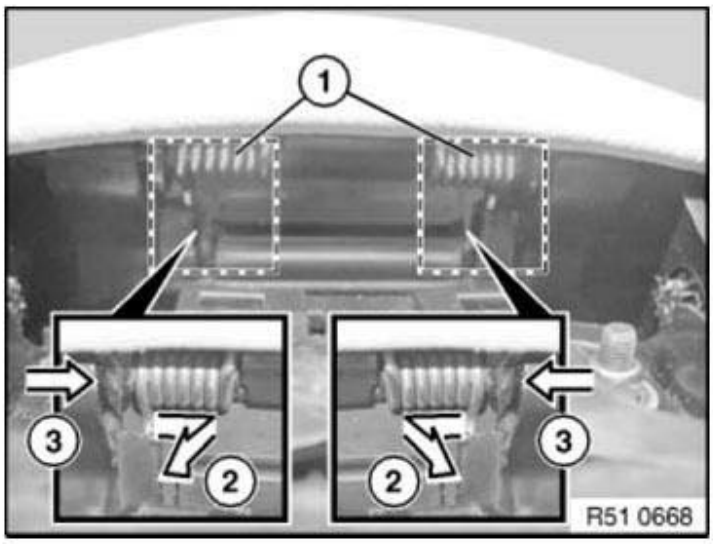


Fig. 99: Detaching Spring Legs Of Left And Right Side
Courtesy of BMW OF NORTH AMERICA, INC.

Open centre armrest fully to minimize spring pre-tension.

Unhook spring legs on left and right in direction of arrow (2) from housing body, then slide spring coil in each case in direction of arrow (3) from hinge axes. Use a suitable tool for this.

Pull spring with spring retainer (2) towards rear out of centre armrest (1). If necessary, fold centre armrest (1) shut for this purpose.

Installation:

Spring retainer (2) must lock correctly in recess in centre armrest (1).

The spring legs must be engaged up to the stop in the centre console housing.

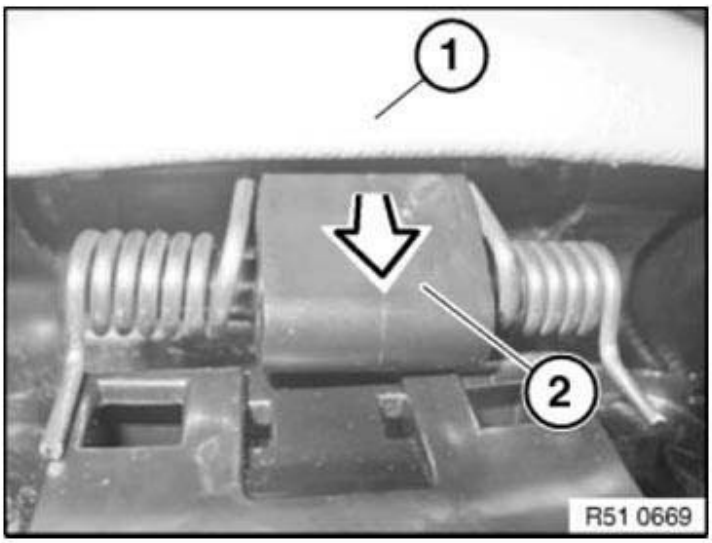


Fig. 100: Pulling Spring With Spring Retainer
Courtesy of BMW OF NORTH AMERICA, INC.

Pull hinge axes (2) in direction of arrow in inward direction out of bearing supports and remove centre armrest (1).

Installation:

Toothing of hinge axes points inwards.

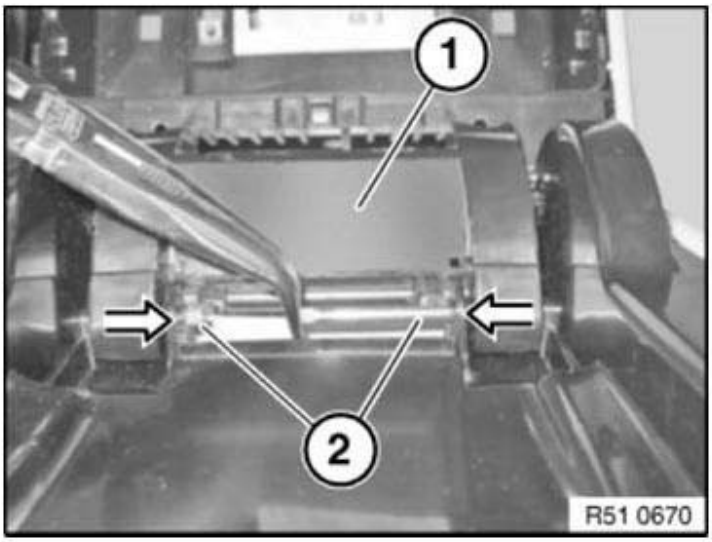


Fig. 101: Pulling Hinge Axes
Courtesy of BMW OF NORTH AMERICA, INC.

51 16 383 REMOVING AND INSTALLING/REPLACING DAMPER FOR GLOVEBOX

Unclip damper (1).

Turn damper (1) through 90° to right and remove.

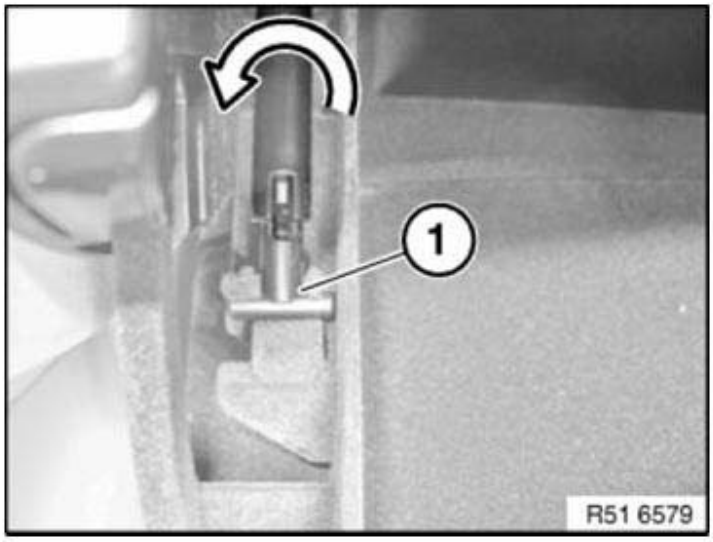


Fig. 102: Turning Damper
Courtesy of BMW OF NORTH AMERICA, INC.

51 16 365 REMOVING AND INSTALLING/REPLACING GLOVEBOX COVER

Necessary preliminary tasks

- Remove **RIGHT GLOVEBOX WITH HOUSING**
- Remove **DAMPER FOR GLOVEBOX**

Release screws (1).

Remove glovebox housing (2).

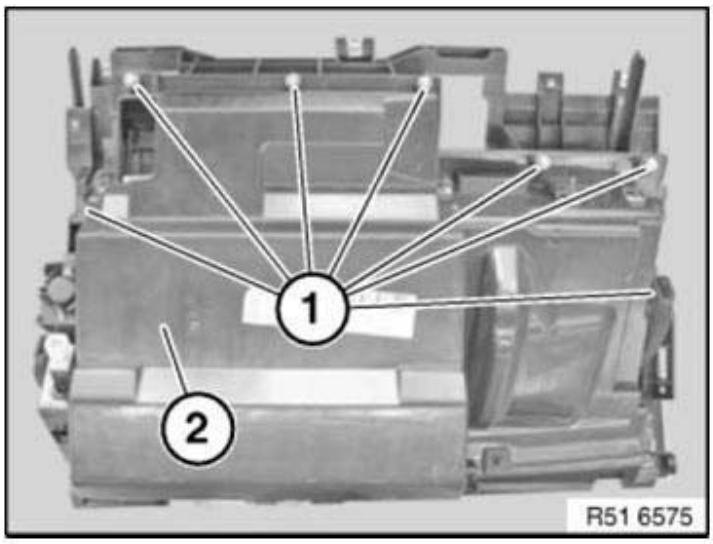


Fig. 103: Identifying Glovebox Housing With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Drive out hinge axle (1) on left and right with a suitable tool.

Remove glovebox cover (2).

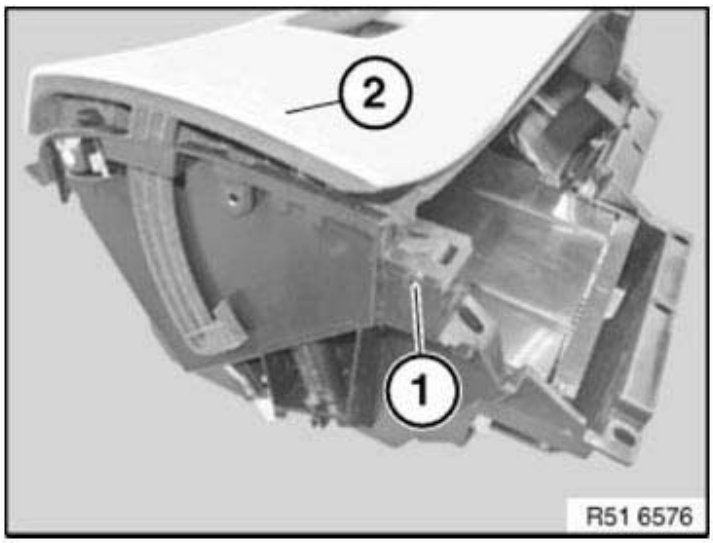


Fig. 104: Identifying Glovebox Cover And Hinge Axle
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

- Remove **GLOVEBOX LOCK**

51 16 040 REMOVING AND INSTALLING/REPLACING HOUSING ON LEFT OR RIGHT OUTSIDE

MIRROR

Necessary preliminary tasks

- Remove **MIRROR GLASS FOR MIRROR**

Using special tool 00 9 317 , press mirror housing (1) off mirror and at same time bend open retaining hooks (3) with suitable tool.

In so doing, always position special tool 00 9 317 close to retaining hooks.

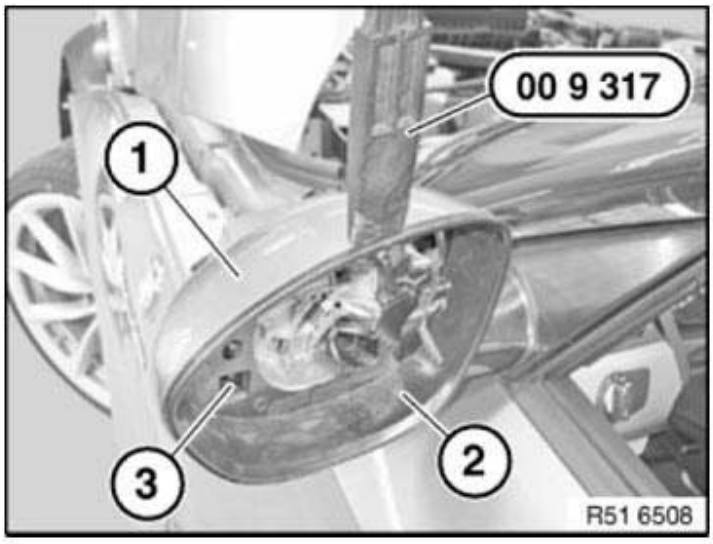


Fig. 105: Pressing Mirror Housing Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Catches (1) on mirror housing (2) must not be damaged.

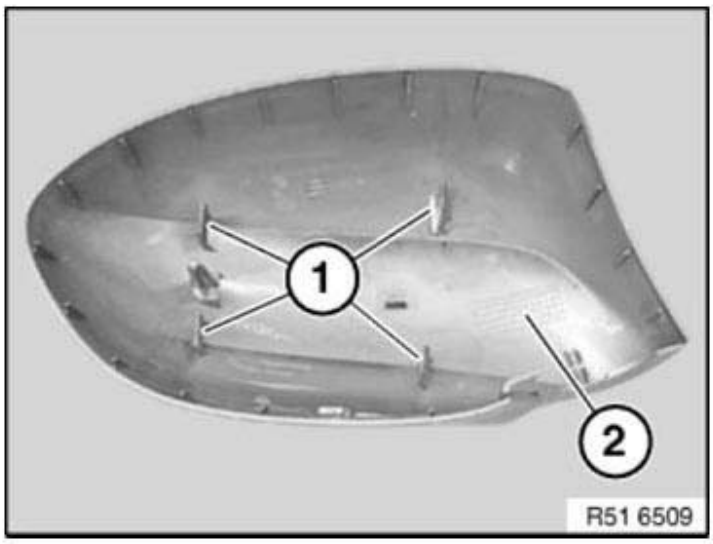


Fig. 106: Identifying Catches On Mirror Housing
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 261 REMOVING AND INSTALLING/REPLACING LEFT INSTRUMENT PANEL TRIM

Unclip instrument panel cover (1) in direction of arrow.

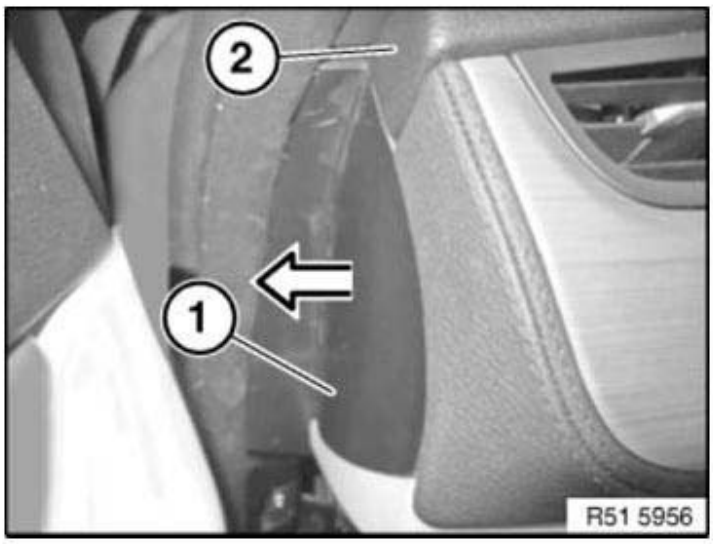


Fig. 107: Removing Instrument Panel Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) on trim (2).

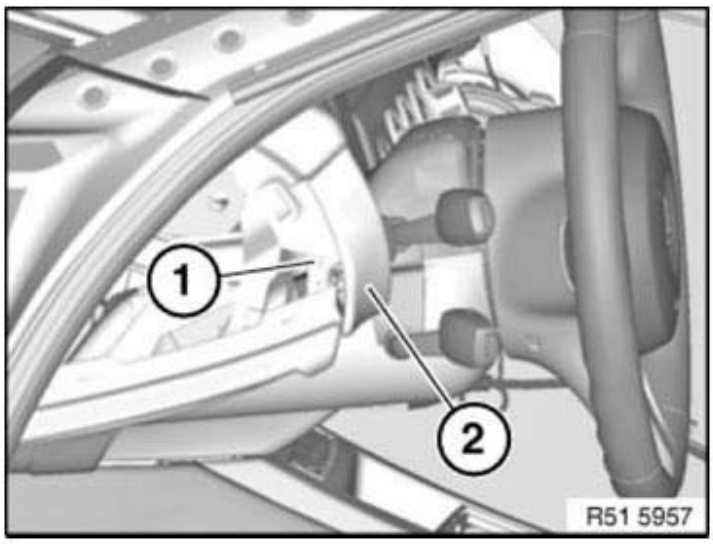


Fig. 108: Identifying Screw On Trim
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Tape off working area. Risk of damage!

Painted trims are particularly sensitive to damage.

Lever out trim (1) with special tool 00 9 317 at mounting points (2) and remove.

Unlock plug connection behind and disconnect.

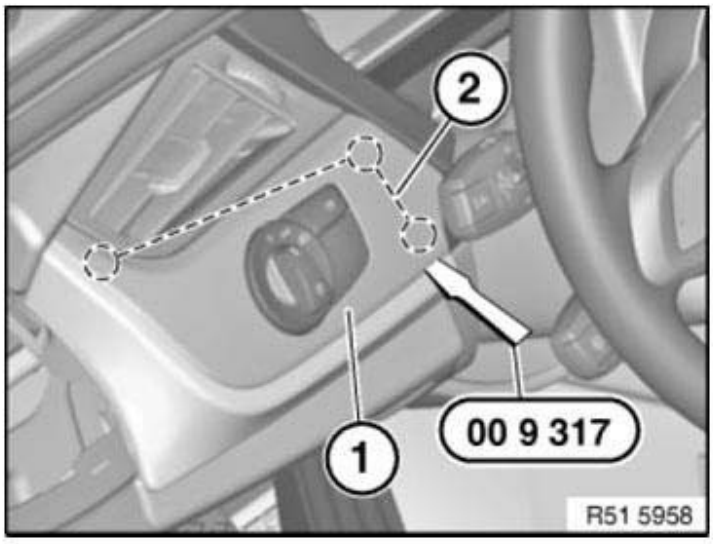


Fig. 109: Removing Trim Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, replace retainers (1).

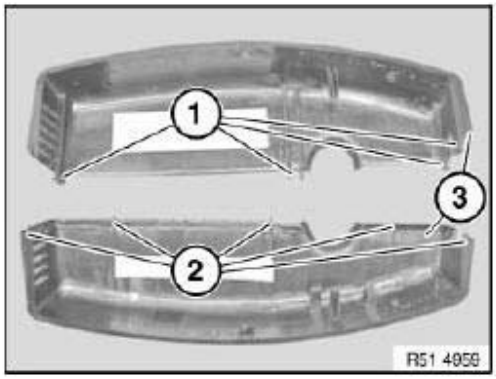


Fig. 110: Identifying Retainers
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

Remove **LIGHT SWITCH UNIT** .

51 16 340 REMOVING AND INSTALLING/REPLACING LOCK FOR RIGHT GLOVEBOX

Open glove compartment (2).

Release screws (1) on inside of glovebox (2).

Remove lock from glovebox (2).

Installation:

Carry out function check with glovebox open.

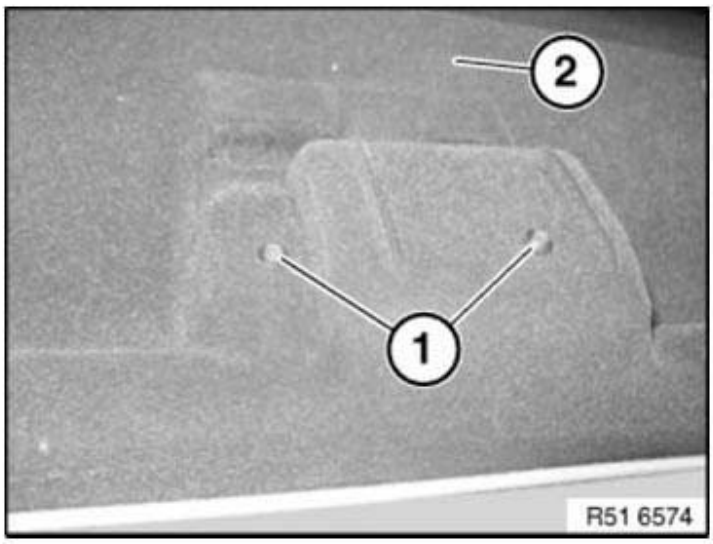


Fig. 111: Identifying Screws On Inside Of Glovebox
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

Remove lock barrel.

To do so, remove upper lock section (1) by expanding catches (2) with a suitable tool.

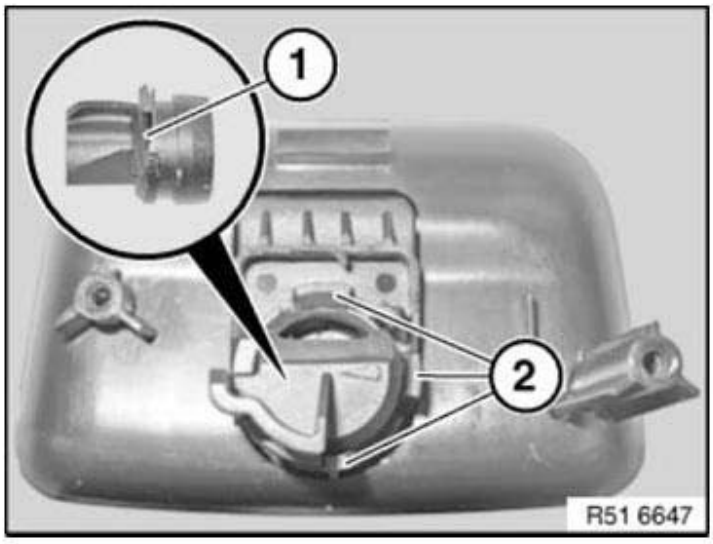


Fig. 112: Identifying Upper Lock Section With Catches
Courtesy of BMW OF NORTH AMERICA, INC.

Slide lock barrel (2) out of glovebox lock (3) by expanding catches (1) with a suitable tool.

NOTE: The emergency key in the lock barrel prevents the lock wedges from falling out.

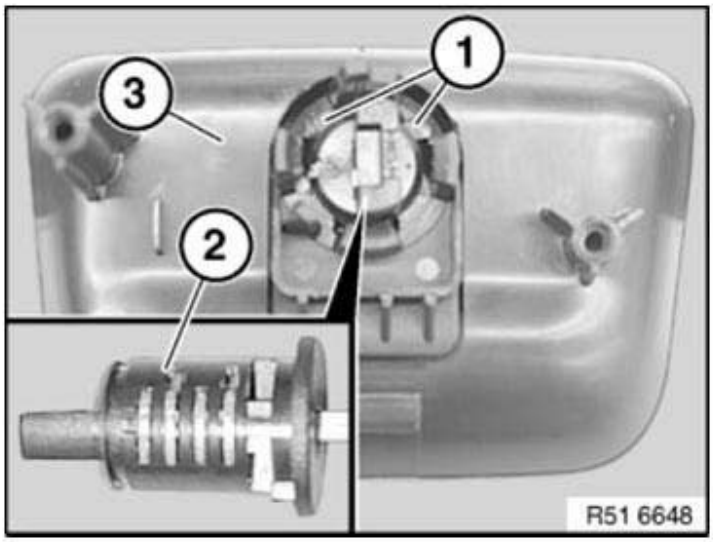


Fig. 113: Identifying Lock Barrel With Catches And Glovebox Lock
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 266 REMOVING AND INSTALLING/REPLACING RIGHT INSTRUMENT PANEL TRIM

IMPORTANT: Risk of damage!

A hard disk is installed in the Car Information Computer (CIC).

Carry out mechanical work on the CIC and adjacent components with care.

Avoid subjecting the CIC to shaking/shocks.

Necessary preliminary tasks

(Only with Radio Business or Radio Professional equipment specification)

- Remove **RADIO RECEIVER**

NOTE: Carry out following work step only in case of optional equipment with Car Information Computer (CIC)

Unclip trim (1) with special tool 00 9 323 .



Fig. 114: Removing Trim Using Special Tool (00 9 323)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: For clearer illustration, shown with front trim on CIC removed.

Release screws (1).

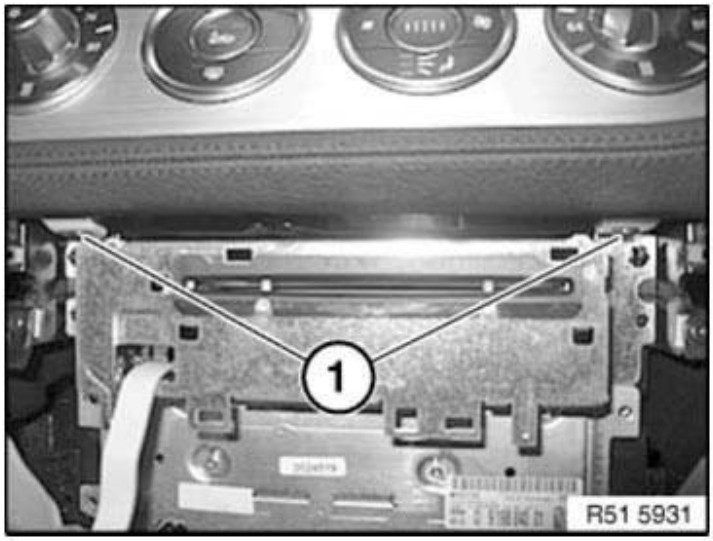


Fig. 115: Identifying Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Open glovebox cover (1).

Release screws (2) at marked points in upper area of glovebox.

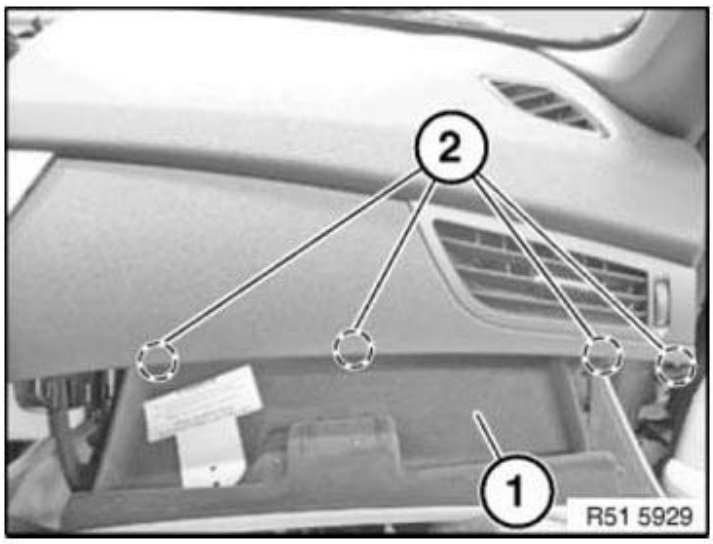


Fig. 116: Identifying Glovebox Cover With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out insertion slot (1) with special tool 00 9 323 and remove.

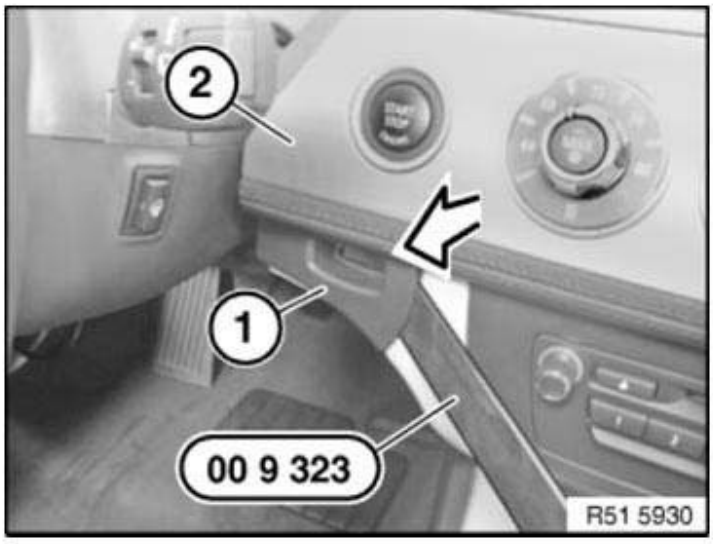


Fig. 117: Removing Insertion Slot Using Special Tool (00 9 323)
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw behind.

Carefully lever out instrument panel trim (2) towards front.

Unlock associated plug connections and disconnect.

Remove instrument panel pipe trim (2).

Replacement

- Remove **CONTROL PANEL FOR HEATING - A/C SYSTEM**
- Remove **START/STOP SWITCH**

61 31 172 REMOVING AND INSTALLING/REPLACING SWITCH FOR ELECTROMECHANICAL PARKING BRAKE

Necessary preliminary tasks:

- **DISCONNECT NEGATIVE BATTERY LEAD** (to avoid fault memory entries)
- Remove **TRIM FOR STORAGE TRAY**

Release screws (1).

Remove switch for electromechanical parking brake (2) from trim for storage compartment (3).

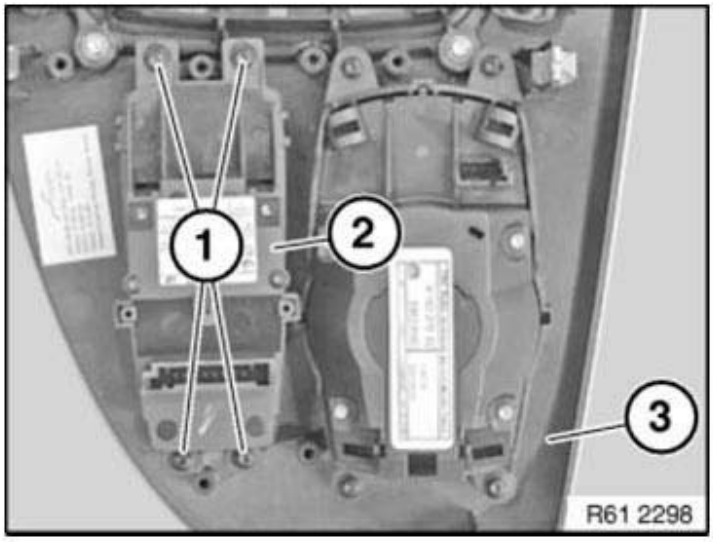


Fig. 118: Identifying Electromechanical Parking Brake, Storage Compartment And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 16 368 REPLACE RIGHT GLOVE BOX WITH HOUSING

Necessary preliminary tasks

- Modify glove box lid See **5145195 REMOVING AND INSTALLING/REPLACING TRIM FOR INSTRUMENT PANEL, BOTTOM RIGHT** or **5116365 REMOVING AND INSTALLING/REPLACING GLOVEBOX COVER**
- Modify footwell light

  If the replacement smart card (supplied with the new glove box) does not correspond to the original

smart card of the vehicle, then

- the original smart card should continue to be used.
- the replacement smart card should be disposed.

51 16 166 REPLACING CENTRE CONSOLE

Necessary preliminary tasks

- Remove **ACTUATOR DRIVE IN STORAGE COMPARTMENT**

Additionally if telephone optional equipment installed:

- Remove **EJECT BOX**

Raise mat insert (1) with suitable tool and remove.

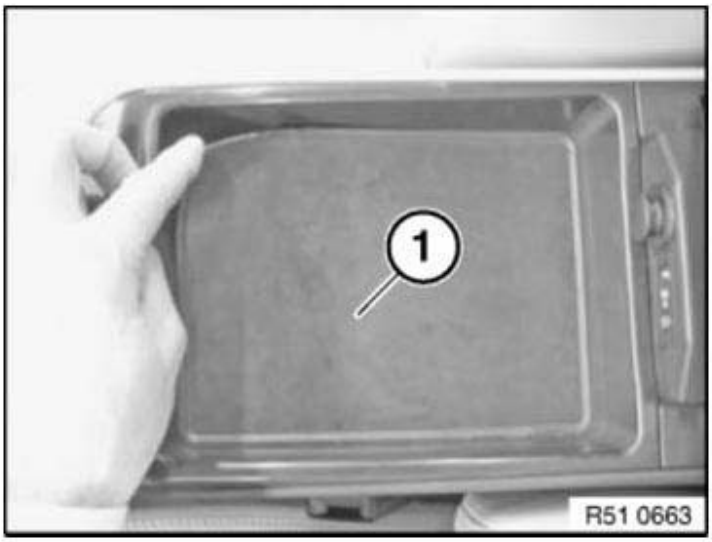


Fig. 119: Raising Mat Insert
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and remove storage compartment (2).

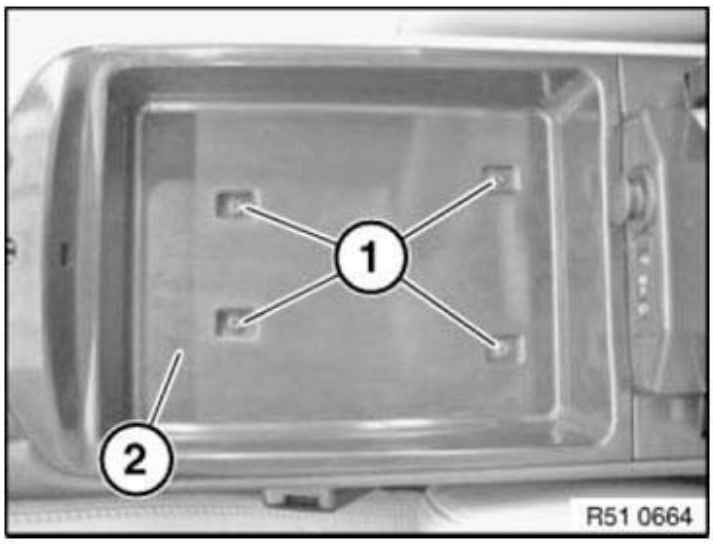


Fig. 120: Identifying Storage Compartment With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

If telephone optional equipment installed

Raise both mat inserts (1) with suitable tool and remove.

Installation:

Mat inserts (1) are installation-encoded (2). Note different diameters when installing.

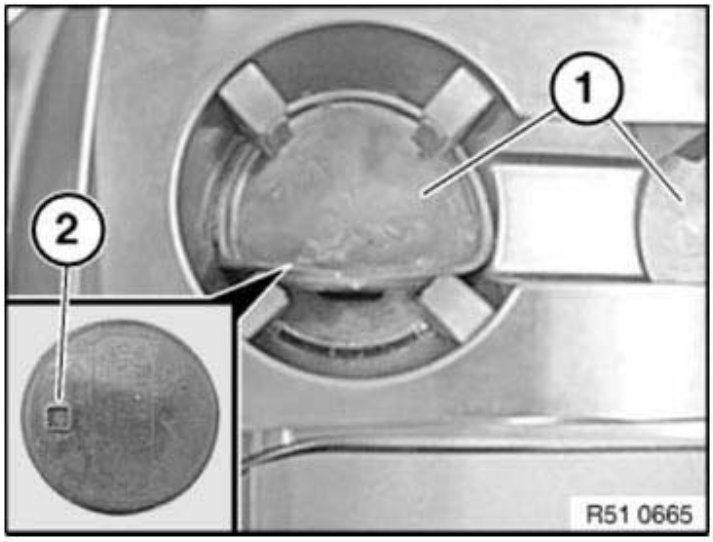


Fig. 121: Identifying Installation-Encoded Mat Inserts
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Remove storage compartment (2) from centre console (3).

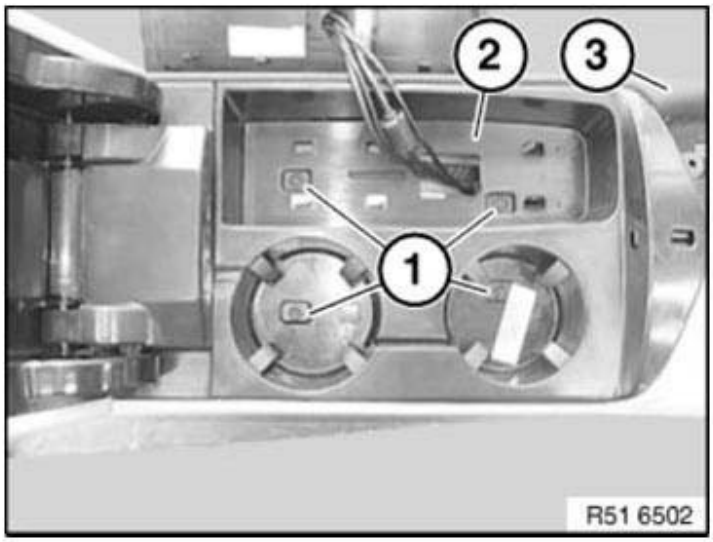


Fig. 122: Identifying Storage Compartment, Centre Console With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Remove trim for drinks holder (2) and holder for drinks holder (2) from centre console (3).

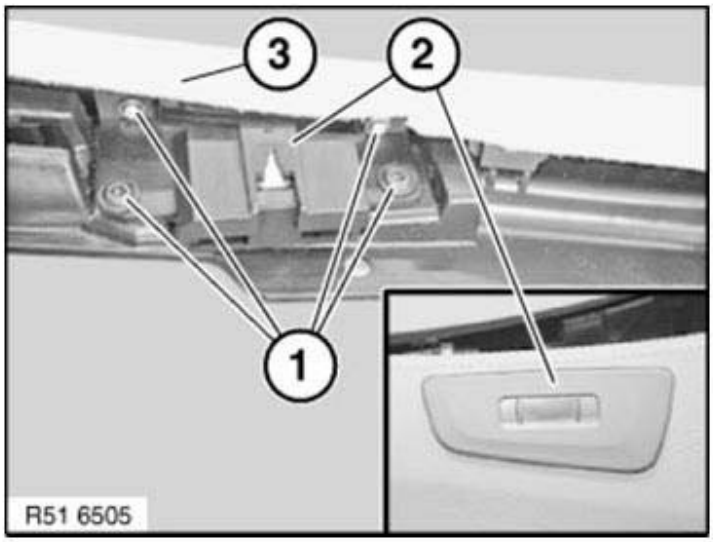


Fig. 123: Identifying Drinks Holder With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 ... REPLACING DEFROSTER COVERS

When working on trim panel components, make sure that the sensitive surfaces are not scratched or damaged.

Carefully lever out and remove speaker cover (1) using special tool 00 9 325 .

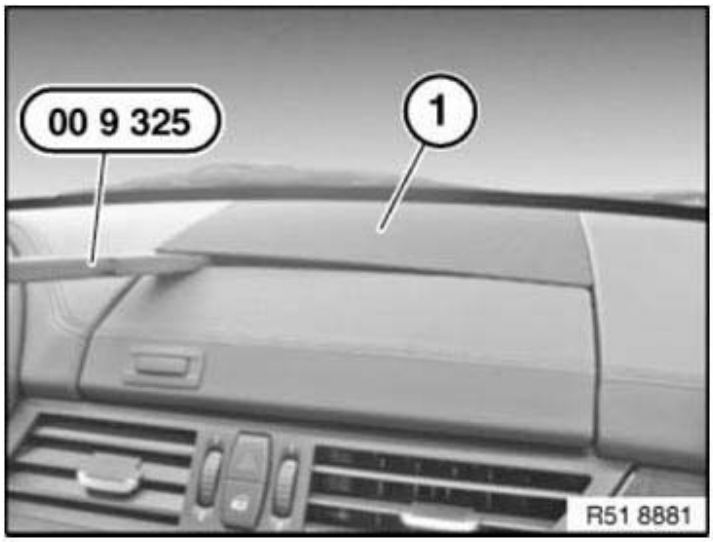


Fig. 124: Removing Speaker Cover Using Special Tool (00 9 325)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Retaining clips (1) on speaker cover (2) must be correctly seated on associated lugs and must not be damaged.

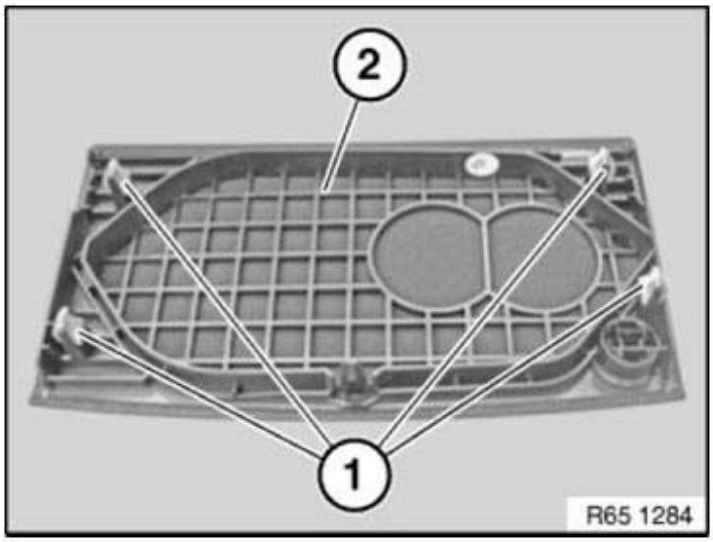


Fig. 125: Identifying Retaining Clips On Speaker Cover
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Make sure that no parts fall into the air duct (risk of noise).

Using special tool 00 9 327 , first lever out right defroster cover (1) in the centre and release inner catch.

If necessary, twist special tool 00 9 327 as shown in order to do so.

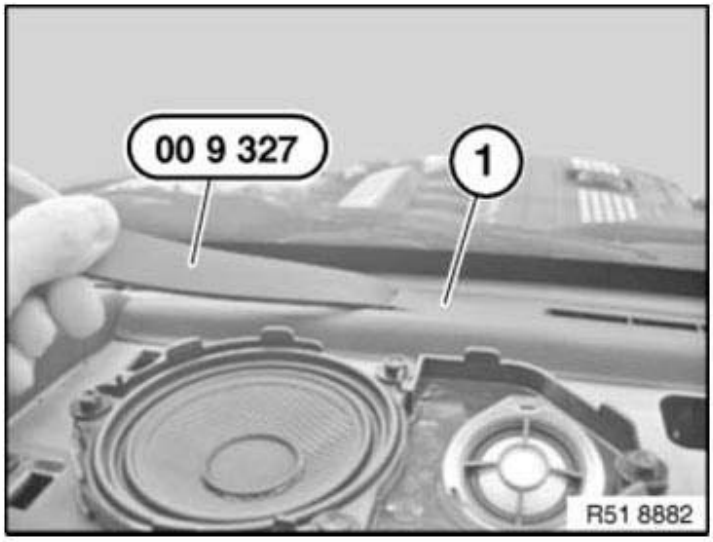


Fig. 126: Removing Right Defroster Cover Using Special Tool (00 9 327)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The catch positions (arrow) can be determined by counting off the ribs (2) on the defroster cover (1) in each case.

Lever out all other catches from the inside outwards using special tool 00 9 327 .

To do so, carefully lever up defroster cover (1) in the centre using special tool 00 9 325 (see illustration).

Remove defroster cover.

Repeat operation on left defroster cover.

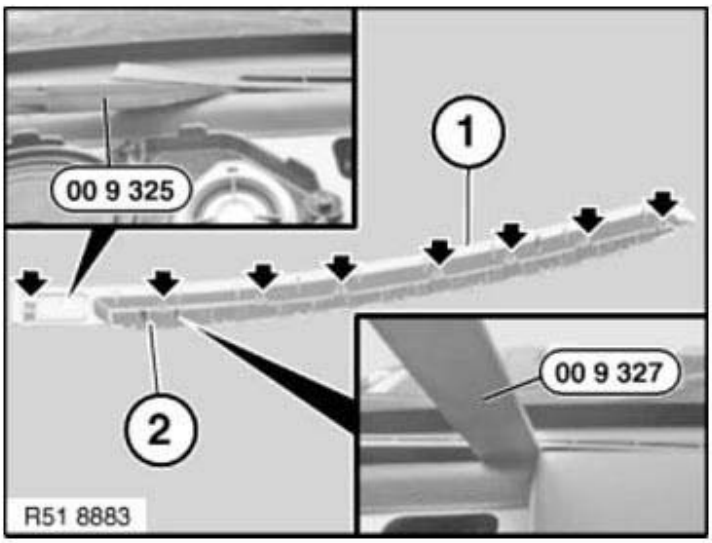


Fig. 127: Removing Catches Using Special Tool (00 9 327)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Fit left defroster cover first.

Leather interior only:

- A2Apply 2-component Araldite 2021 TN 2 149 520 adhesive drops (sourcing reference BMW parts service) to marked points (2) of the (1) left and right defroster panel.
- Read and comply with safety data sheet!

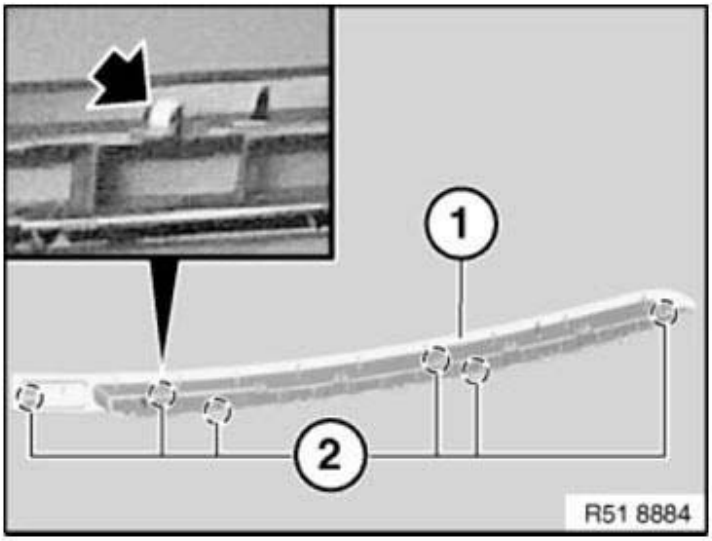


Fig. 128: Identifying Araldite 2021 TN 2 149 520 Adhesive Drops Applying Areas

Courtesy of BMW OF NORTH AMERICA, INC.

51 16 026 REPLACING MIRROR GLASS

WARNING: If mirror glass is damaged:

Wear protective goggles and tearproof gloves during the removal operation.

Risk of injury by flaking-off glass splinters.

The right side is removed in the same way as the left side.

Tilt mirror glass (1) upwards.

Bend visible wire ends (2) with a suitable tool in each case towards middle and then move in direction of arrow and disengage.

Release mirror glass (1) by tilting and remove.

NOTE: Look out for possible damage to mirror by tool.

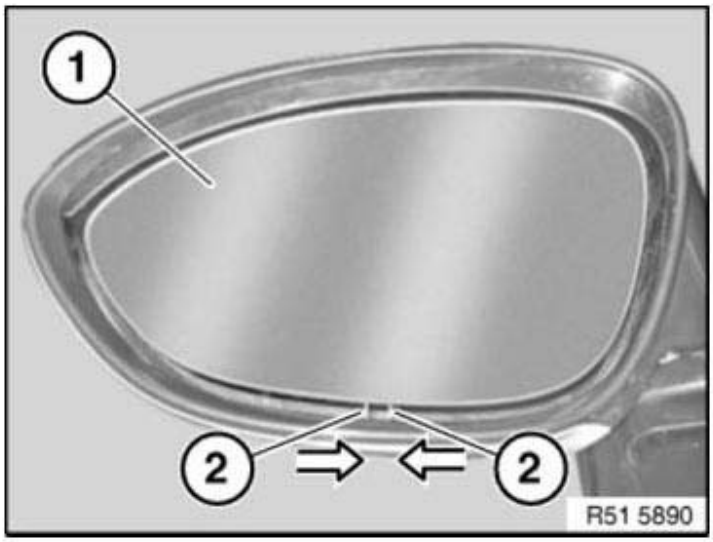


Fig. 129: Moving Visible Wire Ends
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connections (1) for mirror heating from mirror glass (2).

If necessary, disconnect plug connection for automatic anti-glare control from mirror glass (2).

Remove wire (3) from mirror glass (2).

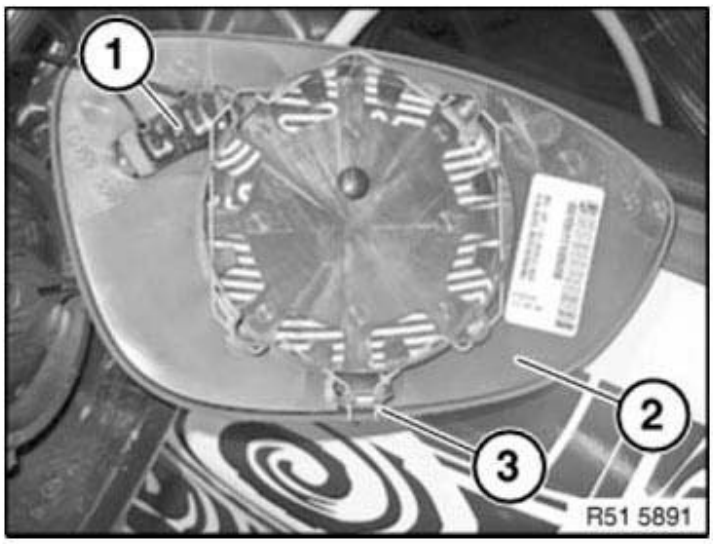


Fig. 130: Identifying Plug Connection, Mirror Glass And Wire
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Following parts of mirror glass must not be damaged or missing:

- Connections for mirror heating
- If necessary: guides for automatic anti-glare control cable
- Guides for spring wire clip
- Spring wire clip

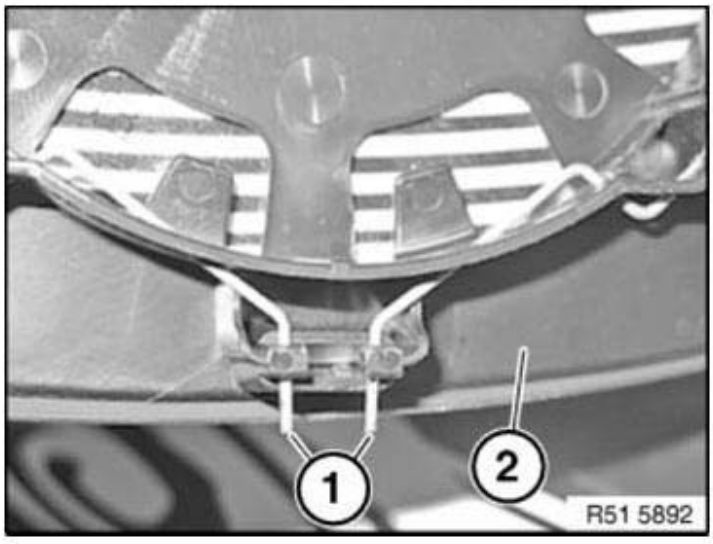


Fig. 131: Identifying Mirror Glass With Spring Wire Clip Ends
Courtesy of BMW OF NORTH AMERICA, INC.

Connect plug connection to mirror glass (2).

Clip both spring wire clip ends (1) into mirror glass (2).

Clip mirror glass (2) into mirror housing.

NOTE: Check function.

51 16 213 REPLACING TRIM FOR STORAGE COMPARTMENT

Necessary preliminary tasks

- Remove **TRIM FOR STORAGE COMPARTMENT**
- Remove **SWITCH FOR PARKING BRAKE**
- Remove **CONTROLLER**
- Remove **DRIVING DYNAMICS SWITCH**
- Remove **ROOF OPERATING UNIT**

Unscrew storage compartment (1) from trim for storage compartment (2).

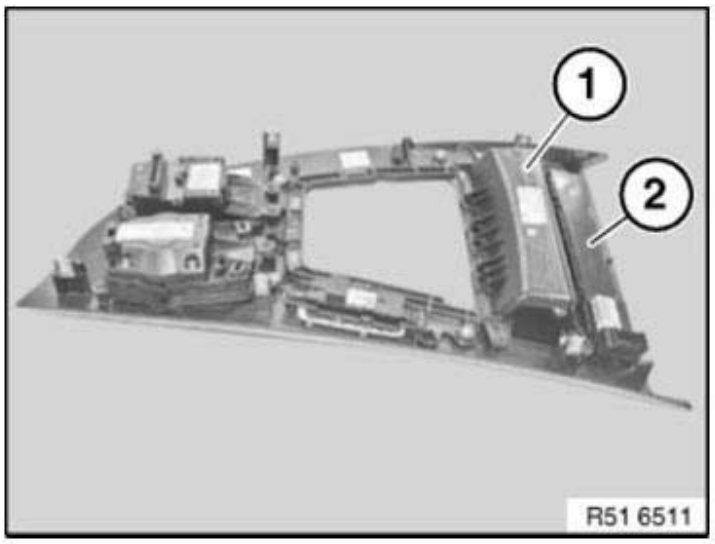


Fig. 132: Identifying Storage Compartment
Courtesy of BMW OF NORTH AMERICA, INC.

5117 LIDS

51 21 ... REMOVING AND INSTALLING/REPLACING STORAGE COMPARTMENT IN LEFT OR RIGHT FRONT DOOR

Necessary preliminary tasks

- Remove **FRONT DOOR TRIM PANEL**

Release screws (1) on door trim panel (2).

Open storage compartment and remove.

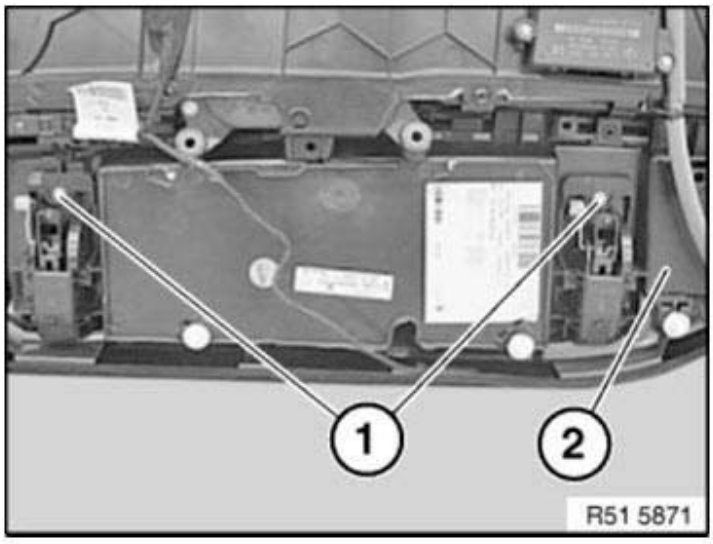


Fig. 133: Identifying Screws On Door Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

41 63 002 REPLACING COVER BOWL

Necessary preliminary tasks

Remove **FLAP FOR FUEL FILLER NECK (1)** .

Turn cover (1) through approx. 90° and lever out in direction of arrow.

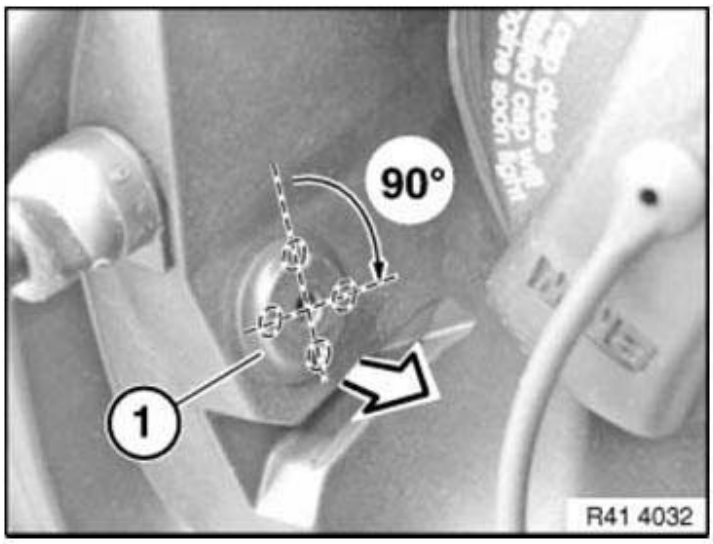


Fig. 134: Removing Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1).

Press retaining strap (1) inwards and remove.

Remove fuel tank cap.

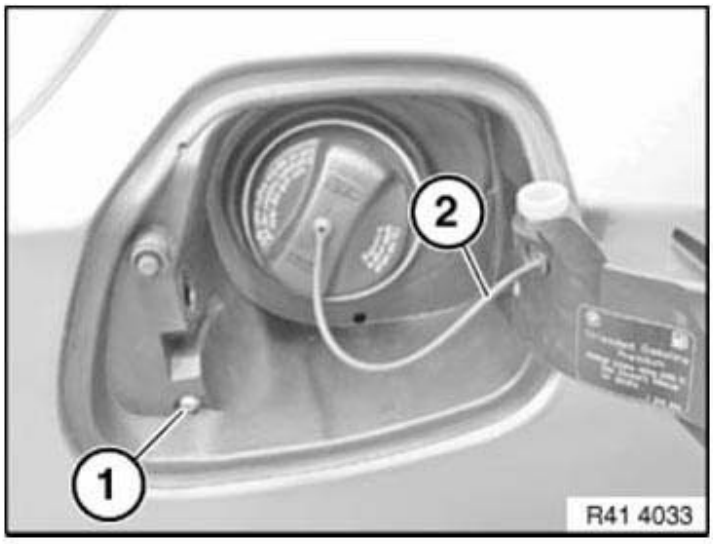


Fig. 135: Identifying Retaining Strap With Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Press rear cover housing in direction of arrow downwards a little and then pull outwards.

In so doing, lift seal (1) over fuel filler neck ().

If necessary, apply suitable antiseize agent between seal and fuel filler neck.

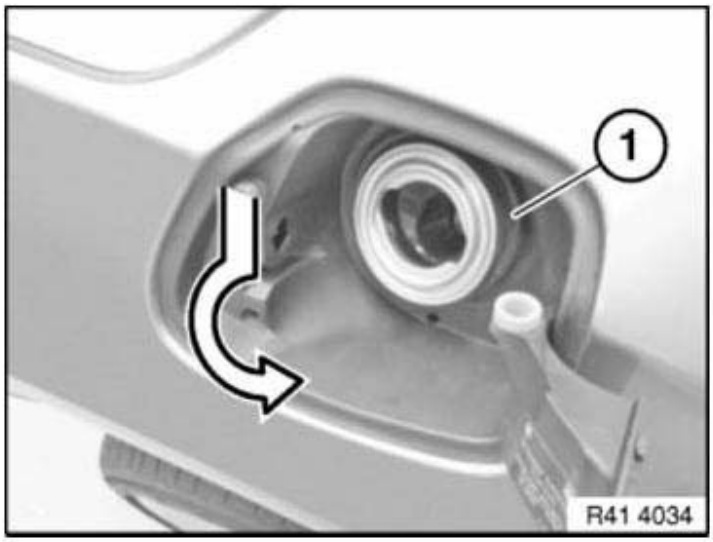


Fig. 136: Pressing Rear Cover Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Locks (1) on left/right of cover (2) must not be damaged.

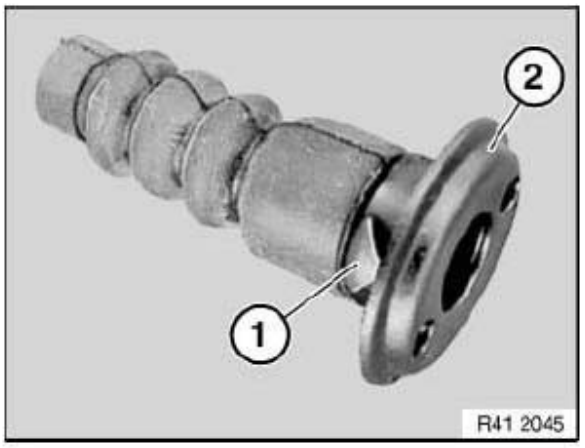
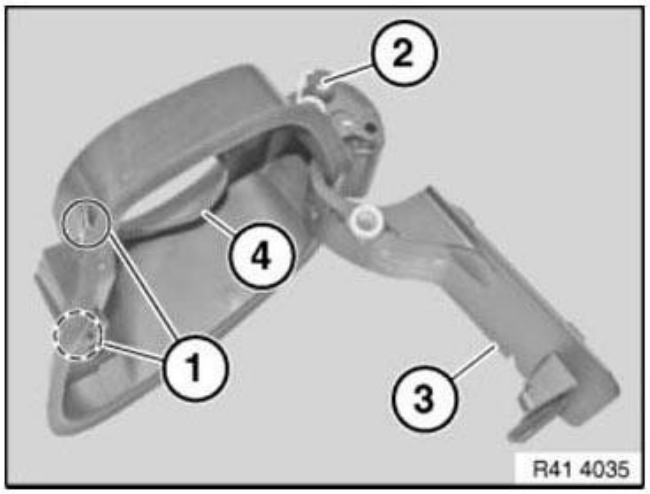


Fig. 137: Identifying Locks And Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Following parts of cover housing not be damaged or missing:

If necessary, apply suitable antiseize agent to seal and fuel filler neck.



1. Catches, top/bottom
2. Spring
3. Catch, fuel tank flap
4. Seal

Fig. 138: Identifying Catches, Spring And Seal
Courtesy of BMW OF NORTH AMERICA, INC.

5121 FRONT DOOR LOCKS, HANDLES, FITTINGS

51 21 004 ADJUSTING FRONT LEFT OR RIGHT DOOR LOCK STRIKER

Adjusting door lock striker, see **ADJUSTING FRONT DOOR** .

51 21 280 REMOVING AND INSTALLING OR REPLACING DOOR BRAKE ON LEFT OR RIGHT FRONT DOOR

Necessary preliminary tasks

- Close door windows
- Remove **FRONT DOOR TRIM**
- Remove **SOUND INSULATION** in front area

Release screws (1).

Tightening torque **51 21 13AZ** .

Remove H-strut (2).

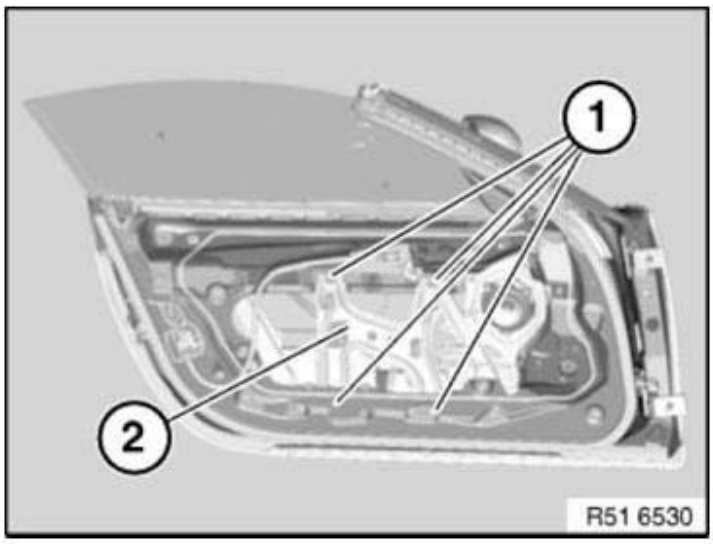


Fig. 139: Identifying H-Strut And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 21 16AZ** .

Remove adapter for door speaker (2).

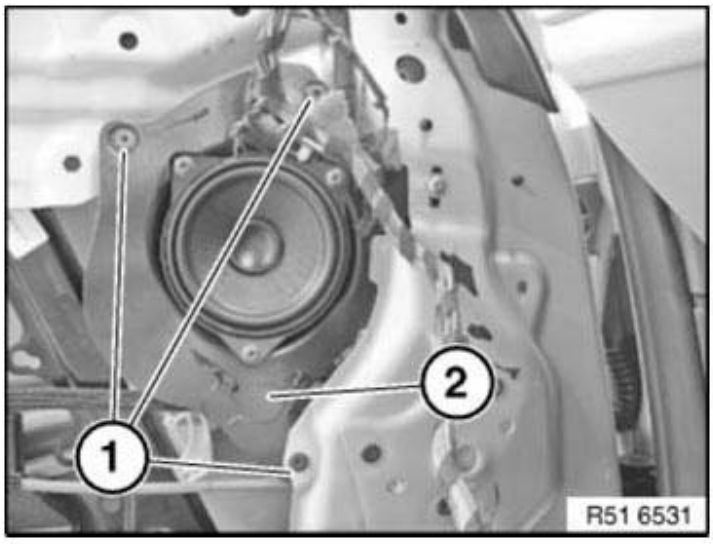


Fig. 140: Identifying Door Speaker And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 21 17AZ** .

Remove power window motor (2) from pole retainer (3).

Power window motor (2) remains in door (4).

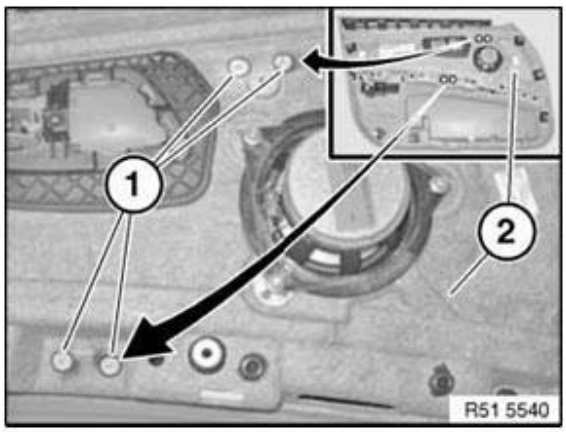


Fig. 141: Identifying Power Window Motor, Pole Retainer, Door With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Secure front door against falling closed.

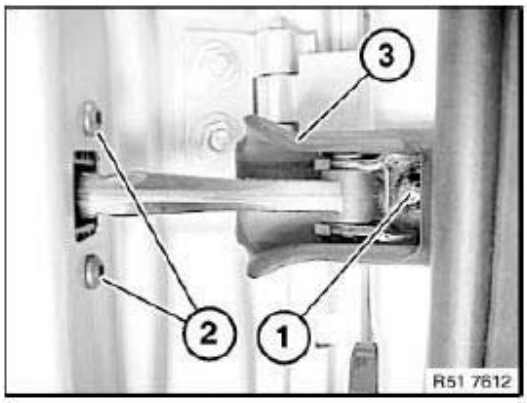


Fig. 142: Identifying Seal And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1).

Tightening torque **51 21 9AZ** .

Unfasten screws (2).

Tightening torque **51 21 10AZ** .

Remove seal (3).

Installation:

Seal (3) must not be damaged.

Remove door retainer (1) via cutout (2).

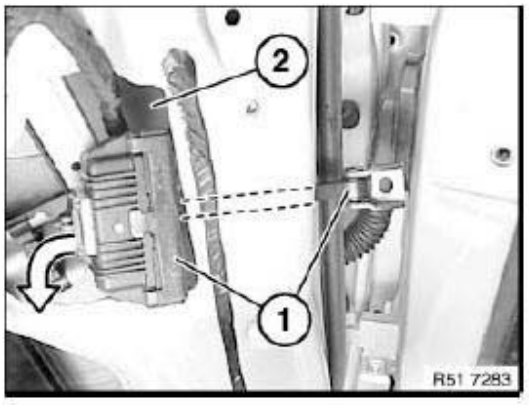


Fig. 143: Removing Door Retainer
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Following parts of door retainer (3) must not be damaged:

1. Hinge
2. Thread

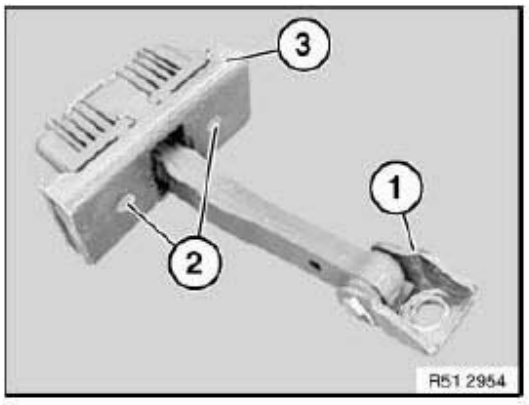


Fig. 144: Identifying Door Retainer With Hinge And Thread
Courtesy of BMW OF NORTH AMERICA, INC.

51 21 225 REMOVING AND INSTALLING OR REPLACING INSIDE DOOR OPENER IN LEFT OR RIGHT FRONT DOOR

Necessary preliminary tasks

- Remove **FRONT DOOR TRIM PANEL**

Release screws (1).

Unlock and disconnect plug (2).

Unhook Bowden cable (3) from door trim panel (4).

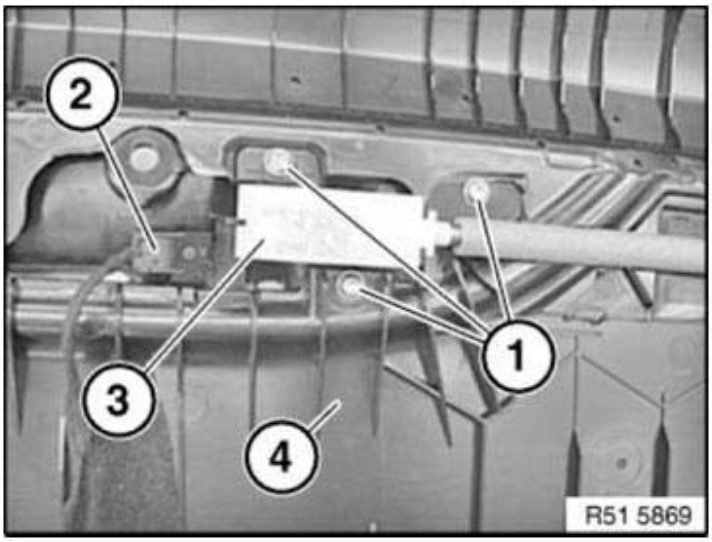


Fig. 145: Identifying Bowden Cable, Door Trim Panel With Plug Connection And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Snap trim with inner door opener (2) out of door trim panel (1).

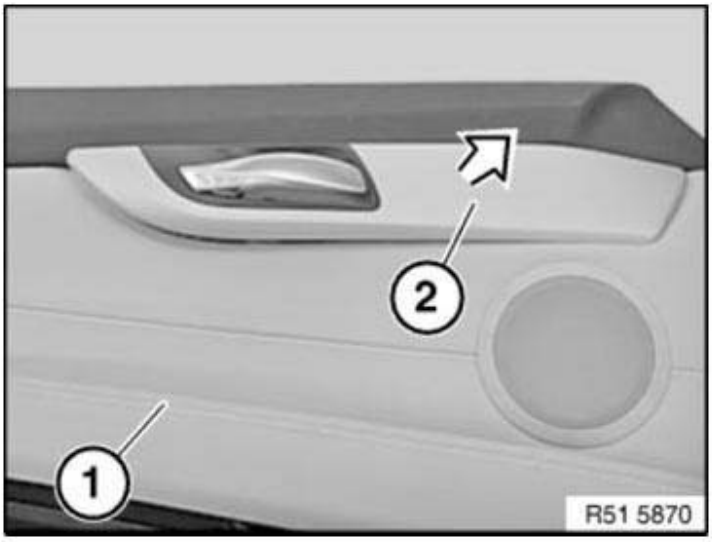


Fig. 146: Removing Trim With Inner Door Opener Out Of Door Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

51 21 170 REMOVING AND INSTALLING OR REPLACING OUTSIDE DOOR HANDLE FROM LEFT OR RIGHT FRONT DOOR

Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.

Measure dimension aeon special tool 51 3 340 and mark accordingly (1).

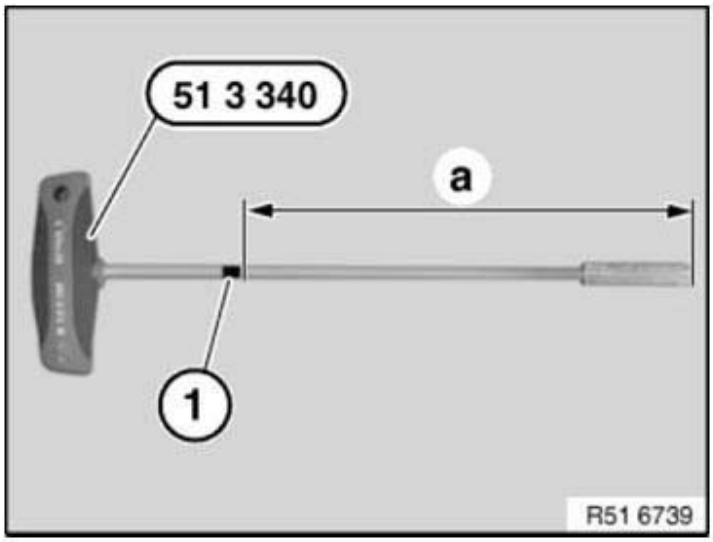


Fig. 147: Identifying Dimension On Special Tool (51 3 340)
Courtesy of BMW OF NORTH AMERICA, INC.

"a" = 140 mm.

Lever seal plug (1) out of mounting hole (2).

NOTE: To avoid paintwork damage, use a suitable tool and tape off area around mounting hole.

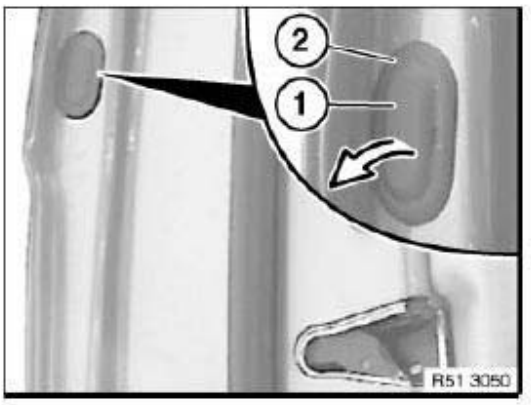


Fig. 148: Removing Seal Plug Out Of Mounting Hole
Courtesy of BMW OF NORTH AMERICA, INC.

For overview

- Carrier plate, outside door handle (1)
- Locking plate (2)
- Positioning of special tools 51 3 252 and 51 3 340

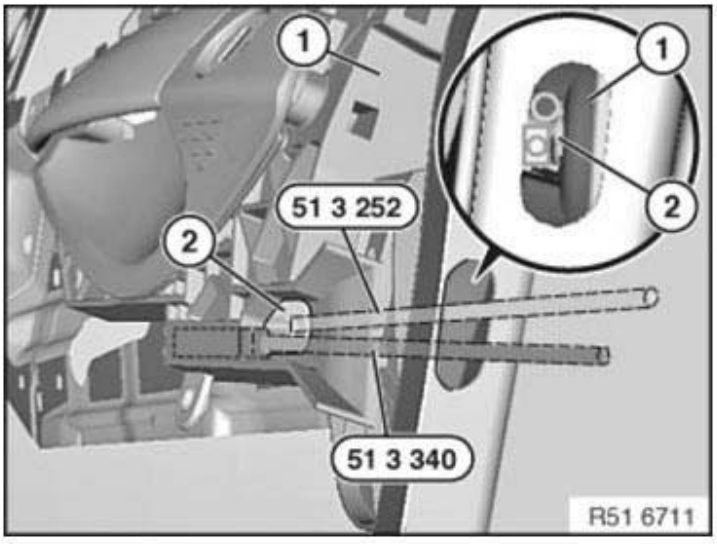


Fig. 149: Positioning Of Special Tools (51 3 252 And 51 3 340)
Courtesy of BMW OF NORTH AMERICA, INC.

For purposes of clarity, the following operations are shown with the component removed:

To raise retaining tab (2) of locking plate (1) over retaining rib (3) ...

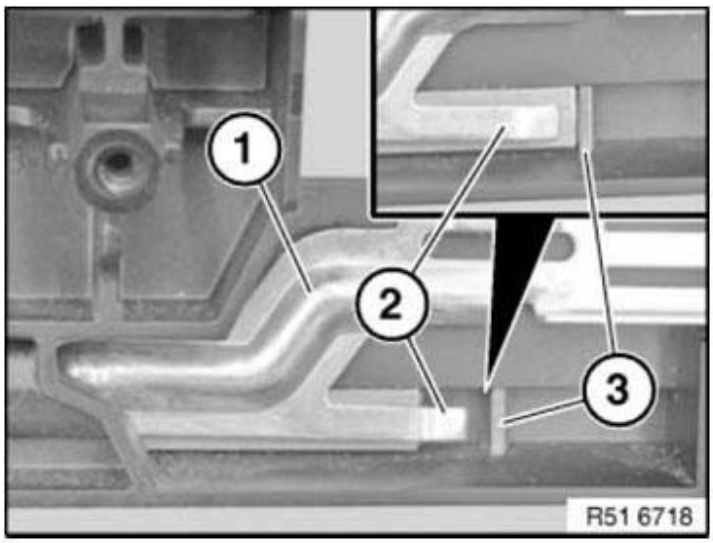


Fig. 150: Identifying Retaining Tab Of Locking Plate And Retaining Rib
Courtesy of BMW OF NORTH AMERICA, INC.

Insert special tool 51 3 340 from below, outside locking plate (2), along marked edge of carrier plate (1) up to point "X".

NOTE: If special tool 51 3 340 can only be slid in with difficulty from point "X" onwards, check the tool geometry per SI 01 32 09 (606).

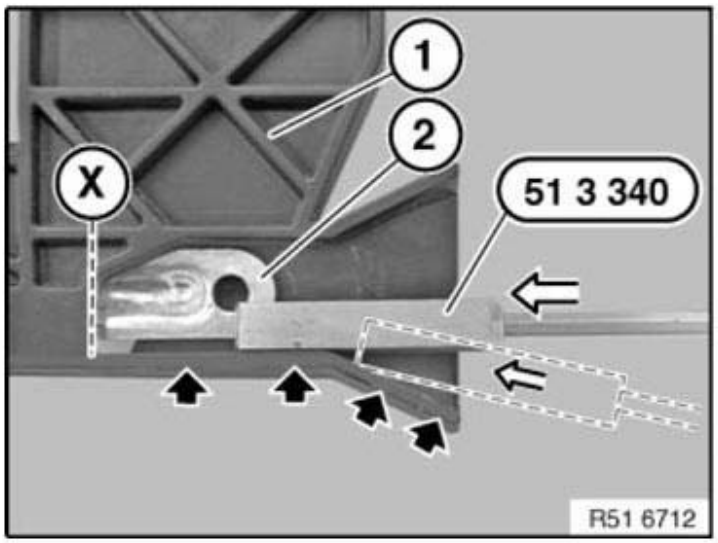


Fig. 151: Inserting Special Tool (51 3 340)
Courtesy of BMW OF NORTH AMERICA, INC.

For checking

Marking (1) on special tool 51 3 340 is flush with outer door panel.

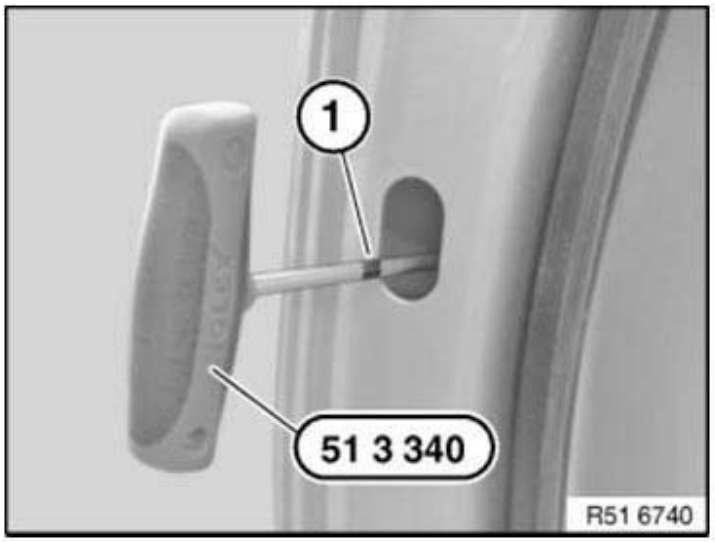


Fig. 152: Identifying Marking On Special Tool (51 3 340)
Courtesy of BMW OF NORTH AMERICA, INC.

Insert special tool 51 3 252 from above, as illustrated, along marked edge. Screw in tool hook inwards no later than at point "Y".

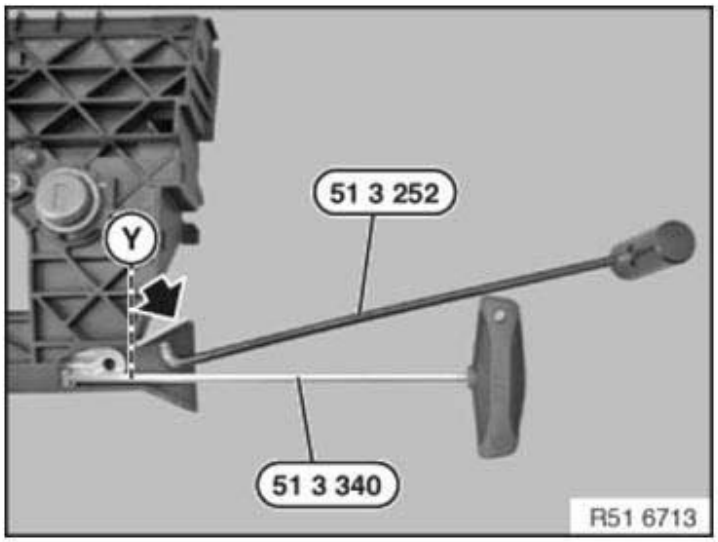


Fig. 153: Inserting Special Tool (51 3 252)
Courtesy of BMW OF NORTH AMERICA, INC.

Continue to insert special tool 51 3 252 along marked edge. Here the special tool hook recedes into recess (2) of locking plate (1).

By pulling back, (see line guidance) special tool 51 3 252 engages in bore hole of locking plate (1).

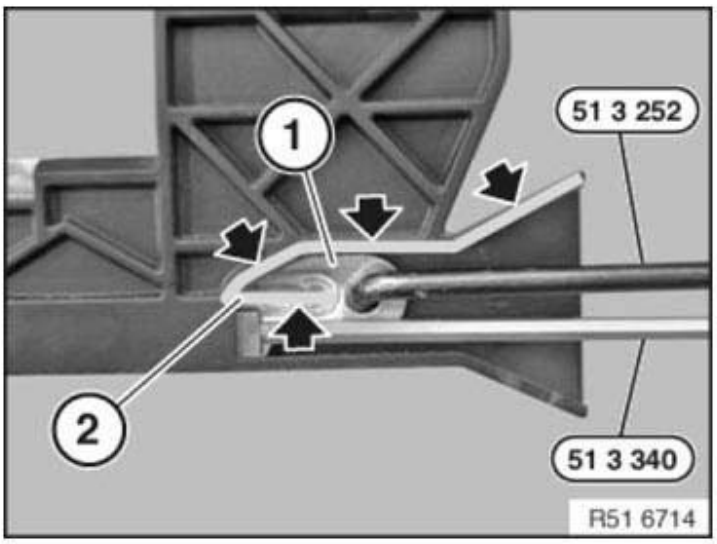


Fig. 154: Inserting Special Tool (51 3 252)
Courtesy of BMW OF NORTH AMERICA, INC.

Slide locking plate (1) with special tool 51 3 252 inwards up to stop "A".

Installation:

Special tool 51 3 340 is not needed for installation.

Locking plate retaining tab (1) must lock. It must no longer be possible to push locking plate (1) inwards.

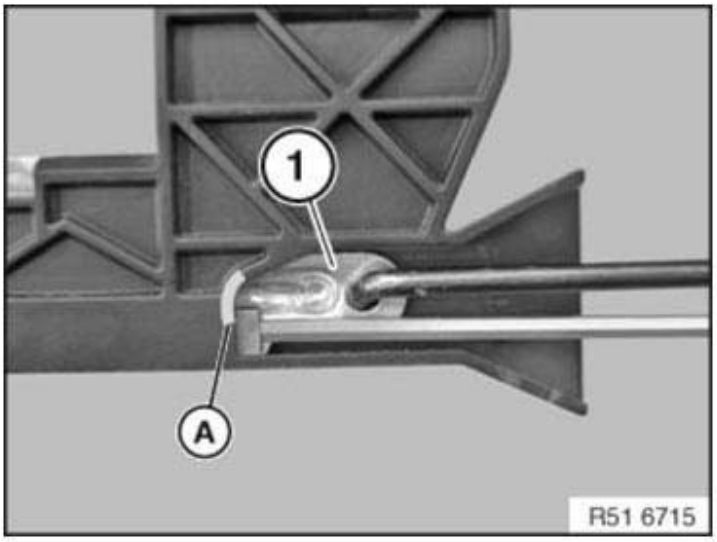


Fig. 155: Sliding Locking Plate Using Special Tool (51 3 252)
Courtesy of BMW OF NORTH AMERICA, INC.

Here locking plate (1) releases retaining hooks (arrowed) of outer door handle.

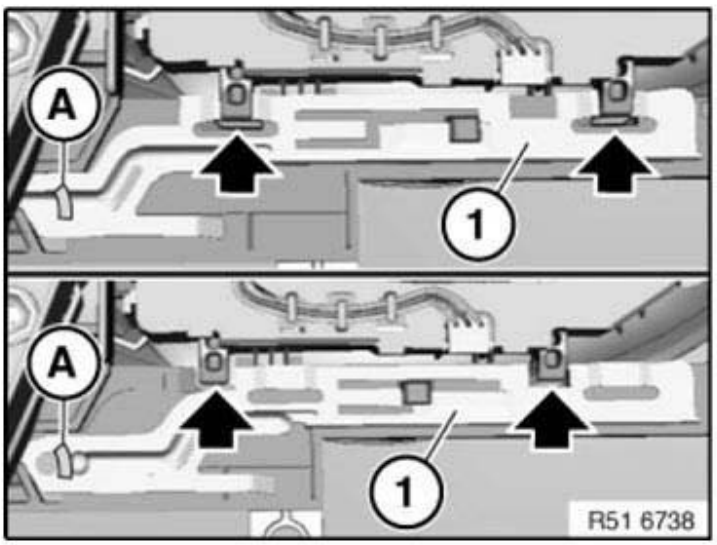


Fig. 156: Identifying Locking Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out outer door handle (1) first at bottom. Then feed out at an angle towards bottom.

Installation:

Rotary striker lock must be open to enable outer door handle (1) to be correctly fed in. Ensure correct installation position.

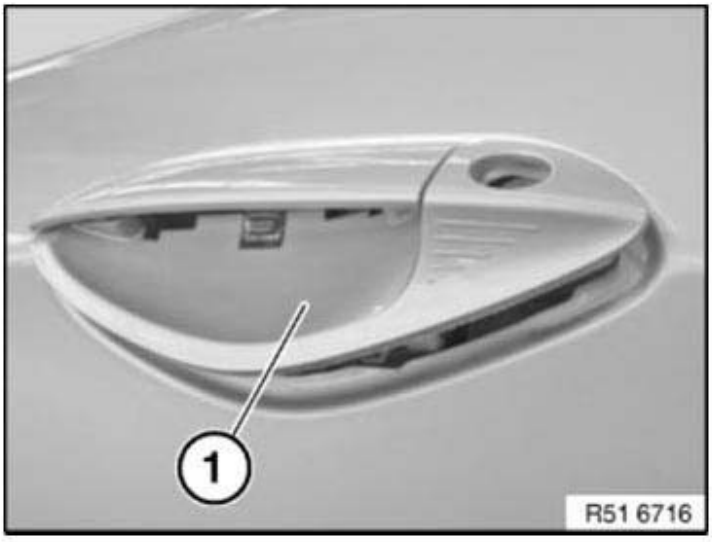


Fig. 157: Identifying Outer Door Handle
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten plug connection (1) and disconnect.

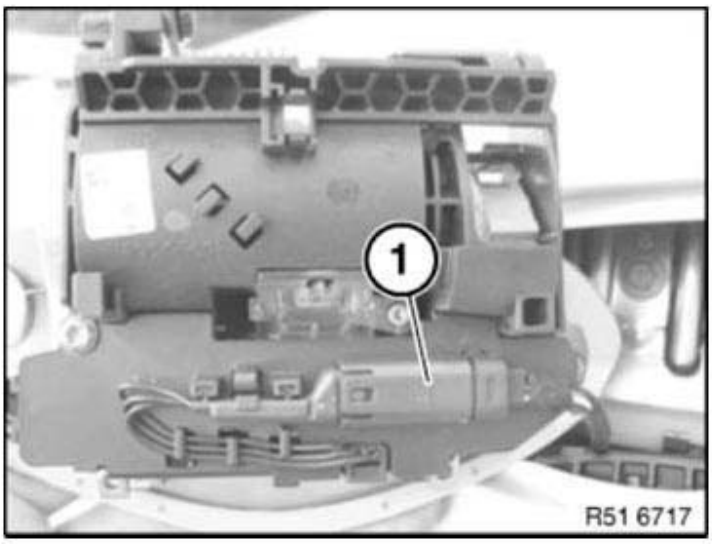


Fig. 158: Identifying Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Following parts on outer handle (4) must not be damaged or missing (graphic similar):

1. Seal
2. Guide
3. Rubber mount

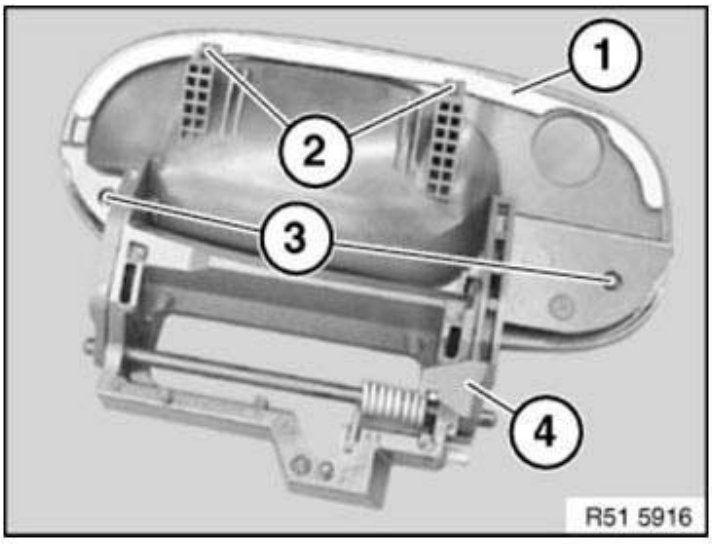


Fig. 159: Identifying Outer Handle With Seal, Guide And Rubber Mount
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Carry out function check with door open.

To do so, close rotary striker lock by hand.

51 21 300 REMOVING AND INSTALLING OR REPLACING WINDOW CAVITY COVER STRIP ON OUTSIDE OF LEFT OR RIGHT FRONT DOOR

Necessary preliminary tasks

- Remove **MIRROR ON FRONT DOOR**

IMPORTANT: Observe PROCEDURE for using special tool 00 9 324 .

NOTES ON INSTALLING WINDOW GUIDES are the basis of this repair instruction.

IMPORTANT: Risk of damage!

If reusing the existing window cavity cover strip (1), make sure it is not bent.

Lever out window cavity cover strip (1) with special tool 00 9 324 (starting at B-pillar).

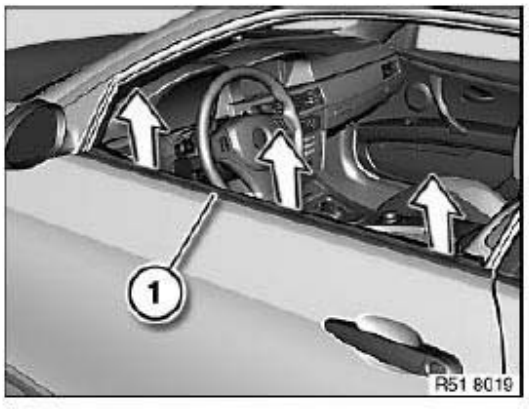


Fig. 160: Removing Window Cavity Cover Strip
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Coat window cavity cover strip (1) prior to fitting with **APPROVED ANTI-FRICTION AGENT** and fit with precision under exterior mirror (2).

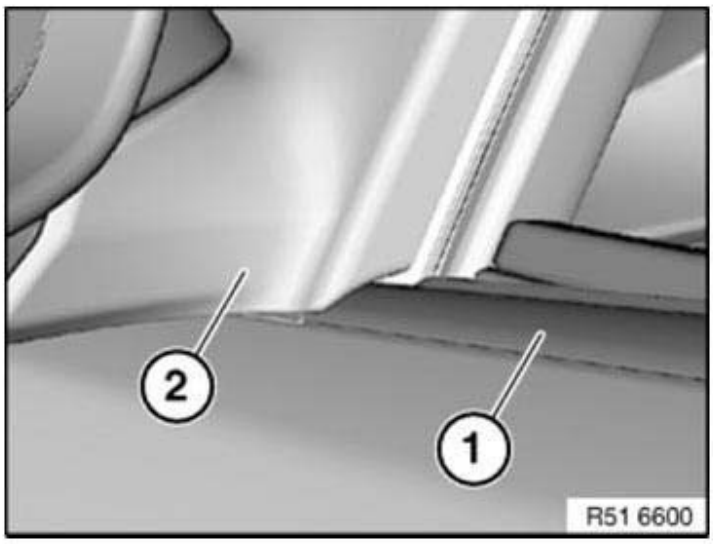


Fig. 161: Identifying Window Cavity Cover Strip And Exterior Mirror
Courtesy of BMW OF NORTH AMERICA, INC.

51 21 235 REMOVING AND INSTALLING/REPLACING BOWDEN CABLE FOR INSIDE DOOR OPENER ON LEFT OR RIGHT FRONT DOOR

Necessary preliminary tasks

- Remove **FRONT DOOR TRIM**

Unhook Bowden cable for release lever:

- Tighten release lever (1).
- Lever out lock (2).
- Detach Bowden cable (3) towards rear/top.

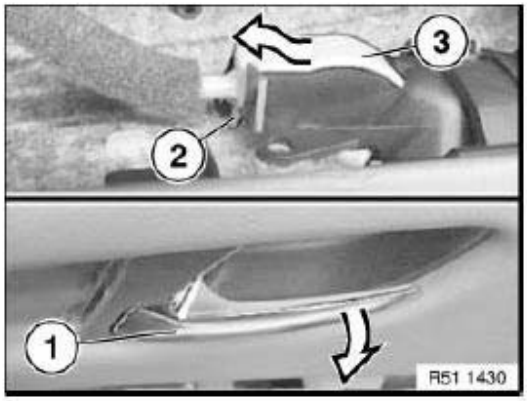


Fig. 162: Detaching Bowden Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

For fitting, press release lever (1) fully onto door trim panel.

Installation:

Slide nipple (1) fully forwards in blade (2) and engage Bowden cable in release lever.

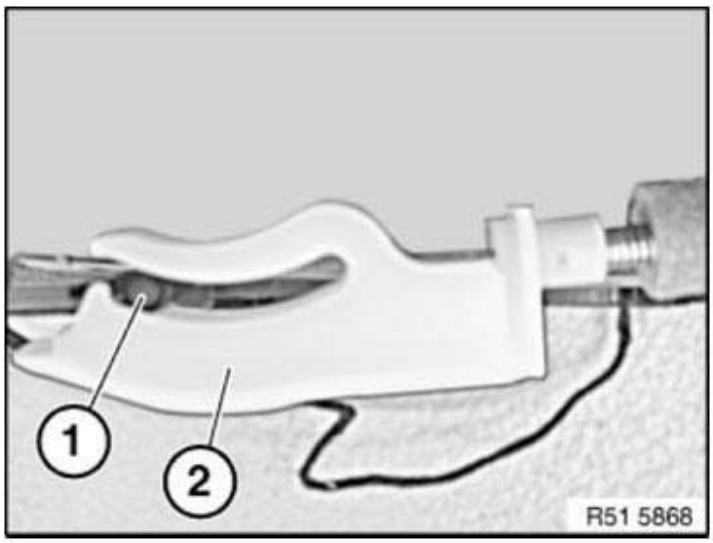


Fig. 163: Identifying Nipple And Blade
Courtesy of BMW OF NORTH AMERICA, INC.

51 21 233 REMOVING AND INSTALLING/REPLACING BOWDEN CABLE FOR OUTER DOOR HANDLE ON LEFT OR RIGHT FRONT DOOR

Necessary preliminary tasks

- Remove **CARRIER FOR OUTER DOOR HANDLE**

NOTE: For a better overview, door lock and outer door handle are shown removed.

Remove Bowden cable (1) from outer door handle (2) and door lock (3).

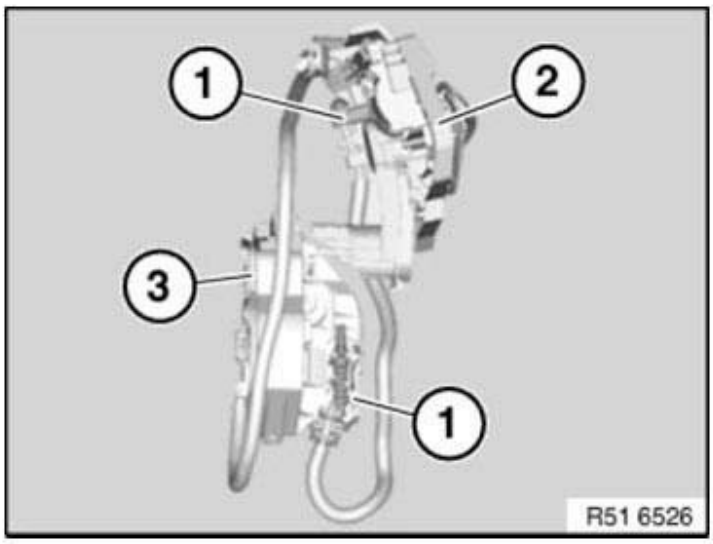


Fig. 164: Identifying Bowden Cables, Outer Door Handle And Door Lock
Courtesy of BMW OF NORTH AMERICA, INC.

51 21 125 REMOVING AND INSTALLING/REPLACING CARRIER FOR LEFT OR RIGHT OUTSIDE DOOR HANDLE WITH LOCK CYLINDER

Necessary preliminary tasks

- Remove **FRONT OUTSIDE HANDLE**
- Remove **DOOR LOCK** on front door

Release screws (1).

Tightening torque **51 21 15AZ** .

Unclip outside door handle carrier (2) at catch (3).

Remove outside door handle carrier (2) from door (4).

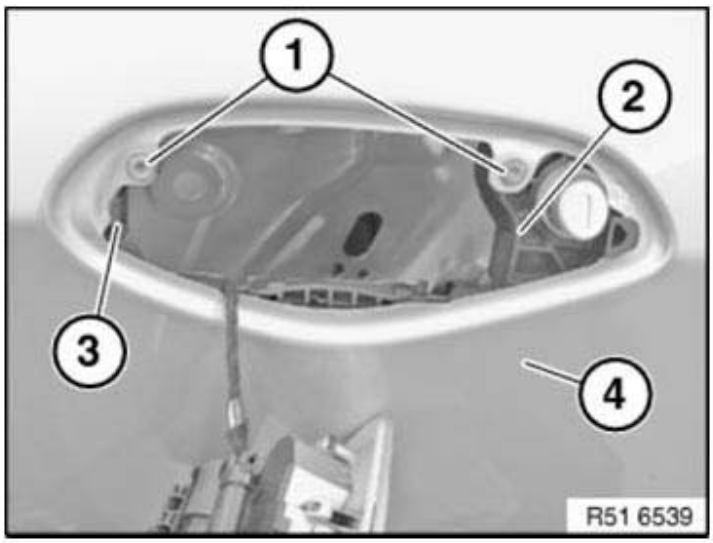


Fig. 165: Identifying Door With Outside Door Handle Carrier, Catches And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 21 126 REMOVING AND INSTALLING/REPLACING CARRIER FOR LEFT OR RIGHT OUTSIDE DOOR HANDLE WITHOUT LOCK CYLINDER

NOTE: This operation is described in section on: Removing and installing/replacing CARRIER FOR OUTSIDE DOOR HANDLE WITH LOCK CYLINDER .

51 21 140 REMOVING AND INSTALLING/REPLACING COMPLETE LOCK CYLINDER IN LEFT OR RIGHT FRONT DOOR

Necessary preliminary tasks

- Remove **OUTSIDE HANDLE ON FRONT DOOR**

Release screws (1).

Remove gearing cover (2).

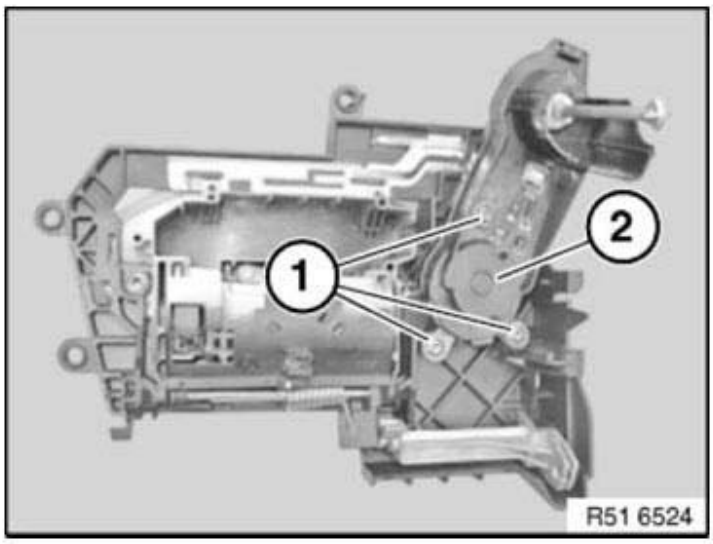


Fig. 166: Identifying Gearing Cover With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Detach retaining clip (1).

Remove lock cylinder (2).

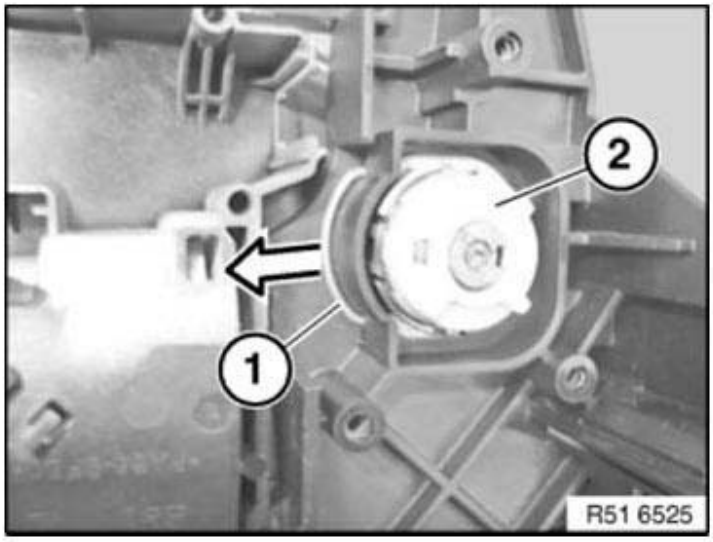


Fig. 167: Detaching Retaining Clip
Courtesy of BMW OF NORTH AMERICA, INC.

51 21 090 REMOVING AND INSTALLING/REPLACING DOOR LOCK IN LEFT OR RIGHT FRONT DOOR

Necessary preliminary tasks

- Remove **FRONT DOOR WINDOW GLASS**

Release screws (1) on H-strut.

Tightening torque **51 21 13AZ** .

Remove H-strut (2).

Release screw (3) with special tool 51 3 300 .

Tightening torque **51 21 14AZ** .

Release screw (4).

Tightening torque **51 21 14AZ** .

Window rail (5) remains in door.

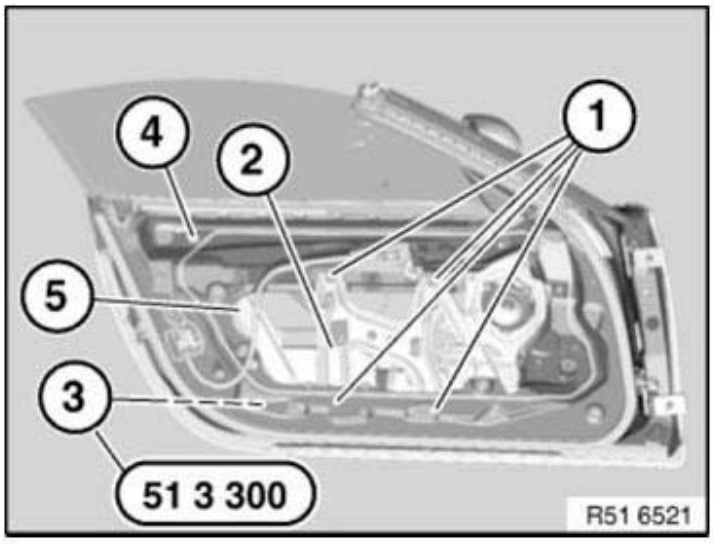


Fig. 168: Removing Screw Using Special Tool (51 3 300)
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock and disconnect plug connection (2) at tabs (1).

Disengage Bowden cable (3) from door lock (4).

Unclip lock knob control rod (5).

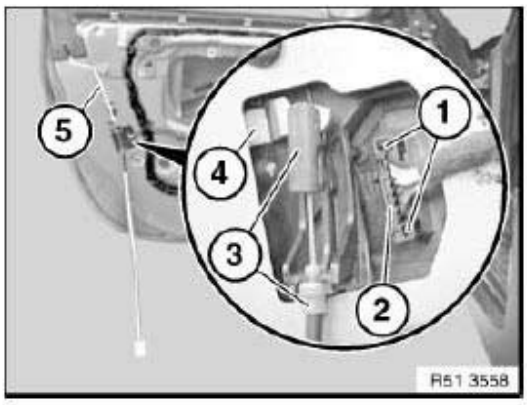


Fig. 169: Identifying Plug Connection With Tabs, Bowden Cable, Door Lock And Control Rod
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Door crashpad (2) remains in door.

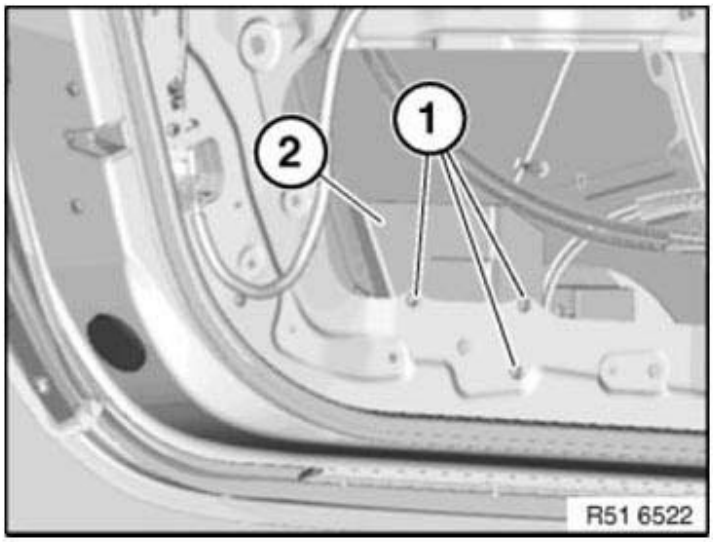


Fig. 170: Identifying Door Crashpad With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not damage door lock seal during removal.

Release screws (1).

Tightening torque **51 21 1AZ** .

Remove door lock (2) from door (3).

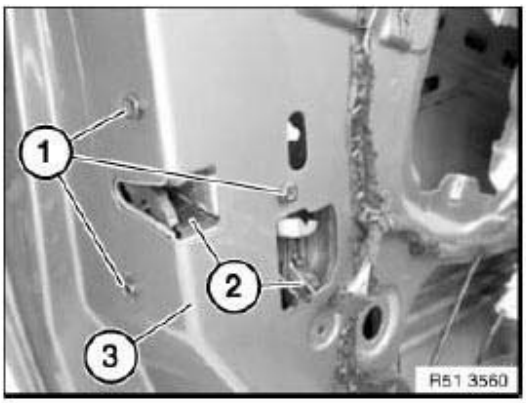


Fig. 171: Identifying Door With Lock And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Disengage Bowden cable (1) from door lock (2).

IMPORTANT: Bowden cable (1) must:

- **correctly located in mountings on door lock (2)**
- **be laid without kinks in bend to door lock (2)**

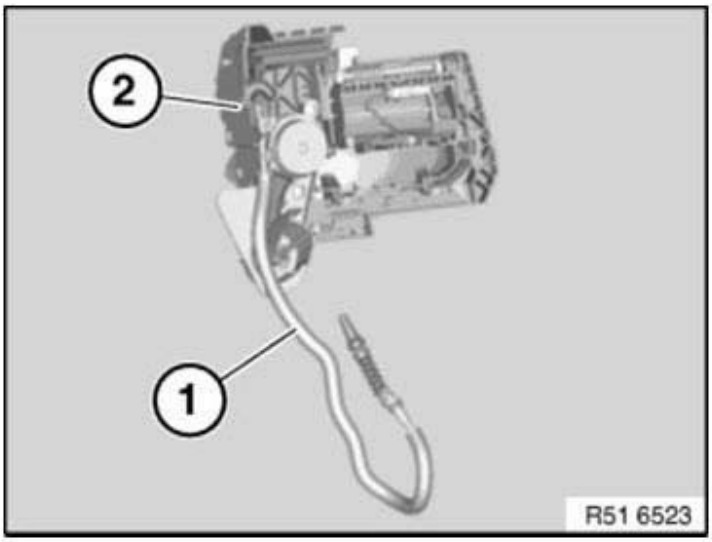


Fig. 172: Identifying Bowden Cable With Door Lock
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Seal (1) on door lock (2) must not be damaged.

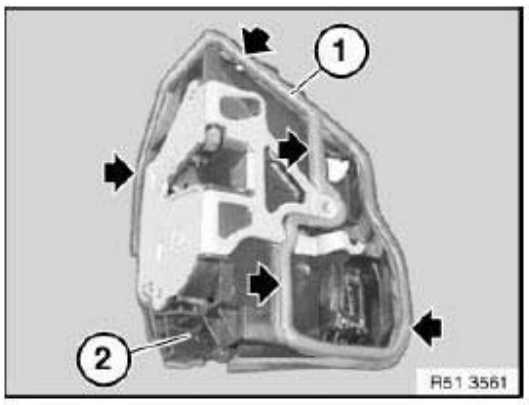


Fig. 173: Identifying Seal On Door Lock
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

- Install door lock and insert screws (1), do not tighten down.
- Slide special tool 51 2 190 into opened rotary striker until striker engages in first stage

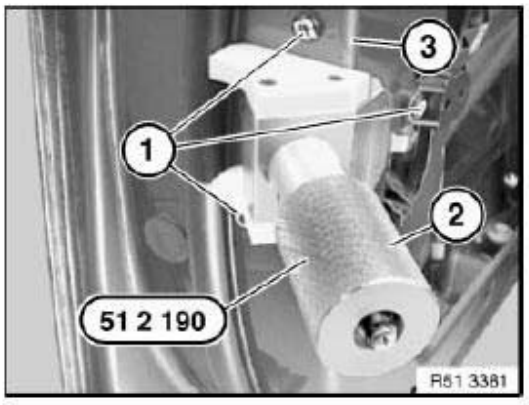


Fig. 174: Sliding Special Tool (51 2 190) Into Opened Rotary Striker
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

- Pre-tension door lock (1) with knurled screw (2) until special tool 51 2 190 just contacts corner points (3)

IMPORTANT: To tension door lock (1), it is only permitted to turn knurled screw (2) by a further 1 to 1.5 turns (max.) (risk of damage).

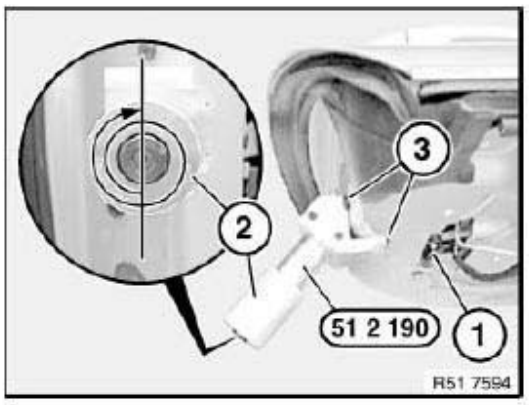


Fig. 175: Installing Door Lock Using Special Tool (51 2 190)
Courtesy of BMW OF NORTH AMERICA, INC.

Door lock seal must rest uniformly on inner door panel (water ingress).

- Tighten down door lock screws, tightening torque **51 21 1AZ** .

51 21 ... REMOVING AND INSTALLING/REPLACING STORAGE COMPARTMENT IN LEFT OR RIGHT FRONT DOOR

Necessary preliminary tasks

- Remove **FRONT DOOR TRIM PANEL**

Release screws (1) on door trim panel (2).

Open storage compartment and remove.

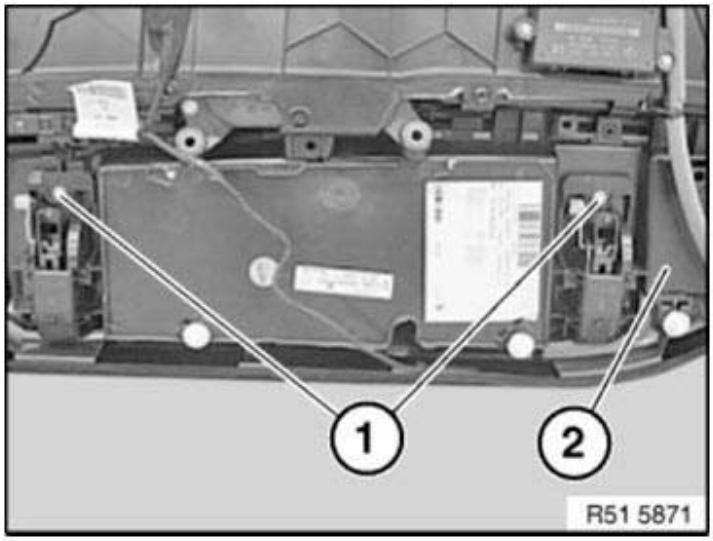


Fig. 176: Identifying Screws On Door Trim Panel

Courtesy of BMW OF NORTH AMERICA, INC.

51 21 330 REMOVING AND INSTALLING/REPLACING WINDOW CAVITY COVER STRIP ON INNER FRONT DOOR

IMPORTANT: NOTES ON INSTALLING WINDOW GUIDES are the basis of this repair instruction.

Necessary preliminary tasks

- Remove **FRONT DOOR TRIM PANEL**

Pull window cavity cover strip (1) in direction of arrow off front door.

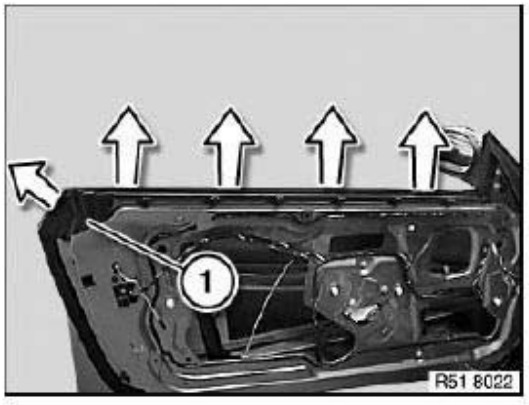


Fig. 177: Pulling Window Cavity Cover Strip
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Moulded section (1) and retaining elements (2) of window cavity cover strip (3) must not be damaged.

Moulded section (1) must be correctly fed into door.

Moisten window cavity cover strip (3) prior to fitting with **APPROVED ANTI-FRICTION AGENT** .

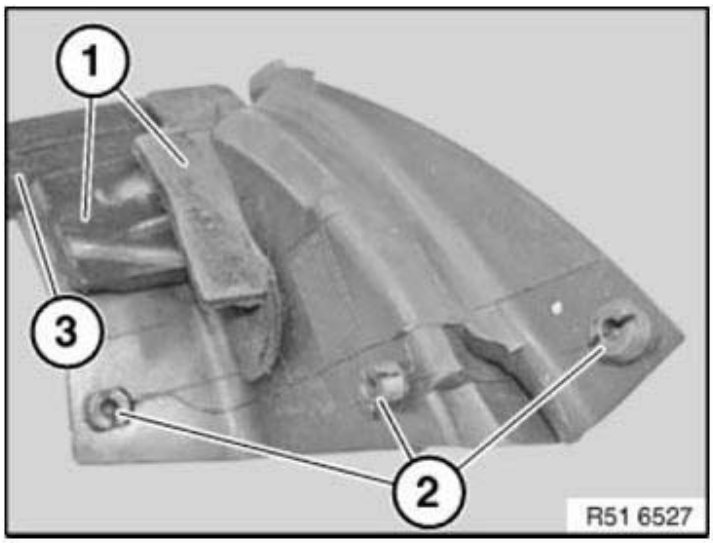


Fig. 178: Identifying Moulded Section And Retaining Elements Of Window Cavity Cover Strip
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure window cavity cover strip (1) is installed in correct position on door (2) and door window glass (3).

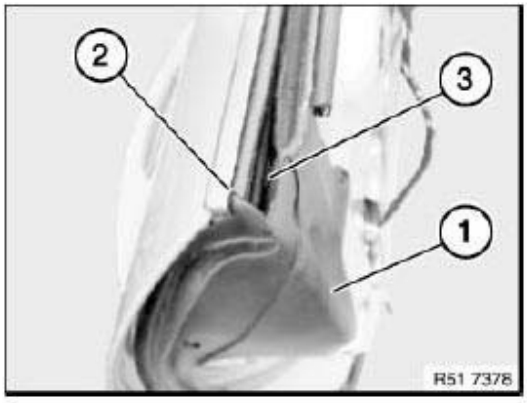


Fig. 179: Identifying Window Cavity Cover Strip On Door And Door Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

51 21 ... REMOVING WEATHER STRIP WITH SPECIAL TOOL 00 9 324 AT FRONT OR REAR

Open side window completely.

Front door:

Insert special tool 00 9 324 at front (at A-pillar) in window cavity (1) (TOP label pointing upwards).

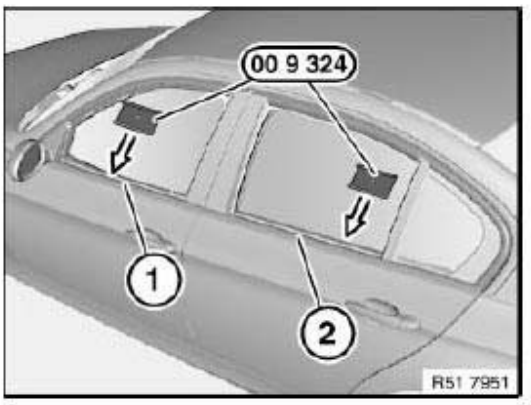


Fig. 180: Inserting Special Tool (00 9 324) At Front And Rear Window Cavity
Courtesy of BMW OF NORTH AMERICA, INC.

Rear door:

Insert special tool 00 9 324 at rear (at C-pillar) in window cavity (2) (TOP label pointing upwards).

NOTE: For purposes of clarity, graphic shows inner door panel and side window removed.

Special tool 00 9 324 must be correctly guided under weather strip (1).

2 Short leg, bottom

3 Long leg, top (TOP)

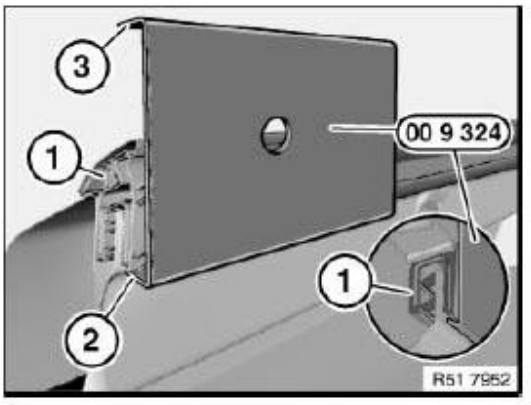


Fig. 181: Identifying Special Tool (00 9 324) Under Weather Strip With Short And Long Legs
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Start at the front or rear, depending on the model.

IMPORTANT: Risk of damage!

Raise weather strip (3) no more than 5 mm in each levering operation, otherwise the strip will be bent.

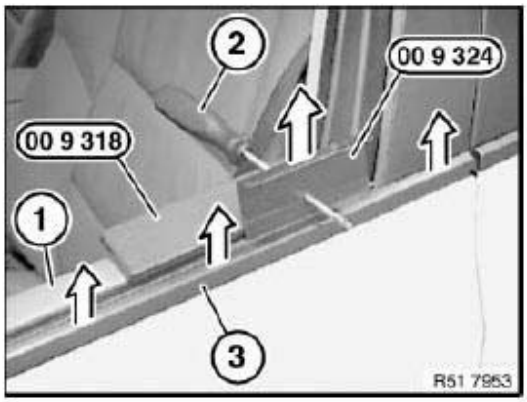


Fig. 182: Raising Weather Strip
Courtesy of BMW OF NORTH AMERICA, INC.

Position special tool 00 9 318 on door trim panel (1).

Slide screwdriver (2) into special tool 00 9 324 and weather strip (3) upwards no more than 5 mm.

Guide special tools 00 9 324 and 00 9 318 towards front/rear and lever out weather strip (3).

51 21 003 REPLACING FRONT LEFT OR RIGHT DOOR LOCK STRIKER

Release screws (1).

Tightening torque **51 21 3AZ** .

Remove door lock striker (2).

Installation:

Adjusting door lock striker, see **ADJUSTING FRONT DOOR** .

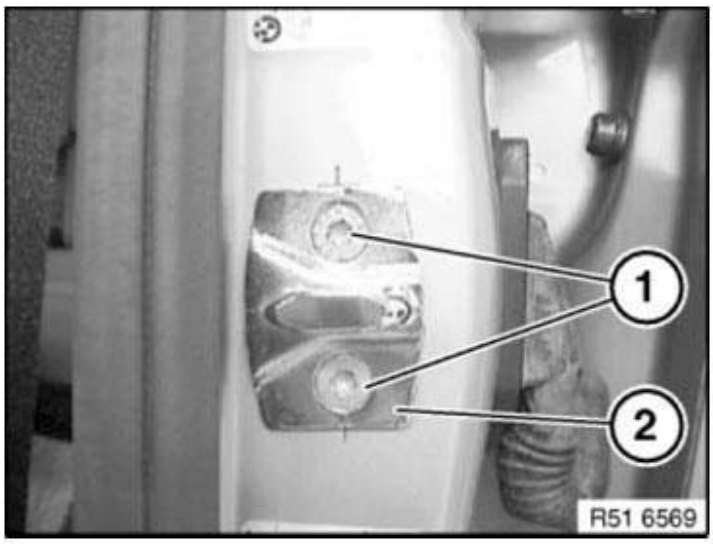


Fig. 183: Identifying Door Lock Striker With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

5123 HOOD LATCH, LOCKS

51 23 004 ADJUSTING ENGINE COMPARTMENT LID CATCH

Adjusting engine compartment lid catch, see also **ADJUSTING ENGINE COMPARTMENT LID** .

51 23 131 ADJUSTING LEFT OR RIGHT STRIKER ON ENGINE HOOD/BONNET

Operation is described in:

- **ADJUSTING HOOD/BONNET**

51 23 ... ADJUSTING/REPLACING BUMP STOPS

The illustrations are schematic representations and are to be applied to the relevant vehicle type.

Version 1:

Following parts must not be damaged:

- (1) Bump stop



Fig. 184: Identifying Bump Stop
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust bump stop (1) to correct height by turning left or right.

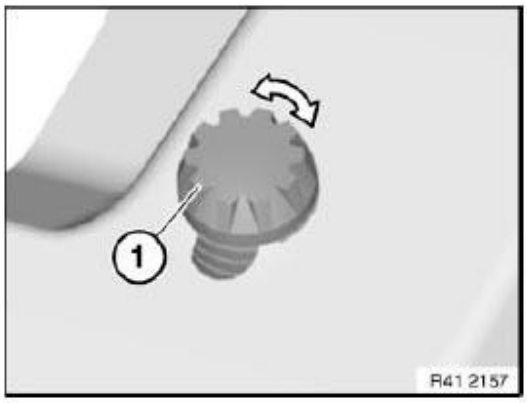


Fig. 185: Turning Bump Stop
Courtesy of BMW OF NORTH AMERICA, INC.

Version 2:

Replace damaged bump stops (refer to EPC):

- (1) Bump stop with ejector



Fig. 186: Identifying Bump Stop With Ejector
Courtesy of BMW OF NORTH AMERICA, INC.

Press ejector (1) into bump stop and, in this position, twist approx. 90° counterclockwise with a Phillips screwdriver.

This locks the ejectors (1) in the bump stops.

Adjust bump stop (2) to correct height by turning left or right.

Unlock the ejector (1) again after completing adjustment.

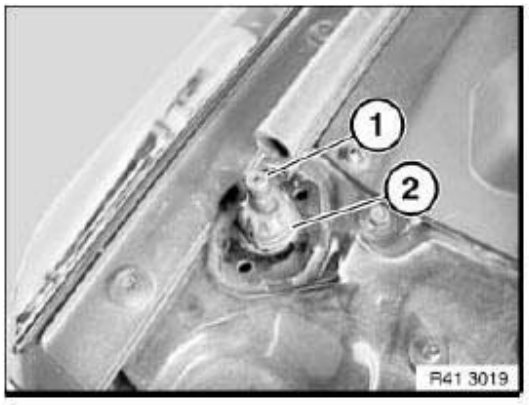


Fig. 187: Identifying Bump Stop With Ejector
Courtesy of BMW OF NORTH AMERICA, INC.

Version 3:

Replace damaged bump stops (refer to EPC):

- (1) Bump stop

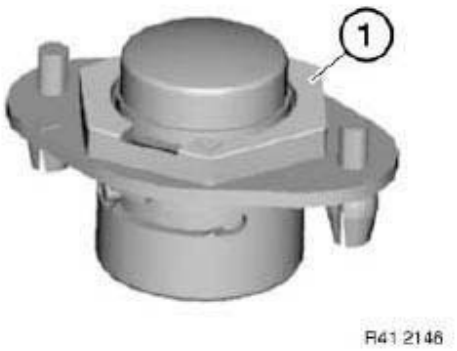


Fig. 188: Identifying Bump Stop
Courtesy of BMW OF NORTH AMERICA, INC.

Turn lock (1) 45° counterclockwise.

Pull bump stop (2) upwards.

Close lid slowly until it is at the same height as the side panel.

Open lid and turn lock (1) clockwise.

Installation:

Press bump stop into panel and drive in expanding pins (3).

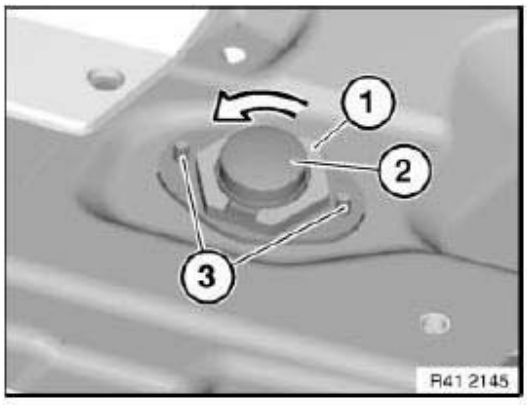


Fig. 189: Turning Lock
Courtesy of BMW OF NORTH AMERICA, INC.

51 23 ... ADJUSTING/REPLACING BUMP STOPS

The graphics are schematic representations and are to be applied to the relevant vehicle type.

Prerequisite: Lid must be correctly adjusted.

Version 1:

Following parts must not be damaged:

- (1) Bump stop



Fig. 190: Identifying Bump Stop
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust bump stop (1) to correct height by turning left or right.

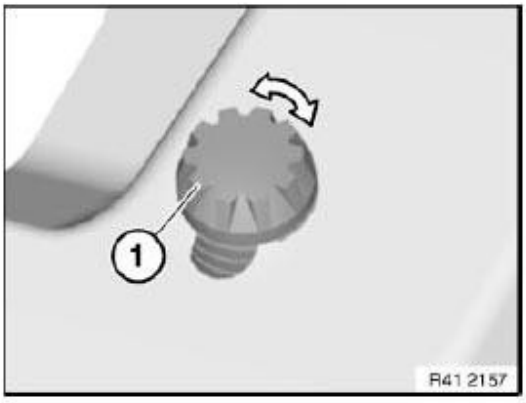


Fig. 191: Turning Bump Stop
Courtesy of BMW OF NORTH AMERICA, INC.

Type 2:

Replace damaged bump stops (refer to EPC):

- (1) Bump stop

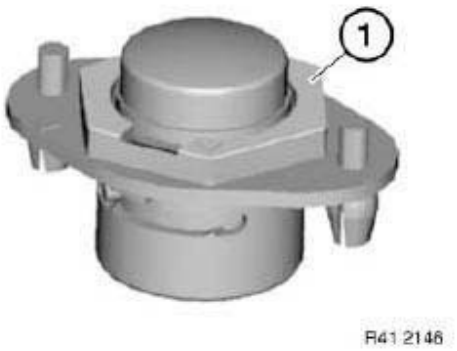


Fig. 192: Identifying Bump Stop
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting version 2:

Turn lock (1) 45° anticlockwise.

Pull bump stop (2) upwards.

Close lid slowly until it is at the same height as the side wall.

Open lid and turn lock (1) clockwise.

Installation note:

Press bump stop into sheet metal part and drive in expanding pins (3).

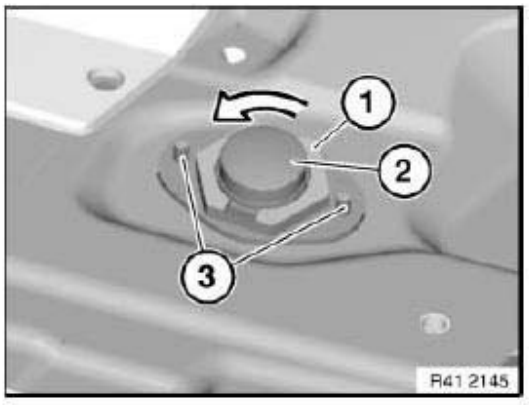


Fig. 193: Turning Lock
Courtesy of BMW OF NORTH AMERICA, INC.

Version 3:

Lever out expanding rivets (1).

Remove bump stop (2).

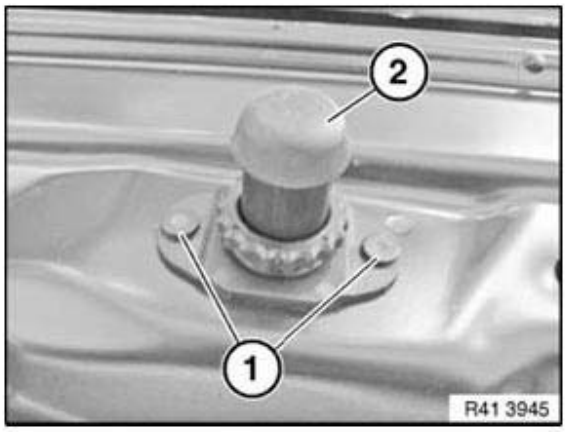


Fig. 194: Identifying Bump Stop And Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting version 3:

Checking correct adjustment:

- Insert a strip of paper (normal writing paper) between bump stop and stop on body.
- Close lid. Make sure that the paper strip remains between bump stop and stop.
- The bump stop is correctly adjusted when the paper strip can be pulled out "with slight resistance".

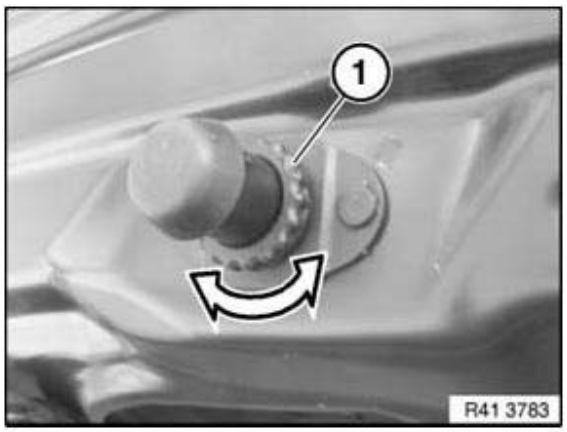


Fig. 195: Turning Bump Stop (Version 3)
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting procedures

Screw in bump stop until the paper strip can be easily pulled out.

Then unscrew bump stop until the paper strip cannot be pulled out any more.

Screw in bump stop until the paper strip can be pulled out "with slight resistance".

Version 4:

Lever out expanding rivets (1).

Remove bump stop (2).

Adjusting version 4:

Set bump stop to the correct height by turning to the left or right.

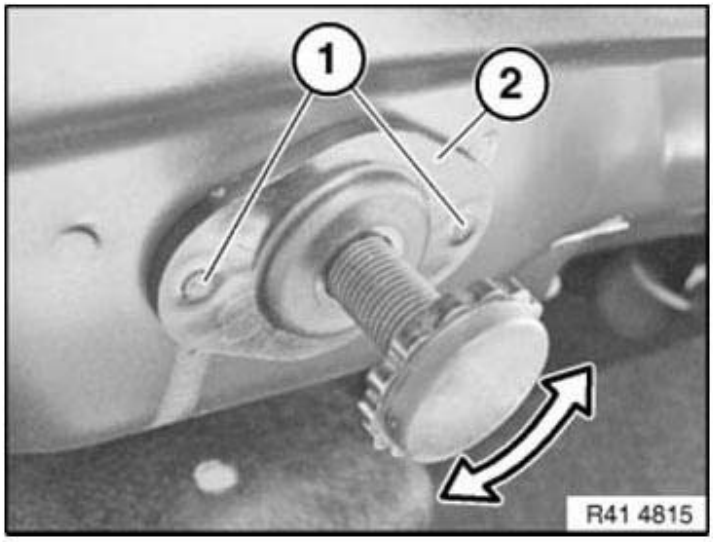


Fig. 196: Turning Bump Stop (Version 4)
Courtesy of BMW OF NORTH AMERICA, INC.

51 23 131 ADJUSTING/REPLACING LEFT OR RIGHT STRIKER ON ENGINE HOOD/BONNET

Raise bonnet/hood.

Disengage nipple (1).

Unfasten screws (2).

Tightening torque **51 23 1AZ** .

Installation:

Replace self-locking screws.

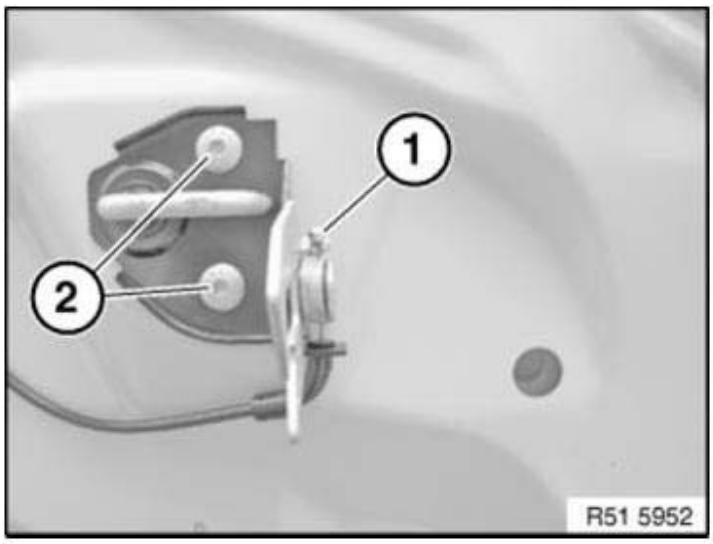


Fig. 197: Identifying Nipple And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 23 110 REMOVING AND INSTALLING/REPLACING LEFT BONNET LOCK

Release screws (1) and pull out engine compartment lid lock (2) in upward direction.

Tightening torque **51 23 2AZ** .

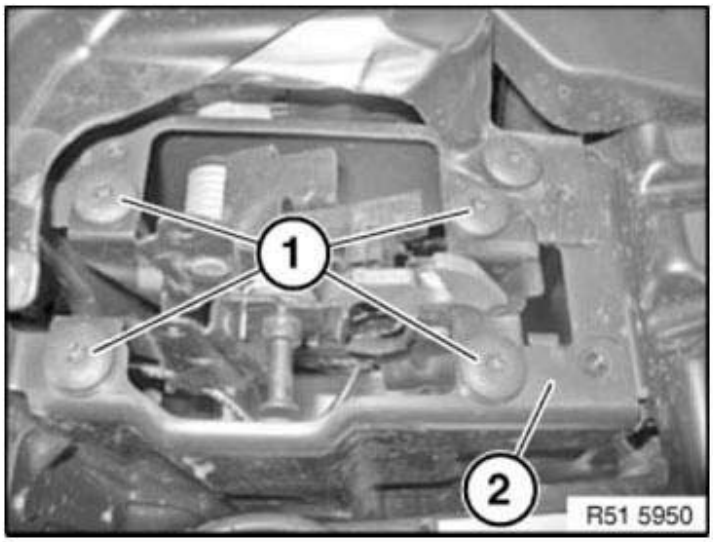


Fig. 198: Identifying Engine Compartment Lid Lock With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Disengage Bowden cable (1) in direction of arrow from engine compartment lid lock (2).

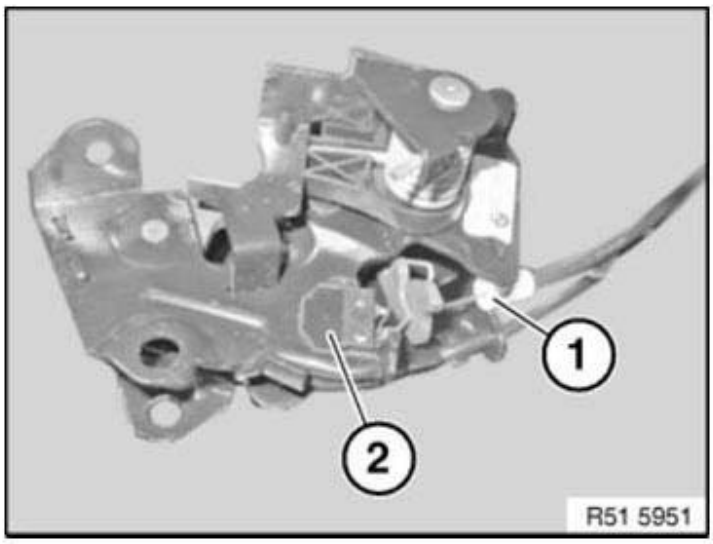


Fig. 199: Identifying Engine Compartment Lid Lock With Bowden Cable
Courtesy of BMW OF NORTH AMERICA, INC.

51 23 265 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT GAS-FILLED STRUT FOR ENGINE BONNET/HOOD

WARNING: Risk of injury and damage!

For the following tasks, you must take the appropriate measures to support the engine bonnet/hood.

As an alternative, you can enlist the help of a second person to hold the bonnet/hood.

Raise bonnet/hood.

Removing gas-filled strut at top and bottom:

NOTE: If necessary, release cable tie on gas-filled strut

- **1) Push retaining spring to end of gas-filled strut**
- **2) Remove gas-filled strut from ball head**

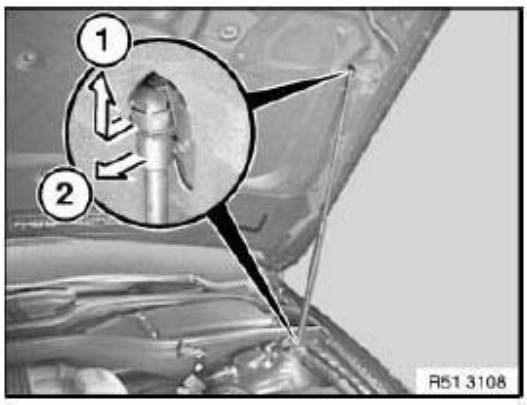


Fig. 200: Pushing Retainer Spring Of Gas Spring Strut
Courtesy of BMW OF NORTH AMERICA, INC.

51 23 211 REMOVING AND INSTALLING/REPLACING PULL CABLE FOR HOOD/BONNET LOCKS AT FRONT

Necessary preliminary tasks

- Remove **CROSS-MEMBER UPPER SECTION**
- Remove hood/bonnet locks See **5123110 REMOVING AND INSTALLING/REPLACING LEFT BONNET LOCK** or **5123100 REMOVING AND INSTALLING/REPLACING RIGHT ENGINE HOOD/BONNET LOCK**

Lever coupler (2) out of front panel, open and lever out Bowden cable.

Release Bowden cable (1) from holder (3).

Remove Bowden cable (1).

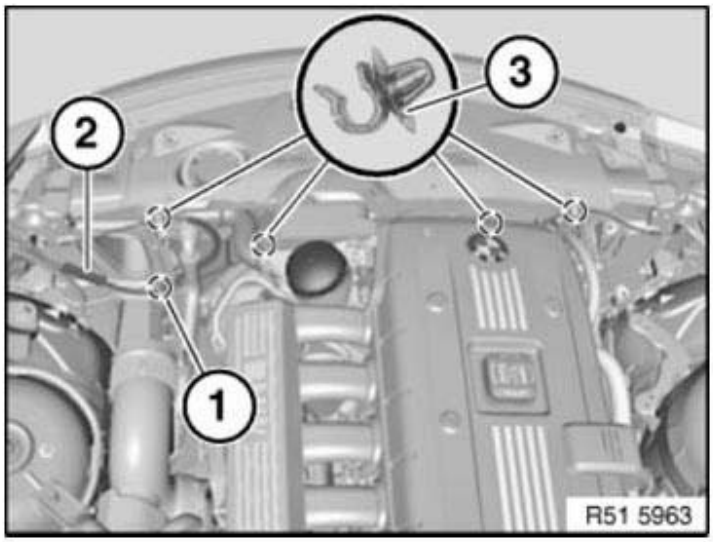


Fig. 201: Identifying Bowden Cable With Holders And Coupler
Courtesy of BMW OF NORTH AMERICA, INC.

51 23 201 REMOVING AND INSTALLING/REPLACING RELEASE MECHANISM FOR CATCH ON ENGINE HOOD/BONNET

Release screws (1) on hood/bonnet (2).

Disengage Bowden cable (4) from hood/bonnet release mechanism (3).

Remove hood/bonnet release mechanism (3).

Installation:

Replace self-locking screws.

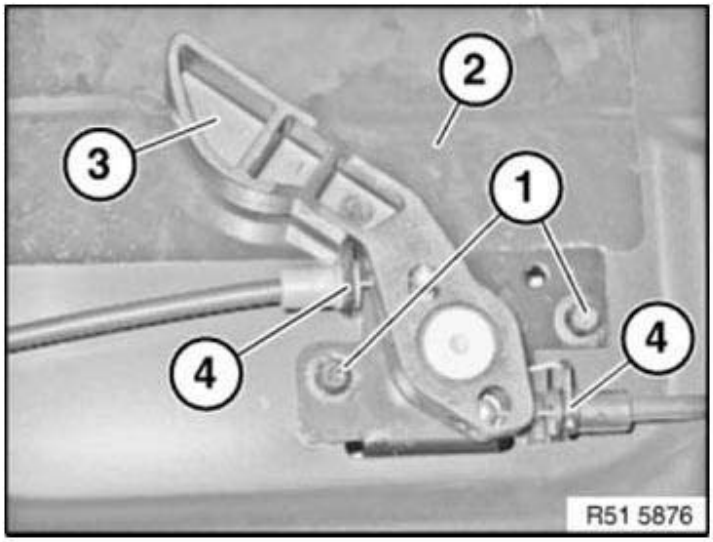


Fig. 202: Identifying Bowden Cable Of Hood/Bonnet Release Mechanism And Screws On Hood/Bonnet
Courtesy of BMW OF NORTH AMERICA, INC.

51 23 100 REMOVING AND INSTALLING/REPLACING RIGHT ENGINE HOOD/BONNET LOCK

Disconnect plug connection (1) from microswitch.

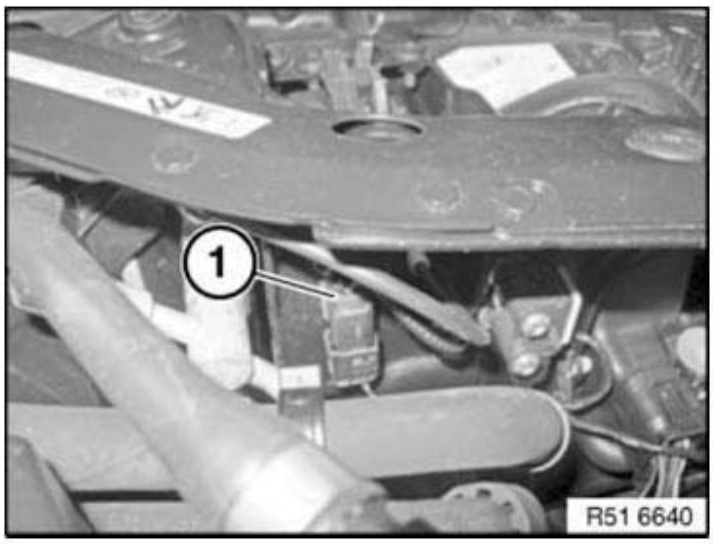


Fig. 203: Identifying Microswitch Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and feed out engine compartment lid lock (2) including plug and wiring harness for microswitch towards top.

Tightening torque **51 23 2AZ** .

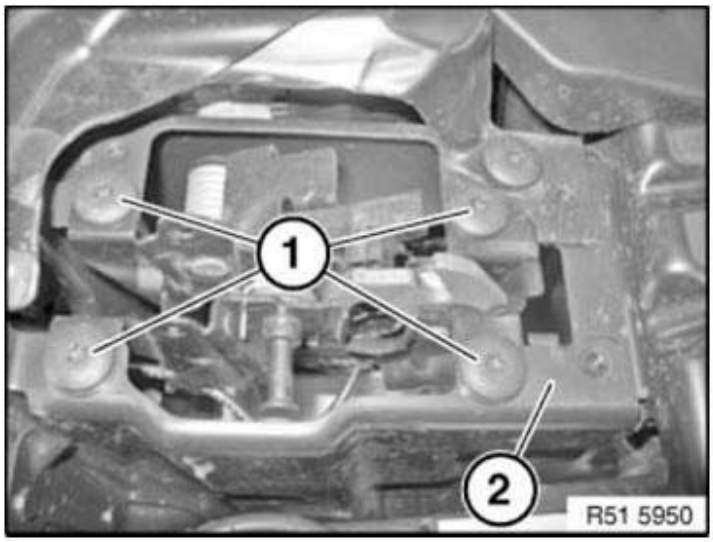


Fig. 204: Identifying Engine Compartment Lid Lock With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Disengage Bowden cable (1) in direction of arrow from engine compartment lid lock (2).

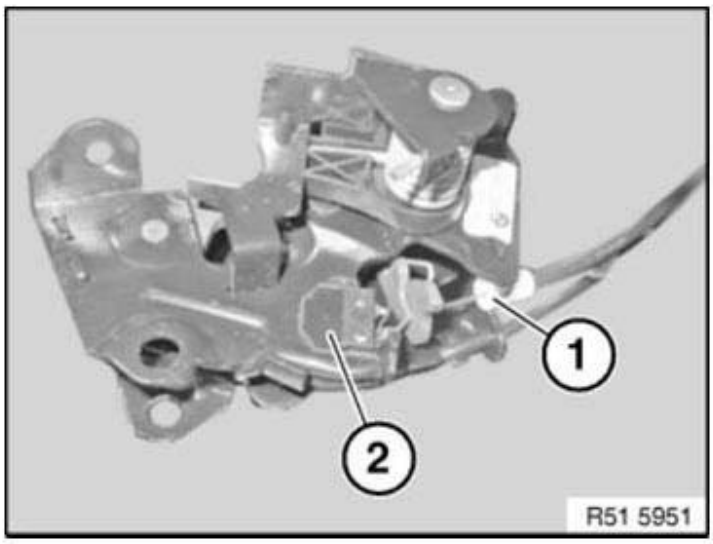


Fig. 205: Identifying Engine Compartment Lid Lock With Bowden Cable
Courtesy of BMW OF NORTH AMERICA, INC.

5124 TRUNK LATCH, LOCKS

51 24 004 ADJUSTING REAR LID LOCK (ADJUSTING BOTH STRIKERS)

Precondition:

Rear lid must be correctly adjusted to fit; if necessary, **ADJUST REAR LID**

Installation:

- Microencapsulated screws (Loctite) must be replaced and may not be reused
- Screw connection must be completed within 20 minutes (start of curing)
- Microencapsulated screws must not be retightened
- Clean thread of nut beforehand in event of repeated use

NOTE: Rear lid is shown removed.

Screw in elements (1) for adjusting rear lid (2) completely.

For ideal adjustment, refer to **BODY GAP DIMENSIONS** .

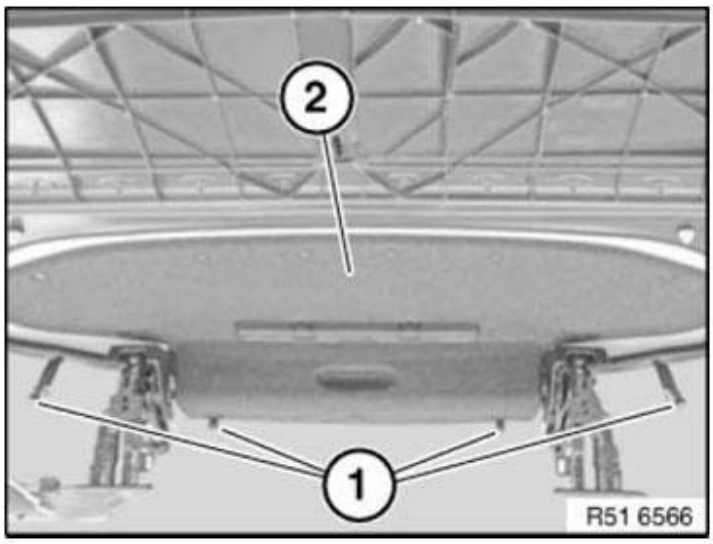


Fig. 206: Identifying Rear Lid With Elements
Courtesy of BMW OF NORTH AMERICA, INC.

The right side is removed in the same way as the left side.

Lever out expansion rivets (1).

Remove trim (2).

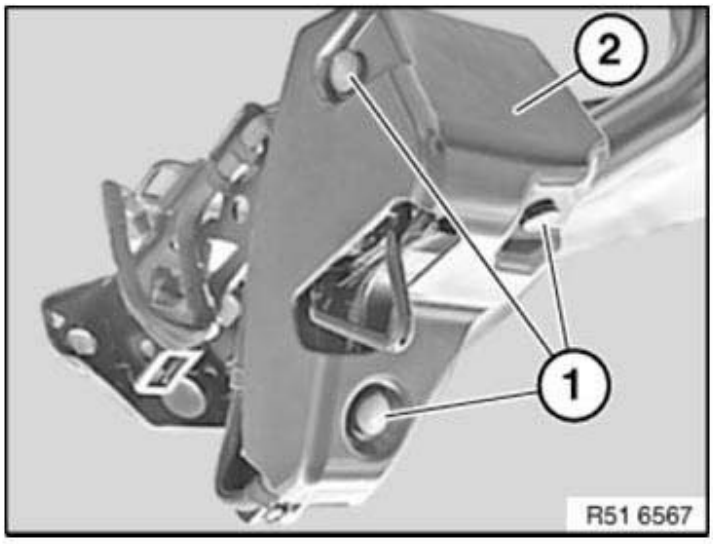


Fig. 207: Identifying Trim With Expansion Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Slacken screws (1) on striker (2) until striker (2) can still just be moved.

Tightening torque **51 24 14AZ** .

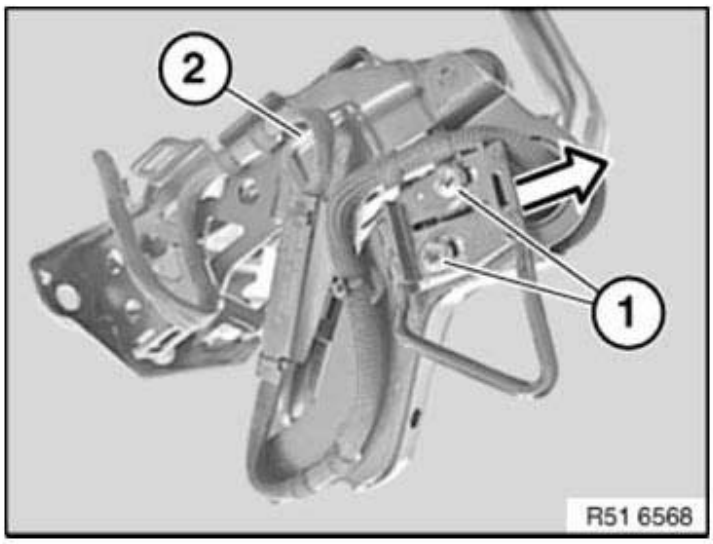


Fig. 208: Identifying Slacken Screws On Striker
Courtesy of BMW OF NORTH AMERICA, INC.

Installation

Replace screws.

Adjust striker:

Close rear lid.

This automatically adjusts the striker correctly.

Open rear lid.

Tighten down screws (1) on striker (2).

Check adjustment of rear lid and rear lid lock, repeating adjustment if necessary.

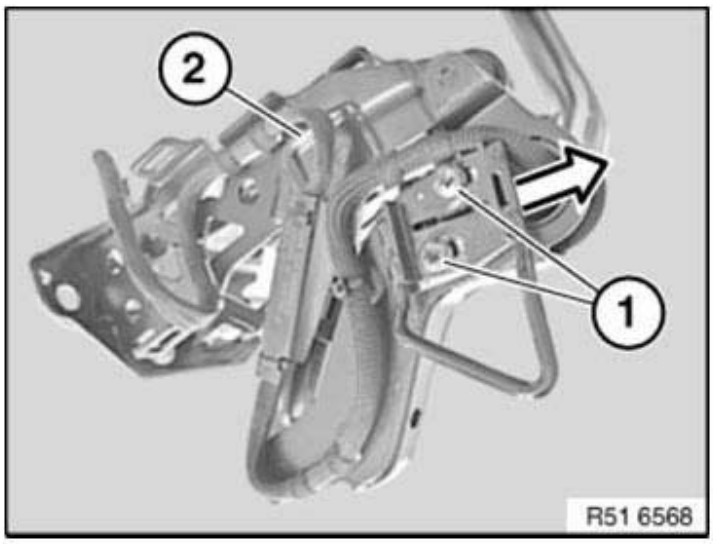


Fig. 209: Identifying Screws On Striker
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew stop buffers (1) to the point where left and right sides of closed rear lid (2) rest on stop buffers.

NOTE: The rear lid must not be higher than the side panels, otherwise there is preload on height adjustment!

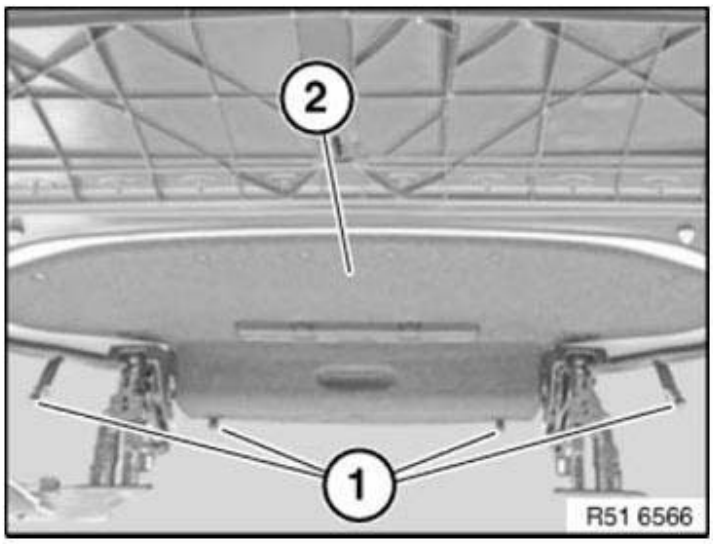


Fig. 210: Identifying Rear Lid With Stop Buffers
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Carry out operational check until

BODY GAP DIMENSIONS are obtained.

51 24 146 REMOVING AND INSTALLING BUTTON FOR ACTUATING REAR LID

Necessary preliminary tasks

- Remove **REAR LID LOCK**

Disconnect plug connection (1) at microswitch.

Slacken screws (2) until retaining ring (3) can be turned.

Tightening torque **51 24 11AZ** .

Turn retaining ring (3) in direction of arrow and remove button (4) from rear lid.

Installation:

Perform function check with rear lid open.

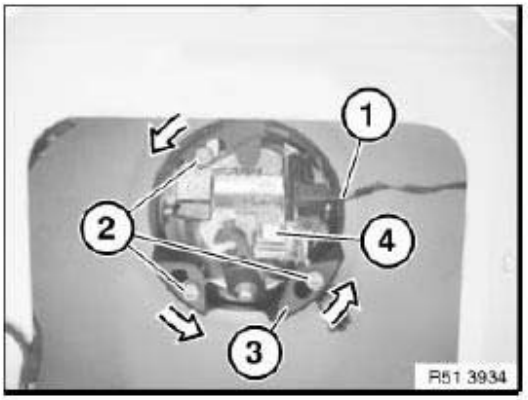


Fig. 211: Turning Retaining Ring
Courtesy of BMW OF NORTH AMERICA, INC.

51 24 300 REMOVING AND INSTALLING OR REPLACING LEFT OR RIGHT GAS STRUT FOR TRUNK LID

> **WARNING: Support rear lid in fully opened position with suitable apparatus. Risk of injury.**

Slide stop spring (1) to end of gas-filled strut (2) and lever out gas strut.

Repeat the procedure at the other end of the gas-filled strut (2) and remove.

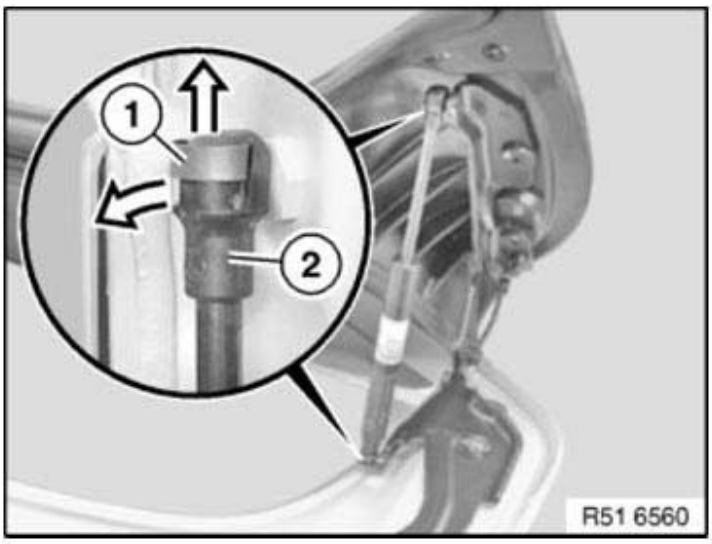


Fig. 212: Sliding Stop Spring Of Gas-Filled Strut
Courtesy of BMW OF NORTH AMERICA, INC.

51 24 100 REMOVING AND INSTALLING/REPLACING REAR LID LOCK (UPPER SECTION)

Necessary preliminary tasks

- Remove **PANEL FOR REAR LID**

Release screws (1).

Tightening torque **51 24 12AZ** .

Release screw (2).

Tightening torque **51 24 13AZ** .

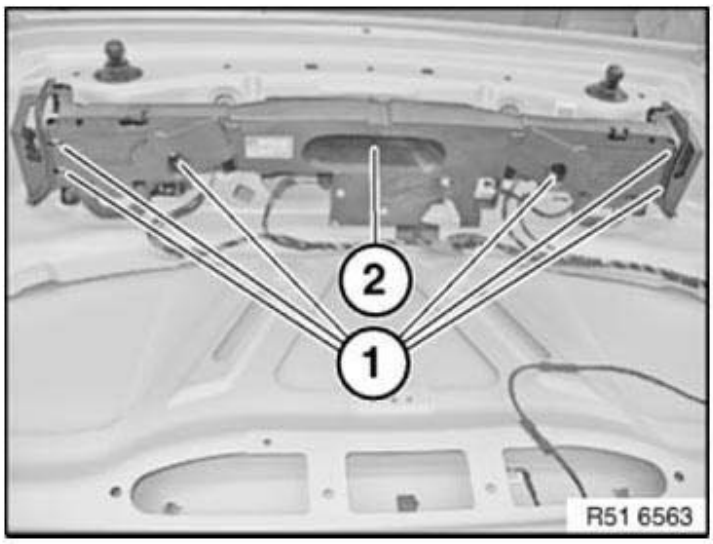


Fig. 213: Identifying Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1).

Unfasten screws (2).

Remove rear lid lock upper section (3).

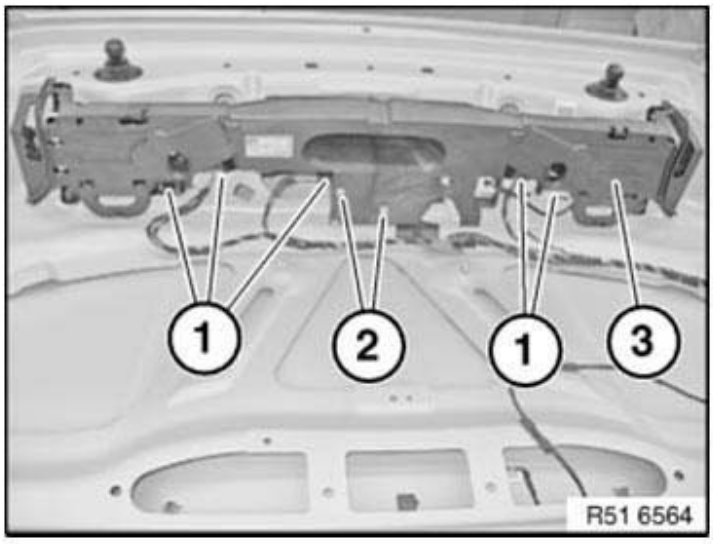


Fig. 214: Identifying Rear Lid Lock Upper Section With Plug Connection And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

US version only:

Disengage Bowden cable (1) for emergency release mechanism.

Remove rear lid lock (2).

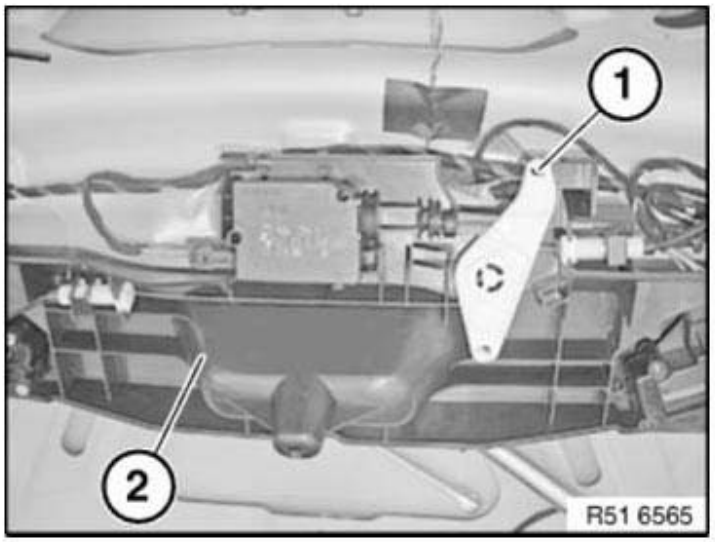


Fig. 215: Identifying Rear Lid Lock And Bowden Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Perform function check with rear lid open.

5131 FRONT AND REAR WINDOW

51 70 ... FITTING SEALS

NOTE: All seals on the vehicle must be removed with the utmost care. Incorrect fitting may result in among other things wind noises and water ingress, and may compromise closing and opening comfort.

- **The following instructions always apply:**

  Seals which are attached to the side frame can be removed and fitted as often as desired.

- Seals must not be damaged or cracked.
- The clamping area must be pressed together by hand to such an extent that rigid attachment to the side flange is still possible. The sides of the seal are permitted to touch each other slightly. A fully compressed seal is not permitted.

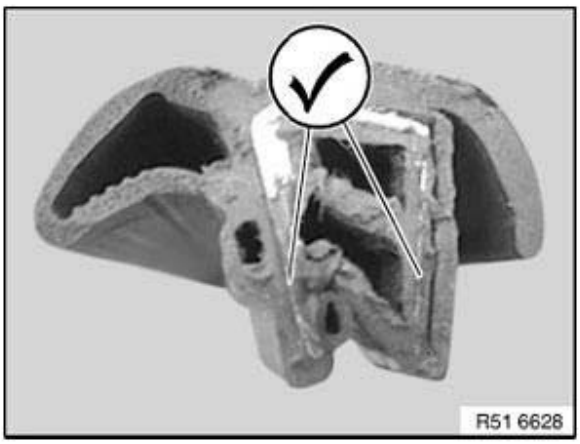


Fig. 216: Identifying Correct Position For Fitting Seals
Courtesy of BMW OF NORTH AMERICA, INC.

- A special tool to press the clamping area together is not needed. Careful fitting by hand is sufficient.
- The seals must always be fitted over their full extent. There is no defined pressing force.
- If seals are repeatedly removed and fitted in the rear lid area, a new seal must be fitted (water ingress in event of sheet flaws).

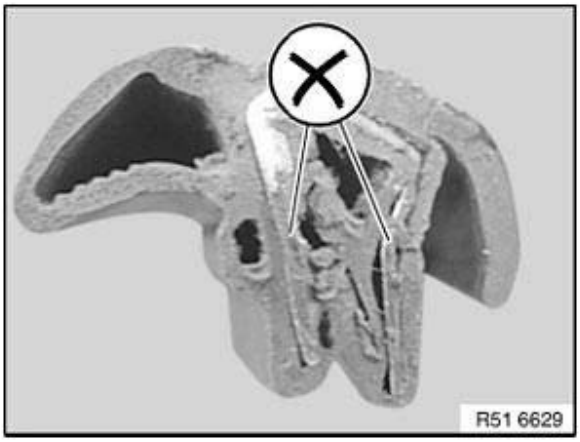


Fig. 217: Identifying Improper Position For Fitting Seals
Courtesy of BMW OF NORTH AMERICA, INC.

- Seals must be checked after fitting for correct seating. If necessary, the seals must be lifted over the adjacent components with a suitable tool. Adjacent components must not be damaged.
- Seals must be replaced when the metal insert in the seal is visible (corrosion).
- The clamping area must be uniform.

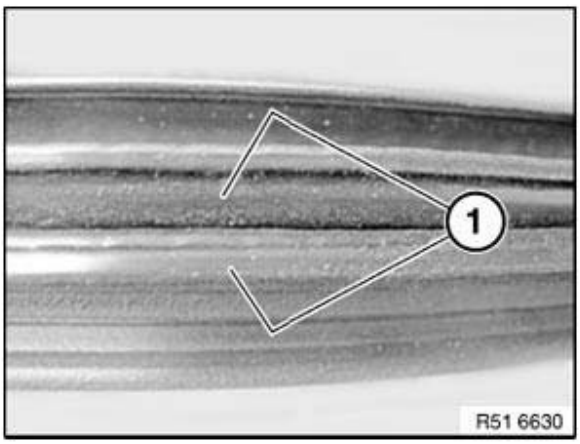


Fig. 218: Identifying Clamping Area
Courtesy of BMW OF NORTH AMERICA, INC.

- Joint seals which are fitted with plastic clips must rest rigidly on the body. Otherwise, the clips or the joint seal must be replaced.

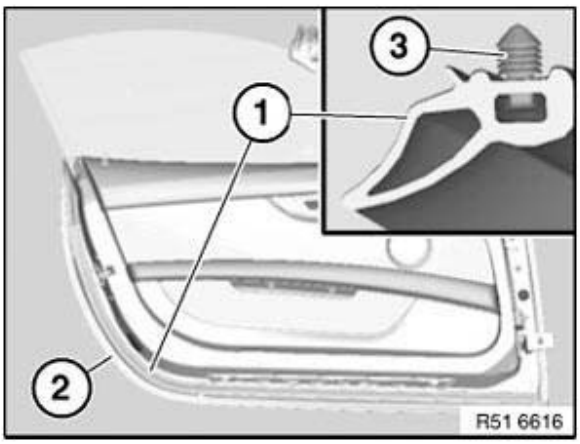


Fig. 219: Identifying Joint Seal With Plastic Clips
Courtesy of BMW OF NORTH AMERICA, INC.

51 31 ... NOTES FOR BONDING SOUND INSULATION (SI), DOORS

IMPORTANT: Do not pull on the sound insulation in jerks (risk of damage)

Work steps for removing and installing sound insulation

- Click on "underlined cross-reference" to display at the end of this document

General

Sound insulation is bonded to the inner door panel.

Bonded sound insulation must not be subjected to load (e.g. leak test) before 5 hours have elapsed.

On-the-job safety

When working with bonding products (adhesive, cleaning agent, etc.):

- Wear safety goggles, protective gloves and if necessary an apron.
- Ensure rooms are well ventilated.
- Change work clothing contaminated with adhesive immediately.
- Change work clothing contaminated with solvents and swelling agents immediately (keep spare work clothing on hand).
- Take skin protection measures, provide washing facilities including hot water, use silicone-free skin creams
- Provide eye douche facilities, change water regularly (once a month).
- Comply with the relevant safety regulations

Handling adhesive area on inner door panel

HANDLING PROCEDURE FOR INNER DOOR PANEL

Adhesive	Cleaning
a. Butyl bead applied to sound insulation with protective film b. Butyl mini-round profile 3 mm from the roller c. Butyl round profile 6 mm from the roller	a. Isohexane (benzine) b. 2-propanol (isopropanol) *Under no circumstances: paint thinning* c. Carry out bonding only after an air drying time > or = 1 min. Air drying time may be omitted if the entire bonding surface is wiped with a dry cloth d. After cleaning, the bonding surface may not be touched with hands or fouled again

Repair in area of sound insulation, door

REPAIR FOR SOUND INSULATION AREA (DOOR)

Repair in the event of damaged sound	• Cut the butyl rope between the sound insulation and the inner door panel with a sharp knife • After the repair is finished, position a new butyl rope 3 mm directly on the original adhesive bead • Heat the butyl bead with a standard hot air blower until the butyl rope strings when touched slightly. Do not damage the sound insulation in the process • Press down with special tool **51 0 300** . Perform this work extremely carefully because the increased amount of adhesive requires pressure of >

insulation or leakage	or = 20 N/cm^2 (compared to firm thumb pressure ~ 30 N/cm^2) • Visually check the adhesive bead and its compression (no capillaries or broken adhesive bead permitted) • In the cases mentioned, the complete sound insulation must be replaced. After removing the sound insulation, removal all butyl remnants from the inner door panel. Apply 6 mm butyl rope to new sound insulation • Press down with special tool **51 0 300** to > or = 20 N/cm^2 (compare to firm thumb pressure ~ 30 N/cm^2)

The sound insulation must be bonded watertight below the door lock

- Flat bonding surface required all round
- No bonding in event of moisture (e.g. condensation, etc.)
- Bonding area must not show any traces of adhesion-reducing residues (e.g. separating agents, greases, oils, paraffins, plastisols, cavity wax, polishing dust residues, etc.)
- Remove the protective film directly before joining (under no circumstances remove earlier, since the butyl, because of its stickiness, will very quickly pick up adhesion-reducing dirt contaminants)
- The sound insulation must be attached with positional accuracy to the inner door panel, because it is no longer possible to change the position without damaging the butyl bead
- With repainted areas, the maximum permitted temperature of 90°C may not be exceeded in the area of the sound insulation. Otherwise, the sound insulation must be removed (and replaced, if necessary).

Expiry date of adhesive

24 months, see label on packaging

Disposal of the cleaning cloth

Cleaning cloths and cleaning agent residues are hazardous waste (see also safety data sheet)

Disposal of adhesive

Hazardous waste (see also safety data sheet)

Work steps for removing and installing sound insulation

SEE REPAIR INSTRUCTIONS

51 31 ... NOTES ON WINDOW BONDING

IMPORTANT: For 03-2009

- **the "1 Hour System" was introduced.**

  Two different adhesive systems are described and identified accordingly

in the following:

"1-day system"

"1-hour system"

For 01-2010

- **the information for the Expiry date (Best Before) on the repair kit and window glue cartridge was changed and now refers to Calendar week and Year (CW/YYYY).**

For 03-2010

- **a "Repair kit, large" was introduced for the "1 Hour System" under part number 83 19 0 444 145.**

  In addition to the "Repair kit, small" delivery, this kit includes a second window glue cartridge.

  Recommended for 5-Series, 6-Series, 7-Series, X3, X5.

These instructions are not applicable to side window bonding (door "centre") on the E38/L7:

Work steps for removing and installing window glass

- Is located at the end of the document under the cross reference "Refer to repair instructions"

General

- It is possible to tow or drive without windscreen or rear window.

The windscreen, rear window and side windows are glued to the body. This bonding will increase the torsional rigidity of the vehicle. To obtain perfect bonding, comply with the installation procedure described in the following.

- The adhesive must be applied at room temperatures > 15 °C to avoid negatively affecting the bonded connection.

  Adjust the component and interior temperature accordingly.

- An air humidity of < 30% significantly slows hardening.
- The window glass must be secured against slipping with yellow plastic adhesive tape (sourcing reference: BMW Parts Department) after being installed. The paint must be completely hardened after painting work.

- Always apply the adhesive in such a way as to achieve tension-free bonding!

On-the-job safety

When working with bonding products (adhesive, cleaning agent, bonding agent, etc.):

- Wear safety goggles, protective gloves and if necessary an apron.
- Ensure rooms are well ventilated.
- Change work clothing contaminated with adhesive immediately.
- Change work clothing contaminated with solvents and swelling agents immediately (keep spare work clothing on hand).
- Take skin protection measures, provide washing facilities including hot water, use silicone-free skin creams
- Provide eye douche facilities, change water regularly (once a month).
- Comply with the relevant safety regulations
- Do not eat, drink or smoke in areas of polyurethane processing.
- All use and safety information of the safety data sheet (SDB) for the applicable product apply. The safety data sheet (SDB) can be obtained from the Aftersales Assistance Portal (ASAP)

Replacement of windscreens

Version with Head-Up Display (HUD):

- Marking for HUD must be present on the windscreen

Version with front passenger airbag:

- Stick on **LABEL**

Tools for cutting through adhesive bead:

ADHESIVE BEAD CUTTING TOOL REFERENCE CHART

Type	Type	Order/part number
Special cutter (manufacturer: Fein) with oscillating knife	Compressed air operated Electrically operated	7 23 63 100 23 8 7 53 60 200 00 4
BMW knife set	All required knives	PN 81 43 9 428 596 or 6 39 03 167 05 4
Knife (U-shape)	19.5 mm (1) 24 mm 36 mm 45 mm	6 39 03 118 01 3 6 39 03 076 01 6 6 39 03 079 01 2 6 39 03 154 01 0
	16 to 35 mm (adjustable)	6 39 03 143 01 3

Knife (straight with stop roller)	10 mm (fixed)(1) 14 mm (fixed)	6 39 03 189 01 0 6 39 03 082 01 6
" **ROLL OUT 2000** " Window glass repair	Wire cutting system (1)	PN 81 62 0 301 768
Cutting wire	Wire cutting system (1)	PN 83 19 2 150 267
Scalpel	for heavy-duty applications (1)	
Handles for cutting wire	Self-locking (1)	Special tool 51 3 270
(1) not included in BMW blade set		

Storage temperature

1-day system: Storage temperature of all adhesive products of 5 °C to 25 °C must be observed.

1-hour system: Storage temperature of all adhesive products of more than 15 °C must be observed.

Adhesive

The BMW approved polyurethane adhesive must be used for bonding:

- **1-day system:** Window glass adhesive (Part number 83 19 0 444 144*)

1-hour system: Repair kit, small (part number 83 19 0 444 141*) or large (part number 83 19 0 444 145*)

The repair kit, large contains a second window glass glue cartridge.

* Sourcing reference: BMW Parts Department

Adhesive is applied to window glass with cartridge gun (compressed airy or electrically operated, sourcing reference: BMW Workshop Equipment and Planning Documentation).

When using accelerator (hot working, 3-hour system)

- Temperature (min. 80 ± 5 °C) of cartridge oven must be checked every morning. Connect temperature sensor to diagnosis system
- Heat adhesive for one hour in cartridge oven (sourcing reference: BMW Parts Department) to 80 ±5 °C
  - Write date and time on cartridge when inserting into cartridge oven
  - Insufficient heating (< 1 hour) results in the formation of bubbles/blisters (bonding not permitted)
  - Temperature < 80 ± 5 °C results in the formation of bubbles/blisters (bonding not permitted)
- Remove hardened adhesive prior to further processing.
- Mistake in mixing in event of an interruption in application > 1 minute (bonding not permitted)
  - A sample bead of 50...70 mm must be rejected after an interruption in application
- Expiry dates of accelerator and adhesive must not be more than 3 months apart
  - Expiry date >3 months results in the formation of bubbles/blisters (bonding not permitted)

Sealed adhesive:

- May only be stored for a maximum of 8 hours once it has been heated up to 80 ±5 °C
- The adhesive will be damaged if this time is exceeded (bonding not permitted)
- Damaged adhesive must not be used and must be disposed of in compliance with national regulations
- The glue cartridge may only be heated up once
    - If the lower label is black, this adhesive may only still be used cold without accelerator while adhering to the expiry date.

IMPORTANT: Not all window glass may be bonded with accelerator (hot working).

If hot working is not permitted, this is described in the relevant document.

Adhesive expiry date

Repair kit (A) and glue cartridges (B) are marked with a date (best before).

Date (1) refers to the calendar week and year (KW/JJJJ).

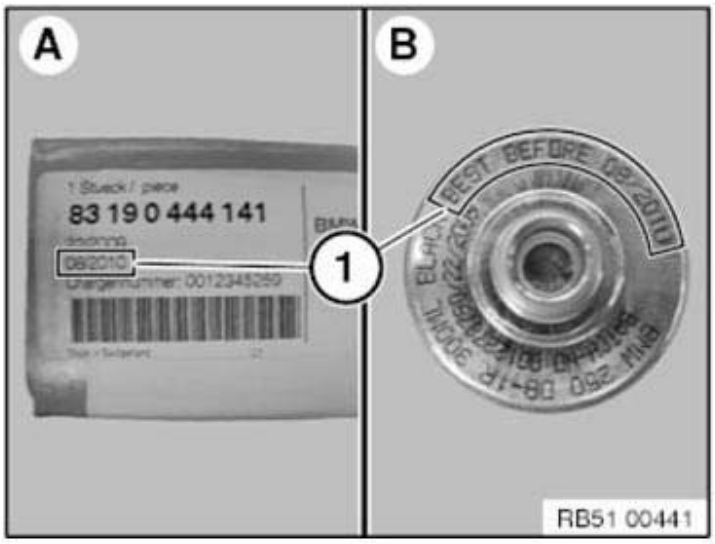


Fig. 220: Identifying Date On Kit And Glue Cartridges
Courtesy of BMW OF NORTH AMERICA, INC.

The adhesive cannot be used after this date (1).

Adhesive disposal

Pure hardened adhesive is handled as normal waste.

The adhesive is disposed of in paper sacks so that it can react with moisture.

Non-hardened adhesive, cartridges and mixtures of adhesive and solvents and the like must be disposed of as hazardous waste.

Accelerator (3-hour system)

Accelerator is screwed onto the glue cartridge and contains a reaction paste which is mixed with the heated adhesive.

IMPORTANT: The accelerator may only be paired with the glue cartridge of an unopened package (formation of bubbles/blisters).

Adhesive and accelerator must be paired while taking into account the expiry dates.

The accelerator may no longer be used if the expiry dates are more than 3 months apart.

Bonding agent (activator)

The BMW-approved bonding agents must be used to treat adhesive areas:

1-day system:

- "Glass Activator 1" (on ceramic glass)
- "Paint Activator A" (on sheet metal flange or residual adhesive bead)

1-hour system:

- "Glass Activator (2)" (on ceramic glass), yellow stick, BMW part number: 83 19 0 444 142
- "Paint Activator (B)" (on sheet metal flange), blue stick, BMW part number: 83 19 2 154 458

WARNING: Wear cut resistant gloves when breaking the glass ampoule

Prepare Glass Activator (2) and Paint Activator (B) for application by shaking and kinking (breaking glass ampoule).

Apply Glass Activator (2) by pressing gently. There is no need for final wiping. Air drying time approx. 2 minutes.

Apply Paint Activator (B) by pressingly gently. Then wipe dry with a paper towel (included in the set).

Bonding agent expiry date

Repair kit and bonding agent are marked with a date (Best Before).

- The bonding agent may only be used up to this date (if not already opened previously).
- Once it has been opened (circlip broken), use for 1 week only even if the expiry date has not been reached.

NOTE: Write the date on the bottle when opening the bonding agent for the first time. Close the bottle immediately after extracting the bonding agent (reaction with air).

Application of bonding agent

The bonding agent is used for adhesion between glass or ceramic glass and the adhesive. Therefore, a thin, homogeneous and continuous line of bonding agent must be applied.

After compressing the adhesive bead, make sure that there is 1 to 2 mm wide bonding agent trace is on the ceramic glass next to the adhesive bead (serves visual inspection).

The adhesive bead may become up to 15 mm wide in compressed condition. The width of the adhesion agent is therefore at least 17mm with windscreens and rear windows and at least 9 mm with door window glass.

The bonding agent may not be applied in the visible area or the point grid. Fresh bonding agent in the visible area must immediately be wiped off with solvent because hardened bonding agent will leave a haze behind.

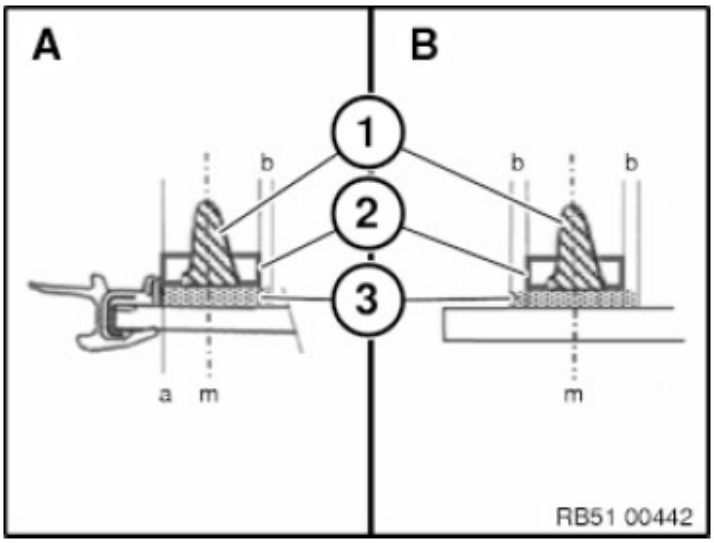


Fig. 221: Identifying Adhesive Bead And Bonding Agent Bead
Courtesy of BMW OF NORTH AMERICA, INC.

ADHESIVE BEAD REFERENCE CHART

Graphic A	Graphic B
Window glass with cover	Window glass without cover.
If the adhesive bead (1) cannot expand further (a = 0 mm) into one direction when pressing down, the	If the adhesive bead (1) can expand into both directions while pressing down, the bonding agent

outer edge of the bonding agent bead (3) will run through Point a.	(3) and adhesive bead (2) will run toward each other in the center (m).

Removal of window glass

IMPORTANT: As of E63 and E87 it will only be possible to remove the rear window with the "ROLL OUT 2000 ".

Cover side walls, roof-mounted aerial and if necessary interior equipment with protective covers.

Tape off body with fabric adhesive tape (e.g. Tesa) in those areas where the oscillating blade could damage the window glass or the paint.

When using the cutting wire, pull the cutting wire ends through special tool 51 3 270, bend and tape off with fabric adhesive tape (e.g. Tesa) (risk of injury and damage).

When removing the window glass:

- Wear safety goggles and protective gloves.

Cut through adhesive bead of window glass:

- With "**ROLL OUT 2000** " * (wire cutting system); no paint is damaged here in the case of narrow gaps
- with special cutter* and oscillating knife*

*Sourcing reference: BMW Workshop Equipment and Planning Documentation

Prior to each use, regrind the knife with a grindstone while the machine is running (new knives also).

Avoid paintwork damage on body aperture.

Guide knife carefully between body and window glass.

Run blade of knife parallel to window glass.

Cut through adhesive bead as closely as possible to window glass.

To remove residual adhesive bead in body aperture (and on window glass if reusing):

- Use a scalpel for heavy-duty applications
- Cut off adhesive residue to a thickness of approx. 0.5 mm
- Remove residual adhesive bead only briefly before bonding

Damage to paintwork in body aperture

To ensure long-term corrosion protection, it is absolutely essential to touch up damage to paintwork!

The "BMW Color System" painting handbook forms the basis of these repair instructions and must be observed without fail.

Touch up damage to paintwork on body aperture with BMW multibase filler.

Grind out scratches in non-visible areas and touch up with BMW multibase filler.

Grind extensive areas of damage down to the bare metal and coat with BMW multibase filler (layer thickness 30 ... 40 µm).

Hardening time:

- With infrared, at least 10 minutes
- Without infrared for at least 60 °C, at least 30 minutes
- Without infrared for at least 20 °C, at least 24 hours

If a complete build-up of paint is required in the visible area:

- Tape off primed adhesive flange before applying top coat

IMPORTANT: Observe hardening time of BMW multibase filler otherwise a perfect bond cannot be guaranteed!

Treatment of adhesive area in body aperture:

TREATMENT PROCEDURE FOR ADHESIVE

Adhesive	Treatment
Bonding and sealant for car window glass	a. Clean with cleaning agent R2 (sourcing reference: BMW Parts Department, part number 83 19 0 417 324) b. Observe an air drying time of at least 5 minutes (at least 15 minutes when applied to residual adhesive bead) c. **1-day system:** Apply "Paint Activator A" to paint and residual adhesive bead c) **1-hour system:** Apply "Paint Activator B" (blue stick) to paint d) Observe an air drying time of at least 1 minute (at least 10 minutes when applied to residual adhesive bead)

IMPORTANT: Do not use Sika remover 208 for cleaning in the adhesive area.

Preparation for installation

Prepare plastic nozzle(s) for shaping adhesive bead (when not using the standard nozzle C), can be cut to size during the air drying time.

Lay a sample bead of approx. 50 mm - watch out for formation of bubbles/blisters when hot bonding; if OK, apply immediately to window glass.

- Interruption must be < 5 seconds (incorrect mixture ratio).

Glue cartridge must be vertical to window glass.

Black ceramic glass impermeable to UV light is located on the peripheral zone of the inside edge of the window to protect the adhesive bead.

Ceramic glass must not be damaged and must be treated as follows.

1-day system: Treatment of ceramic glass surface (inside of window):

TREATMENT FOR CERAMIC GLASS SURFACE (1-DAY SYSTEM)

Adhesive (with part numbers)	**Treatment**
Repair kit Cold/Hot Bonding: - 83 19 0 444 141/145 Glue cartridge: - 83 19 0 444 144	a. Clean with cleaning agent R2 (sourcing reference: BMW Parts Department, part number 83 19 0 417 324) b. Observe an air drying time of at least 5 minute c. Apply a thin coating of "Glass Activator (2)" d. Observe an air drying time of at least 2 minutes

1-hour system: Treatment of ceramic glass surface (inside of window):

TREATMENT FOR CERAMIC GLASS SURFACE (1-HOUR SYSTEM)

Adhesive (with part numbers)	**Treatment**
Repair kit: - 83 19 0 444 141/145 Glue cartridge: - 83 19 0 444 144	a. Clean with cleaning agent R2 (sourcing reference: BMW Parts Department, part number 83 19 0 417 324) b. Observe an air drying time of at least 5 minutes c. Apply a thin coating of "Glass Activator (2)" d. Observe an air drying time of at least 2 minutes

Version with inspection glass for vehicle identification number in windscreen only

- Close inspection glass (left bottom) with Sika bonding base VP 206 (part number 83 19 9 407 777*)

(*sourcing reference: BMW Parts Department)

Except for:

All US/GB models. In addition, all models or models on which the black I-panel cover means that the body color can not be seen through the inspection glass.

Adhesive quantities

Approx. 1 1/4 glue cartridges are required to bond the windscreen on the following vehicles:

- 7 Series
- 5 Series from E60
- X5
- X3

In the case of hot bonding (with accelerator), the missing residual adhesive bead is applied from a second glue cartridge but while cold and without accelerator (formation of bubbles/blisters).

Minimum hardening time is thus not increased.

IMPORTANT: If a second cartridge is required for bonding:

- **First apply cold adhesive to cowl panel at bottom (skin formation time)**
- **Accelerator from repair kit must not be used with the second glue cartridge (formation of bubbles/blisters)**

Formation of bubbles/blisters results in leakage and insufficient bonding strength (torsional rigidity, front passenger airbag).

Effect of differing adhesive quantities:

ADHESIVE QUANTITIES REFERENCE CHART

Too little adhesive:	Too much adhesive:
○ Window glass rests too low in body aperture ○ Strains/tensions may occur (window glass breakage) ○ Insufficient squeezing of adhesive bead (leaking)	○ Window glass rests too high in body aperture ○ Wind noise may occur ○ Strains/tensions may occur (window glass breakage) ○ Dirt contamination of add-on parts by emerging adhesive ○ Adhesive on uninsulated strainer pressure lines of aerial(s) (interference of reception)

Spacer buffers

Before sticking on new spacer buffers, remove all remaining traces of old spacer buffers completely.

Position of spacer buffers must be observed exactly.

Incorrectly fitted spacer buffers will result in:

- Windscreen glass breakage
- Leakage (if the spacer buffer is in the adhesive area)
- Wind noises

Installation

To prevent a pressure build-up in the passenger compartment when the doors are closed:

- Open a side window

IMPORTANT: 1-day system:

After the adhesive bead has been applied, the window glass must be fitted within 5 to 10 minutes (depending on air humidity, temperature and use of accelerator).

After 5 to 10 minutes the adhesive bead forms a skin which can no longer guarantee a perfect bond.

1-hour system:

Once the adhesive bead has been applied, the window glass must be installed within 7 minutes (depending on air humidity, temperature).

After 7 minutes the adhesive bead forms a skin which can no longer guarantee a perfect bond.

The general rule is:

To secure the window glass, use only the yellow plastic adhesive tape (sourcing reference: BMW Parts Department, part number 83 19 9 410 979).

The window glass will slip down if other adhesive tapes are used.

Window glass slippage will result in leaks and wind noises.

Remove adhesive residue immediately with adhesive remover (Sika remover 208, sourcing reference: BMW Parts Department). Do not press out the window glass again.

Hardened adhesive can only be removed mechanically.

Check height of windscreen/rear window with special tool 51 0 010 or 51 3 210.

Assemble vehicle.

Hardening

The adhesive hardens as it reacts with air humidity (with accelerator also due to mixed-in reaction paste) at room temperature.

Minimum hardening time (table) is obtained from 22 °C and 38 % relative air humidity.

At ambient temperatures above 23 °C and 50 % relative air humidity (hot countries), the adhesive open time is shortened to approx. 5 minutes (skin formation time).

The adhesive hardening process is interrupted completely at ambient temperatures below 5 °C. In this event, there will be no increase in the strength of the bonded connection.

Do not subject the vehicle to load on one side during the minimum hardening time (see table, without front passenger airbag), such as e.g.:

- one wheel on curb
- vehicle hoist
- etc.

Maneuvering inside garage/workshop:

- only permitted on level ground
- do not under any circumstances drive over approach ramps, e.g. into multistorey car parks

Remove adhesive tapes after hardening time.

If you fail to adhere to the minimum hardening times (see table, without front passenger airbag):

- Leaks and/or wind noises may occur at the window glass

1-day system: Adhesives and their minimum hardening times:

ADHESIVES AND HARDENING TIMES (1-DAY SYSTEM) REFERENCE CHART

Adhesive	**Minimum hardening time "without front passenger airbag" (after which vehicle can be moved)**	**Minimum hardening time "with front passenger airbag" (countries where seatbelt use is not required by law)**
Hot working with accelerator	2 hours	3 hours()
Cold processing	9 hours	20 hours()

1-hour system: Adhesives and their minimum hardening times:

ADHESIVES AND HARDENING TIMES (1-HOUR SYSTEM) REFERENCE CHART

Adhesive	Minimum hardening time "without front passenger airbag" (after which vehicle can be moved)	Minimum hardening time "with front passenger airbag" (countries where seatbelt use is not required by law)
Cold processing	1 hour	2 hours(1)

(1) Note

Vehicles with front passenger airbag:
The vehicle can be handed over to the customer after the hardening time (vehicle can be moved, adhesive-dependent) with the following warning:
Once the windscreen glass has been bonded, all occupants must travel with their seatbelts attached for "... hours"!
The time is taken from the "Minimum hardening time" table for countries where seatbelt use is not required by law.

IMPORTANT: If the minimum hardening time is not adhered to:

- **the front passenger together with the windscreen may fall out of the vehicle in the event of an accident after the front passenger airbag has been triggered**

Locate leaks

- by spraying water underneath sealing lips
- with ultrasonic leak detector (sourcing reference: BMW Parts Department)

If necessary, seal leakage with appropriate nozzle.

Version with GPS navigation system 1 (up to 9/97)

After installation of rear window:

- Recalibrate magnetic field probe
- Refer to functional description in ISID (Integrated Service Information Display/Diagnosis and Information System)

Version with rain sensor, rain/light sensor or rain/light solar sensor

Remove complete rain sensor, rain/light sensor or rain/light solar sensor, **SEE REPAIR INSTRUCTIONS** .

After replacing windscreen:

- Initialize rain sensor, rain/light sensor or rain/light solar sensor
- Refer to functional description in ISID (Integrated Service Information Display/Diagnosis and Information System)

Version with automatic air conditioning

After replacing windscreen:

If condensation sensor is not mounted on new windscreen:

Replace condensation sensor, **REFER TO REPAIR INSTRUCTIONS** .

Version with Head-Up Display (HUD)

When replacing windscreen in vehicles with **rain/light solar sensor,** replace this completely: See repair instructions See **6135177 REMOVING AND INSTALLING (REPLACING) RAIN/LIGHT SENSOR** or **6135679 INITIALIZING RAIN/LIGHT (SOLAR) SENSOR** .

Before bonding, install windscreen with seal(s) and check HUD; if necessary, press expanding foam tape down with hand roller.

After bonding windscreen, check and if necessary adjust HUD.

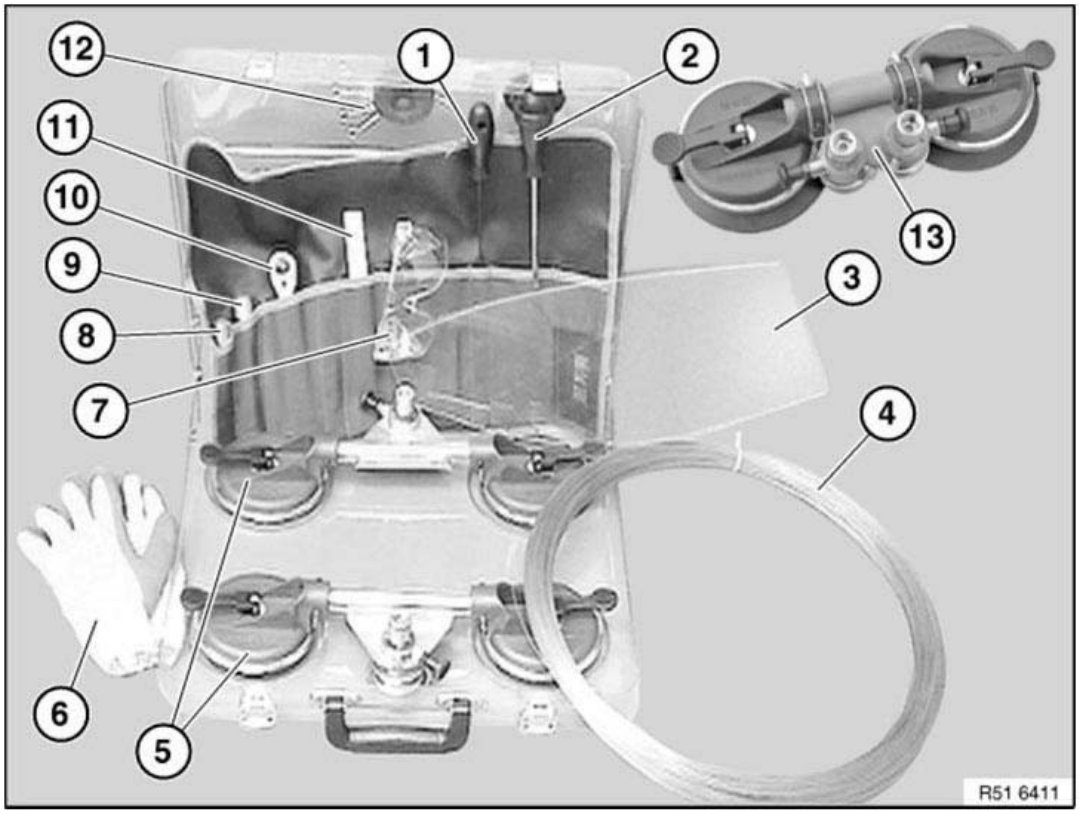
Work steps for removing and installing window glass

See repair instructions See **5131000 REMOVING AND INSTALLING/RENEWING WINDSCREEN** or **5131200 REMOVING AND INSTALLING/REPLACING REAR WINDOW**.

NOTE: **If the document for the selected model is not required or not approved, the following message will be displayed when clicking on the "cross-reference": "No additional documents available in the current vehicle context".**

51 31 ... REMOVE WINDSCREEN WITH "ROLL OUT 2000"

Windscreen removal system "Roll Out 2000"



1 Wire starter
2 Parabolic tool
3 Plastic washer
4 Wire cutting roller
5 Suction cup lifters
6 Protective gloves
7 Safety goggles
8 Extension (short)
9 Extension (long)
10 Reversible ratchet
11 Plastic wedge
12 Guide needles
13 Suction cup lifter with double spool

Fig. 222: Identifying Windscreen Removal System Components (Roll Out 2000)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Both paint and ergonomic and health-endangering damage is minimized with the "Roll Out 2000" system.
Sourcing reference:

WARNING: Follow safety instructions See 5100... SAFETY INSTRUCTIONS FOR WORKING ON CARS WITH AIRBAG SYSTEMS or 72 SAFETY PRECAUTIONS AND GENERAL INFORMATION for working on vehicles with airbag systems (risk of injury).

IMPORTANT: Take care when handling sharp-edged tools and cutting wire (risk of damage to head airbag and window glass).

IMPORTANT: Always keep both suction cups dry and clean to ensure their optimum adhesion on the windscreen.

Lubricate spool if lock rattling becomes too loud.

Always wear safety goggles and protective gloves for your own safety.

Mounting suction cup lifters on windscreen or rear window:

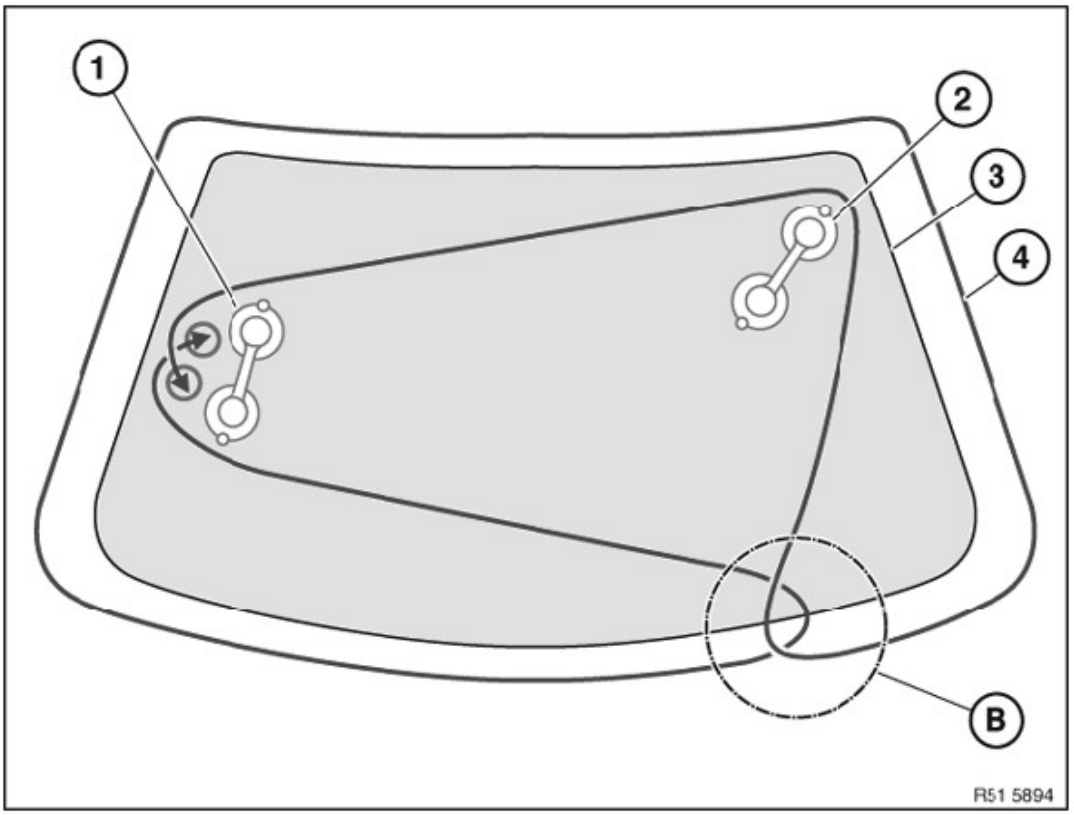


Fig. 223: Identifying Suction Cup Lifters Position On Windscreen
Courtesy of BMW OF NORTH AMERICA, INC.

- Secure position of suction cup lifters as shown:

1. Suction cup lifter with double spool
2. Suction cup lifter with single spool
3. Window
4. Cutting wire

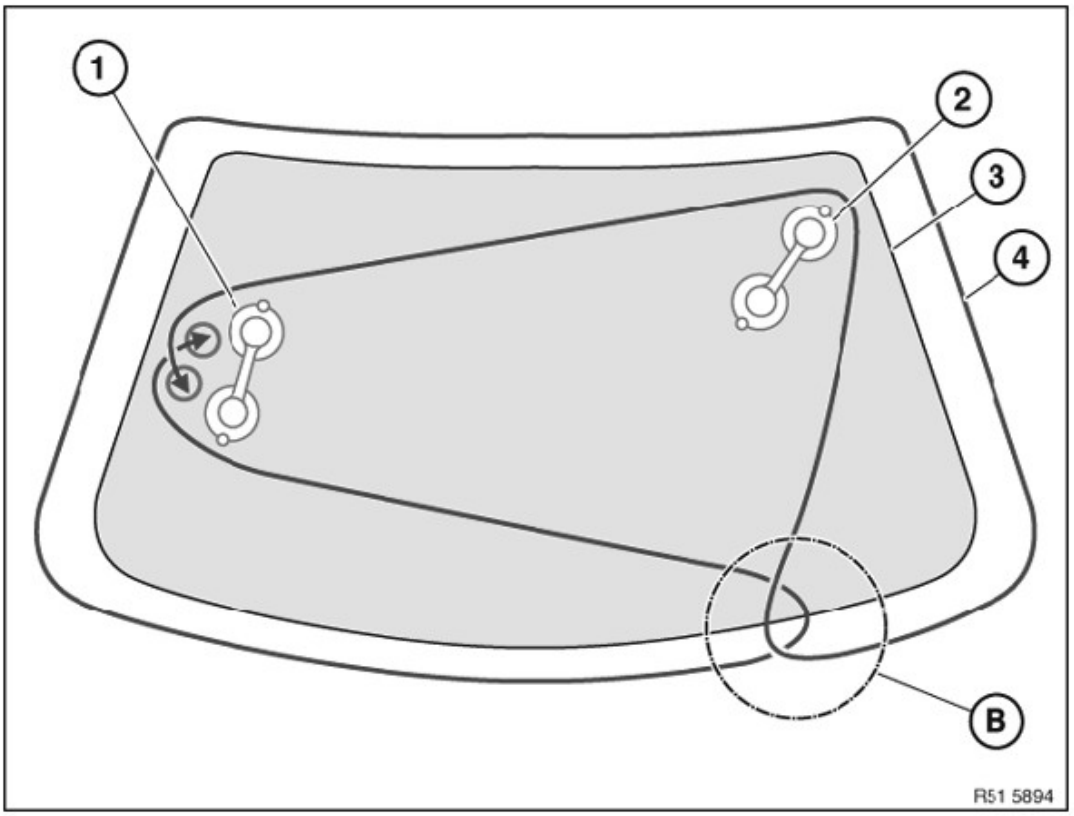


Fig. 224: Identifying Suction Cup Lifters Position On Windscreen
Courtesy of BMW OF NORTH AMERICA, INC.

Preparatory work

- Cut off required cutting wire length:

  Length = 6 x window glass diagonal

- The cutting wire loops must lie on top of each other in area (B).

They must not get caught up in each other. (Otherwise no possibility of cutting the adhesive bead/wire will break.)

Overlapping of cutting wire loops approx. 10 cm.

Distance from right window edge approx. 30 cm.

Pulling cutting wire into vehicle

- Cut off wire end (1) at an angle and pierce adhesive bead (2) with it.
- Wire end must be bent towards window glass.

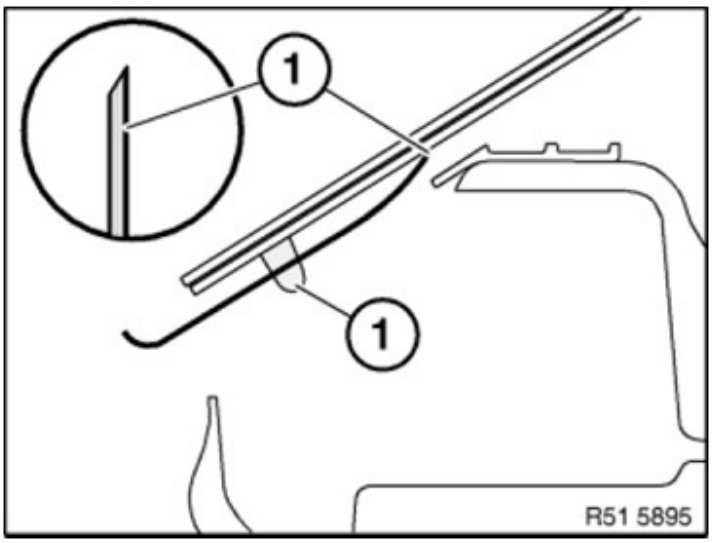


Fig. 225: Identifying Wire End
Courtesy of BMW OF NORTH AMERICA, INC.

Laying cutting wire around window glass

- Starting from pull-in point, lay wire eyelet created on the outside around the window glass
- Pull excess wire into passenger compartment

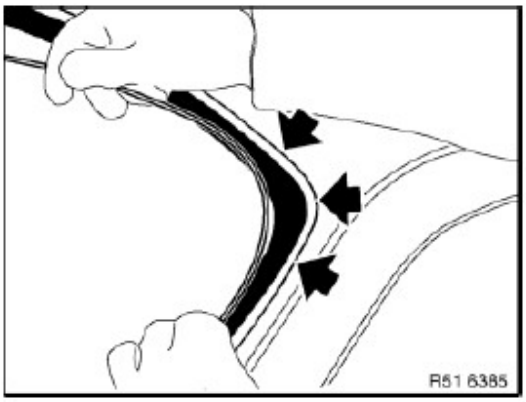


Fig. 226: Securing Cutting Wire Around Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Make sure the cutting wire is located at all four corner points below the window glass.

Check that the cutting wire is not caught on clamps or body.

Secure window glass on outside with adhesive tape against sliding.

NOTE: **Window glass (1) with installed seals (3) or moulded-on surrounds:**

- **Moisten cutting wire (4) and seals (3) on window glass (1) with water**
- **Insert cutting wire (4) in bend (without kinking) between window glass(1) and body aperture (2)**

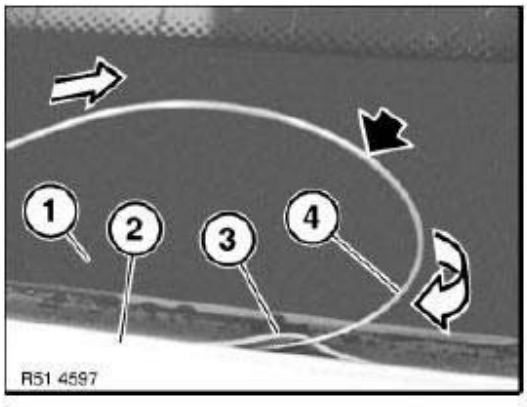


Fig. 227: Inserting Cutting Wire Between Window Glass And Body Aperture
Courtesy of BMW OF NORTH AMERICA, INC.

Protecting vehicle passenger compartment

- To avoid damage and possible dirt contamination, protect A-pillars, roof and dashboard trim panel (3) by means of plastic washer (1)
- Always carry plastic washer (1) between respective wire (2) being tightened and trim panel components



Fig. 228: Identifying Plastic Washer, Wire And Dashboard Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Attaching wire in hoisting winch with double coil

- Bend over cutting wire end (1) and insert into slot of spool (2)

- Repeat process with other end of wire (1) and second spool (2)
- Wind cutting wire (1) onto spools by hand until cutting wire (1) is under slight tension

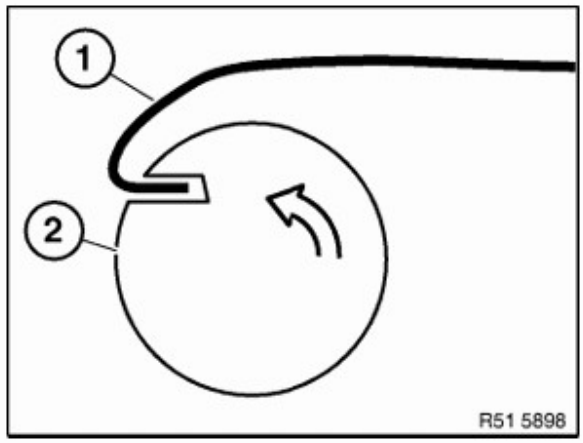


Fig. 229: Bending Cutting Wire End
Courtesy of BMW OF NORTH AMERICA, INC.

Starting the dismantling

NOTE: Spools can only be rotated in one direction.

- **Make sure the wire is always situated in the guide channel of the suction cup lifter (1)**
- **Fit reversible ratchet onto top spool shaft (2) and tighten wire**
- **Start by cutting lower adhesive bead**

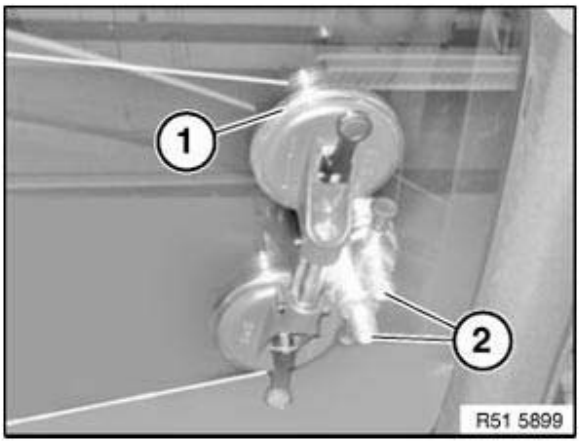


Fig. 230: Identifying Suction Cup Lifter On Spool Shaft
Courtesy of BMW OF NORTH AMERICA, INC.

- **At the end of the cutting process, the two wire loops join up at the lifting**

winch (1)

- **Remove "Roll Out 2000"**
- **Remove window glass**

51 31 000 REMOVING AND INSTALLING/RENEWING WINDSCREEN

IMPORTANT: INSTRUCTIONS ON CEMENTING WINDSCREEN serve as the basis for this repair instruction and must be observed without fail.

Cover front side walls with protective covers.

NOTE: Removal is performed with ROLL OUT 2000 . Only use an oscillating blade when replacing the windscreen.

Necessary preliminary work

- Remove **TRIM PANELS FOR ROOF PILLARS**
- Remove **INTERIOR REAR-VIEW MIRROR**
- Remove **WINDSCREEN FRAME SEAL**
- Remove **COVER FOR COWL PANEL**

Replacement:

- If necessary, remove **RAIN/LIGHT SENSOR**
- If necessary, remove **SOLAR RAIN/LIGHT SENSOR**
- If necessary, remove **FOGGING/CONDENSATION SENSOR**

Replacement only

Fit 36 mm blade (sourcing reference: BMW Parts Department) to the tool.

Regrind blade with a grinding stone while machine is running (new blades also).

Carefully insert blade between body aperture and windscreen.

Guide handle of knife parallel to windscreen.

Cut through adhesive bead as closely as possible to windscreen.



Fig. 231: Identifying 36 mm Blade On Tool
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: When cutting is carried out at the bottom, the engine compartment lid must be in the service position.

Cables and hoses remain connected.

Move **ENGINE BONNET/HOOD INTO SERVICE POSITION** .

Cut through windscreen adhesive bead at bottom.

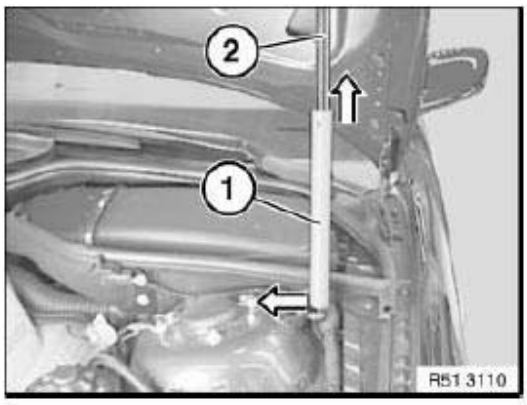


Fig. 232: Lifting Out Windscreen
Courtesy of BMW OF NORTH AMERICA, INC.

Lift out windscreen with special tools 51 3 010.

Pull off adhesive tapes all round.

Installation note:

If necessary, replace defective **EXPANDING FOAM TAPE** (1).

IMPORTANT: Press down or bond the expanding foam tape (1) right before installing the windscreen with special tool 51 0 300 . Relaxed expanding foam tape could crush cement bead (leaks, wind noises).

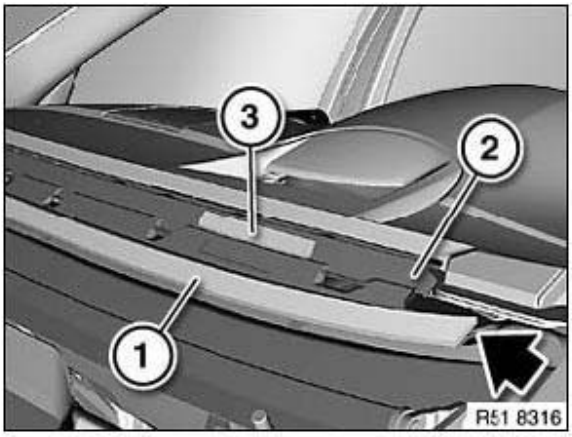


Fig. 233: Identifying Expanding Foam Tape On Lower Edge Of Defroster Channel
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

Attach new expanding foam tape (1) to lower edge of defroster channel (2).

Expanding foam tape (1) may only be stuck up to corner points of defroster channel (2).

Stick on expanding foam tape (3) (120 mm long) above vehicle identification number.

Fitting spacer buffers

IMPORTANT: Completely remove remnants of semicircular spacer buffers still present (2) (windscreen breakage).

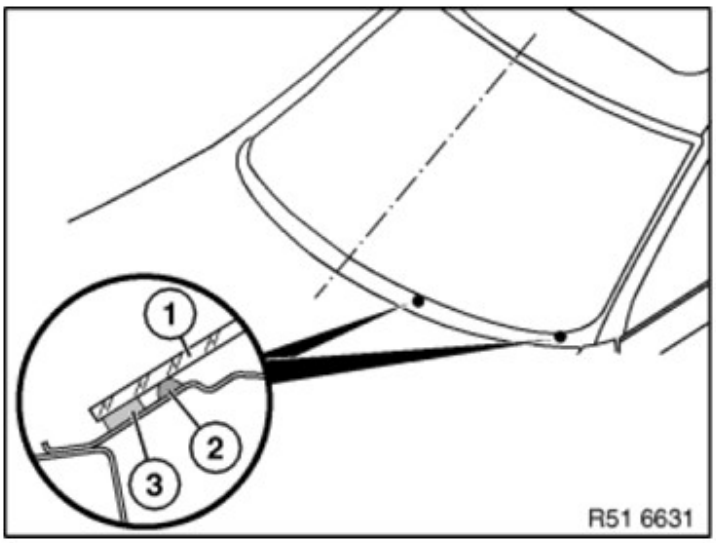


Fig. 234: Identifying Windscreen, Semicircular Spacer Buffer And Adhesive Bead
Courtesy of BMW OF NORTH AMERICA, INC.

Stick on two new semicircular spacer buffers (2) as follows:

- 310 mm to left/right of centre window frame aperture
- on right and left sides in window corner

1. Windscreen
2. Semicircular spacer buffer
3. Adhesive bead

Installing the windscreen frame sealing

Refer to removing and installing/replacing **WINDSCREEN FRAME SEALING** .

Section, cowl panel, top

Preventing wind noise on top of windscreen:

Windscreen (1) must be lower than roof outer skin (2). The bridge (3) of the windscreen frame sealing therefore serves as a spacer buffer for the top windscreen (1).

Dimension A ~ 8 mm.

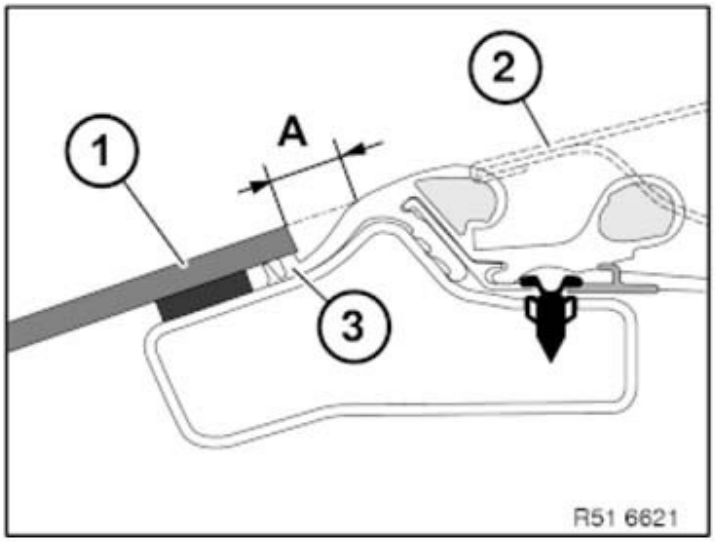


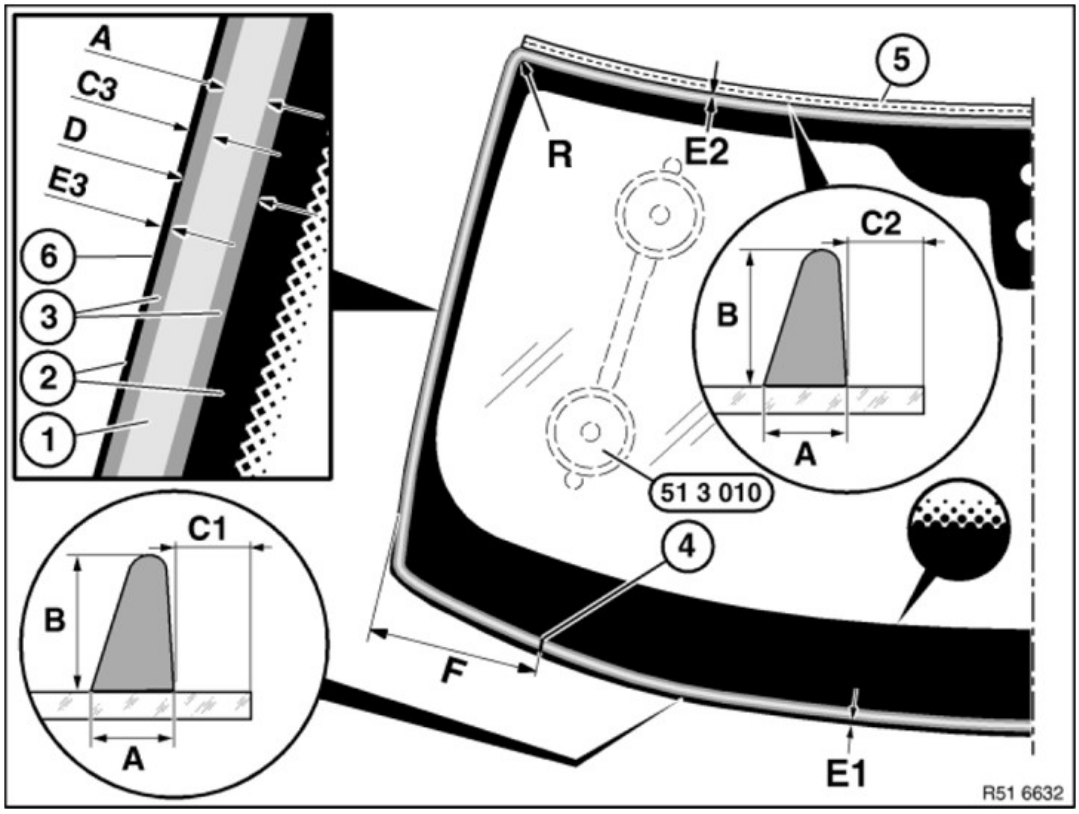
Fig. 235: Identifying Windscreen And Roof Outer Screen With Bridge
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Depending on the installation position of the windscreen frame sealing (later installation), dimension A may slightly deviate from the design specifications.

Installation note:

Keep the contact pressure when bonding the windscreen (1) light enough so that a later removal of the windscreen frame sealing can be ensured.

Overview for windscreen cementing (E89):



1	Adhesive bead	C1	5 ±1 mm (distance 1 to 6 bottom)
2	Ceramic layer	C2	12 ±1 mm (distance from 1 to 6, top)
3	Primer coat	C3	5 ±1 mm (distance 1 to 6 side)
4	Application point of adhesive bead	D	20+2 mm (width of primer trace)
5	Rubber frame, top	E1	1 mm (distance from 3 to 6, bottom)
6	Windscreen outer edge	E2	7 mm (distance from 3 to 6, top)
A	8 ±2 mm (width of adhesive bead)	E3	1 mm (distance from 3 to 6 side)
B	12 -2 mm (height of adhesive bead)	F	approx. 300 mm (distance from 4 to 6)
		R	approx. 15 mm (radius of 1)

Fig. 236: Overview For Windscreen Cementing (E89)
Courtesy of BMW OF NORTH AMERICA, INC.

Attach special tool 51 3 010 twice to tool trolley. Moisten suction surfaces and tension windscreen from outside.

If reusing removed windscreen, remove residual adhesive down to 0.5 mm.

If necessary, mount new rubber frame (5). Observe centre markings in so doing.

If necessary, press expanding foam tape down with hand roller.

Virtually vertical part (B) of adhesive bead (1) must be positioned to rubber frame (5) and windscreen outer edge (6).

Spread bead joint with special tool. 00 9 322

NOTE: Adhesive area for plastic adhesive tapes (1) must be free from grease and dust.

Stick two yellow plastic adhesive tapes (1) to roof at distance (A) from outside corners.

Length: 400 mm

A = 250 mm

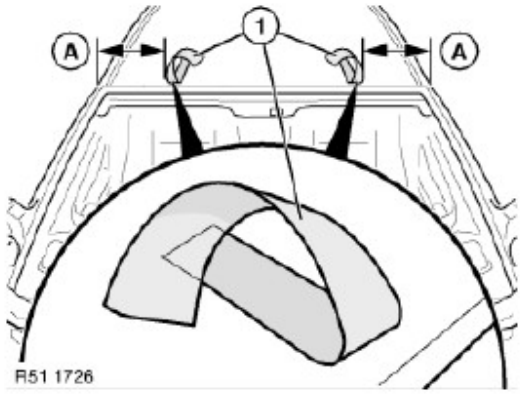


Fig. 237: Identifying Plastic Adhesive Tapes Position On Roof
Courtesy of BMW OF NORTH AMERICA, INC.

Working on windscreen (1) carefully with special tool 51 3 010 :

- position windscreen first at top
- Align sides evenly
- then insert at bottom and press down
- secure in terms of height in this position at top with two yellow plastic adhesive tapes (2)

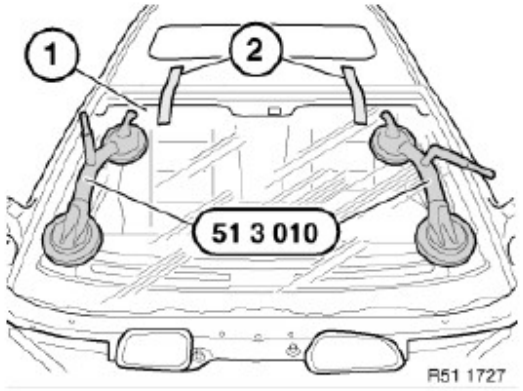


Fig. 238: Identifying Plastic Adhesive Tapes And Special Tool (51 3 210) On Windscreen
Courtesy of BMW OF NORTH AMERICA, INC.

51 31 000 REMOVING AND INSTALLING/RENEWING WINDSCREEN

IMPORTANT: The "INSTRUCTIONS FOR WINDOW CEMENTING " serve as the basis for these repair instructions and must be followed without fail.

51 31 200 REMOVING AND INSTALLING/REPLACING REAR WINDOW

IMPORTANT: The "INSTRUCTIONS FOR WINDOW CEMENTING " serve as the basis for these repair instructions and must be followed without fail.

51 48 ... REMOVING AND INSTALLING/REPLACING SOUND INSULATION ON COWL PANEL OR WINDSCREEN

Sound insulation can only be replaced with the following removed:

- **INSTRUMENT PANEL** or
- **WINDSCREEN**

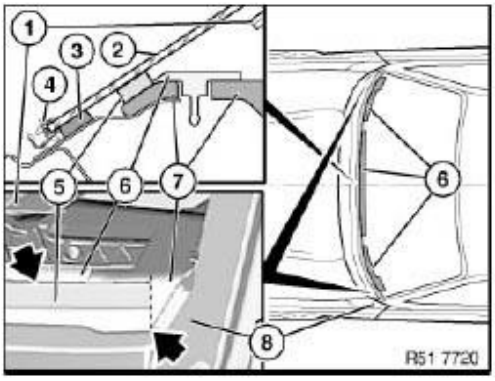


Fig. 239: Identifying Expanding Foam Tape, Adhesive Bead And Sound Insulation On Windscreen
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Press down, or with replacement bond, expanding foam tape (5) just before installing the windscreen (2) with special tool 51 0 300 . Relaxed expanding foam tape could crush cement bead (3) (leaks, wind noises).

Replacement

Stick new expanding foam tape (5) on sound insulation (7) along press-down elements (6).

Expanding foam tape (5) may only be stuck up to corner point of sound insulation (7).

1. Dashboard trim panel
2. Windscreen
3. Adhesive bead

4. Retaining strip, bottom
5. Expanding foam tape (sound insulation, cowl panel)
6. Press-down for sound insulation (7)
7. Sound insulation, bulkhead upper section
8. Side frame

51 48 ... REMOVING AND INSTALLING/REPLACING SOUND INSULATION ON COWL PANEL/WINDSCREEN

NOTE: Sound insulation is only fitted in vehicles with diesel engines.

Sound insulation can only be replaced with the following removed:

- Instrument panel or
- **WINDSCREEN**

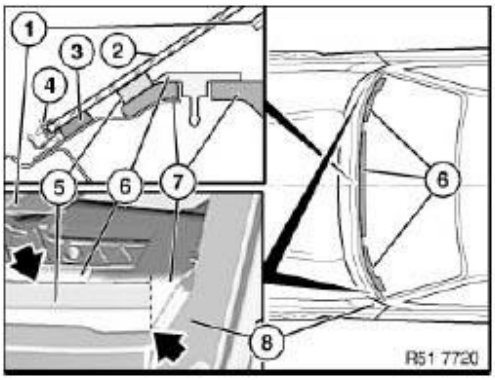


Fig. 240: Identifying Expanding Foam Tape, Adhesive Bead And Sound Insulation On Windscreen
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Press down expanding foam tape (5) shortly before installing windscreen (2) (with hand roller) or stick on if replacing. Relaxed expanding foam tape could crush cement bead (3) (leaks, wind noises).

Replacement

Stick new expanding foam tape (5) on sound insulation (7) along press-down elements (6).

Expanding foam tape (5) may only be stuck up to corner point of sound insulation (7).

1. Dashboard trim panel
2. Windscreen
3. Adhesive bead
4. Retaining strip, bottom

5. Expanding foam tape (sound insulation, cowl panel)
6. Press-down elements for (7)
7. Sound insulation, bulkhead upper section
8. Side frame

51 31 015 REPAIRING DAMAGE TO WINDSCREENS CAUSED BY STONE CHIPS (CLEAR AND TINTED LAMINATED SAFETY GLASS)

Field of vision (no repairs acceptable):

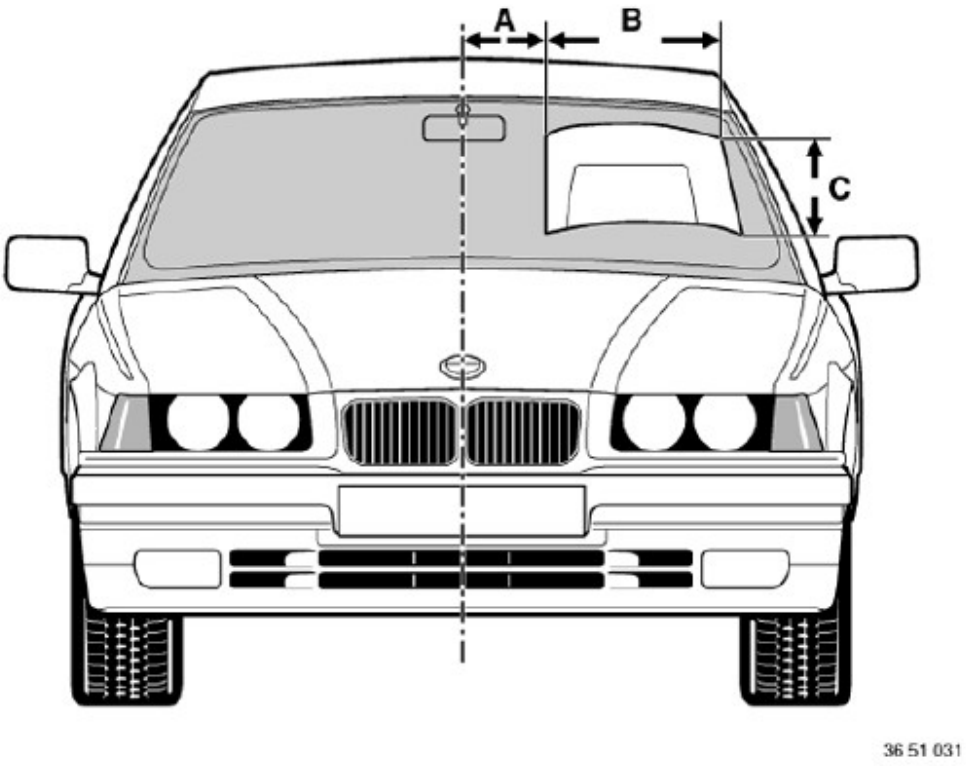


Fig. 241: Identifying Field Of View Width \ Height
Courtesy of BMW OF NORTH AMERICA, INC.

A. 50 mm (gap between field of view/centre of vehicle)
B. Up to end of wiper range, outside (field of view width)
C. Restriction by wiper range (height of field of view)

IMPORTANT: Repairs must only be carried out outside of the field of vision (refer to sketch).

5132 FRONT MANUALLY OPERATED WINDOWS

51 32 154 ADJUSTING LEFT OR RIGHT FRONT DOOR WINDOW GLASS

Precondition:

- Vehicle must be standing on its wheels on a level floor
- **FRONT DOOR** correctly adjusted to fit
- If necessary, close retractable hardtop

IMPORTANT: When closing, the door window glass must not jam on the trim strip in any area of the window (window glass breakage).

If necessary, incoming check

The following incoming checks must be carried out prior to every adjustment operation:

NOTE: Incoming check must be carried out with the window cavity cover strip fitted.

- **Denormalize POWER WINDOW**
- **Measure retraction depths with special tool 51 3 080 .**
- **Initialize power windows**

Necessary preliminary tasks

- Denormalize **POWER WINDOW**
- Remove **FRONT DOOR TRIM PANEL**
- Remove **SOUND INSULATION**
- Remove **OUTER WINDOW CAVITY COVER STRIP** (not for checking pre-tension)

Ideal adjustment, longitudinal direction

Open door window.

Fit special tool 51 0 360 in front door and press back as far as it will go.

NOTE: Special tool 51 0 360 must rest against door and reach stop on guide (1).

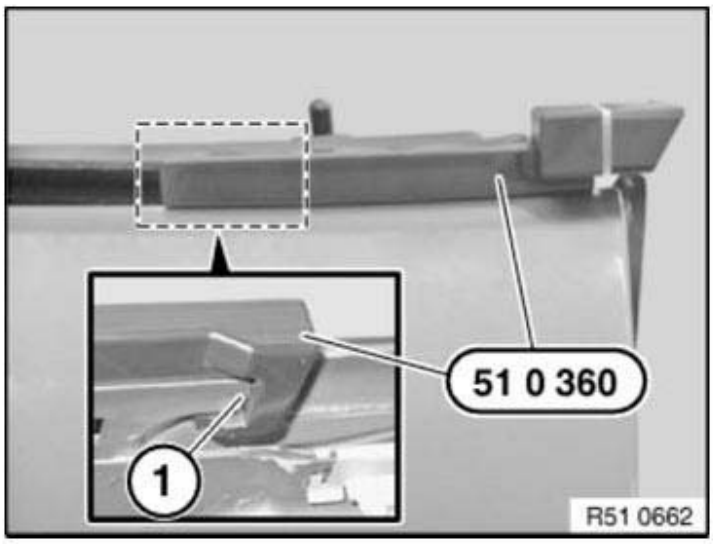


Fig. 242: Fitting Special Tool (51 0 360) On Front Door
Courtesy of BMW OF NORTH AMERICA, INC.

Ideal adjustment, retraction depth

- Open door window
- Attach special tool 51 3 080 to door window glass
- Close front door and door window
- Measure retraction depth

NOTE: 2 items of special tool 51 3 080 are required for adjustment of retraction depths.

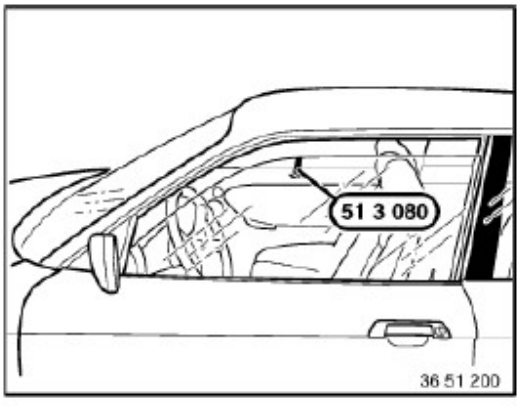


Fig. 243: Identifying Special Tool (51 3 080)
Courtesy of BMW OF NORTH AMERICA, INC.

Use fabric adhesive tape in area A to tape special tool 51 3 310 . Place suitable foil between glass and special tool (paint and window may get damaged)

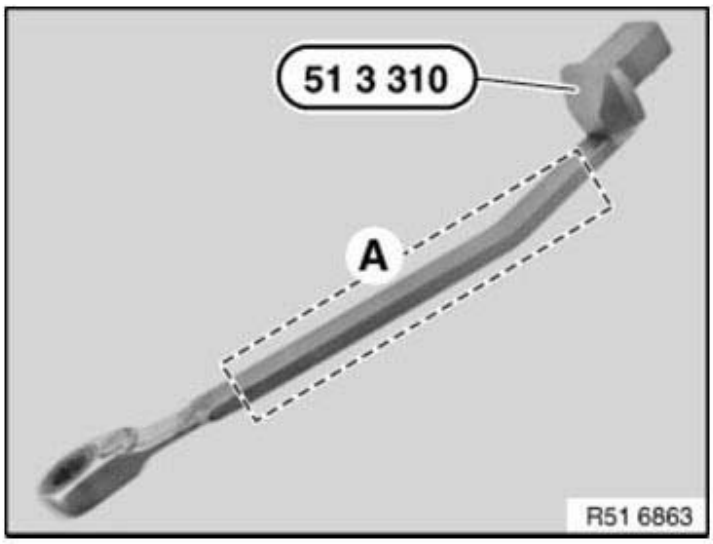


Fig. 244: Identifying Fabric Adhesive Tape On Special Tool (51 3 310)
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting longitudinal direction/retraction depth

Slacken screws (1) with special tool until door window glass can just be moved.

Tightening torque **51 32 2AZ** .

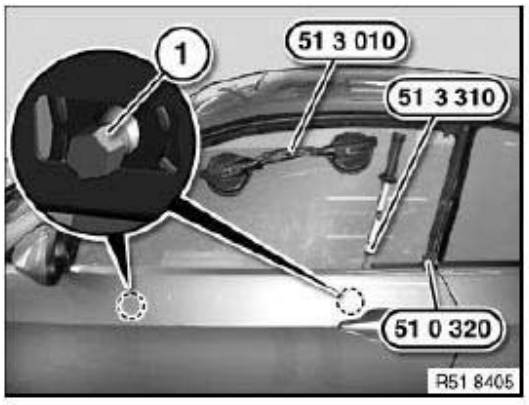


Fig. 245: Removing Screws Using Special Tool (51 3 310)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Ensure window glass does not become bonded to support (1) in the blue area (A).

(increased breakaway torque)

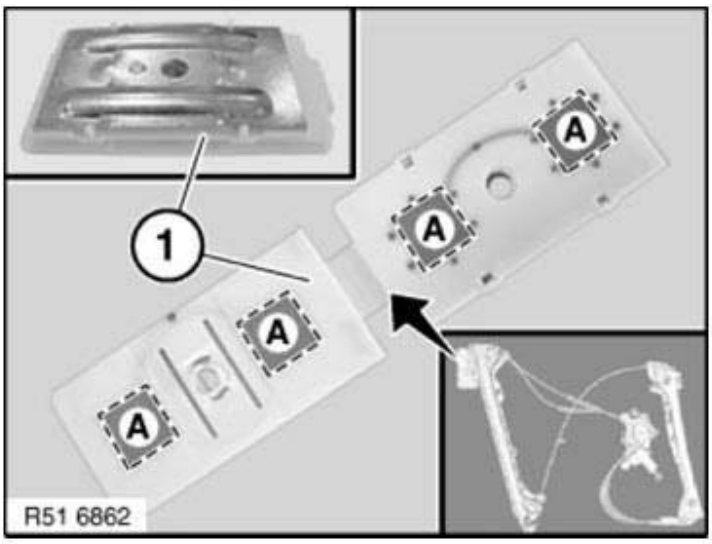


Fig. 246: Identifying Window Glass Support Area
Courtesy of BMW OF NORTH AMERICA, INC.

Attach special tool 51 3 010 to door window glass (1).

Adjust retraction depth and longitudinal direction of door window glass (1) by moving door window glass with special tool 51 3 010 .

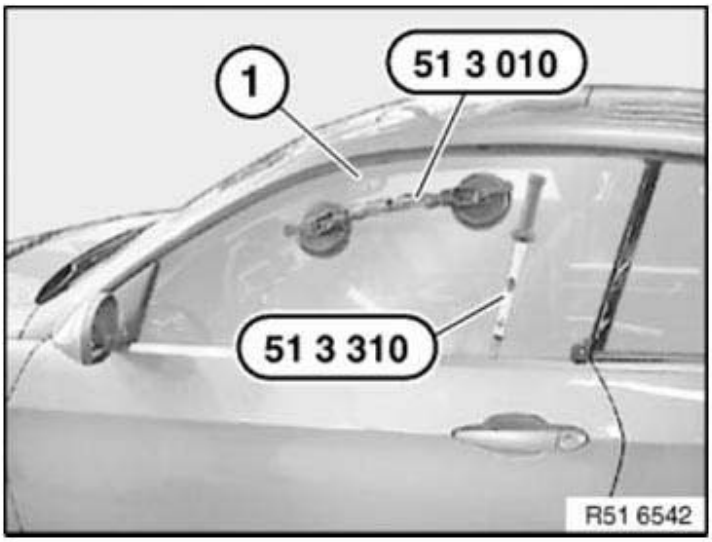


Fig. 247: Attaching Special Tool (51 3 310) To Door Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting retraction depth

Measure retraction depth "C" in areas A and B.

Retraction depth C:

C = 4.3 ± 1 mm in area A

(measuring point distance 30 mm to mirror triangle)

C = 8.5 ± 1 mm in area B

(measuring point distance next to dot screen)

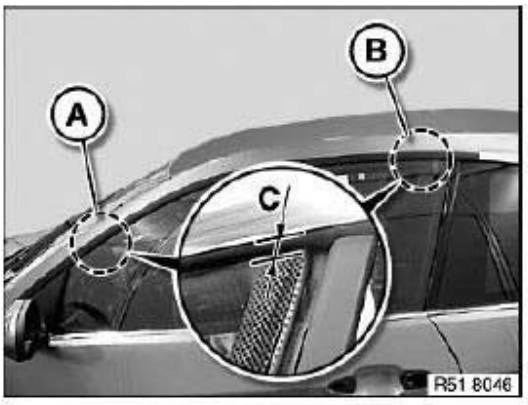


Fig. 248: Identifying Retraction Depth
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Front door must open and close without the door window glass touching the roof trim strip.

Adjusting longitudinal direction

Close door and door window glass.

Door window glass (1) must touch seal (2) in area of B-pillar in accordance with measurement "A".

Measurement A:

A = 12 ± 1 mm

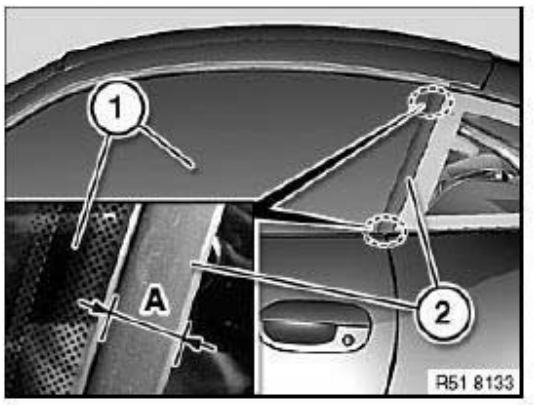


Fig. 249: Identifying Door Window Glass And Seal Touching Distance
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

The tightening torque to be set **51 32 1AZ** (MDE) is reduced when special tool 51 3 310 is used. Depending on the torque wrench used, this must be calculated in accordance with the adjacent overview:

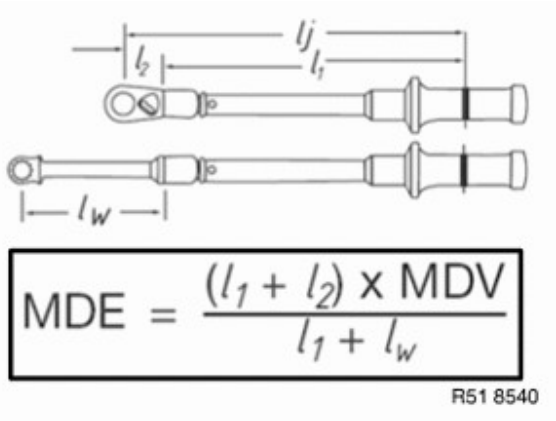


Fig. 250: MDE Calculation Diagram
Courtesy of BMW OF NORTH AMERICA, INC.

MDE = Torque to be set

MDV = Prescribed torque (without special tool)

lj = Standard adjustment length with adjusting tool

l1 = Effective length of torque wrench

l2 = Inside dimension of adjusting tool

lw = Inside dimension of insertion tool (here lw = 145 mm)

Tighten down screws (1) with special tool 51 3 310 .

Tightening torque **51 32 2AZ** .

Remove special tool 51 3 010 from door window glass.

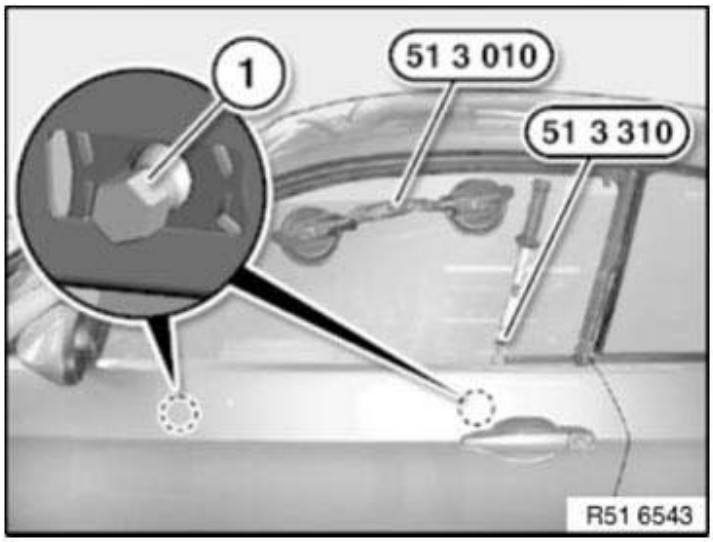


Fig. 251: Identifying Special Tools (51 3 010 And 51 3 310) On Door Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

Top edge of door window glass (1) must be adjusted parallel to contour (2) of water drain.

Seals on A-pillar and on retractable hardtop must not be damaged.

When the door window glass is retracted into the seals, the seals must not distorted.

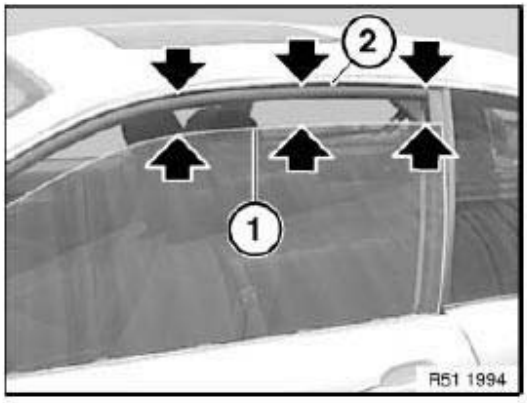


Fig. 252: Identifying Door Window Glass And Water Drain Counter
Courtesy of BMW OF NORTH AMERICA, INC.

Ideal adjustment, pre-tension

NOTE: **Pretension can be checked with or without window cavity cover strip. Pretension is 1.0 mm less with window cavity cover strip. Magnet in special tool 51 0 341 creates the correct door window glass pre-tension on the seal system for measurement. No force must be exerted on the door or door window glass during measurement.**

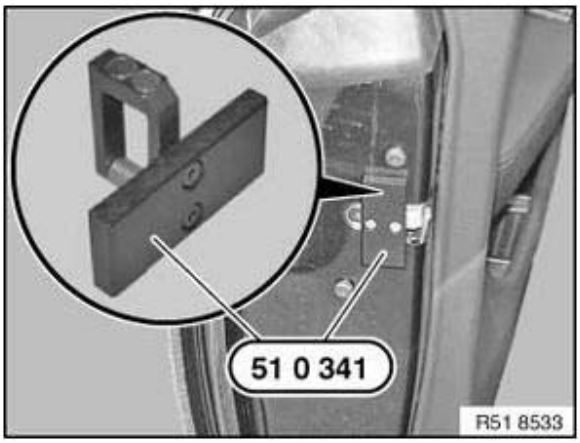


Fig. 253: Identifying Special Tool (51 0 341) On Rotary Striker Of Door Lock
Courtesy of BMW OF NORTH AMERICA, INC.

Insert special tool 51 0 341 in rotary striker of door lock and close rotary striker manually. Carefully close door

Slide special tool 51 0 342 at distance "B" to door window glass side edge into seal (1) and measure dimension (A) to outside edge of door window glass (2).

Dimension "A" with window cavity cover strip:

A = 30 ± 1 mm

Dimension "A" without window cavity cover strip:

A = 29 ± 1 mm

B = 40 mm

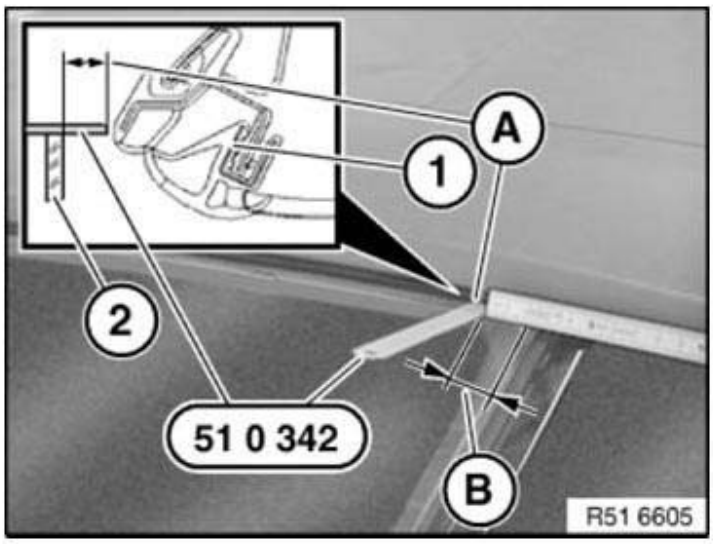


Fig. 254: Sliding Special Tool (51 0 342) On Door Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting pre-tension

Slacken nut (3) with reversible ratchet (2) of special tool 51 3 300 (consisting of 51 3 301, 51 3 303 and 51 3 304).

Turn knob (1) on special tool 51 3 300 to turn stud (4) and thereby alter the pretension.

Tighten nut (3).

Tightening torque **51 32 6AZ** .

Check adjustment, repeat procedure if necessary.

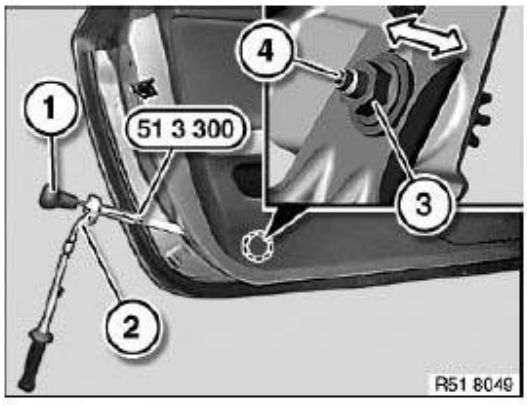


Fig. 255: Turning Knob On Special Tool (51 3 304)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: **After completing adjustment work, it is essential to INITIALIZE the power window regulator.**
Checking run-in of door window glass:
Door window glass must strike the inside of the seal.

51 32 170 REMOVING AND INSTALLING/REPLACING DOOR WINDOW GLASS, FRONT LEFT OR RIGHT

Necessary preliminary tasks

- Remove **INNER WINDOW CAVITY COVER STRIP**
- Remove **OUTER WINDOW CAVITY COVER STRIP**
- Remove **FRONT DOOR TRIM**
- Remove **ACOUSTIC INSULATION**

WARNING: **Risk of injury!**

Carry out work on the power window unit only when the power window motor is de-energized.

Door window glass (1) must be opened to dimension (A).

A= approx. 110 mm

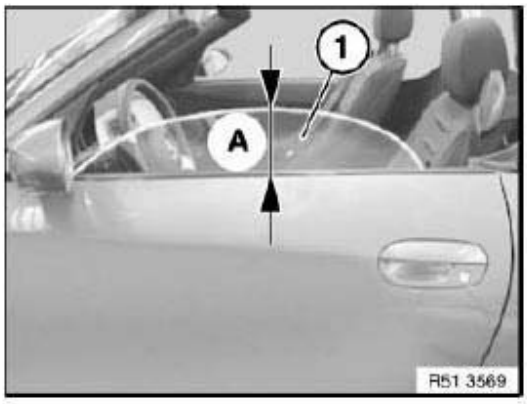


Fig. 256: Identifying Door Window Glass Opening Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 21 16AZ** .

Remove adapter (2).

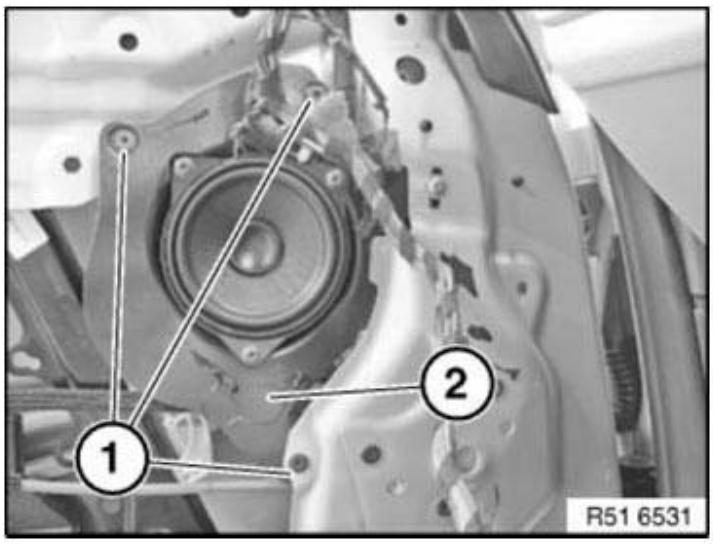


Fig. 257: Identifying Adapter With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 21 13AZ** .

Remove H-strut (2).

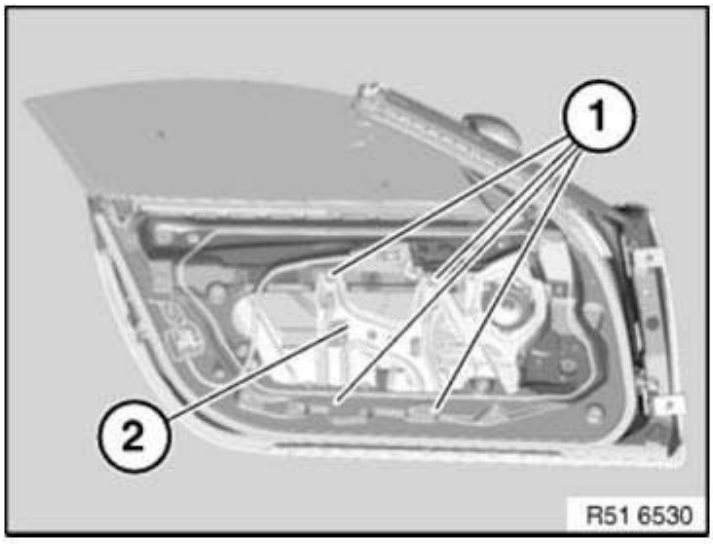


Fig. 258: Identifying H-Strut With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Power window unit is shown removed.

Release screws (1).

Tightening torque **51 32 2AZ** .

Remove door window glass (2).

Installation:

Insert door window glass (2) in clamping plates (3).

ADJUST DOOR WINDOW GLASS .

Check function.

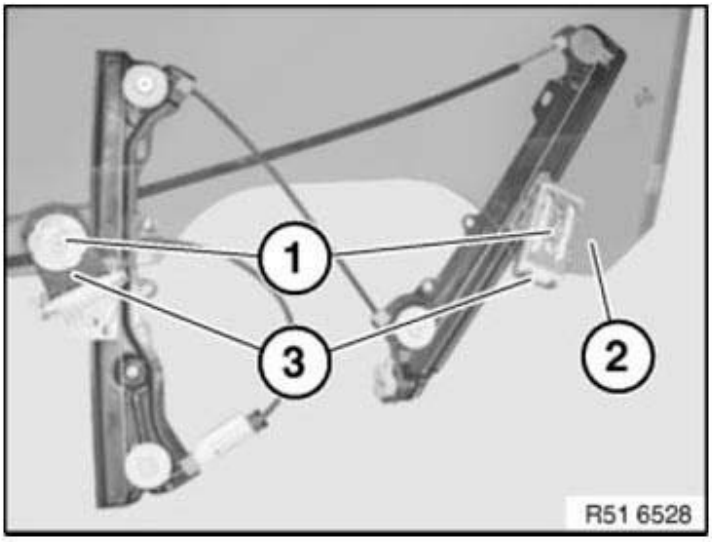


Fig. 259: Identifying Door Window Glass And Clamping Plates With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

When replacing door window glass

Remove clamping plate (1) from door window glass (2).

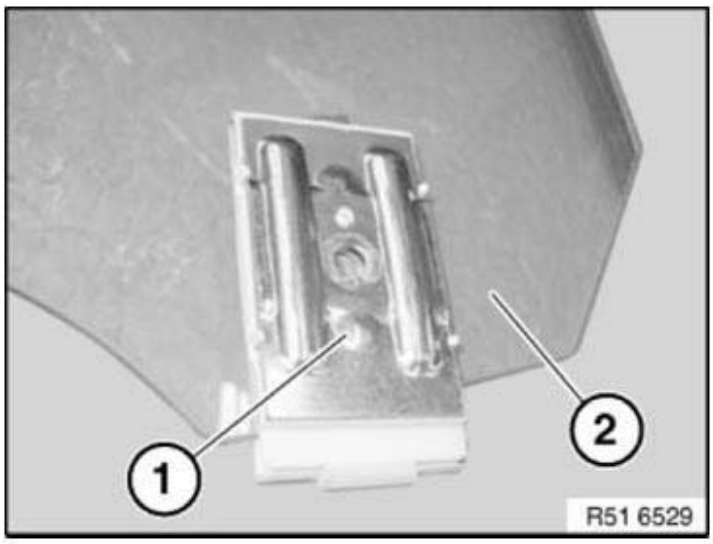


Fig. 260: Identifying Clamping Plate Of Door Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

51 32 211 REPLACING FRONT LEFT OR RIGHT RUBBER GUIDE FOR LEFT OR RIGHT DOOR WINDOW

Necessary preliminary tasks

- Remove **INNER WINDOW CAVITY COVER STRIP**
- Remove **OUTER WINDOW CAVITY COVER STRIP**
- Remove **SOUND INSULATION** in front area

Pop rubber guide (1) in area (A) out of door.

Pull rubber guide (1) out of window guide rail and remove towards top.

Installation:

Moisten rubber guide (1) with water before fitting.

Slide rubber guide (1) from above into window guide rail and if necessary retighten at bottom.

Make sure rubber guide (1) is correctly seated on door and door window glass.

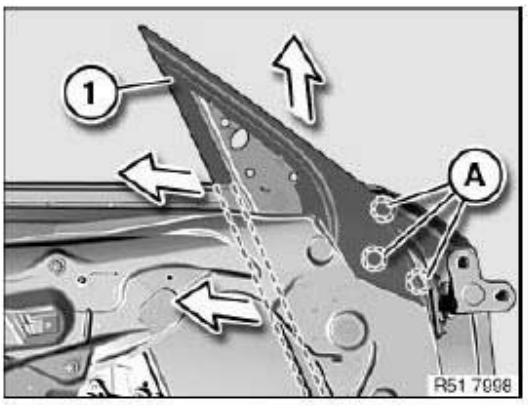


Fig. 261: Pulling Rubber Guide Out Of Window Guide Rail
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Coat contact surface of window glass with Vaseline, especially in top corner (2).

Rubber guide (1) must not be damaged in corners (2).

If necessary, replace rubber guide.

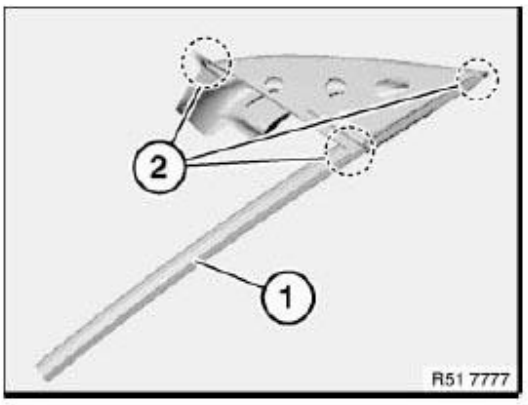


Fig. 262: Identifying Rubber Guide On Corners
Courtesy of BMW OF NORTH AMERICA, INC.

5133 FRONT ELECTRICALLY OPERATED WINDOWS

51 32 154 ADJUSTING LEFT OR RIGHT FRONT DOOR WINDOW GLASS

Precondition:

- Vehicle must be standing on its wheels on a level floor
- **FRONT DOOR** correctly adjusted to fit

- If necessary, close retractable hardtop

IMPORTANT: When closing, the door window glass must not jam on the trim strip in any area of the window (window glass breakage).

If necessary, incoming check

The following incoming checks must be carried out prior to every adjustment operation:

NOTE: Incoming check must be carried out with the window cavity cover strip fitted.

- **Denormalize POWER WINDOW**
- **Measure retraction depths with special tool 51 3 080 .**
- **Initialize power windows**

Necessary preliminary tasks

- Denormalize **POWER WINDOW**
- Remove **FRONT DOOR TRIM PANEL**
- Remove **SOUND INSULATION**
- Remove **OUTER WINDOW CAVITY COVER STRIP** (not for checking pre-tension)

Ideal adjustment, longitudinal direction

Open door window.

Fit special tool 51 0 360 in front door and press back as far as it will go.

NOTE: Special tool 51 0 360 must rest against door and reach stop on guide (1).

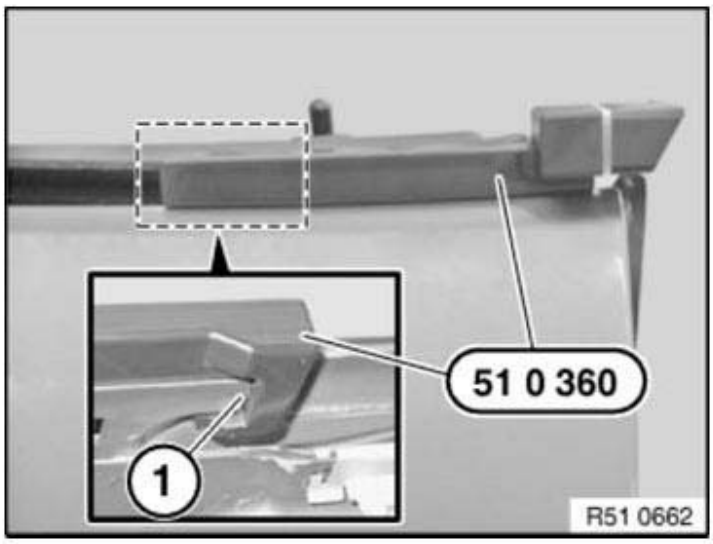


Fig. 263: Fitting Special Tool (51 0 360) On Front Door
Courtesy of BMW OF NORTH AMERICA, INC.

Ideal adjustment, retraction depth

- Open door window
- Attach special tool 51 3 080 to door window glass
- Close front door and door window
- Measure retraction depth

NOTE: 2 items of special tool 51 3 080 are required for adjustment of retraction depths.

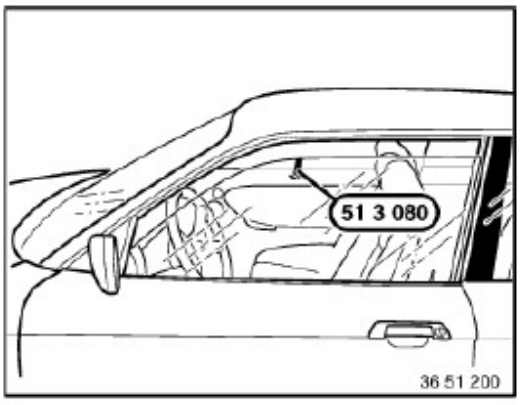


Fig. 264: Identifying Special Tool (51 3 080)
Courtesy of BMW OF NORTH AMERICA, INC.

Use fabric adhesive tape in area A to tape special tool 51 3 310 . Place suitable foil between glass and special tool (paint and window may get damaged)

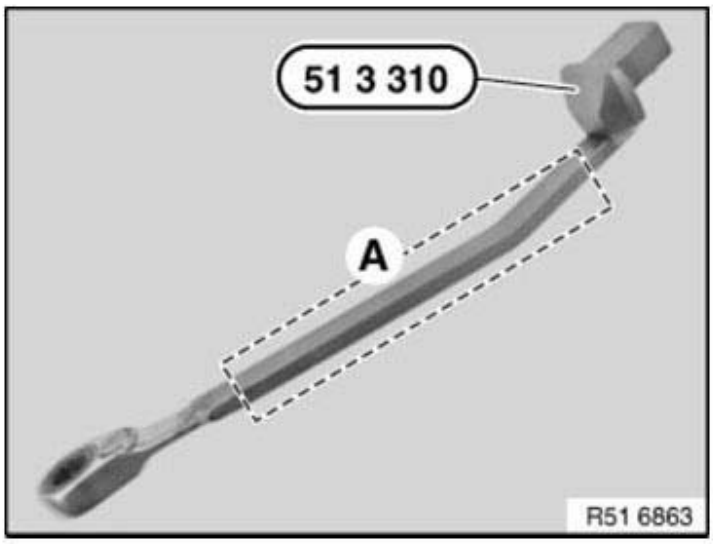


Fig. 265: Identifying Fabric Adhesive Tape On Special Tool (51 3 310)
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting longitudinal direction/retraction depth

Slacken screws (1) with special tool 51 3 310 until door window glass can just be moved.

Tightening torque **51 32 2AZ** .

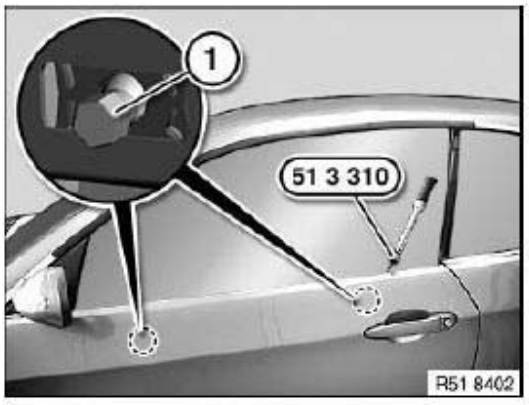


Fig. 266: Removing Screws Using Special Tool (51 3 310)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Ensure window glass does not become bonded to support (1) in the blue area (A).

(increased breakaway torque)

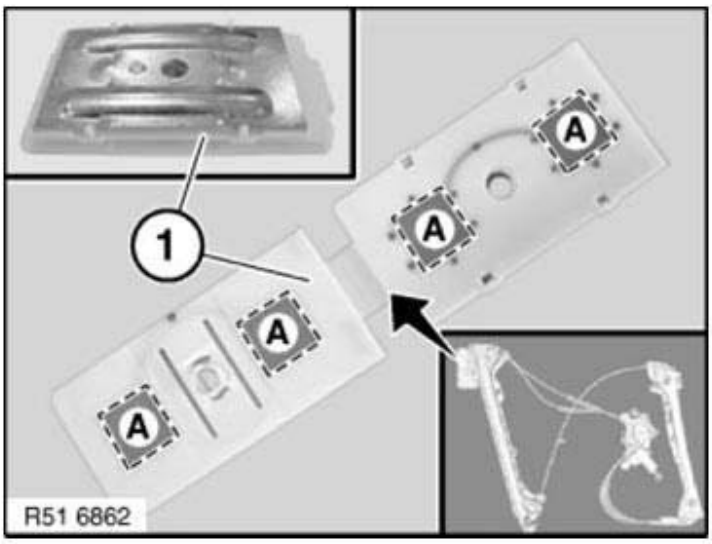


Fig. 267: Identifying Window Glass Support Area
Courtesy of BMW OF NORTH AMERICA, INC.

Attach special tool 51 3 010 to door window glass (1).

Adjust retraction depth and longitudinal direction of door window glass (1) by moving door window glass with special tool 51 3 010 .

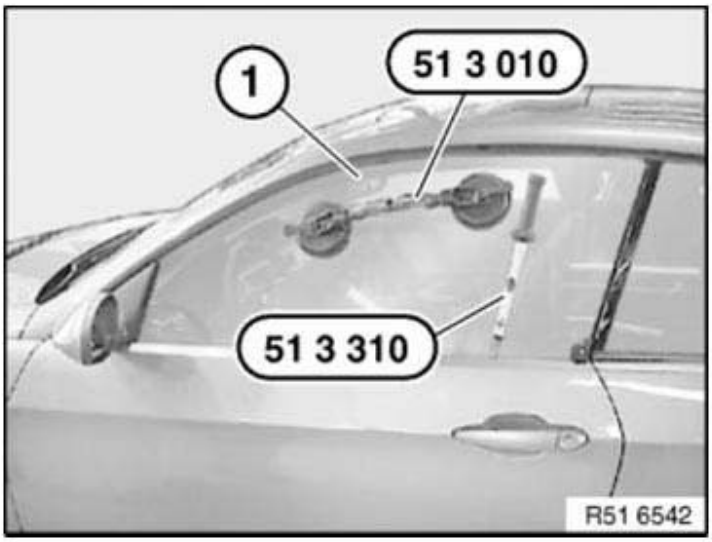


Fig. 268: Attaching Special Tool (51 3 310) To Door Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting retraction depth

Measure retraction depth "C" in areas A and B.

Retraction depth C:

C = 4.3 ± 1 mm in area A

(measuring point distance 30 mm to mirror triangle)

C = 8.5 ± 1 mm in area B

(measuring point distance next to dot screen)

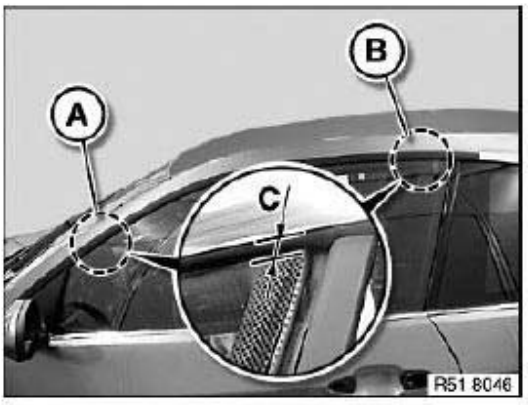


Fig. 269: Identifying Retraction Depth
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Front door must open and close without the door window glass touching the roof trim strip.

Adjusting longitudinal direction

Close door and door window glass.

Door window glass (1) must touch seal (2) in area of B-pillar in accordance with measurement "A".

Measurement A:

A = 12 ± 1 mm

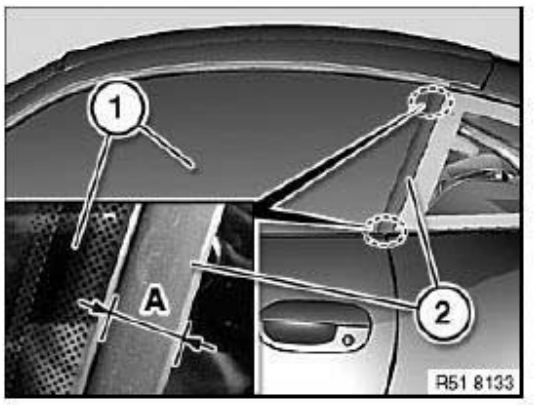


Fig. 270: Identifying Door Window Glass And Seal Touching Distance
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

The tightening torque to be set **51 32 1AZ** (MDE) is reduced when special tool 51 3 310 is used. Depending on the torque wrench used, this must be calculated in accordance with the adjacent overview:

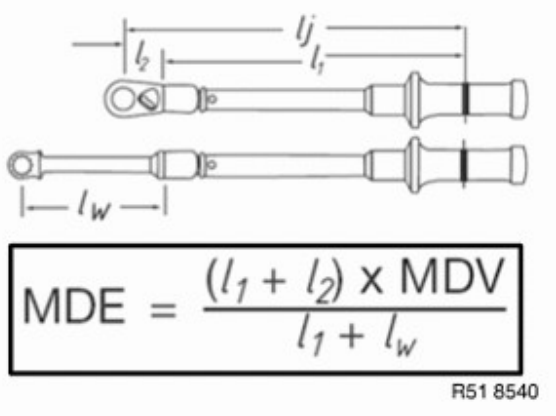


Fig. 271: MDE Calculation Diagram
Courtesy of BMW OF NORTH AMERICA, INC.

MDE = Torque to be set

MDV = Prescribed torque (without special tool)

lj = Standard adjustment length with adjusting tool

l1 = Effective length of torque wrench

l2 = Inside dimension of adjusting tool

lw = Inside dimension of insertion tool (here lw = 145 mm)

Tighten down screws (1) with special tool 51 3 310 .

Tightening torque **51 32 2AZ** .

Remove special tool 51 3 010 from door window glass.

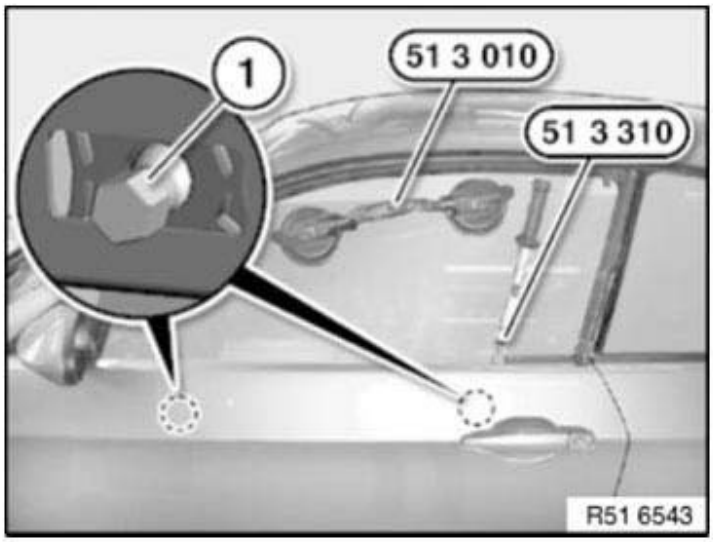


Fig. 272: Identifying Special Tools (51 3 010 And 51 3 310) On Door Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

Top edge of door window glass (1) must be adjusted parallel to contour (2) of water drain.

Seals on A-pillar and on retractable hardtop must not be damaged.

When the door window glass is retracted into the seals, the seals must not distorted.

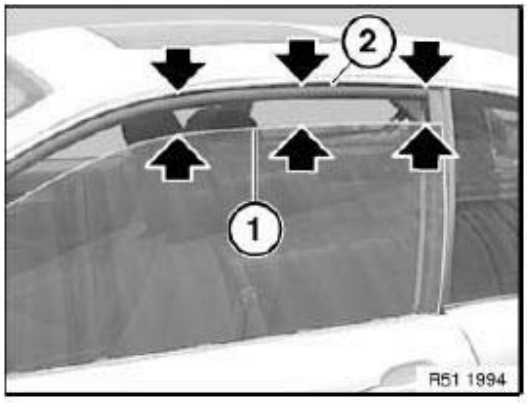


Fig. 273: Identifying Door Window Glass And Water Drain Counter
Courtesy of BMW OF NORTH AMERICA, INC.

Ideal adjustment, pre-tension

NOTE: **Pretension can be checked with or without window cavity cover strip. Pretension is 1.0 mm less with window cavity cover strip. Magnet in special tool 51 0 341 creates the correct door window glass pre-tension on the seal system for measurement. No force must be exerted on the door or door window glass during measurement.**

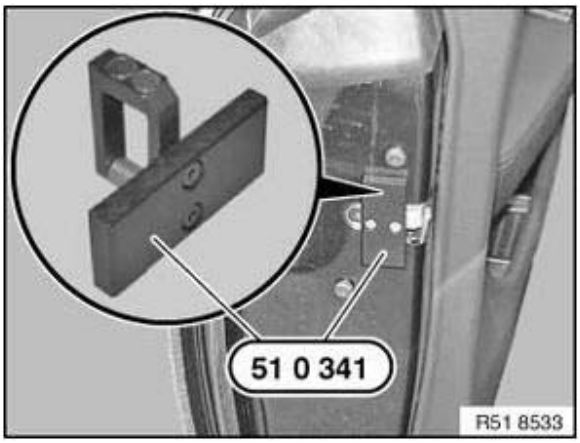


Fig. 274: Identifying Special Tool (51 0 341) On Rotary Striker Of Door Lock
Courtesy of BMW OF NORTH AMERICA, INC.

Insert special tool 51 0 341 in rotary striker of door lock and close rotary striker manually. Carefully close door

Slide special tool 51 0 342 at distance "B" to door window glass side edge into seal (1) and measure dimension (A) to outside edge of door window glass (2).

Dimension "A" with window cavity cover strip:

A = 30 ± 1 mm

Dimension "A" without window cavity cover strip:

A = 29 ± 1 mm

B = 40 mm

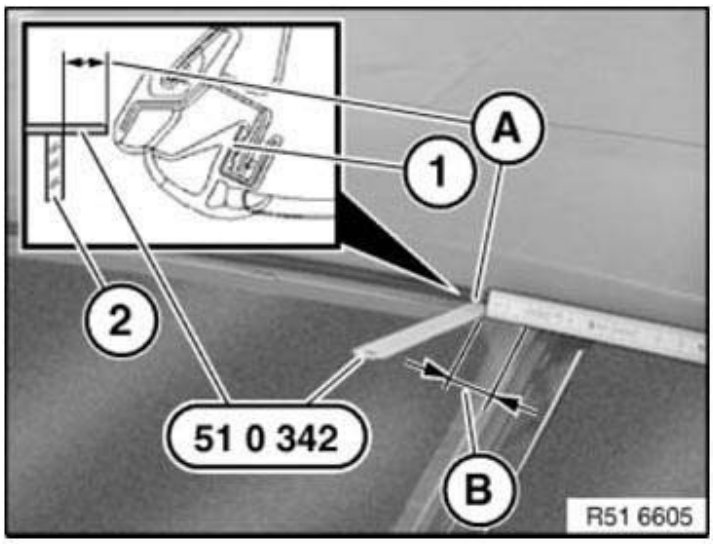


Fig. 275: Sliding Special Tool (51 0 342) On Door Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting pre-tension

Slacken nut (3) with reversible ratchet (2) of special tool 51 3 300 (consisting of 51 3 301, 51 3 303 and 51 3 304).

Turn knob (1) on special tool 51 3 300 to turn stud (4) and thereby alter the pretension.

Tighten nut (3).

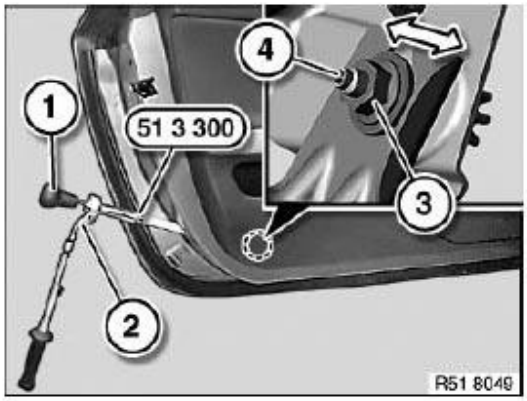


Fig. 276: Turning Knob On Special Tool (51 3 304)
Courtesy of BMW OF NORTH AMERICA, INC.

Tightening torque **51 32 6AZ** .

Check adjustment, repeat procedure if necessary.

NOTE: **After completing adjustment work, it is essential to INITIALIZE the power window regulator.**
Checking run-in of door window glass:
Door window glass must strike the inside of the seal.

51 33 000 REMOVING AND INSTALLING/REPLACING POWER WINDOW REGULATOR IN LEFT OR RIGHT FRONT DOOR

WARNING: **Risk of injury!**

Carry out work on the power window regulator only when the power window motor is de-energized.

Necessary preliminary tasks

- Remove **DOOR WINDOW GLASS**

Release screws (1).

Tightening torque **51 21 16AZ** .

Remove adapter for door speaker (2).

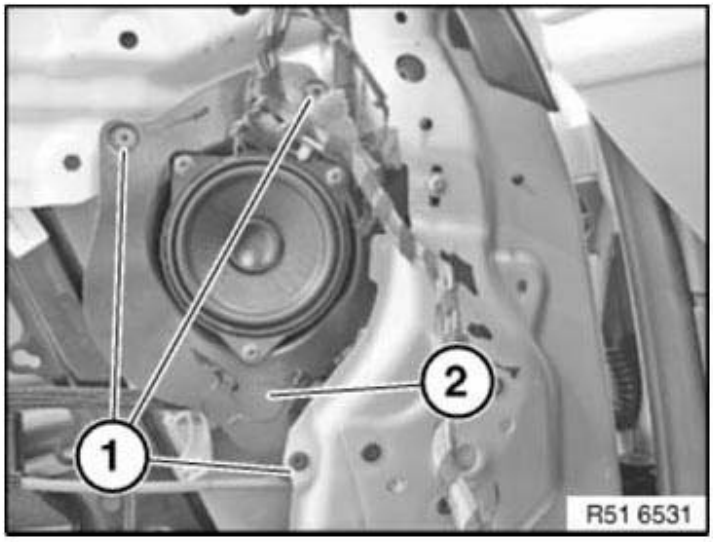


Fig. 277: Identifying Door Speaker With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 21 17AZ** .

Remove power window regulator flat motor (2) from door (3).

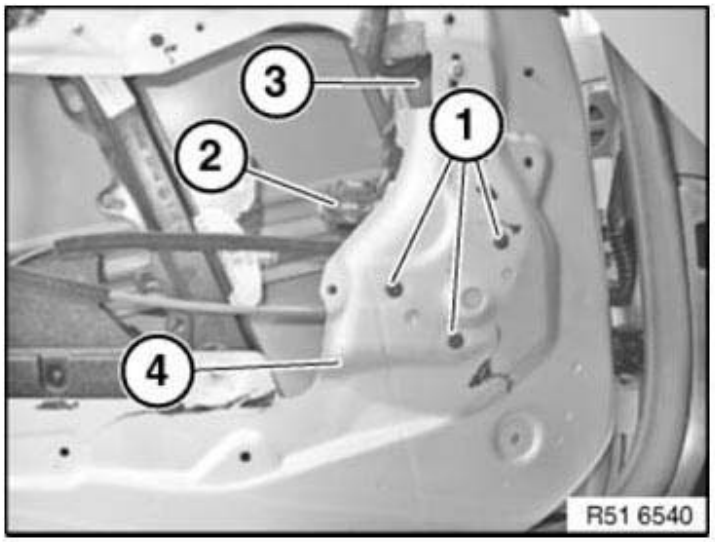


Fig. 278: Identifying Power Window Regulator Flat Motor And Door With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock and disconnect plug connection (1) from power window regulator flat motor (2).

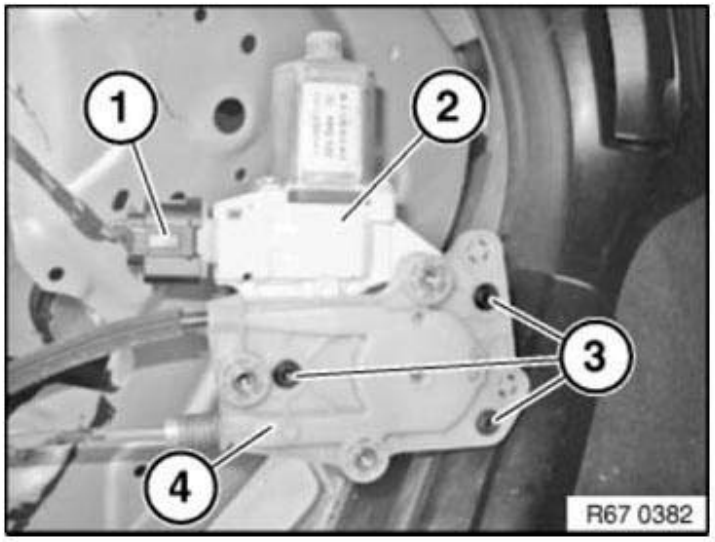


Fig. 279: Identifying Power Window Regulator Flat Motor With Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out assembly plug (1).

Unfasten screws (2).

Tightening torque **51 33 4AZ** .

Release screw (3) with special tool 51 3 300 .

Tightening torque **51 33 4AZ** .

Remove power window regulator (4).

Installation:

Engage drive cable (1) correctly in clips (2).

Adjust **POWER WINDOW REGULATOR** .

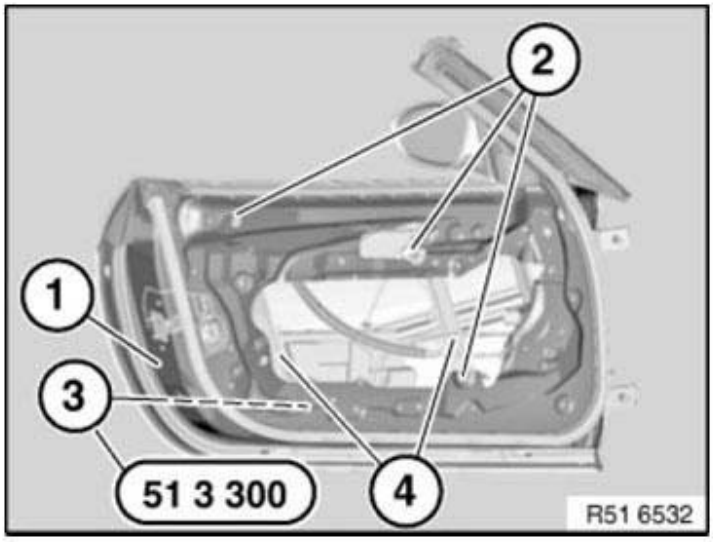


Fig. 280: Removing Screw Using Special Tool (51 3 300)
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

Release screws (3).

Tightening torque **67 62 1AZ** .

Detach power window regulator flat motor (2) from power window regulator adapter plate (4).

Installation:

INITIALIZE POWER WINDOW .

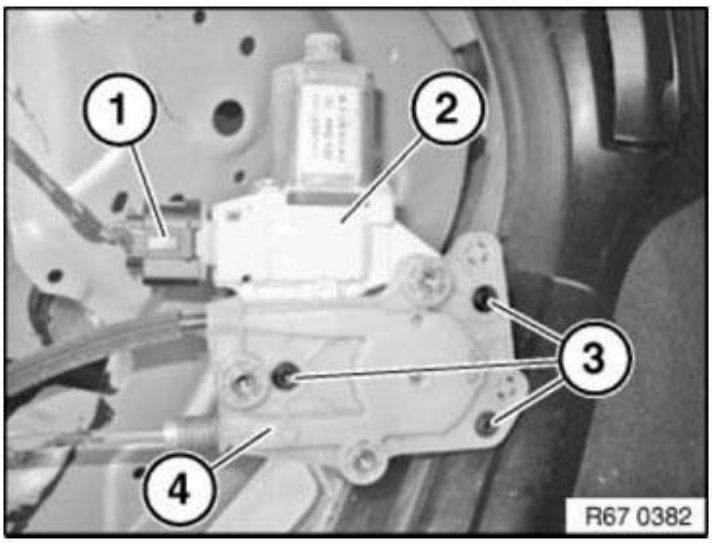


Fig. 281: Identifying Power Window Regulator Flat Motor And Adapter Plate With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 32 170 REMOVING AND INSTALLING/REPLACING DOOR WINDOW GLASS, FRONT LEFT OR RIGHT

Necessary preliminary tasks

- Remove **INNER WINDOW CAVITY COVER STRIP**
- Remove **OUTER WINDOW CAVITY COVER STRIP**
- Remove **FRONT DOOR TRIM**
- Remove **ACOUSTIC INSULATION**

WARNING: Risk of injury!

Carry out work on the power window unit only when the power window motor is de-energized.

Door window glass (1) must be opened to dimension (A).

A= approx. 110 mm

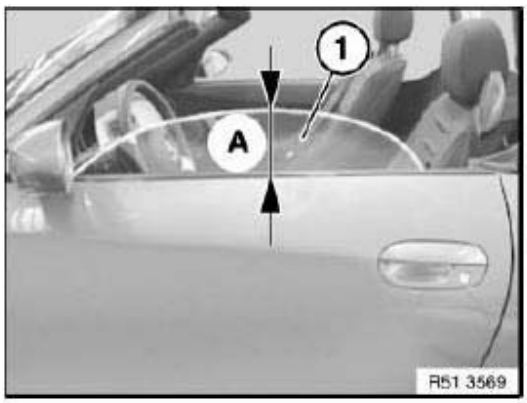


Fig. 282: Identifying Door Window Glass Opening Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 21 16AZ** .

Remove adapter (2).

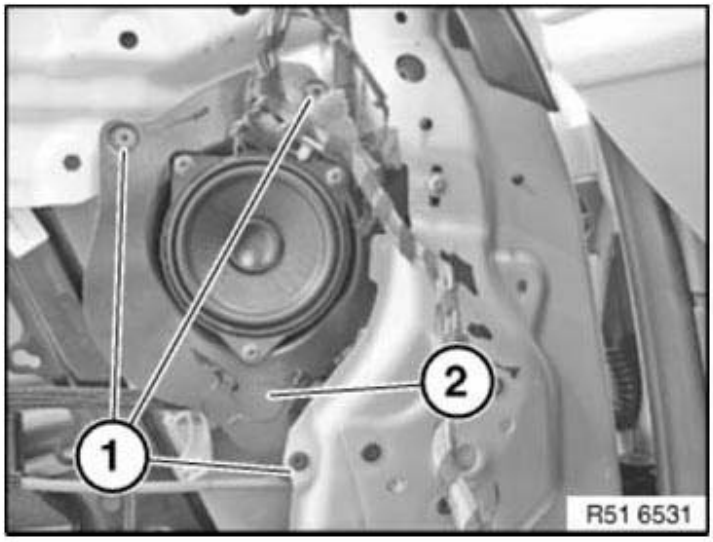


Fig. 283: Identifying Adapter With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 21 13AZ** .

Remove H-strut (2).

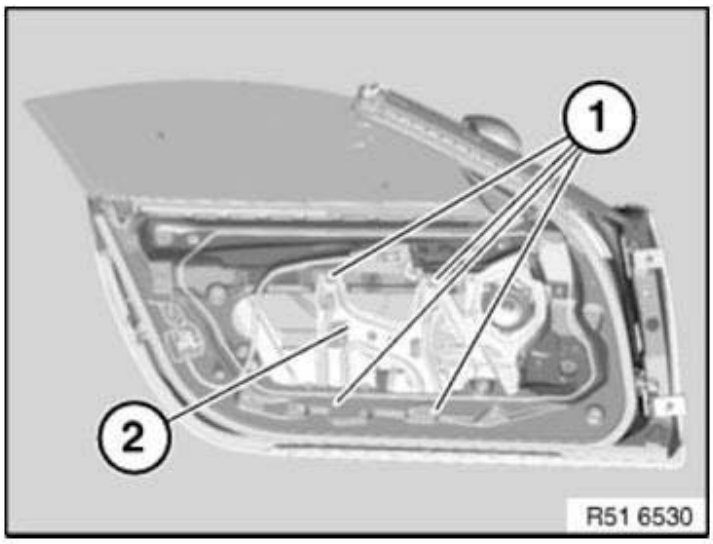


Fig. 284: Identifying H-Strut With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Power window unit is shown removed.

Release screws (1).

Tightening torque **51 32 2AZ** .

Remove door window glass (2).

Installation:

Insert door window glass (2) in clamping plates (3).

ADJUST DOOR WINDOW GLASS .

Check function.

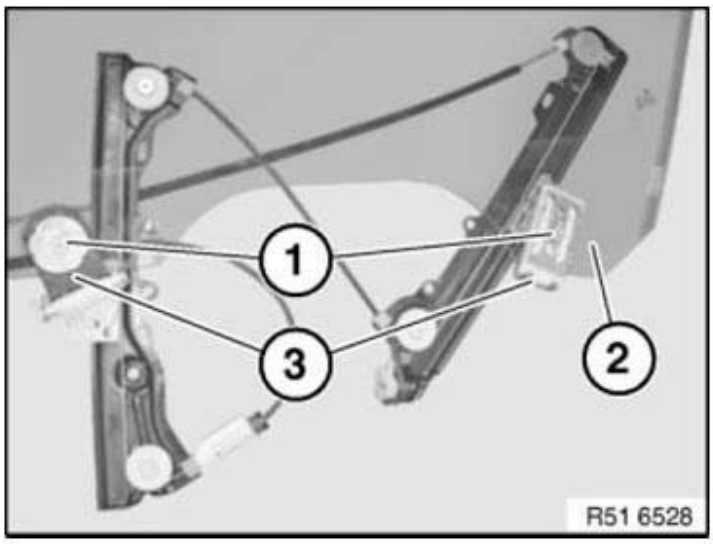


Fig. 285: Identifying Door Window Glass And Clamping Plates With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

When replacing door window glass

Remove clamping plate (1) from door window glass (2).

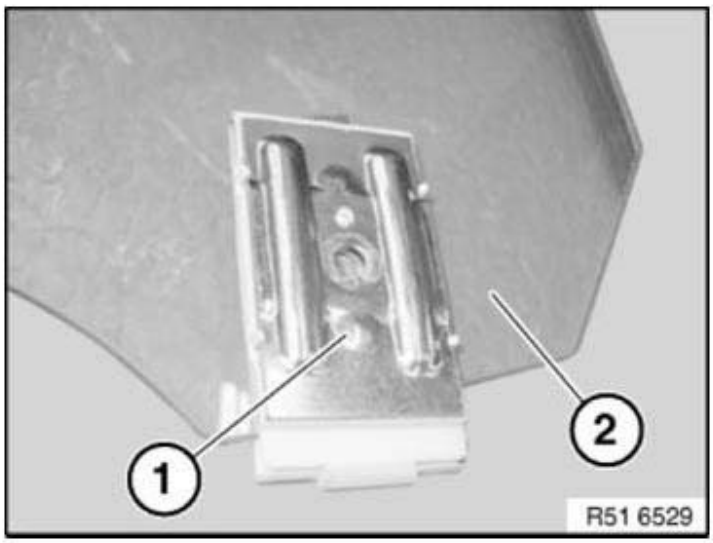


Fig. 286: Identifying Clamping Plate Of Door Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

51 32 211 REPLACING FRONT LEFT OR RIGHT RUBBER GUIDE FOR LEFT OR RIGHT DOOR WINDOW

Necessary preliminary tasks

- Remove **INNER WINDOW CAVITY COVER STRIP**
- Remove **OUTER WINDOW CAVITY COVER STRIP**
- Remove **SOUND INSULATION** in front area

Pop rubber guide (1) in area (A) out of door.

Pull rubber guide (1) out of window guide rail and remove towards top.

Installation:

Moisten rubber guide (1) with water before fitting.

Slide rubber guide (1) from above into window guide rail and if necessary retighten at bottom.

Make sure rubber guide (1) is correctly seated on door and door window glass.

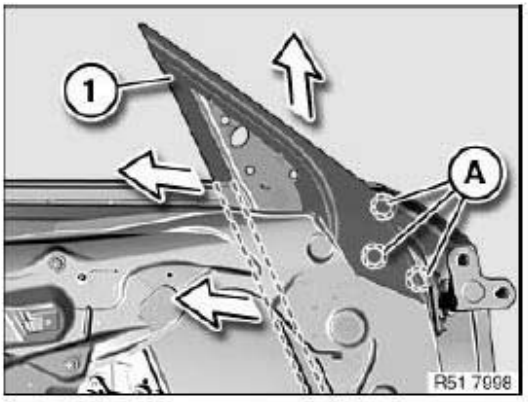


Fig. 287: Pulling Rubber Guide Out Of Window Guide Rail
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Coat contact surface of window glass with Vaseline, especially in top corner (2).

Rubber guide (1) must not be damaged in corners (2).

If necessary, replace rubber guide.

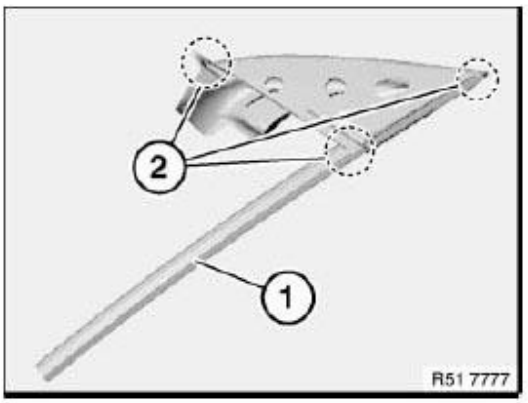


Fig. 288: Identifying Rubber Guide On Corners
Courtesy of BMW OF NORTH AMERICA, INC.

5137 ELECTRICAL POWER WINDOWS, BODY

51 37 154 ADJUSTING REAR LEFT OR RIGHT SIDE WINDOW

Prerequisite:

- Vehicle must be standing on its wheels on a level floor
- **DOOR WINDOW GLASS** correctly adjusted

Necessary preliminary tasks

- Remove rear window cavity seal See **5137261 REMOVING AND INSTALLING/REPLACING WINDOW CAVITY COVER STRIP FOR DOOR WINDOW, REAR LEFT OR RIGHT** or **5137240 REMOVING AND INSTALLING/REPLACING OUTER WINDOW CAVITY COVER STRIP FOR REAR SIDE WINDOW**
- Open retractable hardtop
- Move side window upwards (close)

Ideal adjustment, transversal direction

Side window glass (1) must be situated at distance (A) to body (2).

Distance A = 9±1 mm

Measuring points in area of B-pillar and at end of side window glass (1).

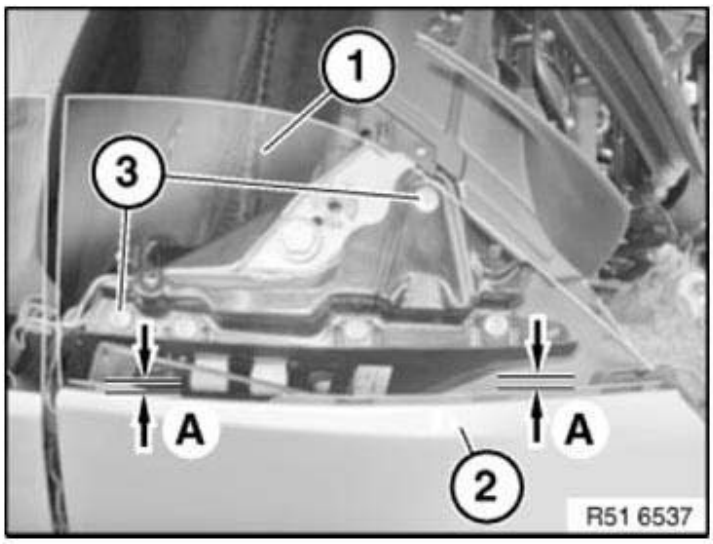


Fig. 289: Identifying Side Window Glass Distance To Body
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting transversal direction

Remove **SEAT BELT COVER** .

Slacken screws (3) and adjust distance (A).

Tightening torque **51 37 4AZ** .

Ideal adjustment, longitudinal direction

Side window glass (1) must be positioned at distance (A) to door window glass (2).

Measurement (A) = 12 ± 1 mm

Parallelism deviation ± 1 mm.

Side window glass (1) may have a max. underprotrusion (B) to door window glass (2).

Dimension (B) = 0 ±1 mm

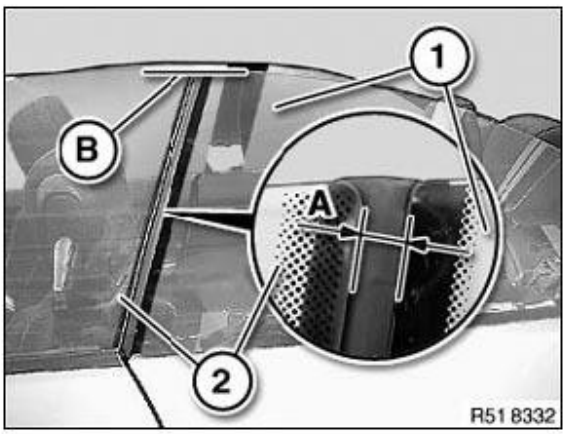


Fig. 290: Identifying Side Window Glass Distance To Door Window Glass
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting longitudinal direction

Slacken screws (1) with special tool 51 3 310 .

Adjust longitudinal direction by moving side window glass (2).

Tightening torque **51 37 2AZ** .

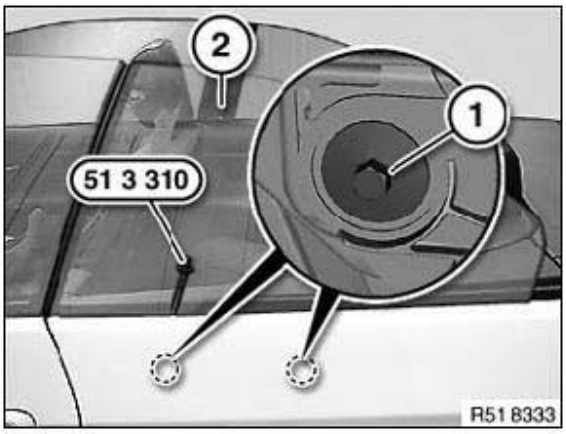


Fig. 291: Removing Screws Using Special Tool (51 3 310)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

The tightening torque to be set **51 37 2AZ** (MDE) is reduced when special tool 51 3 310 is used. Depending on the torque wrench used, the torque must be calculated in accordance with the adjacent overview:

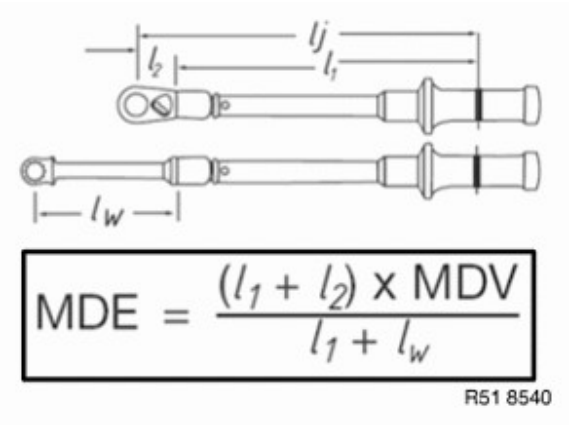


Fig. 292: MDE Calculation Diagram
Courtesy of BMW OF NORTH AMERICA, INC.

MDE = Torque to be set

MDV = Prescribed torque (without special tool)

lj = Standard adjustment length with adjusting tool

l1 = Effective length of torque wrench

l2 = Inside dimension of adjusting tool

lw = Inside dimension of insertion tool (here lw = 145 mm)

Checking retraction depth

- Close retractable hardtop
- Open door window
- Attach special tool 51 3 080 to door window glass
- Close side window completely
- Measure retraction depth

NOTE: 2 items of special tool 51 3 080 are required for adjustment of retraction depths.

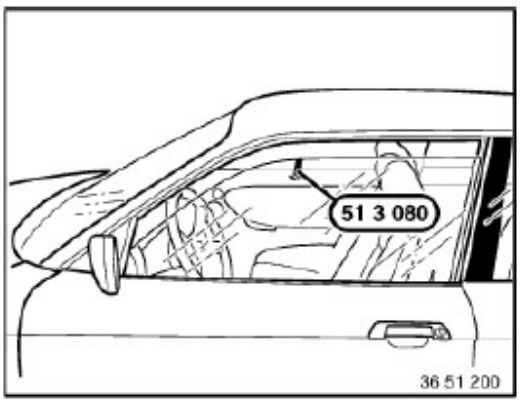


Fig. 293: Identifying Special Tool (51 3 080)
Courtesy of BMW OF NORTH AMERICA, INC.

Measure retraction depth (A) in areas (1 to 2).

Measurement (A):

(1) = 8 ± 3 mm

(2) = 8 ± 3 mm

If necessary, check or readjust settings on:

- **DOOR WINDOW GLASS, REAR**
- Side window

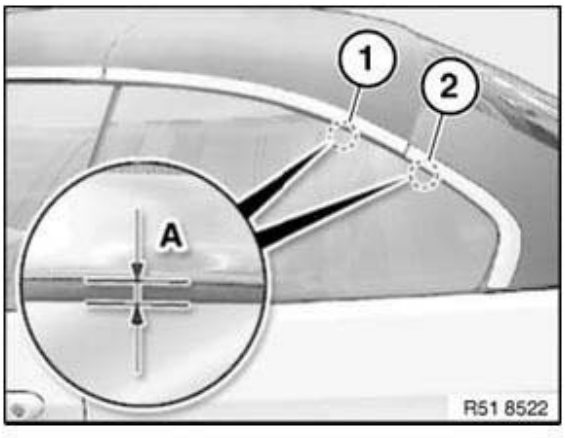


Fig. 294: Identifying Retraction Depth
Courtesy of BMW OF NORTH AMERICA, INC.

Ideal adjustment, pretension

NOTE: **Pretension can be checked with or without window cavity cover strip. Pretension is 1.0 mm greater with window cavity cover strip. Magnet in special tool 51 0 341 creates the correct door window glass pretension on the seal system for measurement. No force must be exerted on the door or door window glass during measurement.**

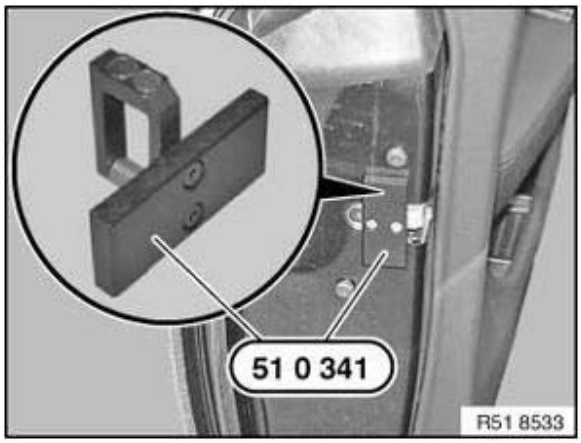


Fig. 295: Identifying Special Tool (51 0 341) On Rotary Striker Of Door Lock
Courtesy of BMW OF NORTH AMERICA, INC.

Insert special tool 51 0 341 in rotary striker of door lock and close rotary striker manually. Carefully close door.

Measure gap (A) between side window glass (1) and inside edge of door window glass (2).

NOTE: **Measuring point 10 mm below top edge of window glass.**

With window cavity cover strip fitted (front and rear): A = 35 +1 mm

Without window cavity cover strip fitted (rear): A = 35 +1 mm

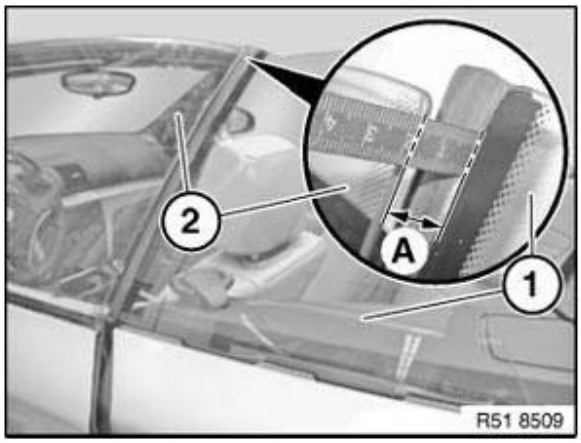


Fig. 296: Identifying Gap Between Side Window Glass And Inside Edge Of Door Window Glass

Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting pretension

Remove rear window cavity cover strip See **5137261 REMOVING AND INSTALLING/REPLACING WINDOW CAVITY COVER STRIP FOR DOOR WINDOW, REAR LEFT OR RIGHT** or **5137240 REMOVING AND INSTALLING/REPLACING OUTER WINDOW CAVITY COVER STRIP FOR REAR SIDE WINDOW**.

Turn adjusting screw (1) with special tool **51 2 220** until correct pretension is reached.

NOTE: With hardtop closed, side window glass (2) must run correctly into hardtop seals (check only when window cavity cover strip fitted).

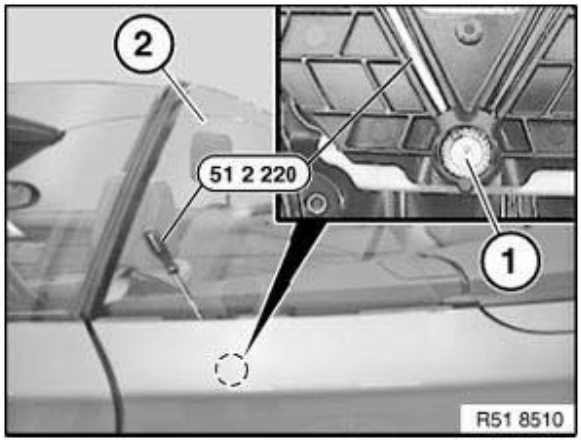


Fig. 297: Turning Adjusting Screw Using Special Tool (51 2 220)
Courtesy of BMW OF NORTH AMERICA, INC.

Checking adjustment

Open door window and side window.

Close both windows simultaneously and check run-in of side window glass to door window glass.

Close retractable hardtop.

Hardtop seals must not be damaged.

Check run-in of both windows in hardtop seals.

51 31 ... NOTES ON WINDOW BONDING

IMPORTANT: For 03-2009

- **the "1 Hour System" was introduced.**

  Two different adhesive systems are described and identified accordingly in the following:

  "1-day system"

  "1-hour system"

For 01-2010

- **the information for the Expiry date (Best Before) on the repair kit and window glue cartridge was changed and now refers to Calendar week and Year (CW/YYYY).**

For 03-2010

- **a "Repair kit, large" was introduced for the "1 Hour System" under part number 83 19 0 444 145.**

  In addition to the "Repair kit, small" delivery, this kit includes a second window glue cartridge.

  Recommended for 5-Series, 6-Series, 7-Series, X3, X5.

These instructions are not applicable to side window bonding (door "centre") on the E38/L7:

Work steps for removing and installing window glass

- Is located at the end of the document under the cross reference "Refer to repair instructions"

General

- It is possible to tow or drive without windscreen or rear window.

The windscreen, rear window and side windows are glued to the body. This bonding will increase the torsional rigidity of the vehicle. To obtain perfect bonding, comply with the installation procedure described in the following.

- The adhesive must be applied at room temperatures > 15 °C to avoid negatively affecting the bonded connection.

  Adjust the component and interior temperature accordingly.

- An air humidity of < 30% significantly slows hardening.
- The window glass must be secured against slipping with yellow plastic adhesive tape (sourcing reference: BMW Parts Department) after being installed. The paint must be completely hardened after painting

work.

- Always apply the adhesive in such a way as to achieve tension-free bonding!

On-the-job safety

When working with bonding products (adhesive, cleaning agent, bonding agent, etc.):

- Wear safety goggles, protective gloves and if necessary an apron.
- Ensure rooms are well ventilated.
- Change work clothing contaminated with adhesive immediately.
- Change work clothing contaminated with solvents and swelling agents immediately (keep spare work clothing on hand).
- Take skin protection measures, provide washing facilities including hot water, use silicone-free skin creams
- Provide eye douche facilities, change water regularly (once a month).
- Comply with the relevant safety regulations
- Do not eat, drink or smoke in areas of polyurethane processing.
- All use and safety information of the safety data sheet (SDB) for the applicable product apply. The safety data sheet (SDB) can be obtained from the Aftersales Assistance Portal (ASAP)

Replacement of windscreens

Version with Head-Up Display (HUD):

- Marking for HUD must be present on the windscreen

Version with front passenger airbag:

- Stick on **LABEL**

Tools for cutting through adhesive bead:

ADHESIVE BEAD CUTTING TOOL REFERENCE CHART

Type	Type	Order/part number
Special cutter (manufacturer: Fein) with oscillating knife	Compressed air operated Electrically operated	7 23 63 100 23 8 7 53 60 200 00 4
BMW knife set	All required knives	PN 81 43 9 428 596 or 6 39 03 167 05 4
Knife (U-shape)	19.5 mm (1) 24 mm 36 mm 45 mm	6 39 03 118 01 3 6 39 03 076 01 6 6 39 03 079 01 2 6 39 03 154 01 0
	16 to 35 mm (adjustable)	6 39 03 143 01 3

Knife (straight with stop roller)	10 mm (fixed)(1) 14 mm (fixed)	6 39 03 189 01 0 6 39 03 082 01 6
" **ROLL OUT 2000** " Window glass repair	Wire cutting system (1)	PN 81 62 0 301 768
Cutting wire	Wire cutting system (1)	PN 83 19 2 150 267
Scalpel	for heavy-duty applications (1)	
Handles for cutting wire	Self-locking (1)	Special tool 51 3 270
(1) not included in BMW blade set		

Storage temperature

1-day system: Storage temperature of all adhesive products of 5 °C to 25 °C must be observed.

1-hour system: Storage temperature of all adhesive products of more than 15 °C must be observed.

Adhesive

The BMW approved polyurethane adhesive must be used for bonding:

- **1-day system:** Window glass adhesive (Part number 83 19 0 444 144*)

1-hour system: Repair kit, small (part number 83 19 0 444 141*) or large (part number 83 19 0 444 145*)

The repair kit, large contains a second window glass glue cartridge.

* Sourcing reference: BMW Parts Department

Adhesive is applied to window glass with cartridge gun (compressed airy or electrically operated, sourcing reference: BMW Workshop Equipment and Planning Documentation).

When using accelerator (hot working, 3-hour system)

- Temperature (min. 80 ± 5 °C) of cartridge oven must be checked every morning. Connect temperature sensor to diagnosis system
- Heat adhesive for one hour in cartridge oven (sourcing reference: BMW Parts Department) to 80 ±5 °C
  - Write date and time on cartridge when inserting into cartridge oven
  - Insufficient heating (< 1 hour) results in the formation of bubbles/blisters (bonding not permitted)
  - Temperature < 80 ± 5 °C results in the formation of bubbles/blisters (bonding not permitted)
- Remove hardened adhesive prior to further processing.
- Mistake in mixing in event of an interruption in application > 1 minute (bonding not permitted)
  - A sample bead of 50...70 mm must be rejected after an interruption in application
- Expiry dates of accelerator and adhesive must not be more than 3 months apart
  - Expiry date >3 months results in the formation of bubbles/blisters (bonding not permitted)

Sealed adhesive:

- May only be stored for a maximum of 8 hours once it has been heated up to 80 ±5 °C
- The adhesive will be damaged if this time is exceeded (bonding not permitted)
- Damaged adhesive must not be used and must be disposed of in compliance with national regulations
- The glue cartridge may only be heated up once
    - If the lower label is black, this adhesive may only still be used cold without accelerator while adhering to the expiry date.

IMPORTANT: Not all window glass may be bonded with accelerator (hot working).

If hot working is not permitted, this is described in the relevant document.

Adhesive expiry date

Repair kit (A) and glue cartridges (B) are marked with a date (best before).

Date (1) refers to the calendar week and year (KW/JJJJ).

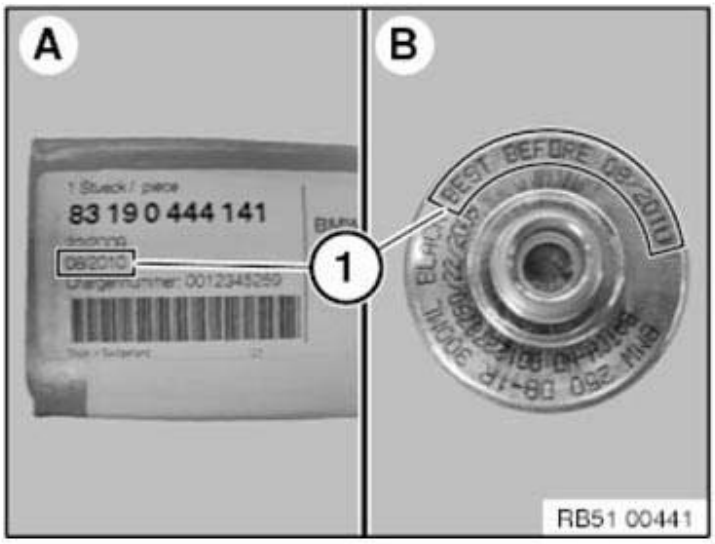


Fig. 298: Identifying Date On Kit And Glue Cartridges
Courtesy of BMW OF NORTH AMERICA, INC.

The adhesive cannot be used after this date (1).

Adhesive disposal

Pure hardened adhesive is handled as normal waste.

The adhesive is disposed of in paper sacks so that it can react with moisture.

Non-hardened adhesive, cartridges and mixtures of adhesive and solvents and the like must be disposed of as hazardous waste.

Accelerator (3-hour system)

Accelerator is screwed onto the glue cartridge and contains a reaction paste which is mixed with the heated adhesive.

IMPORTANT: The accelerator may only be paired with the glue cartridge of an unopened package (formation of bubbles/blisters).

Adhesive and accelerator must be paired while taking into account the expiry dates.

The accelerator may no longer be used if the expiry dates are more than 3 months apart.

Bonding agent (activator)

The BMW-approved bonding agents must be used to treat adhesive areas:

1-day system:

- "Glass Activator 1" (on ceramic glass)
- "Paint Activator A" (on sheet metal flange or residual adhesive bead)

1-hour system:

- "Glass Activator (2)" (on ceramic glass), yellow stick, BMW part number: 83 19 0 444 142
- "Paint Activator (B)" (on sheet metal flange), blue stick, BMW part number: 83 19 2 154 458

WARNING: Wear cut resistant gloves when breaking the glass ampoule

Prepare Glass Activator (2) and Paint Activator (B) for application by shaking and kinking (breaking glass ampoule).

Apply Glass Activator (2) by pressing gently. There is no need for final wiping. Air drying time approx. 2 minutes.

Apply Paint Activator (B) by pressingly gently. Then wipe dry with a paper towel (included in the set).

Bonding agent expiry date

Repair kit and bonding agent are marked with a date (Best Before).

- The bonding agent may only be used up to this date (if not already opened previously).
- Once it has been opened (circlip broken), use for 1 week only even if the expiry date has not been reached.

NOTE: Write the date on the bottle when opening the bonding agent for the first time. Close the bottle immediately after extracting the bonding agent (reaction with air).

Application of bonding agent

The bonding agent is used for adhesion between glass or ceramic glass and the adhesive. Therefore, a thin, homogeneous and continuous line of bonding agent must be applied.

After compressing the adhesive bead, make sure that there is 1 to 2 mm wide bonding agent trace is on the ceramic glass next to the adhesive bead (serves visual inspection).

The adhesive bead may become up to 15 mm wide in compressed condition. The width of the adhesion agent is therefore at least 17mm with windscreens and rear windows and at least 9 mm with door window glass.

The bonding agent may not be applied in the visible area or the point grid. Fresh bonding agent in the visible area must immediately be wiped off with solvent because hardened bonding agent will leave a haze behind.

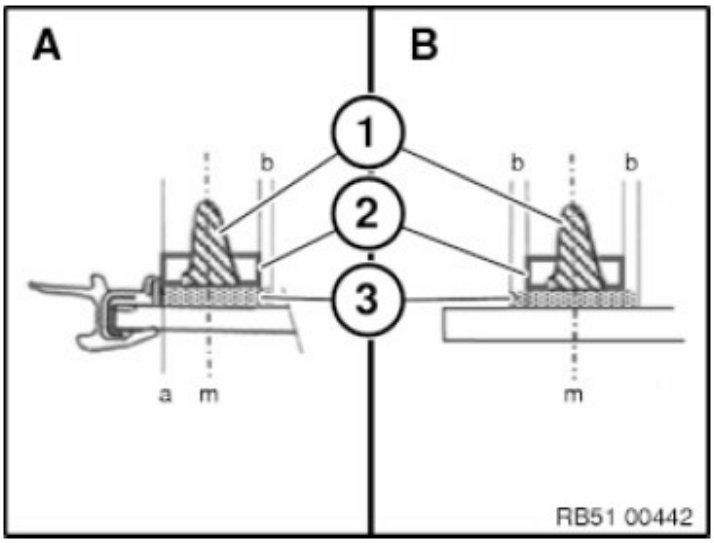


Fig. 299: Identifying Adhesive Bead Position And Bonding Agent Bead
Courtesy of BMW OF NORTH AMERICA, INC.

ADHESIVE BEAD REFERENCE CHART

Graphic A	Graphic B
Window glass with cover	Window glass without cover.
If the adhesive bead (1) cannot expand further (a = 0 mm) into one direction when pressing down, the	If the adhesive bead (1) can expand into both directions while pressing down, the bonding agent

outer edge of the bonding agent bead (3) will run through Point a.	(3) and adhesive bead (2) will run toward each other in the center (m).

Removal of window glass

IMPORTANT: As of E63 and E87 it will only be possible to remove the rear window with the "ROLL OUT 2000 ".

Cover side walls, roof-mounted aerial and if necessary interior equipment with protective covers.

Tape off body with fabric adhesive tape (e.g. Tesa) in those areas where the oscillating blade could damage the window glass or the paint.

When using the cutting wire, pull the cutting wire ends through special tool 51 3 270 , bend and tape off with fabric adhesive tape (e.g. Tesa) (risk of injury and damage).

When removing the window glass:

- Wear safety goggles and protective gloves.

Cut through adhesive bead of window glass:

- With "**ROLL OUT 2000** " * (wire cutting system); no paint is damaged here in the case of narrow gaps
- with special cutter* and oscillating knife*

*Sourcing reference: BMW Workshop Equipment and Planning Documentation

Prior to each use, regrind the knife with a grindstone while the machine is running (new knives also).

Avoid paintwork damage on body aperture.

Guide knife carefully between body and window glass.

Run blade of knife parallel to window glass.

Cut through adhesive bead as closely as possible to window glass.

To remove residual adhesive bead in body aperture (and on window glass if reusing):

- Use a scalpel for heavy-duty applications
- Cut off adhesive residue to a thickness of approx. 0.5 mm
- Remove residual adhesive bead only briefly before bonding

Damage to paintwork in body aperture

To ensure long-term corrosion protection, it is absolutely essential to touch up damage to paintwork!

The "BMW Color System" painting handbook forms the basis of these repair instructions and must be observed without fail.

Touch up damage to paintwork on body aperture with BMW multibase filler.

Grind out scratches in non-visible areas and touch up with BMW multibase filler.

Grind extensive areas of damage down to the bare metal and coat with BMW multibase filler (layer thickness 30 ... 40 µm).

Hardening time:

- With infrared, at least 10 minutes
- Without infrared for at least 60 °C, at least 30 minutes
- Without infrared for at least 20 °C, at least 24 hours

If a complete build-up of paint is required in the visible area:

- Tape off primed adhesive flange before applying top coat

IMPORTANT: Observe hardening time of BMW multibase filler otherwise a perfect bond cannot be guaranteed!

Treatment of adhesive area in body aperture:

TREATMENT FOR CERAMIC GLASS SURFACE

Adhesive	Treatment
Bonding and sealant for car window glass	a. Clean with cleaning agent R2 (sourcing reference: BMW Parts Department, part number 83 19 0 417 324) b. Observe an air drying time of at least 5 minutes (at least 15 minutes when applied to residual adhesive bead) c. **1-day system:** Apply "Paint Activator A" to paint and residual adhesive bead c) **1-hour system:** Apply "Paint Activator B" (blue stick) to paint d) Observe an air drying time of at least 1 minute (at least 10 minutes when applied to residual adhesive bead)

IMPORTANT: Do not use Sika remover 208 for cleaning in the adhesive area.

Preparation for installation

Prepare plastic nozzle(s) for shaping adhesive bead (when not using the standard nozzle C), can be cut to size during the air drying time.

Lay a sample bead of approx. 50 mm - watch out for formation of bubbles/blisters when hot bonding; if OK, apply immediately to window glass.

- Interruption must be < 5 seconds (incorrect mixture ratio).

Glue cartridge must be vertical to window glass.

Black ceramic glass impermeable to UV light is located on the peripheral zone of the inside edge of the window to protect the adhesive bead.

Ceramic glass must not be damaged and must be treated as follows.

1-day system: Treatment of ceramic glass surface (inside of window):

TREATMENT FOR CERAMIC GLASS SURFACE (1-DAY SYSTEM)

Adhesive (with part numbers)	**Treatment**
Repair kit Cold/Hot Bonding: - 83 19 0 444 141/145 Glue cartridge: - 83 19 0 444 144	a. Clean with cleaning agent R2 (sourcing reference: BMW Parts Department, part number 83 19 0 417 324) b. Observe an air drying time of at least 5 minute c. Apply a thin coating of "Glass Activator (2)" d. Observe an air drying time of at least 2 minutes

1-hour system: Treatment of ceramic glass surface (inside of window):

TREATMENT FOR CERAMIC GLASS SURFACE (1-HOUR SYSTEM)

Adhesive (with part numbers)	**Treatment**
Repair kit: - 83 19 0 444 141/145 Glue cartridge: - 83 19 0 444 144	a. Clean with cleaning agent R2 (sourcing reference: BMW Parts Department, part number 83 19 0 417 324) b. Observe an air drying time of at least 5 minutes c. Apply a thin coating of "Glass Activator (2)" d. Observe an air drying time of at least 2 minutes

Version with inspection glass for vehicle identification number in windscreen only

- Close inspection glass (left bottom) with Sika bonding base VP 206 (part number 83 19 9 407 777*)

(*sourcing reference: BMW Parts Department)

Except for:

All US/GB models. In addition, all models or models on which the black I-panel cover means that the body color can not be seen through the inspection glass.

Adhesive quantities

Approx. 1 1/4 glue cartridges are required to bond the windscreen on the following vehicles:

- 7 Series
- 5 Series from E60
- X5
- X3

In the case of hot bonding (with accelerator), the missing residual adhesive bead is applied from a second glue cartridge but while cold and without accelerator (formation of bubbles/blisters).

Minimum hardening time is thus not increased.

IMPORTANT: If a second cartridge is required for bonding:

- **First apply cold adhesive to cowl panel at bottom (skin formation time)**
- **Accelerator from repair kit must not be used with the second glue cartridge (formation of bubbles/blisters)**

Formation of bubbles/blisters results in leakage and insufficient bonding strength (torsional rigidity, front passenger airbag).

Effect of differing adhesive quantities:

ADHESIVE QUANTITIES REFERENCE CHART

Too little adhesive:	Too much adhesive:
○ Window glass rests too low in body aperture ○ Strains/tensions may occur (window glass breakage) ○ Insufficient squeezing of adhesive bead (leaking)	○ Window glass rests too high in body aperture ○ Wind noise may occur ○ Strains/tensions may occur (window glass breakage) ○ Dirt contamination of add-on parts by emerging adhesive ○ Adhesive on uninsulated strainer pressure lines of aerial(s) (interference of reception)

Spacer buffers

Before sticking on new spacer buffers, remove all remaining traces of old spacer buffers completely.

Position of spacer buffers must be observed exactly.

Incorrectly fitted spacer buffers will result in:

- Windscreen glass breakage
- Leakage (if the spacer buffer is in the adhesive area)
- Wind noises

Installation

To prevent a pressure build-up in the passenger compartment when the doors are closed:

- Open a side window

IMPORTANT: 1-day system:

After the adhesive bead has been applied, the window glass must be fitted within 5 to 10 minutes (depending on air humidity, temperature and use of accelerator).

After 5 to 10 minutes the adhesive bead forms a skin which can no longer guarantee a perfect bond.

1-hour system:

Once the adhesive bead has been applied, the window glass must be installed within 7 minutes (depending on air humidity, temperature).

After 7 minutes the adhesive bead forms a skin which can no longer guarantee a perfect bond.

The general rule is:

To secure the window glass, use only the yellow plastic adhesive tape (sourcing reference: BMW Parts Department, part number 83 19 9 410 979).

The window glass will slip down if other adhesive tapes are used.

Window glass slippage will result in leaks and wind noises.

Remove adhesive residue immediately with adhesive remover (Sika remover 208, sourcing reference: BMW Parts Department). Do not press out the window glass again.

Hardened adhesive can only be removed mechanically.

Check height of windscreen/rear window with special tool 51 0 010 or 51 3 210.

Assemble vehicle.

Hardening

The adhesive hardens as it reacts with air humidity (with accelerator also due to mixed-in reaction paste) at room temperature.

Minimum hardening time (table) is obtained from 22 °C and 38 % relative air humidity.

At ambient temperatures above 23 °C and 50 % relative air humidity (hot countries), the adhesive open time is shortened to approx. 5 minutes (skin formation time).

The adhesive hardening process is interrupted completely at ambient temperatures below 5 °C. In this event, there will be no increase in the strength of the bonded connection.

Do not subject the vehicle to load on one side during the minimum hardening time (see table, without front passenger airbag), such as e.g.:

- one wheel on curb
- vehicle hoist
- etc.

Maneuvering inside garage/workshop:

- only permitted on level ground
- do not under any circumstances drive over approach ramps, e.g. into multistorey car parks

Remove adhesive tapes after hardening time.

If you fail to adhere to the minimum hardening times (see table, without front passenger airbag):

- Leaks and/or wind noises may occur at the window glass

1-day system: Adhesives and their minimum hardening times:

ADHESIVES AND HARDENING TIMES (1-DAY SYSTEM) REFERENCE CHART

Adhesive	**Minimum hardening time "without front passenger airbag" (after which vehicle can be moved)**	**Minimum hardening time "with front passenger airbag" (countries where seatbelt use is not required by law)**
Hot working with accelerator	2 hours	3 hours()
Cold processing	9 hours	20 hours()

1-hour system: Adhesives and their minimum hardening times:

ADHESIVES AND HARDENING TIMES (1-HOUR SYSTEM) REFERENCE CHART

Adhesive	Minimum hardening time "without front passenger airbag" (after which vehicle can be moved)	Minimum hardening time "with front passenger airbag" (countries where seatbelt use is not required by law)
Cold processing	1 hour	2 hours(1)

(1) Note

Vehicles with front passenger airbag:
The vehicle can be handed over to the customer after the hardening time (vehicle can be moved, adhesive-dependent) with the following warning:
Once the windscreen glass has been bonded, all occupants must travel with their seatbelts attached for "... hours"!
The time is taken from the "Minimum hardening time" table for countries where seatbelt use is not required by law.

IMPORTANT: If the minimum hardening time is not adhered to:

- **the front passenger together with the windscreen may fall out of the vehicle in the event of an accident after the front passenger airbag has been triggered**

Locate leaks

- by spraying water underneath sealing lips
- with ultrasonic leak detector (sourcing reference: BMW Parts Department)

If necessary, seal leakage with appropriate nozzle.

Version with GPS navigation system 1 (up to 9/97)

After installation of rear window:

- Recalibrate magnetic field probe
- Refer to functional description in ISID (Integrated Service Information Display/Diagnosis and Information System)

Version with rain sensor, rain/light sensor or rain/light solar sensor

Remove complete rain sensor, rain/light sensor or rain/light solar sensor, **SEE REPAIR INSTRUCTIONS** .

After replacing windscreen:

- Initialize rain sensor, rain/light sensor or rain/light solar sensor
- Refer to functional description in ISID (Integrated Service Information Display/Diagnosis and Information System)

Version with automatic air conditioning

After replacing windscreen:

If condensation sensor is not mounted on new windscreen:

Replace condensation sensor, **REFER TO REPAIR INSTRUCTIONS** .

Version with Head-Up Display (HUD)

When replacing windscreen in vehicles with **rain/light solar sensor,** replace this completely: See repair instructions See **6135177 REMOVING AND INSTALLING (REPLACING) RAIN/LIGHT SENSOR** or **6135679 INITIALIZING RAIN/LIGHT (SOLAR) SENSOR** .

Before bonding, install windscreen with seal(s) and check HUD; if necessary, press expanding foam tape down with hand roller.

After bonding windscreen, check and if necessary adjust HUD.

Work steps for removing and installing window glass

See repair instructions See **5131000 REMOVING AND INSTALLING/RENEWING WINDSCREEN** or **5131200 REMOVING AND INSTALLING/REPLACING REAR WINDOW**.

NOTE: If the document for the selected model is not required or not approved, the following message will be displayed when clicking on the "cross-reference": "No additional documents available in the current vehicle context".

51 37 000 REMOVING AND INSTALLING COMPLETE REAR LEFT OR RIGHT POWER WINDOW UNIT

WARNING: Risk of injury!

Power window unit has no anti-trapping mechanism.

Necessary preliminary tasks

- Remove **REAR TOP SIDE TRIM PANEL**
- Remove **OUTER WINDOW CAVITY COVER STRIP**
- Remove **INNER WINDOW CAVITY COVER STRIP**
- Remove **REAR WHEEL ARCH COVER**
- Remove **SEAT BELT COVER**

Remove foam material (1).

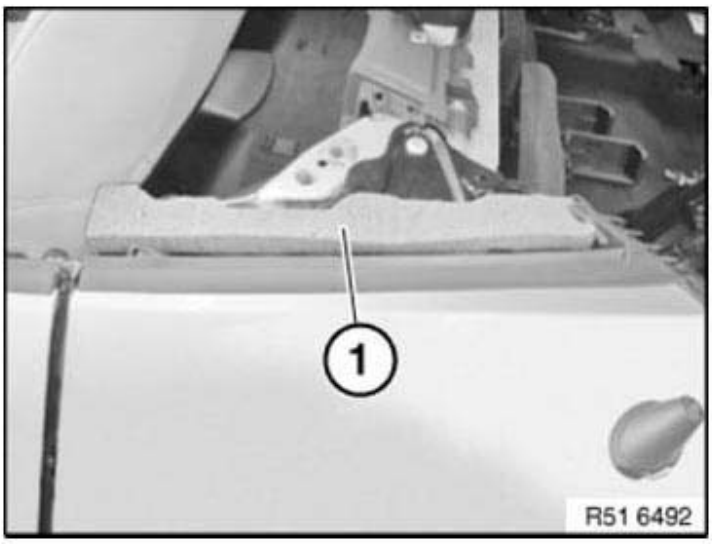


Fig. 300: Identifying Foam Material
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 37 4AZ** .

NOTE: Replace self-locking screws.

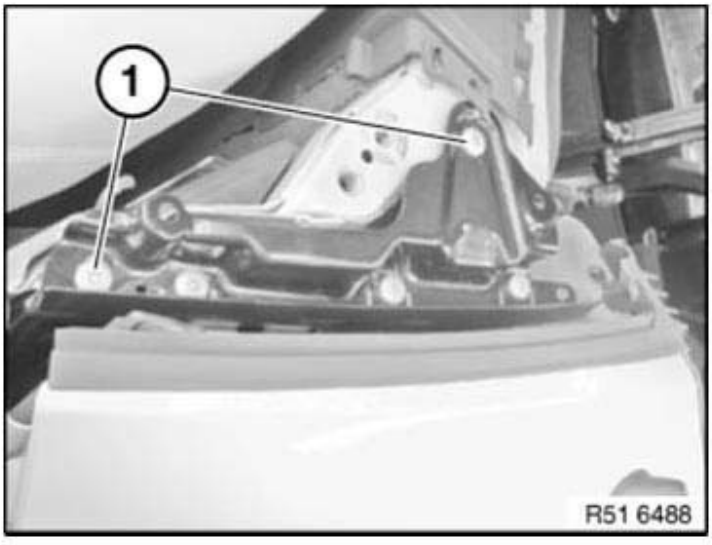


Fig. 301: Identifying Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release bolt (1).

Tightening torque **51 37 5AZ** .

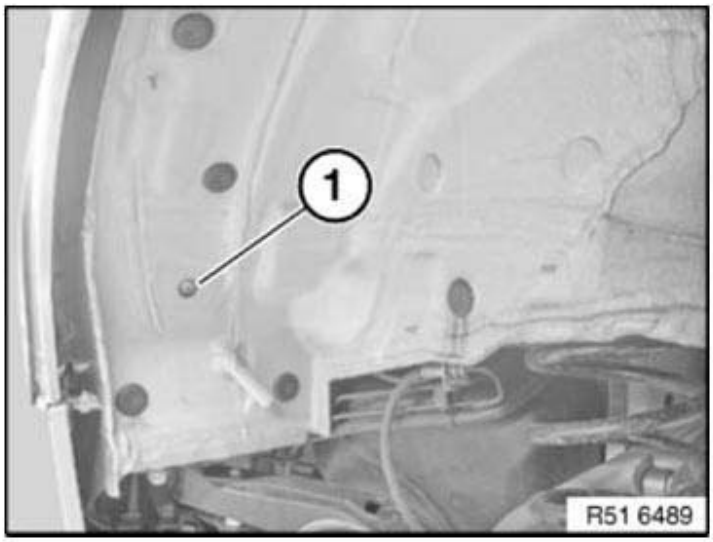


Fig. 302: Identifying Power Window Unit Bolt
Courtesy of BMW OF NORTH AMERICA, INC.

Raise power window unit slightly.

Unclip cable connection (1).

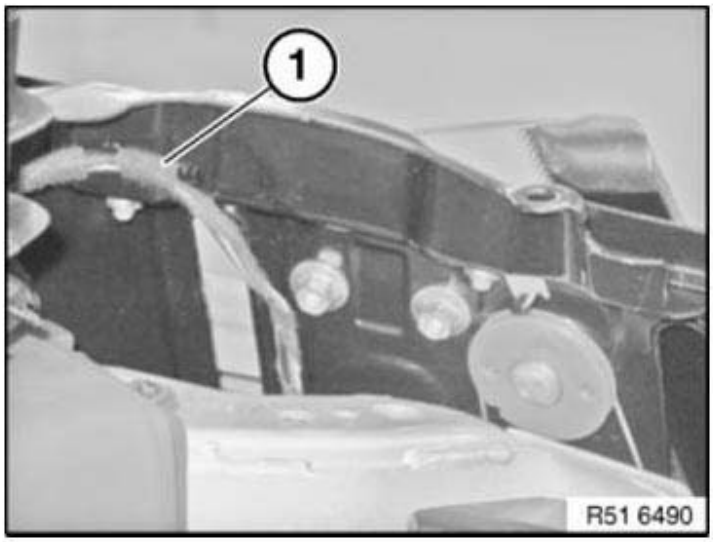


Fig. 303: Identifying Power Window Unit Cable Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Move power window unit (1) with electric switch in door trim panel to roughly half height and feed out power window in upward direction.

Installation:

Reinstall power window unit (1) in half-opened position in body and move power window unit (1) with electric switch in door trim panel downwards again.

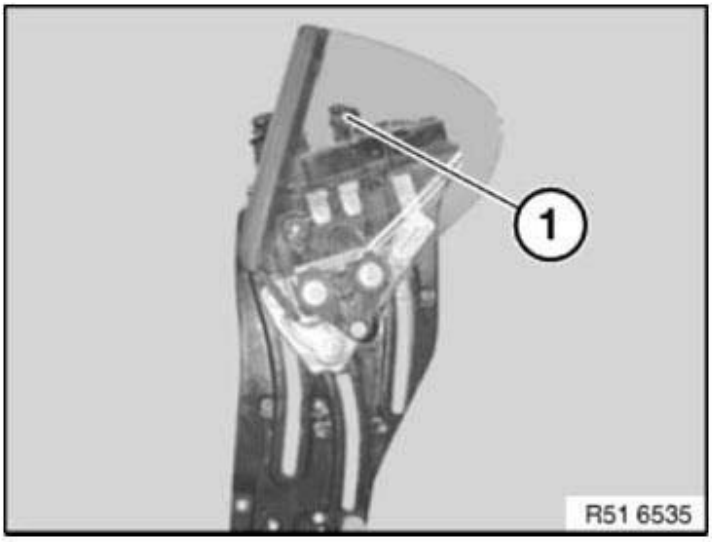


Fig. 304: Identifying Power Window Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect electric motor (1) and cable clip (2).

Installation:

Check function.

Adjust **REAR SIDE WINDOW** .

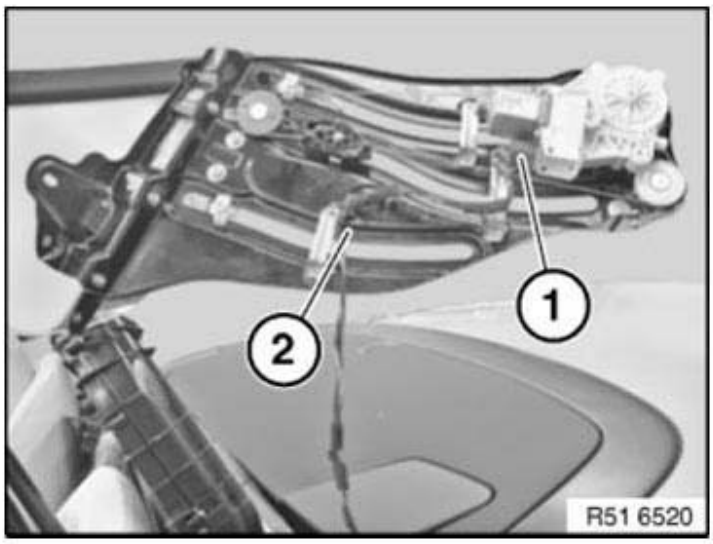


Fig. 305: Identifying Electric Motor And Cable Clip
Courtesy of BMW OF NORTH AMERICA, INC.

51 37 240 REMOVING AND INSTALLING/REPLACING OUTER WINDOW CAVITY COVER STRIP FOR REAR SIDE WINDOW

IMPORTANT: The "INSTRUCTIONS ON FITTING WINDOW GUIDES " serve as the basis for this repair instruction and must be observed without fail.

Necessary preliminary tasks

- Partially open folding roof
- If necessary, open side window glass

NOTE: Prior to removing, pay attention to the exact installation position with respect to the adjoining components.

Unclip belt deflector trim (1).

Release outer window cavity cover strip (2) from side panel.

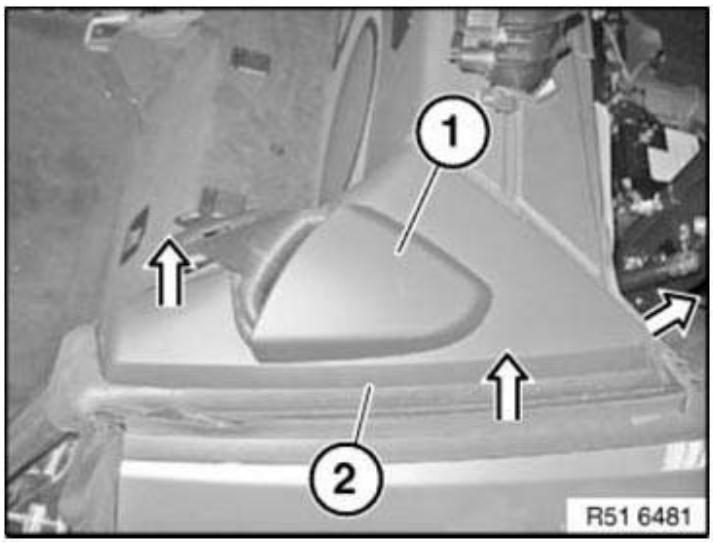


Fig. 306: Removing Outer Window Cavity Cover Strip From Side Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure window cavity cover strip (1) is correctly seated.

Window cavity cover strip (1) must not be damaged.

If necessary, moisten window cavity cover strip (1) prior to fitting with **APPROVED ANTI-FRICTION AGENT** .

Secure window cavity cover strip (1) with clip (2) to body (3).

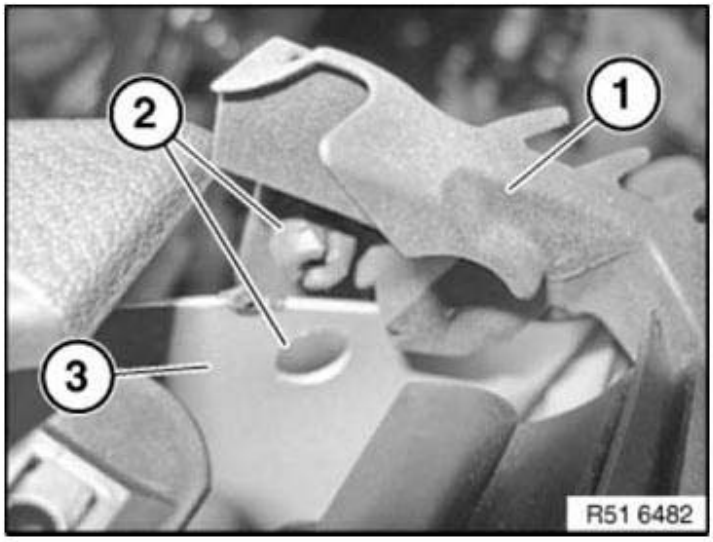


Fig. 307: Identifying Window Cavity Cover Strip With Clip

Courtesy of BMW OF NORTH AMERICA, INC.

51 37 261 REMOVING AND INSTALLING/REPLACING WINDOW CAVITY COVER STRIP FOR DOOR WINDOW, REAR LEFT OR RIGHT

IMPORTANT: The "INSTRUCTIONS ON FITTING WINDOW GUIDES " serve as the basis for this repair instruction and must be observed without fail.

Necessary preliminary tasks

- Partially open folding roof
- If necessary, open side window glass

NOTE: Prior to removing, pay attention to the exact installation position with respect to the adjoining components.

Unclip belt deflector trim (1).

Release inner window cavity cover strip (2) from side panel.

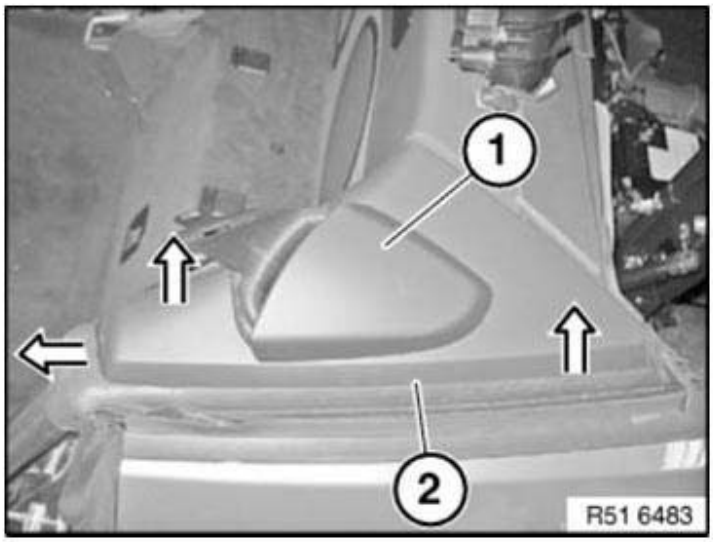


Fig. 308: Removing Outer Window Cavity Cover Strip From Side Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure window cavity cover strip (1) is correctly seated.

Window cavity cover strip (1) must not be damaged.

If necessary, moisten window cavity cover strip (1) prior to fitting with **APPROVED ANTI-FRICTION**

AGENT.

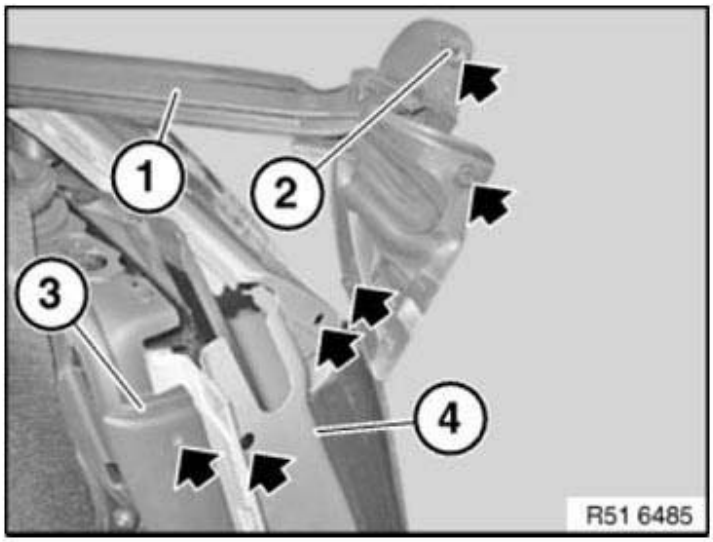


Fig. 309: Identifying Window Cavity Cover Strip With Trim And Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Insert clip (2) in window cavity cover strip (1) if this remains on trim (3) during removal.

Clip window cavity cover strip (1) on trim (3) and body (4).

51 37 003 REPLACING REAR LEFT OR RIGHT POWER WINDOW UNIT

Necessary preliminary tasks

- Remove **REAR POWER WINDOW UNIT**
- Remove **FLAT MOTOR FOR REAR POWER WINDOW UNIT**

Release screws (1).

Tightening torque **51 37 2AZ** .

Remove side window glass (2) from power window unit (3).

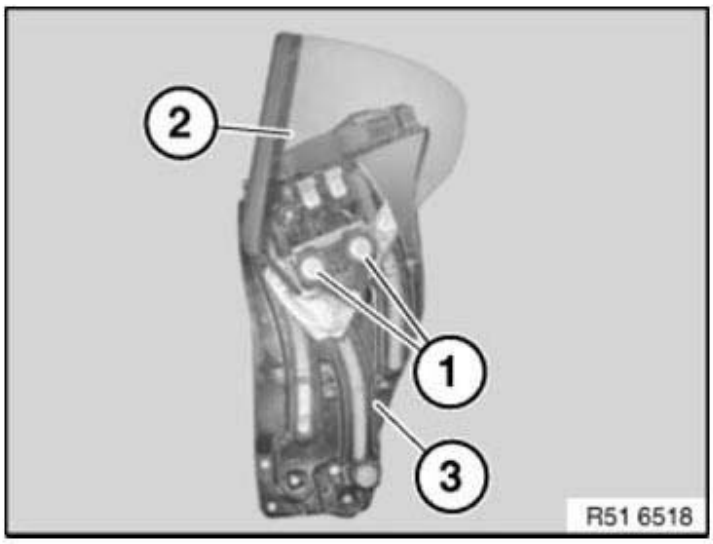


Fig. 310: Identifying Side Window Glass Of Power Window Unit With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Initial adjustment of pretension:

Attach adjusting screw (1) until flush on outside.

Check function.

Adjust **REAR SIDE WINDOW** .

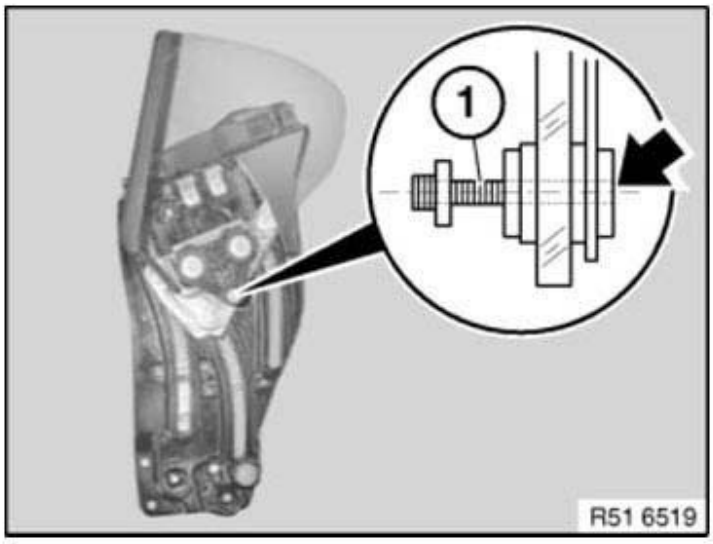


Fig. 311: Identifying Adjusting Screw
Courtesy of BMW OF NORTH AMERICA, INC.

51 37 171 REPLACING REAR LEFT OR RIGHT SIDE WINDOW

WARNING: Power window unit has no anti-trapping mechanism.

Necessary preliminary tasks

- Remove **REAR POWER WINDOW UNIT**

Release screws (1).

Tightening torque **51 37 2AZ** .

Feed side window glass (2) out of power window unit (3).

Installation:

Position screws (1) centrally in window bore holes.

Check function.

Adjust **REAR DOOR WINDOW** .

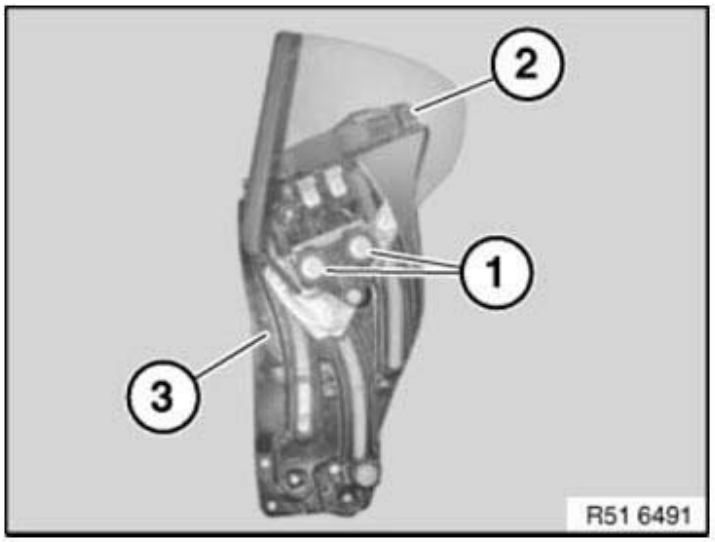


Fig. 312: Identifying Side Window Glass Of Power Window Unit With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

5141 FRONT DOOR TRIM PANEL WITH ARM REST

51 31 ... NOTES FOR BONDING SOUND INSULATION (SI), DOORS

IMPORTANT: Do not pull on the sound insulation in jerks (risk of damage)

Work steps for removing and installing sound insulation

- Click on "underlined cross-reference" to display at the end of this document

General

Sound insulation is bonded to the inner door panel.

Bonded sound insulation must not be subjected to load (e.g. leak test) before 5 hours have elapsed.

On-the-job safety

When working with bonding products (adhesive, cleaning agent, etc.):

- Wear safety goggles, protective gloves and if necessary an apron.
- Ensure rooms are well ventilated.
- Change work clothing contaminated with adhesive immediately.
- Change work clothing contaminated with solvents and swelling agents immediately (keep spare work clothing on hand).
- Take skin protection measures, provide washing facilities including hot water, use silicone-free skin creams
- Provide eye douche facilities, change water regularly (once a month).
- Comply with the relevant safety regulations

Handling adhesive area on inner door panel

HANDLING PROCEDURE FOR INNER DOOR PANEL

Adhesive	Cleaning
a. Butyl bead applied to sound insulation with protective film b. Butyl mini-round profile [] 3 mm from the roller c. Butyl round profile [] 6 mm from the roller	a. Isohexane (benzine) b. 2-propanol (isopropanol) *Under no circumstances: paint thinning* c. Carry out bonding only after an air drying time > or = 1 min. Air drying time may be omitted if the entire bonding surface is wiped with a dry cloth d. After cleaning, the bonding surface may not be touched with hands or fouled again

Repair in area of sound insulation, door

REPAIR FOR SOUND INSULATION AREA (DOOR)

Repair in the event of damaged sound insulation or leakage	• Cut the butyl rope between the sound insulation and the inner door panel with a sharp knife • After the repair is finished, position a new butyl rope [] 3 mm directly on the original adhesive bead • Heat the butyl bead with a standard hot air blower until the butyl rope strings when touched slightly. Do not damage the sound insulation in the process • Press down with special tool **51 0 300** . Perform this work extremely carefully because the increased amount of adhesive requires pressure of = 20 N/cm^2 (compared to firm thumb pressure ~ 30 N/cm^2) • Visually check the adhesive bead and its compression (no capillaries or broken adhesive bead permitted) • In the cases mentioned, the complete sound insulation must be replaced. After removing the sound insulation, removal all butyl remnants from the inner door panel. Apply 6 mm [] butyl rope to new sound insulation • Press down with special tool **51 0 300** to > or = 20 N/cm^2 (compare to firm thumb pressure ~ 30 N/cm^2)

The sound insulation must be bonded watertight below the door lock

- Flat bonding surface required all round
- No bonding in event of moisture (e.g. condensation, etc.)
- Bonding area must not show any traces of adhesion-reducing residues (e.g. separating agents, greases, oils, paraffins, plastisols, cavity wax, polishing dust residues, etc.)
- Remove the protective film directly before joining (under no circumstances remove earlier, since the butyl, because of its stickiness, will very quickly pick up adhesion-reducing dirt contaminants)
- The sound insulation must be attached with positional accuracy to the inner door panel, because it is no longer possible to change the position without damaging the butyl bead
- With repainted areas, the maximum permitted temperature of 90°C may not be exceeded in the area of the sound insulation. Otherwise, the sound insulation must be removed (and replaced, if necessary).

Expiry date of adhesive

24 months, see label on packaging

Disposal of the cleaning cloth

Cleaning cloths and cleaning agent residues are hazardous waste (see also safety data sheet)

Disposal of adhesive

Hazardous waste (see also safety data sheet)

Work steps for removing and installing sound insulation

SEE REPAIR INSTRUCTIONS

51 41 000 REMOVING AND INSTALLING LEFT OR RIGHT FRONT DOOR TRIM PANEL

NOTE: Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.

Necessary preliminary tasks

- Open side window completely.

Switch off ignition before disconnecting plug connections.

Lever out plug (1) with a suitable tool and release screw underneath.

Tightening torque **51 41 1AZ** .

Unfasten screws (2).

Tightening torque **51 41 1AZ** .

Release bolt (3).

Tightening torque **51 41 1AZ** .

Unclip door trim panel (5) with special tool 00 9 317 at points (4).

Installation:

Replace self-locking screw.

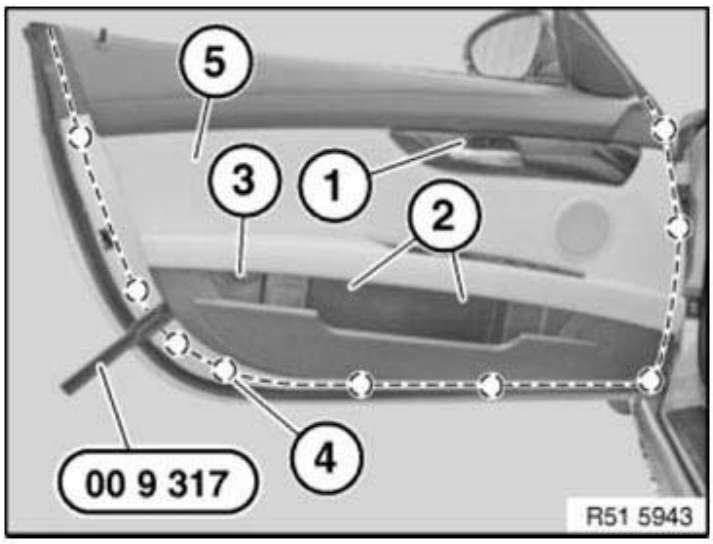


Fig. 313: Removing Door Trim Panel Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

Ensure that the clips are correctly fitted.

1. Blue clips
2. White clips
3. Yellow clips

Installation:

Always replace blue clip (1) (clip with sealing ring)

If necessary, replace further faulty clips.

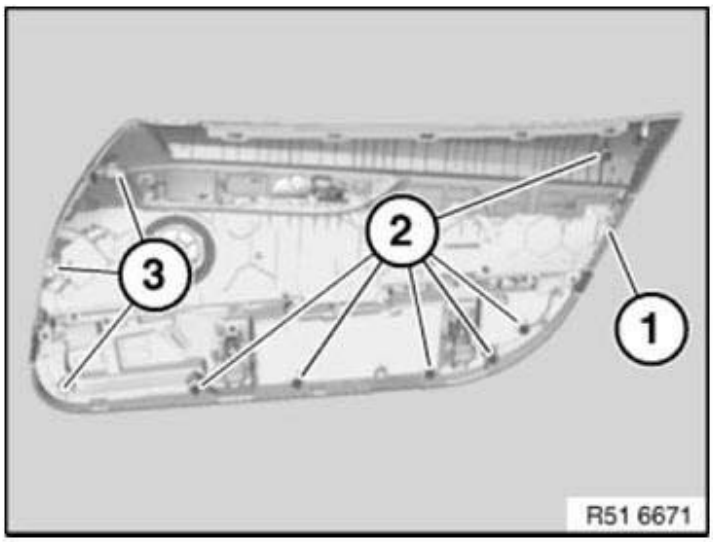


Fig. 314: Identifying Blue, Yellow And White Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip door trim (1) at top.

Feed out door trim (1) from unlocking button (2).

Installation:

If necessary, replace defective retaining elements.

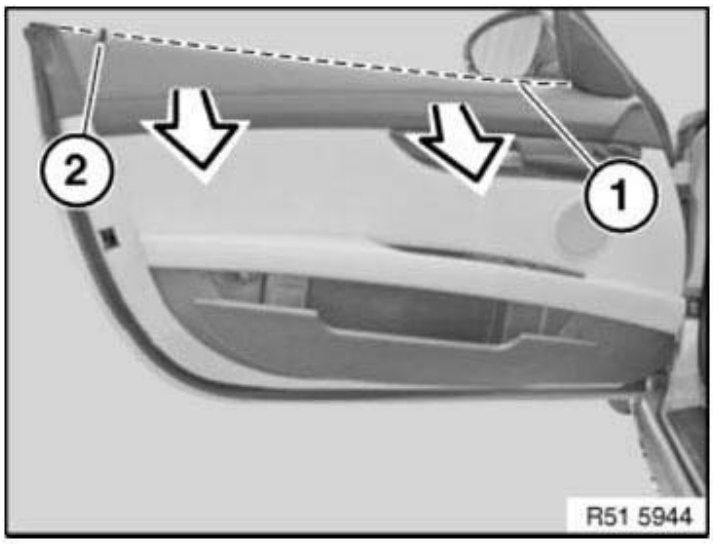


Fig. 315: Removing Door Trim From Unlocking Button
Courtesy of BMW OF NORTH AMERICA, INC.

Unhook Bowden cable (1) from door lock (2).

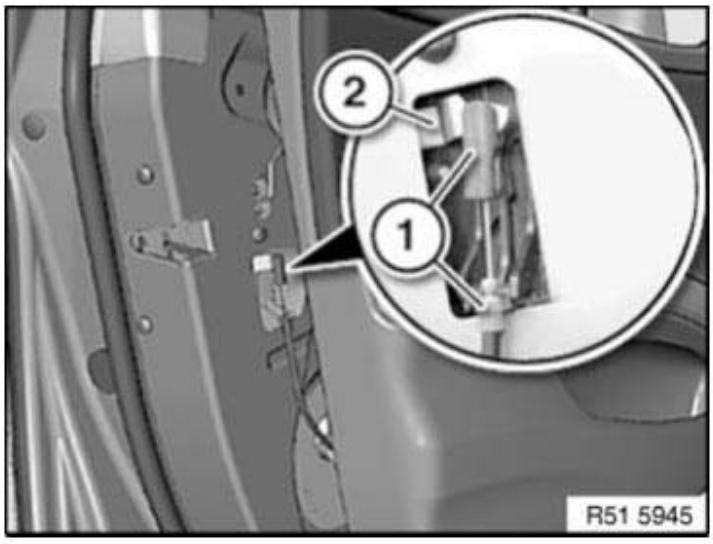


Fig. 316: Identifying Bowden Cable Of Door Lock
Courtesy of BMW OF NORTH AMERICA, INC.

Depending on equipment specification:

Disconnect plug connection (1).

Remove cable (2) with retaining clips.

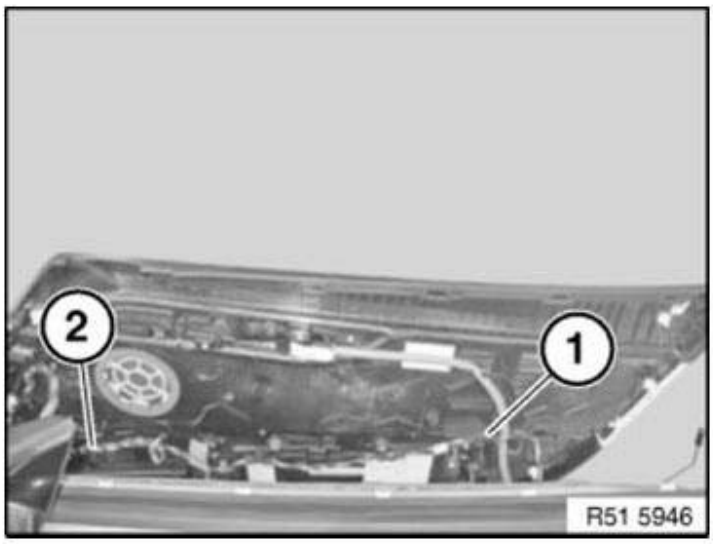


Fig. 317: Identifying Plug Connection And Cable
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Carry out following function checks with door opened:

- Close rotary striker lock with a suitable tool. Check freedom of movement of locking button and linkage by actuating the locking system several times on the ignition key.

  If necessary, align linkage and repeat check procedure.

- Open rotary striker lock above inside door handle. Check correct opening by means of visual inspection.

51 48 060 REMOVING AND INSTALLING/REPLACING SOUND INSULATION IN FRONT DOOR, LEFT OR RIGHT

IMPORTANT: INSTRUCTIONS FOR SOUND INSULATION are an essential part of these repair instructions and must be followed without fail.

Do not detach sound insulation in jerks (risk of damage).

After every repair, check that the sound insulation is water-tight (water ingress).

Necessary preliminary tasks

- Remove **DOOR TRIM PANEL**

Release speaker cable (1).

Guide speaker cable (1) through sound insulation (2).

Position of sealing bead (3).

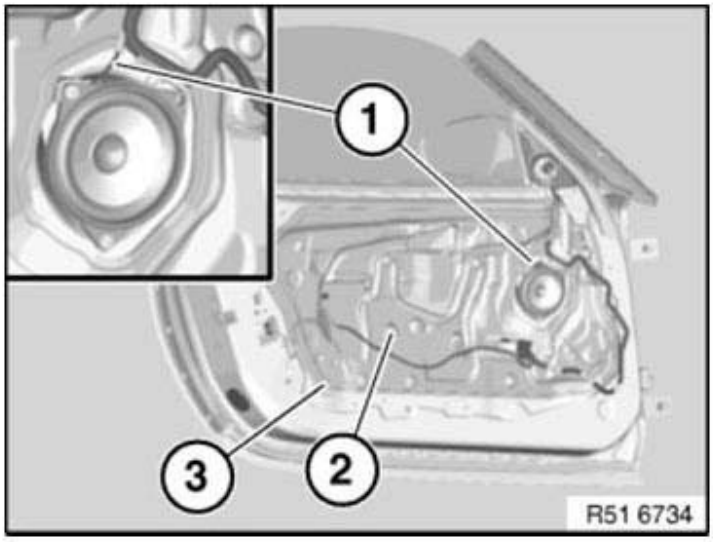


Fig. 318: Identifying Speaker Cable With Sound Insulation And Sealing Bead
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: When cutting through sealing bead (1), do not damage sound insulation (2) and if necessary cable.

With a suitable sharp cutting tool (3) cut through sealing bead (1) of sound insulation (2) in the area to be detached.

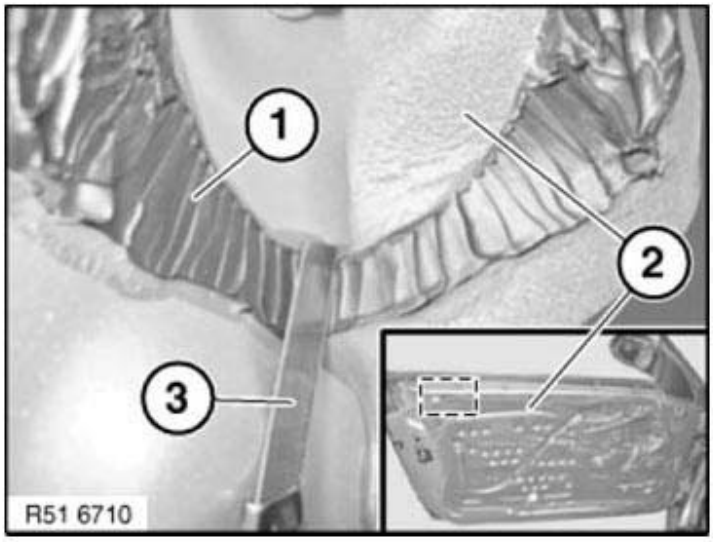


Fig. 319: Cutting Sealing Bead Of Sound Insulation Using Sharp Cutting Tool

Courtesy of BMW OF NORTH AMERICA, INC.

Clean bonding area with adhesive remover (sourcing reference: BMW Parts Service).

Air drying time: 1 minute

IMPORTANT: Adhesive areas must be dry and free of dust and grease.

Once it has been cleaned, do not touch the adhesive area with bare hands.

NOTE: Replacement:

Lay 6 mm dia. butyl cord (sourcing reference: BMW Parts Department) in specified adhesive area.

Heat butyl cord (hot air blower) and press down firmly on sound insulation all round.

Contact pressure with hand roller: approx. 20 N/cm ^{2}

Manual contact pressure: approx. 10 N/cm^2

NOTE: Firm thumb pressure has approx. 30 N/cm^2

NOTE: Position of butyl cord (1) on sound insulation (2).

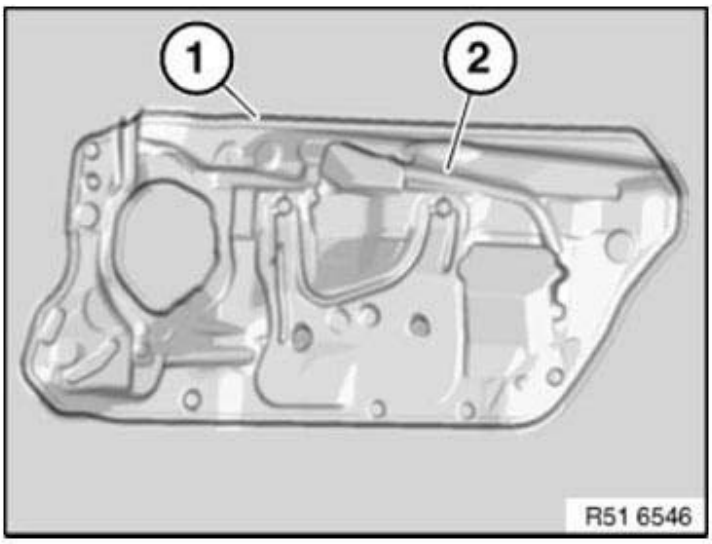


Fig. 320: Identifying Butyl Cord On Sound Insulation
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: There is a 2 cm wide edge (2) all round on sound insulation (1).

Stick on butyl cord (3) centrally in this area.

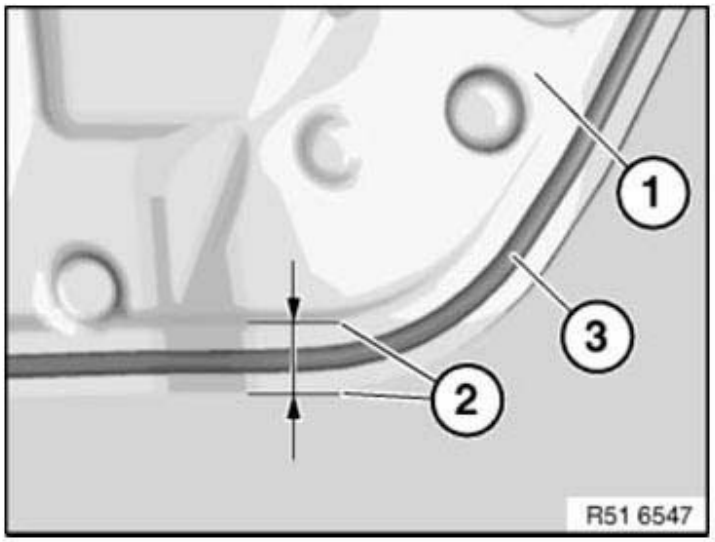


Fig. 321: Identifying 2 cm Wide Edge On Sound Insulation And Butyl Cord
Courtesy of BMW OF NORTH AMERICA, INC.

51 41 001 REPLACING FRONT LEFT OR RIGHT DOOR TRIM PANEL

NOTE: Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.

Necessary preliminary tasks

- Remove **DOOR TRIM PANEL**
- Remove **BOWDEN CABLE**
- Remove switch centre See **6131117 REMOVING AND INSTALLING/REPLACING POWER WINDOW SWITCH (DRIVER'S SIDE)** or **6131118 REPLACING FRONT PASSENGER POWER WINDOW SWITCH**
- Remove **SPEAKER COVER**
- Remove **CENTRE CONSOLE**
- Remove **INSIDE DOOR OPENER**
- If necessary, remove **FOOTWELL LIGHT**
- If necessary, remove **ANTI-THEFT ALARM INDICATOR**
- Remove **LED IN DOOR TRIM PANEL**

Lever out locking button trim (1) from door shoulder (2) with a suitable tool.

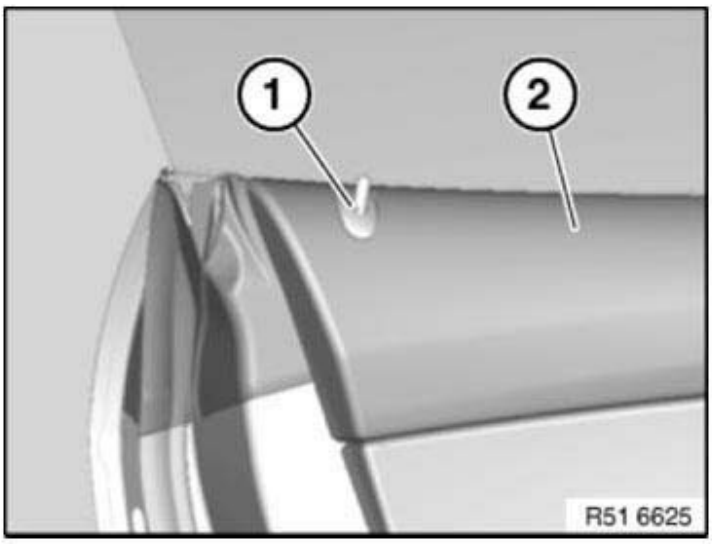


Fig. 322: Identifying Button Trim On Door Shoulder
Courtesy of BMW OF NORTH AMERICA, INC.

51 41 ... REPLACING SPEAKER COVER ON LEFT OR RIGHT DOOR TRIM PANEL

Partially fit special tool 00 9 317 as illustrated.

Carefully lever speaker cover (2) out of door trim panel (1).

IMPORTANT: Tape off working area. Risk of damage!

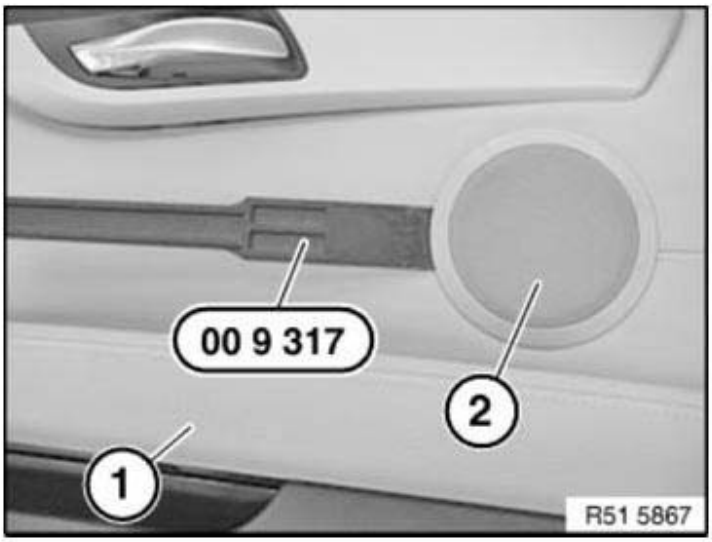


Fig. 323: Fitting Special Tool (00 9 317) On Speaker Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Guide (2) and catch along line (3) must not be damaged.

Insert guide (2) of speaker cover (1) correctly in opening (5) of door trim panel (4) and carefully engage speaker cover (1) on edge.

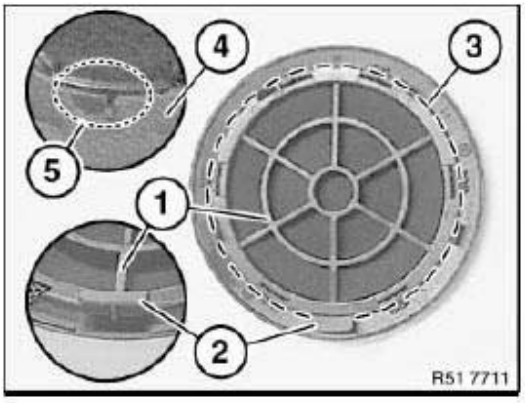


Fig. 324: Identifying Guides Of Speaker Cover And Door Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

5142 REAR DOOR TRIM PANEL WITH ARM REST

51 31 ... NOTES FOR BONDING SOUND INSULATION (SI), DOORS

IMPORTANT: Do not pull on the sound insulation in jerks (risk of damage)

Work steps for removing and installing sound insulation

- Click on "underlined cross-reference" to display at the end of this document

General

Sound insulation is bonded to the inner door panel.

Bonded sound insulation must not be subjected to load (e.g. leak test) before 5 hours have elapsed.

On-the-job safety

When working with bonding products (adhesive, cleaning agent, etc.):

- Wear safety goggles, protective gloves and if necessary an apron.
- Ensure rooms are well ventilated.
- Change work clothing contaminated with adhesive immediately.
- Change work clothing contaminated with solvents and swelling agents immediately (keep spare work

clothing on hand).

- Take skin protection measures, provide washing facilities including hot water, use silicone-free skin creams
- Provide eye douche facilities, change water regularly (once a month).
- Comply with the relevant safety regulations

Handling adhesive area on inner door panel

HANDLING PROCEDURE FOR INNER DOOR PANEL

Adhesive	Cleaning
a. Butyl bead applied to sound insulation with protective film b. Butyl mini-round profile 3 mm from the roller c. Butyl round profile 6 mm from the roller	a. Isohexane (benzine) b. 2-propanol (isopropanol) *Under no circumstances: paint thinning* c. Carry out bonding only after an air drying time > or = 1 min. Air drying time may be omitted if the entire bonding surface is wiped with a dry cloth d. After cleaning, the bonding surface may not be touched with hands or fouled again

Repair in area of sound insulation, door

REPAIR FOR SOUND INSULATION AREA (DOOR)

Repair in the event of damaged sound insulation or leakage	• Cut the butyl rope between the sound insulation and the inner door panel with a sharp knife • After the repair is finished, position a new butyl rope 3 mm directly on the original adhesive bead • Heat the butyl bead with a standard hot air blower until the butyl rope strings when touched slightly. Do not damage the sound insulation in the process • Press down with special tool **51 0 300** . Perform this work extremely carefully because the increased amount of adhesive requires pressure of > or = 20 N/cm^2 (compared to firm thumb pressure ~ 30 N/cm^2) • Visually check the adhesive bead and its compression (no capillaries or broken adhesive bead permitted) • In the cases mentioned, the complete sound insulation must be replaced. After removing the sound insulation, removal all butyl remnants from the inner door panel. Apply 6 mm butyl rope to new sound insulation • Press down with special tool **51 0 300** to > or = 20 N/cm^2 (compare to firm thumb pressure ~ 30 N/cm^2)

The sound insulation must be bonded watertight below the door lock

- Flat bonding surface required all round
- No bonding in event of moisture (e.g. condensation, etc.)
- Bonding area must not show any traces of adhesion-reducing residues (e.g. separating agents, greases, oils, paraffins, plastisols, cavity wax, polishing dust residues, etc.)
- Remove the protective film directly before joining (under no circumstances remove earlier, since the butyl, because of its stickiness, will very quickly pick up adhesion-reducing dirt contaminants)
- The sound insulation must be attached with positional accuracy to the inner door panel, because it is no longer possible to change the position without damaging the butyl bead
- With repainted areas, the maximum permitted temperature of 90°C may not be exceeded in the area of the sound insulation. Otherwise, the sound insulation must be removed (and replaced, if necessary).

Expiry date of adhesive

24 months, see label on packaging

Disposal of the cleaning cloth

Cleaning cloths and cleaning agent residues are hazardous waste (see also safety data sheet)

Disposal of adhesive

Hazardous waste (see also safety data sheet)

Work steps for removing and installing sound insulation

SEE REPAIR INSTRUCTIONS

5143 SIDE COVERING WITH ARMRESTS

51 43 075 REMOVING AND INSTALLING/REPLACING SIDE TRIM PANEL, FOOTWELL, ON A-PILLAR, RIGHT

Necessary preliminary tasks

- Remove **FRONT INNER ENTRANCE COVER STRIP**
- Remove **TRIM FOR INSTRUMENT PANEL, BOTTOM LEFT**

Detach mucket See **5170... FITTING SEALS** or **5171000 REMOVING AND INSTALLING/REPLACING SEAL ON FRONT DOOR, LEFT OR RIGHT** (1) in area of trim (2).

Unclip panel (2) in direction of arrow at retaining points (3) and remove.

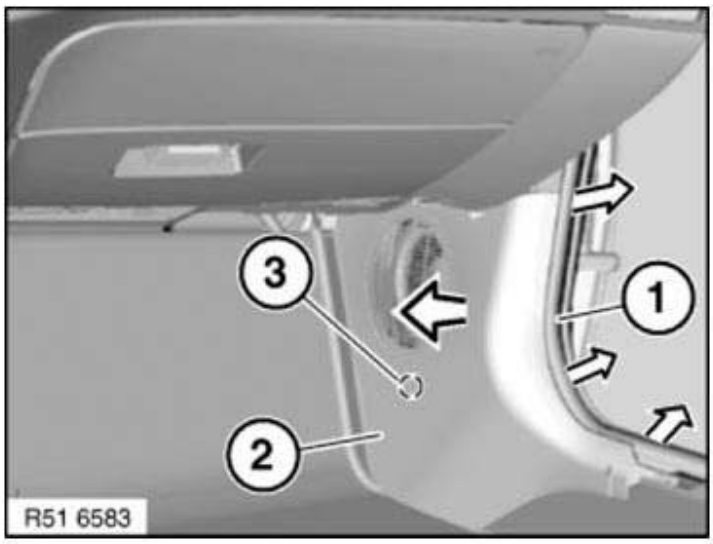


Fig. 325: Removing Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, lever out clips (1) remaining in bores.

If necessary, replace faulty clips (1).

Preinstall clip (1) in trim (2).

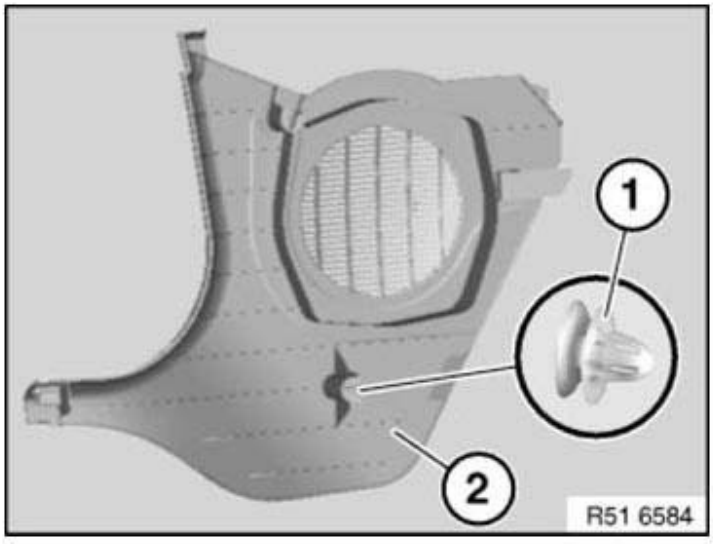


Fig. 326: Identifying Clip On Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 43 030 REMOVING AND INSTALLING/REPLACING COVER ON FRONT LEFT OR RIGHT

ROLLOVER BAR

NOTE: Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.
For purposes of clarity, operations show component removed.

Necessary preliminary tasks

- Partially open folding roof
- If necessary, remove wind deflector

Insert special tool 00 9 327 in marked area from an angle at rear in direction of arrow A between front (1) and rear covers (2).

By rotating special tool in direction of arrow B, lever cover (1) out of retaining nipple of rear cover (2).

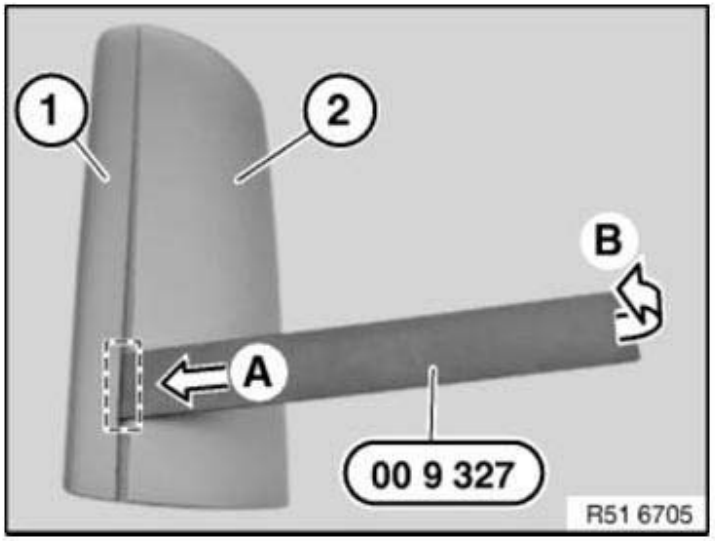


Fig. 327: Inserting Special Tool (00 9 327)
Courtesy of BMW OF NORTH AMERICA, INC.

Repeat procedure, as described above.

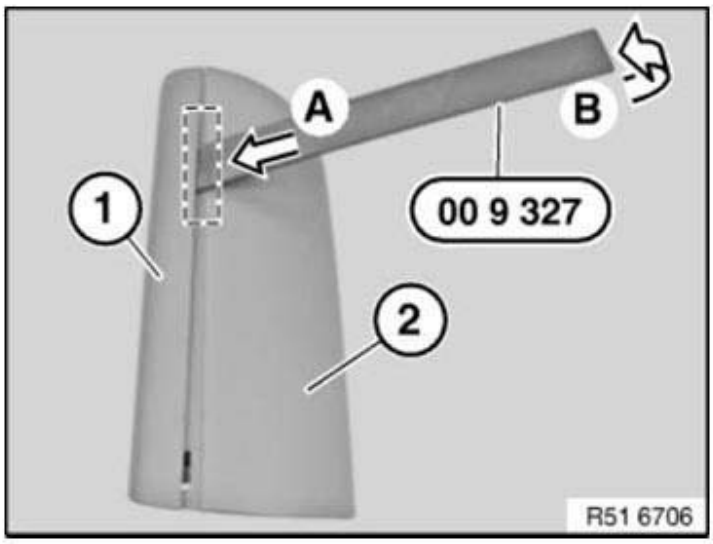


Fig. 328: Inserting Special Tool (00 9 327)
Courtesy of BMW OF NORTH AMERICA, INC.

Now carefully lever front cover (2) out of remaining retaining nipples by hand and remove cover (2).

Installation:

Replace missing or damages fixing grommets (1).

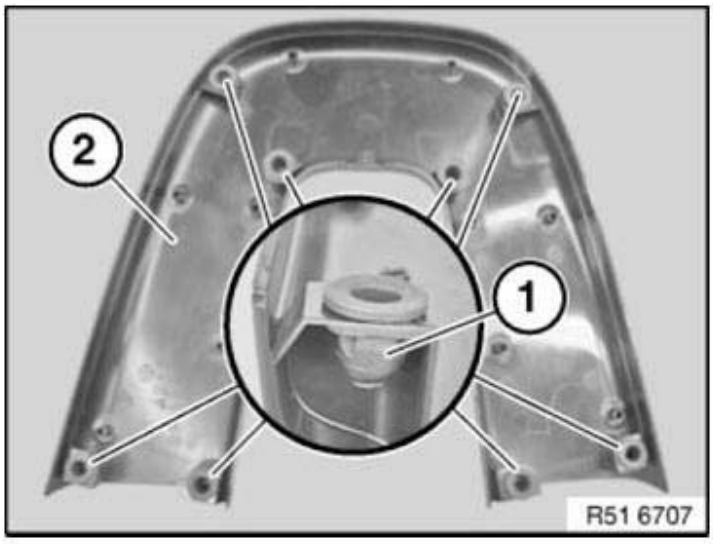


Fig. 329: Identifying Cover With Fixing Grommets
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Retaining nipples (1) on rear cover (2) must not be damaged. If necessary, replace rear cover (2).

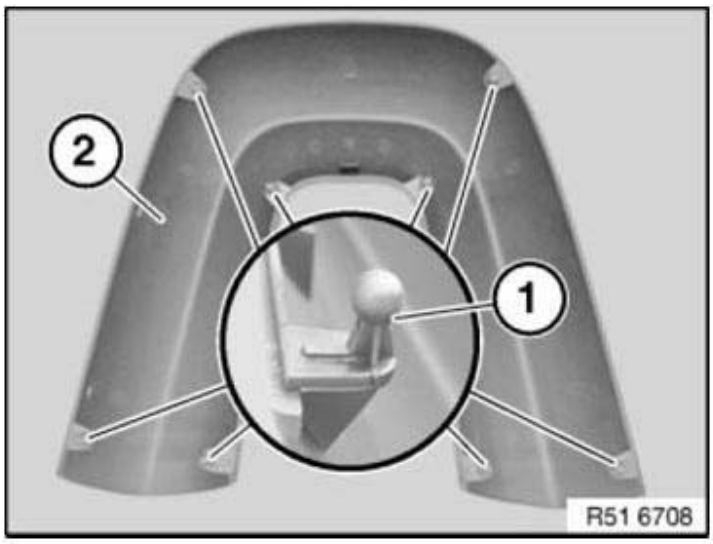


Fig. 330: Identifying Retaining Nipples On Rear Cover
Courtesy of BMW OF NORTH AMERICA, INC.

51 43 031 REMOVING AND INSTALLING/REPLACING COVER ON REAR LEFT OR RIGHT ROLLOVER BAR

NOTE: Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.

Necessary preliminary tasks

- Remove **COVER ON FRONT ROLLOVER BAR**

Release screws (1) and remove windbreak mount.

Remove rear cover (2) in direction of arrow from rollover bar.

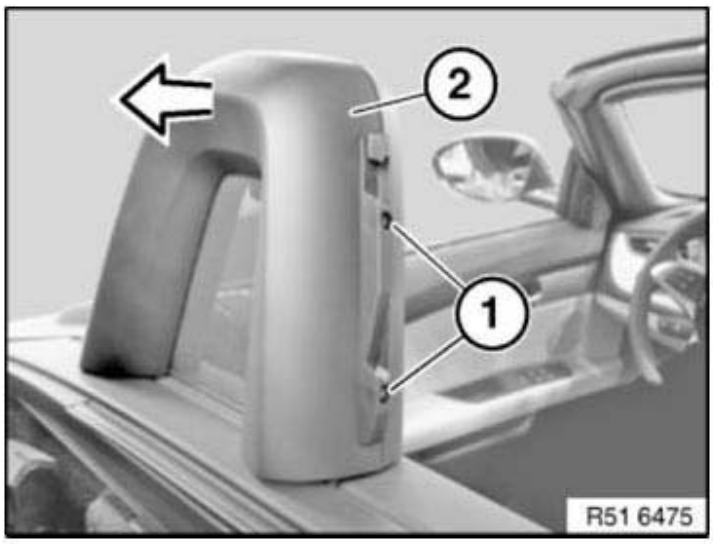


Fig. 331: Removing Rear Cover From Rollover Bar
Courtesy of BMW OF NORTH AMERICA, INC.

51 43 ... REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT ROLLOVER PROTECTION COVER BRACKET

Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.

Necessary preliminary tasks

- Remove **UPPER (REAR) PARTITION PANEL**

Release screws (1) and (2).

Remove split rollover protection cover bracket (3).

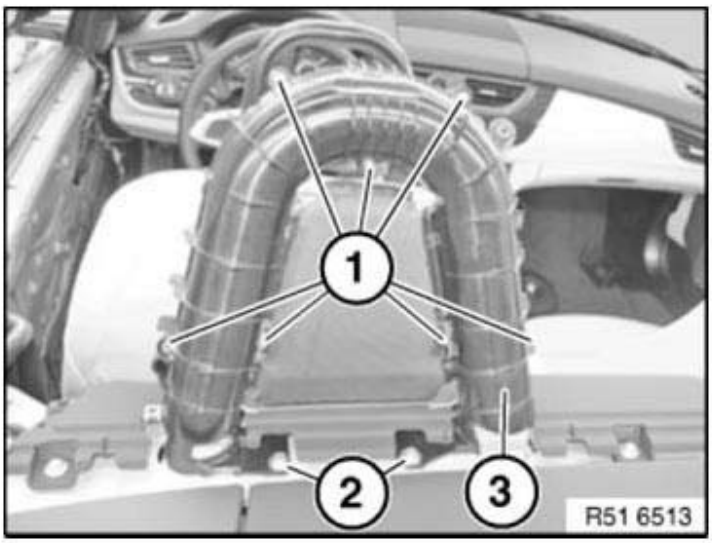


Fig. 332: Identifying Split Rollover Protection Cover Bracket With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

Modify wind deflector (1) and coat hook (2).

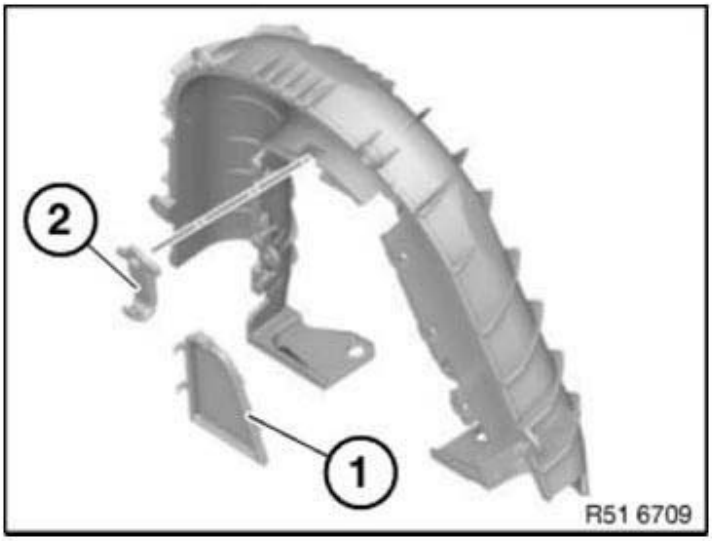


Fig. 333: Identifying Wind Deflector And Coat Hook
Courtesy of BMW OF NORTH AMERICA, INC.

51 43 125 REMOVING AND INSTALLING/REPLACING REAR BOTTOM LEFT OR RIGHT SIDE TRIM PANEL

Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.

Necessary preliminary tasks

- Remove **REAR SIDE TRIM PANEL**
- Remove **FRONT DOOR SILL COVER STRIP**

Release screw (1).

Partially detach door seal (2).

Carefully pull out trim panel (3) and remove.

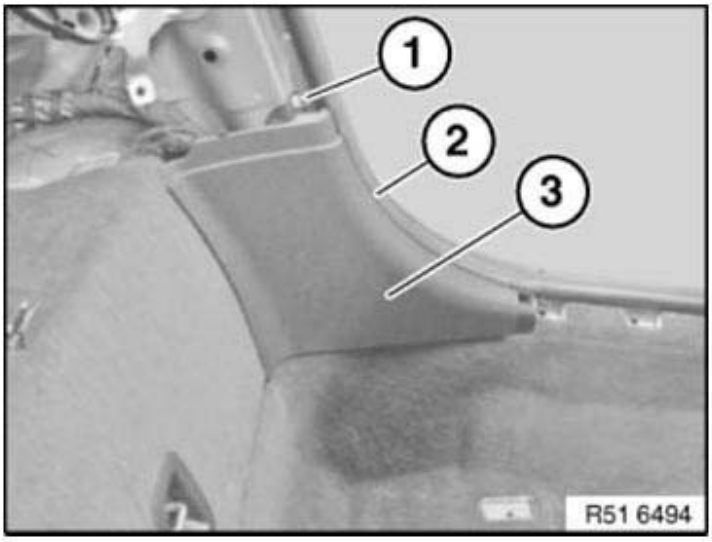


Fig. 334: Identifying Door Seal, Trim Panel And Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, reattach clip (1) prior to installation.

Clip (1) and retaining lugs (2) must not be damaged.

If necessary, replace side trim panel.

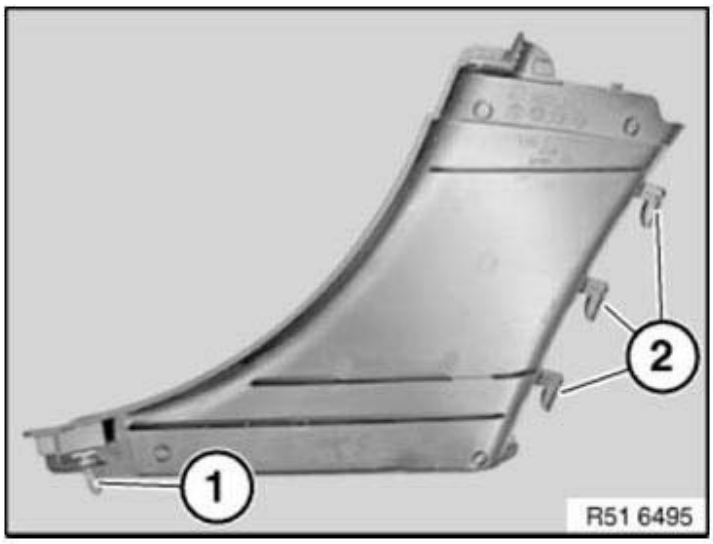


Fig. 335: Identifying Clip And Retaining Lugs
Courtesy of BMW OF NORTH AMERICA, INC.

51 43 120 REMOVING AND INSTALLING/REPLACING REAR LEFT OR RIGHT SIDE TRIM PANEL

Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.

Necessary preliminary tasks

- Remove **REAR TOP SIDE TRIM PANEL**

Installation:

- Microencapsulated screws (Loctite) must be replaced and may **not** be reused
- Screw connection must be completed within 20 minutes (start of curing)
- Microencapsulated screws must **not** be retightened
- Clean thread of nut beforehand in event of repeated use

Snap out speaker cover (1) with a suitable tool.

Lever out fixing rivet (2) from rubber skirt for inner window cavity cover strip.

NOTE: For purposes of clarity, fixing rivet (2) shown with rubber skirt detached.

Installation:

If necessary, replace fixing rivet (2).

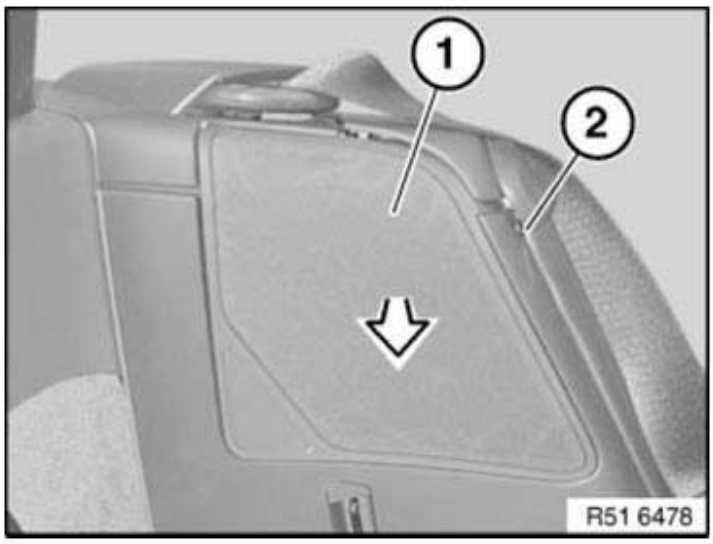


Fig. 336: Removing Speaker Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Partially remove door seal (4).

Lift off cover (2).

Remove storage net (3) with rod.

Release screw (1).

Installation:

Make sure door seal (4) is correctly seated.

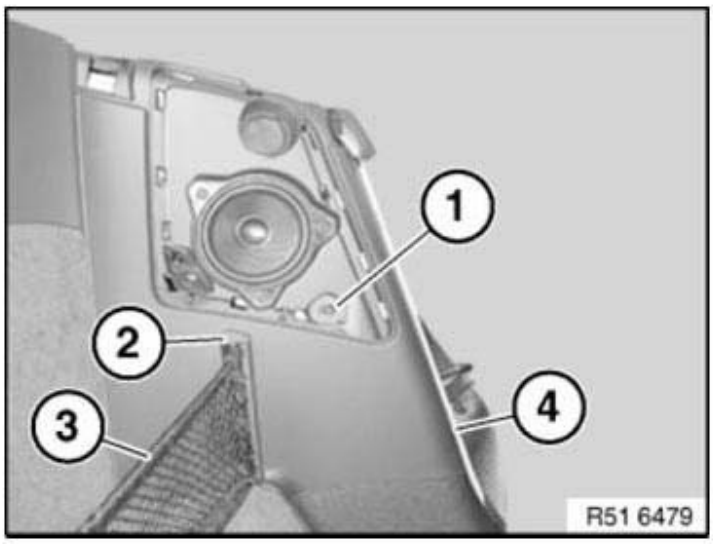


Fig. 337: Identifying Cover, Storage Net, Door Seal And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out retaining clips (1) with a suitable tool.

Release screw (2).

Tightening torque **72 11 03AZ** .

Remove reversing clip (3).

Installation:

Deflection fitting (3) is encoded against incorrect installation.

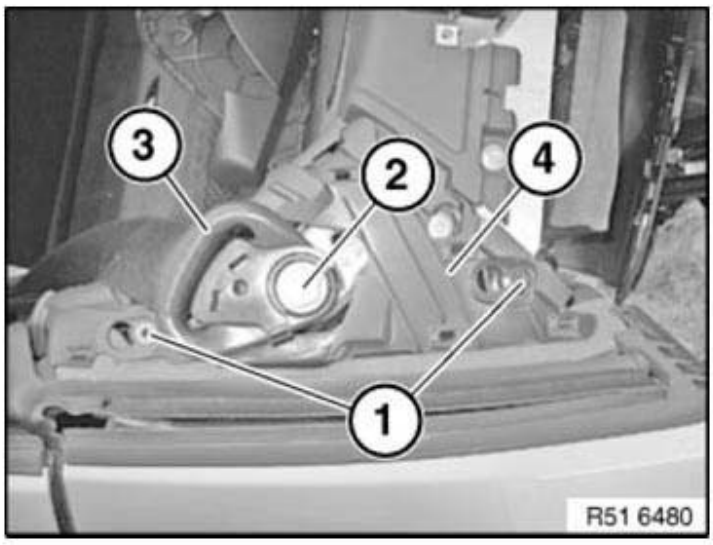


Fig. 338: Identifying Retaining Clips And Reversing Clip With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Remove side trim panel (1), as pictured, in direction of arrow.

Unlock and disconnect plug connection behind.

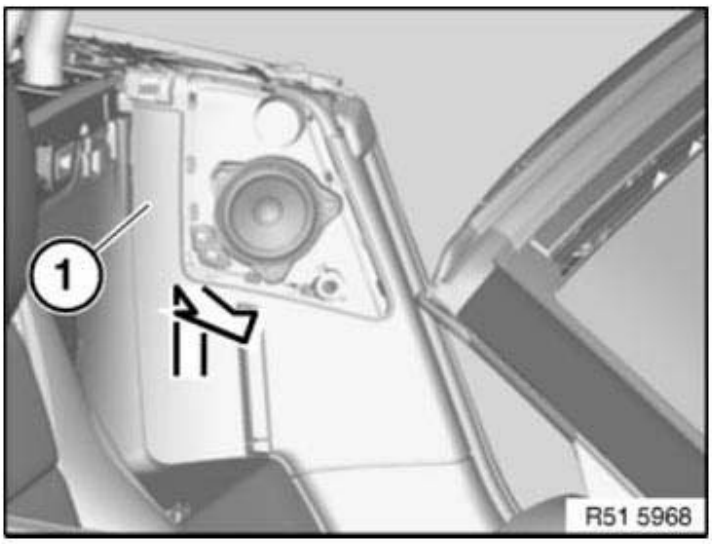


Fig. 339: Removing Side Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure side trim panel (3) is correctly seated.

Retaining lugs (1) and (2) must not be damaged.

If necessary, replace side trim panel (3).

Replacement

Modify **MID-RANGE SPEAKER** .

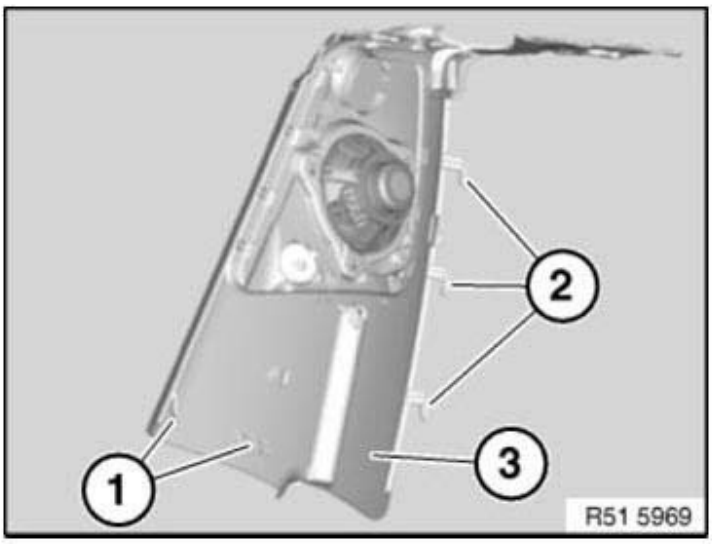


Fig. 340: Identifying Side Trim Panel With Retaining Lugs
Courtesy of BMW OF NORTH AMERICA, INC.

51 43 ... REMOVING AND INSTALLING/REPLACING REAR TOP LEFT OR RIGHT SIDE TRIM PANEL

Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.

Unclip side trim panel (1) towards top.

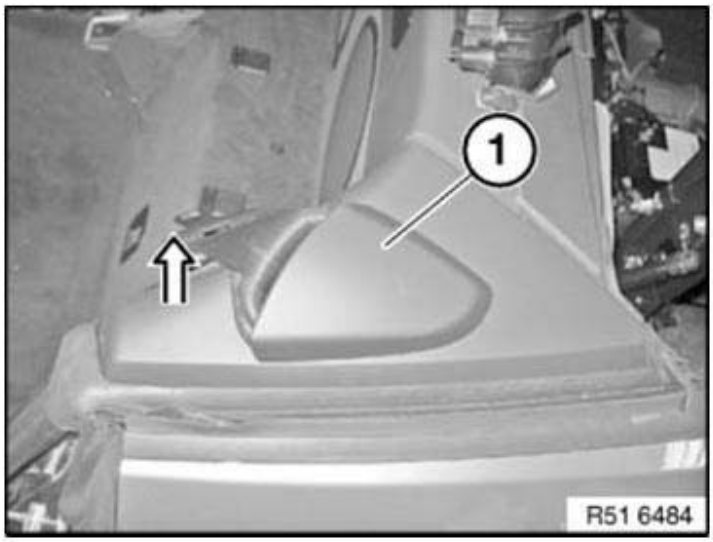


Fig. 341: Removing Side Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure seal (2) is correctly seated in relation to side trim panel (1).

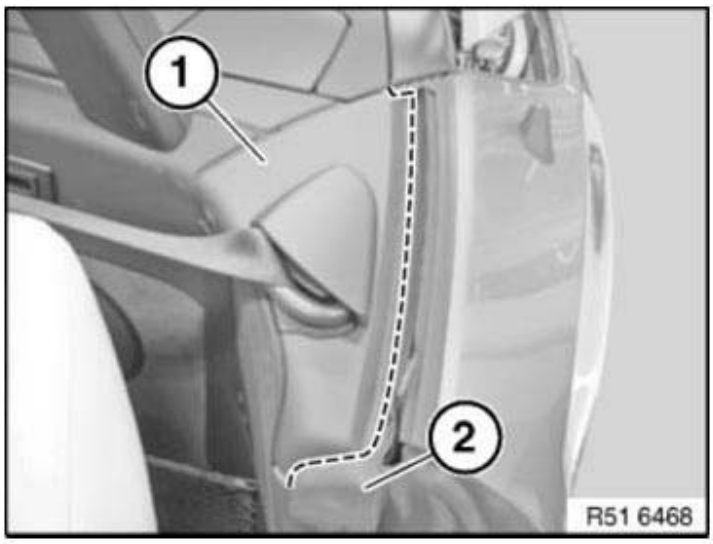


Fig. 342: Identifying Side Trim Panel With Seal
Courtesy of BMW OF NORTH AMERICA, INC.

51 43 070 REMOVING AND INSTALLING/REPLACING SIDE TRIM PANEL, FOOTWELL, ON A-PILLAR, LEFT

Necessary preliminary tasks

- Remove **FRONT INNER ENTRANCE COVER STRIP**
- Remove **TRIM PANEL FOR PEDAL ASSEMBLY** .

Release screw (1).

Remove hood/bonnet actuating lever (2) in direction of arrow from panel (3).

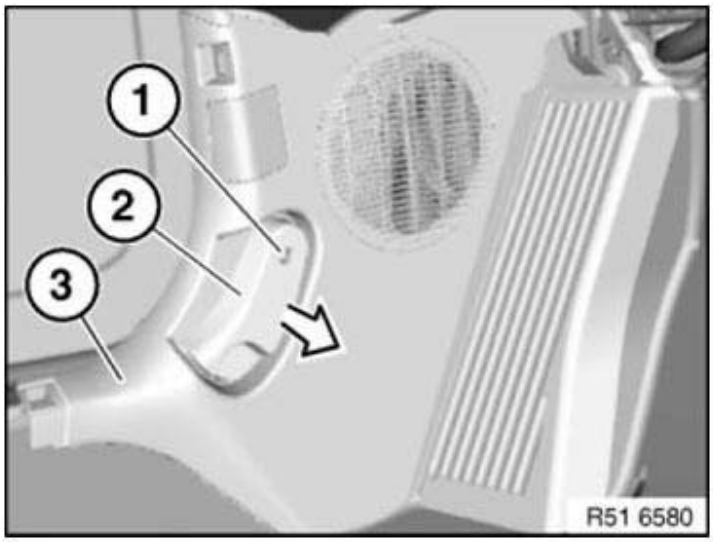


Fig. 343: Removing Hood/Bonnet Actuating Lever From Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Detach mucket See **5170... FITTING SEALS** or **5171000 REMOVING AND INSTALLING/REPLACING SEAL ON FRONT DOOR, LEFT OR RIGHT** (2) in area of trim (5).

Release screw (1).

Unclip panel (5) in direction of arrow from retaining points (4).

If necessary, unlock plug connection of switch (3) and disconnect.

Remove trim (5).

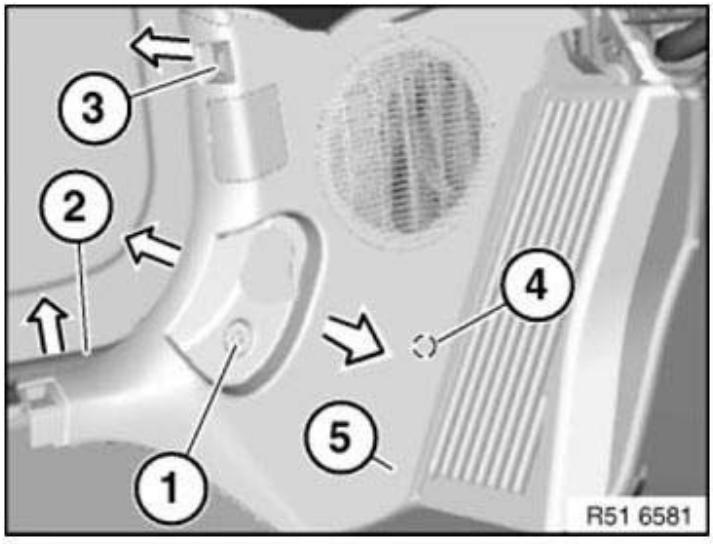


Fig. 344: Removing Panel From Retaining Points
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, lever out clips (1) remaining in bores.

If necessary, replace faulty clips (1).

Preinstall clip (1) in trim (2).

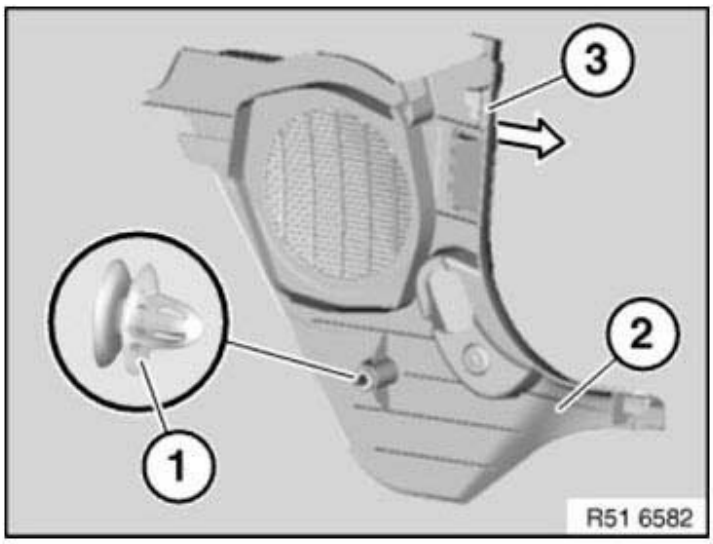


Fig. 345: Removing Switch
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

Press catches and remove switch (3) in direction of arrow.

51 43 201 REMOVING AND INSTALLING/REPLACING TRIM PANEL FOR LEFT OR RIGHT ROOF PILLAR

Necessary preliminary tasks

- Remove **FRONT ROOFLINER TRIM**

Unclip trim (1) at top and remove from instrument panel.

Installation:

Make sure panel (1) is correctly seated on instrument panel.

Make sure mucket (2) is correctly seated on panel (1).

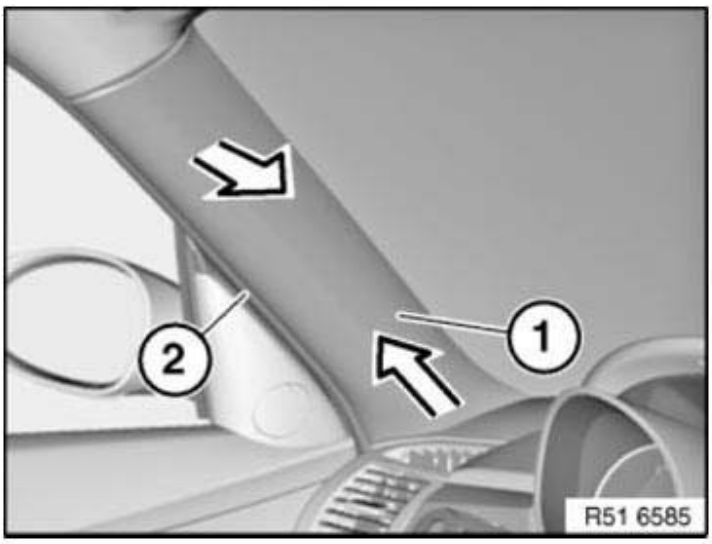


Fig. 346: Removing Front Roofliner Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 46 070 REMOVING AND INSTALLING/REPLACING UPPER PARTITION PANEL

Necessary preliminary tasks

- Remove **REAR SIDE TRIM PANELS**
- Remove **ROLLOVER PROTECTION COVER BRACKET**
- If necessary, place backrests in vertical position and move seats fully forwards

Release screws (1).

Lever out caps for lashing eyes and release screws (2).

Tightening torque **51 46 6AZ** .

Professional HiFi system only:

Remove **TWEETER** (3)

Lift out upper partition wall panel (4) at an angle.

Replacement

If necessary, replace middle trim (3).

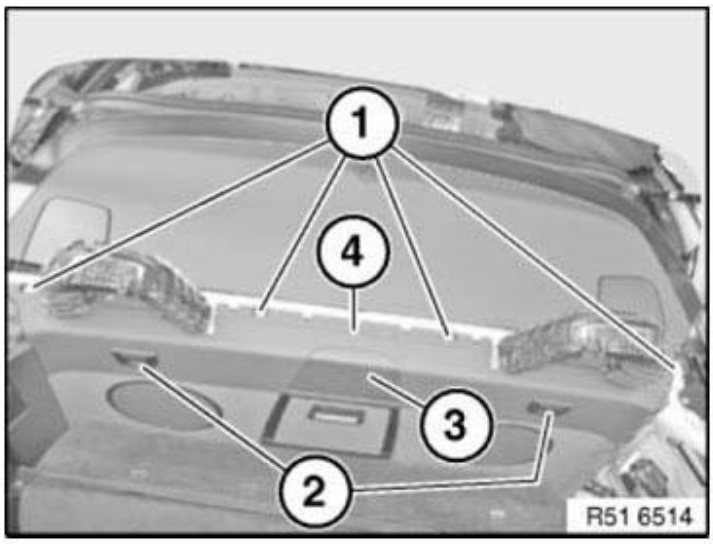


Fig. 347: Identifying Middle Trim And Upper Partition Wall Panel With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Locking hooks (1) on front partition wall panel (2) must not be broken.

If necessary, replace upper partition wall panel (2).

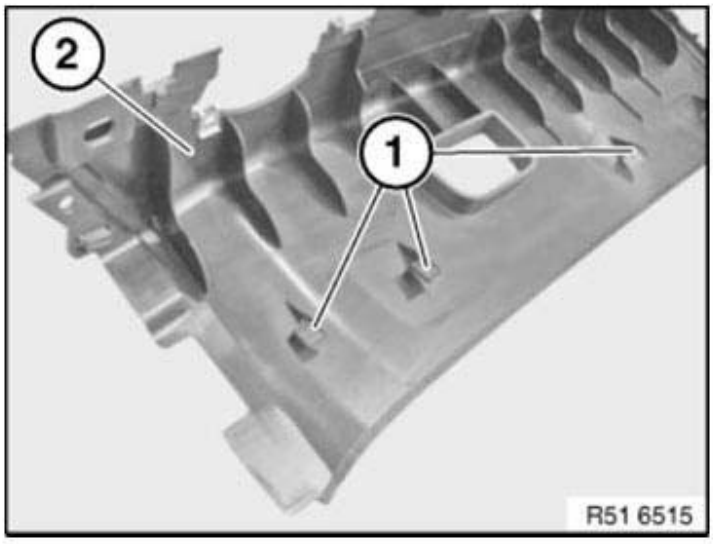


Fig. 348: Identifying Locking Hooks On Front Partition Wall Panel
Courtesy of BMW OF NORTH AMERICA, INC.

51 43 122 REPLACING REAR (TOP) LEFT OR RIGHT SIDE TRIM PANEL

Necessary preliminary tasks

- Remove **REAR SIDE TRIM PANEL**
- Remove SPEAKER. See **65 13 090 REMOVING AND INSTALLING/REPLACING SPEAKER (MIDRANGE SPEAKER IN REAR SIDE TRIM PANEL)** .

Installation:

None of the retaining lugs (1) or clips (2) may be damaged.

If necessary, replace side trim panel.

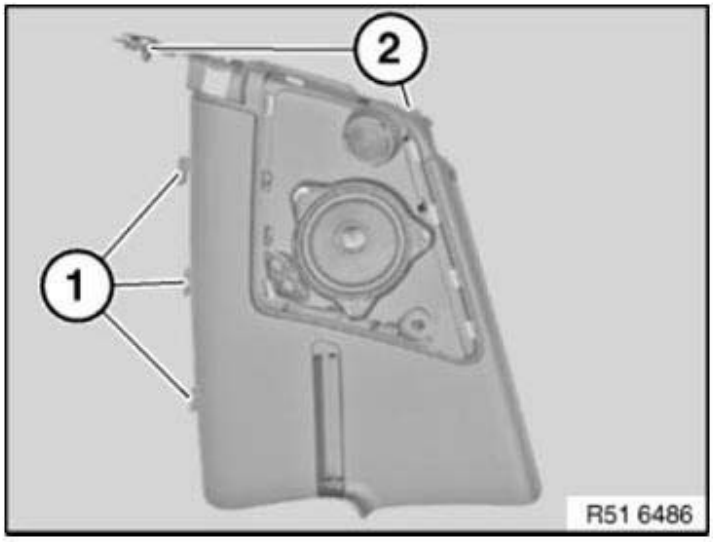


Fig. 349: Identifying Retaining Lugs And Clips
Courtesy of BMW OF NORTH AMERICA, INC.

5144 ROOF TRIM PANEL

51 44 150 REMOVING AND INSTALLING/REPLACING FRONT ROOFLINER TRIM

Necessary preliminary tasks

- Open convertible top
- Remove **SUN VISORS**

Pull back trim (1) in direction of arrow.

Disconnect plug connection for ceiling light (5).

Remove trim for roofliner (1).

Installation:

Make sure seal (4) is correctly seated on roofliner trim (1).

Make sure trim (1) is correctly seated on panels (3) on left and right.

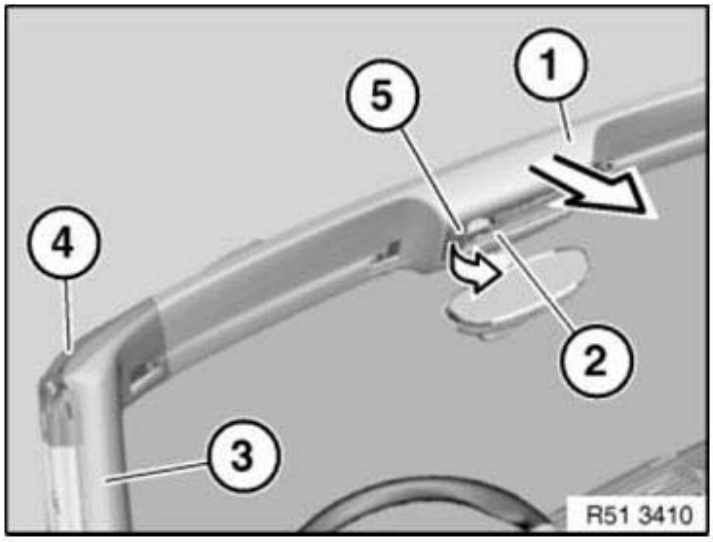


Fig. 350: Pulling Back Trim
Courtesy of BMW OF NORTH AMERICA, INC.

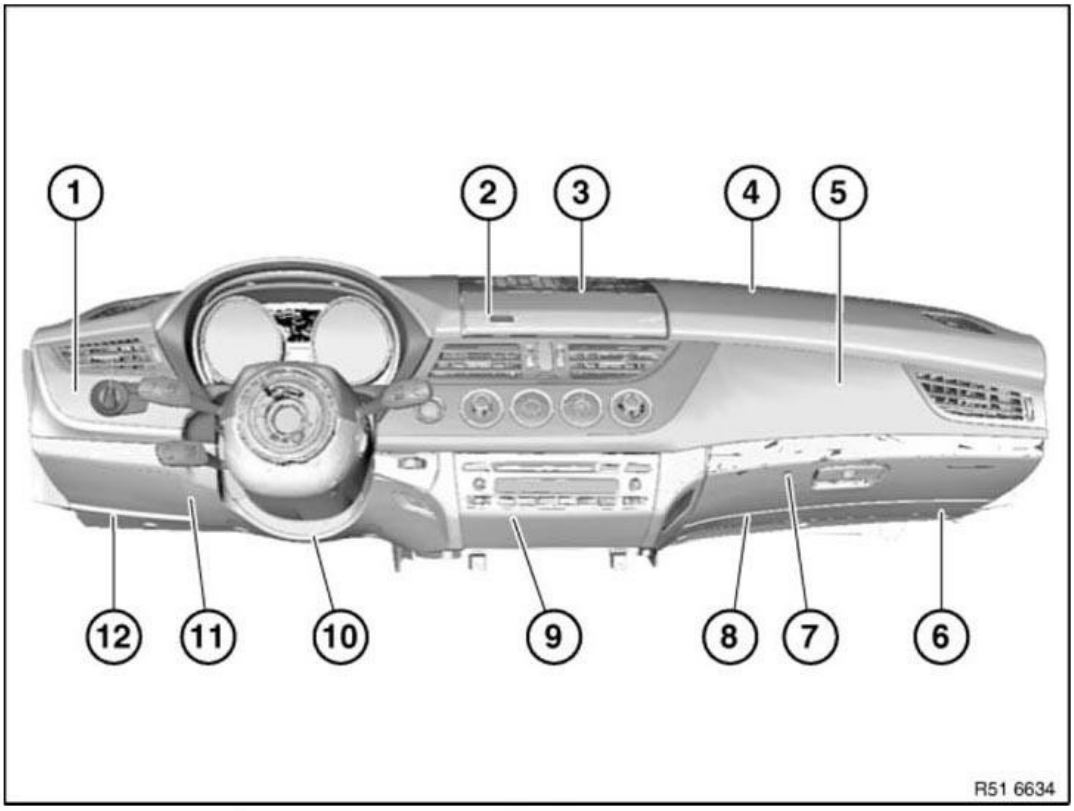
Replacement

NOTE:

- **Remove CEILING LIGHT**

5145 INSTRUMENT CLUSTER TRIM PANEL

51 45 .. OVERVIEW OF DASHBOARD



1 Instrument panel trim, left
2 Central Information Display (CID)
3 Speaker trim
4 Dashboard trim panel
5 Instrument panel trim, right
6 Instrument panel trim, bottom right
7 Glovebox
8 Airbag module for front passenger knee protection
9 Radio receiver
10 Airbag module for driver's knee protection
11 Instrument panel trim, bottom left
12 Trim for pedal assembly

Fig. 351: Overview Of Dashboard
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 025 REMOVING AND INSTALLING INSTRUMENT PANEL TRIM

Necessary preliminary work

- Remove **TRIM PANELS FOR ROOF PILLAR AT FRONT**
- Remove **INSTRUMENT PANEL TRIM AT BOTTOM LEFT**
- Remove **RIGHT GLOVEBOX WITH HOUSING**
- Remove **CENTRE FRESH-AIR GRILLE**
- Remove speaker. See **65 13 060 REMOVING AND INSTALLING/REPLACING SPEAKER (MIDRANGE SPEAKER, IN INSTRUMENT PANEL)** .
- Remove **CENTRAL INFORMATION DISPLAY (CID)**

- Remove **INSTRUMENT CLUSTER**

NOTE: Observe the following instructions to facilitate removal of the instrument panel trim:

- **Move front seats back completely and lower**
- **Move steering column into "lower" and "extended" position**

Release screws (1) on right panel (2).

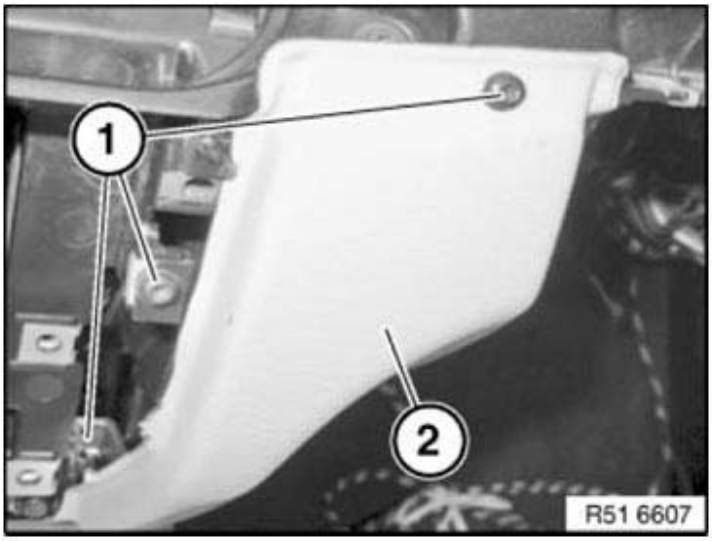


Fig. 352: Removing Screws On Right Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

Insert locator (1) of panel (2) correctly in lug of instrument panel carrier.

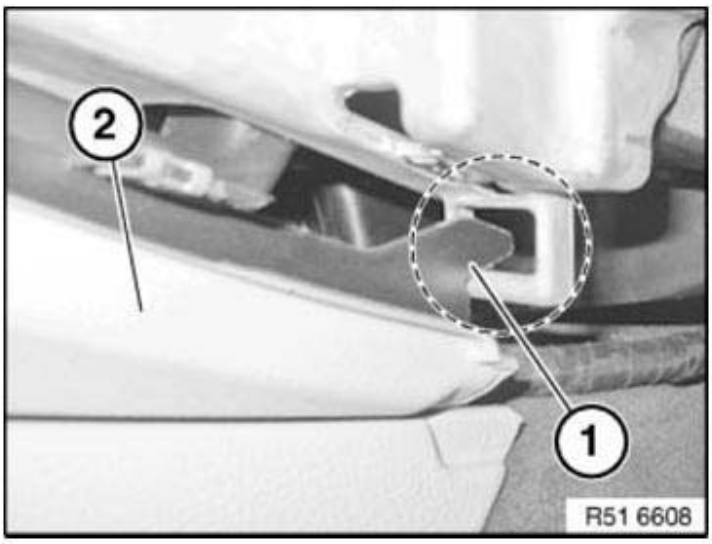


Fig. 353: Identifying Locator Of Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip wiring harness (1) to steering column on instrument panel carrier (2).

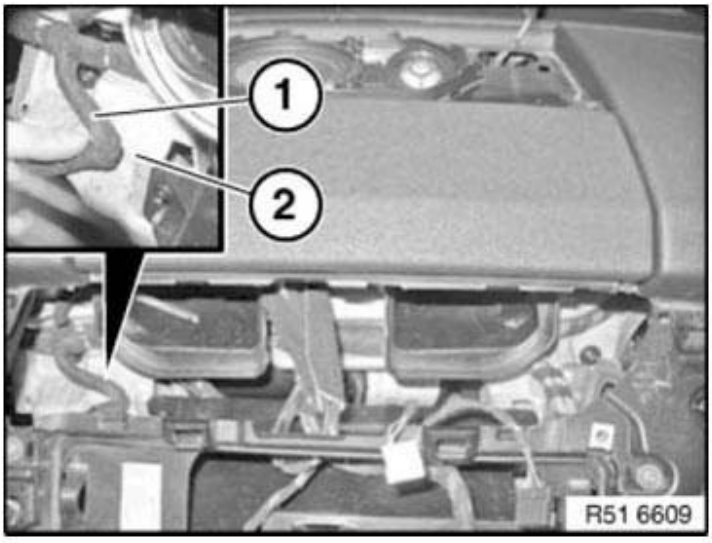


Fig. 354: Identifying Instrument Panel Carrier With Wiring Harness
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) from temperature sensor (2).

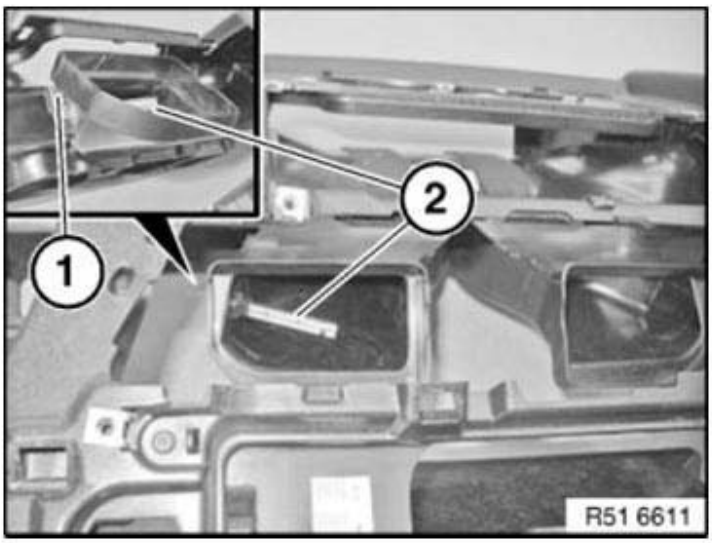


Fig. 355: Identifying Temperature Sensor With Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Secure steering column against falling out.

Release screws (1).

Tightening torque **32 31 3AZ** .

Installation note:

Check steering column sleeve.

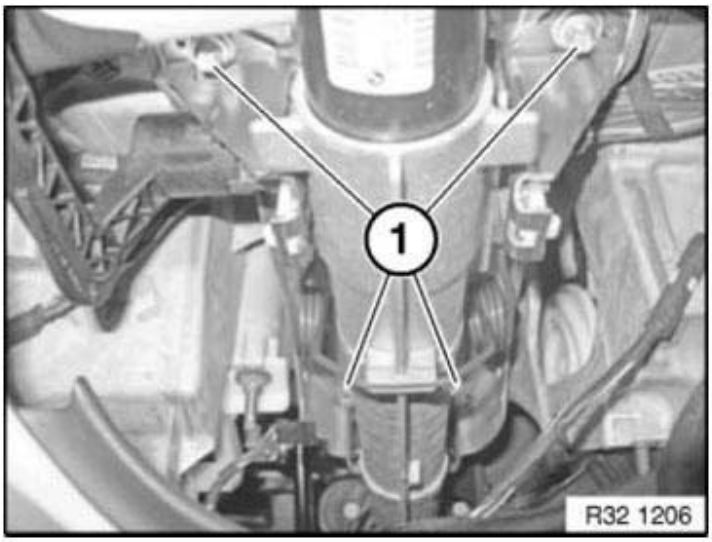


Fig. 356: Identifying Steering Column Screws
Courtesy of BMW OF NORTH AMERICA, INC.

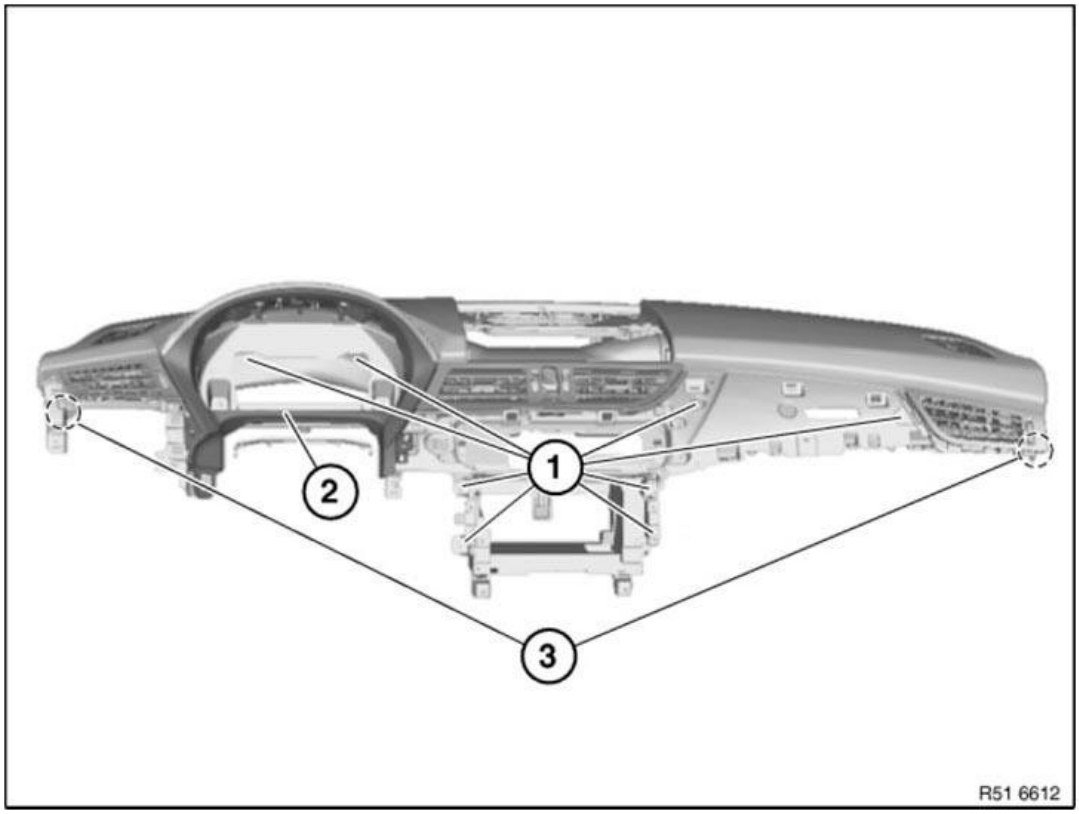


Fig. 357: Identifying Instrument Panel With Screws And Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten screws (1) and nuts (3).

Remove trim for instrument panel (2)

NOTE: Graphic shows already removed instrument panel trim for better clarity.

If the instrument panel trim jams during removal, loosen the left and right studs (1).

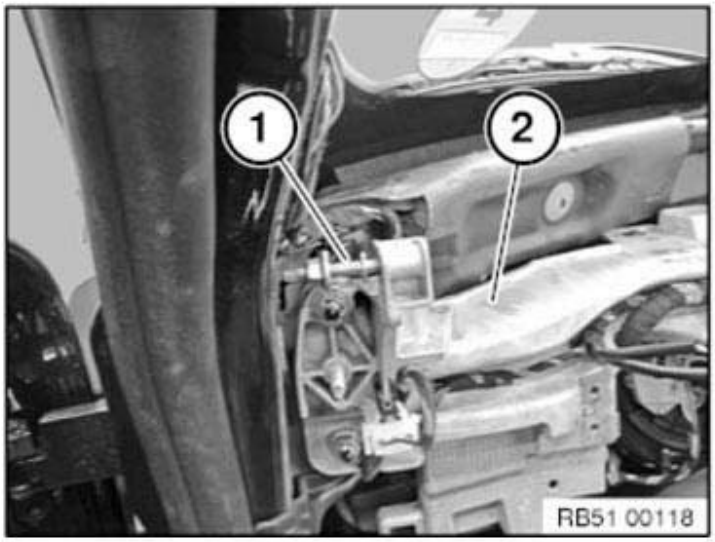


Fig. 358: Identifying Studs
Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

Make sure guides (1) on instrument panel trim (2) are correctly seated in respective mountings.

Make sure gaskets are correctly seated on air ducts.

Make sure electrical leads are correctly laid.

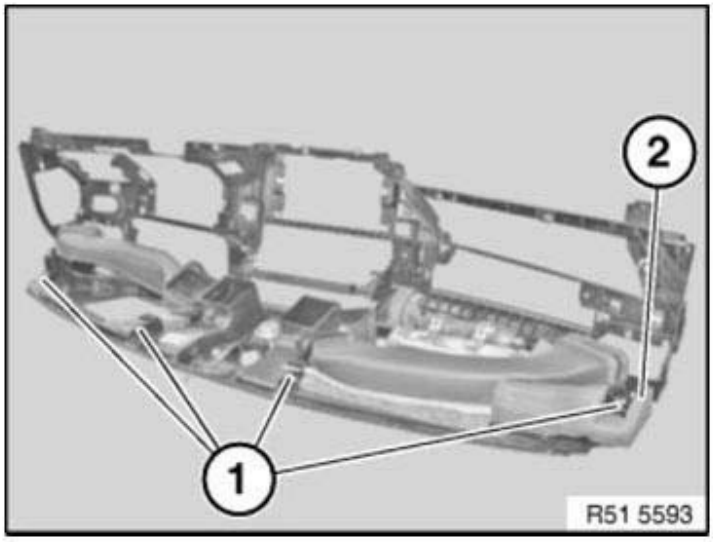


Fig. 359: Identifying Guides On Instrument Panel Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 115 REMOVING AND INSTALLING SPEAKER FRAME ON PANEL FOR INSTRUMENT

PANEL AT TOP

Unclip trim (1) with special tool 00 9 317 from catches and remove towards top.

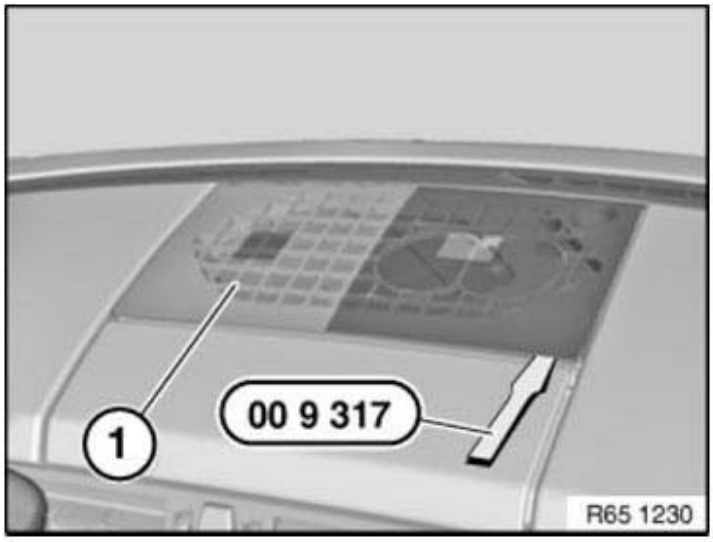


Fig. 360: Removing Trim Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect solar sensor plug connection.

Installation:

Retainers (1) on speaker trim (2) must be correctly seated on associated lugs and must not be damaged.

Replacement:

Modify solar sensor and replace retainers.

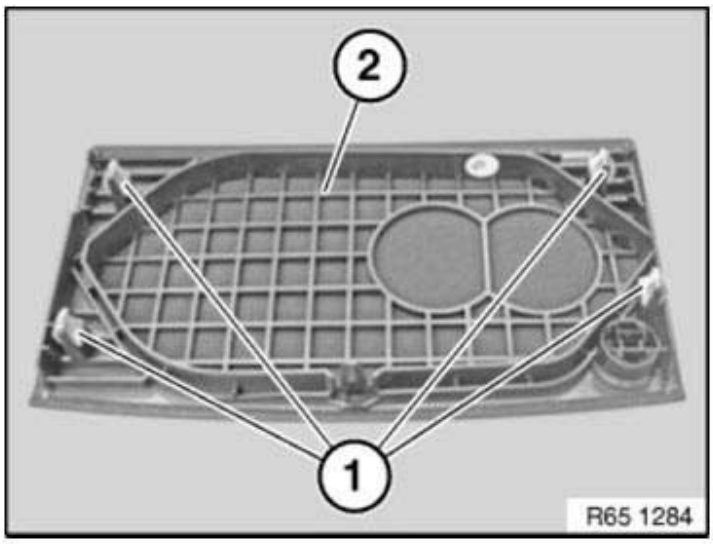


Fig. 361: Identifying Retainers On Speaker Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 075 REMOVING AND INSTALLING/REPLACING CARRIER FOR INSTRUMENT PANEL

Necessary preliminary tasks

- Remove **INSTRUMENT PANEL TRIM**
- Unclip wiring harness

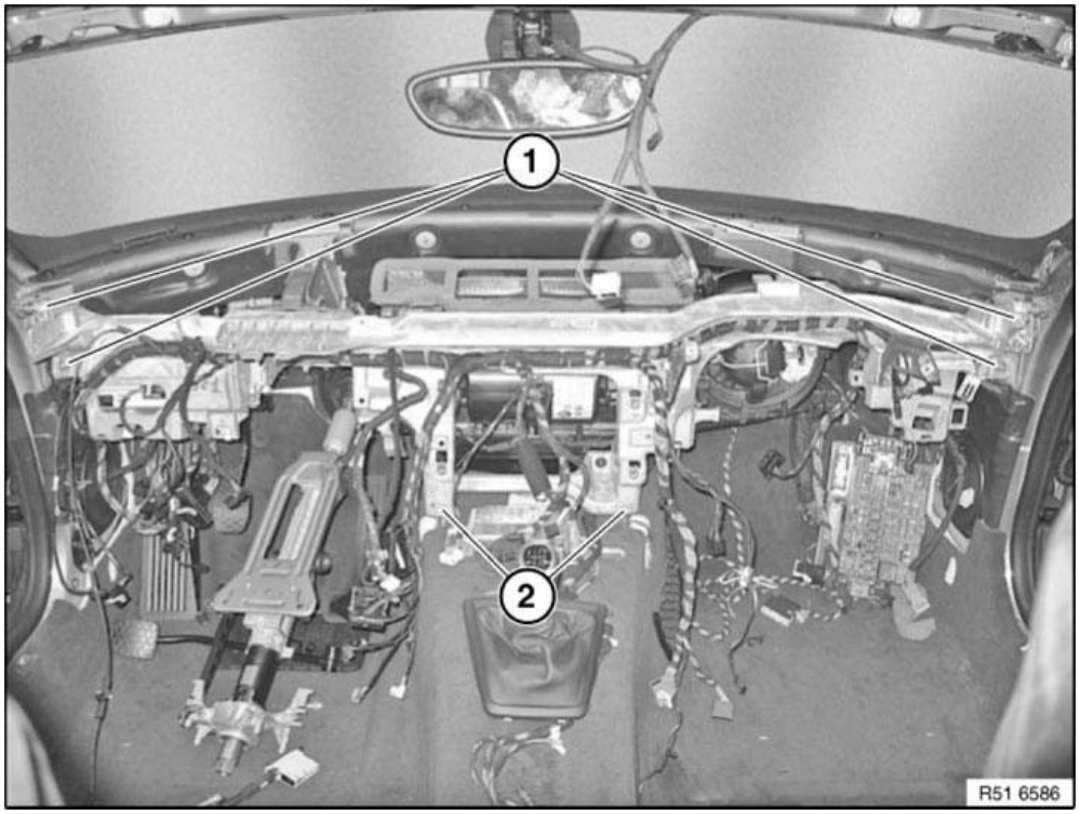


Fig. 362: Identifying A-Pillar Nuts And Tunnel Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release nuts (1) on A-pillar.

Tightening torque **51 45 4AZ** .

Release screws (2) on tunnel.

Tightening torque **51 45 3AZ** .

Release screws (1) on instrument panel carrier (2).

Tightening torque **51 45 3AZ** .

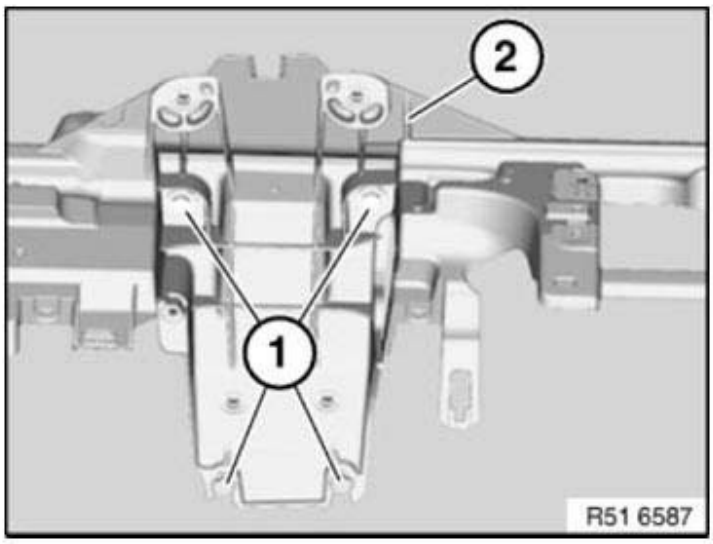


Fig. 363: Identifying Screws On Instrument Panel Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) on heater/air conditioner (2).

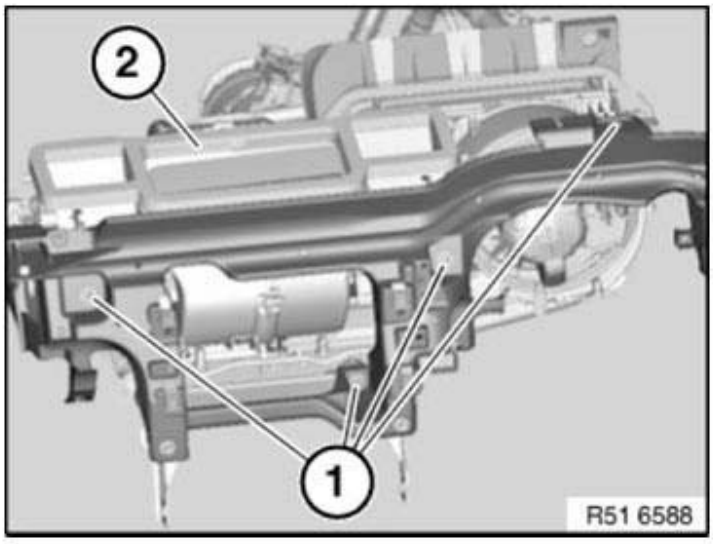


Fig. 364: Identifying Screws On Heater/Air Conditioner
Courtesy of BMW OF NORTH AMERICA, INC.

Remove expander rivets (1).

Remove air duct on left side (2).

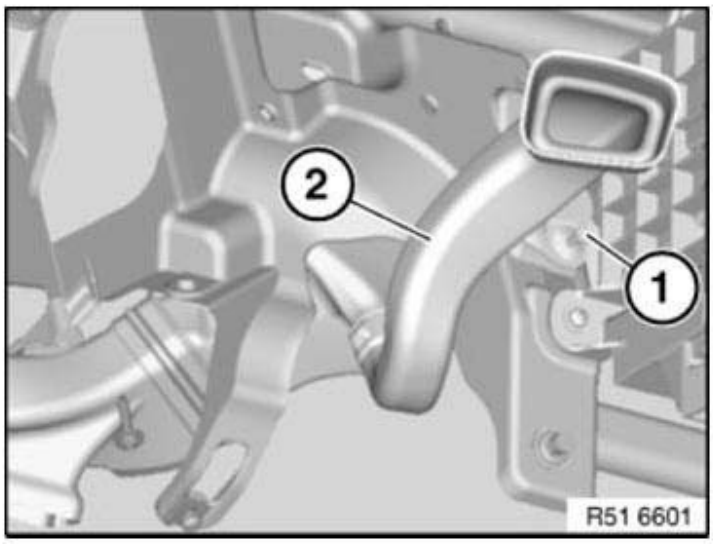


Fig. 365: Identifying Expander Rivets And Air Duct On Left Side
Courtesy of BMW OF NORTH AMERICA, INC.

Remove expander rivets (1).

Remove air duct on right side (2).

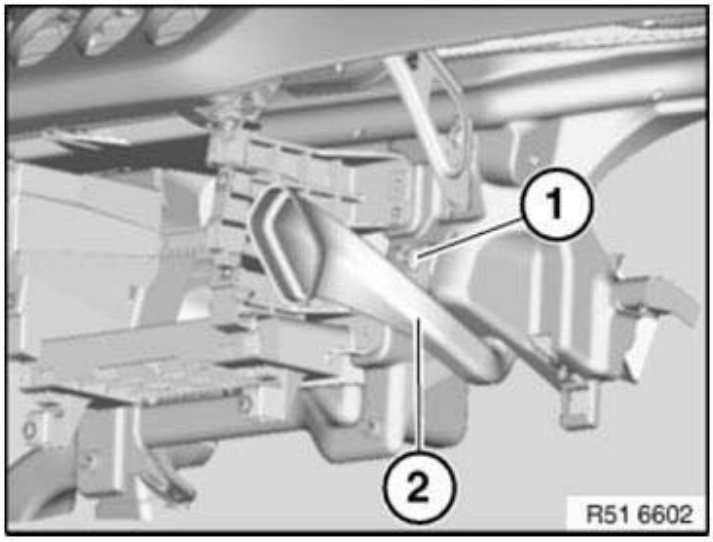


Fig. 366: Identifying Expander Rivets And Air Duct On Right Side
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 180 REMOVING AND INSTALLING/REPLACING INSTRUMENT PANEL TRIM, BOTTOM LEFT

Necessary preliminary tasks

- Remove **LEFT INSTRUMENT PANEL TRIM**
- Remove **RIGHT INSTRUMENT PANEL TRIM**
- Remove **TRIM PANEL FOR PEDAL ASSEMBLY**
- Remove **TRIM FOR STORAGE TRAY**

  US version only:

- Remove **AIRBAG MODULE FOR DRIVER KNEE PROTECTION**

Release screws (1) on trim (2) and unclip left trim from steering column.

Carefully disconnect plug connection for ribbon cable on insert slot.

Installation:

Make sure trim is correctly seated.

Replacement

Remove **INSERT FOR RADIO CONTROL KEY** .

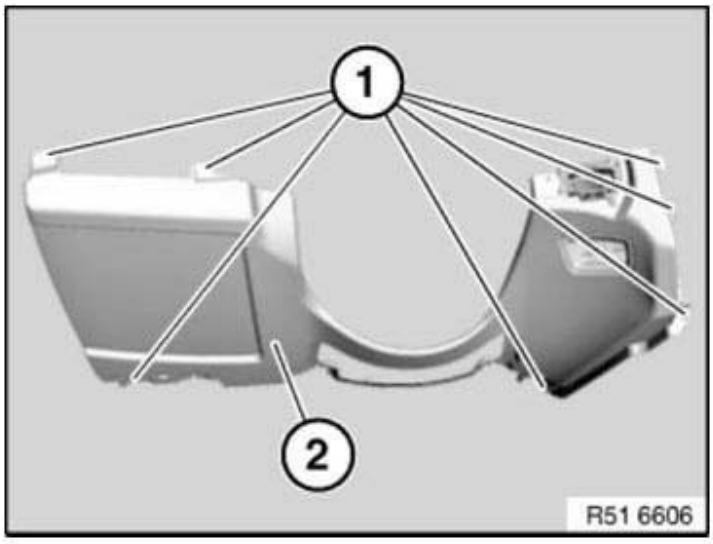


Fig. 367: Identifying Screws On Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 261 REMOVING AND INSTALLING/REPLACING LEFT INSTRUMENT PANEL TRIM

Unclip instrument panel cover (1) in direction of arrow.

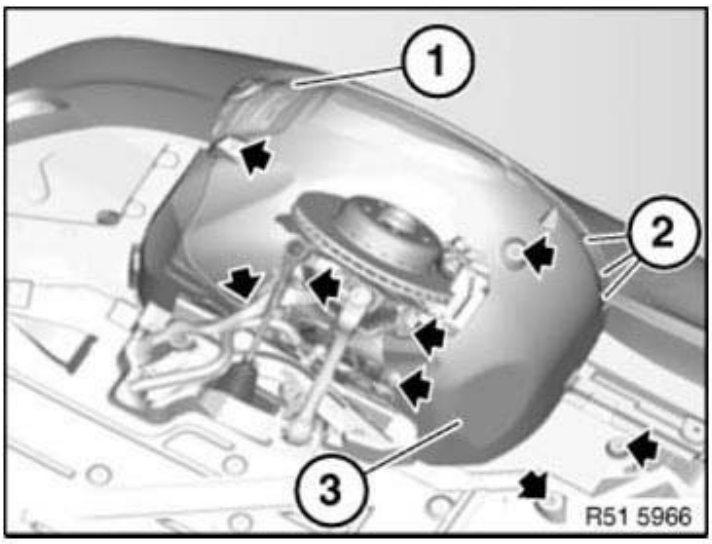


Fig. 368: Removing Instrument Panel Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) on trim (2).

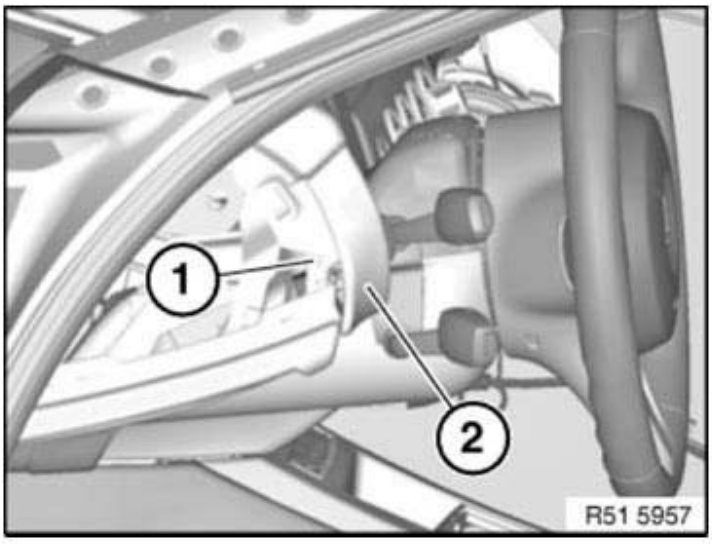


Fig. 369: Identifying Screw On Trim
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Tape off working area. Risk of damage!

Painted trims are particularly sensitive to damage.

Lever out trim (1) with special tool 00 9 317 at mounting points (2) and remove.

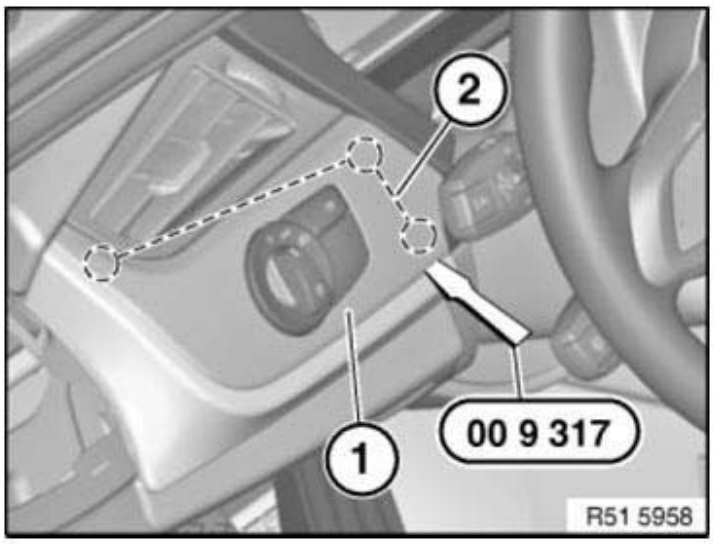


Fig. 370: Removing Trim Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock plug connection behind and disconnect.

Installation:

If necessary, replace retainers (1).

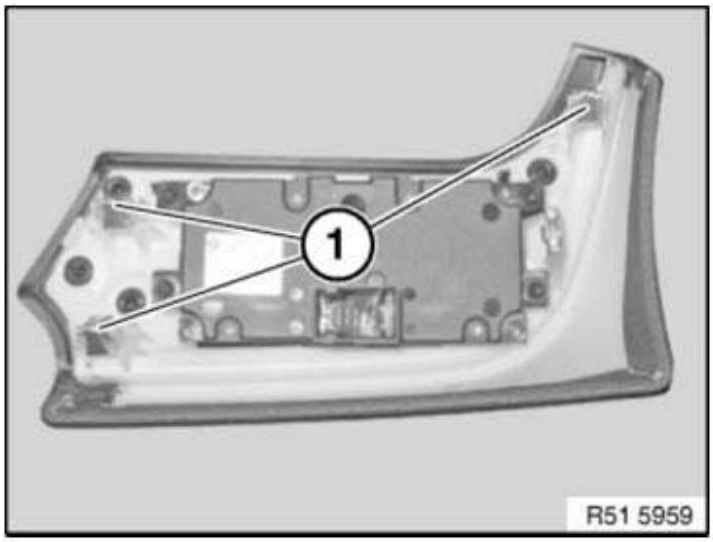


Fig. 371: Identifying Retainers
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

Remove **LIGHT SWITCH UNIT** .

51 45 184 REMOVING AND INSTALLING/REPLACING PANEL FOR PEDALS

Necessary preliminary tasks

- Move driver's seat completely towards rear

ECE only:

Release screws (1).

Pull back trim for pedal assembly (2).

Disconnect and unlock all plug connections.

Remove trim for pedal assembly (2).

Installation:

Make sure trim for pedal assembly (2) is correctly seated on footwell air outlet above.

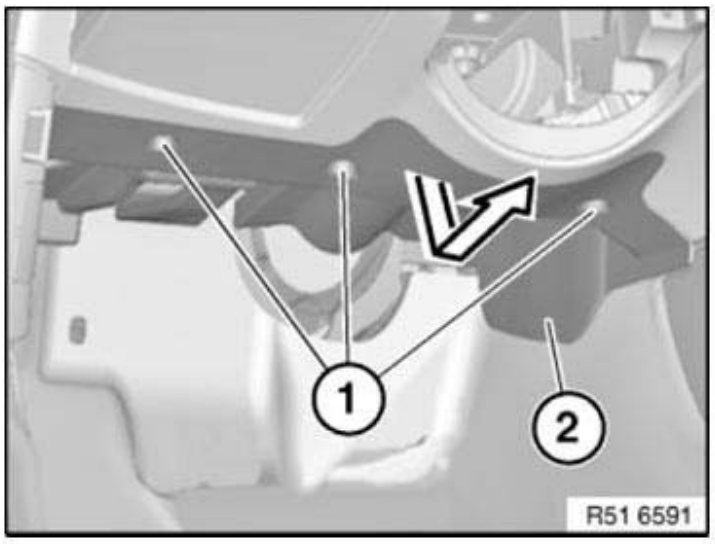


Fig. 372: Pulling Back Trim For Pedal Assembly (ECE)
Courtesy of BMW OF NORTH AMERICA, INC.

US only:

Release screws (1).

Pull back trim for pedal assembly (2).

Disconnect and unlock all plug connections.

Remove trim for pedal assembly (2).

Installation:

Make sure trim for pedal assembly (2) is correctly seated on footwell air outlet above.

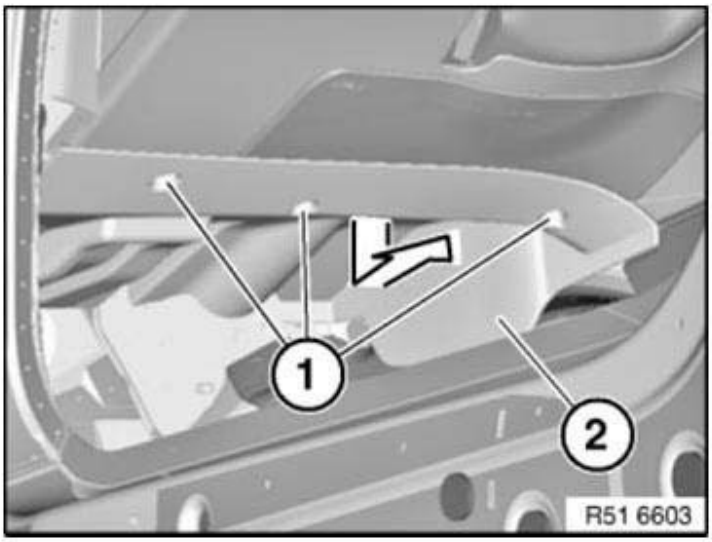


Fig. 373: Pulling Back Trim For Pedal Assembly (US)
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

Remove **FOOTWELL LIGHT** (1).

Remove **SPEAKER** (2).

Remove **AERIAL** (3).

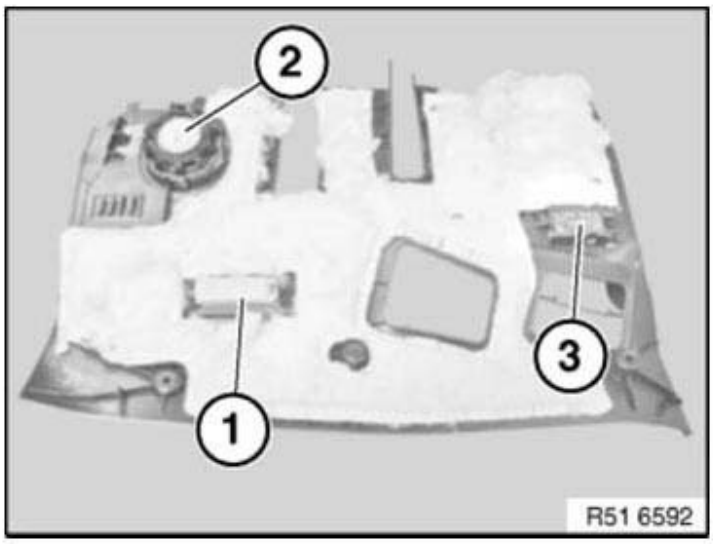


Fig. 374: Identifying Footwell Light, Speaker And Aerial
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 266 REMOVING AND INSTALLING/REPLACING RIGHT INSTRUMENT PANEL TRIM

IMPORTANT: Risk of damage!

A hard disk is installed in the Car Information Computer (CIC).

Carry out mechanical work on the CIC and adjacent components with care.

Avoid subjecting the CIC to shaking/shocks.

Necessary preliminary tasks

(Only with Radio Business or Radio Professional equipment specification)

- Remove **RADIO RECEIVER**

NOTE: Carry out following work step only in case of optional equipment with Car Information Computer (CIC)

Unclip trim (1) with special tool 00 9 323 .



Fig. 375: Removing Trim Using Special Tool (00 9 323)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: For clearer illustration, shown with front trim on CIC removed.

Release screws (1).

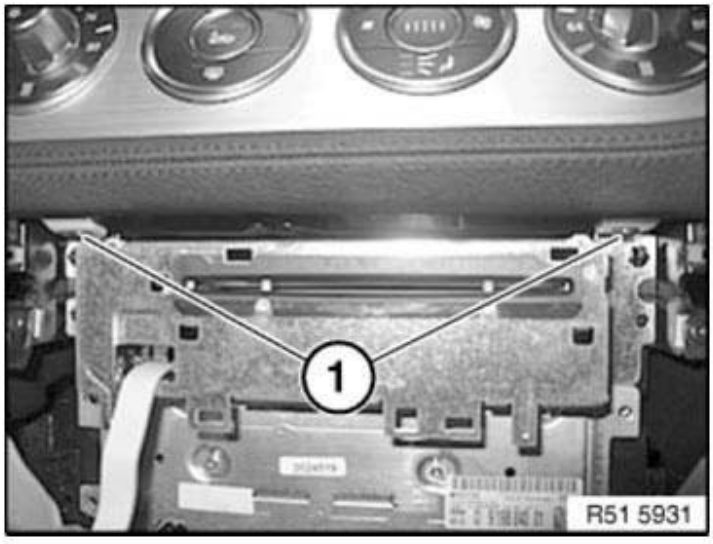


Fig. 376: Identifying Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Open glovebox cover (1).

Release screws (2) at marked points in upper area of glovebox.

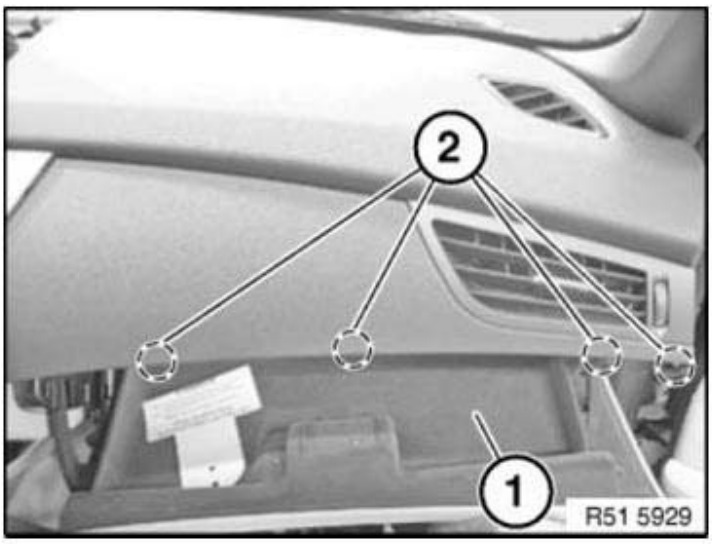


Fig. 377: Identifying Glovebox Cover With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out insertion slot (1) with special tool 00 9 323 and remove.

Release screw behind.

Carefully lever out instrument panel trim (2) towards front.

Unlock associated plug connections and disconnect.

Remove instrument panel pipe trim (2).

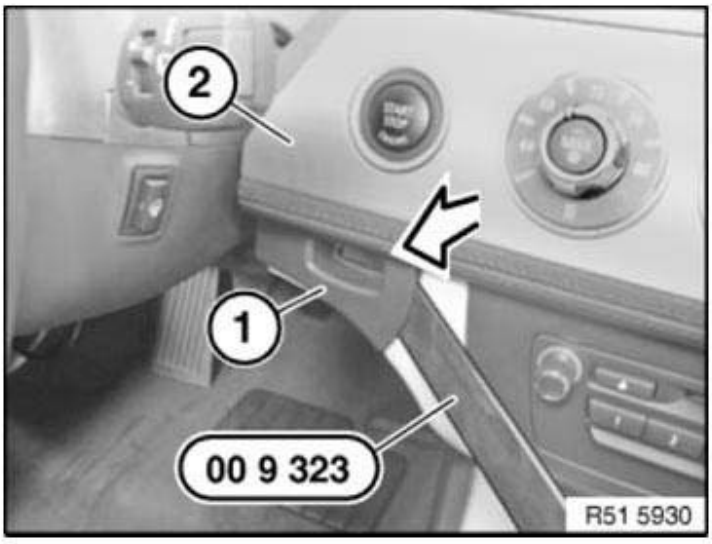


Fig. 378: Removing Instrument Panel Trim
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

- Remove **CONTROL PANEL FOR HEATING - A/C SYSTEM**
- Remove **START/STOP SWITCH**

51 45 195 REMOVING AND INSTALLING/REPLACING TRIM FOR INSTRUMENT PANEL, BOTTOM RIGHT

Necessary preliminary tasks

- Move front passenger seat completely towards rear

ECE only:

Release screws (1).

Pull back trim for instrument panel (2)

Disconnect and unlock all plug connections.

Remove trim for instrument panel (2)

Installation:

Make sure trim for instrument panel (2) is correctly seated on footwell air outlet above.

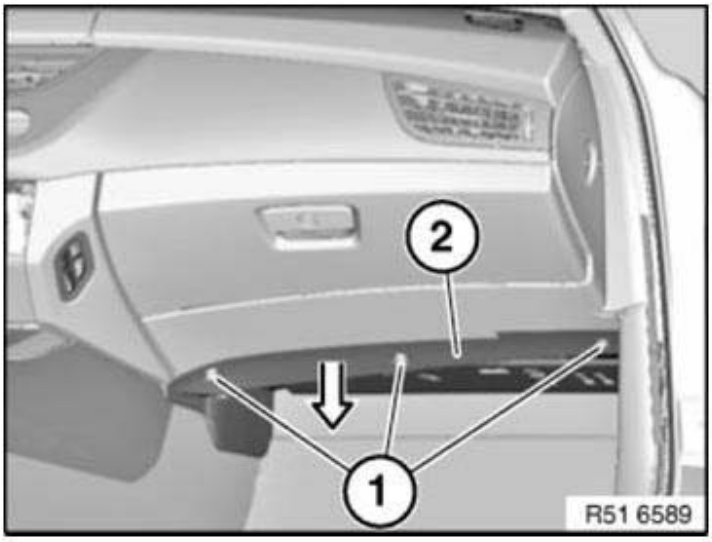


Fig. 379: Removing Trim For Instrument Panel
Courtesy of BMW OF NORTH AMERICA, INC.

US only:

Release screws (1).

Pull back trim for instrument panel (2)

Disconnect and unlock all plug connections.

Remove trim for instrument panel (2)

Installation:

Make sure trim for instrument panel (2) is correctly seated on footwell air outlet above.

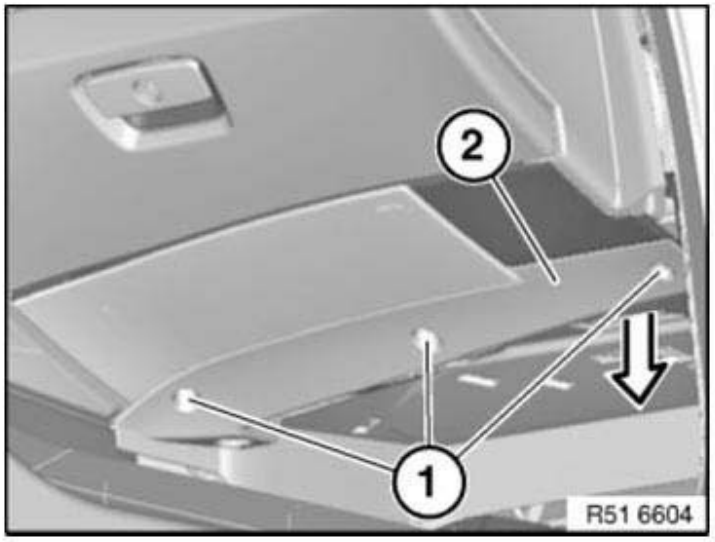


Fig. 380: Removing Trim For Instrument Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement

Remove **FOOTWELL LIGHT** (1).

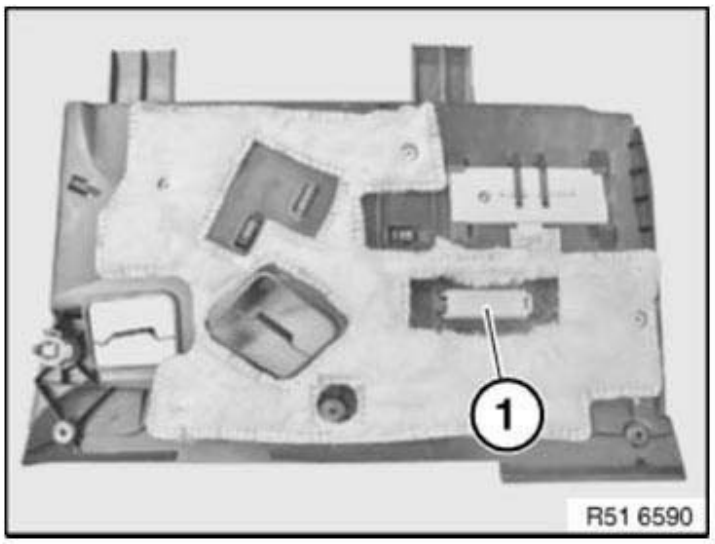


Fig. 381: Identifying Footwell Light
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 ... REPLACING DEFROSTER COVERS

When working on trim panel components, make sure that the sensitive surfaces are not scratched or damaged.

Carefully lever out and remove speaker cover (1) using special tool 00 9 325 .

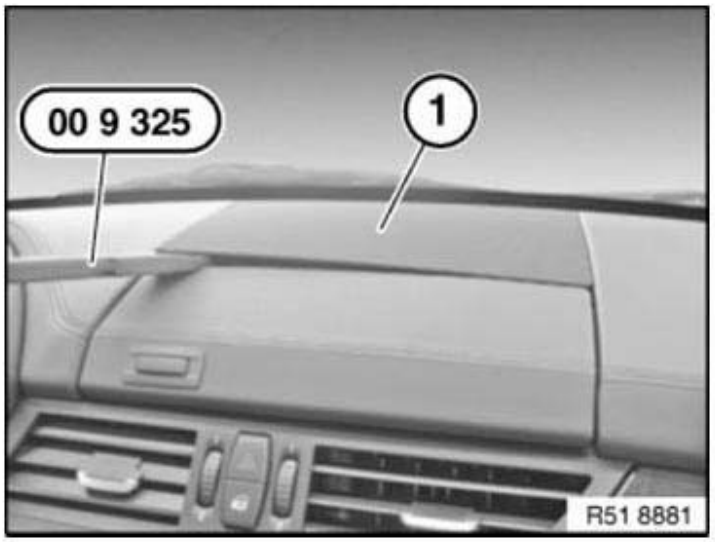


Fig. 382: Removing Speaker Cover Using Special Tool (00 9 325)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Retaining clips (1) on speaker cover (2) must be correctly seated on associated lugs and must not be damaged.

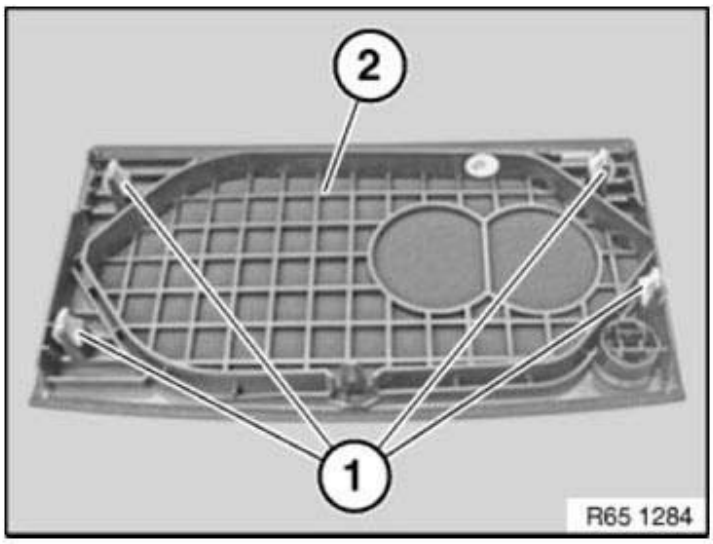


Fig. 383: Identifying Retainers On Speaker Cover
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Make sure that no parts fall into the air duct (risk of noise).

Using special tool 00 9 327, first lever out right defroster cover (1) in the centre and release inner catch.

If necessary, twist special tool 00 9 327 as shown in order to do so.

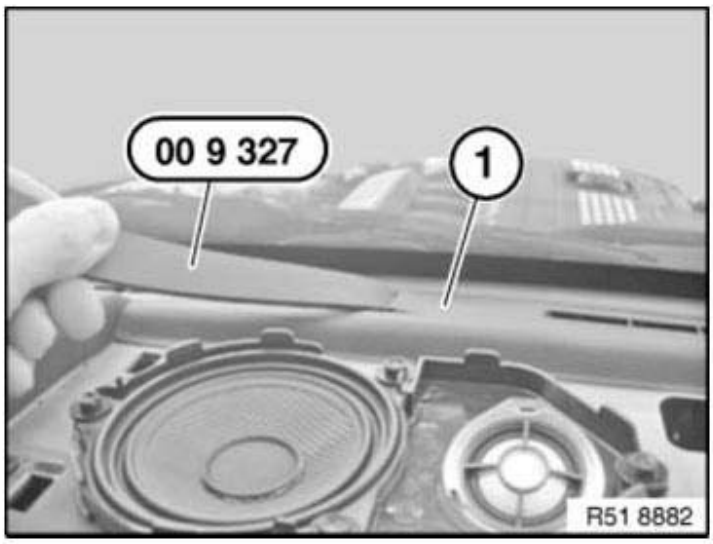


Fig. 384: Removing Right Defroster Cover Using Special Tool (00 9 327)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The catch positions (arrow) can be determined by counting off the ribs (2) on the defroster cover (1) in each case.

Lever out all other catches from the inside outwards using special tool 00 9 327 .

To do so, carefully lever up defroster cover (1) in the centre using special tool 00 9 325 (see illustration).

Remove defroster cover.

Repeat operation on left defroster cover.

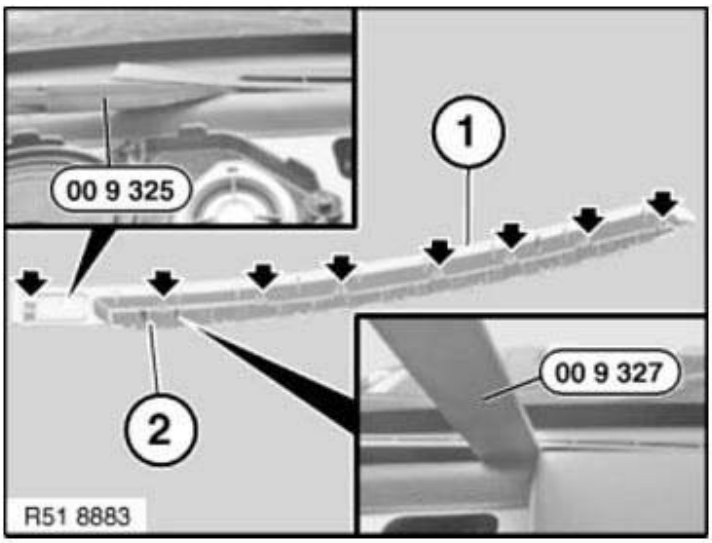


Fig. 385: Removing Catches Using Special Tool (00 9 327)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Fit left defroster cover first.

Leather interior only:

- A2Apply 2-component Araldite 2021 TN 2 149 520 adhesive drops (sourcing reference BMW parts service) to marked points (2) of the (1) left and right defroster panel.
- Read and comply with safety data sheet!

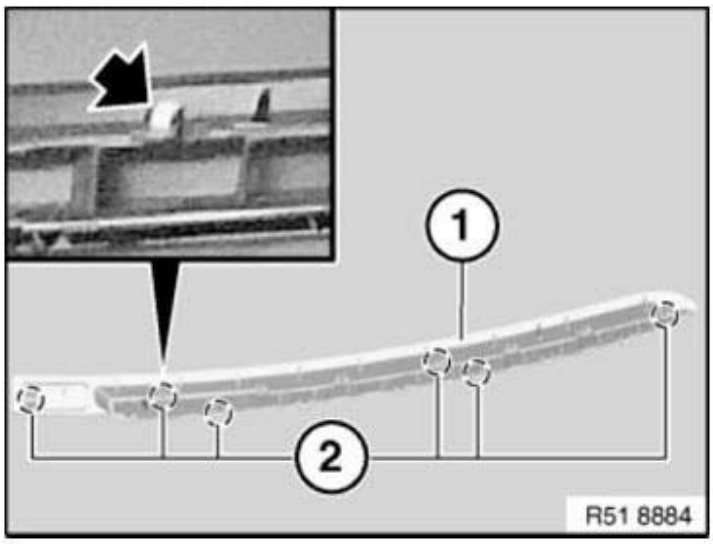


Fig. 386: Identifying Araldite 2021 TN 2 149 520 Adhesive Drops Applying Areas
Courtesy of BMW OF NORTH AMERICA, INC.

51 45 031 REPLACING INSTRUMENT PANEL TRIM

Necessary preliminary tasks

- Remove **INSTRUMENT PANEL TRIM**
- Remove **LEFT FRESH-AIR GRILLE**
- Remove **RIGHT FRESH-AIR GRILLE**

5146 PARCEL SHELF TRIM PAN ROLLER SUN BLIND

51 46 ... REMOVING AND INSTALLING/REPLACING COVER FOR SEAT BELT ON LEFT OR RIGHT

Lever out cover (1) in upward direction with plastic wedge.

Installation:

Make sure cover (1) is correctly seated in seal (2).

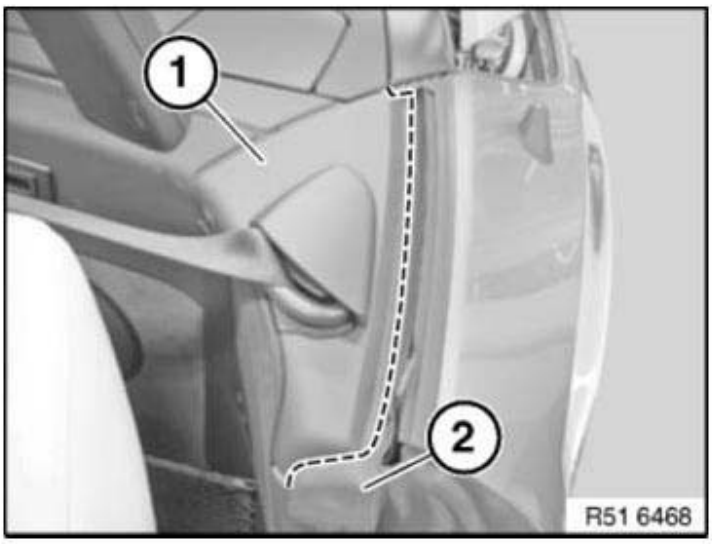


Fig. 387: Identifying Cover With Seal
Courtesy of BMW OF NORTH AMERICA, INC.

51 46 072 REMOVING AND INSTALLING/REPLACING LOWER PARTITION PANEL

Necessary preliminary tasks

- Clamp off **BATTERY LEAD FROM NEGATIVE TERMINAL**
- Remove **CENTRE CONSOLE** .
- Remove **UPPER PARTITION TRIM PANEL**
- Remove **REAR SIDE TRIM PANEL (BOTTOM)**

NOTE: Both seats are shown removed for purposes of clarity.

Professional HiFi system only:

Release mid-range speaker screws (2).

Unlock plug connection for mid-range speaker and disconnect.

Remove mid-range speaker.

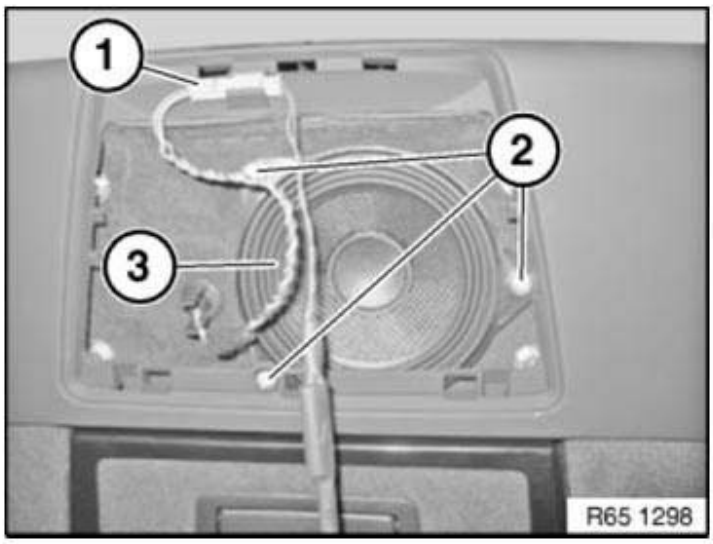


Fig. 388: Identifying Mid-Range Speaker Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 46 7AZ** .

Remove clips (2).

Raise protective caps for storage net holder and release screws (3).

Tightening torque **51 46 7AZ** .

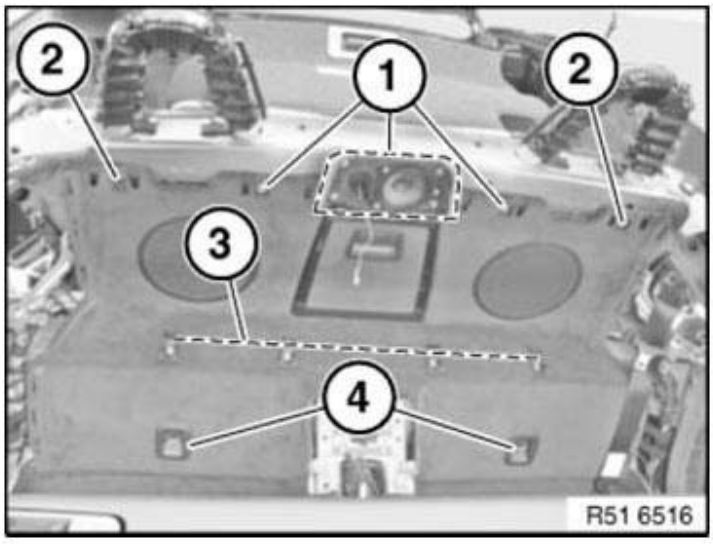


Fig. 389: Identifying Screws And Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Release partition panel (1) at catches (2).

Disconnect necessary plug connections.

Remove partition panel (1).

Replacement

Modify covers or lashing eyes (4).

Professional HiFi system only:

Modify speaker covers of bass speaker on left and right.

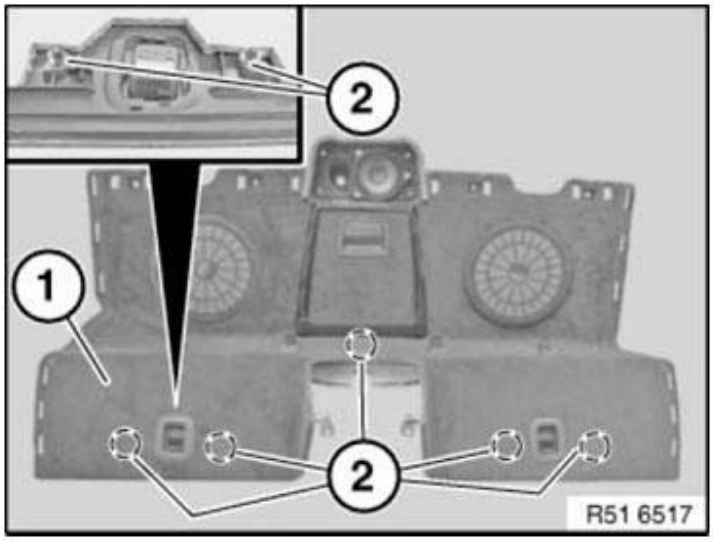


Fig. 390: Identifying Partition Panel With Catches
Courtesy of BMW OF NORTH AMERICA, INC.

51 43 ... REMOVING AND INSTALLING/REPLACING REAR TOP LEFT OR RIGHT SIDE TRIM PANEL

Operations on right side analogous to left side shown. Use graphics in a mirror-inverted way.

Unclip side trim panel (1) towards top.

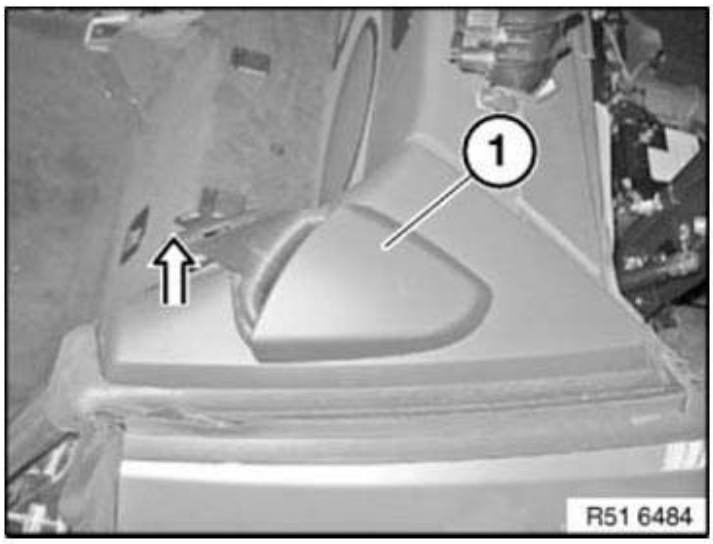


Fig. 391: Removing Side Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure seal (2) is correctly seated in relation to side trim panel (1).

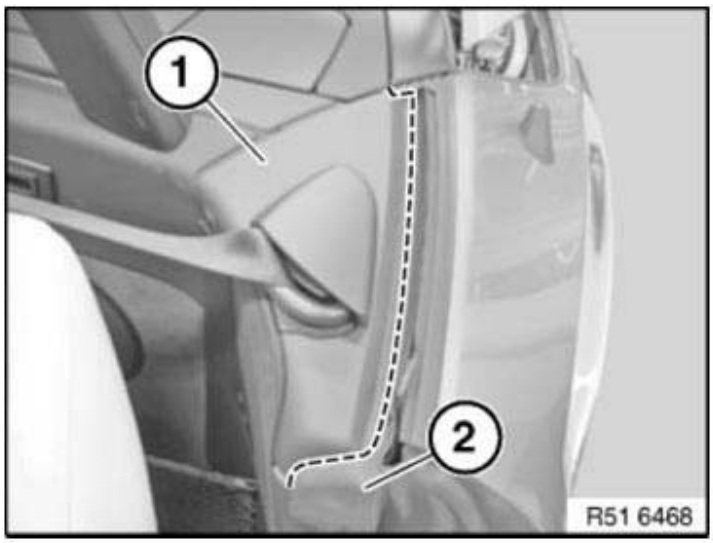


Fig. 392: Identifying Side Trim Panel With Seal
Courtesy of BMW OF NORTH AMERICA, INC.

51 46 050 REMOVING AND INSTALLING/REPLACING TOP TRIM ON REAR APRON

Necessary preliminary tasks

- Remove **FRONT LUGGAGE COMPARTMENT FLOOR TRIM**

- Remove **LOADING SILL END COVER**

Release screws with special tool 51 2 040 on rear apron trim (1).

Partially lift off seal (2).

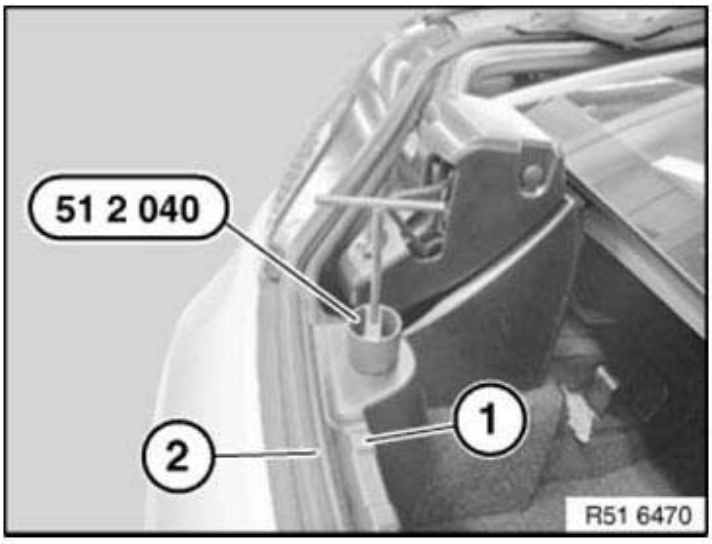


Fig. 393: Removing Screws Using Special Tool (51 2 040)
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out expansion rivets (1).

Remove panel for rear apron trim (2).

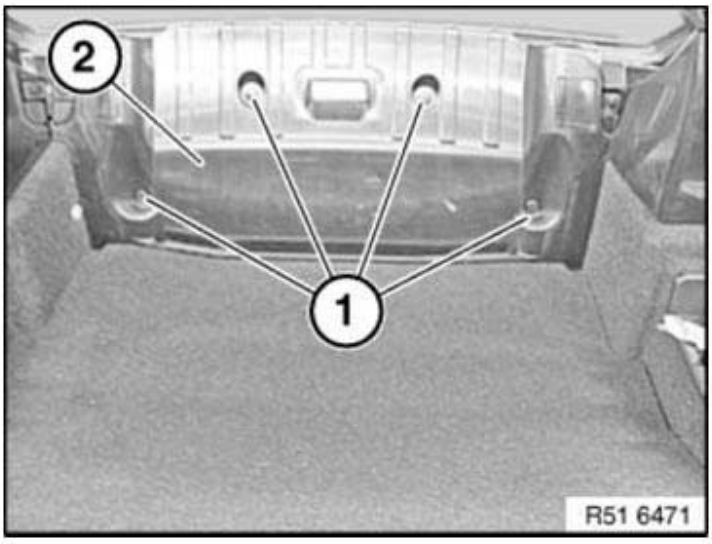


Fig. 394: Identifying Rear Apron Trim With Expansion Rivets

Courtesy of BMW OF NORTH AMERICA, INC.

Unclip lights (1) on rear apron trim (2).

Remove rear apron trim (2).

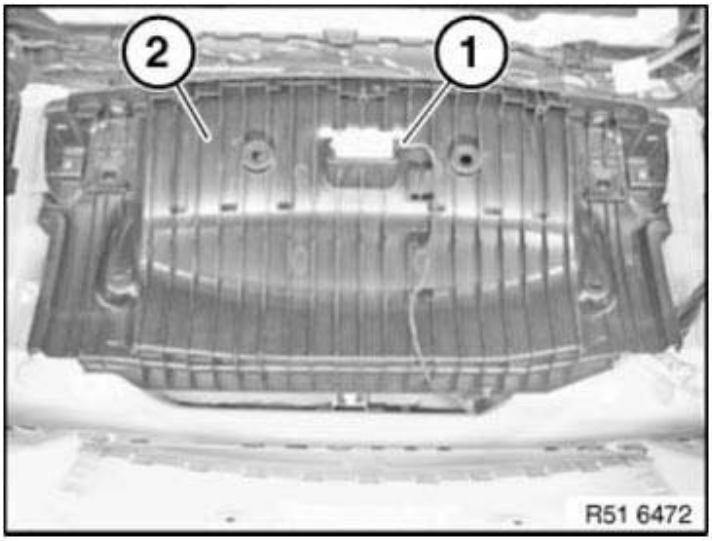


Fig. 395: Identifying Lights On Rear Apron Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 46 ... REMOVING AND INSTALLING/REPLACING UPPER (REAR) PARTITION PANEL

Necessary preliminary tasks

- Remove **COVERS ON ROLLOVER BAR**

Release screws (1).

Lever out expander rivets (2).

Remove rear upper partition panel (3).

Installation:

Feed in retaining tabs for expanding rivets (2) between partition and luggage compartment trim panel.

Replace faulty expanding rivets (2).

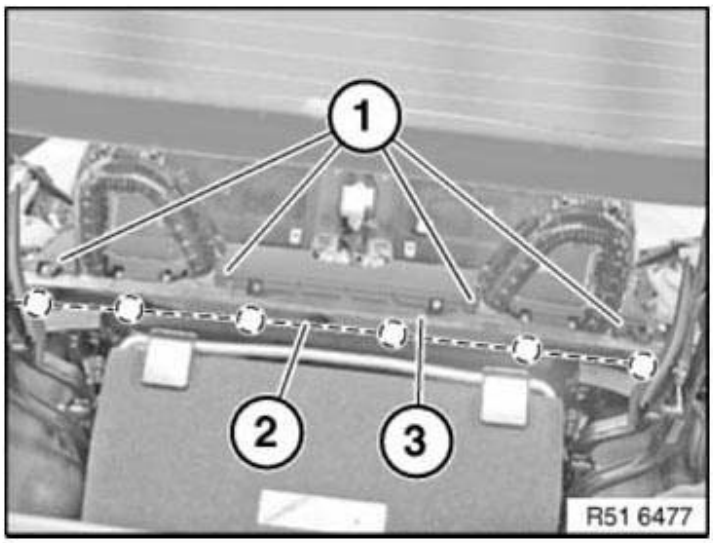


Fig. 396: Identifying Rear Upper Partition Panel With Expanding Rivets And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 46 070 REMOVING AND INSTALLING/REPLACING UPPER PARTITION PANEL

Necessary preliminary tasks

- Remove **REAR SIDE TRIM PANELS**
- Remove **ROLLOVER PROTECTION COVER BRACKET**
- If necessary, place backrests in vertical position and move seats fully forwards

Release screws (1).

Lever out caps for lashing eyes and release screws (2).

Tightening torque **51 46 6AZ** .

Professional HiFi system only:

Remove **TWEETER** (3)

Lift out upper partition wall panel (4) at an angle.

Replacement

If necessary, replace middle trim (3).

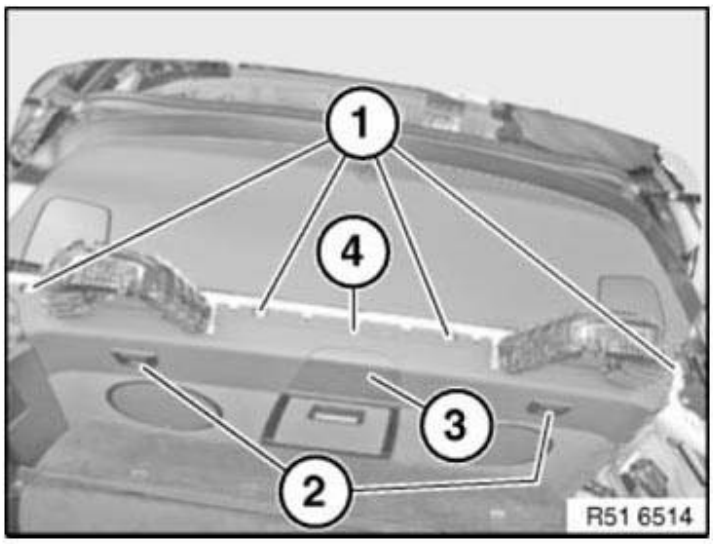


Fig. 397: Identifying Middle Trim And Upper Partition Wall Panel With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Locking hooks (1) on front partition wall panel (2) must not be broken.

If necessary, replace upper partition wall panel (2).

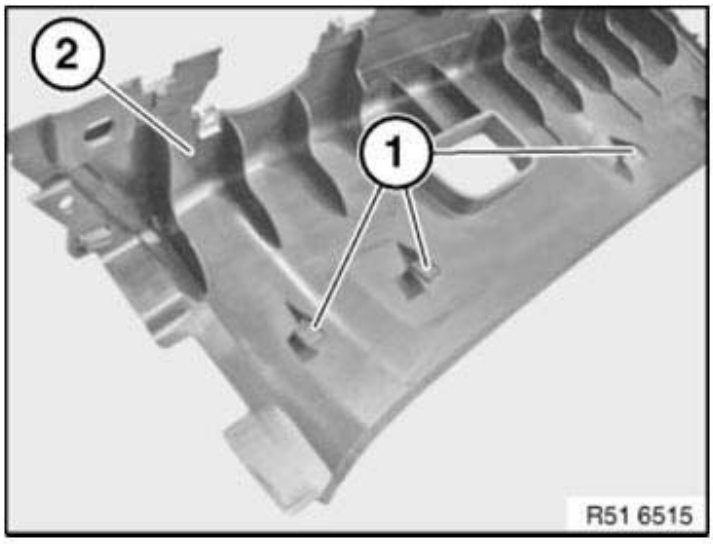


Fig. 398: Identifying Locking Hooks On Front Partition Wall Panel
Courtesy of BMW OF NORTH AMERICA, INC.

5147 FLOOR, LUGGAGE COMPARTMENT, ENGINE COMPARTMENT, TRIM PANELS

51 47 490 REMOVING AND INSTALLING/REPLACING FRONT UNDERBODY PROTECTION

NOTE: Illustration shows one example only.
There may be differences in detail in the case of other engine variants.

Release all screws (1) on underbody protection (2).

Remove underbody protection (2).

Installation

Centre underbody protection (2) and tighten down screws (1).

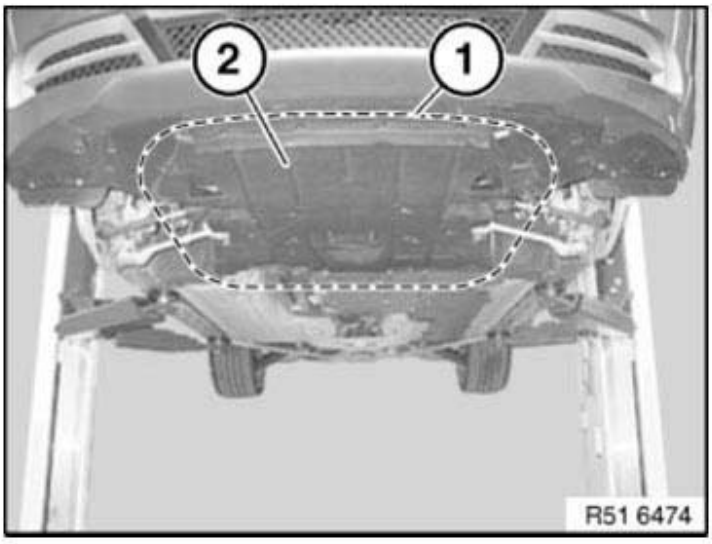


Fig. 399: Identifying Screws On Underbody Protection
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 000 REMOVING AND INSTALLING/REPLACING (INSIDE) FRONT LEFT OR RIGHT DOOR SILL COVER STRIP

Disengage retaining lugs (5) of door sill cover strip (2) from both adjoining panels.

IMPORTANT: Lever out door sill cover strip (2) at front retaining points (3).

Slide door sill cover strip (2) back approx. 2 cm to feed clips out of rear retaining points (1).

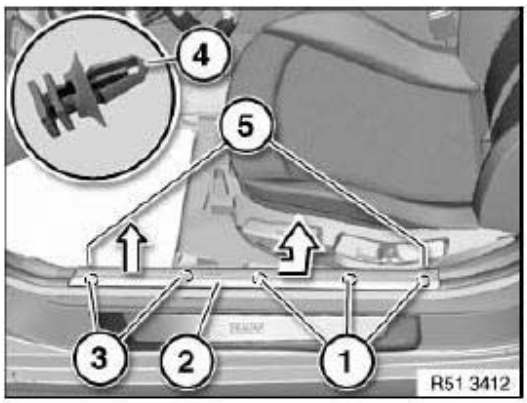


Fig. 400: Removing Door Sill Cover Strip
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, lever out clips (1) remaining in floor panel and push into clip mounts of door sill cover strip (2).

Replace faulty clips (1).

Clip mountings of door sill cover strip (2) must not be damaged.

Retaining lugs (3) of door sill cover strip (2) must not be damaged.

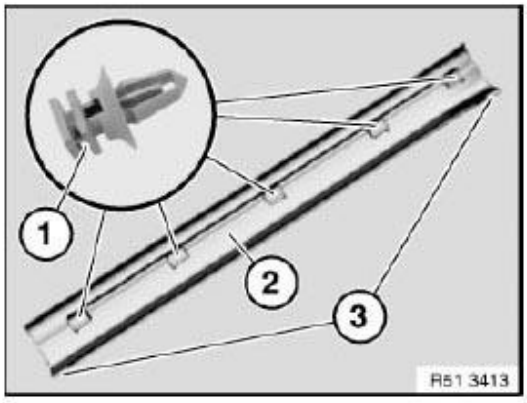


Fig. 401: Identifying Door Sill Cover Strip With Clips And Retaining Lugs
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 314 REMOVING AND INSTALLING/REPLACING CARPET FOR PASSENGER COMPARTMENT

Necessary preliminary tasks:

- Remove **SEATS**

- Remove footwell side trim panels See **5143075 REMOVING AND INSTALLING/REPLACING SIDE TRIM PANEL, FOOTWELL, ON A-PILLAR, RIGHT** or **5143070 REMOVING AND INSTALLING/REPLACING SIDE TRIM PANEL, FOOTWELL, ON A-PILLAR, LEFT** on left and right
- Remove **HEATER/AIR CONDITIONER**
- Remove **ACCELERATOR PEDAL MODULE**
- Remove **LOWER PARTITION TRIM PANEL**

Replacement

Unclip footwell net (1) on front passenger side.

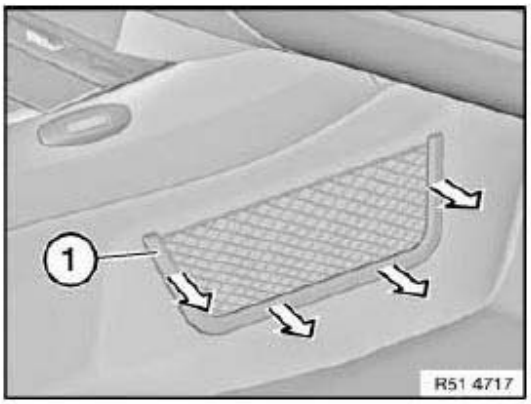


Fig. 402: Removing Footwell Net
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, replace damaged retaining clips.

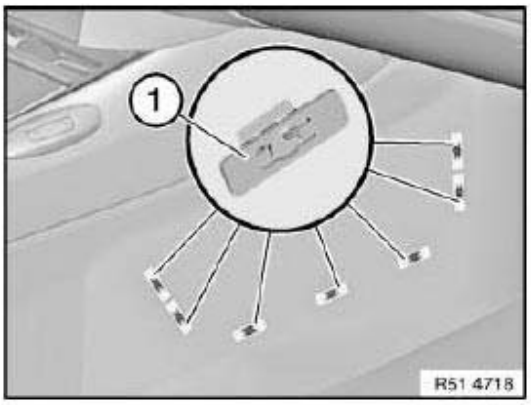


Fig. 403: Identifying Retaining Clips
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 065 REMOVING AND INSTALLING/REPLACING COVER AT FRONT LEFT OR RIGHT ENTRANCE

IMPORTANT: Risk of damage!

Do not raise cover (2) over entire length simultaneously.

Unclip clips (1) for cover (2) with special tool 00 9 317 .

Remove cover (2).

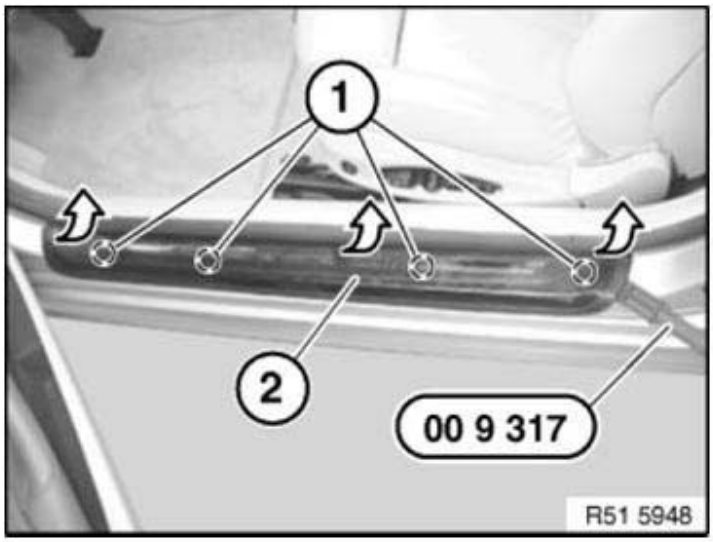


Fig. 404: Removing Cover Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Lever out remaining clips (1) in retaining holes with a suitable tool.

If necessary, slide missing clips (1) into clip mounts of cover.

Clip cover into retaining holes.

NOTE: Clips (1), clip mounts and retaining lugs of cover must not be damaged.

If necessary, replace faulty clips (1) or cover.

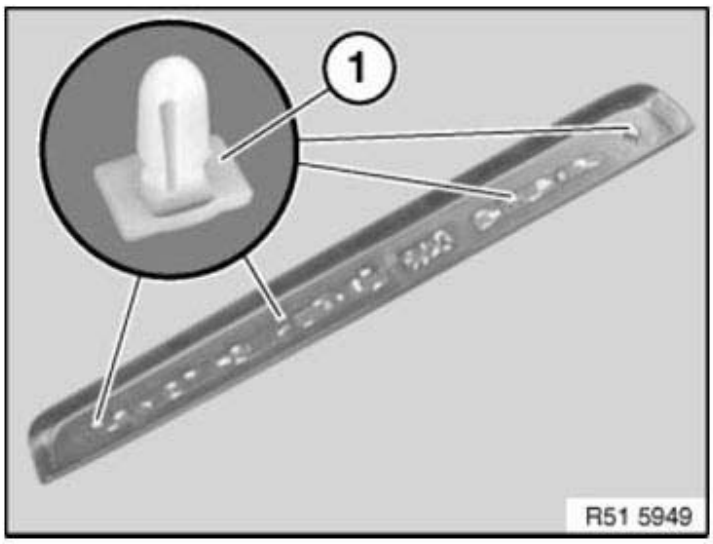


Fig. 405: Identifying Clips
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 038 REMOVING AND INSTALLING/REPLACING FRONT LEFT OR RIGHT WHEEL ARCH COVER (FRONT SECTION)

NOTE: Prior to removing, pay attention to the exact installation position with respect to the adjoining components.

Necessary preliminary tasks:

- Remove **FRONT WHEEL**

Unscrew all bolts.

Unscrew nuts (1).

Remove cover (2).

Installation:

Make sure cover (2) is correctly seated.

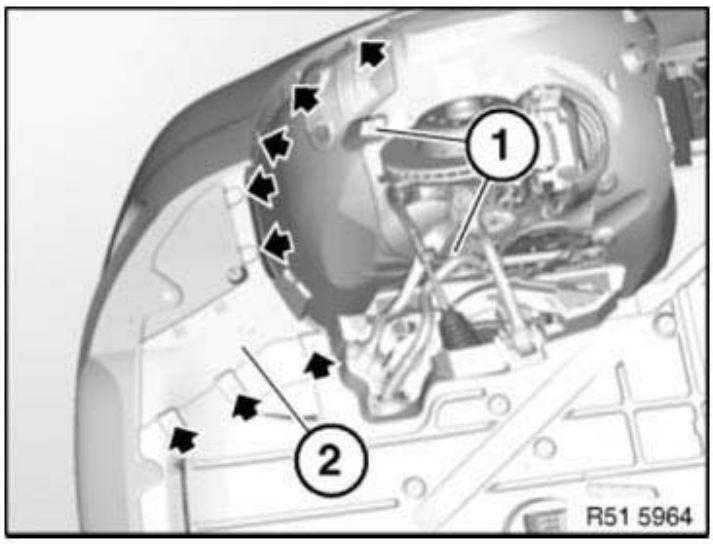


Fig. 406: Identifying Wheel Arch Cover With Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Feed out wheel arch cover (2) towards bottom.

Installation:

Make sure wheel arch cover (2) is exactly seated.

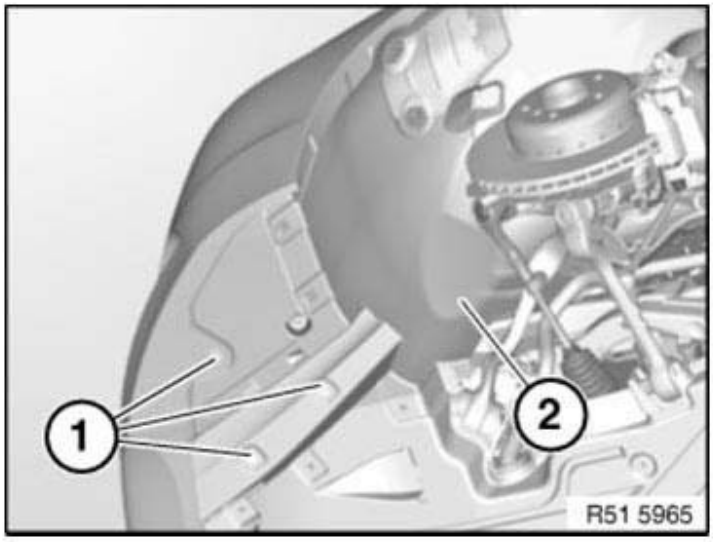


Fig. 407: Identifying Wheel Arch Cover With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 039 REMOVING AND INSTALLING/REPLACING FRONT LEFT OR RIGHT WHEEL ARCH

COVER (REAR SECTION)

NOTE: Prior to removing, pay attention to the exact installation position with respect to the adjoining components.

Necessary preliminary tasks:

- Remove **FRONT WHEEL**

Release all nuts.

Release screw (1).

Lever out clips (2).

Remove cover (3).

Installation:

Make sure cover (3) is correctly seated.

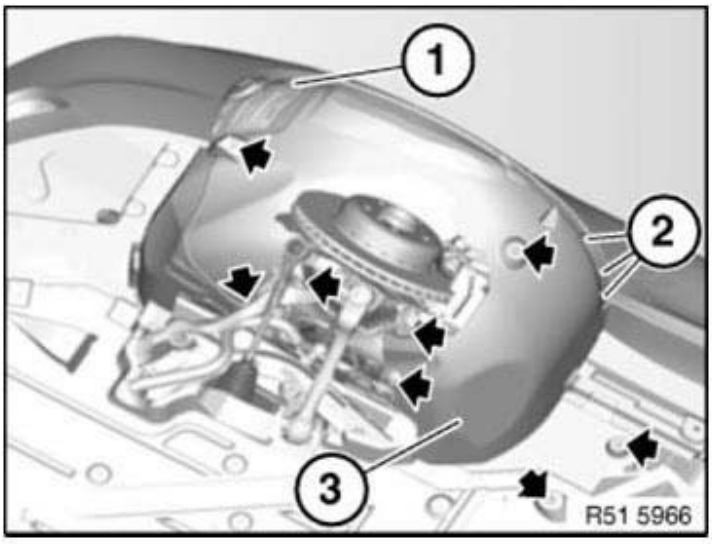


Fig. 408: Identifying Wheel Arch Cover With Screw And Clips
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 151 REMOVING AND INSTALLING/REPLACING LEFT LUGGAGE COMPARTMENT WHEEL ARCH PANEL

Necessary preliminary tasks

- Remove **PANEL FOR LUGGAGE COMPARTMENT SIDE MEMBER**

Partially detach seal (1).

Lift out expanding rivets (2).

Remove panel for luggage compartment wheel arch panel (3).

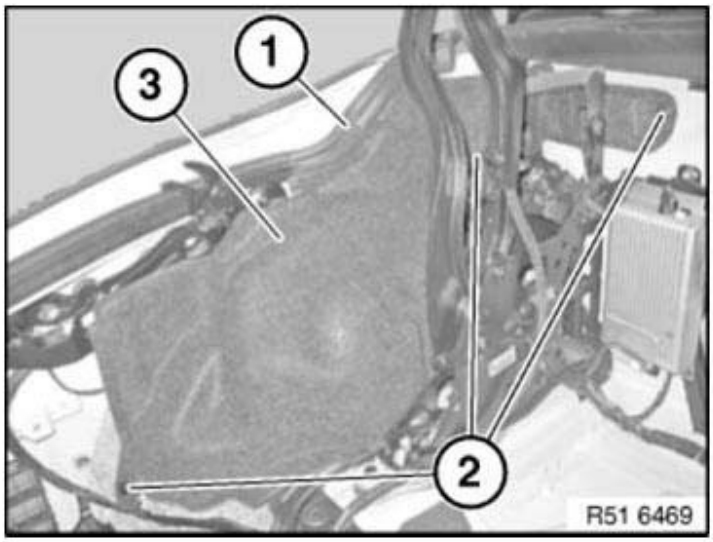


Fig. 409: Identifying Luggage Compartment Wheel Arch Panel With Expanding Rivets And Seal
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 217 REMOVING AND INSTALLING/REPLACING LOADING SILL END COVER (REAR LIGHT) ON LEFT OR RIGHT

Necessary preliminary tasks

- Remove **LUGGAGE COMPARTMENT TRIM ON SIDE PANEL**
- Move Convertible top into half-opened position
- Support Convertible top compartment lid with suitable tool

Remove luggage compartment cover (1) from roof fastener mechanism (2).

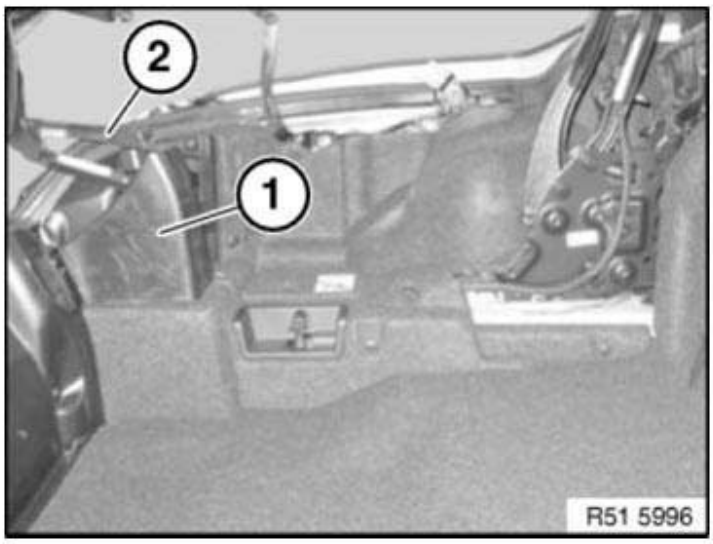


Fig. 410: Identifying Luggage Compartment Cover Of Roof Fastener Mechanism
Courtesy of BMW OF NORTH AMERICA, INC.

Partially lift off seal (1).

Lift out expanding rivets (2).

Remove end cover (3).

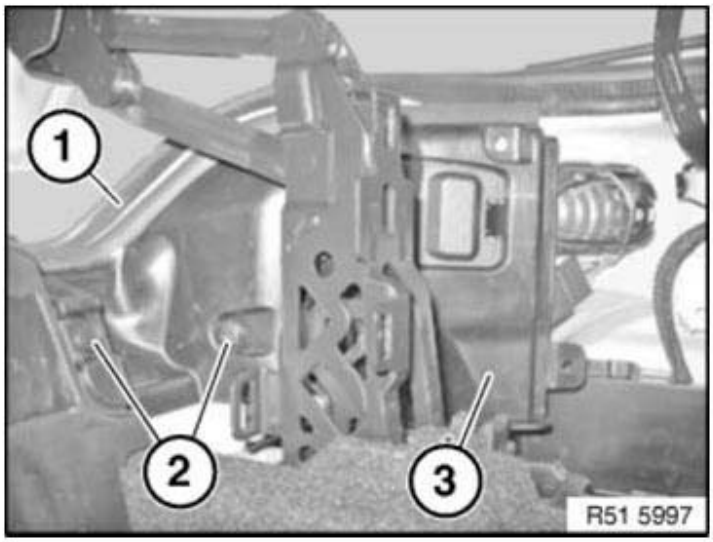


Fig. 411: Identifying Cover With Seal And Expanding Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

51 75 515 REMOVING AND INSTALLING/REPLACING LOWER PEDESTRIAN PROTECTION

Necessary preliminary tasks

- Remove **FRONT UNDERBODY PROTECTION**

Release screws (1).

Remove pedestrian protection (2).

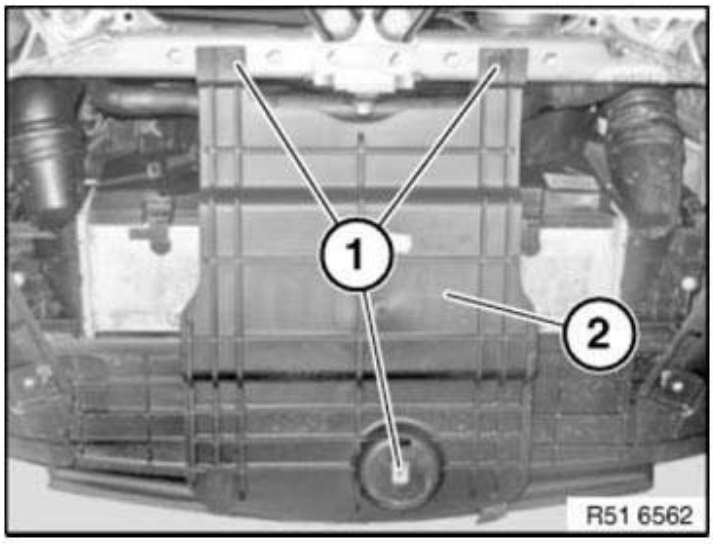


Fig. 412: Identifying Pedestrian Protection With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 101 REMOVING AND INSTALLING/REPLACING LUGGAGE COMPARTMENT FLOOR TRIM PANEL

Remove luggage compartment floor trim (1).

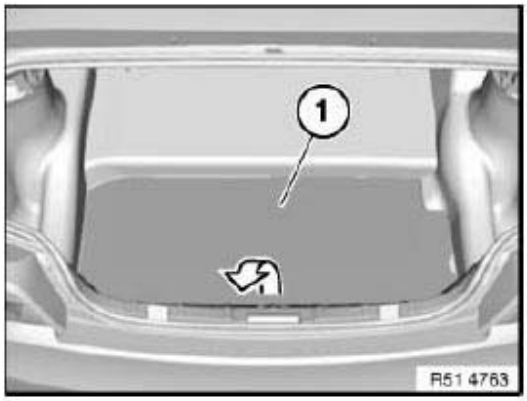


Fig. 413: Removing Luggage Compartment Floor Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 220 REMOVING AND INSTALLING/REPLACING LUGGAGE COMPARTMENT TRIM

PANEL ON RIGHT SIDE PANEL

Lever out expansion rivets (1).

Feed out luggage compartment trim panel (3), unclipping at marked points (2).

Installation:

Rubber seal (4) must be correctly seated over luggage compartment trim panel (3).

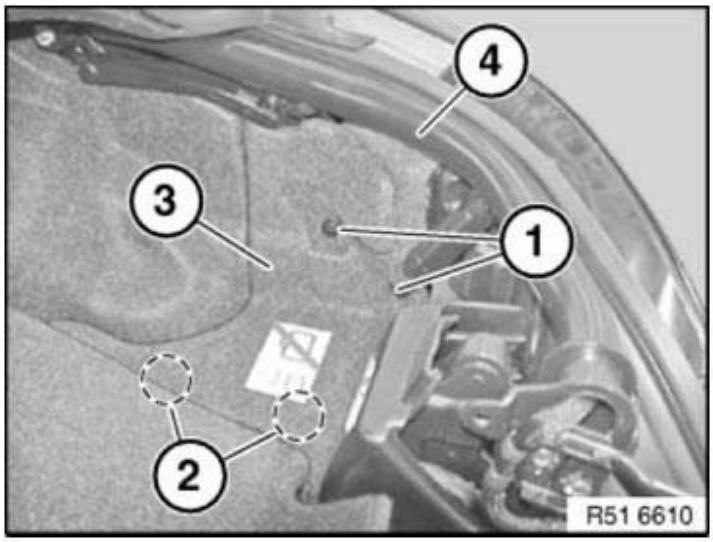


Fig. 414: Identifying Luggage Compartment Trim Panel With Expansion Rivets And Seal
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 140 REMOVING AND INSTALLING/REPLACING PANEL FOR LUGGAGE COMPARTMENT PARTITION WALL

Necessary preliminary tasks

- Move soft top into half-opened position
- Support soft top compartment lid with suitable tool
- Remove **FRONT LUGGAGE COMPARTMENT FLOOR TRIM PANEL**

Lever out expansion rivets (1).

Remove panel for luggage compartment partition wall (2).

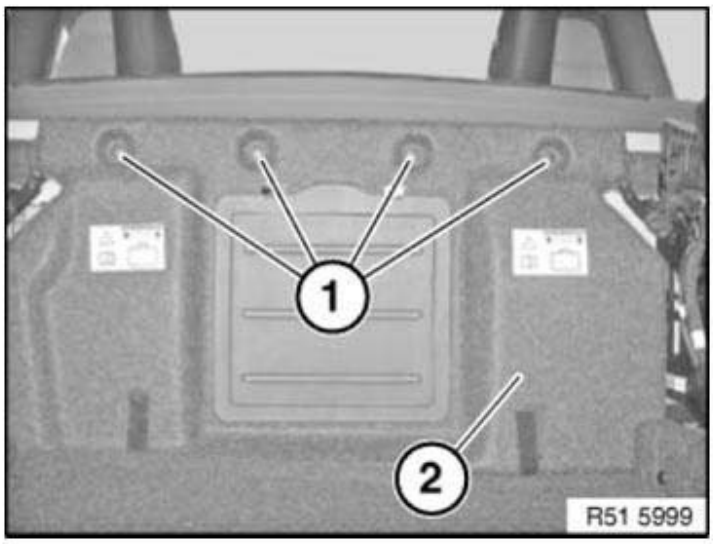


Fig. 415: Identifying Luggage Compartment Partition Wall With Expansion Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 215 REMOVING AND INSTALLING/REPLACING PANEL FOR LUGGAGE COMPARTMENT SIDE MEMBER ON LEFT

Necessary preliminary tasks

- Remove **PANEL FOR LUGGAGE COMPARTMENT PARTITION**

Unclip trim (1).

Lift out expanding rivets (2).

Remove panel for luggage compartment side member (3).

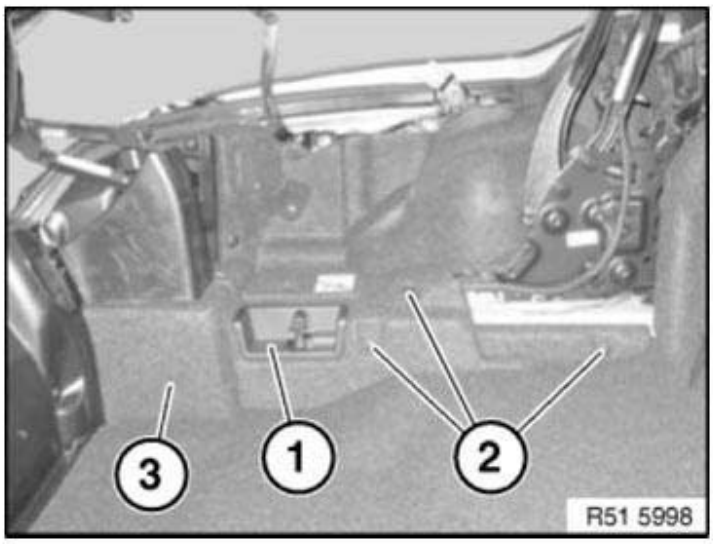


Fig. 416: Identifying Luggage Compartment Side Member With Expanding Rivets And Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 216 REMOVING AND INSTALLING/REPLACING PANEL FOR LUGGAGE COMPARTMENT SIDE MEMBER ON RIGHT

NOTE: Operation is identical to:

- **Removing and installing/replacing PANEL FOR LUGGAGE COMPARTMENT SIDE MEMBER ON LEFT**

51 71 041 REMOVING AND INSTALLING/REPLACING REAR LEFT OR RIGHT WHEEL ARCH COVER

Necessary preliminary tasks

- Remove **REAR WHEEL**

Release all nuts (1).

Remove cover (2).

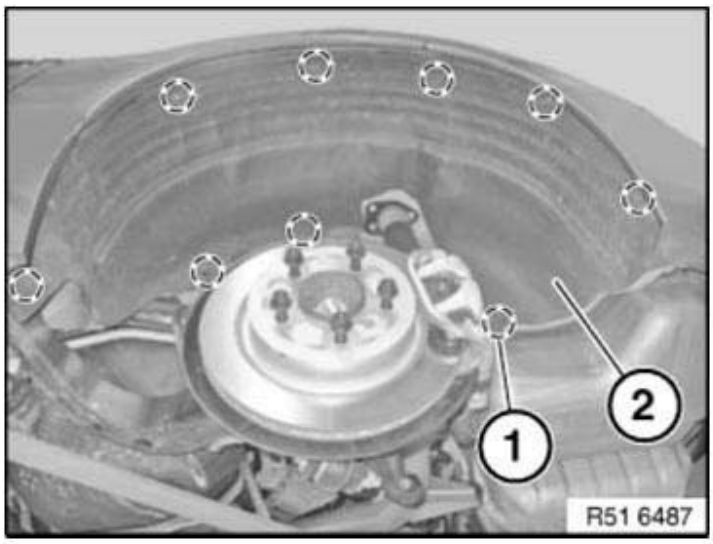


Fig. 417: Identifying Wheel Arch Cover And Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Carefully lift in wheel arch cover (1) with special tool 00 9 317 .

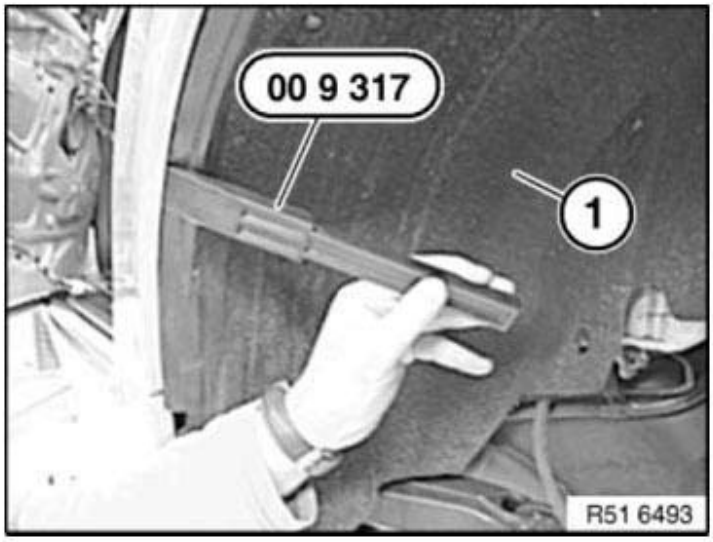


Fig. 418: Lifting Wheel Arch Cover Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 491 REMOVING AND INSTALLING/REPLACING REAR UNDERBODY PROTECTION

WARNING: Scalding hazard!

This work may only be carried out on an exhaust system which has cooled down.

Release screws (1).

Pull underbody protection (2) out from under bumper trim (3).

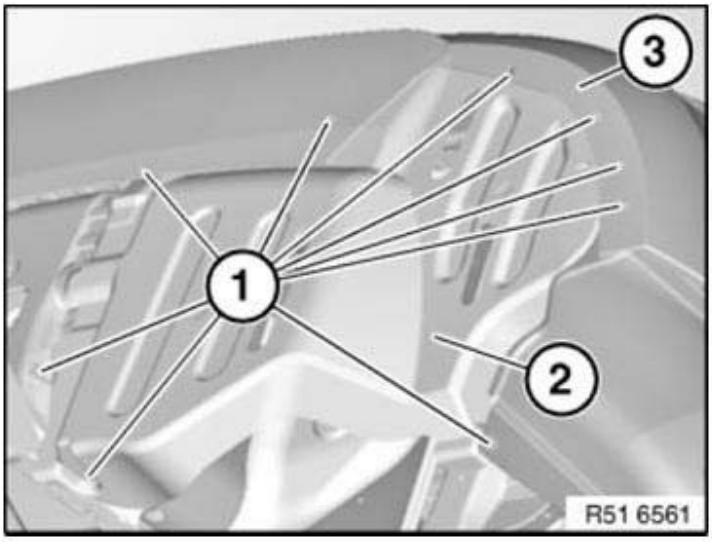


Fig. 419: Identifying Underbody Protection, Under Bumper Trim With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 161 REMOVING AND INSTALLING/REPLACING RIGHT LUGGAGE COMPARTMENT WHEEL ARCH TRIM

NOTE: Operation is identical to:

- **Removing and installing/replacing LEFT LUGGAGE COMPARTMENT WHEEL ARCH TRIM**

51 46 050 REMOVING AND INSTALLING/REPLACING TOP TRIM ON REAR APRON

Necessary preliminary tasks

- Remove **FRONT LUGGAGE COMPARTMENT FLOOR TRIM**
- Remove **LOADING SILL END COVER**

Release screws with special tool 51 2 040 on rear apron trim (1).

Partially lift off seal (2).

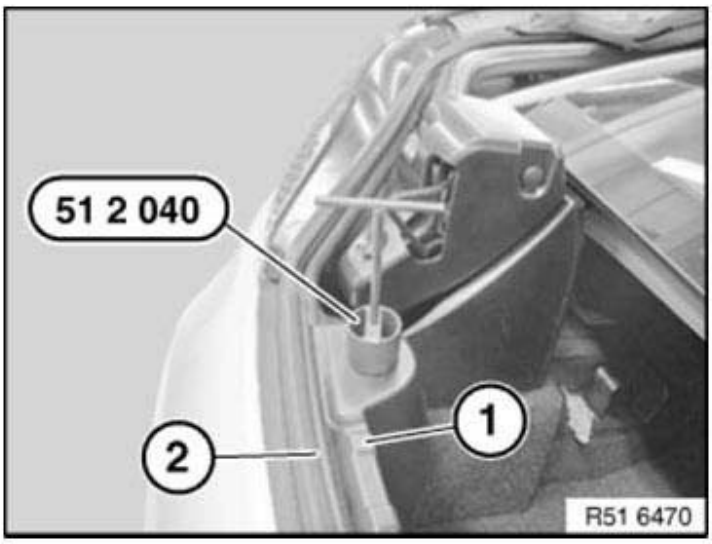


Fig. 420: Removing Screws Using Special Tool (51 2 040)
Courtesy of BMW OF NORTH AMERICA, INC.

Lever out expansion rivets (1).

Remove panel for rear apron trim (2).

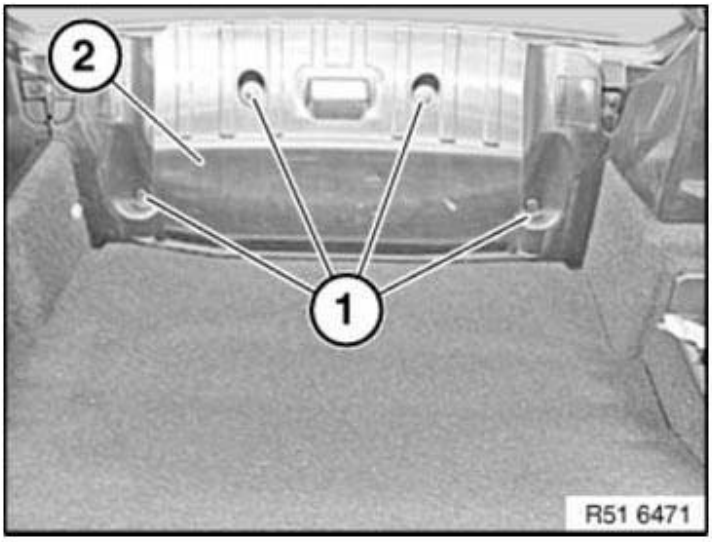


Fig. 421: Identifying Rear Apron Trim With Expansion Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip lights (1) on rear apron trim (2).

Remove rear apron trim (2).

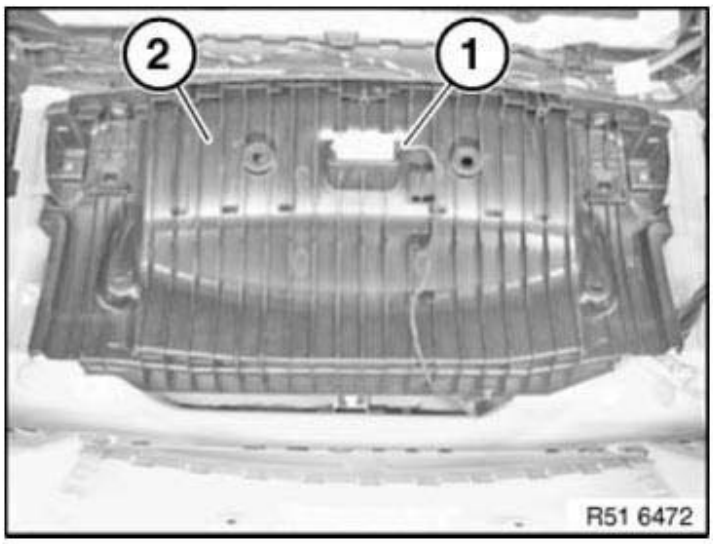


Fig. 422: Identifying Lights On Rear Apron Trim
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 210 REMOVING AND INSTALLING/REPLACING TRUNK TRIM PANEL ON LEFT SIDE PANEL

Open spagnolet fastener (1).

Lever out expander rivet underneath.

Lift out expanding rivets (2).

Feed out side trim panel (3).

Installation:

Luggage compartment rubber seal must be correctly seated over luggage compartment trim panel (3).

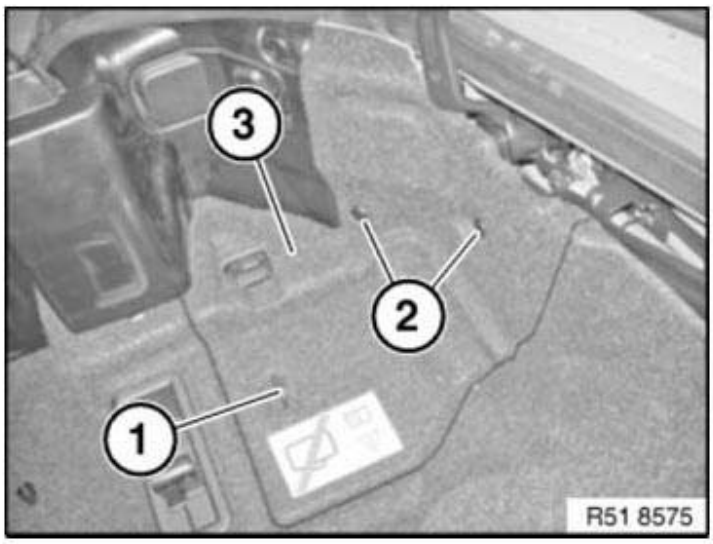


Fig. 423: Identifying Spagnolet Fastener, Side Trim Panel And Expanding Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

51 47 131 REPLACING FRONT PANEL FOR LUGGAGE COMPARTMENT FLOOR

Necessary preliminary tasks

- Remove **LUGGAGE COMPARTMENT FLOOR TRIM PANEL**

Lever out expansion rivets (1).

Remove front luggage compartment floor trim (2).

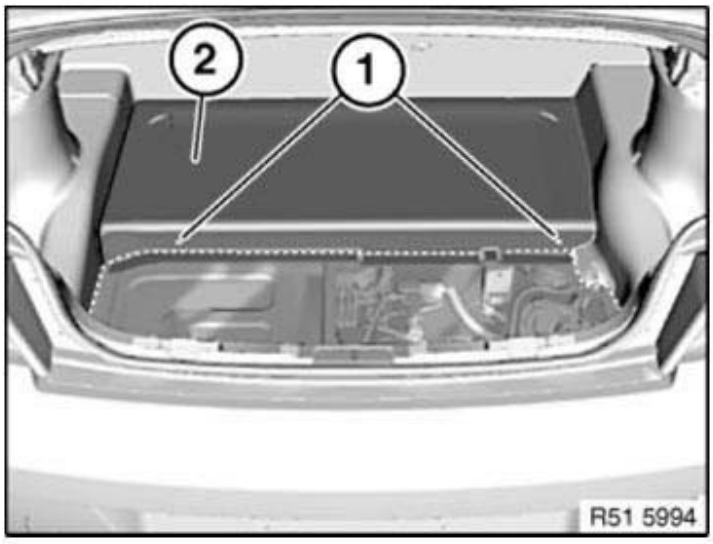


Fig. 424: Identifying Front Luggage Compartment Floor Trim With Expansion Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

5148 FRONT LID INSULATION LINING

51 48 060 REMOVING AND INSTALLING/REPLACING SOUND INSULATION IN FRONT DOOR, LEFT OR RIGHT

IMPORTANT: INSTRUCTIONS FOR SOUND INSULATION are an essential part of these repair instructions and must be followed without fail.

Do not detach sound insulation in jerks (risk of damage).

After every repair, check that the sound insulation is water-tight (water ingress).

Necessary preliminary tasks

- Remove **DOOR TRIM PANEL**

Release speaker cable (1).

Guide speaker cable (1) through sound insulation (2).

Position of sealing bead (3).

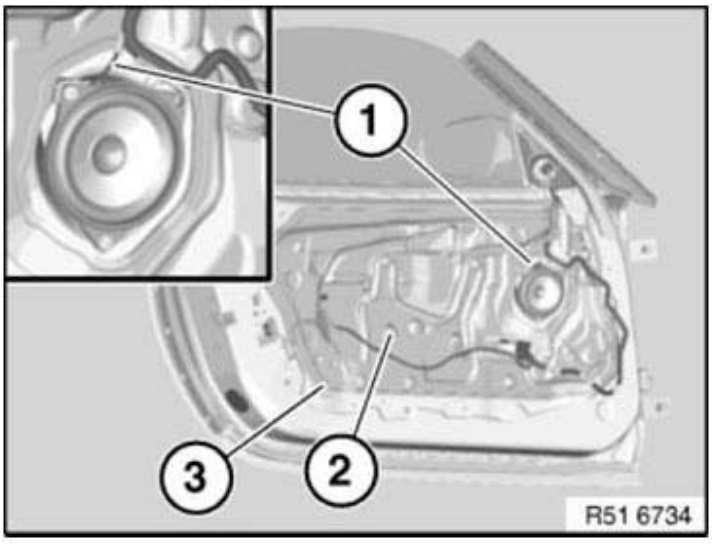


Fig. 425: Identifying Speaker Cable With Sound Insulation And Sealing Bead
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: When cutting through sealing bead (1), do not damage sound insulation (2) and if necessary cable.

With a suitable sharp cutting tool (3) cut through sealing bead (1) of sound insulation (2) in the area to be

detached.

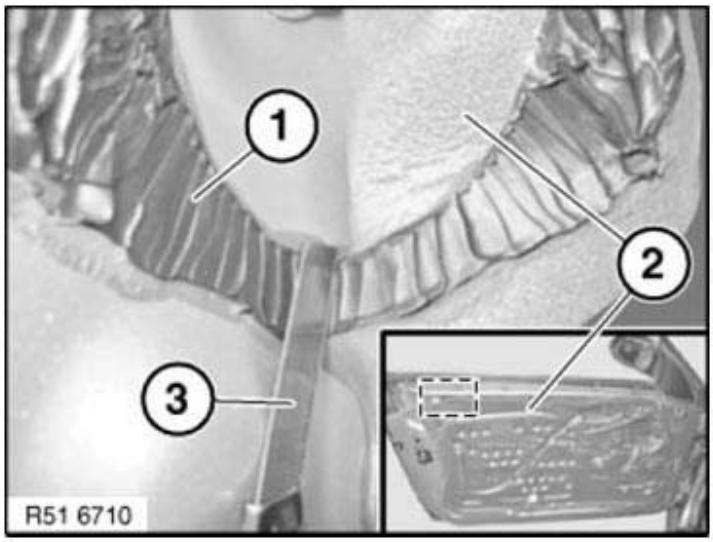


Fig. 426: Cutting Sealing Bead Of Sound Insulation Using Sharp Cutting Tool
Courtesy of BMW OF NORTH AMERICA, INC.

Clean bonding area with adhesive remover (sourcing reference: BMW Parts Service).

Air drying time: 1 minute

IMPORTANT: Adhesive areas must be dry and free of dust and grease.

Once it has been cleaned, do not touch the adhesive area with bare hands.

NOTE: Replacement:

Lay 6 mm dia. butyl cord (sourcing reference: BMW Parts Department) in specified adhesive area.

Heat butyl cord (hot air blower) and press down firmly on sound insulation all round.

Contact pressure with hand roller: approx. 20 N/cm ^{2}

Manual contact pressure: approx. 10 N/cm ^{2}

NOTE: Firm thumb pressure has approx. 30 N/cm ^{2}

NOTE: Position of butyl cord (1) on sound insulation (2).

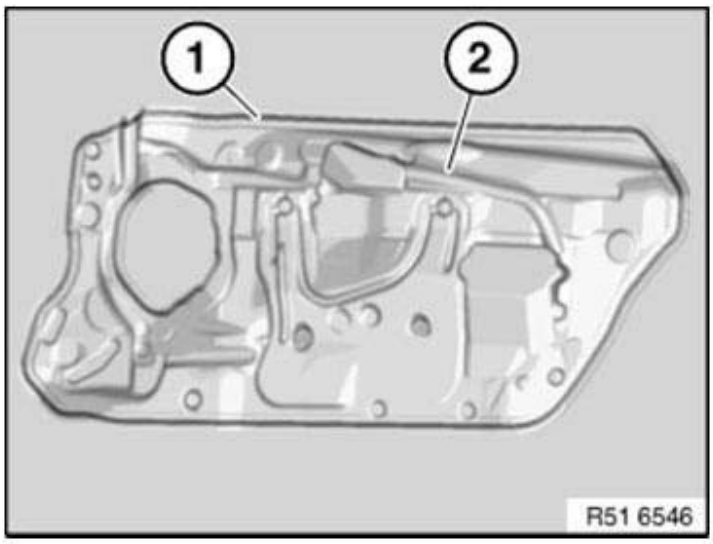


Fig. 427: Identifying Butyl Cord On Sound Insulation
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: There is a 2 cm wide edge (2) all round on sound insulation (1).

Stick on butyl cord (3) centrally in this area.

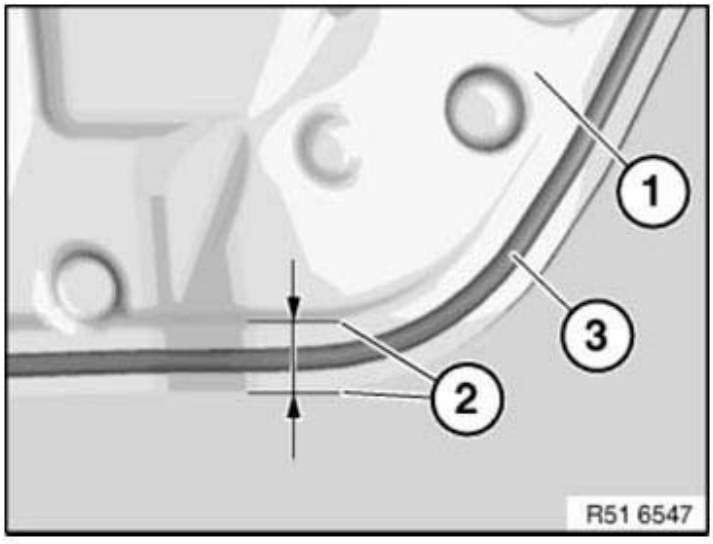


Fig. 428: Identifying 2 cm Wide Edge On Sound Insulation And Butyl Cord
Courtesy of BMW OF NORTH AMERICA, INC.

51 48 ... REMOVING AND INSTALLING/REPLACING SOUND INSULATION ON COWL PANEL OR WINDSCREEN

Sound insulation can only be replaced with the following removed:

- **INSTRUMENT PANEL** or
- **WINDSCREEN**

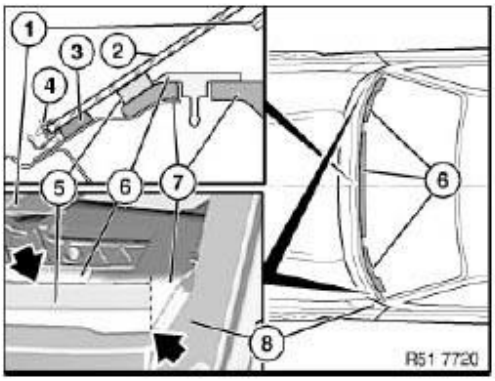


Fig. 429: Identifying Expanding Foam Tape, Adhesive Bead And Sound Insulation On Windscreen
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Press down, or with replacement bond, expanding foam tape (5) just before installing the windscreen (2) with special tool 51 0 300 . Relaxed expanding foam tape could crush cement bead (3) (leaks, wind noises).

Replacement

Stick new expanding foam tape (5) on sound insulation (7) along press-down elements (6).

Expanding foam tape (5) may only be stuck up to corner point of sound insulation (7).

1. Dashboard trim panel
2. Windscreen
3. Adhesive bead
4. Retaining strip, bottom
5. Expanding foam tape (sound insulation, cowl panel)
6. Press-down for sound insulation (7)
7. Sound insulation, bulkhead upper section
8. Side frame

51 48 ... REMOVING AND INSTALLING/REPLACING SOUND INSULATION ON COWL PANEL/WINDSCREEN

NOTE: Sound insulation is only fitted in vehicles with diesel engines.

Sound insulation can only be replaced with the following removed:

- **Instrument panel or**
- **WINDSCREEN**

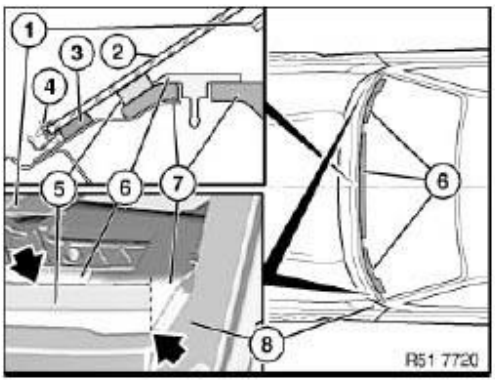


Fig. 430: Identifying Expanding Foam Tape, Adhesive Bead And Sound Insulation On Windscreen
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Press down expanding foam tape (5) shortly before installing windscreen (2) (with hand roller) or stick on if replacing. Relaxed expanding foam tape could crush cement bead (3) (leaks, wind noises).

Replacement

Stick new expanding foam tape (5) on sound insulation (7) along press-down elements (6).

Expanding foam tape (5) may only be stuck up to corner point of sound insulation (7).

1. Dashboard trim panel
2. Windscreen
3. Adhesive bead
4. Retaining strip, bottom
5. Expanding foam tape (sound insulation, cowl panel)
6. Press-down elements for (7)
7. Sound insulation, bulkhead upper section
8. Side frame

5149 REAR LID TRIM PANEL

51 49 000 REMOVING AND INSTALLING OR REPLACING TRIM FOR REAR LID

Remove warning triangle (1).

Release screws underneath.

Lift out expanding rivets (2).

US version only:

Pass emergency release (3) through rear lid trim (4).

Remove rear lid trim (4).

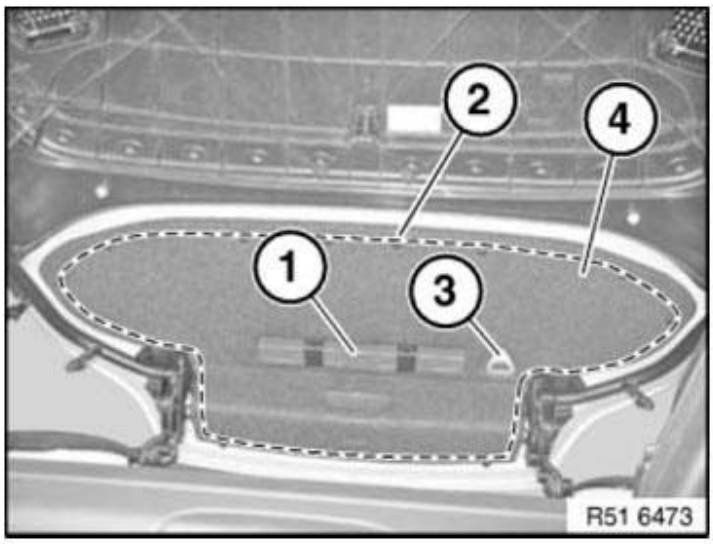


Fig. 431: Identifying Warning Triangle, Expanding Rivets, Emergency Release And Rear Lid Trim
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, replace faulty expanding rivets (2).

5161 REINFORCEMENT, BODY

51 61 011 REMOVING AND INSTALLING/REPLACING V-STRUT, FRONT AXLE CARRIER, LEFT OR RIGHT

IMPORTANT: Observe SAFETY INSTRUCTIONS for raising the vehicle

Driving without V-struts is not permitted!

Necessary preliminary tasks

- Remove **FRONT UNDERBODY PROTECTION**

Release bolt (1).

Tightening torque **51 71 10AZ** .

Release bolt (2).

Tightening torque **51 71 10AZ** .

Release bolt (3).

Tightening torque **51 71 10AZ** .

Remove V-strut (4) towards front.

Installation:

Replace bolts.

Make sure bolts are installed in correct positions.

- Bolt (1) M12x30
- Bolt (2) M10x33
- Bolt (3) M10x45

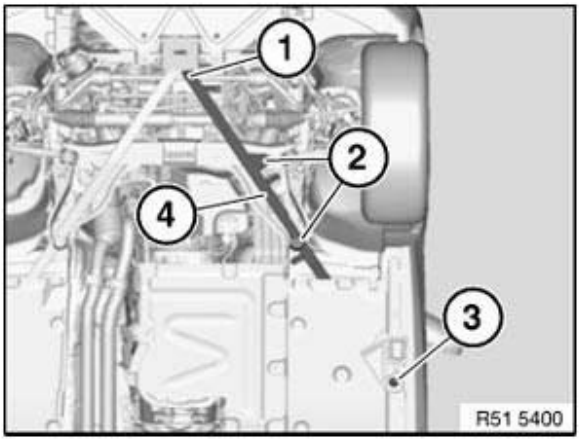


Fig. 432: Identifying V-Strut With Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 482 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT TENSION STRUT

IMPORTANT: Vehicles must not be driven without tension struts.

Driving without tension struts may damage the vehicle body.

Tension strut bolts must be tightened to torque and then tightened down with special tool 00 9 120 .

Tension strut, left and right

Release bolts (1, 2) and nuts (3) and remove tension strut (4).

Installation:

Replace bolts (1 and 2).

- Bolt (1) M10x50

  Tightening torque **51 71 29AZ** .

- Bolt (2) M8x35

  Tightening torque **51 71 30AZ** .

- Nut (3)

Tightening torque **51 71 31AZ** .

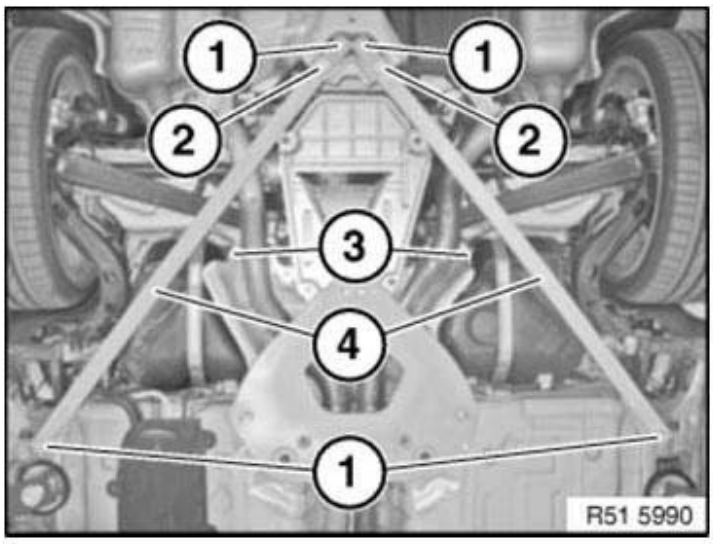


Fig. 433: Identifying Tension Strut With Bolts And Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 390 REMOVING AND INSTALLING/REPLACING REINFORCEMENT PLATE ON REAR AXLE

IMPORTANT: Vehicles must not be driven without reinforcement plates.

Driving without the reinforcement plate may damage the vehicle body.

Screws of reinforcement plate must be tightened to torque and then tightened

down with special tool 00 9 120 .

Release screws (1) and remove heat shield (2).

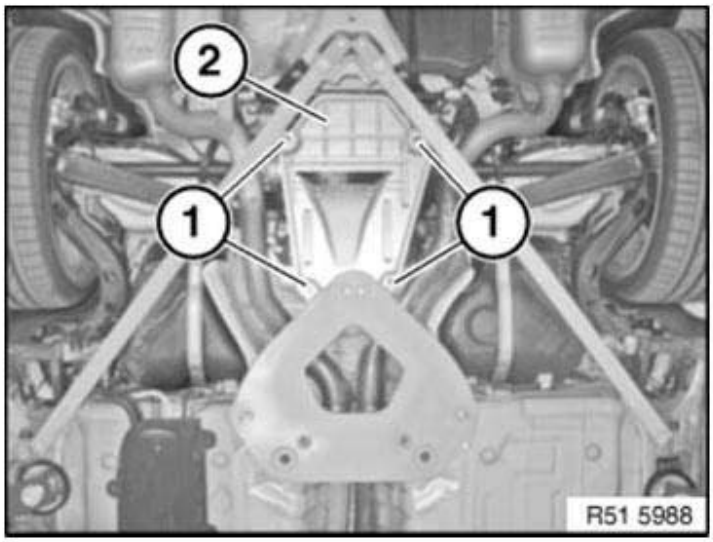


Fig. 434: Identifying Heat Shield With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 71 24AZ** .

Unscrew nuts (2).

Tightening torque **51 71 25AZ** .

Unscrew nuts (3).

Tightening torque **51 71 26AZ** .

Remove thrust panel (reinforcement plate) (4).

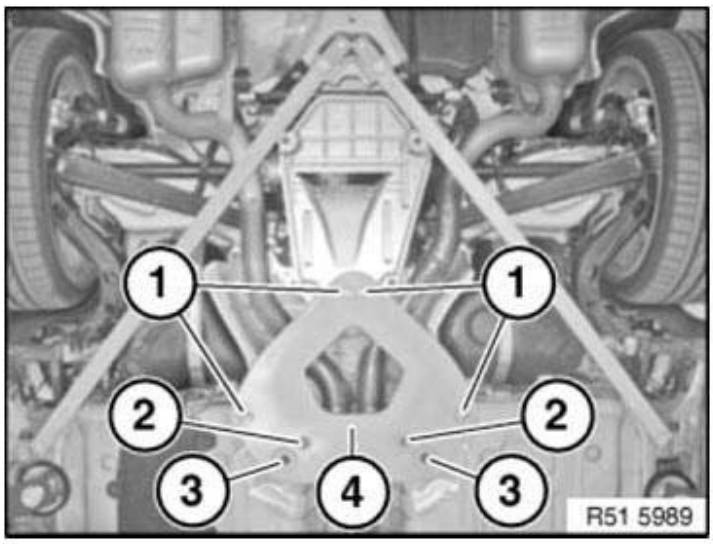


Fig. 435: Identifying Thrust Panel (Reinforcement Plate) With Screws And Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace screw (1).

- Tighten down screws (1) to specified torque and then to angle of rotation.

51 71 371 REMOVING AND INSTALLING/REPLACING TENSION STRUT ON LEFT OR RIGHT SPRING STRUT DOME

IMPORTANT: Vehicles must not be driven without tension struts.

Driving without tension struts may damage the vehicle body.

Tension struts can be secured with screws or nuts.

Screws must be tightened to specified torque and then tightened down with special tool 00 9 120 .

Release screw (1).

Lift out expanding rivets (2).

Remove cable holder (3).

Release screws (4).

Tightening torque **51 71 4AZ** .

Installation:

Replace screws (4), tighten to specified torque and then to angle of rotation.

Remove tension strut (5).

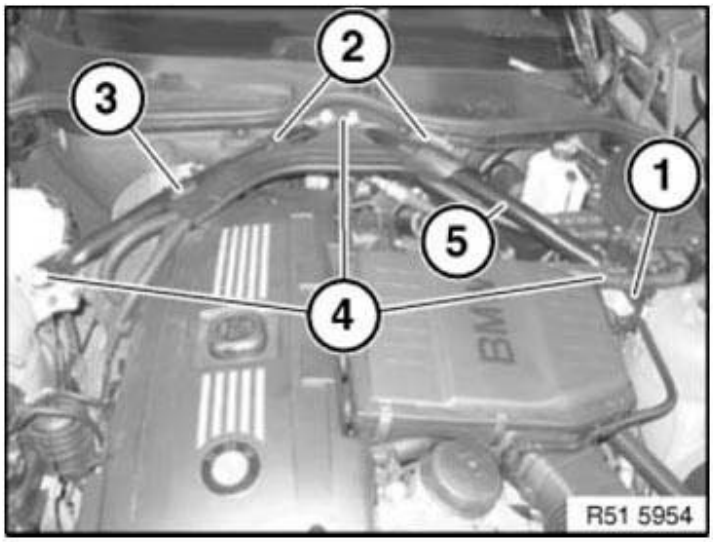


Fig. 436: Identifying Tension Strut With Expanding Rivets, Cable Holder And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

5164 FRONT PANEL, FRONT END

51 64 035 REMOVING AND INSTALLING/REPLACING CROSS-MEMBER UPPER SECTION (CONNECTION OF BOTH FRONT WHEEL ARCHES)

Necessary preliminary tasks

- Remove **13 71 000 REMOVING AND INSTALLING/REPLACING INTAKE FILTER HOUSING (N52K)** or **13 71 000 REMOVING AND INSTALLING/REPLACING INTAKE FILTER HOUSING (N54)** .

Release screws (1).

Tightening torque **51 71 23AZ** .

Remove cross-member (2).

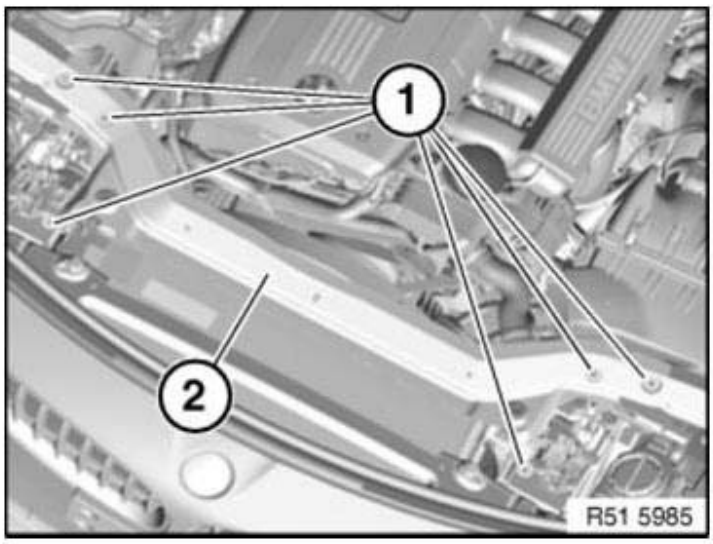


Fig. 437: Identifying Cross-Member With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 64 040 REMOVING AND INSTALLING/REPLACING FRONT BUMPER MOUNTING

Necessary preliminary tasks

- Remove **BUMPER TRIM**
- Remove intake duct on intake silencer housing. See **13 71 000 REMOVING AND INSTALLING/REPLACING INTAKE FILTER HOUSING (N52K)** or **13 71 000 REMOVING AND INSTALLING/REPLACING INTAKE FILTER HOUSING (N54)** .

Release screws (1).

Tightening torque **51 11 2AZ** .

V-support (2) remains on vehicle.

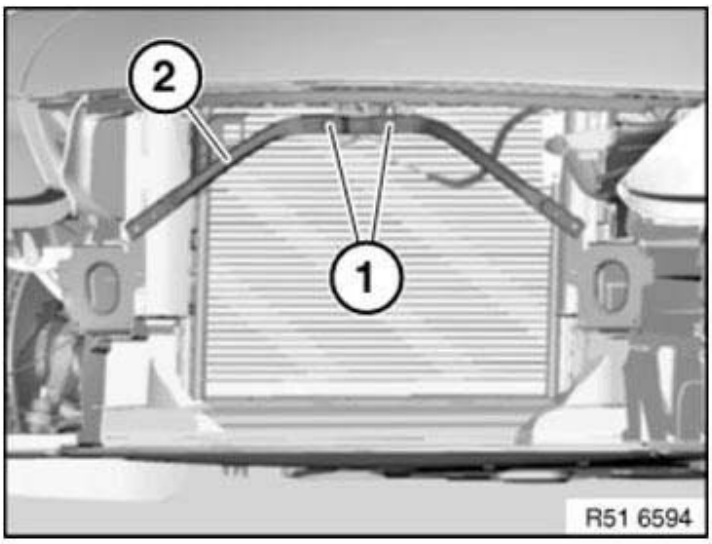


Fig. 438: Identifying V-Support With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 11 1AZ** .

Remove bumper mounting (2).

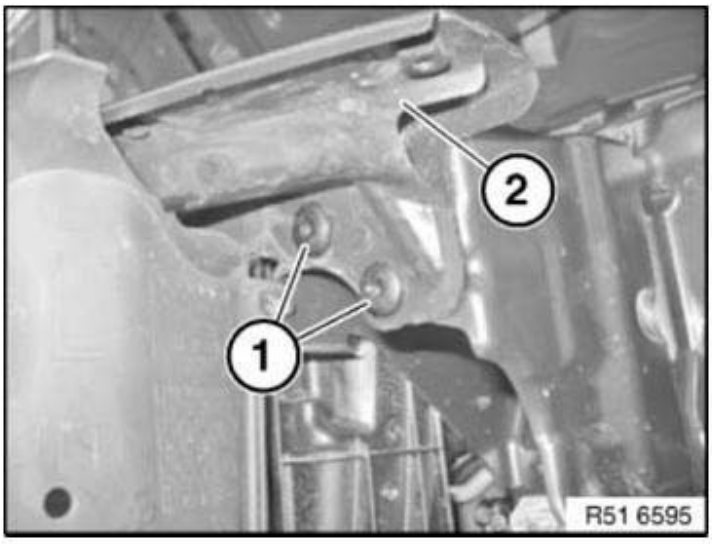


Fig. 439: Identifying Bumper Mounting And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 64 010 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT V-SUPPORT

Necessary preliminary tasks

- Remove **BUMPER TRIM**

NOTE: Pictured without bumper trim carrier.

Release screws (1).

Remove V-support (2).

Tightening torque **51 11 2AZ** .

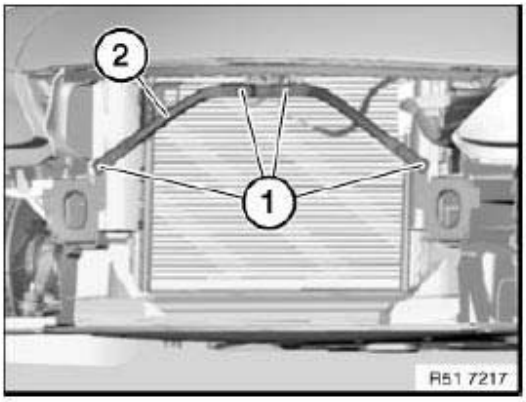


Fig. 440: Identifying V-Support And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

41 33 051 REPLACING LEFT FRONT PANEL

Necessary preliminary tasks

- Remove **DEFORMATION ELEMENT FOR BUMPER**
- Remove **CROSS-MEMBER UPPER SECTION**
- Remove **FRONT BUMPER MOUNTING**
- Remove engine compartment lid lock See **5123110 REMOVING AND INSTALLING/REPLACING LEFT BONNET LOCK** or **5123100 REMOVING AND INSTALLING/REPLACING RIGHT ENGINE HOOD/BONNET LOCK**
- Remove sensor . See **6577532 REMOVING AND INSTALLING/REPLACING FRONT LEFT SENSOR (US VERSION ONLY)** or **6577534 REMOVING AND INSTALLING/REPLACING FRONT RIGHT SENSOR (US VERSION ONLY)** .

Release screws (1).

Tightening torque **51 64 1AZ** .

Remove headlight mounting (2).

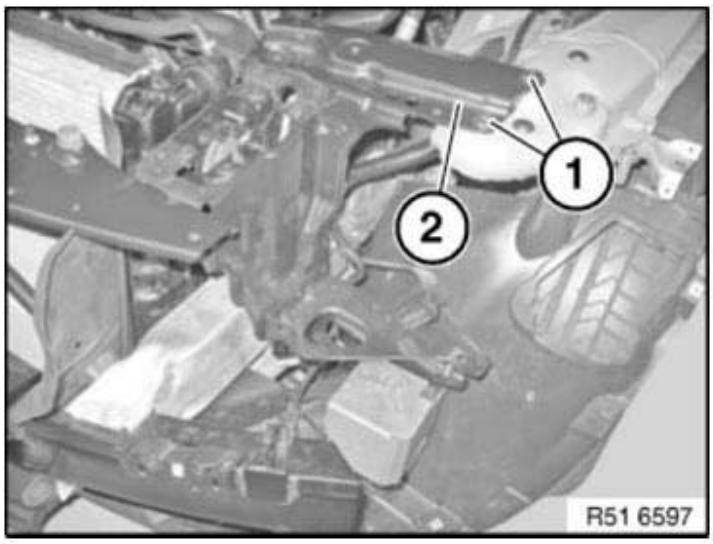


Fig. 441: Identifying Headlight Mounting With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

41 33 052 REPLACING RIGHT FRONT PANEL

Operations correspond to:

REPLACING LEFT FRONT PANEL

5171 GASKETS, SEALS, LOOSE BODY COMPONENTS

51 70 ... FITTING SEALS

NOTE: All seals on the vehicle must be removed with the utmost care. Incorrect fitting may result in among other things wind noises and water ingress, and may compromise closing and opening comfort.

- **The following instructions always apply:**

  Seals which are attached to the side frame can be removed and fitted as often as desired.

- Seals must not be damaged or cracked.

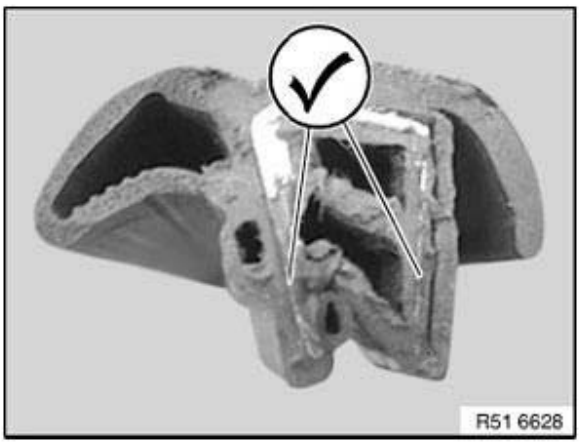


Fig. 442: Identifying Correct Position For Fitting Seals
Courtesy of BMW OF NORTH AMERICA, INC.

- The clamping area must be pressed together by hand to such an extent that rigid attachment to the side flange is still possible. The sides of the seal are permitted to touch each other slightly. A fully compressed seal is not permitted.
- A special tool to press the clamping area together is not needed. Careful fitting by hand is sufficient.
- The seals must always be fitted over their full extent. There is no defined pressing force.
- If seals are repeatedly removed and fitted in the rear lid area, a new seal must be fitted (water ingress in event of sheet flaws).

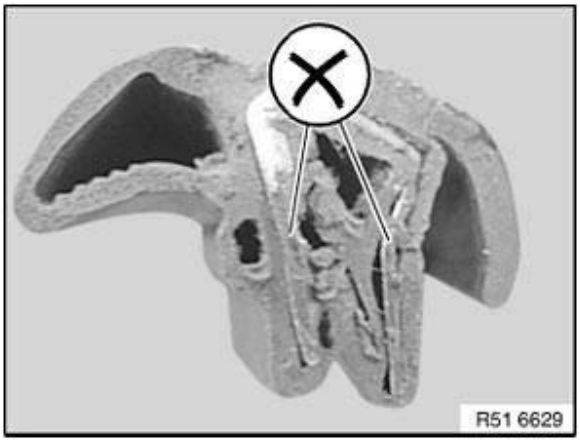


Fig. 443: Identifying Improper Position For Fitting Seals
Courtesy of BMW OF NORTH AMERICA, INC.

- Seals must be checked after fitting for correct seating. If necessary, the seals must be lifted over the adjacent components with a suitable tool. Adjacent components must not be damaged.
- Seals must be replaced when the metal insert in the seal is visible (corrosion).
- The clamping area must be uniform.

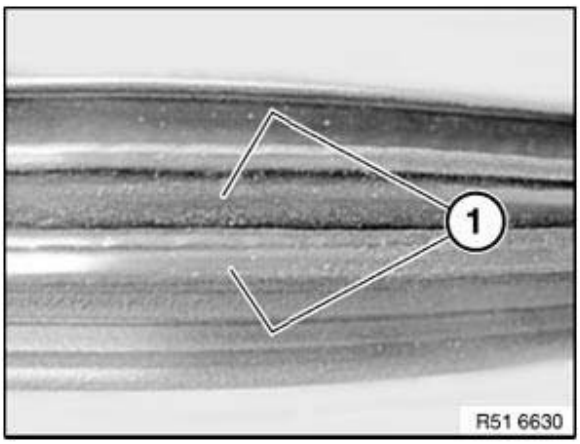


Fig. 444: Identifying Clamping Area
Courtesy of BMW OF NORTH AMERICA, INC.

- Joint seals which are fitted with plastic clips must rest rigidly on the body. Otherwise, the clips or the joint seal must be replaced.

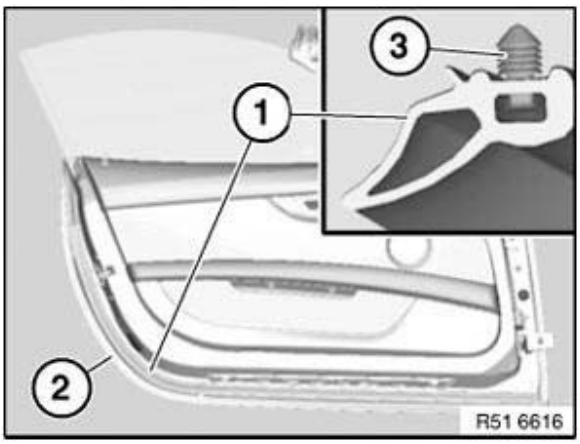


Fig. 445: Identifying Joint Seal With Plastic Clips
Courtesy of BMW OF NORTH AMERICA, INC.

51 13 115 REMOVING AND INSTALLING/REPLACING COWL PANEL COVER

Necessary preliminary tasks

- Remove **BOTH WINDSCREEN WIPER ARMS**

Disengage catch (1).

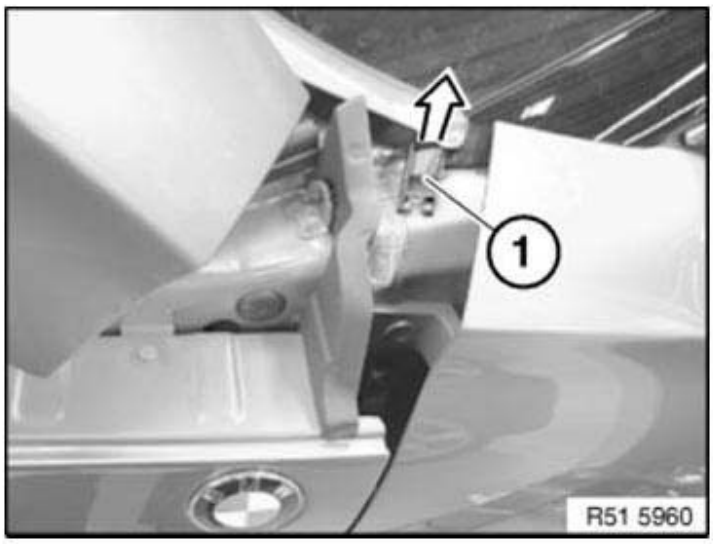


Fig. 446: Removing Catch
Courtesy of BMW OF NORTH AMERICA, INC.

Release cable from cable holder (1).

Remove clips (2) and remove cowl panel cover.

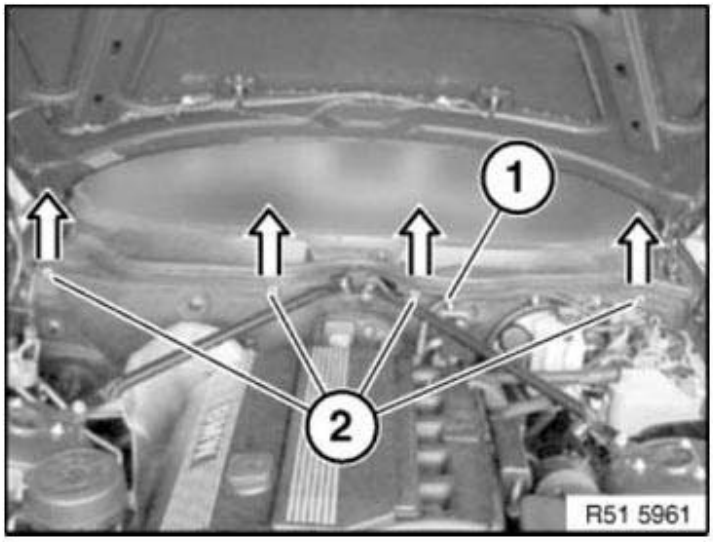


Fig. 447: Removing Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If necessary, replace defective grommets (1).

Check holder (2) for correct seating.

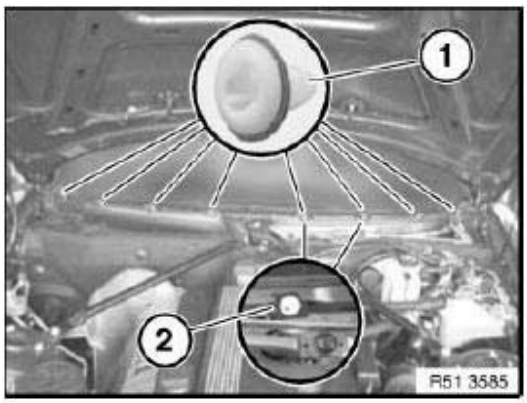


Fig. 448: Identifying Defective Grommets With Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Clips (1) must not be missing or damaged.

Retaining tabs (2) must not be damaged

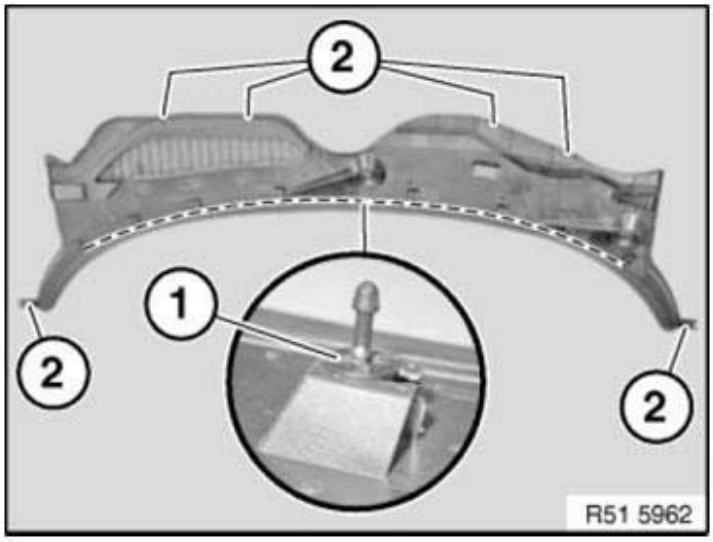


Fig. 449: Identifying Clips And Retaining Tabs
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 000 REMOVING AND INSTALLING/REPLACING SEAL ON FRONT DOOR, LEFT OR RIGHT

Pull joint seal (1) off door (2).

Installation:

If necessary, lever out clips (3) remaining in door.

If necessary, replace faulty clips (3).

Slide clips (3) into joint seal (1).

Clip joint seal (2) onto bodyshell.

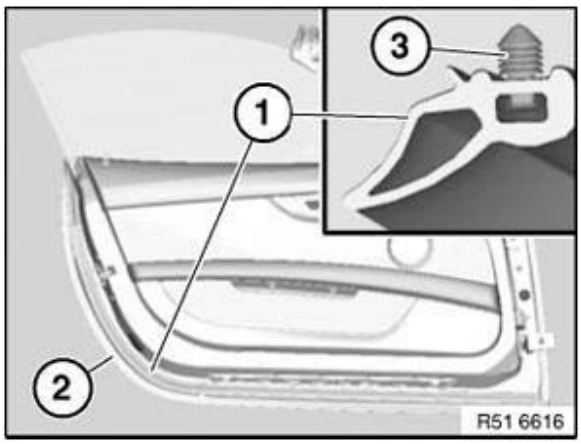


Fig. 450: Identifying Joint Seal With Plastic Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Lever off side panel shaft seal (1) towards top and unclip.

Remove door seal (2) from body (3).

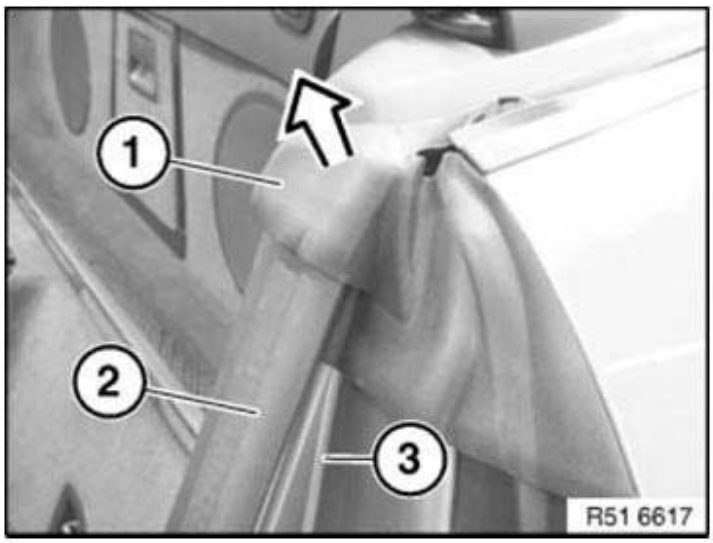


Fig. 451: Removing Side Panel Shaft Seal
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Insert clip (2) in window cavity cover strip (1) if this remains on trim (3) during removal.

Clip window cavity cover strip (1) on trim (3) and body (4).

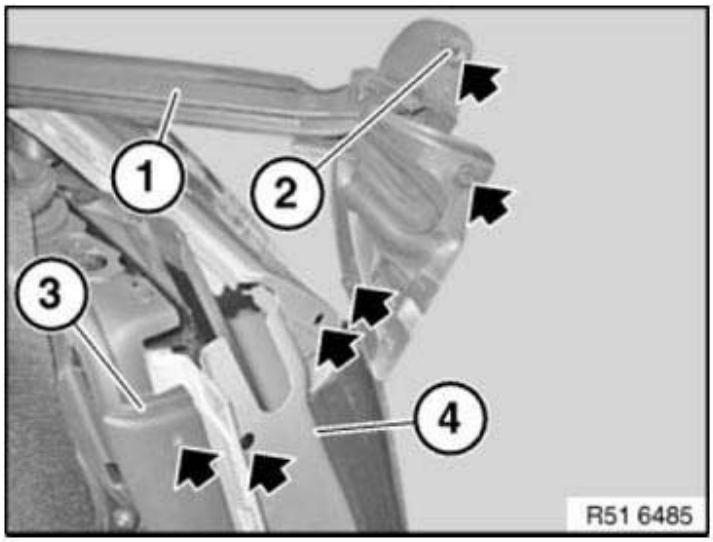


Fig. 452: Identifying Window Cavity Cover Strip With Trim And Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Lever off A-pillar seal (1) towards top.

Remove door seal (2) from body (3).

Installation:

- Observe **FITTING OF SEALS**

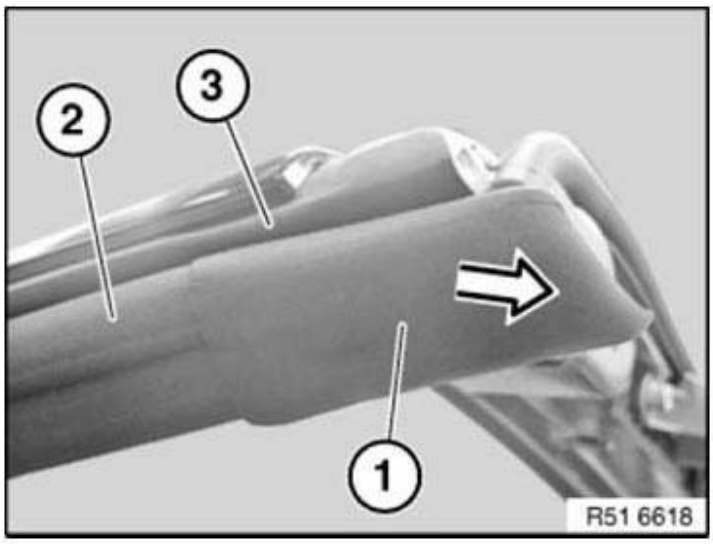


Fig. 453: Removing A-Pillar Seal
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 447 REMOVING AND INSTALLING OR REPLACING PANEL FOR COVER ON LEFT OR RIGHT SIDE MEMBER

Release screws (1 and 2).

Release clips (3).

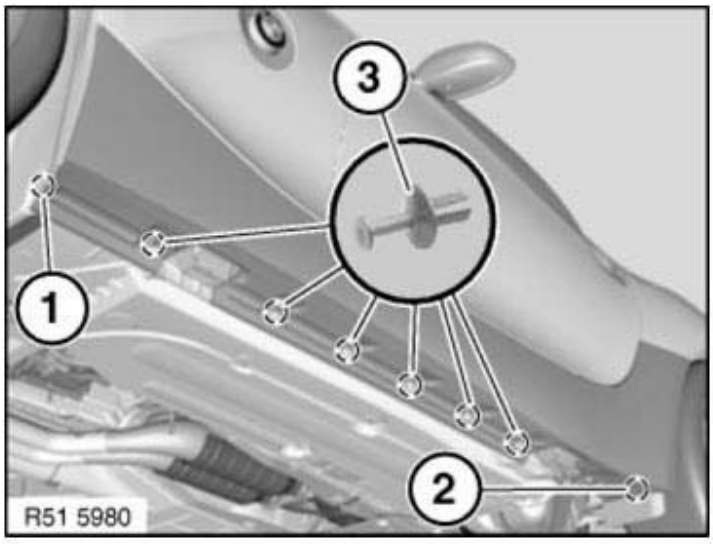


Fig. 454: Identifying Screws And Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip panel (1) in areas (A and B) from holders in direction of arrow.

Release panel (1) at clips (2) and remove in direction of arrow.

Installation:

Catches of panel (1) in areas (A and B) must not be damaged.

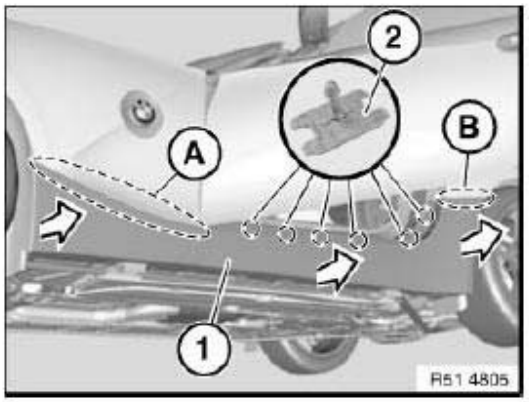


Fig. 455: Removing Panel From Holders
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Holders (1 and 2) must not be damaged.

If necessary, detach clips (3) from body and attach to panel for cover on side member.

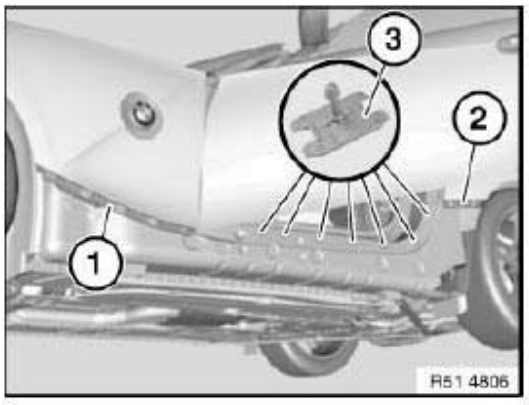


Fig. 456: Identifying Holders And Clips
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Make sure seal (1) is correctly seated on body and after assembly pay attention to **GAP DIMENSIONS** .

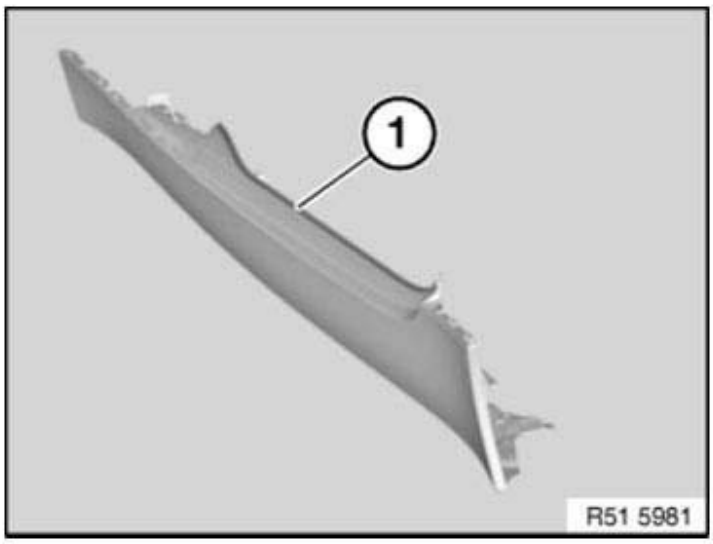


Fig. 457: Identifying Seal On Body
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 038 REMOVING AND INSTALLING/REPLACING FRONT LEFT OR RIGHT WHEEL ARCH COVER (FRONT SECTION)

NOTE: Prior to removing, pay attention to the exact installation position with respect to the adjoining components.

Necessary preliminary tasks:

- Remove **FRONT WHEEL**

Unscrew all bolts.

Unscrew nuts (1).

Remove cover (2).

Installation:

Make sure cover (2) is correctly seated.

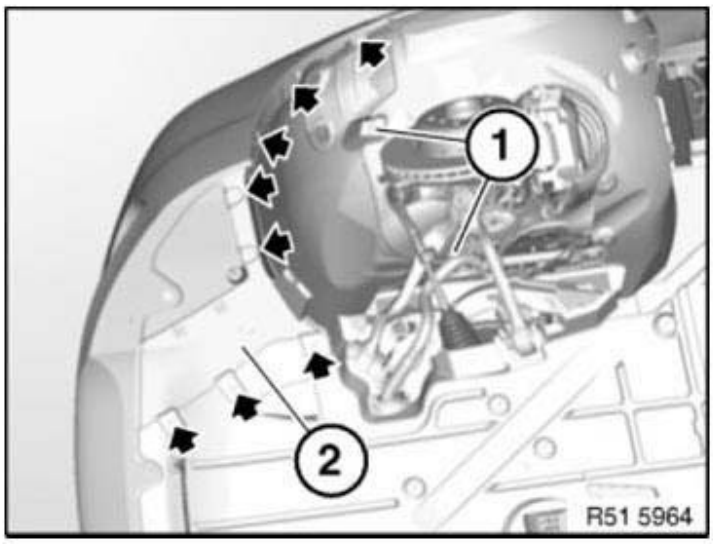


Fig. 458: Identifying Wheel Arch Cover With Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Feed out wheel arch cover (2) towards bottom.

Installation:

Make sure wheel arch cover (2) is exactly seated.

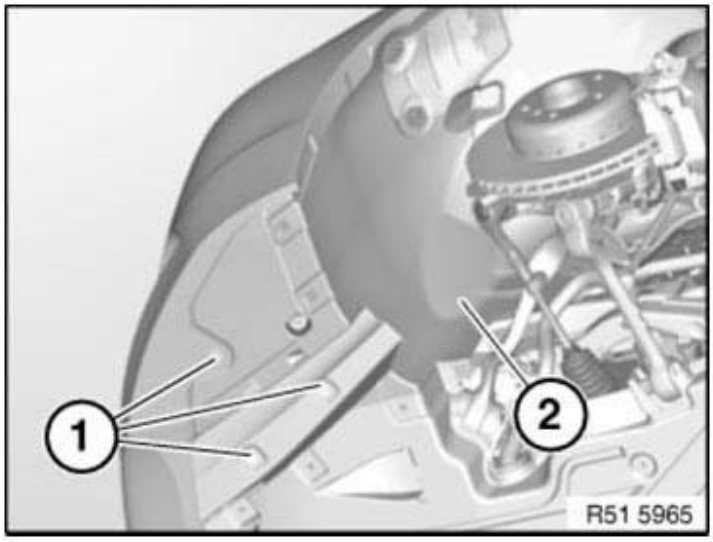


Fig. 459: Identifying Wheel Arch Cover With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 039 REMOVING AND INSTALLING/REPLACING FRONT LEFT OR RIGHT WHEEL ARCH

COVER (REAR SECTION)

NOTE: Prior to removing, pay attention to the exact installation position with respect to the adjoining components.

Necessary preliminary tasks:

- Remove **FRONT WHEEL**

Release all nuts.

Release screw (1).

Lever out clips (2).

Remove cover (3).

Installation:

Make sure cover (3) is correctly seated.

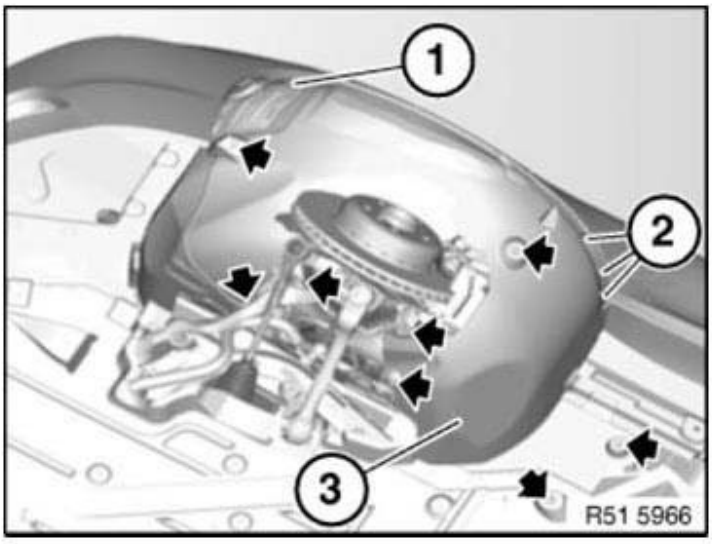


Fig. 460: Identifying Wheel Arch Cover With Screw And Clips
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 ... REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT DIAGONAL STRUT

Necessary preliminary tasks

- Remove **FRONT UNDERBODY PROTECTION**
- Remove **COOLANT EXPANSION TANK**

- Remove **INTAKE FILTER HOUSING**

Release screws and nuts (1).

Tightening torque **51 71 27AZ** .

Remove diagonal struts (2).

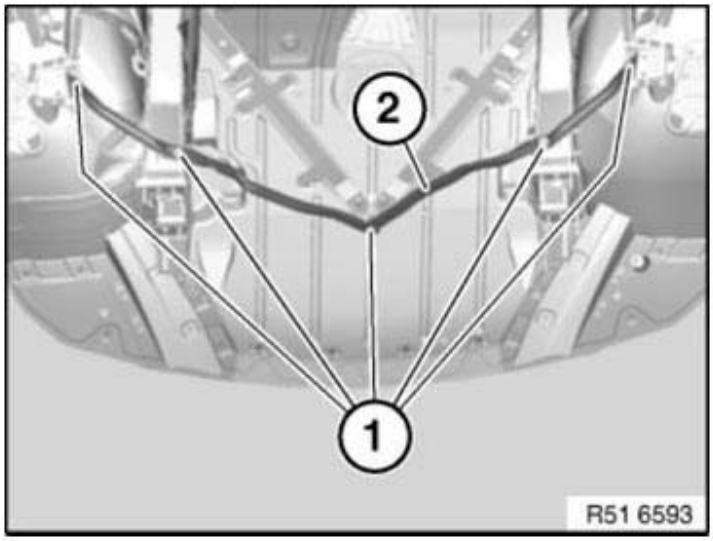


Fig. 461: Identifying Diagonal Struts With Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 482 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT TENSION STRUT

IMPORTANT: Vehicles must not be driven without tension struts.

Driving without tension struts may damage the vehicle body.

Tension strut bolts must be tightened to torque and then tightened down with special tool 00 9 120.

Tension strut, left and right

Release bolts (1, 2) and nuts (3) and remove tension strut (4).

Installation:

Replace bolts (1 and 2).

- Bolt (1) M10x50

Tightening torque **51 71 29AZ** .

- Bolt (2) M8x35

  Tightening torque **51 71 30AZ** .

- Nut (3)

Tightening torque **51 71 31AZ** .

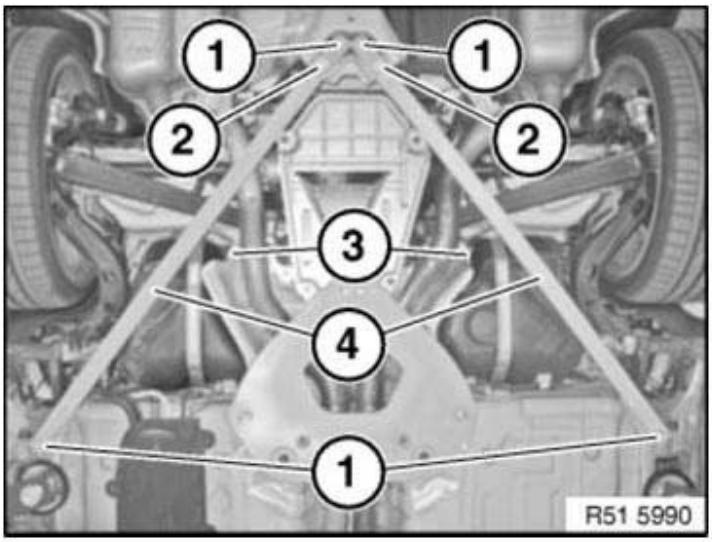


Fig. 462: Identifying Tension Strut With Bolts And Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 041 REMOVING AND INSTALLING/REPLACING REAR LEFT OR RIGHT WHEEL ARCH COVER

Necessary preliminary tasks

- Remove **REAR WHEEL**

Release all nuts (1).

Remove cover (2).

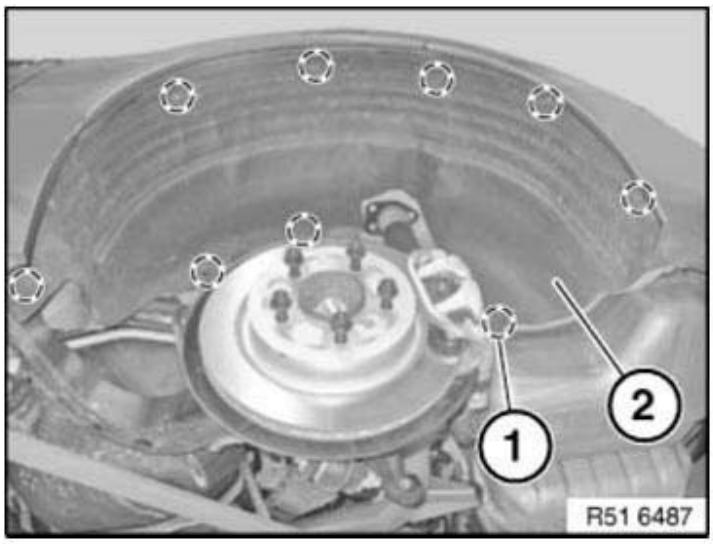


Fig. 463: Identifying Wheel Arch Cover And Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Carefully lift in wheel arch cover (1) with special tool 00 9 317 .

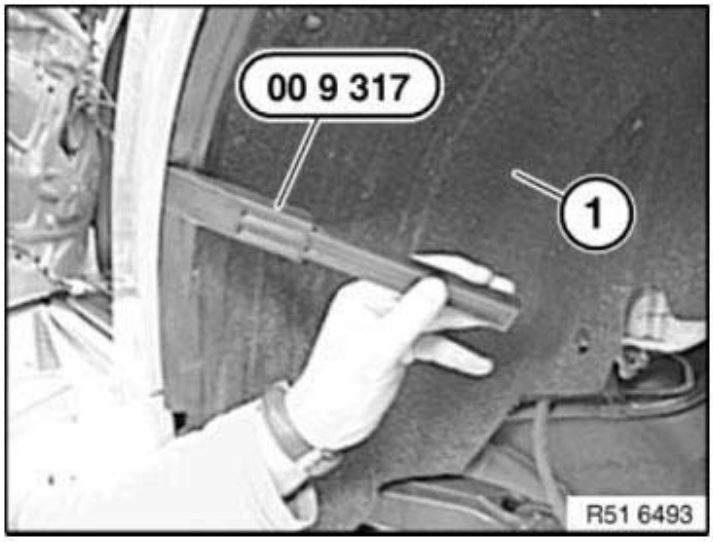


Fig. 464: Lifting Wheel Arch Cover Using Special Tool (00 9 317)
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 ... REMOVING AND INSTALLING/REPLACING REAR LEFT OR RIGHT WHEEL ARCH SPLASH GUARD

Release screw and nut (1).

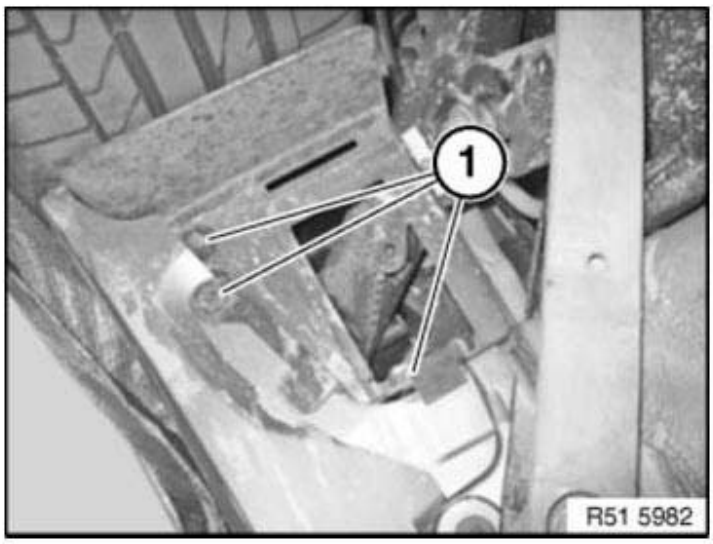


Fig. 465: Identifying Wheel Arch Splash Guard Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Release cable holder (1).

Remove splash guard (2).

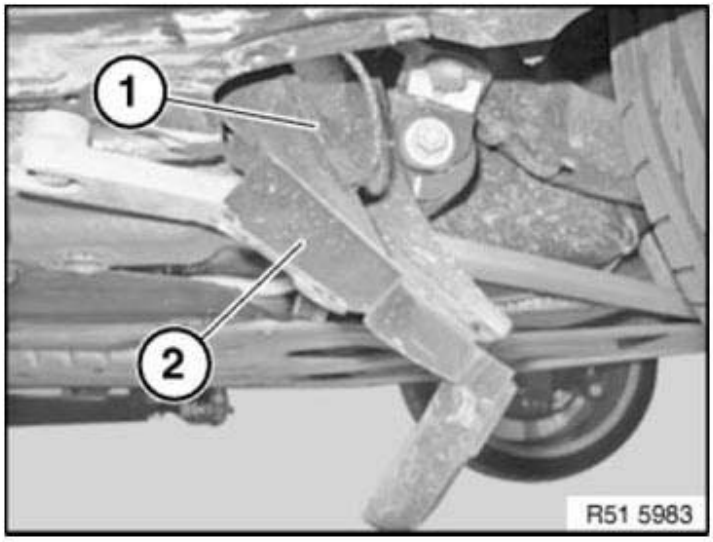


Fig. 466: Identifying Splash Guard With Cable Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Engage lug for cable (1) on stud (2).

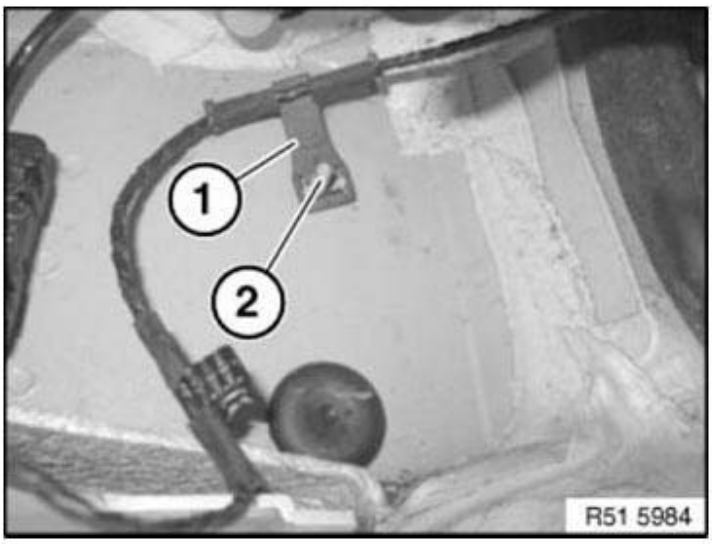


Fig. 467: Identifying Cable On Stud
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 390 REMOVING AND INSTALLING/REPLACING REINFORCEMENT PLATE ON REAR AXLE

IMPORTANT: Vehicles must not be driven without reinforcement plates.

Driving without the reinforcement plate may damage the vehicle body.

Screws of reinforcement plate must be tightened to torque and then tightened down with special tool 00 9 120 .

Release screws (1) and remove heat shield (2).

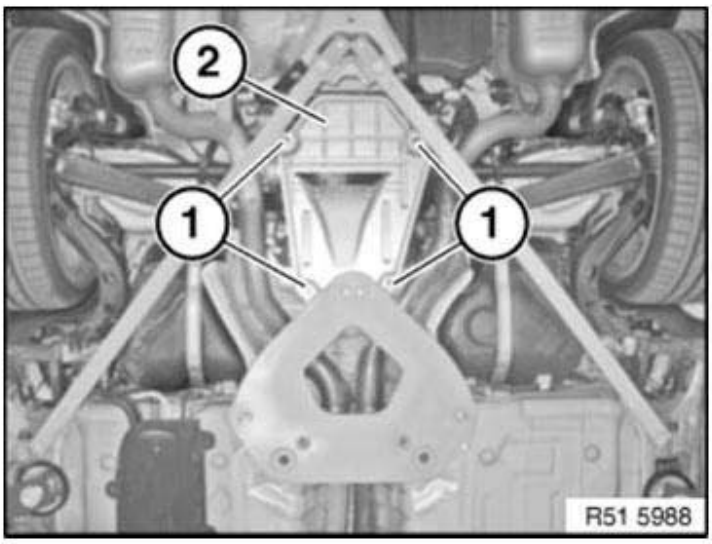


Fig. 468: Identifying Heat Shield With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **51 71 24AZ** .

Unscrew nuts (2).

Tightening torque **51 71 25AZ** .

Unscrew nuts (3).

Tightening torque **51 71 26AZ** .

Remove thrust panel (reinforcement plate) (4).

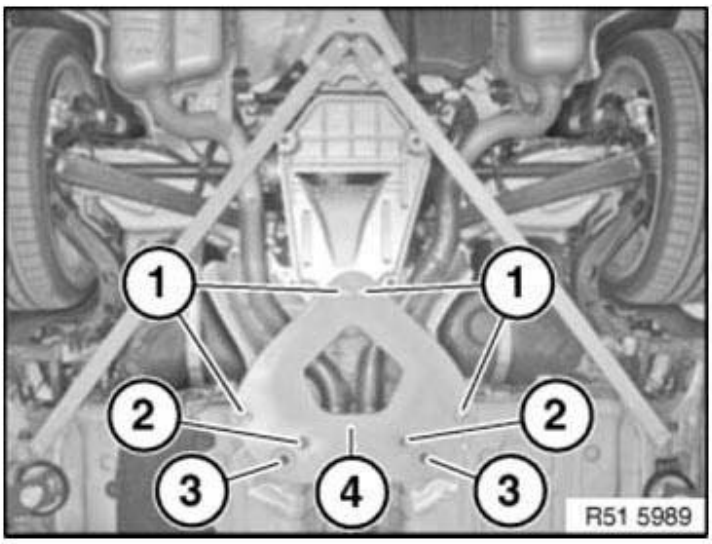


Fig. 469: Identifying Thrust Panel (Reinforcement Plate) With Screws And Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Replace screw (1).

- Tighten down screws (1) to specified torque and then to angle of rotation.

51 71 360 REMOVING AND INSTALLING/REPLACING SEAL FOR REAR LID

Necessary preliminary tasks

- If necessary, open folding roof
- If necessary, open luggage compartment lid

The right side is removed in the same way as the left side.

Release screws (1).

Remove seal (2).

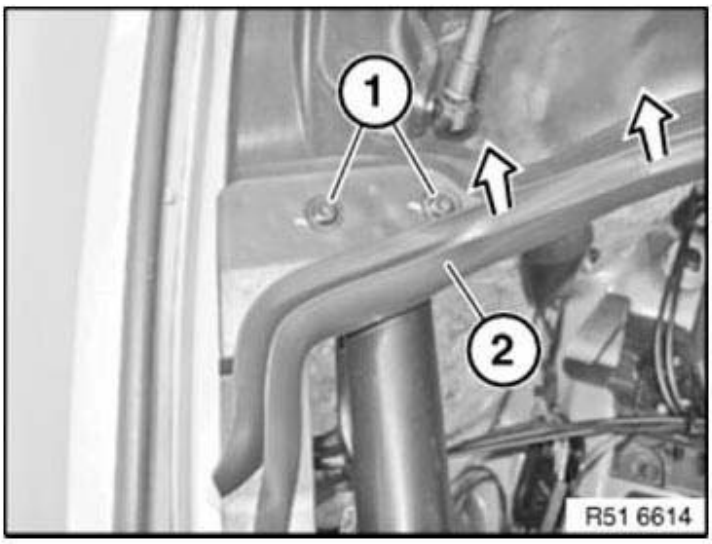


Fig. 470: Removing Seal
Courtesy of BMW OF NORTH AMERICA, INC.

The right side is removed in the same way as the left side.

Release screw (1).

Lever off seal (2).

Lever off seal (3).

Installation:

- Observe **FITTING OF SEALS**

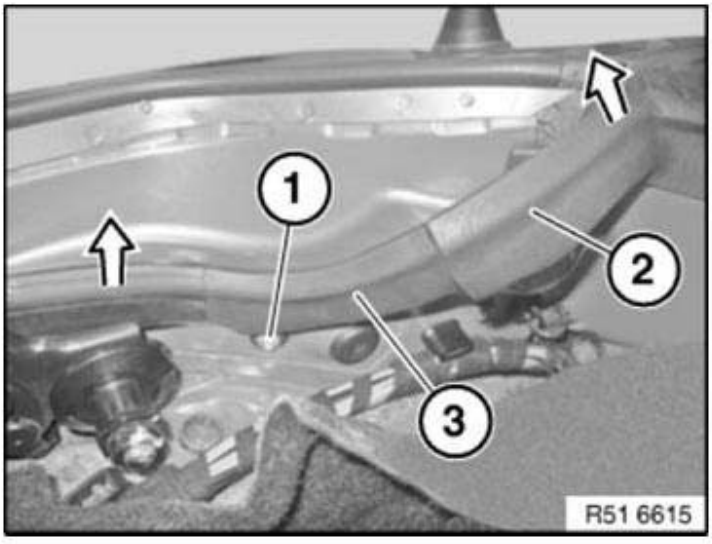


Fig. 471: Removing Seal
Courtesy of BMW OF NORTH AMERICA, INC.

51 71 371 REMOVING AND INSTALLING/REPLACING TENSION STRUT ON LEFT OR RIGHT SPRING STRUT DOME

IMPORTANT: Vehicles must not be driven without tension struts.

Driving without tension struts may damage the vehicle body.

Tension struts can be secured with screws or nuts.

Screws must be tightened to specified torque and then tightened down with special tool 00 9 120 .

Release screw (1).

Lift out expanding rivets (2).

Remove cable holder (3).

Release screws (4).

Tightening torque **51 71 4AZ** .

Installation:

Replace screws (4), tighten to specified torque and then to angle of rotation.

Remove tension strut (5).

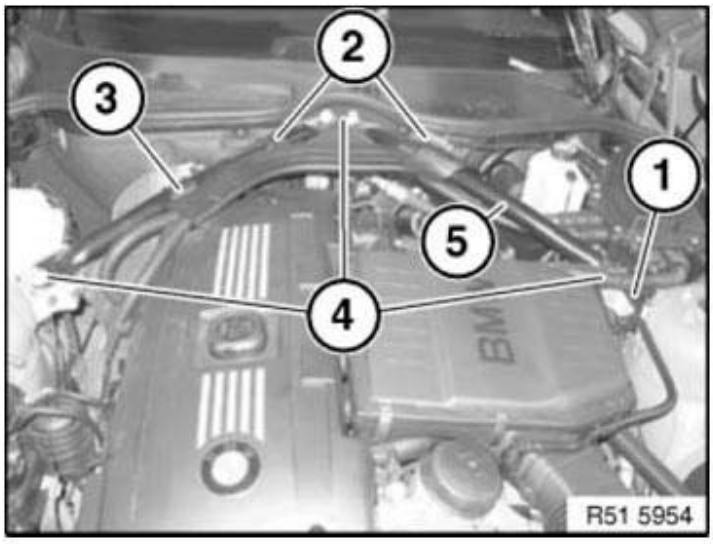


Fig. 472: Identifying Tension Strut With Expanding Rivets, Cable Holder And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

51 76 040 REMOVING AND INSTALLING/REPLACING WINDOW FRAME SEAL

Necessary preliminary tasks

- Open folding roof
- Remove **TRIM STRIPS FROM WATER GUTTER**

IMPORTANT: Seal (1) features an aluminum strip (3).

Carefully wind out seal (1) (windscreen breakage).

Release all screws (2) on windscreen frame strip (3).

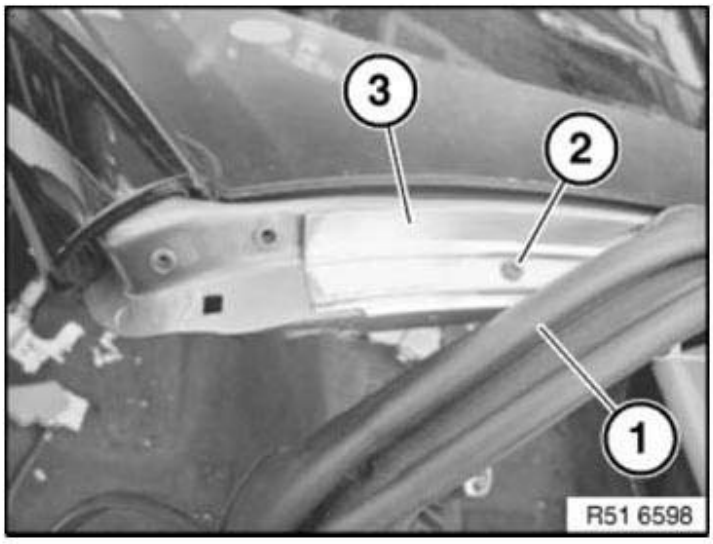


Fig. 473: Identifying Seal And Screws On Windscreen Frame Strip
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

In order to ensure tightness, the butyl rope (1) must be placed between the upper and lateral aluminum profiled insert (2), see diagram.

Butyl rope:

Length = 60 mm

Dia. = 4 mm

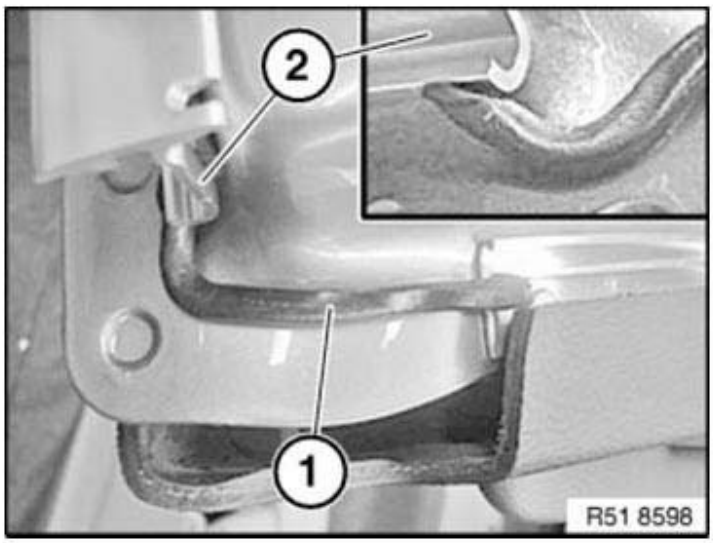


Fig. 474: Identifying Butyl Rope And Aluminum Profiled Insert
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Insert windscreen frame strip (1) over entire length into

A-pillar seal (2).

NOTE: Tear-off lip (3) can be stuck on adhesive.

When seal (2) is removed, tear-off lip (3) can tear off and remain in vehicle.

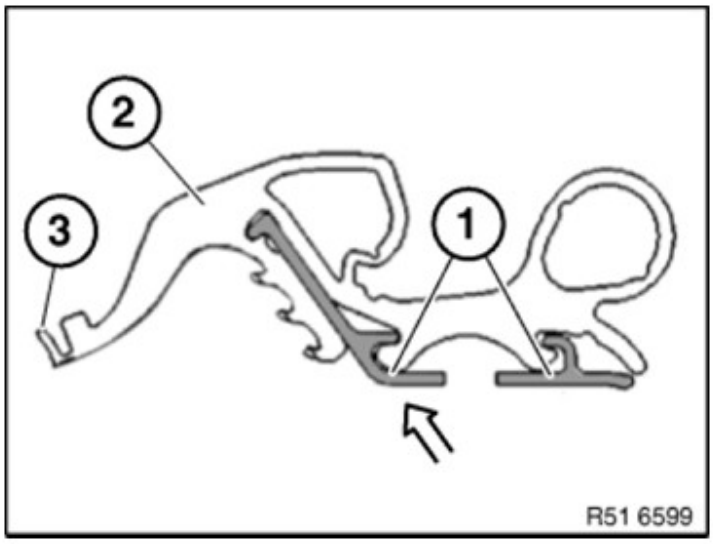


Fig. 475: Inserting Windscreen Frame Strip Over Entire Length

Courtesy of BMW OF NORTH AMERICA, INC.

Replacement of seal without windscreen removal

Detach tear-off lip (3) from seal (2).

If adhesive leaks over tear-off lip (3), this area must be cut out partially.

To facilitate installation, coat seal (2) and body aperture with water.

Pay attention to centre marking when installing seal (2).

1 Aluminum strip

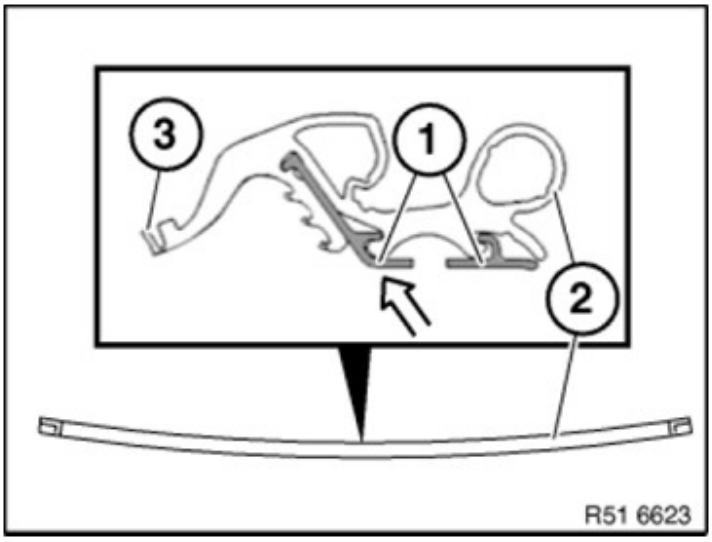


Fig. 476: Inserting Windscreen Frame Strip Over Entire Length
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement of seal frame with removed or new windscreen

Pay attention to centre marking when installing seal (2) with tear-off lip (3).

1 Aluminum strip

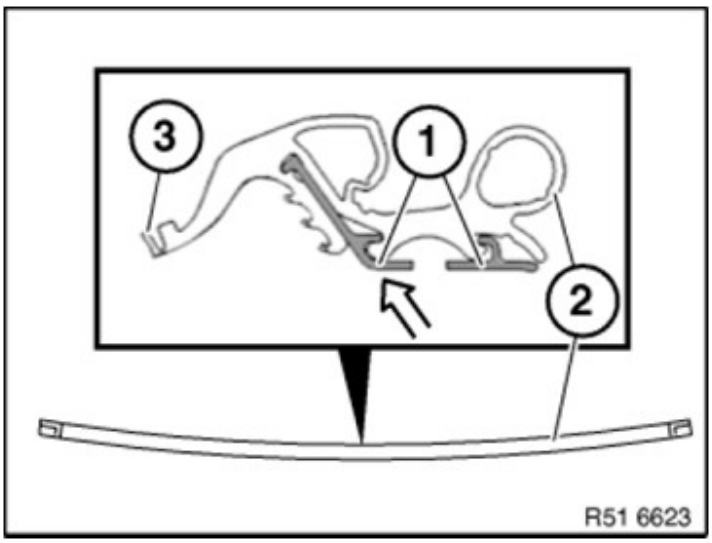


Fig. 477: Inserting Windscreen Frame Strip Over Entire Length
Courtesy of BMW OF NORTH AMERICA, INC.

Check and if necessary adjust adjustment of windscreen frame seal to roof shell seal.

For necessary operations, refer to:

ADJUSTMENT OF WINDSCREEN FRAME SEAL

51 32 211 REPLACING FRONT LEFT OR RIGHT RUBBER GUIDE FOR LEFT OR RIGHT DOOR WINDOW

Necessary preliminary tasks

- Remove **INNER WINDOW CAVITY COVER STRIP**
- Remove **OUTER WINDOW CAVITY COVER STRIP**
- Remove **SOUND INSULATION** in front area

Pop rubber guide (1) in area (A) out of door.

Pull rubber guide (1) out of window guide rail and remove towards top.

Installation:

Moisten rubber guide (1) with water before fitting.

Slide rubber guide (1) from above into window guide rail and if necessary retighten at bottom.

Make sure rubber guide (1) is correctly seated on door and door window glass.

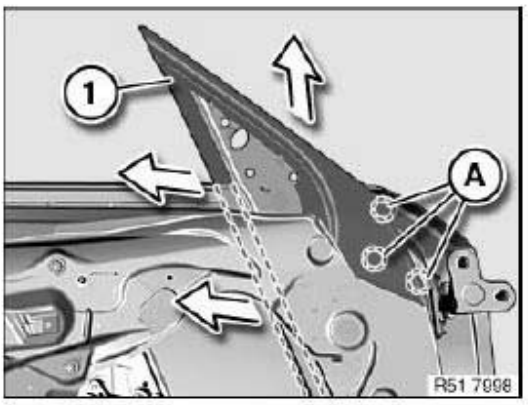


Fig. 478: Pulling Rubber Guide Out Of Window Guide Rail
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Coat contact surface of window glass with Vaseline, especially in top corner (2).

Rubber guide (1) must not be damaged in corners (2).

If necessary, replace rubber guide.

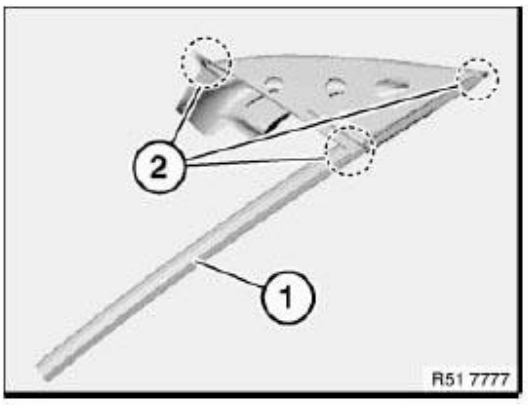


Fig. 479: Identifying Rubber Guide On Corners
Courtesy of BMW OF NORTH AMERICA, INC.

5172 MUCKET FOR DOORS

51 70 ... FITTING SEALS

NOTE: All seals on the vehicle must be removed with the utmost care. Incorrect fitting may result in among other things wind noises and water ingress, and may compromise closing and opening comfort.

- **The following instructions always apply:**

  Seals which are attached to the side frame can be removed and fitted as often as desired.

- Seals must not be damaged or cracked.

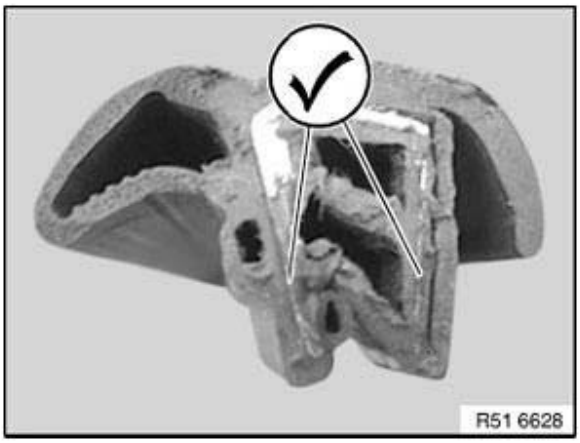


Fig. 480: Identifying Correct Position For Fitting Seals
Courtesy of BMW OF NORTH AMERICA, INC.

- The clamping area must be pressed together by hand to such an extent that rigid attachment to the side flange is still possible. The sides of the seal are permitted to touch each other slightly. A fully compressed seal is not permitted.
- A special tool to press the clamping area together is not needed. Careful fitting by hand is sufficient.
- The seals must always be fitted over their full extent. There is no defined pressing force.
- If seals are repeatedly removed and fitted in the rear lid area, a new seal must be fitted (water ingress in event of sheet flaws).

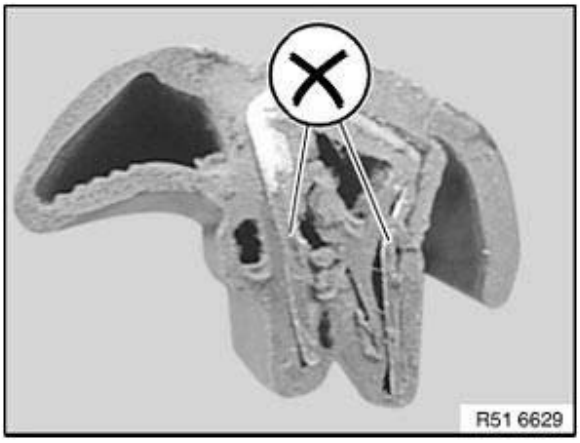


Fig. 481: Identifying Improper Position For Fitting Seals
Courtesy of BMW OF NORTH AMERICA, INC.

- Seals must be checked after fitting for correct seating. If necessary, the seals must be lifted over the adjacent components with a suitable tool. Adjacent components must not be damaged.
- Seals must be replaced when the metal insert in the seal is visible (corrosion).
- The clamping area must be uniform.

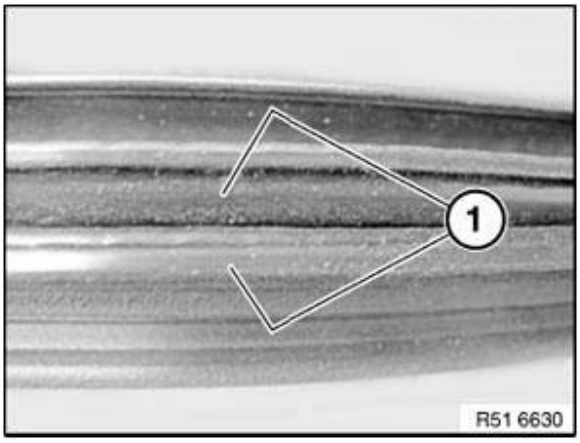


Fig. 482: Identifying Clamping Area
Courtesy of BMW OF NORTH AMERICA, INC.

- Joint seals which are fitted with plastic clips must rest rigidly on the body. Otherwise, the clips or the joint seal must be replaced.

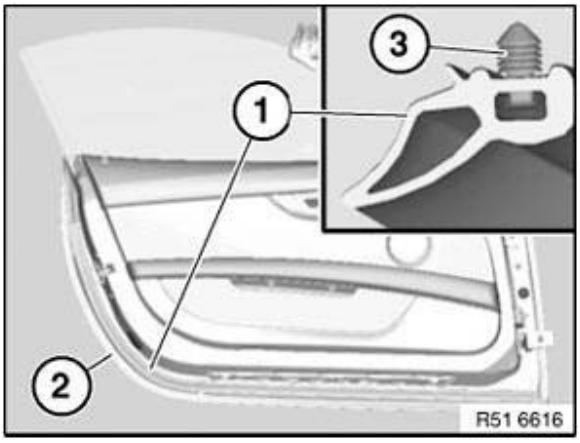


Fig. 483: Identifying Joint Seal With Plastic Clips
Courtesy of BMW OF NORTH AMERICA, INC.

51 BODY EQUIPMENT

51-2190 ADJUSTER

0494325 512190 Adjuster Minimum set: Mechanical tools MW

NOTE: (Door lock tensioner) For pre-tensioning front and rear door locks when installing. Change to tool through use of noise-optimised locks from 02/2004. Illustration items: 1 = knurled nut 51 2 191 2 = support 51 2 192 3 = protection 51 2 196 4 = mandrel 51 2 197

Storage Location

B44

C44

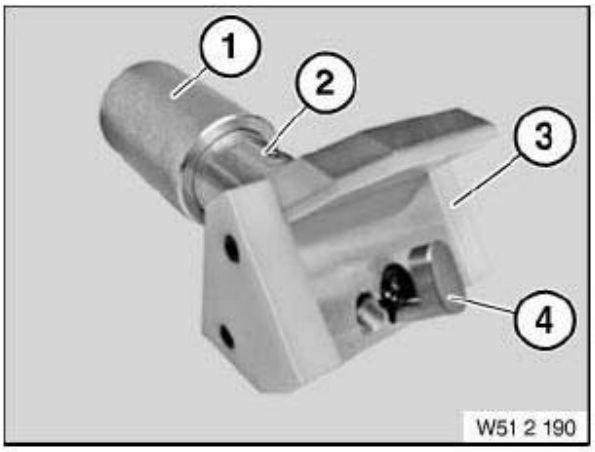


Fig. 1: Identifing Adjuster (512190)

SI number

01 06 02 (864)

Consisting of:

2 = 0494472 Guard

NOTE: Is replaced by 51 2 196 with the use of noise-optimised locks from 02/2004 Replaced by 51 2 196 (0 494 906)

2 = 0494473 Mandrel

NOTE: Is replaced by 51 2 197 with the use of noise-optimised locks from 02/2004 Replaced by 51 2 197 (0 494 907)

4 = 0494907 Mandrel

NOTE: Replaces mandrel 51 2 194

1 = 0494470 Nut

NOTE: (Knurled nut)

2 = 0494471 Support

2 = 0494474 Shaped element

NOTE: E85 (discontinued)

3 = 0494906 Guard

NOTE: Replaces guard 51 2 193

51-3300 ADJUSTER

0495590 513300 Adjuster Minimum set: Mechanical tools MW

NOTE: (special tool for door window glass adjustment) For adjusting door window glass in "Y" direction

Storage Location

A18

B18

C18

SI number

01 14 06 (280)

Consisting of:

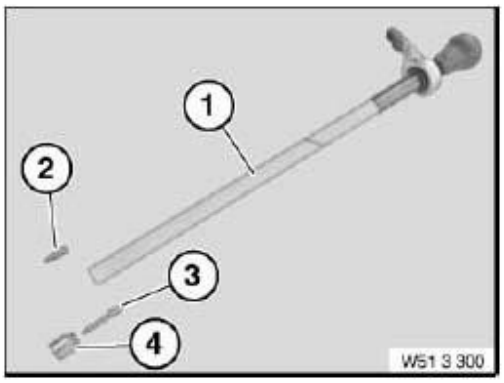


Fig. 2: Identifing Adjuster (513300)

3 = 0496201 Torx

NOTE: (Torx bit, long)

1 = 0495624 Handle

NOTE: (shank)

2 = 0495625 Torx

NOTE: (Torx bit (15))

4 = 0496202 Socket

NOTE: (socket SW13 (adapter))

51-2040 BOX WRENCH

0492594 512040 Box Wrench MW

NOTE: For lock barrel screw connection (threaded ring) of tailgate E93 impact plate, tailgate



W51 2 040

Fig. 3: Identifing Box Wrench (512040)

51-0103 BRIDGE

51 0 103 Bridge

NOTE: Gantry crane

SI number

6 04 03 (046)

51-2197 DRIFT

51 2 197 Drift

NOTE: Replaces drift 51 2 194

51-0360 FITTING AID

0496614 510360 Fitting aid Minimum set: Mechanical tools MW

NOTE: For adjusting door window in X-axis

Storage Location

A26

B26

SI number

01 09 09 (532)

Consisting of:

1 = 0496619 Fitting aid

NOTE: **(Fitting aid, left)**

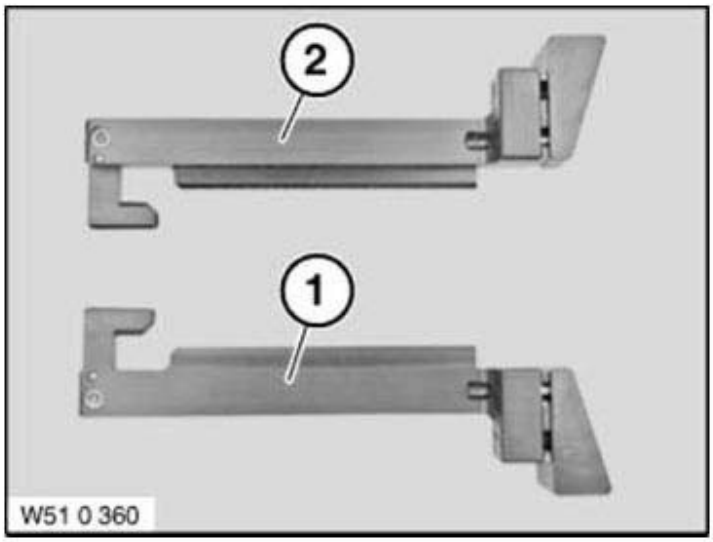


Fig. 4: Identifing Fitting Aid (510360)

2 = 0496620 Fitting aid

NOTE: **(Fitting aid, right)**

51-0000 GAUGE

0496710 510000 Gauge Minimum set: Mechanical tools MW

NOTE: **For measurement of retraction depth of window glass (replaces special tool 51 3 080 as of 10/2009).**

SI number

01 22 09 (587)



Fig. 5: Identifing Gauge (510000)

51-0010 GAUGE

0495259 510010 Gauge Minimum set: Mechanical tools MW

NOTE: (test gauge for installing windscreen and rear window) (replaces special tool 51 3 210 from 06/2005)

Storage Location

B2

SI number

01 10 05 (189)

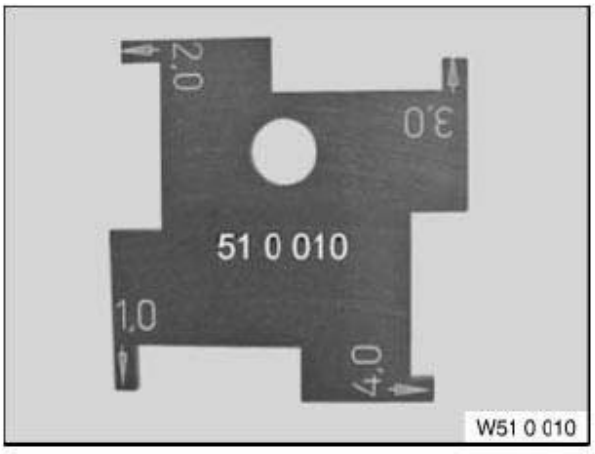


Fig. 6: Identifing Gauge (510010)

51-3270 HANDLE

0494633 513270 Handle MW

NOTE: (pull handles) Cutting wire pull handles fore removing rear, quarterlight and side windows

SI number

01 13 03 (001)

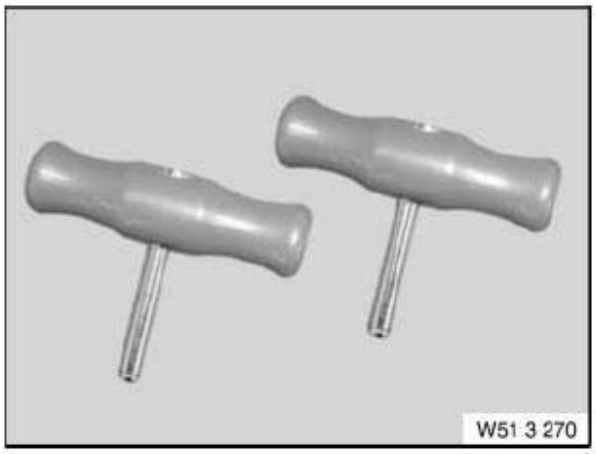


Fig. 7: Identifing Handle (513270)

51-0107 HOISTING WINCH

51 0 107 Hoisting winch

NOTE: for windscreen/rear window locating fixture on gantry crane

SI number

6 04 03 (046)

51-0108 HOISTING WINCH

51 0 108 Hoisting winch

NOTE: for side window locating fixture on gantry crane

SI number

6 04 03 (046)

51-3000 HOLDER

0492608 513000 Holder MW

NOTE: (Window glass holder) For holding the front and rear window glass when mounting the window glass/replaced by 51 3 010. (0 492 609)

51-2196 PROTECTION

51 2 196 Protection

NOTE: Replaces protection 51 2 193

51-3340 RELEASE TOOL

0496577 513340 Release tool Minimum set: Mechanical tools MW

NOTE: (release slide) For removing outer door handle.

Storage Location

C26

SI number

01 09 09 (532)

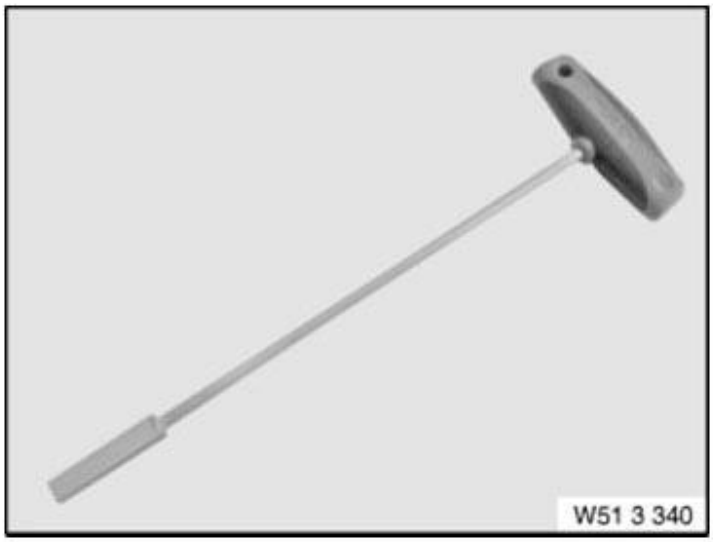


Fig. 8: Identifing Release Tool (513340)

51-3310 REVERSIBLE RATCHET

0495591 513310 Reversible ratchet Minimum set: Mechanical tools MW

NOTE: (ratchet wrench) For adjusting door window glass in x- and z-axes

Storage Location

A18

SI number

01 14 06 (280)

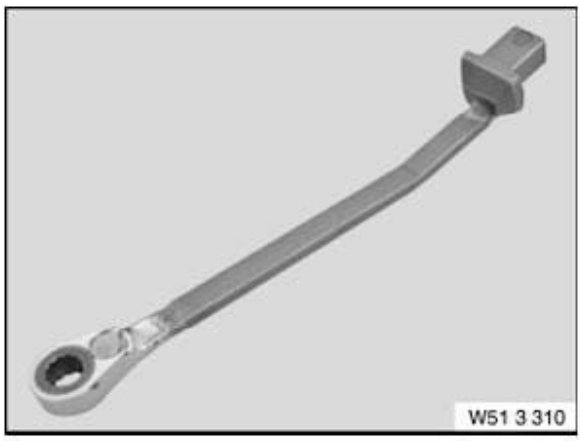


Fig. 9: Identifing Reversible Ratchet (513310)

51-0300 ROLLER

0495505 510300 Roller MW

NOTE: (Contact roller) For pressing sound insulation into doors; various rubber seals and covers

Storage Location

B19

SI number

01 07 06 (271)

Consisting of:

1 = 0495843 Handle

2 = 0495844 Roller



Fig. 10: Identifing Roller (510300)

51-0105 SIDE WINDOW LOCATING FIXTURE

51 0 105 Side window locating fixture

NOTE: for gantry crane

SI number

6 04 03 (046)

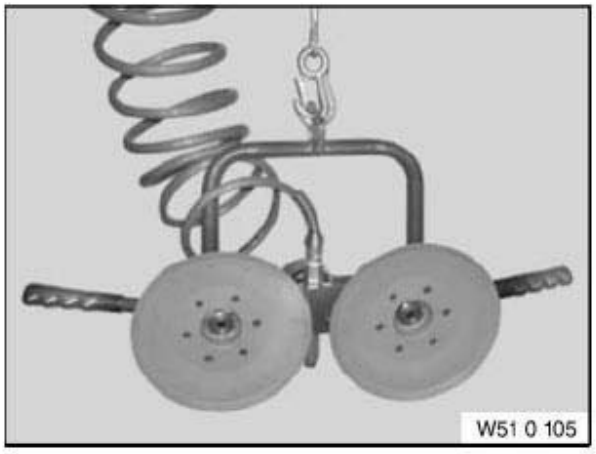


Fig. 11: Identifing Side Window Locating Fixture (510105)

51-3010 SIPHON

0492609 513010 Siphon MW

NOTE: **(Siphon (2 pieces)) For removal and installation of the window glass. Is replaced by 81 64 2 184 377, see Service Information (bulletin) 08 01 10 (635).**

SI number

01 05 86 (604)

Consisting of:

1 = 0493119 Suction cup

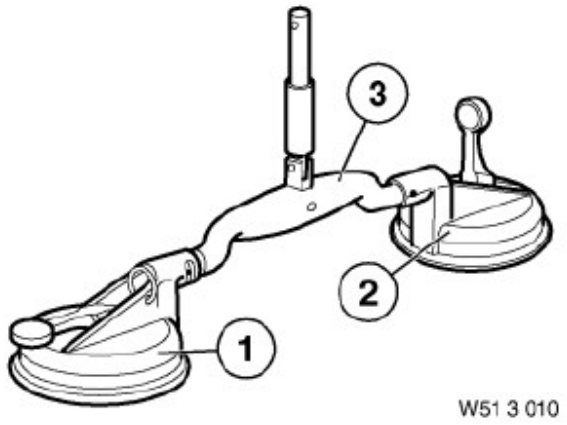


Fig. 12: Identifing Siphon (513010)

NOTE: **With elongated hole, suspension can be moved around all axles. Is replaced by 81 64 2 184 377, see Service Information (bulletin) 08 01 10 (635)**

2 = 0493120 Suction cup

NOTE: **With bore hole, suspension can only be moved in longitudinal direction. Is replaced by 81 64 2 184 377, see Service Information (bulletin) 08 01 10 (635).**

3 = 0493121 Handle

NOTE: **(Grab handle): Is replaced by 81 64 2 184 377, see Service Information (bulletin) 08 01 10 (635).**

2 = 0493267 Plate

NOTE: **(rubber plate without joint)**

2 = 0493268 Joint

NOTE: **(joint without rubber plate)**

51-0109 SUCTION CUP

51 0 109 Suction cup

NOTE: **Gantry crane**

SI number

6 04 03 (046)

51-2110 SUPPORT

0492600 512110 Support MW

NOTE: **For the engine compartment lid when removing the engine/Replaced by 51 2 140.(0 492 603)**



W51 2 110

Fig. 13: Identifing Support (512110)

51-2170 SUPPORT

0493647 512170 Support Minimum set: Mechanical tools MW

NOTE: (Bonnet support (2 x)) For retaining the engine compartment lid in the working position

Storage Location

A2

SI number

01 15 99 (483)

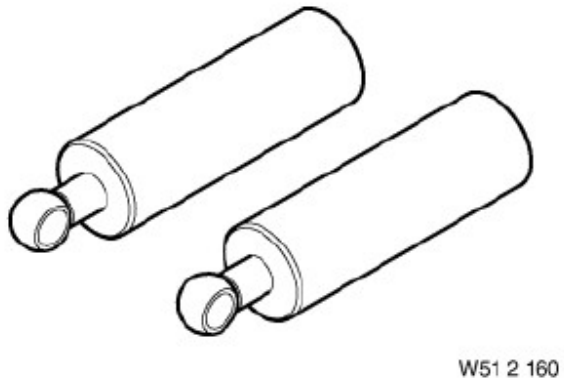


Fig. 14: Identifing Support (512170)

51-0102 SUPPORT, LEFT

51 0 102 Support, left

NOTE: Gantry crane

SI number

6 04 03 (046)

51-0101 SUPPORT, RIGHT

51 0 101 Support, right

NOTE: Gantry crane

SI number

6 04 03 (046)

51-3080 TOOL

0492634 513080 Tool MW

Replaced by: 0496710

NOTE: **For checking retraction depth when installing side window. From 10/2009 Replaced by 51 0 000.(0 496 710)**

Storage Location

B6

SI number

01 05 90 (207)



W51 3 080

Fig. 15: Identifing Tool (513080)

51-0340 TOOL

0496386 510340 Tool Minimum set: Mechanical tools MW

NOTE: **(Adapter striker) For adjusting disc pretension on frameless BMW door windows**

Storage Location

A25

SI number

01 13 08 (456)

Consisting of:

1 = 0496455 Adapter

2 = 0496456 Steel tape measure

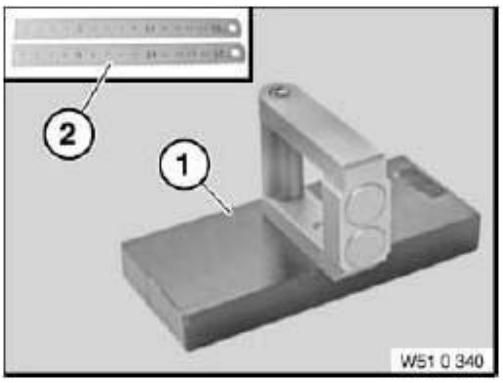


Fig. 16: Identifing Tool (510340)

NOTE: Delivery 2 pcs.

51-2220 TORX

0494645 512220 Torx Minimum set: Mechanical tools MW

NOTE: For removing door handles and window and side window glass

Storage Location

B47

C47

SI number

01 08 03 (988)

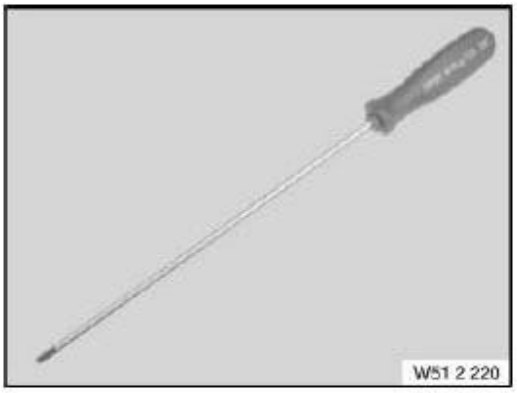


Fig. 17: Identifing Torx (512220)

51-0106 VACUUM PUMP

51 0 106 Vacuum pump

NOTE: for gantry crane

SI number

6 04 03 (046)

51-0104 WINDSCREEN/REAR WINDOW LOCATING FIXTURE

51 0 104 Windscreen/rear window locating fixture

NOTE: Gantry crane

SI number

6 04 03 (046)

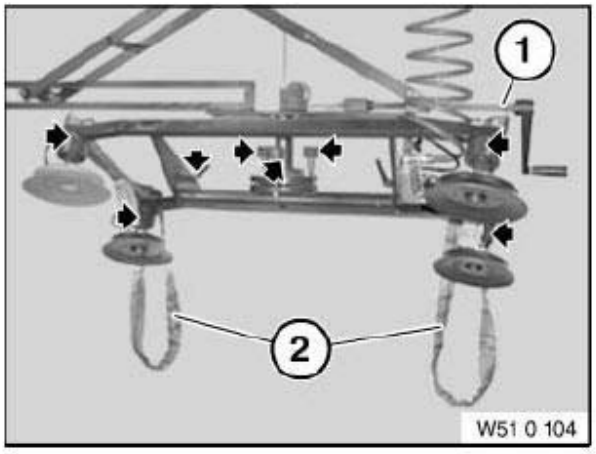


Fig. 18: Identifing Windscreen/Rear Window Locating Fixture (510104)

ELECTRICAL WINDOW SYSTEMS OPERATION FRONT

51 33 ELECTRICAL WINDOW SYSTEMS OPERATION FRONT

TIGHTENING TORQUE SPECIFICATION - ELECTRICAL WINDOW SYSTEMS OPERATION FRONT

		Type	Thread	Tightening specifications	Value
1AZ	Flat motor to power window regulator	E31, E36, E65, E66			5 Nm
		E46, E85, E86			4.5 Nm
		E83			3 Nm
		E60, E61, E63, E64			6 Nm
2AZ	Power window regulator to door	E38, E39, E60, E61, E65, E66, E83			8 Nm
		E36			9 Nm
		E46		Replace nut (self-locking)	9.5 Nm
		E63, E64			9.5 Nm
3AZ	Power window regulator to door	E85, E86			13.3 Nm
4AZ	Power window unit to door	E85/E86			9.5 Nm
5AZ	Flat motor to inner door panel	E89			7.6 Nm
6AZ	Support (terminal clamp) flat motor to inner door panel	E89			9.5 Nm

FRONT BUMPER

51 11 FRONT BUMPER

TIGHTENING TORQUE SPECIFICATION - FRONT BUMPER

		Type	Thread	Tightening specification	Measure
1AZ	Amplifier, mounting,	E89			8 Nm

	bumper, to support, outer				
2AZ	Strut, front panel, to front end	E89,			8 Nm
3AZ	Deformation element to body	E89			21 Nm
4AZ	Carrier to deformation element	E89	M6		8 Nm
5AZ	Carrier to deformation element	E89			23 Nm

FRONT DOOR LOCKS

51 21 FRONT DOOR LOCKS

TIGHTENING TORQUE SPECIFICATION - FRONT DOOR LOCKS

		Type	Thread	Tightening specification	Measure
1AZ	Door lock to front door	E31/E36/E89		Install bolt with bolt cement.	9 Nm
		E46/E53/E60/E61/			9.5 Nm
		E63/E64/E65/E66/E67/E85/E86			8 Nm
		E83			10 Nm
2AZ	Outside handle to front door	E31/E36			10 Nm
3AZ	Door striker to body	E24/E30			24 Nm
		E31/E32/E34			28 Nm
		E65/E66/E67/E85/E86/			19 Nm
		E60/E61/E63/E64/E89/			21 Nm
		E83		Screw length 18 mm	25 Nm
				Screw length 20 mm	18.5 Nm
4AZ	Adjustment screw to door lock	E46			3 Nm
5AZ	Outside handle to lock actuator	E53			3.2 Nm
		E46/E63/E64/E83			2 Nm
		E60/E61			3 Nm
6AZ	Inside door	E46/Saloon/Touring			4 Nm

	opener to front door	E46/Compact			2.7 Nm
		E65/E66/E85/E86			3 Nm
		E67			4 Nm
7AZ	Lock actuator/front cover to front door	E60/E61/E63/E64			2.5 Nm
8AZ	Lock actuator/rear cover to front door	E60/E61/E63/E64			3.3 Nm
9AZ	Door retainer to A-pillar	E85/E86			24 Nm
		E60/E61			21 Nm
		E89			27 Nm
10AZ	Door retainer to door	E60/E61/E85/E86			10 Nm
		E89			12 Nm
11AZ	Adapter plate, drive, to door	E60/E61			7.6 Nm
12AZ	Drive to adapter plate	E60/E61			4 Nm
13AZ	H-strut to inner door plate	E89		Replace screw (self-locking)	7 Nm
14AZ	Power window rail to door	E89			9.5 Nm
15AZ	Carrier, outside door handle, to door outer skin	E89			4.4 Nm
16AZ	Adapter, speaker, to inner door plate	E89			2 Nm
17AZ	Power window motor to inner door plate	E89		Replace screws (self-locking)	7.6 Nm

FRONT DOOR WINDOWS

51 32 FRONT DOOR WINDOWS

TIGHTENING TORQUE SPECIFICATION - FRONT DOOR WINDOWS

		Type	Thread	Tightening specification	Measure
1AZ	Door window glass to power window unit	E88/E92/E93		with special tool **51 3 310**	10 Nm 7 Nm
		E81		with special tool 51 3 240 (longer lever arm, follow formula in repair instructions!)	12 Nm 6 Nm
		E82/E88		with special tool 51 3 240 (longer lever arm, follow formula in repair instructions!)	10 Nm 5 Nm

FRONT DOOR WINDOWS

51 32 FRONT DOOR WINDOWS

TIGHTENING TORQUE SPECIFICATION - FRONT DOOR WINDOWS

		Type	Thread	Tightening specification	Measure
1AZ	Door window glass holder to roller guide	E31/E36/Coupe/Convertible			9 Nm
2AZ	Door window glass to holder	E31/E36/Coupe/Convertible			6 Nm
		E38/E39/E46/E60/E61/E85/E86			8 Nm
		E63/E64/E65/E66/E89/			10 Nm
3AZ	Main stop to window regulator	E31/E36			9 Nm
4AZ	Window guide to body	E36			10 Nm
5AZ	Window winder	E36			6 Nm
6AZ	Power window rail to door	E89			9.5 Nm

FRONT DOOR TRIM PANEL WITH ARMRESTS

51 41 FRONT DOOR TRIM PANEL WITH ARMRESTS

TIGHTENING TORQUE SPECIFICATION - FRONT DOOR TRIM PANEL WITH ARMRESTS

		Type	Thread	Tightening specification	Measure
1AZ	Door trim panel to front door (screw under airbag sticker)	E46/Convertible/Coupe			2.5 Nm
		E85/E86/E46/Compact			4 Nm
		E89			5.0 Nm
		E60/E61/E65/E66/E67/E83			8.0 Nm
2AZ	Door trim panel to front door (screw to armrest or door handle)	E46/Saloon/Touring			2.5 Nm
		E46/Convertible/Coupe			3.0 Nm
		E46/Compact			4 Nm
		E63/E64			3.5 Nm
		E65/E66/E67/E83			8.0 Nm
		E85/E86			7.0 Nm
3AZ	Armrest to door trim panel	E46/Convertible/Coupe			2.5 Nm
4AZ	Door trim panel to front door	E46/Compact			1.1 Nm
		E60/E61			0.8 Nm
		E65/E66/E67			1.5 Nm
		E63/E64			3.0 Nm
5AZ	Wood/decorative strip to door trim	E65/E66/E67			1.2 Nm
		E60/E61			0.4 Nm
6AZ	Speaker frame to door trim	E65/E66/E67			0.5 Nm
7AZ	Sheet metal nut	E65/E66/E67			1.0 Nm
8AZ	Door handle to door trim panel	E85/E86			0.5 Nm
9AZ	Carrier to door trim panel	E60/E61			7.0 Nm

GASKETS AND LOOSE BODY COMPONENTS

51 71 GASKETS AND LOOSE BODY COMPONENTS

TIGHTENING TORQUE SPECIFICATION - GASKETS AND LOOSE BODY COMPONENTS

		Type	Thread	Tightening specifications	Dimension
1AZ	Front spoiler to bumper	E36/M3			3 Nm
2AZ	Rear spoiler	E34/touring, E36/Z3 coupe/M coupe	M6		6 Nm
		E36/M3	M6		7 Nm
		E53			3 Nm

		E83	M6		10 Nm
		E61			8 Nm
3AZ	Reinforcement plate to front axle support/engine support	E46/ohne Allrad, E85, E86		Replace screws Jointing torque Angle of rotation	 59 Nm 90 °
4AZ	Trailing link in engine compartment	E85, E86		Nut Replace screw Angle of rotation	41 Nm 56 Nm 105 ± 15 °
		E83	M8		19 Nm
		E89		Replace screws Angle of rotation	100 Nm 105 ± 15 °
5AZ	Reinforcement plate/trailing link to rear axle	E46/Cabrio, E85, E86	M10	Replace screws Jointing torque Angle of rotation	 59 Nm 90 °
6AZ	Reinforcement plate to body	E85, E86	M8		21 Nm
7AZ	Trailing link to rear axle	E46/Cabrio	M8		24 Nm
		E85, E86		Replace nut	24 Nm
8AZ	Cross member, A-pillar, to bracket	E52	M8		19 Nm
9AZ	Cross member, A-pillar, middle	E52	M8		10 Nm
10AZ	Strut to transmission tunnel	E52	M8		19 Nm
11AZ	Cross member, A-pillar, bottom, to bracket	E52	M6		11 Nm
12AZ	Support tube to support, steering column upper section	E65, E66, E67	M8		21 Nm
13AZ	Support tube to body	E85/E86	M8		20 Nm
14AZ	Heating unit to support tube	E85, E86			4 Nm
15AZ	Support tube to body	E60, E61, E63, E64, E83	M8		21 Nm
16AZ	Mounting, cover,	E83	M8		5 Nm

	sill to body				
17AZ	Cover, partition, to body, front	E61			2.5 Nm
18AZ	Retaining strip, sill trim, to side panel	E61			5 Nm
19AZ	Multifunction pan to body	E60/M5			3 Nm
		E86			12 Nm
20AZ	Underride protection to retaining bracket	E60, E61	M8	Replace bolts	8 Nm
21AZ	Retaining bracket for underride protection to frame side member	E60, E61	M8	Replace bolts	8 Nm
22AZ	Protective mat/protective cover to body	E60/Security	M6	Screw	10 Nm
23AZ	Cross connection (engine compartment) to upper section, support, front panel	E89		Screw	7.6 Nm
24AZ	Stiffening plate to body	E89	M10	Replace screws	
				Jointing torque	56 Nm
				Angle of rotation	105 ±15 °
25AZ	Stiffening plate to exhaust system	E89		Nut	20 Nm
26AZ	Stiffening plate to body	E89		Nut	24 Nm
27AZ	Diagonal strut in engine compartment	E89		Nut	56 Nm
				Screw	56 Nm

GASKETS AND LOOSE BODY COMPONENTS

51 71 GASKETS AND LOOSE BODY COMPONENTS

TIGHTENING TORQUE SPECIFICATION - GASKETS AND LOOSE BODY COMPONENTS

	Type	Thread	Tightening specifications	Dimension

1AZ	Rear spoiler	E91		Screw Nut	3 Nm 7 Nm
2AZ	Trailing link in engine compartment	E81, E82, E84, E87, E88, E90, E91, E92, E93	M10	Replace bolts Jointing torque Angle of rotation	 40 Nm 60 °
		E81, E82, E84, E87, E88, E90, E91, E92, E93	M12 x 1.5	Replace bolts Jointing torque Angle of rotation	 100 Nm 100 °
3AZ	Trailing link to rear axle	E91	M12	Replace bolts Jointing torque Angle of rotation	 100 Nm 90 °
		E91, E84	M10		50 Nm
4AZ	Support tube to support, steering column upper section	E84, E87, E90, E91, E92, E93	M8		19 Nm
5AZ	Support tube to body	E84, E87, E90, E91, E92, E93	M8		21 Nm
6AZ	Heating unit to support tube	E84, E87, E90, E91, E92, E93			4 Nm
7AZ	Bracket, handle, to body	E82/E87/E90/E91		Sheet metal screw	3.5 Nm
		E84			6 Nm
8AZ	Bracket, suspension, load area net to body	E91			11 Nm
9AZ	Multifunction pan to body	E81, E82, E87, E90, E91, E92, E93	M6		8 Nm
10AZ	V-strut, front axle support	E88	M10 to front axle support, front		50 Nm
		E88, E93	M10 to blind rivet nut	Jointing torque Angle of rotation	60 Nm 105 °
		E88, E93	M10 to captive nut	Replace cage nut	50 Nm
		E89	M10	Jointing torque	56 Nm

		E88, E89, E93	M12	Jointing torque Angle of rotation	100 Nm 105 °
11AZ	Diagonal strut, front end	E88, E93	Nut	Replace nut	56 Nm
		E88, E93	Screw	Replace bolts Jointing torque Angle of rotation	56 Nm 90 °
12AZ	Protecting skid/mounting bracket to front axle support	E88, E93	M10		50 Nm
13AZ	Rear middle trailing link to underbody bracket	E93/ab 03_2007	M8		28 Nm
14AZ	Battery tray to body	E93	M8		19 Nm
15AZ	Vibration absorber to battery tray	E93	M8		19 Nm
16AZ	Grounding strap to body	E93	M6		8 Nm
17AZ	Bulkhead connection, suspension cross-brace, to holder, spring suspension cross-brace	E92/M3	M12 x 1.5	Replace screw Jointing torque Angle of rotation	 100 Nm 100 °
18AZ	Suspension cross-brace to bulkhead connection, suspension cross-brace	E92/M3	M8	Replace bolts	34 Nm
19AZ	Suspension cross-brace to bulkhead connection, suspension cross-brace/ring, suspension cross-brace	E92/M3	M8	Replace nuts	34 Nm
20AZ	Trailing link, left/right to	E88, E93	M10x40	Replace bolts	66 Nm

	vehicle underbody				
21AZ	Trailing link to side member locating bushing	E88, E93	M12x35	Replace screw Jointing torque Angle of rotation	 100 Nm 105 °
22AZ	Trailing link to triangle/vehicle underbody	E88, E93	M12x35 M12x50	Replace bolts Jointing torque Angle of rotation	 105 Nm 105 °
23AZ	Trailing link to rack (rear axle)	E88, E93	M12x35 M12x50	Replace bolts Jointing torque Angle of rotation	 100 Nm 105 °
24AZ	Rear middle trailing link to underbody bracket/triangle bracket	E93/bis 03_2007	M8	Jointing torque	19 Nm
25AZ	Trailing link to side member locating bushing	E93/bis 03_2007	M12	Jointing torque Angle of rotation	100 Nm 90 °
26AZ	Left and right trailing link to underbody triangle	E93/bis 03_2007	M12	Jointing torque Angle of rotation	100 Nm 90 °
27AZ	Strut, rollover protection system, to rollover protection system	E88, E93	M10	Jointing torque Angle of rotation	56 Nm 100 °
28AZ	Strut, rollover protection system, to body	E88, E93	M10	Jointing torque Angle of rotation	56 Nm 100 °

29AZ	Trailing link strut, left and right, to body (rear axle)	E89	M10	Jointing torque Angle of rotation	56 Nm 105 ± 15 °
30AZ	Trailing link, rear left and rear right, to triangle bracket (rear axle)	E89	M8	Jointing torque	28 Nm
31AZ	Shutoff, trailing link, rear left and rear right, to body (rear axle)	E89	M8	Jointing torque	24 Nm
32AZ	Trailing link, rear left and right, to compression strut	E92, E93	M8x25		24 Nm
33AZ	Trailing links, rear left/right, to holder	E93/M3	M10x25		56 Nm
34AZ	Holder, trailing link, to triangle	E93/M3	M12x1.5x50	Jointing torque Angle of rotation	100 Nm 105 °
35AZ	Holder, trailing link, to triangle	E93/M3	M12x1.5x35	Jointing torque Angle of rotation	100 Nm 105 °

HOOD/BONNET LOCKS

51 23 HOOD/BONNET LOCKS

TIGHTENING TORQUE SPECIFICATION - HOOD/BONNET LOCKS

		Type	Thread	Tightening specification	Mea
1AZ	Retaining hook to engine hood/bonnet (replace microencapsulated screws)	E46/E52/E53/E60/E61/E63/E64/E65/E66/E83/E85/E86/E89			10 N
		E38/E39			12 N
		E36		Hexagon screw Torx bolt	10 N 12 N
2AZ	Lock to body (replace microencapsulated screws)	E36/E38/E39/E46/E52/E53/E60/E61/E63/E64/E83			10 N
		E65/E66/E85/E86			8 Nr
		E89			12 N

3AZ	Lock to engine hood/bonnet (replace microencapsulated screws)	E36/E46/E52			10 N
		E39			12 N

MIRRORS, FINISHERS, ASHTRAYS, CONSOLES

51 16 MIRRORS, FINISHERS, ASHTRAYS, CONSOLES

TIGHTENING TORQUE SPECIFICATION - MIRRORS, FINISHERS, ASHTRAYS, CONSOLES

		Type	Thread	Tightening specifications	D
1AZ	Exterior mirror to front door	E31/E36/Z3/E38/E39/E52			6
		E46/E53/E60/E61/E63/E64/E65/E66/E67/E83/E84/E85/E86/E89		First screw connection for new mirror (cutting process of self-tapping screws)	6 8
2AZ	Centre console (plastic nut)	E30			5
3AZ	Wooden finisher on carrier	E38			0
4AZ	Wooden finisher on carrier	E38			0
5AZ	Wooden finisher on carrier	E38			0
6AZ	Front drinks holder to function carrier	E38			1
7AZ	Wooden finisher to front drinks holder	E38			0
8AZ	Screw-in pin to wooden finisher of	E46			0

	instrument panel and door panel				
9AZ	Housing for exterior mirror to support	E46 M3 Coupe			1
		E60 M5/E63 M6			0
		E85/E86			1
10AZ	Brush cable unit to function carrier	E65/E66/E67			0 N
11AZ	Roller sunblind to function carrier	E65/E66/E67			0 N
12AZ	Roller sunblind to brush cable unit	E65/E66/E67			1 N
13AZ	Flap to storage box	E85/E86			0
14AZ	Rearview mirror retaining ring on reinforcement plate	E60 M5/E63 M6			1
15AZ	Notch adapter to mirror base plate	E60 M5/E63 M6			3
16AZ	Centre console to body	E89	M6/Torx		2
17AZ	Centre console to body	E84/E89			4
18AZ	Glove box housing	E84			2
19AZ	Bracket, handle, to body	E84			6

PANEL, REAR PARCEL SHELF, ROLLER SUN BLIND

51 46 PANEL, REAR PARCEL SHELF, ROLLER SUN BLIND

TIGHTENING TORQUE SPECIFICATION - PANEL, REAR PARCEL SHELF, ROLLER SUN BLIND

		Type	Thread	Tightening specification	Measure
1AZ	Rear parcel shelf to body	E65, E66, E67			2.5 Nm
2AZ	Roller sun blind to rear parcel shelf	E38, E39			3 Nm
		E65, E66, E67			2 Nm
3AZ	Roller sun blind with rear parcel shelf to body	E38, E39			6 Nm
		E60, E65, E66, E67, E90, E92			4 Nm
4AZ	Cover, rollover bar	E88, E93			4.4 Nm
5AZ	Trim grille, air outlet, to rollover protection system	E88			3 Nm
		E93			8 Nm
6AZ	Lashing eye to trim panel, partition	E89	M6		6 Nm
7AZ	Trim panel, partition, to body	E89	M6		3.5 Nm

REAR BUMPER

51 12 REAR BUMPER

TIGHTENING TORQUE SPECIFICATION - REAR BUMPER

		Type	Thread	Tightening specification	Measure
1AZ	Bumper to carrier	E31	M10		40 Nm
		E32/E34/E36	M8		22 Nm
		E34	M10		42 Nm
2AZ	Bumper/carrier to impact absorber	E36	M10	Install bolts with bolt cement.	42 Nm
		E38	M12		45 Nm
		E39	M10		45 Nm
		E46	M10		41 Nm
		E31/E32/E34/E30/Mod. 88	M12		48 Nm

		E52	M10		38 Nm
		E53	M12		55 Nm
		E85/E86			19 Nm
		E60/E61/E63/E64	M10		36 Nm
3AZ	Impact absorber/carrier to body	E30/E24			23 Nm
		E31/E32/E34	M6		9 Nm
		E36/E46	M8		22 Nm
		E39	M8		20 Nm
		E53	M8		24 Nm
		E65/E66/E67			38 Nm
		E52/E85/E86/E89/			19 Nm
		E60/E61/E63/E64	M10		36 Nm
		E83	M12		71 Nm
4AZ	Bumper to side panel	E30			7 Nm
5AZ	Bracket to side panel	E36/E46			3 Nm
		E39			6 Nm
6AZ	Holder, bottom, to body	E36			8.5 Nm
7AZ	Screw for lower panel	E36			2.5 Nm
8AZ	Bumper to tail panel	E60	M6	Replace screw with sealing washer	2.5 Nm
9AZ	Guide to side panel	E83			2 Nm
		E61			3 Nm
10AZ	Guide to rear trim panel	E83			2.8 Nm
		E61			4.5 Nm

REAR LID LOCKS

51 24 REAR LID LOCKS

TIGHTENING TORQUE SPECIFICATION - REAR LID LOCKS

		Type	Thread	Tightening specification	Measure
1AZ	Banjo bolt to hydraulic unit and to hydraulic cylinder	E39/Touring			$10^{+2.5}$ Nm
		E65/E66/E67			15 Nm
2AZ	Oil filler plug to	E65/E66/E67/E39/Touring			8^{+2} Nm

	hydraulic unit	E61			$1^{+0.3}$ Nm
3AZ	Engine bolt to hydraulic unit	E65/E66/E67			$5^{+1.5}$ Nm
4AZ	Hydraulic unit to bracket	E61			$2^{+1.5}$ Nm
		E65/E66/E67			10 Nm
5AZ	Rear lid lock to rear lid	E60/E63/E64/E65/E66/E67/E85/E86			10 Nm
6AZ	Striker to body	E60/E63/E64/E65/E66/E67/E85/E86			10 Nm
7AZ	Bracket, hydraulic unit, to body	E65/E66/E67			10 Nm
8AZ	Bracket, angle sensor, to body	E65/E66/E67			7 Nm
9AZ	Valve to hydraulic unit	E65/E66/E67			14 Nm
10AZ	Ball pin for hydraulic cylinder to body	E61		Install with Loctite 270	41 Nm
11AZ	Emblem actuator to holder, emblem actuator	E89			4 Nm
12AZ	Rear lid lock to rear inner plate	E89			10 Nm
13AZ	Rear lid lock to rear inner plate	E89			1.5 Nm
14AZ	Striker to body	E89			10 Nm

REINFORCEMENT, BODY

51 64 REINFORCEMENT, BODY

TIGHTENING TORQUE SPECIFICATION - REINFORCEMENT, BODY

			Tightening	

		Type	Thread	specification	Measure
1AZ	Upper section, support, to support carrier, wheel arch	E89			18 Nm

SIDE WINDOWS, ELECTRICALLY ACTUATED

51 37 SIDE WINDOWS, ELECTR. ACTUATED

TIGHTENING TORQUE SPECIFICATION - SIDE WINDOWS, ELECTR. ACTUATED

		Type	Thread	Tightening specification	Measure
1AZ	Motor to window regulator	E93		Replace thread-tapping screw with metric screw	3.5 Nm
		E88			4 Nm
2AZ	Side window glass to window regulator	E88		On hook screw (removed window cavity cover strip) with special tool 51 3 240 (longer lever arm, observe formula in repair instruction)	12 Nm 5 Nm
		E93, E89		On hexagon screw (removed window cavity cover strip) with special tool 51 3 310 (longer lever arm, observe formula in repair instruction)	10 Nm 5.6 Nm
		E89			9.5 Nm
3AZ	Power window unit to body	E88			18.5 Nm
		E93			7.6 Nm
4AZ	Connecting bracket to body	E88			10 Nm
		E93			7.6 Nm
		E89			7.6 Nm
5AZ	Power window	E89			7.6 Nm

	unit in area of wheel arch to body				

TRIM PARTS, COVERS, HANDLE TRIM

51 13 TRIM PARTS, COVERS, HANDLE TRIM

TIGHTENING TORQUE SPECIFICATION - TRIM PARTS, COVERS, HANDLE TRIM

		Type	Thread	Tightening specification	Measure
1AZ	Bracket, roof luggage rack on body	E39/E46/E81/E82/E87/E90/E91/E92/E36/Z3 and M Coupe	M10		20 Nm
2AZ	Water drain to body (plastic nut)	E46			1 Nm
Water drain to body (metal nut or rivet nut)		E46			1.8 Nm
3AZ	Roof railing to body	E39		Centre, front, rear	24 Nm
		E61	M8	 settling time Check	16 Nm 15 min 16 Nm
		E83	M8	Front Jointing torque Release nut after settling time Jointing torque Torque angle	 21 Nm 15 min 21 Nm 120 ± 10°
		E83	M8	Centre, rear settling time Check	21 Nm 15 min 21 Nm
		E84			19 Nm
		E91			25 Nm
		E70			19 Nm
		E71/E72			16 Nm
4AZ	Handle strip to rear lid	E39/Touring			3 Nm
		E46/E53			2.5 Nm
		E83			1.8 Nm
5AZ	Cowl panel	E60/E61/E63/E64			2.5 Nm

	cover to body				
6AZ	Centre trim to rear lid	E65/E66/E67	M8		2.5 Nm
7AZ	Trim to engine compartment lid	E90/E91			2 Nm
8AZ	Additional brake light to rear lid	E89			5 Nm
9AZ	Threaded bolt on sliding carriage (roof railing)	E84			15 Nm
10AZ	Decorative trim, side, to cowl panel	E88/E93			1.8 Nm

TRIM, INSTRUMENT PANEL

51 45 TRIM, INSTRUMENT PANEL

TIGHTENING TORQUE SPECIFICATION - TRIM, INSTRUMENT PANEL

		Type	Thread	Tightening specification	Measure
1AZ	Knee protection, driver, to support tube	E65/E66/E67	M6		8 Nm
2AZ	Wooden finisher to instrument panel trim, nut	E65/E66/E67			2.5 Nm
3AZ	Support structure, cockpit, to body	E89			21 Nm
4AZ	Support structure to instrument panel upper section	E89			3 Nm

99 PAINTWORK

99 00 ... GENERAL INSTRUCTIONS ON PAINTING

General instructions and classification of paint stages are described on the KSD CD (notes general information on flat rate unit data, passenger car explanation for FR specifications for painting).

For further information, please refer to BMW Painting Handbook.

The marked area serves as the starting point for painting. This area may differ from the illustration for technical painting reasons.

Touching-up areas are taken into account.

99 00 ... INDIVIDUAL PARTS/PAINTING

Follow **GENERAL INSTRUCTIONS ON PAINTING** .

Inside mirror

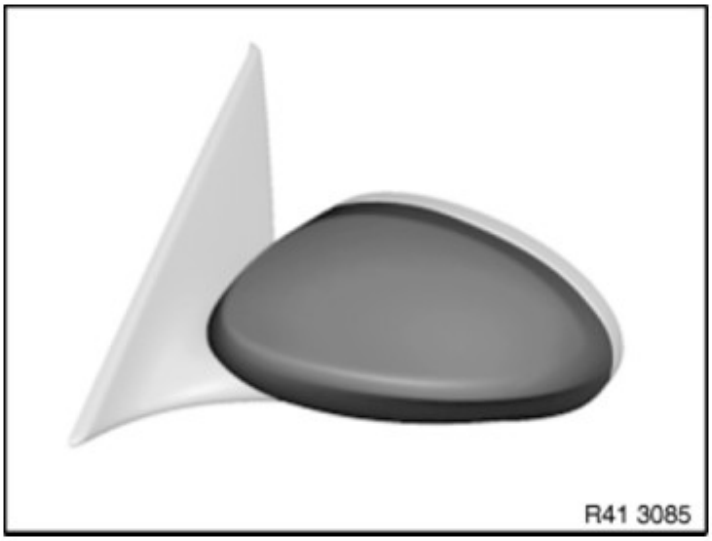


Fig. 1: Identifying Inside Mirror
Courtesy of BMW OF NORTH AMERICA, INC.

Outer door handle

Area specification applies to all paint stages.

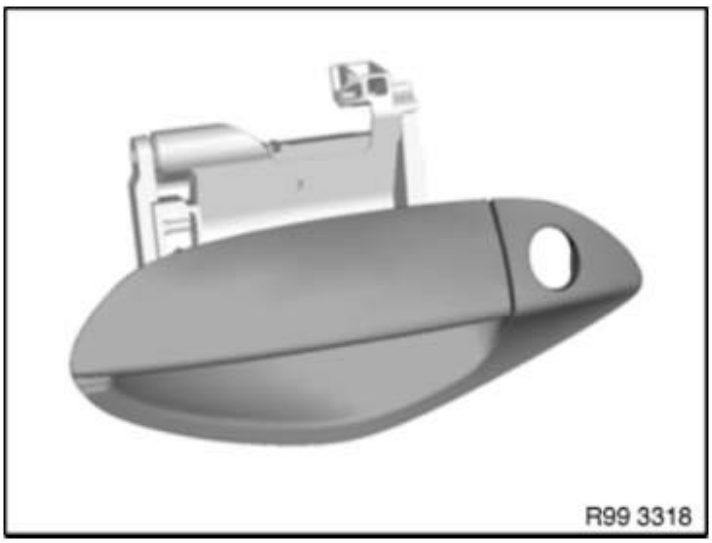


Fig. 2: Identifying Outer Door Handle
Courtesy of BMW OF NORTH AMERICA, INC.

Roof shell, front

Area specification applies to all paint stages.

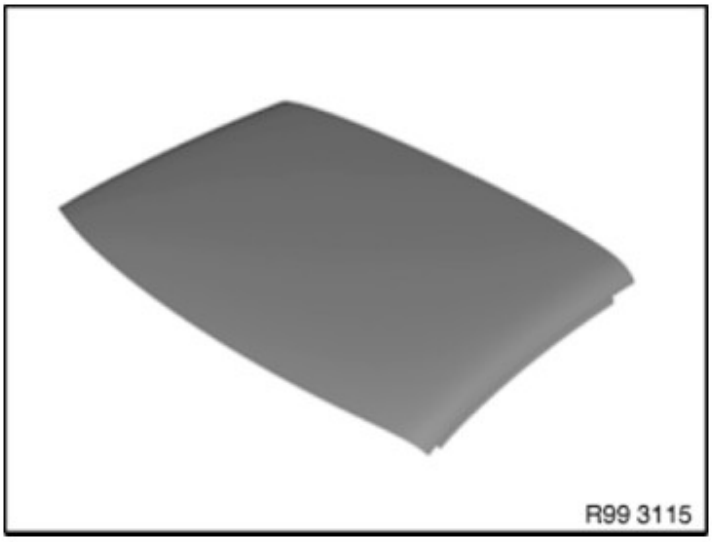


Fig. 3: Identifying Front Roof Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Roof shell, rear

Area specification applies to all paint stages.



Fig. 4: Identifying Rear Roof Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Rear cross panel

Area specification applies to all paint stages.

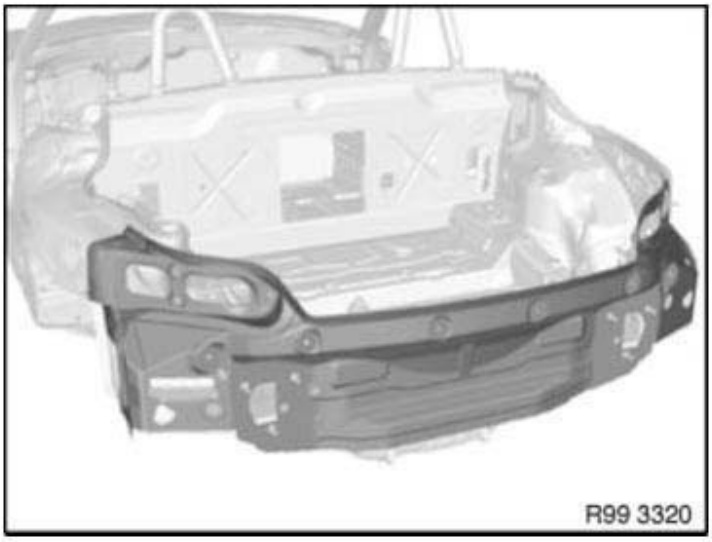


Fig. 5: Identifying Rear Cross Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Side wall, front

Area specification applies to all paint stages.



Fig. 6: Identifying Front Side Wall
Courtesy of BMW OF NORTH AMERICA, INC.

Rear side panels

Area specification applies to paint stage 1.



Fig. 7: Identifying Rear Side Panels
Courtesy of BMW OF NORTH AMERICA, INC.

Cover for entrance

Area specification applies to all paint stages.

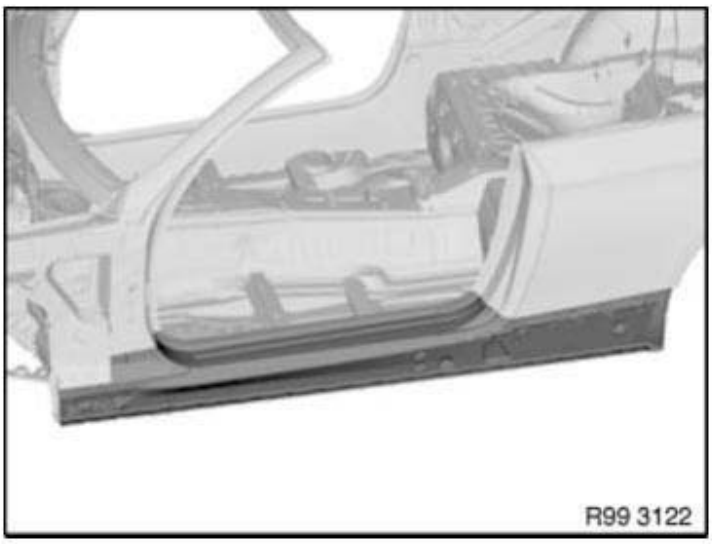


Fig. 8: Identifying Cover For Entrance
Courtesy of BMW OF NORTH AMERICA, INC.

Front door

Area specification applies to all paint stages.

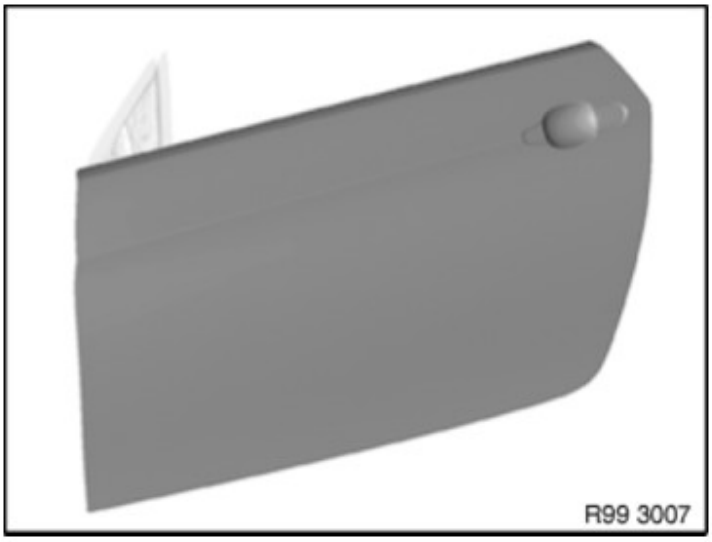


Fig. 9: Identifying Front Door Paint Area
Courtesy of BMW OF NORTH AMERICA, INC.

Front door

Additional area specification inner plate for paint stages 2 and 3.

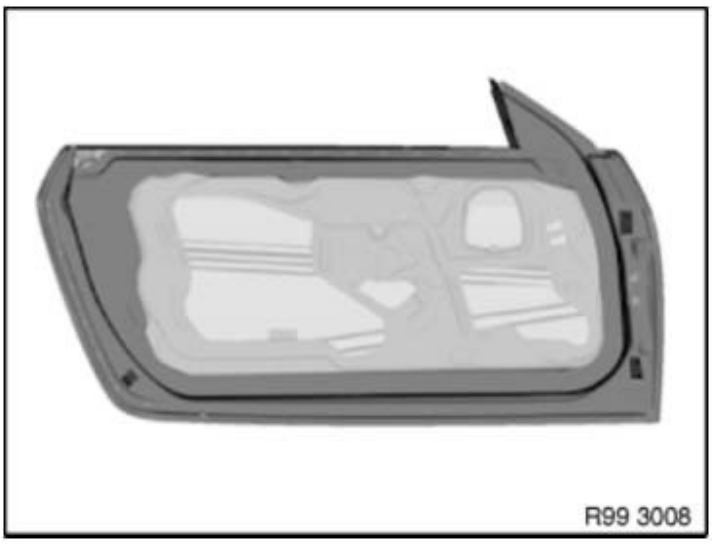


Fig. 10: Identifying Front Door Inner Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Bonnet

Area specification applies to all paint stages.

Additionally complete inner plate for paint stages 2 and 3.

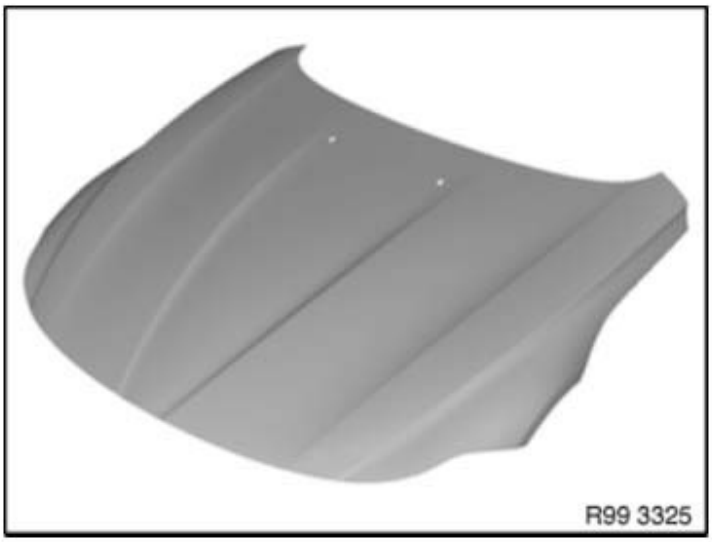


Fig. 11: Identifying Bonnet Paint Area
Courtesy of BMW OF NORTH AMERICA, INC.

rear lid

Area specification applies to all paint stages.



Fig. 12: Identifying Rear Lid Paint Area
Courtesy of BMW OF NORTH AMERICA, INC.

rear lid

Additional area specification inner plate for paint stages 2 and 3.



Fig. 13: Identifying Rear Lid Inner Plate Paint Area
Courtesy of BMW OF NORTH AMERICA, INC.

Trim panel for cover on side member

Area specification applies to all paint stages.

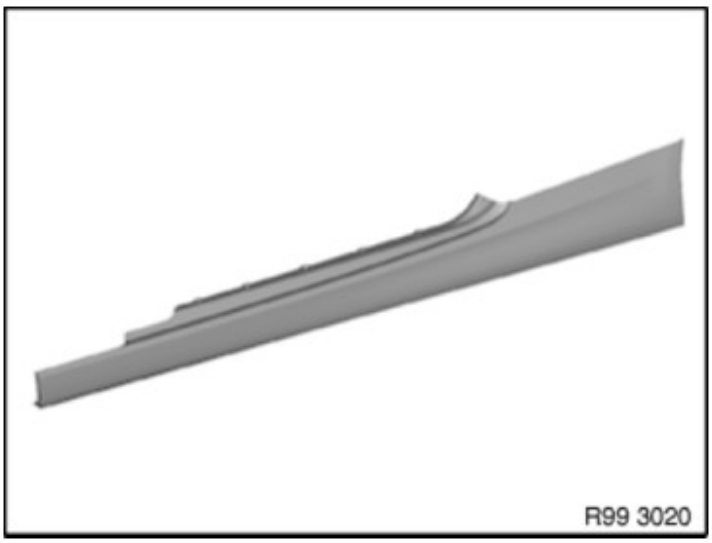


Fig. 14: Identifying Paint Applying Areas On Trim Panel For Cover On Side Member
Courtesy of BMW OF NORTH AMERICA, INC.

Panel, bumper, front

Area specification applies to all paint stages.

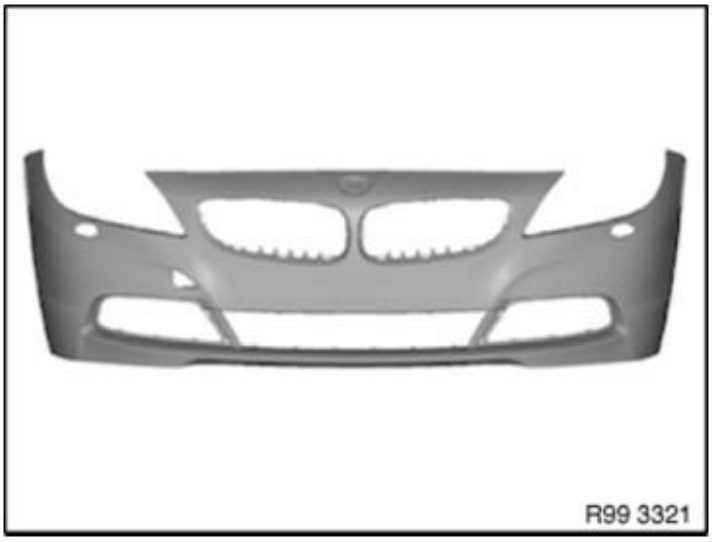


Fig. 15: Identifying Front Bumper Panel Paint Area
Courtesy of BMW OF NORTH AMERICA, INC.

Panel, bumper, rear

Area specification applies to all paint stages.

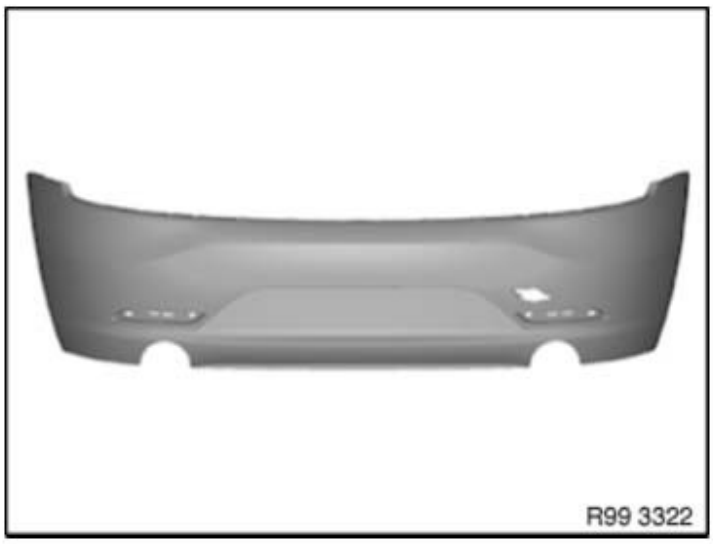


Fig. 16: Identifying Rear Bumper Panel Paint Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 00 ... INFORMATION/WARNING LABELS

Missing or damaged information/warning labels (e.g. tire inflation pressure) must be replaced.

- Overview of **INSTALLATION LOCATIONS**

64 00 000 INFORMATION ON USING CLEANING AGENT/PAINTS (PERSONAL PROTECTION EQUIPMENT)

WARNING: Use of cleaning agents/paints not compliant with instructions can cause serious injuries or burns!
Handling cleaning agents/paints can trigger allergic skin and respiratory reactions!

IMPORTANT: Observe following instructions:

- **Store cleaning agents/paints only in a secure cabinet.**
- **Keep cleaning agents/paints away from naked flames and other sources of ignition.**
- **Protect cleaning agents/paints from high temperatures and direct sunlight.**
- **Always keep an eye bath on hand, change the water regularly (once a month).**

IMPORTANT: Observe following instructions before use:

- **Manufacturer's instructions (on container/packaging)**
- **Hazard warnings (on container/packaging)**
- **Manufacturer's instructions on package insert**
- **Material safety data sheet of manufacturer**
- **Product information in EPC**
- **National market regulations**

IMPORTANT: Observe following instructions during use:

- **Do not eat, drink or smoke while working with these products.**
- **Avoid direct contact with skin and eyes.**
- **Wear personal protective clothing/equipment.**
- **Ensure that all enclosed areas are well ventilated or extract fumes directly.**
- **Immediately change working clothes soiled with cleaning agent/paint.**
- **After finishing work, wash your hands and apply protective skin cream.**

IMPORTANT: Follow hazard warnings and wear personal protection equipment!

First Aid:

- If product comes in contact with eyes, immediately flush with running water for about 10 - 15 minutes. Seek the advice of eye specialist.
- In the event of skin contact and where applicable an allergic skin reaction, clean the affected areas immediately with soap and water and then apply silicone-free skin cream. Seek advice of physician.
- If an adhesive product is swallowed, rinse mouth/parts of mouth thoroughly with running water. Drink 1-2 glasses of water. Do not induce vomiting. Consult a doctor.
- After inhaling vapors ensure ample supply of fresh air. Keep calm, keep respiratory tracks clear and call doctor.

Recycling

Dispose of cleaning agents/paints in a professional manner!

Observe national/country-specific disposal regulations.

36 00 ... INFORMATION/RECOMMENDATIONS AND REPAIR METHODS FOR ALUMINUM WHEELS

Cosmetic repairs of aluminum wheels using Color System

Recommendations and repair methods for aluminum wheels are described in the ASAP system under the following link:

- Aftersales Assistance Portal
  - Service/Technology
    - Color System
      - Repair recommendations for aluminum wheels

99 00 ... INTERIOR PAINTING

Follow **GENERAL INSTRUCTIONS ON PAINTING** .

Engine compartment, complete

Carry over the area shown symmetrically to the other side of the car.

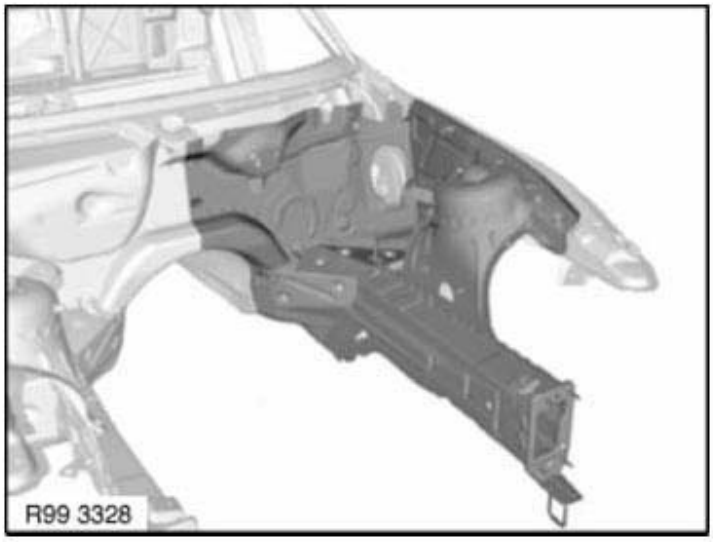


Fig. 17: Identifying Engine Compartment Complete
Courtesy of BMW OF NORTH AMERICA, INC.

Engine compartment partition

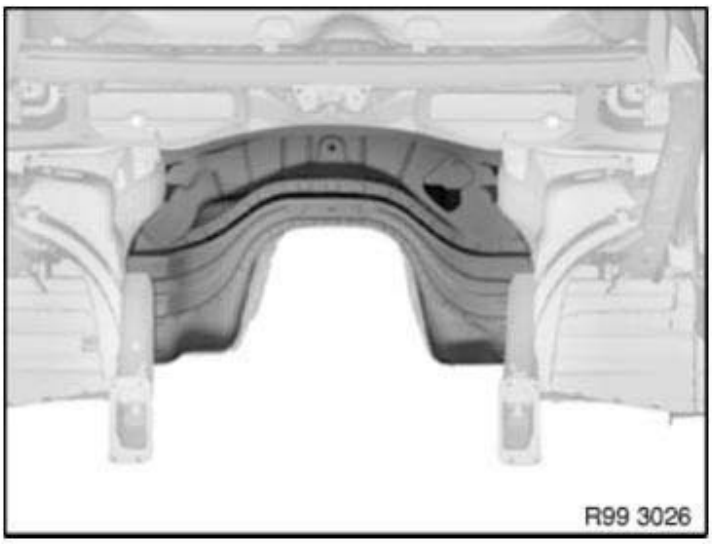


Fig. 18: Identifying Engine Compartment Partition
Courtesy of BMW OF NORTH AMERICA, INC.

Engine carrier (inside only)

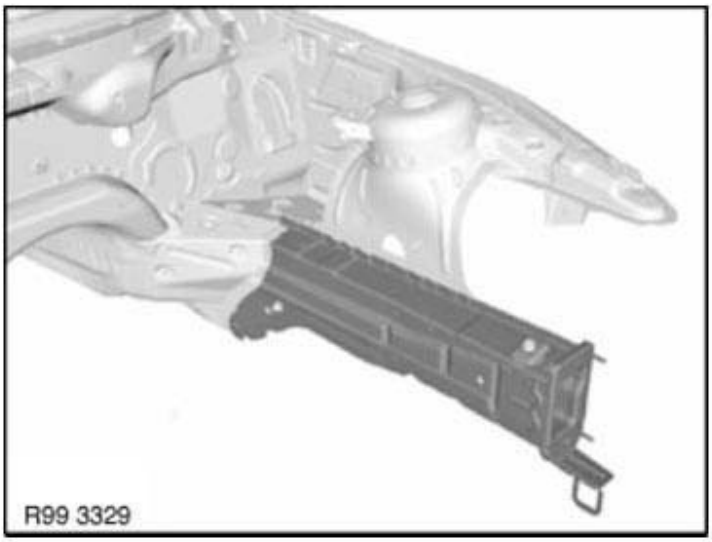


Fig. 19: Identifying Engine Carrier (Inside)
Courtesy of BMW OF NORTH AMERICA, INC.

Engine carrier (partial replacement before front axle)

Inner side shown

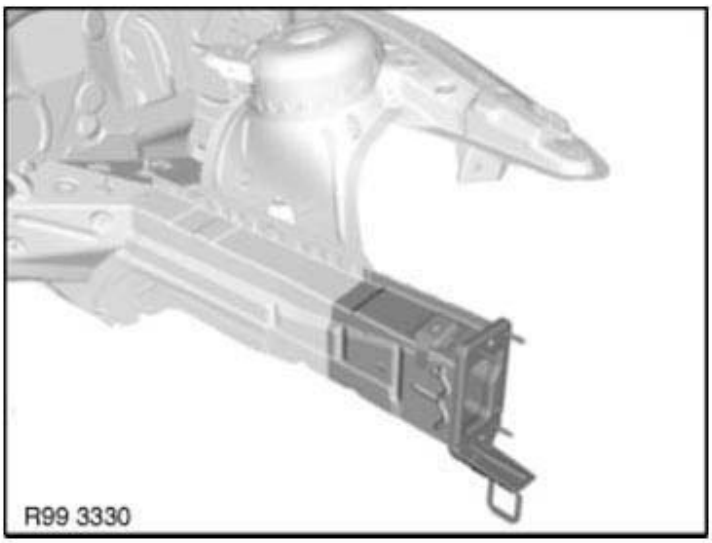


Fig. 20: Identifying Engine Carrier Inner Side
Courtesy of BMW OF NORTH AMERICA, INC.

Engine carrier, complete

Inner side shown

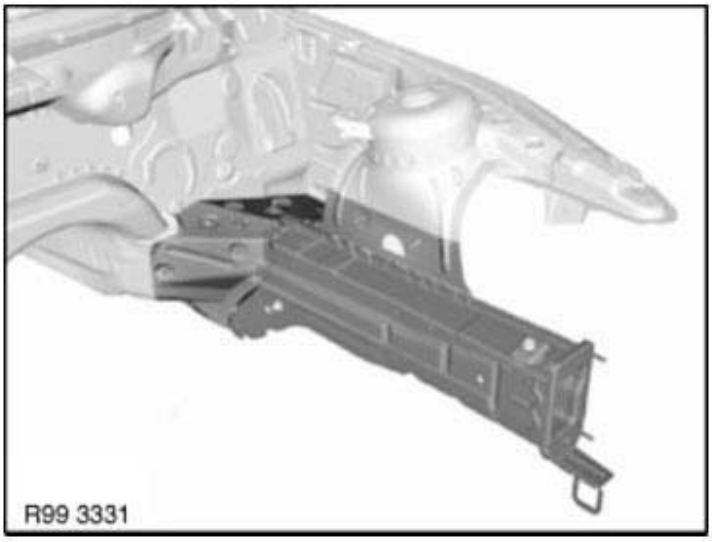


Fig. 21: Identifying Engine Carrier Complete Inner Side
Courtesy of BMW OF NORTH AMERICA, INC.

Engine carrier, complete

Outer side shown

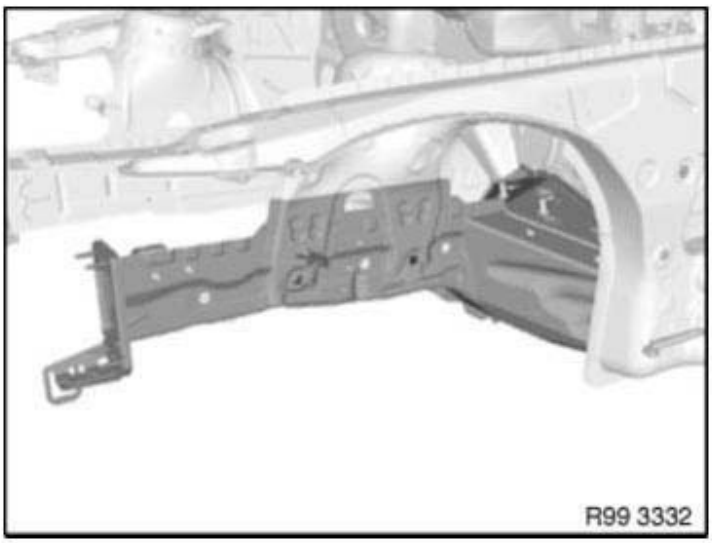


Fig. 22: Identifying Engine Carrier Complete Outer Side
Courtesy of BMW OF NORTH AMERICA, INC.

Wheel arch, front, complete

Inner side shown

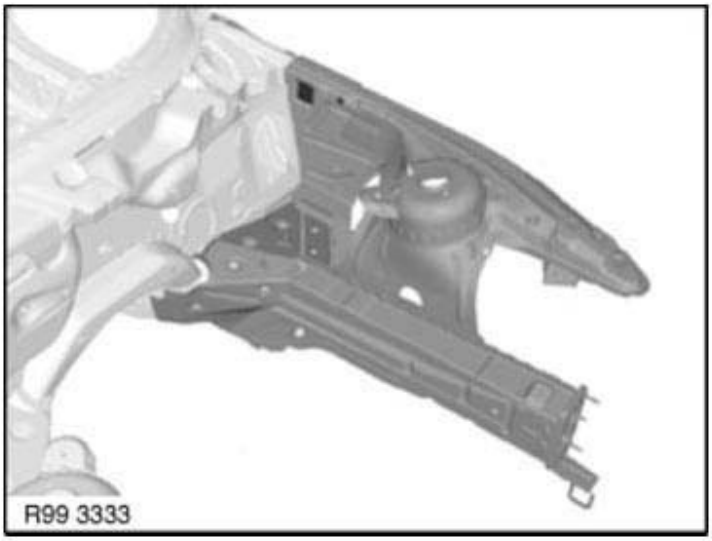


Fig. 23: Identifying Front Wheel Arch Complete Inner Side
Courtesy of BMW OF NORTH AMERICA, INC.

Wheel arch, front, complete

Outer side shown

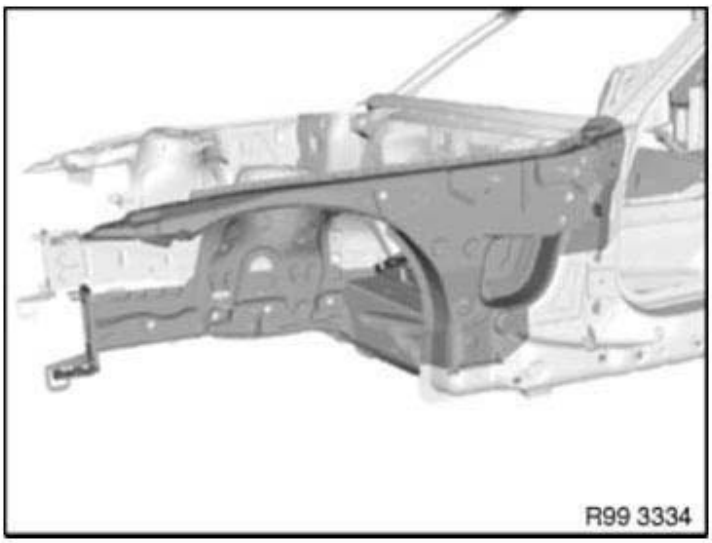


Fig. 24: Identifying Front Wheel Arch Complete Outer Side
Courtesy of BMW OF NORTH AMERICA, INC.

Luggage compartment floor

Carry over the area shown symmetrically to the other side of the car.

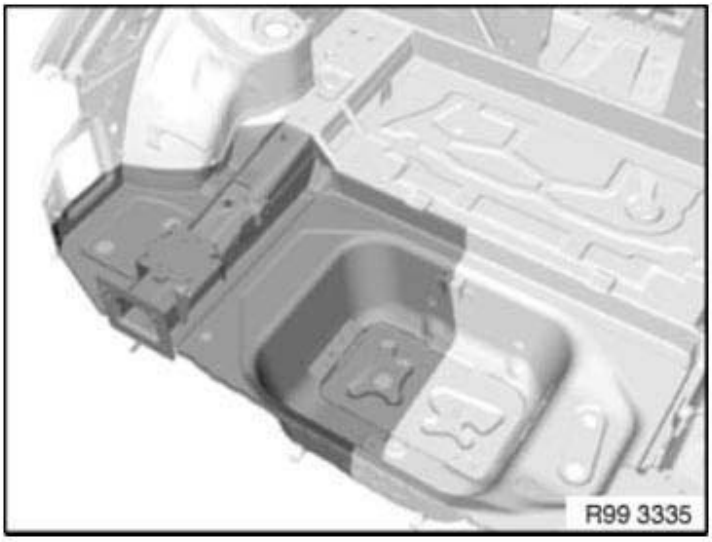


Fig. 25: Identifying Luggage Compartment Floor
Courtesy of BMW OF NORTH AMERICA, INC.

Wheel arch, rear

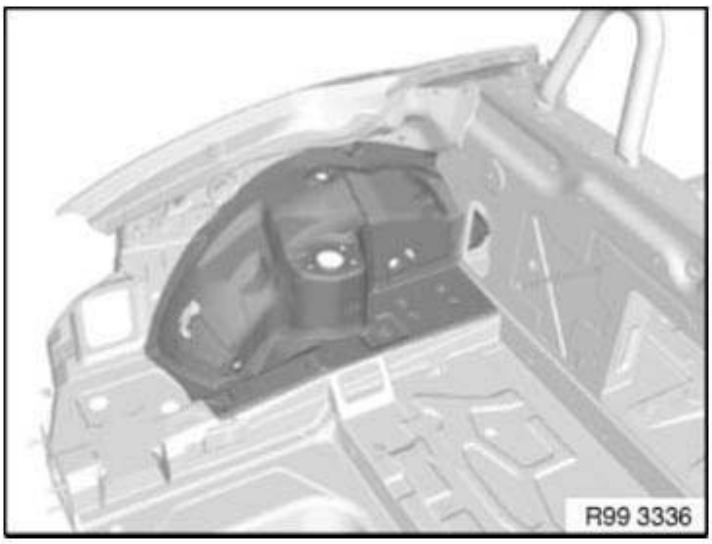


Fig. 26: Identifying Rear Wheel Arch
Courtesy of BMW OF NORTH AMERICA, INC.

RETRACTABLE HARDTOP

The retractable hardtop consists of two aluminum roof panels. They are operated by means of an internal linkage. The retractable hardtop and the rear module are driven hydraulically. The hydraulic system consists of 6 hydraulic cylinders that are supplied with pressure by the hydraulic unit via the hydraulic lines. The cylinders are always actuated in pairs. The retractable hardtop is equipped with a headliner without tensioning cables.

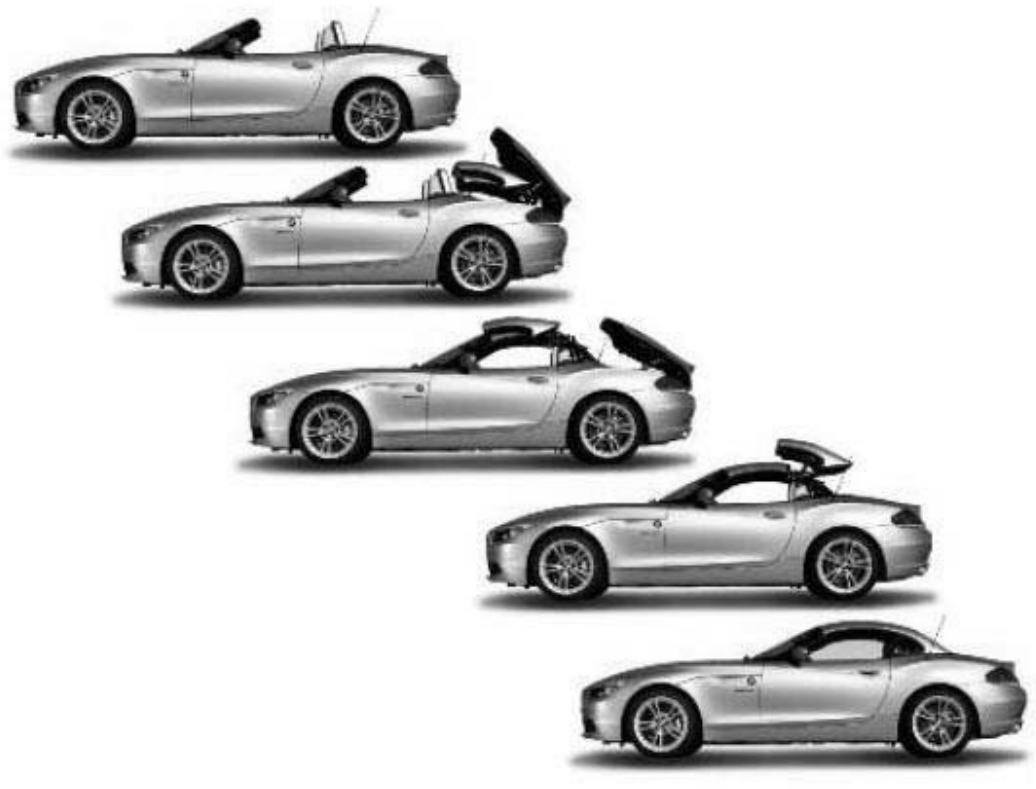


Fig. 1: Identifying Retractable Hardtop Operation
Courtesy of BMW OF NORTH AMERICA, INC.

HYDRAULIC SYSTEM CIRCUIT SCHEMATIC

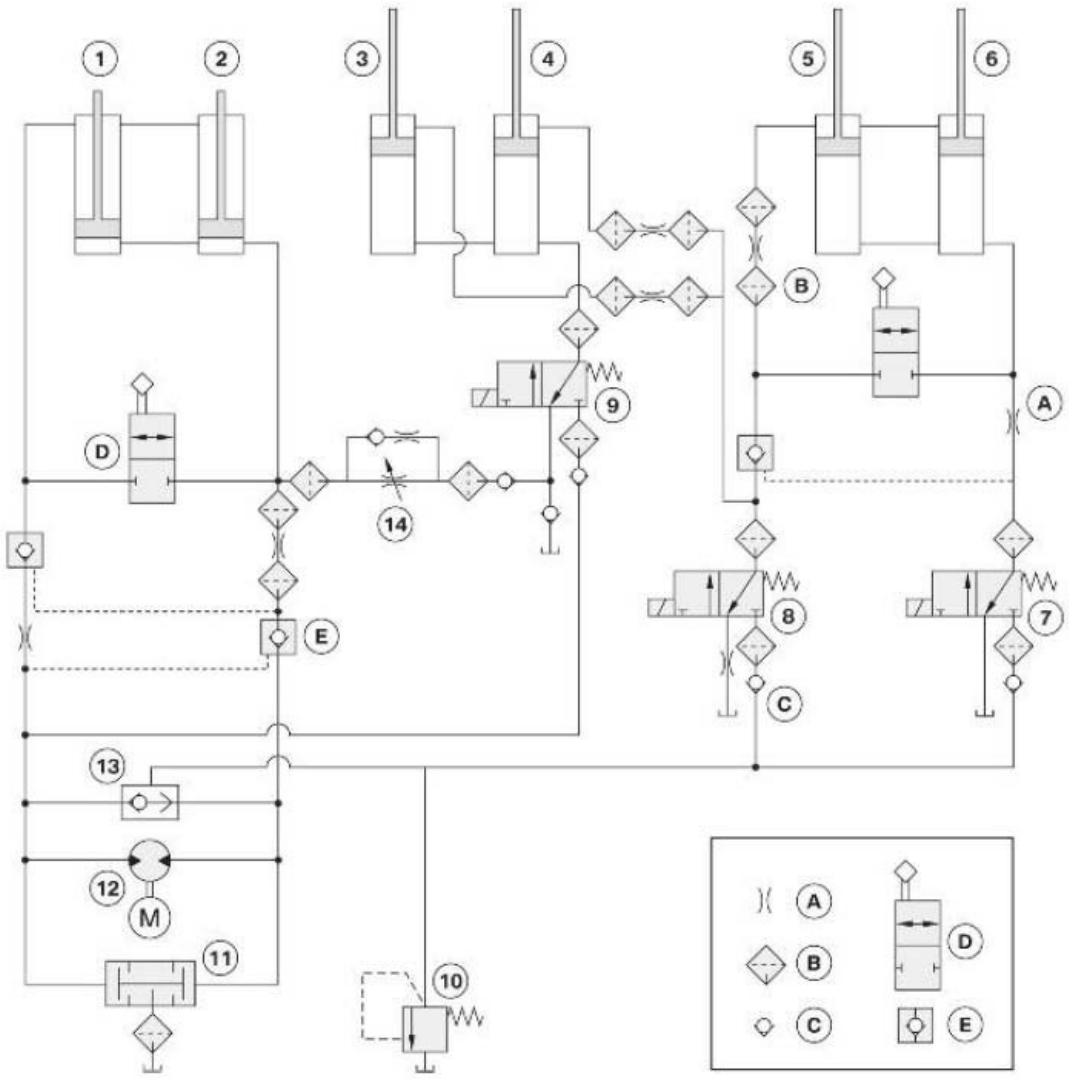


Fig. 2: Hydraulic System Circuit Diagram
Courtesy of BMW OF NORTH AMERICA, INC.

INDEX EXPLANATION REFERENCE CHART

Index	Explanation
A	Throttle
B	Filter
C	Non-return valve
D	Emergency operating valve
E	Pilot-controlled non-return valve
1	LH hydraulic cylinder, main pillar
2	RH hydraulic cylinder, main pillar
3	LH hydraulic cylinder, roof panel
4	RH hydraulic cylinder, roof panel

5	LH hydraulic cylinder, rear module
6	RH hydraulic cylinder, rear module
7	Valve for rear module
8	Valve for roof panel and rear module
9	Valve for main cylinder and roof panel
10	Pressure relief valve
11	Changeover valve
12	Hydraulic pump
13	Changeover valve
14	Two-way flow control valve

HYDRAULICS AND LOCKING MECHANISM

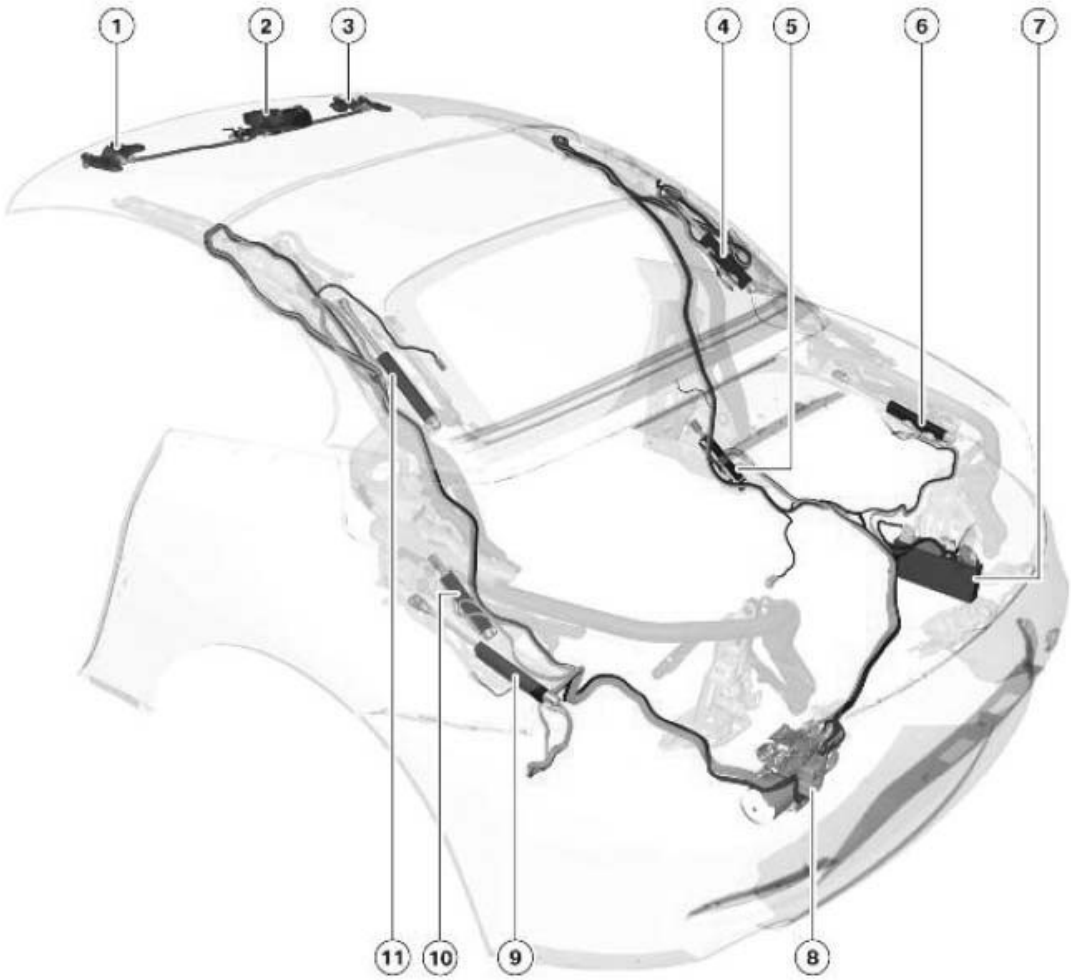


Fig. 3: Identifying Hydraulics And Locking Mechanism
Courtesy of BMW OF NORTH AMERICA, INC.

INDEX EXPLANATION REFERENCE CHART

Index	Explanation
1	LH latch, windscreen cowl panel
2	Drive for locking retractable hardtop
3	RH latch, windscreen cowl panel
4	RH hydraulic cylinder, roof panel
5	RH hydraulic cylinder, main pillar
6	RH hydraulic cylinder, rear module
7	Convertible top module
8	Hydraulic unit
9	LH hydraulic cylinder, rear module
10	LH hydraulic cylinder, main pillar
11	LH hydraulic cylinder, roof panel

MECHANICAL SYSTEM OVERVIEW

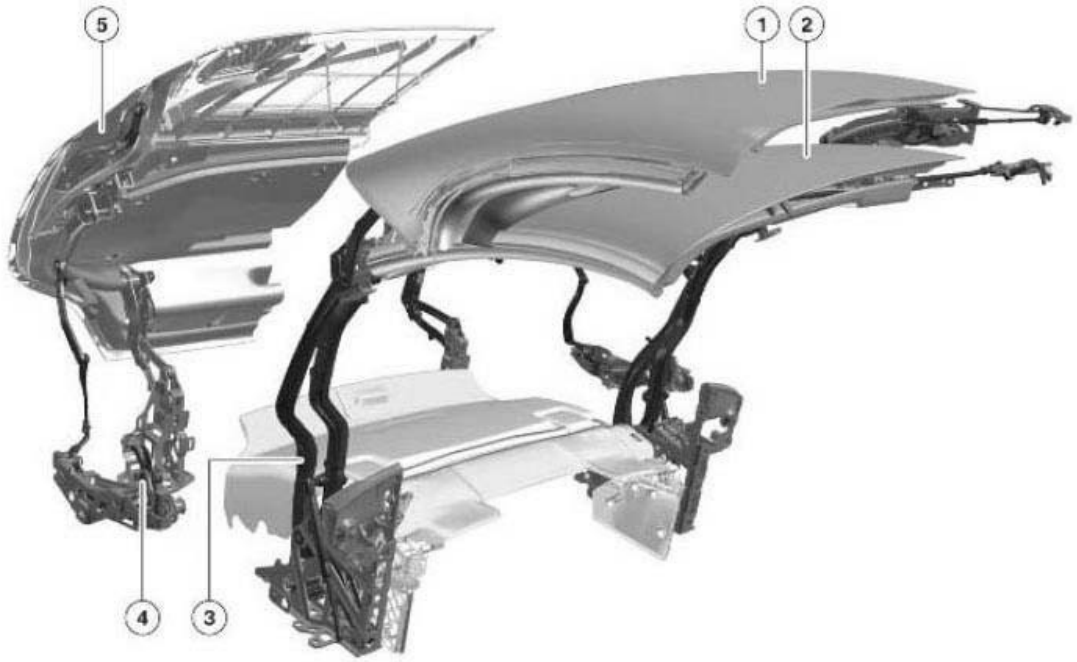


Fig. 4: Mechanical System Overview
Courtesy of BMW OF NORTH AMERICA, INC.

INDEX EXPLANATION REFERENCE CHART

Index	Explanation
1	Roof panel 2
2	Roof panel 1
3	Main pillar mechanism
4	Rear module mechanism
5	Rear module

SENSORS

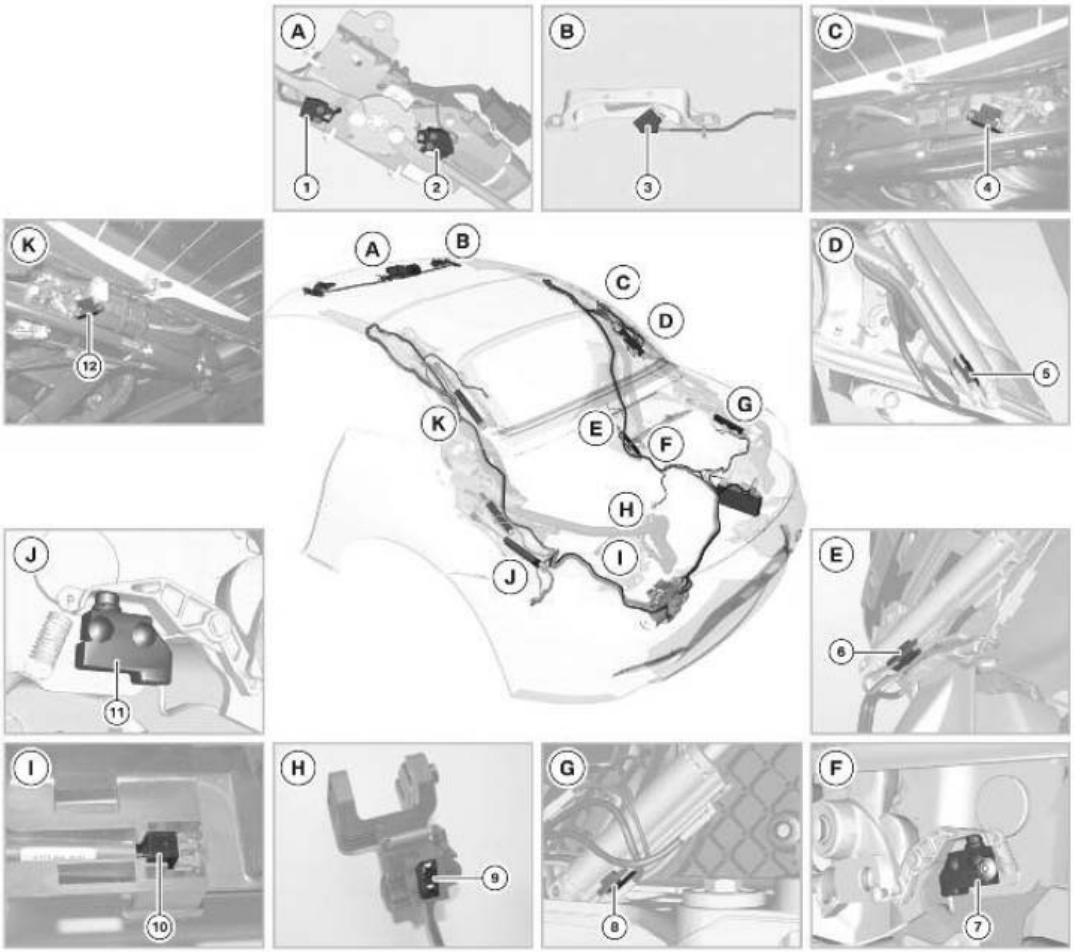


Fig. 5: Identifying Sensor Locations
Courtesy of BMW OF NORTH AMERICA, INC.

INDEX EXPLANATION REFERENCE CHART

Index	Explanation
A - K	Locations
1	Microswitch, cowl panel unlocked
2	Microswitch, cowl panel locked
3	Microswitch, cowl panel reached
4	RH microswitch, roof panel closed
5	Hall sensor, roof panel packed
6	Hall sensor, roof panel opened
7	RH microswitch, rear module closed
8	Hall sensor, roof package extended
9	Microswitch, roof module compartment locked

10	Hall sensor, luggage compartment partition
11	LH microswitch, rear module closed
12	LH microswitch, roof panel closed

CIRCUIT DIAGRAM - CONVERTIBLE TOP MODULE

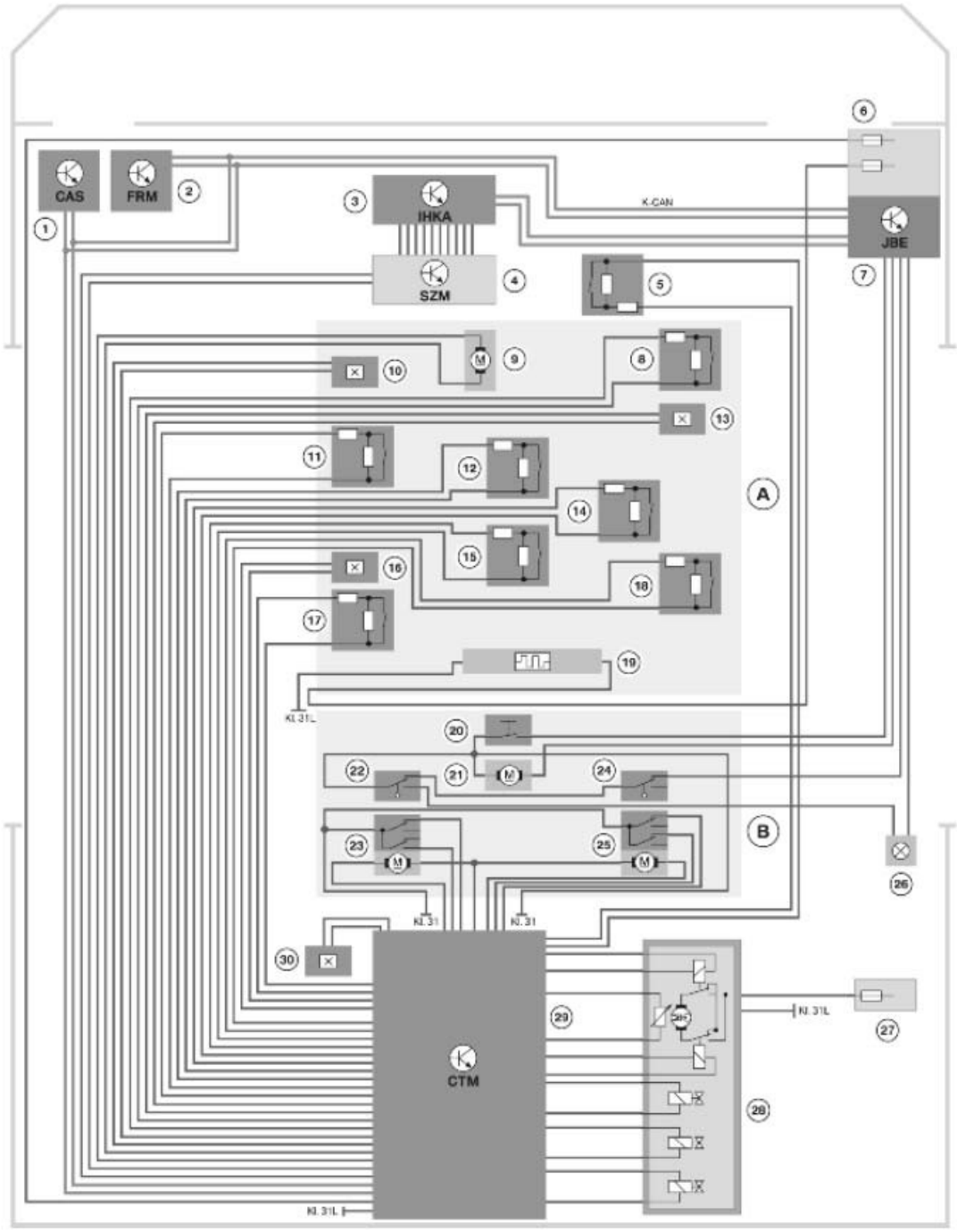


Fig. 6: Convertible Top Module - Circuit Diagram

Courtesy of BMW OF NORTH AMERICA, INC.

INDEX EXPLANATION REFERENCE CHART

Index	Explanation
A	Roof module
B	Rear module
1	Car Access System (CAS)
2	Footwell module (FRM)
3	Integrated automatic climate control (IHKA)
4	Center console control panel (SZM)
5	"Cowl panel reached" microswitch
6	Front power distribution box
7	Junction box electronics (JBE)
8	RH microswitch, roof panel closed
9	Drive for locking retractable hardtop
10	Hall sensor, roof package extended
11	LH microswitch, roof panel closed
12	Microswitch, cowl panel unlocked
13	Hall sensor, roof panel packed
14	Microswitch, cowl panel locked
15	Microswitch, roof module compartment locked
16	Hall sensor, rear module opened
17	LH microswitch, rear module closed
18	RH microswitch, rear module closed
19	Heated rear window
20	Rear lid button
21	Release drive
22	Rear lid lock switch
23	LH automatic soft close drive
24	Rear lid lock switch
25	RH automatic soft close drive
26	Luggage compartment light
27	Battery power distribution box
28	Hydraulic unit
29	Convertible top module (CTM)
30	Hall sensor, luggage compartment partition

SYSTEM COMPONENTS

Microswitches and Hall Sensors

The various positions of the retractable hardtop and of the rear module are detected by 8 microswitches and 4

Hall sensors and signalled to the convertible top module CTM. All microswitches and Hall sensors receive their voltage supply from the convertible top module and have diagnostic capabilities.

After loss of terminal 30 or after emergency operation, the retractable hardtop can still be operated without the need for re-initialization. The microswitches and Hall sensors ensure the convertible top module reliably detects the position of the retractable hardtop.

Buttons for Operating the Hardtop

Two buttons are provided in the center console for the purpose of operating the retractable hardtop. These buttons are wired to the convertible top module. When a button is pressed, the convertible top module receives the information and executes the corresponding command. Movement of the retractable hardtop or side windows stops if the button is released while the hardtop is moving. Operation is indicated by a red LED in one button and a green LED in the other. The convertible top module actuates the LEDs via the K-CAN.



Fig. 7: Identifying Hardtop Buttons
Courtesy of BMW OF NORTH AMERICA, INC.

The green LED in the button lights up during the opening/closing operation. The red LED signals an operating error or incorrect conditions (e.g. luggage compartment partition not in lower position). The red LED flashes as soon as the retractable hardtop is in an intermediate position and not operated. The LED flashing does not indicate a fault. The flashing LED draws attention to the fact that the vehicle cannot be driven in this situation.

A fault code that cannot be read out is stored under following conditions:

- Terminal R On while the button is pressed
- When the button is pressed for longer than 20 seconds after roof operation has concluded.

The retractable hardtop is then temporarily inoperative. The retractable hardtop can be operated again after pressing the Open button once.

Convertible Top Module

The Convertible top module (CTM) is the central electronic control unit for all functions of the retractable hardtop. The convertible top module is installed on the right in the luggage compartment. The convertible top module controls the retractable hardtop, the rear module, the automatic soft close system and the drive unit for locking the hardtop.

The CTM also controls the hydraulic pump and the six hydraulic cylinders by way of the three valves in the hydraulic unit. The K-CAN connects the convertible top module to other control units. Information on outside temperature, driving speed and rear lid status etc., is received via the K-CAN. The convertible top module ends a signal to the car access system (CAS) when the retractable hardtop is opened or closed. The car access system is the master for the power windows. In certain situations, the convertible top module outputs information in the form of check control messages in the instrument cluster.

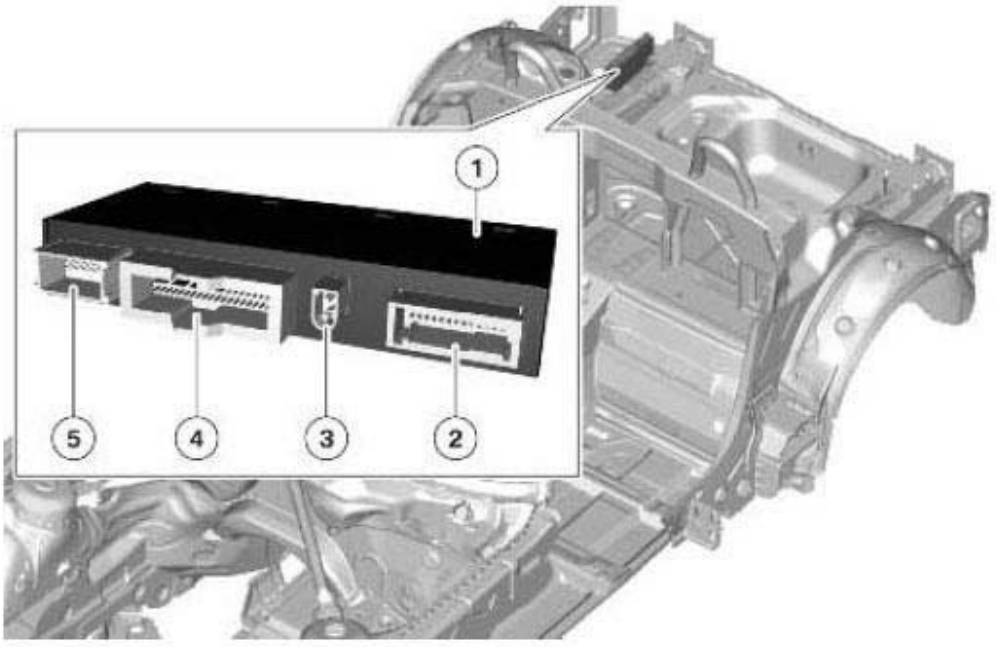


Fig. 8: Identifying Convertible Top Module Location And Connections
Courtesy of BMW OF NORTH AMERICA, INC.

INDEX EXPLANATION REFERENCE CHART

Index	Explanation
1	Convertible top module
2	26-pin connector for Hall sensors and microswitches
3	2-pin connector to drive unit for locking retractable hardtop
4	41-pin connector for voltage supply, automatic soft close system, and K-CAN
5	18-pin connector for actuating hydraulic unit

NOTE: ISTA-P must be used to encoded the new module after replacement.

Drive for Locking the Retractable Hardtop

The drive unit, consisting of an electric motor with gear mechanism, locks and unlocks the retractable hardtop with the cowl panel at the upper windscreen frame. The convertible top module actuates the electric motor. The drive unit is arranged in the middle. The retaining hooks on the right and left are moved by a rotary plate and push rods. The two Hall sensors 'cowl panel locked and unlocked' monitor the locking procedure.

When the retractable hardtop is opened, the drive unit locks the hardtop on the base plate in the rear module. This is a crash-lock function, which prevents the retracted hardtop from folding forward in the event of a crash.

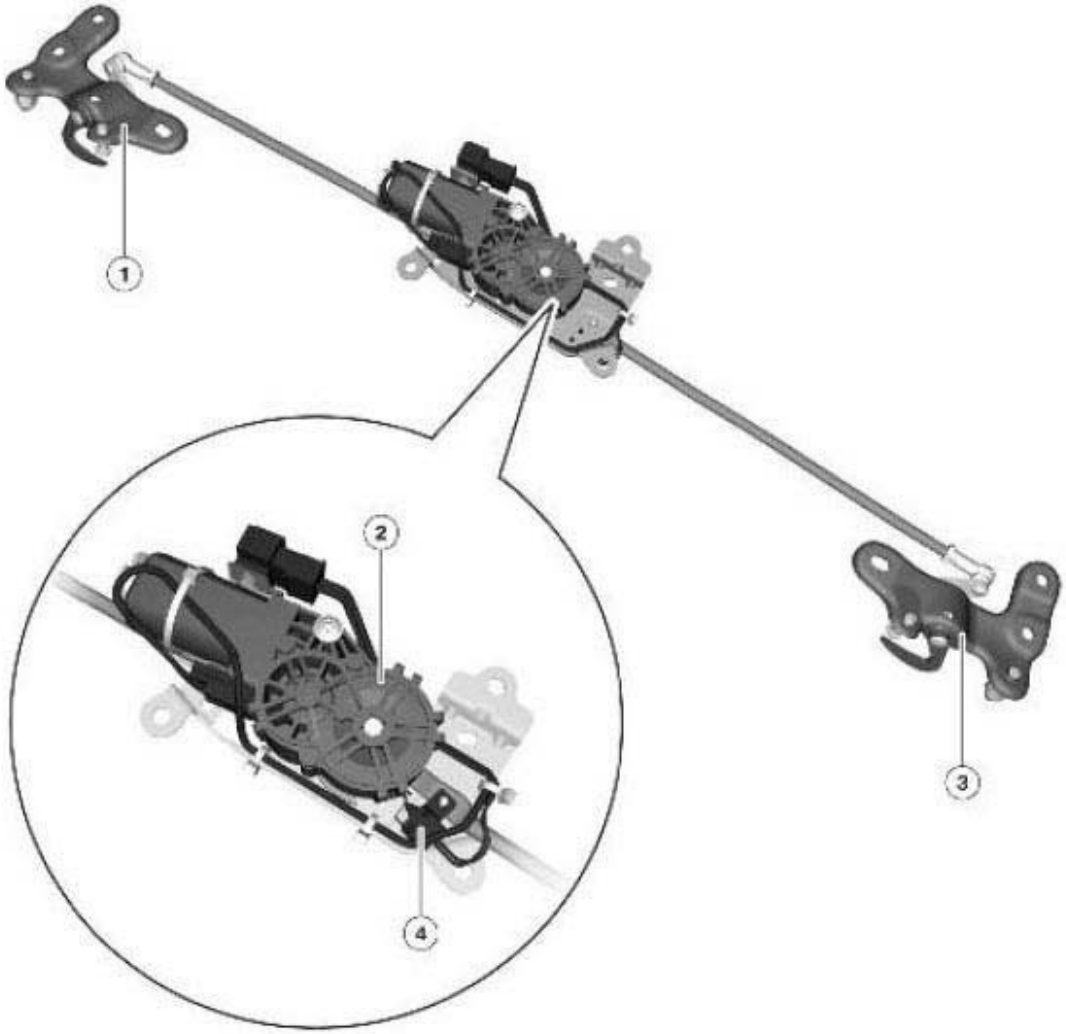


Fig. 9: Identifying Drive For Locking Retractable Hardtop
Courtesy of BMW OF NORTH AMERICA, INC.

INDEX EXPLANATION REFERENCE CHART

Index	Explanation
1	Retaining hook, left

2	Drive for locking retractable hardtop
3	Retaining hook, right
4	'Cowl panel unlocked' microswitch and 'cowl panel locked' microswitch

Hydraulic Unit

The hydraulic unit is located in a pan in the luggage compartment floor. The movement direction of the retractable hardtop and rear module are determined by corresponding valve positions and the direction of rotation of the hydraulic pump. The direction of rotation of the hydraulic pump is controlled by two relays.

The hydraulic pump generates an operating pressure from 150 to 200 bar.

The temperature in the hydraulic pump is measured to avoid the pump overheating during frequent use of the retractable hardtop. Two cables connect the temperature sensor ground-free to the convertible top module. A line break (open circuit) results in a fault code being entered in the fault code memory. At from a temperature of 90°C, hardtop closing movement already started is continued up to the secure end position. The movement of the retractable hardtop is stopped immediately at a temperature of 105°C.

The movement can be continued after the temperature has dropped below 90°C. The hydraulic unit is protected by a 50 amp slow-blow fuse.

Other than topping the hydraulic system off, the hydraulic fluid does not require any servicing. Add only the approved hydraulic fluid to the mark on the reservoir.



Fig. 10: Identifying Hydraulic Unit Location
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: **Excessive noise during top operation may be due to aerated hydraulic lines. If excessive operating noise is heard during operation, the retractable hardtop should be opened and closed several times in order to automatically bleed the hydraulic system via the fluid reservoir.**

Instrument Cluster - KOMBI

The instrument cluster provides the outside temperature (bus signal). The instrument cluster uses the check control symbol to show check control messages relating to the retractable hardtop.

Footwell Module - FRM

The footwell module FRM actuates the front power window regulators. The side windows must be lowered in order to open the retractable hardtop (bus signal to convertible top module).

Junction Box Electronics - JBE

The junction box electronics JBE actuates the rear power window regulators. The side windows must be lowered in order to open the retractable hardtop (bus signal to convertible top module). The junction box electronics provides the signal indicating whether the rear lid is closed (bus signal).

The power distribution box in the junction box supplies terminal 30g to the convertible top module. The convertible top module additionally receives terminal 15 from the car access system. This still enables adequate communication with the BMW diagnosis system when, for example, the voltage supply from the junction box is interrupted.

Car Access System - CAS

The car access system is the master control unit for the power window regulators. On request of the convertible top module, the car access system lowers or raises the side windows. In addition, the car access system prevents the rear lid from being opened and movement of the power windows when the retractable hardtop is in an intermediate position. The car access system controls the auto-remote opening function for the retractable hardtop. The signals from the remote control are received by the remote control receiver and sent to the car access system.

Antenna Diversity

The convertible top module sends a corresponding signal to the antenna diversity module depending on whether the retractable hardtop is closed or open. The antenna diversity function then correspondingly switches over the antennas.

PRINCIPLES OF OPERATION

The following options are available for operating the hardtop:

- Using the button (close and open)
- Using the key in the lock cylinder in the driver's door handle (close and open)

- Using the remote control (open only)
- Using the ID transmitter with Comfort Access option (close, as long as the ID transmitter is within range of the comfort access antennas and open as with the remote control).

Operating Pre-Conditions

The retractable hardtop can be opened and closed using the button in the center console only if the following conditions are met:

- Terminal R ON
- Outside temperature above -12°C
- Boot lid closed
- Vehicle stationary (driving speed < 0.7 km/h)
- Luggage compartment partition in lowest position
- Lateral inclination of vehicle < 11°
- Power windows initialized
- Battery voltage > 11.5 V
- Less than five successive opening/closing operations
- Hydraulic fluid temperature for opening < 90°C and for closing < 105°C
- Electrical system check successful
- Production, transport and workshop mode (FeTraWe) not set.

It is not possible to open and close the retractable hardtop while driving. Due to the high current consumption of the retractable hardtop of up to 40 amps, the hardtop should only be operated when the battery charger is connected or the engine is running.

NOTE: The rear power window regulators do not have an anti-trap system. There is also no one-touch function for closing the rear windows.

Opening the Retractable Hardtop

The retractable hardtop is normally operated by pressing the open or close button in the center console. The hardtop moves for as long as the button is pressed. The green LED in the button lights up while the retractable hardtop is moving. Movement of the retractable hardtop, rear module or side windows is stopped immediately if the button is released while the retractable hardtop is moving. The red LED then flashes in the button.

Movement of the hardtop can be resumed by pressing the button again. Movement of the side windows can be resumed within 10 seconds. If one of the conditions is not met, the red LED will light continuously.

The convertible top module checks the conditions for opening the retractable hardtop when the Open button in the center console is pressed. If the check is successful, the hardtop is opened as follows:

- Lower side windows (if closed or in intermediate position)
- Release hardtop at cowl panel

- Switch off heated rear window (takes place via junction box electronics)
- Unlock and open rear module
- Roof panel 2 is released and packed over roof panel 1
- Stow roof panel package in rear module and lock
- Close and lock rear module
- Close side windows.

The hardtop is closed automatically in the reverse order.

Operating Conditions with Comfort Access

The following functions can be performed only when the ID transmitter is less than 4 m away:

- Open
- Close
- Easy Load feature

Automatic Soft Close System

The automatic soft close function is installed as standard to conveniently close the rear [trunk] lid. The automatic soft close system consists of two drive units. The drive units lock the rear lid on the left and right on the rear module carrier. This increases the stability of the rear end.

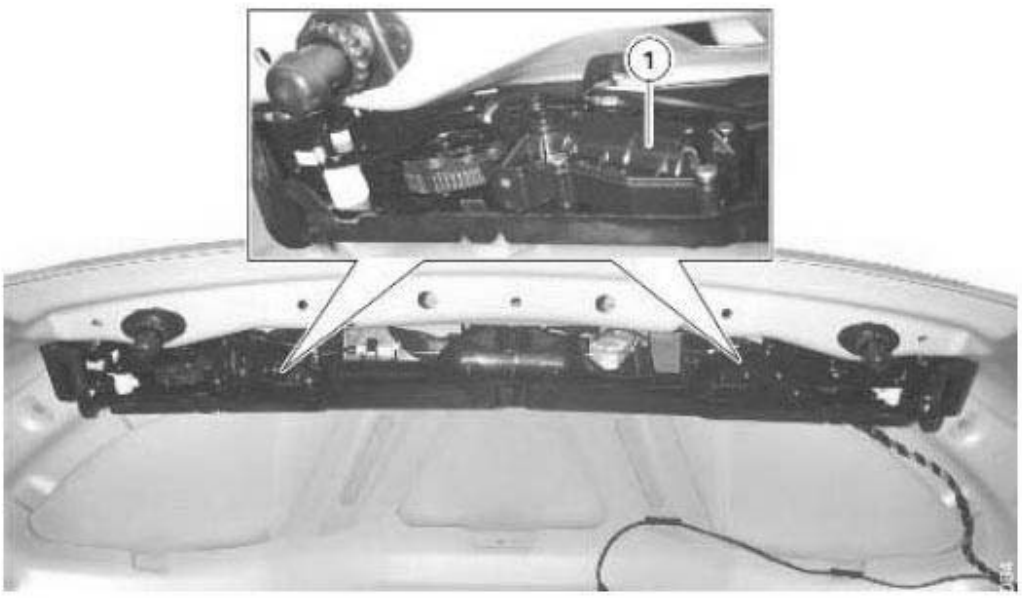


Fig. 11: Identifying Automatic Soft Close Drive
Courtesy of BMW OF NORTH AMERICA, INC.

Each trunk lid latch assembly has a microswitch. These two microswitches are operated when the rear lid locks on the left and right have reached the lock strikers. The signals are hard wired to the junction box electronics

which then makes the signal available to the convertible top module via the K-CAN-bus. The convertible top module then actuates the two drive units of the automatic soft close system until the rear lid is locked.

Manually shutting the rear lid would make closing via the automatic soft close system unnecessary. For safety reasons, steps must be taken to ensure that the rear lid is completely closed. For this reason, the drive units of the automatic soft close system are still actuated.

Both drive units feature a repeat interlock to avoid overheating. The repeat interlock allows the automatic soft close system to be actuated up to 20 times (counter up to 20 increments). The automatic soft close system is then inhibited electrically for approximately 2 minutes.

Check Control Messages

It is not possible to open or close the retractable hardtop in certain situations. In such cases, corresponding messages are shown in the instrument cluster in the form of check control messages.

A short message and additional information are shown on vehicles equipped with a central information display (CID). The check control messages provide explanatory information relating to the red LED in the button that lights up in the case of fault. An active check control message is shown every 5 seconds.

CHECK CONTROL MESSAGES REFERENCE CHART

Check Control Symbol	Check Control Message	Additional Information
	Luggage compartment open!	-
	Roof malfunction!	No roof movement possible. If the retractable hardtop does not lock, contact the nearest BMW dealer.
	Roof operation!	Roof movement not completed. Check whether roof movement is blocked. Then press button again.
	Roof control failed!	Roof position and roof locking are not detected. Trip can be continued if roof is locked securely.
	Roof not locked!	Roof not locked. First open or close roof completely before continuing trip.

	Luggage compartment partition!	No roof movement possible. Move luggage compartment partition into required position.
	Roof drive overheated!	Roof drive overheated.
	Roof operation not possible!	Roof operation only possible when vehicle is stationary.
	Vehicle not parked on level ground!	Vehicle not parked on level ground. No roof movement possible.

SENSOR STATUS

SENSOR STATUS REFERENCE CHART

	Retractable hardtop open	**Intermediate position1**	**Intermediate position2**	**Retractable hardtop closed**
"Roof package stowed" Hall sensor	• On	o Off	o Off	o Off
LH microswitch, roof panel closed	o Off	o Off	o Off	• On
RH microswitch, roof panel closed	o Off	o Off	o Off	• On
Hall sensor, roof panel packed	• On	• On		o Off
Microswitch, cowl panel locked	• On	o Off	• On	• On
Microswitch, cowl panel unlocked	o Off	• On	o Off	o Off
LH microswitch, rear module closed	• On	o Off	• On	• On
"Rear module open" Hall sensor	o Off	• On	o Off	o Off
RH microswitch, rear module closed	• On	o Off	• On	• On
Microswitch, roof module compartment locked	• On	o Off	o Off	o Off

"Cowl panel reached" microswitch	o Off	o Off	• On	• On
"Luggage compartment divider" Hall sensor	• On	• On	• On	• On

Convenient Loading Function of Rear Lid

The retractable hardtop can be opened and closed using the ID transmitter on vehicles equipped with the Comfort Access option.

The new auto-remote function for loading and unloading provides fast access to the luggage compartment when the retractable hardtop is down. This function makes it easier to load larger items of luggage for instance. The auto-remote function is activated as follows:

- Briefly press the rear lid button on the remote control
- Then, press and hold the rear lid button on the remote control (no more than one second may pass between releasing and pressing the rear lid button).

Initially, the rear module is unlocked and fully opened. The roof package is swivelled out of the luggage compartment. The rear module is then closed and locked. The rear lid is unlocked by the automatic soft close system. The boot lid opens a little. The auto-remote functions via the remote control conform to national market specifications.

Emergency Opening of Rear Lid

As there is no lock cylinder and Bowden cable assembly, the rear lid cannot be released in the event of the rear lid lock being defective. At the same time, movement of the retractable hardtop is inhibited by the unknown status of the rear lid.

The lid can be opened if the Bowden cable (emergency glow in the dark) handle can be reached from the through load compartment.

The rear lid can also be forced to open by using the diagnostic tester. The rear lid activation via the JBE component activation function. This activation request ignores all status that would typically inhibit rear lid operation such as top position.

Emergency Actuation of the Retractable Hardtop

An emergency actuation facility for releasing the retractable hardtop by the customer is not possible. Emergency actuation is, however, possible in the service workshop. The emergency actuation procedure is described in detail in the repair instructions.

5410 SLIDETILT SUNROOF AND CONVERTIBLE TOP

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

2.1 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.

2.2 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
   - Press against seal strongly with a roller. Application pressure approx. 70 N.
   - Application pressure approx. 30 N.
   - Tear off tear-off lip at rear and side in area of narrower flange.

Sliding sunroof seal only:

E36 sliding sunroof seal only:

NOTE: Firm thumb pressure has approx. 35 N/cm^2

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.

5431 CONVERTIBLE TOP LINKAGE/OPERATION

54 34 001 CHECKING FUNCTION OF ELECTRO-HYDRAULIC CONVERTIBLE TOP

WARNING: You are exposed to the risk of trapping body parts when working on the installed or removed convertible top.

Convertible top is centered by pin (2) during insertion into guide and locked by rotary striker (1).

Carefully close convertible top until rotary striker (1) has retracted by approx. 1/3 into striker.

Rotary striker (1) and pin (2) must close correctly and virtually silently.

Open and close convertible top at least 3 times.

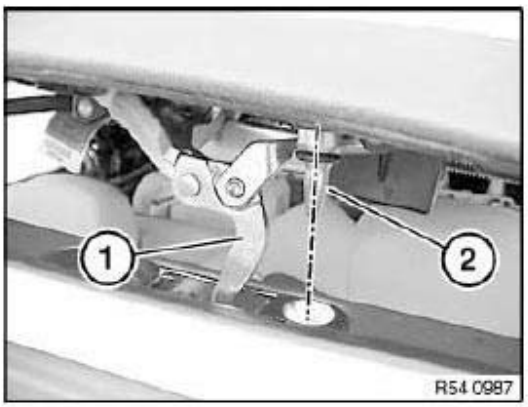


Fig. 1: Identifying Rotary Striker And Pin
Courtesy of BMW OF NORTH AMERICA, INC.

Check all line connections for fluid leaks.

If necessary, **CHECK FLUID LEVEL** .

NOTE: The drive has an additional function.

With the hardtop opened, the drive locks the hardtop on the base plate in the rear module.

The purpose of this function is crash locking.

In the event of a crash, the stored hardtop cannot fold forwards.

Function actuation, convertible top:

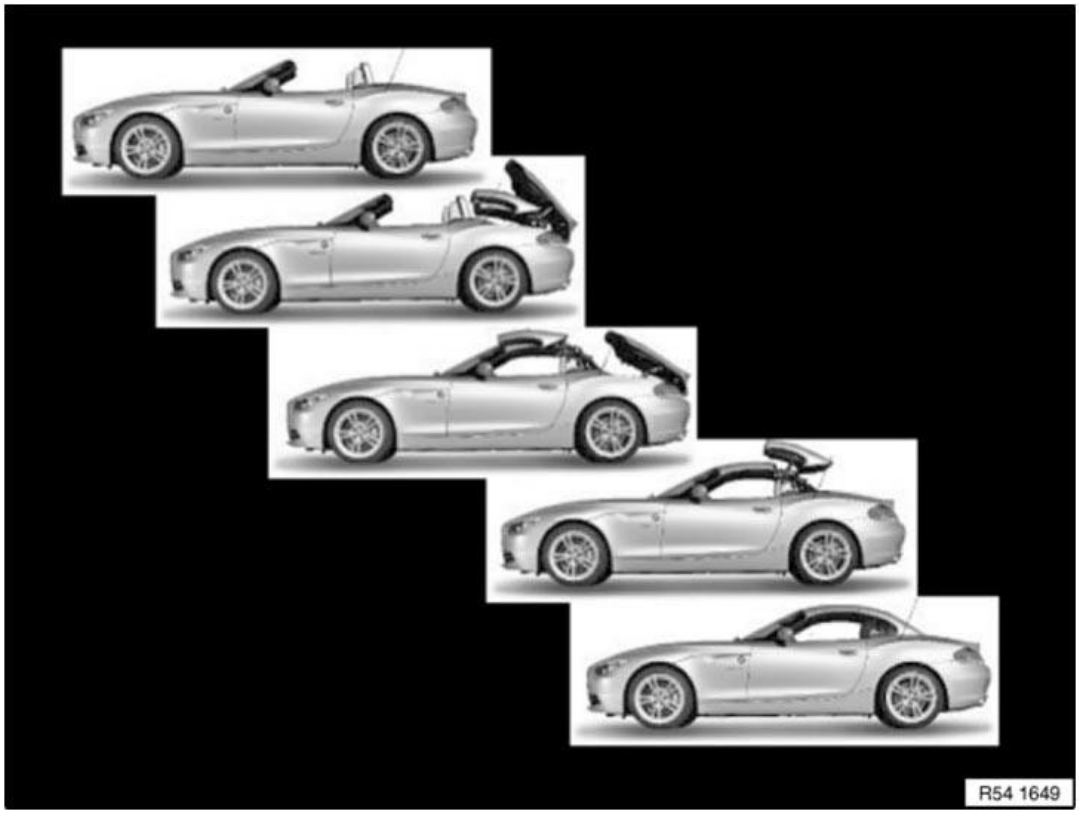


Fig. 2: Function Actuation, convertible top
Courtesy of BMW OF NORTH AMERICA, INC.

Closing convertible top is only possible under following conditions:

- from ignition lock position "R" (radio setting)

- outside temperature is above -20 °C
- rear lid (rear module) closed
- vehicle stationary (driving speed 0 kph)
- luggage compartment partition is in lower position
- lateral inclination of the vehicle less than 11°
- power windows are initialized
- battery voltage greater than 11.5 volts
- fewer than 5 opening and closing operations in succession (pump protection inactive)
- temperature of hydraulic fluid for opening max. 90 °C and for closing max. 105 °C
- hydraulic pump motor is not overheated
- control switch is pressed

Automatic opening runs as follows:

- Side windows are lowered
- Unlock hardtop at the cowl panel
- Switch off heated rear window (via the junction box electronics)
- Unlock and open rear module
- Pack rear roof shell on front roof shell
- Store roof panel package in the rear module and lock
- Close and lock rear module
- Close side windows

Check-control messages

It is not possible to open and close the convertible top in certain situations.

Corresponding Check Control messages are displayed in the instrument cluster for this purpose.

The Check Control messages serve to explain in closer detail the red or yellow LED on the button which lights up in the event of a fault.

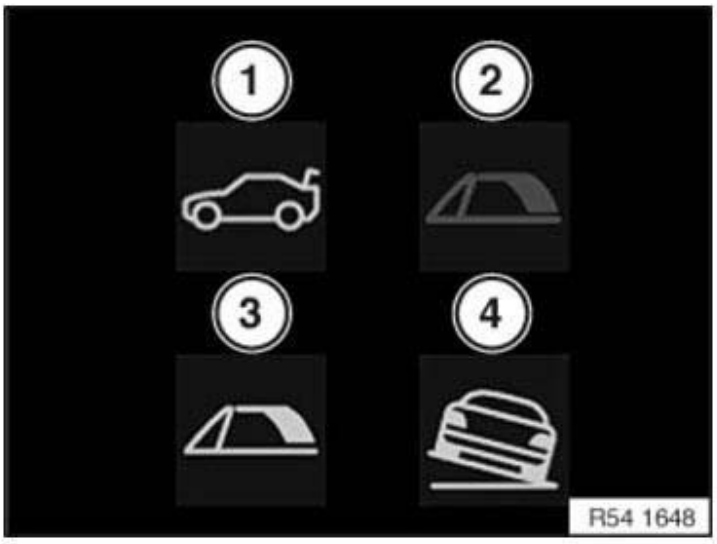


Fig. 3: Identifying Check Control Messages
Courtesy of BMW OF NORTH AMERICA, INC.

CHECK CONTROL MESSAGES REFERENCE CHART

No.	Colour:	ID	Check Control message	Supplementary note:
1	yellow	19	Boot open!	
2	Red	401	Roof mechanism function failure!	Roof mechanism No roof movement possible. If the soft hardtop is not locked,

				contact the nearest BMW Service.
		447	Roof mechanism!	Roof mechanism Roof movement not completed. Please check whether roof movement is blocked. Then press button again.
		558	Roof control failure!	Roof control Roof position and interlock cannot be detected. If the roof locks safely, driving can continue. For information on checking the interlock, see Owner's Handbook.
		562	Roof not locked!	Roof Roof not locked. First open or close the roof completely, then continue driving.
3	yellow	416	Luggage-compartment partition!	Luggage compartment partition No roof movement possible. Move luggage compartment partition to the position required, refer to Owner's Handbook.
		432	Roof drive overheating!	Roof mechanism Roof operation overheated. Temporarily only closing function available.
		516	No roof operation possible!	Roof Roof operation only possible with vehicle at a standstill.
4	yellow	445	Vehicle not standing on level surface!	Roof mechanism Vehicle not standing on level surface! No roof movement possible.

Only when you have excluded the function conditions as fault sources can you start convertible top diagnosis.

5434 MOTOR-OPERATED CONVERTIBLE TOP

54 34 001 CHECKING FUNCTION OF ELECTRO-HYDRAULIC CONVERTIBLE TOP

WARNING: You are exposed to the risk of trapping body parts when working on the installed or removed convertible top.

Convertible top is centered by pin (2) during insertion into guide and locked by rotary striker (1).

Carefully close convertible top until rotary striker (1) has retracted by approx. 1/3 into striker.

Rotary striker (1) and pin (2) must close correctly and virtually silently.

Open and close convertible top at least 3 times.

Check all line connections for fluid leaks.

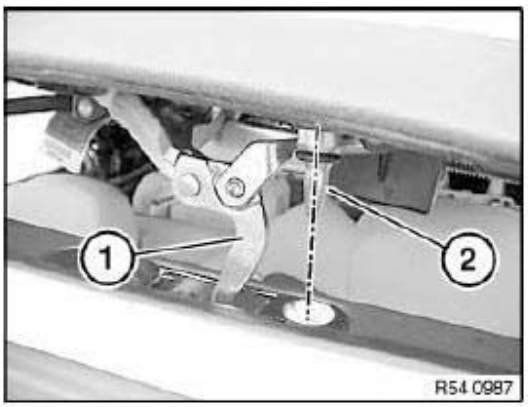


Fig. 4: Identifying Rotary Striker And Pin
Courtesy of BMW OF NORTH AMERICA, INC.

If necessary, **CHECK FLUID LEVEL** .

NOTE: The drive has an additional function.

With the hardtop opened, the drive locks the hardtop on the base plate in the rear module.

The purpose of this function is crash locking.

In the event of a crash, the stored hardtop cannot fold forwards.

Function actuation, convertible top:

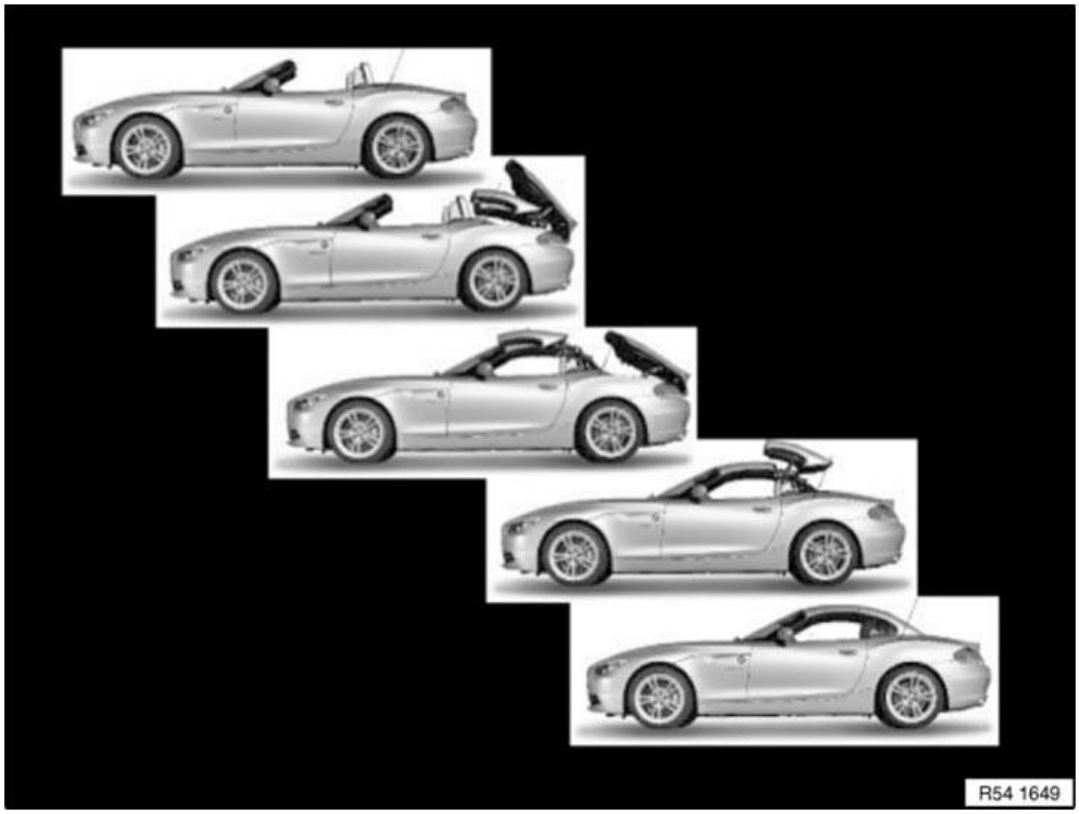


Fig. 5: Function Actuation, Convertible Top
Courtesy of BMW OF NORTH AMERICA, INC.

Closing convertible top is only possible under following conditions:

- from ignition lock position "R" (radio setting)
- outside temperature is above -20 °C
- rear lid (rear module) closed
- vehicle stationary (driving speed 0 kph)
- luggage compartment partition is in lower position
- lateral inclination of the vehicle less than 11°
- power windows are initialized
- battery voltage greater than 11.5 volts
- fewer than 5 opening and closing operations in succession (pump protection inactive)
- temperature of hydraulic fluid for opening max. 90 °C and for closing max. 105 °C
- hydraulic pump motor is not overheated
- control switch is pressed

Automatic opening runs as follows:

- Side windows are lowered

- Unlock hardtop at the cowl panel
- Switch off heated rear window (via the junction box electronics)
- Unlock and open rear module
- Pack rear roof shell on front roof shell
- Store roof panel package in the rear module and lock
- Close and lock rear module
- Close side windows

Check-control messages

It is not possible to open and close the convertible top in certain situations.

Corresponding Check Control messages are displayed in the instrument cluster for this purpose.

The Check Control messages serve to explain in closer detail the red or yellow LED on the button which lights up in the event of a fault.

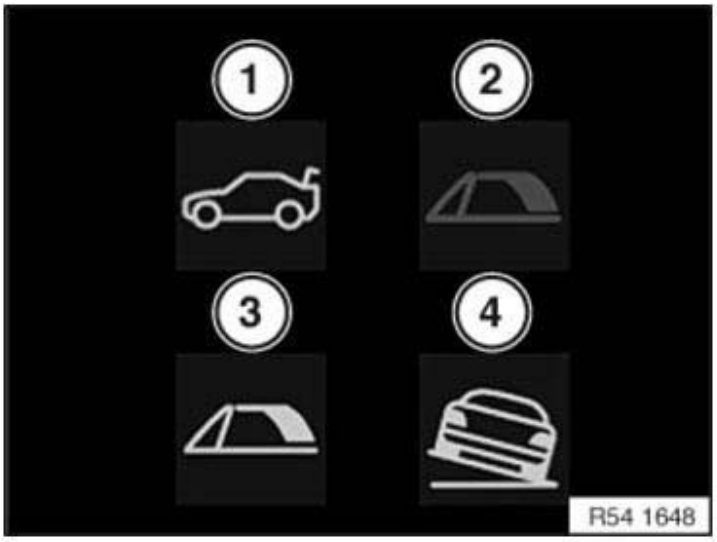


Fig. 6: Identifying Check Control Messages
Courtesy of BMW OF NORTH AMERICA, INC.

CHECK CONTROL MESSAGES REFERENCE CHART

No.	Colour:	ID	Check Control message	Supplementary note:
1	yellow	19	Boot open!	
2	Red	401	Roof mechanism function failure!	Roof mechanism No roof movement possible. If the soft hardtop is not locked,

				contact the nearest BMW Service.
		447	Roof mechanism!	Roof mechanism Roof movement not completed. Please check whether roof movement is blocked. Then press button again.
		558	Roof control failure!	Roof control Roof position and interlock cannot be detected. If the roof locks safely, driving can continue. For information on checking the interlock, see Owner's Handbook.
		562	Roof not locked!	Roof Roof not locked. First open or close the roof completely, then continue driving.
3	yellow	416	Luggage-compartment partition!	Luggage compartment partition No roof movement possible. Move luggage compartment partition to the position required, refer to Owner's Handbook.
		432	Roof drive overheating!	Roof mechanism Roof operation overheated. Temporarily only closing function available.
		516	No roof operation possible!	Roof Roof operation only possible with vehicle at a standstill.
4	yellow	445	Vehicle not standing on level surface!	Roof mechanism Vehicle not standing on level surface! No roof movement possible.

Only when you have excluded the function conditions as fault sources can you start convertible top diagnosis.

54 34 820 REMOVING AND INSTALLING KINEMATICS BOX

Necessary preliminary tasks

- Remove hydraulic cylinder for Convertible top compartment lid See **5437225 REMOVING AND INSTALLING/REPLACING RIGHT CONVERTIBLE TOP COMPARTMENT LID HYDRAULIC CYLINDER** or **5437220 REMOVING AND INSTALLING/REPLACING LEFT CONVERTIBLE TOP COMPARTMENT LID HYDRAULIC CYLINDER** on left and right

Open convertible top compartment lid.

IMPORTANT: Convertible top compartment lid can tilt forwards when hydraulic cylinders are removed and must be supported with suitable apparatus.

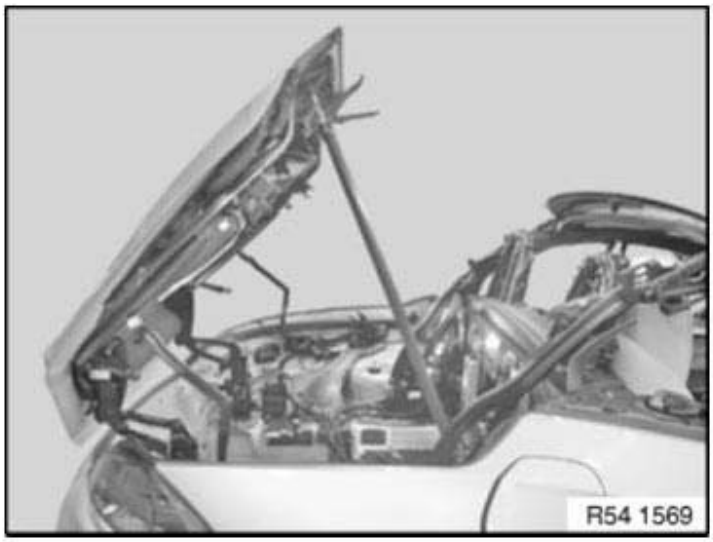


Fig. 7: Identifying Top Compartment Lid
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten and detach retaining clip (1).

Drive out pin.

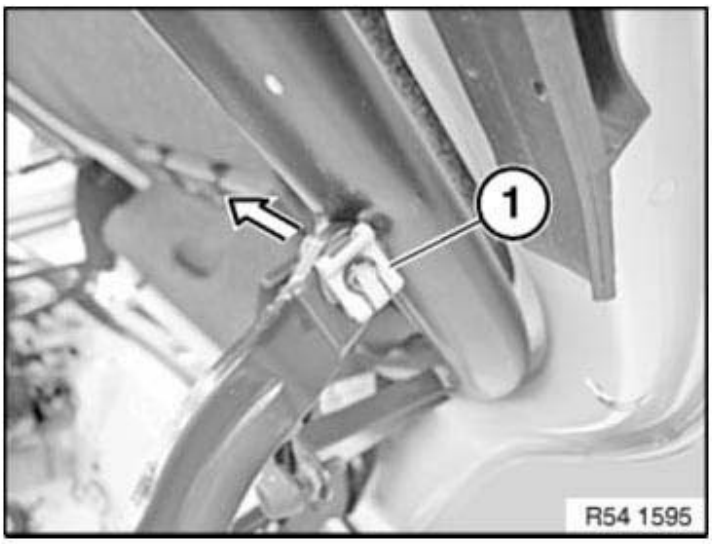


Fig. 8: Disconnecting Retaining Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Remove kinematics box.

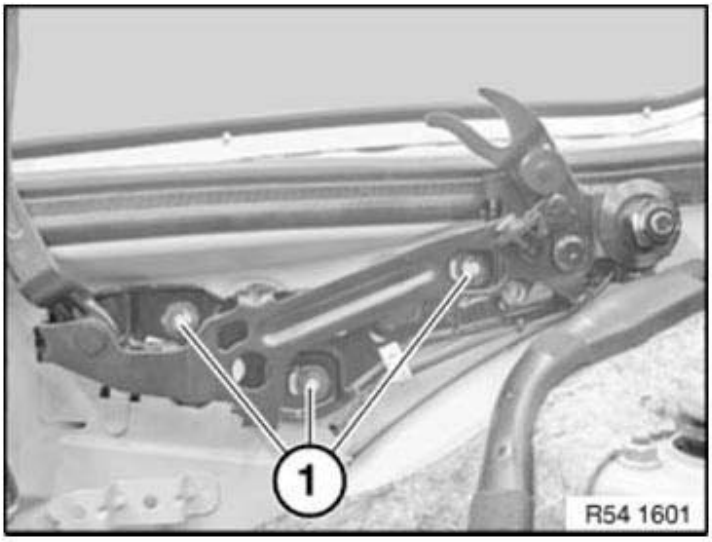


Fig. 9: Identifying Kinematics Box Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting kinematics box

NOTE: Kinematics box must not be at top dead centre.

Insert screws (1).

Kinematics box should still be able to be slid in order to centre itself.

Close Convertible top compartment lid.

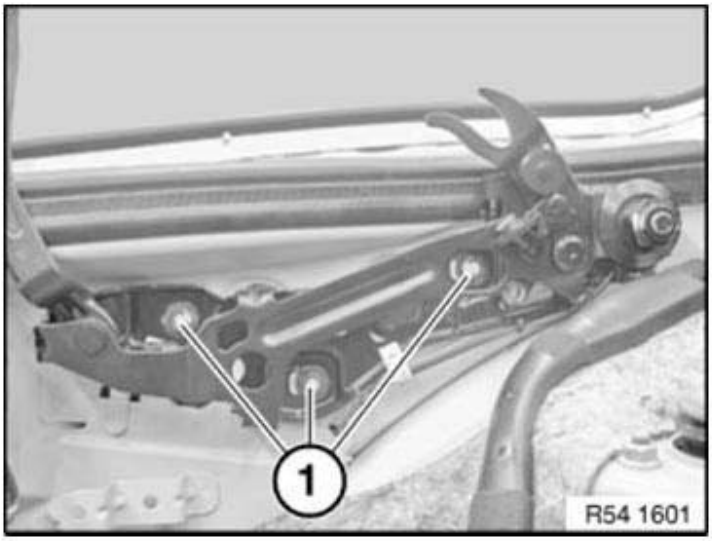


Fig. 10: Identifying Kinematics Box Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Open rear lid.

Tighten down screws (1).

Tightening torque **54 37 02AZ** .

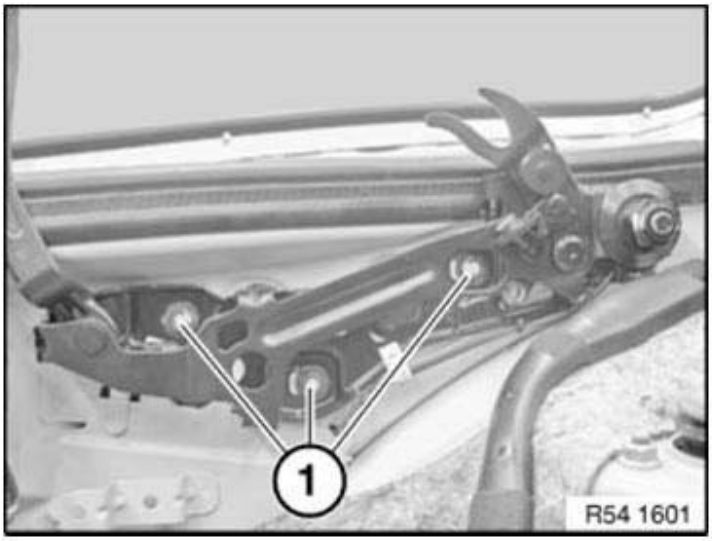


Fig. 11: Identifying Kinematics Box Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check **GAP DIMENSIONS** .

If necessary, manually adjust the kinematics box.

54 34 ... REMOVING AND INSTALLING/REPLACING GAS PRESSURIZED PROP ON LEFT OR RIGHT MAIN MOUNT

Open convertible top compartment lid.

IMPORTANT: Convertible top compartment lid may tilt forwards and must be supported with suitable apparatus.

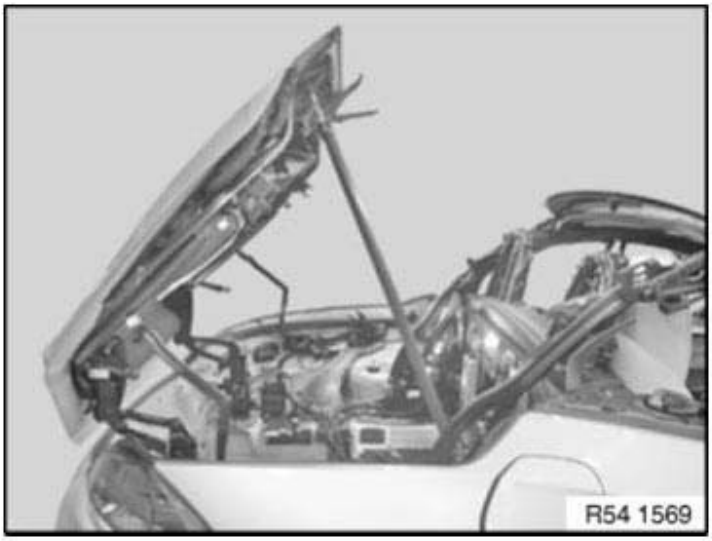


Fig. 12: Identifying Top Compartment Lid
Courtesy of BMW OF NORTH AMERICA, INC.

Make a written record of the alignment of gas pressure spring (1) before removing.

Slide retaining spring (2) to end of gas pressurized prop (1) and lever gas pressurized prop (1).

Repeat procedure at other end of gas strut (1).

Installation:

Check that retaining spring is fitted correctly and replace if necessary.

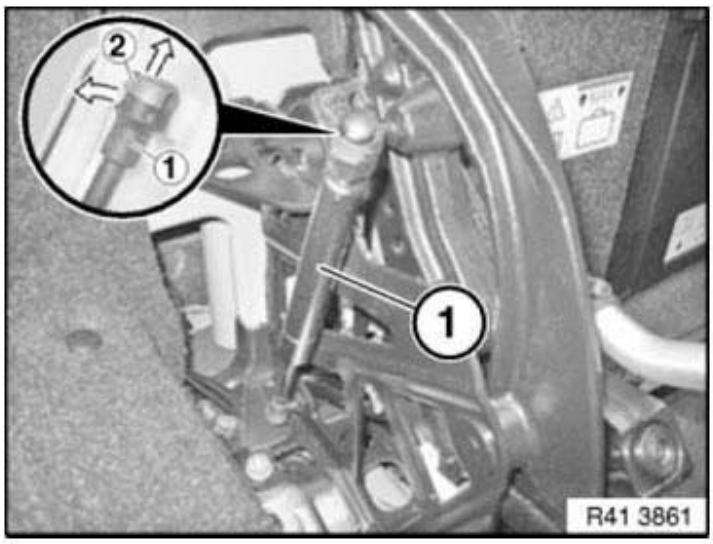


Fig. 13: Sliding Retaining Spring To End Of Gas Pressurized Prop
Courtesy of BMW OF NORTH AMERICA, INC.

Place special tool 54 0 210 on both ends of gas pressurized prop (1) and lightly tighten screw (2).

Remove gas pressurized prop from the ball heads.

Mark length of tensioned gas pressurized prop with felt pen on special tool 54 0 210 .

The tension in the gas pressurized prop can be completely relieved by releasing screw (2).

Repeat procedure on right-hand side of car.

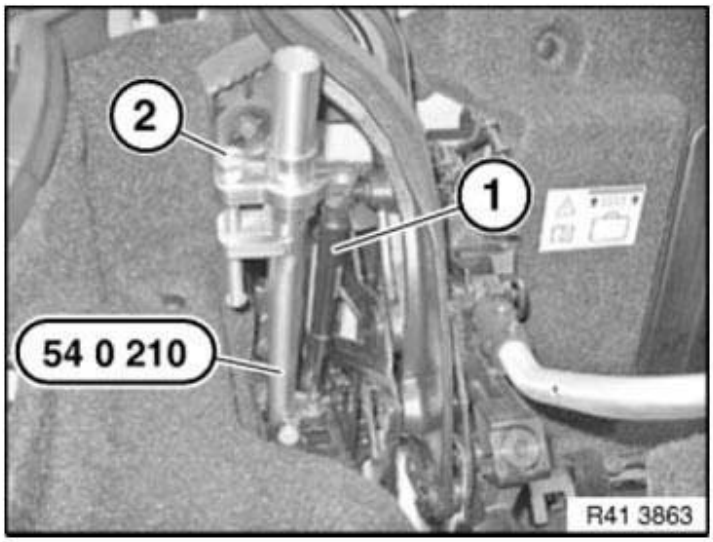


Fig. 14: Positioning Special Tool 54 0 210 On Both Ends Of Gas Pressurized Prop
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Always replace gas pressurized props in pairs.

Tension gas pressurized prop up to marking and install.

54 37 185 REMOVING AND INSTALLING/REPLACING HYDRAULIC UNIT (DRIVE) FOR RETRACTABLE HARDTOP

Necessary preliminary work

- Remove **LUGGAGE COMPARTMENT FLOOR TRIM PANEL**

IMPORTANT: Hydraulic fluid may emerge from the disconnected lines and the open connections on the hydraulic unit (drive).
Protect components and work area with suitable materials (e.g. cloths).
Follow REPAIR INSTRUCTIONS for hydraulic system.
Do not fit hydraulic lines in kinked, crushed or transposed condition.

Release screws (1).

Tightening torque **54 37 09AZ** .

Remove battery rollover protection (2).

Remove insulating mat (3).

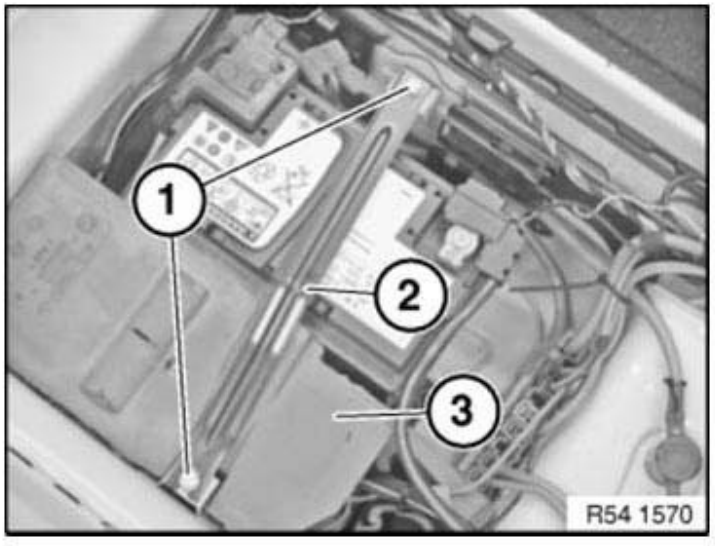


Fig. 15: Identifying Insulating Mat And Battery Rollover Protection With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten plug connection (1) and disconnect.

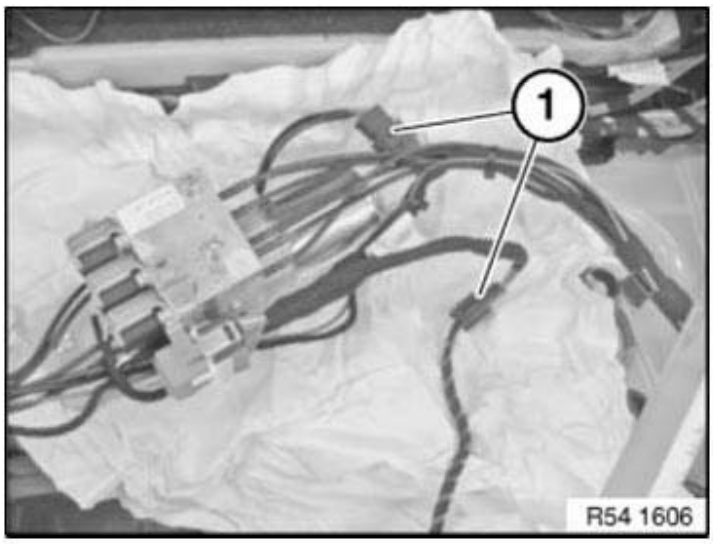


Fig. 16: Identifying Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Press release and detach relay (1) from holder.

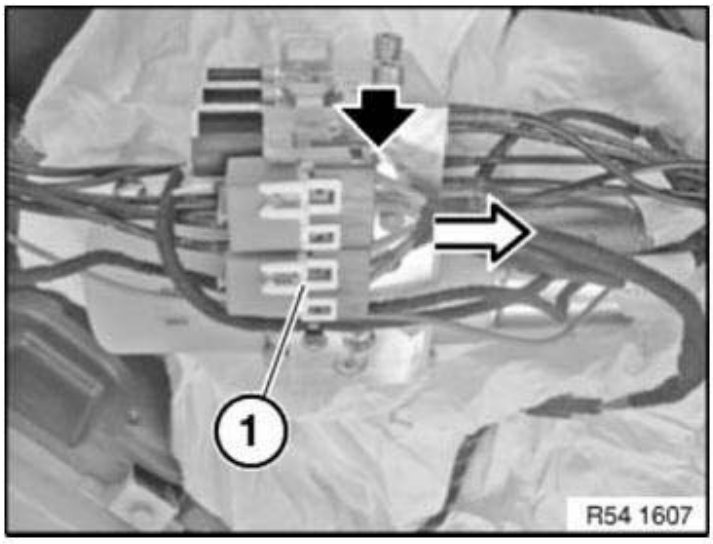


Fig. 17: Disconnecting Relay From Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Release plug connections (1) and disconnect.

Cut cable straps.

Installation note:

Plug connections are coded against incorrect assembly.

Replace defective cable strap.

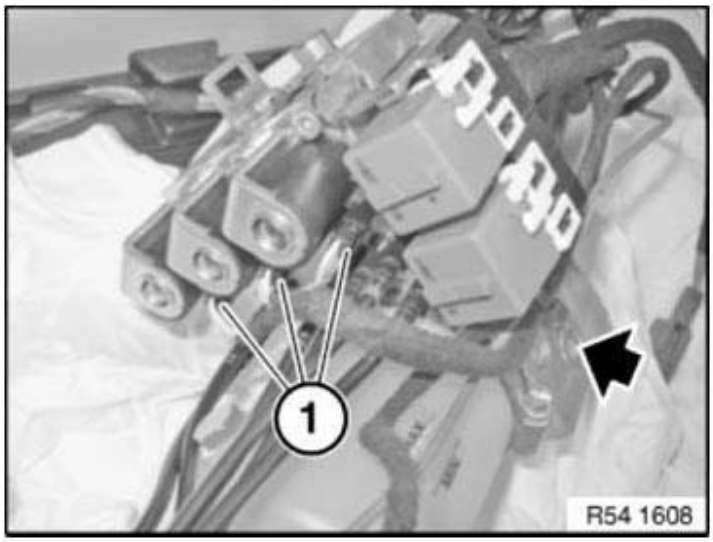


Fig. 18: Identifying Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Protect joints (lines and hydraulic unit) against dripping fluid, e.g. with a cleaning cloth.

Disconnect hydraulic lines from hydraulic unit:

- Release screws.
- Detach hydraulic lines

Installation note:

Hydraulic lines and connections are marked with numbers to prevent mix-ups.

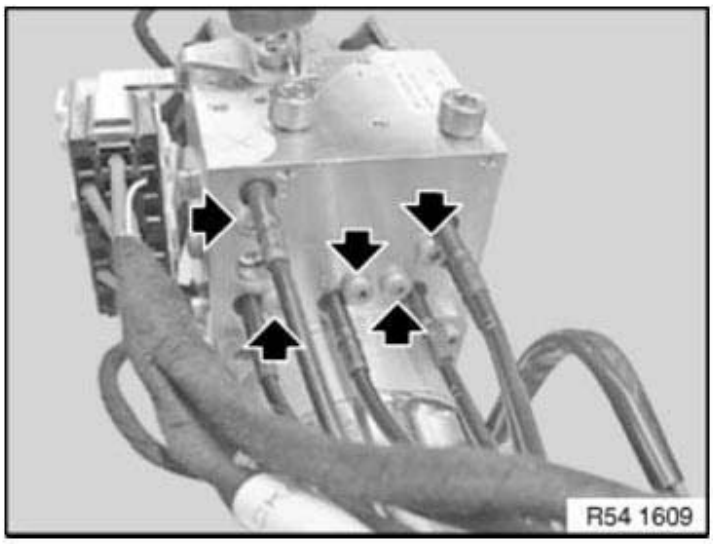


Fig. 19: Locating Screws Of Hydraulic Lines
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect hydraulic lines from hydraulic unit:

- Release screws.
- Detach hydraulic lines
- Remove hydraulic unit (drive).

Installation note:

Hydraulic lines and connections are marked with numbers to prevent mix-ups.

Check **FLUID LEVEL** or top up if necessary.

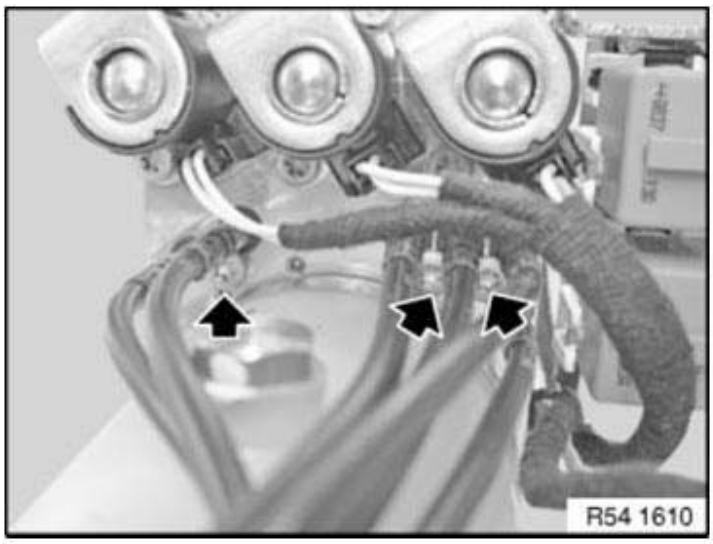


Fig. 20: Locating Screws Of Hydraulic Lines
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement only:

Use Allen key to close shutoff valve on hydraulic unit.

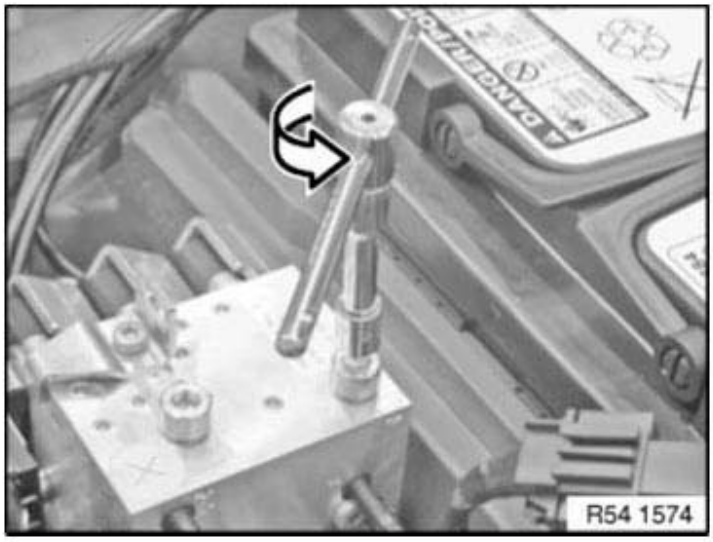


Fig. 21: Closing Shutoff Valve On Hydraulic Unit Using Allen Key
Courtesy of BMW OF NORTH AMERICA, INC.

54 34 503 REMOVING AND INSTALLING/REPLACING HYDRAULIC VALVE (SOLENOID VALVE)

Necessary preliminary tasks

- Remove **LUGGAGE COMPARTMENT FLOOR TRIM PANEL**

IMPORTANT: Hydraulic fluid may emerge from the open connections on the hydraulic unit.
Protect components and work area with suitable materials (e.g. cloths).
Make sure that dirt cannot get into the hydraulic circuit.
Follow REPAIR INSTRUCTIONS for hydraulic system.
Do not fit hydraulic lines in kinked, crushed or transposed condition.

Release screws (1).

Tightening torque **54 37 09AZ** .

Remove battery rollover protection (2).

Remove insulating mat (3).

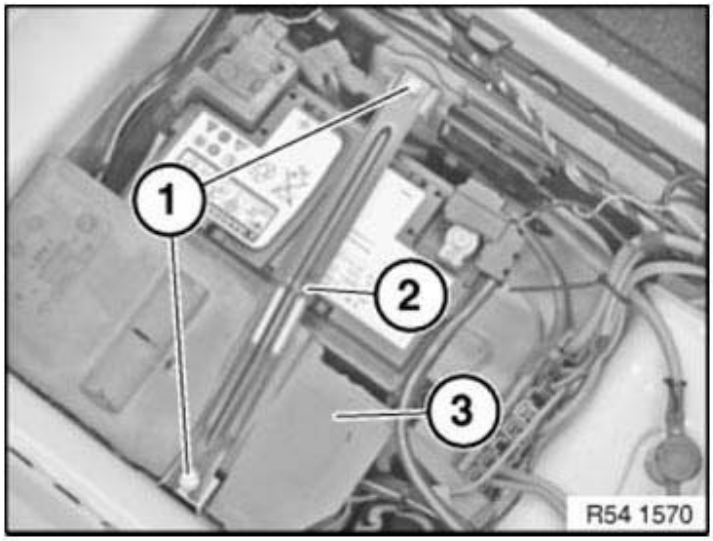


Fig. 22: Identifying Battery Rollover Protection And Insulating Mat
Courtesy of BMW OF NORTH AMERICA, INC.

Overview, hydraulic valves F1, F2 and F3:

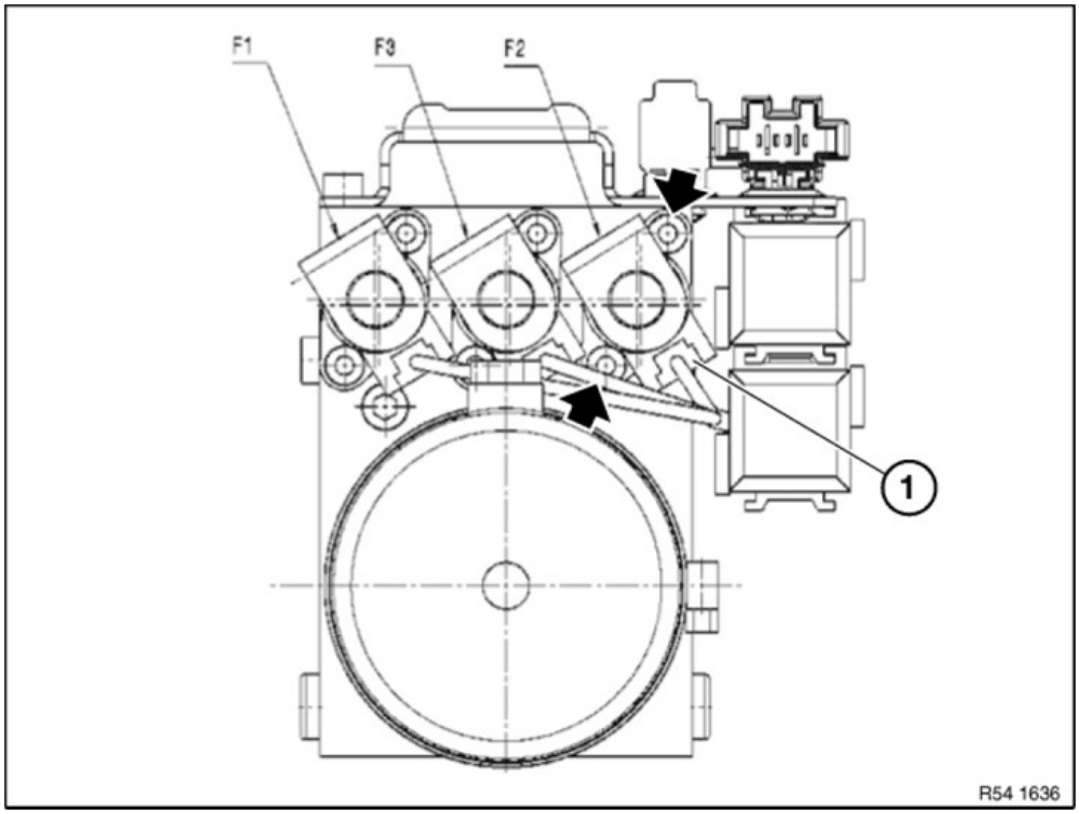


Fig. 23: Overview Of Hydraulic Valves F1, F2 And F3
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: **Hydraulic unit must be held in the vertical position, otherwise fluid will escape.**
Change shown on hydraulic valve F2. Analogous procedure for hydraulic valve F1 and F3.
When removing several hydraulic valves, mark the plugs at the respective slots.
Unfasten plug connection (1) and disconnect.
Release screws.
Tightening torque 54 37 15AZ .
Detach hydraulic valve.

IMPORTANT: Protect exposed bores against dirt contamination.
Do not mix up plug connections.

Check **FLUID LEVEL** or top up if necessary.

Check function.

Fully open and close convertible top a minimum of 3 times in order to bleed the hydraulic system.

54 34 ... REPAIR INSTRUCTIONS FOR HYDRAULIC SYSTEM OF CONVERTIBLE TOP AND CONVERTIBLE TOP COMPARTMENT LID

1. Definitions of terms

REPAIR INSTRUCTIONS FOR HYDRAULIC SYSTEM OF SOFT TOP AND SOFT TOP COMPARTMENT LID

Hydraulic system at zero pressure or Untensioned state:	• Turn ignition lock to "0" position. • E46c: Wait 15 secondsE52: Wait 2 minutesE85: Emergency operation or wait 2 minutesE64: Wait 5 seconds.	Hydraulic system has no or only very low pressure
Mechanical operation: Emergency operation:	• Soft top is opened or closed by hand • Always move soft top with aid of a second person	Observe Point 3
Closed system:	• All lines are connected	Even "short circuiting" of lines is possible
Function check:	• Open and close soft top several times (min. 3 times) • Check fluid level in hydraulic unit; if necessary, top up fluid	Refer to Operating Instructions
Short circuit (E46c only):	• Unfastening of quick-release couplings • Connection of supply and return lines	Hydraulic system cannot build up pressure Soft top can be moved
Function check:	• Checking of soft top function if possible on removed soft top	Soft top must be secured! Move 2-3 times
Soft top stowed:	• Soft top fully open (folded together)	When the soft top is installed, it is in the closed soft top compartment

2. When working on hydraulic system, observe the following

- Once it has been removed, the convertible top must be safely stowed or tensioned (e.g. with screw clamps to workbench).

  On some models, the special tool must be used.

  The **UNIVERSAL LEVER** is required here.

- When the hydraulic system is open (unscrewing of lines, topping up of fluid, etc.), always provide sufficient cloths to catch leak-off fluid.

  Also provide an adherent protective cover to cover/protect fittings.

- Hydraulic system must be at zero pressure.
- E46c only: The disconnected supply and return lines to the convertible top can be connected to each other (establish "short circuit"). The system is thereby closed again. The clutches are protected against damage. The hydraulic system cannot build up a high pressure. The convertible top can be moved.

- Disconnect or unscrew feed and return lines if possible at a later stage, when the convertible top is stowed and untensioned (check fluid, see also Point 3).
- Once the hydraulic system has been opened, first check the fluid level after completing the tasks before carrying out a function test.
- After disconnecting the hydraulic lines from hydraulic components, do not move the convertible top if at all possible (fluid can escape from joints).
- Piston rods must not be damaged (e.g. scratches). Even paint mist and welding spots are harmful.

  When working in the vicinity of hydraulic cylinders, cover the cylinders with suitable materials.

- If the hydraulic unit or the lines stay removed for an extended period of time, the bores on the hydraulic unit and the hose connections must be sealed off (observe installation instructions).

3. Mechanical operation of convertible top

- E46c: only with ignition switched off.

  If lines are disconnected, connect them to each other if at all possible.

- E52/E85: Emergency operation
- In the event of repeated operation, the system fluid is pumped into the supply tank of the hydraulic unit. If hydraulic components are now replaced, there will be too much fluid in the system. This may cause damage to the system in event of operation. (Checking fluid level, see Points 4 and 5).

4. Check oil level

- E46c: only when convertible top is stowed and convertible top compartment lid is closed. E52, E85: with closed convertible top only
- Observe brief instructions.
- Fluid level must be within the markings (circle/cross).
- Fluid is supplied with the repair kits (e.g. banjo bolts/seals, hoses, cylinders) and is available separately (refer to BMW Parts Department).

5. Topping up/extracting fluid

- E46c: only when convertible top is stowed and convertible top compartment lid is closed. E52E85only with convertible top closed
- E64 The hydraulic fluid does not have to be changed because the system is filled with life-time fluid. Only the approved hydraulic fluid may be used in the event of leaks.
- Observe brief instructions.
- Remove hydraulic unit without detaching lines.
- Fluid is supplied with the repair kits (e.g. banjo bolts/seals, hoses, cylinders) and is available separately (refer to BMW Parts Department).
- Pour in fluid with bottle through filler opening.

- Hydraulic unit must be removed if overfilled. Allow fluid to escape through filler opening and collect.

6. Bleeding hydraulic system

- E64if there is a significant build-up of noise while the convertible top is moving, the convertible top must be opened and closed several times. The hydraulic system is automatically bled in the fluid reservoir in the process.

54 34 ... TOPPING UP/EXTRACTING FLUID, CHECKING FLUID LEVEL

NOTE: No changing of the hydraulic fluid necessary.

- The hydraulic fluid does not have to be changed because the system is filled with life-time fluid.
- Only the approved hydraulic fluid may be used in the event of leaks.
- All hydraulic cylinders must be completely extended.

Checking fluid level:

Fluid level must be within the markings (arrow) when the unit is horizontal.

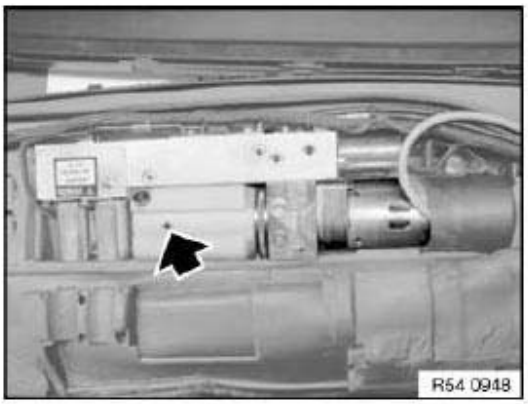


Fig. 24: Locating Fluid Level Marking
Courtesy of BMW OF NORTH AMERICA, INC.

Topping up fluid:

Align hydraulic unit horizontally.

Open oil filler plug.

Pour in required amount of fluid from fluid bottle.

Installation:

Check fluid level in the meantime.

Pour in hydraulic fluid only up to marking on fluid reservoir.

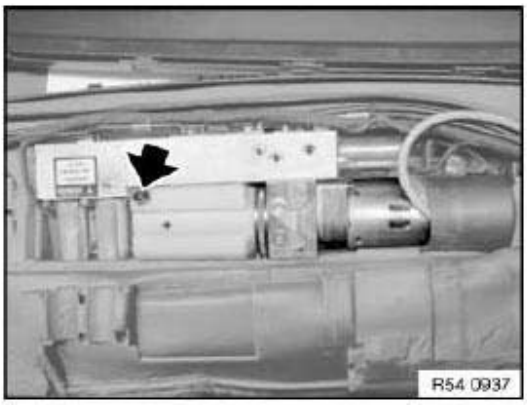


Fig. 25: Locating Oil Filter Plug
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Protect components and work area with suitable materials (e.g. cloths).

Extracting fluid:

Open oil filler plug.

Tilt hydraulic unit and let fluid flow out or draw off with a suitable auxiliary apparatus.

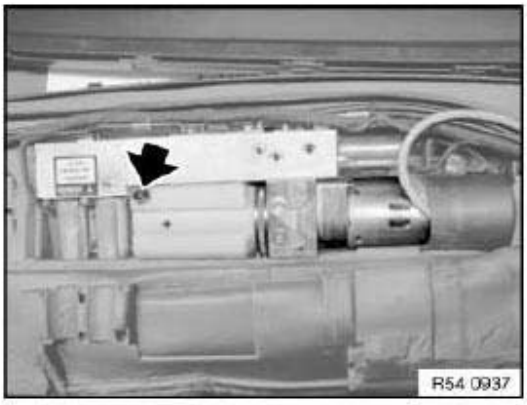


Fig. 26: Locating Oil Filter Plug
Courtesy of BMW OF NORTH AMERICA, INC.

5437 FOLDING ROOF

54 37 ... 0 GENERAL NOTES REGARDING REPAIR AND TROUBLESHOOTING ON THE HARDTOP

The hardtop is a complex mechanical system. Proper function is achieved through precise adjustments of

all components at the works.

Not all components can be adjusted at the works.

To avoid secondary problems after repairs, only repairs and adjustments that are explicitly approved by BMW may be performed.

Thorough troubleshooting must always be completed prior to beginning with hardtop repairs.

In addition to the diagnosis system and repair instructions, video sequences are available on DVD.

VHT E93 Analysis and repair instructions Part 1 (01 69 0 038 434).

VHT E93 Analysis and repair instructions Part 2 (01 69 0 038 662).

NOTE: Troubleshoot in the event of water penetration according to the specifications on the DVD.

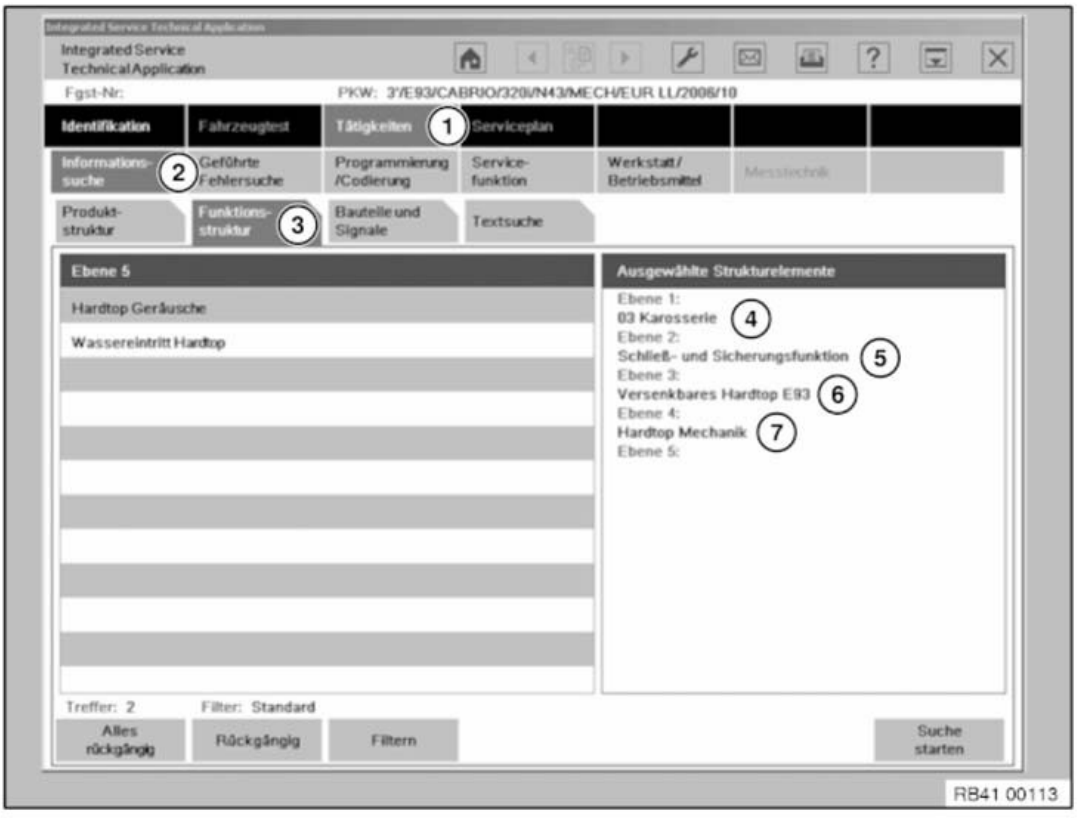


Fig. 27: Display - Repair And Troubleshooting On Hardtop
Courtesy of BMW OF NORTH AMERICA, INC.

The required procedures in the diagnosis system are found under:

1. **Activities**
2. **Information search**
3. **Function structure**
4. **Level 1: 03 Body**
5. **Level 2: Locking and security functions**
6. **Level 3: Retractable hardtop**
7. **Level 4: Hardtop mechanism (E93 only)**

54 37 295 EMERGENCY CLOSING HARDTOP

Necessary preliminary tasks

- Open rear lid
- **REMOVE TRUNK FLOOR**

IMPORTANT: Always perform the emergency closing procedure with the aid of an assistant. The applied force must always be even on the left and right otherwise the linkage will bend.

Always execute all movements of the roof module with the assistance of a second person.

Risk of injury by trapping!

Remove foam cover.

Open screws on hydraulic unit 1.5 turns.

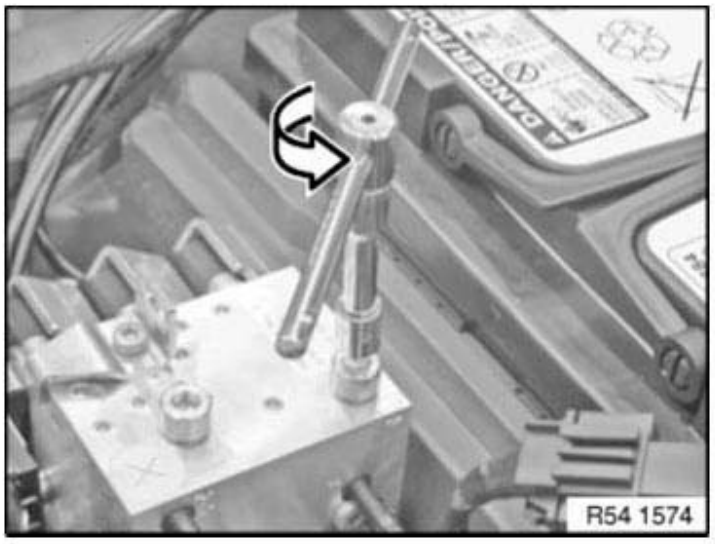


Fig. 28: Opening Screw Of Hydraulic Unit
Courtesy of BMW OF NORTH AMERICA, INC.

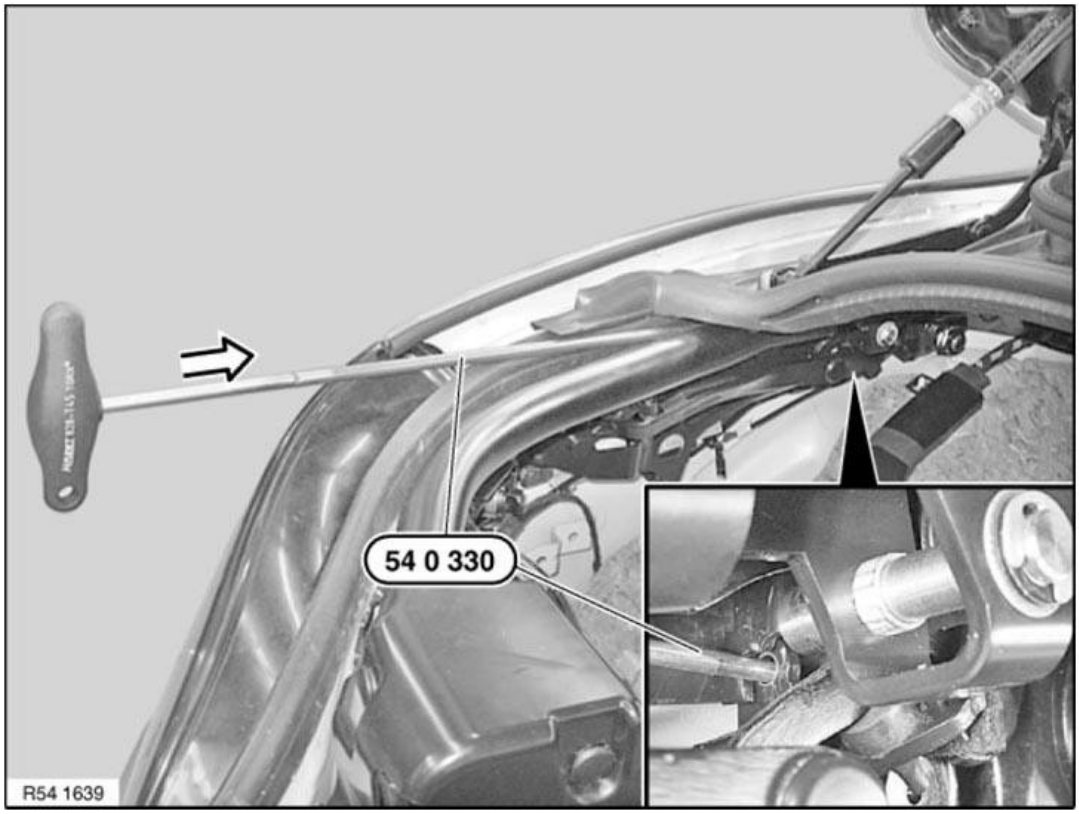


Fig. 29: Inserting Special Tool 54 0 330 Between Convertible Top Compartment Lid Frame And Side Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Insert special tool 54 0 330 at rear left and right between convertible top compartment lid frame and side panel.

Feed in tip of special tool through bore hole.

NOTE: Bore hole is visible from direction of special tool with a torch.

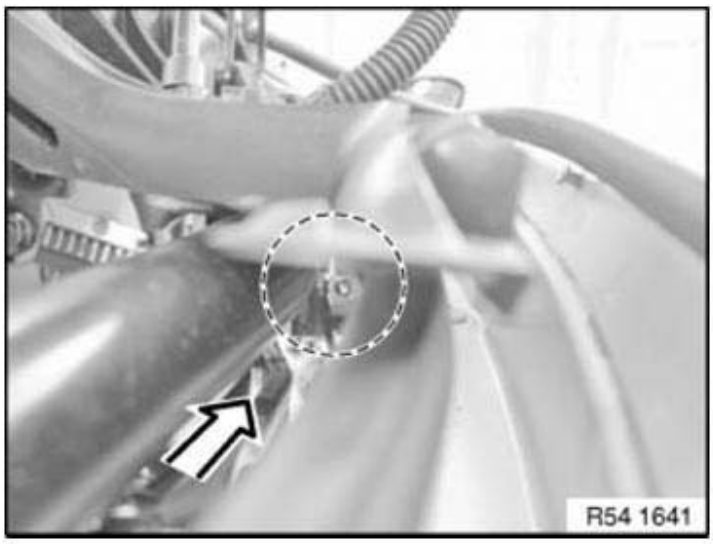


Fig. 30: Installing Tip Of Special Tool Through Bore Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Tip of special tool 54 0 330 must butt against joint for hydraulic cylinder (1).

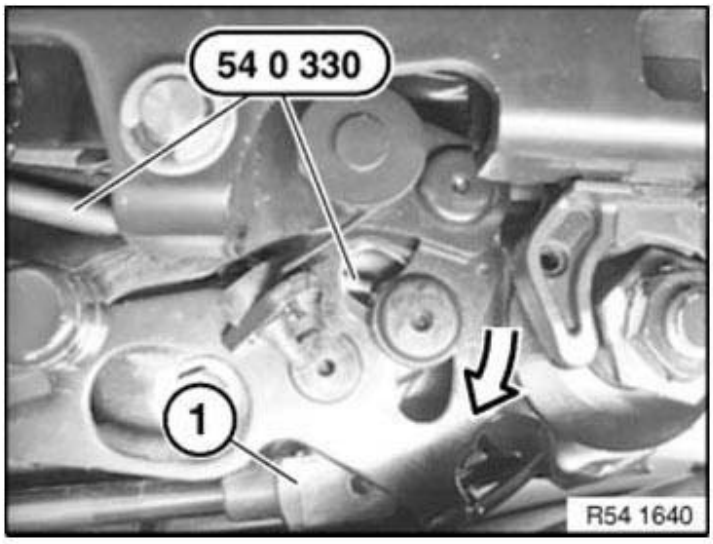


Fig. 31: Identifying Hydraulic Cylinder
Courtesy of BMW OF NORTH AMERICA, INC.

For the ideal pressure point of special tool on joint, proceed as follows:

1. Press outwards
2. Pull tool upwards
3. Press tool to unlock convertible top compartment lid latch

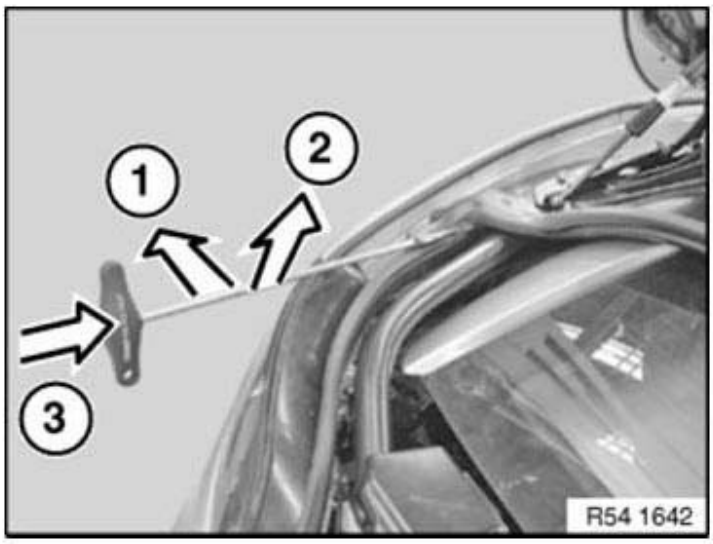


Fig. 32: Pressing Tool To Unlock Convertible Top Compartment Lid Latch
Courtesy of BMW OF NORTH AMERICA, INC.

Open convertible top compartment lid.

IMPORTANT: Convertible top compartment lid may tilt forwards and must be supported with suitable apparatus.

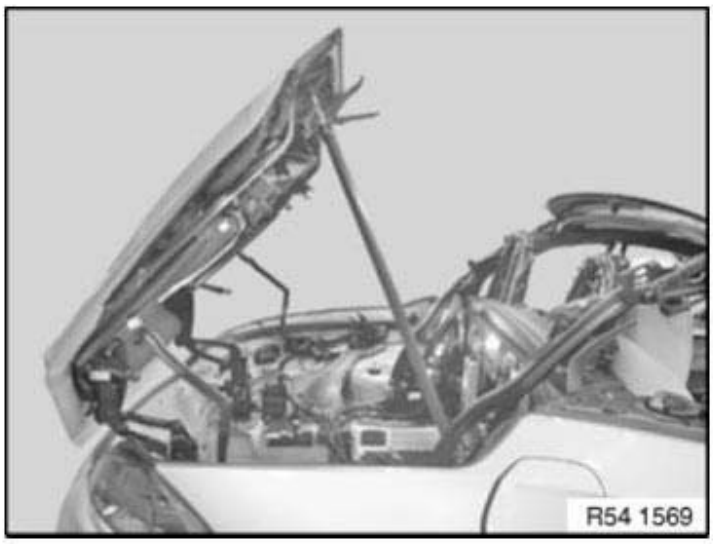


Fig. 33: Opening Convertible Top Compartment Lid
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) on left and right from holder.

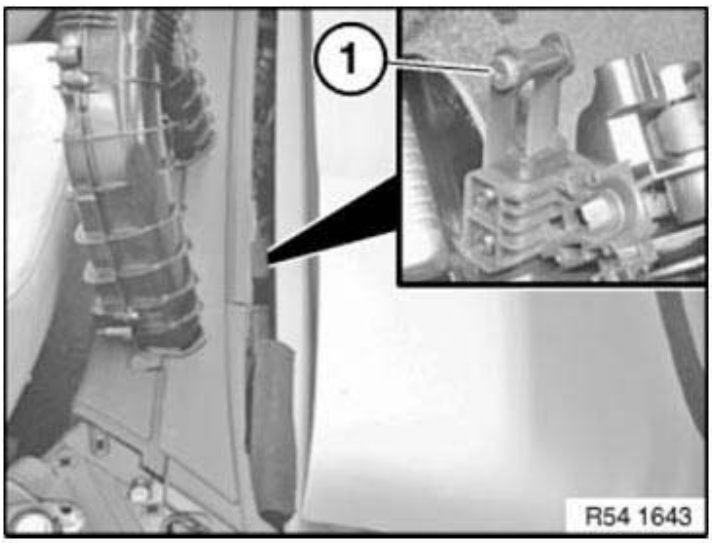


Fig. 34: Identifying Holder Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Lift out roof shells uniformly with a 2nd person helping and set down.

NOTE: Only grasp the front roof shell when raising the roof shells.

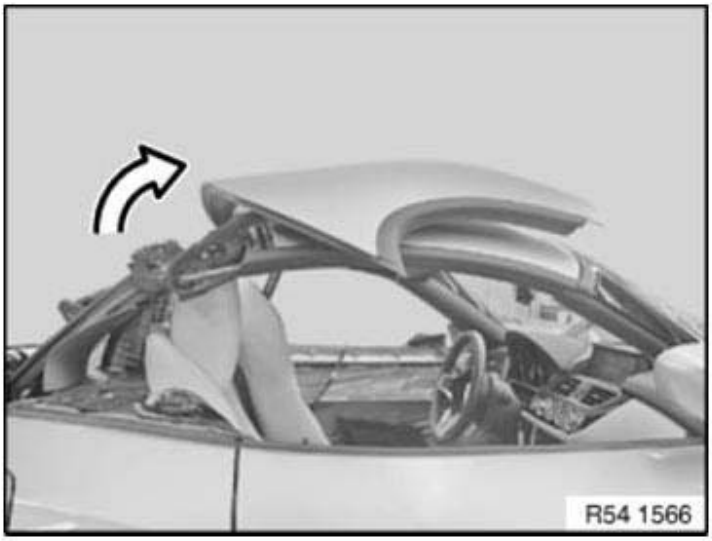


Fig. 35: Lifting Of Roof Shells
Courtesy of BMW OF NORTH AMERICA, INC.

Remove support for convertible top compartment lid (1) and set down convertible top compartment lid.

Raise rear roof shell (2) and remove **ROOFLINER** .

Set down roof shell (2) towards rear (convertible top closed).

Remove **ROOFLINER** for roof shell at front.

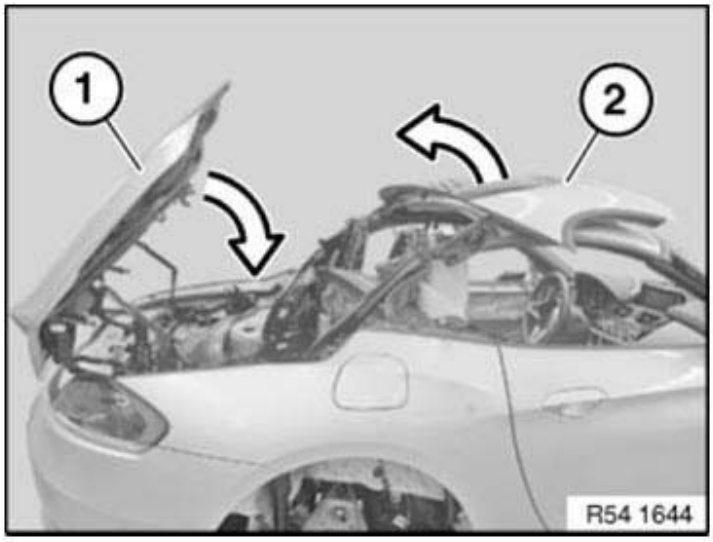


Fig. 36: Raising Rear Roof Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Slide open retaining clip (1) and unclip ball head.

Secure control rod on left and right with cable tie to prevent them hanging down and rattling.

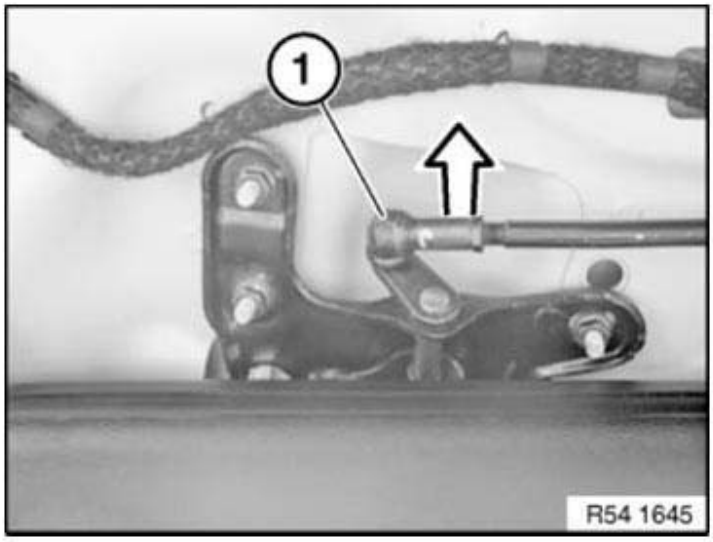


Fig. 37: Sliding Open Retaining Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Lock retaining hook (1) on left and right.

Turn retaining hook (1) with pliers over dead centre.

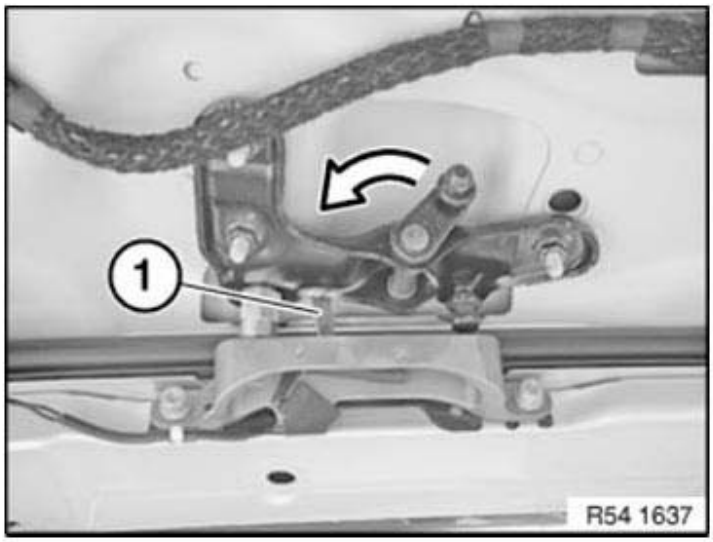


Fig. 38: Turning Retaining Hook Using Pliers Over Dead Centre
Courtesy of BMW OF NORTH AMERICA, INC.

Insert special tool 54 0 320 in convertible top frame and lock rear roof shell on left and right.

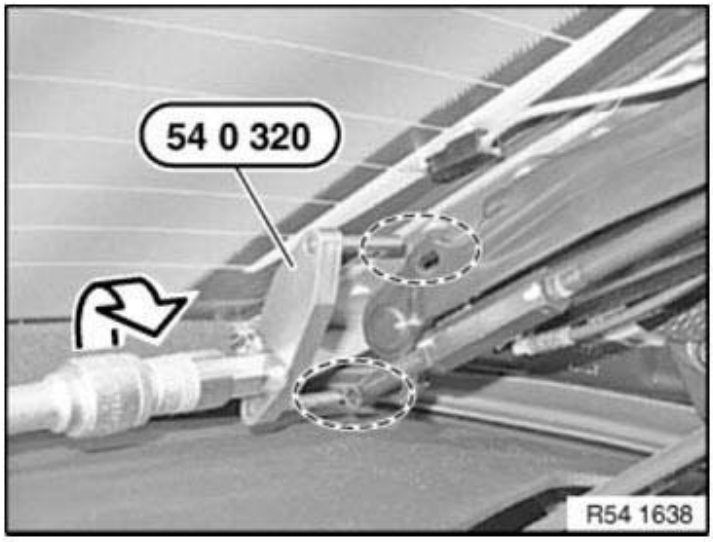


Fig. 39: Inserting Special Tool 54 0 320 On Convertible Top Frame
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: The customer must no longer operate the convertible top after it has been closed with the emergency closing procedure!
To prevent operation, remove fuse 12 for convertible top.
Place removed individual parts in vehicle.

54 37 290 HARDTOP EMERGENCY OPENING

Necessary preliminary tasks

- Remove **ROOFLINER FOR ROOF SHELL AT FRONT**
- Remove **ROOFLINER FOR ROOF SHELL AT REAR**
- Remove **LUGGAGE COMPARTMENT FLOOR TRIM**

NOTE: Roofliner for roof shell at rear can not be removed without sustaining damage.

IMPORTANT: Always perform the emergency opening procedure with the aid of an assistant.
The applied force must always be even on the left and right otherwise the linkage will bend.
Always execute all movements of the roof module with the assistance of a second person.
Risk of injury by trapping!

Step 1: Open rear roof shell

Open rear lid.

Remove foam cover.

Open screws on hydraulic unit 1.5 turns.

NOTE: System is now depressurised and can be moved manually.

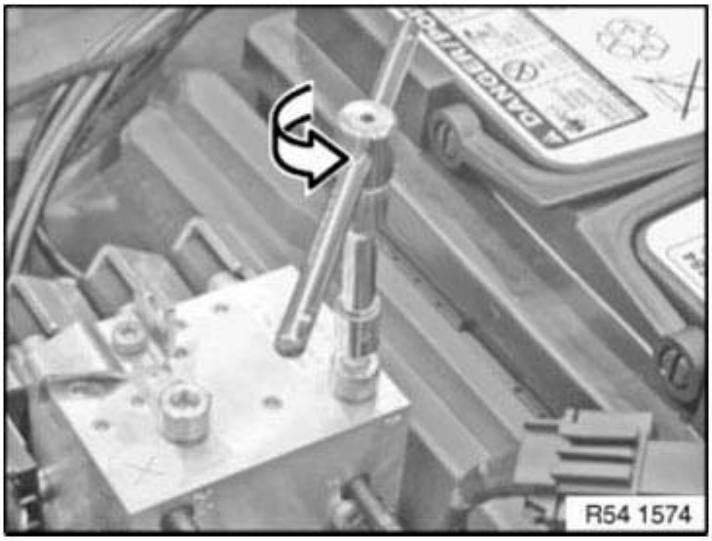


Fig. 40: Opening Screws On Hydraulic Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Insert special tool **54 0 320** in convertible top linkage and unlock rear roof shell on left and right.

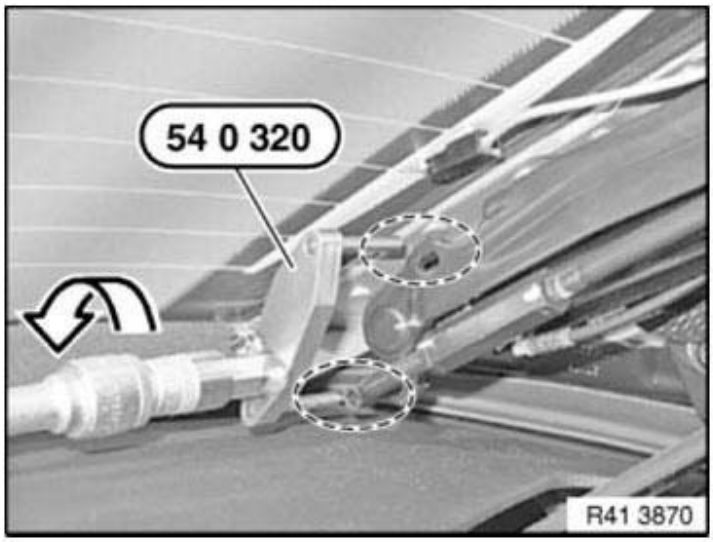


Fig. 41: Inserting Special Tool 54 0 320
Courtesy of BMW OF NORTH AMERICA, INC.

Evenly lift up rear roof shell with an assistant and set down on front roof shell.

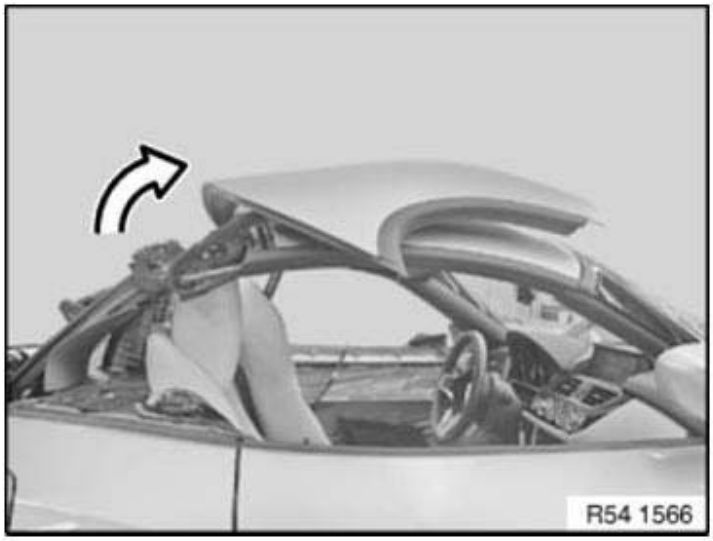


Fig. 42: Lifting Rear Roof Shell With Assistant On Front Roof Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Step 2: Open cowl panel lock

Slide open retaining clip (1) and unclip ball head.

IMPORTANT: Risk of damage!
Secure control rod on left and right with cable tie to prevent them hanging down and rattling.

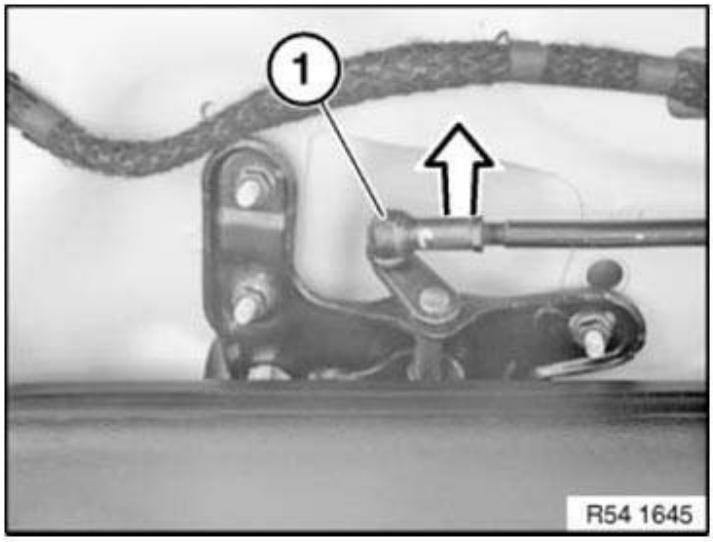


Fig. 43: Sliding Open Retaining Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock retaining hook (1) on left and right.

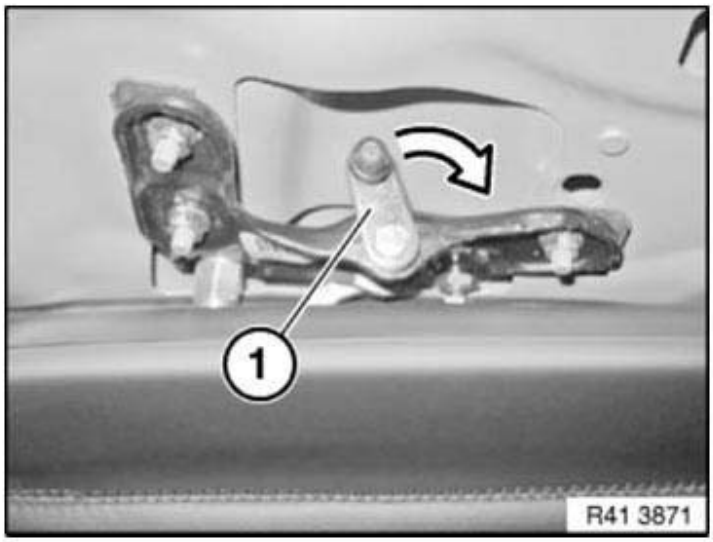


Fig. 44: Removing Retaining Hook
Courtesy of BMW OF NORTH AMERICA, INC.

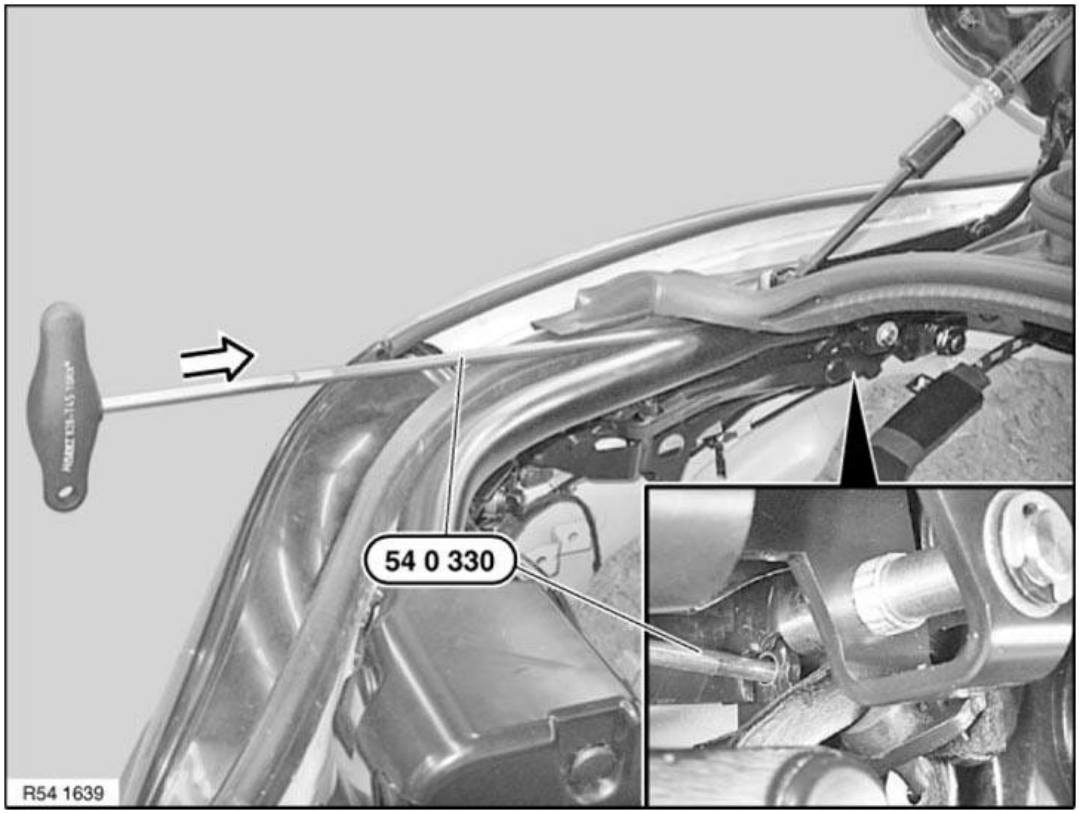


Fig. 45: Inserting Special Tool 54 0 330 Between Convertible Top Compartment Lid Frame And Side Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Step 3: Open rear module lock

Open rear lid.

Insert special tool **54 0 330** at rear left and right between convertible top compartment lid frame and side panel.

Feed in tip of special tool through bore hole.

NOTE: Bore hole is visible from direction of special tool with a torch.

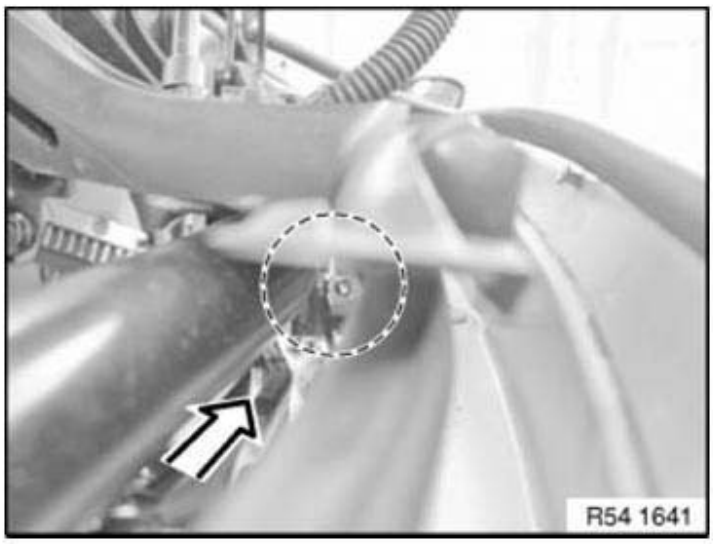


Fig. 46: Installing Tip Of Special Tool Through Bore Hole
Courtesy of BMW OF NORTH AMERICA, INC.

Tip of special tool **54 0 330** must butt against joint for hydraulic cylinder (1).

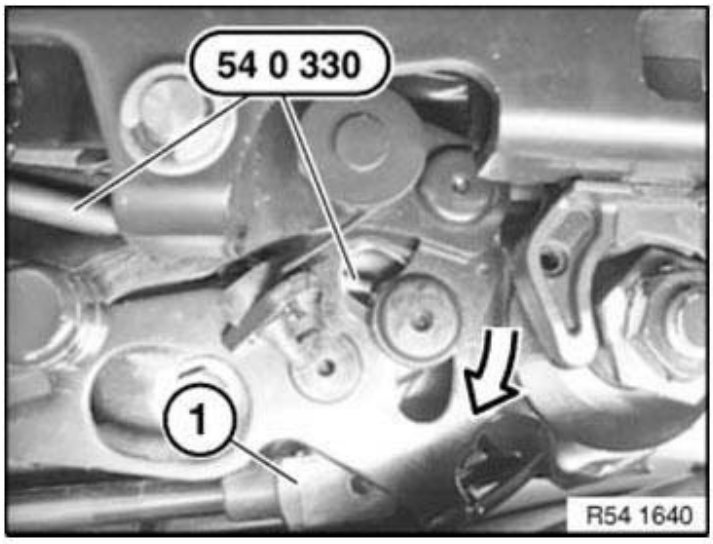


Fig. 47: Identifying Hydraulic Cylinder
Courtesy of BMW OF NORTH AMERICA, INC.

For the ideal pressure point of special tool on joint, proceed as follows:

1. Press outwards
2. Pull tool upwards
3. Press tool to unlock convertible top compartment lid latch

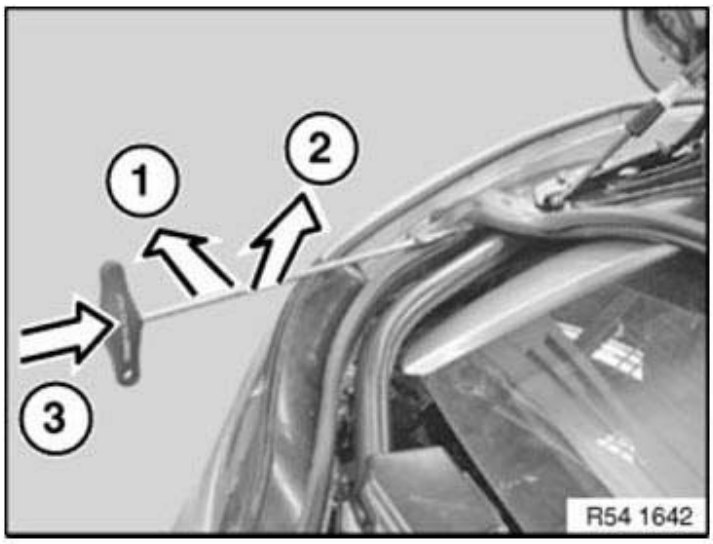


Fig. 48: Pressing Tool To Unlock Convertible Top Compartment Lid Latch
Courtesy of BMW OF NORTH AMERICA, INC.

Open rear module.

IMPORTANT: Rear module can tip.
Have an assistant support the rear module.

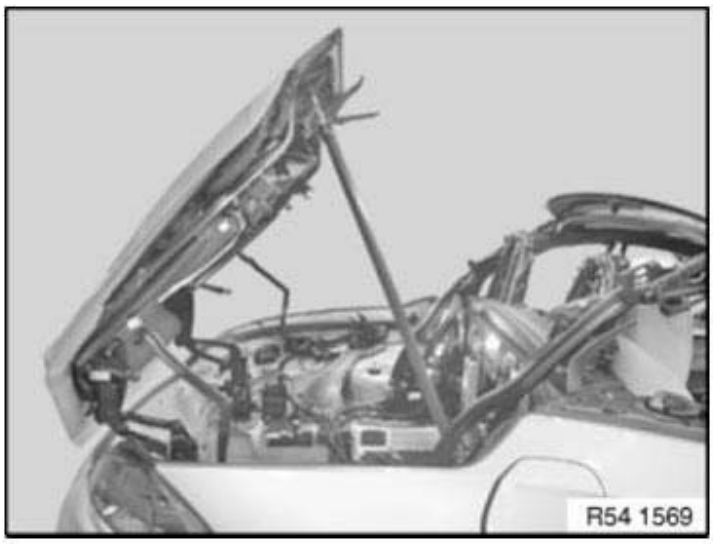


Fig. 49: Opening Rear Module
Courtesy of BMW OF NORTH AMERICA, INC.

Evenly lift up roof module (2) with an assistant and set down in vehicle.

NOTE: Only grasp the front roof shell when raising the roof shells.

Close rear module.

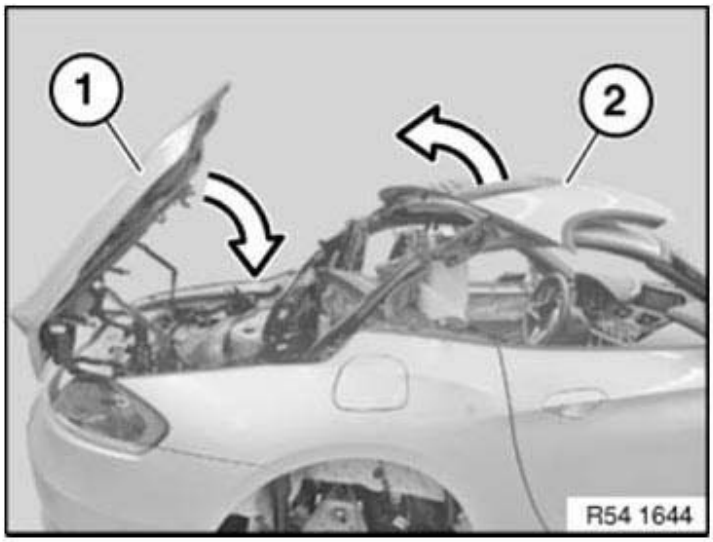


Fig. 50: Lifting Roof Module With Assistant On Vehicle
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: The convertible top must not be moved any further after emergency opening.
Move the vehicle as little as possible to prevent vibrations.
Roof shells which are not locked may cause irreparable damage.

54 37 ... INSTALLING/REPLACING MAIN BEARING CONSOLES

IMPORTANT: The main bearing consoles factory prepared.
Removing the main bearing consoles is only necessary in the event of body repair in area of attachment points.

Adjust both consoles (1) with barrel screws (2) to dimension a.

Measurement a = 35 mm

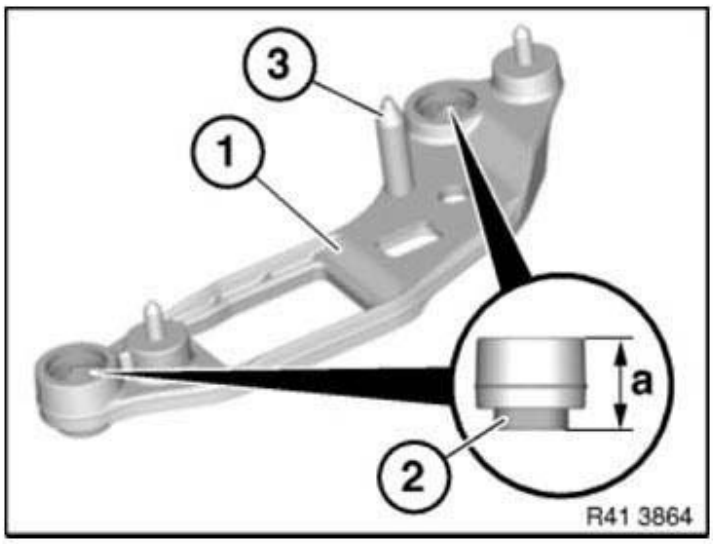


Fig. 51: Identifying Consoles With Barrel Screws Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Centre console (1) and tighten with screws (2).

Tightening torque **54 37 5AZ** .

Repeat procedure on other side of car.

Installation:

Distance of dowel pins must match distance of bore holes on roof module, correct if necessary.

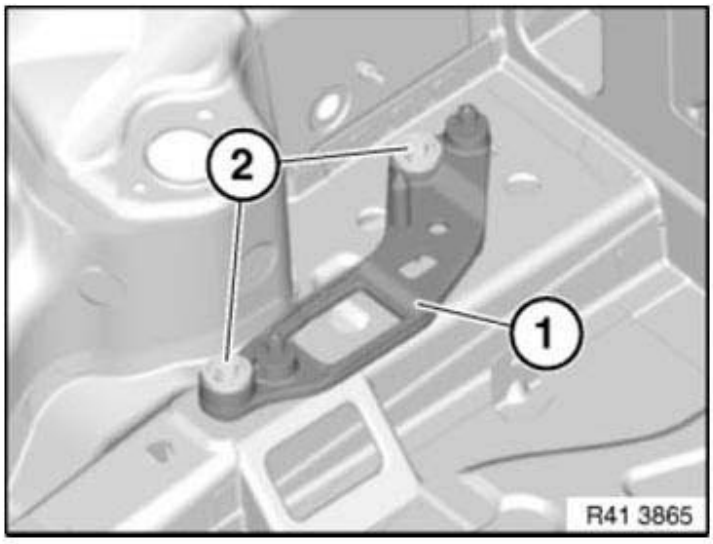


Fig. 52: Identifying Centre Console With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Install **ROOF MODULE** and manually move to position shown.

Install **REAR MODULE** .

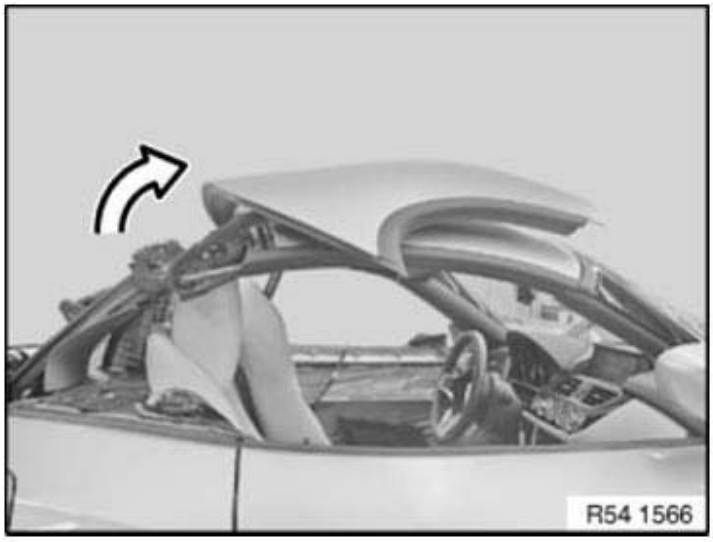


Fig. 53: Installing Roof Module
Courtesy of BMW OF NORTH AMERICA, INC.

Prior to performing further adjusting procedures on consoles, the following components must be adjusted:

- Rear module
- Rear side panels
- Tailgate

After adjusting all components, manually See **5437290 HARDTOP EMERGENCY OPENING** or **5437295 EMERGENCY CLOSING HARDTOP** run a complete convertible top cycle and check components for collision.

The convertible top can then be moved electrically.

WARNING: Risk of injury by trapping!
During adjusting procedures, support convertible top or secure with a second person helping.

Before releasing the roof module screws, move convertible top until weight is resting centrally on consoles.

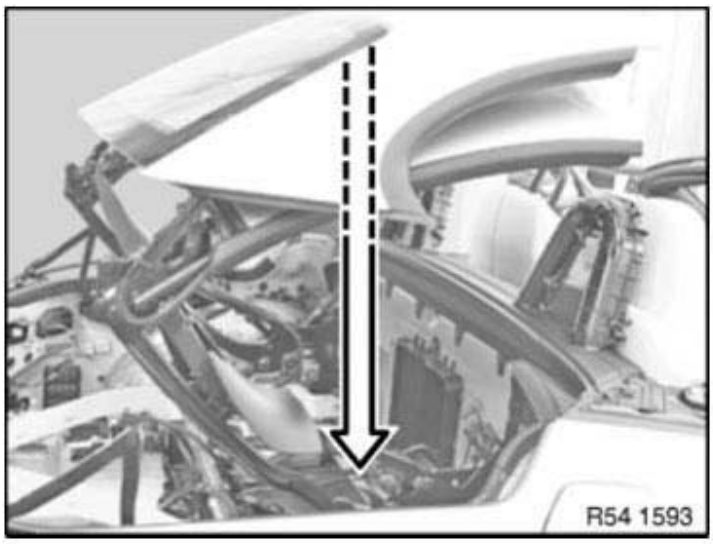


Fig. 54: Positioning For Moving Convertible Top
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting in longitudinal direction (X):

Release X screw connections (1) and slacken lock nut with special tool 54 0 190 .

Tightening torques **54 37 3AZ AND 54 37 1AZ** .

IMPORTANT: To prevent twisting, release Z screw connection.

Adjust roof module by turning barrel screw (2). Turn barrel screw with special tool 54 0 180 .

Pre-adjustment to dimension a= 19 mm.

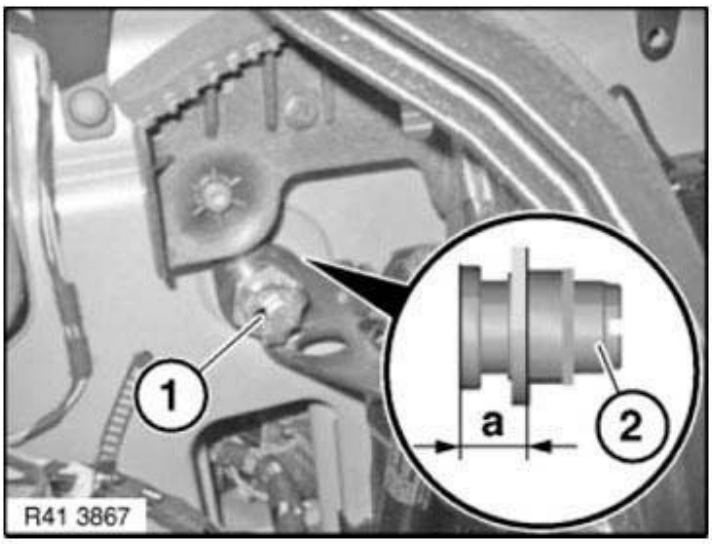


Fig. 55: Identifying Barrel Screw Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Adjusting in transverse direction (Y):

Release X and Z screw connections.

Centre roof module.

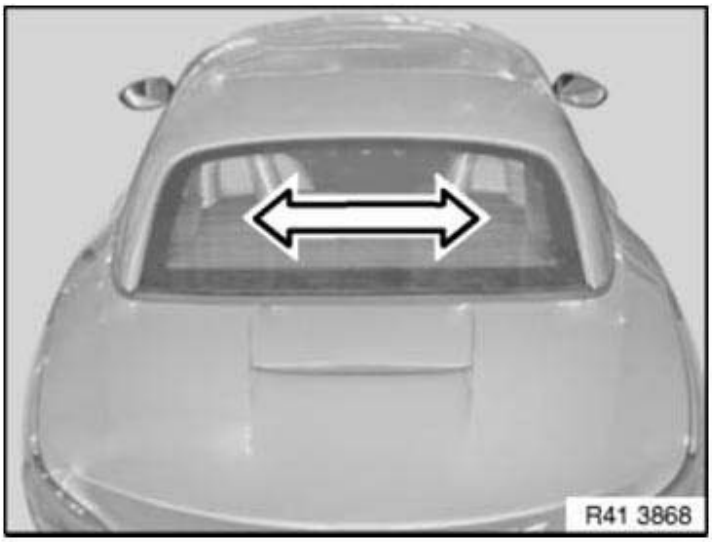


Fig. 56: Releasing X And Z Screw Connections
Courtesy of BMW OF NORTH AMERICA, INC.

Height adjustment (Z):

Release screws (1).

Tightening torque **54 37 5AZ** .

IMPORTANT: To prevent twisting, release X screw connection.

Tightening torque **54 37 3AZ** .

Installation:

Always adjust barrel screws evenly on each side.

Maximum difference between link and right side 1 mm

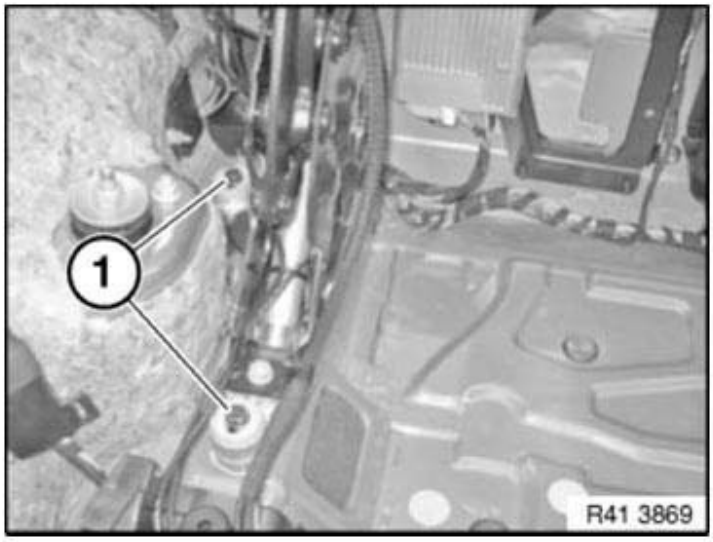


Fig. 57: Identifying Barrel Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Completely close convertible top.

Check **GAP DIMENSIONS** at marked points.

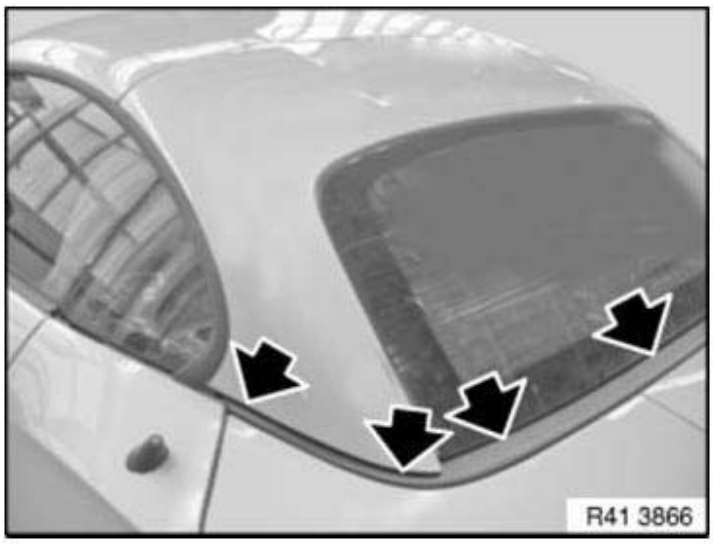


Fig. 58: Locating Gap Dimensions At Marked Points
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

If there are problems after installing the convertible top, process fault diagnosis tree in BMW diagnosis system.

41 00 ... PROCEDURE FOR FOLDING HARDTOP AFTER AN ACCIDENT

The hardtop may be under tension after the vehicle has incurred damage following an accident. Moving the hardtop by hydraulic means may result in irreparable damage. For this reason, the hardtop may only be moved manually until the damaged has been repaired.

IMPORTANT: It is not possible to check the correct operation of the folding roof on the damaged vehicle.

Different procedures are required, depending on the degree of damage which the vehicle has incurred. The repair instructions for emergency operation See **5437290 HARDTOP EMERGENCY OPENING** or **5437295 EMERGENCY CLOSING HARDTOP** describe only the complete sequences for manually opening and closing the hardtop.

When removing the roof module and/or the rear module, it is possible to move the hardtop manually into the necessary intermediate positions in each case.

WARNING: Risk of injury due to the heavy weight of the hardtop!
Since the hydraulic system may have to be depressurized during manual movement of the hardtop, there is an increased risk of injury by trapping. Secure the hardtop permanently and adequately against unintentional movement.

After body repairs to the vehicle

All the hardtop components screwed/bolted to the body are precisely screwed/bolted to the vehicle at the factory by means of gauges. This affects above all the base plates and consoles of the roof and rear modules. To minimize extensive adjustment work after a body repair as much as possible, only remove those components which are screwed/bolted to a damaged body part.

- Gauge the base plates *only* after a body repair to the cowl panel.

54 37 130 REMOVING AND INSTALLING ROOF MODULE

Necessary preliminary tasks

- Connect battery charger
- Remove **REAR MODULE**
- Remove hydraulic cylinder for convertible top compartment lid See **5437225 REMOVING AND INSTALLING/REPLACING RIGHT CONVERTIBLE TOP COMPARTMENT LID HYDRAULIC CYLINDER** or **5437220 REMOVING AND INSTALLING/REPLACING LEFT CONVERTIBLE TOP COMPARTMENT LID HYDRAULIC CYLINDER**

IMPORTANT: Convertible top may only be electrically operated when the main bearing is screwed down.
Otherwise only perform roof movements manually with a 2nd person helping.

Move convertible top for following work into position.

Rear roof shell stowed above front roof shell.

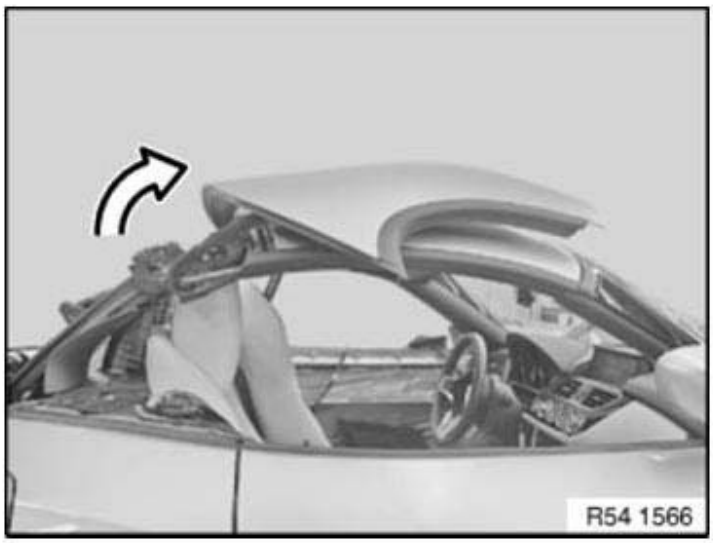


Fig. 59: Lifting Rear Roof Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew nuts (1).

Set down device holder towards rear.

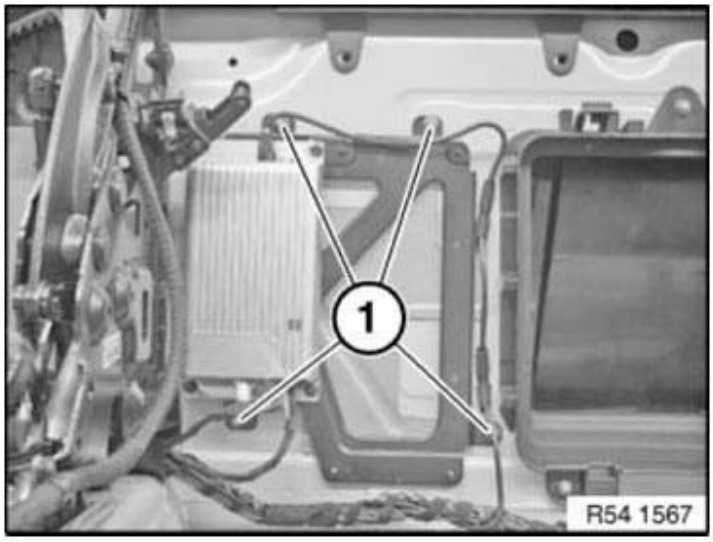


Fig. 60: Identifying Holder Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Unscrew nuts (1).

Set down device holder towards rear.

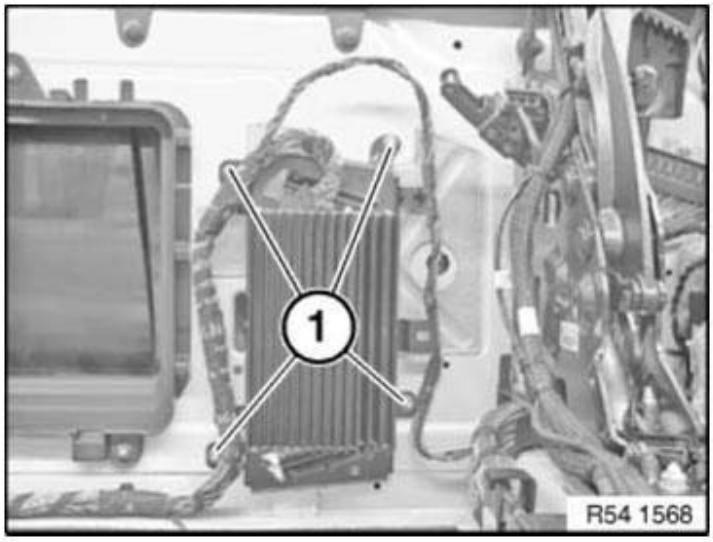


Fig. 61: Identifying Holder Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **54 37 09AZ** .

Remove battery rollover protection (2).

Remove insulating mat (3).

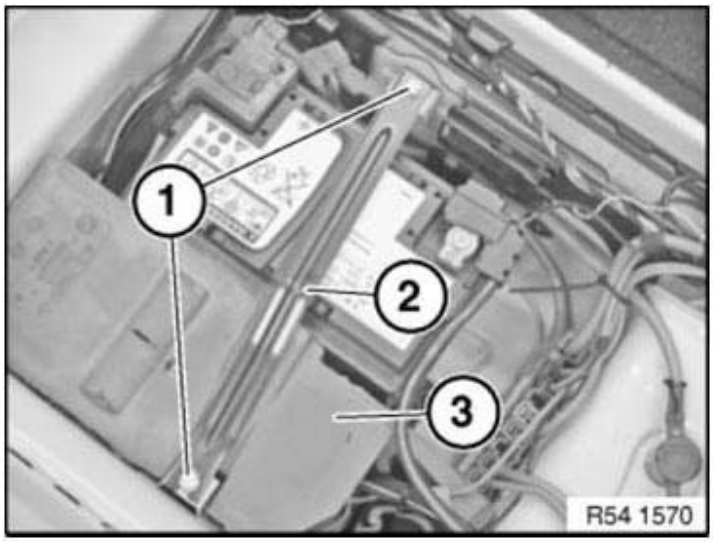


Fig. 62: Identifying Insulating Mat And Battery Rollover Protection With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip all cable holders on hydraulic lines on left.

Installation:

If necessary, replace faulty cable holders.

Detach retainer (1).

Installation:

If necessary, replace faulty retainers (1).

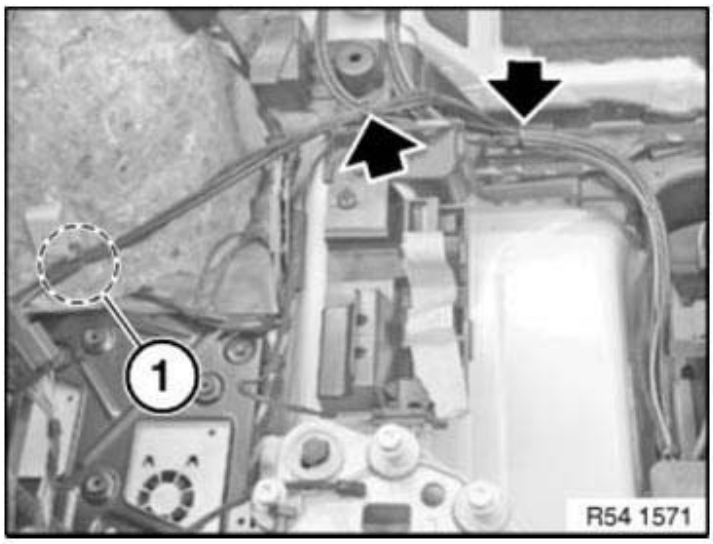


Fig. 63: Identifying Retainer
Courtesy of BMW OF NORTH AMERICA, INC.

Unclip all cable holders on hydraulic lines on right.

Installation:

If necessary, replace faulty cable holders.

Detach retainer (1).

Installation:

If necessary, replace faulty retainers (1).

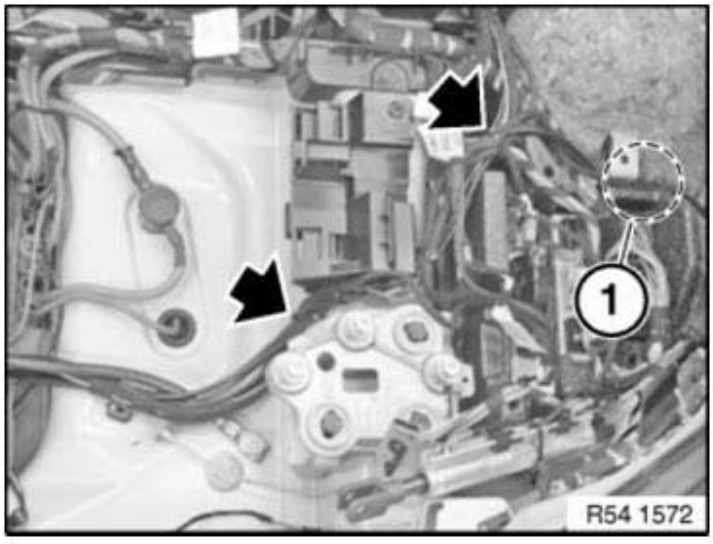


Fig. 64: Identifying Retainer
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1) from cable holder on left and right.

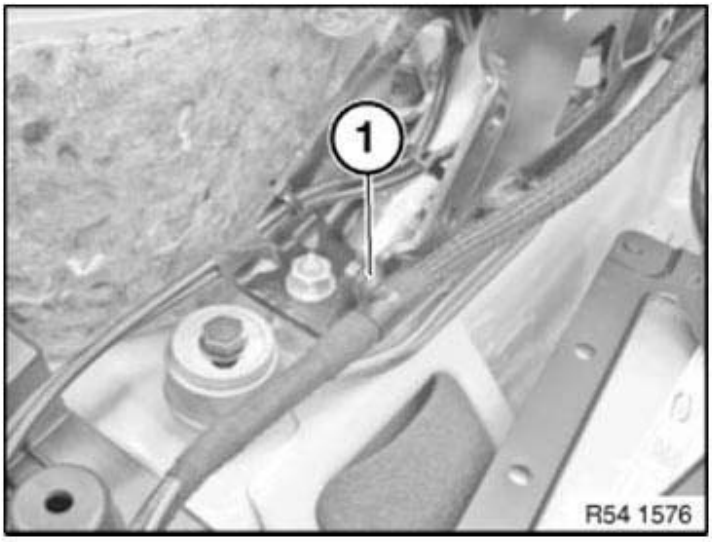


Fig. 65: Identifying Cable Holder Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Remove control unit (1) on right from device holder.

Unfasten plug connection (2) and disconnect.

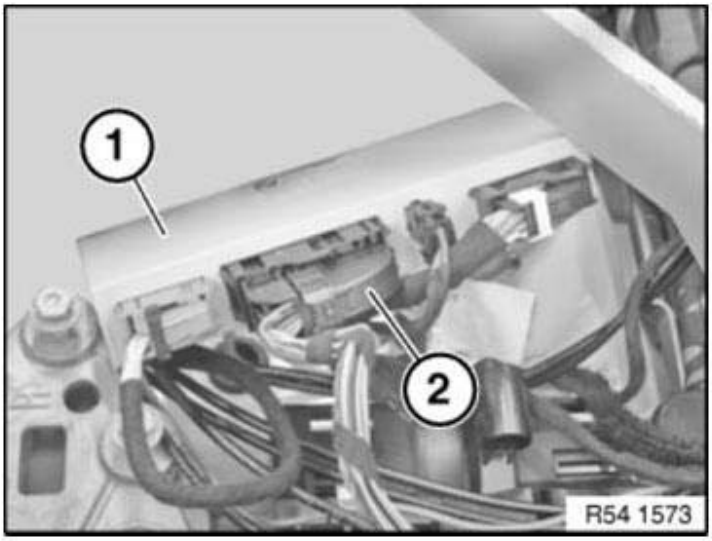


Fig. 66: Identifying Plug Connection And Control Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock and disconnect plug

connections (1) for hydraulic control unit.

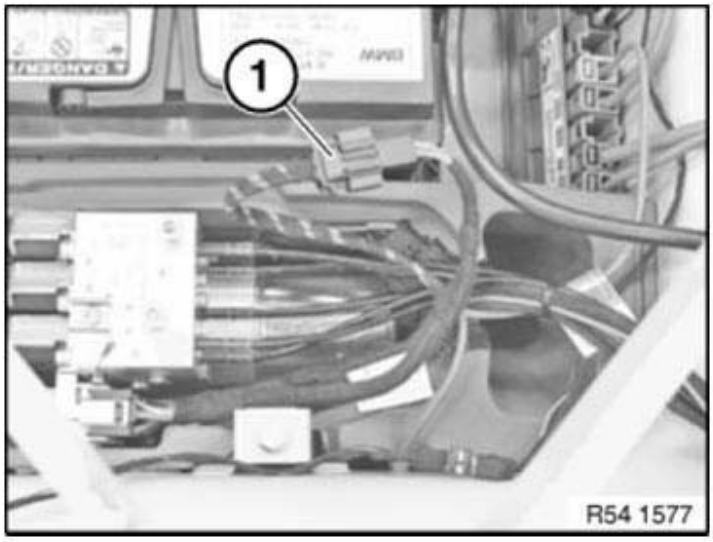


Fig. 67: Identifying Plug Connections For Hydraulic Control Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock plug connections (1) and disconnect.

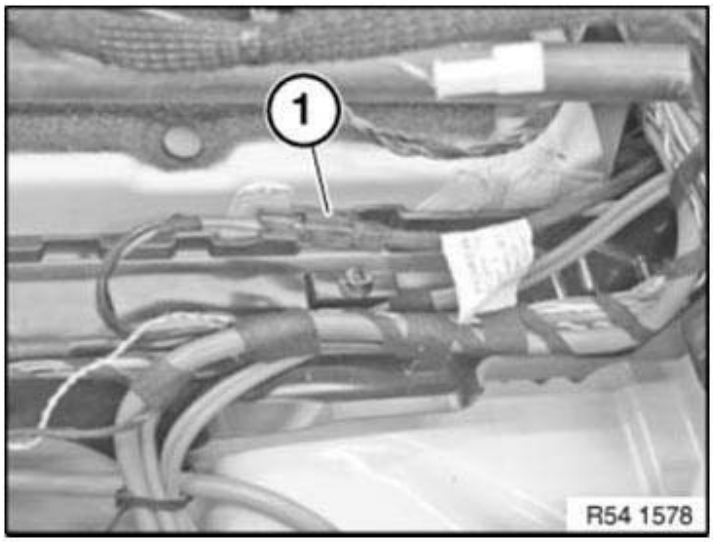


Fig. 68: Identifying Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Mount adapter plate 54 0 300 with bolts (1) on special tool 54 0 101.

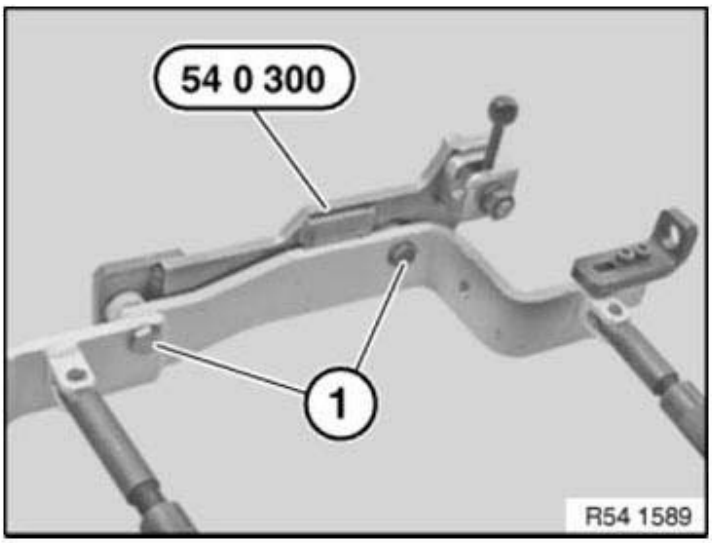


Fig. 69: Mounting Adapter Plate 54 0 300 With Bolts On Special Tool 54 0 101
Courtesy of BMW OF NORTH AMERICA, INC.

Place legs of special tool 54 0 101 as close together as possible.

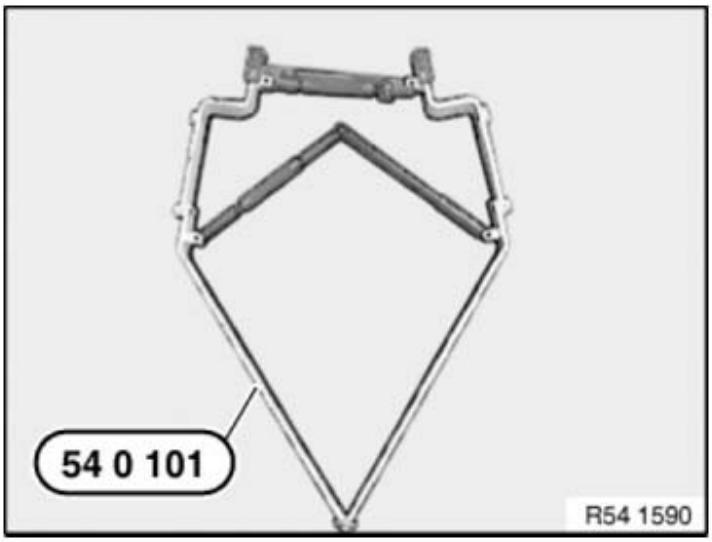


Fig. 70: Positioning Legs Of Special Tool 54 0 101
Courtesy of BMW OF NORTH AMERICA, INC.

Carefully insert folded special tool 54 0 101.

Place leg on main bearing.

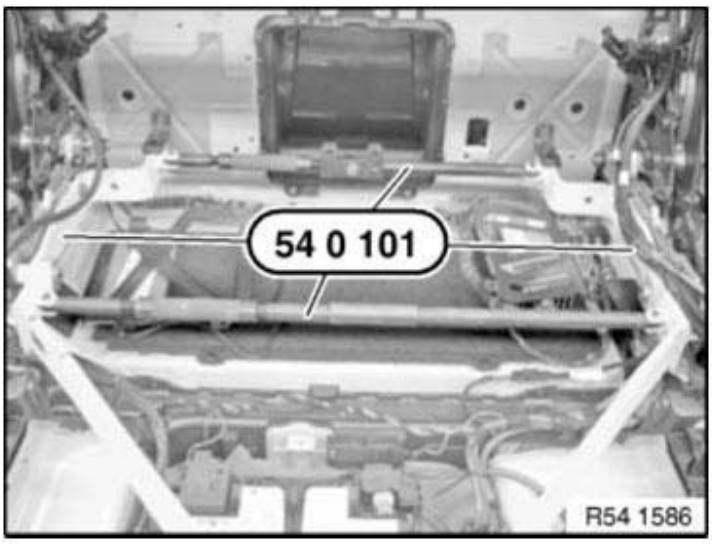


Fig. 71: Inserting Folded Special Tool 54 0 101
Courtesy of BMW OF NORTH AMERICA, INC.

Insert clamping piece (1) in main bearing.

Reposition lever (2).

Tighten nut (3).

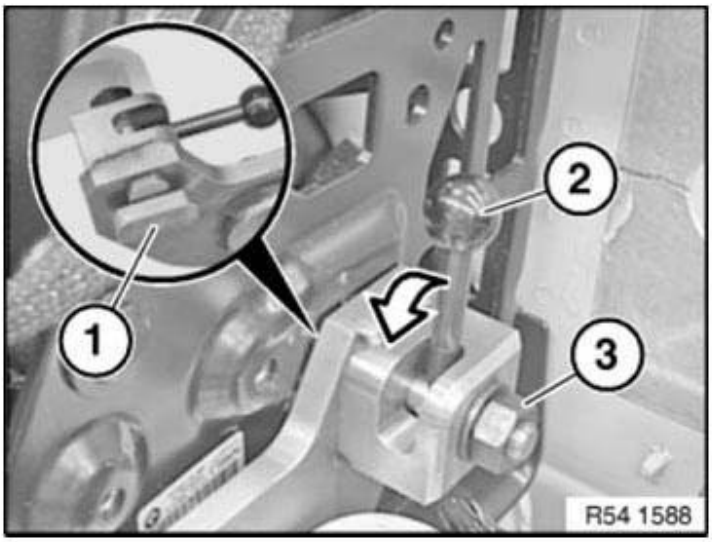


Fig. 72: Inserting Clamping Piece On Main Bearing
Courtesy of BMW OF NORTH AMERICA, INC.

Tighten down screws (1) on main bearing on left and right.

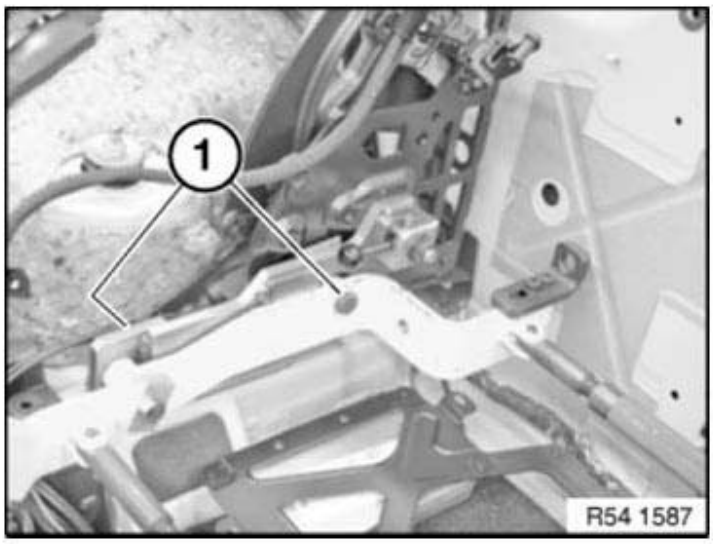


Fig. 73: Identifying Main Bearing Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Assemble linkage and screw down.

Adjust rotary sleeve (1) if necessary.

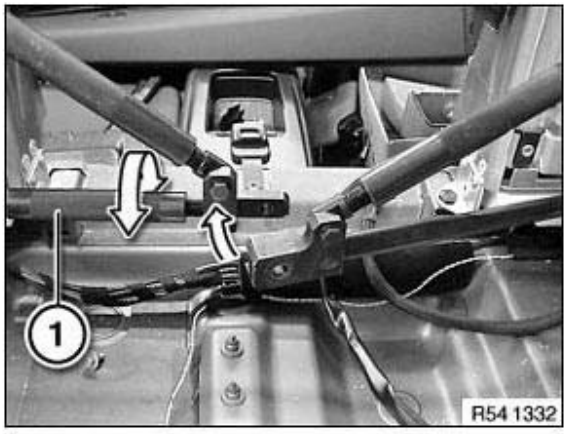


Fig. 74: Adjusting Rotary Sleeve
Courtesy of BMW OF NORTH AMERICA, INC.

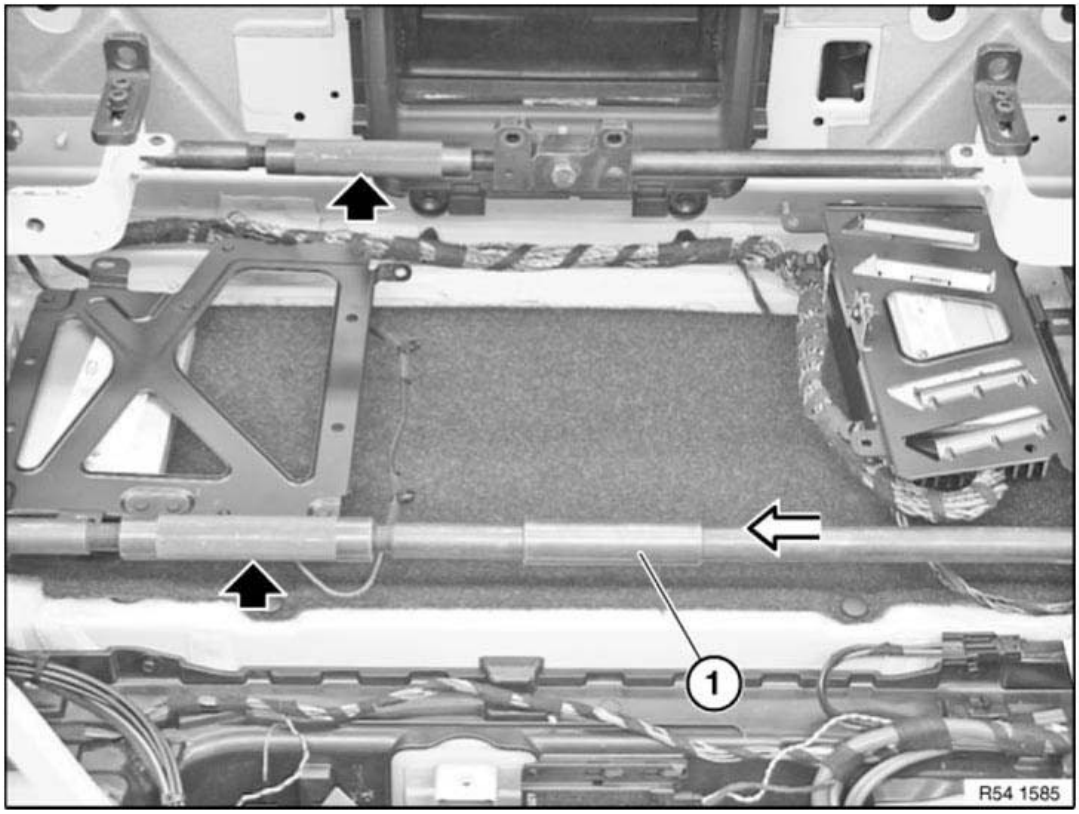


Fig. 75: Locating Locking Sleeve
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

The assembly carrier must rest free of tension on the main mount. Otherwise stress may occur at the main mount that could cause faulty installation.

Without using excessive force, pull tensioning rods outwards over rotary sleeves.

Slide locking sleeve (1) over pivot joint.

Secure hydraulic control unit (1) with cable ties to assembly carrier.

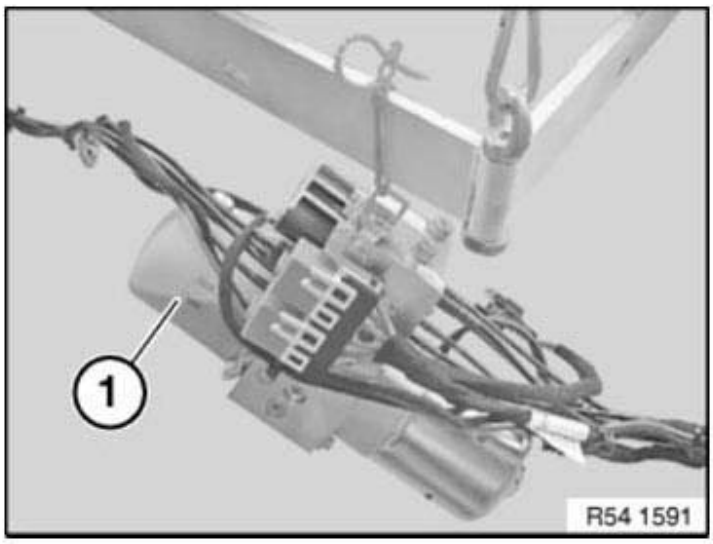


Fig. 76: Identifying Hydraulic Control Unit With Cable Ties
Courtesy of BMW OF NORTH AMERICA, INC.

Secure hydraulic cylinders (1) on left and right to assembly carrier with cable tie.

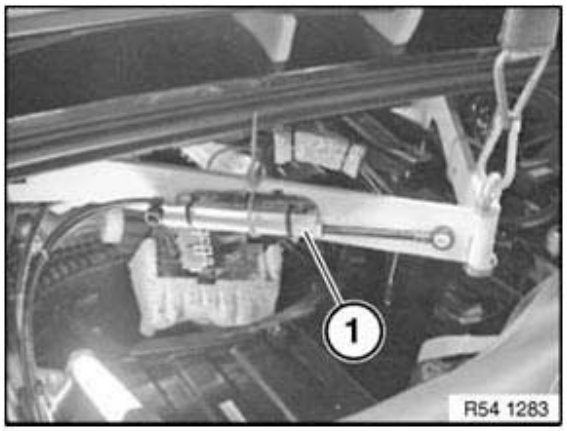


Fig. 77: Identifying Hydraulic Cylinders
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **54 37 03AZ** .

Replacement only:

Slacken lock nuts with special tool 54 0 190 .

Tightening torque **54 37 01AZ** .

Turn back barrel screws by approx. 3 mm.

Installation:

Tighten barrel screws only with special tool 54 0 180 in conjunction with 00 9 450 .

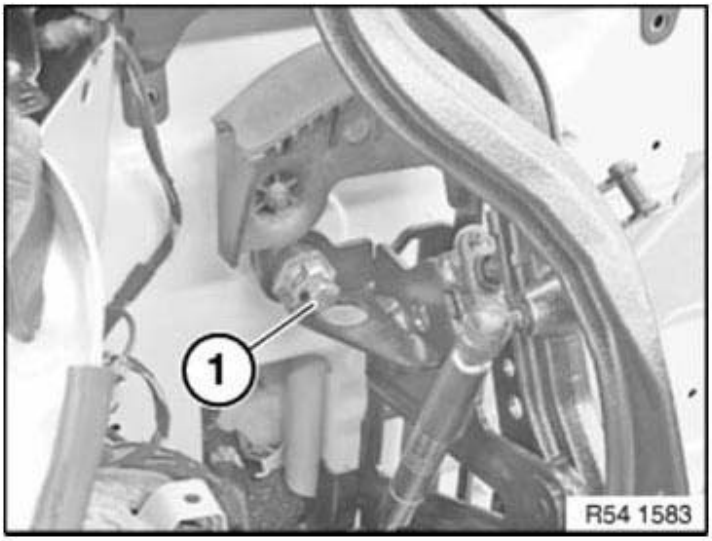


Fig. 78: Identifying Barrel Screw
Courtesy of BMW OF NORTH AMERICA, INC.

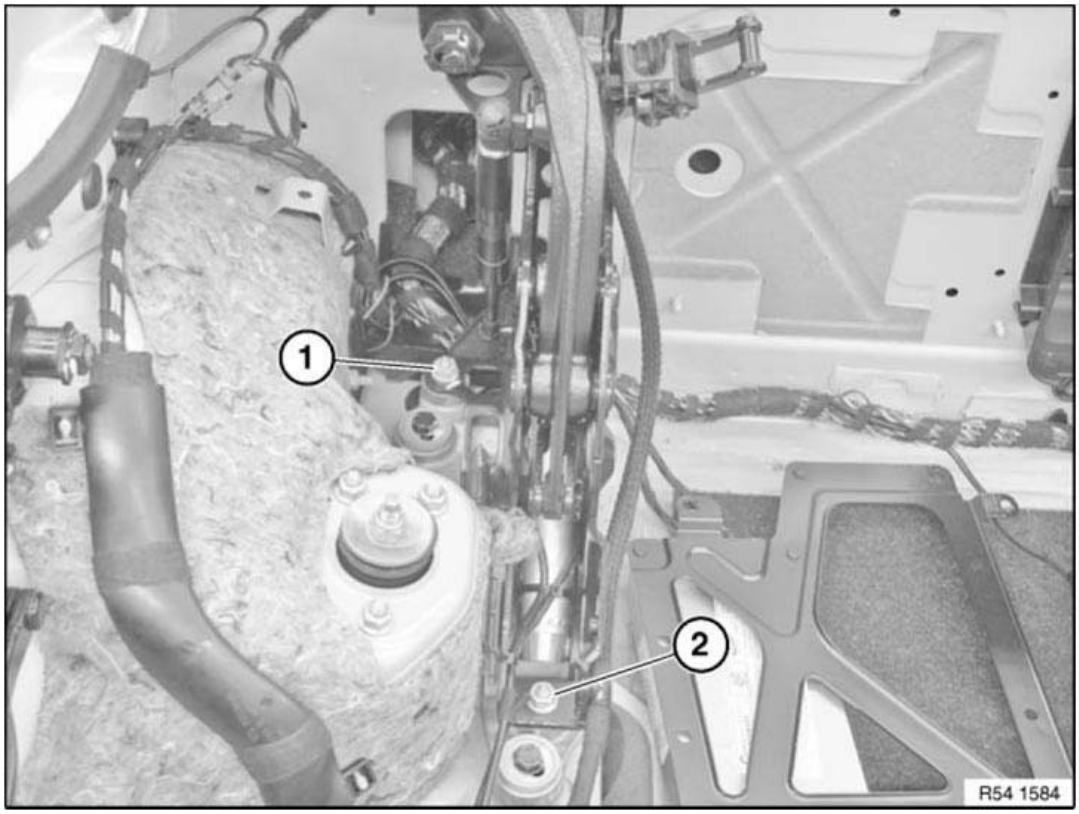


Fig. 79: Identifying Roof Module Main Bearings Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Release front nuts (1) on left and right roof module main bearings.

Tightening torque **54 37 08AZ** .

NOTE: Rear nuts (2) on left and right main bearing - release torque only . Slacken nuts only, do not release fully. Tightening torque 54 37 08AZ .

IMPORTANT: Convertible top must not be electrically operated after the nuts on the main bearing have been released.

IMPORTANT: Risk of damage!

Reposition joint of kinematics box on left and right towards rear.

Roof shells (2) must not be set down beforehand.

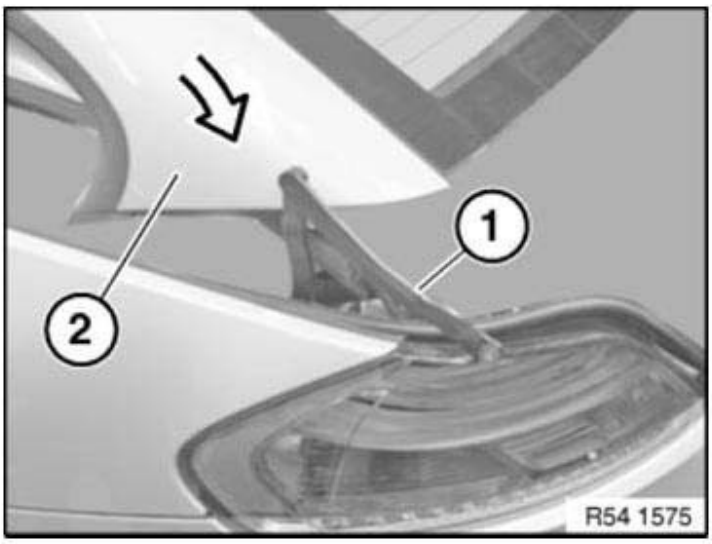


Fig. 80: Identifying Roof Shells Position
Courtesy of BMW OF NORTH AMERICA, INC.

Open screw on hydraulic unit 1.5 turns.

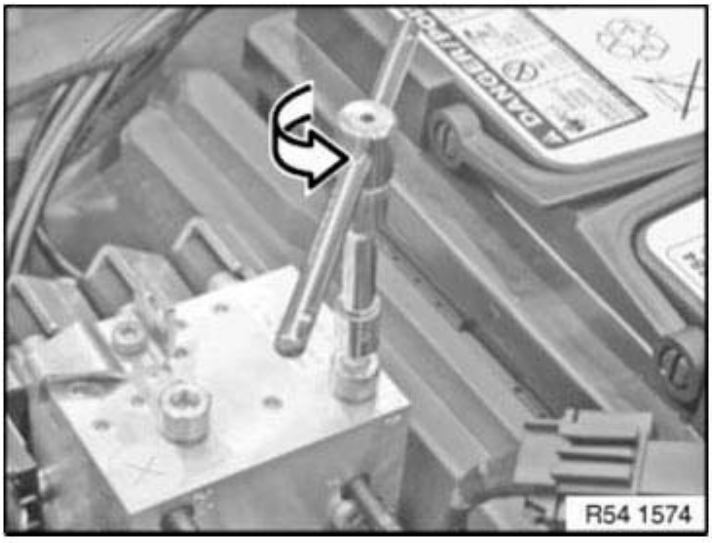


Fig. 81: Opening Screw On Hydraulic Unit
Courtesy of BMW OF NORTH AMERICA, INC.

Carefully raise roof shells with two people helping.

Move roof shells until weight acts centrally on main bearing.

Close screw on hydraulic control unit.

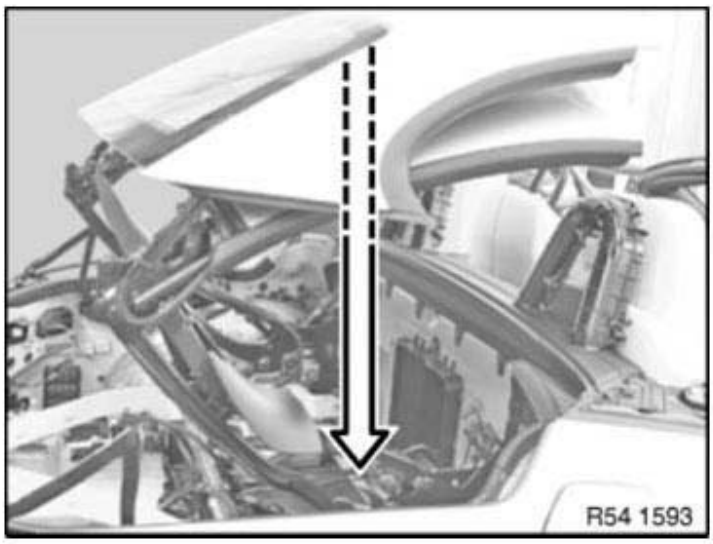


Fig. 82: Positioning For Moving Roof Shells
Courtesy of BMW OF NORTH AMERICA, INC.

Support roof shells on left and rights with two helpers.

Slacken nut (1).

Only then set roof shells down.

Open hydraulic control unit screw.

Slowly set roof shells down.

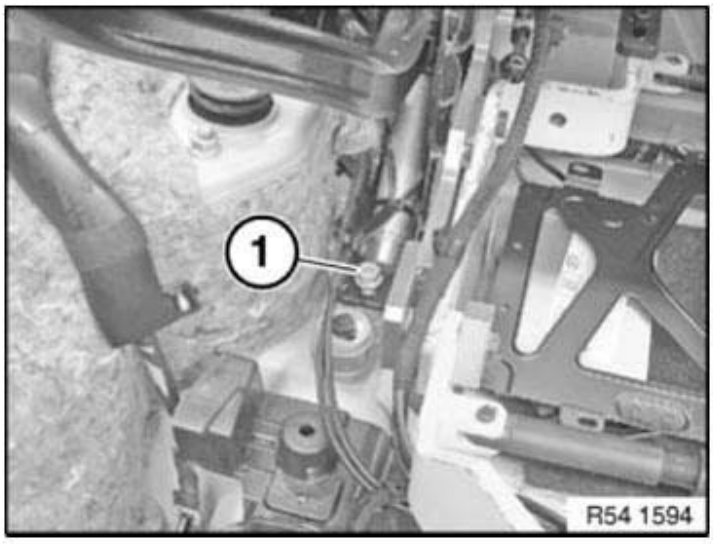


Fig. 83: Identifying Roof Shells Nut
Courtesy of BMW OF NORTH AMERICA, INC.

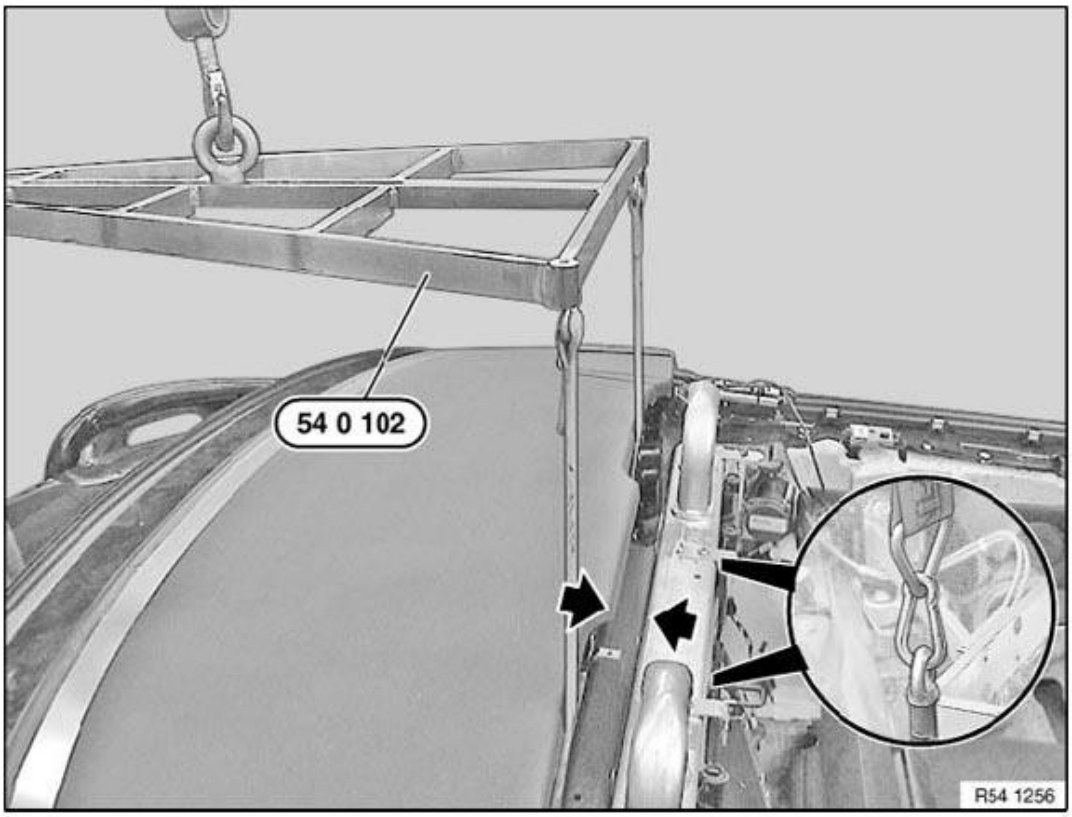


Fig. 84: Positioning Special Tool 54 0 102 With Workshop Crane Over Roof Module
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Carry out this part of the work with the assistance of two other persons. Position special tool 54 0 102 with workshop crane over roof module.

IMPORTANT: Use lifting gear and assembly carrier only in conjunction with BMW WJN.10 workshop crane (special lifting arm with 1690 mm arm length - refer to BMW Workshop Equipment Catalogue) or a crane with comparable specifications. Feed in belts between rollover protection system and roof module. Do not twist straps!

Installation:

The assembly carrier including the roof shell can be tilted towards the rear to slot in the karabiners.

Slot karabiners into assembly carrier.

Slot karabiner at rear into assembly carrier.

IMPORTANT: Straps must not be twisted!

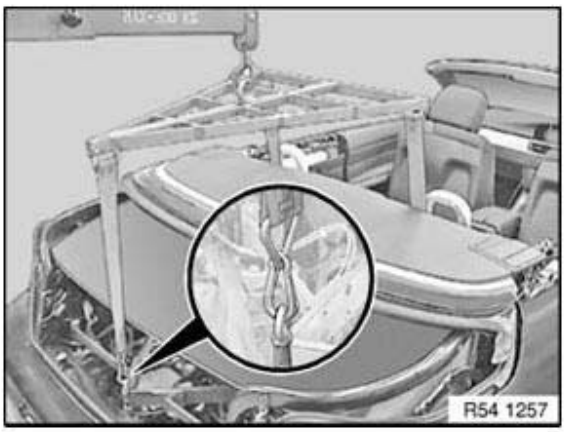


Fig. 85: Ensure Straps Are Not Twisted
Courtesy of BMW OF NORTH AMERICA, INC.

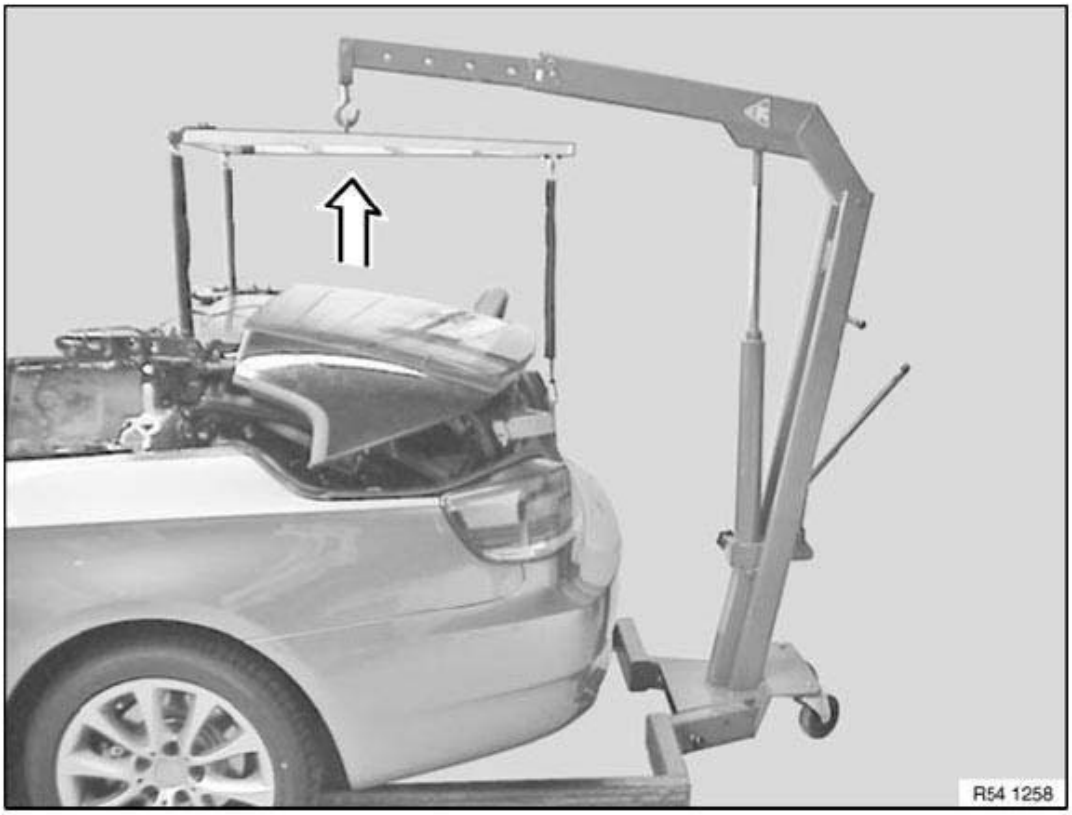


Fig. 86: Lifting Convertible Top Using Special Tool
Courtesy of BMW OF NORTH AMERICA, INC.

To lift out the Convertible top uniformly, make sure the special tool is aligned parallel to the roof module.

Lifting out roof module carefully and in stages with lifting gear.

Check freedom of movement of roof module with respect to body.

Carefully set roof module down on a suitable surface (e.g. squared beams on pallet).

Replacement only:

Change assembly carrier to new roof module and install roof module in vehicle.

Place the removed roof module in transport crate and screw down.

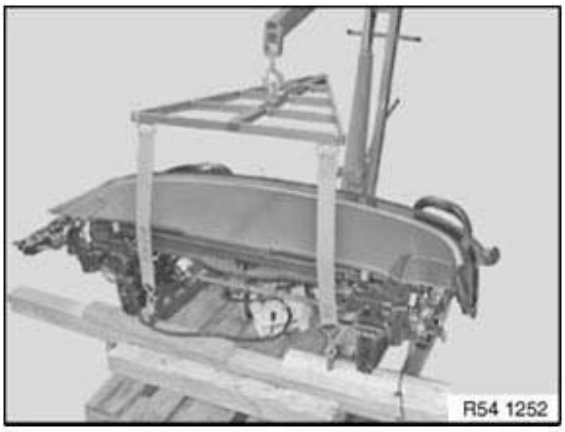


Fig. 87: Setting Roof Module Down On Surface
Courtesy of BMW OF NORTH AMERICA, INC.

Carry out function check on roof module with rear module removed:

IMPORTANT: Convertible top may only be operated when the main bearing is screwed down.

Special tool 61 4 250 must be connected.

Contact bridge simulates a closed convertible top compartment lid.

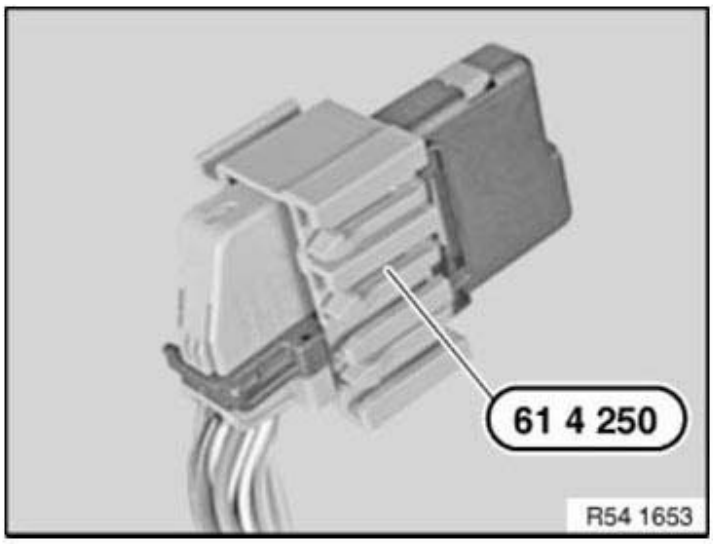


Fig. 88: Identifying Special Tool 61 4 250
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check **GAP DIMENSIONS** and if necessary adjust

Carry out diagnosis.

54 37 100 REMOVING AND INSTALLING ROOF SHELL FASTENER MOTOR (DRIVE)

Necessary preliminary tasks

- Remove **ROOFLINER**

Installation:

- Microencapsulated nuts (Loctite) must be replaced and may not be reused
- Screw connection must be completed within 20 minutes (start of curing)
- Microencapsulated nuts must not be retightened
- Threaded bolts must be cleaned beforehand in event of repeated use

Slide open retaining clip (1) and unclip ball head.

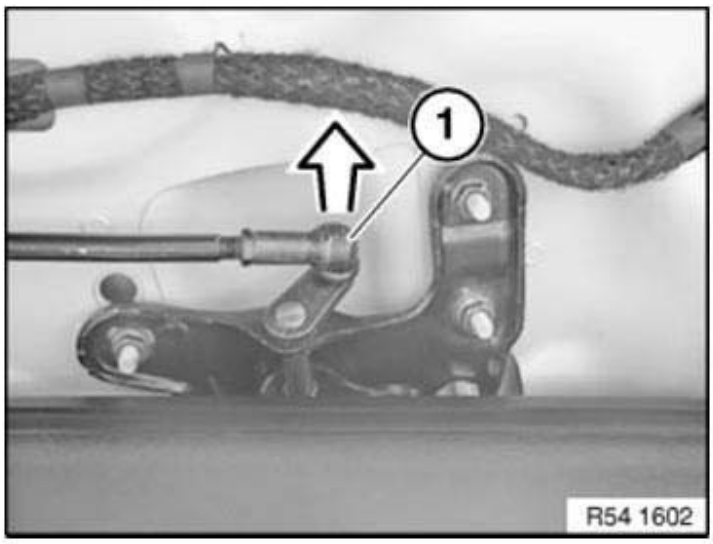


Fig. 89: Sliding Open Retaining Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten plug connection (1) and disconnect.

Unscrew nuts.

Tightening torque **54 37 12AZ** .

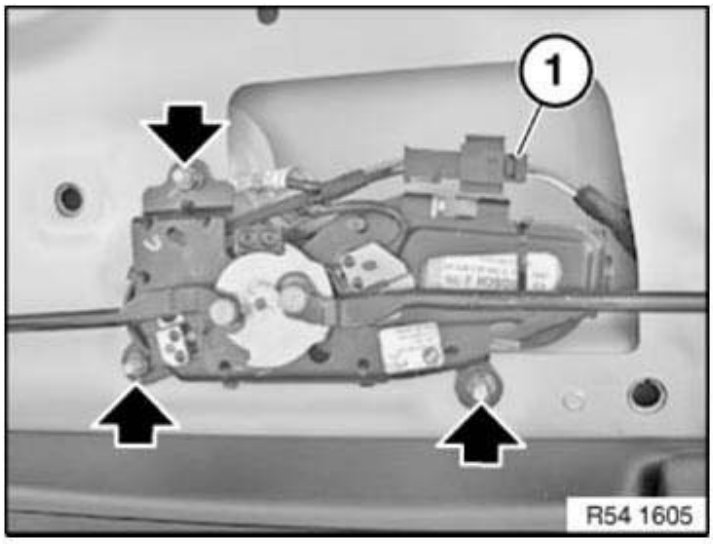


Fig. 90: Locating Plug Connection Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Check GAP DIMENSIONS and if necessary adjust at front.

54 37 185 REMOVING AND INSTALLING/REPLACING HYDRAULIC UNIT (DRIVE) FOR RETRACTABLE HARDTOP

Necessary preliminary work

- Remove **LUGGAGE COMPARTMENT FLOOR TRIM PANEL**

IMPORTANT: Hydraulic fluid may emerge from the disconnected lines and the open connections on the hydraulic unit (drive).
Protect components and work area with suitable materials (e.g. cloths).
Follow REPAIR INSTRUCTIONS for hydraulic system.
Do not fit hydraulic lines in kinked, crushed or transposed condition.

Release screws (1).

Tightening torque **54 37 09AZ** .

Remove battery rollover protection (2).

Remove insulating mat (3).

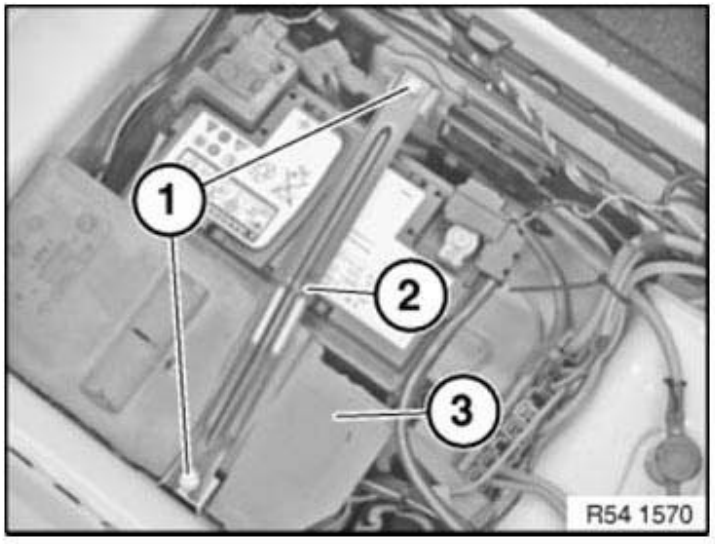


Fig. 91: Identifying Insulating Mat And Battery Rollover Protection With Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten plug connection (1) and disconnect.

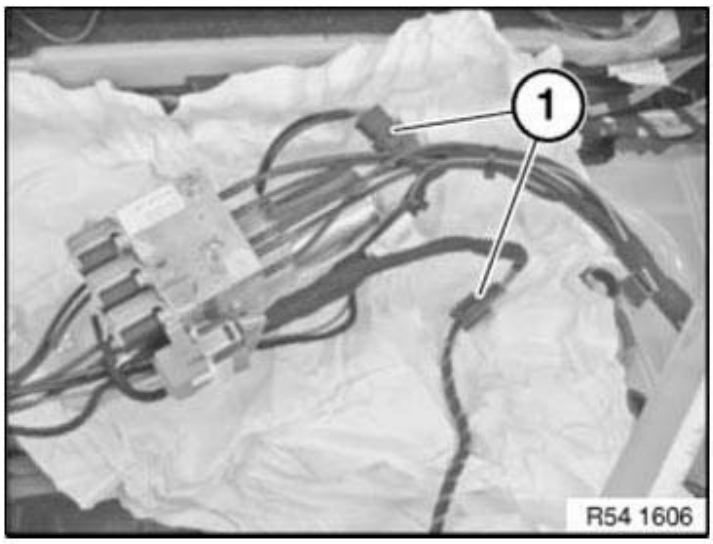


Fig. 92: Identifying Plug Connections
Courtesy of BMW OF NORTH AMERICA, INC.

Press release and detach relay (1) from holder.

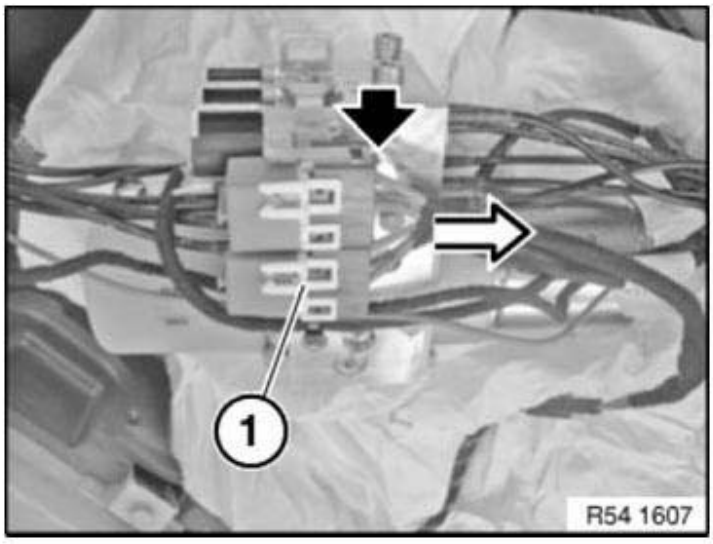


Fig. 93: Disconnecting Relay From Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Release plug connections (1) and disconnect.

Cut cable straps.

Installation note:

Plug connections are coded against incorrect assembly.

Replace defective cable strap.

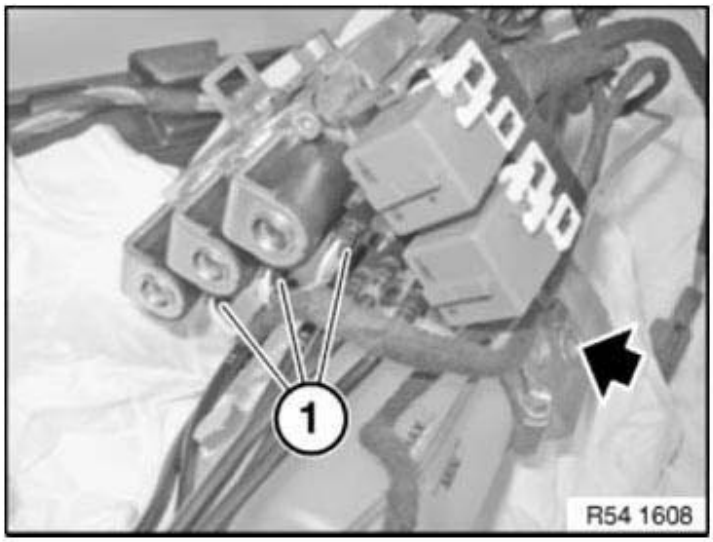


Fig. 94: Identifying Plug Connections
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Protect joints (lines and hydraulic unit) against dripping fluid, e.g. with a cleaning cloth.

Disconnect hydraulic lines from hydraulic unit:

- Release screws.
- Detach hydraulic lines

Installation note:

Hydraulic lines and connections are marked with numbers to prevent mix-ups.

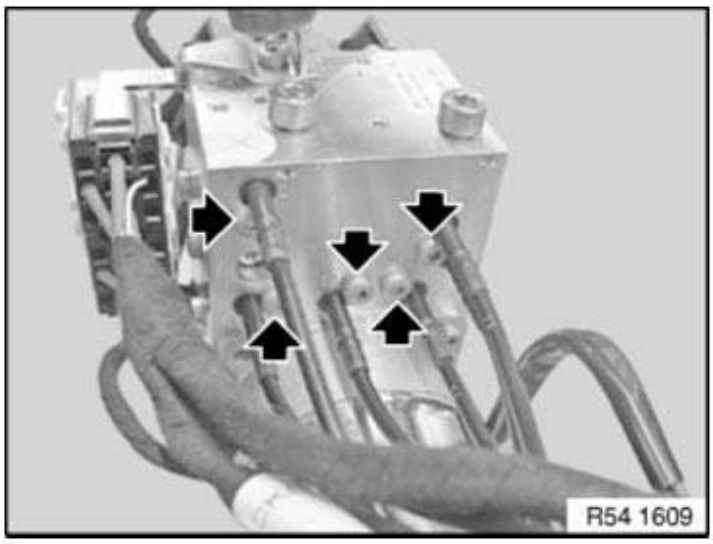


Fig. 95: Locating Hydraulic Line Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect hydraulic lines from hydraulic unit:

- Release screws.
- Detach hydraulic lines
- Remove hydraulic unit (drive).

Installation note:

Hydraulic lines and connections are marked with numbers to prevent mix-ups.

Check **FLUID LEVEL** or top up if necessary.

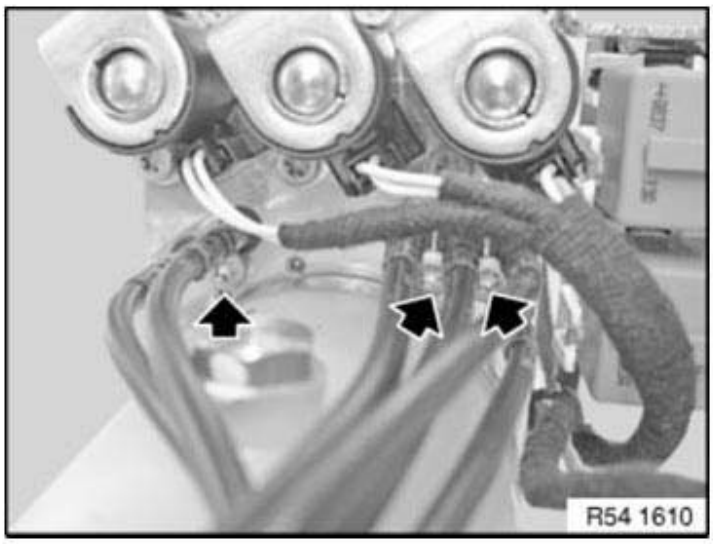


Fig. 96: Locating Hydraulic Line Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement only:

Use Allen key to close shutoff valve on hydraulic unit.

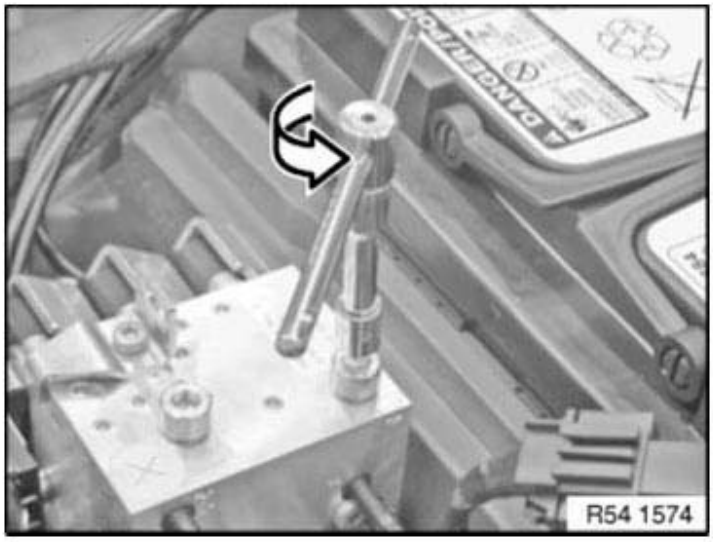


Fig. 97: Closing Shutoff Valve On Hydraulic Unit Using Allen Key
Courtesy of BMW OF NORTH AMERICA, INC.

54 37 220 REMOVING AND INSTALLING/REPLACING LEFT CONVERTIBLE TOP COMPARTMENT LID HYDRAULIC CYLINDER

NOTE: Except for the operations covering the plug connections for the Hall sensors,

this task is identical to:

- **Removing and installing/replacing right CONVERTIBLE TOP COMPARTMENT LID HYDRAULIC CYLINDER**

54 37 090 REMOVING AND INSTALLING/REPLACING LEFT OR RIGHT CONVERTIBLE LOCK

Necessary preliminary tasks

- Remove **FRONT ROOFLINER**
- Open Convertible top.

Installation:

- Microencapsulated nuts (Loctite) must be replaced and may not be reused
- Screw connection must be completed within 20 minutes (start of curing)
- Microencapsulated nuts must not be retightened
- Threads of threaded bolts must be cleaned beforehand in event of repeated use

Slide open retaining clip (1) and unclip ball head.

NOTE: Before removing, mark position of nuts to ensure correct alignment when installing.

Unscrew nuts (2).

Tightening torque **54 37 12AZ** .

Installation:

Replace nuts.

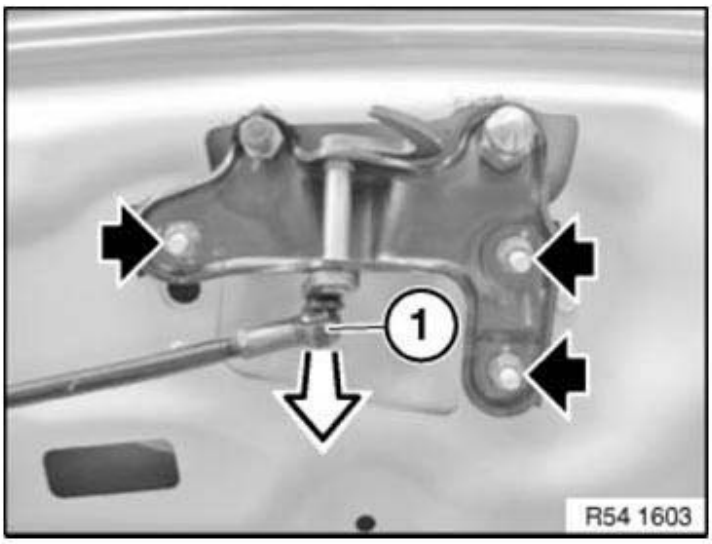


Fig. 98: Sliding Open Retaining Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement only:

Screw on new fasteners loosely.

Fastener should still be able to be slid in order to centre itself.

Close convertible top.

Fasteners glide into place.

Tighten nuts.

Tightening torque **54 37 12AZ** .

Check **GAP DIMENSIONS** and if necessary adjust

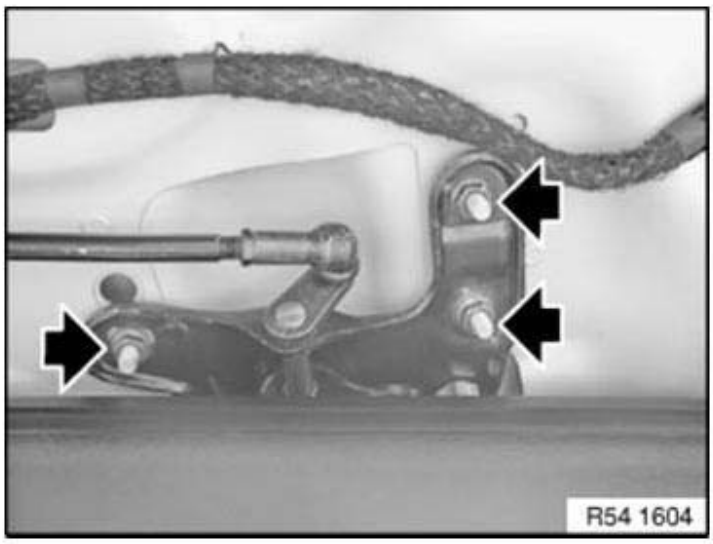


Fig. 99: Locating Screw On Fasteners
Courtesy of BMW OF NORTH AMERICA, INC.

51 31 200 REMOVING AND INSTALLING/REPLACING REAR WINDOW

IMPORTANT: The "INSTRUCTIONS ON CEMENTING WINDSCREEN" serve as the basis for this repair instruction and must be observed without fail.
Cover rear side panels with protective covers.
When reusing the rear window:
Do not damage plug soldering tags for heated rear window.

Necessary preliminary tasks

- Remove **ROOFLINER FOR ROOF SHELL**

NOTE: Removal is performed with ROLL OUT 2000 .

- **Tape off entire roof shell aperture with fabric adhesive tape (paint coat must not be damaged)**
- **All attachment parts must not be damaged**

Move rear roof shell (1) forwards until frame (1) can be engaged in openings (2) on left and right with a suitable tool.

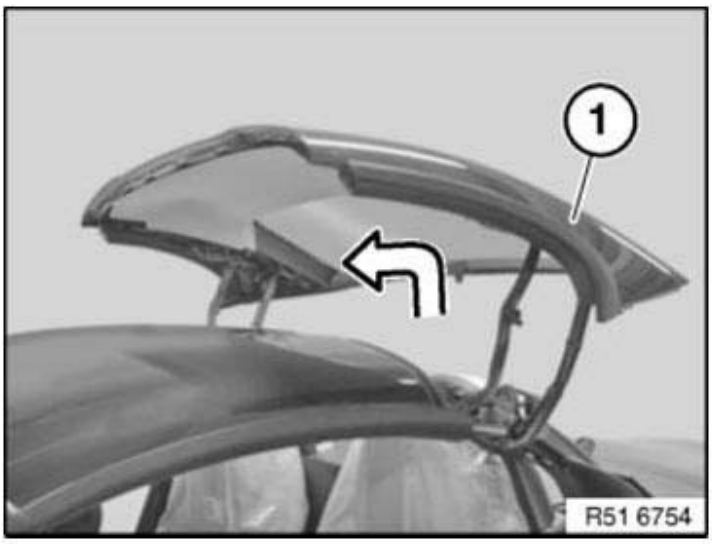


Fig. 100: Moving Rear Roof Shell
Courtesy of BMW OF NORTH AMERICA, INC.

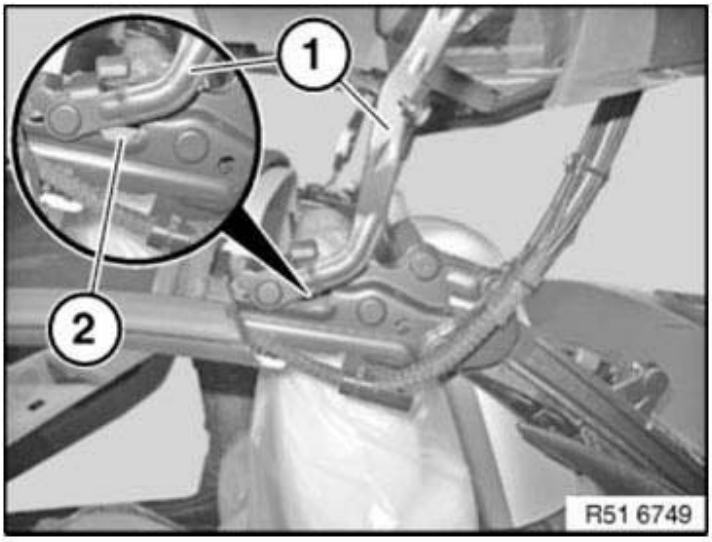


Fig. 101: Frame Engaged On Openings
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect heated rear window plug connections (1) on left and right.

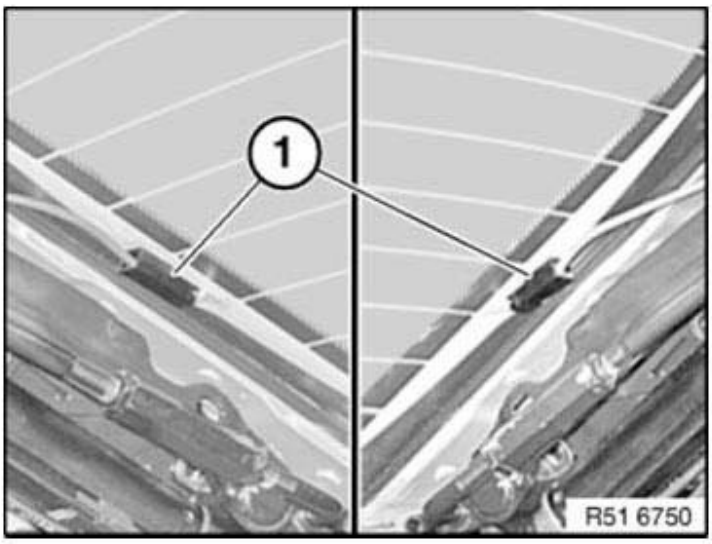


Fig. 102: Identifying Rear Window Plug Connections
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Tape off body area at piercing point (1) with fabric adhesive tape (risk of damage).

Push wire starter from **ROLL OUT 2000** at line (1) through adhesive bead.

Cut out rear window with **ROLL OUT 2000** .

Lift out rear window with special tool 51 3 010 .

Installation:

Bond rear window with hardtop closed.

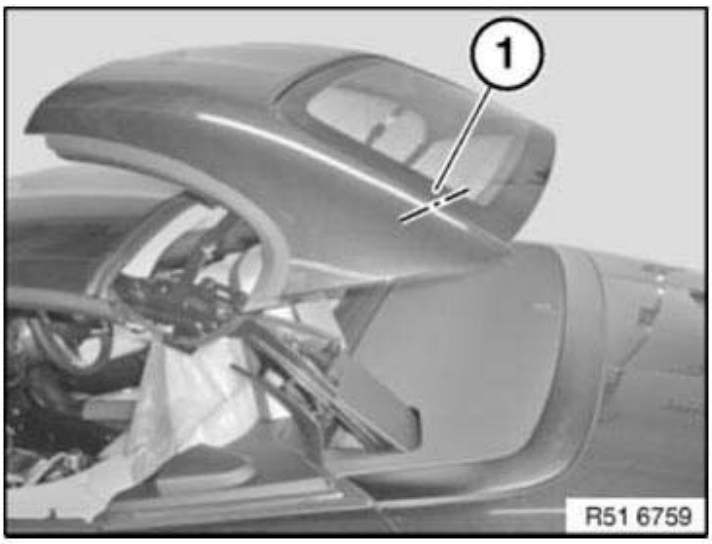


Fig. 103: Identifying Wire Starter From Roll Out 2000 At Line
Courtesy of BMW OF NORTH AMERICA, INC.

Fitting 6 spacer buffers:

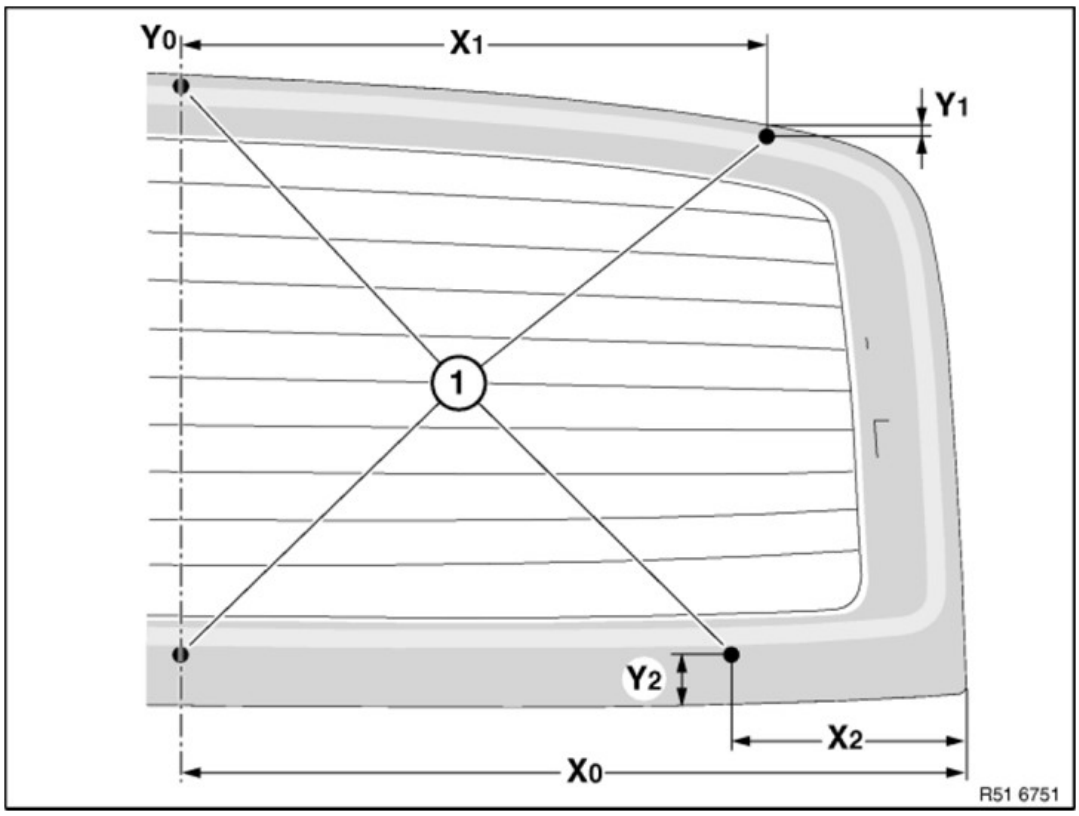


Fig. 104: Identifying Upper And Lower Spacer Buffer Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: To avoid rear window breakage and leaks, remove remnants of removed spacer buffers (1).
Position new spacer buffers (1) outside adhesive bead.
Only the following spacer buffers (1) may be used:

- Dia. 9.5 mm and 3.8 mm high

SPACER BUFFER DIMENSION SPECIFICATION

Apply dimensions to right window half in mirror-inverted fashion			
X_0 =	550	Y_0 =	All dimensions in mm Window centre
X_1 =	380	Y_1 =	6
X_2 =	165	Y_2 =	35

Y_1 = applicable to all upper spacer buffers (1)

Y_2 = applicable to all lower spacer buffers (1)

Overview of bonding agent application (primer)

Apply bonding agent in marked area (1), but not beyond the ceramic glass screen print.

NOTE: Otherwise wipe again straight away with a fluff-free cloth.

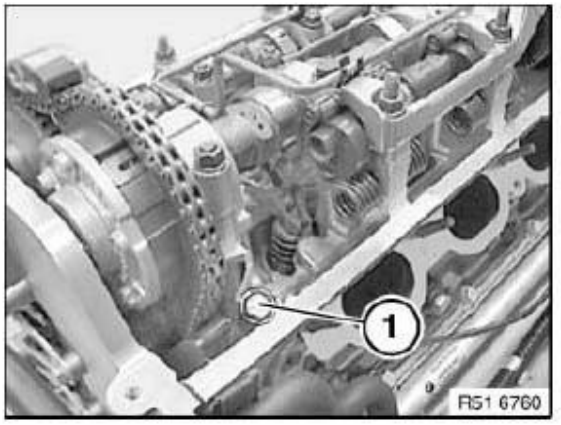


Fig. 105: Identifying Bonding Agent On Applied Marked Area
Courtesy of BMW OF NORTH AMERICA, INC.

Overview of adhesive bead trace, top and side

Adhesive bead trace (1) runs inside clinch points (2).

Adhesive bead trace

A = 7 $^{+2}$ mm (width, adhesive bead trace)

B = 7 $^{+1}$ mm (height, adhesive bead trace)

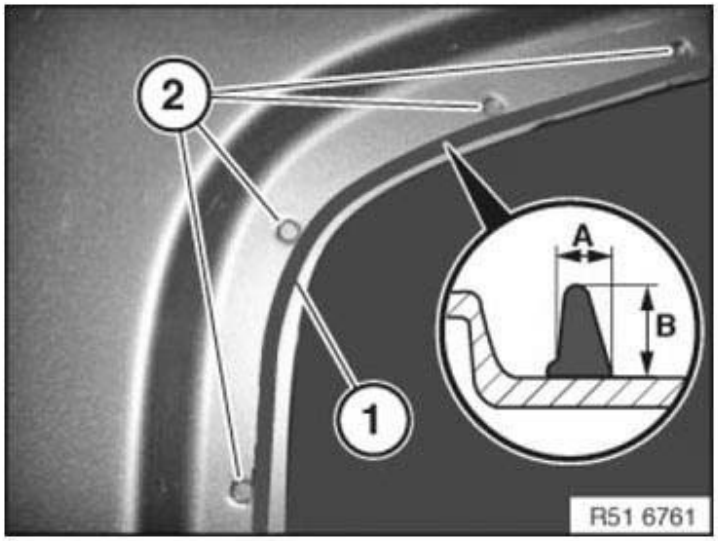


Fig. 106: Identifying Adhesive Bead Trace (Top)
Courtesy of BMW OF NORTH AMERICA, INC.

Overview of adhesive bead trace, bottom

Adhesive bead trace (1) runs in sheet recess of cross-member (2).

Spread bead joint (3) with special tool 00 9 322 .

Adhesive bead trace

A = 7 $^{+2}$ mm (width, adhesive bead trace)

B = 7 $^{+1}$ mm (height, adhesive bead trace)

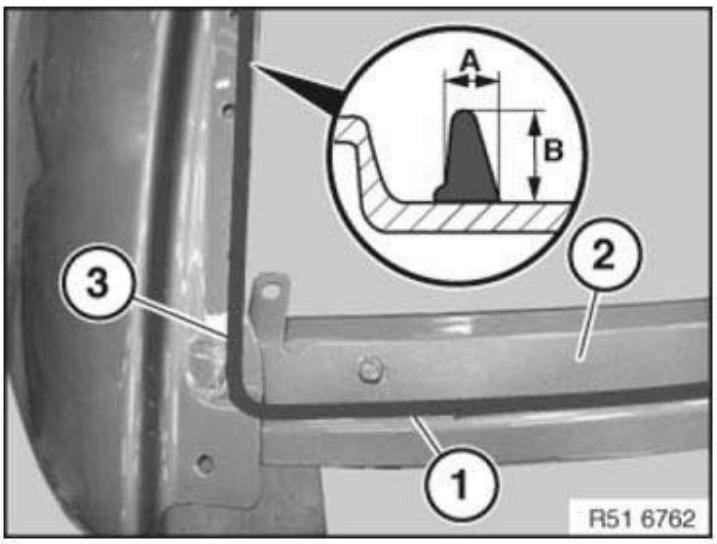


Fig. 107: Identifying Adhesive Bead Trace (Bottom)
Courtesy of BMW OF NORTH AMERICA, INC.

Attach special tool 51 3 010 twice to tool trolley. Moisten suction surfaces and secure rear window from outside.

If reusing the removed rear window, remove the adhesive residue with a blunt scraper or knife.

Observe treatment of adhesive area in body aperture and on rear window, see **INSTRUCTIONS ON WINDOW CEMENTING**

Position and width of bead joint:

- Overlapping and closed
- Not visible from outside and inside
- The contact point becomes noticeable through an increase in the adhesive volume (approx. 1.5 - 2 x bead width after crushing).

  Position adhesive bead only where the glass ceramic material offers a sufficient overlap and the body flange offers sufficient space.

- The adhesive bead is not permitted in the window radii and in the cowl panel area

NOTE: Adhesive area for plastic adhesive tapes (1) must be free from grease and dust.

Stick two yellow plastic adhesive tapes (1) to roof at distance (A) from outside corners.

Length: 400 mm

A = 150 mm

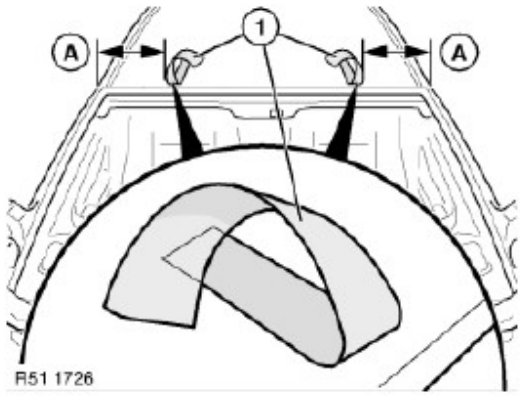


Fig. 108: Identifying Plastic Adhesive Tapes Position Onto Roof
Courtesy of BMW OF NORTH AMERICA, INC.

Gap dimensions

A = Centre rear window (2) to roof shell (1) laterally.

B = Rear window (2) to trim strip, convertible top compartment lid (3), see **GAP DIMENSIONS, BODY** .

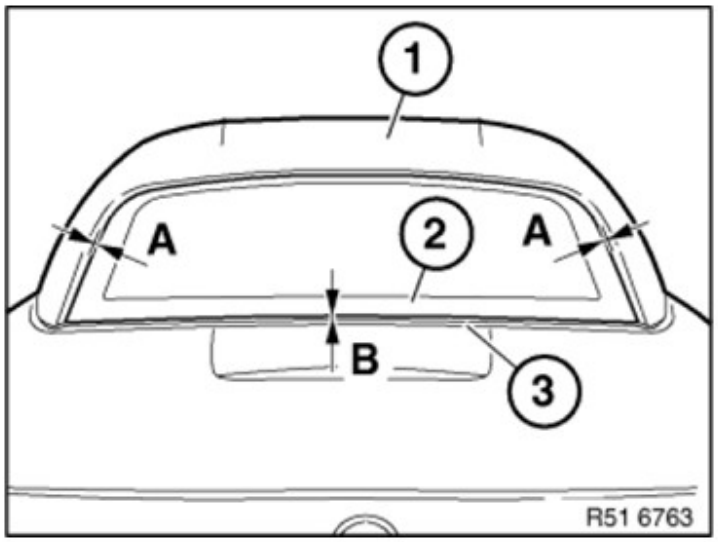


Fig. 109: Identifying Gap Dimension For Centre Rear Window To Roof Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Checking pre-tension on rear window

In order to avoid wind noises, rear window (1) must be lower than roof outer skin (2).

Position special tool 51 0 010 in middle of vehicle depending on measurement (A) and check underprotrusion of rear window (1).

A = 2 mm

X = measurement stages 1 ... 4 mm

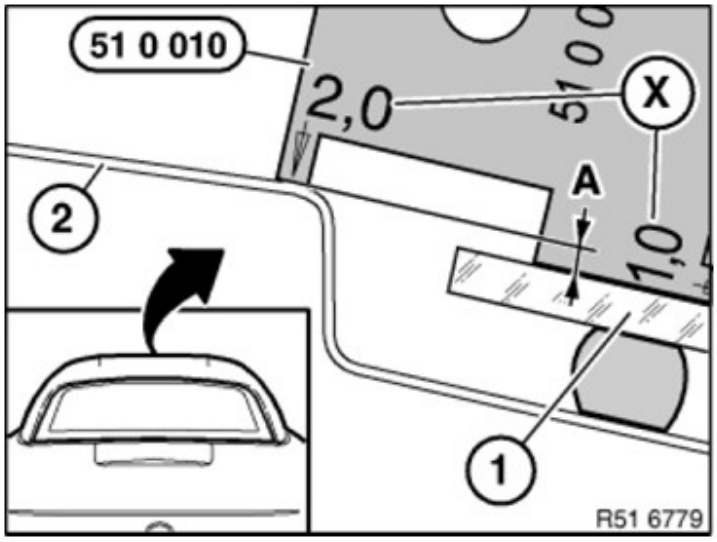


Fig. 110: Checking Pre-Tension On Rear Window Using Special Tool 51 0 010
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Underprotrusion dimension "A" is decreased by approx. 4 mm continuously from window centre to window edge on left and right.

54 37 225 REMOVING AND INSTALLING/REPLACING RIGHT CONVERTIBLE TOP COMPARTMENT LID HYDRAULIC CYLINDER

Necessary preliminary tasks

- Remove luggage compartment wheel arch trim See **5147161 REMOVING AND INSTALLING/REPLACING RIGHT LUGGAGE COMPARTMENT WHEEL ARCH TRIM** or **5147151 REMOVING AND INSTALLING/REPLACING LEFT LUGGAGE COMPARTMENT WHEEL ARCH PANEL** on left or right
- **REPAIR INSTRUCTIONS FOR HYDRAULIC SYSTEM** of Convertible top and Convertible top compartment lid

CAUTION: Hydraulic fluid may emerge from the disconnected lines and the open connections on the hydraulic cylinder.
Protect components and work area with suitable materials (e.g. cloths).

IMPORTANT: Convertible top compartment lid tilts closed when system is depressurized and must be supported with suitable apparatus.

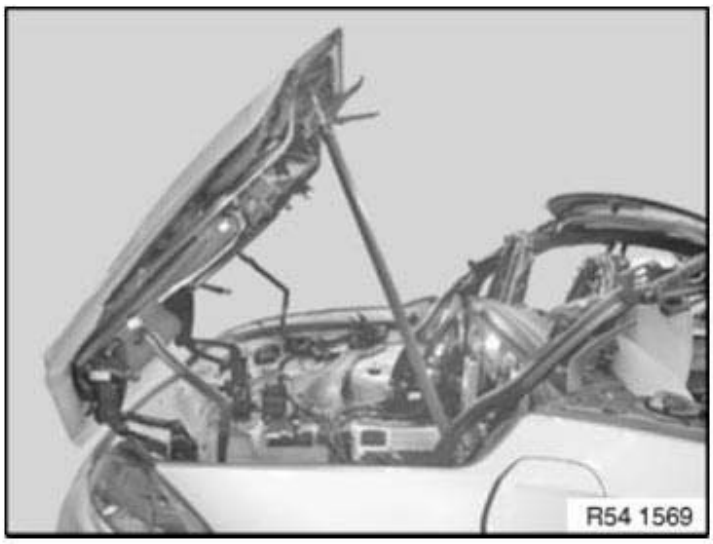


Fig. 111: Identifying Convertible Top Compartment Lid
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Hydraulic system must be at zero pressure. Open screw on hydraulic unit 1.5 turns.

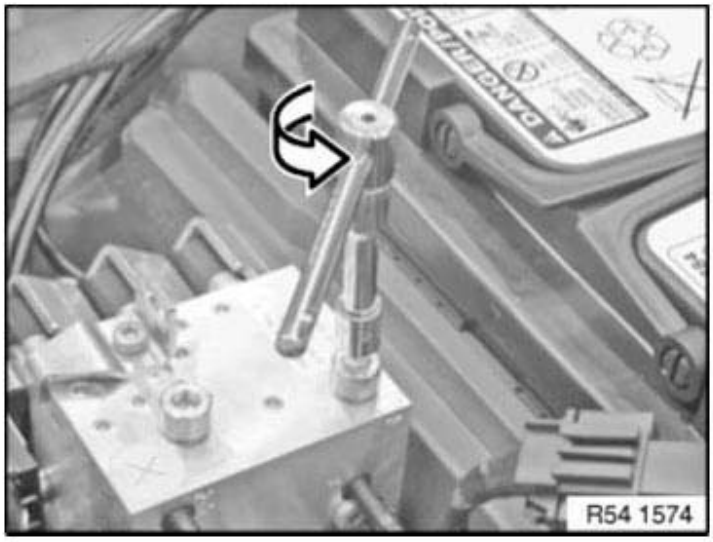


Fig. 112: Opening Screw On Hydraulic Unit
Courtesy of BMW OF NORTH AMERICA, INC.

1. Unlock retaining lug
2. Twist bearing pin downwards

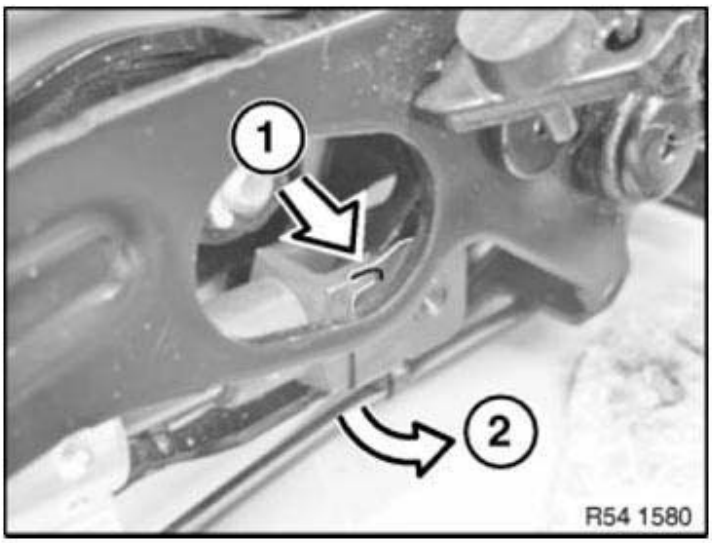


Fig. 113: Twisting Bearing Pin
Courtesy of BMW OF NORTH AMERICA, INC.

Remove bearing pin (1).

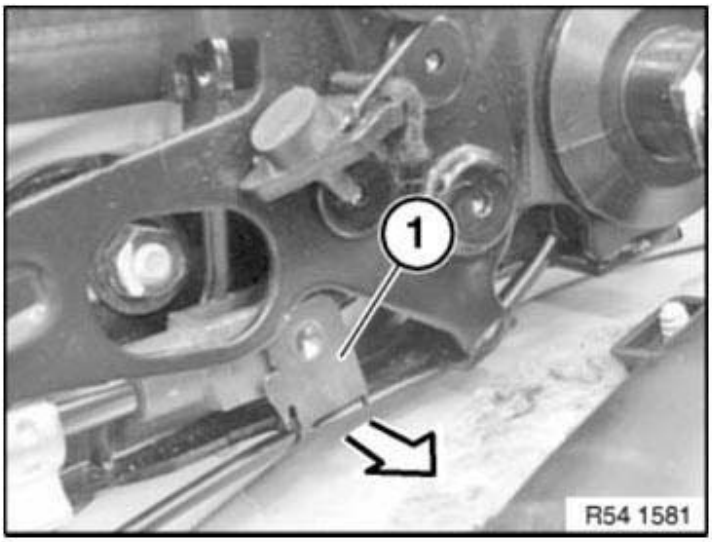


Fig. 114: Removing Bearing Pin
Courtesy of BMW OF NORTH AMERICA, INC.

Remove retaining clip (1) with a screwdriver.

Drive out pin (2) at side.

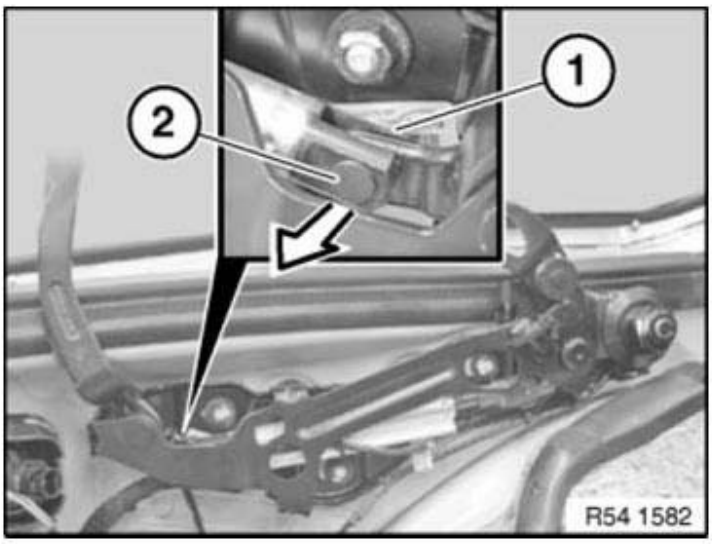


Fig. 115: Removing Pin
Courtesy of BMW OF NORTH AMERICA, INC.

Feed out hydraulic cylinder (1).

Unfasten plug connection (2) and disconnect.

Right side only:

Unlock plug connection (3) for Hall sensor and disconnect.

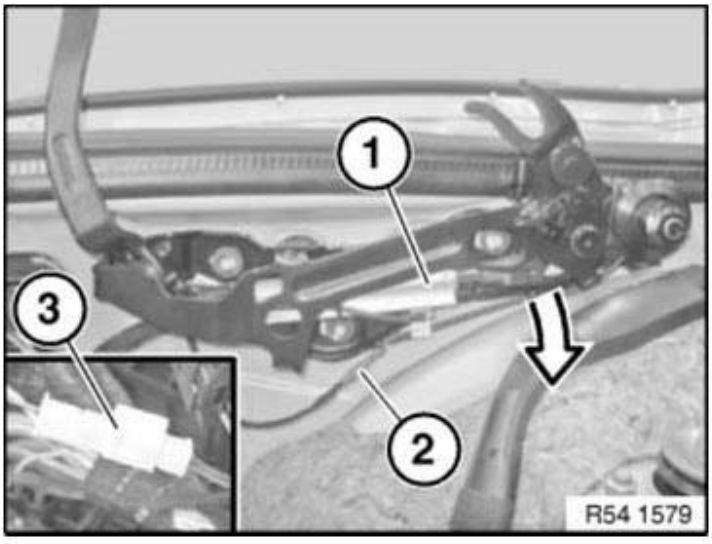


Fig. 116: Removing Hydraulic Cylinder
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement only:

IMPORTANT: Protect joints (lines and cylinder) against dripping fluid, e.g. with a cleaning cloth.

Detach cable tie.

Installation:

Replace faulty cable ties.

Slide open retaining rings (1) with screwdriver.

Detach hydraulic lines (2).

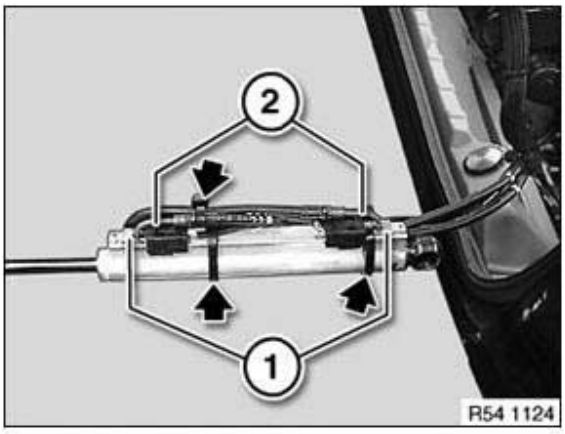


Fig. 117: Identifying Retaining Rings And Hydraulic Lines
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

- Carry out operational check.
- Check **FLUID LEVEL** .

54 37 070 REMOVING AND INSTALLING/REPLACING ROOF SHELL AT FRONT

Necessary preliminary tasks

- Remove **ROOFLINER FOR ROOF SHELL AT FRONT**
- Front latch unlocked

NOTE: Removal of front roof shell must only be carried out when the rear roof shell is fitted.
Never remove the front and rear roof shell together.
An adjustment of the roof shell is specified in all directions and in this case is not possible.

Installation:

- Microencapsulated screws (Loctite) must be replaced and may **not** be reused
- Screw connection must be completed within 20 minutes (start of curing)
- Microencapsulated screws must not be retightened
- Thread of nut must be cleaned beforehand in event of repeated use

Special tool 54 0 350 for mechanically tensioning convertible top when removing roof shell.

Insert and tension tightening hook (1) on left and right.

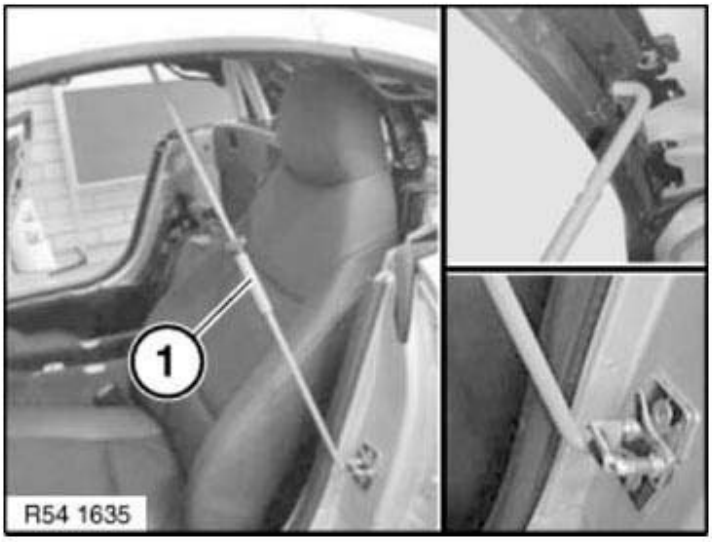


Fig. 118: Identifying Hook
Courtesy of BMW OF NORTH AMERICA, INC.

Unfasten plug connection (1) and disconnect.

Cut open cable tie (2).

Unclip cable holder (3).

Installation:

Replace faulty cable ties and cable clips.

Feed wiring harness out of roof shell.

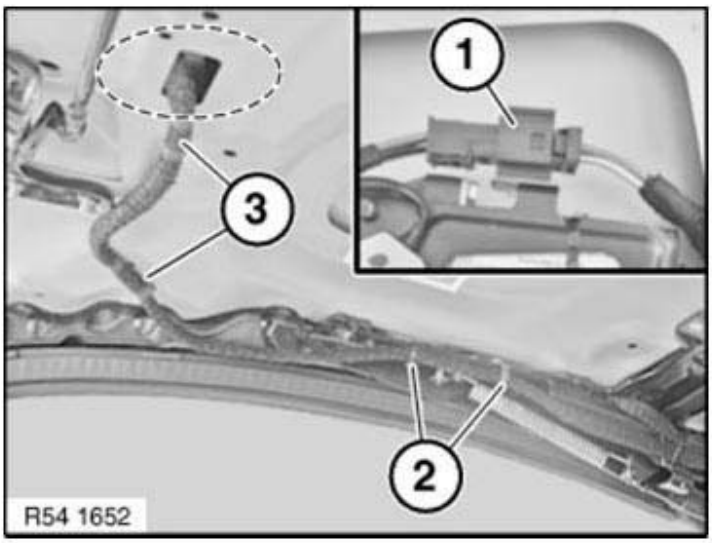


Fig. 119: Identifying Plug Connection, Cable Tie And Cable Holder
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Count and note the number of washers for height specification.

Release Torx screws (1).

Installation:

Replace Torx screws and insert with Loctite.

Tightening torque **54 37 11AZ** .

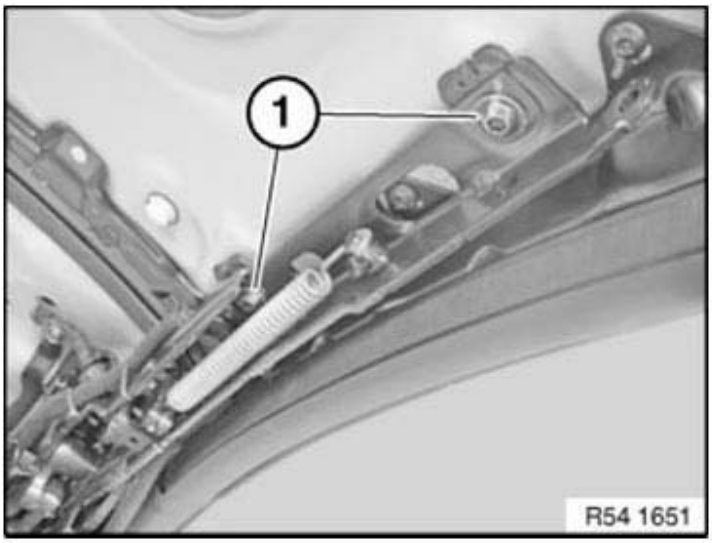


Fig. 120: Identifying Torx Screws

Courtesy of BMW OF NORTH AMERICA, INC.

Replacement only

- Remove **FRONT LATCH**
- Remove **LATCH MOTOR**
- Remove **SEAL**

Release Torx screws (1).

Installation:

Replace Torx screws and insert with Loctite.

Tightening torque **54 37 13AZ** .

Remove seal mount.

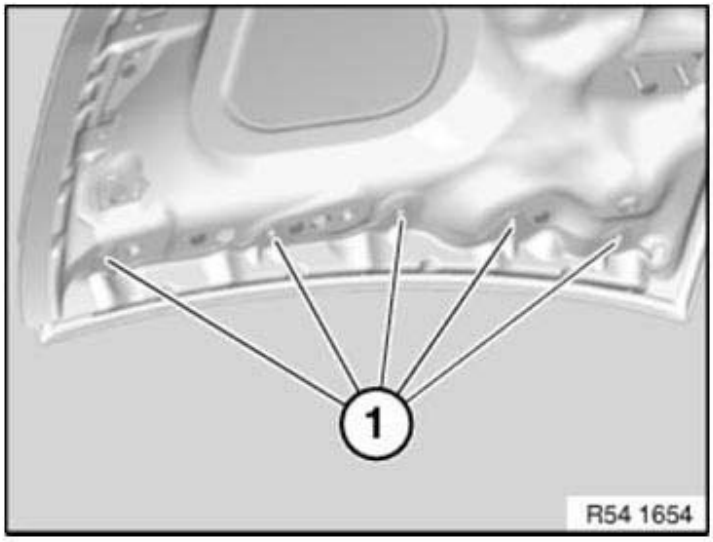


Fig. 121: Identifying Torx Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Drill out rivets (1).

Remove seal mount.

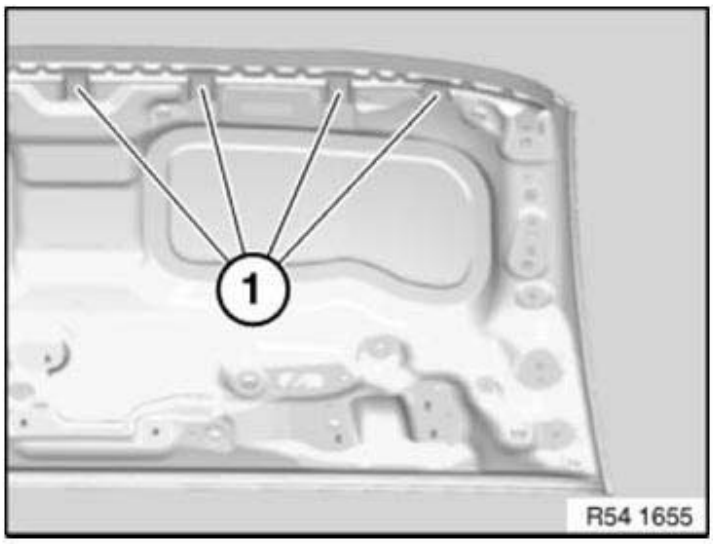


Fig. 122: Identifying Seal Mount Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check **GAP DIMENSIONS** for convertible top.

54 37 080 REMOVING AND INSTALLING/REPLACING ROOF SHELL AT REAR

Necessary preliminary tasks

- Remove **ROOFLINER FOR ROOF SHELL AT REAR**

NOTE: Removal of rear roof shell must only be carried out when the front roof shell is fitted.
Never remove the rear and front roof shell together.
An adjustment of the roof shell is specified in all directions and in this case is not possible.

Installation:

- Microencapsulated screws (Loctite) must be replaced and may **not** be reused
- Screw connection must be completed within 20 minutes (start of curing)
- Microencapsulated screws must **not** be retightened
- Thread of nut must be cleaned beforehand in event of repeated use

Move rear roof shell (1) over front roof shell.

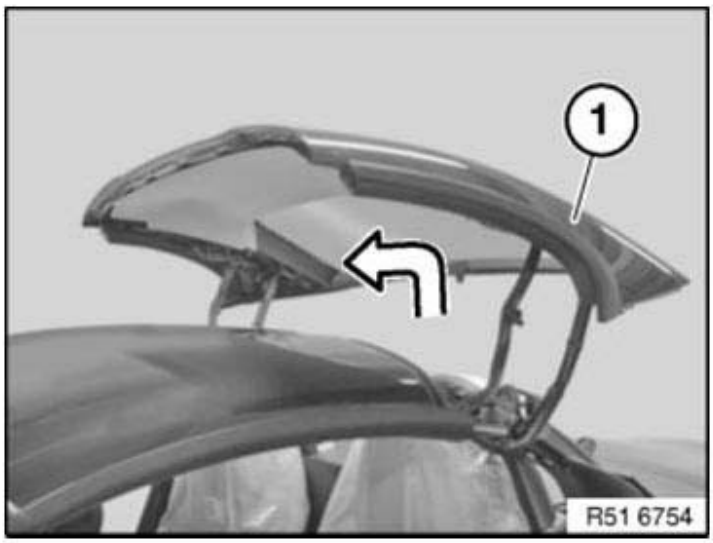


Fig. 123: Moving Rear Roof Shell Over Front Roof Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Secure rear roof shell against sinking.

Insert auxiliary tool on left and right in bore hole (2) of convertible top frame (1).

Roof shell is blocked when hydraulic system is depressurized.

IMPORTANT: Remove auxiliary tool again without fail before moving roof. Risk of damage!

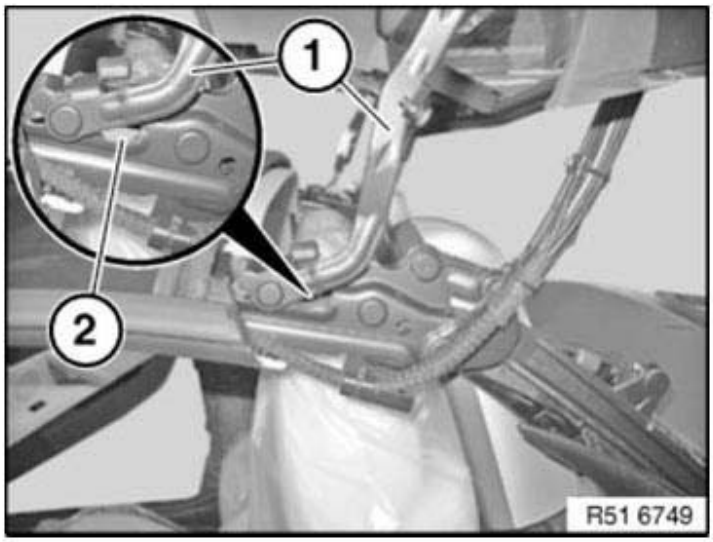


Fig. 124: Identifying Bore Hole Of Convertible Top Frame
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Count and note the number of washers for height specification.

Release Torx screws (1) on left and right.

Installation:

Replace Torx screws.

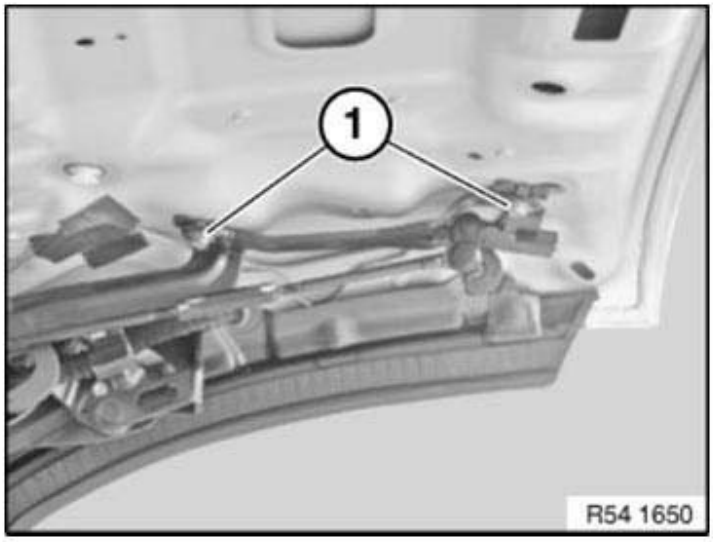


Fig. 125: Identifying Washer Torx Screws
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Count and note the number of washers.

Release Torx screws (1) on left and right.

Installation:

Replace Torx screws.

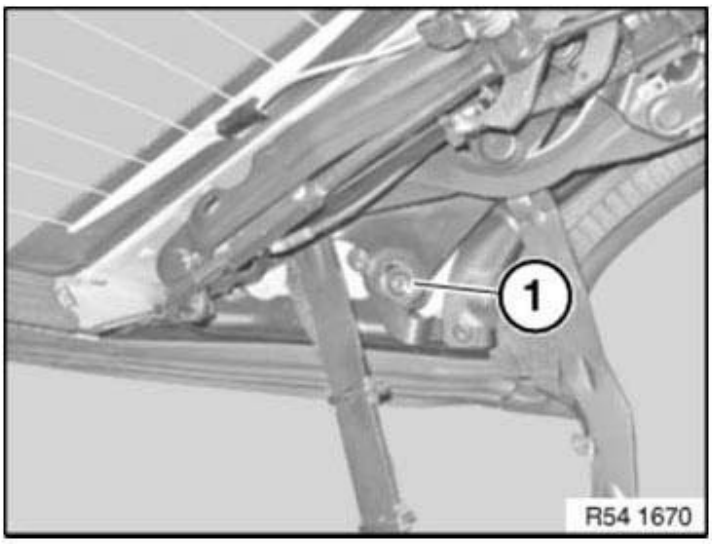


Fig. 126: Identifying Washer Torx Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Install and adjust roof shell without fin.

Release screws (1).

Remove fin.

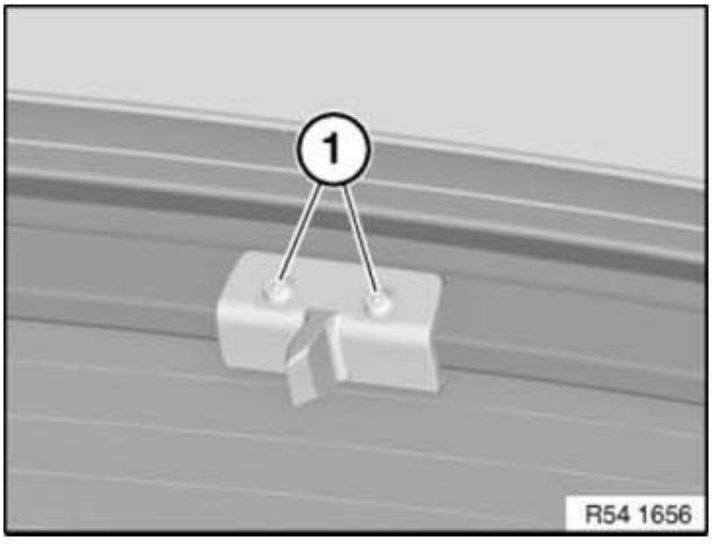


Fig. 127: Identifying Fin Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Observe installation sequence:

Screw on roof shell slack, roof shell must just still be able to be moved.

Close convertible top.

Align roof shell and check **GAP DIMENSION** .

Screw down front Torx screw (1).

Tightening torque **54 37 11AZ** .

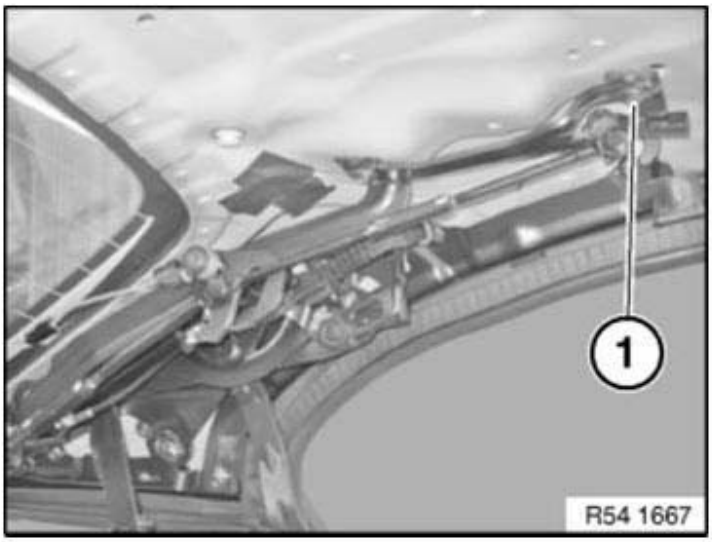


Fig. 128: Identifying Roof Shell Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Screw down Torx screw (1).

Tightening torque **54 37 11AZ** .

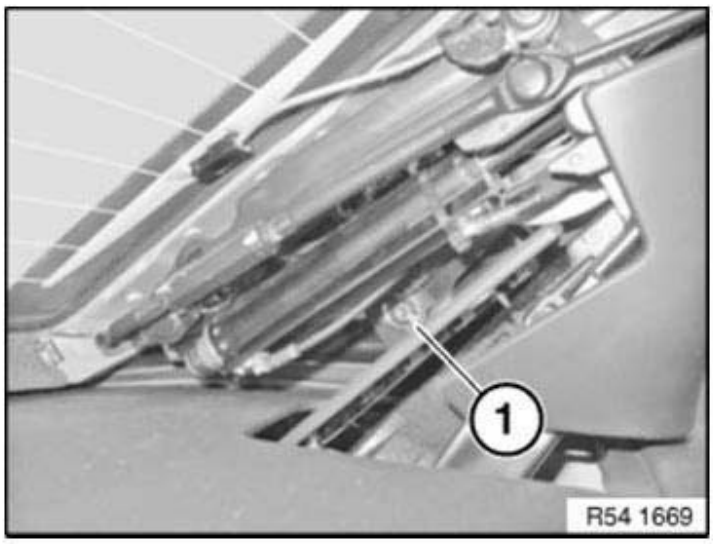


Fig. 129: Identifying Roof Shell Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Open convertible top.

Screw down rear Torx screw (1).

Tightening torque **54 37 11AZ** .

Install fin.

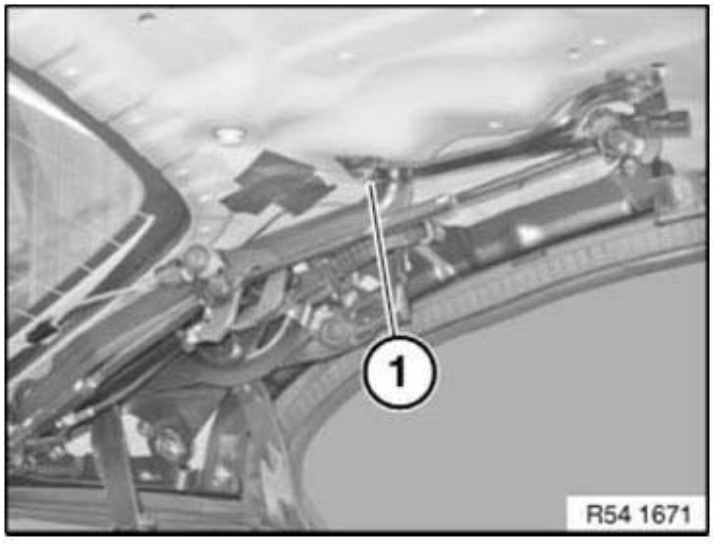


Fig. 130: Identifying Fin Screw
Courtesy of BMW OF NORTH AMERICA, INC.

Replacement only

- Modify **REAR WINDOW**
- Modify **SEAL**

Release screws (1).

Tightening torque **54 37 13AZ** .

Remove seal holder.

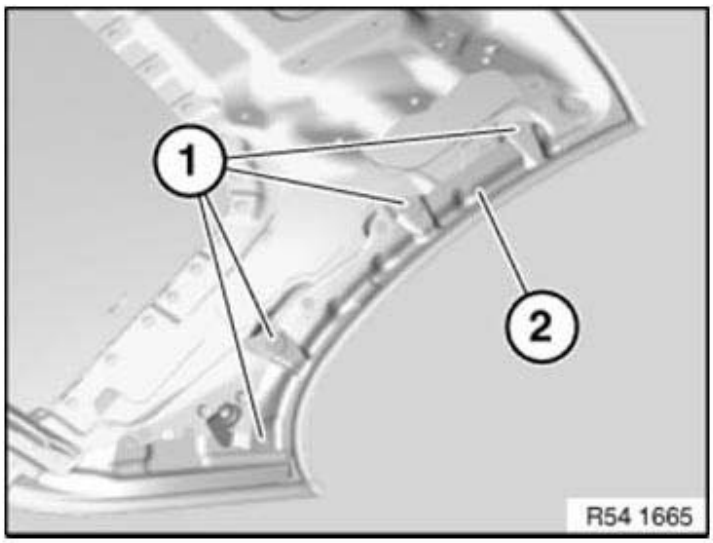


Fig. 131: Identifying Holder Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

Tightening torque **54 37 13AZ** .

Remove seal holder.

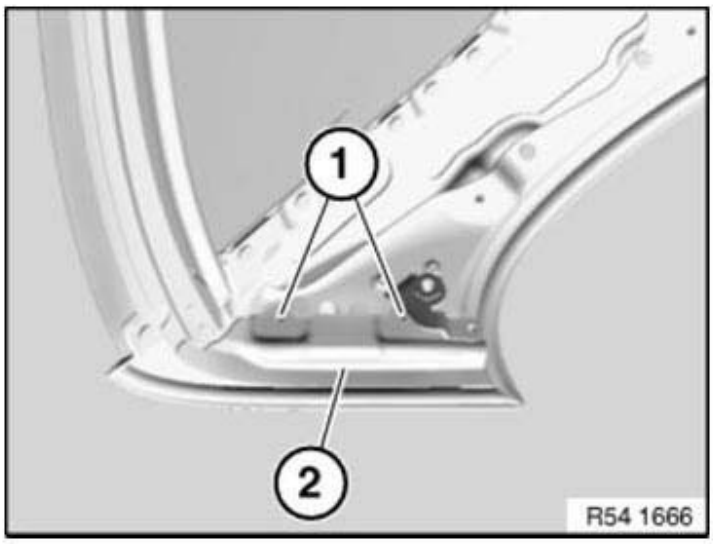


Fig. 132: Identifying Holder Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Attach Teflon tape (1) in front area of roof shell.

A. 25 mm

Installation:

Clean adhesive area with spirit.

Air drying time: > or = 2 minute

IMPORTANT: Adhesive area must be dry and free from dust and grease.
Once it has been cleaned, do not touch the adhesive area with bare hands.

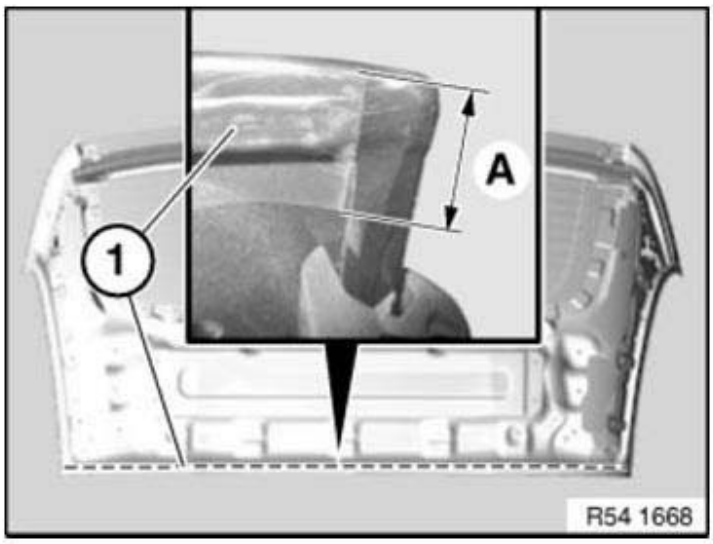


Fig. 133: Identifying Teflon Tape On Front Area Of Roof Shell Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

54 37 035 REMOVING AND INSTALLING/REPLACING ROOFLINER FOR ROOF SHELL AT FRONT

Necessary preliminary tasks

- Open convertible top

Unclip roofliner in front area (1) with special tool 51 0 310.

Unclip roofliner at rear.

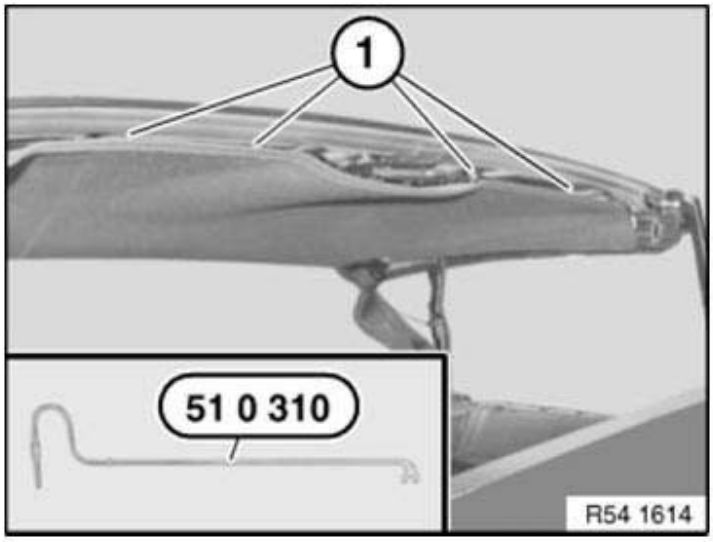


Fig. 134: Removing Roofliner On Front Area Using Special Tool 51 0 310

Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Pre-install clips on roofliner (1).

If necessary, replace faulty clips (1).

After installing fold out roofliner seal.

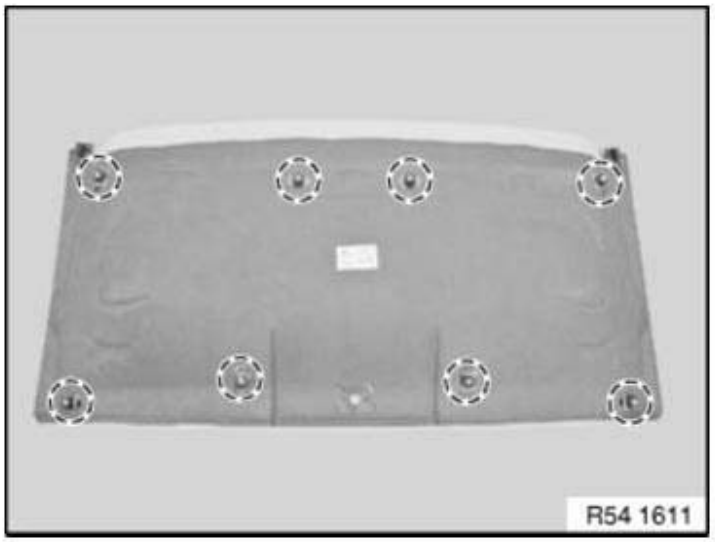


Fig. 135: Identifying Clips On Roofliner
Courtesy of BMW OF NORTH AMERICA, INC.

54 37 045 REMOVING AND INSTALLING/REPLACING ROOFLINER FOR ROOF SHELL AT REAR

Open convertible top until rear roofliner is accessible.

1. Unclip roofliner from roof shell.
2. Remove roofliner from roof shell.

Installation:

Thread in roofliner first in marked area.

Check roofliner for correct seating.

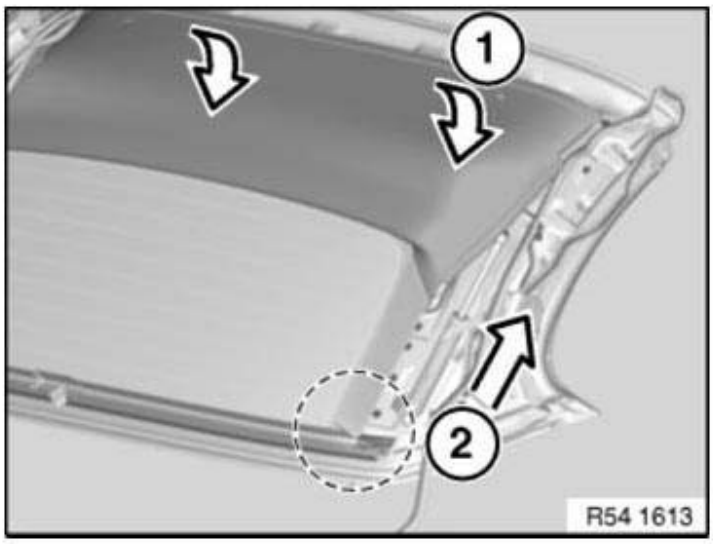


Fig. 136: Removing Roofliner From Roof Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Pre-install clips on roofliner.

After installing fold out roofliner seal.

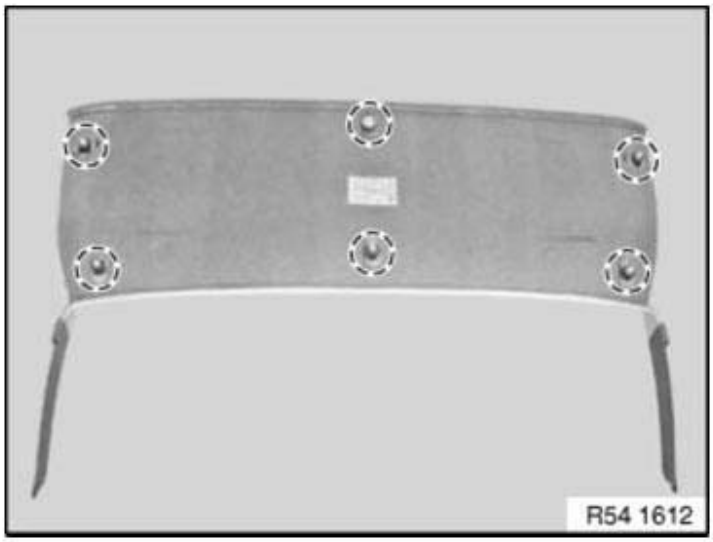


Fig. 137: Identifying Clips On Roofliner
Courtesy of BMW OF NORTH AMERICA, INC.

54 37 160 REMOVING REAR MODULE

Necessary preliminary tasks

- Connect battery charger
- Remove **LOADING SILL END COVER**
- Remove **TRIM FROM REAR APRON**

Open convertible top compartment lid.

IMPORTANT: Convertible top compartment lid may tilt forwards and must be supported with suitable apparatus.

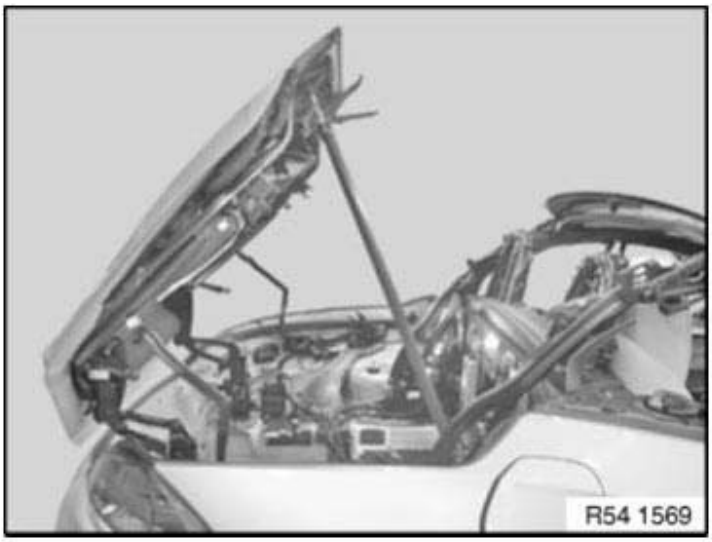


Fig. 138: Opening Convertible Top Compartment Lid
Courtesy of BMW OF NORTH AMERICA, INC.

Generously cover bumper area (loading sill) with protective covers (1).



Fig. 139: Cover Bumper Area (Loading Sill) With Protective Covers
Courtesy of BMW OF NORTH AMERICA, INC.

Measure distance A between rear module kinematics.

Installation:

Adjust distance A.

Basic adjustment dimension e.g. for replacement:

A = 770.3 mm.

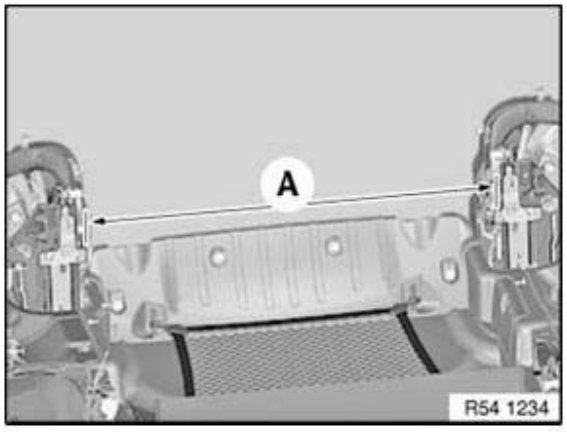


Fig. 140: Adjusting Distance Between Rear Module Kinematics
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Rear lid must be closed.

Unlock and disconnect plug connection (1) on right main bearing.

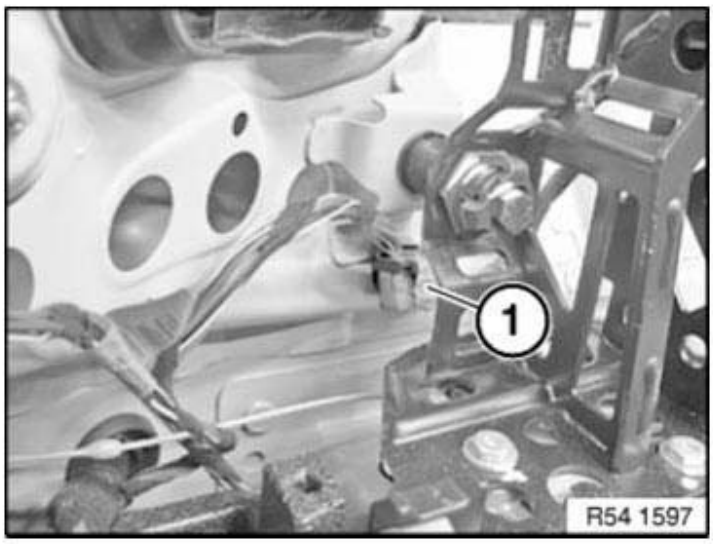


Fig. 141: Identifying Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Connect special tool 61 4 250 to vehicle-side plug for rear module.

NOTE: Adapter simulates closed rear lid. Retractable hardtop without rear lid not in working order.

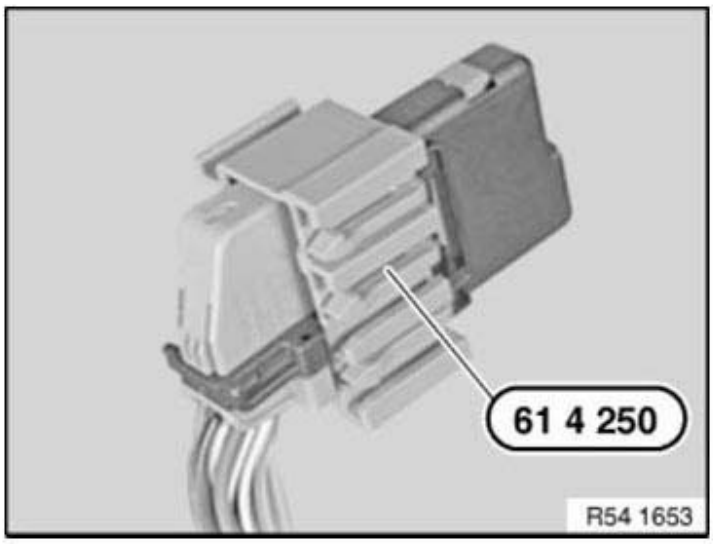


Fig. 142: Identifying Special Tool 61 4 250 To Vehicle-Side Plug For Rear Module
Courtesy of BMW OF NORTH AMERICA, INC.

Release left and right screws (1).

Tightening torque **54 34 1AZ** .

NOTE: Do not adjust barrel screws.

Replacement only:

Bring barrel screws into contact with special tool 54 0 180 in conjunction with special tool 00 9 450 .

Tightening torque **54 34 10AZ** .

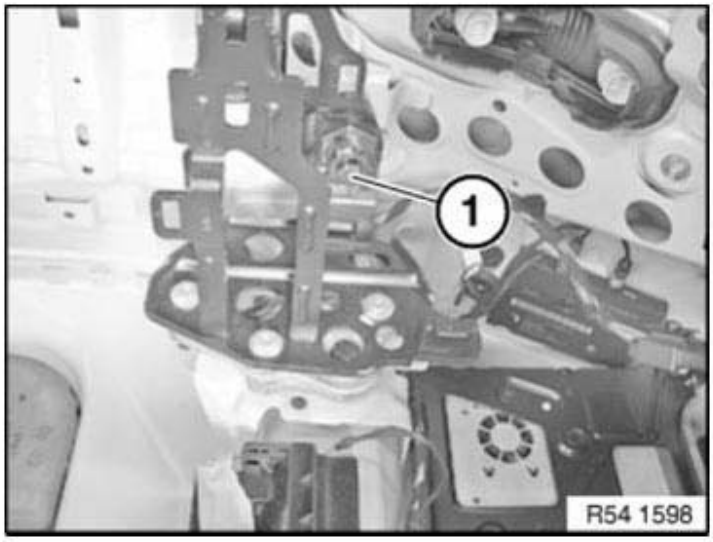


Fig. 143: Identifying Barrel Screw
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Before removing, mark position of screws (1) to ensure correct alignment during installation.

Do **not** release screws.

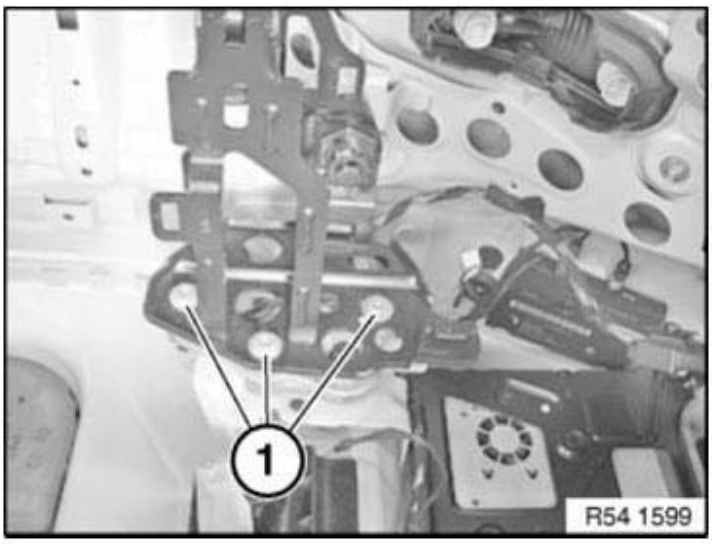


Fig. 144: Identifying Barrel Screw
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Proceed with the greatest possible caution when carrying out the following tasks.
Risk of damage!
Two persons are essential for helping to carry out the following tasks.

IMPORTANT: Rear module sinks if incorrectly supported. Risk of damage!

Position a helper on both the left and right sides of the rear module.

Grip rear module with two hands on rear module kinematic assembly and support in Z-direction.

NOTE: Bracket is double-jointed and bends.



Fig. 145: Positioning Helper On Both Sides Of Rear Module
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock and detach retainers (1) on left and right.

Drive out pin.

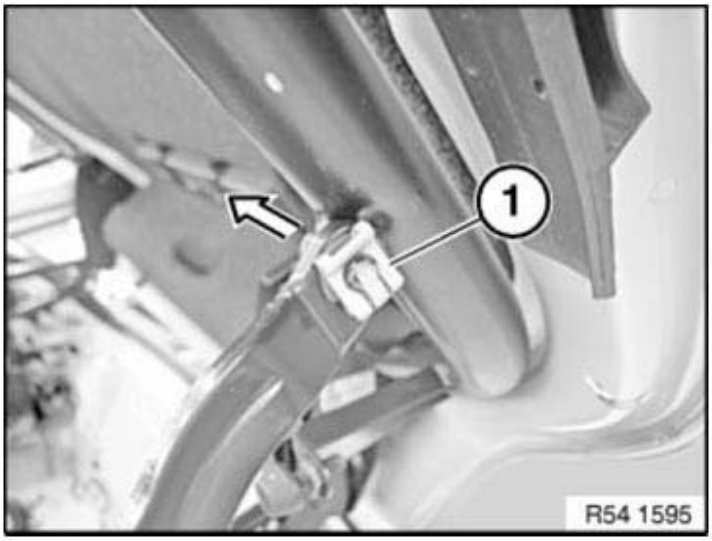


Fig. 146: Disconnecting Retainer
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) on left and right from bearing support.

Tightening torque **54 34 13AZ** .

Remove rear module.

Set down rear module on a suitable surface.

IMPORTANT: Do not damage any surrounding parts.

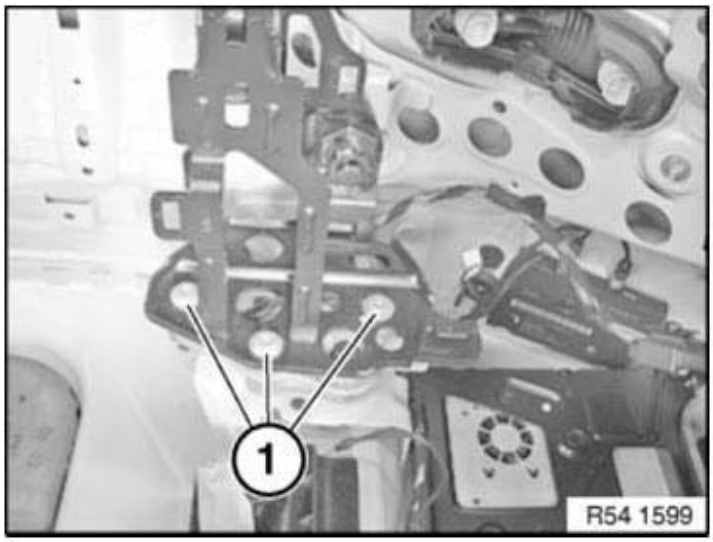


Fig. 147: Identifying Bearing Support Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Check **GAP DIMENSIONS** and if necessary adjust

Carry out diagnosis.

54 37 005 REPLACING FRONT ROOF SHELL SEAL

Necessary preliminary tasks

- Remove **ROOF LINING**
- Partially open convertible top

Remove seal (1).

Installation:

Slide seal flush onto windscreen frame seal.

Make sure seal (1) is **SECURELY MOUNTED** on seal carrier.

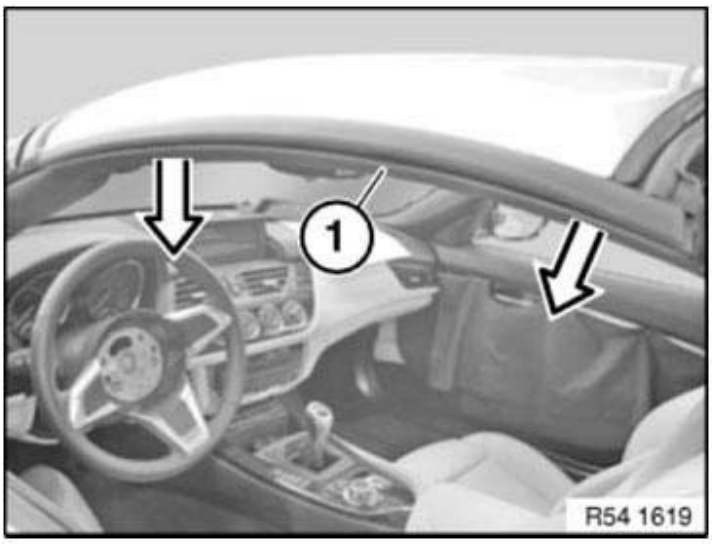


Fig. 148: Removing Seal
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Sealing lip on windscreen frame seal must not be distorted when roof shell seal retracts.

If the sealing lip is distorted, the roof shell seal must be pushed further forwards.

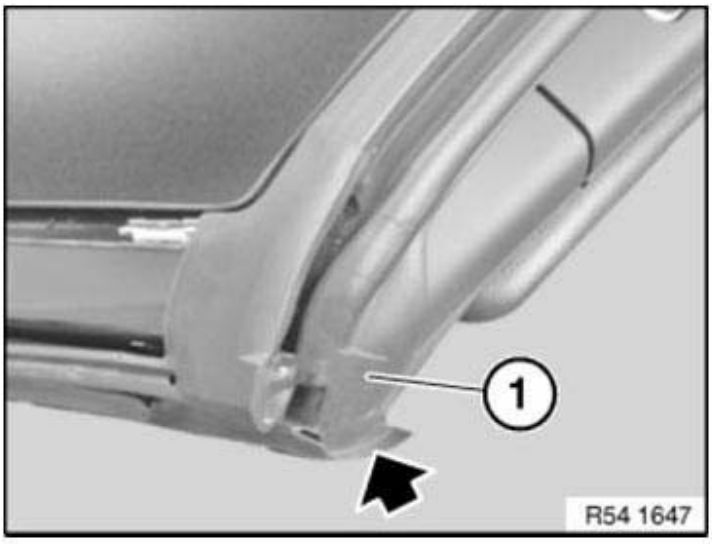


Fig. 149: Identifying Windscreen Frame Seal
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Count and make a note of washers.

Release left and right screws (1).

Installation:

Adjust gap dimension, seal carrier to roof shell.

= 2 mm ±1 mm

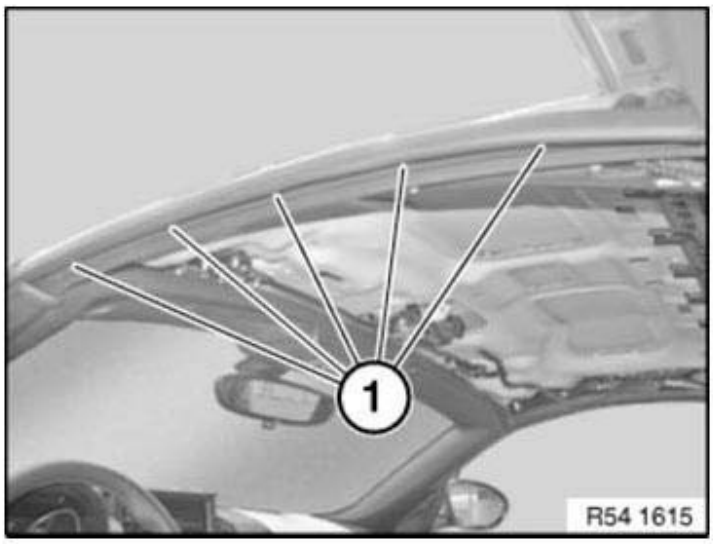


Fig. 150: Identifying Roof Shell Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Before installing the seal carrier, fit a butyl pad (1) and a butyl ball (2) at the front corners of the roof shell.

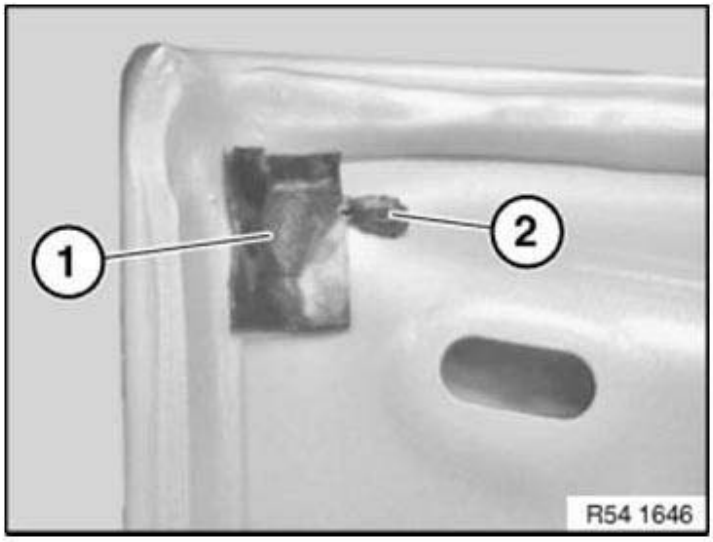


Fig. 151: Identifying Butyl Pad And Butyl Ball Of Roof Shell
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Grease contact points of seal carrier and cowl panel seal with Vaseline.

Slide seal carrier (1) fully onto cowl panel seal and screw down.

Tightening torque **54 37 14AZ** .

If necessary, **ADJUST** windscreen frame seal to roof shell seal.

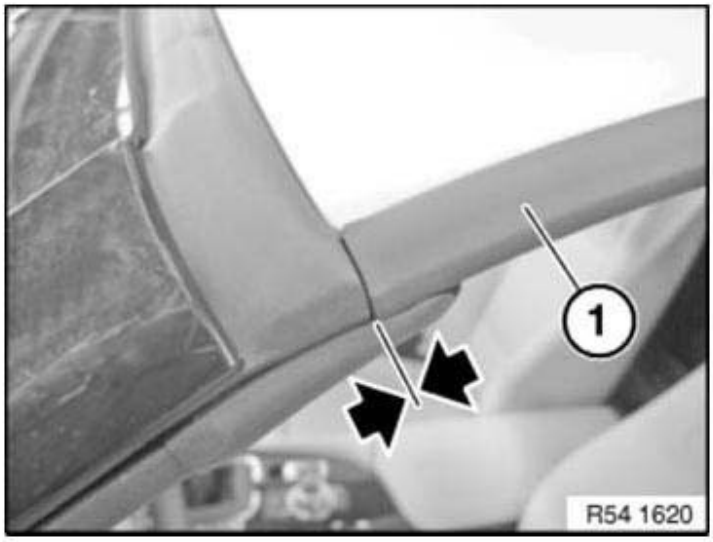


Fig. 152: Identifying Seal Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Detach seal (1) from seal carrier.

Installation:

Cleanly push on seal from rear, starting on left and right, into corners.

Push on seal in one operation, as sealing lip may kink.

Check kink-free position of sealing lip between roof shell and seal carrier using a torch.

If necessary, repeat procedure.

Make sure seal (1) is **SECURELY MOUNTED** on seal carrier.

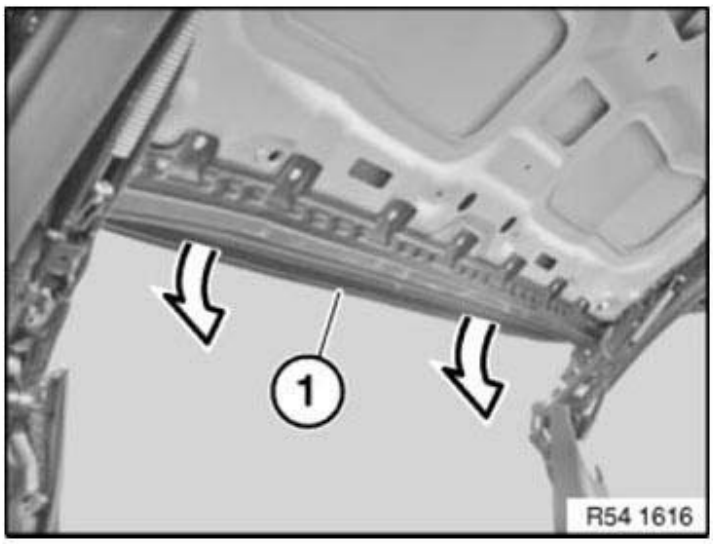


Fig. 153: Disconnecting Seal From Seal Chamber
Courtesy of BMW OF NORTH AMERICA, INC.

Check retraction depth of windows and **ADJUST** if necessary.

If necessary, adapt number of washers.

54 37 024 REPLACING REAR ROOF SHELL SEAL

Necessary preliminary tasks

- Partially open convertible top

Remove seal (1).

Installation:

Slide seal flush onto front roof shell seal.

Make sure seal (1) is **SECURELY MOUNTED** on seal carrier.

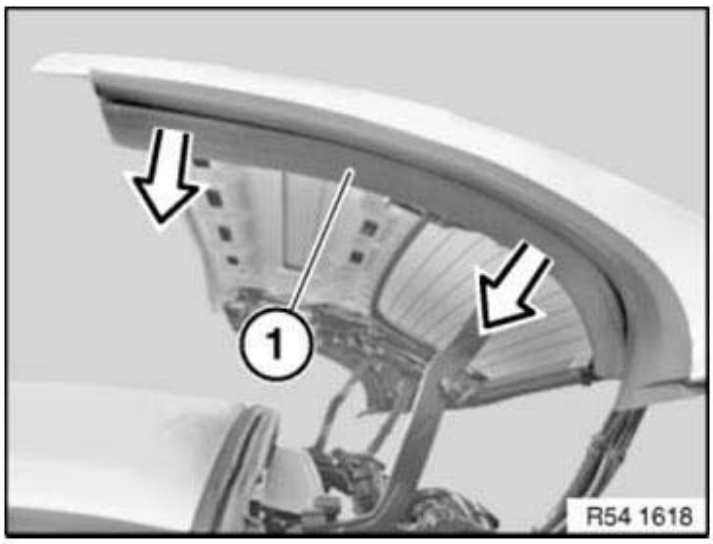


Fig. 154: Removing Seal
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Count and make a note of washers.

Release left and right screws (1).

Installation:

Adjust gap dimension, seal carrier to roof shell.

If necessary, adapt number of washers.

= 2 mm ±1 mm

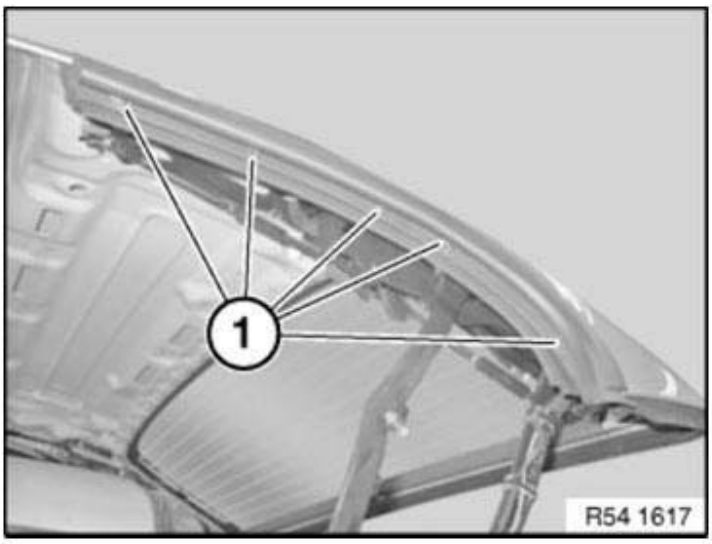


Fig. 155: Identifying Roof Shell Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation:

Grease contact points of seal carriers with Vaseline.

Slide seal carrier (1) fully onto front roof shell seal and screw down.

If necessary, **ADJUST** seal carrier, front roof shell.

Tightening torque **54 37 14AZ** .

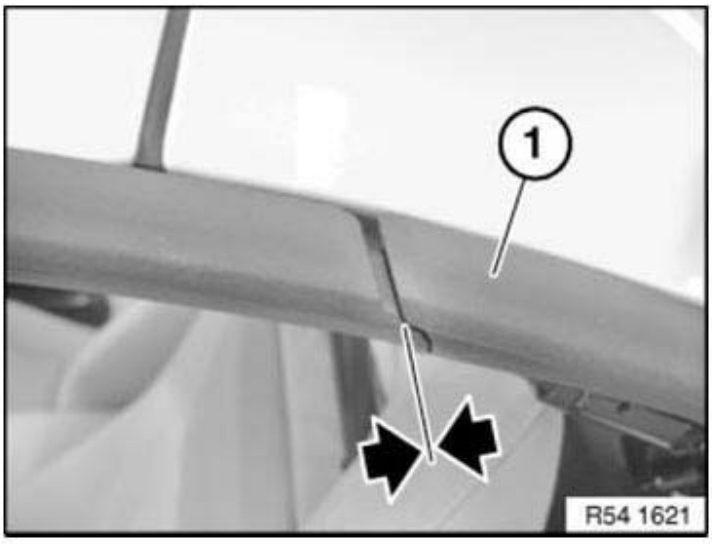


Fig. 156: Identifying Seal Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Detach seal (1) from seal carrier.

Installation:

Make sure seal (1) is correctly seated on seal carrier.

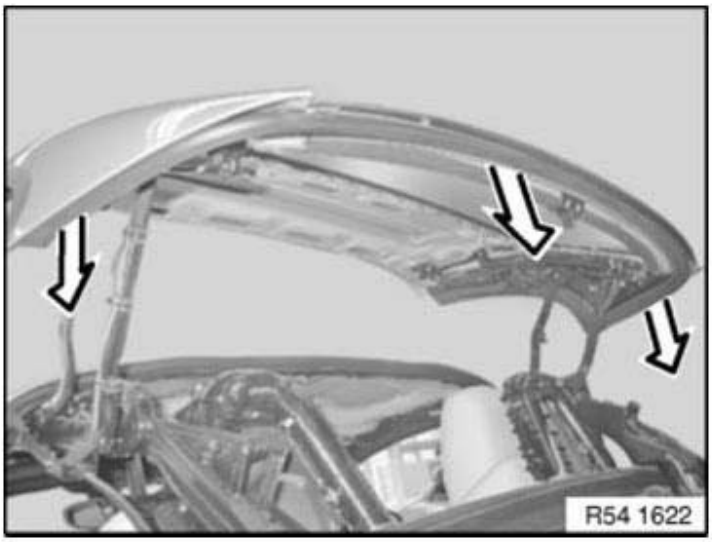


Fig. 157: Disconnecting Seal From Seal Carrier
Courtesy of BMW OF NORTH AMERICA, INC.

Check retraction depth of windows and adjust See **5137154 ADJUSTING REAR LEFT OR RIGHT SIDE WINDOW** or **5132154 ADJUSTING LEFT OR RIGHT FRONT DOOR WINDOW GLASS** if necessary.

54 SLIDE/TILT SUNROOF AND CONVERTIBLE TOP

54-0300 ADAPTER PLATE

Adapter plate MW

NOTE: 54 0 100 omitted starting 11/2009

SI number

01 09 09 (532)

Consisting of:

1 = 0496691 Adapter

NOTE: Adapter, left

2 = 0496692 Adapter

NOTE: Adapter, right

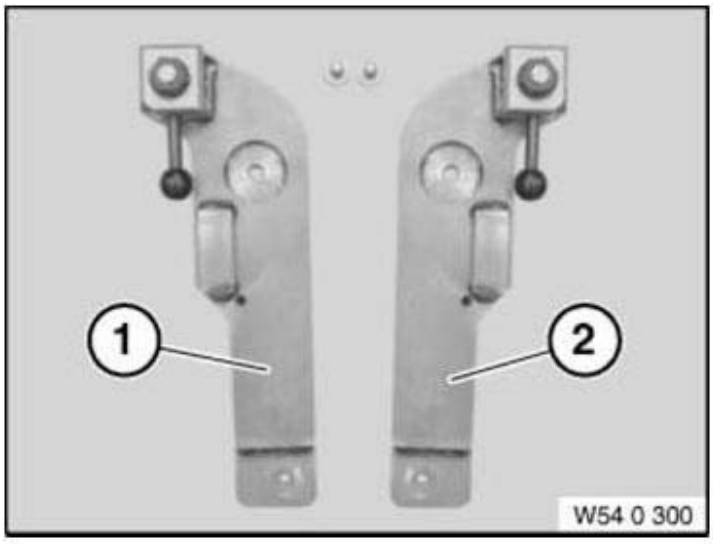


Fig. 1: Identifying Adapter Plate (540300)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0070 BELT

Belt MW

NOTE: Replaces 540103 effective 11/2009

SI number

01 30 09 (602)

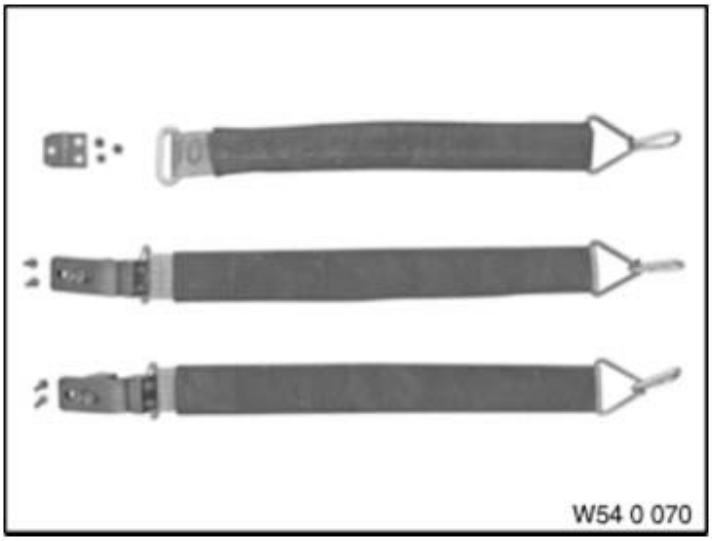


Fig. 2: Identifying Belt (540070)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0180 BIT

Bit MW

NOTE: For adjusting barrel screws (adjusting elements) on the RHT.

SI number

01 03 07 (337)



Fig. 3: Identifying Bit (540180)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0190 BIT

Bit MW

NOTE: For lock nuts on barrel screws (WAF 30) on the retractable hardtop (RHT)

SI number

01 03 07 (337)

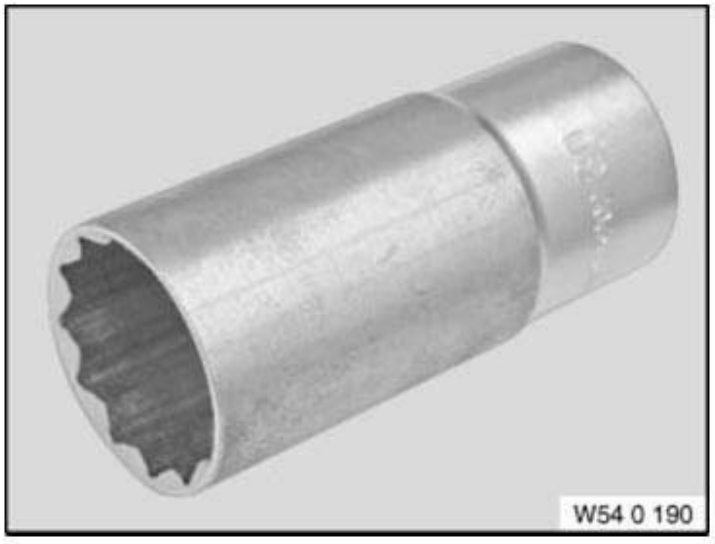


Fig. 4: Identifying Bit (540190)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0250 FITTING AID

Fitting aid MW

SI number

01 13 10 (652)



Fig. 5: Identifying Fitting Aid (540250)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0060 FIXTURE

Fixture MW

NOTE: Replaces 540101 effective 11/2009

SI number

01 30 09 (602)

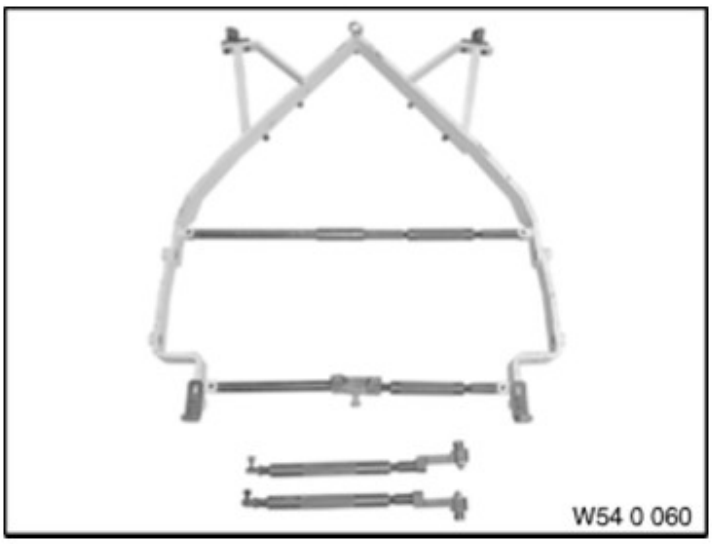


Fig. 6: Identifying Fixture (540060)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0050 LIFTING GEAR

Lifting gear MW

NOTE: Replaces 540102 effective 11/2009

SI number

01 30 09 (602)

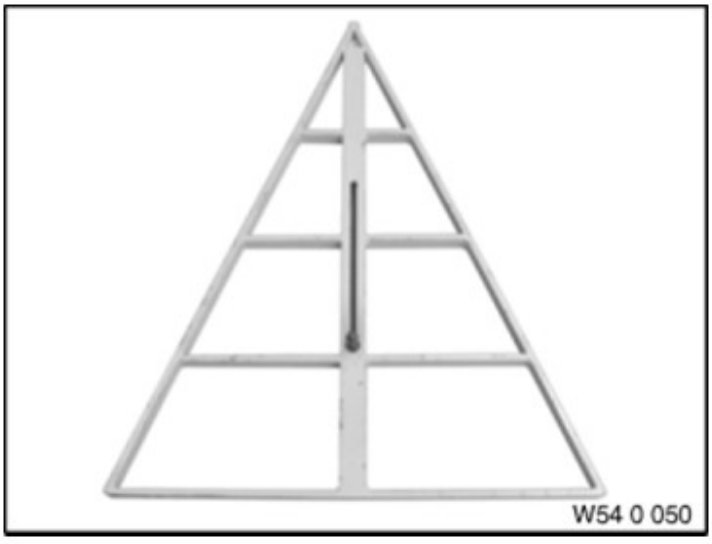


Fig. 7: Identifying Lifting Gear (540050)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0160 TOOL

Tool MW

NOTE: (Emergency closing/opening (3 tools)) For manual opening or closing of hardtop in the event of a technical defect.

SI number

01 03 07 (337)

Consisting of:

3 = 0496075 Adapter

1 = 0496051 Tool

NOTE: (Slide tool)

2 = 0496052 Tool

NOTE: (Pulling tool)

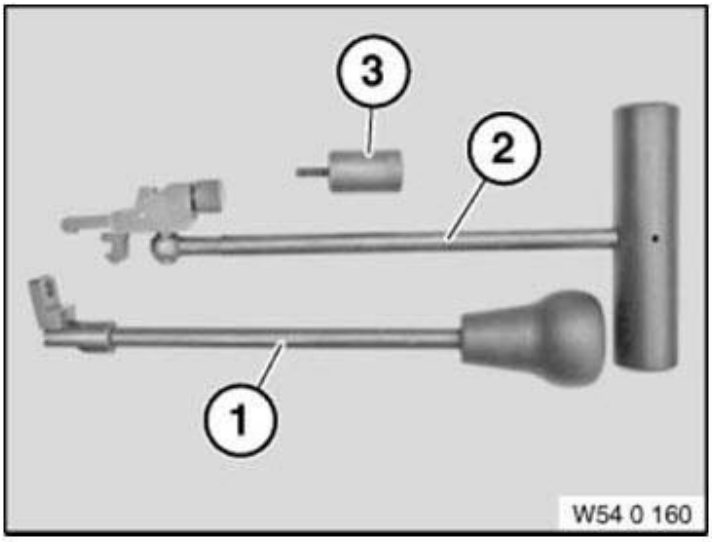


Fig. 8: Identifying Tool (540160)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0330 TOOL

Tool Minimum set: Mechanical tools MW

NOTE: **For unlocking soft top**

Storage Location

C26

B26

A26

SI number

01 09 09 (532)

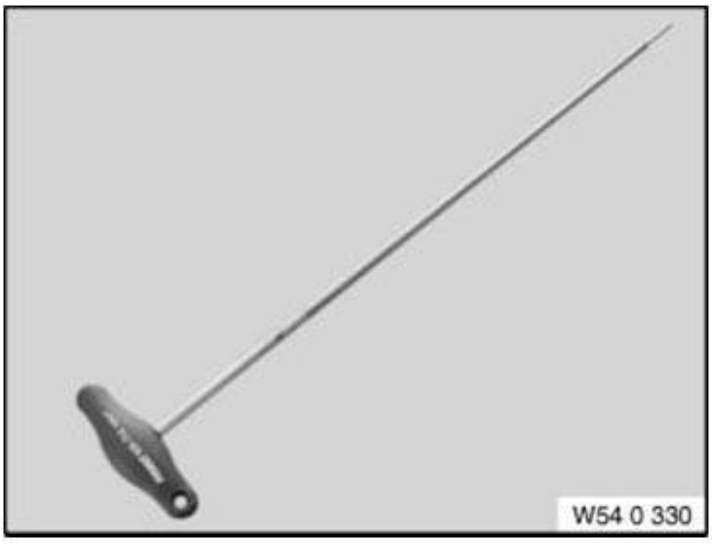


Fig. 9: Identifying Tool (540330)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0350 TOOL

Tool MW

NOTE: **(clamping hook) Delivery specification 2 pieces**

Storage Location

C26

A26

B26

SI number

01 09 09 (532)

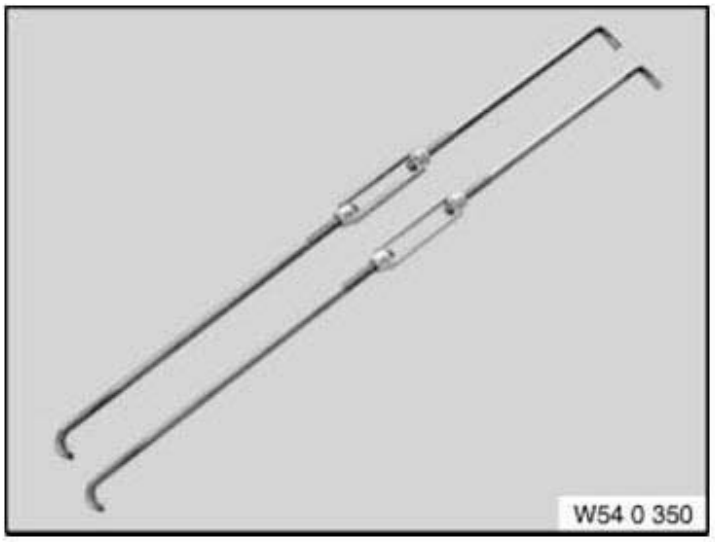


Fig. 10: Identifying Tool (540350)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0320 TOOL

Tool Minimum set: Mechanical tools MW

NOTE: For locking soft top

Storage Location

B26

C26

SI number

01 09 09 (532)

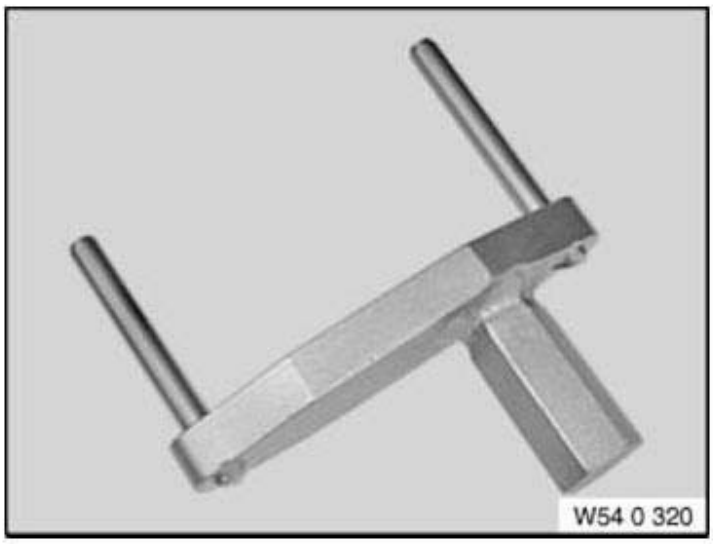


Fig. 11: Identifying Tool (540320)
Courtesy of BMW OF NORTH AMERICA, INC.

54-1240 TOOL

Tool MW

NOTE: (Tool set) For adjusting the slide/tilt sunroof

Consisting of:

1 = 0494795 Key

NOTE: Special Torx for tightening the slide/tilt sunroof screws

2 = 0494796 Template

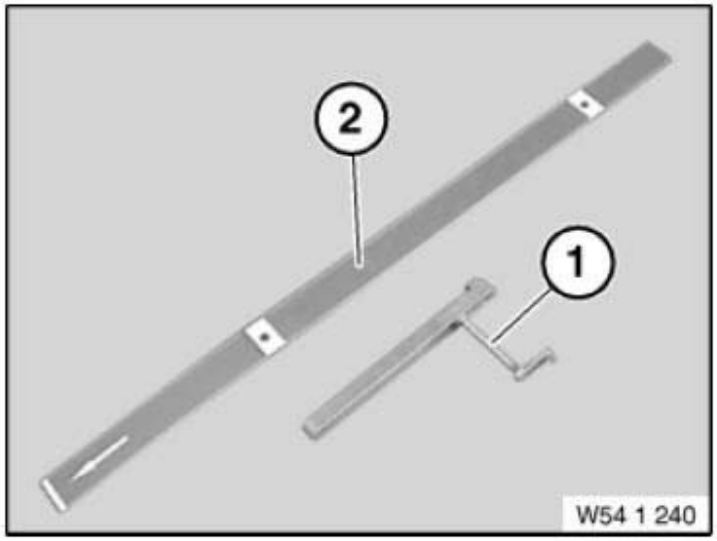


Fig. 12: Identifying Tool (541240)
Courtesy of BMW OF NORTH AMERICA, INC.

54-0210 TOOL

Tool MW

NOTE: (Clamping tool) For removal and installation of gas-filled shock absorbers on hardtop.

SI number

01 21 09 (583)

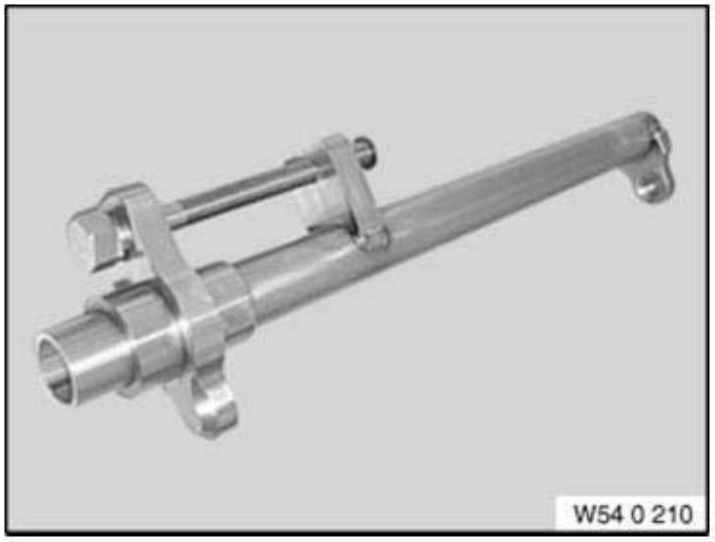


Fig. 13: Identifying Tool (540210)
Courtesy of BMW OF NORTH AMERICA, INC.

61-4250 CONNECTOR

Connector Minimum set: Measuring and testing equipment MP

NOTE: as intermediary contact on soft top

SI number

02 05 09 (549)

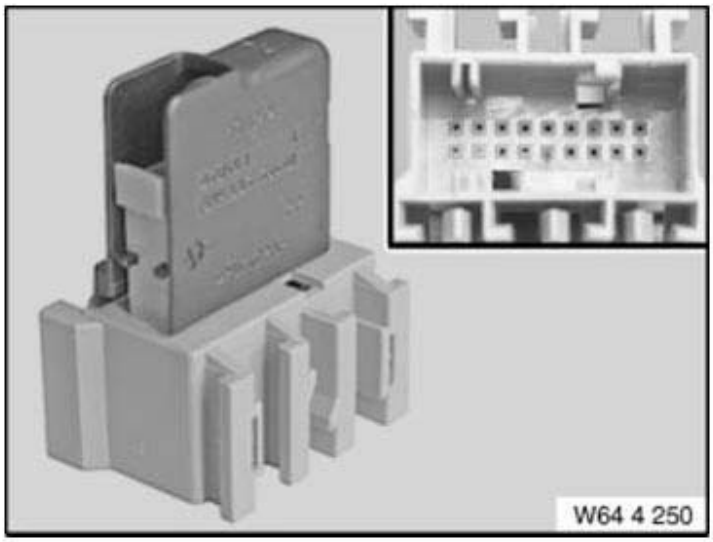


Fig. 14: Identifying Connector (614250)
Courtesy of BMW OF NORTH AMERICA, INC.

CONVERTIBLE TOP COMPARTMENT LID

41 63 CONVERTIBLE TOP COMPARTMENT LID

TIGHTENING TORQUE SPECIFICATION - CONVERTIBLE TOP COMPARTMENT LID

		Type	Thread	Tightening specifications	Dimension
1AZ	Hinge to convertible top compartment lid	E93	M8		20 Nm
2AZ	Convertible top compartment lid to convertible top compartment lid mechanism	E88	M8		20 Nm
3AZ	Convertible top compartment lid to hinge	E88	M6		8 Nm
		E89	M6		5.5 Nm
4AZ	Hinge to body	E88	M8		20 Nm
5AZ	Accumulator plate to body	E88	M6		8 Nm

POWER CONVERTIBLE TOP

54 37 POWER CONVERTIBLE TOP

TIGHTENING TORQUE SPECIFICATION - POWER CONVERTIBLE TOP

		Type	Thread	Work instruction	Measure
1AZ	Locking of X-screw connection - Main bearing, roof module to rear end module	E89			19 Nm
2AZ	Kinematics box - to body	E89			19 Nm
3AZ	X-screw connection - Rear end module/roof module	E89			19 Nm
4AZ	Base plate - to cowl panel	E89			19 Nm
5AZ	Mounting brackets - to body	E89			8 Nm

7AZ	Linkage, rear end module - to mounting bracket, rear end	E89			19 Nm
8AZ	Linkage, roof module - to mounting bracket, roof	E89			19 Nm
9AZ	Battery rollover protection	E89			6 Nm
10AZ	Barrel screws - to frame, roof and rear modules	E89		20 cNm = 0.2 Nm	20 cNm
11AZ	Roof shell to linkage	E89	M8x20		19 Nm
12AZ	Screw connection, front lock to roof shell	E89			8 Nm
13AZ	Seal holder to roof shell	E89			4.6 Nm
14AZ	Seal to seal holder	E89			2.3 Nm
15AZ	Hydraulic valve (solenoid valve)	E89			6 Nm

1.0 CONVERTIBLE TOP MATERIAL

Cleaning Kit consists of three fluids for periodic maintenance of the top's outer surface:

- Car Shampoo

  For cleaning the entire convertible top. Add 2 to 3 capfuls of shampoo to 2.5 gallons of water. Rinse with clean water.

- Glass Cleaner

  Cleans the plastic rear window as well as the vehicle's glass windows. Spray on, wipe off with dry cloth.

- Impregnating Spray

After cleaning the top, apply this spray over a large area about 12 inches from the surface to seal the top against possible leaks.

Convertible Top Cleaning Kit

BMW Part No. 83 12 9 407 806

Impregnating Spray

BMW Part No. 83 12 9 407 802

2.0 CONVERTIBLE TOP REAR (PLASTIC) WINDOW

REAR WINDOW CLEANER

Meguiar's Mirror Glaze Professional Plastic Cleaner #17 removes hairline scratches on the surface.

BMW Part No. 82 14 1 467 128.

REAR WINDOW POLISH

Meguiar's Mirror Glaze Professional Plastic Polish #10 restores and maintains clarity, leaves surface static-free.

BMW Part No. 82 14 1 467 129

CONTACT CEMENT

Attaching soft top material to zip-out rear window trim plastic channel on E30 and E36 convertibles. (former

BMW Part No. 81 22 9 407 524)

3M 1357 High Performance Contact Adhesive

3.0 CONVERTIBLE TOP STORAGE LID ADHESIVE

E30 and E36 Convertible top storage lid covering adhesive

3M™ Super Trim Adhesive Yellow Part No. 08090

4.0 CONVERTIBLE TOP SEALING FRAME ADHESIVE

() E36 Z3 Sealing Frame Adhesive

One roll of Bostik 3/4" x 1/8" Butyl Tape, available in cases of 12 rolls from Springfield Paper Specialties.

5.0 CONVERTIBLE TOP HYDRAULIC FLUID

BMW PART NUMBER SPECIFICATION

Model	**BMW Part Number**
E36/7	54 34 8 410 306
E46	54347117733
E52	54348234324
E85	54347117733
E64	54347717733
E93	54340394395

6.0 SUNROOF

Cassette Lubricant

BMW PART NUMBER SPECIFICATION

Wurth Glide Grease	Part No. 0893898

Loctite 380

5 Series Touring double panel sunroof repairs. (former BMW Part No. 81 22 9 407 394)

BMW PART NUMBER SPECIFICATION

3M	Part No. 8155
Wurth	Part No. 893 4103
Loctite	Part No. 38050