41 00 ... 0 Contents of Body, General

Before beginning repair work	- Checking the body for damage (e.g. following an accident)	
General notes	- Quality standard	- Workshop equipment
Safety regulations	- Safety at work	- Information on hazards
	- Information on vehicle protection	
Material/new part	- Materials science	
	- Expendable materials	
Handling components	- Electrical system, electronics and optical fibre	- Vehicles with hybrid/electric drive
	- Flood damage	
	- Passive safety	- Seats/seat belts
	- Chassis and suspension and steering	- Wheel rim repairs
	- Retractable hardtop	- Headlight repairs
Cavity sealing	- Installation of shaped parts	
	- Position of shaped parts	
Vehicle identification number	- General notes	
Repair method	- Repair stage 1a	BMW/MINI/BMW i • Replacement of screwed-on components
	- Repair stage 1b	BMW/MINI/BMW i • Repairs to outer skin
	- Repair stage 2	BMW/MINI • Bonding and riveting • Welding using a MAG welder • **without** straightening bench BMW i • Repairs to life module • Repairs to drive module • **without** straightening bench
	- Repair stage 3	BMW/MINI • Bonding and riveting • Welding using a spot welding system • **with** a straightening bench BMW i • Repairs to life module • Repairs to drive module • **with** a straightening bench
Corrosion protection	- General notes	
Paint	- General notes	

cardiagn.com

- Information / warning labels

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

cardiagn.com

41 00 ... Blind rivet

1.0 Recommended tools and equipment

- Blind riveting tongs
- Rivet head extension

Sourcing reference BMW Workshop equipment catalogue

Setting blind rivets:

- Refer to repair instructions for rivet size.
- Position bore holes for blind rivets in accordance with specification in repair instructions. If necessary, carry over the positions of the blind rivets to the new part.
- Drill holes that exceed the outer diameter of the blind rivet (example ⌀ 4.2 mm with 4 mm blind rivet and ⌀ 6.8 mm with 6.5 mm blind rivet).
- The edge of the hole must even on both sides.If necessary, sand down and even out surfaces (e.g. edges of punch rivet connections).Deburr bore 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 dirty with adhesive. Risk of damage to rivet head by penetrating adhesive.
- Seal blind rivet with sealantD1 (risk of corrosion).
- Seal cavities after work on vehicle paintwork on with cavity preservation (risk of corrosion).

cardiagn.com

41 00 ... Bonding on painted/primed surfaces

Attention!

These repair instructions apply only to components of the outer skin and not to structural components.

These include roof outer skin, tail panel, rear side panels and components of the luggage compartment floor.

Follow the vehicle-specific repair instructions.

Only the repair method described there must be used!

Conform with safety regulations !

Overview of topics:

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

.

1.0 Equipment

- Cleaning agentR1
- Cleaning agent R2
- Adhesive K5
- 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 the surface on the vehicle (series status):

- Establish a level bonding surface (e.g. grinding).
- **Do not sand primed bonding surfaces.**
  If the bonding surface is painted in the vehicle colour, the paint must be completely sanded off.
- If necessary, pre-clean the bonding surfaces with cavity protection wax remover.
  Clean bonding surfaces with cleaning agent R1.
- Allow cleaned surfaces to dry for approx. 5 min.
  Bonding surfaces must be completely dry.

3.2 Preparation of the surface on the vehicle (replacement of a bonded component):

- Remove adhesive residue completely from vehicle. Remove all the existing reinforcement plates if necessary (e. g. rear side panel).
- **Do not prime in the area of the bonding surfaces!** Adhesive insufficiently bonds to primer.
  If priming is needed after straightening work, cover the bonding surfaces.
- If necessary, pre-clean bonding surfaces with cavity sealing wax remover.
  Remove coarse dirt from the bonding surfaces using solvent cleaner R2.
  Clean bonding surfaces with cleaning agent R1.
- Allow cleaned surfaces to dry for approx. 5 min.
  Bonding surfaces must be completely dry.

cardiagn.com

3.3 Preparation of surface on new part:

- Do not remove primer on new part.
  Do not grind/sand bonding surfaces.
- Remove coarse dirt from the bonding surfaces using solvent cleaner R2.
- Clean bonding surfaces with cleaning agent R1.
- Allow cleaned surfaces to dry for approx. 5 min.
  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, at least 15°C.
- Do not use an air-powered cartridge gun.
- Insert glue cartridge into 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 glue cartridge. If yes, break off the bonding procedure. Clean new part. Use new glue cartridge. Contact national hotline.
- Pot life of mixed adhesive approx. 2 h. A change of mixer is necessary only if no material has flowed through the mixer for a period of 30 min.
- 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 h at an object temperature of at least 15 °C (corresponds to approx. 18 °C room temperature).
  Or 1 h 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 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.

cardiagn.com

41 00 ... Bonding steel on steel

Attention!

These repair instructions apply to structural components.

Such components include engine supports, A-pillars, B-pillars, etc.

Follow the vehicle-specific repair instructions.

Only use the repair procedures described there.

Conform with safety regulations!

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
- Cleaning agent R2
- Adhesive K1
- Cartridge gun

2.0 Preparing the surface:

- Remove coarse dirt from the bonding surfaces using solvent cleaner R2.
- Clean bonding surfaces using R1 solvent cleaner prior to sanding.
- Remove paint from bonding surfaces using a wire brush or sandpaper with 120 graining.
- 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.

carflash.com

72 11 ... Checklist for front seat

Event		Check	Action
Has at least one belt tensioner and/or one side airbag been activated?	**Yes**	**Check 1 (when installed):** Check all seat adjustment options of both front seats. There must be no stiff movement, sticking or other functional problems or noises across the entire adjustment range of all the seat adjustment options. Check head restraints for damage. Check crash-active headrest for activation. **Only 2-door model:** Check backrest lock. Backrest must unlock and lock easily without any great physical effort.	If components are OK with regard to checks 1 and 2, only replace activated belt tensioner or side airbag. Otherwise, replace faulty parts on the seat/body. Replace belt tensioner, seat belt and, if necessary, side airbag.
		Check 2 (when dismounted): Check for deformation/damage on the following components: 1. All seat cross members on the body 2. Threaded support sleeves in the seat cross members 3. End fittings on the seat mechanism. Check for visible damage or deformation.	
	No	Check all adjustment options of the head restraints. Check crash-active headrest for activation.	Replace faulty parts.
Only seat with integrated seat belt:			
Does the backrest indicator light turn on when the backrest is locked and also when the backrest is shaken?	**Yes**	Check microswitch of backrest lock and renew if necessary. Check electrical lines and repair if necessary.	If there is still a fault, replace the entire seat
	No	No further action necessary.	

cardiagn.com

41 00 ... Corrosion protection

Note:

Following repairs, the corrosion protection work already begins with the correct removal of the underbody protection, anti-drumming layer and seam sealing in the repair area.

The products recommended by BMW are optimized with regard to corrosion protection.

1.0 Removing and applying sealant:

1.1 Removing sealant:

Important!

- Do not burn off PVC material (sealant) with an autogenous torch or similar or heat to temperatures above 180 °C. This would generate highly corrosive hydrochloric acid and release harmful vapour.
- The new sealant does not adhere appropriately to burnt polyvinyl chloride material and hence subsequent rust creep is possible.

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 sealant:

Prime and seal all weld seams that are sealed with sealant in original condition immediately after repair work. Replace damaged or removed anti-drumming layers.

Note:

Required spray gun for sealant (order number 81 49 0 300 887).

Seal blind rivet with sealant (risk of corrosion).

Seal affected cavities with cavity preservation (risk of corrosion).

2.0 Basics of cavity preservation:

Apply 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 pressure cup gun for all other repairs. Cavity protection agent is available in different container sizes.

Use the relevant sensors 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.

cardiagn.com

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 or extruded profile must be sealed with cavity protection agent after being painted.

cardiagn.com

41 00 ... EMC screws

(EMC = electromagnetic compatibility)

1. Purpose:

- EMC screws are used in the bonding/riveting repair method to re-establish bonding transition.
- They adopt the task of welded connections, which handle bonding transition between the individual components in series production.
- 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 for 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).

cardiagn.com

Requested document not found

Tightening Torques (AZD) Reinforcement plate

Repair Hint (REH) 6.1.3 Fuel tank and fuel lines (including heater fuel tank and lines)

Repair Hint (REH) Cosmetic repairs on wheel rims

Repair Hint (REH) Filler S1

Repair Hint (REH) Transferring hole pattern

Repair Hint (REH) Vehicle identification number, general

Repair Instructions (REP) 0 Contents of Body, General

Repair Instructions (REP) 0 Notes on the repair technique used in the main group 41

Repair Instructions (REP) Blind rivet

Repair Instructions (REP) Bonding on painted/primed surfaces

Repair Instructions (REP) Bonding steel on steel

Repair Instructions (REP) Checklist for front seat

Repair Instructions (REP) Corrosion protection

Repair Instructions (REP) EMC screws

Repair Instructions (REP) Fix bolts on the new part

Repair Instructions (REP) Frame reference dimension, body

Repair Instructions (REP) Gap dimensions, body

Repair Instructions (REP) General instructions on paintwork

Repair Instructions (REP) General notes for labelling with adhesive films

Repair Instructions (REP) Grinding aluminium components

Repair Instructions (REP) Grinding steel parts

Repair Instructions (REP) Handling airbags and restraint systems

Repair Instructions (REP) Handling components after flood damage

Repair Instructions (REP) Handling electrical system and electronics

Repair Instructions (REP) Information on hazards

Repair Instructions (REP) Information on metal filler

Repair Instructions (REP) Information on using cleaning agent/paints (personal protection equipment)

Repair Instructions (REP) Information on vehicle protection

Repair Instructions (REP) Information/warning labels

Repair Instructions (REP) Installation solution for straight shank/hexagon rivet nut

Repair Instructions (REP) Installing a cavity sealing with 2-component PU cavity foam

Repair Instructions (REP) Installing a cavity sealing with 2-component PU cavity foam

Repair Instructions (REP) Installing cavity sealing (expanded)

Repair Instructions (REP) Installing cavity sealing (not expanded)

Repair Instructions (REP) Materials science

Repair Instructions (REP) Notes on adhesive K1

Repair Instructions (REP) Notes on adhesive K2

Repair Instructions (REP) Notes on adhesive K3

Repair Instructions (REP) Notes on adhesive K4

cardiagn.com

Repair Instructions (REP) Notes on adhesive K5

Repair Instructions (REP) Notes on adhesive K6

Repair Instructions (REP) Notes on cleaning agent R1

Repair Instructions (REP) Notes on handling the high pressure cleaner

Repair Instructions (REP) Notes on repairing threads

Repair Instructions (REP) Notes on the water drain hose of the slide/tilt sunroof

Repair Instructions (REP) Notes on using temperature-controlled infra-red radiators

Repair Instructions (REP) Opening bonded connections

Repair Instructions (REP) Opening brazed connections

Repair Instructions (REP) Opening rivet connections

Repair Instructions (REP) Opening welded connections

Repair Instructions (REP) Overview of additional work for the removal and installation or replacement of electronic components in the body area/windscreen

Repair Instructions (REP) Overview of adhesive cartridge guns

Repair Instructions (REP) Overview of consumables (Electronic Parts Catalogue)

Repair Instructions (REP) Position of shaped parts for cavity sealing

Repair Instructions (REP) Position of shaped parts for cavity sealing

Repair Instructions (REP) Procedure for vehicles with active pedestrian protection after an accident

Repair Instructions (REP) Punch rivets

Repair Instructions (REP) Quality standard

Repair Instructions (REP) Reinforcement plate with stud bolt (bonded or welded)

Repair Instructions (REP) Releasing bonded folded seam connections

Repair Instructions (REP) Repair methods, repair stages 1

Repair Instructions (REP) Repair solution for straight shank/hexagon rivet nut

Repair Instructions (REP) Repair techniques, repair stage 2

Repair Instructions (REP) Repair techniques, repair stage 3

Repair Instructions (REP) Repairing headlights

Repair Instructions (REP) Repairing plastic components

Repair Instructions (REP) Replacing blind rivets

Repair Instructions (REP) Safety at work

Repair Instructions (REP) Safety information for working on vehicles with automatic engine start-stop function (MSA)

Repair Instructions (REP) Safety instructions for handling magnets

Repair Instructions (REP) Separating cut determination with a template

Repair Instructions (REP) Setting blind rivet nuts and bolts

Repair Instructions (REP) Soldering steel components

Repair Instructions (REP) Spot-weld bonding steel components

Repair Instructions (REP) Spray gun for cavity sealant

Repair Instructions (REP) Stamping vehicle identification number (needle stamping unit)

Repair Instructions (REP) Straightening aluminium component on the outer skin

Repair Instructions (REP) Straightening aluminium components in structure

Repair Instructions (REP) Straightening steel components in the structure

Repair Instructions (REP) Straightening steel components on the outer skin

Repair Instructions (REP) Touching up paintwork damage

cardiagn.com

Repair Instructions (REP) Use of materials in outer skin

Repair Instructions (REP) Welding in reinforcement plate (sheet steel)

Repair Instructions (REP) Welding steel components

Repair Instructions (REP) Working with 2-component PU cavity foam

Repair Instructions (REP) Workshop equipment (BMW and MINI vehicles)

Service Information (SIT) Heel panel repair (edge corrosion)

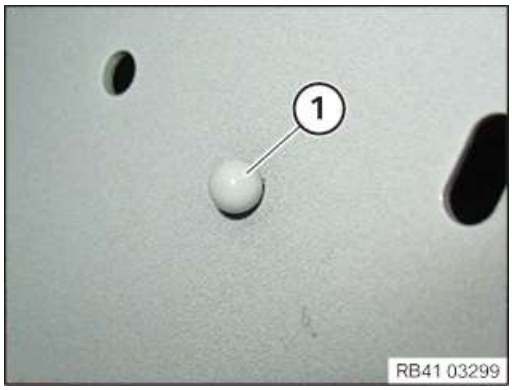
Service Information (SIT) Inner door panel repair (edge corrosion)

Service Information (SIT) Min/max tolerance sample catalogue for paintwork and corrosion damage

cardiagn.com

41 00 513 Fix bolts on the new part

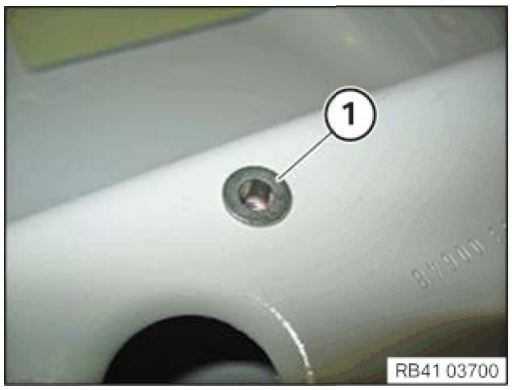
Note: On BMW and MINI bodies, various welded and pushed in bolts are being used.



Single ball/double ball (version 1):

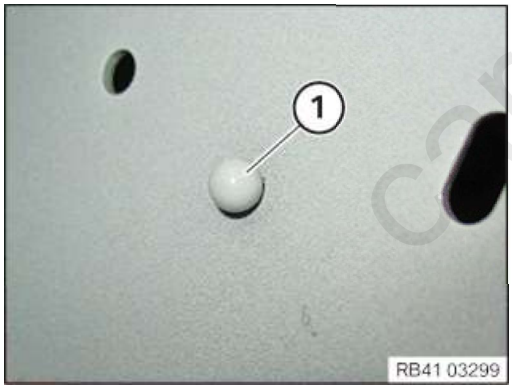
Grind off any residues of the single ball (1), if applicable.

Drill hole with diameter 7 mm.



Set blind rivet nut (1).

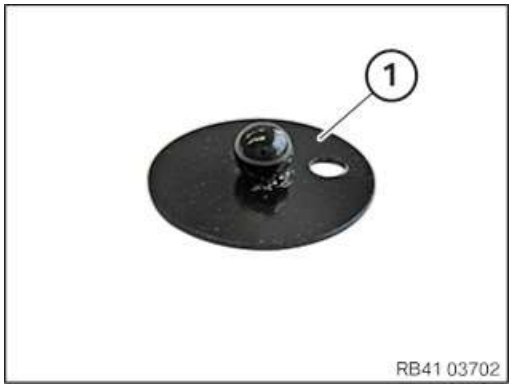
Screw in single ball with thread until a height of 5 mm (double ball 10 mm) is reached.



Single ball/double ball (version 2):

Grind off any residues of the single ball (1), if applicable.

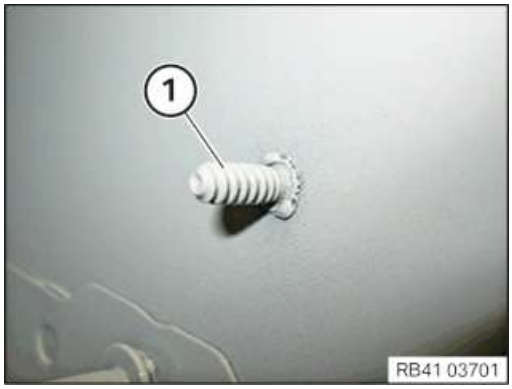
Clean area with solvent cleaner R1.



Clean bonding surface of repair element single ball (1) with solvent cleaner R1.

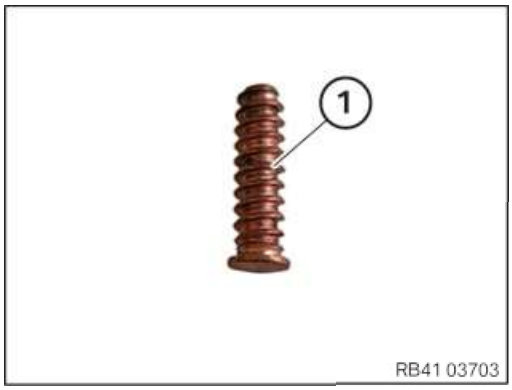
Bond repair element optionally with adhesive K1, K5 or window pane adhesive at the same position.

cardiagn.com

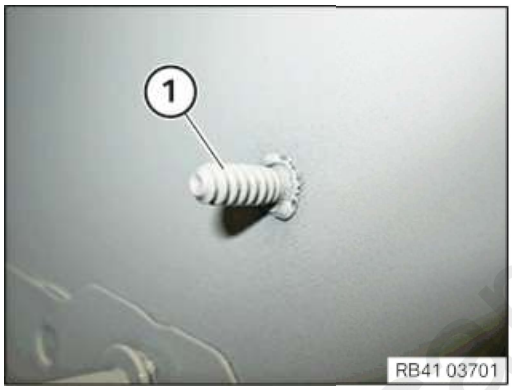


Coarse threaded bolt (version 1):

Grind off any residues of the coarse threaded bolt (1), if applicable.



Spot weld coarse threaded bolt to same position.



Coarse threaded bolt (version 2):

Grind off any residues of the coarse threaded bolt (1), if applicable.

Drill hole with diameter 7 mm.

Set blind rivet coarse threaded bolt using riveting pliers.

cardiagn.com

41 00 ... Frame reference dimension, body

Dimensions in mm.

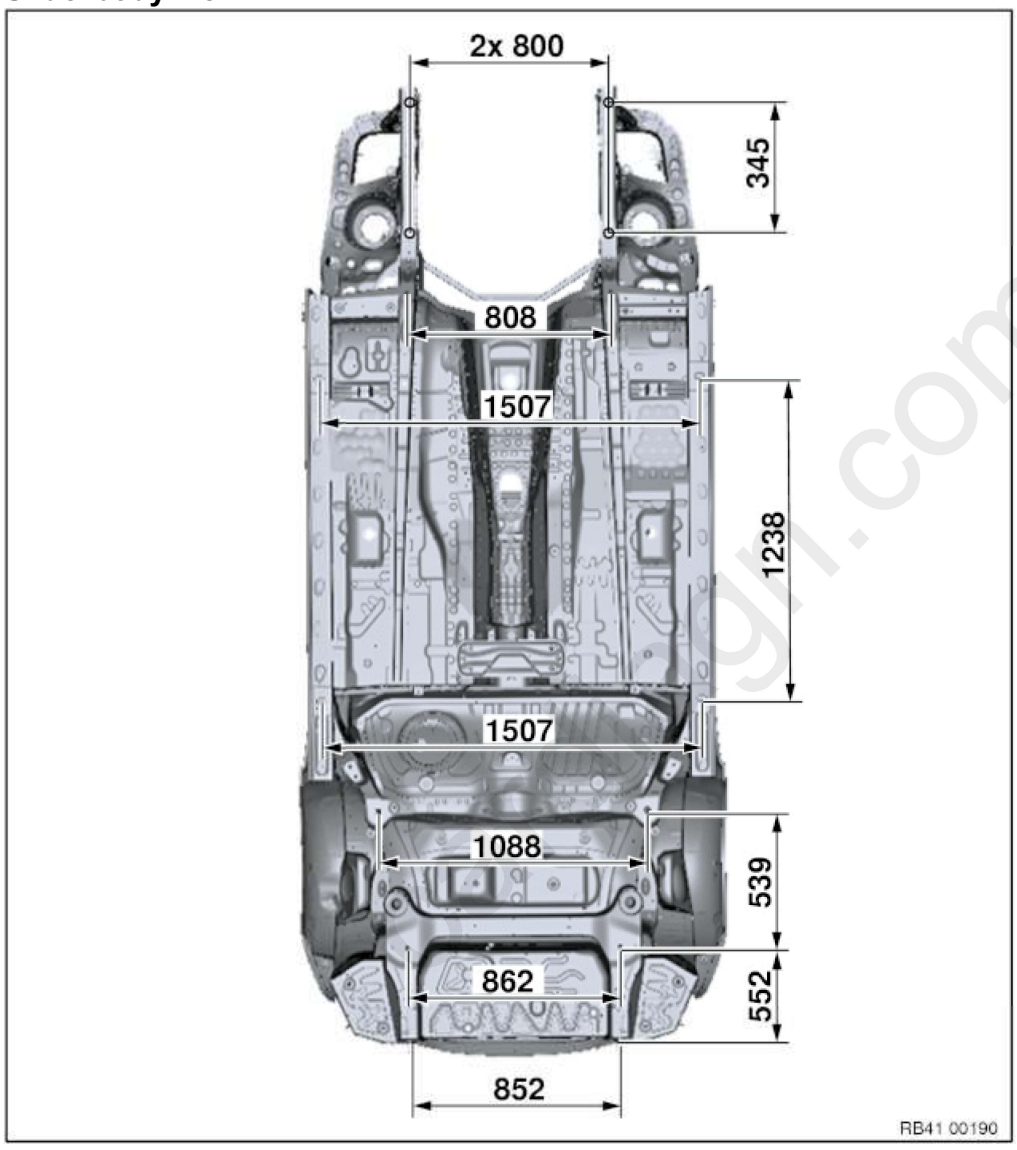
Dimension tolerances:

- ≤ 1000 mm ± 1.5 mm
- ≥ 1000 mm ± 2.5 mm

The checkpoints shown serve to check the body and the set of attachments.

The specified dimensions always refer to the centrepoint of the bore hole/screw.

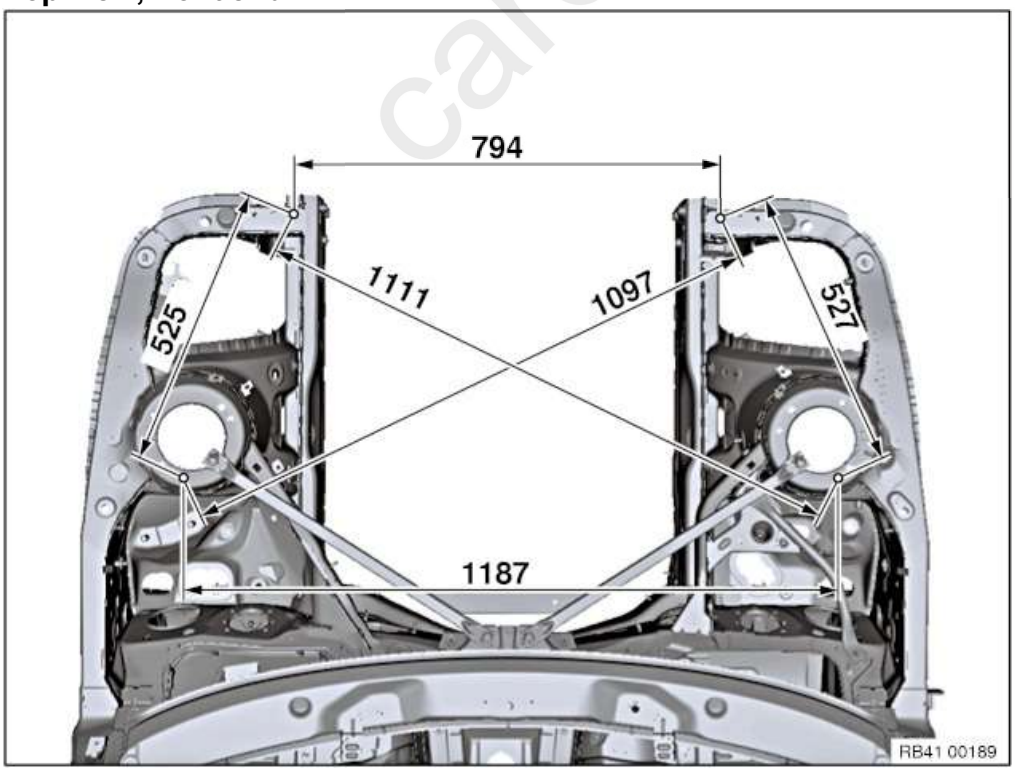
Underbody view 1



Underbody view 2



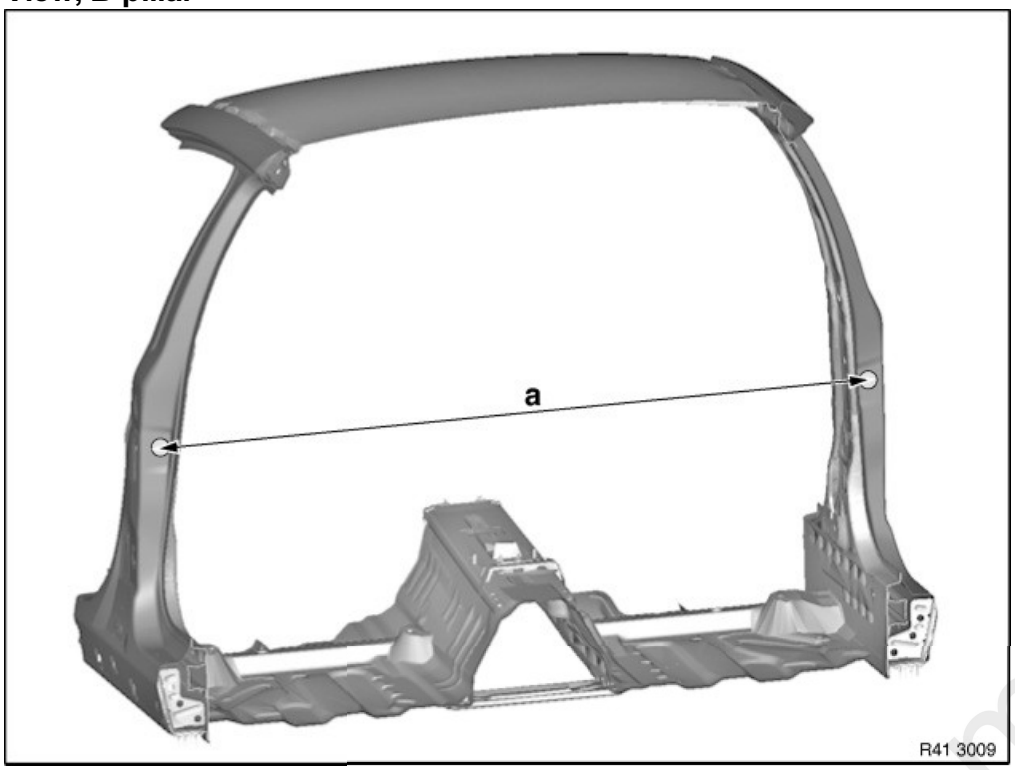
Top view, front end



The specified dimensions refer to removed assemblies.

cardiagn.com

View, B-pillar



Measurement a=1548 mm between screw-on points of door brakes.

cardiagn.com

41 00 ... Gap dimensions, body

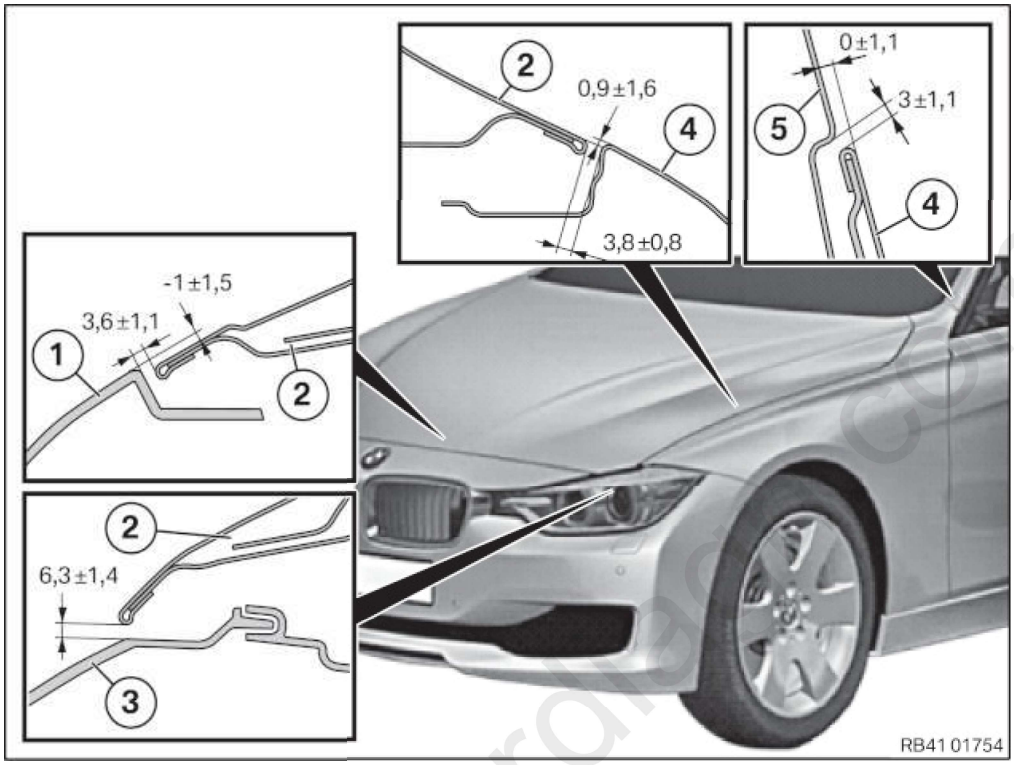
The dimensions specified in this document are applicable at an object temperature of 20 °C. The aim of adjustment is to achieve a uniform gap.

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

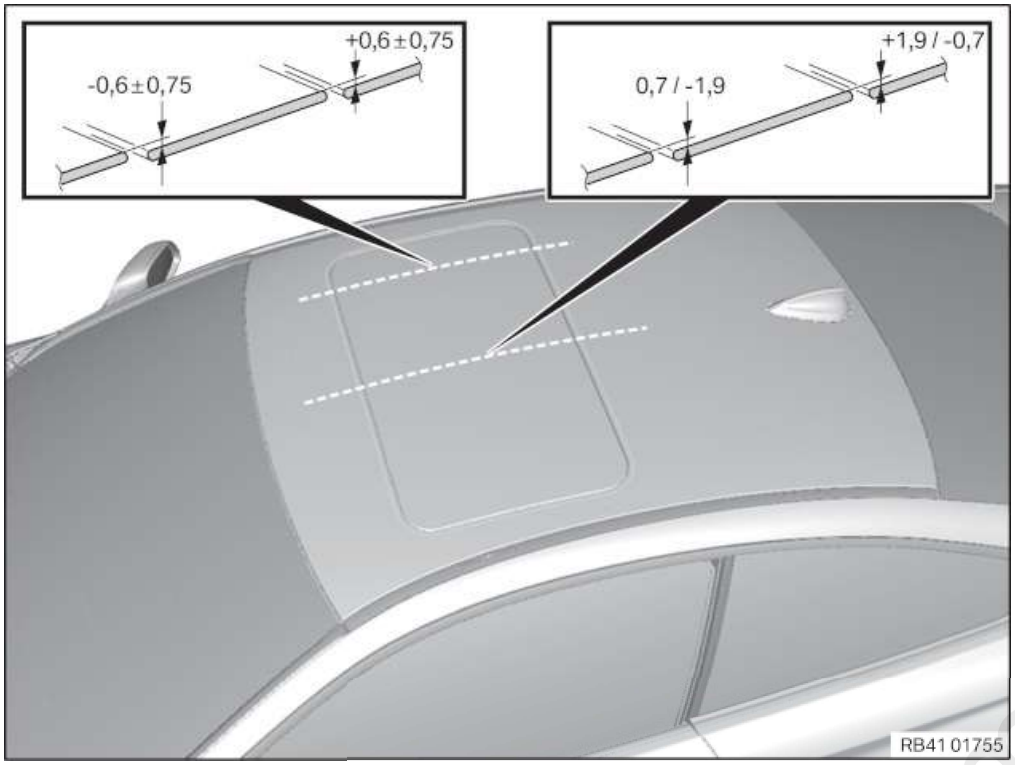
For door gaps, the maximum deviation between the front and rear door gaps must be 1.0 mm.

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

Dimensions in mm

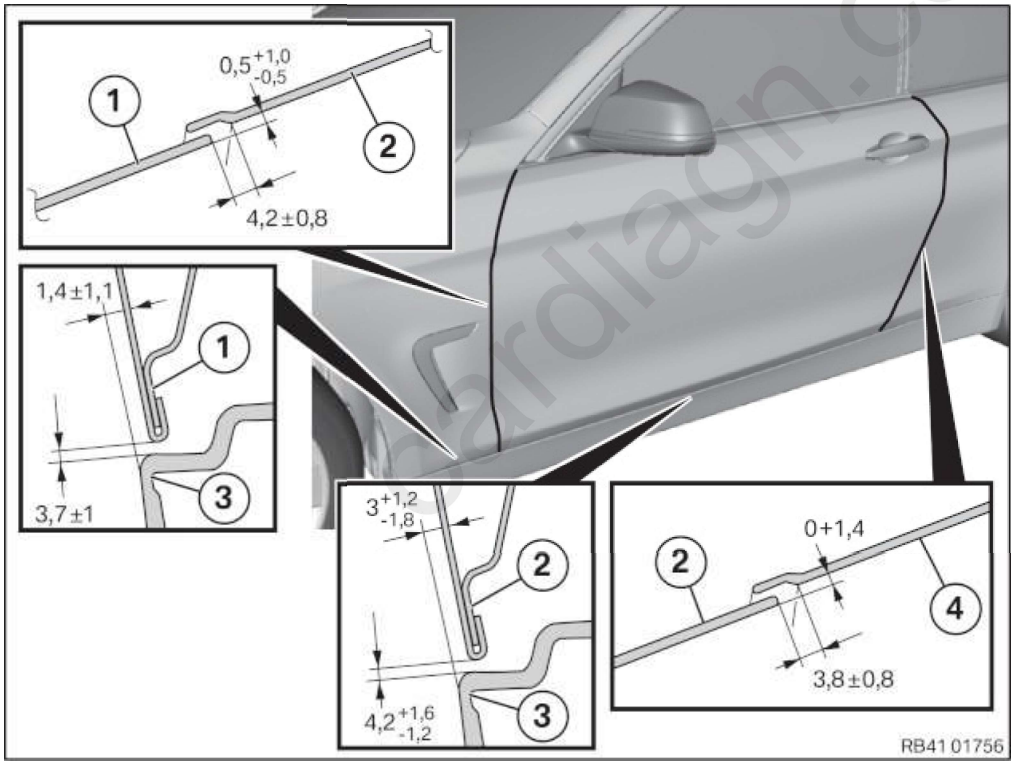


1. Trim panel, bumper, front
2. Engine compartment lid
3. Headlight
4. Side wall, front
5. A-pillar

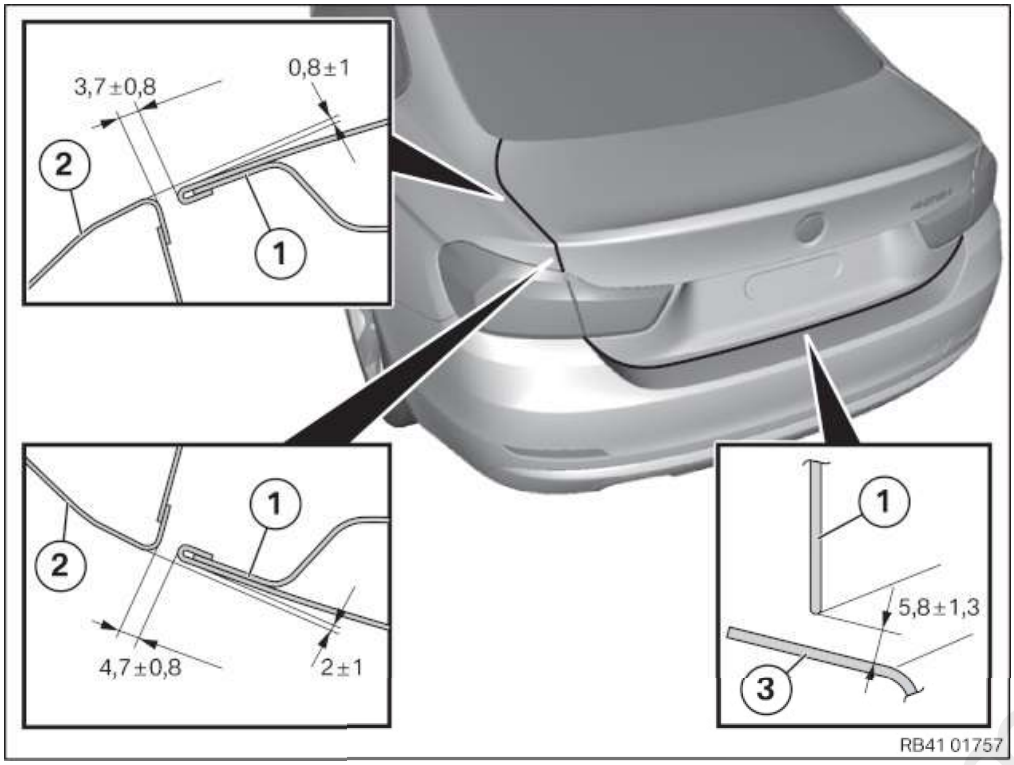


+ dimensions are a glass sunroof protrusion.

- dimensions are a glass sunroof short length.



1. Side wall, front
2. Front door:
3. Trim panel for entrance
4. Rear side wall



1. Rear lid
2. Rear side wall
3. Panel, bumper, rear

cardiagn.com

99 00 ... General instructions on paintwork

General instructions and classification of paint stages are described on the KSD CD (under Notes, General information on flat rate unit data, Passenger car explanation for FRU specifications for paintwork).

The marked area shows the basis of area calculation for creating the flat rate unit. The marked area does not show the area actually to be painted. If touching up is required, the painter defines the precise position as he sees fit.

Special procedure for matte paintwork:

Matte paintwork cannot be touched up since the painted surface cannot be polished.

For further information, see also the BMW painting handbook and the Aftersales Assistance Portal.

cardiagn.com

51 14 ... General notes for labelling with adhesive films

In the event of a repair the adhesive films must be partially or completely replaced. The basic procedure for all areas of the vehicle is described below.

In addition, vehicle-specific repair instructions are available.

1. Preparation:

Wash and dry vehicle. Rework with compressed air as required in area of joints.

Clean complete component surface with glass cleaner (BMW part number 83 12 0 396 775). Also clean the inside of the component in areas, in which adhesive films are applied.

Only carry out repair work with clean hands!

Important!

Labels can only be applied to recently painted components after a waiting period of **2 weeks**. The paint hardening is only fully completed after this time.

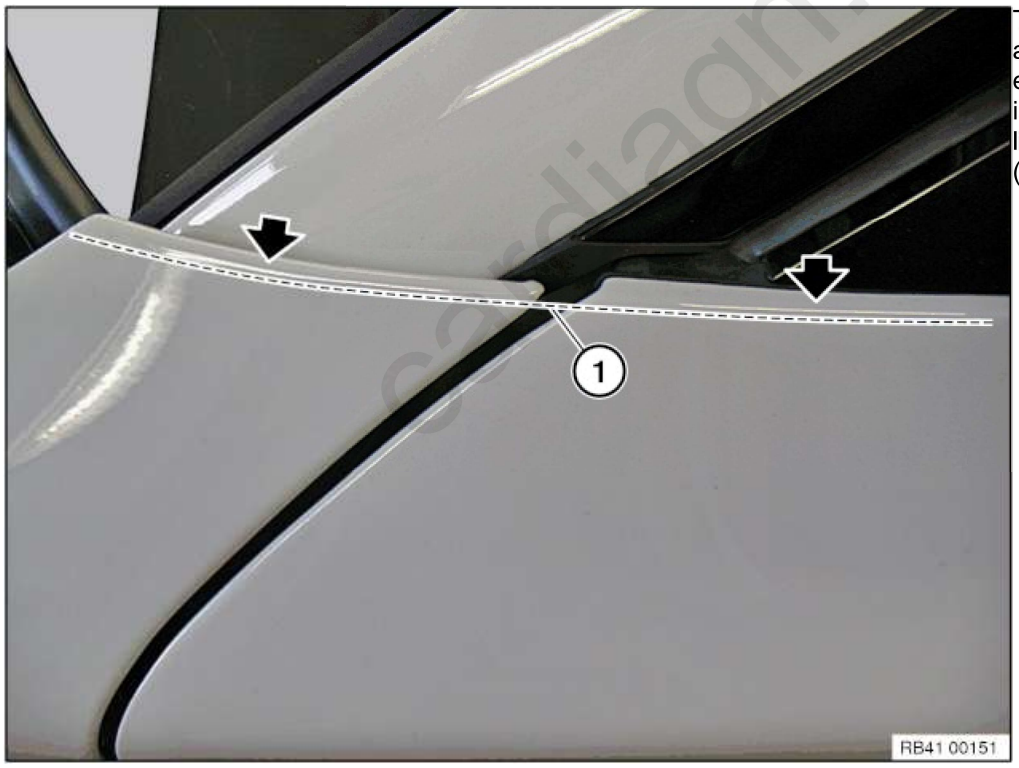
2. Procedure for applying labels:

All adhesive films in the repair kit are marked with numbers. Prepare the required plastic films prior to start of repairs.

The templates included in the repair kit assist orientation. A straight line running over the different components is the top priority.

Pull off the templates positioning of the adhesive films.

Only throw away templates after completion of all repair work, as some templates are used several times.



Templates are always applied along the light edge (1). The light edge is the reflection of the light source in radius (see arrow).

Roughly align the adhesive film using a template.

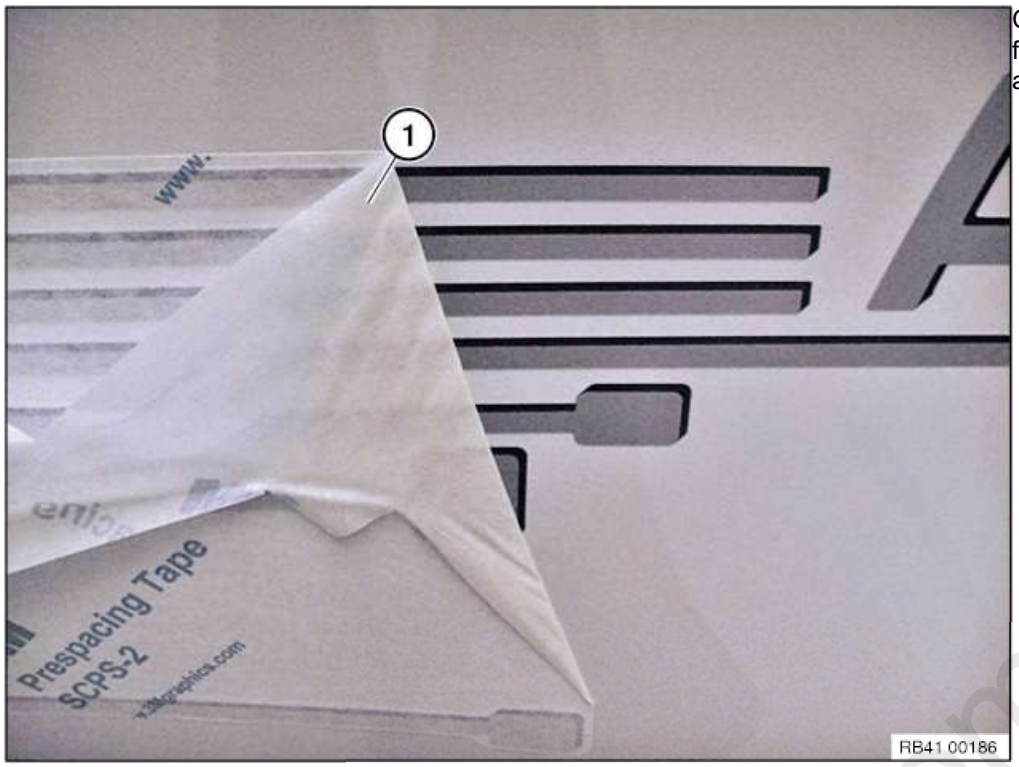
For large adhesive films, pull off the first 20 cm of protective film and fold back the edge.

Align and lightly press down the adhesive film. Use only one finger for this and not the entire hand so that air pockets are unable to form under the adhesive film.

Pull off the remaining protective film and press down the adhesive film from front to rear and from inside to outside.

If faults are made in applying the adhesive film, it can be pulled off and repositioned several times. When no further corrections have to be made, use a squeegee to press down the adhesive film firmly from inside to outside.

Lay protruding ends of the adhesive film around the component edge and press down firmly.



Carefully pull off backing film (1) at an acute angle.

cardiagn.com

41 00 ... Grinding aluminium components

1.0 Recommended tools and equipment

Grinding work on the outer skin:

- To carry out grinding work by hand or machine, you must use the recommended tools and equipment (refer to Service Information 5 03 03 975).
  The workbay 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 (refer to Service Information 5 03 03 975).
  The workbay 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 (refer to Service Information 5 01 00 532).
  The workbay must be cleaned with the recommended explosion-proof extractor system (refer to Service Information 5 01 00 532).
  High dust concentration, **explosion hazard!**

2.0 Grinding outer skin 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.

cardiagn.com

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.

See also Aftersales Assistance Portal (ASAP) - Service/Technology - Workshop Equipment (StartÂ BMW) - Shop Workshop Equipment

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.

cardiagn.com

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 ground cable must be disconnected prior to all repair work on the body.

cardiagn.com

11 00 ... Handling components after flood damage

Flood damage can occur if the permissible fording depth of a vehicle is exceeded. Ingress of water can cause damage to the engine (water shock) or components.

Because dirt particles generally enter into the component with the water (e.g. starter motor, wiring harness), the components need to be thoroughly inspected.

Residual moisture in the components leads to corrosion (increased contact resistance in the component), which can lead to a component failure at a later time.

If water ingress into the electrical components cannot be ruled out, it is recommended to replace the component to ensure correct functioning through the vehicle lifetime.

cardiagn.com

41 00 ... Handling electrical system and electronics

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

- Control units with visible mechanical damages and/or electrical damages caused by accidents must be replaced.
- 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 ground cable 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 the influence of heat >65 °C (e.g. during welding and drying work with infrared beams or hot air blowers).

3.0 Electrical wires and wiring harnesses

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

4.0 Optical fibres

- Follow instructions for handling optical fibres.

cardiagn.com

41 00 ... Information on hazards

1. Aluminium

Hazards/effects	Measures / regulations
Repair stage 1 and 2: No hazards/effects	none
Repair stage 3: (Welding - only E52) • 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.

2. Carbon

Hazards / effects	Measures / regulations
Repair stage 1: No hazards/effects	none
Repair stage 2 and 3: • Explosion hazard due to high concentration of carbon dust. Produced when grinding carbon. • Explosion hazard due to swirling up of carbon dust in cavities. Created by the necessary, thorough cleaning of machining surfaces and tools before and after machining carbon.	• Avoid high concentration of carbon dust by drawing it off continuously. • 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 carbon 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.

cardiagn.com

41 00 ... Information on metal filler

Note:

The metal spatula is omitted.

Changes to the procedure are described here.

cardiagn.com

64 00 ... 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 douche 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!

cardiagn.com



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.

cardiagn.com

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 , see ServiceÂ Information.

Important!

Do not use flammable or dirty material for covering.

cardiagn.com

41 00 ... Information/warning labels

Missing or damaged labels (e.Â g. tyre pressure) must be replaced.

--> overview via the installation location

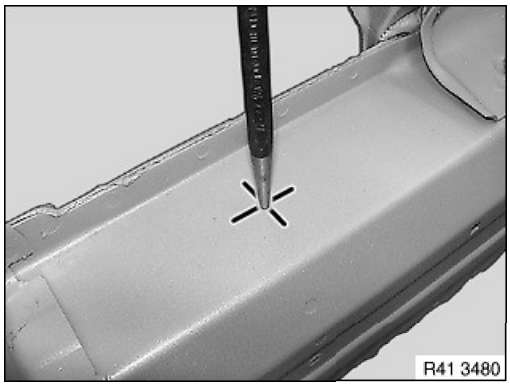
cardiagn.com

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



Important!

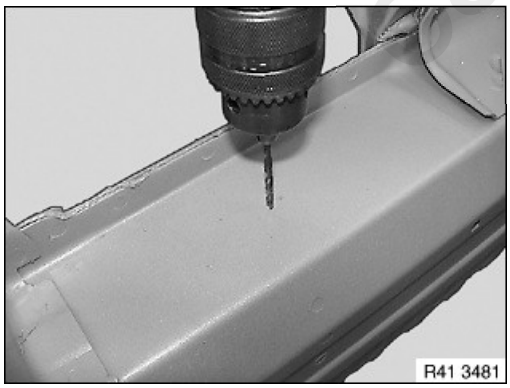
If the determined drill bit diameter is not observed:

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

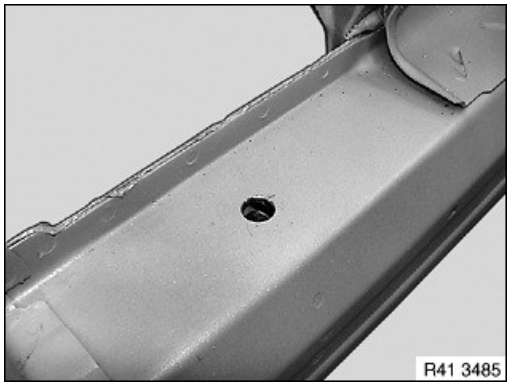
Determining suitable drill bit:

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

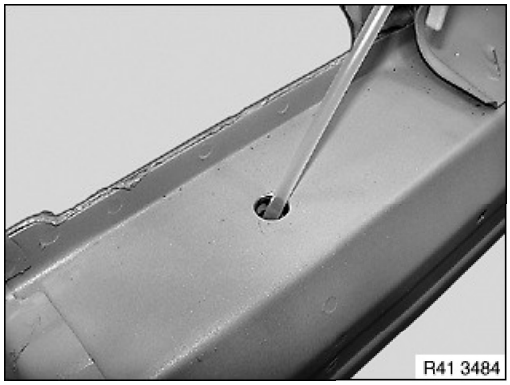
E.g. with a shank diameter of 10.1 mm, the 10.5 mm drill bit can be used. The 11.0 mm drill bit must not be used.



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



3. Clean component, eliminate paintwork damage if necessary

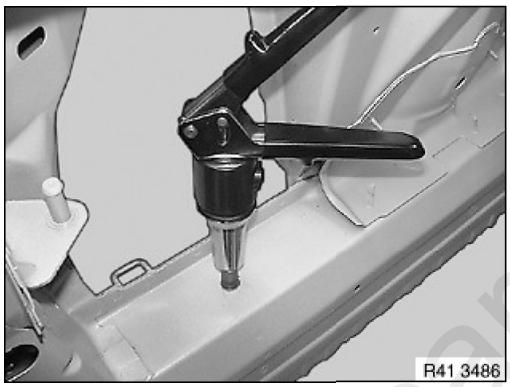


Important!

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

Follow instructions on corrosion protection .

4. Preserving cavity

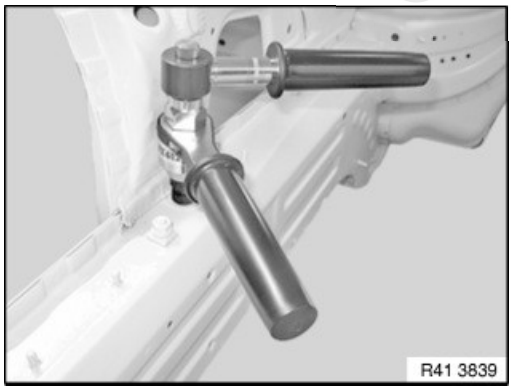


Important!

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 (see Aftersales Assistance Portal (ASAP) - Service/Technology - Workshop Equipment (Start BMW) - Workshop Equipment Shop or www.bmwgroup-wep.com).



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 (see Aftersales Assistance Portal (ASAP) - Service/Technology - Workshop Equipment (Start BMW) - Workshop Equipment Shop or www.bmwgroup-wep.com).

cardiagn.com

41 00 ... Installing a cavity sealing with 2-component PU cavity foam

Sourcing reference for cavity foam HS1 (refer to BMW Parts Department).

Important!

> The cavity foam may only be use for cavity sealing at the points at which cavity sealing is present as standard!

The following repair represents the replacement of a shaped part for the cavity sealing by the use of cavity foam.

This type of cavity sealing is used at points at which shaped parts cannot be used for repairs.

This is the case when large amounts of heat occur (e.g. due to welding, soldering or tin-plating) in the direct vicinity or at the point of the standard cavity sealing.

It is not possible here to install shaped parts for the cavity sealing because of the fire risk!

To replace shaped parts with cavity foam at further locations, adopt the procedure shown here and adapt it to the relevant ratios.

It must be ensured that the cavity sealing is fully completed.

Note:

> Check the accessibility for the spraying pipe of the cavity foam to the affected cavity after removing the defective parts.

Properties of cavity foam HS1:

- 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 eye protection, solvent-resistant protective gloves and protective clothing.
- Do not inhale.
  Apply in well ventilated rooms only.
- **Warning!**
  Application time after mixing process: within **8 minutes!**
  Completely empty open can after use.
- Residual 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 residual amount for several hours in cold water.
- Do not eat, drink or smoke while working with these products.
- Keep heat and ignition sources far away.
- Read the manufacturer's information on hazards/dangers (printed on the can) prior to application.

Processing instructions:

- Observe the expiry date on the cartridge.
  Do not use spray can after the expiry date has passed. After the Use by date the properties of the cavity foam will no longer meet the requirements of the BMW Group.
- Cavity preservation of the repair area possible after an air drying time of 1 hour.
- Surface must be **clean, free of dust, grease, oil and separating agents**.
- Application temperature at least 15 °C. Optimally 20 °C.
- Important!
  Foam expands many times over as it sets (change in volume).

cardiagn.com

- Before applying to the vehicle, fill a clearly visible cavity of corresponding size with foam on a used part.
  This enables an optimal dosage (i.e. spraying time) to be specified for filling the cavity on the vehicle with foam.
- Tape off open passages to visible areas with adhesive tape to prevent foam from escaping.
- The setting takes approx. 30 minutes. Mechanical processing (e.g. drilling, cutting, etc.) is then possible
- Cavity preservation of the repair area possible after an air drying time of 1 hour.
- Remove fresh, non-hardened polyurethane foam with adhesive remover 208.
  Sourcing reference: BMW Parts Department.
  Hardened polyurethane foam can only be removed mechanically.
- Excess hardened polyurethane foam can be disposed of as residual waste.
  Cans that are not entirely empty or are unused and have an expired expiry date are classed as hazardous waste.
  Observe country-specific waste disposal regulations.
- Observe the manufacturer's processing instructions (printed on the can).

cardiagn.com

41 00 ... Installing a cavity sealing with 2-component PU cavity foam

Sourcing reference for cavity foam HS3 (refer to BMW Group Parts).

Attention!

The cavity foam may only be use for cavity sealing at the points at which cavity sealing is present as standard!

The following repair represents the replacement of a shaped part for the cavity sealing by the use of cavity foam.

This type of cavity sealing is used at points at which shaped parts cannot be used for repairs.

This is the case when large amounts of heat occur (e.g. due to welding, soldering or tin-plating) in the direct vicinity or at the point of the standard cavity sealing.

It is not possible here to install shaped parts for the cavity sealing because of the fire risk!

To replace shaped parts with cavity foam at further locations, adopt the procedure shown here and adapt it to the relevant ratios.

It must be ensured that the cavity sealing is fully completed.

Note:

Check the accessibility for the spraying pipe of the cavity foam to the affected cavity after removing the defective parts.

Properties of cavity foam HS3:

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

Information on dangers/hazards:

- Avoid eye and skin contact.
  Wear eye protection, solvent-resistant protective gloves and protective clothing.
- Do not inhale.
  Apply in well ventilated rooms only.
- **Warning!**
  Processing after the mixing process within a few seconds!
- Do not eat, drink or smoke while working with these products.
- Keep heat and ignition sources far away.
- Observe the manufacturer's information on dangers / hazards prior to application (imprint on double cartridge).

Processing instructions:

- Observe the expiry date on the cartridge.
  Do not use cavity foam after the expiry date has passed. After the Use by date the properties of the cavity foam will no longer meet the requirements of the BMW Group.
- Cavity preservation of the repair area possible after an air drying time of 1 hour.
- Surface must be **clean, free of dust, grease, oil and separating agents**.
- Application temperature at least 15 °C. Optimally 20 °C.
- Attention!
  Foam expands during hardening (volume change).
- Tape off open passages to visible areas with adhesive tape to prevent foam from escaping.
- The setting takes approx. 30 minutes. Mechanical processing (e.g. drilling, cutting, etc.) is then possible
- Cavity preservation of the repair area possible after an air drying time of 1 hour.
- Remove fresh, non-hardened polyurethane foam with adhesive remover 208.
  Sourcing reference, see BMW Group Parts.

cardiagn.com

Hardened polyurethane foam can only be removed mechanically.

- Excess hardened polyurethane foam can be disposed of as residual waste.
  Double cartridges that are not entirely empty or are unused and have an expired expiry date are classified as hazardous waste.
  Observe country-specific waste disposal regulations.
- Observe the manufacturer's processing instructions (imprinted on double cartridge).

cardiagn.com

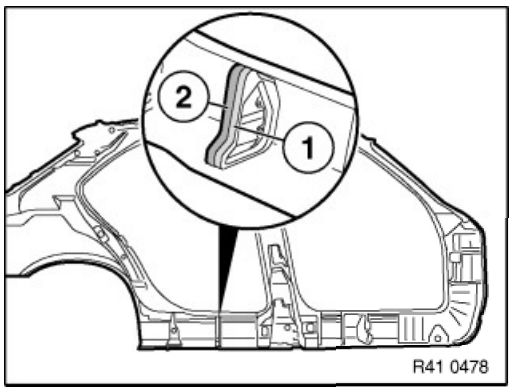
41 00 ... Installing cavity sealing (expanded)

Note:
Carry over schematic diagram to the relevant vehicle type.

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

The cavity acoustic baffle 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 D2 to contact surface (1).

If necessary apply sealant D2 somewhat thinner on each side, to prevent the sealant from running.

Fit, secure and weld up new part.

Warning:
Ensure adequate ventilation over entire processing period.

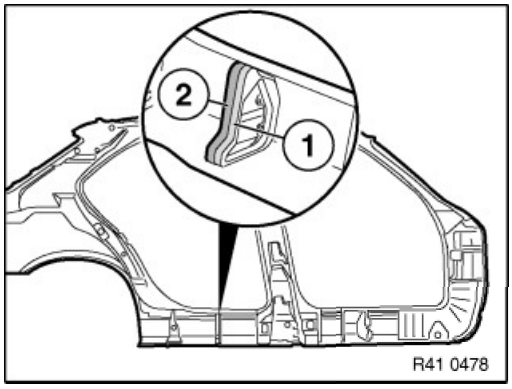
cardiagn.com

41 00 ... Installing cavity sealing (not expanded)

Note:
Carry over schematic diagram to the relevant vehicle type.

The following repair represents replacement of a cavity acoustic baffle.

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 D2 to contact surface (1).

If necessary apply sealant D2 somewhat thinner on each side, to prevent the sealant from running.

Attach cavity acoustic baffle in specified position (see old part).

Fit, secure and weld up new part.

Warning:
Ensure adequate ventilation over entire processing period.

cardiagn.com

41 00 ... Materials science

1. Aluminium

1.1 Chassis/suspension components

Read and observe the Notes on chassis/suspension components before handling aluminium.

1.2 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 connection point. This results in surface corrosion or pitting. New parts and accessory parts which have been approved by the BMW Group for aluminium (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.
Tools 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 set is available for processing/machining aluminium.
Surfaces are attacked when fluxing agents are used.	Soldering is not permitted for joining aluminium components. Risk of corrosion from chemical factors.
Aluminium/steel grinding dust from adjoining working areas.	This results in surface corrosion. Erection of protective barriers.

1.3 Machining properties

Properties of aluminium compared with steel	Effects
Aluminium parts are magnetically neutral.	Attachment with magnetic tools/working aids is not possible.
Elasticity is only 1/3 as high. Elongation failure is approx. 50 % slighter.	Convertibility is limited in comparison with steel. Overstretching the material results in strain-hardening and an increased tendency of cracking.

cardiagn.com

Electrical conductivity is almost 4 times higher.	Electric welding methods 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.
Structural transformation between 200 °C and 250 °C	Elongation characteristics and thus plasticity are improved. Strength is reduced. ***Important!*** No heat treatment during repair work on the vehicle structure! Workshop operation doesn't make it possible to control the temperature to sufficiently exact levels.
Aluminium shows no annealing colours.	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 colouring and the surface warpage. ***Important!*** Do not use thermo crayons. Not suitable for workshop operation because the paint runs too quickly.

1.4 Storage

Characteristic features of aluminium	Special measures
Corrosion (ageing) in damp environments.	Store aluminium components in a dry place.
Contact corrosion in event of contact e.g. with steel components.	Always store aluminium components separately or in isolation from steel components.
Susceptibility to paint infiltration.	Do not damage factory protective layer of the surface since this would cause oxidation. Failure to comply with this requirement would result in more painting work.

cardiagn.com

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 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. Allow approx. 10 cm of mixed adhesive to emerge.

Only after this apply the mixed adhesive to one side of the bonding surface.

Application time 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.

2-component 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 an object temperature of 15°C.

10 hours at an object temperature of 23°C.

cardiagn.com

1 hour at an object temperature of 60°C.

0.5 hours at an object temperature of 85°C.

Important!

> 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 a mixture 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.

cardiagn.com

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 °C - 25 °C.

Shelf life:

The glue cartridge is marked with a date.

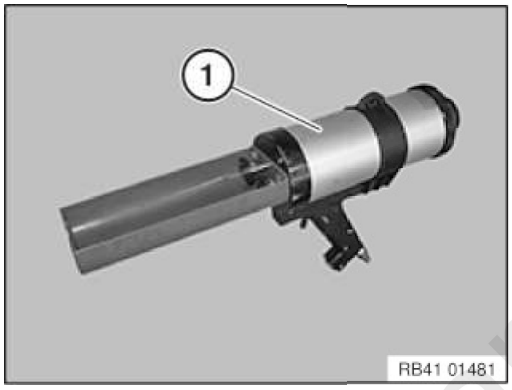
Do not use the adhesive after this date.

Surface pre-treatment:

Refer to vehicle-specific repair instructions or Notes.

Required cartridge gun:

Cartridge gun 81 49 2 355 475 for 2x290 ml container



Preparation of the glue cartridge (2x290 ml):

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.

Application time of adhesive at 28 °C 35 min and at 18 °C 50 min

Remove the sealing cap on the back of the glue cartridge. Remove the safety and connecting pipe. Puncture the glue cartridges open. Attach the connecting pipe and insert the glue cartridge in the cartridge gun. Allow both adhesive components to emerge. Strip adhesive components uniformly and attach mixing tube. Only use mixing tubes supplied with glue cartridge. Allow approx. 10 cm of mixed adhesive to emerge.

Only after this 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.

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.

cardiagn.com

Hardening time:

Do not move the vehicle before the adhesive has hardened.

The following hardening times apply unless the specifications in the vehicle-specific repair instructions indicate otherwise:

Adhesive K2 (2x290 ml):

Important!

> During the initial 12 hours, no accelerated hardening with a heat gun or heat chamber is permitted!

The **solidity for installation work** on the vehicle is reached after:

12 hours at an object temperature of 18°C.

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

48 hours at an object temperature of 18°C.

Important!

> When a complete side frame is replaced (without partial replacement), the hardening period will increase to 24 hours until the beginning of installation work.

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.

cardiagn.com

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.

carmagn.com

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.

cardiagn.com

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.

2-component 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 an object temperature of 15°C.

10 hours at an object temperature of 23°C.

1 hour at an object temperature of 60°C.

carflash.com

0.5 hours at an object temperature of 85°C.

Important!

> 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.

cardiagn.com

41 00 ... Notes on adhesive K6

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

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.

carmagn.com

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.

cardiagn.com

61 00 ... Notes on handling the high pressure cleaner



Warning!

Only used a high pressure cleaner approved by BMW!

Only specially trained persons of 16 years of age or older may work with the high pressure cleaner.

Check the high pressure cleaner and electrical wiring for visible damage.

Only use at a suitable location.



Attention!

Pay attention to following hazard warnings:

- Danger of injury due to water jet
- Contact with hazardous substances in spray
- Risk of skidding on wet floor
- Risk of stumbling due to hoses and cables
- Comply with notes and instructions on handling cleaning agents !
- Risk of scalding when cleaning with hot water.
- On electric or hybrid cars, the safety instructions for handling with hybrid cars are to be complied with.



Warning!

The following personal protective equipment is to be used:

- Safety goggles/face guard
- Suitable gloves
- Apron
- Rubber boots
- Ear protectors
- Safety shoes



Attention!

Notes on washing a vehicle with a high pressure cleaner:

- Do not wash directly on gaskets and control units during engine washes.
- A minimum distance of 30 cm must be adhered to for tyres and tyre valves.
- A minimum distance of 30 cm must be adhered to for the soft top and painted parts.
- Do not use if engine is still hot.
- Do not exceed maximum water temperature of 60Â degrees.
- Do not spray directly onto cameras/sensors.

cardiagn.com



Attention!

- For your own safety, we recommend that you do not wash on the high-voltage components in electric or hybrid vehicles.

cardiagn.com

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. Observe the procedure described in the example.

Screw connection	Vehicle	Bolting point	Helicoil thread insert
Front axle support to engine support	F20, F21, F22, F30, F31, F32, F33, F34, F35, F36	Front	M12x1.5x24
	F20, F21, F22, F30, F31, F32, F33, F34, F35, F36	Centre	M12x1.5x24
	F20, F21, F22, F30, F31, F32, F33, F34, F35, F36	Rear	M14x1.5x28
Rear axle support to side member	F20, F21, F22, F30, F31, F32, F33, F34, F35, F36	All	M12x1.5x24

cardiagn.com

41 00 ... Notes on the water drain hose of the slide/tilt sunroof

The water drain hoses for the slide/tilt sunroof are partially permanently integrated in the body and cannot be replaced individually.

These water drain hoses can only be completely replaced with extensive body repair work (e. g. after an accident).

Component	Vehicle	Individually replaceable
Water drain hose, front	All BMW All MINI	No
Rear water drain hose	E60, F34	No
	All other BMWs	Yes
	All MINI	Yes

An individual solution is required for damage that was not caused by an accident.

Contact national hotline.

cardiagn.com

99 Notes on using temperature-controlled infra-red radiators

When using temperature-controlled infrared radiators, damage to adhesive bonds, paint and vehicle components can occur when drying spatula and filler.

The temperature sensors in the infrared radiator only operate reliably on large, even surfaces.

On small surfaces such as C-pillars or sills, often only a colder, adjacent area is measured.

This leads to actual surface temperatures of up to 130°C, even if only 70°C is set on the infrared radiator.

When the rear side walls are partially replaced by bonding and riveting, these high temperatures can lead to a visible pattern in the area of the joint.

Remedy:

Check the surface temperatures on small component surfaces during the drying process with an external temperature sensor.

The general rule is: The surface temperatures must not exceed 85°C.

Important!

Do not use infrared radiators on carbon parts!

Risk of component destruction.

cardiagn.com

41 00 ... Opening bonded connections

1. Opening spot-welded adhesive joint

Open welding spots.

Warning!

Draw off vapour and gases!

Use personal protective clothing/equipment.

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

Release connecting flange with chisel.

Remove adhesive residue from connecting flange.

2. Opening bonded connections

Release any punch rivet or blind rivet.

Roughly cut out damaged component.

Warning!

Draw off vapour 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 bonded connections on aluminium roofs

Procedure is described in detailed in the relevant repair instructions.

cardiagn.com

41 00 ... Opening brazed connections

The ”Bonding and Riveting” repair method involves replacing the watertight brazed connection with adhesive.

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

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.

cardiagn.com

41 00 ... Opening rivet connections

Different rivet types are used on BMW vehicles.

1. Opening blind rivets:

1.1 Loosening blind rivets (N1, N2, N7, N8, N9 and N10):

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 (refer to Service Information 5 03 03 975) with gas bottle containing inert gas (82 % argon, 18 % CO_2).
- Stainless steel stud (sourcing reference via BMW Parts Department image board Aluminium and steel/bonding and welding)
- Universal riveting tool (refer to Service Information 5 03 03 975)

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 panel 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.

Note:

Sand down and even out remaining burr on the rear side.Deburr bore holes.

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

Clean vehicle to remove swarfs (risk of corrosion).

cardiagn.com

41 00 ... Opening welded connections

1. Components made of steel:

1.1 Opening welding 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 welding 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, see Aftersales Assistance Portal (ASAP) - Service/Technology - Workshop Equipment (Start BMW) - Shop Workshop Equipment or at www.bmwgroup-wep.com.

- **Procedure:**
  If necessary, surface-grind existing unevenness with a belt or angle grinder in the area around the welding spot.
  Set punch mark in centre of welding spot. Set 8 mm dia. welding spot drill bit on punch mark and drill through top metal sheet.
  Note: Because the welding spots may have surface-hardened, grind them if necessary with an angle grinder and paper grinding disc.
  Use a chisel to separate the sheet metal flange and remove the component.
  Follow the special procedure for spot welds .

1.2 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.

1.3 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.

2. Components made of aluminium:

2.1 Opening MiG weld seams:

- **Procedure:**
  Grind off weld seams with a belt or angle grinder. Do not grind the base material thin.
  Do not use a chisel.
  Remove component.

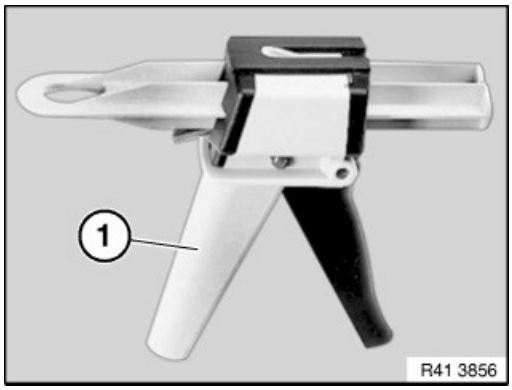
cardiagn.com

61 35 ... Overview of additional work for the removal and installation or replacement of electronic components in the body area/windscreen

Component	**Removal and installation** Calibration/Initialisation required **(diagnosis system must be connected)**	**Removal and installation** Use of the Special tool necessary	**Replacement** Programming/encoding Calibration/Initialisation required **(diagnosis system must be connected)**	**Replacement** Use of the Special tool necessary	Remarks
Front section: (including bumper panel)					
ACC sensor	Yes	Yes	Yes	Yes	
PDC ultrasonic sensor	No	No	No	No	
PMA ultrasonic sensor	No	No	No	No	
Side View camera	No	No	Yes	No	
Side section:					
Top view camera (in the exterior mirror)	No	No	Yes	No	
Rear area: (including bumper panel):					
reversing camera	No	No	Yes	No	
PDC ultrasonic sensor	No	No	No	No	
Sensor, lane change warning	no*	No	Yes	No	*Required after a body repair in the surrounding area of the sensor. **Comply with the regulations for repainting!**
Windscreen:					
Camera-based driver support systems camera	no*	No	no*	No	*Necessary after **replacement of the windscreen**
Rain sensor (separate document)					

cardiagn.com

41 00 ... Overview of adhesive cartridge guns



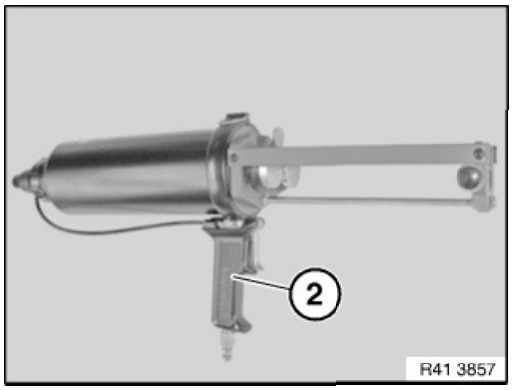
Adhesive gun 83 19 2 149 522

Obtainable via Electronic Parts Catalogue.

Usable for adhesives K4, K5a.

Usable for BMW 2K polyurethane foam.

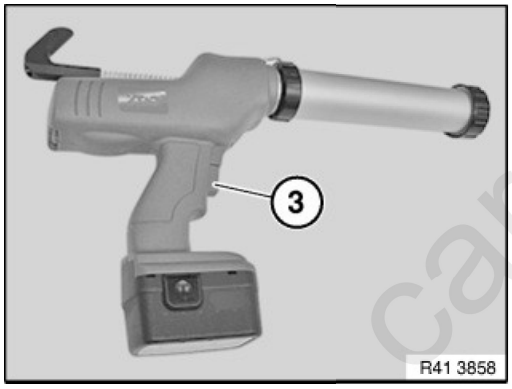
Including insert 1:1 and 2:1.



Adhesive gun 81 49 0 443 166

Orderable via BMW Workshop Equipment Catalogue.

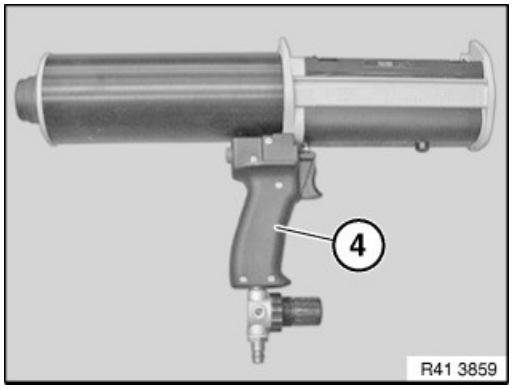
Usable for adhesive K3.



Adhesive cartridge gun 81 49 2 213 059

Orderable via BMW Workshop Equipment Catalogue.

Usable for adhesives K1, K5b, sealant D1/D2, window glass adhesive and all 310 ml Euro cartridges.



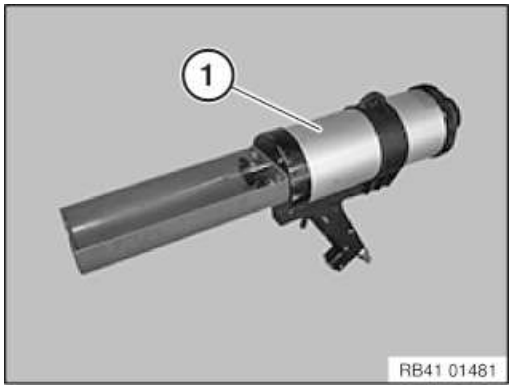
Adhesive cartridge gun 83 30 0 494 836

Orderable via BMW Workshop Equipment Catalogue.

Usable for structural foam HS2.

Note:
Special tool number 41 3 010

cardiagn.com



Adhesive cartridge gun 81 49 2 355 475

Orderable via BMW Workshop Equipment Catalogue.

Usable for adhesive K2 (2x290 ml glue cartridge)

cardiagn.com

41 00 ... Overview of consumables (Electronic Parts Catalogue)

1.0 Adhesives

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Adhesive K1	Body adhesive K1	83 19 0 413 015	195 ml
Adhesive K2	Body adhesive K2	83 19 2 355 849	2x290 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 K5	Body adhesive K5	83 19 2 158 654	50 ml
Adhesive K5	Body adhesive K5	83 19 2 157 298	195 ml
Adhesive K6	Adhesive set K6	83 19 2 317 925	

1.1 Primer / activator

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
PrimerP1	PrimerP1	83 19 0 302 556	50 ml
PrimerP2	Primer P2/Gas cartridge	83 19 0 302 555	50 ml
Betawipe 4800	Betawipe 4800	83 19 2 357 707	10 ml
Bonding base VP 206	Bonding base VP 206	83 19 9 407 777	30 ml
Aktivator 205	Aktivator 205	83 19 0 030 155	250 ml

1.2 Cleaning agent

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Filler S1	Alluvial tin replacement	83 19 2 464 575	175 ml

1.3 Fillers

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Cleaning agent R1	Cleaning agent R1	83 19 2 211 217	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

2.0 Rivet

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Blind rivet N1	Blind rivet N1	83 19 0 301 414	dia. 6.5 mm; clamping range 2.8-4.8 mm
Blind rivet N2	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 rivetN4	Punch rivetN4	83 19 2 457 307	dia. 3 mm; length 4 mm
Punch rivetN5	Punch rivetN5	83 19 2 158 079	dia. 5 mm; length 5 mm

carflagn.com

Blind rivet N6	Blind rivet N6	83 19 2 158 655	dia. 4 mm; clamping range 3-5 mm
Blind rivet N7	Blind rivet N7	83 19 2 240 352	dia. 6.5 mm; clamping range 1.5-3.5 mm
Blind rivet N8	Blind rivet N8	83 19 2 355 998	dia. 6.5 mm; clamping range 6.8-8.8 mm
Blind rivet N9	Blind rivet N9	83 19 7 239 634	dia. 6.5 mm; clamping range 8.8-10.8 mm
Blind rivet N10	Blind rivet N10	83 19 9 144 282	dia. 6.5 mm; clamping range 10.8-12.8 mm
Blind rivet N11	Blind rivet N11	07 14 7 391 057	Blind rivet for carbon connections dia. 4.8 mm; clamping range 2.2-4.7 mm
Blind rivet N12	Blind rivet N12	07 14 7 391 046	Blind rivet for carbon connections dia. 4.8 mm; clamping range 4.5-7.5 mm

2.1 Plastic nuts

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Cap nut	Plastic nut	51 16 1 943 122	Dia. 18 mm
Cap nut	Plastic nut	07 14 7 169 847	Dia. 22 mm

3.0 Primer/paint spray aerosol

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Primer	Emergency program base filler 2K spray	51 91 0 432 615	200 ml; application time 8 h
Welding primer	INOX spray welding primer	83 40 0 409 992	500 ml
Paint spray aerosol, cathodic dip coating, grey	Paint spray aerosol, inside filler of spare wheel well	51 91 0 411 026	400 ml
Spray can, black, matte	Spray paint, black matt	51 91 1 900 346	400 ml

4.0 Sealant

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Sealant D1 Sprayable sealant	Seam sealing	83 42 2 409 985	310 ml
Sealant D2	Seam sealing, spreadable	83 42 2 409 986	310 ml

5.0 Cavity preservation

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Cavity sealant	Cavity sealant spray	83 42 2 457 337	400 ml

cardiagn.com

Cavity sealant	Cavity preservation	83 42 2 457 338	1000 ml

6.0 Cavity foam

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Cavity foamHS1	Cavity foam	83 42 9 410 694	400 ml
Structural foamHS2	Structural foam	83 19 0 007 361	420 ml
Cavity foamHS3	2K polyurethane foam	83 42 2 288 930	50 ml

7.0 EMC screw (electromagnetic compatibility)

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

8.0 Twist drill

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Drill bit	Drill bit	83 19 2 460 424	4.2 x 120 mm
Drill bit	Drill bit	83 19 2 460 425	6.8 x 150 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
Drill bit	High-strength drill	83 19 2 359 262	6.8 x 79 mm
Drill bit	High-strength drill	83 19 2 359 263	4.2 x 66 mm

9.0 Grinding material

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Non-woven abrasivesS1	ScotchBrite Multiflex A, very fine	51 91 0 402 967	

10.0 Spacer

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Spacer	Adhesive tape	51 71 7 901 759	

11.0 Adhesive tape

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Aluminium adhesive tape	Adhesive tape	11 00 7 769 948	Width 50 mm

12.0 reinforcement plates

cardiagn.com

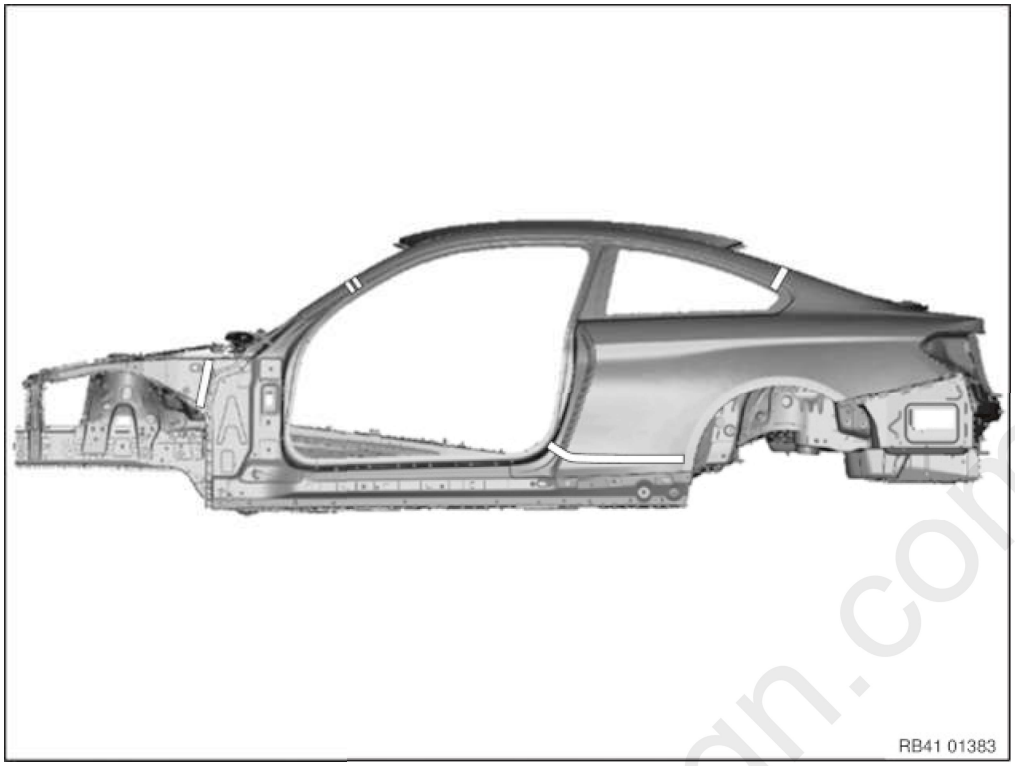
Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Reinforcement plate, universal	Reinforcement plate, universal	41 21 7 275 563	

cardiagn.com

41 00 ... Position of shaped parts for cavity sealing

Cavity sealing is carried out in specific body areas in order to reduce interior noise and to reduce condensation. 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 Â°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 has been specified for this situation.

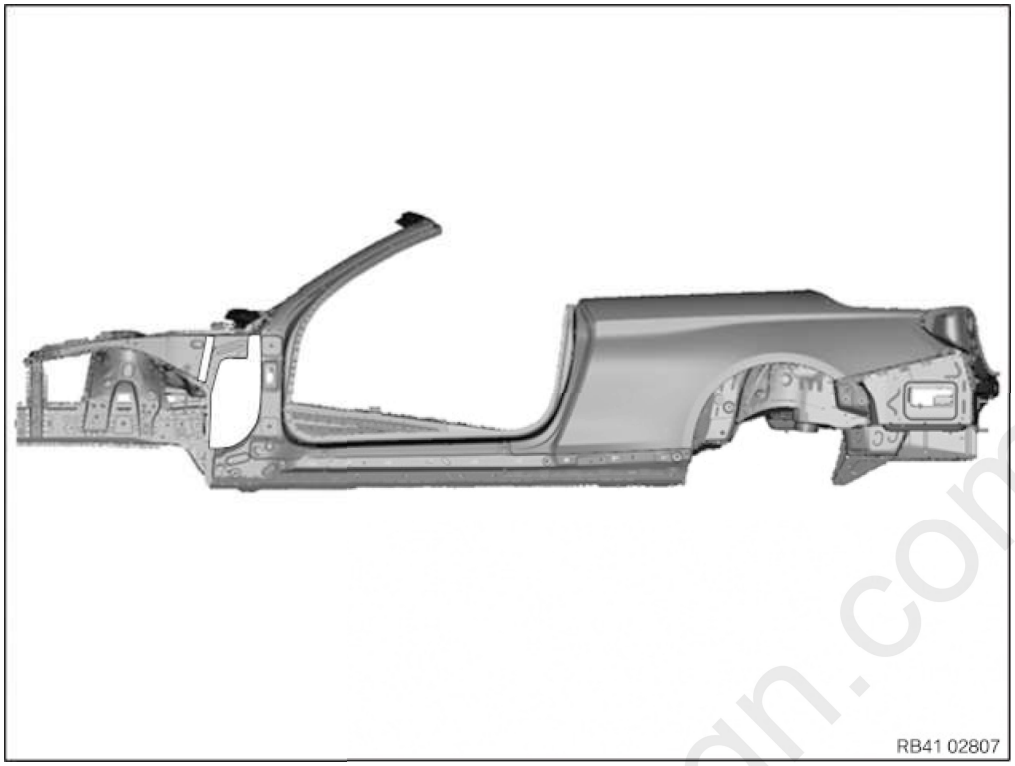


cardiagn.com

41 00 ... Position of shaped parts for cavity sealing

Cavity sealing is carried out in specific body areas in order to reduce interior noise and to reduce condensation. 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 Â°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 has been specified for this situation.



cardiagn.com

41 00 ... Procedure for vehicles with active pedestrian protection after an accident

The active pedestrian protection system consists of the following components:

- *Satellites (control unit + sensor)*
  - Sensors, inside, bumper panel, left/centre/right
  - ACSM control unit (Crash Safety Module)
- *Cables and connectors*
- *Engine compartment lid hinges*
  - Actuator
  - Engine compartment lid hinge

In case of a frontal crash or side collision in the area of the bonnet and/or the A-pillars, check the following components:

Satellites (control unit + sensor)

- Procedure
  - Read fault memory.
  - Disconnect the vehicle battery and observe the waiting period.
  - Rectify fault.
  - Reconnect the vehicle battery and observe the waiting period.
  - Delete the fault memory.
  - Switch off ignition and wait at least 2 minutes (no consumers, such as such as e.g. interior light, radio, etc., may be switched on during this period).
  - Switch the ignition on.
  - Read fault memory and rectify faults if necessary.

Cables and connectors

- Procedure
  - Check cables and connectors for damage, replace if necessary.

cardiagn.com

Procedure with activation of active pedestrian protection:

Engine compartment lid hinges

- Replace actuators.
- Check both bonnet hinges . Replace damaged hinges.
  If necessary, repair hinges with repair kit.
  If no repair kit is available, the hinge must be replaced.

Model	Repair kit available
F15, F16	No
F20, F21, F22, F23, F32, F33, F34, F36, F80, F82, F83, F87	Yes
F55, F56, F57, F60	No
F45, F46, F48, F49, F39	No

Procedure without activation of active pedestrian protection:

Engine compartment lid hinges

- Check both bonnet hinges and replace if necessary.
- If the hinge is damaged, the actuator must also be replaced.

cardiagn.com

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 (see Service Information 05 03 09 (535))

Sourcing reference via Aftersales Assistance Portal (ASAP) - Service/Technology - Workshop Equipment (Start BMW) - Shop Workshop Equipment or at www.bmwgroup-wep.com.

Setting punch rivets:

- Refer to the vehicle-specific repair instructions for the punch rivet size.
- 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).

cardiagn.com

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.

  The procedures described in the repair instructions must be complied with. Deviations are only permitted after arrangement 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 repair work are vital for ensuring the vehicle retains its value.

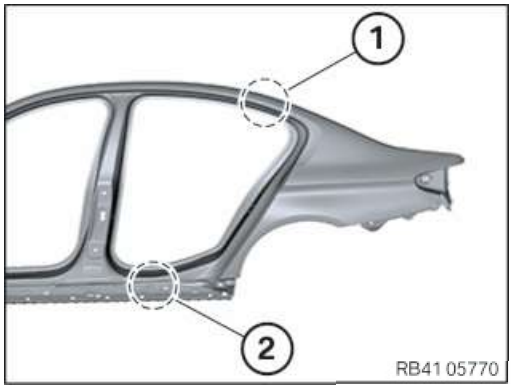
- For repair work, only use original BMW/MINI parts, or parts that are of an equivalent quality, and approved auxiliary materials and operating fluid.

  For repairs that are settled by a warranty or goodwill, only original BMW/MINI parts may be used.

cardiagn.com

41 00 ... Reinforcement plate with stud bolt (bonded or welded)

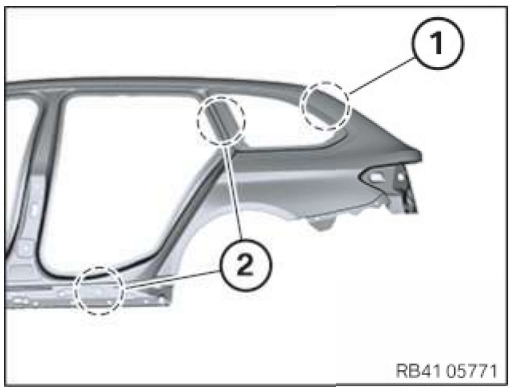
When replacing the rear side panel, reinforcement plates are bonded or welded on the separation points.



Applicable to Saloon, hatchback, Coupé.

Welding is done in area (1) (incl. water channel).

Bonding is done in area (2).

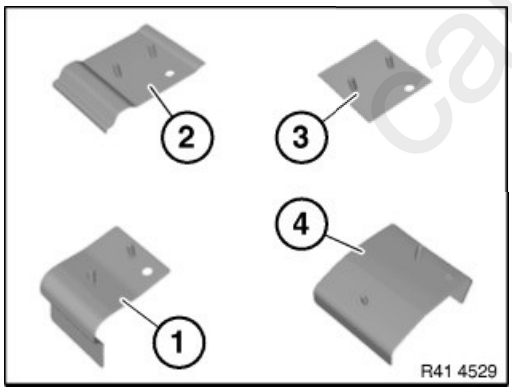


Applicable to Touring, X models, Gran Coupé, Gran Turismo.

Welding is done in area (1) (incl. water channel).

Bonding is done in areas (2).

Note:
The following graphics serve as general illustrations of reinforcement plate repair work. They apply to sectional repairs on the outer skin which are produced using the adhesive joining method.



Overview of the reinforcement plates (for sourcing reference, see Electronic Parts Catalogue):

(1) Reinforcement plate, sill

(2) Reinforcement plate, C-pillar

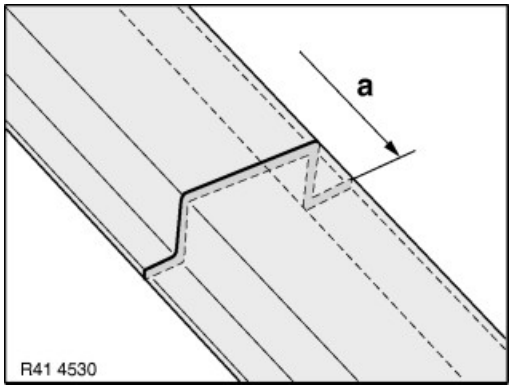
(3) Reinforcement plate, universal

(4) Reinforcement plate, C- or D-pillar

(5) Nuts (not shown)

- Plastic nut dia. 18 mm, part number 07 14 1 943 122
- Plastic nut ⌀ 22 mm, part number 07 14 7 169 847

cardiagn.com

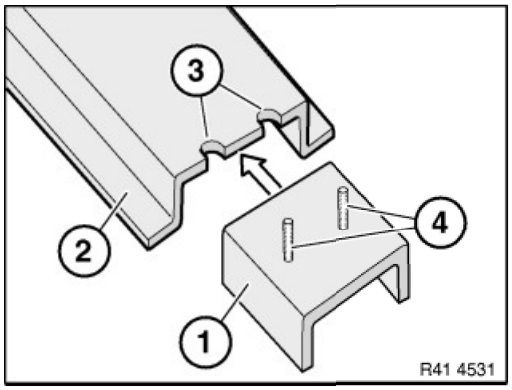


Mark side panel according to dimension a and detach it.

Preparation of the reinforcement plate (bonded or welded)

Some reinforcement plates are oversized.

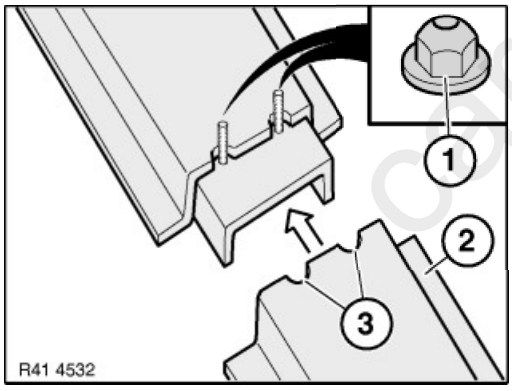
It may be necessary to rework the reinforcement plates at the edges or cut them to size until they rest against the outer skin free of tension.



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

Make semicircular recesses (3) for the stud bolts (4).

Diameter of recesses approx. 10 - 12 mm.



Fix the reinforcement plate using plastic nuts (1).

Fit new part (2).

Make semi-circular recesses (3) in the new part.

Diameter of recesses approx. 10 - 12 mm.

Remove reinforcement plate.

Note:

Bonded reinforcement plates:

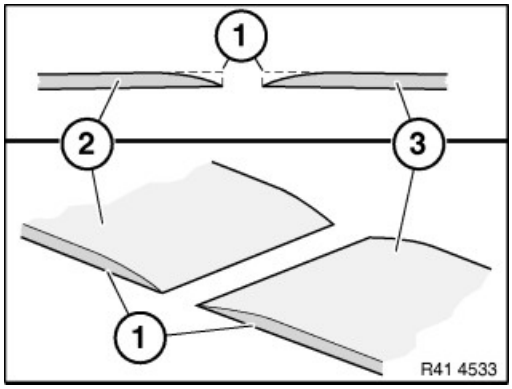
Width of joint between new part and component on vehicle approx. 5 - 8 mm (at least 30 mm flange width per side).

Welded reinforcement plates:

Width of joint between new part and component on vehicle approx. 2 - 3 mm.

Grind down to the metal in the area of the joint.

cardiagn.com



Carry out the following step only if the reinforcement plates are bonded.

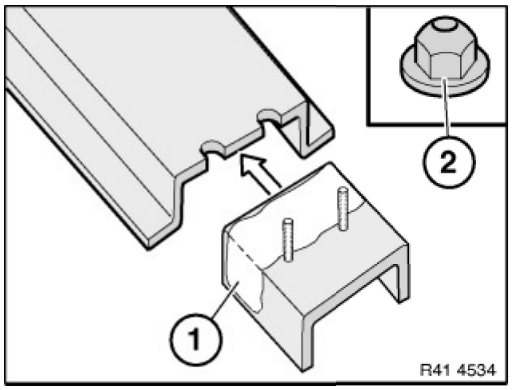
Chamfer cutting edges (1) on joint by grinding.

(2) Component on vehicle

(3) New part

If the cutting edges have not been sufficiently chamfered, there may be voids in the paintwork after painting.

Installing bonded reinforcement plate



Clean all bonding surfaces.

Apply the adhesive in area (1) on the reinforcement plate.

Apply more adhesive in the radii to avoid air pockets.

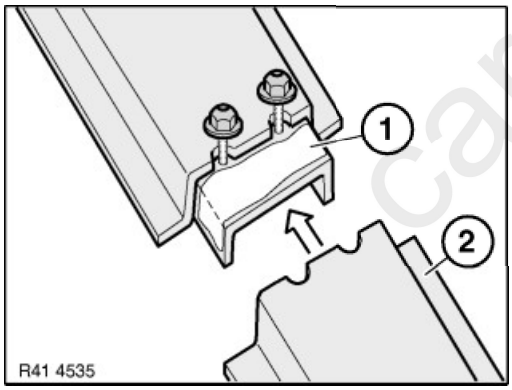
Apply additional adhesive to the outer skin around radii.

Slide the reinforcement plate carefully into the component on the vehicle and fix plastic nuts (2).

Screw on the nuts with only a few turns.

Attention!

When joining the reinforcement plate, make sure that there is sufficient adhesive on the bonding surfaces!



Apply the adhesive on bonding surface (1) of the reinforcement plate.

Apply more adhesive in the radii to avoid air pockets.

Apply additional adhesive to the outer skin around radii.

Fit new part (2).

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

First tighten the plastic nuts at the radii.

Only then tighten all the plastic nuts in the flat areas.

Tightening torque 41 14 1AZ.

Attention!

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.

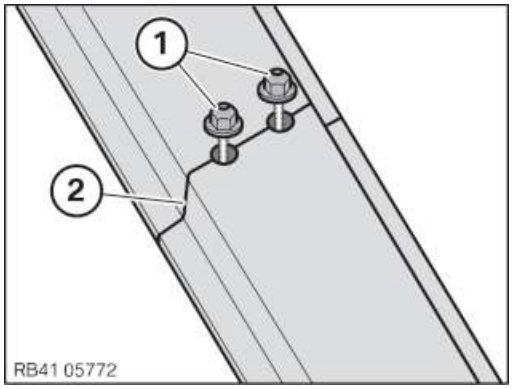
After adhesive has hardened:

Grind off stud bolts and surplus adhesive flush.

Paint area as specified in BMW Painting Handbook.

Installing welded reinforcement plate

cardiagn.com



Attention!

Risk of damage!

Protect the adjacent components from heat and flying sparks.

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

First tighten the plastic nuts at the radii.

Only then tighten all the plastic nuts in the flat areas.

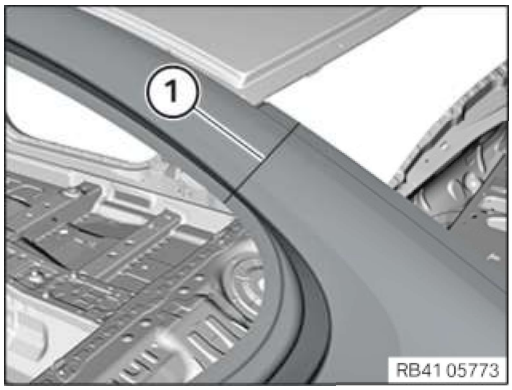
Tightening torque 41 14 1AZ.

Weld joint (2) between plastic nuts (1).

Release plastic nuts (1).

Grind down stud bolt until flush.

Weld joint (2) in the remaining areas.



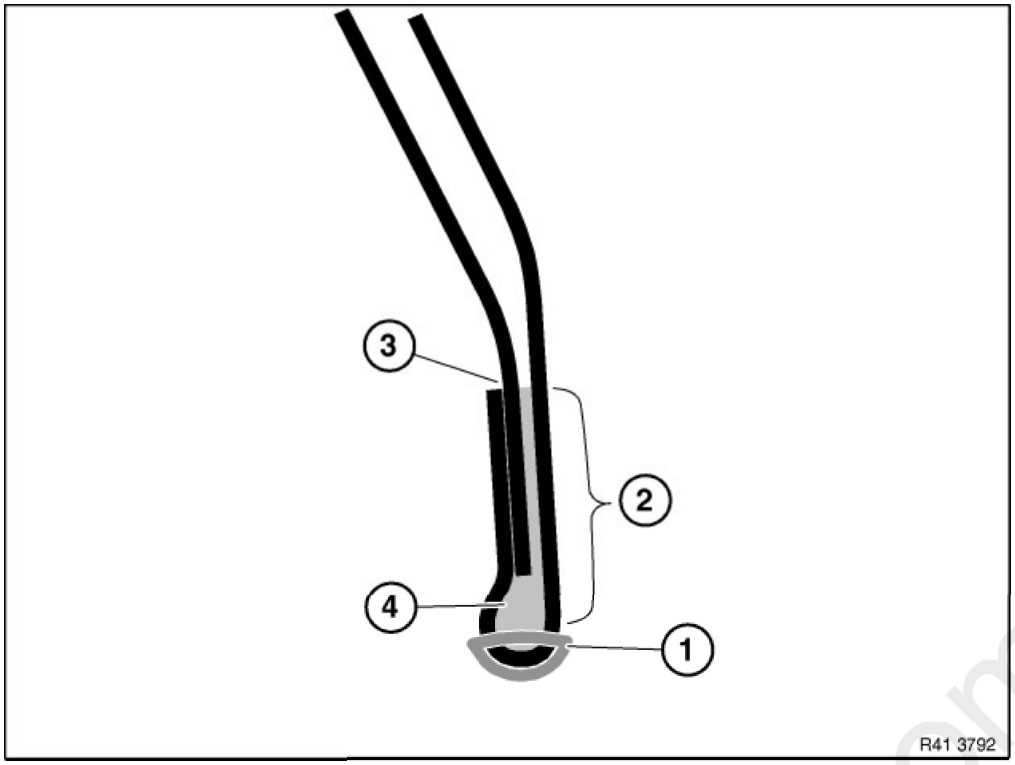
Grind weld seam (1) until flush.

If necessary, straighten area (1) and level it with a multi-functional spatula.

Paint area as specified in BMW Painting Handbook.

cardiagn.com

41 05 800 Releasing bonded folded seam connections



- 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).

cardiagn.com

41 00 ... Repair methods, repair stages 1

All work as part of which screwed body components must be replaced.

Repair techniques -> Repairing threads

Repair stage 1a

-> Blind rivetÂ

-> Blind rivet nuts and bolts

-> Glass pane

All procedures during which repairs are to be done on the outer skin.

Repair techniques -> Straightening outer skin -> Straightening aluminium parts

Repair stage 1b

-> Straightening steel components

-> Repairing plastic components

-> Grinding -> Grinding aluminium components

-> Grinding steel parts

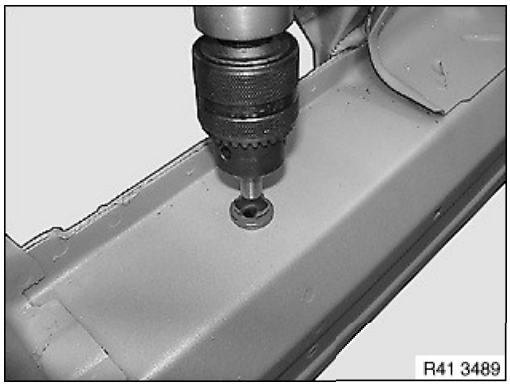
cardiagn.com

41 00 ... Repair solution for straight shank/hexagon rivet nut



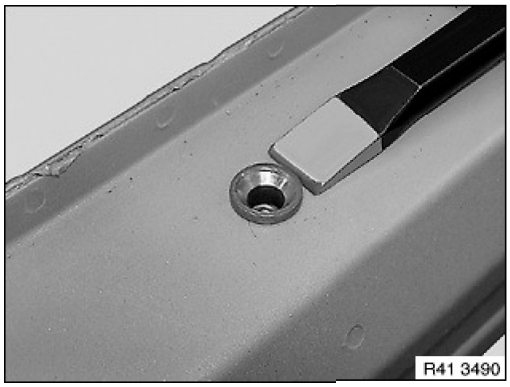
Protective measures!

- 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



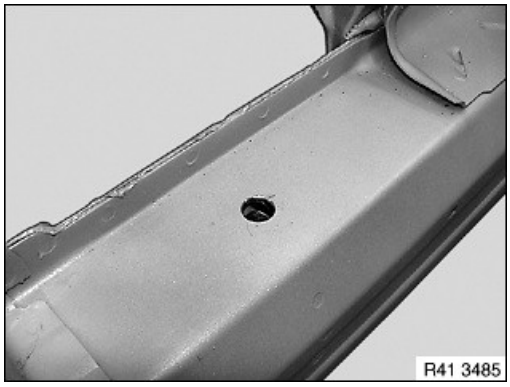
Important!
Avoid paint damage

2. Knock rivet head away with a chisel

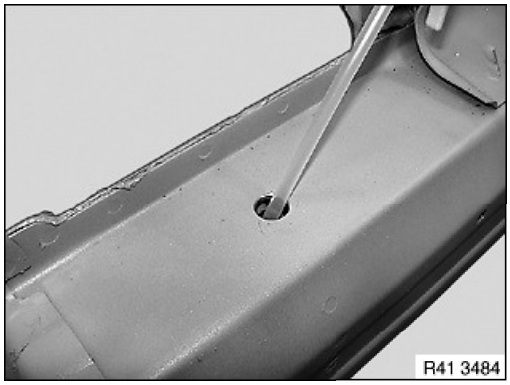


3. Punch through rivet shank into cavity, remove if necessary

cardiagn.com



4. Clean component, eliminate paint damage if necessary

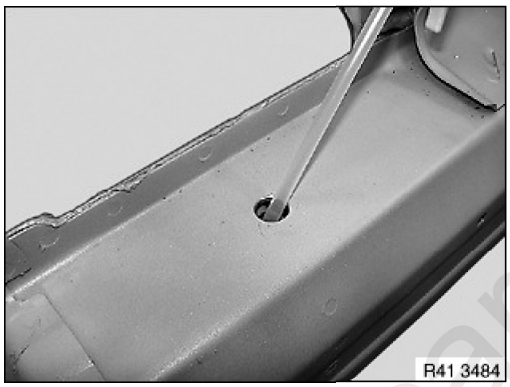


If the rivet shank can be removed: **Important!**

To avoid corrosion, stop chips/swarf by means of cavity preservation.

Follow notes on corrosion protection.

5. Preserving cavity



If the rivet shank cannot be removed: **Warning!**

Danger of injury!

Observe notes on cavity foam.

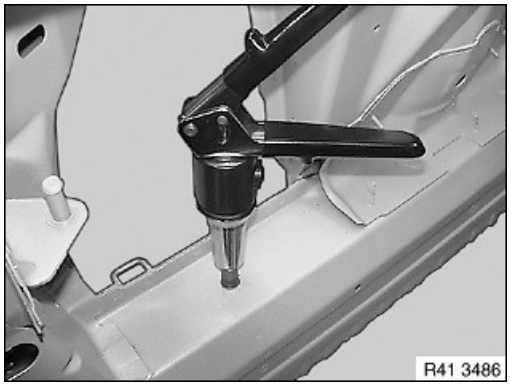
Important!

To avoid corrosion and rattling noises, stop chips/swarf and rivet nut shank with cavity foam.

Remove foam remnants with isohexane (benzine).

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.



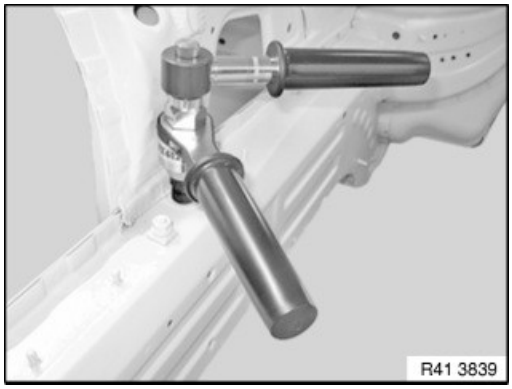
Hexagon / straight shank rivet nut (up to thread M8) with hand rivet gun ZS308 Important!

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 (see Aftersales Assistance Portal (ASAP) - Service/Technology - Workshop Equipment (Start BMW) - Workshop Equipment Shop or www.bmwgroup-wep.com).

cardiagn.com



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.

Note:
According to the manufacturer, the pictured tool is suitable up to an M12 thread (see Aftersales Assistance Portal (ASAP) - Service/Technology - Workshop Equipment (Start BMW) - Workshop Equipment Shop or www.bmwgroup-wep.com).

cardiagn.com

41 00 ... Repair techniques, repair stage 2

Repairs that are carried out by bonding and riveting and/or welded with MAG welder without the use of a straightening bench.

Repair techniques -> Removing used part -> Opening welded connections
-> Opening brazed connections
-> Opening rivet connections
-> Opening bonded connections

-> Grinding aluminium components
-> Grinding steel components

-> Sectional repair -> Reinforcement plate (bonded)
-> Installing new part -> Notes on consumables
-> Notes on adhesive
-> Bonding on painted surfaces
-> Blind rivet
-> Punch rivets
-> Welding steel components
-> Cavity sealing
-> EMC screws

cardiagn.com

41 00 ... 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 welded connections

-> Opening brazed connections

-> Opening rivet connections

-> Opening bonded connections

-> Removing carbon components

-> Grinding aluminium components

-> Grinding steel components

-> Sectional repair -> Welding in reinforcement plate (sheet steel)

-> 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

-> Notes on adhesive

-> Bonding aluminium on steel

-> Bonding steel on steel

-> Blind rivets

-> Punch rivets

-> Cavity sealing

-> EMC screws

cardiagn.com

63 12 ... Repairing headlights

It is possible to repair the following damage:

- Deformed or broken holders can be replaced using the available repair kits.
  Replacement of headlight is **not required**!
  For reasons of pedestrian safety it is **not permitted** to use adhesive or reinforcements to repair broken holders!

Note:

Headlight repair kits are not available for every vehicles (see Electronic Parts Catalogue).

Follow the vehicle-specific repair instructions.

It is not possible to repair the following damage:

- Deformed or broken headlight housing.
- Scratched or damaged headlight lenses
  The standard coating of headlight lens cannot be restored. Commercially available repair systems are unable to provide sufficient protection from ultraviolet radiation and external influences (stone chipping).

cardiagn.com

41 00 ... Repairing plastic components

1.0 General notes

- In general, the economic viability must be checked prior to the repair.
- The following painted components on the outer skin are suitable for repair:
  - Bumper panels (exception: E52)
  - Side sill trim panels
  - Side Panels
  - Door outer skin
  - Hardtop/roof
  - Soft top compartment lid
  - Rear lid
- **It is possible to repair the following damage:**
  - Slight deformations without visible cracks in the paint.
    Visible cracks reach the component and it is not possible to permanently rectify the damage.Cracks once again become visible on the paintwork after a certain period of time.
  - Slight damage, e.g. scrapes, if the component underneath does not become visible.
  - Cracks, holes up to 2.5 centimetre in length.
    Cracks must **not** reach the edge of the component.
- **Attention!**
  The following components **cannot** be repaired:
  - Components that are not painted as standard.
    Unable to restore grained surface.
  - Fuel tank, fluid tank (e.g. window washer system, brake fluid, coolant expansion tank, etc.)

2.0 Reshaping of plastic parts

- A hot air blower can be used to reshape plastic parts as per the aforementioned criteria.

3.0 Bonding of plastic parts

Important!

Conform with safety regulations!

- A plastic repair box is offered (sourcing reference via BMW Parts Department) for inexpensive repair with fair time values.
- The procedure for repair of plastic parts is included in the plastic repair box.
  Clamps or other metal reinforcements must **not** be used for reasons of pedestrian protection.

4.0 Welding plastic parts

- Plastic welding procedures are permitted as they are cost-effective repairs in line with the components' current value.
- Clamps or other metal reinforcements must **not** be used for reasons of pedestrian protection.

cardiagn.com

41 00 ... Replacing blind rivets

Special tools required:

- 2 348 128
- 72 1 210

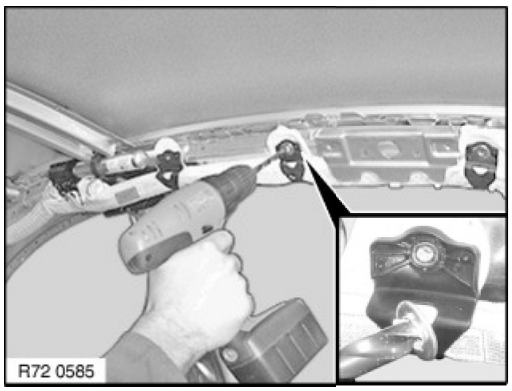


Important!

Lay out protective mats to protect the interior equipment against swarf from the drilled-out rivets and damage.

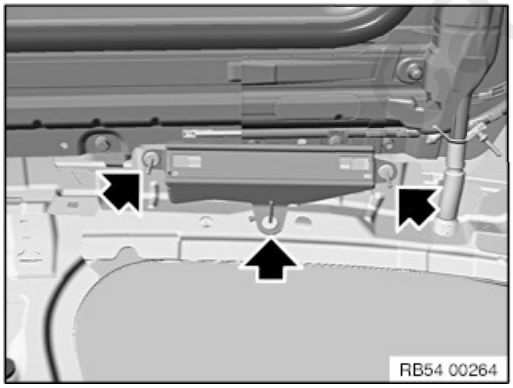
Lay out protective mats in the relevant working area:

- Instrument panel
- Entrance area
- Passenger compartment



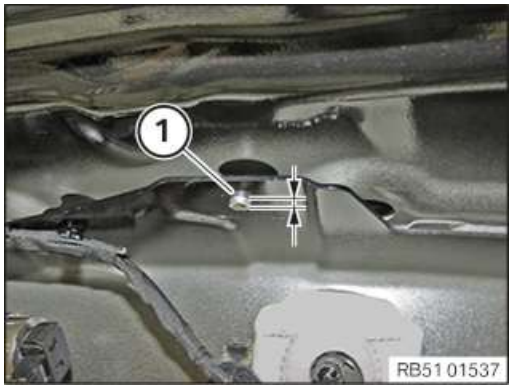
Schematic diagram of folding pack holder for head airbag:

Drill off rivet plate down to rivet shank with a 10 mm twist drill bit.



Described for grab handle holder:

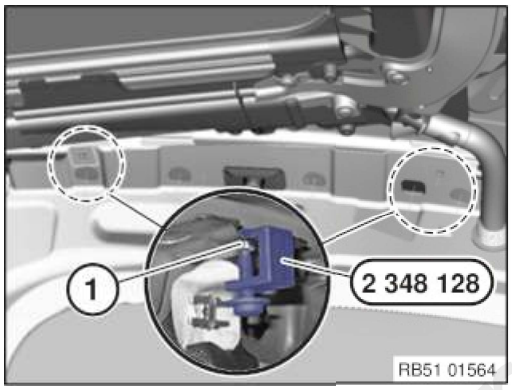
Drill off rivet plate down to rivet shank with a 10 mm twist drill bit.



Drill out all blind rivet protusions (1) up to the body.

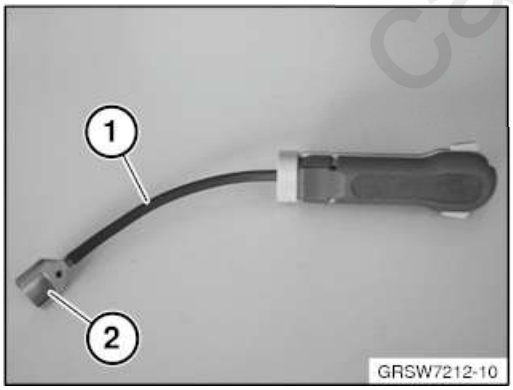
Installation note:
Apply primer to paintwork damages on side frame.
Note:
Depending on accessibility, the rivet heads will have to be removed using special tool 2 348 128 or 72 1 210 .

In areas that cannot be reached using special tools, cavity foam HS3must first be applied around the rivet head before the rivet head is then punched out immediately..



Removal of rivet head with special tool 2 348 128:

Press off rivet heads (1) using special tool 2 348 128 and remove.



Removal of rivet head with special tool 72 1 210:

Shank (1) of special tool 72 1 210 is flexible and can be adapted to the relevant body contours.

Note:
Insert butyl in the collecting tray (2) to secure rivet heads and prevent them from falling out.

cardiagn.com



Insert special tool 72 1 210 through bore hole in body next to attachment points.

Position special tool from rear on rivet head in cavity.

Note:
A second person will be needed to help hold the special tool on the rivet head during the driving-out operation.

Make sure collecting tray is correctly fitted on rivet head.

Drive out stem with hammer and 6 mm punch.

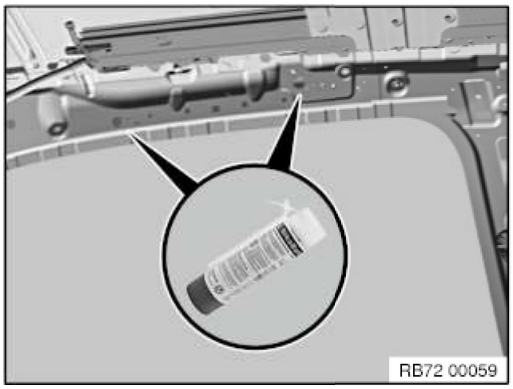
Carefully feed special tool out of body so that rivet head does not fall out of collecting tray.

Note:
If the rivet falls out of the collecting tray into the side frame when the special tool is fed out, this area must be generously filled with foam.

For details of procedure for filling cavities with foam, see further operations.

Use cavity preservation (refer to BMW Group Parts) for foam filling.

Cavity foam (refer to BMW Group Parts) may also be used if required.



Fit tube to foam can.

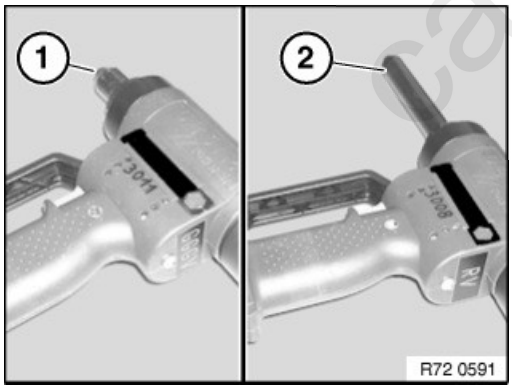
Push the hose in through the pillar holes.

Fill cavity with a filling material.

Warning!

Empty foam can completely onto cardboard and after hardening dispose of foam and can in residual waste.

Can may burst if not completely emptied.



Overview of rivet gun:

Riveting of gas generator housing and holders for folding pack with rivet gun (refer to BMW Workshop Catalogue).

The interchangeable head is changed for the different work operations.

Riveting of gas generator housing with:

1.) 17/36 nosepiece and short shank

Riveting of holders for folding pack:

2.) 17/40 nosepiece and long shank

cardiagn.com

41 00 ... Safety at work

Note national regulations.

1.0 Compressed air:

- Air guns must not be pointed at individuals. "Blowing off" the body with compressed air may lead to serious injury.
- The devices are not permitted to be cleaned with compressed air due to dust contamination.

2.0 Electrical systems/devices:

- Only perfectly functioning systems and devices may be used.
- Repairs on electrical systems and devices must only be performed by certified electricians.

3.1 Working with aluminium dust:

- Wear a fine dust mask.
- The following applies only to E52 and BMWi: Use explosion-proof exhaust extraction unit.
- Note national regulations.

3.2 Removing sealant.

- Hydrochloric acid is created when PVC sealing material is heated to temperatures in excess of 180 °C.
- Remove PVC sealant with a rotating wire brush only or heat material with a hot air blower to maximum 180 °C and remove with a spatula.
- For good ventilation or direct extraction.

3.3 Arc welding and brazing solder:

Important!

> The extremely bright arc during welding may cause serious injury to the eyes if appropriate protective measures are not taken.

- Use a welding screen suitable for the relevant welding method (metal active gas or metal inert gas).
- Separation of workbays with protective curtains.
- Use a welding-emissions extractor facility.
- Wear protective clothing and gloves suitable for welding (not combustible).
- A fire extinguisher must be located within reach of the welding area.
- Do not carry out any welding work in the proximity of a fuel tank e.g. when it is installed.
- Note national regulations.

3.4 Working with chemical products (adhesive, cleaning agents, fillers, etc.):

Heed the manufacturer's material safety data sheets.

Important!

> Handling chemical products may result in allergic skin and breathing reactions.

- Do not eat, drink or smoke while working with these products.
- Avoid direct contact with eyes and skin.
- Wear safety goggles, protective gloves and if necessary an apron.
- For good ventilation or direct extraction.
- Use a breathing apparatus with a suitable filter type when ventilation is insufficient.
- Wear impermeable protective clothing.
- Immediately change contaminated work clothing.
- After finishing work, thoroughly clean your hands and apply protective skin cream.
- Always keep an eye douche on hand, change the water regularly (once a month).
- Store bonding products in a secure cabinet only.

cardiagn.com

- Keep bonding products away from naked flames and other ignition sources.
- Protect bonding products against strong heat sources and direct sunlight.
- 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.

3.5 Working with carbon dust:

- Do not eat, drink or smoke while working with these products.
  After finishing work, thoroughly clean your hands. Use protective hand cream.
- Fire, smoking and naked flames are forbidden.
- Wear work clothes, safety shoes, safety goggles and protective gloves.
- Only carry out grinding and cutting work with explosion-proof extraction (BMWi only).
- Wear ear protectors.
- Wear a dust mask (minimum protection class FFP2).
- Avoid carbon dust contact with skin, eyes and clothing.
- Regularly clean the working area with a vacuum cleaner and wipe the surfaces with a damp cloth.
- Separate workbay by means of mobile partition walls or protective curtains.

cardiagn.com

00 Safety information for working on vehicles with automatic engine start-stop function (MSA)



Warning!

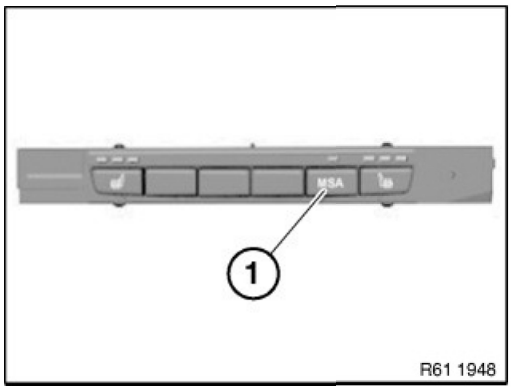
If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

An automatic engine start is possible.

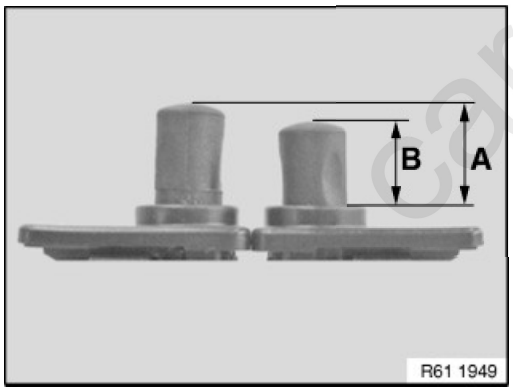
Observe safety precautions when working on MSA vehicles.

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



- 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.



When working with diagnosis tools:

- Observe instructions in diagnosis tool

cardiagn.com

Note:
For further information on automatic engine start-stop function (MSA):

- Refer to the Service Information (bulletin) (for manual transmissions) Service Information (bulletin) 61 01 07 335
- Refer to the Service Information (bulletin) (for automatic transmissions or twin-clutch gearboxes) Service Information (bulletin) 61 01 10 629

cardiagn.com

41 00 ... Safety instructions for handling magnets

Precautionary measures are necessary when handling magnets in order to exclude any potential danger.

If the distance between the magnets falls below the minimum distance, the magnets will be abruptly attracted to each other. The brittle magnets will then collide with each other at high speed.

Very sharp splinters (similar to glass splinters) may then be chipped off.

Crush or cut injuries may also be caused.

Observe the manufacturer's safety data sheets.

Warning!

- Danger of crush injuries
- Danger of injury due to splinters
- Danger of injury due to magnetic fields

Handling instructions

- Wear safety goggles and protective gloves.
- Persons with heart pacemakers must not use the magnets.
- Do not store any iron parts (tools, small parts) close to the magnets.
- Keep magnets away from magnetic data media (credit cards, memory cards).
- Do not machine the magnets.
- Keep the magnets away direct heat and naked flames.
- Do not eat, drink or smoke while working with these products.

cardiagn.com

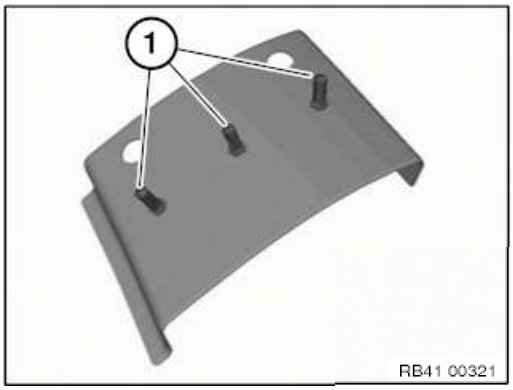
41 00 ... Separating cut determination with a template

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.

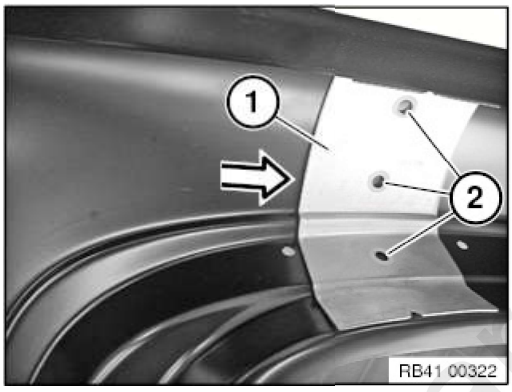
Carry over schematic diagram at the separation cut C-pillar to the relevant vehicle type.



Remove stud bolts (1).

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

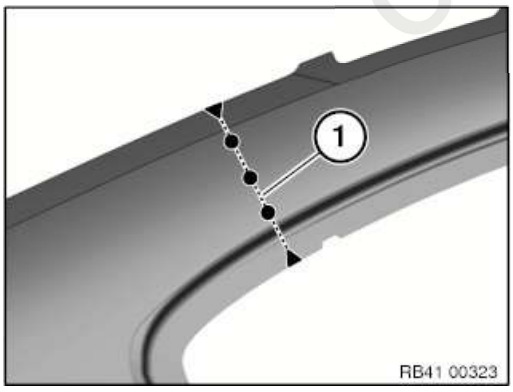
If applicable, place additional bore holes in the area of the edges.



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.



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.

cardiagn.com

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 (sourcing reference: BMW Parts Department).

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 (sourcing reference: BMW Parts Department). 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).

cardiagn.com

41 00 ... Soldering steel components

Attention!

Comply with the following topics from ”Body, General”:

Safety regulations.

Handling electrical system, electronics, airbags and restraint systems.

1. General information

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

2. Work materials

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

3. Preparation

- Remove the paint and zinc layer 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 connections:

- 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!

The European End-of-life Vehicles Act prohibits the use of leaded tin in vehicles introduced after 01.07.2003!

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

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.

cardiagn.com

41 00 ... Spot-weld bonding steel components

Important!

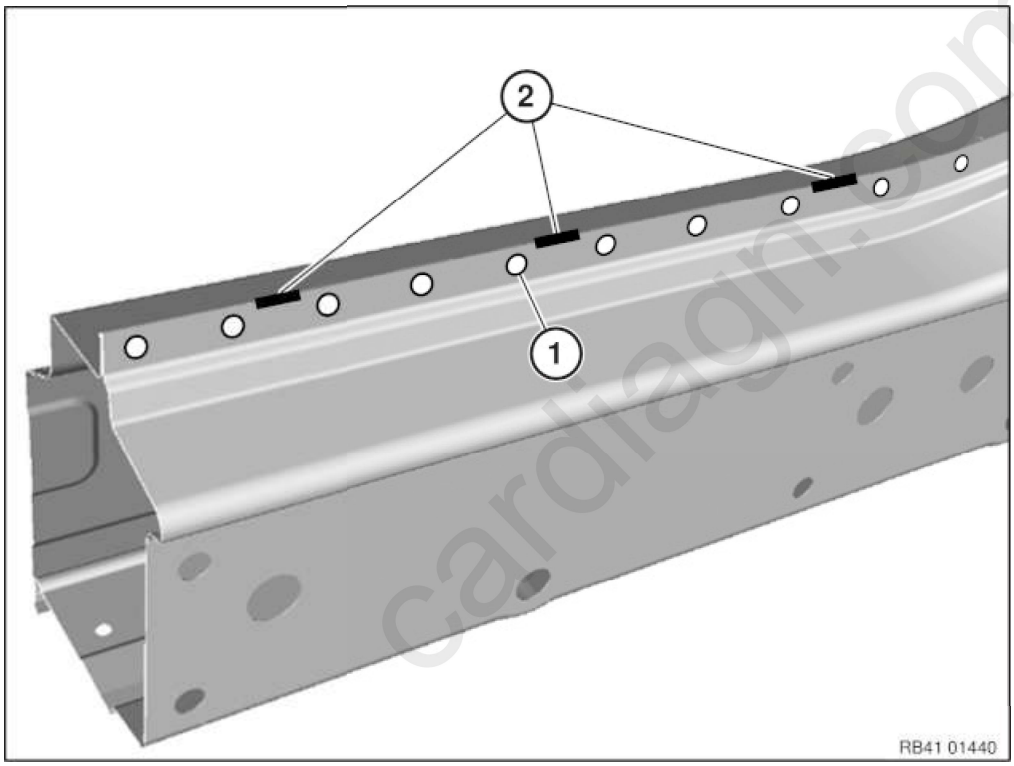
Comply with the following topics from ”Body, General”:

Safety regulations .

Handling electrical system, electronics, airbags and restraint systems.

Welding steel components.

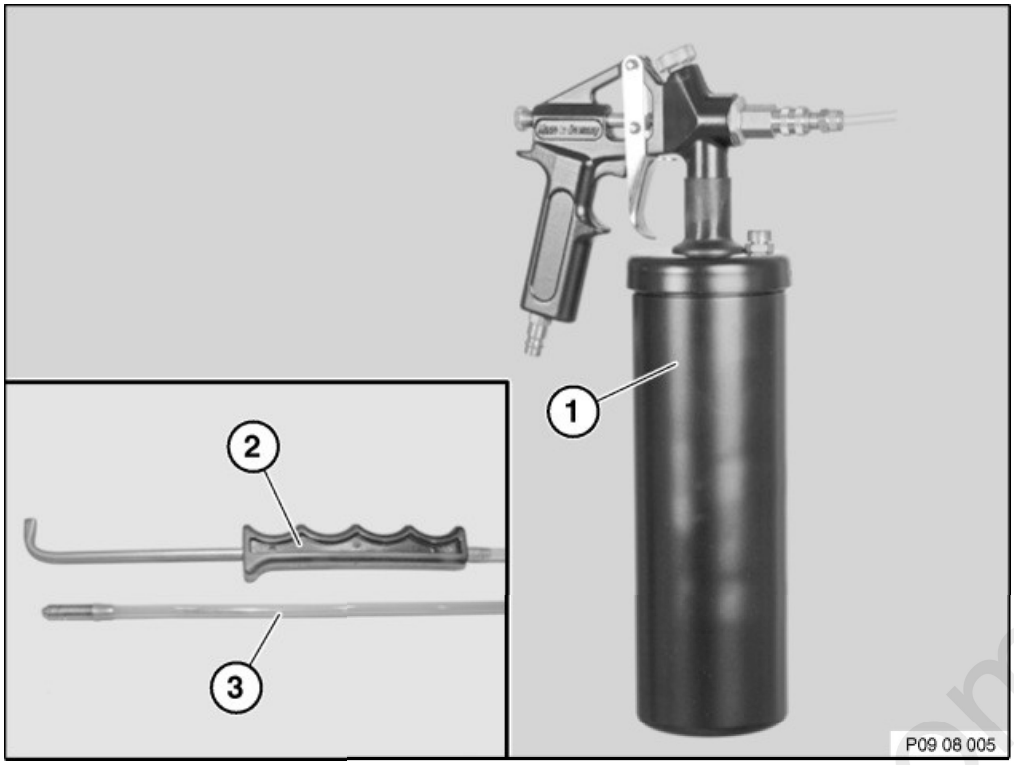
- Beginning with E65 the spot-weld bonding process is used to increase vehicle rigidity. In partial body areas, a 1-component adhesive is applied to the spot flanges and this is followed by resistance pressure spot welding. The adhesive is hardened only after the paint drying process (at approx. 180 °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.
- Minimum distance between welding spots (1) is 25 mm. Important! The minimum distance must not be undershot! If there is not enough space for twice the number of resistance weld points, each non-made resistance weld point must be replaced by a MAG weld seam (2). Length of a MAG weld seam = 20 mm. Set the MAG weld seams at equal intervals distributed on the face.



- The following procedures are used as a substitute for spot-weld bonding:
  - MAG welding (**M**etal **Ac**tive **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 plug 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.

cardiagn.com

41 00 ... Spray gun for cavity sealant



1.0 Delivery specification:

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

Important!
Prior to start-up read and familiarise yourself with the manufacturer's operating and safety instructions.

2.0 Start-up:

- Open the pressure reservoir and insert the cavity sealant in the form of a 1-litre can.
  Close the pressure reservoir.
- Connect the spray hose to the quick-release coupling.
- Connect the device to the compressed air supply.
  Operating pressure 2-6 bar, max. 8 bar!

3.0 Operating principle:

Note:
Unlike previous devices you can alter the spray pattern on this device with the air volume regulating screw (large knurled screw).

- Twisting the air volume regulating screw in decreases the air volume and thus reduces the formation of material mist.
  This facilitates optimum working when preserving open components/surfaces.

- Twisting the air volume regulating screw out increases the air volume and thus increases the formation of material mist. (For closed cavities)
- The trigger has two settings.
  1st setting - air discharge only.
  2nd setting - air and material discharge.
- After finishing work, press the first setting to clean the spray hose with compressed air.

cardiagn.com

- Prior to storing, remember to twist the air volume regulating screw closed to reduce the risk of the material drying out.
- Prior to an extended period of non-use (2 weeks and more), clean the gun.
- To ensure that the spray hoses function properly, do not store them coiled up e.g. in the side member area!
  Store the spray hoses stretched out.

4.0 Application examples:

- Use the appropriate spray hoses for the different types of cavity and surface.
- Example - doors, lids and hatches:
  Spray hose with angle nozzle. Reduce air volume to keep the formation of mist low.
- Example - side members:
  Long spray hose with round spray nozzle. The air volume must be increased a little, depending on the type used.
- Basically, keep the formation of mist low to avoid fouling and unpleasant odours.

5.0 Safety instructions:

- Do not inhale spray mist.
- Use in well ventilated rooms only.
- Operating pressure max. 8 bar.

cardiagn.com

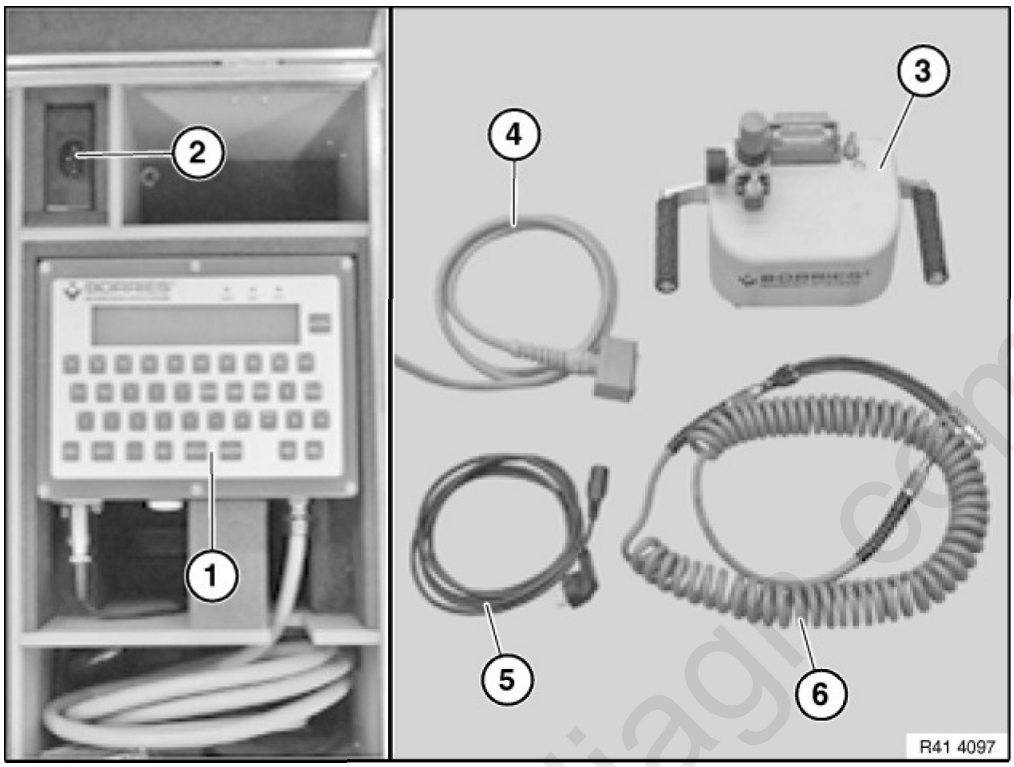
41 00 ... Stamping vehicle identification number (needle stamping unit)

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

- Sourcing reference:
  BMW Workshop Equipment Catalogue



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. 6 bar
- Use only dry, oil-free air

Procedure when stamping a substitute vehicle identification number

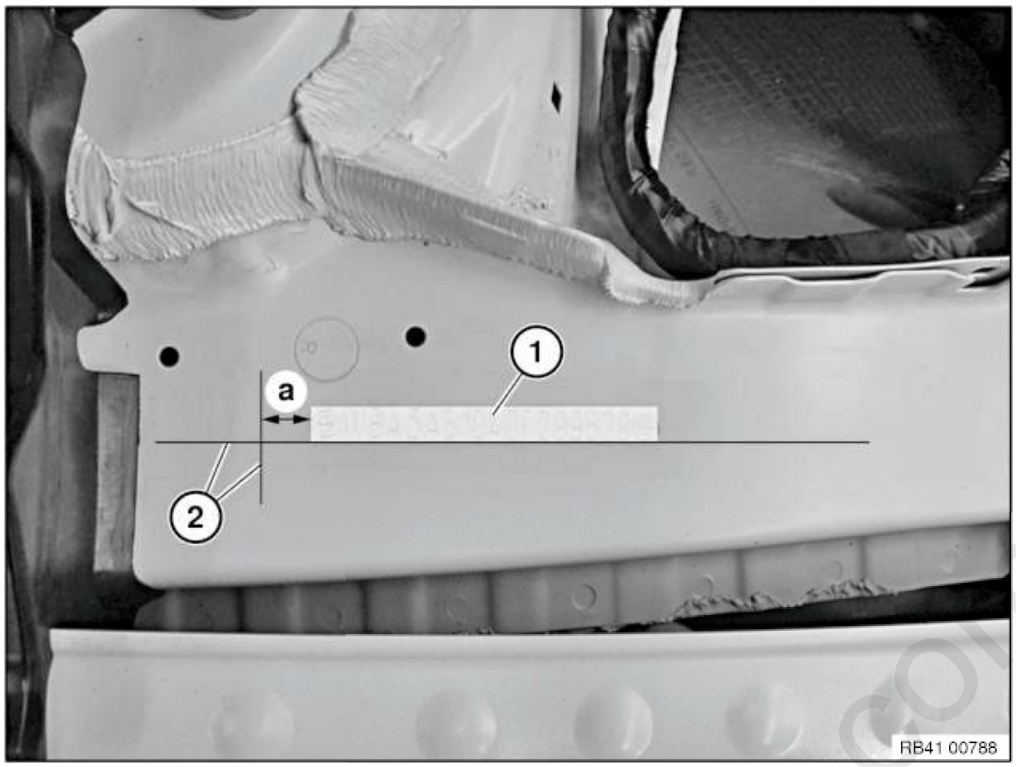
Note:
On this vehicle the substitute vehicle identification number is stamped below the original vehicle identification number.

Substitute vehicle identification number = line 1

Original vehicle identification number = line 2

cardiagn.com

(1) Cross through original vehicle identification number



(1) = original vehicle identification number (line 2).
Pull off protective film from vehicle identification number.
Mark position lines (2) according to schematic diagram.
Dimension a = 12 mm
Horizontal position line is directly against vehicle identification number.



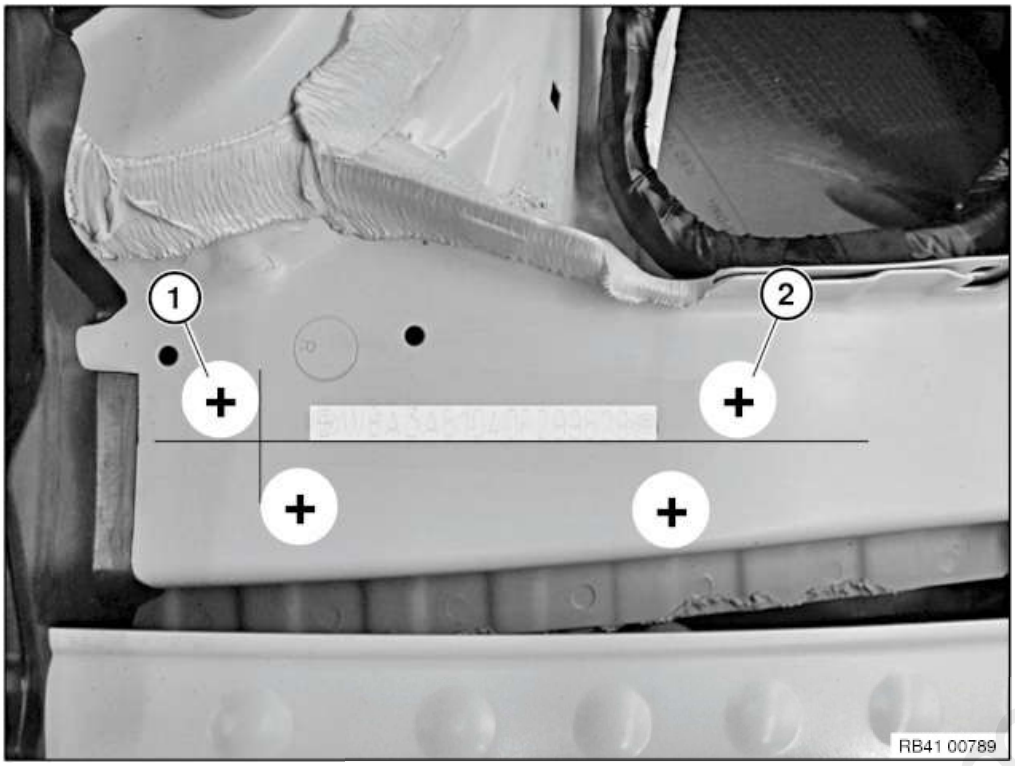
Display input:

- Select Layout 6 with arrow button.
- Enter vehicle identification number with F10.
- Press ”ENTER” button.

Note:
With Layout 6 the vehicle identification number (line 2) is crossed through.

Important!
Perform stamping operation with position lines in advance on a test sheet.

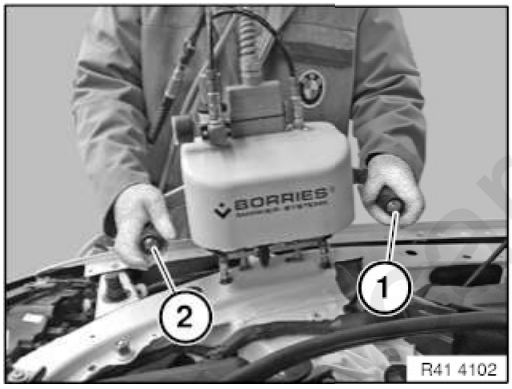
cardiagn.com



Note:
The contact surface for the suction cups of the needle imprint device must be dry and free of dust and grease!

Make sure the unit is resting securely in position. If necessary, adjust the height and position of the suction feet.

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



Press pushbutton (1) for vacuum pressure.

Then start stamping operation with pushbutton (2).

Graphic representation similar.

Important!

After completing the stamping operation, do not alter the position of the unit.

Do not switch off vacuum pressure.

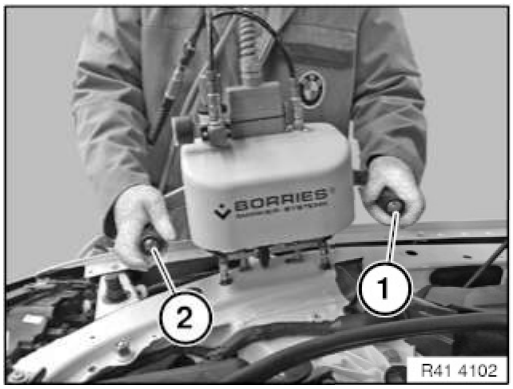
Stamping substitute vehicle identification number



Display input:

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

Note:
With Layout 1 the already entered substitute vehicle identification number is embossed in line 1.



Start stamping operation with pushbutton (2).

Following layout functions are available:

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

cardiagn.com

41 00 ... Straightening aluminium component on the outer skin

1.0 Prerequisites

The component must be replaced if there are cracks and it is neither possible to drill into the end of the crack, nor to weld it.

2.0 Recommended tools

- Only use tools specifically designed for aluminium repairs.
- Do not use tools and operating fluids that have already been used for steel repairs (e. g. grinding wheel). Danger of contact corrosion.
- Do not use any sharp-edged tools (notch effect).
- We recommend the "Alu Slimliner A (6106)" tool to repair minor and moderate body damage. Sourcing reference BMW Workshop Equipment Catalogue.

3.0 Straightening outer skin.

- ”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 requires special tools and trained employees.
- ”Hot” straightening: Heat the component in the damaged area with a hot air blower to approx. 60 °C. This significantly reduces the force that needs to be applied for straightening.
- Avoid notching and cracking.
- Avoid hardening and overstretching.
- Avoid heating and excess temperature the outer skin over large areas.

cardiagn.com

41 00 ... Straightening aluminium components in structure

- **Reshaping or heating extruded profiles 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 bonded 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 profiles 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 profiles are used in the E52 as engine supports, door posts, side members, etc.
  Extruded profiles 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 profiles and cast parts may only be used to achieve optimum joining of connection faces (e.g. when bulkhead is damaged). Reshaped parts must be replaced.
- Repairs which affect the attachment points of mechanical assemblies and chassis/suspension components must be carried out on the straightening bench. Use the vehicle-specific set of attachments set or vehicle-specific data sheet.
  Straightening attachment supports and data sheets are also available for the top section, e.g.: door posts, soft top mounts, cowl panel, tailgate hinges, etc.
- Check windscreen and rear window apertures for curvature by inserting the original glass.
- Take the gap dimensions for doors, engine compartment lid and tailgate 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 sealant.
  Observe the frame reference dimension for the carrier support.
  Any repairs to the bulkhead if cracked outside the approved scope of repair work are only permitted after consultation with and approval by BMW. Should you have any questions, please contact the country-specific Hotline.

cardiagn.com

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.

cardiagn.com

41 00 ... Straightening steel components on the outer skin

1.0 Recommended tools.

Only use those tools designed for steel repairs (sourcing reference BMW Workshop Equipment Catalogue).

2.0 Straightening outer skin.

- ”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 requires special tools and trained employees.
- In the event of damage that is only accessible from one side it is possible to use a dent removal system featuring welding.
- Avoid cracking.
- Avoid hardening and overstretching.
- Prevent overheating small areas of the outer skin.
- When the surface exhibits an unevenness no greater than 2 mm after straightening, putty compound can be used to even out the area (see Painting Handbook).
  Only applicable within the European Union!
  European used-vehicle regulations prohibit the use of tin containing lead in vehicles introduced after 01.07.2003!
- For high-security vehicle, note the special information in the repair instructions!

2.1 Straightening the wheel arch (rear side panel).

Vehicles in which the wheel arch is not welded but bonded and bordered can be straightened.

This is possible in the following situations:

- Rear side panel (wheel arch) is not torn in the area of the bonding. Welding in this area is not permissible.
- The outer skin has not become separated from the outer wheel arch section.

In general, the following applies:

When performing straightening work on the wheel arch, apply sealant to the inside. After straightening, the area must be primed and resealed with sealant D1. Protect from the inside using cavity preservation.

cardiagn.com

99 00 ... Touching up paintwork damage

These notes apply to paintwork damage on the body aperture that occurred when detaching bonded window glass.

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.

Ground down damage to paintwork on body aperture and touch up with BMW multibase filler.

Grind larger areas or damage down to the bare sheet metal and coat with BMW multibase filler (layer thickness 30 to 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!

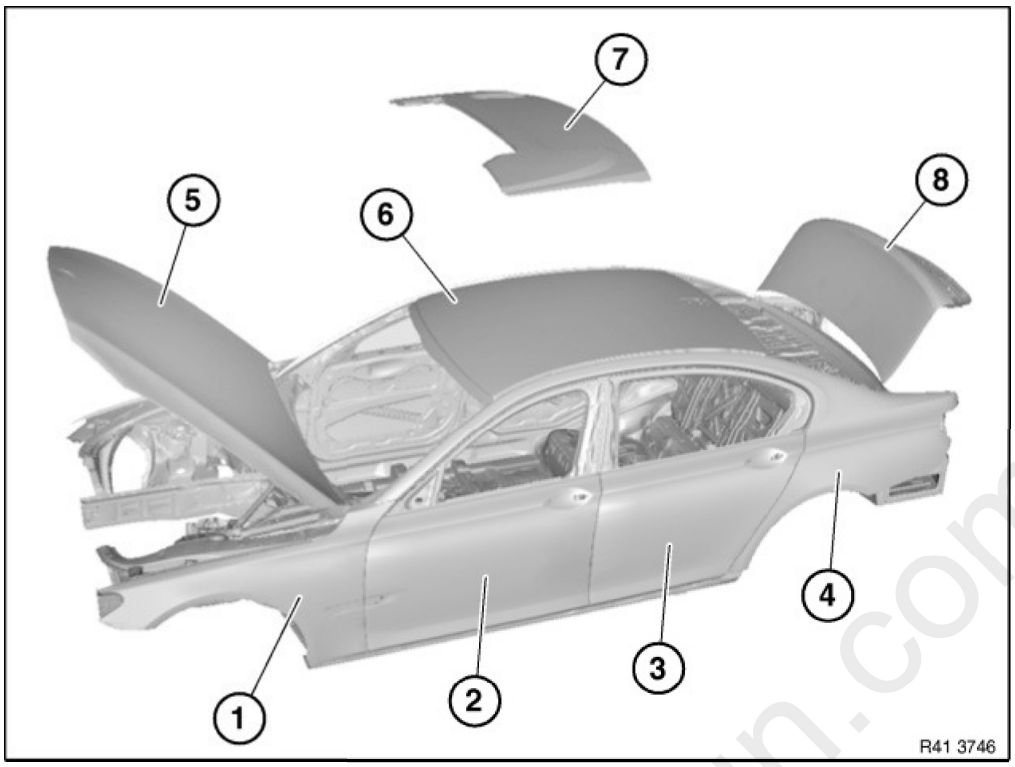
cardiagn.com

41 00 ... Use of materials in outer skin

Â

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

Apply this illustration to the relevant vehicle.



Component	Vehicle	Material
(1) Side wall, front	F01, F02, F04, F10, F11, F18, F80, F82, F83	Aluminium
	F06, F12, F13, F15, F16	Plastic
	F20, F21, F22, F23, F25, F26, F30, F31, F32, F33, F34, F35, F36	Steel
(2) Door, front	F01, F02, F04, F06, F07, F10, F11, F12, F13, F18	Aluminium
	F20, F21, F22, F23, F25, F26, F30, F31, F32, F33, F34, F35, F36, F80, F82, F83	Steel
(3) Door, rear	F01, F02, F04, F06, F07, F10, F11, F18	Aluminium
	F20, F25, F26, F30, F31, F34, F35, F36	Steel
(5) Engine compartment lid	F01, F02, F04, F06, F07, F10, F11, F12, F13, F15, F16, F18, F80, F82, F83	Aluminium
	F20, F21, F22, F23, F25, F26, F30, F31, F32, F33, F34, F35, F36	Steel
(6) Hardtop/ roof	F01, F02, F04	Aluminium
	F06, F07, F10, F11, F13, F15, F16, F18, F20, F21, F22, F25, F26, F30, F31, F32, F33, F34, F35, F36	Steel
	F82	Carbon
(7) Soft top compartment lid	F12	Plastic
	F23, F33	Steel
(8) Tailgate	F07	Aluminium
	F06, F12, F13, F82	Plastic
	F01, F02, F04, F10, F11, F15, F16, F18, F20, F21, F22, F23, F25, F26, F30, F31, F32, F33, F34, F35, F36, F80	Steel

cardiagn.com

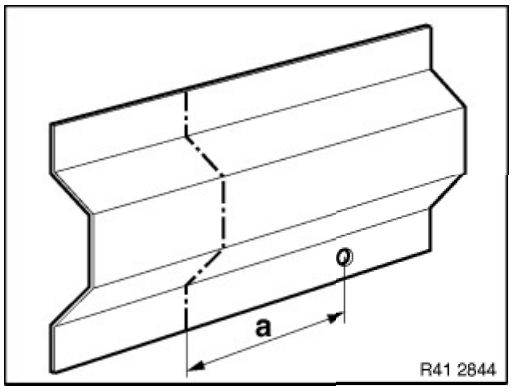
41 00 ... Welding in reinforcement plate (sheet steel)

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

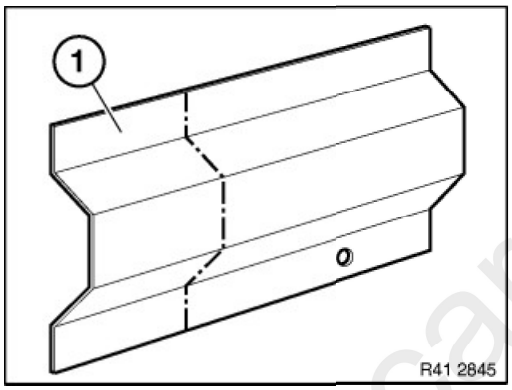
A reinforcement plate is welded in to ensure sufficient strength.

Follow notes for welding steel components.

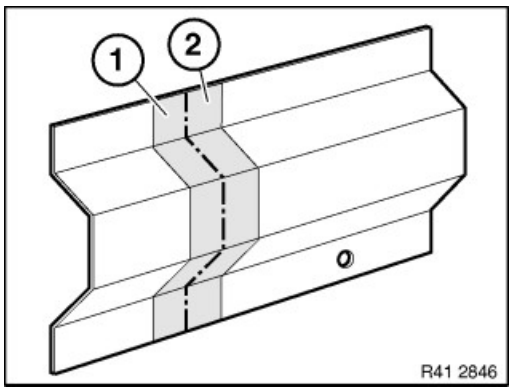
Note:
The following graphics serve as general illustrations of reinforcement plate repair work. They are applicable to all sectional repairs.



Mark component in accordance with dimension A and cut.



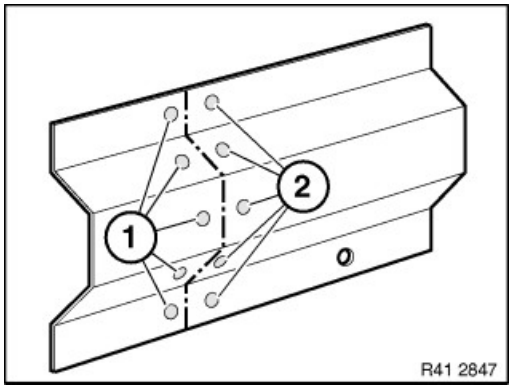
Cut new part (1) in accordance with cut and if necessary adjust to fit with alignment bracket or universal mount.*Installation note:*
Maintain a distance of approximately one to no more than two material thicknesses at the severance cut to ensure welding with the reinforcement metal and enable more tolerant adjustment.



Clean inner and outer sides of connection faces (1) on new part and (2) on body.

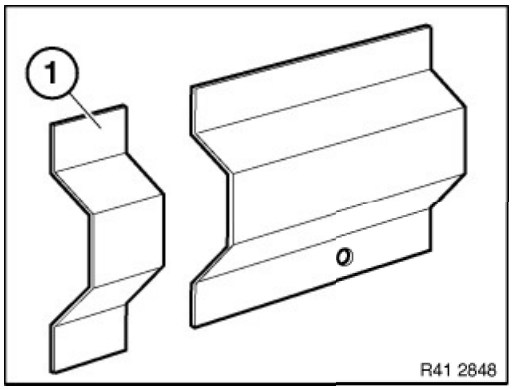
Coat insides with welding primer.

cardiagn.com



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

Hole diameter approx. 8 mm.

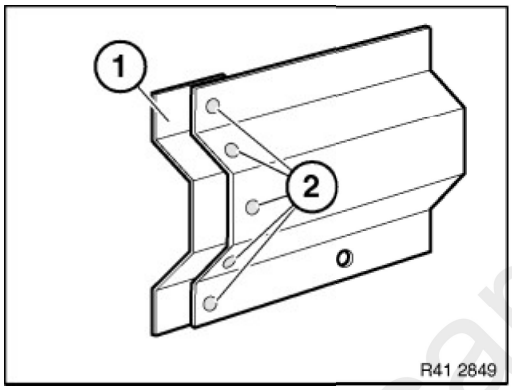


Make reinforcement plate (1) from trim of new part.

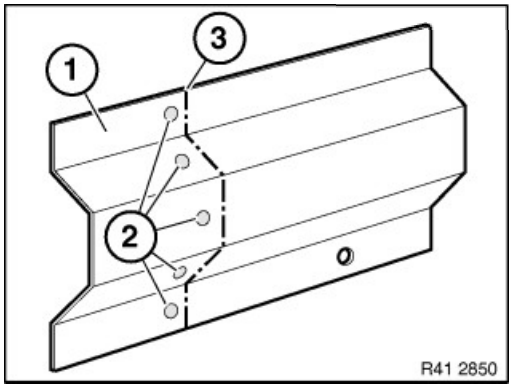
If applicable, produce more reinforcement plates.

Length of reinforcement plates is min. 40 mm.

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



Push reinforcement plate (1) into component on body up to half way and plug-weld (2).



If applicable, adjust the new part (1) with the alignment bracket or universal tool and plug-weld (2)

MAG weld the joint (3).

Grind and clean weld seam and plug weld spots.

Only visible areas of the outer skin and on the carrier support 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-vehicle regulations prohibit the use of tin containing lead in motor vehicles introduced after 01.07.2003!

cardiagn.com

41 00 ... Welding steel components

Important!

Comply with the following topics from ”Body, General”:

Safety regulations.

Handling electrical system, electronics, airbags and restraint systems.

1. General information

- The following procedures are used for repairs:
  - MAG welding (**M**etal **Ac**tive **G**as welding)
  - Resistance pressure spot welding (referred to in the following and in the repair instructions as spot welding).
- Take the number and position of welding spots and MAG weld seams from the separated part. Replace areas inaccessible to spot-welding tongs with MAG plug weldings at the same distance. Diameter of bore holes for plug weldings 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 welder (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).
  - Safety 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 layer underneath must be removed during the MAG welding method.
  - It is not necessary to remove the zinc layer 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 sheet metal.
- 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 sheet 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 distance between welding spots 25 mm.

5. Subsequent treatment of welded connections:

- When grinding a weld seam, do not grind thin the base material next to the seam.

cardiagn.com

- After joining, clean all weld seams and spots with a stainless steel wire brush.
- Remove burnt paint with a stainless steel wire brush.
- All welded connections sealed off with body sealing compound in original condition must be primed and sealed off again thoroughly after repairing. Replace damaged or removed anti-drumming layers.

cardiagn.com

41 00 ... Working with 2-component PU cavity foam

Sourcing reference for cavity foam, refer to BMW Parts Service.

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.
  Sourcing reference: BMW Parts Service.
  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.

bardian.com

41 00 ... Workshop equipment (BMW and MINI vehicles)

Minimum requirements for workshop equipment to guarantee professional body repairs:

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

Repair stage 1a:

Tool*	Sourcing reference	Screwed parts (steel or plastic)	Screwed parts (aluminium)
Body tool trolley	81 64 2 153 204 or 81 64 2 410 578	x	x
Drill	conventional Span width 0 to min. 10 mm	x	x
Blind riveting tongs	81 43 0 301 744	x	x
Manual riveting machine for blind rivet nuts	81 43 2 155 739 (up to M12) or 81 43 9 429 204 (up to M8)	x	x

Repair stage 1b:

Tool*	Sourcing reference	Screwed parts (steel or plastic)	Screwed parts (aluminium)
Aluminium bodywork tool assortment	81642336755		x
Pressure cup spray gun for cavity preservation	81452148795	x	x
Drill	conventional Span width 0 to min. 10 mm	x	x
Blind riveting tongs Electrical or pneumatic With rivet head extension	81430301744 with extension 81432158706 or 81432159003	x	x
Manual riveting machine for blind rivet nuts	81432155739 (up to M12) or 81439429204 (up to M8)	x	x

Repair stage 2:

		Steel		Aluminium	
Tool*	Sourcing reference	Structure	Outer skin	Structure	Outer skin
Body tool trolley accessory set	81642334947	x	x		
Bodywork saw	81432156415 or 81432410594	x	x		
Belt sander	81432236488 (230V) or 81432333873 (100-115V)	x	x	x	x
Single-handed grinder	81430303336	x	x	x	x
Welding spot remover	81439428600	x	x		
Punch riveting tool	8132158708	x	x	x	

cardiagn.com

MAG welding apparatus	conventional	x	x		
Cartridge gun for adhesives		x	x	x	x
Infrared heater	81442211107 (220V) or 81452211615 (110V)		x		
Thermometer	81312211265		x		

In addition, the repair stage 1 tools are required.

Repair stage 3:

	Steel		Aluminium	
Tool*	**Structure**	**Outer skin**	**Structure**	**Outer skin**
Spot welding apparatus	x	x		
Straightening system	x		x	
Stud welding apparatus	x		x	
Flame coating set			x	
MIG welding apparatus			x (E52 only)	

In addition, the repair stage 1 and 2 tools are required.

*Sourcing reference BMW Workshop Equipment Catalogue

Attention!

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 an accident). In the end, this can result in safety and product liability risks which cannot 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 lose its recommendation as soon as tests with materials and material combinations designated for future use in BMW Group vehicles return negative results (see Table Group 1). All previous application before the withdrawal of the recommendation shall remain unaffected.

	Device designation	Manufacturer
Group 1 Devices currently *no* longer recommended	CR500	CAR-O-LINER
	Spot9000	Tecna
	ATL 400V	Wieländer&Schill
	MIDIspot QSVM12000T	CAR-O-LINER
	MIDIspot QSVM12000T	Elmatech
	MIDIspot QSVM9000	CELETTE
	MIDIspot QSVM9000	Elmatech
	CR600 QSM	CAR-O-LINER

cardiagn.com

Group 2 Devices currently *recommended*	Multispot MI-100 Control	Elektron
	Inverta Spot GT BM	Wieländer&Schill
	3664 BM	Tecna
	CTR12000T	CAR-O-LINER

Application options and restrictions of above devices.

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

Note:

As at May 2016

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

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

cardiagn.com

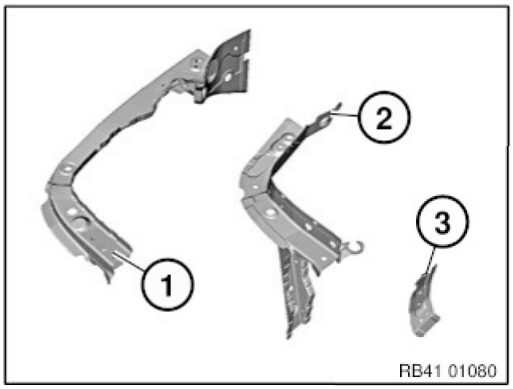
41 11 205 Completely replacing left carrier support

When replacing the right carrier support, follow the special procedure concerning the vehicle identification number. (order new body part with vehicle identification number if necessary)

Read contents of Body, General.

Follow procedure for repair stage 2.

Strip down vehicle.



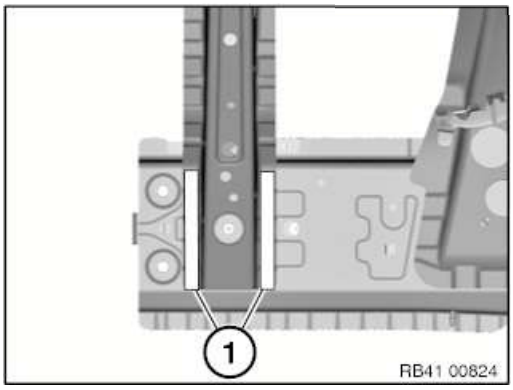
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Carrier support, outer wheel arch section
- (2) Wheel arch inner section support member
- (3) Carrier support end plate

Following consumables are required:

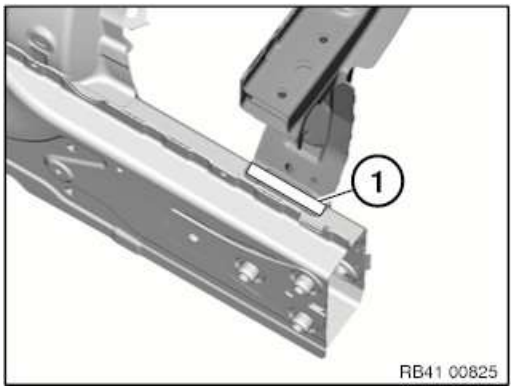
Material	Quantity
Adhesive K1	1
Blind rivet N1	4
Blind rivet N7	5
Punch rivets N5	56
Sealant D1	1
Cleaning agent R1	1

Removal:

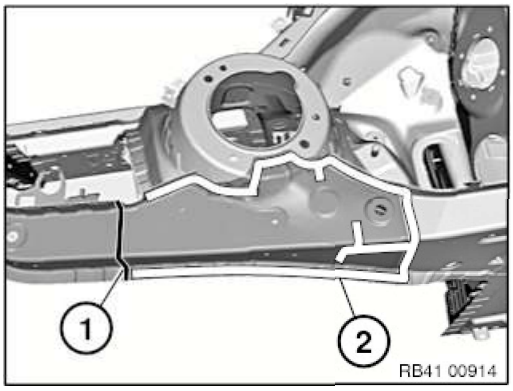


Open welded connections in areas (1).

cardiagn.com

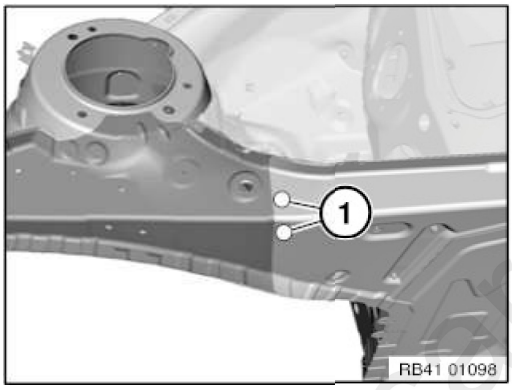


Open weld joint in area (1).



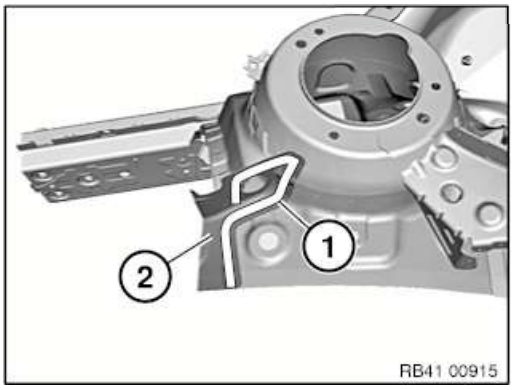
Mark severance cut (1) as pictured and cut off carrier support.

Open weld connections in area (2) and remove outer part of carrier support.



Note:
Concealed welding spots!

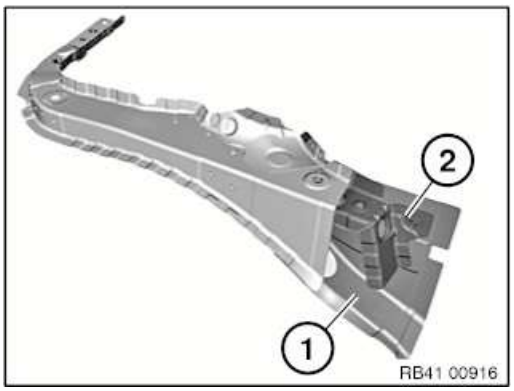
In areas (1), undo welded connections for both external panels.



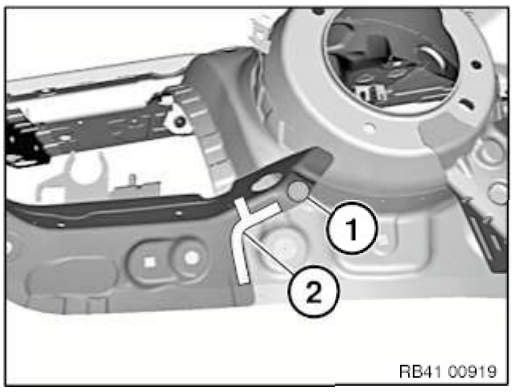
Release welded connections in area (1) and remove sheet section (2).

Preparation of new part:

cardiagn.com



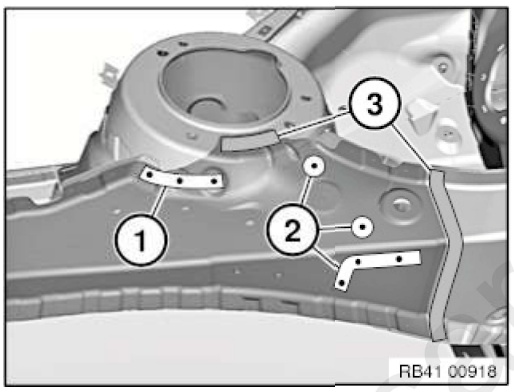
Release welded connections and take off components (1) and (2) that are not required.



Adjust new parts with add-on parts to fit and secure.

Areas (1) and (2): join using bond-and-rivet method.

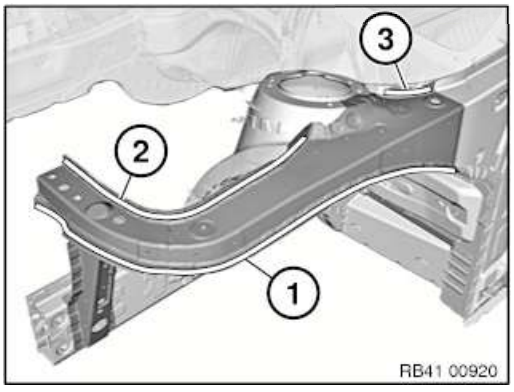
In area (1), drill a 6.8 mm dia. bore hole for blind rivet N1.



Areas (1) and (2): join using bond-and-rivet method.

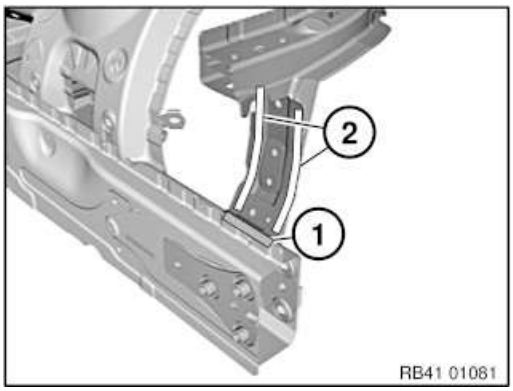
In areas (1) and (2), set 8 6.8 mm diameter bore holes for blind rivets.

Prepare areas (3) for joints by welding.



Areas (1) to (3): join using bond-and-rivet method. (punch rivets)

cardiagn.com



In area (1), prepare new part/engine support for plug-welding.
Area (2): join using bond-and-rivet method.
Remove new parts.

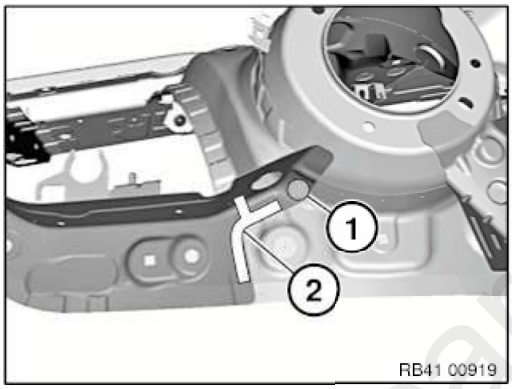
Attention!

Structure bonding!

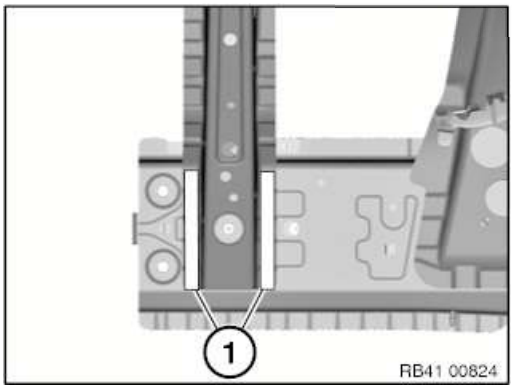
Observe preparation of bonding surfaces.

Installation:

Clean all bonding surfaces with cleaning agent R1.
Apply adhesive to bonding surfaces.
Install and secure inside part of carrier support (new part) with add-on parts.

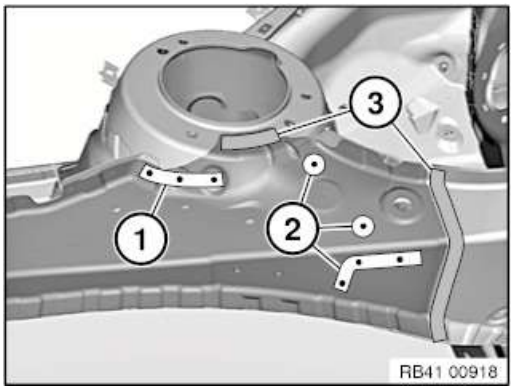


In area (1), rivet new part with blind rivet N1.
In area (2) rivet new part with 4 punch rivets N5.



In areas (1) weld new part.

cardiagn.com



Install and secure outside part of carrier support (new part).

In areas (1) and (2), rivet new part with blind rivets .

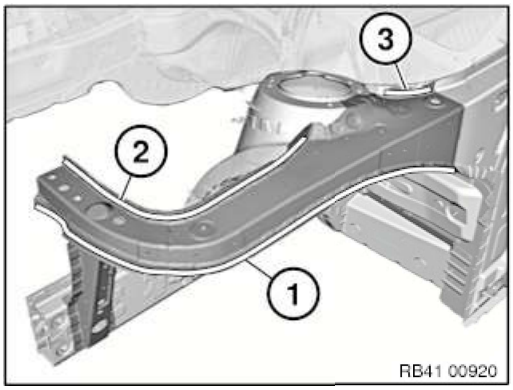
Area	Remarks
1	N1
2	N7

In areas (3) weld new part.

Attention!

Risk of damage!

Avoid excessive application of heat to adjacent adhesive areas.

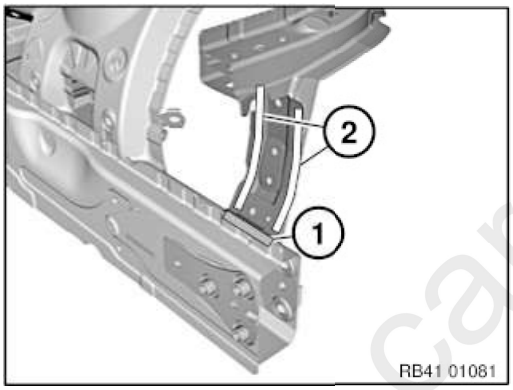


In areas (1) to (3), rivet new part with punch rivets N5.

Area	Number
1	22
2	15
3	3

Note:

Do not seal new parts in adhesive rivet areas (1) and (2). (Field of view)



Install and secure carrier support end plate.

In areas (2), rivet new part with 12 punch rivets N5.

Weld new part in area (1).

Attention!

Risk of damage to adhesive area!

Avoid applying excessive heat to the neighbouring adhesive areas!

Note:

Do not seal new parts in the area of the adhesive riveting. (Field of view)

Remove excess adhesive.

Do not use any cleaning agents containing solvents.

cardiagn.com

41 11 092 Replacing engine support in front of bulkhead on right



Operation is identical to replacing engine support in front of left bulkhead.

cardiagn.com

41 11 091 Replacing engine support in front of bulkhead, left

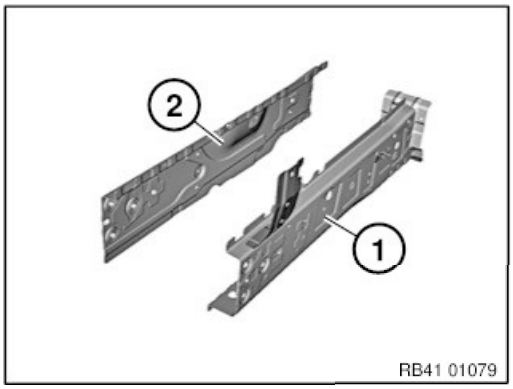
Observe procedure of repair stage 3.

Read contents of Body, General.

For stripping and rigging operations, refer to surrounding text on KSD (FRU number 41 11 091).

Use only an approved spot-welding apparatus for repairs!

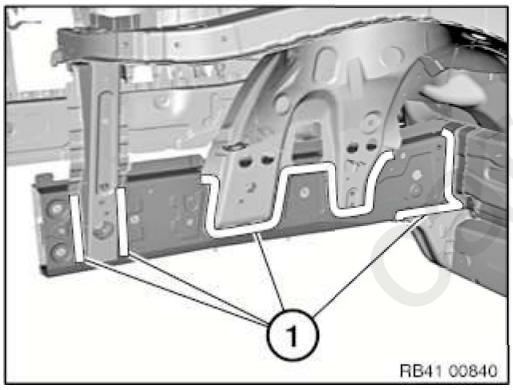
Place vehicle on straightening bench.



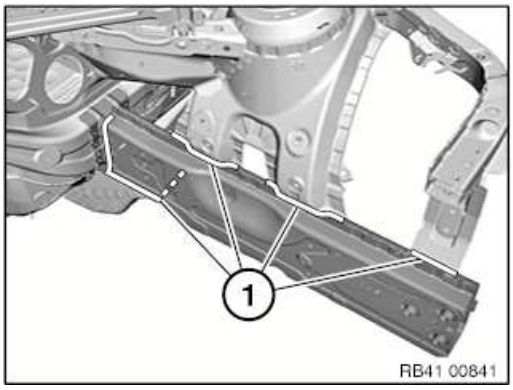
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Engine support, outer left
- (2) Engine support, inner left

Removal

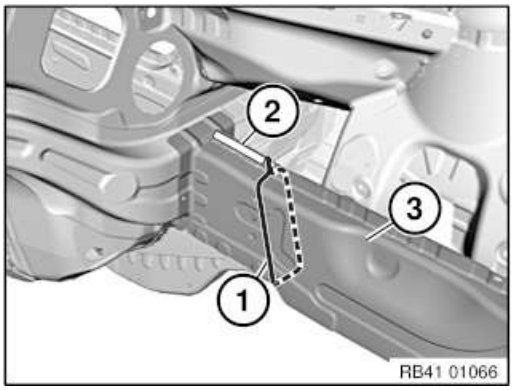


Open welded connections in areas (1).



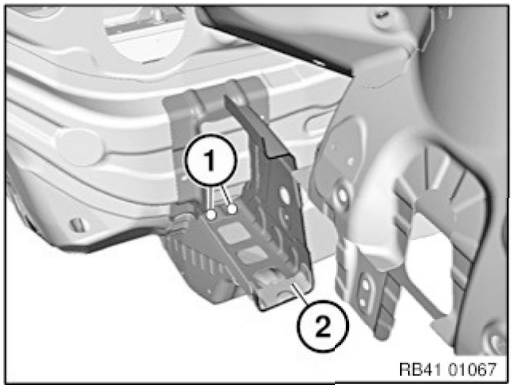
Open welded connections in areas (1).

cardiagn.com



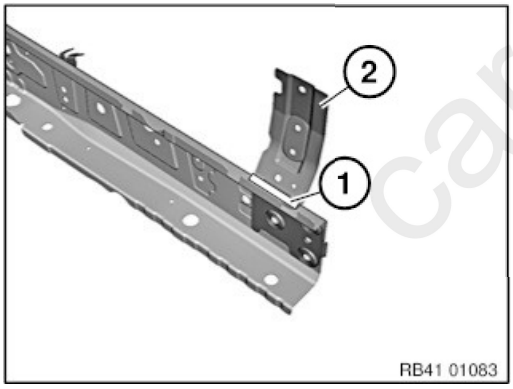
Roughly mark severance cut (1) as pictured and cut.

Open welded connections in area (2) and remove engine support (3).

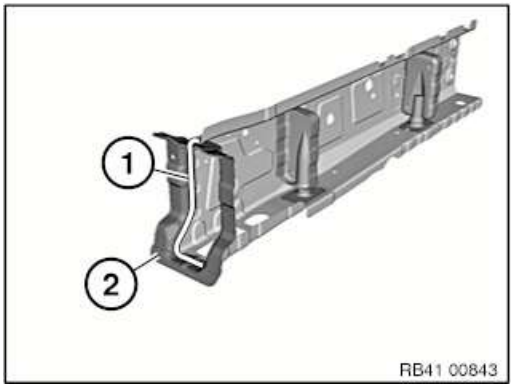


Open welded connections in areas (1) by grinding and remove residual section of engine support (2).

New part preparation

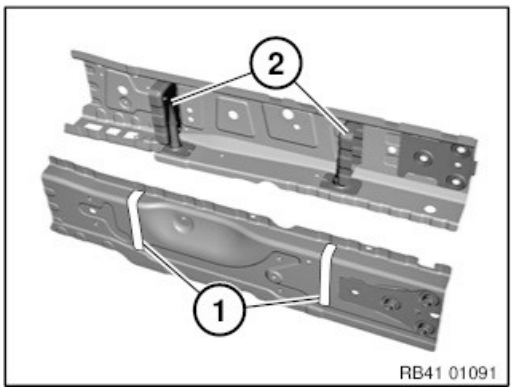


Open welded connections (1) and remove component (2) which is not required.



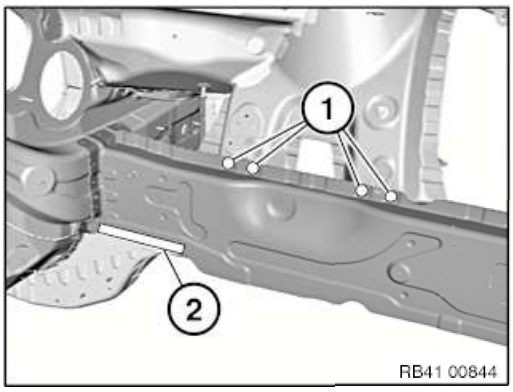
Release welded connections (1) and remove adapter plate (2).

cardiagn.com



Set bore holes for welding the reinforcements (2) in areas (1).

Refer to series part for number and position and transfer to new part.



Adjust new parts to fit with alignment bracket or universal mounting.

Note:
Three-sheet connection in areas (1) and (2)!

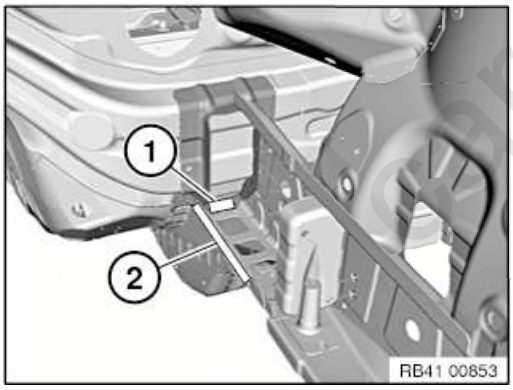
All three panels must be welded in these areas (1) and (2)!

Prepare new parts and vehicle accordingly.

Prepare new parts in all joint areas for joining by welding.

Remove new parts and deburr bore holes.

Installation



Install the outer engine support section including alignment bracket or universal fixture and weld in these areas (1) and (2).

Install engine support inner part. Weld new part.

cardiagn.com

41 11 095 Replacing engine support in front of wheel arch, left

Follow procedure for repair stage 3.

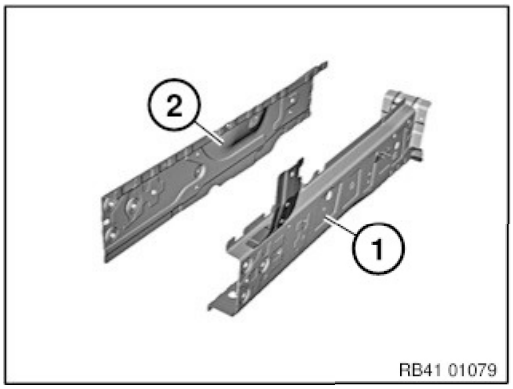
Read contents of Body, General.

Strip down vehicle.

For stripping and rebuilding operations, refer to surrounding texts on KSD (flat rate unit number 41 11 095).

Use only approved spot-welding equipment for repairs!

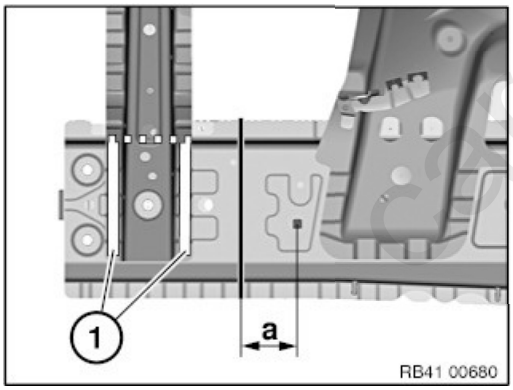
Place vehicle on straightening bench.



Following new body parts are required (see Electronic Parts Catalogue):

- (1) Engine support, outer
- (2) Engine support, inner

Removal



Mark severance cut in accordance with Dimension a and cut.

Attention!

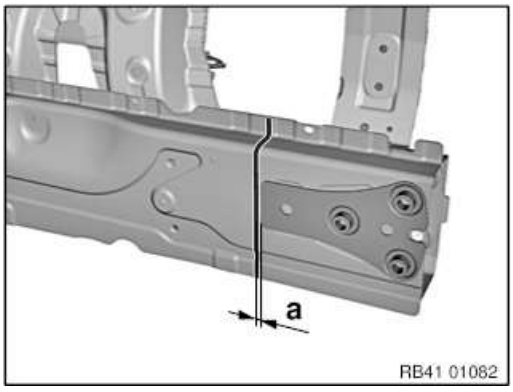
Offset severance cuts!

Cut outer metal panel only.

Dimension a = approx. 63 mm before centre point of 9 x 9 mm dia. hole.

Severance cut path is carried out through 7 mm diameter hole.

Open welded connections in areas (1).



View of inside:

Mark severance cut in accordance with Dimension a and cut.

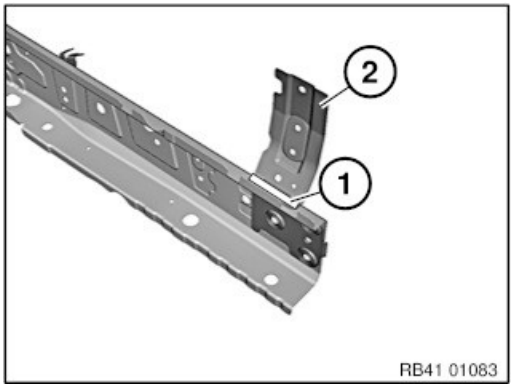
Attention!

Cut outer metal panel only.

Dimension a = approx. 5 mm from component edge of reinforcement plate.

Remove section of engine support.

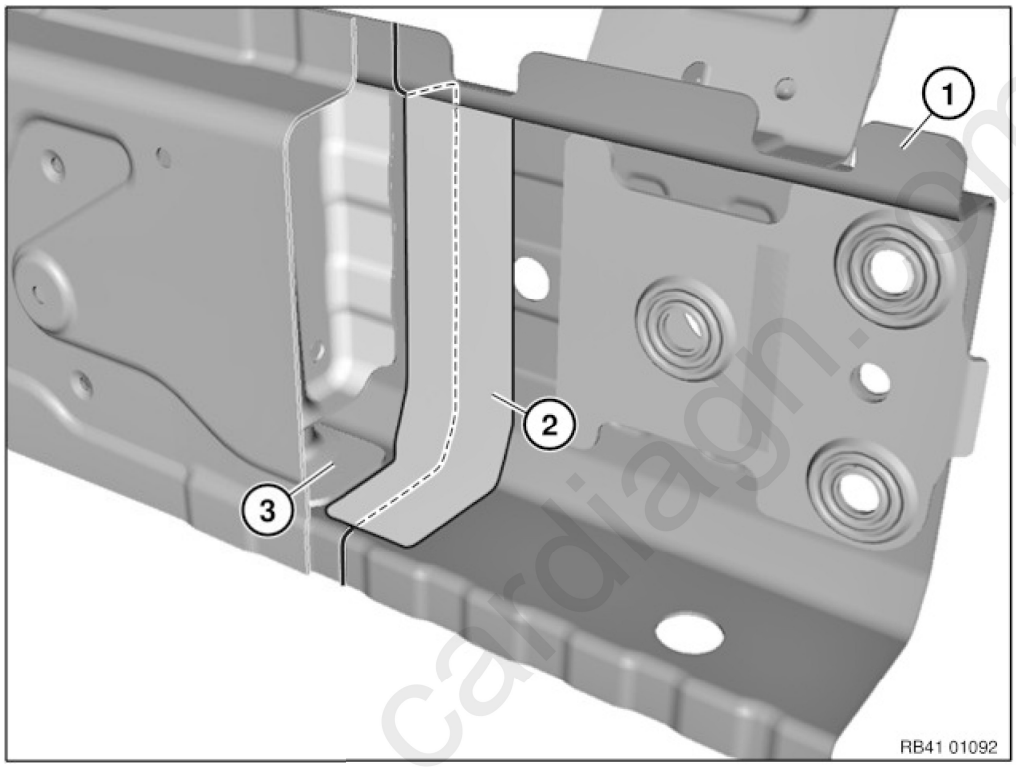
New part preparation



Open welded connections (1) and remove component (2) which is not required.

Mark severance cuts on new parts according to severance cuts on vehicle and sever.

Adjust new parts to fit with alignment bracket or universal mounting.



Adjust engine support outer section (1) to alignment bracket or universal fixture and fix in position.

Adjust reinforcement plate (2) for engine support outer section (1) according to schematic diagram.

Remove engine support outer section.

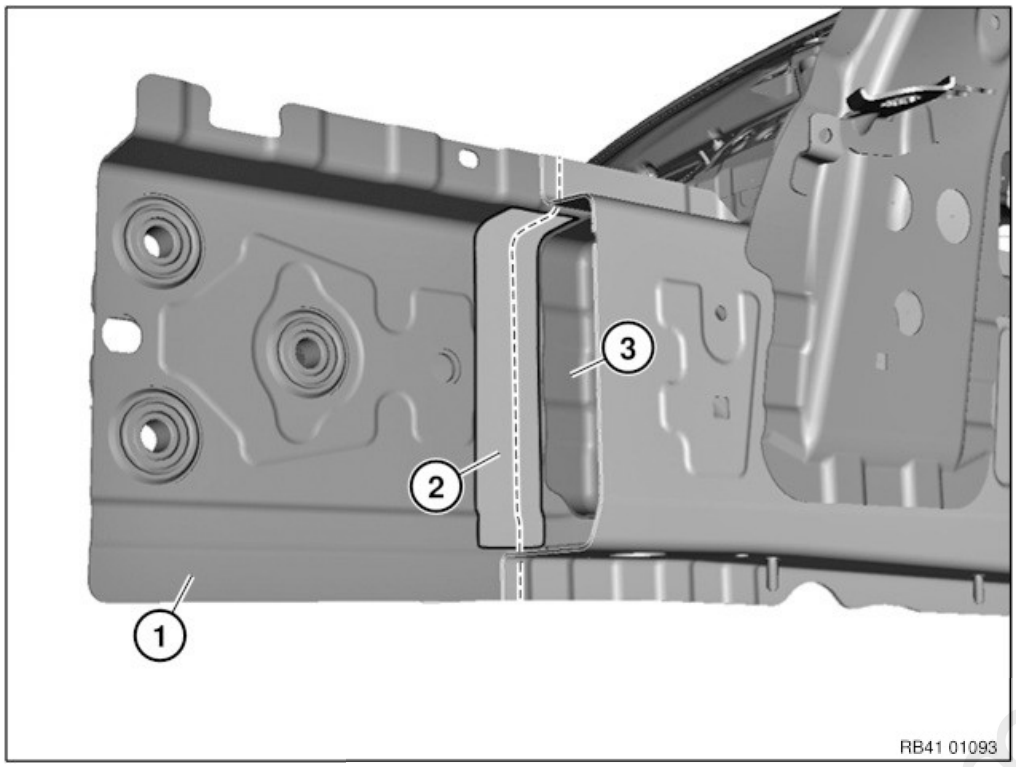
Attention!
Reinforcement plate must be adjusted in area of axle support (3).

Different procedure: Reinforcement plate is welded from inside during installation.

Bore hole for welding the reinforcement plate from outside are therefore not required.

Alignment bracket not shown for purposes of clarity.

cardiagn.com



Adjust engine support inner section (1) to alignment bracket or universal fixture and fix in position.

Adjust reinforcement plate (2) for engine support inner section (1) according to schematic diagram.

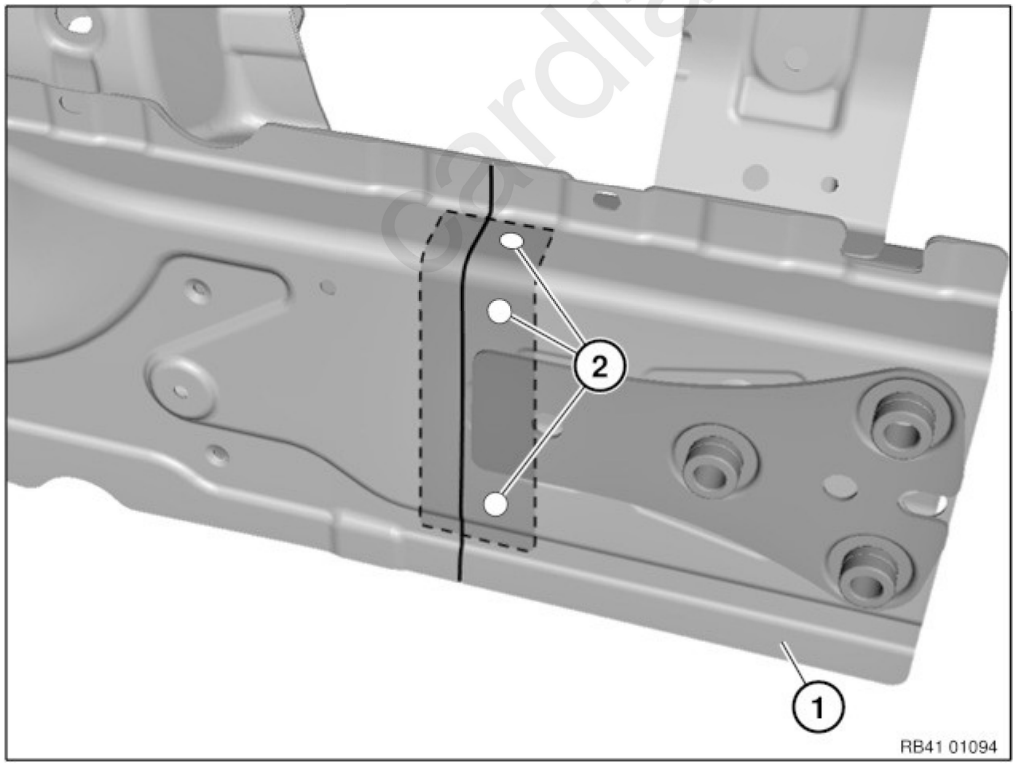
Attention!
Reinforcement plate (2) must be adjusted in area of axle support (3).

Reinforcement plate is welded from inside to outside during installation.

Bore hole for welding the reinforcement plate from outside are therefore only required in the front area.

See the following figure.

Alignment bracket and carrier support not shown for purposes of clarity.

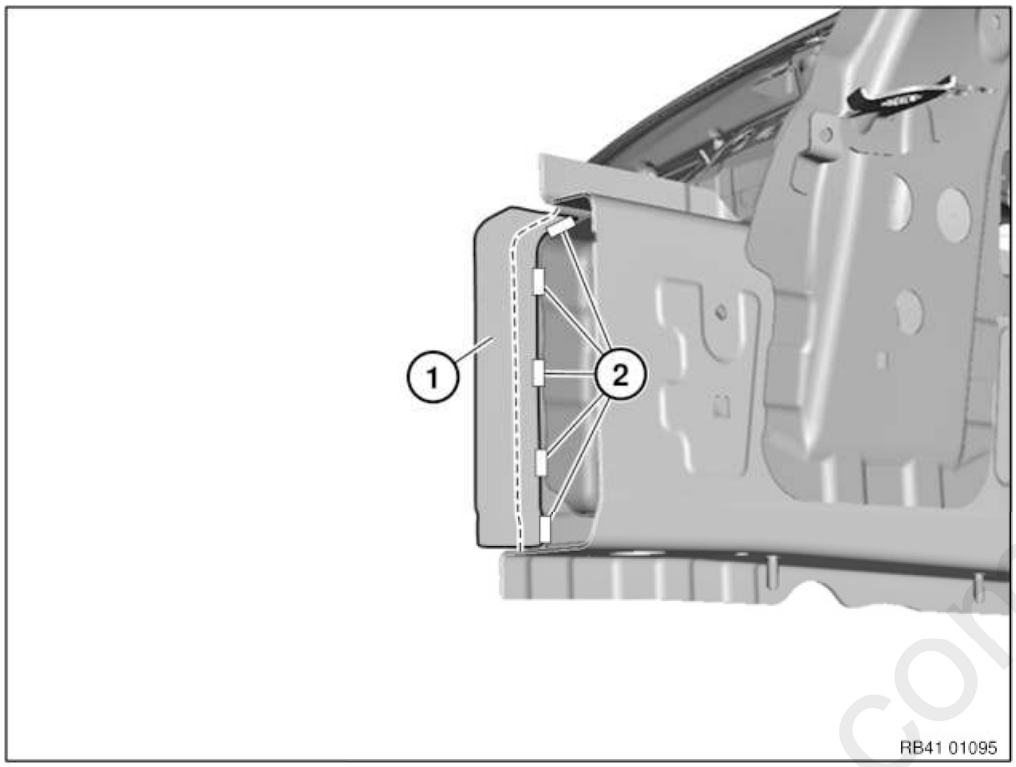


In areas (2), set bore holes for plug welding.

Remove engine support inner section (1).

cardiagn.com

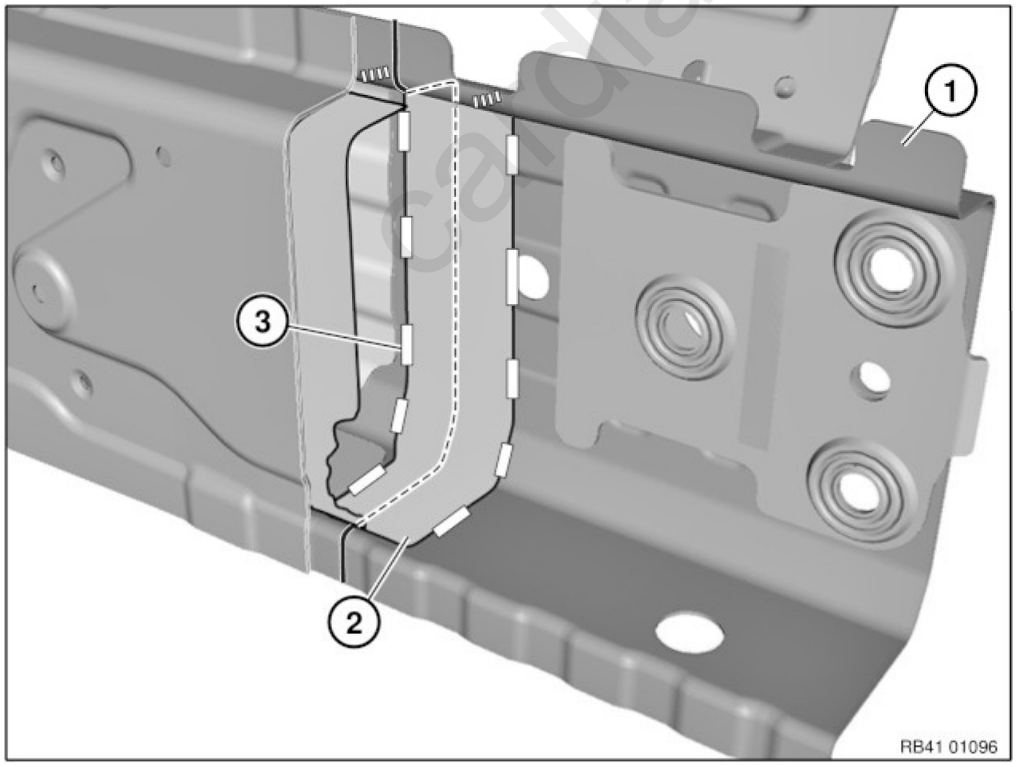
Installation



Install the reinforcement plate (1) for the engine support inner section and weld to the axle support.

For this purpose, in areas (2) set MAG weld seams with a length of 10 - 15 mm.

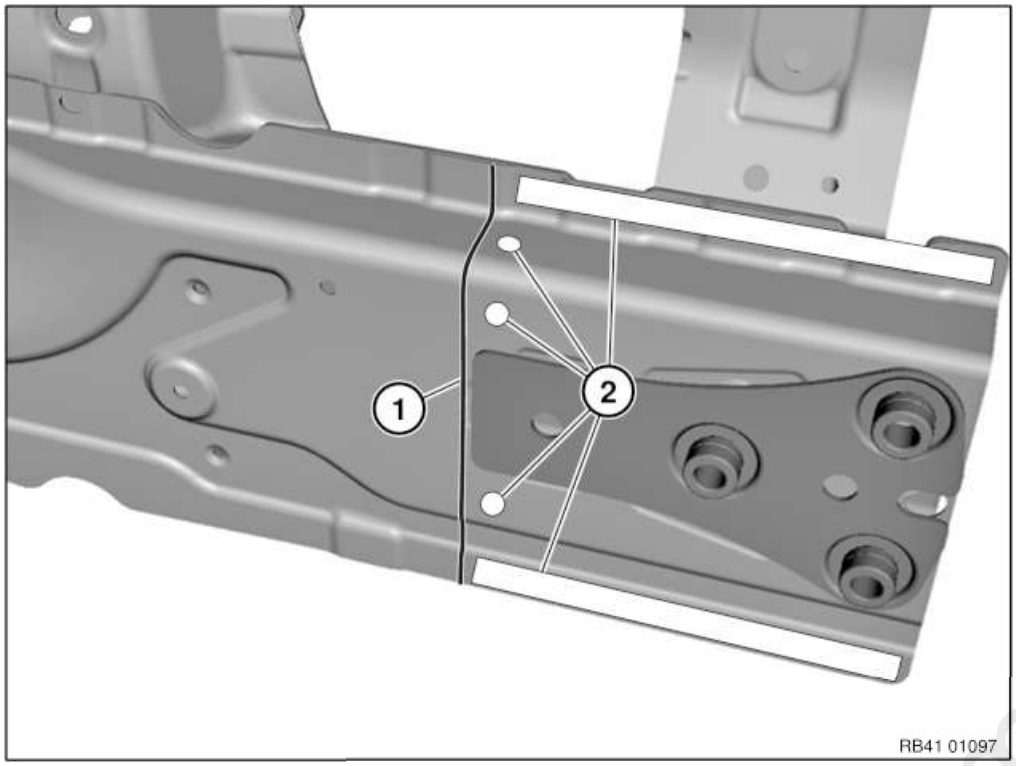
Note:
Alignment bracket and engine support inner section not shown for purposes of clarity.



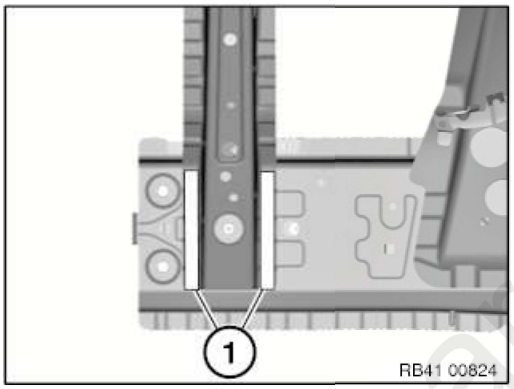
Install engine support outer section (1) and reinforcement plate (2) with alignment bracket or universal fixture and weld.

For this purpose, apply a 10 - 15 mm long metal active gas weld seam in this area (3).

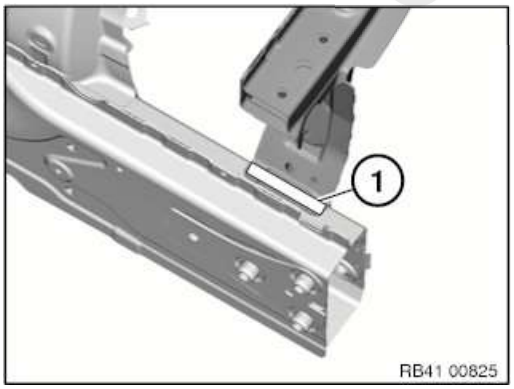
Note:
Alignment bracket not shown for purposes of clarity.



Install engine support inner section with alignment bracket or universal fixture and weld in areas (1) and (2). Note: Alignment bracket not shown for purposes of clarity.



In areas (1) weld new part.



Weld new part in area (1).

cardiagn.com

41 11 072 Replacing engine support with front right wheel arch in front of bulkhead



Observe special procedure for vehicle identification number (order body new part with vehicle identification number if required).



Work is identical to replacing the " engine support in front of the bulkhead with the left wheel arch".

cardiagn.com

41 11 071 Replacing engine support with left wheel arch in front of bulkhead

Observe procedure of repair stage 3.

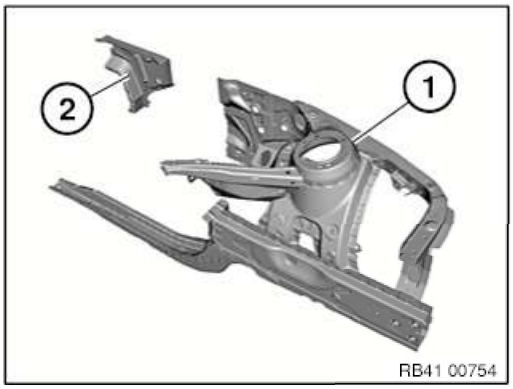
Read contents of Body, General.

For stripping and rebuilding operations, refer to surrounding texts on KSD (flat rate unit number 41 11 071).

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.



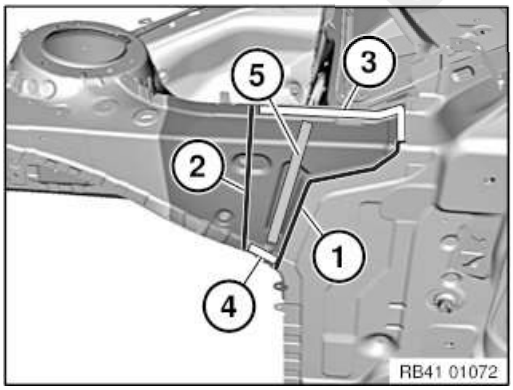
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Wheel arch, front
- (2) Extension, wheel arch carrier support
- (3) Shaped part, wheel arch carrier support (not shown)

Following consumables are required.

Material	Quantity
Adhesive K1	1
Blind rivet N7	9
Blind rivet N3	5
Punch rivetN5	12
Sealant D1	
Cleaning agent R1	1

Removal



Mark severance cut (1) at component edge and cut.

Mark severance cut (2) as pictured and cut.

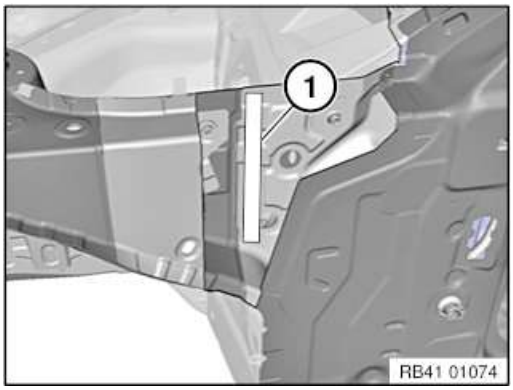
Loosen spot-welded adhesive joints in area (3).

Open welded connections in area (4).

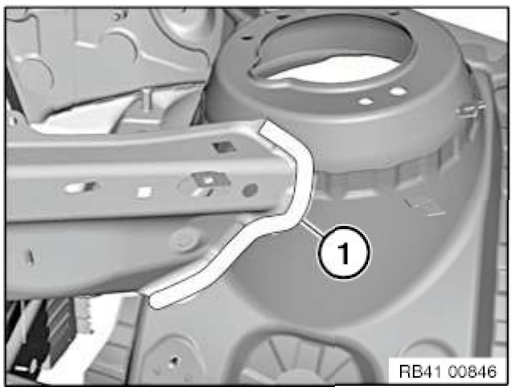
Release metal section from cavity sealing (5) and remove.

Remove cavity sealing (5).

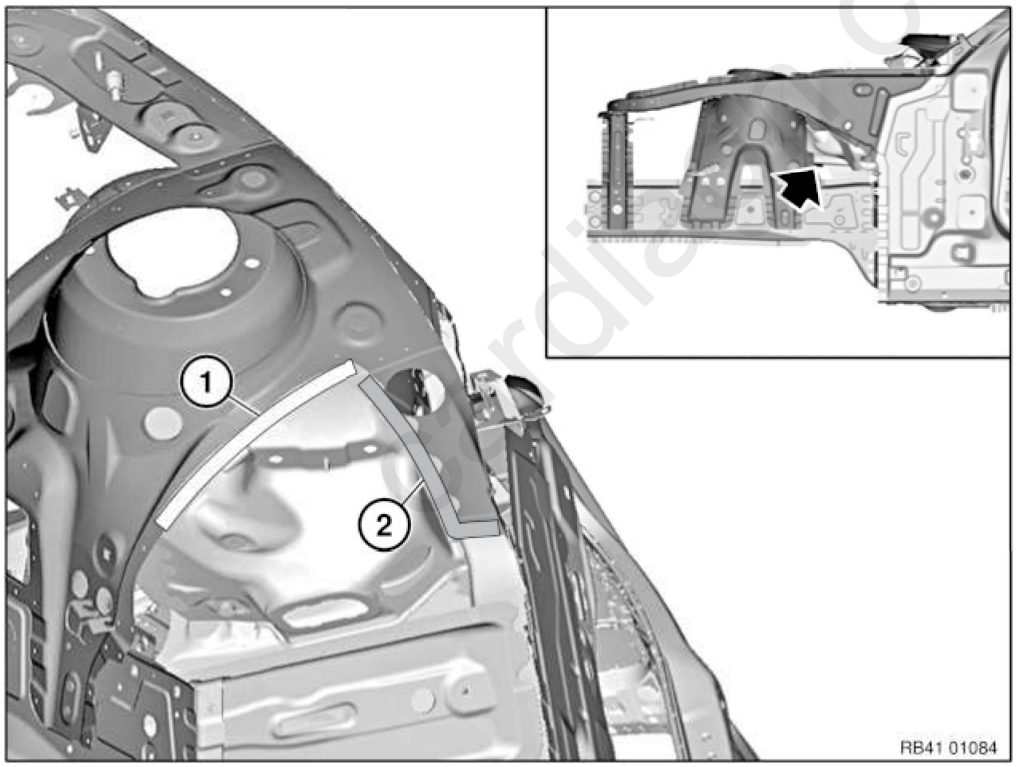
cardiagn.com



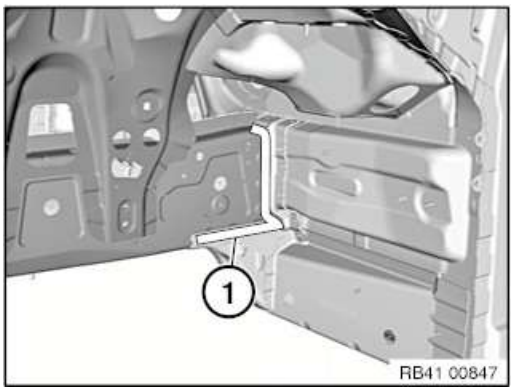
Open welded connections in area (1).



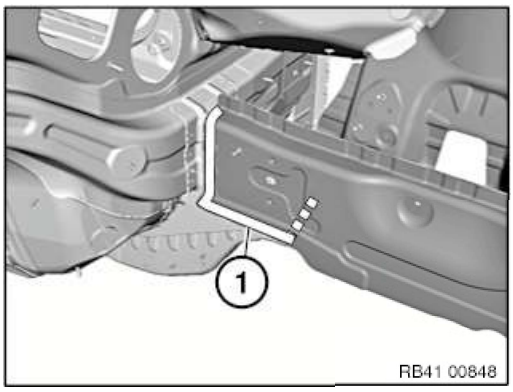
Open welded connections in area (1).



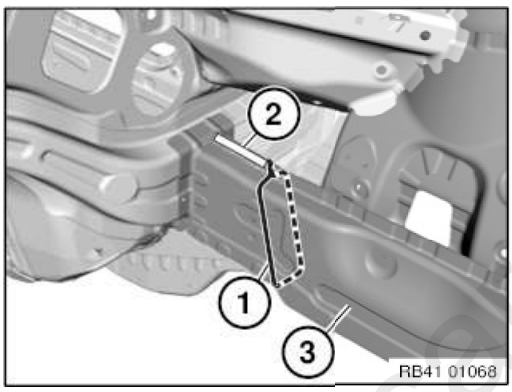
Open welded connections in areas (1) and (2).



Open welded connections in area (1).

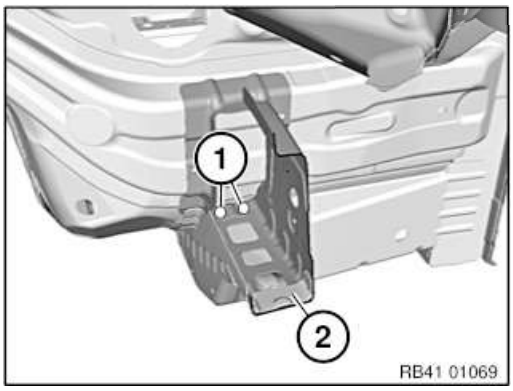


Open welded connections in area (1).



Mark severance cut (1) roughly as pictured and cut engine support.

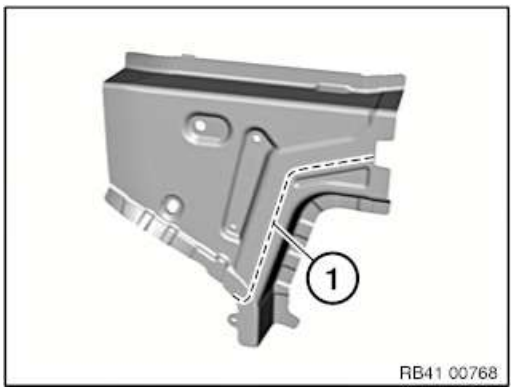
Open welded connections in area (2) and remove engine support (3) with wheel arch.



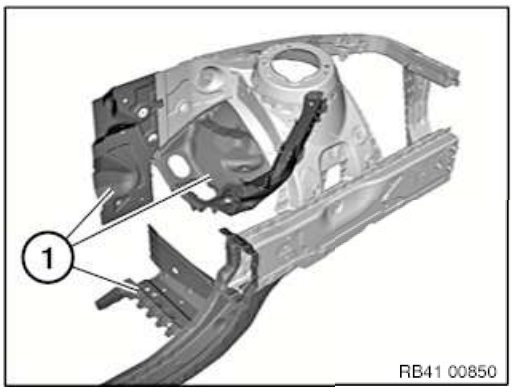
Open welded connections in areas (1) by grinding and remove residual section of engine support (2).

New part preparation

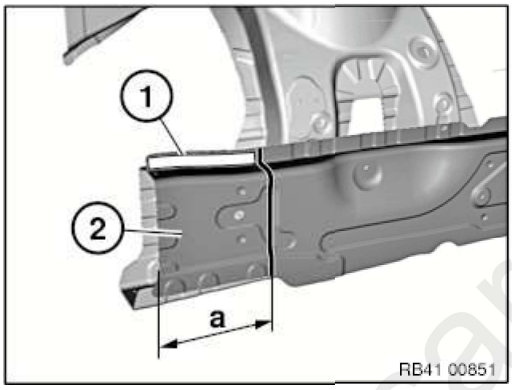
cardiagn.com



Mark and disconnect severance cut on the new part according to the severance cut on the vehicle + 20 mm added material (1).



Release welded connections and remove non-required components (1) from new part.



Mark severance cut in accordance with dimension and cut.

Measurement a = approx. 145 mm from component edge.

Cut outer metal panel only.

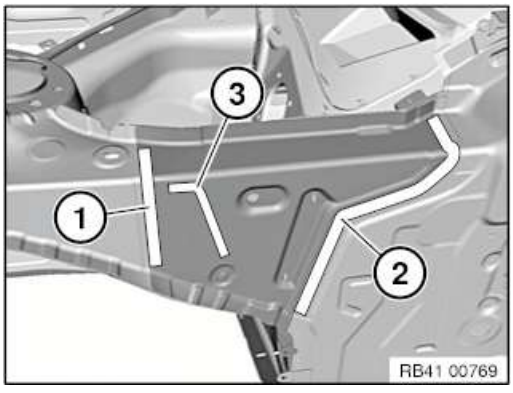
Open welded connections in area (1).

Remove metal section (2).

Note:
The metal section (2) is needed to close the engine support.

Prepare reinforcement plate at severance cut.

Adjust new parts to fit with alignment bracket or universal mounting.



Adjust extension, wheel arch carrier support new part to fit and secure.

In areas (1) and (2), set Ø 6.8 mm bore holes for blind rivet.

Area	Number
1	3
2	5

In area (3), set 4 Ø 4.2 mm bore holes for blind rivet N3.

Remove new parts and deburr bore holes.

cardiagn.com

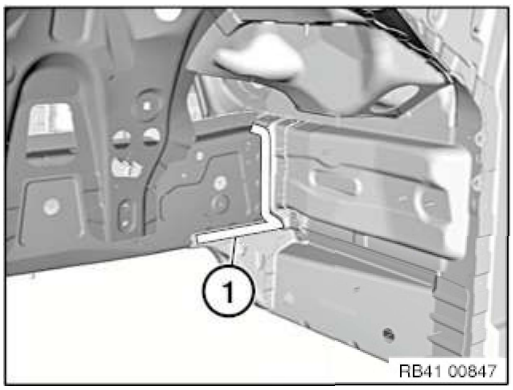
Attention!

Structure bonding!

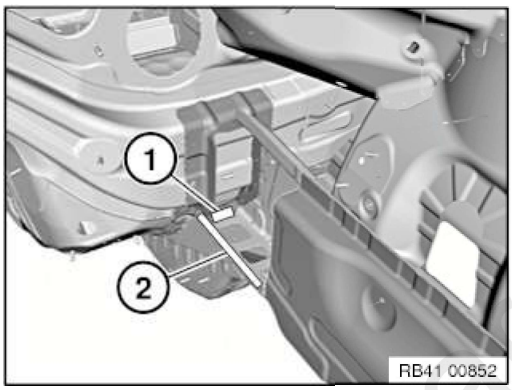
Observe preparation of bonding surfaces.

Installation

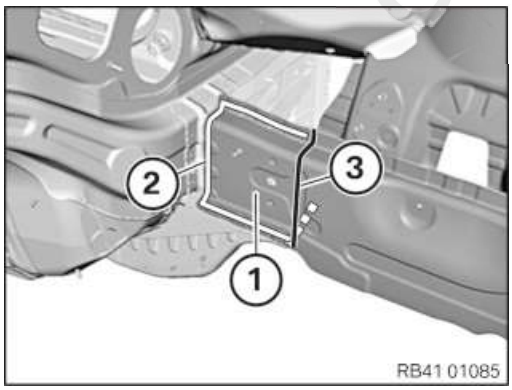
Install new part with alignment bracket or universal mount and secure.



Weld new part in area (1).

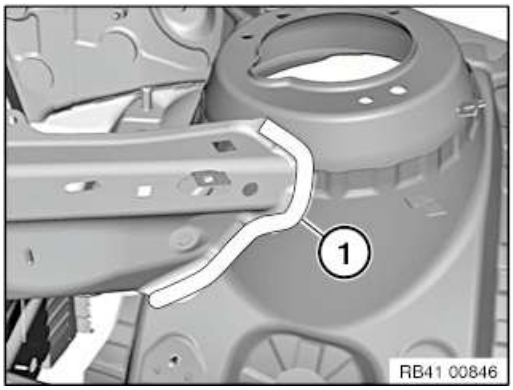


Weld new part in the areas (1) and (2).

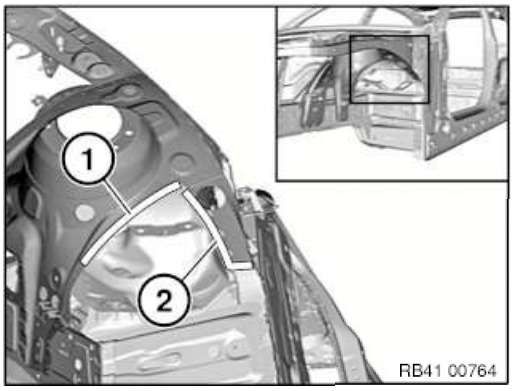


Install sheet metal section (1) and reinforcement plate and weld in areas (2) and (3).

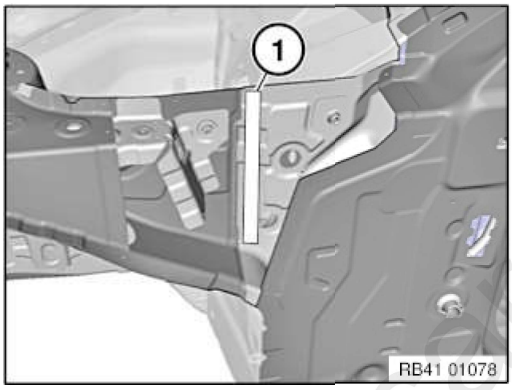
cardiagn.com



Weld new part in area (1).



Weld new part in the areas (1) and (2).



Weld new part in area (1).

Installation

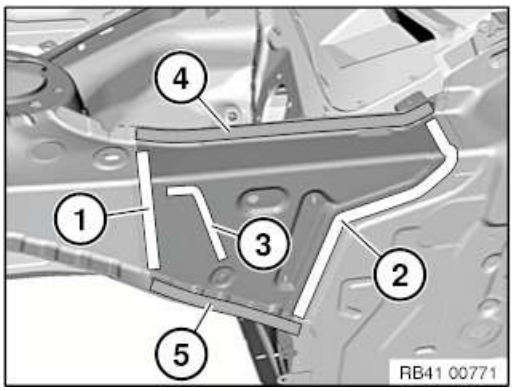
Clean bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Apply sealant to cavity sealing.

Install extension, wheel arch carrier support.

cardiagn.com



In areas (1) and (2), rivet new part with blind rivets N7.
In area (3) rivet new part with blind rivets N3.
In areas (4) and (5), rivet new part with punch rivets N5.

Area	Number
4	6
5	5

cardiagn.com

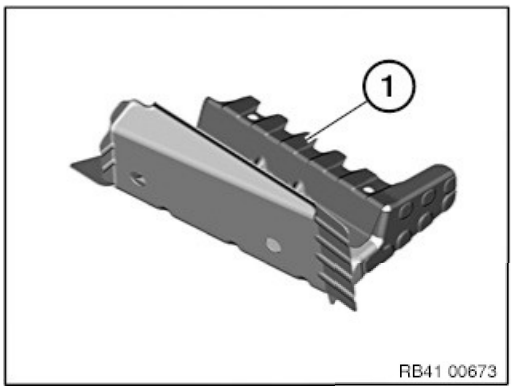
41 14 531 Replacing engine support/front left side frame connection (front left wheel arch removed).

Observe procedure for repair stage 3.

Read contents of Body, General.

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

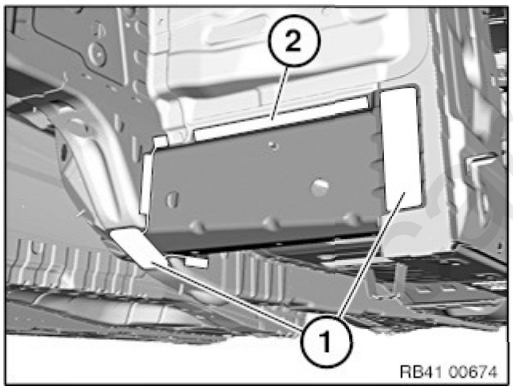
For stripping and rebuilding operations, refer to surrounding texts on KSD (flat rate unit number 41 14 531).



Following new body parts are required (see Electronic Parts Catalogue):

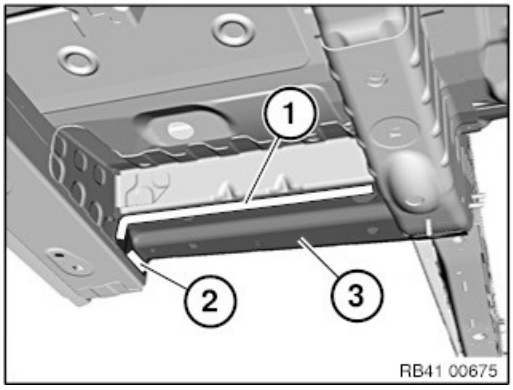
- (1) Connection, wheel arch/entrance

Removal



Open welded connections in areas (1).

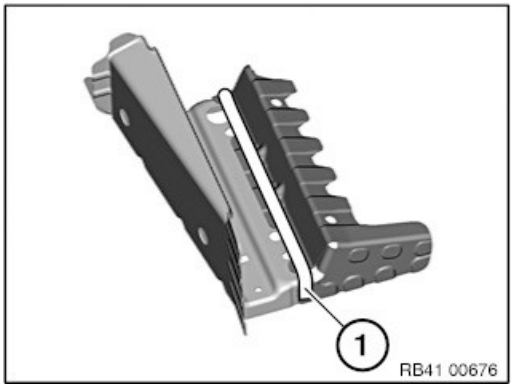
Open spot-welded adhesive joints in area (2).



Open welded connections in area (1).

Open spot-welded adhesive joints in area (2) and remove engine support / side frame connection (3).

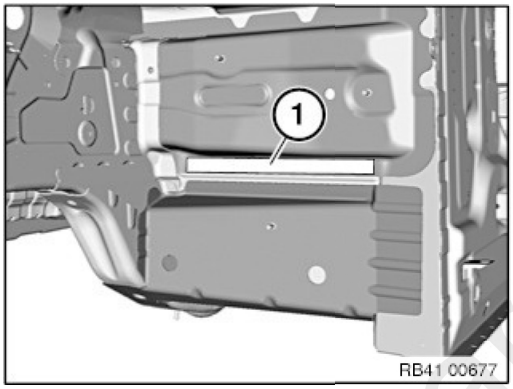
New part preparation



Open welded connections in area (1) and remove part section not required.

Installation

Install and weld new parts.



Attention!

Risk of damage to adhesive area.

Avoid applying too much heat to adjacent adhesive area (1).

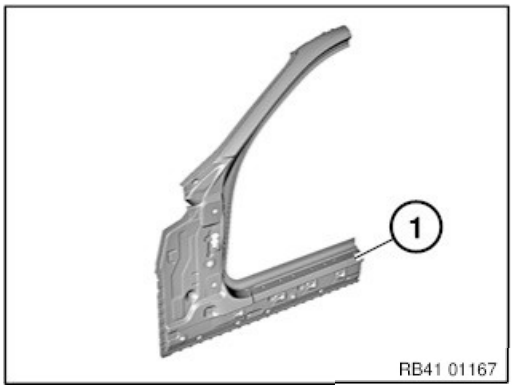
cardiagn.com

41 11 311 Replacing entrance for door front left

Observe procedure for repair stage 3.

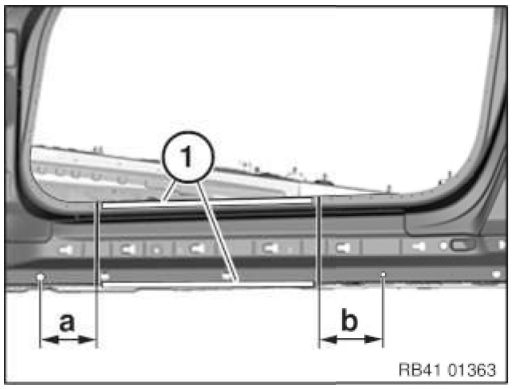
Read contents of Body, General.

For stripping and rigging operations, refer to texts on KSD CD (job number 41 11 311).



Following new body parts are required (see Electronic Parts Catalogue):

- (1) A-pillar with entrance



Mark severance cuts in accordance with specified dimensions and cut.

Important!

Cut outer panel only for following severance cuts.

Dimension a = approx. 140 mm behind 20 mm dia. hole.

Dimension b = approx. 160 mm in front of 15 mm dia. hole.

Open welded connections in areas (1).

Installation note:

Mark new part in accordance with severance cuts on vehicle and cut.

Weld in reinforcement plates at severance cuts.

cardiagn.com

41 11 312 Replacing entrance for front right door

Operation is identical to replacing front left door entrance.

cardiagn.com

41 21 682 Replacing left B-pillar reinforcement (rear side panel and roof outer skin removed)

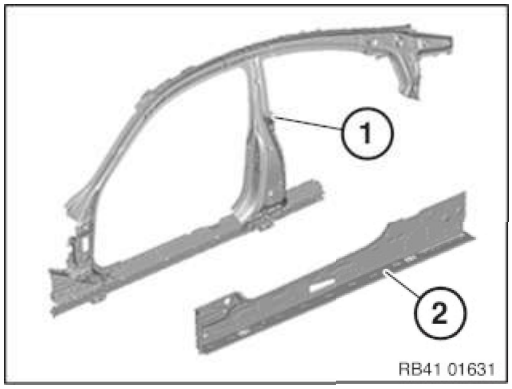
Observe procedure for repair stage 3.

Read contents of Body, General.

Use only an approved spot-welding apparatus for repairs!

For stripping and rebuilding operations, refer to the surrounding text of Commercial Service Data (flat rate unit number 41 21 682).

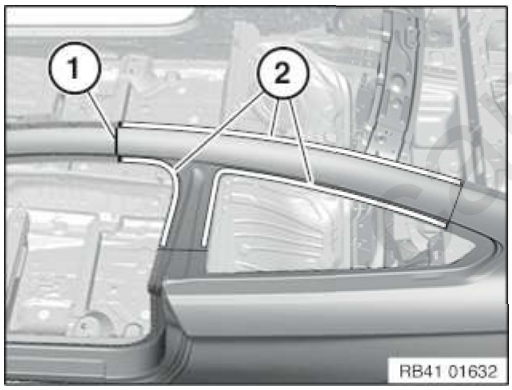
Place vehicle on straightening bench.



Following new body parts are required (see Electronic Parts Catalogue):

- (1) Middle side frame
- (2) Inner side member
- Shaped part, B-pillar, inner
- Shaped part B-pillar, outer

Removal



Extended removal of side panel:

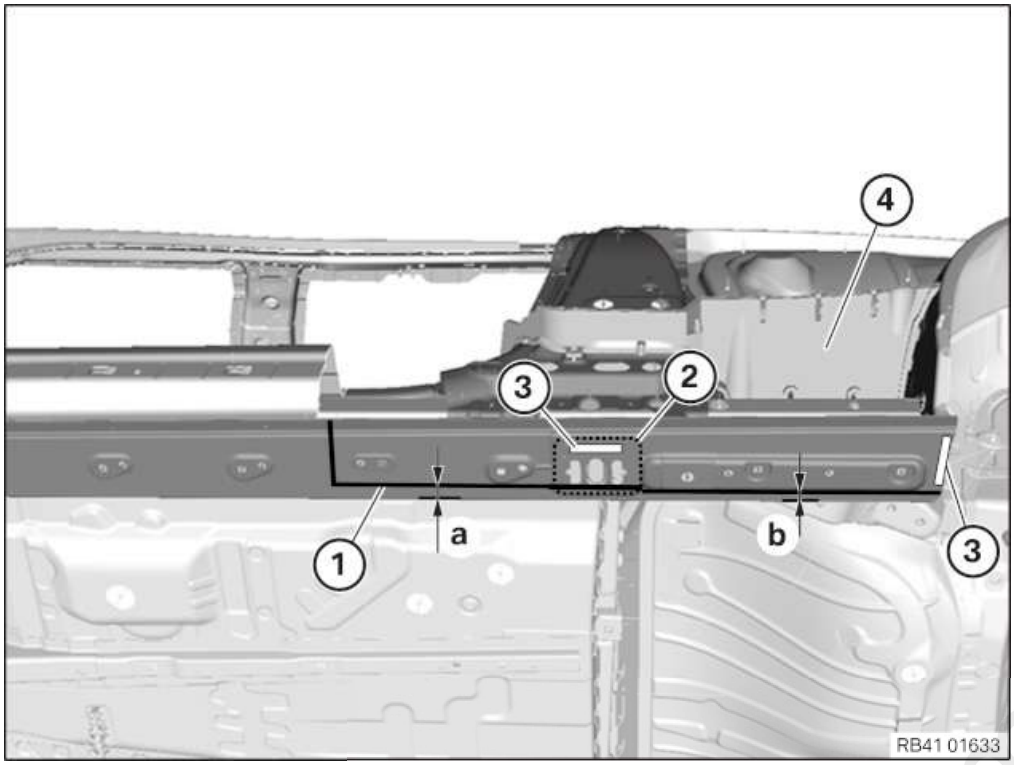
Mark severance cut (1) in accordance with severance cut on new part and cut.

Attention!

Cut outer metal panel only.

Open welded connections in areas (2).

carldiagn.com



Side member section:

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

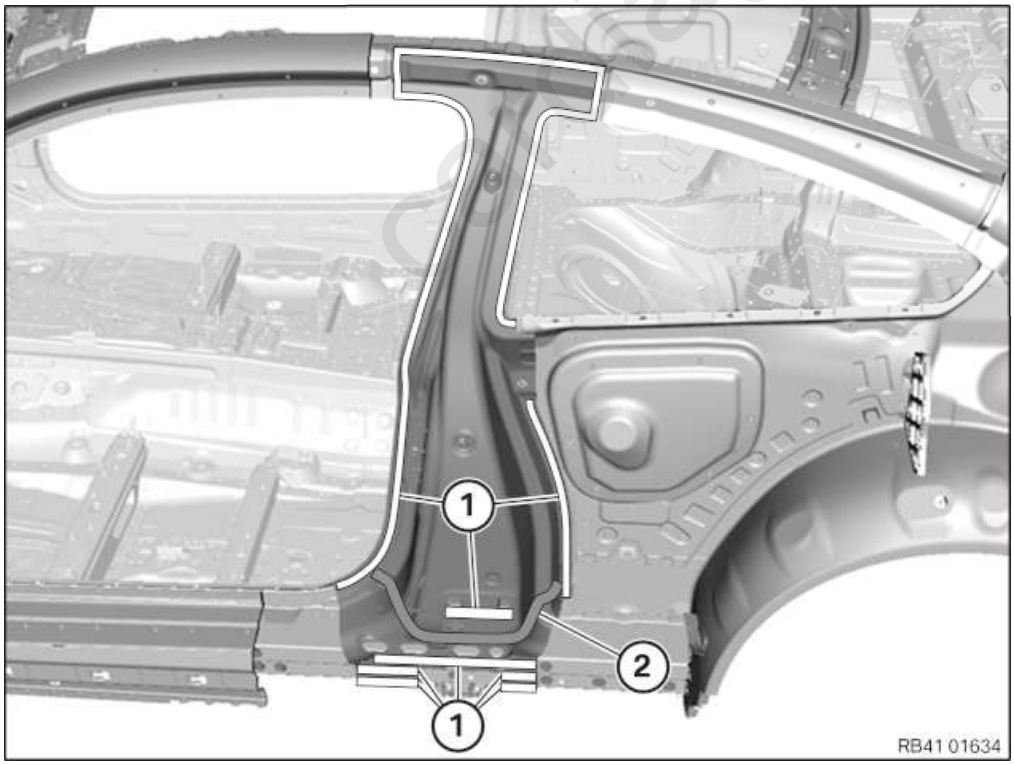
Attention!
Only cut the outer panel in the area of the jacking point (2).

Measurement a = approx. 20 mm from component edge.

Dimension b=approx. 10 - 15 mm from component edge.

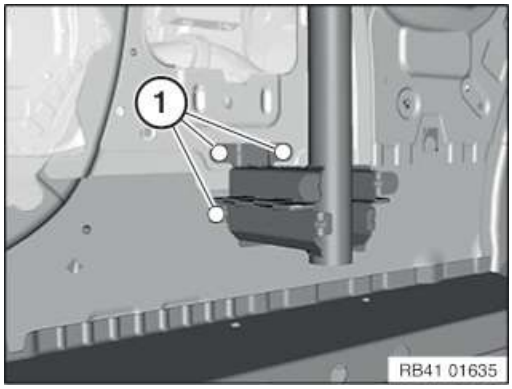
Release welded connections in areas (3) and remove side member section.

Remove cavity sealing (4).

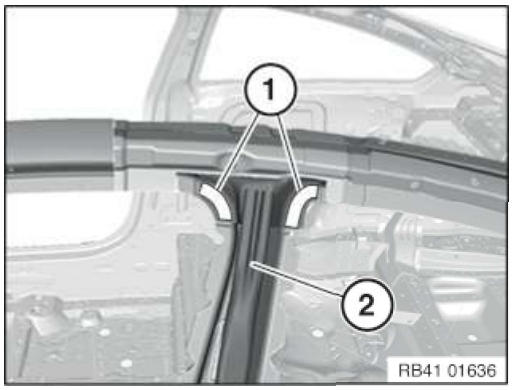


Open welded connections in areas (1).

Release the B-pillar reinforcement from the inner cavity sealing (2) and remove.

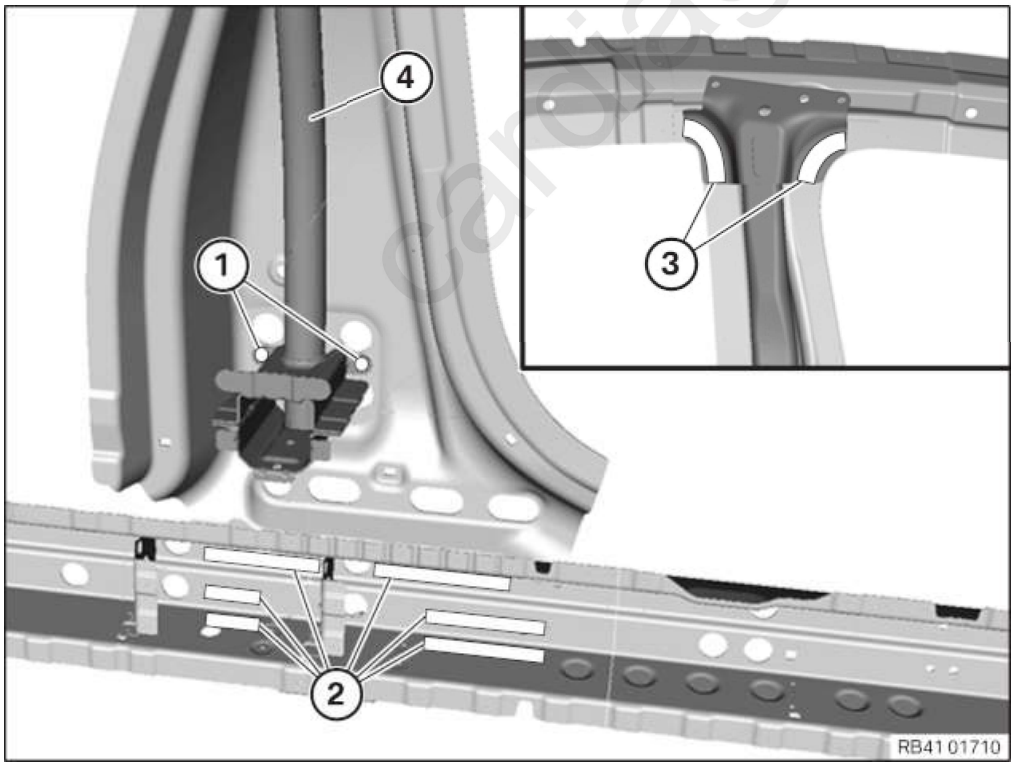


Open welded connections in areas (1).



Open welded connection in areas (1) and remove B-pillar reinforcement (2).

New part preparation



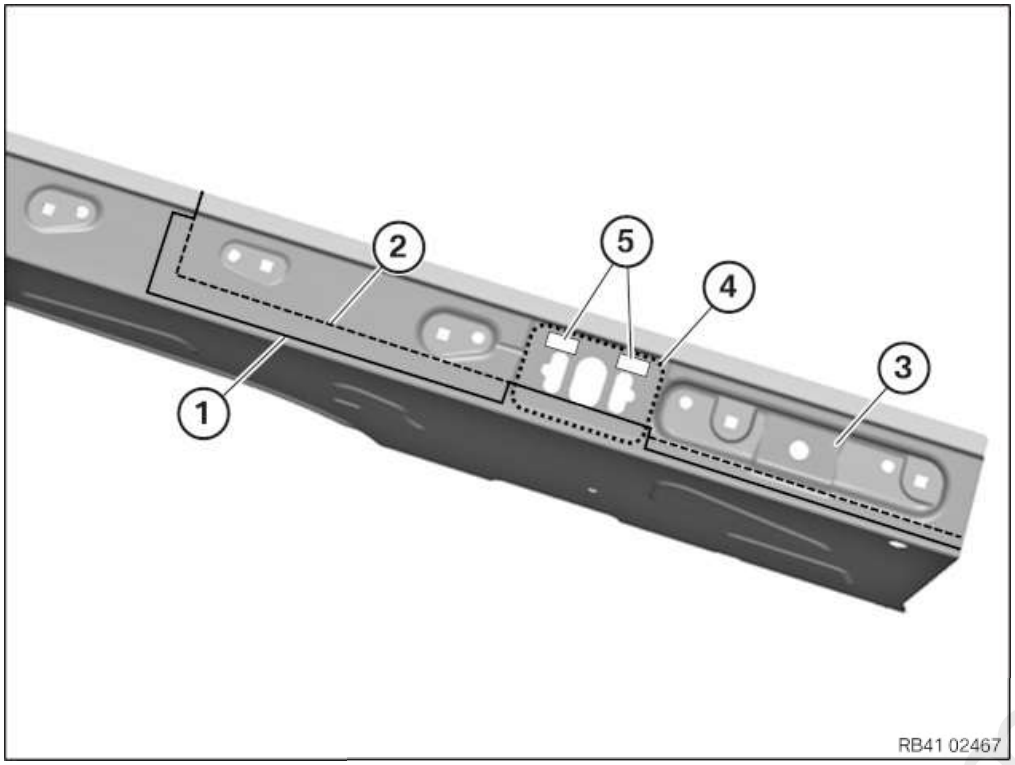
Open welded connections in areas (1) to (3).

Remove the B-pillar reinforcing tube (4).

Note:
Release the welded connections in areas (1) and (2) from the outer side.

The B-pillar reinforcing tube (4) must be installed separately for accessibility reasons.

carmagn.com



Side sill section:

Mark and perform severance cut (1) in accordance with severance cut on vehicle (2) +15 mm extra material.

In the area of the moulding (3) extra material approx. 5 - 10 mm.

Note:
In the area of the jacking point (4), joining with overlaps is not performed. Prepare new part for butt welding.

Prepare the areas for overlapping and the areas (5) for plug-welding.

Comply with new part preparation for side panel and side sill.

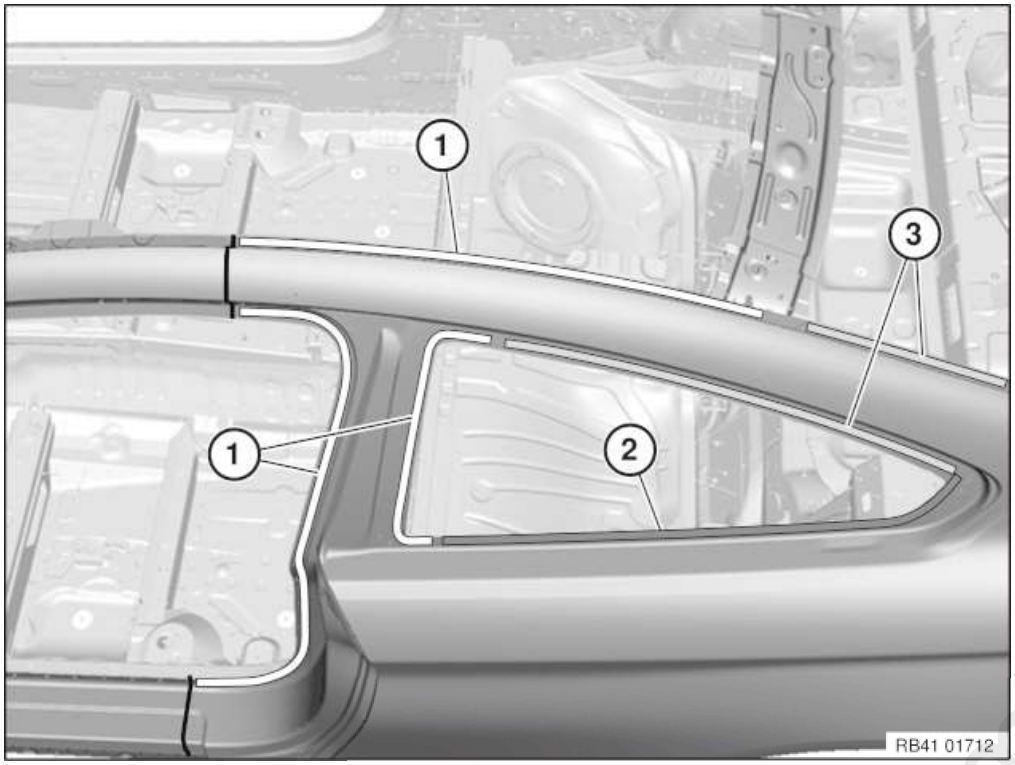
Prepare reinforcement plates at severance cuts.

Prepare new parts for joining by welding in the remaining joining areas.

Adjust new parts to fit with alignment bracket or universal mount and secure.

Note:
When adjusting the new parts, the panel thickness of the missing side panel must be taken into consideration depending on straightening system manufacturer.

cardiagn.com



Different new part preparation for side panel:

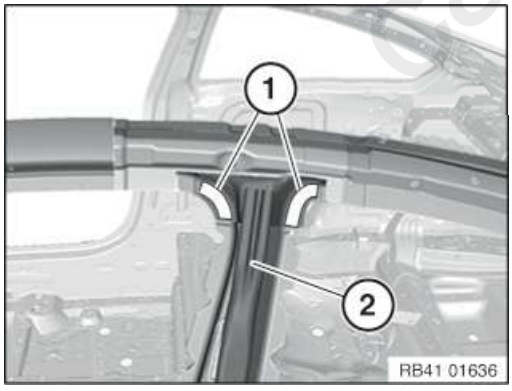
Prepare for joining by welding in areas (1).

Prepare the joints in areas (2) and (3) for joining by rivet bonding technology.

Installation

Install new parts and reinforcement plates with alignment bracket or universal mount and weld.

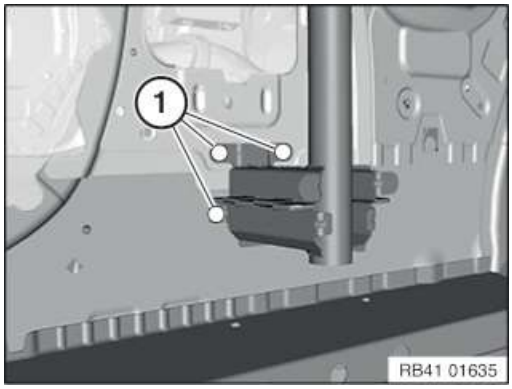
Note:
When installing the new parts, the panel thickness of the missing side panel must be taken into consideration depending on straightening system manufacturer.



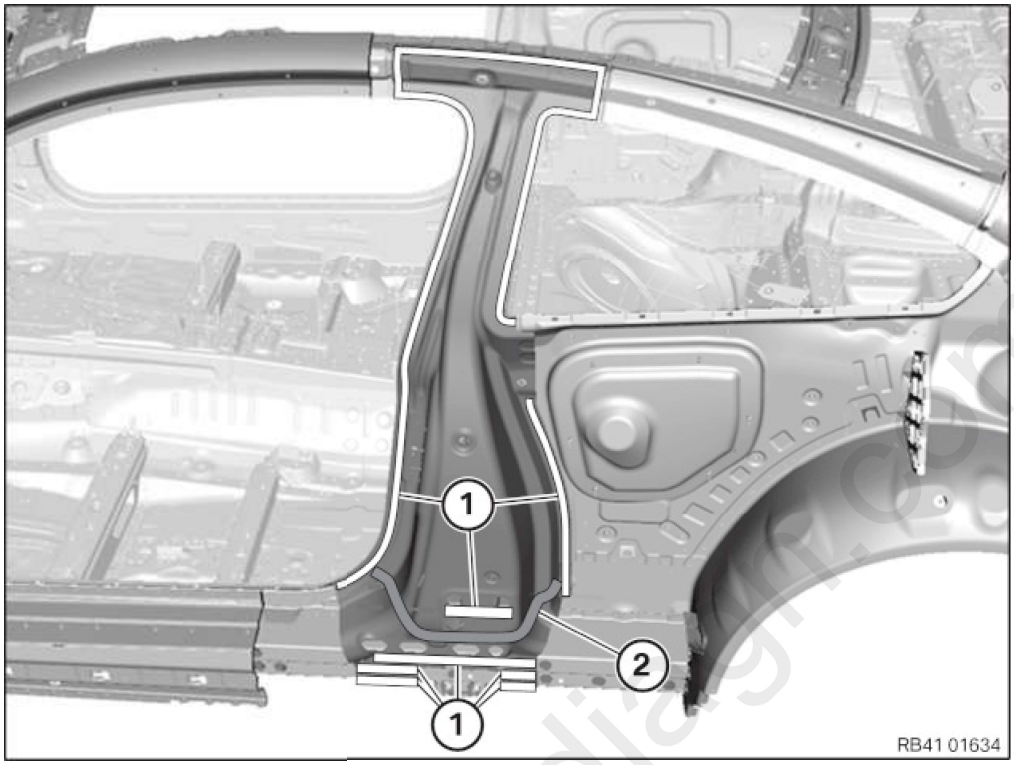
Install the reinforcement tube (2) and MAG weld in the areas (1).

Minimum length of weld seams: 20 mm.

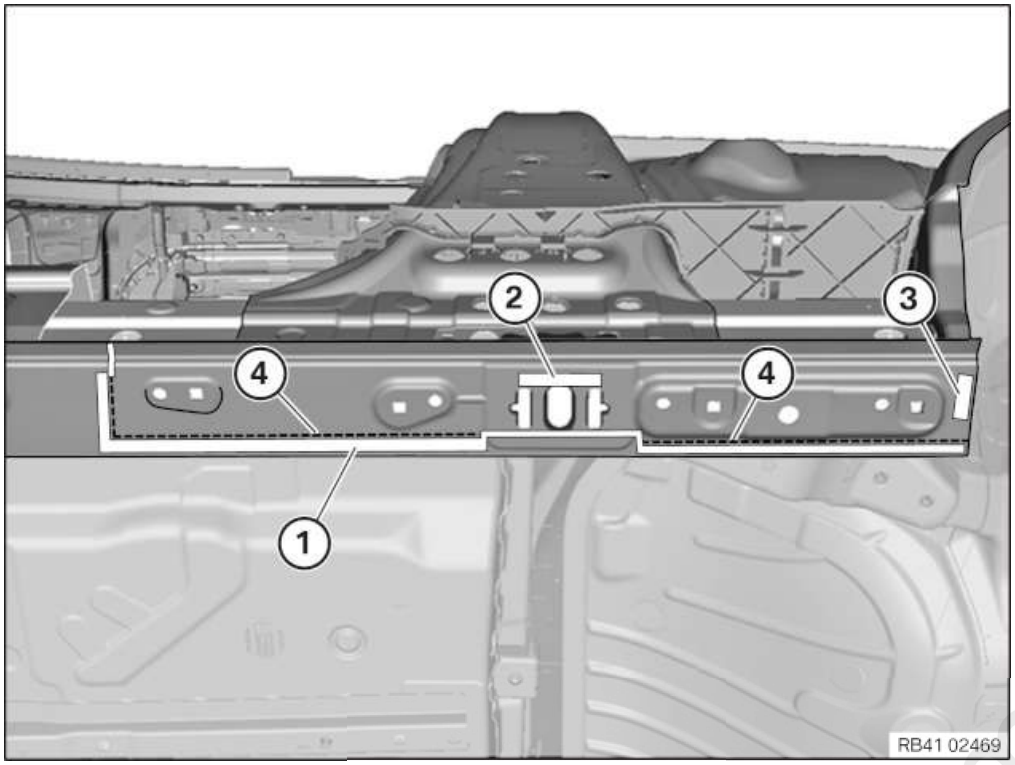
cardiagn.com



Weld reinforcement tube in the areas (1).

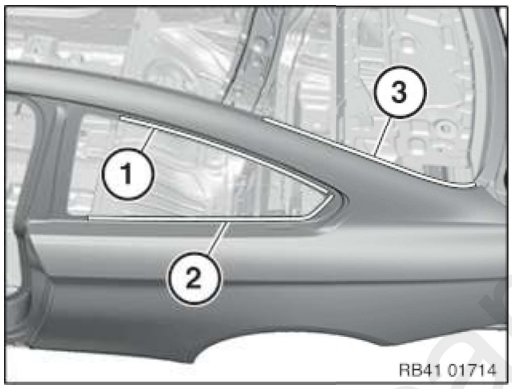


Apply sealant to inner cavity sealing (2). Install cavity sealing.
Install new part and weld in areas (1).
install outer cavity sealing.



Install side sill section and weld in areas (1) to (3).

(4) = Severance cut route on vehicle.



Divergent installation of the side wall:

In areas (1) - (3) rivet side panel with punch rivets.

Area	Number	Remarks
1	6	Punch rivet **N5**
2	7	Punch rivet **N4**
3	6	Punch rivet **N5**

cardiagn.com

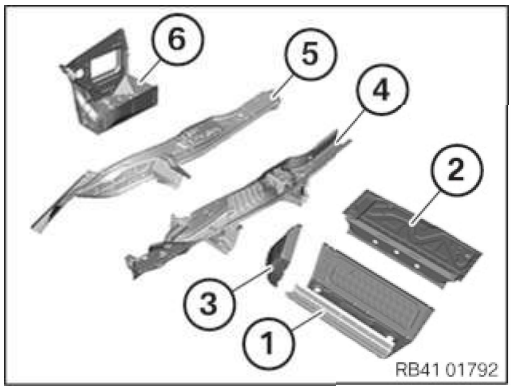
41 12 701 Replacing luggage compartment floor and right side member (right side panel and tail panel removed)

Read contents of Body, General.

Strip down vehicle.

Place vehicle on straightening bench.

Observe procedure of repair stage 3.



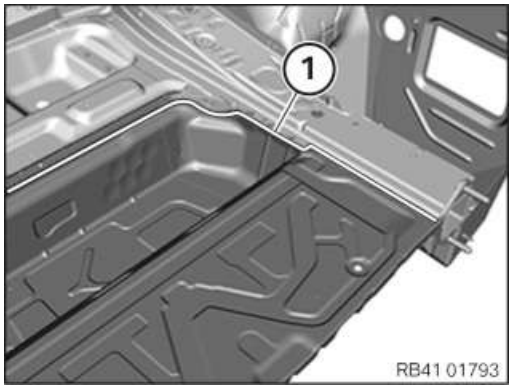
The following new parts are required (see Electronic Parts Catalogue):

- (1) Luggage compartment well
- (2) Luggage compartment floor, rear
- (3) Luggage compartment well, right
- (4) Bottom right side member
- (5) Frame side member, top right
- (6) Luggage compartment floor, right

Following consumables are required:

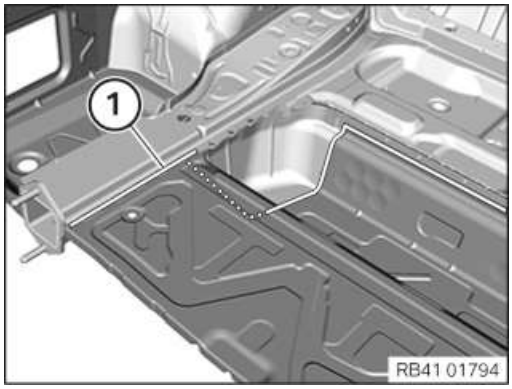
Material	Quantity
Adhesive K5a	2
Blind rivet N3	11
Blind rivet N6	8
EMC screw	4
Cleaning agent R1	1
Sealant D1	

Removal:

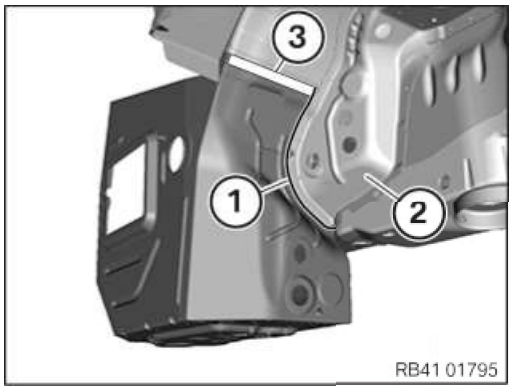


Open welded connections in area (1).

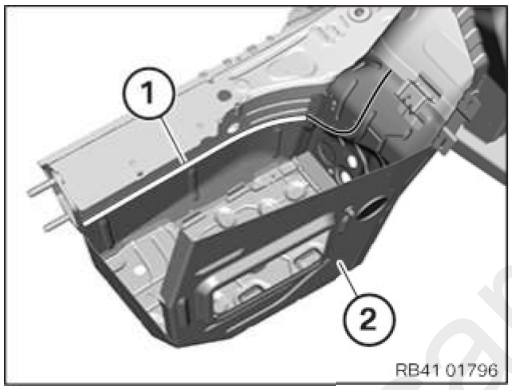
cardiagn.com



Open welded connections in area (1).

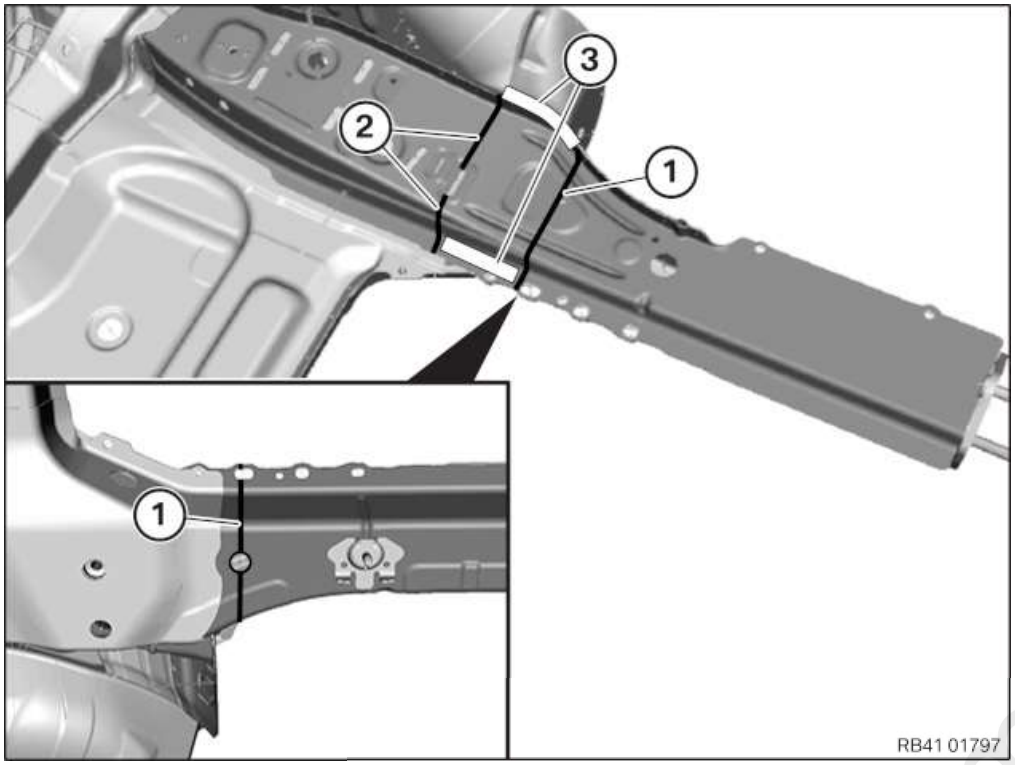


Mark severance cut (1) next to reinforcement (2) and disconnect.
Open welded connections in area (3).



Open welded connections in area (1).
Remove the luggage compartment floor.

cardiagn.com



Mark and cut severance cut (1) through Ø 20 mm hole.

Cut side member.

Mark severance cut (2) through elongated hole for MAG weld seam and cut.

Important!
Cut outer panel only.

Open welded connections in areas (3).

Remove side member.

Preparation of new part:

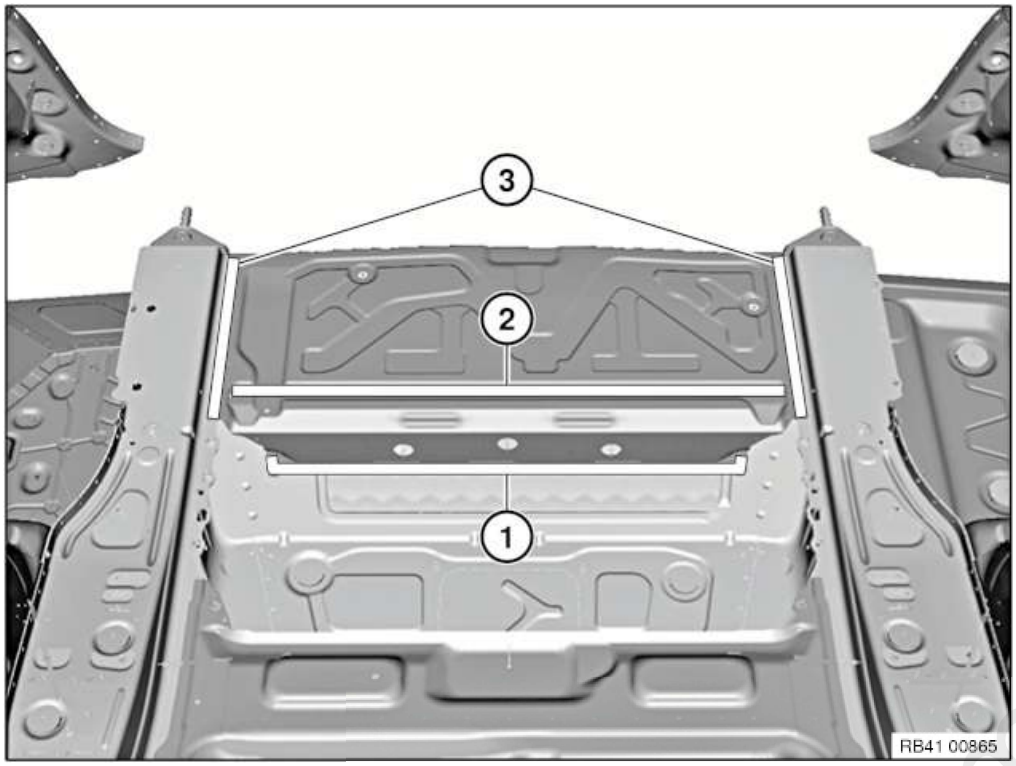
Mark severance cuts on side member in accordance with severance cuts on vehicle and cut.

Mark severance cut on luggage compartment floor in accordance with severance cut on vehicle + 15 mm for extra material and cut.

Prepare for severance cuts on the side member reinforcement plates.

Adjust new parts with alignment bracket or universal mount and in conjunction with side wall and tail panel and secure.

cardiagn.com



In areas (1) to (3), set bore holes ⌀ 4.2 mm for blind rivet.

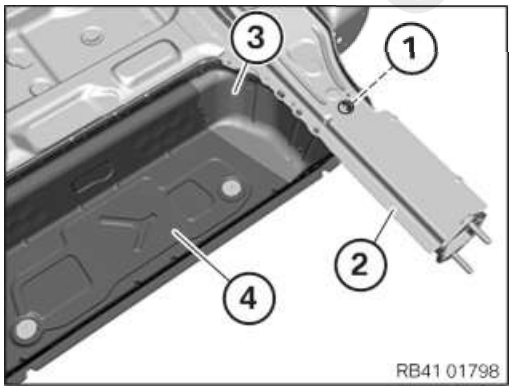
Area	Number
1	5
2	6
3	4 of

Remove new parts and deburr bore holes.



Important!

Do not grind new parts and body in area of bonding surfaces.



Installation of side member and luggage compartment well:

Install new parts and reinforcement plates with alignment bracket or universal mount and weld analogue to series standard:

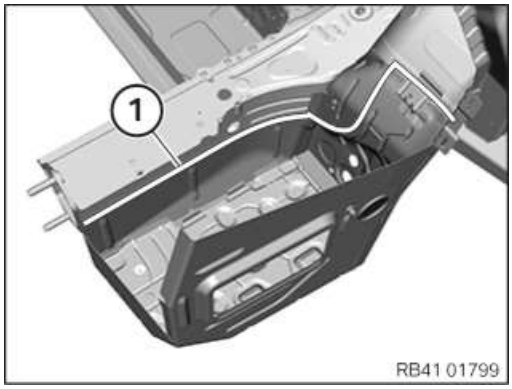
(1) Extension, bottom side member

(2) Extension, top side member

(3) Luggage compartment well, left

(4) Luggage compartment well

cardiagn.com



Installation of right luggage compartment floor:

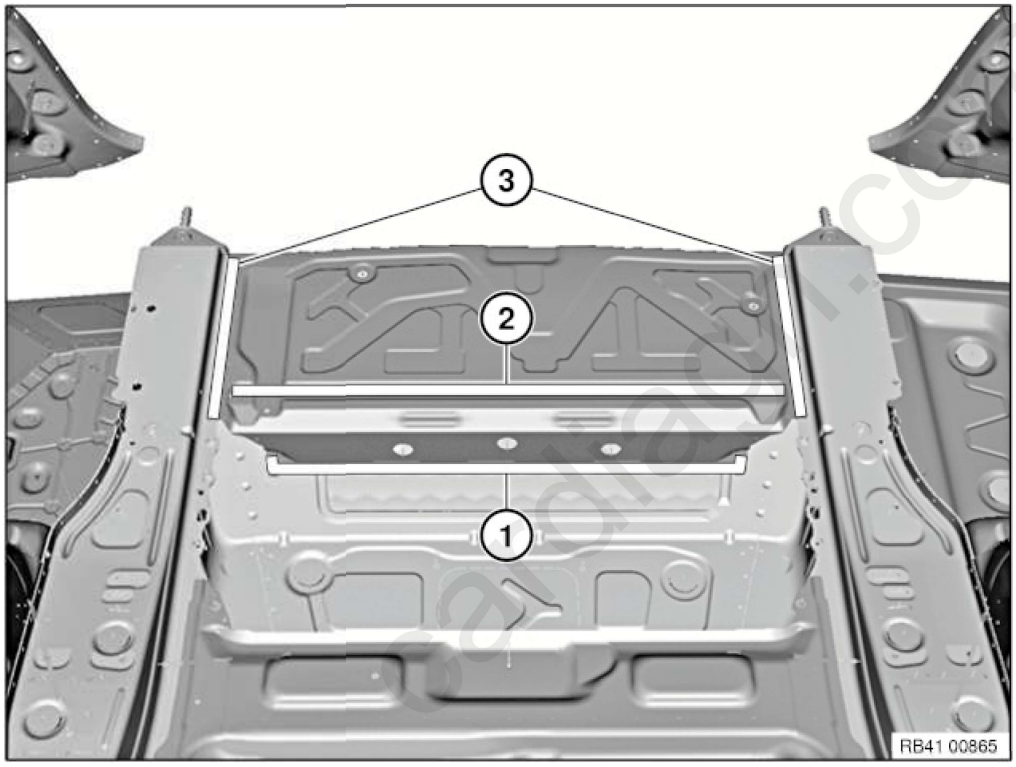
Install new part and weld in area (1).

Installation of rear luggage compartment floor:

Clean all bonding surfaces with cleaning agent R1.

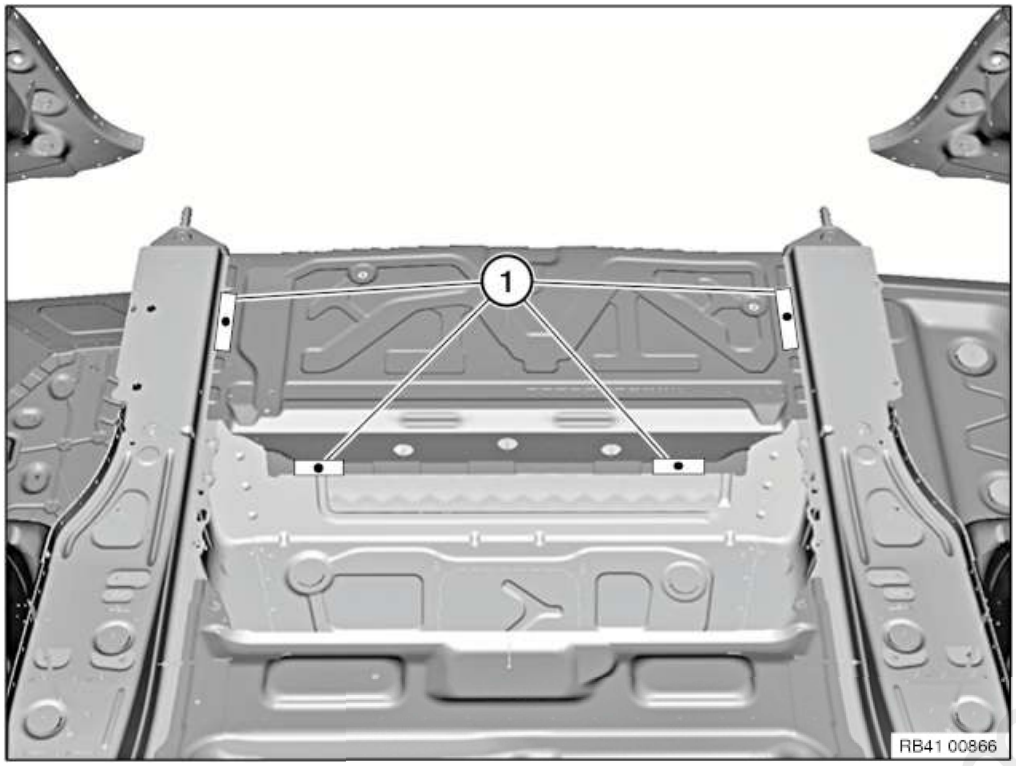
Apply adhesive to bonding surfaces.

When installing the new part, make sure that all bonding surfaces have sufficient adhesive.



Install new part and rivet with blind rivets .

Area	Number	Remarks
1	5	Blind rivet **N3**
2	6	Blind rivet **N3**
3	4 of	Blind rivet **N6**



After hardening of the adhesive install 4 EMC screws in the areas shown (1).

cardiagn.com

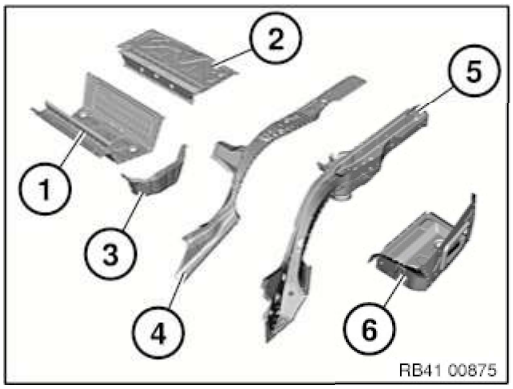
41 12 700 Replacing luggage compartment floor and side member on left (left side wall and tail panel removed)

Read contents of Body, General.

Strip down vehicle.

Place vehicle on straightening bench.

Observe procedure of repair stage 3.



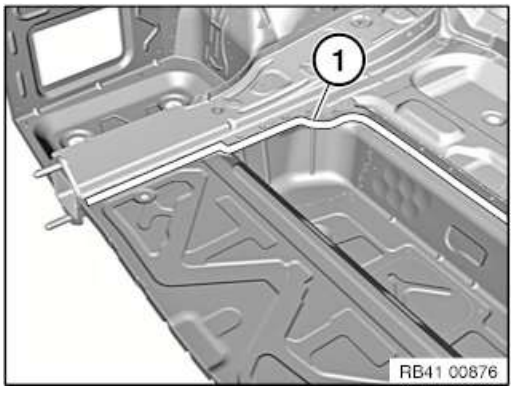
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Luggage compartment well
- (2) Luggage compartment floor, rear
- (3) Luggage compartment well, left
- (4) Frame side member, top left
- (5) Side member, bottom left
- (6) Luggage compartment floor, left section

Following consumables are required:

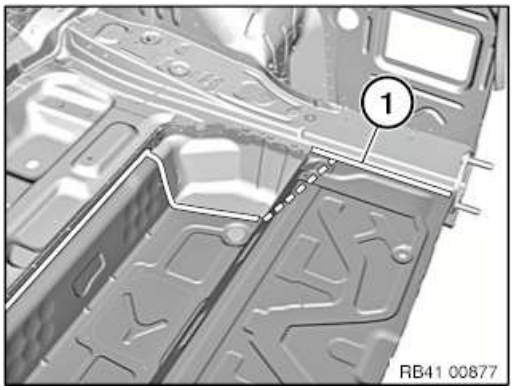
Material	Quantity
Adhesive K5a	2
Blind rivet N3	20
Blind rivet N6	8
EMC screw	7
Cleaning agent R1	1
Sealant D1	

Removal of side member and luggage compartment floor:

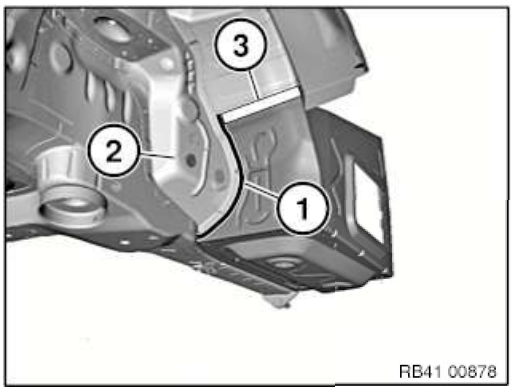


Open welded connections in area (1).

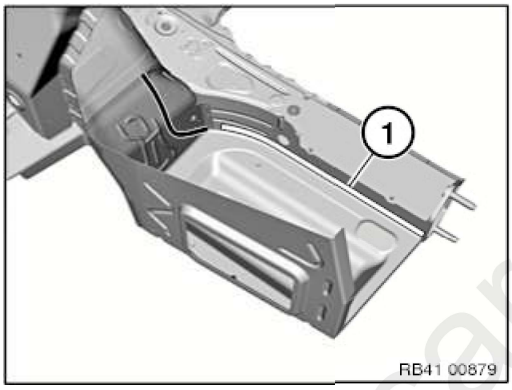
cardiagn.com



Open welded connections in area (1).

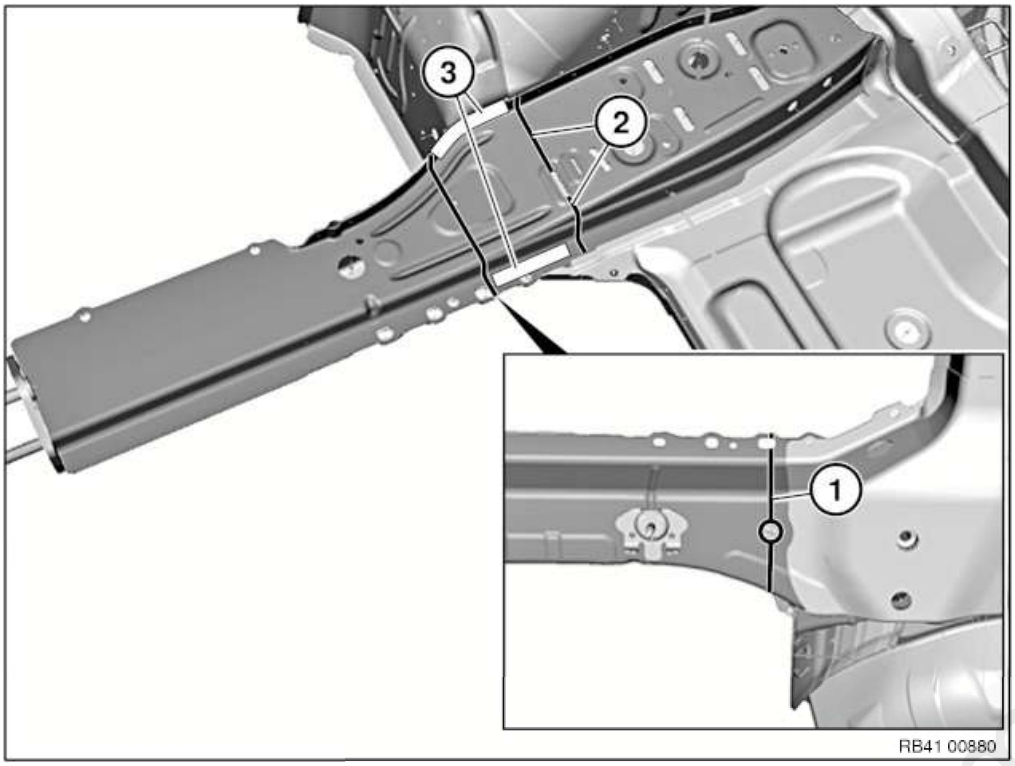


Mark severance cut (1) next to reinforcement (2) and disconnect.
Open welded connections in area (3).



Open welded connections in area (1).
Remove the luggage compartment floor.

cardiagn.com



Mark and cut severance cut (1) through Ø 20 mm hole.

Cut side member.

Mark severance cut (2) through elongated hole for MAG weld seam and cut.

Important!
Cut outer panel only.

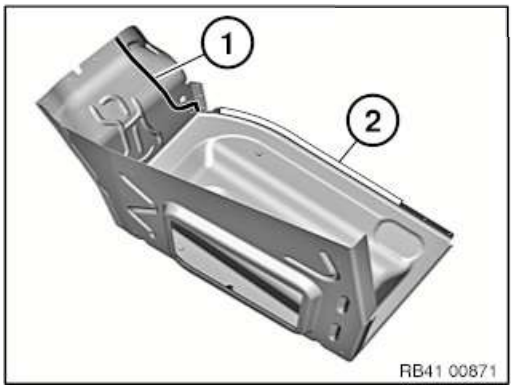
Open welded connections in areas (3).

Remove side member.

Preparation of new part:

Mark severance cuts on side members in accordance with severance cuts on vehicle and cut.

For all severance cuts on side members, prepare reinforcement plates.

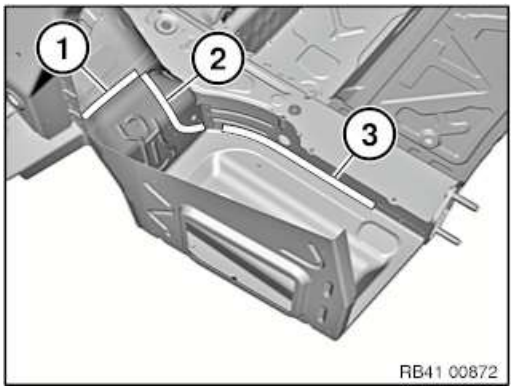


Mark severance cut at luggage compartment floor in accordance with severance cut on vehicle + 15 mm extra material and cut (1).

Set 4 4.2 mm ⌀ bore holes in area (2).

Adjust new parts with alignment bracket or universal mount and in conjunction with side wall and tail panel and secure.

cardiagn.com

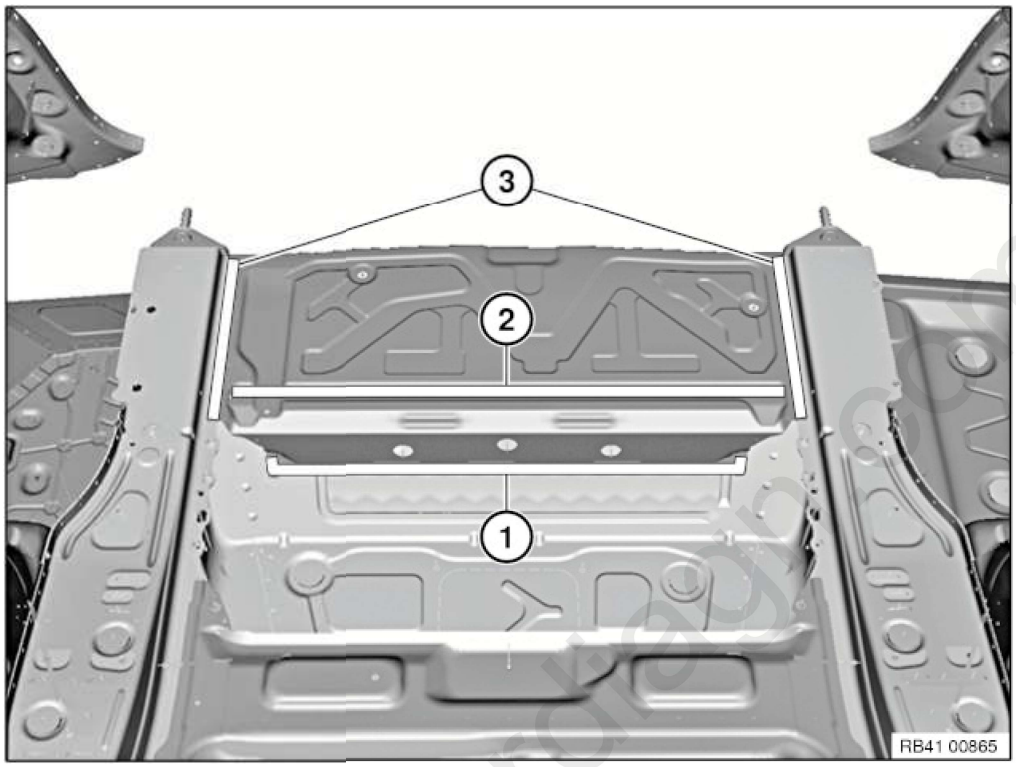


In areas (1) to (3), set ⌀ 4.2 mm bore holes for blind rivet N3.

Area	Number
1	2
2	3
3	4

If necessary, mark bore holes in area (3) on body and create after removal of new part.

Note:
Side wall and tail panel have been hidden for clarity.



In areas (1) to (3), set bore holes ⌀ 4.2 mm for blind rivet.

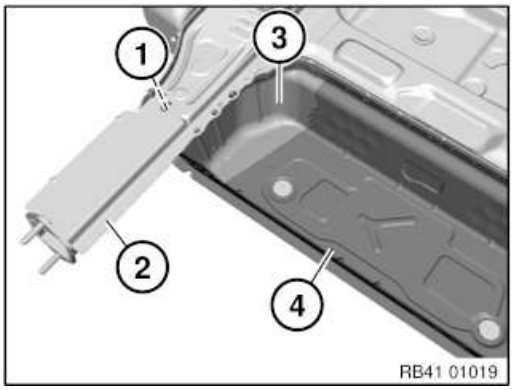
Area	Number	Remarks
1	5	Blind rivet **N3**
2	6	Blind rivet **N3**
3	4 of	Blind rivet **N6**

Remove new parts and deburr bore holes.



Important!

Do not grind new parts and body in area of bonding surfaces.



Installation of side member and luggage compartment well:

Install new parts and reinforcement plates with alignment bracket or universal mount and weld analogue to series standard:

(1) Extension, bottom side member

(2) Extension, top side member

(3) Luggage compartment well, left

(4) Luggage compartment well

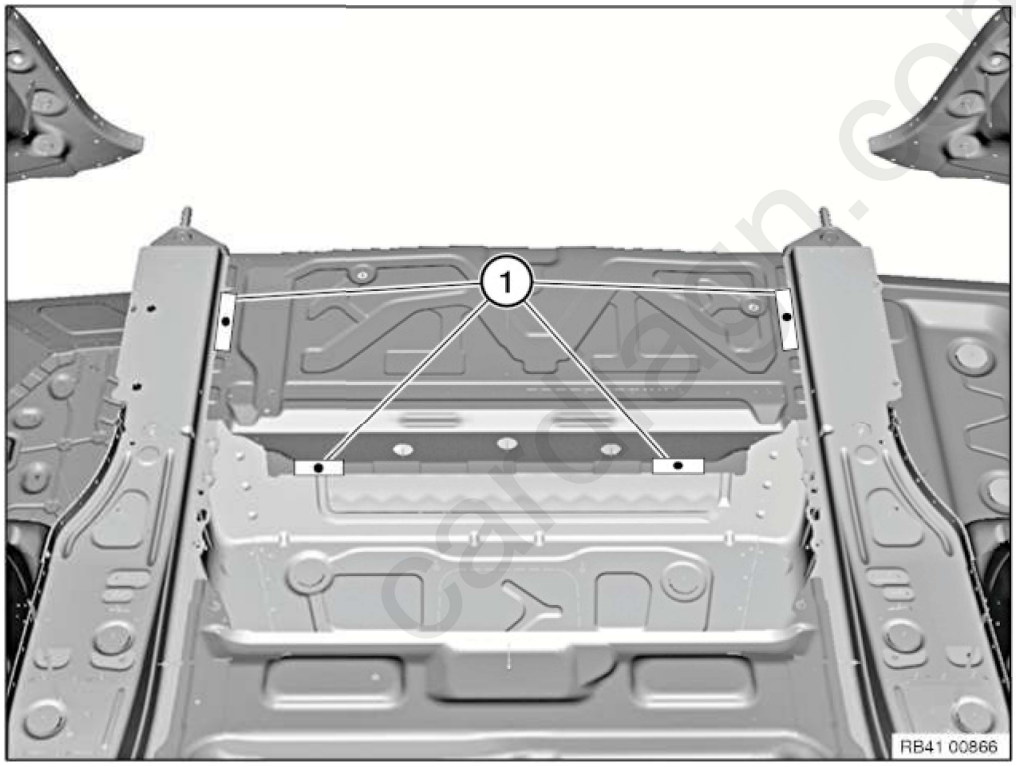
Installation of rear luggage compartment floor and left luggage compartment floor:

Clean all bonding surfaces with cleaning agent R1.

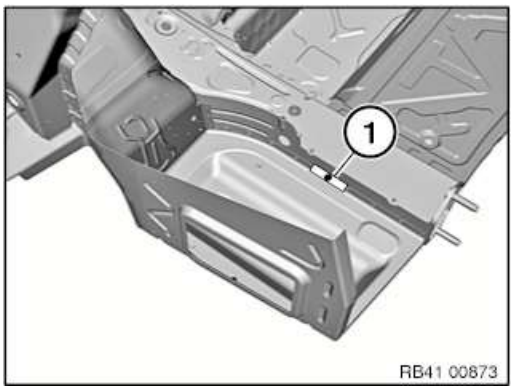
Apply adhesive to bonding surfaces.

Install new part and rivet with blind rivets .

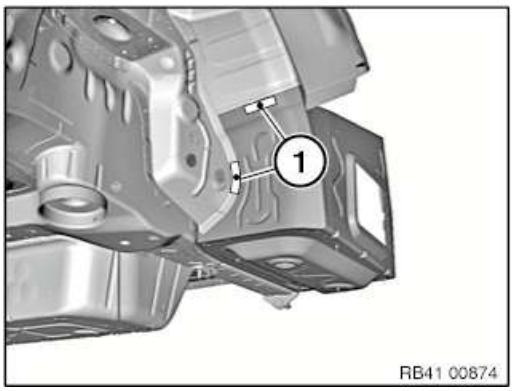
When installing the new part, make sure that all bonding surfaces have sufficient adhesive.



After hardening of the adhesive install 4 EMC screws in the areas shown (1).



In area (1) install one EMC screw.



In area (1) install two EMC screws.

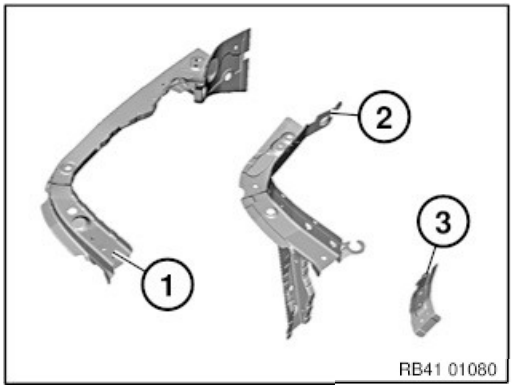
cardiagn.com

41 11 201 Replacing the carrier support before the wheel arch on the left

Read contents of Body, General.

Follow procedure for repair stage 2.

Strip down vehicle.



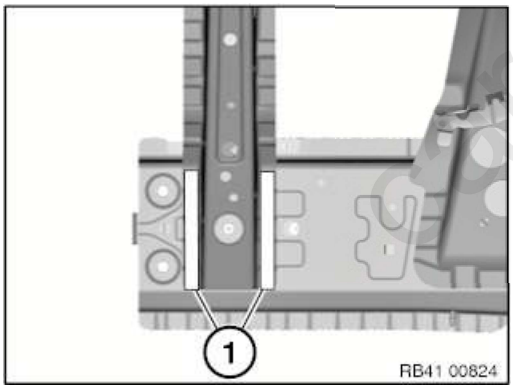
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Carrier support, outer wheel arch section
- (2) Wheel arch inner section support member
- (3) Carrier support end plate

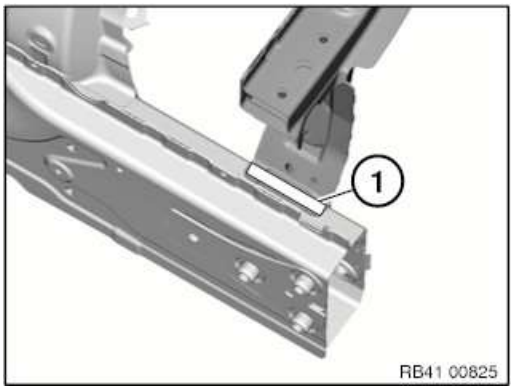
Following consumables are required:

Material	Quantity
Adhesive K1	1
Punch rivets N5	33
Sealant D1	
Cleaning agent R1	1

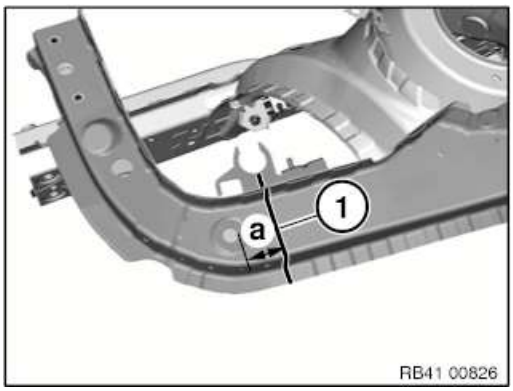
Removing carrier support



Open welded connections in areas (1).

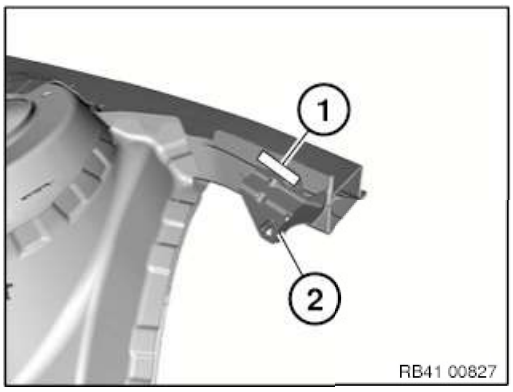


Open welded connections in area (1).

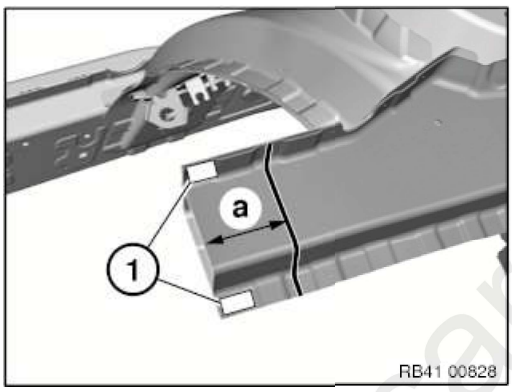


Mark severance cut (1) in accordance with dimension and detach carrier support.

Dimension a = approx. 35 mm from 15 mm diameter hole.



Detach welded connections (1) and remove holder (2).



Mark severance cut in accordance with dimension and cut.

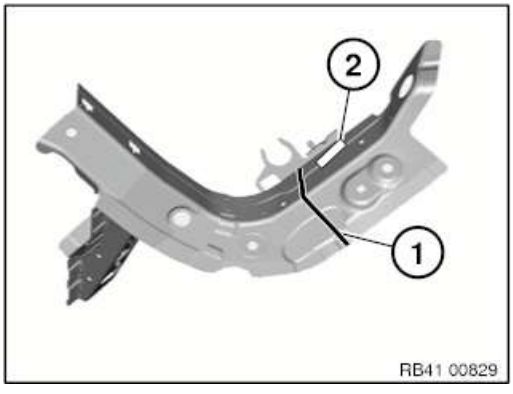
Important!

Cut outer metal panel only.

Dimension a = approx. 55 mm from previous separation cut.

Open weld joints in areas (1) and remove metal panel section.

New part preparation

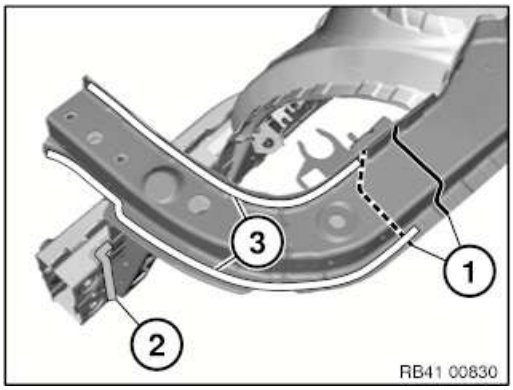


Mark severance cut (1) on inside part of carrier support in accordance with severance cut on vehicle and cut.

Release welded connections (2) for holder.

Mark severance cut on outside part of carrier support in accordance with severance cut on vehicle and disconnect.

cardiagn.com

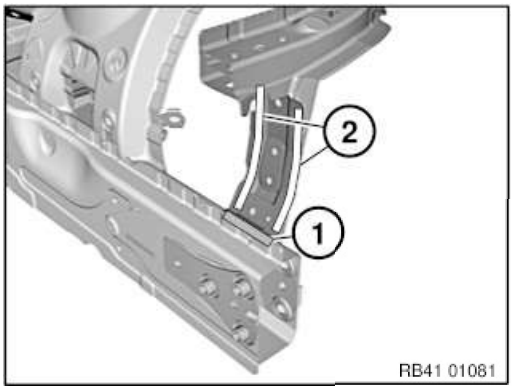


Adjust new parts with add-on parts to fit and secure.

Prepare reinforcement plates (welded) at severance cuts (1).

Prepare new parts in engine support area (2) for plug-welding.

Note:
In areas (3), the new components are joined using the adhesive riveting method.



In area (1), prepare new part and engine support for plug-welding.*Note:*
In areas (2), the new parts are joined using the adhesive riveting method.



Important!

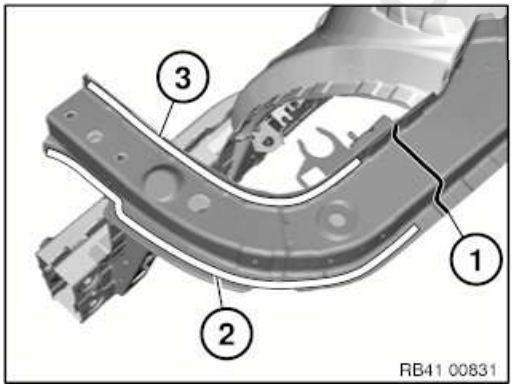
Structure bonding!

Observe preparation of bonding surfaces.



Installing carrier support

Install new part (carrier support for inner wheel arch section) and reinforcement plate and weld in place.



Install reinforcement plate in area of severance cut (1) and weld in place.

Clean all bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces, fit new component (outside part of carrier support) and fasten.

In areas (2) and (3), rivet new part with punch rivets N5.

Area	Number
2	11
3	10

Weld new part and reinforcement plate in the area of severence cut (1).

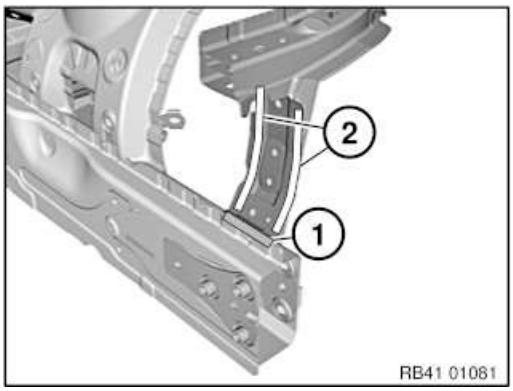
Important!

Risk of damage to adhesive area!

Avoid applying excessive heat to the neighbouring adhesive areas!

Note:
Do not seal new parts in the adhesive rivet areas (2) and (3). (visible area)

cardiagn.com



Apply adhesive to bonding surfaces, fit new part carrier support end plate and secure.

In areas (2), rivet new part with 12 punch rivets N5.

Weld new part in area (1).

Important!

Risk of damage to adhesive area!

Avoid applying excessive heat to the neighbouring adhesive areas!

Note:
Do not seal new parts in the area of the adhesive riveting. (visible area)

Remove excess adhesive.

Do not use any cleaning agents containing solvents.

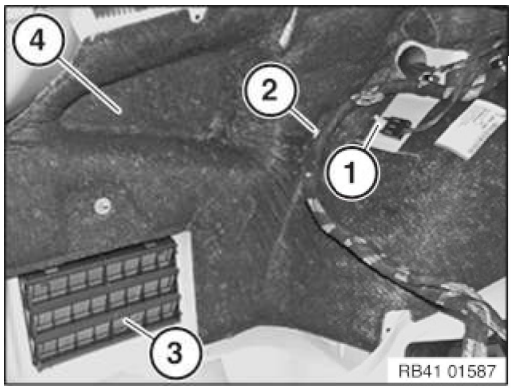
cardiagn.com

41 12 700 Stripping operations - Replace the luggage compartment floor and left side member (removed left side wall and 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 exhaust system (job number: petrol engine 18 00 020, diesel engine 18 00 018)
- Remove exhaust system heat shield
- Remove rear axle support (job number: 33 31 000)



Release nut (1) for ground connection.

Tightening torque 41 14 1AZ.

Release wiring harness at attachment point (2) and set aside.

Release latch mechanisms and remove rear ventilation (3).

Release insulating mat (4) and tie forwards.

Installation note:
The rear ventilation must not be damaged! (watertightness).

All latch mechanisms must engage audibly.

cardiagn.com

41 11 201 Stripping operations - replacing carrier support in front of left wheel arch

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.

- Disconnect battery earth lead (FR number: 61 20 900)
- Remove bumper trim (FR number: 51 11 156)
- Remove intake silencer housing (FR number: 13 71 000)
- Remove coolant expansion tank (job number: 17 11 100)
- Remove front underbody protection assembly (job number: 51 47 490)
- Remove centre front panel (job number: 41 33 050)
- Remove deformation element for front left bumper panel (job number: 51 11 770)
- Release line for air conditioning on capacitor
- Remove left wishbone (FR number: 31 12 000)
- Trim panel for cover on side member (job number: 51 71 447)
- Remove front wheel arch cover (front section) (job number: 51 71 038)
- Remove front side panel (job number: 41 35 081)
- Partially release left wiring harness

cardiagn.com

41 11 205 Stripping operations - Replacing complete 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.

- Disconnect battery earth lead (FR number: 61 20 900)
- Remove bumper trim (FR number: 51 11 156)
- Remove intake silencer housing (FR number: 13 71 000)
- Remove coolant expansion tank (job number: 17 11 00)
- Remove front underbody protection assembly (job number: 51 47 490)
- Remove centre front panel (job number: 41 33 050)
- Remove deformation element for front left bumper panel (job number: 51 11 770)
- Remove DSC hydraulic unit (job number: 34 51 527)
- Release line for air conditioning on capacitor
- Remove left wishbone (FR number: 31 12 000)
- Remove trim panel for cover on side member (job number: 51 71 447)
- Remove front wheel arch cover (front section) (job number: 51 71 038)
- Remove front wheel arch cover (rear section) (job number: 51 71 039)
- Remove front side panel (job number: 41 35 081)
- Partially release left wiring harness

cardiagn.com

41 14 030 Stripping operations - Replacing front right wheel arch

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.

- Disconnect battery earth lead (FR number: 61 20 900)
- Remove bumper trim (FR number: 51 11 156)
- Remove front underbody protection assembly (job number: 51 49 490)
- Remove intake silencer housing (FR number: 41 35 111)
- Remove front panel (FR number: 41 33 039)
- Remove radiator (job number: 17 11 100)
- Remove power distribution module (job number: 12 63 586)
- Remove front wheel arch cover (front section) (job number: 51 71 038)
- Remove front wheel arch cover (rear section) (job number: 51 71 039)
- Remove trim panel for cover on right side member (job number: 51 71 447)
- Remove front right side wall (job number: 41 35 082)
- Remove trailing link on right spring strut dome (job number: 51 71 371)
- Remove engine compartment lid (job number: 41 61 000)
- Remove right hinge for engine compartment lid (job number: 41 61 050)
- Remove right front door (job number: 41 51 080)
- Remove right partition wall for units compartment (job number: 51 71)
- Release right wiring harness
- Remove right trailing link (job number: 31 12 080)
- Remove right wishbone (job number: 31 12 000)
- Remove front right spring strut complete (job number: 31 31 000)

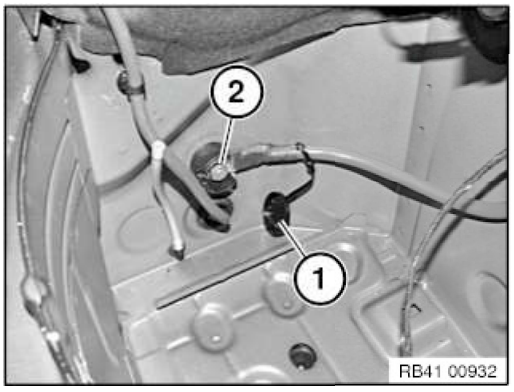
cardiagn.com

41 12 701 Stripping operations - Replacing luggage compartment floor and right side member (right side panel and tail panel removed)

Note:
Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.

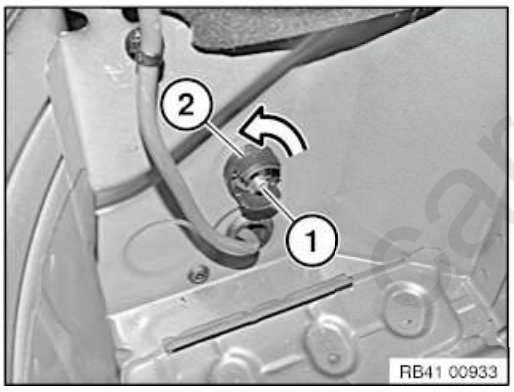
The following list basically represents the removal sequence.

- Remove exhaust system (job number: petrol engine 18 00 020, diesel engine 18 00 018)
- Remove exhaust system heat shield
- Remove rear axle support (job number: 33 31 000)



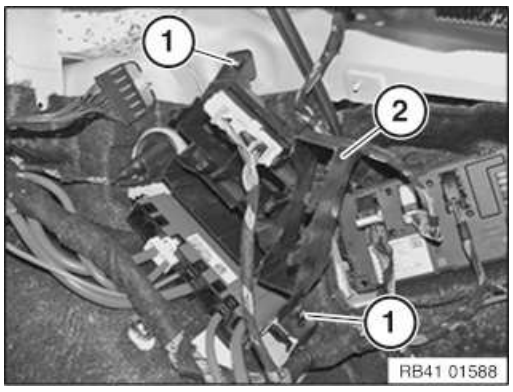
Remove cover (1) and release nut (2) below it.

Tightening torque 61 21 4AZ.



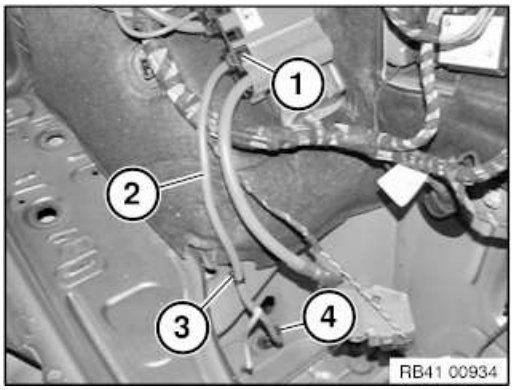
Turn the lock (2) counterclockwise and remove.

Push the positive battery cable connect (1) through the luggage compartment floor to the outside.



Release nuts (1), remove holder (2) and lay towards the front.

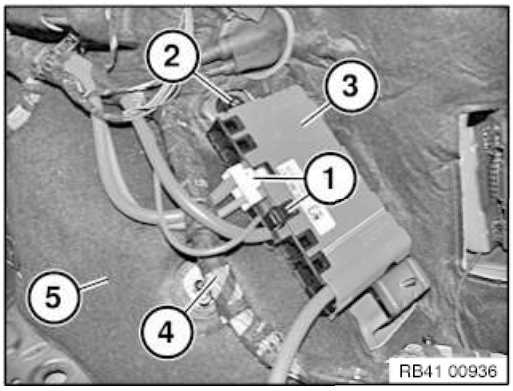
carsdiagn.com



Release plug connection (1) on power distribution box.

Release positive wire (2) from mounting (3).

Push grommet (4) with the positive battery cable through towards the outside and secure.



Unlock plug connections (1) and disconnect.

Release nut (2) and remove positive battery cable distributor (3).

Tightening torque 61 21 2AZ.

Release wiring harness (4) from retaining pin.

Partially release the insulating mat (5) and set aside.

cardiagn.com

41 11 095 Stripping operations - replacing engine support in front of left wheel arch

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.

- Disconnect battery earth lead (FR number: 61 20 900)
- Remove front panel (job number:Â 41 33 039)
- Remove cooling package
- Remove anti-roll bar (job number: 31 35 000)

  (Anti-roll bar is removed without lowering the front axle support)

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

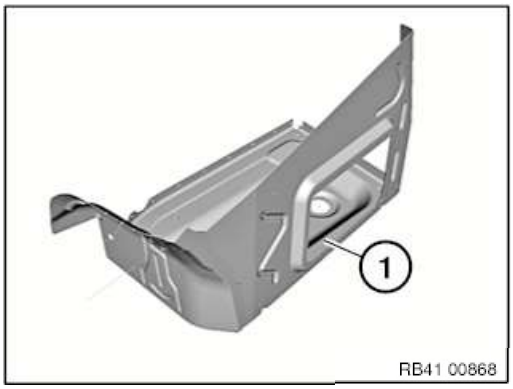
cardiagn.com

41 12 190 Replacing left luggage compartment base

Read contents of Body, General.

Procedure Observe repair stage 2!

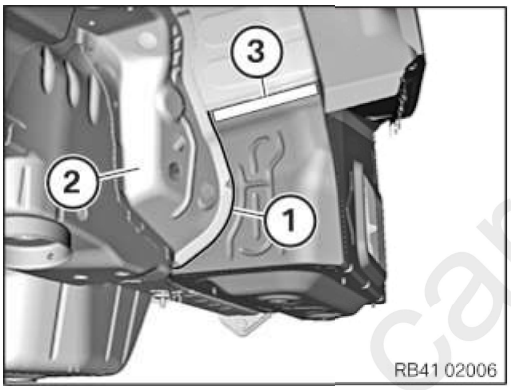
For stripping and rigging operations, refer to surrounding text on KSD CD (FRU number 41 12 190).



Following new body parts are required (see Electronic Parts Catalogue):

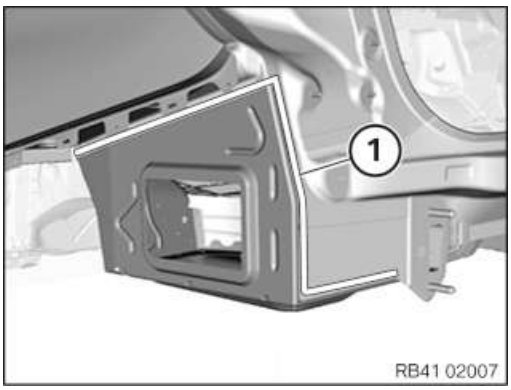
- (1) Luggage compartment floor, left section

Removal



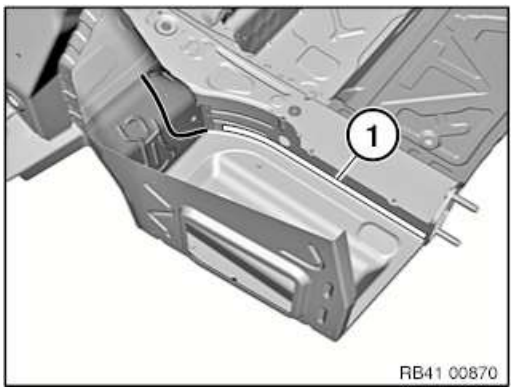
Mark severance cut (1) next to reinforcement (2) and disconnect.

Open welded connections in area (3).



Open welded connections in area (1).

cardiagn.com

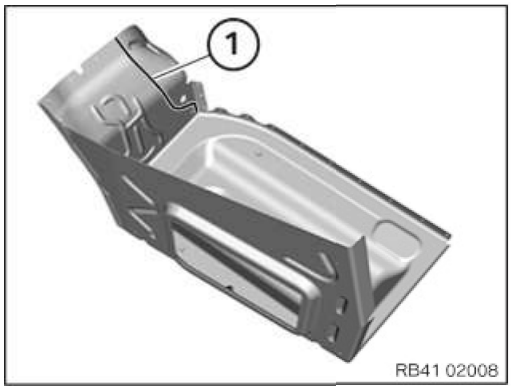


Open welded connections in area (1).

Remove luggage compartment floor.

Note:
Side wall and tail panel have been hidden for clarity.

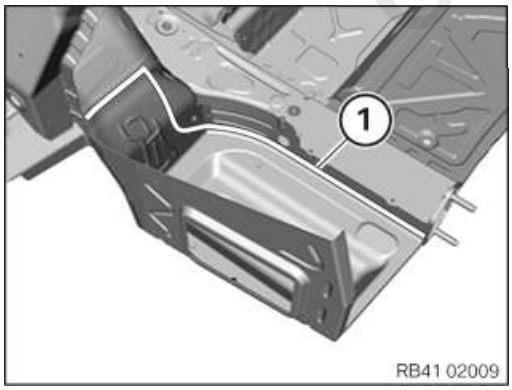
New part preparation



Mark severance cut at luggage compartment floor in accordance with severance cut on vehicle + 15 mm extra material and cut (1).

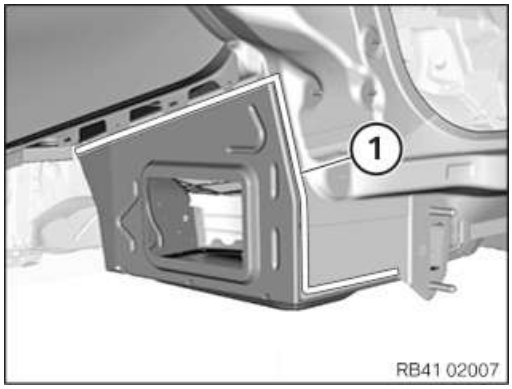
Adjust luggage compartment floor in combination with side panel and tail panel to fit and secure.

Installation



Install new part and weld in area (1).*Note:*
Side wall and tail panel have been hidden for clarity.

cardiagn.com



Weld new part in area (1).

cardiagn.com

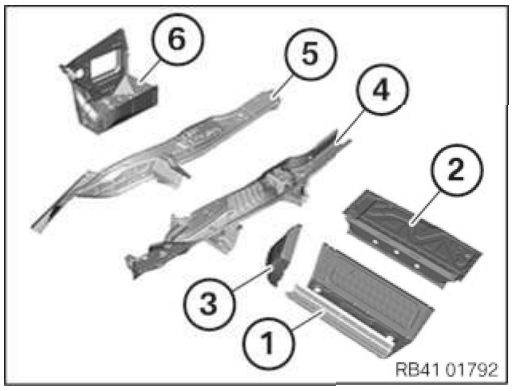
41 12 701 Replacing luggage compartment floor and right side member (right side panel and tail panel removed)

Read contents of Body, General.

Strip down vehicle.

Place vehicle on straightening bench.

Observe procedure of repair stage 3.



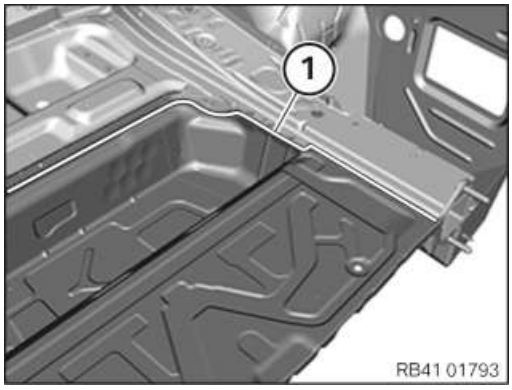
The following new parts are required (see Electronic Parts Catalogue):

- (1) Luggage compartment well
- (2) Luggage compartment floor, rear
- (3) Luggage compartment well, right
- (4) Bottom right side member
- (5) Frame side member, top right
- (6) Luggage compartment floor, right

Following consumables are required:

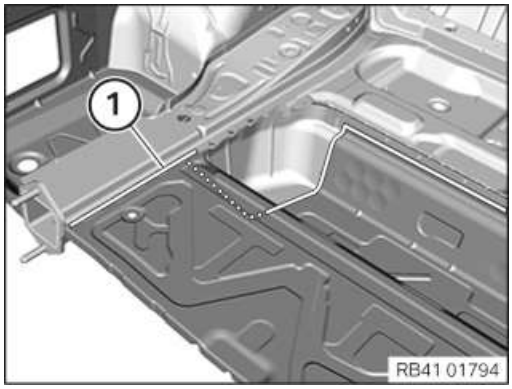
Material	Quantity
Adhesive K5a	2
Blind rivet N3	11
Blind rivet N6	8
EMC screw	4
Cleaning agent R1	1
Sealant D1	

Removal:

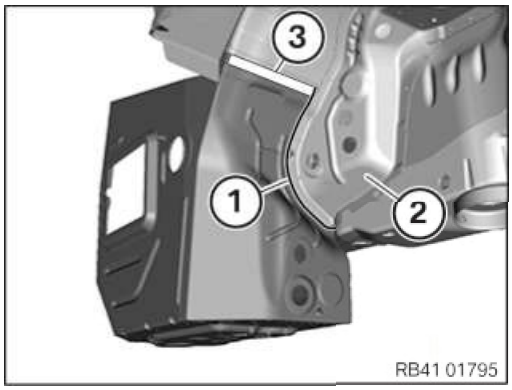


Open welded connections in area (1).

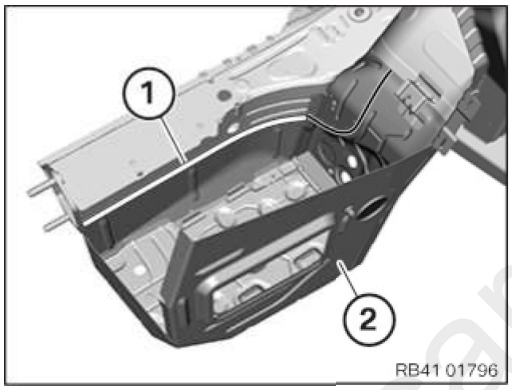
cardiagn.com



Open welded connections in area (1).

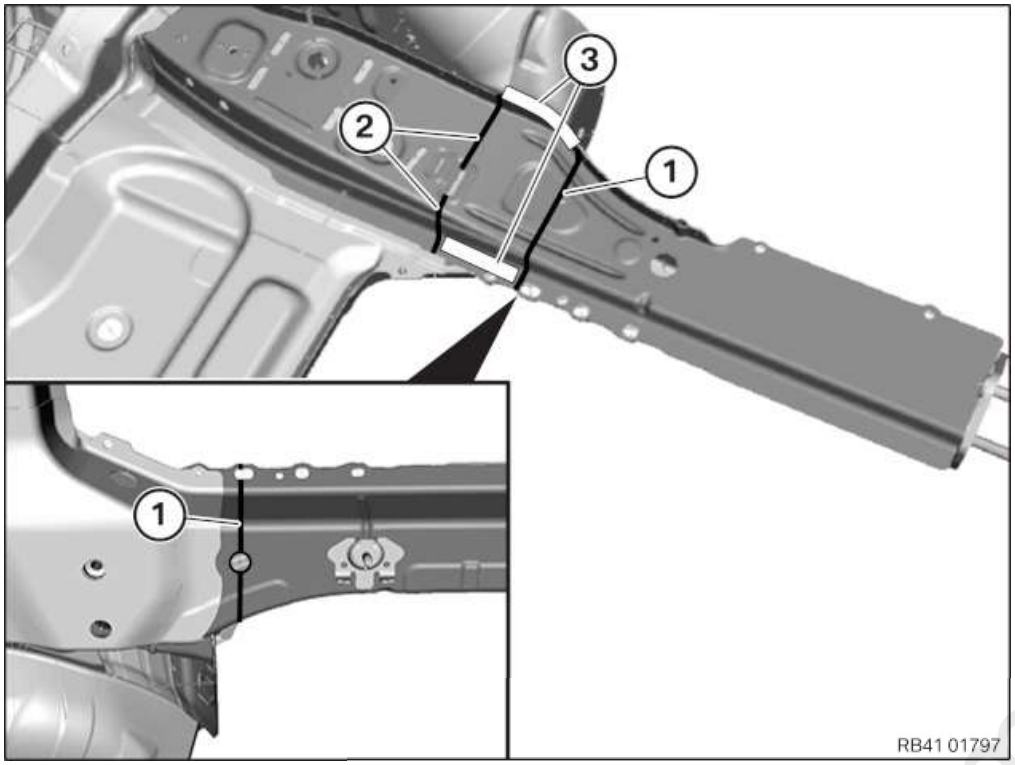


Mark severance cut (1) next to reinforcement (2) and disconnect.
Open welded connections in area (3).



Open welded connections in area (1).
Remove the luggage compartment floor.

cardiagn.com



Mark and cut severance cut (1) through Ø 20 mm hole.

Cut side member.

Mark severance cut (2) through elongated hole for MAG weld seam and cut.

Important!
Cut outer panel only.

Open welded connections in areas (3).

Remove side member.

Preparation of new part:

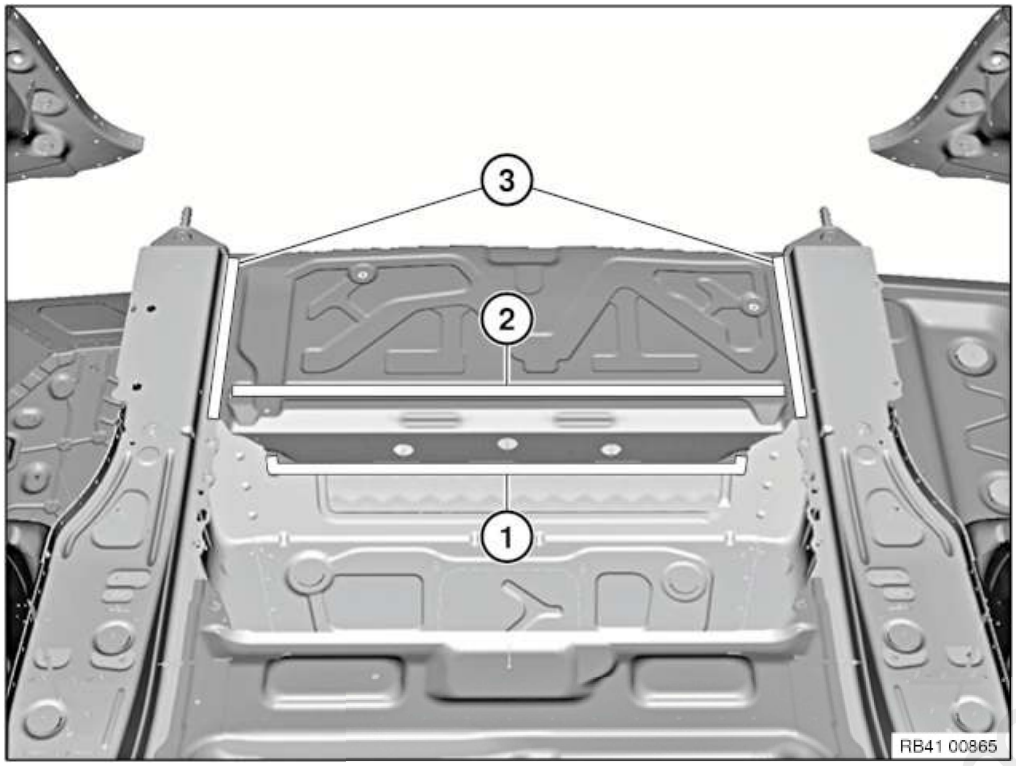
Mark severance cuts on side member in accordance with severance cuts on vehicle and cut.

Mark severance cut on luggage compartment floor in accordance with severance cut on vehicle + 15 mm for extra material and cut.

Prepare for severance cuts on the side member reinforcement plates.

Adjust new parts with alignment bracket or universal mount and in conjunction with side wall and tail panel and secure.

cardiagn.com



In areas (1) to (3), set bore holes ⌀ 4.2 mm for blind rivet.

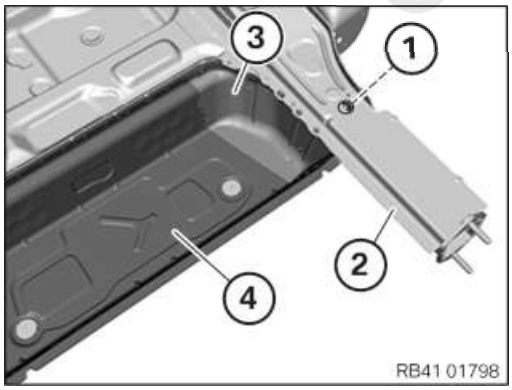
Area	Number
1	5
2	6
3	4 of

Remove new parts and deburr bore holes.



Important!

Do not grind new parts and body in area of bonding surfaces.



Installation of side member and luggage compartment well:

Install new parts and reinforcement plates with alignment bracket or universal mount and weld analogue to series standard:

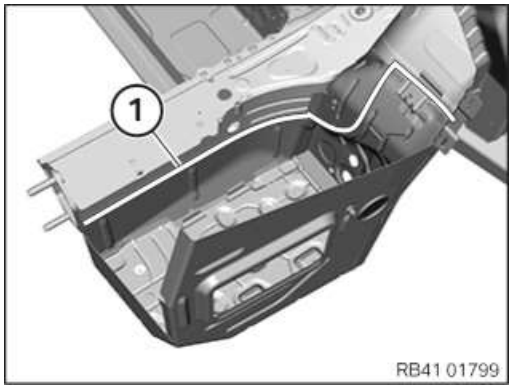
(1) Extension, bottom side member

(2) Extension, top side member

(3) Luggage compartment well, left

(4) Luggage compartment well

cardiagn.com



Installation of right luggage compartment floor:

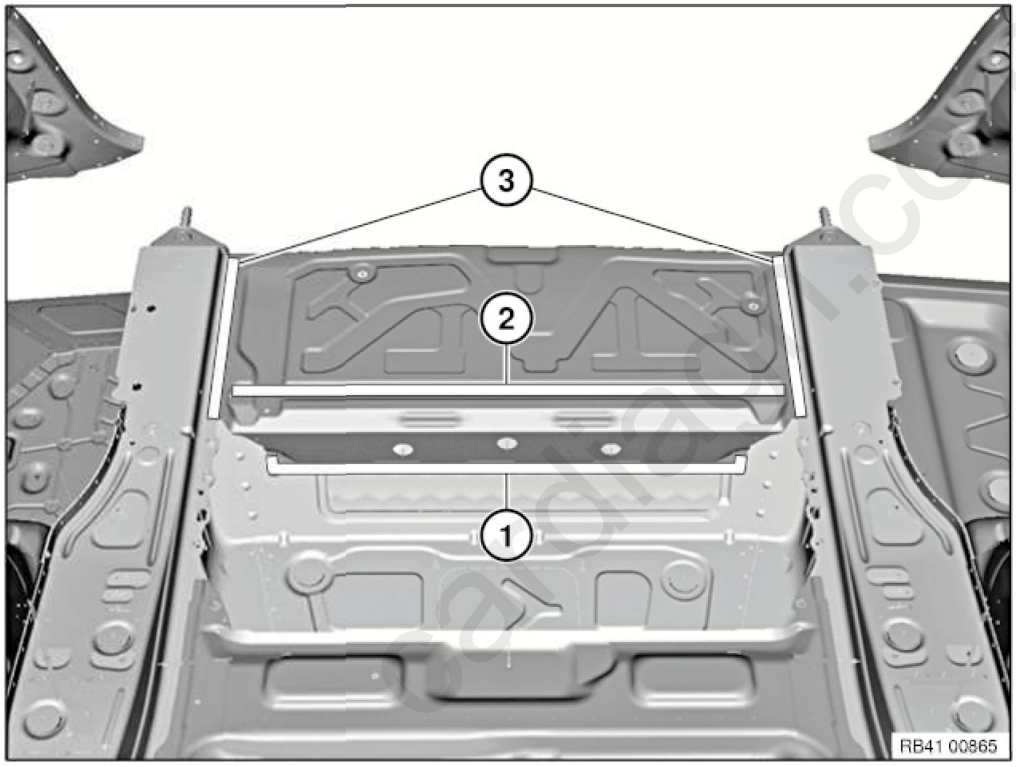
Install new part and weld in area (1).

Installation of rear luggage compartment floor:

Clean all bonding surfaces with cleaning agent R1.

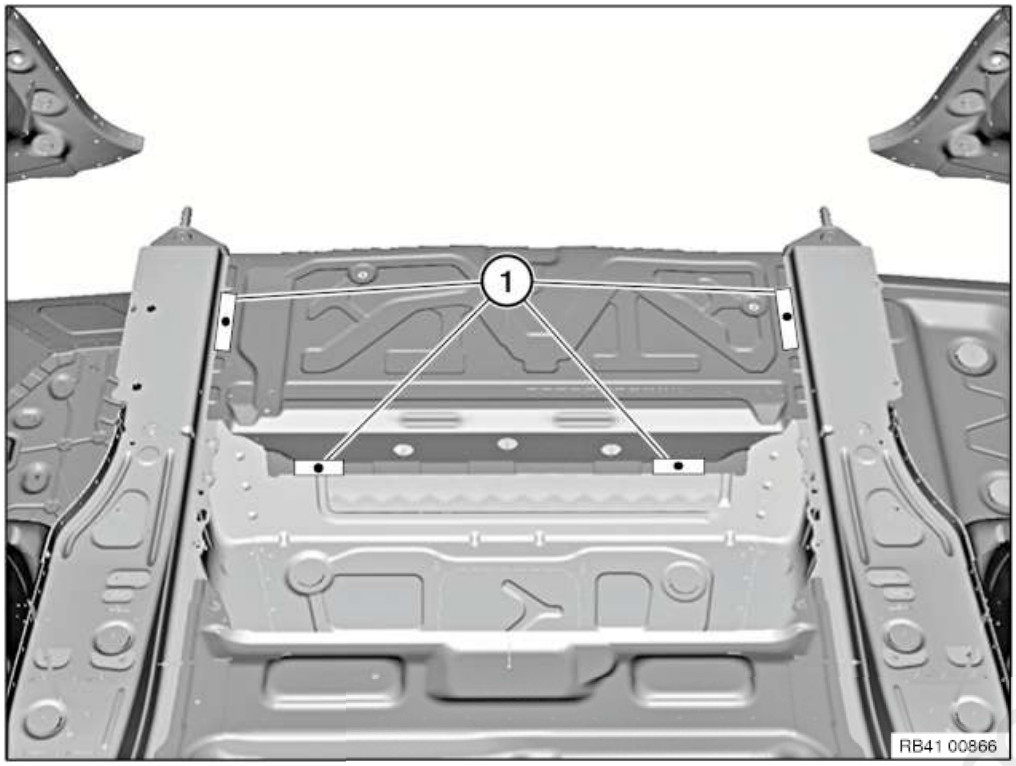
Apply adhesive to bonding surfaces.

When installing the new part, make sure that all bonding surfaces have sufficient adhesive.



Install new part and rivet with blind rivets .

Area	Number	Remarks
1	5	Blind rivet **N3**
2	6	Blind rivet **N3**
3	4 of	Blind rivet **N6**



After hardening of the adhesive install 4 EMC screws in the areas shown (1).

cardiagn.com

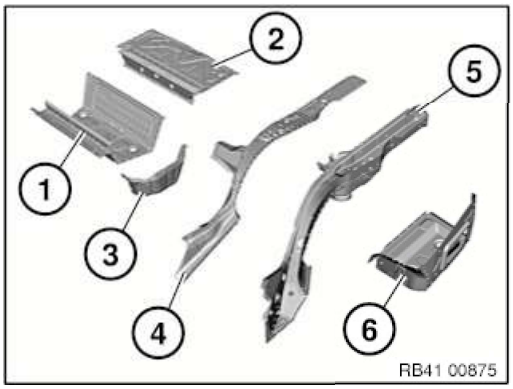
41 12 700 Replacing luggage compartment floor and side member on left (left side wall and tail panel removed)

Read contents of Body, General.

Strip down vehicle.

Place vehicle on straightening bench.

Observe procedure of repair stage 3.



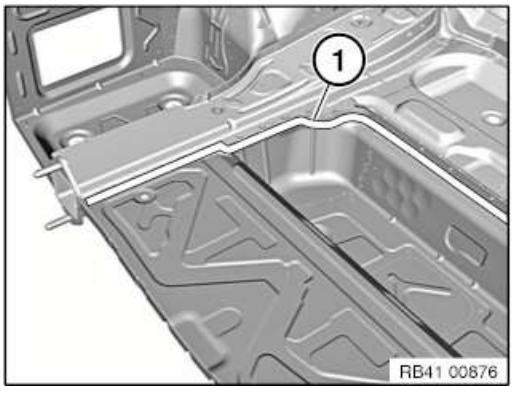
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Luggage compartment well
- (2) Luggage compartment floor, rear
- (3) Luggage compartment well, left
- (4) Frame side member, top left
- (5) Side member, bottom left
- (6) Luggage compartment floor, left section

Following consumables are required:

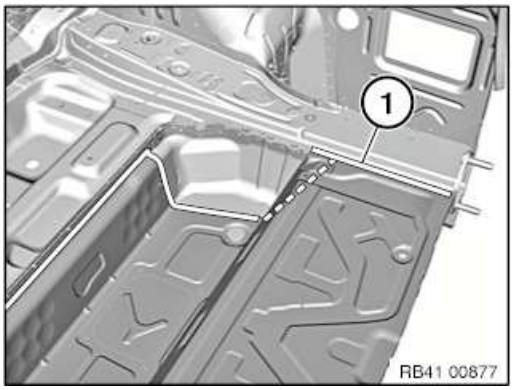
Material	Quantity
Adhesive K5a	2
Blind rivet N3	20
Blind rivet N6	8
EMC screw	7
Cleaning agent R1	1
Sealant D1	

Removal of side member and luggage compartment floor:

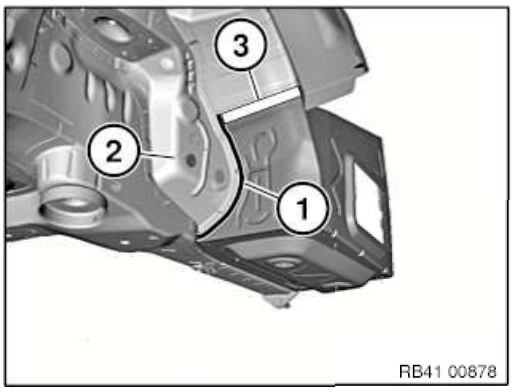


Open welded connections in area (1).

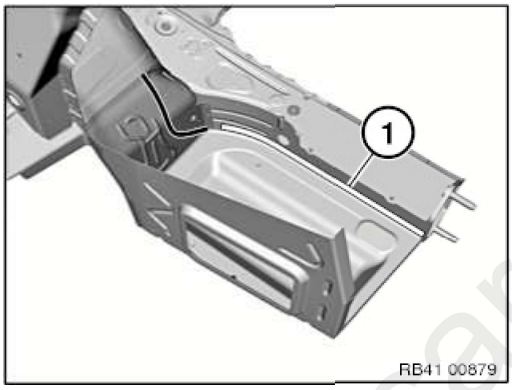
cardiagn.com



Open welded connections in area (1).

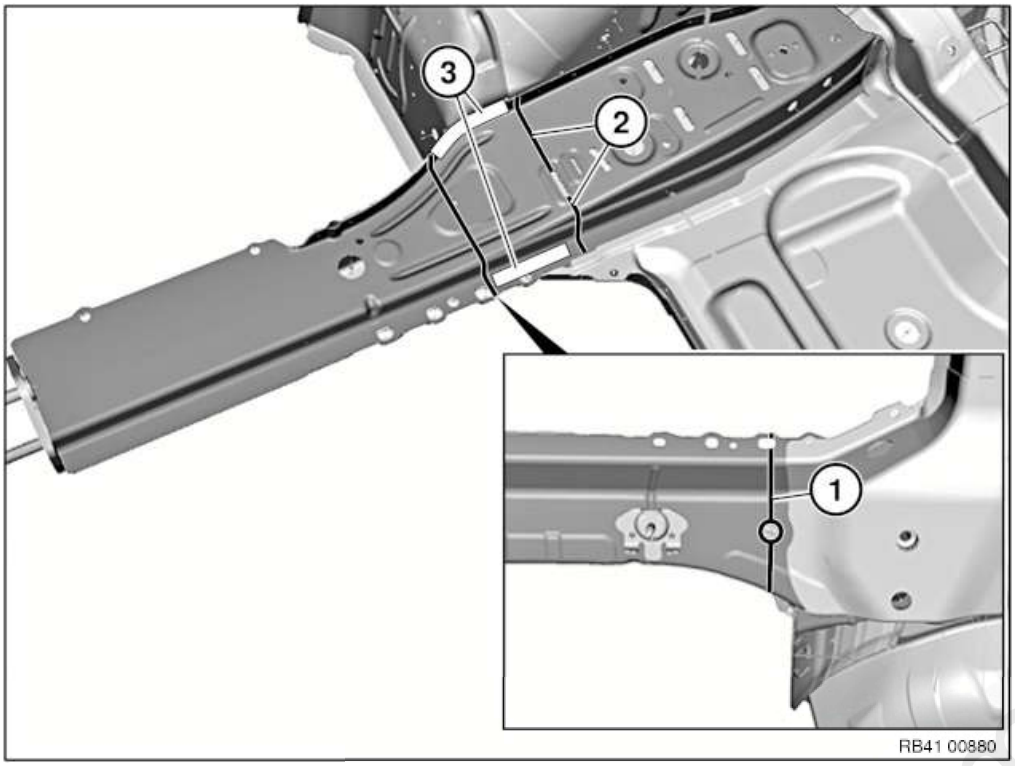


Mark severance cut (1) next to reinforcement (2) and disconnect.
Open welded connections in area (3).



Open welded connections in area (1).
Remove the luggage compartment floor.

cardiagn.com



Mark and cut severance cut (1) through Ø 20 mm hole.

Cut side member.

Mark severance cut (2) through elongated hole for MAG weld seam and cut.

Important!
Cut outer panel only.

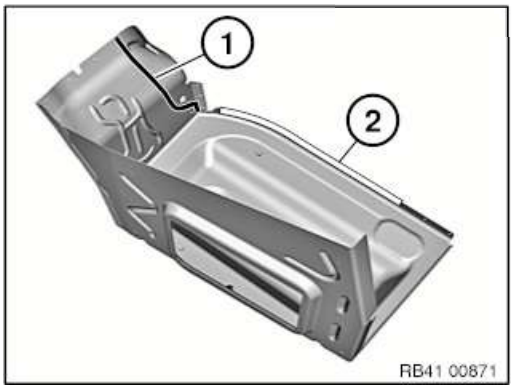
Open welded connections in areas (3).

Remove side member.

Preparation of new part:

Mark severance cuts on side members in accordance with severance cuts on vehicle and cut.

For all severance cuts on side members, prepare reinforcement plates.

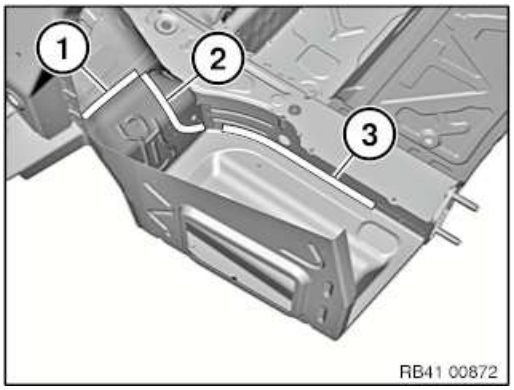


Mark severance cut at luggage compartment floor in accordance with severance cut on vehicle + 15 mm extra material and cut (1).

Set 4 4.2 mm ⌀ bore holes in area (2).

Adjust new parts with alignment bracket or universal mount and in conjunction with side wall and tail panel and secure.

cardiagn.com

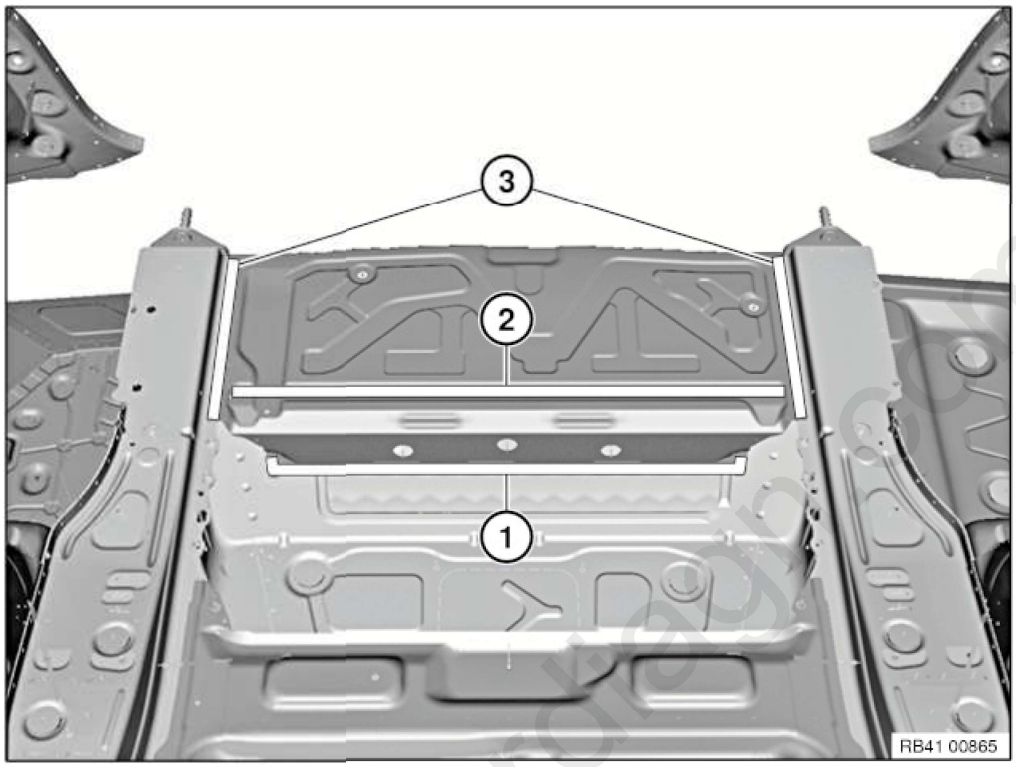


In areas (1) to (3), set ⌀ 4.2 mm bore holes for blind rivet N3.

Area	Number
1	2
2	3
3	4

If necessary, mark bore holes in area (3) on body and create after removal of new part.

Note:
Side wall and tail panel have been hidden for clarity.



In areas (1) to (3), set bore holes ⌀ 4.2 mm for blind rivet.

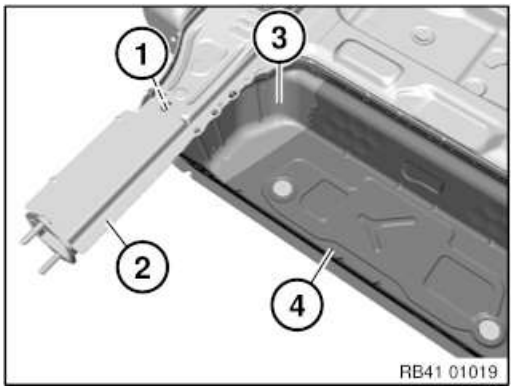
Area	Number	Remarks
1	5	Blind rivet **N3**
2	6	Blind rivet **N3**
3	4 of	Blind rivet **N6**

Remove new parts and deburr bore holes.



Important!

Do not grind new parts and body in area of bonding surfaces.



Installation of side member and luggage compartment well:

Install new parts and reinforcement plates with alignment bracket or universal mount and weld analogue to series standard:

(1) Extension, bottom side member

(2) Extension, top side member

(3) Luggage compartment well, left

(4) Luggage compartment well

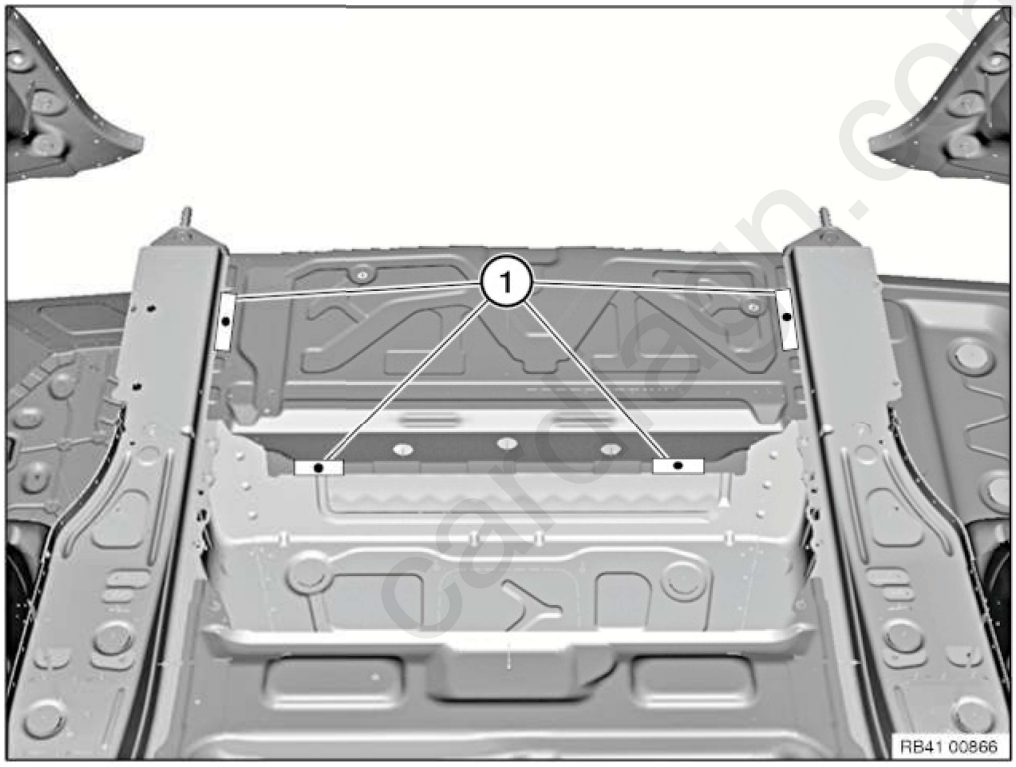
Installation of rear luggage compartment floor and left luggage compartment floor:

Clean all bonding surfaces with cleaning agent R1.

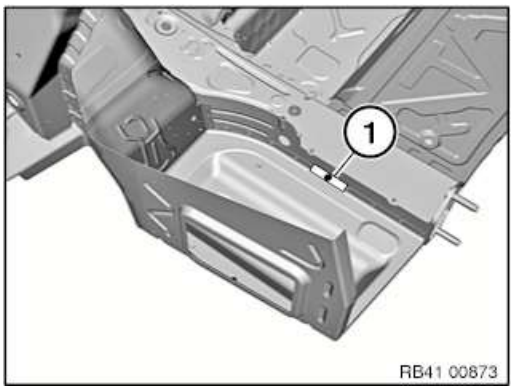
Apply adhesive to bonding surfaces.

Install new part and rivet with blind rivets .

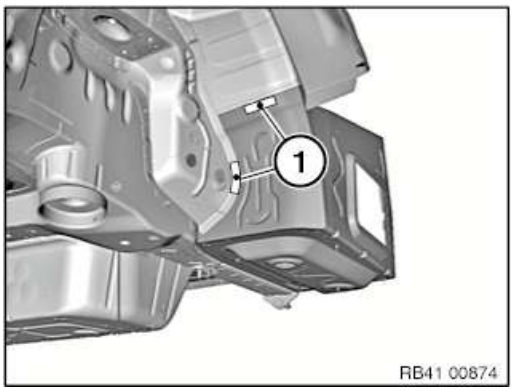
When installing the new part, make sure that all bonding surfaces have sufficient adhesive.



After hardening of the adhesive install 4 EMC screws in the areas shown (1).



In area (1) install one EMC screw.

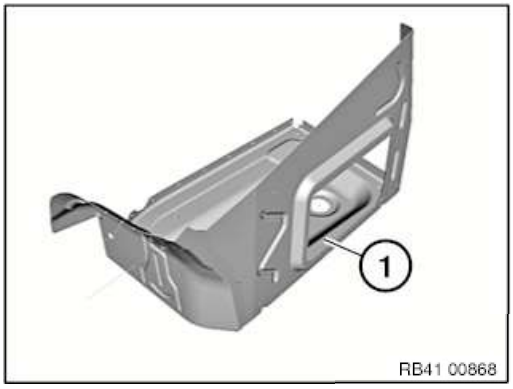


In area (1) install two EMC screws.

cardiagn.com

41 12 653 Replacing luggage compartment floor, left section (rear side panel and tail panel removed)

Read contents of Body, General.
Procedure Observe repair stage 2!
Strip down vehicle.



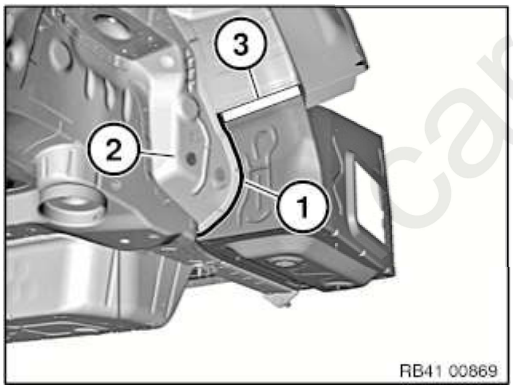
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Luggage compartment floor, left section

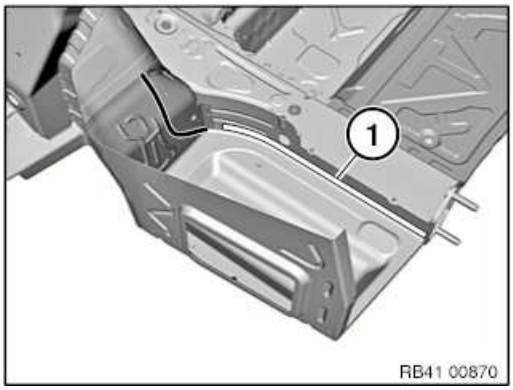
Following consumables are required:

Material	Quantity
Adhesive K5a	1
Blind rivet N3	9
EMC screw	3
Cleaning agent R1	1
Sealant D1	

Removal:



Mark severance cut (1) next to reinforcement (2) and disconnect.
Open welded connections in area (3).



Open welded connections in area (1).
Remove the luggage compartment floor.

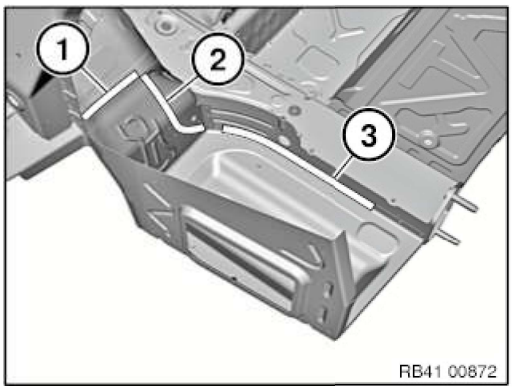
cardiagn.com

Preparation of new part:



Mark severance cut at luggage compartment floor in accordance with severance cut on vehicle + 15 mm extra material and cut (1).

Set 4 4.2 mm ⌀ bore holes in area (2).



Adjust luggage compartment floor in combination with side panel and tail panel to fit and secure.

In areas (1) to (3), set ⌀ 4.2 mm bore holes.

Area	Number
1	2
2	3
3	4

If necessary, mark bore holes in area (3) on body and create after removal of new part.

Remove new parts and deburr bore holes.

Note:
Side wall and tail panel have been hidden for clarity.

Important!

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

Installation:

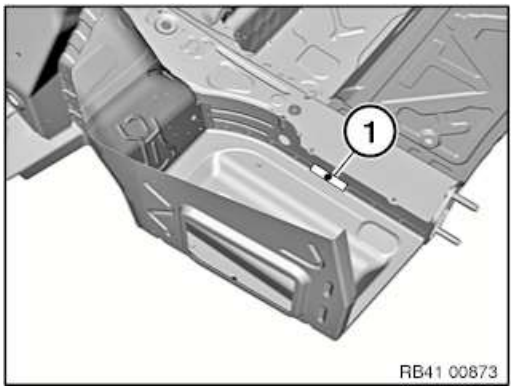
Clean all bonding surfaces on new part and on vehicle with cleaning agent R1.

Apply adhesive on all bonding and riveting surfaces.

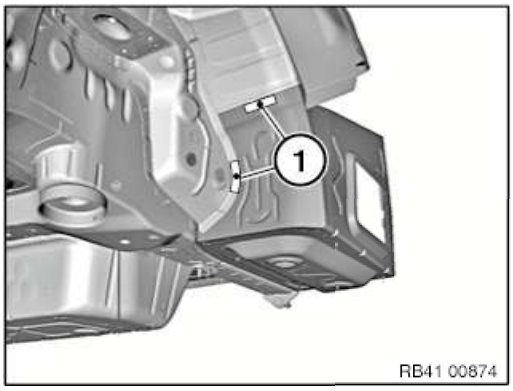
Install new part and rivet with blind rivets .

When installing the new part, make sure that all bonding surfaces have sufficient adhesive.

cardiagn.com



Fit an EMC screw after adhesive has hardened in area (1).



In areas (1), use two EMC screws.

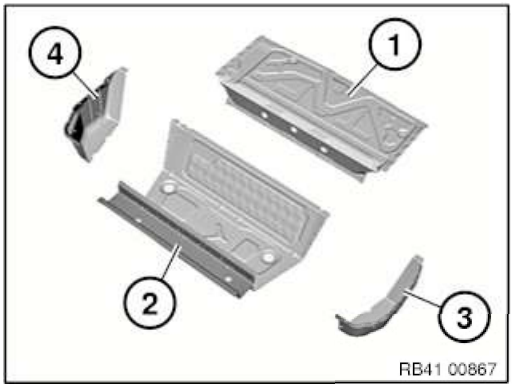
cardiagn.com

41 12 557 Replacing middle luggage compartment floor (tail panel has been removed)

Read contents of Body, General.

Observe procedure of repair stage 3.

Strip down vehicle



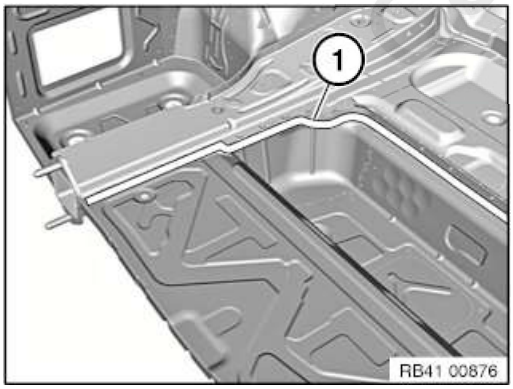
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Luggage compartment floor, rear
- (2) Luggage compartment well
- (3) Luggage compartment well, left
- (4) Luggage compartment well, right

Following consumables are required:

Material	Quantity
Adhesive K5a	2
Blind rivet N3	11
Blind rivet N6	8
EMC screws	4
Cleaning agent R1	1
Sealant D1	

Removal



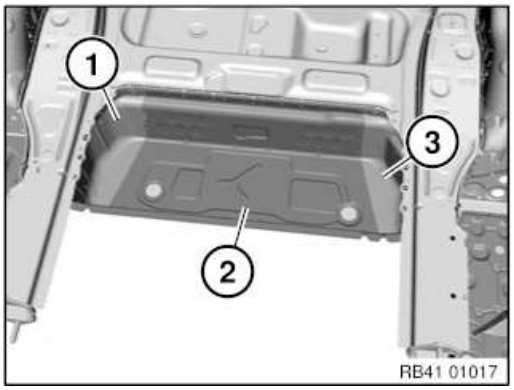
Operation is described on the left side. Right side identical.

Open welded connections in area (1) and remove luggage compartment floor.

New part preparation

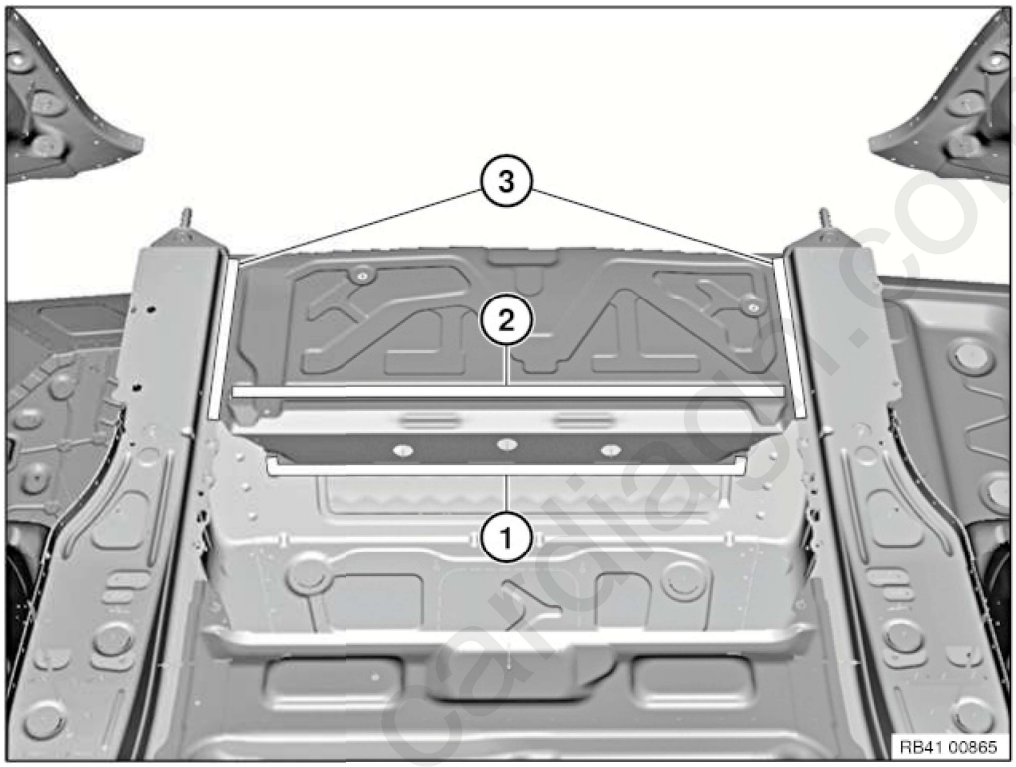
Loosen component not required (cross member) from luggage compartment well.

carsdiagn.com



Prepare the following new parts for joining by welding.
(1) Luggage compartment well, left
(2) Luggage compartment well
(3) Luggage compartment well, right
Adjust new parts to fit and secure.

New part preparation luggage compartment floor, rear
Adjust new part in conjunction with tail panel and secure.

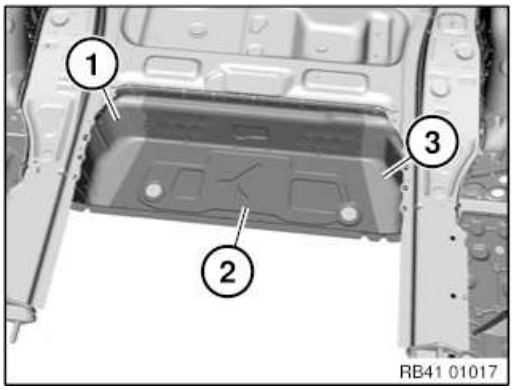


In areas (1) to (3), set ⌀ 4.2 mm bore holes for blind rivets .

Area	Number	Remarks
1	5	Blind rivet **N3**
2	6	Blind rivet **N3**
3	4 of	Blind rivet **N6**

Remove new parts and deburr bore holes.

Important!
Do not grind new part and body in area of bonding surfaces.



Installation

Install new parts and weld the same as series

(1) Luggage compartment well, left

(2) Luggage compartment well

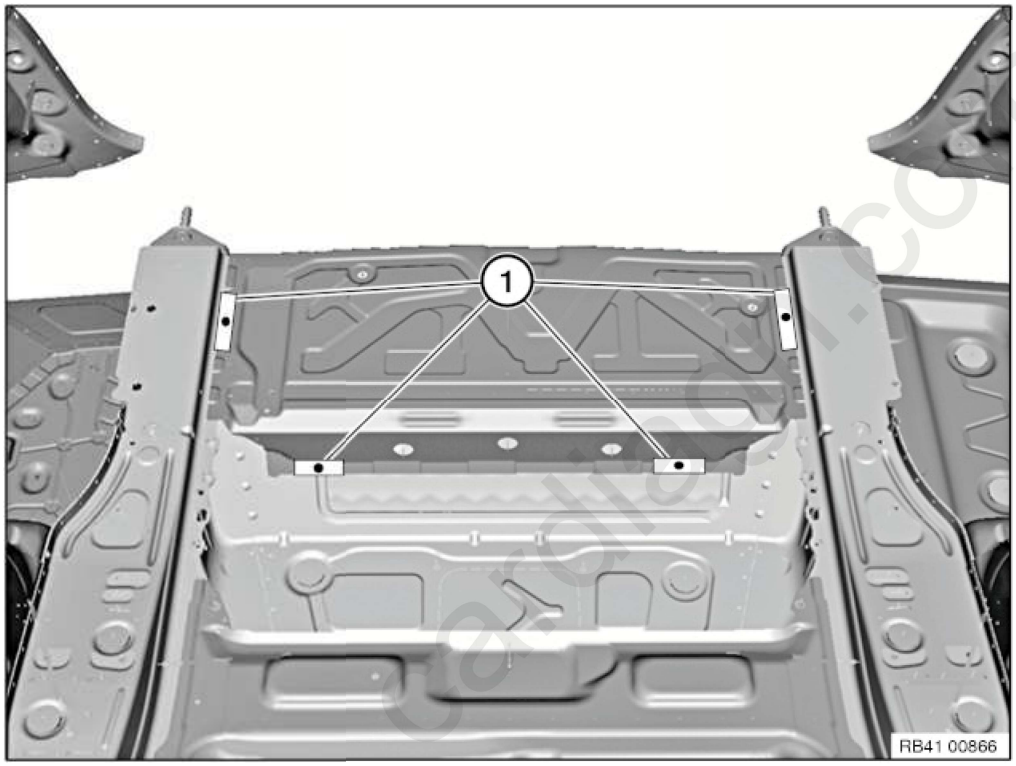
(3) Luggage compartment well, right

Installation of luggage compartment floor, rear

Clean all bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Install new part and rivet with blind rivets.

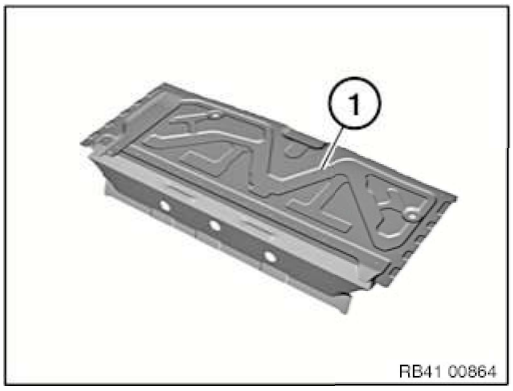


After hardening of the adhesive install 4 EMC screws in areas shown (1).

41 12 660 Replacing rear luggage compartment floor (tail panel removed)

Read contents of Body, General.
Strip down vehicle.

Follow procedure for repair stage 2.



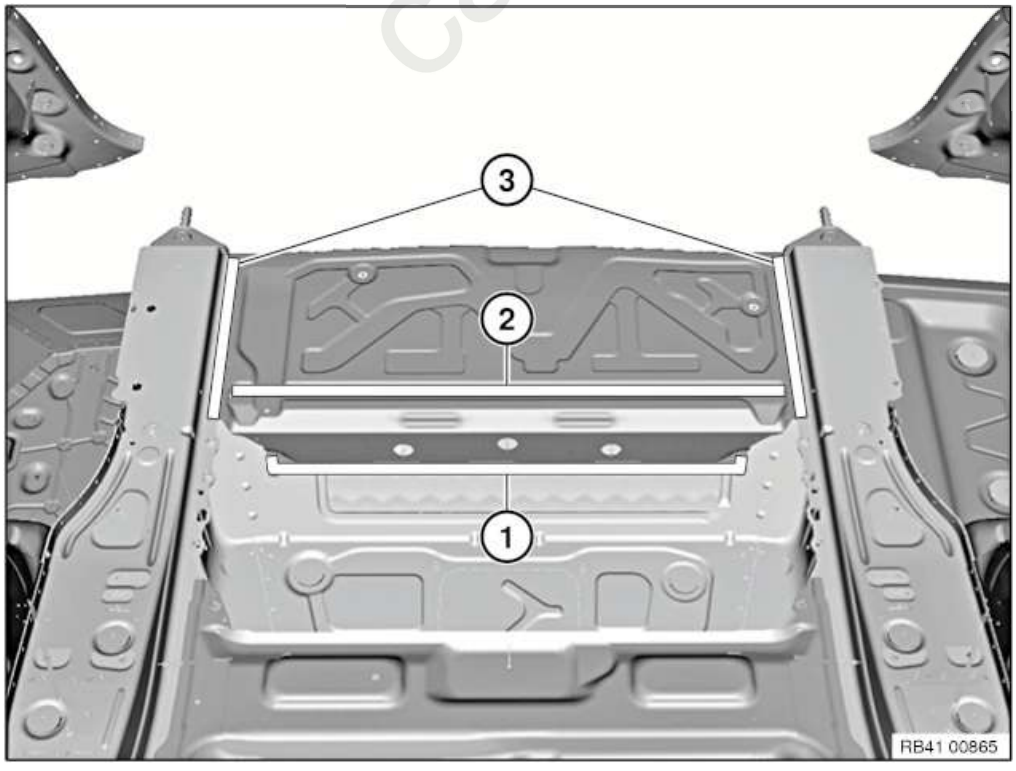
Following new body parts are required (refer to Electronic Parts Catalogue):

- (1) Luggage compartment floor, rear

Following consumables are required:

Material	Quantity
Adhesive K5a	2
Blind rivet N3	11
Blind rivet N6	8
EMC screw	4
Cleaning agent R1	1
Sealant D1	

Removal:

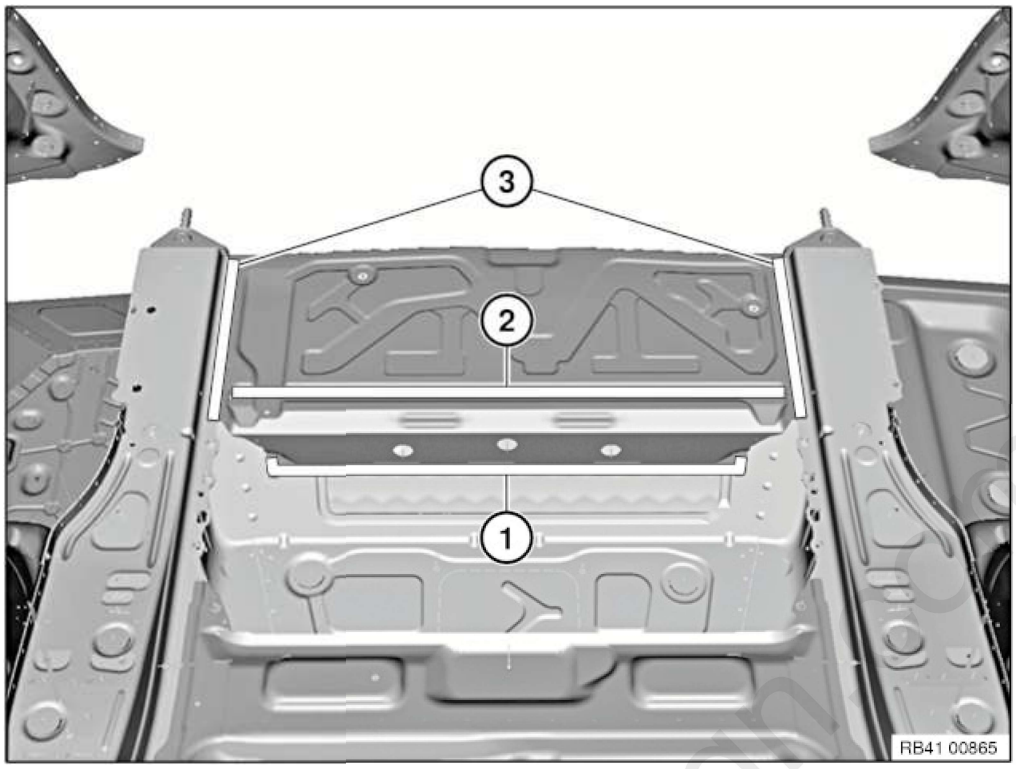


cardiagn.com

Release welded connections in areas (1) to (3) and remove luggage compartment floor.

Preparation of new part:

Adjust new part in conjunction with tail panel and secure.



In areas (1) to (3), set bore holes ⌀ 4.2 mm for blind rivet.

Area	Number	Remarks
1	5	Blind rivet **N3**
2	6	Blind rivet **N3**
3	4 of	Blind rivet **N6**

Remove new parts and deburr bore holes.

Important!

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

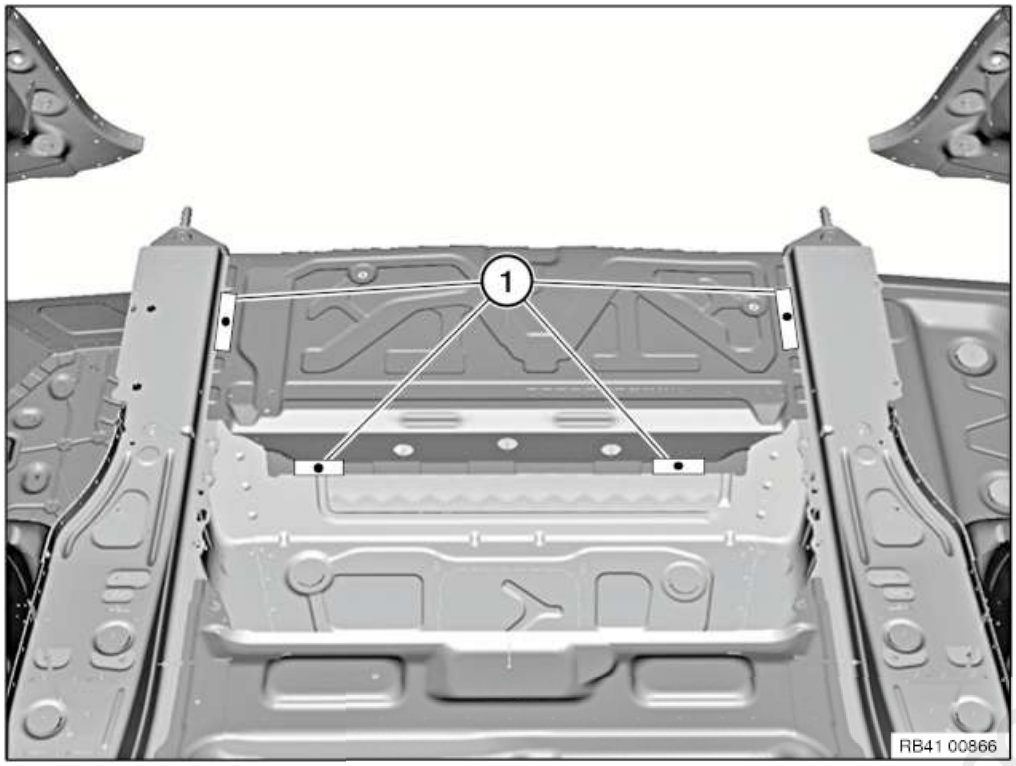
Installation:

Clean all bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Install new part and rivet with blind rivets .

cardiagn.com



After hardening of the adhesive install 4 EMC screws in areas shown (1).

cardiagn.com

41 12 654 Replacing right luggage compartment floor (rear side panel and tail panel removed)

Read contents of Body, General.

For stripping and rigging operations, refer to texts on KSD CD (job number 41 12 654).

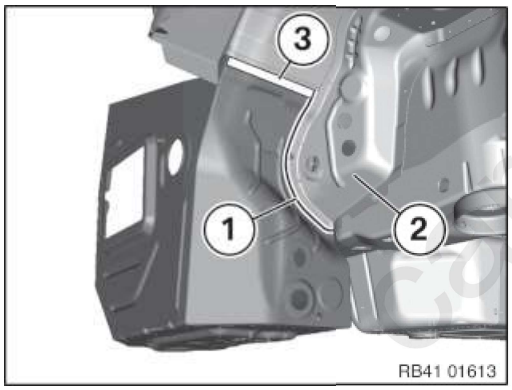
Use only approved spot-welding apparatus for repairs.



Following new body parts are required (see Electronic Parts Catalogue):

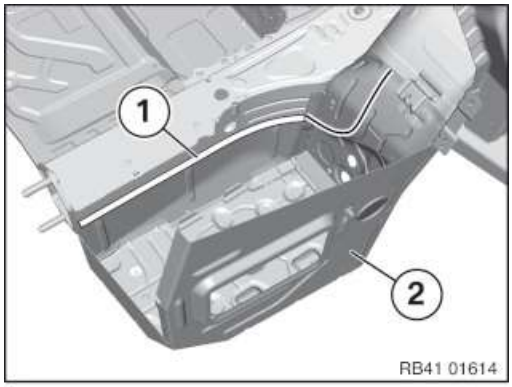
- (1) Luggage compartment floor, right

Removal



Mark severance cut (1) next to reinforcement (2) and disconnect.

Open welded connections in area (3).



Open welded connections in area (1).

Remove the luggage compartment floor.

cardiagn.com

New part preparation

Mark severance cut on luggage compartment floor in accordance with severance cut on vehicle + 15 mm for extra material and cut.

Adjust luggage compartment floor in combination with side panel and tail panel to fit.

Prepare luggage compartment floor for joining by welding.

Installation

Install new part and weld.

cardiagn.com

41 12 191 Replacing the right luggage compartment floor



Operation is identical to replacing left luggage compartment floor.

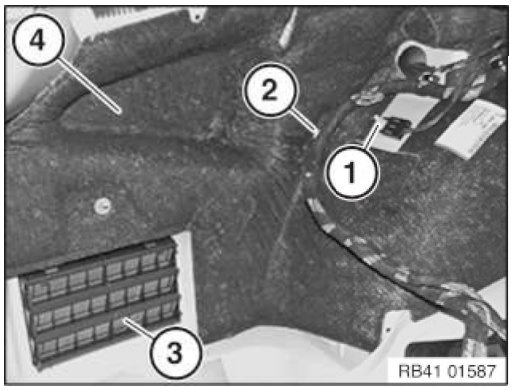
cardiagn.com

41 12 700 Stripping operations - Replace the luggage compartment floor and left side member (removed left side wall and 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 exhaust system (job number: petrol engine 18 00 020, diesel engine 18 00 018)
- Remove exhaust system heat shield
- Remove rear axle support (job number: 33 31 000)



Release nut (1) for ground connection.

Tightening torque 41 14 1AZ.

Release wiring harness at attachment point (2) and set aside.

Release latch mechanisms and remove rear ventilation (3).

Release insulating mat (4) and tie forwards.

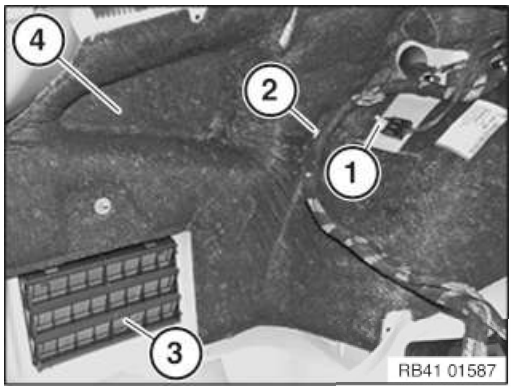
Installation note:
The rear ventilation must not be damaged! (watertightness).

All latch mechanisms must engage audibly.

cardiagn.com

41 12 653 Stripping operations - Replacing left luggage compartment floor (rear side wall and tail panel removed)

Note:
Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.



Release nut (1) for ground connection. Remove ground connection.

Tightening torque 41 14 1AZ.

Release wiring harness at attachment point (2) and set aside.

Release latch mechanisms and remove rear ventilation (3).

Release insulating mat (4) and tie forwards.

Installation note:
The rear ventilation must not be damaged! (watertightness).

All latch mechanisms must engage audibly.

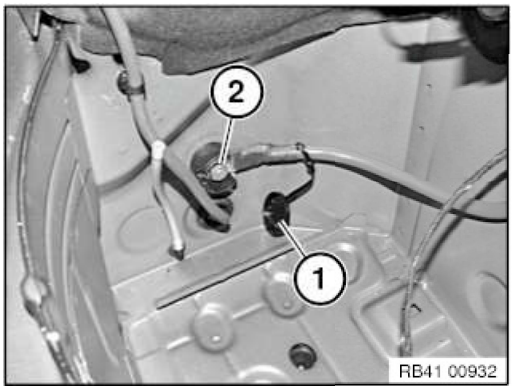
cardiagn.com

41 12 701 Stripping operations - Replacing luggage compartment floor and right side member (right side panel and tail panel removed)

Note:
Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.

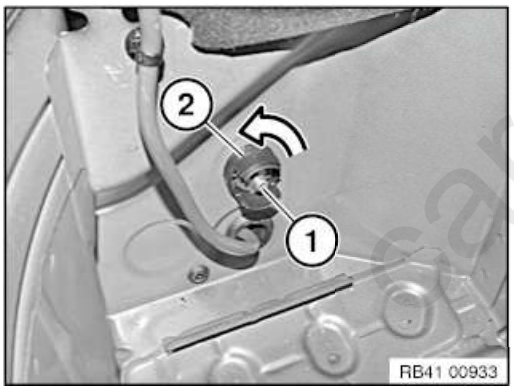
The following list basically represents the removal sequence.

- Remove exhaust system (job number: petrol engine 18 00 020, diesel engine 18 00 018)
- Remove exhaust system heat shield
- Remove rear axle support (job number: 33 31 000)



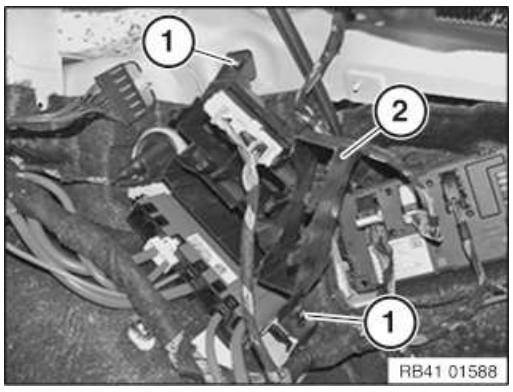
Remove cover (1) and release nut (2) below it.

Tightening torque 61 21 4AZ.



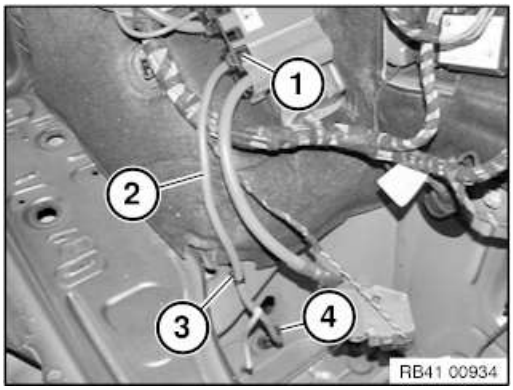
Turn the lock (2) counterclockwise and remove.

Push the positive battery cable connect (1) through the luggage compartment floor to the outside.



Release nuts (1), remove holder (2) and lay towards the front.

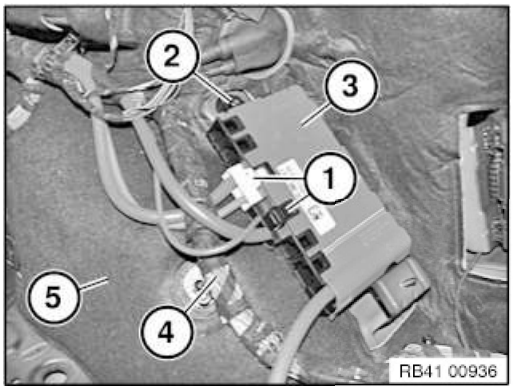
carsdiagn.com



Release plug connection (1) on power distribution box.

Release positive wire (2) from mounting (3).

Push grommet (4) with the positive battery cable through towards the outside and secure.



Unlock plug connections (1) and disconnect.

Release nut (2) and remove positive battery cable distributor (3).

Tightening torque 61 21 2AZ.

Release wiring harness (4) from retaining pin.

Partially release the insulating mat (5) and set aside.

cardiagn.com

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 (job number: 18 00 020)
- Remove exhaust system heat shield
- Remove rear axle support (job number: 33 31 000)

cardiagn.com

41 12 660 Stripping operations - Replacing luggage compartment floor, rear (tail panel removed)

Note:
Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.

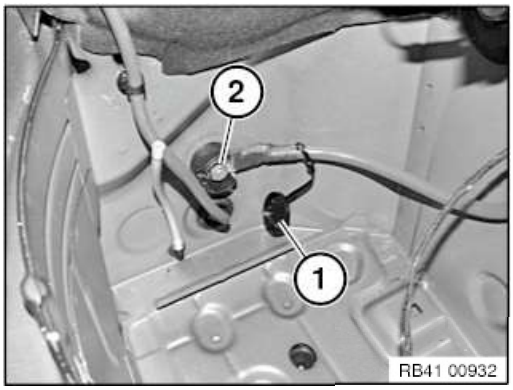
The following list basically represents the removal sequence.

- Remove exhaust system (job number: 18 00 020)
- Remove the exhaust system heat shield

cardiagn.com

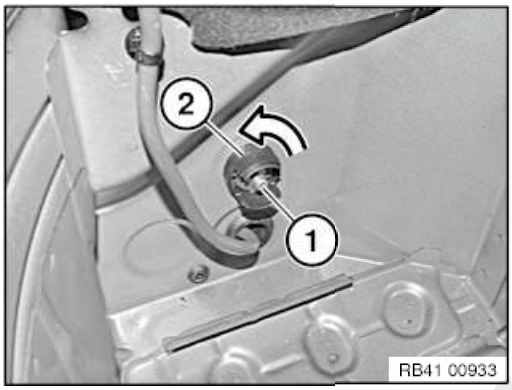
41 12 654 Stripping operations - Replacing right luggage compartment floor (rear right side wall and tail panel removed)

Note:
Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.



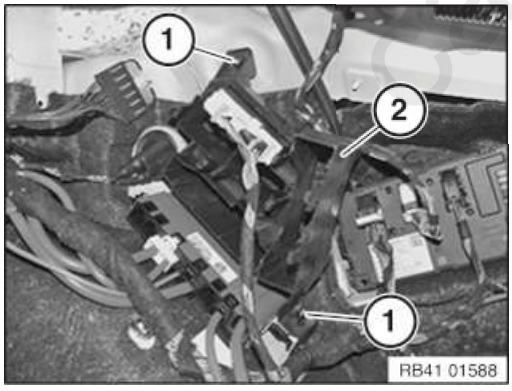
Remove cover (1) and release nut (2) below it.

Tightening torque 61 21 4AZ.



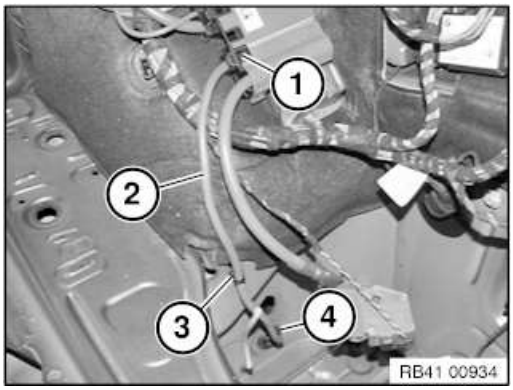
Turn the lock (2) counterclockwise and remove.

Push the positive battery cable connector (1) through the luggage compartment floor to the outside.



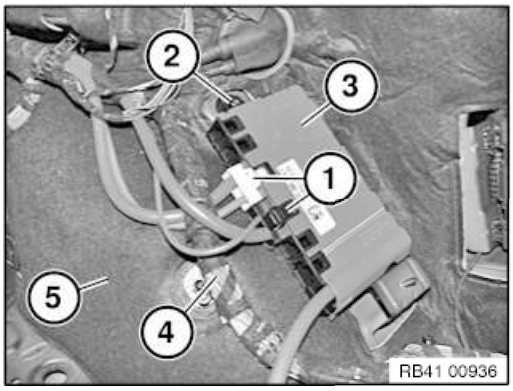
Release nuts (1) and remove holder (2).

cardiagn.com



Release plug connection (1) on power distribution box.

Release positive wire (2) at attachment point (3), and push grommet (4) with positive wire through towards the outside.



Unlock plug connections (1) and disconnect.

Release nut (2) and remove positive battery cable distributor (3).

Tightening torque 61 21 2AZ.

Release wiring harness (4) from retaining pin.

Partially release the insulating mat (5) and set aside.

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

cardiagn.com

41 14 030 Replace front right wheel arch



observe specific procedure regarding the vehicle identification number.
(order new body part with vehicle identification number if necessary)



Operation is identical to replacing "front left wheel arch".

cardiagn.com

41 11 072 Replacing engine support with front right wheel arch in front of bulkhead



Observe special procedure for vehicle identification number (order body new part with vehicle identification number if required).



Work is identical to replacing the " engine support in front of the bulkhead with the left wheel arch".

cardiagn.com

41 11 071 Replacing engine support with left wheel arch in front of bulkhead

Observe procedure of repair stage 3.

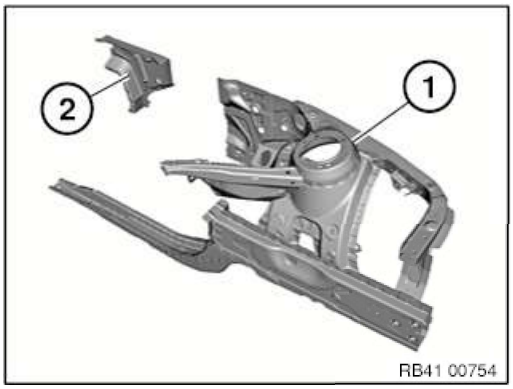
Read contents of Body, General.

For stripping and rebuilding operations, refer to surrounding texts on KSD (flat rate unit number 41 11 071).

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.



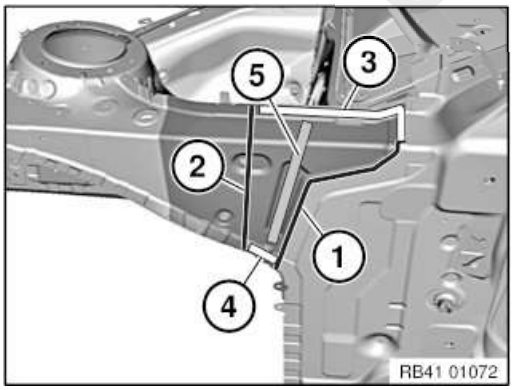
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Wheel arch, front
- (2) Extension, wheel arch carrier support
- (3) Shaped part, wheel arch carrier support (not shown)

Following consumables are required.

Material	Quantity
Adhesive K1	1
Blind rivet N7	9
Blind rivet N3	5
Punch rivetN5	12
Sealant D1	
Cleaning agent R1	1

Removal



Mark severance cut (1) at component edge and cut.

Mark severance cut (2) as pictured and cut.

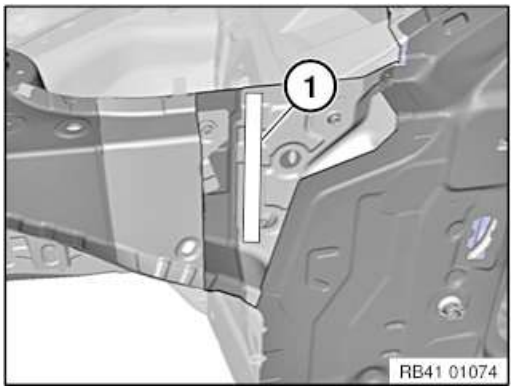
Loosen spot-welded adhesive joints in area (3).

Open welded connections in area (4).

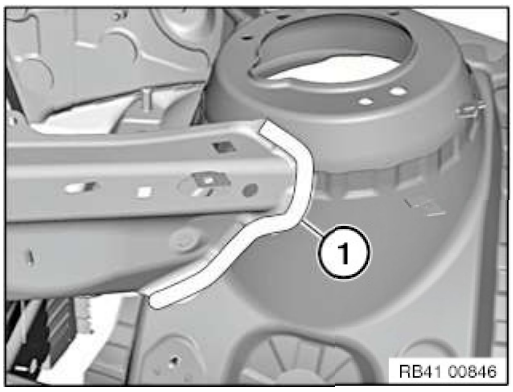
Release metal section from cavity sealing (5) and remove.

Remove cavity sealing (5).

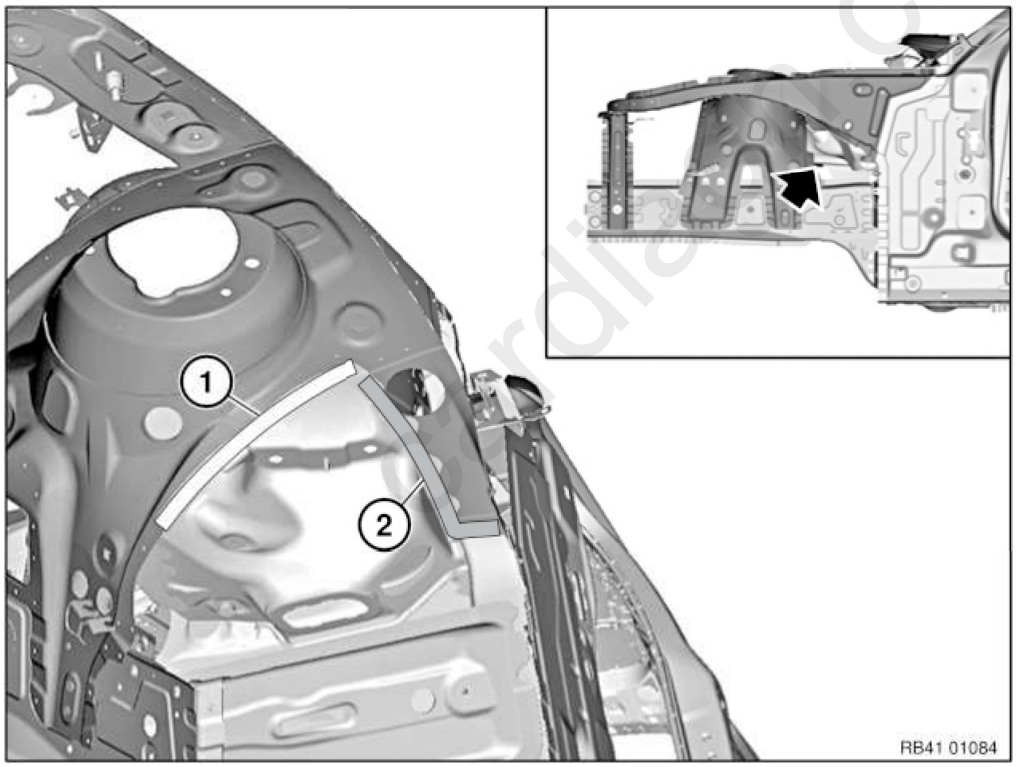
cardiagn.com



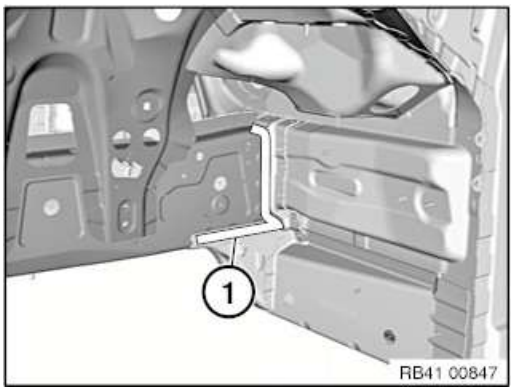
Open welded connections in area (1).



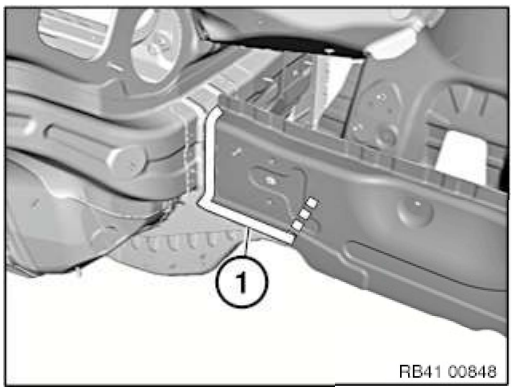
Open welded connections in area (1).



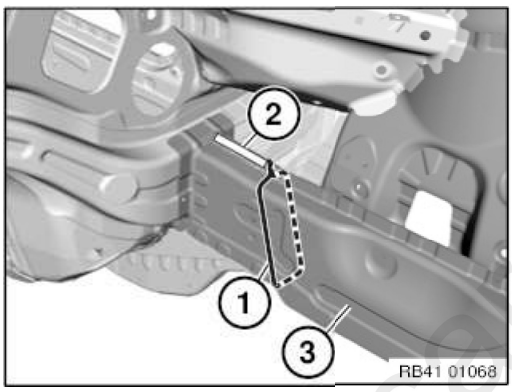
Open welded connections in areas (1) and (2).



Open welded connections in area (1).

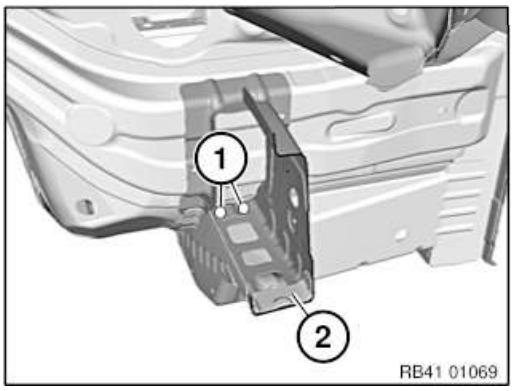


Open welded connections in area (1).



Mark severance cut (1) roughly as pictured and cut engine support.

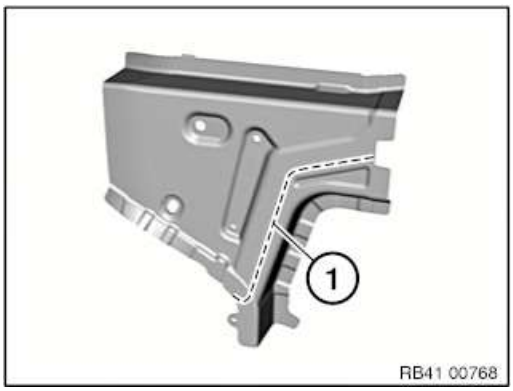
Open welded connections in area (2) and remove engine support (3) with wheel arch.



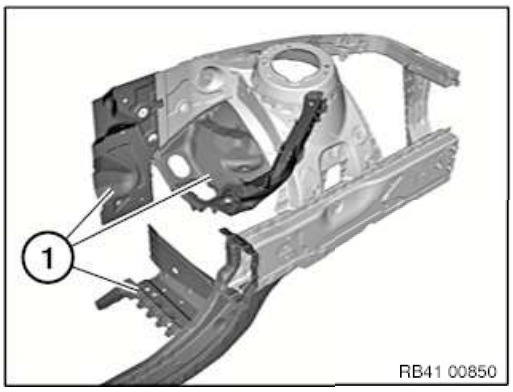
Open welded connections in areas (1) by grinding and remove residual section of engine support (2).

New part preparation

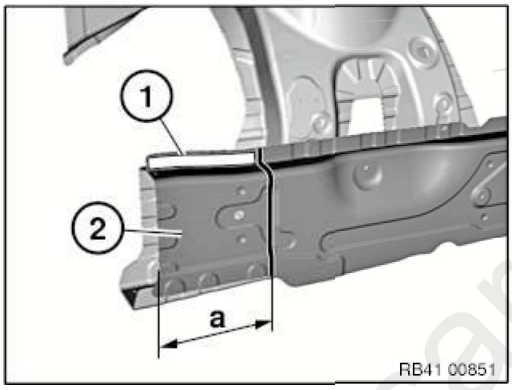
cardiagn.com



Mark and disconnect severance cut on the new part according to the severance cut on the vehicle + 20 mm added material (1).



Release welded connections and remove non-required components (1) from new part.



Mark severance cut in accordance with dimension and cut.

Measurement a = approx. 145 mm from component edge.

Cut outer metal panel only.

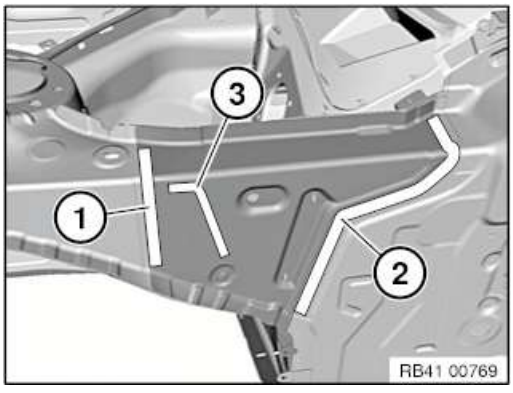
Open welded connections in area (1).

Remove metal section (2).

Note:
The metal section (2) is needed to close the engine support.

Prepare reinforcement plate at severance cut.

Adjust new parts to fit with alignment bracket or universal mounting.



Adjust extension, wheel arch carrier support new part to fit and secure.

In areas (1) and (2), set Ø 6.8 mm bore holes for blind rivet.

Area	Number
1	3
2	5

In area (3), set 4 Ø 4.2 mm bore holes for blind rivet N3.

Remove new parts and deburr bore holes.

cardiagn.com

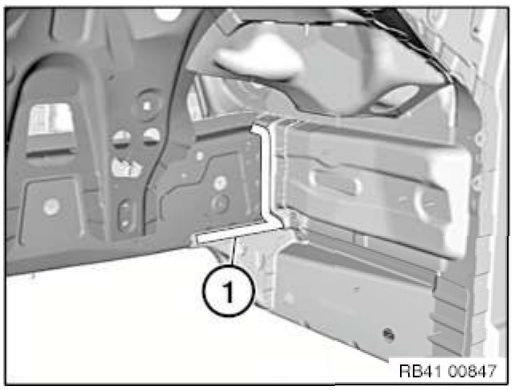
Attention!

Structure bonding!

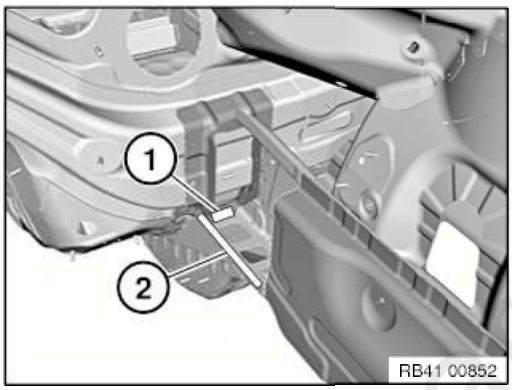
Observe preparation of bonding surfaces.

Installation

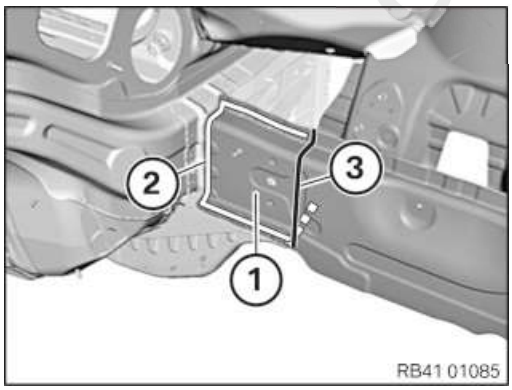
Install new part with alignment bracket or universal mount and secure.



Weld new part in area (1).

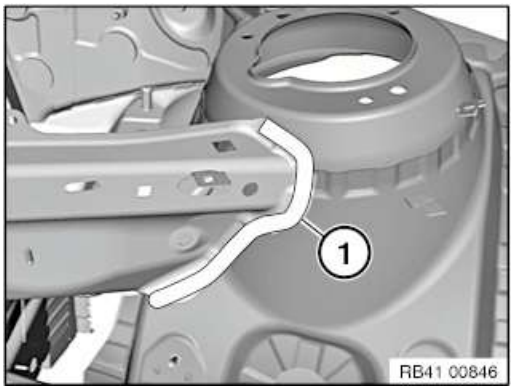


Weld new part in the areas (1) and (2).

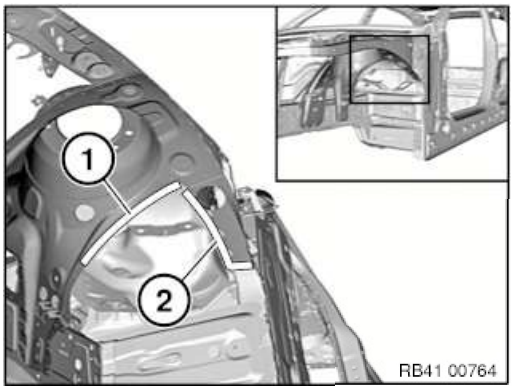


Install sheet metal section (1) and reinforcement plate and weld in areas (2) and (3).

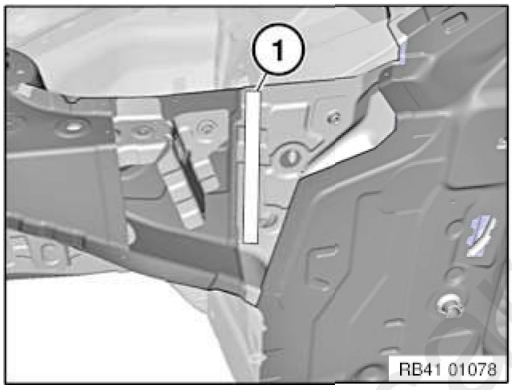
cardiagn.com



Weld new part in area (1).



Weld new part in the areas (1) and (2).



Weld new part in area (1).

Installation

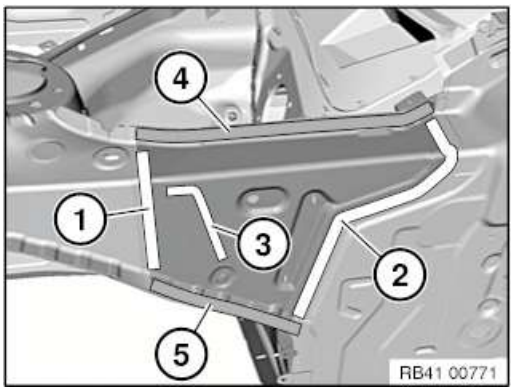
Clean bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Apply sealant to cavity sealing.

Install extension, wheel arch carrier support.

cardiagn.com



In areas (1) and (2), rivet new part with blind rivets N7.
In area (3) rivet new part with blind rivets N3.
In areas (4) and (5), rivet new part with punch rivets N5.

Area	Number
4	6
5	5

cardiagn.com

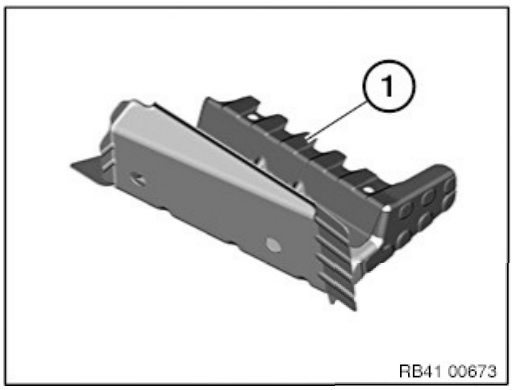
41 14 531 Replacing engine support/front left side frame connection (front left wheel arch removed).

Observe procedure for repair stage 3.

Read contents of Body, General.

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

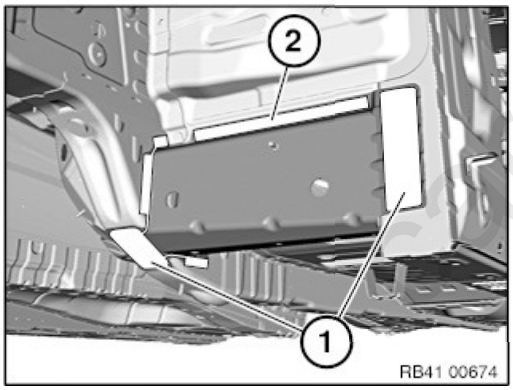
For stripping and rebuilding operations, refer to surrounding texts on KSD (flat rate unit number 41 14 531).



Following new body parts are required (see Electronic Parts Catalogue):

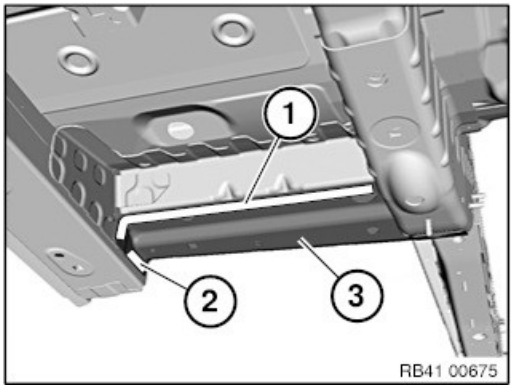
- (1) Connection, wheel arch/entrance

Removal



Open welded connections in areas (1).

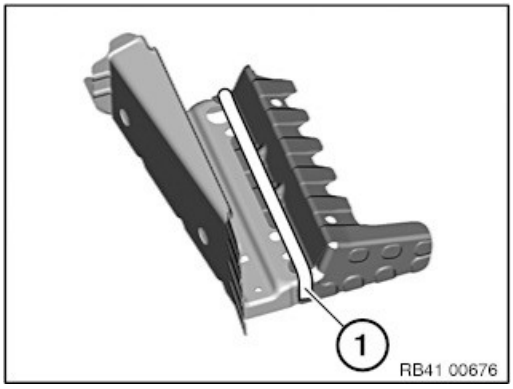
Open spot-welded adhesive joints in area (2).



Open welded connections in area (1).

Open spot-welded adhesive joints in area (2) and remove engine support / side frame connection (3).

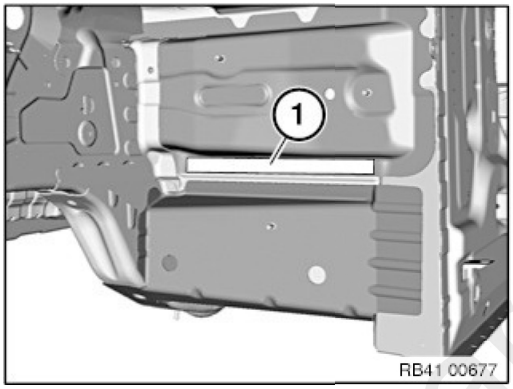
New part preparation



Open welded connections in area (1) and remove part section not required.

Installation

Install and weld new parts.



Attention!

Risk of damage to adhesive area.

Avoid applying too much heat to adjacent adhesive area (1).

cardiagn.com

41 14 020 Replacing front left wheel arch

When replacing front right wheel arch: observe specific procedure regarding the vehicle identification number. (order new body part with vehicle identification number if necessary)

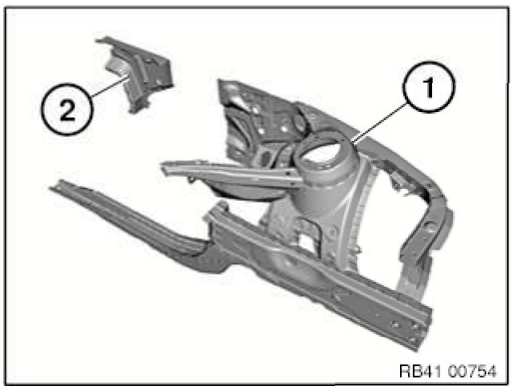
Observe procedure of repair stage 3.

Read contents of Body, General.

Strip down vehicle.

Use only approved spot-welding apparatus for repairs.

Place vehicle on straightening bench.



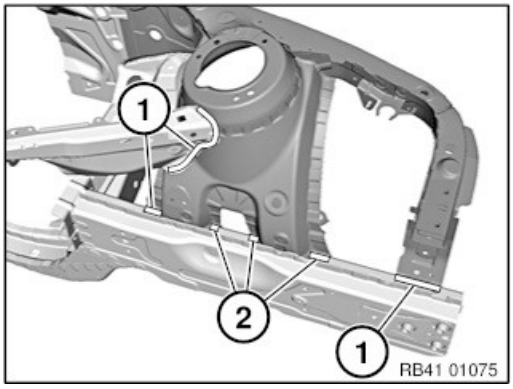
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Wheel arch, front
- (2) Extension, wheel arch carrier support
- (3) Shaped part, wheel arch carrier support (not shown)

Following consumables are required:

Material	Quantity
Adhesive K1	1
Blind rivet N1	8
Blind rivet N7	29
Blind rivet N3	5
Punch rivets N5	12
Sealant D1	
Cleaning agent R1	1

New part preparation



Open welded connections in areas (1).

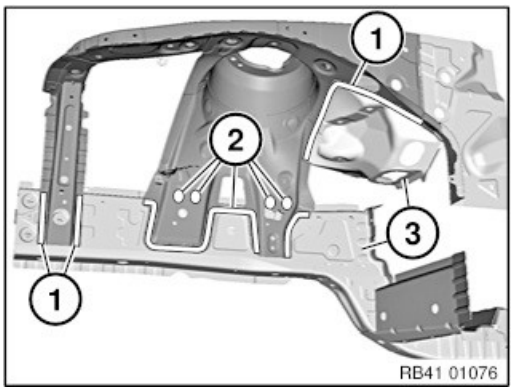
Centre punch the welded connections in area (2) in the middle and drill out with a drill diameter of 6.8 mm.

Note:
The new part is joined in areas (2) by adhesive riveting.

The bore holes in areas (2) are required for fitting the blind rivets.

The new part is joined the areas (1) by plug-welding.

cardiagn.com



Open welded connections in areas (1).

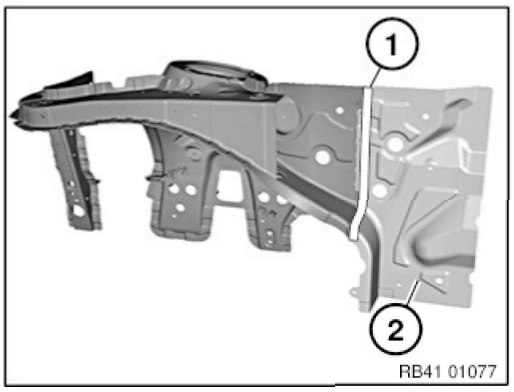
Centre punch the welded connections in area (2) in the middle and drill out with a drill diameter of 6.8 mm.

Remove components (3) which are not required.

Note:
New part is attached in area (2) using adhesive riveting technology.

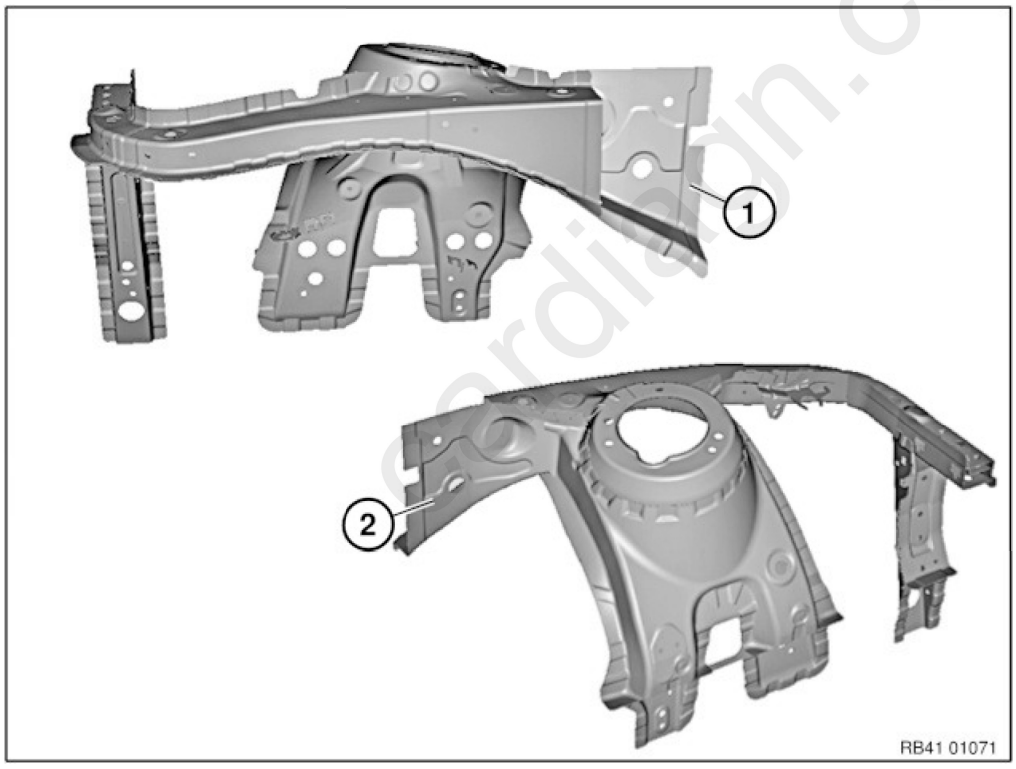
The bore holes in areas (2) are required for fitting the blind rivets.

The new part is joined the areas (1) by plug-welding.



Open welded connections in area (1).

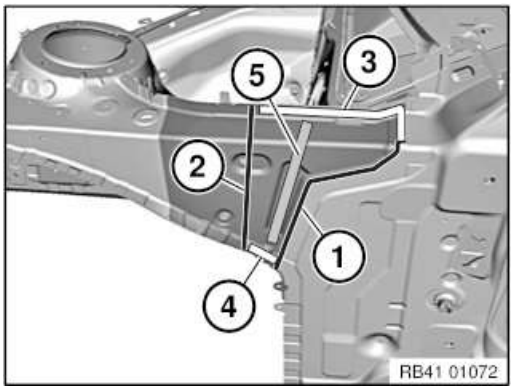
Remove component (2) which is not required.



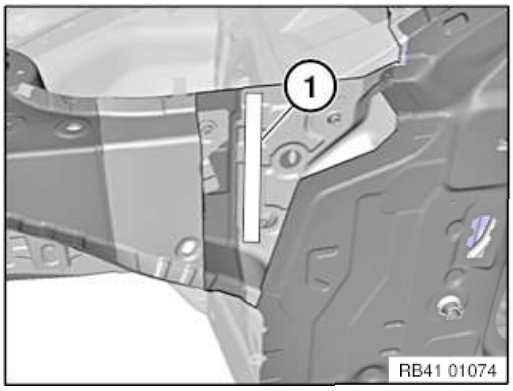
Views of the wheel arch (new part) to be fitted:

- (1) View from outside
- (2) View, engine compartment

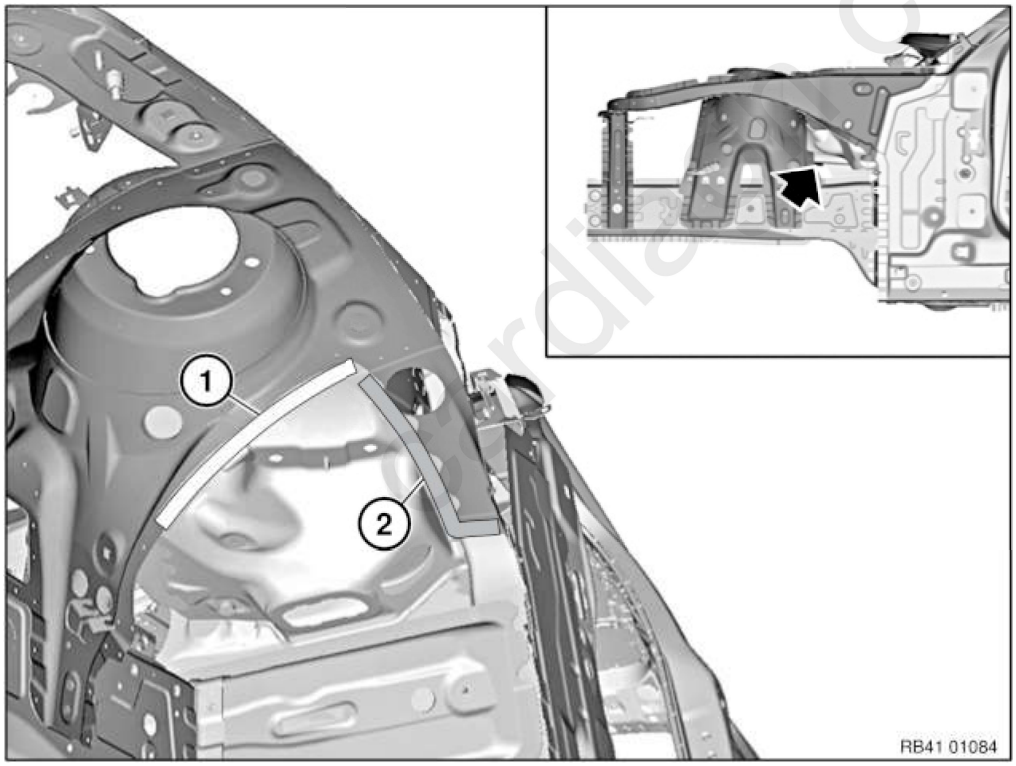
Removing the wheel arch



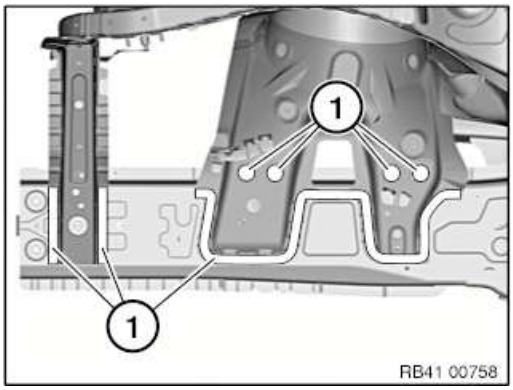
Mark severance cut (1) at component edge and cut.
Mark severance cut (2) as pictured and cut.
Loosen spot-welded adhesive joints in area (3).
Open welded connections in area (4).
Release metal section from cavity sealing (5) and remove.
Remove cavity sealing (5).



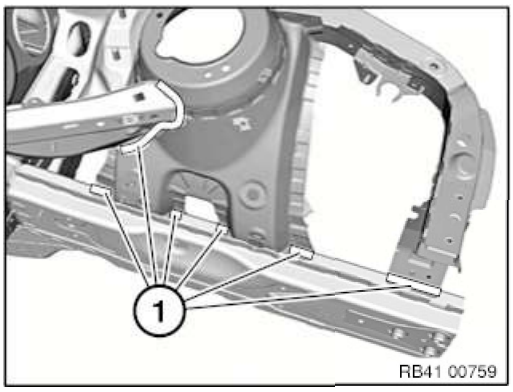
Open welded connections in area (1).



Open welded connections in areas (1) and (2).



Open welded connections in areas (1).*Note:*
Do not drill into or through the engine support when releasing the welded connections!

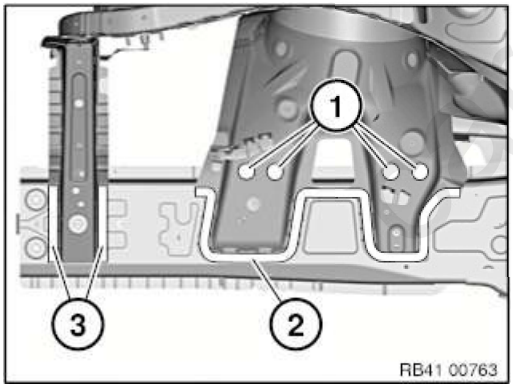


Open welded connections in areas (1).

Remove the wheel arch.

Note:
Do not drill into or through the engine support when releasing the welded connections!

Fit in new part

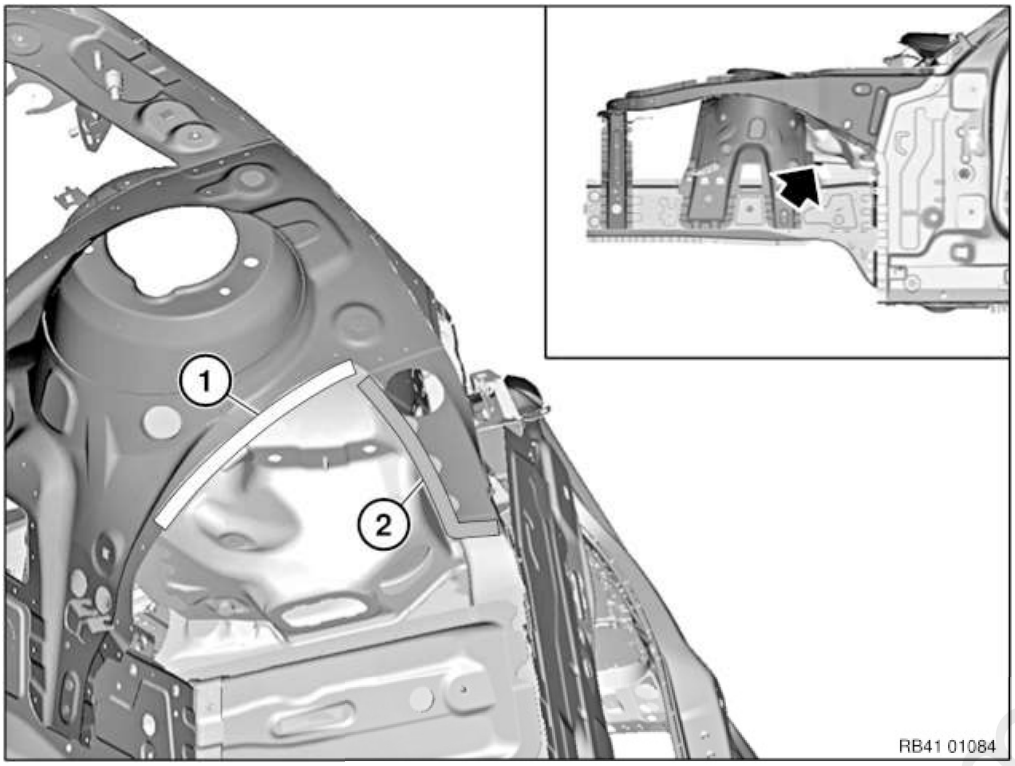


Adjust wheel arch new part to fit with alignment bracket or universal mount and secure.

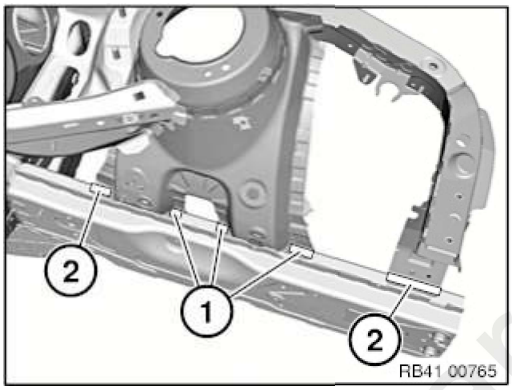
Areas (1) and (2): Transfer existing 6.8 mm diameter bore holes for blind rivets to engine support.

In areas (3), prepare new part and vehicle for plug-welding.

diagn.com

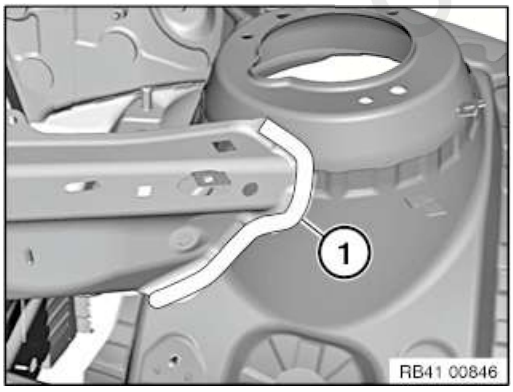


In areas (1) and (2), prepare new part and vehicle for plug-welding.



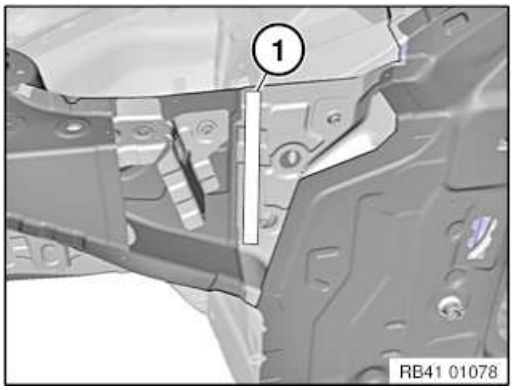
Areas (1): Transfer existing 6.8 mm diameter bore holes for blind rivets to engine support.

In areas (2), prepare new part and vehicle for plug-welding.

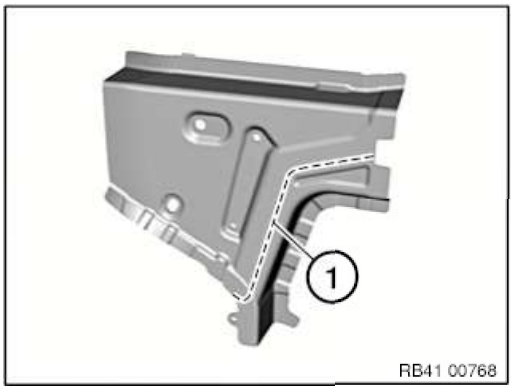


In area (1), prepare new part and vehicle for plug welding.

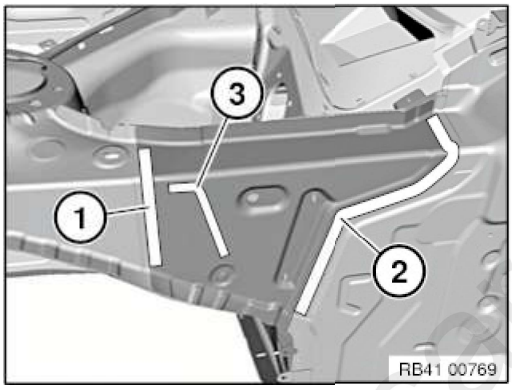
carcardiagn.com



In area (1), prepare new part and vehicle for plug welding.



Mark and disconnect severance cut on the new part according to the severance cut on the vehicle + 20 mm added material (1).



Adjust extension, wheel arch carrier support new part to fit and secure.

In areas (1) and (2), set 6.8 mm diameter bore holes for blind rivets.

Area	Number
1	3
2	5

In area (3), set 4 4.2 mm diameter bore holes for blind rivets N3.

Remove new parts and deburr bore holes.

Important!

Structure bonding!

Observe preparation of bonding surfaces.

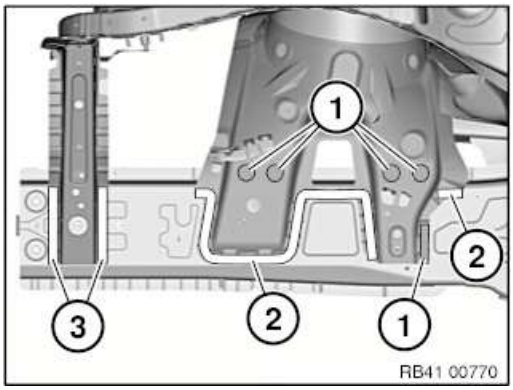
Installing new part, front wheel arch

Clean bonding surfaces with cleaning agent R1.

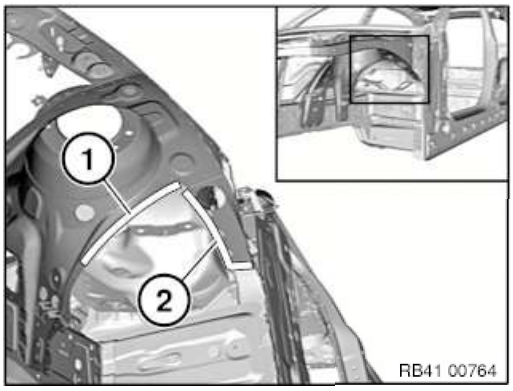
Apply adhesive to bonding surfaces.

Install wheel arch with alignment bracket or universal mount.

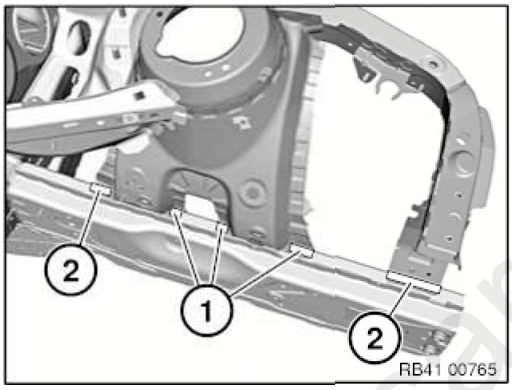
cardiagn.com



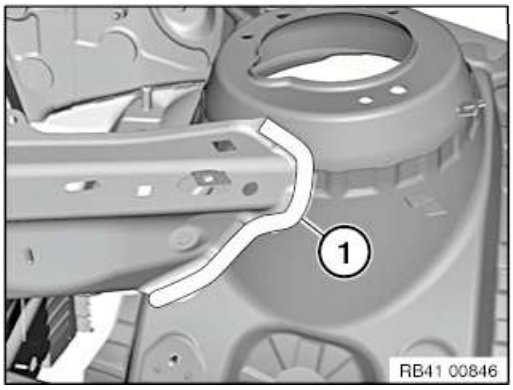
In areas (1), rivet new part with blind rivets N1.
In areas (2), rivet new part with blind rivets N7.
In areas (3) weld new part.



In areas (1) and (2), weld new part.

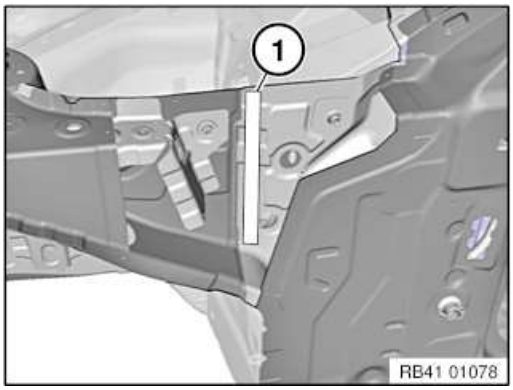


In areas (1), rivet new part with blind rivets N7.
In areas (2) weld new part.



Weld new part in area (1).

cardiagn.com



Weld new part in area (1).

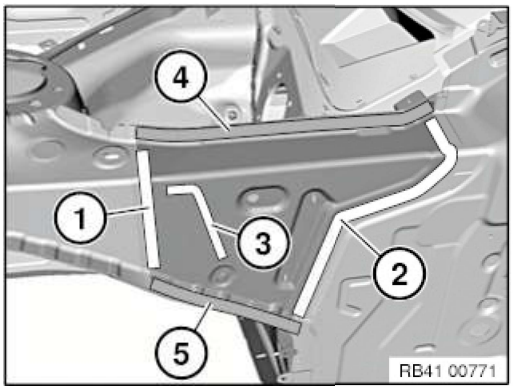
Installation of extension, wheel arch carrier support

Clean bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Apply sealant to cavity sealing. Install cavity sealing.

Install extension, wheel arch carrier support.



In areas (1) and (2), rivet new part with blind rivets N7.

In area (3) rivet new part with blind rivets N3.

In areas (4) and (5), rivet new part with punch rivets N5.

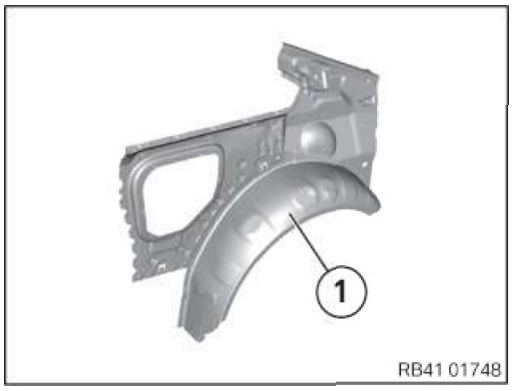
Area	Number
4	6
5	5

cardiagn.com

41 14 505 Replacing rear left outer wheel arch section (rear side panel removed)

Read contents of Body, General.

Follow procedure for repair stage 2.



Following new body parts are required (see Electronic Parts Catalogue):

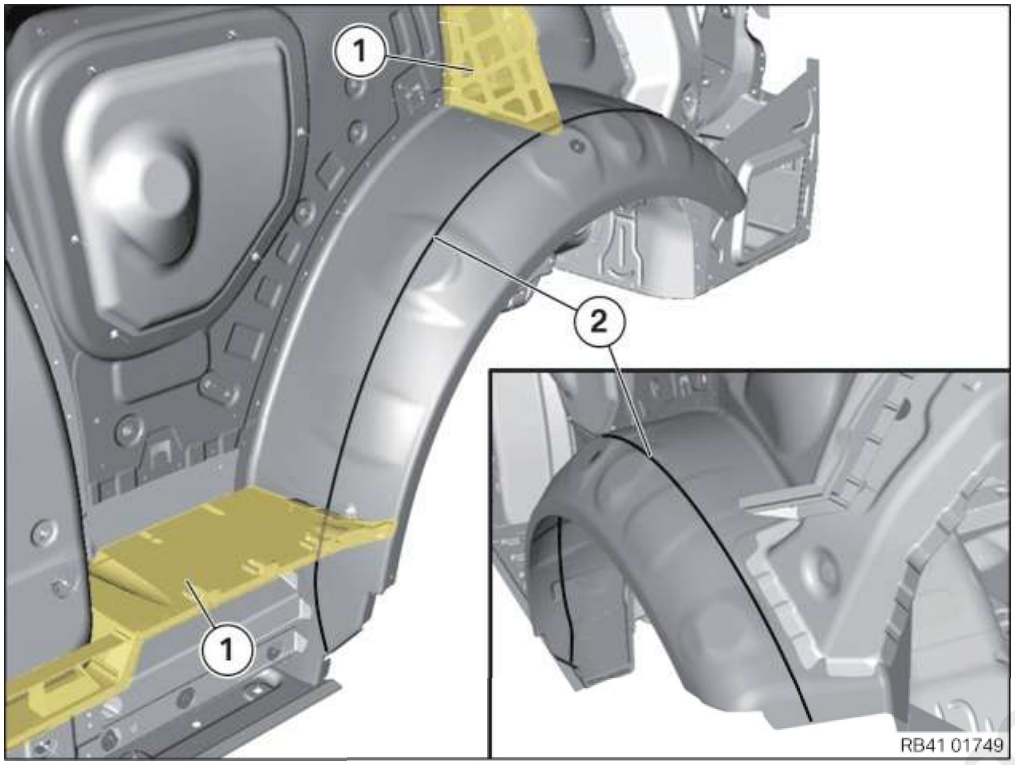
- (1) Outer wheel arch section, rear
- Shaped part B-pillar, outer
- Shaped part wheel arch, front

Following consumables are required:

Material	Quantity
Adhesive K5a	1
Blind rivet N3	12
Cleaning agent R1	1
Cavity sealing wax remover	1
Sealant D1	

Removal

cardiagn.com



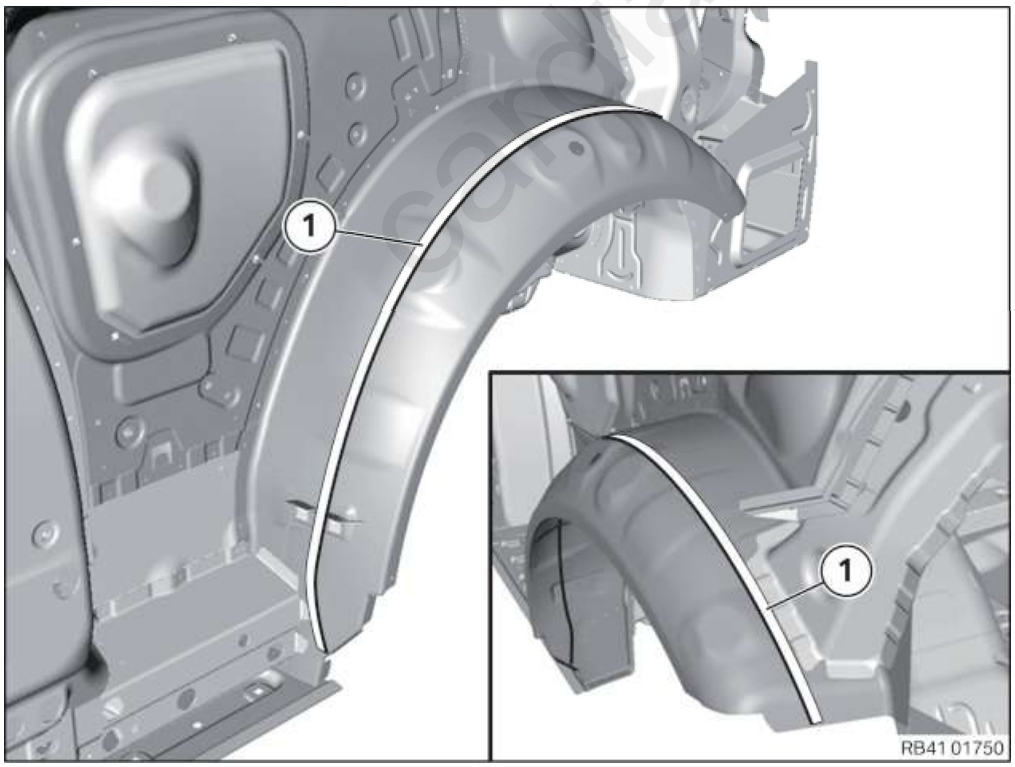
Remove cavity sealing (1).

Mark severance cut (2) as pictured and cut.

Remove part of the outer wheel arch section.

Preparation of new part:

Mark severance cut on new part according to severance cut on vehicle + 20 mm material extra and cut.



Adjust new parts in combination with side wall to fit and secure.

In area of bonding surface (1), drill 12 4.2 mm dia. bore holes for blind rivets.

Installation



Important!

Do not grind/sand new part in area of bonding surfaces.



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

Apply adhesive to bonding surfaces.

Apply sealant to new cavity sealing.

Install and rivet outer wheel arch section.

cardiagn.com

41 14 502 Replacing rear left outer wheel arch section with reinforcement (rear side panel removed)

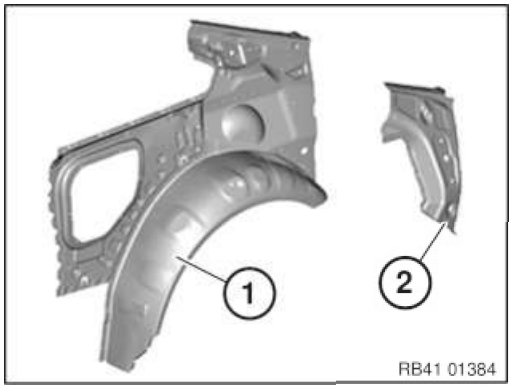
Follow procedure for repair stage 3.

Read contents of Body, General.

For stripping and rigging operations, refer to texts on KSD CD (job number 41 14 502).

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

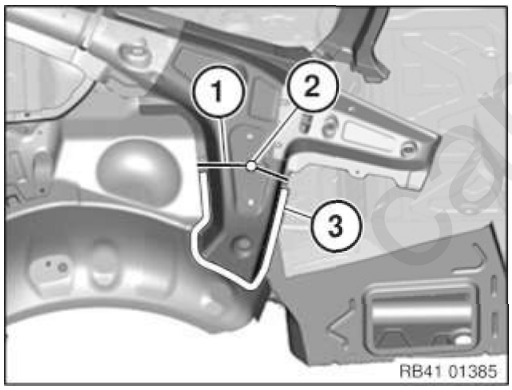
Use only approved spot-welding apparatus for repairs.



Following new body parts are required (see Electronic Parts Catalogue):

- (1) Side section, inner
- (2) C-pillar reinforcement
- Shaped part B-pillar, outer

Removal



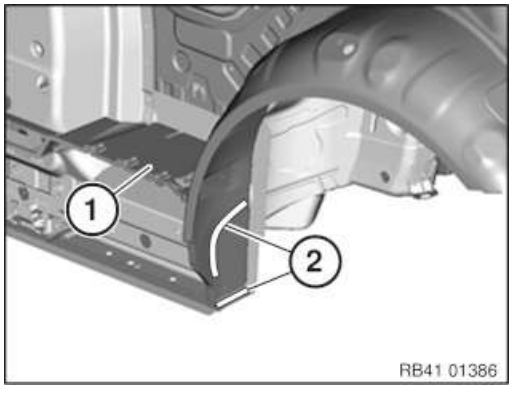
Mark severance cut (1) through hole (2) and disconnect.

Important!

Cut outer panel only.

Open welded connections in area (3).

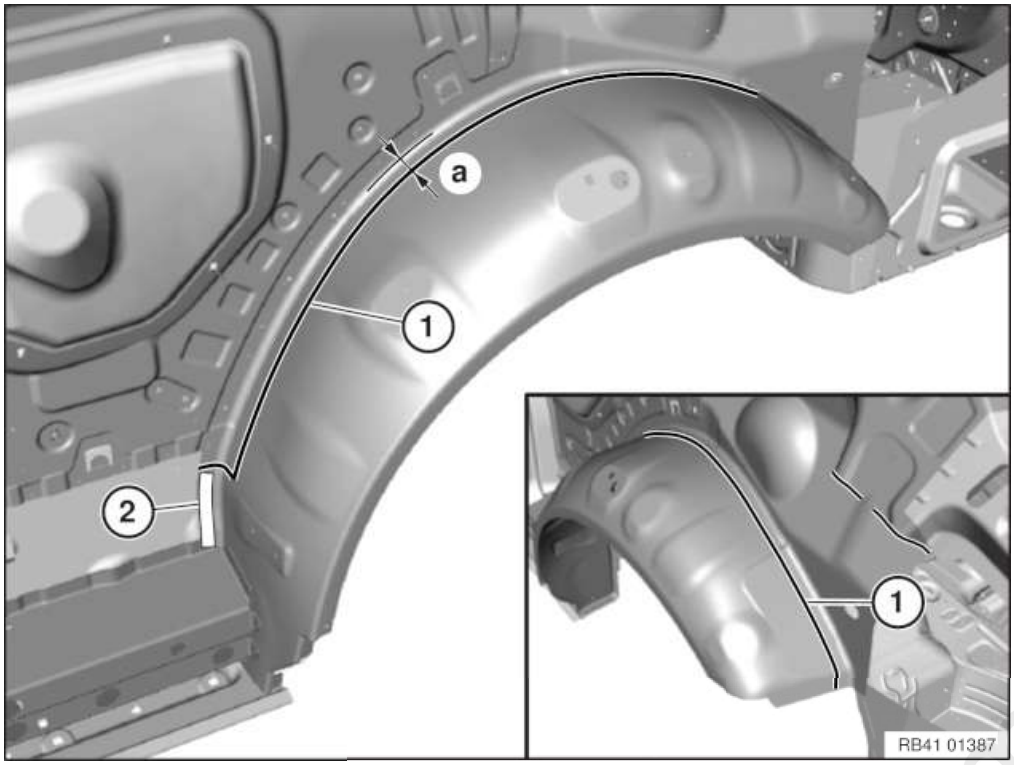
Remove reinforcement section on C pillar.



Remove cavity sealing (1).

Open welded connections in areas (2).

cardiagn.com



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

Important!
Cut outer metal panel only.

Dimension a = approx. 20 mm from radius.

Open welded connections in area (2).

Remove part section of outer wheel arch section.

New part preparation

Mark severance cut on new wheel arch part to match severance cut on vehicle + 20 mm material allowance, then make the cut.

Prepare reinforcement plate at severance cut for reinforcement on C-pillar.

Adjust outer wheel arch section in combination with side wall to fit and secure.

Installation

Install and weld new parts.

Apply sealant to new cavity sealing. Install cavity sealing.

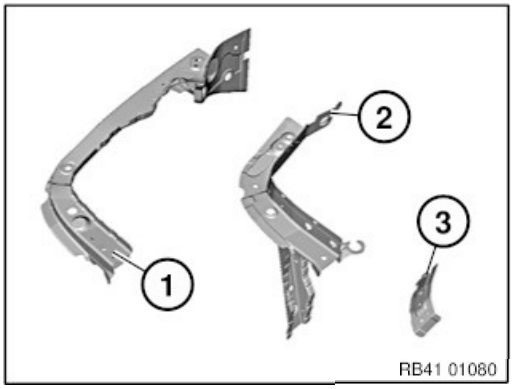
cardiagn.com

41 11 201 Replacing the carrier support before the wheel arch on the left

Read contents of Body, General.

Follow procedure for repair stage 2.

Strip down vehicle.



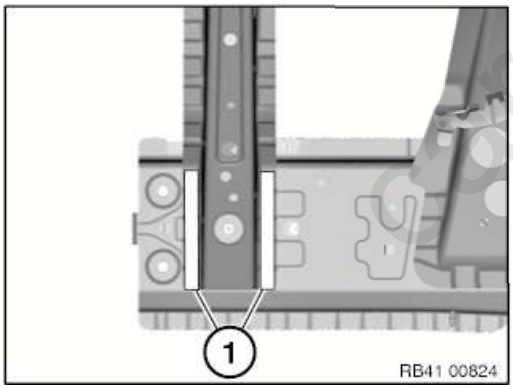
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Carrier support, outer wheel arch section
- (2) Wheel arch inner section support member
- (3) Carrier support end plate

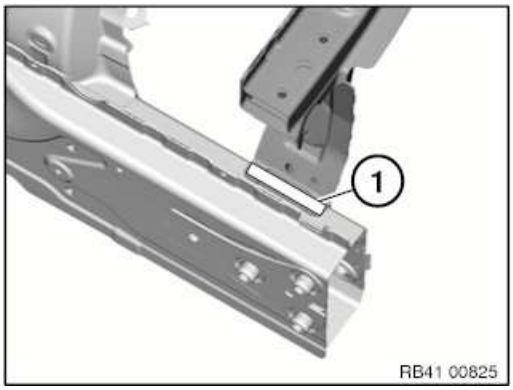
Following consumables are required:

Material	Quantity
Adhesive K1	1
Punch rivets N5	33
Sealant D1	
Cleaning agent R1	1

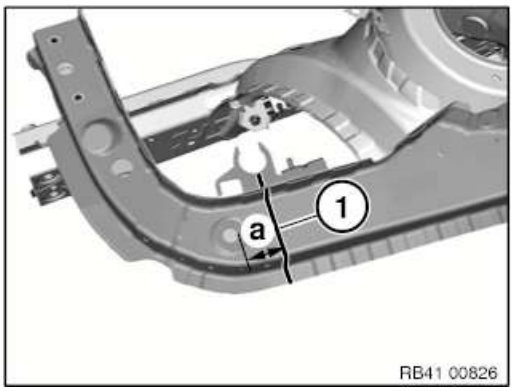
Removing carrier support



Open welded connections in areas (1).

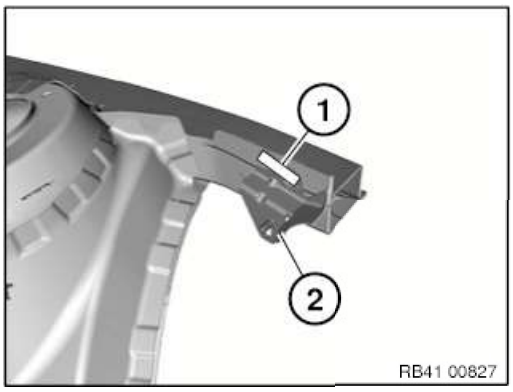


Open welded connections in area (1).

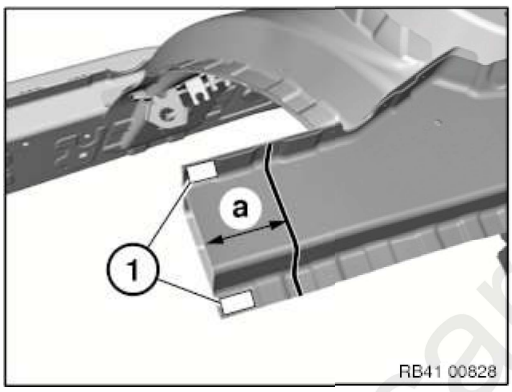


Mark severance cut (1) in accordance with dimension and detach carrier support.

Dimension a = approx. 35 mm from 15 mm diameter hole.



Detach welded connections (1) and remove holder (2).



Mark severance cut in accordance with dimension and cut.

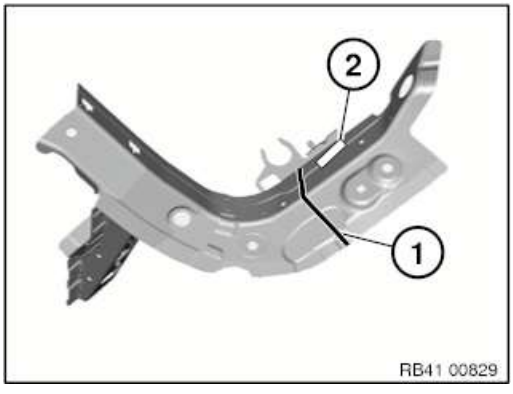
Important!

Cut outer metal panel only.

Dimension a = approx. 55 mm from previous separation cut.

Open weld joints in areas (1) and remove metal panel section.

New part preparation

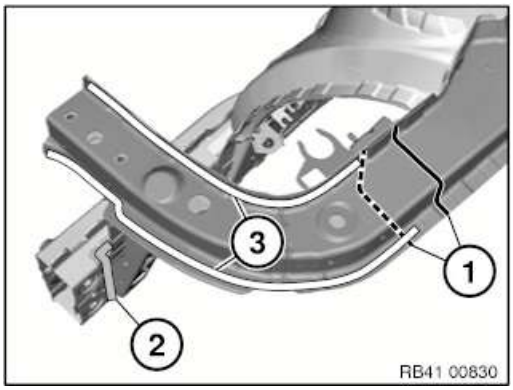


Mark severance cut (1) on inside part of carrier support in accordance with severance cut on vehicle and cut.

Release welded connections (2) for holder.

Mark severance cut on outside part of carrier support in accordance with severance cut on vehicle and disconnect.

cardiagn.com

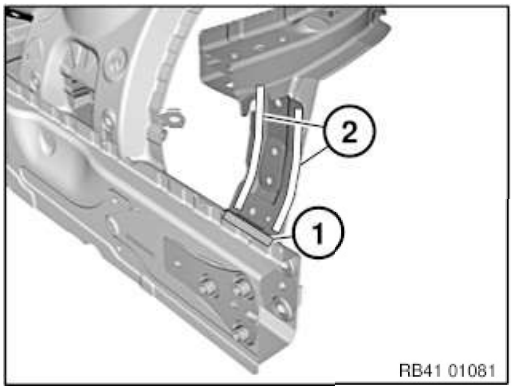


Adjust new parts with add-on parts to fit and secure.

Prepare reinforcement plates (welded) at severance cuts (1).

Prepare new parts in engine support area (2) for plug-welding.

Note:
In areas (3), the new components are joined using the adhesive riveting method.



In area (1), prepare new part and engine support for plug-welding.*Note:*
In areas (2), the new parts are joined using the adhesive riveting method.



Important!

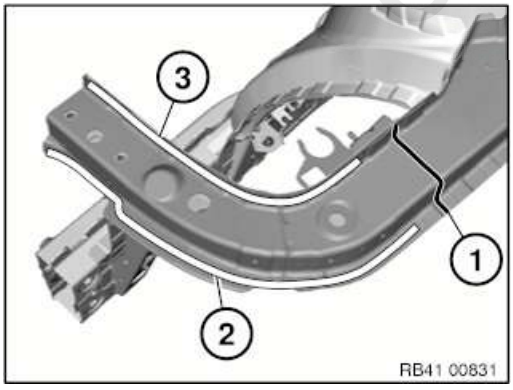
Structure bonding!

Observe preparation of bonding surfaces.



Installing carrier support

Install new part (carrier support for inner wheel arch section) and reinforcement plate and weld in place.



Install reinforcement plate in area of severance cut (1) and weld in place.

Clean all bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces, fit new component (outside part of carrier support) and fasten.

In areas (2) and (3), rivet new part with punch rivets N5.

Area	Number
2	11
3	10

Weld new part and reinforcement plate in the area of severence cut (1).

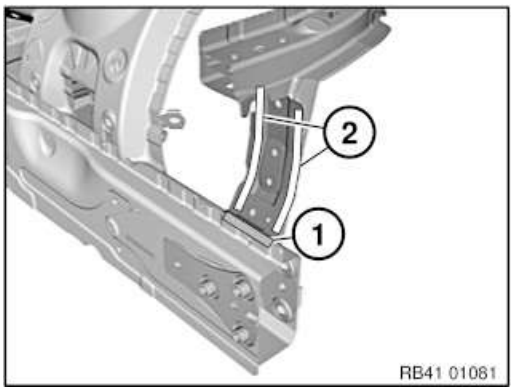
Important!

Risk of damage to adhesive area!

Avoid applying excessive heat to the neighbouring adhesive areas!

Note:
Do not seal new parts in the adhesive rivet areas (2) and (3). (visible area)

cardiagn.com



Apply adhesive to bonding surfaces, fit new part carrier support end plate and secure.

In areas (2), rivet new part with 12 punch rivets N5.

Weld new part in area (1).

Important!

Risk of damage to adhesive area!

Avoid applying excessive heat to the neighbouring adhesive areas!

Note:
Do not seal new parts in the area of the adhesive riveting. (visible area)

Remove excess adhesive.

Do not use any cleaning agents containing solvents.

cardiagn.com

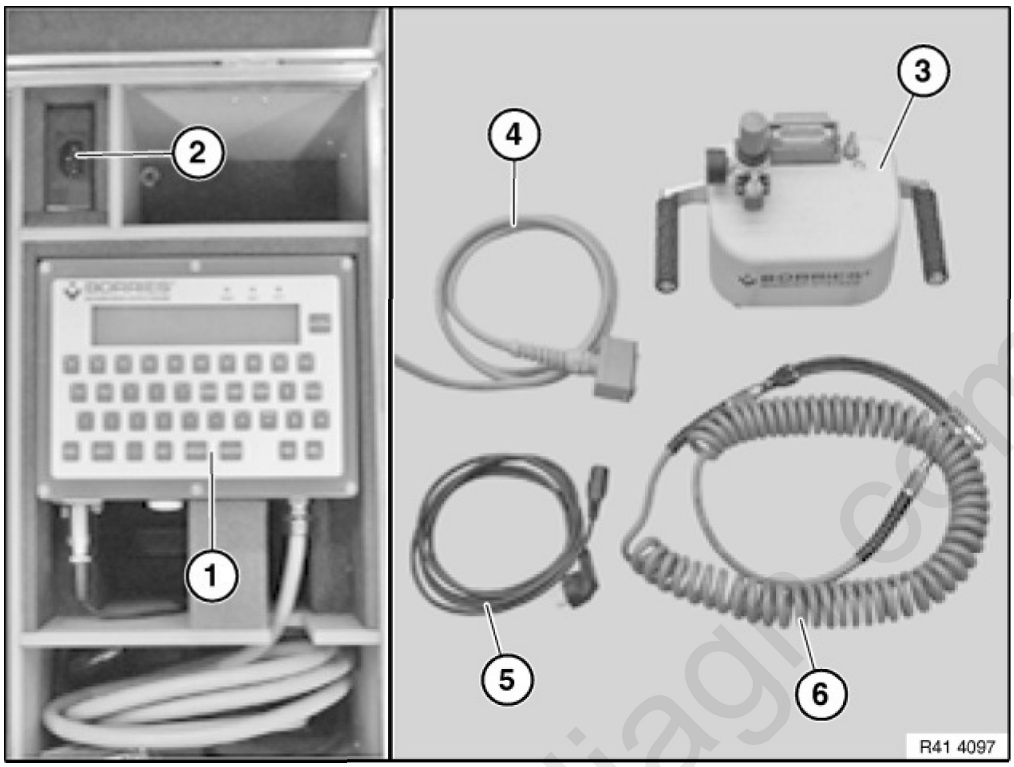
41 00 ... Stamping vehicle identification number (needle stamping unit)

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

- Sourcing reference:
  BMW Workshop Equipment Catalogue



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. 6 bar
- Use only dry, oil-free air

Procedure when stamping a substitute vehicle identification number

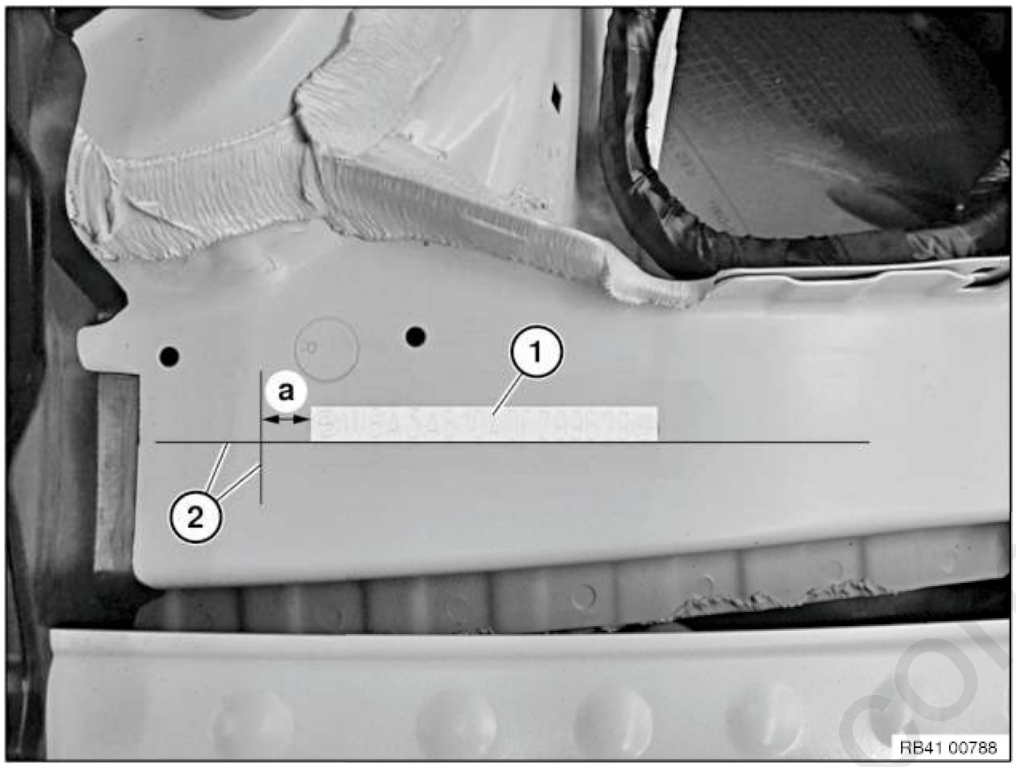
Note:
On this vehicle the substitute vehicle identification number is stamped below the original vehicle identification number.

Substitute vehicle identification number = line 1

Original vehicle identification number = line 2

cardiagn.com

(1) Cross through original vehicle identification number



(1) = original vehicle identification number (line 2).
Pull off protective film from vehicle identification number.
Mark position lines (2) according to schematic diagram.
Dimension a = 12 mm
Horizontal position line is directly against vehicle identification number.



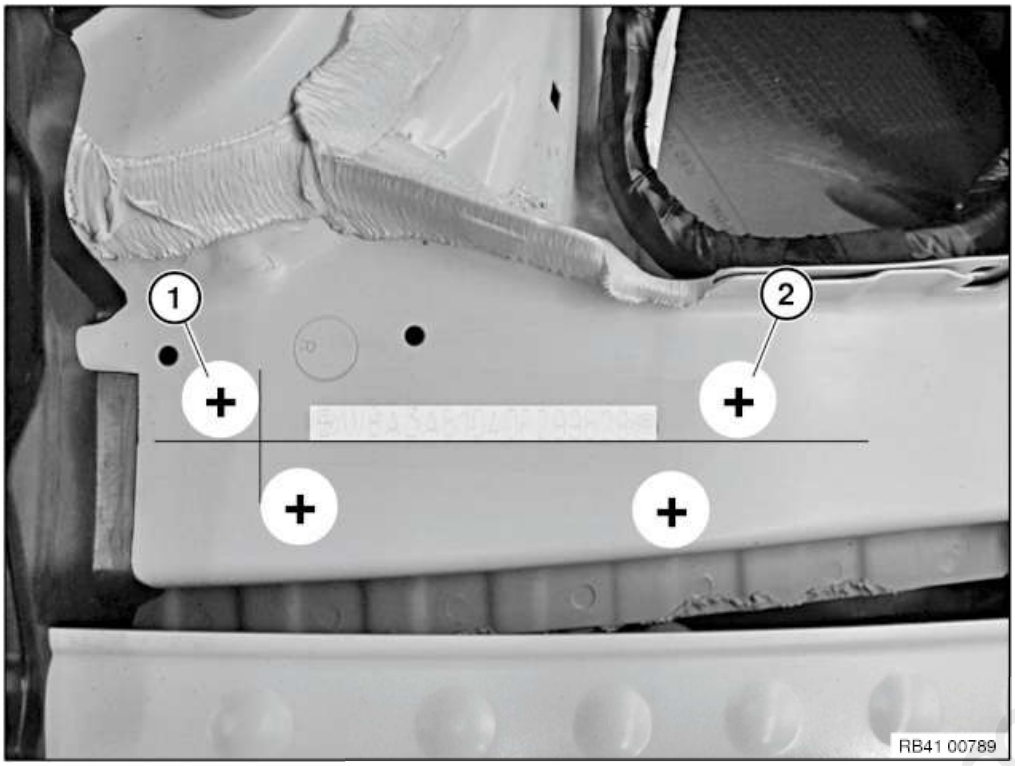
Display input:

- Select Layout 6 with arrow button.
- Enter vehicle identification number with F10.
- Press ”ENTER” button.

Note:
With Layout 6 the vehicle identification number (line 2) is crossed through.

Important!
Perform stamping operation with position lines in advance on a test sheet.

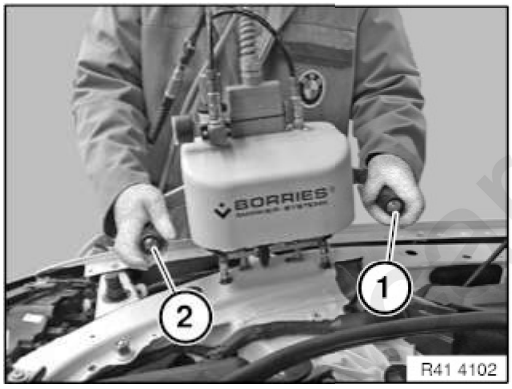
cardiagn.com



Note:
The contact surface for the suction cups of the needle imprint device must be dry and free of dust and grease!

Make sure the unit is resting securely in position. If necessary, adjust the height and position of the suction feet.

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



Press pushbutton (1) for vacuum pressure.

Then start stamping operation with pushbutton (2).

Graphic representation similar.

Important!

After completing the stamping operation, do not alter the position of the unit.

Do not switch off vacuum pressure.

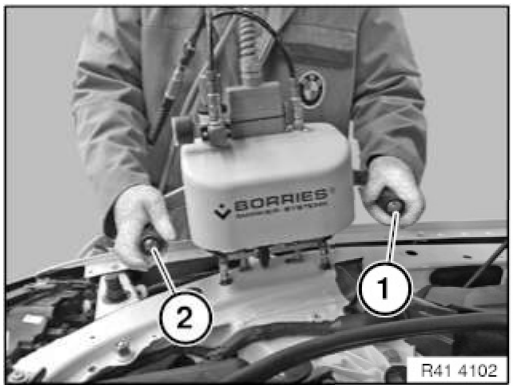
Stamping substitute vehicle identification number



Display input:

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

Note:
With Layout 1 the already entered substitute vehicle identification number is embossed in line 1.



Start stamping operation with pushbutton (2).

Following layout functions are available:

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

cardiagn.com

41 14 020 Stripping operations - Replacing front left wheel arch

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.

- Disconnect battery earth lead (FR number: 61 20 900)
- Remove bumper trim (FR number: 51 11 156)
- Remove front underbody protection assembly (job number: 51 49 490)
- Remove coolant expansion tank (job number: 17 11 100)
- Remove intake silencer housing (FR number: 41 35 111)
- Remove front panel (FR number: 41 33 039)
- Remove radiator (job number: 17 11 100)
- Remove front wheel arch cover (front section) (job number: 51 71 038)
- Remove front wheel arch cover (rear section) (job number: 51 71 039)
- Remove panel for cover on left side member (job number: 51 71 447)
- Remove front side panel left (FR number: 41 35 081)
- Remove trailing link on left spring strut dome (job number: 51 71 371)
- Remove engine compartment lid (job number: 41 61 000)
- Remove left hinge for engine compartment lid (job number: 41 61 060)
- Remove left front door (job number: 41 51 080)
- Remove left partition wall for units compartment (job number: 51 71)
- Remove DSC hydraulic unit (job number: 34 51 527)
- Remove tandem brake master cylinder (job number: 34 31 002)
- Remove brake booster (FR number: 34 33 505)
- Remove left trailing link (job number: 31 12 050)
- Remove left wishbone (FR number: 31 12 000)
- Remove front left spring strut complete (job number: 31 31 000)
- Release left wiring harness

cardiagn.com

41 14 030 Stripping operations - Replacing front right wheel arch

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.

- Disconnect battery earth lead (FR number: 61 20 900)
- Remove bumper trim (FR number: 51 11 156)
- Remove front underbody protection assembly (job number: 51 49 490)
- Remove intake silencer housing (FR number: 41 35 111)
- Remove front panel (FR number: 41 33 039)
- Remove radiator (job number: 17 11 100)
- Remove power distribution module (job number: 12 63 586)
- Remove front wheel arch cover (front section) (job number: 51 71 038)
- Remove front wheel arch cover (rear section) (job number: 51 71 039)
- Remove trim panel for cover on right side member (job number: 51 71 447)
- Remove front right side wall (job number: 41 35 082)
- Remove trailing link on right spring strut dome (job number: 51 71 371)
- Remove engine compartment lid (job number: 41 61 000)
- Remove right hinge for engine compartment lid (job number: 41 61 050)
- Remove right front door (job number: 41 51 080)
- Remove right partition wall for units compartment (job number: 51 71)
- Release right wiring harness
- Remove right trailing link (job number: 31 12 080)
- Remove right wishbone (job number: 31 12 000)
- Remove front right spring strut complete (job number: 31 31 000)

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

cardiagn.com

41 21 013 Replace A-pillar, outer left

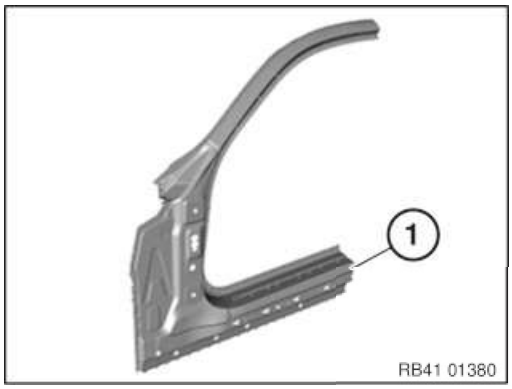
Procedure Observe repair stage 3!

Read contents of Body, General.

For stripping and rigging operations, refer to texts on KSD CD (FR number 41 21 013).

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

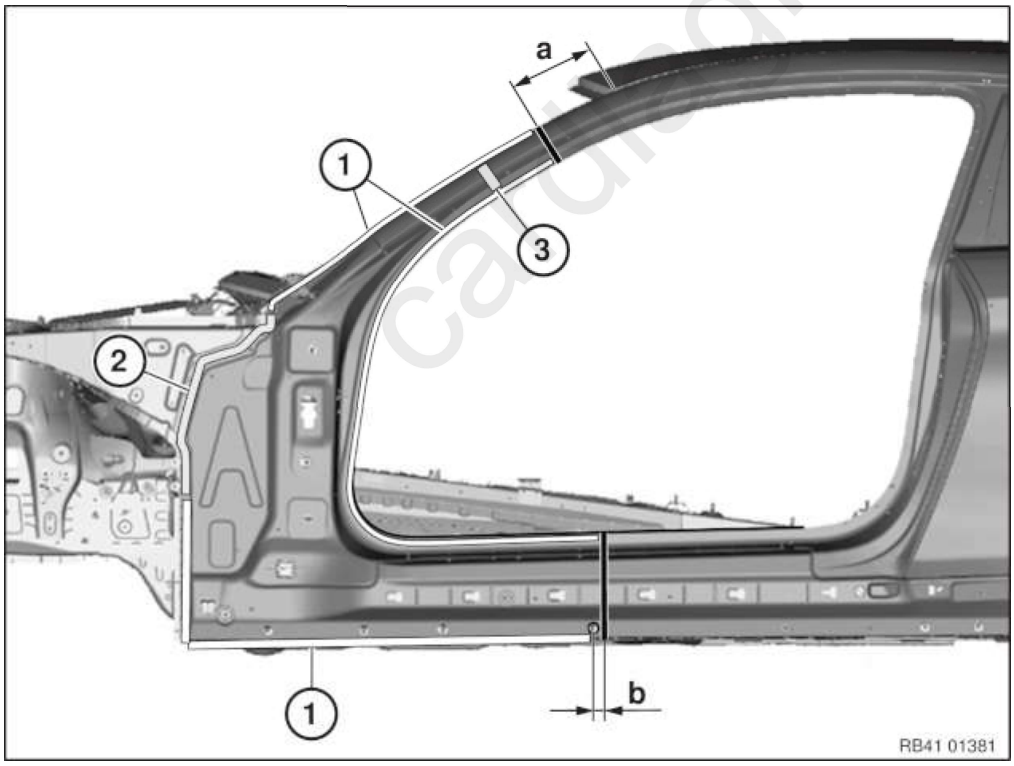
Use only approved spot-welding apparatus for repairs.



Following new body parts are required (see Electronic Parts Catalogue):

- (1) A-pillar, outer

Removal



Mark severance cuts in accordance with specified dimensions and cut.

Important!
Cut outer panel only for following severance cuts.

Dimension a = approx. 200 mm from corner of roof outer skin.

Dimension b = approx. 20 mm from centre of a 20 mm dia. bore hole.

Open welded connections in areas (1).

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

Release and remove A-pillar from cavity sealing (3).

New part preparation

Mark severance cuts on new part in accordance with severance cuts on vehicle and cut.

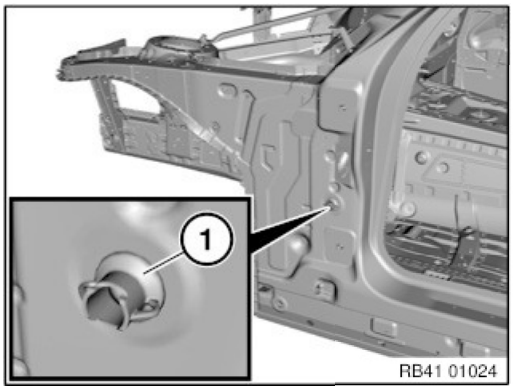
Prepare reinforcement plates at severance cuts.

Fit in new part.

Installation

Apply sealant to cavity sealing.

Install and weld new parts and reinforcement plates.



Note:

- Vehicles with slide/tilt sunroof: Make sure water drain hose (1) is correctly installed (watertightness).
- In vehicle with a normal roof, a grommet is installed instead of the water drain hose.

  Please ensure correct installation of the grommet!

cardiagn.com

41 21 003 Replacing A-pillar with reinforcement on left

Procedure Observe repair stage 3!

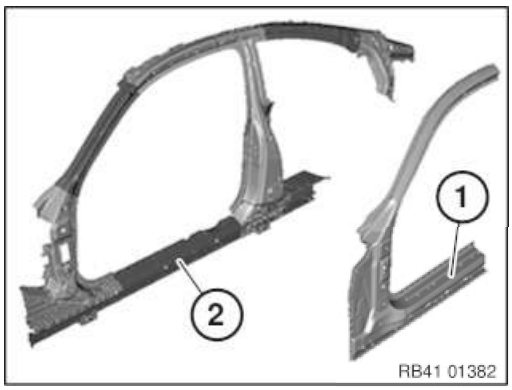
Read contents of Body, General.

For stripping and rigging operations, refer to texts on KSD CD (job number 41 21 003).

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

Use only approved spot-welding apparatus for repairs.

Place vehicle on straightening bench.



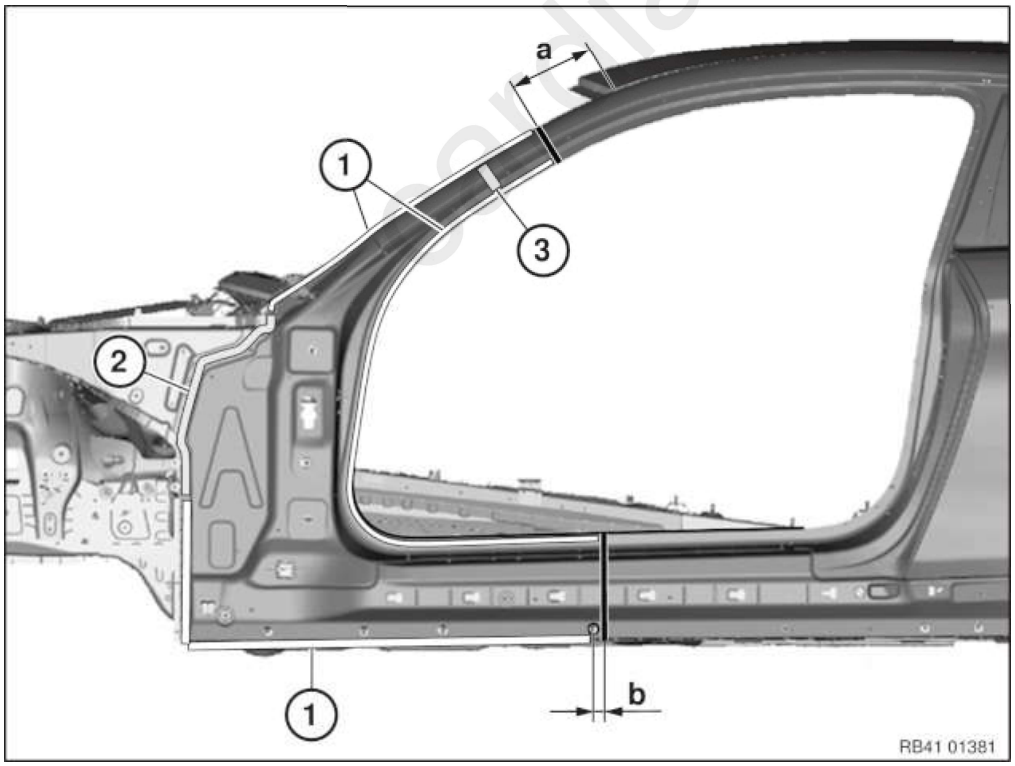
Following new body parts are required (see Electronic Parts Catalogue):

- (1) A-pillar, outer
- (2) Middle side frame
- Shaped part A-pillar, top, outer

Following consumables are required:

Material	Quantity
Blind rivet N1	1
Blind rivet N2	1

Removal



Mark severance cuts in accordance with specified dimensions and cut.

Important!
Cut outer panel only for following severance cuts.

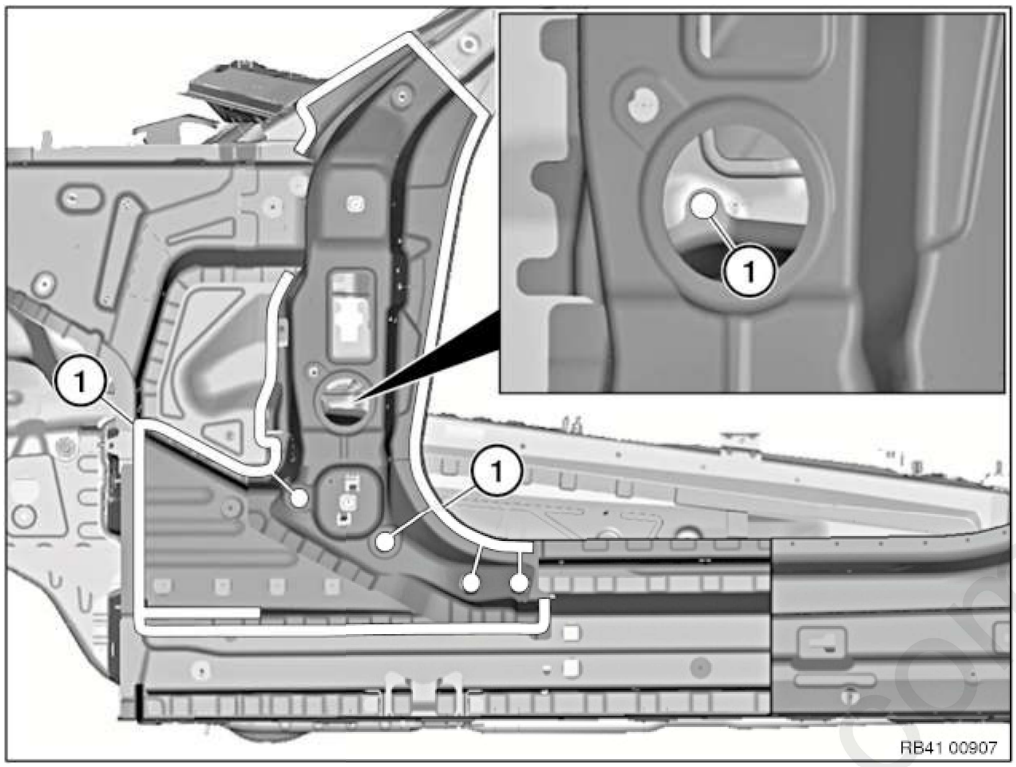
Dimension a = approx. 200 mm from corner of roof outer skin.

Dimension b = approx. 20 mm from centre of a 20 mm dia. bore hole.

Open welded connections in areas (1).

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

Release and remove A-pillar from cavity sealing (3).

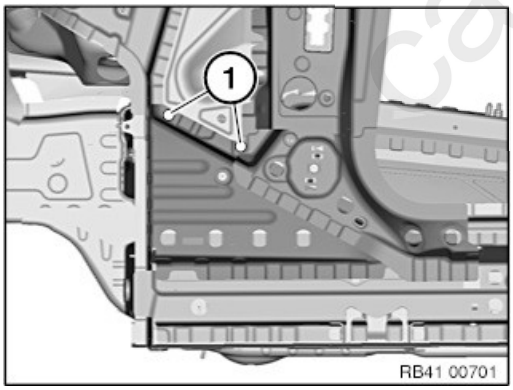


Undo welded connections in these areas (1) and remove the A-pillar reinforcement.

New part preparation

Mark severance cuts on new parts according to severance cuts on vehicle and sever.

Prepare reinforcement plates at severance cuts.



Adjust A-pillar to fit with alignment bracket or universal mount and secure.

Note:
When adjusting, due to the absence of an outer skin, it is necessary to place a panel of equal thickness in the area of the door hinges.

In areas (1), set 2 bore holes Ø 6.8 mm for blind rivets.

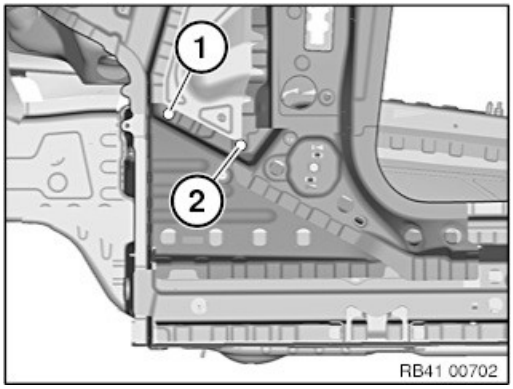
Remove new parts and deburr bore holes.

Installation

Apply sealant to cavity sealing.

Install new A-pillar and reinforcement plates with alignment bracket or universal mount and fix.

When adjusting, the lack of outer skin means that a plate with the same thickness must be used as a shim in the area of the door hinges.



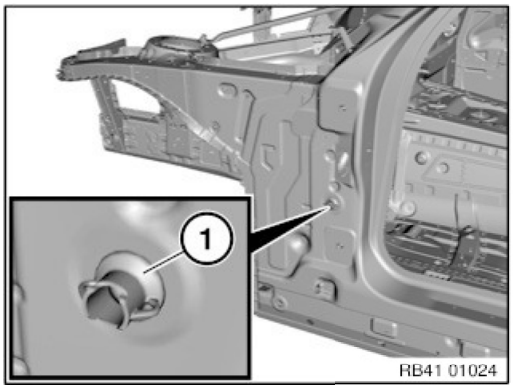
Rivet new part in areas (1) and (2).

Area (1): Blind rivet N1.

Area (2): Blind rivet N2.

Weld new part in further joint areas.

Install and weld outer A-pillar and reinforcement plates.



Note:

- Vehicles with slide/tilt sunroof: Make sure water drain hose (1) is correctly installed (watertightness).
- In vehicle with a normal roof, a grommet is installed instead of the water drain hose.

  Please ensure correct installation of the grommet!

cardiagn.com

41 21 004 Replacing A-pillar with reinforcement, right



Work is identical to replacing the "A-pillar with reinforcement left".

cardiagn.com

41 21 682 Replacing left B-pillar reinforcement (rear side panel and roof outer skin removed)

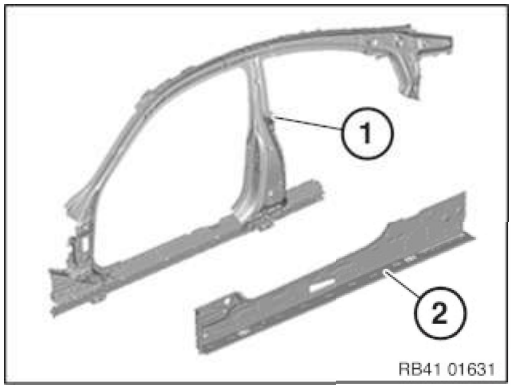
Observe procedure for repair stage 3.

Read contents of Body, General.

Use only an approved spot-welding apparatus for repairs!

For stripping and rebuilding operations, refer to the surrounding text of Commercial Service Data (flat rate unit number 41 21 682).

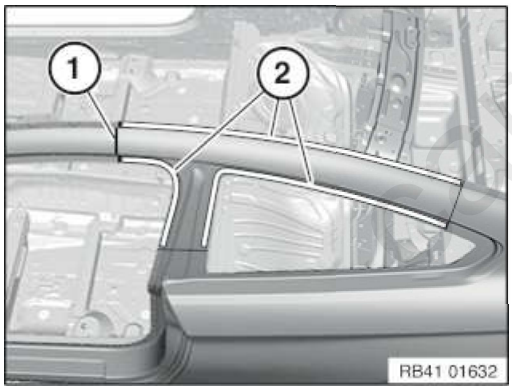
Place vehicle on straightening bench.



Following new body parts are required (see Electronic Parts Catalogue):

- (1) Middle side frame
- (2) Inner side member
- Shaped part, B-pillar, inner
- Shaped part B-pillar, outer

Removal



Extended removal of side panel:

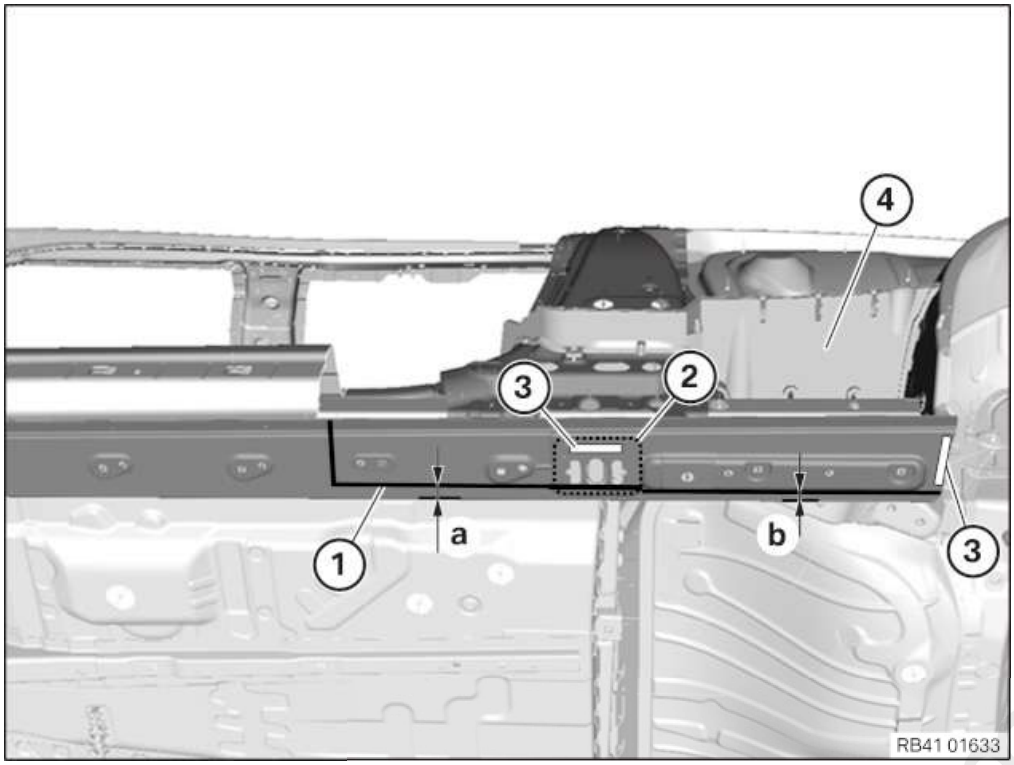
Mark severance cut (1) in accordance with severance cut on new part and cut.

Attention!

Cut outer metal panel only.

Open welded connections in areas (2).

carldiagn.com



Side member section:

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

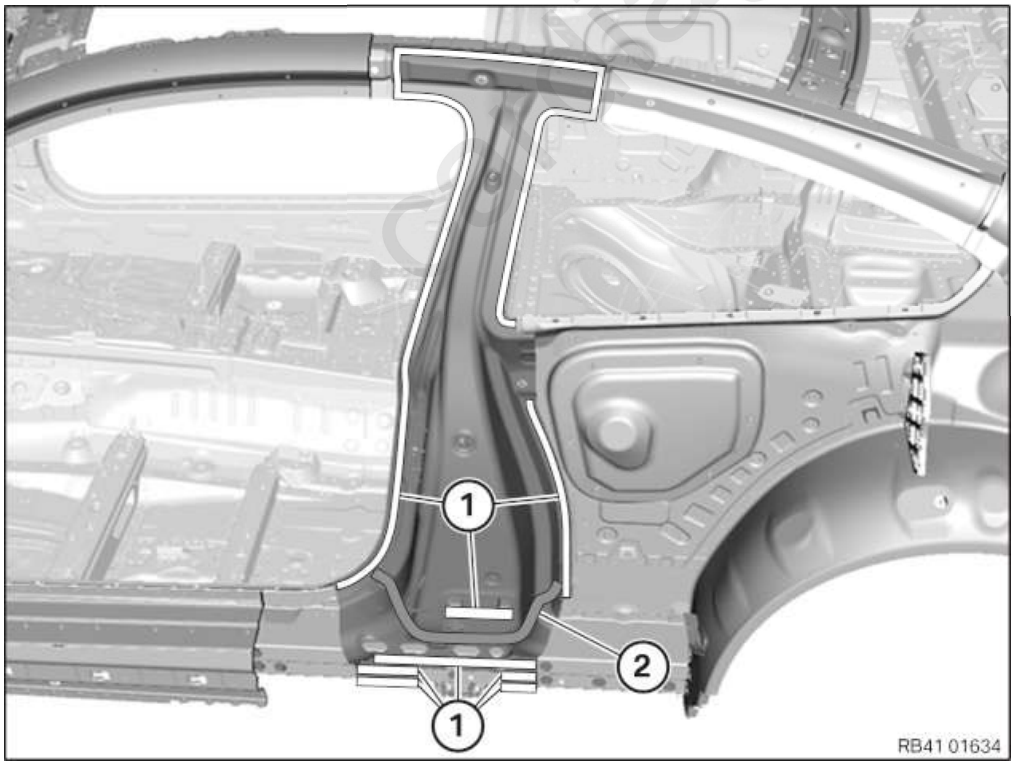
Attention!
Only cut the outer panel in the area of the jacking point (2).

Measurement a = approx. 20 mm from component edge.

Dimension b=approx. 10 - 15 mm from component edge.

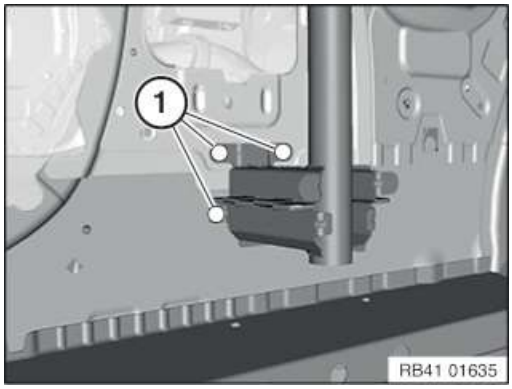
Release welded connections in areas (3) and remove side member section.

Remove cavity sealing (4).

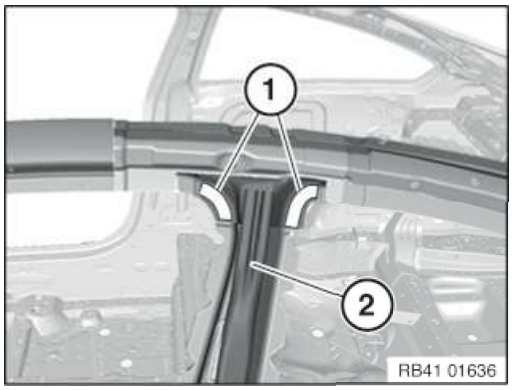


Open welded connections in areas (1).

Release the B-pillar reinforcement from the inner cavity sealing (2) and remove.

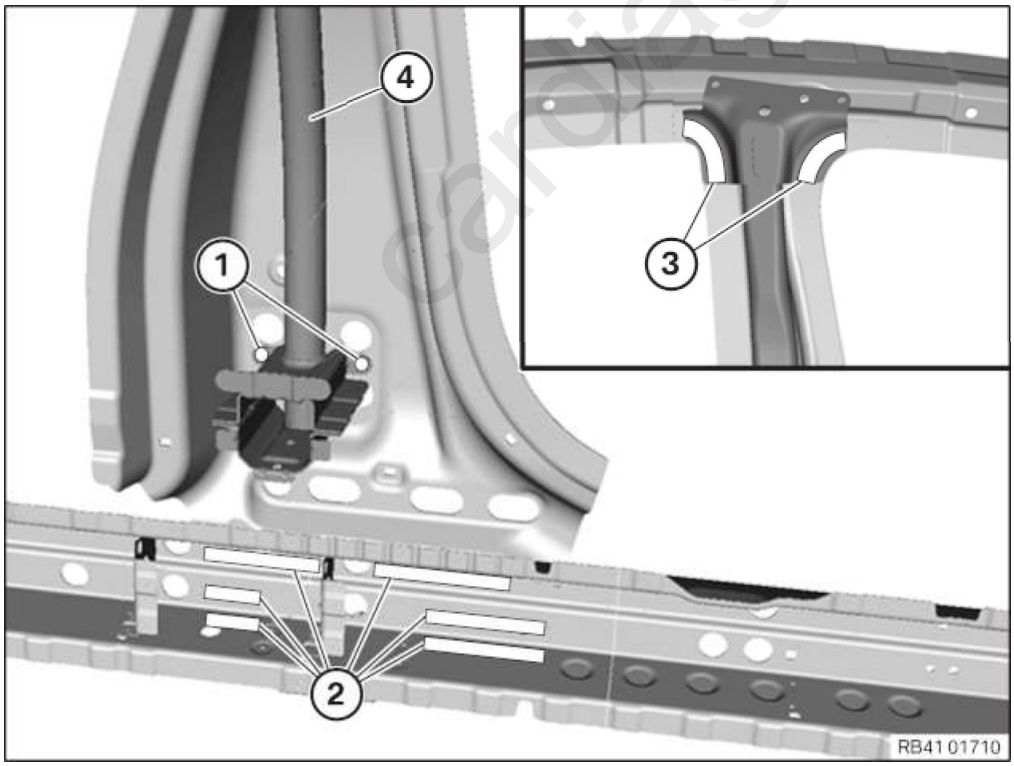


Open welded connections in areas (1).



Open welded connection in areas (1) and remove B-pillar reinforcement (2).

New part preparation



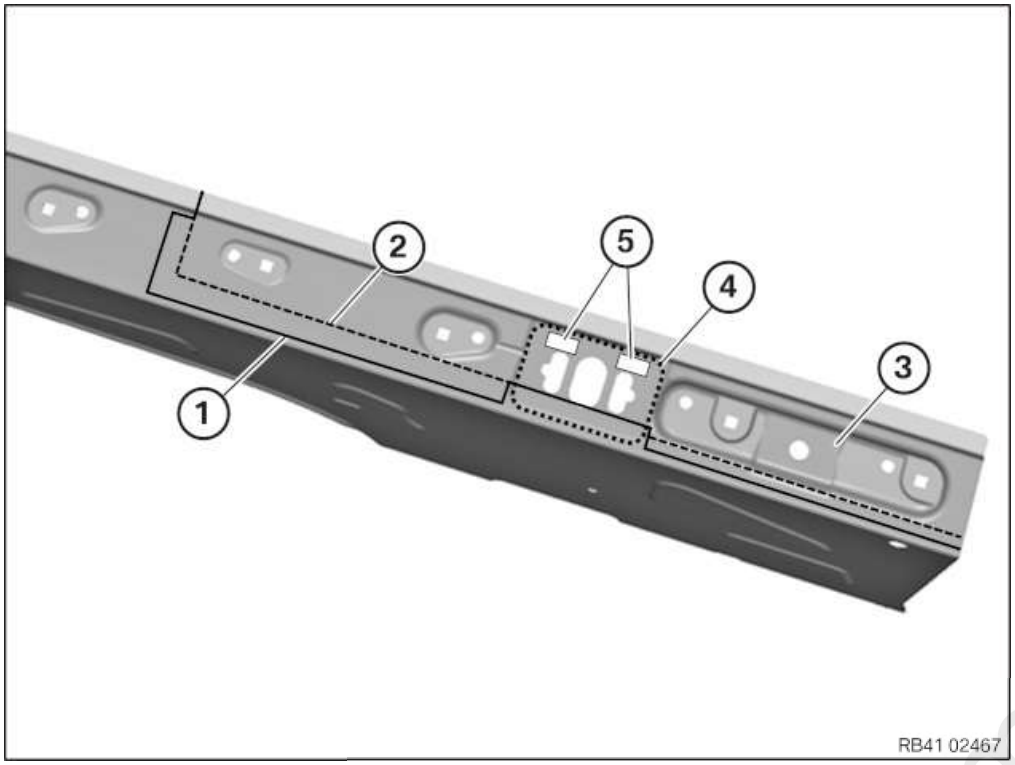
Open welded connections in areas (1) to (3).

Remove the B-pillar reinforcing tube (4).

Note:
Release the welded connections in areas (1) and (2) from the outer side.

The B-pillar reinforcing tube (4) must be installed separately for accessibility reasons.

carmagn.com



Side sill section:

Mark and perform severance cut (1) in accordance with severance cut on vehicle (2) +15 mm extra material.

In the area of the moulding (3) extra material approx. 5 - 10 mm.

Note:
In the area of the jacking point (4), joining with overlaps is not performed. Prepare new part for butt welding.

Prepare the areas for overlapping and the areas (5) for plug-welding.

Comply with new part preparation for side panel and side sill.

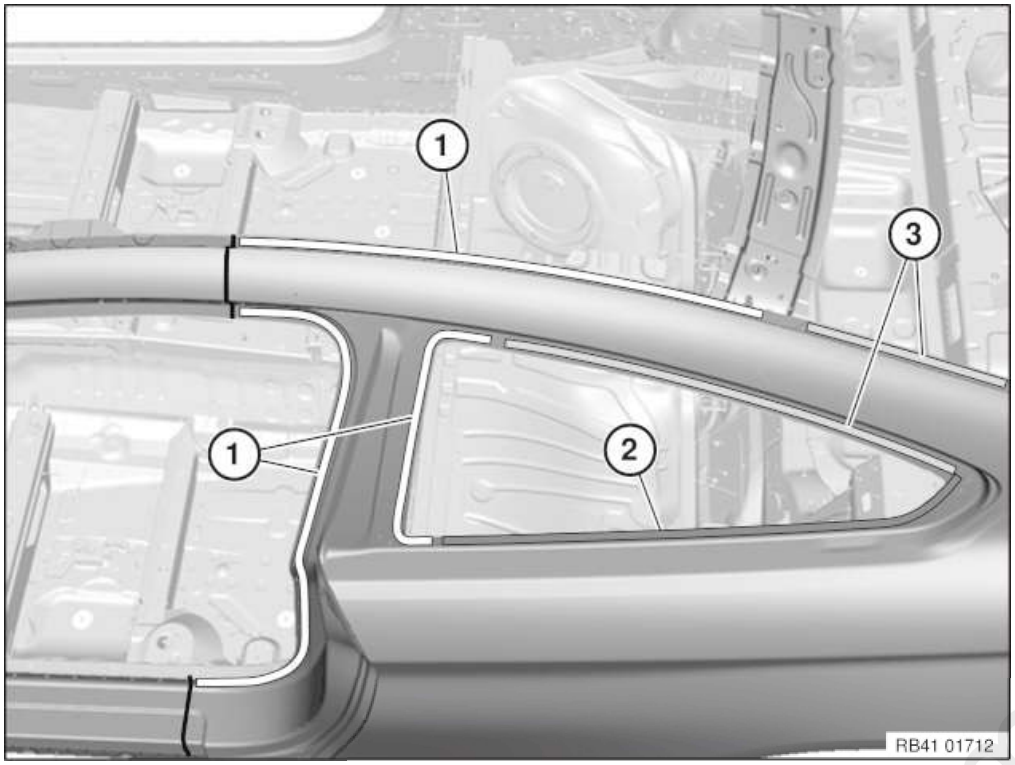
Prepare reinforcement plates at severance cuts.

Prepare new parts for joining by welding in the remaining joining areas.

Adjust new parts to fit with alignment bracket or universal mount and secure.

Note:
When adjusting the new parts, the panel thickness of the missing side panel must be taken into consideration depending on straightening system manufacturer.

cardiagn.com



Different new part preparation for side panel:

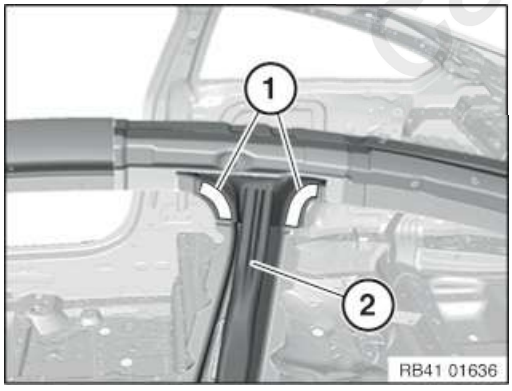
Prepare for joining by welding in areas (1).

Prepare the joints in areas (2) and (3) for joining by rivet bonding technology.

Installation

Install new parts and reinforcement plates with alignment bracket or universal mount and weld.

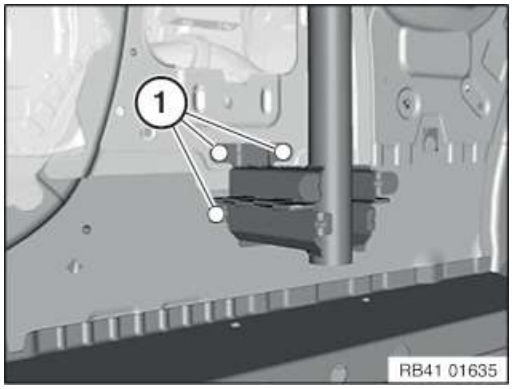
Note:
When installing the new parts, the panel thickness of the missing side panel must be taken into consideration depending on straightening system manufacturer.



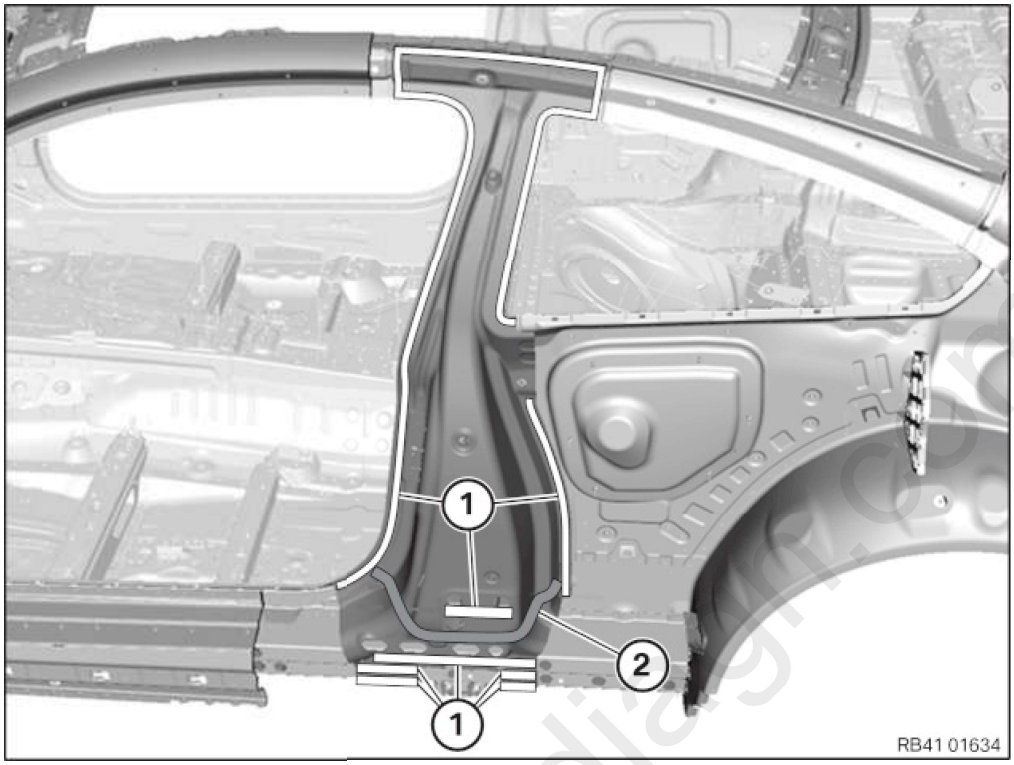
Install the reinforcement tube (2) and MAG weld in the areas (1).

Minimum length of weld seams: 20 mm.

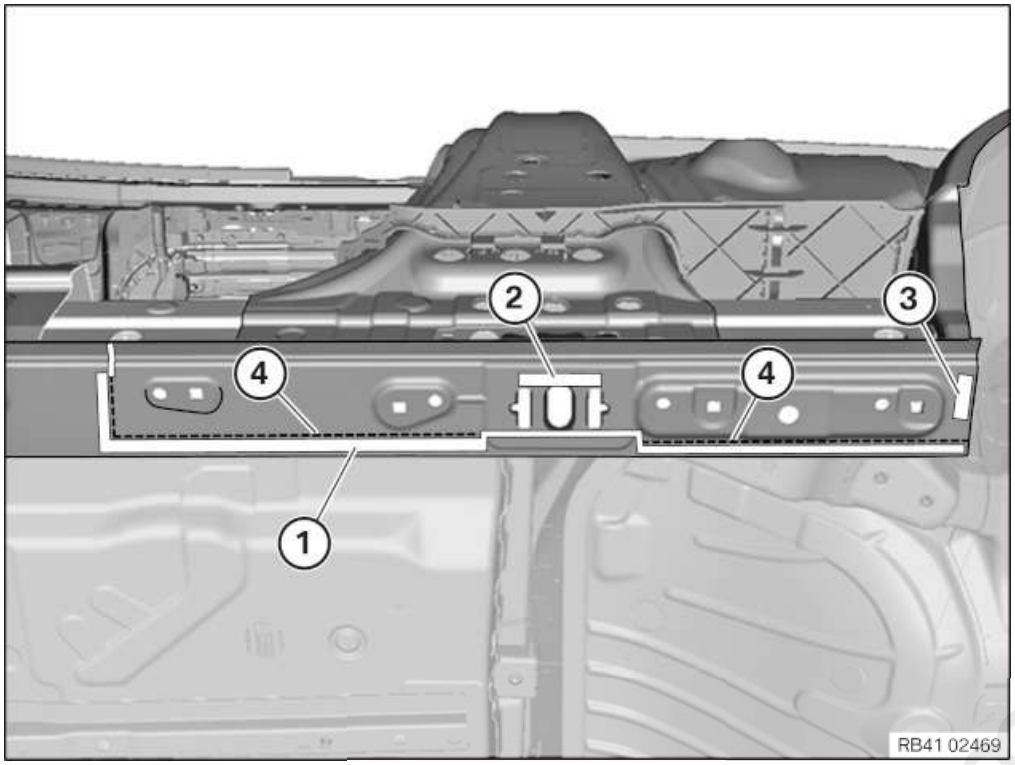
cardiagn.com



Weld reinforcement tube in the areas (1).

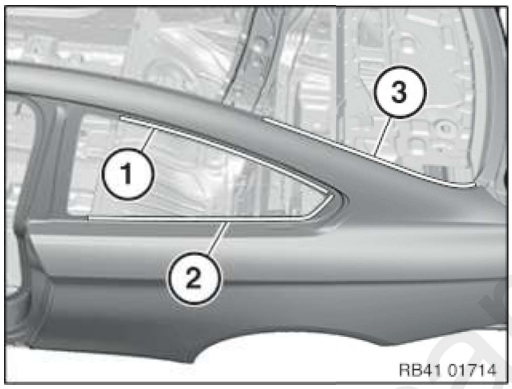


Apply sealant to inner cavity sealing (2). Install cavity sealing.
Install new part and weld in areas (1).
install outer cavity sealing.



Install side sill section and weld in areas (1) to (3).

(4) = Severance cut route on vehicle.



Divergent installation of the side wall:

In areas (1) - (3) rivet side panel with punch rivets.

Area	Number	Remarks
1	6	Punch rivet **N5**
2	7	Punch rivet **N4**
3	6	Punch rivet **N5**

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

cardiagn.com

41 33 051 Removing and installing/replacing left or right deformation element for front bumper panel



Operation is identical to 51 11 770.

cardiagn.com

41 33 051 Removing and installing/replacing left or right deformation element for front bumper panel



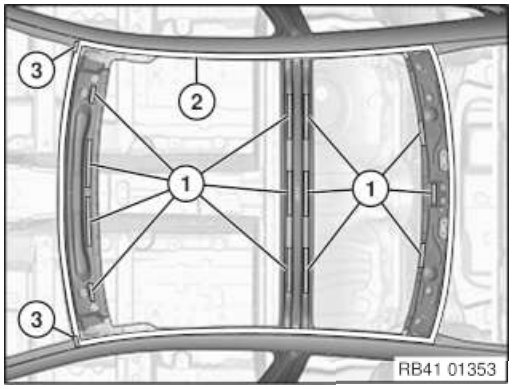
Operation is identical with 51 11 770

cardiagn.com

41 31 000 Replace roof outer skin

Refer to repair instructions Roof outer skin with slide/tilt sunroof for procedure and carry over schematically to the vehicle.

Strip down vehicle.



Installing roof outer skin

Apply D2 sealant in areasÂ (1) in the same way as in series standard.

Apply adhesive in area (2).

Note:
Excess material at the A-pillar nodes is later used for coating the increments.

cardiagn.com

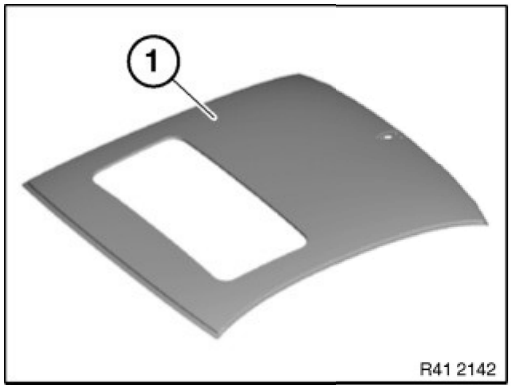
41 31 100 Replacing roof outer skin (version with slide/tilt sunroof)

Special tools required:

- 41 3 202
- 41 3 204

Read contents of Body, General.
Strip down vehicle.

Observe procedure for repair stage 2.



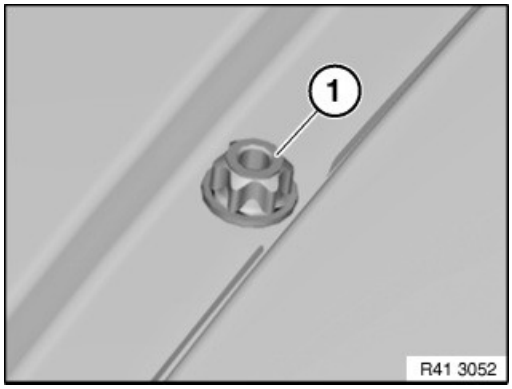
Following new body parts are required (see Electronic Parts Catalogue):

- (1) Roof outer skin, slide/tilt sunroof
- Star screws (4 pcs. order number: 07 14 7 153 767)

Following consumables are required:

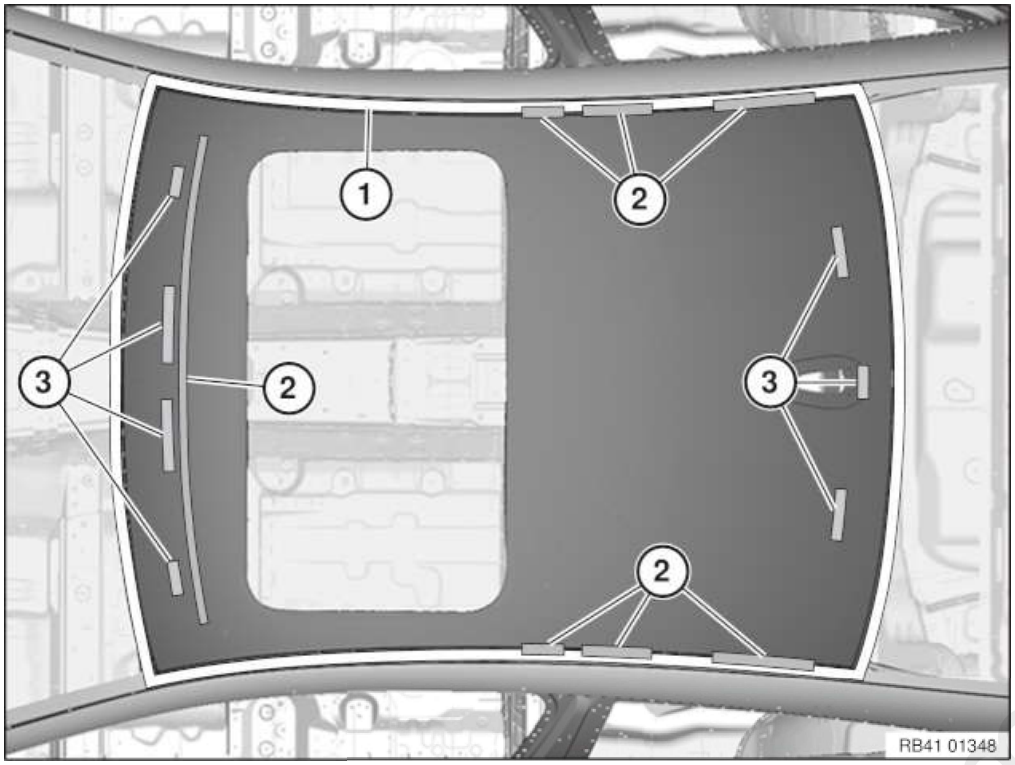
Material	Quantity
Adhesive K5a	1
Adhesive K5b	1
Punch rivet N5	16
Sealant D2	1
EMC screw	2
Cleaning agent R1	1

Removal



Release 4 star screws (1) in roof channel.

cardiagn.com



Open welded connections in area (1).

Release adhesive areas in areas (2).

Release adhesive areas (sealant) in areas (3) and remove roof outer skin.

New part preparation

Place roof outer skin in position and fit in conjunction with roof trim strips.

Attention!

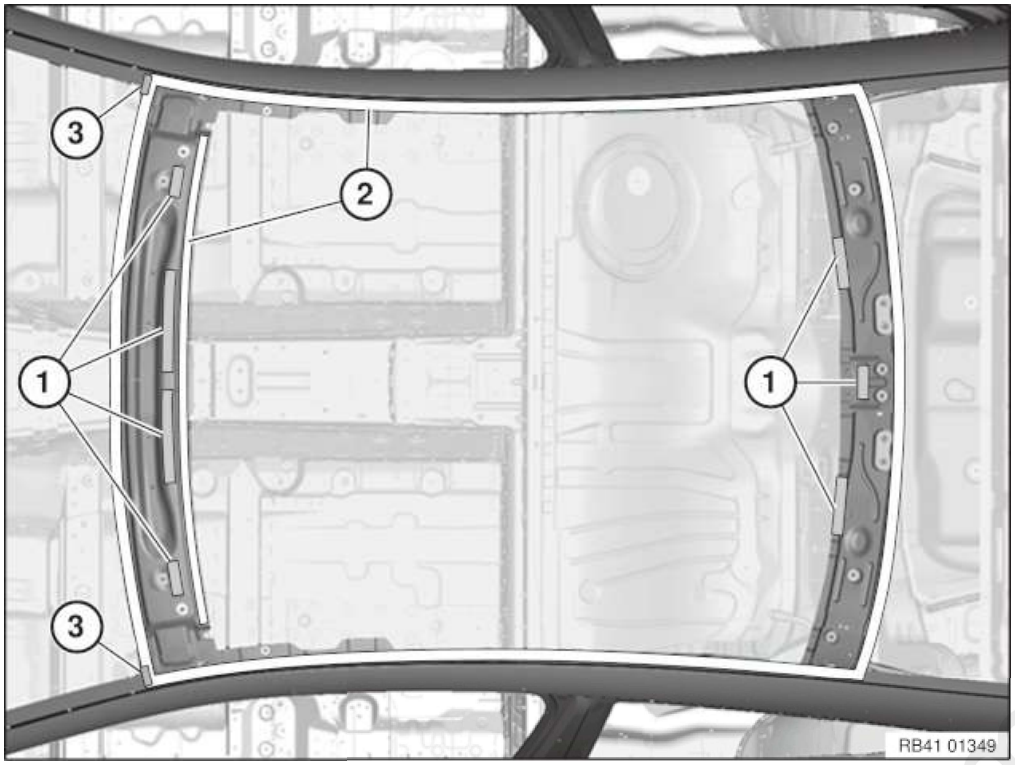
Bonding in outer skin area.

Do not grind/sand new part in area of bonding surfaces.

Installation

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

cardiagn.com



Apply sealant D2 in areas (1) analogously to Series.

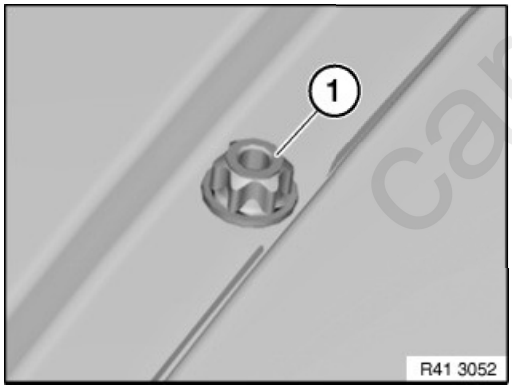
Apply adhesive in areas (2).

Apply a little more adhesive to nodes (3) of A-pillar.

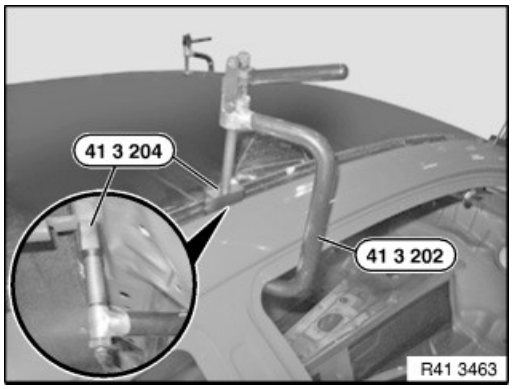
Note:
Excess material at the A-pillar nodes is later used for coating the increments.

Place roof outer skin with helpers evenly and centrally on vehicle and adjust to fit.

Fit roof strips for positioning if necessary.

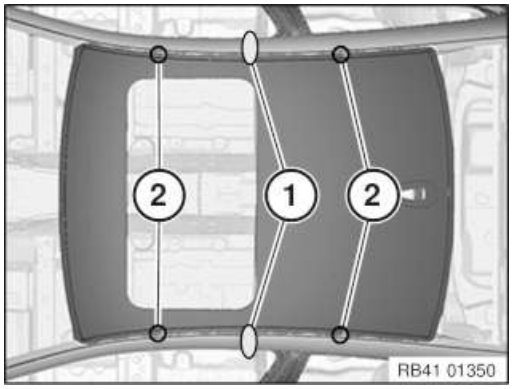


Insert 4 star screws (1) hand-tight.



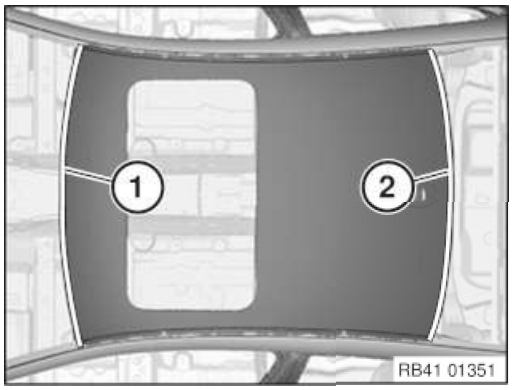
Secure roof outer skin with pliers 41 3 202 and shaped elements 41 3 204 .

cardiagn.com



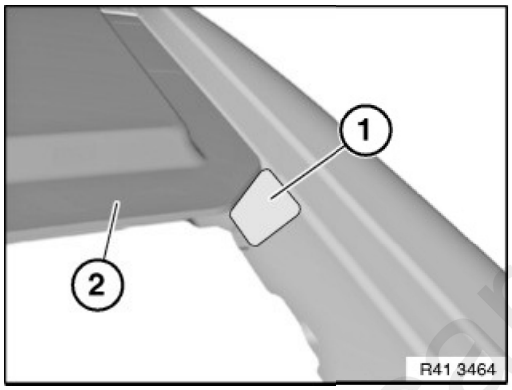
Fix roof outer skin in areas (1) with roof pliers.

(2) Star screws



In areas (1) and (2) rivet roof outer skin with punch **N5**rivets.

Area	Number
1	8
2	8



Adapt stage (1) between roof outer skin (2) and A-pillar with emerging adhesive. Remove excess adhesive.

Attention!

Do not use any cleaning agents containing solvents.

Do not leave any traces of sharp edges as this could compromise the tightness of the subsequent bond.

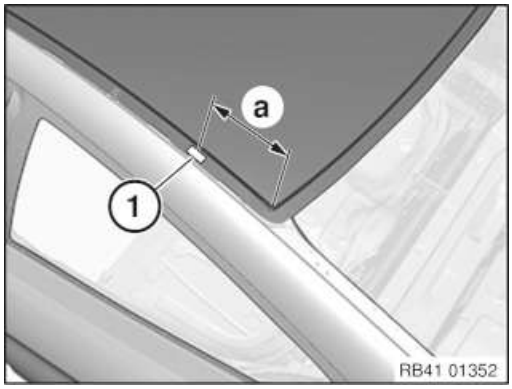
Attention!

Spread excess adhesive in roof trim strip channel. Mounting surfaces of clips for roof trim strips must not be coated with adhesive.

Tighten 4 star screws.

Tightening torque 41 31 1AZ.

cardiagn.com



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

Install an EMC screw in position (1) when the adhesive is hardened.

Dimension a = approx. 140 mm in front of corner of roof outer skin.

cardiagn.com

41 31 000 Stripping operations - Replacing roof outer skin

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.

- Disconnect battery (job number: 61 20 900)
- Remove head restraint for rear seat (FRU number: 52 26 210)
- Remove the trim panel for the storage shelf (job number: 51 46 001)
- Remove headlining (job number: 51 44 001)
- Remove head airbag (job number: 72 12 061)
- Remove front windscreen (FR number: 51 31 000)
- Remove rear window (FR number: 51 31 200)
- Remove left roof trim strip (FR number: 51 13 280)
- Remove right roof trim strip (FR number: 51 13 280)
- Remove roof aerial (FR number: 65 20 035)

cardiagn.com

41 31 100 Stripping operations - Replacing roof outer skin (version with slide/tilt sunroof)

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.

- Disconnect battery (job number: 61 20 900)
- Remove head restraint for rear seat (FRU number: 52 26 210)
- Remove the trim panel for the storage shelf (job number: 51 46 001)
- Remove headlining (job number: 51 44 001)
- Remove head airbag (job number: 72 12 061)
- Remove slide/tilt sunroof (FR number: 54 12 211)
- Remove front windscreen (FR number: 51 31 000)
- Remove rear window (FR number: 51 31 200)
- Remove left roof trim strip (FR number: 51 13 280)
- Remove right roof trim strip (FR number: 51 13 280)
- Remove roof aerial (FR number: 65 20 035)

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

cardiagn.com

41 32 031 Replace the A-pillar on the outside left in the area of the windscreen

Read contents of Body, General.

For stripping and rigging operations, refer to texts on KSD CD (job number 41 32 031).

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.

Important!

Operations on pyrotechnical devices may only be carried out by authorised experts.

Improper, unauthorised operations may result in serious dangers.

Unauthorized persons are strictly prohibited from performing any operations on this system.

Warning!

Read and comply with safety instructions for handling airbag modules and pyrotechnical belt tensioners.

Incorrect handling can activate airbag and cause injury.

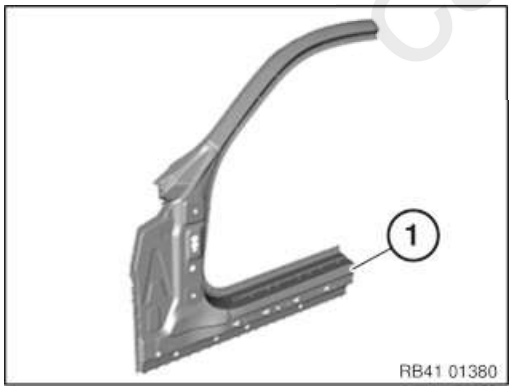
A damaged head airbag must be replaced.

A damaged head airbag exhibits an impaired protective function and in extreme cases loses its protective function altogether.

Necessary preliminary tasks:

Disconnect negative battery cable.

Remove trim panel for roof pillar.

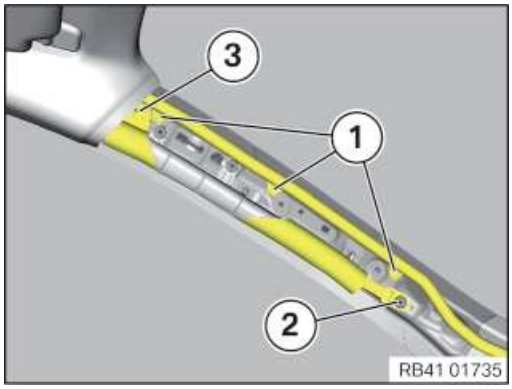


Following new body parts are required (see Electronic Parts Catalogue):

- (1) A-pillar, outer

Removing the A-pillar in the area of the windscreen

cardiagn.com



Version 1:

Unclip wiring harness in areas (1).

Release rivet connection (2).

Loosen airbag at attachment point (3).

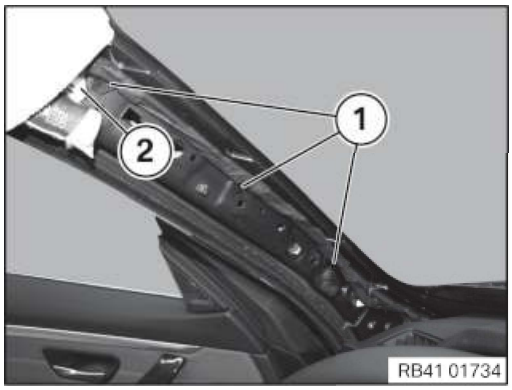
Important!

For the exact procedure, see repair instructions for removing and installing head airbag.

Important!

Risk of damage!

Airbag must not be kinked or bent!



Version 2:

Unclip wiring harness in areas (1).

Loosen airbag at attachment point (2).

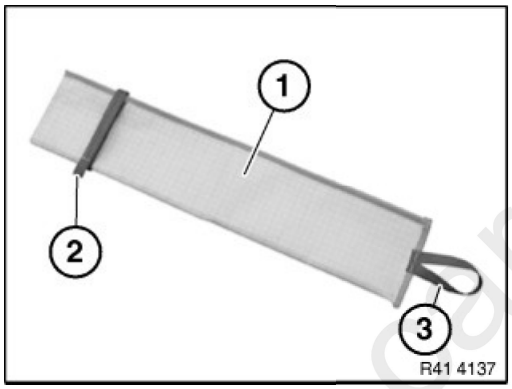
Important!

For the exact procedure, see repair instructions for removing and installing head airbag.

Important!

Risk of damage!

Airbag must not be kinked or bent!



Note:

Use protective sleeve (1) to protect the airbag.

Check protective sleeve for damage prior to use.

A damaged protective sleeve must not be used!

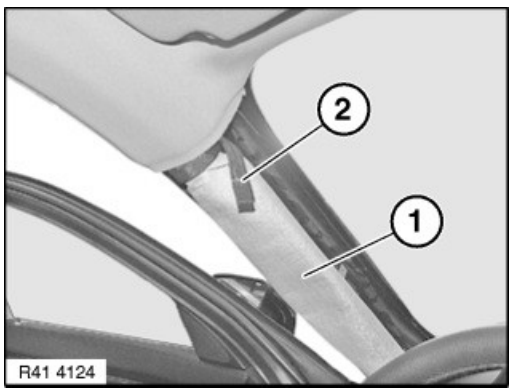
(2) Velcro fastener

(3) Loop

- Order number, protective sleeve: 81 47 2 159 578

  Sourcing reference:

  BMW Workshop Equipment Catalogue

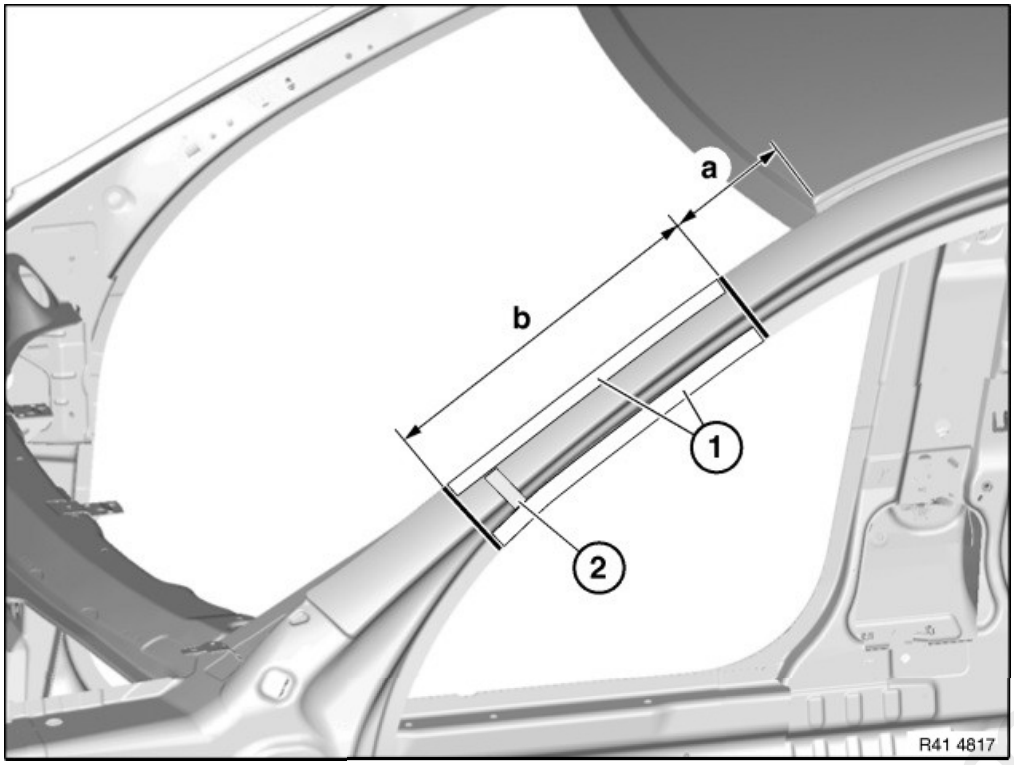


Push the protective sleeve (1) onto the airbag up to just below the roofliner so that the airbag is completely covered.

Fasten protective sleeve with Velcro fastener (2).

Secure protective sleeve with airbag against kinking.

cardiagn.com



Mark severance cuts in accordance with specified dimensions and cut.

Important!
Cut outer panel only for following severance cuts.

Dimensions a = approx. 150 mm from roof edge.

Dimension b = approx. 350 mm below severance cut a.

Open welded connections in areas (1).

Release and remove partial section of A-pillar from cavity sealing (2).

New part preparation

Mark severance cuts on new parts in accordance with vehicle and cut.

Prepare reinforcement plates at severance cuts.

Installing the A-pillar in the area of the windscreen

Apply sealing compound to cavity acoustic baffle.

Install and weld new parts and reinforcement plates.

After completing welding work:

Check airbag in area of protective sleeve for damage, replace if necessary.

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

cardiagn.com

41 33 051 Removing and installing/replacing left or right deformation element for front bumper panel



Operation is identical to 51 11 770.

cardiagn.com

41 33 051 Removing and installing/replacing left or right deformation element for front bumper panel



Operation is identical with 51 11 770

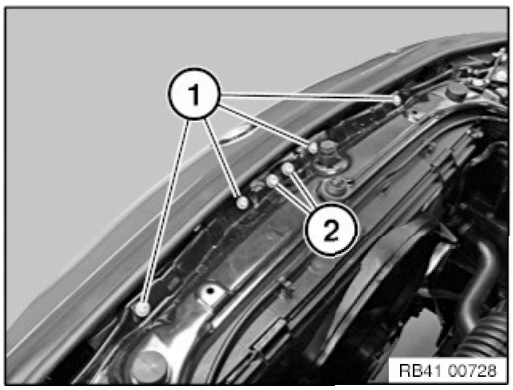
cardiagn.com

41 33 050 Replacing centre front panel

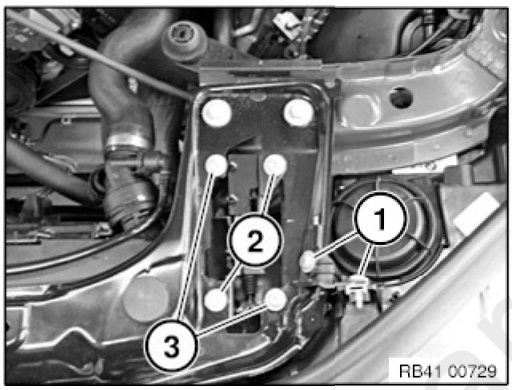
Necessary preliminary tasks:

- Remove intake silencer housing
- Only remove the F33, F23: front strut
- Only remove F80, F82: carbon strut

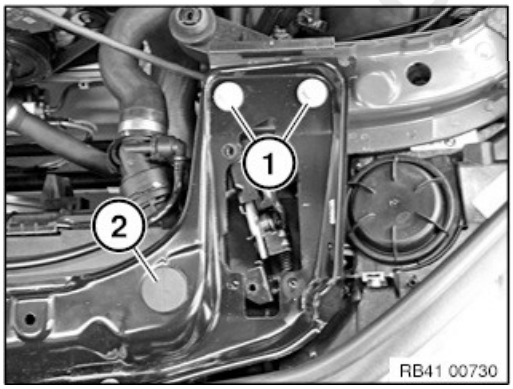
Most of operation is described on the left side. Right side identical.



Release screws (1).
Tightening torque 51 11 13AZ.
Unfasten screws (2).
Tightening torque 51 11 7AZ.

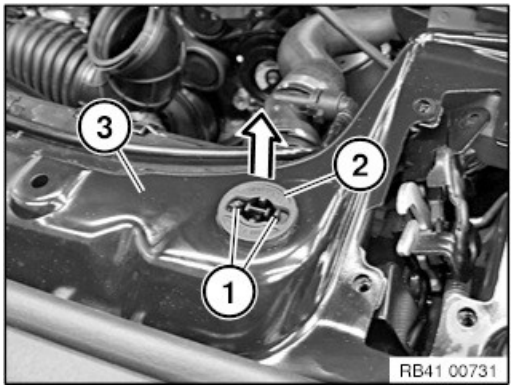


Release screws (1) and remove headlight holder.
Tightening torque 63 12 1AZ.
Release screws (2) and place the bonnet lock directly under the front panel.
Tightening torque 51 23 1AZ.
Loosen screws (3).
Tightening torque 51 11 14AZ.



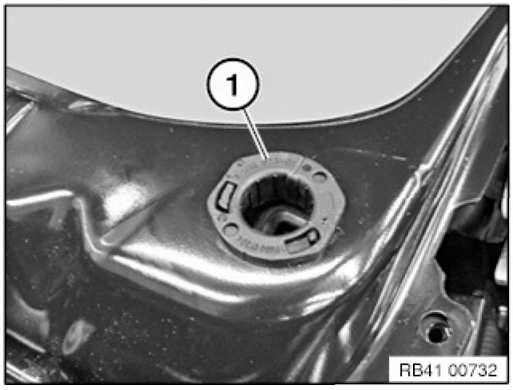
Release screws (1).
Tightening torque 41 33 1AZ.
Remove cover (2).

cardiagn.com

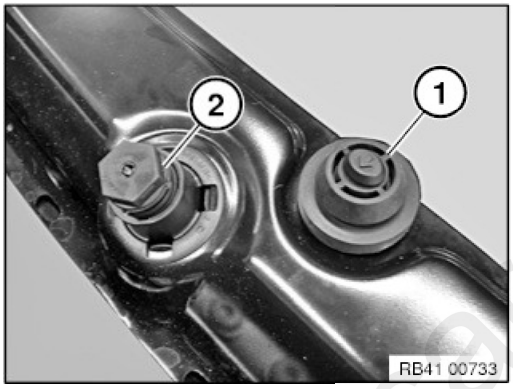


Press locks (1) together and pull the supporting bushing (2) out toward the top.

Remove centre front panel (3).

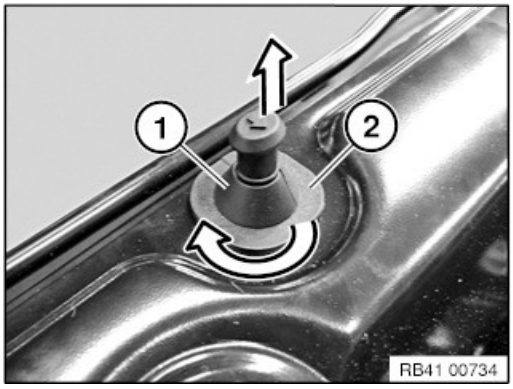


Remount holder (1) for radiator.



Remove rubber mount (1).*Installation note:*
The fixing possibility for the stop pad (2) is omitted on the replacement part.

The stop pad (2) is omitted.



Slide lock *(1)* upwards in direction of arrow.

Turn the holder (2) for the rubber mount clockwise and take off.

Remount holder and rubber mount.

cardiagn.com

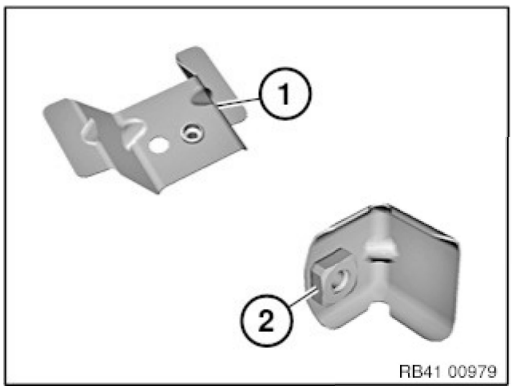
41 33 040 Replacing front left or right side wall holder

Note:
Read contents of Body, General.

Side wall removed.

Transfer the systematic diagram onto the respective holder version.

General information:
Procedure Observe repair stage 2!



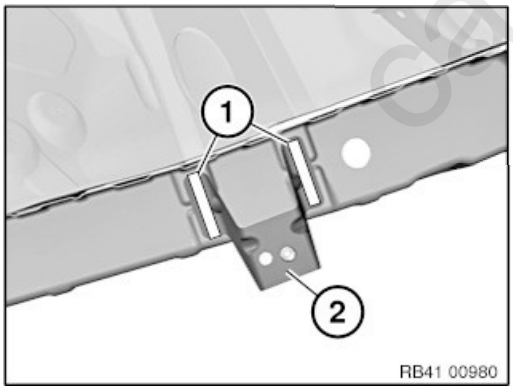
Following new body parts are required (refer to Electronic Parts Catalogue):

- (1) Holder, side wall, front (variant 1)
- (2) Holder, side wall, front (variant 2)

Following consumables are required:

Material	Quantity
Adhesive K5a	1
Blind rivets N3	2
Cleaning agent R1	1

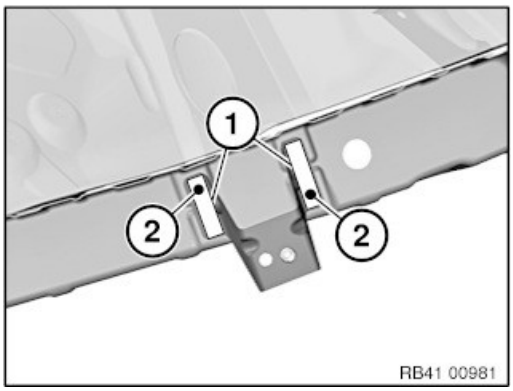
Removal of side wall holder (variant 1):



Release welded connections in areas (1) and remove holder (2).

Preparation of new part:

cardiagn.com



Adjust new part in conjunction with side panel in front to fit.

In area of bonding surfaces (1), set 2 4.2 mm dia. bore holes (2) for blind rivetsN3.

Remove new part and deburr holes.

Important!

Do not grind bonding surfaces down or off.

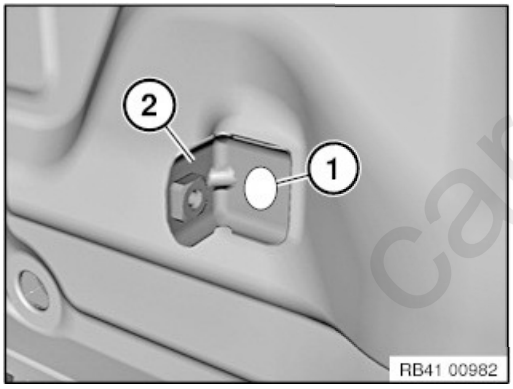
Installation of side wall holder:

Clean all bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Install new part and rivet with blind rivets.

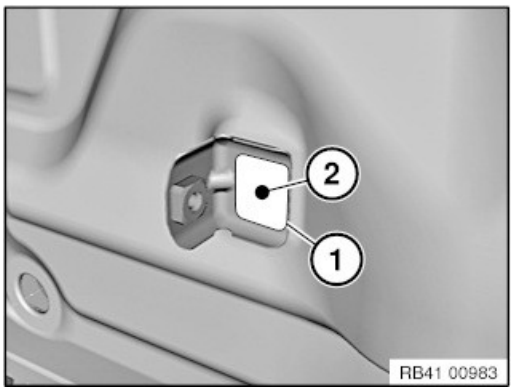
Removal of side wall holder (variant 2):



Release welded connection in area (1) and remove holder (2).

Preparation of new part:

cardiagn.com



Fit in new part.

In area of adhesive surface (1), drill a 4.2 mm dia. bore hole (2) for blind rivet N3.

Remove new part and deburr holes.

Important!

Do not grind bonding surfaces down or off.

Installation of side wall holder:

Clean all bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surface.

Install new part and rivet with blind rivet.

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

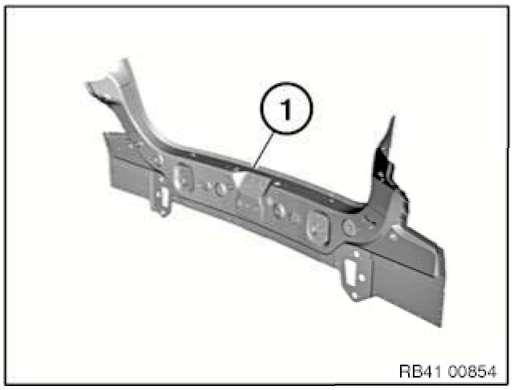
cardiagn.com

41 34 041 Replacing tail panel

Read contents of Body, General.

Strip down vehicle.

Procedure Observe repair stage 2!



Following new body parts are required (see Electronic Parts Catalogue):

- (1) Rear trim panel

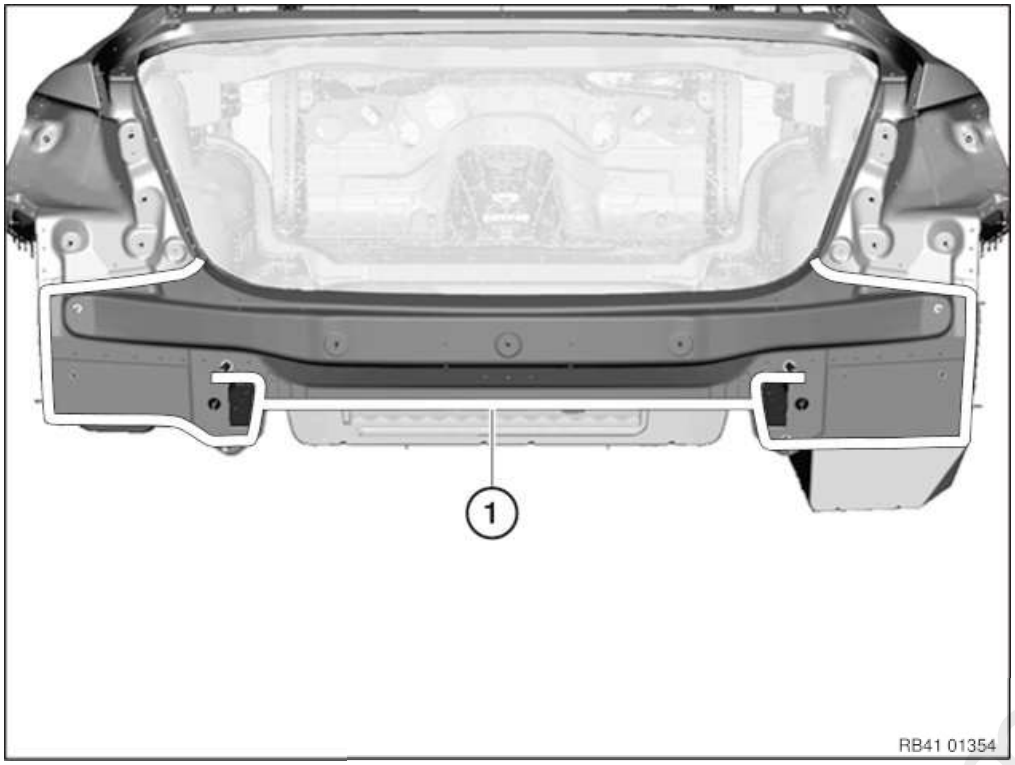
Following consumables are required:

Material	Quantity
Adhesive K5b	1
Blind rivets N3	20
Punch rivets N4	8
Punch rivets N5	8
EMC screws	6
Cleaning agent R1	1
Sealant D1	
Cavity wax remover	

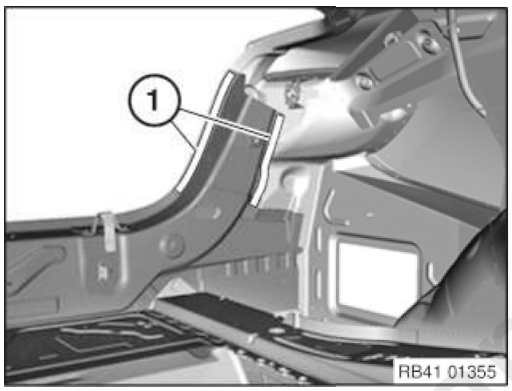
Removing rear trim panel

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

cardiagn.com



Open welded connections in area (1).

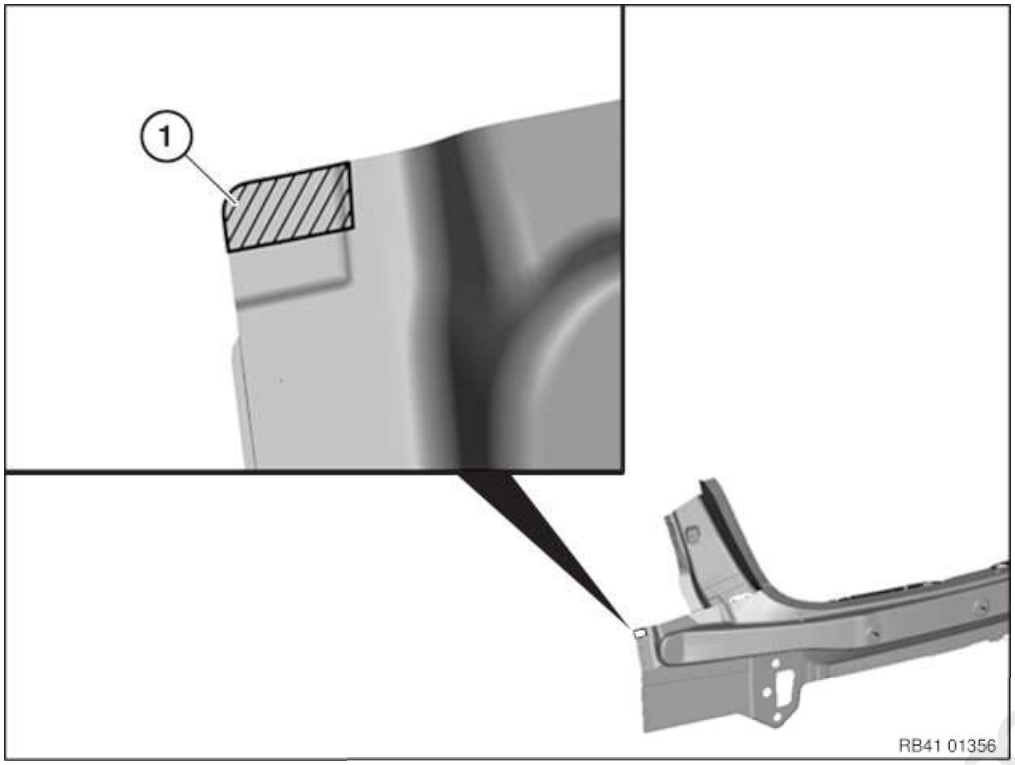


Release the welded connections in areas (1) and remove the tail panel.

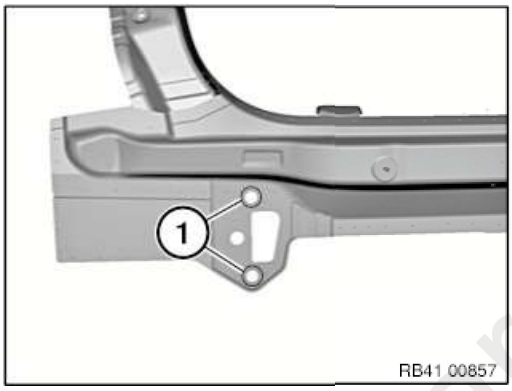
New part preparation

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

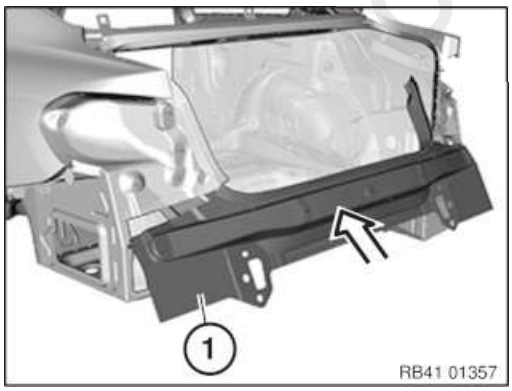
cardiagn.com



Mark area (1) in accordance with dimensions approx. 15 x 20 mm and cut.

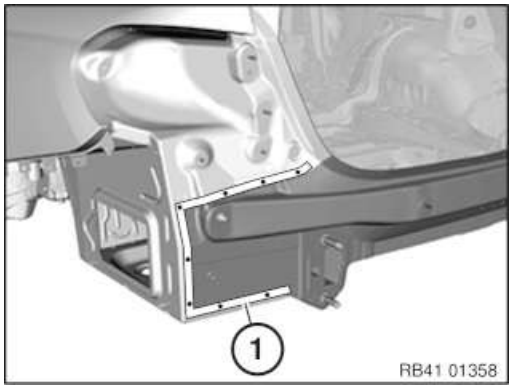


The bore holes (1) can be enlarged slightly if necessary.

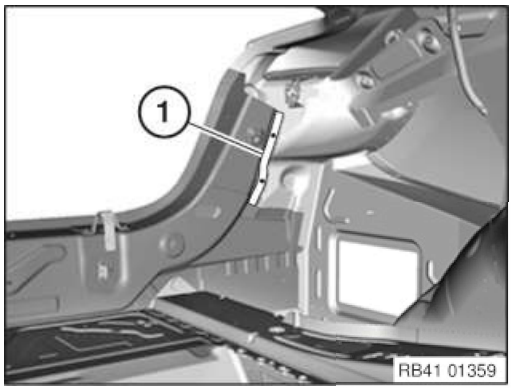


Slide in rear trim panel (1) from bottom upwards. Adjust rear trim panel in combination with rear lid and rear lights to fit and secure.

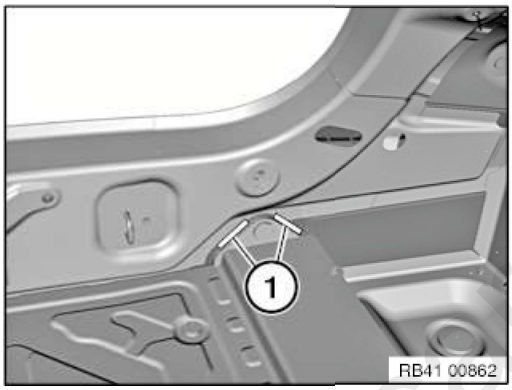
mycardiagn.com



Set 8 4.2 mm dia. bore holes for blind rivets in area (1).**Important!**
Retaining screws must not be used in area in area of tailgate seal.



Set two 4.2 mm diameter bore holes for blind rivets in area (1).*Installation note:*
When installing, insert the blind rivets from the outside to the inside.



On both vehicle sides, prepare areas (1) for MAG welding.

Remove new part and deburr holes.

cardiagn.com



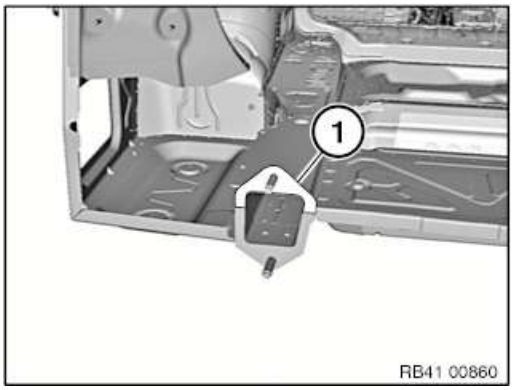
Important!
Do not grind/sand new part in area of bonding surfaces.



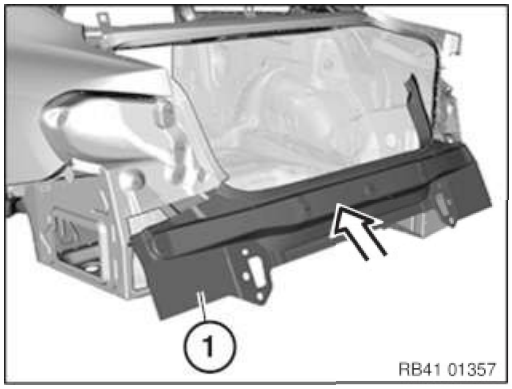
Installing rear trim panel

Clean <u>all</u> bonding surfaces on new part and on vehicle with cleaning agent R1.

Apply adhesive to bonding surfaces.

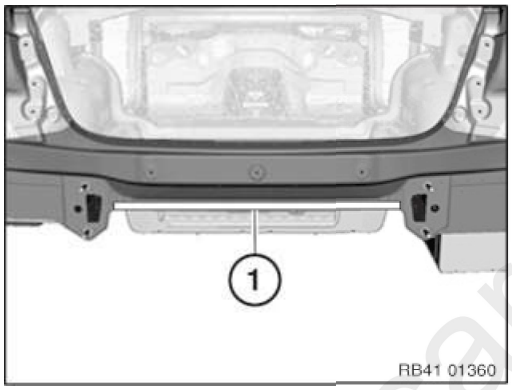


Do not apply adhesive on either vehicle side in area (1).



Mount rear trim panel (1) and secure with blind rivets.

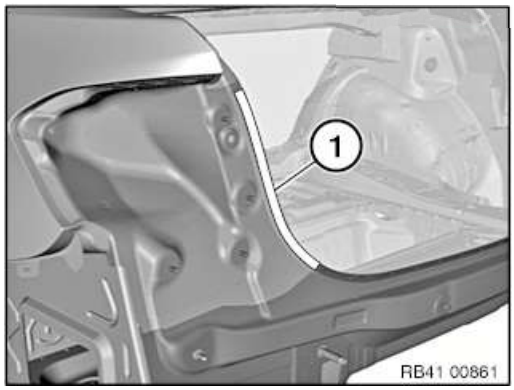
When inserting new parts, make sure there is sufficient adhesive on bonding surfaces.



Important!

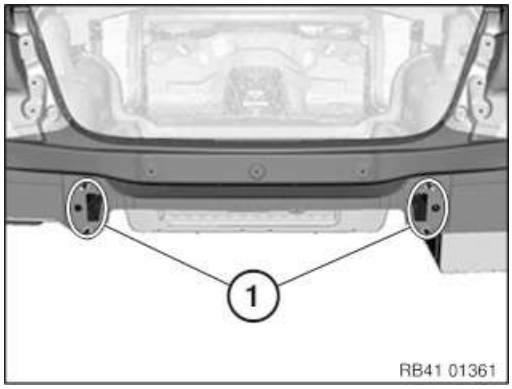
Three-plate connection!

In area (1), use 8 punch rivets N5 from both sides.



In area (1) set 4 punch rivets N4.

cardiagn.com



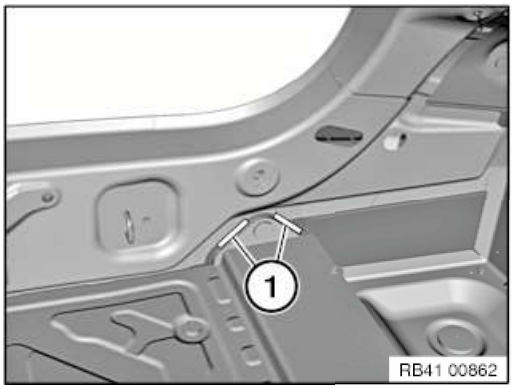
Press rear trim panel in areas (1) and remove emerging adhesive.

Then install carrier for bumper panel to secure rear trim panel.

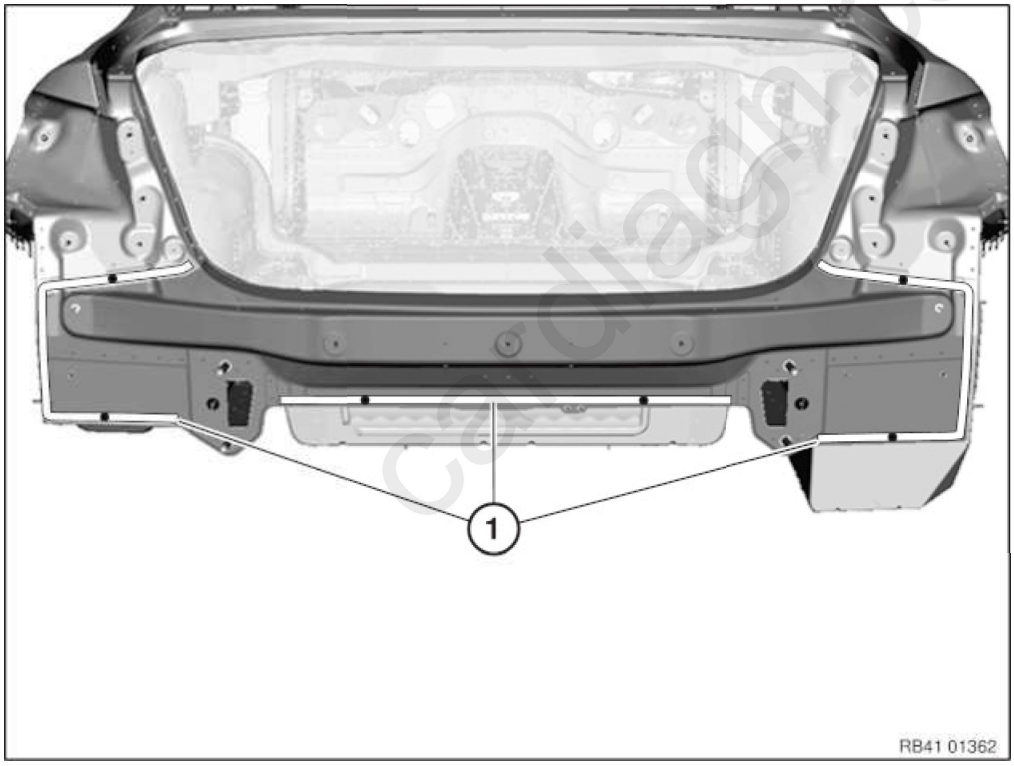
Important!

Prevent emerging adhesive from coming into contact with support.

Do not use any cleaning agents containing solvents.



On each vehicle side, introduce 2 MAG weld seams (1). Length approx. 20 mm.



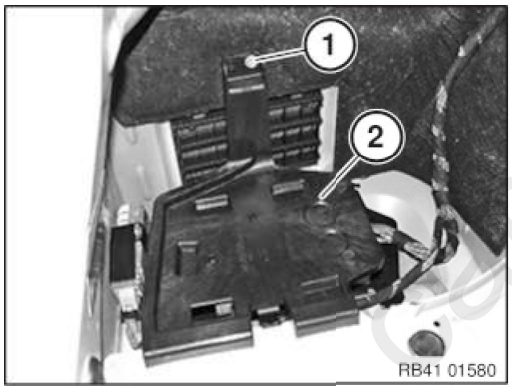
After hardening of the adhesive install 6 EMC screws in the areas (1).

41 34 041 Stripping operations - Replacing tail panel

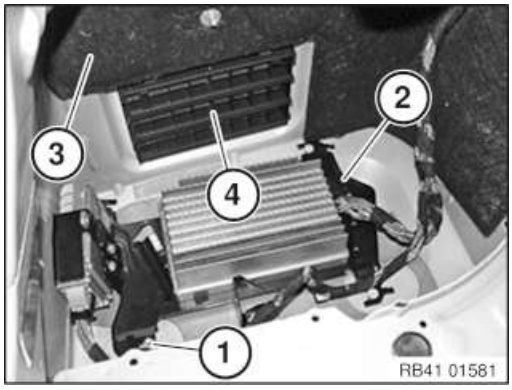
Note:
Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.

The following list basically represents the removal sequence.

- Remove battery (FR number: 61 21 010)
- Remove bumper trim (FR number: 51 121 56)
- Remove bumper carrier (FR number: 51 12 050)
- Remove guide for rear bumper in the centre (job number: 51 12 825)
- Remove guide for rear left and right bumper (job number: 51 12 828)
- Remove both rear lights (job number: 63 21 180)
- Remove luggage compartment floor trim panel
- Upper tail panel trim (FR number: 51 46 050)
- Remove and install tailgate striker (FR number: 51 24 130)
- Remove left luggage compartment wheel arch panel (FR number: 51 47 151)
- Remove right luggage compartment wheel arch panel (FR number: 51 47 161)
- Lower rear silencer
- Remove heat shields
- Partially detach tailgate seal



Release nut (1) and remove upholstery (2).



Release nut (1) and lay holder (2) with control unit to one side.

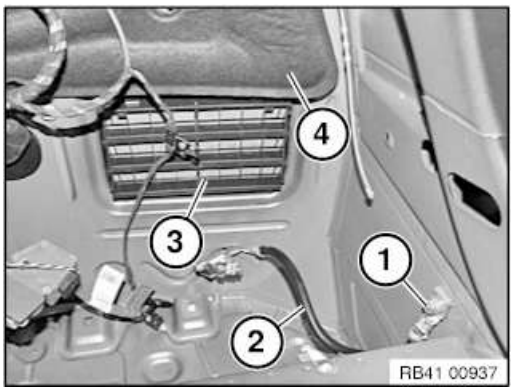
Partially release the insulating mat (3) and tie to one side.

Release latch mechanisms and remove rear ventilation (4).

Installation note:
The rear ventilation must not be damaged! (watertightness).

All latch mechanisms must engage audibly.

carldiagn.com



Release nut (1) and remove battery earth lead (2).

Tightening torque 61 21 6AZ.

Release latch mechanisms and remove rear ventilation (3).

Partially release the insulating mat (4) and tie to one side.

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

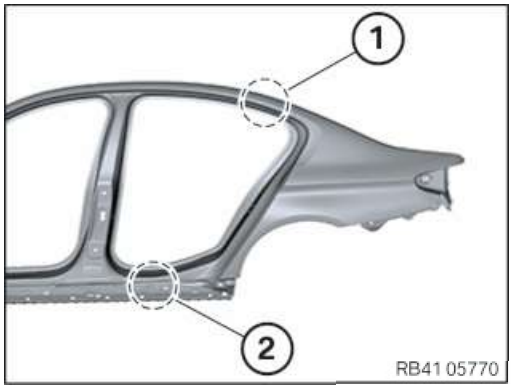
The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

cardiagn.com

41 00 ... Reinforcement plate with stud bolt (bonded or welded)

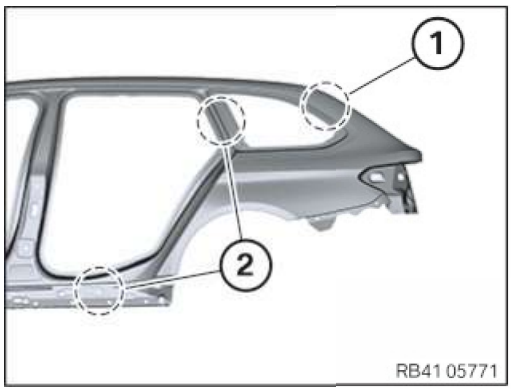
When replacing the rear side panel, reinforcement plates are bonded or welded on the separation points.



Applicable to Saloon, hatchback, Coupé.

Welding is done in area (1) (incl. water channel).

Bonding is done in area (2).

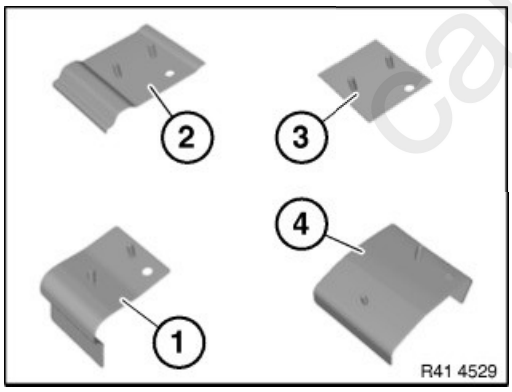


Applicable to Touring, X models, Gran Coupé, Gran Turismo.

Welding is done in area (1) (incl. water channel).

Bonding is done in areas (2).

Note:
The following graphics serve as general illustrations of reinforcement plate repair work. They apply to sectional repairs on the outer skin which are produced using the adhesive joining method.



Overview of the reinforcement plates (for sourcing reference, see Electronic Parts Catalogue):

(1) Reinforcement plate, sill

(2) Reinforcement plate, C-pillar

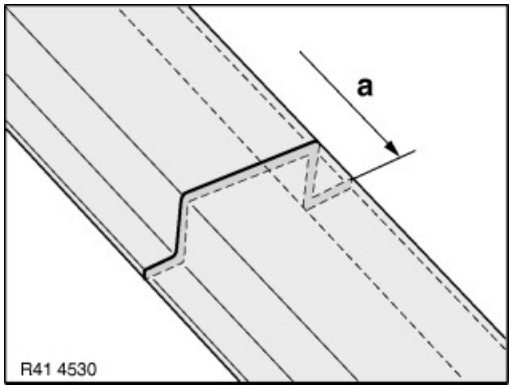
(3) Reinforcement plate, universal

(4) Reinforcement plate, C- or D-pillar

(5) Nuts (not shown)

- Plastic nut dia. 18 mm, part number 07 14 1 943 122
- Plastic nut ⌀ 22 mm, part number 07 14 7 169 847

cardiagn.com

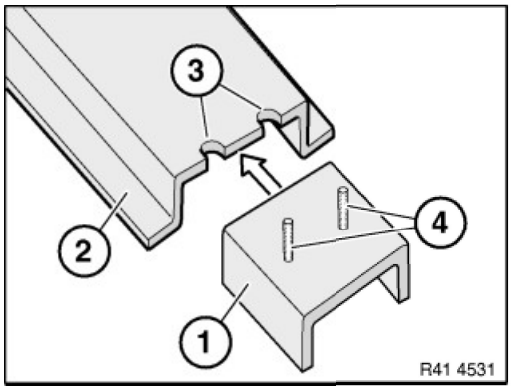


Mark side panel according to dimension a and detach it.

Preparation of the reinforcement plate (bonded or welded)

Some reinforcement plates are oversized.

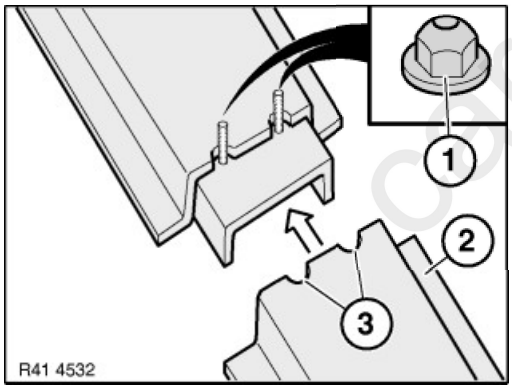
It may be necessary to rework the reinforcement plates at the edges or cut them to size until they rest against the outer skin free of tension.



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

Make semicircular recesses (3) for the stud bolts (4).

Diameter of recesses approx. 10 - 12 mm.



Fix the reinforcement plate using plastic nuts (1).

Fit new part (2).

Make semi-circular recesses (3) in the new part.

Diameter of recesses approx. 10 - 12 mm.

Remove reinforcement plate.

Note:

Bonded reinforcement plates:

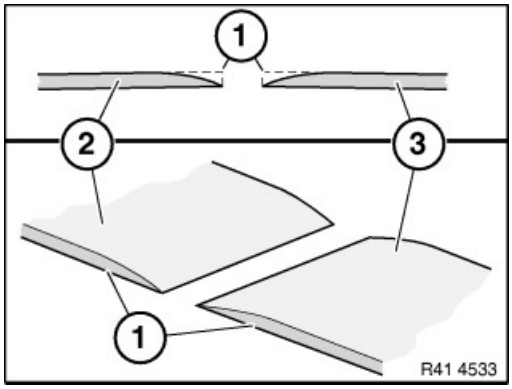
Width of joint between new part and component on vehicle approx. 5 - 8 mm (at least 30 mm flange width per side).

Welded reinforcement plates:

Width of joint between new part and component on vehicle approx. 2 - 3 mm.

Grind down to the metal in the area of the joint.

cardiagn.com



Carry out the following step only if the reinforcement plates are bonded.

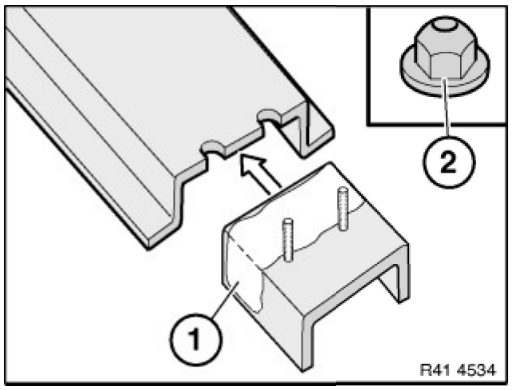
Chamfer cutting edges (1) on joint by grinding.

(2) Component on vehicle

(3) New part

If the cutting edges have not been sufficiently chamfered, there may be voids in the paintwork after painting.

Installing bonded reinforcement plate



Clean all bonding surfaces.

Apply the adhesive in area (1) on the reinforcement plate.

Apply more adhesive in the radii to avoid air pockets.

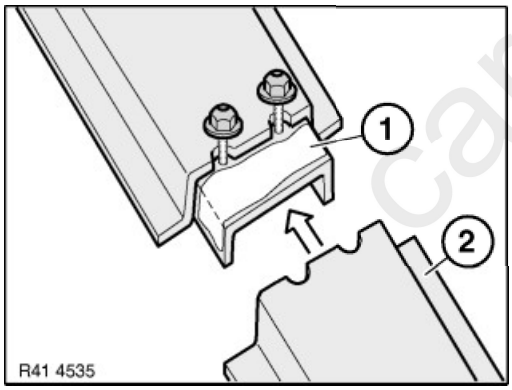
Apply additional adhesive to the outer skin around radii.

Slide the reinforcement plate carefully into the component on the vehicle and fix plastic nuts (2).

Screw on the nuts with only a few turns.

Attention!

When joining the reinforcement plate, make sure that there is sufficient adhesive on the bonding surfaces!



Apply the adhesive on bonding surface (1) of the reinforcement plate.

Apply more adhesive in the radii to avoid air pockets.

Apply additional adhesive to the outer skin around radii.

Fit new part (2).

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

First tighten the plastic nuts at the radii.

Only then tighten all the plastic nuts in the flat areas.

Tightening torque 41 14 1AZ.

Attention!

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.

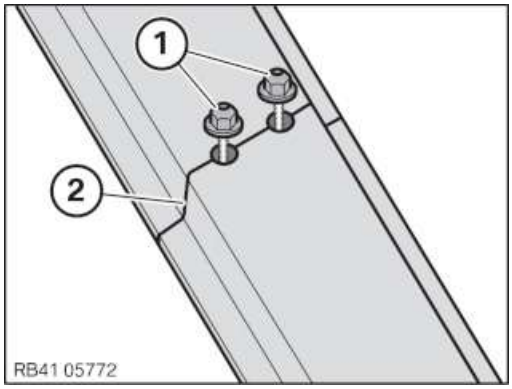
After adhesive has hardened:

Grind off stud bolts and surplus adhesive flush.

Paint area as specified in BMW Painting Handbook.

Installing welded reinforcement plate

cardiagn.com



Attention!

Risk of damage!

Protect the adjacent components from heat and flying sparks.

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

First tighten the plastic nuts at the radii.

Only then tighten all the plastic nuts in the flat areas.

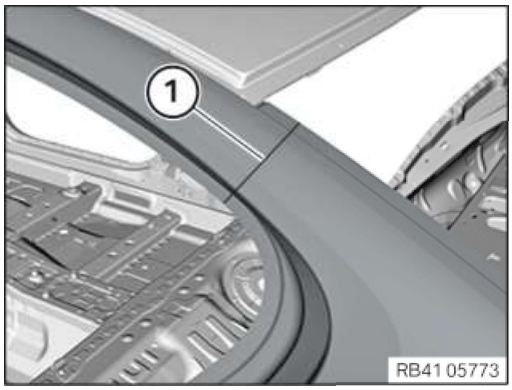
Tightening torque 41 14 1AZ.

Weld joint (2) between plastic nuts (1).

Release plastic nuts (1).

Grind down stud bolt until flush.

Weld joint (2) in the remaining areas.



Grind weld seam (1) until flush.

If necessary, straighten area (1) and level it with a multi-functional spatula.

Paint area as specified in BMW Painting Handbook.

cardiagn.com

41 35 082 Removing and installing front right side panel



Operation is identical to "Replace front side panel, left".

cardiagn.com

41 35 081 Removing and installing front side panel on left

For stripping and rigging operations, refer to texts on KSD CD (FRU number 41 35 081).

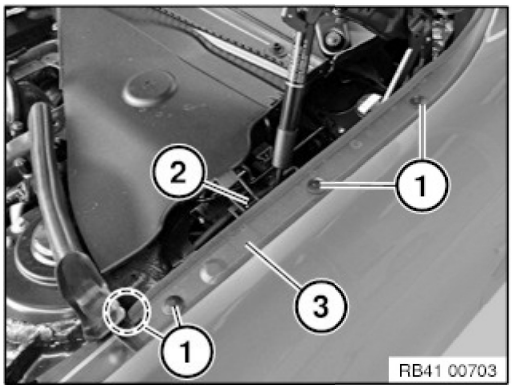
Observe gap dimensions.

Important:

Do not damage adjoining body components.

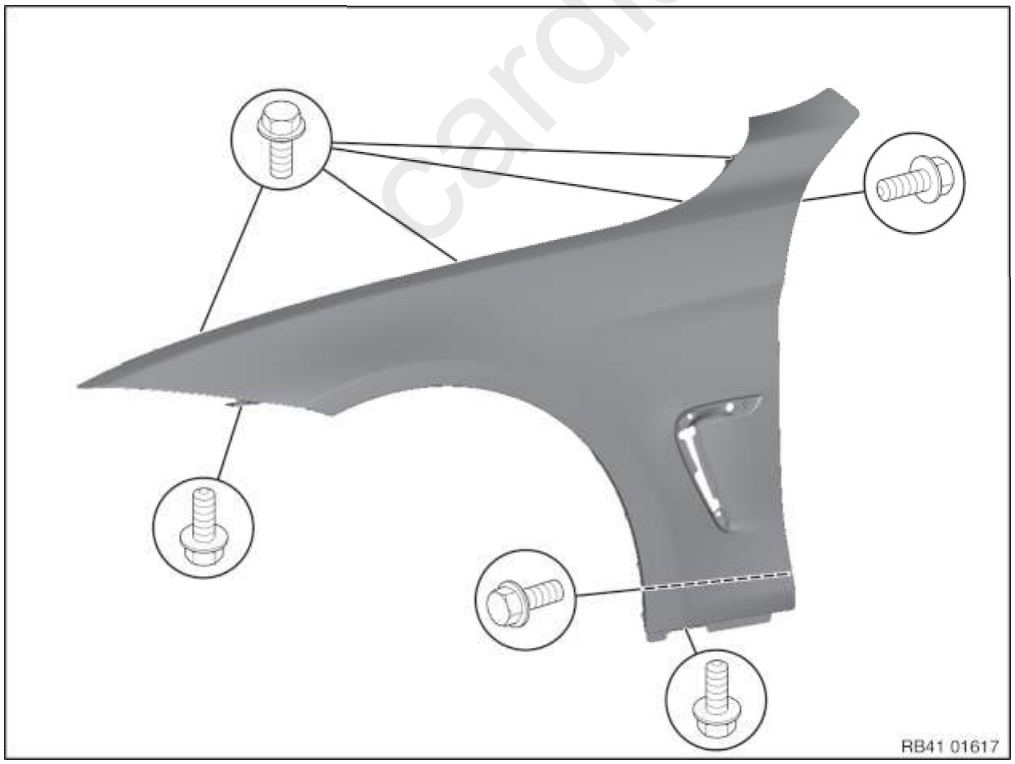
Necessary preliminary tasks:

- Remove trim panel for cover on side member
- Release bumper panel at the side in the area of the wheel arch cover



Lever out expanding rivets (1).

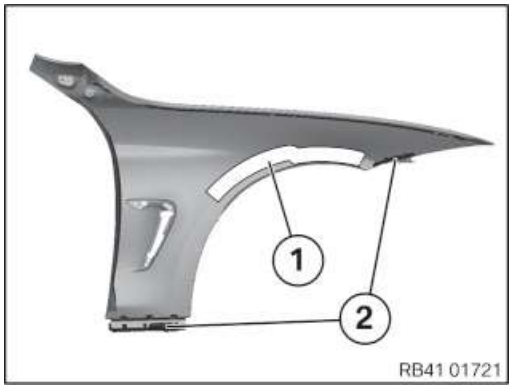
Release latch mechanism (2) and remove cover (3).



Loosen screws and remove side wall.

Tightening torque 41 35 1AZ.

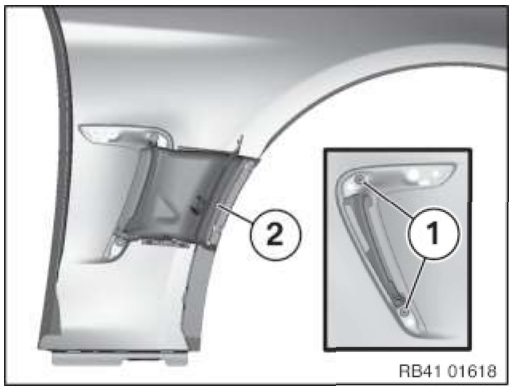
cardiagn.com



Replacement:

- Apply additional sealant to inside of front panel in area (1) analogous with series.

  Material: Sealant D1 (sourcing reference via BMW Parts Department).
- Remount holder (2).



Replacement:

Drill out blind rivets (1) and remove air duct (2).

cardiagn.com

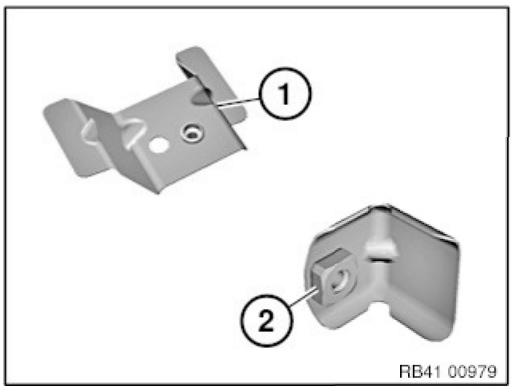
41 33 040 Replacing front left or right side wall holder

Note:
Read contents of Body, General.

Side wall removed.

Transfer the systematic diagram onto the respective holder version.

General information:
Procedure Observe repair stage 2!



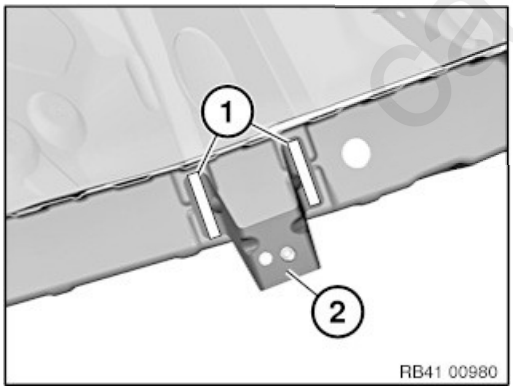
Following new body parts are required (refer to Electronic Parts Catalogue):

- (1) Holder, side wall, front (variant 1)
- (2) Holder, side wall, front (variant 2)

Following consumables are required:

Material	Quantity
Adhesive K5a	1
Blind rivets N3	2
Cleaning agent R1	1

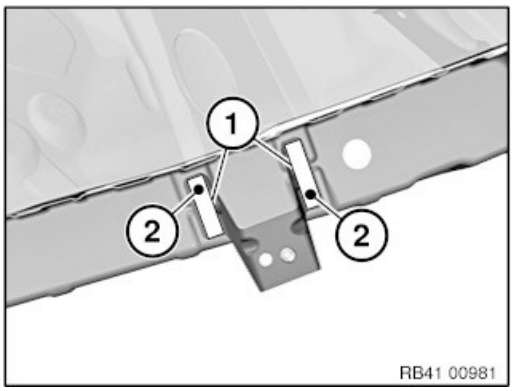
Removal of side wall holder (variant 1):



Release welded connections in areas (1) and remove holder (2).

Preparation of new part:

cardiagn.com



Adjust new part in conjunction with side panel in front to fit.

In area of bonding surfaces (1), set 2 4.2 mm dia. bore holes (2) for blind rivetsN3.

Remove new part and deburr holes.

Important!

Do not grind bonding surfaces down or off.

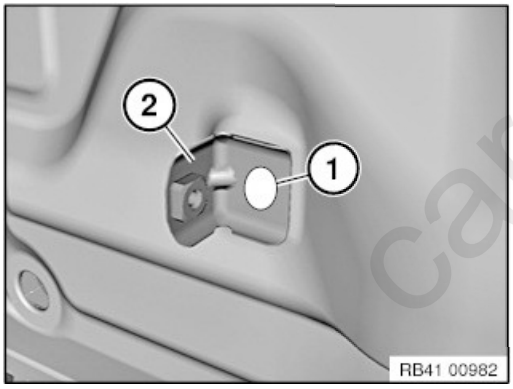
Installation of side wall holder:

Clean all bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Install new part and rivet with blind rivets.

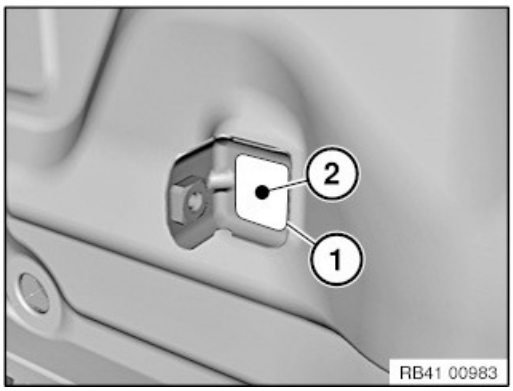
Removal of side wall holder (variant 2):



Release welded connection in area (1) and remove holder (2).

Preparation of new part:

cardiagn.com



Fit in new part.

In area of adhesive surface (1), drill a 4.2 mm dia. bore hole (2) for blind rivet N3.

Remove new part and deburr holes.

Important!

Do not grind bonding surfaces down or off.

Installation of side wall holder:

Clean all bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surface.

Install new part and rivet with blind rivet.

cardiagn.com

41 21 682 Replacing left B-pillar reinforcement (rear side panel and roof outer skin removed)

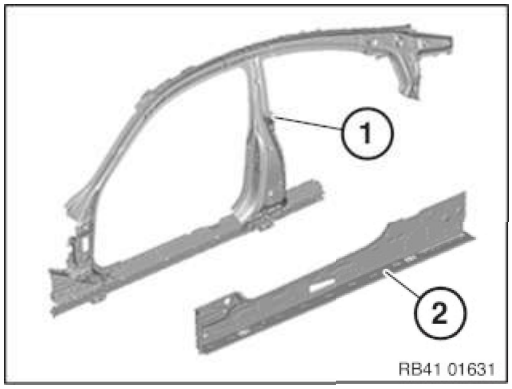
Observe procedure for repair stage 3.

Read contents of Body, General.

Use only an approved spot-welding apparatus for repairs!

For stripping and rebuilding operations, refer to the surrounding text of Commercial Service Data (flat rate unit number 41 21 682).

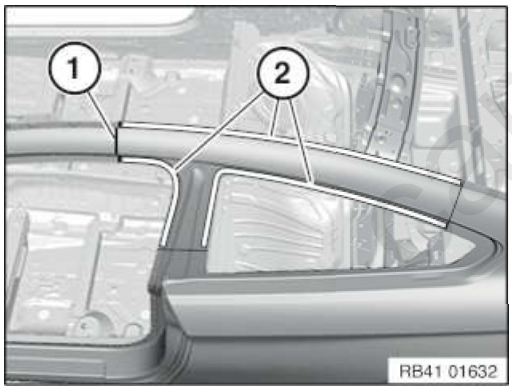
Place vehicle on straightening bench.



Following new body parts are required (see Electronic Parts Catalogue):

- (1) Middle side frame
- (2) Inner side member
- Shaped part, B-pillar, inner
- Shaped part B-pillar, outer

Removal



Extended removal of side panel:

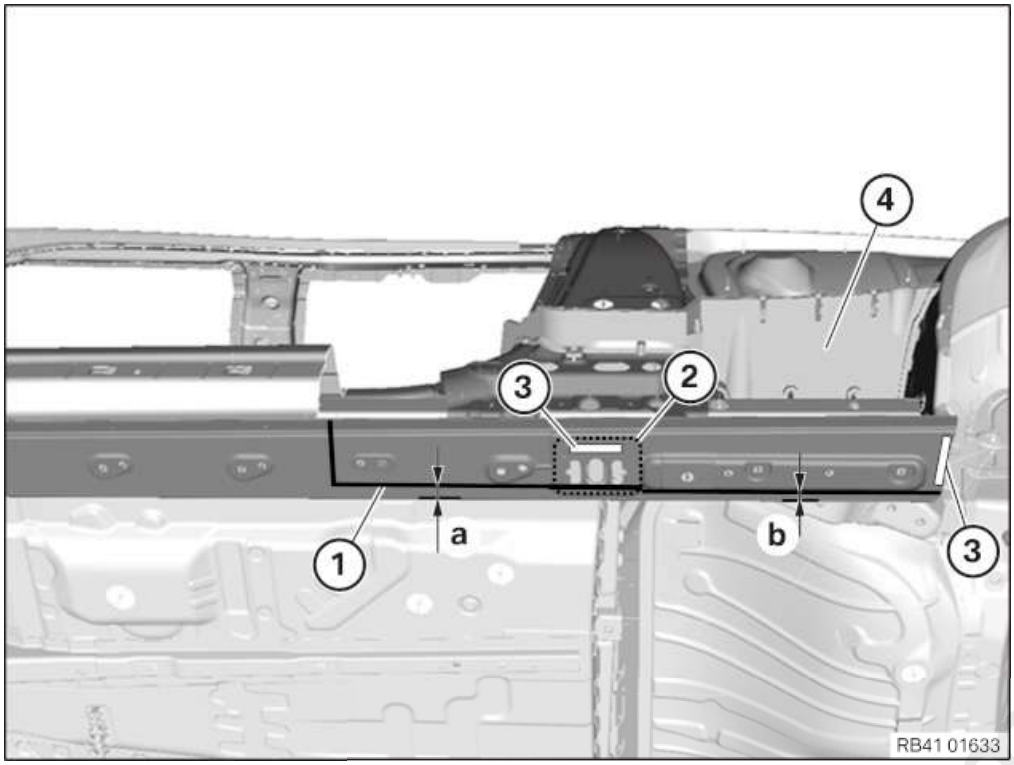
Mark severance cut (1) in accordance with severance cut on new part and cut.

Attention!

Cut outer metal panel only.

Open welded connections in areas (2).

carldiagn.com



Side member section:

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

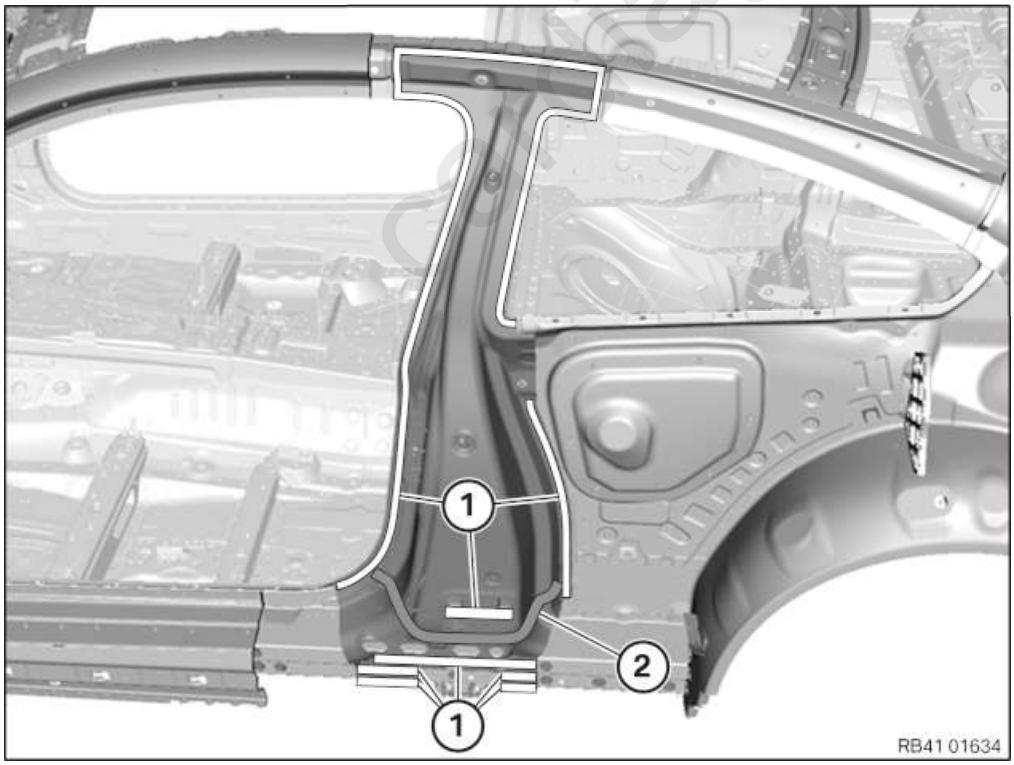
Attention!
Only cut the outer panel in the area of the jacking point (2).

Measurement a = approx. 20 mm from component edge.

Dimension b=approx. 10 - 15 mm from component edge.

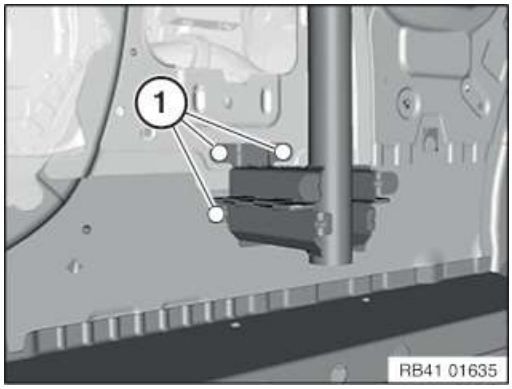
Release welded connections in areas (3) and remove side member section.

Remove cavity sealing (4).

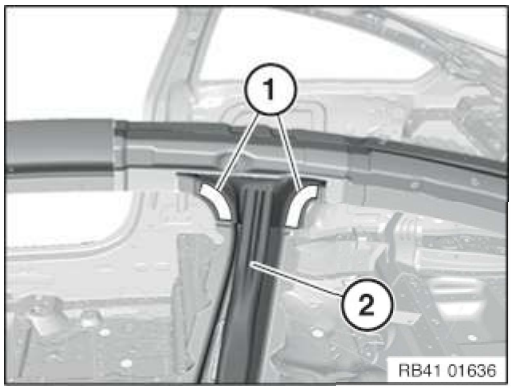


Open welded connections in areas (1).

Release the B-pillar reinforcement from the inner cavity sealing (2) and remove.

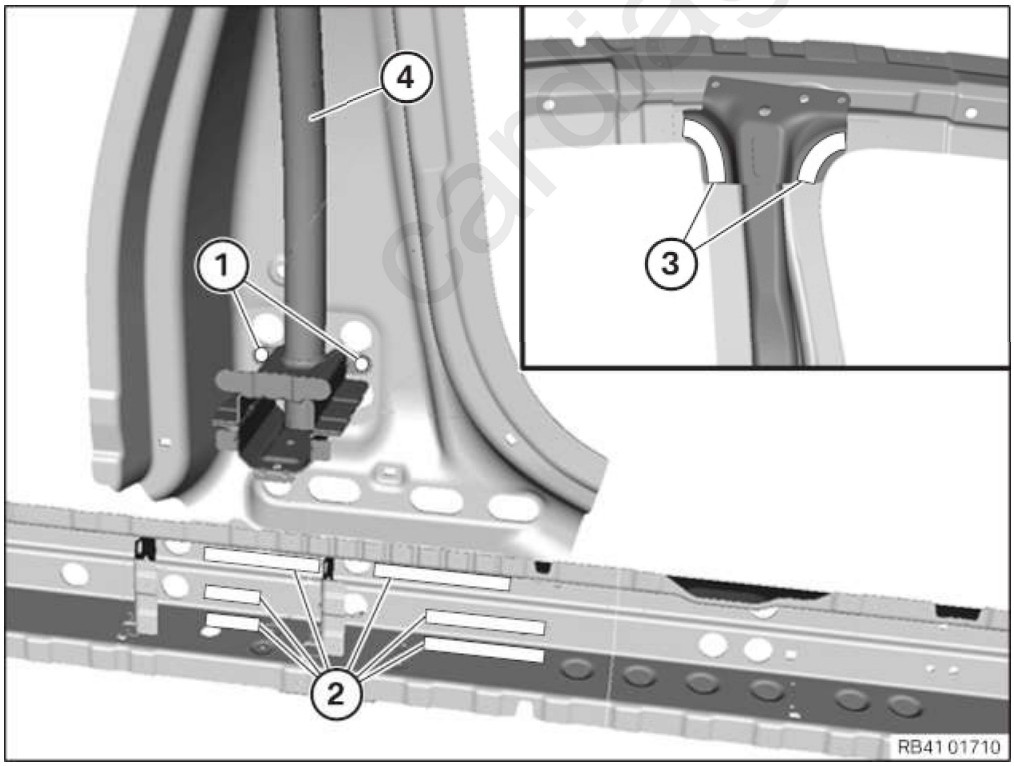


Open welded connections in areas (1).



Open welded connection in areas (1) and remove B-pillar reinforcement (2).

New part preparation



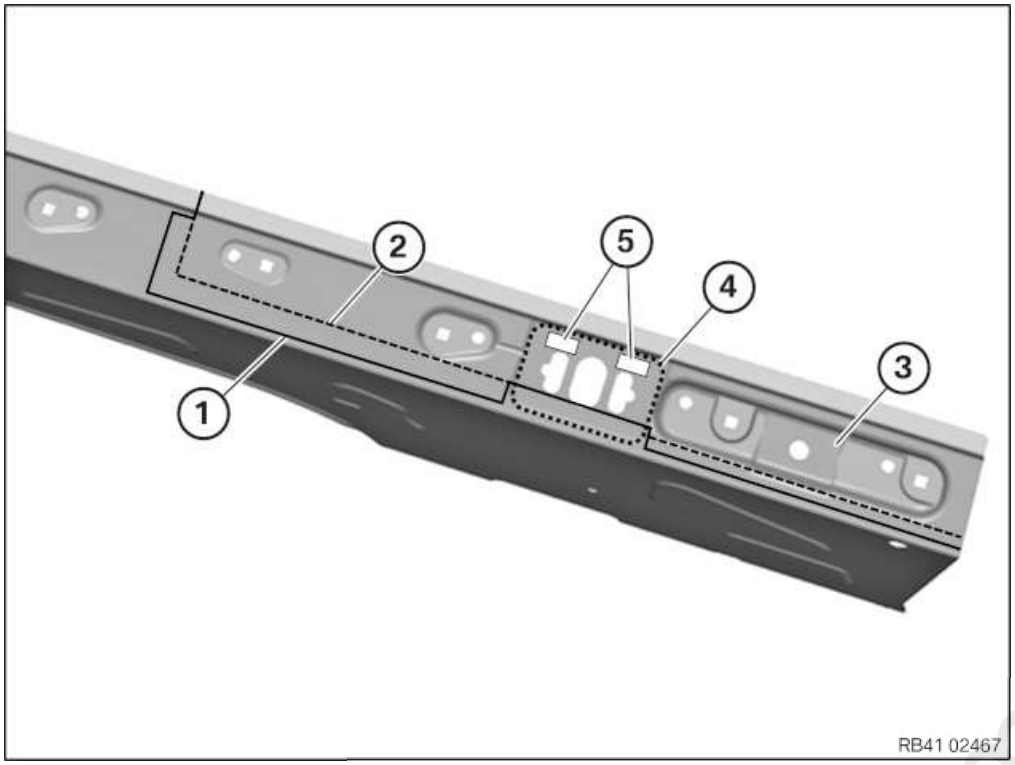
Open welded connections in areas (1) to (3).

Remove the B-pillar reinforcing tube (4).

Note:
Release the welded connections in areas (1) and (2) from the outer side.

The B-pillar reinforcing tube (4) must be installed separately for accessibility reasons.

carmagn.com



Side sill section:

Mark and perform severance cut (1) in accordance with severance cut on vehicle (2) +15 mm extra material.

In the area of the moulding (3) extra material approx. 5 - 10 mm.

Note:
In the area of the jacking point (4), joining with overlaps is not performed. Prepare new part for butt welding.

Prepare the areas for overlapping and the areas (5) for plug-welding.

Comply with new part preparation for side panel and side sill.

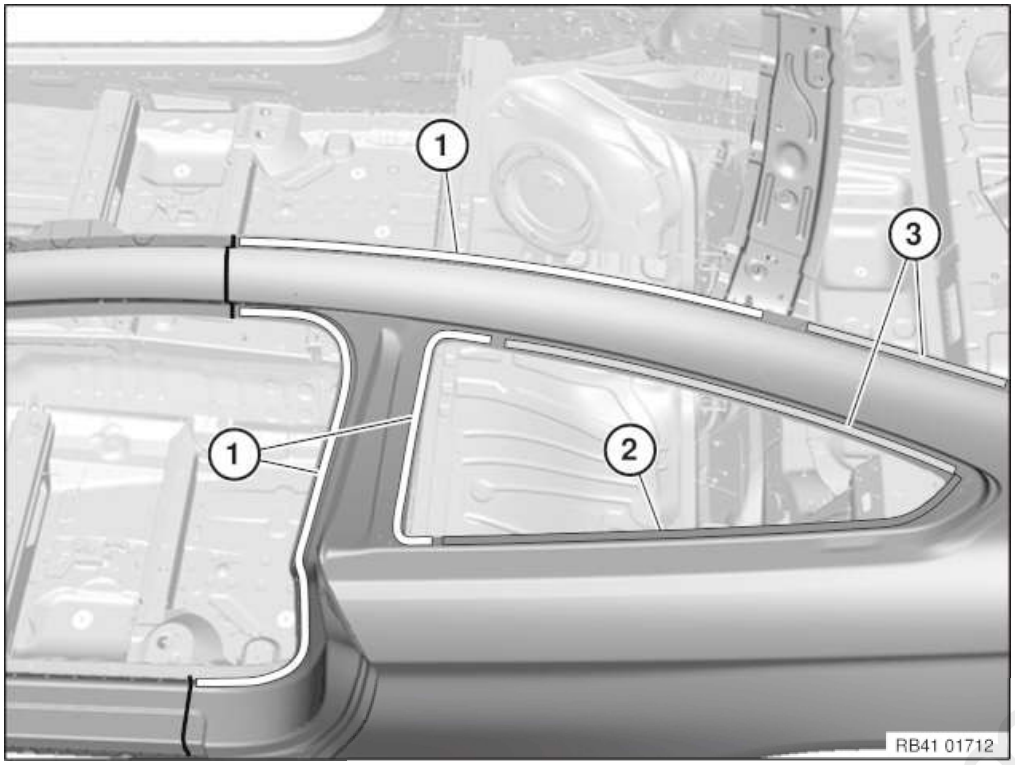
Prepare reinforcement plates at severance cuts.

Prepare new parts for joining by welding in the remaining joining areas.

Adjust new parts to fit with alignment bracket or universal mount and secure.

Note:
When adjusting the new parts, the panel thickness of the missing side panel must be taken into consideration depending on straightening system manufacturer.

cardiagn.com



Different new part preparation for side panel:

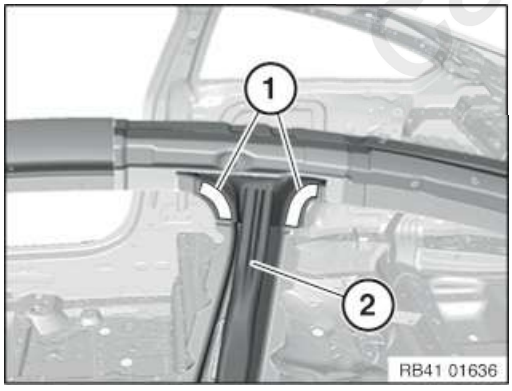
Prepare for joining by welding in areas (1).

Prepare the joints in areas (2) and (3) for joining by rivet bonding technology.

Installation

Install new parts and reinforcement plates with alignment bracket or universal mount and weld.

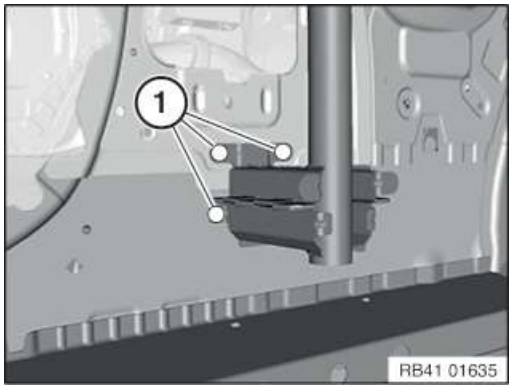
Note:
When installing the new parts, the panel thickness of the missing side panel must be taken into consideration depending on straightening system manufacturer.



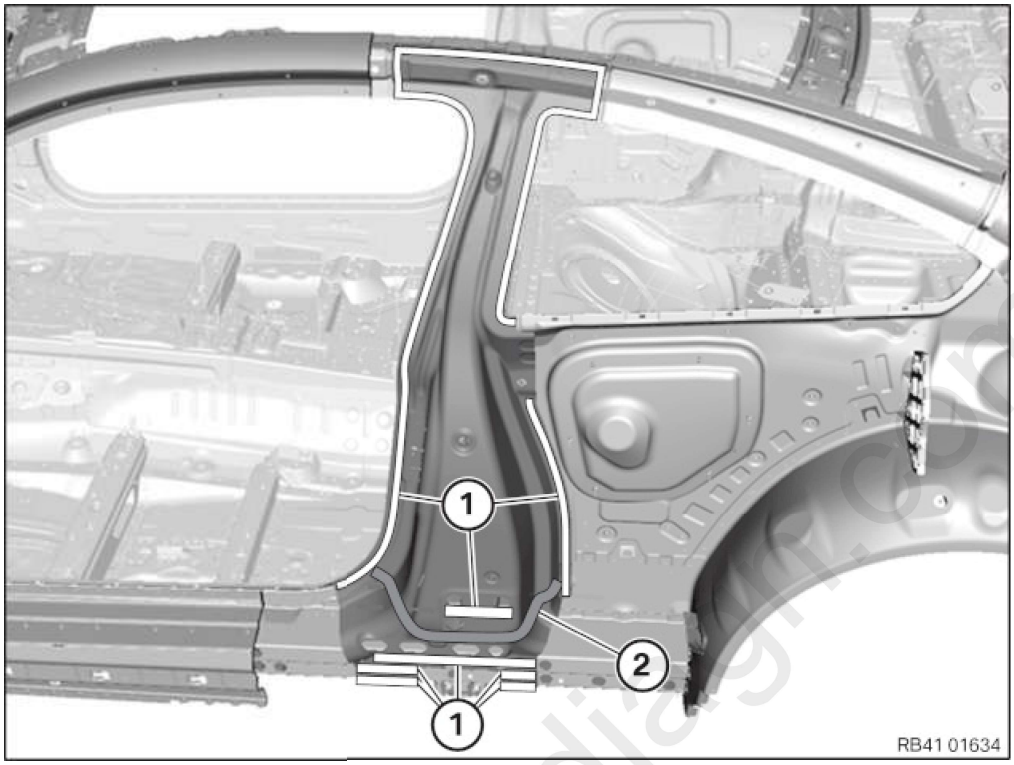
Install the reinforcement tube (2) and MAG weld in the areas (1).

Minimum length of weld seams: 20 mm.

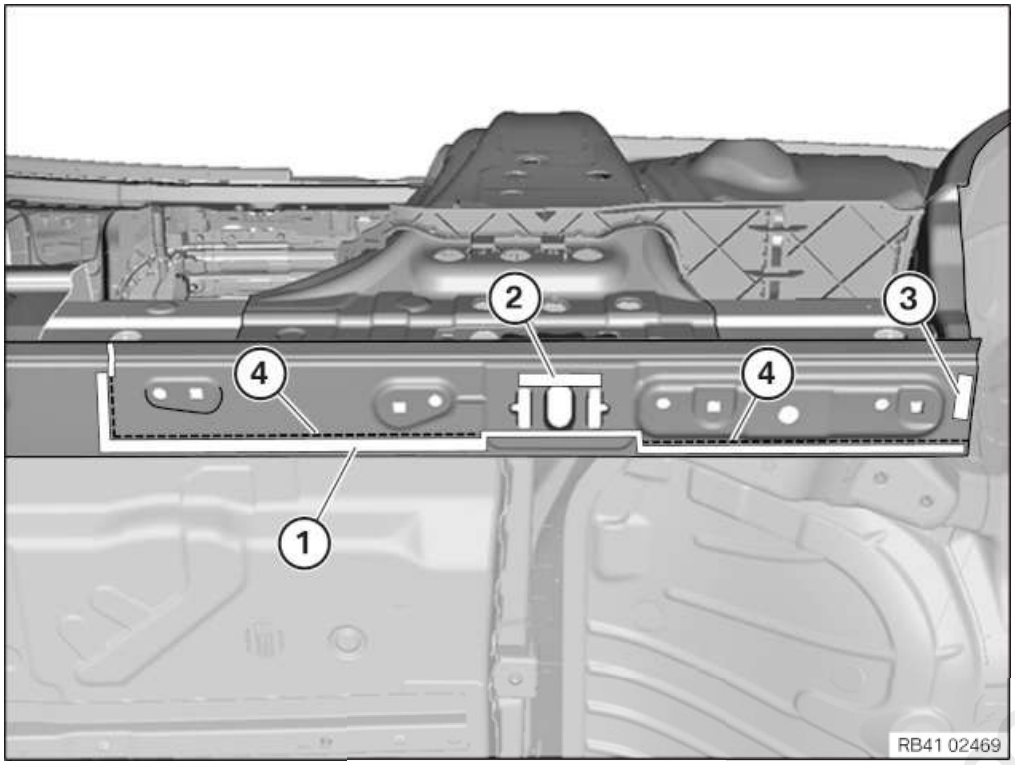
cardiagn.com



Weld reinforcement tube in the areas (1).

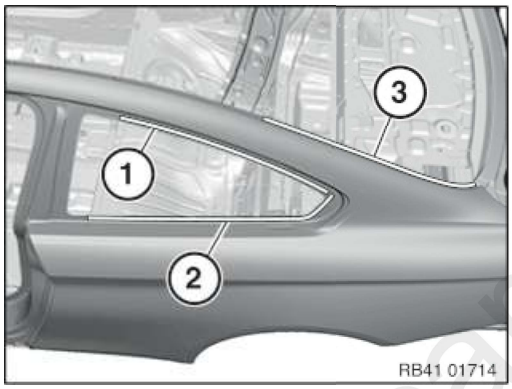


Apply sealant to inner cavity sealing (2). Install cavity sealing.
Install new part and weld in areas (1).
install outer cavity sealing.



Install side sill section and weld in areas (1) to (3).

(4) = Severance cut route on vehicle.



Divergent installation of the side wall:

In areas (1) - (3) rivet side panel with punch rivets.

Area	Number	Remarks
1	6	Punch rivet **N5**
2	7	Punch rivet **N4**
3	6	Punch rivet **N5**

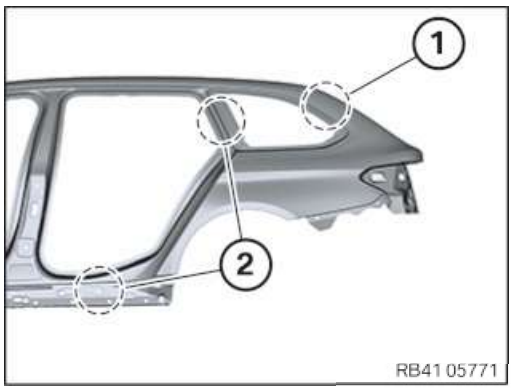
cardiagn.com

41 35 101 Replacing rear left side panel

Read contents of Body, General.

Procedure Observe repair stage 2!

Strip down vehicle.



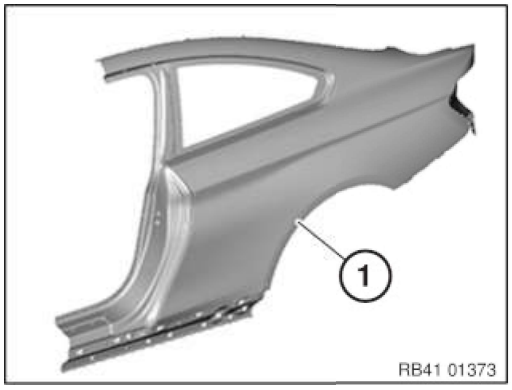
Example figure.

Due to the ever-increasing geometric complexity as well as the demanding post-processing steps on visible severance cuts, the joining technology of the reinforcement plate is to be changed from adhesive bonding to welding. This change applies across all BMW and MINI models.

Welding is done in area (1) (incl. water channel).

Bonding is done in areas (2).

Note changed procedure!



Following new body parts are required (see Electronic Parts Catalogue):

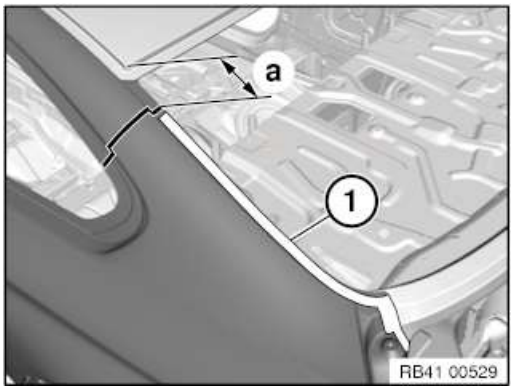
- (1) Rear side wall
- Reinforcement plate, side sill
- Reinforcement, B-pillar
- Reinforcement plate, C-pillar
- Mounting nuts

Following consumables are required:

Material	Quantity
Adhesive K5b	1
Adhesive K5a	1
Blind rivet N3	11
Punch rivetN4	27
Punch rivetN5	2
EMC screws	3
Cleaning agent R1	1
Cavity sealing wax remover	1
Sealant D1	1

Removal

cardiagn.com



Mark severance cut in accordance with dimension and cut.

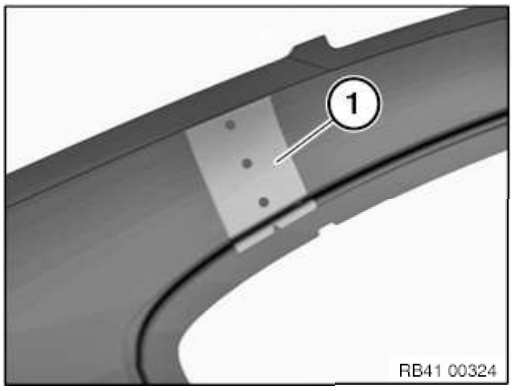
Attention!

Cut outer panel only.

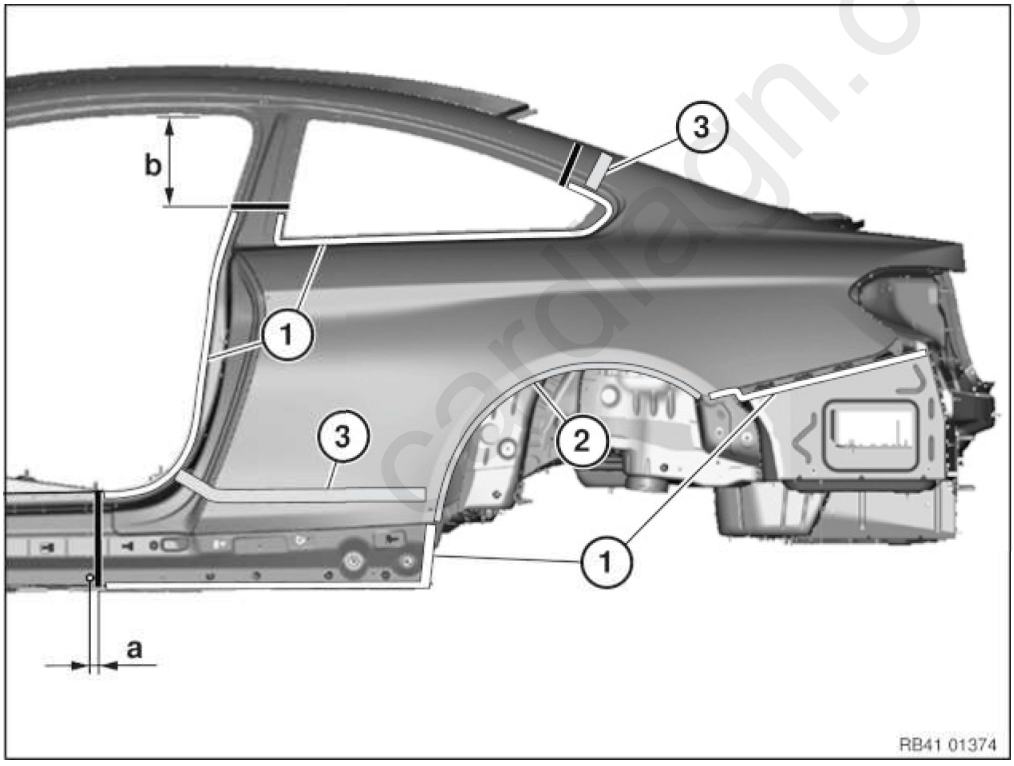
Compare position of severance cut with reinforcement plate.

Dimension a = approx. 220 mm from corner of roof outer skin.

Open welded connections in area (1).



Note:
In addition to the dimensions, the position of the separating cut can be determined with a template (1).



Mark severance cuts in accordance with specified dimensions and cut.

Attention!
Cut outer panel only.

Compare position of severance cuts with reinforcement plates.

Dimension a = approx. 10 mm from centre point of 15 mm dia. hole.

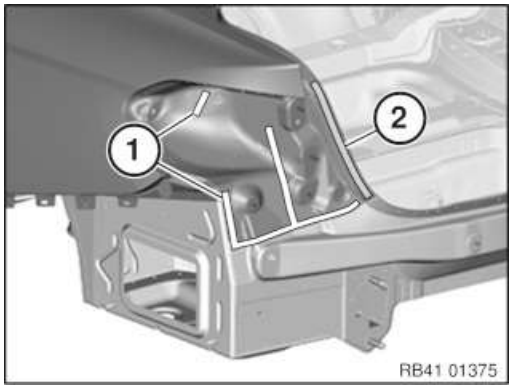
Dimension b = approx. 225 mm from the edge of side frame.

Open welded connections in areas (1).

Open seam adhesive bond in area (2).

Release side wall from cavity acoustic baffles (3).

cardiagn.com



Open welded connections in areas (1) and (2).

Attention!

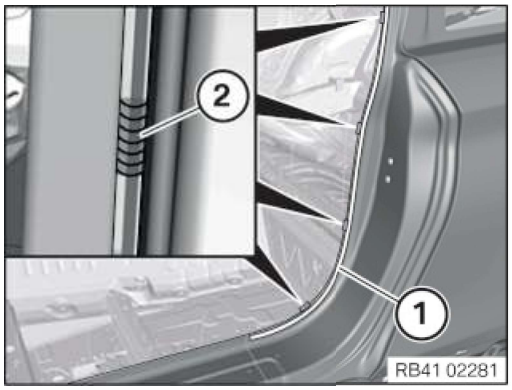
In area (2), the welding spots must be detached from the side wall.

Take off side panel.

New part preparation

Mark severance cuts on new part in accordance with severance cuts on vehicle and cut.

Prepare reinforcement plates at severance cuts.

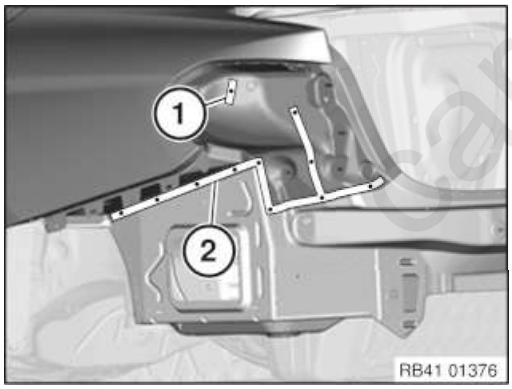


Adjust new part to fit and secure.

Prepare area (1) for 4 x 15 mm long metal active gas weld seams (2).

Installation note:
The metal active gas weld seams (2) will be placed on the front side of the 3-sheet metal flange.

If an approved spot-welding apparatus is available, 4 spot welds can be made in area (1) instead of metal active gas weld seams.



In areas (1) and (2), drill ⌀ 4.2 mm bore holes for blind rivet:

Area	Number
1	1
2	10

Remove new part again and deburr bore holes.

Attention!

Do not grind/sand new part in area of bonding surfaces.

cardiagn.com

Installation

Clean all bonding surfaces on vehicle, on the new part and on the reinforcement plates with cleaning agent R1.

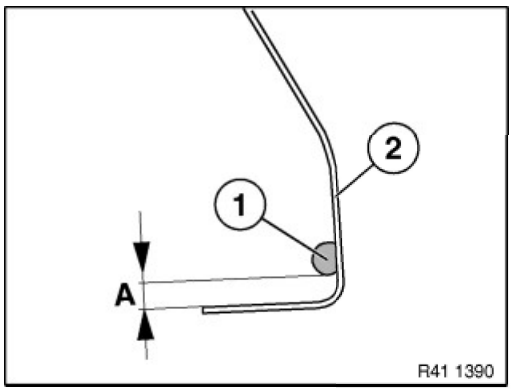
Apply adhesive to reinforcement plates (side sill, B-pillar). Install reinforcement plates.

Coat cavity sealings with sealant.

Apply adhesive to bonding surfaces on vehicle.

Attention!

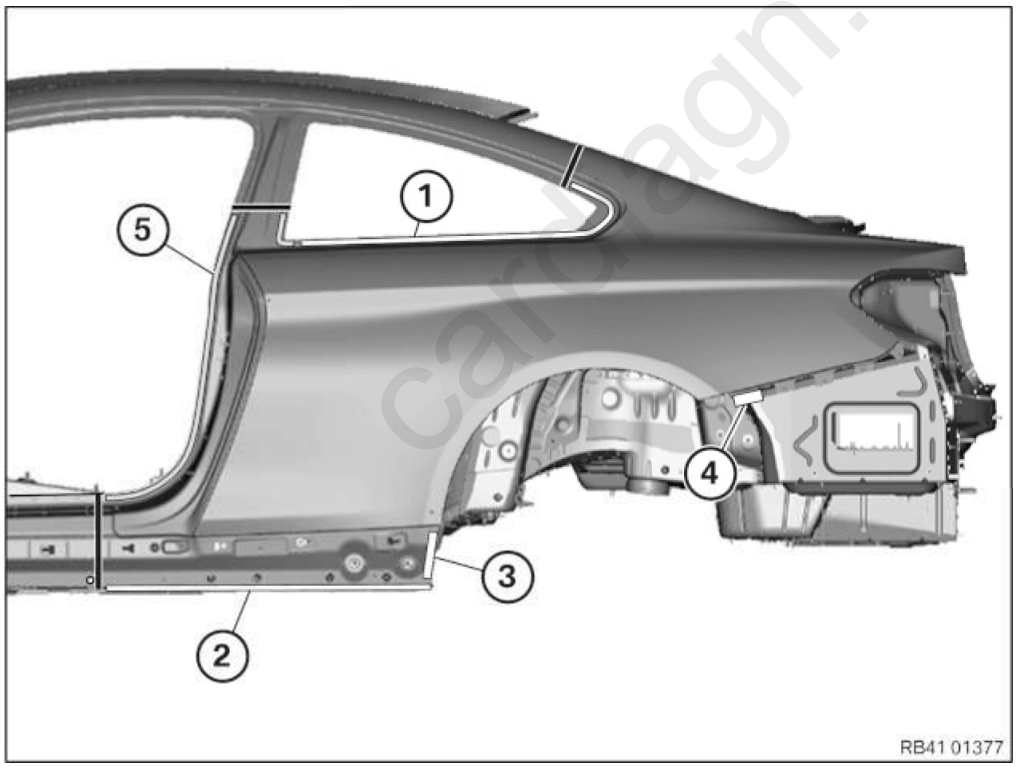
In the area around the B-pillar, adequate distance must be provided between the adhesive applied and the upcoming metal active gas welded connections. Distance depending on the adhesive 2 - 3 centimetre.



Apply adhesive to new part in area of wheel arch.

Apply adhesive (1) to inside of side wall at distance a.

Measurement a = approx. 5 mm.



Install side panel with a second person helping.

Note:
When installing side panel, make sure there is sufficient adhesive on bonding surfaces.

After adjusting side panel, tighten nuts of reinforcement plates.

Secure side panel in area of reinforcement plates with gripping pliers.

Rivet side panel with blind rivets N3.

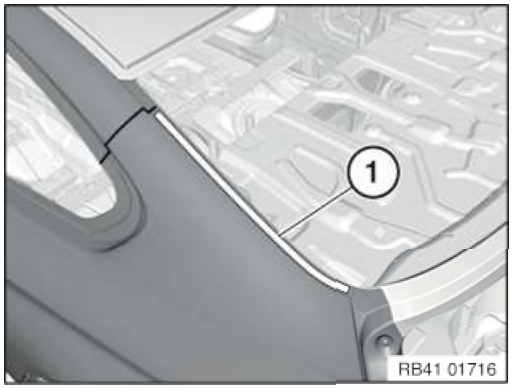
In areas (1) to (5), use a punch rivet.

carmagn.com

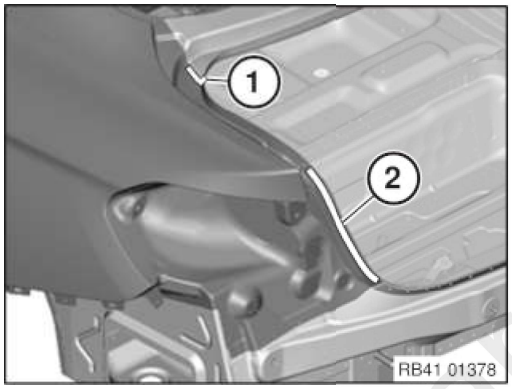
Area	Number	Remarks
1	7	Punch rivet **N4**
2	9	Punch rivet **N4**
3	3	Punch rivet **N4**
4	2	Punch rivet **N4**

Weld the separation point to the C-pillar.

Place 4 x 15 mm long metal active gas weld seams or 4 spot welds in area (5) in accordance with the new part preparation process.

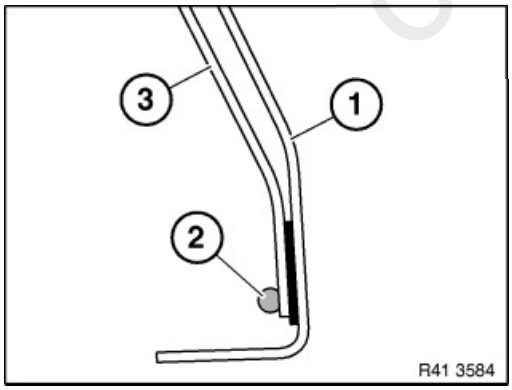


Use 6 punch rivets N5 in area (1).



Use punch rivets **N4** in areas (1) and (2).

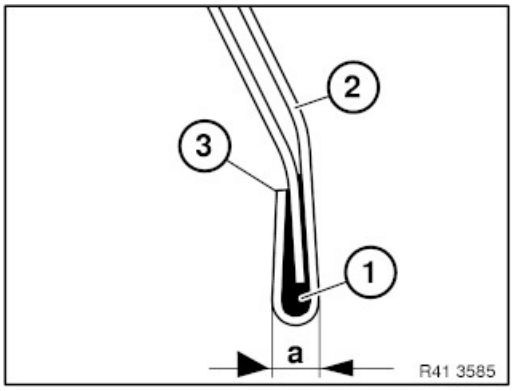
Area	Number
1	2
2	4



Also apply adhesive (2) to outer wheel arch section (3).

(1) Rear side wall.

cardiagn.com



Installation note:
Flange edge of wheel arch (3) of side wall flush to outer wheel arch section.

Do not create sharp edges when flanging as otherwise the flange edge may begin to tear.

Dimension (A) = 5 mm.

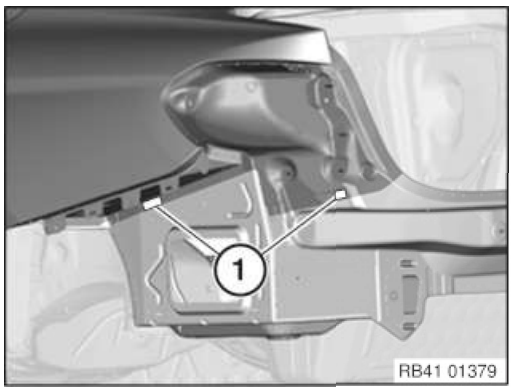
(1) Adhesive

(2) Rear side wall

Also seal in area (3) according to standard.

Attention!

Flange edge must be completely filled with adhesive!



After hardening of the adhesive, install two EMC screws in the areas (1).

Additionally, install EMC screw in sill area.

cardiagn.com

41 35 111 Replacing rear right side panel

Operation is identical to Replacing "rear left side panel".

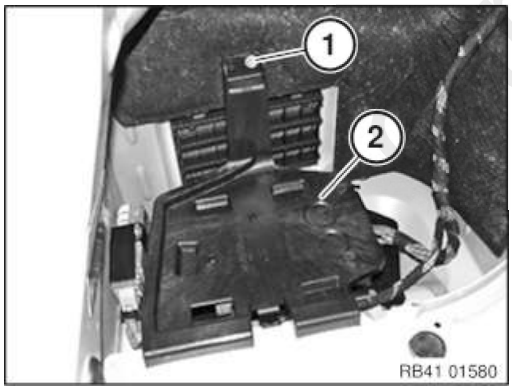
cardiagn.com

41 35 101 Stripping operations - Replacing rear side panel, left

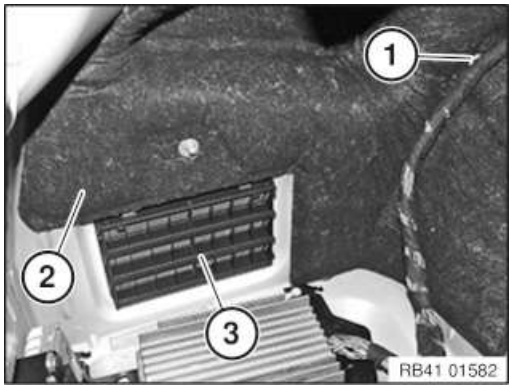
Note:
Owing to the different engine variants and equipment specifications, not all the components are taken into consideration.

The following list basically represents the removal sequence.

- Disconnect negative battery cable (job number:. 61 20 900)
- Remove bumper trim panel (job number: 51 12 156)
- Remove bumper support (job number: 51 12 050)
- Remove centre bumper guide (job number: 51 12 825)
- Remove left bumper guide (job number: 51 12 828)
- Remove tail panel cover (job number: 51 46 050)
- Remove tailgate (FR number: 41 62 000)
- Partially detach tailgate seal
- Remove left rear light (job number: 63 21 260)
- Remove luggage compartment floor trim panel (FR number: 51 47 101)
- Remove left luggage compartment wheel arch panel (FR number: 51 47 152)
- Remove left rear wheel arch cover (job number: 51 71 041)
- Remove rear window (FR number: 51 31 200)
- Remove backrest (job number: 52 24 010)
- Remove rear left side trim panel (job number: 52 43 000)
- Remove rear left side window (job number: 51 36 070)
- Remove front left lock striker (job number: 51 21 003)
- Remove left door edge protection (job number: 51 72 000)
- Remove left door sill cover strip (job number: 51 47 030)
- Remove panel for cover on left side member (job number: 51 71 447)



Release nut (1) and remove upholstery (2).



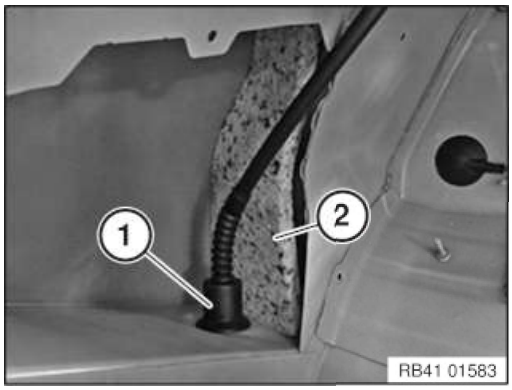
Release wiring harness at attachment point (1) and lay to one side.

Partially release insulating mat (2) and tie to one side.

Release latch mechanisms and remove rear ventilation (3).

Installation note:
The rear ventilation must not be damaged! (watertightness).

All latch mechanisms must engage audibly.



Release grommet (1) for water drain hose of the slide/tilt sunroof and lay to one side.

Remove foam insert (2).

Installation note:
Make sure water drain hose is installed correctly! (watertightness).

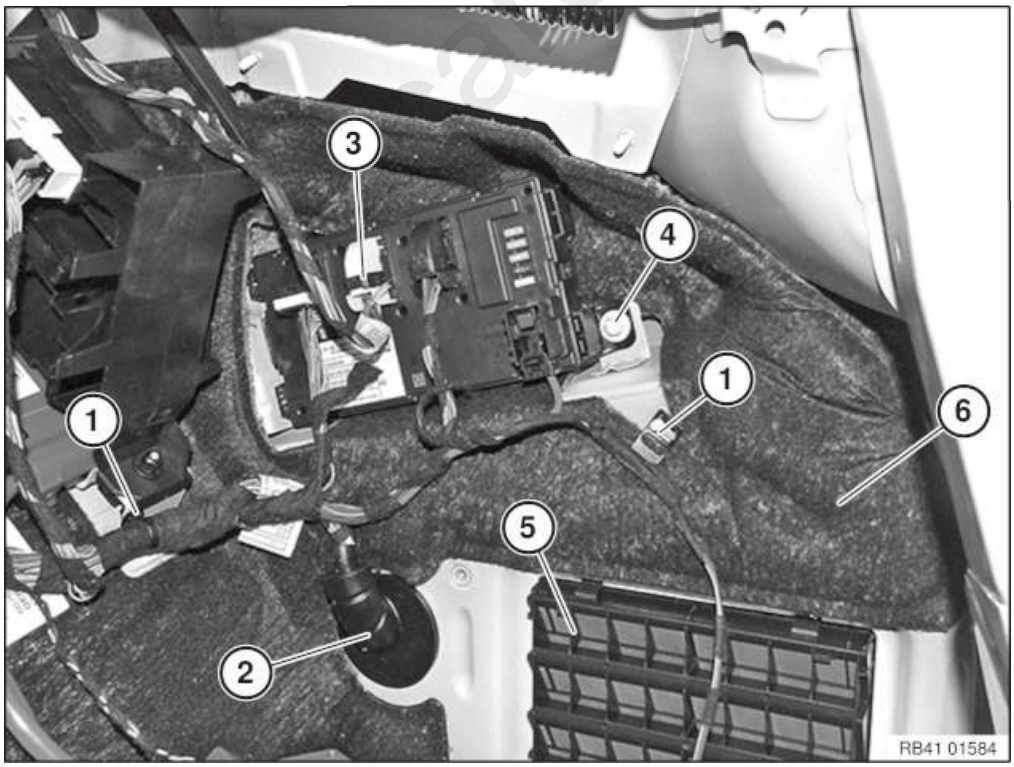
cardiagn.com

41 35 111 Stripping operations - Replacing rear side panel, right

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 battery (FR number: 61 21 010)
- Remove bumper trim panel (job number: 51 12 156)
- Remove bumper support (job number: 51 12 050)
- Remove centre bumper guide (job number: 51 12 825)
- Remove right bumper guide (job number: 51 12 828)
- Remove tail panel cover (job number: 51 46 050)
- Remove tailgate (FR number: 41 62 000)
- Partially detach tailgate seal
- Remove right rear light (job number: 63 21 265)
- Remove cover housing (job number: 41 63 003)
- Remove luggage compartment floor trim panel (FR number: 51 47 101)
- Remove right luggage compartment wheel arch panel (FR number: 51 47 162)
- Remove rear right wheel arch cover (FRU number: 51 71 041)
- Remove rear window (FR number: 51 31 200)
- Remove backrest (job number: 52 24 010)
- Remove rear left side trim panel (job number: 52 43 000)
- Remove rear side window, right (FR number: 51 36 070)
- Remove front right lock striker (FRU number: 51 21 003)
- Remove right door edge protection (FRU number: 51 72 000)
- Remove right door sill cover strip (FRU number: 51 47 030)
- Remove trim panel for cover on right side member (job number: 51 71 447)



Release wiring harness at attachment points (1) and lay to one side.

Press grommet (2) with wiring harness inwards.

Unlock plug connector (3) and pull off.

Release screw (4) and remove module.

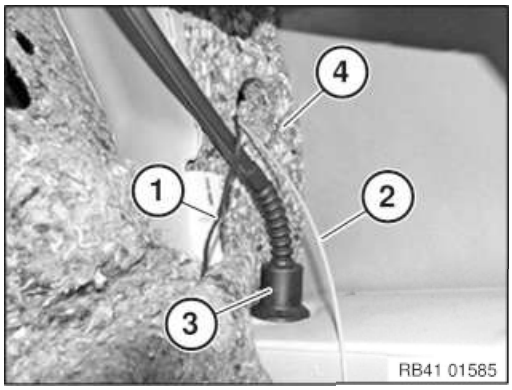
Release latch mechanisms and remove rear ventilation (5).

Partially release the insulating mat (6) and tie to one side.

Installation note:
The rear ventilation must not be damaged! (watertightness).

All latch mechanisms must engage audibly.

Ensure correct installation of the grommet (2)! (watertightness).



Pull out wiring harness (1) and cable (2) for emergency release of the fuel filler flap.

Release grommet (3) for water drain hose of the slide/tilt sunroof and lay to one side.

Remove foam insert (4).

Installation note:
Make sure water drain hose is installed correctly! (watertightness).

cardiagn.com

41 51 ... Adjusting left or right door

Important!

Do not damage adjoining body components.

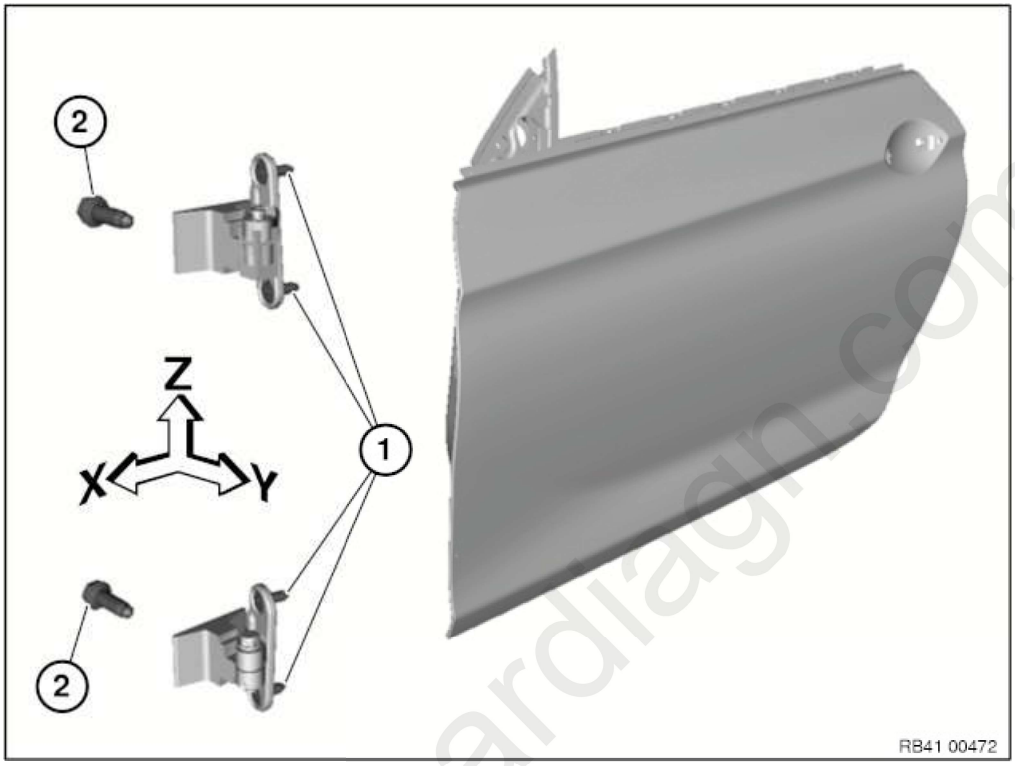
Minor corrections (realignment work) are permitted if the existing adjustment options are not sufficient.

Note:

Observe gap dimensions.

The door must be provided with all add-on parts for correct adjustment.

Adjust screwed body components from rear to front.



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):

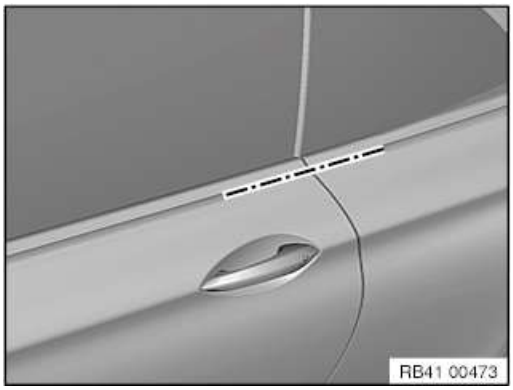
Slacken screw (2) on upper hinge and adjust door in longitudinal direction. Then adjust door at lower hinge in longitudinal direction.

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.

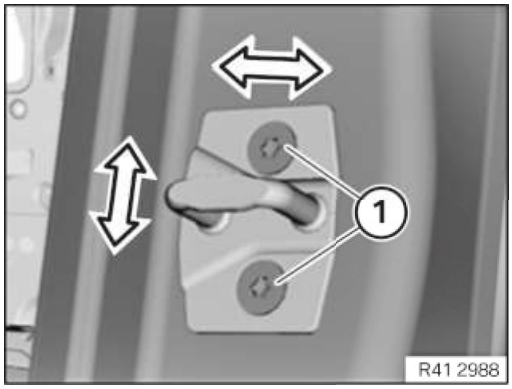
cardiagn.com



Check that adjoining body components are flush in terms of height and correct if necessary.**Note**

Height adjustment of door must not be influenced by lock striker.

When closing the door, the lock striker must not touch or scrape against the door lock. Look out for scratch marks.



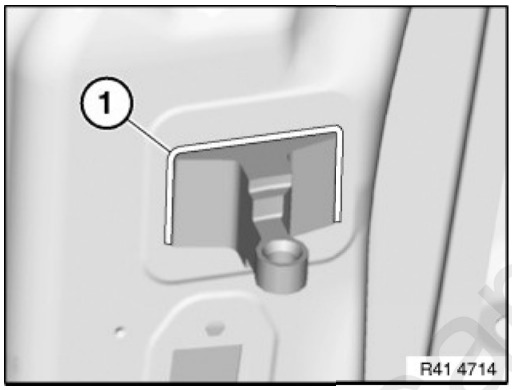
Slacken screws (1) until lock striker can still just be moved.

Move lock striker sideways in order to adjust transition between door and rear side panel.

Tightening torque 51 21 2AZ.

Note

When the door is closed, the lock striker must not touch or scrape against the door lock. Look out for scratch marks.



After Installation note:

If the hinge is slackened on the body side, the area of the hinge must be sealed in a u-shape with sealant (1).

- Tighten all bolts to specified torque.
- Initialise power window.
- Touch up unpainted surfaces in the appropriate colour.

cardiagn.com

41 51 ... Notes on replacing the door



Important!

For production reasons the side impact beam is only screwed loosely.

Tighten screws of side impact beam.



Remount all components on the new door.

If necessary, replace damaged components.

The procedure is described in the repair instructions of the components.

cardiagn.com

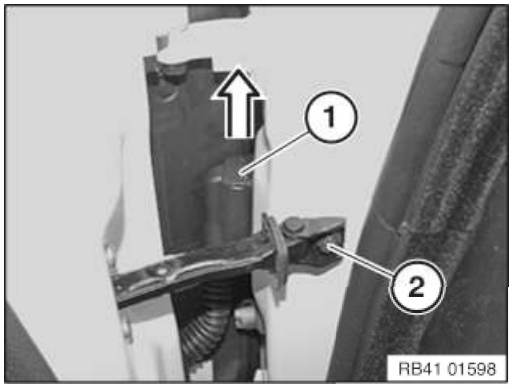
41 51 ... Removing and installing door



Attention!
Do not damage adjoining body components.

The graphics are schematic representations and are to be applied to the relevant vehicle type.

Open door.



Pull the lock (1) up and disconnect plug connection.

Note:
Secure door against closing.

Release screw (2) on door stop.

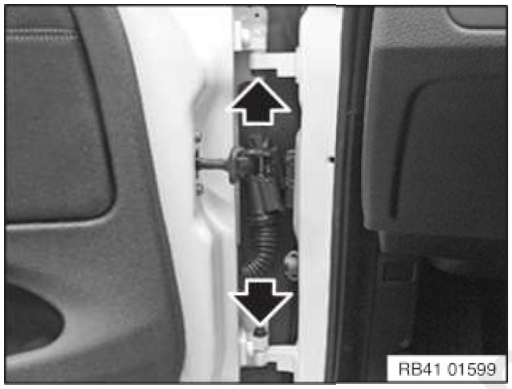
Front door:

Tightening torque 51 21 3AZ.

Rear door:

Tightening torque 51 22 3AZ.

Open door up to limit position.



Release screws between both hinge elements at top and bottom.

Front door:

Tightening torque 41 51 1AZ.

Rear door:

Tightening torque 41 52 1AZ.

Unhinge door by moving upwards and placing it on a suitable surface.

Installation note:
If necessary, adjust door.

cardiagn.com

41 51 ... Notes on replacing the door



Important!

For production reasons the side impact beam is only screwed loosely.

Tighten screws of side impact beam.



Remount all components on the new door.

If necessary, replace damaged components.

The procedure is described in the repair instructions of the components.

cardiagn.com

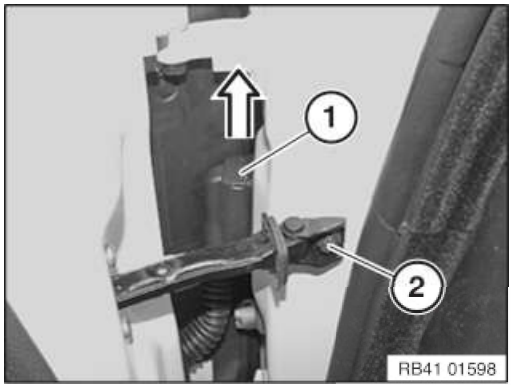
41 51 ... Removing and installing door



Attention!
Do not damage adjoining body components.

The graphics are schematic representations and are to be applied to the relevant vehicle type.

Open door.



Pull the lock (1) up and disconnect plug connection.

Note:
Secure door against closing.

Release screw (2) on door stop.

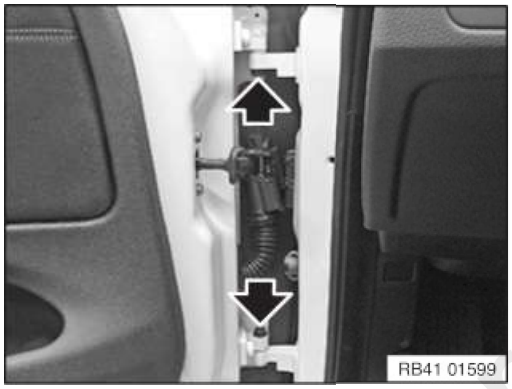
Front door:

Tightening torque 51 21 3AZ.

Rear door:

Tightening torque 51 22 3AZ.

Open door up to limit position.



Release screws between both hinge elements at top and bottom.

Front door:

Tightening torque 41 51 1AZ.

Rear door:

Tightening torque 41 52 1AZ.

Unhinge door by moving upwards and placing it on a suitable surface.

Installation note:
If necessary, adjust door.

cardiagn.com

41 61 014 Adjusting bonnet

Important!

These instructions apply only to vehicles **without** active pedestrian protection!

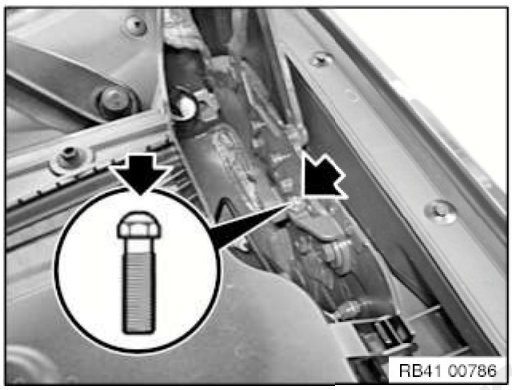
Observe separate procedure for vehicles **with** active pedestrian protection!

Important!

Do not damage adjoining body components!

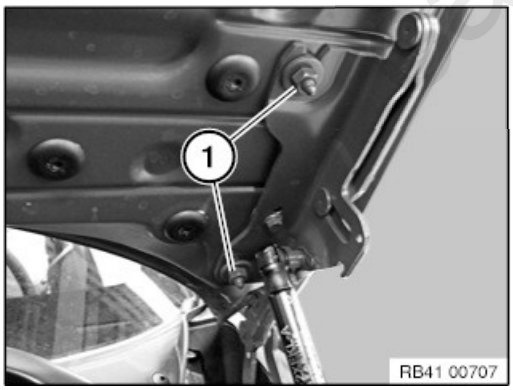
Minor corrections (realignment work) are permitted if the existing adjustment options are not sufficient.

Observe gap dimensions.



Note:
Stop screw must not be damaged or missing. If necessary, replace engine compartment lid hinge.

The stop screw is preset and must not be used to adjust the engine compartment lid.

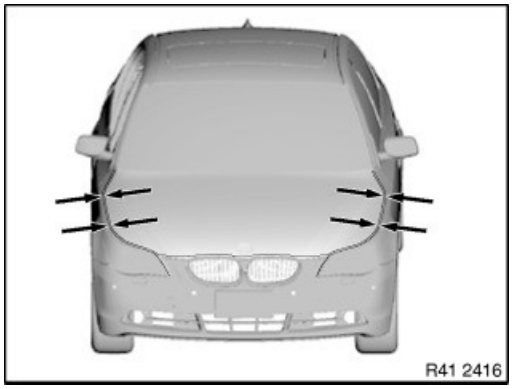


Slacken nuts (1) of hinges on left and right.

Tightening torque 41 61 1AZ.

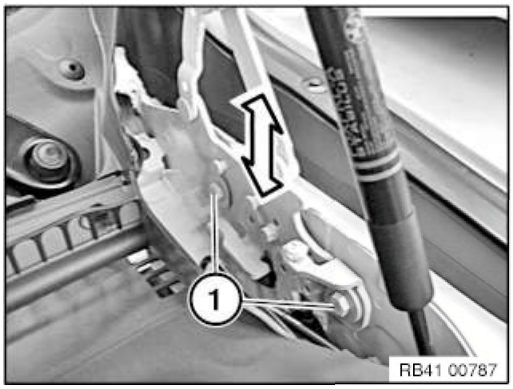
Note:

If adjustment range is not sufficient, slacken screws on body and slide hinge. (Refer to operation: Height adjustment at hinge)



Adjust engine compartment lid sideways and lengthways.

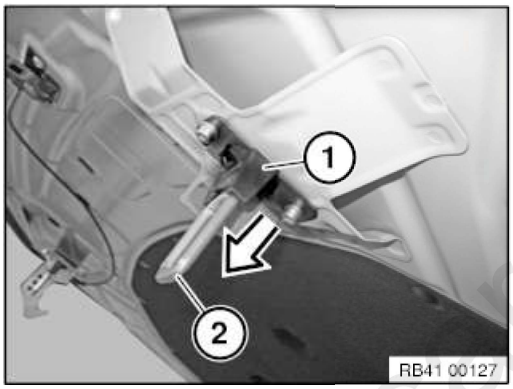
Strikers must snap into place in engine compartment lid catch.



Height adjustment at hinge:

Slacken screws (1) and adjust engine compartment lid.

Tightening torque 41 61 2AZ.



Height adjustment at strikers:

Unclip the anti-twist lock (1).

Adjust height by turning the striker (2).

Height adjustment of engine compartment lid to side panel by means of stop pad.

Note:

The engine compartment lid is correctly adjusted in the front section by a combination of pulling the strikers and pressing the stop pads.

Incorrect adjustment results in either wobbling of the bonnet or sluggish unlocking.

Important!

Check function of retaining hook.

After Installation note:

- Tighten all screws and nuts to specified torque.
- Touch up unpainted surfaces in the appropriate colour.
- If necessary, adjust front side panels.

cardiagn.com

41 61 014 Adjusting bonnet

Warning!

Danger of injury!

The battery earth lead must be disconnected on vehicles with active pedestrian protection!

Read contents of Body, General.

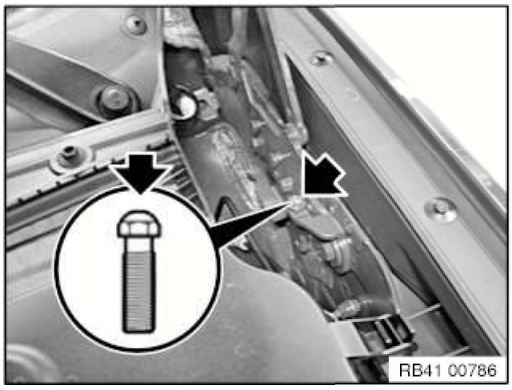
The gap dimensions specified serve as the basis for the adjusting procedure.

Minor corrections (realignment work) are permitted if the existing adjustment options are not sufficient.

Make unpainted surfaces visible by also moving the hinges. Touch these up in the appropriate colour.

Necessary preliminary tasks:

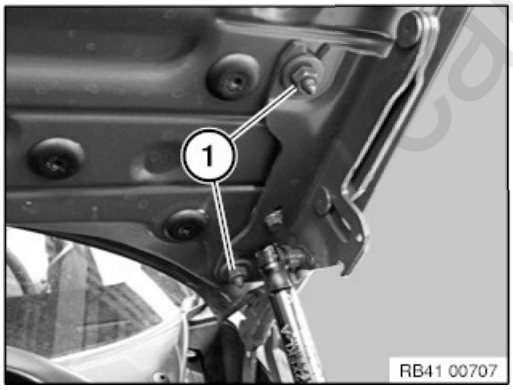
Clamp off battery earth lead.



Note:

Stop screw must not be damaged or missing. If necessary, replace engine compartment lid hinge.

The stop screw is preset and must not be used to adjust the engine compartment lid.



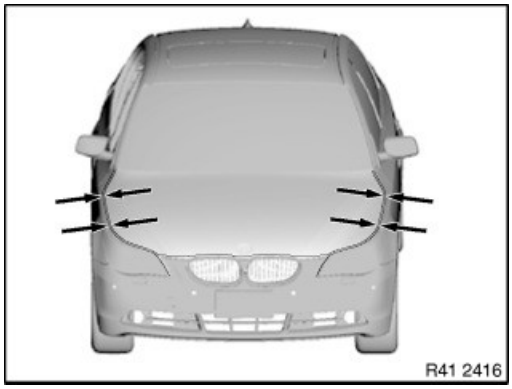
Slacken nuts (1) of hinges on left and right.

Tightening torque 41 61 1AZ.

Note:

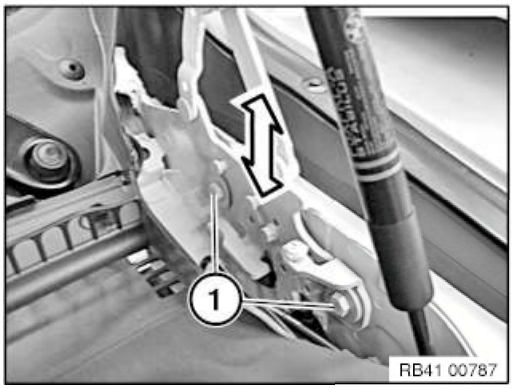
If adjustment range is not sufficient, slacken screws on body and slide hinge. (See operation: Height adjustment at hinge)

carDiagn.com



Adjust engine compartment lid sideways and lengthways.

Strikers must snap into place in engine compartment lid catch.

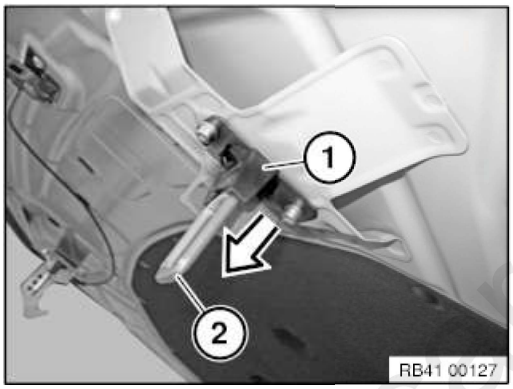


Height adjustment at hinge:

Slacken screws (1) and adjust engine compartment lid.

Tightening torque 41 61 2AZ.

Note:
For better understanding; the active pedestrian protection is shown here without actuator.



Height adjustment at strikers:

Unclip the anti-twist lock (1).

Adjust height by turning the striker (2).

Height adjustment of engine compartment lid to side panel by means of stop pad.

Note:
The engine compartment lid is correctly adjusted in the front section by a combination of pulling the strikers and pressing the stop pads.

Incorrect adjustment results in either wobbling of the bonnet or sluggish unlocking.



Important!

Check function of retaining hook.



After Installation note:

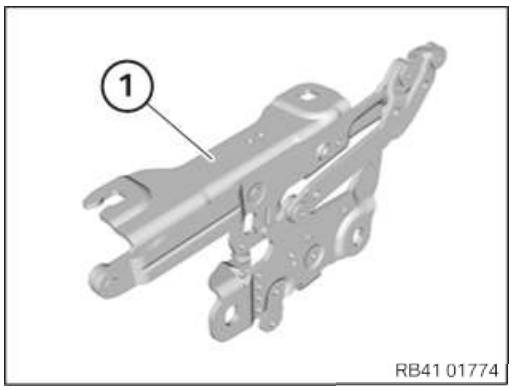
- Tighten all screws and nuts to specified torque.
- Touch up unpainted surfaces in the appropriate colour.
- If necessary, adjust front side panels.

cardiagn.com

41 61 ... Check hinge for engine compartment lid

Necessary preliminary tasks:

- Remove hinge for engine compartment lid



Open and close hinge (1).

Visual inspection for damage.

Test result	Solution
Hinge is stiff	Replace hinge
Visible damage	Replace hinge

cardiagn.com

41 00 ... Procedure for vehicles with active pedestrian protection after an accident

The active pedestrian protection system consists of the following components:

- *Satellites (control unit + sensor)*
  - Sensors, inside, bumper panel, left/centre/right
  - ACSM control unit (Crash Safety Module)
- *Cables and connectors*
- *Engine compartment lid hinges*
  - Actuator
  - Engine compartment lid hinge

In case of a frontal crash or side collision in the area of the bonnet and/or the A-pillars, check the following components:

Satellites (control unit + sensor)

- Procedure
  - Read fault memory.
  - Disconnect the vehicle battery and observe the waiting period.
  - Rectify fault.
  - Reconnect the vehicle battery and observe the waiting period.
  - Delete the fault memory.
  - Switch off ignition and wait at least 2 minutes (no consumers, such as such as e.g. interior light, radio, etc., may be switched on during this period).
  - Switch the ignition on.
  - Read fault memory and rectify faults if necessary.

Cables and connectors

- Procedure
  - Check cables and connectors for damage, replace if necessary.

cardiagn.com

Procedure with activation of active pedestrian protection:

Engine compartment lid hinges

- Replace actuators.
- Check both bonnet hinges . Replace damaged hinges.
  If necessary, repair hinges with repair kit.
  If no repair kit is available, the hinge must be replaced.

Model	Repair kit available
F15, F16	No
F20, F21, F22, F23, F32, F33, F34, F36, F80, F82, F83, F87	Yes
F55, F56, F57, F60	No
F45, F46, F48, F49, F39	No

Procedure without activation of active pedestrian protection:

Engine compartment lid hinges

- Check both bonnet hinges and replace if necessary.
- If the hinge is damaged, the actuator must also be replaced.

cardiagn.com

41 61 071 Removing and installing (replacing) left bonnet hinge (active pedestrian protection)

Warning!

Adhere to the following safety information so as to avoid a danger of injury by the actuator.

The battery earth lead must be clamped off prior to work on the hinge or engine compartment lid!

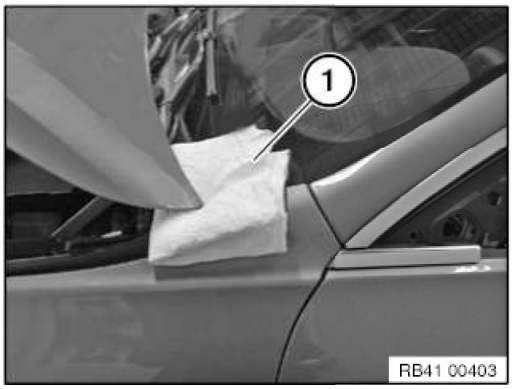
Use suitable tool to support bonnet in the fully opened position. Risk of injury.

For stripping and rebuilding operations, refer to surrounding texts on KSD (flat rate unit number 41 61 071).**Necessary preliminary tasks:**

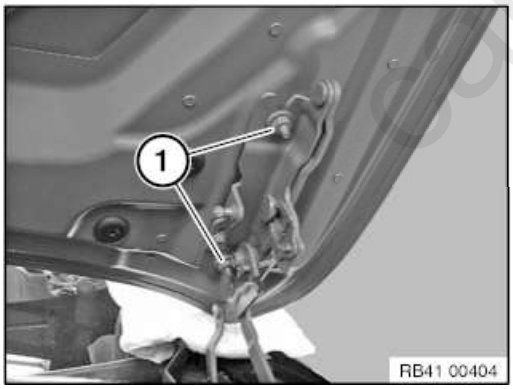
Clamp off battery earth lead.

Remove gas pressure spring for engine compartment lid.

Remove actuator.



Position suitable cloth under engine compartment lid without gaps.



Attention!

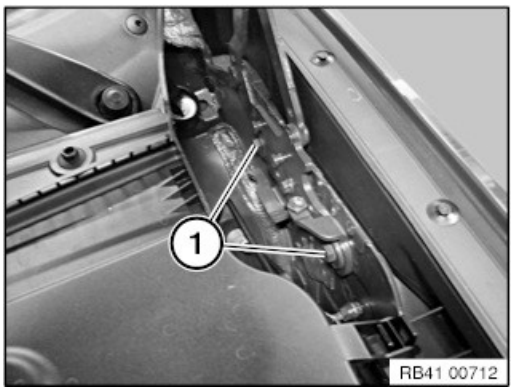
After nuts have been slackened no lateral forces must be exerted on the engine compartment lid!

Secure engine compartment lid with a second person.

Unscrew nuts (1).

Tightening torque 41 61 1AZ.

gordiagn.com



Release screws (1) and remove hinge.

Tightening torque 41 61 2AZ.

Installation note:
Adjust hinge together with engine compartment lid.

cardiagn.com

41 61 000 Removing and installing engine compartment lid

Important!

Danger of injury!

Use suitable tool to support bonnet in the fully opened position.

Removal of the engine compartment lid must be carried out with the assistance of a second person.

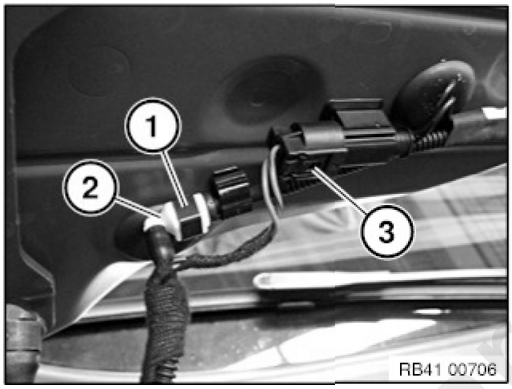
Important!

These instructions apply only to vehicles **without** active pedestrian protection!

Observe separate procedure for vehicles **with** active pedestrian protection!

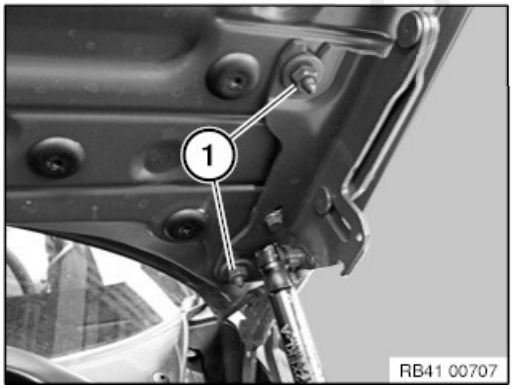
Read contents of Body, General.

For stripping and rigging operations, refer to texts on KSD CD (job number 41 61 000).



Release the lock (1) and detach the water hose (2).

Unfasten plug connection (3) and disconnect.



Unscrew nuts (1).

Remove engine compartment lid.

Installation note:
Install engine compartment lid at screw locations to on hinge.

Tightening torque 41 61 1AZ.

If necessary, adjust engine compartment lid.

cardiagn.com

41 61 060 Removing and installing/replacing hinge for engine compartment lid

Warning!

Support engine compartment lid in fully opened position with suitable apparatus. Risk of injury.

Important!

These instructions only apply to vehicles **without** active pedestrian protection!

Observe separate procedure for vehicles **with** active pedestrian protection!

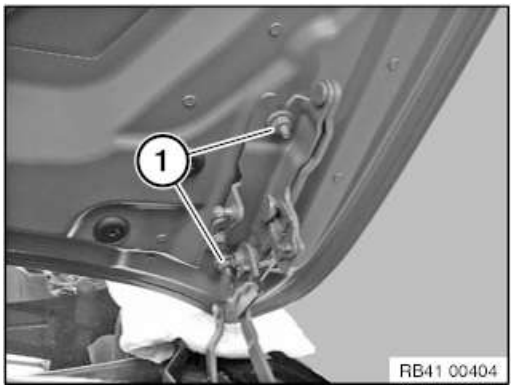
For stripping and rigging operations, refer to texts on KSD CD (job number 41 61 060).

Necessary preliminary tasks:

Remove gas prop for engine compartment lid



Position suitable cloth under engine compartment lid without gaps.



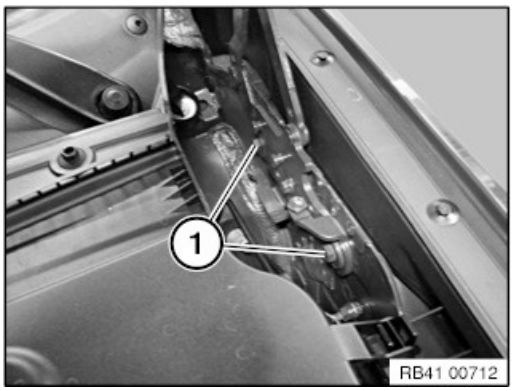
Important!

After nuts have been slackened no lateral forces must be exerted on the engine compartment lid!

Secure engine compartment lid with a second person.

Unscrew nuts (1).

Tightening torque 41 61 1AZ.



Release screws (1) and remove hinge.

Tightening torque 41 61 2AZ.

Installation note:
Adjust hinge together with engine compartment lid.

cardiagn.com

51 23 400 Removing and installing/replacing left or right actuator (active pedestrian protection), vehicles from 09/ 2011

Warning!

Adhere to the following safety information so as to avoid a danger of injury by the actuator.

The battery negative lead must be clamped off prior to work on the actuator or engine compartment lid!

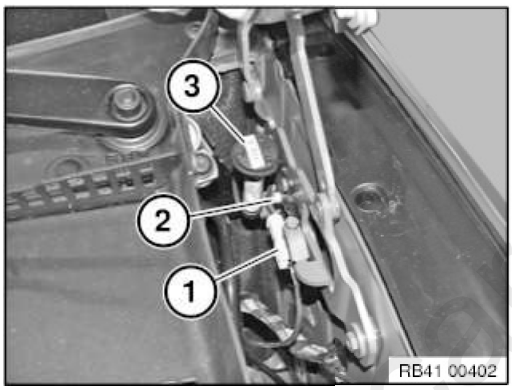
Do not exert any force on the actuator.

Incorrect handling may result in triggering of the actuator and thereby cause serious injury.

Necessary preliminary tasks:

Disconnect battery earth lead.

Removal

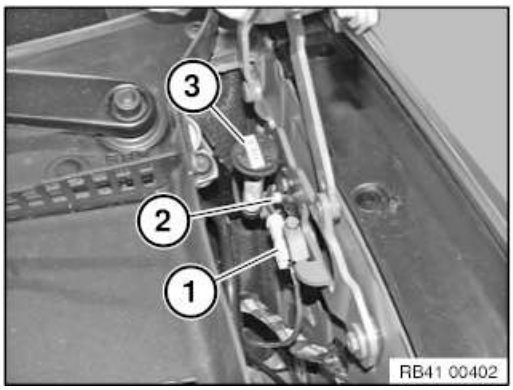


Unfasten plug connection (1) and disconnect.

Release bolt (2) and remove actuator (3).

Installation

Comply with notes regarding handling active pedestrian protection.



Install actuator (3) and tighten bolt (2).

Tightening torque 41 61 8AZ.

Attach plug connection (1).

cardiagn.com

Required reworking:

Connect battery earth lead.

cardiagn.com

41 61 543 Repairing both bonnet hinges

Warning!

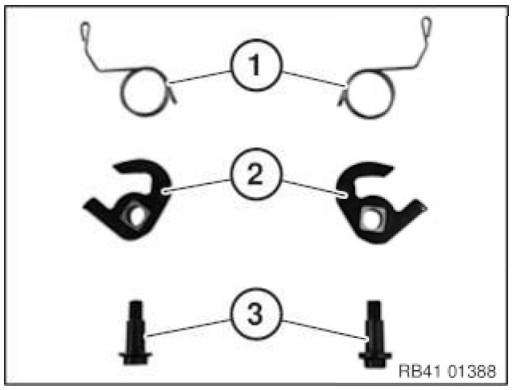
Adhere to the following safety information so as to avoid a danger of injury by the actuator.

The battery earth lead must be clamped off prior to work on the hinge or engine compartment lid!

Use suitable tool to support bonnet in the fully opened position. Risk of injury.

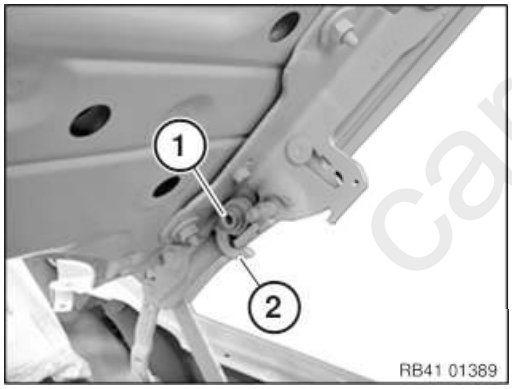
Necessary preliminary work:

Disconnect battery earth lead



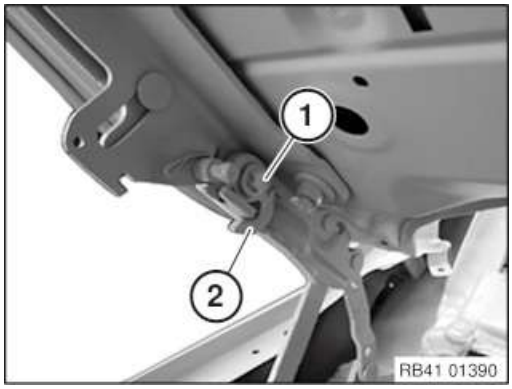
Following new body parts are required (see Electronic Parts Catalogue):

- Bonnet hinge repair kit consisting of:
- (1) Spring
- (2) Lever
- (3) Bolt



Open bonnet and support in the fully opened position with a suitable device.

Release screw (1) and remove lever (2).

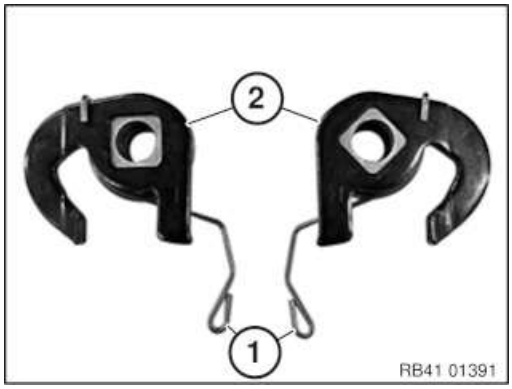


Attention!

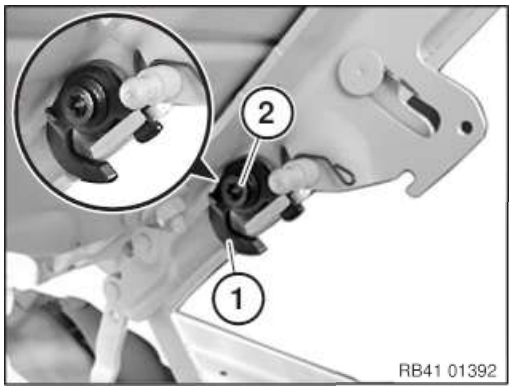
Left-hand thread!

Release screw (1) and remove lever (2).

cardiagn.com



Installation note:
Insert springs (1) in levers (2) for left and right sides.



Installation note:
Check that fitted position of lever (1) is correct.

Position lever (1) in recess on bonnet hinge and tighten bolt (1).

Tightening torque 41 61 3AZ.

Repeat procedure on right side of vehicle.

Tightening torque 41 61 4AZ.

cardiagn.com

41 62 014 Adjusting tailgate

Important:

Do not damage adjoining body components.

Minor corrections (realignment work) are permitted if the existing adjustment options are not sufficient.

Read contents of Body, General.

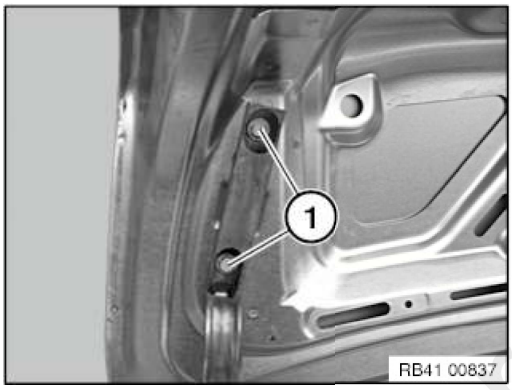
For stripping and rigging operations, refer to texts on KSD CD (FRU number 41 62 014).

Observe gap dimensions.

The tailgate must be provided with all attachment parts for correct adjustment.

Necessary preliminary tasks:

- Remove tailgate trim panel.

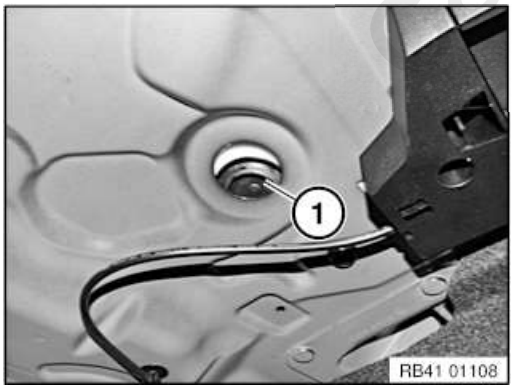


Slacken screws (1) until such stage that the tailgate can still be moved.

Adjust tailgate laterally and longitudinally.

Tightening torque 41 62 1AZ.

When the tailgate is closed, the striker must not touch or scrape against the tailgate lock. If necessary, remove striker.

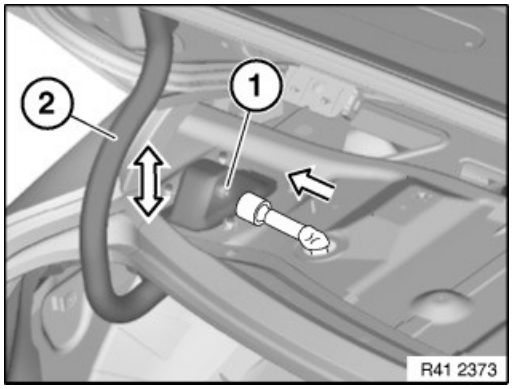


View of trim panel for storage shelf from luggage compartment:

Press grommet (1) through and pull out toward the bottom with long-nose pliers.

Installation note:
Replace damaged grommet.

Install the grommet contrary to series assembly from the bottom.



Slacken nut (1) with a suitable tool (SW13) until the hinge can be moved.

Adjust height of tailgate.

Tightening torque 41 62 5AZ.

Adjust tailgate catch.

Adjust stop pad.

After Installation note:

- Tighten all screws and nuts to specified torque.
- Touch up unpainted surfaces in the appropriate colour.

cardiagn.com

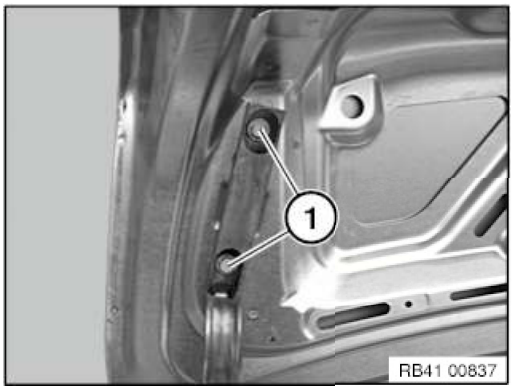
41 62 000 Removing and installing tailgate

Read contents of Body, General.

For stripping and rigging operations, refer to texts on KSD CD (job number 41 62 000).

Necessary preliminary tasks:

- Remove panel for tailgate .
- Disconnect all cable plug connections and pull wiring harness out of tailgate.



Carry over the work step shown symmetrically to the other side of the vehicle.

Slacken screws (1) and remove tailgate with a second person.

Tightening torque 41 62 1AZ.

Installation note:
Install tailgate at screw locations on hinge.

If necessary, adjust trunk lid.

cardiagn.com

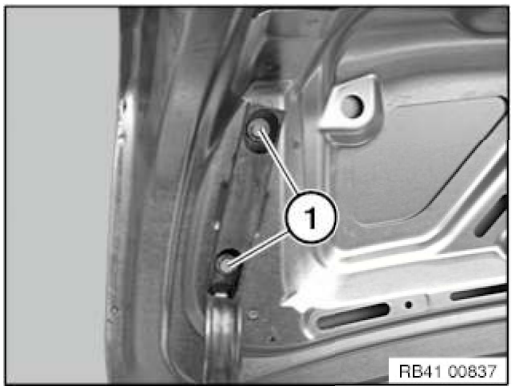
41 62 043 Removing and installing/replacing left tailgate hinge

Read contents of Body, General.

For stripping and rigging operations, refer to texts on KSD CD (job number 41 62 043).

Necessary preliminary tasks:

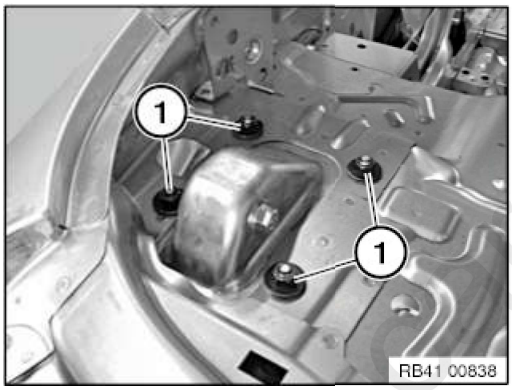
- Remove trim panel for storage shelf (parcel shelf)
- Remove left tension spring for tailgate



Secure tailgate against falling down with a second person.

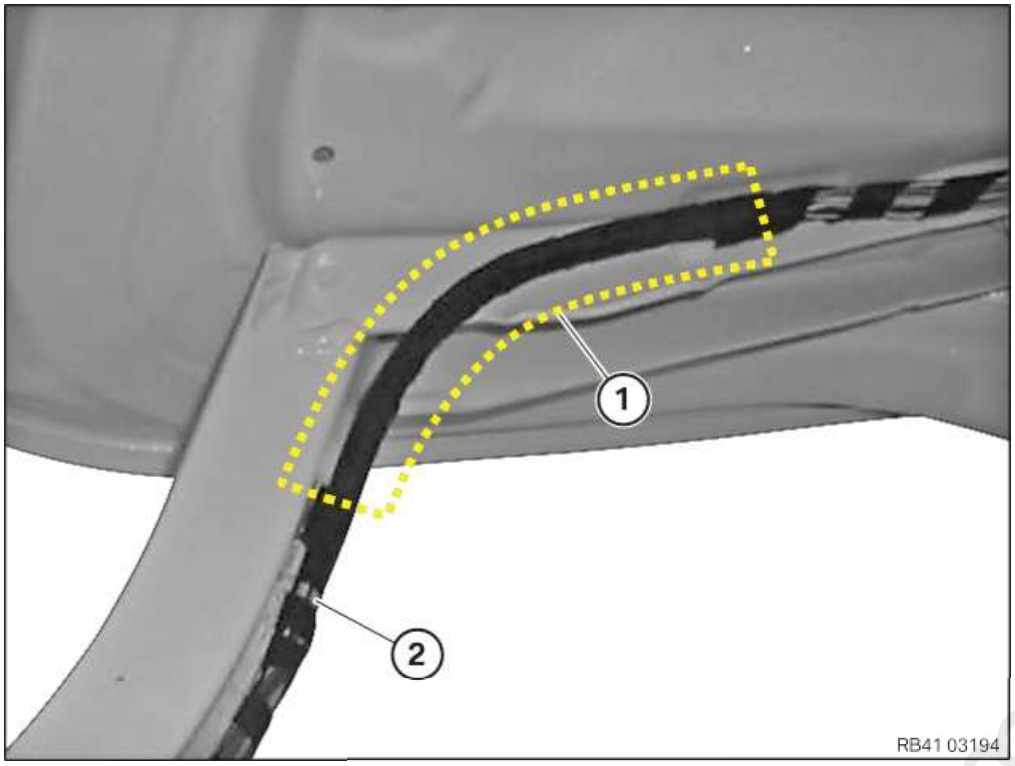
Release screws (1).

Tightening torque 41 62 1AZ.



Release nuts (1) and remove hinge.*Installation note:*
Tightening torque 41 62 1AZ/ 2AZ.

Adjust hinge together with tailgate.



Only if hinge is replaced:

Important!
Risk of short circuits caused by sharp-edged component in area (1)!

The wiring harness (2) must be completely wrapped with insulating tape in area (1)!

Check insulation of wiring harness in area (1) and completely wrap with insulating tape if necessary.

cardiagn.com

51 24 325 Removing and installing/replacing left tension spring for tailgate

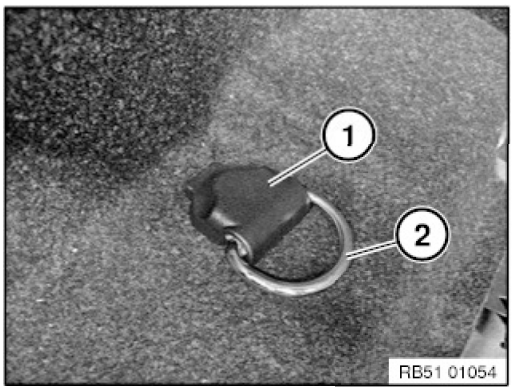
Necessary preliminary tasks:

- Remove cover from tail panel

Warning!

Danger of injury!

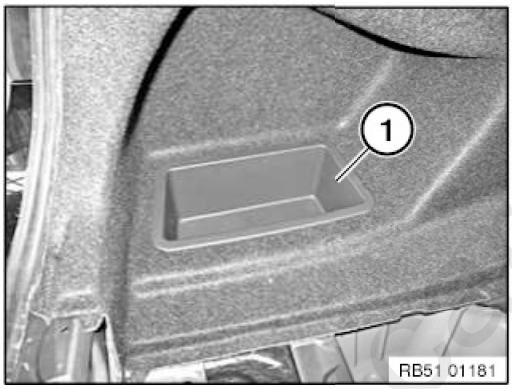
Support tailgate in fully opened position with suitable apparatus.



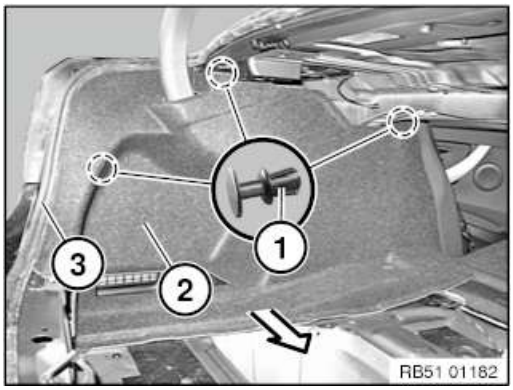
Lever out cover (1) and release screw underneath.

Tightening torque 51 47 1AZ.

Remove lashing eye (2).



Remove storage tray (1) in upward direction.



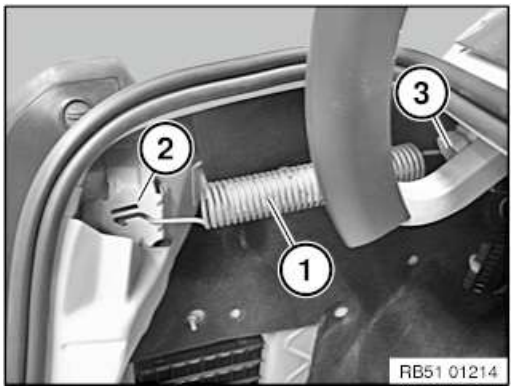
Release expanding rivets (1).

Feed out luggage compartment wheel arch panel (2) in rear area but do not completely remove.

If necessary, unlock plug connection for charging socket and disconnect.

Installation note:
Luggage compartment wheel arch panel (2) must fit correctly under tailgate rubber seal (1).

cardiagn.com



Note down position of tension spring (1) at rear holder (2).

Warning!

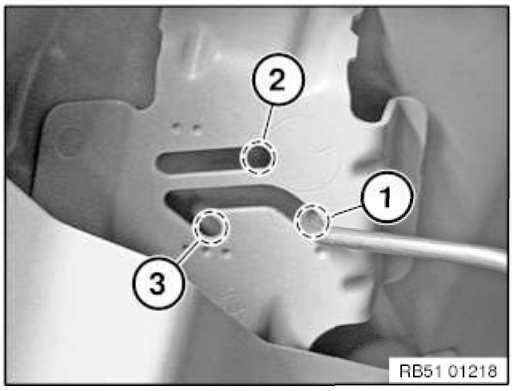
Wear gloves when detaching tension spring (1).

Detach tension spring (1) from rear holder (2).

Feed out tension spring (1) from hinge (3).

Installation note:

Reattach tension spring (1) to rear holder (2) again in the same position.



Installation note:

Positions (1 to 3) influence the closing force of the tension spring.

(1) Soft (factory setting without rear spoiler)

(2) Medium

(3) Hard (factory setting with rear spoiler)

If the closing force needs to be changed: Adhere to notes on closing force setting.

cardiagn.com

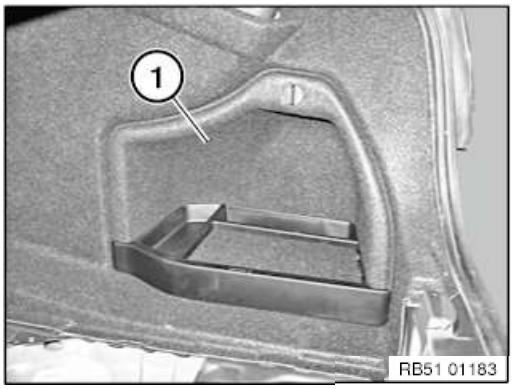
51 24 324 Removing and installing/replacing right tension spring for tailgate



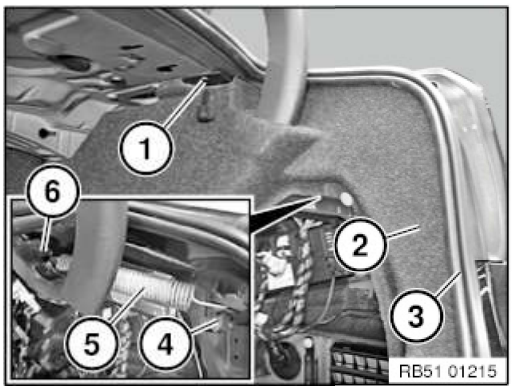
Warning!

Danger of injury!

Support tailgate in fully opened position with suitable apparatus.



Remove flap (1).



Release clip (1).

Feed out trim panel (2) from edge protection (3).

Make a written record of the position of tension spring (5) on rear holder (4).

Warning!

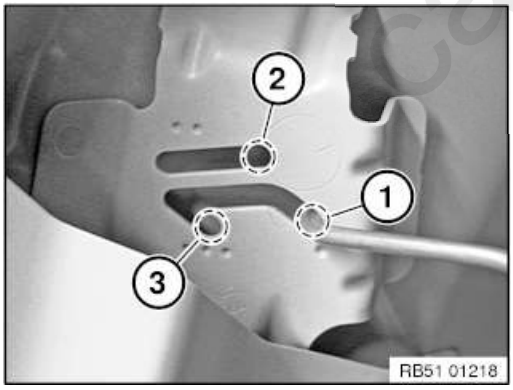
Wear glove when detaching tension spring (5).

Reach to rear of trim panel (2) and detach tension spring (5) from rear holder (4) and hinge (6).

Installation note:

Trim panel (2) must be fitted correctly under edge protection (3).

Reattach tension spring (5) in same position on rear holder (4).



Installation note:

Positions (1 to 3) influence the closing force of the tension spring.

(1) Soft (factory setting without rear spoiler)

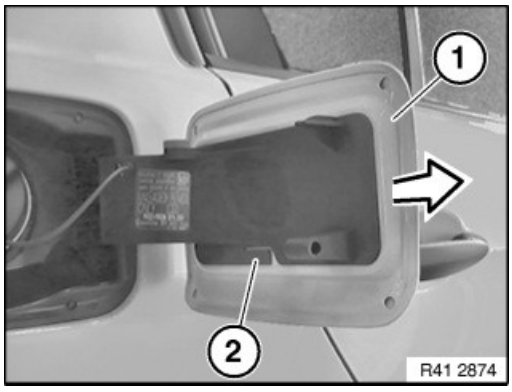
(2) Medium

(3) Hard (factory setting with rear spoiler)

If the closing force needs to be changed: Observe notes on setting closing force!

41 63 000 Removing and installing the fuel filler flap

Note: The illustration is a schematic diagram and is to be applied to the relevant vehicle type.

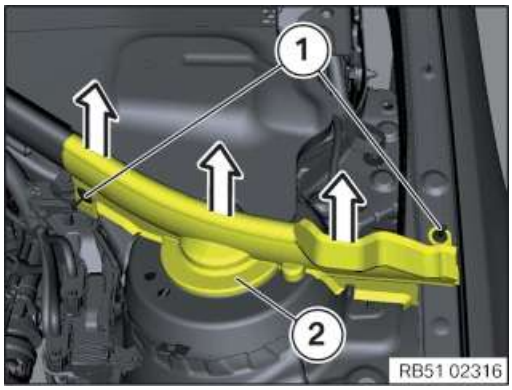


Open fuel filler flap.

Lift out the lockÂ (2) and detach the fuel filler flap (1) in direction of arrow.

cardiagn.com

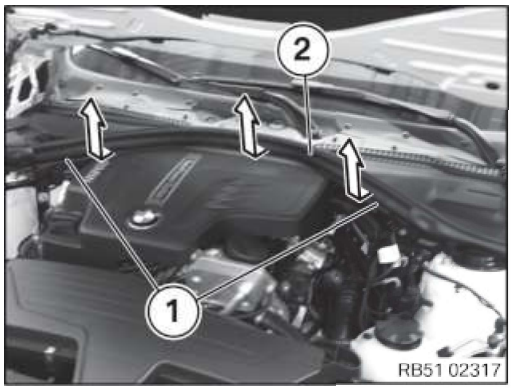
51 76 030 Removing and installing/replacing engine compartment lid gasket



Left and right gasket:

Release expanding rivet (1).

Remove gasket (2) in direction of arrow.



Centre gasket

Detach cable (1) from gasket (2).

Remove gasket (2) in direction of arrow.

cardiagn.com

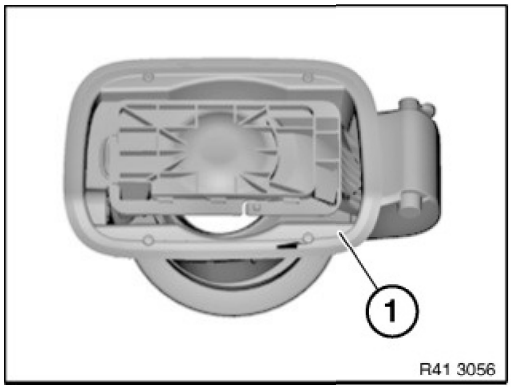
41 63 003 Replace cover bowl

Necessary preliminary tasks:

- Remove right rear wheel
- Remove rear right wheel arch cover
- Remove flap for fuel filler neck
- Close the central locking system with open cap

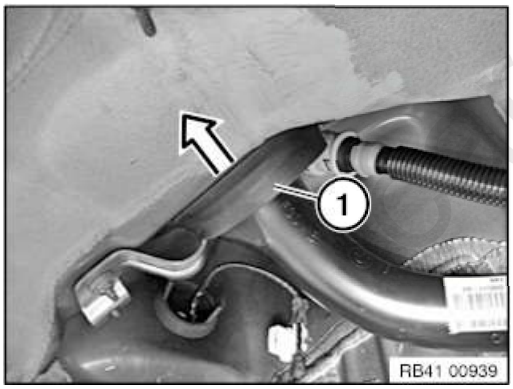
Note: The illustration is a schematic diagram and is to be applied to the relevant vehicle type.

Attention!
Deformation of the sheet metal flanges in the side panel and the wheel arch results in permanent vehicle leakage. Carry out removal/installation with great care.

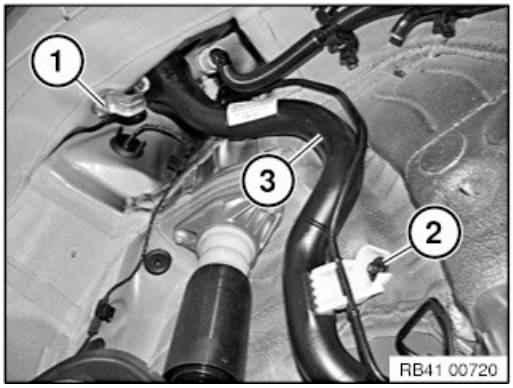


Following new body parts are required (see Electronic Parts Catalogue):

- (1) Cover bowl



Press sealing cup (1) through to the outside.



Release nuts (1) and (2).

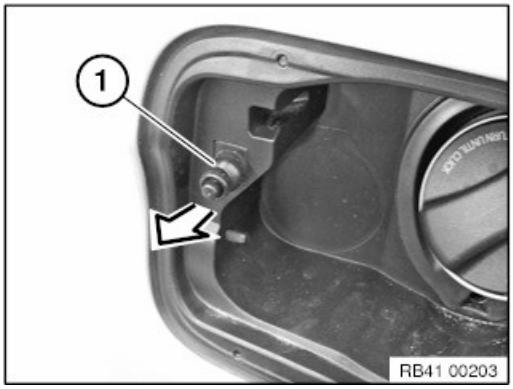
Installation note:
Renew plastic nut.

Tightening torque 16 12 2AZ.

Slacken the fuel filler pipe (3).

Installation note:
Clean **contact surface** on body and ground connection (top of holder) on fuel filler pipe.

Ground connection must be guaranteed.

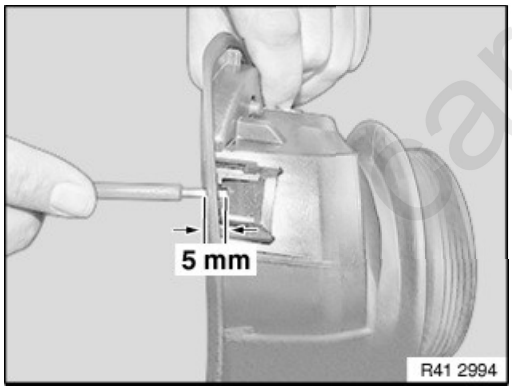


Remove ejector (1) in the direction of the arrow.

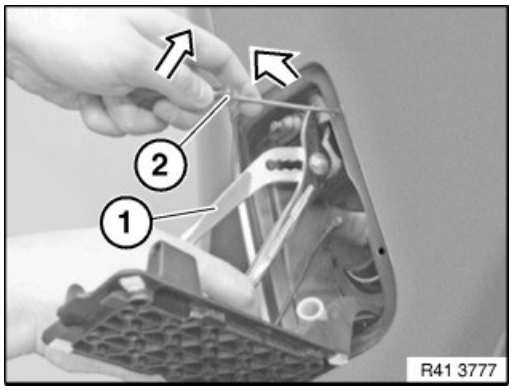


Lift out the retaining strap (1) and remove the lid.

Pierce markings (2) with a small screwdriver.



Insert screwdriver to a depth of max. 5 mm and unlock cover bowl latch mechanism.



Keep cover bowl tensioned with pliers (1).

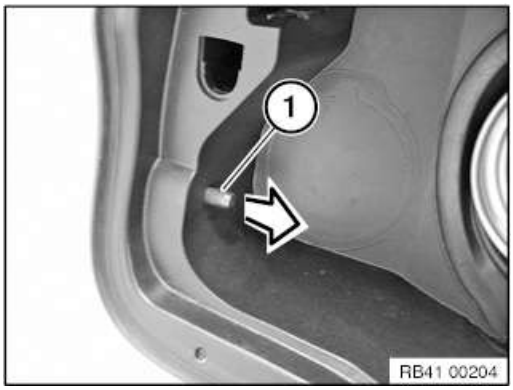
Unlock catches individually with screwdriver (2).

Unlock catches in following order:

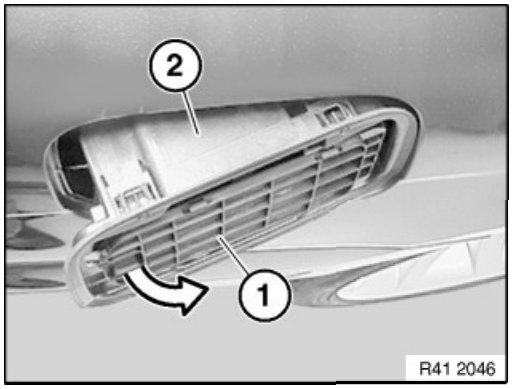
1. Top left
2. Bottom left
3. Top right
4. Bottom right

Move screwdriver in opposite direction at both lower catches.

cardiagn.com



Slightly pull the locking pin (1) forward in the direction of the arrow, if applicable.



Close hinge arm (1).

Attention!

Do not damage sheet metal flange of side wall.

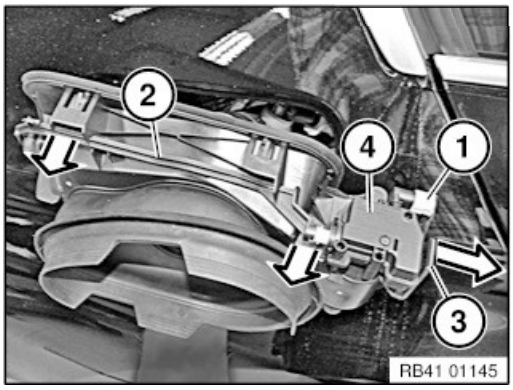
Carefully twist out cover bowl (2) at first at rear in direction of arrow from side panel and remove.



Release wiring harness (1) at attachment points.

Release cable (2) for emergency operation of fuel filler cap.

Installation note:
Make sure the cable for emergency operation is correctly installed!



Unlock and disconnect plug connection (1) for actuator drive.

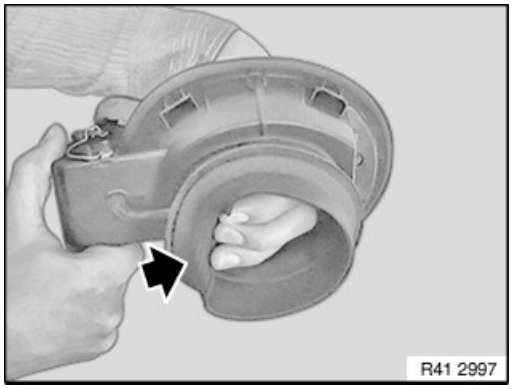
Detach release clip (2) in direction of arrow.

Press latch mechanism (3) in direction of arrow and pull off actuator drive (4) from cover bowl.

Installation note:
Make sure the servo drive for fuel filler flap is correctly installed!

Check function of controller drive before installation of cover bowl!

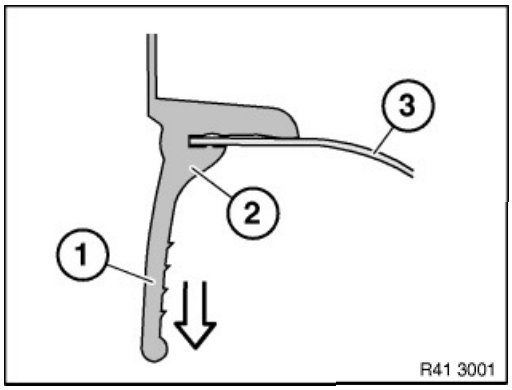
cardiagn.com



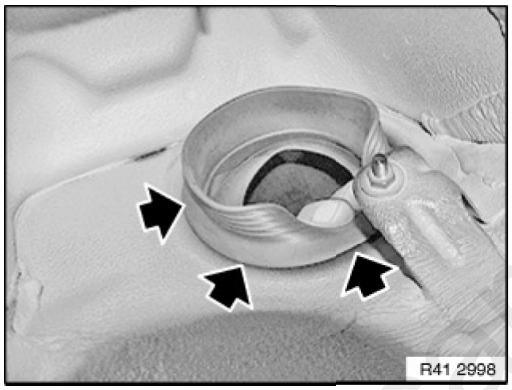
Systematic representation.*Installation note:*
Open hinge arm.

Turn sealing sleeve in area of hinge inwards and hold.

Insert cover bowl and engage sealing sleeve over fuel filler pipe.

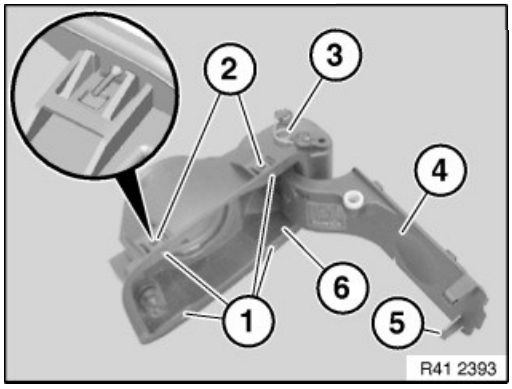


Installation note:
Using fitting aid (1), pull sealing lip (2) over sheet metal flange of wheel arch (3).



Systematic representation.*Installation note:*
Illustrations shows fuel filler pipe removed.

Check that sealing lip is correctly seated.



Installation note:
Following parts on cover bowl (6) must not be damaged or missing:

1	Bump stop
2	Latch mechanisms, top/bottom
3	Spring
4	Catch
5	Guide

Cover bowl must audibly snap into place 4 times.

There must be no discernible gap between sealing lip and side wall in area.

cardiagn.com

41 ... 0 Notes on the repair technique used in the main group 41

Two different repair techniques are used in body repair.

These are welding and bonding/riveting.

If the repair instructions do not specify a repair technique, then welding must **always** be used.

The bonding/riveting repair technique is **always** described in detail in the repair instructions.

Quality standards must be met.

cardiagn.com

64 00 ... 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 douche 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!

cardiagn.com



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:

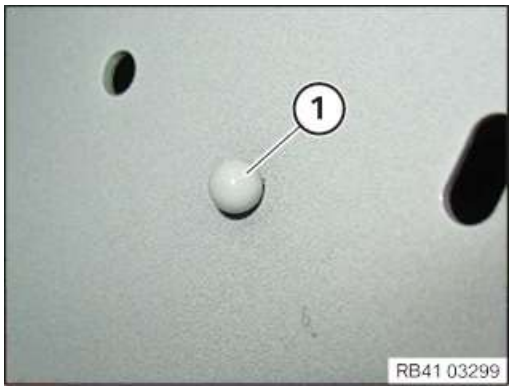
Dispose of cleaning agents/paints in a professional manner!

Observe national/country-specific disposal regulations.

cardiagn.com

41 00 513 Fix bolts on the new part

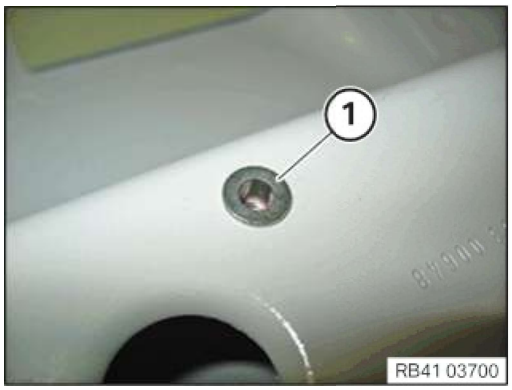
Note: On BMW and MINI bodies, various welded and pushed in bolts are being used.



Single ball/double ball (version 1):

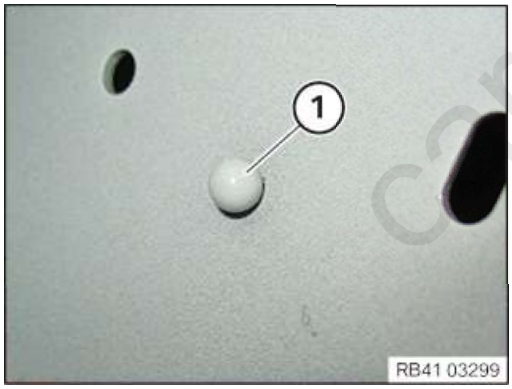
Grind off any residues of the single ball (1), if applicable.

Drill hole with diameter 7 mm.



Set blind rivet nut (1).

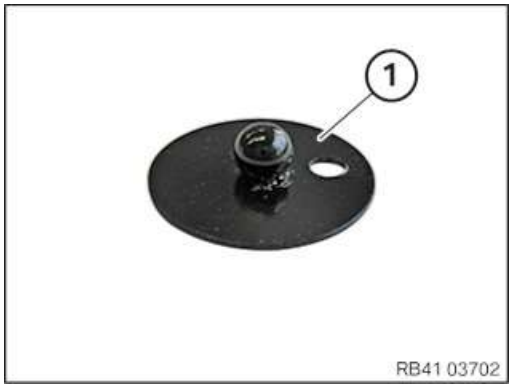
Screw in single ball with thread until a height of 5 mm (double ball 10 mm) is reached.



Single ball/double ball (version 2):

Grind off any residues of the single ball (1), if applicable.

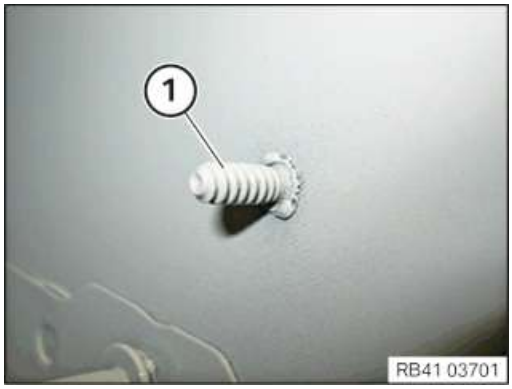
Clean area with solvent cleaner R1.



Clean bonding surface of repair element single ball (1) with solvent cleaner R1.

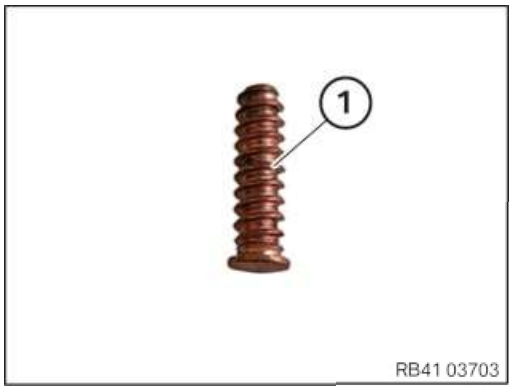
Bond repair element optionally with adhesive K1, K5 or window pane adhesive at the same position.

cardiagn.com

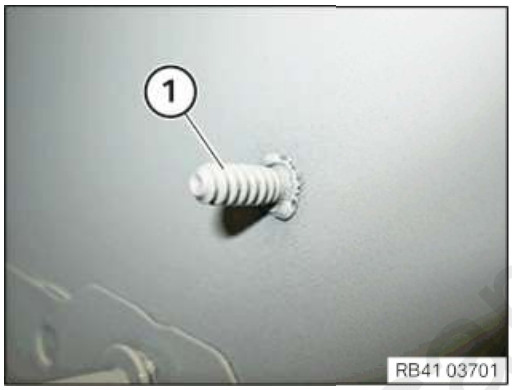


Coarse threaded bolt (version 1):

Grind off any residues of the coarse threaded bolt (1), if applicable.



Spot weld coarse threaded bolt to same position.



Coarse threaded bolt (version 2):

Grind off any residues of the coarse threaded bolt (1), if applicable.

Drill hole with diameter 7 mm.

Set blind rivet coarse threaded bolt using riveting pliers.

cardiagn.com

51 00 ... Notes on component bonding with adhesive tape

Unless specified otherwise in vehicle-specific or component-specific instructions, the following notes apply.

Follow repair notes for bonded gaskets for rubber seals.

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 area.
- 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.

2. Auxiliary materials and tools

- Cleaning agent R1 or cleaning agent R2
- Sika Activator 205
- 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.
- Treat adhesive strips on glass or painted surfaces with Sika activator 205.

Note:

Sika activator 205 **apply extremely thinly. It must not be coated beyond the bonding surface**.

Note: air drying time: ≥ 1 minute

4. Bonding

4.1 Components without preassembled 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
  Minimum contact pressure ≥ 15 N/cm² (firm thumb pressure reaches approx. 35 N/cm².)

* Liner is the protective film on the adhesive tape.

cardiagn.com

51 00 ... Notes on installation of rubber window seals

1. Work safety when handling lubricant G14*

- Wear safety 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 away from heat and ignition sources
- In event of skin contact: Wash areas of skin affected with soap and water immediately, change work clothing which has been fouled with lubricant immediately (keep spare work clothing in reserve)
- In event of eye contact: Rinse eyes immediately with plenty of water and seek medical advice
- Observe the safety data sheet

2. General notes

- Use approved lubricant for installation only
- Application only at room and object temperatures between 18 and 25 °C
- Lubricant dries at different rates depending on the quantity, temperature and ventilation and becomes sticky
- Lubricant 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 lubricant after cooling
- Optimal bonding to the surface is achieved after approx. 48 h. The rubber window seal must not be exposed to mechanical strain beforehand. (car wash, strength test, etc.).

Attention!

To avoid groaning noises, do not use soapy water (low-surface-tension water with washing-up liquid) or lubricant containing silicone.

3. Auxiliary materials and tools

- Cleaning agent R1 or cleaning agent R2, cleaning cloth, plastic scraper, needle
- LubricantG14*
  (*Sourcing reference: Electronic Parts Catalogue)

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 in order to remove silicone and grease residues

Note:

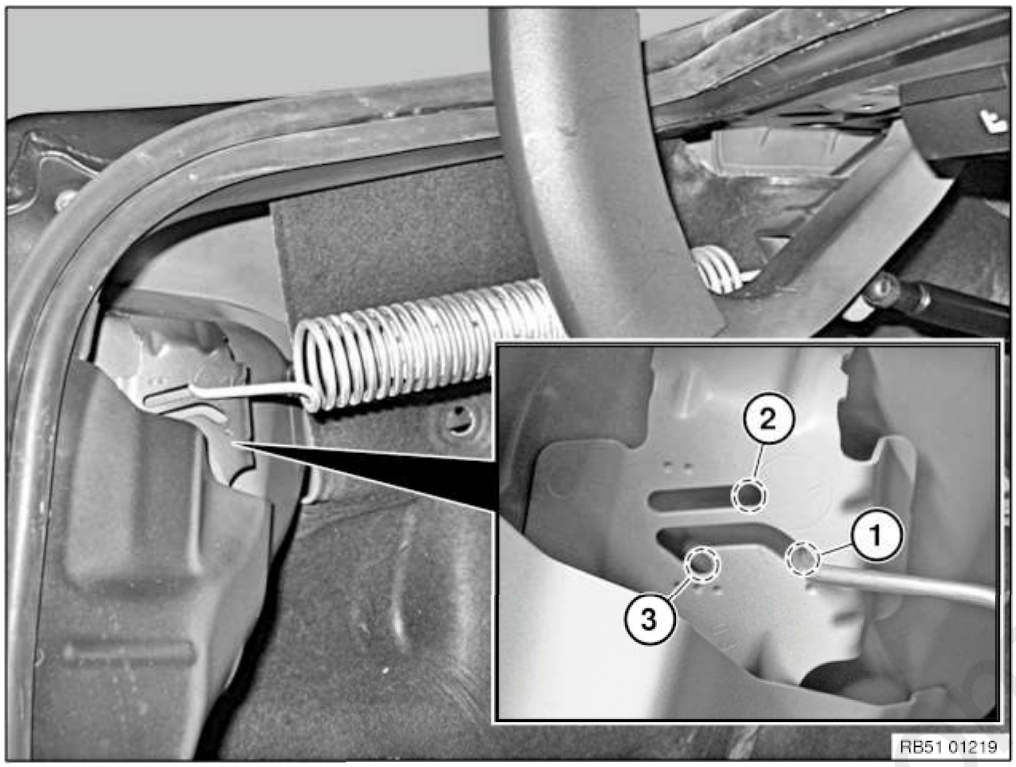
Air drying time approx. 1 min:

5. Assembly

- Apply a thin coating of lubricant to the rear side of the rubber window seal only
- Perform fitting within 30 min of applying lubricant
- Lubricant dries after fitting and becomes sticky

cardiagn.com

51 24 ... Notes on setting tailgate closing force



1 General information

For different reasons it can be necessary to change the closing force of the tension springs, e.g.:

- Frequent parking uphill or parking in two-level garages (tailgate does not remain in open position)
- Customer complaint of operating convenience when opening and closing the tailgate
- Retrofit/dismantling of accessories on tailgate (e.g. rear spoiler, warning triangle, etc.)

The closing force can be changed by reattaching the tension spring at the rear holder.

Important!

It is not permitted to change the attachment on the hinge.

2 Adjustment positions:

(1) Soft (factory setting without rear spoiler)

(2) Medium

(3) Hard (factory setting with rear spoiler)

3 Adaptation of the closing force:

- Check the position of the tension springs on the left/right

Note:

The left/right tension springs may be attached in different positions. **Exception:** Position (1) on one side and position (3) on the other side is not permissible. This causes tailgate inclination.

- If possible, firstly reattach the right tension spring in the next higher/lower position
- Check the closing force
- If necessary, reattach the left tension spring in the next higher/lower position
- Check the closing force, repeat the process as required

cardiagn.com

Procedure for reattaching the tension spring: See repair instructions.

cardiagn.com

61 35 ... Overview of additional work for the removal and installation or replacement of electronic components in the body area/windscreen

Component	**Removal and installation** Calibration/Initialisation required **(diagnosis system must be connected)**	**Removal and installation** Use of the Special tool necessary	**Replacement** Programming/encoding Calibration/Initialisation required **(diagnosis system must be connected)**	**Replacement** Use of the Special tool necessary	Remarks
Front section: (including bumper panel)					
ACC sensor	Yes	Yes	Yes	Yes	
PDC ultrasonic sensor	No	No	No	No	
PMA ultrasonic sensor	No	No	No	No	
Side View camera	No	No	Yes	No	
Side section:					
Top view camera (in the exterior mirror)	No	No	Yes	No	
Rear area: (including bumper panel):					
reversing camera	No	No	Yes	No	
PDC ultrasonic sensor	No	No	No	No	
Sensor, lane change warning	no*	No	Yes	No	*Required after a body repair in the surrounding area of the sensor. **Comply with the regulations for repainting!**
Windscreen:					
Camera-based driver support systems camera	no*	No	no*	No	*Necessary after **replacement of the windscreen**
Rain sensor (separate document)					

cardiagn.com

51 00 ... Overview of consumables (Electronic Parts Catalogue)

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Cleaning agent R2	Cleaning agent R2	83 19 0 417 324	500 ml
Lubricants G14	Lubricants G14	83 23 2 360 412	900 ml / Notes
Sika Activator 205	Aktivator 205	83 19 0 030 155	250 ml
Yellow plastic adhesive tape	Adhesive tape	83 19 9 410 979	A = 66 mm; B = 50 mm
Double-sided adhesive tape	Adhesive tape	54 11 2 290 978	L = 50 mm/W = 12 mm
Masking tape	Masking tape	81 22 9 400 181	L = 50 mm / W = 19 mm
Masking tape	Masking tape	81 22 9 400 388	L = 50 mm / W = 30 mm
Eraser disk	Scotch Brite eraser disk	51 91 0 402 946	with shaft
Cutting cord	Cutting cord	81 43 2 344 272	Notes
Adhesive set K6	Adhesive set K6	83 19 2 317 925	
Window glass adhesive	Window glass adhesive, cold, 1 hour	83 19 2 289 286	
Profile rubber adhesive		83 19 2 232 322	
Set of felt pads	Set of felt pads	51 45 2 353 024	

cardiagn.com

41 00 ... Replacing blind rivets

Special tools required:

- 2 348 128
- 72 1 210

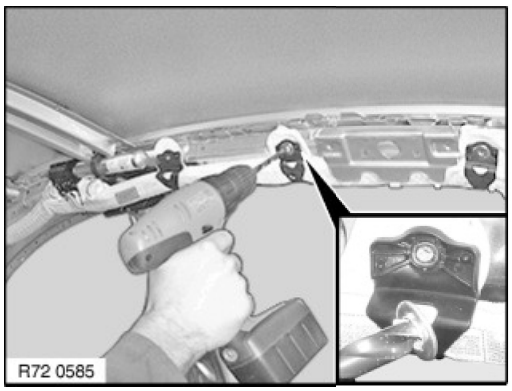


Important!

Lay out protective mats to protect the interior equipment against swarf from the drilled-out rivets and damage.

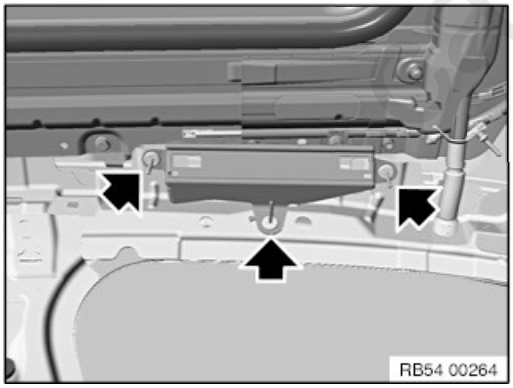
Lay out protective mats in the relevant working area:

- Instrument panel
- Entrance area
- Passenger compartment



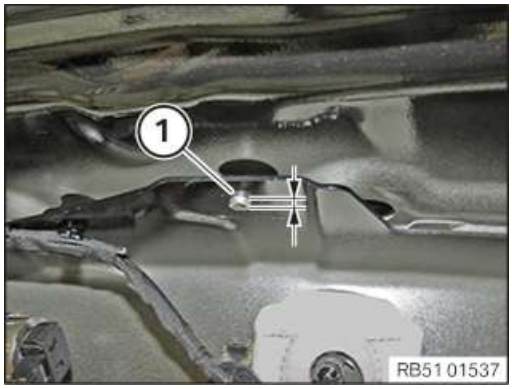
Schematic diagram of folding pack holder for head airbag:

Drill off rivet plate down to rivet shank with a 10 mm twist drill bit.



Described for grab handle holder:

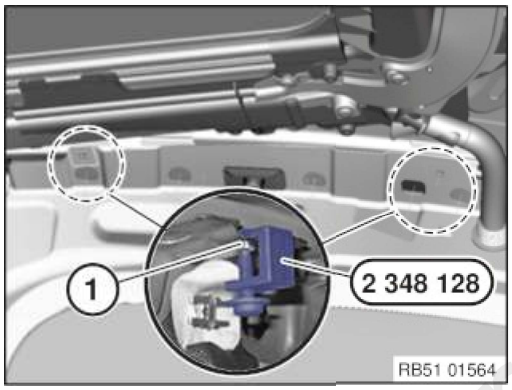
Drill off rivet plate down to rivet shank with a 10 mm twist drill bit.



Drill out all blind rivet protusions (1) up to the body.

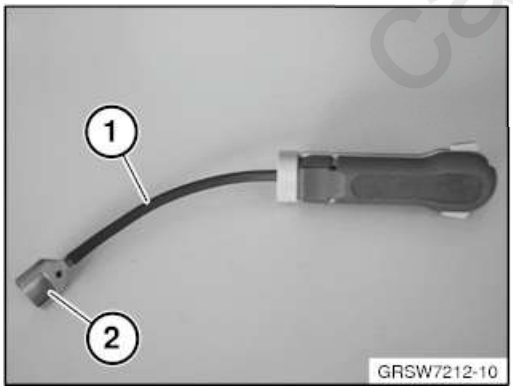
Installation note:
Apply primer to paintwork damages on side frame.
Note:
Depending on accessibility, the rivet heads will have to be removed using special tool 2 348 128 or 72 1 210 .

In areas that cannot be reached using special tools, cavity foam HS3must first be applied around the rivet head before the rivet head is then punched out immediately..



Removal of rivet head with special tool 2 348 128:

Press off rivet heads (1) using special tool 2 348 128 and remove.



Removal of rivet head with special tool 72 1 210:

Shank (1) of special tool 72 1 210 is flexible and can be adapted to the relevant body contours.

Note:
Insert butyl in the collecting tray (2) to secure rivet heads and prevent them from falling out.

cardiagn.com



Insert special tool 72 1 210 through bore hole in body next to attachment points.

Position special tool from rear on rivet head in cavity.

Note:
A second person will be needed to help hold the special tool on the rivet head during the driving-out operation.

Make sure collecting tray is correctly fitted on rivet head.

Drive out stem with hammer and 6 mm punch.

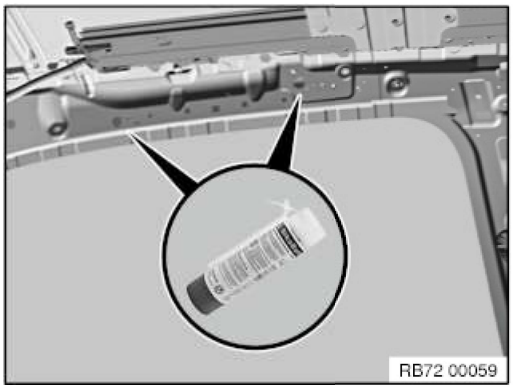
Carefully feed special tool out of body so that rivet head does not fall out of collecting tray.

Note:
If the rivet falls out of the collecting tray into the side frame when the special tool is fed out, this area must be generously filled with foam.

For details of procedure for filling cavities with foam, see further operations.

Use cavity preservation (refer to BMW Group Parts) for foam filling.

Cavity foam (refer to BMW Group Parts) may also be used if required.



Fit tube to foam can.

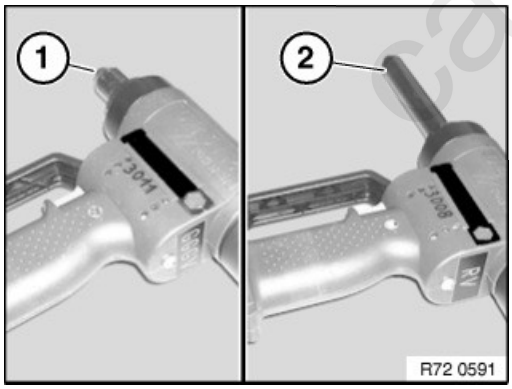
Push the hose in through the pillar holes.

Fill cavity with a filling material.

Warning!

Empty foam can completely onto cardboard and after hardening dispose of foam and can in residual waste.

Can may burst if not completely emptied.



Overview of rivet gun:

Riveting of gas generator housing and holders for folding pack with rivet gun (refer to BMW Workshop Catalogue).

The interchangeable head is changed for the different work operations.

Riveting of gas generator housing with:

1.) 17/36 nosepiece and short shank

Riveting of holders for folding pack:

2.) 17/40 nosepiece and long shank

cardiagn.com

00 Safety information for working on vehicles with automatic engine start-stop function (MSA)



Warning!

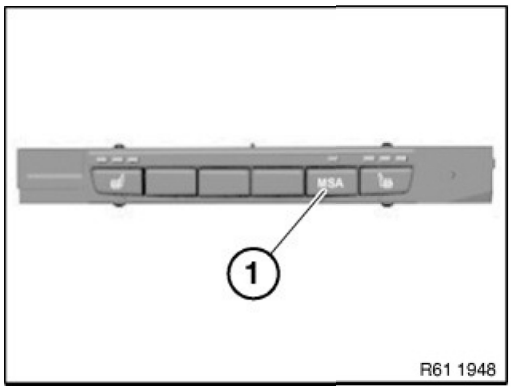
If the engine hood/bonnet contact is pulled upwards (workshop mode), the information "switch closed" is output. The automatic engine start-stop function is active.

An automatic engine start is possible.

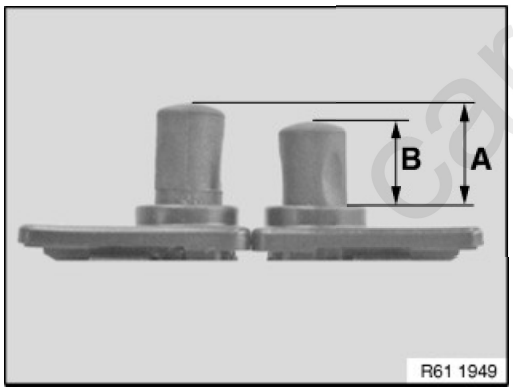
Observe safety precautions when working on MSA vehicles.

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



- 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.



When working with diagnosis tools:

- Observe instructions in diagnosis tool

cardiagn.com

Note:
For further information on automatic engine start-stop function (MSA):

- Refer to the Service Information (bulletin) (for manual transmissions) Service Information (bulletin) 61 01 07 335
- Refer to the Service Information (bulletin) (for automatic transmissions or twin-clutch gearboxes) Service Information (bulletin) 61 01 10 629

cardiagn.com

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.

cardiagn.com

51 00 ... Service position of engine compartment lid

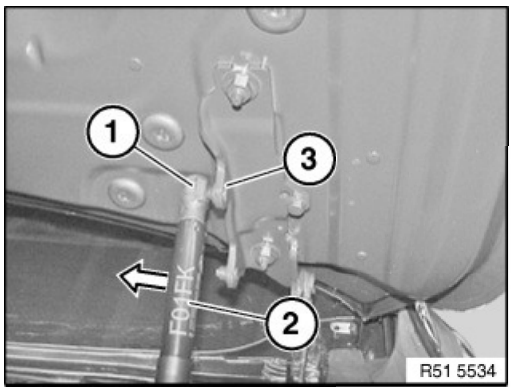
Special tools required:

- 2 353 020

Warning!

Danger of injury and damage!

Engine compartment lid must be held by a second person helping.

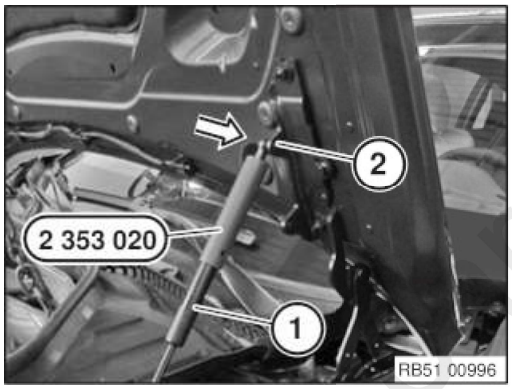


Note:
Graphic shows F01.

If necessary, open engine compartment lid.

Remove ball socket (1).

Unclip gas pressure spring (2) in direction of arrow from ball stud (3).



Push special tool 2 353 020 over gas pressure spring (1).

Clip ball socket of special tool 2 353 020 onto ball stud (2).

carsdiagn.com

51 11 ... Attaching/replacing support for number plate (using laser)

Special tools required:

- 2 407 566

Only use the vehicle-specific number plate baseplate.

The installation of other license plate baseplates is not permissible.

Refer to Service Information License plate attachment at front.

The number plate must be precisely mounted on the number plate baseplate.

If a number plate baseplate is not offered for the corresponding national-market version, the number plate must be screwed directly onto the bumper using a drilling template.

Incorrect assembly leads to a malfunction of the sensors of the driver assist systems.

Warning!

Danger of injury!

Laser beam on the special tool.

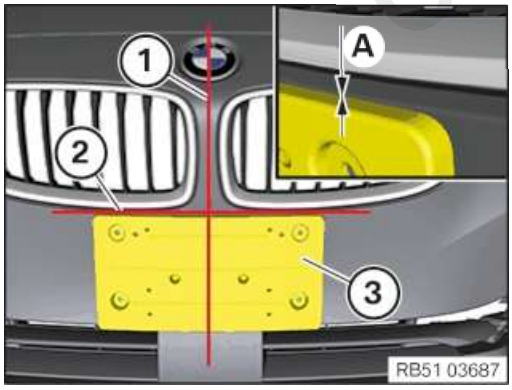
Do not look into the beam!



Set vehicle and special tool 2 407 566 on a flat surface.

Switch on laser (Position without automatic level).

Activate laser horizontally and vertically.



National-market version for USA/Japan:

Position and centre special tool 2 407 566 in front of the vehicle.

Align vertical laser line (1) in the centre of the vehicle (Ex:. BMW badge).

Align horizontal laser line (2) at two symmetrical corners.

Move horizontal laser beam (2) vertically downwards by dimension (A), measured from contour line.

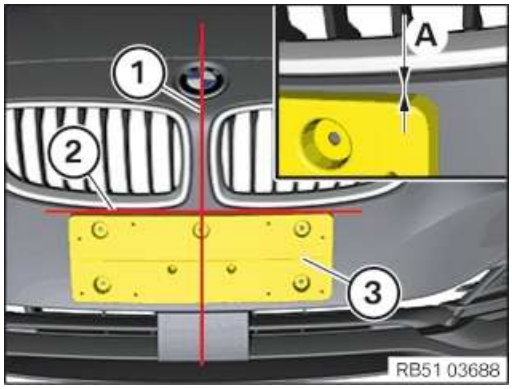
Dimension (A) = 2.5 mm.

Mark centre of support (3).

Align support (3) with both laser beams and mark attachment points.

Remove special tool 2 407 566 .

Screw down support (3) on the marked attachment point.



National-market version for China:

Position and centre special tool 2 407 566 in front of the vehicle.

Align vertical laser line (1) in the centre of the vehicle (Ex:. BMW badge).

Align horizontal laser line (2) at two symmetrical corners.

Move horizontal laser beam (2) vertically downwards by dimension (A), measured from contour line.

Dimension (A) = 4 mm.

Align support (3) with both laser beams and mark attachment points.

Remove special tool 2 407 566 .

Screw down support (3) on the marked attachment point.

cardiagn.com

51 11 ... Punching holes in the bumper panel

Special tools required:

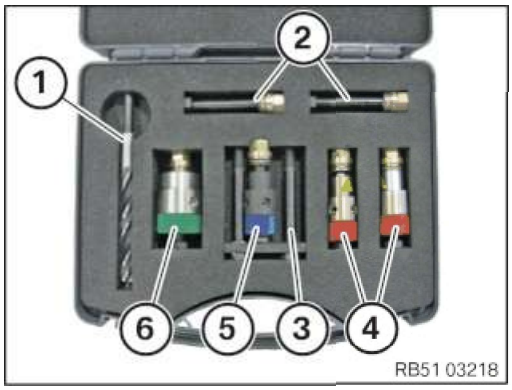
- 2 334 053
- 2 359 747

Punching holes is described here using an ultrasonic sensor in the F20.

The versions in which the holes must be punched can be found in the Electronic Parts Catalogue.

Depending on the equipment specification, holes and holders of the ultrasonic sensors for the Park Distance Control (PDC)/Park Manoeuvring Assistant (PMA) and side view camera or front camera must be added later.

To punch holes, use special tool 2 334 053 .

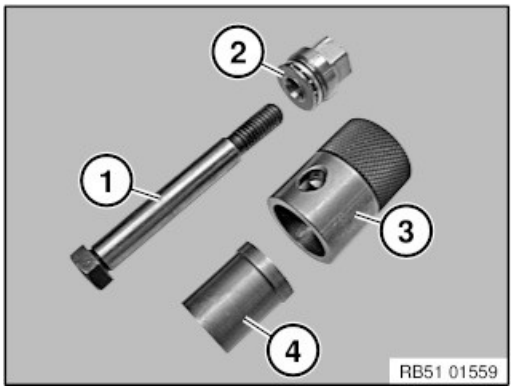


Overview of special tools:

(1)	Drill bit	
(2)	Replace screws and nuts	83 30 2 334 067
(3)	Punching guide fork	83 30 2 334 065
(4)	Punching tool Ø 18 mm	83 30 2 334 055
(5)	Punching tool Ø 17,6 mm (Front camera)	83 30 2 359 747 (Not included in set 2 334 053)
(6)	Punching tool Ø 32 mm (F20 ultrasonic sensor, front, inner)	83 30 2 334 059
(7)	Punching tool Ø 33 mm (F30, life cycle impulse)	83 30 2 463 684 (Not included in set 2 334 053)

In equipment specifications with PMA **and** side view camera, both punching tools (4) must be used with the punching guide fork (3). This is the only way to achieve the correct hole spacing.

In equipment specifications with PMA **or** side view camera, insert the appropriate component into the holder before punching and in this way determine the hole that needs to be punched.



(1) Screw.

(2) Nut.

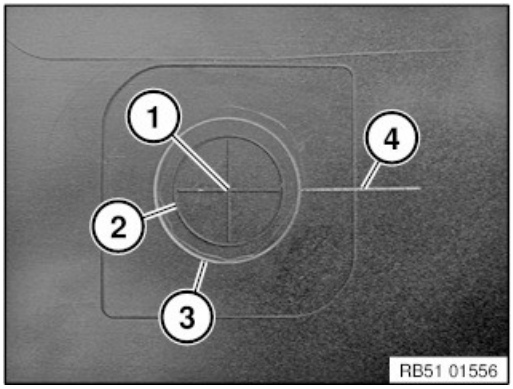
(3) Die plate.

(4) Stamp.

Check the punching tool for damage before using, and replace any defective parts.

The shaft of the bolt (1) must be lightly oiled.

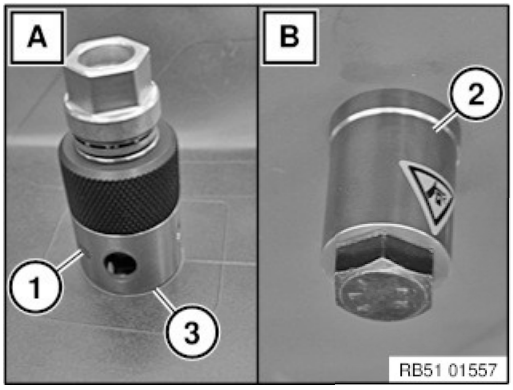
cardiagn.com



Drill bumper panel centrally at mark (1).*Note:*
Mark (2) corresponds to the position of the sensor.

Mark (3) corresponds to the position of the tool.

Mark (4) is for positioning the PDC holder.



Attention!

To avoid damaging the bumper panel, always punch from the outside to the inside.

(A) View from inside.

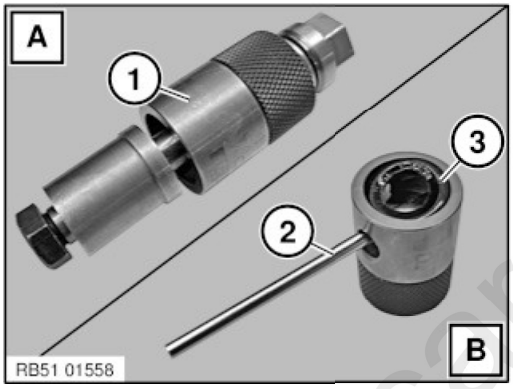
(B) View from outside.

Insert die plate (1) and stamp (2) with the bolt and nut.

Align die plate (1) to mark (3) and tighten the tool hand-tight.

Check the position of the die plate (1) at mark (3) and correct it if necessary.

Punch out the hole by turning the nut while holding the bolt.



Disassemble special tool (1).**Attention!**

Risk of damage to tool!

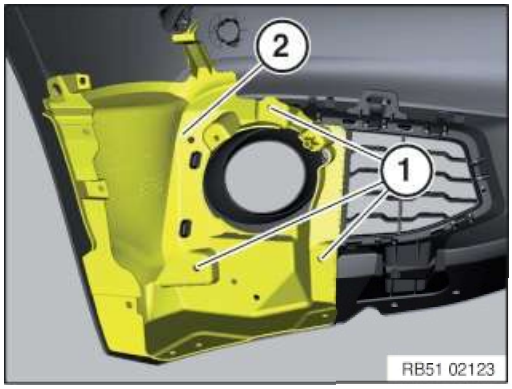
Introduce a suitable tool (2) through the lateral hole and pry out the punching remnant (3).

cardiagn.com

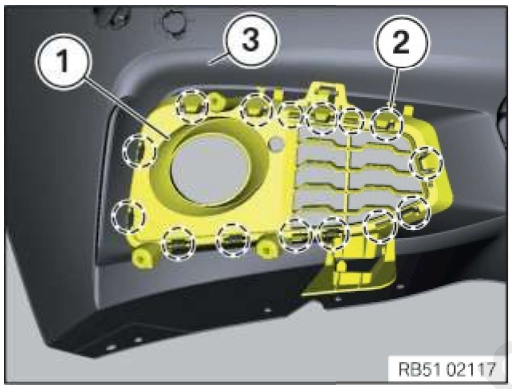
51 11 183 Removing and installing (replacing) M Aerodynamic package ornamental grille for bumper panel (side)

Necessary preliminary tasks:

- Remove fog light
- Remove front bumper panel



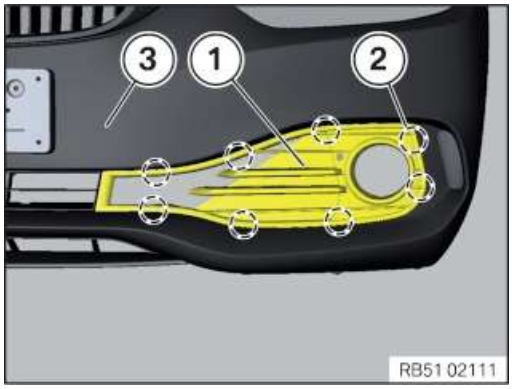
Unfasten screws (1) and take off trim (2).



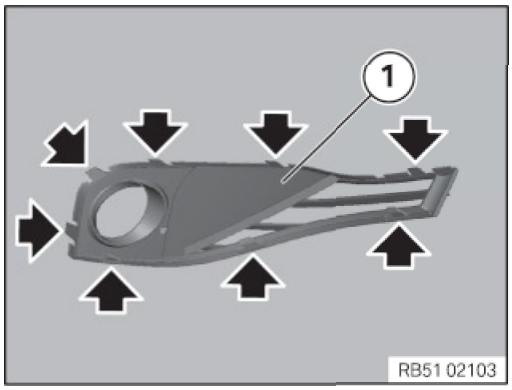
Release ornamental grille (1) at latch mechanisms (2) and pull out of bumper panel (3) towards the rear.

cardiagn.com

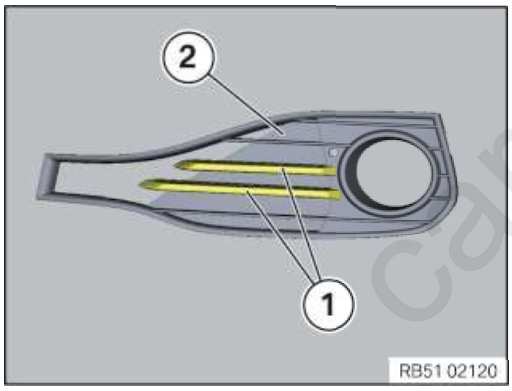
51 11 183 Removing and installing (replacing) ornamental grille for bumper panel (side), Luxury Line



Release ornamental grille (1) at latch mechanisms (2) and pull out of bumper panel (3).



Installation note:
Latch mechanisms (arrow) at ornamental grille (1) must not be missing or damaged.

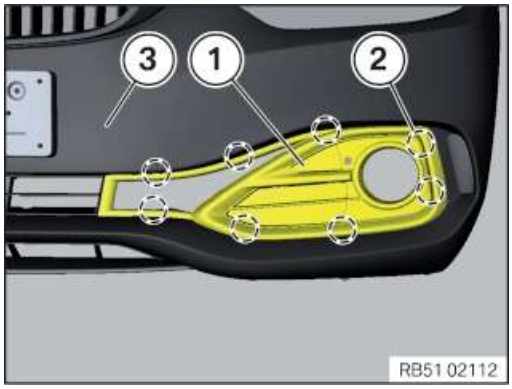


Replacement only:

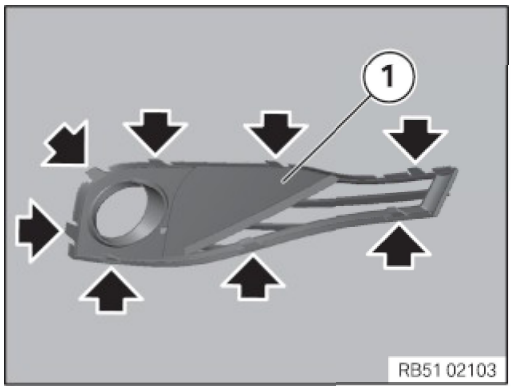
Disengage and remount trims (1) of ornamental grille (2).

cardiagn.com

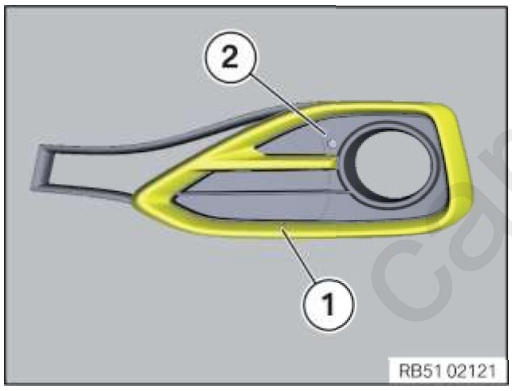
51 11 183 Removing and installing (replacing) ornamental grille for bumper panel (side), Modern Line



Release ornamental grille (1) at latch mechanisms (2) and pull out of bumper (2).



Installation note:
Latch mechanisms (arrow) at ornamental grille (1) must not be missing or damaged.



Replacement only:

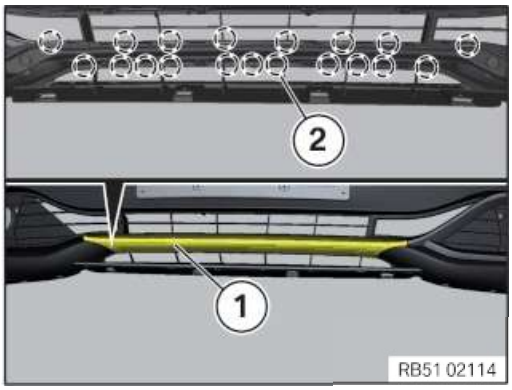
Disengage and remount trims (1) of ornamental grille (2).

cardiagn.com

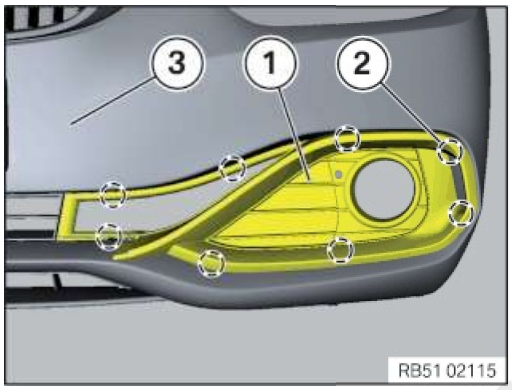
51 11 183 Removing and installing (replacing) ornamental grille for bumper panel (side), Sport Line

Necessary preliminary tasks:

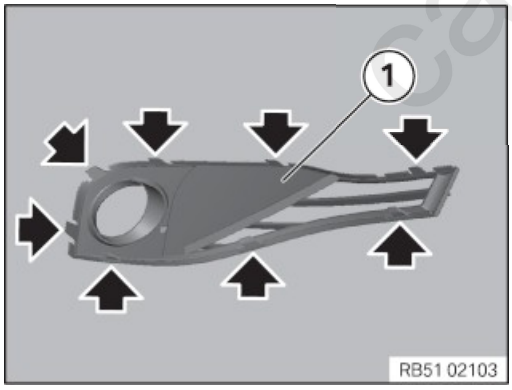
- Remove front bumper panel



Release and remove trim strip (1) at the marked latch mechanisms (2) from the rear.

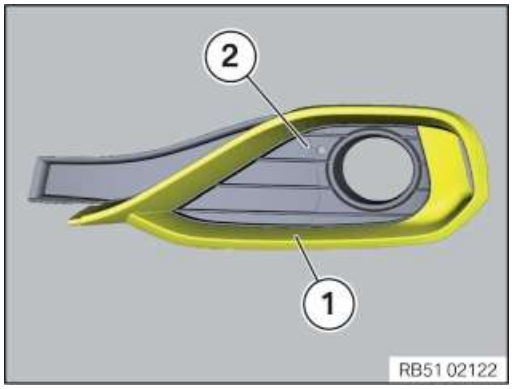


Release ornamental grille (1) at latch mechanisms (2) and pull out of bumper panel (3).



Installation note:
Latch mechanisms (arrow) at ornamental grille (1) must not be missing or damaged.

cardiagn.com

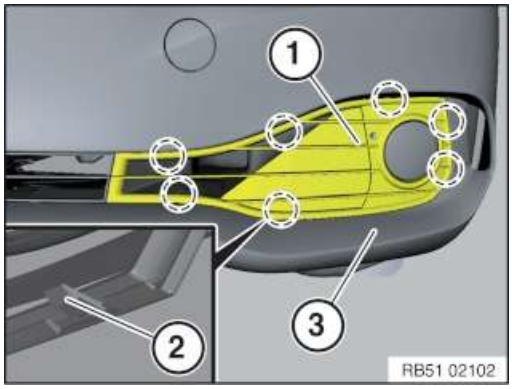


Replacement only:

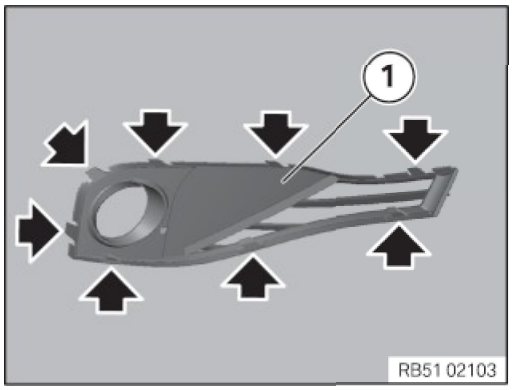
Disengage and remount trims (1) of ornamental grille (2).

cardiagn.com

51 11 183 Removing and installing (replacing) ornamental grille for bumper panel, basic version (side)



Release ornamental grille (1) at latch mechanisms (2) and pull out of bumper panel (3).



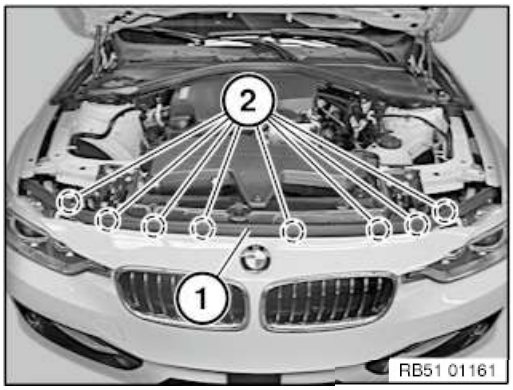
Installation note:
Latch mechanisms (arrow) at ornamental grille (1) must not be missing or damaged.

cardiagn.com

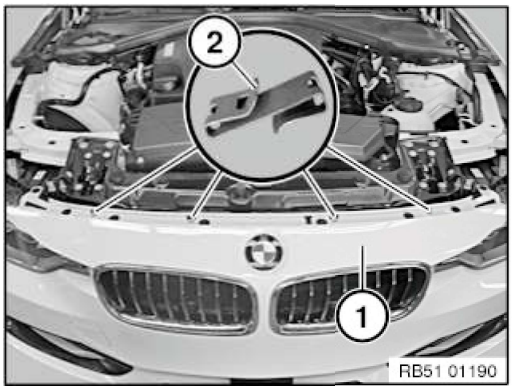
51 11 156 Removing and installing front bumper panel

Necessary preliminary tasks:

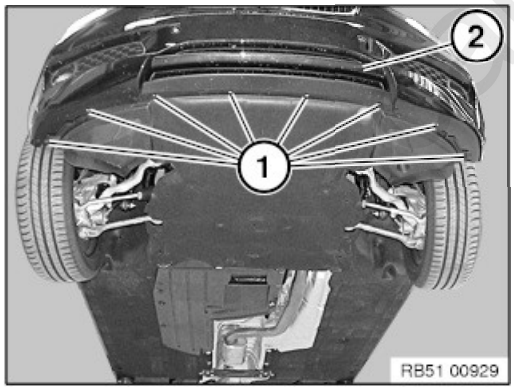
- Only F82 GTS: Remove the front splitter



Remove gasket (1) and release screws (2) beneath it.
Tightening torque 51 11 1AZ.

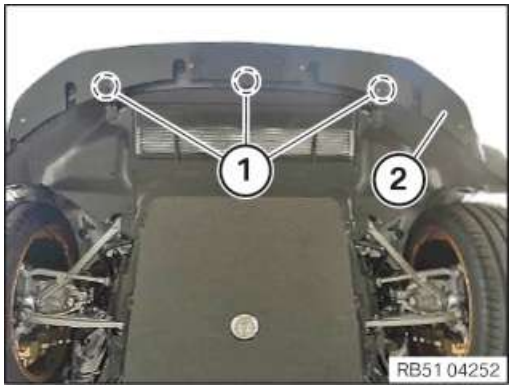


Installation note:
Feed bumper panel (1) correctly into clamps (2).



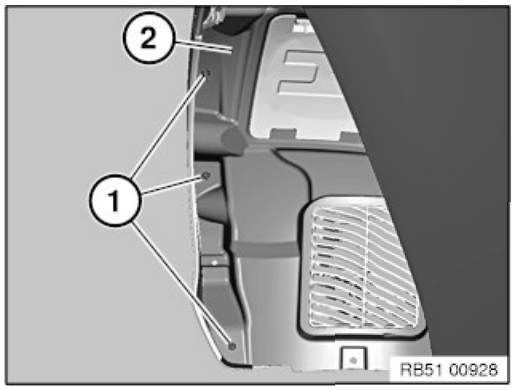
Release screws (1) and expanding rivet, if applicable, on bumper panel (2).

bmwdiagn.com



Only F82 GTS:

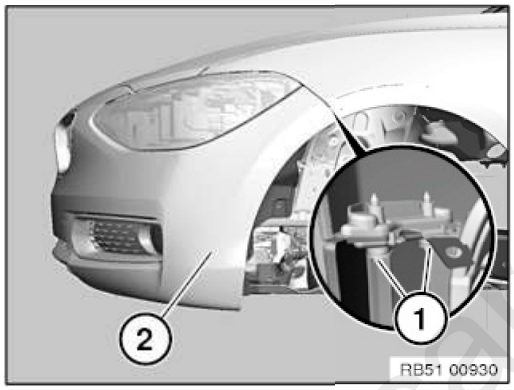
Loosen the screw (1) on the front splitter adapter (2).



Release screws (1) on wheel arch cover (2) on left/right.

Lift out wheel arch cover (2) at side.

Installation note:
Make sure wheel arch cover (2) is in correct position.



Release screws (1) on left/right.

Tightening torque 51 11 11AZ.

Note:
The following tasks must be carried out with a second person assisting:

Pull bumper panel (2) forwards a little.

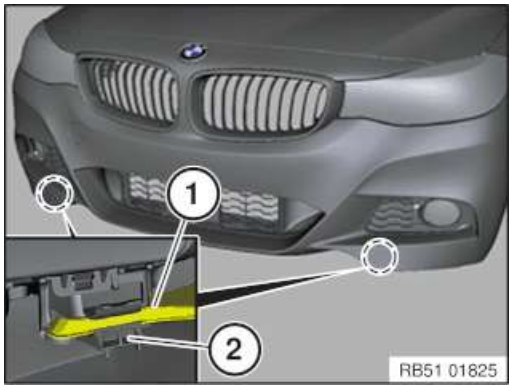
Unlock and detach plug connections on the following components depending on the version.

- Ultrasonic sensors PDC (right wiring harness)
- Pedestrian protection sensor (right and right wiring harness)
- Ultrasonic sensors for parking manoeuvring assistant (left/right)
- Fog light (left/right)
- ACC sensor (middle)
- Side View Camera (left/right)

If necessary, unlock and detach hose pipe for headlight cleaning system and lay down on top.

Remove bumper panel (2) towards front.

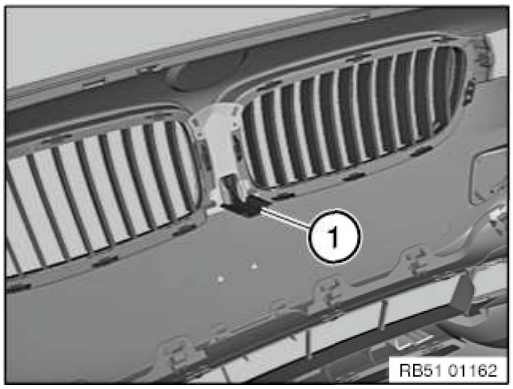
cardiagn.com



Version with M Aerodynamics package:

Unfasten mount (1) from catch (2).

Remove bumper trim panel forwards.



Installation note:
Feed support (1) out toward the bottom and insert from the top in the first retaining lug.

After the bumper panel has been removed, push the support (1) down until it is placed on the support.

cardiagn.com

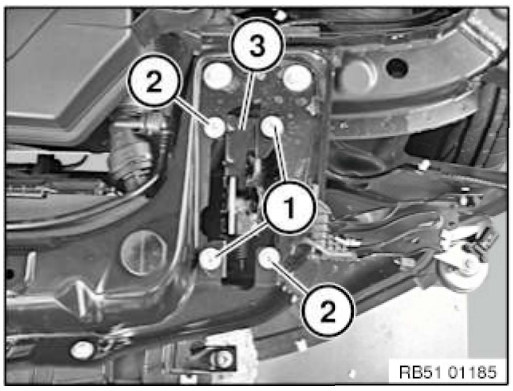
51 11 770 Removing and installing/replacing left or right deformation element for front bumper panel

Necessary preliminary work:

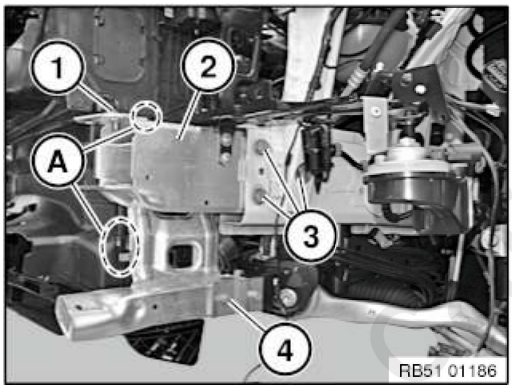
- Remove support for front bumper panel
- Remove the support for the front bottom bumper panel
- Remove intake silencer housing

F23 and F33 only:

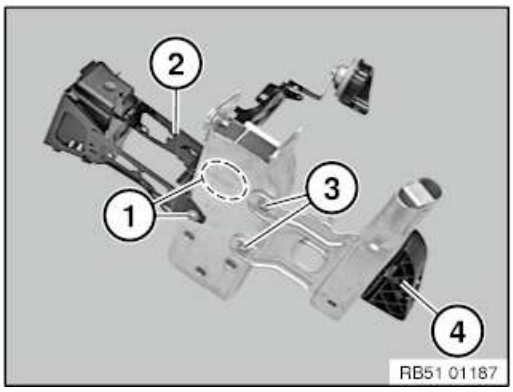
- Remove front-end strut



Release screws (1).
Tightening torque 51 23 1AZ.
Unfasten screws (2).
Tightening torque 51 11 14AZ.
Lay the engine compartment lock (3) on the top.



Disconnect plug connection and cable clip from fanfare if necessary.
Release screw (1).
Tightening torque 51 11 7AZ.
Loosen screws (3).
Tightening torque 51 11 3AZ.
Release screw (4).
Tightening torque 51 11 6AZ.
Detach deformation element (2) from air duct in area (A) and feed out.



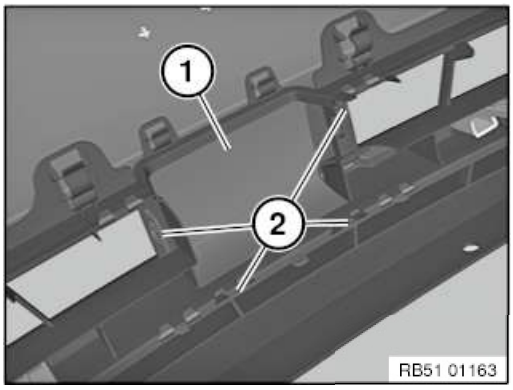
Replacement:

Release screws (1) on both sides and remove bracket (2).
Tightening torque 51 11 2AZ.
Release screws (3) and remove lower deformation element.
Tightening torque 51 11 5AZ.
When replacing lower deformation element:
Release blind rivet from damper (4).

51 11 180 Removing and installing/replacing ornamental grille for bumper panel (centre)

Necessary preliminary tasks:

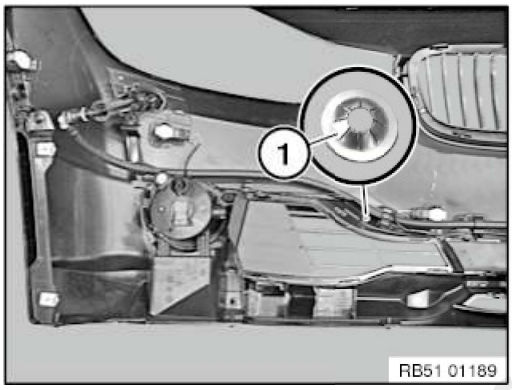
- Remove front bumper panel



Version with ACC:

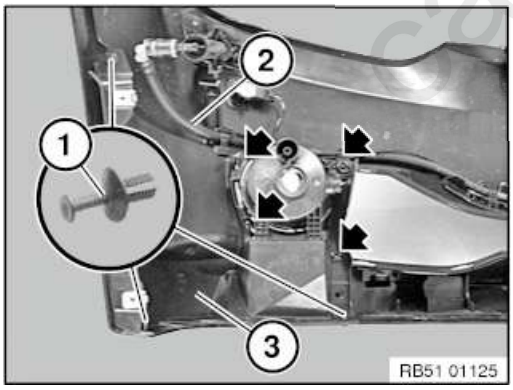
Release cover (1) at latch mechanisms (2).

Remove cover (1).



Luxury Line model:

Release circlip (1).

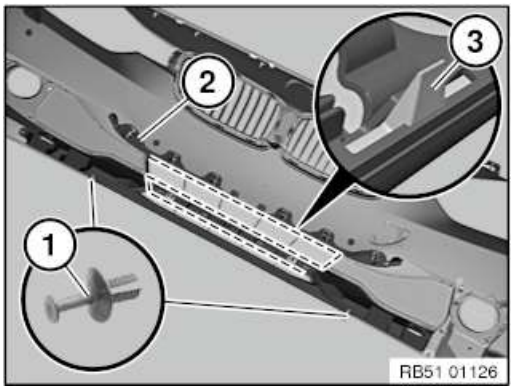


Release expanding rivet (1).

If necessary, unclip hose pipe (2).

Loosen the holder (3) at marked latch mechanisms and feed out.

carsdiagn.com



If necessary, feed the hose pipe for the headlight cleaning system and cable for ultrasonic sensors out as well.

Release expanding rivet (1).

Release ornamental grille (2) at latch mechanisms (3).

Feed out ornamental grille (2).

Installation note:
Catches (3) must not be damaged or missing.

cardiagn.com

51 11 050 Removing and installing/replacing support for front bumper panel

Necessary preliminary tasks:

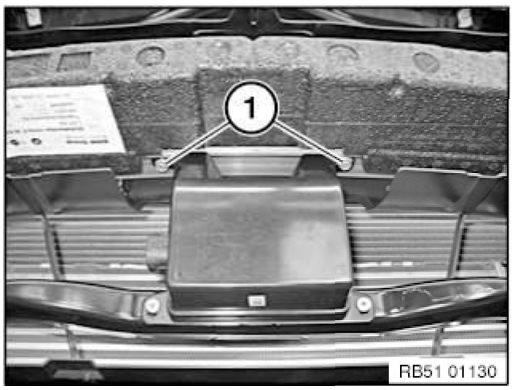
- Remove front bumper panel
- Remove the impact absorber from the support

Version with pedestrian protection:

- Remove impact absorber from support

F30 / F31 / F35 / F36 / F80 only:

- Remove right/left headlight



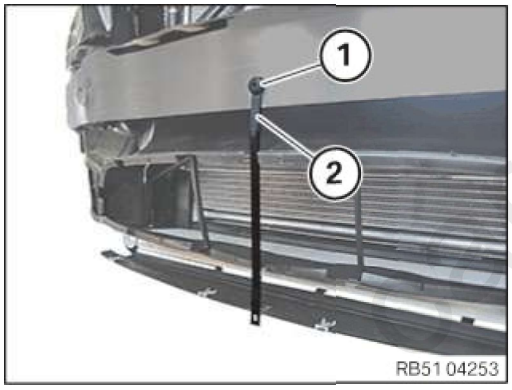
Version with ACC:

Release screws/blind rivet (1).

Installation note:
Blind rivet nuts* and associated screws* are used as repair solution for defective threads or installed blind rivet.

* Sourcing reference: BMW Parts Department.

Observe note on placing blind rivet nuts.



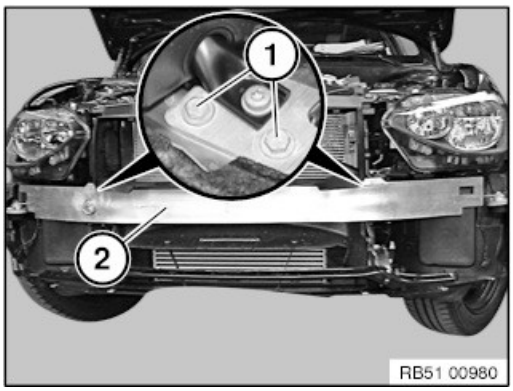
Only F82 GTS:

Release screw (1) and remove holder (2).

Tightening torque 51 11 6AZ.

Replacement:

Rework support.



Release screws (1) on left/right.

Tightening torque 51 11 4AZ.

Remove support (2) towards front.

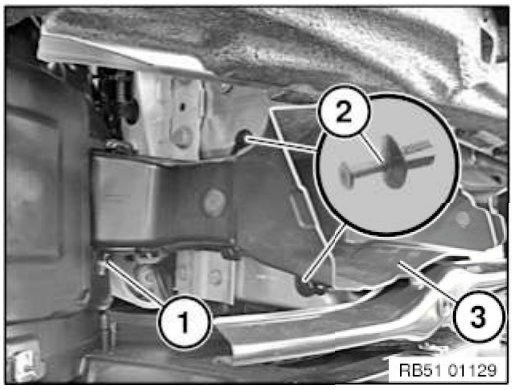
51 11 060 Removing and installing/replacing support for front lower bumper panel

Necessary preliminary tasks:

- Remove front bumper panel

F20/F21 only:

- Remove front underbody protection in the working area

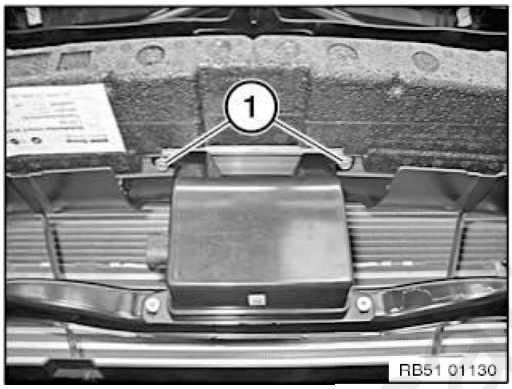


Version with air duct:

Unscrew bolts (1) and expanding rivet (2).

Remove air duct (3).

Note:
Schematic diagram shows the right side. Perform repair work on the left side in the same manner.



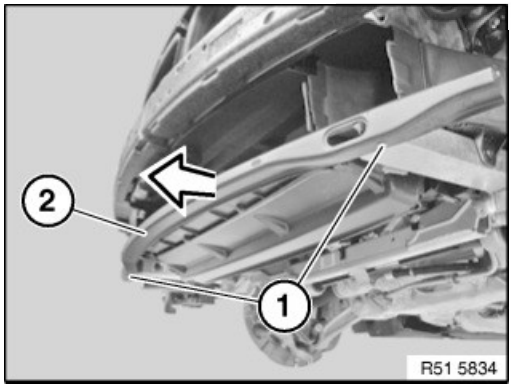
Version with ACC:

Release screws/blind rivet (1).

Installation note:
Blind rivet nuts* and associated screws* are used as repair solution for defective threads or installed blind rivet.

* Sourcing reference: BMW Parts Department.

Adhere to the notes on mounting blind rivet nuts.

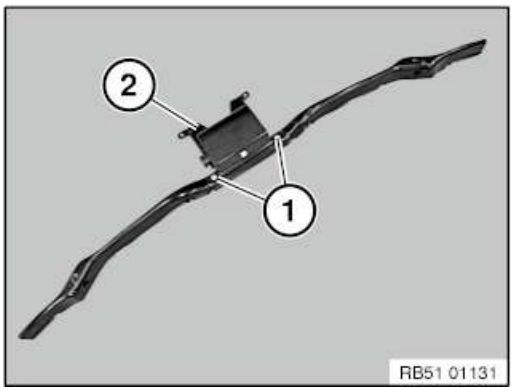


Release screws (1).

Tightening torque 51 11 10AZ.

Remove support (2) in direction of arrow.

cardiagn.com



In the case of replacement ACC version:

Drill out blind rivets (1).

Modify holder (2) with ACC sensor.

Adjust ACC sensor.

cardiagn.com

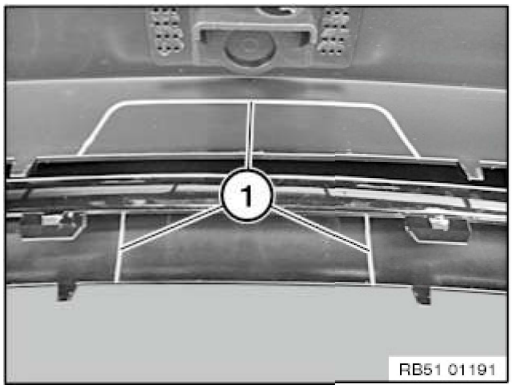
51 11 157 Replace bumper panel, front

Necessary preliminary tasks:

- Remount middle front radiator grille
- Remount ornamental grille for bumper panel (centre)
- Remount ornamental grille for bumper panel (side)
- Remount support for number plate
- Attach BMW badge
- Remount fixture for fog light

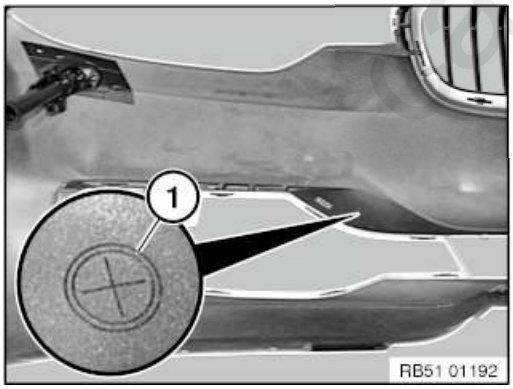
Depending on version:

- Punching holes for PDC/PMA/Side View Camera
- Install holder for PDC/PMA/side view camera
- Remount fog light
- Remount high-pressure nozzles and hose pipe
- Remount ultrasonic sensor and wiring harness
- Remount side view camera



Version with ACC:

Saw out bumper panel along mark (1).



Luxury Line model:

Drill bumper panel at mark (1).

cardiagn.com

51 11 ... Replace the holder for the PDC/PMA/side view camera

Necessary preliminary work:

- If necessary, remove the side view camera or ultrasonic sensor

Observe notes for bonding with adhesive tape.

The description of the work uses the example of a PDC holder.



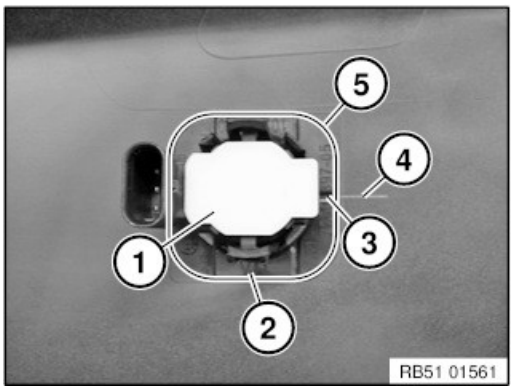
If necessary, completely remove the faulty holder and adhesive residue.

Lightly sand the adhesive area (1) with sandpaper.

Clean the adhesive area (1).



Insert the ultrasonic sensor (1) in the holder (2).



Attention!

Mount holder (2) according to its installation position. Note the label on the holder (2).

Align the visible notch (3) with the mark (4) and bond the holder (2) with the integrated ultrasonic sensor (1).

Fasten the holder (3) on the bumper panel in the area (5) on all sides with the adhesive kitK6.

cardiagn.com

51 11 158 Replacing base plate for number/license plate

Special tools required:

- 2 285 029
- 2 355 633
- 2 246 254
- 2 354 940

Only use the vehicle-specific number plate baseplate.

The installation of other license plate baseplates is not permissible.

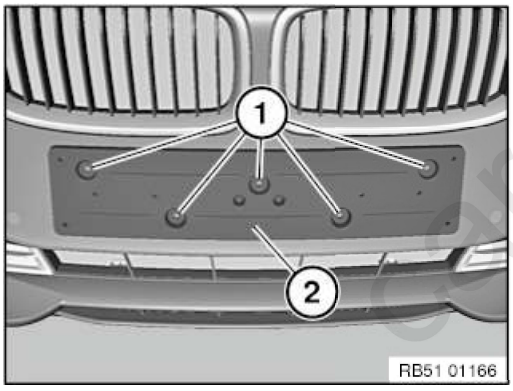
Refer to Service Information License plate attachment at front.

The number plate must be precisely mounted on the number plate baseplate.

If a number plate baseplate is not offered for the corresponding national-market version, the number plate must be screwed directly onto the bumper using a drilling template.

Incorrect assembly leads to a malfunction of the sensors of the driver assist systems.

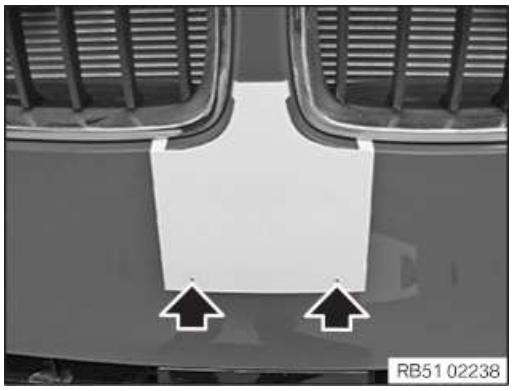
Schematic diagram is example of F32 Europe national-market version.



Release screws (1).

Tightening torque 51 11 8AZ.

Remove holder (2) towards front.



If replacing bumper:

Place template against bumper and align.

Mark the holes for the number plate baseplate on the bumper.

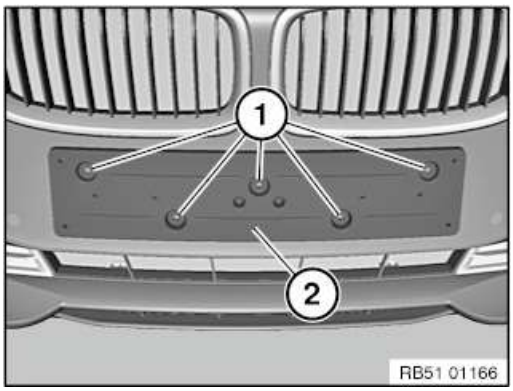
Drill out marks on bumper to 10 mm.

Note:
Use the template only for the purpose of marking the hole positions.

Use only the drilling template prescribed for the specific model series:

F32/F33/F36 Series	2 285 029
F32/F33/F36 M Aerodynamic package	2 355 633
F34 Series	2 246 254
F34 M Aerodynamic package	2 354 940

cardiagn.com



Attach support (2) to bumper and insert screws (1).

Tightening torque 51 11 8AZ.

cardiagn.com

51 11 773 Replacing front lower left or right deformation element

Operation is described in:

Removing and installing/replacing front left or right deformation element for bumper panel.

cardiagn.com

51 00 ... Overview of consumables (Electronic Parts Catalogue)

Designation, repair instructions	Designation, Electronic Parts Catalogue	Part number, Electronic Parts Catalogue	Remarks
Cleaning agent R2	Cleaning agent R2	83 19 0 417 324	500 ml
Lubricants G14	Lubricants G14	83 23 2 360 412	900 ml / Notes
Sika Activator 205	Aktivator 205	83 19 0 030 155	250 ml
Yellow plastic adhesive tape	Adhesive tape	83 19 9 410 979	A = 66 mm; B = 50 mm
Double-sided adhesive tape	Adhesive tape	54 11 2 290 978	L = 50 mm/W = 12 mm
Masking tape	Masking tape	81 22 9 400 181	L = 50 mm / W = 19 mm
Masking tape	Masking tape	81 22 9 400 388	L = 50 mm / W = 30 mm
Eraser disk	Scotch Brite eraser disk	51 91 0 402 946	with shaft
Cutting cord	Cutting cord	81 43 2 344 272	Notes
Adhesive set K6	Adhesive set K6	83 19 2 317 925	
Window glass adhesive	Window glass adhesive, cold, 1 hour	83 19 2 289 286	
Profile rubber adhesive		83 19 2 232 322	
Set of felt pads	Set of felt pads	51 45 2 353 024	

cardiagn.com

51 12 156 Removing and installing rear bumper panel

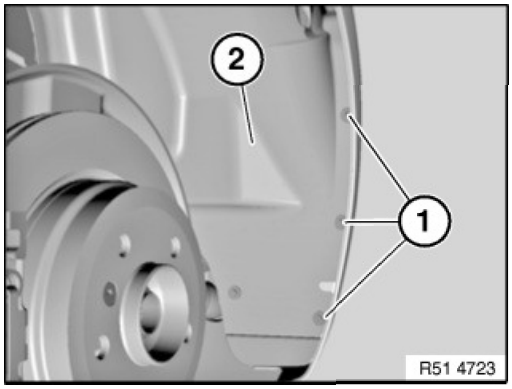
Caution!

To ensure the system function in vehicles with sensor for lane change warning (optional equipment S5ASA and S5ATA), do not repaint the bumper panel in paint stage 1 or paint stage 3.

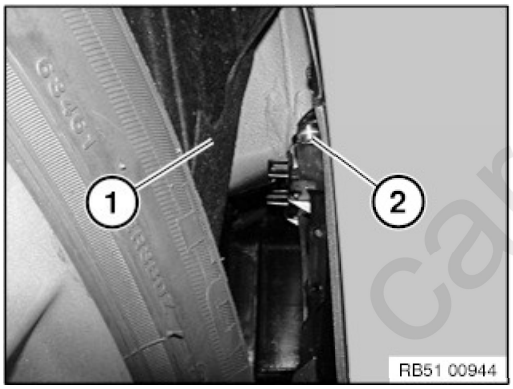
Do not attach labels in the sampling range of the sensor.

Necessary preliminary work:

- Remove the water channel trim left/right



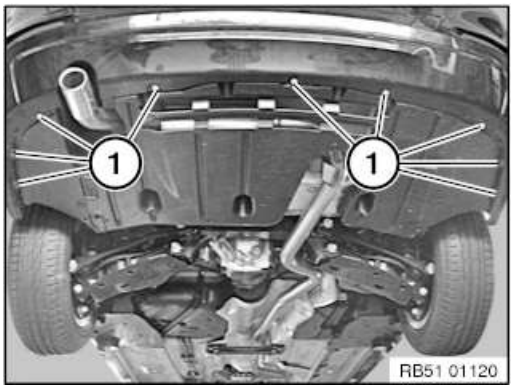
Release screws (1) on wheel arch cover (2) on left/right.



Fold back wheel arch cover (1).

Release screw (2).

Tightening torque 51 12 4AZ.

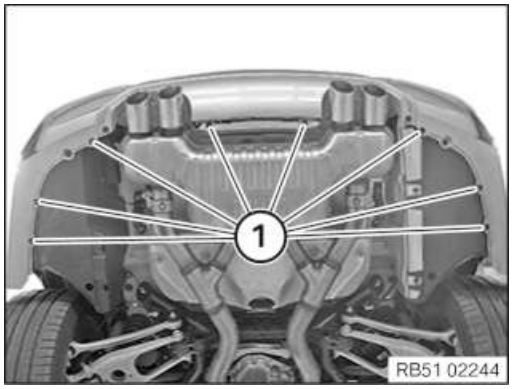


Except for F80/F82:

Release screws (1).

Tightening torque 51 12 6AZ.

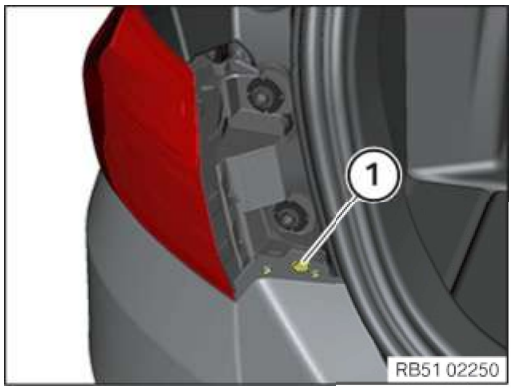
cardiagn.com



Only F80/F82:

Release screws (1).

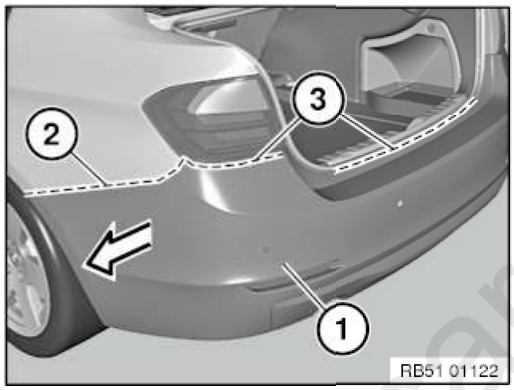
Tightening torque 51 12 6AZ.



Release screw (1).

Tightening torque 51 12 5AZ.

Note:
Carry out work on the right side in the same way as for the left side illustrated here.



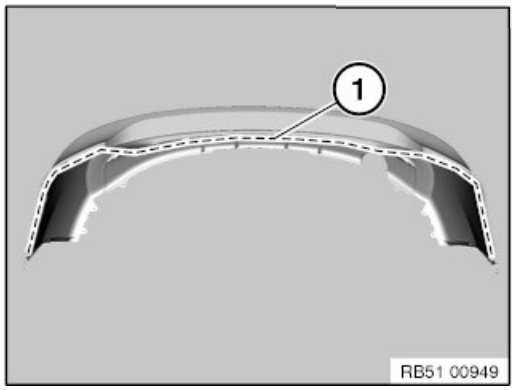
Note:
The following tasks must be carried out with a second person assisting:

Unclip the bumper panel (1) in the area (2) left/right outward.

Unclip bumper panel (1) in area (3) toward the rear.

If necessary, disconnect the plug connections of the ultrasonic sensors and remove the bumper panel (1).

Installation note:
Latch mechanisms in this area (2 and 3) must be routed correctly into the corresponding holders.



Installation note:
Latch mechanisms and guides (1) must not be damaged or missing.

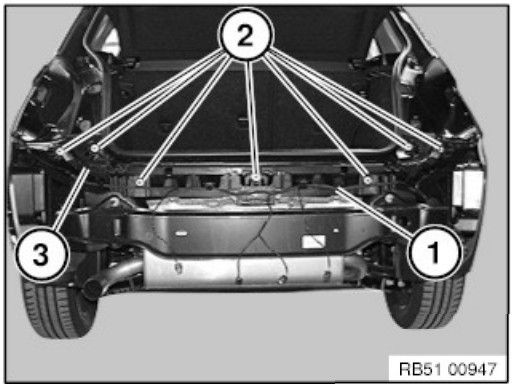
Replace defective sheet metal nuts left/right.

cardiagn.com

51 12 825 Removing and installing/replacing guide for rear centre bumper panel

Necessary preliminary tasks:

- Remove rear bumper trim

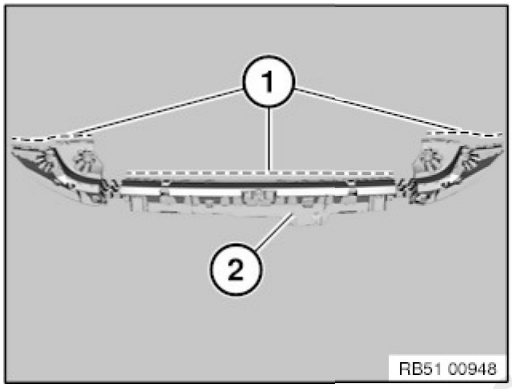


Feed out cable (1).

Unscrew nuts (2).

Tightening torque 51 12 2AZ.

Remove guide (3).



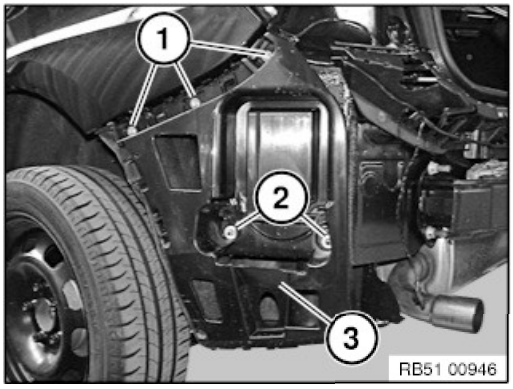
Installation note:
Latch mechanisms (1) of guide (2) must not be damaged or missing.

cardiagn.com

51 12 828 Removing and installing/replacing guide for the bumper panel, rear left or right

Necessary preliminary tasks:

- Remove rear bumper trim



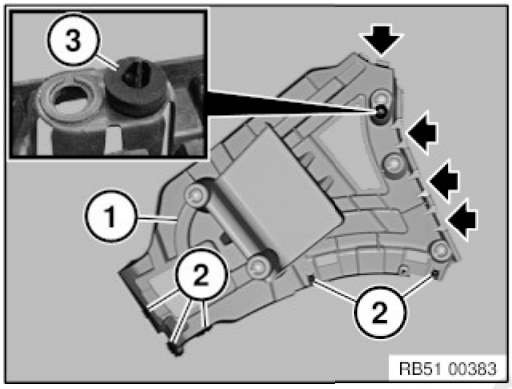
Release screws (1).

Tightening torque 51 12 3AZ.

Unscrew nuts (2).

Tightening torque 51 12 3AZ.

Remove guide (3).



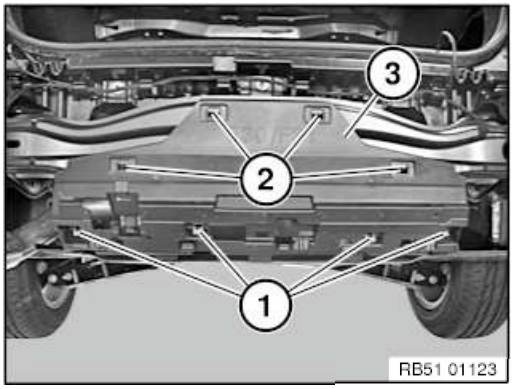
Installation note:
Latch mechanisms (2) and gasket (3) of the guide (1) must not be damaged or missing.

cardiagn.com

51 12 050 Removing and installing/replacing support for rear bumper panel

Necessary preliminary tasks:

- Remove bumper panel



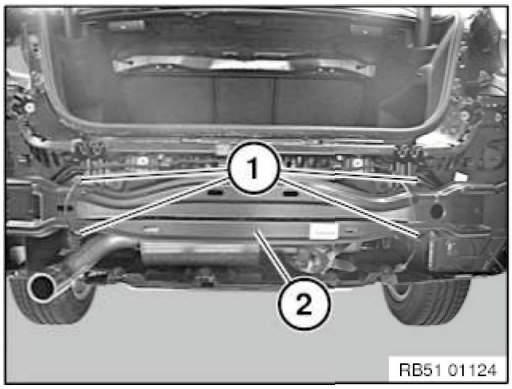
Depending on version:

- Unscrew screws (1).
- Unlock and disconnect plug connection on Smart Opener control unit and bumper aerial

Loosen the latch mechanisms (2) at reinforcement (3).

Remove reinforcement (3).

Installation note:
Catches (2) must not be damaged or missing.



If necessary, feed out cable.

Unscrew nuts (1).

Tightening torque 51 12 1AZ.

Remove support (2).

cardiagn.com

51 12 157 Replace rear bumper panel

Attention!

To ensure the system function in vehicles with sensor for lane change warning (optional equipment S5ASA and S5ATA), do not repaint the bumper panel in paint stage 1 or paint stage 3.

Do not attach labels in the sampling range of the sensor.

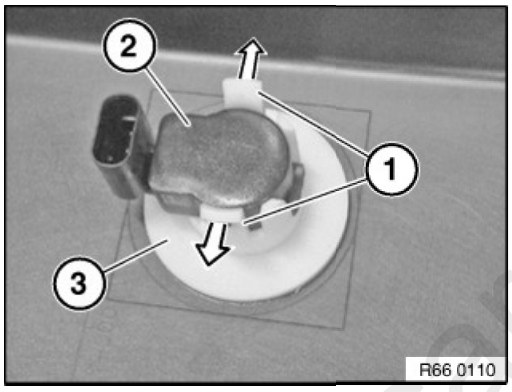
Follow the further instructions according to painting manual.

Necessary preliminary work:

- Remove bumper panel
- Remount the cover for the towing eye
- If necessary, punch holes for ultrasonic sensors
- If necessary, install holder for ultrasonic sensors
- Remount rear reflectors

Only F80/F82:

- Remount the cover on the rear bumper trim panel.
- Remount the non-contact tailgate opening.

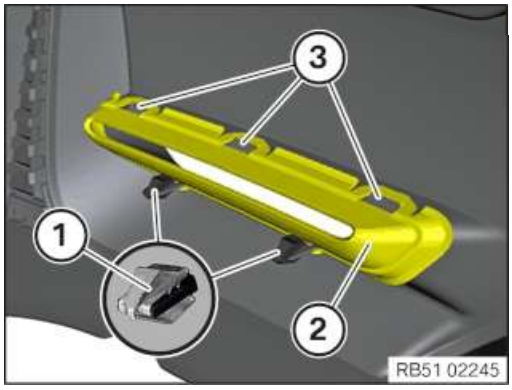


Execution with PDC:

Unlock retaining tabs (1) in direction of arrow and pull ultrasonic sensor (2) up and out of bracket (3).

Installation note:
Before installing the ultrasonic sensor (2), clean the plug connections.

Retaining tabs (1) must not be damaged!



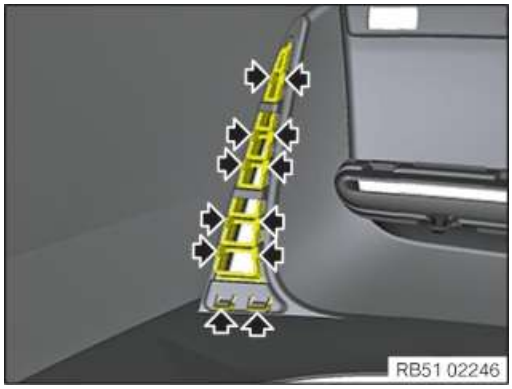
Only for F80/F82:

Loosen clamps (1).

Release the air duct (2) at latch mechanisms (3) and remove.

Note:
Carry out work on the left side in the same way as for the right side illustrated here.

cardiagn.com



Only for F80/F82:

Release the air duct at latch mechanisms and remove.

Note:
Carry out work on the left side in the same way as for the right side illustrated here.

cardiagn.com

51 13 116 Removing and installing cowl panel cover \PREMIUM

PRELIMINARY WORK

1 – Remove both wiper arms.

RISK OF DAMAGE

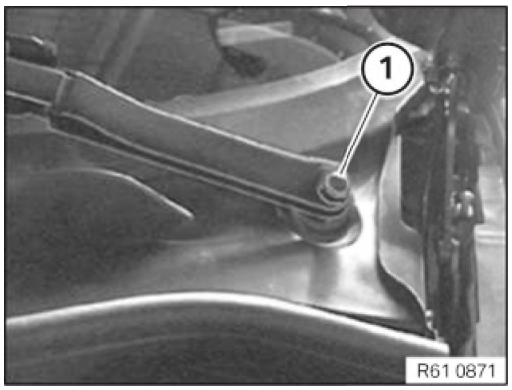
Damage to wiper console

While removing the wiper arms without using special tool, the wiper console can break.

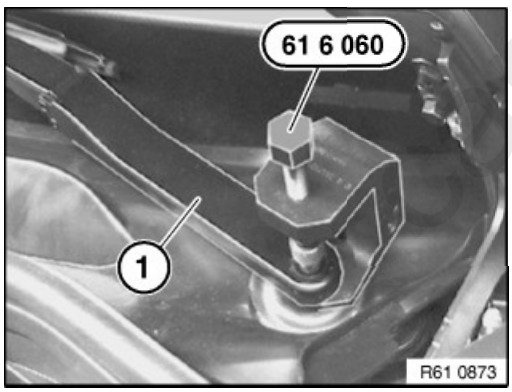
- Removing the wiper arms must be carried out only using the prescribed special tool.
- Do not lift off wiper arm, else the wiper console may break on the predetermined breaking point for the pedestrian protection.

NOTICE

Description is for left component only. Procedure on the right side is identical.

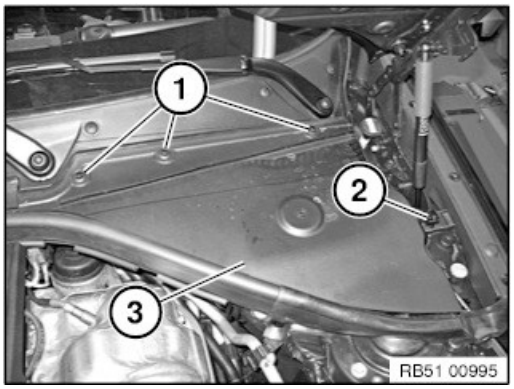


- Remove the protective cap (1).
- Unscrew the nut below it.



- Make sure that the wiper arm (1) is not bent during removal.
- Pull off the wiper arm (1) using special tool .

2 – Remove the cover in the left engine compartment

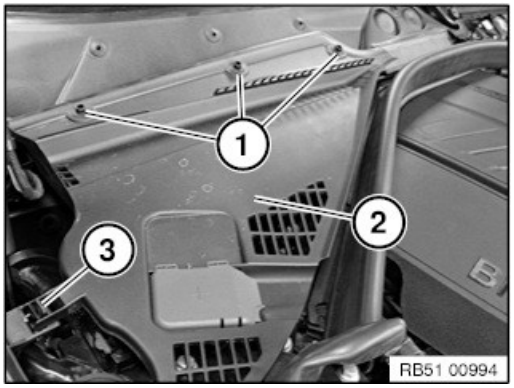


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Loosen the mounting elements (1).
- Unlock the latch mechanism (2).
- Remove the cover (3).

3 – Remove the right cover in the engine compartment



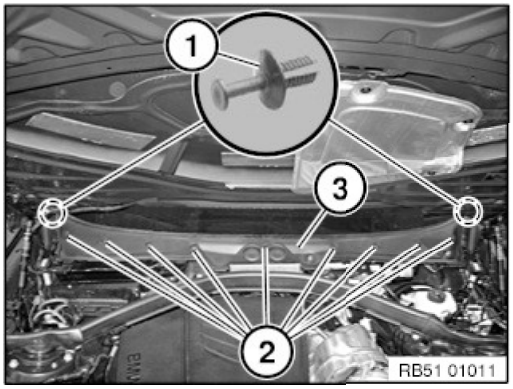
NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Loosen the mounting elements (1).
- Unlock the latch mechanism (3).
- Remove the cover (2).

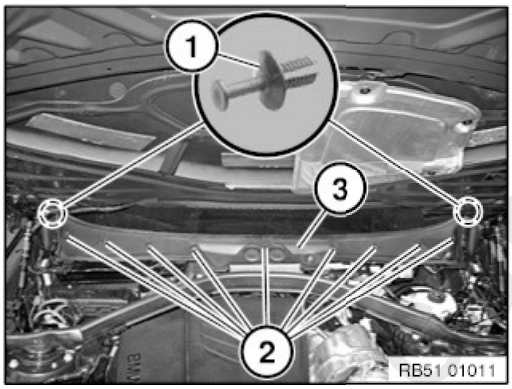
MAIN WORK

4 – Remove cowl panel cover



- Loosen the expanding rivets or clips (1) on the left and right.
- Twist the snap fasteners (2) counter-clockwise by approximately 90°.
- Remove the cowl panel cover (3) towards the top.

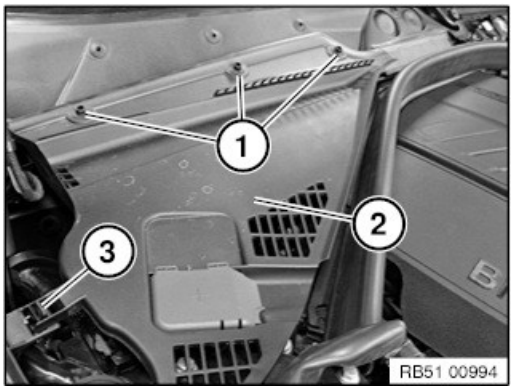
5 – Attaching cowl panel cover



- Check the expanding rivets or clips (1) for damage and replace if necessary.
- Check the cowl panel cover (3) for correct fit.
- Close the snap fasteners (2) beginning from the centre.

  The snap fasteners are closed correctly when the arrow tips point to each other.

6 – Installing the cover in the engine compartment on the right

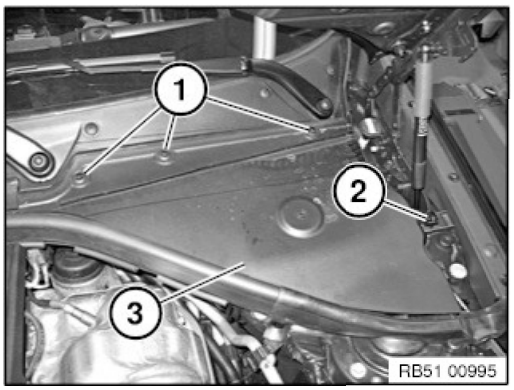


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Position the cover (2).
- Lock latch mechanism (3).
- Attach the mounting elements (1).

7 – Installing the cover in the engine compartment on the left



NOTICE

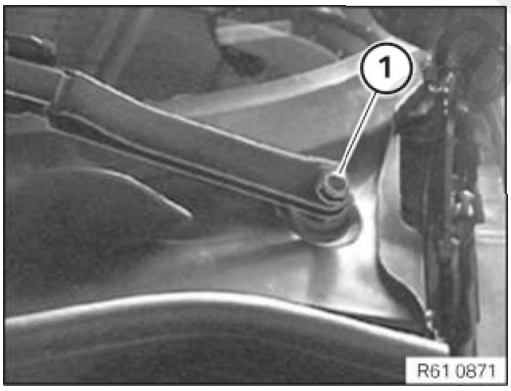
Schematic diagram is for example purposes. Some parts may differ in certain details.

- Position the cover (3).
- Lock latch mechanism (2).
- Attach the mounting elements (1).

8 – Install both wiper arms

NOTICE

Description is for left component only. Procedure on the right side is identical.



- Position the wiper arm.
- Tighten nut.

Windscreen wiper arm

			35 Nm

- Connect the protective cap (1).

Additional Information

Overview of Tightening Torques

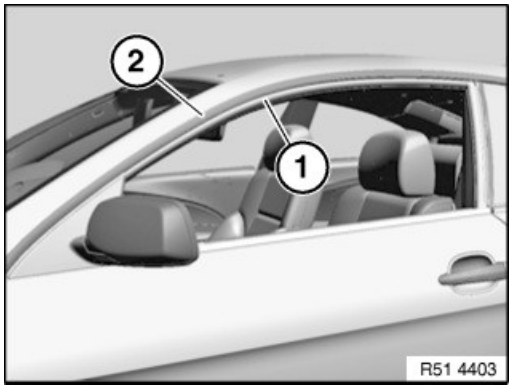
Windscreen wiper arm Used in step 8

			35 Nm

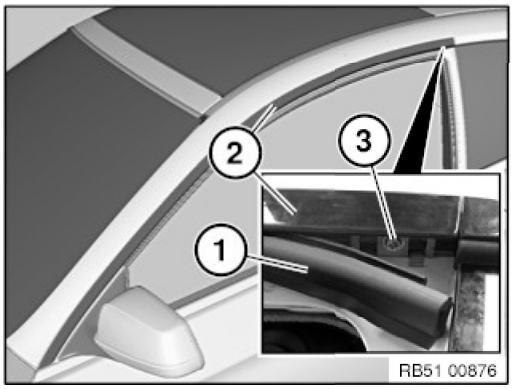
Overview of Special Tools

cardiagn.com

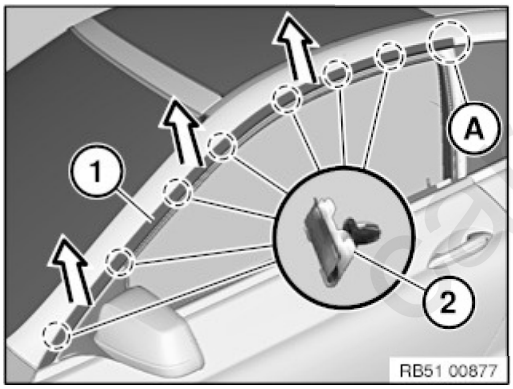
51 13 316 Removing and installing or replacing trim strip on roof gutter at left or right



Pull off edge protection (1) in area of trim strip (2).



Slightly pull gasket (1) out of trim strip (2) and release screw (3).



Important!

Risk of damage!

Do not unclip trim strip upwards (1) in area (A).

Pull off trim strip (1) from clamps (2) in direction of arrow starting at the front.

Pull off trim strip (1) from rear trim strip in direction of travel in area (A).

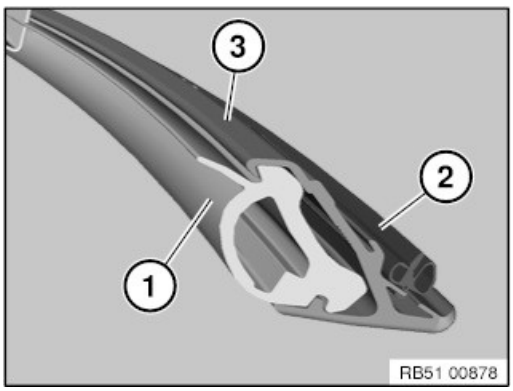
Installation note:

To avoid leaks and noises, check all clips (2) for visible damage.

If necessary, replace faulty clamps (2).

Firstly slide trim strip (1) in area (A) into rear trim strip.

Trim strip (1) must be free of gaps to rear trim strip in area (A).



Installation note:

Make sure gasket (1) and welt (2) are correctly seated on trim strip (3).

Gasket (1) and welt (2) must not be damaged.

Replacement:

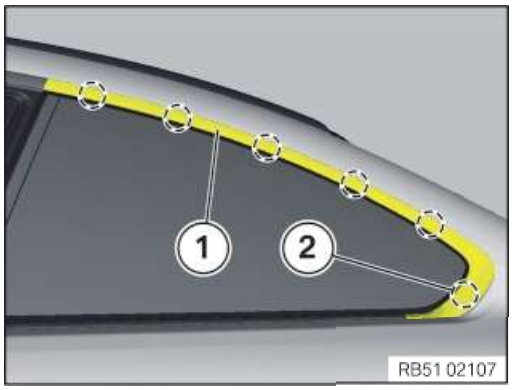
If necessary, modify gasket (1 and 2).

eadiagn.com

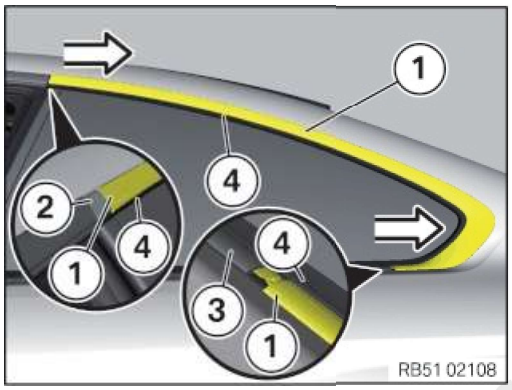
51 13 319 Removing and installing or replacing trim strip on roof gutter strip at rear left or right

Necessary preliminary work:

- Release rear section of trim strip on gutter strip (do not remove)



Lift out trim strip (1) from latch mechanisms (2).



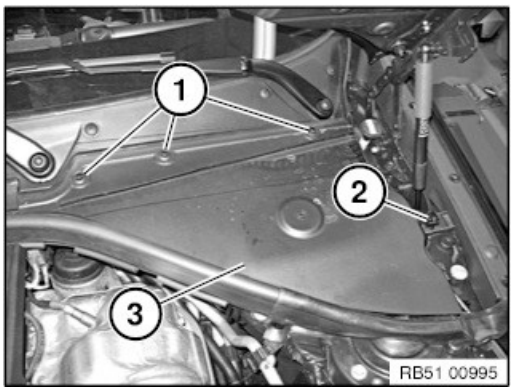
Pull trim strip (1) in direction of arrow out of guide (2) and of strip (3).*Installation note:*
Coat sealing (4) of side window with water.

First feed in trim strip (1) into guide (2) and strip (3), then engage in sealing (4).

Sealing (4) must not be trapped by trim strip (1) (risk of damage).

cardiagn.com

51 13 ... Removing and installing/replacing cover in engine compartment on left or right

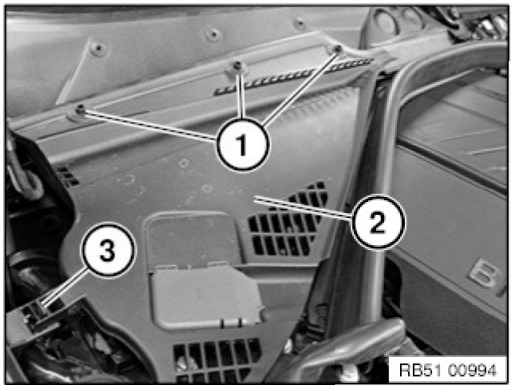


Left side:

Turn locks (1) 90° counterclockwise.

Unlock catch (2).

Remove cover (3).



Right side:

Turn locks (1) 90° counterclockwise.

Unlock catch (3).

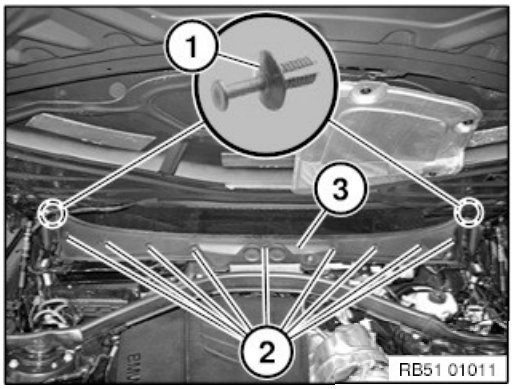
Remove cover (2).

cardiagn.com

51 13 116 Removing and installing/replacing cowl panel cover

Necessary preliminary tasks:

- Remove both windscreen wiper arms.
- Remove cover in engine compartment on the left and right



Release expanding rivets/clips (1) on left/right.

Turn snap fastener (2) approx. 90° counterclockwise.

Lift out cover (3).

Installation note:
Replace damaged expanding rivets/clips (1).

Check cover (3) for correct fit.

Close snap fasteners (2) from the middle.

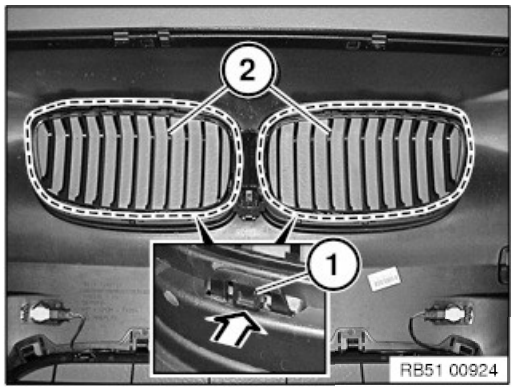
The fastener is closed if the arrow tips point to each other.

cardiagn.com

51 13 001 Removing and installing/replacing front radiator grille, middle left or right

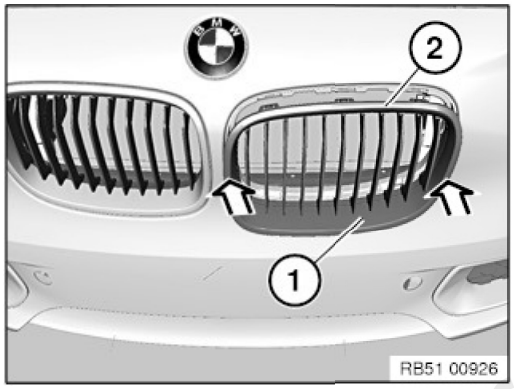
Necessary preliminary tasks:

- Remove front bumper panel



Release all retainers (1).

Remove front radiator grille (2) towards front.



Installation note:
All catch mechanisms and guides on the front radiator grille (2) may be neither damaged or missing.

Press on chrome ring to push front radiator grille (1) into bumper trim.

Fixtures must be correctly locked.

cardiagn.com

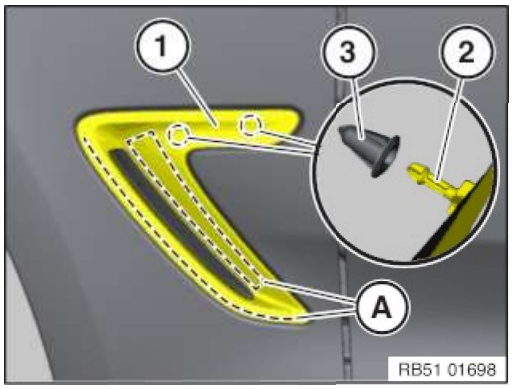
51 13 045 Removing and installing/replacing front side panel trim on left or right

Special tools required:

- 00 9 327

The trim is secured with double-sided adhesive tape and can not be reused after disassembly.

Observe notes for securing components with adhesive tape.



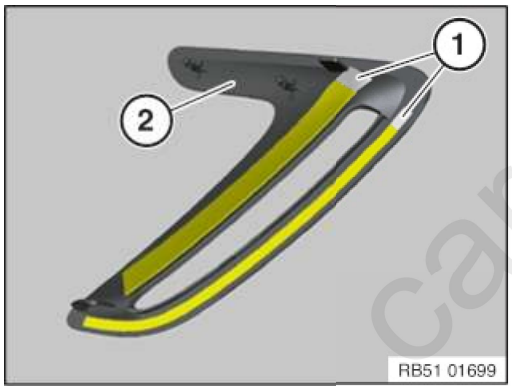
Tape off side panel above trim (1) with yellow plastic adhesive tape.

Release trim (1) from latch mechanisms (2) with special tool 00 9 327 .

Release double-sided adhesive tape in area (A) and remove trim (1).

Installation note:
Replace faulty clips (3).

Clean bonding surface.



Installation note:
Pull off liner (1).

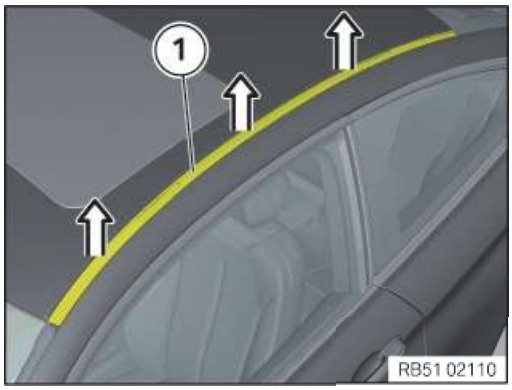
Place trim (2) on side panel, clip in at top and press down evenly on adhesive tape.

cardiagn.com

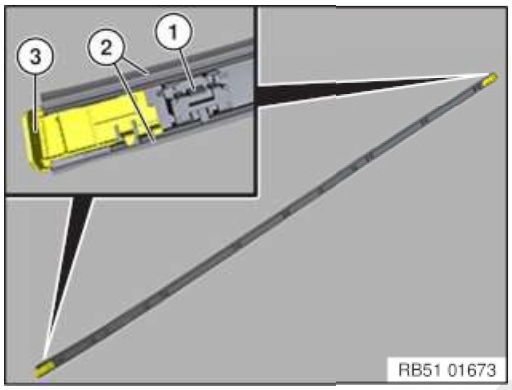
51 13 280 Removing and installing/replacing trim strip on roof frame at left or right

Special tools required:

- 00 9 321



Lift out trim strip (1) with special tool 00 9 321 in direction of arrow starting at the front.



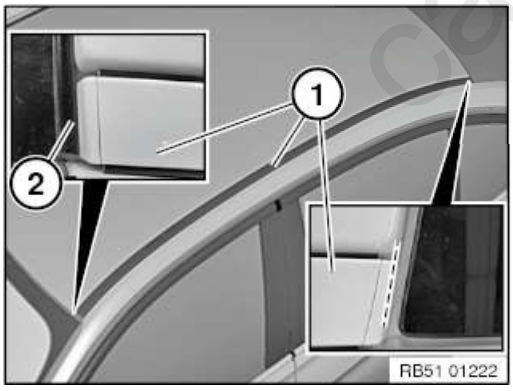
Installation note:
Clips (1), gaskets (2) and end caps (3) must not be damaged or missing.

The positions of the clips (1) are determined with the tabs on the body.

Place the trim strip onto the roof loosely and check if clips (1) are correctly positioned with the tabs on the roof.

Replacement:

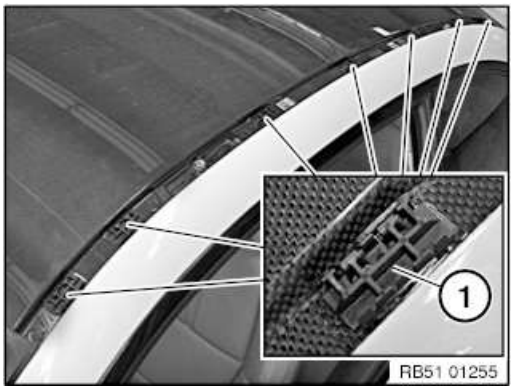
Do not attach clips (1) until the trim strip has been painted.



Installation note:
Trim strip (1) must be flush with roof outer skin (1 ±1 mm) at front and rear.

Gasket (2) must be correctly positioned against trim strip (1).

cardiagn.com



For equipment specification with CFRP roof:

If necessary, replace damaged clips (1).

Adhere to a minimum temperature of 18 °C for the roof outer skin and clips.

Clean bonding surfaces using solvent cleaner R1 or R2.

Apply a thin layer of Sika Activator 205 on the bonding surfaces.

Air drying time: ≥2 minutes.

Observe notes for securing components with adhesive tape.

Label the clips (1) to the roof within the embossings.

Minimum contact pressure can be achieved by pressing firmly with thumb or ball of hand (pressing for at least 2 seconds).

Installation note:
Firmer pressure and longer time increase strength.

Trim strip must be attached only after 4 hours of hardening time.

cardiagn.com

51 14 ... General notes for labelling with adhesive films

In the event of a repair the adhesive films must be partially or completely replaced. The basic procedure for all areas of the vehicle is described below.

In addition, vehicle-specific repair instructions are available.

1. Preparation:

Wash and dry vehicle. Rework with compressed air as required in area of joints.

Clean complete component surface with glass cleaner (BMW part number 83 12 0 396 775). Also clean the inside of the component in areas, in which adhesive films are applied.

Only carry out repair work with clean hands!

Important!

Labels can only be applied to recently painted components after a waiting period of **2 weeks**. The paint hardening is only fully completed after this time.

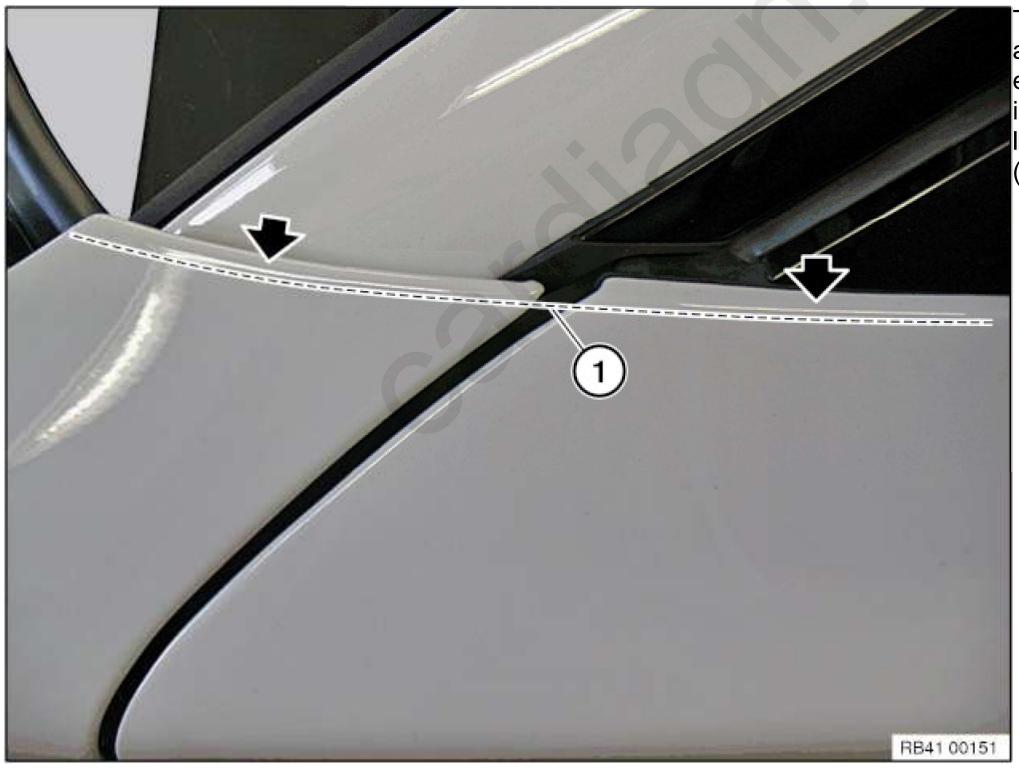
2. Procedure for applying labels:

All adhesive films in the repair kit are marked with numbers. Prepare the required plastic films prior to start of repairs.

The templates included in the repair kit assist orientation. A straight line running over the different components is the top priority.

Pull off the templates positioning of the adhesive films.

Only throw away templates after completion of all repair work, as some templates are used several times.



Templates are always applied along the light edge (1). The light edge is the reflection of the light source in radius (see arrow).

Roughly align the adhesive film using a template.

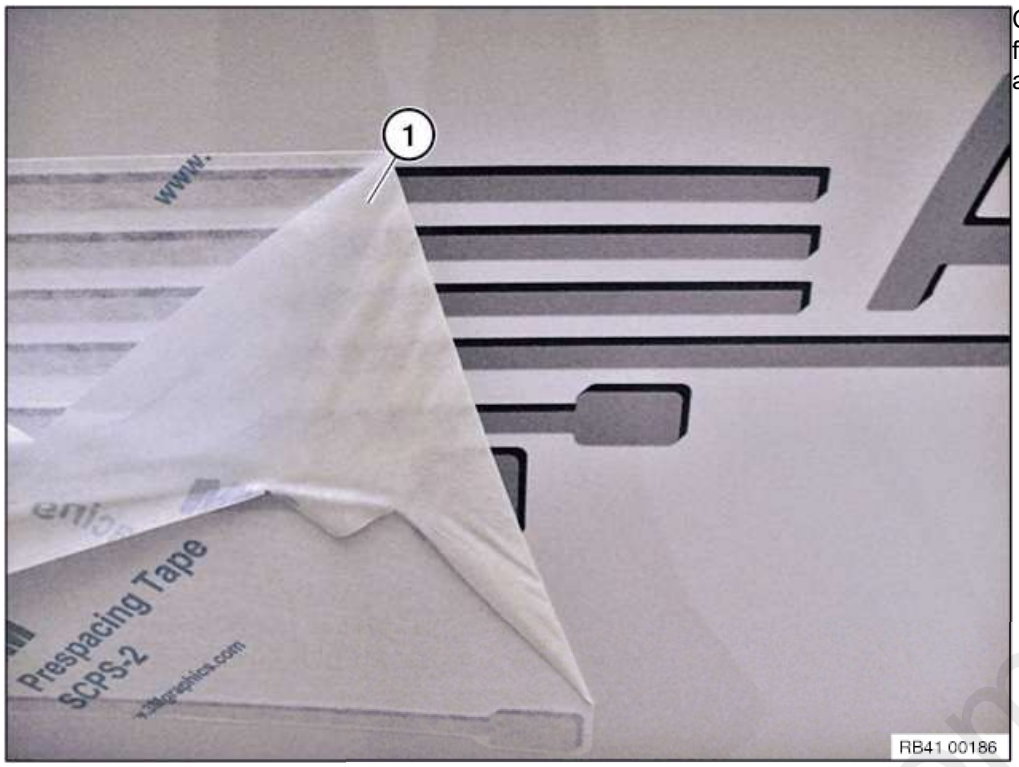
For large adhesive films, pull off the first 20 cm of protective film and fold back the edge.

Align and lightly press down the adhesive film. Use only one finger for this and not the entire hand so that air pockets are unable to form under the adhesive film.

Pull off the remaining protective film and press down the adhesive film from front to rear and from inside to outside.

If faults are made in applying the adhesive film, it can be pulled off and repositioned several times. When no further corrections have to be made, use a squeegee to press down the adhesive film firmly from inside to outside.

Lay protruding ends of the adhesive film around the component edge and press down firmly.



Carefully pull off backing film (1) at an acute angle.

cardiagn.com

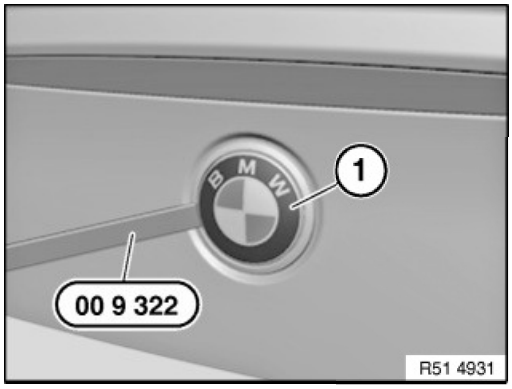
51 14 010 Removing and installing/replacing rear BMW badge

Special tools required:

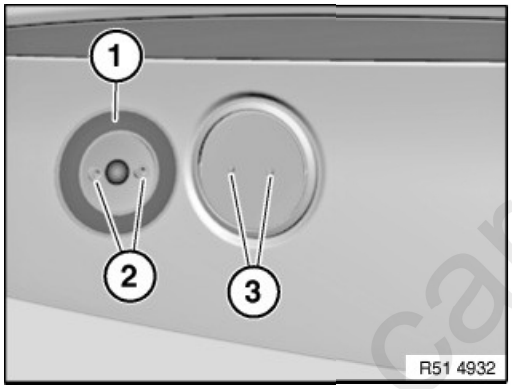
- 00 9 322

Important!

The notes on component bonding with double-sided adhesive tape serve as the basis for this repair instruction and must be observed without fail.



Carefully heat BMW badge (1) with hot air blower and lever out with special tool 00 9 322 .



Installation note:
Pull liner* off adhesive tape (1).

Position plate over guides (2 and 3) and press down firmly.

* Liner is the protective film on a new badge.

cardiagn.com

51 14 008 Replacing letter/number combination on front left or right side panel

General procedure is described in:

"Replacing rear model designation"

Use same procedure as for the front side panel.

cardiagn.com

51 14 111 Replacing model name plate, rear

Note:
This document describes a general procedure for replacement and new bonding of model designations/lettering using the 335i (F30) as an example.

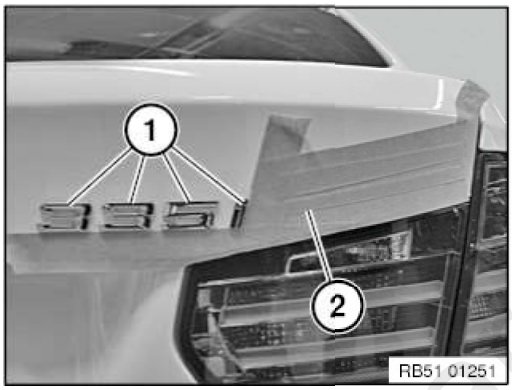
The procedure can be used for all models, positions and installation locations.

The model designation is attached with adhesive and can not be reused.

Refer to instructions for securing components with adhesive tape!

Consumables:

Cutting cord
Masking tape 19 mm or 30 mm
Yellow plastic adhesive tape
Eraser disk
Cleaning agent R2



Replacing model designation (new or newly painted tailgate):

Note:
Transfer position of model designation (1) from old tailgate by making an adhesive tape template.

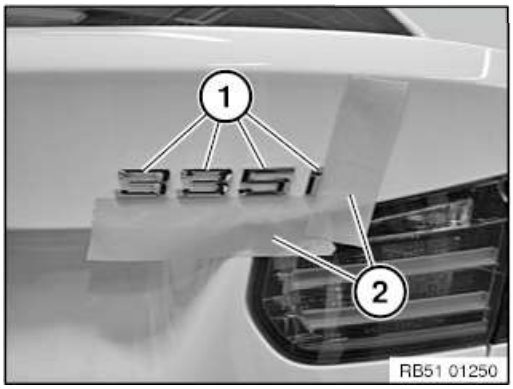
For paintwork, keep adhesive tape template up to installation.

Stick masking tape (2) to nearby reference edges of tailgate and therefore determine position of model designation (1).

Pull off masking tape (2) completely and stick to same reference edges of new/painted tailgate.

Check position, realign if required.

Refer to "**Installation**" operation for further procedure.



Replacing model designation:

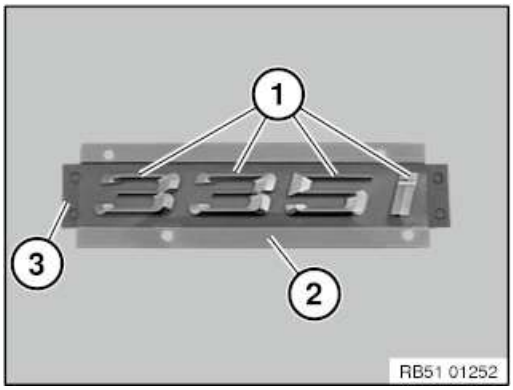
Mark position of model designation (1) with yellow plastic adhesive tape (2).

Coat separating string or strong yarn with tensides (e.g. washing-up liquid).

Cut through adhesive layer and remove model designation (1).

Refer to "**Installation**" operation for further procedure.

cardiagn.com



Installation:

If required, remove adhesive layer residues with grinding wheel and/or cleaning agent R2.

Clean the adhesive area.

Number and letter combinations (1) of the model designation are not connected to each other and are supplied on a backing film (2).

Remove liner (3) (protective film for bonding surface).

Place model designation at marked position and press down firmly.

Remove backing film (2) and template.

cardiagn.com

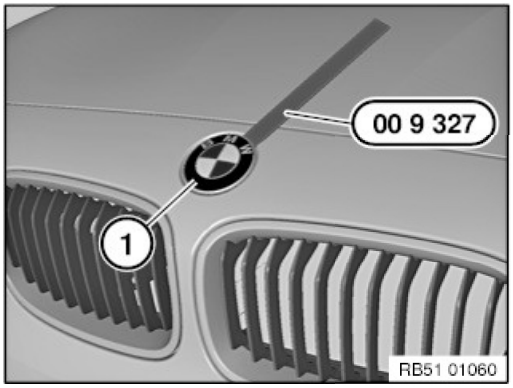
51 14 001 Replacing the front BMW badge

Special tools required:

- 00 9 327

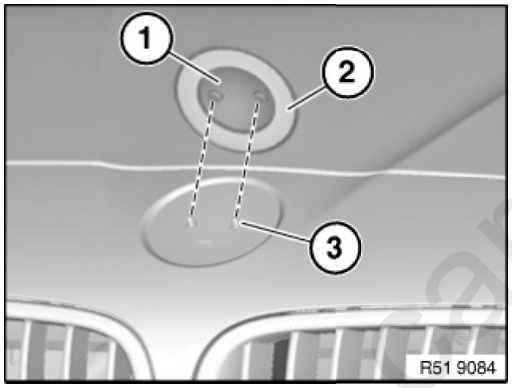
Important!

The notes on component bonding with double-sided adhesive tape serve as the basis for this repair instruction and must be observed without fail.



Tape off working area around the BMW badge (1) with adhesive tape.

Carefully warm up the BMW badge (1) with a hot air blower (temperature approx. 40 - 55 °C) and lift it out with the special tool 00 9 327 .



Installation note:
Pull liner* off adhesive tape (2).

Position BMW badge (1) over guides (3) and press down firmly.

* Liner is the protective film on a new plate.

cardiagn.com

51 16 ... Calibrating the compass on the inside mirror

Note:
It may be necessary to alter the magnetic deflection zone if the vehicle is more than two ranges away from the set deflection zone.

For numbers of magnetic deflection zone, refer to operating instructions.

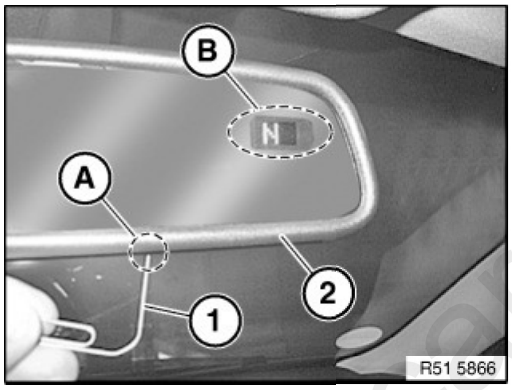
It may be necessary to calibrate the compass if:

- ”C” appears in compass display
- there is no compass display
- not all compass directions are displayed correctly

Different time-based adjustment menus can be obtained by means of the control button:

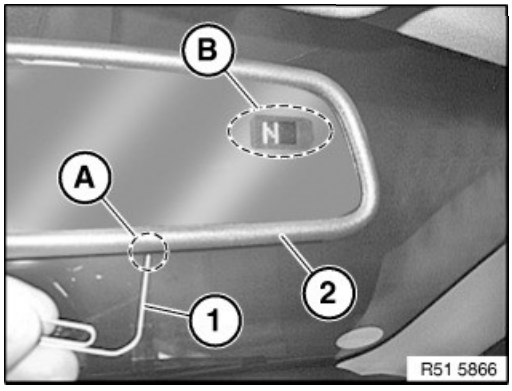
- 0 to 3 seconds: Display ON/OFF
- 3 to 6 seconds: Adjustment of the magnetic field zones (0 -15)
- 6 to 9 seconds: Calibration (C)
- 9 to 12 seconds: Right-hand drive or left-hand drive vehicles (R or L)
- 12 to 15 seconds: English or German (E or O)

For further information, see System description.



Adjusting magnetic field zone:

- Press and hold down control button (A) on inside mirror (2) with a suitable tool (1) for 3--6 seconds. The currently set magnetic field zone is indicated in the compass display (B) (default setting ”8” for Central Europe). Release control button (A) briefly and select magnetic field zone (1-15) by pressing control button (A) again. Release setting button (A) when the desired magnetic field zone is selected. The selection menu is automatically exited after approx. 5 seconds.
- **The compass must be recalibrated after the magnetic field zone has been changed.**

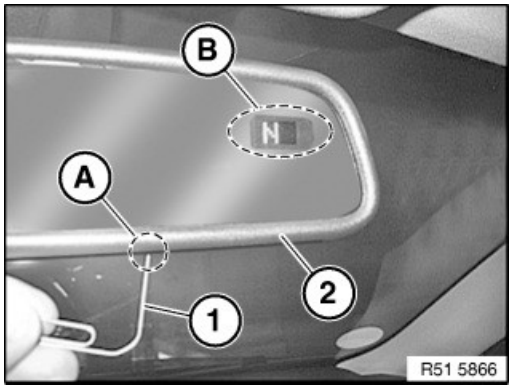


Calibrating compass:

- Press and hold down setting button (A) on inside mirror (2) for 6-9 seconds. Release setting button (A) as soon as ”C” is indicated in the compass display (B).
- Drive vehicle 2 to -3 times in a full circle at approx. 7-10 km/h. The circle must be at least twice the vehicle's turning circle. Calibration is complete as soon as a valid direction is displayed.
- For convertibles and vehicles with hardtops only:

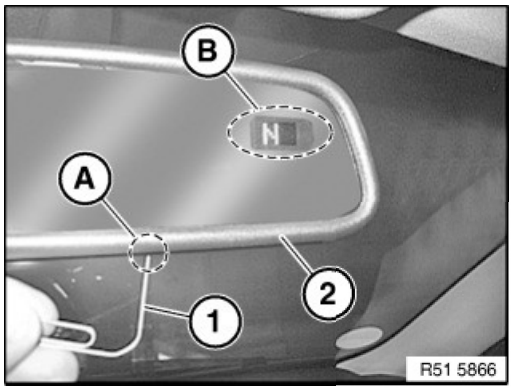
  The digital compass must be calibrated once with the soft top or hardtop closed and once with the soft top or hardtop open.

cardiagn.com



Setting right-hand drive or left-hand drive vehicle:

- Press and hold down control button (A) on inside mirror (2) for 9-12 seconds. The currently set vehicle type is indicated in the compass display (B) (default setting "L" for left-hand drive vehicle). Release setting button (A) briefly and select vehicle ("L" or "R") by pressing setting button (A) again. Release setting button (A) when the desired vehicle type is selected. The selection menu is automatically exited after approx. 5 seconds.
- **The compass must be recalibrated after the right/left hand drive vehicle setting is made.**.

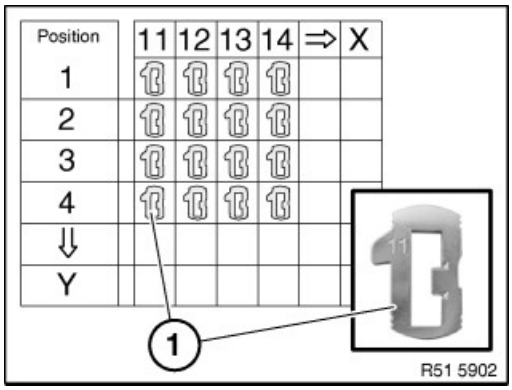


Setting language of compass display:

- Press and hold down control button (A) on inside mirror (2) for 12--15 seconds. The currently set language is indicated in the compass display (B) (default setting ”E” for English). Release setting button (A) briefly and select language (E for English or O for German) by pressing setting button (A) again. Release setting button (A) when the desired language is selected. The selection menu is automatically exited after approx. 5 seconds.

cardiagn.com

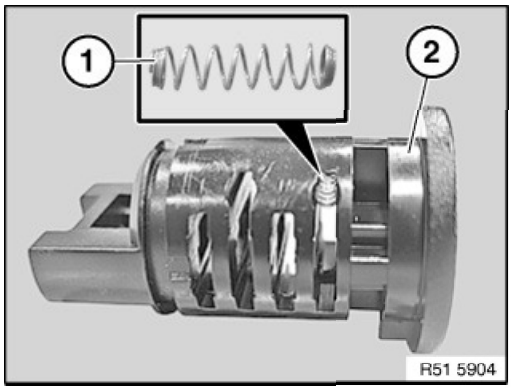
51 16 992 Disassembling and assembling lock barrel (lock barrel removed)



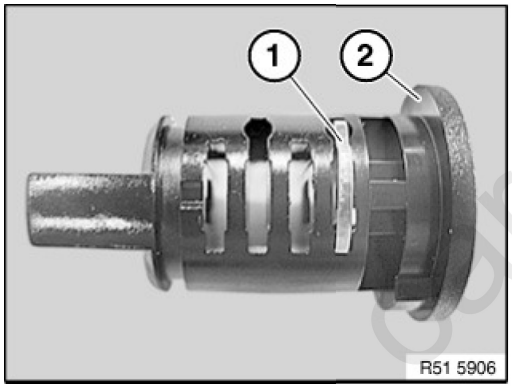
Sort supplied retainers (1) according to graphic.

(X) Embossed number on retainer (1)

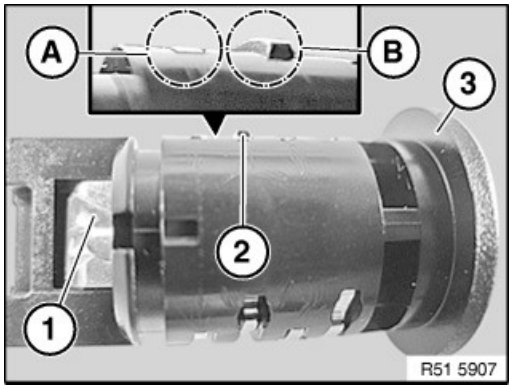
(Y) Installation position in lock barrel



Insert spring (1) into first position of lock barrel (2).*Note:*
Lock barrel version (2) differs according to vehicle.



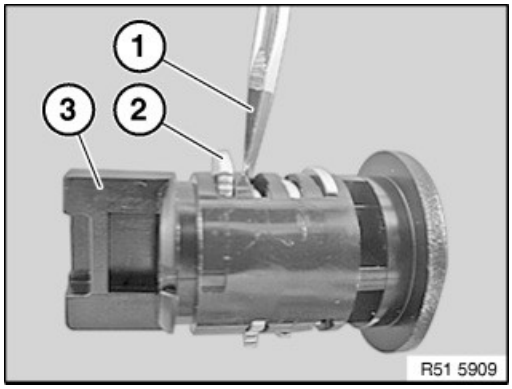
Insert retainer (1) with lowest stamped number (X) in first position (Y) in lock barrel (2) so that it snaps into place audibly.*Note:*
Number of retainers (1) differs according to vehicle.



Insert ignition key (1) in lock barrel (3) and check whether retainer (2) is flush with housing.

(A)	OK
(B)	not OK

eardiagn.com



If retainer (2) is not OK, press retainer (2) out of lock barrel (3) with a suitable tool (1).

Repeat work operations with retainer (2) with next higher number (X) until correct retainer (2) has been found.

Carry out all further positions in lock barrel as described in the process above.

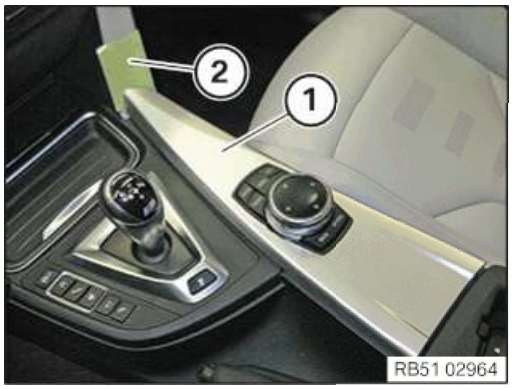
cardiagn.com

51 16 145 Removing and installing (replacing) decorative trim at centre console

Special tools required:

- 00 9 327

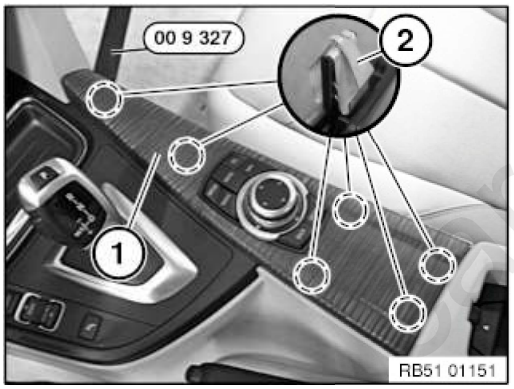
When working on trim panel components, make sure that the sensitive surfaces are not scratched or damaged.



Version with instrument panel in leather:

When removing and installing, the decorative strip (1) may damage the leather of the instrument panel.

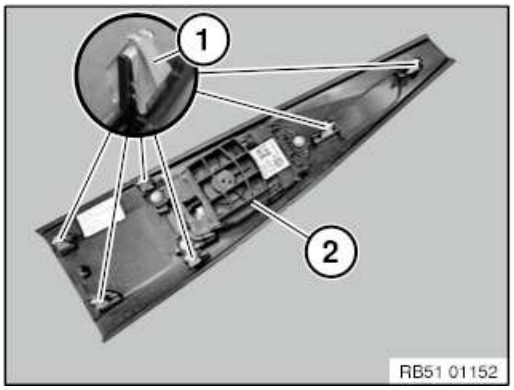
To avoid damage, the yellow plastic adhesive tape (2) must be placed between the decorative strip (1) and the instrument panel.



Loosen cover (1) with special tool 00 9 327 from clamps (2).

If necessary, unlock associated plug connections and disconnect.

Remove cover (1) upwards.



Installation note:
Replace faulty clamps (1).

Replacement (depending on version):

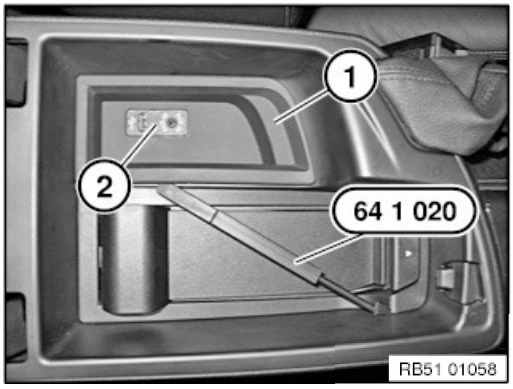
Remount controller (2).

cardiagn.com

51 16 142 Removing and installing (replacing) insert in centre armrest storage compartment

Special tools required:

- 64 1 020



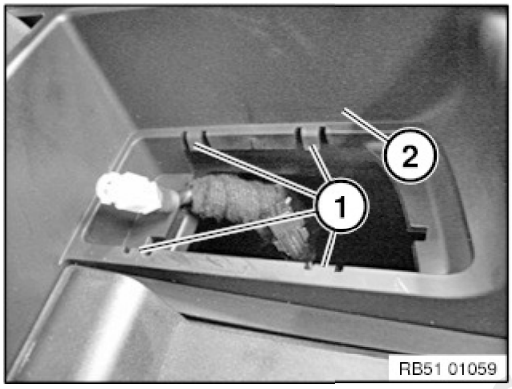
Unclip insert (1) with special tool 64 1 020 in upward direction.

Unlock and disconnect the plug connections of the connecting socket (2).

Remove insert (1).

Replacement:

Modify connecting socket (2).



Installation note:
Catches (1) on storage compartment (2) and corresponding counter-pieces on the insert must not be damaged or missing.

cardiagn.com

51 16 160 Removing and installing center console trim

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

cardiagn.com

PRELIMINARY WORK

1 – Remove the decorative trim from the centre console

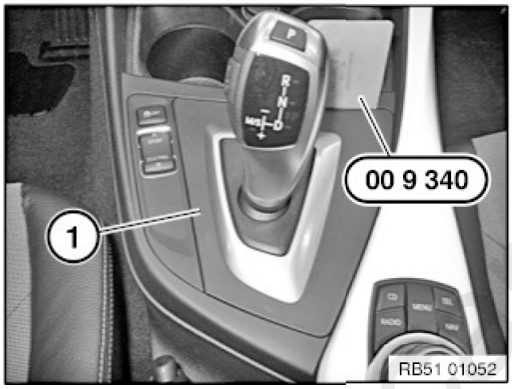


- For equipment specification with in leather instrument panel: Attach plastic adhesive tape (2) between the decorative trim (1) and the instrument panel.



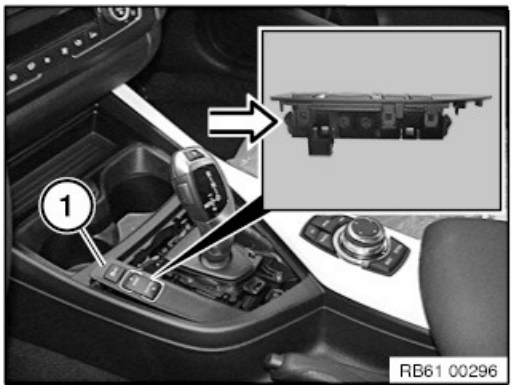
- Detach the decorative trim (1) with the special tool **0 496 571 (00 9 327)** from the clamps (2).
- If necessary, unlock associated plug connections and disconnect.
- Remove decorative trim (1) upwards.

2 – Remove trim for selector lever



- Partially fit special tool **0 493 687 (00 9 340)** as pictured.
- Lift trim for selector lever (1) all around and remove upwards.
- If necessary, unlock associated plug connection and disconnect.

3 – Remove the operating facility in the centre console

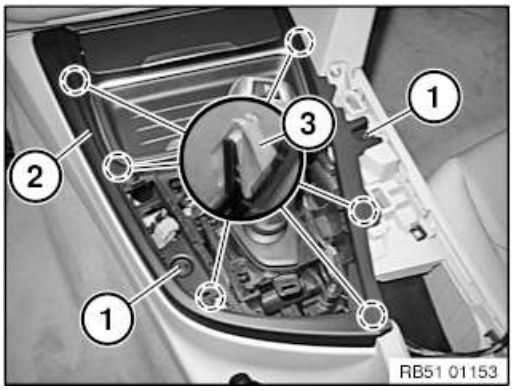


- Reach under the front section of the operating facility in the centre console (1).
- Push the front latch mechanism in the direction of the arrow and simultaneously raise the operating facility in the centre console (1).
- Disconnect the associated plug connection and remove the operating facility in the centre console (1).

ecardiagn.com

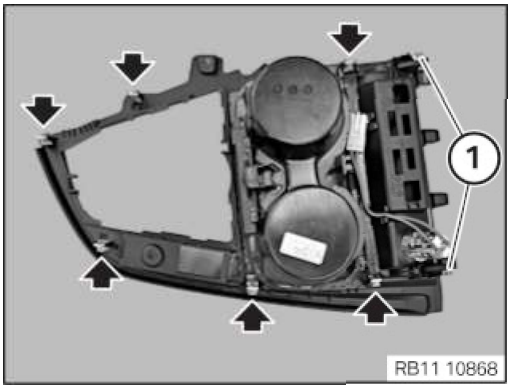
MAIN WORK

4 – Remove the centre console trim

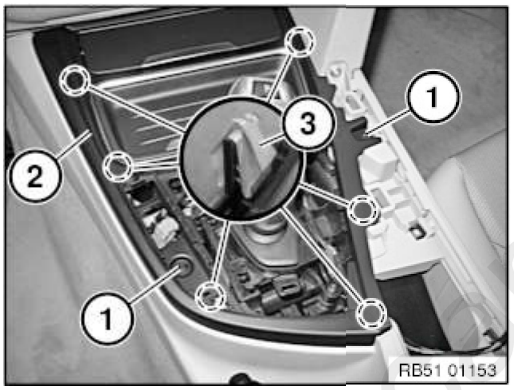


- Loosen screws (1).
- Release the centre console trim (2) with the special tool **0 496 569 (00 9 325)** at the clamps (3).
- Lift the centre console trim (2) slightly and disconnect associated plug connections.
- Thread out centre console trim (2) to top rear.

5 – Install the centre console trim



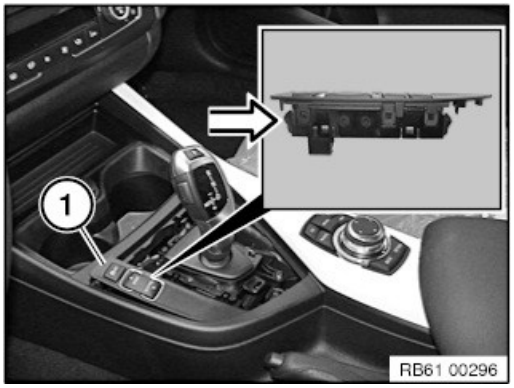
- Make sure that the springs (1) are not detached during the installation.
- Renew faulty clamps (arrows).



- Connect all connectors.
- Position centre console trim (2).
- Clip centre console trim (2) into clamps (3).
- Tighten the screws (1).

POSTPROCESSES

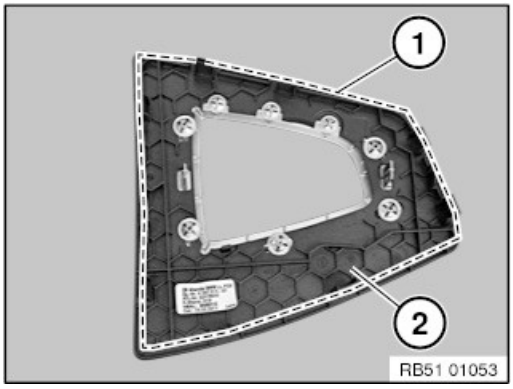
6 – Install the operating facility in the centre console



- Clip in the operating facility in the centre console.

7 – Install trim for selector lever

cardiagn.com



TECHNICAL INFORMATION

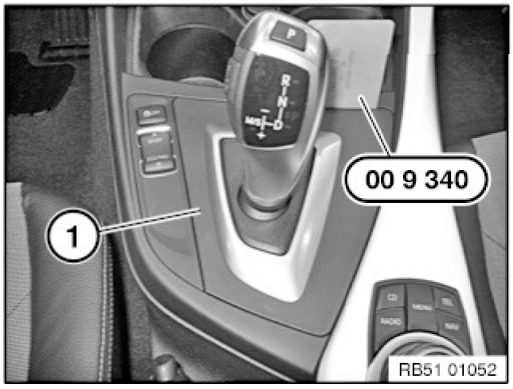
Latch mechanisms, guides and mounting elements must not be damaged or missing.

TECHNICAL INFORMATION

Remount the Drivelogic button when replacing the trim for the selector lever in F80/F82/F83.

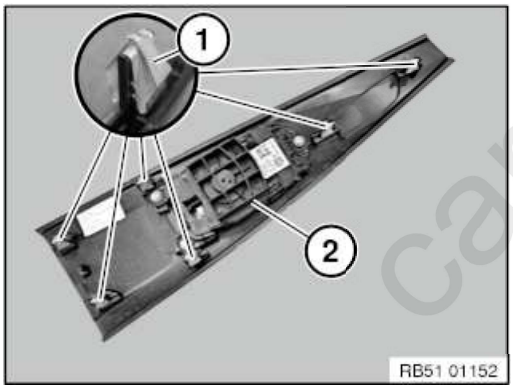
For more information see: 61 31 ... Removing and installing/replacing Drivelogic button

- Check latch mechanisms for damage, if necessary replace trim for selector lever.



- Clip in trim for selector lever (1).

8 – Installing the decorative trim to the centre console



TECHNICAL INFORMATION

The controller may have to be remounted upon replacing the decorative trim, depending on the equipment specification.

For more information see: 6131195 Removing and installing (replacing) the controller

- Renew the faulty clamps (1) of the decorative trim (2).



- For equipment specification with in leather instrument panel: Attach plastic adhesive tape (2) between the decorative trim (1) and the instrument panel.

carmagn.com

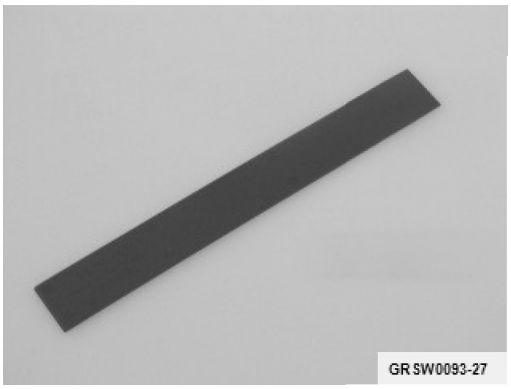


- Clip in the decorative trim (1) at the latch mechanisms (2).

Additional Information

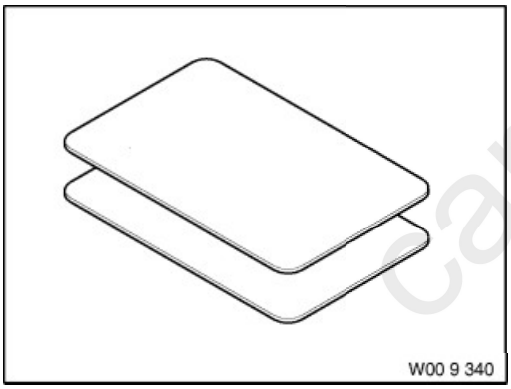
Overview of Special Tools

0 496 571 (00 9 327) Wedge



Common	Used in step 1
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

0 493 687 (00 9 340) Removal aid



Common	Used in step 2
Usage	(Removal aid (2 x)) For levering out switch block on driver's door.
Included in the tool or work	
Storage location	C2
Replaced by	
In connection with	
SI-Number	01 15 99 (483)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 496 289 (00 9 341)		**Removal aid** Only available as a set (2 tools) under 00 9 340 (= 83 30 0 493 687).	

cardiagn.com

0 496 569 (00 9 325) Wedge



Common	Used in step 4
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

cardiagn.com

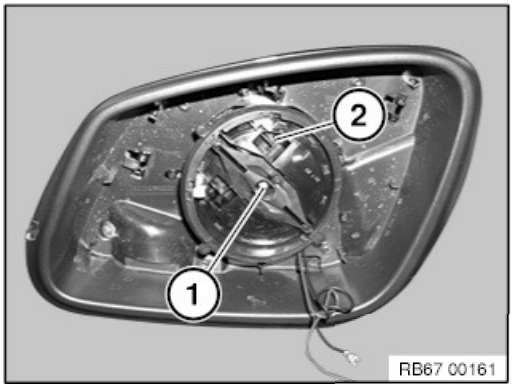
Links

Repair instructions	Used in step
61 35 953 Removing and installing/replacing interior aerial for Comfort Access (front storage compartment)	5
61 34 ... Removing and installing/replacing 12-V power socket	5
61 31 ... Removing and installing/replacing Drivelogic button	7
61 31 195 Removing and installing/replacing controller	8

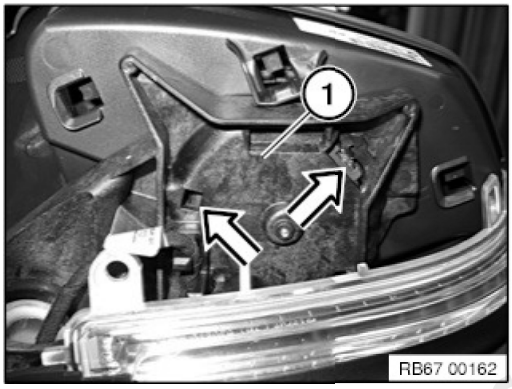
51 16 045 Removing and installing or replacing retaining ring on left or right exterior mirror

Necessary preliminary tasks:

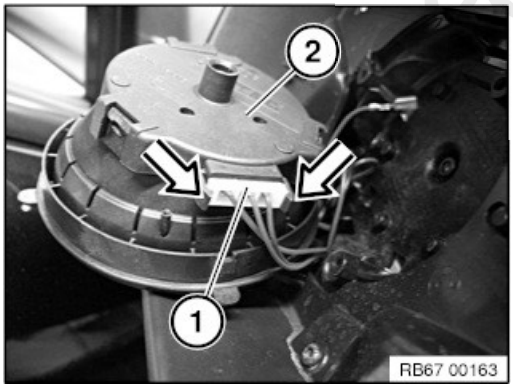
- Remove protective cap from exterior mirror



Release screw (1) on drive (2) for electrically adjustable exterior mirror.
Tightening torque 51 16 7AZ.

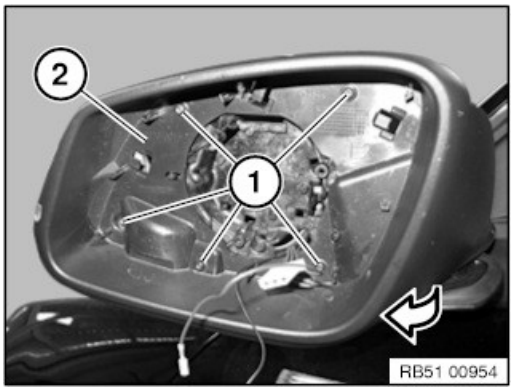


Unclip drive (1) from rear at marked points from mirror housing.



Carefully unlock and disconnect plug connection (1) at the marked points.
Remove electric motor (2).

ardiagn.com

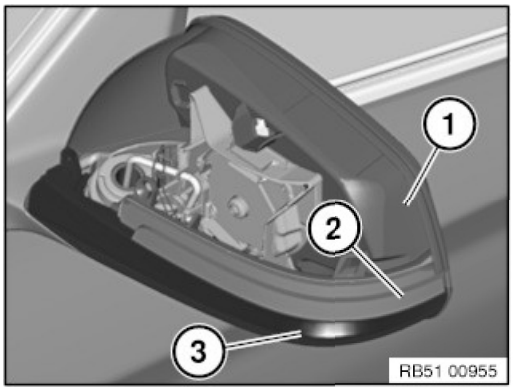


Fold exterior mirror forwards.

Release screws (1) from circlip (2).

Tightening torque 51 16 5AZ.

Feed out retaining ring (2) in direction of arrow.

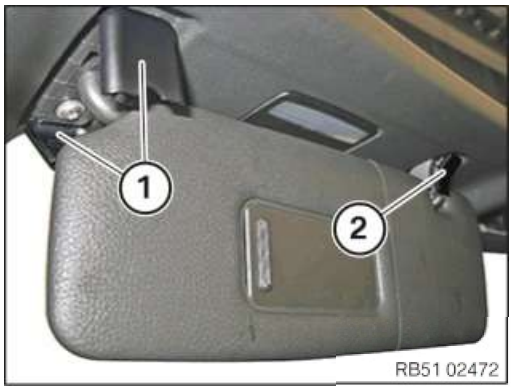


Installation note:
Make sure retaining ring (1) is correctly mounted on turn indicator (2) and housing (3).

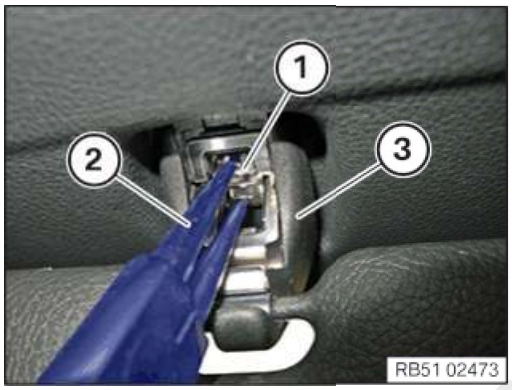
cardiagn.com

51 16 080 Removing and installing or replacing sun visor and left or right counter support

Removal:



Open the cover (1) and pull out the cover (2).



Unlock the clamp (1) with suitable long-nose pliers (2) and remove the counter support (3) by pulling it downward.



Release screws (1).



Pull out the sun visor.

Disconnect plug connection (1).

Installation:

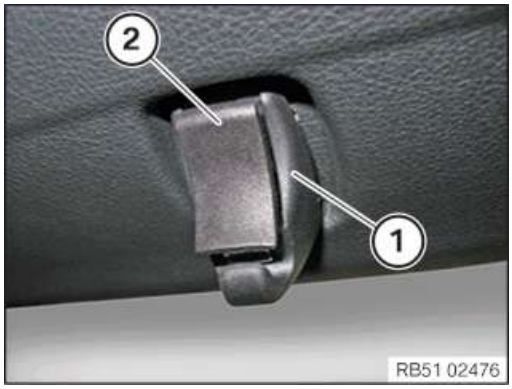


Connect plug connection (1).

Position the sun visor.



Tighten the screws (1) and close the covers.



Engage the counter support (1) and clip the cover (2) into place.

51 16 145 Removing and installing the decorative trim to centre console \PREMIUM

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.

1 – Remove the decorative trim from the centre console

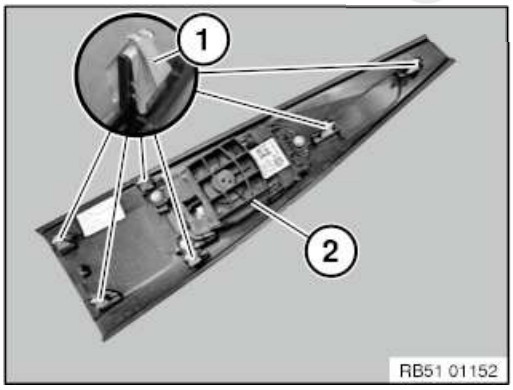


- For equipment specification with in leather instrument panel: Attach plastic adhesive tape (2) between the decorative trim (1) and the instrument panel.



- Detach the decorative trim (1) with the special tool **0 496 571 (00 9 327)** from the clamps (2).
- If necessary, unlock associated plug connections and disconnect.
- Remove decorative trim (1) upwards.

2 – Installing the decorative trim to the centre console



TECHNICAL INFORMATION

The controller may have to be remounted upon replacing the decorative trim, depending on the equipment specification.

For more information see: 6131195 Removing and installing (replacing) the controller

- Renew the faulty clamps (1) of the decorative trim (2).

cardiagn.com



- For equipment specification with in leather instrument panel: Attach plastic adhesive tape (2) between the decorative trim (1) and the instrument panel.

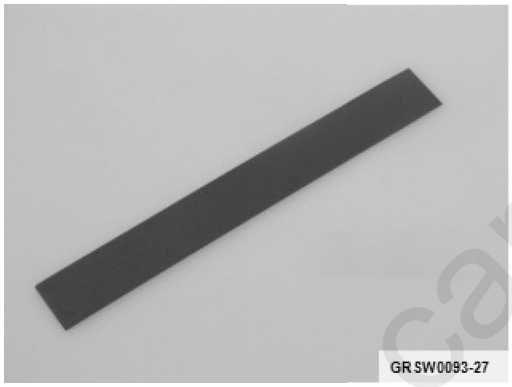


- Clip in the decorative trim (1) at the latch mechanisms (2).

Additional Information

Overview of Special Tools

0 496 571 (00 9 327) Wedge



Common	Used in step 1
Usage	(Cleaning wedge) From 11/2008 this special tool replaces panel wedge 00 9 323 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 09 (530)

Links

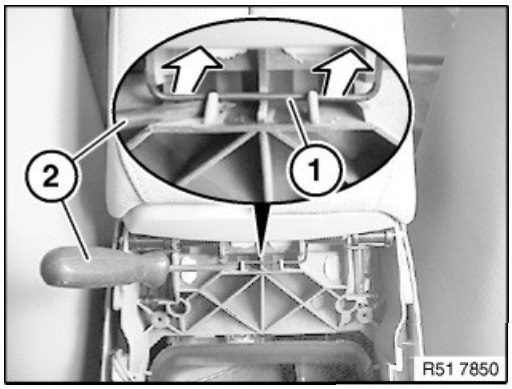
Repair instructions	Used in step
61 31 195 Removing and installing/replacing controller	2

cardiagn.com

51 16 206 Removing and installing/replacing centre armrest

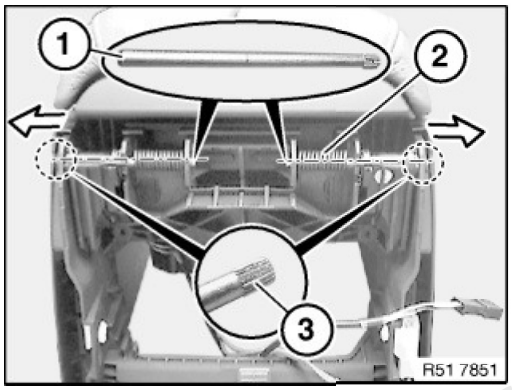
Necessary preliminary work:

- Move both front seats forwards
- Remove rear centre console trim



Note:
Open the centre armrest, because the spring (1) will otherwise be under too much tension.

Detach the spring (1) with the screwdriver (2).*Installation note:*
Make sure the spring (1) is correctly seated.



Drive the hinge axes (1) out.

Note:
The hinge axes (1) are secured with gearing (3) on the outside.

Remove the spring (2), open the centre armrest and feed out of storage compartment.

cardiagn.com

51 16 160 Removing and installing/replacing centre console cover

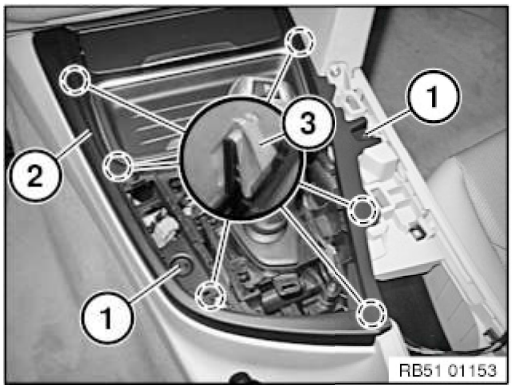
Special tools required:

- 00 9 325

When working on trim panel components, make sure that the sensitive surfaces are not scratched or damaged.

Necessary preliminary tasks:

- Remove decorative trim on centre console
- Remove centre console operating unit



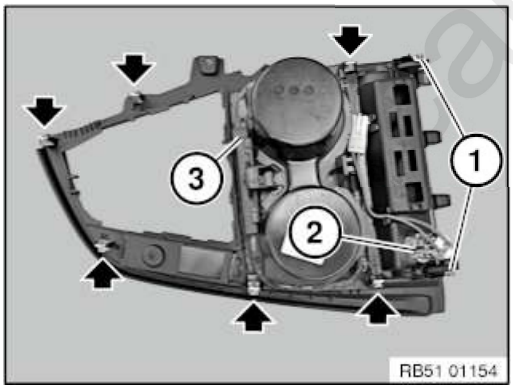
Release screws (1).

Release cover (2) with special tool 00 9 325 from clamps (3).

Slightly raise the cover (2) and disconnect associated plug connection.

Feed out cover (2) to the top/rear.

Installation note:
Ensure correct cable routing.



Installation note:
When installing make sure springs (1) are not disengaged.

Replace faulty clamps.

Replacement:

- Modify charging socket (2)
- Modify interior aerial (3)

51 16 165 Removing and installing/replacing complete centre console

Necessary preliminary tasks:

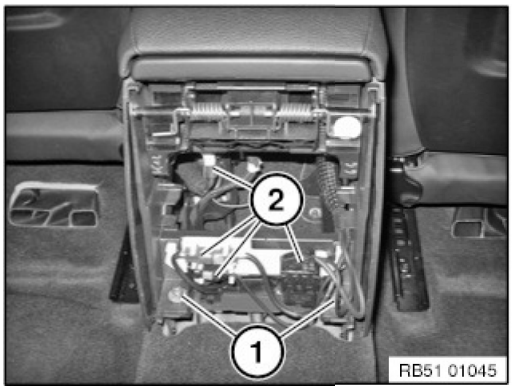
- Remove centre console cover
- Remove rear centre console trim
- Release gaiter for parking brake lever from centre console

Only with automatic transmission or F80/F82/F83:

- Remove gear selector switch

Important!

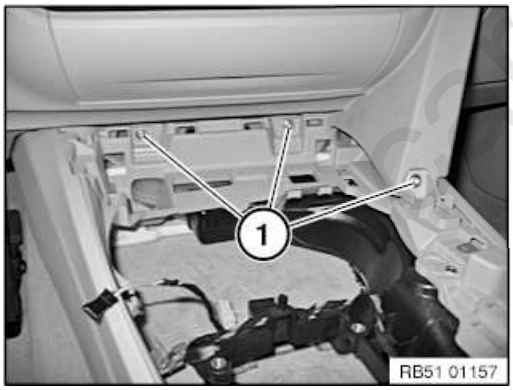
Read and comply with notes on handling wiring harnesses and cables.



Unscrew nuts (1).

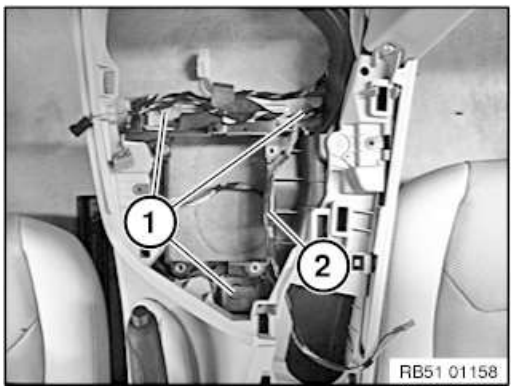
Tightening torque 51 16 3AZ.

Disconnect plug connections (2), depending on version.



Release screws (1).

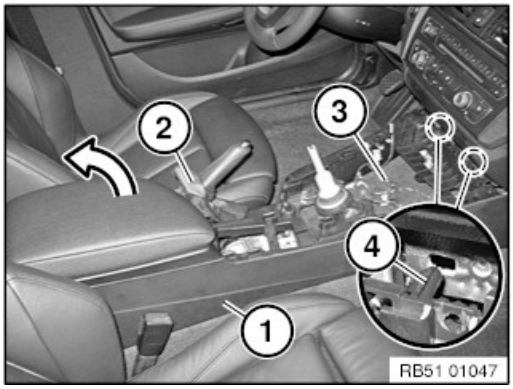
Tightening torque 51 16 4AZ.



Release screws (1).

Tightening torque 51 16 3AZ.

Detach wiring harness (2) from central console mount.



Raise the centre console (1) rear and feed out gaiter (2).

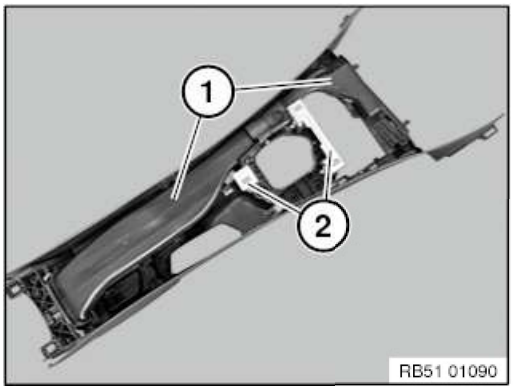
If necessary, release further plug connections and cable clips from below on centre console (1).

Remove centre console (1) to the rear/top.

Installation note:
Feed centre console (1) correctly into dashboard including guides (4).

Fit centre console (1) on the side correctly at rear of trim panel for pedal mechanism and trim panel at bottom of dashboard.

Make sure wiring harness (3) is in correct position.



Replacement (depending on version):

- Modify air ducts (1)
- Modify retaining bracket (2)
- Modify side cover
- Change over centre armrest.
- Modify insert in storage compartment
- Modify base plate for telephone
- Modify LED

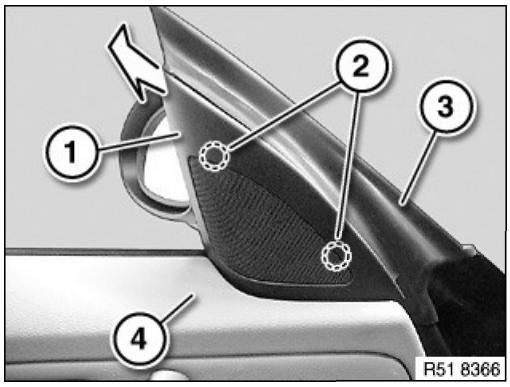
cardiagn.com

51 16 ... Removing and installing/replacing corner trim panel at front left door

Necessary preliminary tasks:

Only in version with speaker:

- Remove cover on door handle
- Partially remove front door trim panel



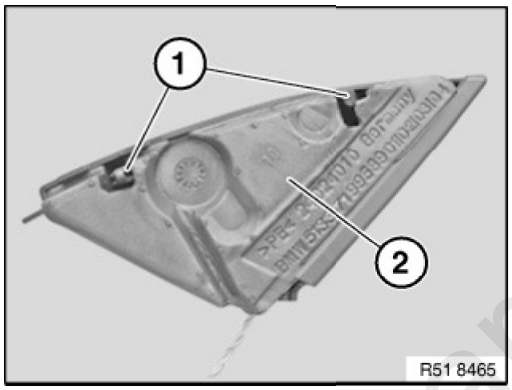
Slide corner trim panel (1) upwards slightly and release inwards from latch mechanisms (2).

Pull out corner trim panel (1) out of the sealing (3) and door trim panel (4).

If necessary, disconnect plug connection and remove corner trim panel (1).

Installation note:
Moisten the sealing (3) with water for better installation of the corner trim panel (1).

Make sure the corner trim panel (1) is correctly seated on sealing (3) and door trim panel (4).



Installation note:
Catches (1) and sound insulation (2) of the corner trim panel must not be damaged.

To replace in version with speaker:

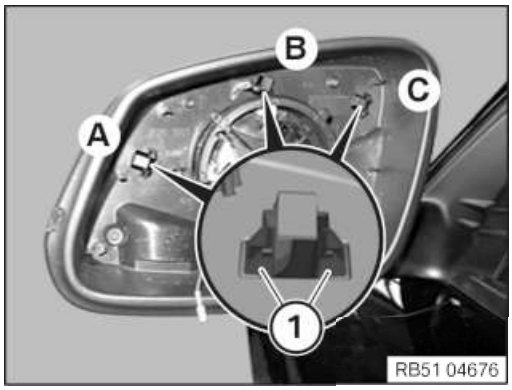
- Rebuild speaker

carDiagn.com

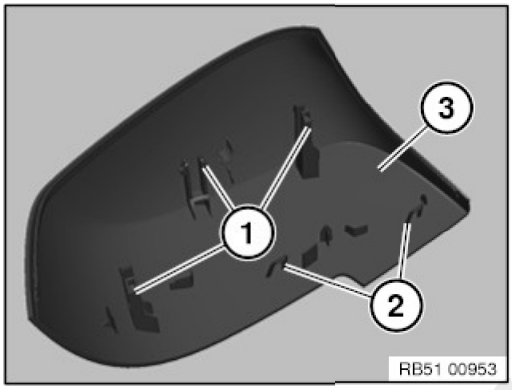
51 16 041 Removing and installing/replacing cover cap on left or right exterior mirror

Necessary preliminary tasks:

- Remove mirror glass



Compress the latch mechanisms (1) in the sequence (A), (B) and (C) and at the same time pull the protective cap outwards.



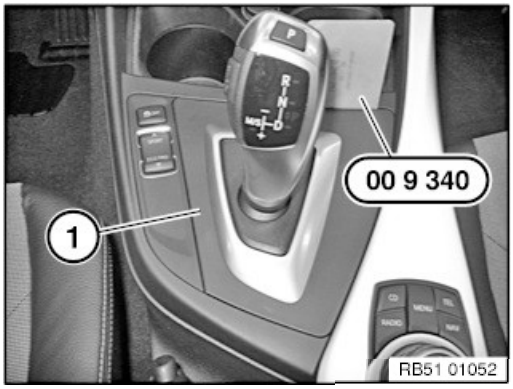
Installation note:
Latch mechanisms (1) and guides (2) on protective cap (3) must not be damaged or missing.

cardiagn.com

51 16 210 Removing and installing/replacing cover for selector lever

Special tools required:

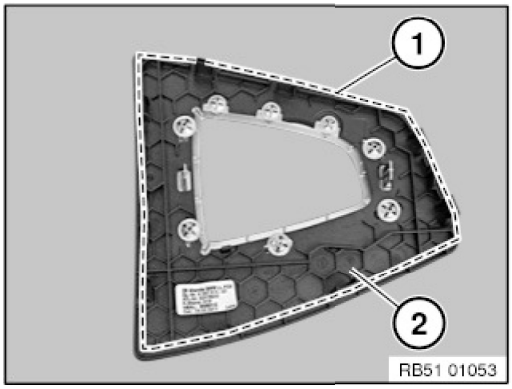
- 00 9 340



Partially fit special tool 00 9 340 as pictured.

Lift cover (1) all around and remove upwards.

If necessary, unlock associated plug connection and disconnect.



Installation note:
Latch mechanisms (1) on cover (2) must not be damaged or missing.

Only F80/F82/F83 for replacement:

- Remount Drivelogic button

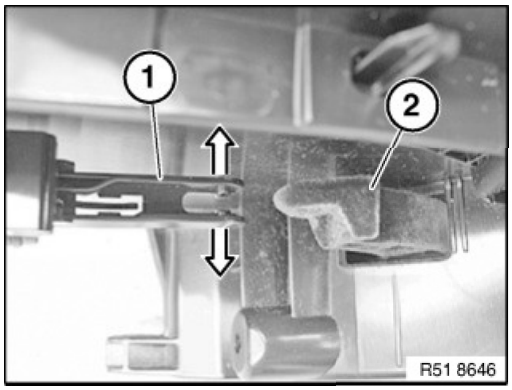
cardiagn.com

51 16 383 Removing and installing/replacing damper for glove box

When working on trim panel components, make sure that the sensitive surfaces are not scratched or damaged.

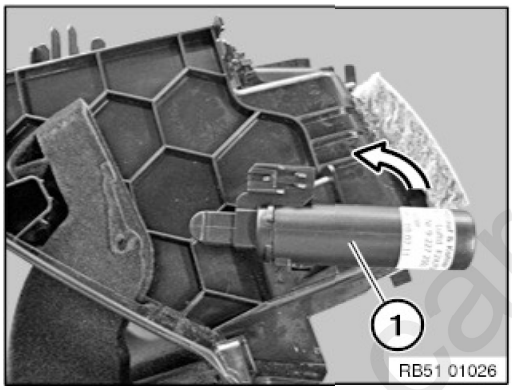
Necessary preliminary work:

- Remove right glove box



Note:
For better illustration, the damper has already been disconnected from the retaining bracket.

Unclip damper (1) from retaining bracket (2) and slide back in direction of arrow.



Turn damper (1) approx. 90° in direction of arrow and disconnect.

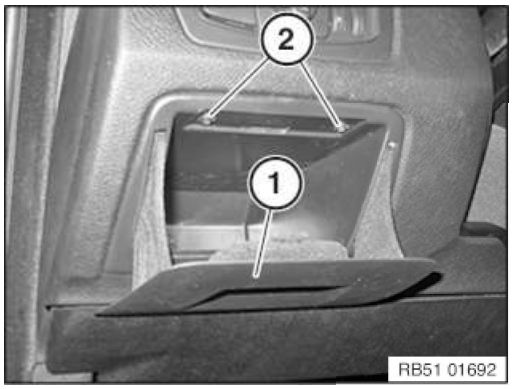
cardiagn.com

51 16 355 Removing and installing/replacing driver's side fold-down compartment

When working on trim panel components, make sure that visible surfaces are not scratched or damaged (e.g. by sharp-edged tools).

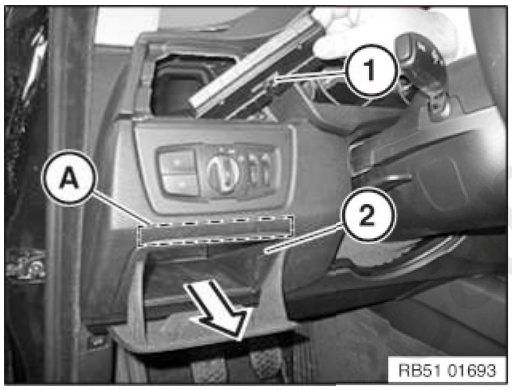
Necessary preliminary tasks:

- Remove decorative strip on dashboard on left



Open fold-down compartment (1).

Unfasten screws (2).



Note:
Fold-down compartment (2) is screwed onto holder (1) in area (A) and is fastened to dashboard in this way.

Remove holder (1) though opening.

Feed out fold-down compartment (2) in direction of arrow.

51 16 210 Removing and installing/replacing gear selector switch cover

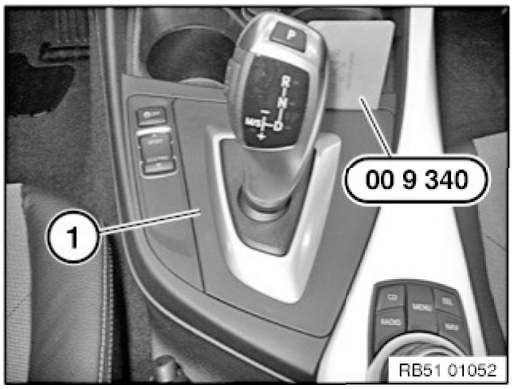
RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

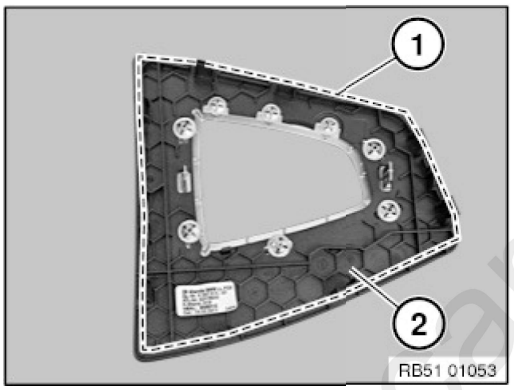
- Protect working area.
- Handle tools and components carefully.

1 – Remove trim for selector lever



- Partially fit special tool **0 493 687 (00 9 340)** as pictured.
- Lift trim for selector lever (1) all around and remove upwards.
- If necessary, unlock associated plug connection and disconnect.

2 – Install trim for selector lever



TECHNICAL INFORMATION

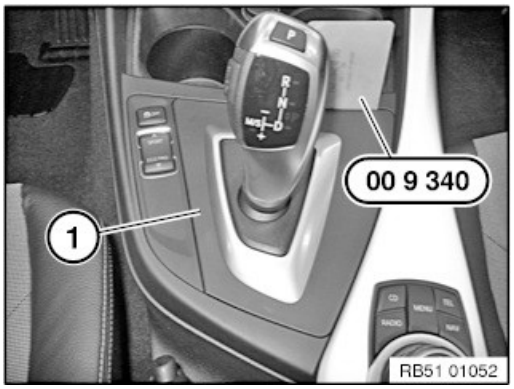
Latch mechanisms, guides and mounting elements must not be damaged or missing.

TECHNICAL INFORMATION

Remount the Drivelogic button when replacing the trim for the selector lever in F80/F82/F83.

For more information see: 61 31 ... Removing and installing/replacing Drivelogic button

- Check latch mechanisms for damage, if necessary replace trim for selector lever.

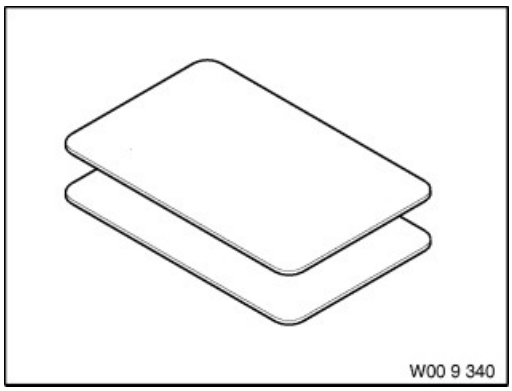


- Clip in trim for selector lever (1).

Additional Information

Overview of Special Tools

0 493 687 (00 9 340) Removal aid



Common Used in step 1

Usage	(Removal aid (2 x)) For levering out switch block on driver's door.
Included in the tool or work	
Storage location	C2
Replaced by	
In connection with	
SI-Number	01 15 99 (483)

Consisting of

Pos	BMW Order number	Replaced by	Designation	In Connection with
1	0 496 289 (00 9 341)		**Removal aid** Only available as a set (2 tools) under 00 9 340 (= 83 30 0 493 687).	

Links

Repair instructions	Used in step
61 31 ... Removing and installing/replacing Drivelogic button	2

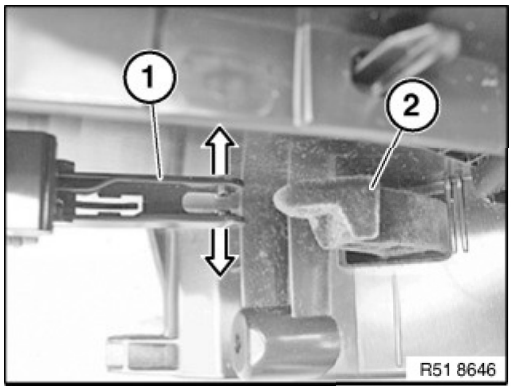
cardiagn.com

51 16 365 Removing and installing/replacing glove box cover

When working on trim panel components, make sure that the sensitive surfaces are not scratched or damaged.

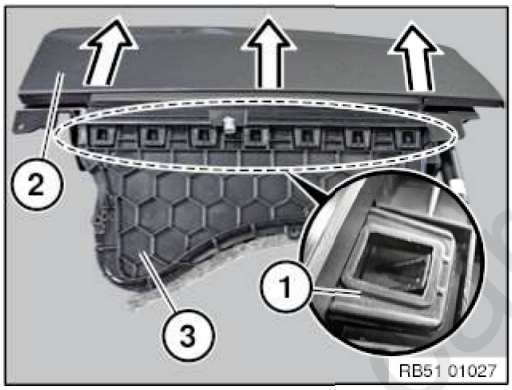
Necessary preliminary tasks:

- Remove right glove box

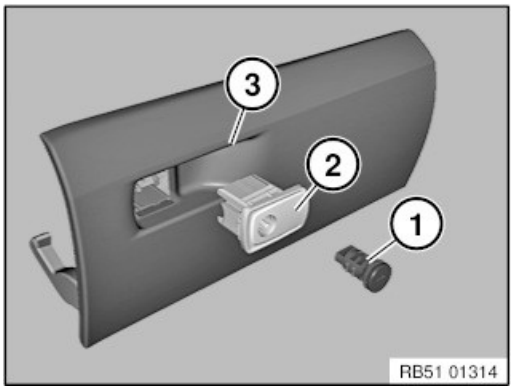


Note:
For better illustration, the damper has already been disconnected from the retaining bracket.

Unclip damper (1) from retaining bracket (2) and slide back in direction of arrow.



Loosen latch mechanisms (1) and feed glove box cover (2) out of housing (3) in direction of arrow.



Note:
It is not possible to remove the lock barrel (1) and opener (2) without causing damage.

In the case of replacement (version with lock barrel):

Click lock barrel (1) into new opener (2) (ensure that it is in the correct installation position).

Click opener (2) into the glove box cover (3).

In the case of replacement (version without lock barrel):

Click opener (2) into the glove box cover (3).

tgrdiagn.com

61 31 334 Removing and installing/replacing grip trim for gear selector switch

Special tools required:

- 00 9 327



Note:
Symbol plate (1) is glued on.

Mount special tool 00 9 327 as illustrated.

Detach symbol plate (1) from upper shell (2) in direction of arrow.

Important!

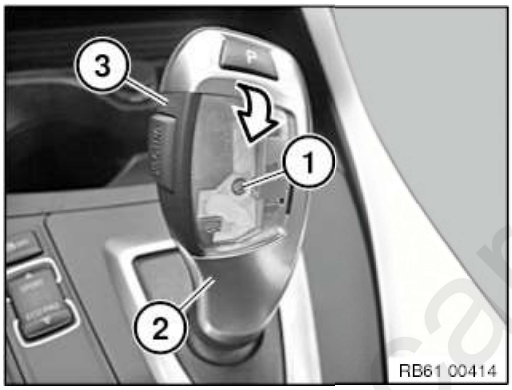
Risk of damage!

Do not leverage side panel (3) out of upper shell (2).

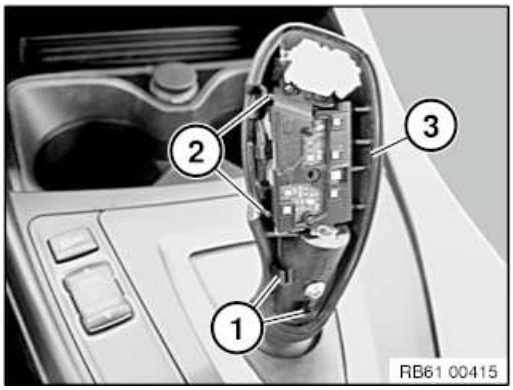
Installation note:
Remove any adhesive residue.

Remove the protective film from the back of the symbol plate before installing.

Make sure symbol plate (1) is correctly seated on upper shell (2).

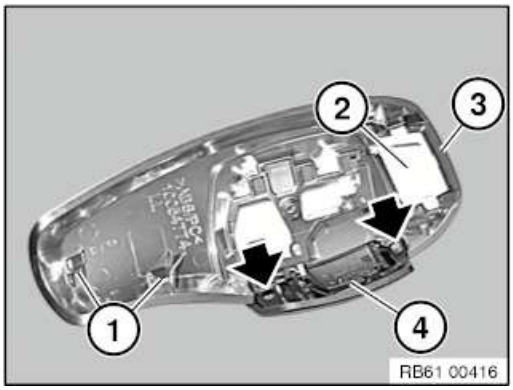


Release screw (1) and remove upper shell (2) with side panel (3) in direction of arrow.



Installation note:
Fixtures (1) and guide pins (2) on gear selector switch (3) must not be damaged or missing.

cardiagn.com



Installation note:
Guides (1) and P-button (2) must not be damaged or missing.

Make sure P-button (2) is correctly seated in upper shell (3).

Make sure side panel (4) is correctly seated in upper shell (3)!

For better installation, secure UNLOCK button outside on the side panel (4) using adhesive tape.

Feed in upper shell with side panel into fixtures and guide pins on gear selector switch.

cardiagn.com

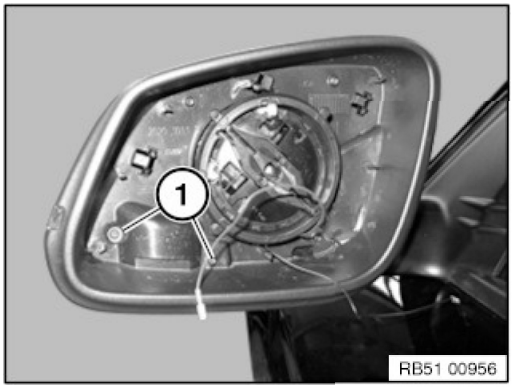
51 16 040 Removing and installing/replacing housing on left or right exterior mirror

Special tools required:

- 2 405 562

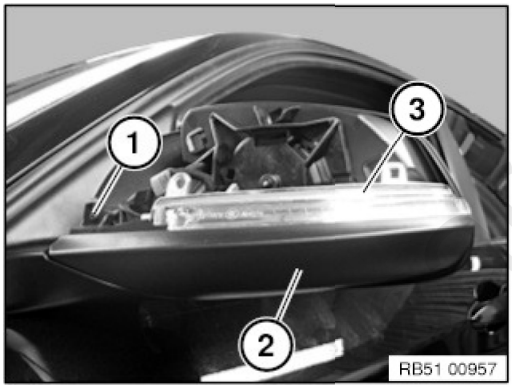
Necessary preliminary work:

- Remove protective cap on exterior mirror



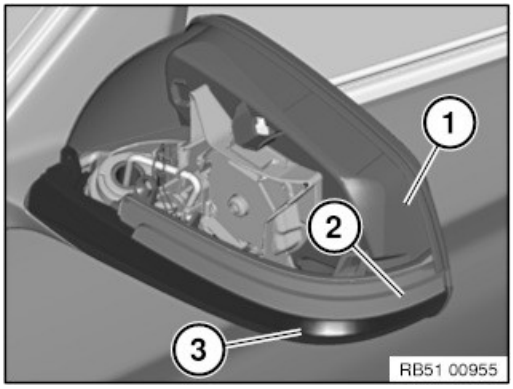
Release screws (1) with special tool 2 405 562 .

Tightening torque 51 16 5AZ.

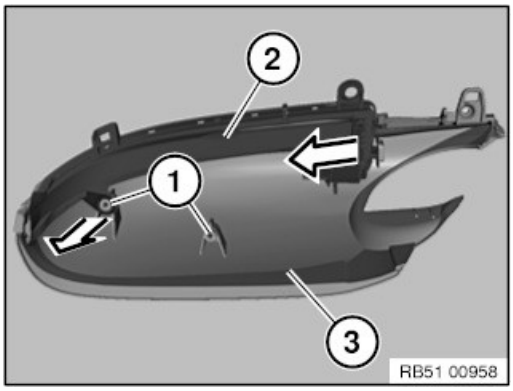


Release screw (1).

Remove housing (2) carefully and disconnect plug connection at side repeater (3).



Installation note:
Make sure retaining ring (1) is correctly mounted on side repeater (2) and housing (3).



Installation note:
Screw holes (1) must not be damaged.

Replacement:

Feed side repeater (2) out of housing (3) in direction of arrow.

cardiagn.com

51 16 063 Removing and installing/replacing interior mirror (as of 07/2011)

Important!

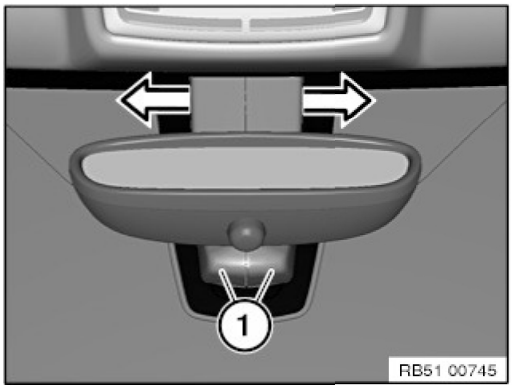
Work may only be carried out at a room/object temperature of 18 ... 28 °C.

If this can not be guaranteed (cold/hot countries), it is necessary to equalise the temperature of the windscreen, mirror base and inside mirror (e.g. vehicle left to stand indoors or in the shade for at least 30 minutes).

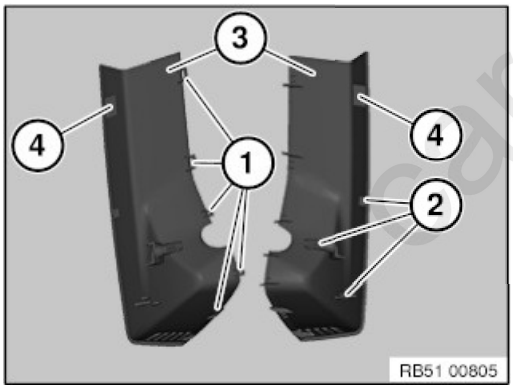
Important!

<u>To avoid windscreen breakage:</u>

When removing mirror base, never turn or disengage towards front or rear.



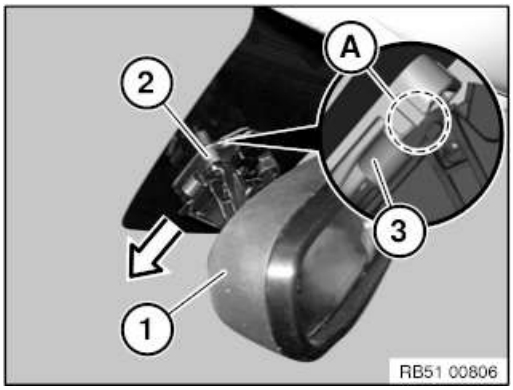
Unclip end caps (1) in direction of arrow using a suitable tool and remove.



Installation note:
Latch mechanisms (1) and guides (2) on both end caps (3) must not be damaged.

For end caps (3) with tabs (4), the spacers must be bonded onto the tabs (4).

bardiagn.com



Important!

Risk of damage!

When removing mirror base, never turn or disengage towards front or rear.

Interior mirror is held by clamp (3) and latch mechanism in area (A) on mirror base (2).

If necessary, disconnect plug connection on inside mirror (1).

Jerkily pull off inside mirror (1) parallel to windscreen from mirror socket (2).

Installation note:
Retaining clips (3) must not be bent or damaged.

Interior mirror (1) must engage correctly in mirror base (2) in area (A).



Version with compass:

Check compass function if replacing or after disconnecting inside mirror plug connection or battery.

If necessary, calibrate compass in interior rearview mirror.

Version with high-beam assistant without KAFAS (camera-based driver support systems):

Normalisation or initialisation is not necessary.

High-Beam Assistant is automatically aligned under the following conditions:

- Driving on a motorway/ordinary road at night for approx. 50 km and
- Clearly visible road markings



Replacement:

Carry out vehicle programming/coding.

cardiagn.com

51 16 063 Removing and installing/replacing interior mirror (overview)

Important!

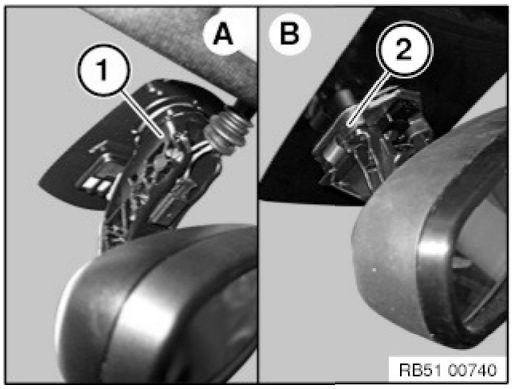
Interior mirrors with modified mirror base will be installed as of series launch F20 and for all subsequent series launches.

Observe new repair instructions!

Further introduction date:

F01, F02, F03, F06, F07, F10, F11, F12, F13, F18	07/2012
F25	03/2012

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 documents with further information available for the currently selected vehicle context".

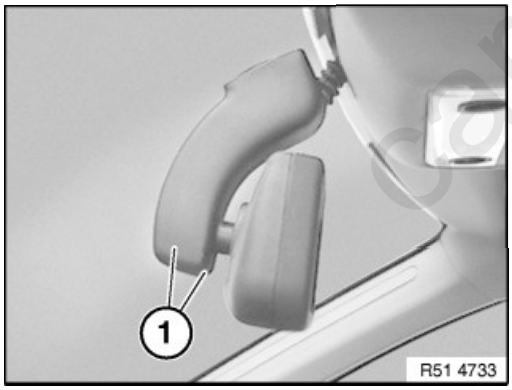


Distinguishing feature:

(A) previous version, small mirror base (1) with round base plate on windscreen.

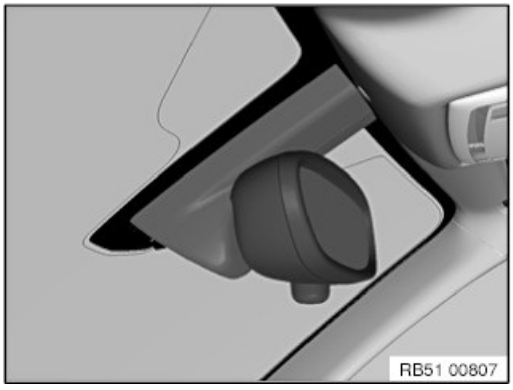
(B) new version, large mirror base (2) with square base plate on windscreen.

Note:
Dismantling of mirror cap is identical on both versions.



Version with mirror arm end cap:

- Previous version.



Version with mirror arm end cap:

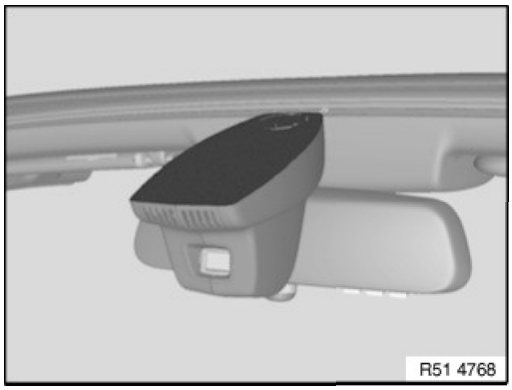
- New version.

cardiagn.com



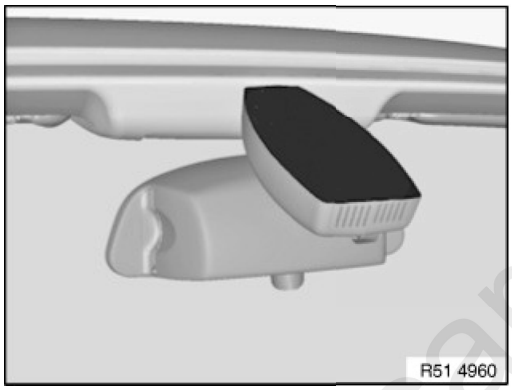
Version with rain sensor:

- Previous version.
- New version.



Version with Autobeam:

- Previous version.
- New version.



Version with Toll interior mirror for Japan:

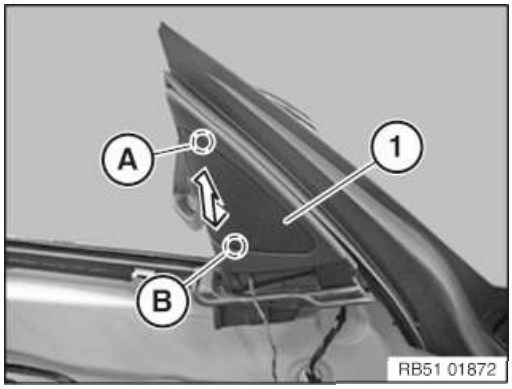
- Previous version.
- New version.

cardiagn.com

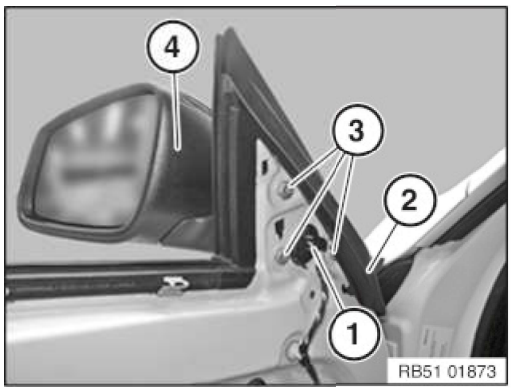
51 16 001 Removing and installing/replacing mirror on left or right front door

Necessary preliminary tasks:

- Remove door trim panel

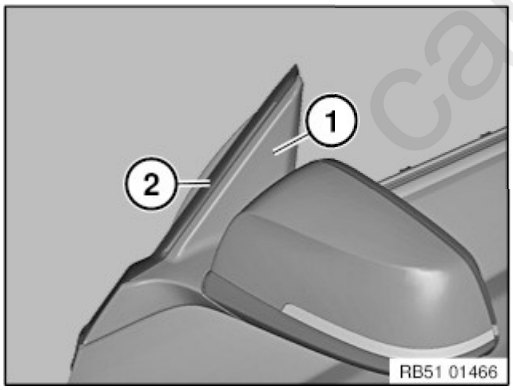


First unclip trim (1) inwards in area (B), then feed out upwards in area (A).



Attention!
Secure the mirror (4) against falling.

Unfasten plug connection (1) and disconnect.
Press sealing (2) aside slightly.
Undo the screws (3) and remove the mirror (4).
Tightening torque 51 16 1AZ.



Installation note:
Make sure exterior mirror (1) is correctly fitted on sealing (2).

Replacement:

- Remount mirror glass
- Remount protective cap

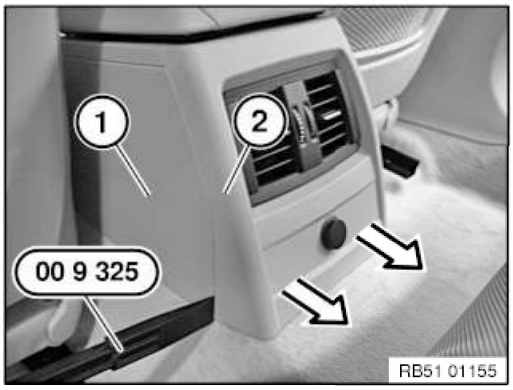
cardiagn.com

51 16 163 Removing and installing/replacing rear centre console cover

Special tools required:

- 00 9 325

When working on trim panel components, make sure that the sensitive surfaces are not scratched or damaged.



Important!

Risk of damage!

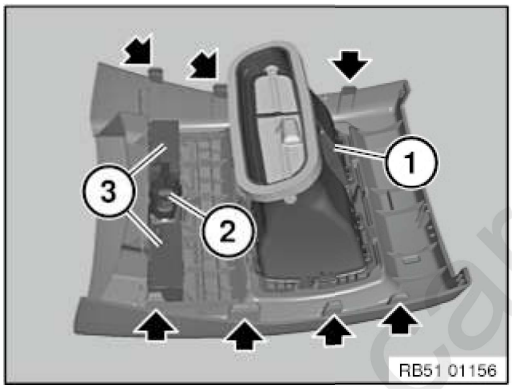
If necessary, mask centre console (1) and cover (2) with plastic adhesive tape.

Press special tool 00 9 325 between centre console (1) and cover (2).

Unclip cover (2) towards rear.

If necessary, unlock associated plug connections and disconnect.

Remove cover (2).



Installation note:
Latches on cover and counterparts on centre console must not be missing or damaged.

Replacement (depending on version):

- Modify fresh air grille in rear passenger compartment (1)
- Modify 12 V charging socket (2)
- Modify switch (3)

cardiagn.com

51 16 366 Removing and installing/replacing right glove box with housing

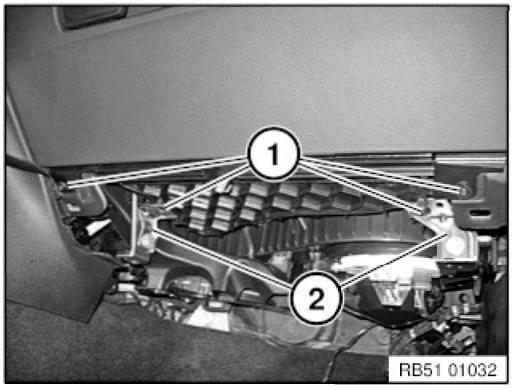
When working on trim panel components, make sure that visible surfaces are not scratched or damaged (e.g. by sharp-edged tools).

Necessary preliminary tasks:

- Remove instrument panel trim at bottom right
- Remove side panel on dashboard

US version:

- Remove airbag module for front passenger knee protection



Release screws (1).

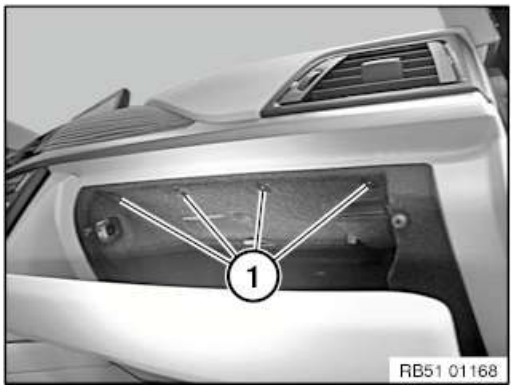
Tightening torque 51 16 2AZ.

Installation note:
Ensure the glove box is correctly seat on the holder (2).



Release screw (1).

Tightening torque 51 16 2AZ.

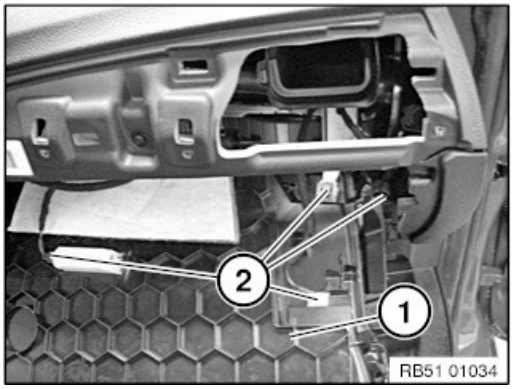


Open glovebox.

Release screws (1).

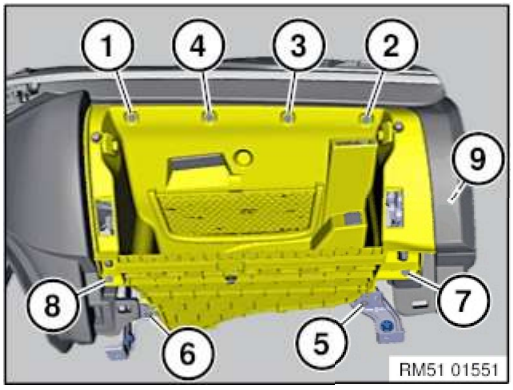
Tightening torque 51 16 2AZ.

autodiagn.com



Pull glove box (1) out slightly and unlock and disconnect depending on the plug connection versions (2).

Remove glove box (1).



Installation note:
To avoid straining the glove box and causing interference noise, observe the screwing sequence (1 to 9).

This also helps achieve optimal gap spacing.

In the case of replacement, the following parts need to be remounted:

- Glove box damper
- Glove box cover
- Glovebcx light

Depending on version:

- USB interface connecting socket
- Hotel pcsition switch

cardiagn.com

51 16 158 Removing and installing/replacing side cover on centre console

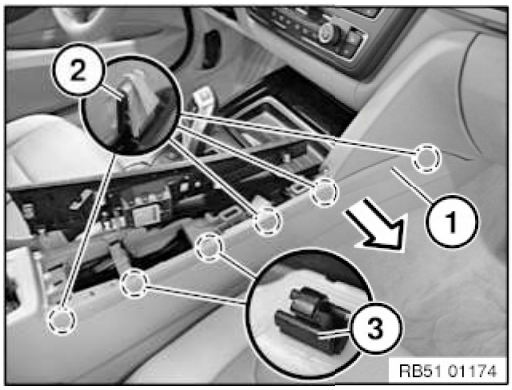
Special tools required:

- 00 9 325

When working on trim panel components, make sure that visible surfaces are not scratched or damaged (e.g. by sharp-edged tools).

Necessary preliminary tasks:

- Remove decorative trim on centre console



Release cover (1) with special tool 00 9 325 from clamps (2 and 3).

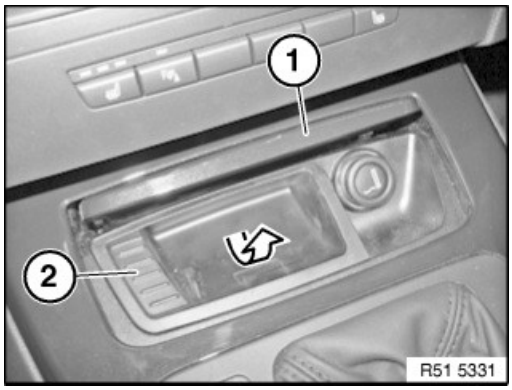
Remove cover (1) inwards.

Installation note:
Replace faulty clamps (2 and 3).

Fixtures for clamps (2 and 3) on cover (1) must not be missing or damaged.

cardiagn.com

51 16 156 Replacing ashtray insert



Open ashtray cover (1) and pull ashtray insert (2) out of mounting.*Installation note:*
Press ashtray insert (2) until it engages in mounting.

cardiagn.com

51 16 026 Replacing mirror glass

Special tools required:

- 2 298 505

Warning!

Danger of injury!

Move mirror glass with hand carefully and slowly.

If mirror glass is damaged:

Wear protective goggles and cut-proof gloves.

Danger of injury by flaking-off glass splinters.

Attention!

Risk of damage!

Bring exterior mirror to room temperature to prevent catches from breaking off.



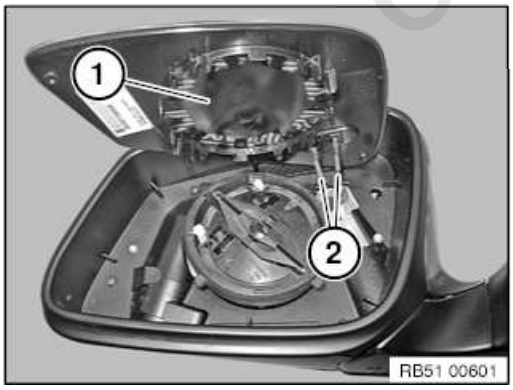
Attention!

Risk of damage!

Secure mirror glass (1) against falling out.

Press mirror glass (1) at top by hand to full extent.

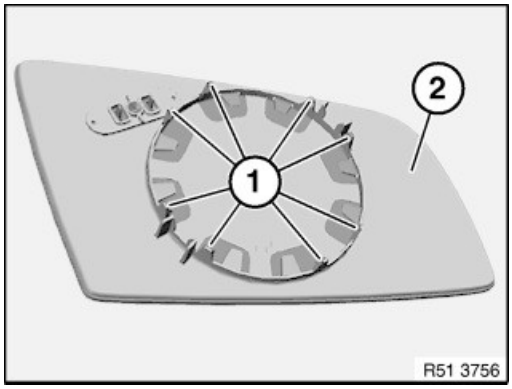
Unclip the mirror glass (1) with special tool 2 298 505 beginning on the bottom all the way around.



Unlock all associated plug connections·(2) carefully and disconnect.

Remove the mirror glass (1).

cardiagn.com



Installation note:
Retaining lugs (1) must not be damaged.

Fit the mirror glass (2) with the retaining lugs (1) flush on mirror adjustment drive and clip it into place.

Ensure correct locking.

Make sure mirror adjusting drive functions correctly.

cardiagn.com

67 13 030 Replacing the mirror electronics for both electrically adjustable, exterior mirrors

Attention!

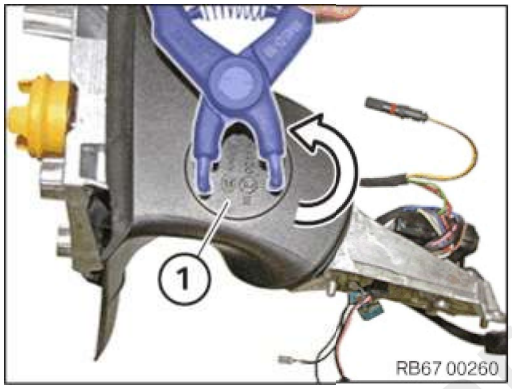
Read and comply with notes on protection against electrostatic discharge (ESD protection).

Necessary preliminary tasks:

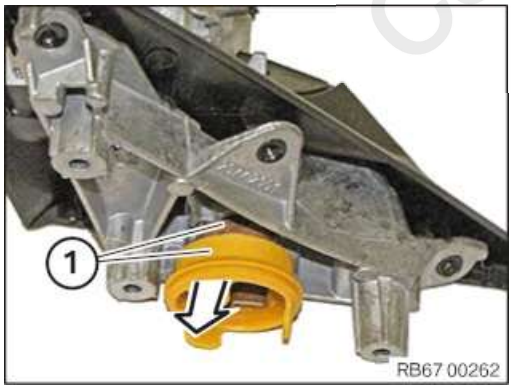
- Remove and disassemble the mirror

Note:
The number of wires/connectors may vary depending on the equipment specification.

Removal:



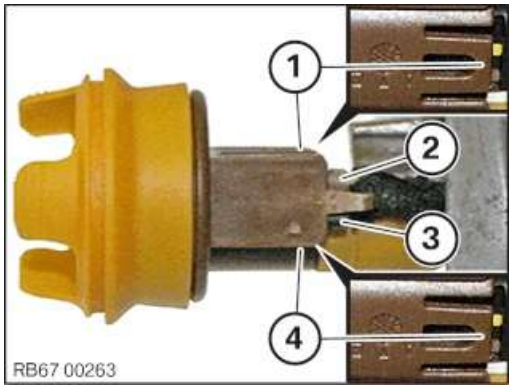
Use a suitable tool to twist the lid (1) slightly in anticlockwise direction and remove it.



Pull out the grommet with connector holder (1) in the direction of the arrow.*Note:*
A retaining lug may potentially break off the connector holder (1) when pulling it out.

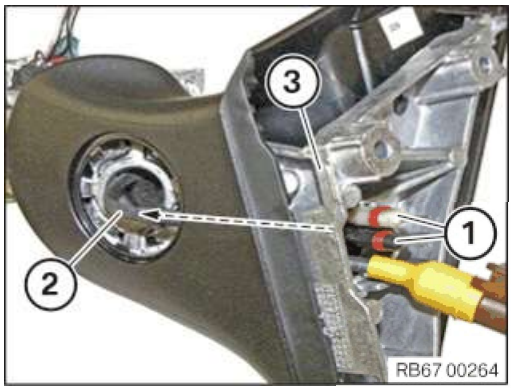
In this case, it is **not required** to replace the connector holder (1)!

cardiagn.com

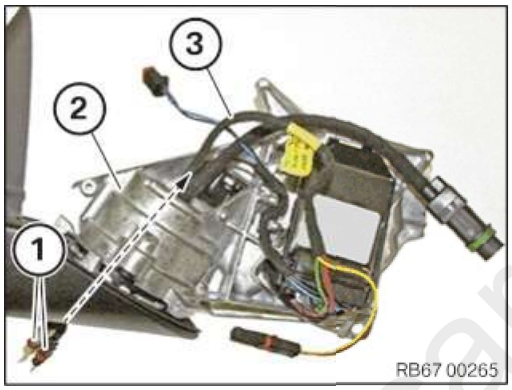


Carefully lift the retaining lug (1) and loosen the connector (2).

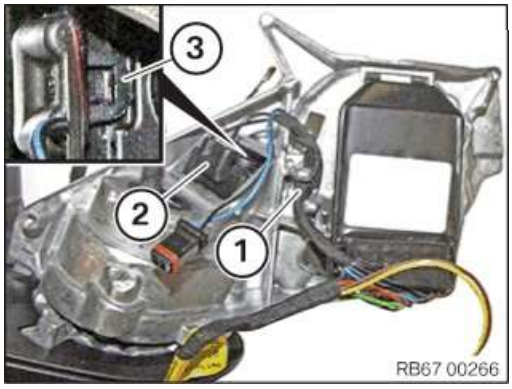
Carefully lift the retaining lug (4) and loosen the connector (3).



Pull out the connector (1) including the wire (2) from the housing (3) in the direction of the arrow.



Pull out the connector (1) including the wire (3) from the housing (2) in the direction of the arrow.

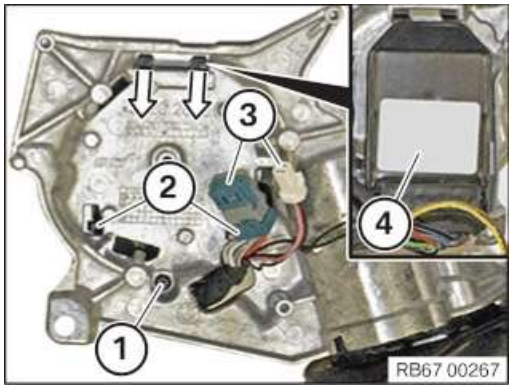


Remove the line (1).

Slightly lift the retaining lug (3).

Disconnect plug connection (2).

cardiagn.com



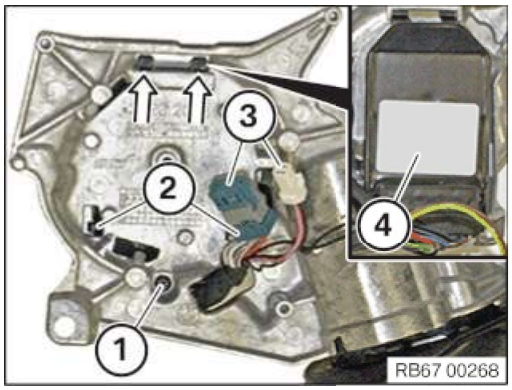
Release screw (1).

Simultaneously press both retaining lugs (2) and lift the mirror electronics (4) in this area.

Remove the mirror electronics (4) in the direction of the arrow.

Remove the wires (3).

Installation:



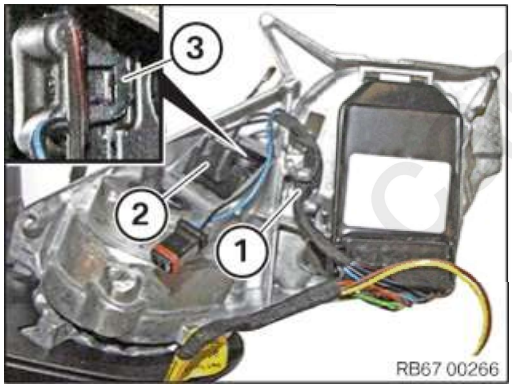
Remove the wires (3).

Install the mirror electronics (4) in the direction of the arrow.

Carefully press in the mirror electronics (4) until both retaining lugs (2) have engaged correctly.

Tighten screw (1).

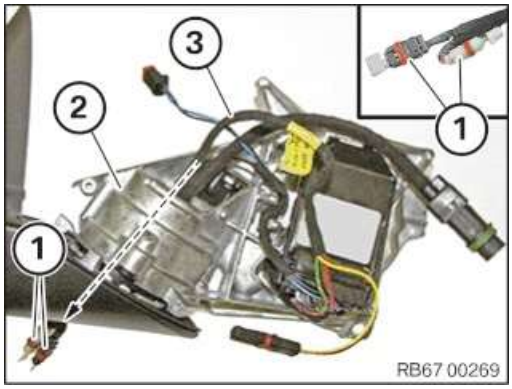
Tightening torque 51 16 6AZ.



Carefully connect the plug connection (2).

The retaining lug (3) must engage correctly.

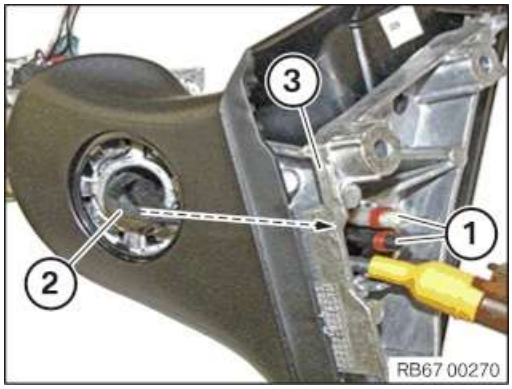
Position the cable (1) as illustrated.



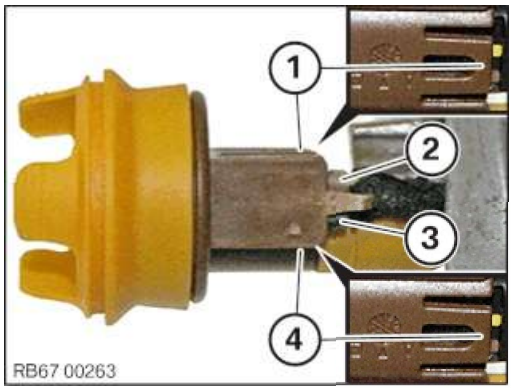
Insert the connector (1) including the cable (3) into the housing (2) in the direction of the arrow.*Note:*
Thread the connector (1) as illustrated for better installation.

The protective caps of the connector (1) must be removed first before installation into the connector housing.

cardiagn.com

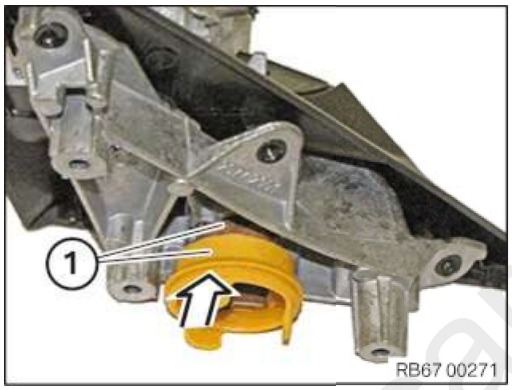


Insert the connector (1) including the cable (2) into the housing (3) in the direction of the arrow.

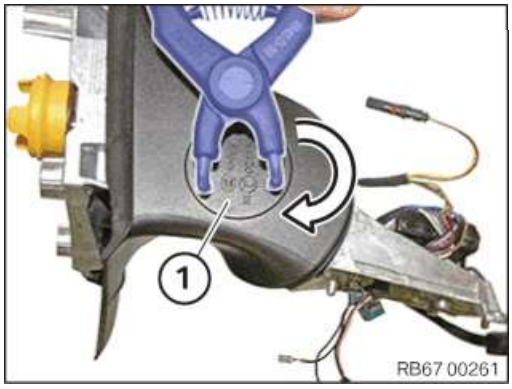


Correctly connect the connector (2) until the retaining lug (1) engages correctly.

Connect the connector (3) until the retaining lug (4) engages correctly.

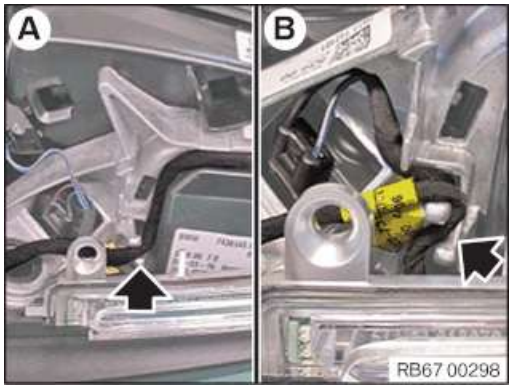


Install the grommet including the connector holder (1) in the direction of the arrow.



Position the lid (1) and twist in clockwise direction using a suitable tool.

cardiagn.com



Ensure correct cable routing.

A Version with camera

B Version without camera

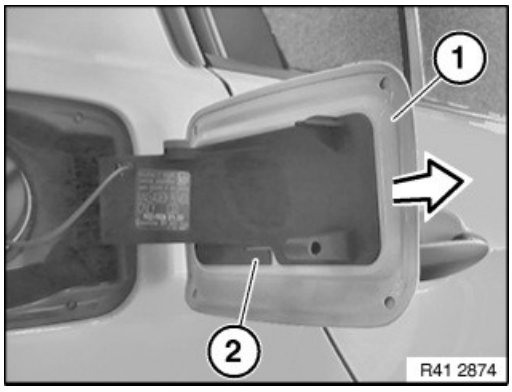
Required follow-up work:

- Assemble and install the mirror

cardiagn.com

41 63 000 Removing and installing the fuel filler flap

Note: The illustration is a schematic diagram and is to be applied to the relevant vehicle type.



Open fuel filler flap.

Lift out the lockÂ (2) and detach the fuel filler flap (1) in direction of arrow.

cardiagn.com

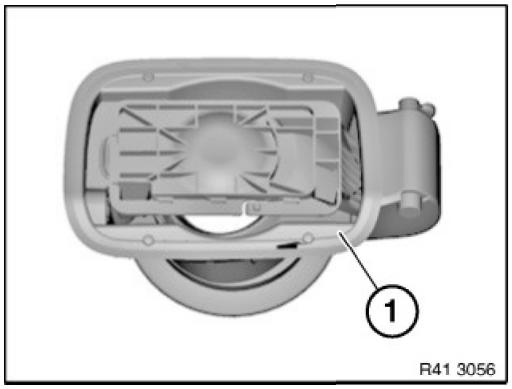
41 63 003 Replace cover bowl

Necessary preliminary tasks:

- Remove right rear wheel
- Remove rear right wheel arch cover
- Remove flap for fuel filler neck
- Close the central locking system with open cap

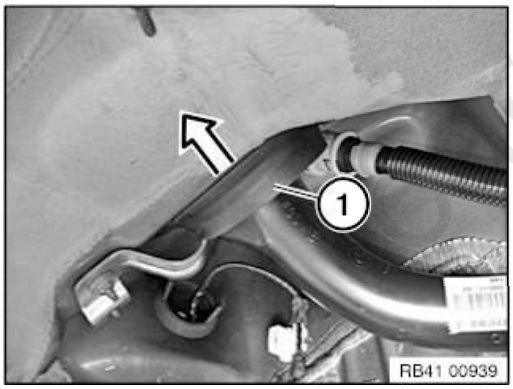
Note: The illustration is a schematic diagram and is to be applied to the relevant vehicle type.

Attention!
Deformation of the sheet metal flanges in the side panel and the wheel arch results in permanent vehicle leakage. Carry out removal/installation with great care.

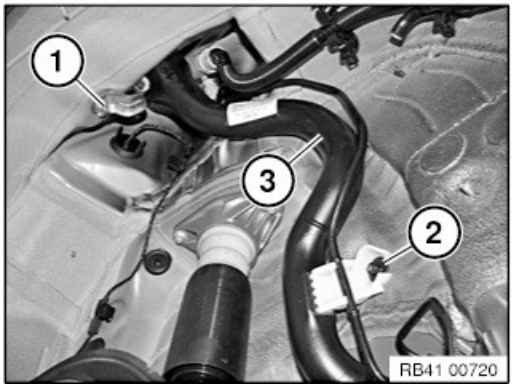


Following new body parts are required (see Electronic Parts Catalogue):

- (1) Cover bowl



Press sealing cup (1) through to the outside.



Release nuts (1) and (2).

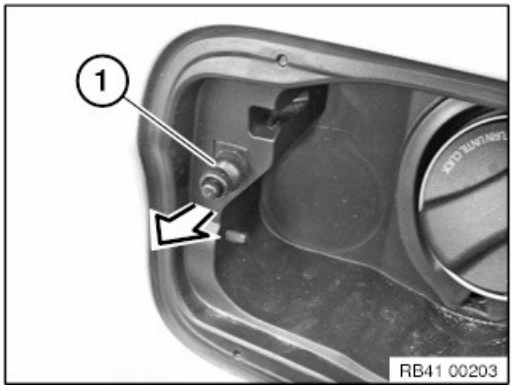
Installation note:
Renew plastic nut.

Tightening torque 16 12 2AZ.

Slacken the fuel filler pipe (3).

Installation note:
Clean **contact surface** on body and ground connection (top of holder) on fuel filler pipe.

Ground connection must be guaranteed.

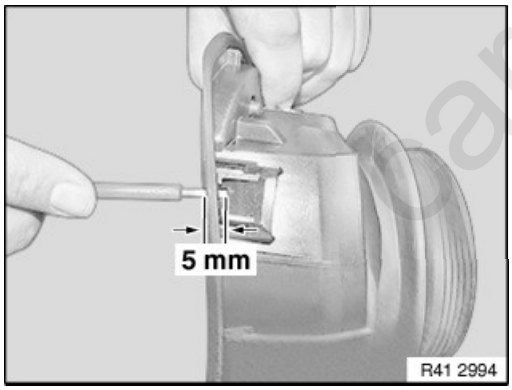


Remove ejector (1) in the direction of the arrow.

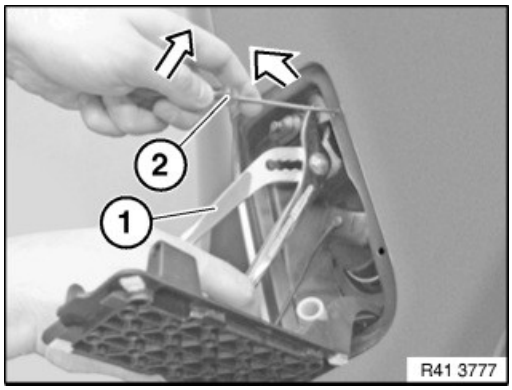


Lift out the retaining strap (1) and remove the lid.

Pierce markings (2) with a small screwdriver.



Insert screwdriver to a depth of max. 5 mm and unlock cover bowl latch mechanism.



Keep cover bowl tensioned with pliers (1).

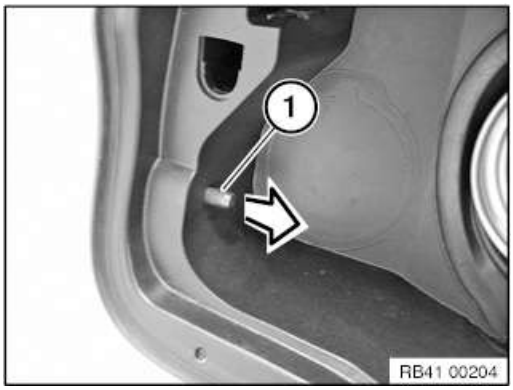
Unlock catches individually with screwdriver (2).

Unlock catches in following order:

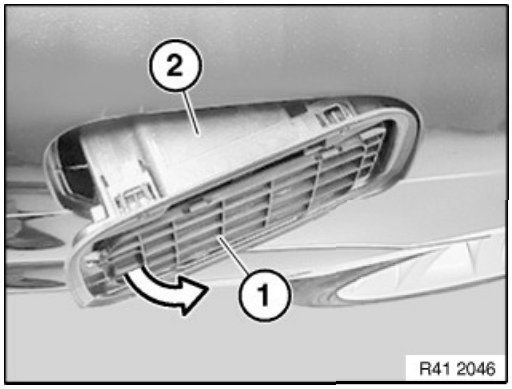
1. Top left
2. Bottom left
3. Top right
4. Bottom right

Move screwdriver in opposite direction at both lower catches.

cardiagn.com



Slightly pull the locking pin (1) forward in the direction of the arrow, if applicable.



Close hinge arm (1).

Attention!

Do not damage sheet metal flange of side wall.

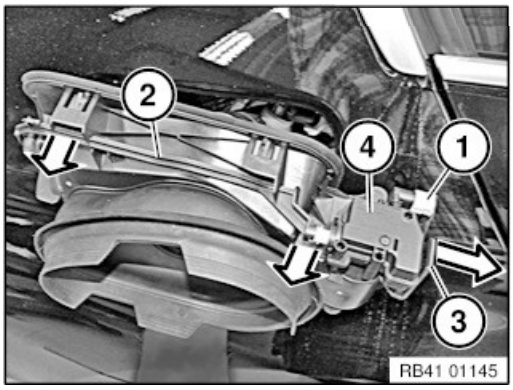
Carefully twist out cover bowl (2) at first at rear in direction of arrow from side panel and remove.



Release wiring harness (1) at attachment points.

Release cable (2) for emergency operation of fuel filler cap.

Installation note:
Make sure the cable for emergency operation is correctly installed!



Unlock and disconnect plug connection (1) for actuator drive.

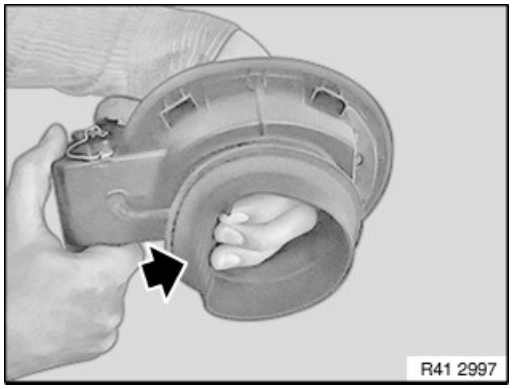
Detach release clip (2) in direction of arrow.

Press latch mechanism (3) in direction of arrow and pull off actuator drive (4) from cover bowl.

Installation note:
Make sure the servo drive for fuel filler flap is correctly installed!

Check function of controller drive before installation of cover bowl!

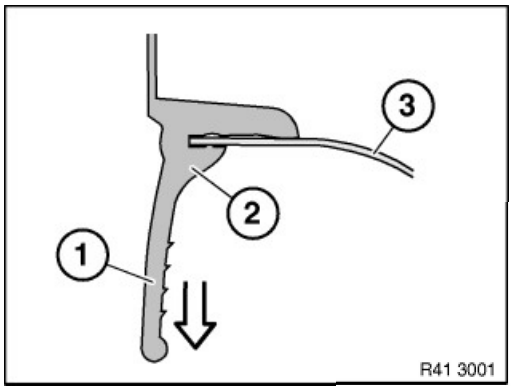
cardiagn.com



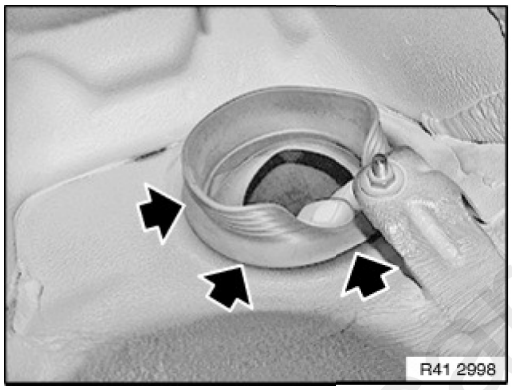
Systematic representation.*Installation note:*
Open hinge arm.

Turn sealing sleeve in area of hinge inwards and hold.

Insert cover bowl and engage sealing sleeve over fuel filler pipe.

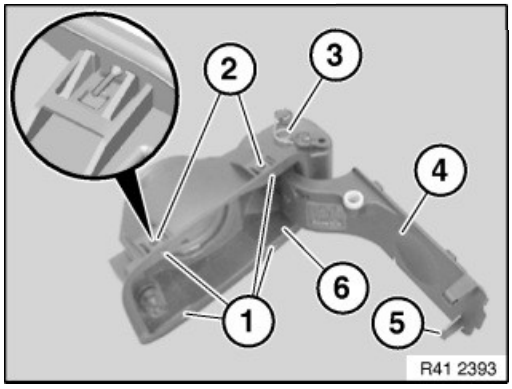


Installation note:
Using fitting aid (1), pull sealing lip (2) over sheet metal flange of wheel arch (3).



Systematic representation.*Installation note:*
Illustrations shows fuel filler pipe removed.

Check that sealing lip is correctly seated.



Installation note:
Following parts on cover bowl (6) must not be damaged or missing:

1	Bump stop
2	Latch mechanisms, top/bottom
3	Spring
4	Catch
5	Guide

Cover bowl must audibly snap into place 4 times.

There must be no discernible gap between sealing lip and side wall in area.

cardiagn.com

51 21 004 Adjusting front left or right lock striker

Operation is described in:

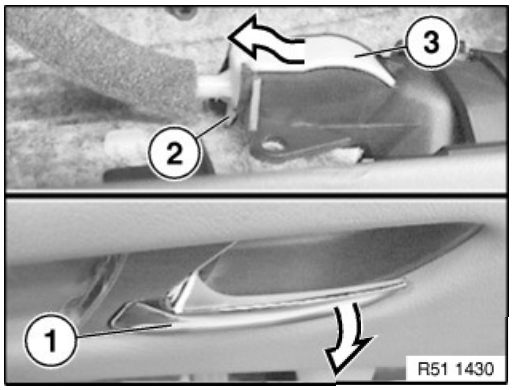
Adjusting left or right front door.

cardiagn.com

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

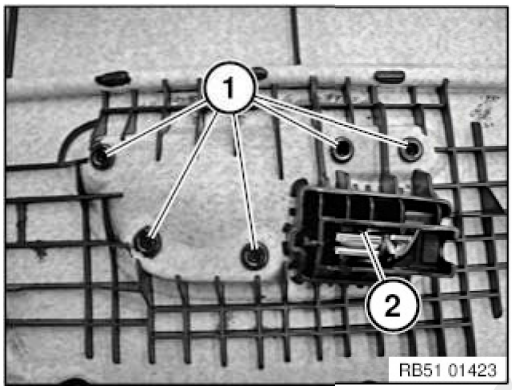


Note:
Graphic is similar.

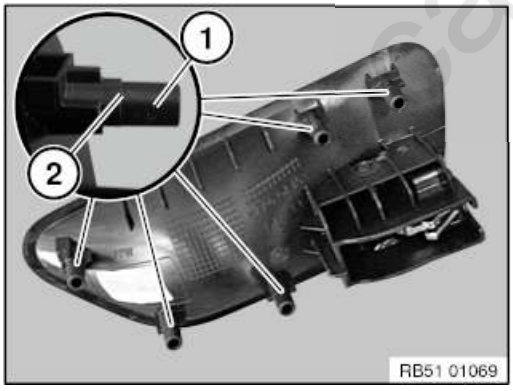
Lever out lock (2)

Pull off Bowden cable housing (3) towards rear/top - the Bowden cable feeds out of its own accord in the process.

Installation note:
To install the Bowden cable, press inner door handle (1) opposite to direction of arrow.

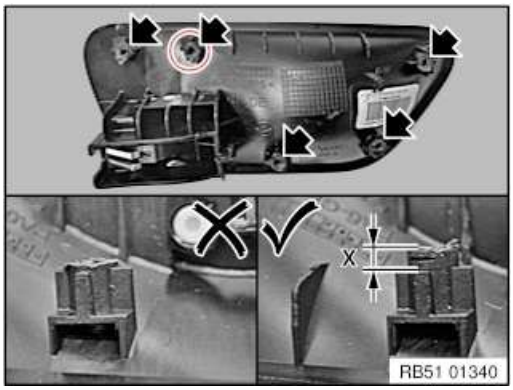


Drill out welding spots (1) on door opener (2) with 8 mm dia. weld spot drill bit and remove.door opener (2).*Note:*
Door opener is welded to door trim panel only on initial installation. The door opener is screw-connected on second installation. If applicable, release screws instead of welding spots.



Replacement:

Saw off welding pins (1) along edge (2).



Important!

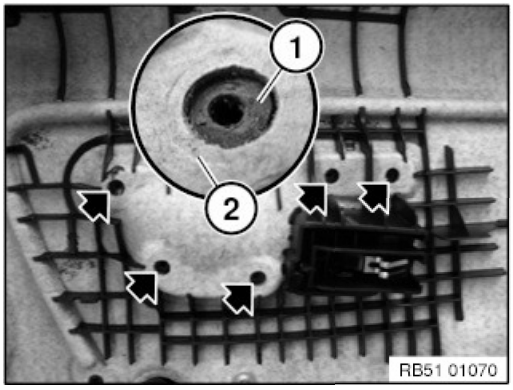
Increased risk of damage through welding pin marked red.

Welding pins are not to be completely shortened.

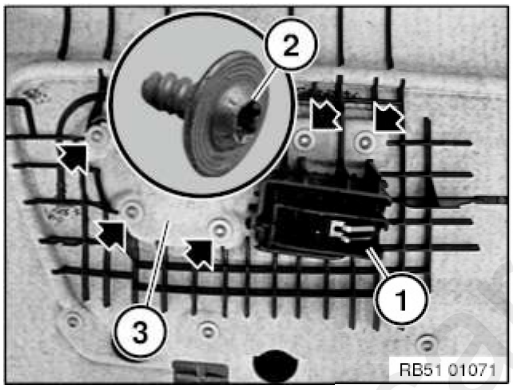
When welding pins are completely shortened, repair screw may leave a pressure mark in the visible area.

Welding pins must protrude by at least dimension (x).

x = 2 mm



Insert door opener in door trim panel.*Installation note:*
Welding pins (1) are not to protrude over door trim panel (2).



Installation note:
Secure door opener (1) on door trim panel (3) with repair screw (2).

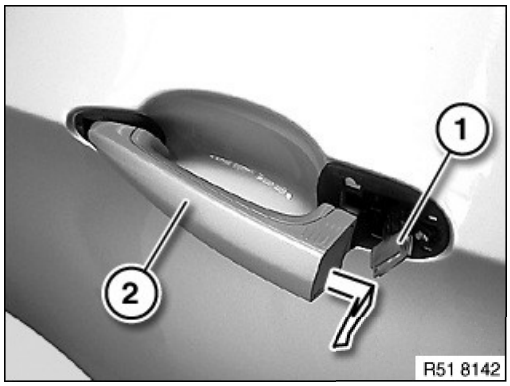
Tightening torque 51 41 2AZ.

cardiagn.com

51 21 170 Removing and installing or replacing outer door handle from left or right front door

Necessary preliminary tasks:

- Remove cover on outer door handle

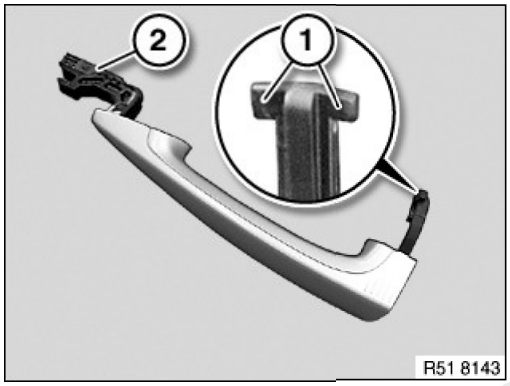


If necessary, lay outer door handle light (1) slightly to one side.

Pull out outer door handle (2) somewhat and feed out in direction of arrow.

Version with Comfort Access/CA:

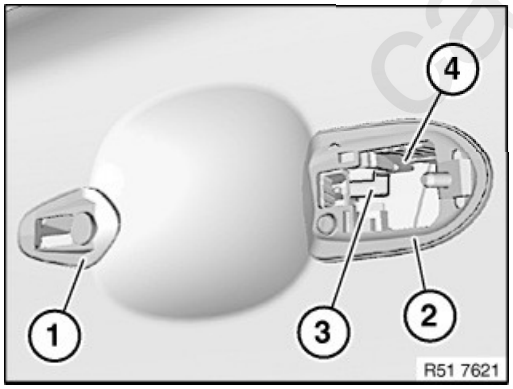
Carefully feed out outer door handle (2) and disconnect associated plug connection.



Installation note:
Locator (1) must not be damaged.

Version with Comfort Access/CA:

Seal (2) must not be damaged.



Installation note:
Sealing (1 and 2) must not be damaged or missing.

In necessary, use string to pull lock actuation (3) outwards and hold in position.

Install outer door handle and insert correctly into lock actuator (3).

Remove string.

Mount cover on outer door handle and carry out function check with open door.

After replacing version with Comfort Access/CA:

Clear fault memory and perform functional check.

cardiagn.com

51 21 300 Removing and installing or replacing window cavity cover strip on outside of left or right front door

Special tools required:

- 00 9 324

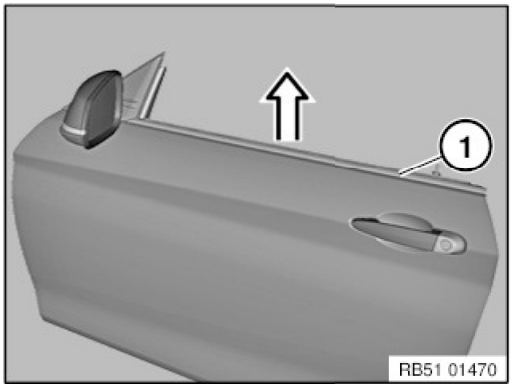
Important!

Observe procedure for using special tool 00 9 324 .

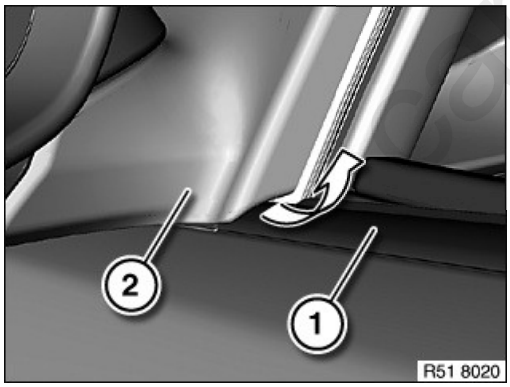
The "Instructions on installation of window guides" serve as the basis for this repair instructions and must be observed without fail.

Risk of damage!

If reusing the existing window cavity cover strip (1), make sure it is not bent.



Lever out weather strip (1) using special tool 00 9 324 (starting at B-pillar).



Pull out weather strip (1) from exterior mirror (2) in direction of arrow.*Installation note:*
Moisten weather strip (1) before installation with approved lubricant.

cardiagn.com

51 21 181 Removing and installing/renewing cover on outer door handle with lock barrel

Operation is identical to:

Removing and installing/renewing complete lock barrel in left or right front door.

cardiagn.com

51 21 330 Removing and installing/renewing weather strip on inner front door

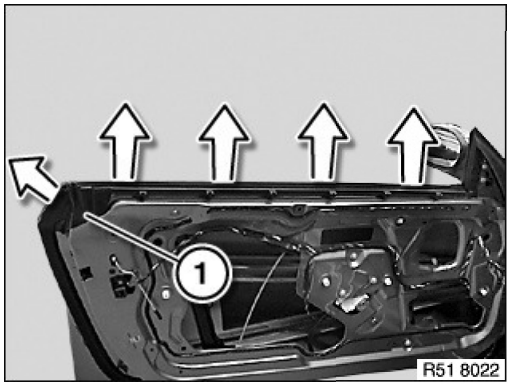
Necessary preliminary tasks:

- Remove front door trim panel
- The "Instructions on installation of window guides" serve as the basis for this repair instructions and must be observed without fail.

Important!

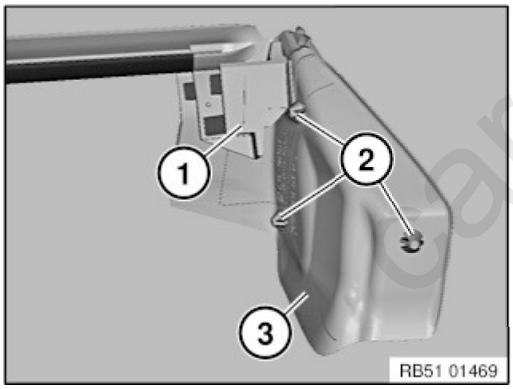
Risk of damage!

If weather strip is reused, make sure it is not bent.



Detach weather strip (1) from front door in direction of arrow.*Installation note:*
If necessary, remove clamps from weather strip and attach to door.

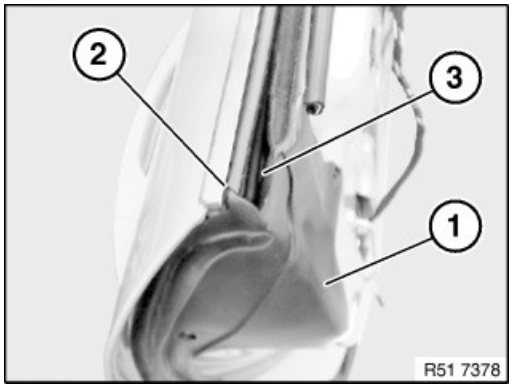
Replace faulty clamps.



Installation note:
Shaped part (1) and retaining elements (2) of weather strip (3) must not be damaged.

Shaped part (1) must be correctly threaded into the door.

Moisten weather strip (3) before installation with approved lubricant.



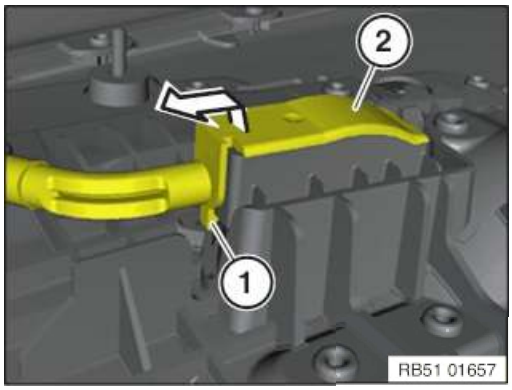
Installation note:
Ensure that weather strip (1) has the right installation position on door (2) and side window (3).

vardiagn.com

51 21 235 Removing and installing/replacing Bowden cable for inside door opener on left or right front door

Necessary preliminary tasks:

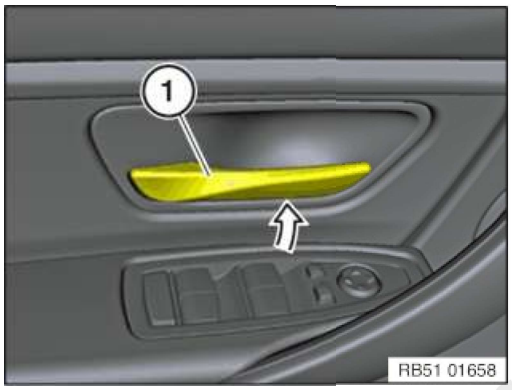
- Remove front door trim panel



Note:
Graphic is similar.

Lever out lock (1)

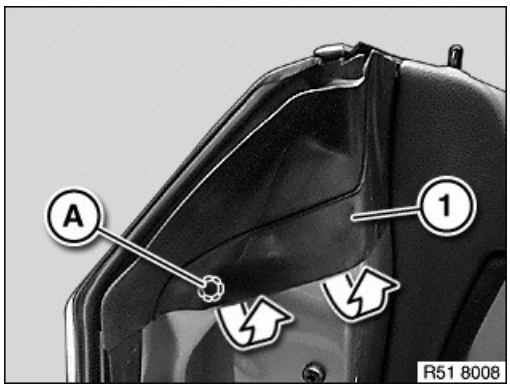
Pull off Bowden cable housing (2) towards rear/top - the Bowden cable feeds out of its own accord in the process.



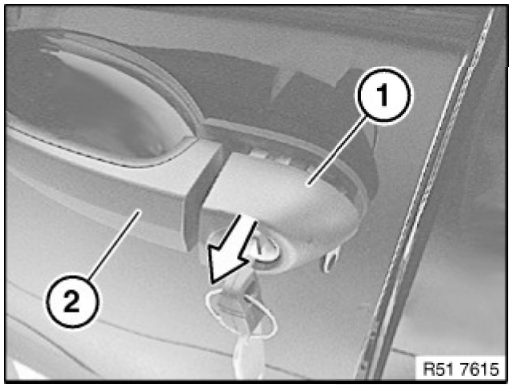
Installation note:
To install the Bowden cable, press inner door handle (1) in direction of arrow.

cardiagn.com

51 21 140 Removing and installing/replacing complete lock barrel in left or right front door



Lever out the sealing (1) and undo the screw in area (A).*Installation note:*
Make sure the sealing (1) is correctly fitted on the door.

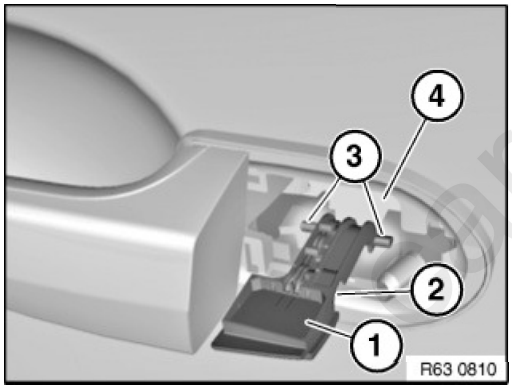


Insert ignition key into lock barrel.

Turn ignition key slightly and pull off cover (1) in direction of arrow with outside door handle (2) opened slightly.

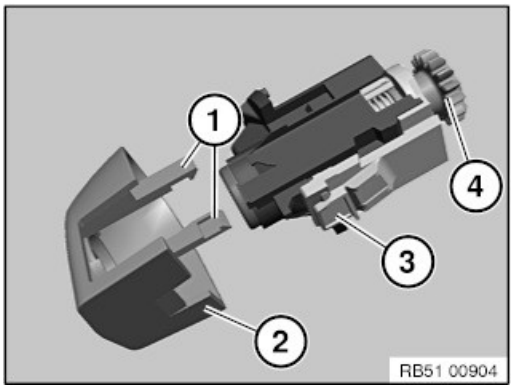
Installation note:
Lock barrel must be correctly seated in support for outer door handle.

Check function of lock barrel.



Version with light package: *Installation note:*
Make sure outside door handle light (1) is correctly positioned in area (2).

Guides (3) of outside door handle light (1) must be correctly seated in support for outer door handle (4).



Replacement:

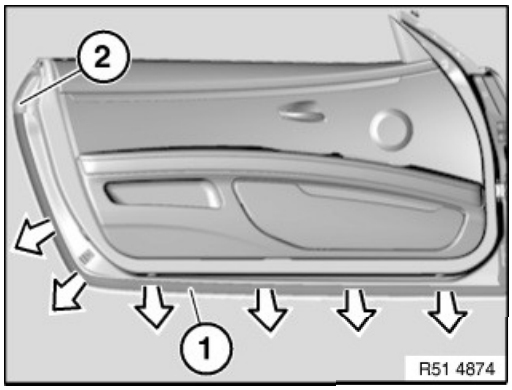
Remove latch mechanisms (1) and detach cover (2) from lock barrel (3).

Installation note:
Latch mechanisms (1) of cover (2) must not be damaged or missing.

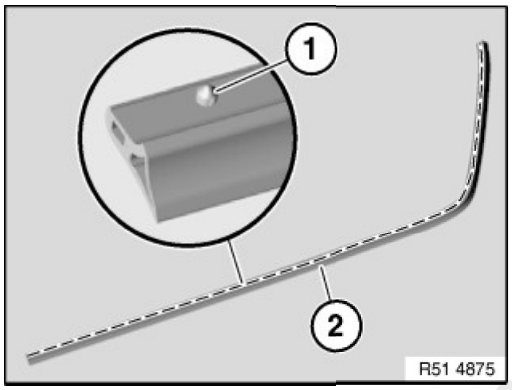
Gear (4) of lock barrel (3) must not be damaged.

51 21 370 Removing and installing/replacing cover (seal) on front door at bottom left or right

Note:
Repair work is shown by way of example. There may be differences in detail in the case of other vehicle types.



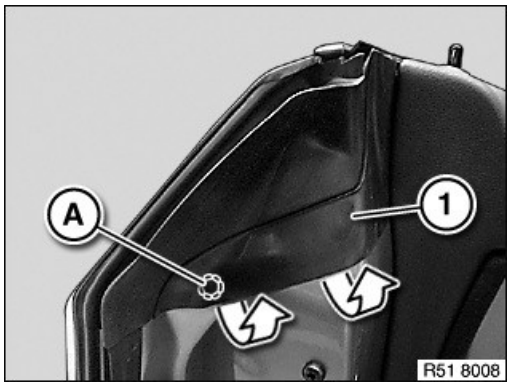
Unclip sealing (1) from front door in direction of arrow.*Installation note:*
Make sure sealing (1) fits correctly on window guide (2).



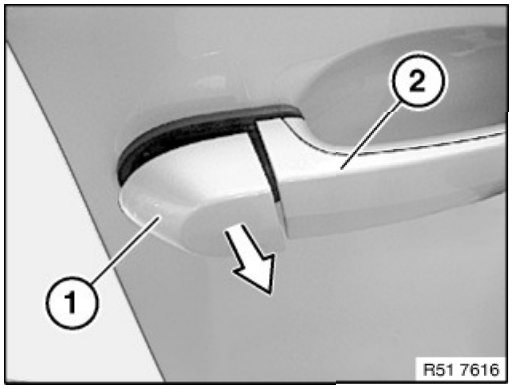
Installation note:
Clips (1) of sealing (2) must not be damaged.

cardiagn.com

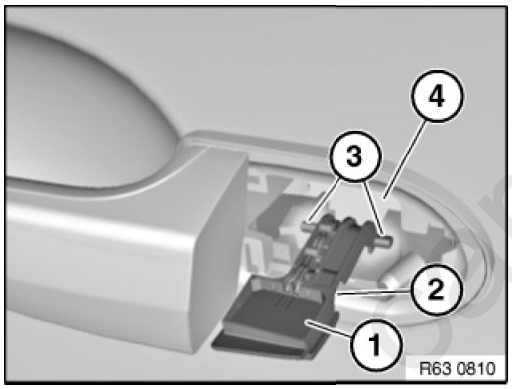
51 21 180 Removing and installing/replacing cover on outside door handle



Lever out the sealing (1) and undo the screw in area (A).*Installation note:*
Make sure the sealing (1) is correctly fitted on the door.

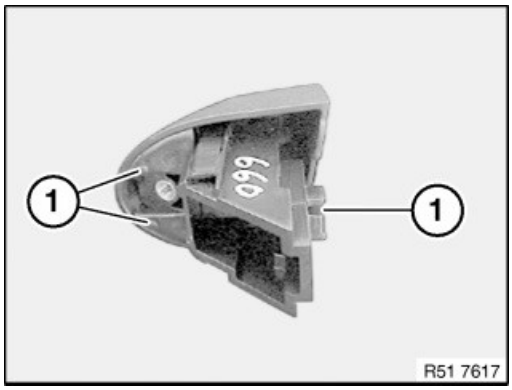


Pull off cover (1) in direction of arrow with outer door handle (2) opened slightly.

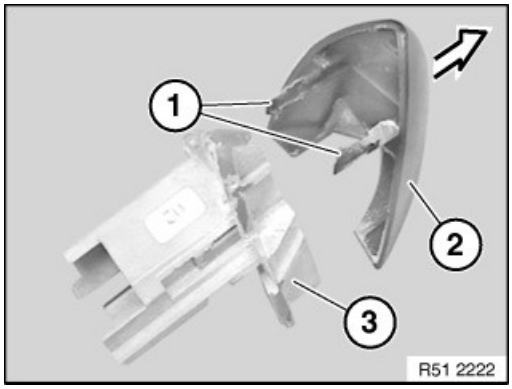


<u>Version with light package:</u> *Installation note:*
Make sure outer door handle light (1) is correctly positioned in area (2).

Guides (3) of outer door handle light (1) must be correctly seated in support for outer door handle (4).



Installation note:
Guides (1) must not be damaged.



Replacement

Note:
Similar to graphic.

Detach cover (2) from filler piece (3).

Installation note:
Latch mechanisms (1) of cover (2) must not be damaged.

cardiagn.com

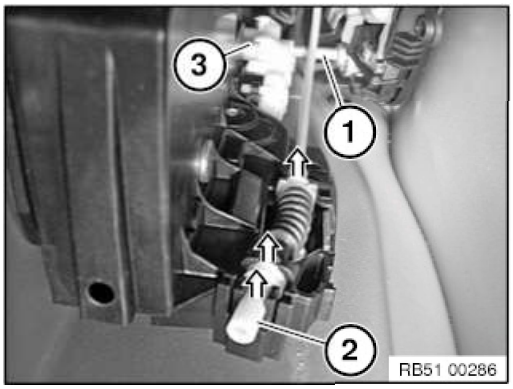
51 21 090 Removing and installing/replacing door lock in left or right front door

Special tools required:

- 51 2 190

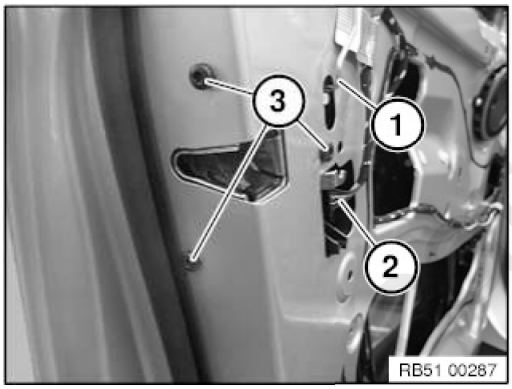
Necessary preliminary tasks:

- Remove sound insulation in front door



Disengage Bowden cable (2) from outer door handle at marked position.*Installation note:*
Driver's side only:

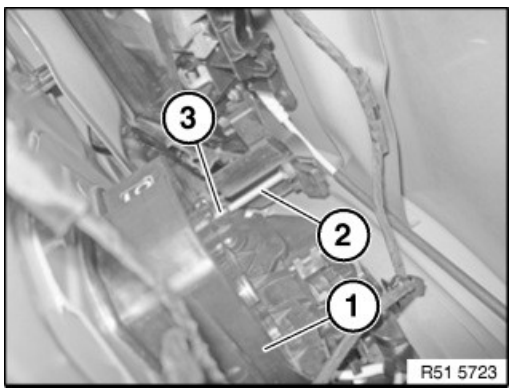
Make sure locking pin (1) is correctly seated in mounting of door lock (3).



Lever out locking rod (1).

Unfasten plug connection (2) and disconnect.

Release screws (3).

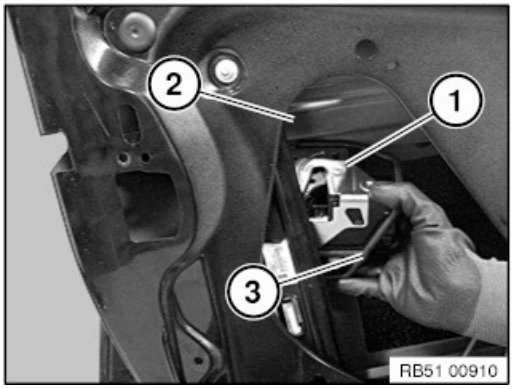


Only with driver's door:

Disengage door lock (1) at locking pin (2).

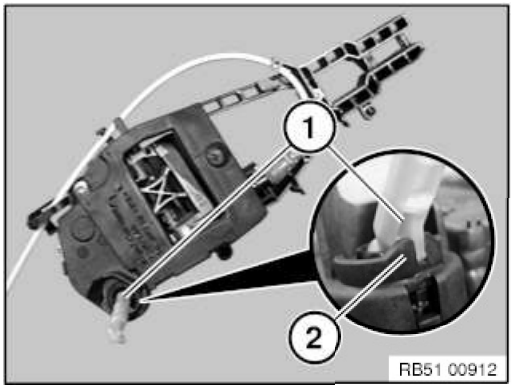
Installation note:
Make sure locking pin (2) is correctly seated in mount (3).

manualdiagn.com



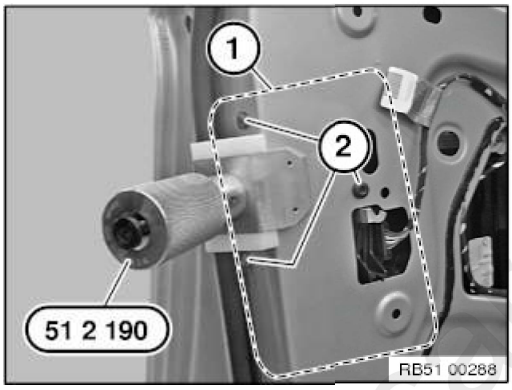
Turn door lock (1) as shown and manoeuvre out below door reinforcement (2).**Important!**

Do not damage door lock seal (3) when removing (water ingress)!



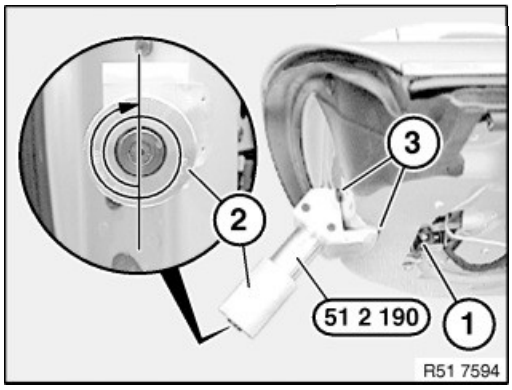
Installation note:
Schematic diagram of removed support for outer door handle.

For it to be possible to install the door lock, locking pin (1) must be in the installation position on the support (2).



Installation note:
Install door lock (1) and screw in screws (2) but to not tighten.

Slide special tool 51 2 190 into opened rotary striker until striker engages in first stage



Installation note:
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 tighten knurled screw (2) by a further 1 to 1.5 turns (max.) (risk of damage).

Door lock seal must rest uniformly on inner door panel (water ingress).

Tighten screws of door lock (1).

Observe tightening sequence: bottom - top - inner.

Tightening torque 51 21 1AZ.

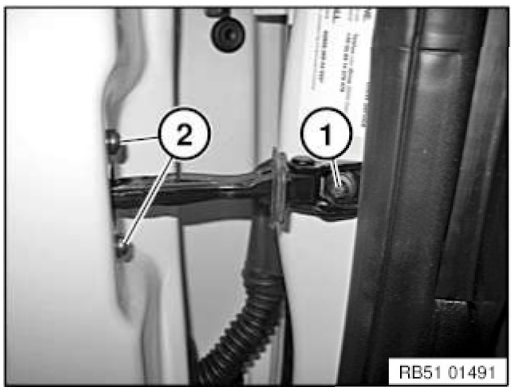
cardiagn.com

51 21 280 Removing and installing/replacing door stop on left or right front door

Necessary preliminary tasks:

- Close door windows
- Remove sound insulation in front area

Note:
After disengaging door stop, use suitable means of preventing door from opening past its maximum permissible opening angle (risk of damaging paintwork or bodywork).



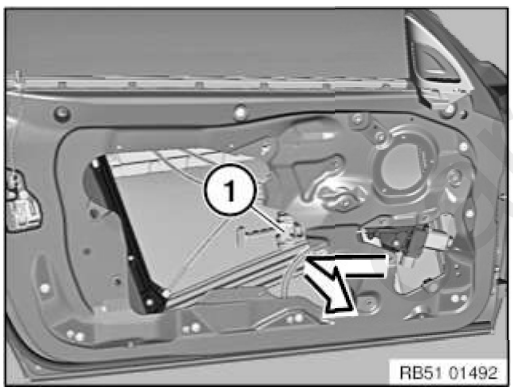
Note:
Secure front door against falling closed.

Release screw (1).

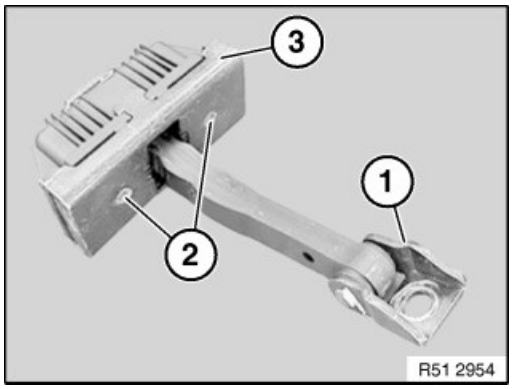
Tightening torque 51 21 3AZ.

Unfasten screws (2).

Tightening torque 51 21 5AZ.



Remove door stop (1) in direction of arrow.



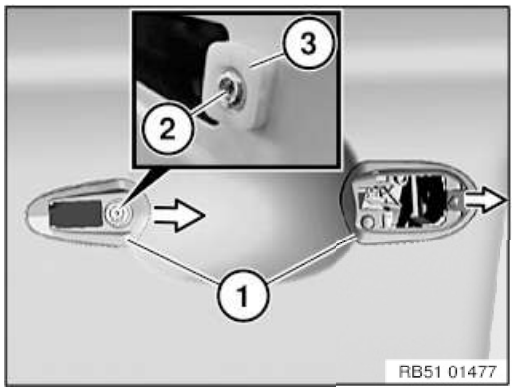
Installation note:
Hinge (1) and thread (2) on door stop (3) must not be damaged.

autodiagn.com

51 21 125 Removing and installing/replacing support for left or right outer door handle with lock barrel

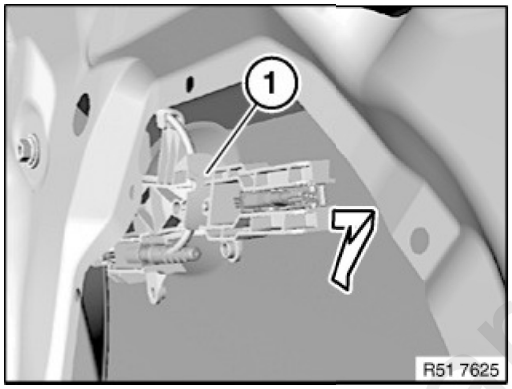
Necessary preliminary tasks:

- Close side window if necessary
- Remove outer door handle on front door
- Remove door lock of front door



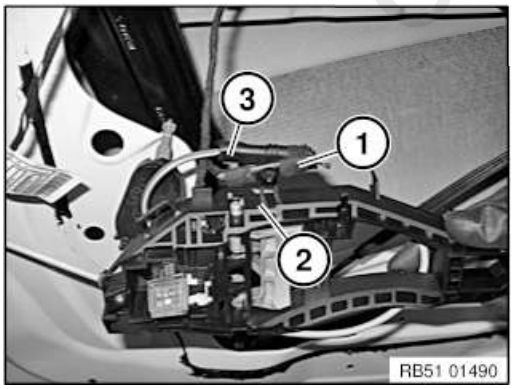
Remove seals (1) in direction of arrow.

Release screw (2) and remove holder (3) to outside.



If necessary, release cable clip from support (1).

Remove inner support (1) in direction of arrow and feed out of door.

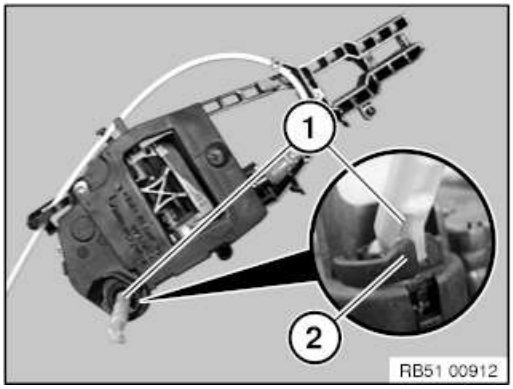


For version with Comfort Access/light package:

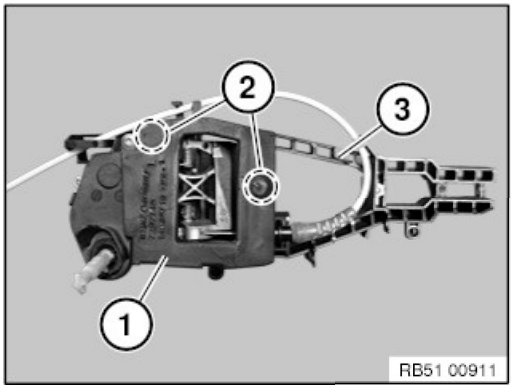
Release cable clip (1) from support (2).

Disconnect plug connection (3).

cardiagn.com

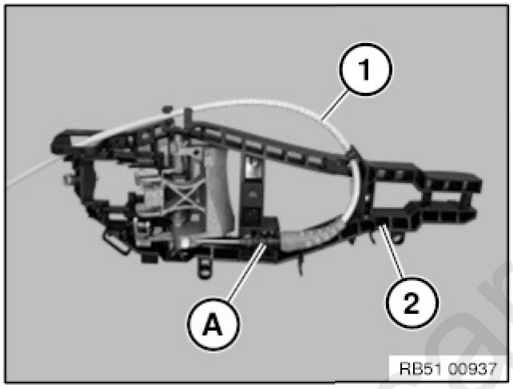


Installation note:
For it to be possible to install the door lock, locking pin (1) must be in the installation position on the support (2).



Replacement

Release sound cover (1) at clips (2) and manoeuvre out of support (3).



Replacement

Unclip Bowden cable (1) in area (A) and manoeuvre out of support (2).

Installation note:
Ensure that the Bowden cable (1) is correctly routed at support (2).

For version with Comfort Access/light package:

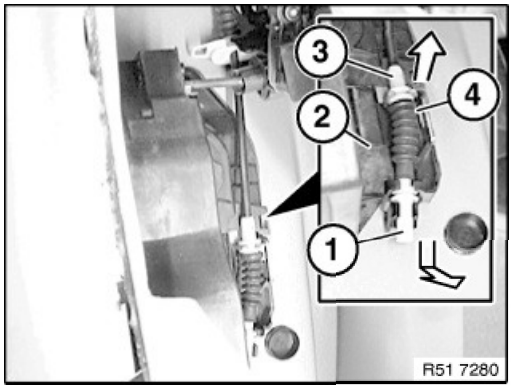
Modify outside door handle light on front door.

cardiagn.com

51 21 126 Removing and installing/replacing support for left or right outer door handle without lock barrel

Necessary preliminary tasks:

- Close side window if necessary
- Remove outer door handle on front door
- Release sound insulation on front door in rear part



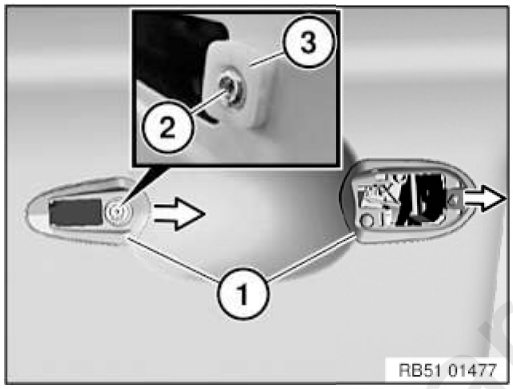
Disconnect Bowden cable at bottom (1) and top (3) from door lock (2).**Important!**
Door cannot be opened if Bowden cable is incorrectly laid.

Installation note:
Bowden cable must be correctly engaged in locators in door lock (2).

Bowden cable must be laid without kinks in bend to door lock (2).

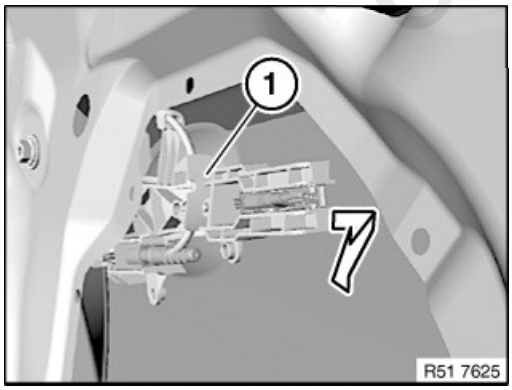
Seal (4) must be correctly fitted on Bowden cable.

Carry out function check with door open.



Remove seals (1) in direction of arrow.

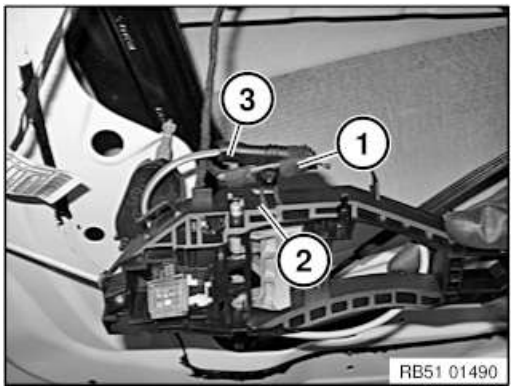
Release screw (2) and remove holder (3) to outside.



If necessary, release cable clip from support (1).

Remove inner support (1) in direction of arrow and feed out of door.

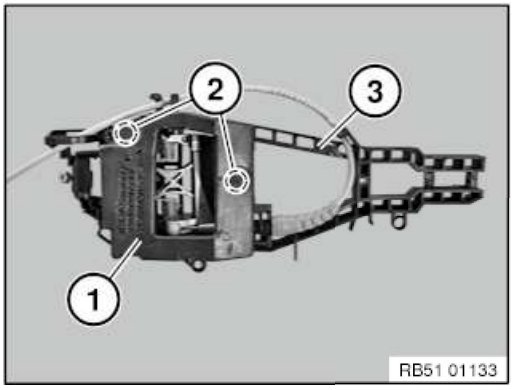
cardiagn.com



For version with Comfort Access/light package:

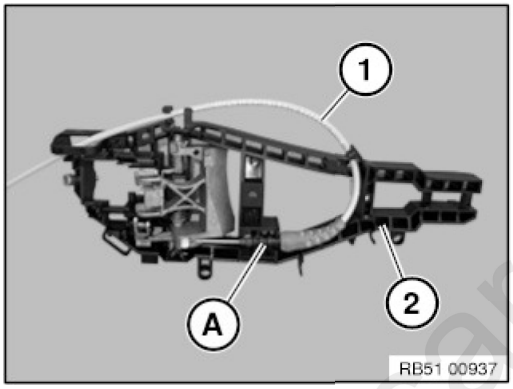
Release cable clip (1) from support (2).

Disconnect plug connection (3).



Replacement:

Release sound cover (1) at clips (2) and manoeuvre out of support (3).



Replacement:

Unclip Bowden cable (1) in area (A) and manoeuvre out of support (2).

Installation note:
Ensure that the Bowden cable (1) is correctly routed at support (2).

For version with Comfort Access/light package:

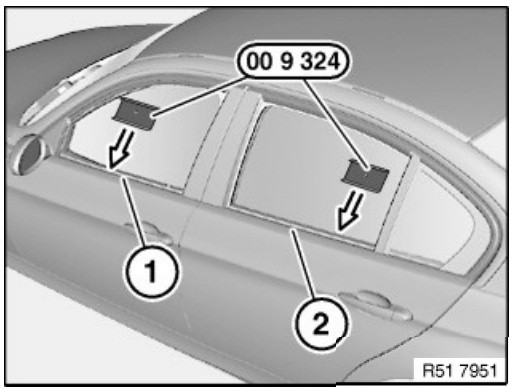
Modify outside door handle light on front door.

cardiagn.com

51 21 ... Removing weather strip with special tool 00 9 324 at front or rear

Special tools required:

- 00 9 318
- 00 9 324



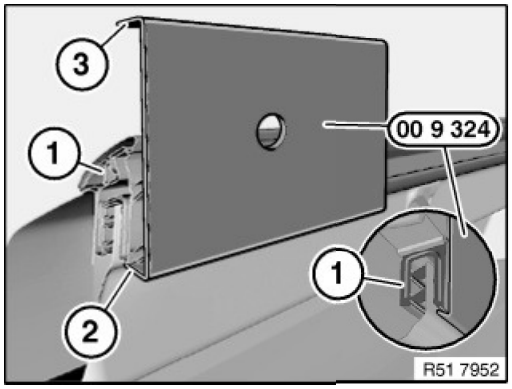
Open side window completely.

Front door:

Insert special tool 00 9 324 at front (at A-pillar) in window cavity (1) (TOP label pointing upwards).

Rear door:

Insert special tool 00 9 324 at rear (at C-pillar) in window cavity (2) (TOP label pointing upwards).

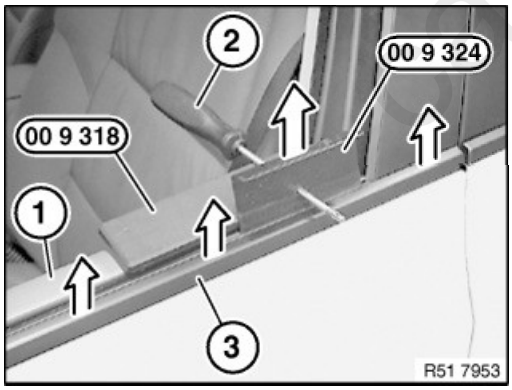


Note:
For purposes of clarity, graphic shows inner door panel and side window removed.

Special tool 00 9 324 must be correctly guided under weather strip (1).

2 Short leg, bottom

3 Long leg, top (TOP)



Note:
Start at the front or rear, depending on the model.

Important!

Risk of damage!

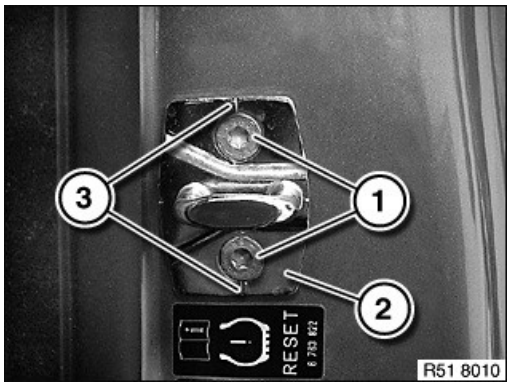
Raise weather strip (3) no more than 5 mm in each levering operation, otherwise the strip will be bent.

Position special tool 00 9 318 on door trim panel (1).

Push suitable tool (2) into the bore hole of special tool 00 9 324 and thus lever out the weather strip (3) maximum 5 mm in upward direction.

Guide special tools 00 9 324 and 00 9 318 forward or backward step by step until weather strip (3) is fully removed.

51 21 003 Replacing door detent (lock striker), front left or right



Release screws (1) and remove door detent (2).

Installation note:
If necessary, carry out basic adjustment by way of notches (3) on door detent (2) and B-pillar.

Tightening torque 51 21 2AZ.

After installation:

Adjust door detent.

cardiagn.com

51 21 233 Replacing the Bowden cable for the outside door handle on the left or right front door



Operation is described in:

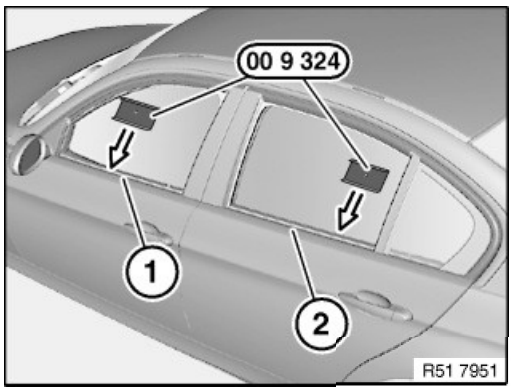
Remove and install/replace outside door handle supports at left or right.

cardiagn.com

51 21 ... Removing weather strip with special tool 00 9 324 at front or rear

Special tools required:

- 00 9 318
- 00 9 324



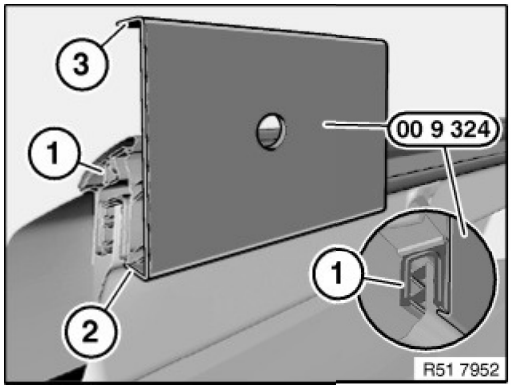
Open side window completely.

Front door:

Insert special tool 00 9 324 at front (at A-pillar) in window cavity (1) (TOP label pointing upwards).

Rear door:

Insert special tool 00 9 324 at rear (at C-pillar) in window cavity (2) (TOP label pointing upwards).

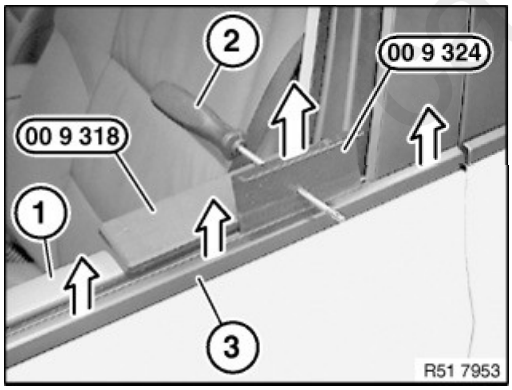


Note:
For purposes of clarity, graphic shows inner door panel and side window removed.

Special tool 00 9 324 must be correctly guided under weather strip (1).

2 Short leg, bottom

3 Long leg, top (TOP)



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.

Position special tool 00 9 318 on door trim panel (1).

Push suitable tool (2) into the bore hole of special tool 00 9 324 and thus lever out the weather strip (3) maximum 5 mm in upward direction.

Guide special tools 00 9 324 and 00 9 318 forward or backward step by step until weather strip (3) is fully removed.

51 23 004 Adjusting engine compartment lid catch



Operation is described in:

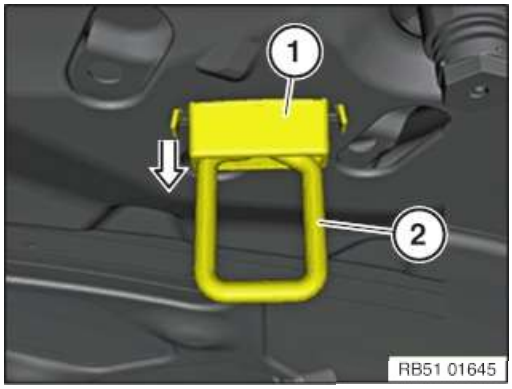
Adjusting engine compartment lid.

cardiagn.com

51 23 131 Adjusting left or right striker on engine compartment lid

Adjusting striker is described in:

Adjusting engine compartment lid



Unclip anti-twist lock (1).

Unscrew retaining hook (2).

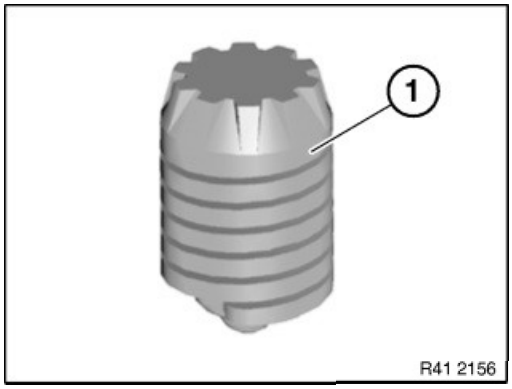
Installation note:

Adjust engine compartment lid

cardiagn.com

51 23 ... Adjusting/replacing bump stops

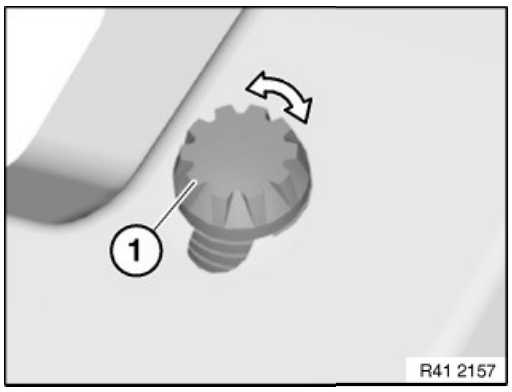
The illustrations are schematic representations and are to be applied to the relevant vehicle type.



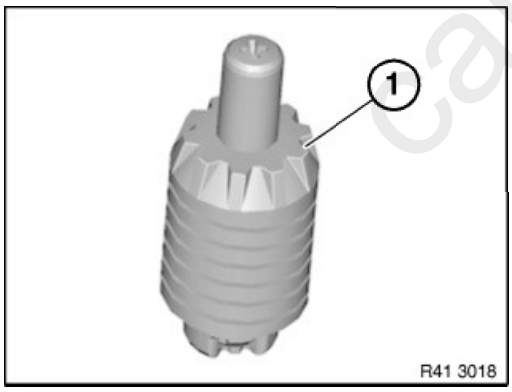
Version 1:

Following parts must not be damaged:

- (1) Bump stop



Adjust bump stop (1) to correct height by turning left or right.

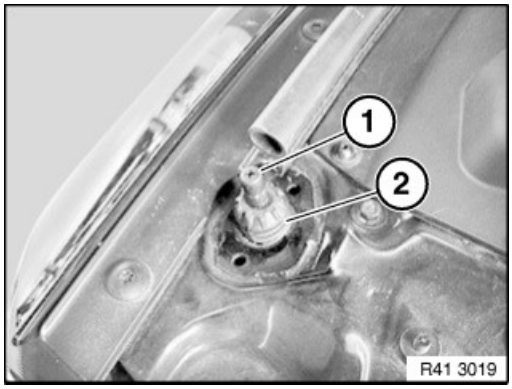


Version 2:

Replace damaged bump stops (refer to EPC):

- (1) Bump stop with ejector

cardiagn.com

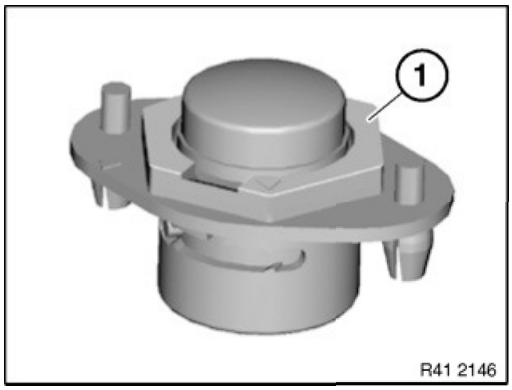


Press ejector (1) into bump stop and, in this position, twist approx. 90° counterclockwise with a Phillips screwdriver.

This locks the ejectors (1) in the bump stops.

Adjust bump stop (2) to correct height by turning left or right.

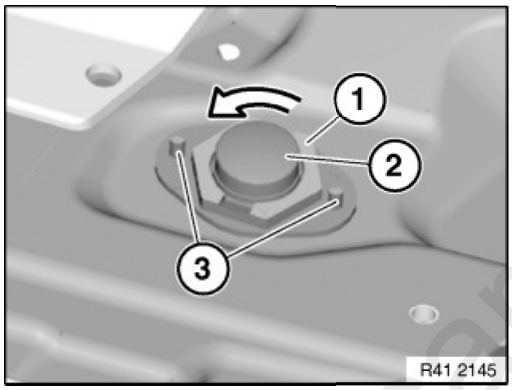
Unlock the ejector (1) again after completing adjustment.



Version 3:

Replace damaged bump stops (refer to EPC):

- (1) Bump stop



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:

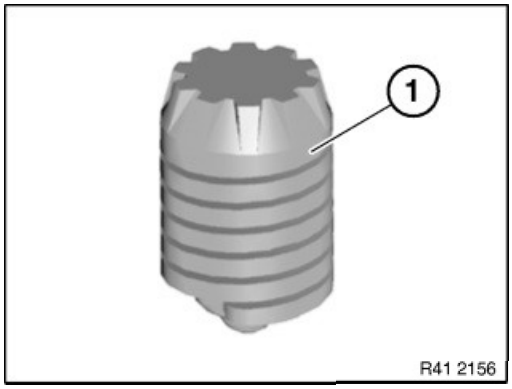
Press bump stop into panel and drive in expanding pins (3).

cardiagn.com

51 23 ... Adjusting/replacing bump stops

The graphics are schematic representations and are to be applied to the relevant vehicle type.

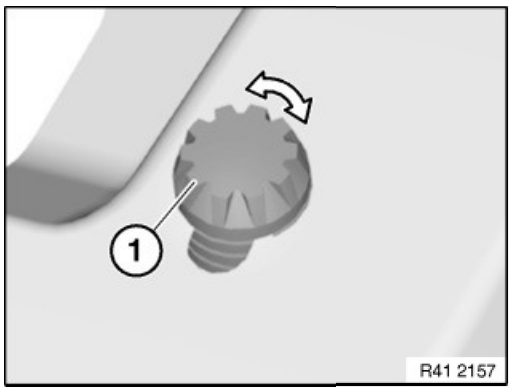
Prerequisite: Lid must be correctly adjusted.



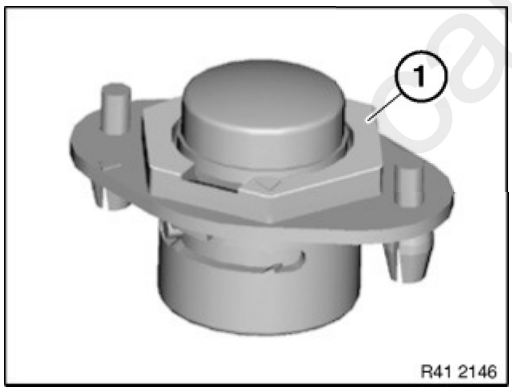
Version 1:

Following parts must not be damaged:

- (1) Bump stop



Adjust stop pad (1) to correct height by turning left or right.

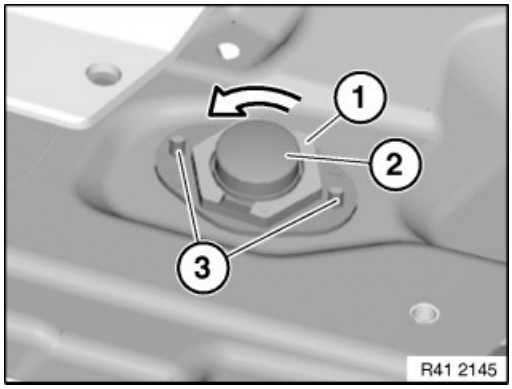


Version 2:

Replace damaged stop pads (refer to EPC):

- (1) Bump stop

cardiagn.com



Adjusting version 2:

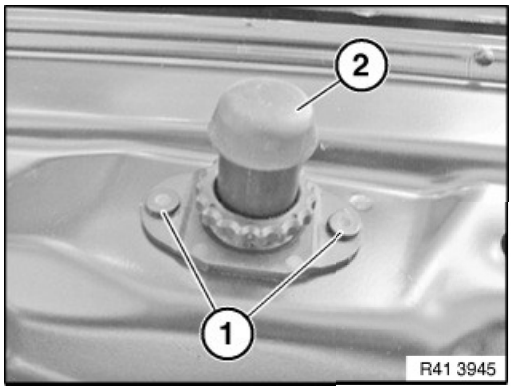
Stop (1) 45° anticlockwise.

Pull stop pad (2) upwards.

Close lid slowly until it is at the same height as the side wall.

Open flap and turn stop (1) clockwise.

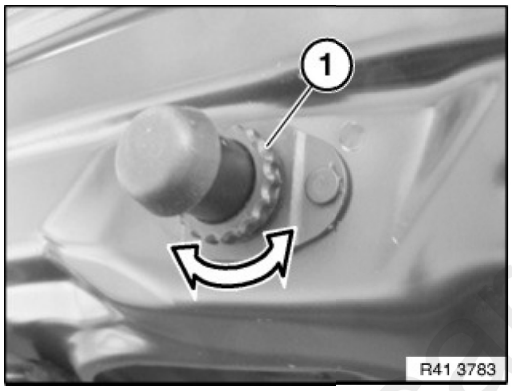
Installation note:
Press stop pad into panel and drive in expanding pins (3).



Version 3:

Lever out expanding rivets (1).

Remove stop pad (2).



Adjusting version 3:

Checking correct adjustment:

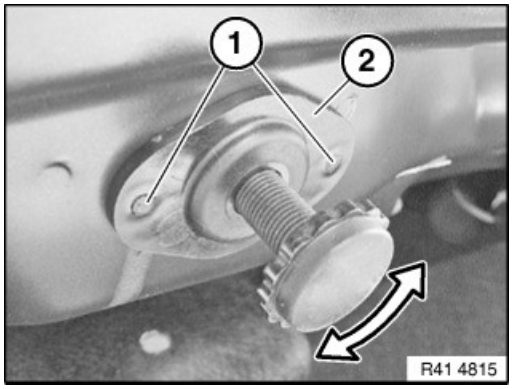
- Insert a strip of paper (normal writing paper) between stop pad and limit position on body.
- Close flap. Make sure that the paper strip remains between stop pad and limit position.
- The stop pad is correctly adjusted when the paper strip can be pulled out ”with slight resistance”.

Adjustment procedures:

Screw in stop pad until the paper strip can be easily pulled out.

Then unscrew stop pad until the paper strip cannot be pulled out any more.

Screw in stop pad until the paper strip can be pulled out with "slight" resistance.



Version 4:

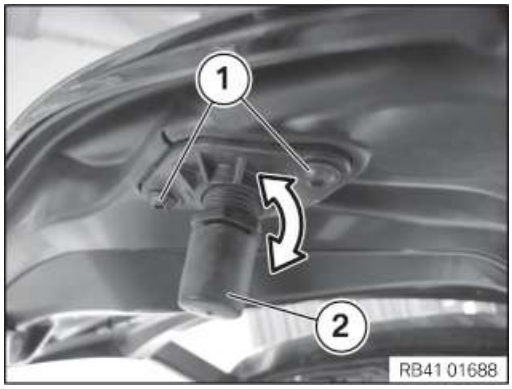
Lever out expanding rivets (1).

Remove stop pad (2).

Adjusting version 4:

Set stop pad to the correct height by turning to the left or right.

cardiagn.com



Version 5:

Release screws (1) and remove stop pad (2).

Adjusting version 5:

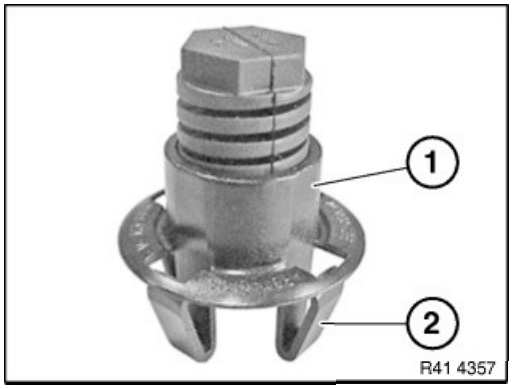
Set stop pad to the correct height by turning to the left or right.

cardiagn.com

51 23 ... Adjusting/replacing bump stops

The graphics are schematic representations and are to be applied to the relevant vehicle type.

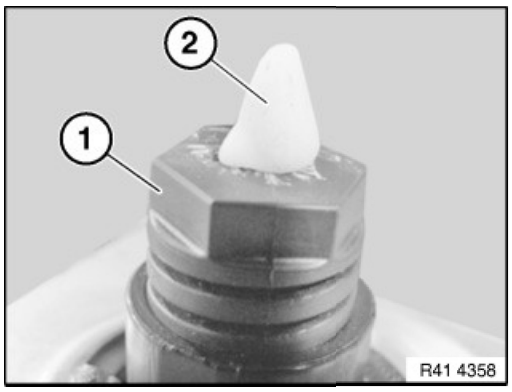
Prerequisite: Lid must be correctly adjusted.



Following parts must not be damaged:

- (1) Bump stop
- (2) Catches

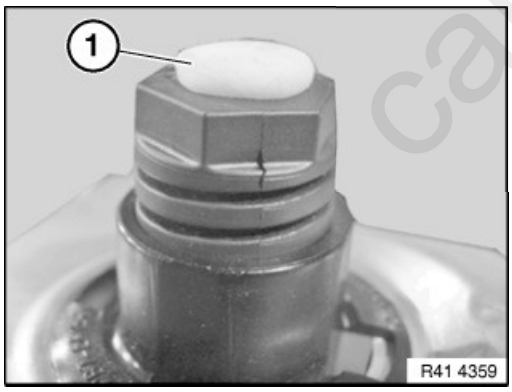
Remove stop pad by pressing latch mechanisms back.



Screw in stop pad (1) to create distance to front compartment lid.

Place a cone (2) of modelling or sealing compound on the stop pad.

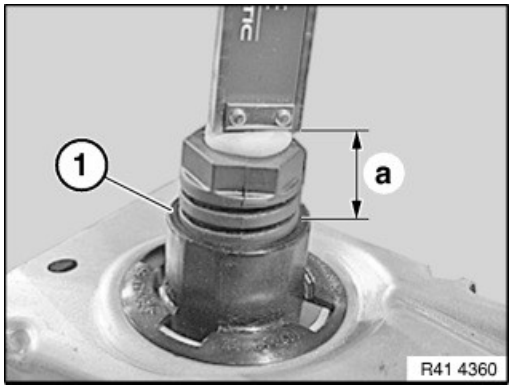
Slowly close bonnet.



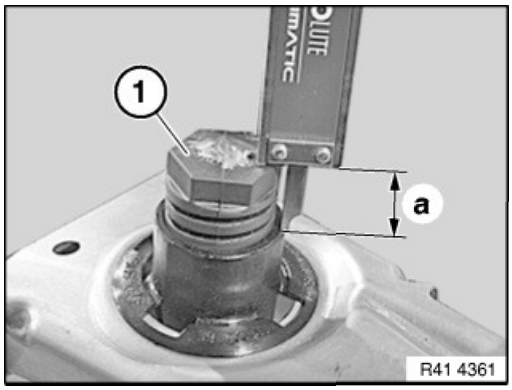
Raise bonnet.

Compressed cone (1) determines distance between stop pad and front compartment lid.

cardiagn.com



Measure dimension a between compressed cone and edge (1) of stop pad.



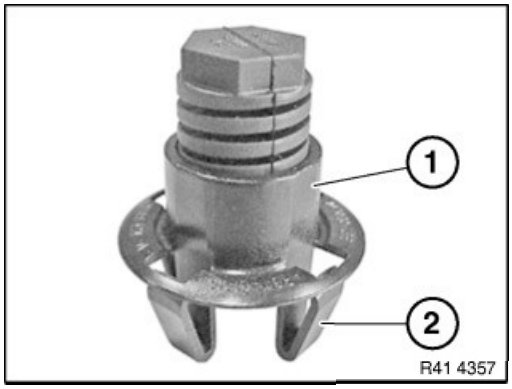
Adjust measured dimension a + 0.5 mm by unscrewing stop pad (1).

cardiagn.com

51 23 ... Adjusting/replacing bump stops

The graphics are schematic representations and are to be applied to the relevant vehicle type.

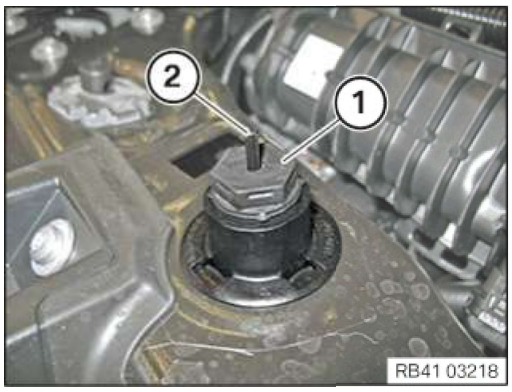
Prerequisite: Lid must be correctly adjusted.



Following parts must not be damaged:

- (1) Bump stop
- (2) Catches

Remove adjusting buffer by pressing latch mechanisms back.



Screw adjusting buffer (1) until the pin (2) can be pulled out.

Slowly pull the pin (2) out approx. 15 mm.

Slowly close engine compartment lid.

The pin (2) is thus pushed into the adjusting buffer (1).



Raise engine compartment lid.

Unscrew the adjusting buffer (1) until it is flush with the upper edge of the pin (2).

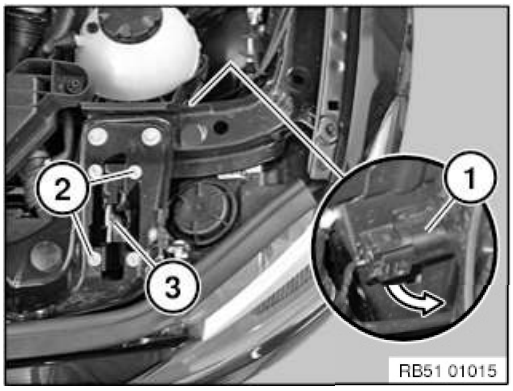
bmwdiagn.com

51 23 110 Removing and installing/replacing left engine compartment lid lock.

Necessary preliminary tasks:

F23/F87/F33 only:

- Remove left front-end strut

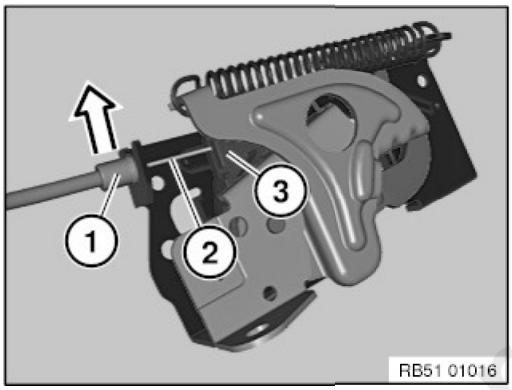


Detach plug connection (1) by twisting from catch carrier.

Unfasten plug connection (1) and disconnect.

Release screws (2) and feed out engine compartment lid lock (3).

Tightening torque 51 23 1AZ.



Unclip grommet (1).

Unhook Bowden cable (2) from engine compartment lid lock (3).

cardiagn.com

51 23 400 Removing and installing/replacing left or right actuator (active pedestrian protection), vehicles from 09/ 2011

Warning!

Adhere to the following safety information so as to avoid a danger of injury by the actuator.

The battery negative lead must be clamped off prior to work on the actuator or engine compartment lid!

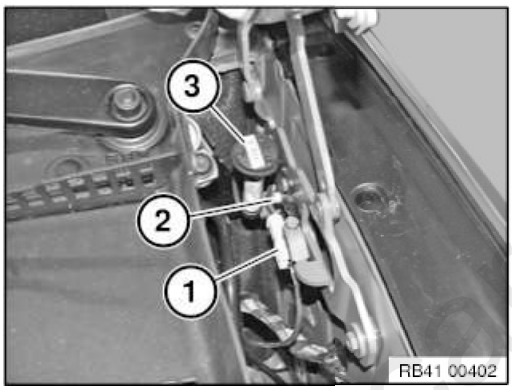
Do not exert any force on the actuator.

Incorrect handling may result in triggering of the actuator and thereby cause serious injury.

Necessary preliminary tasks:

Disconnect battery earth lead.

Removal

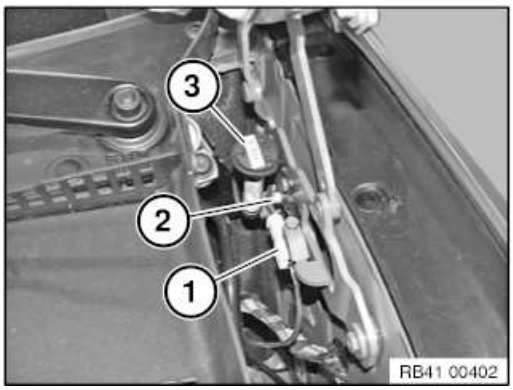


Unfasten plug connection (1) and disconnect.

Release bolt (2) and remove actuator (3).

Installation

Comply with notes regarding handling active pedestrian protection.



Install actuator (3) and tighten bolt (2).

Tightening torque 41 61 8AZ.

Attach plug connection (1).

cardiagn.com

Required reworking:

Connect battery earth lead.

cardiagn.com

51 23 265 Removing and installing/replacing left or right gas pressure spring for engine compartment lid

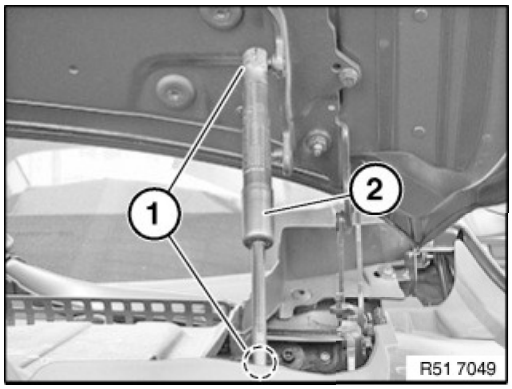


Warning!

Danger of injury and damage!

For the following tasks, you must take the appropriate measures to support the engine compartment lid.

As an alternative, you can enlist the help of a second person to hold the engine compartment lid.



Make a written record of the installation position of the gas pressure spring(s) before removing.

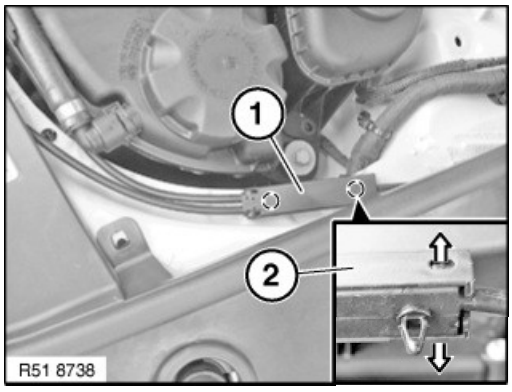
Carry out ball socket removal at both ends (1) of gas pressure spring (2).

cardiagn.com

51 23 211 Removing and installing/replacing pull cable for hood/bonnet locks at front

Necessary preliminary tasks:

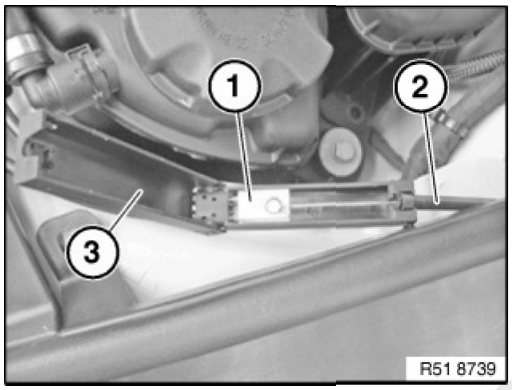
- Remove left/right engine compartment lock



Unclip clutch housing Bowden cable (1) at marked points.

Installation note:
Clips must not be damaged.

To open up clutch housing cover, lever up cover (2) in direction of arrow.

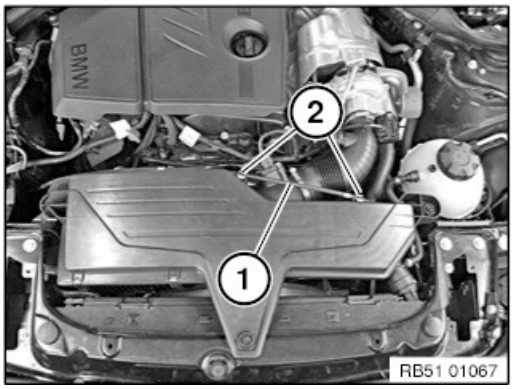


Feed rear Bowden cable (2) out of holder (1) and clutch housing (3).

Note:
Depending on the version, two variants of the Bowden cable are possible.

Version 1 : Bowden cable rear intake silencer housing

Version 2 : Longer Bowden cable stored in the cross member



Version 1:

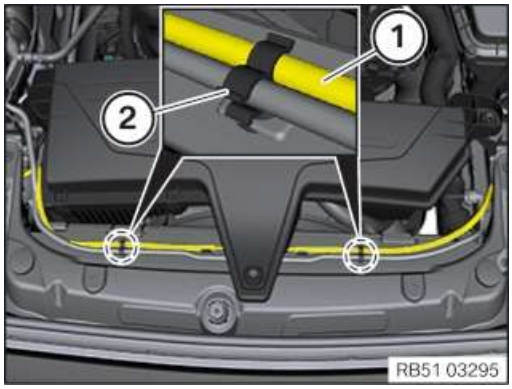
Release Bowden cable (1) on holder (2).

Feed out Bowden cable (1).

Replacement:

If a longer Bowden cable (1) installed, the Bowden cable must be installed as described in Option 2.

cardiagn.com



Version 2:

Release Bowden cable (1) on holder (2).

Feed out Bowden cable (1).

Note:
When converting from version 1 to version 2, the holder (2) must be retrofitted.

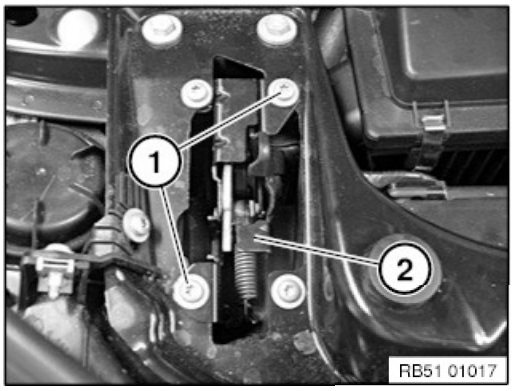
cardiagn.com

51 23 100 Removing and installing/replacing right engine compartment lid lock.

Necessary preliminary tasks:

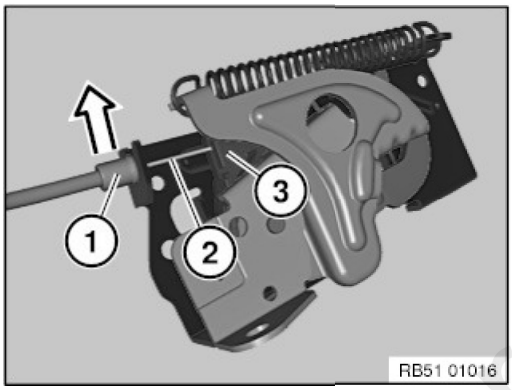
F23/F33/F87 only:

- Remove right front-end strut



Release screws (1) and feed out engine compartment lid lock (2).

Tightening torque 51 23 1AZ



Unclip grommet (1).

Unhook Bowden cable (2) from engine compartment lid lock (3).

cardiagn.com

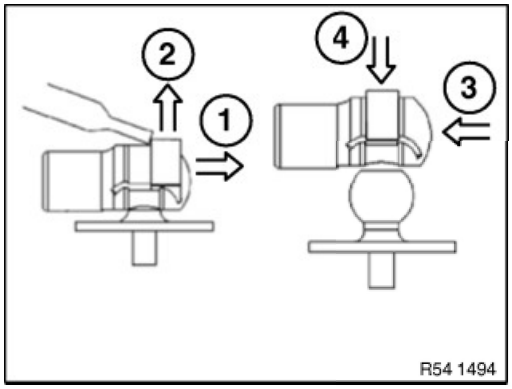
51 23 ... Removing/installing ball sockets with clip

Warning!

Danger of injury! When installed, the gas pressurised shock absorber is under preload. Minimise preload as far as possible before removing.

Important!

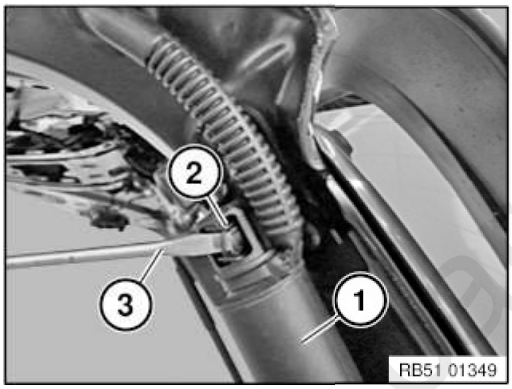
Never lift off ball socket with engaged clamp.



Version A:

1. Push on clamp in direction of groove with screwdriver
2. Lift off ball socket from ball pin
3. Slide clamp back
4. Fit ball socket on ball stud and snap into place with force

Installation note:
Pack grease into two opposite positions in socket. The grease spreads after installation on the ball pin all round in the ball socket.



Version B:

Important!

Risk of damage!

If you are not careful, retaining spring (2) may be bent to such an extent that the entire drive spindle will have to be replaced.

Press drive spindle (1) against ball pin in order to relieve strain on retaining spring (2) at ball pin.

Pull out retaining spring (2) approx. 2-3 mm with screwdriver (3).

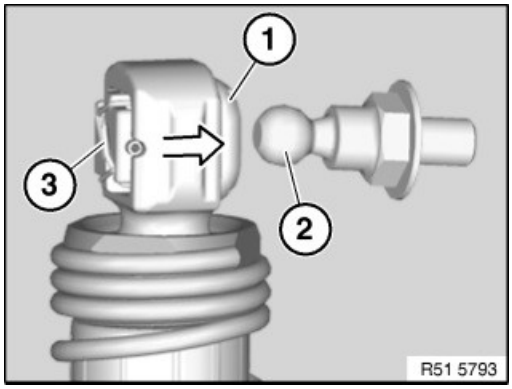
Pull off spindle foot.

Warning!

Observe warning notices on the damper.

Electrical spindle drive for tailgate is under mechanical spring load!

The component must be secured against falling down.

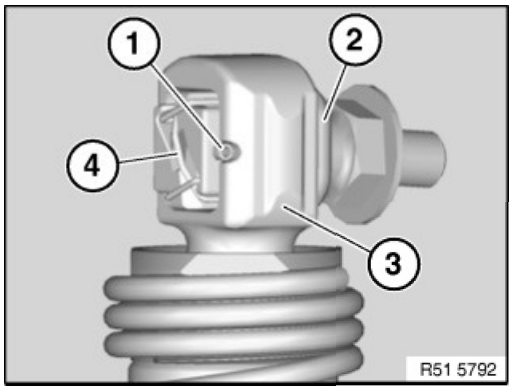


Attention!

Risk of damage!

Do not press on spindle drive at an angle or twisted.

Installation note:
Press ball socket (1) onto ball pin (2) until retaining spring (3) engages correctly (clicking sound).



Important!

If retaining spring (4) is damaged!

Release pin (1).

Remove spindle drive (3).

Remove ball socket (2).

Remove retaining spring (4) and replace if necessary.

cardiagn.com

51 24 004 Adjusting rear lid lock

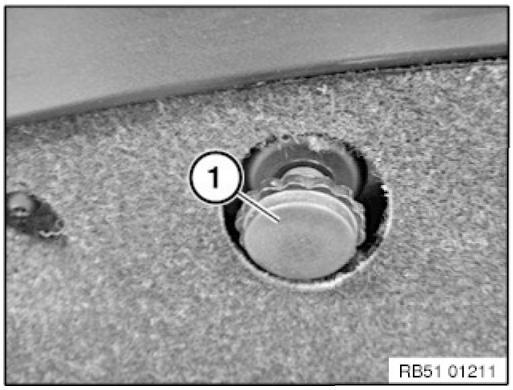
Special tools required:

- 64 1 020

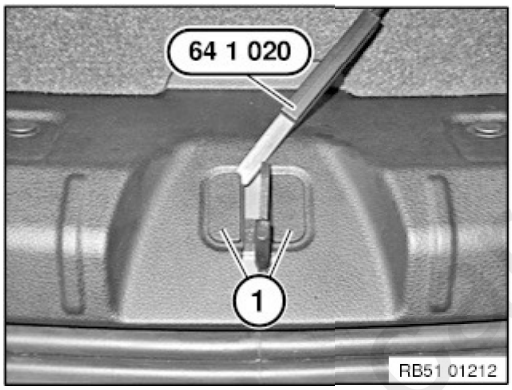
Prerequisite:

Rear lid must be correctly adjusted to fit; if necessary, adjust rear lid.

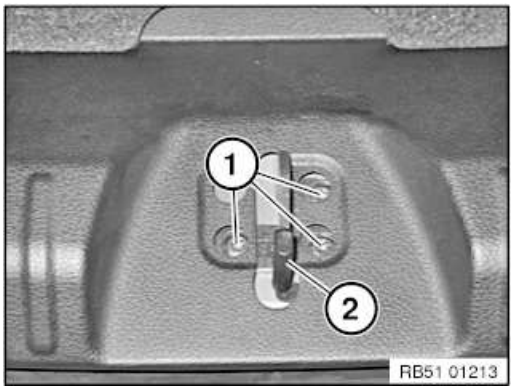
For ideal adjustment, refer to Body gap dimensions.



Screw in stop pad (1) on tailgate at left and right all the way.



Lever out protective caps (1) with special tool 64 1 020 .



Slacken screws (1) until striker (2) can still just be moved and centres itself.**Important!**

Striker (2) must not brush against rear lid lock.

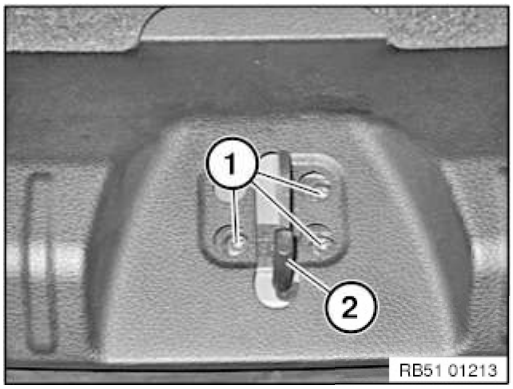
Close tailgate.

Check gap dimensions and locking comfort.

If necessary, repeat procedure.

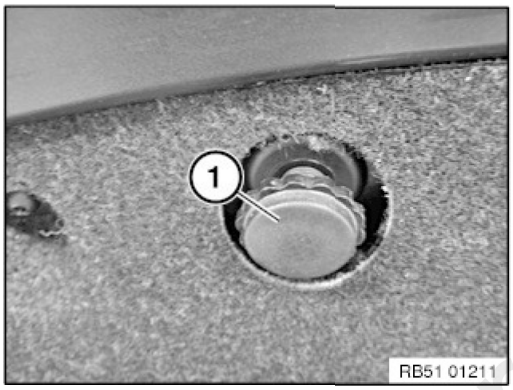
Note:
When the tailgate is closed, the striker must not touch or scrape against the tailgate lock. Look out for scratch marks.

Open tailgate.



Tighten down screws (2).

Tightening torque 51 24 2AZ.



Screw out stop pads (1) left/right until they are in contact with cover for tail panel.

Corresponding resistance must be noticeable when pulling out a paper strip from between tailgate and stop pad (1).

Then screw out stop pad (1) approx. half a rotation further.

Check closing comfort and if necessary, correct setting of stop pad (1).

Note:
Stop pads that are screwed out too far impede closing comfort.

Stop pads that are not screwed out enough can cause the tailgate to "rattle".

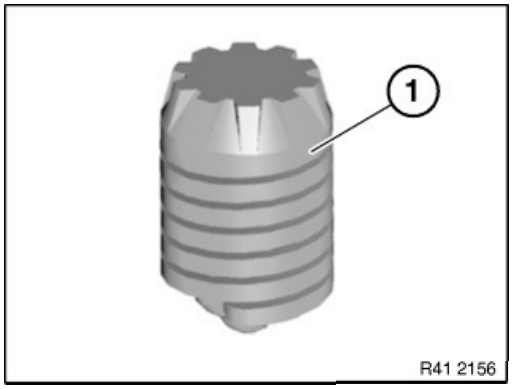
Equipment specification with rear view camera:

After adjusting, check rear view camera and if necessary recalibrate.

cardiagn.com

51 23 ... Adjusting/replacing bump stops

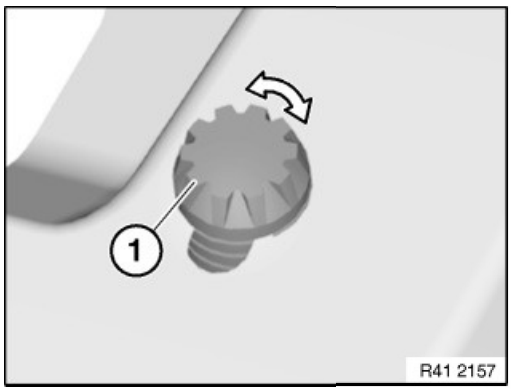
The illustrations are schematic representations and are to be applied to the relevant vehicle type.



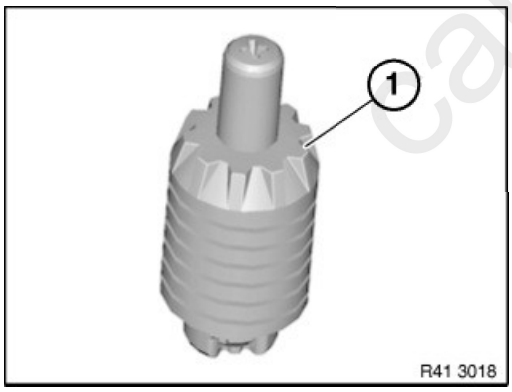
Version 1:

Following parts must not be damaged:

- (1) Bump stop



Adjust bump stop (1) to correct height by turning left or right.

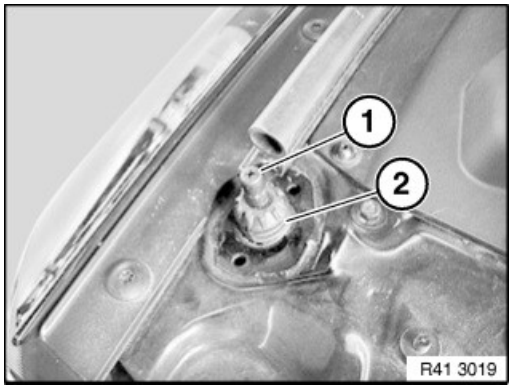


Version 2:

Replace damaged bump stops (refer to EPC):

- (1) Bump stop with ejector

cardiagn.com

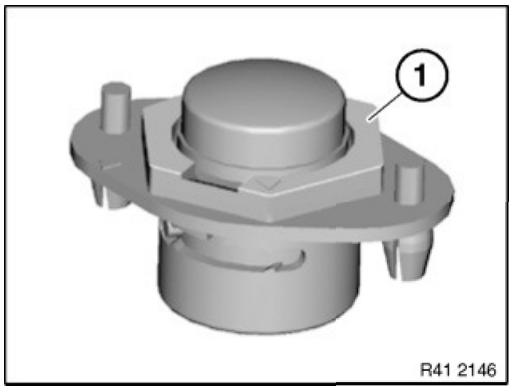


Press ejector (1) into bump stop and, in this position, twist approx. 90° counterclockwise with a Phillips screwdriver.

This locks the ejectors (1) in the bump stops.

Adjust bump stop (2) to correct height by turning left or right.

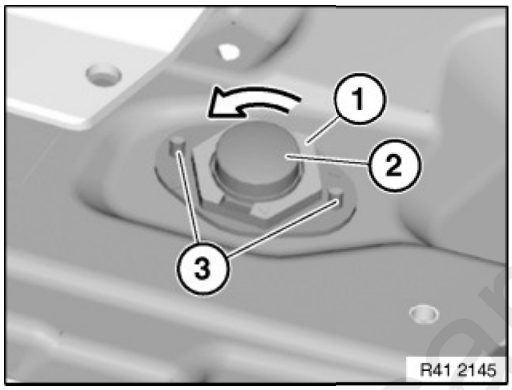
Unlock the ejector (1) again after completing adjustment.



Version 3:

Replace damaged bump stops (refer to EPC):

- (1) Bump stop



Turn lock (1) 45° counterclockwise.

Pull bump stop (2) upwards.

Close lid slowly until it is at the same height as the side panel.

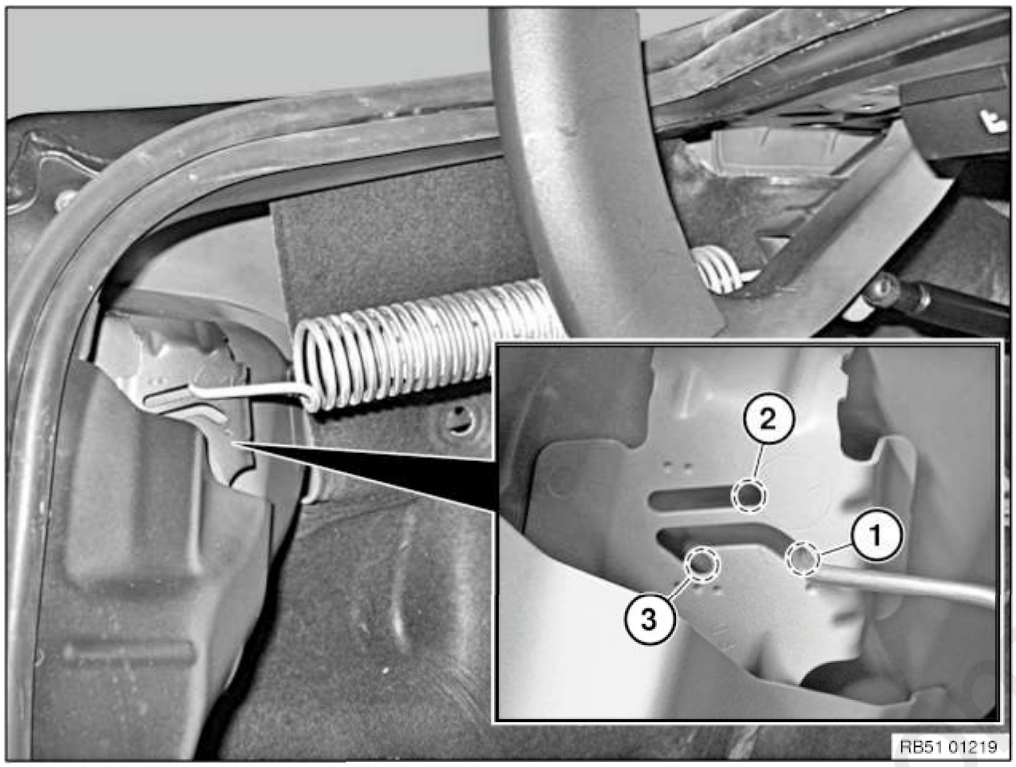
Open lid and turn lock (1) clockwise.

Installation:

Press bump stop into panel and drive in expanding pins (3).

cardiagn.com

51 24 ... Notes on setting tailgate closing force



1 General information

For different reasons it can be necessary to change the closing force of the tension springs, e.g.:

- Frequent parking uphill or parking in two-level garages (tailgate does not remain in open position)
- Customer complaint of operating convenience when opening and closing the tailgate
- Retrofit/dismantling of accessories on tailgate (e.g. rear spoiler, warning triangle, etc.)

The closing force can be changed by reattaching the tension spring at the rear holder.

Important!

It is not permitted to change the attachment on the hinge.

2 Adjustment positions:

(1) Soft (factory setting without rear spoiler)

(2) Medium

(3) Hard (factory setting with rear spoiler)

3 Adaptation of the closing force:

- Check the position of the tension springs on the left/right

Note:

The left/right tension springs may be attached in different positions. **Exception:** Position (1) on one side and position (3) on the other side is not permissible. This causes tailgate inclination.

- If possible, firstly reattach the right tension spring in the next higher/lower position
- Check the closing force
- If necessary, reattach the left tension spring in the next higher/lower position
- Check the closing force, repeat the process as required

cardiagn.com

Procedure for reattaching the tension spring: See repair instructions.

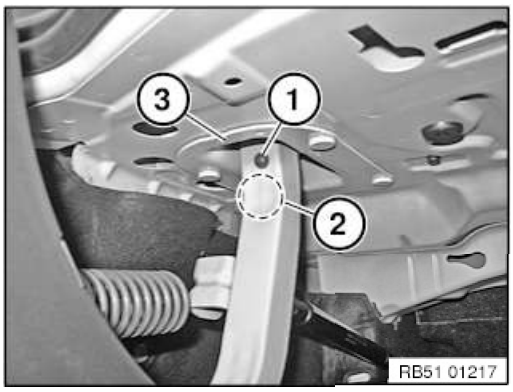
cardiagn.com

51 24 300 Removing and installing or replacing left or right gas pressure spring for tailgate

Necessary preliminary tasks:

- Remove luggage compartment wheel arch panel on left

Note:
Gas pressure spring is only installed on the left side.



Important!

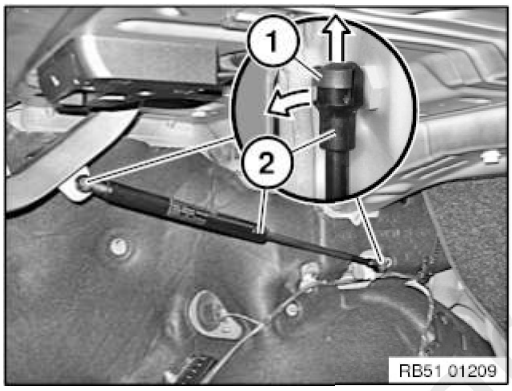
Gas-filled shock absorber restricts opening angle of tailgate.

When gas-filled shock absorber is removed, body and/or rear window can be damaged by tailgate.

Opening angle can be restricted by semicircular spacer buffer (from window bonding repair kit).

Bond spacer buffer (1) above recess (2).

Spacer buffer (1) must contact hinge carrier (3) when tailgate is open.



Slide retaining spring (1) to end of gas pressure spring (2) and lever out gas pressure spring (2).

Repeat procedure at other end of gas strut (2).

Remove gas strut (2).

Installation note:
Mount gas pressure spring (2) with retaining spring (1) pushed back.

Installation position is marked by a corresponding mark on gas pressure spring (2).

cardiagn.com

51 24 325 Removing and installing/replacing left tension spring for tailgate

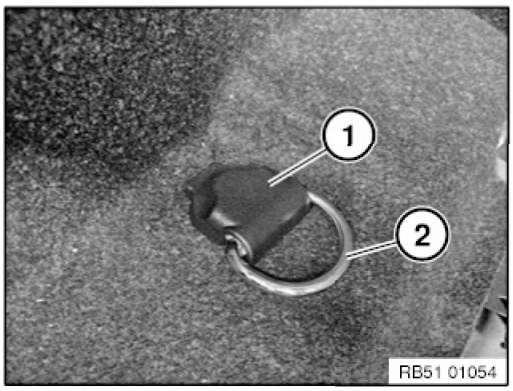
Necessary preliminary tasks:

- Remove cover from tail panel

Warning!

Danger of injury!

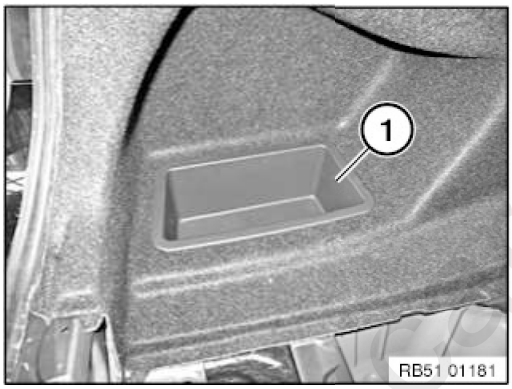
Support tailgate in fully opened position with suitable apparatus.



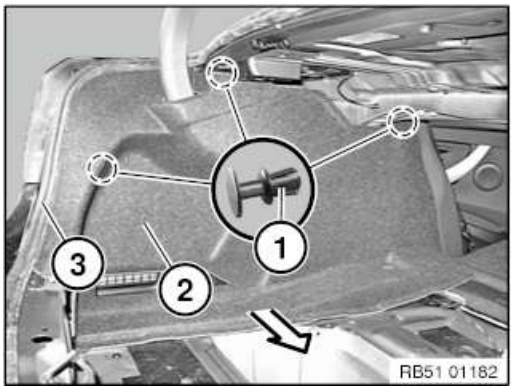
Lever out cover (1) and release screw underneath.

Tightening torque 51 47 1AZ.

Remove lashing eye (2).



Remove storage tray (1) in upward direction.



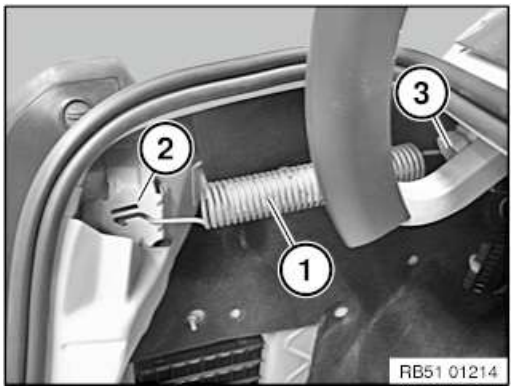
Release expanding rivets (1).

Feed out luggage compartment wheel arch panel (2) in rear area but do not completely remove.

If necessary, unlock plug connection for charging socket and disconnect.

Installation note:
Luggage compartment wheel arch panel (2) must fit correctly under tailgate rubber seal (1).

cardiagn.com



Note down position of tension spring (1) at rear holder (2).

Warning!

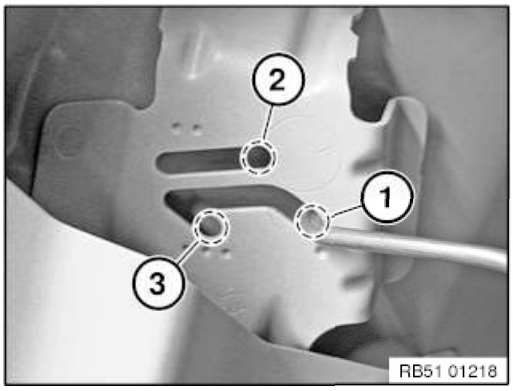
Wear gloves when detaching tension spring (1).

Detach tension spring (1) from rear holder (2).

Feed out tension spring (1) from hinge (3).

Installation note:

Reattach tension spring (1) to rear holder (2) again in the same position.



Installation note:

Positions (1 to 3) influence the closing force of the tension spring.

(1) Soft (factory setting without rear spoiler)

(2) Medium

(3) Hard (factory setting with rear spoiler)

If the closing force needs to be changed: Adhere to notes on closing force setting.

cardiagn.com

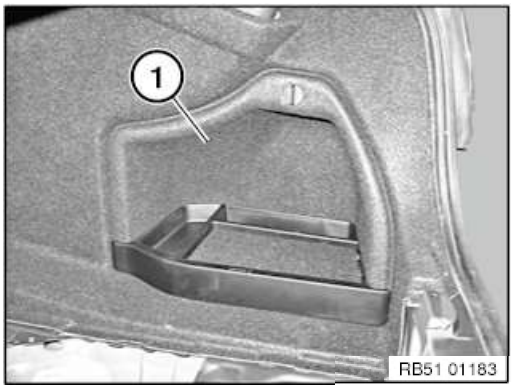
51 24 324 Removing and installing/replacing right tension spring for tailgate



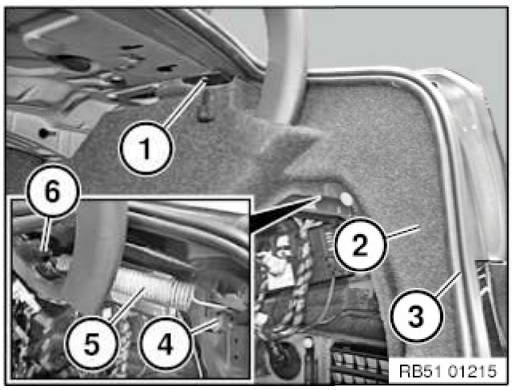
Warning!

Danger of injury!

Support tailgate in fully opened position with suitable apparatus.



Remove flap (1).



Release clip (1).

Feed out trim panel (2) from edge protection (3).

Make a written record of the position of tension spring (5) on rear holder (4).

Warning!

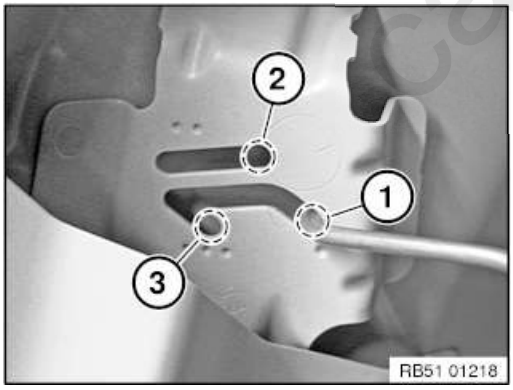
Wear glove when detaching tension spring (5).

Reach to rear of trim panel (2) and detach tension spring (5) from rear holder (4) and hinge (6).

Installation note:

Trim panel (2) must be fitted correctly under edge protection (3).

Reattach tension spring (5) in same position on rear holder (4).



Installation note:

Positions (1 to 3) influence the closing force of the tension spring.

(1) Soft (factory setting without rear spoiler)

(2) Medium

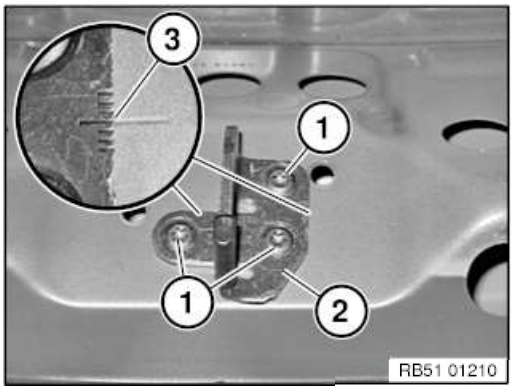
(3) Hard (factory setting with rear spoiler)

If the closing force needs to be changed: Observe notes on setting closing force!

51 24 130 Removing and installing/replacing striker for tailgate lock

Necessary preliminary work:

- Remove top cover from tail panel



Release bolts (1) and remove striker (2).

Tightening torque 51 24 2AZ.

Installation note:
Establish basic setting using mark (3).

Adjust rear lid lock.

Important!

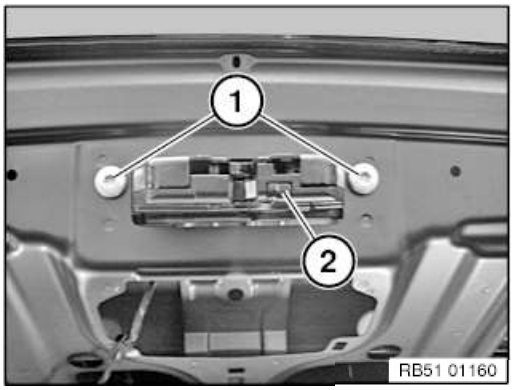
Striker and tailgate lock must not be greased.

cardiagn.com

51 24 105 Removing and installing/replacing tailgate lock

Necessary preliminary tasks:

- Remove trim for rear lid



Release screws (1).

Tightening torque 51 24 1AZ.

Feed out tailgate lock (2) and unlock and disconnect associated plug connection.

Installation note:
Perform a function check of tailgate lock with the tailgate open.

cardiagn.com

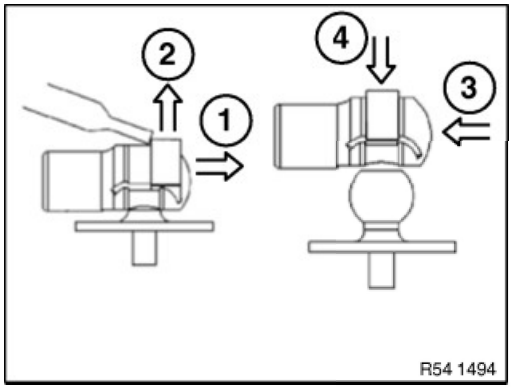
51 23 ... Removing/installing ball sockets with clip

Warning!

Danger of injury! When installed, the gas pressurised shock absorber is under preload. Minimise preload as far as possible before removing.

Important!

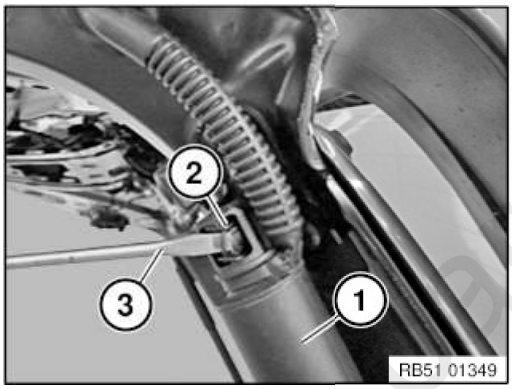
Never lift off ball socket with engaged clamp.



Version A:

1. Push on clamp in direction of groove with screwdriver
2. Lift off ball socket from ball pin
3. Slide clamp back
4. Fit ball socket on ball stud and snap into place with force

Installation note:
Pack grease into two opposite positions in socket. The grease spreads after installation on the ball pin all round in the ball socket.



Version B:

Important!

Risk of damage!

If you are not careful, retaining spring (2) may be bent to such an extent that the entire drive spindle will have to be replaced.

Press drive spindle (1) against ball pin in order to relieve strain on retaining spring (2) at ball pin.

Pull out retaining spring (2) approx. 2-3 mm with screwdriver (3).

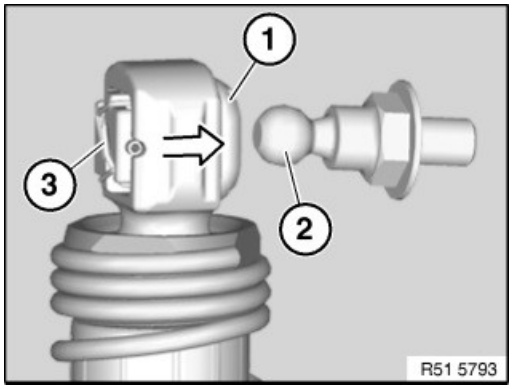
Pull off spindle foot.

Warning!

Observe warning notices on the damper.

Electrical spindle drive for tailgate is under mechanical spring load!

The component must be secured against falling down.

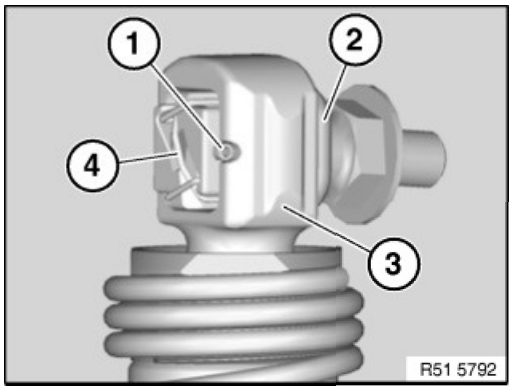


Attention!

Risk of damage!

Do not press on spindle drive at an angle or twisted.

Installation note:
Press ball socket (1) onto ball pin (2) until retaining spring (3) engages correctly (clicking sound).



Important!

If retaining spring (4) is damaged!

Release pin (1).

Remove spindle drive (3).

Remove ball socket (2).

Remove retaining spring (4) and replace if necessary.

cardiagn.com

51 24 147 Replace button for tailgate activation

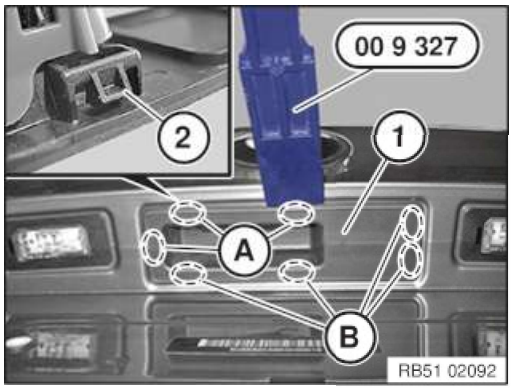
Special tools required:

- 00 9 327

Attention!

Disassembly of the button is not possible without destroying it.

To avoid water ingress, the button must be replaced every time after disassembly.



Place special tool 00 9 327 at areas (A) between tailgate and button (1).

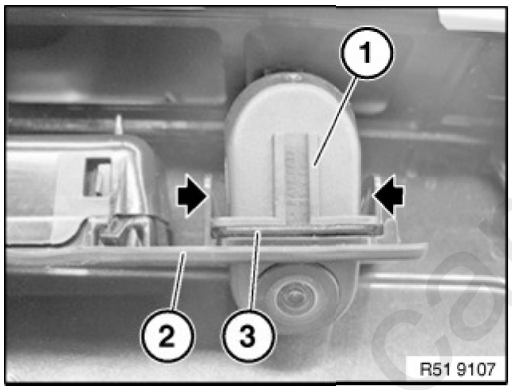
Destroy retaining tabs (2) in areas (A) by striking special tool 00 9 327 .

Pull out button (1) from latch mechanisms (2) in area (B).

Disconnect associated plug connections and remove button (1).

Installation note:
Check tailgate for damage, touch up if required.

Perform function check with tailgate open.



Version with reversing camera:

Unclip rear view camera (1) left and right and feed out of button holders (2).

Installation note:
Gasket (3) of rear view camera (1) must not be missing or damaged.

Cardiagn.com

51 31 ... General procedure for the disassembly and installation of bonded window glass

1 General information

Follow general instructions on window bonding.

Materials needed for window bonding.

The vehicle can be towed away or driven without a windscreen, rear window and side window.

When carrying out disassembly/installation work and during the hardening time, the vehicle must be standing on its wheels on a level surface.

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.

2 Disassembly

2.1 Disassembly in general

The following dismantling methods are applied, according to the version:

- Oscillating knife (not permissible for vehicles with window bonding on carbon body components)
- Cutting wire with wire pull handles
- "Spider" window glass removal system (unsuitable for severely damaged window glass)

Note:

> When cutting out the window glass with wire pull handles, there is a risk of damage to the window glass if the wire is pulled over the window edge.
>
> Unless otherwise described, only use this method when replacing the window glass.

Follow the vehicle-specific repair instructions!

2.2 Disassembly of damaged window glass

The disassembly method described in the REP may be unsuitable depending on the degree of damage.

- e.g. suction cups cannot be attached to window glass around cracks
- Damaged window glass may damage and tear the nylon string

Attention! Risk of damage!

Use one of the other disassembly methods at your own discretion in the event of severely damaged window glass.

Make sure adjacent components are adequately protected.

3 Installation

3.1 Preparation

Position the windscreen or rear window on a universal work top or secure the components on a tool trolley using suction lifters.

Attach two suction lifters to the outsides of the window glass in the event of storage on a universal work top.

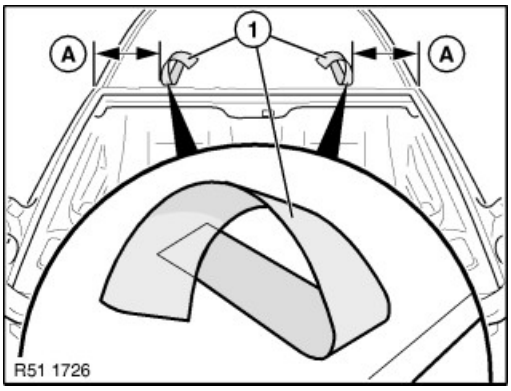
According to its size, fix side and door window glass onto the tool trolley using suction lifters or special tool 51 3 220 and set down on a suitable support.

Always keep the suction faces of the window glass suction lifters dry and clean.

Note:

> If accessibility is restricted, insert the window glass on a trial basis.

cardiagn.com



Bond two yellow plastic adhesive tapes (1) approx. 400 mm in length to the roof.

(A) = 250 mm

Only the yellow plastic adhesive tape may be used to fix the window glass.

The glass will slip down if other adhesive tapes are used.

Window glass slippage will result in leaks and wind noises.

After completing the paint work, the paint must be fully hardened before the plastic adhesive tapes are applied.

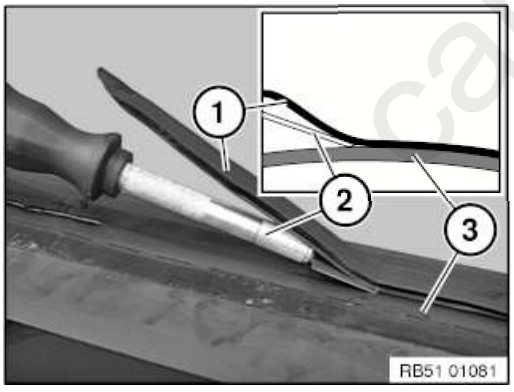
3.2 Pre-treatment of bonding surfaces

- Protect the vehicle interior against contamination, cover the Head-Up Display.
- Clean window glass and body aperture (with residual adhesive bead) with cleaning agent R2
  Attention! Do **not** use Sika remover 208 for cleaning in the adhesive area.
- Observe an air drying time of at least 5 minutes (at least 15 minutes when applied to residual adhesive bead)
- Remove residual adhesive bead from body and window glass (see point 3.3)
- Touch up paintwork damage to body aperture with BMW multibase filler (except for carbon body components)

Pretreatment on new body component (no residual adhesive beads present):

Surface	Pretreatment
Panel painted	Wipe cleaning agent R1 dry with a paper towel or observe the air drying time of at least 1 minute
Carbon	Only cleaning agent R2
Carbon painted (e.g. roof outer skin M3)	Wipe cleaning agent R1 dry with a paper towel or observe the air drying time of at least 1 minute
Plastic (e.g. I01 A-pillar)	Cleaning agent R2 and ScotchBrite Multiflex abrasive pad

3.3 Remove adhesive residue from the body and window glass



Do not remove residual adhesive bead (1) until shortly before bonding.

Use the pitchweld scraper to remove the residual adhesive bead (1) from the body aperture and window glass (3).

Position the pinchweld scraper (2) as shown and remove the residual adhesive bead (1) up to a thickness of approx. 0.5 mm.

Attention!

Carbon body components are not to have scratches with a depth greater than 0.2 mm.

Note, comply with life module check!

3.4 Installation of spacer (spacer buffer / dual-lock tapes)

Completely remove all residue of existing spacers before bonding new adhesive spacers.

The exact position of the spacers must be retained (see vehicle-specific repair instructions).

Incorrectly fitted spacers will result in:

- Window glass breakage due to tension
- leakage (if the spacer is in the adhesive area)

cardiagn.com

- Wind noises

3.5 Add-on part

Depending on the version, attach sealing, expanding foam tape, rain sensor, etc.

Observe Overview of additional work with rain sensor when working with versions including the rain sensor!

Follow the vehicle-specific repair instructions!

3.6 Pre-treatment of new window glass

- Apply a thin coat of glass activator (yellow stick); a final wipe is not necessary.
- Observe an air drying time of at least 2 minutes

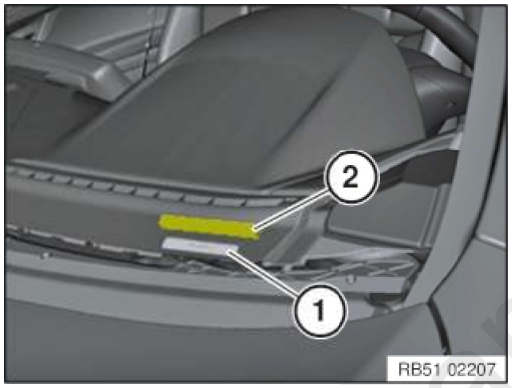
The glass activator is used for adhesion between glass or ceramic glass and the adhesive. Therefore, a thin, homogeneous and continuous line of glass activator must be applied. If the window glass is to be reused with a cut-back adhesive bead, glass activator is not needed.

It must be guaranteed that a 1 to 2 mm wide line of glass activator is located on the ceramic glass next to the squeezed adhesive bead.

The adhesive bead may become up to 15 mm wide in compressed condition. The width of the glass activator is therefore normally a minimum of 17 mm for windscreens and rear windows and a minimum of 9 mm for side windows.

The glass activator may not be applied in the field of view or the point grid. Fresh glass activator in the field of view must immediately be wiped off with cleaning agent R2 because hardened glass activator will leave a haze behind.

3.7 Version with inspection glass for vehicle identification number in windscreen



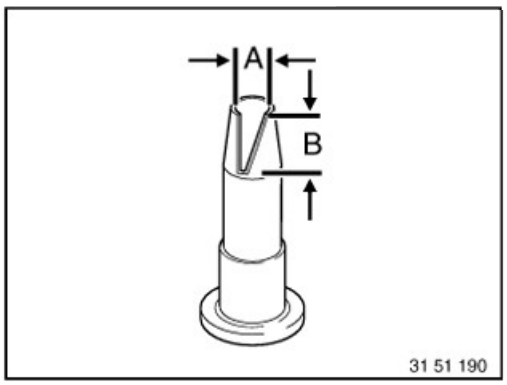
Foam tape (2) must be installed to protect the vehicle identification number (1) against tampering. If necessary, install foam tape 07 14 7 222 909.

Close off the inspection glass on the windscreen (bottom left) with Sika bonding base VP 206.

Except for:

- All US/GB models
- All models with a black dashboard cover, which means that the vehicle colour cannot be seen through the inspection glass

3.8 Nozzle preparation



Use the standard nozzle C for windscreens, rear windows, and body-specific fixed side window glass.

A	8 ±1 mm
B	12 ±1 mm

Prepare plastic nozzle for fixed door window glass.

A	8 ±1 mm
B	15 ±1 mm

Deviations are described in the vehicle-specific repair instructions.

Black ceramic glass impermeable to UV light is located on the peripheral zone of the inside of the window to protect the adhesive bead.

Ceramic glass must not be damaged.

3.9 Apply adhesive

Adhesive is applied to the window glass using a cartridge gun.

Glue cartridge must be vertical to window glass.

The almost vertical part of the adhesive bead must be facing the outer window glass edge.

On window glass with guidelines, the adhesive bead must be applied centrally between the guidelines.

On window glass without guidelines, the position of the adhesive bead is specified in the vehicle-specific repair instructions.

Coat bead joint.

Effect of differing adhesive quantities:

Too little adhesive:	Too much adhesive:
• Window glass rests too low in body aperture • 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)

Note on bonding of windscreen:

The adhesive amount specified in the vehicle-specific repair instructions is sufficient if the specified adhesive bead size is maintained.

If too much adhesive is applied due to application-related variations (manual application), the specified adhesive amount may not be sufficient. To avoid interrupting adhesive application for longer than the permitted period, have another glue cartridge ready.

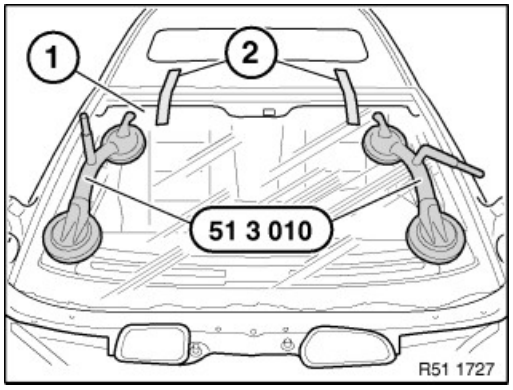
Attention!

> 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.

3.10 Mounting the window glass

To prevent a pressure build-up in the passenger compartment when the doors are closed:

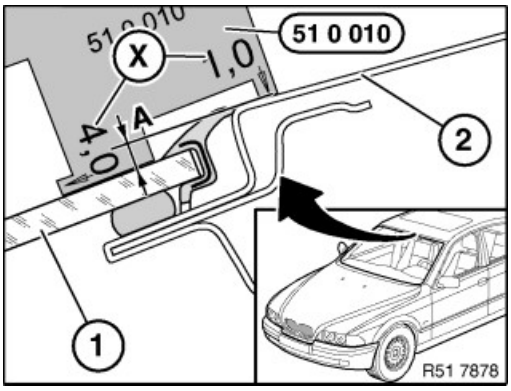
- Open a side window



Mount window glass (1) with suction lifter (51 3 010).

3.11 Adjusting the window glass

cardiagn.com



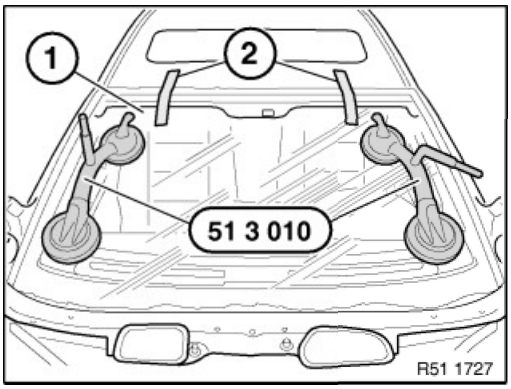
To avoid wind noise, the front and rear windows (1) must be lower than the roof outer skin (2).

Check ride height of the windscreen or rear window using special tool 51 0 010.

Dimension (A) of window glass offset, refer to vehicle-specific repair instructions.

X = measurement stages 1 ... 4 mm

3.12 Fixing the window glass



Fix the window glass with yellow plastic adhesive tapes (2).

Immediately remove dirt contamination with adhesive residue using Sika remover 208. Do not press out the window glass again.

Hardened adhesive can only be removed mechanically.

3.13 Label

Depending on version, apply label.

cardiagn.com

51 31 ... Materials for bonding window



Special tools required:

- 51 3 220

1 Tools

Type	Type	Order/part number
Electric special cutter	SuperCut FSC 1.6Q	81 43 2 296 987
Knife set Contains: Knife (U-shape) Knife (L shape) Knife (straight with stop roller)	 24 / 36 / 45 mm 25,4 mm 16 to 43 mm (adjustable) 14 mm (fixed)	81 43 9 428 596
”Roll Out 2000”	Wire cutting system	81 62 0 301 768
"Spider"	Cutting system with nylon string	81 43 2 357 248
Wire pull handles		81 43 2 326 501
Cartridge gun		81 49 2 213 059
Pinchweld scraper set		81 62 0 410 436
Siphon		81 64 2 184 377
Single suction cup	Special tool	51 3 220
Universal work table		81 49 0 151 675

2 Consumables:

Naming of Electronic Parts Catalogue	Designation, repair instructions /addition	BMW part number
Window glass repair kit, cold, 1 hour	Small repair kit	83 19 2 289 285 83 19 2 289 180 (US) 83 19 2 180 001 (China)
Window glass repair kit, cold, 1 hour	Large repair kit Like small repair kit, plus 1x window glass adhesive 300 ml	83 19 2 360 680 (not available for the US/China)
Cutting wire for glass repair	Cutting wire, square	83 19 2 150 267
Nylon string	Nylon string	81 43 2 344 272
Multi-base filler	BMW multibase filler	
Cleaning agent R1	Cleaning agent R1	83 19 2 211 217
Cleaning agent R2	Cleaning agent R2	83 19 0 417 324
Adhesive tape	Plastic adhesive tape, yellow	83 19 9 410 979
Adhesive cleaner 208	Sika remover 208	83 19 9 407 780
Aktivator 205	Sika Activator 205 (e.g. for rubber frame on windscreen)	83 19 0 030 155

cardiagn.com

Bonding base VP 206	Sika bonding base VP 206 (e.g. for inspection glass for vehicle identification number)	83 19 9 407 777

Storage of all consumables

Dry at 15 ° - 25 °C.

cardiagn.com

62 30 ... Notes on head-up display

Note:
A special windscreen must be fitted to ensure that the Head-Up Display image can be projected correctly.

This windscreen comprises three sections. An outer and an inner glass pane are connected by a wedge-shaped plastic film.

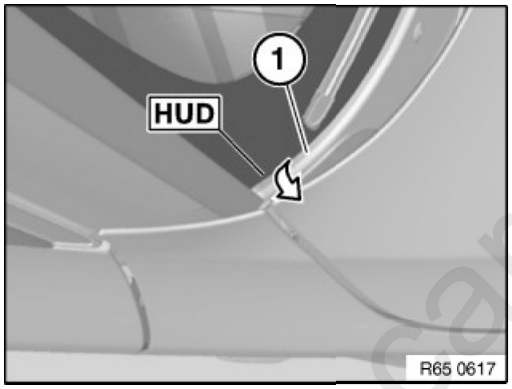
The wedge shape prevents double projection of the Head-Up Display.

When the windscreen is replaced, the vehicle identification number and Electronic Parts Catalogue must be checked to ascertain whether the windscreen in question is suitable for HUD.



Example of the display with a conventional windscreen:

With a conventional windscreen, the projected image is reflected on the inner and outer glass pane, producing a double image.



Note:
Windscreens for Head-Up Display, for vehicles with model year up to 2012, are marked with the letters "HUD" on the outside at the bottom right below the seal (1).

cardiagn.com

51 31 ... Notes on window bonding repair kit

	Part number	Part number (US)	Part number (China)
Small repair kit	83 19 2 289 285	83 19 2 289 180	83 19 2 180 001
- Window glass adhesive 300 ml	83 19 2 289 286	83 19 2 289 181	83 19 2 180 002
- Glass activator	83 19 0 444 142		
- C nozzle	83 19 2 155 589		
- Plastic nozzle and paper tissue			
Large repair kit (Contains an additional window glass adhesive 300 ml)	83 19 2 360 680	Not available	Not available

Important!

Before working with the consumables, note the following information.

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

1 Storage and processing of all consumables

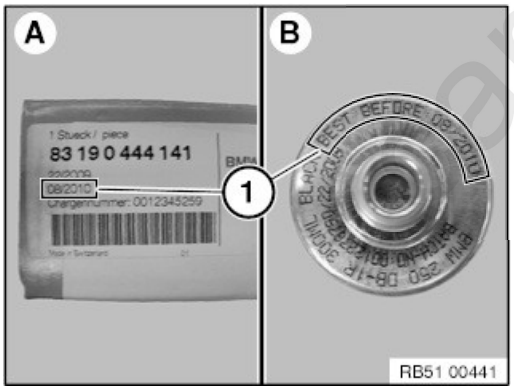
Dry at 15 ° - 25 °C.

2 Expiry date of adhesive:

Repair kit and glue cartridges are marked with a date (expiry).

Date (1) refers to the calendar week and year (KW/JJJJ).

The adhesive cannot be used after this date (1).



3 Hardening of adhesive:

The adhesive hardens by reacting with air humidity at room temperature.

Important!

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.

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).

ardiagn.com

A relative air humidity of < 30% significantly slows hardening.

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.

3.1 Minimum hardening time:

Minimum hardening time is reached beginning at 22 °C and 38 % relative air humidity.

- 1 hour, vehicles without front passenger airbag (after which vehicle can be moved)
- 2 hours, vehicles with front passenger airbag in countries without mandatory seat belt usage

Note:

> **In vehicles with front passenger airbag in countries without mandatory seat belt usage:**
>
> The vehicle can be transferred to the customer after a 1-hour hardening time with the following warning:
>
> **Once the windscreen glass has been bonded, all occupants must travel with their seat belts attached for 1 hour.**

Important!

> If the minimum hardening time is not adhered to, an accident can cause the passenger together with the windscreen to fall out of the vehicle after the front passenger airbag deploys.

During the minimum hardening time of 1 hour, the vehicle must not be subjected to load on one side such as e.g.:

- one wheel on kerb
- vehicle hoist
- etc.

Manoeuvring inside garage/workshop:

- only permitted on level ground
- do not under any circumstances drive over approach ramps, e.g. into multi-storey car parks

Do not remove adhesive tapes until after hardening time.

If the minimum hardening time of 1 hour is undercut, leaks and wind noises may occur at the window glass.

4 Disposal of adhesive:

Hardened adhesive is disposed of as normal waste.

Non-hardened adhesive, glue cartridge and mixtures of adhesive and solvents and the like must be disposed of as hazardous waste.

The adhesive is disposed of in paper sacks so that it can react with moisture.

5 Glass activator:

Warning!

> Wear cut resistant gloves when breaking the glass ampule.

Prepare glass activator for processing by shaking and snapping (breaking glass ampoule).

Apply glass activator by pressing gently. There is no need for final wiping. Air drying time approx. 2 minutes.

6 Expiry date of glass activator:

Repair kit and glass activator are marked with a date (best before date).

- The glass activator may only be used up to this date (if not already opened previously).
- After opening, keep only for one week even if the expiry date has not yet been reached.

cardiagn.com

7 Disposal of glass activator:

Glass activator must not be disposed of as part of household waste.

Glass activator must be disposed of as hazardous waste.

cardiagn.com

61 35 ... Overview of additional work for the removal and installation or replacement of electronic components in the body area/windscreen

Component	**Removal and installation** Calibration/Initialisation required **(diagnosis system must be connected)**	**Removal and installation** Use of the Special tool necessary	**Replacement** Programming/encoding Calibration/Initialisation required **(diagnosis system must be connected)**	**Replacement** Use of the Special tool necessary	Remarks
Front section: (including bumper panel)					
ACC sensor	Yes	Yes	Yes	Yes	
PDC ultrasonic sensor	No	No	No	No	
PMA ultrasonic sensor	No	No	No	No	
Side View camera	No	No	Yes	No	
Side section:					
Top view camera (in the exterior mirror)	No	No	Yes	No	
Rear area: (including bumper panel):					
reversing camera	No	No	Yes	No	
PDC ultrasonic sensor	No	No	No	No	
Sensor, lane change warning	no*	No	Yes	No	*Required after a body repair in the surrounding area of the sensor. **Comply with the regulations for repainting!**
Windscreen:					
Camera-based driver support systems camera	no*	No	no*	No	*Necessary after **replacement of the windscreen**
Rain sensor (separate document)					

cardiagn.com

61 35 ... Overview, rain sensor (additional work when replacing the windscreen / sensor replacement)

- **1-Series:** E8x
- **3-Series:** E9x
- **5-Series:** E6x
- **6-Series:** E6x
- **X1:** E84
- **Z4:** E89

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor/ Programming/encoding necessary	When replacing the sensor/ Initialisation required	Connecting the diagnosis system required
Condensation sensor square 30 x 20 mm	Yes	No	No	No

- **5-Series:** E6x
- **6-Series:** E6x
- **7-Series:** E6x

Sensor type/ Sensor shape	With windscreen replacement replacement **sensor** required	When replacing **the sensor** Programming/encoding necessary	When replacing **substitute visuals** Programming/encoding necessary	When replacing **the sensor/** **substitute visuals** Initialisation required	Connecting the diagnosis system required
all types square 60 x 40 mm	No	Yes	-	Yes	Yes
RLS approximately ø 50 mm	No (new **substitute visuals** required, refer to Electronic Parts Catalogue)	-	No	Yes	Yes

- **X5:** E70
- **X6**: E7x

cardiagn.com

Sensor type/ Sensor shape	With windscreen replacement replacement **sensor** required	When replacing **the sensor** Programming/encoding necessary	When replacing **substitute visuals** Programming/encoding necessary	When replacing **the sensor/** **substitute visuals** Initialisation required	Connecting the diagnosis system required
RLPSS (Rain, light and precipitation solar sensor) (Designation is located on the back of the sensor) approximately ø 50 mm	Yes	Yes	-	Yes	Yes
RLS (vehicle **with no HUD**) (Designation is located on the back of the sensor) approximately ø 50 mm	No (new **substitute visuals** required, refer to Electronic Parts Catalogue)	-	No	Yes	Yes
RLSS (vehicle **with HUD**) (Designation is located on the back of the sensor) approximately ø 50 mm	Yes	Yes	-	Yes	Yes

- **1-Series:** E8x
- **3-Series:** E9x
- **X1:** E84
- **X3:** E83
- **Z4:** E89

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor Programming/encoding necessary	When replacing the sensor Initialisation required	Connecting the diagnosis system required
all types square 60 x 40 mm	No	Yes	Yes	Yes

- **5-Series:** F1x
- **5 Series GT:** F07
- **6-Series:** F06, F1x
- **7-Series:** F0x

cardiagn.com

- **X3:** F25
- **X4:** F26

Sensor type/ Sensor shape	With windscreen replacement replacement **sensor** required	When replacing **the sensor** Programming/encoding necessary	When replacing **substitute visuals** Programming/encoding necessary	When replacing **the sensor/ substitute visuals** Initialisation required	Connecting the diagnosis system required
all types approximately ø 35 mm	No	No	-	Yes	Yes
all types approximately ø 50 mm	Yes	Yes	-	Yes	Yes
Only for F25 : RLS approximately ø 50 mm	No (new **substitute visuals** required, refer to Electronic Parts Catalogue)	-	No	Yes	Yes

- **X5:** F15, F85
- **X6:** F16, F86

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor Programming/encoding necessary	When replacing the sensor Initialisation required	Connecting the diagnosis system required
all types approximately ø 35 mm	No	No	No	No

- **1-Series:** F2x
- **2-Series:** F2x
- **3-Series:** F3x, F8x
- **3 Series GT:** F34
- **4-Series:** F3x, F8x

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor Programming/encoding necessary	When replacing the sensor Initialisation required	Connecting the diagnosis system required
all **up to 03/2014** except SBS (01) (Designation is located on the back of the sensor) approximately ø 35 mm	No	No	Yes	Yes

cardiagn.com

SBS (01) (Designation is located on the back of the sensor) approximately ø 35 mm	No	No	No	No
All **as from 03/2014** approximately ø 35 mm	No	No	No	No

- **2-Series:** F4x

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor Programming/encoding necessary	When replacing the sensor Initialisation required	Connecting the diagnosis system required
all types	No	No	No	No

BMW i:

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor Programming/encoding necessary	When replacing the sensor Initialisation required	Connecting the diagnosis system required
all types approximately ø 35 mm	No	No	No	No

BMW from **G series**

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor Programming/encoding necessary	When replacing the sensor Initialisation required	Connecting the diagnosis system required
all types	No	No	No	No

MINI (all):

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor Programming/encoding necessary	When replacing the sensor Initialisation required	Connecting the diagnosis system required
all types square 60 x 40 mm	No	Yes	Yes	Yes
all types approximately ø 35 mm	No	No	No	No

Rolls-Royce:

- RR1
- RR2

cardiagn.com

- RR3
- RR4
- RR5
- RR6

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor Programming/encoding necessary	When replacing the sensor Initialisation required	Connecting the diagnosis system required
all types square 60 x 40 mm	No	Yes	Yes	Yes
all types approximately ø 35 mm	No	No	Yes	Yes
all types approximately ø 50 mm	Yes	Yes	Yes	Yes

Rolls-Royce:

- RR11
- RR12

Sensor type/ Sensor shape	With windscreen replacement replacement sensor required	When replacing the sensor Programming/encod ng necessary	When replacing the sensor Initialisation required	Connecting the diagnosis system required
all types approximately ø 35 mm	No	No	No	No

cardiagn.com

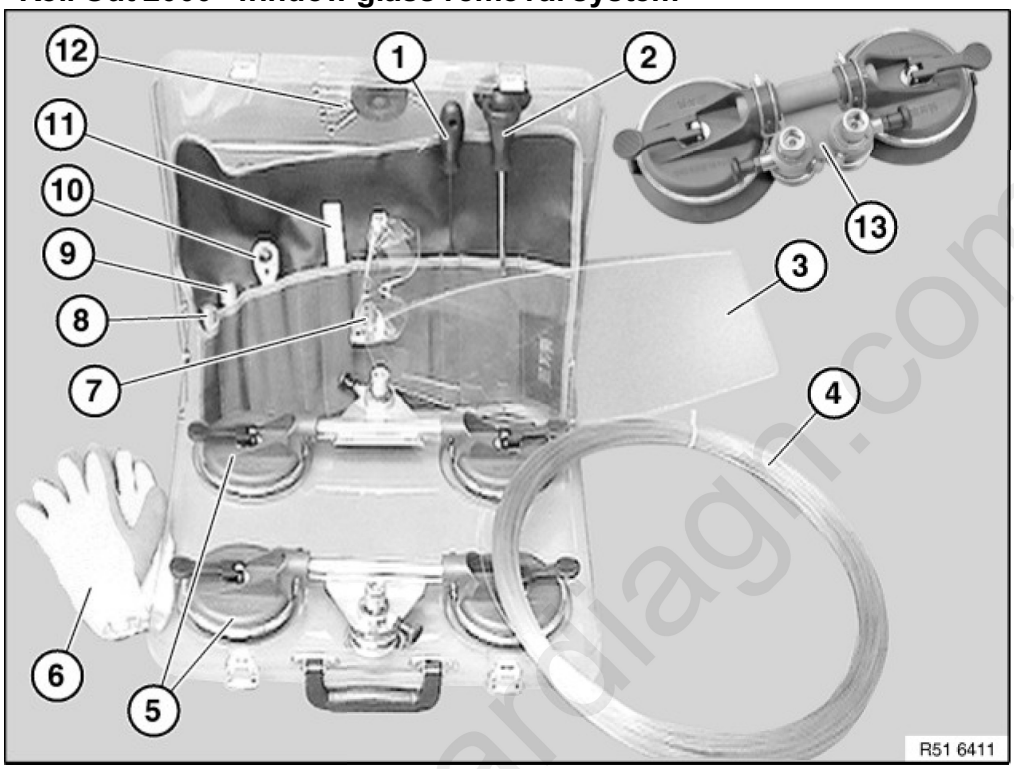
51 31 ... Remove windscreen with "Roll Out 2000"

Special tools required:

- 2 150 267

"Roll Out 2000" has been replaced by the "Spider" removal system."Roll Out 2000" may still be used. The "Spider" removal system is recommended for removing window glass.

"Roll Out 2000" window glass removal system



1	Wire starter	8	Extension (short)
2	Parabolic tool	9	Extension (long)
3	Plastic washer	10	Reversible ratchet
4	Wire cutting roller	11	Plastic wedge
5	Suction cup lifters	12	Guide needles
6	Protective gloves	13	Suction cup lifter with double spool
7	Safety goggles		

Note:
Both paint and ergonomic and health-endangering damage is minimised with the "Roll Out 2000" system.

Sourcing reference:

See Aftersales Assistance Portal (ASAP) - Service/Technical - Workshop Equipment (Start BMW) - Shop Workshop Equipment or at www.bmwgroup.com

cardiagn.com

Warning!

Follow safety instructions 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!

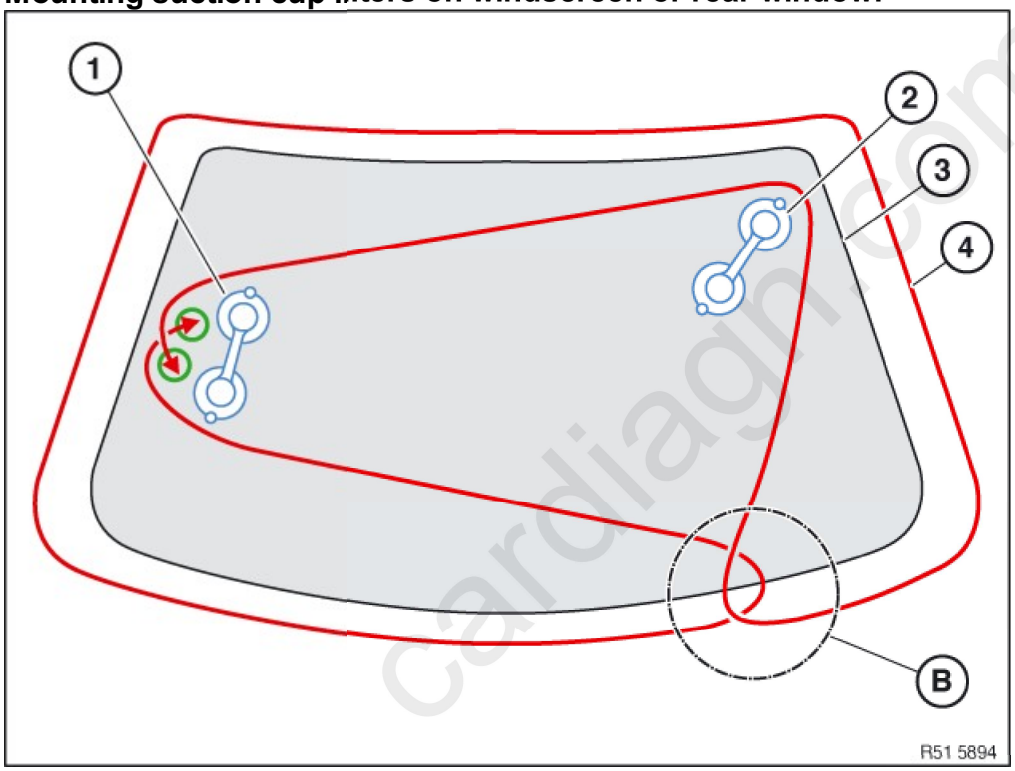
Always keep both suction cups dry and clean to ensure their optimum adhesion on the windscreen.

Suction cup may not be applied at the damaged point (crack in window glass).

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:



cardiagn.com

- Secure position of lifting jacks as shown (view from outside):
  1. Suction cup lifter with double spool
  2. Suction cup lifter with single spool (as deflecting point)
  3. Window
  4. Cutting wire

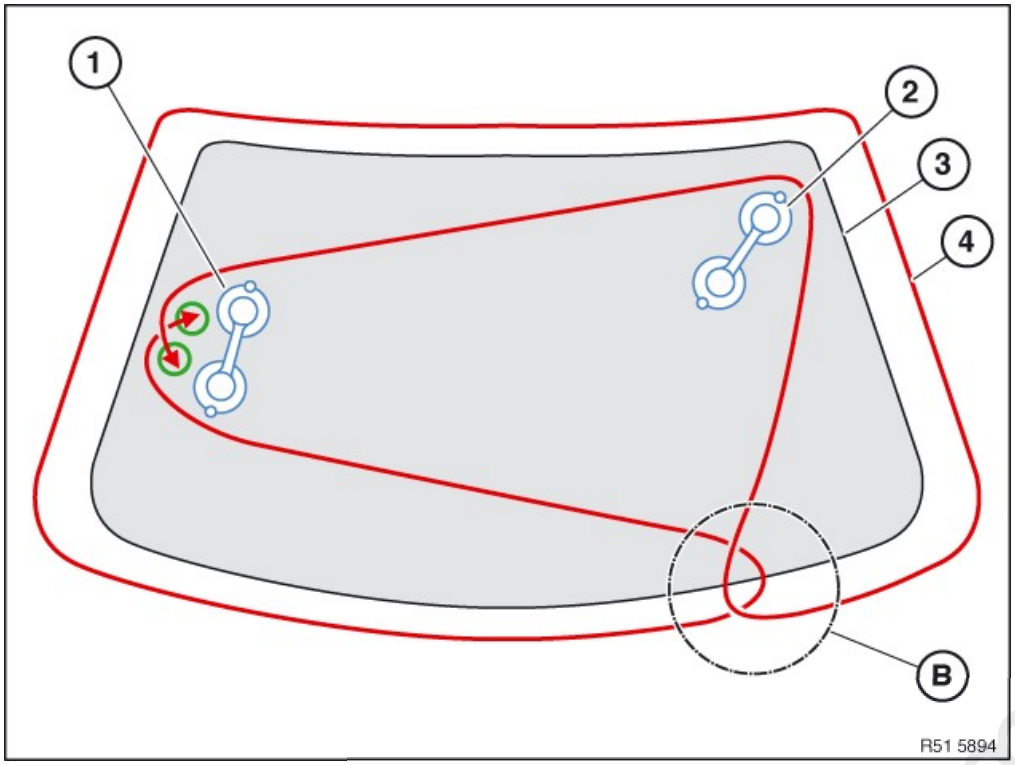
Note:

Optimum cutting is guaranteed when the cutting wire is at an acute angle to the adhesive bead. There is a risk of the cutting wire breaking if the angle is too obtuse.

The suction cup lifter (2) is used as the deflection point to achieve the corresponding angle.

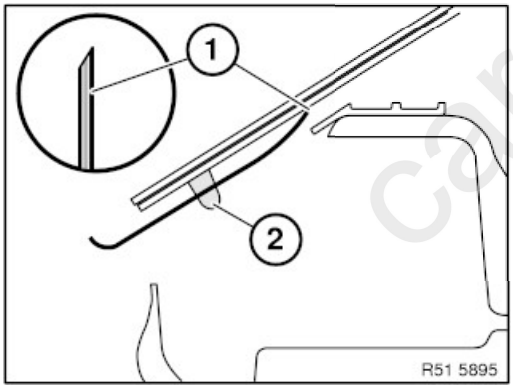
Depending on the window glass version and the effort applied during cutting, it may be necessary to change the deflection point during cutting.

The suction cups without a spool can even be used as the deflection point.



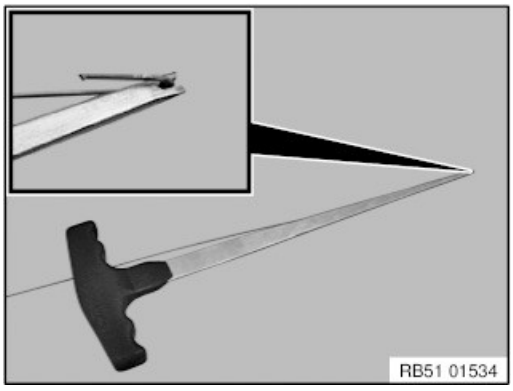
Preparatory work:

- Cut off required cutting wire length:
  Length approximately = 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:

- Grip wire with pliers
  (If accessibility is bad, stick wire with wire starter 2 150 267 through adhesive bead.)
- Wire end (1) must be bent towards window glass.
- Heat wire end (1) and use it to pierce adhesive bead (2).
- Pull the wire approximately 1.5 m into the passenger compartment

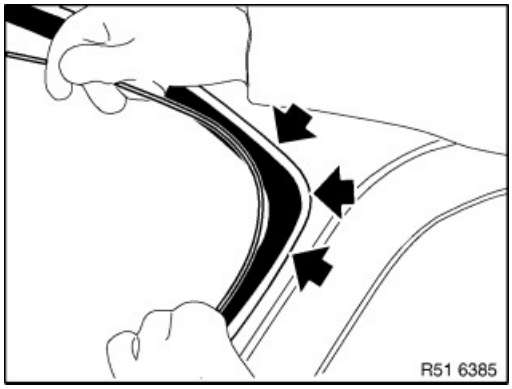


Using wire starter:

Bend wire end approx. 10 mm and insert in notched tip.

Pierce wire starter with uniform pressure through adhesive bead, wire end (bent part) must be positioned on window glass.

cardiagn.com



Laying cutting wire around window glass:

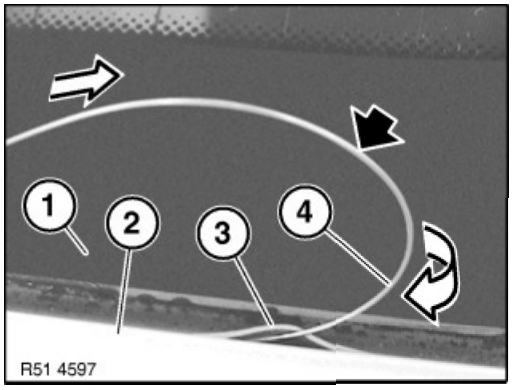
- Starting from pull-in point, lay wire eyelet created on the outside around the window glass
- Pull excess wire into passenger compartment

Important!

Make sure the cutting wire is located at all four corner points below the window glass.

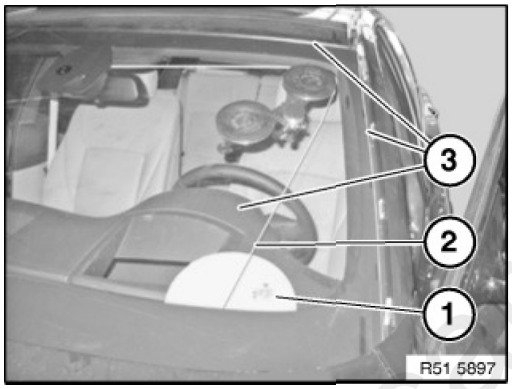
Check that the cutting wire is not caught on clamps or body.

Secure window glass on outside with adhesive tape against sliding.



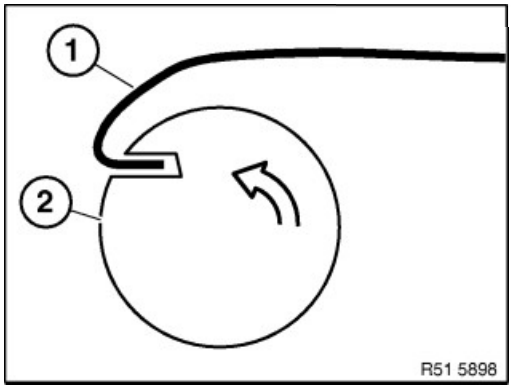
Note:
Window glass (1) with installed seals (3) or moulded-on surrounds:

- 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)



Protect the passenger compartment:

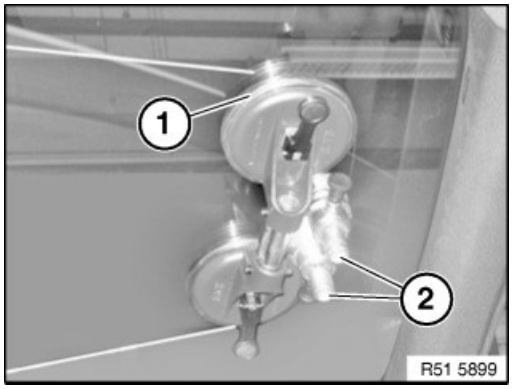
- To avoid damage and possible dirt contamination, protect A-pillars, roof and dashboard trim panel (3) by means of plastic washer (1)
- Always carry plastic washer (1) between respective wire (2) being tightened and trim panels



Attaching wire in hoisting winch with double coil:

- Bend over cutting wire end (1) approximately 10 mm 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

cardiagn.com

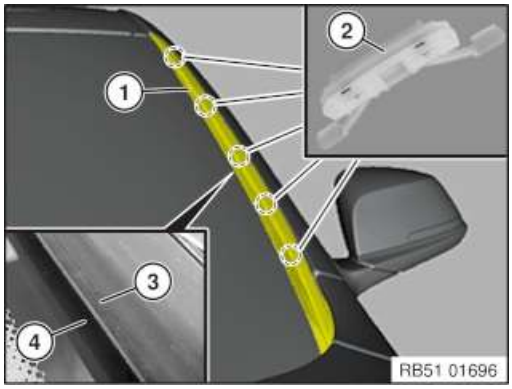


Starting the dismantling: *Note:*
Spools can only be rotated in one direction.

- 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
- 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

cardiagn.com

51 31 030 Removing and installing or replacing left or right gutter strip along windscreen

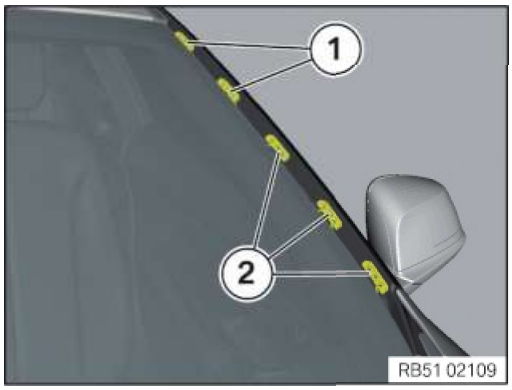


Unclip gutter strip (1) upwards out of the clips (2).*Installation note:*
Gasket (3) of the gutter strip (1) must lie against the windscreen over the entire length (4).

Important!

Replace gutter strip (1) after each dismantling.

Exception: New gutter strips (1) may only be removed once for correcting the position.



Installation note:
Replace faulty clips (1 and 2).

Make sure the installation location of clips (1 and 2) is correct.

- Clips (1) black
- Clips (2) white

cardiagn.com

51 31 000 Removing and installing windscreen



Up until this point, the work is identical to "Replace windscreen" .

- Rain/light/solar sensor and/or camera remain on the windscreen; only disconnect the plug connections
- Replace the cover / windscreen rubber surround only in the event of damage.
- Replace expanding foam tape only if damaged.

cardiagn.com

51 31 200 Removing and installing/replacing rear window

Special tools required:

- 51 0 010

Attention!

The following notes form the basis for these repair instructions and must be adhered to at all times:

- Notes on window bonding
- General procedure for dismantling/installing bonded window glass

When reusing the rear window:

Avoid damaging lines for heated rear window / -aerial.

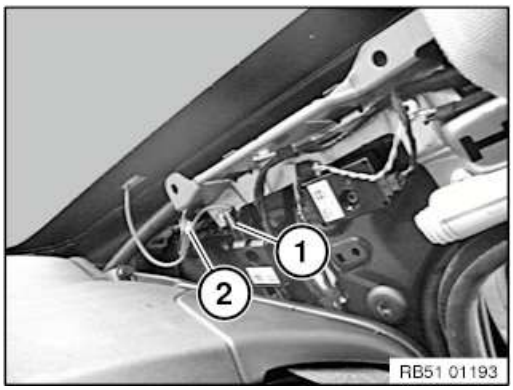
Note:
Removal is performed with Roll Out 2000 or Spider.

The following new parts / consumables are required (sourcing reference BMW Parts Department).

Material	Quantity
Rear window (with replacement)	1
Spacer buffer 5x5x20 mm	10
Small repair kit	1

Necessary preliminary tasks:

- Remove trim panel for roof pillar at rear (C-pillar) left/right
- Remove auxiliary brake light



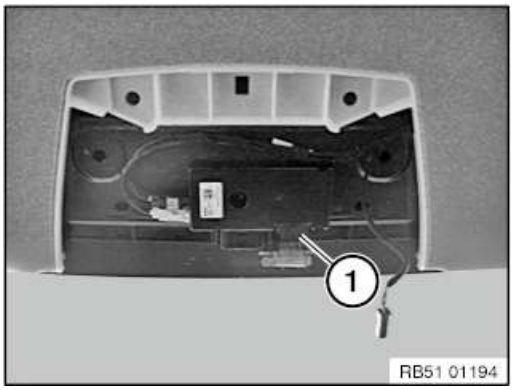
Unfasten plug connection (1) and disconnect.

Unfasten cable strap (2).

Secure cable to rear window with adhesive tape.

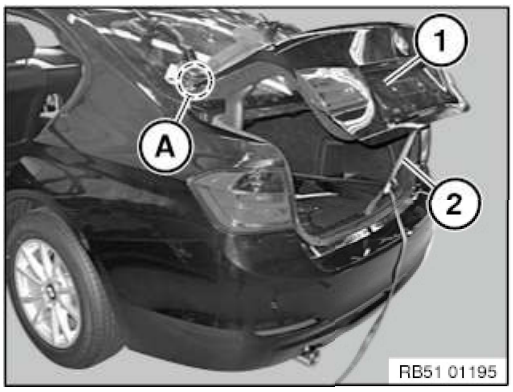
Note:
Carry out work on the right side in the same way as for the left side illustrated here.

cardiag.com



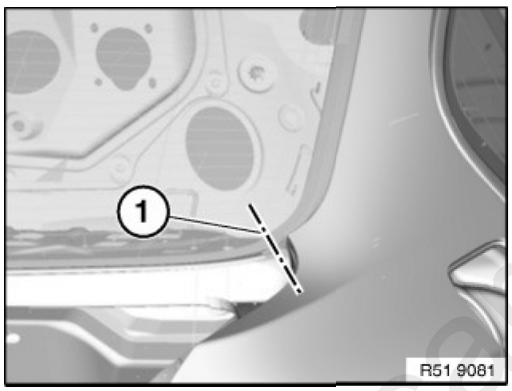
Unfasten plug connection (1) and disconnect.

Secure cable to rear window with adhesive tape.



Secure tailgate (1) in half-opened position with tensioning strap (2).

Tape off area (A) on the left/right with yellow plastic adhesive tape.

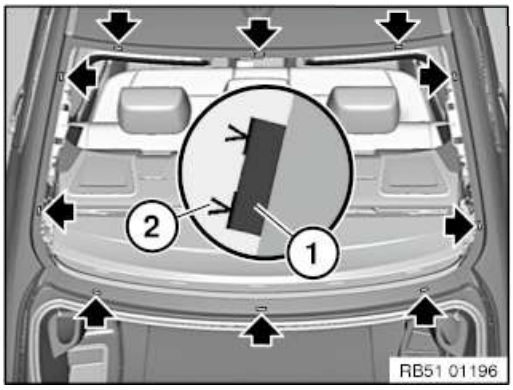


Attention!

Tape off body in area of piercing point with fabric adhesive tape (risk of damage).

Slide wire or string at line (1) through adhesive bead.

When sliding in wire/string, do not damage sealant on body.



Fitting spacer buffers (spacers): Attention!

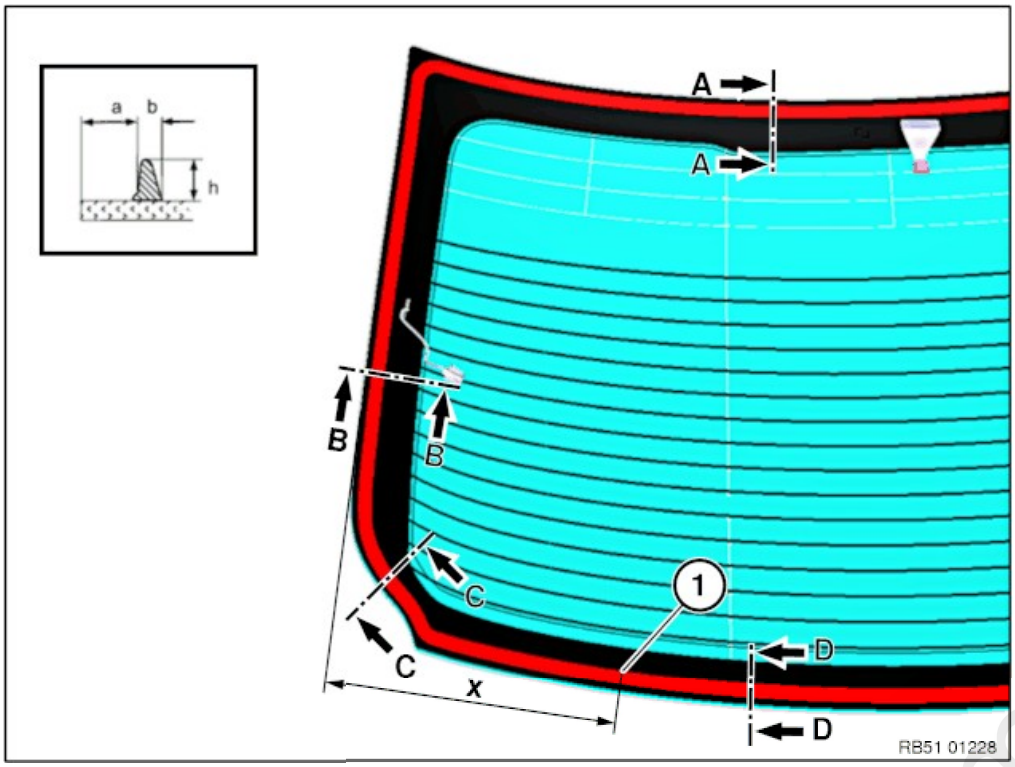
Spacer buffers are installed to avoid rear window breakage.

Completely remove the damaged spacer buffers (1).

Bond new spacer buffer (1) to marks (2).

Overview of rear window bonding:

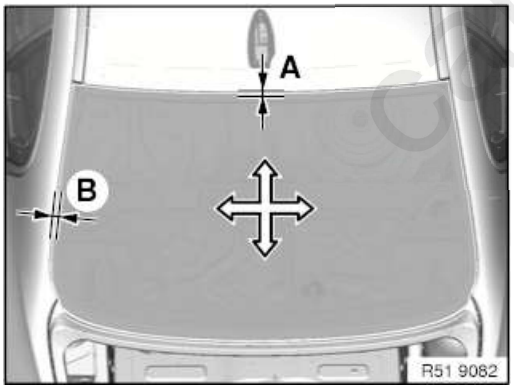
cardiagn.com



Cut	A - A / B - B	C - C	D - D
a [mm] = Position adhesive bead	10 ±2	9 ±1	14 ±2
b [mm] = Width adhesive bead	7 ±1	7 ±1	7 ±1
h [mm] = Height adhesive bead	12 -2	12 -2	12 -2

Note:
A tolerance band is printed on the ceramic (two dashed lines) that marks the position of the adhesive bead. Place adhesive bead centrally on tolerance band.

x = approx. 250 mm (bead joint distance (1) to rear window outer edge)



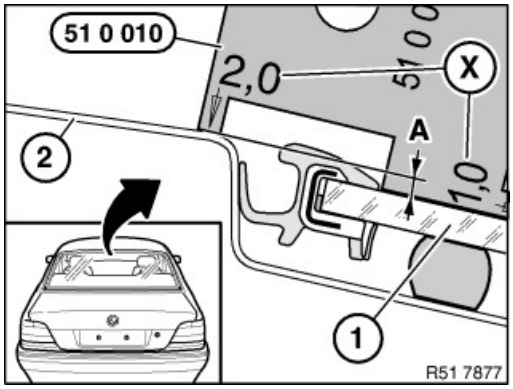
Installation note:
Carefully perform the following steps with the rear window (1) using a suction lifter:

- Feed in under tailgate
- Mount on top and insert
- Centre rear window to distances (A) and (B)
- secure in this position with yellow plastic adhesive tapes

A = 5 ± 1 mm

B = 4 ± 1.3 mm

cardiagn.com



Preload on top of windscreen to prevent wind noise:

Rear window (1) must be lower than roof outer skin (2). This is the only way to prevent wind noises.

Position special tool 51 0 010 in centre of vehicle depending on dimension (A) and check underprotrusion of rear window (1).

A = 3 ± 0.8 mm

X = Measurement stages 1... 4 mm

cardiagn.com

51 31 021 Removing and installing/replacing windscreen rubber surround

Special tools required:

- 51 3 320

Necessary preliminary work:

- Remove windscreen

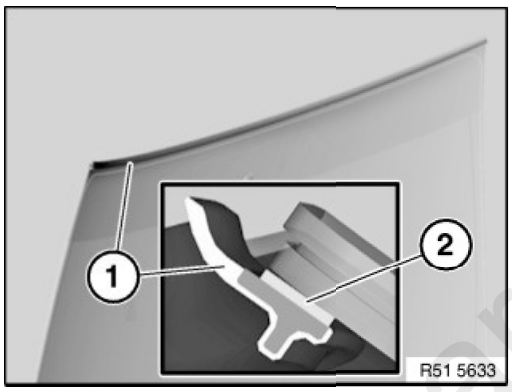
Attention!

The glass activator to pre-treat the area of the windscreen adhesive bead may not come in contact with the adhesive area of the cover.

The bonding result of the cover is otherwise compromised.

Therefore, the cover must be installed prior to application of the glass activator.

Following instructions for bonding components with double-sided adhesive tape.



Detach cover (1).

Remove remnants of adhesive tape (2).

Clean bonding surface.

Air drying time: ≥ 1 minute

Attention!

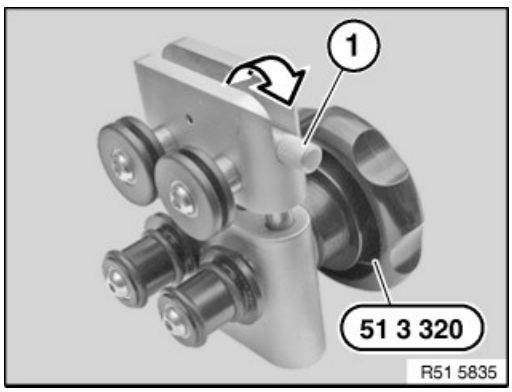
Adhesive area must be dry and free from dust and grease.

Once it has been cleaned, do not touch the adhesive area with bare hands.

Installation note:
Pre-treat adhesive area with Sika-Aktivator205.

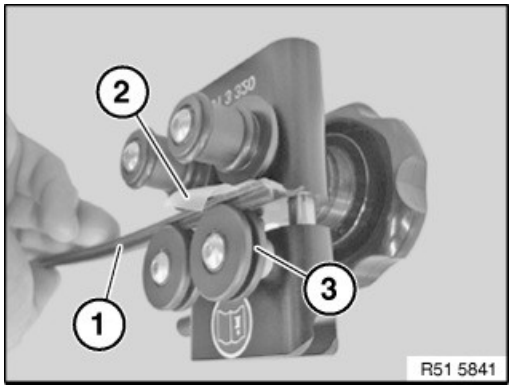
Air drying time: ≥ 1 minute

Sika Activator 205 must not get onto adhesive area of adhesive bead.

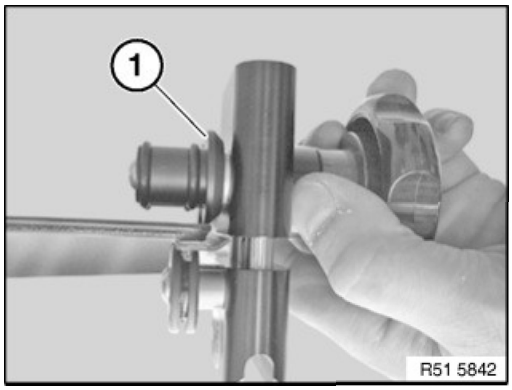


Reposition lever (1) and open special tool 51 3 320 .

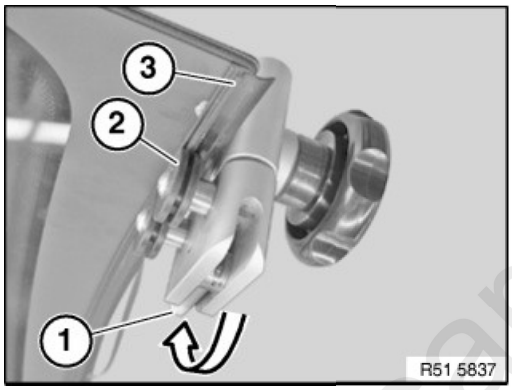
cardiagn.com



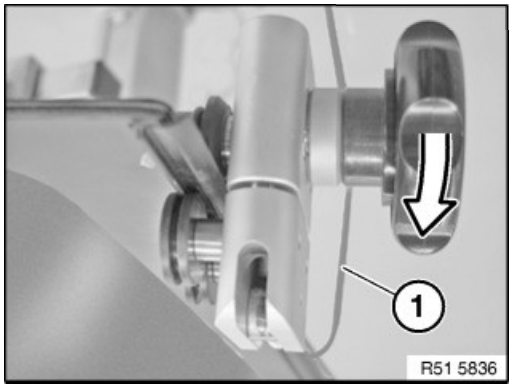
Pull off protective film (2) in stages from adhesive tape.
Insert cover (1) in guide pulleys (3).



Place special tool with contact rollers (1) up against window edge.
Align cover to window outer edge.
Fit cover and visually check for perfect fit.



Reposition lever (1) and close special tool.
Make cover (3) is correctly seated in guide pulleys (2).



Continue to pull off protective film (1) in stages from adhesive tape.
Run special tool with adjuster knob over entire upper window edge.

cardiagn.com

51 31 ... Removing windows with a "Spider"

Windscreen removal system "Spider"



1	"Spider" separation device	6	Line threader
2	Bit holder	7	Line routing tool
3	Operating instructions	8	Suction anchor
4	Dashboard protection	9	Cord for separating adhesive strips
5	Angular transmission		

Accessories required for operation (not included):

Cordless screwdriver/drill with at least a 10.8 V Li-ion battery or a 18 V Ni-Cd battery and variable speed.

Note: Always use a low gear setting.

Note:
Damage as well as ergonomic and health-endangering damage are minimised with the "Spider" disassembly system.

Sourcing reference:

See Aftersales Assistance Portal (ASAP) - Service/Technical - Workshop Equipment (Start BMW) - Shop Workshop Equipment or at www.bmwgroup.com

Warning!
Follow safety instructions for working on vehicles with airbag systems (risk of injury).

Important!
Handle sharp-edged tools with care (risk of damage to the head airbag and the window glass).

cardiagn.com

Important!

Always keep both suction cups dry and clean to ensure their optimum adhesion on the windscreen.

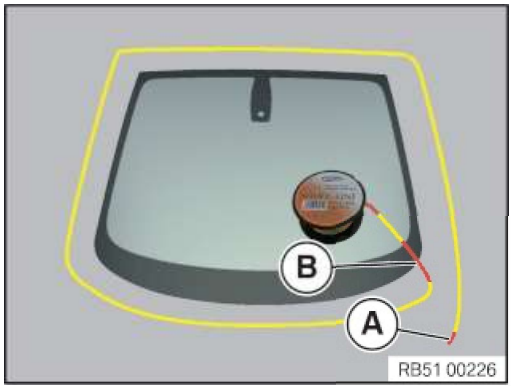
Suction cup may not be applied at the damaged point (crack in window glass).

The bearing bushes of the shaft (spindle) must always be lubricated.

Always wear safety goggles and protective gloves for your own safety.

The procedure for disassembly of the windscreen is described below as an example.

Deviations in the work procedure can be found in the vehicle-specific repair instructions.



General

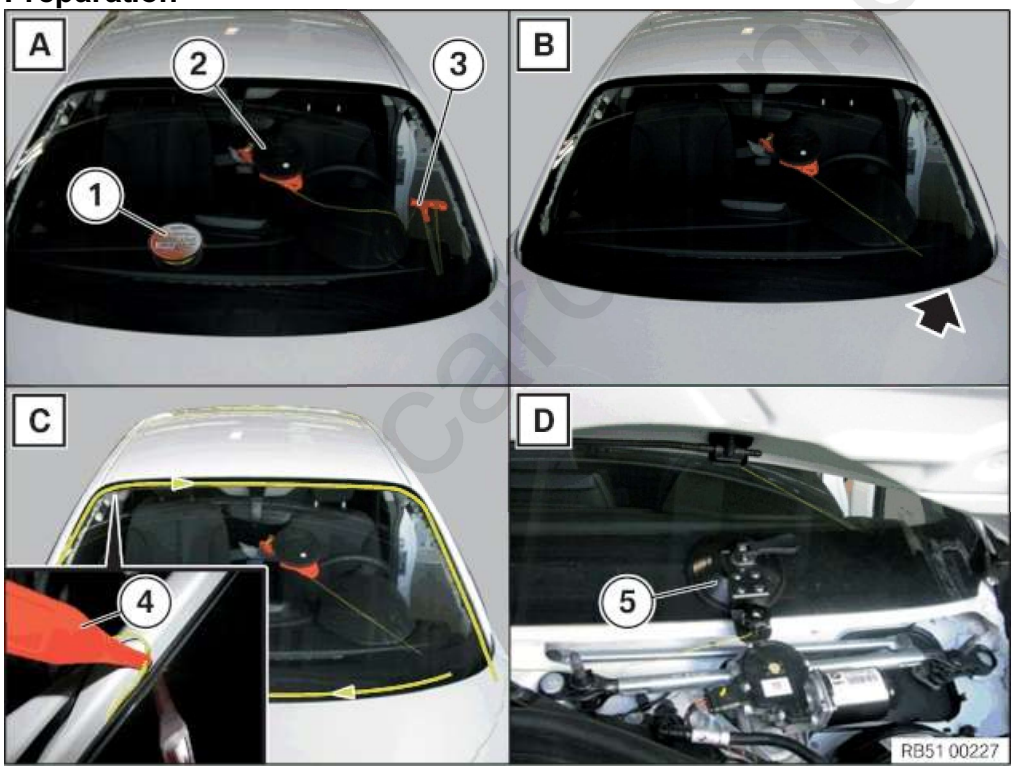
A cord approx. 6.8 m long is used to cut through the adhesive bead.

The cord length to be used is identified by a short red mark (A) approx. 5 cm.

The part of the cord laid outside around the window glass (approx. 5 m) is identified with a long red mark (B) (approx. 18 cm).

The marks are applied so that the cord has to be pulled from the inside to the outside.

Preparation

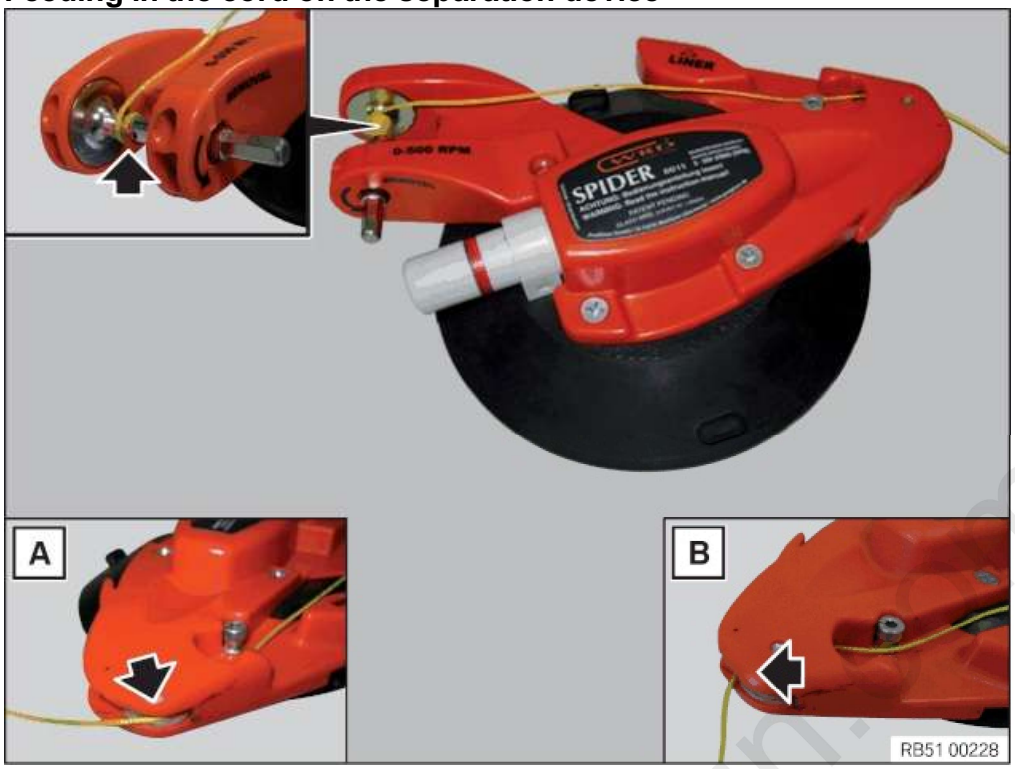


A. Pierce cord from the roller (1) or separation device (2) with cord threader (3) through the adhesive bead from the inside, protect the area from the inside as required.
B. Pull out cord up to the first red mark (approx. 18 cm long).
C. Lay cord around the window glass, use pulling aid (4) if required.
D. Secure suction anchor (5) outside on window glass, secure cord to suction anchor (5).

If required, unwind cord from roller (1) up to the second red mark (approx. 5 cm long) and cut off.

Make sure the cord lies below the window glass at all four corners.
Check that the cord is not caught on clamps or body.
Secure window glass on outside with adhesive tape against sliding.

Feeding in the cord on the separation device



Normally, the adhesive bead is cut through anticlockwise seen from the passenger compartment.

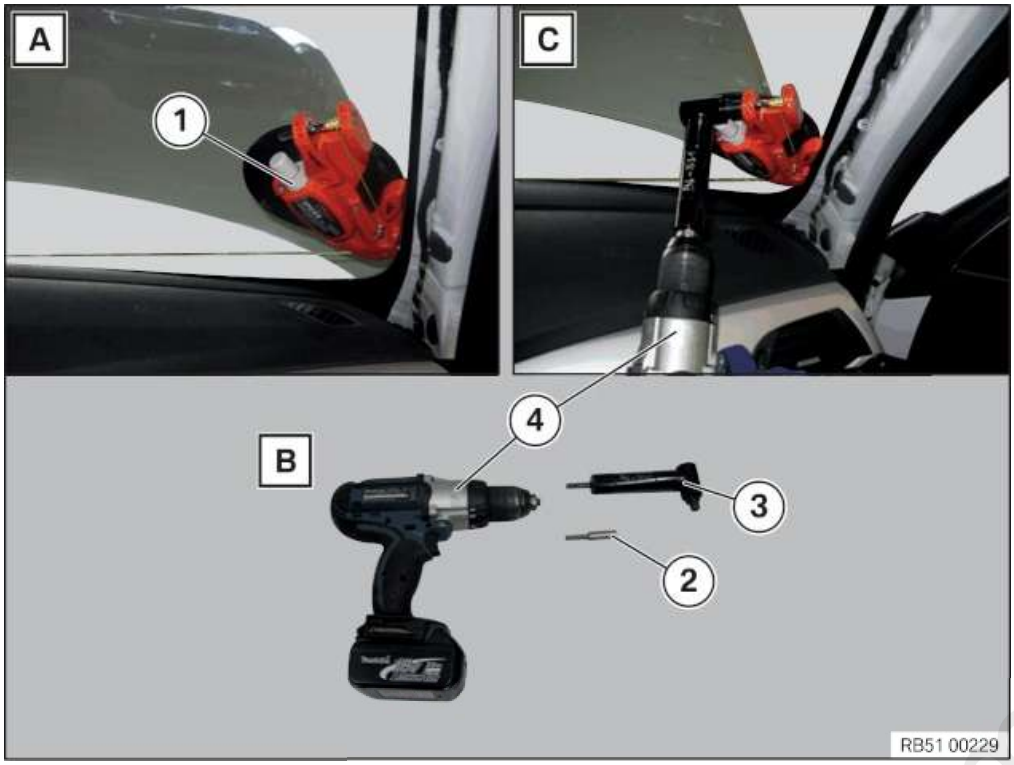
- This means the cord must be fed into the separation device as shown in graphic A.

When accessibility is not optimal, the opposite cutting direction may be required (comply with vehicle-specific repair instructions).

- This means the cord must be fed into the separation device as shown in graphic B.

Feed cord into coil and wind it on, at the same time trapping the end of the cord.
When winding the cord, the correct direction of rotation on the separation device must be observed.

Cutting out procedure



Optimum cutting is guaranteed when the cord is at an acute angle to the adhesive bead. There is a risk of the cord ripping if the angle is too obtuse.

The separation device must be positioned correspondingly to achieve the appropriate angle.

A. Fix separation device (1) on window glass at bottom right.
B. Depending on accessibility, attach bit holder (2) or angle gear (3) to cordless screwdriver (4).
C. Place cordless screwdriver (4) on separation device (1) and start winding cord, observe direction of rotation on separation device.

If required, over trim panel components with plastic protection.

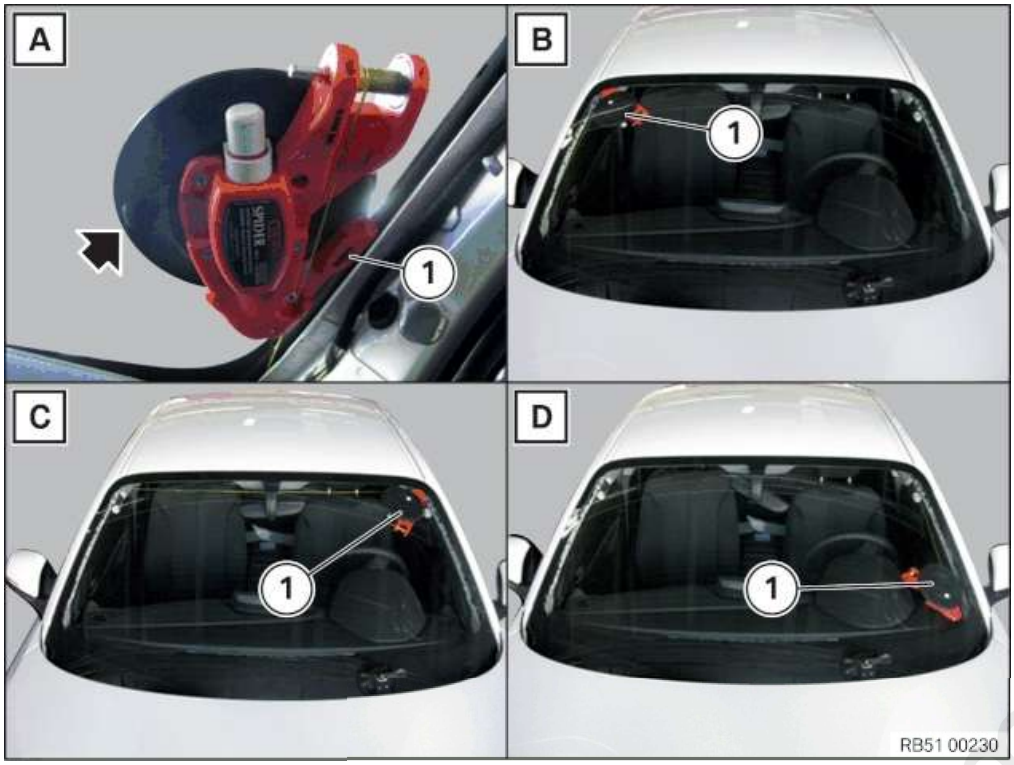
Guide cord with plastic protection around sharp-edged positions.

Cut through adhesive bead up to bottom area of A-pillar.

Turn back cordless screwdriver (4) approx. 2 rotations and remove.

Cutting out procedure

cardiagn.com



A. Discharge vacuum on windscreen removal tool (1) by pressing the tab, remove windscreen removal tool (1) from window glass.

B. Reset removal tool (1) at illustrated and wind up cord up to the position of windscreen removal tool (1).

C./D. Repeat further resetting, work sequence as given at B.

Additional resetting may be required for very curved window glass.

It is possible to reuse the cord. When a cord is used many times the risk of ripping increases.

Dirt contamination must be avoided when a cord is reused.

cardiagn.com

51 31 ... Removing windows with an oscillating knife



Warning!

Follow safety instructions for working on vehicles with airbag systems (risk of injury).

Important!

Handle sharp-edged tools with care (risk of damage to the head airbag and the window glass).



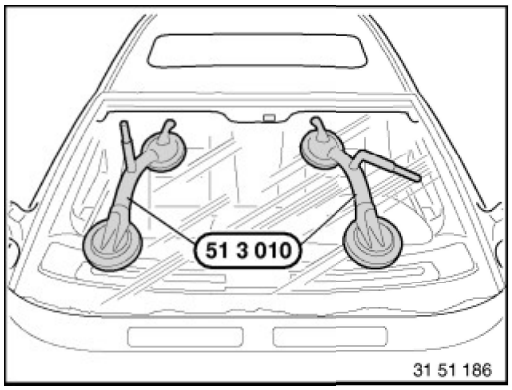
Important!

Follow the vehicle-specific repair instructions!

Always wear safety goggles and protective gloves for your own safety.

Cover the working area (side walls, roof-mounted aerial and if necessary interior equipment) with protective covers.

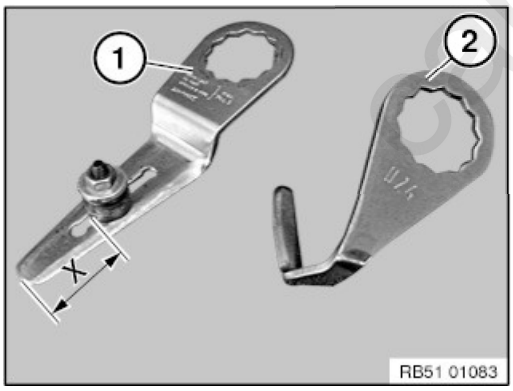
Tape off body with fabric adhesive tape (e.g. Tesa) in areas where the oscillating knife could damage the window glass or the paint.



Use suction cups (51 3 010) to lift out the window glass.

Always keep both suction cups dry and clean to ensure their optimum adhesion on the windscreen.

Secure window glass against falling out.



Depending on the area of application, knife 1 or 2 is used.

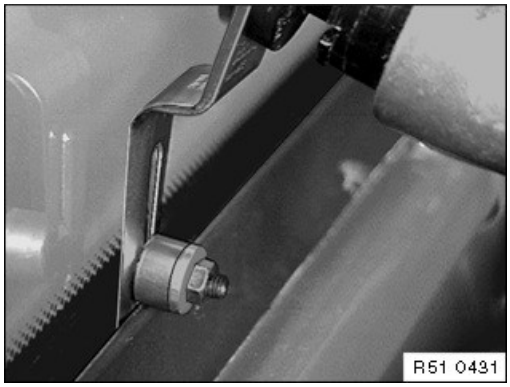
(1) Straight knife with adjustable thrust roller

(2) U-shaped knife

Dimension (X) on the knife (1) can be adjusted individually, see vehicle-specific repair instructions.

Note:
Sharpen knife blade before every use on a running machine with a grinding stone (even with new knife blade).

cardiagn.com



Removing from the inside:

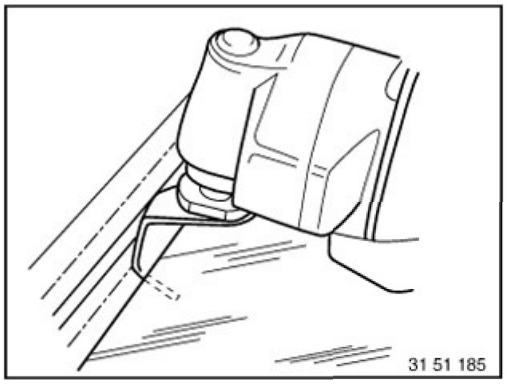
Guide knife carefully between body and window glass.

Run blade of knife parallel to glass.

Take care not to damage paintwork.

Cut through adhesive bead all the way around.

Pull window glass outwards to remove.



Removal from outside:

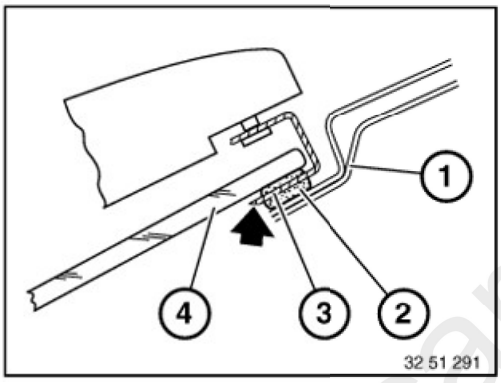
Guide knife carefully between body and window glass.

Run blade of knife parallel to glass.

Take care not to damage paintwork.

Cut through adhesive bead all the way around.

Pull window glass outwards to remove.



Cut through adhesive bead as closely as possible to window glass.

(1) Body opening

(2) Adhesive bead

(3) Knife

(4) Window

cardiagn.com

51 31 011 Replace windscreen

Special tools required:

- 51 0 010

Attention!

The following notes form the basis for these repair instructions and must be adhered to at all times:

- Notes on window bonding
- General procedure for dismantling/installing bonded window glass

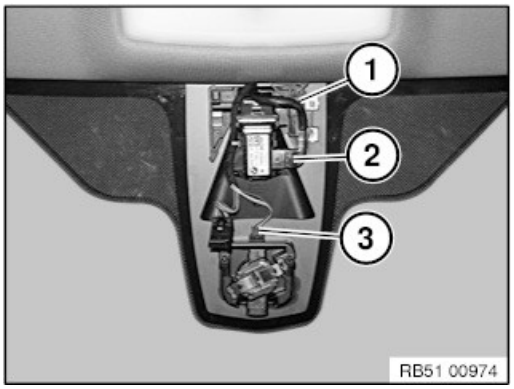
Removal is performed with Roll Out 2000 or Spider.

The following new parts/consumables are required (sourcing reference: BMW Group Parts).

Material	Quantity
Windscreen	1
Cover, windscreen	1
Gutter strip, left and right	1
Spacer buffer 5x5x20 mm	11
Small repair kit	1
Sika Activator 205 (for windscreen cover)	1
Expanding foam tape	1

Necessary preliminary tasks:

- Remove left/right gutter strips
- Remove cowl panel cover
- Remove inside mirror
- Remove trim panel for roof pillar (A-pillar) left/right



Depending on version:

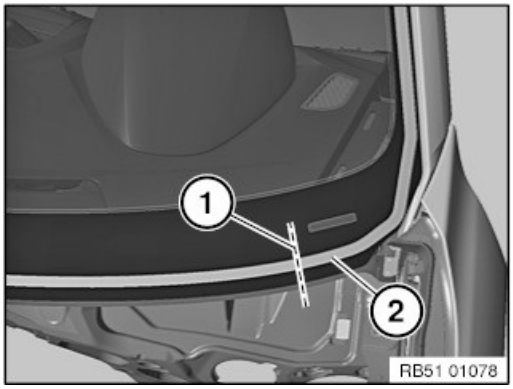
Unplug plug connections (1 to 3).

Do not remount the rain-light solar and condensation sensor until **after** the windscreen is disassembled.

Remove camera.

Note:
Cables torn from the windscreen must not be soldered back in place. The windscreen must be replaced.

cardiagn.com



Attention!

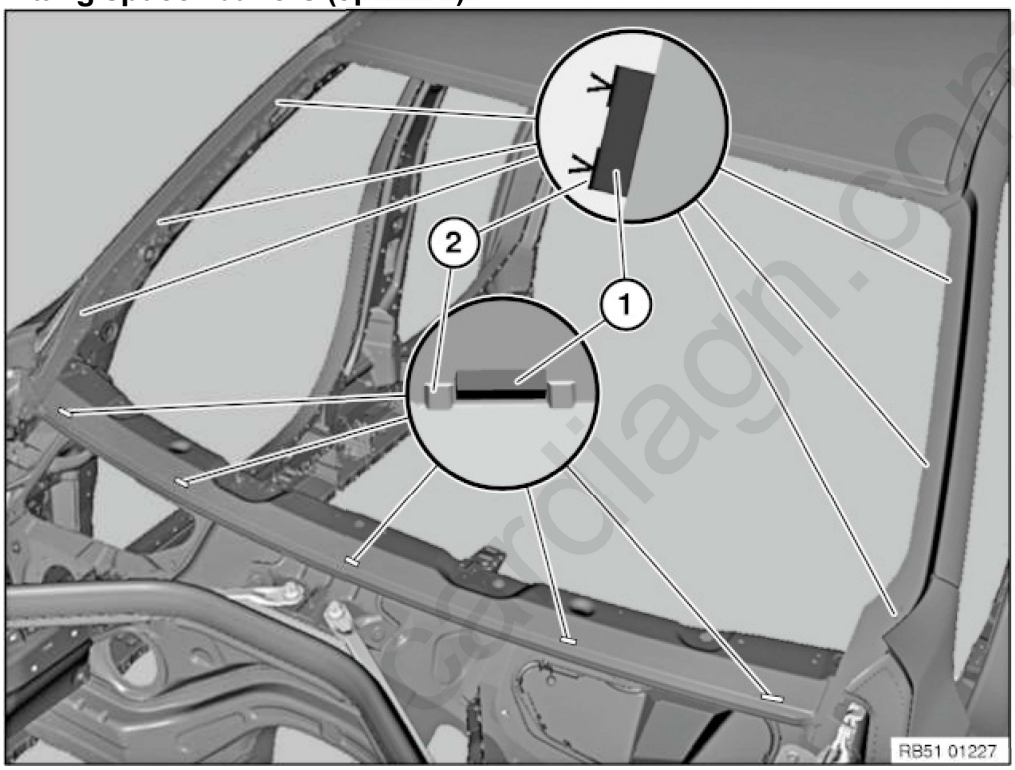
Tape off body in area of piercing point with fabric adhesive tape.

Slide wire/string along line (1) through adhesive bead (2).

Cut out windscreen.

Remove the rain/light/solar and condensation sensor and immediately install on a new windscreen.

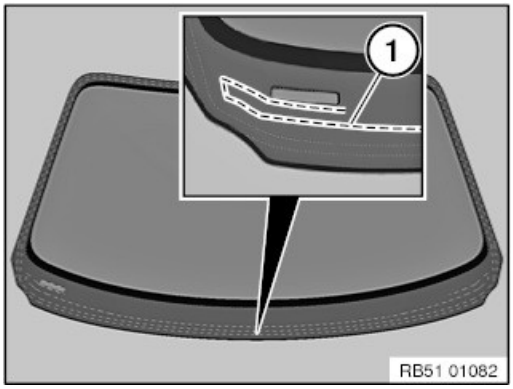
Fitting spacer buffers (spacers):



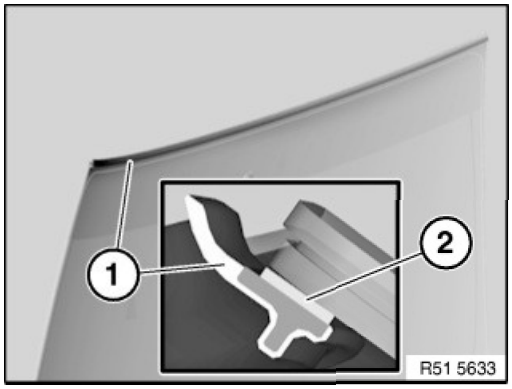
Attention!
Spacer buffers are installed to avoid windscreen breakage and wind noises.

Completely remove old spacer buffers (1).

Position new spacer buffers (1) on centre of the embossed marks (2) and bond.

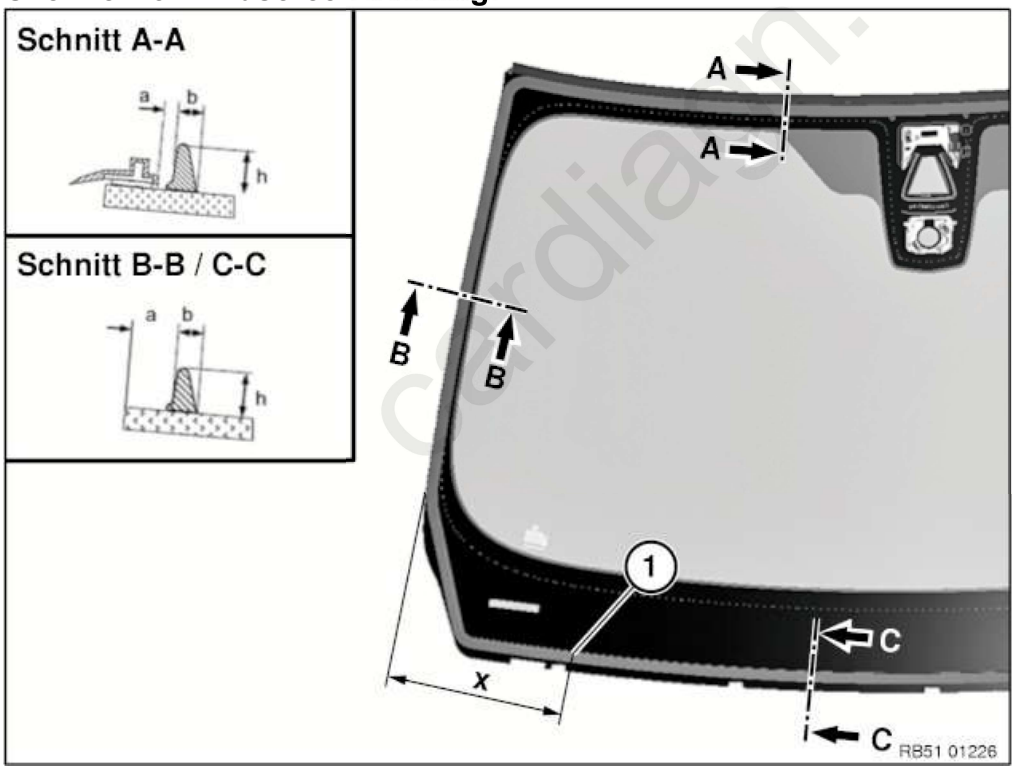


Observe notes on component-bonding with adhesive tape!
Stick expanding foam tape onto the marked area (1) on the windscreen.



Install the cover / rubber frame (1) for the windscreen.
Pre-treat adhesive area with Sika-Aktivator205.

Overview of windscreen bonding:



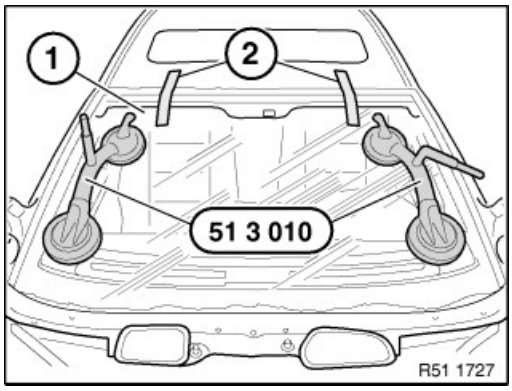
Cut	A - A	B - B	C - C
a [mm] = Position adhesive bead	6 ±2	3 ±1	19 ±2
b [mm] = Width adhesive bead	7 ±1	7 ±1	7 ±1
h [mm] = Height adhesive bead	12 -2	12 -2	12 -2

Note:
A tolerance band is printed on the ceramic (two dashed lines) that marks the position of the adhesive bead. Place the adhesive

bead in the outer area of the tolerance band.

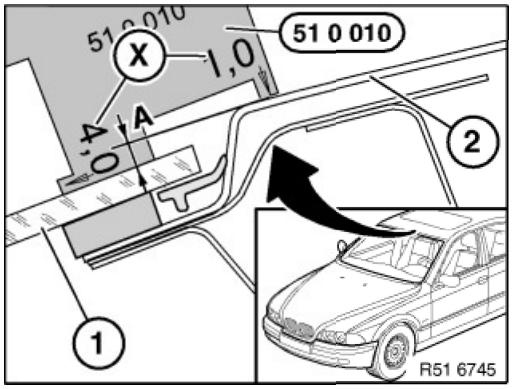
x = approx. 300 mm (bead joint distance (1) to windscreen outer edge)

Prepare the body and windscreen.



Perform the following steps carefully on the windscreen (1) using suction cup (51 3 010):

- Feed in at bottom of front of engine compartment lid
- Position at top
- Align sides evenly
- press upwards until sealing rests evenly on roof and apply pressure
- secure in terms of height in this position at top with two yellow plastic adhesive tapes (2)



Preload on top of windscreen to prevent wind noise:

Windscreen (1) must be lower than roof outer skin (2). This is the only way to prevent wind noises.

Position special tool 51 0 010 in middle of vehicle depending on dimension (A) and check underprotrusion of windscreen (1).

Windscreen underprotrusion (A):

Without HUD	3.4 ± 1 mm
With HUD	3.0 ± 1 mm

X = Measurement stages 1... 4 mm



Only with camera-based driver support systems:

Carry out camera calibration via diagnosis system.

Under Service Functions menu:

- Driver assistance
  - Camera-based driver assistance systems
    - Calibration of camera-based driver support systems

cardiagn.com

51 31 221 Replacing rear window (rear window broken)



Important!

Remove all glass splinters, also from underneath seats.

In case of bonded rear windows:

If required by the condition, remove bonded window remnants with an oscillating knife or fold scraper.

Check seat belts:

- Condition of seat belt strap
- Function of automatic reel
- Seat belt locking reel
- Check seat belt buckle



Other operations correspond to:

Remove and install rear window.

cardiagn.com

51 31 ... Window glass removal with wire pull handle

Special tools required:

- 2 150 267

Warning!

Follow safety instructions for working on vehicles with airbag systems (risk of injury).

Always wear safety goggles and protective gloves for your own safety.

Attention!

Handle sharp-edged tools with care (risk of damage to the head airbag and the window glass).

Attention!

Follow the vehicle-specific repair instructions!

Protect inner and outer working area (body, trim panels, cables etc.) against damage.

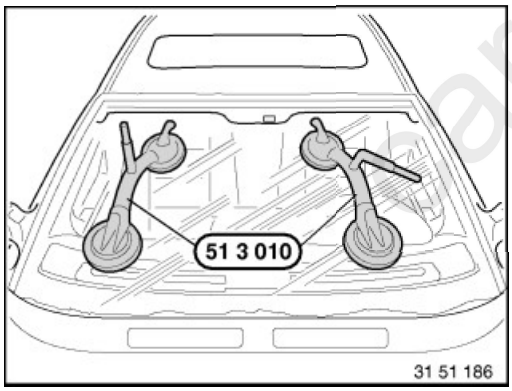
Depending on the area of application, a separating cord can also be used as an alternative to wire.

Using the separating cord prevents any damage to the body.

Do not pull the separating cord over any sharp edges (risk of tearing)!

Used tool:

- Wire pull handles
- Dashboard protection
- Wire starter (special tool 2 150 267)

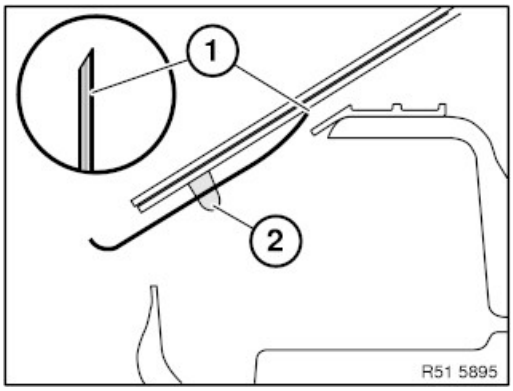


Use suction cups (51 3 010) to lift out the window glass.

Always keep both suction cups dry and clean to ensure their optimum adhesion on the windscreen.

Secure window glass (if necessary with adhesive tape) against falling out.

cardiagn.com

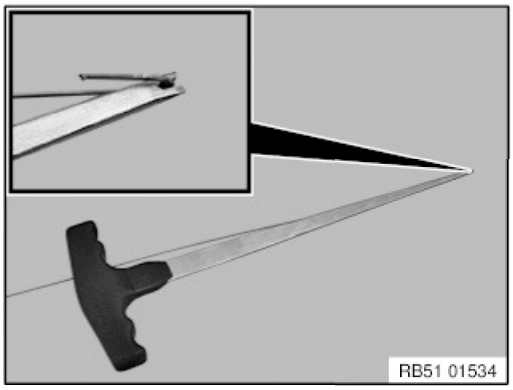


Pulling cutting wire into vehicle:

- Grip wire with pliers

  (If access is difficult: using wire starter 2 150 267 , feed wire through adhesive bead.)
- Wire end (1) must be bent towards window glass.
- Heat wire end (1) and use it to pierce adhesive bead (2).
- Pull approximately half of the wire into the passenger compartment

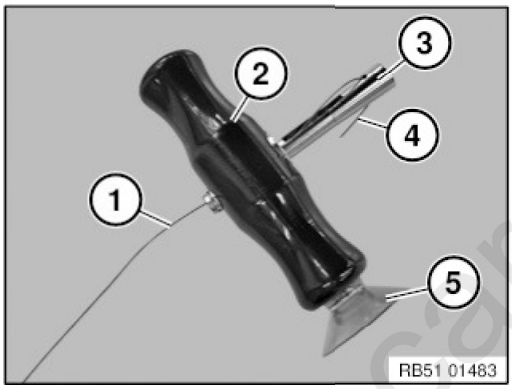
Note:
When using the separating cord, always pull it in using the wire starter 2 150 267 .



Using wire starter:

Bend wire end approx. 10 mm and insert in notched tip.

Pierce wire starter with uniform pressure through adhesive bead, wire end (bent part) must be positioned on window glass.



Attach wire pull handles:

Feed in cutting wire (1) in cutting handle (2) and clamping element (3) as illustrated.

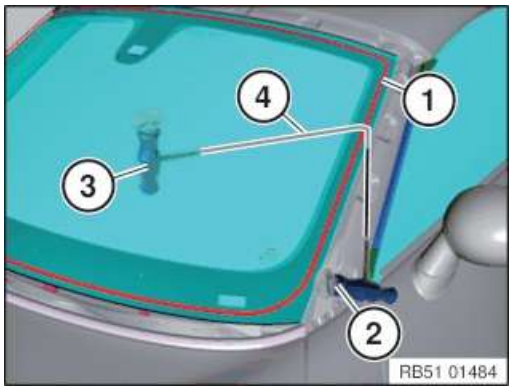
Move back cutting handle (2) over clamping element (3) and trap wire end (4).

Danger of injury!

Wire end (4) must not protrude out of cutting handle (2).

Cutting handle (2) can be secured with suction cup (5) to the vehicle window or body during each of the work operations. This prevents damage to the paint.

Fit second wire pull handle to other wire end.



Perform repair work with the aid of a second person.

Cutting wire (4) must be guided in cutting direction at an acute as possible angle (>45°) to adhesive bead (1).

Cut through adhesive bead (1) by pulling cutting handle (2) and at the same time providing counter support with cutting handle (3).

Pull back cutting wire (4) with cutting handle (3) and make sure that cutting wire (4) is always held under tension.

Cut through remaining adhesive bead in the same way.

cardiagn.com

51 32 154 Adjusting left or right front side window

Special tools required:

- 51 0 341
- 51 0 342
- 2 351 398
- 2 304 553
- 51 3 240

Configuring the correct setting will fulfil the following properties:

- Seal against water ingress
- No wind noise
- No rattling
- No unintentional reversing of side window during closing action (anti-trap safety function)

Prerequisites for correct adjustment:

- Vehicle is supported on wheels at ground level
- Front door correctly adjusted to fit
- Recharge the battery (observe notes regarding lithium ion battery)

  (Full operability of the power windows during the adjustment procedure is only assured with an external power supply)

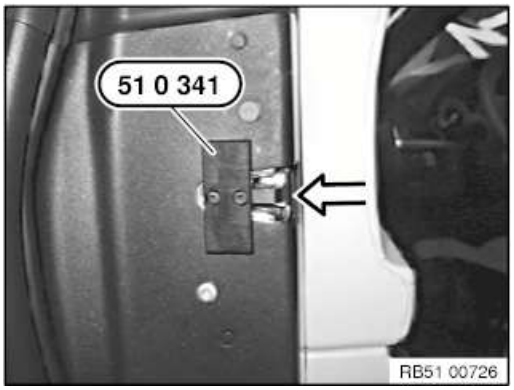
Attention!

When closing, the door window glass must not jam on the trim strip in any area of the window (window glass breakage).

When performing measurement and adjustment work, do not slam the door (window pane may shatter).

Observe the checking and adjustment sequence!

1. Door window glass preload
2. Door window glass retraction depth/longitudinal direction



1 Preload

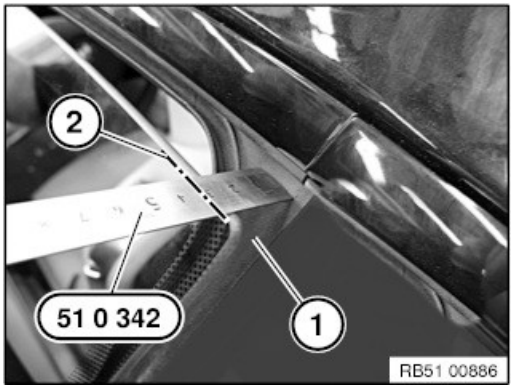
1.1 Preparations

Open door; move door window pane into uppermost position, if necessary.

Insert special tool 51 0 341 in rotary striker of door lock and manually lock rotary striker (short lift activation).

Close the door carefully up to the point where the special tool51 0 341 magnetically adheres to the striker (defined door opening angle for measurement).

cardiagn.com



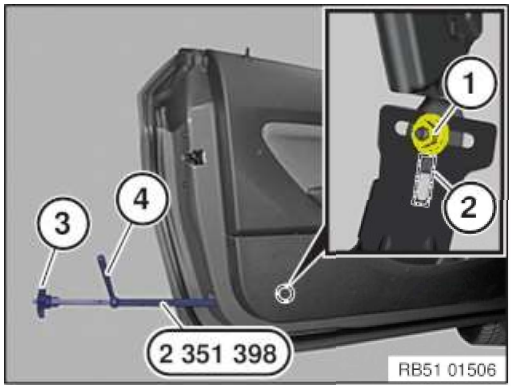
1.2 Preload ideal setting

Note:
No force must be exerted on the door or door window pane during measurement.

Bring special tool 51 0 342 into contact with window guide gasket (1) and door window (2).

Determine dimension for preload between window guide gasket (1) and outer edge of door window (2).

Dimension = 27 ±1 mm



1.3 Adjust preload

Open door and remove sealing cap on door window frame.

Thread in special tool 2 351 398 into door and position on nut (1) and guide (2).

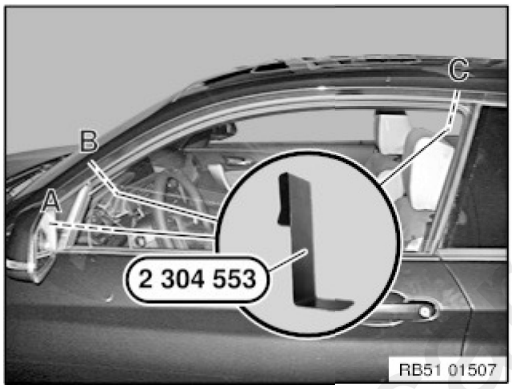
Slacken nut (1) with knob (3).

Turn lever (4) to adjust preload and tighten nut (1).

Tightening torque 51 33 2AZ.

Check adjustment, repeat procedure if necessary.

Remove special tool 51 0 341 from rotary striker of door lock.



2 Retraction depth/longitudinal direction

2.1 Retraction depth/longitudinal direction ideal setting

Open door.

Connect special tool 2 304 553 to measuring points (A to C) on side window.

Close door.

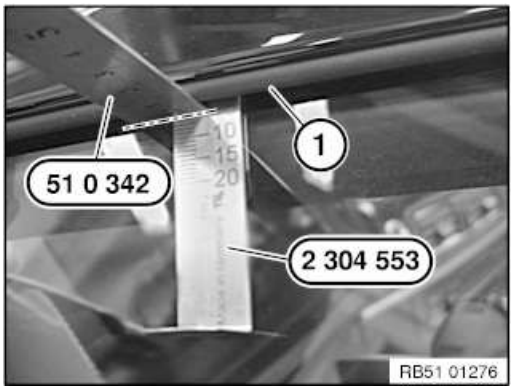
Measure longitudinal direction (A) and retraction depth (B and C) (refer to next work operation).

Area	Dimension	Position of special tool 2 304 553
A	19 ±1 mm	Centrally on mirror triangle
B	5.5 ±1 mm	30 to 40 mm above exterior mirror
C	7 ±1 mm	60 to 70 mm in front of outer edge of door window glass

Important!

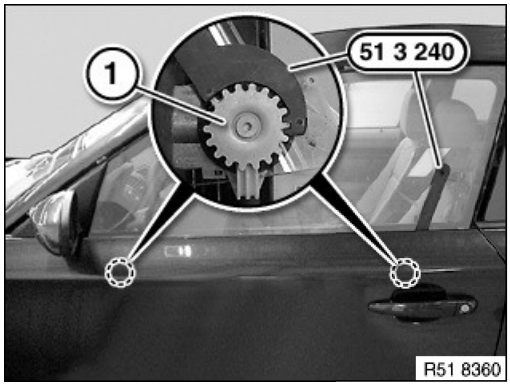
Door must open and close without the door window glass touching the roof trim strip (risk of damage).

cardiagn.com



Note:
Special tool 2 304 553 rest against edge of side window without play for each measurement.

To correctly determine the dimension, transfer edge of profile seal (1) with special tool 51 0 342 to scale perpendicular to special tool 2 304 553 .



2.2. Adjust retraction depth/longitudinal direction

Remove weather strip on outside of front door.

Note:
Avoid damaging door window glass and window cavity through tool use.

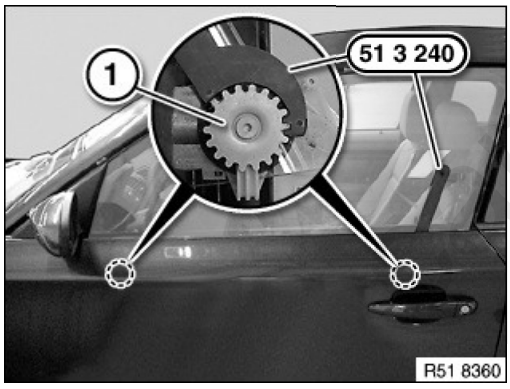
When configuring setting, ensure that all special tools 2 304 553 continue to touch edge of door window pane without any gaps.

Attach siphon to centre of side window.

Slacken multipoint head cap screw (1)51 3 240 with special tool until side window with siphon can just be moved with little effort.

Note:
Always slacken both multipoint head cap screws to avoid tension in the power window system.

Adjust longitudinal direction and retraction depth of door window glass.



Tighten multipoint head cap screws (1) using special tool 51 3 240 and torque wrench.

Tightening torque 51 33 3AZ.

Important!

Do not release or tighten multipoint head cap screws over inside of door (disassembled door trim panel; threaded bolt may snap).

Check adjustment, repeat procedure if necessary.

Note:
Checking run-in of door window glass:

Door window glass must strike the inside of the gasket.

51 32 170 Removing and installing/replacing door window glass, front left or right

Special tools required:

- 2 360 051

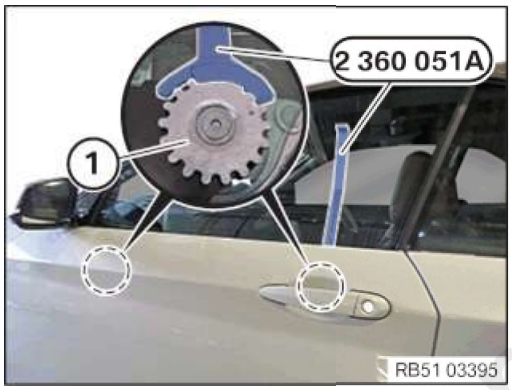
Warning!

Danger of injury!

Carry out work on the power window regulator only when the power window motor is de-energized.

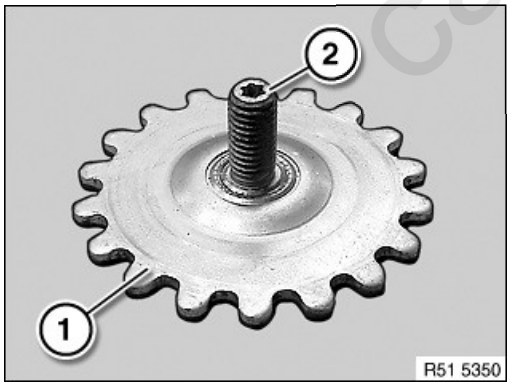
Necessary preliminary tasks:

- Remove sound insulation in front door
- Remove outer weather strip



Slacken multipoint head cap screws (1) on ring gear with special tool 2 360 051 .

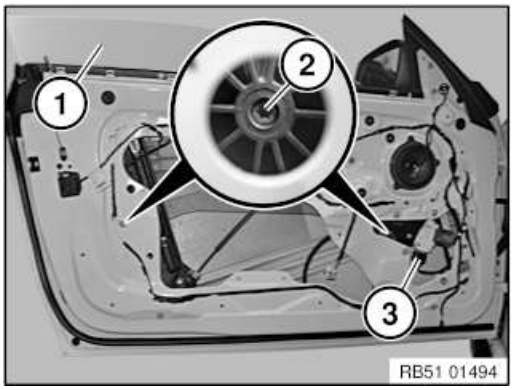
Tightening torque 51 33 3AZ.



Note:

Slacken multipoint head cap screws on ring gear (1) until they can be screwed out slightly at inner star (2).

carldiag.com



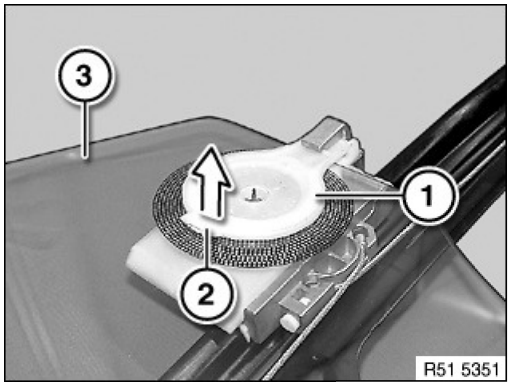
Open door window glass (1) until multipoint head cap screws (2) are accessible.

Important!

Danger of injury!

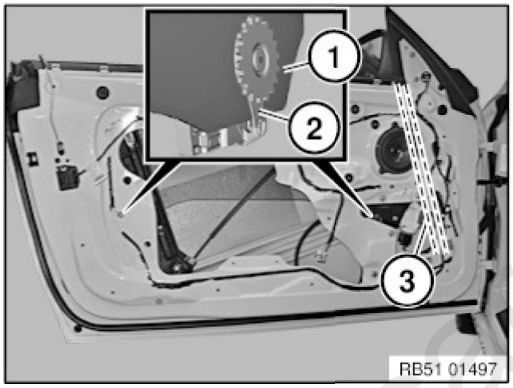
Disconnect plug connection (3) at power window motor (pinch hazard).

Release multipoint head cap screws (2) (turn to the right).



Note:
Door window glass (3) remove for purposes of clarity.

Raise holder (1) at tab (2) and remove door window glass (3) in upward direction.



Installation note:
Make sure dcor window glass (1) is correctly seated on holder (2) and window guide (3).

Adjust door window glass.

Carry out function check on power window regulator and anti-trap mechanism.

If necessary, normalise power window regulator.

cardiagn.com

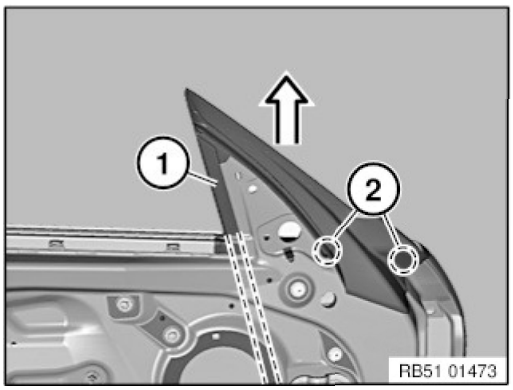
51 32 211 Removing and installing/replacing rubber window seal for front left or right side window

Necessary preliminary tasks:

- Remove rear-view mirror on front door
- Remove weather strip on outside of front door
- Remove weather strip on inside of front door

Important!

The "Notes on fitting window guide seals" serve as the basis for this repair instruction and must be observed without fail.

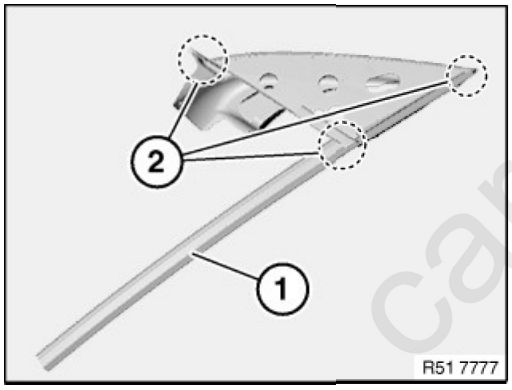


Release rubber window seal (1) at lugs (2).

Pull out rubber window seal (1) from window guide rail.

Installation note:
Moisten rubber guide (1) prior to fitting with approved lubricant.

Insert rubber window seal (1) at front/bottom correctly into window guide rail.



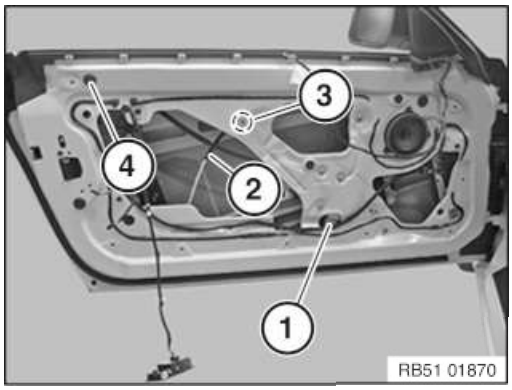
Installation note:
Rubber guide (1) must not be damaged in corners (2).

cardiagn.com

51 33 000 Removing and installing (replacing) power window regulator in left or right front door

Necessary preliminary tasks:

- Remove side window

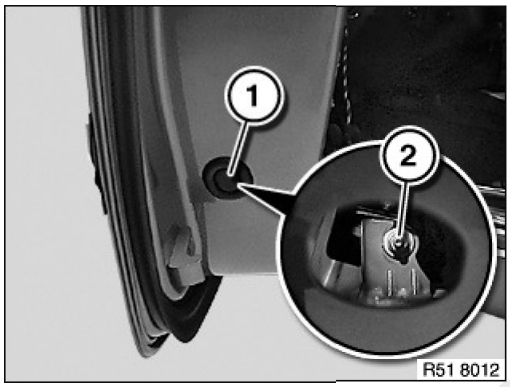


Unfasten plug connection (1) and disconnect.

Unclip drive cable (2) in area (3).

Raise cover (4) and release nuts underneath.

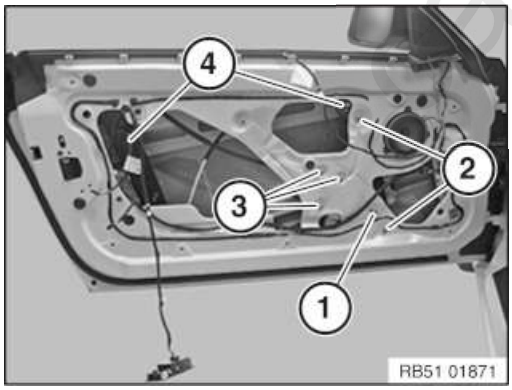
Tightening torque 51 33 2AZ.



Lift cover (1) and slacken nut (2).

Tightening torque 51 33 2AZ.

Installation note:
Nut is tightened during adjustment of side window.



Release screw (1).

Release nuts (2 and 3).

Tightening torque 51 33 2AZ.

Feed out power window regulator (4) from door.

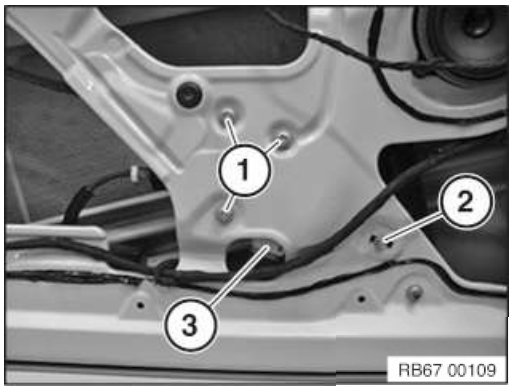
Replacement:

Remount flat motor for power window regulator.

67 62 000 Removing and installing or replacing flat motor for front left or right power window regulator

Necessary preliminary tasks:

- Remove sound insulation in front door

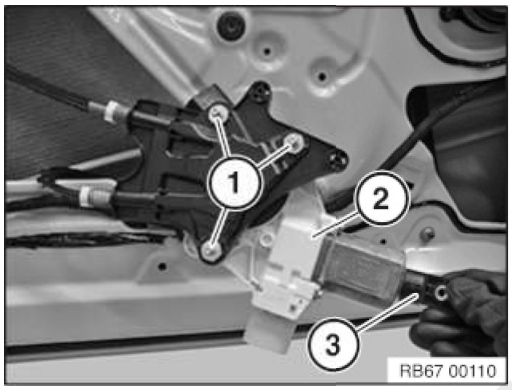


Release nuts (1) and screw (2).

Tightening torque 51 33 2 AZ.

Feed out flat motor (3).

Unlock associated plug connection and disconnect.



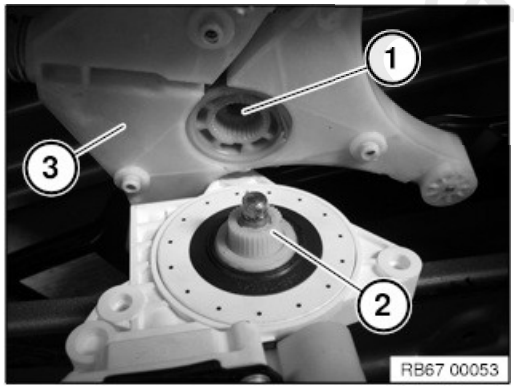
Release screws (1).

Tightening torque 51 33 1 AZ.

Remove flat motor (2).

Replacement:

Remount support (3).



Note:
Diagram similar.
Installation note:
Make sure drive shaft (2) is correctly seated in mounting (1) at power window regulator (3)!

Ensure that the flat motor (2) is assembled without tension.

After installation:

An initialisation must be carried out in order to activate anti-trap mechanism.

Read and comply with notes on initialisation of power window regulator.

ardiagn.com

51 32 170 Removing and installing/replacing door window glass, front left or right

Special tools required:

- 2 360 051

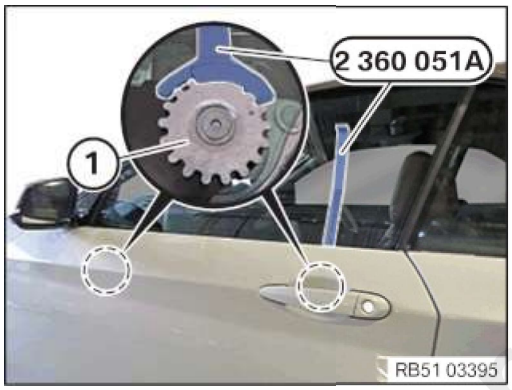
Warning!

Danger of injury!

Carry out work on the power window regulator only when the power window motor is de-energized.

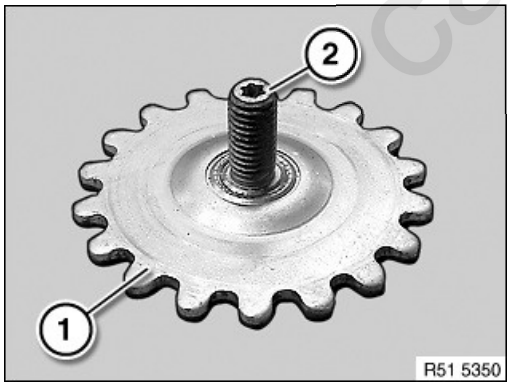
Necessary preliminary tasks:

- Remove sound insulation in front door
- Remove outer weather strip



Slacken multipoint head cap screws (1) on ring gear with special tool 2 360 051 .

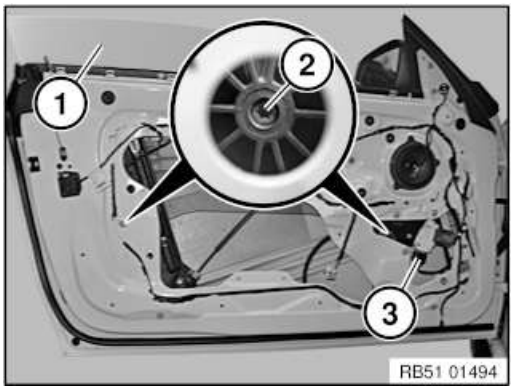
Tightening torque 51 33 3AZ.



Note:

Slacken multipoint head cap screws on ring gear (1) until they can be screwed out slightly at inner star (2).

carldiag.com



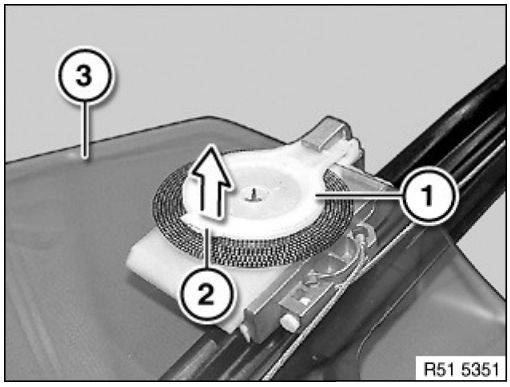
Open door window glass (1) until multipoint head cap screws (2) are accessible.

Important!

Danger of injury!

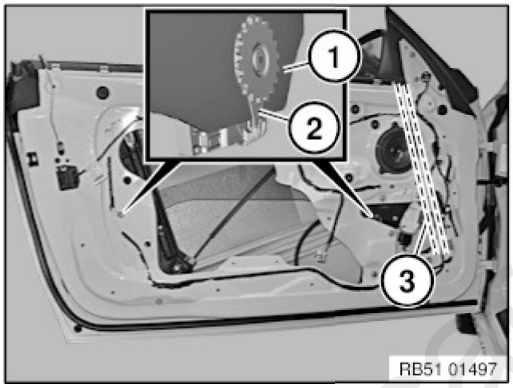
Disconnect plug connection (3) at power window motor (pinch hazard).

Release multipoint head cap screws (2) (turn to the right).



Note:
Door window glass (3) remove for purposes of clarity.

Raise holder (1) at tab (2) and remove door window glass (3) in upward direction.



Installation note:
Make sure dcor window glass (1) is correctly seated on holder (2) and window guide (3).

Adjust door window glass.

Carry out function check on power window regulator and anti-trap mechanism.

If necessary, normalise power window regulator.

cardiagn.com

51 36 070 Removing and installing / replacing left or right rear side window

Attention!

- Notes on window bonding
- General procedure for dismantling/installing bonded window glass

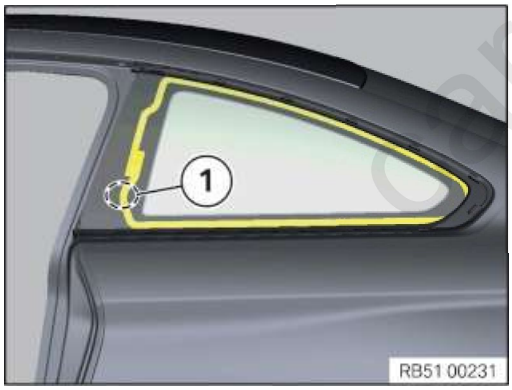
Removal is performed with Roll Out 2000 or Spider.

The following new parts/consumable are required (sourcing reference BMW Group Parts).

Material	Quantity
Side window (when replacing)	1
Small repair kit	1
Cutting wire for Roll Out 2000	5 m
Velcro fastener (Dual Lock tape)	6

Necessary preliminary tasks:

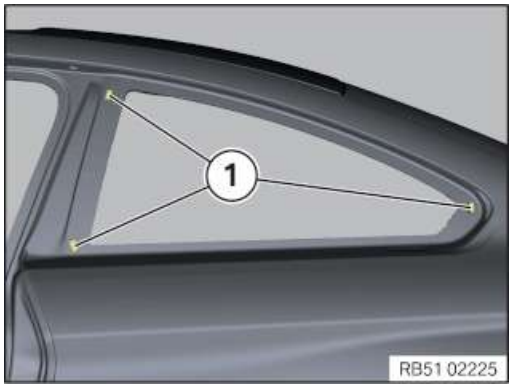
- Remove side trim panel
- Remove trim panel for door post.
- Remove trim panel for roof pillar at rear (C-pillar)
- Remove trim strip on gutter strip rear



Attention!

Tape off body in area of piercing points (1) with fabric adhesive tape (risk of damage).

Cut the side window out.



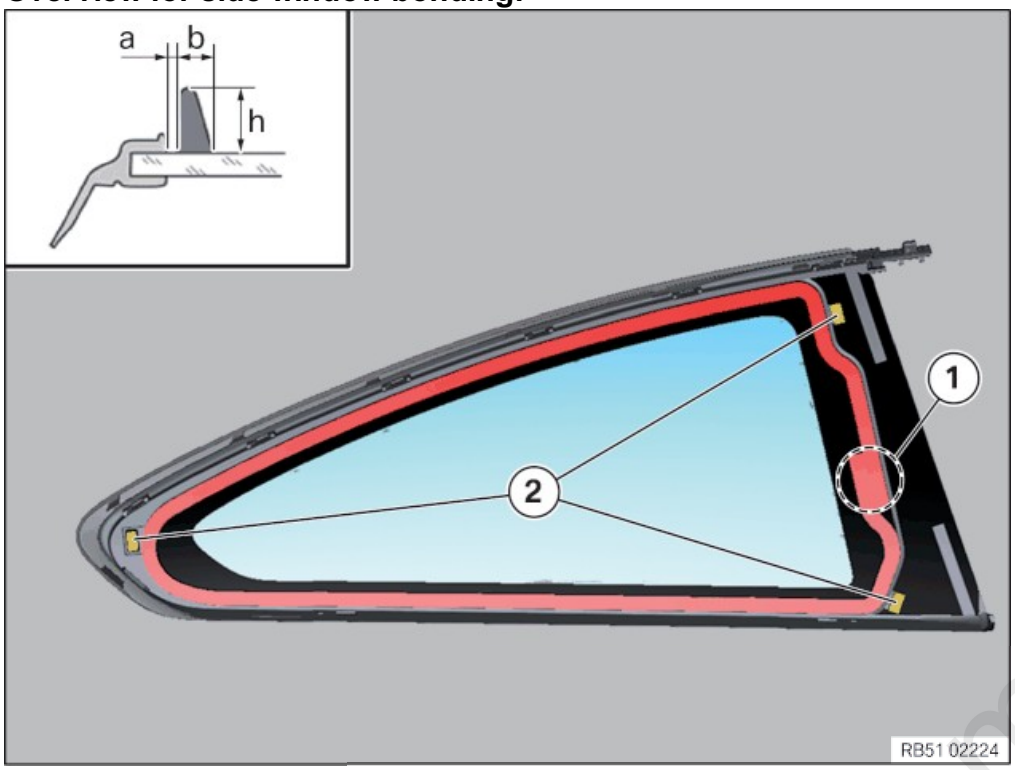
Installation of Dual Lock tapes:

Remove rest of dual-lock tapes (1) and clean bonding surface.

Apply new Dual Lock tape (1) between the marks on the body area.

cardiagn.com

Overview for side window bonding:



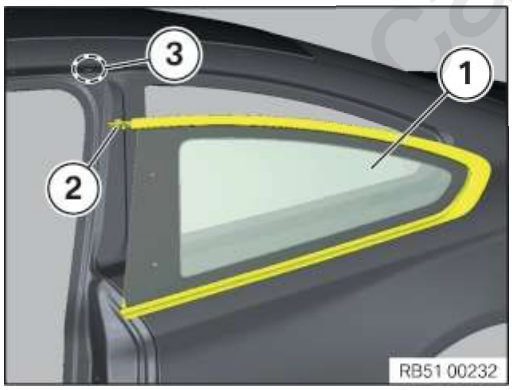
Install trim strip on rear gutter strip to side window.

a [mm] = Position adhesive bead	1 +1
b [mm] = Width adhesive bead	7 ±1
h [mm] = Height adhesive bead	12 -2

For reusing the side window:

- Remove rest of dual-lock tapes (2). Clean bonding surface and stick on new dual-lock tapes (2).

Apply bead joint in area (1).
Follow the adhesive bead around the circumference of the PVC coating.



Perform the following repair work with a second person to give assistance.

Clip side window (1) at first with clip (2) into fixture (3).

Then place side window (1) at side wall.

Align side window (1) to side wall and engage in Dual Lock tapes.

Fix side window (1) in place using yellow plastic adhesive tapes (sourcing reference BMW Parts Department).

Replacement:

Mount new trim onto fixed side window glass at rear.

cardiagn.com

51 36 047 Replacing cover at rear left or right side window

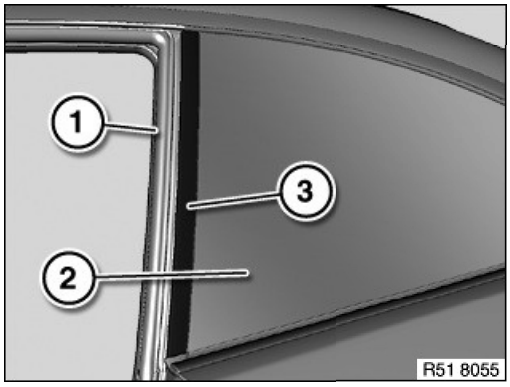
Special tools required:

- 00 9 325

Important!

The notes on component bonding with double-sided adhesive tape serve as the basis for this repair instruction and must be observed without fail.

Note:
Correctly adjusted front door window glass is essential to ensuring correct installation.



Remove trim:

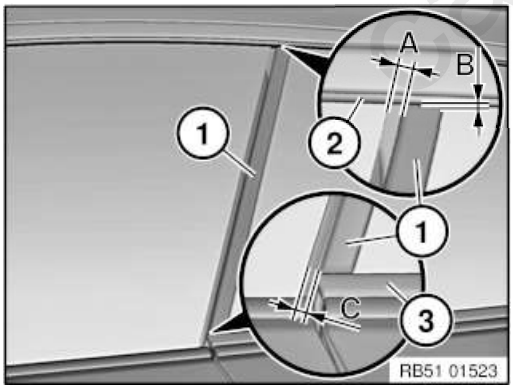
Undo door seal (1) in the area of the side window (2).

Heat cover (3) using a hot air blower and remove from side window (2) using special tool 00 9 325 .

Install cover:

Clean adhesive area on side window.

Fit door seal.



Pull liner* off cover (1).

Attach cover (1) above at PVC coating (2) in accordance with dimensions (A) and (B).

A = 7 ± 1 mm

B = 1 ± 0.5 mm

Attach cover (1) below at PVC coating (3) in accordance with dimension (C).

C = 7 ± 1 mm

Apply thumb pressure force over entire bonding surface of cover (1).

*Liner is the protective film on adhesive tape.

cardiagn.com

51 48 ... Notes for bonding sound insulation (SI), doors



Special tools required:

- 51 0 300

Attention!

Do not yank at the sound insulation (risk of damage).

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 the area is 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.
- Always keep an eye douche on hand, change the water regularly (once a month).
- Comply with the relevant safety regulations.

Handling adhesive area on inner door panel:

Adhesive	Cleaning
a. Butyl bead applied to sound insulation with protective film b. Butyl mini-round profile ⌀ 4 mm from the roller c. Butyl round profile ⌀ 6 mm from the roller	a. Cleaning agentR2 *Under no circumstances: paint thinning* b. Carry out bonding only after an air drying time ≥ 1 min. Air drying time may be omitted if the entire bonding surface is wiped with a dry cloth c. After cleaning, the bonding surface may not be touched with hands or fouled again

Repair in area of sound insulation, door:

Repair	
	• 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 ⌀ 4 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 on with special tool 51 0 300. Perform this work extremely carefully because the increased amount of adhesive requires contact 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)

cardiagn.com

in the event of damaged sound insulation or leakage	• 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 on with special tool 51 0 300. Contact pressure ≥ 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 the 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 will no longer be 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).

cardiagn.com

51 41 000 Removing and installing left or right front door trim panel

Special tools required:

- 00 9 325

When working on trim panel components, make sure that visible surfaces are not scratched or damaged (e.g. by sharp-edged tools).

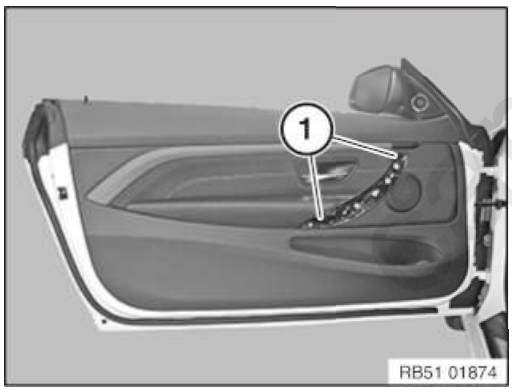
Necessary preliminary tasks:

- Remove cover on door handle
- Remove switch panel

Only M4 GTS:

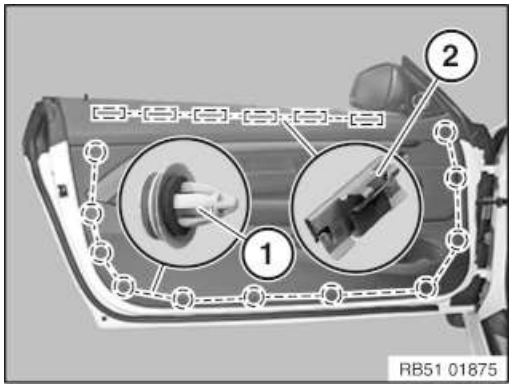
- Remove the pull strap

Attention!
Do not ever pull on the folding compartment.



Release screws (1).

Tightening torque 51 41 1AZ.



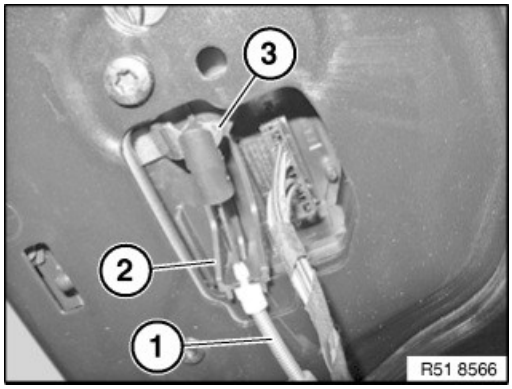
Attention!
Risk of damage!

Do not pull folding compartment. Door trim panel lower section may separate from door trim panel upper part.

Mask front door and door trim panel in working area with plastic adhesive tape.

Release door trim panel using special tool 00 9 325 in A-pillar/mirror triangle area starting at clips (1).

Pull off door trim panel from clamps (2).

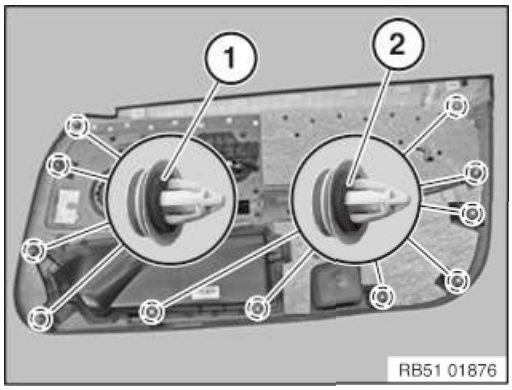


Disengage Bowden cable (1) for release lever first at counter support (2) and then at door lock (3).

Installation note:
Perform function check for door inside handle with door open and rotary striker lock closed.

Feed out door wiring harness from all brackets.

Unlock and disconnect all plug connections, then remove door trim panel.



Installation note:
Make sure the installation location of the clips (1 and 2) is correct.

(1)	Clips, grey
(2)	White clips



Installation note:
After assembling the door trim panel proceed as follows:

- Open side window
- Lock with ignition key
- Check for ease of movement on locking button linkage
- If necessary, align linkage

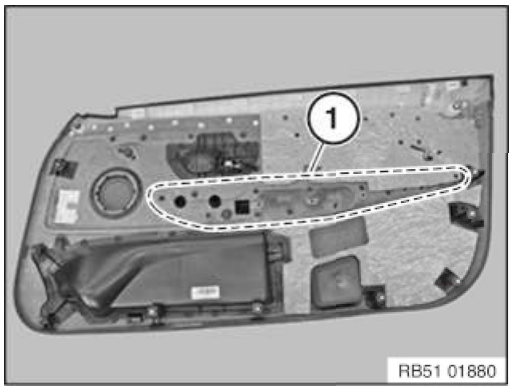
cardiagn.com

51 41 060 Removing and installing or replacing armrest on door trim panel, front left or right

Necessary preliminary tasks:

- Remove front door handle

Note:
Armrest is welded to door trim panel only on initial installation. The armrest is screw-connected on second installation. If necessary, release screws instead of welding spots.



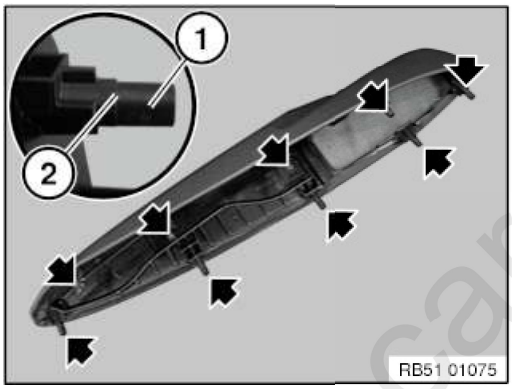
Important!

Risk of damage!

To avoid damaging the contact surface, only drill to base area of door trim panel.

Drill out all welding spots in marked area (1) with an 8 mm dia. weld spot drill bit.

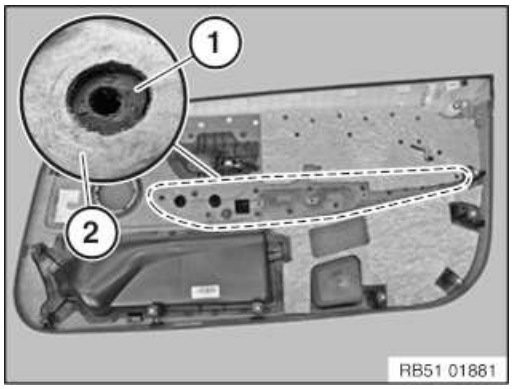
Remove welding remnants on door trim panel.



Replacement:

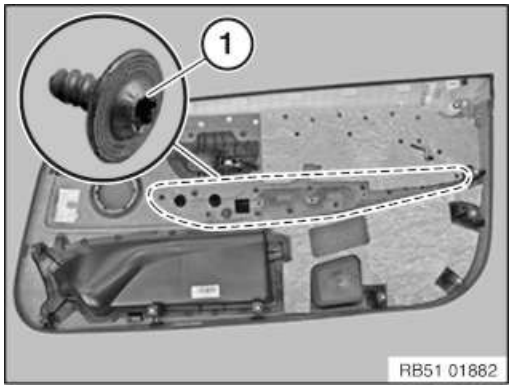
Similar to graphic.

Saw off all welding pins (1) along moulding (2).



Insert armrest in door trim panel.*Installation note:*
Welding pins (1) are not to protrude over door trim panel (2).

cardiagn.com



Installation note:
Secure armrest with repair screws (1).

Tightening torque 51 41 4AZ.

If the screw starts to turn without resistance, fill the welding pins with adhesive and then tighten the screws using only minimal tightening torque.

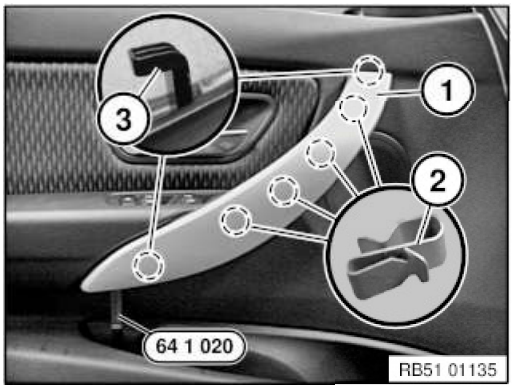
cardiagn.com

51 41 017 Removing and installing or replacing cover on door handle, front left or right

Special tools required:

- 64 1 020

When working on trim panel components, make sure that visible surfaces are not scratched or damaged (e.g. by sharp-edged tools).

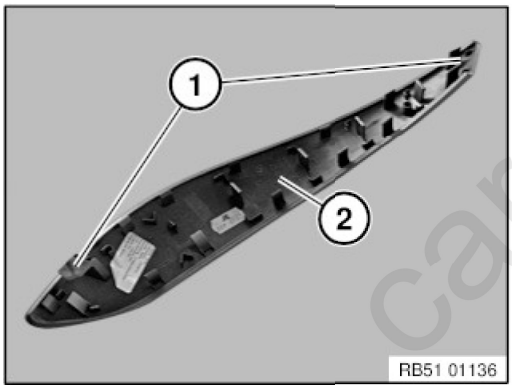


Unclip cover (1) starting from below using special tool 64 1 020 from clamps (2) and latch mechanisms.

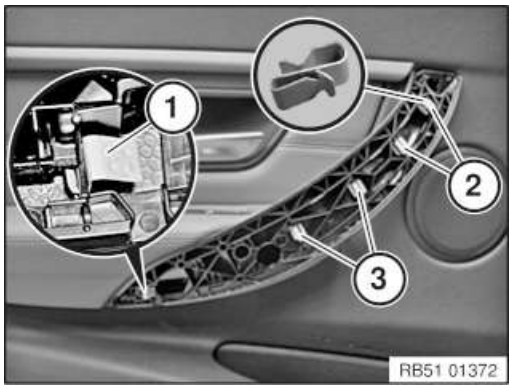
Feed out cover (1) from retaining hook (3).

Installation note:
Install the cover (1) as follows:

- Feed in top retaining hook (3)
- Position on clamps (2) and side latch mechanisms
- Feed in bottom retaining hooks (3)
- Clip in to door trim panel



Installation note:
Retaining hooks (1) and latches on cover (2) must not be missing or damaged.



Installation note:
Clamp (1) may bend up when dismantling the cover.

Bend clamp (1) back by approx. 45° if necessary.

Replace faulty clamps.

Make sure installation location of clamps (2 and 3) is correct.

- Clamps (2) silver
- Clamps (3) black

To replace clamps, disassemble (1) door handle.

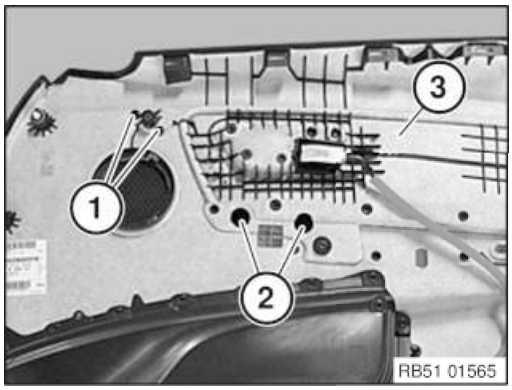
cardiagn.com

51 41 019 Removing and installing or replacing door handle on door trim, front left or right

Necessary preliminary tasks:

- Remove front door trim panel

Note:
Door handle is welded to door trim panel only on initial installation. The door handle is screw-connected on second installation. If necessary, release screws instead of welding spots.



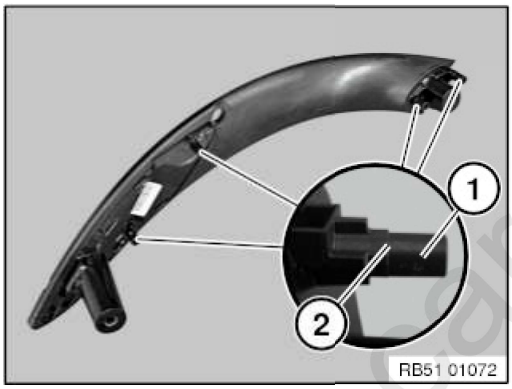
Important!

Risk of damage!

To avoid damaging the contact surface, only drill down to door trim panel area (3).

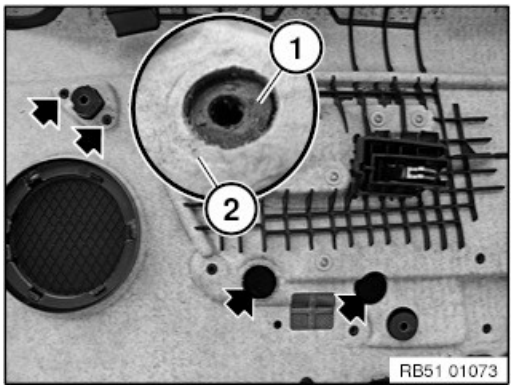
Drill out welding spots (1 and 2) on door trim panel (3) with drill 8 mm dia.

Remove weld residuals on door trim panel (3) and, if necessary, on door handle with scalpel (for heavy duty use).



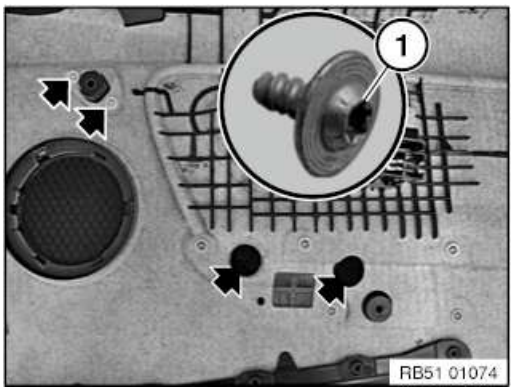
Replacement:

Saw off welding pins (1) along moulding (2).



Insert door handle in door trim panel.*Installation note:*
Welding pins (1) are not to protrude over door trim panel.

cardiagn.com



Installation note:
Secure door handle with repair screws (1).

Tightening torque 51 41 3AZ.

cardiagn.com

51 41 090 Removing and installing or replacing lighting strip on door trim, front left or right

Necessary preliminary tasks:

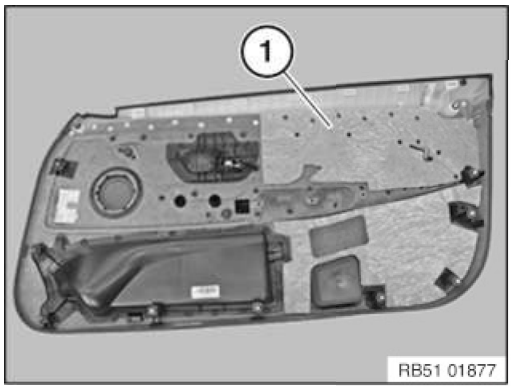
- Remove LED for door trim lighting at front

Important!

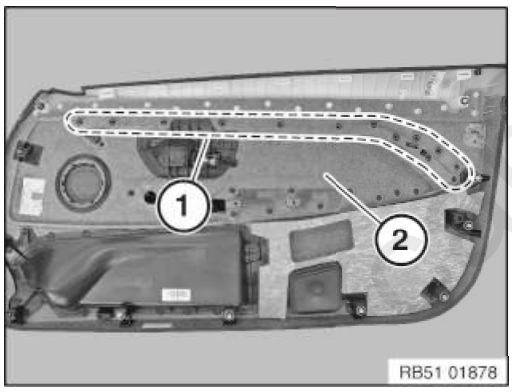
Risk of damage!

Exercise caution when handling lighting strip.

Do not strike the fibre-optic conductor against other objects.



Release sound insulation (1) of door trim panel.*Installation note:*
Attach sound insulation (1) with profile rubber adhesive.

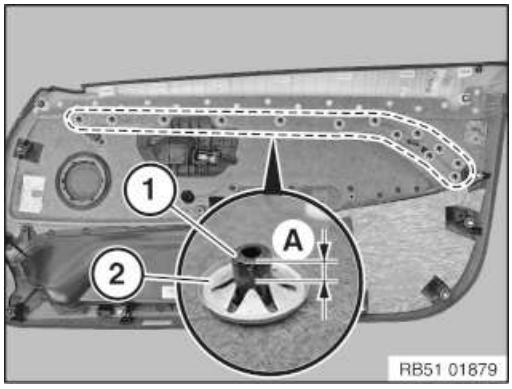


Drill out welding spots (1).

Note:
Only drill down to door trim panel area (2) so that the contact surface is not damaged.

Feed lighting strip out of door trim panel (2).

Remove plastic remnants from contact surface of door trim panel (2) .



Installation note:
Carefully feed lighting strip into door trim panel.

Secure welding pins (1) with lock washer (2).

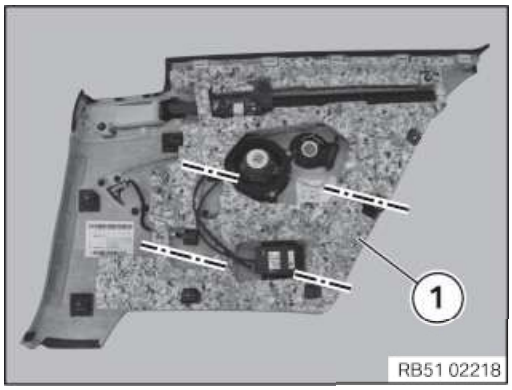
Check light strip is fitted correctly, if necessary pressing down firmer on lock washers (2).

Saw off weld pins (1) to dimension (A).

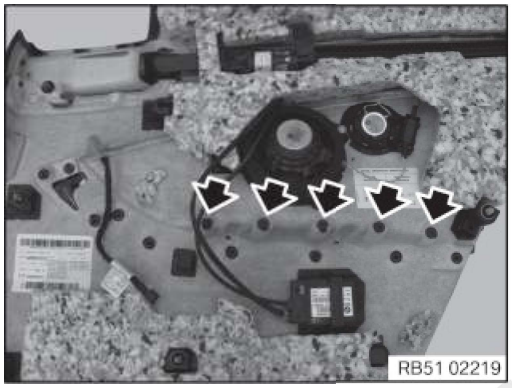
A = 2 mm

51 43 060 Removing and installing/replacing armrest on rear left or right side trim panel

Note:
Armrest is welded to door trim panel only on initial installation. The armrest is screw-connected on second installation. If necessary, release screws instead of welding spots.



Cut sound insulation (1) in marked area and remove.*Installation note:*
Attach sound insulation (1) with profile rubber adhesive.



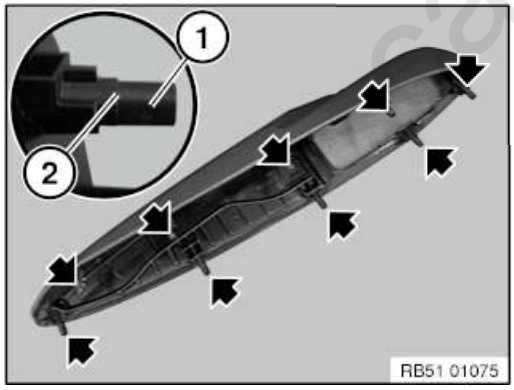
Important!

Risk of damage!

Drill only to base area of side trim panel so that contact surface is not damaged.

Drill out all marked welding spots with 8 mm dia. weld spot drill bit.

Remove welding remnants on side trim panel.

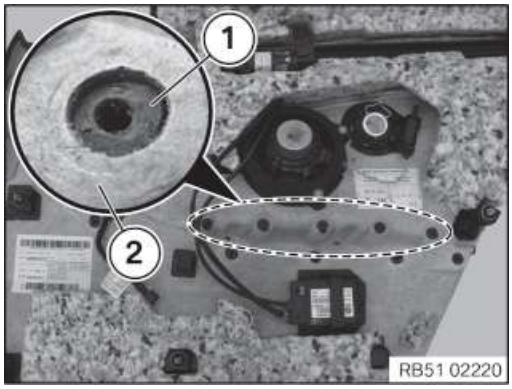


Replacement:

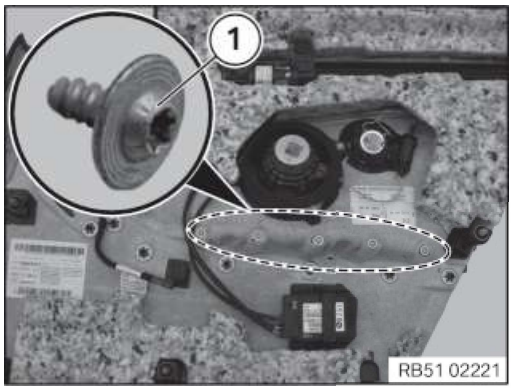
Similar to graphic.

Saw off all welding pins (1) along moulding (2).

cardiagn.com



Insert armrest in side trim panel.*Installation note:*
Welding pins (1) are not to protrude over side trim panel (2).



Installation note:
Secure armrest with repair screws (1).

Tightening torque 51 43 5AZ.

If the screw starts to turn without resistance, fill the welding pins with adhesive and then tighten the screws using only minimal tightening torque.

cardiagn.com

51 41 017 Removing and installing/replacing cover on door handle, front left or right \PREMIUM

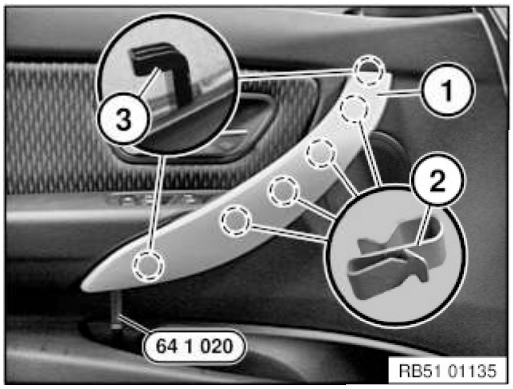
1 – Remove front left or right door handle cover

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- Unclip cover (1) starting from below using special tool **0 493 681 (64 1 020)** from clamps (2) and latch mechanisms.
- Remove cover (1) from tail hook (3).

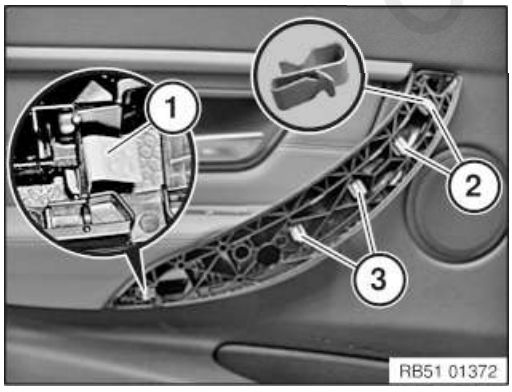
2 – Fix front left or right door handle cover

RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

- Protect working area.
- Handle tools and components carefully.



- If clamp (1) is bent up, bend it back by approx. 45°.
- Replace faulty clamps.

TECHNICAL INFORMATION

Disassemble the door handle to replace the clamp.

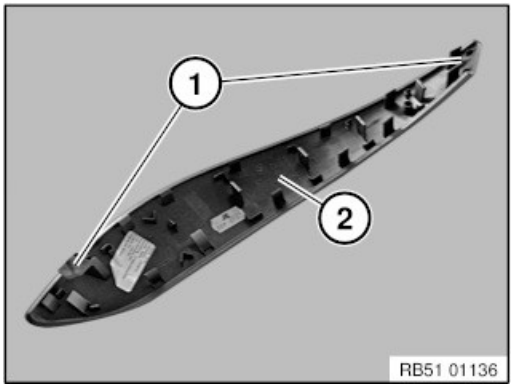
For more information see: 5142019 Removing and installing or replacing door handle on door trim, rear left or right.

- Make sure clamps (2) and (3) are installed in correct positions.

  - Clamps (2) silver

  - Clamps (3) black

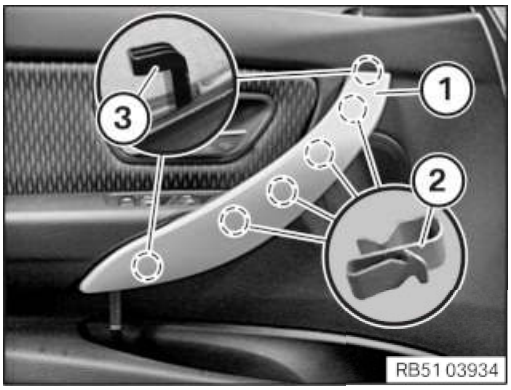
cardiagn.com



TECHNICAL INFORMATION

Latch mechanisms, guides and mounting elements must not be damaged or missing.

- Check retaining hooks (1) and latch mechanisms on cover (2) for damage, replace if necessary.

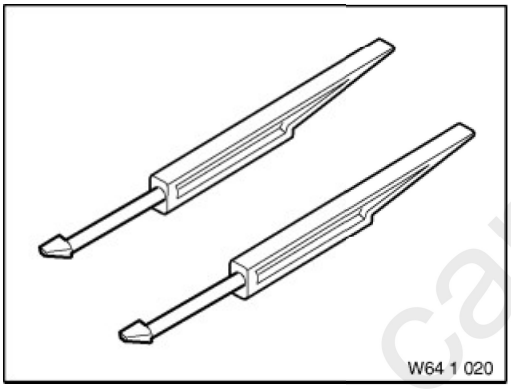


- Feed in cover (1) on top retaining hook (3).
- Feed in cover (1) on bottom retaining hook (3).
- Clip in cover (1) on door trim panel with clamps (2).

Additional Information

Overview of Special Tools

0 493 681 (64 1 020) Hook



Common	Used in step 1
Usage	(release hook) For releasing and removing fresh air grille. For removing various covers.
Included in the tool or work	
Storage location	C2
Replaced by	
In connection with	
SI-Number	01 15 99 (483)

Links

Repair instructions	Used in step
51 41 019 Removing and installing or replacing door handle on door trim, front left or right	2

cartiagn.com

51 43 090 Removing and installing/replacing light strip on rear left or right side trim panel

Necessary preliminary tasks:

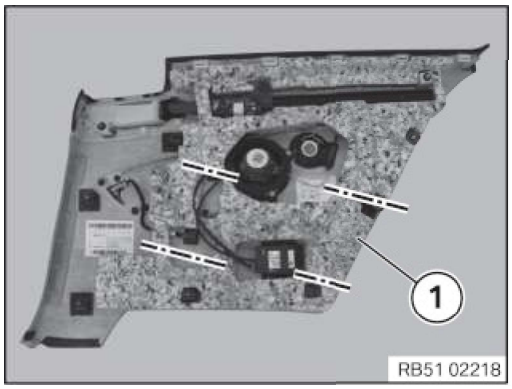
- Remove LED for side trim panel light

Important!

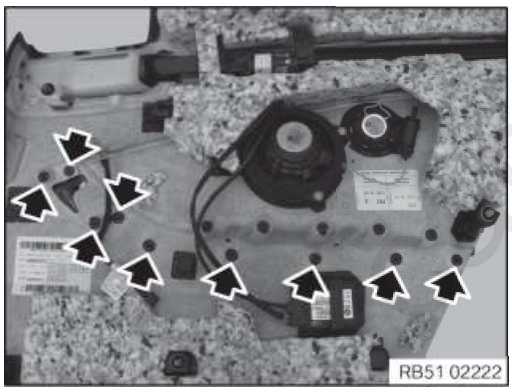
Risk of damage!

Exercise caution when handling lighting strip.

Do not strike the fibre-optic conductor against other objects.



Cut sound insulation (1) in marked area and remove.*Installation note:*
Attach sound insulation (1) with profile rubber adhesive.

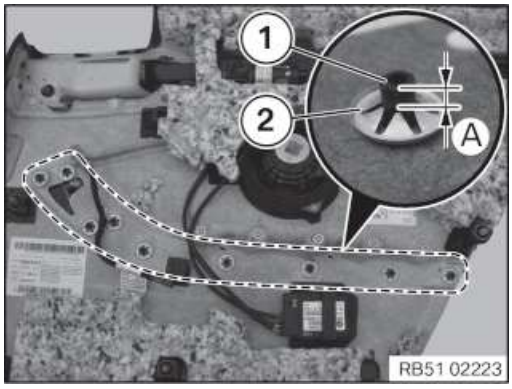


Drill out all marked welding spots.

Note:
So that contact surface is not damaged, drill only to base area of side trim panel.

Reed out light strip from side trim panel.

Remove plastic remnants from contact surface of side trim panel.



Installation note:
Carefully feed in lighting strip into side trim panel.

Secure welding pins (1) with lock washer (2).

Check light strip is fitted correctly, if necessary pressing down firmer on lock washers (2).

Saw off weld pins (1) to dimension (A).

A = 2 mm

51 48 060 Removing and installing/replacing sound insulation in left or right front door

Attention!

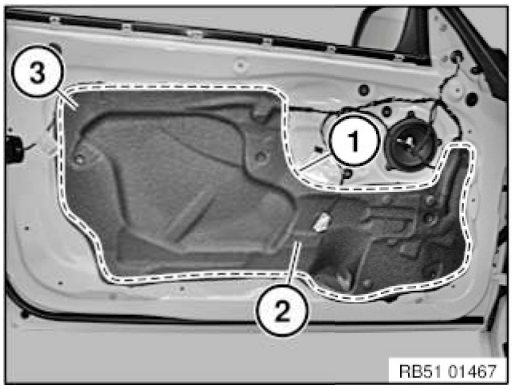
Instructions for sound insulation are an essential part of these repair instructions and must be followed without fail.

Do not detach sound insulation in jerks (risk of damage).

Ensure watertightness of sound insulation after every repair (water ingress).

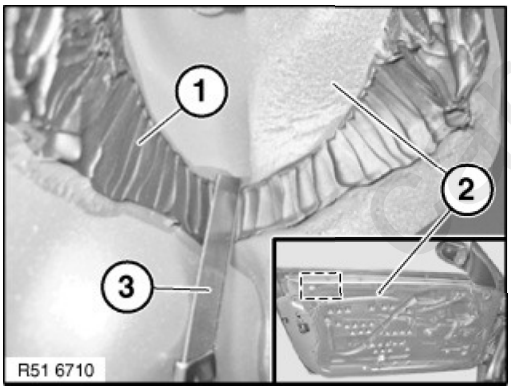
Necessary preliminary tasks:

- Remove door trim panel



Note:
Position of sealing bead (1).

If necessary, manoeuvre out sound insulation (2) at cable (3).



Attention!

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.

When refitting:

Damaged sound insulation must be replaced.

Lay butyl rope with ⌀ 4 mm (sourcing reference: BMW Parts Department) onto the original butyl rope.

Replacement:

Remove residual butyl at the door and clean the adhesive area.

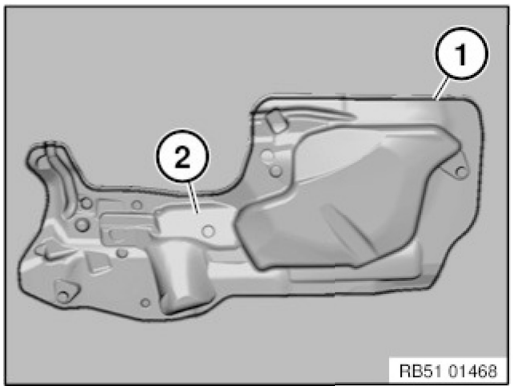
Air drying time: 1 minute

Attention!

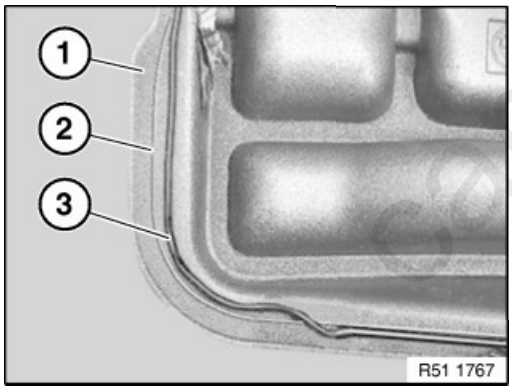
Bonding surfaces must be dry and free of dust and grease.

Once it has been cleaned, do not touch the adhesive area with bare hands.

Lay 6 mm dia. butyl rope (sourcing reference: BMW Parts Department) in specified adhesive area onto the sound insulation.



Note:
Position of butyl rope (1) on sound insulation (2).



Note:
A mark (2) is provided all round on the sound insulation (1).

Butyl rope (3) rests on or inside the marking (2).

Heat butyl rope (3) (hot air blower) and press sound insulation (1) on firmly 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

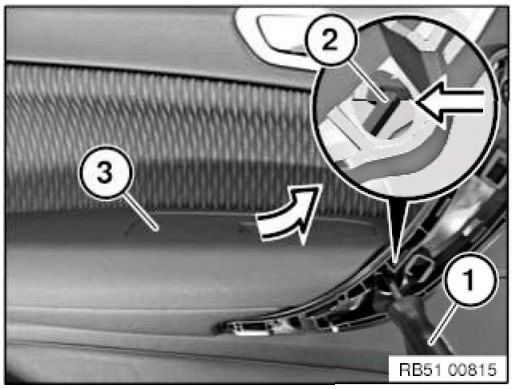
.ardiagn.com

51 41 ... Removing and installing/replacing switch cover on left or right front door trim panel

When working on trim panel components, make sure that visible surfaces are not scratched or damaged (e.g. by sharp-edged tools).

Necessary preliminary tasks:

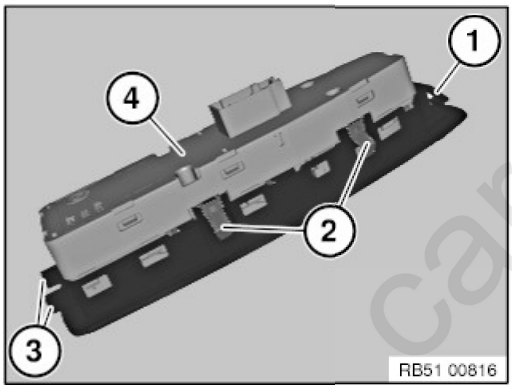
- Remove cover on door handle



Use a suitable tool (1) to release latch mechanism (2) of switch cover (3) in direction of arrow.

Unclip switch cover (3) from door trim panel towards front/top.

Disconnect plug connection and remove switch cover (3).



Installation note:
Following parts must not be missing or damaged:

(1) Catch

(2) Retaining clips

(3) Guides

Replacement:

Remount switch for power window (4).

cardiagn.com

51 41 001 Replacing left or right front door trim panel

Necessary preliminary work:

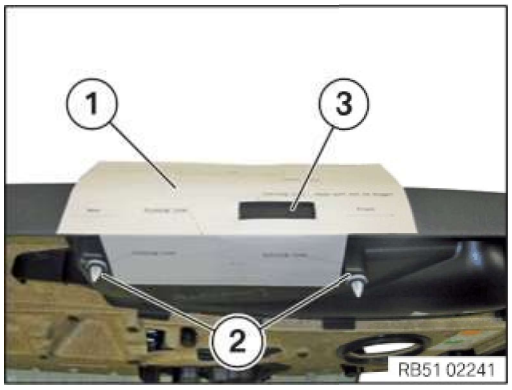
- Remove door trim panel

The following parts must be fitted on the new door trim panel (if necessary, as a new part):

- Door opener (always fit new part)
- Arm support
- Door handle
- Speaker cover
- Light strip

Depending on version:

- LED for door opener
- Footwell light
- Crashpad (US version only)



Version with footwell light:

Cut out and fold template (1) in accordance with the markings.

Place template (1) between the clips (2).

Mark cut-out (3).

Remove template (1) and saw out marked cut-out (3).

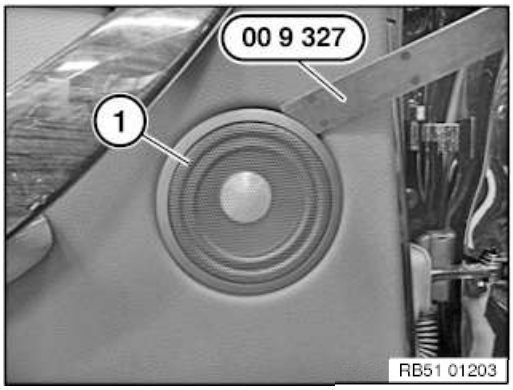
A special electric cutter may be used together with a straight knife for sawing.

cardiagn.com

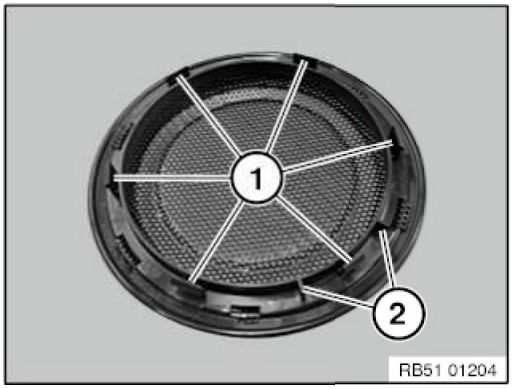
51 41 018 Replacing speaker cover on left or right front door trim panel

Special tools required:

- 00 9 327



Unclip speaker cover (1) from door trim panel with special tool 00 9 327 .



Installation note:
Catches (1) and guides (2) must not be damaged or missing.

Guides (2) are used for correct positioning of speaker cover on door trim panel.

cardiagn.com

51 48 ... Notes for bonding sound insulation (SI), doors



Special tools required:

- 51 0 300

Attention!

Do not yank at the sound insulation (risk of damage).

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 the area is 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.
- Always keep an eye douche on hand, change the water regularly (once a month).
- Comply with the relevant safety regulations.

Handling adhesive area on inner door panel:

Adhesive	Cleaning
a. Butyl bead applied to sound insulation with protective film b. Butyl mini-round profile ⌀ 4 mm from the roller c. Butyl round profile ⌀ 6 mm from the roller	a. Cleaning agentR2 *Under no circumstances: paint thinning* b. Carry out bonding only after an air drying time ≥ 1 min. Air drying time may be omitted if the entire bonding surface is wiped with a dry cloth c. After cleaning, the bonding surface may not be touched with hands or fouled again

Repair in area of sound insulation, door:

Repair	
	• 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 ⌀ 4 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 on with special tool 51 0 300. Perform this work extremely carefully because the increased amount of adhesive requires contact 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)

cardiagn.com

in the event of damaged sound insulation or leakage	• 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 on with special tool 51 0 300. Contact pressure ≥ 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 the 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 will no longer be 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).

cardiagn.com

51 43 201 Removing and installing or replacing trim for roof pillar at front (A-pillar), left or right

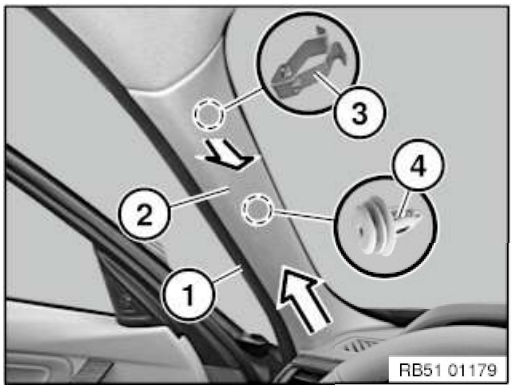


Warning!

Follow safety instructions for working on vehicles with airbag systems.

Important!

Do not use any sharp-edged tools to remove trim (risk of damage to head airbag).



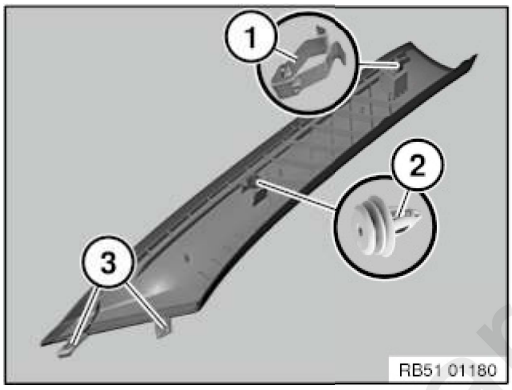
Detach edge protection (1) in area of trim panel (2).

Release trim panel (2) inwards from first detent position of clamp (3).

Pull trim panel (2) upwards and feed out from clamp (3) and clip (4).

Installation note:
Make sure edge protection (1) is correctly seated.

Always replace clamp (3).



Installation note:
Always replace clamp (1).

Lever out clip (2) remaining in body and insert in trim panel.

Replace faulty clip (2).

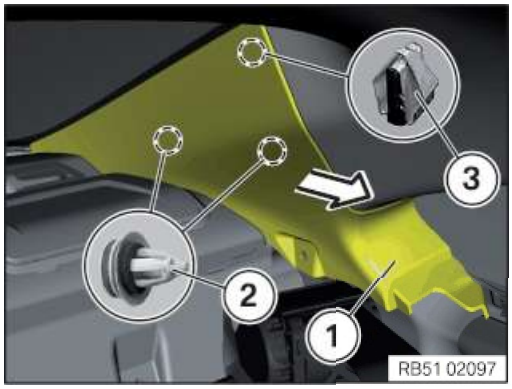
Make sure guides (3) is correctly seated in associated mounts.

cardiagn.com

51 43 251 Removing and installing or replacing trim panel for left or right rear roof pillar (C-pillar)

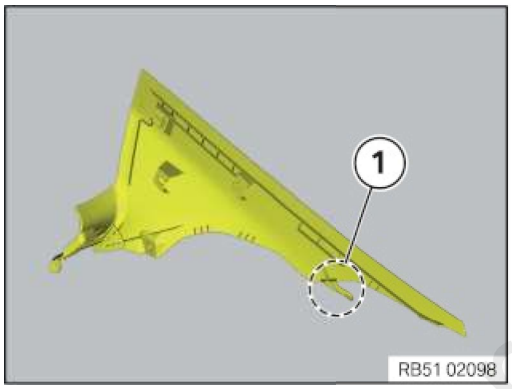
Necessary preliminary tasks:

- Remove cover for seat belt
- Remove rear side trim panel



Lift out trim panel (1) from clips (2) and clamp (3) and remove in direction of arrow.*Installation note:*
Replace faulty clamp (2) and clip (3).

Check that clamp (2) is securely seated in trim panel, replace if necessary.



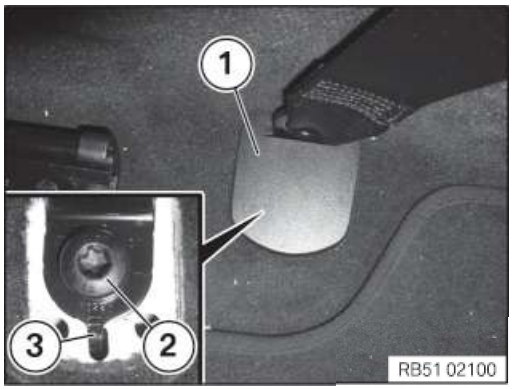
Installation note:
Guide (1) must not be missing or damaged.

cardiagn.com

51 43 148 Removing and installing or replacing trim panel on left or right door post (top)

Necessary preliminary tasks:

- Remove rear side trim panel



Note:
Seat belt strap only has to be detached for complete removal or replacement.

Lever out sealing cap (1).

Release screw (2) and pull off seat belt strap.

Tightening torque 72 11 2AZ.

Installation note:
Make sure position of encoding (3) is correct.

Renew protective cap (1) after each disassembly.



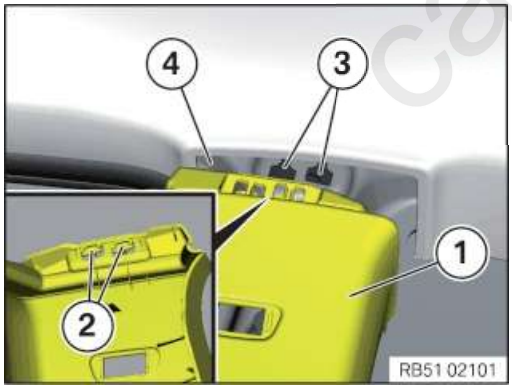
Detach edge protection (1) in area of trim panel (3).

Detach trim panel (3) from clips (2).

Feed out trim panel (3) from door post in direction of arrow.

Feed out seat belt strap (4) and remove from trim panel (3).

Installation note:
Replace faulty clips (2).



Installation note:
Insert trim panel (1) with guide lugs (2) in corresponding openings (3) in roof pillar (4).

Slide trim panel (1) upwards until guides (2) fit correctly.

cardiagn.com

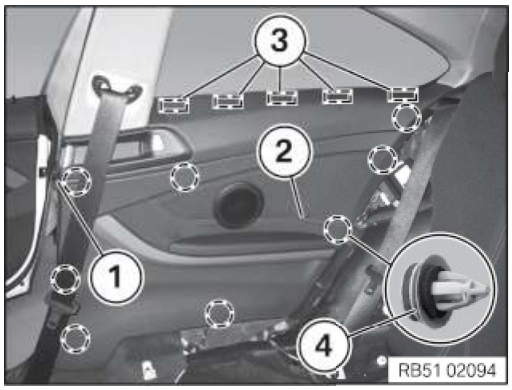
51 43 002 Removing and installing rear left or right side trim panel

Special tools required:

- 00 9 317

Necessary preliminary tasks:

- Release seat belt cover
- Remove armrest side section
- Remove rear seat



Detach edge protector (1) in area of side trim (2).

Carefully release side trim panel (2) from clamps (3) and clips (4) with special tool 00 9 317 starting at the front.

Unlock associated plug connections and disconnect.

Remove side trim panel (2).

Installation note:
If necessary, replace faulty clips (4) and clamps (3).



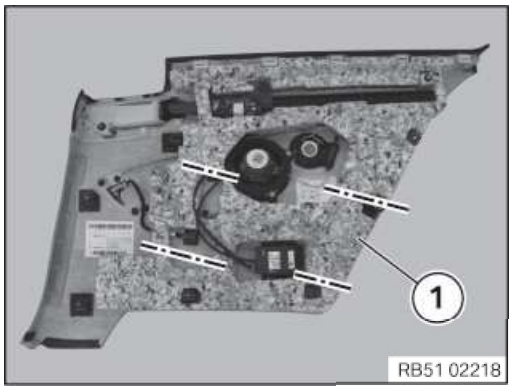
Installation note:
Side trim panel (1) must fit correctly in guides (2).

When replacing, swap over the following parts:

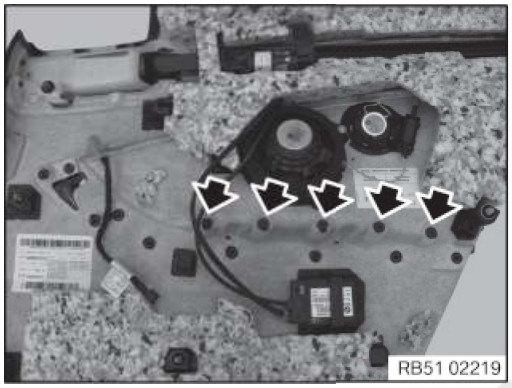
- Tweeters
- speaker
- Seat-belt extender
- Power amplifier for seat-belt extender

51 43 060 Removing and installing/replacing armrest on rear left or right side trim panel

Note:
Armrest is welded to door trim panel only on initial installation. The armrest is screw-connected on second installation. If necessary, release screws instead of welding spots.



Cut sound insulation (1) in marked area and remove.*Installation note:*
Attach sound insulation (1) with profile rubber adhesive.



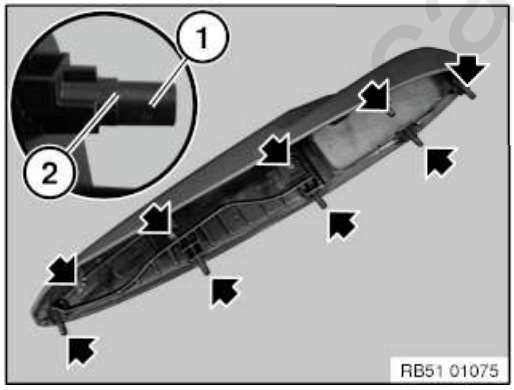
Important!

Risk of damage!

Drill only to base area of side trim panel so that contact surface is not damaged.

Drill out all marked welding spots with 8 mm dia. weld spot drill bit.

Remove welding remnants on side trim panel.

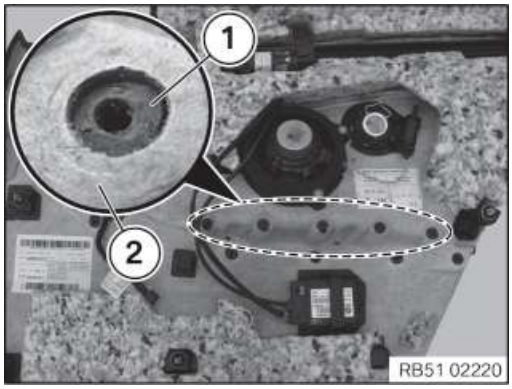


Replacement:

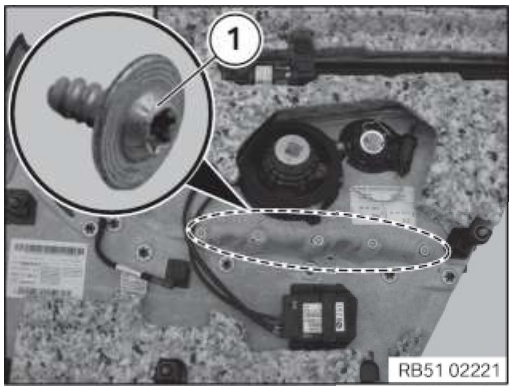
Similar to graphic.

Saw off all welding pins (1) along moulding (2).

cardiagn.com



Insert armrest in side trim panel.*Installation note:*
Welding pins (1) are not to protrude over side trim panel (2).



Installation note:
Secure armrest with repair screws (1).

Tightening torque 51 43 5AZ.

If the screw starts to turn without resistance, fill the welding pins with adhesive and then tighten the screws using only minimal tightening torque.

cardiagn.com

51 43 090 Removing and installing/replacing light strip on rear left or right side trim panel

Necessary preliminary tasks:

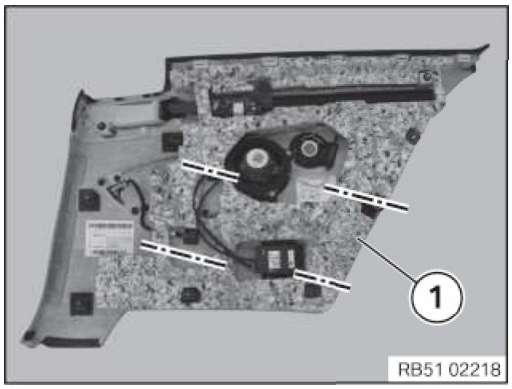
- Remove LED for side trim panel light

Important!

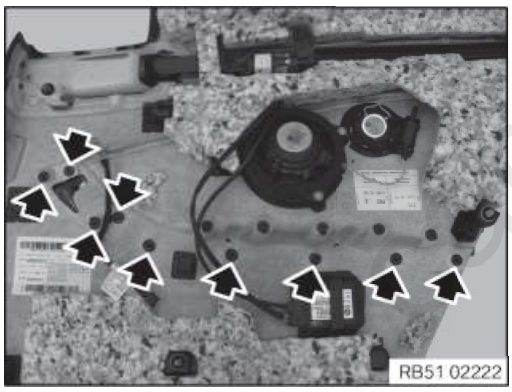
Risk of damage!

Exercise caution when handling lighting strip.

Do not strike the fibre-optic conductor against other objects.



Cut sound insulation (1) in marked area and remove.*Installation note:*
Attach sound insulation (1) with profile rubber adhesive.

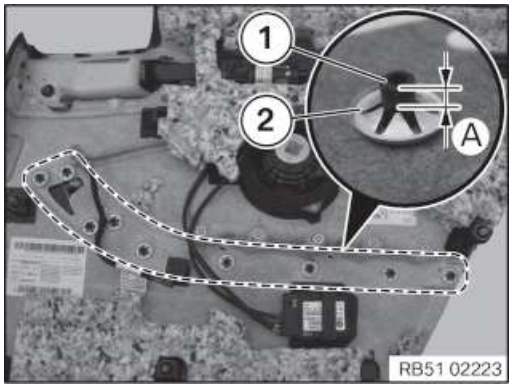


Drill out all marked welding spots.

Note:
So that contact surface is not damaged, drill only to base area of side trim panel.

Reed out light strip from side trim panel.

Remove plastic remnants from contact surface of side trim panel.



Installation note:
Carefully feed in lighting strip into side trim panel.

Secure welding pins (1) with lock washer (2).

Check light strip is fitted correctly, if necessary pressing down firmer on lock washers (2).

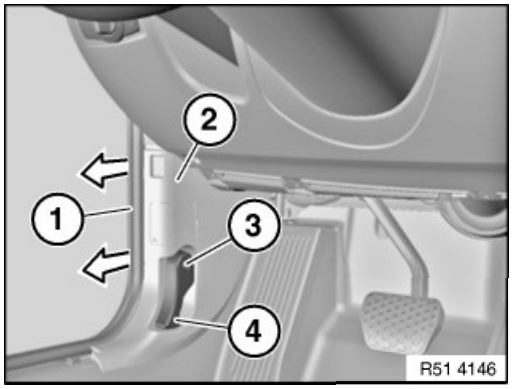
Saw off weld pins (1) to dimension (A).

A = 2 mm

51 43 070 Removing and installing/replacing side trim panel, footwell, on A-pillar, left

Necessary preliminary tasks:

- Remove front door sill cover strip (inside)
- Remove trim panel for pedal mechanism

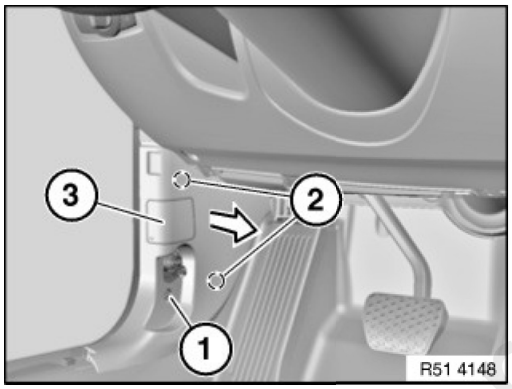


Detach edge protection (1) in area of side trim panel (2).

Release screw (3).

Remove engine compartment lid release lever (4) from side trim panel (2).

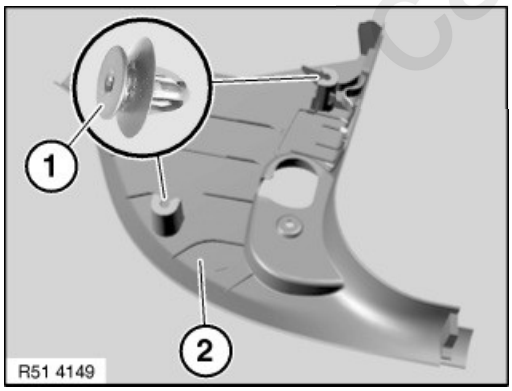
Installation note:
Make sure edge protection (1) is correctly seated.



Release screw (1).

Unclip side trim panel (3) in direction of arrow from retaining points (2).

If necessary, disconnect associated plug connection and remove side trim panel (3).



Installation note:
If necessary, lever out clamps (1) remaining in bore.

Replace faulty clips (1).

Position side trim panel (2) pre-installed with clips (1) on associated bore holes and clip into place.

Replacement:

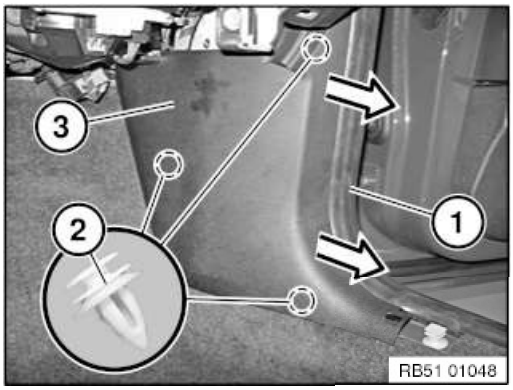
Modify rear lid unlocking switch, if applicable.

cardiagn.com

51 43 075 Removing and installing/replacing side trim panel, footwell, on A-pillar, right

Necessary preliminary tasks:

- Remove front door sill cover strip (inner), right
- Remove dashboard trim at bottom right

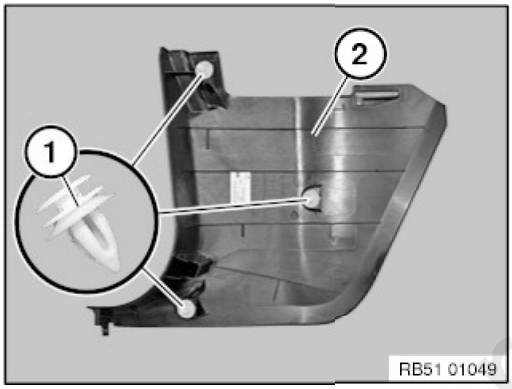


Detach edge protection (1) in area of side trim panel (3).

Pull side trim panel (3) off clips (2) in direction of arrow.

Loosen clips (2) from body and insert in side trim panel (3).

Installation note:
Make sure edge protection (1) is correctly seated.



Installation note:
Clips (1) for side trim panel (2) must not be damaged.

cardiagn.com

51 44 011 Removing and installing/replacing headlining (version with slide/tilt sunroof)

Necessary preliminary tasks:

- Remove both sun visors and counter supports
- Remove both trim panels for roof pillar at front (A-pillar)
- Remove both trim panels for door post at top (B-pillar)
- Remove both trim panels for rear roof pillar (C-pillar)
- Remove rear interior roof light
- Remove cover for additional brake light
- Release edge protection on all doors in the headlining area

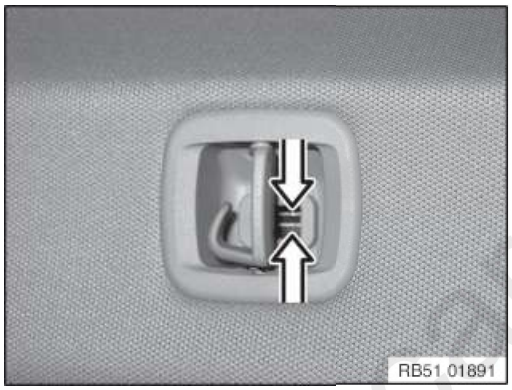
  Fully release rear edge protection on driver's side

Depending on version:

- Remove mirror lights
- Remove roof switch cluster
- Remove front ceiling light
- Remove microphones

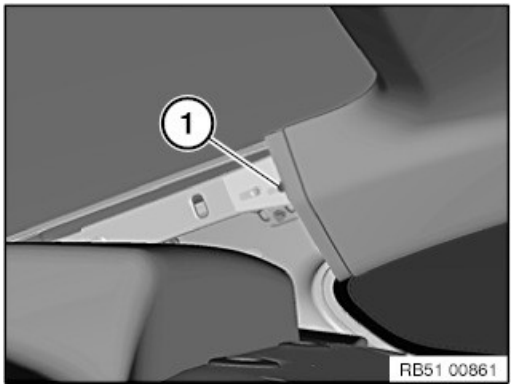
Complete removal only:

- Remove windscreen



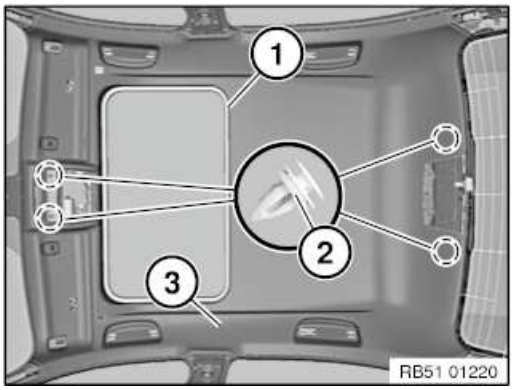
Open coat hook halfway.

Press clamps together and feed coat hook out towards the inside.



Release screw (1) in area of C-pillar left/right.

obdiagn.com



Move both front seat backrest as far back as possible.

Detach edge protection (1) toward the inside.

Important!

The following tasks must be carried out with a second person assisting:

Undo the headlining (3) at the clips (2).

Set headlining (3) down and take out through the windscreen opening.

Installation note:
Replace faulty clips (2).

cardiagn.com

51 44 001 Removing and refitting/replacing roofliner (version without sliding/tilting sunroof)

Except for the steps relating to the slide/tilt sunroof, the work is identical to:

Removing and installing/replacing headlining (version with slide/tilt sunroof).

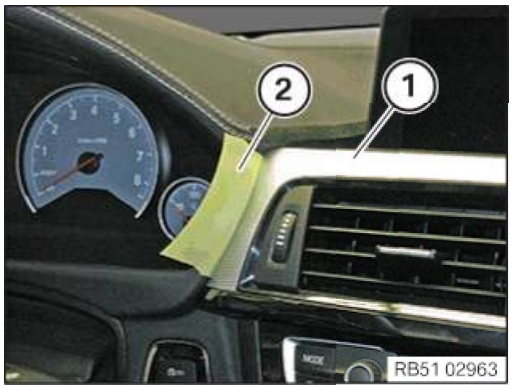
cardiagn.com

51 45 380 Removing and installing (replacing) right decorative strip on dashboard

Special tools required:

- 00 9 325

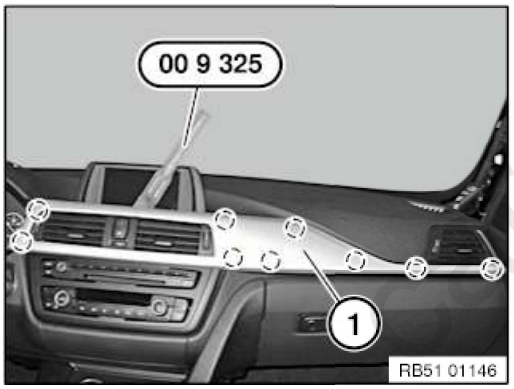
When working on trim panel components, make sure that visible surfaces are not scratched or damaged (e.g. by sharp-edged tools).



Version with instrument panel in leather:

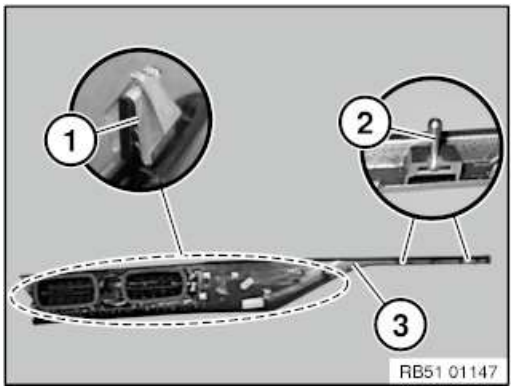
When removing and installing, the decorative strip (1) may damage the leather of the instrument panel.

To avoid damage, the yellow plastic adhesive tape (2) must be placed between the decorative strip (1) and the instrument panel.



Carefully unclamp decorative strip (1) with special tool 00 9 325 at marked points.

Remove decorative strip (1) with fresh air grille.



Installation note:
Clamps (1) in marked area and latch mechanisms (2) of decorative strip (3) must not be damaged or bent.

Replace clamps and latches if necessary.

autodiagn.com

Replacement:

Remount fresh air grille.

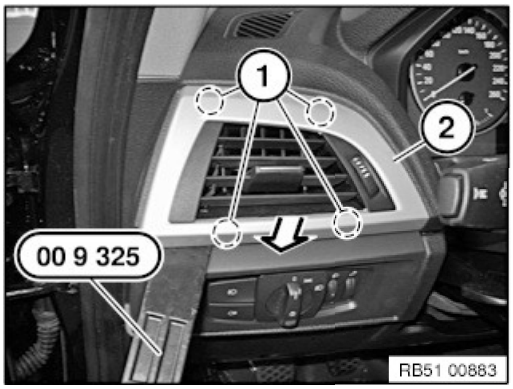
cardiagn.com

51 45 370 Removing and installing decorative strip on left dashboard

Special tools required:

- 00 9 325

When working on trim panel components, make sure that the sensitive surfaces are not scratched or damaged.



Lever out decorative strip (2) at retaining points (1) with special tool 00 9 325 and remove in direction of arrow.

cardiagn.com

51 45 030 Removing and installing instrument panel trim

Attention!

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 vibration / shocks.

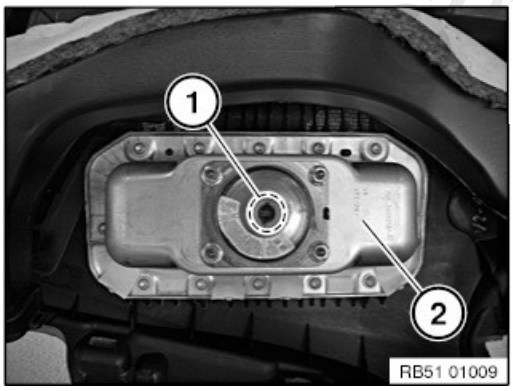
When working on trim panel components, make sure that visible surfaces are not scratched or damaged (e.g. by sharp-edged tools).

Necessary preliminary tasks:

- Remove trim panel for roof pillar at front left and right
- Remove decorative strip on dashboard on left
- Remove steering column control panel
- Remove instrument cluster
- Remove Start/Stop switch
- Remove centre console.
- Remove right glove box with housing
- Remove trim panel for pedal assembly

Depending on version:

- Remove Car Information Computer
- Remove radio
- Remove mid-range speaker dashboard
- Remove control element for driver assist system
- Remove trim for head-up display

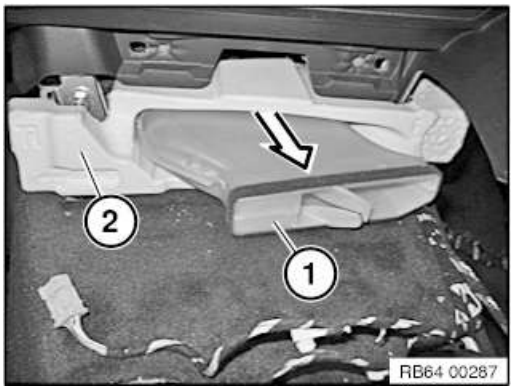


Note:
Shown removed here for purposes of clarity. Wiring harness is therefore not included in graphic.

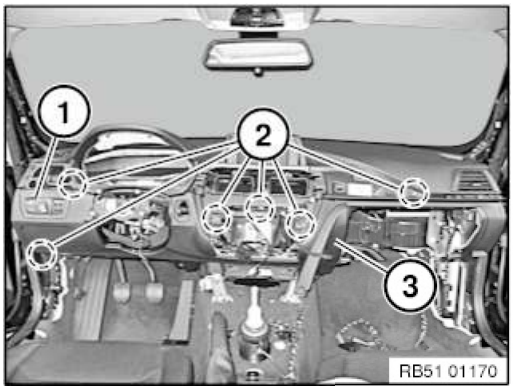
Detach plug connection (1) of front passenger airbag module (2).

(Observe notes regarding Airbag plug connections).

ardiagn.com



Remove air duct (1) and sound insulation (2) in direction of arrow.



Release and disconnect plug connection at light operating facility (1).

Release cable clips in area of middle air duct.

Release screws (2) on dashboard (3).

Tightening torque 51 45 7AZ.

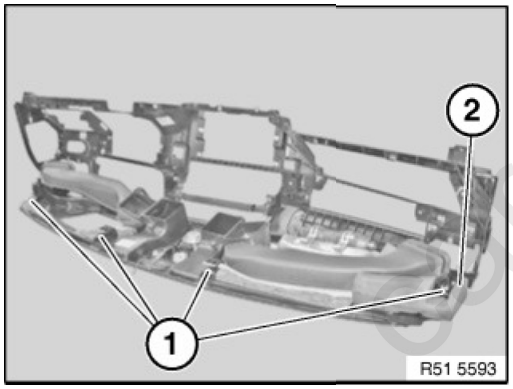
With the aid of a 2nd person, pull dashboard (3) towards rear slightly and feed out electrical wiring, release further cable clips if necessary.

Remove dashboard (3) and feed out all electrical wires.

Installation note:
Make sure dashboard (3) is correctly seated against gasket for Head-Up Display and heating and air-conditioning unit.

Screw dashboard (3) in place from the middle to the outside.

Make sure all electrical lines are correctly routed.



Note:
Graphic is ony an example.
Installation note:
Make sure guides (1) on dashboard (2) are correctly seated in respective mountings of the bulkhead.

Make sure gaskets are correctly seated on air ducts.

Correctly insert foam-padded part of dashboard (2) in centre and install.

51 45 195 Removing and installing instrument panel trim at bottom right \PREMIUM

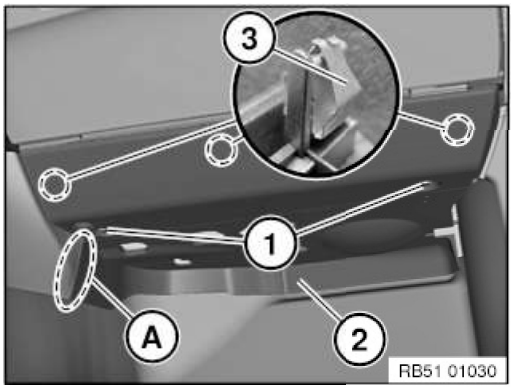
RISK OF DAMAGE

Scratches.

Tools and sharp-edged components can cause scratches.

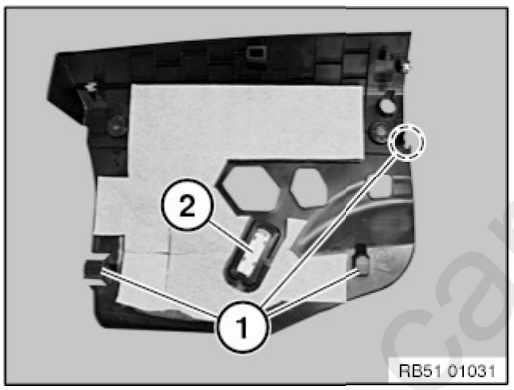
- Protect working area.
- Handle tools and components carefully.

1 – Removing the bottom left instrument panel trim

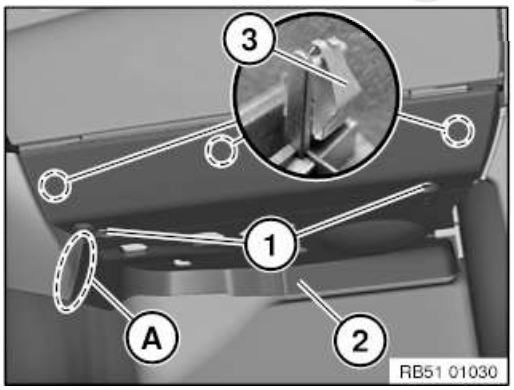


- Loosen screw connections (1).
- Loosen the instrument panel trim (2) using the clips (3) and remove towards the bottom in this area (A).
- Slightly lower the instrument panel trim (2) and disconnect the plug connection behind it.
- Remove the instrument panel trim (2) and put to one side.

2 – Installing the botto right instrument panel trim



- Check the guides (1) for damage, if necessary, replace the instrument panel trim (2).
- Connect the footwell light connector (2).



- Insert the instrument panel trim (2) in this area (A) behind the centre console.
- Clip in the clips (3) at the instrument panel towards the top.
- Tighten the screw connections (1).

Dashboard trim panel at bottom on support

			4,6 Nm

Additional Information

Overview of Tightening Torques

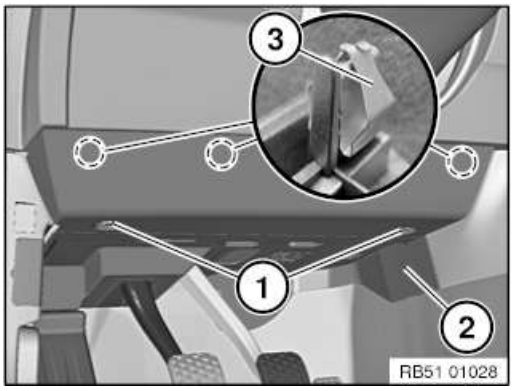
Dashboard trim panel at bottom on support Used in step 2

			4,6 Nm

cardiagn.com

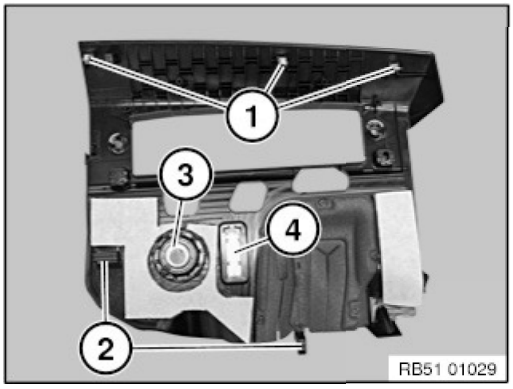
51 45 184 Removing and installing the \PREMIUM trim panel for the pedal mechanism

1 – Removing the trim panel for pedal mechanism

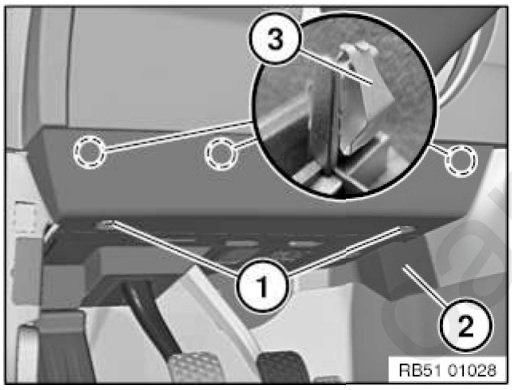


- Loosen screws (1).
- Unclip the pedal mechanism trim panel (2) from the clips (3).
- Slightly lower the pedal mechanism trim panel (2) and disconnect the plug connection behind it.
- Remove the pedal mechanism panel trim (2) and set it aside.

2 – Installing the trim panel for the pedal mechanism



- Check the clips (1) and the guides (2) for damage and replace if necessary.
- Check the speakers (3) and the footwell light (4) and replace if necessary.
- Insert the guides (2) into the corresponding holder on the vehicle.



- Insert the trim panel for the pedal mechanism (2) toward the top and clip the clips (3) into the instrument panel.
- Tighten the screws (1).

Trim panel for the pedal mechanism on the support for the instrument panel

	4,6 Nm

Additional Information

Overview of Tightening Torques

Trim panel for the pedal mechanism on the support for the instrument panel	Used in step 2
	4,6 Nm

carmagn.com

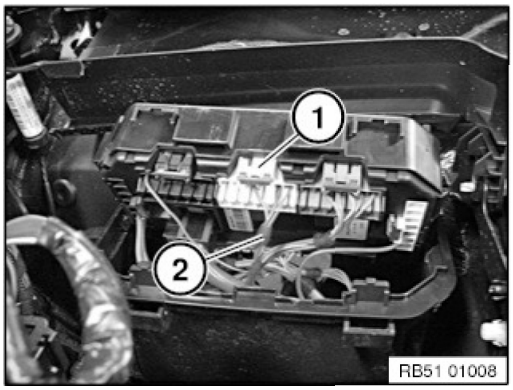
51 45 075 Removing and installing/replacing carrier for instrument panel

Necessary preliminary work:

- Remove instrument panel trim
- Detach steering column from dashboard carrier
- Detach plug connections on airbag control unit
- Unclip front power distribution box

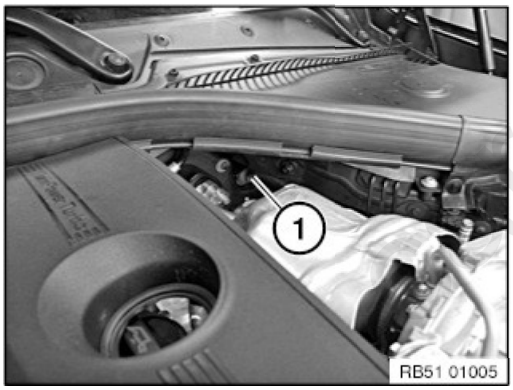
Depending on version:

- Disconnect plug connection from driver's knee protection airbag module
- Remove Head-Up Display



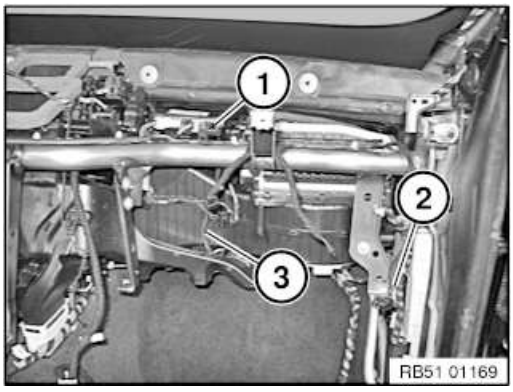
Unfasten plug connection (1) and disconnect.

Feed out wiring harness (2) towards passenger compartment.



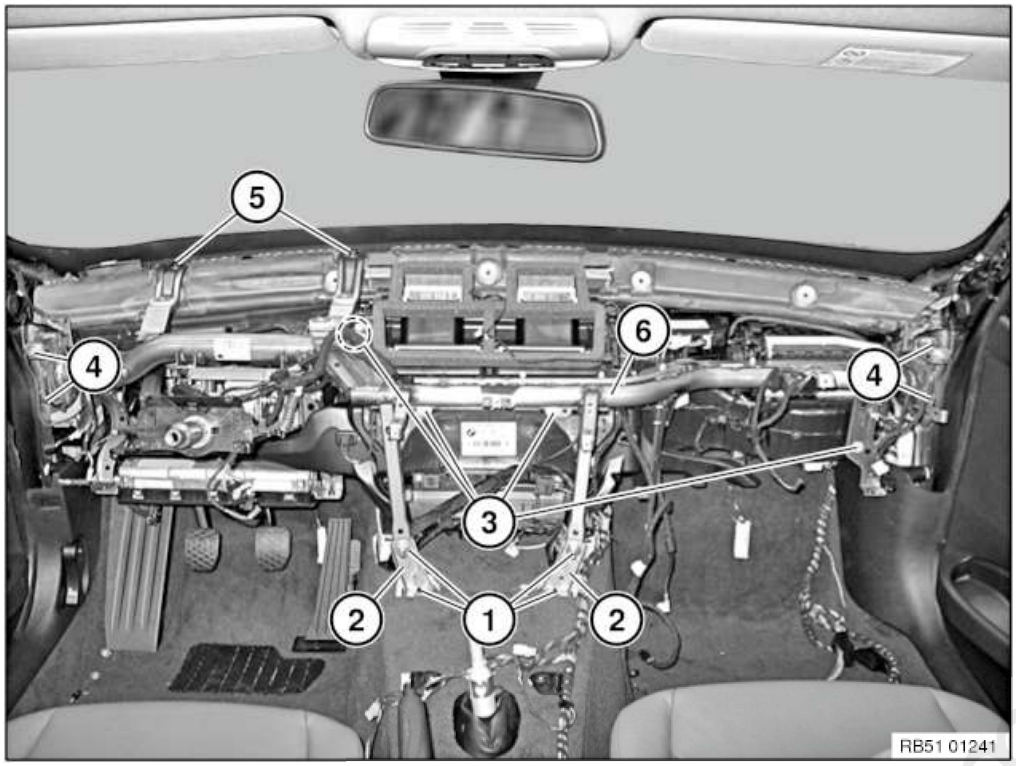
Undo bolts (1) on bulkhead.

Tightening torque 51 45 4AZ.



Unlock and detach plug connections (1 and 2).

Feed out cable (3).



Release nuts (1) and remove holder (2).

Tightening torque 51 45 3AZ.

Unscrew nut (3).

Tightening torque 51 45 5AZ.

Installation note:
Instead of nuts (3) threaded bolts can come loose from heating and air-conditioning unit. Before installing the carrier, screw threaded bolts into the heating and air-conditioning unit.

Release nuts (4) on A-pillar.

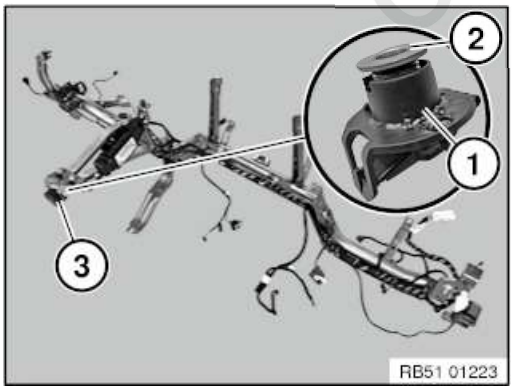
Tightening torque 51 45 2AZ

Release screws (5) by approx. 2 turns.

Tightening torque 51 45 1AZ.

Carefully pull support (6) to the rear and if necessary unclip further cable clips.

Remove carrier (6).

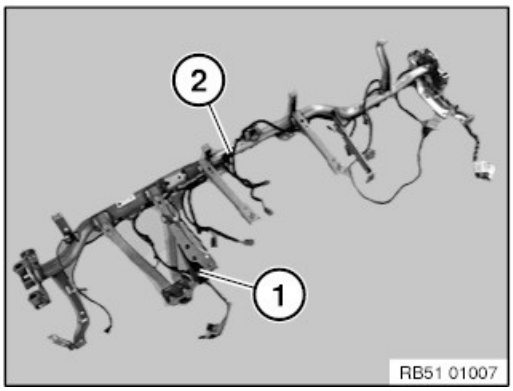


Installation note:
Replace compensating element (1) every time after dismantling the support.

Fully screw in installation plate (2). When applying tightening force to the screw, installation plate (2) is automatically adjusted.

Make sure foam ring (3) is fitted correctly.

cardiagn.com



Replacement:

Remount airbag control unit (1).

Remount wiring harness (2).

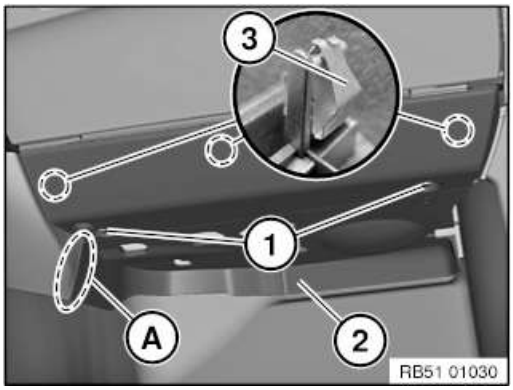
If necessary, remount non-existing retaining bracket on new part.

US version:

Remove airbag module for driver's knee protection

cardiagn.com

51 45 195 Removing and installing/replacing instrument panel trim, bottom right



Unfasten screw connection (1).

Note:
Version with knee airbag: Unscrew nuts (1).

Tightening torque 51 45 9AZ.

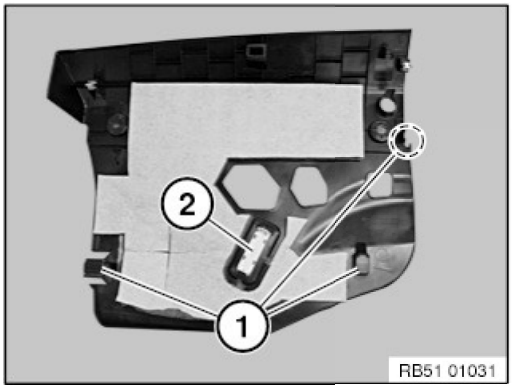
Release trim panel (2) at clamps (3).

Feed out trim panel (2) in area (A) toward the bottom.

Lower trim panel (2) slightly and disconnect plug connections behind it.

Installation note:
Feed in trim panel (2) in area (A) correctly behind the centre console.

Clamps (3) must not be damaged.



Installation note:
Guides (1) must not be damaged or missing.

Feed guides (1) correctly into the corresponding holders on the vehicle.

Replacement (depending on version):

Remount footwell light (2).

Remount power socket.

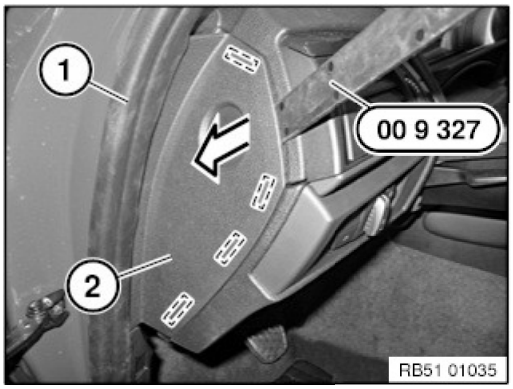
cardiagn.com

51 45 ... Removing and installing/replacing side panel on dashboard on left or right

Special tools required:

- 00 9 327

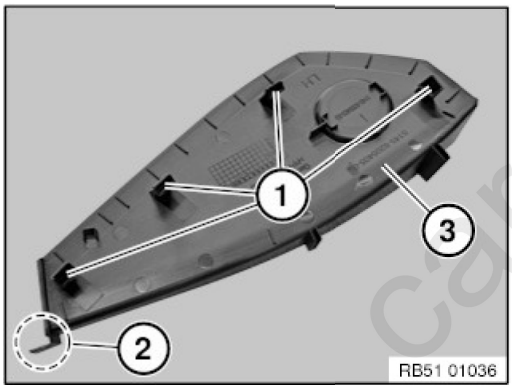
When working on trim panel components, make sure that visible surfaces are not scratched or damaged (e.g. by sharp-edged tools).



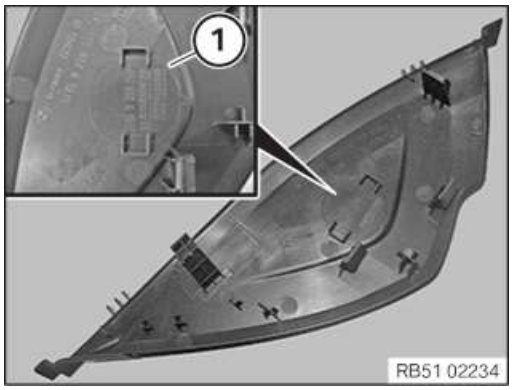
Pull off seal (1) in the area of the side panel (2).

Unclip side panel from dashboard (2) in direction of arrow with special tool 00 9 327 and feed out at a slant to the rear.

If necessary, unlock plug connection on switch for front passenger airbag deactivation and unplug.



Installation note:
Latch mechanisms (1) and guide tab (2) on side panel (3) must not be damaged or missing.



Replacement with switch for front passenger airbag deactivation:

Saw out inside mark (1) with 25 mm dia. jigsaw.

Mill off remnants up to mark (1).

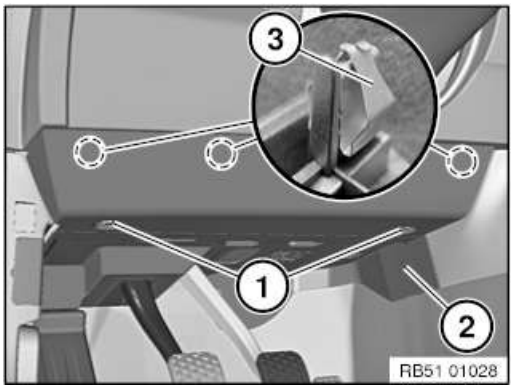
cardiagn.com

Replacement:

Remount switch for front passenger airbag deactivation.

cardiagn.com

51 45 184 Removing and installing/replacing trim panel for pedal mechanism



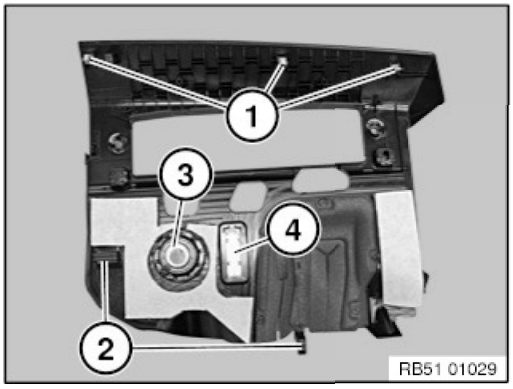
Release screw connection (1).

Note:
Version with knee airbag: Unscrew nuts (1).

Tightening torque 51 45 8AZ.

Release trim panel (2) at clamps (3).

Lower trim panel (2) slightly and disconnect plug connections behind.



Installation note:
Clamps (1) and guides (2) must not be damaged.

Feed guides (2) correctly into the corresponding holder in the vehicle.

Replacement (depending on version):

- Remount speaker for hands-free system (3)
- Remount footwell light (4)

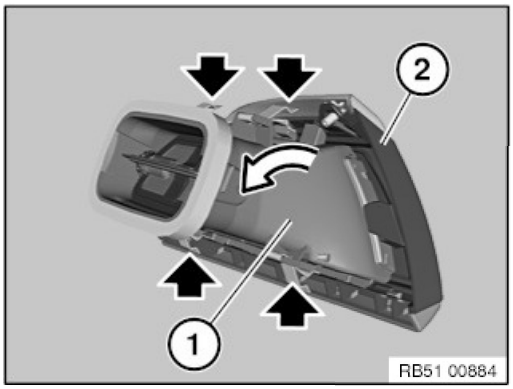
cardiagn.com

51 45 371 Replace the decorative strip on the dashboard, left.

Note:
When working on trim panel components, make sure that the sensitive surfaces are not scratched or damaged.

Necessary preliminary work:

- Remove decorative strip on dashboard on left



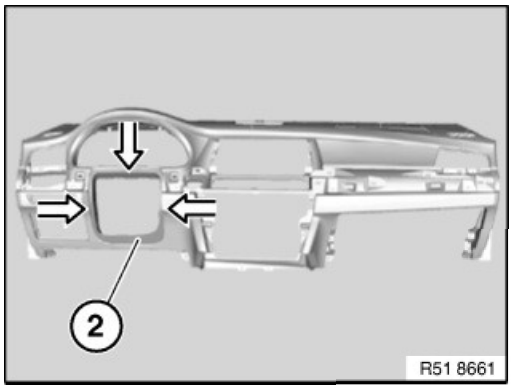
Unclip fresh air grille, leftÂ (1) from decorative trim, left (2) in direction of arrow.*Installation note:*
Clamps labelled with arrows must not be bent or damaged, and must be renewed if they are.

cardiagn.com

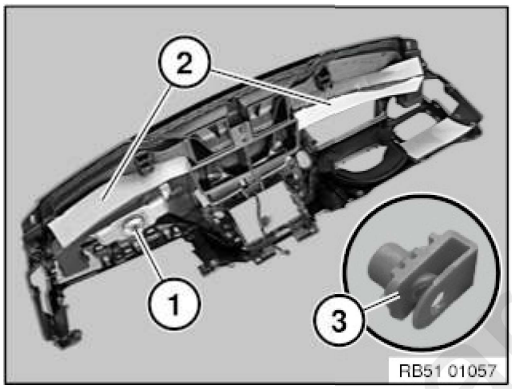
51 45 031 Replacing instrument panel trim

Necessary preliminary tasks:

- Remove Central Information Display
- Remove instrument panel trim
- Modify light operating facility.
- Modify fresh air grille



Press gap cover (2) of steering column at left and right slightly inward in direction of arrow and lever out at top, then remove completely.



Modify passenger's side airbag module (1).

Modify air ducts (2).

If necessary, replace and modify faulty retaining elements (3).

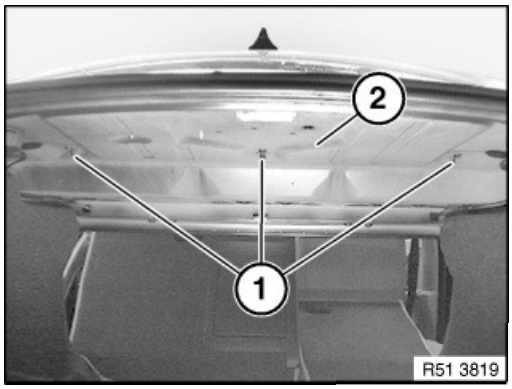
If necessary, modify other retaining elements that are not included with the new part.

cardiagn.com

51 46 001 Removing and installing (replacing) storage shelf trim panel

Necessary preliminary work:

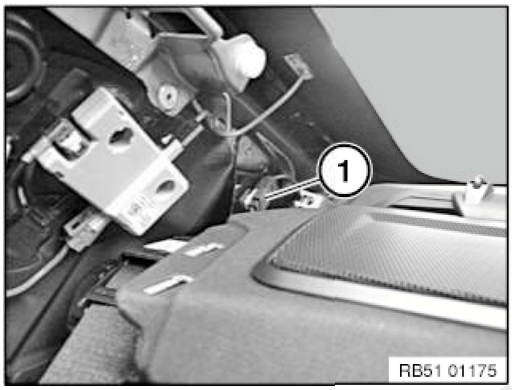
- Remove trim panel for roof pillar at rear left/right
- Reposition left/right rear seat backrest



Version with roller sunblind:

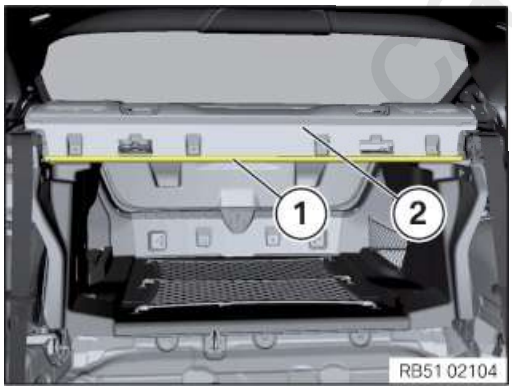
Release screws (1) on luggage compartment floor (2).

Tightening torque 51 46 3AZ.



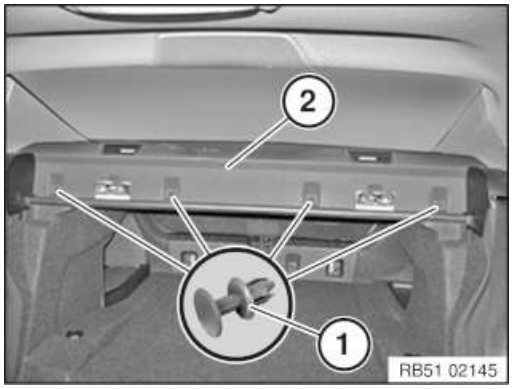
Version with roller sunblind:

Release and disconnect plug connection (1) at right C-pillar.



Pull off gasket (1) from storage shelf (2).

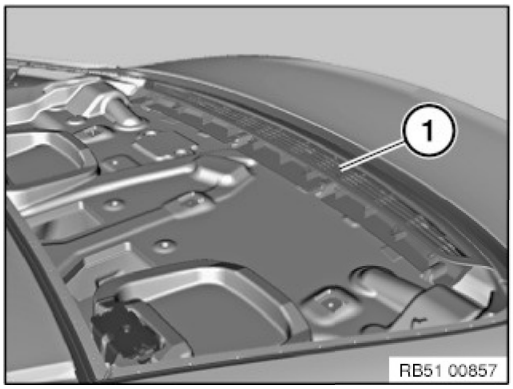
cardiagn.com



Release expanding rivet (1).

Slightly raise storage shelf (2) at front and unlock and detach plug connections underneath for speaker.

Remove storage shelf (2) toward the inside.



Installation note:
Make sure storage shelf is correctly seated in ventilation grille (1).

In the case of replacement with appropriate version:

- Remount left/right speaker
- Remount roller sunblind

cardiagn.com

51 46 ... Removing and installing/replacing cover for rear left or right seat belt

Necessary preliminary tasks:

- Remove armrest side section



Release expanding rivet (1).

Release cover (2) from clip (3) in direction of arrow.

Feed cover (2) out of seat belt and remove.

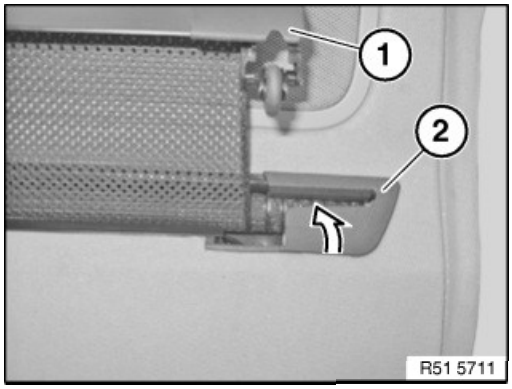
Installation note:
If necessary, replace faulty expanding rivet (1) and faulty clip (3).

cardiagn.com

51 46 013 Removing and installing/replacing rear window roller blind

Necessary preliminary tasks:

- Remove trim panel for storage shelf with roller sunblind



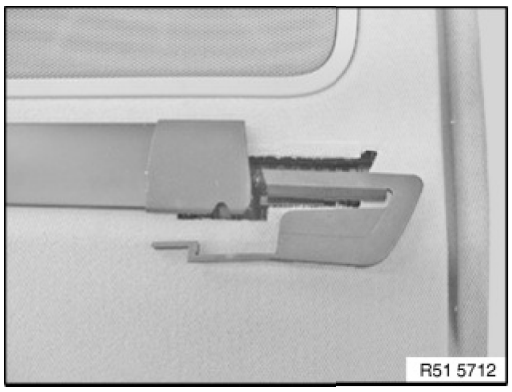
Important!

Risk of damage!

Rod eyes of roller sunblind could break.

Carefully pull out rear window roller blind (1) a little.

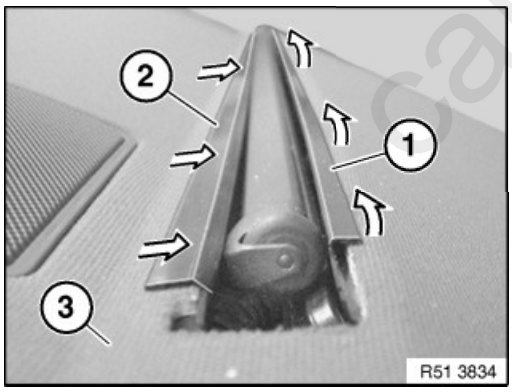
Lever out protective cap (2) on left or right with plastic wedge.



Installation note:
Protective caps must not be damaged or missing.

Renew protective cap if necessary.

Make sure protective cap is correctly seated in storage shelf.



Press rear groove (1) and front guide (2) together slightly.

Lift out oddments tray (3) over rear groove (1) of rear window roller blind.

Pull front guide (2) out of oddments tray (3) and remove roller sunblind downwards.

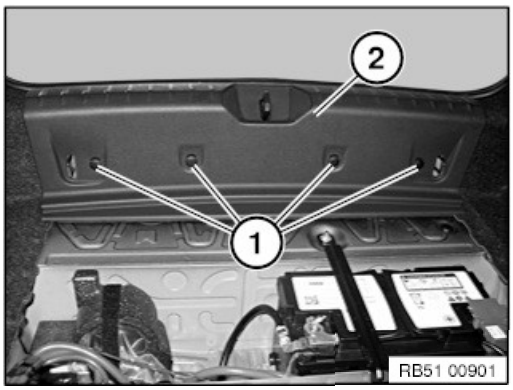
Installation note:
Make sure front guide (2) is correctly seated in rear storage shelf.

cardiagn.com

51 46 050 Removing and installing/replacing top cover on tail panel

Necessary preliminary tasks:

- Remove luggage compartment floor trim panel (luggage compartment mat)



Release expanding rivets (1).

Lever out trimÂ (2) inwards/upwards.

Installation note:
Make sure edge protection for tailgate (2) is correctly seated on cover.

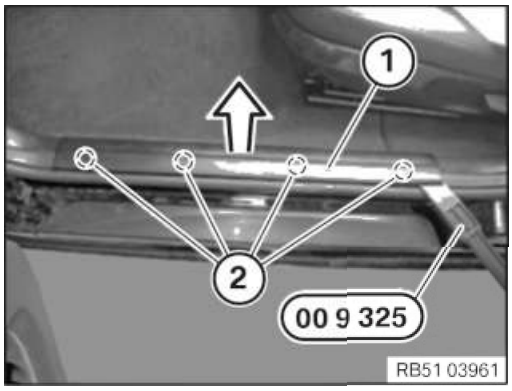
cardiagn.com

51 47 000 Remove and install/replace the front left or right door sill cover strip (inner)

1 – Remove front entrance cover strip

NOTICE

Description is for left component only. Procedure on the right side is identical.



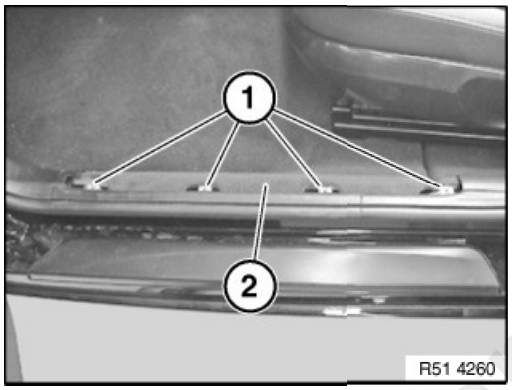
RISK OF DAMAGE

Bending of plastic parts.

Application of too much force can lead to bending of plastic parts.

- Place special tool directly beside the mounting clip.
- Continue unclipping the part without using the tool if possible.

- Unclip the front door sill cover strip (1) at the clips (2) using the special tool **0 496 569 (00 9 325)** in the direction of arrow starting from the rear.

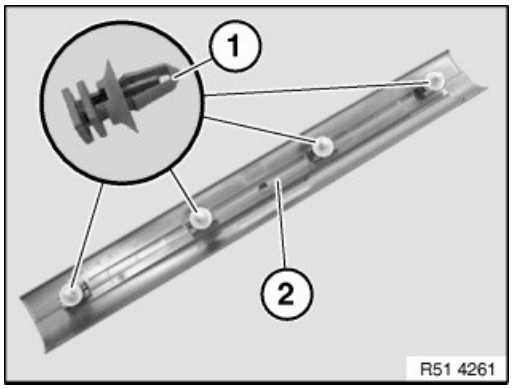


- If applicable, unclip the clips (1) from the floor panel (2).

2 – Install the front door sill cover strip

NOTICE

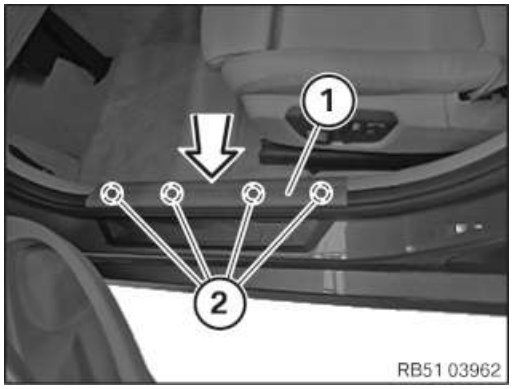
Description is for left component only. Procedure on the right side is identical.



- Renew faulty clips (1) on the front door sill cover strip (2).

  Parts: Clips

cardiagn.com



- Install and engage the front door sill cover strip (1) with the clips (2) in the direction of the arrow.

Additional Information

Overview of Special Tools

0 496 569 (00 9 325) Wedge



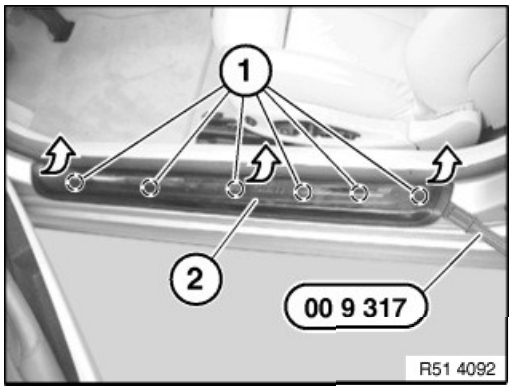
Common	Used in step 1
Usage	(Panel wedge) From 11/2008 this special tool replaces panel wedge 00 9 317 (different material)
Included in the tool or work	0 490 527
Storage location	Individual
Replaced by	
In connection with	
SI-Number	41 01 09 (507)

cardiagn.com

51 47 065 Removing and installing / replacing finishing strip at front left or right entrance

Special tools required:

- 00 9 317



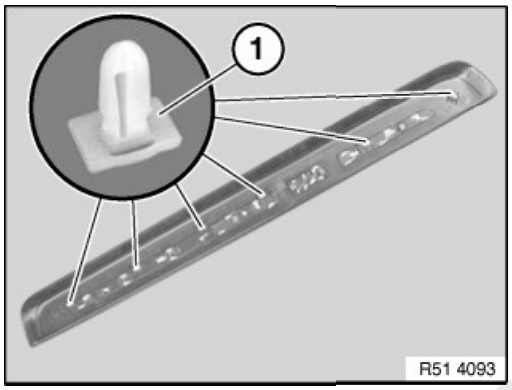
Important!

Risk of damage!

Do not raise finishing strip (2) over entire length simultaneously.

Unclip clips (1) for finishing strip (2) with special tool 00 9 317 .

Remove finishing strip (2).



Installation:

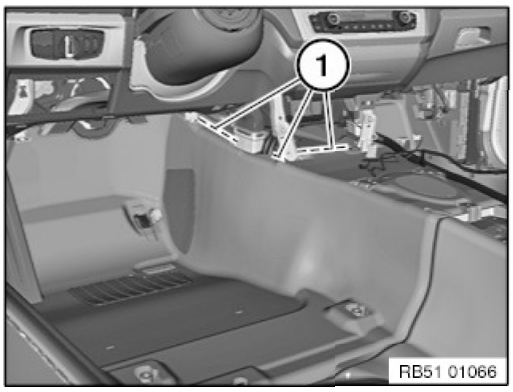
If necessary, replace faulty clips (1).

cardiagn.com

51 47 315 Removing and installing / replacing front carpet for passenger compartment

Necessary preliminary tasks:

- Clamp off battery lead from negative connection point
- Remove centre console.
- Remove footwell side trip panel on A-pillar on front left/right
- Remove both front seats
- Remove complete accelerator pedal module
- Remove cover for central bass speaker left/right



Important!

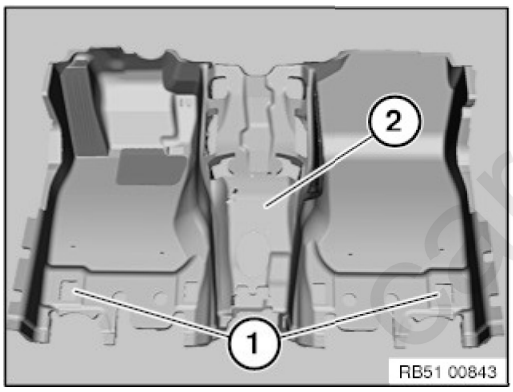
Risk of damage!

Pay attention to cables when cutting.

Start cuts towards centre of vehicle as far as is possible. This guarantees that cutting edges are covered by storage compartment and/or dashboard.

Cut out the carpet along the lines (1), including on the right side.

Remove carpet towards rear/top and if necessary feed out cable.



Installation note:
Apertures (1) serve as fixing points for fitting carpet.

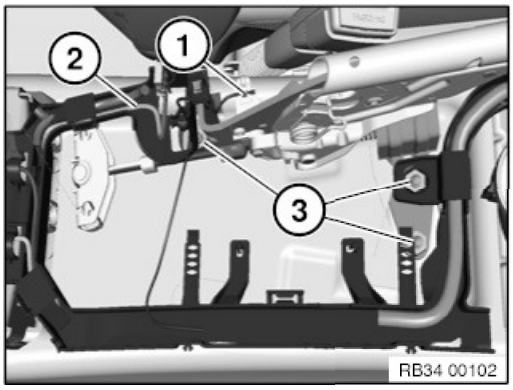
Replacement:

Lay removed carpet over new one and transfer cuts to new carpet.

51 47 440 Removing and installing or replacing rear carpet on seat pan

Necessary preliminary tasks:

- Clamp off battery lead from negative connection point
- Remove both front seats
- Remove both side trim panels, rear
- Remove complete centre console
- Remove central bass speaker trim on left/right



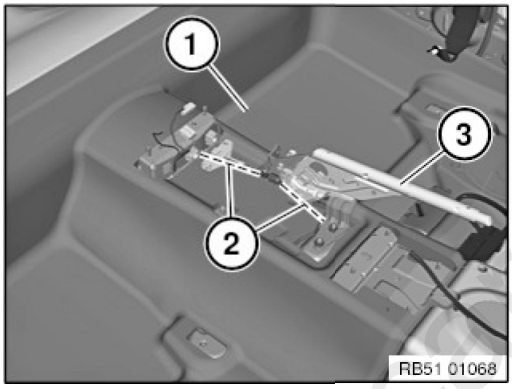
Disconnect cable (1) from handbrake check switch.

Unclip cable clip (2) from parking brake lever.

Loosen nuts (3) on cable clip only.

Installation note:
Replace self-locking nuts.

Tightening torque 34 41 1AZ.



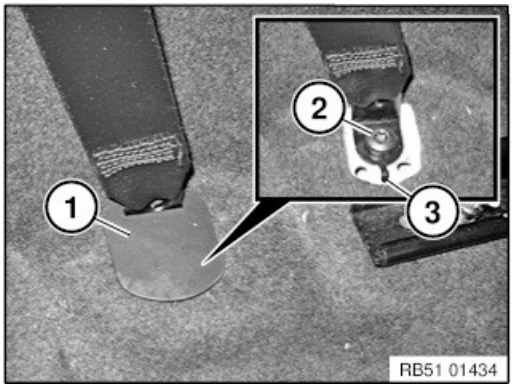
Important!

Risk of damage!

Pay attention to cables when cutting.

Cut carpet (1) along line (2).

Feed carpet (1) out to the top from the parking brake lever (3).



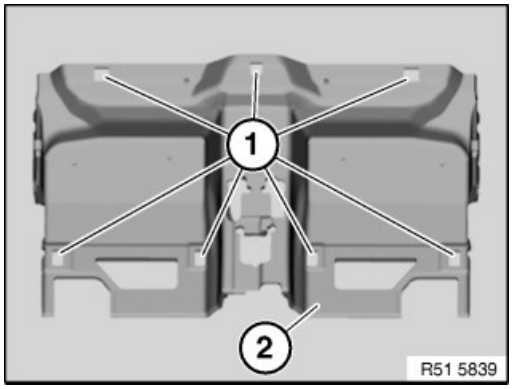
Lift protective cap (1) and release screw (2).

Tightening torque 72 11 2AZ.

Installation note:
Make sure that guide (3) is correctly fitted in body.

Replace protective cap (1) after every disassembly.

cardiagn.com



Installation note:
Apertures (1) serve as alignment points when fitting carpet (2).

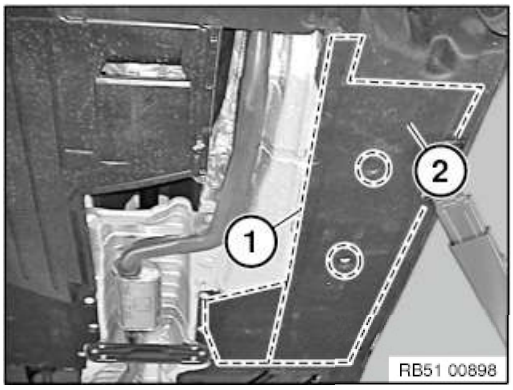
Replacement:

Lay removed carpet over new one and transfer cuts to new carpet.

cardiagn.com

51 71 017 Removing and installing/replacing (left or right) underbody panelling

Graphic is only an example. There may be differences in specific details depending on engine version.



Release all screws along dashed line (1).

Tightening torque 51 75 1AZ

Remove underbody panelling (2).

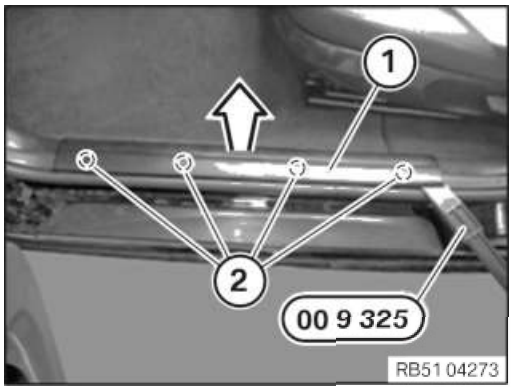
Installation note:
Make sure underbody panelling (2) is correctly seated.

cardiagn.com

51 47 000 Removing and installing/replacing front (inside) left or right door sill cover strip

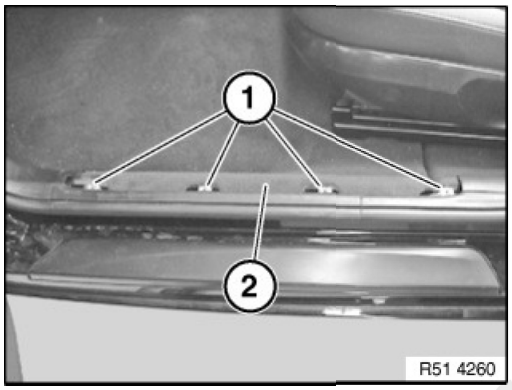
Special tools required:

- 00 9 325

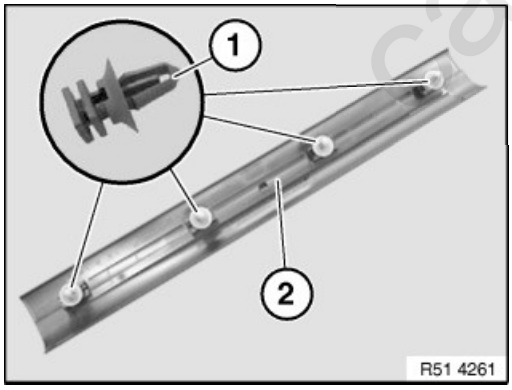


Attention!
Do not raise door sill cover strip (1) over entire length simultaneously.

Unclip rear door sill cover strip (1) from clips (2) starting from the rear with special tool 00 9 325 .



If necessary lift clip (1) from floor panel (2) and clip on door sill cover strip.



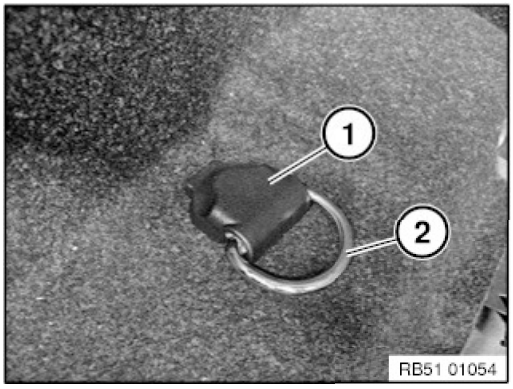
Installation note:
Replace defective clips (1) on door sill cover strip (2).

cardiagn.com

51 47 151 Removing and installing/replacing left luggage compartment wheel arch trim

Necessary preliminary tasks:

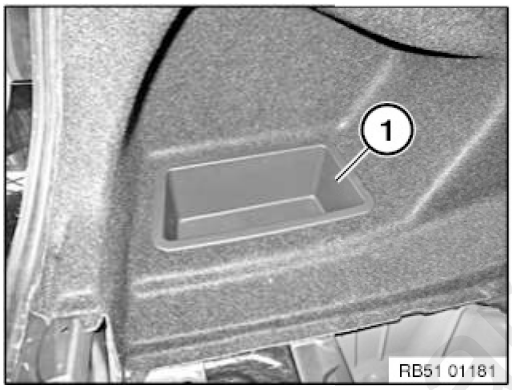
- Remove cover from tail panel
- Remove trim for tailgate hinge on left
- Reposition left rear seat backrest



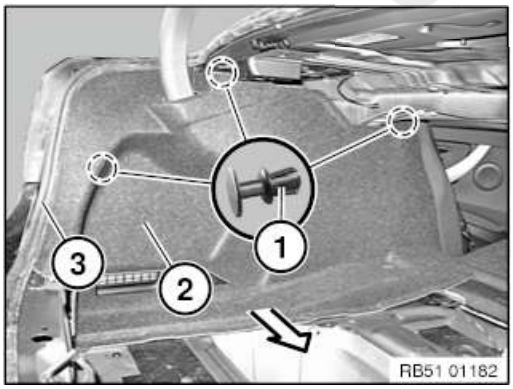
Lever out cover (1) and release screw underneath.

Tightening torque 51 47 1AZ.

Remove lashing eye (2).



Remove storage tray (1) in upward direction.



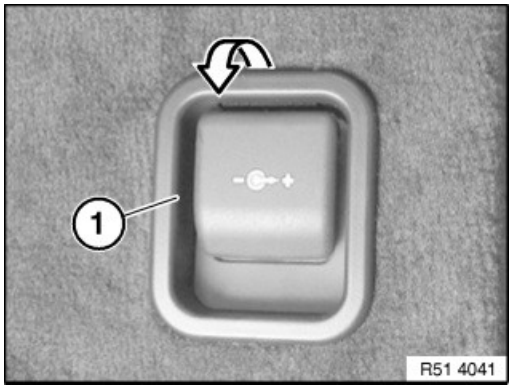
Release expanding rivets (1).

Feed out luggage compartment wheel arch panel (2) in direction of arrow

If necessary, unlock plug connection for charging socket and disconnect.

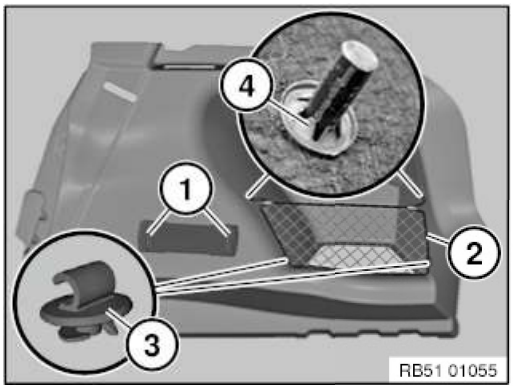
Installation note:
Luggage compartment wheel arch panel (2) must fit correctly under tailgate rubber seal (1).

cardiagn.com



Replacement and version with charging socket:

Lever out charging socket (1) in direction of arrow.



Replacement (depending on version):

Note:
Similar to graphic.

Unclip tensioning strap (1).

Detach luggage compartment net (2) at holder (3).

Release lock washer (4) and feed out luggage compartment net (2).

Unscrew holder (3).

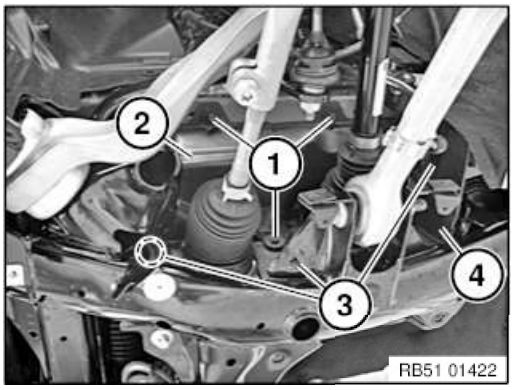
If necessary, apertures for tensioning strap (1) and luggage compartment net (2) must be cut out at mark on rear side.

cardiagn.com

51 75 010 Removing and installing/replacing left or right steering assembly cover

Necessary preliminary tasks:

- Remove front underbody protection. (except for F87)



Release screws (1) and feed out cover (2).

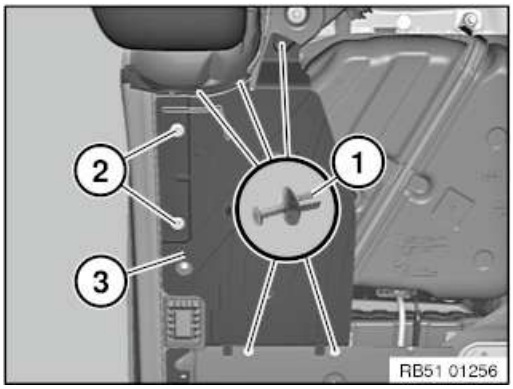
Release expanding rivets (3) and feed out cover (4).

Installation note:
Replace faulty expanding rivets (3).

Ensure the correct seating of the covers (2 and 4).

cardiagn.com

51 75 ... Removing and installing/replacing left or right tank cover



Release expanding rivets (1).

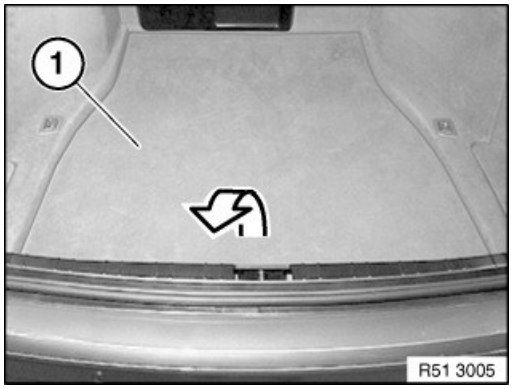
Unfasten screws (2).

Tightening torque 51 75 1AZ.

Remove tank (3).

cardiagn.com

51 47 101 Removing and installing/replacing luggage compartment floor trim panel

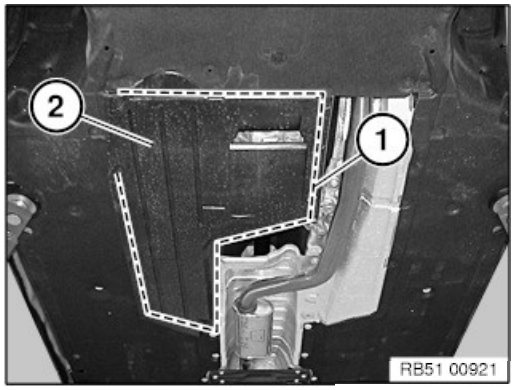


Remove luggage compartment floor trim panelÂ (1) in direction of arrow.

cardiagn.com

51 47 491 Removing and installing/replacing rear underbody protection

Note:
Illustration only an example. There may be differences in detail in the case of other models.



Release screws along line (1) and remove underbody protection (2).

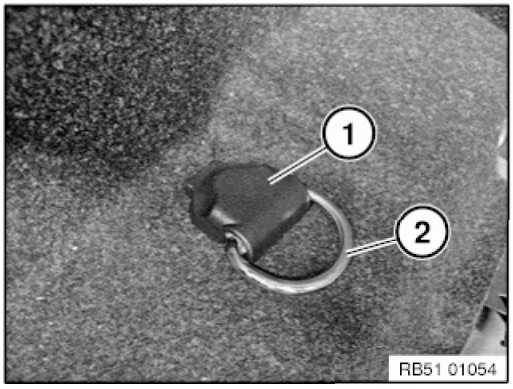
Tightening torque 51 75 1AZ

cardiagn.com

51 47 161 Removing and installing/replacing right luggage compartment wheel arch panel

Necessary preliminary tasks:

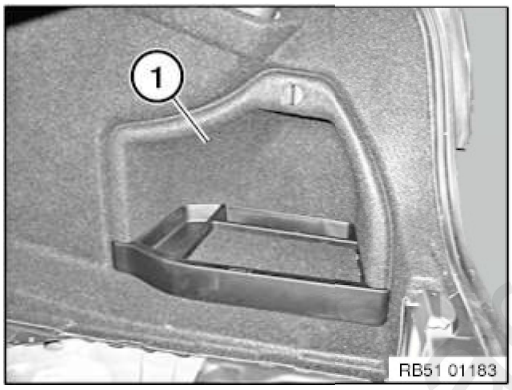
- Remove cover from tail panel
- Remove trim for tailgate hinge on right
- Reposition right rear seat backrest



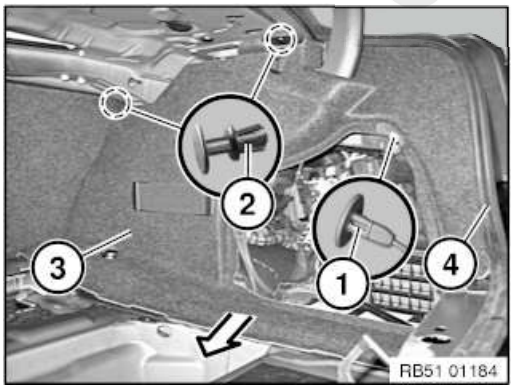
Lever out cover (1) and release screw underneath.

Tightening torque 51 47 1AZ.

Remove lashing eye (2).



Remove flap (1).



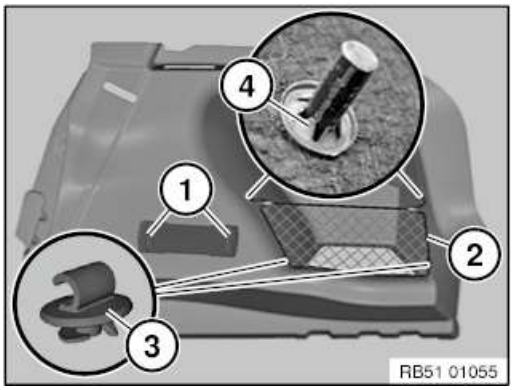
Pull out and detach fuel tank release (1).

Release clamps (2).

Feed out wheel arch panel (3) in direction of arrow.

Installation note:
Wheel arch panel must be seated correctly under tailgate rubber seal (4).

cardiagn.com



Replacement (depending on version):

Note:
Similar to graphic.

Unclip tensioning strap (1).

Detach luggage compartment net (2) at holder (3).

Release lock washer (4) and feed out luggage compartment net (2).

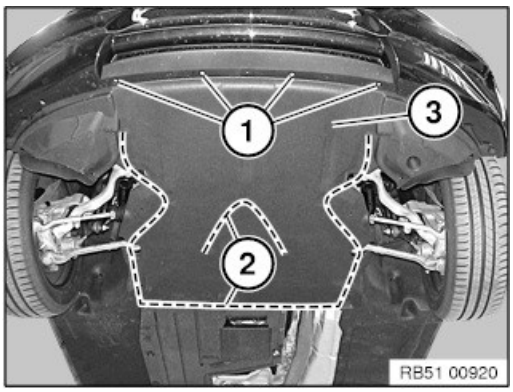
Unscrew holder (3).

If necessary, apertures for tensioning strap (1) and luggage compartment net (2) must be cut out at mark on rear side.

cardiagn.com

51 47 490 Removing and installing/replacing underbody protection (front)

1 – Removing the front underbody protection

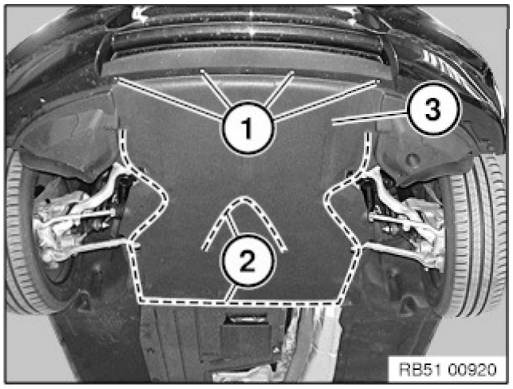


NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Loosen screws (1).
- Release screws along line (2).
- Remove the front underbody protection (3).

2 – Installing the front underbody protection



NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.

- Position the front underbody protection (3).
- Tighten the bolts along the line (2).
- Tighten the screws (1).

Underbody protection front

Screw not metric thread			3 Nm
Screw M6			8,8 Nm
Nut			2,5 Nm

Additional Information

Overview of Tightening Torques

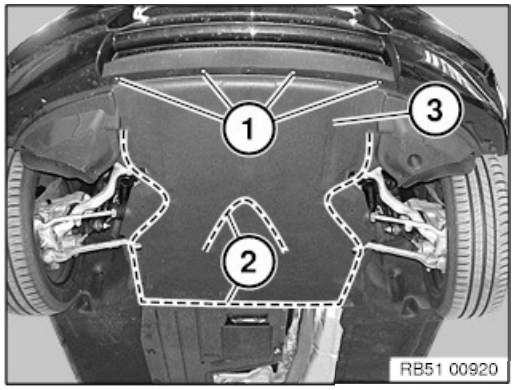
Underbody protection front Used in step 2

Screw not metric thread			3 Nm
Screw M6			8,8 Nm
Nut			2,5 Nm

cardiagn.com

51 47 490 Removing and installing/replacing underbody protection (front)

Note:
Illustration only an example. Detail deviations (depending on engine version) are possible.



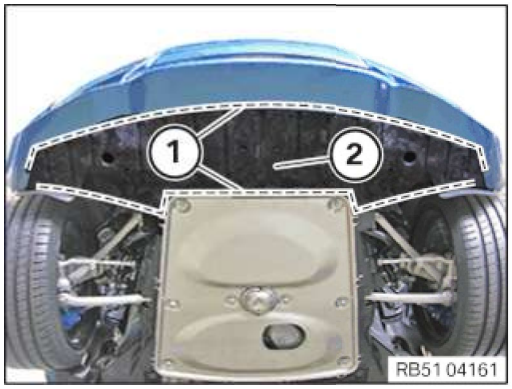
Release screws (1).

Tightening torque 51 75 1AZ.

Release all screws along line (2).

Tightening torque 51 75 1AZ.

Remove underbody protection (3).



Only F87:

Release screws (1).

Tightening torque 51 75 1AZ.

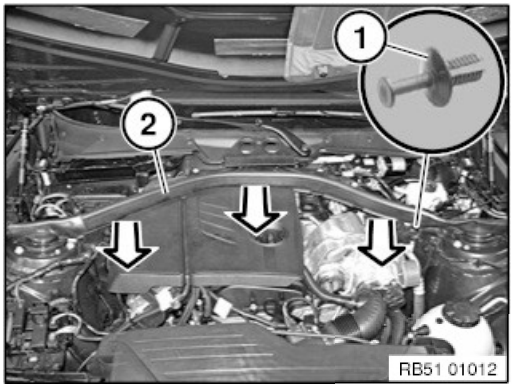
Remove underbody protection (2).

cardiagn.com

51 75 030 Removing or installing/replacing the sound insulation of the upper part of the bulkhead

Necessary preliminary tasks:

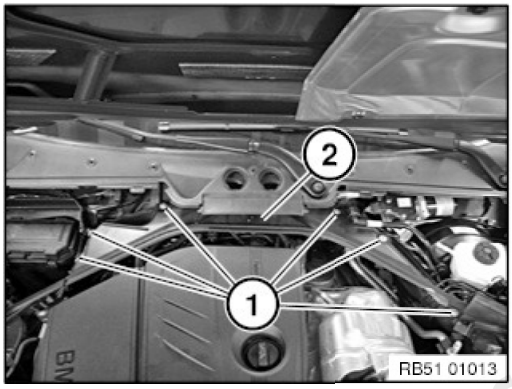
- Remove trailing link on spring strut dome



Detach positive wire from sealing (2).

Release expansion rivet (1).

Unclip sealing (2) in direction of arrow.



Release screws (1).

Feed out sound insulation of upper part of bulkhead (2).

Installation note:
The gasket at the bottom of the sound insulation of the upper part of the bulkhead (2) must not be damaged.

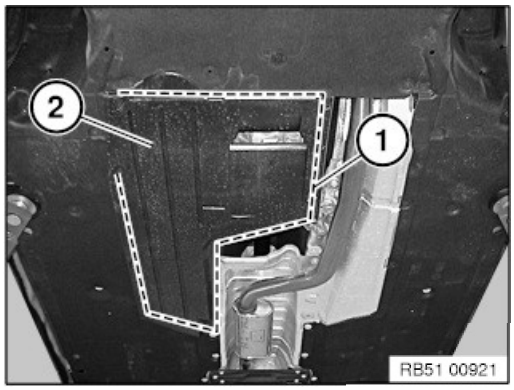
cardiagn.com

51 47 491 Removing refitting/replacing rear engine undercover

1 â€“ Installing underbody protection at rear

NOTICE

Schematic diagram is for example purposes. Some parts may differ in certain details.



- Position the rear underbody protection (2).
- Tighten the bolts along the line (1).

Underbody panelling on body

Screw not metric thread			3 Nm
Screw M6			8,8 Nm
Nut			2,5 Nm

Additional Information

Overview of Tightening Torques

Underbody panelling on body Used in step 1

Screw not metric thread			3 Nm
Screw M6			8,8 Nm
Nut			2,5 Nm

cardiagn.com

51 48 ... Notes for bonding sound insulation (SI), doors



Special tools required:

- 51 0 300

Attention!

Do not yank at the sound insulation (risk of damage).

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 the area is 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.
- Always keep an eye douche on hand, change the water regularly (once a month).
- Comply with the relevant safety regulations.

Handling adhesive area on inner door panel:

Adhesive	Cleaning
a. Butyl bead applied to sound insulation with protective film b. Butyl mini-round profile ⌀ 4 mm from the roller c. Butyl round profile ⌀ 6 mm from the roller	a. Cleaning agentR2 *Under no circumstances: paint thinning* b. Carry out bonding only after an air drying time ≥ 1 min. Air drying time may be omitted if the entire bonding surface is wiped with a dry cloth c. After cleaning, the bonding surface may not be touched with hands or fouled again

Repair in area of sound insulation, door:

Repair	
	• 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 ⌀ 4 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 on with special tool 51 0 300. Perform this work extremely carefully because the increased amount of adhesive requires contact 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)

cardiagn.com

in the event of damaged sound insulation or leakage	• 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 on with special tool 51 0 300. Contact pressure ≥ 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 the 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 will no longer be 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).

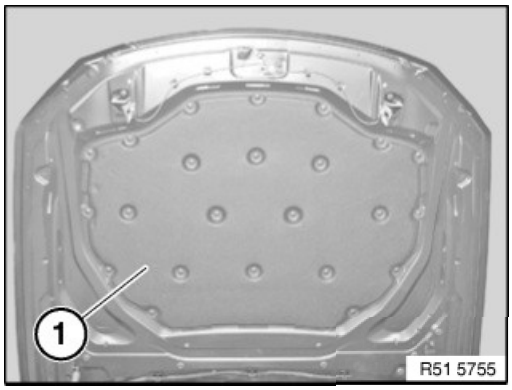
Disposal of adhesive:

Hazardous waste (see also safety data sheet).

cardiagn.com

51 48 001 Removing and installing/replacing insulation lining on engine hood/bonnet

Note:
Example shown on F01: There may be differences in detail in the case of other vehicle types.



Release all expanding rivets/clips on damping material (1).

Remove damping materialÂ (1).

cardiagn.com

51 48 060 Removing and installing/replacing sound insulation in left or right front door

Attention!

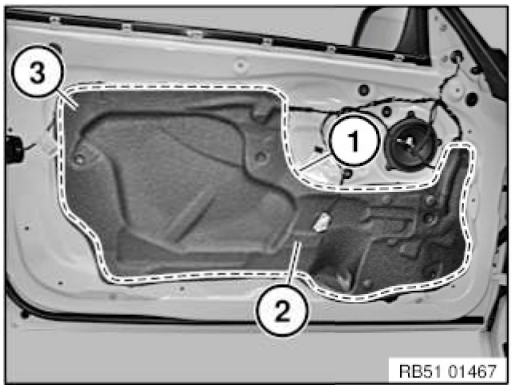
Instructions for sound insulation are an essential part of these repair instructions and must be followed without fail.

Do not detach sound insulation in jerks (risk of damage).

Ensure watertightness of sound insulation after every repair (water ingress).

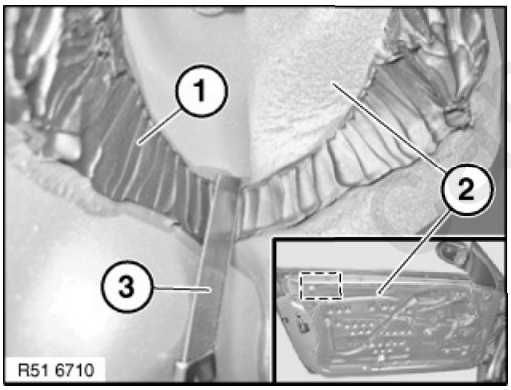
Necessary preliminary tasks:

- Remove door trim panel



Note:
Position of sealing bead (1).

If necessary, manoeuvre out sound insulation (2) at cable (3).



Attention!

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.

When refitting:

Damaged sound insulation must be replaced.

Lay butyl rope with ⌀ 4 mm (sourcing reference: BMW Parts Department) onto the original butyl rope.

Replacement:

Remove residual butyl at the door and clean the adhesive area.

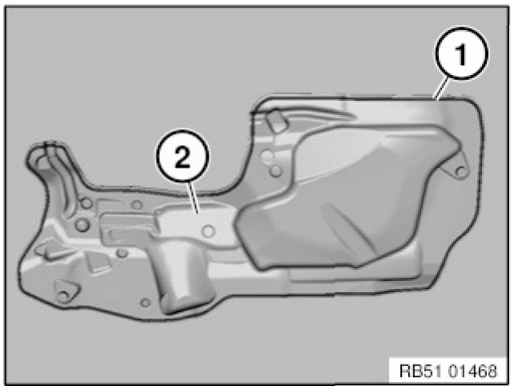
Air drying time: 1 minute

Attention!

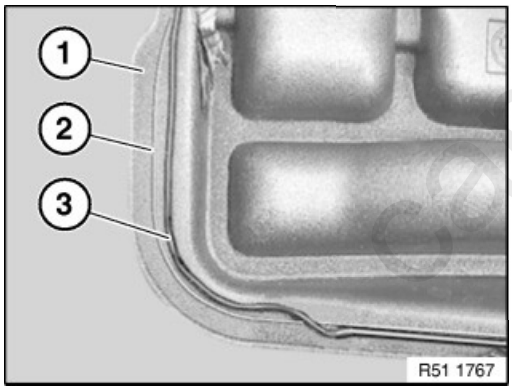
Bonding surfaces must be dry and free of dust and grease.

Once it has been cleaned, do not touch the adhesive area with bare hands.

Lay 6 mm dia. butyl rope (sourcing reference: BMW Parts Department) in specified adhesive area onto the sound insulation.



Note:
Position of butyl rope (1) on sound insulation (2).



Note:
A mark (2) is provided all round on the sound insulation (1).

Butyl rope (3) rests on or inside the marking (2).

Heat butyl rope (3) (hot air blower) and press sound insulation (1) on firmly all-round.

Contact pressure with hand roller: approx. 20 N/cm^2

Manual contact pressure: approx. 10 N/cm^2

Note:

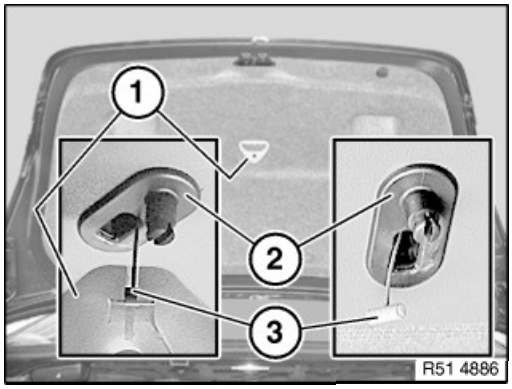
Firm thumb pressure has approx. 30 N/cm^2

.ardiagn.com

51 49 000 Removing and installing or replacing trim for rear lid

Necessary preliminary tasks:

- Remove both trim panels for hinges

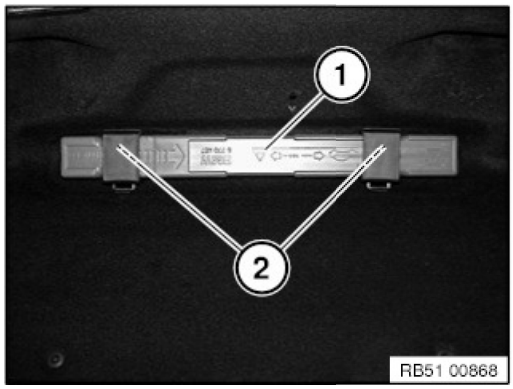


Version with emergency release:

Detach handle (1) from clip (2).

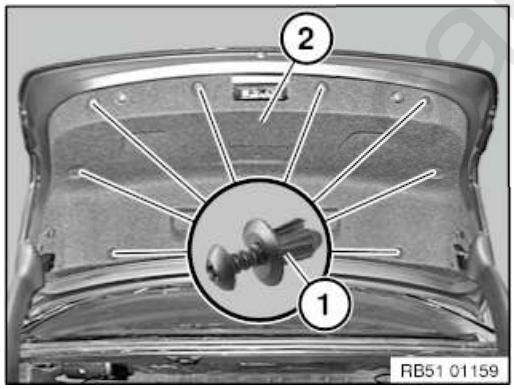
Unhook Bowden cable (3) from handle (1).

Installation note:
Feed Bowden cable (3) through clip (2) and engage correctly in handle (1).



Remove warning triangle (1) from bracket.

Release screws (2) and remove warning triangle holder.



Release expanding rivet (1).

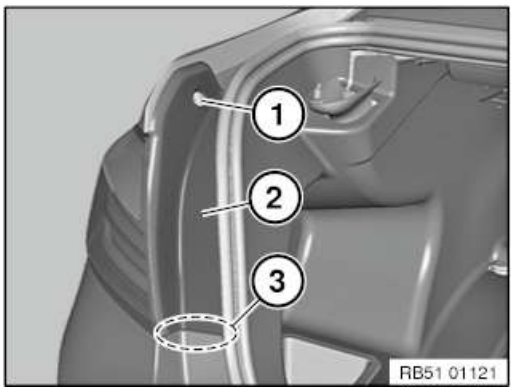
If necessary, feed out Bowden cable from emergency release.

Remove trim panel (2).

Installation note:
Replace faulty expanding rivets (1).

ardiagn.com

51 49 ... Removing and installing/replacing left or right water channel trim strip on rear side panel



Unscrew clip (1).

Feed cover (2) in upward direction out of guides (3).

Installation note:
Sealing lip of cover (2) must not lie below edge protection for tailgate.

Sealing lip of cover (2) must rest correctly on edge protection for tailgate.

cardiagn.com

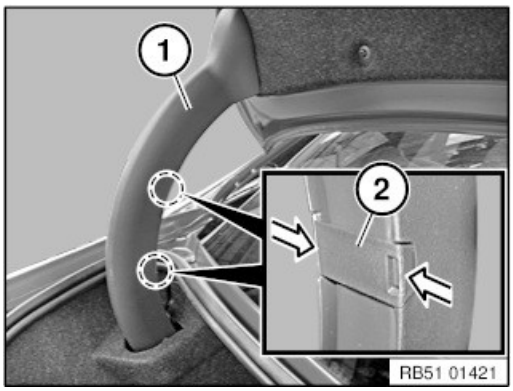
51 71 360 Removing and installing/replacing seal for tailgate



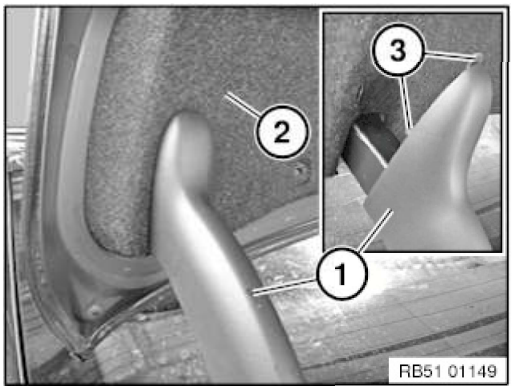
Pull off seal (1) and remove.

cardiagn.com

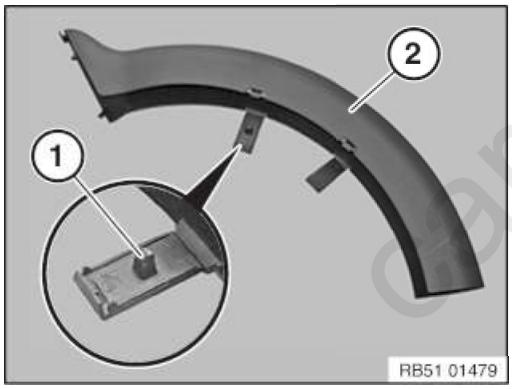
51 49 ... Removing and installing/replacing trim for tailgate hinge on left or right



Gently press together trim panel for hinge (1) in area of tabs (2) and open tabs (2).*Installation note:*
Tabs (2) must not be missing or damaged.



Pull out trim panel for hinge (1) from tailgate trim panel (2) and feed out of hinge.*Installation note:*
Catches (3) on trim for hinge (1) must not be missing or damaged.



Installation note:
Pin (1) must be inserted in corresponding opening in hinge.

On vehicle versions before 03/2012, it is possible hinges are installed without a corresponding opening.

On replacement of trim panel (2), pin (1) must possibly be removed.

cardiagn.com

51 71 373 Removing and installing/replacing trailing link on spring strut dome

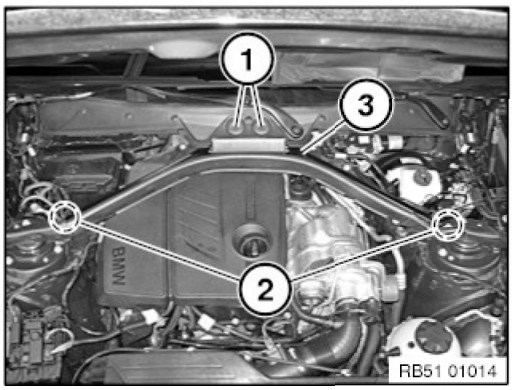
Important!

Driving without the trailing link is not permitted.

(risk of damage to the body).

Necessary preliminary tasks:

- Remove cover in engine compartment on the left and right



Lever out covers (1) and release screws underneath.

Release screws (2) and remove trailing link (3).

Tightening torque 51 61 1AZ

Installation note:
Replace screws and tighten to specified torque and then to angle of rotation.

cardiagn.com

51 64 012 Removing and installing/replacing V-support



Important!

Driving without V-support is not permissible (risk of damage to body).



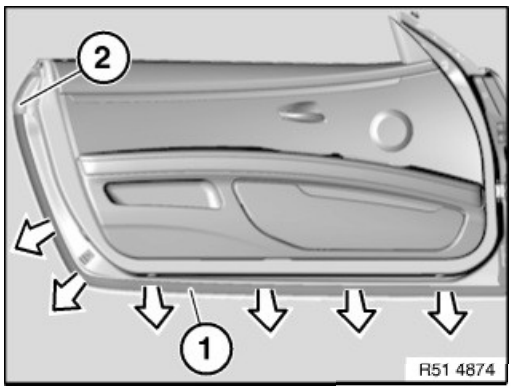
Removal of the V-support is explained in the following operations:

- Remove front bumper panel
- Release the side of the centre front panel
- Remove deformation element for bumper panel on the left or right

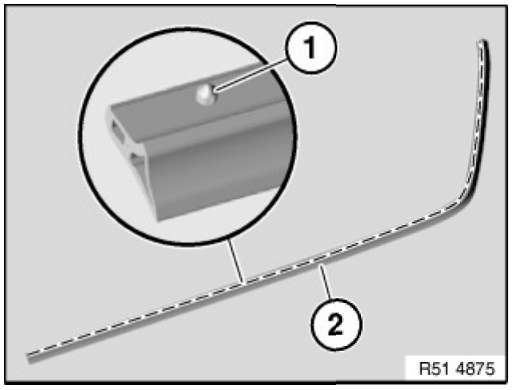
cardiagn.com

51 71 000 Removing and installing / replacing seal on front door, left or right

Note:
Repair work is shown by way of example. There may be differences in detail for different vehicle types.



Unclip sealing (1) from front door in direction of arrow.*Installation note:*
Make sure sealing (1) fits correctly on window guide (2).



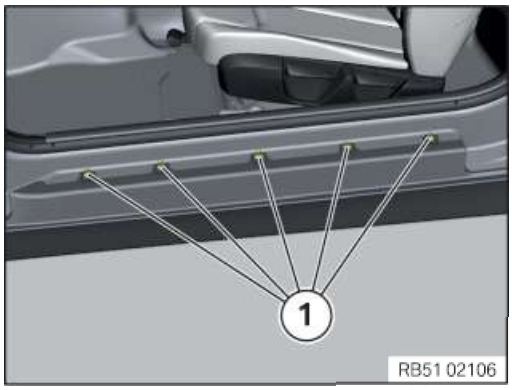
Installation note:
Clips (1) of sealing (2) must not be damaged.

cardiagn.com

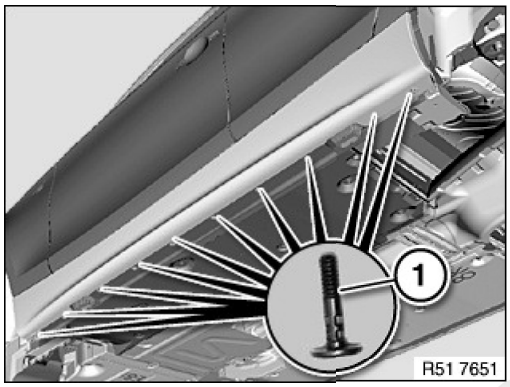
51 71 447 Removing and installing or replacing trim panel for cover on left or right side member

Necessary preliminary tasks:

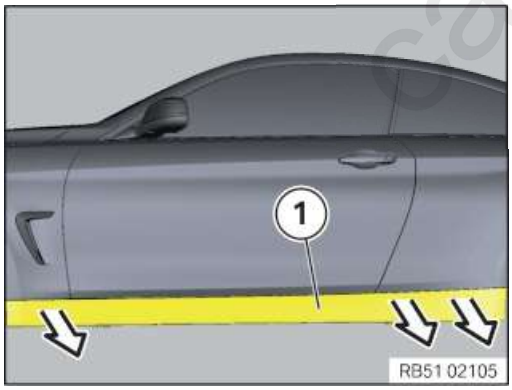
- Remove door sill cover strip



Release expanding rivet (1).



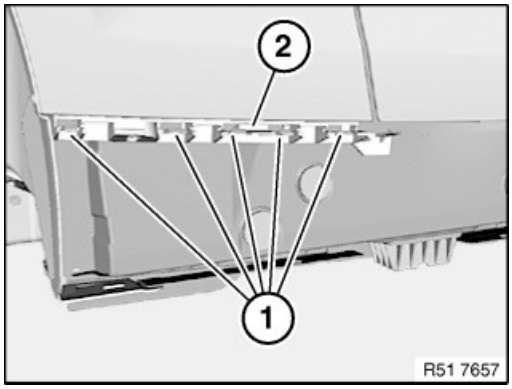
Release screws (1).



Unclip trim panel (1) at front and rear.

Open the door and remove the trim panel (1) in direction of arrow and remove.

cardiagn.com

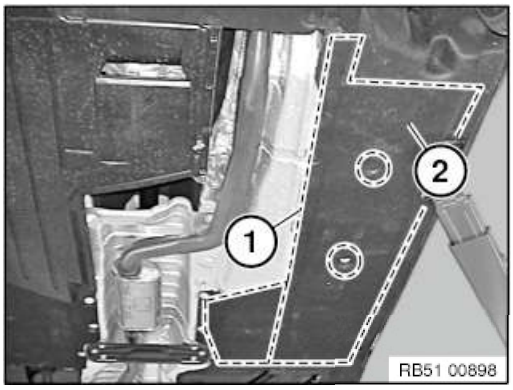


Installation note:
Latch mechanisms (1) on holder (2) must not be damaged.

cardiagn.com

51 71 017 Removing and installing/replacing (left or right) underbody panelling

Graphic is only an example. There may be differences in specific details depending on engine version.



Release all screws along dashed line (1).

Tightening torque 51 75 1AZ

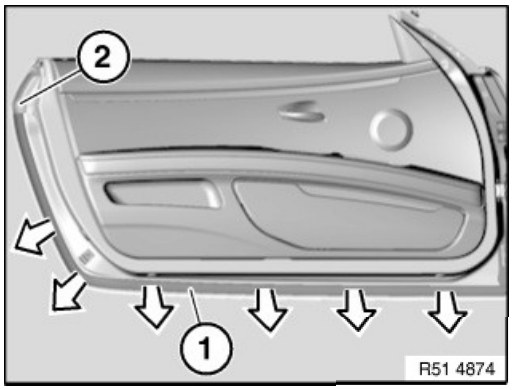
Remove underbody panelling (2).

Installation note:
Make sure underbody panelling (2) is correctly seated.

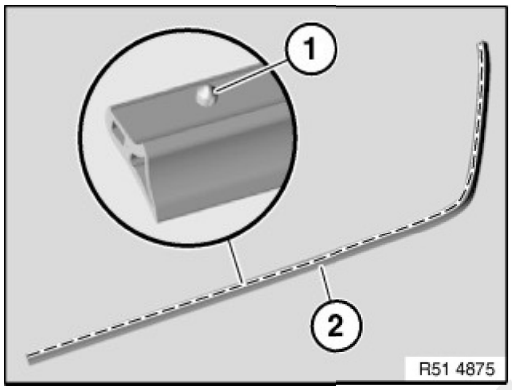
cardiagn.com

51 21 370 Removing and installing/replacing cover (seal) on front door at bottom left or right

Note:
Repair work is shown by way of example. There may be differences in detail in the case of other vehicle types.



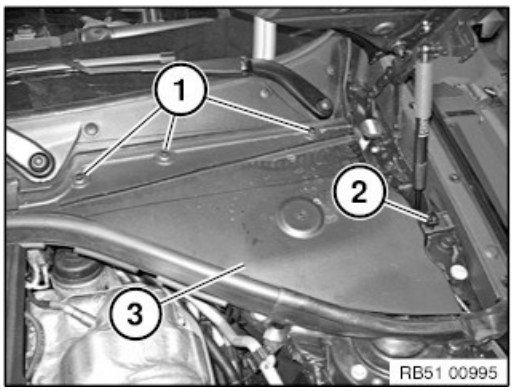
Unclip sealing (1) from front door in direction of arrow.*Installation note:*
Make sure sealing (1) fits correctly on window guide (2).



Installation note:
Clips (1) of sealing (2) must not be damaged.

cardiagn.com

51 13 ... Removing and installing/replacing cover in engine compartment on left or right

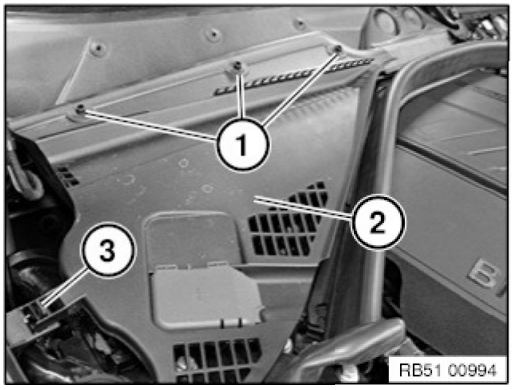


Left side:

Turn locks (1) 90° counterclockwise.

Unlock catch (2).

Remove cover (3).



Right side:

Turn locks (1) 90° counterclockwise.

Unlock catch (3).

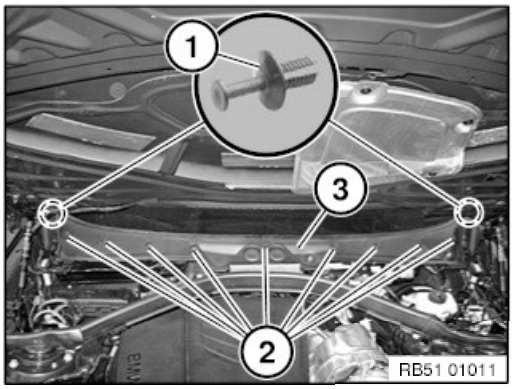
Remove cover (2).

cardiagn.com

51 13 116 Removing and installing/replacing cowl panel cover

Necessary preliminary tasks:

- Remove both windscreen wiper arms.
- Remove cover in engine compartment on the left and right



Release expanding rivets/clips (1) on left/right.

Turn snap fastener (2) approx. 90° counterclockwise.

Lift out cover (3).

Installation note:
Replace damaged expanding rivets/clips (1).

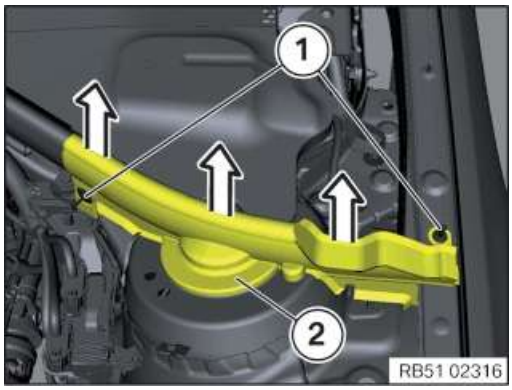
Check cover (3) for correct fit.

Close snap fasteners (2) from the middle.

The fastener is closed if the arrow tips point to each other.

cardiagn.com

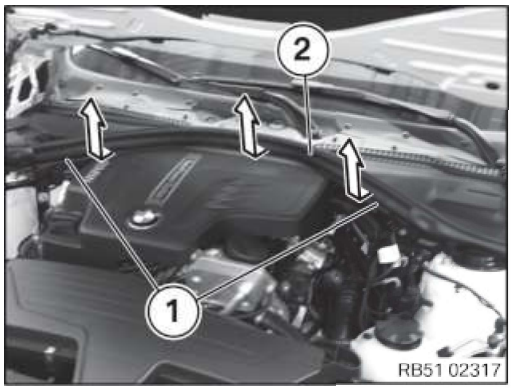
51 76 030 Removing and installing/replacing engine compartment lid gasket



Left and right gasket:

Release expanding rivet (1).

Remove gasket (2) in direction of arrow.



Centre gasket

Detach cable (1) from gasket (2).

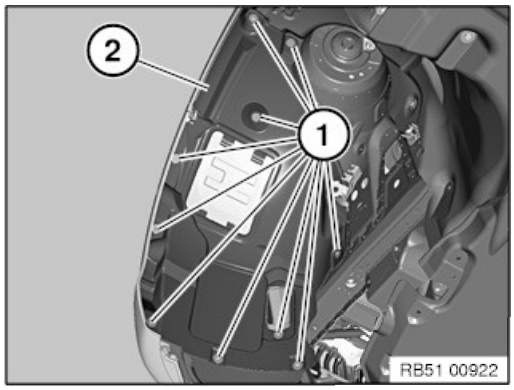
Remove gasket (2) in direction of arrow.

cardiagn.com

51 71 038 Removing and installing/replacing front left or right wheel arch cover (front section)

Necessary preliminary work:

- Remove front wheel

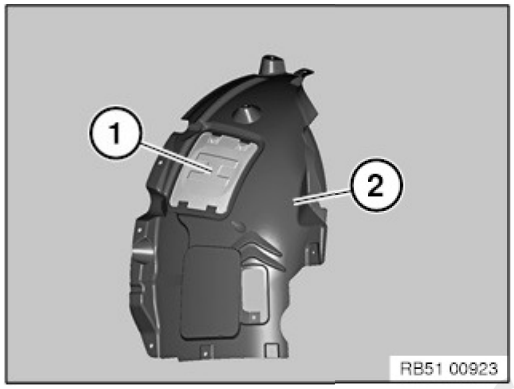


Note:
For a better view surrounding components have been omitted.

Release screws (1).

Feed out wheel arch cover (2).

Installation note:
Ensure wheel arch cover (2) and cooling air routing are correctly fitted.



Replacement:

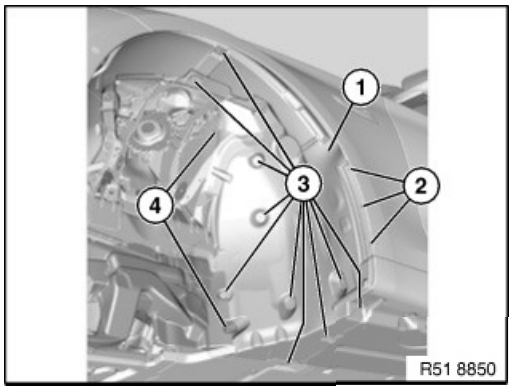
Modify lid (1) on wheel arch cover (2).

cardiagn.com

51 71 039 Removing and installing/replacing front left or right wheel arch cover (rear section)

Necessary preliminary work:

- Remove front wheel



Note:
For a better view surrounding components have been omitted.

Release all screws (3).

Release expanding rivets (2) and (4).

Installation note:
Replaced expanding rivets (2).

Remove front wheel arch cover (1).

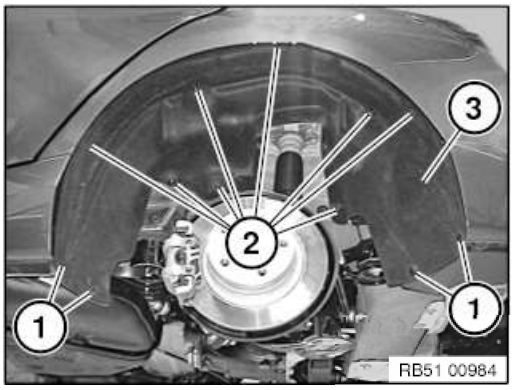
Installation note:
Make sure front wheel arch cover (1) is correctly seated.

cardiagn.com

51 71 041 Removing and installing/replacing rear left or right wheel arch cover

Necessary preliminary tasks:

- Remove rear wheel



Note:
The number of mounting elements may vary, depending on the vehicle type and equipment fitted.

Release screws/expanding rivets (1).

Release all nuts (2).

Tightening torque 51 75 2AZ.

Remove wheel arch cover (3).

Installation note:
Make sure wheel arch cover (3) is correctly seated.

cardiagn.com

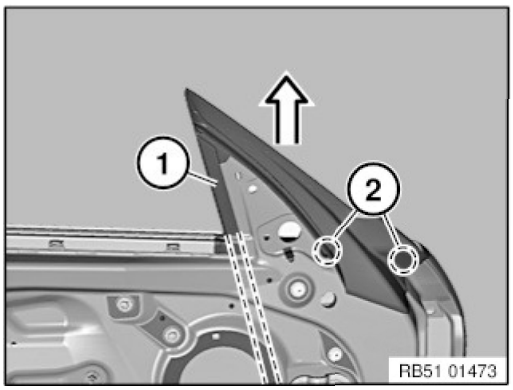
51 32 211 Removing and installing/replacing rubber window seal for front left or right side window

Necessary preliminary tasks:

- Remove rear-view mirror on front door
- Remove weather strip on outside of front door
- Remove weather strip on inside of front door

Important!

The "Notes on fitting window guide seals" serve as the basis for this repair instruction and must be observed without fail.

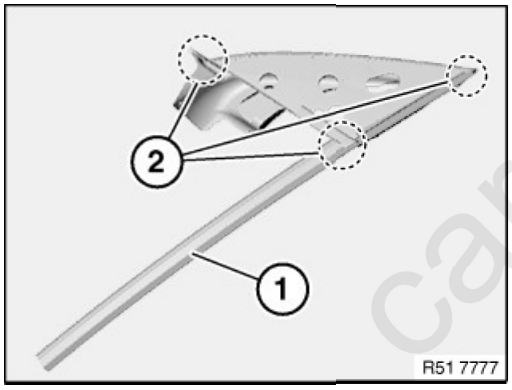


Release rubber window seal (1) at lugs (2).

Pull out rubber window seal (1) from window guide rail.

Installation note:
Moisten rubber guide (1) prior to fitting with approved lubricant.

Insert rubber window seal (1) at front/bottom correctly into window guide rail.



Installation note:
Rubber guide (1) must not be damaged in corners (2).

cardiagn.com

51 71 360 Removing and installing/replacing seal for tailgate



Pull off seal (1) and remove.

cardiagn.com

51 71 373 Removing and installing/replacing trailing link on spring strut dome

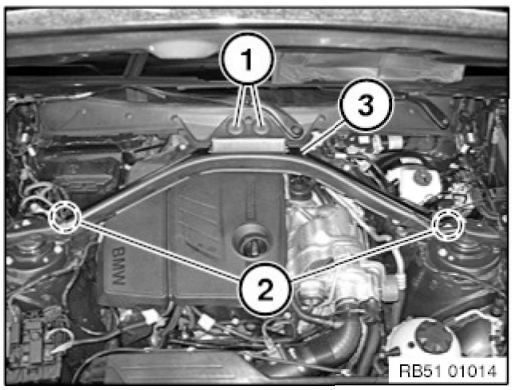
Important!

Driving without the trailing link is not permitted.

(risk of damage to the body).

Necessary preliminary tasks:

- Remove cover in engine compartment on the left and right



Lever out covers (1) and release screws underneath.

Release screws (2) and remove trailing link (3).

Tightening torque 51 61 1AZ

Installation note:
Replace screws and tighten to specified torque and then to angle of rotation.

cardiagn.com

51 64 012 Removing and installing/replacing V-support



Important!

Driving without V-support is not permissible (risk of damage to body).



Removal of the V-support is explained in the following operations:

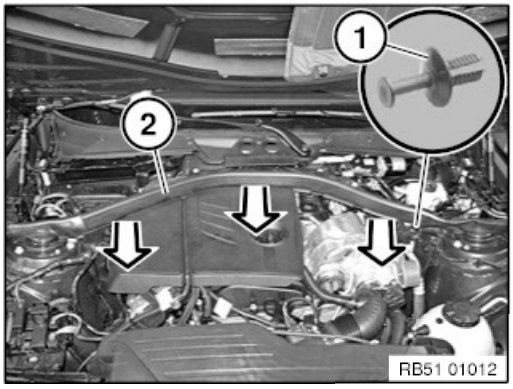
- Remove front bumper panel
- Release the side of the centre front panel
- Remove deformation element for bumper panel on the left or right

cardiagn.com

51 75 030 Removing or installing/replacing the sound insulation of the upper part of the bulkhead

Necessary preliminary tasks:

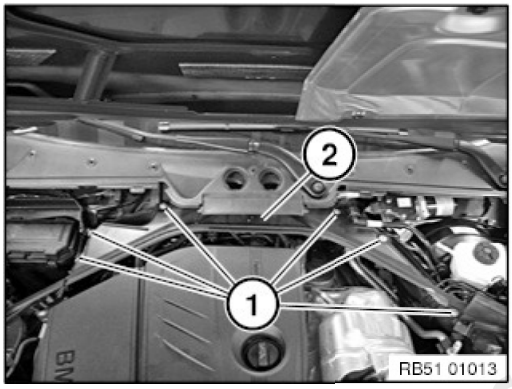
- Remove trailing link on spring strut dome



Detach positive wire from sealing (2).

Release expansion rivet (1).

Unclip sealing (2) in direction of arrow.



Release screws (1).

Feed out sound insulation of upper part of bulkhead (2).

Installation note:
The gasket at the bottom of the sound insulation of the upper part of the bulkhead (2) must not be damaged.

cardiagn.com

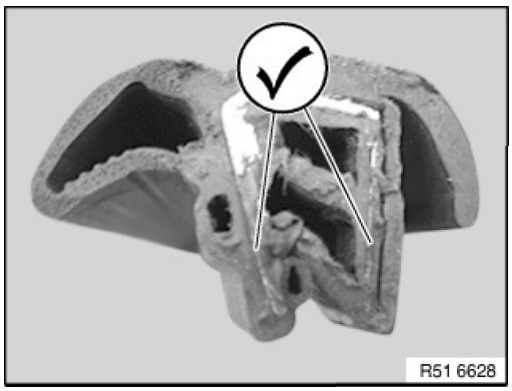
51 72 ... Sealing installation

Note:
The utmost care must be taken when removing all sealings on the vehicle. Incorrect fitting can lead to wind noise and water ingress among other things and can affect the ease of closing and opening.

The following instructions only apply to sealing without sealant.

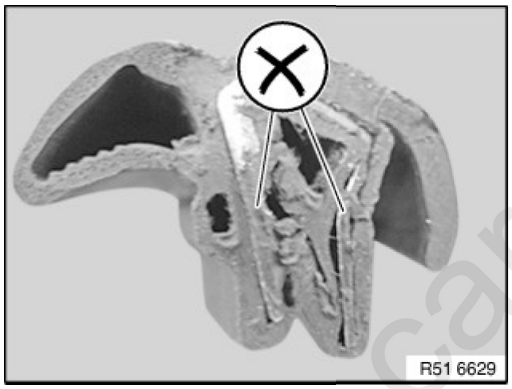
Sealings with sealant must be replaced each time they are disassembled.

Sealing surfaces must be cleaned.

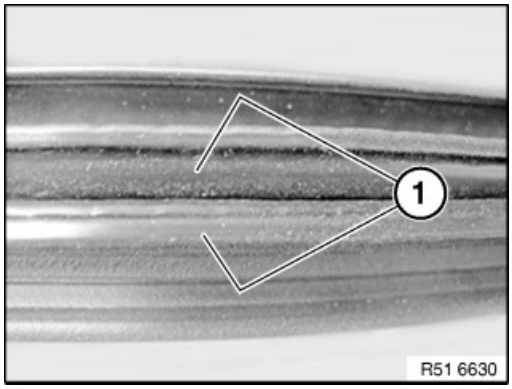


- <u>In general, the following applies:</u>

  Sealings on the side frame can be fitted and removed any number of times.
- Sealings must not be damaged or torn.
- The clamping surface must be compressed by hand far enough to ensure that a tight connection on the side flange is still possible. The sealing shanks may touch each other slightly. A completely compressed sealing is not permitted.

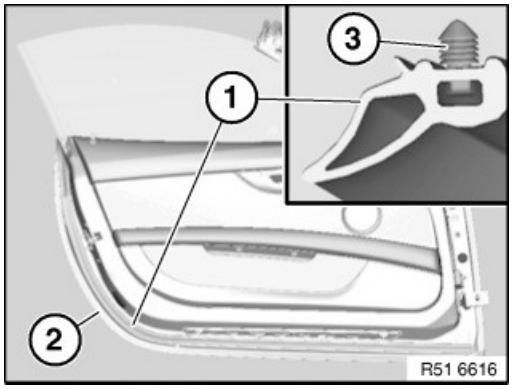


- It is not necessary to use special tools to compress the clamping surface. This can be done carefully by hand.
- The sealings must always be fitted except in the case of blockages. There is no defined contact pressure.
- A new gasket must be fitted if sealings in the tailgate area are repeatedly fitted and removed (water ingress due to cracked sheet metal).
- Sealings must be checked for correct fit after installation. If necessary, sealings should be lifted over the adjacent components using the appropriate tool. Neighbouring components must not be damaged.
- Sealings must be replaced if the metal inlay of the sealing is visible (corrosion).



- Ensure the clamping surface is even all round.

cardiagn.com



- Sealings that are installed with plastic clips fit tightly against the body. If this is not the case, replace the clips or sealings.

cardiagn.com

51 72 000 Replacing edge protection for left or right front door

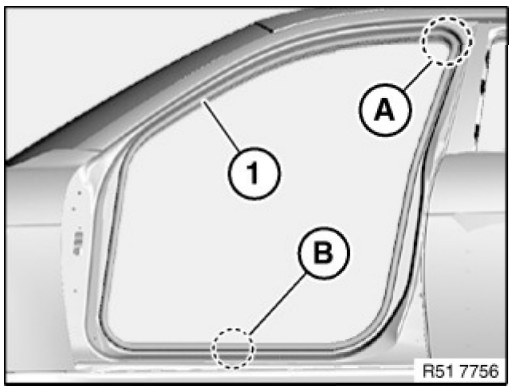
When working on trim panel components, make sure that the sensitive surfaces are not scratched or damaged.

Necessary preliminary tasks:

- Remove front door sill cover strip (inner)

Important!

Follow notes for fitting sealing!



Detach edge protection (1).*Installation note:*
Install edge protection (1) starting in area ”A”.

When installed, the location of joint of edge protection (1) must be in area ”B”.

Pull off mounting cord starting in area ”B”.

cardiagn.com

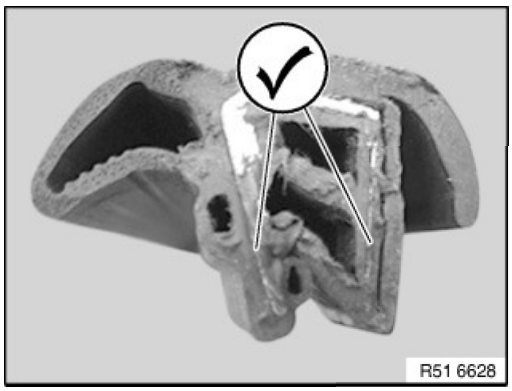
51 72 ... Sealing installation

Note:
The utmost care must be taken when removing all sealings on the vehicle. Incorrect fitting can lead to wind noise and water ingress among other things and can affect the ease of closing and opening.

The following instructions only apply to sealing without sealant.

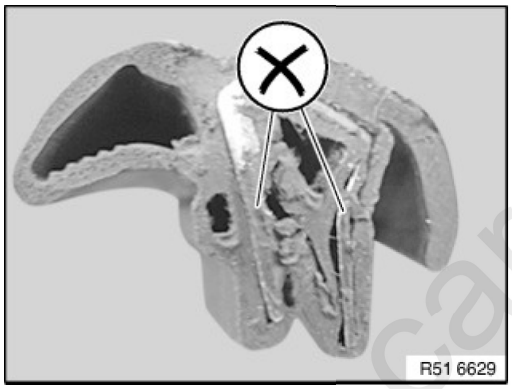
Sealings with sealant must be replaced each time they are disassembled.

Sealing surfaces must be cleaned.

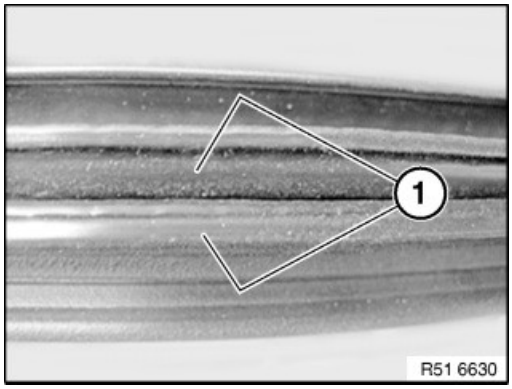


- <u>In general, the following applies:</u>

  Sealings on the side frame can be fitted and removed any number of times.
- Sealings must not be damaged or torn.
- The clamping surface must be compressed by hand far enough to ensure that a tight connection on the side flange is still possible. The sealing shanks may touch each other slightly. A completely compressed sealing is not permitted.

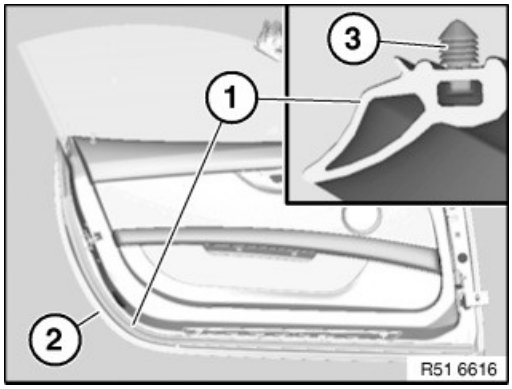


- It is not necessary to use special tools to compress the clamping surface. This can be done carefully by hand.
- The sealings must always be fitted except in the case of blockages. There is no defined contact pressure.
- A new gasket must be fitted if sealings in the tailgate area are repeatedly fitted and removed (water ingress due to cracked sheet metal).
- Sealings must be checked for correct fit after installation. If necessary, sealings should be lifted over the adjacent components using the appropriate tool. Neighbouring components must not be damaged.
- Sealings must be replaced if the metal inlay of the sealing is visible (corrosion).



- Ensure the clamping surface is even all round.

cardiagn.com



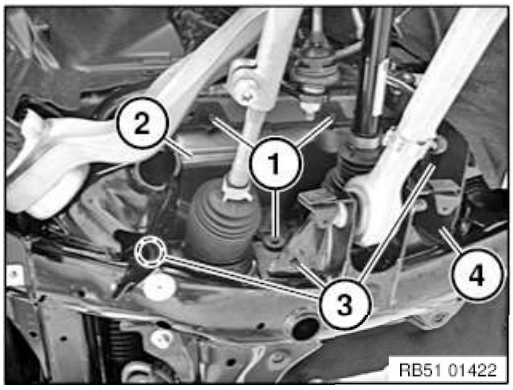
- Sealings that are installed with plastic clips fit tightly against the body. If this is not the case, replace the clips or sealings.

cardiagn.com

51 75 010 Removing and installing/replacing left or right steering assembly cover

Necessary preliminary tasks:

- Remove front underbody protection. (except for F87)



Release screws (1) and feed out cover (2).

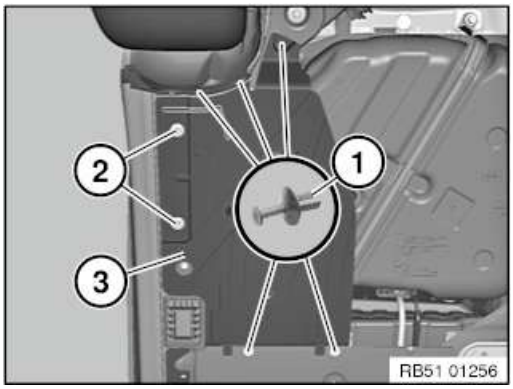
Release expanding rivets (3) and feed out cover (4).

Installation note:
Replace faulty expanding rivets (3).

Ensure the correct seating of the covers (2 and 4).

cardiagn.com

51 75 ... Removing and installing/replacing left or right tank cover



Release expanding rivets (1).

Unfasten screws (2).

Tightening torque 51 75 1AZ.

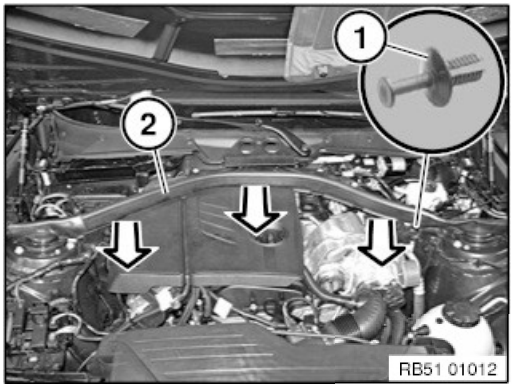
Remove tank (3).

cardiagn.com

51 75 030 Removing or installing/replacing the sound insulation of the upper part of the bulkhead

Necessary preliminary tasks:

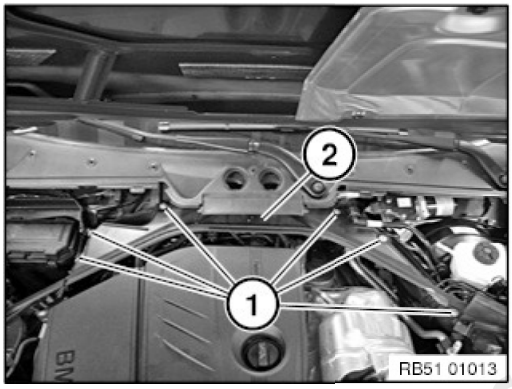
- Remove trailing link on spring strut dome



Detach positive wire from sealing (2).

Release expansion rivet (1).

Unclip sealing (2) in direction of arrow.



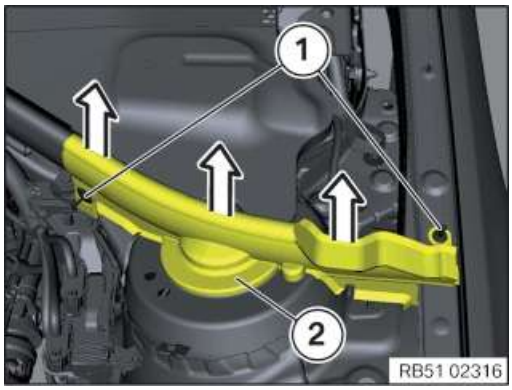
Release screws (1).

Feed out sound insulation of upper part of bulkhead (2).

Installation note:
The gasket at the bottom of the sound insulation of the upper part of the bulkhead (2) must not be damaged.

cardiagn.com

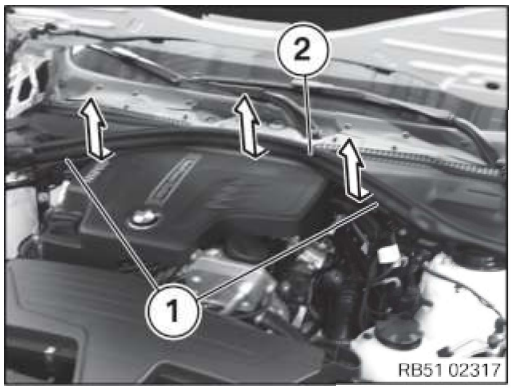
51 76 030 Removing and installing/replacing engine compartment lid gasket



Left and right gasket:

Release expanding rivet (1).

Remove gasket (2) in direction of arrow.



Centre gasket

Detach cable (1) from gasket (2).

Remove gasket (2) in direction of arrow.

cardiagn.com

51 71 360 Removing and installing/replacing seal for tailgate



Pull off seal (1) and remove.

cardiagn.com

65 77 602 Replacing sensor mat for front passenger seat occupancy detector

Necessary preliminary tasks:

- Remove front passenger seat

Important!

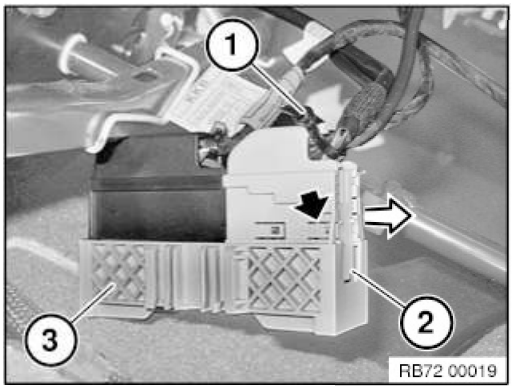
Risk of damage on sharp-edged seat mechanism.

Guide all cables carefully through seat and backrest mechanism.

Make sure cable is routed without kinks and tension.

Make sure plug connections are correctly locked.

Make sure connectors are correctly seated in latch mechanisms.

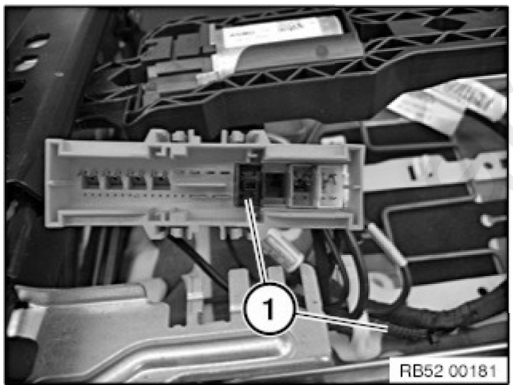


Remove the central plug from the mounting.

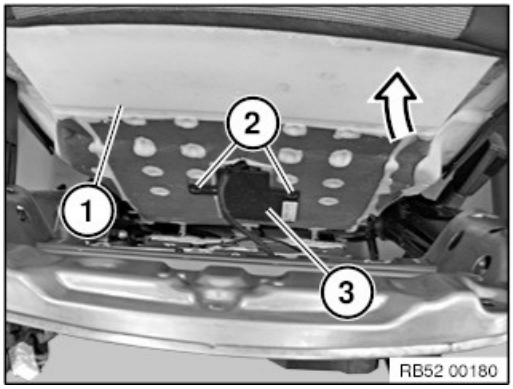
Cut open cable strap (1).

Installation note:
Replace cable tie (1) at central plug.

Raise the tab and pull connector (2) out through the side of the connector housing (3).



Detach cable for seat occupancy detection (1) from cable clip.



Lift the front seat cover with upholstery (1) and unclip the mounting (2) for the seat occupancy detection (3).

Remove the seat occupancy detection (3) from upholstery front passenger seat (1) and feed out connector with cable.

Installation note:
Plug connections are coded against incorrect assembly.

- To avoid malfunctions, make sure seat occupancy mat (3) is cleanly laid:
  - Insert the seat occupancy detection (3) in the provided recess and clip in mounting.
  - Install the cables and connectors for the seat occupancy detection clean and without kinks.
  - Slide and lock connector in central connector housing.

cardiagn.com

52 13 001 Removing and installing front seat, driver's side

Necessary preliminary tasks:

- Disconnect battery earth lead
- Remove head restraint

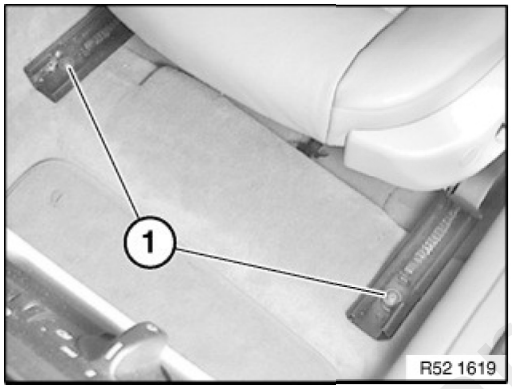
Important!

An airbag module and a pyrotechnical seat belt tensioner are installed in the front seat.

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

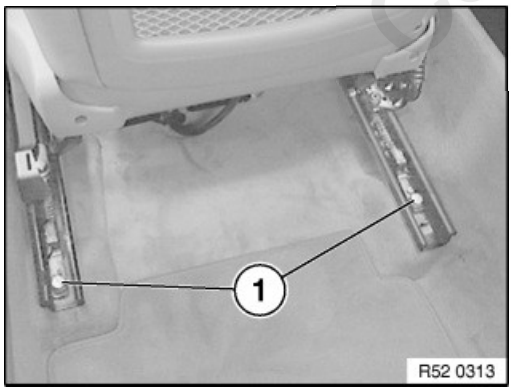
Installation note:

- Powerlok screws must be replaced and must not be reused
- Powerlok screws are mechanical screw locks with trilobular threads



Move seat to upper back position.

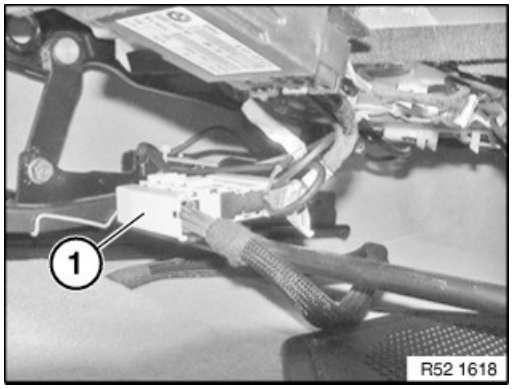
Release and dispose of screws (1).



Adjust the seat to the front top.

Release and dispose of screws (1).

cardiagn.com



Disconnect plug connection (1).

Important!

Cover door sill with protective covers (risk of damage).

Lift out front seat.

Installation note:

- Carpet must not get between seat rails and floor panel in area of attachment points (squeaking noises)
- Replace microencapsulated screws
- Insert all screws loose to avoid twisting
- Tighten down all screws to specified torque

  Tightening torque 52 10 01AZ.

Warning!

When carrying out further work on the front seat, it is absolutely imperative to observe the safety regulations on handling airbag modules and pyrotechnical seat belt tensioners

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

cardiag.com

52 13 002 Removing and installing front seat, passenger's side

Necessary preliminary tasks:

- Disconnect battery earth lead
- Remove head restraint

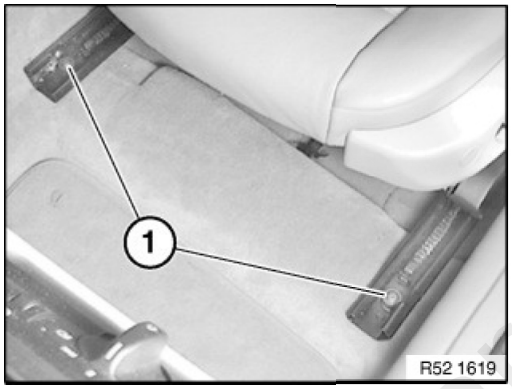
Important!

An airbag module and a pyrotechnical seat belt tensioner are installed in the front seat.

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

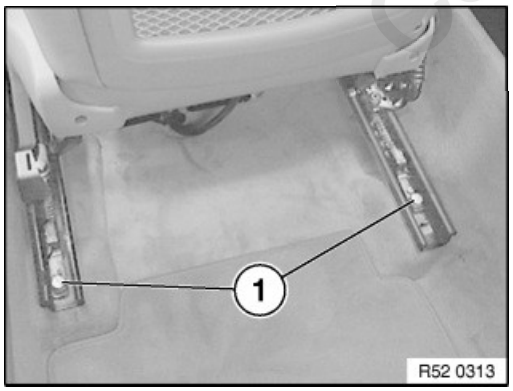
Installation note:

- Powerlok screws must be replaced and must not be reused
- Powerlok screws are mechanical screw locks with trilobular threads



Move seat to upper back position.

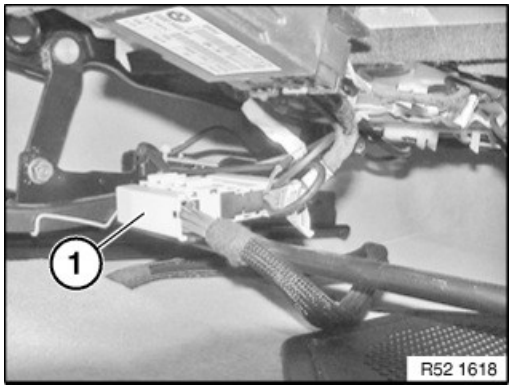
Release and dispose of screws (1).



Adjust the seat to the front top.

Release and dispose of screws (1).

cardiagn.com



Disconnect plug connection (1).

Important!

Cover door sill with protective covers (risk of damage).

Lift out front seat.

Installation note:

- Carpet must not get between seat rails and floor panel in area of attachment points (squeaking noises)
- Replace microencapsulated screws
- Insert all screws loose to avoid twisting
- Tighten down all screws to specified torque

  Tightening torque 52 10 01AZ.

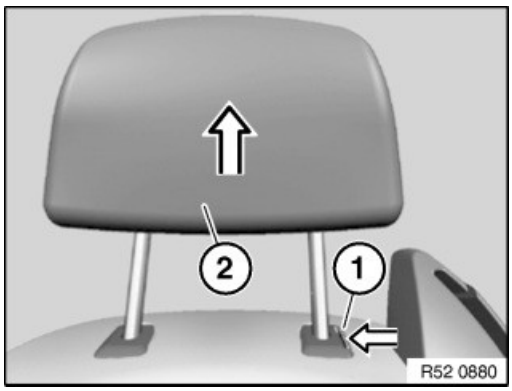
Warning!

When carrying out further work on the front seat, it is absolutely imperative to observe the safety regulations on handling airbag modules and pyrotechnical seat belt tensioners

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

cardiag.com

52 13 390 Removing and installing or replacing front left or right head restraint



Press latch mechanism (1) and lift out head restraint (2).

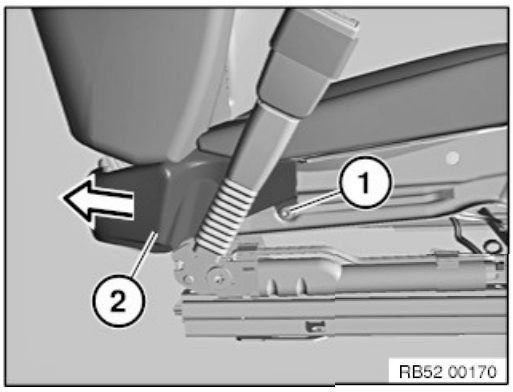
cardiagn.com

52 13 041 Removing and installing or replacing inner cover on left or right front seat

Necessary preliminary tasks:

- Remove front seat

Note:
Completely move the electric front seat to the top prior to removal.

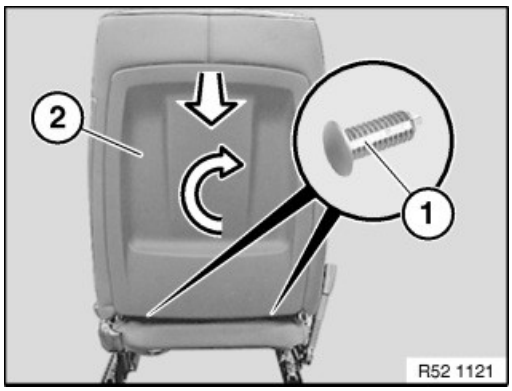


Release screw (1).

Remove cover (2) in direction of arrow.

cardiagn.com

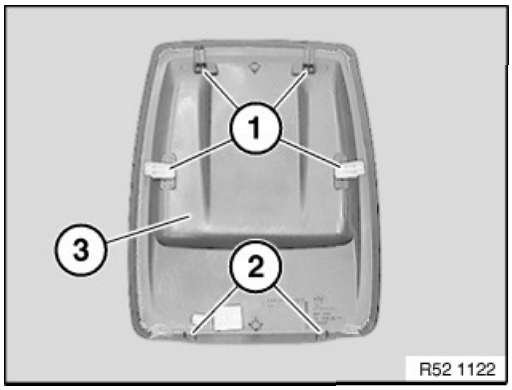
52 13 198 Removing and installing or replacing rear panel on left or right front seat backrest



Release clips (1) with diagonal cutting pliers.

Remove rear panel (2) downwards with a rotational movement.

Note:
Remove remnants of clips.



Installation note:
Retaining hooks (1) and bore holes (2) on rear panel (3) must not be damaged.

Replace faulty clips.

cardiagn.com

52 13 030 Removing and installing/replacing backrest frame at left or right front seat

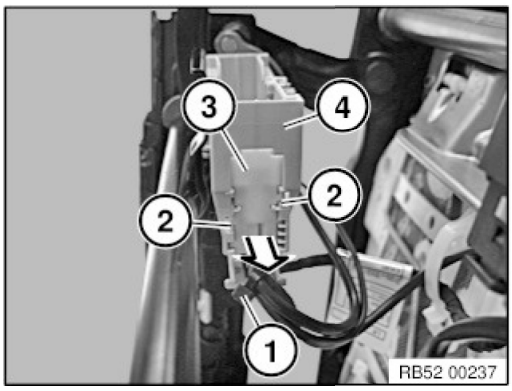
Important!

When working on the front seat it is absolutely essential to observe the safety regulations on handling airbag modules.

Improper handling may trigger the side airbag and as a result cause injuries.

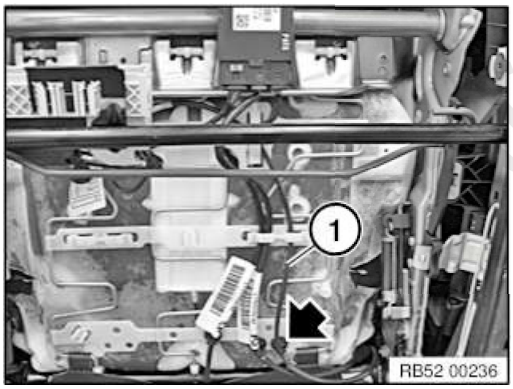
Necessary preliminary tasks:

- Remove front seat
- Remove rear panel on front seat backrest



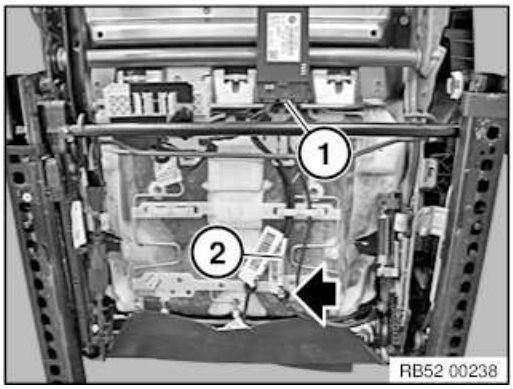
Cut open cable strap (1).

Press locks (2) outwards and at the same time remove connector (3) in direction of arrow from connector housing (4).



Unclip airbag wiring harness (1) in marked area.

Release airbag wiring harness (1) from cable clips on seat mechanism.



Version with seat heating only:

Unfasten plug connection (1) and disconnect.

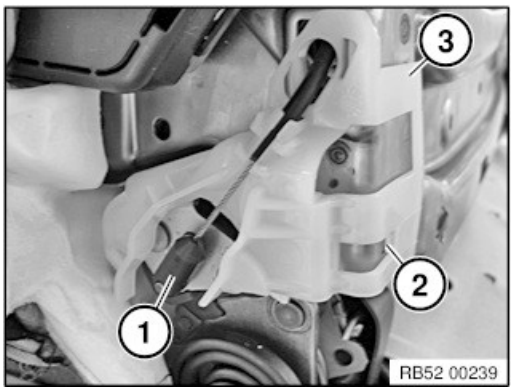
Unclip wiring harness (2) in marked area.

Release wiring harness (2) from cable clips on seat mechanism.

Important!

Feed all the wiring harnesses carefully through the seat and backrest mechanism as the edges of the frame can be sharp.

diagn.com



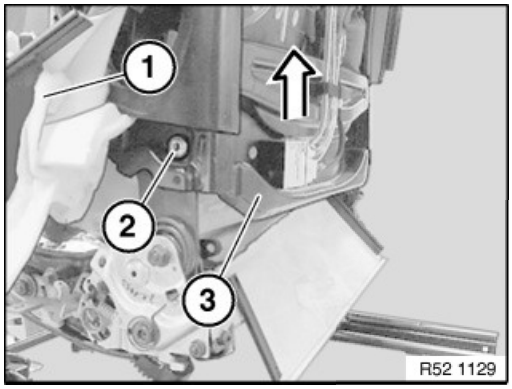
Unhook seat cover on left and right.

Unclip ball socket (1) from ball head on left and right.

Installation note:
Ball socket (1) must audibly snap into place.

Ball socket (1) must be able to move freely on the ball head.

Actuate rear catch (2) and remove guide for Bowden cable (3) by rotational movement towards the rear.



Unhook backrest cover (1) on left and right.

Release screws (2) on left and right.

Tightening torque 52 10 2 AZ.

Remove backrest frame (3) completely towards top.

Replacement:

- Remove backrest cover with upholstery.

cardiagn.com

52 13 526 Removing and installing/replacing left or right seat mechanism

Necessary preliminary tasks:

- Removing backrest frame
- Remove seat cover with upholstery

When replacing, remount the following parts depending on the version:

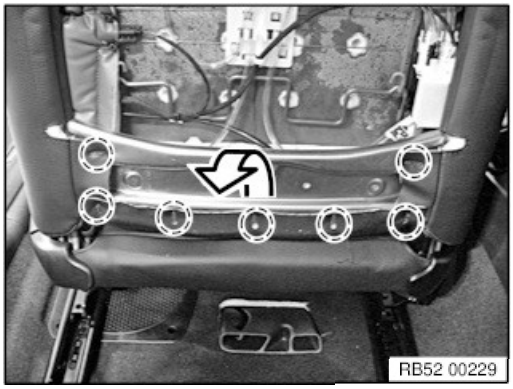
- Module for seat heating
- Control unit/module for seat adjustment
- Lower strap
- Backrest adjustment motor
- Seat height adjustment drive unit
- Forward/back seat adjustment drive unit
- Drive unit for seat cushion tilt adjustment
- Wiring harness to seat mechanism
- Position sensor for front seat
- Front seat sensor
- Seat occupancy mat for SBE

cardiagn.com

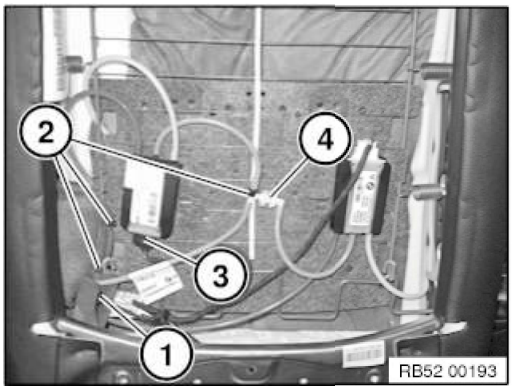
52 15 055 Removing and installing/replacing lumbar support on front seat

Necessary preliminary tasks:

- Remove rear panel on front seat



Detach backrest cover from backrest frame in marked area.



Unlock and disconnect plug connection (1) on lumbar support pump.

Unlock and disconnect plug connection (3) on valve body.

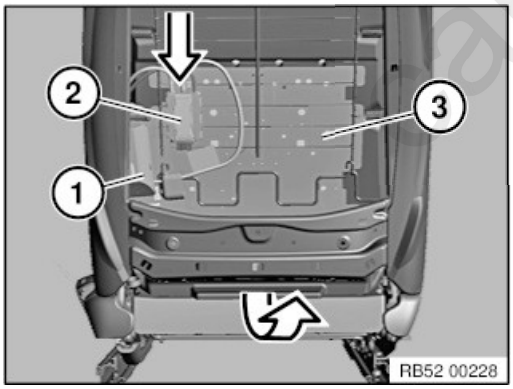
Release cable strap (2).

Installation note:
Completely remove remnants of cable ties.

Replace faulty cable straps.

Version with backrest width adjustment only.

Unlock and disconnect additional quick connector (4).



Detach valve body (2) from spring wire.

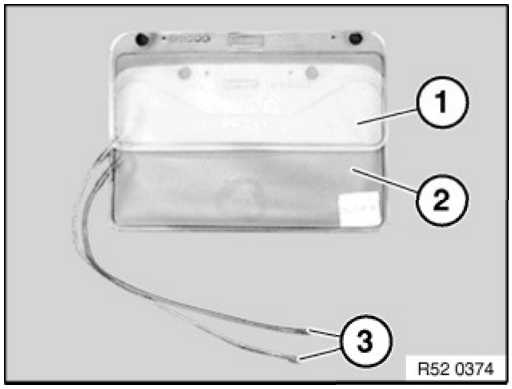
Detach lumbar support (3) from spring wire.

Press padding forward a little.

Carefully pull out lumbar support pump (1) downward with lumbar support (3) and valve body (2).



Installation note:
Attach lumbar support on second and fifth wire from the bottom.



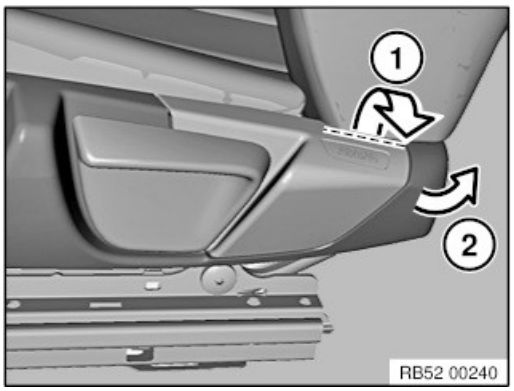
Installation note:
Check lumbar support at top (1) and bottom (2) for damage.

Air hoses (3) must not be kinked.

Installation note:
Run a function check.

cardiagn.com

52 13 040 Removing and installing/replacing outer cover on left or right front seat (manual)

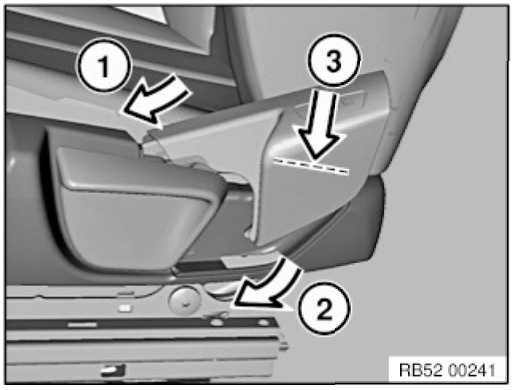


Move backrest to full rearward position.

Grip end fitting cover in marked area between cushion and cover.

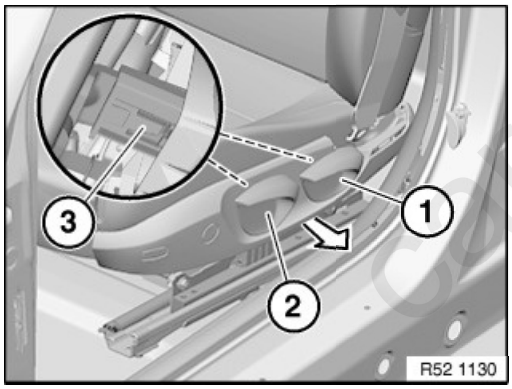
Unclip end fitting cover in direction of arrow (1).

Feed out end fitting cover (2) in direction of arrow.



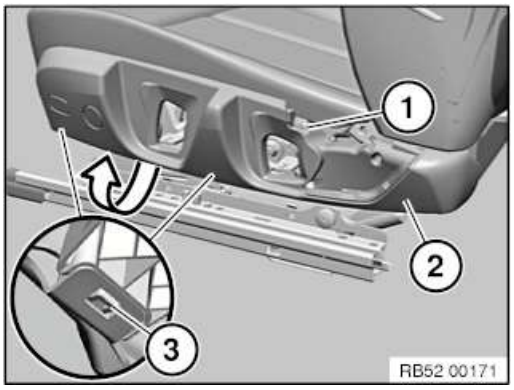
Installation note:
Install end fitting cover as follows:

1. Insert cover with front guide in cover
2. Insert cover in direction of arrow downwards in covering
3. Engage top cover in marked area in covering.



Pull the handle up and lift up lock (3).

Pull off the handle for the backrest angle adjustment (1) and handle for seat height adjustment (2).

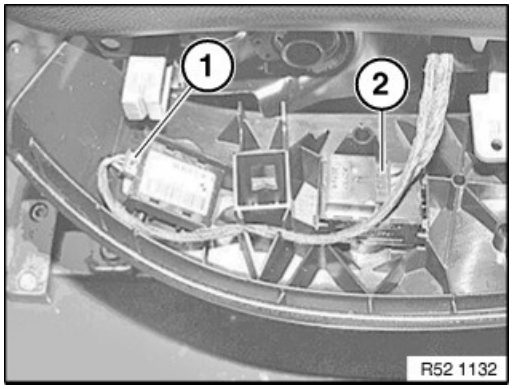


Release screw (1).

Lever latch mechanism (3) of the cover (2) out of seat mechanism.

Remove cover (2) in direction of arrow from seat mechanism.

cardiagn.com



If necessary, unlock plug connection (1) backrest width adjustment and disconnect.

If necessary, unlock plug connection (2) lumbar support and disconnect.

Replacement (depending on version):

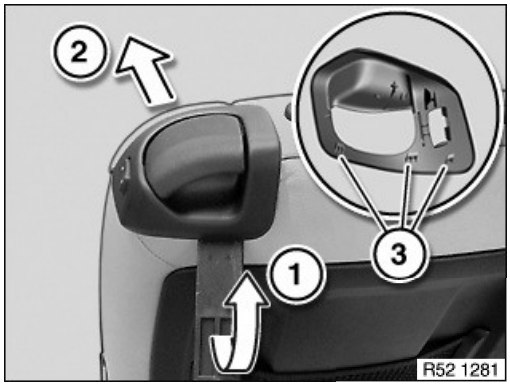
- Remount switch for backrest width adjustment
- Remount switch for lumbar support

cardiagn.com

52 13 034 Removing and installing/replacing release mechanism on left or right front seat

Necessary preliminary tasks:

- Remove front seat
- Remove rear panel



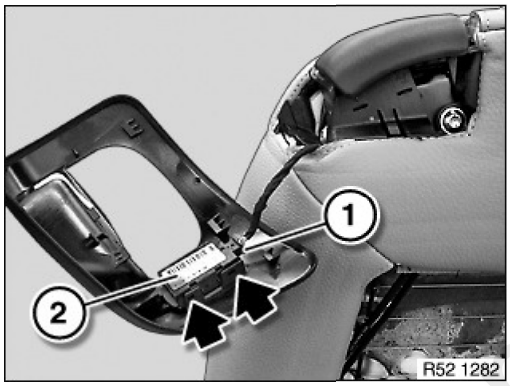
Lever out cover with plastic wedge in upward direction (1).

Slide cover forward (2) and feed out via release handle.

Installation note:

Check that the lugs (3) are correctly seated in the release mechanism.

Snap cover into place.

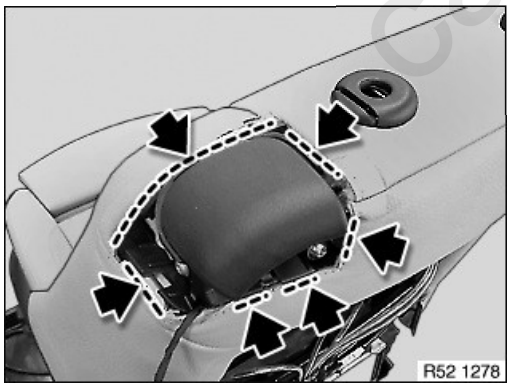


Only for front seat (electrical):

Unfasten plug connection (1) and disconnect.

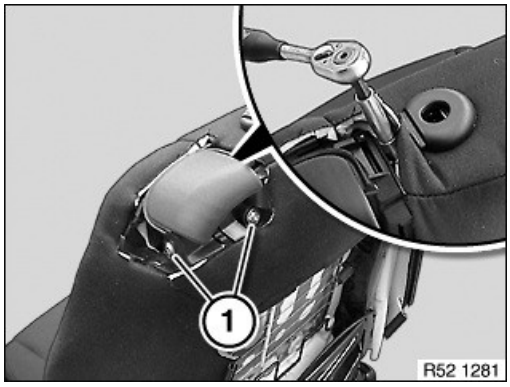
Replacement only:

Unclip switch (2).



Detach backrest cover in marked area.

carldiag1.com

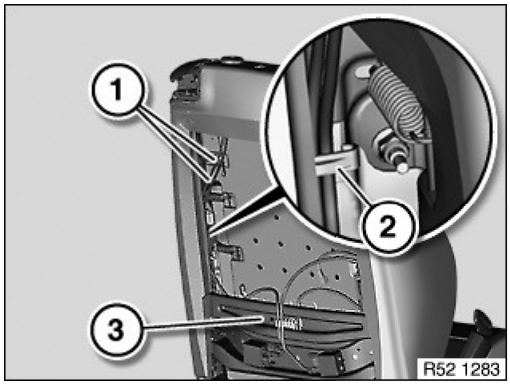


Important!

There is a risk of mixing up the screws.

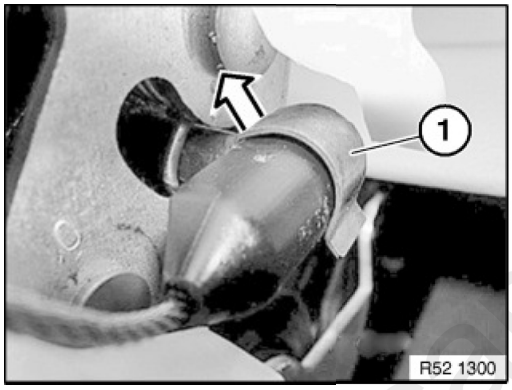
Release screws (1).

Release screw between backrest cover and release mechanism.



Feed Bowden cables (1) out of cable clip (2).

Clip cable clip (3) out of backrest frame.

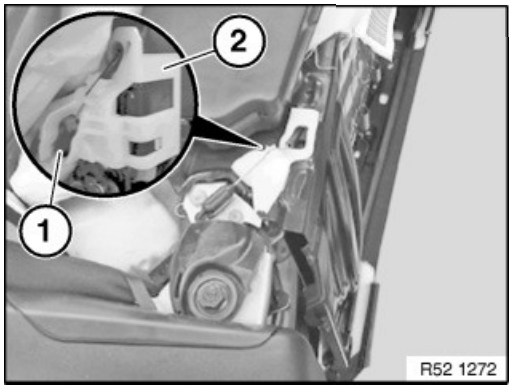


Unhook seat cover on left and right.

Lever out retaining clip (1) on the left and right.

Installation note:
Replace retaining clip (1).

Make sure the retaining clip (1) is correctly seated.



Unclip ball socket (1) from ball head on left and right.

Installation note:
Ball socket (1) must audibly snap into place.

Ball socket (1) must be able to move freely on the ball head.

Feed Bowden cable out of guide (2) and backrest frame.

cardiagn.com

52 13 405 Replacing backrest cover for left or right front seat (normal / manual)

Special tools required:

- 52 0 050

Necessary preliminary work:

- Remove front seat
- Remove rear panel
- Remove guide sleeves for head restraint
- Remove cover of release mechanism

Important!

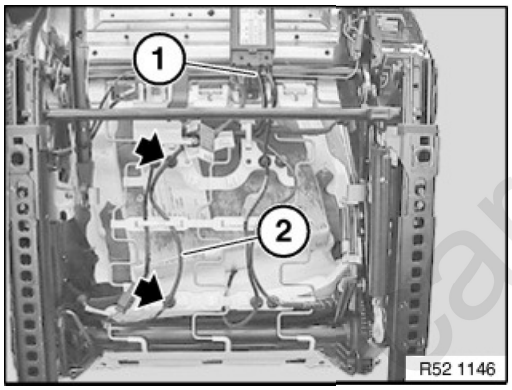
Risk of damage on sharp-edged seat mechanism.

Guide all cables carefully through seat and backrest mechanism.

Make sure cable is routed without kinks and tension.

Make sure plug connections are correctly locked.

Make sure connectors are correctly seated in latch mechanisms.



Version with seat heating only:

Unlock plug connection (1) for seat heating and disconnect.

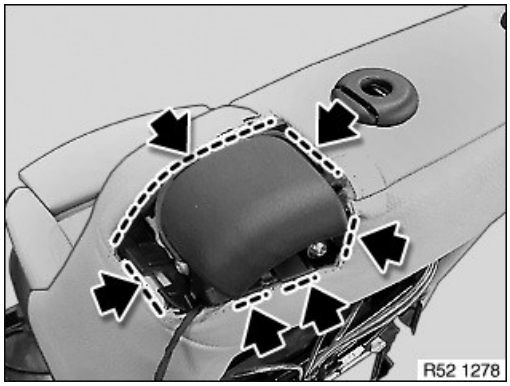
Detach cable strap.

Detach seat heater cable (2) from cable clips on seat mechanism.

Installation note:

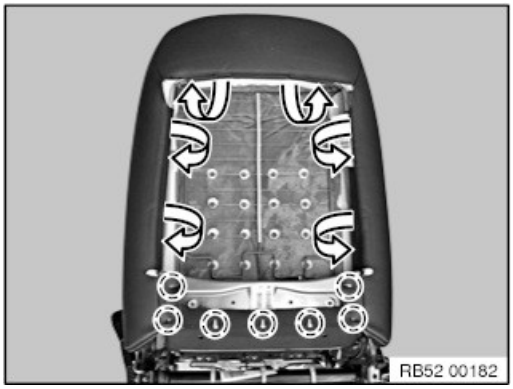
Plug connection is encoded to prevent incorrect connection.

Replace cable strap.



Detach backrest cover in marked area.

carclagn.com



Lift welt out of backrest frame.

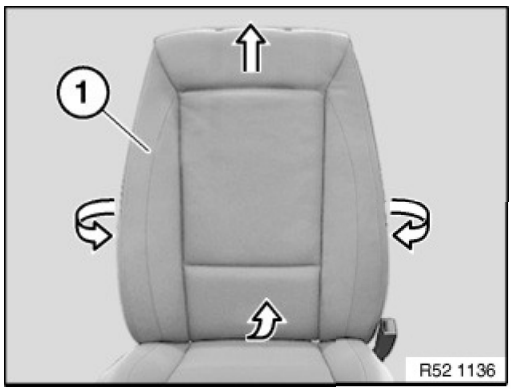
Detach backrest cover at bottom from the metal tabs in the marked area.

Carefully slide bracing cloth with foam through backrest gap and seat structure.

If applicable, route cable carefully through seat and backrest mechanics as the edges of the frame may be sharp.

Installation note:
Slide foam completely through backrest gap and seat structure.

Make sure foam and bracing cloth are correctly fitted.



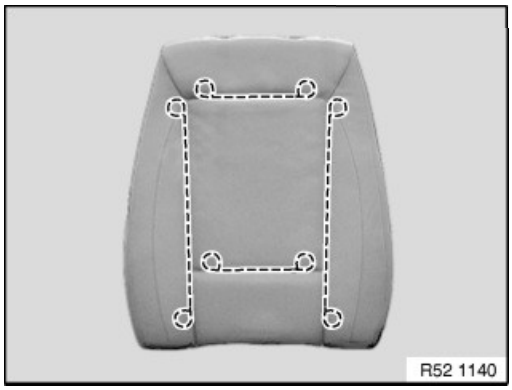
Pull off backrest cover (1) with upholstery sideways and towards top from backrest frame.



Release all clamps in marked area.

Remove backrest cover from padding.

Note:
Remove all remnants of clamps from backrest cover and upholstery.



Installation note:
Bend new clamp (2) with special tool 52 0 050 .

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in backrest cover
5. Backrest cover



Replacement only:

Pull trim wires out of backrest cover.

Cut new backrest cover to size and insert trim wires.

cardiagn.com

52 15 451 Replacing backrest heating element for left or right sports seat



Operation is described in:

- Replace heating elements for front seat left or right

cardiagn.com

52 15 450 Replacing cushion heating element for left or right front seat



Operation is described in:

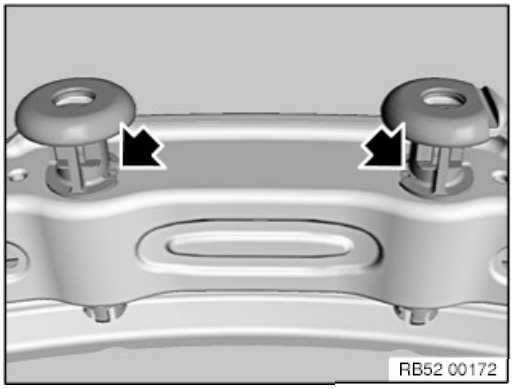
- Replace heating elements for front seat left or right

cardiagn.com

52 13 ... Replacing guide sleeves for front left or right head restraint

Necessary preliminary work:

- Remove front head restraint

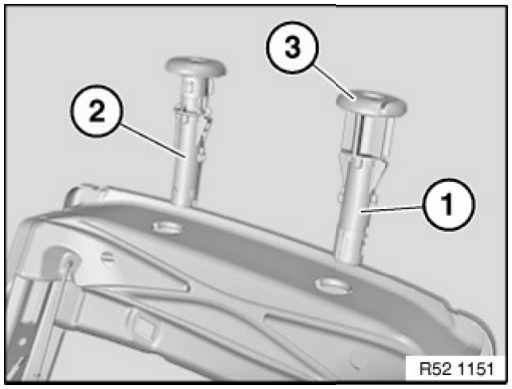


Note:
Shown here without backrest cover for a better overview.

Push the backrest cover with upholstery down next to the guide sleeve.

Carefully insert screwdriver between the backrest cover and guide sleeve.

Unlock the retaining lug with a screwdriver and remove the guide sleeves through the top.



Installation note:
Install guide sleeves as follows:

1. Guide sleeve with pushbuttonÂ (3) in direction of travel left
2. Guide sleeve without pushbutton in direction of travel right

cardiagn.com

52 13 455 Replacing heating elements for front seat (normal) left or right

Necessary preliminary tasks:

- Remove seat cover

Note:
Heating element is bonded to the foam section and cannot be separated from each other without incurring damage.

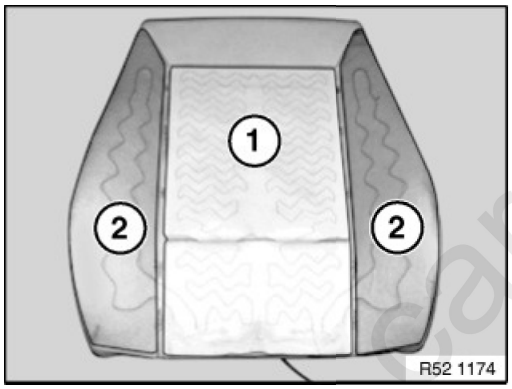
Foam section and heating mat must be replaced.

Check new foam part:

- No obvious damage or material defects
- All trim wires present in foam
- No bubbles in foam part
- No dirt contamination on foam or residual foam
- Pay attention to foam part on left and right

Check new heating mat:

- No obvious damage or material defects
- All tear-off film pieces present
- Note variant by examining label on cable



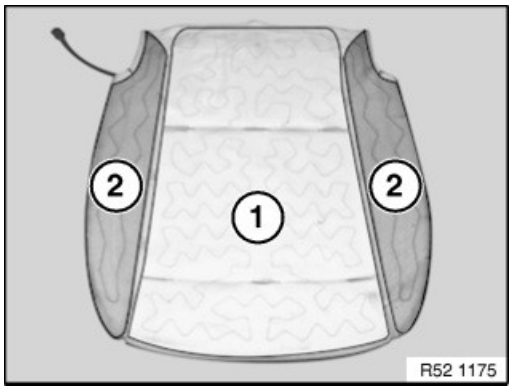
Guide cable for backrest heating through foam hole.

Stick on main section (1):

- Pull adhesive film pieces off main section (1) and stick to upper edge of main section foam until flush

Stick on bead section (2):

- Pull adhesive film pieces off bead section (2) and stick on heating mat along bead section edge.
- Press down evenly in outwards direction



Guide cable for seat heating through foam hole.

Stick on main section (1):

- Pull adhesive film pieces off main section (1) and stick to upper edge of main section foam until flush

Stick on bead section (2):

- Pull adhesive film pieces off bead section (2) and stick on heating mat along bead section edge.
- Press down evenly in outwards direction

cardiagn.com



Check laying of heating mats:

- Heating mats laid without folds
- Heating mats correctly positioned
- All bonding surfaces stuck on

Note:
Carry out function check.

cardiagn.com

52 13 415 Replacing left or right upholstery for front seat (normal / manual)



Operation is described in:

- Replacing seat cover on left or right front seat.

cardiagn.com

52 13 420 Replacing left or right upholstery for front seat backrest (normal / manual)



Operation is described in:

- Replacing backrest cover for left or right front seat

cardiagn.com

52 13 410 Replacing seat and backrest cover for left or right front seat (normal/manual)



Operations are described in:

- Replacing seat cover for front seat
- Replacing backrest cover for front seat

cardiagn.com

52 13 400 Replacing seat cover on left or right front seat (normal/manual)

Special tools required:

- 52 0 050

Necessary preliminary work:

- Remove front seat
- Remove outer cover on front seat
- Remove inner cover on front seat

Warning!

Note airbag safety regulations!

Incorrect handling can activate airbag and cause injury.

Important!

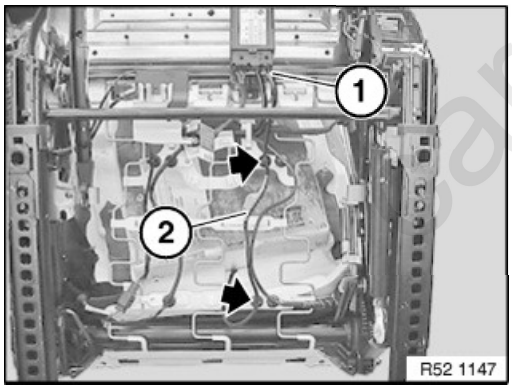
Risk of damage on sharp-edged seat mechanism.

Guide all cables carefully through seat and backrest mechanism.

Make sure cable is routed without kinks and tension.

Make sure plug connections are correctly locked.

Make sure connectors are correctly seated in latch mechanisms.



Version with seat heating only:

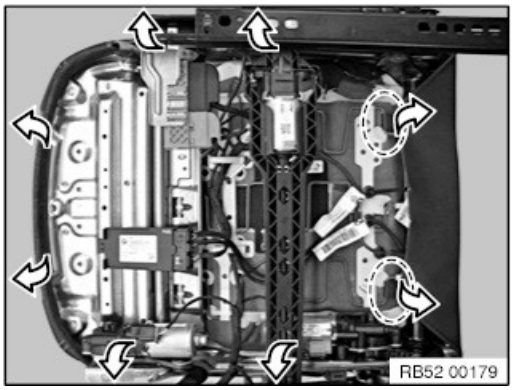
Unlock plug connection (1) for seat heating and disconnect.

Detach cable strap.

Detach seat heater cable (2) from cable clips on seat mechanism.

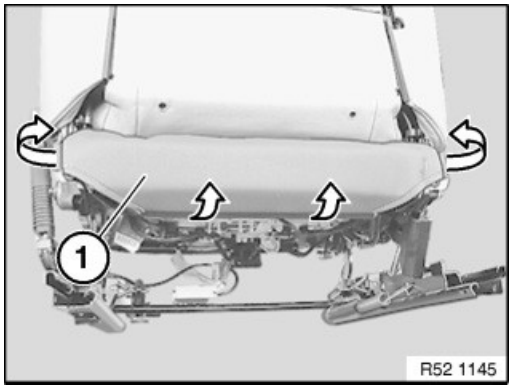
Installation note:
Plug connection is encoded to prevent incorrect connection.

Replace cable strap.



Fully lift welt of seat cover out of seat frame.

Disengage seat cover at rear.

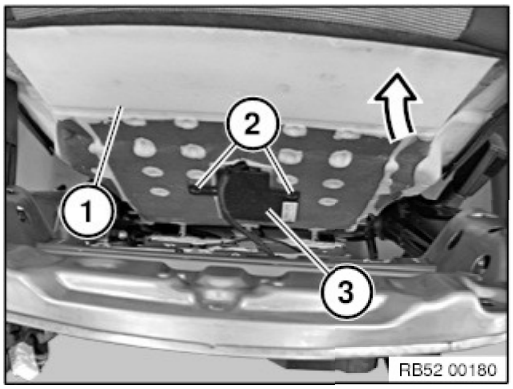


Carefully slide bracing cloth (1) with foam through backrest gap and seat structure.

If applicable, route cable carefully through seat and backrest mechanics as the edges of the frame may be sharp.

Installation note:
Slide foam completely through backrest gap and seat structure.

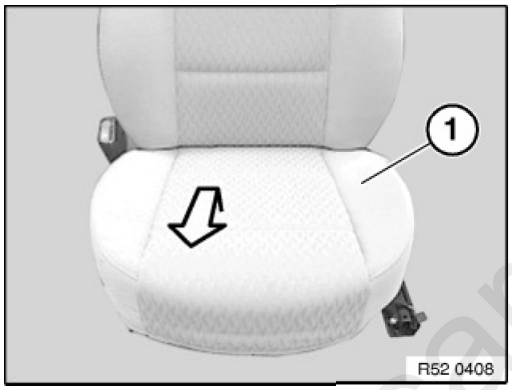
Make sure foam and bracing cloth are correctly fitted.



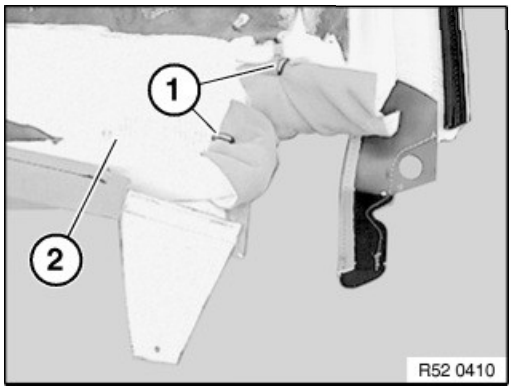
<u>Front passenger seat only:</u>

Lift seat cover with upholstery (1) at front and unclip mounting (2) for seat occupancy detection (SBE) (3).

Remove SBE (3) from upholstery (1) and place on flexmat.

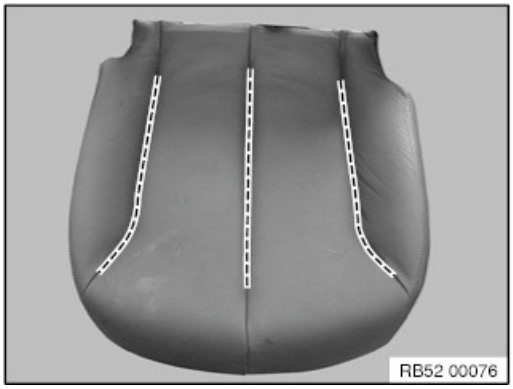


Remove seat cover (1) with padding towards front/top.



Release all clamps (1) from seat cover (2).

cardiagn.com

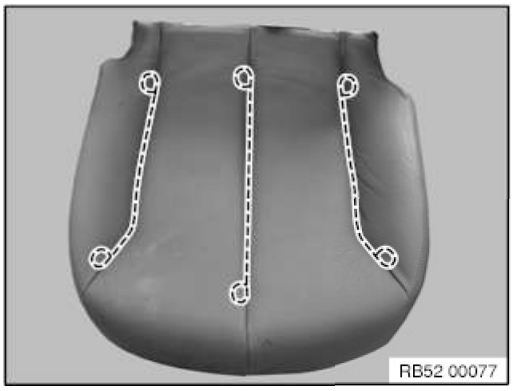


Release all clamps in marked area of trim wires.

Remove seat cover from upholstery.

Important!

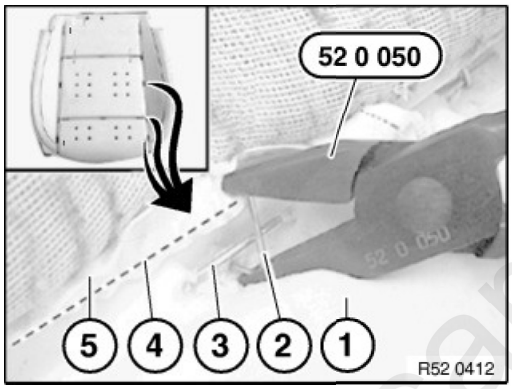
Remove all remnants of clamps from seat cover and upholstery.



Replacement only:

If applicable, pull trim wires out of seat cover.

Cut new seat cover to size and insert trim wires.

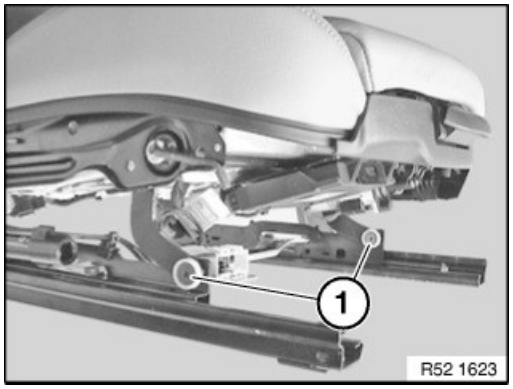


Installation note:
Bend new clamps (2) with special tool 52 0 050 .

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in cover
5. Seat cover

cardiagn.com

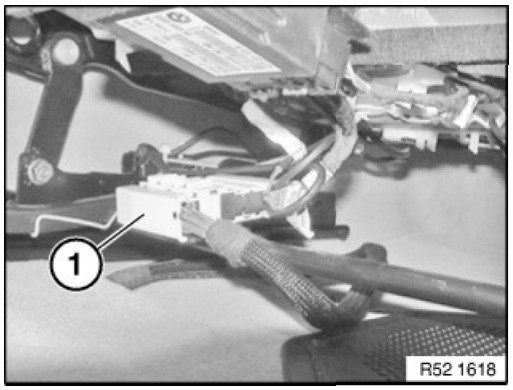
52 14 ... Additional work in event of faulty drive/gearing for longitudinal adjustment



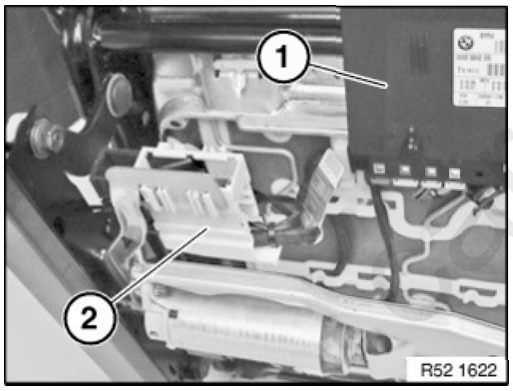
Release screws (1) of swinging arms for seat height adjustment.

Installation note:
Carefully bend side section back and feed swinging arm out of top rail.

Tilt front seat back.

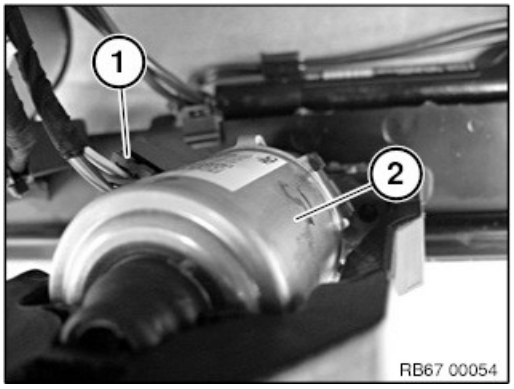


Unfasten plug connection (1) and disconnect.



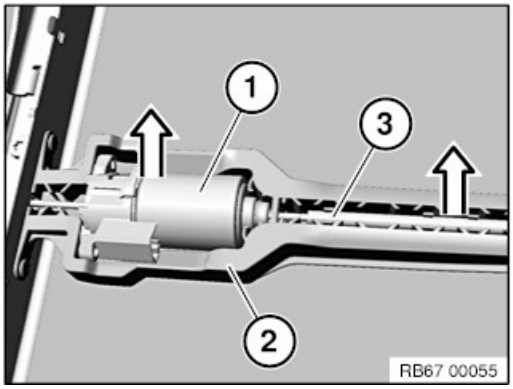
Unclamp central connector (2) from seat mechanism.

Unclip control units (1).



Removal of electric motor for forward/back seat adjustment:

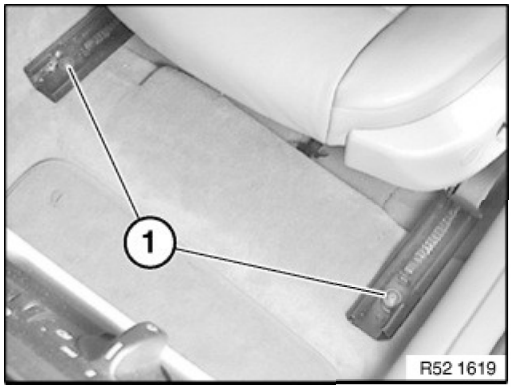
Unlock plug connection (1) and disconnect.



Lift long flex shaft (3) out of guide in direction of arrow.

Pull out flex shaft (3) from electric motor for forward/back seat adjustment (1).

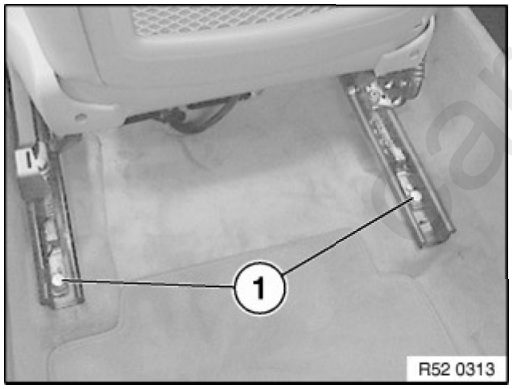
Remove electric motor for forward/back seat adjustment (1) in direction of arrow from holder (2).



Release screws (1) at front.

Installation note:
Install new drive for longitudinal seat adjustment.

Move front seat forwards.



Release screws (1) at rear.

Important!

Cover door sill with protective covers (risk of damage).

Lift out front seat and assemble.

Installation note:

- Make sure flex shaft is correctly fitted on drive
- Carpet must not get between seat rails and floor panel in area of attachment points (squeaking noises)
- Powerlok screws must be replaced and must not be reused
- Powerlok screws are mechanical screw locks with trilobular threads
- Insert all screws loose to avoid twisting
- Tighten down all screws to specified torque

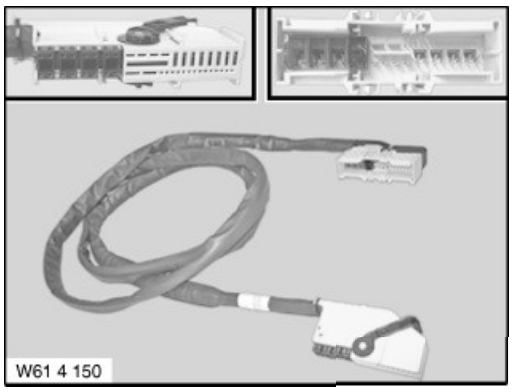
  Tightening torque 52 10 1AZ.

cardiagn.com

52 14 ... Performing function check with adapter cable (for seat repairs)

Special tools required:

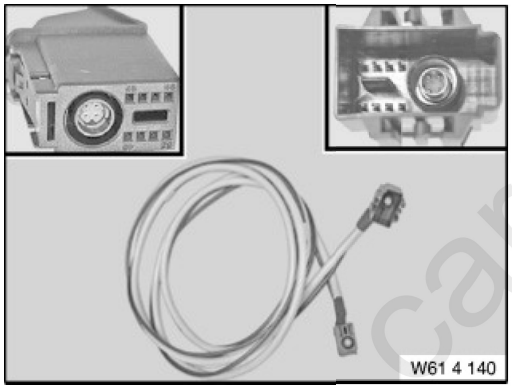
- 61 4 140
- 61 4 150



Seat function check: *Note:*
The function check on a repaired driver's or front passenger seat can be performed outside the vehicle by using adapter cable 61 4 150 .

Application:

Adapter cable is connected to vehicle wiring harness and removed seat 61 4 150 .



RSE (rear passenger compartment monitor) function check *Note:*
The function check of the RSE (rear passenger compartment monitor) on a repaired driver's or front passenger seat can be performed outside the vehicle by using adapter cable 61 4 140 .

Application:

Adapter cable is connected to vehicle wiring harness and removed seat 61 4 140 .

cardiagn.com

52 13 001 Removing and installing front seat, driver's side

Necessary preliminary tasks:

- Disconnect battery earth lead
- Remove head restraint

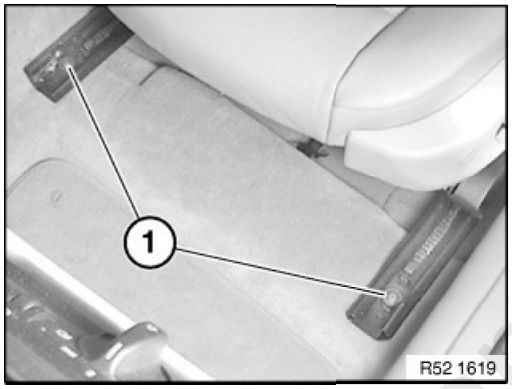
Important!

An airbag module and a pyrotechnical seat belt tensioner are installed in the front seat.

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

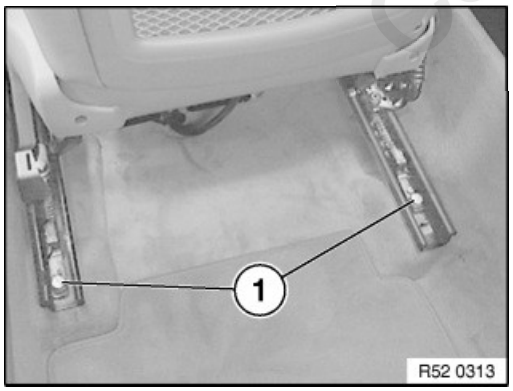
Installation note:

- Powerlok screws must be replaced and must not be reused
- Powerlok screws are mechanical screw locks with trilobular threads



Move seat to upper back position.

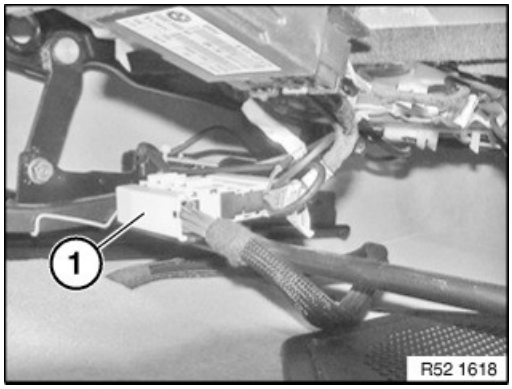
Release and dispose of screws (1).



Adjust the seat to the front top.

Release and dispose of screws (1).

cardiagn.com



Disconnect plug connection (1).

Important!

Cover door sill with protective covers (risk of damage).

Lift out front seat.

Installation note:

- Carpet must not get between seat rails and floor panel in area of attachment points (squeaking noises)
- Replace microencapsulated screws
- Insert all screws loose to avoid twisting
- Tighten down all screws to specified torque

  Tightening torque 52 10 01AZ.

Warning!

When carrying out further work on the front seat, it is absolutely imperative to observe the safety regulations on handling airbag modules and pyrotechnical seat belt tensioners

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

cardiag.com

52 13 002 Removing and installing front seat, passenger's side

Necessary preliminary tasks:

- Disconnect battery earth lead
- Remove head restraint

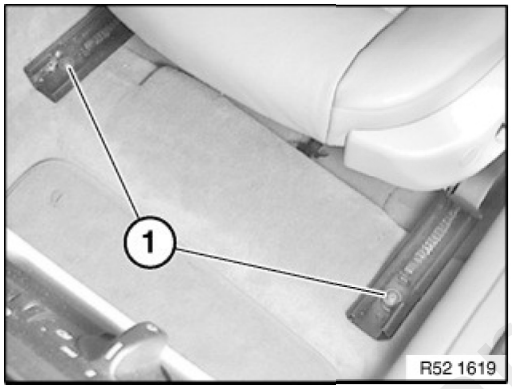
Important!

An airbag module and a pyrotechnical seat belt tensioner are installed in the front seat.

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

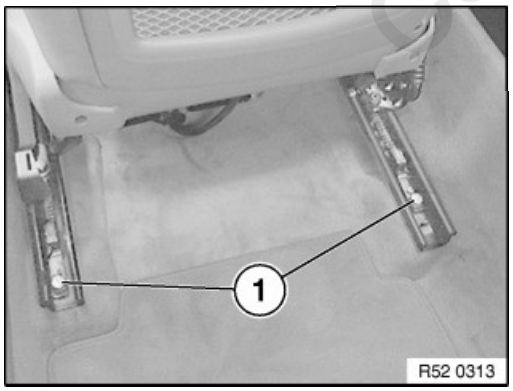
Installation note:

- Powerlok screws must be replaced and must not be reused
- Powerlok screws are mechanical screw locks with trilobular threads



Move seat to upper back position.

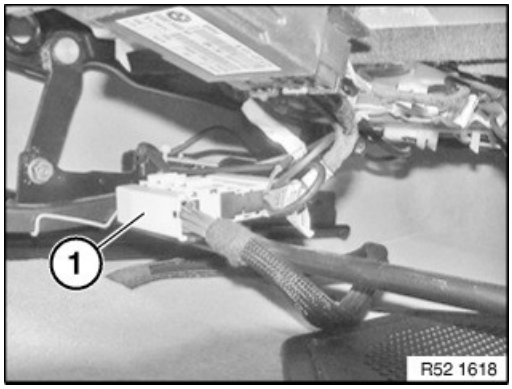
Release and dispose of screws (1).



Adjust the seat to the front top.

Release and dispose of screws (1).

cardiagn.com



Disconnect plug connection (1).

Important!

Cover door sill with protective covers (risk of damage).

Lift out front seat.

Installation note:

- Carpet must not get between seat rails and floor panel in area of attachment points (squeaking noises)
- Replace microencapsulated screws
- Insert all screws loose to avoid twisting
- Tighten down all screws to specified torque

  Tightening torque 52 10 01AZ.

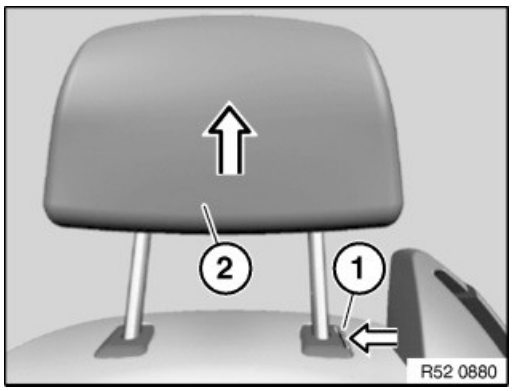
Warning!

When carrying out further work on the front seat, it is absolutely imperative to observe the safety regulations on handling airbag modules and pyrotechnical seat belt tensioners

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

cardiag.com

52 13 390 Removing and installing or replacing front left or right head restraint



Press latch mechanism (1) and lift out head restraint (2).

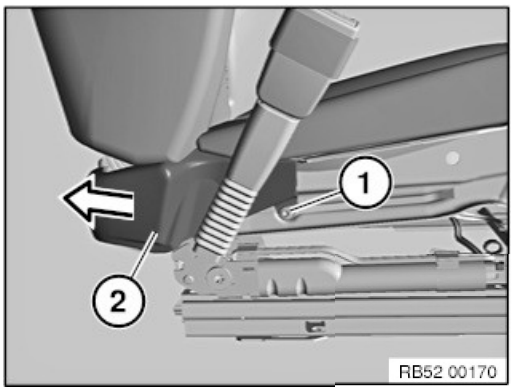
cardiagn.com

52 13 041 Removing and installing or replacing inner cover on left or right front seat

Necessary preliminary tasks:

- Remove front seat

Note:
Completely move the electric front seat to the top prior to removal.

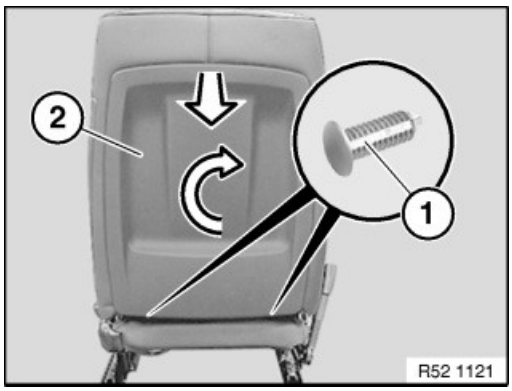


Release screw (1).

Remove cover (2) in direction of arrow.

cardiagn.com

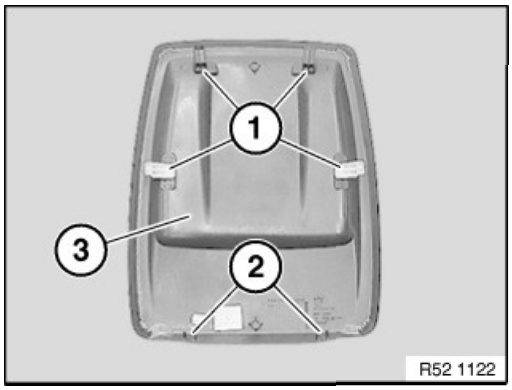
52 13 198 Removing and installing or replacing rear panel on left or right front seat backrest



Release clips (1) with diagonal cutting pliers.

Remove rear panel (2) downwards with a rotational movement.

Note:
Remove remnants of clips.



Installation note:
Retaining hooks (1) and bore holes (2) on rear panel (3) must not be damaged.

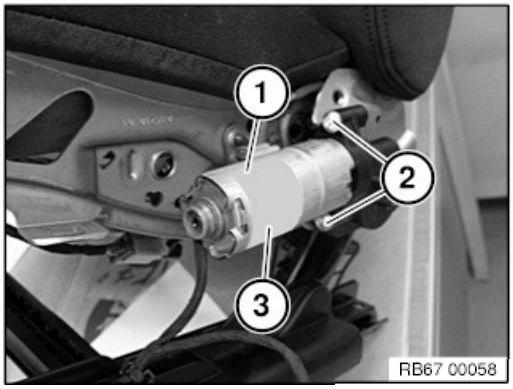
Replace faulty clips.

cardiagn.com

67 31 530 Removing and installing/replacing backrest adjustment motor

Necessary preliminary tasks:

- Remove covers on front seat



Unfasten plug connection (1) and disconnect.

Unfasten screws (2).

Remove electric motor (3).

Note:
Carry out a function check.
Replacement:
Initialise backrest adjustment motor.

cardiagn.com

52 13 030 Removing and installing/replacing backrest frame at left or right front seat

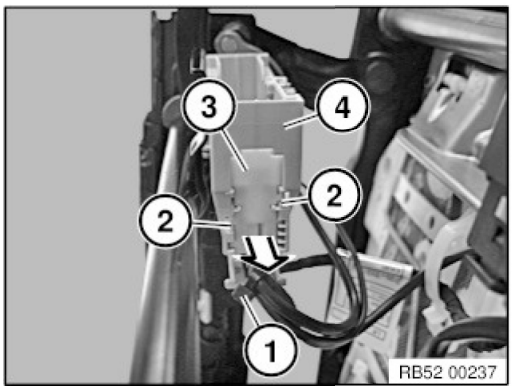
Important!

When working on the front seat it is absolutely essential to observe the safety regulations on handling airbag modules.

Improper handling may trigger the side airbag and as a result cause injuries.

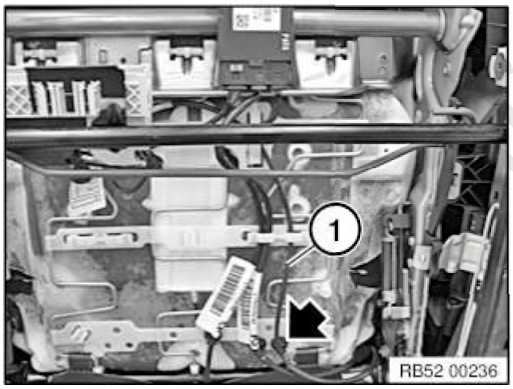
Necessary preliminary tasks:

- Remove front seat
- Remove rear panel on front seat backrest



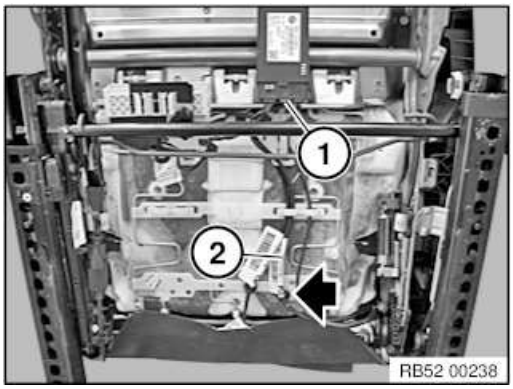
Cut open cable strap (1).

Press locks (2) outwards and at the same time remove connector (3) in direction of arrow from connector housing (4).



Unclip airbag wiring harness (1) in marked area.

Release airbag wiring harness (1) from cable clips on seat mechanism.



Version with seat heating only:

Unfasten plug connection (1) and disconnect.

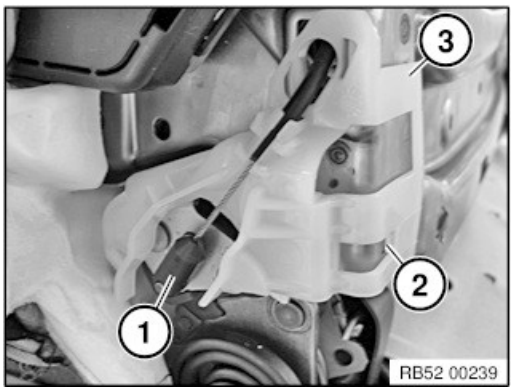
Unclip wiring harness (2) in marked area.

Release wiring harness (2) from cable clips on seat mechanism.

Important!

Feed all the wiring harnesses carefully through the seat and backrest mechanism as the edges of the frame can be sharp.

diagn.com



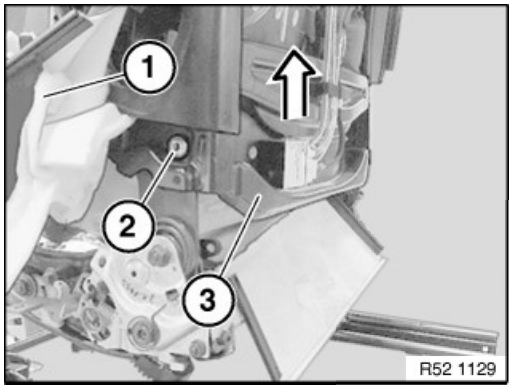
Unhook seat cover on left and right.

Unclip ball socket (1) from ball head on left and right.

Installation note:
Ball socket (1) must audibly snap into place.

Ball socket (1) must be able to move freely on the ball head.

Actuate rear catch (2) and remove guide for Bowden cable (3) by rotational movement towards the rear.



Unhook backrest cover (1) on left and right.

Release screws (2) on left and right.

Tightening torque 52 10 2 AZ.

Remove backrest frame (3) completely towards top.

Replacement:

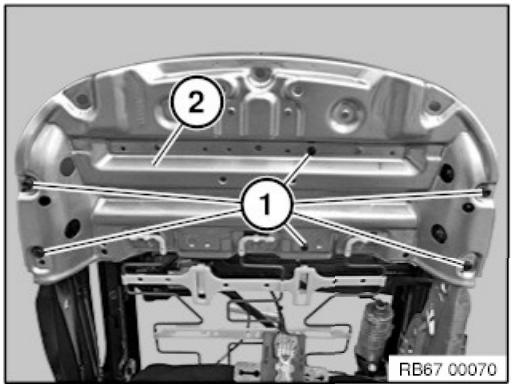
- Remove backrest cover with upholstery.

cardiagn.com

67 31 510 Removing and installing/replacing drive unit for seat cushion tilt adjustment

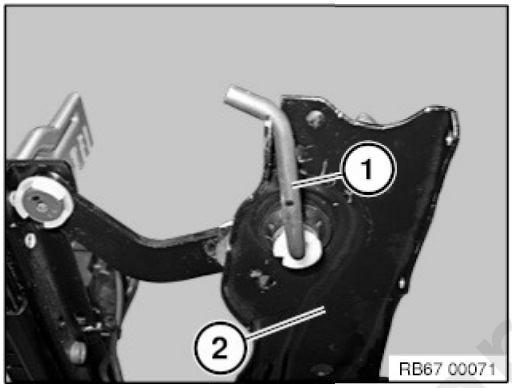
Necessary preliminary tasks:

- Remove driver's or front passenger seat
- Remove front seat cover

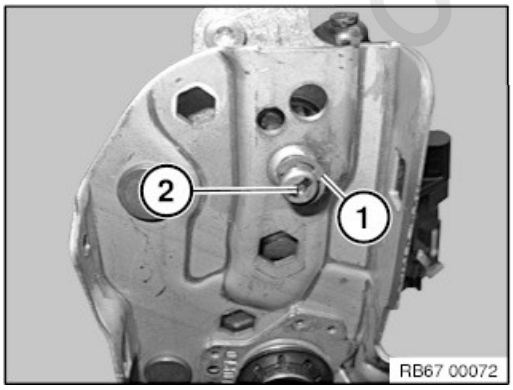


Release screws (1).

Remove cushion shell (2).

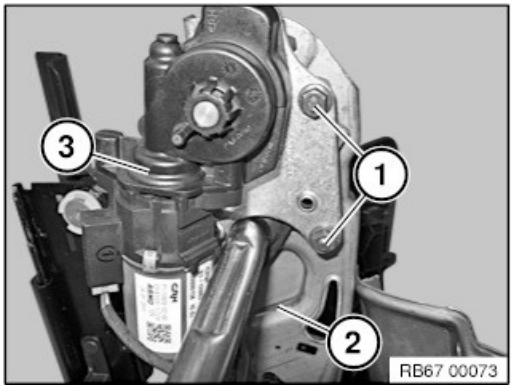


Detach spring (1) at seat frame (2).



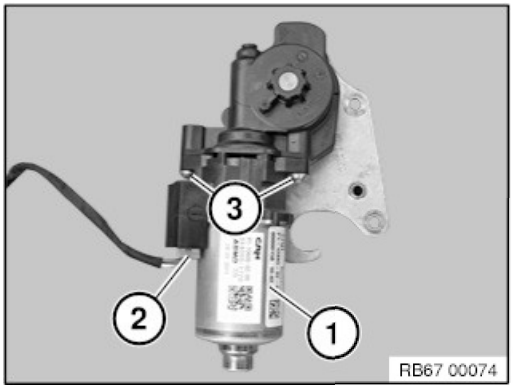
Remove fuse (1) from shaft (2).

cardiagn.com



Unscrew nuts (1).

Pull drive with transmission (3) out of seat frame (2) and remove.



Unfasten plug connection (2) and disconnect.

Release screws (3).

Tightening torque 67 31 1AZ.

Remove drive unit for seat cushion tilt adjustment (1).

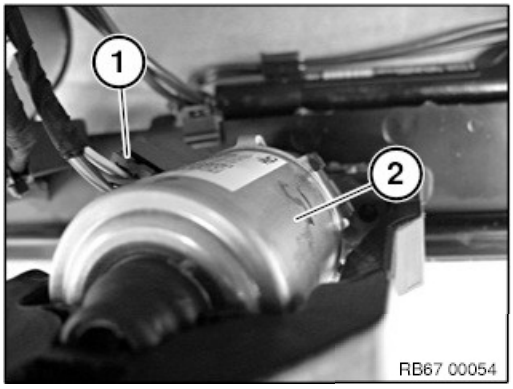
Note:
Carry out a function check.
Replacement:
Initialise seat height adjustment drive unit.

cardiagn.com

67 31 500 Removing and installing/replacing forward/back seat adjustment drive unit

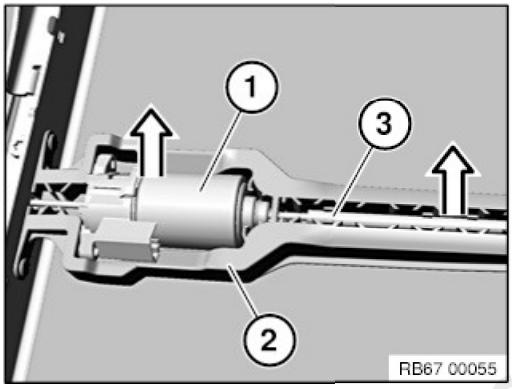
Necessary preliminary work:

- Raise front seat as far up as possible



Removal of electric motor for forward/back seat adjustment:

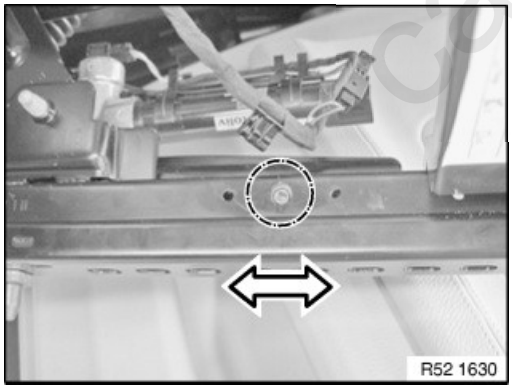
Unfasten plug connection (1) and disconnect.



Lift long flex shaft (3) out of guide in direction of arrow.

Pull out flex shaft (3) from electric motor for forward/back seat adjustment (1).

Remove electric motor for forward/back seat adjustment (1) in direction of arrow from holder (2).

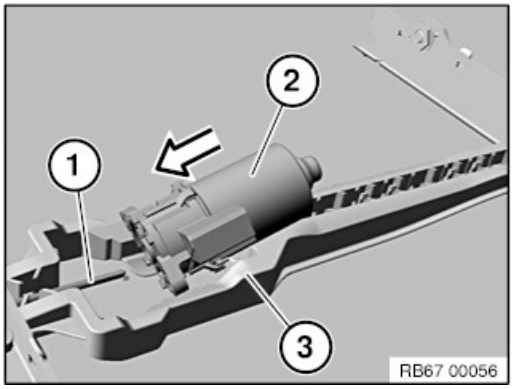


Installation of electric motor for forward/back seat adjustment:

Slide seat rail with opening forwards or back until bushing for flex shaft mounting of worm gear is flush.

Insert short flex shaft.

cardiagn.com

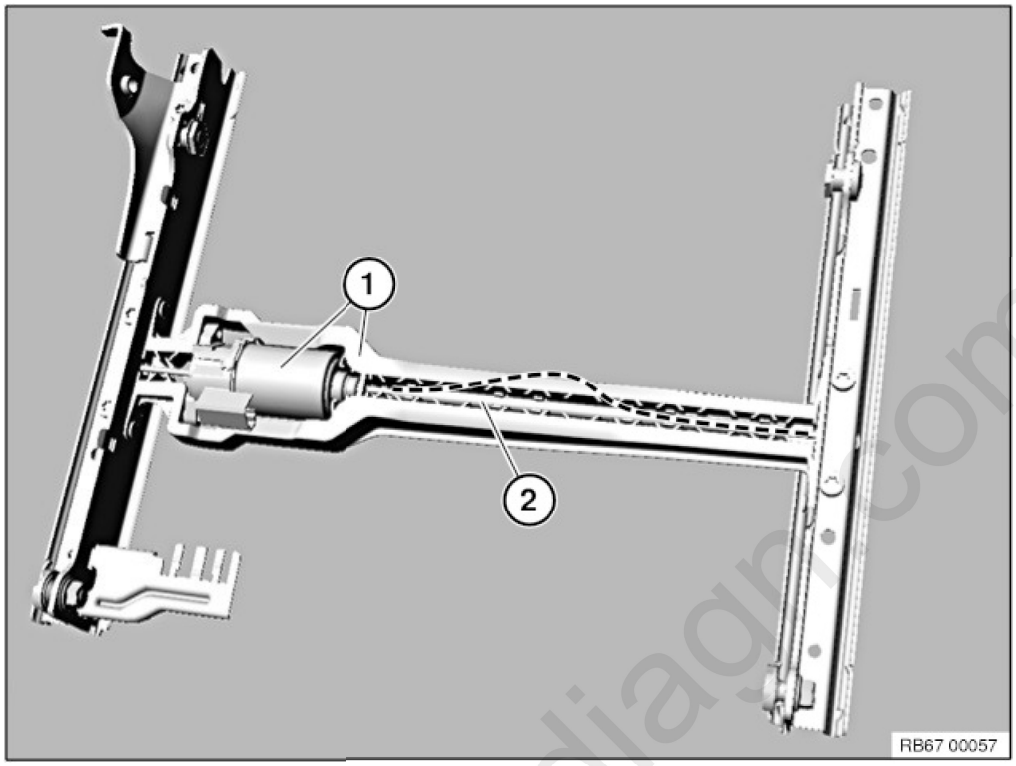


Connect electric motor for forward/back seat adjustment (2) to short flex shaft (1).

Installation note:
Make sure flex shaft (1) is correctly seated in electric motor (2) and seat rail mounting.

Clip in electric motor for forward/back seat adjustment (2) into holder (3).

Installation note:
Electric motor for forward/back seat adjustment (2) must audibly engage in holder (3).

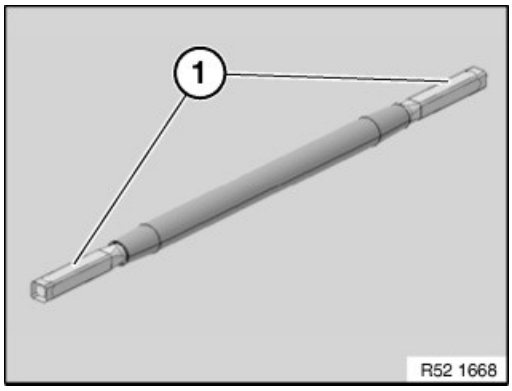


Insert long flex shaft (2) in worm gear on seat rail.

Bend long flex shaft (2) upwards and slide into electric motor for forward/back seat adjustment (1).

Clip in flex shaft into carrier plate.

Installation note:
Make sure flex shaft (2) is correctly seated in electric motor (1) and seat rail mounting.



Installation note:
PTFE hoses are shrink-fitted onto end pieces.

Check that hoses are free from damage.

cardiagn.com



Note:
Carry out a function check.
Replacement:
Initialize drive unit for forward/back seat adjustment.

cardiagn.com

52 13 526 Removing and installing/replacing left or right seat mechanism

Necessary preliminary tasks:

- Removing backrest frame
- Remove seat cover with upholstery

When replacing, remount the following parts depending on the version:

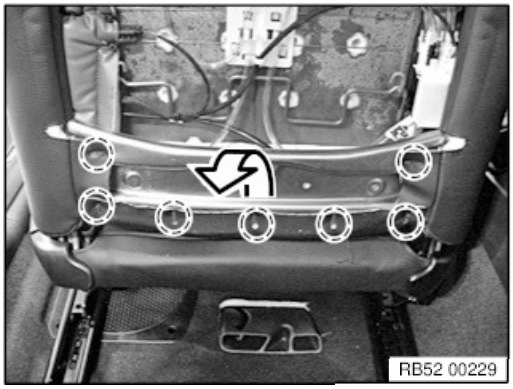
- Module for seat heating
- Control unit/module for seat adjustment
- Lower strap
- Backrest adjustment motor
- Seat height adjustment drive unit
- Forward/back seat adjustment drive unit
- Drive unit for seat cushion tilt adjustment
- Wiring harness to seat mechanism
- Position sensor for front seat
- Front seat sensor
- Seat occupancy mat for SBE

cardiagn.com

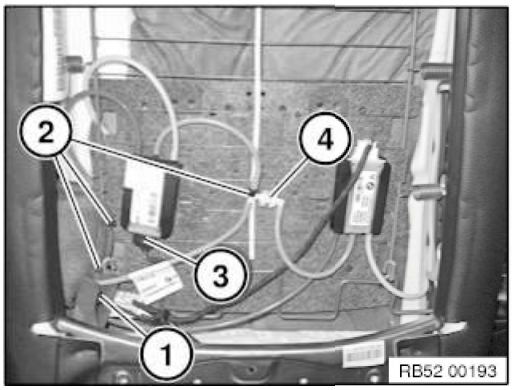
52 15 055 Removing and installing/replacing lumbar support on front seat

Necessary preliminary tasks:

- Remove rear panel on front seat



Detach backrest cover from backrest frame in marked area.



Unlock and disconnect plug connection (1) on lumbar support pump.

Unlock and disconnect plug connection (3) on valve body.

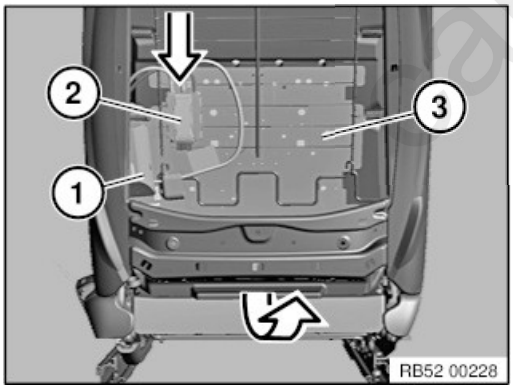
Release cable strap (2).

Installation note:
Completely remove remnants of cable ties.

Replace faulty cable straps.

Version with backrest width adjustment only.

Unlock and disconnect additional quick connector (4).



Detach valve body (2) from spring wire.

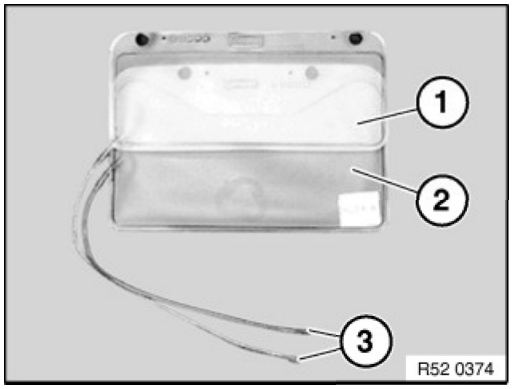
Detach lumbar support (3) from spring wire.

Press padding forward a little.

Carefully pull out lumbar support pump (1) downward with lumbar support (3) and valve body (2).



Installation note:
Attach lumbar support on second and fifth wire from the bottom.



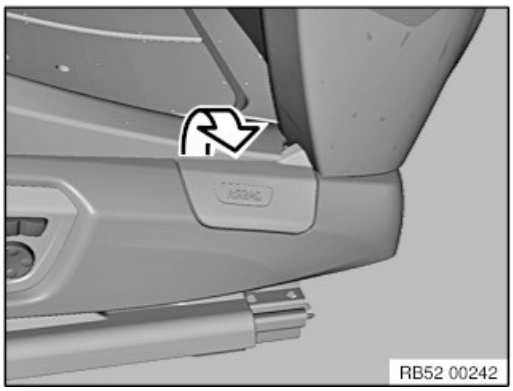
Installation note:
Check lumbar support at top (1) and bottom (2) for damage.

Air hoses (3) must not be kinked.

Installation note:
Run a function check.

cardiagn.com

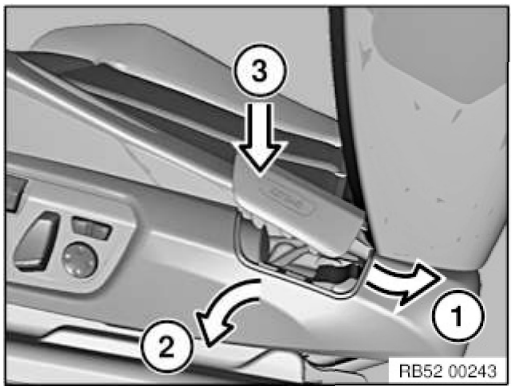
52 14 040 Removing and installing/replacing outer cover on left or right front seat (electric)



Move backrest to full rearward position.

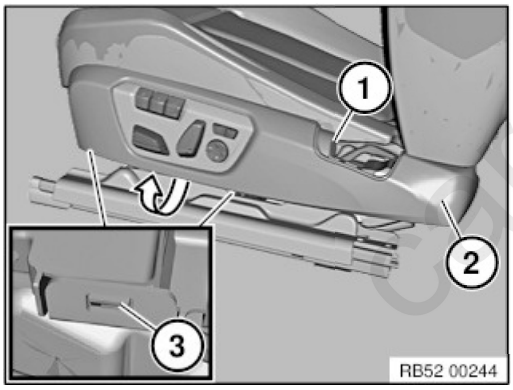
Grip end fitting cover centrally between seat belt strap and cover.

Unclip end fitting cover in direction of arrow.



Installation note:
Install end fitting cover as follows:

1. Insert cover with rear guide in covering.
2. Insert cover in direction of arrow downwards in covering
3. Engage top left of cover in covering.



Release screw (1).

Lever latch mechanism (3) of the cover (2) out of seat mechanism.

Remove cover (2) in direction of arrow from seat mechanism.

Unlock and disconnect plug connections behind from operating unit.

Installation note:
Cover must not be damaged.

Replace cover if necessary.

Replacement only:

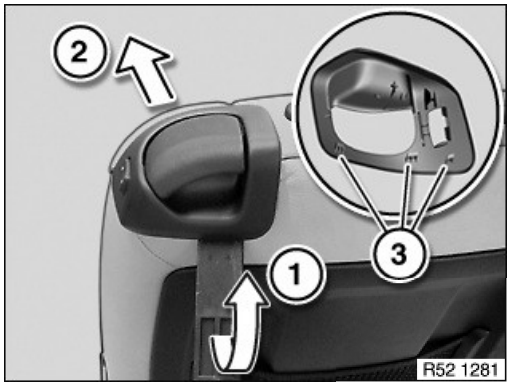
Remove operating unit for seat adjustment from cover.

cardiagn.com

52 13 034 Removing and installing/replacing release mechanism on left or right front seat

Necessary preliminary tasks:

- Remove front seat
- Remove rear panel



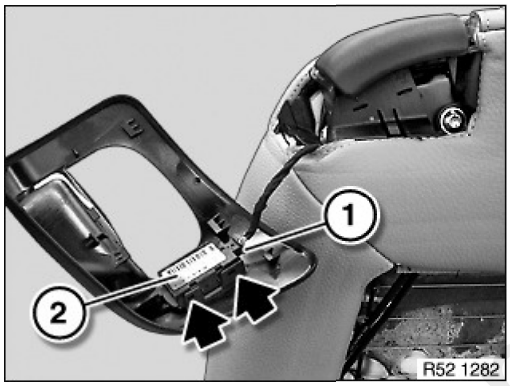
Lever out cover with plastic wedge in upward direction (1).

Slide cover forward (2) and feed out via release handle.

Installation note:

Check that the lugs (3) are correctly seated in the release mechanism.

Snap cover into place.

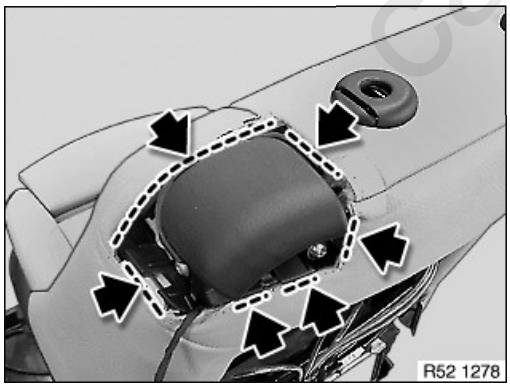


Only for front seat (electrical):

Unfasten plug connection (1) and disconnect.

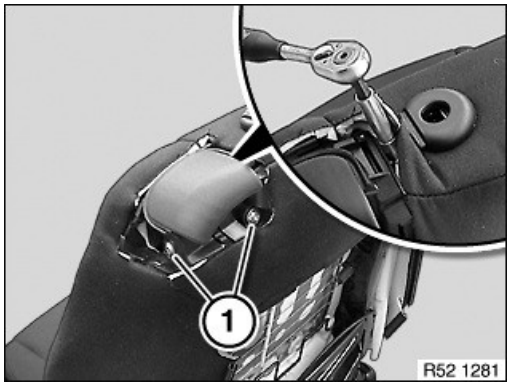
Replacement only:

Unclip switch (2).



Detach backrest cover in marked area.

carldiag1.com

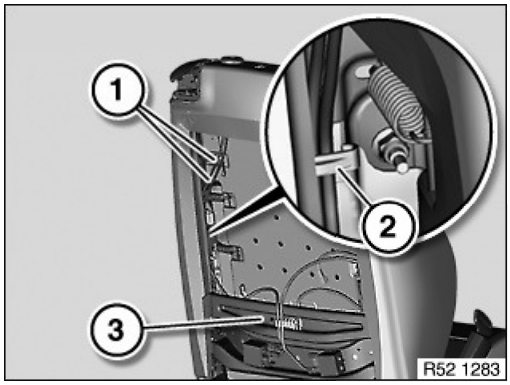


Important!

There is a risk of mixing up the screws.

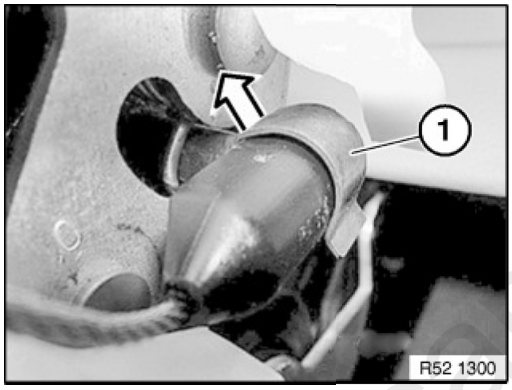
Release screws (1).

Release screw between backrest cover and release mechanism.



Feed Bowden cables (1) out of cable clip (2).

Clip cable clip (3) out of backrest frame.

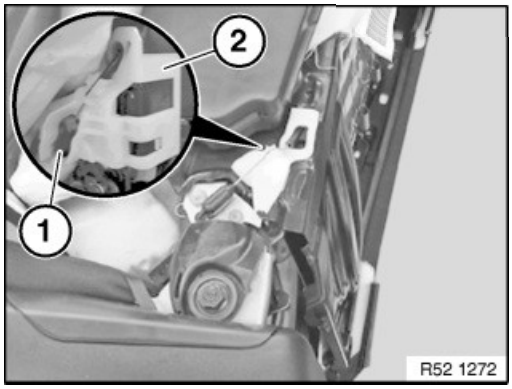


Unhook seat cover on left and right.

Lever out retaining clip (1) on the left and right.

Installation note:
Replace retaining clip (1).

Make sure the retaining clip (1) is correctly seated.



Unclip ball socket (1) from ball head on left and right.

Installation note:
Ball socket (1) must audibly snap into place.

Ball socket (1) must be able to move freely on the ball head.

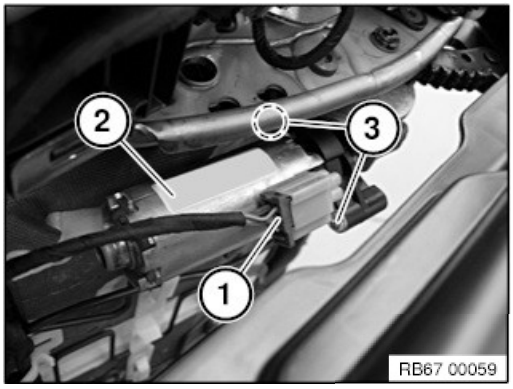
Feed Bowden cable out of guide (2) and backrest frame.

cardiagn.com

67 31 520 Removing and installing/replacing seat height adjustment drive unit

Necessary preliminary tasks:

- Remove driver's or front passenger seat



Set down front seat sideways on a suitable surface.

Unfasten plug connection (1) and disconnect.

Release screws (3).

Tightening torque 67 31 1AZ.

Feed out seat height adjustment drive unit (2) and remove.

Note:
Carry out a function check.
Replacement:
Initialise seat height adjustment drive unit.

cardiagn.com

52 14 400 Replace seat cover for left or right front seat (normal/electric)

Special tools required:

- 52 0 050

Necessary preliminary work:

- Remove front seat
- Remove outer cover on front seat
- Remove inner cover on front seat

Important!

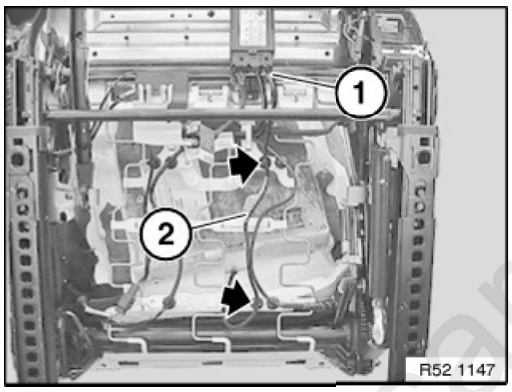
Risk of damage on sharp-edged seat mechanism.

Guide all cables carefully through seat and backrest mechanism.

Make sure cable is routed without kinks and tension.

Make sure plug connections are correctly locked.

Make sure connectors are correctly seated in latch mechanisms.



Version with seat heating only:

Unlock plug connection (1) for seat heating and disconnect.

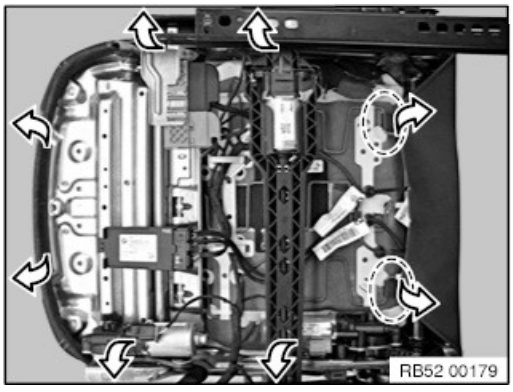
Detach cable strap.

Detach seat heater cable (2) from cable clips on seat mechanism.

Installation note:

Plug connection is encoded to prevent incorrect connection.

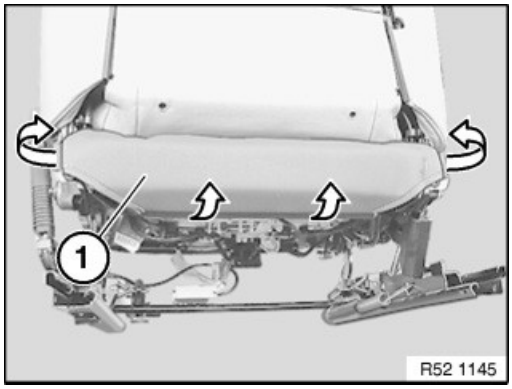
Replace cable strap.



Fully lift welt of seat cover out of seat frame.

Disengage seat cover at rear.

carcraft.com

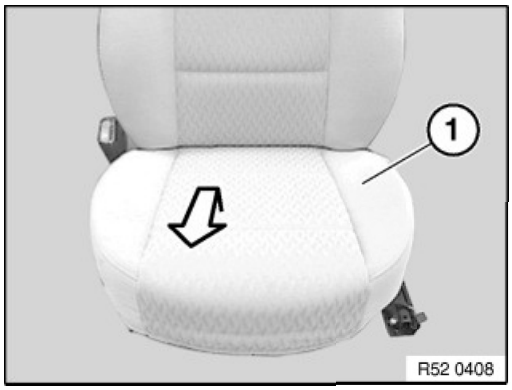


Carefully slide bracing cloth (1) with foam through backrest gap and seat structure.

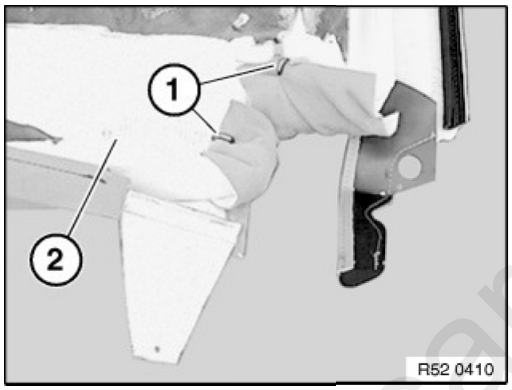
If applicable, route cable carefully through seat and backrest mechanics as the edges of the frame may be sharp.

Installation note:
Slide foam completely through backrest gap and seat structure.

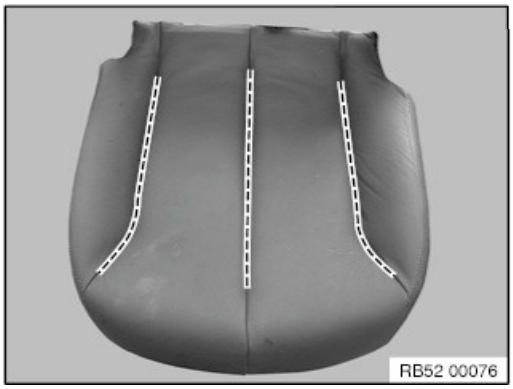
Make sure foam and bracing cloth are correctly fitted.



Remove seat cover (1) with padding towards front/top.



Release all clamps (1) from seat cover (2).



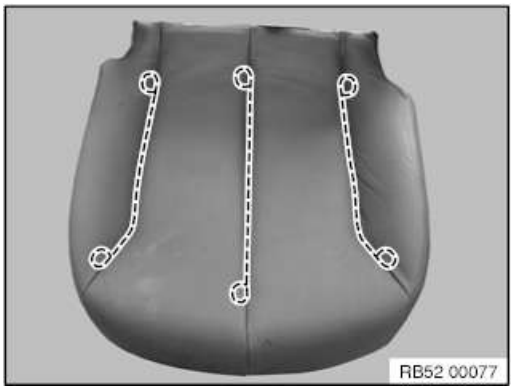
Release all clamps in marked area of trim wires.

Remove seat cover from upholstery.

Important!

Remove all remnants of clamps from seat cover and upholstery.

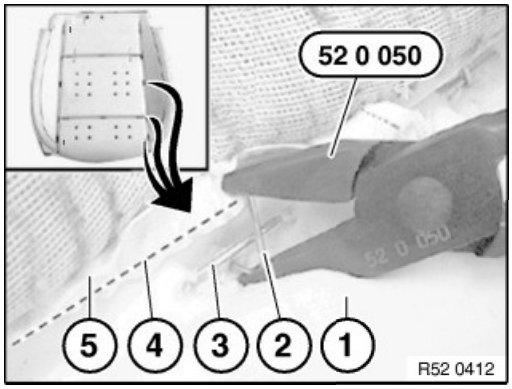
cardiagn.com



Replacement only:

If applicable, pull trim wires out of seat cover.

Cut new seat cover to size and insert trim wires.



Installation note:
Bend new clamps (2) with special tool 52 0 050 .

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in cover
5. Seat cover

cardiagn.com

52 14 415 Replace upholstery for left or right front seat (normal/electric)



Operation is described in:

- Replacing seat cover for front seat

cardiagn.com

52 14 420 Replace upholstery for left or right front seat backrest (normal/electric)



Operation is described in:

- Replace backrest cover for front seat

cardiagn.com

52 14 405 Replacing backrest cover for left or right front seat (normal/electrical)

Special tools required:

- 52 0 050

Necessary preliminary tasks:

- Remove front seat
- Remove rear panel
- Remove guide sleeves for head restraint
- Remove cover of release mechanism

Important!

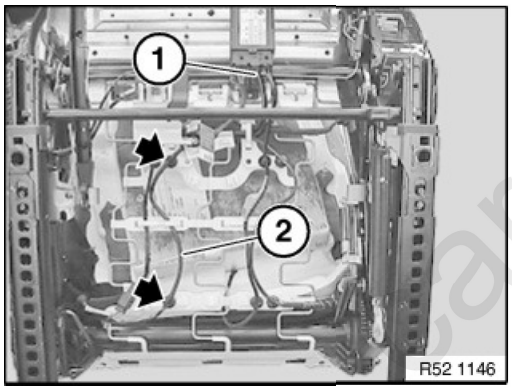
Risk of damage on sharp-edged seat mechanism.

Guide all cables carefully through seat and backrest mechanism.

Make sure cable is routed without kinks and tension.

Make sure plug connections are correctly locked.

Make sure connectors are correctly seated in latch mechanisms.



Version with seat heating only:

Unlock plug connection (1) for seat heating and disconnect.

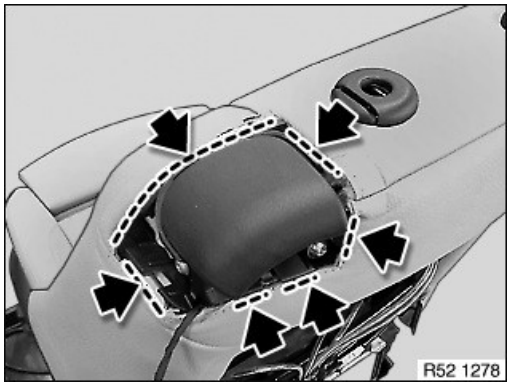
Detach cable strap.

Detach seat heater cable (2) from cable clips on seat mechanism.

Installation note:

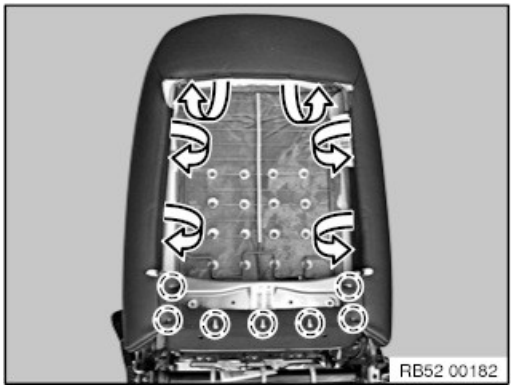
Plug connection is encoded to prevent incorrect connection.

Replace cable strap.



Detach backrest cover in marked area.

carclan.com



Lift welt out of backrest frame.

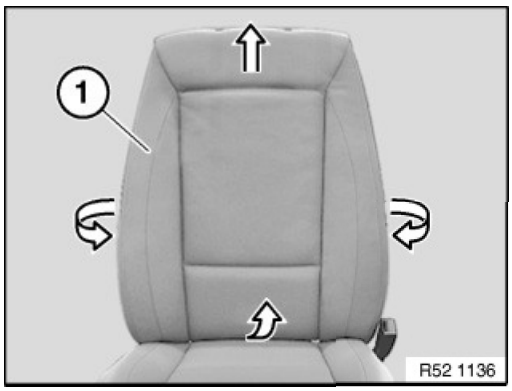
Detach backrest cover at bottom from the metal tabs in the marked area.

Carefully slide bracing cloth with foam through backrest gap and seat structure.

If applicable, route cable carefully through seat and backrest mechanics as the edges of the frame may be sharp.

Installation note:
Slide foam completely through backrest gap and seat structure.

Make sure foam and bracing cloth are correctly fitted.



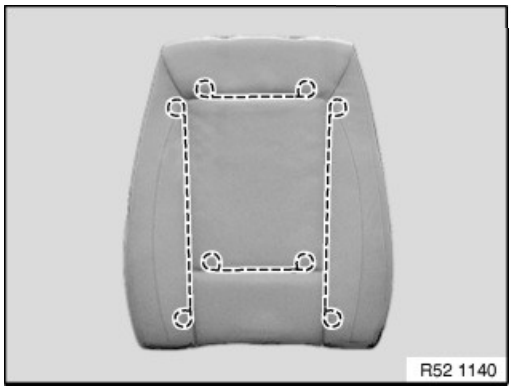
Pull off backrest cover (1) with upholstery sideways and towards top from backrest frame.



Release all clamps in marked area.

Remove backrest cover from padding.

Note:
Remove all remnants of clamps from backrest cover and upholstery.



Installation note:
Bend new clamp (2) with special tool 52 0 050 .

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in backrest cover
5. Backrest cover



Replacement only:

Pull trim wires out of backrest cover.

Cut new backrest cover to size and insert trim wires.

cardiagn.com

52 15 451 Replacing backrest heating element for left or right sports seat



Operation is described in:

- Replace heating elements for front seat left or right

cardiagn.com

52 15 450 Replacing cushion heating element for left or right front seat



Operation is described in:

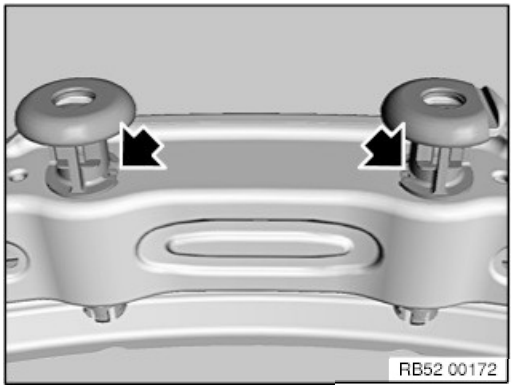
- Replace heating elements for front seat left or right

cardiagn.com

52 13 ... Replacing guide sleeves for front left or right head restraint

Necessary preliminary work:

- Remove front head restraint

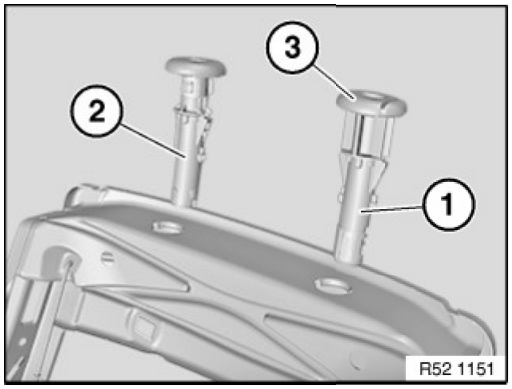


Note:
Shown here without backrest cover for a better overview.

Push the backrest cover with upholstery down next to the guide sleeve.

Carefully insert screwdriver between the backrest cover and guide sleeve.

Unlock the retaining lug with a screwdriver and remove the guide sleeves through the top.



Installation note:
Install guide sleeves as follows:

1. Guide sleeve with pushbuttonÂ (3) in direction of travel left
2. Guide sleeve without pushbutton in direction of travel right

cardiagn.com

52 13 455 Replacing heating elements for front seat (normal) left or right

Necessary preliminary tasks:

- Remove seat cover

Note:
Heating element is bonded to the foam section and cannot be separated from each other without incurring damage.

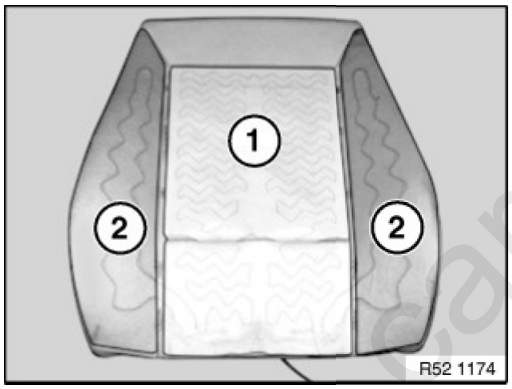
Foam section and heating mat must be replaced.

Check new foam part:

- No obvious damage or material defects
- All trim wires present in foam
- No bubbles in foam part
- No dirt contamination on foam or residual foam
- Pay attention to foam part on left and right

Check new heating mat:

- No obvious damage or material defects
- All tear-off film pieces present
- Note variant by examining label on cable



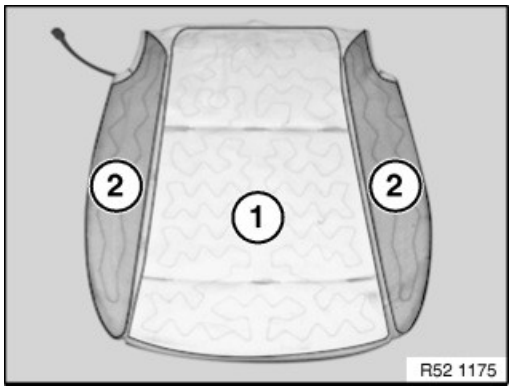
Guide cable for backrest heating through foam hole.

Stick on main section (1):

- Pull adhesive film pieces off main section (1) and stick to upper edge of main section foam until flush

Stick on bead section (2):

- Pull adhesive film pieces off bead section (2) and stick on heating mat along bead section edge.
- Press down evenly in outwards direction



Guide cable for seat heating through foam hole.

Stick on main section (1):

- Pull adhesive film pieces off main section (1) and stick to upper edge of main section foam until flush

Stick on bead section (2):

- Pull adhesive film pieces off bead section (2) and stick on heating mat along bead section edge.
- Press down evenly in outwards direction

cardiagn.com



Check laying of heating mats:

- Heating mats laid without folds
- Heating mats correctly positioned
- All bonding surfaces stuck on

Note:
Carry out function check.

cardiagn.com

52 14 410 Replacing seat and backrest cover for left or right front seat (normal/electric)

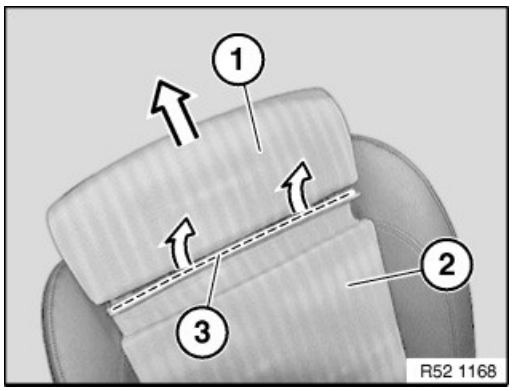


Operations are described in:

- Replacing seat cover for front seat
- Replacing backrest cover for front seat

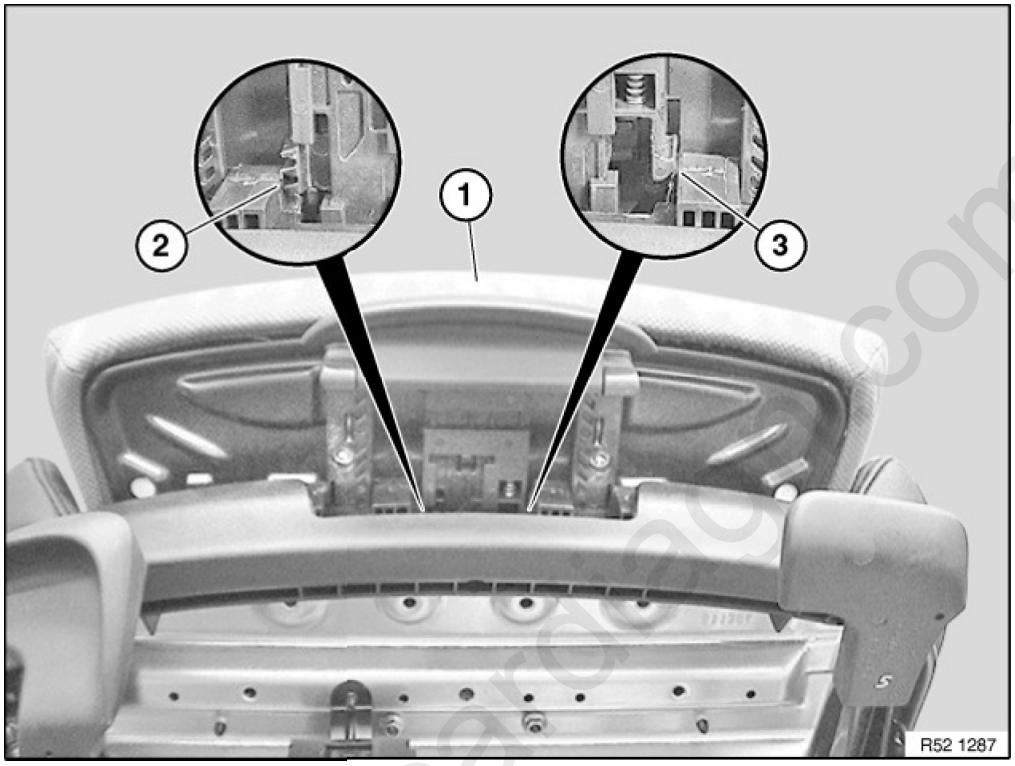
cardiagn.com

52 15 050 Remove or install thigh support at the front seat (sport) on the left or right



Adjust thigh support (1) completely towards the front.

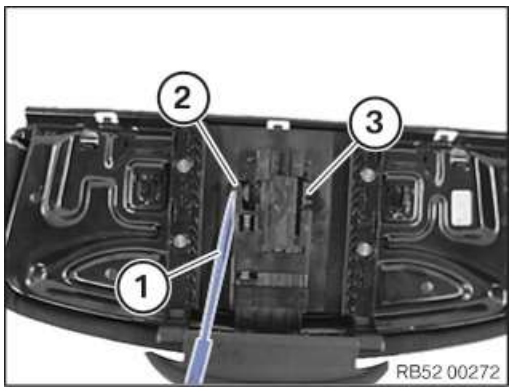
Lever out the welt (3) from the seat cover (2) from the thigh support (1).



Do not completely extend the thigh support to the end stop.

Keep Actuation (1) pressed to unlock the centering (2).

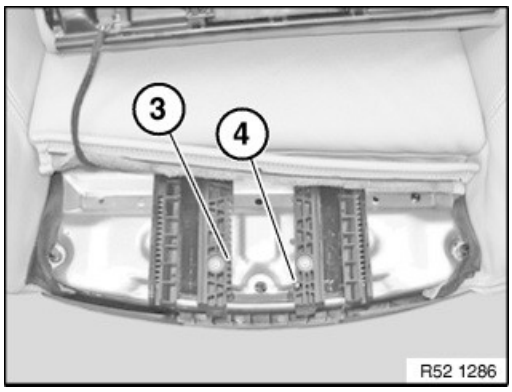
Carefully raise the end stop (3) for the thigh support with a screwdriver and pull the thigh support toward the front out of the guide rails at the same time.



View of thigh support mechanism when removed:

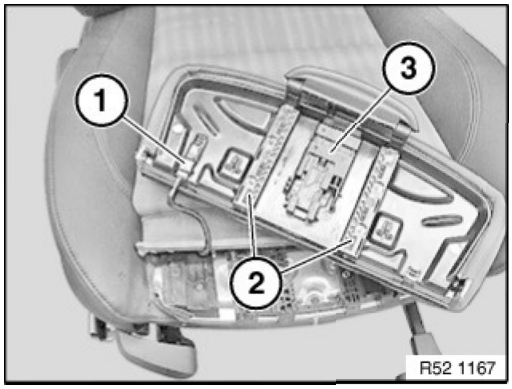
1. Screwdriver for unlocking the end stop
2. End stop for thigh support

3. Locking mechanism for the thigh support



View of seat mechanism:

3. Guide rail on seat with depth retainer
4. Guide rail on seat with end stop



Unfasten plug connection (1) and disconnect.*Note:*
Check guide rails (2) and adjusting mechanism (3) for damage.

cardiagn.com

52 13 001 Removing and installing front seat, driver's side

Necessary preliminary tasks:

- Disconnect battery earth lead
- Remove head restraint

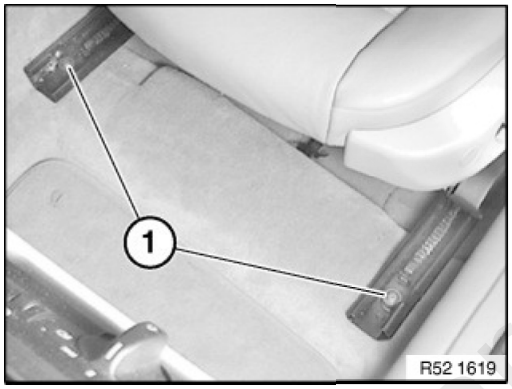
Important!

An airbag module and a pyrotechnical seat belt tensioner are installed in the front seat.

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

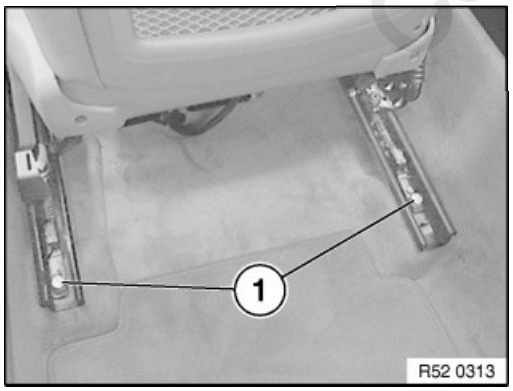
Installation note:

- Powerlok screws must be replaced and must not be reused
- Powerlok screws are mechanical screw locks with trilobular threads



Move seat to upper back position.

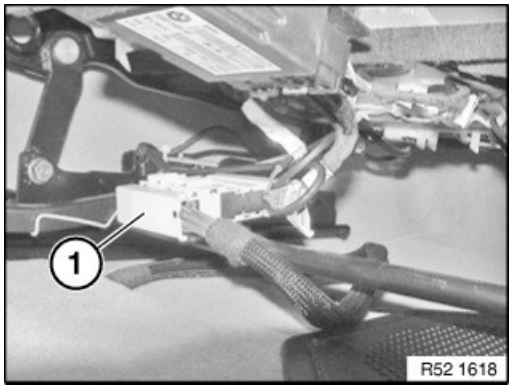
Release and dispose of screws (1).



Adjust the seat to the front top.

Release and dispose of screws (1).

cardiagn.com



Disconnect plug connection (1).

Important!

Cover door sill with protective covers (risk of damage).

Lift out front seat.

Installation note:

- Carpet must not get between seat rails and floor panel in area of attachment points (squeaking noises)
- Replace microencapsulated screws
- Insert all screws loose to avoid twisting
- Tighten down all screws to specified torque

  Tightening torque 52 10 01AZ.

Warning!

When carrying out further work on the front seat, it is absolutely imperative to observe the safety regulations on handling airbag modules and pyrotechnical seat belt tensioners

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

cardiag.com

52 13 002 Removing and installing front seat, passenger's side

Necessary preliminary tasks:

- Disconnect battery earth lead
- Remove head restraint

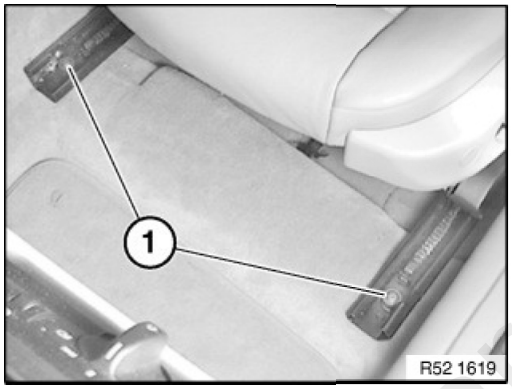
Important!

An airbag module and a pyrotechnical seat belt tensioner are installed in the front seat.

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

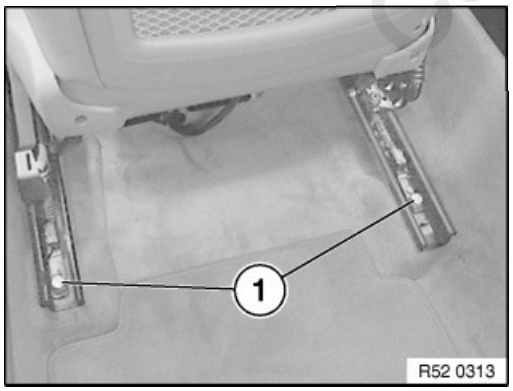
Installation note:

- Powerlok screws must be replaced and must not be reused
- Powerlok screws are mechanical screw locks with trilobular threads



Move seat to upper back position.

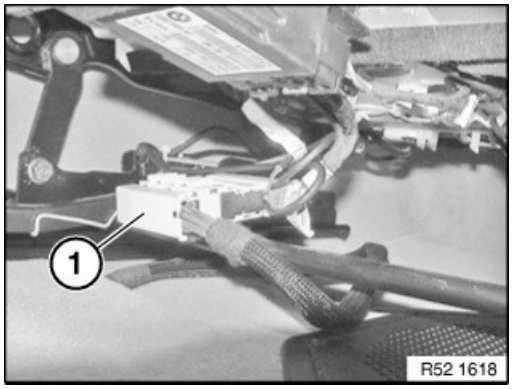
Release and dispose of screws (1).



Adjust the seat to the front top.

Release and dispose of screws (1).

cardiagn.com



Disconnect plug connection (1).

Important!

Cover door sill with protective covers (risk of damage).

Lift out front seat.

Installation note:

- Carpet must not get between seat rails and floor panel in area of attachment points (squeaking noises)
- Replace microencapsulated screws
- Insert all screws loose to avoid twisting
- Tighten down all screws to specified torque

  Tightening torque 52 10 01AZ.

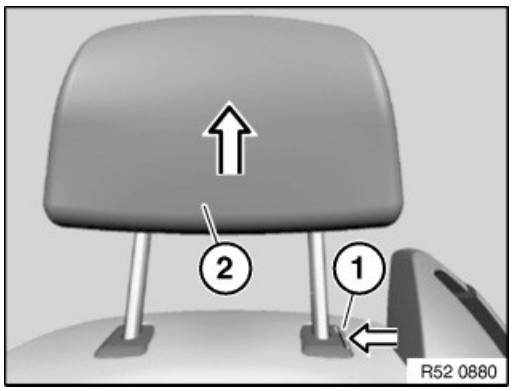
Warning!

When carrying out further work on the front seat, it is absolutely imperative to observe the safety regulations on handling airbag modules and pyrotechnical seat belt tensioners

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

cardiag.com

52 13 390 Removing and installing or replacing front left or right head restraint



Press latch mechanism (1) and lift out head restraint (2).

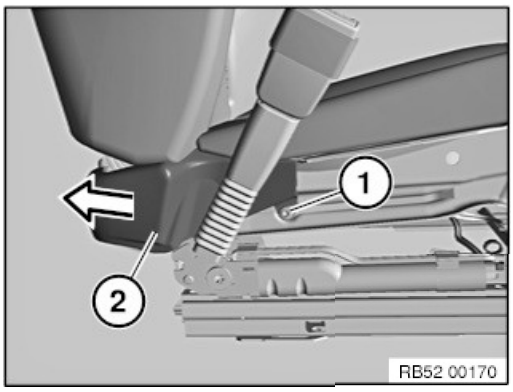
cardiagn.com

52 13 041 Removing and installing or replacing inner cover on left or right front seat

Necessary preliminary tasks:

- Remove front seat

Note:
Completely move the electric front seat to the top prior to removal.

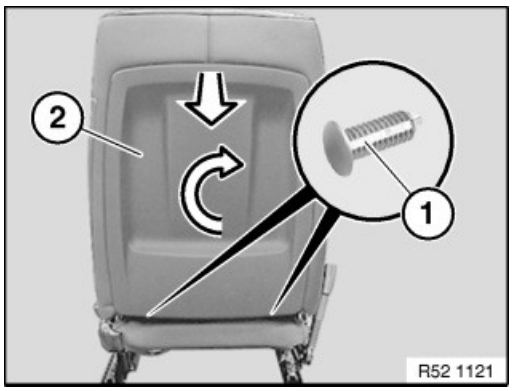


Release screw (1).

Remove cover (2) in direction of arrow.

cardiagn.com

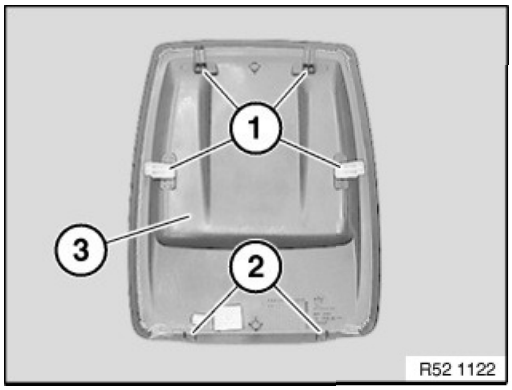
52 13 198 Removing and installing or replacing rear panel on left or right front seat backrest



Release clips (1) with diagonal cutting pliers.

Remove rear panel (2) downwards with a rotational movement.

Note:
Remove remnants of clips.



Installation note:
Retaining hooks (1) and bore holes (2) on rear panel (3) must not be damaged.

Replace faulty clips.

cardiagn.com

52 13 030 Removing and installing/replacing backrest frame at left or right front seat

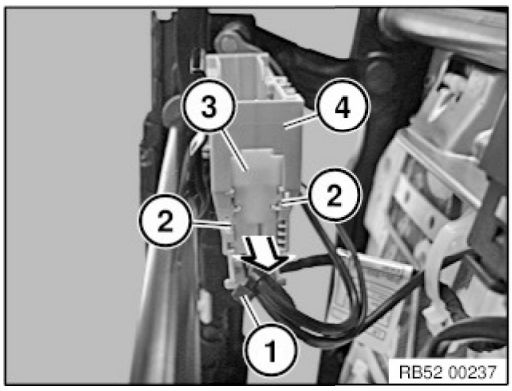
Important!

When working on the front seat it is absolutely essential to observe the safety regulations on handling airbag modules.

Improper handling may trigger the side airbag and as a result cause injuries.

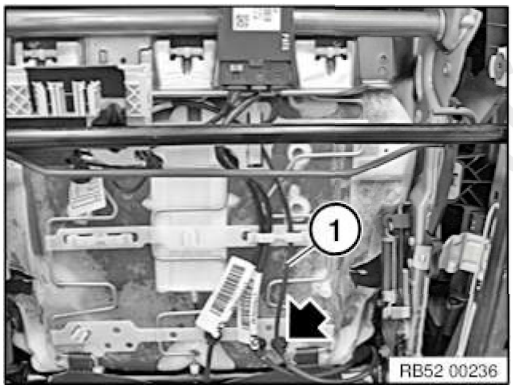
Necessary preliminary tasks:

- Remove front seat
- Remove rear panel on front seat backrest



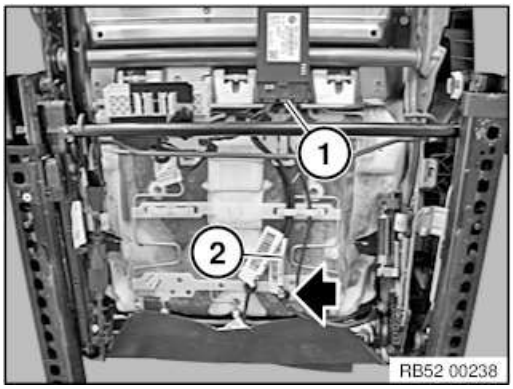
Cut open cable strap (1).

Press locks (2) outwards and at the same time remove connector (3) in direction of arrow from connector housing (4).



Unclip airbag wiring harness (1) in marked area.

Release airbag wiring harness (1) from cable clips on seat mechanism.



Version with seat heating only:

Unfasten plug connection (1) and disconnect.

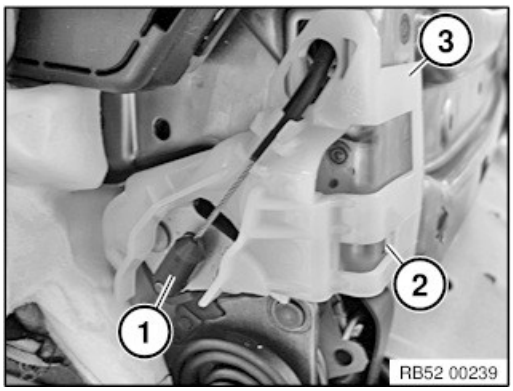
Unclip wiring harness (2) in marked area.

Release wiring harness (2) from cable clips on seat mechanism.

Important!

Feed all the wiring harnesses carefully through the seat and backrest mechanism as the edges of the frame can be sharp.

diagn.com



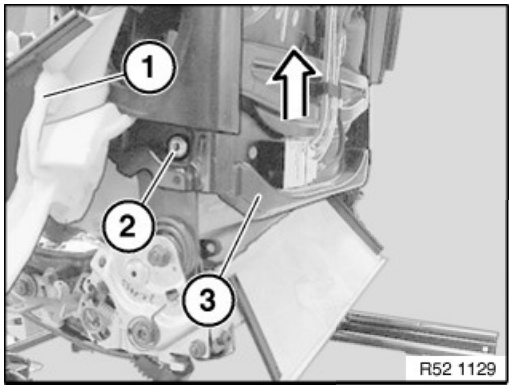
Unhook seat cover on left and right.

Unclip ball socket (1) from ball head on left and right.

Installation note:
Ball socket (1) must audibly snap into place.

Ball socket (1) must be able to move freely on the ball head.

Actuate rear catch (2) and remove guide for Bowden cable (3) by rotational movement towards the rear.



Unhook backrest cover (1) on left and right.

Release screws (2) on left and right.

Tightening torque 52 10 2 AZ.

Remove backrest frame (3) completely towards top.

Replacement:

- Remove backrest cover with upholstery.

cardiagn.com

52 13 526 Removing and installing/replacing left or right seat mechanism

Necessary preliminary tasks:

- Removing backrest frame
- Remove seat cover with upholstery

When replacing, remount the following parts depending on the version:

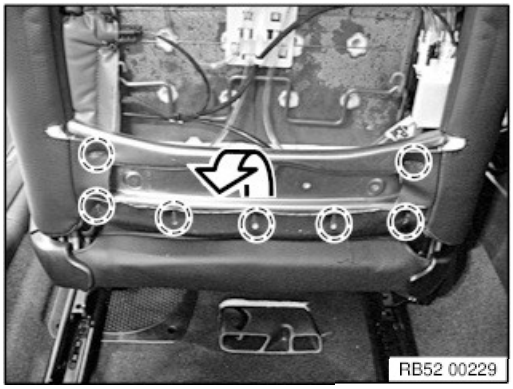
- Module for seat heating
- Control unit/module for seat adjustment
- Lower strap
- Backrest adjustment motor
- Seat height adjustment drive unit
- Forward/back seat adjustment drive unit
- Drive unit for seat cushion tilt adjustment
- Wiring harness to seat mechanism
- Position sensor for front seat
- Front seat sensor
- Seat occupancy mat for SBE

cardiagn.com

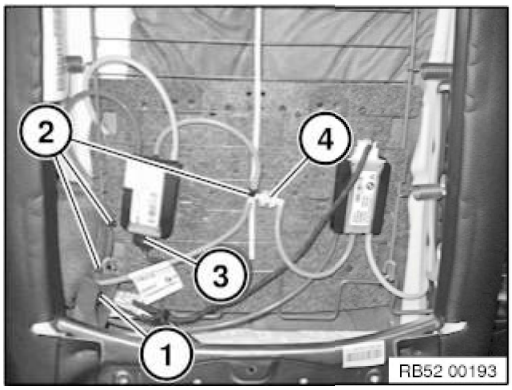
52 15 055 Removing and installing/replacing lumbar support on front seat

Necessary preliminary tasks:

- Remove rear panel on front seat



Detach backrest cover from backrest frame in marked area.



Unlock and disconnect plug connection (1) on lumbar support pump.

Unlock and disconnect plug connection (3) on valve body.

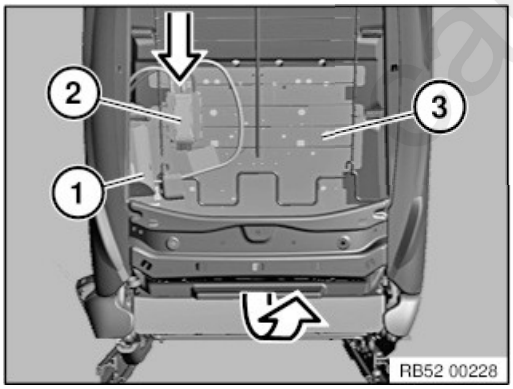
Release cable strap (2).

Installation note:
Completely remove remnants of cable ties.

Replace faulty cable straps.

Version with backrest width adjustment only.

Unlock and disconnect additional quick connector (4).



Detach valve body (2) from spring wire.

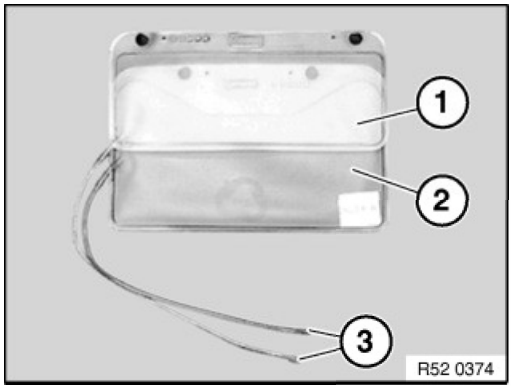
Detach lumbar support (3) from spring wire.

Press padding forward a little.

Carefully pull out lumbar support pump (1) downward with lumbar support (3) and valve body (2).



Installation note:
Attach lumbar support on second and fifth wire from the bottom.



Installation note:
Check lumbar support at top (1) and bottom (2) for damage.

Air hoses (3) must not be kinked.

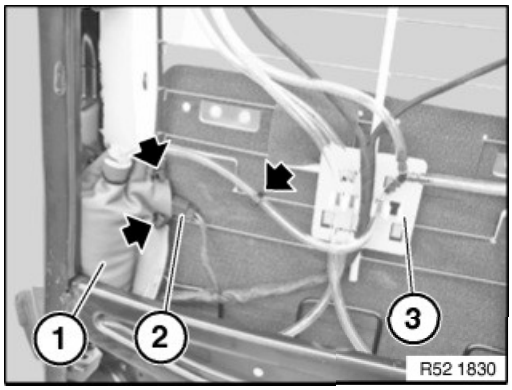
Installation note:
Run a function check.

cardiagn.com

52 15 059 Removing and installing/replacing lumbar support pump with valve body for lumbar support/backrest width adjustment

Necessary preliminary work:

- Remove rear panel



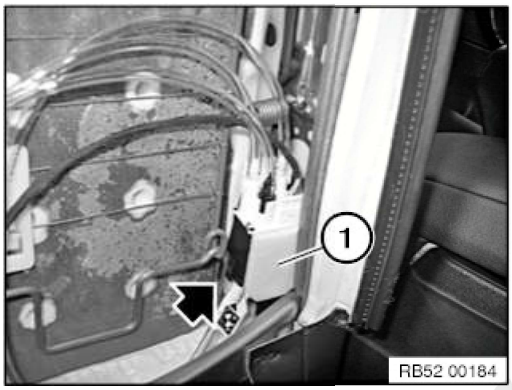
Cut open cable straps (arrows).

Installation note:
Replace defective cable straps.

Remove lumbar support pump (1) from backrest frame.

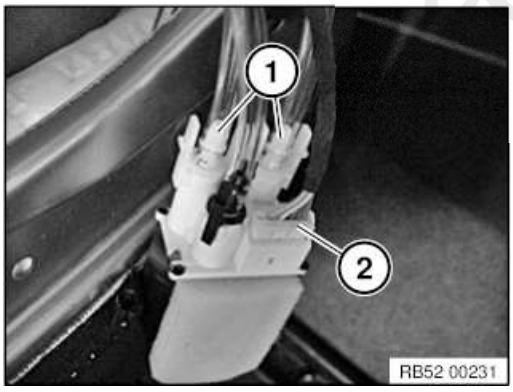
Unfasten plug connection (2) and disconnect.

Unclip air hose from holder (3).



Unclip valve body (1) from seat mechanism and feed out from backrest frame.*Installation note:*
Check the valve body (1) for correct fit in the backrest frame and spring wire.

Air hoses must not be kinked.



Unfasten plug connection (2) and disconnect.

Unlock quick connectors and detach air hoses (1).

Valve body for backrest width adjustment:

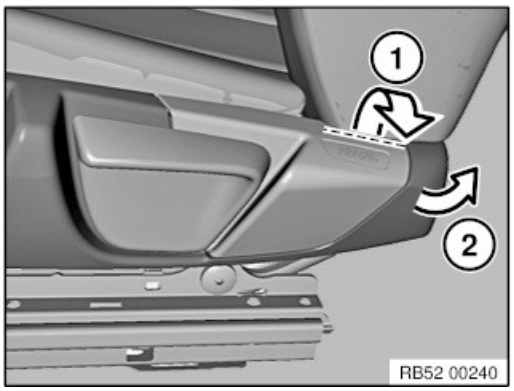
1. Lumbar support left/right = hose clear, quick-connector white

Installation note:
Connections are coded against incorrect assembly.

Note:
Run a function check.

ardiagn.com

52 13 040 Removing and installing/replacing outer cover on left or right front seat (manual)

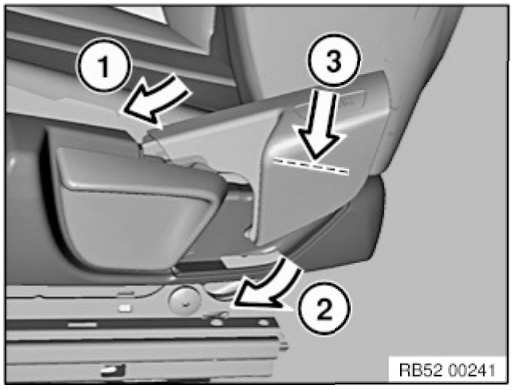


Move backrest to full rearward position.

Grip end fitting cover in marked area between cushion and cover.

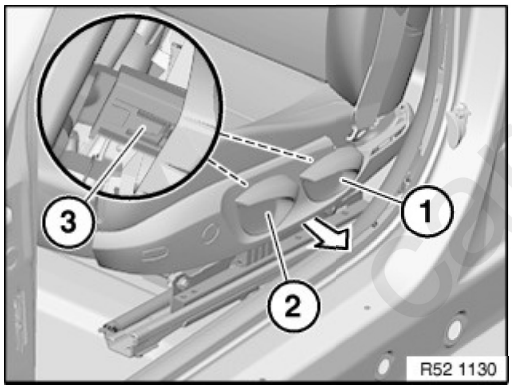
Unclip end fitting cover in direction of arrow (1).

Feed out end fitting cover (2) in direction of arrow.



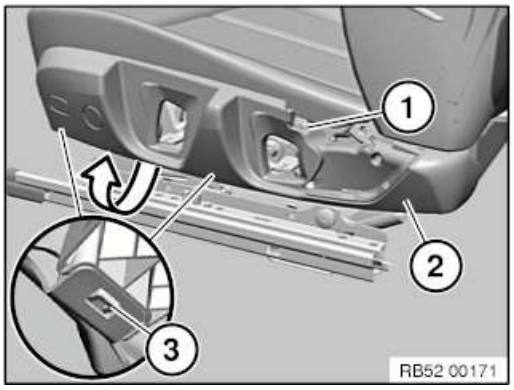
Installation note:
Install end fitting cover as follows:

1. Insert cover with front guide in cover
2. Insert cover in direction of arrow downwards in covering
3. Engage top cover in marked area in covering.



Pull the handle up and lift up lock (3).

Pull off the handle for the backrest angle adjustment (1) and handle for seat height adjustment (2).

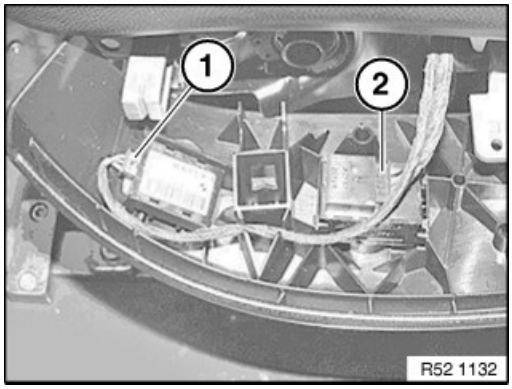


Release screw (1).

Lever latch mechanism (3) of the cover (2) out of seat mechanism.

Remove cover (2) in direction of arrow from seat mechanism.

cardiagn.com



If necessary, unlock plug connection (1) backrest width adjustment and disconnect.

If necessary, unlock plug connection (2) lumbar support and disconnect.

Replacement (depending on version):

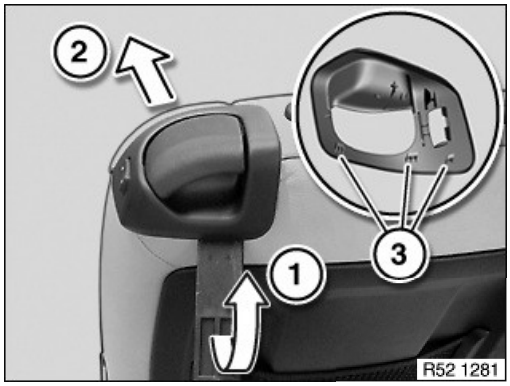
- Remount switch for backrest width adjustment
- Remount switch for lumbar support

cardiagn.com

52 13 034 Removing and installing/replacing release mechanism on left or right front seat

Necessary preliminary tasks:

- Remove front seat
- Remove rear panel



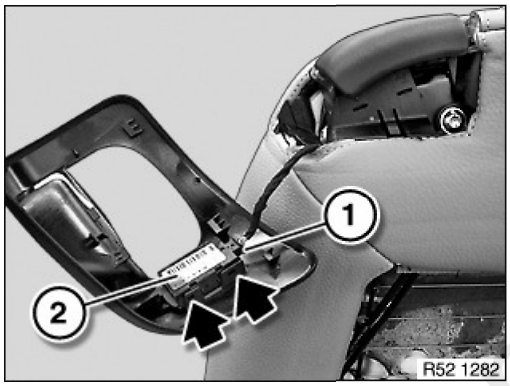
Lever out cover with plastic wedge in upward direction (1).

Slide cover forward (2) and feed out via release handle.

Installation note:

Check that the lugs (3) are correctly seated in the release mechanism.

Snap cover into place.

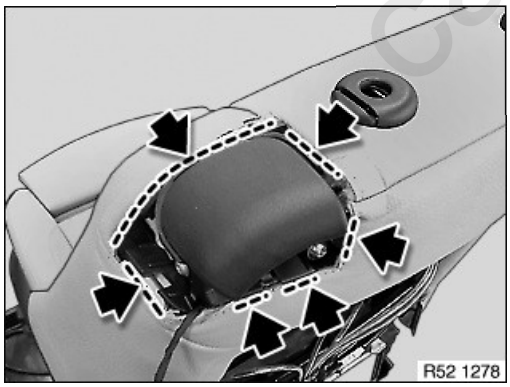


Only for front seat (electrical):

Unfasten plug connection (1) and disconnect.

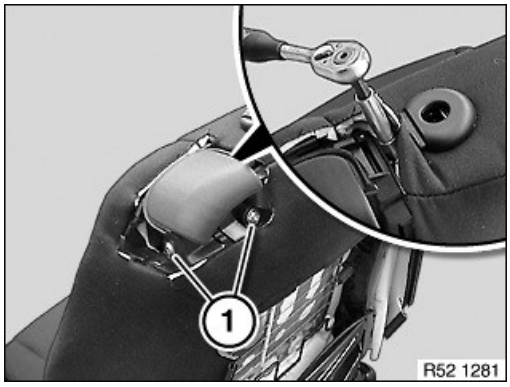
Replacement only:

Unclip switch (2).



Detach backrest cover in marked area.

carldiag1.com

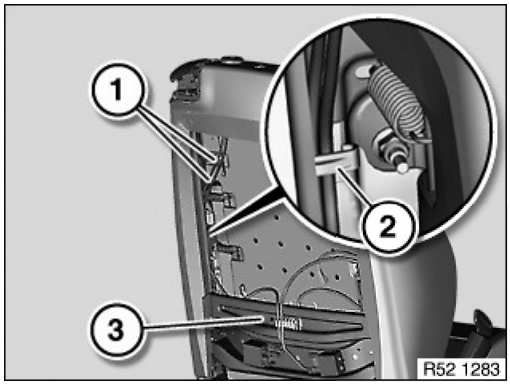


Important!

There is a risk of mixing up the screws.

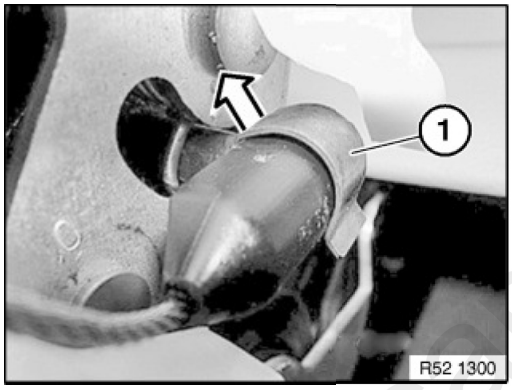
Release screws (1).

Release screw between backrest cover and release mechanism.



Feed Bowden cables (1) out of cable clip (2).

Clip cable clip (3) out of backrest frame.

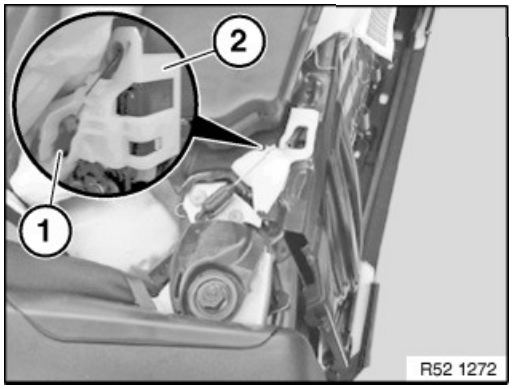


Unhook seat cover on left and right.

Lever out retaining clip (1) on the left and right.

Installation note:
Replace retaining clip (1).

Make sure the retaining clip (1) is correctly seated.



Unclip ball socket (1) from ball head on left and right.

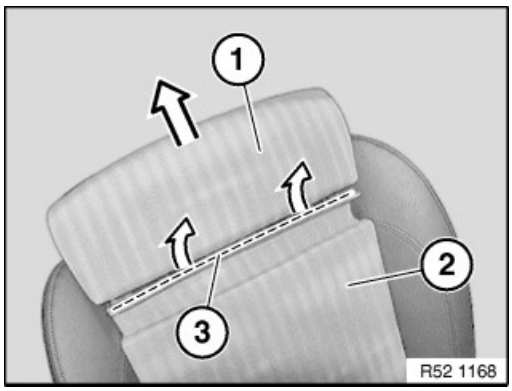
Installation note:
Ball socket (1) must audibly snap into place.

Ball socket (1) must be able to move freely on the ball head.

Feed Bowden cable out of guide (2) and backrest frame.

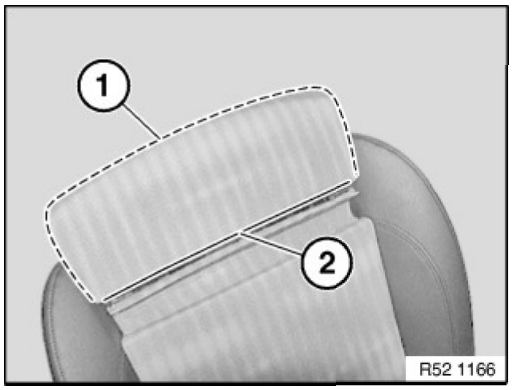
cardiagn.com

52 15 403 Removing or installing/replacing thigh support cover on left or right front seat (Sport)



Unlock and move thigh support (1) as far forward as possible.

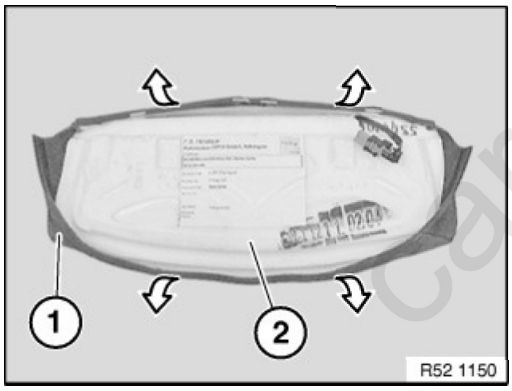
Lift out welt of seat cover (2) from thigh support.



Lever out cover welt in marked area (1).

Detach trim wire in marked area (2) from thigh support.

Remove cover with upholstery.



Pull cover (1) off upholstery (2).

cardiagn.com

52 15 455 Replace heating elements for front seat (Sport) on left and right

Necessary preliminary tasks:

- Remove seat cover
- Remove backrest cover
- Remove thigh support cover

Note:
Heating elements are bonded with the foam part and cannot be separated from each other without causing damage.

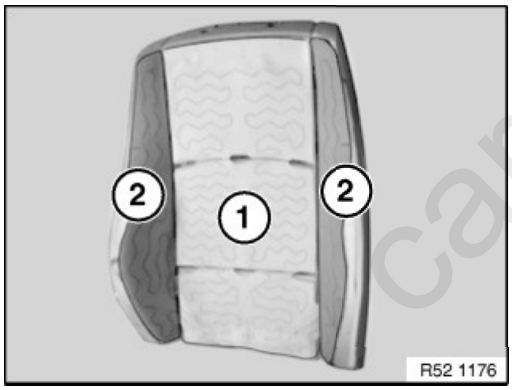
Foam part and heating elements must be replaced.

Check new foam part:

- No obvious damage or material defects
- All trim wires present in foam
- No bubbles in foam part
- No dirt contamination on foam or residual foam
- Pay attention to foam part on left and right

Check new heating mat:

- No obvious damage or material defects
- All tear-off film pieces present
- Note variant by examining label on cable



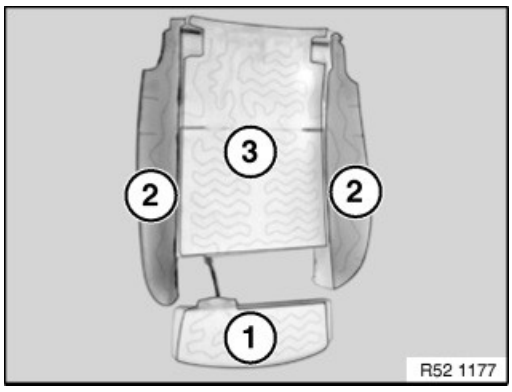
Guide cable for backrest heating through foam hole.

Stick on main section (1):

- Pull adhesive film pieces off main section (1) and stick to upper edge of main section foam until flush

Stick on bead section (2):

- Pull adhesive film pieces off bead section (2) and stick on heating mat along bead section edge.
- Press down evenly in outwards direction



Guide cable for seat heating through foam hole.

Bond the STV heating mat (1):

- Pull off the adhesive film and bond flush with the rear foam edge

Stick on bead section (2):

- Pull adhesive film pieces off bead section (2) and stick on heating mat along bead section edge.
- Press down evenly in outwards direction

Stick on main section (3):

- Pull adhesive film pieces off main section (3) and stick to upper edge of main section foam until flush

cardiagn.com



Check laying of heating mats:

- Heating mats laid without folds
- Heating mats correctly positioned
- All bonding surfaces stuck on

Note:
Carry out function check

cardiagn.com

52 15 410 Replace seat and backrest cover for front seat (sport), left or right



Operations are described in:

- Replacing seat cover for front seat
- Replacing backrest cover for front seat

cardiagn.com

52 15 420 Replace upholstery for front seat backrest (sport)



Operation is described in:

- Replace backrest cover for front seat

cardiagn.com

52 15 417 Replace upholstery for thigh support (Sport) at left or right



Operation is described in:

- Replacing thigh support upholstery cover on left or right front seat.

cardiagn.com

52 15 405 Replacing backrest cover for front seat (Sport)

Special tools required:

- 52 0 050

Necessary preliminary tasks:

- Remove front seat
- Remove rear panel on front seat backrest
- Remove guide sleeves
- Remove cover of release mechanism

Important!

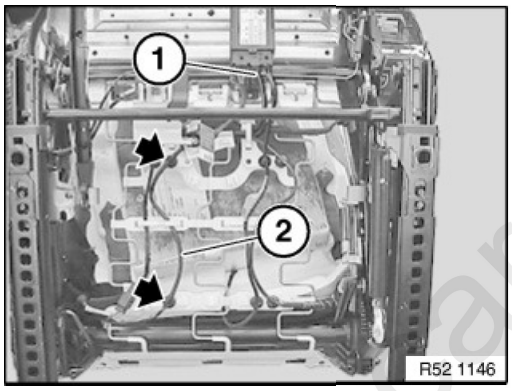
Risk of damage on sharp-edged seat mechanism.

Guide all cables carefully through seat and backrest mechanism.

Make sure cable is routed without kinks and tension.

Make sure plug connections are correctly locked.

Make sure connectors are correctly seated in latch mechanisms.



Version with seat heating only:

Unlock plug connection (1) for seat heating and disconnect.

Detach cable strap.

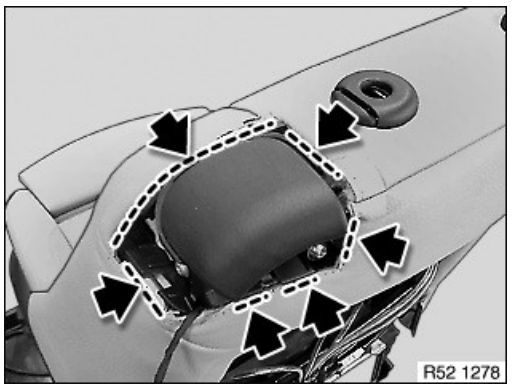
Release seat heater cable (2) from cable clips on seat mechanism.

Installation note:
Plug connection is encoded to prevent incorrect connection.

Replace cable strap.

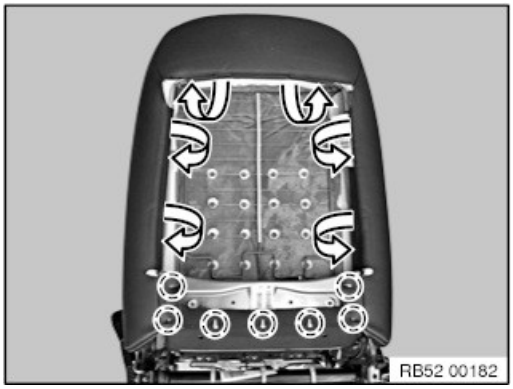
Important!

Feed the wiring harness carefully through the seat and backrest mechanism as the edges of the frame can be sharp.



Detach backrest cover in marked area.

cardiagn.com



Lift welt out of backrest frame.

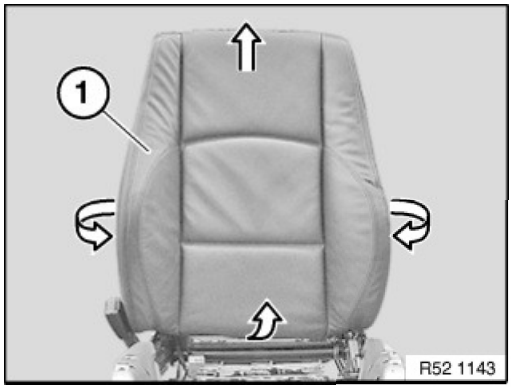
Detach backrest cover at bottom from the metal tabs in the marked area.

Carefully slide bracing cloth with foam through backrest gap and seat structure.

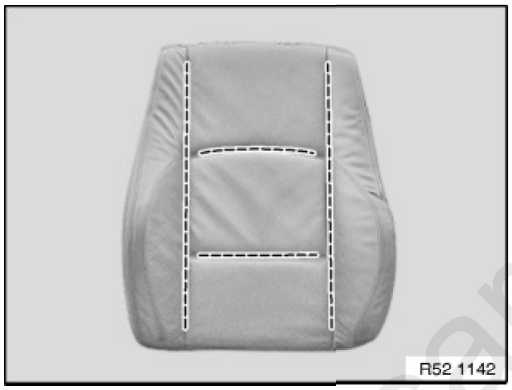
If applicable, route cable carefully through seat and backrest mechanics as the edges of the frame may be sharp.

Installation note:
Slide foam completely through backrest gap and seat structure.

Make sure foam and bracing cloth are correctly fitted.



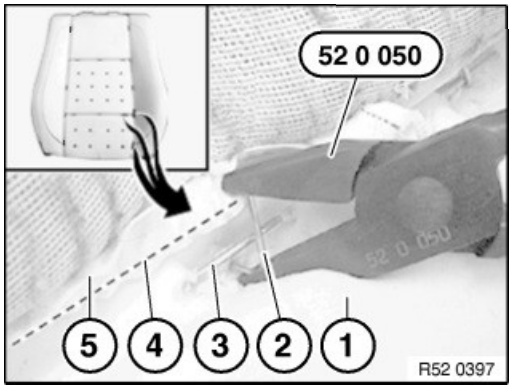
Pull off backrest cover (1) with upholstery sideways and towards top from backrest frame.



Release all clamps in marked area.

Remove backrest cover from padding.

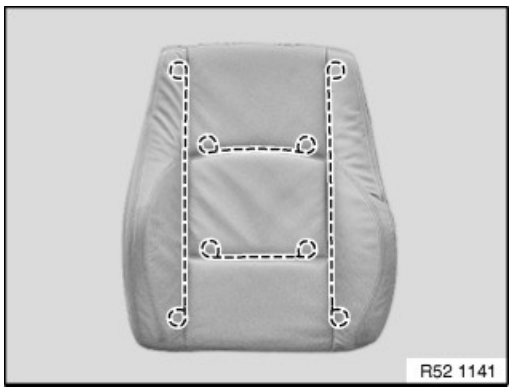
Note:
Remove all remnants of clamps from backrest cover and upholstery.



Installation note:
Bend new clamp (2) with special tool 52 0 050 .

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in backrest cover
5. Backrest cover

cardiagn.com



Replacement only:

Pull trim wires out of backrest cover.

Cut new backrest cover to size and insert trim wires.

cardiagn.com

52 15 451 Replacing backrest heating element for left or right sports seat



Operation is described in:

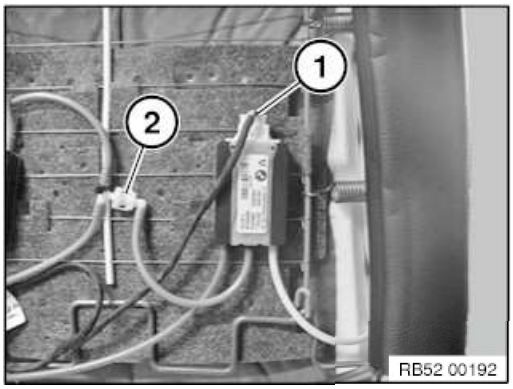
- Replace heating elements for front seat left or right

cardiagn.com

52 15 062 Replacing backrest width adjustment with valve on left or right

Necessary preliminary work:

- Remove the rear panel from the front seat
- Fully drain air cushion

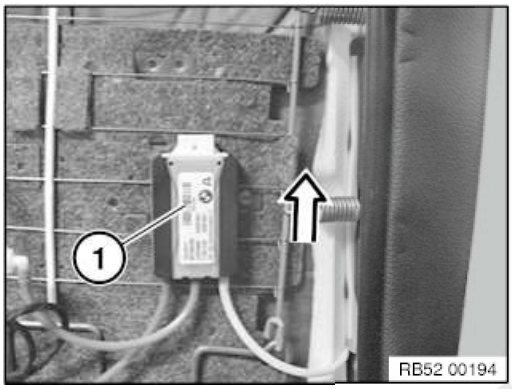


Unlock plug connection (1) and disconnect.

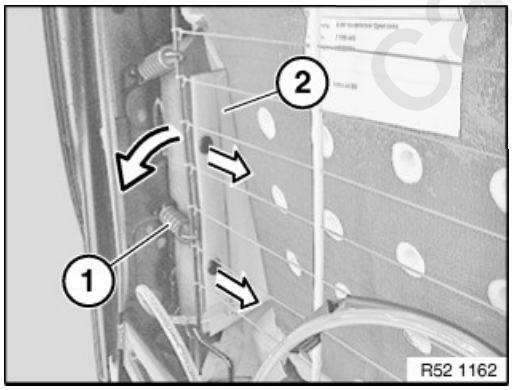
Unlock quick connector (2) and pull off air hose from adapter.

Installation note:
Connections are coded against incorrect assembly.

Air hoses must not be kinked.



Unclip valve (1) towards top from spring wire.



Note:
Removal operation is shown on left side, right analogous to that.

Air cushion (2) must be fully drained.

Detach spring (1) top and bottom.

Lever out clips.

Feed out air cushion (2) between spring wire and backrest frame.

Installation note:
Replace faulty clips.

Insert the air cushion without kinks.

Check air cushion for damage.

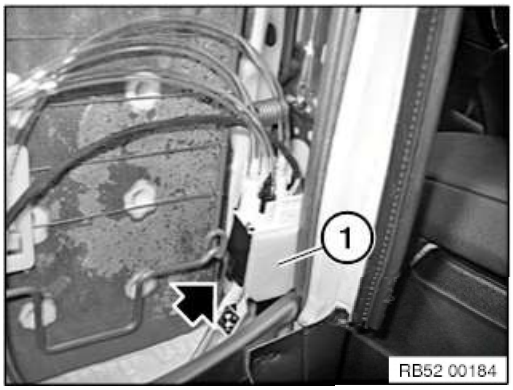
Note:
Run a function check.

cardiagn.com

52 15 061 Replacing both cushions for backrest width adjustment on left or right front seat (sport/manual)

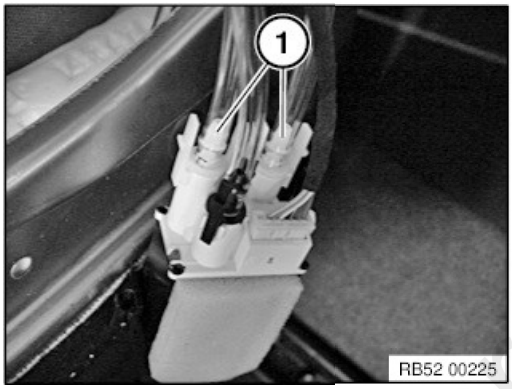
Necessary preliminary tasks:

- Remove the rear panel from the front seat
- Completely drain air cushion for backrest width adjustment



Unclip valve body (1) from seat mechanism and feed out from backrest frame.*Installation note:*
Check the valve body (1) for correct fit in the backrest frame and spring wire.

Air hoses must not be kinked.

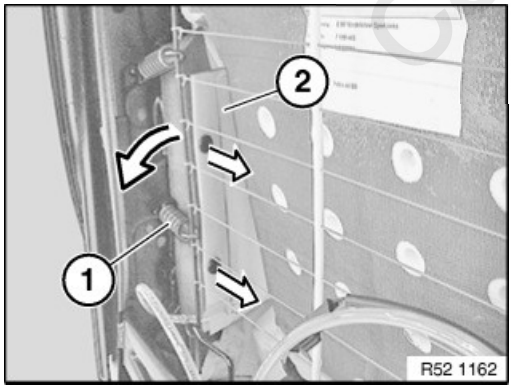


Unlock quick connectors and detach air hoses (1).

Valve body for backrest width adjustment:

1. Lumbar support left/right = hose clear, quick-connector white

Installation note:
Connections are coded against incorrect assembly.



Note:
Removal operation is shown on left side, right analogous to that.

The air cushion must be deflated completely.

Detach spring (1) top and bottom.

Lever out clips.

Feed out air cushion (2) between spring wire and backrest frame.

Installation note:
Replace faulty clips.

Check air cushion for damage.

Insert air cushion without kinks.

Note:
Carry out function check

cardiagn.com

52 15 450 Replacing cushion heating element for left or right front seat



Operation is described in:

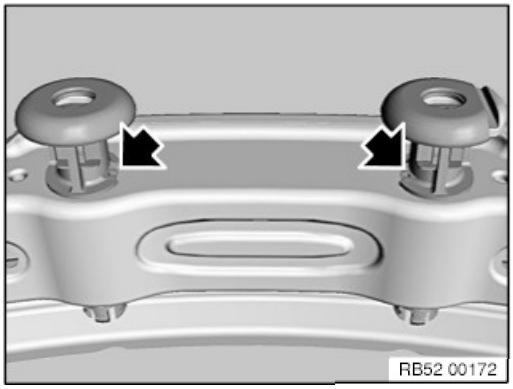
- Replace heating elements for front seat left or right

cardiagn.com

52 13 ... Replacing guide sleeves for front left or right head restraint

Necessary preliminary work:

- Remove front head restraint

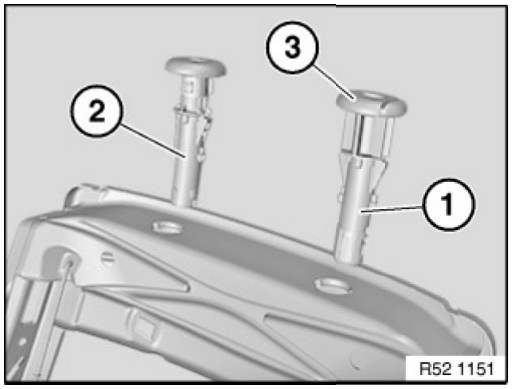


Note:
Shown here without backrest cover for a better overview.

Push the backrest cover with upholstery down next to the guide sleeve.

Carefully insert screwdriver between the backrest cover and guide sleeve.

Unlock the retaining lug with a screwdriver and remove the guide sleeves through the top.



Installation note:
Install guide sleeves as follows:

1. Guide sleeve with pushbuttonÂ (3) in direction of travel left
2. Guide sleeve without pushbutton in direction of travel right

cardiagn.com

52 15 452 Replacing heating element for left or right front seat (thigh support)



Operation is described in:

- Replace heating elements for front seat left or right

cardiagn.com

52 15 400 Replacing seat cover for front seat (Sport)

Special tools required:

- 52 0 050

Necessary preliminary tasks:

- Remove front seat
- Remove thigh support
- Remove inner cover
- Remove outer cover

Important!

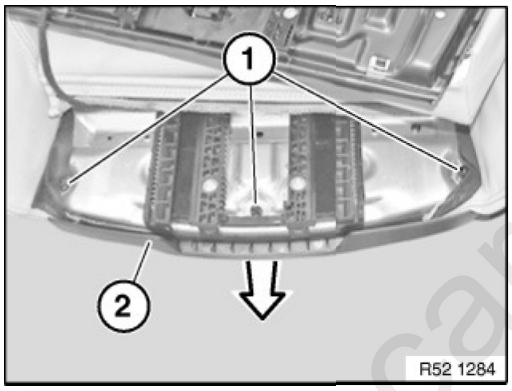
Risk of damage on sharp-edged seat mechanism.

Guide all cables carefully through seat and backrest mechanism.

Make sure cable is routed without kinks and tension.

Make sure plug connections are correctly locked.

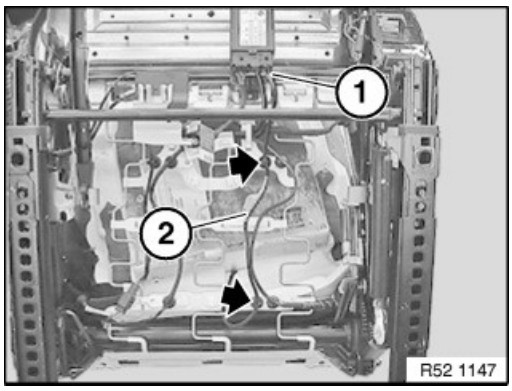
Make sure connectors are correctly seated in latch mechanisms.



Unlock retaining lugs (1).

Remove seat trim (2) downwards.

Installation note:
Seat trim (2) must not be damaged.



Version with seat heating only:

Unlock plug connection (1) for seat heating and disconnect.

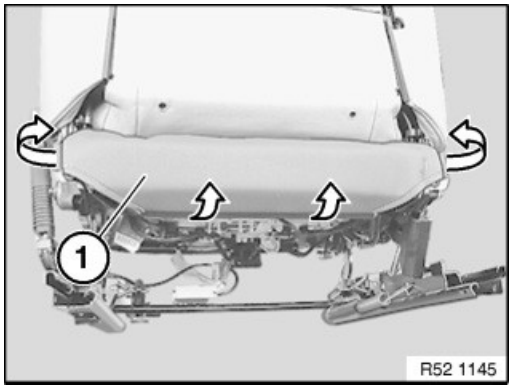
Detach cable strap.

Release wiring harness (2) from cable clips on seat mechanism.

Important!

Feed the wiring harness carefully through the seat and backrest mechanism as the edges of the frame can be sharp.

cardiagn.com

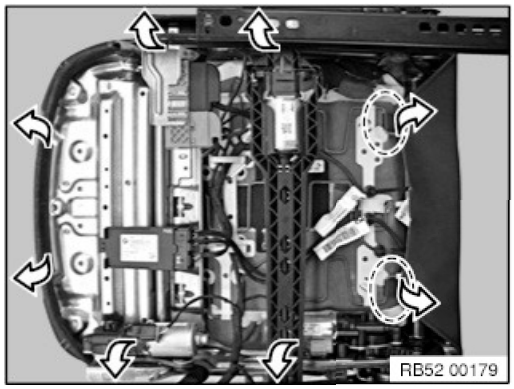


Carefully slide bracing cloth (1) with foam through backrest gap and seat structure.

If applicable, route cable carefully through seat and backrest mechanics as the edges of the frame may be sharp.

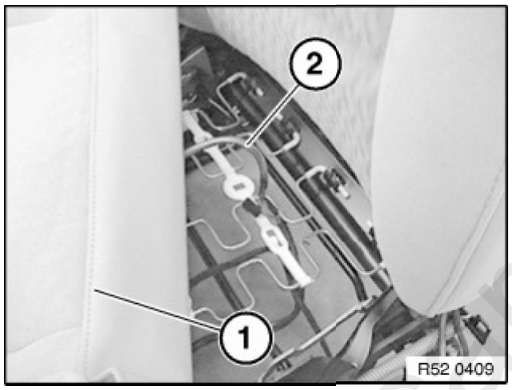
Installation note:
Slide foam completely through backrest gap and seat structure.

Make sure foam and bracing cloth are correctly fitted.



Fully lift welt of seat cover out of seat frame.

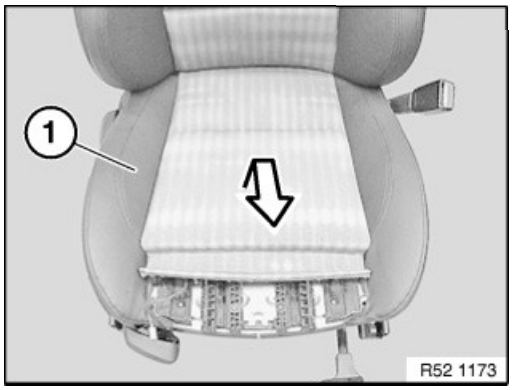
Disengage seat cover at rear.



<u>Version with seat heating:</u>

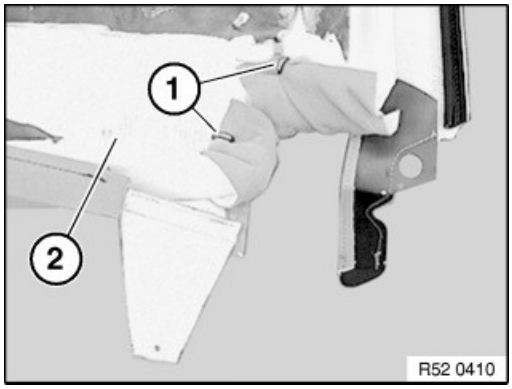
Pull seat cover (1) with upholstery forward a little and feed wiring harness (2) out.

Remove seat cover (1) with padding towards front/top.

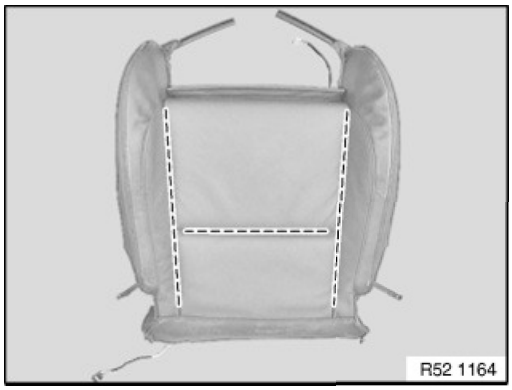


Remove seat cover (1) with padding towards front/top.

cardiagn.com



Release all clamps (1) from seat cover (2).



Detach all clamps in side area from longitudinal wires.

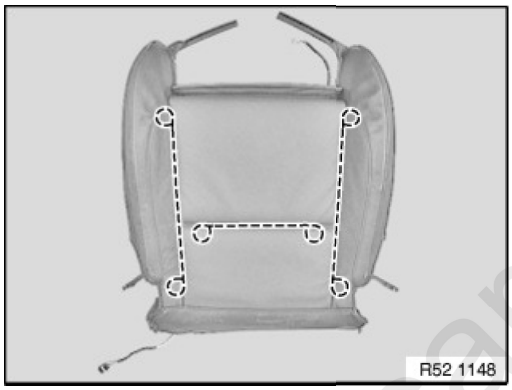
Pull trim wires forward out of seat cover.

Carefully fold back seat cover and release clamps from cross-wires.

Remove seat cover from upholstery.

Important!

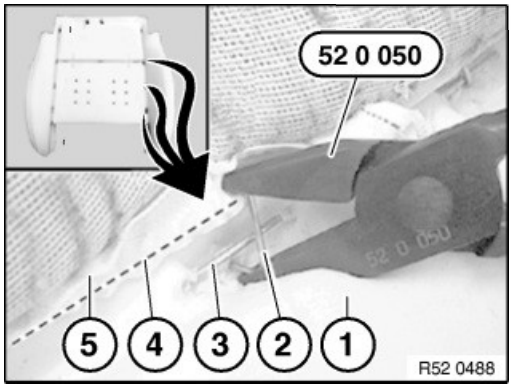
Remove all remnants of clamps from seat cover and upholstery.



Replacement only:

Pull trim wires out of seat cover.

Cut new seat cover to size and insert trim wires.



Installation note:
Bend new clamps (2) with special tool 52 0 050 .

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in cover
5. Seat cover

cardiagn.com

52 15 415 Replacing upholstery for front seat (sport)

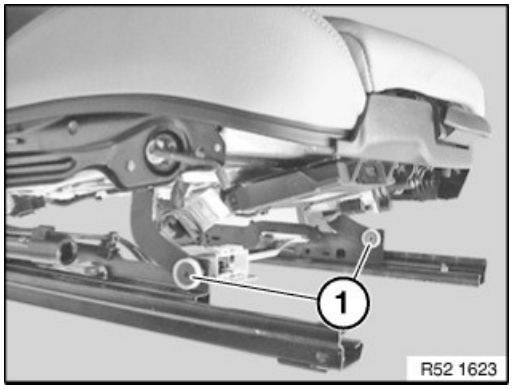


Operation is described in:

- Replacing seat cover for front seat

cardiagn.com

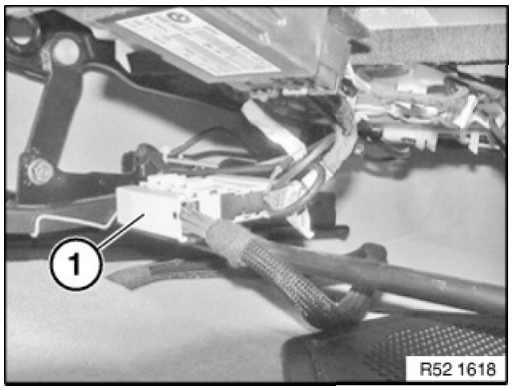
52 14 ... Additional work in event of faulty drive/gearing for longitudinal adjustment



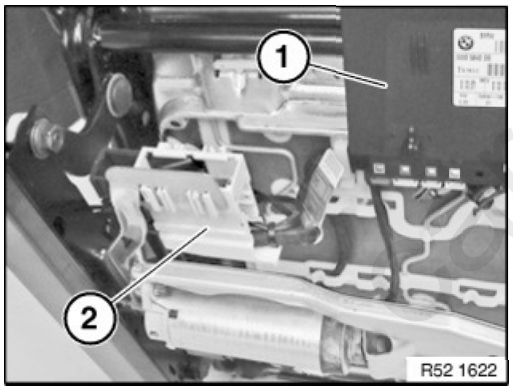
Release screws (1) of swinging arms for seat height adjustment.

Installation note:
Carefully bend side section back and feed swinging arm out of top rail.

Tilt front seat back.

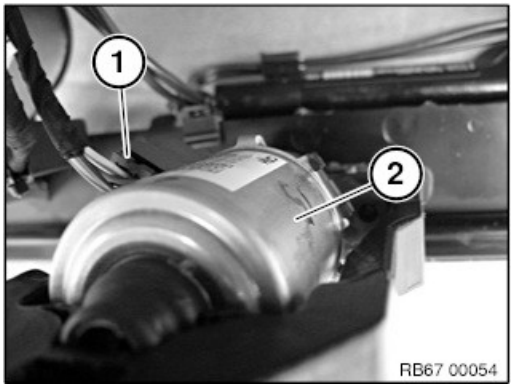


Unfasten plug connection (1) and disconnect.



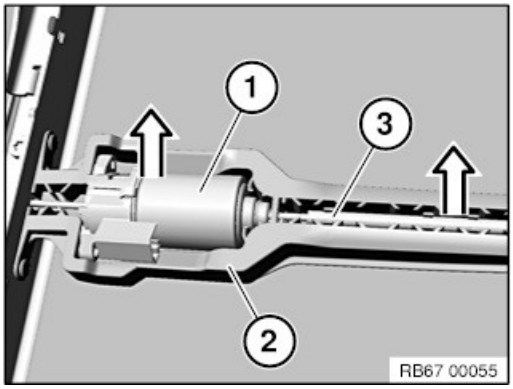
Unclamp central connector (2) from seat mechanism.

Unclip control units (1).



Removal of electric motor for forward/back seat adjustment:

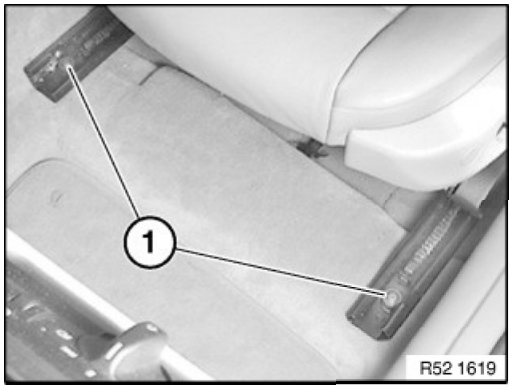
Unlock plug connection (1) and disconnect.



Lift long flex shaft (3) out of guide in direction of arrow.

Pull out flex shaft (3) from electric motor for forward/back seat adjustment (1).

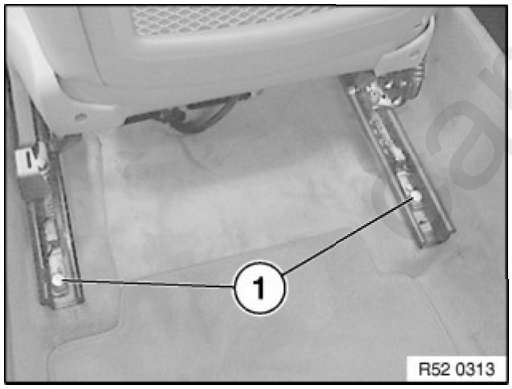
Remove electric motor for forward/back seat adjustment (1) in direction of arrow from holder (2).



Release screws (1) at front.

Installation note:
Install new drive for longitudinal seat adjustment.

Move front seat forwards.



Release screws (1) at rear.

Important!

Cover door sill with protective covers (risk of damage).

Lift out front seat and assemble.

Installation note:

- Make sure flex shaft is correctly fitted on drive
- Carpet must not get between seat rails and floor panel in area of attachment points (squeaking noises)
- Powerlok screws must be replaced and must not be reused
- Powerlok screws are mechanical screw locks with trilobular threads
- Insert all screws loose to avoid twisting
- Tighten down all screws to specified torque

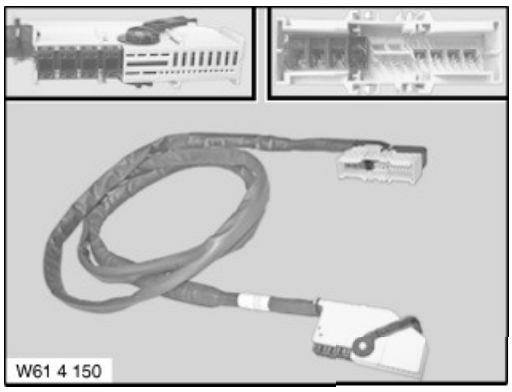
  Tightening torque 52 10 1AZ.

cardiagn.com

52 14 ... Performing function check with adapter cable (for seat repairs)

Special tools required:

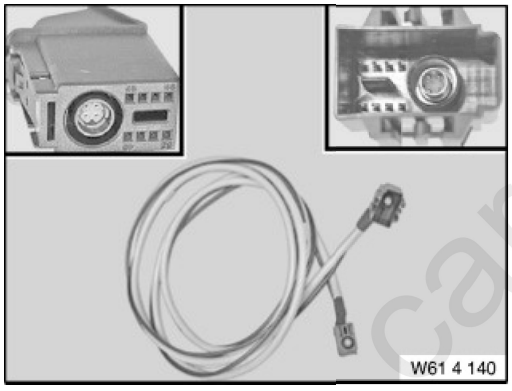
- 61 4 140
- 61 4 150



Seat function check: *Note:*
The function check on a repaired driver's or front passenger seat can be performed outside the vehicle by using adapter cable 61 4 150 .

Application:

Adapter cable is connected to vehicle wiring harness and removed seat 61 4 150 .



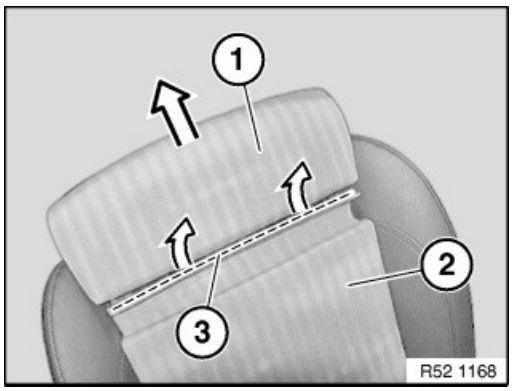
RSE (rear passenger compartment monitor) function check *Note:*
The function check of the RSE (rear passenger compartment monitor) on a repaired driver's or front passenger seat can be performed outside the vehicle by using adapter cable 61 4 140 .

Application:

Adapter cable is connected to vehicle wiring harness and removed seat 61 4 140 .

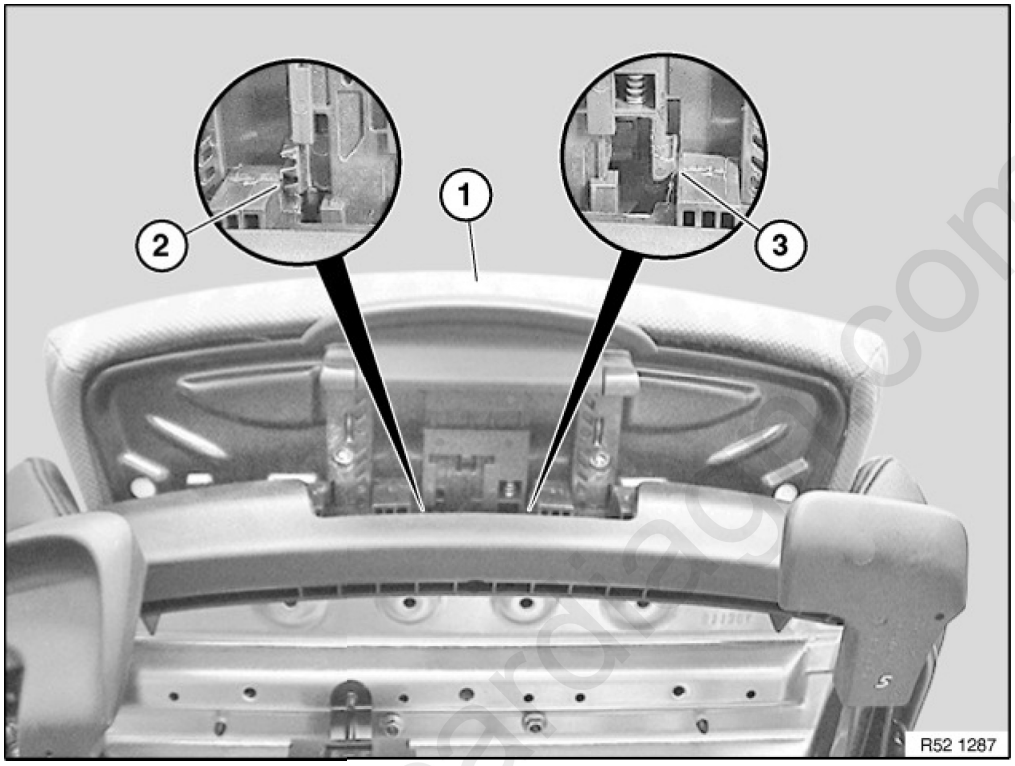
cardiagn.com

52 15 050 Remove or install thigh support at the front seat (sport) on the left or right



Adjust thigh support (1) completely towards the front.

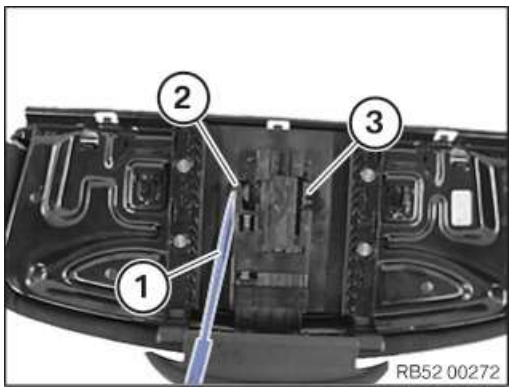
Lever out the welt (3) from the seat cover (2) from the thigh support (1).



Do not completely extend the thigh support to the end stop.

Keep Actuation (1) pressed to unlock the centering (2).

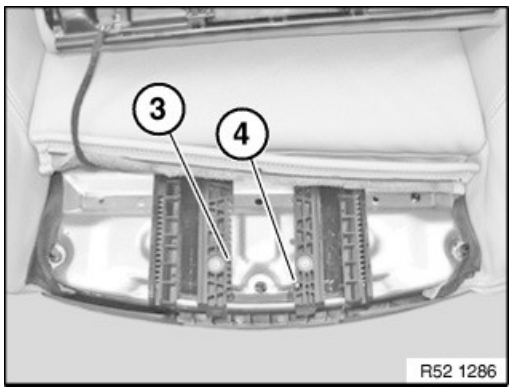
Carefully raise the end stop (3) for the thigh support with a screwdriver and pull the thigh support toward the front out of the guide rails at the same time.



View of thigh support mechanism when removed:

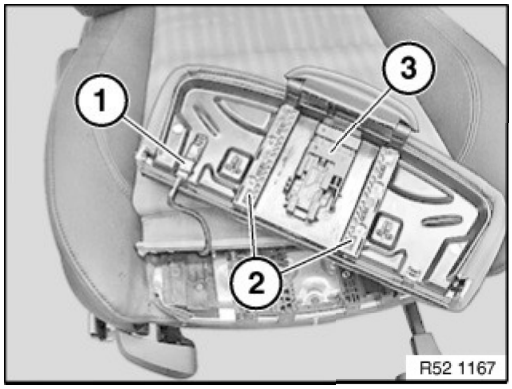
1. Screwdriver for unlocking the end stop
2. End stop for thigh support

3. Locking mechanism for the thigh support



View of seat mechanism:

3. Guide rail on seat with depth retainer
4. Guide rail on seat with end stop



Unfasten plug connection (1) and disconnect.*Note:*
Check guide rails (2) and adjusting mechanism (3) for damage.

cardiagn.com

52 13 001 Removing and installing front seat, driver's side

Necessary preliminary tasks:

- Disconnect battery earth lead
- Remove head restraint

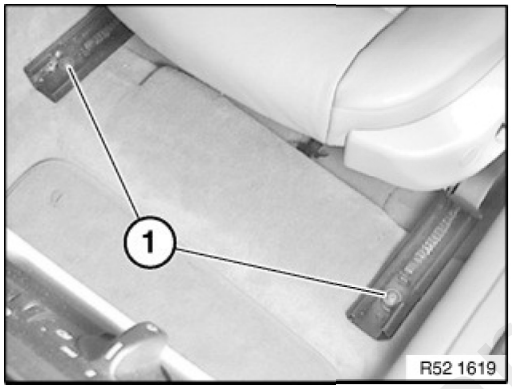
Important!

An airbag module and a pyrotechnical seat belt tensioner are installed in the front seat.

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

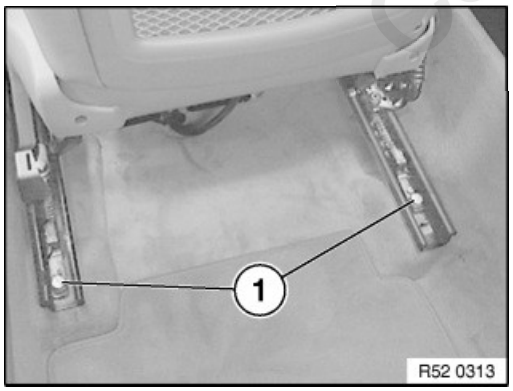
Installation note:

- Powerlok screws must be replaced and must not be reused
- Powerlok screws are mechanical screw locks with trilobular threads



Move seat to upper back position.

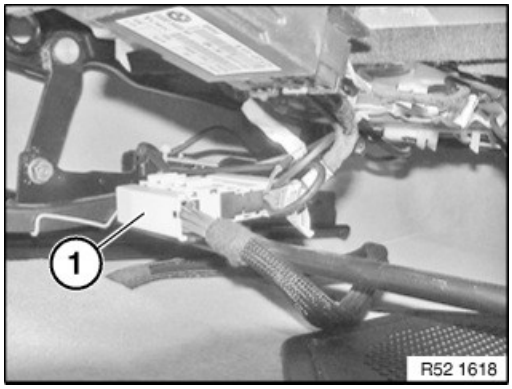
Release and dispose of screws (1).



Adjust the seat to the front top.

Release and dispose of screws (1).

cardiagn.com



Disconnect plug connection (1).

Important!

Cover door sill with protective covers (risk of damage).

Lift out front seat.

Installation note:

- Carpet must not get between seat rails and floor panel in area of attachment points (squeaking noises)
- Replace microencapsulated screws
- Insert all screws loose to avoid twisting
- Tighten down all screws to specified torque

  Tightening torque 52 10 01AZ.

Warning!

When carrying out further work on the front seat, it is absolutely imperative to observe the safety regulations on handling airbag modules and pyrotechnical seat belt tensioners

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

cardiag.com

52 13 002 Removing and installing front seat, passenger's side

Necessary preliminary tasks:

- Disconnect battery earth lead
- Remove head restraint

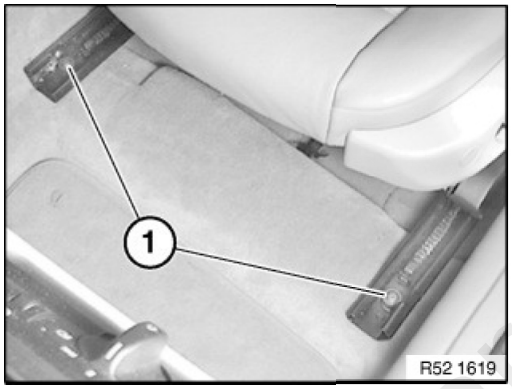
Important!

An airbag module and a pyrotechnical seat belt tensioner are installed in the front seat.

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

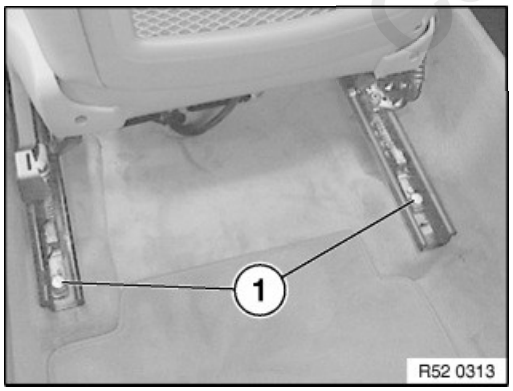
Installation note:

- Powerlok screws must be replaced and must not be reused
- Powerlok screws are mechanical screw locks with trilobular threads



Move seat to upper back position.

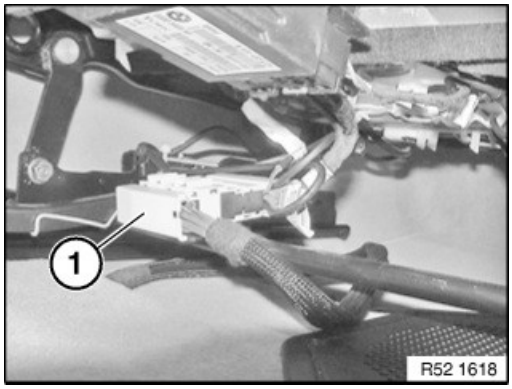
Release and dispose of screws (1).



Adjust the seat to the front top.

Release and dispose of screws (1).

cardiagn.com



Disconnect plug connection (1).

Important!

Cover door sill with protective covers (risk of damage).

Lift out front seat.

Installation note:

- Carpet must not get between seat rails and floor panel in area of attachment points (squeaking noises)
- Replace microencapsulated screws
- Insert all screws loose to avoid twisting
- Tighten down all screws to specified torque

  Tightening torque 52 10 01AZ.

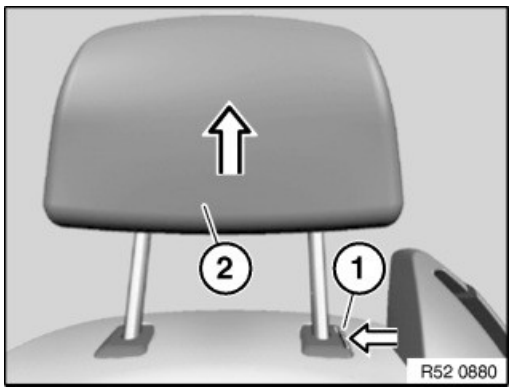
Warning!

When carrying out further work on the front seat, it is absolutely imperative to observe the safety regulations on handling airbag modules and pyrotechnical seat belt tensioners

Improper handling can lead to triggering of the pyrotechnical seat belt tensioner or side airbag, resulting in injuries.

cardiag.com

52 13 390 Removing and installing or replacing front left or right head restraint



Press latch mechanism (1) and lift out head restraint (2).

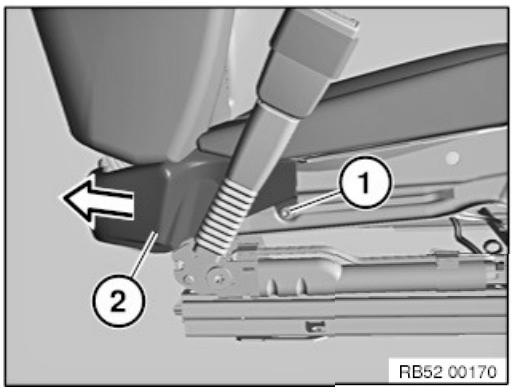
cardiagn.com

52 13 041 Removing and installing or replacing inner cover on left or right front seat

Necessary preliminary tasks:

- Remove front seat

Note:
Completely move the electric front seat to the top prior to removal.

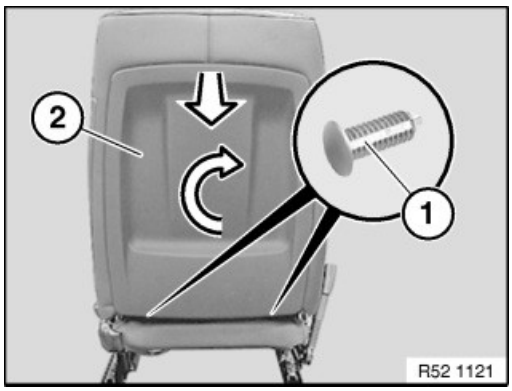


Release screw (1).

Remove cover (2) in direction of arrow.

cardiagn.com

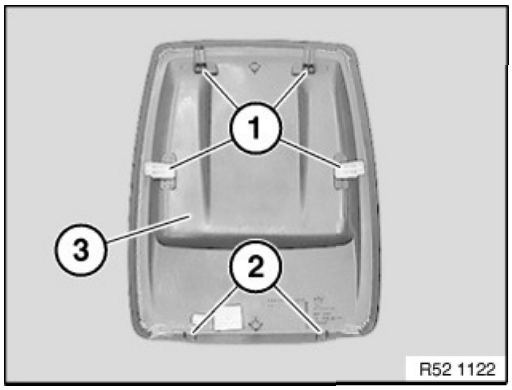
52 13 198 Removing and installing or replacing rear panel on left or right front seat backrest



Release clips (1) with diagonal cutting pliers.

Remove rear panel (2) downwards with a rotational movement.

Note:
Remove remnants of clips.



Installation note:
Retaining hooks (1) and bore holes (2) on rear panel (3) must not be damaged.

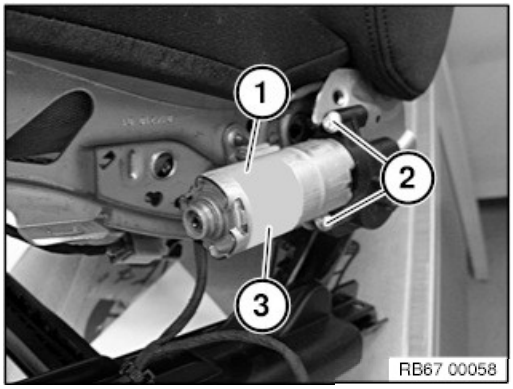
Replace faulty clips.

cardiagn.com

67 31 530 Removing and installing/replacing backrest adjustment motor

Necessary preliminary tasks:

- Remove covers on front seat



Unfasten plug connection (1) and disconnect.

Unfasten screws (2).

Remove electric motor (3).

Note:
Carry out a function check.
Replacement:
Initialise backrest adjustment motor.

cardiagn.com

52 13 030 Removing and installing/replacing backrest frame at left or right front seat

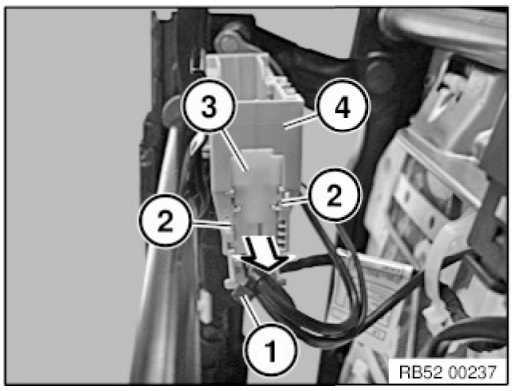
Important!

When working on the front seat it is absolutely essential to observe the safety regulations on handling airbag modules.

Improper handling may trigger the side airbag and as a result cause injuries.

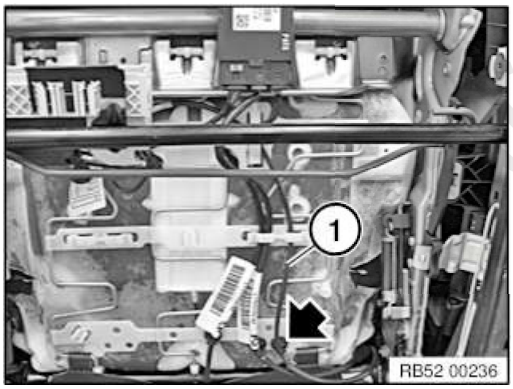
Necessary preliminary tasks:

- Remove front seat
- Remove rear panel on front seat backrest



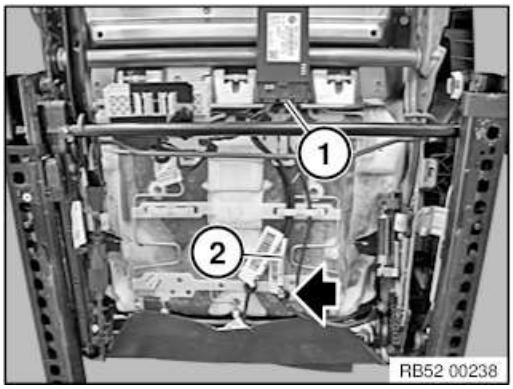
Cut open cable strap (1).

Press locks (2) outwards and at the same time remove connector (3) in direction of arrow from connector housing (4).



Unclip airbag wiring harness (1) in marked area.

Release airbag wiring harness (1) from cable clips on seat mechanism.



Version with seat heating only:

Unfasten plug connection (1) and disconnect.

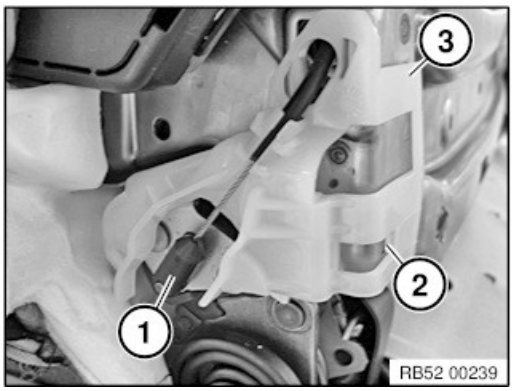
Unclip wiring harness (2) in marked area.

Release wiring harness (2) from cable clips on seat mechanism.

Important!

Feed all the wiring harnesses carefully through the seat and backrest mechanism as the edges of the frame can be sharp.

diagn.com



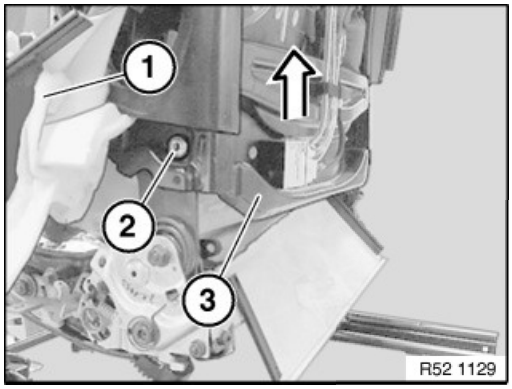
Unhook seat cover on left and right.

Unclip ball socket (1) from ball head on left and right.

Installation note:
Ball socket (1) must audibly snap into place.

Ball socket (1) must be able to move freely on the ball head.

Actuate rear catch (2) and remove guide for Bowden cable (3) by rotational movement towards the rear.



Unhook backrest cover (1) on left and right.

Release screws (2) on left and right.

Tightening torque 52 10 2 AZ.

Remove backrest frame (3) completely towards top.

Replacement:

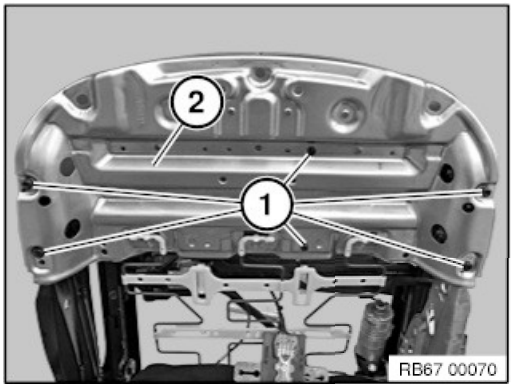
- Remove backrest cover with upholstery.

cardiagn.com

67 31 510 Removing and installing/replacing drive unit for seat cushion tilt adjustment

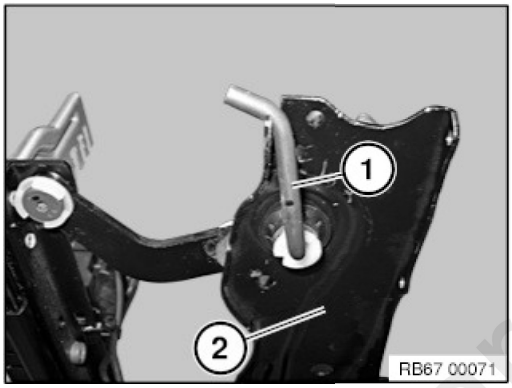
Necessary preliminary tasks:

- Remove driver's or front passenger seat
- Remove front seat cover

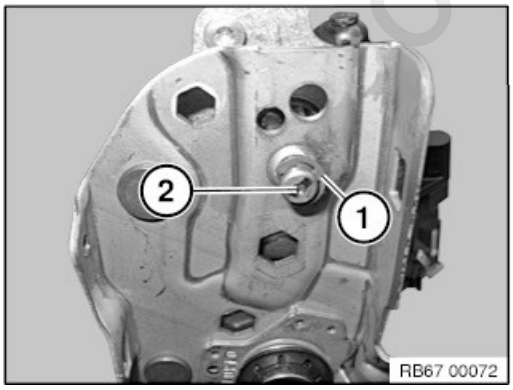


Release screws (1).

Remove cushion shell (2).

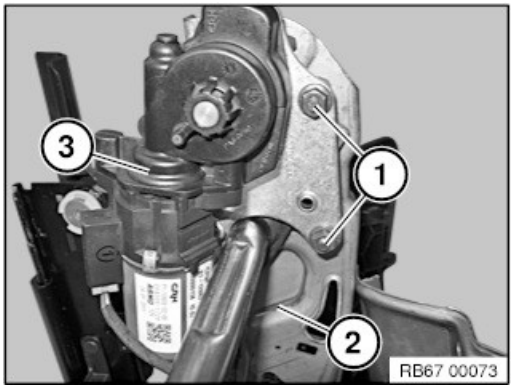


Detach spring (1) at seat frame (2).



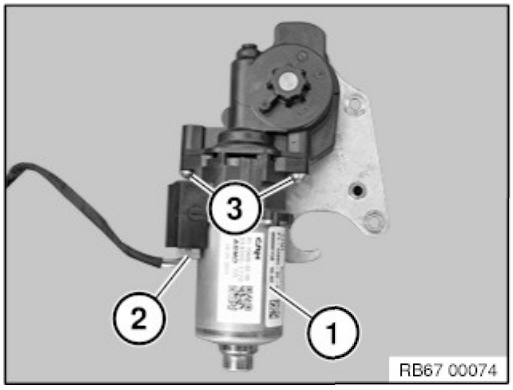
Remove fuse (1) from shaft (2).

cardiagn.com



Unscrew nuts (1).

Pull drive with transmission (3) out of seat frame (2) and remove.



Unfasten plug connection (2) and disconnect.

Release screws (3).

Tightening torque 67 31 1AZ.

Remove drive unit for seat cushion tilt adjustment (1).

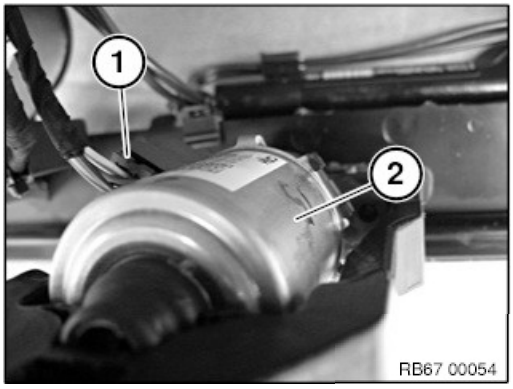
Note:
Carry out a function check.
Replacement:
Initialise seat height adjustment drive unit.

cardiagn.com

67 31 500 Removing and installing/replacing forward/back seat adjustment drive unit

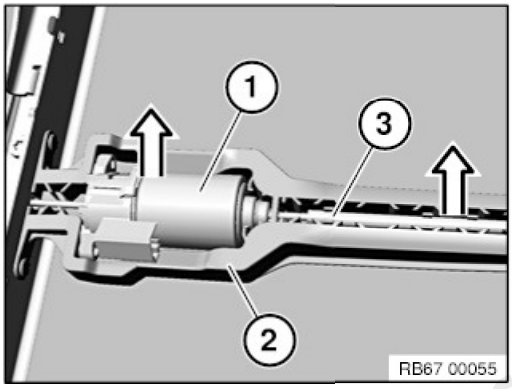
Necessary preliminary work:

- Raise front seat as far up as possible



Removal of electric motor for forward/back seat adjustment:

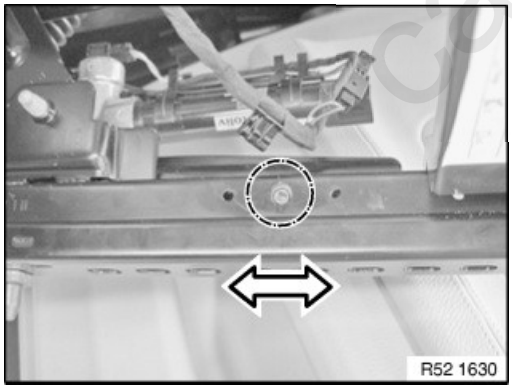
Unfasten plug connection (1) and disconnect.



Lift long flex shaft (3) out of guide in direction of arrow.

Pull out flex shaft (3) from electric motor for forward/back seat adjustment (1).

Remove electric motor for forward/back seat adjustment (1) in direction of arrow from holder (2).

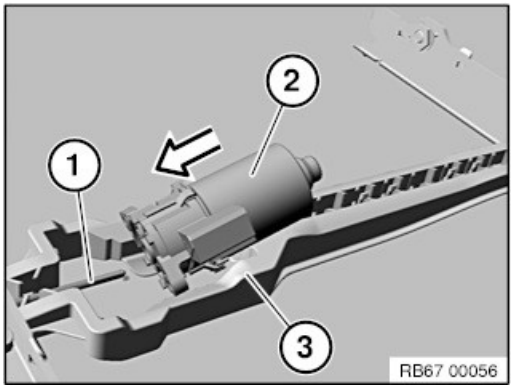


Installation of electric motor for forward/back seat adjustment:

Slide seat rail with opening forwards or back until bushing for flex shaft mounting of worm gear is flush.

Insert short flex shaft.

cardiagn.com

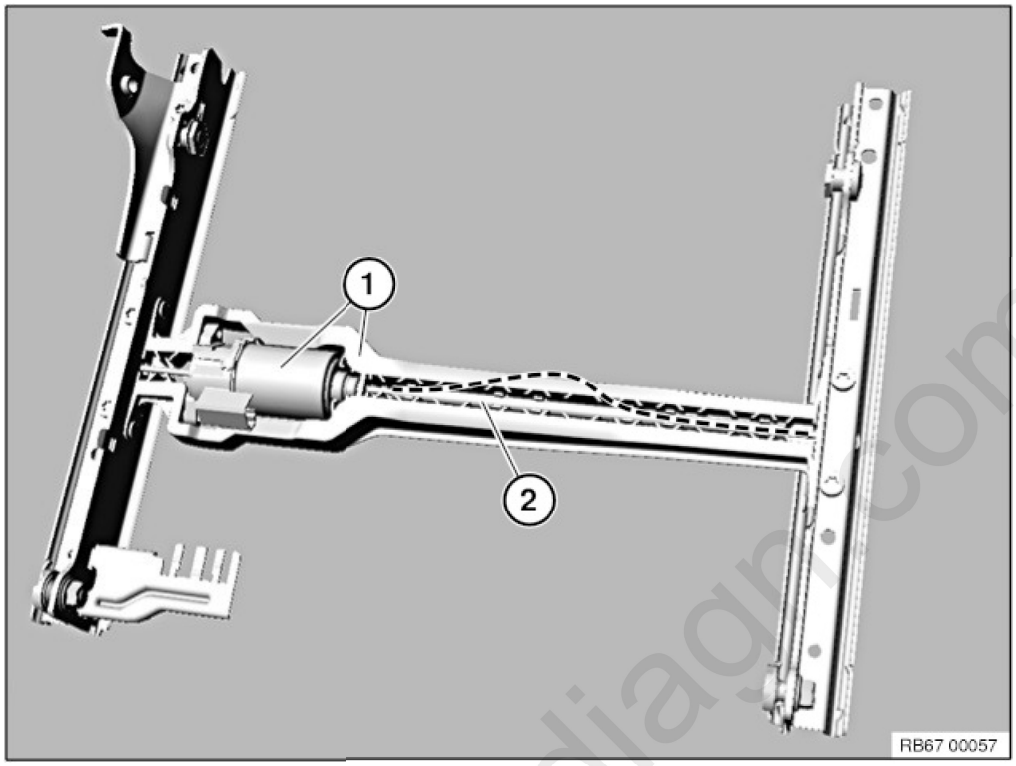


Connect electric motor for forward/back seat adjustment (2) to short flex shaft (1).

Installation note:
Make sure flex shaft (1) is correctly seated in electric motor (2) and seat rail mounting.

Clip in electric motor for forward/back seat adjustment (2) into holder (3).

Installation note:
Electric motor for forward/back seat adjustment (2) must audibly engage in holder (3).

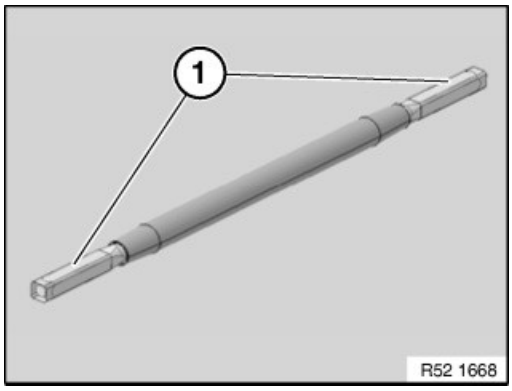


Insert long flex shaft (2) in worm gear on seat rail.

Bend long flex shaft (2) upwards and slide into electric motor for forward/back seat adjustment (1).

Clip in flex shaft into carrier plate.

Installation note:
Make sure flex shaft (2) is correctly seated in electric motor (1) and seat rail mounting.



Installation note:
PTFE hoses are shrink-fitted onto end pieces.

Check that hoses are free from damage.

cardiagn.com



Note:
Carry out a function check.
Replacement:
Initialize drive unit for forward/back seat adjustment.

cardiagn.com

52 13 526 Removing and installing/replacing left or right seat mechanism

Necessary preliminary tasks:

- Removing backrest frame
- Remove seat cover with upholstery

When replacing, remount the following parts depending on the version:

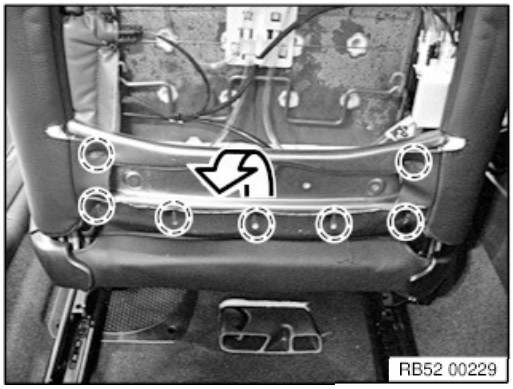
- Module for seat heating
- Control unit/module for seat adjustment
- Lower strap
- Backrest adjustment motor
- Seat height adjustment drive unit
- Forward/back seat adjustment drive unit
- Drive unit for seat cushion tilt adjustment
- Wiring harness to seat mechanism
- Position sensor for front seat
- Front seat sensor
- Seat occupancy mat for SBE

cardiagn.com

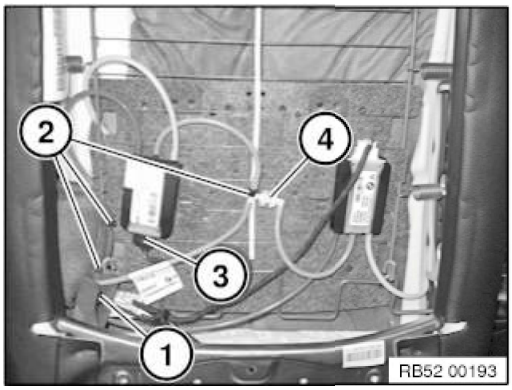
52 15 055 Removing and installing/replacing lumbar support on front seat

Necessary preliminary tasks:

- Remove rear panel on front seat



Detach backrest cover from backrest frame in marked area.



Unlock and disconnect plug connection (1) on lumbar support pump.

Unlock and disconnect plug connection (3) on valve body.

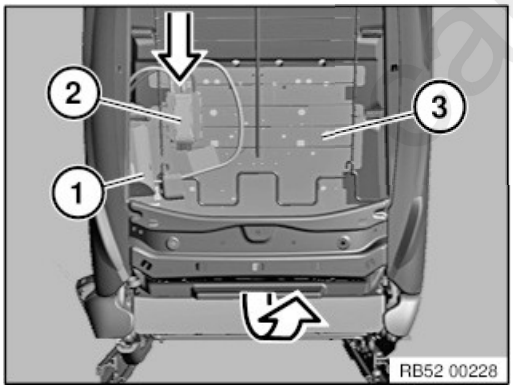
Release cable strap (2).

Installation note:
Completely remove remnants of cable ties.

Replace faulty cable straps.

Version with backrest width adjustment only.

Unlock and disconnect additional quick connector (4).



Detach valve body (2) from spring wire.

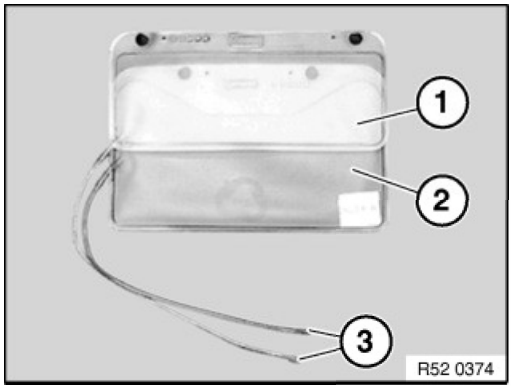
Detach lumbar support (3) from spring wire.

Press padding forward a little.

Carefully pull out lumbar support pump (1) downward with lumbar support (3) and valve body (2).



Installation note:
Attach lumbar support on second and fifth wire from the bottom.



Installation note:
Check lumbar support at top (1) and bottom (2) for damage.

Air hoses (3) must not be kinked.

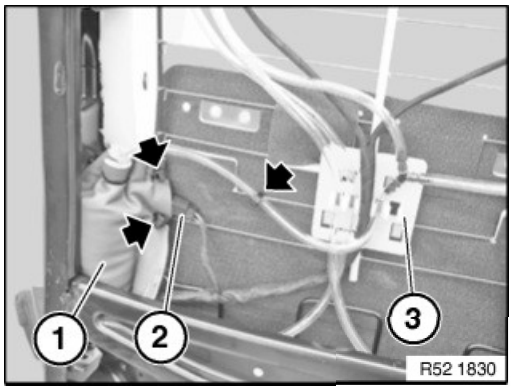
Installation note:
Run a function check.

cardiagn.com

52 15 059 Removing and installing/replacing lumbar support pump with valve body for lumbar support/backrest width adjustment

Necessary preliminary work:

- Remove rear panel



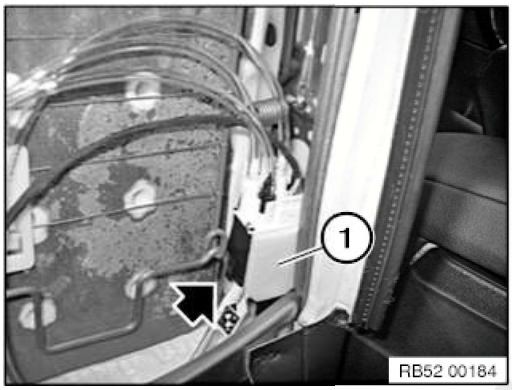
Cut open cable straps (arrows).

Installation note:
Replace defective cable straps.

Remove lumbar support pump (1) from backrest frame.

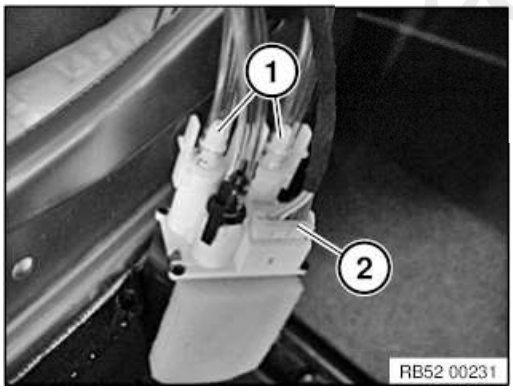
Unfasten plug connection (2) and disconnect.

Unclip air hose from holder (3).



Unclip valve body (1) from seat mechanism and feed out from backrest frame.*Installation note:*
Check the valve body (1) for correct fit in the backrest frame and spring wire.

Air hoses must not be kinked.



Unfasten plug connection (2) and disconnect.

Unlock quick connectors and detach air hoses (1).

Valve body for backrest width adjustment:

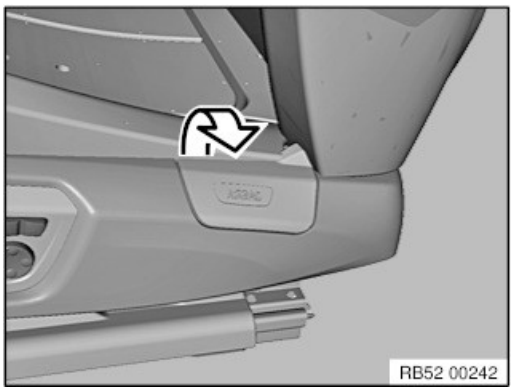
1. Lumbar support left/right = hose clear, quick-connector white

Installation note:
Connections are coded against incorrect assembly.

Note:
Run a function check.

ardiagn.com

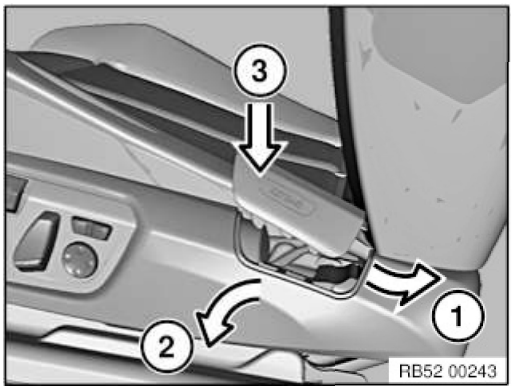
52 14 040 Removing and installing/replacing outer cover on left or right front seat (electric)



Move backrest to full rearward position.

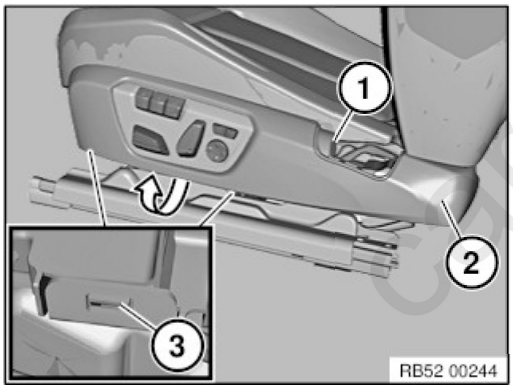
Grip end fitting cover centrally between seat belt strap and cover.

Unclip end fitting cover in direction of arrow.



Installation note:
Install end fitting cover as follows:

1. Insert cover with rear guide in covering.
2. Insert cover in direction of arrow downwards in covering
3. Engage top left of cover in covering.



Release screw (1).

Lever latch mechanism (3) of the cover (2) out of seat mechanism.

Remove cover (2) in direction of arrow from seat mechanism.

Unlock and disconnect plug connections behind from operating unit.

Installation note:
Cover must not be damaged.

Replace cover if necessary.

Replacement only:

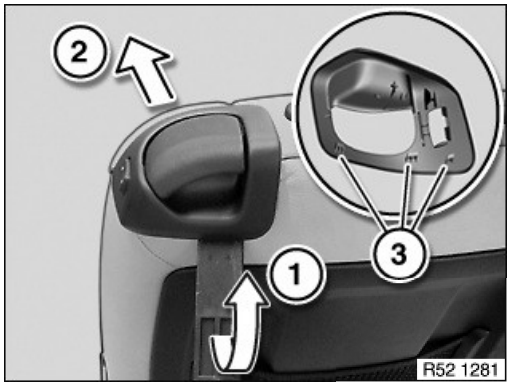
Remove operating unit for seat adjustment from cover.

cardiagn.com

52 13 034 Removing and installing/replacing release mechanism on left or right front seat

Necessary preliminary tasks:

- Remove front seat
- Remove rear panel



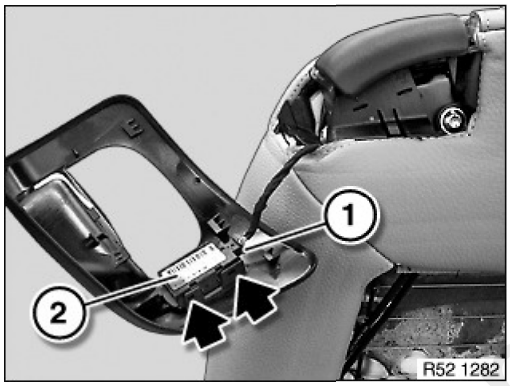
Lever out cover with plastic wedge in upward direction (1).

Slide cover forward (2) and feed out via release handle.

Installation note:

Check that the lugs (3) are correctly seated in the release mechanism.

Snap cover into place.

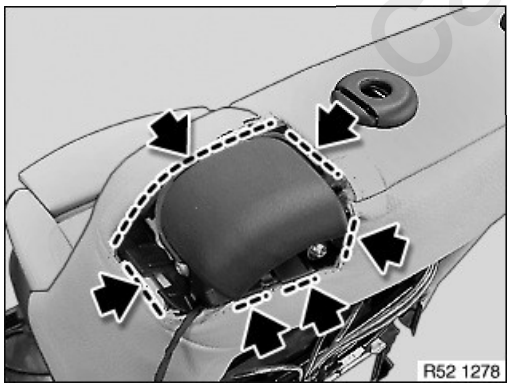


Only for front seat (electrical):

Unfasten plug connection (1) and disconnect.

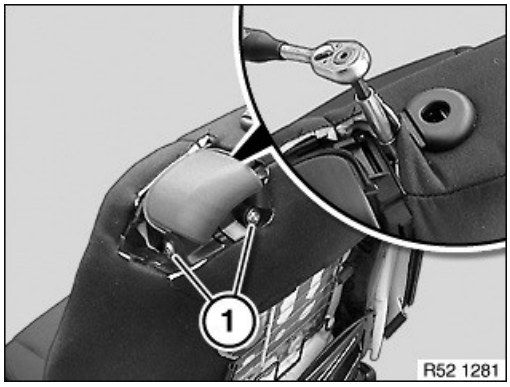
Replacement only:

Unclip switch (2).



Detach backrest cover in marked area.

carldiag1.com

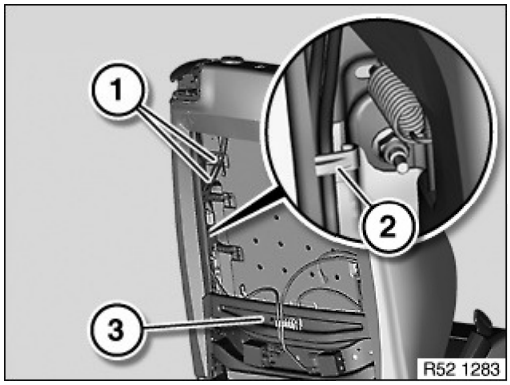


Important!

There is a risk of mixing up the screws.

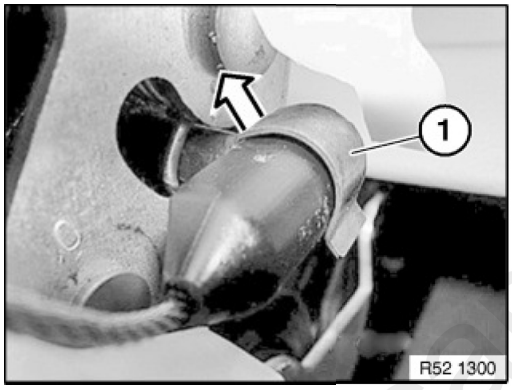
Release screws (1).

Release screw between backrest cover and release mechanism.



Feed Bowden cables (1) out of cable clip (2).

Clip cable clip (3) out of backrest frame.

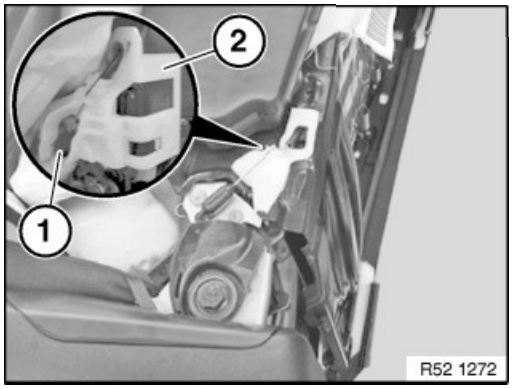


Unhook seat cover on left and right.

Lever out retaining clip (1) on the left and right.

Installation note:
Replace retaining clip (1).

Make sure the retaining clip (1) is correctly seated.



Unclip ball socket (1) from ball head on left and right.

Installation note:
Ball socket (1) must audibly snap into place.

Ball socket (1) must be able to move freely on the ball head.

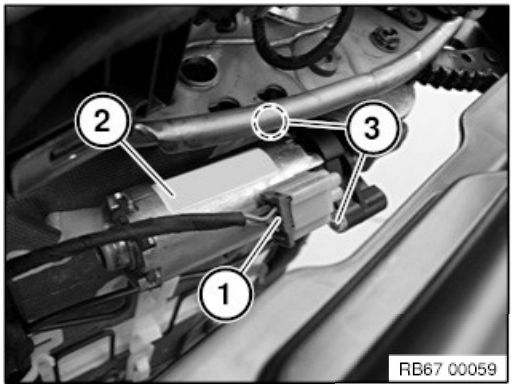
Feed Bowden cable out of guide (2) and backrest frame.

cardiagn.com

67 31 520 Removing and installing/replacing seat height adjustment drive unit

Necessary preliminary tasks:

- Remove driver's or front passenger seat



Set down front seat sideways on a suitable surface.

Unfasten plug connection (1) and disconnect.

Release screws (3).

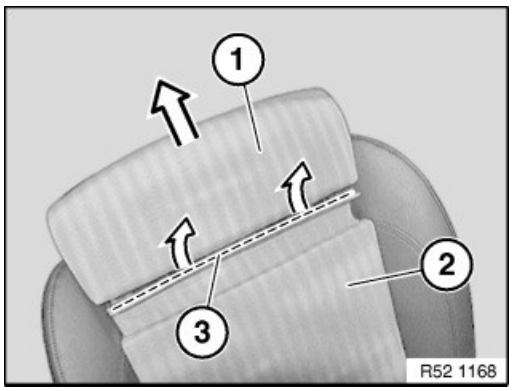
Tightening torque 67 31 1AZ.

Feed out seat height adjustment drive unit (2) and remove.

Note:
Carry out a function check.
Replacement:
Initialise seat height adjustment drive unit.

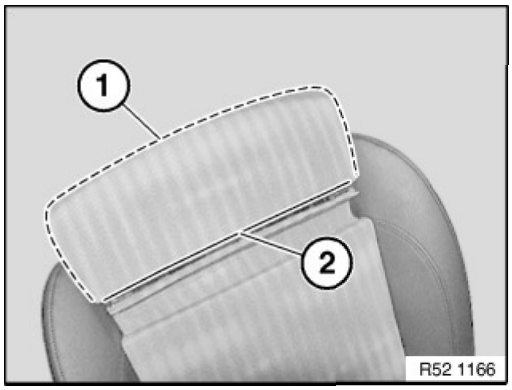
cardiagn.com

52 15 403 Removing or installing/replacing thigh support cover on left or right front seat (Sport)



Unlock and move thigh support (1) as far forward as possible.

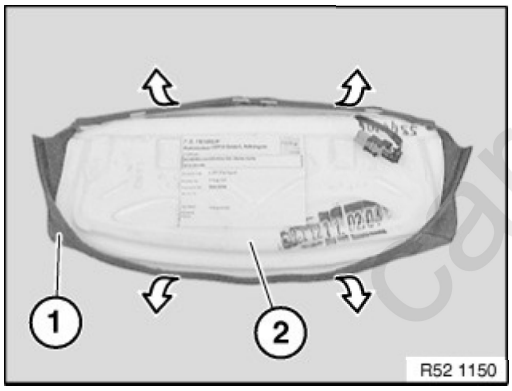
Lift out welt of seat cover (2) from thigh support.



Lever out cover welt in marked area (1).

Detach trim wire in marked area (2) from thigh support.

Remove cover with upholstery.



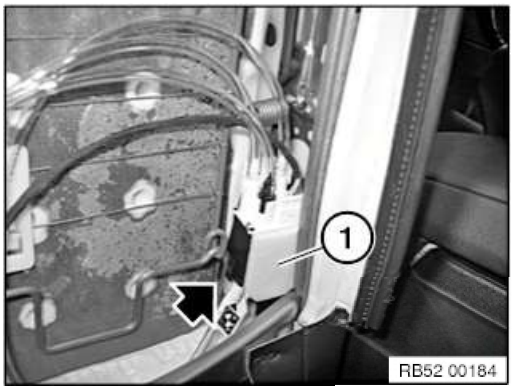
Pull cover (1) off upholstery (2).

cardiagn.com

52 16 056 Replace both seat cushions for backrest width adjustment on front seat (sport/electrical) on the left or right

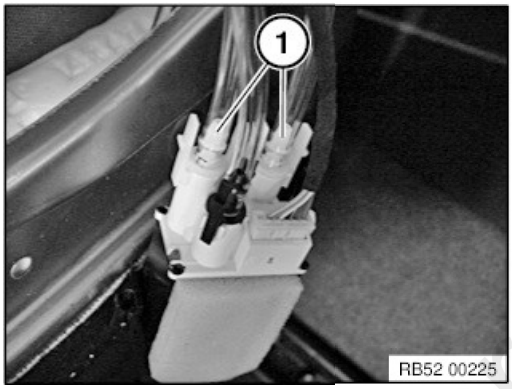
Necessary preliminary tasks:

- Remove the rear panel from the front seat
- Completely drain air cushion for backrest width adjustment



Unclip valve body (1) from seat mechanism and feed out from backrest frame.*Installation note:*
Check the valve body (1) for correct fit in the backrest frame and spring wire.

Air hoses must not be kinked.

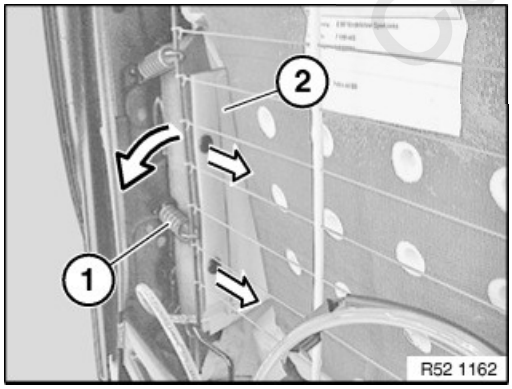


Unlock quick connectors and detach air hoses (1).

Valve body for backrest width adjustment:

1. Lumbar support left/right = hose clear, quick-connector white

Installation note:
Connections are coded against incorrect assembly.



Note:
Removal operation is shown on left side, right analogous to that.

The air cushion must be deflated completely.

Detach spring (1) top and bottom.

Lever out clips.

Feed out air cushion (2) between spring wire and backrest frame.

Installation note:
Replace faulty clips.

Check air cushion for damage.

Insert air cushion without kinks.

Note:
Carry out function check

cardiagn.com

52 15 455 Replace heating elements for front seat (Sport) on left and right

Necessary preliminary tasks:

- Remove seat cover
- Remove backrest cover
- Remove thigh support cover

Note:
Heating elements are bonded with the foam part and cannot be separated from each other without causing damage.

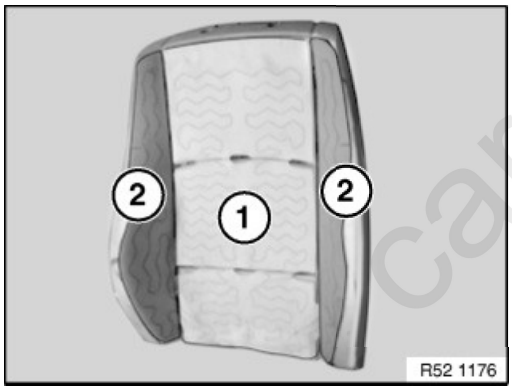
Foam part and heating elements must be replaced.

Check new foam part:

- No obvious damage or material defects
- All trim wires present in foam
- No bubbles in foam part
- No dirt contamination on foam or residual foam
- Pay attention to foam part on left and right

Check new heating mat:

- No obvious damage or material defects
- All tear-off film pieces present
- Note variant by examining label on cable



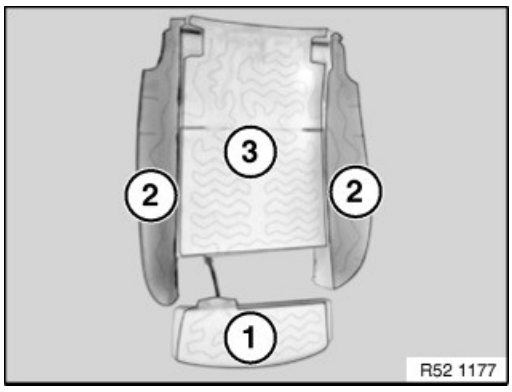
Guide cable for backrest heating through foam hole.

Stick on main section (1):

- Pull adhesive film pieces off main section (1) and stick to upper edge of main section foam until flush

Stick on bead section (2):

- Pull adhesive film pieces off bead section (2) and stick on heating mat along bead section edge.
- Press down evenly in outwards direction



Guide cable for seat heating through foam hole.

Bond the STV heating mat (1):

- Pull off the adhesive film and bond flush with the rear foam edge

Stick on bead section (2):

- Pull adhesive film pieces off bead section (2) and stick on heating mat along bead section edge.
- Press down evenly in outwards direction

Stick on main section (3):

- Pull adhesive film pieces off main section (3) and stick to upper edge of main section foam until flush

cardiagn.com



Check laying of heating mats:

- Heating mats laid without folds
- Heating mats correctly positioned
- All bonding surfaces stuck on

Note:
Carry out function check

cardiagn.com

52 15 410 Replace seat and backrest cover for front seat (sport), left or right



Operations are described in:

- Replacing seat cover for front seat
- Replacing backrest cover for front seat

cardiagn.com

52 15 420 Replace upholstery for front seat backrest (sport)



Operation is described in:

- Replace backrest cover for front seat

cardiagn.com

52 15 417 Replace upholstery for thigh support (Sport) at left or right



Operation is described in:

- Replacing thigh support upholstery cover on left or right front seat.

cardiagn.com

52 15 405 Replacing backrest cover for front seat (Sport)

Special tools required:

- 52 0 050

Necessary preliminary tasks:

- Remove front seat
- Remove rear panel on front seat backrest
- Remove guide sleeves
- Remove cover of release mechanism

Important!

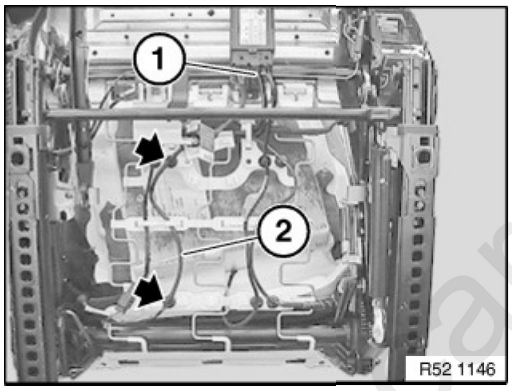
Risk of damage on sharp-edged seat mechanism.

Guide all cables carefully through seat and backrest mechanism.

Make sure cable is routed without kinks and tension.

Make sure plug connections are correctly locked.

Make sure connectors are correctly seated in latch mechanisms.



Version with seat heating only:

Unlock plug connection (1) for seat heating and disconnect.

Detach cable strap.

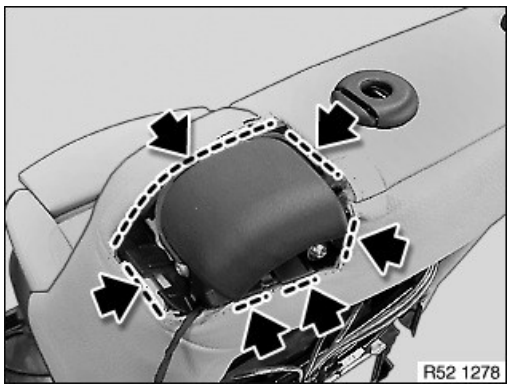
Release seat heater cable (2) from cable clips on seat mechanism.

Installation note:
Plug connection is encoded to prevent incorrect connection.

Replace cable strap.

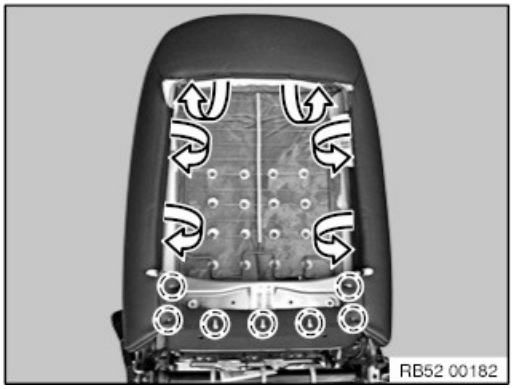
Important!

Feed the wiring harness carefully through the seat and backrest mechanism as the edges of the frame can be sharp.



Detach backrest cover in marked area.

cardiagn.com



Lift welt out of backrest frame.

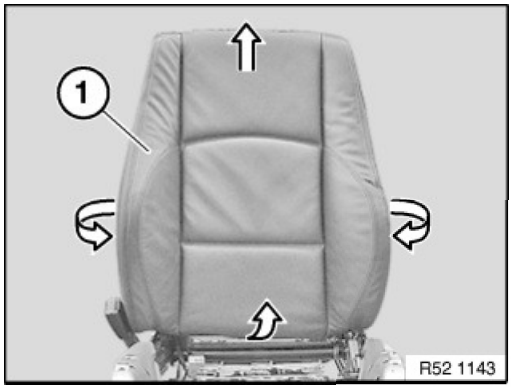
Detach backrest cover at bottom from the metal tabs in the marked area.

Carefully slide bracing cloth with foam through backrest gap and seat structure.

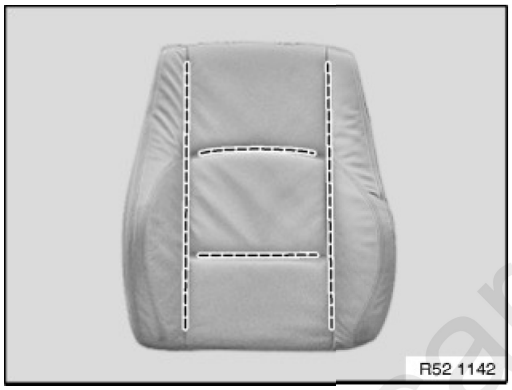
If applicable, route cable carefully through seat and backrest mechanics as the edges of the frame may be sharp.

Installation note:
Slide foam completely through backrest gap and seat structure.

Make sure foam and bracing cloth are correctly fitted.



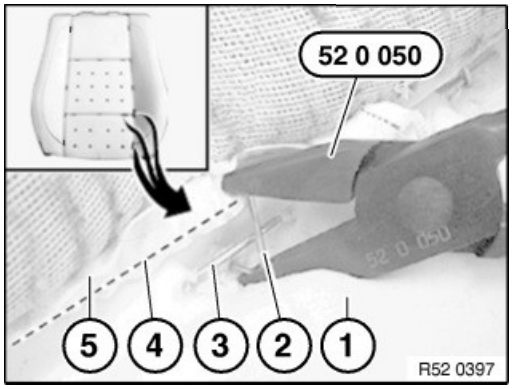
Pull off backrest cover (1) with upholstery sideways and towards top from backrest frame.



Release all clamps in marked area.

Remove backrest cover from padding.

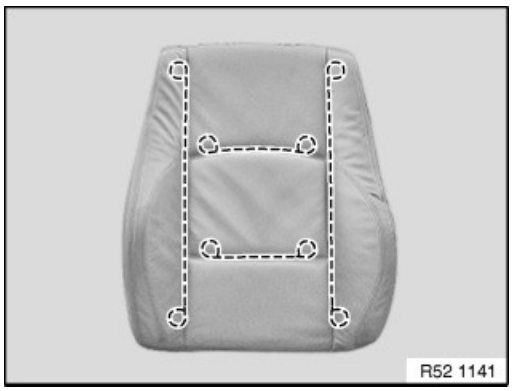
Note:
Remove all remnants of clamps from backrest cover and upholstery.



Installation note:
Bend new clamp (2) with special tool 52 0 050 .

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in backrest cover
5. Backrest cover

cardiagn.com



Replacement only:

Pull trim wires out of backrest cover.

Cut new backrest cover to size and insert trim wires.

cardiagn.com

52 15 451 Replacing backrest heating element for left or right sports seat



Operation is described in:

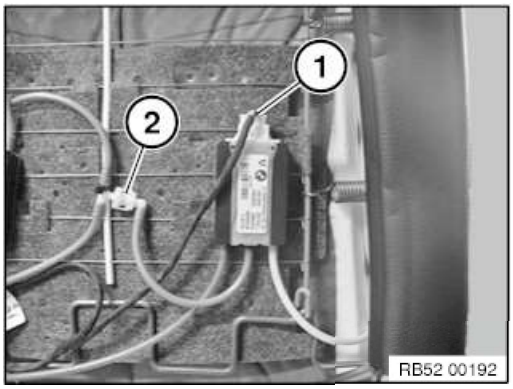
- Replace heating elements for front seat left or right

cardiagn.com

52 15 062 Replacing backrest width adjustment with valve on left or right

Necessary preliminary work:

- Remove the rear panel from the front seat
- Fully drain air cushion

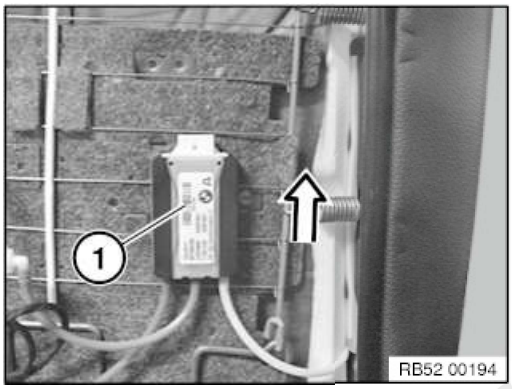


Unlock plug connection (1) and disconnect.

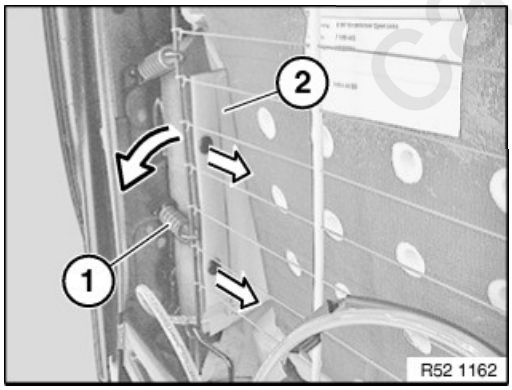
Unlock quick connector (2) and pull off air hose from adapter.

Installation note:
Connections are coded against incorrect assembly.

Air hoses must not be kinked.



Unclip valve (1) towards top from spring wire.



Note:
Removal operation is shown on left side, right analogous to that.

Air cushion (2) must be fully drained.

Detach spring (1) top and bottom.

Lever out clips.

Feed out air cushion (2) between spring wire and backrest frame.

Installation note:
Replace faulty clips.

Insert the air cushion without kinks.

Check air cushion for damage.

Note:
Run a function check.

cardiagn.com

52 15 450 Replacing cushion heating element for left or right front seat



Operation is described in:

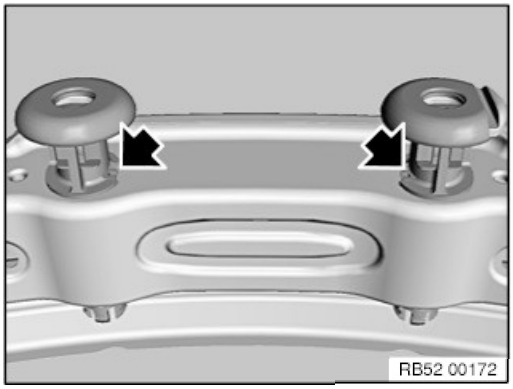
- Replace heating elements for front seat left or right

cardiagn.com

52 13 ... Replacing guide sleeves for front left or right head restraint

Necessary preliminary work:

- Remove front head restraint

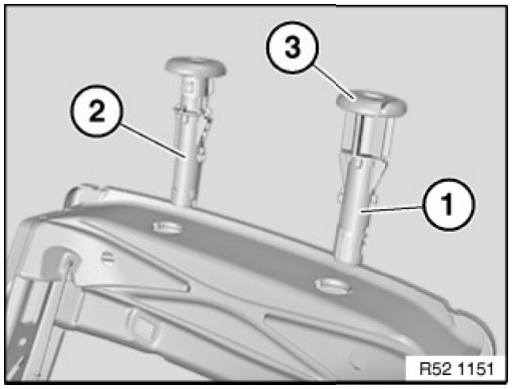


Note:
Shown here without backrest cover for a better overview.

Push the backrest cover with upholstery down next to the guide sleeve.

Carefully insert screwdriver between the backrest cover and guide sleeve.

Unlock the retaining lug with a screwdriver and remove the guide sleeves through the top.



Installation note:
Install guide sleeves as follows:

1. Guide sleeve with pushbuttonÂ (3) in direction of travel left
2. Guide sleeve without pushbutton in direction of travel right

cardiagn.com

52 15 452 Replacing heating element for left or right front seat (thigh support)



Operation is described in:

- Replace heating elements for front seat left or right

cardiagn.com

52 15 400 Replacing seat cover for front seat (Sport)

Special tools required:

- 52 0 050

Necessary preliminary tasks:

- Remove front seat
- Remove thigh support
- Remove inner cover
- Remove outer cover

Important!

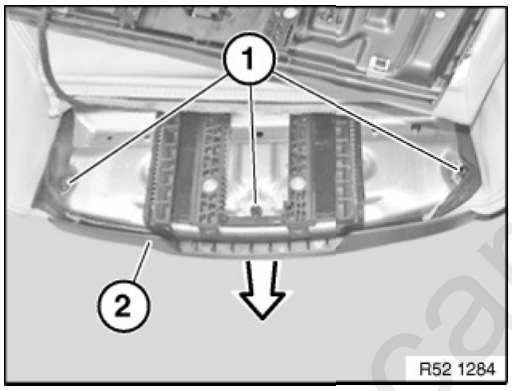
Risk of damage on sharp-edged seat mechanism.

Guide all cables carefully through seat and backrest mechanism.

Make sure cable is routed without kinks and tension.

Make sure plug connections are correctly locked.

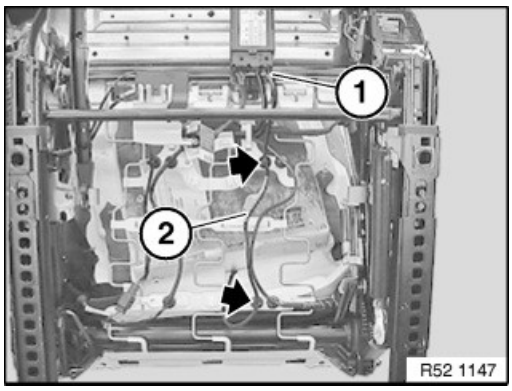
Make sure connectors are correctly seated in latch mechanisms.



Unlock retaining lugs (1).

Remove seat trim (2) downwards.

Installation note:
Seat trim (2) must not be damaged.



Version with seat heating only:

Unlock plug connection (1) for seat heating and disconnect.

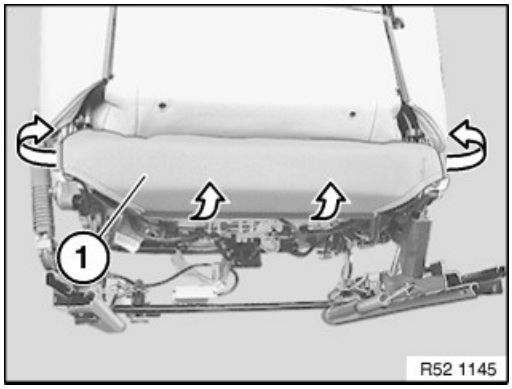
Detach cable strap.

Release wiring harness (2) from cable clips on seat mechanism.

Important!

Feed the wiring harness carefully through the seat and backrest mechanism as the edges of the frame can be sharp.

cardiagn.com

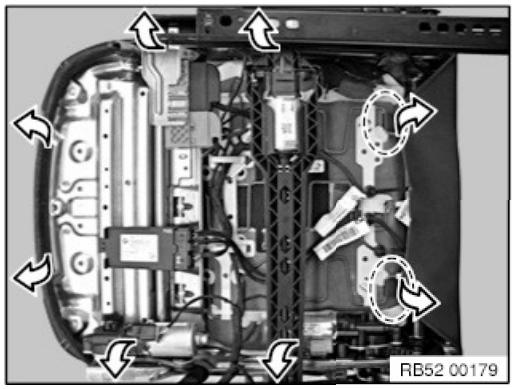


Carefully slide bracing cloth (1) with foam through backrest gap and seat structure.

If applicable, route cable carefully through seat and backrest mechanics as the edges of the frame may be sharp.

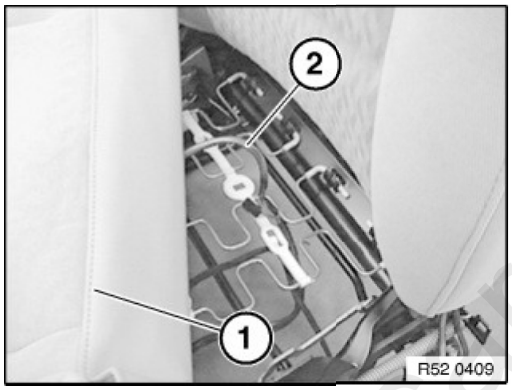
Installation note:
Slide foam completely through backrest gap and seat structure.

Make sure foam and bracing cloth are correctly fitted.



Fully lift welt of seat cover out of seat frame.

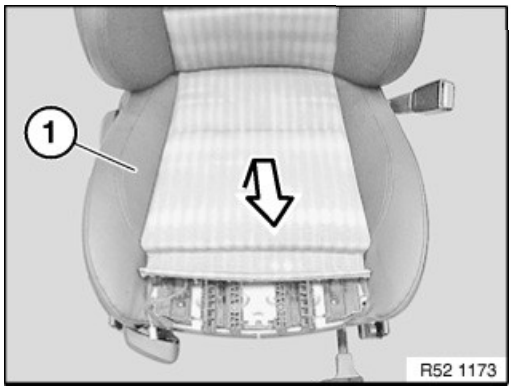
Disengage seat cover at rear.



<u>Version with seat heating:</u>

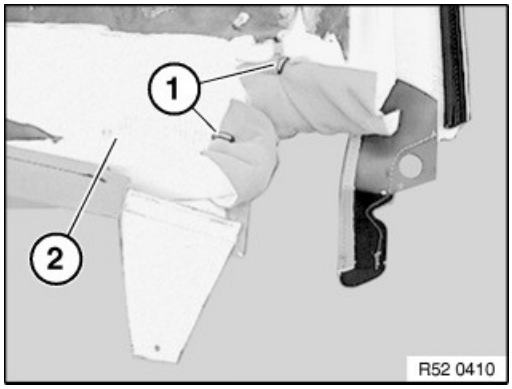
Pull seat cover (1) with upholstery forward a little and feed wiring harness (2) out.

Remove seat cover (1) with padding towards front/top.

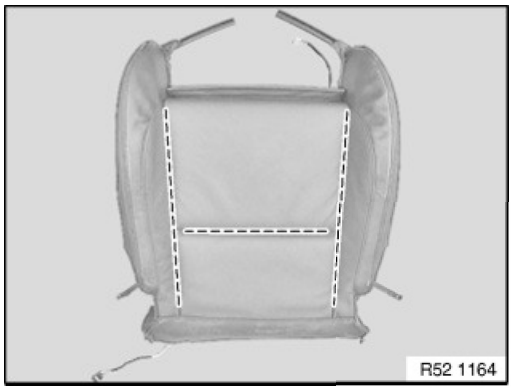


Remove seat cover (1) with padding towards front/top.

cardiagn.com



Release all clamps (1) from seat cover (2).



Detach all clamps in side area from longitudinal wires.

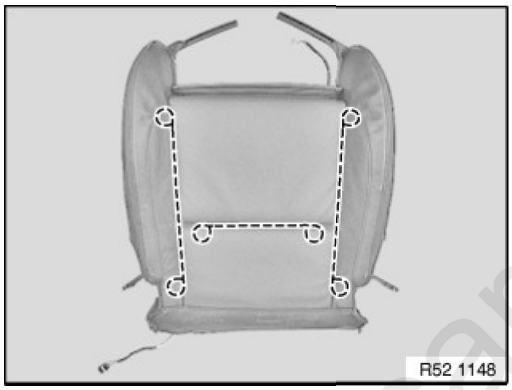
Pull trim wires forward out of seat cover.

Carefully fold back seat cover and release clamps from cross-wires.

Remove seat cover from upholstery.

Important!

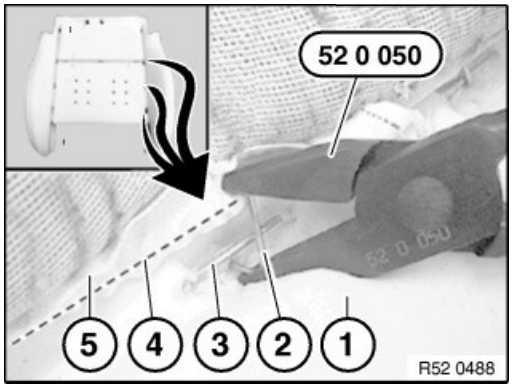
Remove all remnants of clamps from seat cover and upholstery.



Replacement only:

Pull trim wires out of seat cover.

Cut new seat cover to size and insert trim wires.



Installation note:
Bend new clamps (2) with special tool 52 0 050 .

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in cover
5. Seat cover

cardiagn.com

52 15 415 Replacing upholstery for front seat (sport)



Operation is described in:

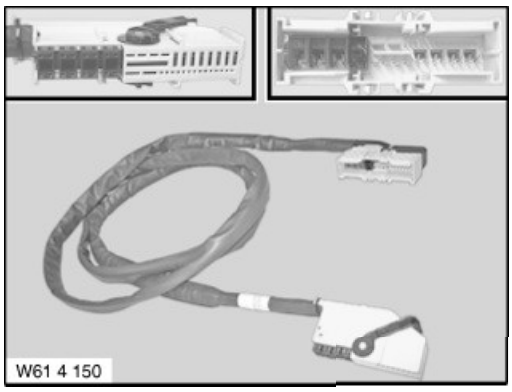
- Replacing seat cover for front seat

cardiagn.com

52 14 ... Performing function check with adapter cable (for seat repairs)

Special tools required:

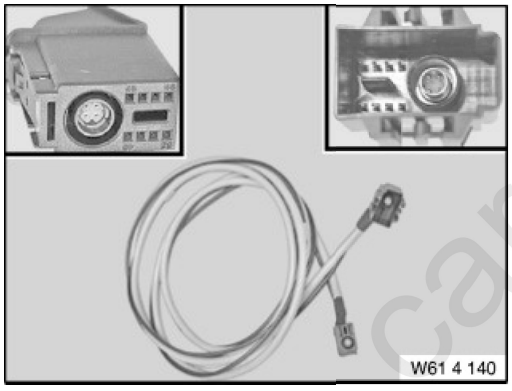
- 61 4 140
- 61 4 150



Seat function check: *Note:*
The function check on a repaired driver's or front passenger seat can be performed outside the vehicle by using adapter cable 61 4 150 .

Application:

Adapter cable is connected to vehicle wiring harness and removed seat 61 4 150 .



RSE (rear passenger compartment monitor) function check *Note:*
The function check of the RSE (rear passenger compartment monitor) on a repaired driver's or front passenger seat can be performed outside the vehicle by using adapter cable 61 4 140 .

Application:

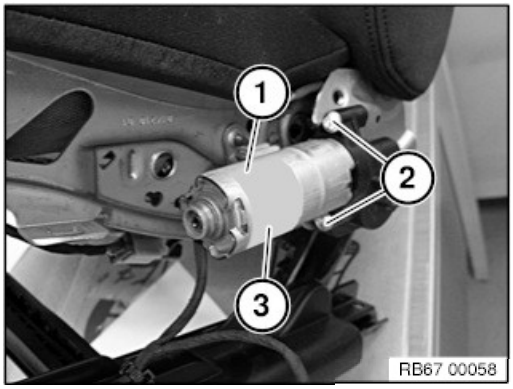
Adapter cable is connected to vehicle wiring harness and removed seat 61 4 140 .

cardiagn.com

67 31 530 Removing and installing/replacing backrest adjustment motor

Necessary preliminary tasks:

- Remove covers on front seat



Unfasten plug connection (1) and disconnect.

Unfasten screws (2).

Remove electric motor (3).

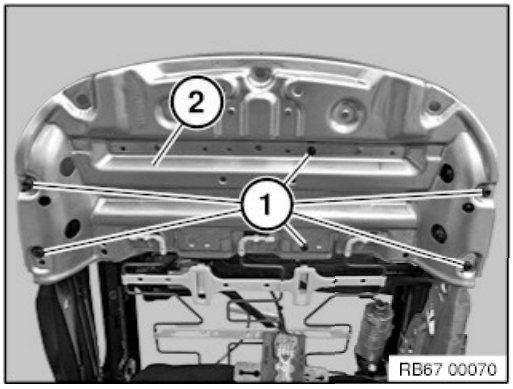
Note:
Carry out a function check.
Replacement:
Initialise backrest adjustment motor.

cardiagn.com

67 31 510 Removing and installing/replacing drive unit for seat cushion tilt adjustment

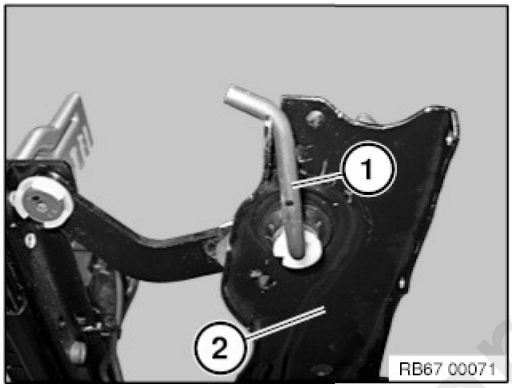
Necessary preliminary tasks:

- Remove driver's or front passenger seat
- Remove front seat cover

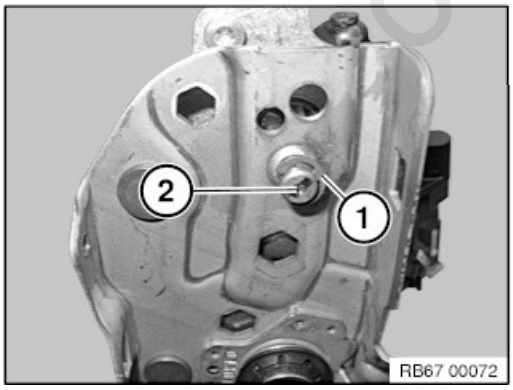


Release screws (1).

Remove cushion shell (2).

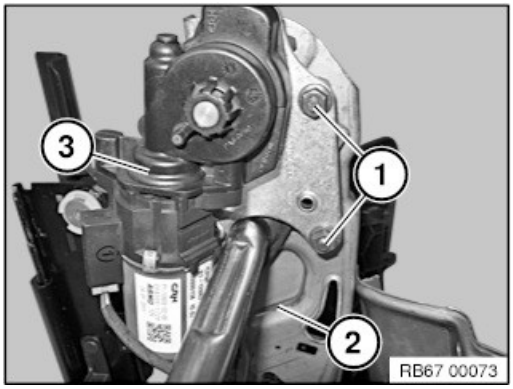


Detach spring (1) at seat frame (2).



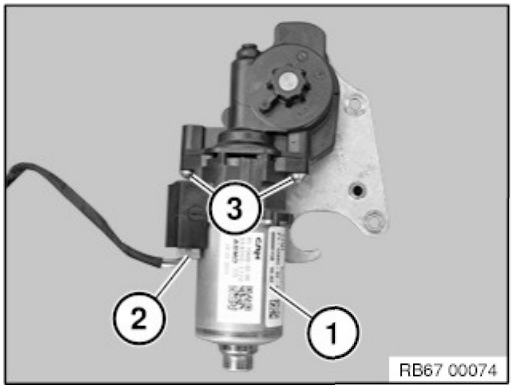
Remove fuse (1) from shaft (2).

cardiagn.com



Unscrew nuts (1).

Pull drive with transmission (3) out of seat frame (2) and remove.



Unfasten plug connection (2) and disconnect.

Release screws (3).

Tightening torque 67 31 1AZ.

Remove drive unit for seat cushion tilt adjustment (1).

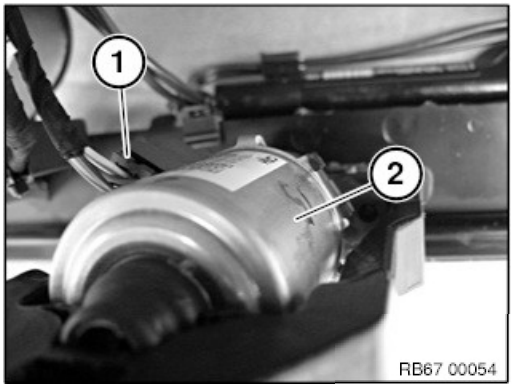
Note:
Carry out a function check.
Replacement:
Initialise seat height adjustment drive unit.

cardiagn.com

67 31 500 Removing and installing/replacing forward/back seat adjustment drive unit

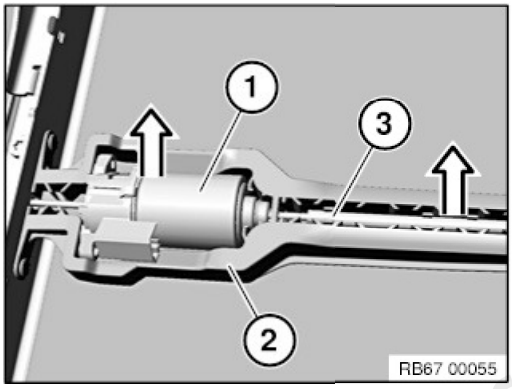
Necessary preliminary work:

- Raise front seat as far up as possible



Removal of electric motor for forward/back seat adjustment:

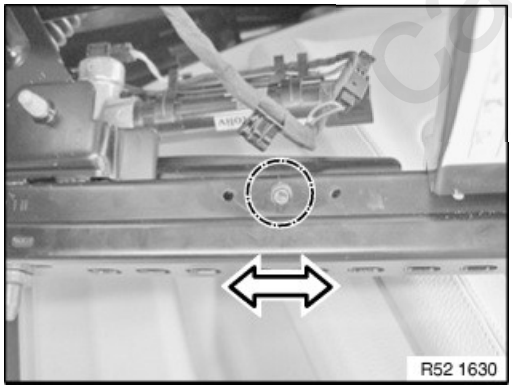
Unfasten plug connection (1) and disconnect.



Lift long flex shaft (3) out of guide in direction of arrow.

Pull out flex shaft (3) from electric motor for forward/back seat adjustment (1).

Remove electric motor for forward/back seat adjustment (1) in direction of arrow from holder (2).

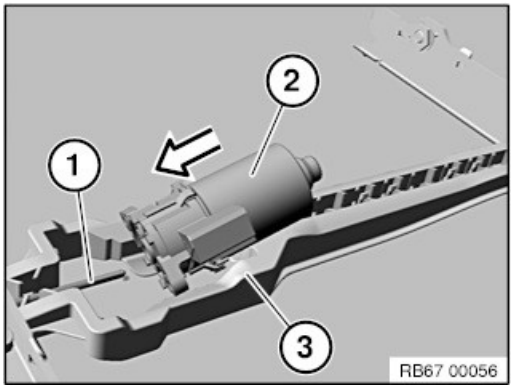


Installation of electric motor for forward/back seat adjustment:

Slide seat rail with opening forwards or back until bushing for flex shaft mounting of worm gear is flush.

Insert short flex shaft.

cardiagn.com

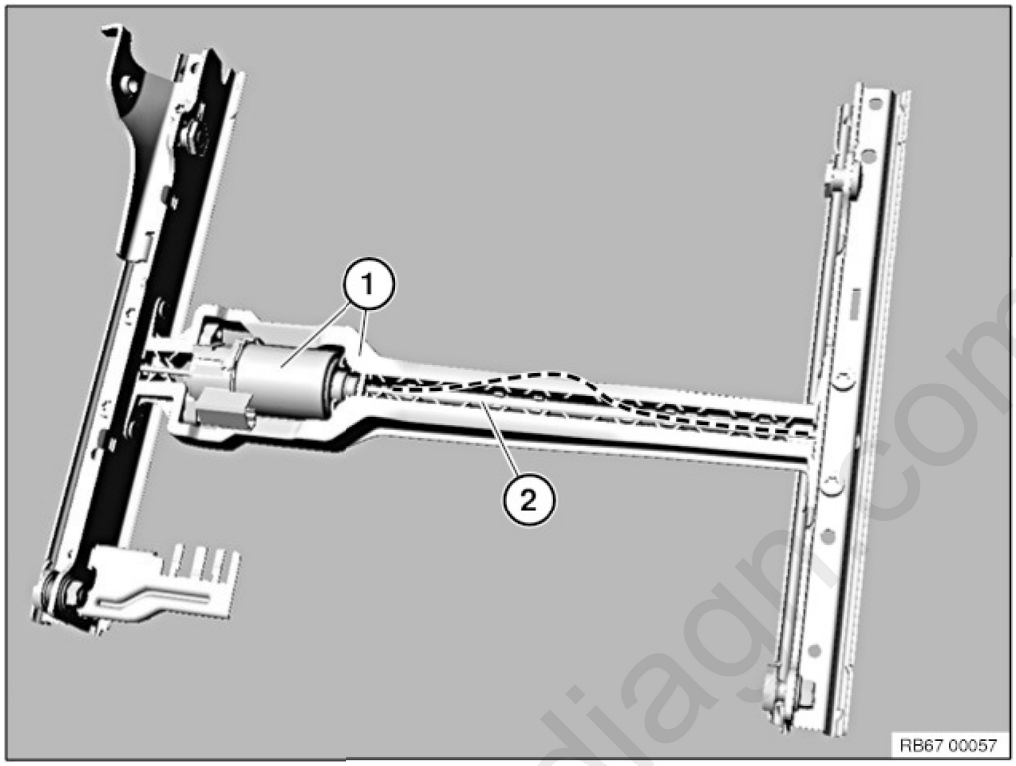


Connect electric motor for forward/back seat adjustment (2) to short flex shaft (1).

Installation note:
Make sure flex shaft (1) is correctly seated in electric motor (2) and seat rail mounting.

Clip in electric motor for forward/back seat adjustment (2) into holder (3).

Installation note:
Electric motor for forward/back seat adjustment (2) must audibly engage in holder (3).

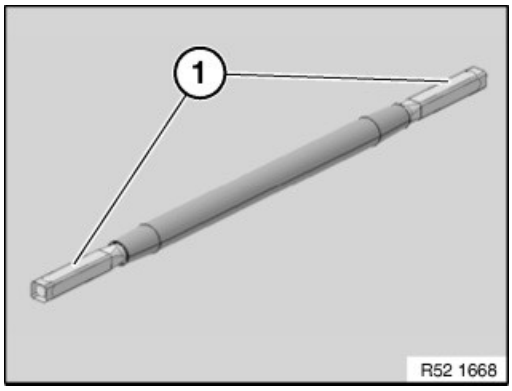


Insert long flex shaft (2) in worm gear on seat rail.

Bend long flex shaft (2) upwards and slide into electric motor for forward/back seat adjustment (1).

Clip in flex shaft into carrier plate.

Installation note:
Make sure flex shaft (2) is correctly seated in electric motor (1) and seat rail mounting.



Installation note:
PTFE hoses are shrink-fitted onto end pieces.

Check that hoses are free from damage.

cardiagn.com



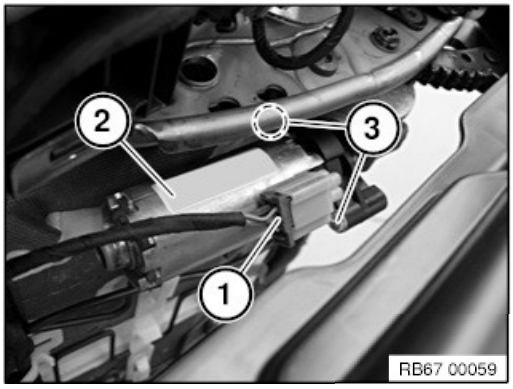
Note:
Carry out a function check.
Replacement:
Initialize drive unit for forward/back seat adjustment.

cardiagn.com

67 31 520 Removing and installing/replacing seat height adjustment drive unit

Necessary preliminary tasks:

- Remove driver's or front passenger seat



Set down front seat sideways on a suitable surface.

Unfasten plug connection (1) and disconnect.

Release screws (3).

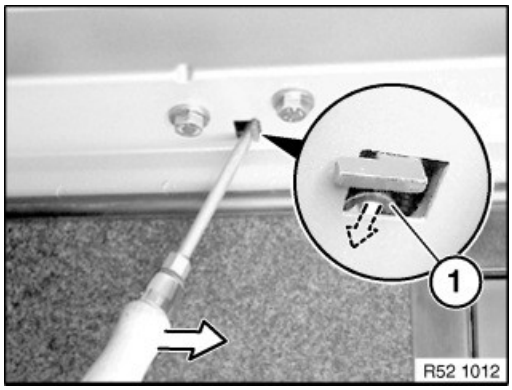
Tightening torque 67 31 1AZ.

Feed out seat height adjustment drive unit (2) and remove.

Note:
Carry out a function check.
Replacement:
Initialise seat height adjustment drive unit.

cardiagn.com

52 26 ... Emergency actuator for rear seat backrest



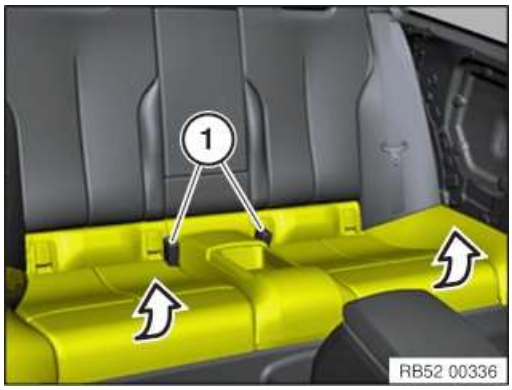
Open luggage compartment.

Insert screwdriver for levering in snap-in hole of rear seat lock.

Press screwdriver to centre of car and in so doing press supporting pointÂ (1) of Bowden cable outwards.

cardiagn.com

52 26 005 Removing and installing / replacing rear seat



Unclip rear seat towards top and remove seat belt buckle (1).*Installation note:*
Feed seat belt buckles (1) into recesses in rear seat.

cardiagn.com

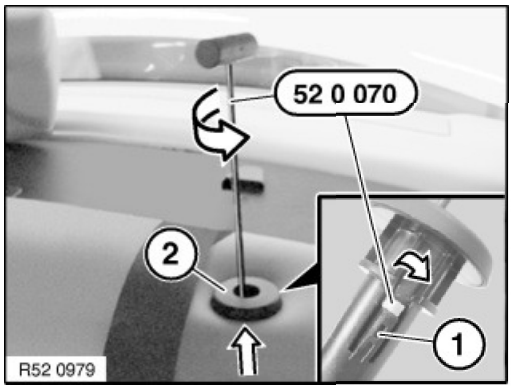
52 26 ... Removing and installing/replacing all guide sleeves for rear head restraints

Special tools required:

- 52 0 070

Necessary preliminary tasks:

- Remove head restraint from rear seat



Insert special tool 52 0 070 into guide hole of sleeve (2) up to upper area of retaining lug.

Feed release tongue of special tool into rear gap on retaining lug (1).

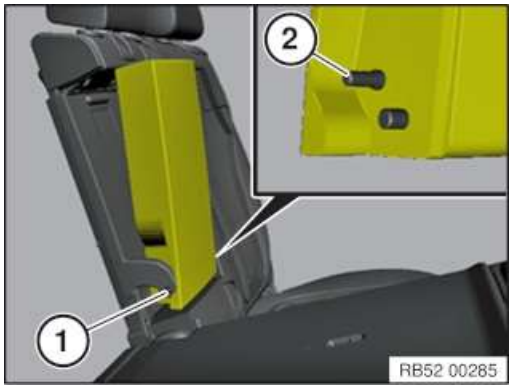
Turn tool to release sleeve (2) and pull out by lifting upwards.

Installation note:
Replace guide sleeves and install as follows:

- Left-hand guide sleeve with catch
- Right-hand guide sleeve without catch

cardiagn.com

52 26 030 Removing and installing/replacing armrest for rear seat backrest (through-loading facility)



Unlock right backrest and tilt forwards.

Release screw (1).

Tightening torque 52 26 02AZ.

Feed out centre armrest from left and right guides (2).

cardiagn.com

52 26 011 Removing and installing/replacing backrest for left rear seat



Note:
This repair work is described in section on:

- Removing and installing both backrests for rear seat backrest

cardiagn.com

52 26 012 Removing and installing/replacing backrest for right rear seat



Note:
This repair work is described in section on:

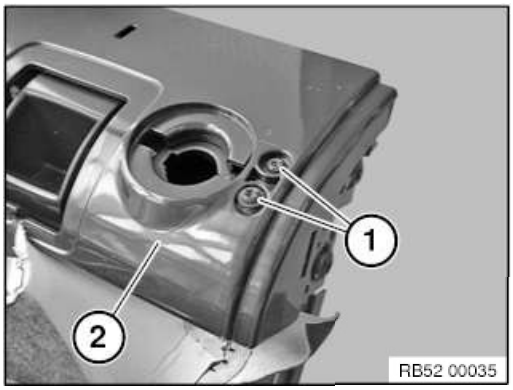
- Removing and installing both backrests for rear seat backrest

cardiagn.com

52 26 081 Removing and installing/replacing backrest frame for centre rear seat

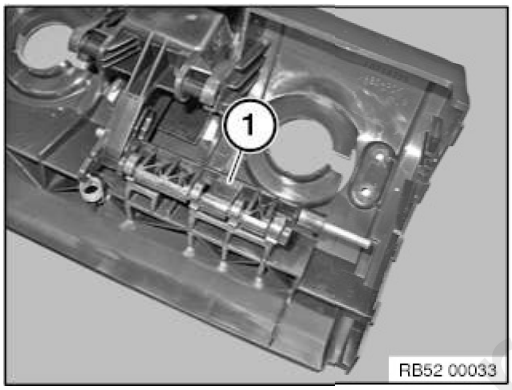
Necessary preliminary tasks:

- Remove the centre backrest cover
- Remove middle rear seat backrest seat belt buckle



Release screws (1).

Remove the actuating unit (2).



Installation note:
Make sure unlocking rod (1) is correctly seated in the operating unit.

cardiagn.com

52 26 080 Removing and installing/replacing backrest frame for left rear seat (basic seat)



Note:
This operation is described in:

- Remove left backrest cover

cardiagn.com

52 26 087 Removing and installing/replacing backrest frame for left rear seat (through-loading facility)

Necessary preliminary tasks:

- Remove backrest cover for rear seat with left through-loading system

cardiagn.com

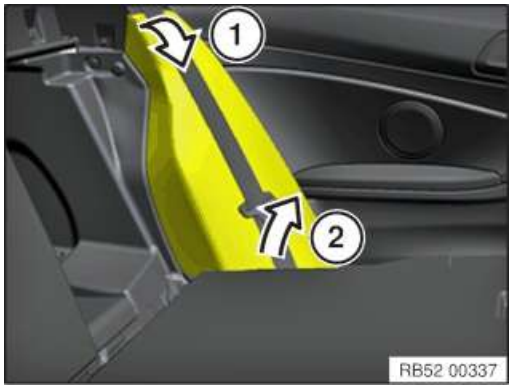
52 26 085 Removing and installing/replacing backrest frame for right rear seat

Note:
This operation is described in:

- Remove right backrest cover

cardiagn.com

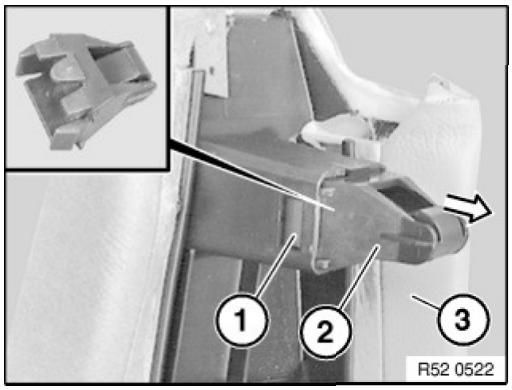
52 26 008 Removing and installing/replacing backrest side section on left or right rear seat backrest



Unfasten backrest and tilt forwards.

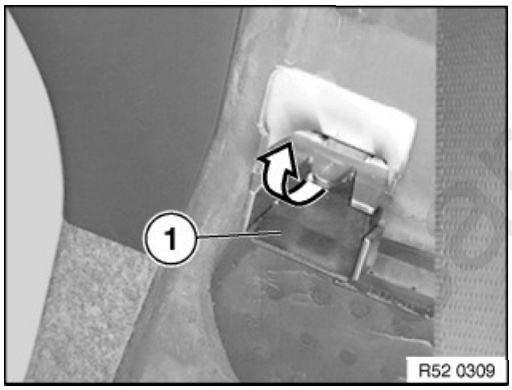
Pull seat belt to middle and place over head restraint.

Pull top backrest side section (1) forwards and pull out upwards (2).



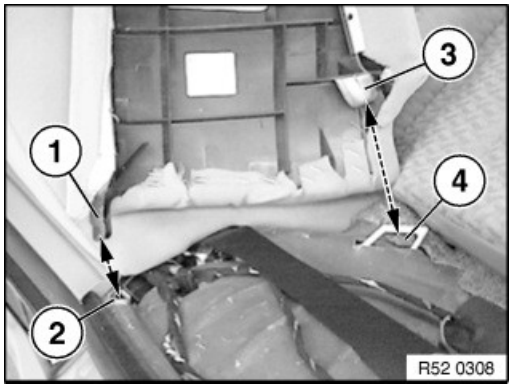
<u>If necessary, replace defective clip (2) from backrest side section:</u>

Unfasten left and right catches (1) and pull clip (3) off backrest side section (2).



<u>If necessary, replace defective clip (1) from body:</u>

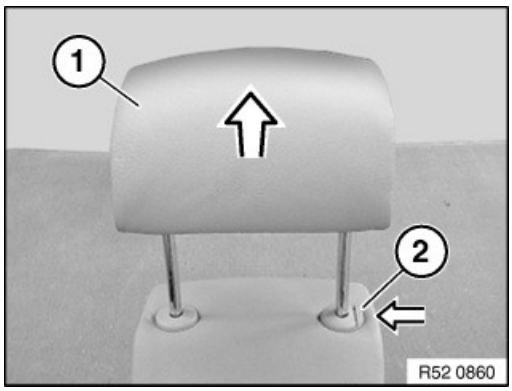
Pull clip (1) towards front out of the body.



Installation note:
Slide the guide (1) into the fixture and (2) and guide (3) into fixture (4).

autodiagn.com

52 26 210 Removing and installing/replacing headrest for left or right rear seat

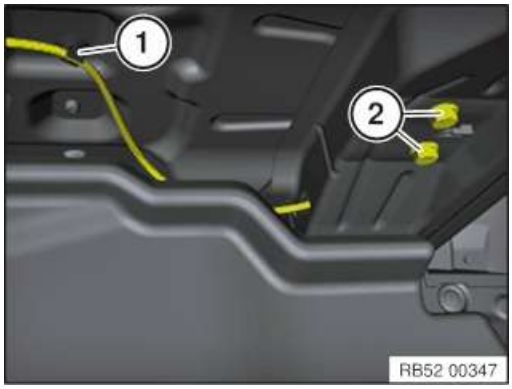


Fold the rear seat backrest forward and adjust the headrest (1) to the maximum top position.

Press lockÂ (2) and pull upwards and out head restraint (1).

cardiagn.com

52 26 311 Removing and installing/replacing lock for left or right rear seat backrest



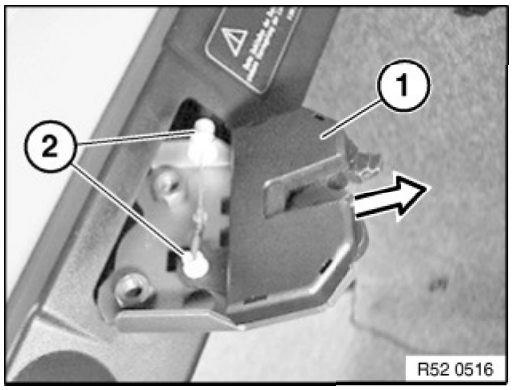
Unlock and fold back rear seat backrest.

Note:
If unlocking mechanism is faulty effect an emergency opening.

Unclip Bowden cable from holders (1).

Release screw (2).

Tightening torque 52 26 08AZ.

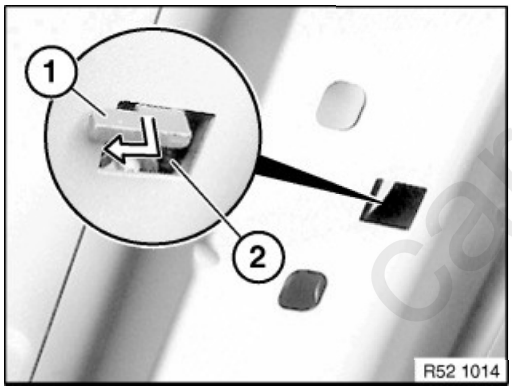


Pull lock (1) out of installation opening slightly and unclip Bowden cable (2).

Remove lock completely from installation opening.

Installation note:
Catches (2) on lock must not be damaged.

Bowden cable must be correctly anchored in catches (2).



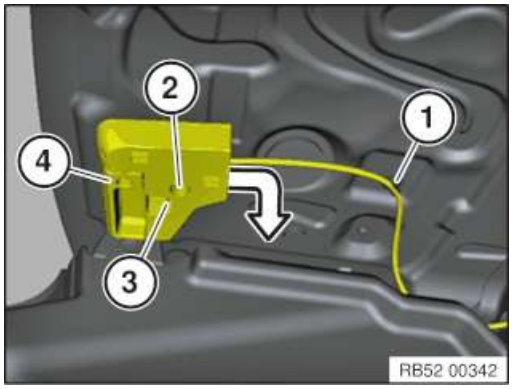
Installation note:
Slide guide lug (1) of lock into recess (2).

Adjusting lock:

- Slacken screws
- Firmly push engaged backrest back
- Tighten down screws

cardiagn.com

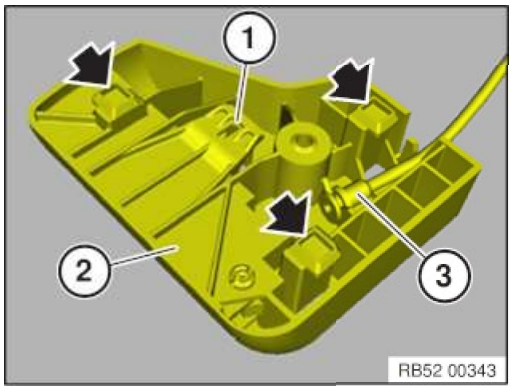
52 26 303 Removing and installing/replacing operation for left or right rear seat backrest



Unclip Bowden cable (1).

Release screw (2).

Unfasten catch (3) rearwards and at the same time unclip actuator (4) in direction of arrow.

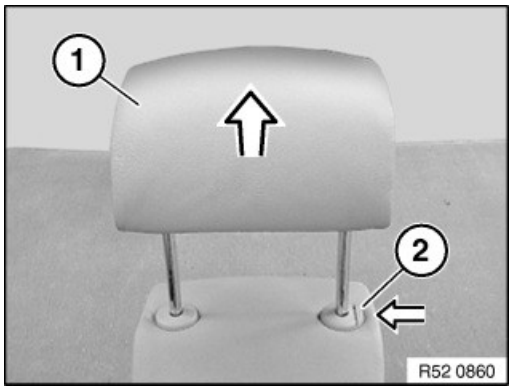


Installation note:
Catches (1) and marked guides of actuator (2) must not be damaged.

Actuator cable (3) must be correctly engaged in actuator (2).

cardiagn.com

52 26 388 Removing and installing/replacing rear middle head restraint



If applicable, fold back head restraint (1) and move upwards to max. extent.

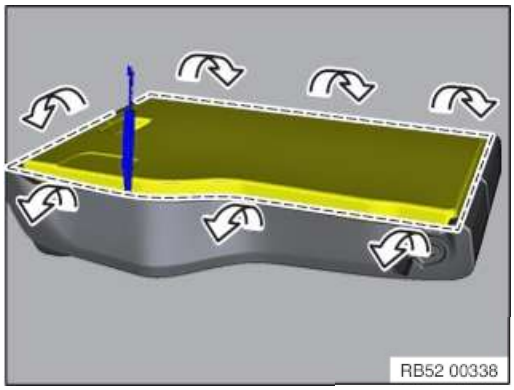
Press lock (2) and pull upwards and out head restraint (1).

cardiagn.com

52 26 199 Removing and installing/replacing rear panel on left rear seat backrest (basic seat)

Necessary preliminary tasks:

- Fold left backrest forwards



Lever welt surrounding from backrest frame.

Remove rear panel from backrest frame.

Installation note:
Insert the rear panel in the backrest frame first.

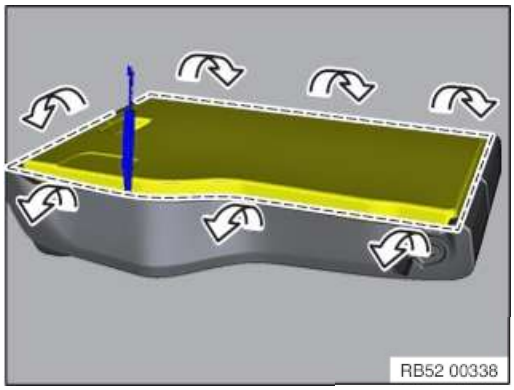
Press the welt from the backrest cover into the frame.

cardiagn.com

52 26 206 Removing and installing/replacing rear panel on left rear seat backrest (through-loading facility)

Necessary preliminary tasks:

- Fold left backrest forwards



Lever welt surrounding from backrest frame.

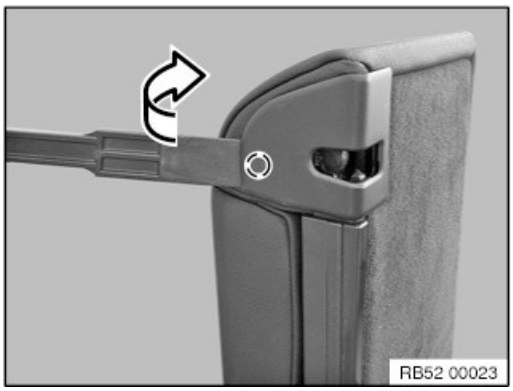
Remove rear panel from backrest frame.

Installation note:
Insert the rear panel in the backrest frame first.

Press the welt from the backrest cover into the frame.

cardiagn.com

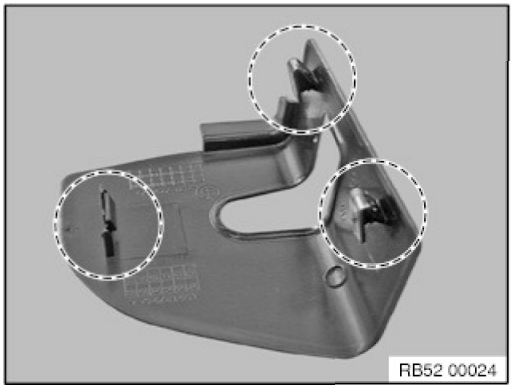
52 26 202 Removing and installing/replacing rear panel on rear centre seat backrest



Unclip trim coverÂ for lock with a plastic wedge.

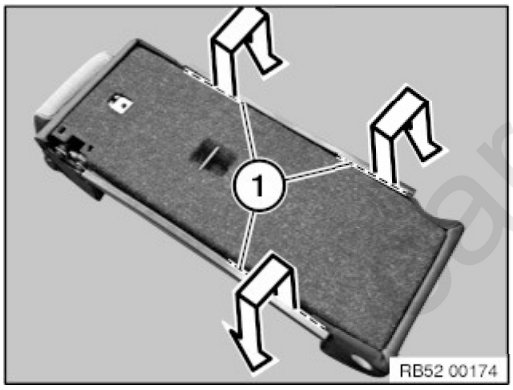
Move trim cover for lock a little towards the middle.

Detach trim cover for lock by pulling towards rear.



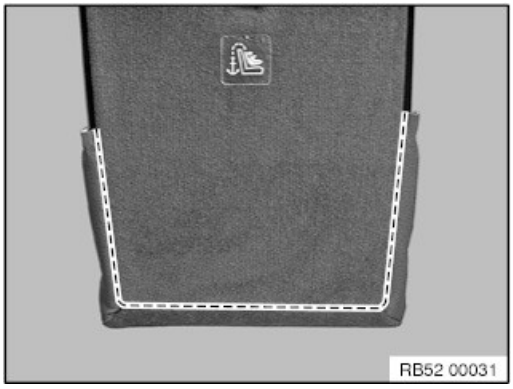
Installation note:
Retaining lugs on the trim cover for the lock must not be damaged.

Replace defective trim cover for lock.



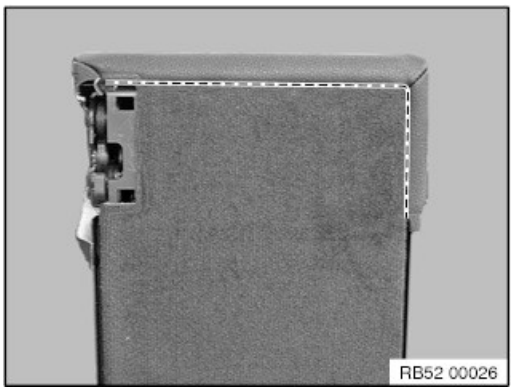
Note:
Welt of backrest cover is partially positioned below the centre armrest cover.

Carefully lift out the centre armrest cover in the marked area (1).



Lever out welt in marked area.

cardiagn.com



Lever out welt in marked area.

Detach rear panel.

Installation note:
Insert the rear panel in the backrest frame first.

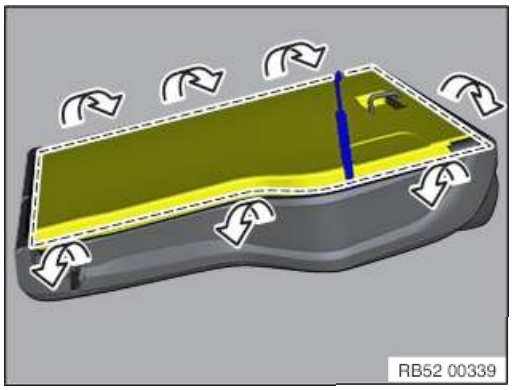
Insert welt of backrest cover in frame.

cardiagn.com

52 26 200 Removing and installing/replacing rear panel on right rear seat backrest

Necessary preliminary tasks:

- Fold down the right backrest forwards



Lever welt surrounding from backrest frame.

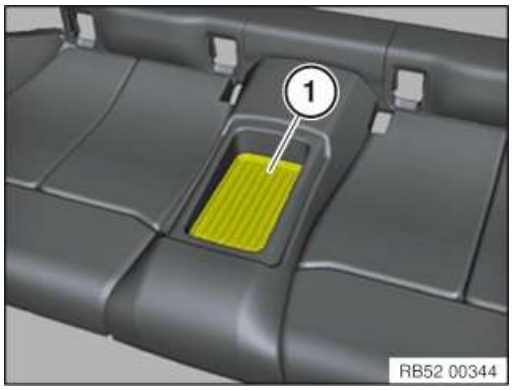
Remove rear panel from backrest frame.

Installation note:
Insert the rear panel in the backrest frame first.

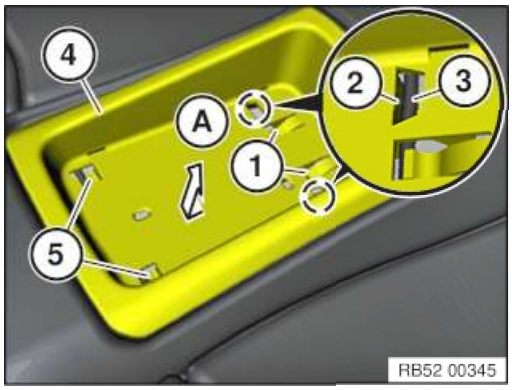
Press the welt from the backrest cover into the frame.

cardiagn.com

52 26 495 Removing and installing/replacing storage tray of rear seat

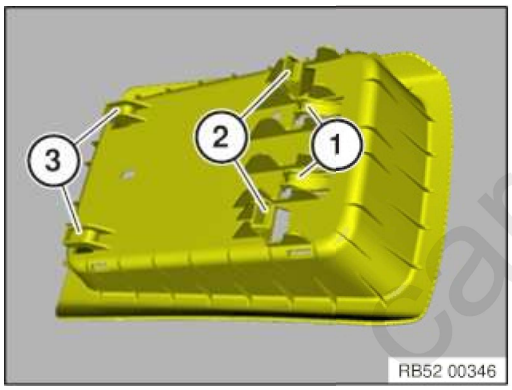


Remove the insert mat (1).



Lift latch mechanisms (1) and at the same time remove latch mechanisms (2) towards the front at the top (A) from the seat frame (3).

Carefully remove storage tray (4) towards top rear from guides (5).



Installation note:
Latch mechanisms (1 and 2) and guides (3) must not be damaged.

cardiagn.com

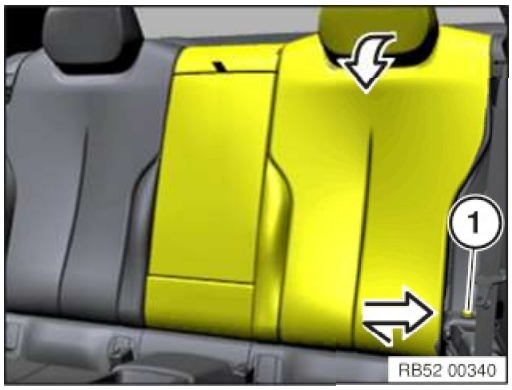
52 26 020 Removing and refitting/replacing both rear seat backrests

Necessary preliminary tasks:

- Remove armrest side section
- Remove rear seat

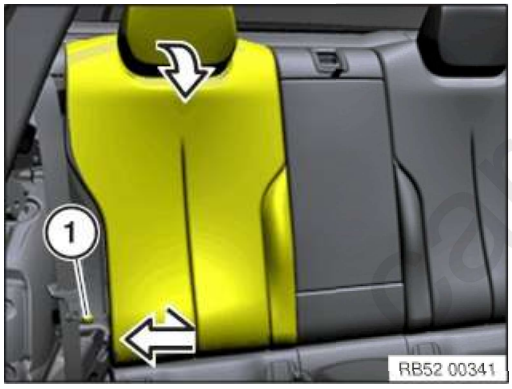
Note:
The assistance of a second person is required to remove and refit the backrest.

Both backrests have to be pulled out of the centre mount at the same time.



Left backrest:

- Undo screw (1)
  Tightening torque 52 26 01AZ.
- Fold backrest forwards
- Pull backrest forwards and outwards out of centre mount



Right backrest:

- Undo screw (1)
  Tightening torque 52 26 01AZ.
- Fold backrest forwards
- Pull backrest forwards and outwards out of centre mount

cardiagn.com

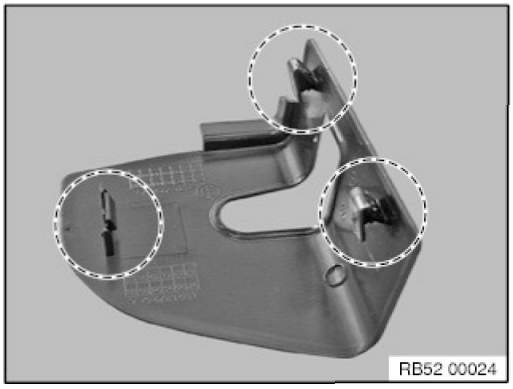
52 26 315 Removing and refitting/replacing lock for centre rear seat backrest



Unclip trim cover for lock with a plastic wedge.

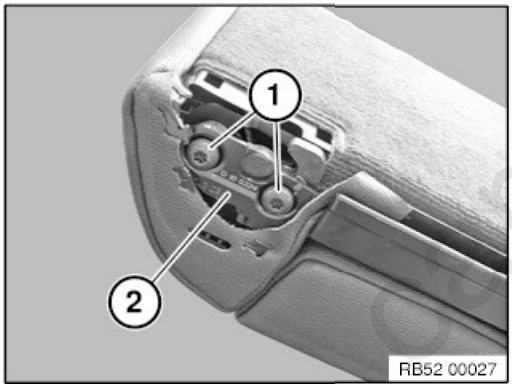
Move trim cover for lock a little towards the middle.

Detach trim cover for lock by pulling towards rear.



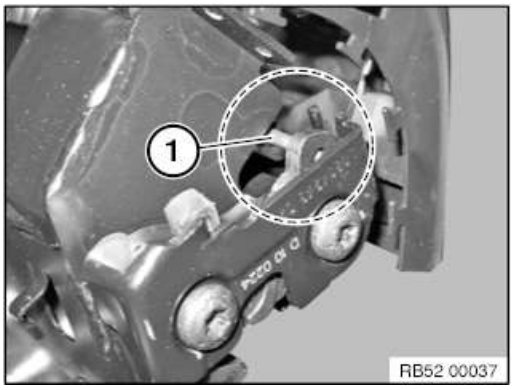
Installation note:
Retaining lugs on the trim cover for the lock must not be damaged.

Replace defective trim cover for lock.



Release screws (1) and feed lock (2) out of rear seat backrest.

Tightening torque 52 26 06AZ.



Installation note:
Make sure operating rod (1) is correctly seated in the lock.

Run a function check.

carldiagn.com

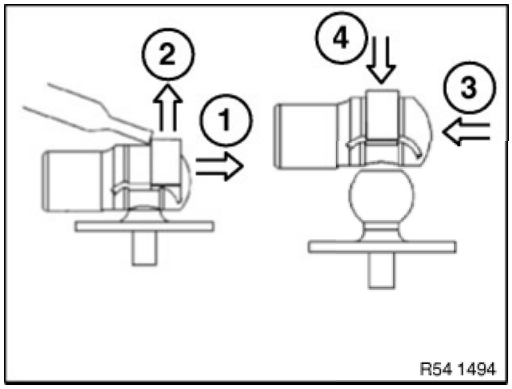
51 23 ... Removing/installing ball sockets with clip

Warning!

Danger of injury! When installed, the gas pressurised shock absorber is under preload. Minimise preload as far as possible before removing.

Important!

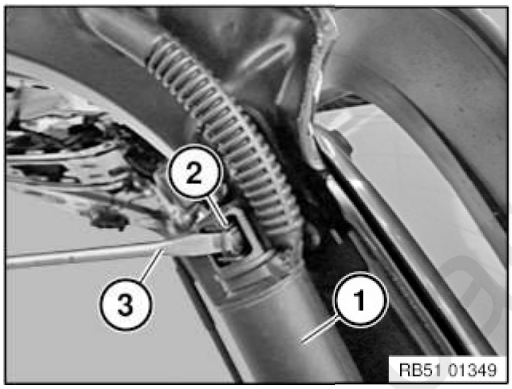
Never lift off ball socket with engaged clamp.



Version A:

1. Push on clamp in direction of groove with screwdriver
2. Lift off ball socket from ball pin
3. Slide clamp back
4. Fit ball socket on ball stud and snap into place with force

Installation note:
Pack grease into two opposite positions in socket. The grease spreads after installation on the ball pin all round in the ball socket.



Version B:

Important!

Risk of damage!

If you are not careful, retaining spring (2) may be bent to such an extent that the entire drive spindle will have to be replaced.

Press drive spindle (1) against ball pin in order to relieve strain on retaining spring (2) at ball pin.

Pull out retaining spring (2) approx. 2-3 mm with screwdriver (3).

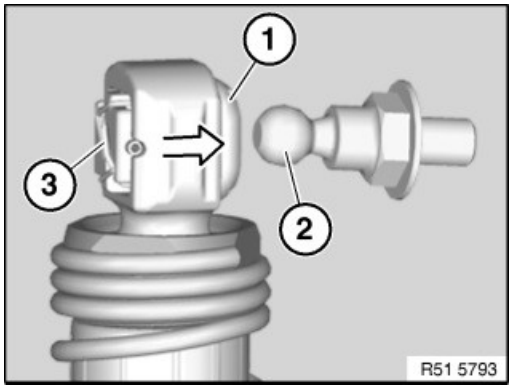
Pull off spindle foot.

Warning!

Observe warning notices on the damper.

Electrical spindle drive for tailgate is under mechanical spring load!

The component must be secured against falling down.

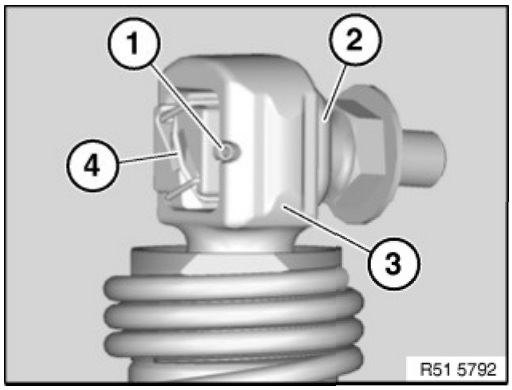


Attention!

Risk of damage!

Do not press on spindle drive at an angle or twisted.

Installation note:
Press ball socket (1) onto ball pin (2) until retaining spring (3) engages correctly (clicking sound).



Important!

If retaining spring (4) is damaged!

Release pin (1).

Remove spindle drive (3).

Remove ball socket (2).

Remove retaining spring (4) and replace if necessary.

cardiagn.com

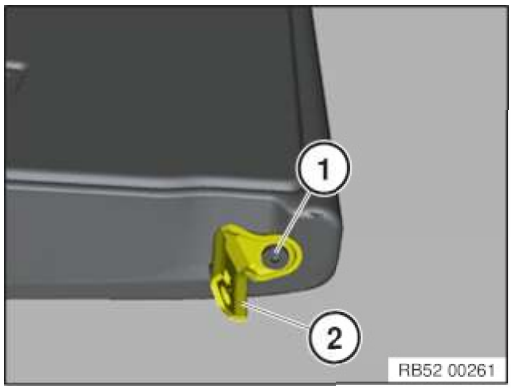
52 26 411 Replacing backrest cover for left rear seat (basic seat)

Special tools required:

- 52 0 050

Necessary preliminary tasks:

- Remove left backrest
- Remove guide sleeves left

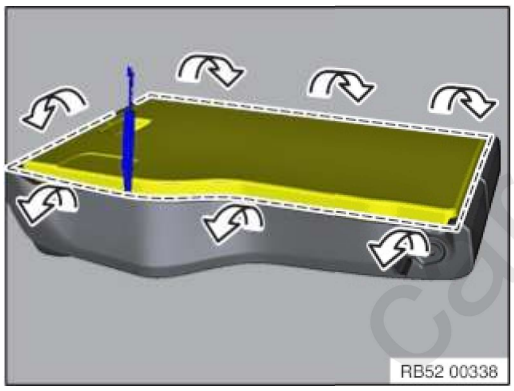


Release screw (1).

Tightening torque 52 26 03AZ.

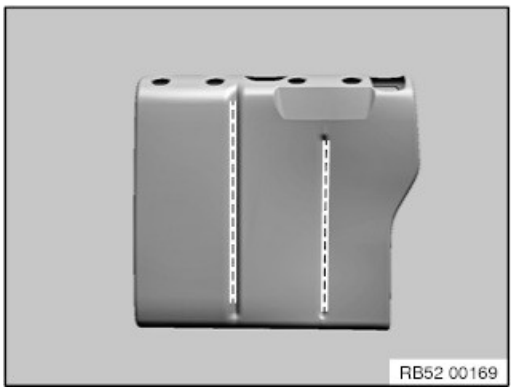
Remove outer mount (2).

Installation note:
Replace screw.



Lift out welt from all around backrest frame.

Remove backrest cover with padding from backrest frame.



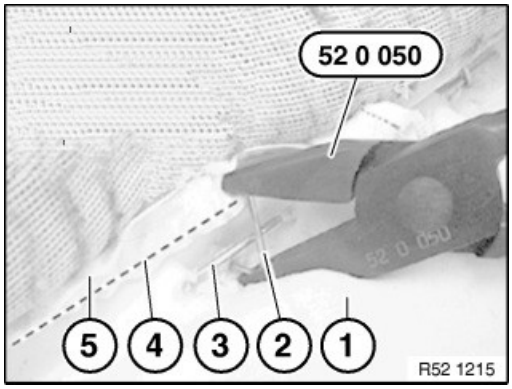
Detaching cover and upholstery:

- Separate all clamps on trim wires
- Remove cover from upholstery
- Remove remaining clamps from cover and upholstery

Replacing cover:

- Remove all trim wires from cover
- If necessary, cut pockets in new cover for trim wires
- Push trim wires into cover pockets

cardiagn.com



Installation note:
Insert new clamp (2) with special tool 52 0 050 .

In so doing, enclose wire in padding and trim wire of cover and bend closed.

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in seat cover
5. Backrest cover

cardiagn.com

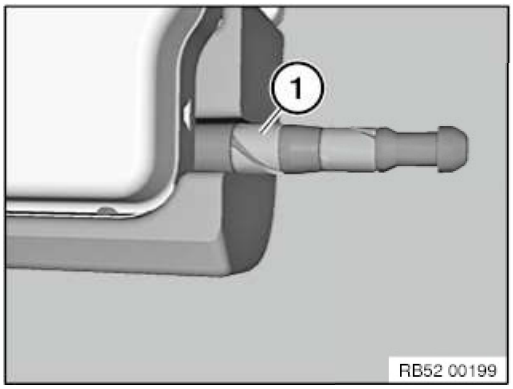
52 26 420 Replacing backrest cover for left rear seat (through-loading facility)

Special tools required:

- 52 0 050

Necessary preliminary tasks:

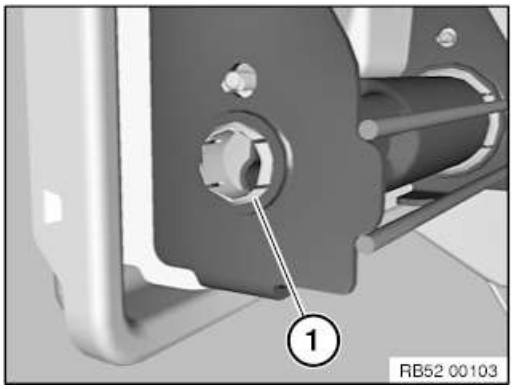
- Remove rear seat backrest, left
- Remove guide sleeves



Remove sleeve (1) from shaft.



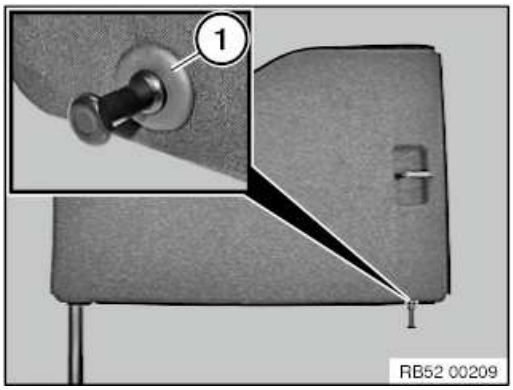
Remove centre rear seat backrest from support of left-hand backrest in direction of arrow.



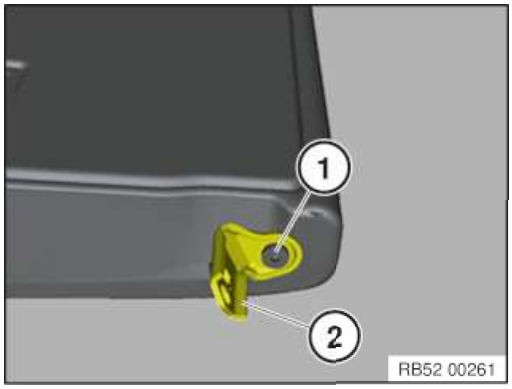
Installation note:
Plastic bush (1) may slide when removing the centre backrest.

Make sure plastic bush (1) is fitted correctly in the backrest frame.

cardiagn.com



Remove sleeve (1).

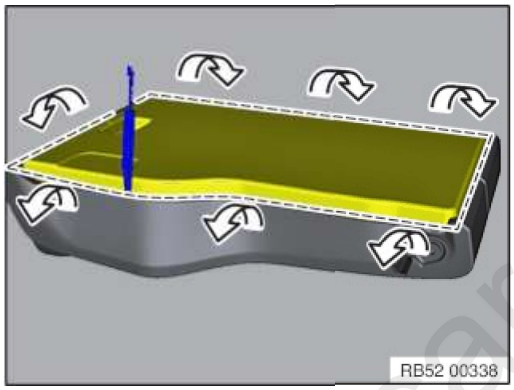


Release screw (1).

Tightening torque 52 26 03AZ.

Remove outer mount (2).

Installation note:
Replace screw (1).



Lever out welt in marked area from backrest frame.

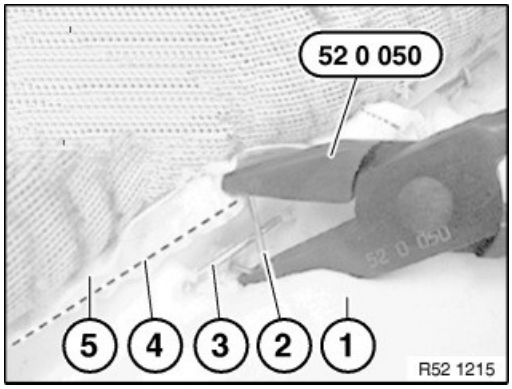
Remove backrest cover with padding from backrest frame.



Detaching cover and upholstery:

- Release all clamps on trim wires.
- Remove cover from upholstery
- Remove remaining clamps from cover and upholstery

cardiagn.com



Installation note:
Insert new clamp (2) with special tool 52 0 050 and bend closed.

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in backrest cover
5. Backrest cover



Replacing cover:

- Remove all trim wires from cover
- If necessary, cut pockets in new cover for trim wires
- Push trim wires into cover pockets

cardiagn.com

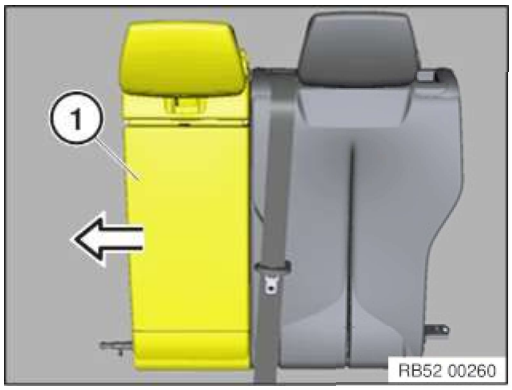
52 26 414 Replacing backrest cover for rear seat, centre

Special tools required:

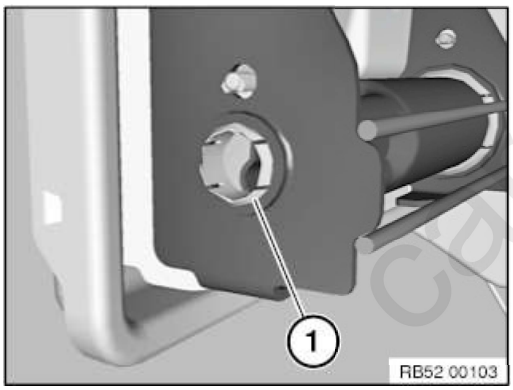
- 52 0 070

Necessary preliminary tasks:

- Remove left backrest for rear seat
- Remove centre armrest
- Removing rear middle head restraint



Remove backrest for centre rear seat (1) from support of left backrest in direction of arrow.



Installation note:
Plastic bush (1) may slide when removing the centre backrest.

Make sure plastic bush (1) is fitted correctly in the backrest frame.

The plastic bush (1) must be retained in the backrest frame.

If applicable, clip the plastic bush (1) in from the inside out.

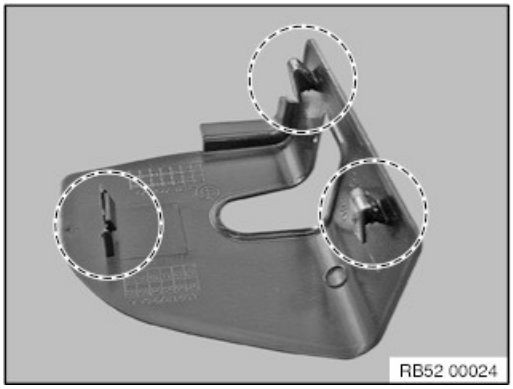


Unclip trim cover for lock with a plastic wedge.

Move trim cover for lock a little towards the middle.

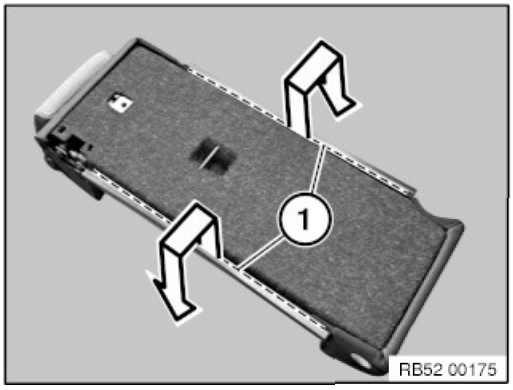
Detach trim cover for lock by pulling towards rear.

cardiagn.com

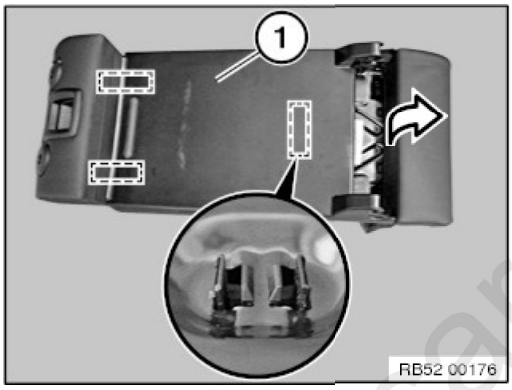


Installation note:
Retaining lugs on the trim cover for the lock must not be damaged.

Replace defective trim cover for lock.



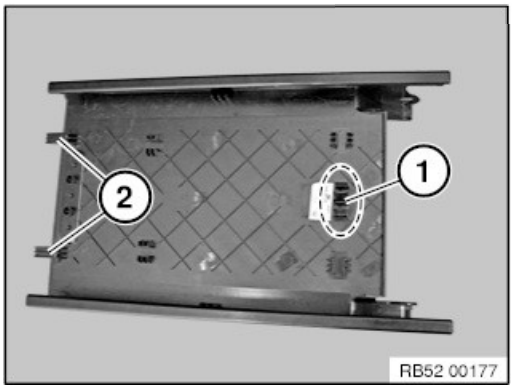
Carefully lift the centre armrest in the marked area (1) out of the backrest frame.



Unlock the back of the centre armrest cover (1).

Remove centre armrest cover (1) in direction of arrow from backrest frame.

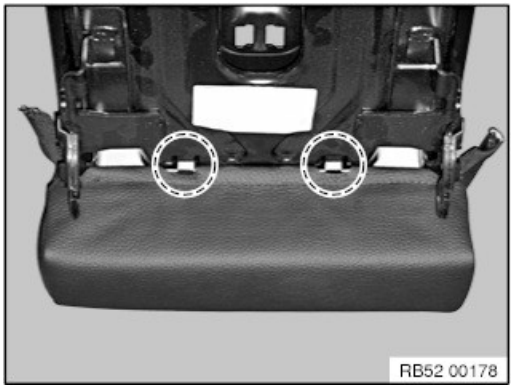
Installation note:
Make sure guide pin is correctly seated in backrest frame.



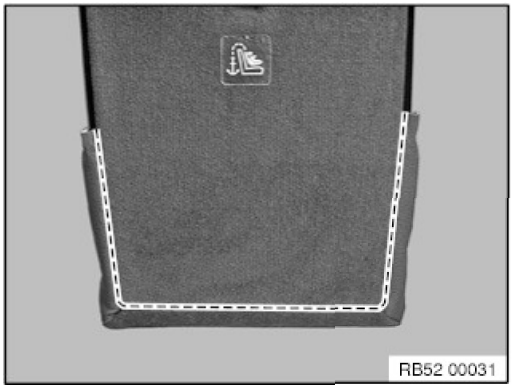
Guide pins (2) and latch mechanism (1) must not be damaged.

Replace defective centre armrest cover.

cardiagn.com

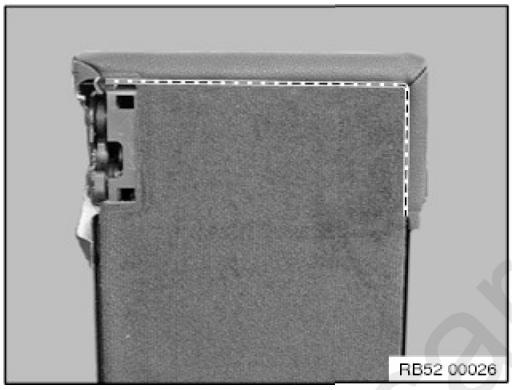


Detach bottom trim wire from claw studs.

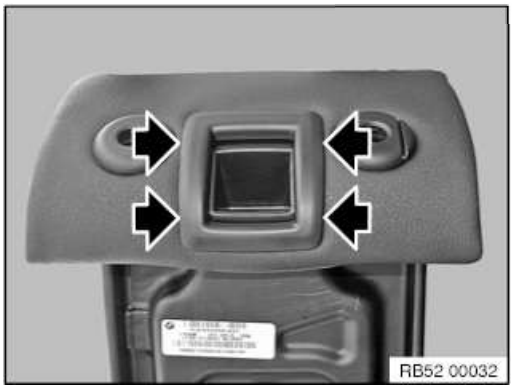


Lever out welt in lower marked area.

Remove lower seat cover.



Lever out welt in top marked area.



Important!

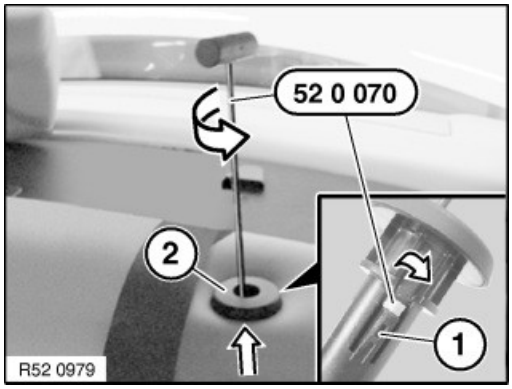
Risk of damage!

Insert plastic wedge from outside between trim (1) and lock.

Carefully lever out cover (1) from latch mechanism with plastic wedge in upward direction.

Remove trim upwards.

cardiagn.com



Insert special tool 52 0 070 into guide hole of sleeve (2) up to upper area of retaining lug.

Feed release tongue of special tool into rear gap on retaining lug (1).

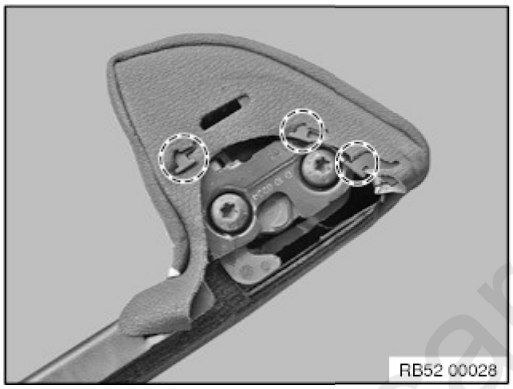
Turn tool to release sleeve (2) and pull out by lifting upwards.

Installation note:
Replace guide sleeves and install as follows:

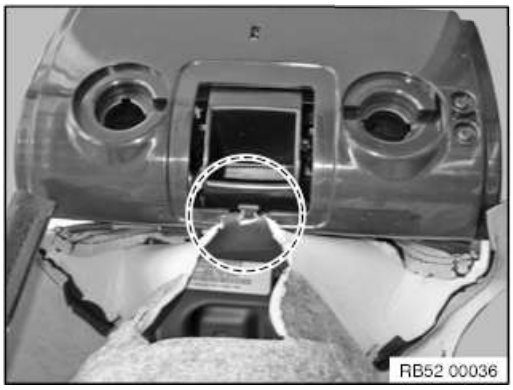
1. Short guide sleeves centre right
2. Short guide sleeve with centre left lock



Detach trim wire from claw studs.



Detach cover from plastic tabs.



Pull cover forward to remove from operating unit.

Detach cover from plastic tabs.

cardiagn.com

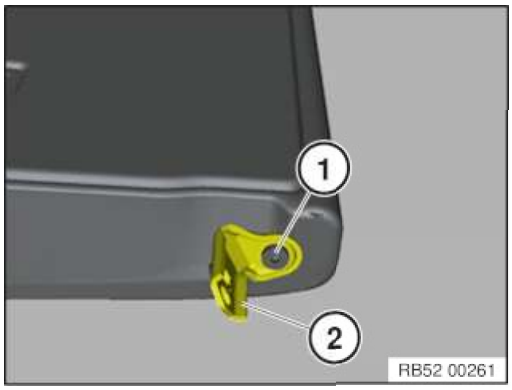
52 26 412 Replacing backrest cover for right rear seat

Special tools required:

- 52 0 050

Necessary preliminary tasks:

- Remove right backrest
- Remove guide sleeves right

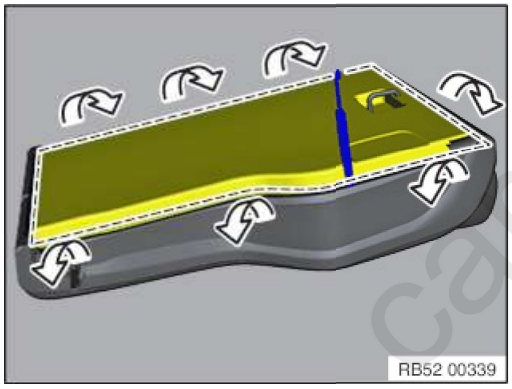


Release screw (1).

Tightening torque 52 26 03AZ.

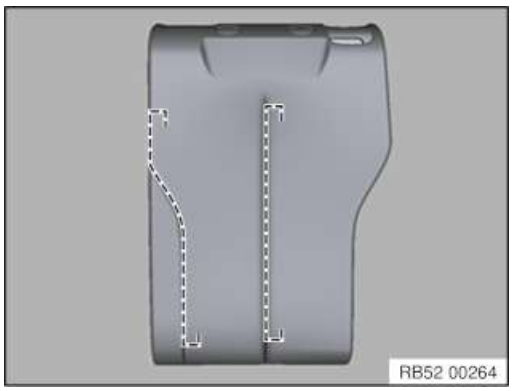
Remove outer mount (2).

Installation note:
Replace screw (1).



Lever out welt in marked area from backrest frame.

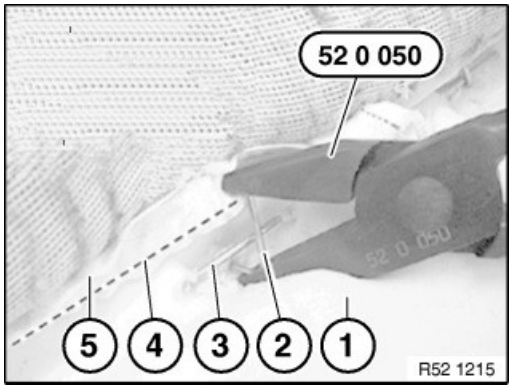
Remove backrest cover with padding from backrest frame.



Detaching cover and upholstery:

- Release all clamps on trim wires.
- Remove cover from upholstery
- Remove remaining clamps from cover and upholstery

cardiagn.com



Installation note:
Insert new clamp (2) with special tool 52 0 050 and bend closed.

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in backrest cover
5. Backrest cover



Replacing cover:

- Remove all trim wires from cover
- If necessary, cut pockets in new cover for trim wires
- Push trim wires into cover pockets

cardiagn.com

52 26 450 Replacing padding for rear seat



This repair work is described in:

Replacing the seat cover for rear seat.

cardiagn.com

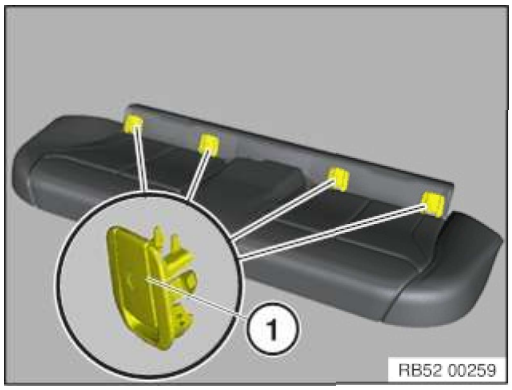
52 26 400 Replacing seat cover for rear seat

Special tools required:

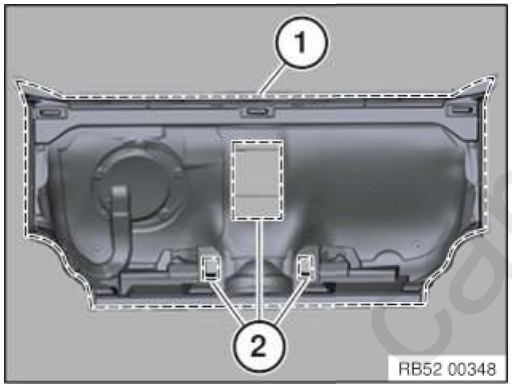
- 52 0 050

Necessary preliminary tasks:

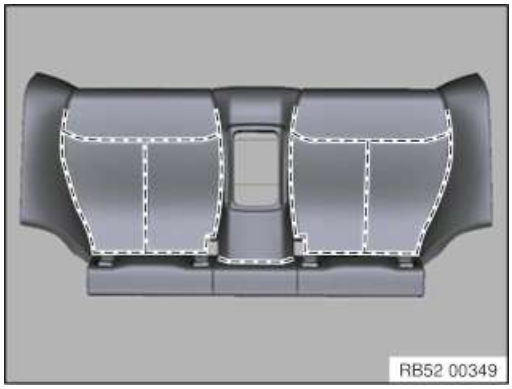
- Remove rear seat
- Remove storage compartment of rear seat



Unclip ISOFIX cover cap.*Installation note:*
Pull cover straps through foam part into Isofix openings.
Make sure Isofix protective caps are correctly engaged.



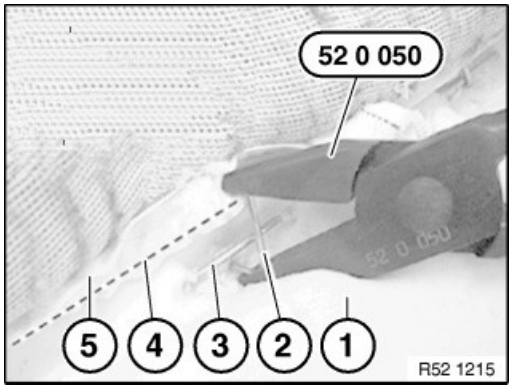
Lever out welt in area (1) with plastic wedge.
Unhook seat cover in area (2).



Detaching cover and upholstery:

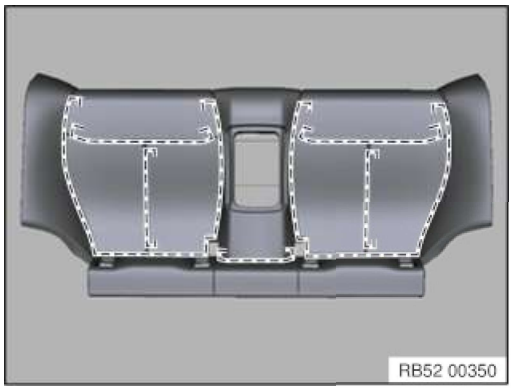
- Release all clamps on trim wires.
- Remove seat cover from upholstery
- Remove remaining clamps from cover and upholstery

cardiagn.com



Installation note:
Insert new clamps with special tool 52 0 050 .

1. Upholstery
2. Clamp
3. Trim wire in upholstery
4. Trim wire in seat cover
5. Seat cover



Replacement only:

- Push trim wires into new seat cover
- If necessary, cut in mounting for trim wires of new cover

cardiagn.com

72 11 ... Checklist for front seat

Event		Check	Action
Has at least one belt tensioner and/or one side airbag been activated?	**Yes**	**Check 1 (when installed):** Check all seat adjustment options of both front seats. There must be no stiff movement, sticking or other functional problems or noises across the entire adjustment range of all the seat adjustment options. Check head restraints for damage. Check crash-active headrest for activation. **Only 2-door model:** Check backrest lock. Backrest must unlock and lock easily without any great physical effort.	If components are OK with regard to checks 1 and 2, only replace activated belt tensioner or side airbag. Otherwise, replace faulty parts on the seat/body. Replace belt tensioner, seat belt and, if necessary, side airbag.
		Check 2 (when dismounted): Check for deformation/damage on the following components: 1. All seat cross members on the body 2. Threaded support sleeves in the seat cross members 3. End fittings on the seat mechanism. Check for visible damage or deformation.	
	No	Check all adjustment options of the head restraints. Check crash-active headrest for activation.	Replace faulty parts.
Only seat with integrated seat belt:			
Does the backrest indicator light turn on when the backrest is locked and also when the backrest is shaken?	**Yes**	Check microswitch of backrest lock and renew if necessary. Check electrical lines and repair if necessary.	If there is still a fault, replace the entire seat
	No	No further action necessary.	

cardiagn.com

00 00 ... Microencapsulated screws



Screw securing adhesive is a means of preventing a screwed connection from being loosened by external influences.

Once the screw has been coated with adhesive, the adhesive remains inactive until such time that it is activated by the encapsulation breaking when the screw is inserted and then cures (hardens) at room temperature.



Installation note:

- Screw connection must be completed within 20 mins. (start of curing)
- Microencapsulated screws must not be retightened
- Thread of nut must be cleaned beforehand in event of repeated use

cardiagn.com