1.0 GENERAL INFORMATION ON PRESERVATION MEASURES

The classic quality of BMW automobiles is based on the long-term comprehensive research and testing, the design, the applied materials and the manufacturing procedures in modern production plants.

BMW recommends cleaning the engine, engine compartment, vehicle underside, axles and engine/transmission at least twice annually, and then waxing the car or repairing the wax coating. This should be performed before or after the period of salt usage on streets.

New cars parked outdoors should be waxed at BMW centers before delivery to customers. This is to avoid deposits damaging to the paint finish, such as air-born rust particles, chemical dust, oil saturated soot, sulfur dioxide (acid) rain, etc. settling on the horizontal surfaces. Bird and insect droppings as well as tree resin could mar the paint finish, forming spots, swelling and pitting in the paint coat.

Wax films on the engine, engine compartment and A pillars (hinge areas) are intentional and prevent corrosion. Such wax film should not be removed.

Unwaxed cars should be washed at least once each week. Parked cars must never be protected with plastic or other nonporous material covers. This will damage the paint finish due to condensed water in conjunction with plastic softener diffusion and scratching.

2.0 BODY CAVITY SEALING

It is only necessary to rewax or seal the affected area after repairing the body.

Only BMW approved products may be used to comply with the six year warranty against rust perforation. These products protect cavities effectively and permanently against corrosion. Their excellent coating and waterproofing properties let them flow into all inaccessible corners and folds for unsurpassed overall protection.

UNDERBODY AND BODY CAVITY SEALING COMPOUND

For sealing of body cavities, such as doors, A-pillars, front, side and cross members, etc.

(Former BMW Part No. 81 22 9 407 479)

3M Part No. 8891

Wurth Part No. 892080

Also: Wurth "Brushable Seam Sealer", Part No. 8901021.

3.0 BODY CORROSION PROTECTION

To comply with the six year warranty against rust, specially selected waxes and additives produce an elastic, temperature-proof, corrosion inhibiting protectant. The corrosion protection thickness should measure a maximum of 30 microns, but can be varied as desired by repeating the spraying procedures accordingly.

PROCEDURE

Clean underside of car to remove grease, oil and dirt. Cover rotating parts and parts not undercoated, such as driveshaft, brake discs, brake hoses, springs, exhaust pipes, etc.

After completion of body repairs, the affected areas must have corrosion protection reapplied. This applies,

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also, if the BMW Annual Check shows that the corrosion protection has to be repaired.

UNDERBODY SEALING

Quick-drying, rubber-based, paintable. Compatible with PVC-based undercoat, front apron and door sill coatings.

(Former BMW Part Nos. 81 22 9 407 001, 81 22 9 407 521/522)

3M Part No. 8883

Wurth Part No. 892072

Loctite Part No. 81833 (or PX135EA)

CRC Part No. Siloo 28A

Also: Wurth "Body Seal, beige", Part No. 0892091 U.

BODY SEALANT, LIGHT

Sealing compound for all joints and seams, can be painted over. Good adhesion, free of shrinkage, resistant to heat and cold temperatures, permanently elastic.

(Former BMW Part Nos. 81 22 9 400 013 and 81 22 9 407 313)

3M Part No. 8361

Wurth Part No. 893430

SEAM SEALER, WHITE

Elasto-plastic sealing compound based on polyacrylate.

Applications: Protection of door and hood panel seams.

(Former BMW Part No. 81 22 9 407 675)

3M Part No. 8361

Wurth Part No. 890100025

Also: Wurth "Gray Seam Sealer", Part No. 089228 U.

TRANSPARENT WAX

Prevents corrosion on painted and non-painted metal surfaces. Serves mainly for treating edges and folded-over seams. (Former BMW Part No. 81 22 9 400 711)

3M Part No. 8892

Wurth Part No. 893082

ANTI-CHIP COMPOUND

Sprayable coating compound for outside and inside. For sealing, noise-insulation and as protection against flying stones. Quick-drying can be painted over, permanently elastic, heat and cold-resistant.

(Former BMW Part Nos. 81 22 9 407 001 and 81 22 9 407 416)

3M Part No. 8964

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Wurth Part No. 893075

Loctite Part No. 81833/PX135EA

4.0 OTHER FLUIDS

ADHESIVE REMOVER

(Former BMW Part No. 81 22 9 407 388)

3M Part No. 8984

RUST REMOVER

(Former BMW Part No. 81 22 9 407 121)

Wurth Part No. 89091801

Loctite Part No. 82075

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BODY

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Before starting repair work

- **BMW i**

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BMW/MINI/BMW i

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- REPAIR STAGE 1B

BMW/MINI/BMW i

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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
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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
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- GENERAL INFORMATION

Paint

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- **GENERAL INFORMATION**
- **INFORMATION/WARNING LABELS**
- **Separate component and sectional paintwork** . See **99 00... PAINTWORK (2 AND 3 COATS)** or **99 00... MISCELLANEOUS PAINTING**

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.

41 00... BLIND RIVET

1.0 Recommended tools and equipment

- Blind riveting tongs
- Rivet head extension

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 Ã˜ 4.2 mm with 4 mm blind rivet and Ã˜ 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 **SEALANT D1** (risk of corrosion).
- Seal cavities after work on vehicle paintwork on with **CAVITY PRESERVATION** (risk of corrosion).

41 00... BONDING ON PAINTED/PRIMED SURFACES

IMPORTANT:
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 . See **41 00... SAFETY AT WORK** or **41 00... INFORMATION ON HAZARDS**!

Overview of topics:

1. Equipment

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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 AGENT R1**
- **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 bonding surfaces with cavity sealing 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 old 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.

  Clean bonding surfaces with cleaning agent R1.

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

  Bonding surfaces must be completely dry.

3.3 Preparation of surface on new part:

- Do not remove primer on new part.

  Do not grind/sand bonding surfaces.

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

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Bonding surfaces must be completely dry.

4.0 Adhesive application:

- Processing temperature of glue cartridge 18 Â°C - 30 Â°C.
- Object temperature, vehicle and new parts, at least 15Â°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.
- 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 Â°C (corresponds to approx. 18 Â°C room temperature).

  Or 1 h in the spray booth (spray booth temperature 80 Â°C/object temperature 60 Â°C).

- When using radiant heaters, make sure that the object temperature does not exceed 85 Â°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.

41 00... BONDING STEEL ON STEEL

These repair instructions apply to structural components.
Such components include engine supports, A-pillars, B-pillars, etc.
IMPORTANT: Follow the vehicle-specific repair instructions.

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Only use the repair procedures described there.
Conform with **safety regulations** . See **41 00... SAFETY AT WORK** or **41 00... INFORMATION ON HAZARDS**!

Overview of topics:

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

1.0 Equipment

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

2.0 Preparing the surface:

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

  Bonding surfaces must be completely dry.

3.0 Adhesive application:

- Processing temperature of glue cartridge 18 Â°C - 30 Â°C.
- Object temperature, vehicle and new parts, min. 15Â°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.
- 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.

72 11... CHECKLIST FOR FRONT SEAT

Event	Check	Action
	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	If components are OK with regard to checks 1 and 2,

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Has at least one belt tensioner and/or one side airbag been activated?	**Yes**	unlock and lock easily without any great physical effort.	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.	Â

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 Â°C. This would generate highly corrosive hydrochloric acid and release harmful vapor.
- 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 Â°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).

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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.

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

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

2.1 Cavity preservation of steel parts:

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

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

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

2.2 Cavity preservation of aluminum parts:

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

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

After all welding work (E52 only) on aluminum 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.

41 00... EMC SCREWS

(EMC = Electro-Magnetic Compatibility)

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

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partial replacement, position the screws in the area of the component overlap.

- In the case of repairs using partial replacement, the number of EMC screws described in the repair instructions must be fitted.
- Drill holes to a diameter of 4.2 mm and insert screws.
- Seal EMC screws with PU sealing material (risk of corrosion).

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

41 00... FRAME ALIGNMENT CONTROL DIMENSIONS, BODY

Dimensions in mm.

Measurement tolerances:

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

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

The specified dimensions/measurements refer to the center point of the bore/screw.

Underbody view 1

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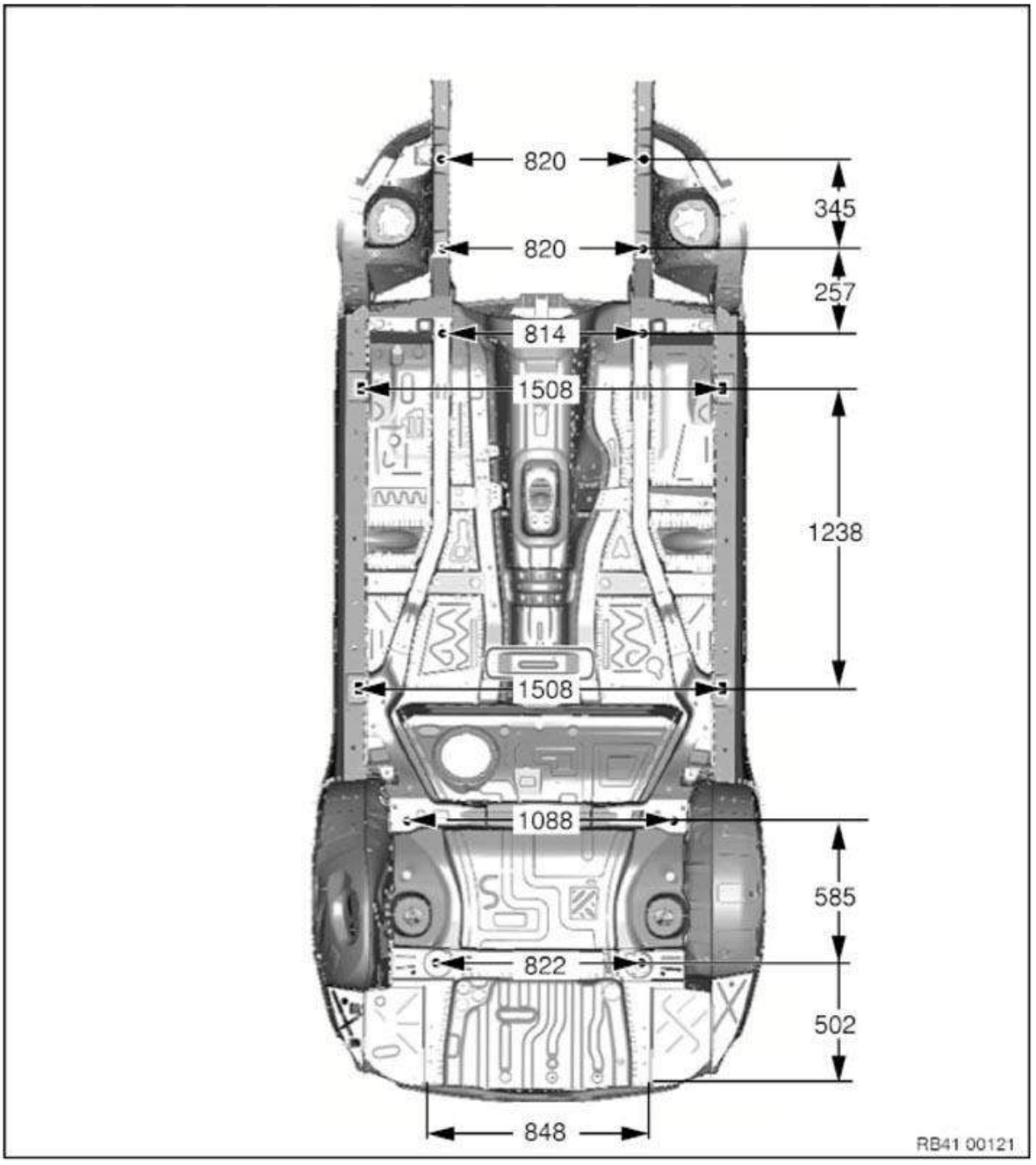


Fig. 1: Identifying Underbody Dimension 1
Courtesy of BMW OF NORTH AMERICA, INC.

Underbody view 2

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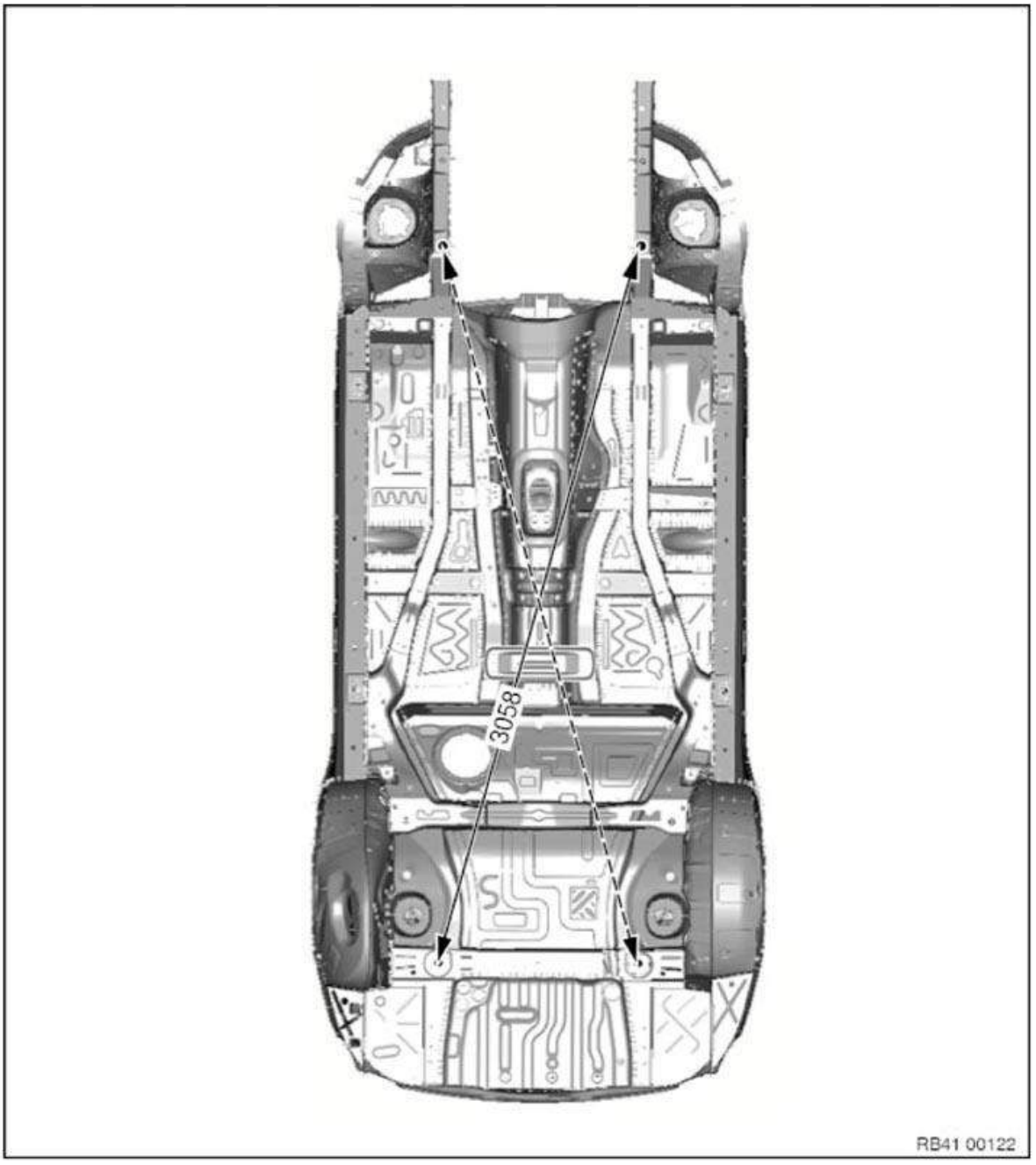


Fig. 2: Identifying Underbody Dimension 2
Courtesy of BMW OF NORTH AMERICA, INC.

Top view, front end

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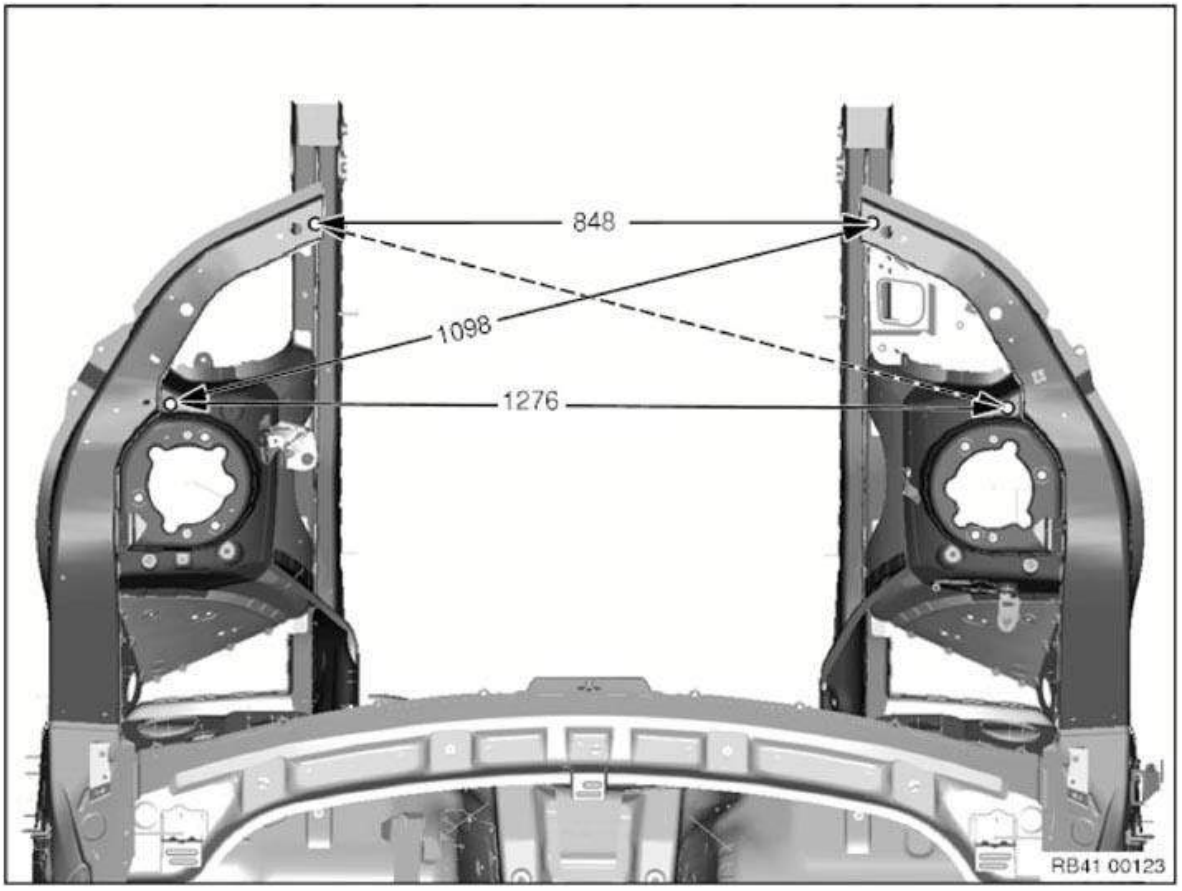
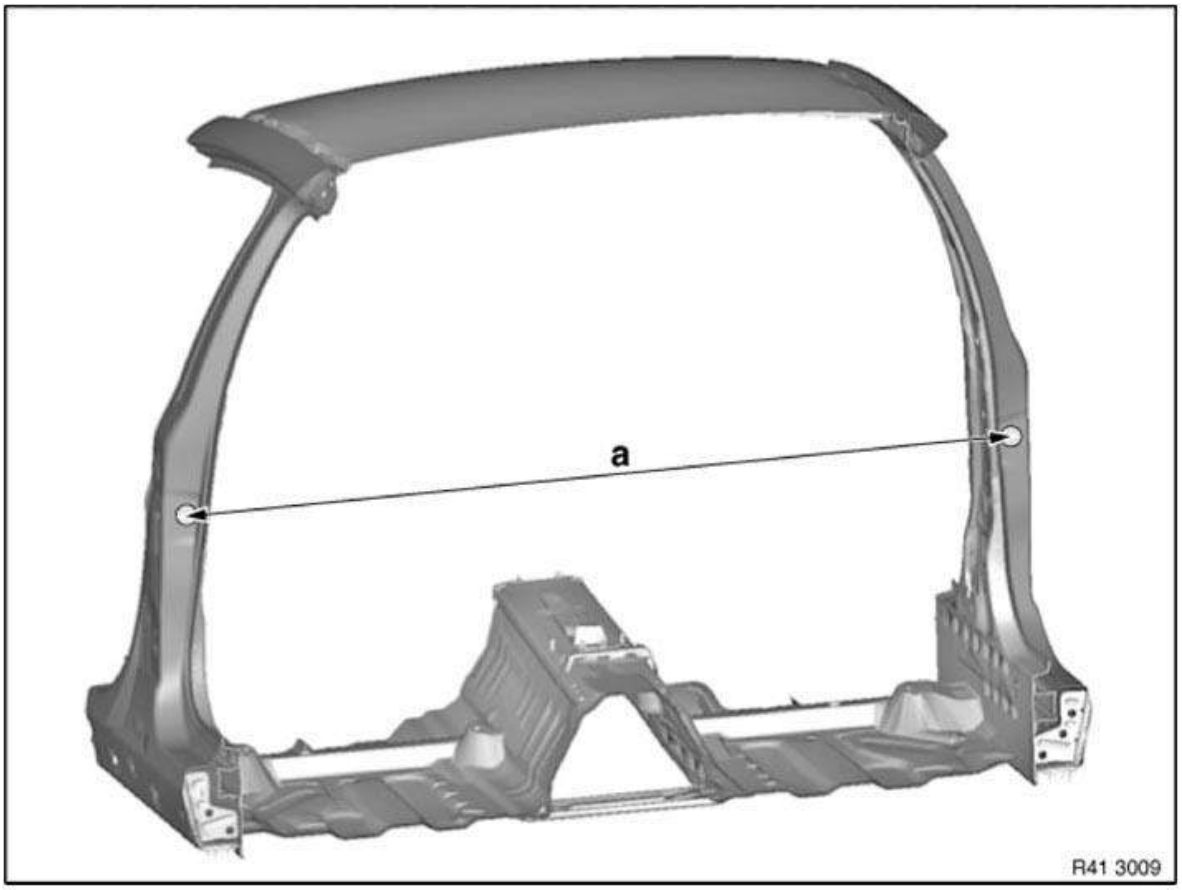


Fig. 3: Identifying Vehicle Top And Front End Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

The specified dimensions refer to removed assemblies.

View, B-pillar



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Fig. 4: Identifying B-Pillar Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Measurement a=1556 mm between screw-on points of door brakes.

41 00... GAP DIMENSIONS, BODY

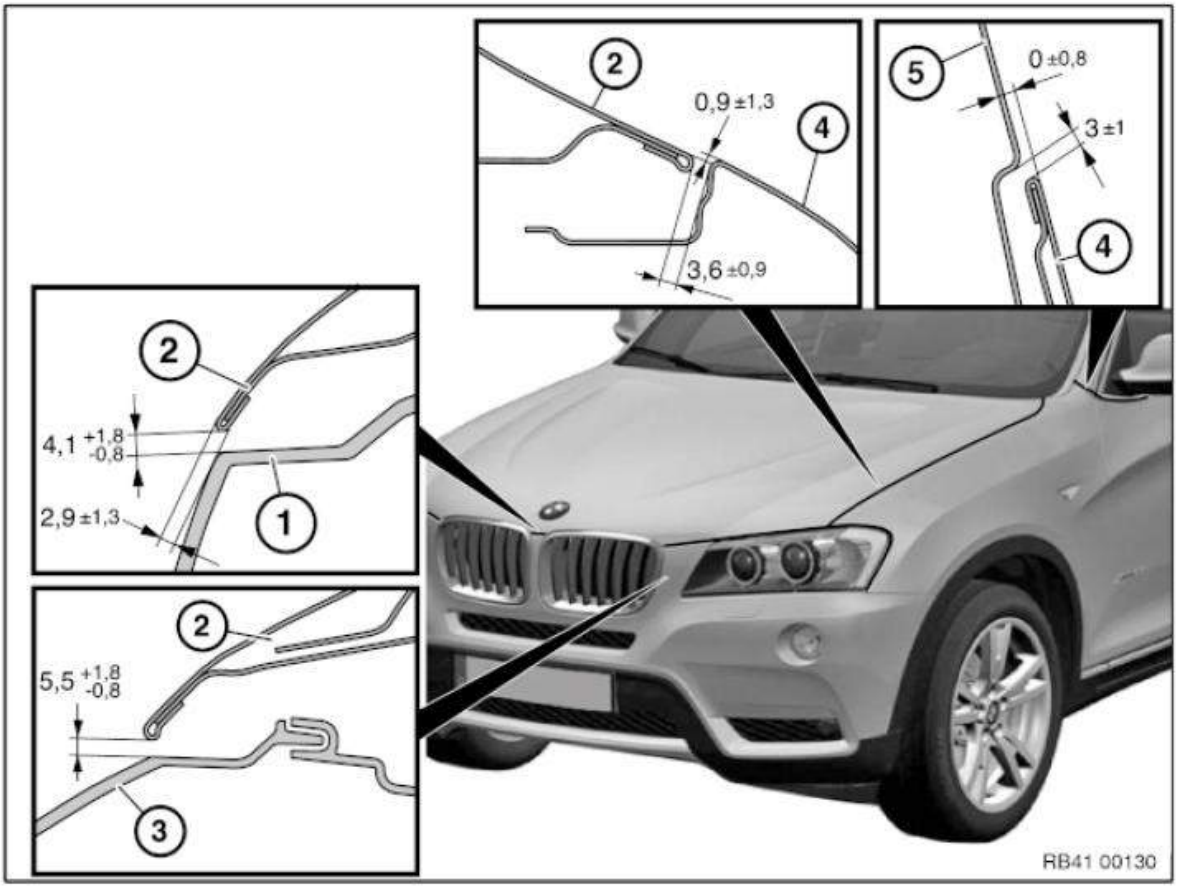
The dimensions specified in this information are applicable at an object temperature of 20 Â°C. The aim of adjustment is to achieve a uniform gap.

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

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

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

Dimensions in mm



1. Panel, bumper, front
2. Engine compartment lid
3. Headlight
4. Front side panel
5. A-pillar

Fig. 5: Identifying B-Pillar Body Gap Dimension - Engine Compartment Lid (1 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

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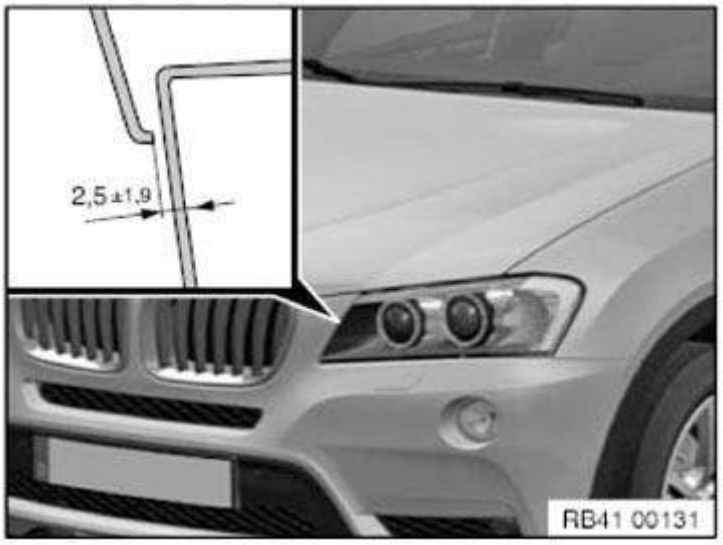


Fig. 6: Identifying B-Pillar Body Gap Dimension - Engine Compartment Lid (2 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

1. Panel, bumper, front
2. Headlight

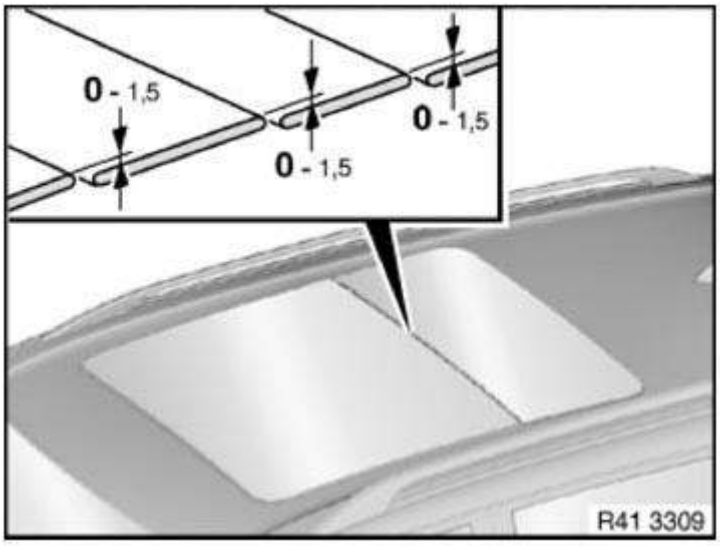
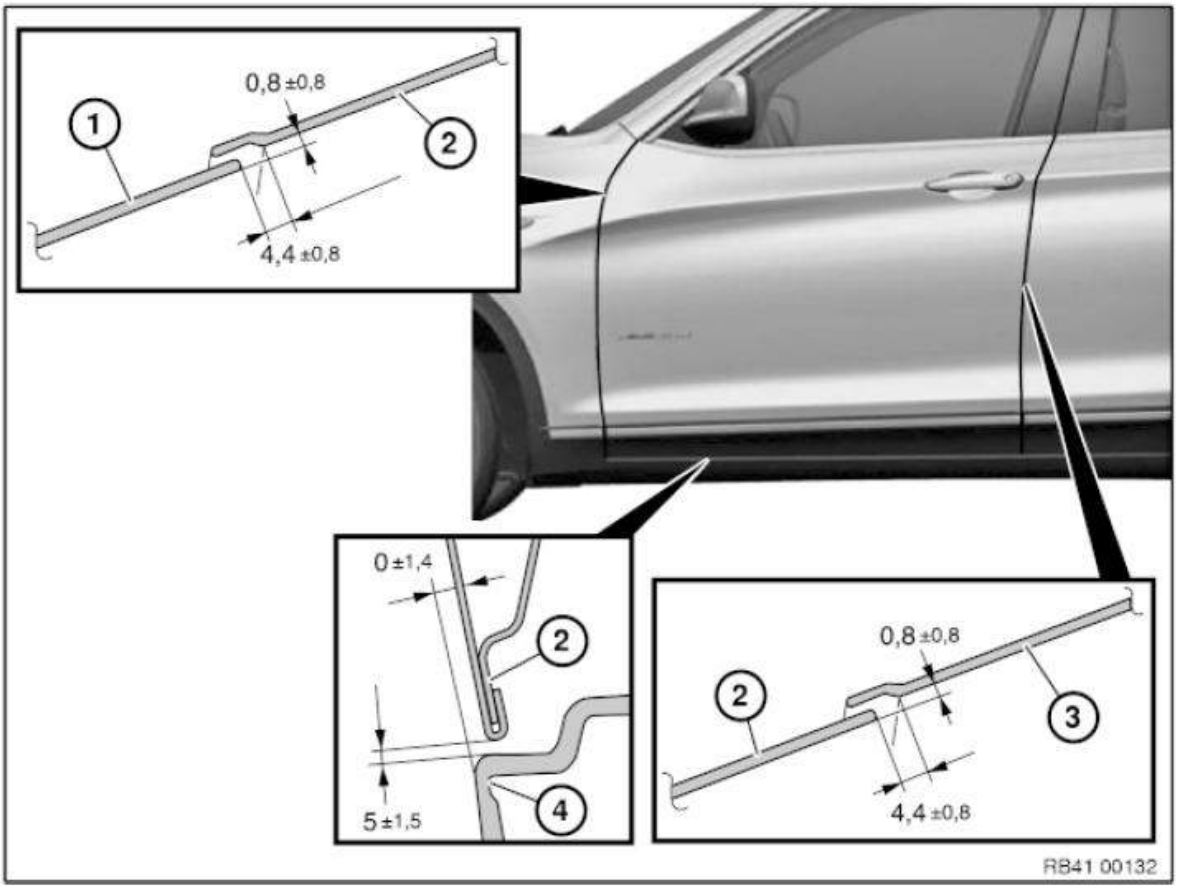


Fig. 7: Identifying B-Pillar Body Gap Dimension - Headlight (1 Of 3)
Courtesy of BMW OF NORTH AMERICA, INC.

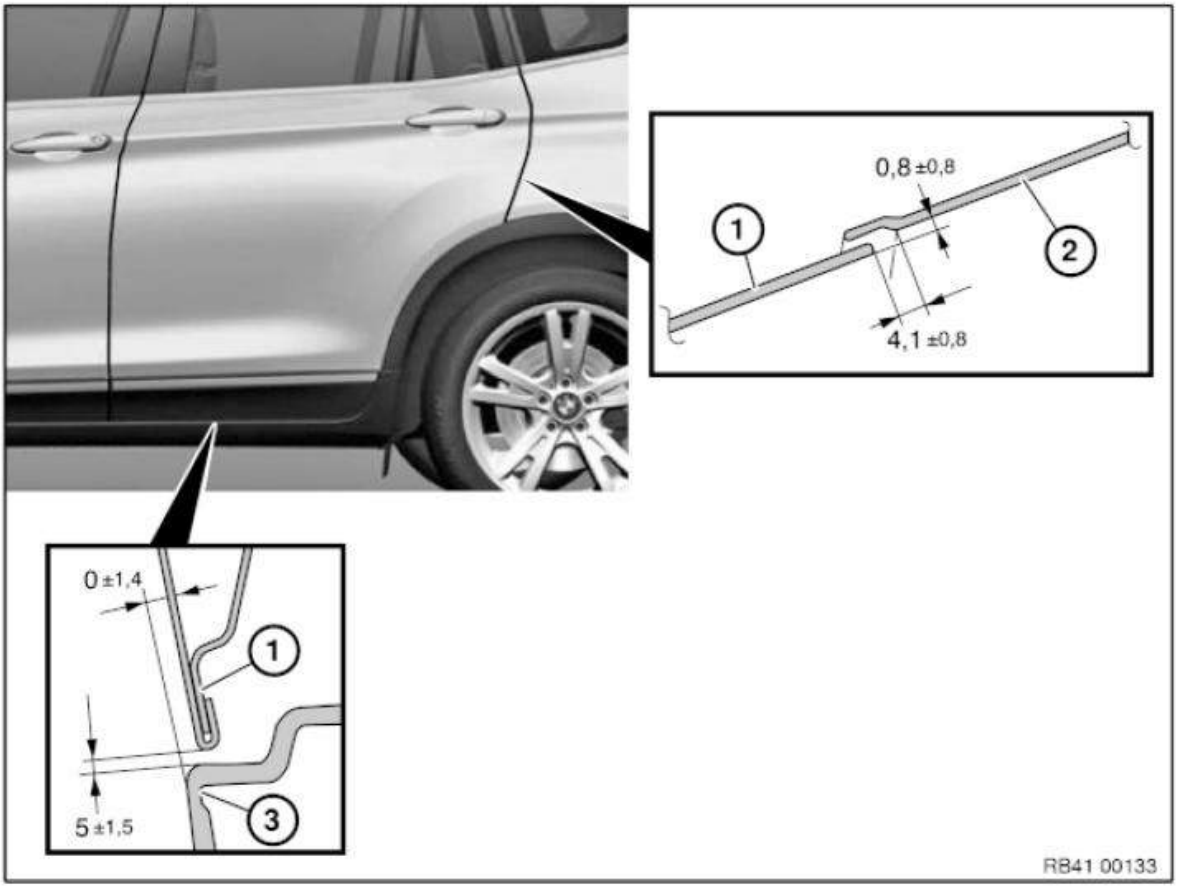
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1. Front side panel
2. Front door:
3. Rear door
4. Trim panel for entrance

Fig. 8: Identifying B-Pillar Body Gap Dimension - Headlight (2 Of 3)
Courtesy of BMW OF NORTH AMERICA, INC.

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1. Rear door
2. Rear side walls
3. Trim panel for entrance

Fig. 9: Identifying B-Pillar Body Gap Dimension - Headlight (3 Of 3)
Courtesy of BMW OF NORTH AMERICA, INC.

1. Rear door
2. Rear side walls

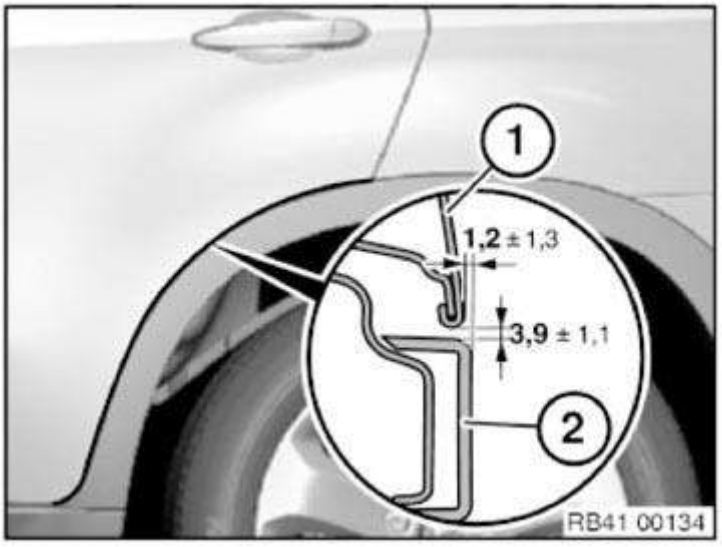
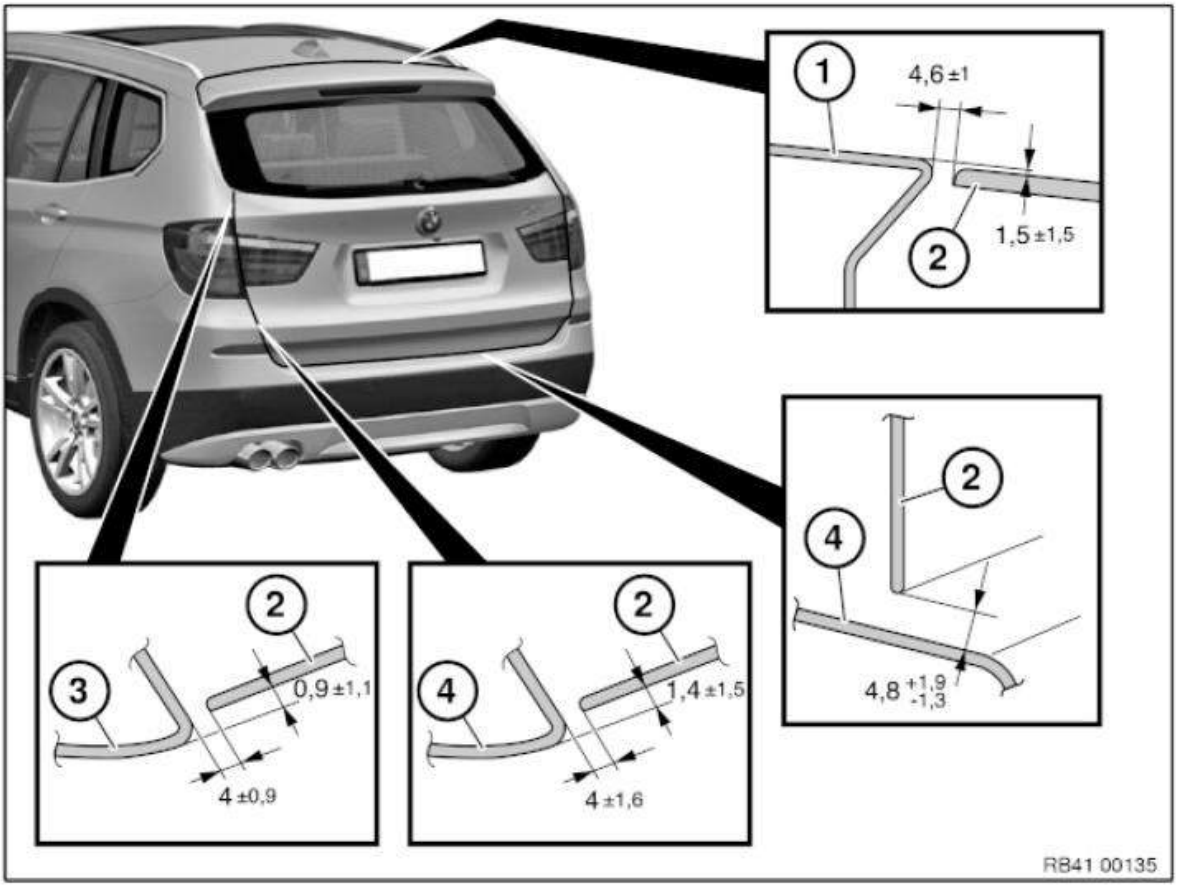


Fig. 10: Identifying B-Pillar Body Gap Dimension - Rear Side Walls (1 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

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1. Roof outer skin
2. Tailgate
3. Rear side walls
4. Trim panel, bumper, rear

Fig. 11: Identifying B-Pillar Body Gap Dimension - Rear Side Walls (2 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

99 00... GENERAL INSTRUCTIONS ON PAINTWORK

The marked area serves as reference value for paintwork. This area may differ from the illustration for technical painting reasons.

Touching-up areas are taken into account.

Special procedure for matte paintwork:

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

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

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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.

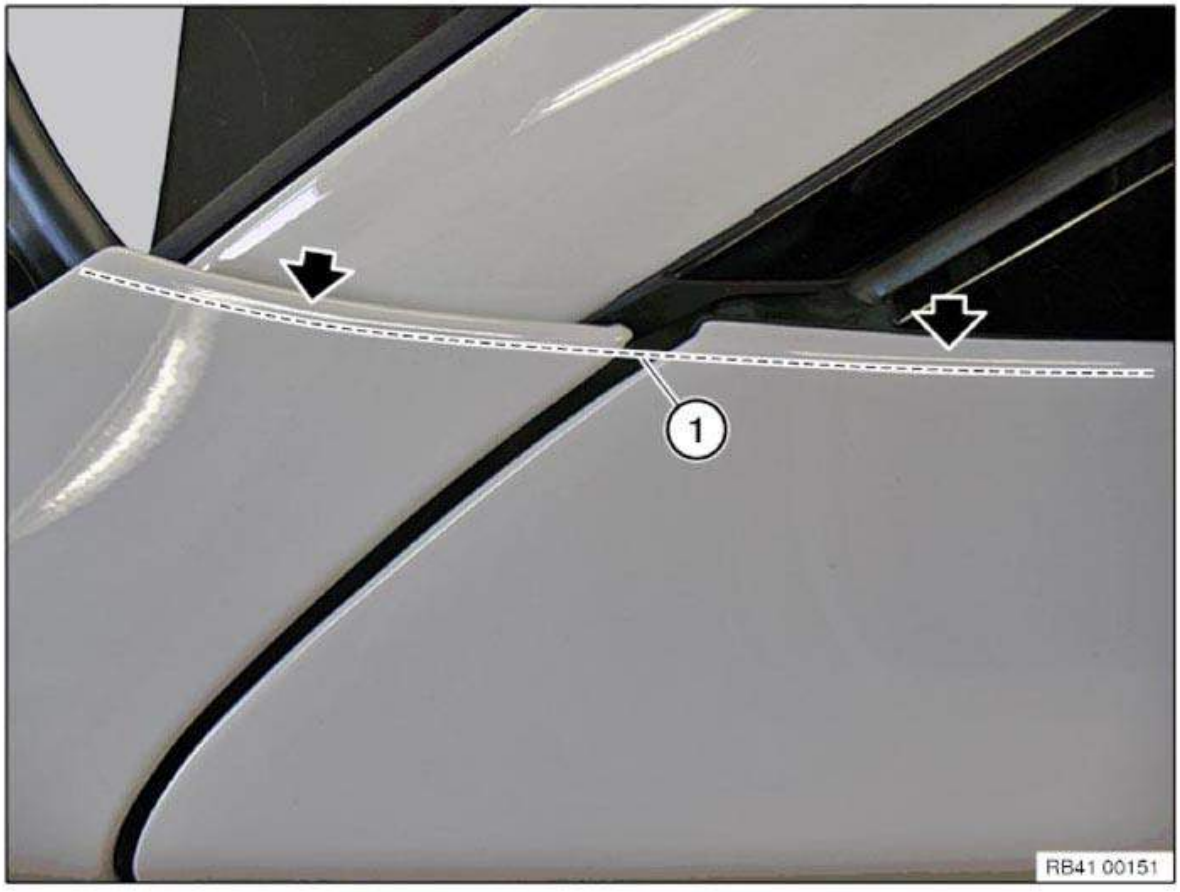


Fig. 12: Locating Templates Light Edge
Courtesy of BMW OF NORTH AMERICA, INC.

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.

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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.



Fig. 13: Identifying Backing Film
Courtesy of BMW OF NORTH AMERICA, INC.

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

41 00... GRINDING ALUMINUM 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.

  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.

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

Z 8 Spaceframe structure:

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

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

  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.

41 00... GRINDING STEEL PARTS

1.0 Recommended tools and equipment

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

2.0 Grinding outer shell and structure

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

Do not grind the material thin.

41 00... 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.

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.

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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 Â°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 80Â°C, the actual temperature of the vehicle is ≤ 60 Â°C (object temperature).
- Protect control units against the influence of heat >65 Â°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 Â° 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** .

41 00... INFORMATION ON HAZARDS

1. **Aluminum**

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 aluminum 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 aluminum dust in cavities. Created by the necessary, thorough cleaning of machining surfaces and tools before and after machining aluminum.	• Avoid high concentration of fine aluminum 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 aluminum 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.

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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.

41 00... INFORMATION ON METAL FILLER

Note the following information before starting to apply metal filler!

IMPORTANT:

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

Storage:

Dry at 15Â°C to 25 Â°C.

Shelf life:

The packaging is marked with a date.

Do not use the metal filler after this date.

Surface pre-treatment:

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

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

Processing:

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

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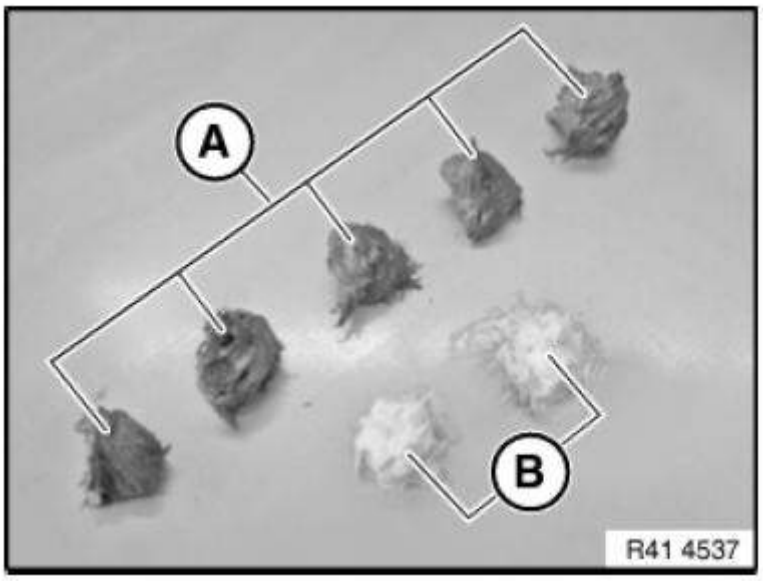


Fig. 14: Identifying Metal Filler And Hardener
Courtesy of BMW OF NORTH AMERICA, INC.

A. Metal filler
B. Hardener

NOTE: **The mixture ratio refers to the volume.**

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

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

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

Applying filler:

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

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

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

No restrictions related to the layer thickness.

Hardening time:

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

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

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

NOTE: **When the heater is used for the first time, the distances that match the temperature must be determined.**

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

Post-processing

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

After cooling, the metal filler can be machined.

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

Special procedure for pores:

Use a Ã˜4.2mm drill. Turn the drill by hand to expand the pores in v shape. by t

Fill cavities with polyester filler.

Paintwork:

Perform paintwork according to the specifications in the painting handbook.

IMPORTANT:

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 130Â°C, even if only 70Â°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 85Â°C.

Metal filler disposal:

Hardened metal filler is disposed of as normal waste.

Empty packaging is disposed of as normal waste.

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

These regulations apply to the Federal Republic of Germany.

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

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!

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Observe following instructions:

IMPORTANT:

- 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).

Observe following instructions before use:

IMPORTANT:

- Manufacturer's instructions (on container/packaging)
- Hazard warnings (on container/packaging)
- Manufacturer's instructions on package insert
- Material safety data sheet of manufacturer
- National market regulations

Observe following instructions during use:

IMPORTANT:

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

IMPORTANT: Follow hazard warnings and wear personal protection equipment!

First Aid:

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

Recycling:

Dispose of cleaning agents/paints in a professional manner!

Observe national/country-specific disposal regulations.

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.

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

41 00... INFORMATION/WARNING LABELS

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

--> Overview of the **INSTALLATION LOCATION**

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

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

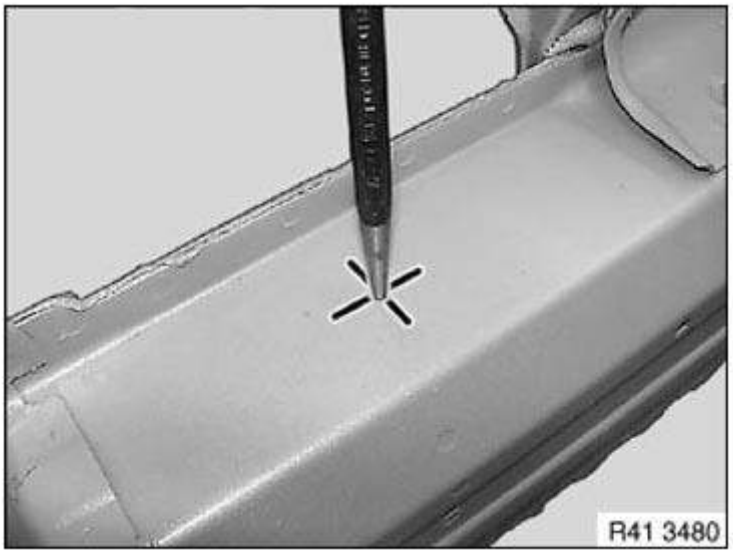


Fig. 15: Identifying Hexagon Rivet Nut Mark Position
Courtesy of BMW OF NORTH AMERICA, INC.

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

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

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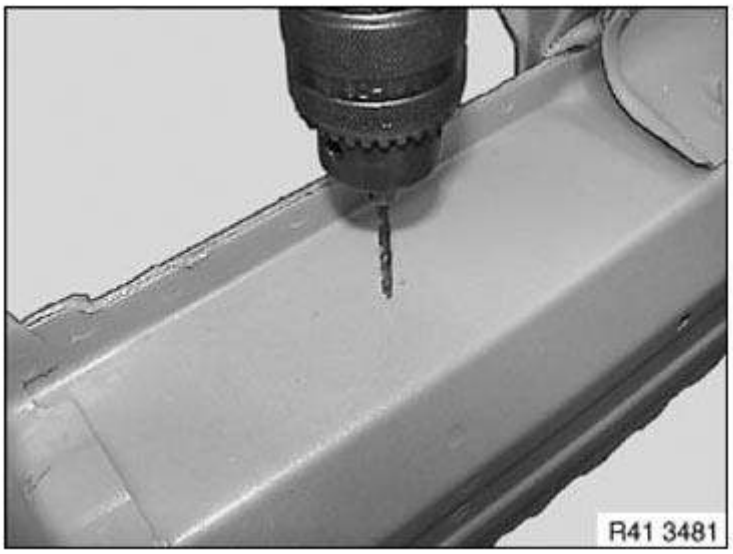


Fig. 16: Drilling Bore On Body
Courtesy of BMW OF NORTH AMERICA, INC.

3. Clean component, eliminate paintwork damage if necessary

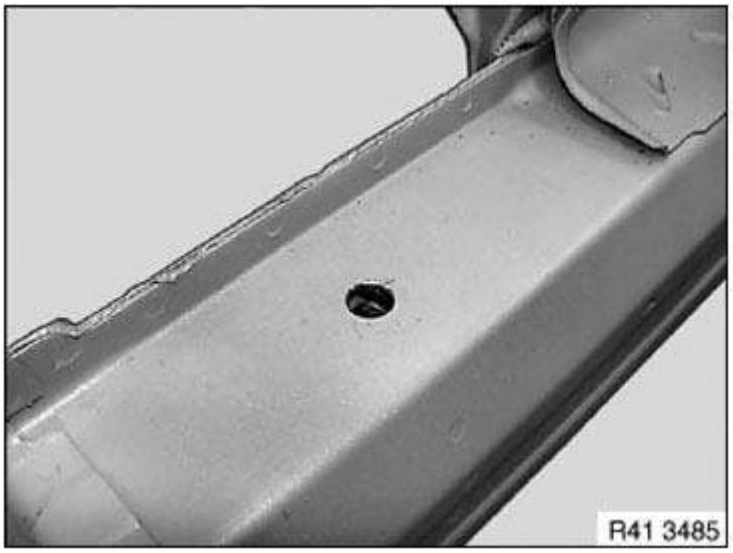


Fig. 17: Identifying Body Rivet Bore
Courtesy of BMW OF NORTH AMERICA, INC.

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

4. Preserving cavity

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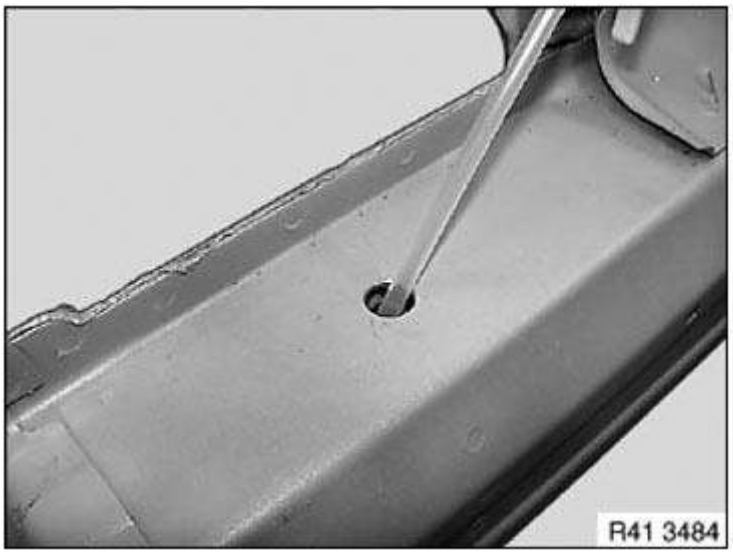


Fig. 18: Identifying Cavity Sealing
Courtesy of BMW OF NORTH AMERICA, INC.

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

5Set rivet nut with hand rivet gun

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

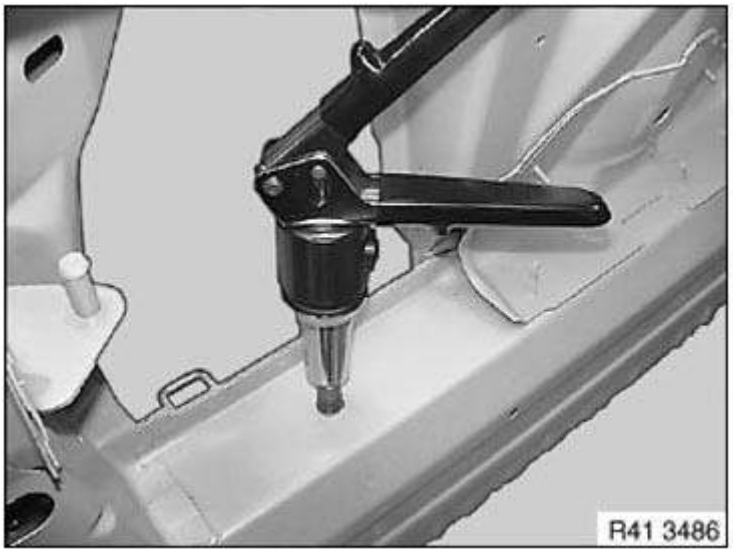


Fig. 19: Installing Rivet Nut Using Rivet Gun
Courtesy of BMW OF NORTH AMERICA, INC.

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

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

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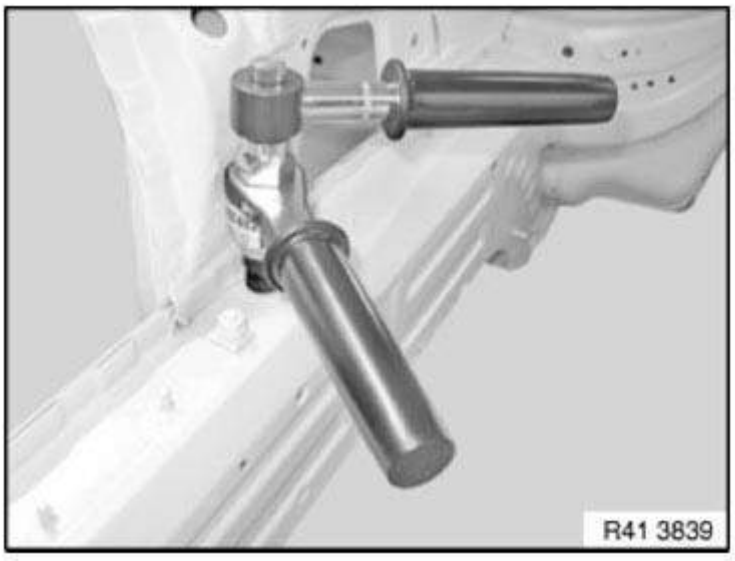


Fig. 20: Setting Rivet Nut Using Hand Rivet Gun
Courtesy of BMW OF NORTH AMERICA, INC.

Set rivet nut with hand rivet gun

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

41 00... INSTALLING A CAVITY SEALING WITH 2-COMPONENT PU CAVITY FOAM

SOURCING REFERENCE for cavity foam HS1.

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.

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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 Â°C. Optimally 20 Â°C.

  IMPORTANT: Foam expands many times over as it sets (change in volume).

- 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.

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- Observe the manufacturer's processing instructions (printed on the can).

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.

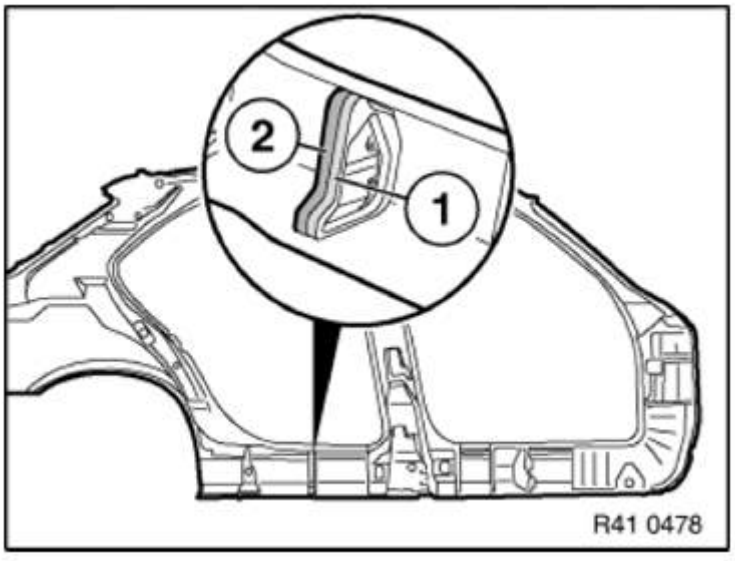


Fig. 21: Identifying Sealant Applying Area To Cavity Contact Surface
Courtesy of BMW OF NORTH AMERICA, INC.

WARNING: Ensure adequate ventilation over entire processing period.

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.

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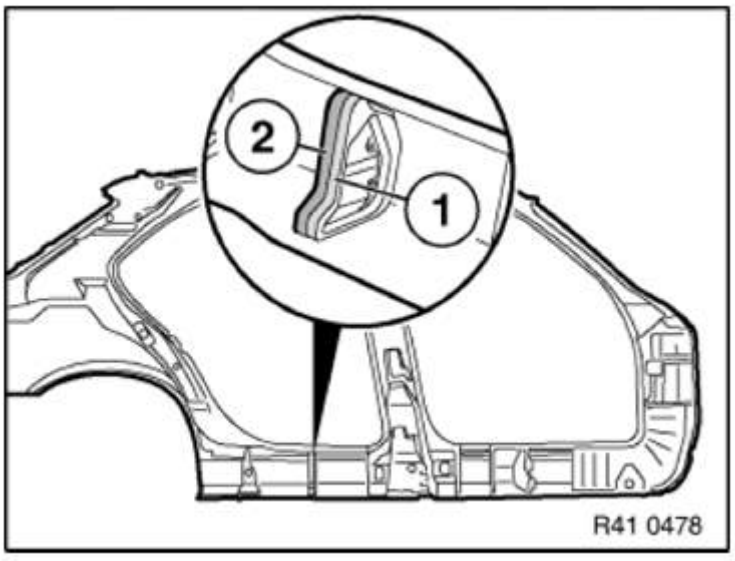


Fig. 22: Identifying Sealant Applying Area To Cavity Contact Surface
Courtesy of BMW OF NORTH AMERICA, INC.

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.**

41 00... MATERIALS SCIENCE

1. **Aluminum**

1.1 Chassis/suspension components

READ and observe the Notes on chassis/suspension components before handling aluminum.

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 aluminum 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 aluminum (screws, washers, nuts etc.) have undergone special surface treatment. Such parts must not be replaced by conventional parts. **NOTE:** **Damaged parts lose this protection and must be specially coated or replaced.** Damage caused by contact corrosion is excluded from the warranty.
Tools also used for work on steel components can implant steel particles in the softer surface of an aluminum component.	Surface corrosion or pitting occurs. A separate tool set is available for processing/machining aluminum.
Surfaces are attacked when fluxing agents	Soldering is not permitted for joining aluminum

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

1.3 Machining properties

Properties of aluminum compared with steel	**Effects**
Aluminum parts are magnetically neutral.	Attachment with magnetic tools/working aids is not possible.
Elasticity is only 1/3 as high.	Convertibility is limited in comparison with steel.
Elongation failure is approx. 50 % slighter.	Overstretching the material results in strain-hardening and an increased tendency of cracking.
Electrical conductivity is almost 4 times higher.	Electric welding 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. Elongation characteristics and thus plasticity are improved. Strength is reduced.
Structural transformation between 200 Â°C and 250 Â°C	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.
Aluminum shows no annealing colors.	The melting point is 650 Â°C. Once the melting temperature has been reached, the material begins to flow without any further indications. The temperature can only be estimated by means of the paint coloring and the surface warpage. IMPORTANT: Do not use thermo crayons. Not suitable for workshop operation because the paint runs too quickly.

1.4 Storage

Characteristic features of aluminum	**Special measures**
Corrosion (ageing) in damp environments.	Store aluminum components in a dry place.
Contact corrosion in event of contact e.g. with steel components.	Always store aluminum 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.

36 10... NOTES FOR REPAIRING ALUMINUM RIMS

In general, the economic viability must be checked prior to the repair.

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It is possible to repair the following damage (applies to cast aluminum rims labelled as AlSi7 AlSi11, AlSi12):

- Depth of the damage in the aluminum at maximum 1 mm
- Distance of the damage from the outer rim edge at maximum 50 mm
- Paintwork damage on the remaining wheel rim

It is not possible to repair the following damage:

- Deformation and cracks
- Polished, forged aluminum wheel rims are unsuitable for repair.

41 00... NOTES ON ADHESIVE K1

Note the following information before starting to apply adhesive!

IMPORTANT:

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

Storage:

Dry at 15Â°- 25 Â°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 20Â°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.

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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.

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 15Â°C.

10 hours at an object temperature of 23Â°C.

1 hour at an object temperature of 60Â°C.

0.5 hours at an object temperature of 85Â°C.

IMPORTANT: When using radiant heaters, make sure that the object temperature does not exceed 85 Â°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.

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 Â°C - 25 Â°C.

Shelf life:

The glue cartridge is marked with a date.

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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 43 2 159 881/883 for 195 ml container



Fig. 23: Identifying Cartridge Gun (81 43 2 159 881/883)
Courtesy of BMW OF NORTH AMERICA, INC.

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

CARTRIDGE GUN 81 49 2 355 475 for 2x290 ml container

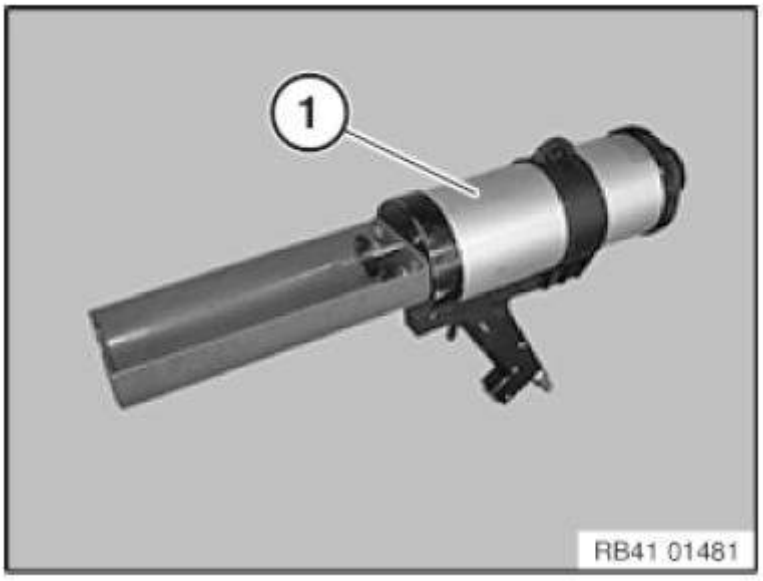


Fig. 24: Setting Speed Control

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Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of the glue cartridge (195 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 20Â°C.

Application time of the adhesive approx. 20 min

IMPORTANT: At working temperatures above 30Â°C, the application time of the adhesive is reduced to **10 min!**

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.

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 20Â°C.

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

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.

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 18Â°C.

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

48 hours at an object temperature of 18Â°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.

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 15Â°- 25 Â°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 18Â°C.

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

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apply the mixed adhesive to one side of the bonding surface.

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

2-component adhesive application:

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

Hardening time:

See vehicle-specific repair instructions

Adhesive disposal:

Hardened adhesive is disposed of as normal waste.

Empty glue cartridges are disposed of as normal waste.

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

These regulations apply to the Federal Republic of Germany.

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

41 00... NOTES ON ADHESIVE K4

Note the following information before starting to apply adhesive!

IMPORTANT:

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

Storage:

Dry at 15Â°- 25 Â°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 18Â°C.

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Working life of adhesive is approx. 10 minutes.

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

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

2-component adhesive application:

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

Hardening time:

The bonded connection will be resistant after 30 minutes.

Disposal of adhesive:

Hardened adhesive is disposed of as normal waste.

Empty glue cartridges are disposed of as normal waste.

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

These regulations apply to the Federal Republic of Germany.

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

41 00... NOTES ON ADHESIVE K5

Note the following information before starting to apply adhesive!

IMPORTANT:

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

Storage:

Dry at 15Â°- 32 Â°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 20Â°C.

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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 23Â°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.

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 15Â°C.

10 hours at an object temperature of 23Â°C.

1 hour at an object temperature of 60Â°C.

0.5 hours at an object temperature of 85Â°C.

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

Disposal of adhesive:

Hardened adhesive is disposed of as normal waste.

Empty glue cartridges are disposed of as normal waste.

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

These regulations apply to the Federal Republic of Germany.

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

41 00... NOTES ON ADHESIVE K6

Note the following information before starting to apply adhesive!

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IMPORTANT:

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

Storage:

Dry at 15Â°-25 Â°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 18Â°C.

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

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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.

61 00... NOTES ON HANDLING THE HIGH PRESSURE CLEANER

WARNING: **Only used a high pressure cleaner approved by BMW!**
Only instructed persons aged over 16 years may work using a high pressure cleaner.
Check the high pressure cleaner and electrical wiring for visible damage.
Only use at a suitable location.

Pay attention to following hazard warnings:

IMPORTANT:

- 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**

Notes on washing a vehicle with a high pressure cleaner:

IMPORTANT:

- Do not wash directly on gaskets and control units during engine washes.
- A minimum distance of 30 cm must be adhered to for tires and tire 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 60 degrees.
- Do not spray directly onto cameras/sensors.
- On electric or hybrid cars do not wash on high-voltage components.

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.**

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Screw connection	Vehicle	Screw/bolt fastening point(s)	Helicoil thread insert
Front axle support to engine support	F01, F02, F03, F04, F07, F10, F11, F12, F13, F18	M12	M12x1.5x24
	F25	M14	M14x1.5x28
Rear axle support to side member	F01, F02, F03, F04, F07, F10, F11, F12, F13, F18	Â	M14x1.5x28
	F25	Â	M12x1.5x24
Support bearing screw connection, front axle	F25	Â	M8x1, 25x16

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	No
	E61	Yes
	E84, E92	Yes
	F01, F02, F04, F06, F07, F10, F11, F18	Yes
	F25, E70, E71	Yes
	F20, F21, F30, F31, F34, F35	Yes
	R55, R56, R60, R61	Yes

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

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 130Â°C, even if only 70Â°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 85Â°C.

IMPORTANT: Do not use infrared radiators on carbon parts!
Risk of component destruction.

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41 00... OPENING BONDED CONNECTIONS

1. **Opening spot-welded adhesive joint**

   OPEN WELDING SPOTS.

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

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

   Release connecting flange with chisel.

   Remove adhesive residue from connecting flange.

2. **Opening bonded connections**

   If necessary, open existing PUNCH OR BLIND RIVETS.

   Roughly cut out damaged component.

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

   Heat adhesive flange with a hot air blower. Heat components to max. 250 Â°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 aluminum roofs**

   Procedure is described in detailed in the relevant repair instructions.

4. **Opening bonded connections on carbon-fibre-reinforced plastic parts**

   Procedure is described in detailed in the relevant repair instructions.

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.

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):

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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 aluminum front end.

Recommended tools and equipment:

- Stud welding apparatus with gas bottle containing inert gas (82 % argon, 18 % CO2).
- Stainless steel stud (sourcing reference via BMW Parts Department image board Aluminum and steel/bonding and welding)
- Universal riveting tool

Grind off paint and dark grey coating of punch rivets.

Position bolt centrally on the rivet and weld on vertically. The area in which the bolts are welded on should be between the two grounding terminals. Position both terminals, if possible, on the top side of the 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 aluminum (risk of corrosion).

Clean vehicle to remove swarfs (risk of corrosion).

41 00... OPENING WELDED CONNECTIONS

1. **Components made of steel:**

1.1 Opening welding spots (resistance pressure spot welding):

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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.

- **Procedure:**

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

  Set punch mark in center 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 aluminum:**

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.

41 00... OVERVIEW OF ADHESIVE CARTRIDGE GUNS

Adhesive gun 83 19 2 149 522

Usable for adhesives K4, K5a.

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Usable for BMW 2K polyurethane foam.

Including insert 1:1 and 2:1.

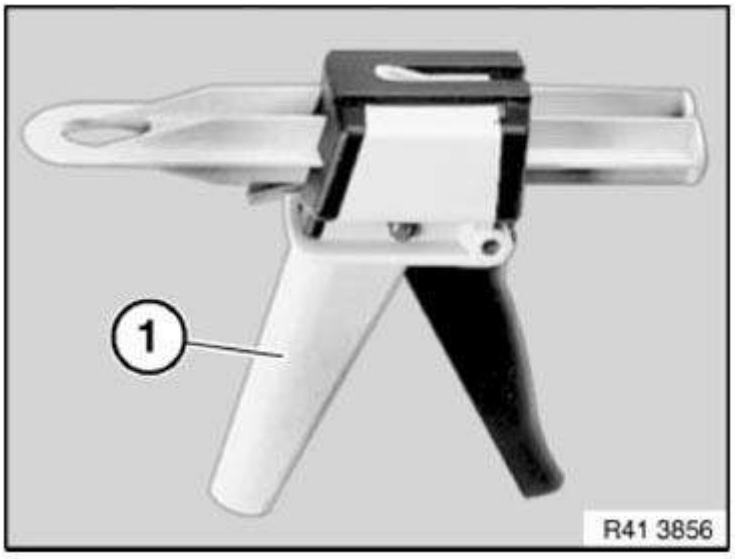


Fig. 25: Identifying Adhesive Cartridge Gun (83 19 2 149 522)
Courtesy of BMW OF NORTH AMERICA, INC.

Adhesive gun 81 49 0 443 166

Usable for adhesive K3.

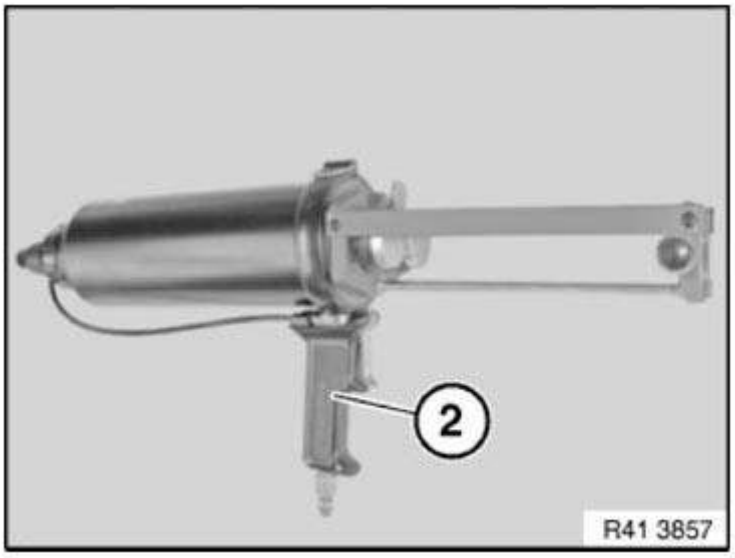


Fig. 26: Identifying Adhesive Gun (81 49 0 443 166)
Courtesy of BMW OF NORTH AMERICA, INC.

Adhesive cartridge gun 81 49 2 213 059

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

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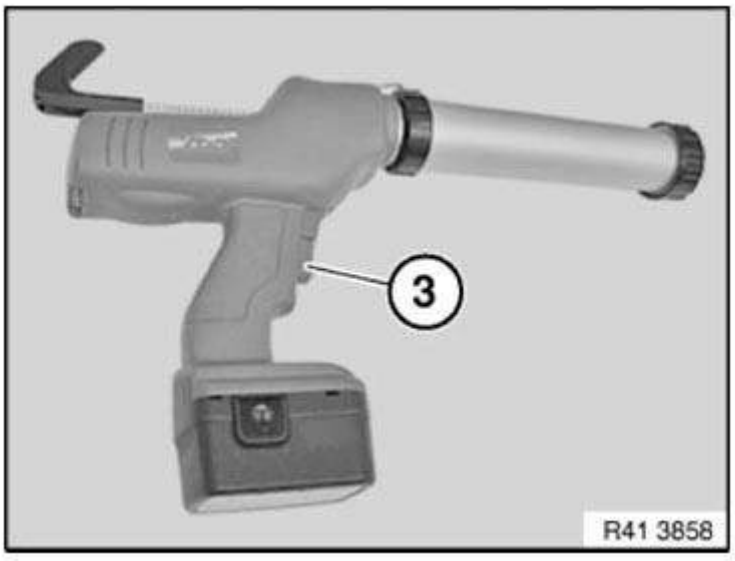


Fig. 27: Identifying Adhesive Cartridge Gun (81 49 2 213 059)
Courtesy of BMW OF NORTH AMERICA, INC.

Adhesive cartridge gun 83 30 0 494 836

Usable for structural foam HS2.

NOTE: **Special tool number 41 3 010**

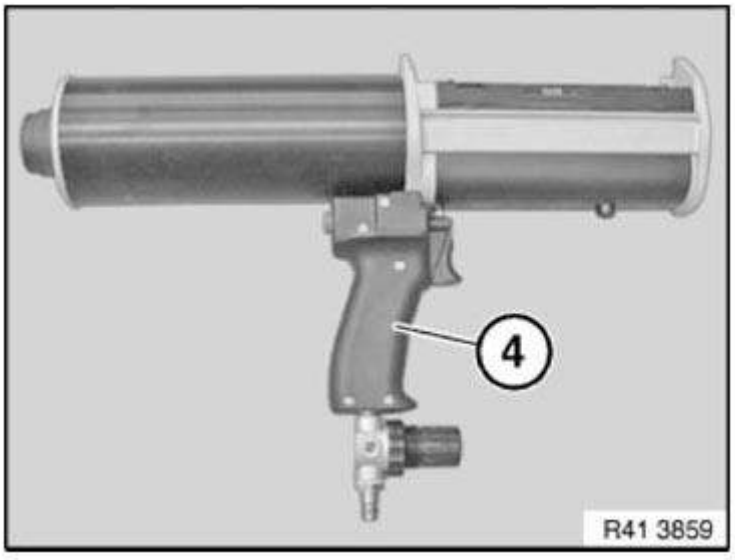


Fig. 28: Identifying Adhesive Cartridge Gun (83 30 0 494 836)
Courtesy of BMW OF NORTH AMERICA, INC.

Adhesive cartridge gun 81 49 2 355 475

Usable for adhesive K2 (2x290 ml glue cartridge)

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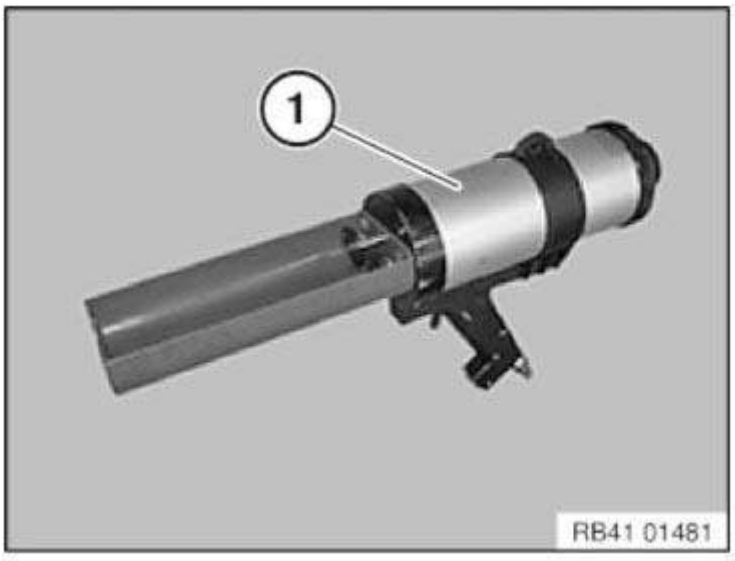


Fig. 29: Setting Speed Control
Courtesy of BMW OF NORTH AMERICA, INC.

41 00... OVERVIEW OF CONSUMABLES

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 K5a	Body adhesive K5a	83 19 2 158 654	50 ml
Adhesive K5b	Body adhesive K5b	83 19 2 157 298	195 ml
Adhesives K5a and K5b are the same adhesive in different package sizes.			
Adhesive K6	Adhesive set K6	83 19 2 317 925	Â

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

1.2 Cleaning agent

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

1.3 Fillers

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Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Metal filler	2K Metallic filler	83 19 2 154 175 US version: 83 19 2 163 602 Asian version: 83 19 2 163 603	Â

2.1 Rivets

Designation, repair instructions	Naming of Electronic Parts Catalogue	Part number of Electronic Parts Catalogue	Remarks
Blind rivet N1 Hemlock 813	Blind rivet N1	83 19 0 301 414	dia. 6.5 mm; clamping range 2.8-4.8 mm
Blind rivet N2 Hemlock 815	Blind rivet N2	83 19 0 301 419	dia. 6.5 mm; clamping range 4.8-6.8 mm
Blind rivet N3	Blind rivet N3	83 19 0 301 421	dia. 4 mm; clamping range 1-3 mm
Punch rivetN4	Punch rivetN4	83 19 2 158 080	dia. 3 mm; length 4 mm
Punch rivetN5	Punch rivetN5	83 19 2 158 079	dia. 5 mm; length 5 mm
Blind rivet N6	Blind rivet N6	83 19 2 158 655	dia. 4 mm; clamping range 3-5 mm
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

2.2 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	HS-AK multibase filler 2K spray	51 91 0 432 612	200 ml; application time 5

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			h
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, KTL 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 0 428 349	310 ml
Sealant D2	Seam sealing, spreadable	83 42 0 428 350	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 0 428 190	400 ml
Cavity sealant	Cavity preservation	83 42 0 428 348	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	BMW 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	Twist drill	83 19 2 166 461	4.2 x 119 mm
Drill bit	Twist drill	83 19 2 166 462	6.8 x 156 mm
Drill bit	Twist drill	83 19 2 166 463	4.2 x 55 mm
Drill bit	Twist drill	83 19 2 166 464	6.8 x 74 mm
Drill bit	High-strength drill	83 19 2 359 262	6.8 x 79 mm

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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	Â

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	Â

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** . See **41 00... INSTALLING CAVITY SEALING (EXPANDED)**, **41 00... INSTALLING CAVITY SEALING (NOT EXPANDED)** or **41 00... INSTALLING A CAVITY SEALING WITH 2-COMPONENT PU CAVITY FOAM** has been specified for this situation.

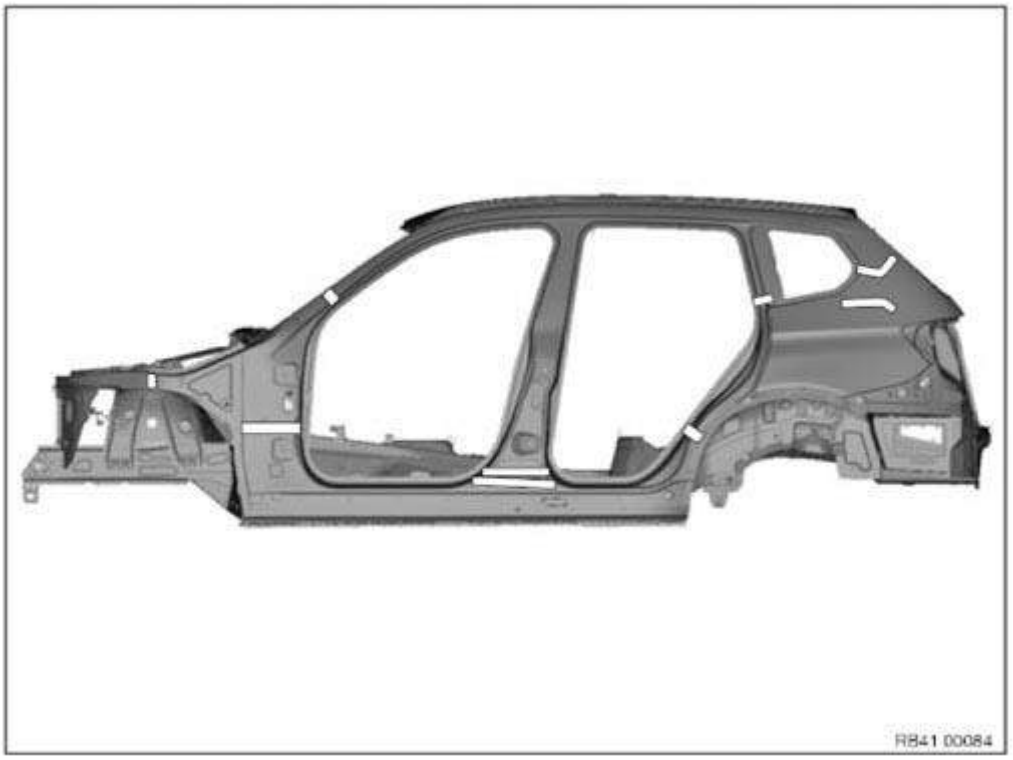


Fig. 30: Identifying Shaped Parts For Cavity Sealing Area
Courtesy of BMW OF NORTH AMERICA, INC.

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.

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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 (05 03 09 (535))

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).

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.

  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.

41 00... REINFORCEMENT PLATE (BONDED)

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

A reinforcement plate is bonded in to ensure sufficient strength.

Observe notes on **REPAIR STAGE 2**.

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

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Mark component in accordance with measurement a and cut.

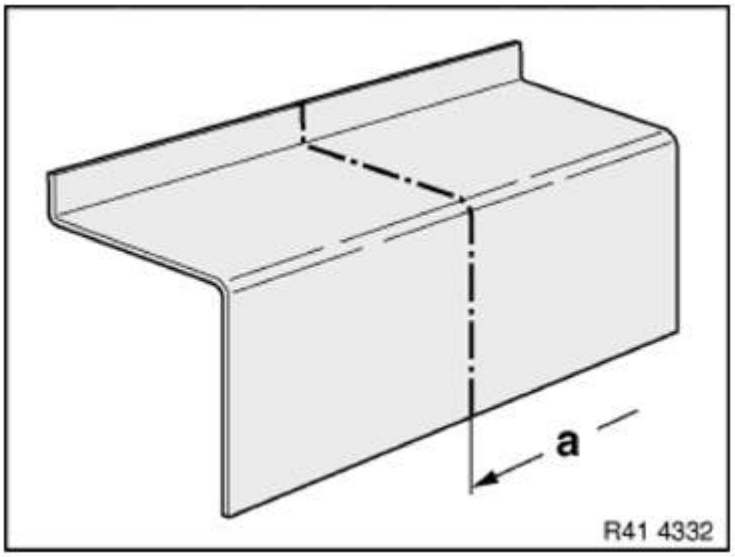


Fig. 31: Identifying Reinforcement Plate Mark
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part:

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

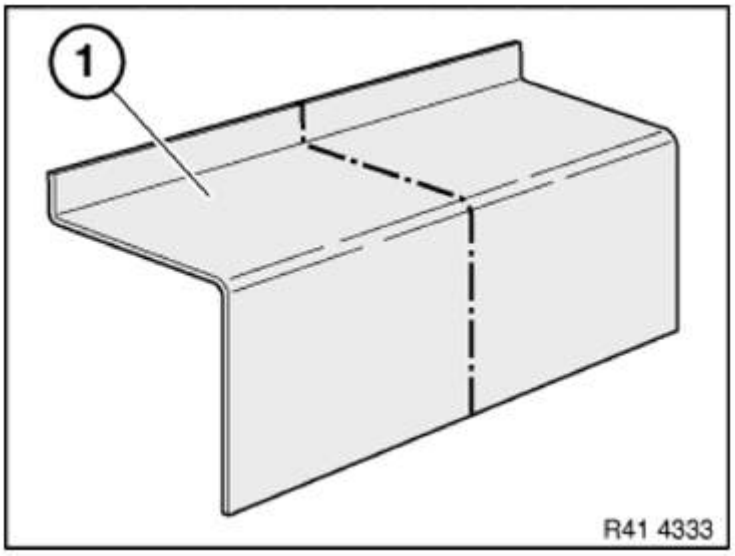


Fig. 32: Identifying Reinforcement Plate Cutting Part
Courtesy of BMW OF NORTH AMERICA, INC.

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

Length of reinforcement plate is 80 mm.

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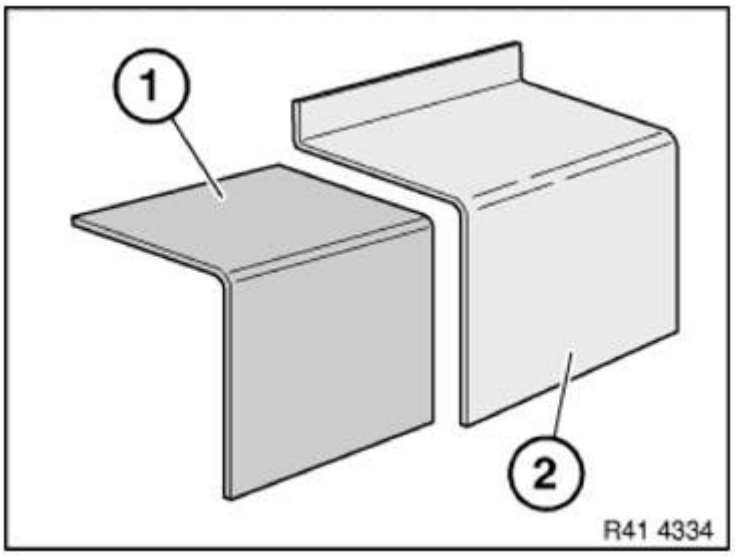


Fig. 33: Identifying Reinforcement Plate And Part
Courtesy of BMW OF NORTH AMERICA, INC.

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

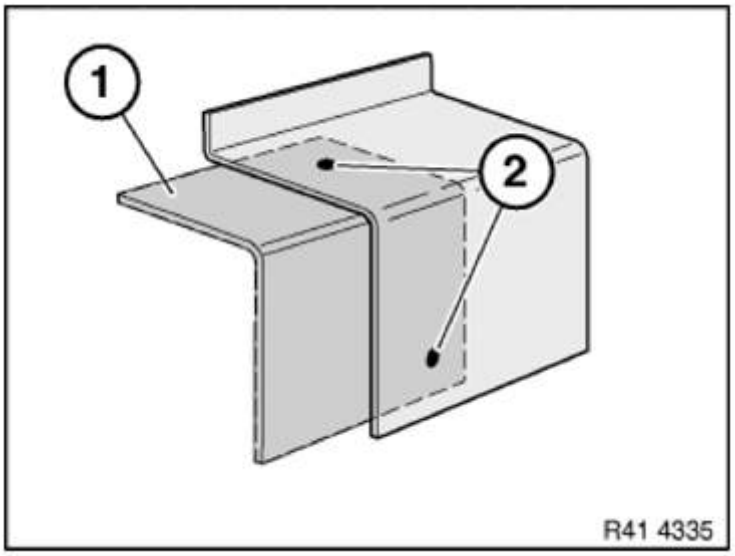


Fig. 34: Identifying Reinforcement Plate And Self-Tapping Screws
Courtesy of BMW OF NORTH AMERICA, INC.

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

Remove new part again.

Release self-tapping screws (3).

Remove reinforcement plate.

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

Deburr all bore holes.

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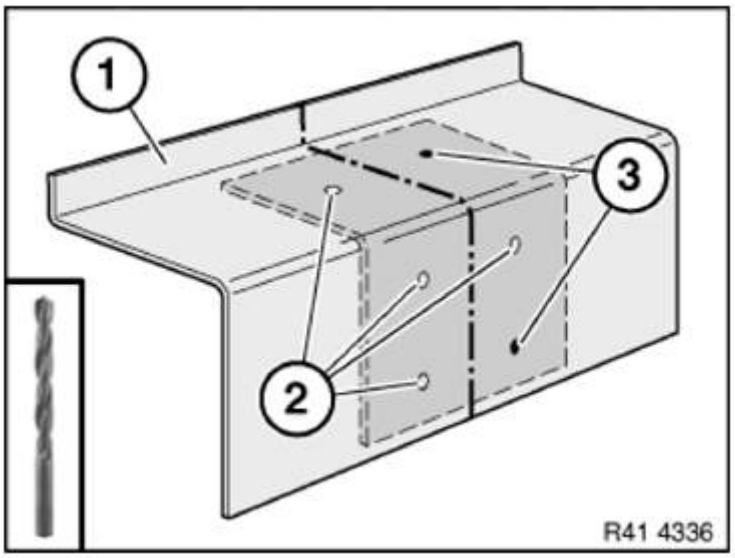


Fig. 35: Identifying Reinforcement Plate, Bore Holes And Self-Tapping Screws
Courtesy of BMW OF NORTH AMERICA, INC.

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

Installing reinforcement plate

Clean **all** bonding surfaces with cleaning agent R1.

Apply adhesive (1) to reinforcement plate bonding surface.

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

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

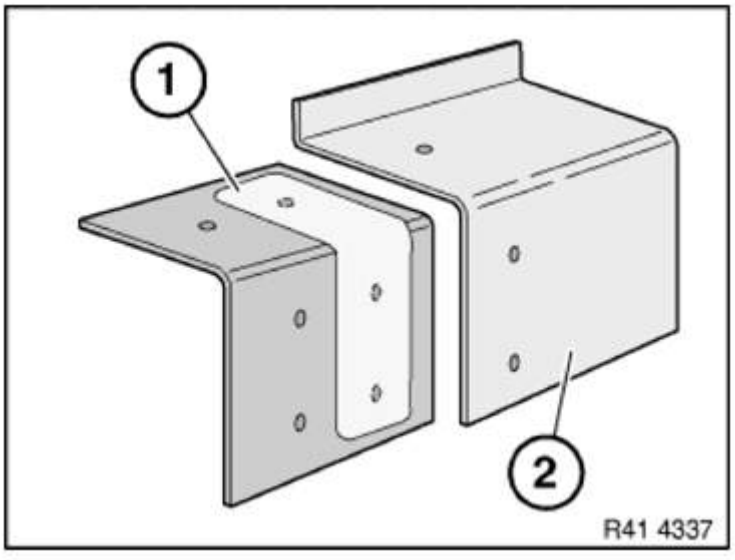


Fig. 36: Identifying Adhesive Applying Area To Reinforcement Plate Bonding Surface
Courtesy of BMW OF NORTH AMERICA, INC.

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

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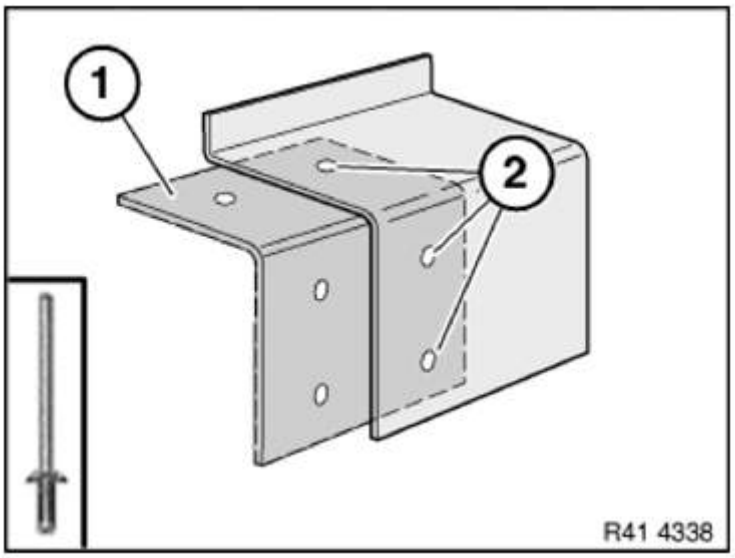


Fig. 37: Identifying Reinforcement Plate Rivet
Courtesy of BMW OF NORTH AMERICA, INC.

Apply adhesive (1) to reinforcement plate bonding surface.

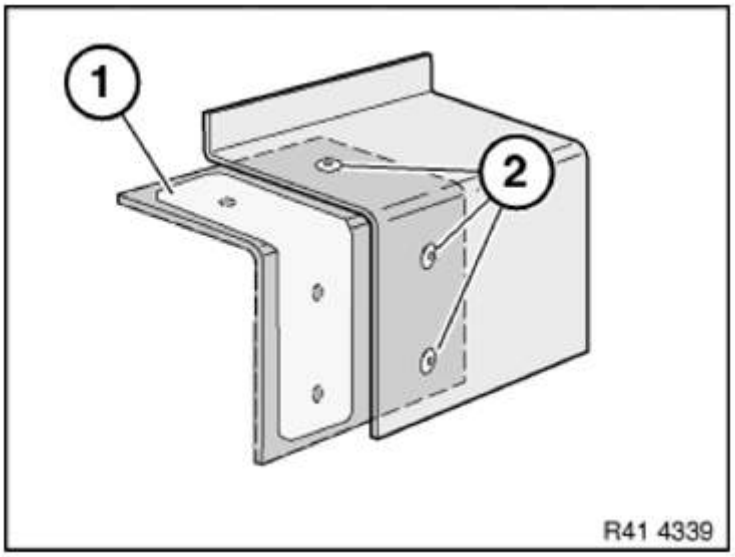


Fig. 38: Identifying Reinforcement Plate Adhesive Applying Area
Courtesy of BMW OF NORTH AMERICA, INC.

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

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

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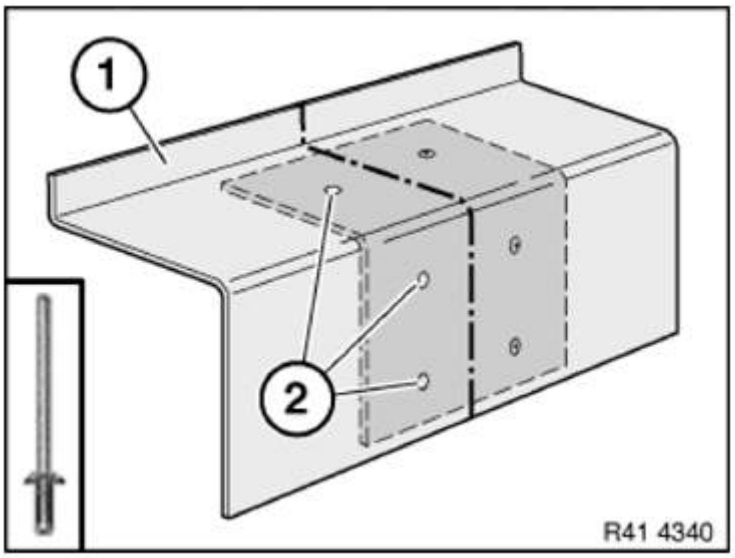


Fig. 39: Identifying Universal Mount And Rivet With Blind Rivets N3
Courtesy of BMW OF NORTH AMERICA, INC.

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

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

A reinforcement plate is bonded in to ensure sufficient strength.

Reinforcement plates are available as new parts and must also be used (see **OVERVIEW OF CONSUMABLES**).

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

Overview of reinforcement plates:

1. Reinforcement plate, sill
2. Reinforcement plate, C-pillar
3. Reinforcement plate, universal
4. Reinforcement plate, C- or D-pillar
5. Nuts (not shown)
    - Plastic nut dia. 18 mm, part number 07 14 1 943 122

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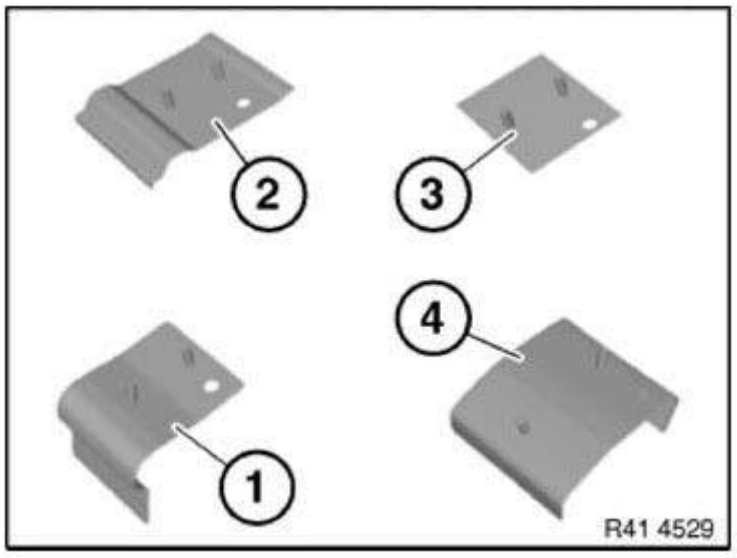


Fig. 40: Overview Of Reinforcement Plates
Courtesy of BMW OF NORTH AMERICA, INC.

- Expansion nut dia. 22 mm, part number 07 14 7 169 847

Mark component in accordance with dimension a and cut.

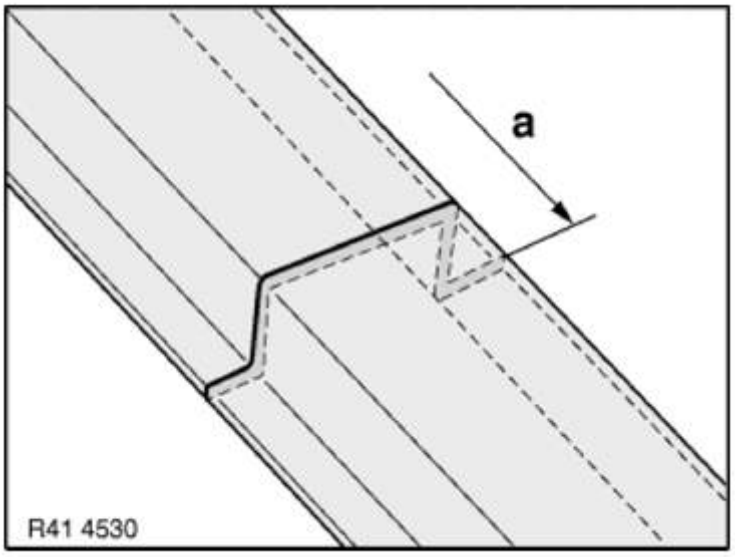


Fig. 41: Identifying Reinforcement Plate Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part:

Some of the reinforcement plates are oversized.

If applicable, it is necessary to rework reinforcement plates at the edges or cut them to size until the reinforcement plates are in tension-free contact with the outer skin.

It must be possible to push the reinforcement plates into the body without shearing off the adhesive.

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.

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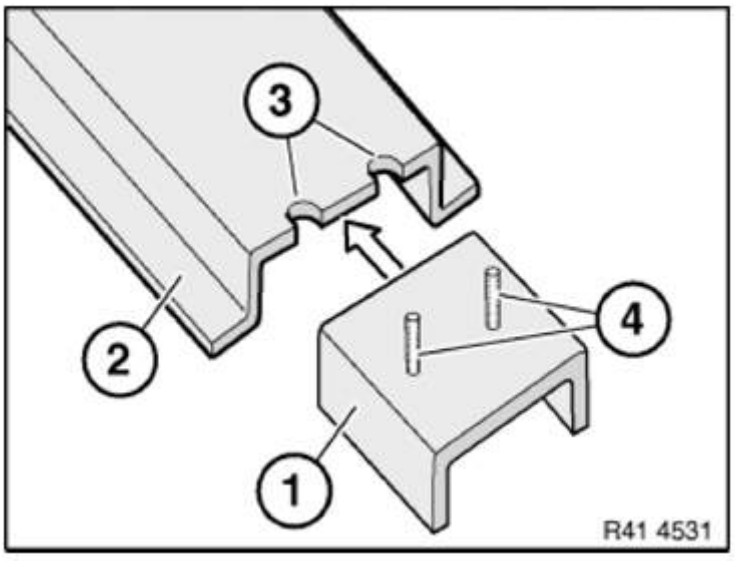


Fig. 42: Adjusting Reinforcement Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Secure reinforcement plate by screwing on nuts (1).

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

Diameter of recesses approx. 10 - 12 mm.

Remove reinforcement plate again.

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

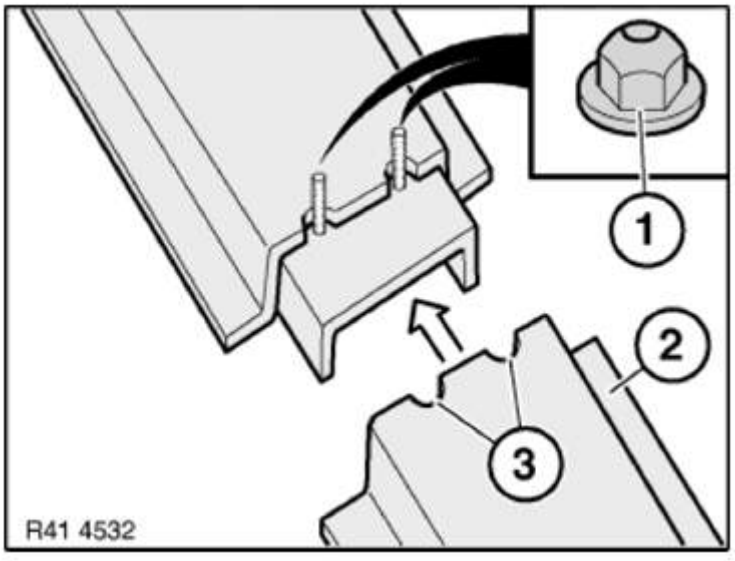


Fig. 43: Securing Reinforcement Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Chamfer cutting edges (1) on joint by grinding.

(2) Component on vehicle
(3) New part

Installation note:

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

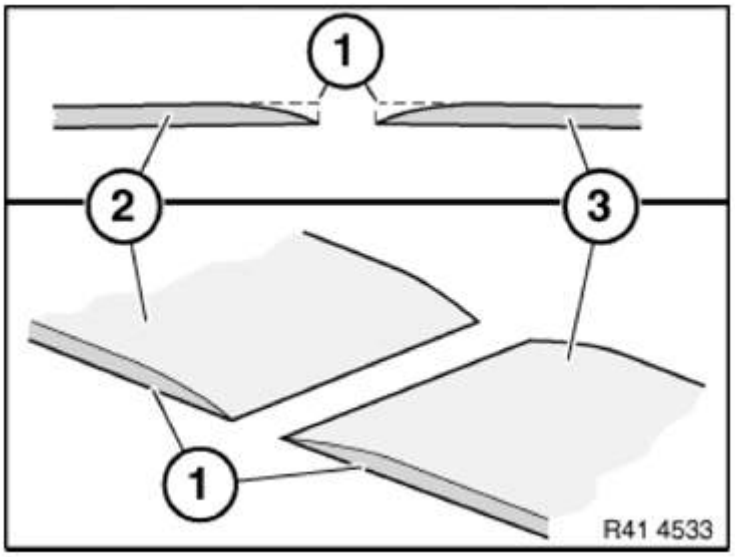


Fig. 44: Identifying Chamfer Cutting Edges
Courtesy of BMW OF NORTH AMERICA, INC.

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

Procedure for using universal reinforcement plate:

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

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

Secure plates with N4 punch rivets.

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

Rivet the plate to the inside of the flange!

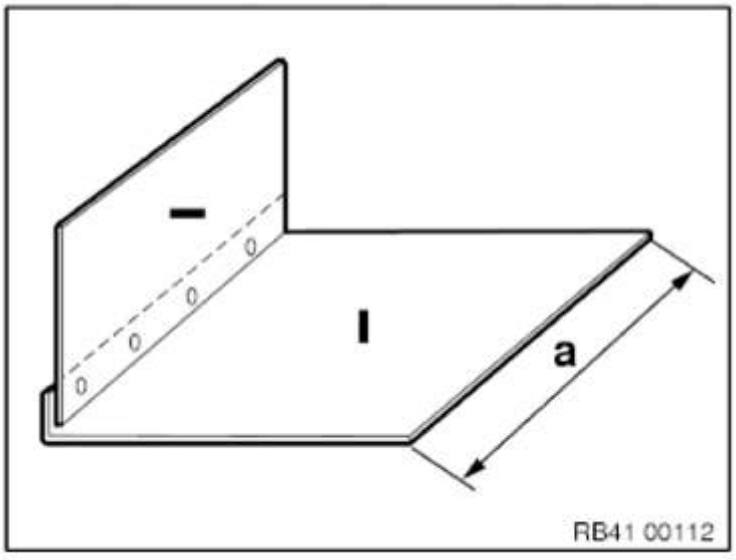


Fig. 45: Identifying Reinforcement Plate Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

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Installing reinforcement plate

Clean **all** bonding surfaces.

Apply adhesive to reinforcement plate in area (1).

Apply more adhesive in the radii to avoid air pockets.

Apply additional adhesive to the outer skin around radii.

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

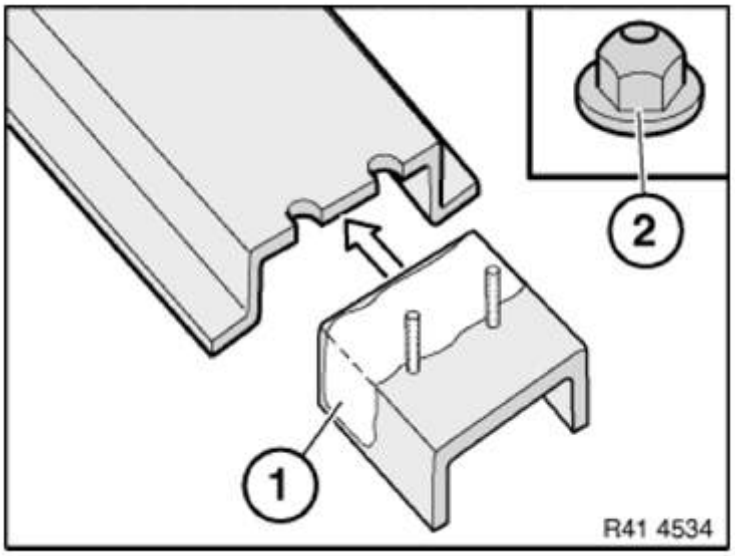


Fig. 46: Installing Reinforcement Plate
Courtesy of BMW OF NORTH AMERICA, INC.

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

Apply adhesive to reinforcement plate bonding surface (1).

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 nuts at the radii.

Only then tighten all nuts in the flat areas.

Tightening torque **41 14 1AZ** .

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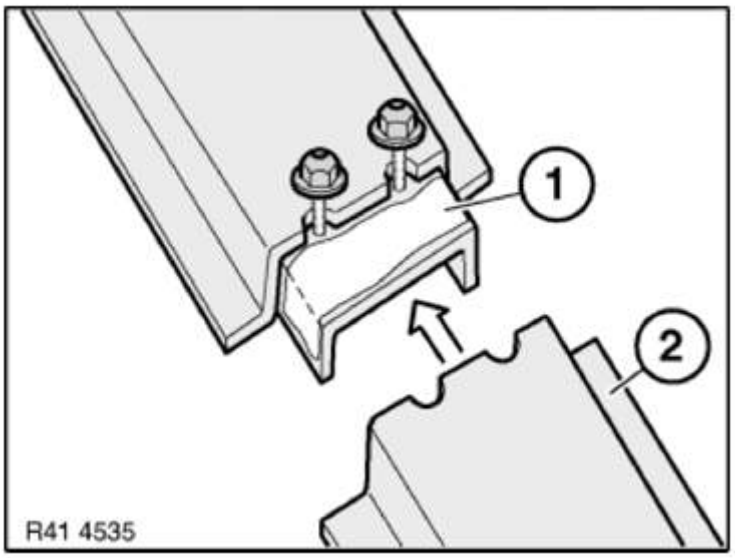


Fig. 47: Installing Reinforcement Plate
Courtesy of BMW OF NORTH AMERICA, INC.

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

Concluding tasks at separation point:

After adhesive has hardened:

In area visible to customer:

Cut off stud bolts with bodywork saw.

Completely remove adhesive residue in joint (1).

Round off sharp edges by grinding.

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

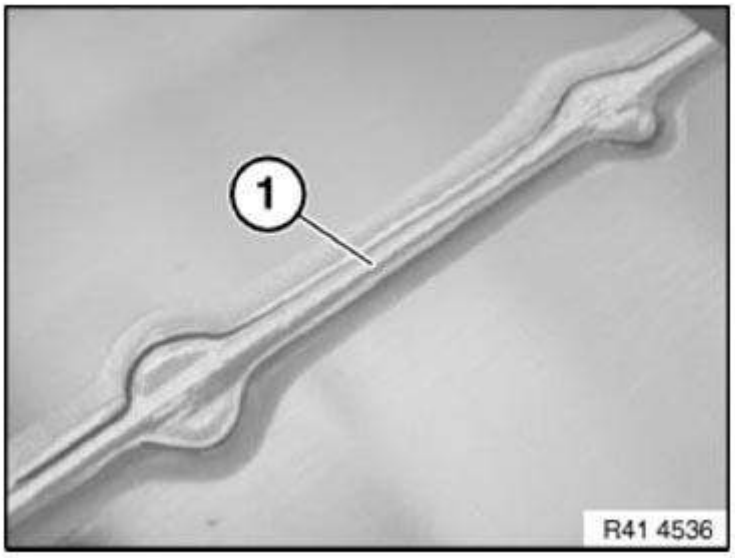


Fig. 48: Identifying Adhesive Residue Joint Area
Courtesy of BMW OF NORTH AMERICA, INC.

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

METAL FILLER - INSTRUCTIONS FOR USE

Not in area visible to customer:

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

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

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

41 05 800 RELEASING BONDED FOLDED SEAM CONNECTIONS

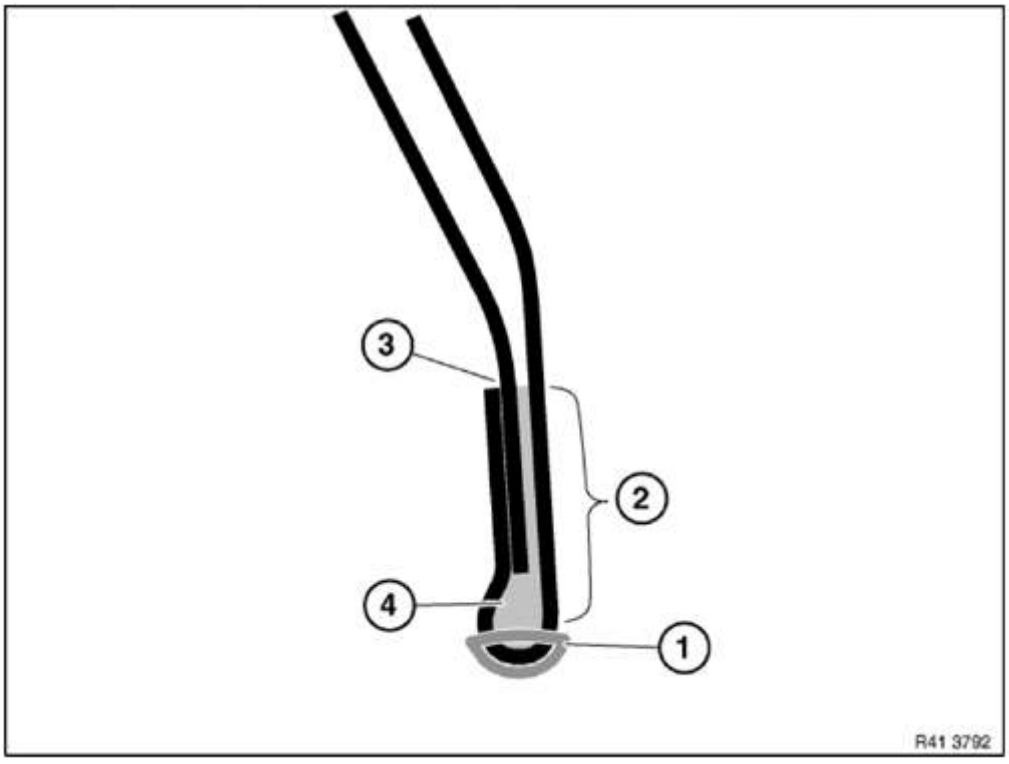


Fig. 49: Identifying Bonded Folded Seam Connections
Courtesy of BMW OF NORTH AMERICA, INC.

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

CAUTION: **Extract vapors and gases.**

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

CAUTION: **Wear a grinding dust mask.**

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

41 00... REPAIR METHODS, REPAIR STAGES 1

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

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Repair techniques

-> **REPAIRING THREADS**

Repair stage 1a

-> **Blind rivet** . See **41 00... BLIND RIVET** or **41 00... REPLACING BLIND RIVETS**

-> **BLIND RIVET NUTS AND BOLTS**

-> **Glass pane** . See **51 31... MATERIALS FOR BONDING WINDOW** , **51 31... GENERAL PROCEDURE WHEN DISMANTLING/INSTALLING BONDED WINDOW GLASS** or **51 31... NOTES ON WINDOW BONDING REPAIR KIT**

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

Repair techniques

-> Straightening outer skin

-> **STRAIGHTENING ALUMINUM PARTS**

Repair stage 1b

-> **STRAIGHTENING STEEL COMPONENTS**

-> **REPAIRING PLASTIC COMPONENTS**

-> **METAL FILLER**

-> Grinding

-> **GRINDING ALUMINUM COMPONENTS**

-> **GRINDING STEEL PARTS**

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

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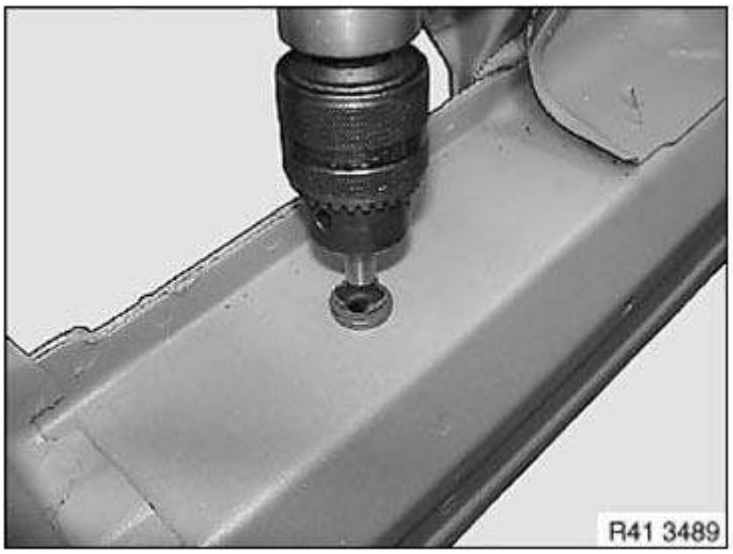


Fig. 50: Drilling Bore On Body
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Avoid paint damage

2. Knock rivet head away with a chisel

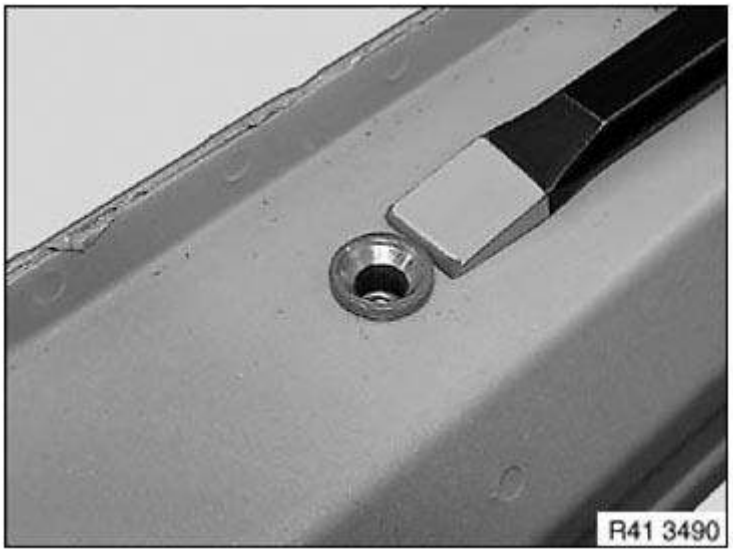


Fig. 51: Removing Knock Rivet Head Using Chisel
Courtesy of BMW OF NORTH AMERICA, INC.

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

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Fig. 52: Identifying Rivet Bore On Body
Courtesy of BMW OF NORTH AMERICA, INC.

4. Clean component, eliminate paint damage if necessary

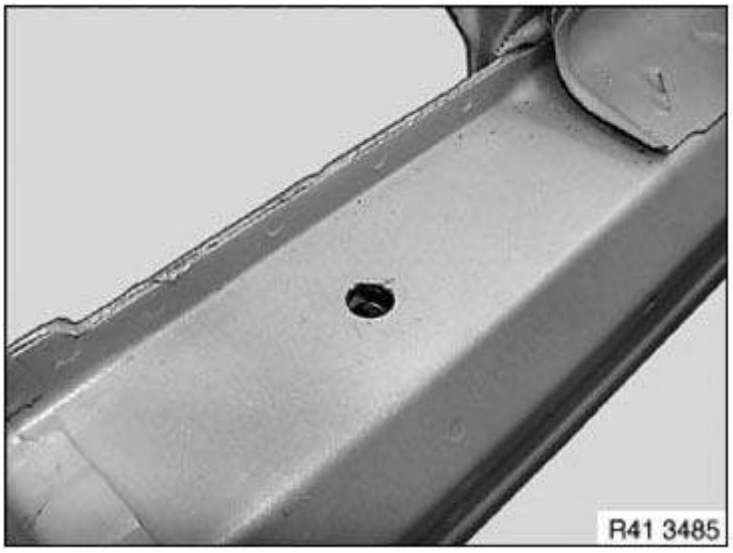


Fig. 53: Identifying Body Rivet Bore
Courtesy of BMW OF NORTH AMERICA, INC.

If the rivet shank can be removed:

IMPORTANT: To avoid corrosion, stop chips/swarf by means of cavity preservation. Follow **NOTES ON CORROSION PROTECTION**.

5. Preserving cavity

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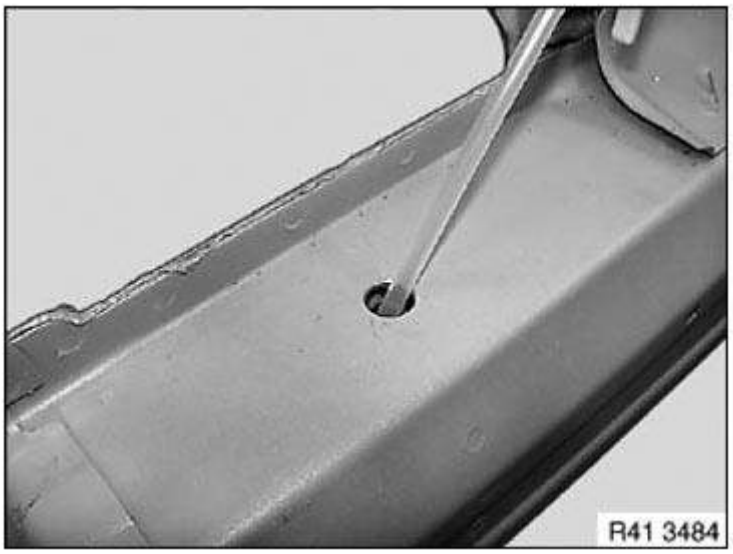


Fig. 54: Identifying Cavity Sealing
Courtesy of BMW OF NORTH AMERICA, INC.

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).

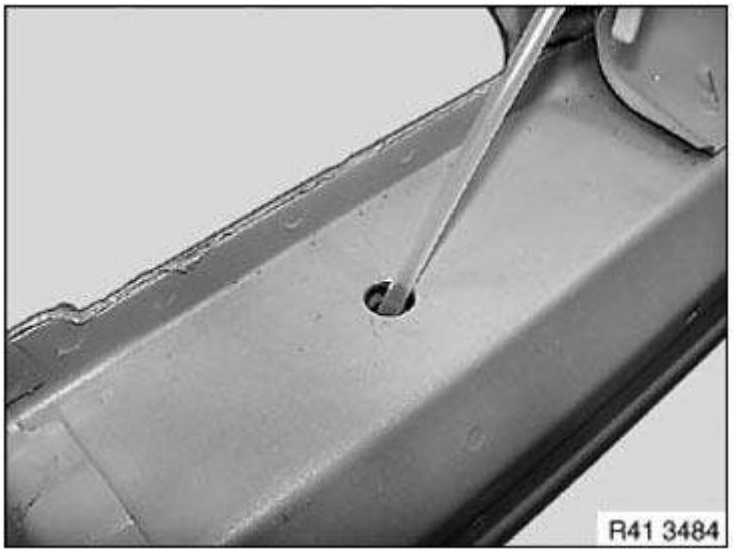


Fig. 55: Identifying Cavity Sealing
Courtesy of BMW OF NORTH AMERICA, INC.

5. Stop rivet shank by means of specific foaming
6. Set rivet nut with hand rivet gun

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

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

IMPORTANT: Follow manufacturer's operating instructions.

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Make sure rivet nut correctly contacts component.

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

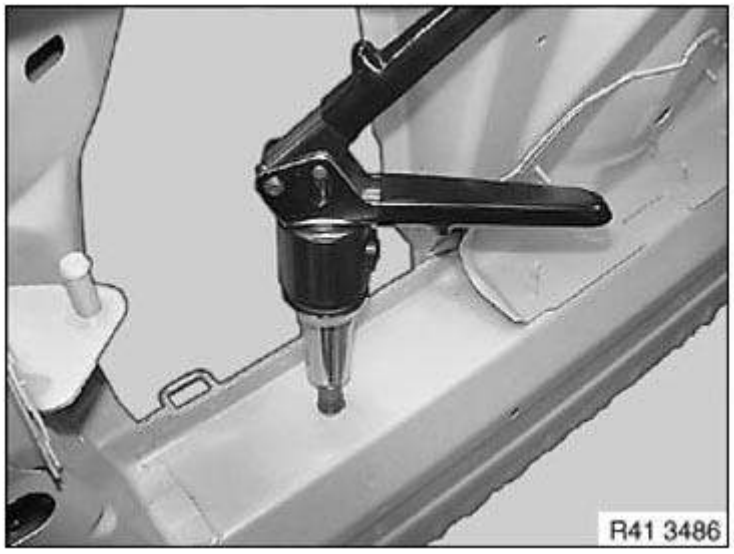


Fig. 56: Installing Rivet Nut Using Rivet Gun
Courtesy of BMW OF NORTH AMERICA, INC.

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

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

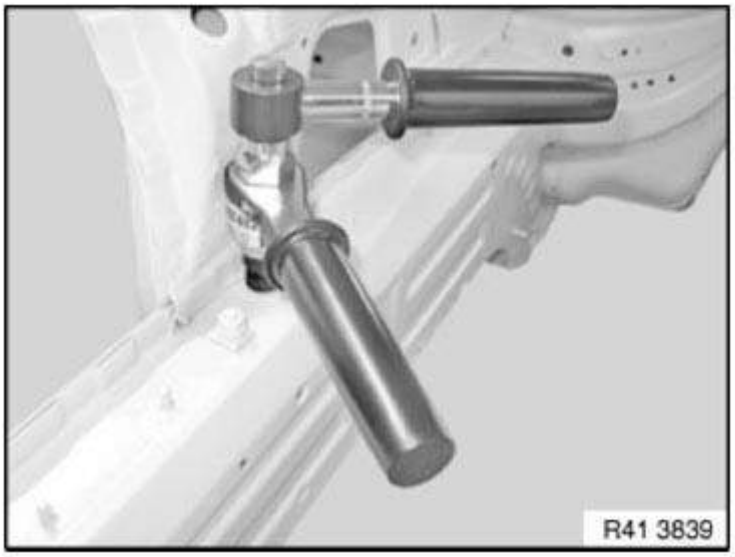


Fig. 57: Setting Rivet Nut Using Hand Rivet Gun
Courtesy of BMW OF NORTH AMERICA, INC.

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

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.

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Repair techniques

-> Removing used part

-> **OPENING WELDED CONNECTIONS**

-> **OPENING BRAZED CONNECTIONS**

-> **OPENING RIVET CONNECTIONS**

-> **Opening bonded connections** . See **41 00... OPENING BONDED CONNECTIONS** or **41 05 800 RELEASING BONDED FOLDED SEAM CONNECTIONS**

-> **GRINDING ALUMINUM COMPONENTS**

-> **GRINDING STEEL COMPONENTS**

-> Sectional repair

-> **Reinforcement plate (bonded)** . See **41 00... REINFORCEMENT PLATE (BONDED)** or **41 00... REINFORCEMENT PLATE WITH STUD BOLT (BONDED)**

-> **METAL FILLER**

-> Installing new part

-> **Notes on consumables** . See **41 00... OVERVIEW OF CONSUMABLES**, **41 00... NOTES ON CLEANING AGENT R1** or **41 00... INFORMATION ON METAL FILLER**

-> **Notes on adhesive** . See **41 00... NOTES ON ADHESIVE K1**, **41 00... NOTES ON ADHESIVE K2**, **41 00... NOTES ON ADHESIVE K3**, **41 00... NOTES ON ADHESIVE K4** or **41 00... NOTES ON ADHESIVE K5**.

-> **BONDING ON PAINTED SURFACES**

-> **BLIND RIVET**

-> **PUNCH RIVETS**

-> **WELDING STEEL COMPONENTS**

-> **Cavity sealing** . See **41 00... INSTALLING CAVITY SEALING (EXPANDED)**, **41 00... INSTALLING CAVITY SEALING (NOT EXPANDED)** or **41 00... INSTALLING A CAVITY SEALING WITH 2-COMPONENT PU CAVITY FOAM**

-> **EMC SCREWS**

41 0 REPAIR TECHNIQUES, REPAIR STAGE 3

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

Repair techniques

-> Straightening structure

-> **STRAIGHTENING ALUMINUM COMPONENTS ON THE STRUCTURE**

-> **STRAIGHTENING STEEL COMPONENTS ON THE STRUCTURE**

-> Removing used part

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-> **OPENING WELDED CONNECTIONS**

-> **OPENING BRAZED CONNECTIONS**

-> **OPENING RIVET CONNECTIONS**

-> **OPENING BONDED CONNECTIONS**

-> **GRINDING ALUMINUM COMPONENTS**

-> **GRINDING STEEL COMPONENTS**

-> Sectional repair

-> **WELDING IN REINFORCEMENT PLATE (SHEET STEEL)**

-> Sectional repair (steel) with repair element

Sectional repair (aluminum) with repair element

-> Installing new part

-> Welding aluminum components

-> **WELDING STEEL COMPONENTS**

-> **SPOT-WELD BONDING STEEL COMPONENTS**

-> **SOLDERING STEEL COMPONENTS**

-> **Notes on consumables** . See **41 00... OVERVIEW OF CONSUMABLES** or **41 00... NOTES ON CLEANING AGENT R1**

-> **NOTES ON ADHESIVE**

-> Bonding aluminum on steel

-> **BONDING STEEL ON STEEL**

-> **BLIND RIVETS**

-> **PUNCH RIVETS**

-> **Cavity sealing** . See **41 00... INSTALLING CAVITY SEALING (EXPANDED)**, **41 00... INSTALLING CAVITY SEALING (NOT EXPANDED)** or **41 00... INSTALLING A CAVITY SEALING WITH 2-COMPONENT PU CAVITY FOAM**

-> **EMC SCREWS**

41 00... REPAIRING CLIPS FOR ROOF STRIP

The following instructions describe the permanent repair gluing of clips which were originally secured with T-pins.

The repair gluing at the same time protects the area of the torn-off T-pin permanently against corrosion.

1.0 Information on dangers/hazards:

- Read and comply with the manufacturer's information on dangers/hazards prior to application.
- Avoid eye and skin contact. Wear solvent-resistant protective gloves.
- Do not inhale adhesive fumes. Apply in well ventilated rooms only.

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1.0 Equipment

- **ADHESIVE K4**
- Static mixing tube
- **ADHESIVE GUN**
- Cleaning agent R1
- Adhesive tape for fixing

2.0 Preparing the surface:

- Surface temperature of bonding surface and room temperature at least 18Â°C.
- Cover area around bonding surface.
- Remove swarf, flaked paint etc. from bonding surface with a brush. Use of compressed air prohibited!
- Clean bonding surface with cleaning agent R1.
- Let cleaned surface air dry for at least 2 minutes. Bonding surface must be completely dry.
- Do not contaminate bonding surfaces once they have been cleaned (sweat from hands, fingerprints, etc.).

3.0 Applying the adhesive:

- Fill the hole (1) created by the torn-off T-pin with adhesive and spread over a length of approx. 4 cm (2) in the roof channel.

IMPORTANT: The hole must be completely filled or sealed with adhesive!

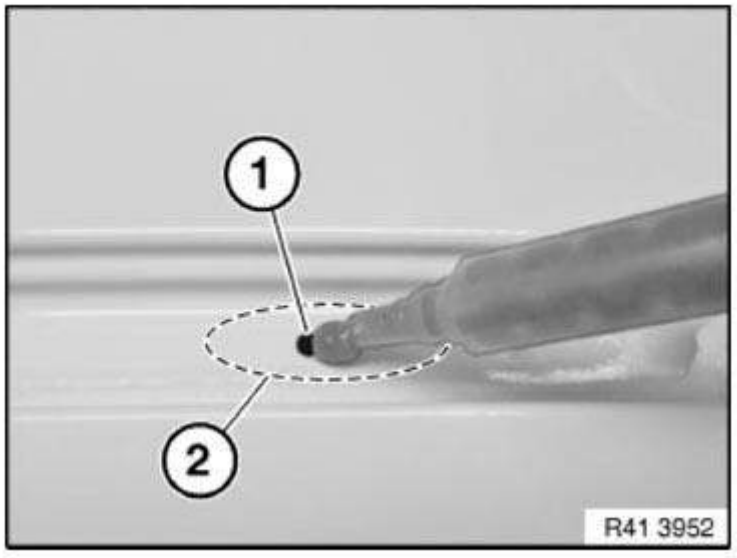


Fig. 58: Filling Hole With Adhesive
Courtesy of BMW OF NORTH AMERICA, INC.

Apply adhesive bead (1) to the underside of the clip.

In so doing, fill channel of clip with adhesive.

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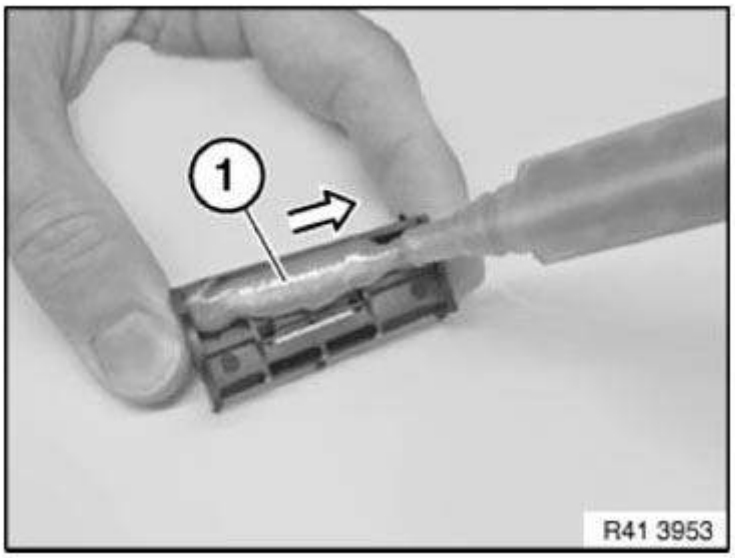


Fig. 59: Filling Channel Of Clip With Adhesive
Courtesy of BMW OF NORTH AMERICA, INC.

Move clip (1) into position and secure by hand.

If the adhesive is not already emerging evenly through the channel, apply additional adhesive from above.

Adhesive bead (2) must be below the clip height.

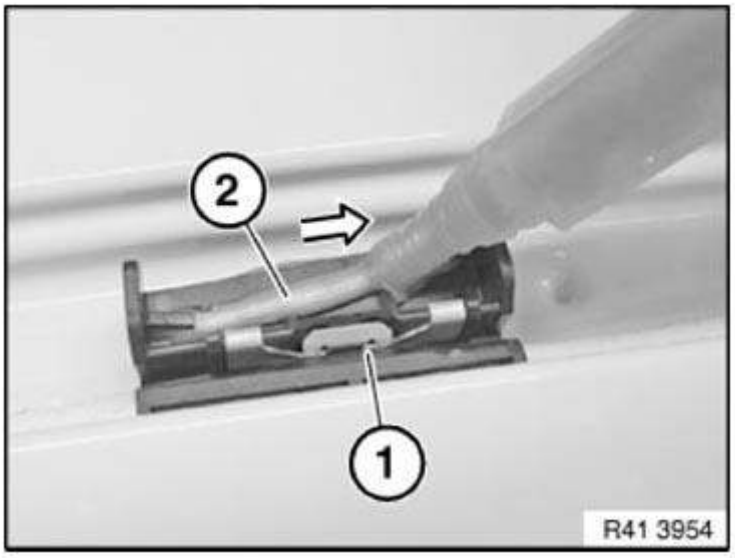


Fig. 60: Moving Clip Into Position
Courtesy of BMW OF NORTH AMERICA, INC.

Secure clip with adhesive tape (1), approx. 150 mm long.

Apply adhesive tape in direction of travel.

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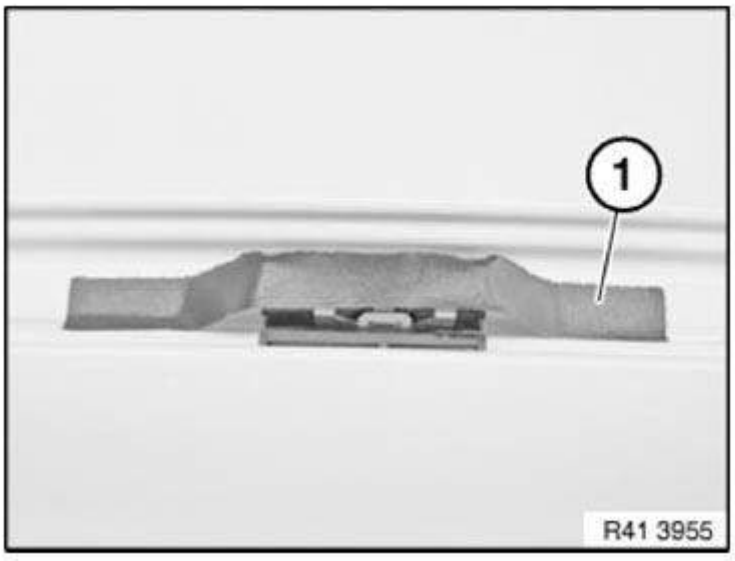


Fig. 61: Identifying Clip With Adhesive Tape
Courtesy of BMW OF NORTH AMERICA, INC.

4.0 Hardening period:

- Adhesive tape can be removed after approx. 10 mins.
- Earliest possible load capability, e.g. fitting of roof strip, after 30 minutes.

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 OVERVIEW OF CONSUMABLES).**
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).

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

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- 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 centimeter 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** . See **41 00... SAFETY AT WORK** or **41 00... INFORMATION ON HAZARDS**!

- 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.

41 00... REPLACEMENT PARTS STANDARDS

SUBJECT

Replacement parts standards

MODEL

All

SITUATION

BMW/MINI vehicles are subjected to rigorous crash tests by internal BMW/MINI departments, government agencies and additional crash assessment tests by independent organizations. When repairs are required, the only way to guarantee that a vehicle will retain and fulfil all crash requirements following repairs is to follow

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BMW/MINI repair standards and use only new original BMW/MINI parts. Any deviation could have serious consequences on the crash performance of the vehicle and jeopardize the safety of the occupants.

BMW/MINI utilizes many different types of materials and joining methods during production of the body shell. The advanced steels, aluminum and synthetic materials are used to improve weight, strength, energy absorption and corrosion resistance. These materials work in unison with the rest of the vehicle to deliver the level of safety, driving performance and appearance often associated with the BMW/MINI brand.

PROCEDURE

BMW/MINI of North America does not support the use of aftermarket, imitation, recycled and salvage repair parts. Returning BMW/MINI vehicles to manufacturer's specifications requires trained technicians utilizing only approved equipment, materials and joining processes. BMW/MINI repair instructions are supported only by the use of new original BMW/MINI parts.

BMW/MINI of North America bases its considerations on the following points:

- It cannot be confirmed that equivalent materials are used to produce aftermarket parts.
- All crash testing results and certifications are achieved with original BMW/MINI parts and joining methods in place.
- It cannot be confirmed that remanufactured components from outside sources fulfil BMW/MINI repair standards.
- Salvage components cannot be traced if subjected to a manufacturer's recall.
- It cannot be confirmed that salvage parts have not been subjected to prior crash impact loads, previous repair work, weathering and/or exposure to additional elements such as fire, smoke/heat damage or flooding.
- Non-original BMW/MINI parts may have poor fit, finish and quality which has a direct impact on the residual value of the vehicle. Original BMW/MINI parts are the same parts utilized to build the vehicles.

41 00... REPLACING BLIND RIVETS

Special tools required:

- 2 348 128
- 72 1 210

Lay out protective mats to protect the interior against swarf from the drilled-out rivets and damage.
Lay out protective mats in the relevant working area:

IMPORTANT:

- Dashboard
- Entrance area
- Passenger compartment

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Fig. 62: Identifying Protective Mats
Courtesy of BMW OF NORTH AMERICA, INC.

Schematic diagram of folding pack holder for head airbag:

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

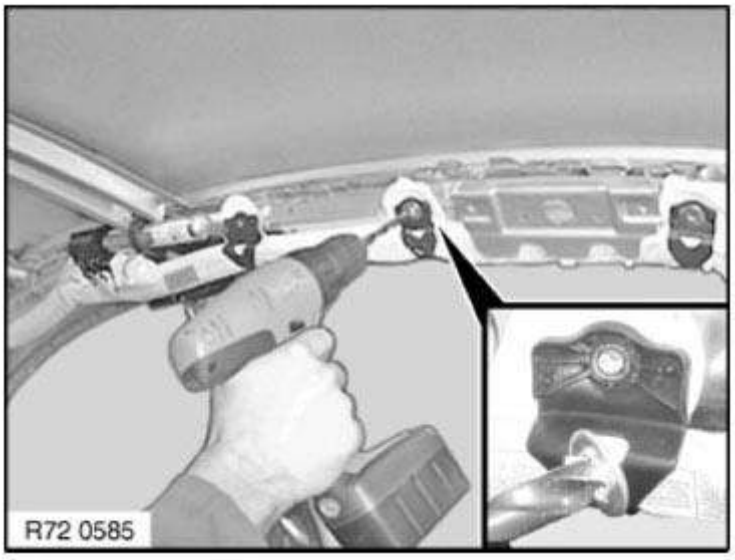


Fig. 63: Drilling Rivet Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Described for grab handle holder:

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

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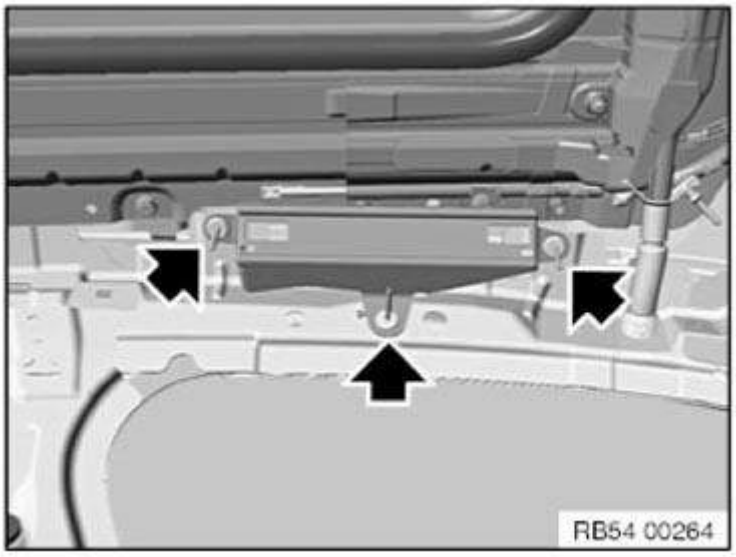


Fig. 64: Locating Rivet Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Cut off blind rivet shanks down to sheet metal as level as possible.

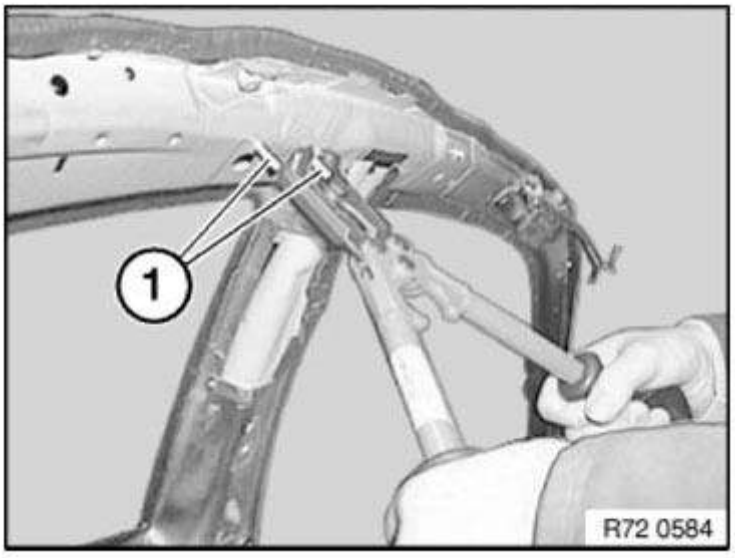


Fig. 65: Cutting Blind Rivet Shanks
Courtesy of BMW OF NORTH AMERICA, INC.

Deburr remaining rivets with nipper pliers.

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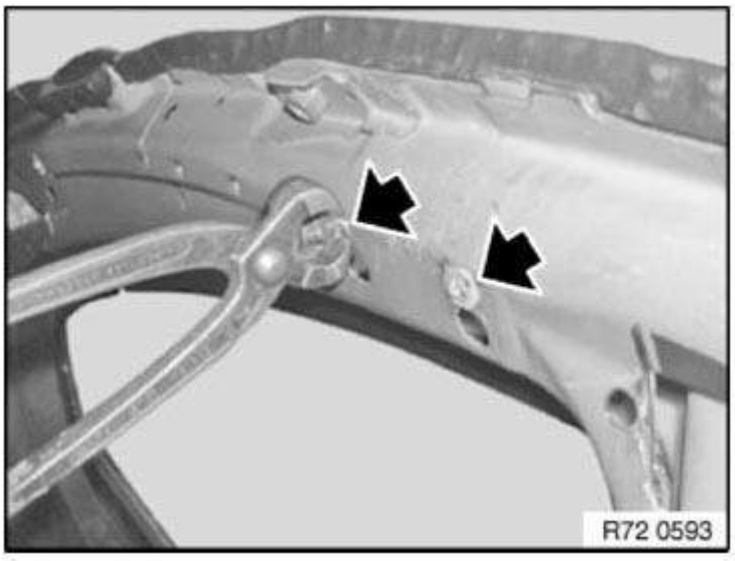


Fig. 66: Removing Rivets Using Nipper Pliers
Courtesy of BMW OF NORTH AMERICA, INC.

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 .

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

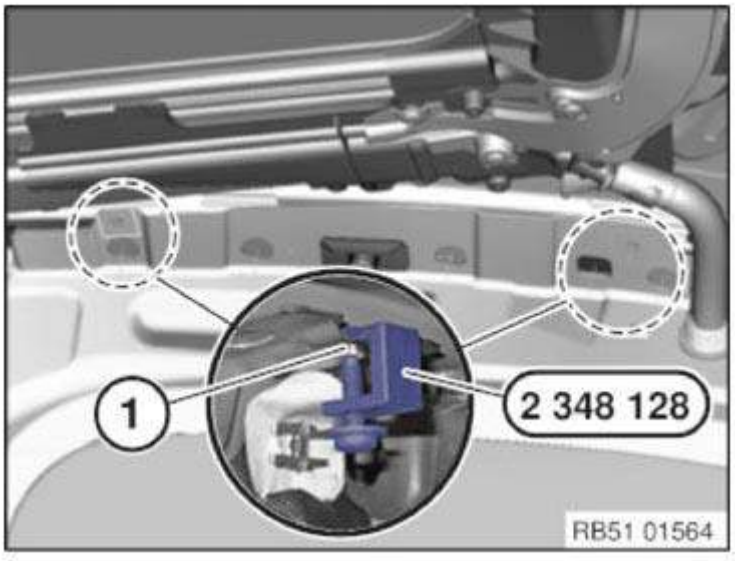


Fig. 67: Pressing Rivet Heads Using Special Tool (2 348 128)
Courtesy of BMW OF NORTH AMERICA, INC.

Special tool **72 1 210** for collecting rivet heads.

Shank (1) of special tool 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.

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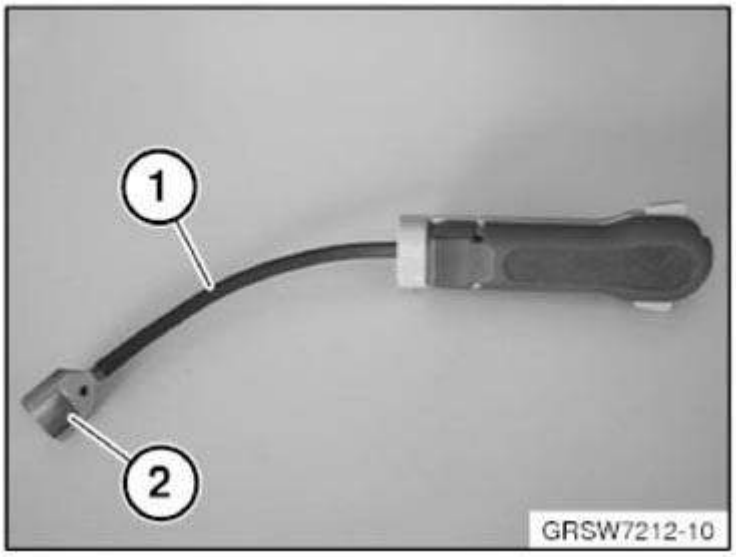


Fig. 68: Identifying Shank And Collecting Tray
Courtesy of BMW OF NORTH AMERICA, INC.

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.



Fig. 69: Inserting Special Tool (72 1 210)
Courtesy of BMW OF NORTH AMERICA, INC.

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.

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Use cavity preservation for foam filling.

Cavity foam can also be used if necessary.

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.

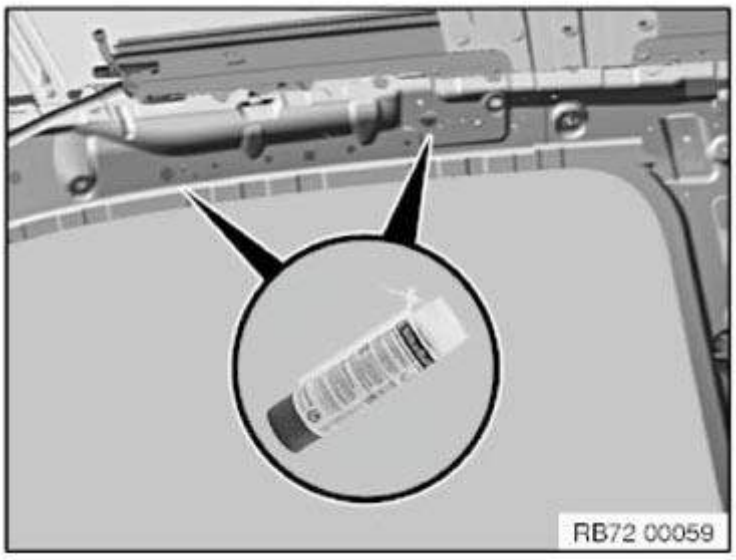


Fig. 70: Identifying Filling Material Tube
Courtesy of BMW OF NORTH AMERICA, INC.

Overview of rivet gun:

Riveting of gas generator housing and holders for folding pack with rivet gun.

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

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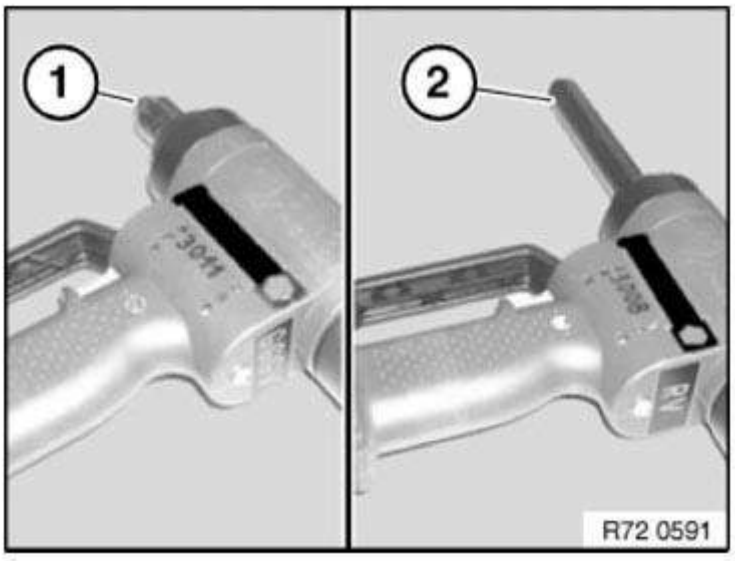


Fig. 71: Identifying Rivet Gun (Short And Long Shank)
Courtesy of BMW OF NORTH AMERICA, INC.

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 aluminum dust:

- Wear a fine dust mask.
- Only applicable to E52 and I01: 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 Â°C.
- Remove PVC sealant with a rotating wire brush only or heat material with a hot air blower to maximum 180 Â°C and remove with a spatula.
- Ensure that all enclosed areas are well ventilated or are provided with direct extractor facilities.

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.
- The welder must wear protective clothing and gloves which are suitable for welding (i.e. flameproof).
- A fire extinguisher must be located within reach of the welding area.

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- 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.
- Ensure that all enclosed areas are well ventilated or extract fumes directly.
- 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.
- 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 vapors ensure ample supply of fresh air. Stay calm. Keep air passages open. Consult a doctor.

3.5 Repair work with carbon:

- 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.

  Wear ear protectors.

- Wear a dust mask (minimum 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.

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START-STOP FUNCTION (MSA)

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

Observe safety precautions when working on MSA vehicles.

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

MSA function is deactivated by:

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

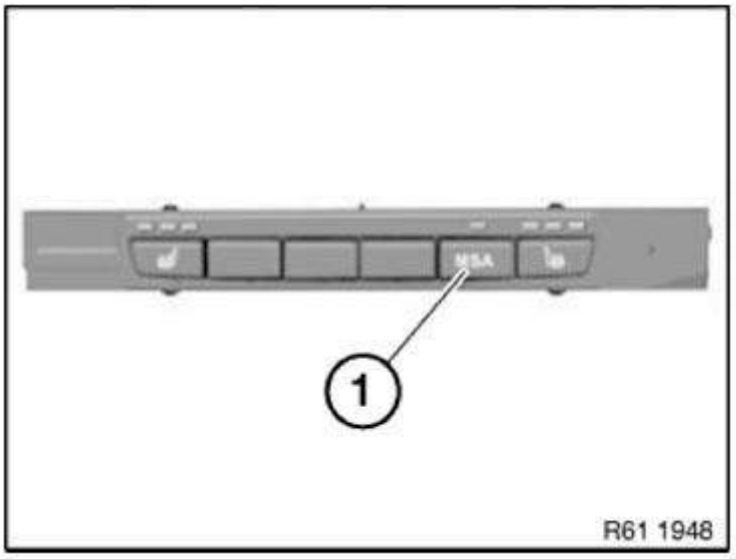


Fig. 72: Identifying MSA Button
Courtesy of BMW OF NORTH AMERICA, INC.

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

    A = 10 mm

  - Basic setting (engine hood/bonnet open)

    B = 7 mm

  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.

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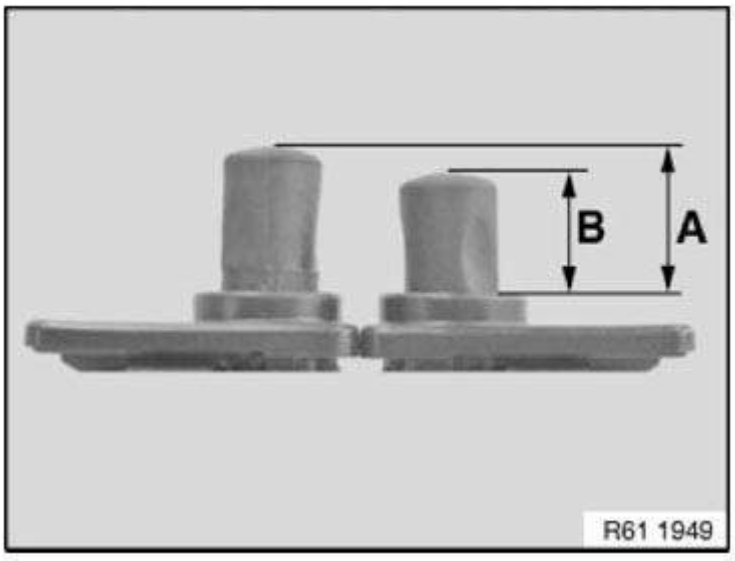


Fig. 73: Identifying Engine Hood/Bonnet Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

When working with diagnosis tools:

- Observe instructions in diagnosis tool

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.

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.

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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 Ã˜ 4 mm at the positions of the removed stud bolts.

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

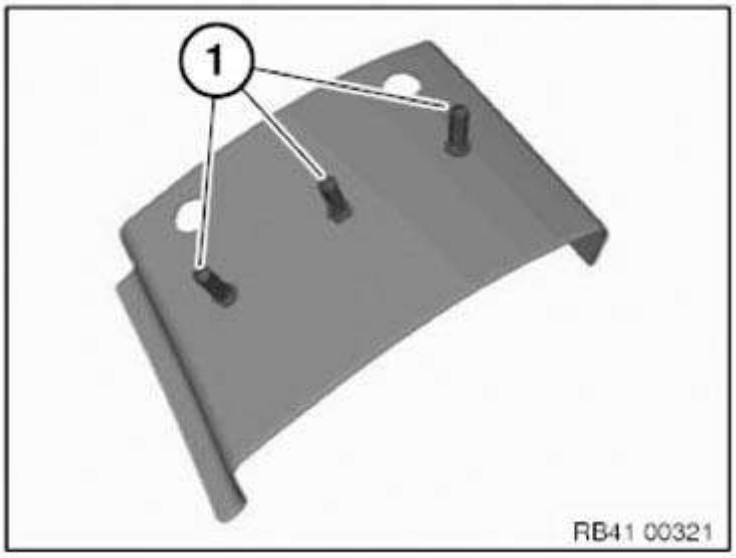


Fig. 74: Identifying Stud Bolts
Courtesy of BMW OF NORTH AMERICA, INC.

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

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

Remove reinforcement plate again.

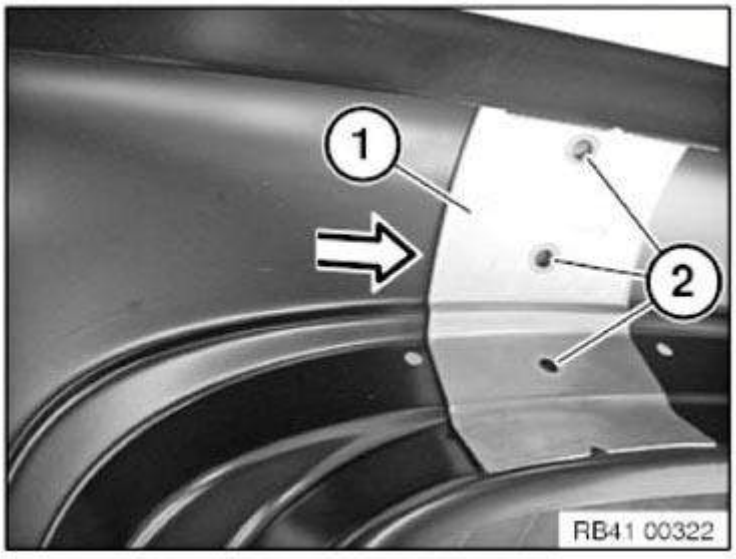


Fig. 75: Identifying Template Holes
Courtesy of BMW OF NORTH AMERICA, INC.

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

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Carry out the separating cut.

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

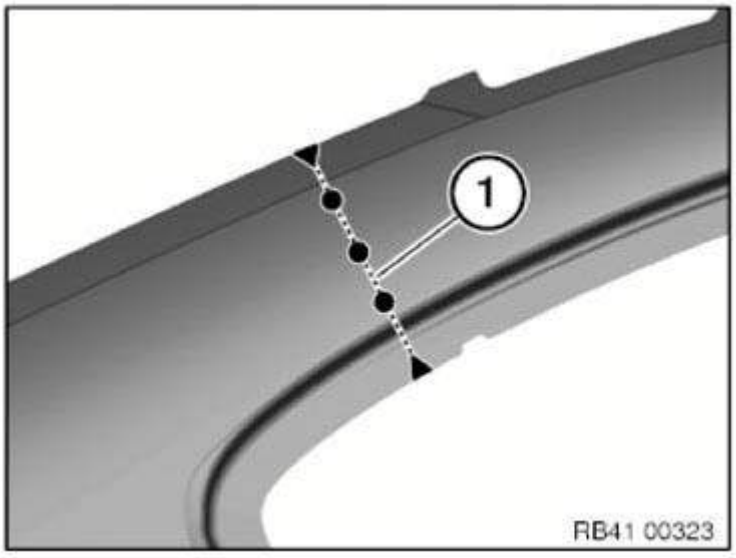


Fig. 76: Identifying Separating Cut Line
Courtesy of BMW OF NORTH AMERICA, INC.

41 00... SETTING BLIND RIVET NUTS AND BOLTS

- Studs welded as standard are always replaced by blind rivet bolts.
- Drill holes (0.2 mm larger than the outside diameter of the blind rivet nuts or blind rivet bolts).
- Blind rivet nuts and studs must have a special coating for anti-corrosion purposes (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 **SEALANT D1** (risk of corrosion).

41 00... SOLDERING STEEL COMPONENTS

IMPORTANT: Comply with the following topics from "Body, General":
Safety regulations . See **41 00... SAFETY AT WORK** or **41 00... INFORMATION ON HAZARDS**.
Handling **electrical system, electronics, airbags and restraint systems** . See **41 00... HANDLING AIRBAGS AND RESTRAINT SYSTEMS** or **41 00... HANDLING ELECTRICAL SYSTEM AND ELECTRONICS**.

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 during repairs by MAG weld seams.*
   - Brazed areas from vehicle production are bonded following the same procedure.
2. **Work materials**

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- 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!

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

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

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

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

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

41 00... SPOT-WELD BONDING STEEL COMPONENTS

Comply with the following topics from "Body, General":
Safety regulations . See **41 00... SAFETY AT WORK** or **41 00... INFORMATION ON HAZARDS**.

IMPORTANT: Handling **electrical system, electronics, airbags and restraint systems** . See **41 00... HANDLING AIRBAGS AND RESTRAINT SYSTEMS** or **41 00... HANDLING ELECTRICAL SYSTEM AND ELECTRONICS**.
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 Â°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.

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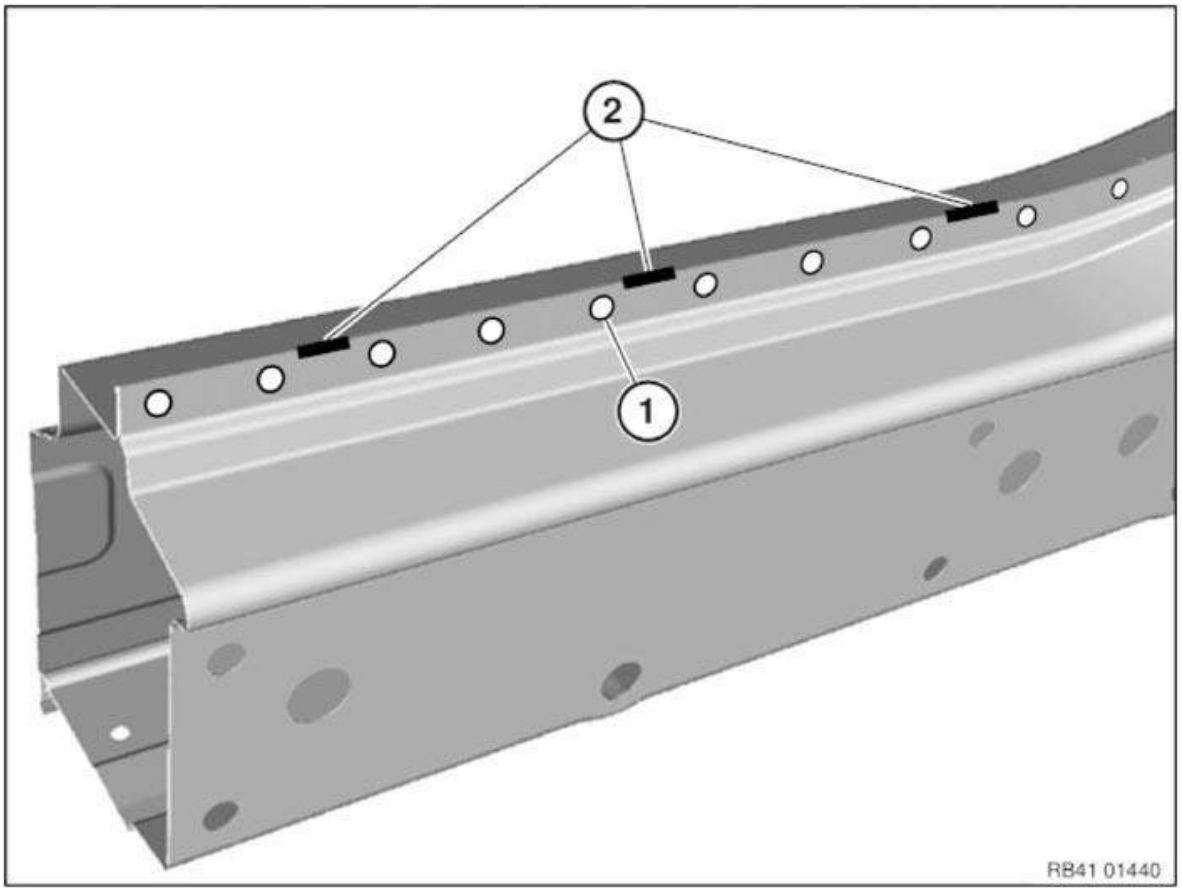


Fig. 77: Identifying Spot-Weld Bonding Steel Components
Courtesy of BMW OF NORTH AMERICA, INC.

- The following procedures are used as a substitute for spot-weld bonding:
  - MAG welding (**M** etal **A** ctive **G** as welding)
  - Resistance pressure spot welding (referred to in the following and in the repair instructions as spot welding).
- Adhesive is not applied between the spot flanges on new parts in the case of 2- or multi-sheet joints. Areas which cannot be reached by the spot-welding tongs can be joined by MAG 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.**

41 00... SPRAY GUN FOR CAVITY SEALANT

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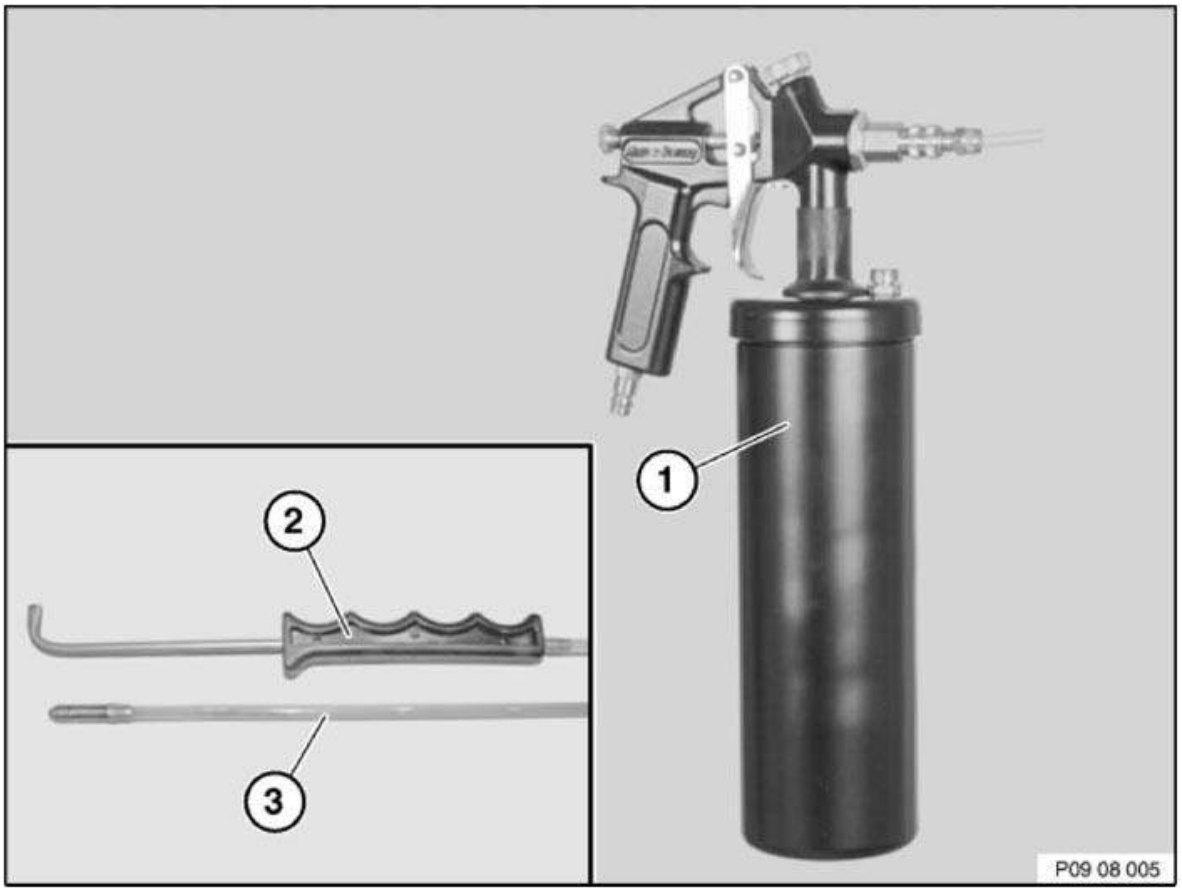


Fig. 78: Identifying Cavity Sealant Spray Gun
Courtesy of BMW OF NORTH AMERICA, INC.

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 familiarize 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-liter 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.

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- 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.
- 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 odors.

5.0 Safety instructions:

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

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

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**

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Necessary preliminary tasks:

- Remove **TOP REAR CONNECTION**

Procedure for additional vehicle identification number

- Cross through original vehicle identification number.

Detach filler neck (1) in upward direction.

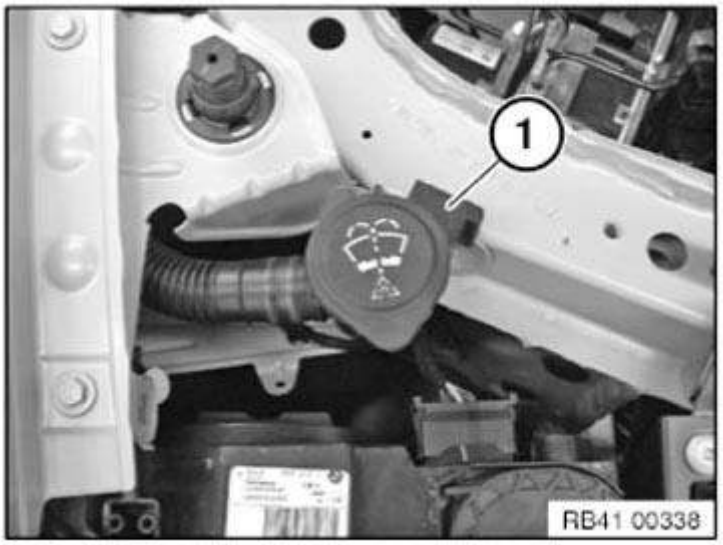


Fig. 79: Identifying Filler Neck
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1).

Tightening torque **63 12 1AZ** .

Release screws (2) and (3) and remove holder for side wall.

Tightening torque **41 35 1AZ** . See **SIDE PANELS** or **HOLDER, SIDE WALL** .

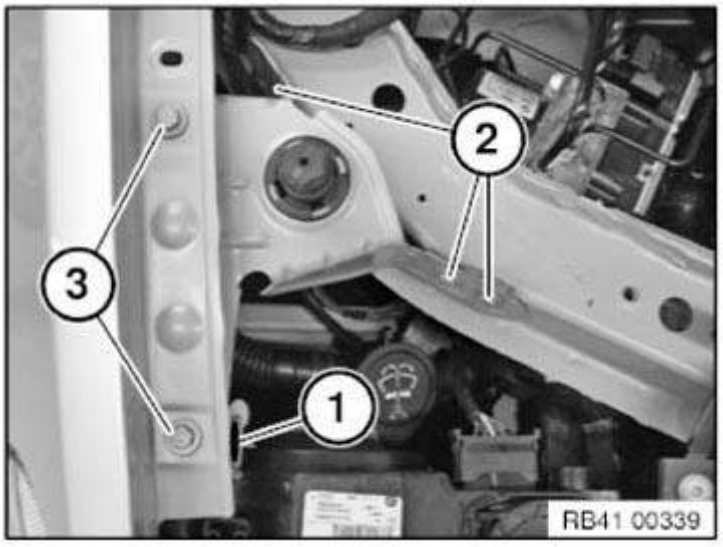


Fig. 80: Identifying Side Wall Screws
Courtesy of BMW OF NORTH AMERICA, INC.

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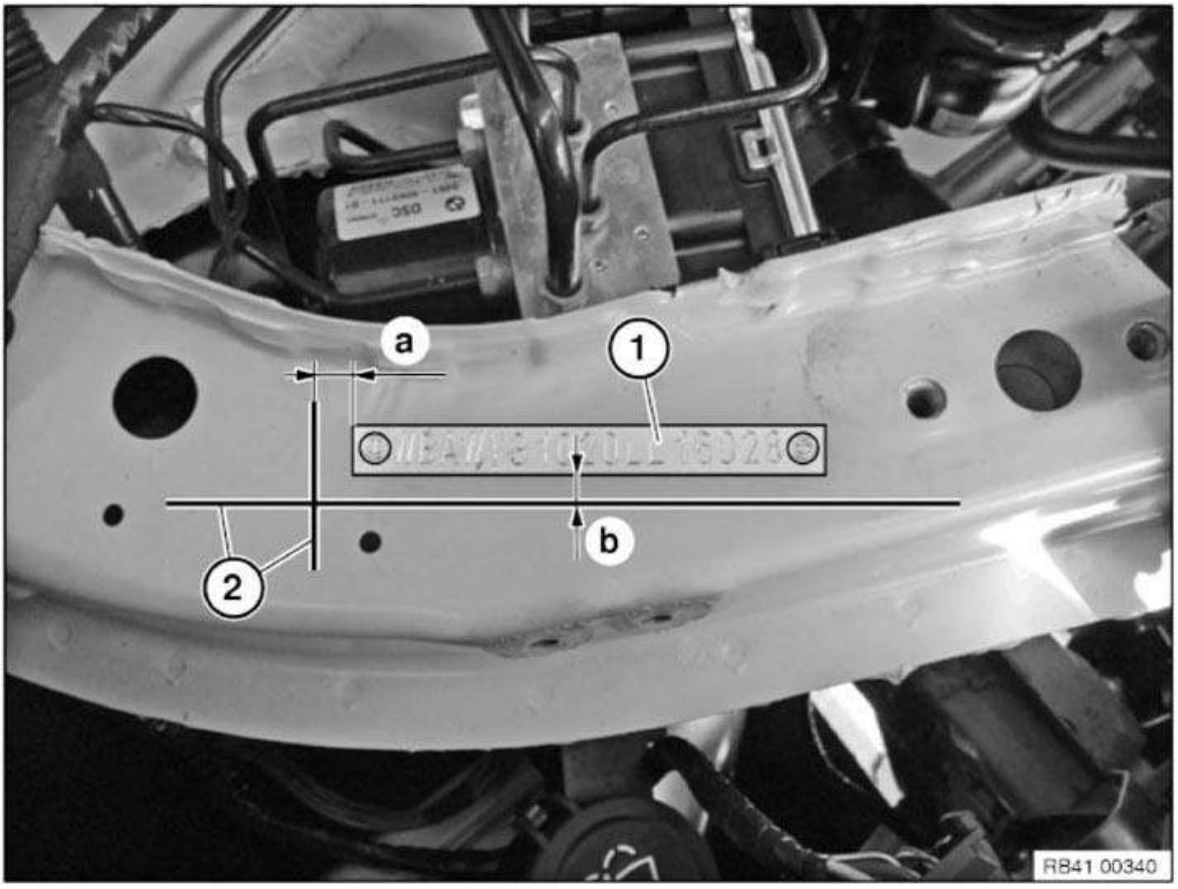


Fig. 81: Identifying C-Pillar Separation Cut Line
Courtesy of BMW OF NORTH AMERICA, INC.

1. = Original vehicle identification number (line 1).

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

Dimension a = 12 mm

Dimension b = 10 mm

Display input:

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

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

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Fig. 82: Identifying Vehicle Identification Number (Line 1)
Courtesy of BMW OF NORTH AMERICA, INC.

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

Tape the hole (1) with a smooth adhesive tape (2).

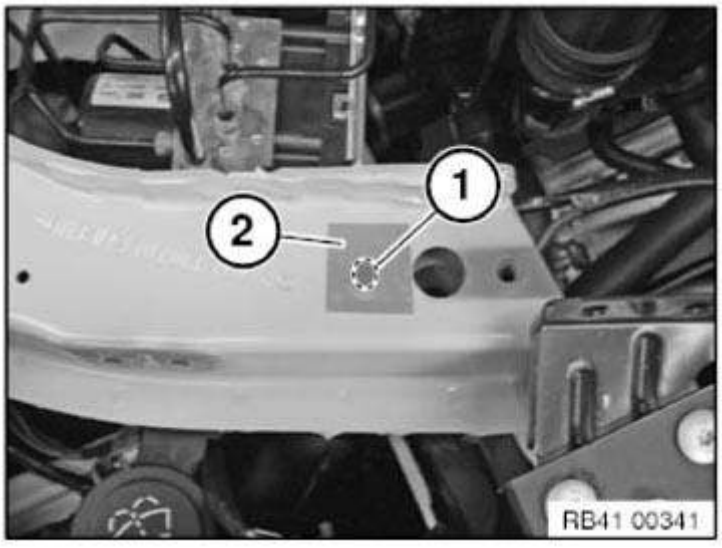


Fig. 83: Identifying Hole With Smooth Adhesive Tape
Courtesy of BMW OF NORTH AMERICA, INC.

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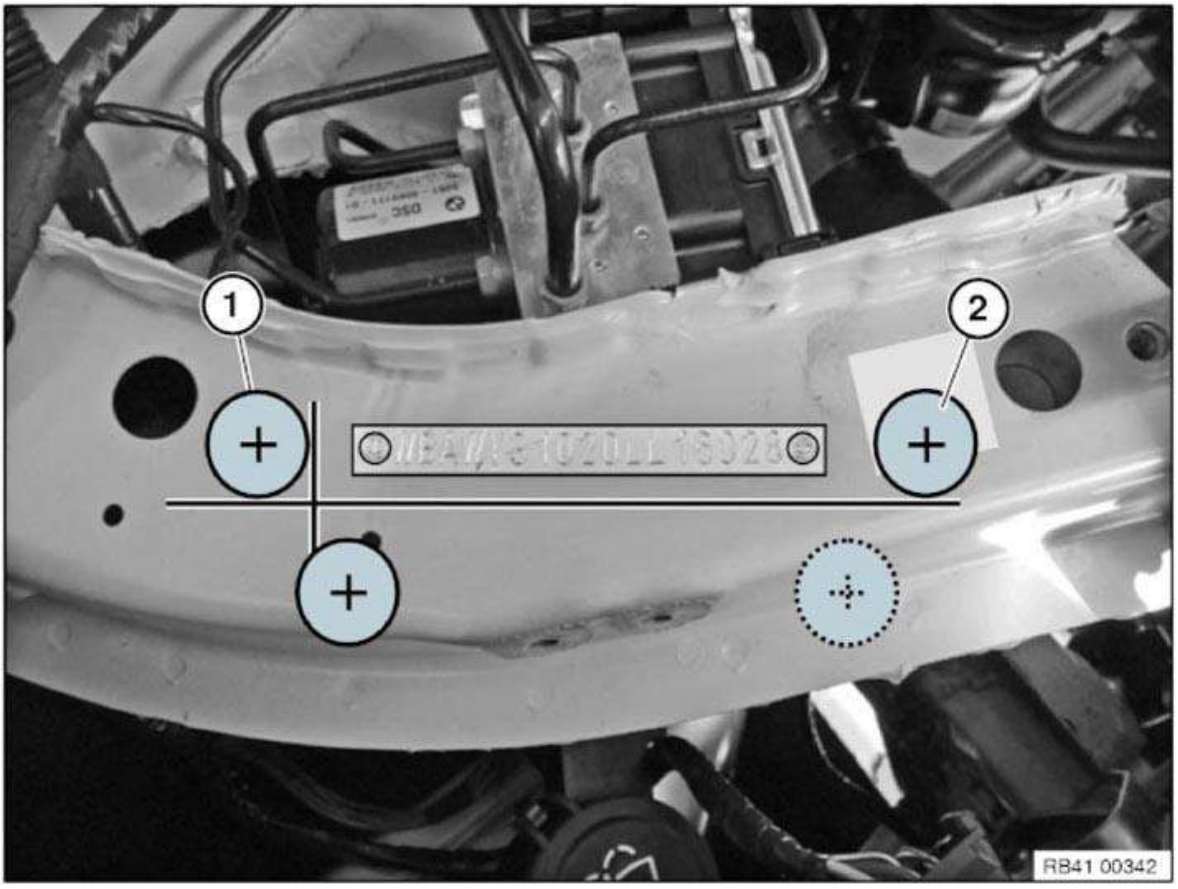


Fig. 84: Identifying Needle Stamping Unit Positions
Courtesy of BMW OF NORTH AMERICA, INC.

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

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.

Press pushbutton (1) for vacuum pressure.

Then start stamping operation with pushbutton (2).

IMPORTANT: After completing the stamping operation, do **not** alter the position of the unit.
Do **not** switch off vacuum pressure.

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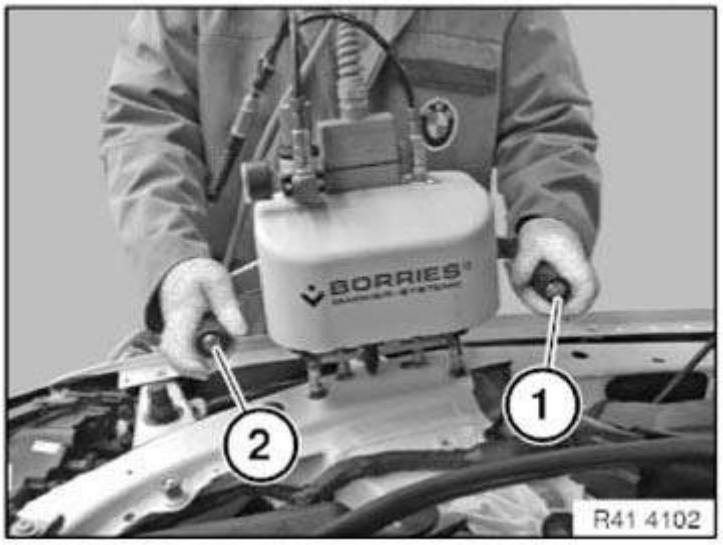


Fig. 85: Starting Stamping Operation
Courtesy of BMW OF NORTH AMERICA, INC.

Stamping second vehicle identification number

Display input:

- Select Layout 2 with arrow button.
- Press "ENTER" button.

NOTE: **With Layout 2 the already entered vehicle identification number is stamped in line 2.**



Fig. 86: Identifying Vehicle Identification Number (Line 1)
Courtesy of BMW OF NORTH AMERICA, INC.

Start stamping operation with pushbutton (2).

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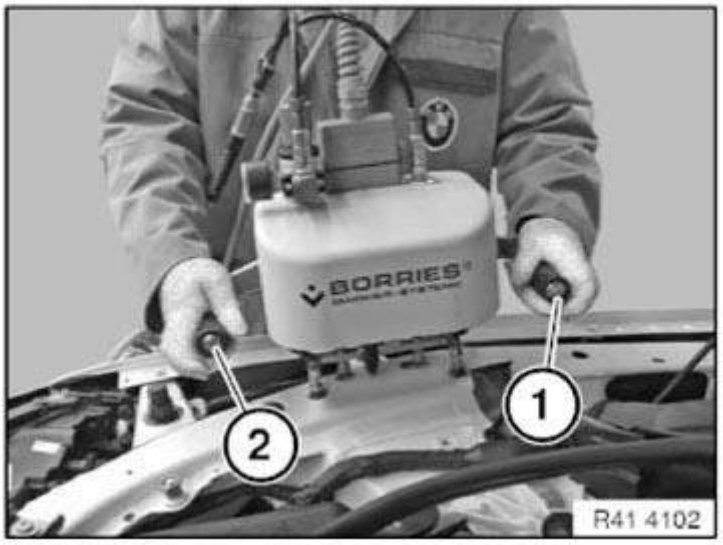


Fig. 87: Starting Stamping Operation
Courtesy of BMW OF NORTH AMERICA, INC.

Following layout functions are available:

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

41 00... STRAIGHTENING ALUMINUM 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 aluminum 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).

3.0 Straightening outer skin

- "Cold" straightening: Press dents out from their center 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. Special tools and a trained employee are needed.

- "Hot" straightening: Heat the component in the damaged area with a hot air blower to approx. 60 Â °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.

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41 00... STRAIGHTENING ALUMINUM 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 Â°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.

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.

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Heating bearing body components for better reshaping is not permitted!

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

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

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

  If using universal electronic or mechanical straightening systems (Car-O-liner/Celette), it is necessary to secure the body with 4 retaining clips to the spot flange of the entrance or to the 4 jacking points. The spot flange (if available) is to be preferred. **In addition** anchor at least 2 points with the securing set.

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

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

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

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

41 00... STRAIGHTENING STEEL COMPONENTS ON THE OUTER SKIN

1.0 Recommended tools.

Only use those tools designed for steel repairs.

2.0 Straightening outer skin.

- "Cold" straightening: Press dents out from their center 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 a trained employee.

- In the case of damaged areas which are only accessible from one side, a repair system with welding can be used.
- 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).

  Unevenness greater than 2 mm with metal putty.

  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!

- For high-security vehicle, note the special information in the repair instructions!

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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.

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 Â°C, at least 30 minutes
- Without infrared for at least 20 Â°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!

41 00... USE OF MATERIALS IN OUTER SKIN

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

Apply this illustration to the relevant vehicle.

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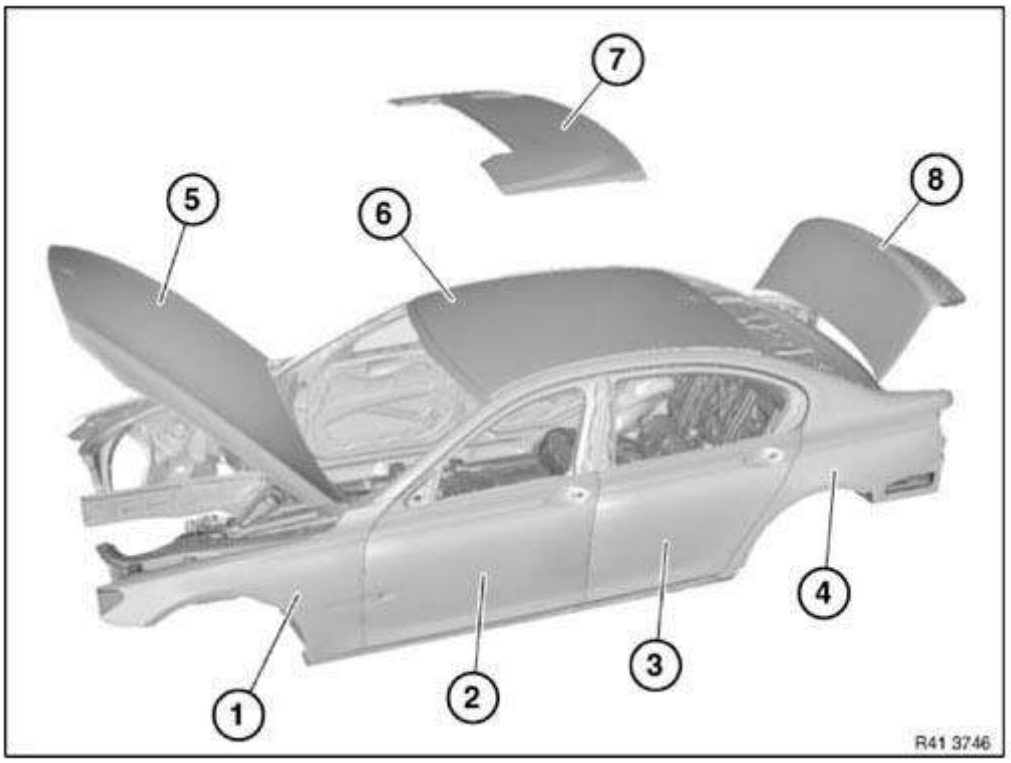


Fig. 88: Identifying Vehicle Body Variants
Courtesy of BMW OF NORTH AMERICA, INC.

Component	Vehicle	Material
(1) Side wall, front	F01, F02, F04, F10, F11, F18, F80, F82, F83	Aluminum
	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	Aluminum
	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	Aluminum
	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	Aluminum
	F20, F21, F22, F23, F25, F26, F30, F31, F32, F33, F34, F35, F36	Steel
(6) Hardtop/roof	F01, F02, F04	Aluminum
	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	Aluminum
	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

41 00... VEHICLE IDENTIFICATION NUMBER, GENERAL

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

1. **General notes for stamped vehicle identification numbers:**

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

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

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

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

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

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

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

Observe national/country-specific regulations.

2. **General notes for embossed vehicle identification numbers:**

   This procedure is used for all vehicles on which the vehicle identification number can not be stamped.

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

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

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

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

   Observe national/country-specific regulations.

41 00... WELDING IN REINFORCEMENT PLATE (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.

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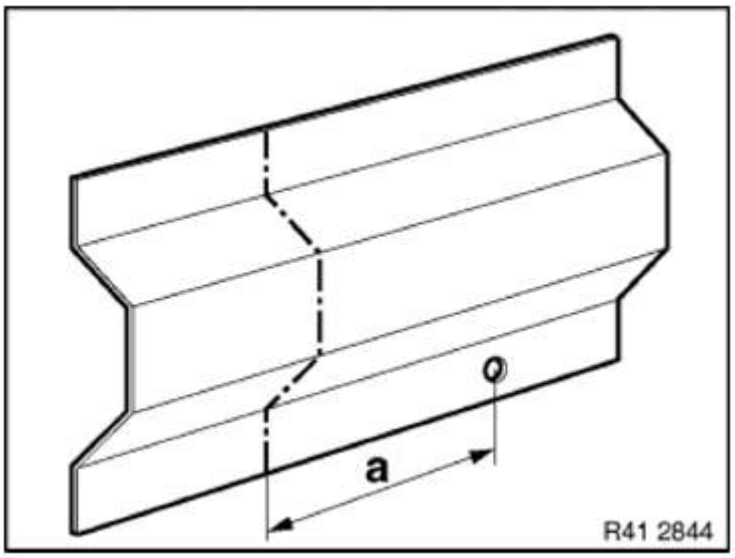


Fig. 89: Identifying Reinforcement Plate Cutting Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

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.

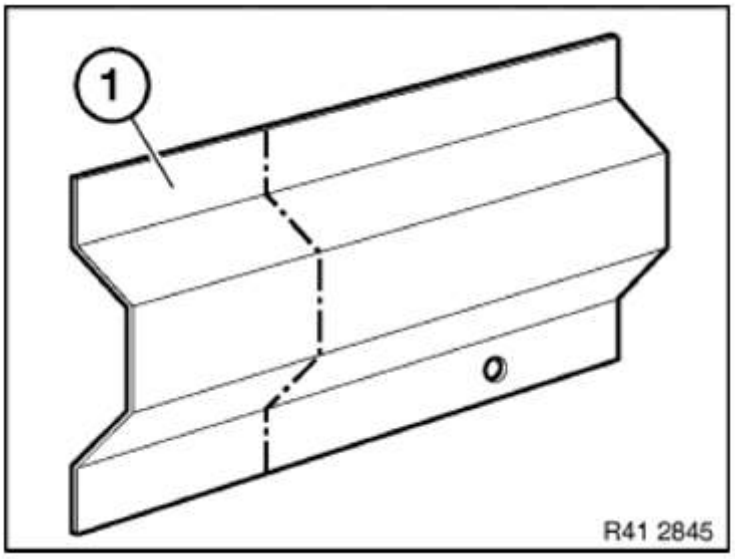


Fig. 90: Identifying Reinforcement Plate
Courtesy of BMW OF NORTH AMERICA, INC.

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

Coat insides with welding primer.

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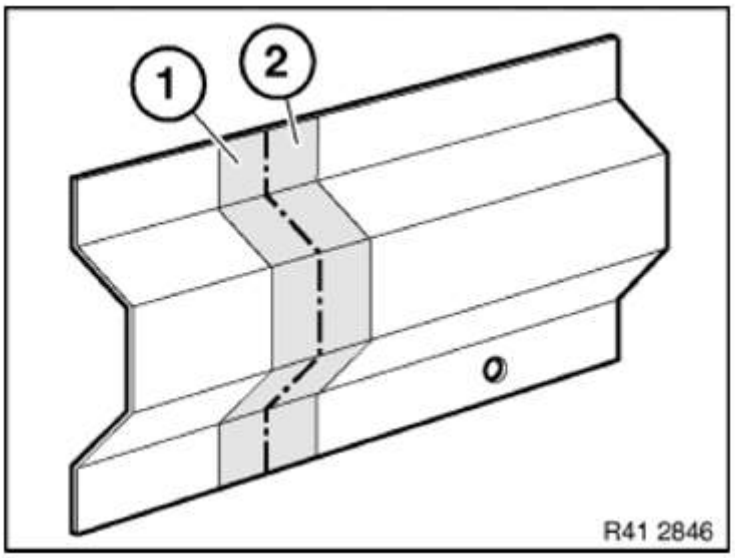


Fig. 91: Identifying Reinforcement Plate Inner And Outer Sides Of Connection Faces
Courtesy of BMW OF NORTH AMERICA, INC.

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

Hole diameter approx. 8 mm.

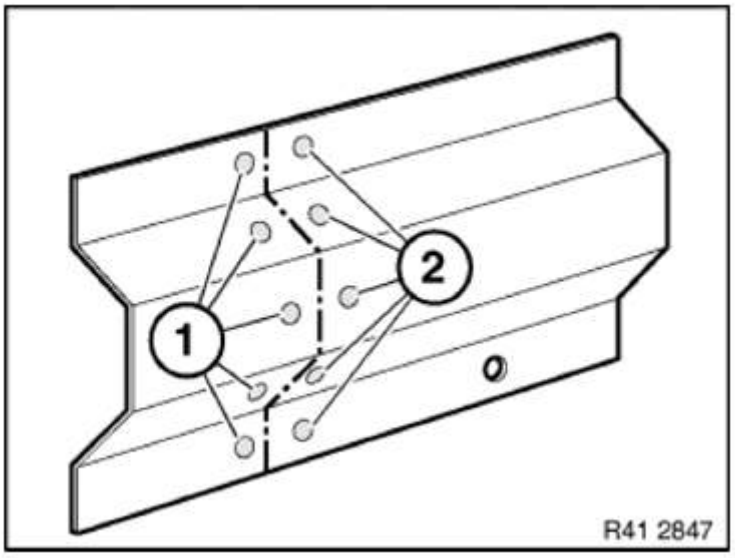


Fig. 92: Identifying Reinforcement Plate Bore Holes
Courtesy of BMW OF NORTH AMERICA, INC.

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.

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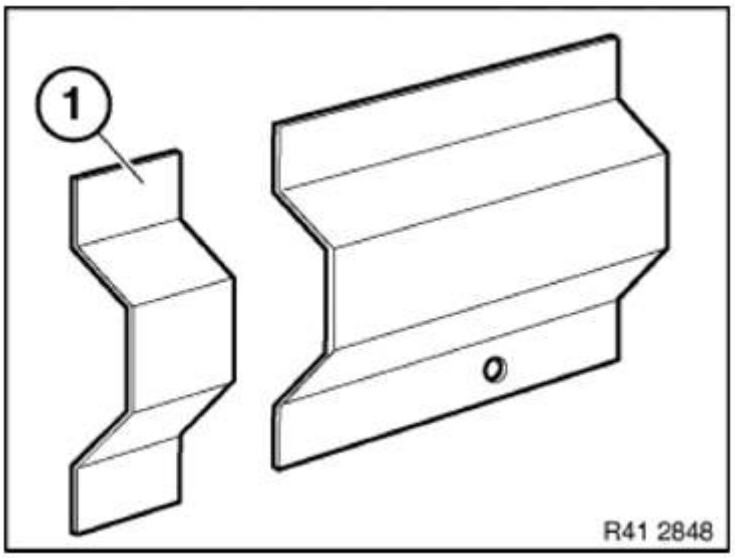


Fig. 93: Identifying Reinforcement Plates From Trim Part
Courtesy of BMW OF NORTH AMERICA, INC.

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

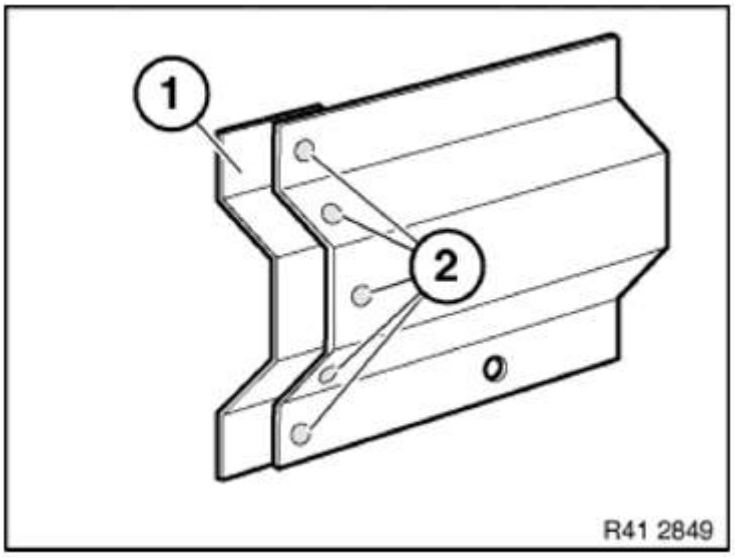


Fig. 94: Identifying Reinforcement Plate And Plug-Weld
Courtesy of BMW OF NORTH AMERICA, INC.

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!

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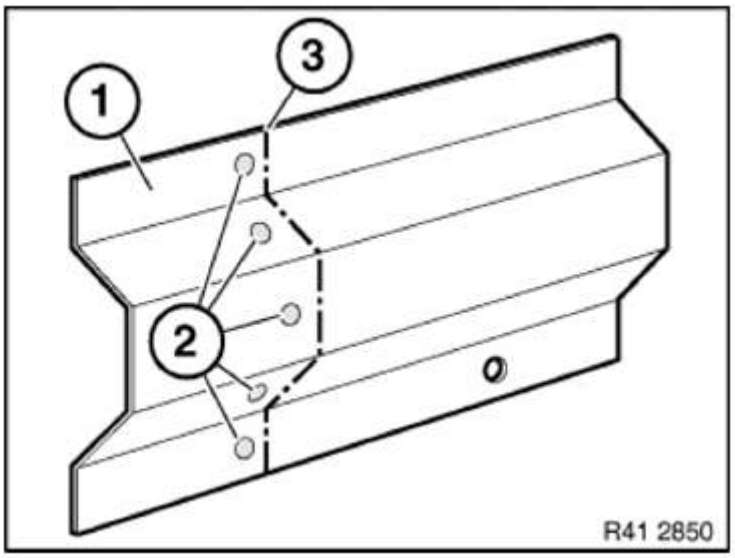


Fig. 95: Identifying MAG Weld Joint Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 00... WELDING STEEL COMPONENTS

IMPORTANT: Comply with the following topics from "Body, General":
Safety regulations . See **41 00... SAFETY AT WORK** or **41 00... INFORMATION ON HAZARDS**.
Handling **electrical system, electronics, airbags and restraint systems** . See **41 00... HANDLING AIRBAGS AND RESTRAINT SYSTEMS** or **41 00... HANDLING ELECTRICAL SYSTEM AND ELECTRONICS**.

1. **General information**
   - The following procedures are used for repairs:
     - MAG welding (**M** etal **A** ctive **G** as welding)
     - Resistance pressure spot welding (referred to in the following and in the repair instructions as spot welding).
   - Take the number and 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 % CO2)
   - 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.

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        - 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.
    - 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.

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

Properties of cavity foam:

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

Information on dangers/hazards:

- Avoid eye and skin contact.

  Wear protective goggles, solvent-resistant protective gloves and protective clothing.
- Do not inhale.

  Apply in well ventilated rooms only.

  WARNING: Application time after mixing: within 8 minutes!
- Completely empty open can after use.
- Remaining amounts which are not used can cause the **can to explode** on account of a chemical reaction (buildup of heat)!

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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 Â°C. Optimally 20 Â°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.

41 00... WORKSHOP EQUIPMENT (BMW AND MINI VEHICLES)

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

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

Repair stage 1:

Tool[(1)]	**Sourcing reference BMW**	**Screwed parts (steel or plastic)**	**Screwed parts (aluminum)**
Body tool trolley	Â	x	x
Aluminum bodywork tool			

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assortment	Â	Â	x
Pressure cup spray gun for cavity preservation	81 45 2 148 795	x	x
Drill	Â	x	x
Blind riveting tongs Electrical or pneumatic With rivet head extension	Â	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
(1) Sourcing reference BMW Workshop Equipment Catalogue			

Repair stage 2:

Â	**Â**	**Steel**		**Aluminum**	
Tool(1)	**Sourcing reference BMW**	**Structure**	**Outer skin**	**Structure**	**Outer skin**
Body tool trolley accessory set	Â	x	x	Â	Â
Bodywork saw	81 43 2 299 088 or 81 43 2 299 089	x	x	Â	Â
Belt sander	81 43 2 236 488 (230V) or 81 43 2 333 873 (100-115V)	x	x	x	x
Single-handed grinder	Â	x	x	x	x
Welding spot remover	81 43 9 428 600	x	x	Â	Â
Punch riveting tool	81 43 2 158 708	x	x	x	Â
MAG welding apparatus	Â	x	x	Â	Â
CARTRIDGE GUN for adhesives	Â	x	x	x	x
Infrared heater	81 44 2 211 107 (220V) or 81 45 2 211 615 (110V)	Â	x	Â	Â
(1) Sourcing reference BMW Workshop Equipment Catalogue					

In addition, the repair stage 1 tools are required.

Repair stage 3:

Â	**Steel**		**Aluminum**	
Tool(1)	**Structure**	**Outer skin**	**Structure**	**Outer skin**
Spot welding apparatus	x	x	Â	Â
Straightening system	x	Â	x	Â
Stud welding apparatus	x	Â	x	Â
Flame coating set	Â	Â	x	Â
MIG welding apparatus	Â	Â	x (E52 only)	Â
(1) Sourcing reference BMW Workshop Equipment Catalogue				

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

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

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IMPORTANT: requirements of the currently recommended welding sets.
The use of technically obsolete equipment may have serious consequences for the structure of the vehicle (e.g. in the event of a crash). In the end, this can result in safety and product liability risks which 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.

Â	Device designation	Manufacturer
Group 1 Devices currently *no* longer recommended	CR500	Car-O-Liner
	Spot9000	Tecna
	ATL 400V	Wielander & Schill
Group 2 Devices currently *recommended*	MIDIspot QSVM9000	Celette(1)
	MIDIspot QSVM9000	Elmatech(1)
	CR600 QSM	Car-O-Liner(1)
	MIDIspot QSVM12000T	Car-O-Liner
	MIDIspot QSVM12000T	Elmatech(1)
	Multispot MI-100 Control	Elektron
	Inverta Spot GT BM	Wielander & Schill
	3664 BM	Tecna
(1) no longer produced		

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 series from E70	x Except B-pillar	x

NOTE: **April 2012**

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

SUPPORT MEMBERS

41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41

Refer to **41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41**.

41 11 311 REPLACE ENTRANCE FOR FRONT LEFT DOOR

Observe procedure for **REPAIR STAGE 3**.

Read contents of **BODY, GENERAL**.

Following new body parts are required (refer to **OVERVIEW OF CONSUMABLES**):

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- (1) A-pillar with entrance

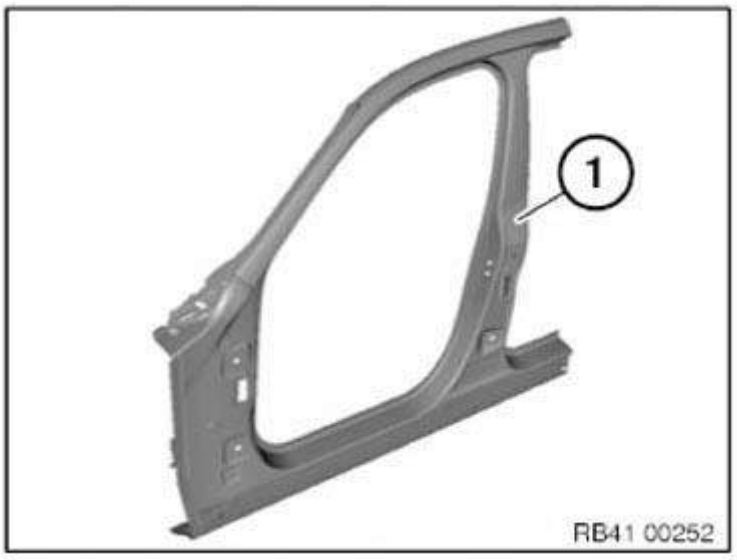


Fig. 96: Identifying A-Pillar With Entrance
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cuts in accordance with specified dimensions and cut.

IMPORTANT: Cut outer panel only for following severance cuts.

Dimension a = approximately 380 mm in front of Ã˜ 20 mm hole.

Dimension b = approximately 360 mm before separating cut a.

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.

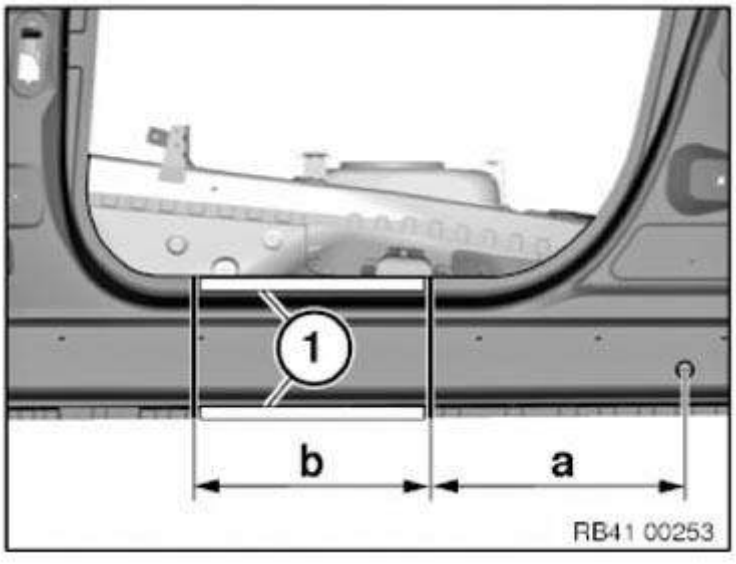


Fig. 97: Identifying A-Pillar With Entrance Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

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41 11 420 REPLACE SILLS, LEFT

Procedure **OBSERVE** repair stage 3!

Read contents of **BODY, GENERAL**.

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

Following new body parts are required (see **OVERVIEW OF CONSUMABLES**):

- (1) Outer side frame



Fig. 98: Identifying Outer Side Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Removal

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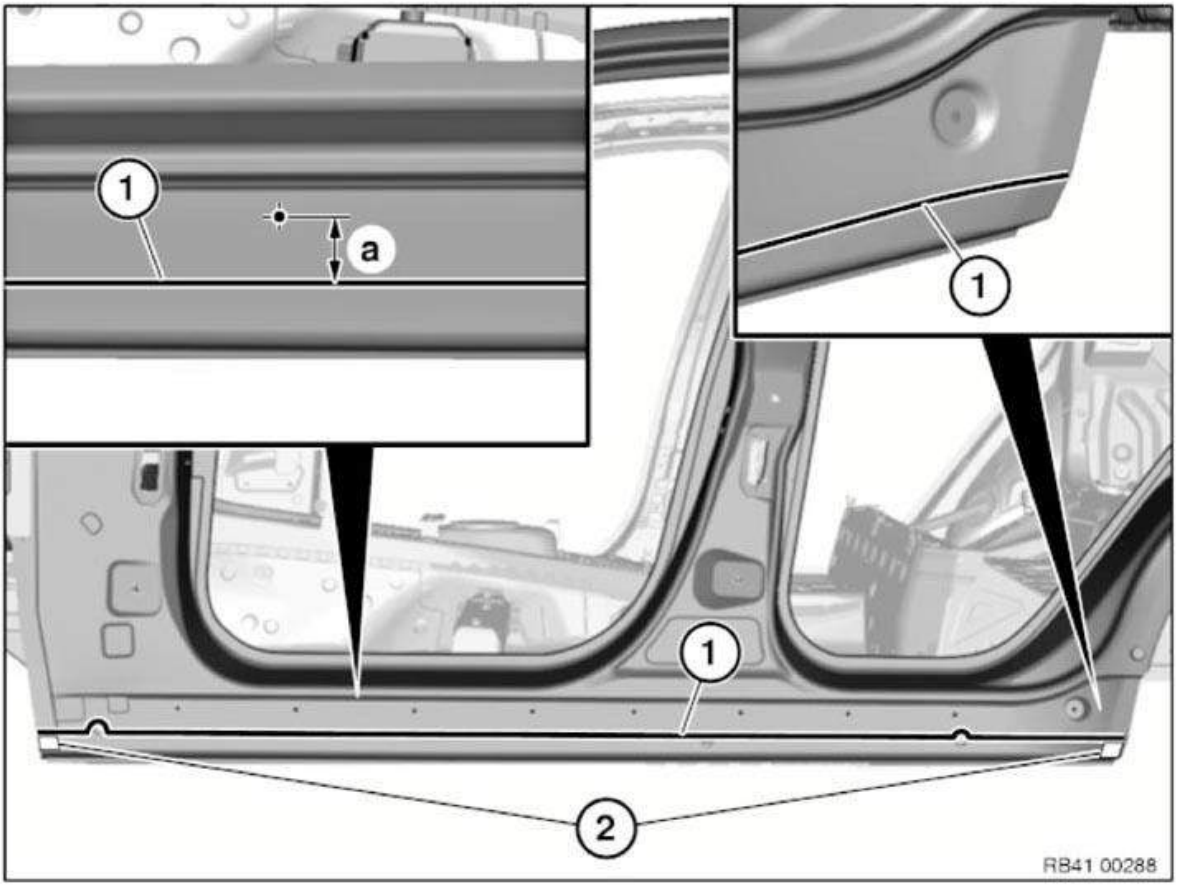


Fig. 99: Identifying Outer Side Frame Severance Cutting Area
Courtesy of BMW OF NORTH AMERICA, INC.

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

IMPORTANT: Cut outer panel only.

Measurement a = approx. 40 mm from center point of 8 mm dia. hole.

Open welded connections in areas (2).

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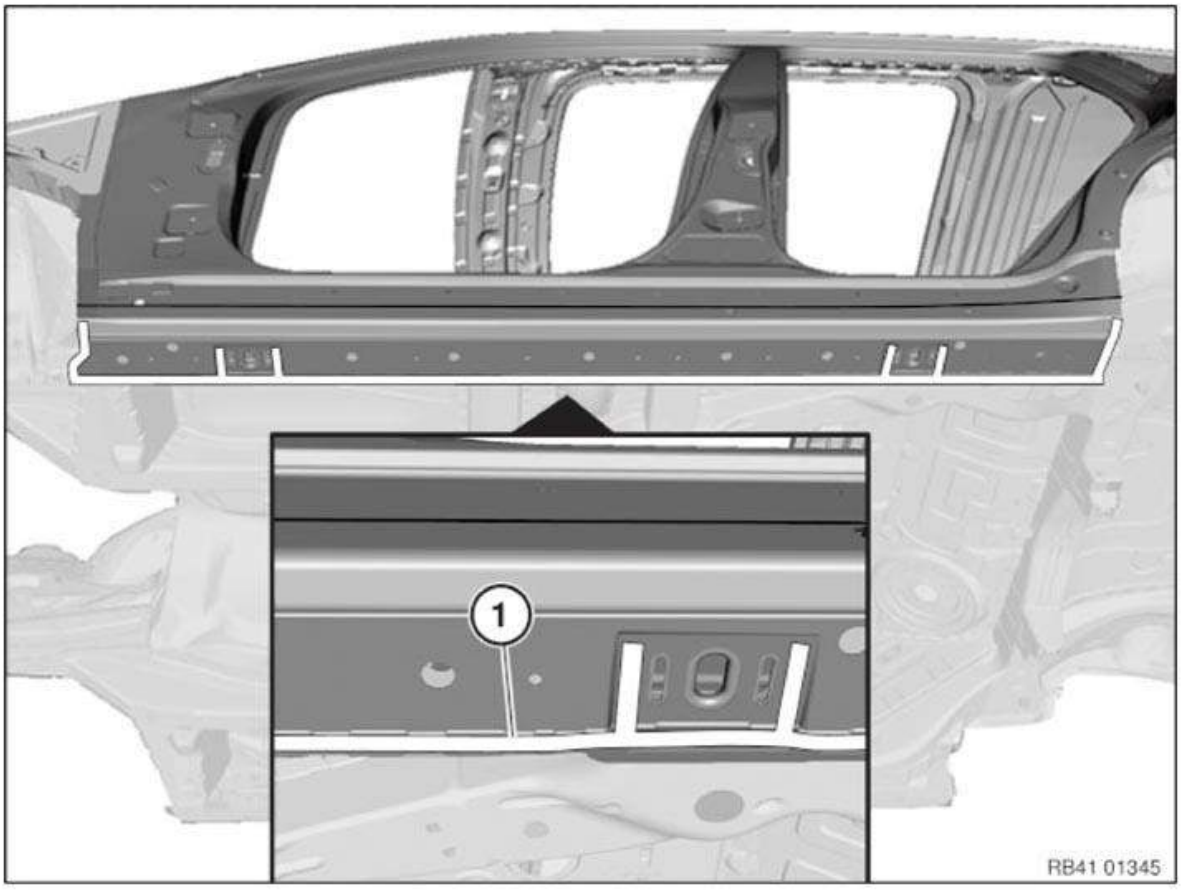


Fig. 100: Identifying Outer Side Frame Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

Remove sill.

New part preparation

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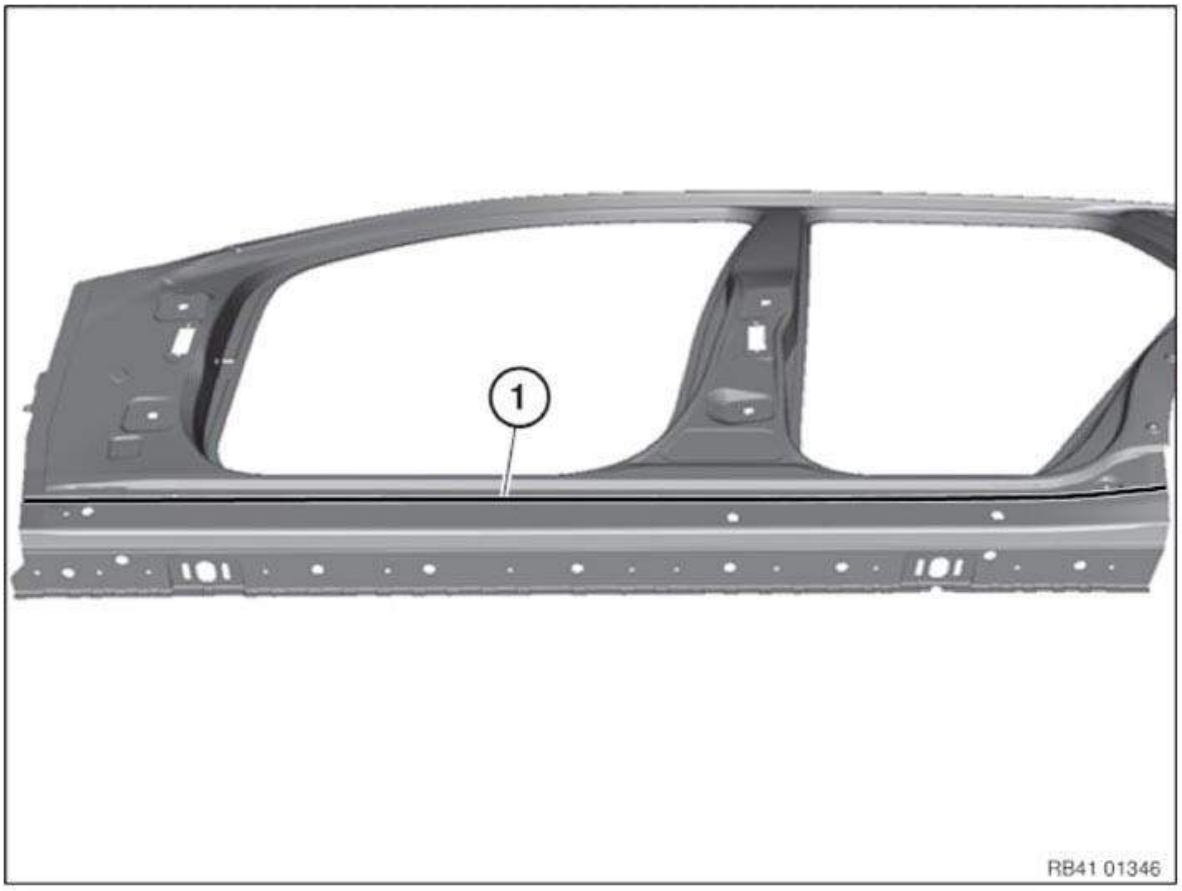


Fig. 101: Identifying Sill Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

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

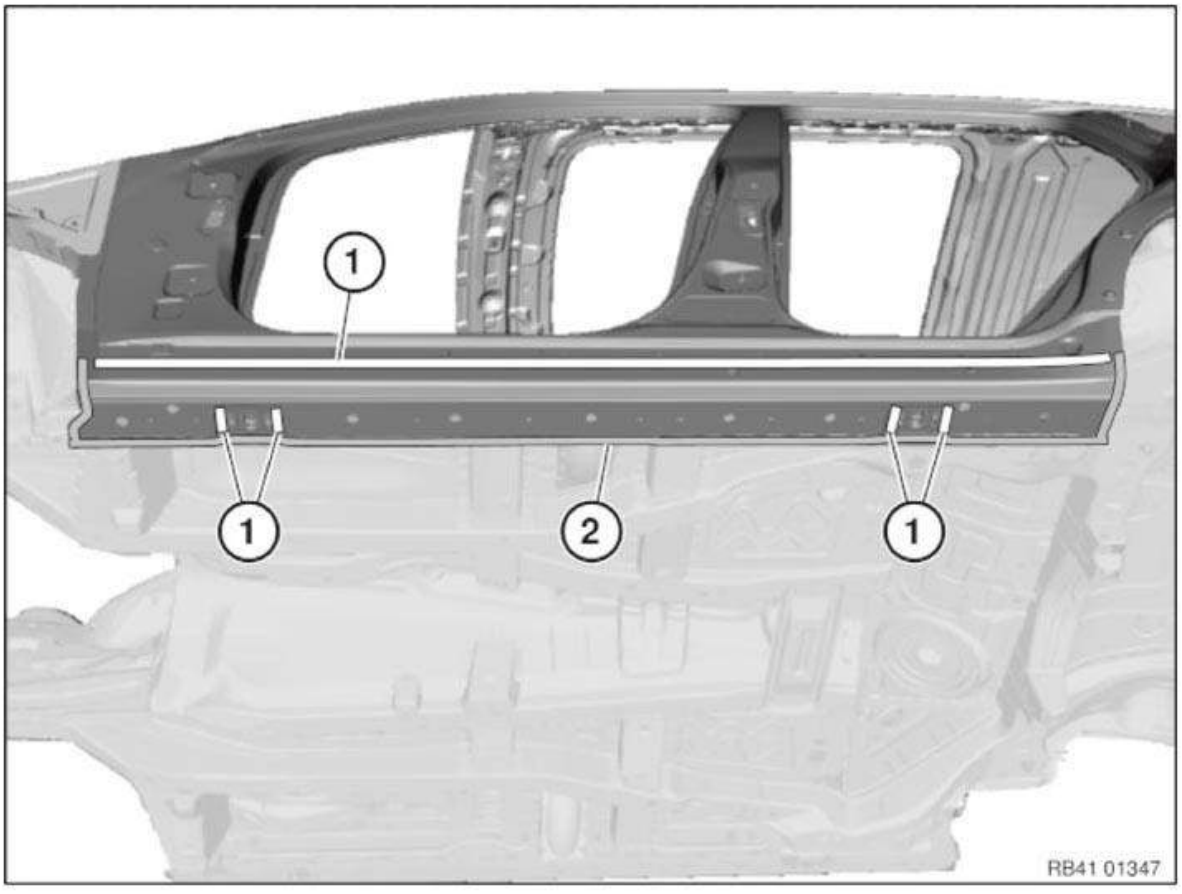


Fig. 102: Identifying Outer Side Frame Plug-Weld Areas

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Courtesy of BMW OF NORTH AMERICA, INC.

Adjust new part to fit and secure.

Prepare new part for plug-weld in areas (1).

In area (2) prepare new part for spot-weld.

Remove new part and deburr holes.

Installation

Install new part and weld.

41 11 092 REPLACING ENGINE SUPPORT IN FRONT OF BULKHEAD ON RIGHT

Operation is identical to **REPLACING ENGINE SUPPORT IN FRONT OF BULKHEAD ON LEFT**.

41 11 091 REPLACING ENGINE SUPPORT IN FRONT OF BULKHEAD, LEFT

Observe procedure of **REPAIR STAGE 3**.

Read contents of **BODY, GENERAL**.

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

Place vehicle on straightening bench.

The following body new parts are required (refer to **OVERVIEW OF CONSUMABLES**)

- (1) Engine support

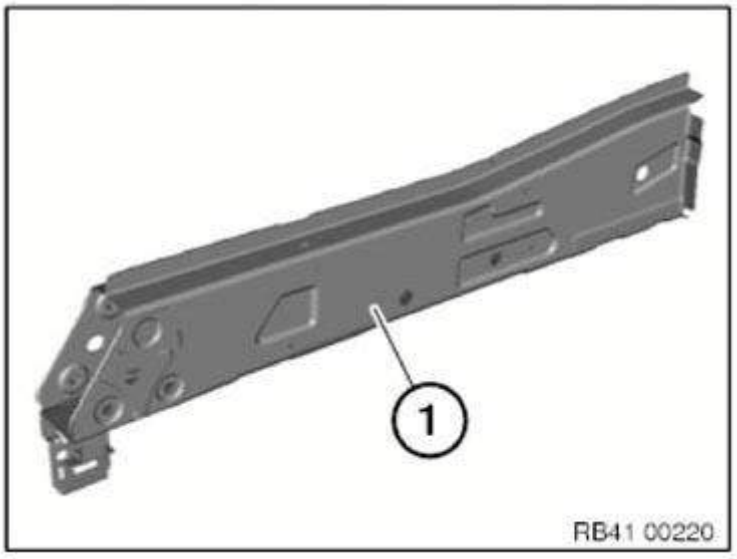


Fig. 103: Identifying Front Left Engine Support
Courtesy of BMW OF NORTH AMERICA, INC.

Removing the engine support

View of inside engine support.

Mark severance cut in accordance with dimension and cut.

Dimension a = approx. 110 mm from engine support edge.

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Open welded connections in areas (1).

Remove partial section (2.

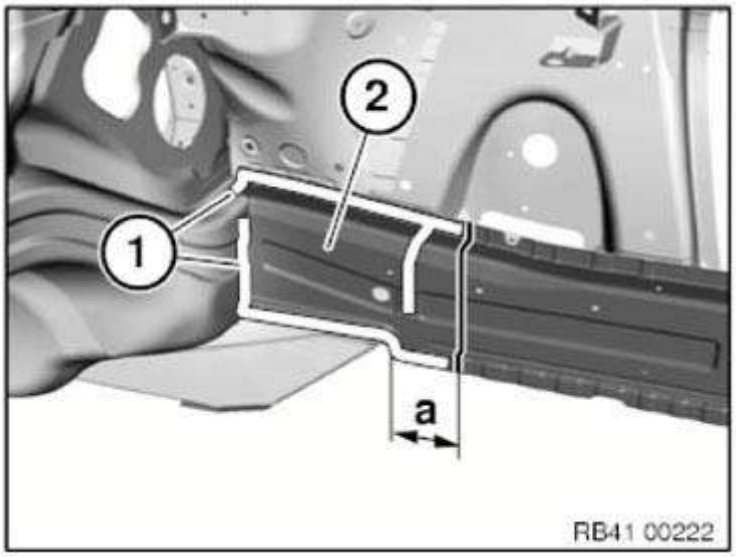


Fig. 104: Identifying Engine Support Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut in accordance with dimension and cut.

Dimension a = 140 mm from cross brace bulkhead.

IMPORTANT: Cut outer metal panel only.

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

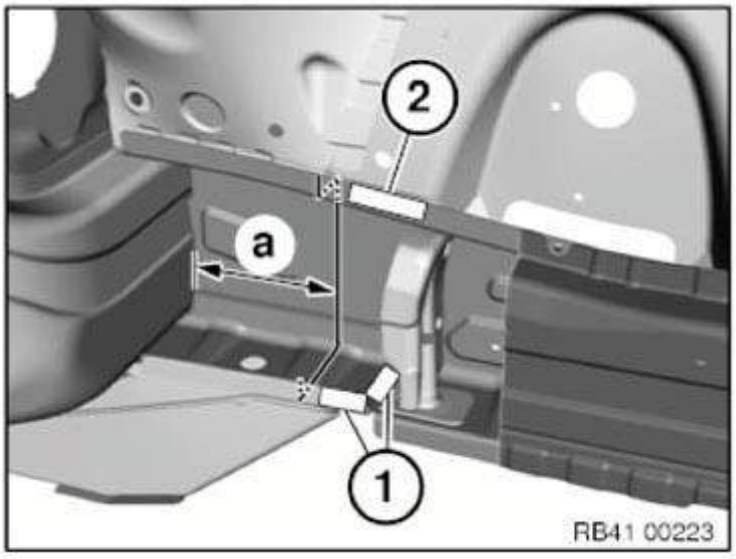


Fig. 105: Identifying Cross Brace Bulkhead Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

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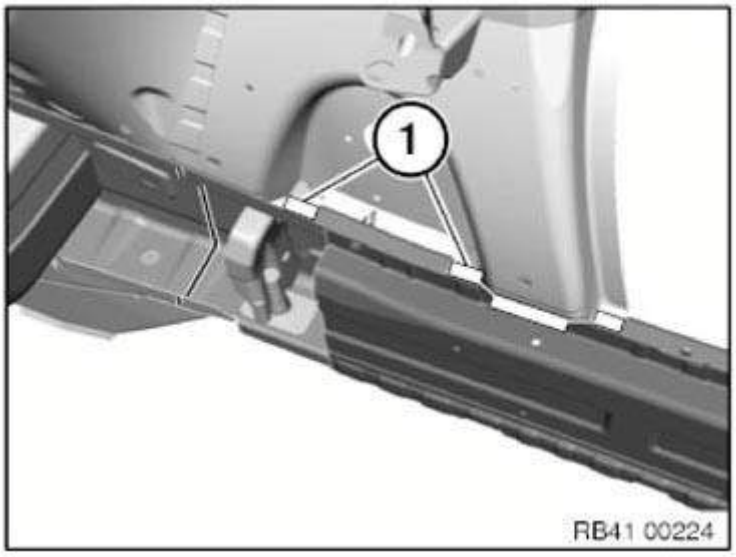


Fig. 106: Identifying Engine Support Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

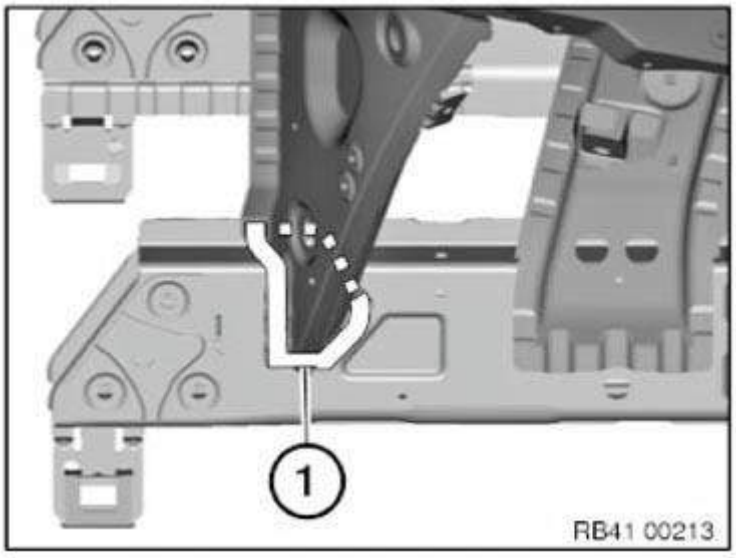


Fig. 107: Identifying Engine Support Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1) and remove engine support.

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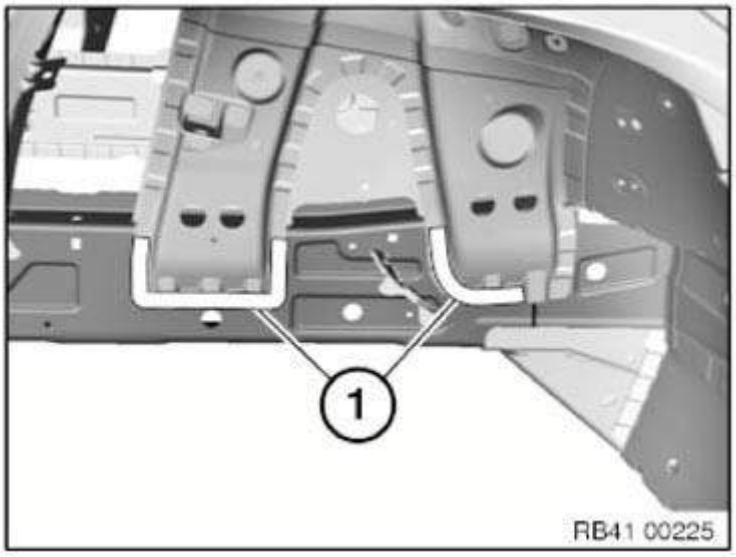


Fig. 108: Identifying Engine Support Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

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

Open welded connections in areas (2).

Remove metal section (3).

NOTE: The metal section (3) is needed to close the engine support.

Mark severance cut in accordance with vehicle and cut.

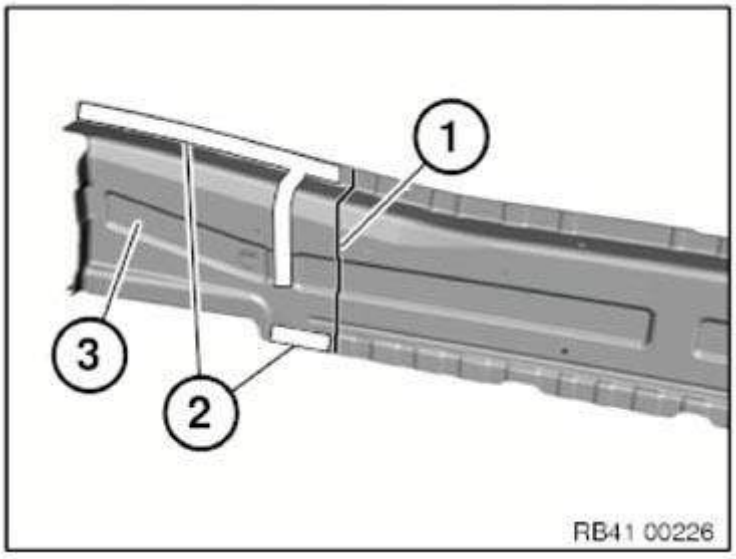


Fig. 109: Identifying Metal Section Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

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

Prepare **REINFORCEMENT PLATES** at severance cuts.

Installing engine support

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

NOTE: The bulkhead cross member (1) is filled with low-flammable cavity foam.

In case of smoke formation, stop the welding procedure and cool the welded area with compressed air if applicable.

(2) Bulkhead
(3) Engine support

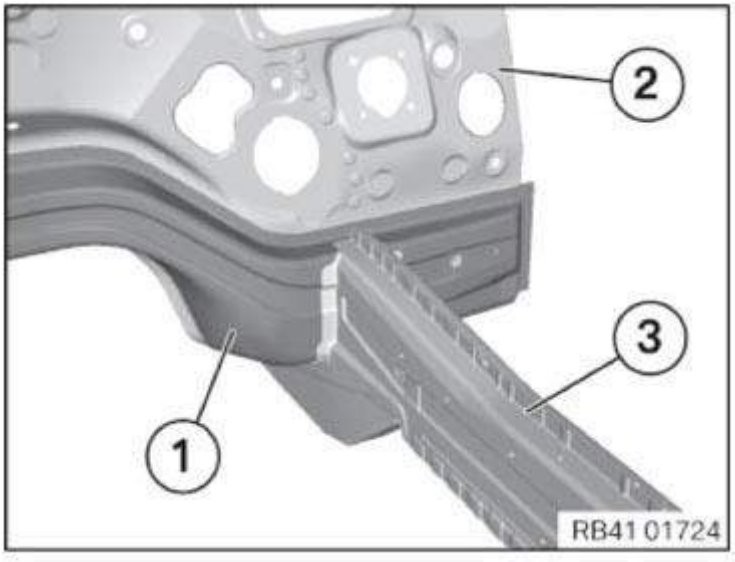


Fig. 110: Identifying Bulkhead Cross Member Filled With Low-Flammable Cavity Foam
Courtesy of BMW OF NORTH AMERICA, INC.

MAG-weld new part in area (1).

Length of weld seam approx. 15 mm.

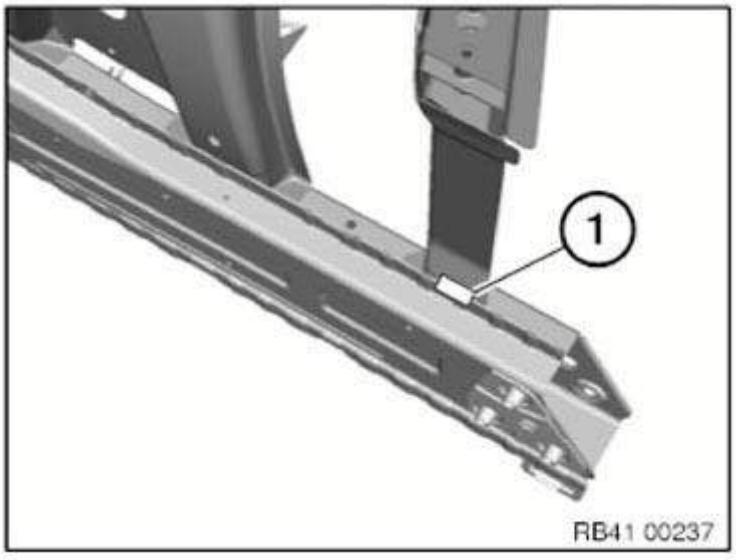


Fig. 111: Identifying Engine Support MAG-Weld Part Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 095 REPLACING ENGINE SUPPORT IN FRONT OF WHEEL ARCH, LEFT

Follow procedure for **REPAIR STAGE 3**.

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Read contents of **BODY, GENERAL**.

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

Place vehicle on straightening bench.

Following new body parts are required (refer to **OVERVIEW OF CONSUMABLES**):

- (1) Engine support, front

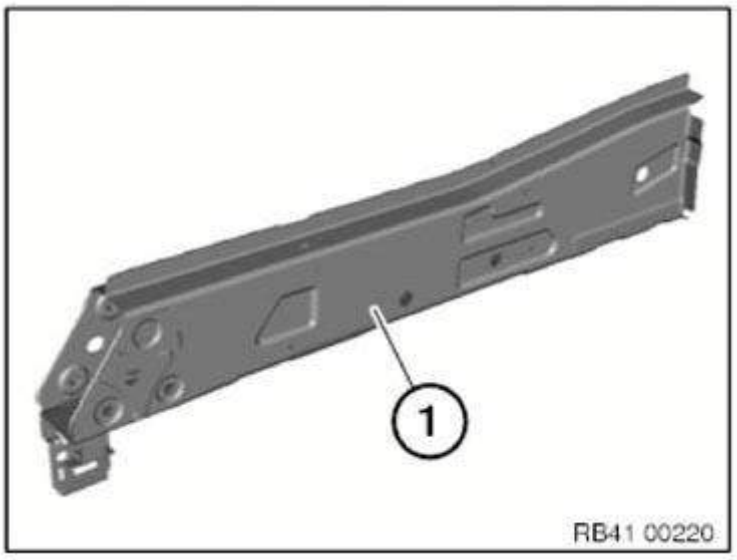


Fig. 112: Identifying Front Left Engine Support
Courtesy of BMW OF NORTH AMERICA, INC.

Removing the engine support

Open welded connections in area (1).

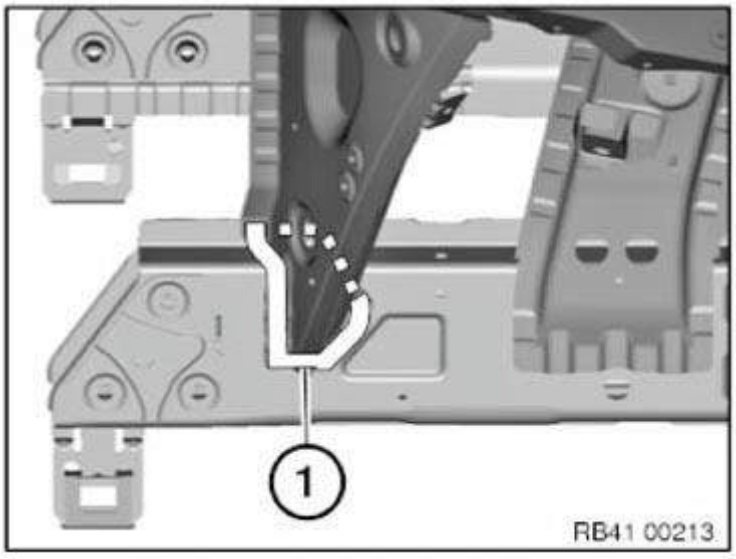


Fig. 113: Identifying Engine Support Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut in accordance with Dimension a and cut.

Dimension a=85 mm before wheel arch edge.

Remove section of engine support.

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NOTE: **Shown without carrier support for purposes of clarity.**

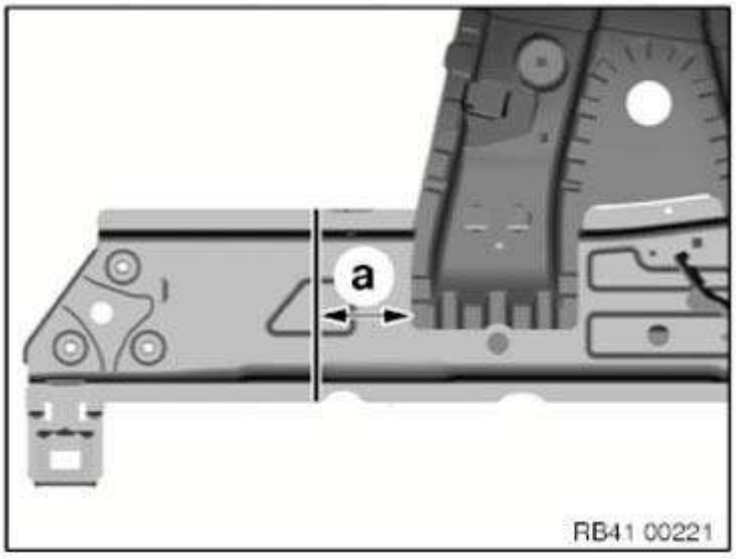


Fig. 114: Identifying Wheel Arch Edge Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part:

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

Prepare **REINFORCEMENT PLATE** at severance cut.

Adjust new part to fit with alignment bracket or universal mount.

Installing engine support

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

MAG-weld new part in area (1).

Length of weld seam approx. 15 mm.

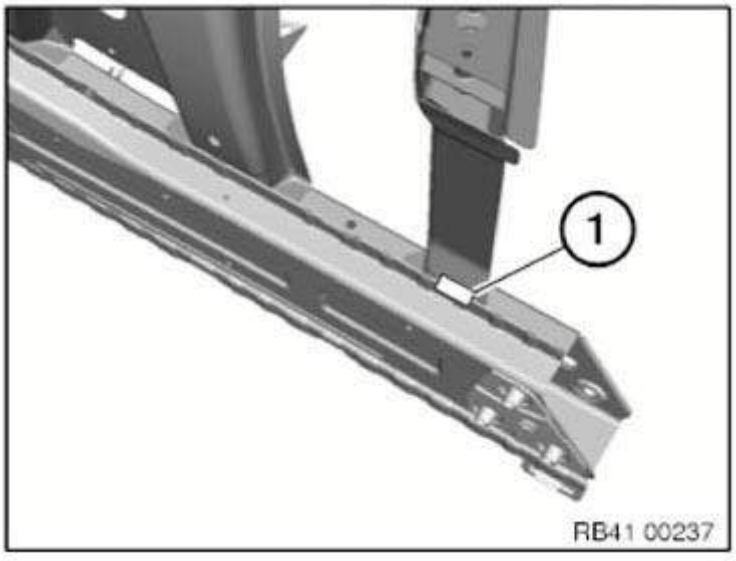


Fig. 115: Identifying Engine Support MAG-Weld Part Area
Courtesy of BMW OF NORTH AMERICA, INC.

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41 11 096 REPLACING ENGINE SUPPORT IN FRONT OF WHEEL ARCH, RIGHT

Operation is identical to **REPLACING ENGINE SUPPORT IN FRONT OF WHEEL ARCH ON LEFT**.

41 11 072 REPLACING ENGINE SUPPORT WITH FRONT RIGHT WHEEL ARCH IN FRONT OF BULKHEAD

Note the specific procedure with regard to the vehicle identification number (if necessary, order new body part with the vehicle identification number).

Operation is identical to **REPLACING ENGINE SUPPORT IN FRONT OF BULKHEAD ON LEFT**.

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**.

Spot-weld bonding is used on this vehicle. Observe specific **procedure** . See **41 00... SPOT-WELD BONDING STEEL COMPONENTS** or **41 00... OPENING BONDED CONNECTIONS**.

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

Place vehicle on straightening bench.

Following new body parts are required (refer to **OVERVIEW OF CONSUMABLES**):

- (1) Wheel arch, front
- (2) Outer wheel arch carrier support
- (3) Carrier support end plate
- (4) A-pillar bulkhead
- (5) Shaped part, wheel arch carrier support (not shown)

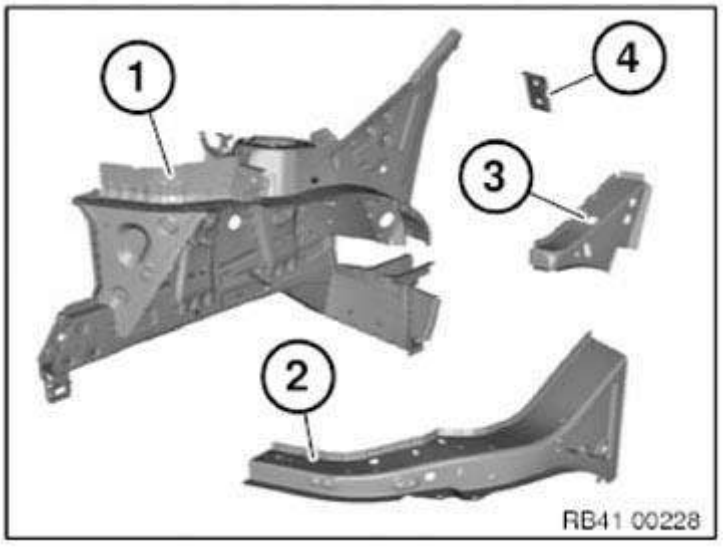


Fig. 116: Identifying Wheel Arch (Front), Outer Wheel Arch Carrier Support, Carrier Support End Plate And A-Pillar Bulkhead
Courtesy of BMW OF NORTH AMERICA, INC.

Removal of engine support with wheel arch

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

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Open spot-welded adhesive joints in area (2)

Open welded connections in area (3).

Release metal section from cavity sealing (4) and remove.

NOTE: Separating cut (1) is only required for removal.

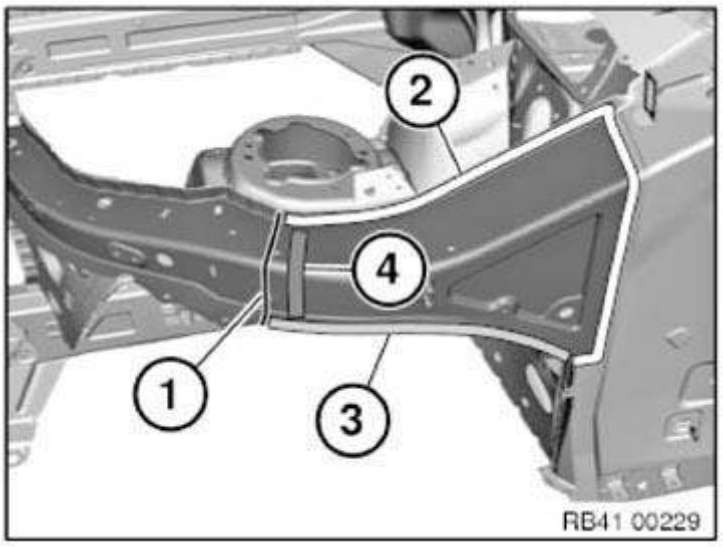


Fig. 117: Identifying Metal Section From Cavity Sealing And Spot-Welded Adhesive Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) as pictured and cut.

IMPORTANT: Cut outer metal panel only.

Open welded connections in areas (2).

Remove carrier support end plate metal section (3).

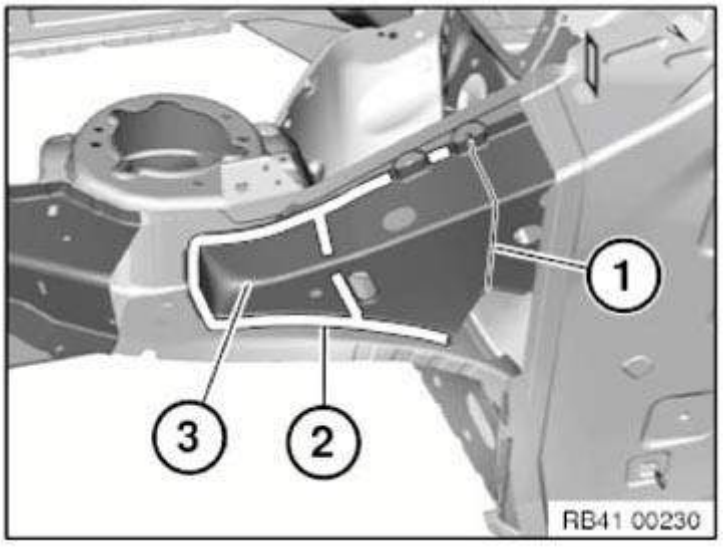


Fig. 118: Identifying Carrier Support End Plate Metal Section
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) as pictured and cut.

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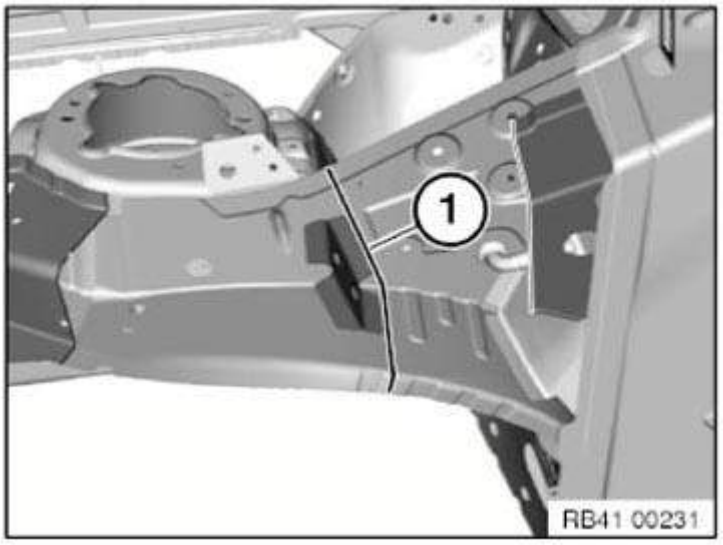


Fig. 119: Identifying Engine Support Severance Cutting Mark
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

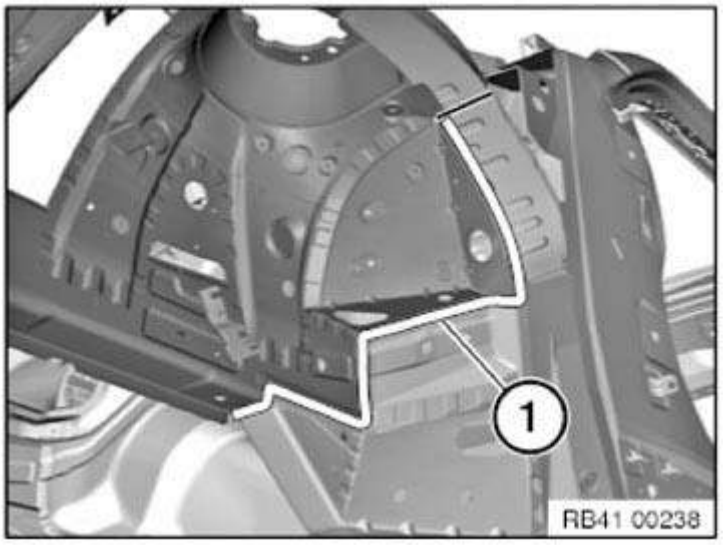


Fig. 120: Identifying Engine Support Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joint in area (1).

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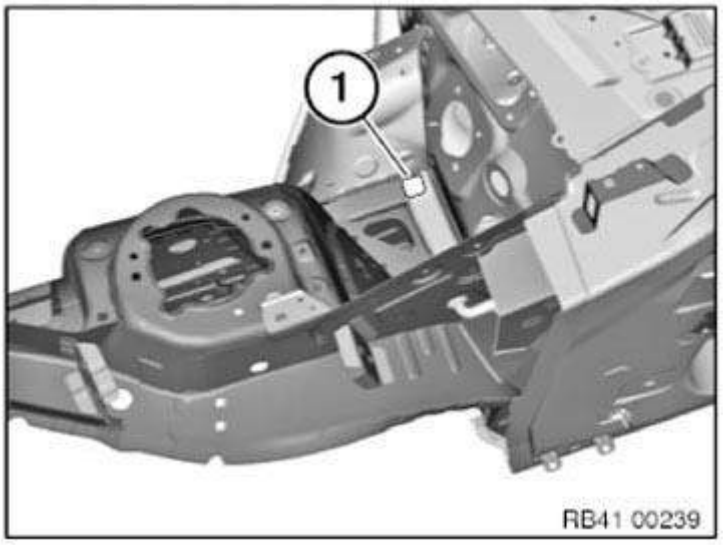


Fig. 121: Identifying Engine Support Weld Joint Area
Courtesy of BMW OF NORTH AMERICA, INC.

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

Dimension a = 110 mm from engine support edge.

Open welded connections in area (1).

Remove partial section (2.

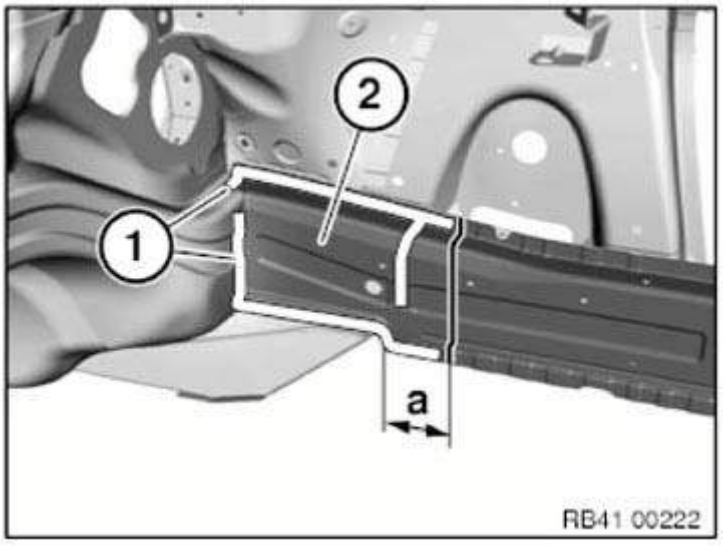


Fig. 122: Identifying Engine Support Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

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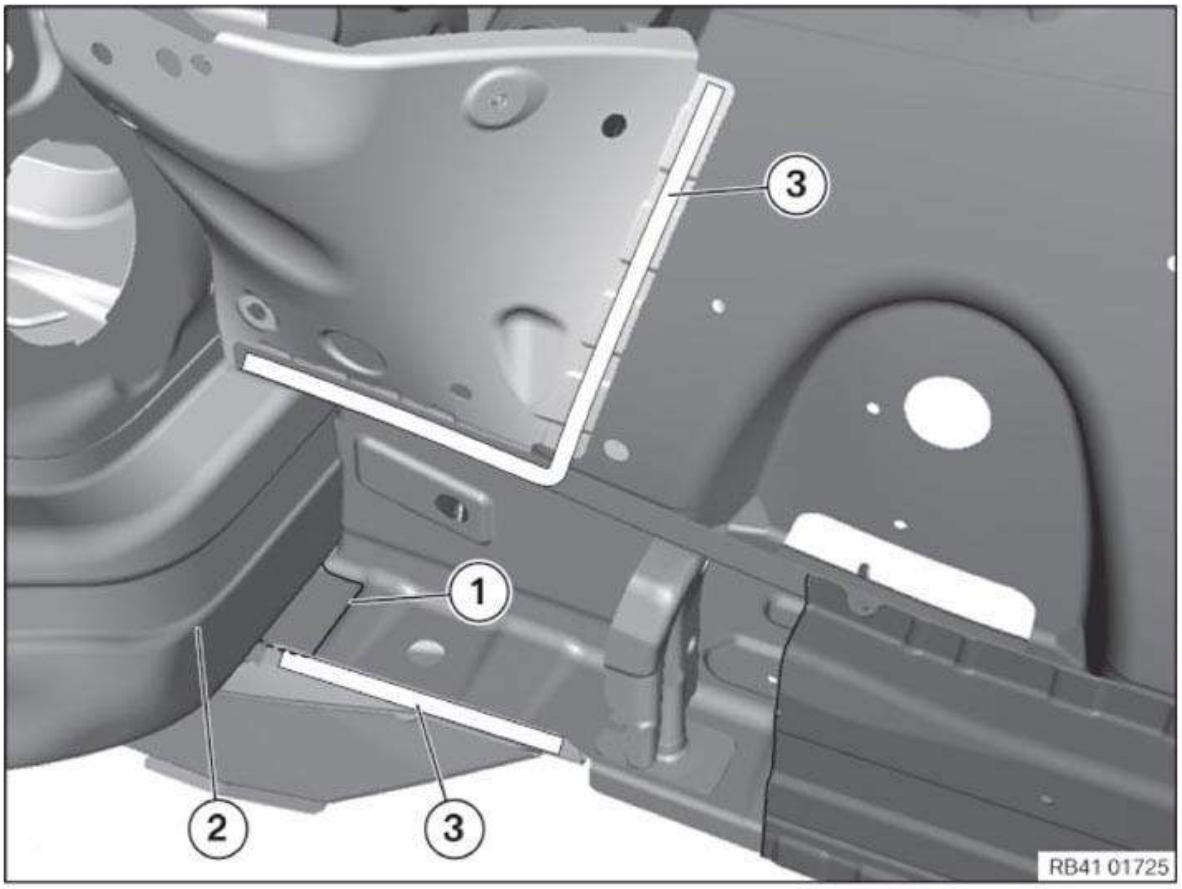


Fig. 123: Identifying Bulkhead Cross Member Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Mark and cut severance cut (1) at a distance of approx. 25 mm to bulkhead cross member (2).

Open welded connections in areas (3).

Remove engine support with wheel arch.

NOTE: New part is installed with overlap in area of severance cut (1).

New part preparation

Release the applicable welded connections and remove metal sections that are not needed from the new wheel arch.

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

Open welded connections in areas (2).

Remove metal section (3).

NOTE: The metal section (3) is needed to close the engine support.

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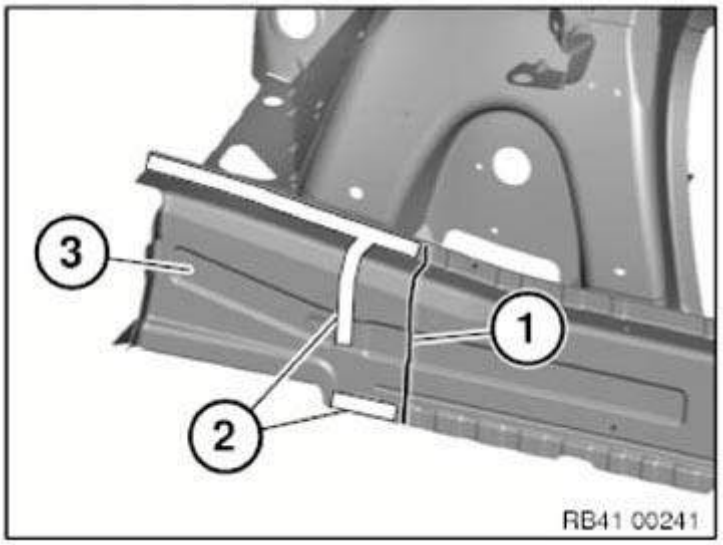


Fig. 124: Identifying Metal Section Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Perform severance cut (1) according to illustration.

Carry out severance cut (2) in accordance with severance cut on vehicle + 15 mm extra material.

Mark further severance cuts in accordance with vehicle and cut.

Prepare **REINFORCEMENT PLATES** at severance cuts.

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

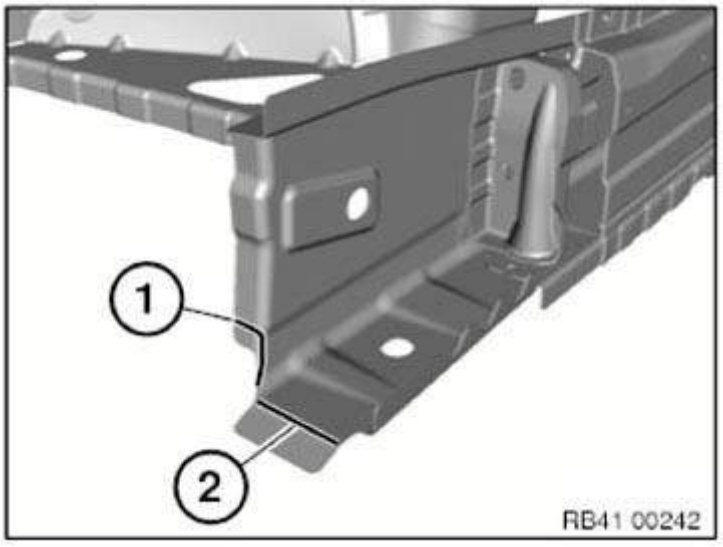


Fig. 125: Identifying Reinforcement Plates Severance Cutting Area
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust the new A-pillar bulkhead (1) in the area of the reinforcement plate (2).

(The new A-pillar bulkhead is set onto the reinforcement plate)

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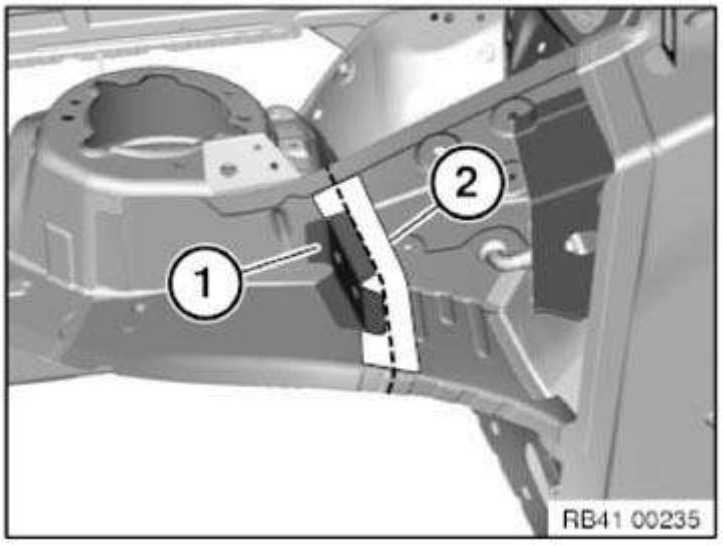


Fig. 126: Identifying A-Pillar Bulkhead Area Of Reinforcement Plate
Courtesy of BMW OF NORTH AMERICA, INC.

Installation of engine support with wheel arch

Apply sealant to new **CAVITY SEALING** of wheel arch carrier support.

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

Weld the new part to the body in the areas (1) and (2)!

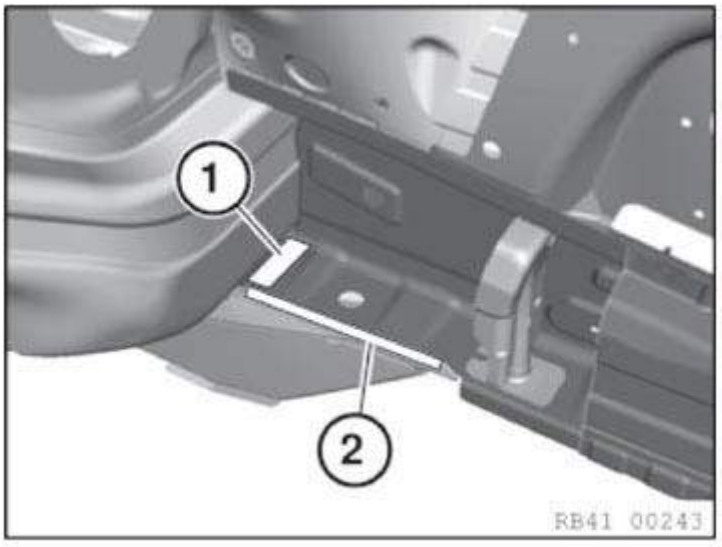


Fig. 127: Identifying Engine Support With Wheel Arch Weld Part Area
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The bulkhead cross member (1) is filled with low-flammable cavity foam.

In case of smoke formation, stop the welding procedure and cool the welded area with compressed air if applicable.

(2) Bulkhead
(3) Engine support

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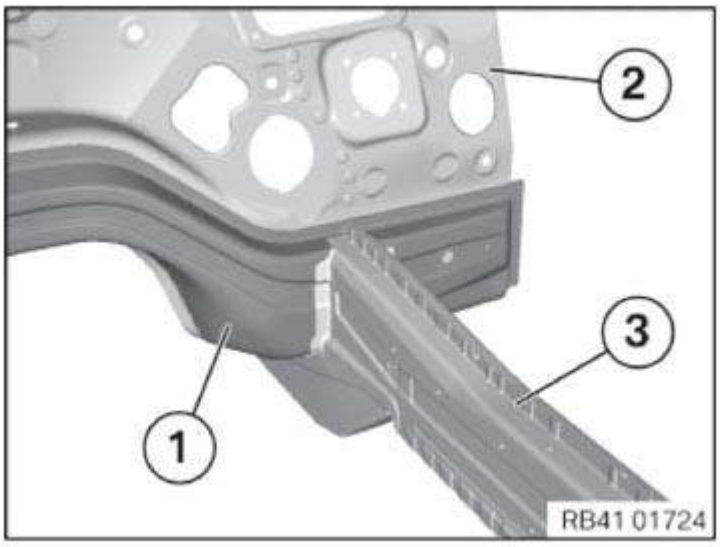


Fig. 128: Identifying Bulkhead Cross Member Filled With Low-Flammable Cavity Foam
Courtesy of BMW OF NORTH AMERICA, INC.

Weld new components in area (1) additionally.

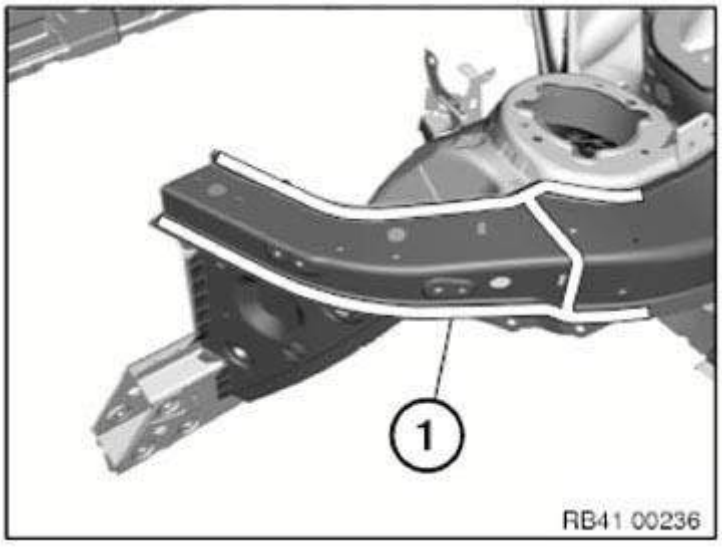


Fig. 129: Identifying Engine Support With Wheel Arch Weld Components Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 14 531 REPLACING ENGINE SUPPORT/FRONT LEFT SIDE FRAME CONNECTION (FRONT LEFT WHEEL ARCH REMOVED)

Refer to **41 14 531 REPLACING ENGINE SUPPORT/FRONT LEFT SIDE FRAME CONNECTION (FRONT LEFT WHEEL ARCH REMOVED)**.

41 14 532 REPLACING ENGINE SUPPORT/FRONT RIGHT SIDE FRAME CONNECTION (FRONT RIGHT WHEEL ARCH REMOVED)

Refer to **41 14 532 REPLACING ENGINE SUPPORT/FRONT RIGHT SIDE FRAME CONNECTION (FRONT RIGHT WHEEL ARCH REMOVED)**.

41 11 312 REPLACING ENTRANCE FOR FRONT RIGHT DOOR

Operation is identical to replacing **FRONT LEFT DOOR ENTRANCE**.

41 11 425 REPLACING RIGHT SIDE SILL

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Operation is identical to replacing **LEFT SIDE SILL**.

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.

The following new body parts are required (refer to **OVERVIEW OF CONSUMABLES**):

- (1) Outer wheel arch carrier support
- (2) Carrier support, inner wheel arch section
- (3) Holder DSC (right side of vehicle only)

Following **CONSUMABLES** are required:

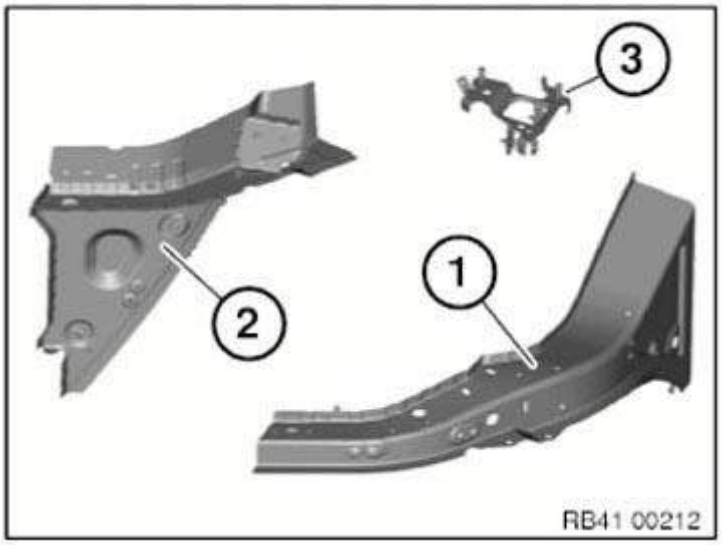


Fig. 130: Identifying Outer And Inner Wheel Arch Carrier Support And Holder DSC
Courtesy of BMW OF NORTH AMERICA, INC.

Material	Quantity
Adhesive K1	1
Blind rivets N1	9
Blind rivets N3	3
Punch rivets N5	18
EMC screws	2
Sealant D1	Â
Cleaning agent R1	1

Removing carrier support

Open welded connections in area (1).

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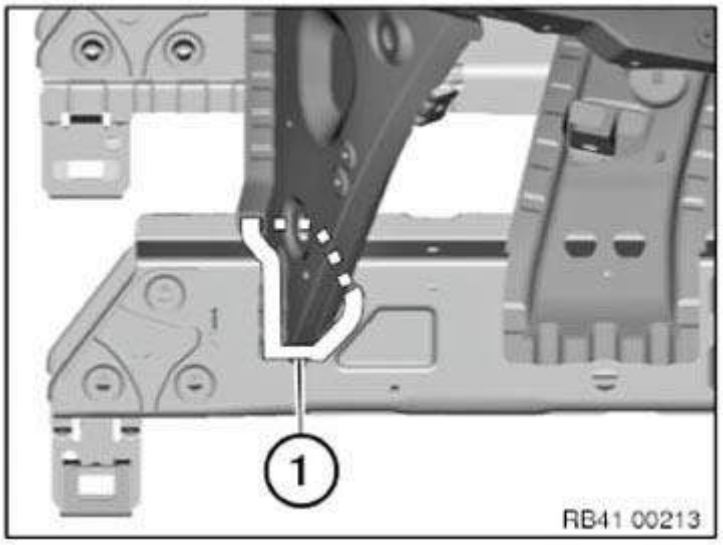


Fig. 131: Identifying Engine Support Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Right side of vehicle only:

Open weld joint in area (1).

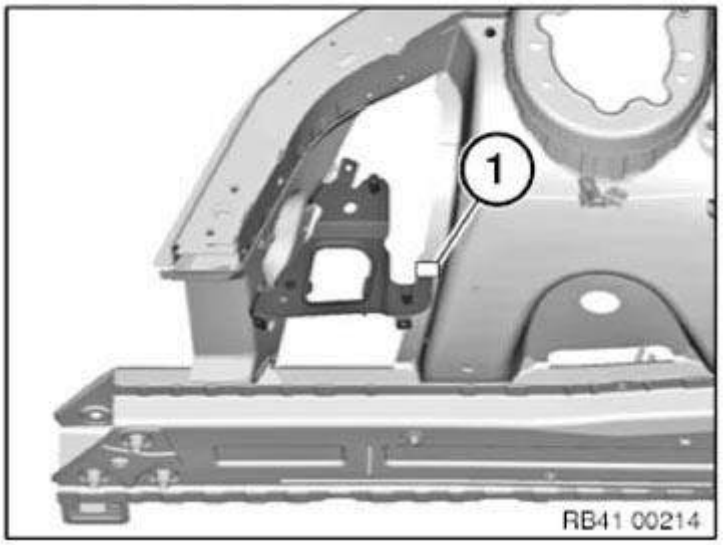


Fig. 132: Identifying Carrier Support Weld Joint Area
Courtesy of BMW OF NORTH AMERICA, INC.

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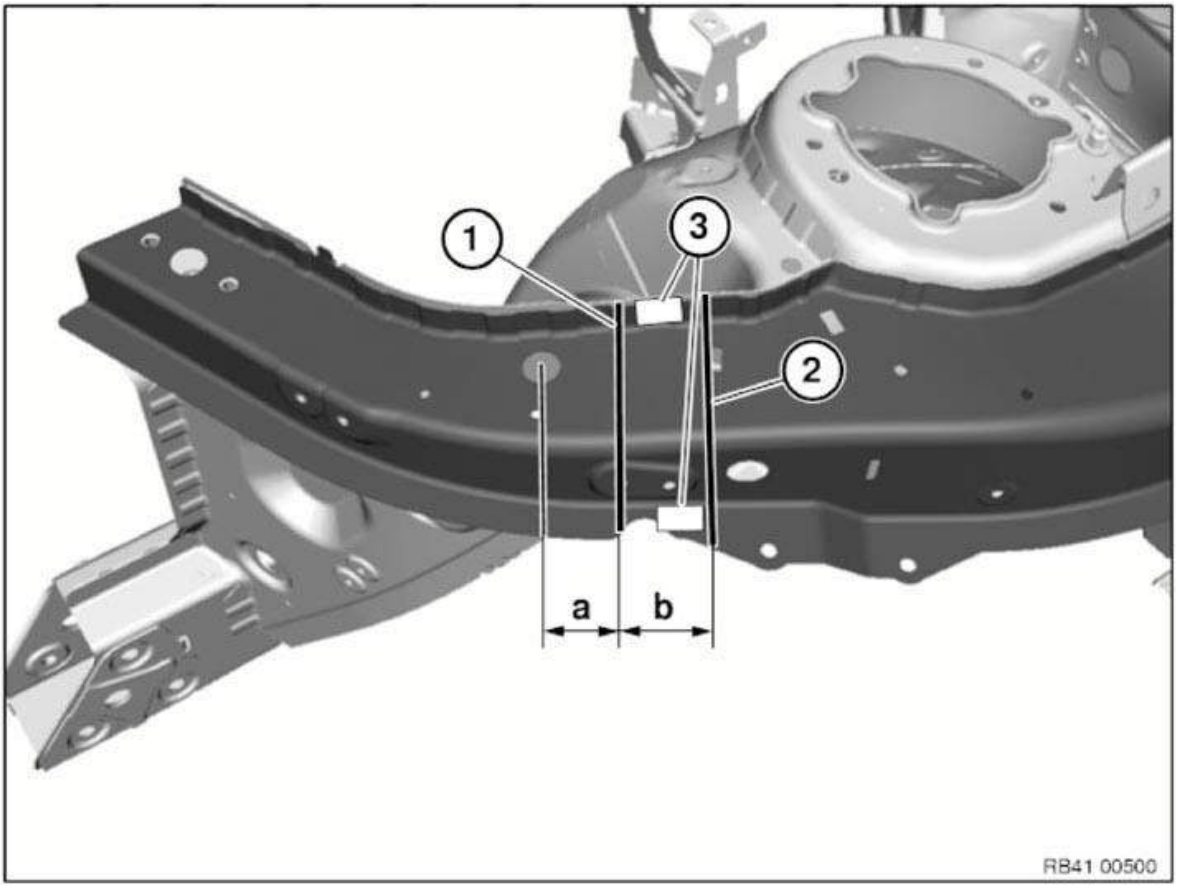


Fig. 133: Identifying Carrier Support Severance Cutting Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cuts in accordance with specified dimensions and cut.

IMPORTANT: Fully sever the carrier support at severance cut (1)!

Only sever outer panel at severance cut (2)!

Dimension a = approx. 40 mm from bore hole Ã˜ 20 mm.

Dimension b = approx. 50 mm from severance cut (1).

Open welded connections in areas (3).

Remove carrier support sections.

New part preparation

Mark new part in accordance with severance cut on vehicle (1) + 20 mm extra material and cut (2).

NOTE: Install new part overlapping in area of severance cut.

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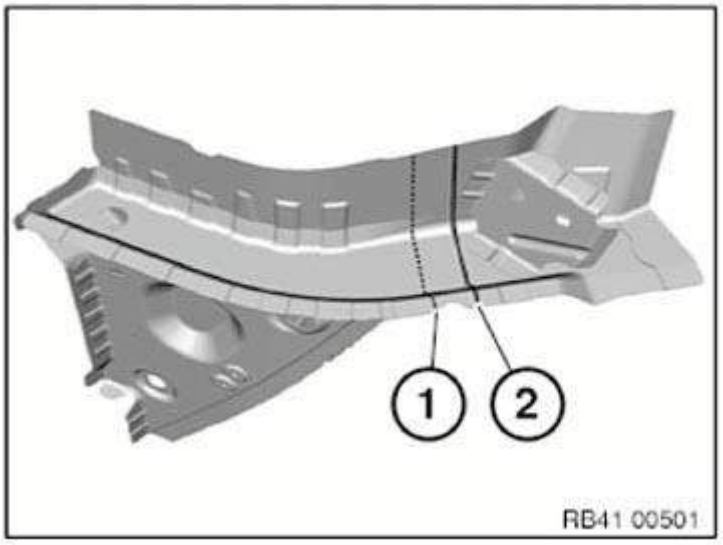


Fig. 134: Identifying Carrier Support Severance Cutting Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

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

For the severance cut, create a **REINFORCEMENT PLATE** (welded) from the trim of the new part.

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

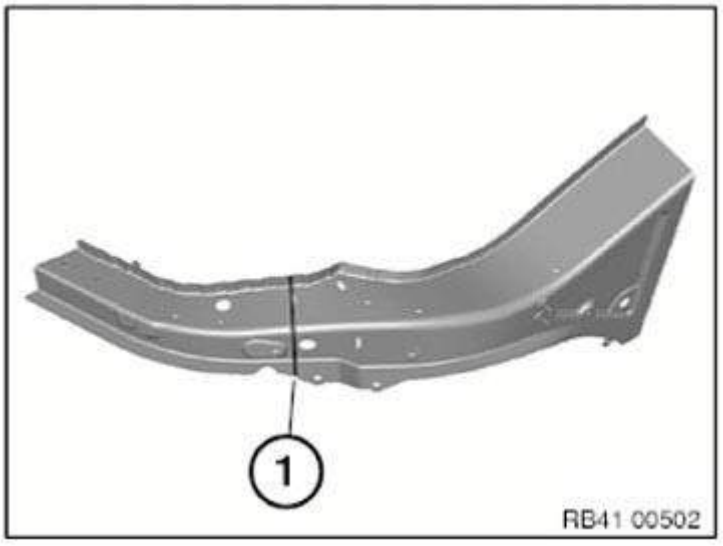


Fig. 135: Identifying Reinforcement Plate Severance Cutting Part
Courtesy of BMW OF NORTH AMERICA, INC.

In areas (1) to (3), introduce Ã˜ 6.8 mm bore holes for blind rivets N1.

Area	Number
1	2
2	3
3	2

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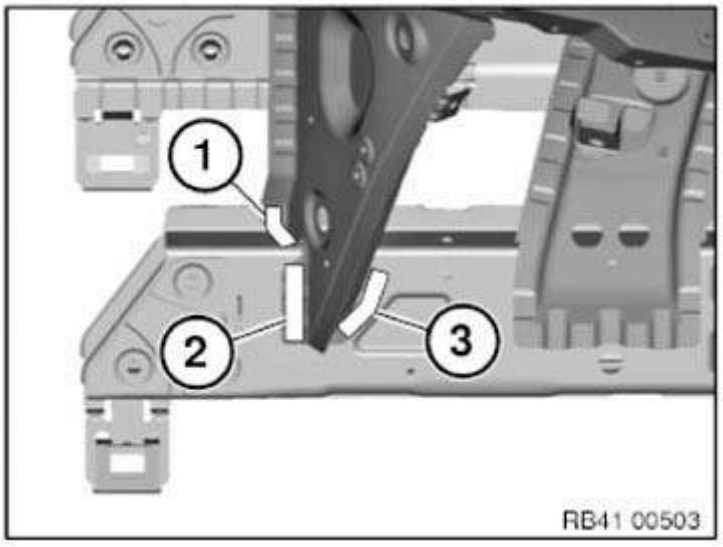


Fig. 136: Identifying Bore Holes For Blind Rivets (N1) Area
Courtesy of BMW OF NORTH AMERICA, INC.

In areas (1) and (2) introduce one Ã˜ 6.8 mm bore hole for blind rivets N1.

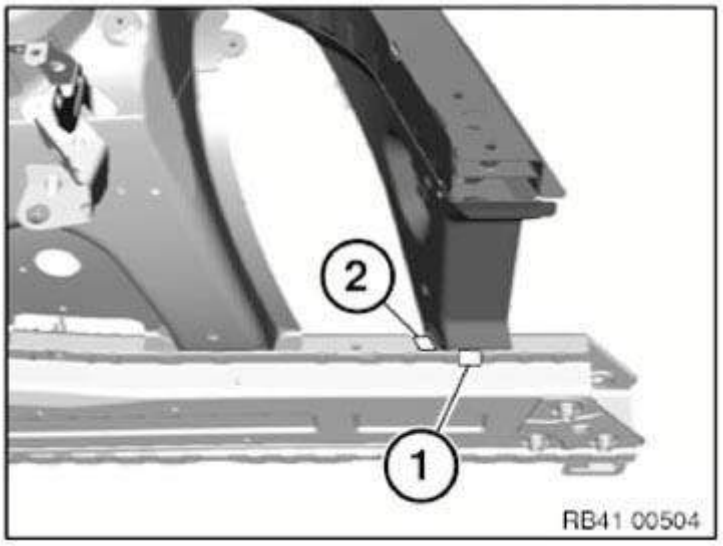


Fig. 137: Identifying Bore Hole Areas For Blind Rivets N1
Courtesy of BMW OF NORTH AMERICA, INC.

Prepare area of overlap (1) for plug-welding.

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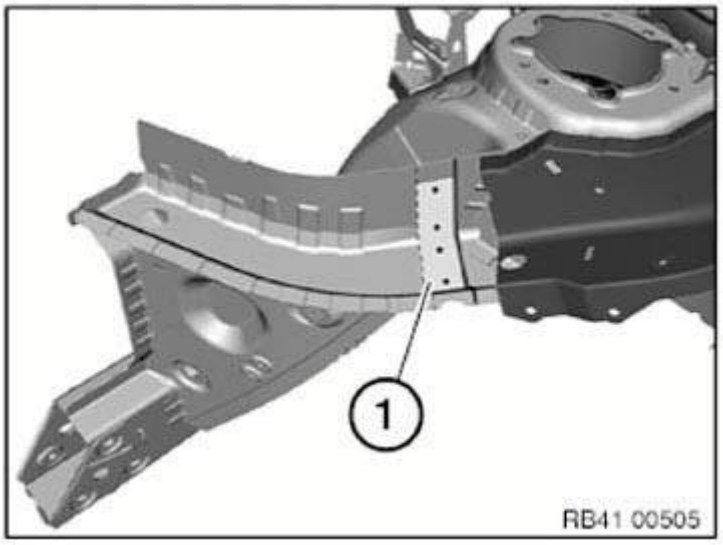


Fig. 138: Identifying Plug-Welding Area
Courtesy of BMW OF NORTH AMERICA, INC.

Prepare area of reinforcement plate (1) for plug-welding.

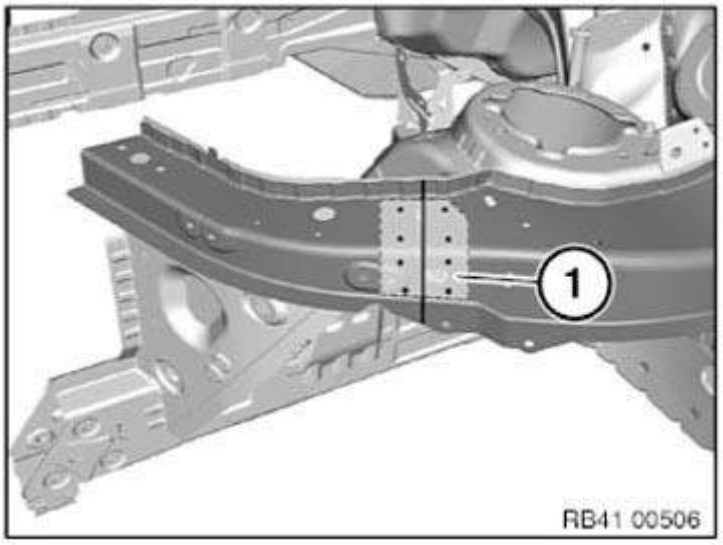


Fig. 139: Identifying Reinforcement Plate For Plug-Welding
Courtesy of BMW OF NORTH AMERICA, INC.

Right side of vehicle only:

Fit DSC (1) holder.

In areas (2), introduce three bore holes Ã˜ 4.2 mm for blind rivets N3.

Remove new parts and deburr bore holes.

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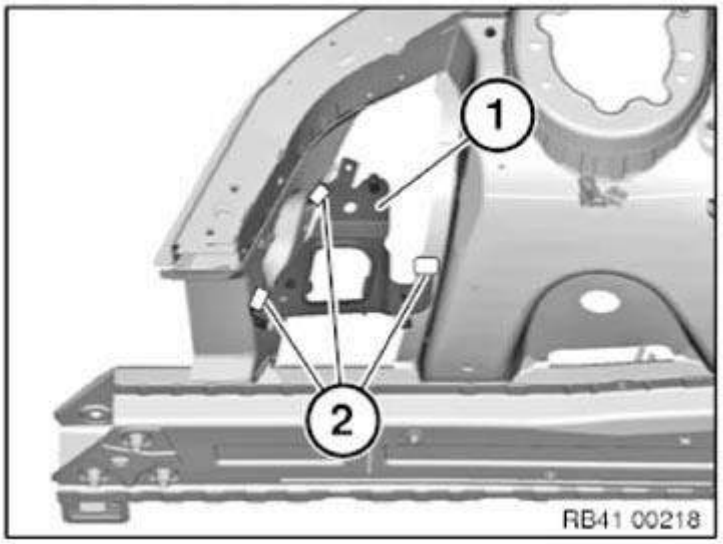


Fig. 140: Identifying DSC Holder And Blind Rivets (N3) Area
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Structure bonding!
OBSERVE preparation of bonding surfaces.

Installing carrier support

Clean all bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Install new parts with add-on parts and rivet with blind rivets.

Plug-weld in area of overlap (1).

At severance cut additionally set 4 metal active gas weld seams each with a length of 1 cm.

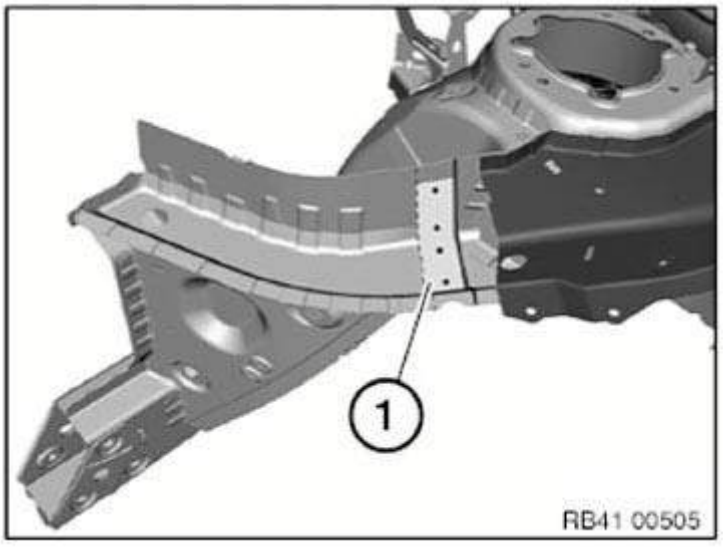


Fig. 141: Identifying Plug-Welding Area
Courtesy of BMW OF NORTH AMERICA, INC.

Install and weld reinforcement plate in area of severance cut.

Clean bonding surfaces with cleaning agent R1.

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Apply adhesive to bonding surfaces, and adjust and fix new part.

In areas (1) and (2), rivet each new part with 9 punch rivets N5.

In area of severance cut, weld new part and reinforcement plate.

IMPORTANT: Risk of damage to adhesive area!
Avoid applying excessive heat to the neighboring adhesive areas!

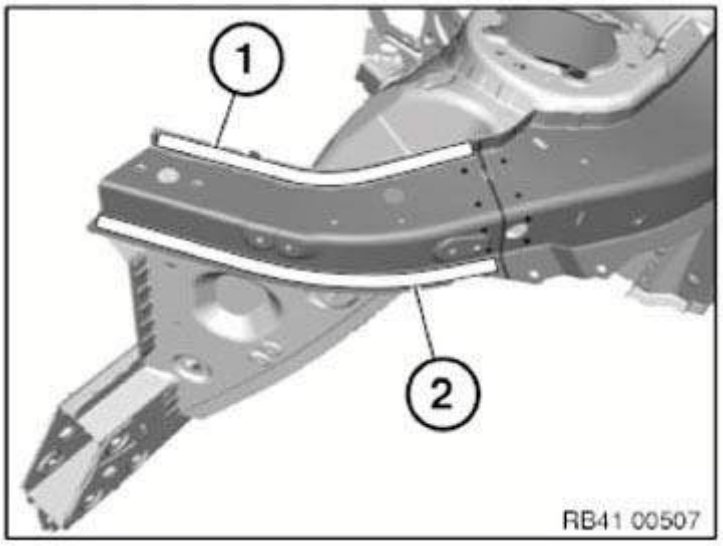


Fig. 142: Identifying Carrier Support Adhesive Rivet Areas
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Do not seal new parts in adhesive rivet areas (1) and (2).

After hardening of adhesive, in areas (2) and (3) install one **EMC SCREW** in each case.

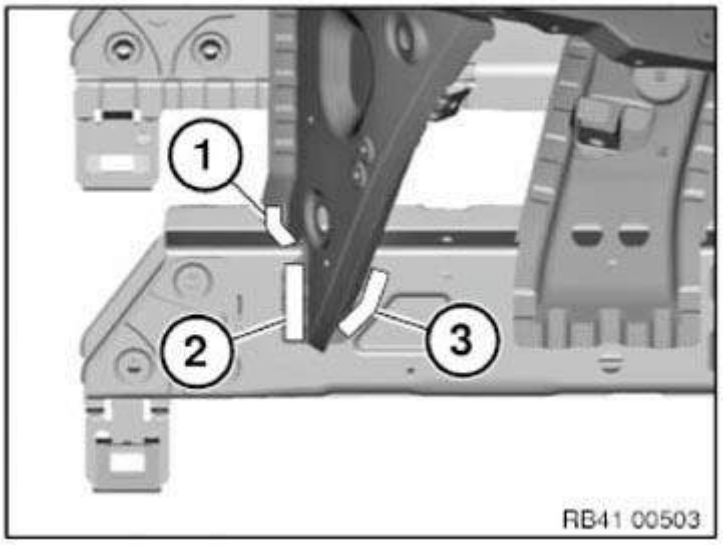


Fig. 143: Identifying Bore Holes For Blind Rivets (N1) Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 202 REPLACING THE CARRIER SUPPORT BEFORE THE WHEEL ARCH ON THE RIGHT

Note the specific procedure with regard to the vehicle identification number (if necessary, order new body part with the vehicle identification number).

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Operation is identical to **REPLACING CARRIER SUPPORT IN FRONT OF WHEEL ARCH ON LEFT**.

41 14 020 STRIPPING OPERATIONS - REPLACING FRONT LEFT WHEEL ARCH

Refer to **41 14 020 STRIPPING OPERATIONS - REPLACING FRONT LEFT WHEEL ARCH**.

41 14 030 STRIPPING OPERATIONS - REPLACING FRONT RIGHT WHEEL ARCH

Refer to **41 14 030 STRIPPING OPERATIONS - REPLACING FRONT RIGHT WHEEL ARCH**.

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 (61 20 900)**
- **Remove bumper trim (51 11 156)**
- **Remove front panel (41 33 039)**
- **Remove front underbody protection assembly (51 47 490)**
- **Remove front side panel (41 35 081)**
- **Remove front wheel arch cover (front section) (51 71 038)**
- **Remove intake silencer housing (INTAKE SILENCER)**
- **Partially release left wiring harness**

LUGGAGE COMPARTMENT FLOOR

41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41

Refer to **41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41**.

41 12 535 REPLACE LUGGAGE COMPARTMENT FLOOR AND BOTH SIDE MEMBERS (TAIL PANEL TRIM 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 (refer to **OVERVIEW OF CONSUMABLES**):

- (1) Wheel arch extension, rear left and right
- (2) Luggage compartment floor, left and right
- (3) Side member, bottom rear left and right

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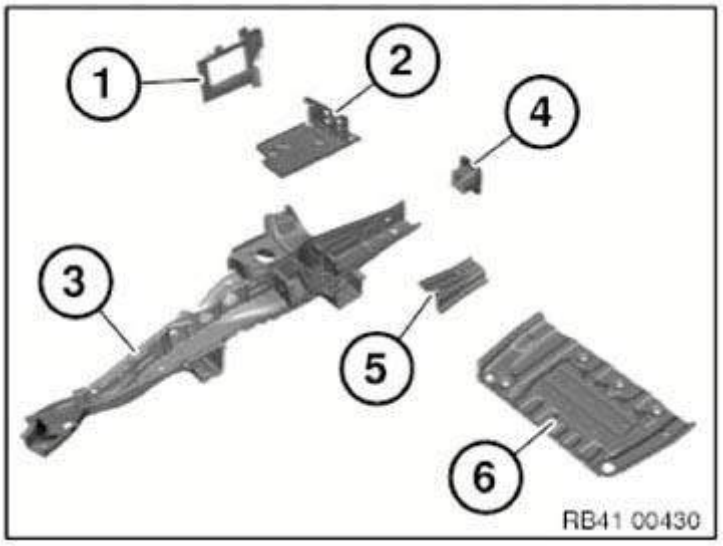


Fig. 144: Identifying Wheel Arch Extension, Side Member, Bottom Rear Left And Right Luggage Compartment Floor
Courtesy of BMW OF NORTH AMERICA, INC.

- (4) Fixture, impact absorber, left and right
- (5) Side member, top left and right
- (6) Battery tray

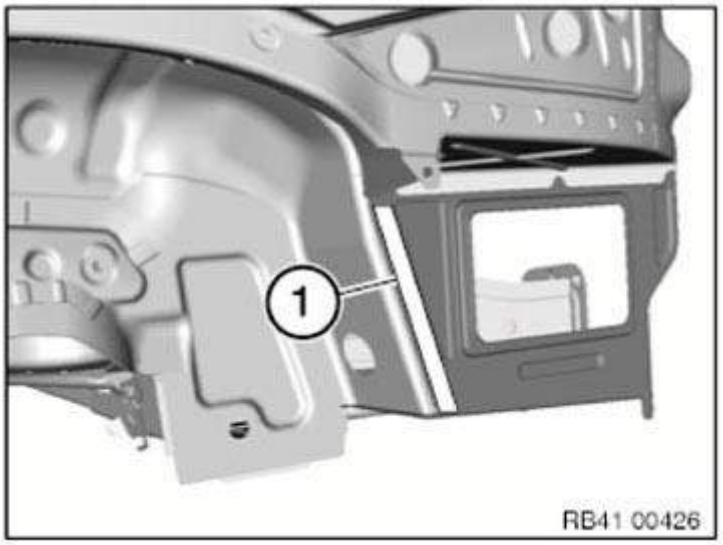
Following **CONSUMABLES** are required:

Material	Quantity
Adhesive K5a	2
Blind rivets N3	17
EMC screws	6
Cleaning agent R1	1
Sealant D1	Â

Removal of complete rear luggage compartment floor:

Operations described predominantly on the left side. Right side identical.

Open welded connections in area (1).



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Fig. 145: Identifying Rear Luggage Compartment Floor Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

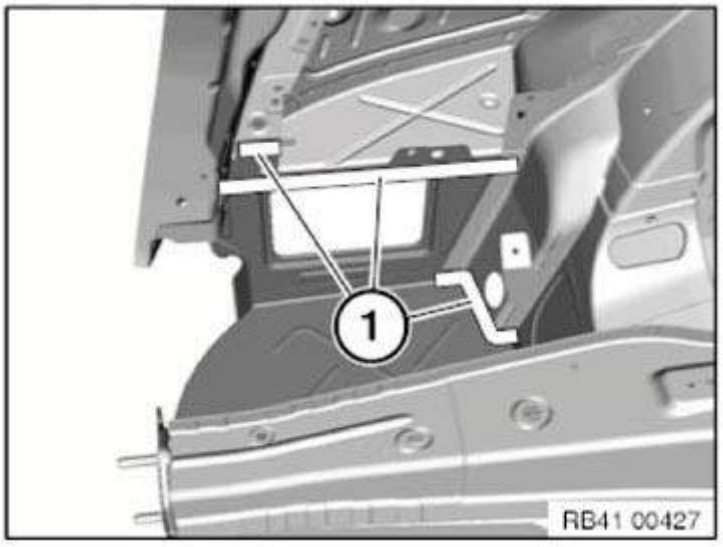


Fig. 146: Identifying Rear Luggage Compartment Floor Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

Remove the luggage compartment floor.

NOTE: Shown without side panel for purposes of clarity.

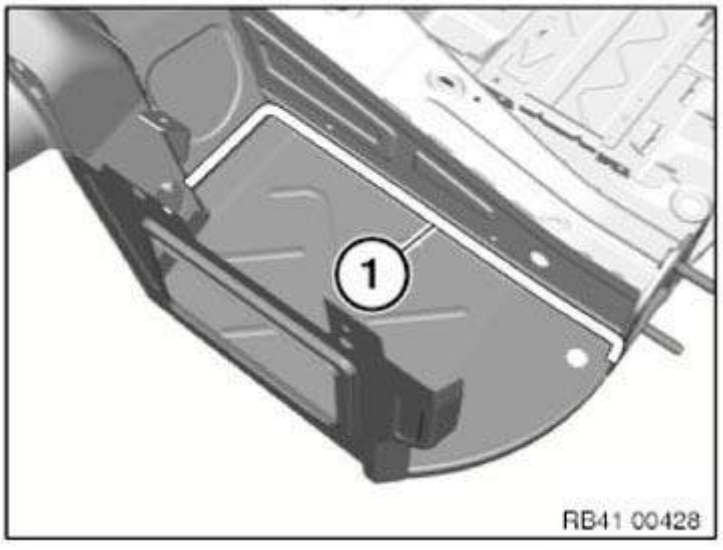


Fig. 147: Identifying Luggage Compartment Floor Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

View from below.

Open welded connections in the area (1) and remove battery tray (2).

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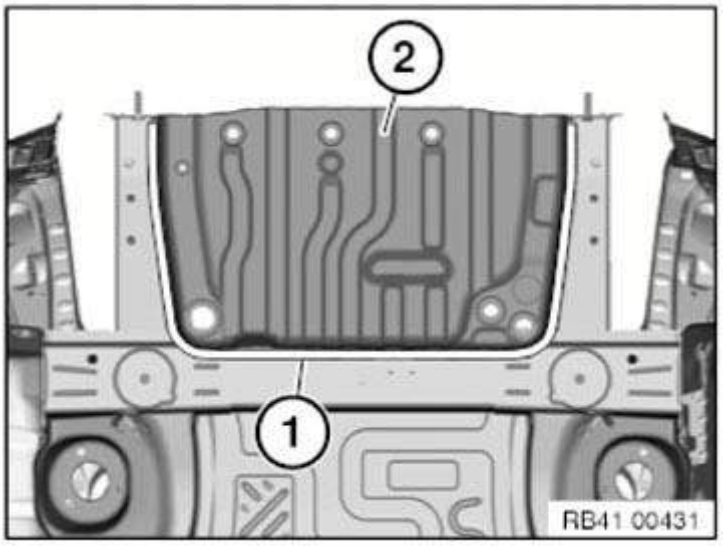


Fig. 148: Identifying Battery Tray Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

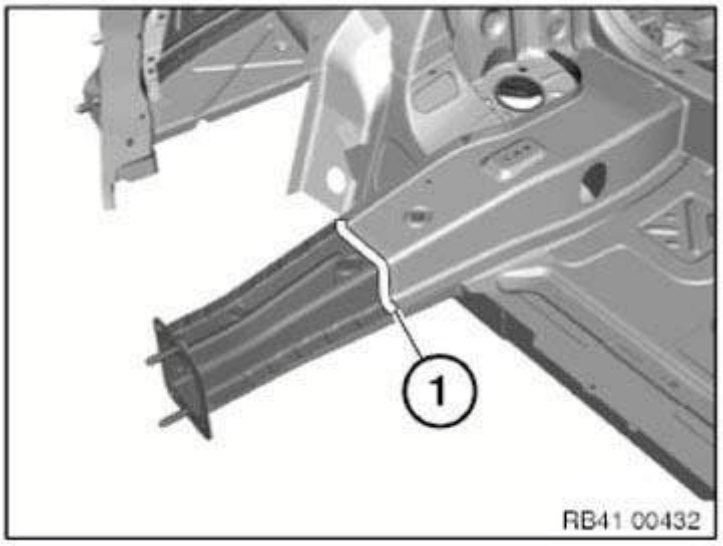


Fig. 149: Identifying Rear Luggage Compartment Floor Welded Connections Area (1 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

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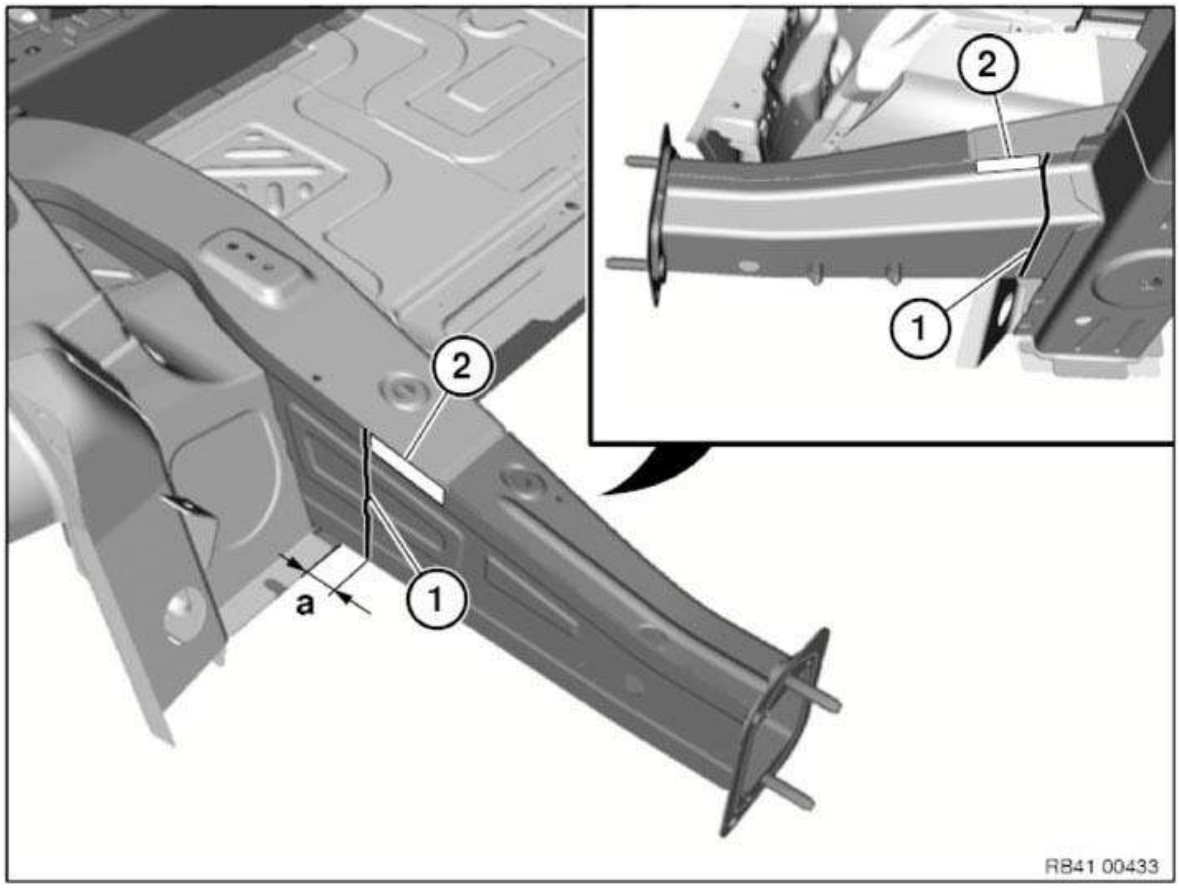


Fig. 150: Identifying Rear Luggage Compartment Floor Welded Connections Area (2 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

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

IMPORTANT: Cut outer panel only.

Dimension a = 30 mm from wheel arch component edge.

Open welded connections in areas (2).

Remove side member.

New part preparation

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

Prepare **REINFORCEMENT PLATE** for severance cut.

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

In areas (1) and (2) set 4.2 mm dia. holes for blind rivets.

Area	Number
1	5 of
2	7

Remove new parts and deburr bore holes.

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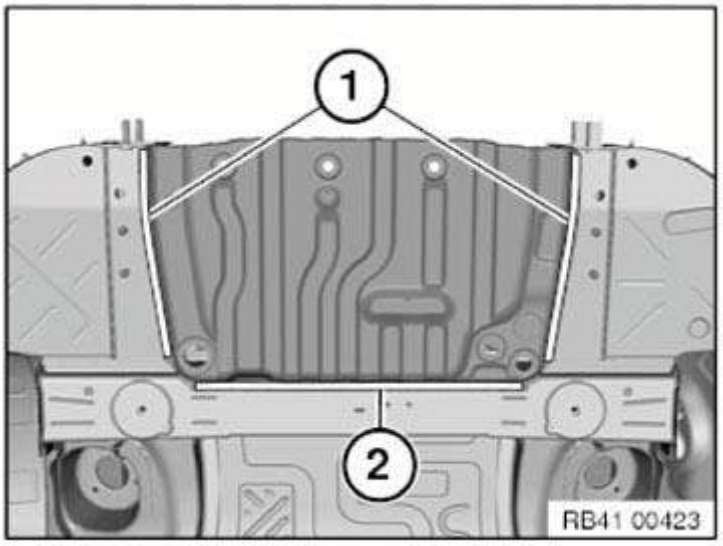


Fig. 151: Identifying Reinforcement Plate Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

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

Installing side member and luggage compartment floor, left and right:

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

- Extension, side member
- Mounting, impact absorber
- Luggage compartment floor
- Wheel arch extension

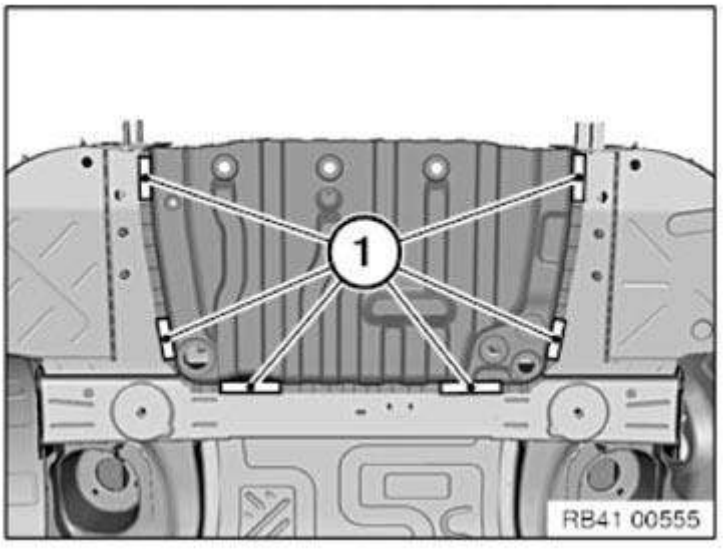
Installing luggage compartment floor (battery tray):

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 **6 EMC SCREWS** in the areas shown (1).



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Fig. 152: Identifying EMC Screws Adhesive Areas
Courtesy of BMW OF NORTH AMERICA, INC.

41 12 655 REPLACING LEFT LUGGAGE COMPARTMENT FLOOR (TAIL PANEL HAS BEEN REMOVED)

Observe procedure for **REPAIR STAGE 3**.

Read contents of **BODY, GENERAL**.

Following new body parts are required (see **OVERVIEW OF CONSUMABLES**):

- (1) Luggage compartment floor, left section
- (2) Rear wheel arch extension

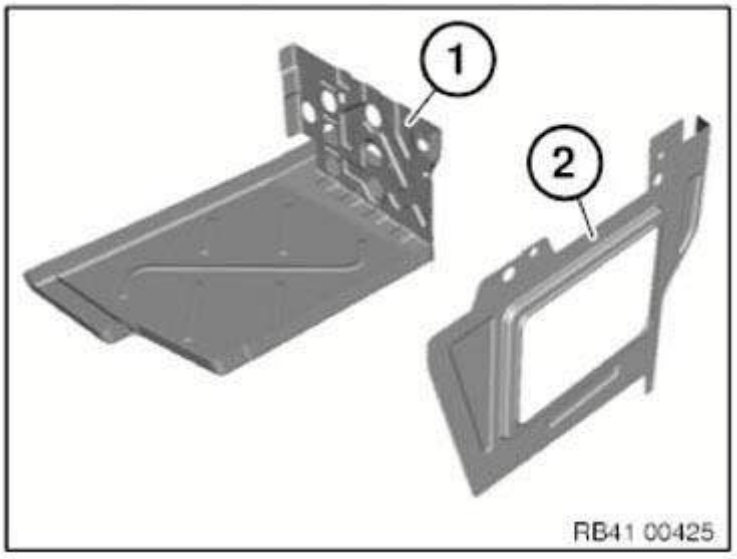


Fig. 153: Identifying Luggage Compartment Floor (Left Section) And Rear Wheel Arch Extension
Courtesy of BMW OF NORTH AMERICA, INC.

Removal

Open welded connections in area (1).

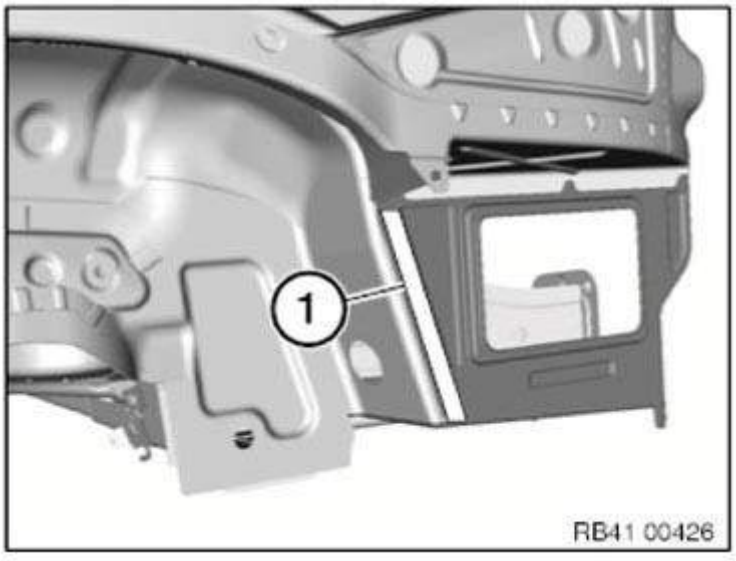


Fig. 154: Identifying Rear Luggage Compartment Floor Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

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Open welded connections in areas (1).

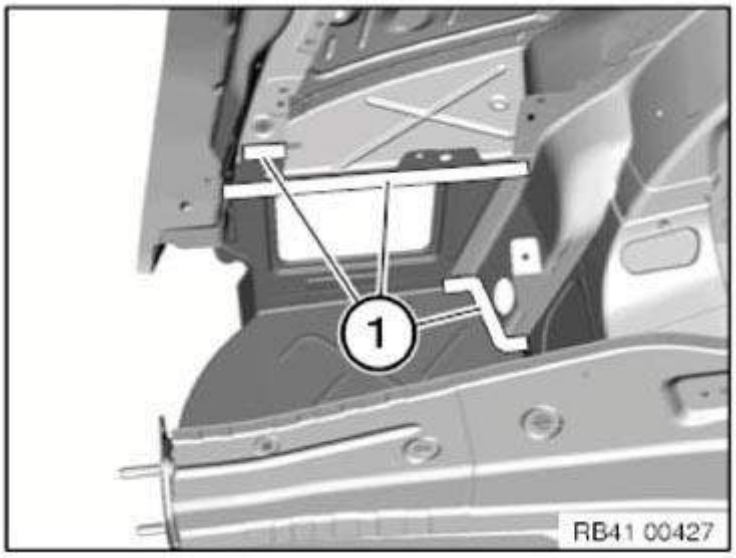


Fig. 155: Identifying Rear Luggage Compartment Floor Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Shown without side panel for purposes of clarity.

Open welded connections in areas (1).

Remove the luggage compartment floor.

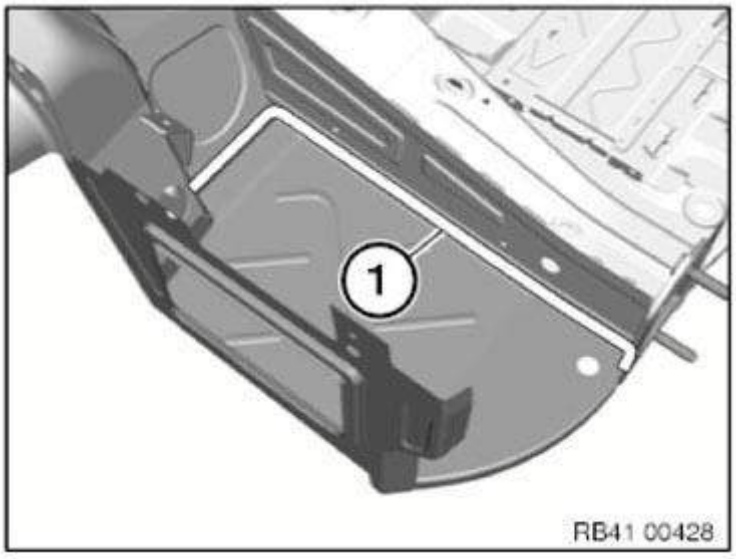


Fig. 156: Identifying Luggage Compartment Floor Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Installation

Install new part and weld.

IMPORTANT: Only weld new part in areas (1) after installing tail panel!

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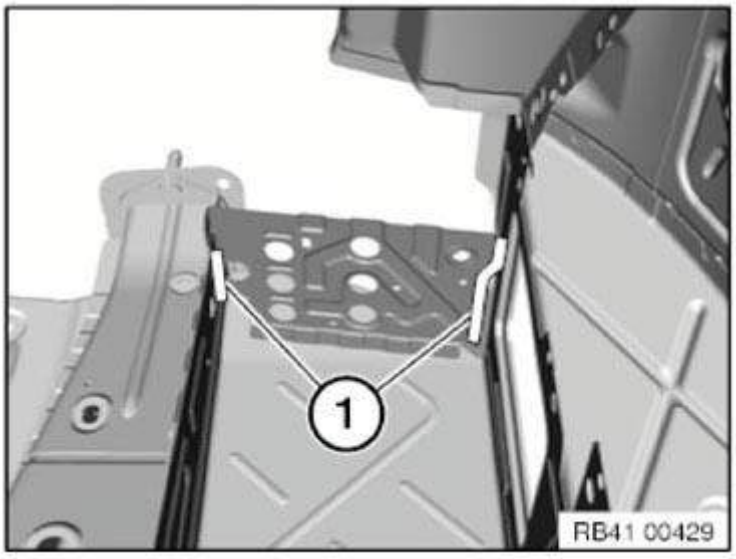


Fig. 157: Identifying Tail Panel Weld Part Areas
Courtesy of BMW OF NORTH AMERICA, INC.

41 12 557 REPLACING LUGGAGE COMPARTMENT FLOOR, MIDDLE SECTION (TAIL PANEL REMOVED)

Read contents of **BODY, GENERAL**.

STRIP DOWN VEHICLE

Observe procedure for **(REPAIR STAGE 2)**!

Following new body parts are required (refer to **OVERVIEW OF CONSUMABLES**):

- (1) Battery tray

Following **CONSUMABLES** are required:

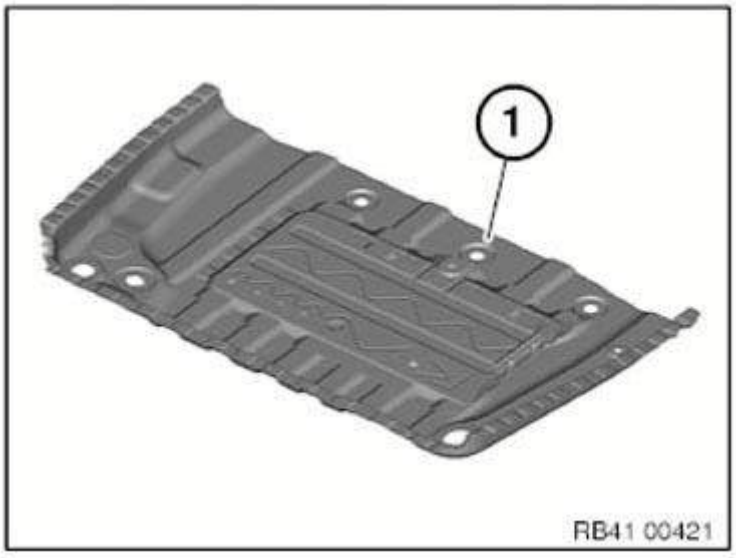


Fig. 158: Identifying Battery Tray
Courtesy of BMW OF NORTH AMERICA, INC.

Material	Quantity
Adhesive K5a	2
Blind rivets N3	17

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EMC screws	6
Cleaning agent R1	1
Sealant D1	Â

Removal of luggage compartment floor

Open welded connections in area (1).

Remove the luggage compartment floor.

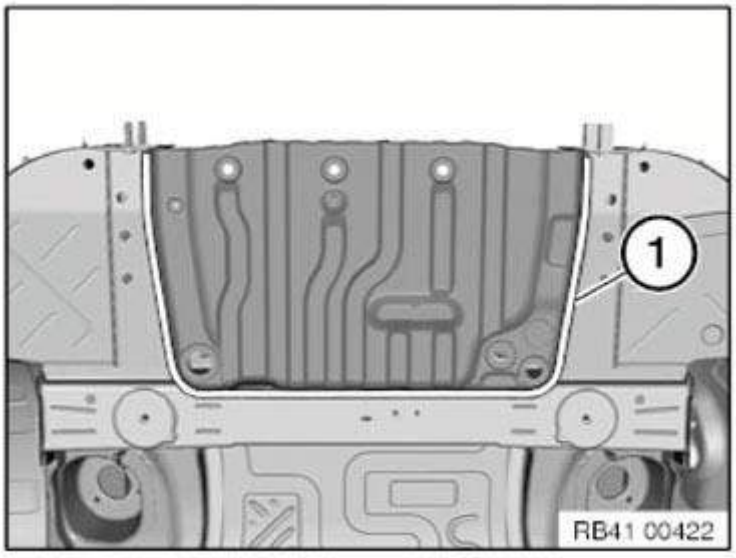


Fig. 159: Identifying Luggage Compartment Floor Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Adjust new part in conjunction with tail panel and secure.

In areas (1) and (2) set 4.2 mm dia. holes for blind rivets.

Area	Number
1	5 of
2	7

Remove new parts and deburr bore holes.

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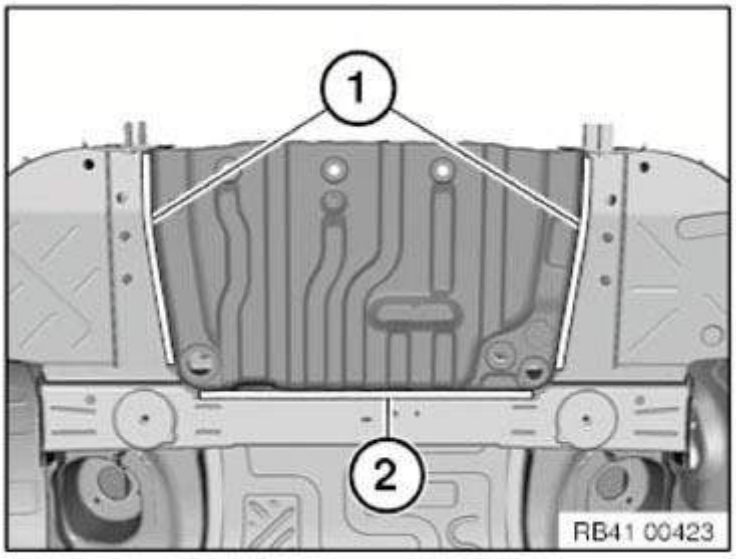


Fig. 160: Identifying Reinforcement Plate Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

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

Installation of luggage compartment floor:

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 **6 EMC SCREWS** in the areas shown (1).

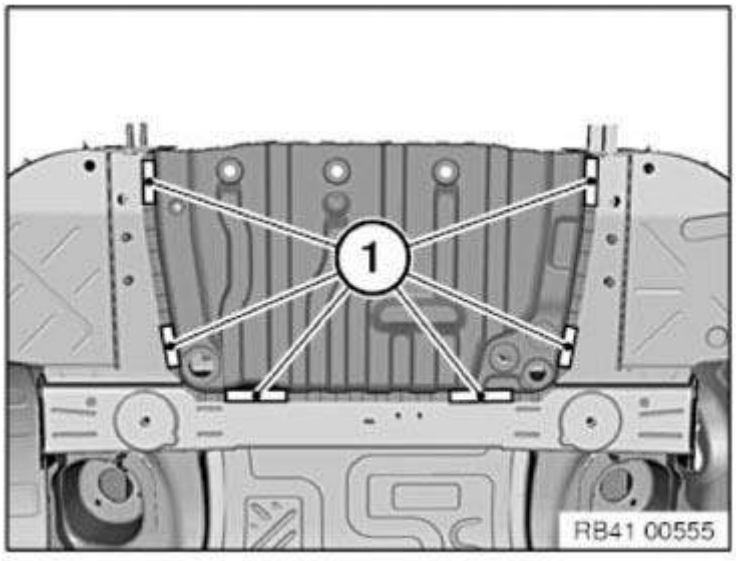


Fig. 161: Identifying EMC Screws Adhesive Areas
Courtesy of BMW OF NORTH AMERICA, INC.

41 12 535 STRIPPING OPERATIONS - REPLACING LUGGAGE COMPARTMENT FLOOR AND BOTH SIDE MEMBERS (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.

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- **Remove positive battery cable (61 12 002)**
- **Remove exhaust system. See 18 00 020 REMOVING AND INSTALLING COMPLETE EXHAUST SYSTEM (N20) , 18 00 020 REMOVING AND INSTALLING COMPLETE EXHAUST SYSTEM (N47 D20 O1) , 18 00 020 REMOVING AND INSTALLING COMPLETE EXHAUST SYSTEM (N52T) or 18 00 020 REMOVING AND INSTALLING COMPLETE EXHAUST SYSTEM (N55) .**
- **Remove heat shield**
- **Remove the left luggage compartment wheel arch panel (51 47 151)**
- **Right luggage compartment wheel arch panel (51 47 161)**
- **Remove front left and right wheel arch cover (51 71 041)**

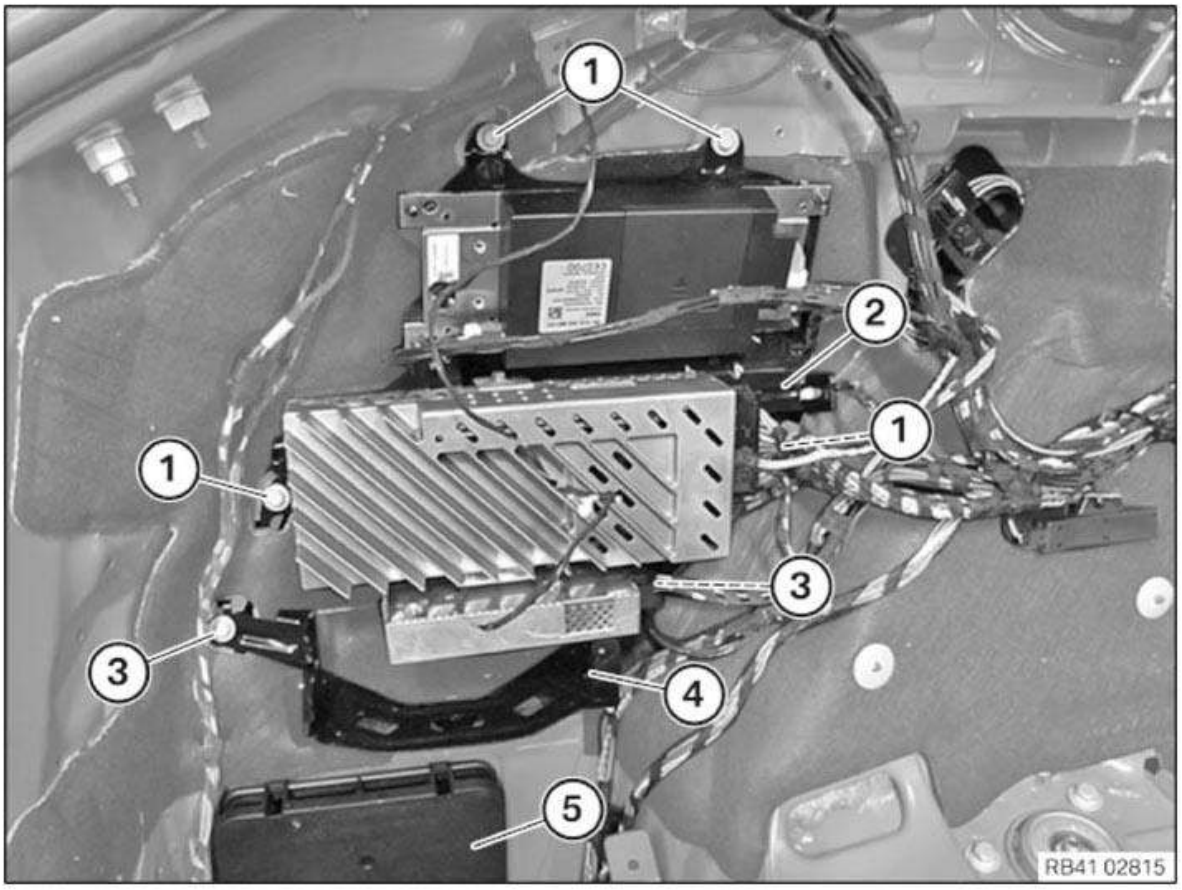


Fig. 162: Identifying Connectors From Control Units And Lay Holder
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1). Undo various connectors from control units and lay holder (2) to one side.

Release screws (3). Undo various connectors from control units and lay holder (4) to one side.

Release wiring harness at attachment points (1) and set aside.

Release wiring harness at attachment points (1) and lay to one side.

Lever out expanding rivet (2) and remove insulating mat (3).

Release latch mechanisms and remove rear ventilation (4).

Installation note:

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The rear ventilation (4) must not be damaged. (watertightness).

All latch mechanisms must engage audibly.

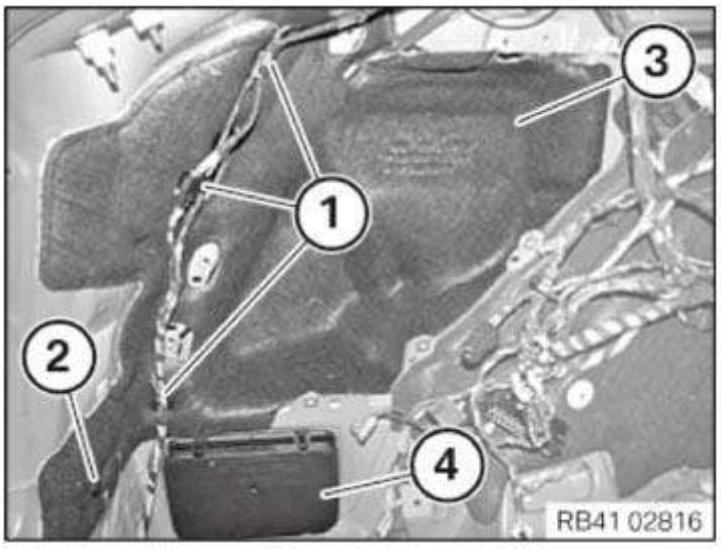


Fig. 163: Identifying Expanding Rivet, Insulating Mat And Rear Ventilation
Courtesy of BMW OF NORTH AMERICA, INC.

Release grommet (1) for water drain hose of the slide/tilt sunroof and lay to one side.

Remove foam insert (2).

Installation note:

Please ensure correct installation of the grommet. (watertightness).

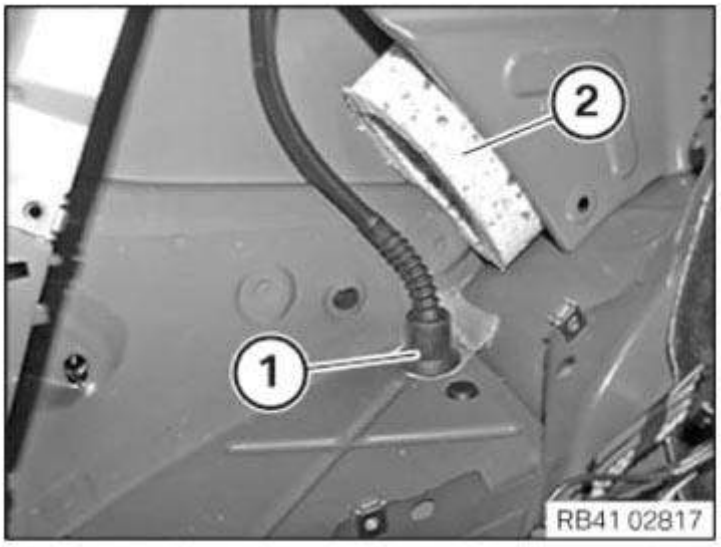


Fig. 164: Identifying Grommet For Water Drain Hose Of Slide/Tilt Sunroof And Foam Insert
Courtesy of BMW OF NORTH AMERICA, INC.

Release grommet (1) for water drain hose of the slide/tilt sunroof and lay to one side.

Installation note:

Please ensure correct installation of the grommet. (watertightness).

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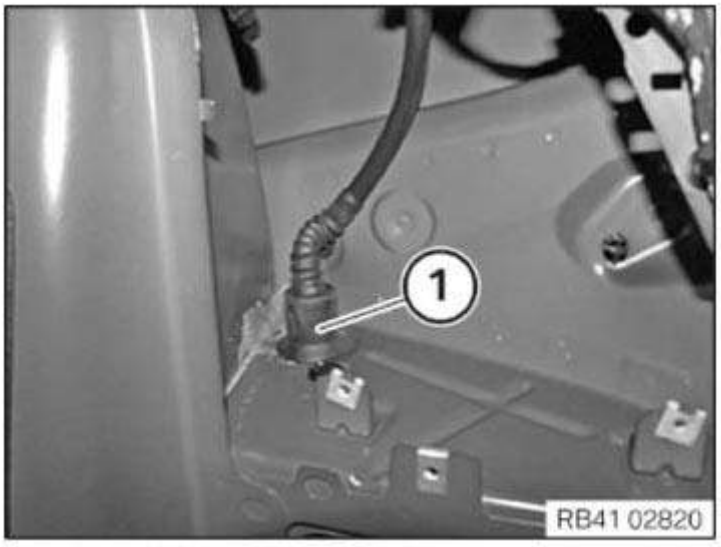


Fig. 165: Identifying Grommet For Water Drain Hose Of Slide/Tilt Sunroof
Courtesy of BMW OF NORTH AMERICA, INC.

Disconnect plug connection (1) for the EMF.

Detach cable (2) from cable clip.

Release cable (2) from vehicle underbody.

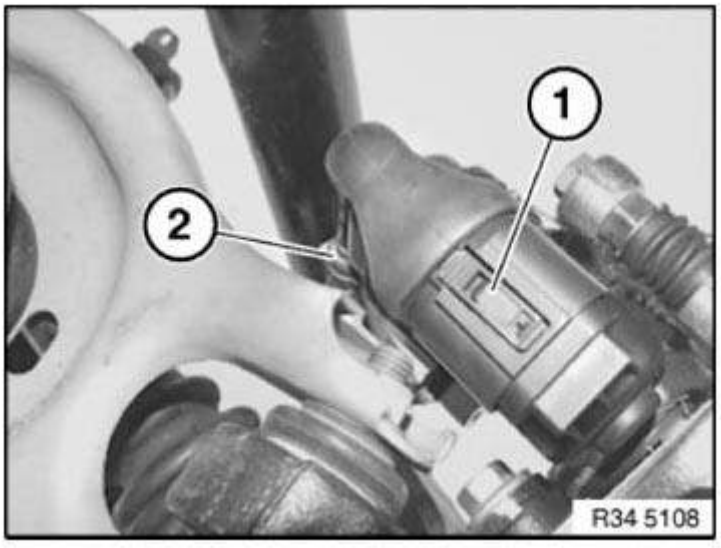


Fig. 166: Identifying EMF Plug Connection, Cable From Cable Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Undo grommet (1) and remove wiring harness (2) for the electromagnetic parking brake for the EMF towards the top.

Undo cable connector (3) for the positive battery cable and lay line (4) to one side.

Release grommet and feed out positive wire (5) to the side.

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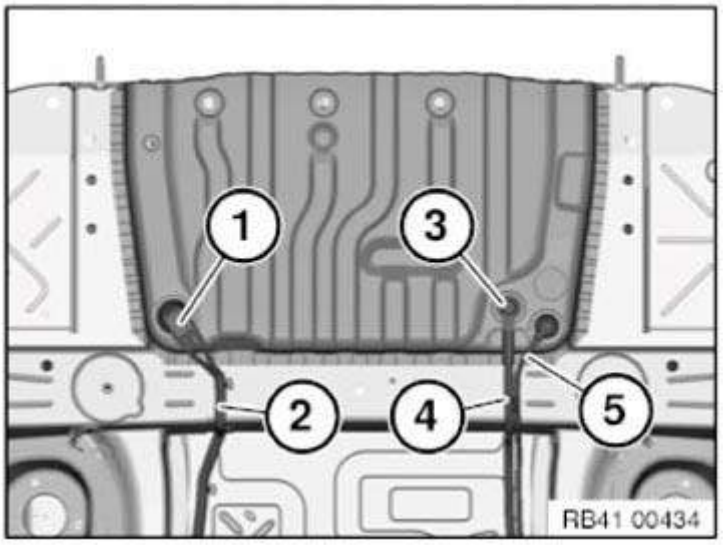


Fig. 167: Identifying Cable Connector For Positive Battery Cable And Lay Line
Courtesy of BMW OF NORTH AMERICA, INC.

41 12 557 STRIPPING OPERATIONS - REPLACING LUGGAGE COMPARTMENT FLOOR, MIDDLE (TAIL PANEL REMOVED)

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

- Remove positive battery cable (61 12 002)
- Remove exhaust system. See 18 00 020 REMOVING AND INSTALLING COMPLETE EXHAUST SYSTEM (N20) , 18 00 020 REMOVING AND INSTALLING COMPLETE EXHAUST SYSTEM (N47 D20 O1) , 18 00 020 REMOVING AND INSTALLING COMPLETE EXHAUST SYSTEM (N52T) or 18 00 020 REMOVING AND INSTALLING COMPLETE EXHAUST SYSTEM (N55) .
- Remove exhaust system heat shield

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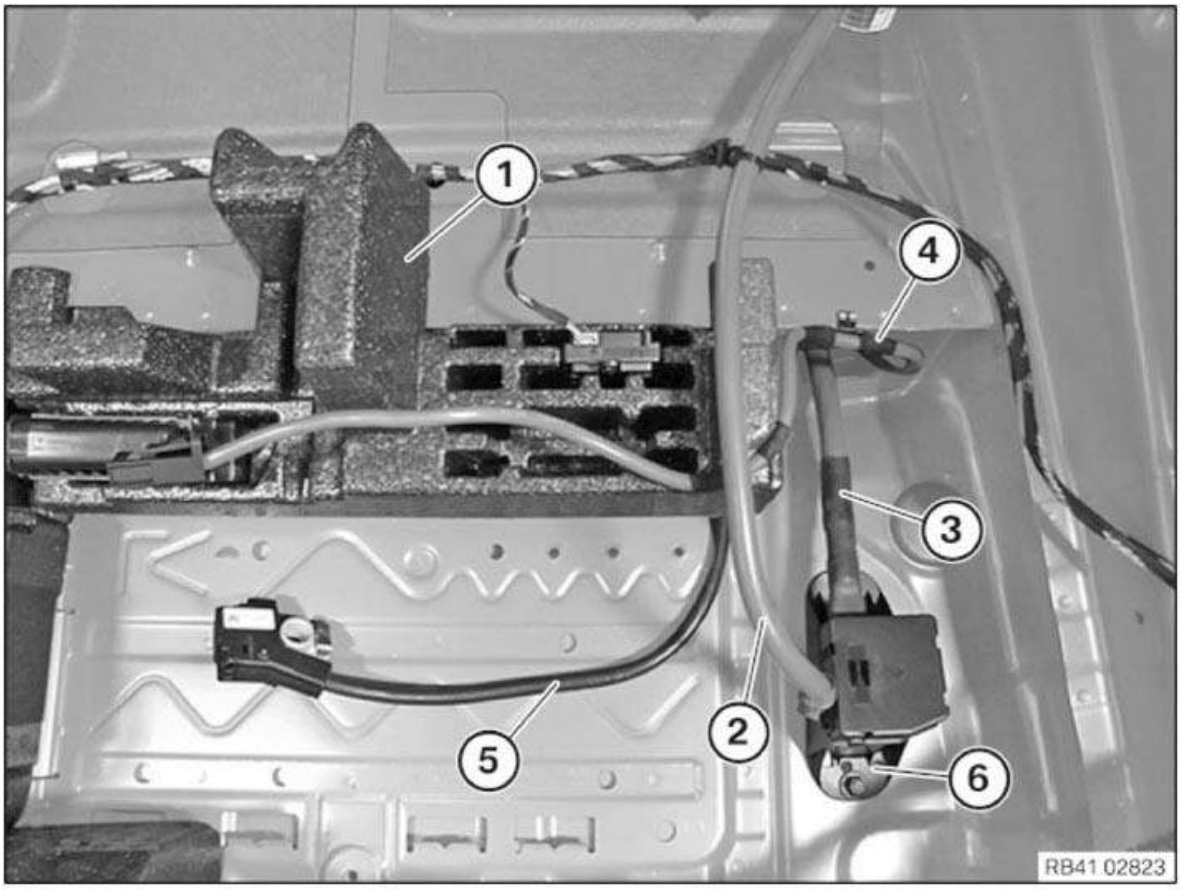


Fig. 168: Identifying Control Units From Holder, Positive Battery Cable And Lay
Courtesy of BMW OF NORTH AMERICA, INC.

Remove control units from holder (1) and lay in the front. Remove holder (1).

Remove **POSITIVE BATTERY CABLE** (2).

Undo positive battery cable (3) from operation support point. Tightening torque **61 21 4AZ** .

Feed positive battery cables (3) and (4) through opening in luggage compartment floor.

Release and remove battery earth lead (5) from body. Tightening torque **61 21 6AZ** .

Release nuts and remove operation support point (6).

Disconnect plug connection (1) for the EMF.

Detach cable (2) from cable clip.

Release cable (2) from vehicle underbody.

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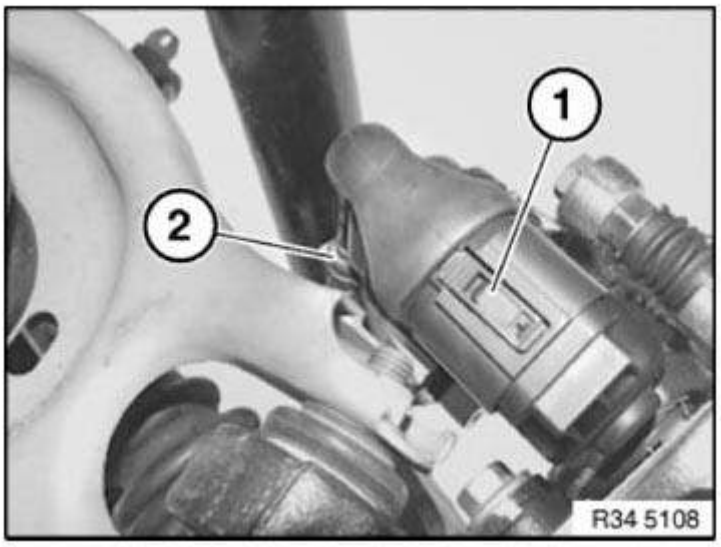


Fig. 169: Identifying EMF Plug Connection, Cable From Cable Clip
Courtesy of BMW OF NORTH AMERICA, INC.

Undo grommet (1) and remove wiring harness (2) for the electromagnetic parking brake for the EMF towards the top.

Undo connector (3) for the positive battery cable and put line (4) to one side.

Undo grommet and remove positive wire (5) towards the bottom and put to one side.

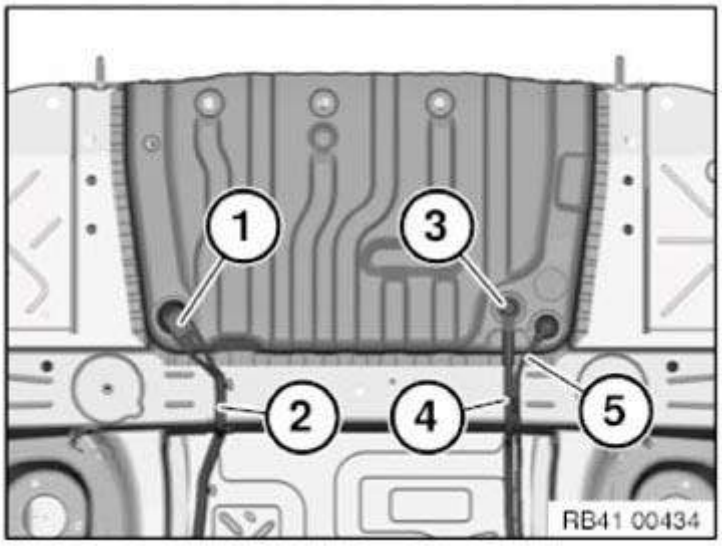


Fig. 170: Identifying Cable Connector For Positive Battery Cable And Lay Line
Courtesy of BMW OF NORTH AMERICA, INC.

WHEEL WELLS

41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41

Refer to **41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41**.

41 14 030 REPLACE FRONT RIGHT WHEEL ARCH

Note the special vehicle identification number procedure when replacing the wheel arch (order the new body part with the vehicle identification number, if necessary)!

STRIP DOWN vehicle.

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Read about the procedure in repair instructions for **WHEEL ARCH FRONT LEFT** and transfer schematically to the right side of the vehicle.

Deviating from the left side of the vehicle:

Due to the ground connection (1), the new part will be welded in area (2).

Analogue to the left side of the vehicle:

In areas (3) and (4) set 7 bore holes with a diameter of 4.2 mm for blind rivets N3.

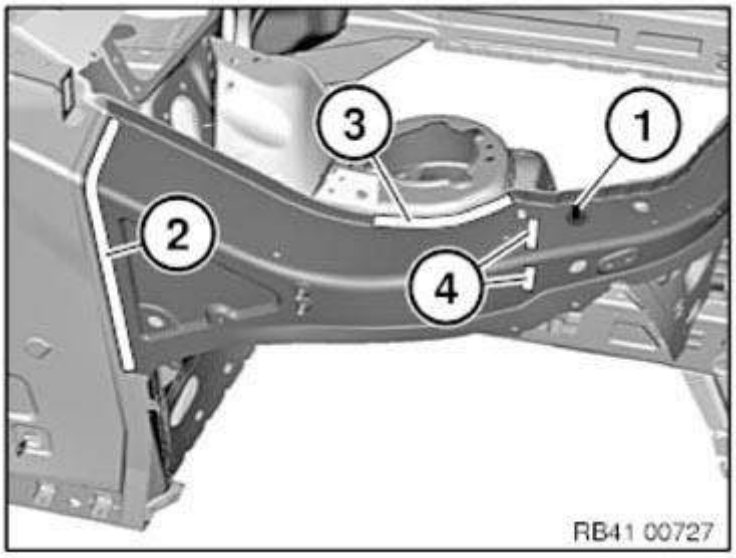


Fig. 171: Identifying Front Right Wheel Arch Ground Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Area	Number
3	5
4	2

41 11 072 REPLACING ENGINE SUPPORT WITH FRONT RIGHT WHEEL ARCH IN FRONT OF BULKHEAD

Refer to **41 11 072 REPLACING ENGINE SUPPORT WITH FRONT RIGHT WHEEL ARCH IN FRONT OF BULKHEAD**..

41 11 071 REPLACING ENGINE SUPPORT WITH LEFT WHEEL ARCH IN FRONT OF BULKHEAD

Refer to **41 11 071 REPLACING ENGINE SUPPORT WITH LEFT WHEEL ARCH IN FRONT OF BULKHEAD**.

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**.

Following new body parts are required (refer to **OVERVIEW OF CONSUMABLES**):

- (1) Engine support, rear

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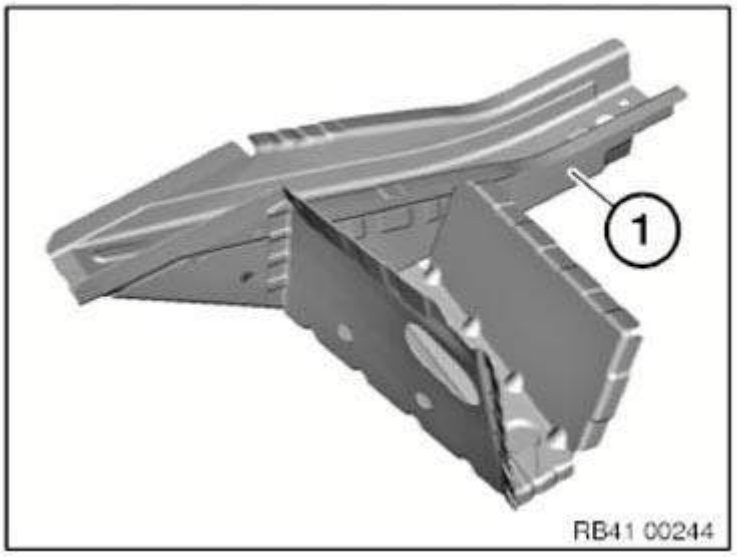


Fig. 172: Identifying Engine Support, Rear
Courtesy of BMW OF NORTH AMERICA, INC.

Removing the engine support side frame connection:

Open welded connections in areas (1).

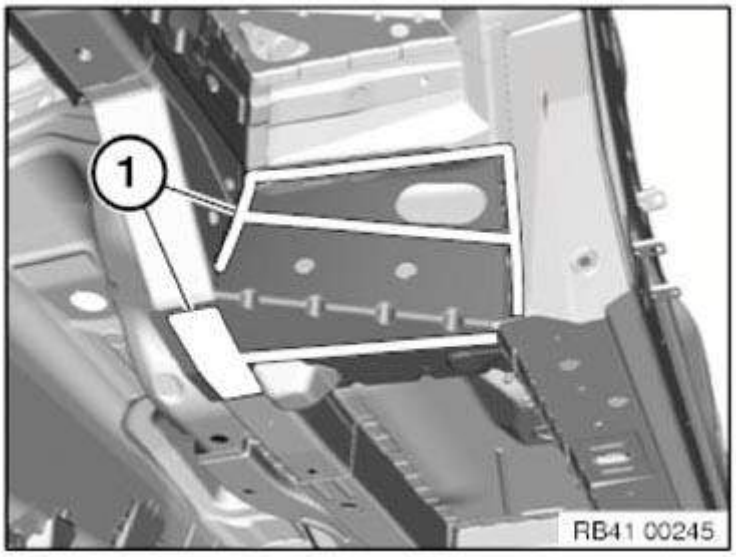


Fig. 173: Identifying Engine Support Side Frame Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

Remove engine support/side frame (2).

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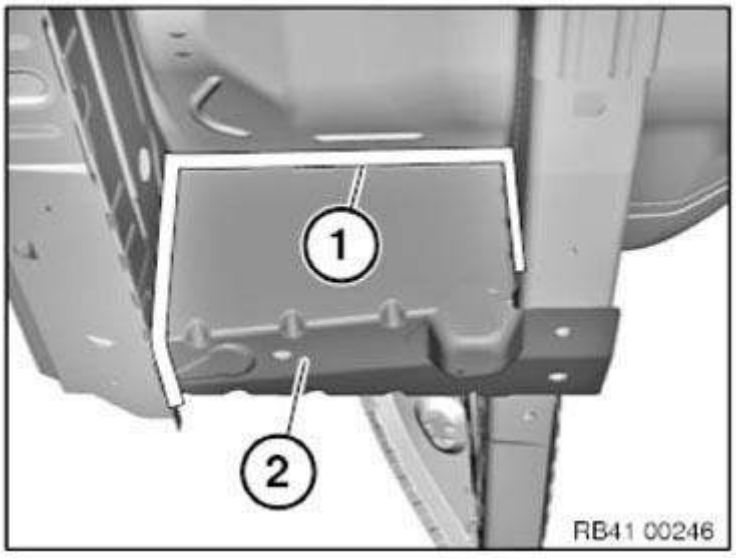


Fig. 174: Identifying Engine Support/Side Frame Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

Remove reinforcement (2).

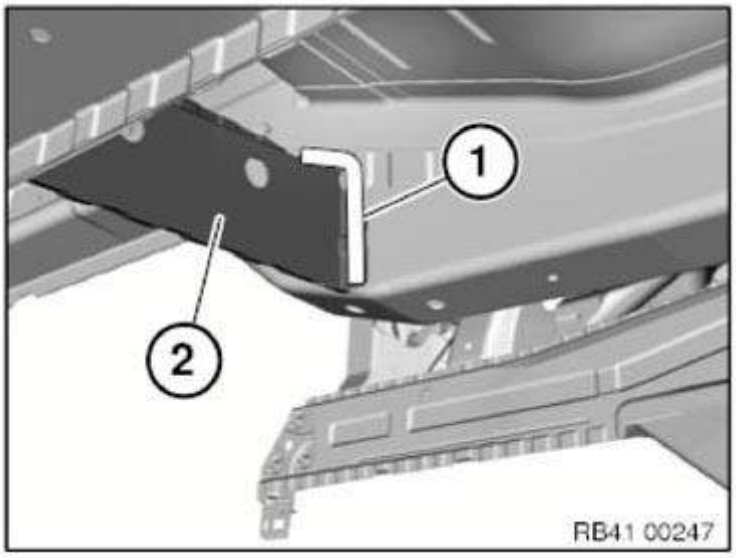


Fig. 175: Identifying Reinforcement Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Open welded connections in areas (1).

Remove engine support (2).

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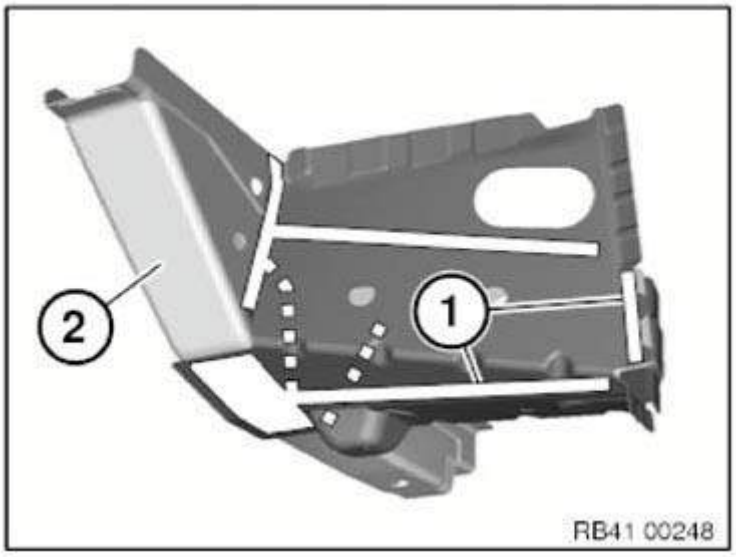


Fig. 176: Identifying Engine Support Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Installing the engine support side frame connection

Install and weld new parts.

NOTE: **First, the reinforcement of the engine support side frame connection must be installed and welded for reasons of accessibility as a separate component.**

NOTE: **The bulkhead cross member (1) is filled with low-flammable cavity foam.**

In case of smoke formation, stop the welding procedure and cool the welded area with compressed air if applicable.

(2) Bulkhead
(3) Connection engine support side frame
(4) Engine support

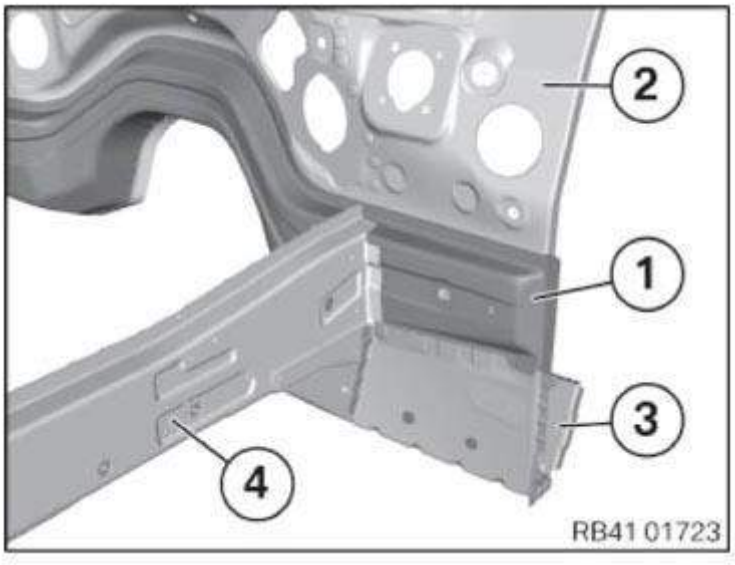


Fig. 177: Identifying Bulkhead Cross Member, Bulkhead, Connection Engine Support Side Frame And Engine Support
Courtesy of BMW OF NORTH AMERICA, INC.

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41 14 532 REPLACING ENGINE SUPPORT/FRONT RIGHT SIDE FRAME CONNECTION (FRONT RIGHT WHEEL ARCH REMOVED)

The work is identical to replacing the "**ENGINE SUPPORT FRONT LEFT SIDE FRAME CONNECTION**".

41 14 020 REPLACING FRONT LEFT WHEEL ARCH

Follow procedure for **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 (refer to **OVERVIEW OF CONSUMABLES**):

- (1) Wheel arch, front
- (2) Outer wheel arch carrier support
- (3) Carrier support end plate
- (4) A-pillar bulkhead
- (5) Shaped part, wheel arch carrier support (not shown)

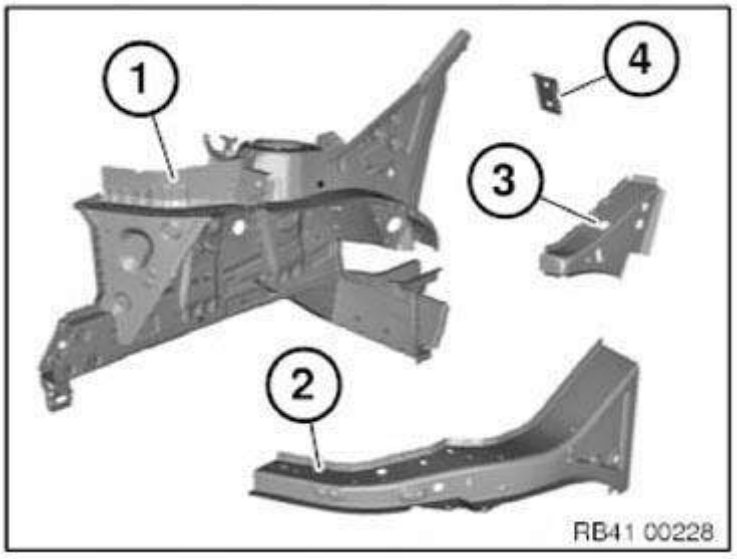


Fig. 178: Identifying Wheel Arch (Front), Outer Wheel Arch Carrier Support, Carrier Support End Plate And A-Pillar Bulkhead
Courtesy of BMW OF NORTH AMERICA, INC.

Following consumables are required:

Material	Quantity
Adhesive K1	1
Blind rivets N1	38
Blind rivets N3	31
Blind rivets N6	5
Punch rivets N5	58
EMC screws	4

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Sealant D1	Â
R1 cleaning agent	1

Removing the wheel arch

Mark severance cut (1) as pictured and cut.

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

Open welded connections in area (3).

Release metal section from cavity sealing (4) and remove.

NOTE: Separating cut (1) is only required for removal.

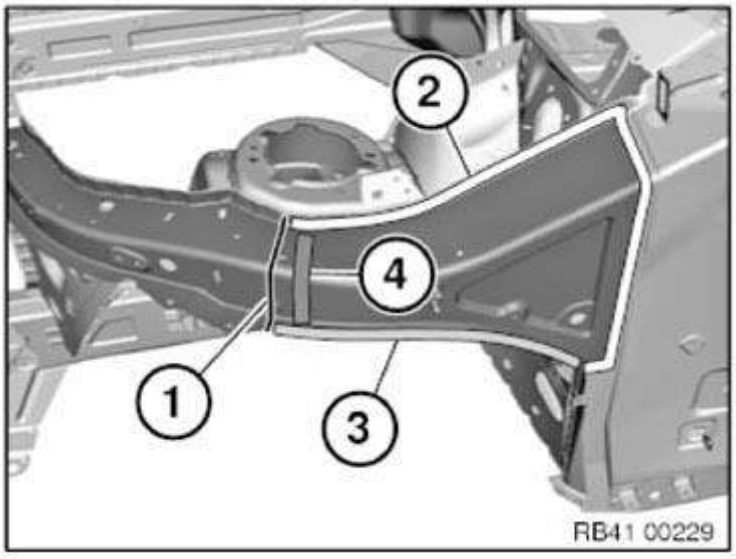
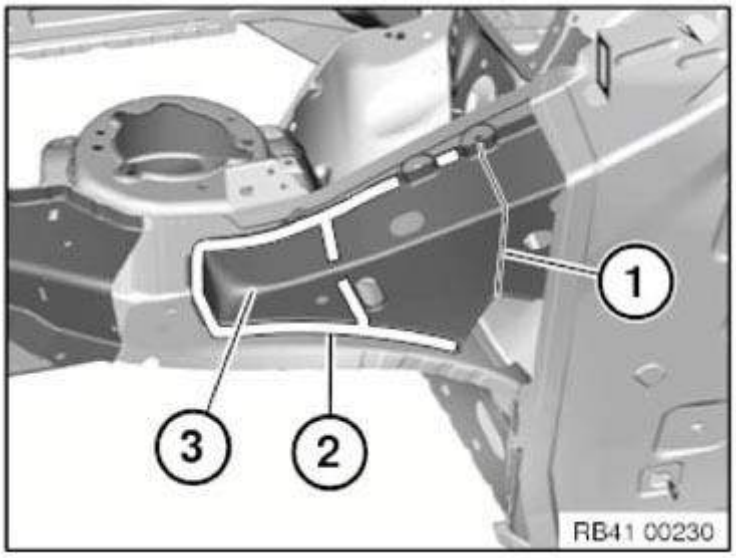


Fig. 179: Identifying Metal Section From Cavity Sealing And Spot-Welded Adhesive Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) as pictured and cut.

Open welded connections in areas (2).

Remove carrier support end plate metal section (3).



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Fig. 180: Identifying Carrier Support End Plate Metal Section
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) directly next to bulkhead component edge and cut.

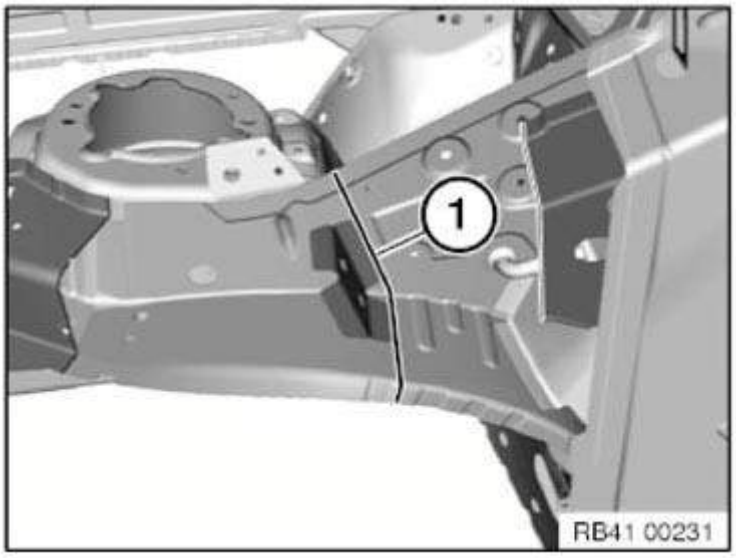


Fig. 181: Identifying Engine Support Severance Cutting Mark
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

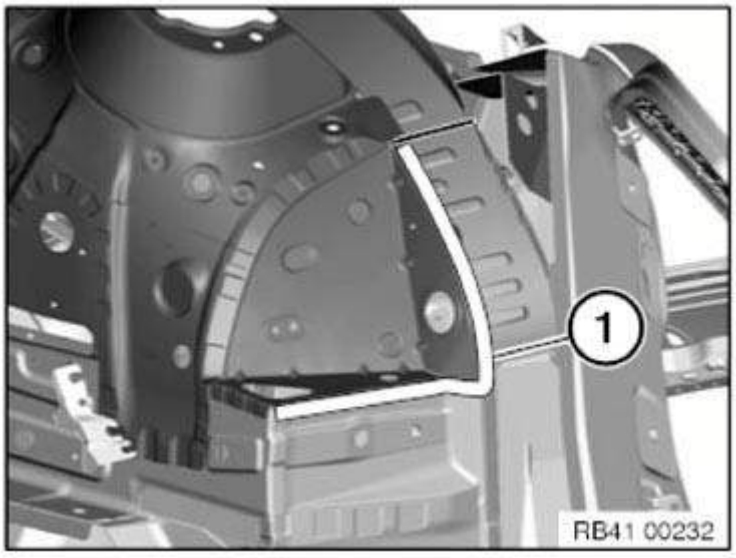


Fig. 182: Identifying Wheel Arch Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

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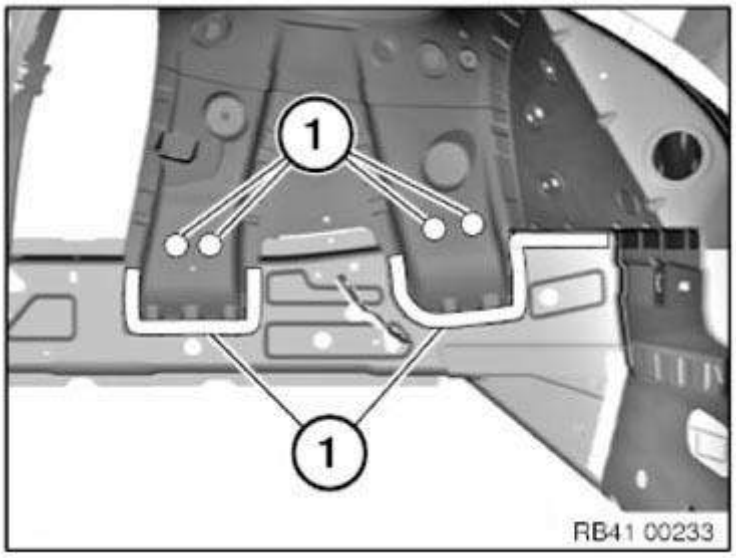


Fig. 183: Identifying Wheel Arch Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

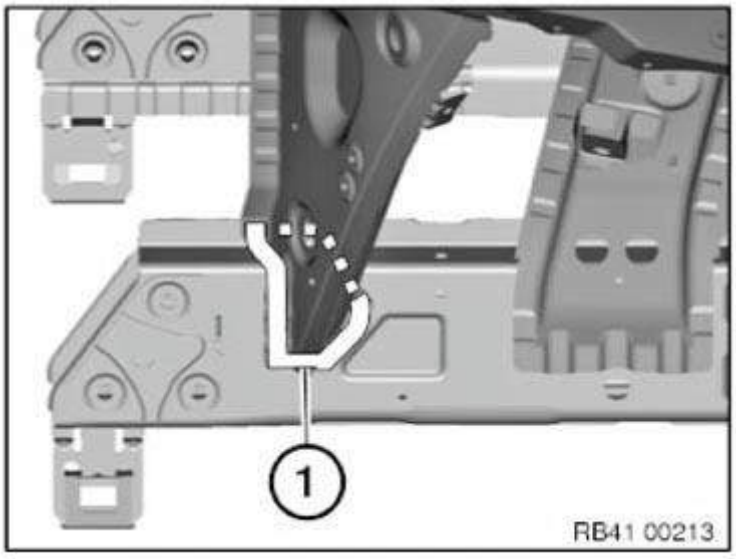


Fig. 184: Identifying Engine Support Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

Remove the wheel arch.

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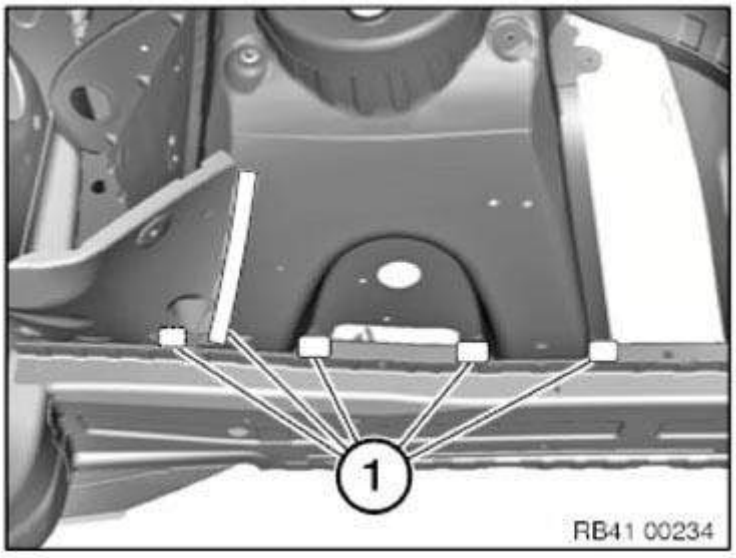


Fig. 185: Identifying Wheel Arch Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Release the applicable welded connections and separate the engine support from the wheel arch.

NOTE: Welded connections must be detached from side of engine support!

Mark new part in accordance with severance cut on vehicle (1) + 20 mm extra material and cut (2).

Open welded connections in area (3) and remove wheel arch part section.

NOTE: New part is installed and welded overlapping in area of severance cut.

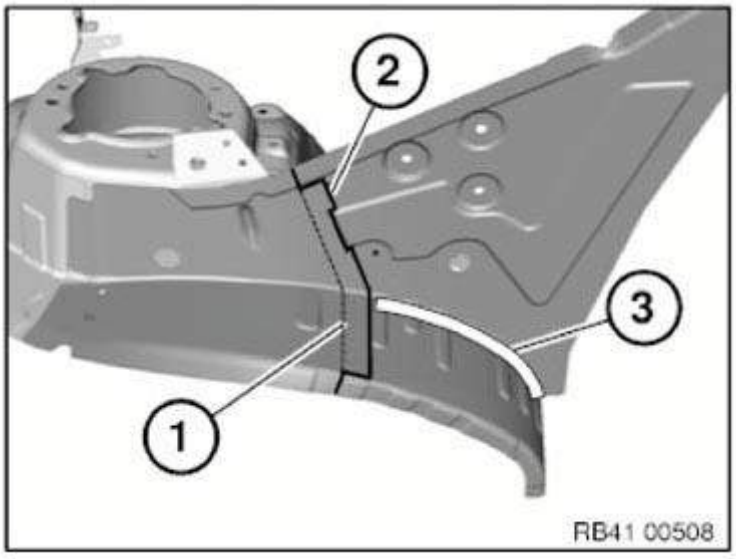


Fig. 186: Identifying Wheel Arch Part Section Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark new part in accordance with severance cut on vehicle (1) + 20 mm extra material and cut (2).

NOTE: New part is joined in area of overlap using adhesive riveting technology.

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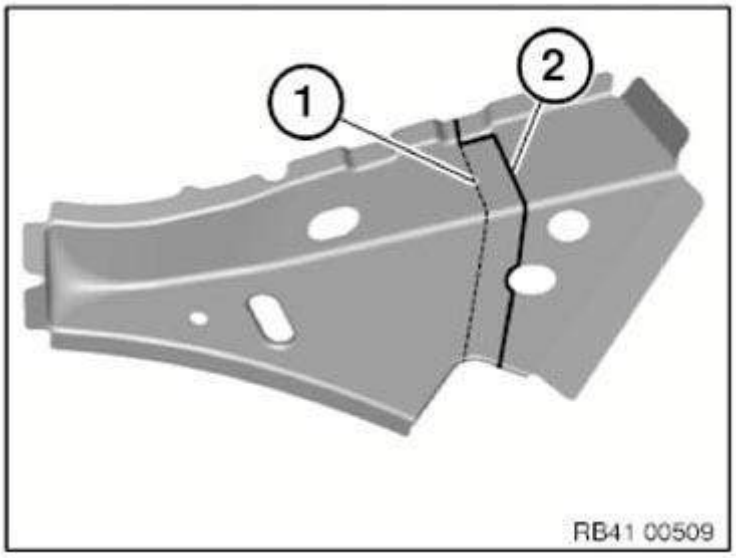


Fig. 187: Identifying Wheel Arch Part Section Severance Cutting Area
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust new part **wheel arch** in combination with **wheel arch carrier support** to fit with alignment bracket or universal mount and secure.

In areas (1) to (3), set dia. 6.8 mm bore holes for blind rivets N1.

Area	Number
1	6
2	10
3	4

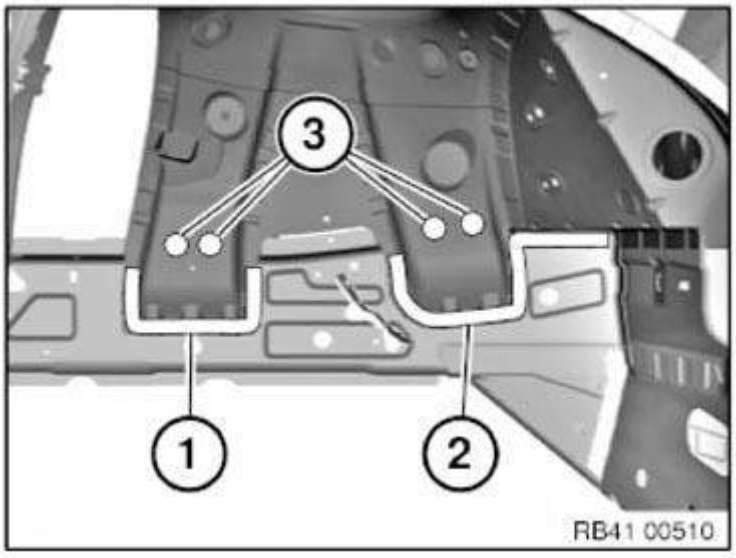


Fig. 188: Identifying Bore Holes For Blind Rivets Area N1
Courtesy of BMW OF NORTH AMERICA, INC.

In areas (1), create 4 dia. 6.8 mm bore holes for blind rivets N1.

In area (2) set 5 dia. 4.2 mm bore holes for blind rivets N3.

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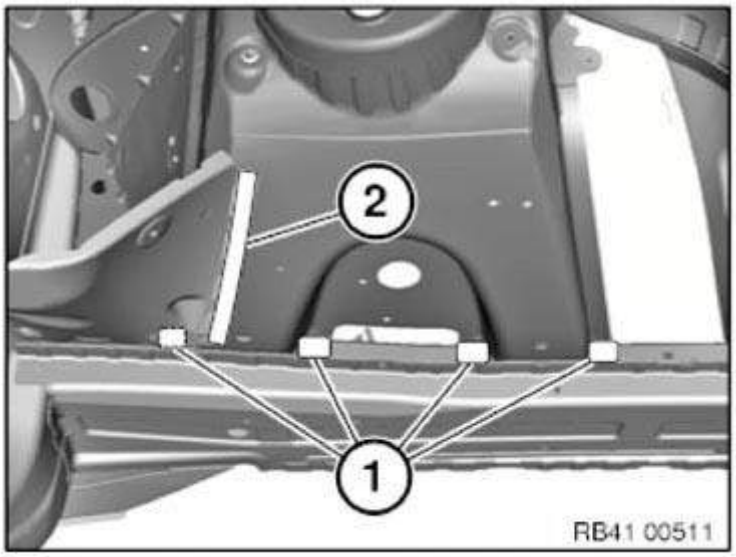


Fig. 189: Identifying Bore Holes For Blind Rivets Area N3
Courtesy of BMW OF NORTH AMERICA, INC.

In areas (1) to (3), set dia. 6.8 mm bore holes for blind rivets N1.

Area	Number
1	2
2	3
3	2

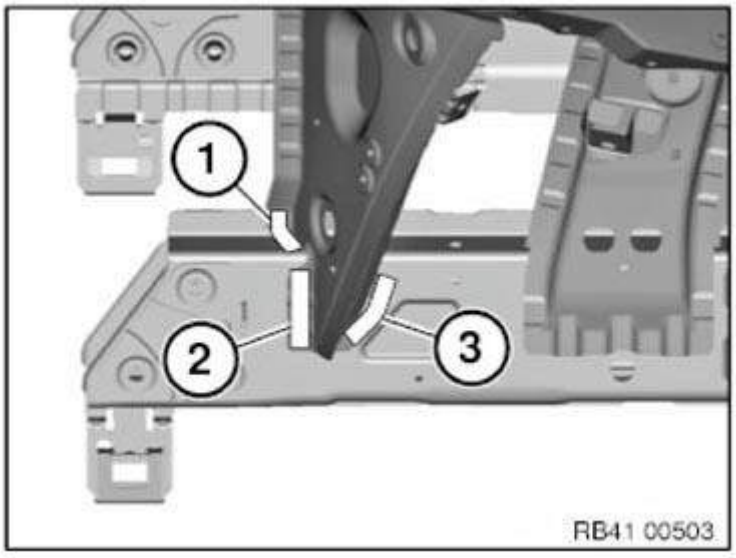


Fig. 190: Identifying Bore Holes For Blind Rivets (N1) Area
Courtesy of BMW OF NORTH AMERICA, INC.

In areas (1) and (2), set dia. 6.8 mm bore holes for blind rivets N1.

Area	Number
1	1
2	1

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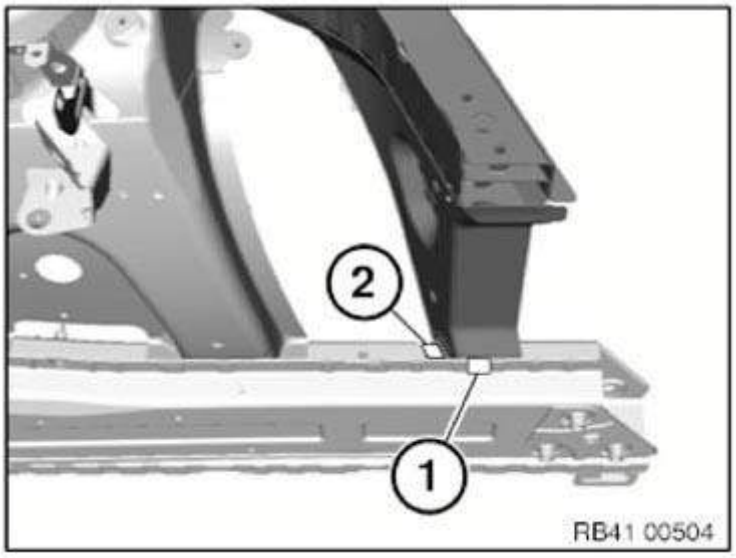


Fig. 191: Identifying Bore Hole Areas For Blind Rivets N1
Courtesy of BMW OF NORTH AMERICA, INC.

In area (1) set 5 dia. 4.2 mm bore holes for blind rivets N3.

In area (2) set 5 dia. 6.8 mm bore holes for blind rivets N1.

Remove carrier support new part.

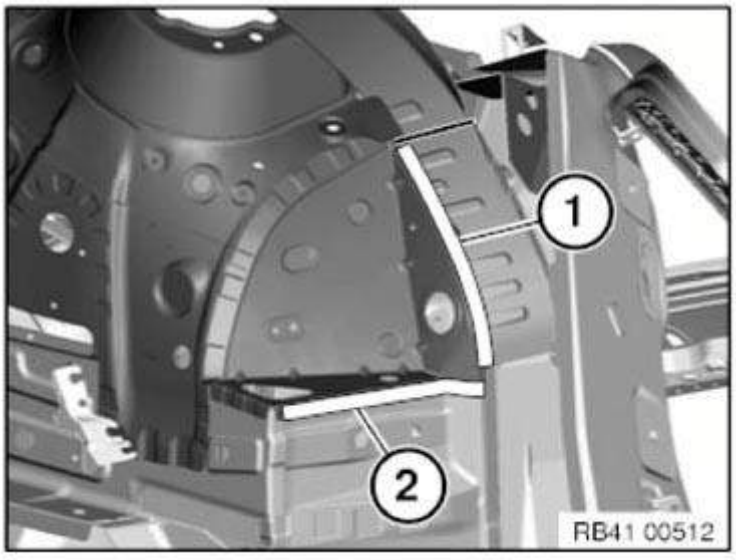


Fig. 192: Identifying Carrier Support Bore Holes For Blind Rivets Area N1
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust A-pillar bulkhead new part (1) and secure.

Prepare wheel arch in area of overlap (3) for joining by welding.

NOTE: **Bulkhead is welded for installation in area (2).**

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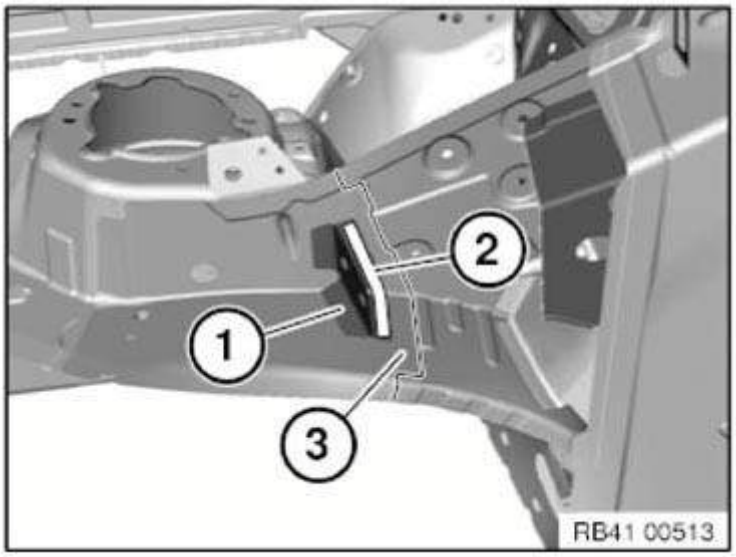


Fig. 193: Identifying A-Pillar Bulkhead Wheel Arch Area
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust carrier support end plate new part (1) and secure.

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

Area	Number
1	5
2	2
3	4

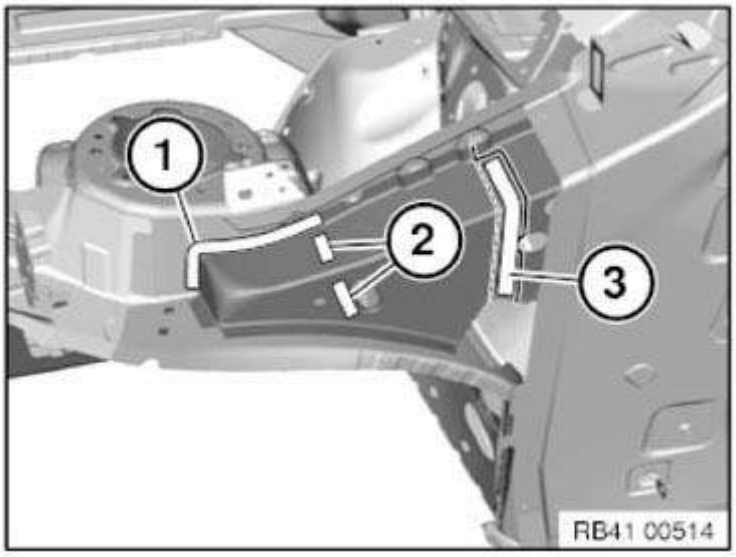


Fig. 194: Identifying Carrier Support End Plate Part With Bore Holes Area
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust wheel arch carrier support new part to fit with alignment bracket or universal mount and secure.

In areas (1) and (3), set dia. 4.2 mm bore holes for blind rivets **N3** .

In area (2) set bore holes dia. 4.2 mm for blind rivets **N6** .

Area	Blind rivet N3	Blind rivet N6
1	2	Â

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2	Â	5
3	8	Â

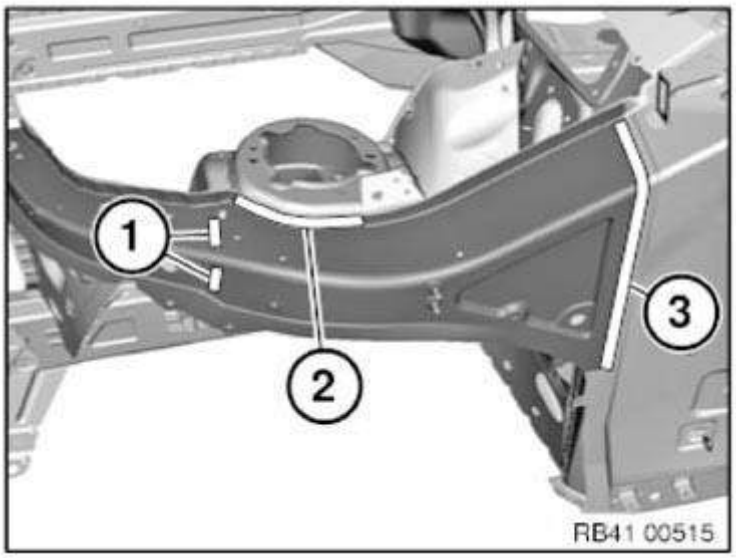


Fig. 195: Identifying Bore Holes Blind Rivet Area
Courtesy of BMW OF NORTH AMERICA, INC.

Remove new parts and deburr bore holes.

IMPORTANT: Structure bonding!
OBSERVE preparation of bonding surfaces.

Installation of wheel arch with bulkhead

Clean bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Adjust wheel arch to fit with alignment bracket or universal mount and secure.

NOTE: Use wheel arch carrier support to adjust wheel arch.

But do not yet rivet wheel arch carrier support!

Rivet wheel arch with blind rivets.

Remove wheel arch carrier support.

Adjust bulkhead new part A-pillar (1) and weld.

Weld wheel arch in area (2).

Set additional 15-mm long metal active gas weld seams at a distance of 20 mm to component edge (3).

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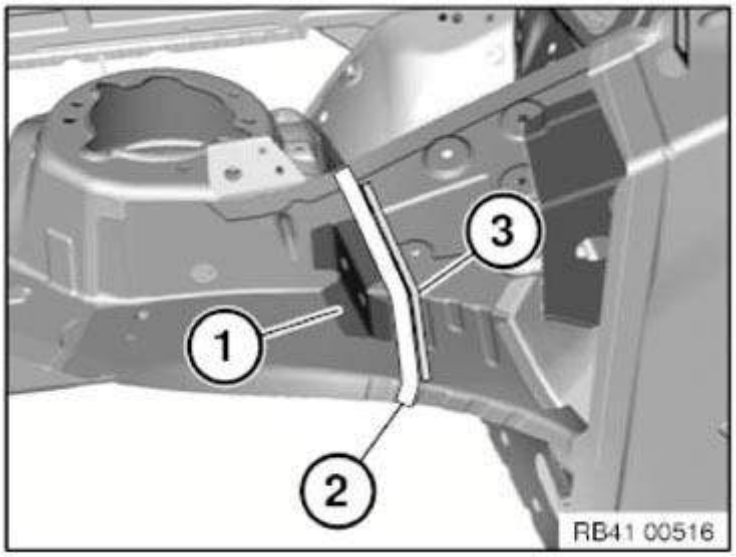


Fig. 196: Identifying Wheel Arch Weld Area
Courtesy of BMW OF NORTH AMERICA, INC.

Installation of end plate carrier support

Clean bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Adjust end plate carrier support (1) and rivet with blind rivets.

Use N5 punch rivets in areas (2) and (3).

Area	Number
2	9
3	6

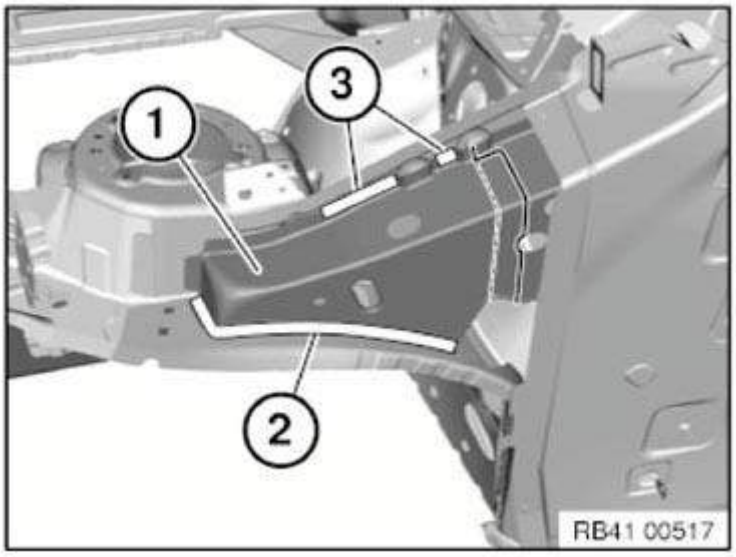


Fig. 197: Identifying End Plate Carrier Support, Rivet With Blind Rivets Area
Courtesy of BMW OF NORTH AMERICA, INC.

Installation of wheel arch carrier support

Clean bonding surfaces with cleaning agent R1.

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Apply adhesive to bonding surfaces.

Apply sealant to new **CAVITY SEALING** of wheel arch carrier support.

Adjust wheel arch carrier support new part to fit with alignment bracket or universal mount and rivet with blind rivets.

Use N5 punch rivets in areas (1) to (3).

Area	Number
1	12
2	24
3	7

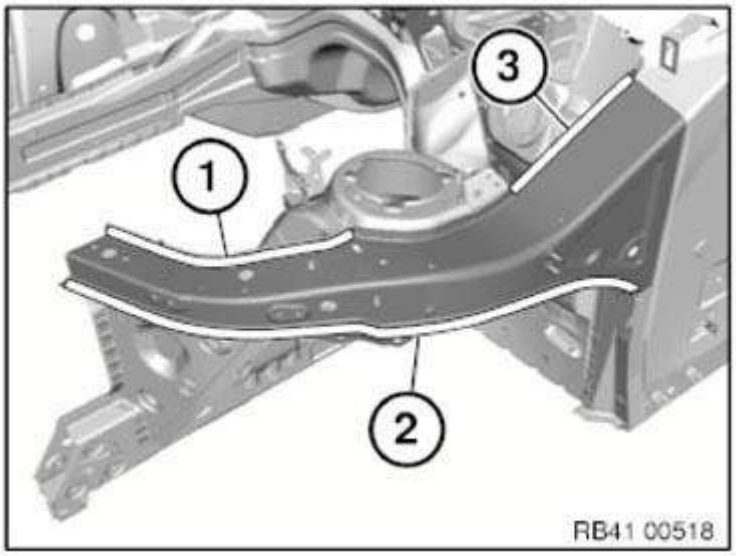


Fig. 198: Identifying Wheel Arch Carrier Support Punch Rivets Areas
Courtesy of BMW OF NORTH AMERICA, INC.

After adhesive has hardened, install one EMC screw in each case in areas (1).

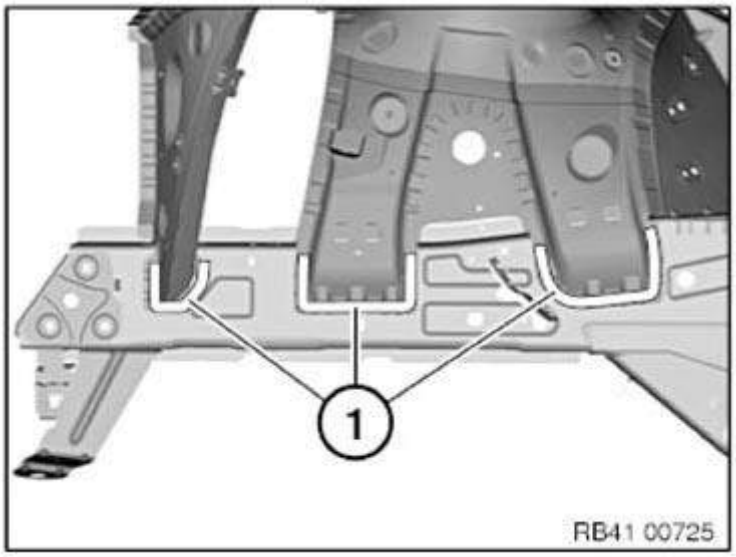


Fig. 199: Identifying EMC Screw Adhesive Applying Area
Courtesy of BMW OF NORTH AMERICA, INC.

In area (1) install one EMC screw.

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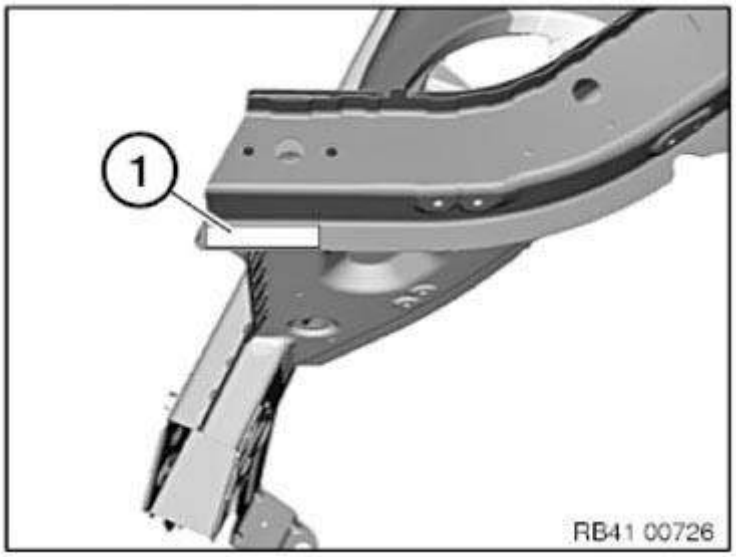


Fig. 200: Identifying EMC Screw Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 14 505 REPLACING REAR LEFT OUTER WHEEL ARCH SECTION (REAR SIDE PANEL REMOVED)

Read contents of **BODY, GENERAL**.

Observe procedure for **(REPAIR STAGE 2)**!

Following new body parts are required (refer to **OVERVIEW OF CONSUMABLES**):

- (1) Outer wheel arch section, rear
- (2) Shaped part, wheel arch, outer (not shown)

Following **CONSUMABLES** are required:

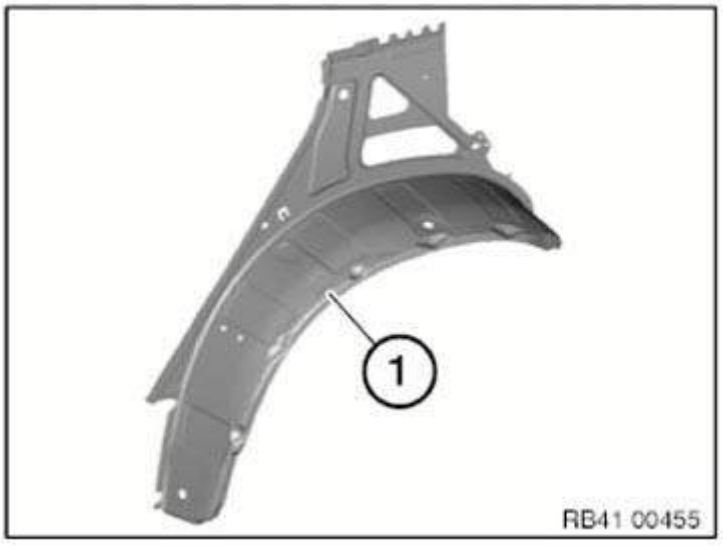


Fig. 201: Identifying Outer Wheel Arch Section, Rear
Courtesy of BMW OF NORTH AMERICA, INC.

Material	Quantity
Adhesive K5a	1
Blind rivets N3	12
Cleaning agent R1	1

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Cavity sealing wax remover	1
Sealant D1	Â

Removal of outer wheel arch section

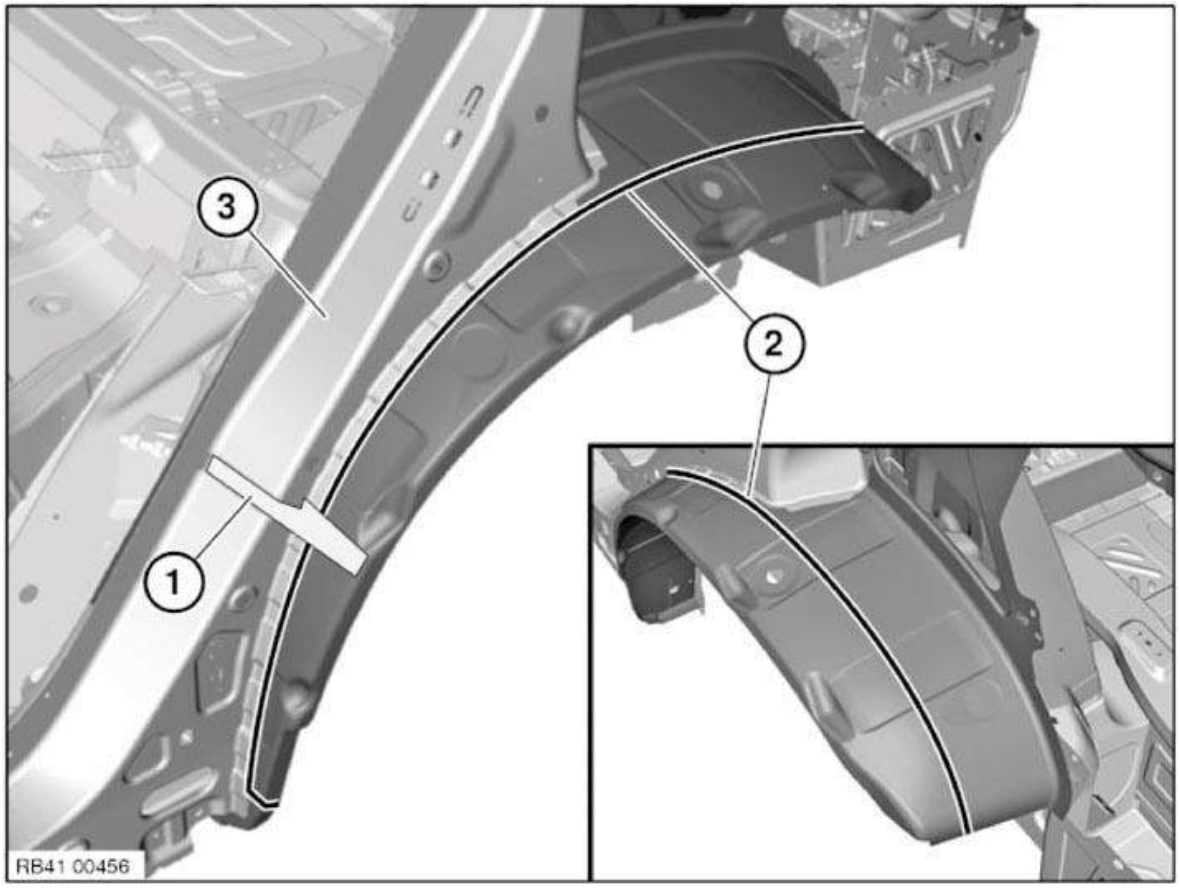


Fig. 202: Identifying Severance Cut At Component Edge Of C-Pillar Reinforcement
Courtesy of BMW OF NORTH AMERICA, INC.

Remove cavity sealing (1).

Mark severance cut (2) at component edge of C-pillar reinforcement (3) and cut.

Remove part of the outer wheel arch section.

Preparation of new part:

Mark new part in accordance with severance cut on vehicle + 20 mm extra material and cut.

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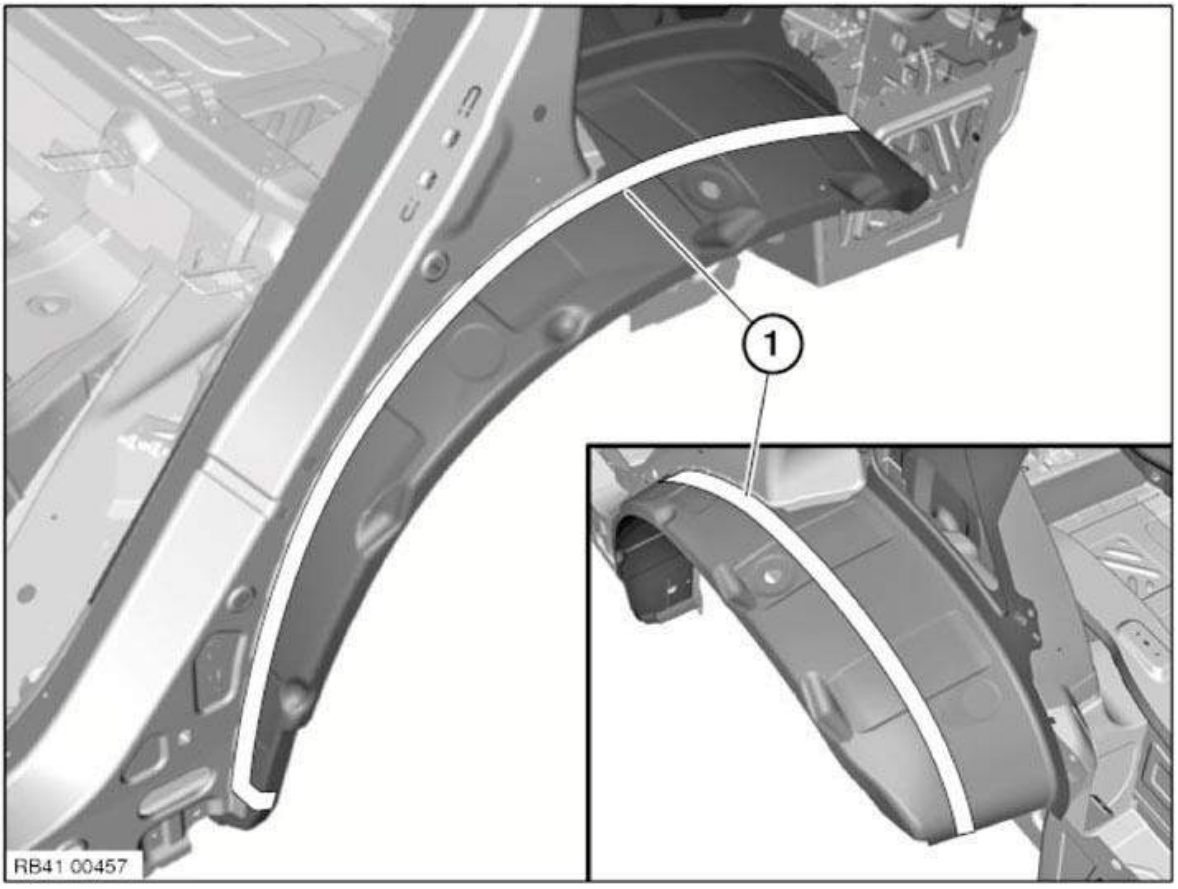


Fig. 203: Identifying Cavity Sealing, C-Pillar Reinforcement Component Edge Severance Cut Mark
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust new parts in combination with side wall to fit and secure.

In area of bonding surface (1), drill 12 Ã˜ 4.2 mm holes for blind rivets.

Installation of outer wheel arch section

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 ACOUSTIC BAFFLE**.

Install and rivet outer wheel arch section.

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**.

Spot-weld bonding is used on this vehicle. Observe specific **procedure** . See **41 00... SPOT-WELD BONDING STEEL COMPONENTS** or **41 00... OPENING BONDED CONNECTIONS**.

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

Following new body parts are required (refer to **OVERVIEW OF CONSUMABLES**):

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- (1) Wheel arch, rear, outer half
- (2) C-pillar reinforcement
- (3) Shaped part, wheel arch, outer (not shown)
- (4) Shaped part, wheel arch, inner (not shown)

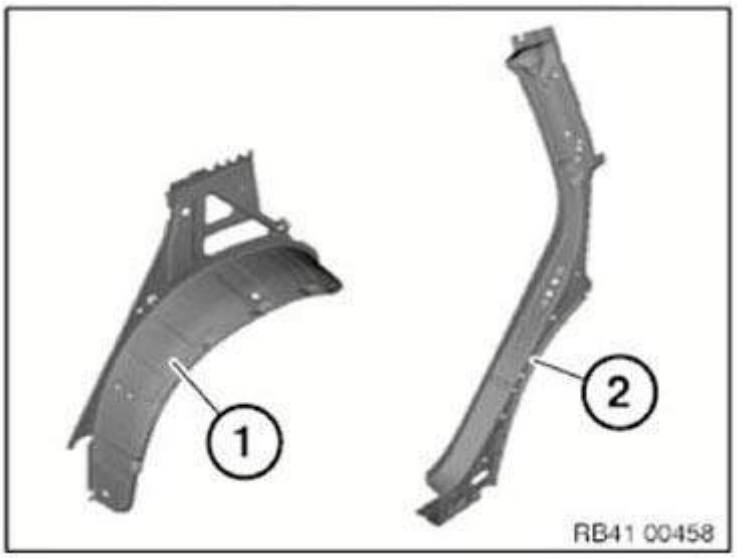


Fig. 204: Identifying Wheel Arch (Rear), Outer Half, C-Pillar Reinforcement
Courtesy of BMW OF NORTH AMERICA, INC.

Removal of the outer wheel arch section with reinforcement

Additionally removing the side wall in the side sill area:

Extend severance cut (1) to lower edge of entrance.

Open weld joints in area (2) and remove entrance section.

(3) = Severance cut progression for replacement of side wall.

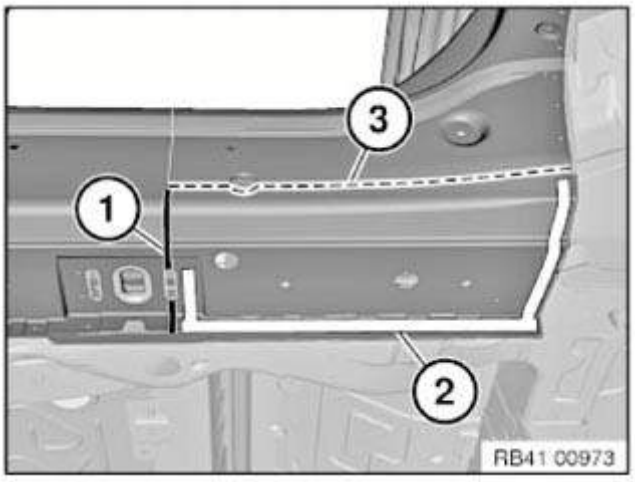


Fig. 205: Identifying Lower Edge Of Entrance Severance Cut, Weld Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

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

IMPORTANT: Cut outer panel only.

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Dimension a = approx. 70 mm.

Open welded connections in areas (2).

Remove cavity acoustic baffle (3).

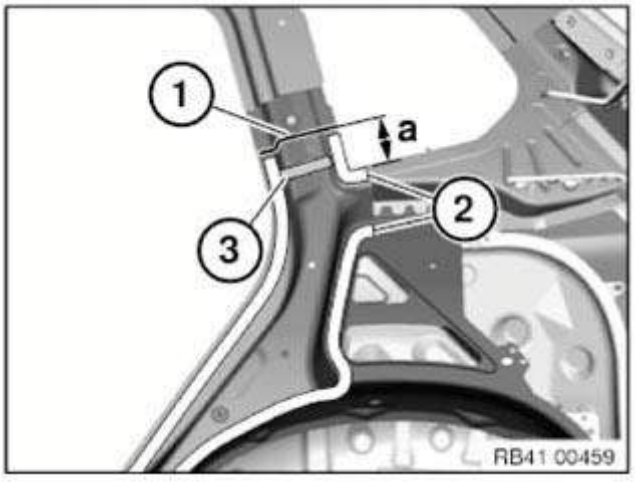


Fig. 206: Identifying Cavity Acoustic Baffle Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Remove cavity sealing (1).

Open welded connections in areas (2).

Remove reinforcement on C-pillar.

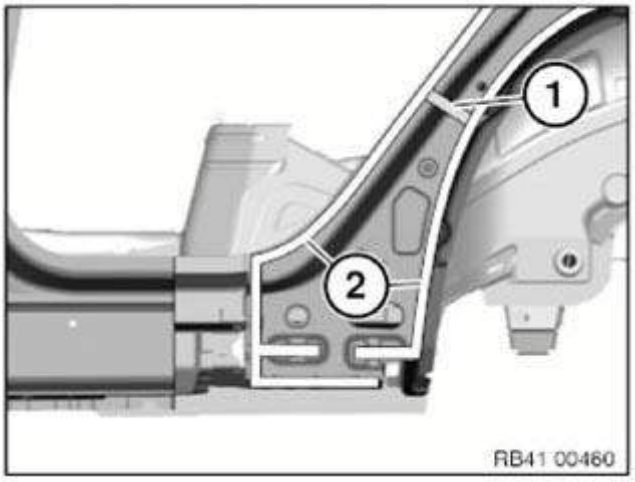


Fig. 207: Identifying Cavity Sealing, Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1). Remove outer section of wheel arch.

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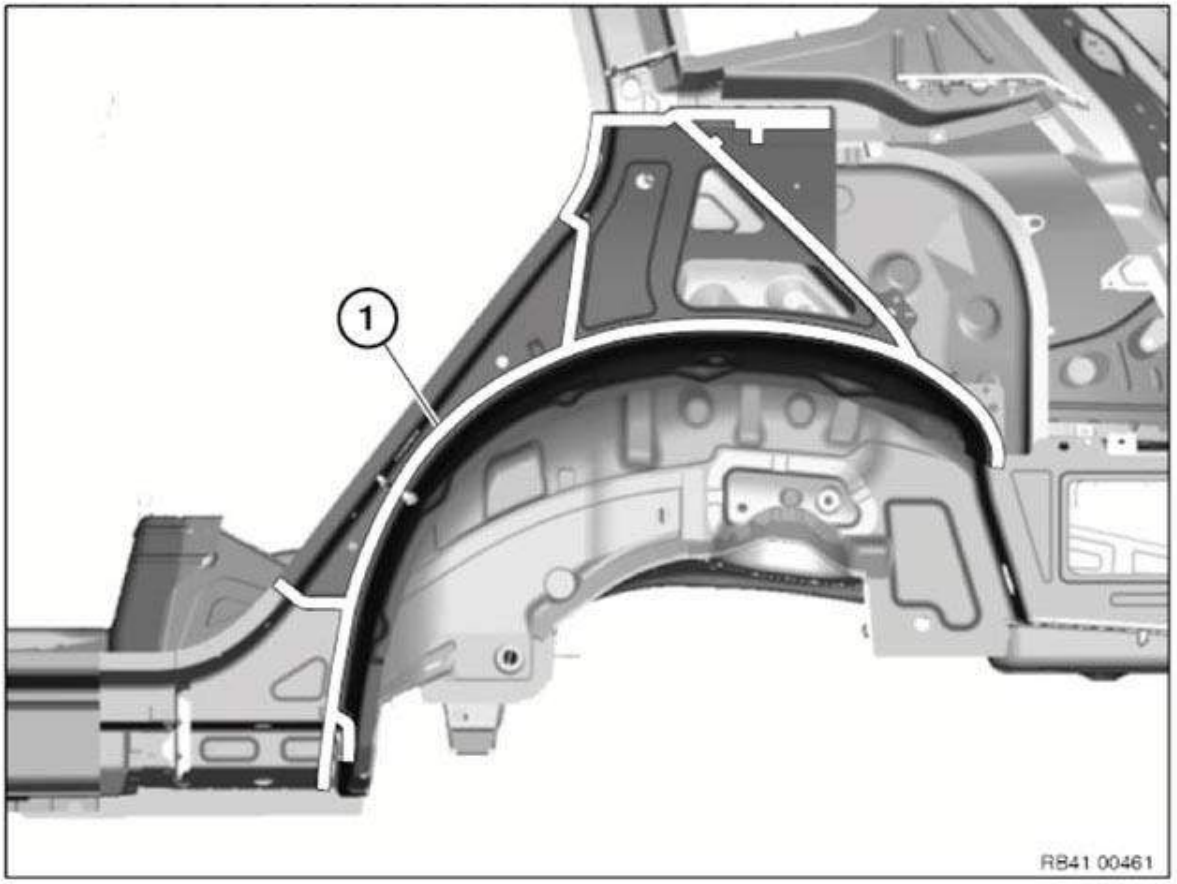


Fig. 208: Identifying Outer Section Of Wheel Arch Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Tear and separate the separating cut on the C-pillar reinforcement new part according to the vehicle.

Prepare **REINFORCEMENT PLATE** at severance cut.

Adjust new parts in conjunction with side panel to fit.

Installation of the outer wheel arch section with reinforcement

Apply sealant to new **CAVITY SEALINGS**.

Install new parts and reinforcement plate and weld in place.

Installation of additional side wall section in side sill area:

Weld additional section in area (1).

Join additional section similarly to side wall using bonding/riveting technology in area (2).

Install 3 punch rivets N4 in area (2).

IMPORTANT: Risk of damage to adjoining adhesive areas!
Avoid excessive application of heat.

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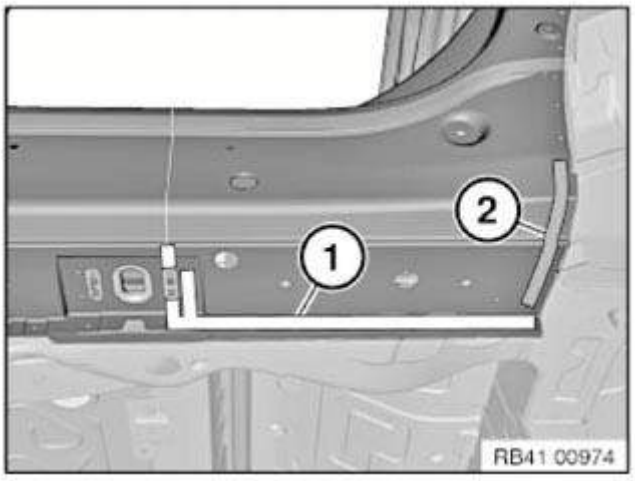


Fig. 209: Identifying Bonding/Riveting And Punch Rivets N4 Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 201 REPLACING THE CARRIER SUPPORT BEFORE THE WHEEL ARCH ON THE LEFT

Refer to 41 11 201 REPLACING THE CARRIER SUPPORT BEFORE THE WHEEL ARCH ON THE LEFT.

41 11 202 REPLACING THE CARRIER SUPPORT BEFORE THE WHEEL ARCH ON THE RIGHT

Refer to 41 11 202 REPLACING THE CARRIER SUPPORT BEFORE THE WHEEL ARCH ON THE RIGHT.

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

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

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 negative battery cable (61 20 900)**
- **Remove bumper trim (51 11 156)**
- **Remove front underbody protection assembly (51 49 490)**
- **Remove front panel (41 33 039)**
- **Remove front side panel left (41 35 081)**
- **Remove trailing link on left spring strut dome (51 71 371)**
- **Remove intake silencer housing (INTAKE SILENCER)**
- **Remove coolant expansion tank (17 11 100)**
- **Remove front wheel arch cover (front section) (51 71 038)**
- **Remove front wheel arch cover (rear section) (51 71 039)**
- **Remove engine compartment lid (41 61 000)**
- **Remove left engine compartment lid hinge (41 61 050)**
- **Remove left partition wall for units compartment (51 71)**
- **Remove brake booster (34 33 505)**
- **Remove trailing link (31 12 080)**
- **Remove left wishbone (31 12 000)**

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- **Remove spring strut with swivel bearing (31 31 000)**
- **Release left wiring harness**

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 negative battery cable (61 20 900)**
- **Remove bumper trim (51 11 156)**
- **Remove front underbody protection assembly (51 49 490)**
- **Remove front panel (41 33 039)**
- **Remove front right side wall (41 35 082)**
- **Remove DSC hydraulic unit (34 51 527)**
- **Remove front wheel arch cover (front section) (51 71 038)**
- **Remove front wheel arch cover (rear section) (51 71 039)**
- **Remove engine compartment lid (41 61 000)**
- **Remove right engine compartment lid hinge (41 61 050)**
- **Remove right partition wall for units compartment (51 71)**
- **Remove trailing link on right spring strut dome (51 71 371)**
- **Remove microfilter housing**
- **Release right wiring harness**
- **Remove trailing link (31 12 080)**
- **Remove right wishbone (31 12 000)**
- **Remove spring strut with swivel bearing (31 31 000)**

41 00... VEHICLE IDENTIFICATION NUMBER, GENERAL

Refer to **41 00... VEHICLE IDENTIFICATION NUMBER, GENERAL**.

SIDE FRAME AND DOOR PILLARS

41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41

Refer to **41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41**.

41 21 013 REPLACE A-PILLAR, OUTER LEFT

Procedure **OBSERVE** repair stage 3!

Read contents of **BODY, GENERAL**.

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 **OVERVIEW OF CONSUMABLES**):

- (1) A-pillar with entrance
- (2) Carrier support, outside

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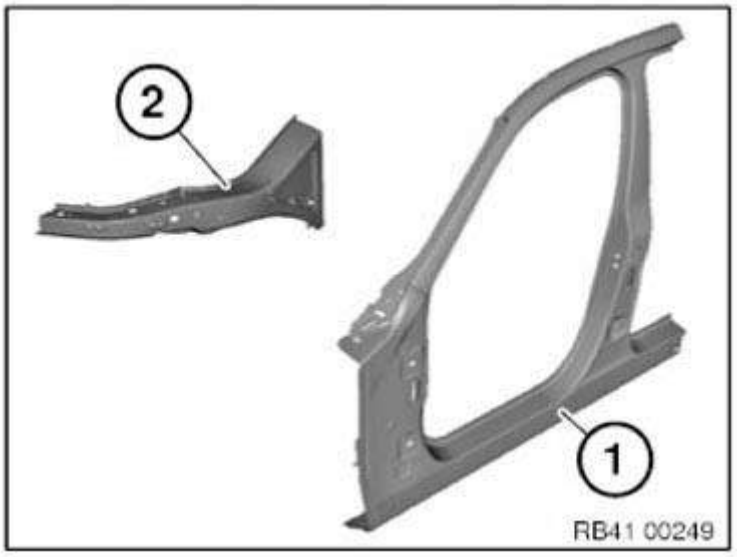


Fig. 210: Identifying A-Pillar With Entrance And Carrier Support (Outside)
Courtesy of BMW OF NORTH AMERICA, INC.

Removal:

Mark severance cut in accordance with dimension and cut.

IMPORTANT: Cut outer panel only.

Dimension a = approx. 100 mm from 6 mm diameter hole.

LOOSEN spot-welded adhesive joints in area (1).

Open welded connections in area (2).

Remove partial section of carrier support.

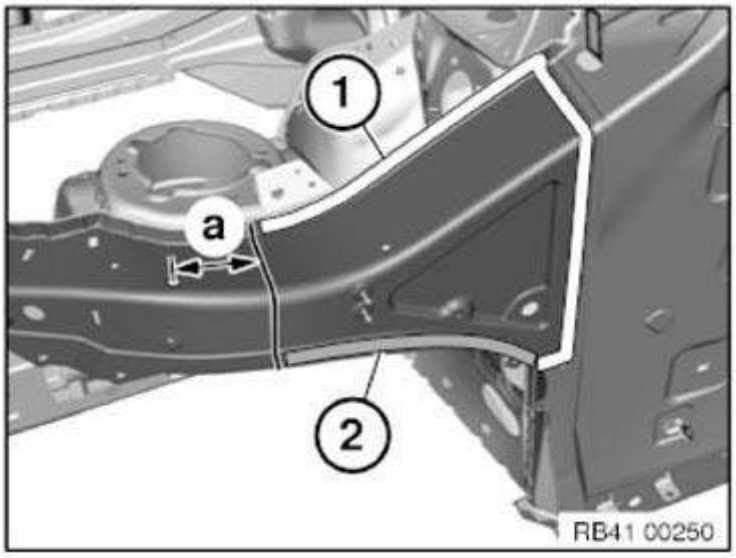


Fig. 211: Identifying Spot-Welded Adhesive Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cuts in accordance with specified dimensions and cut.

IMPORTANT: Cut outer panel only for following severance cuts.

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Dimension a = approx. 600 mm from 20 mm diameter hole.

Dimension b = approx. 450 mm from roof edge.

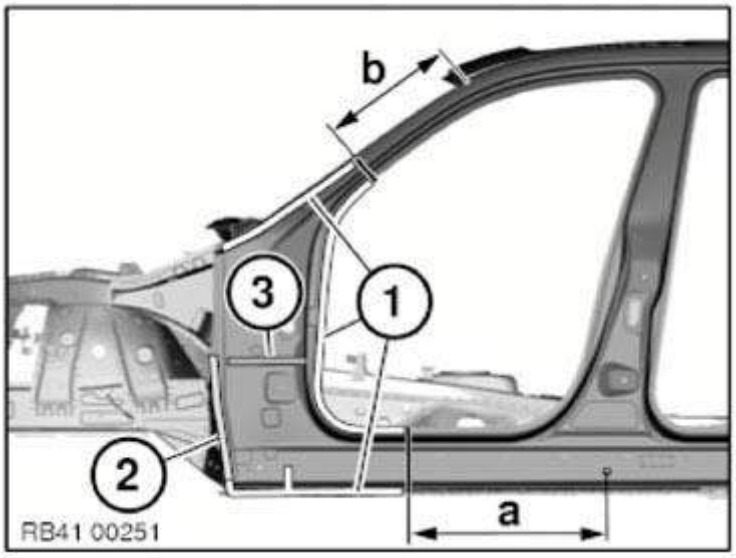


Fig. 212: Identifying Spot-Welded Adhesive Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

Open spot-welded adhesive joints in area (2)

Release and remove A-pillar from cavity sealing (3).

Preparation of new part:

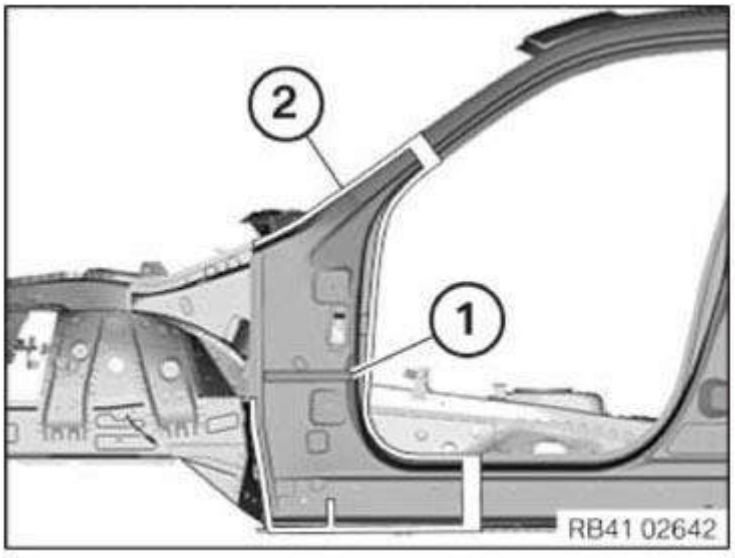
Mark severance cuts on new parts according to severance cuts on vehicle and sever.

Prepare **REINFORCEMENT PLATES** at severance cuts.

Installation:

Apply sealant to **cavity sealing** . See **41 00... INSTALLING CAVITY SEALING (EXPANDED)** or **41 00... INSTALLING CAVITY SEALING (NOT EXPANDED)** (1).

Install and weld new parts and reinforcement plates.



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Fig. 213: Identifying Reinforcement Plates Cavity Sealing
Courtesy of BMW OF NORTH AMERICA, INC.

Install new part and reinforcement plate and weld in designated area (1).

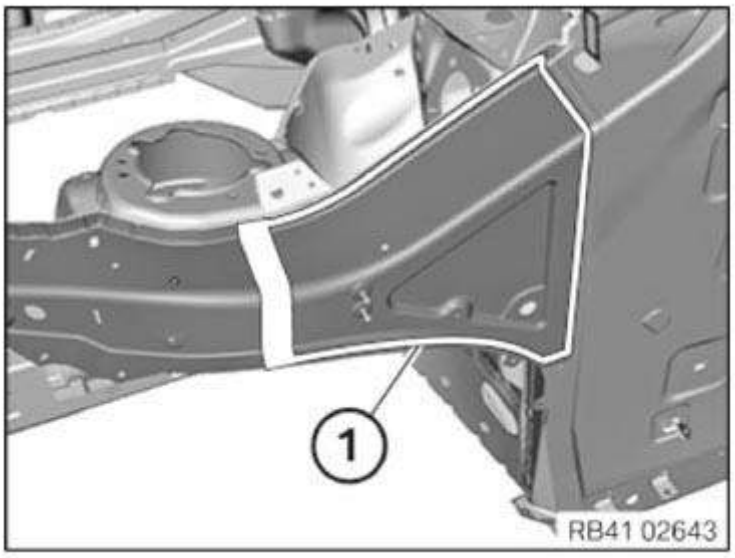


Fig. 214: Identifying Reinforcement Plate Weld Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 21 201 REPLACE B-PILLAR WITH REINFORCEMENT ON LEFT

Procedure **OBSERVE** repair stage 3!

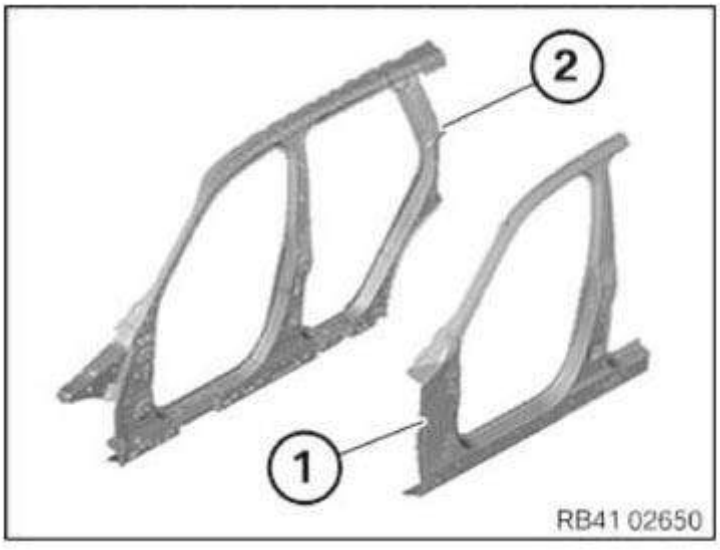
Read contents of **BODY, GENERAL**.

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

Place vehicle on straightening bench.

Following new body parts are required (see **OVERVIEW OF CONSUMABLES**):

- (1) Side frame, outer
- (2) Middle side frame
- Shaped part, B-pillar bottom outside
- Shaped part, B-pillar bottom inside



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Fig. 215: Identifying Side Frame And Outer Middle Side Frame
Courtesy of BMW OF NORTH AMERICA, INC.

Removal:

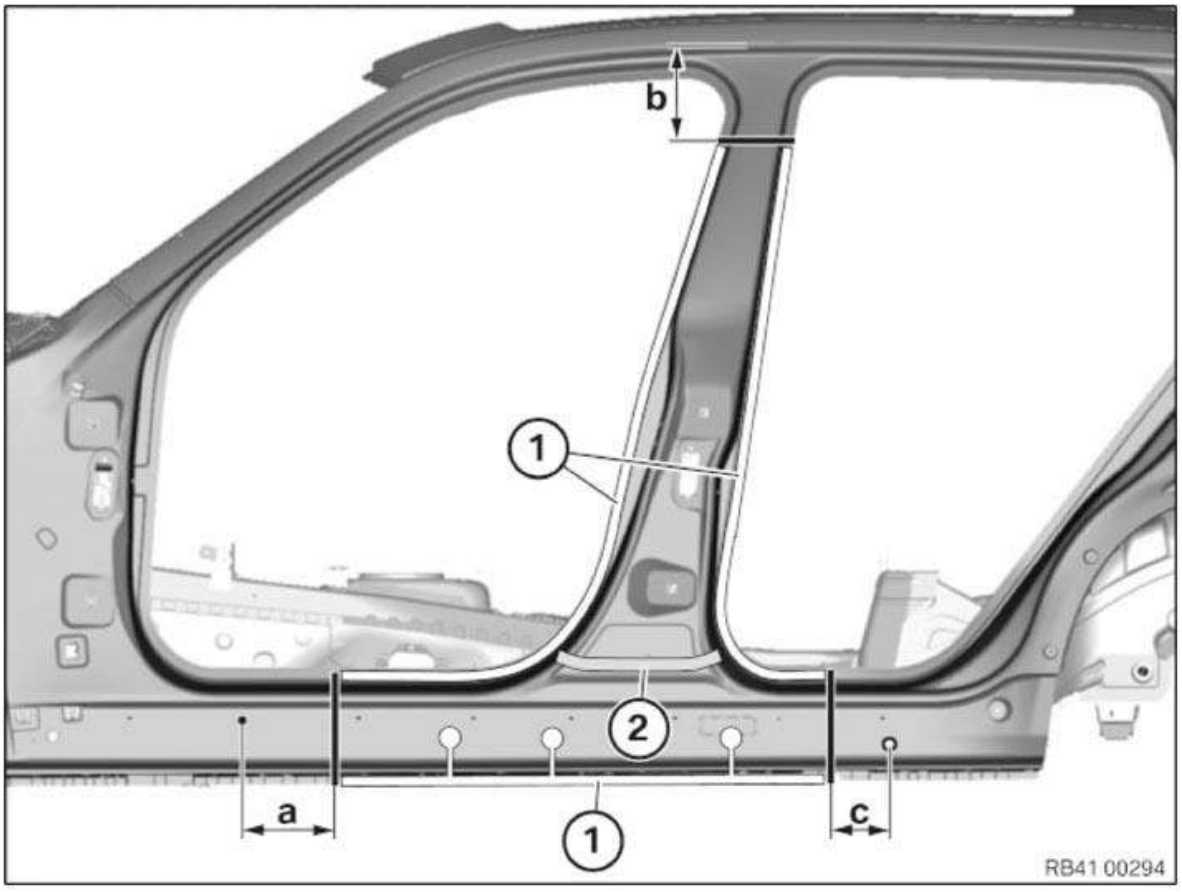


Fig. 216: Identifying A-Pillar From Cavity Sealing
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cuts in accordance with specified dimensions and cut.

IMPORTANT: Cut outer panel only for following severance cuts.

Dimension a = approx. 180 mm after center point of Ã˜ 8 mm hole.

Dimension b = approx. 175 mm from edge of roof frame.

Dimension c = approx. 105 mm from Ã˜ 20 mm hole.

Open welded connections in areas (1).

Release A-pillar from cavity sealing (2) and remove.

View, B-pillar passenger compartment.

Open welded connections in area (1).

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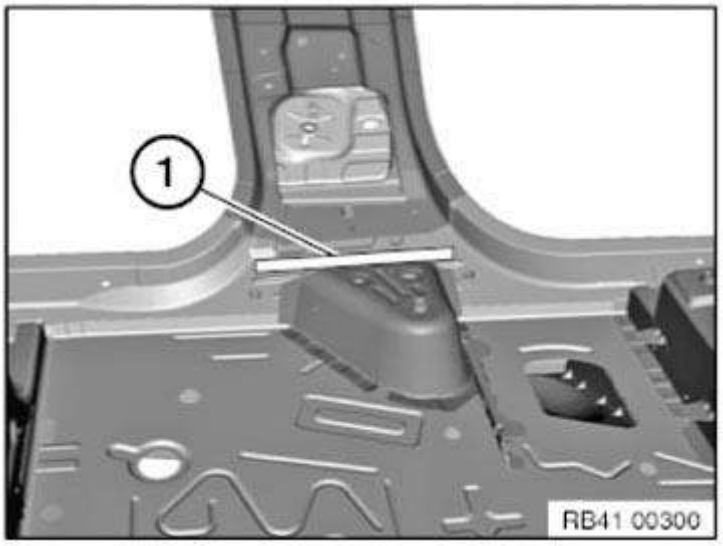


Fig. 217: Identifying B-Pillar Reinforcement Welded Area
Courtesy of BMW OF NORTH AMERICA, INC.

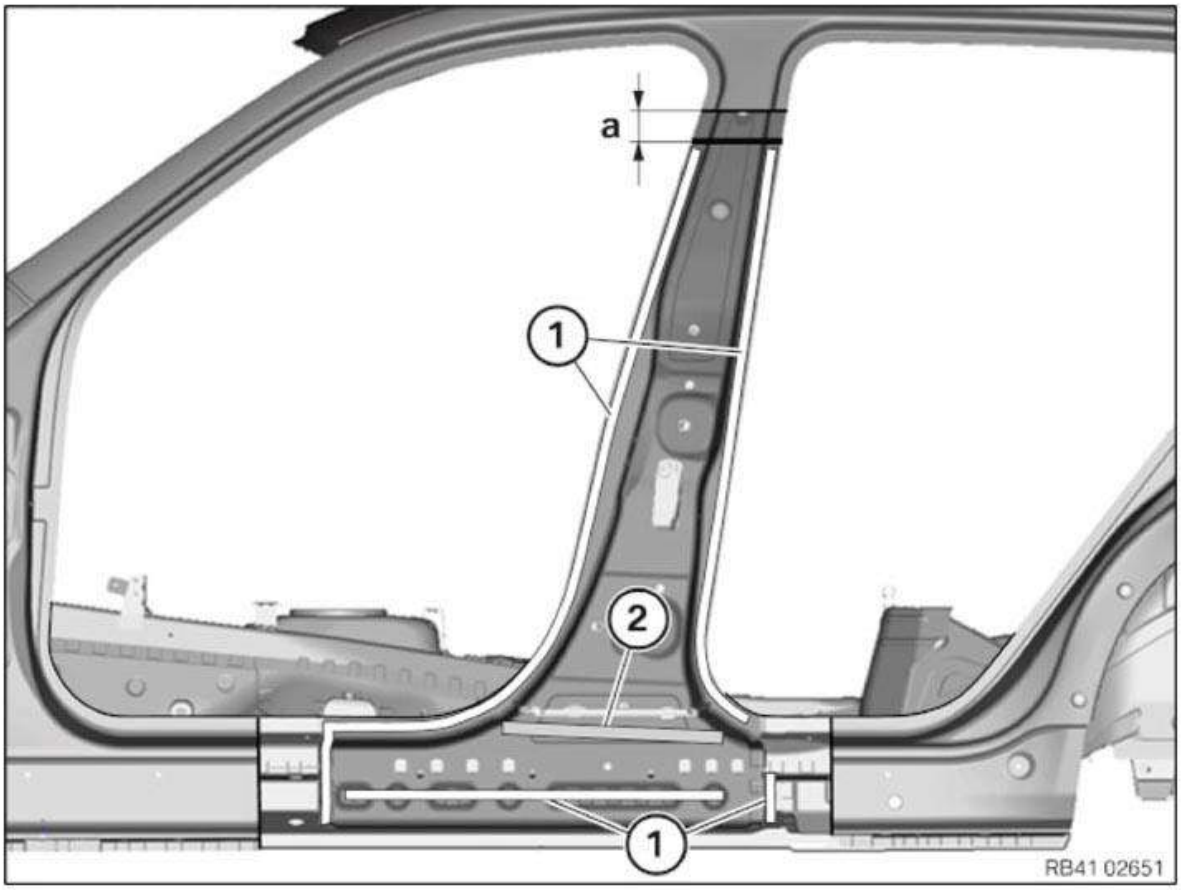


Fig. 218: Identifying B-Pillar Passenger Compartment Welded Connections Area (2 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut in accordance with dimension and cut.

IMPORTANT: Cut outer panel only.

Dimension a = approx. 50 mm below previous severance cut.

Open welded connections in areas (1).

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

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Preparation of new part:

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

Prepare **REINFORCEMENT PLATES** at severance cuts.

Adjust new parts and reinforcements plates with alignment bracket or universal mount.

Installation:

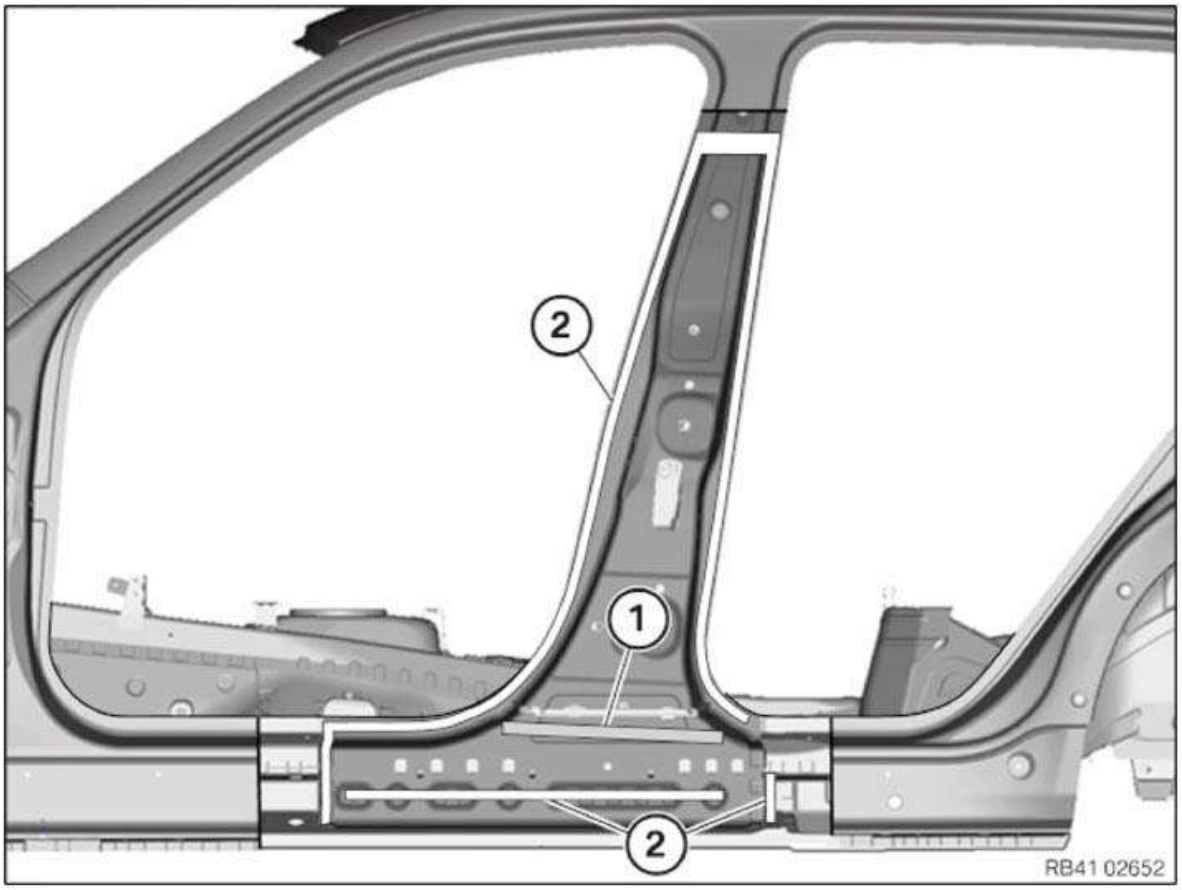


Fig. 219: Identifying B-Pillar Reinforcement From Cavity Sealing Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Apply sealing compound to **cavity sealing** . See **41 00... INSTALLING CAVITY SEALING (EXPANDED)** or **41 00... INSTALLING CAVITY SEALING (NOT EXPANDED)** (1).

Install new part and reinforcement plate with alignment bracket or universal fixture and weld in designated areas (2).

NOTE: **When installing the B-pillar reinforcement new part, the panel thickness of the missing B-pillar outer skin must be taken into consideration depending on the straightening system manufacturer.**

Weld new part in area (1).

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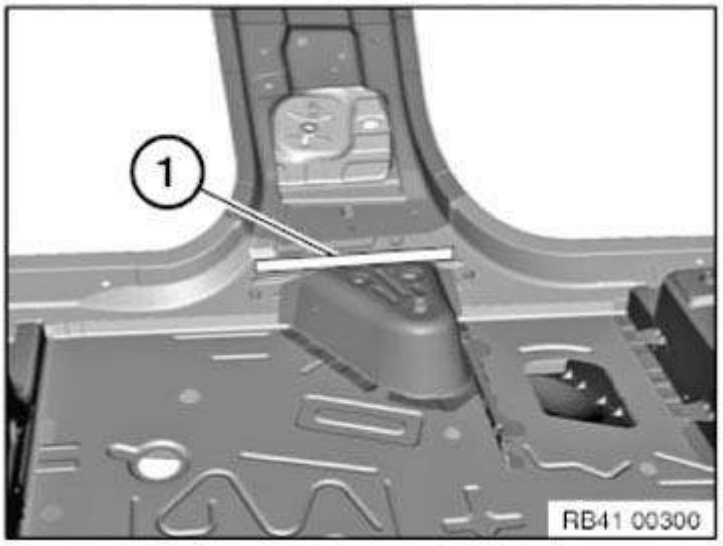


Fig. 220: Identifying B-Pillar Reinforcement Welded Area
Courtesy of BMW OF NORTH AMERICA, INC.

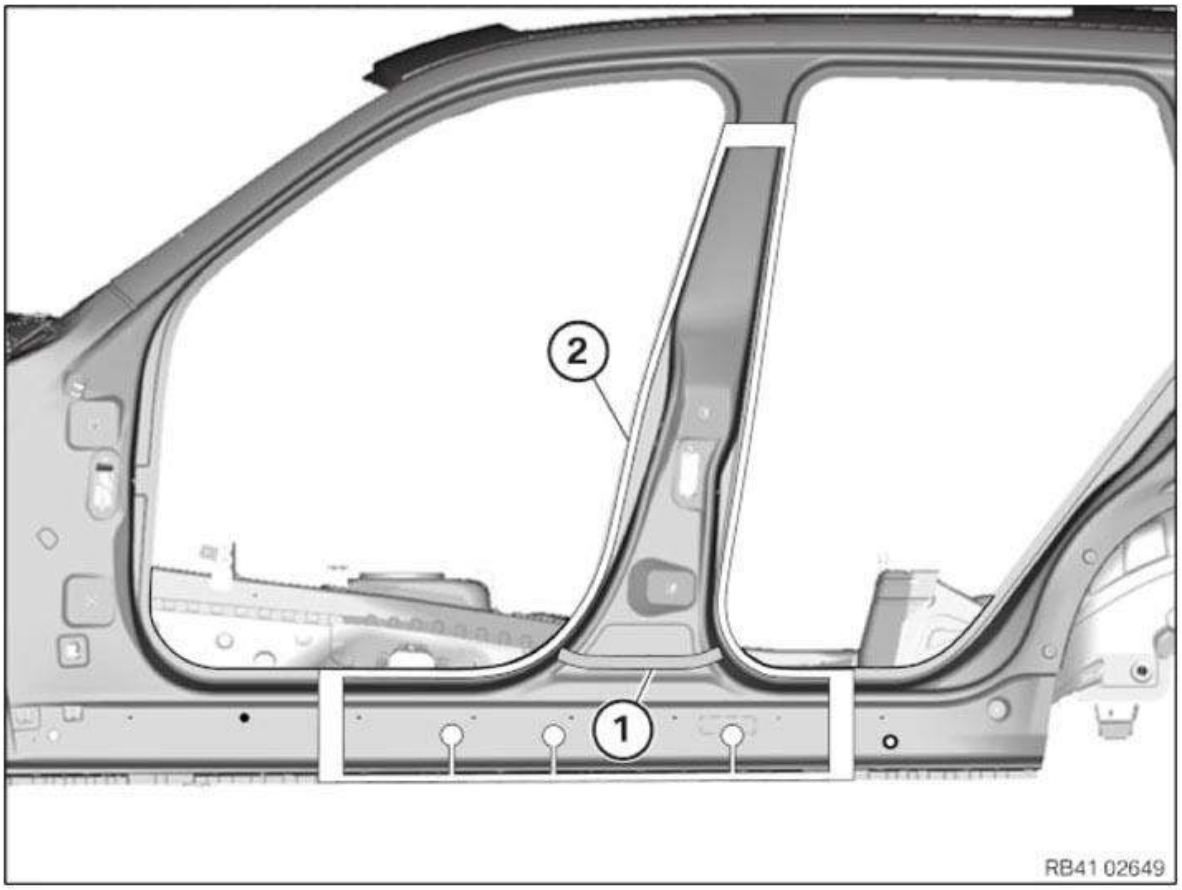


Fig. 221: Identifying Sealant Applying Area On Cavity Sealing
Courtesy of BMW OF NORTH AMERICA, INC.

Apply sealant to **cavity sealing** . See **41 00... INSTALLING CAVITY SEALING (EXPANDED)** or **41 00... INSTALLING CAVITY SEALING (NOT EXPANDED)** (1).

Install new part and reinforcement plate and weld in area (2).

41 21 203 REPLACE B-PILLAR, OUTER LEFT

Procedure **OBSERVE** repair stage 3!

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Read contents of **BODY, GENERAL**.

Use only an approved **SPOT-WELDING APPARATUS** for repairs!

Following new body parts are required (see **OVERVIEW OF CONSUMABLES**):

- (1) A-pillar with entrance
- Shaped part, B-pillar bottom outside

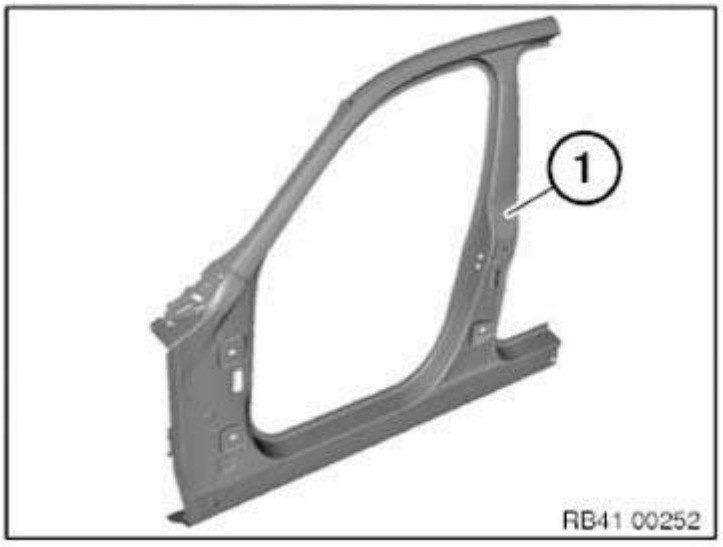


Fig. 222: Identifying A-Pillar With Entrance
Courtesy of BMW OF NORTH AMERICA, INC.

Removal:

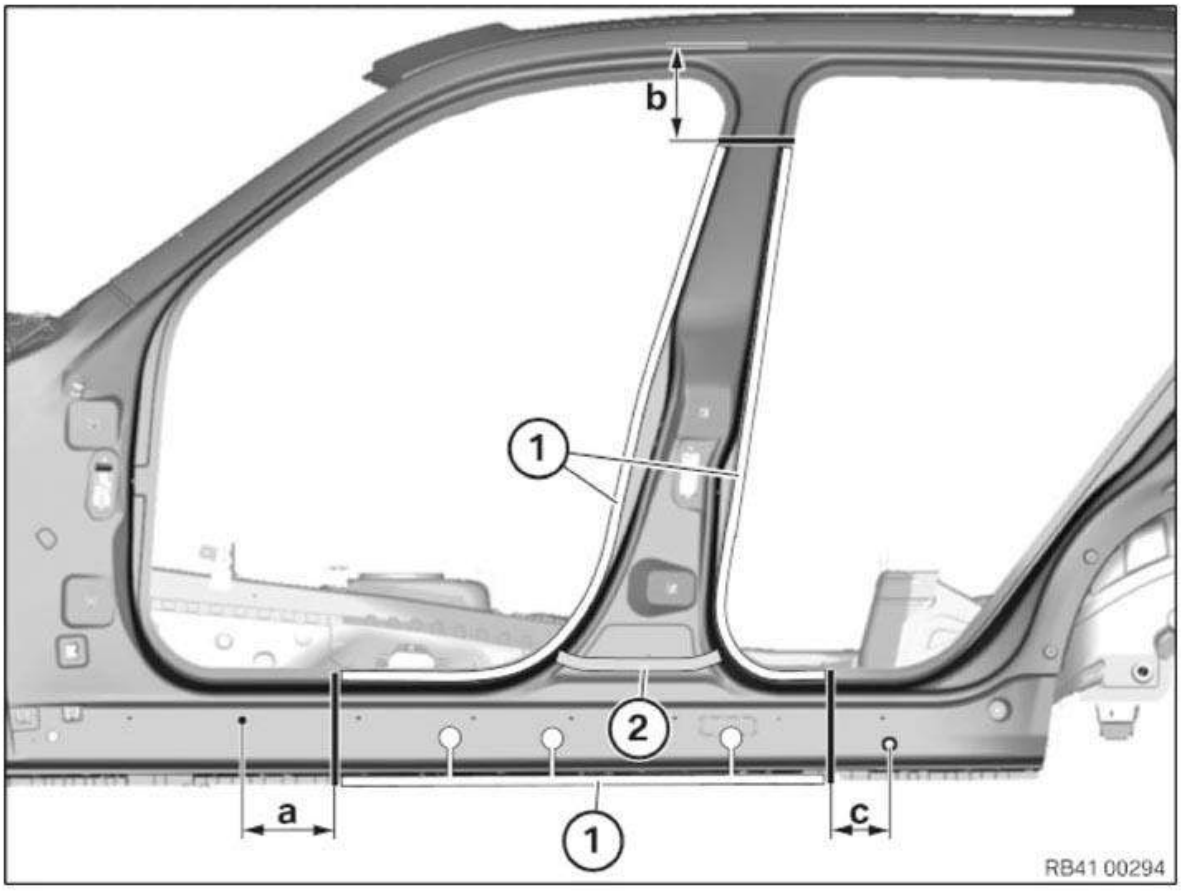


Fig. 223: Identifying A-Pillar From Cavity Sealing

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Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cuts in accordance with specified dimensions and cut.

IMPORTANT: Cut outer panel only for following severance cuts.

Dimension a = approx. 180 mm after center point of Ã˜ 8 mm hole.

Dimension b = approx. 175 mm from edge of roof frame.

Dimension c = approx. 180 mm from center point of Ã˜ 20 mm hole.

Open welded connections in areas (1).

Release A-pillar from cavity sealing (2) and remove.

Preparation of new part:

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

Prepare **REINFORCEMENT PLATES** at severance cuts.

Installation:

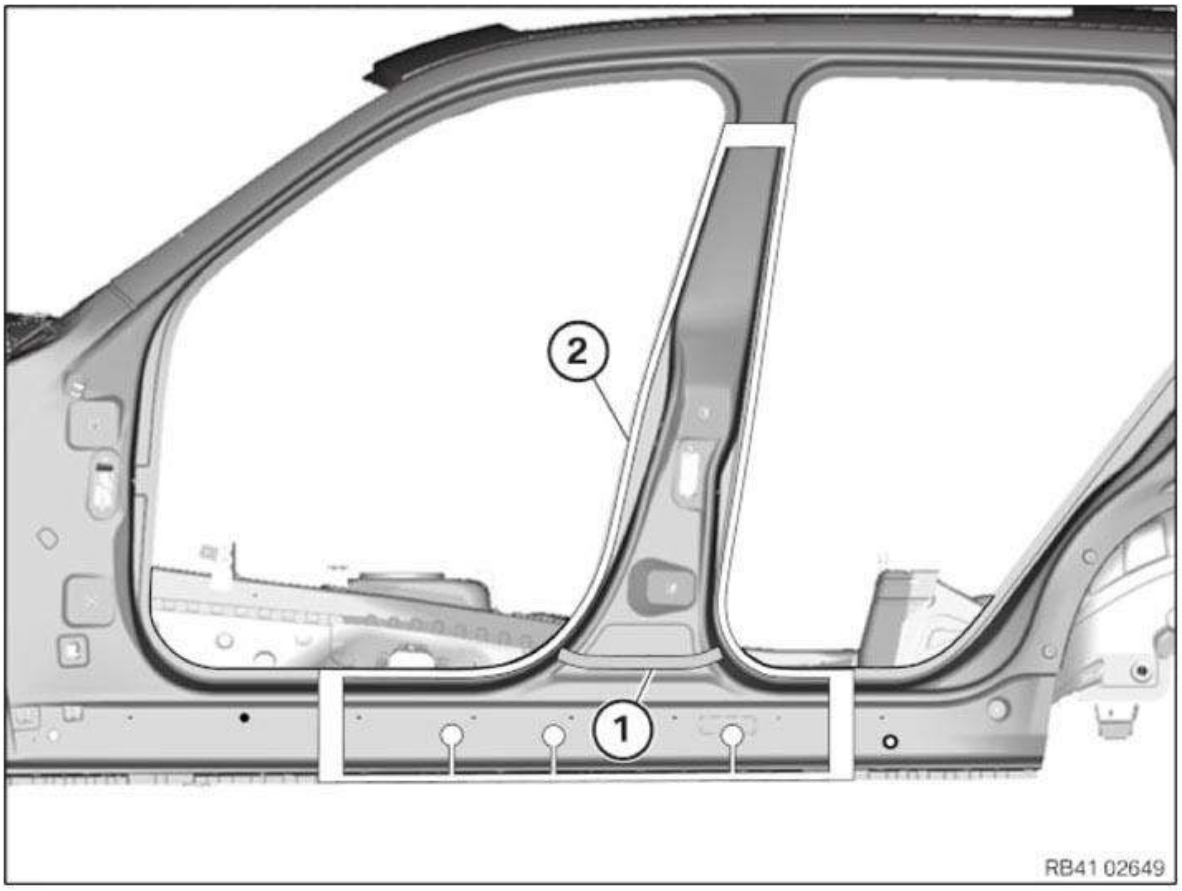


Fig. 224: Identifying Sealant Applying Area On Cavity Sealing
Courtesy of BMW OF NORTH AMERICA, INC.

Apply sealant to **cavity sealing** . See **41 00... INSTALLING CAVITY SEALING (EXPANDED)** or **41 00... INSTALLING CAVITY SEALING (NOT EXPANDED)** (1).

Install new parts and reinforcement plates and weld to designated area (2).

41 21 003 REPLACING A-PILLAR WITH REINFORCEMENT ON LEFT

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Procedure **OBSERVE** repair stage 3!

Read contents of **BODY, GENERAL**.

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

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

Place vehicle on straightening bench.

Following new body parts are required (see **OVERVIEW OF CONSUMABLES**):

- (1) A-pillar with entrance
- (2) Middle side frame
- (3) Carrier support, outer wheel arch section
- Shaped part A-pillar, top, outer
- Shaped part A-pillar, bottom, outer

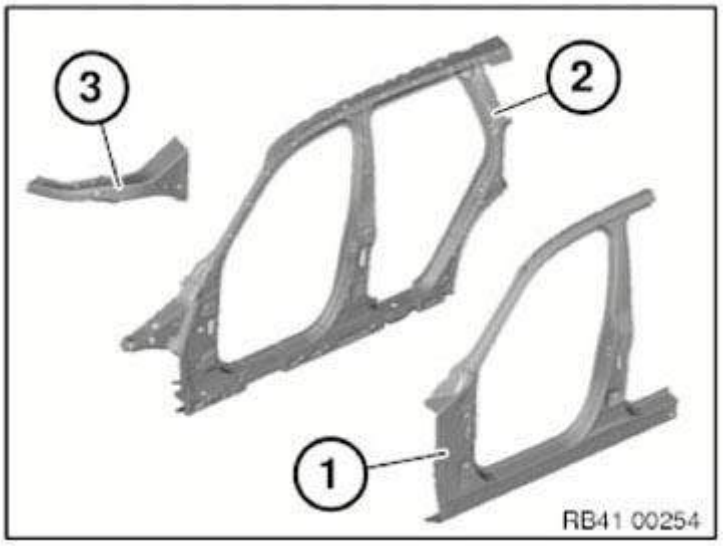


Fig. 225: Identifying A-Pillar With Entrance, Middle Side Frame, Carrier Support
Courtesy of BMW OF NORTH AMERICA, INC.

Following **CONSUMABLES** are required:

Material	Quantity
Adhesive K1	1
Blind rivet N1	5
Cleaning agent R1	1

Removal:

Mark severance cut in accordance with dimension and cut.

IMPORTANT: Cut outer panel only.

Dimension a = approx. 120 mm from hole Ã˜ 6 mm.

LOOSEN spot-welded adhesive joints in area (1).

Open welded connections in area (2).

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Remove partial section of carrier support.

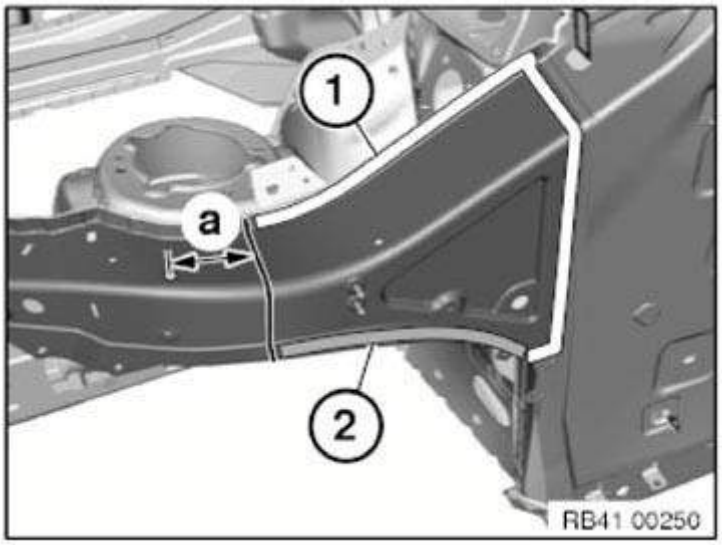


Fig. 226: Identifying Spot-Welded Adhesive Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cuts in accordance with specified dimensions and cut.

IMPORTANT: Cut outer panel only for following severance cuts.

Dimension a = approx. 420 mm in front of hole Ã˜ 20 mm.

Dimension b = approx. 450 mm from roof edge.

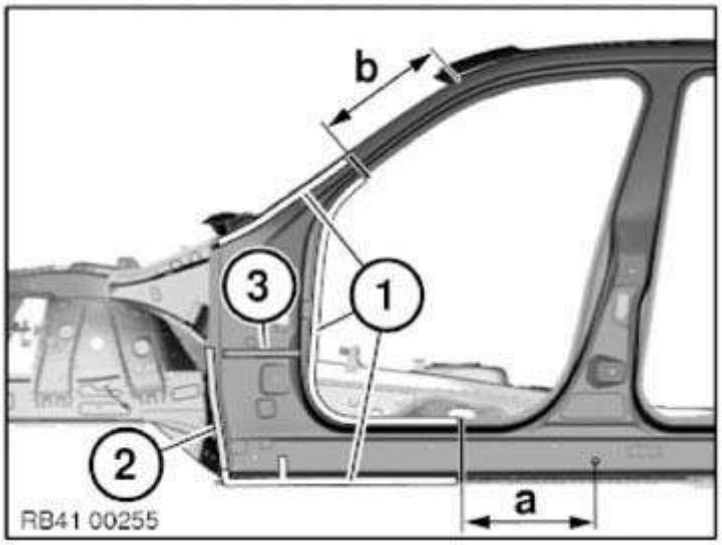


Fig. 227: Identifying Spot-Welded Adhesive Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

Open spot-welded adhesive joints in area (2)

Release A-pillar outer skin from cavity sealing (3) and remove.

Mark severance cut (1) as pictured and cut.

IMPORTANT: Cut outer panel only.

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Open welded connections in area (2).

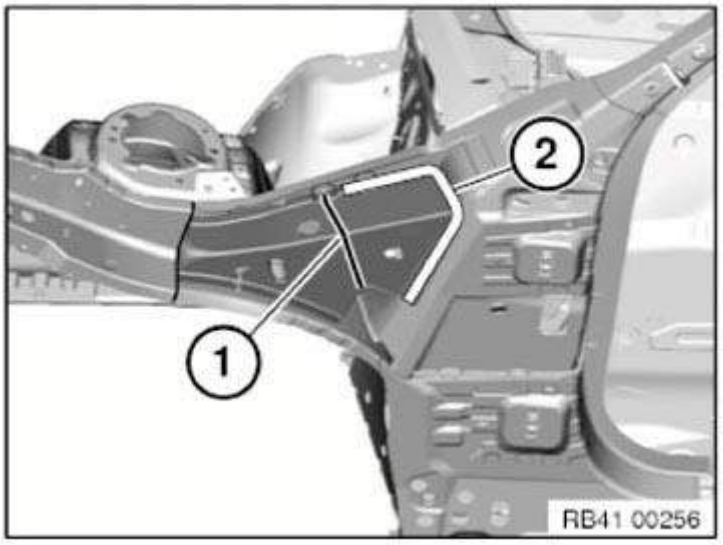


Fig. 228: Identifying A-Pillar Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

Remove reinforcement (2).

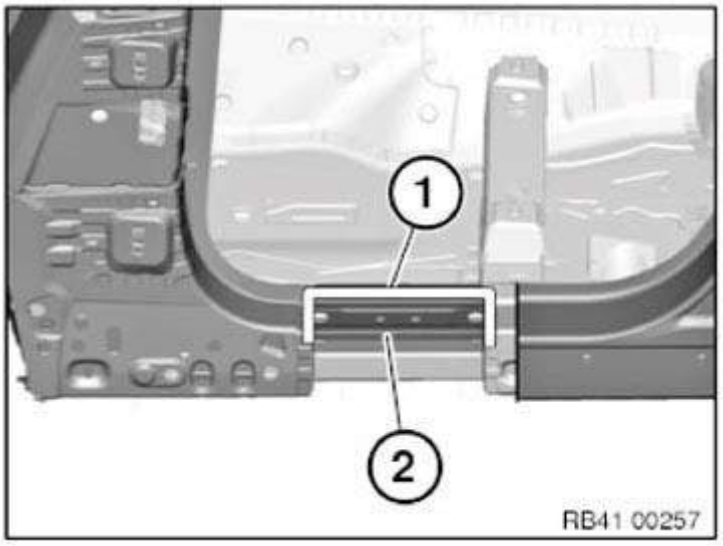


Fig. 229: Identifying Reinforcement Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

View of passenger compartment.

Open welded connections (1).

Open bonded connection in area (2).

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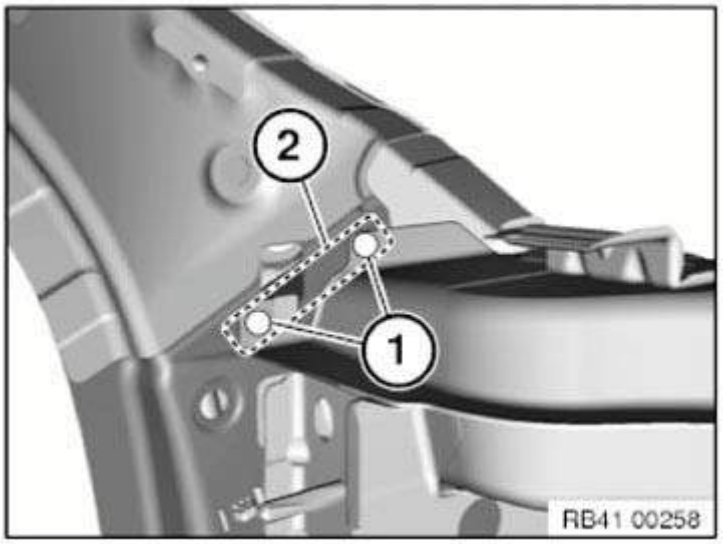


Fig. 230: Identifying Passenger Compartment Bonded Connection And Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joint in area (1).

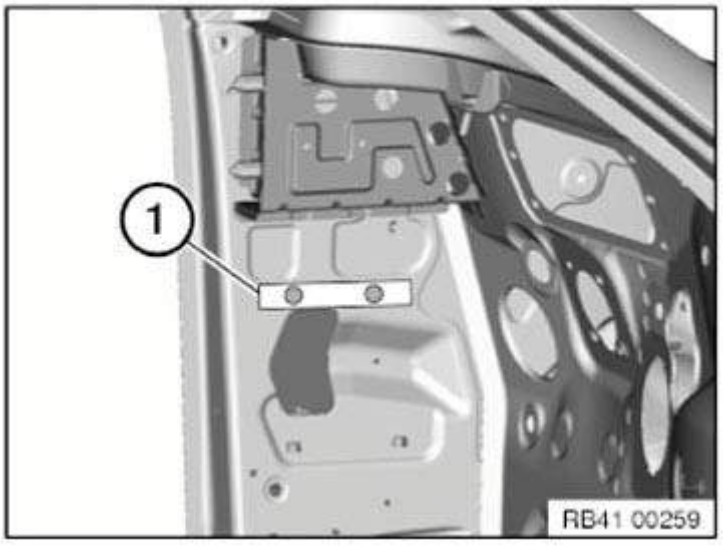


Fig. 231: Identifying A-Pillar Open Weld Joint Area
Courtesy of BMW OF NORTH AMERICA, INC.

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

Remove metal section (2).

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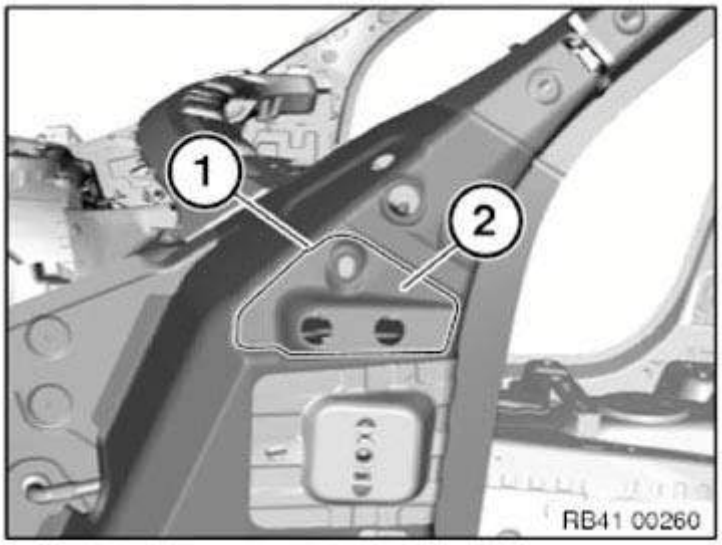


Fig. 232: Identifying Metal Section And Severance Cutting Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections (1).

NOTE: The welded connections are replaced by bonded rivet connections.

Loosen welded connections using **BELT SANDER**.

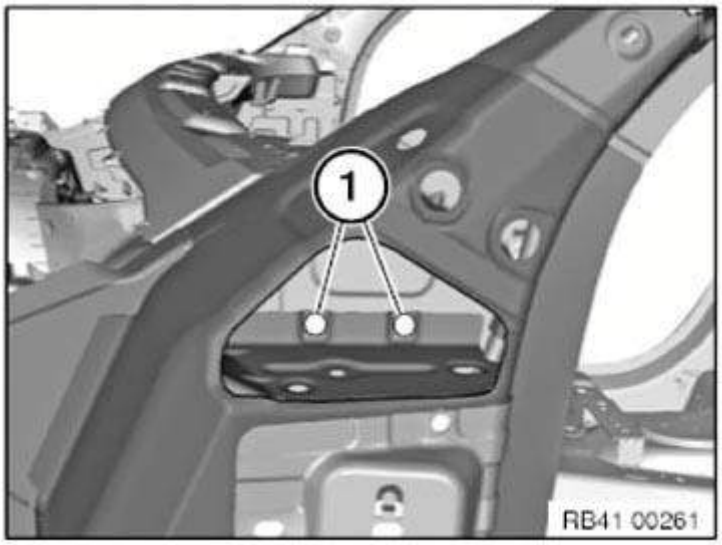


Fig. 233: Identifying Welded Connections
Courtesy of BMW OF NORTH AMERICA, INC.

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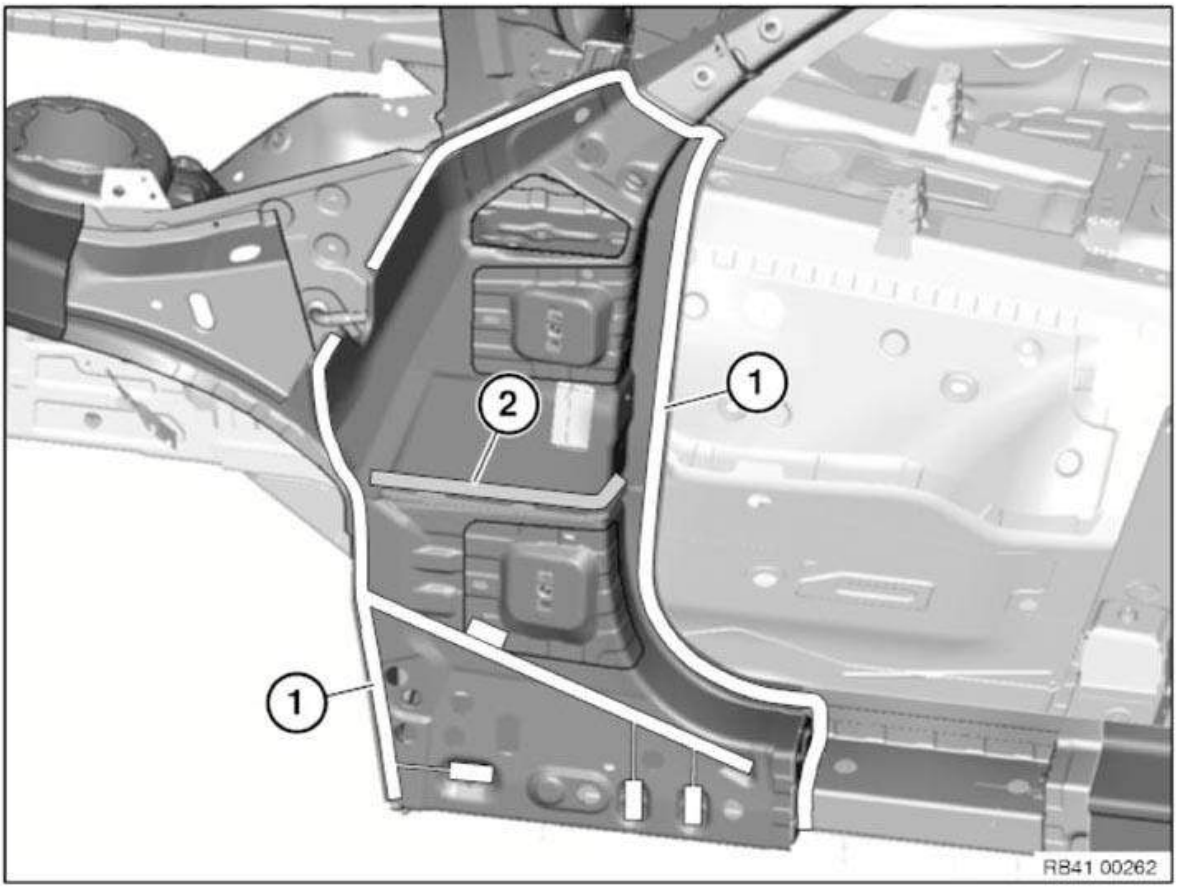


Fig. 234: Identifying A-Pillar From Cavity Sealing Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

Release A-pillar from cavity sealing (2) and remove.

Release welded connections in areas (1) and (2) and remove reinforcement (3).

NOTE: Welded connections in the area (1) are replaced by bonded rivet connections.

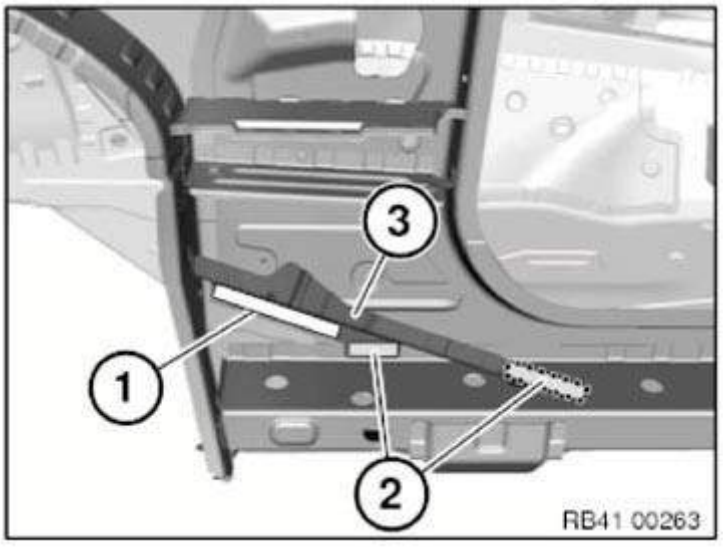


Fig. 235: Identifying A-Pillar From Cavity Sealing Area
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part:

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

Prepare **REINFORCEMENT PLATES** at severance cuts.

Detach welded connections.

Remove reinforcement (1) and side member attachment (2).

NOTE: The reinforcement (1) is used for installation.

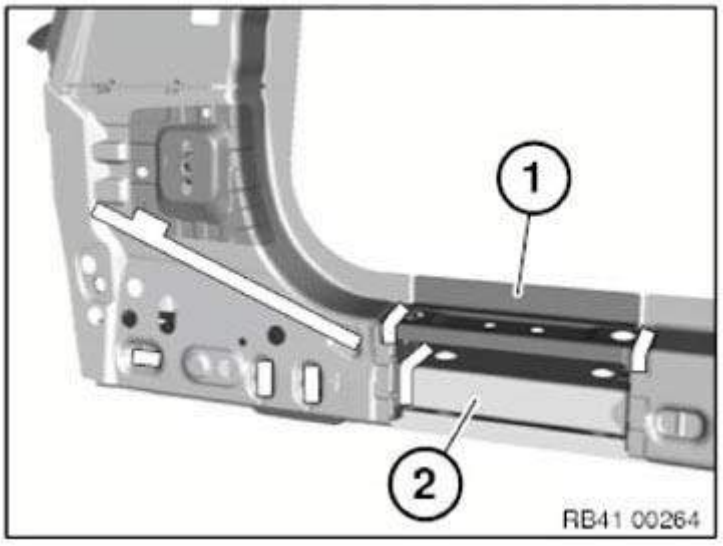


Fig. 236: Identifying Reinforcement And Side Member Attachment
Courtesy of BMW OF NORTH AMERICA, INC.

Detach welded connections (1) and take off reinforcement (2).

NOTE: The reinforcement must be installed as a separate component for access reasons.

Mark further severance cuts in accordance with vehicle and cut.

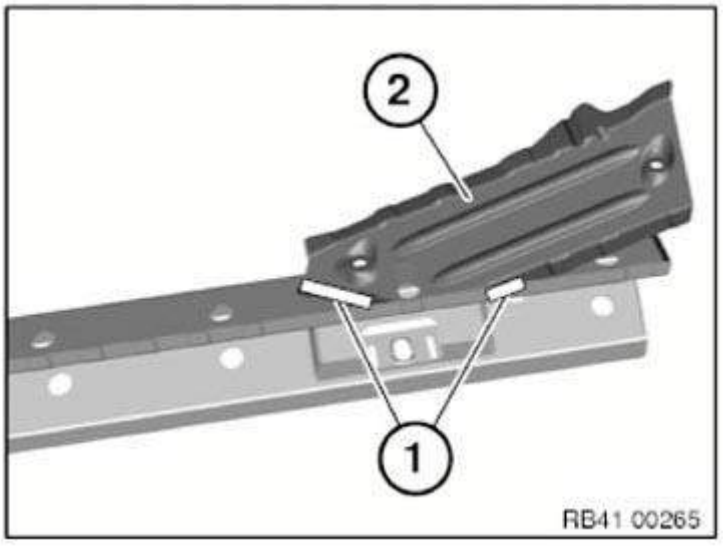


Fig. 237: Identifying Reinforcement Welded Connections
Courtesy of BMW OF NORTH AMERICA, INC.

Fit reinforcement (3) in combination with A-pillar reinforcement.

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Drill three Ã˜ 6.8 mm bore holes for bonded rivet connections in the designated area (1).

Prepare new part in areas (2) for plug/spot welding.

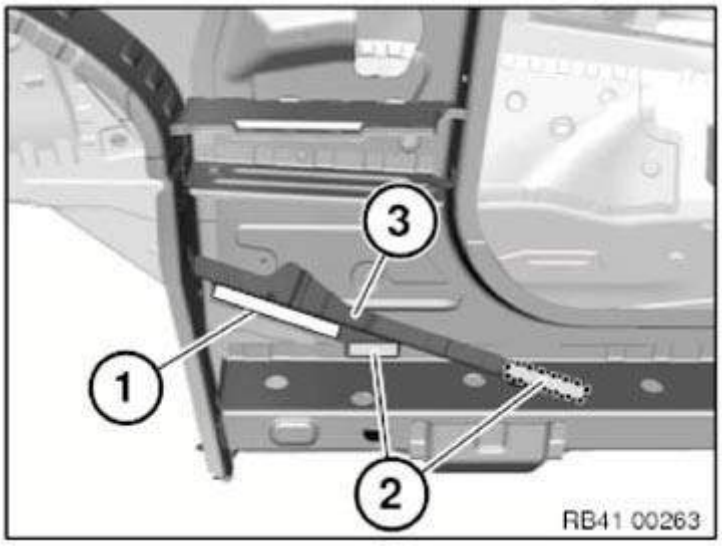


Fig. 238: Identifying A-Pillar From Cavity Sealing Area
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust and secure A-pillar and reinforcement with alignment bracket or universal fixture.

In areas (1), introduce 2 holes of Ã˜ 6.8 mm for adhesive rivet connection.

For drilling the holes, use **TWIST DRILL 6.8 X 156** mm.

NOTE: **When adjusting the new part for the A-pillar reinforcement, the panel thickness of the missing A-pillar outer skin must be taken into consideration depending on straightening system manufacturer.**

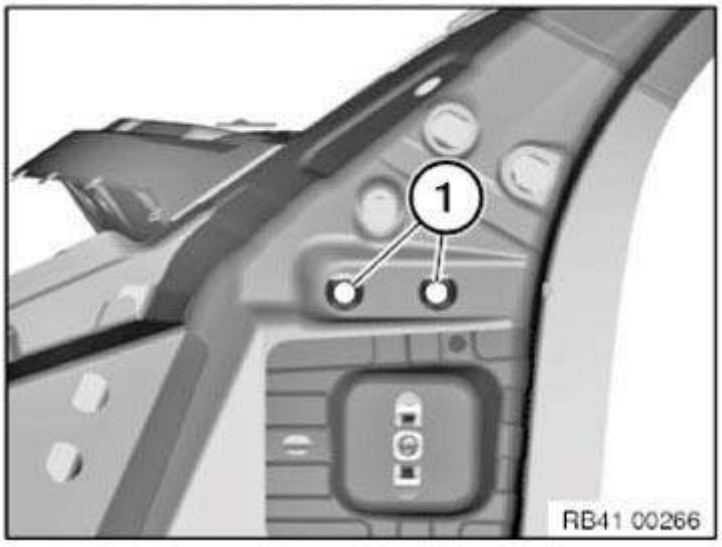


Fig. 239: Identifying Adhesive Rivet Connection Area
Courtesy of BMW OF NORTH AMERICA, INC.

Remove new parts and deburr bore holes.

IMPORTANT: Structure bonding!
OBSERVE preparation of bonding surfaces.

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Installation:

Clean bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Install reinforcement (3).

Rivet new part in designated area (1) using N1 blind rivets and plug-weld in designated areas (2).

IMPORTANT: Risk of damage!
Avoid applying too much heat to adjacent adhesive area (1).

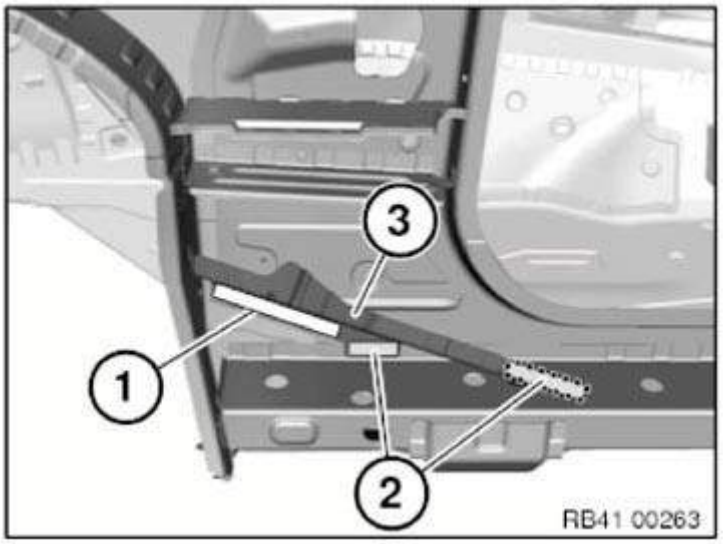
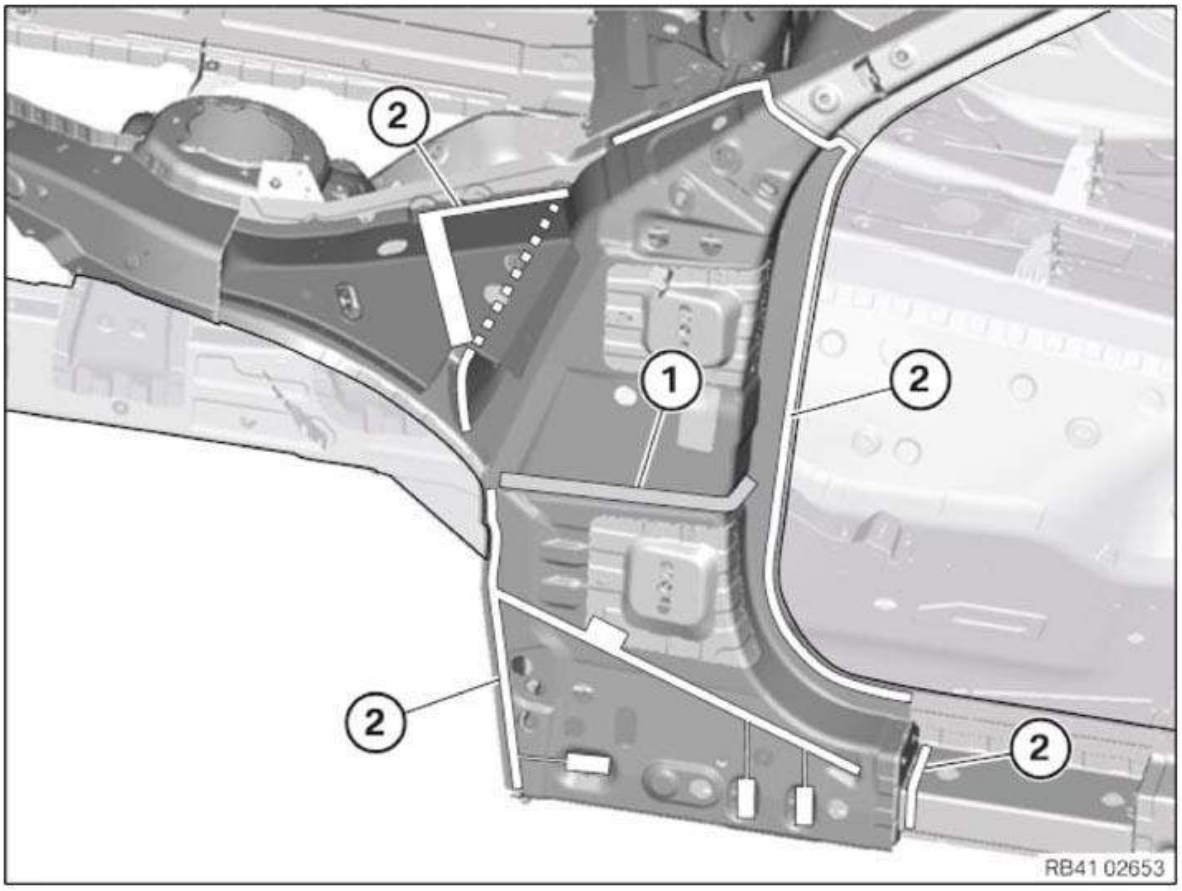


Fig. 240: Identifying A-Pillar From Cavity Sealing Area
Courtesy of BMW OF NORTH AMERICA, INC.



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Fig. 241: Identifying A-Pillar Reinforcement From Cavity Sealing Area
Courtesy of BMW OF NORTH AMERICA, INC.

Clean bonding surfaces with cleaning agent R1.

Apply adhesive K1 to bonding surfaces.

Apply sealant to **cavity sealing** . See 41 00... INSTALLING CAVITY SEALING (EXPANDED) or 41 00... INSTALLING CAVITY SEALING (NOT EXPANDED) (1).

Install and secure new reinforcement part for A-pillar and reinforcement plates with alignment bracket or universal fixture.

Weld new part in the areas (2).

NOTE: When installing the new part for the A-pillar reinforcement, the panel thickness of the missing A-pillar outer skin must be taken into consideration depending on straightening system manufacturer.

Weld new part in the areas (1).

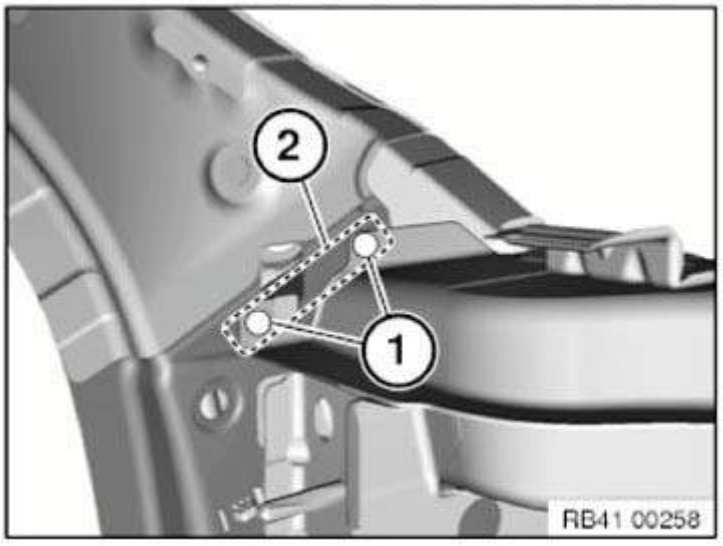


Fig. 242: Identifying Passenger Compartment Bonded Connection And Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

In designated areas (1), rivet new part with N1 blind rivets.

NOTE: Use RIVET HEAD EXTENSION for this process.

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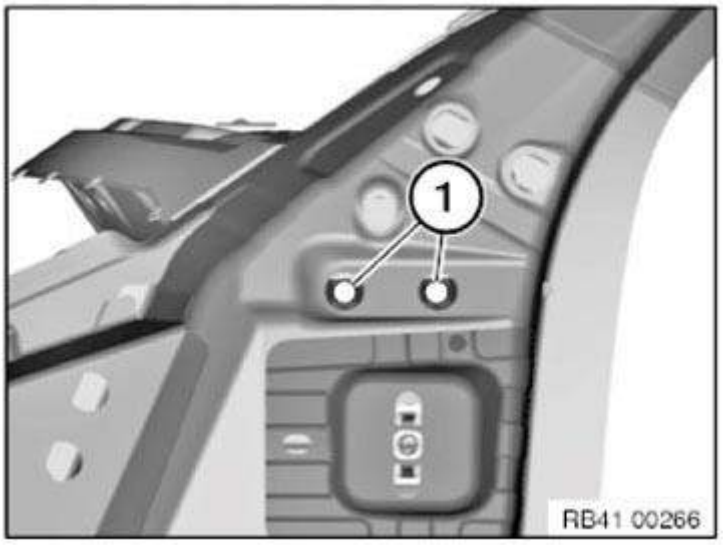


Fig. 243: Identifying Adhesive Rivet Connection Area
Courtesy of BMW OF NORTH AMERICA, INC.

Weld new part in the areas (1).

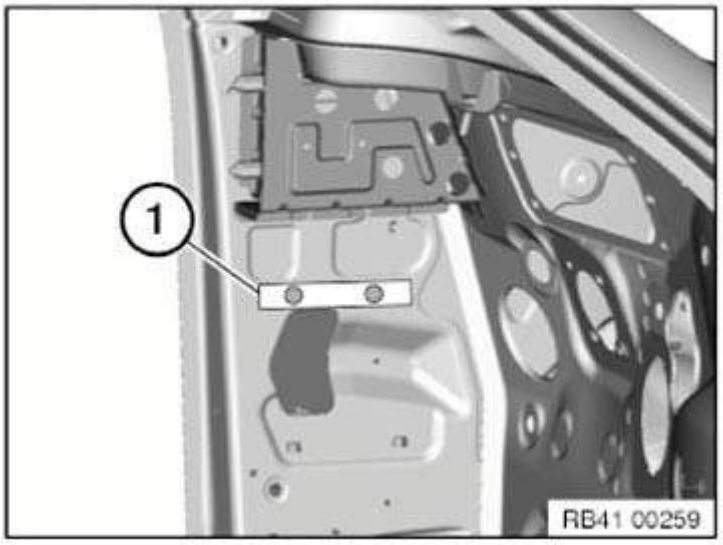


Fig. 244: Identifying A-Pillar Open Weld Joint Area
Courtesy of BMW OF NORTH AMERICA, INC.

Install reinforcement (2) and weld in designated area (1).

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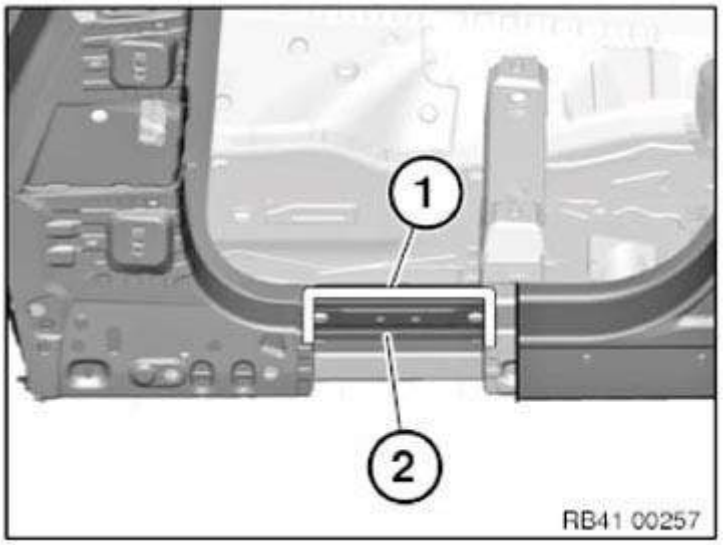


Fig. 245: Identifying Reinforcement Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Install carrier support section and weld in designated area (1).

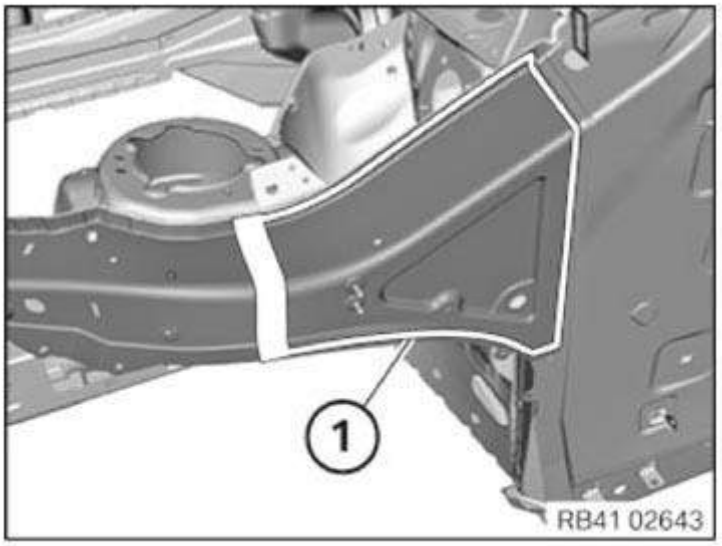


Fig. 246: Identifying Reinforcement Plate Weld Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 21 XXX REPLACING A-PILLAR WITH REINFORCEMENT ON THE LEFT (WITH SIDE MEMBER ATTACHMENT)

Procedure **OBSERVE** repair stage 3!

Read contents of **BODY, GENERAL**.

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

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

Place vehicle on straightening bench.

Following new body parts are required (see **OVERVIEW OF CONSUMABLES**):

- (1) A-pillar with entrance
- (2) Middle side frame

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- (3) Carrier support, outer wheel arch section
- Shaped part A-pillar, top, outer
- Shaped part A-pillar, bottom, outer

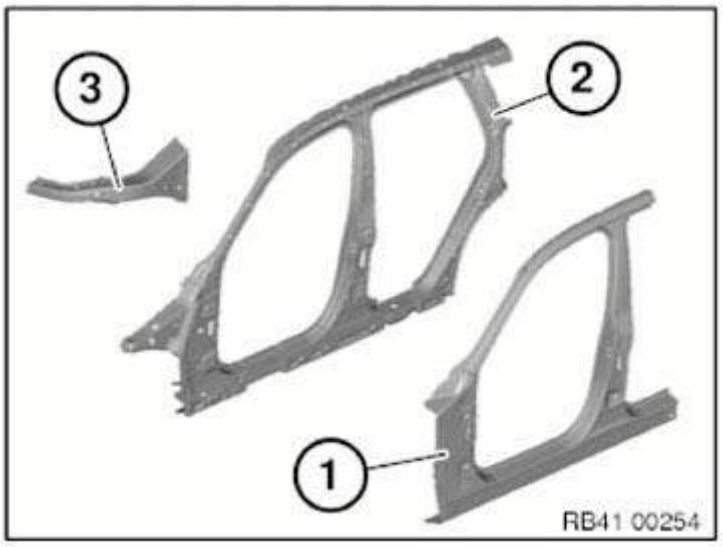


Fig. 247: Identifying A-Pillar With Entrance, Middle Side Frame, Carrier Support
Courtesy of BMW OF NORTH AMERICA, INC.

Following **CONSUMABLES** are required:

Material	Quantity
Adhesive K1	1
Blind rivet N1	11
Cleaning agent R1	1

Removal:

Mark severance cut in accordance with dimension and cut.

IMPORTANT: Cut outer panel only.

Dimension a = approx. 120 mm from hole Ã˜ 6 mm.

LOOSEN spot-welded adhesive joints in area (1).

Open welded connections in area (2).

Remove partial section of carrier support.

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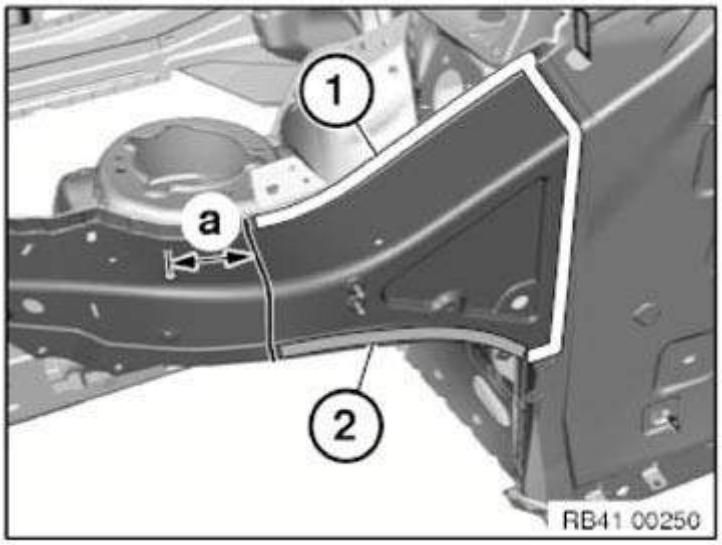


Fig. 248: Identifying Spot-Welded Adhesive Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cuts in accordance with specified dimensions and cut.

IMPORTANT: Cut outer panel only for following severance cuts.

Dimension a = approx. 420 mm in front of hole Ã˜ 20 mm.

Dimension b = approx. 450 mm from roof edge.

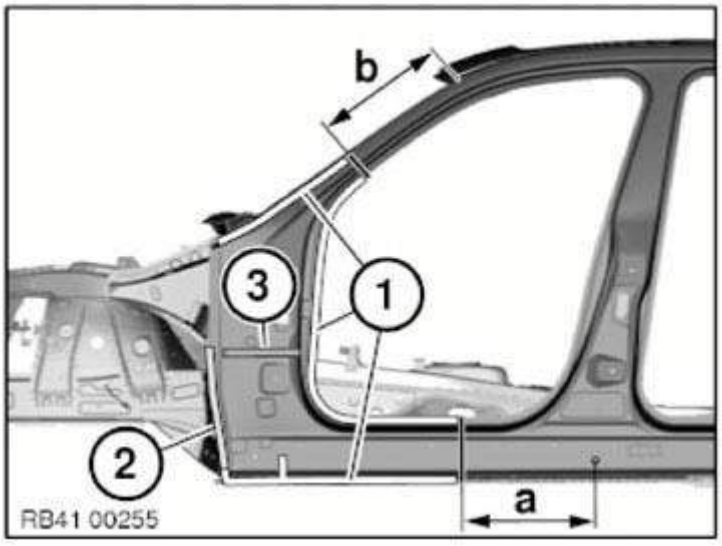


Fig. 249: Identifying Spot-Welded Adhesive Joints Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

Open spot-welded adhesive joints in area (2)

Release section of A-pillar outer skin from cavity sealing (3) and remove.

Mark severance cut (1) as pictured and cut.

IMPORTANT: Cut outer panel only.

Open welded connections in area (1).

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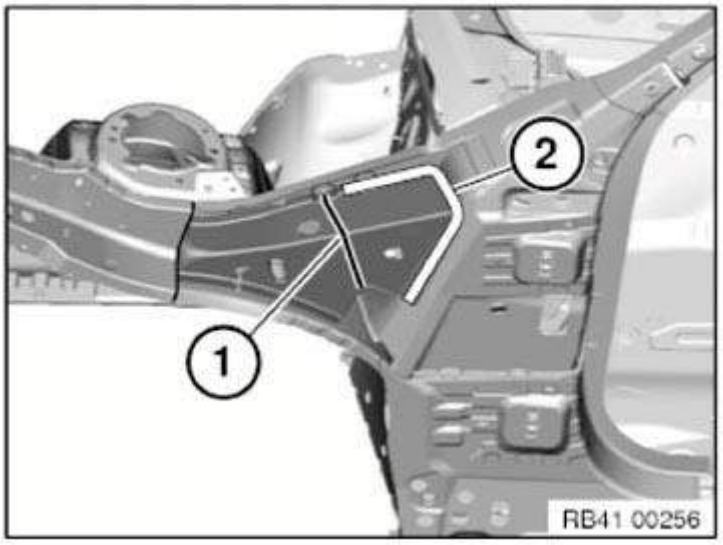


Fig. 250: Identifying A-Pillar Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

Remove reinforcement (2).

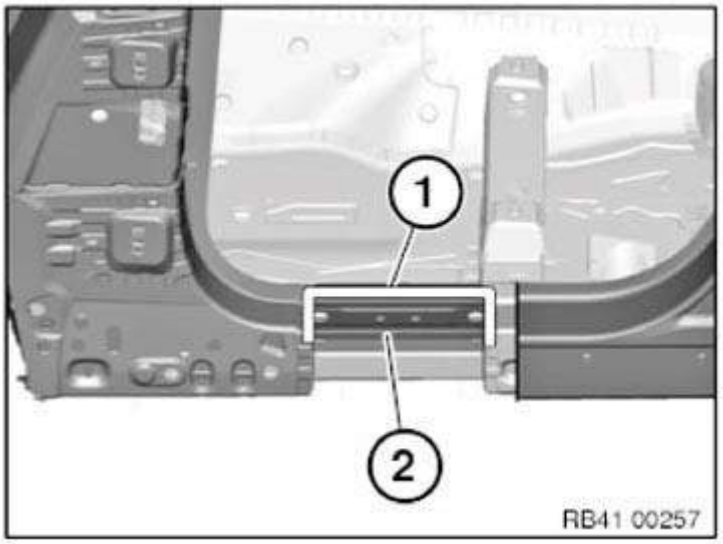


Fig. 251: Identifying Reinforcement Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

View of A-pillar interior.

Open welded connections (1).

Open bonded connection in area (2).

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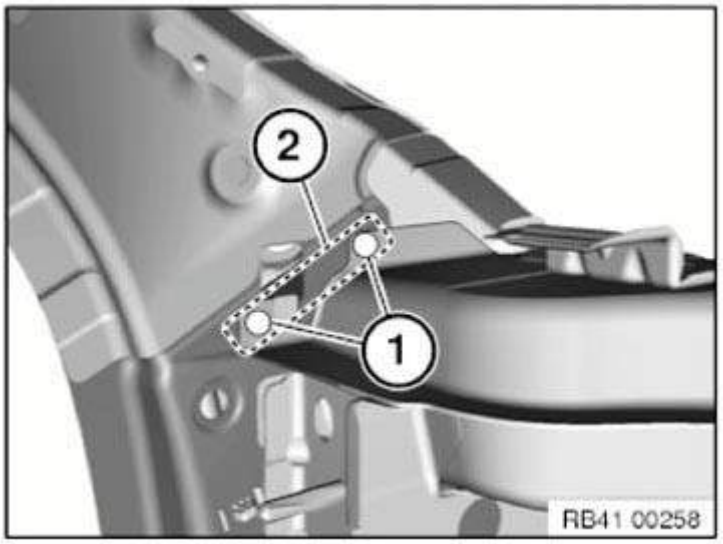


Fig. 252: Identifying Passenger Compartment Bonded Connection And Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open weld joint in area (1).

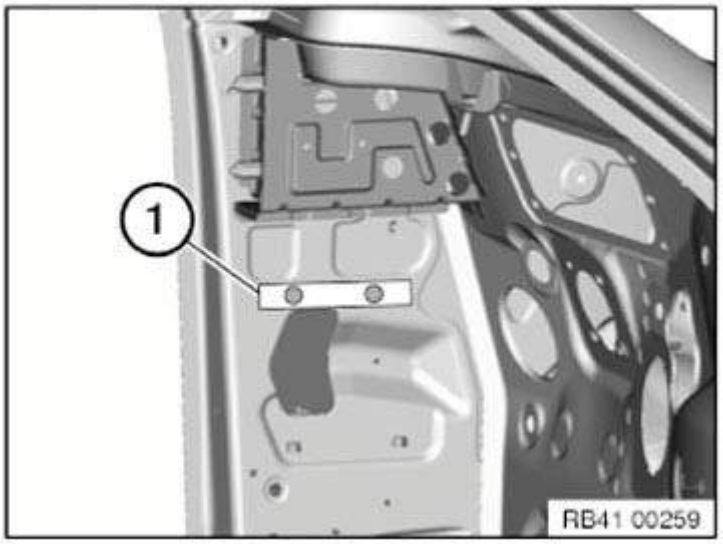


Fig. 253: Identifying A-Pillar Open Weld Joint Area
Courtesy of BMW OF NORTH AMERICA, INC.

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

Remove metal section (2).

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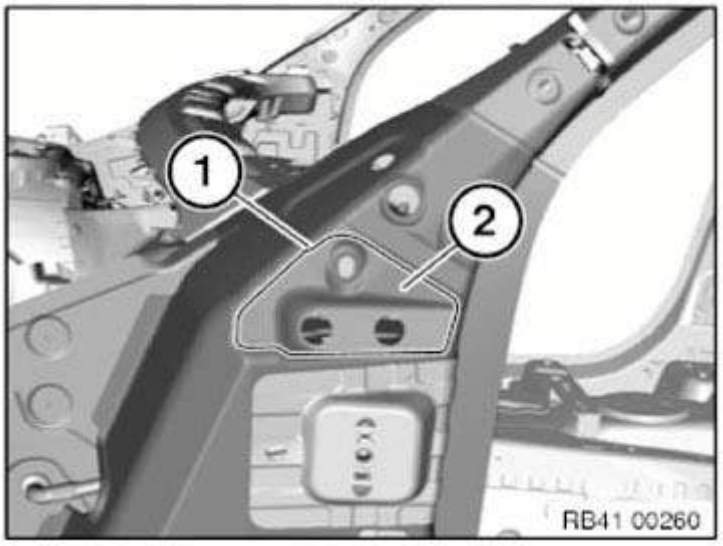


Fig. 254: Identifying Metal Section And Severance Cutting Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections (1).

NOTE: The welded connections (1) are replaced by adhesive rivet connections.

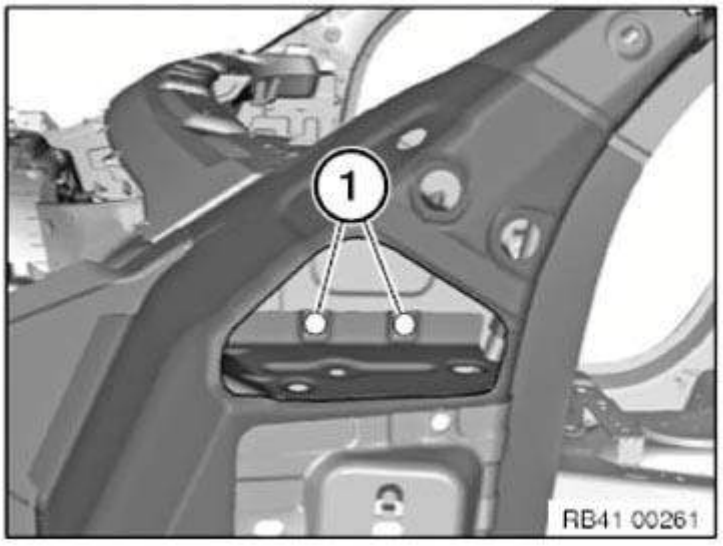


Fig. 255: Identifying Welded Connections
Courtesy of BMW OF NORTH AMERICA, INC.

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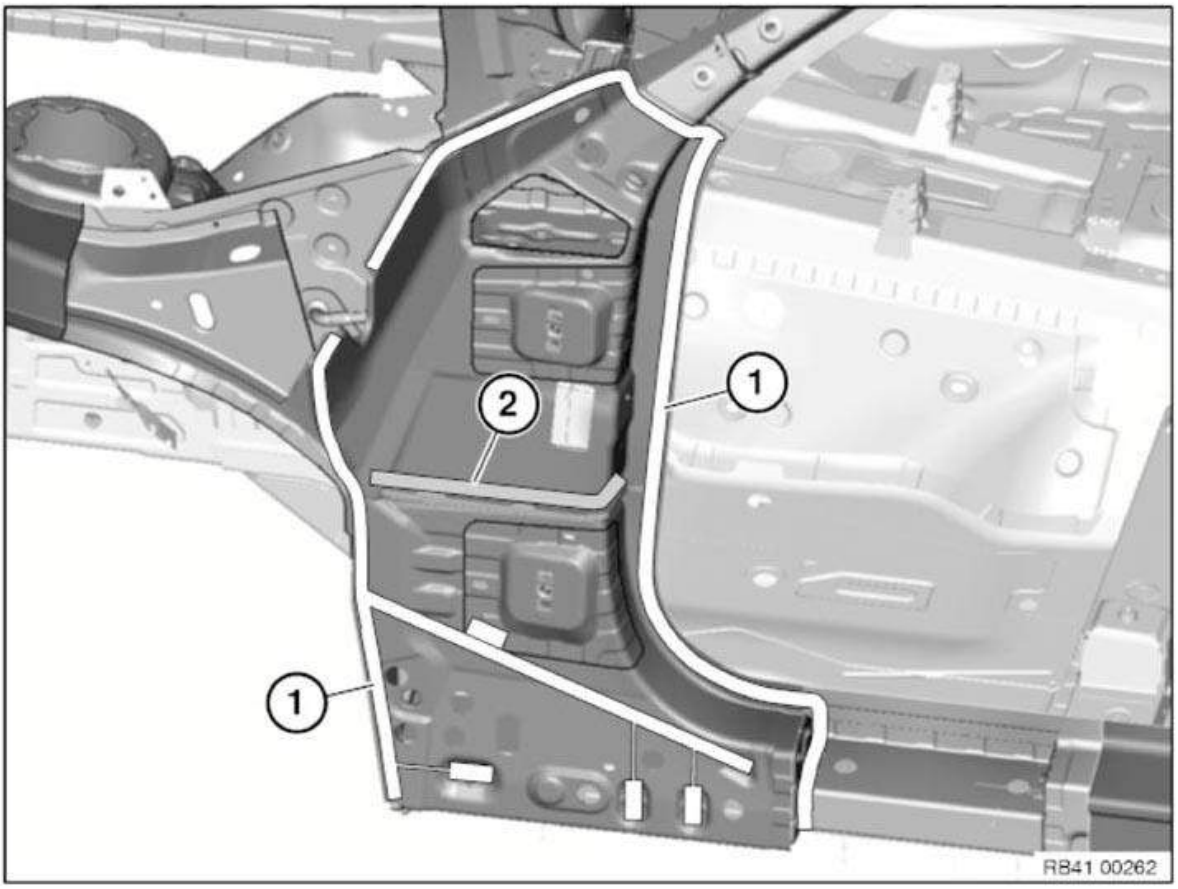


Fig. 256: Identifying A-Pillar From Cavity Sealing Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

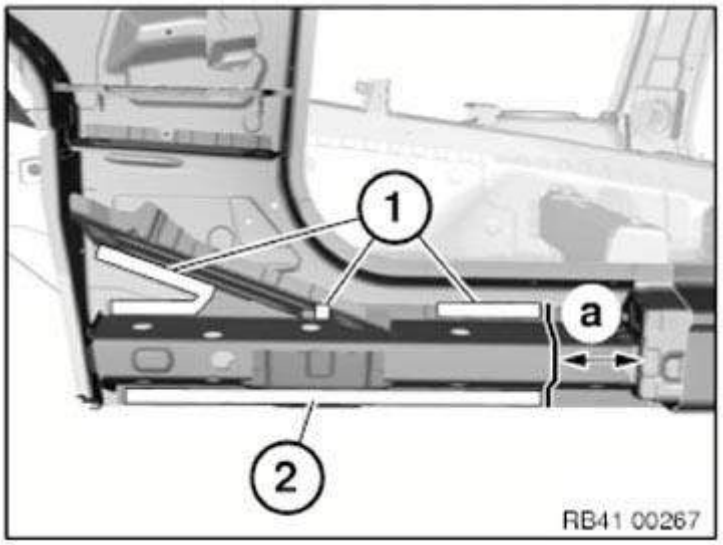
Release A-pillar from cavity sealing (2) and remove.

Mark severance cut in accordance with dimension and cut.

IMPORTANT: Cut outer panel only.

Dimension a = approx. 120 mm from bulkhead.

Release welded connections in areas (1) and (2) and remove side member attachment with reinforcement.



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Fig. 257: Identifying Bulkhead Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: The welded connections in areas (1) are replaced by adhesive rivet connections.

Preparation of new part:

Open welded connections (1) and remove reinforcement.

Mark severance cut (2) in accordance with severance cut on vehicle and cut.

NOTE: The reinforcement (1) is used for installation.

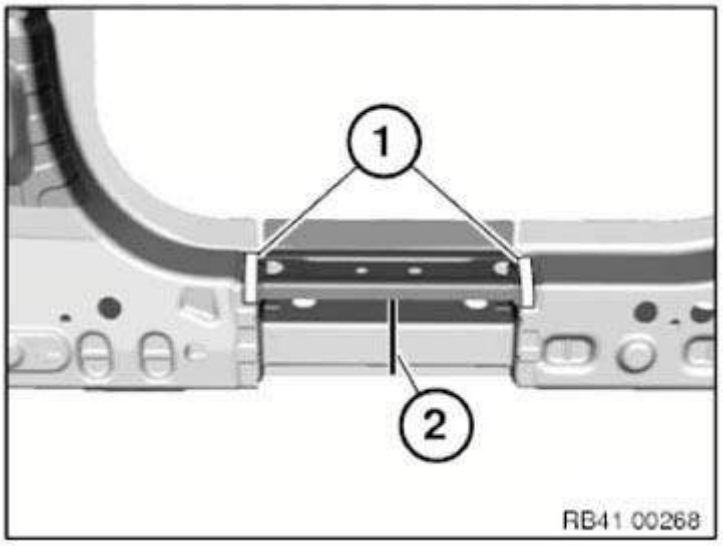


Fig. 258: Identifying Reinforcement Plate Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

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

Prepare **REINFORCEMENT PLATES** at severance cuts.

Adjust A-pillar to fit with alignment bracket or universal mount and secure.

In areas (1), introduce 9 holes of Ã˜ 6.8 mm for adhesive rivet connection.

For drilling the holes, use **TWIST DRILL 6.8 X 156** mm.

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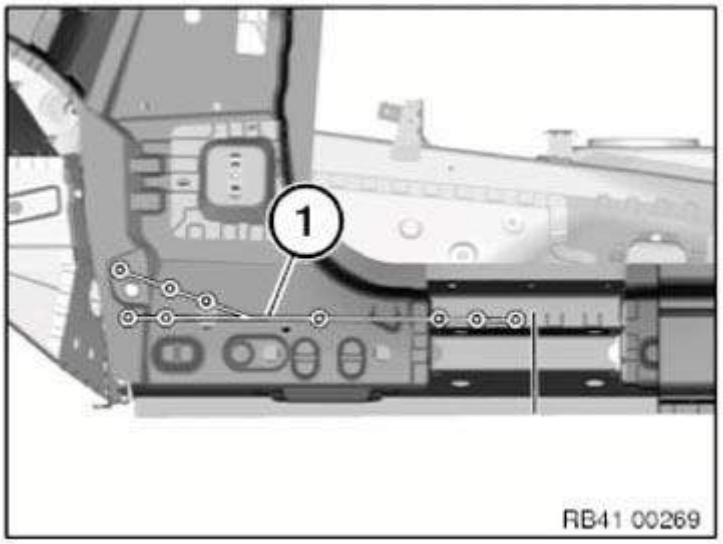


Fig. 259: Identifying Adhesive Rivet Connection Area
Courtesy of BMW OF NORTH AMERICA, INC.

In areas (1), introduce 2 holes of Ã˜ 6.8 mm for adhesive rivet connection.

Remove new parts and deburr bore holes.

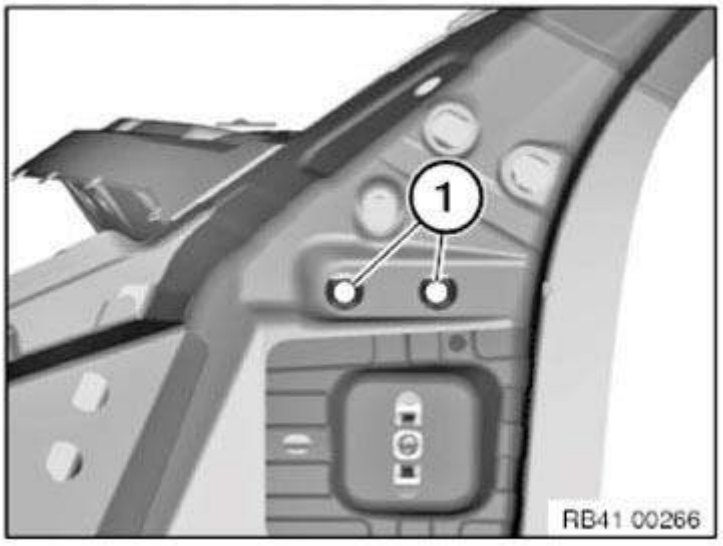


Fig. 260: Identifying Adhesive Rivet Connection Area
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Structure bonding!
OBSERVE preparation of bonding surfaces.

Installation:

Clean bonding surfaces with cleaning agent R1.

Apply adhesive to bonding surfaces.

Apply sealant to **cavity sealing** . See **41 00... INSTALLING CAVITY SEALING (EXPANDED)** or **41 00... INSTALLING CAVITY SEALING (NOT EXPANDED)**.

Install new A-pillar and reinforcement plates with alignment bracket or universal mount and fix.

Rivet new part in the areas (1).

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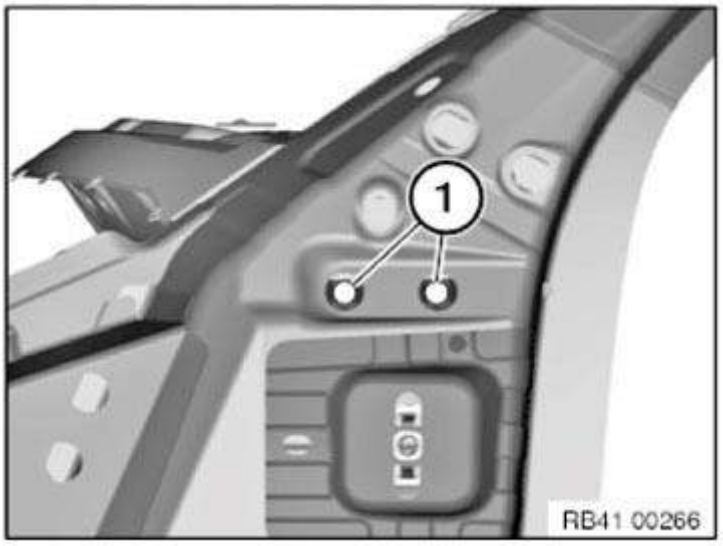


Fig. 261: Identifying Adhesive Rivet Connection Area
Courtesy of BMW OF NORTH AMERICA, INC.

Rivet new component in area (1).

If possible move rivets from vehicle interior to the outside.

Weld A-pillar.

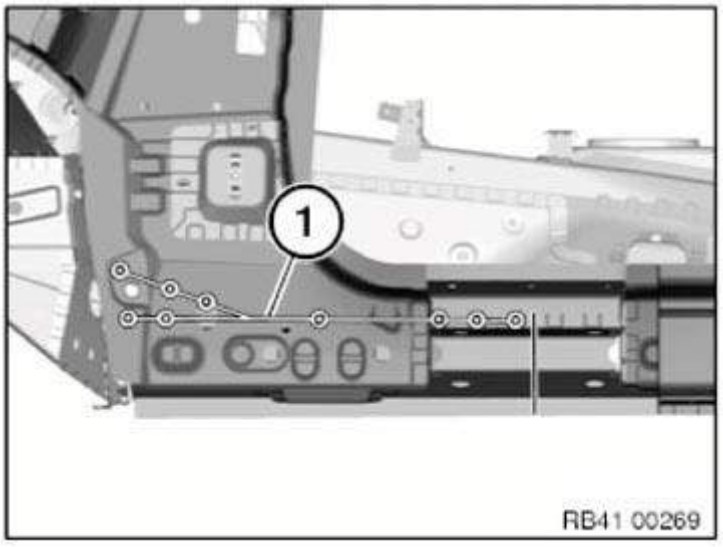


Fig. 262: Identifying Adhesive Rivet Connection Area
Courtesy of BMW OF NORTH AMERICA, INC.

Install further new parts and reinforcement plates and weld in place.

41 21 004 REPLACING A-PILLAR WITH REINFORCEMENT, RIGHT

The work is identical to replacing the **A-PILLAR WITH LEFT REINFORCEMENT**.

41 21 014 REPLACING OUTER RIGHT A-PILLAR

Operation is identical to replacing **OUTER LEFT A-PILLAR**.

ROOF FRAME

41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41

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Refer to 41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41.

ROOF OUTER SKIN

41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41

Refer to 41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41.

41 00... REPAIRING CLIPS FOR ROOF STRIP

Refer to 41 00... REPAIRING CLIPS FOR ROOF STRIP.

41 31 100 REPLACE ROOF OUTER SKIN WITH SLIDE/TILT SUNROOF

Read contents of BODY, GENERAL.

STRIP DOWN VEHICLE

NOTE: Observe (REPAIR STAGE 2) procedure!

Following new body parts are required (refer to OVERVIEW OF CONSUMABLES):

- (1) Roof outer skin panel, panorama glass sunroof

Following CONSUMABLES are required:

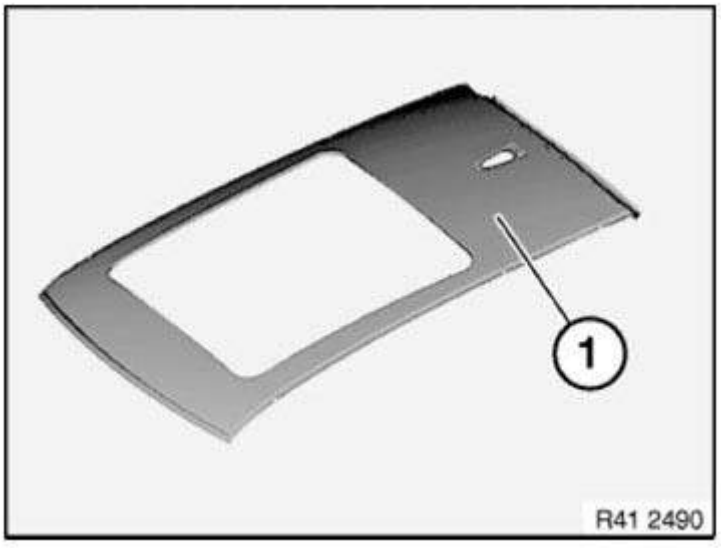


Fig. 263: Identifying Roof Outer Skin Panel, Panorama Glass Sunroof
Courtesy of BMW OF NORTH AMERICA, INC.

Material	Quantity
Adhesive K5b	2
Blind rivets N3	2
Punch rivets N4	22
EMC screws	2
Cleaning agent R1	1
Sealant D1	Â

Removing roof outer skin:

Open welded connections in area (1).

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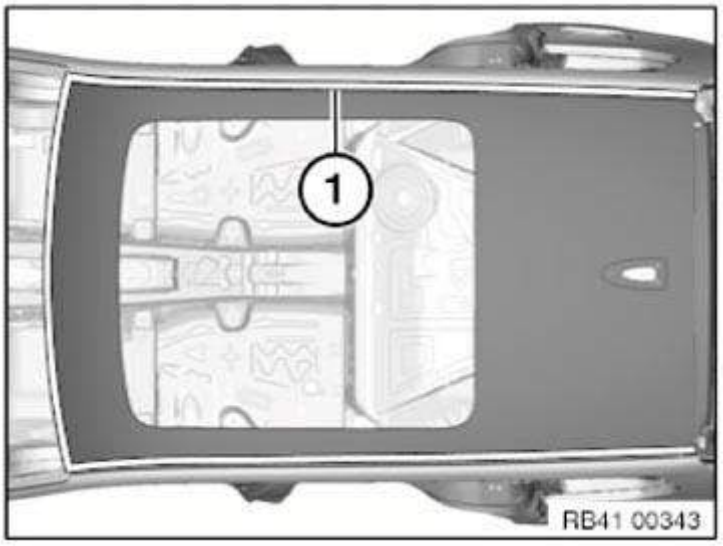


Fig. 264: Identifying Roof Outer Skin Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open brazed connections in areas (1) by grinding.

Open welded connections in areas (2).

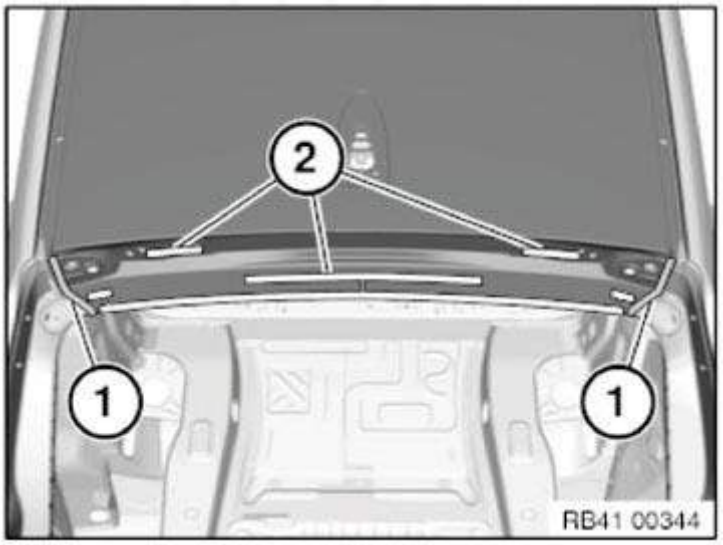


Fig. 265: Identifying Brazed Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1).

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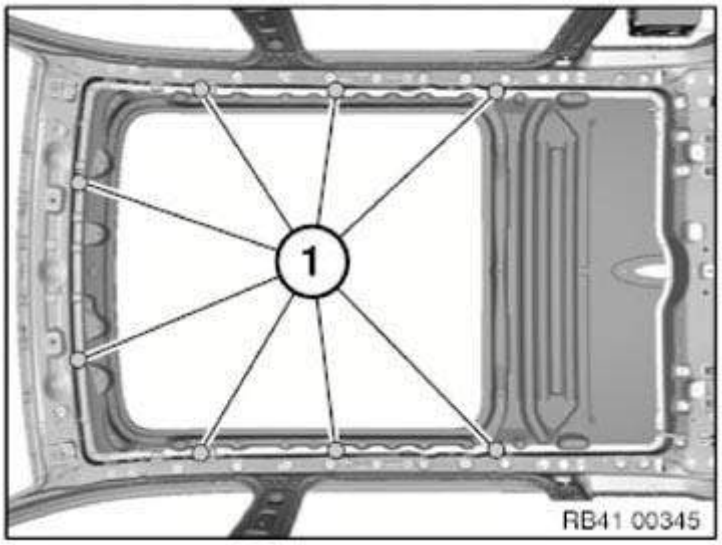


Fig. 266: Identifying Roof Outer Skin Screws
Courtesy of BMW OF NORTH AMERICA, INC.

OPEN bonded connections in areas (1).

Take off roof outer skin.

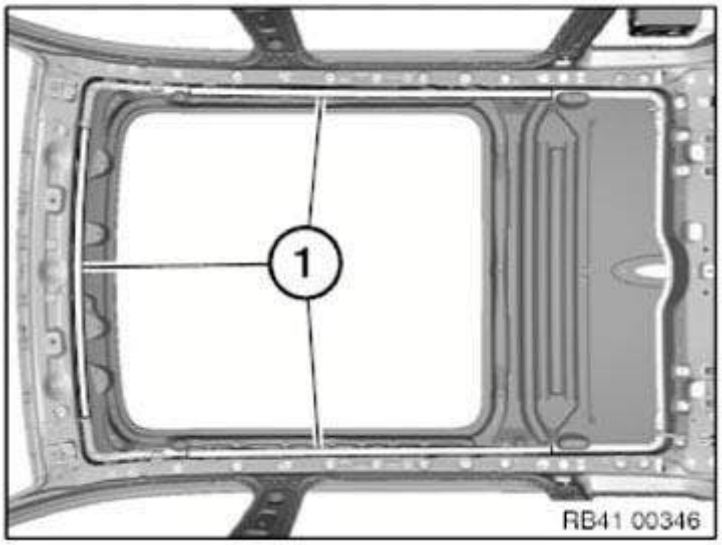


Fig. 267: Identifying Roof Outer Skin Bonded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part:

Adjust roof outer skin to fit and secure.

In area (1) drill 1 Ã˜ 4.2 mm hole for blind rivet.

Shown on left side, right side identical.

Remove new part again and deburr bore holes.

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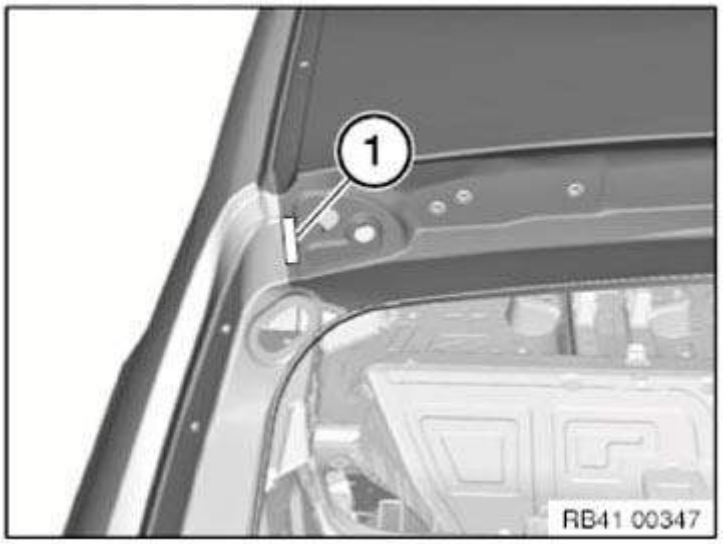


Fig. 268: Identifying Roof Outer Skin Area
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Do not grind/sand new part in area of bonding surfaces.

Installing roof outer skin:

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

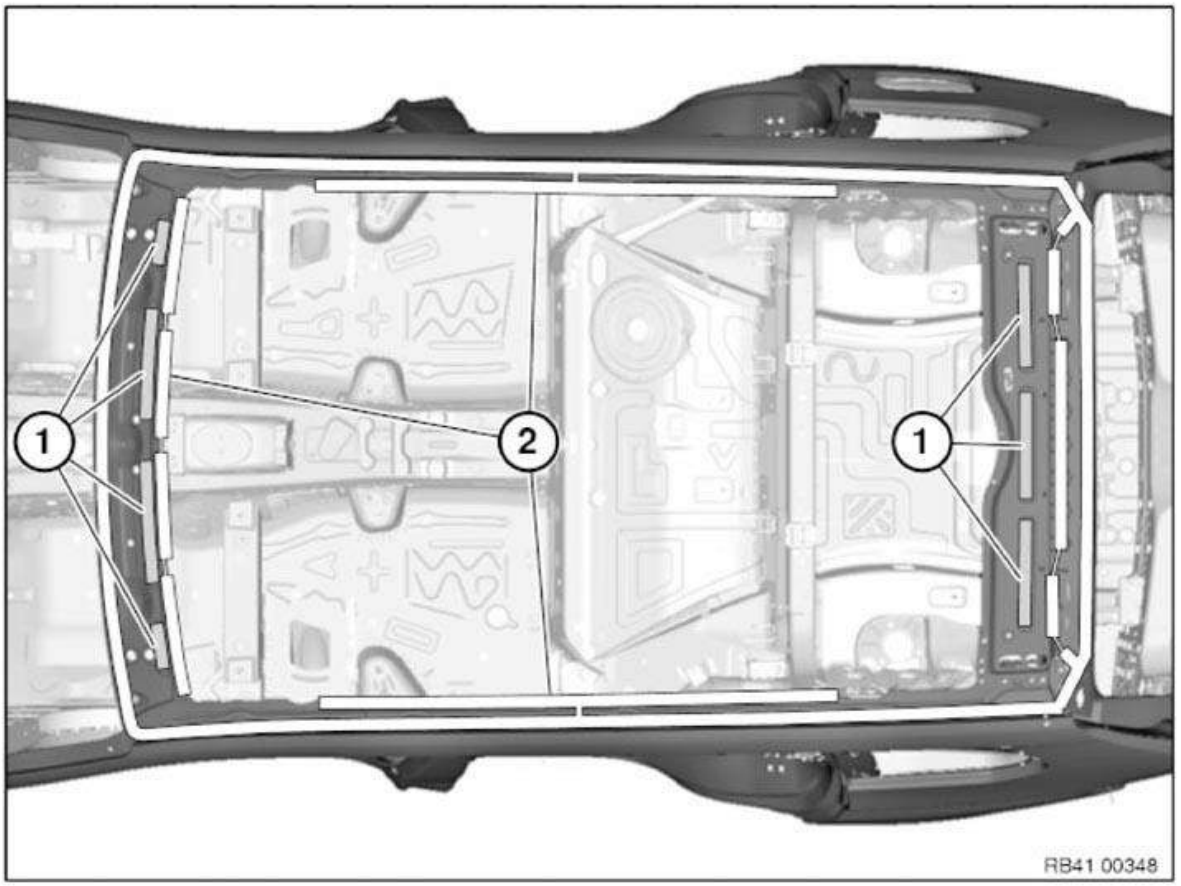


Fig. 269: Identifying Roof Outer Skin Bonding Surfaces Area On Vehicle
Courtesy of BMW OF NORTH AMERICA, INC.

In areas (1), apply sealant D1 in the same way as in series standard.

Apply adhesive in area (2).

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Apply a little more adhesive to node of A-pillar.

NOTE: Excess material at the nodes is later used for spreading to side frame.

Place roof outer skin with helpers evenly and centrally on vehicle, adjust to fit and secure.

Rivet roof outer skin with blind rivets.

Insert screws (1) and tighten down

Tightening torque **41 31 3AZ** .

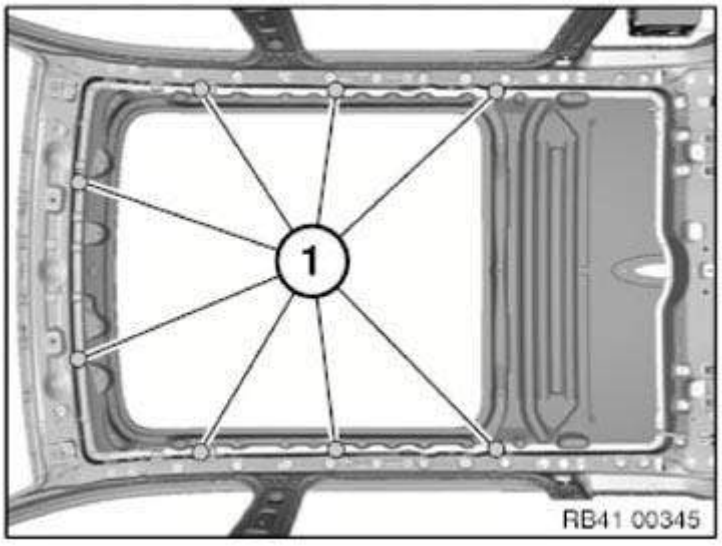


Fig. 270: Identifying Roof Outer Skin Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Secure roof outer skin with screws and nuts M6 at mounting holes (1) of roof rails.

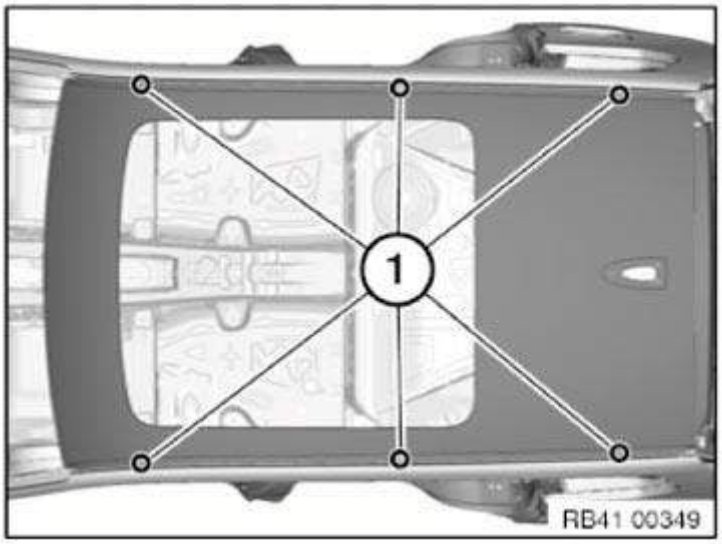


Fig. 271: Identifying Roof Outer Skin With Screws And Nuts M6 At Mounting Holes
Courtesy of BMW OF NORTH AMERICA, INC.

In area (1) rivet roof outer skin with 9 N4 punch rivets.

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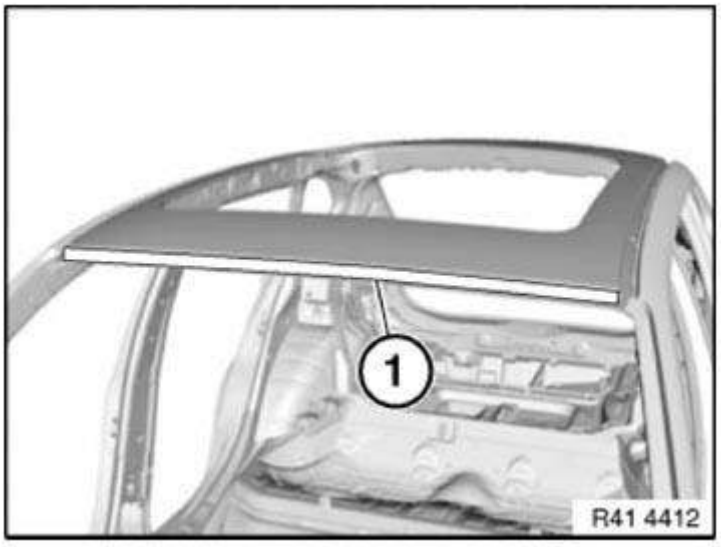


Fig. 272: Identifying Rivet Roof Outer Skin With 9 N4 Punch Rivets Area
Courtesy of BMW OF NORTH AMERICA, INC.

Use N4 punch rivets in areas (1) to (3).

Area	Number
1	7
2	4
3	2

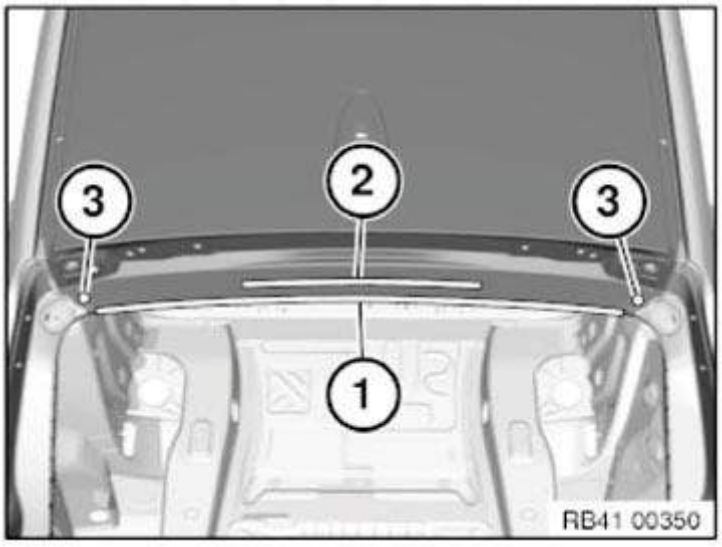


Fig. 273: Identifying N4 Punch Rivets Areas
Courtesy of BMW OF NORTH AMERICA, INC.

A-pillar nodes: Adapt step (1) between roof outer skin (2) and A-pillar with emerging adhesive. Remove excess adhesive.

IMPORTANT: 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.

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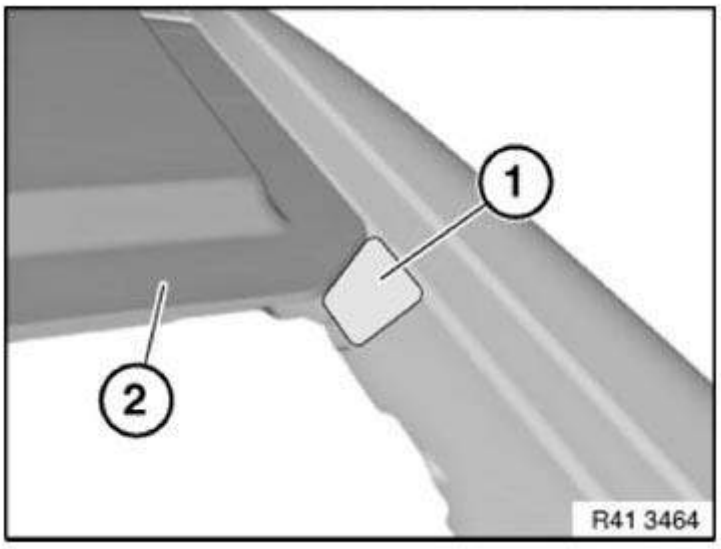


Fig. 274: Identifying Step Between Roof Outer Skin And A-Pillar
Courtesy of BMW OF NORTH AMERICA, INC.

Install hinges for tailgate until the adhesive has hardened.

Avoid contact between emerging adhesive and hinges!

Remove excess adhesive.

IMPORTANT: Do not use any cleaning agents containing solvents.

Seal adhesive areas and blind rivets with sealant D1.

IMPORTANT: Spread excess adhesive in roof trim strip channel. Mounting surfaces of clips for roof trim strips must not be moistened with adhesive.

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

Graphic similar.

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

In so doing, bear in mind subsequent fitting of roof trim strip/roof rail!

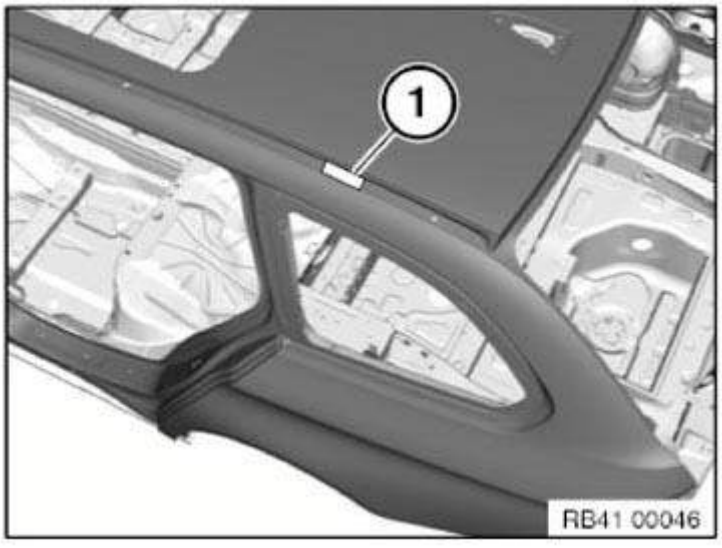


Fig. 275: Identifying EMC Screw Adhesive Applying Area

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Courtesy of BMW OF NORTH AMERICA, INC.

41 31 000 REPLACING ROOF OUTER SKIN (NORMAL ROOF)

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 sealant in areas (1) in the same way as in series standard.

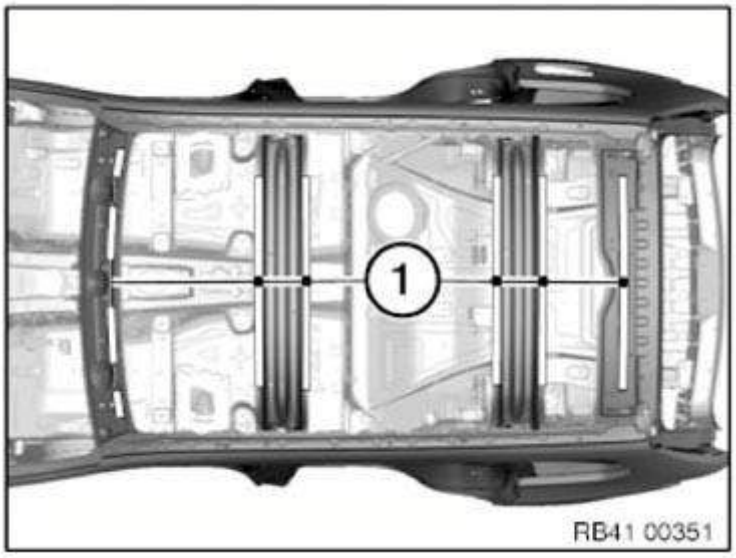


Fig. 276: Identifying Roof Outer Skin Sealant Applying Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 31 000 STRIPPING OPERATIONS - REPLACING ROOF OUTER SKIN (NORMAL ROOF)

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 (61 20 900)**
- **Remove cowl panel cover (51 13 116)**
- **Remove and install windscreen (51 31 000)**
- **Remove and install rear lid (41 62 000)**
- **Remove and install headlining. See 51 44 002 REMOVING AND REFITTING (REPLACING) ROOFLINER (VERSION WITHOUT PANORAMIC SUNROOF) or 51 44 013 REMOVING AND INSTALLING/REPLACING HEADLINING (WITH PANORAMA GLASS ROOF) .**
- **Remove and install left roof trim strip (51 13 280)**
- **Remove and install right roof trim strip (51 13 280)**
- **Remove and install roof aerial (65 20 035)**
- **Remove both tailgate hinges (41 62 515)**
- **Partially release tailgate seal.**

41 31 001 STRIPPING OPERATIONS - REPLACING ROOF OUTER SKIN (VERSION WITH PANORAMA GLASS ROOF)

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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 (61 20 900)**
- **Remove cowl panel cover (51 13 116)**
- **Remove and install windscreen (51 31 000)**
- **Remove and install rear lid (41 62 000)**
- **Remove and install headlining. See 51 44 002 REMOVING AND REFITTING (REPLACING) ROOFLINER (VERSION WITHOUT PANORAMIC SUNROOF) or 51 44 013 REMOVING AND INSTALLING/REPLACING HEADLINING (WITH PANORAMA GLASS ROOF) .**
- **Remove and install panorama glass roof (54 10 260)**
- **Remove and install left roof trim strip (51 13 280)**
- **Remove and install right roof trim strip (51 13 280)**
- **Remove and install roof aerial (65 20 035)**
- **Remove both tailgate hinges (41 62 515)**
- **Slightly release tailgate seal**

DASH COWL

41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41

Refer to 41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41.

41 32 031 REPLACE THE A-PILLAR ON THE OUTSIDE LEFT IN THE AREA OF THE WINDSCREEN

Read contents of BODY, GENERAL.

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

Use only approved SPOT-WELDING APPARATUS for repairs.

IMPORTANT: Operations on pyrotechnical devices may only be carried out by authorized experts.
Improper, unauthorized 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 BATTERY EARTH LEAD

Remove PANEL FOR ROOF PILLAR

Following new body parts are required (refer to OVERVIEW OF CONSUMABLES):

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- (1) A-pillar with entrance

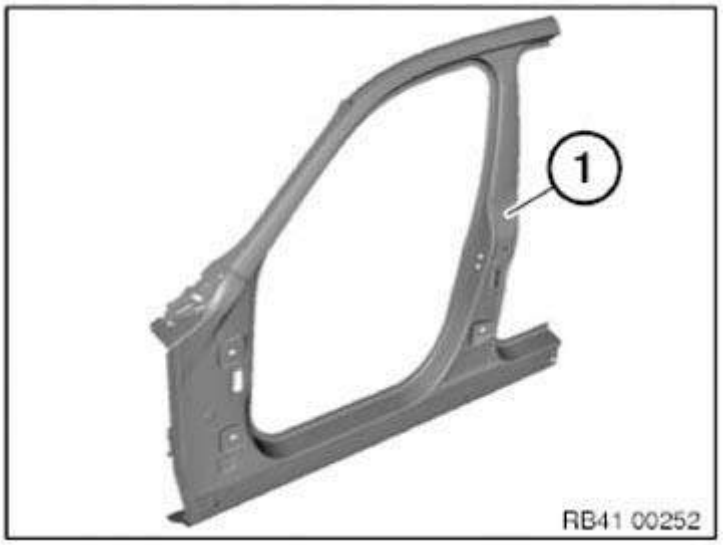


Fig. 277: Identifying A-Pillar With Entrance
Courtesy of BMW OF NORTH AMERICA, INC.

Removing the A-pillar in the area of the windscreen

Unclip wiring harness in these areas (1).

Undo airbag at the attachment points (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!

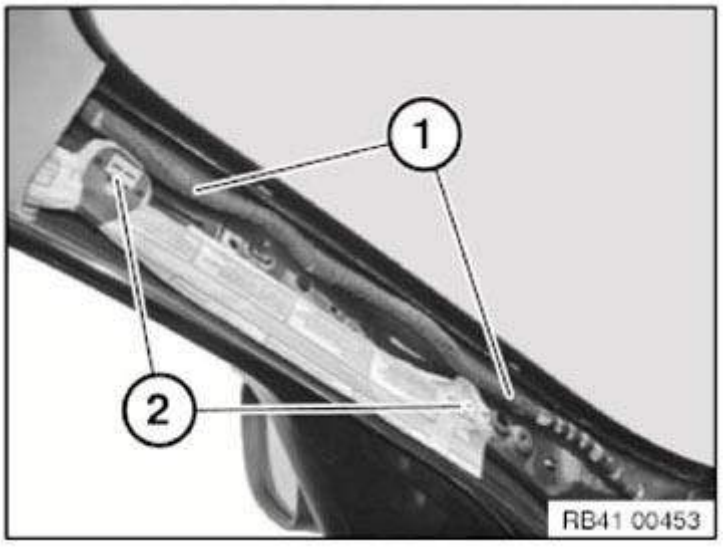


Fig. 278: Identifying A-Pillar Airbag Wiring Harness Areas
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Use protective sleeve (1) to protect the airbag.

Check protective sleeve for damage prior to use.

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A damaged protective sleeve must not be used!

(2) Velcro fastener
(3) Loop

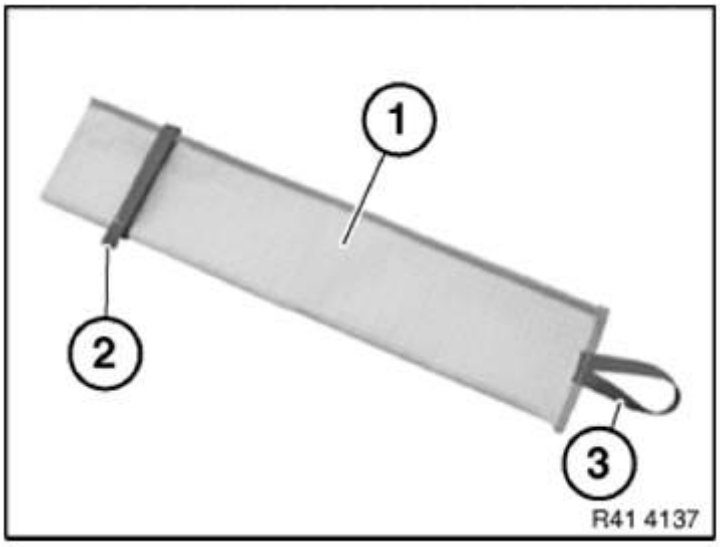


Fig. 279: Identifying Protective Sleeve, Velcro Fastener, Loop
Courtesy of BMW OF NORTH AMERICA, INC.

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.

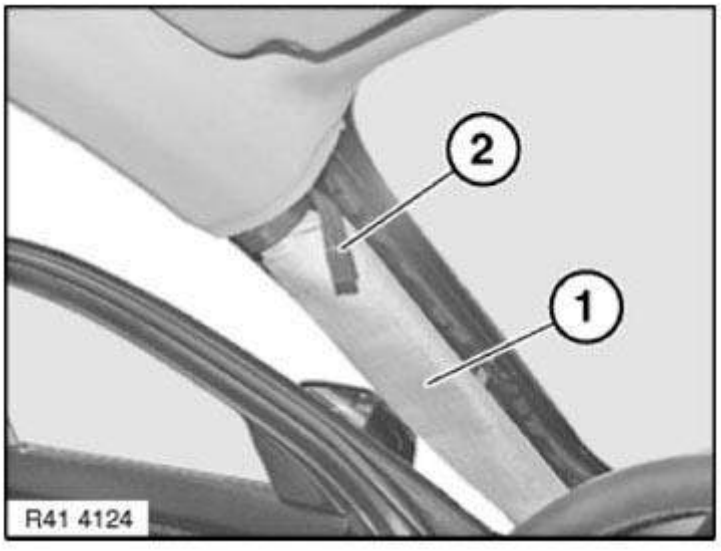


Fig. 280: Identifying Protective Sleeve With Velcro Fastener
Courtesy of BMW OF NORTH AMERICA, INC.

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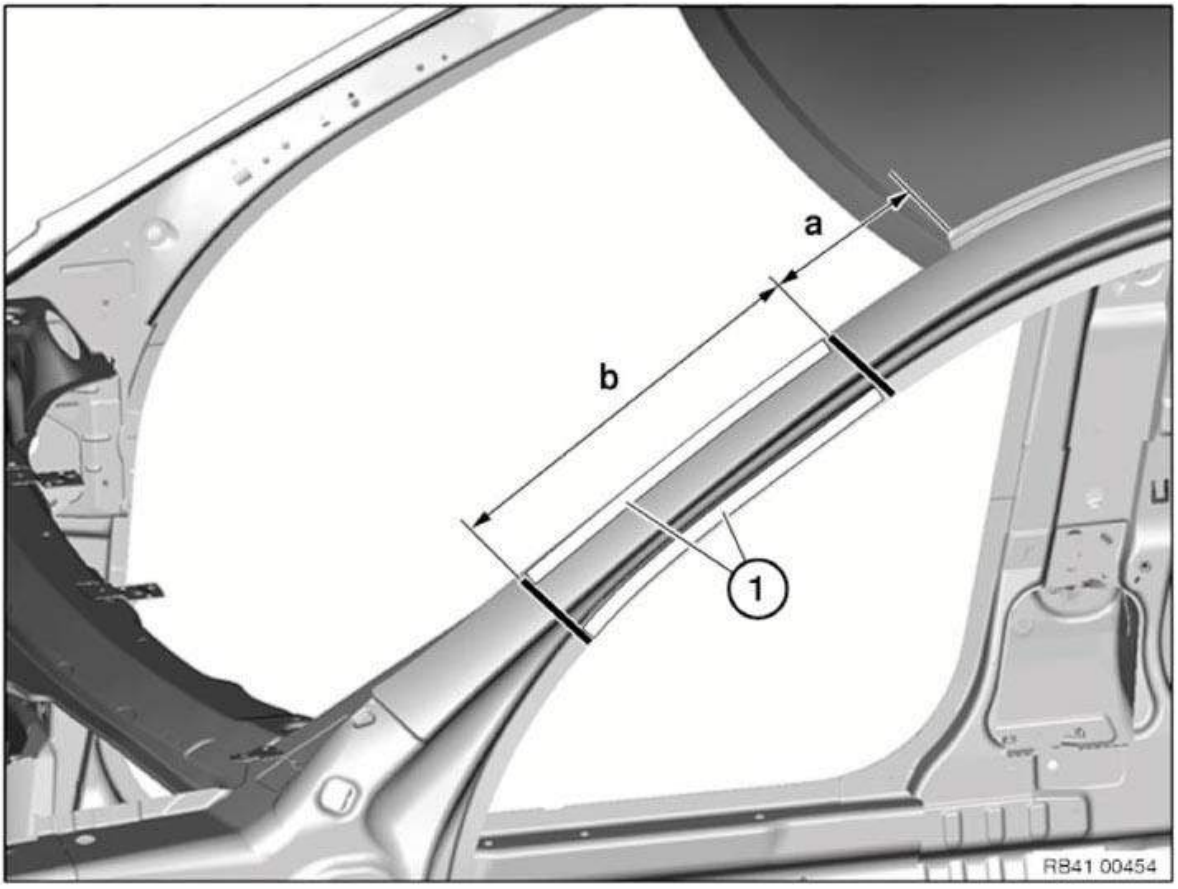


Fig. 281: Identifying A Pillar Severance Cutting Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

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. 340 mm below severance cut a.

Open welded connections in areas (1).

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

Install and weld new parts and reinforcement plates.

After completing welding work:

Check airbag in area of protective sleeve for damage, **REPLACE** if necessary.

41 32 032 REPLACING OUTER RIGHT A-PILLAR IN AREA OF WINDSCREEN

Operation is identical to replacing "**OUTER LEFT A-PILLAR IN AREA OF WINDSCREEN**".

FRONT TRIM PANEL

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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.

41 33 039 REMOVING AND INSTALLING FRONT PANEL

Necessary preliminary tasks:

- Remove **FRONT BUMPER TRIM** .

Unlock plug-in connector (1) for horn and disconnect.

Shown on left side, right side identical.

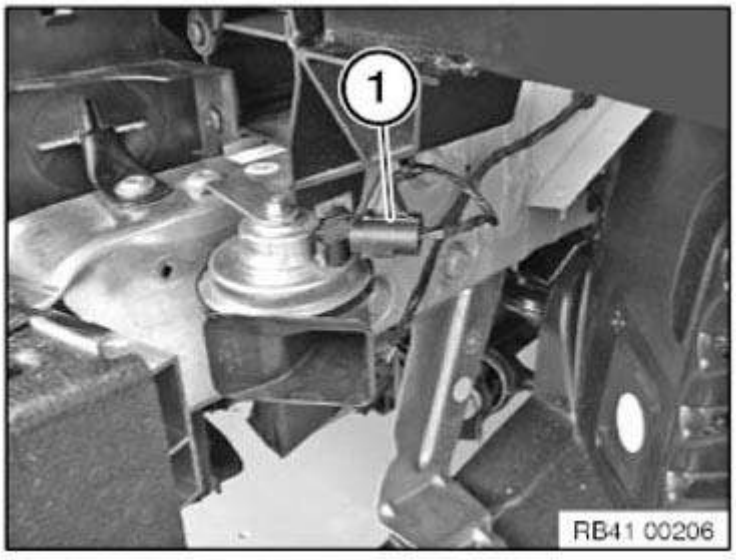


Fig. 282: Identifying Connector For Horn
Courtesy of BMW OF NORTH AMERICA, INC.

Open clutch (1) and detach Bowden cable for hood/bonnet release.

Release screw (2).

Tightening torque **63 12 1AZ** .

Unlock plug connection (3) for headlight and disconnect.

Unlock plug connection for wiring harness (4) and disconnect.

Release screws (5).

Tightening torque **17 10 2AZ** .

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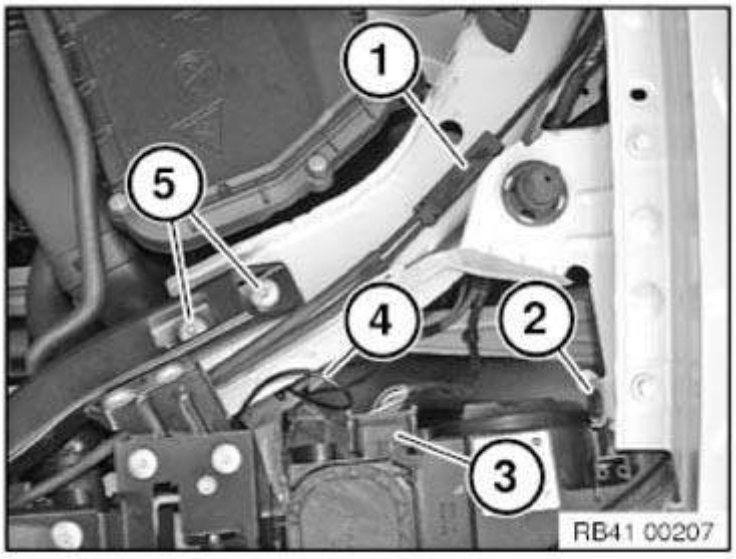


Fig. 283: Identifying Headlight Plug Connection, Clutch
Courtesy of BMW OF NORTH AMERICA, INC.

Release screw (1).

Tightening torque **63 12 1AZ** .

Unlock plug connection (2) for headlight and disconnect.

Release screws (3).

Tightening torque **17 10 2AZ** .

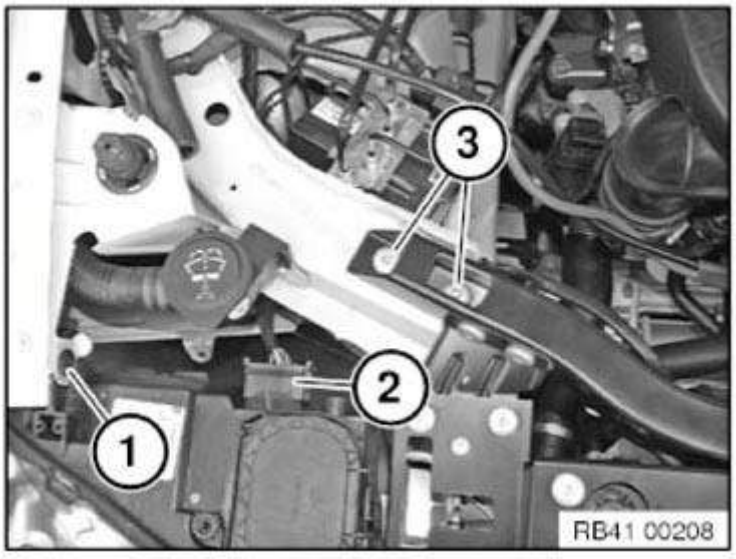


Fig. 284: Identifying Headlight Plug Connection And Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Pull out retainer (2) upwards.

Press the 5 latch mechanisms inward and remove bearing pin (2) upward.

Shown on left side, right side identical.

In case of damage during disassembly, replace bearing pin (plug).

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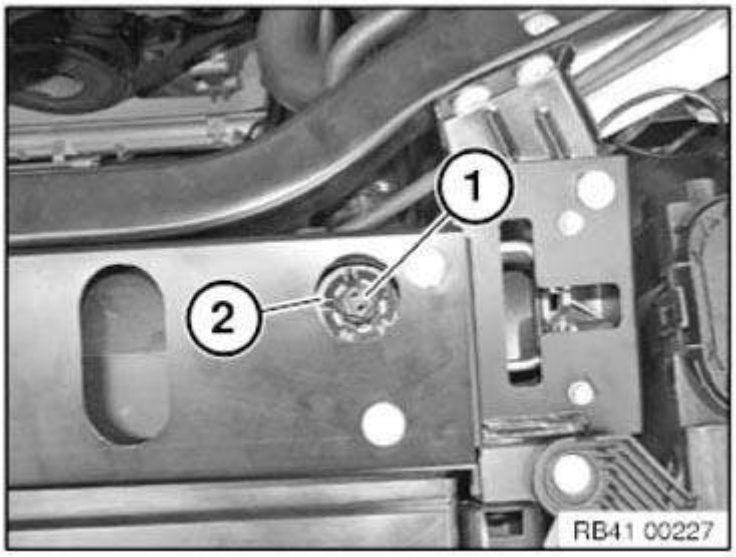


Fig. 285: Identifying Bearing Pin (Plug) With Retainer
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) on engine support on both sides and remove front panel.

Tightening torque **51 11 3AZ** .

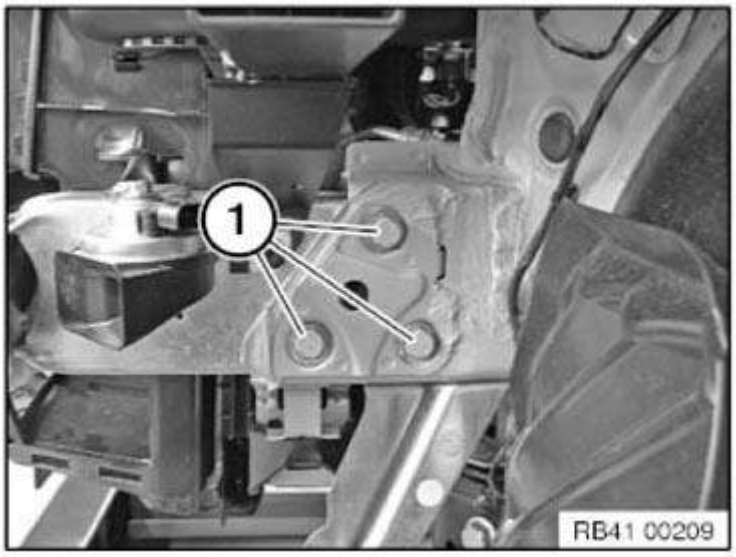


Fig. 286: Identifying Engine Support Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

When mounting the front panel, ensure that the intake air channel (1) is correctly positioned.

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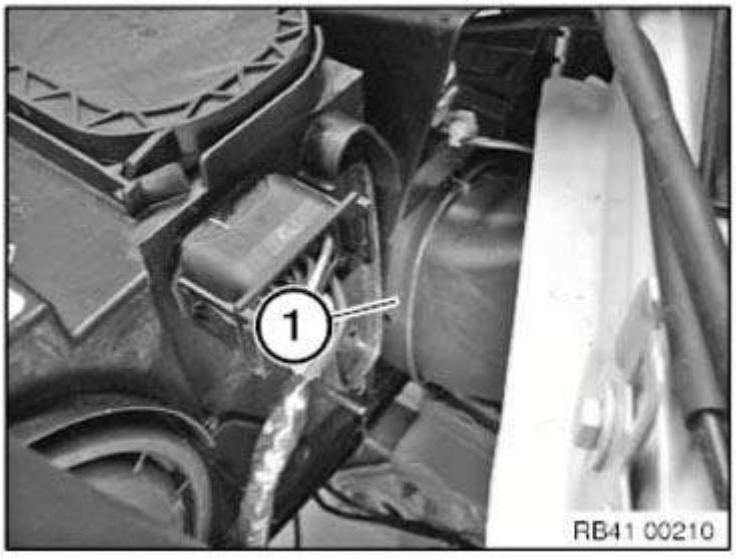


Fig. 287: Identifying Intake Air Channel
Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

In area (1), ensure that the side wall and headlight are correctly positioned.

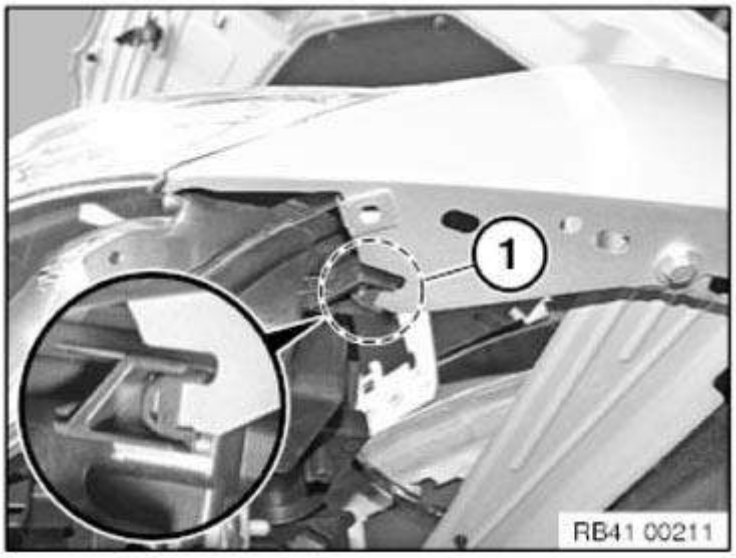


Fig. 288: Identifying Side Wall And Headlight Area
Courtesy of BMW OF NORTH AMERICA, INC.

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 **OVERVIEW OF CONSUMABLES**):

- (1) Holder, side wall, front (variant 1)
- (2) Holder, side wall, front (variant 2)

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Following **CONSUMABLES** are required:

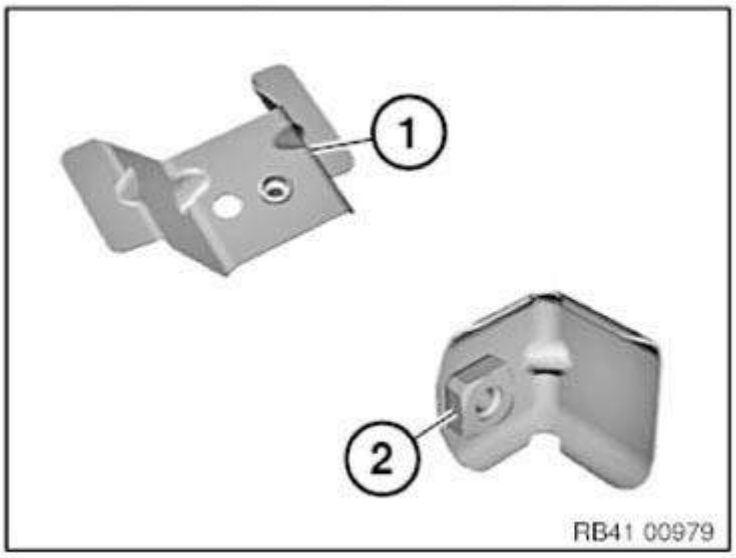


Fig. 289: Identifying Holder, Side Wall, Front (Variant 1 And 2)
Courtesy of BMW OF NORTH AMERICA, INC.

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).

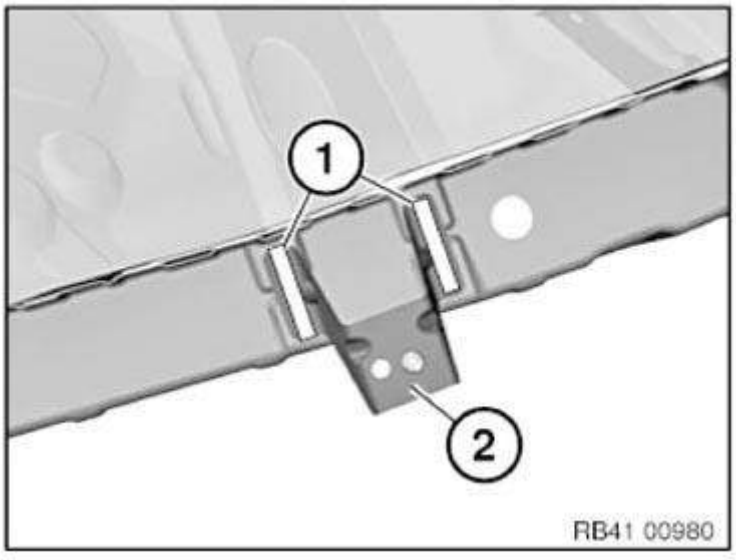


Fig. 290: Identifying Side Wall Holder (Variant 1) Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part:

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.

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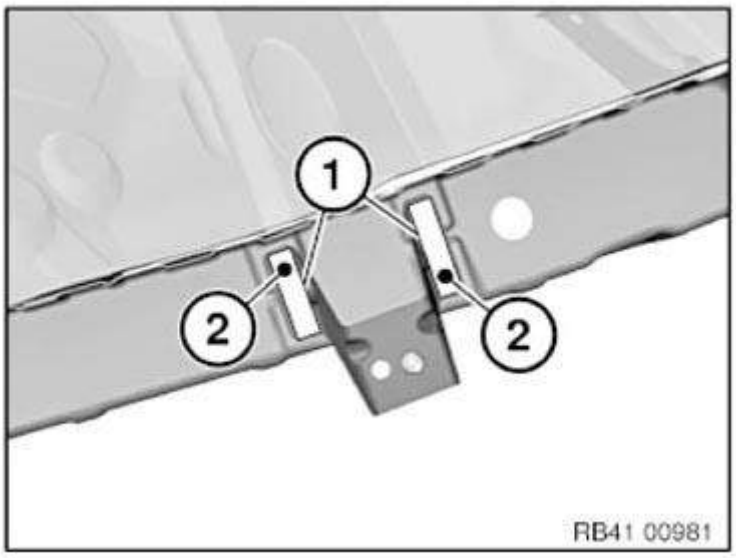


Fig. 291: Identifying Bonding Surfaces Bore Holes Area For Blind Rivets N3
Courtesy of BMW OF NORTH AMERICA, INC.

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).

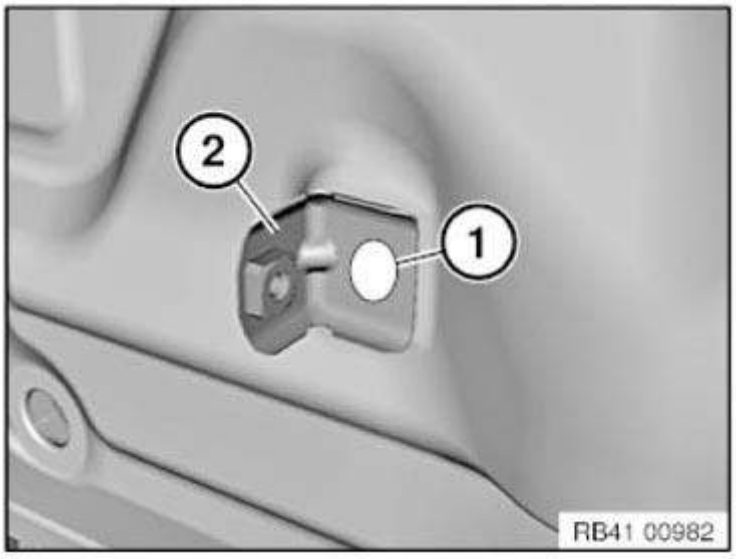


Fig. 292: Identifying Side Wall Holder (Variant 2) Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Preparation of new part:

Fit in new part.

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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.

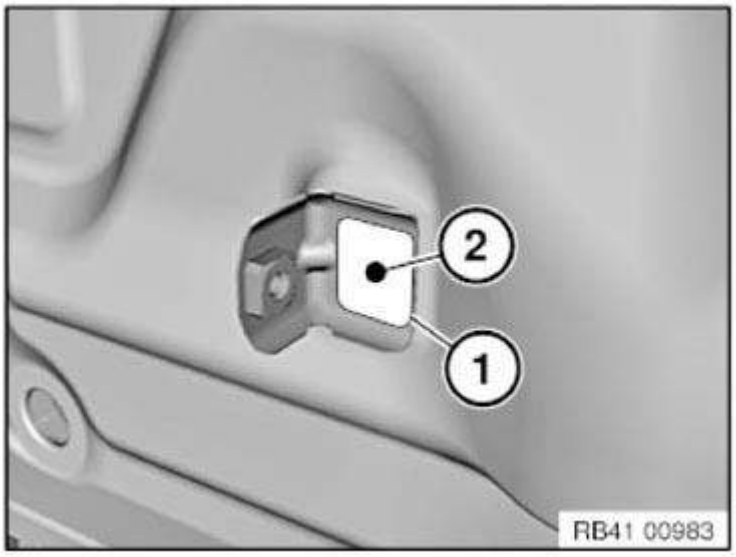


Fig. 293: Identifying Adhesive Surface Bore Hole Area
Courtesy of BMW OF NORTH AMERICA, INC.

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.

REAR TRIM PANEL

41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41

Refer to **41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41**.

41 34 040 REPLACE TAIL PANEL OUTER SECTION AND INNER CENTER SECTION

Read contents of **BODY, GENERAL**.

STRIP DOWN vehicle.

Observe procedure of **REPAIR STAGE 3**.

Following new body parts are required (see **OVERVIEW OF CONSUMABLES**):

- (1) Rear trim, outer skin
- (2) Rear trim, inner

Following **CONSUMABLES** are required:

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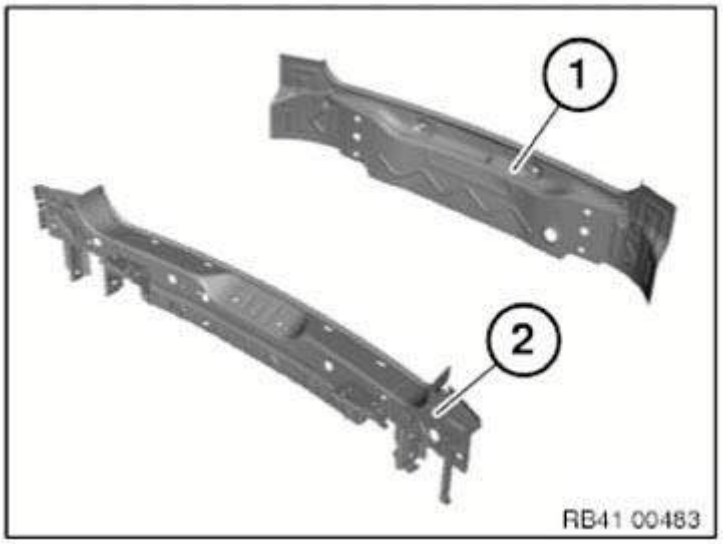


Fig. 294: Identifying Tail Panel Outer Section And Inner Center Section
Courtesy of BMW OF NORTH AMERICA, INC.

Material	Quantity
Adhesive K5a	1
Adhesive K5b	1
Cleaning agent R1	1
Blind rivet N3	38
Punch rivetN4	24
EMC screw	10
Sealant D1	Â
Cavity wax remover	Â

Removing the tail panel outer section and inside center section

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

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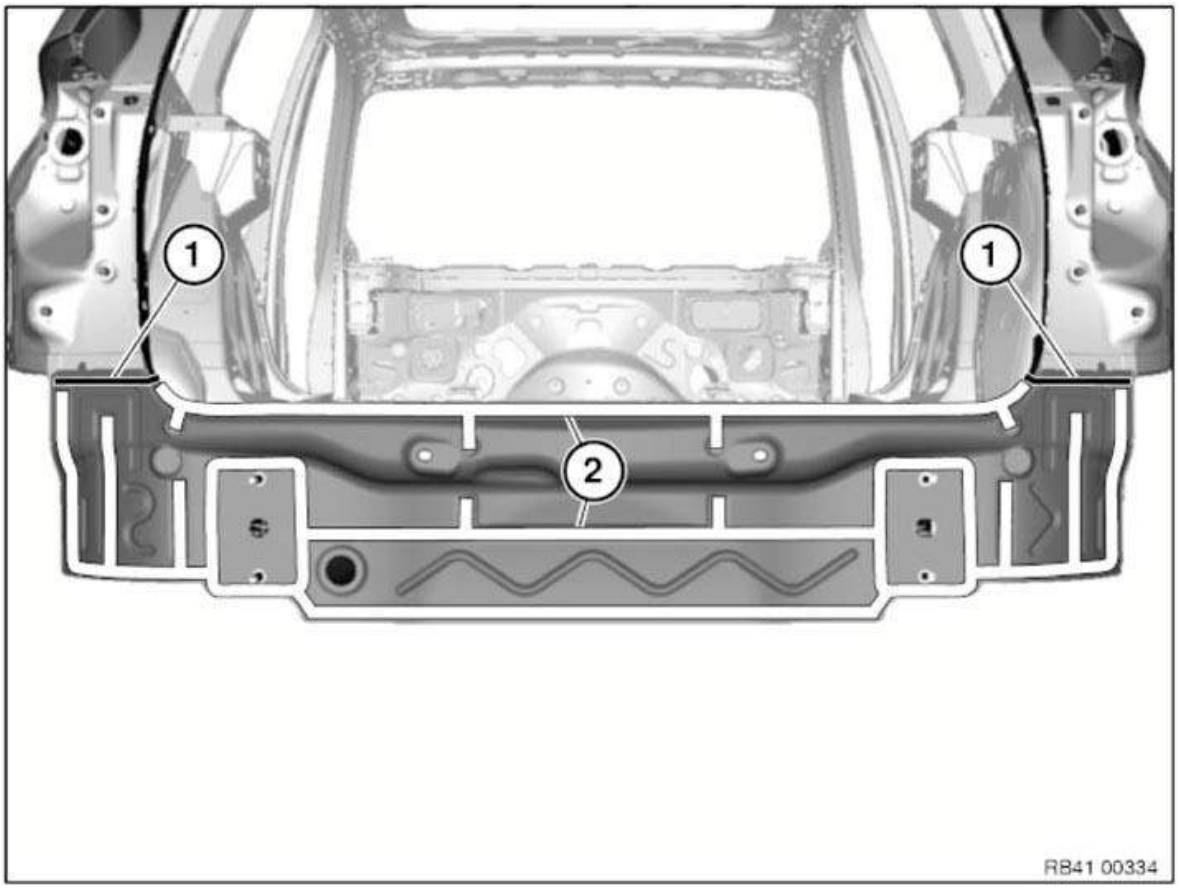


Fig. 295: Identifying Tail Panel Outer Section And Inside Center Section Cutting Area
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Cut outer panel only.

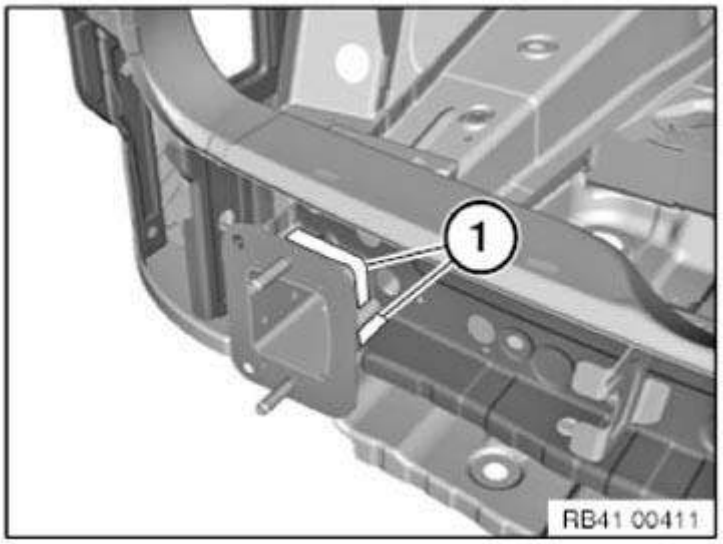
Cut severance cuts (1) 15 mm below the component edge of the rear bulb mount and separate.

Open welded connections in areas (2).

Remove rear trim panel outer skin.

NOTE: The new part is installed overlapping in the areas (1).

Open welded connections in areas (1).



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Fig. 296: Identifying Rear Trim Panel Outer Skin Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

Remove tail panel center section.

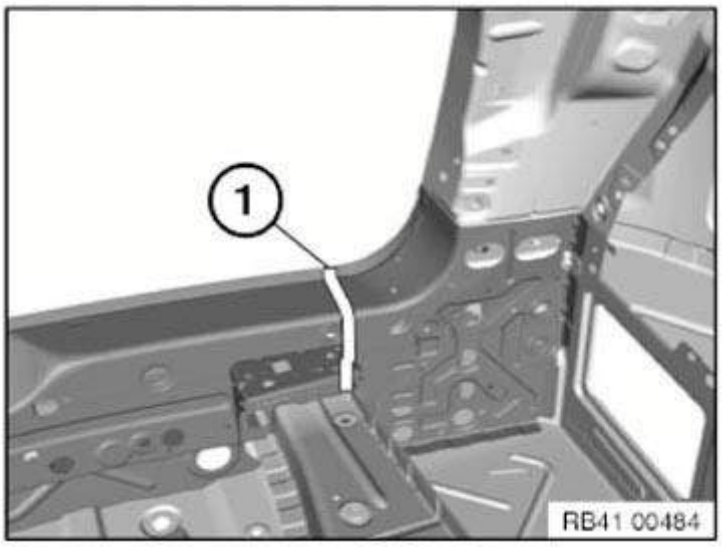


Fig. 297: Identifying Tail Panel Center Section Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Mark new part in accordance with severance cut on rear trim panel outer skin according to vehicle + 15 mm extra material and cut.

NOTE: The outer skin of the rear trim panel is bonded using the bonding riveting process.

The inner panel center section is bonded using the bonding riveting process as well as welded.

IMPORTANT: Version with automatic tailgate actuation:
Risk of damage to spindle drive: only move rear lid slowly by hand.

Mark severance cut (1) on both sides as pictured and cut.

Remove metal section (2).

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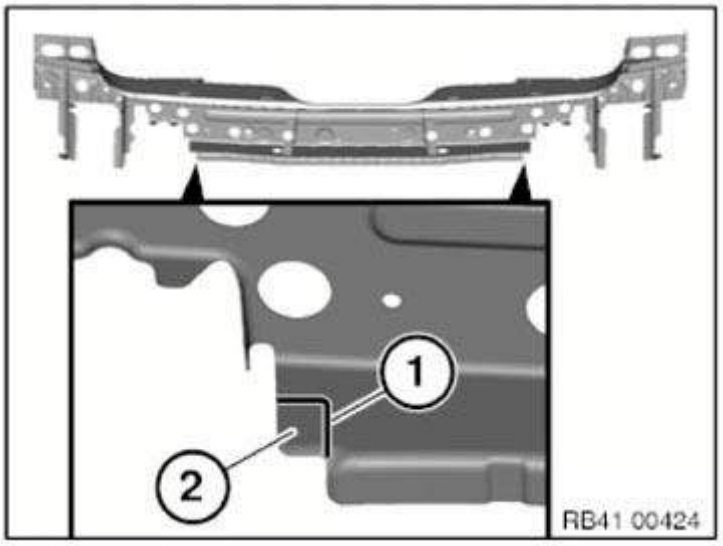


Fig. 298: Identifying Metal Section
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in area (1).

Remove metal section (2) of center section.

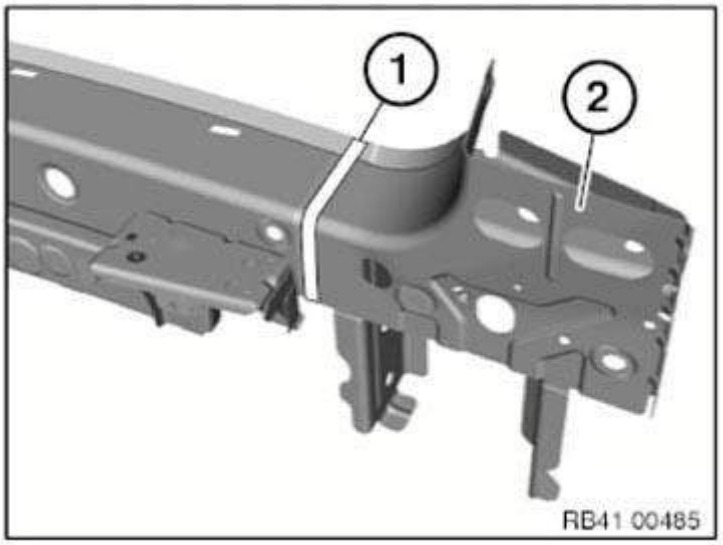


Fig. 299: Identifying Metal Section Of Center Section
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust new parts in combination with tailgate and rear lights to fit and secure.

In area (1), set four Ã˜ 4.2 mm bore holes for blind rivets.

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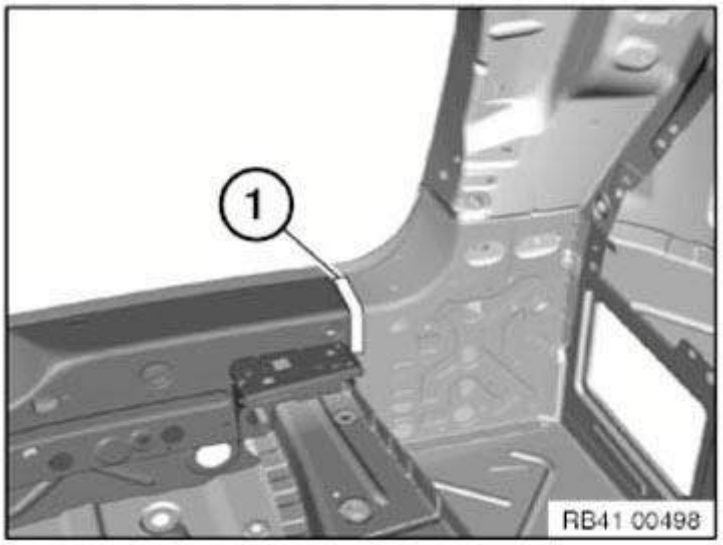


Fig. 300: Identifying Bore Holes For Blind Rivets Area (1 Of 2)
Courtesy of BMW OF NORTH AMERICA, INC.

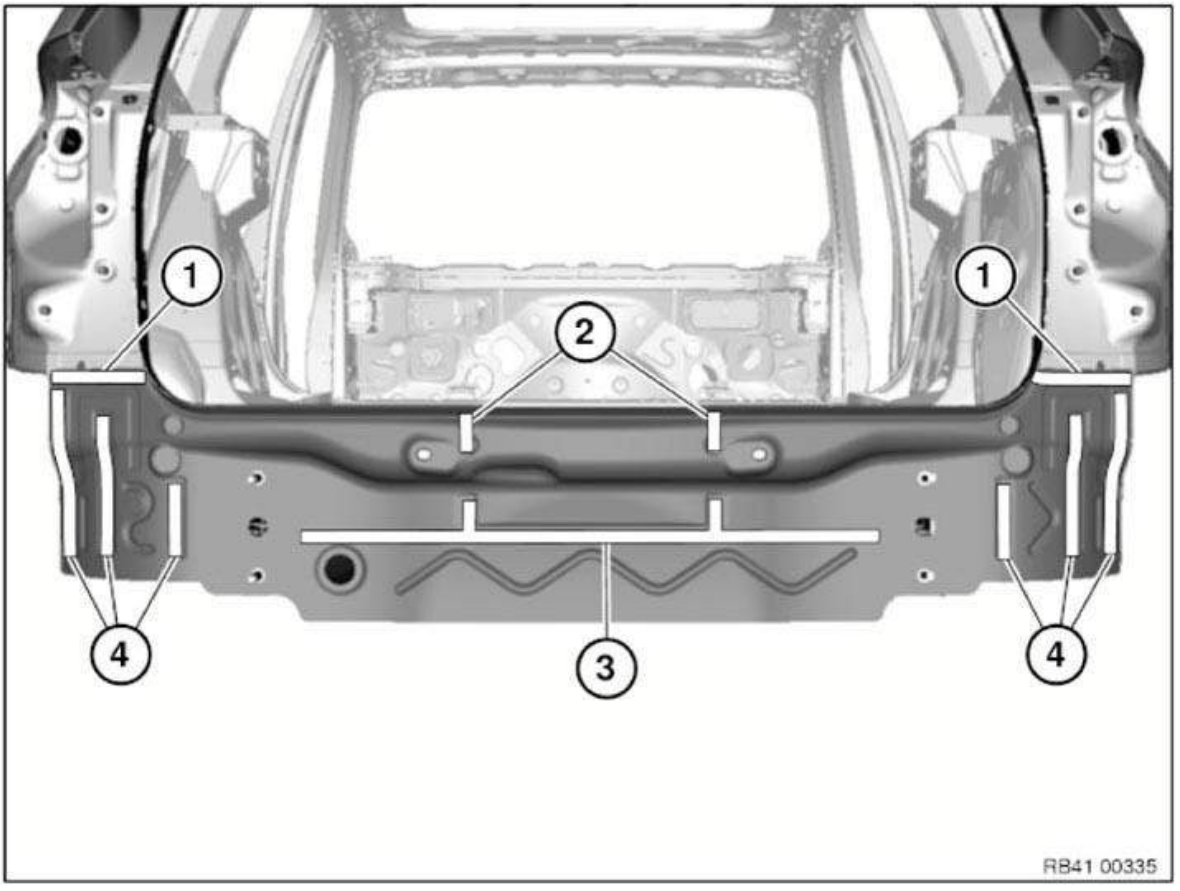


Fig. 301: Identifying Rear Trim Panel Area
Courtesy of BMW OF NORTH AMERICA, INC.

In areas (1) to (4), drill Ã˜ 4.2 mm bore holes for blind rivets.

Area	Number
1	2 on each side
2	2
3	8
4	8 on each side

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Remove new part and deburr holes.

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

Installing tail panel and inner center section

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

Apply adhesive to bonding surfaces.

When inserting rear trim panel, make sure there is sufficient adhesive on bonding surfaces.

Install new part and rivet with blind rivets.

In areas (1) weld new part.

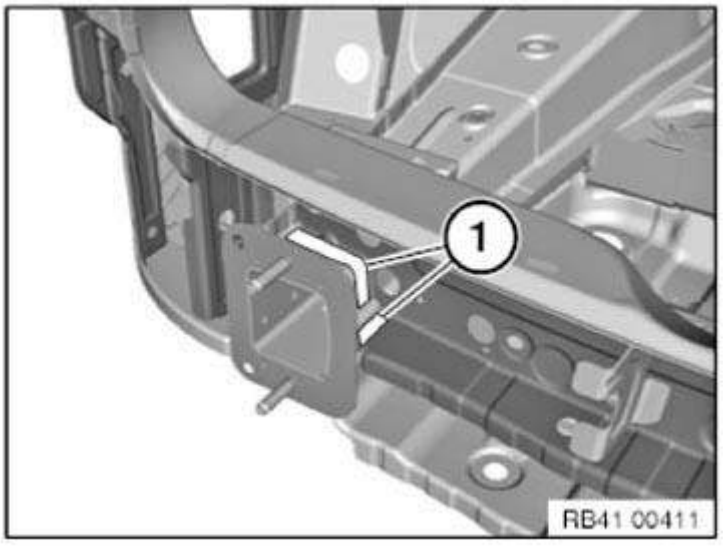


Fig. 302: Identifying Rear Trim Panel Outer Skin Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Weld new part in area (1).

IMPORTANT: Risk of damage!
Avoid applying excessive heat to the neighboring adhesive areas.

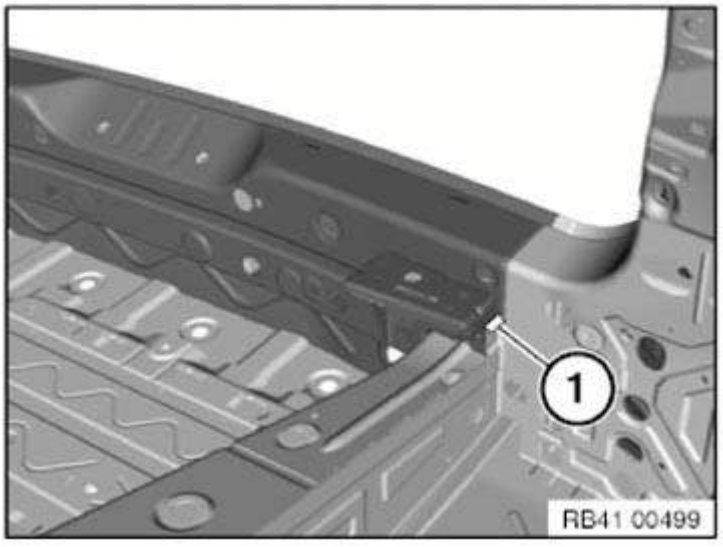


Fig. 303: Identifying Tail Panel And Inner Center Section Weld Parts Areas

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Courtesy of BMW OF NORTH AMERICA, INC.

Installing the outer skin of the rear trim panel

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

Apply adhesive to bonding surfaces.

When inserting rear trim panel, make sure there is sufficient adhesive on bonding surfaces.

Install rear trim panel and rivet with blind rivets.

Use N4 punch rivets in areas (1) to (3).

Area	Number
1	11
2	7
3	3 on each side

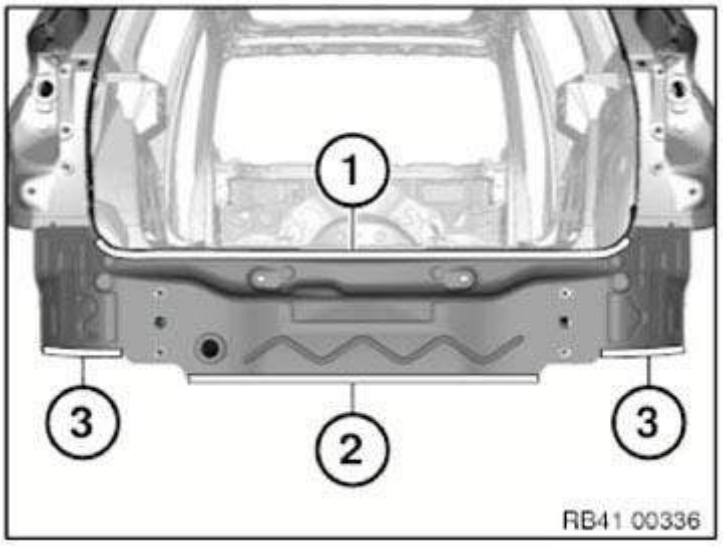


Fig. 304: Identifying Rear Trim Panel And Rivet With Blind Rivets Area
Courtesy of BMW OF NORTH AMERICA, INC.

Press rear trim panel in areas (1) and remove emerging adhesive.

Then install carrier for bumper trim to secure rear trim panel carrier.

IMPORTANT: Prevent emerging adhesive from coming into contact with support.
Do not use any cleaning agents containing solvents.

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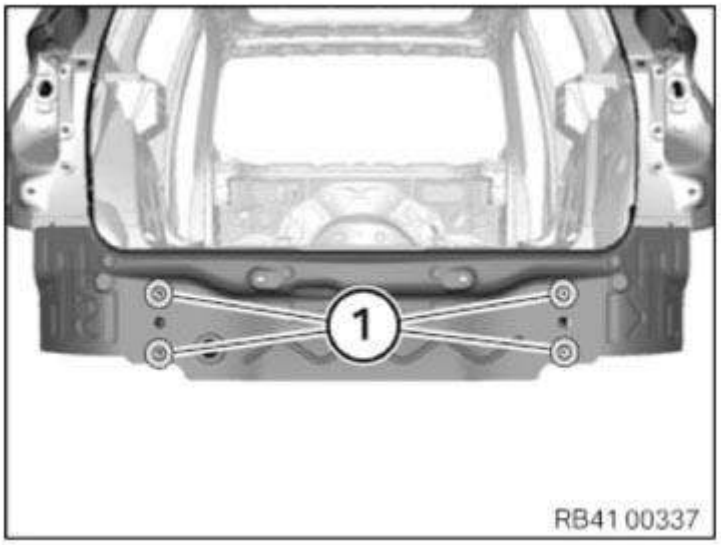


Fig. 305: Identifying Rear Trim Panel Adhesive Areas
Courtesy of BMW OF NORTH AMERICA, INC.

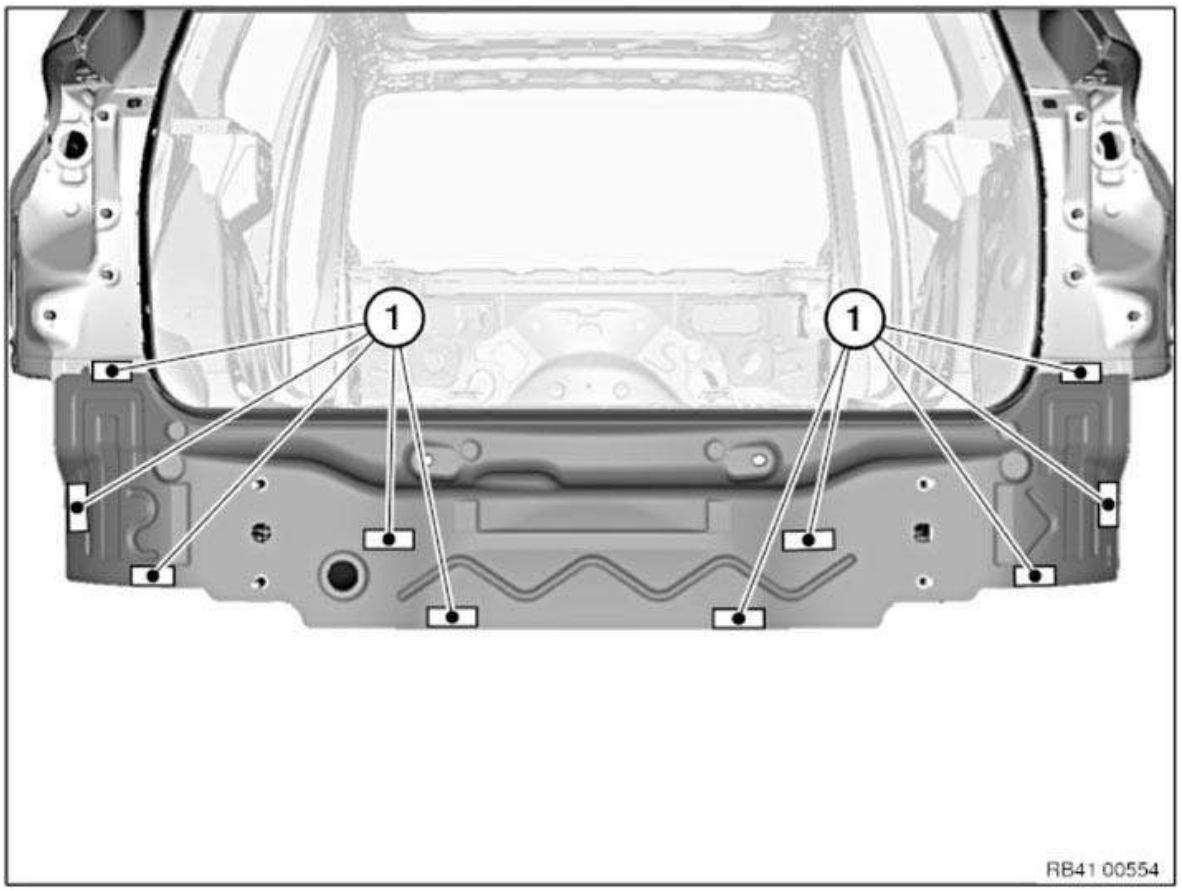


Fig. 306: Identifying EMC Screws Areas
Courtesy of BMW OF NORTH AMERICA, INC.

After hardening of the adhesive install **10 EMC SCREWS** in the areas shown (1).

41 34 060 REPLACE TAIL PANEL OUTER SECTION AND INNER SECTION

Read contents of **BODY, GENERAL**.

STRIP DOWN vehicle

Observe procedure of **REPAIR STAGE 3**.

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Following new body parts are required (see **OVERVIEW OF CONSUMABLES**):

- (1) Rear trim, outer skin
- (2) Rear trim, inner
- (3) Luggage compartment floor, left and right

Following **CONSUMABLES** are required:

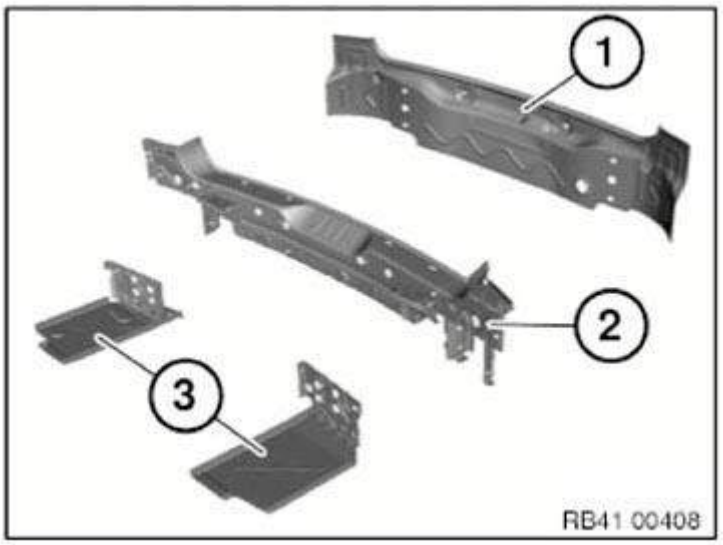


Fig. 307: Identifying Luggage Compartment Floor, Left And Right
Courtesy of BMW OF NORTH AMERICA, INC.

Material	Quantity
Adhesive K5a	1
Adhesive K5b	1
Blind rivet N3	26
Punch rivetN4	24
EMC screw	10
Cleaning agent R1	1
Sealant D1	Â
Cavity wax remover	Â

Remove tail panel outer section and inner section

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

Open welded connections in area (1).

Completely drill through welded connections in these areas (2).

Roughly cut out tail panel outer section and inner section.

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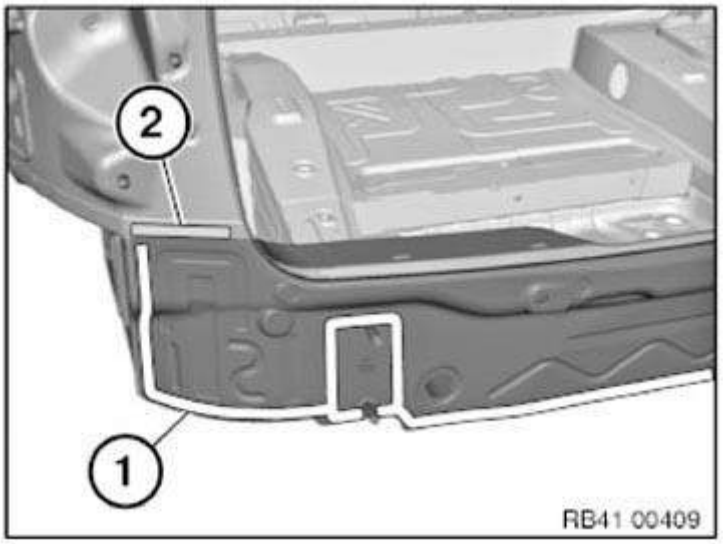


Fig. 308: Identifying Tail Panel Outer Section And Inner Section Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

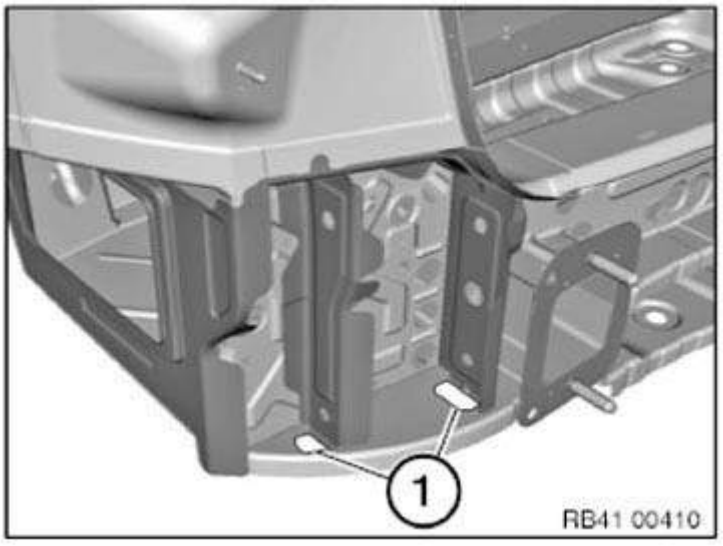


Fig. 309: Identifying Tail Panel Outer Section And Inner Section Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

Open welded connections in areas (1).

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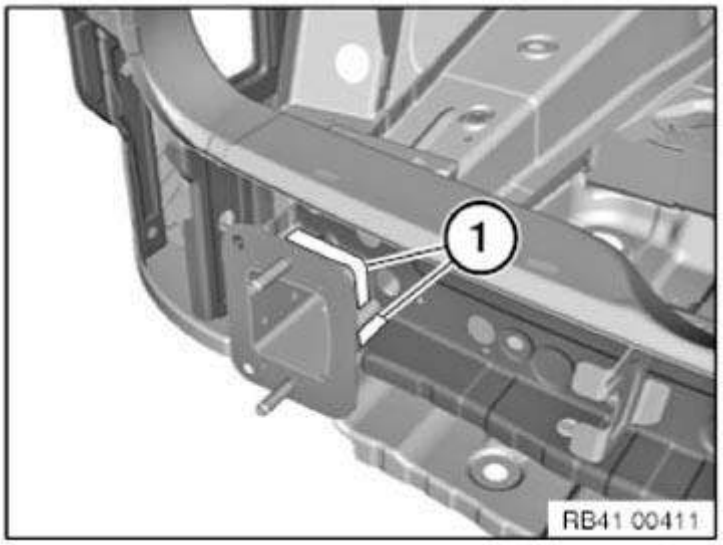


Fig. 310: Identifying Rear Trim Panel Outer Skin Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

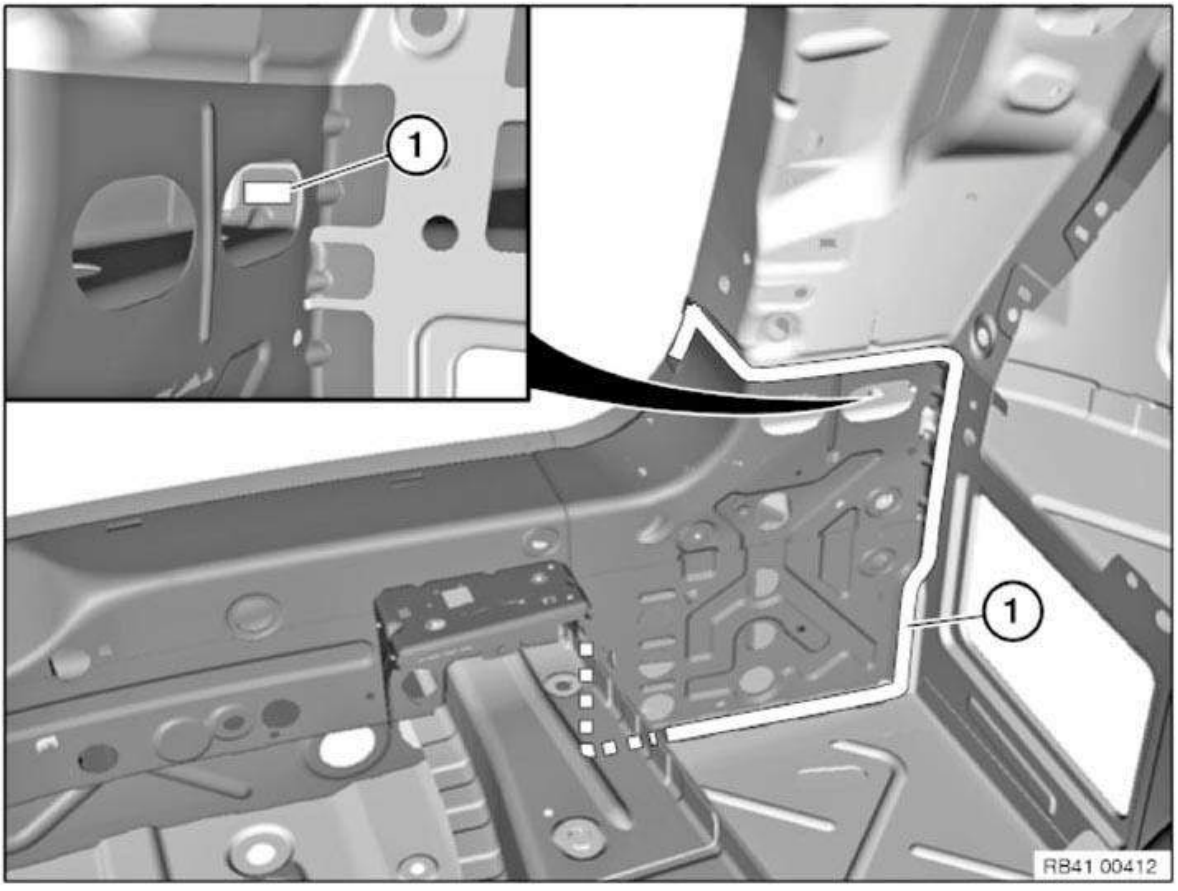


Fig. 311: Identifying Exterior And Interior Tail Part Welded Connections Area
Courtesy of BMW OF NORTH AMERICA, INC.

View from vehicle interior.

Open welded connections in areas (1).

Remove exterior and interior tail part.

New part preparation

NOTE: The outer skin of the rear trim panel is bonded using the bonding riveting

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process. All other components are welded.

IMPORTANT: Version with automatic tailgate actuation:
Risk of damage to spindle drive: only move rear lid slowly by hand.

Undo welded connections and disconnect the rear trim panel support (1) from the luggage compartment floor.

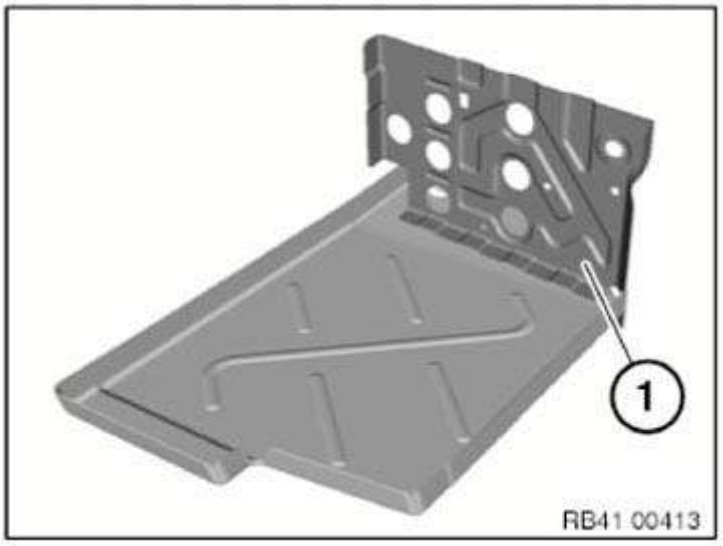


Fig. 312: Identifying Rear Trim Panel Support From Luggage Compartment Floor
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cut (1) as pictured and cut.

Remove metal section (2).

Shown on left side. Right side as mirror image.

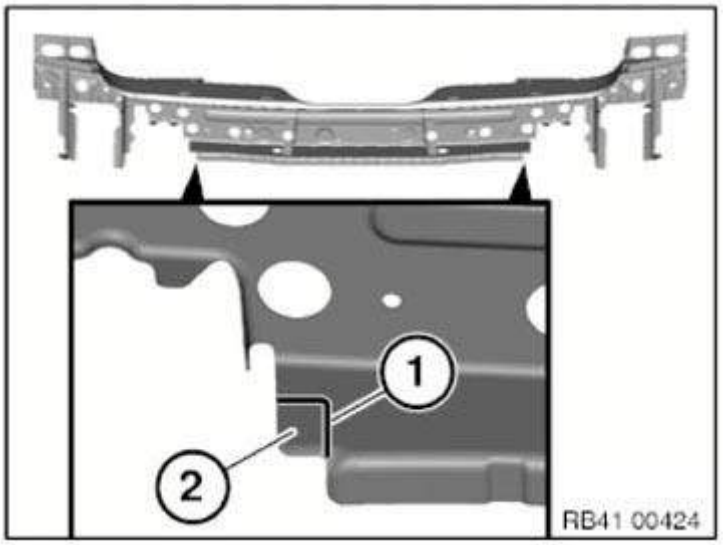


Fig. 313: Identifying Metal Section
Courtesy of BMW OF NORTH AMERICA, INC.

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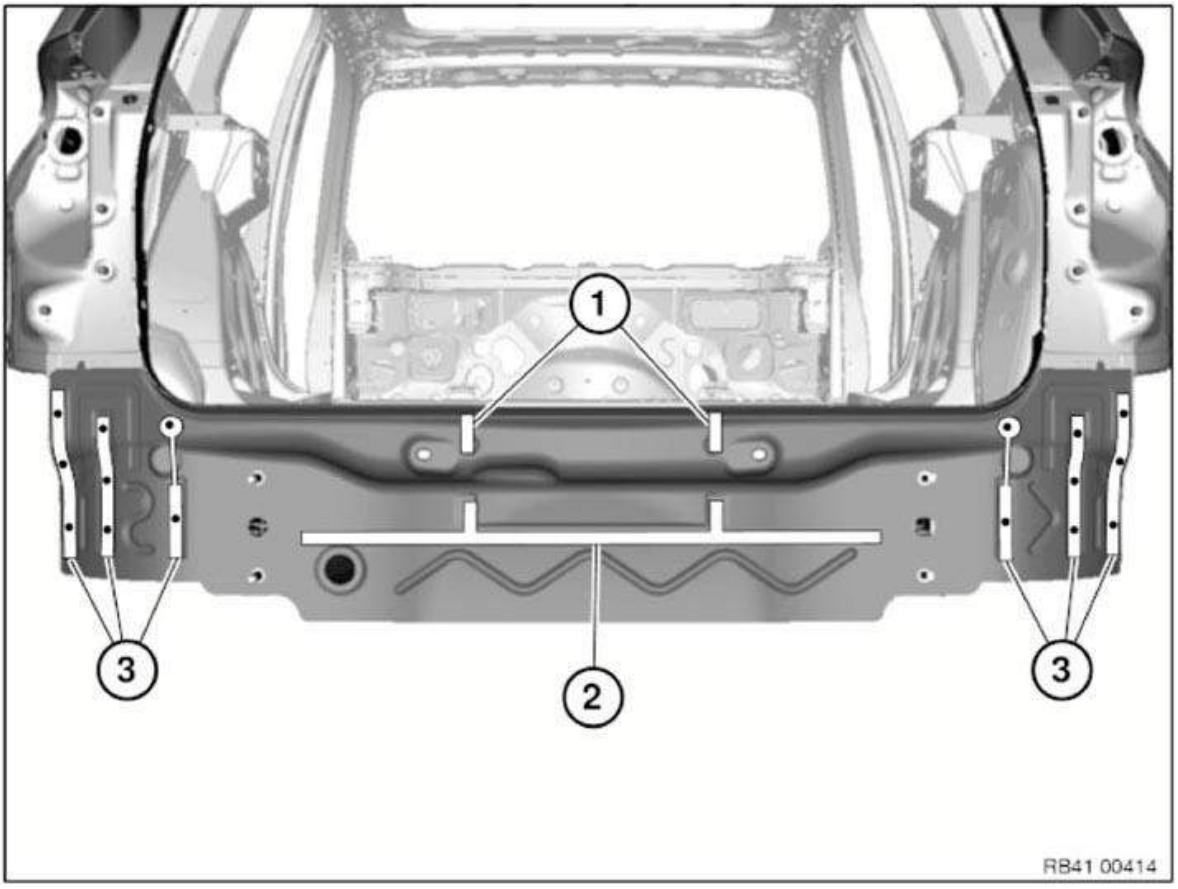


Fig. 314: Identifying Bore Holes For Blind Rivets Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust new parts to fit and secure.

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

Area	Number
1	2
2	8
3	8 on each side

Remove new part and deburr holes.

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

Installing inner rear trim panel and support of rear trim panel

Install and weld new parts.

NOTE: The inner rear trim panel is welded to the outer skin of the rear trim panel in this area (1).

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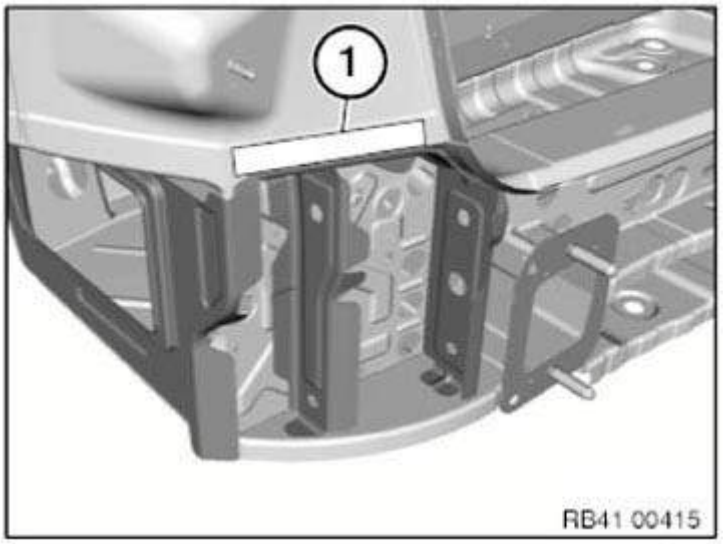


Fig. 315: Identifying Outer Skin Of Rear Trim Panel Weld Area
Courtesy of BMW OF NORTH AMERICA, INC.

Installing the outer skin of the rear trim panel

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

Apply adhesive to bonding surfaces.

When inserting rear trim panel, make sure there is sufficient adhesive on bonding surfaces.

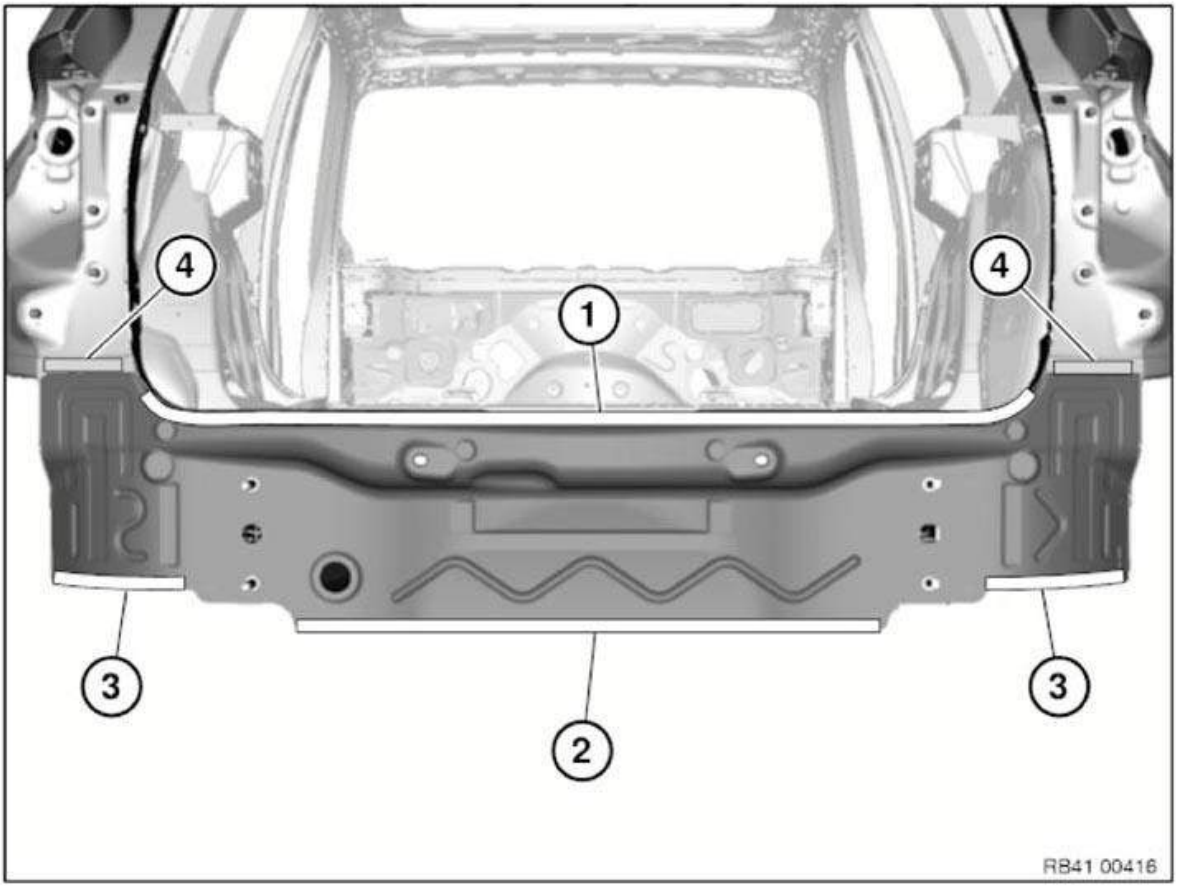


Fig. 316: Identifying Outer Skin Of Rear Trim Panel Punch Rivets Areas
Courtesy of BMW OF NORTH AMERICA, INC.

Install rear trim panel and rivet with blind rivets.

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Use N4 punch rivets in areas (1) to (3).

Area	Number
1	11
2	7
3	3 on each side

Weld the outer skin of the rear trim panel and the inner rear trim panel to the side wall in these areas (4).

IMPORTANT: Risk of damage!
Avoid exposing neighboring adhesive areas to excessive heat!

Press rear trim panel in areas (1) and remove emerging adhesive.

Then install carrier for bumper trim to secure rear trim panel carrier.

IMPORTANT: Prevent emerging adhesive from coming into contact with support.
Do not use any cleaning agents containing solvents.

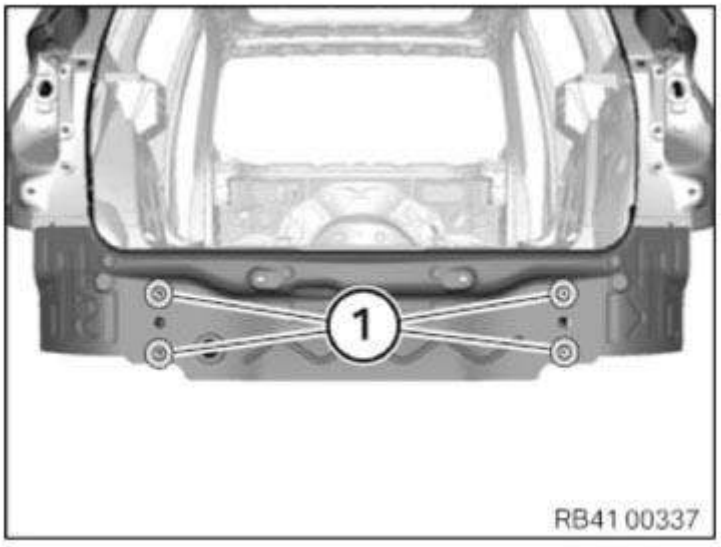


Fig. 317: Identifying Rear Trim Panel Adhesive Areas
Courtesy of BMW OF NORTH AMERICA, INC.

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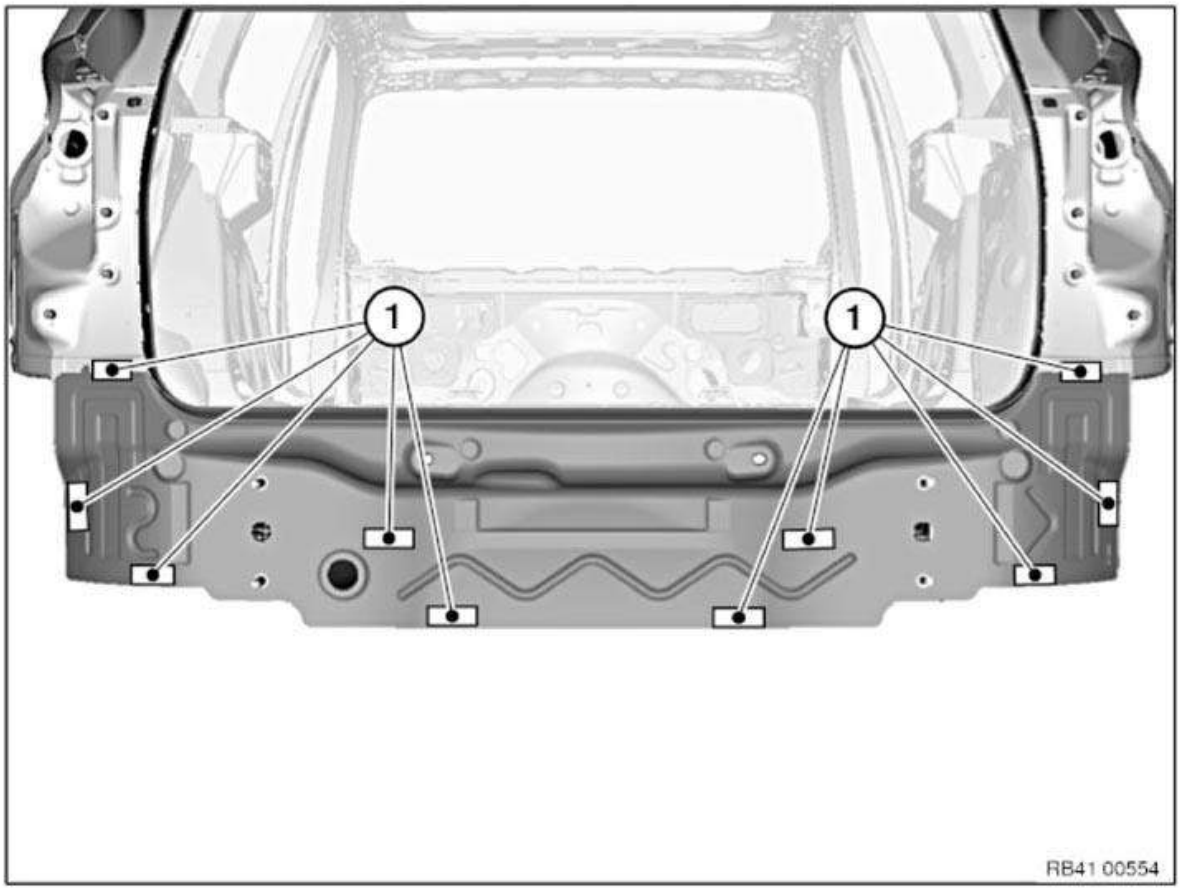


Fig. 318: Identifying EMC Screws Areas
Courtesy of BMW OF NORTH AMERICA, INC.

After hardening of the adhesive install **10 EMC SCREWS** in the areas shown (1).

41 12 655 REPLACING LEFT LUGGAGE COMPARTMENT FLOOR (TAIL PANEL HAS BEEN REMOVED)

Refer to **41 12 655 REPLACING LEFT LUGGAGE COMPARTMENT FLOOR (TAIL PANEL HAS BEEN REMOVED)**.

41 34 038 REPLACING OUTER TAIL PANEL SECTION

Read contents of **BODY, GENERAL**.

Observe **(REPAIR STAGE 2)** procedure!

STRIP DOWN vehicle.

The following new body parts are required (refer to **OVERVIEW OF CONSUMABLES**):

- (1) Rear trim panel

Following **CONSUMABLES** are required:

Material	Quantity
Adhesive K5a	1
Adhesive K5b	1
R1 cleaning agent	1
Blind rivets N3	24
Punch rivets N4	24

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EMC screws	10
Sealant D1	Â
Cavity wax remover	Â

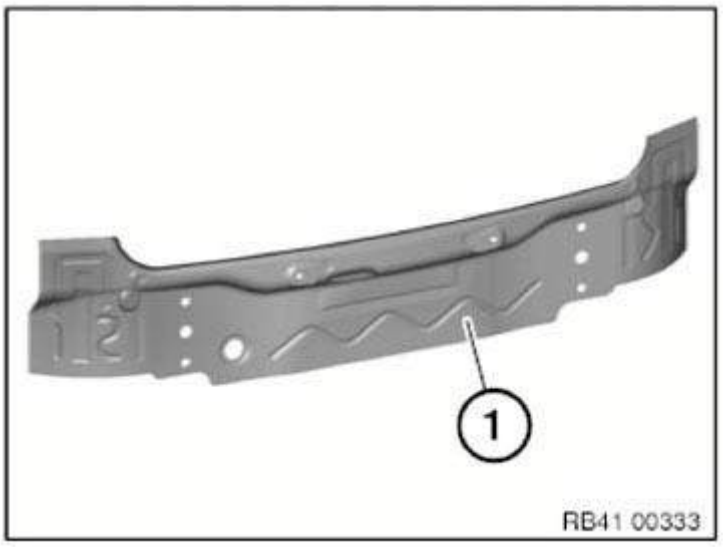


Fig. 319: Identifying Rear Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

Removing rear trim panel

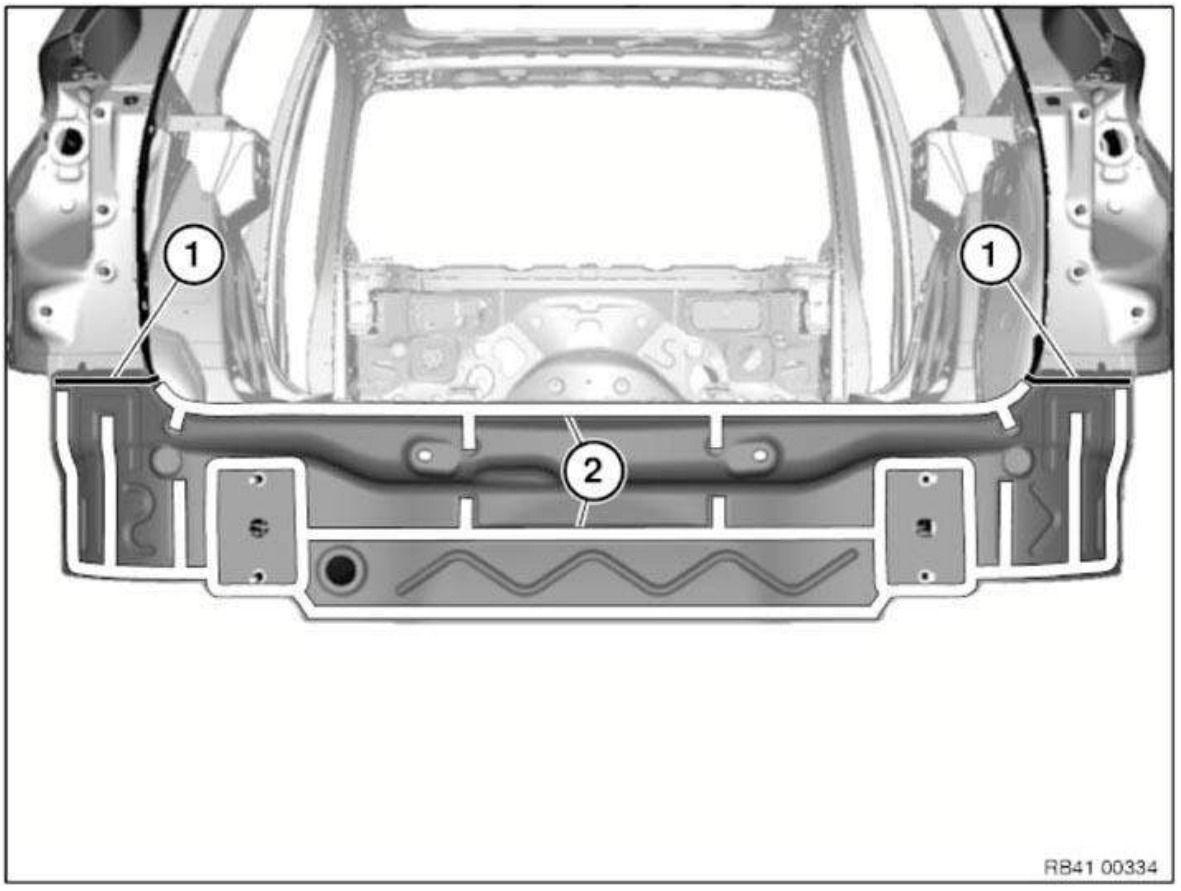


Fig. 320: Identifying Tail Panel Outer Section And Inside Center Section Cutting Area
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Cut outer panel only.

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Cut severance cuts (1) 15 mm below the component edge of the rear bulb mount and separate.

Open welded connections in areas (2).

NOTE: The new part is installed overlapping in the areas (1).

New part preparation

Mark severance cuts on new part in accordance with severance cuts on vehicle + 15 mm extra material and cut.

Adjust rear trim panel in combination with rear lid and rear lights to fit and secure.

IMPORTANT: Version with automatic tailgate activation:
Risk of damage to spindle drive: only move rear lid slowly by hand.

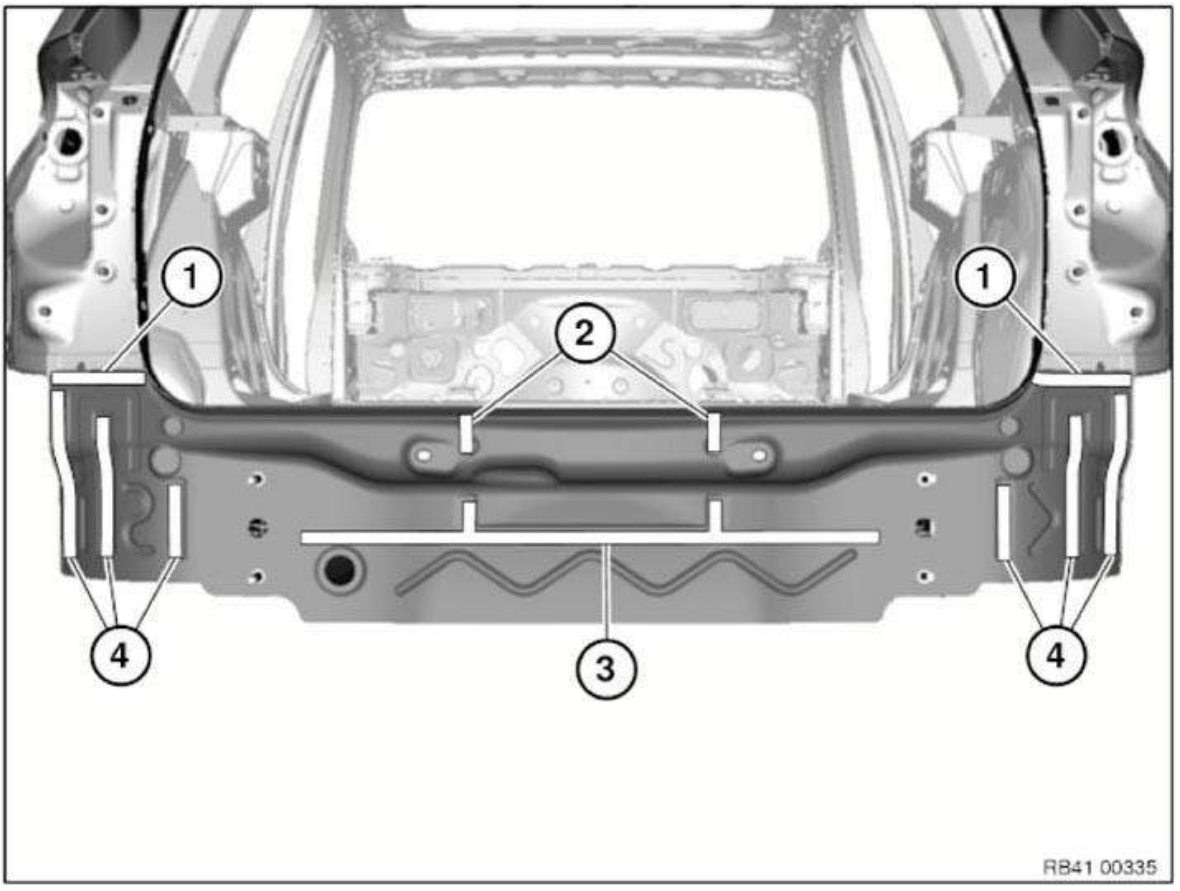


Fig. 321: Identifying Rear Trim Panel Area
Courtesy of BMW OF NORTH AMERICA, INC.

**NOTE: In the areas (1) the new part may not overlap the rear lamp mounts!
In areas (1) to (4), set 4.2 mm diameter bore holes for blind rivets.**

Area	Number
1	2 on each side
2	2
3	8
4	5 on each side

Remove new part and deburr holes.

IMPORTANT: Do not grind/sand new part in area of bonding surfaces.

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Installing rear trim panel:

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

Apply adhesive to bonding surfaces.

Install rear trim panel and rivet with blind rivets.

Use N4 punch rivets in areas (1) to (3).

Area	Number
1	11
2	7
3	3 on each side

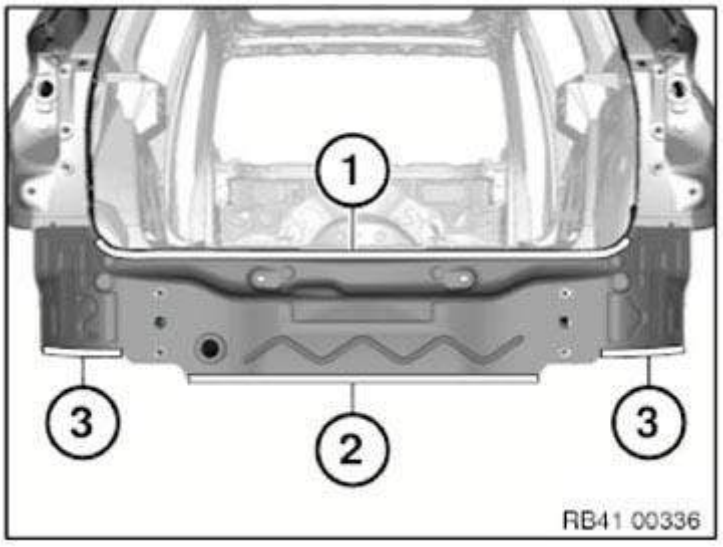
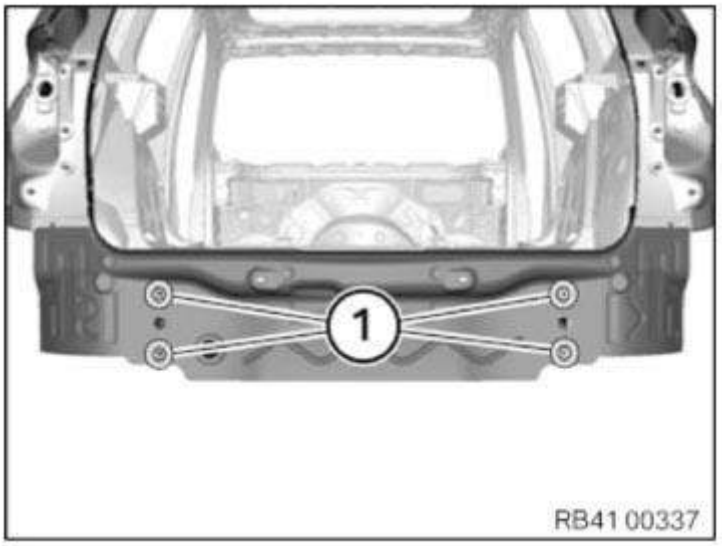


Fig. 322: Identifying Rear Trim Panel And Rivet With Blind Rivets Area
Courtesy of BMW OF NORTH AMERICA, INC.

Press rear trim panel in areas (1) and remove emerging adhesive.

Then install carrier for bumper trim to secure rear trim panel carrier.

IMPORTANT: Prevent emerging adhesive from coming into contact with support.
Do not use any cleaning agents containing solvents.



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Fig. 323: Identifying Rear Trim Panel Adhesive Areas
Courtesy of BMW OF NORTH AMERICA, INC.

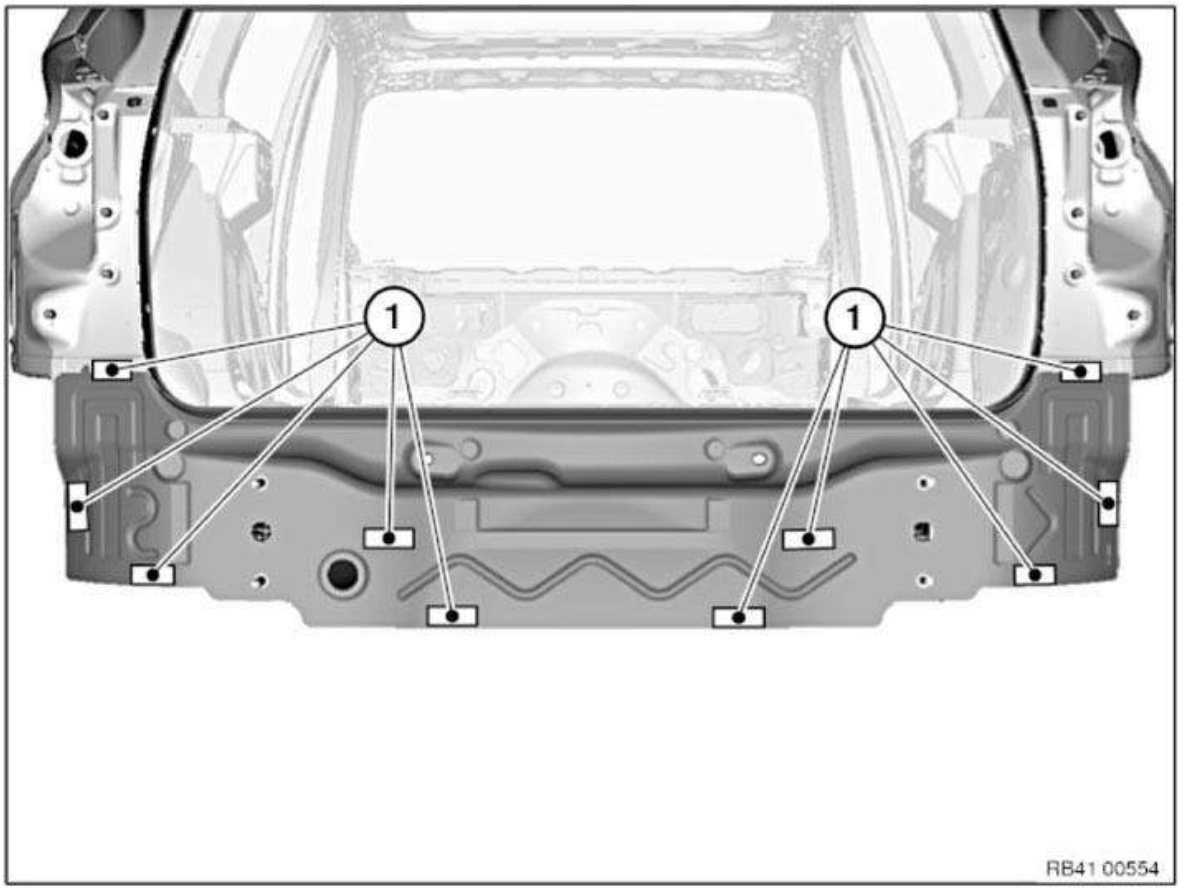


Fig. 324: Identifying EMC Screws Areas
Courtesy of BMW OF NORTH AMERICA, INC.

After hardening of the adhesive install 10 EMC SCREWS in the areas shown (1).

41 34 040 STRIPPING OPERATION - REPLACING OUTER PART AND INSIDE MIDDLE PART OF 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 (61 21 010)**
- **Remove bumper trim (51 12 156)**
- **Remove bumper support (51 12 050)**
- **Remove center bumper guide (51 12 825)**
- **Remove guide for bumper on left and right (51 12 828)**
- **Remove luggage compartment floor trim panel (51 47 102)**
- **Tail panel cover (51 46 050)**
- **Remove left luggage compartment wheel arch panel (51 47 151)**
- **Remove right luggage compartment wheel arch panel (51 47 161)**
- **Remove rear light on left and right (63 21 181)**
- **Remove tailgate lock (51 24 105)**
- **Release and lower rear silencer. See 18 12 031 REPLACING REAR SILENCER (N20) , 18 12 031 REPLACING REAR SILENCER (N52T) or 18 12 031 REPLACING REAR SILENCER (N55) .**

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- **Partially detach tailgate seal**
- **Remove control unit for air suspension**
- **Remove control unit for automatic luggage compartment lid actuation**

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

Release nut/expanding rivets and remove both supports (1) for floor panels.

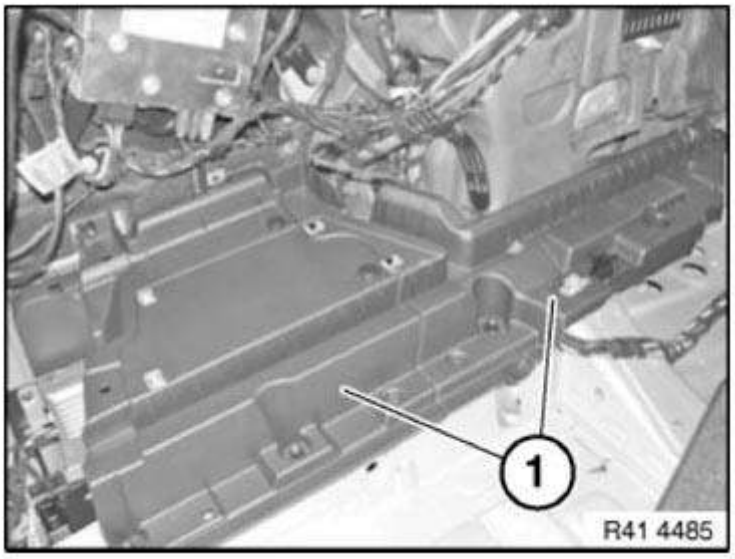


Fig. 325: Identifying Floor Panels Supports
Courtesy of BMW OF NORTH AMERICA, INC.

Release wiring harnesses (1) from rear trim panel and lay towards front.

Diagram similar.

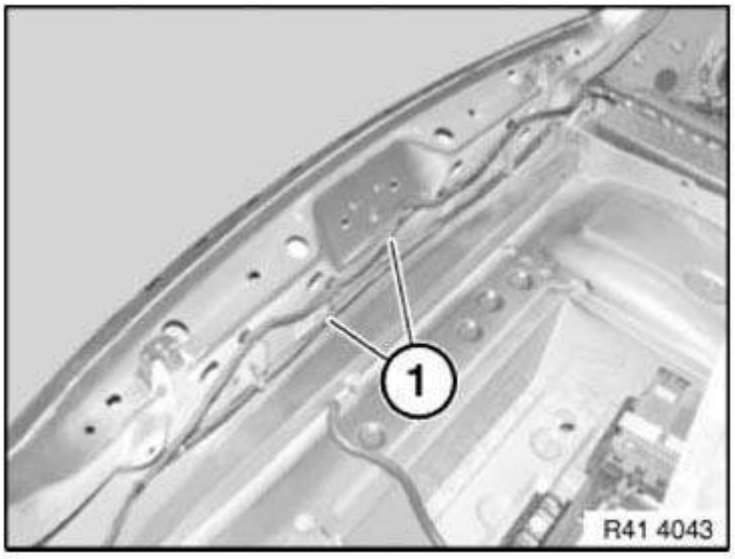


Fig. 326: Identifying Wiring Harnesses From Rear Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

41 34 060 STRIPPING OPERATIONS - REPLACING OUTER AND INNER TAIL PANEL SECTIONS

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.

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- **Remove luggage compartment floor trim panel (51 47 102)**
- **Remove battery (61 21 010)**
- **Remove bumper trim (51 12 156)**
- **Remove bumper support (51 12 050)**
- **Remove center bumper guide 51 12 825)**
- **Remove guide for bumper on left and right (51 12 828)**
- **Remove left luggage compartment wheel arch panel (51 47 151)**
- **Remove right luggage compartment wheel arch panel (51 47 161)**
- **Tail panel cover (51 46 050)**
- **Remove rear light on left and right (63 21 181)**
- **Remove tailgate lock (51 24 105)**
- **Partially detach tailgate seal**
- **Remove control unit for air suspension**
- **Remove control unit for automatic luggage compartment lid actuation**

Lever out expanding rivets and remove side member facing (1).

Lever out expanding rivets and remove toolkit mounting (2).

Undo latch mechanisms and remove rear bleeder (3).

Remove sound insulation (4) of luggage compartment.

Shown on left side. Proceed in the same manner on the right side.

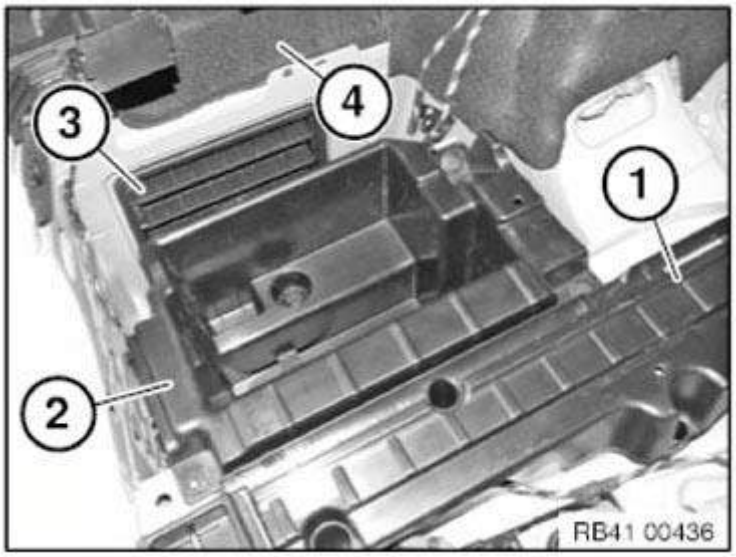


Fig. 327: Identifying Sound Insulation Of Luggage Compartment
Courtesy of BMW OF NORTH AMERICA, INC.

Release wiring harnesses (1) from rear trim panel and lay towards front.

Graphic representation similar.

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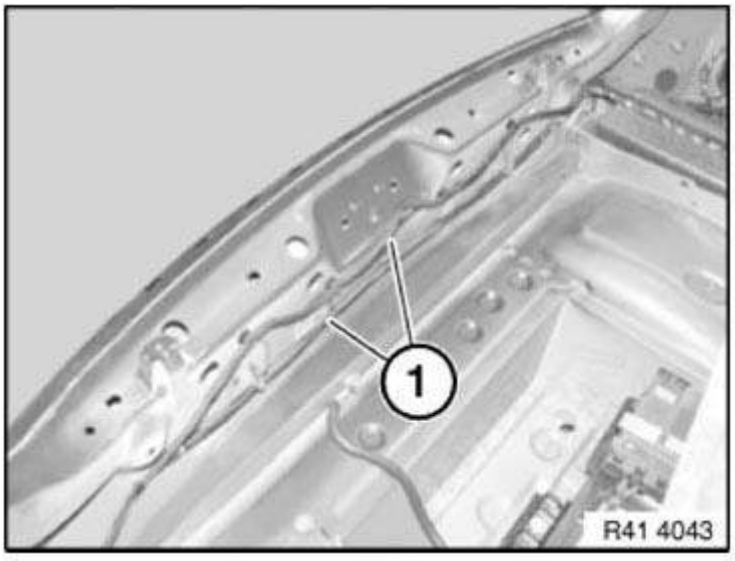


Fig. 328: Identifying Wiring Harnesses From Rear Trim Panel
Courtesy of BMW OF NORTH AMERICA, INC.

41 34 038 STRIPPING-DOWN OPERATIONS - REPLACING TAIL PANEL OUTER SECTION

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 (61 21 010)**
- **Remove bumper trim panel (51 12 156)**
- **Bottom center cover (51 12)**
- **Remove bumper support (51 12 050)**
- **Remove guide for rear center bumper (51 12 825)**
- **Remove guide for rear left bumper (51 12 828)**
- **Remove tail panel cover (51 46 050)**
- **Loosen holder, rear silencer**
- **Partially detach tailgate seal**

SIDE PANELS

41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41

Refer to 41... 0 NOTES ON THE REPAIR TECHNIQUE USED IN THE MAIN GROUP 41.

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

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

41 35 082 REMOVING AND INSTALLING FRONT RIGHT SIDE PANEL

Operation is identical to removing and installing "FRONT SIDE PANEL, LEFT".

41 35 081 REMOVING AND INSTALLING FRONT SIDE PANEL ON LEFT

Observe GAP DIMENSIONS.

IMPORTANT: Do not damage adjoining body components.

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Necessary preliminary tasks:

- Remove **TRIM COVER FROM WHEEL ARCH** at front left
- Remove **WATER COLLECTION STRIP ON WINDSCREEN**
- F25 only: Remove **SIDE REPEATER**
- Partially detach **FRONT WHEEL ARCH COVER**

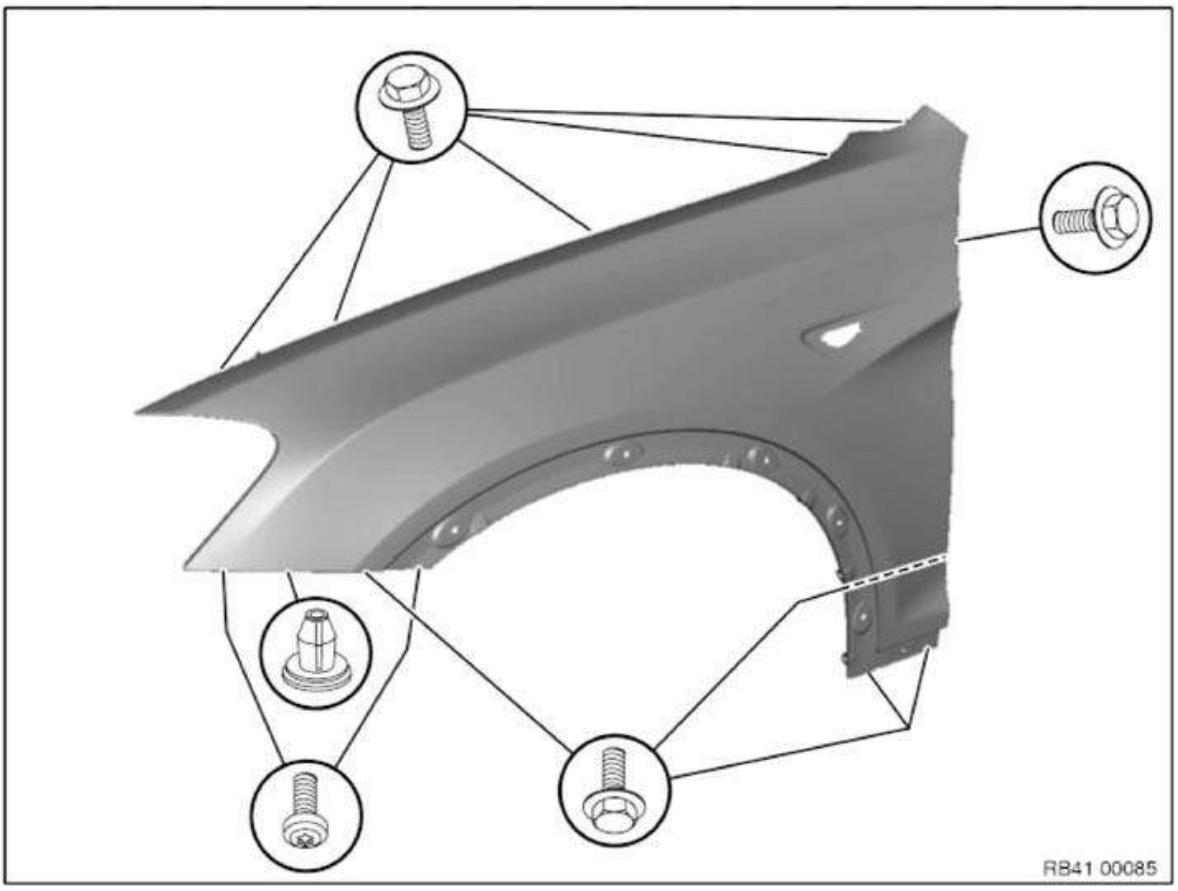


Fig. 329: Identifying Front Side Panel Screws On Left
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws.

Tightening torque **41 35 1AZ**

41 11 420 REPLACE SILLS, LEFT

Refer to **41 11 420 REPLACE SILLS, LEFT**.

41 35 101 REPLACING LEFT REAR SIDE PANEL

Read contents of **BODY, GENERAL**.

STRIP DOWN VEHICLE

Procedure **OBSERVE** repair stage 2!

Following new body parts are required (see **OVERVIEW OF CONSUMABLES**):

- (1) Rear side wall
- Reinforcement plate, side sill
- Reinforcement plate, C-pillar

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- Reinforcement plate, D-pillar
- Mounting nuts

Following **CONSUMABLES** are required:

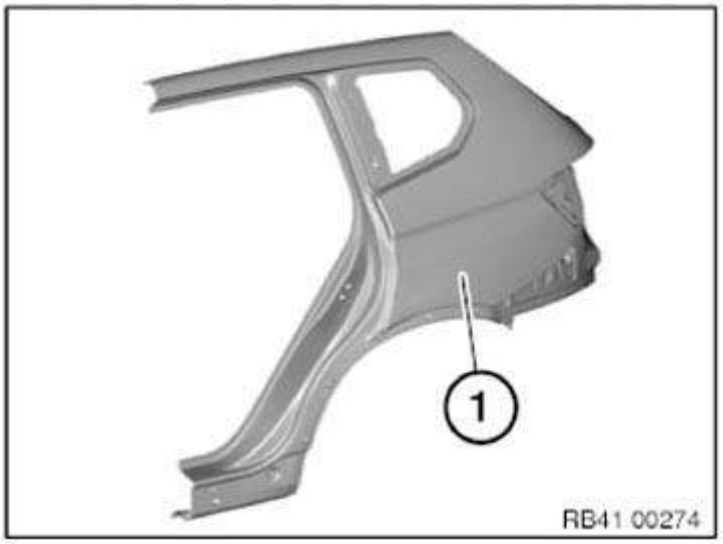


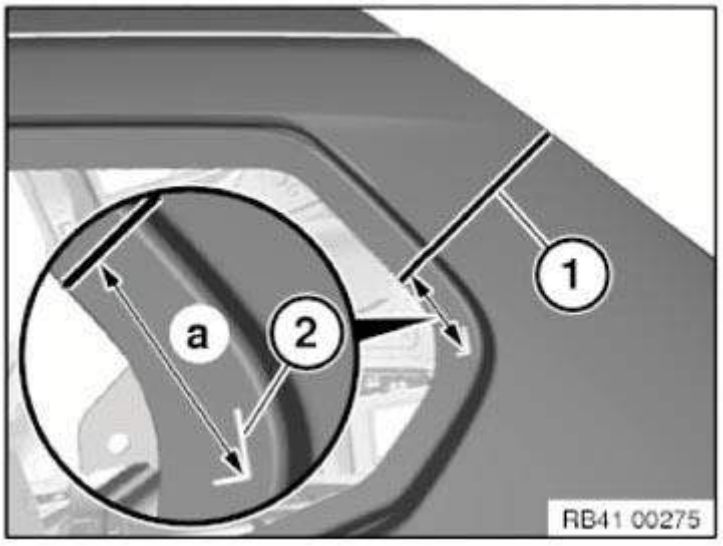
Fig. 330: Identifying Rear Side Wall
Courtesy of BMW OF NORTH AMERICA, INC.

Material	Quantity
Adhesive K5b	1
Adhesive K5a	1
Blind rivets N3	11
Punch rivets N4	46
EMC screws	2
Cleaning agent R1	1
Cavity sealing wax remover	1
Sealant D1	Â

Removing side panel

Mark dimension a for severance cut (1) on D-pillar.

Dimension a = approx. 75 mm from corner of mark (2).



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Fig. 331: Identifying D-Pillar Severance Cutting Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Mark dimension a for severance cut (1) on D-pillar.

Dimension a = approx. 135 mm from corner of roof frame.

Carry out severance cut (1).

IMPORTANT: Cut outer panel only.

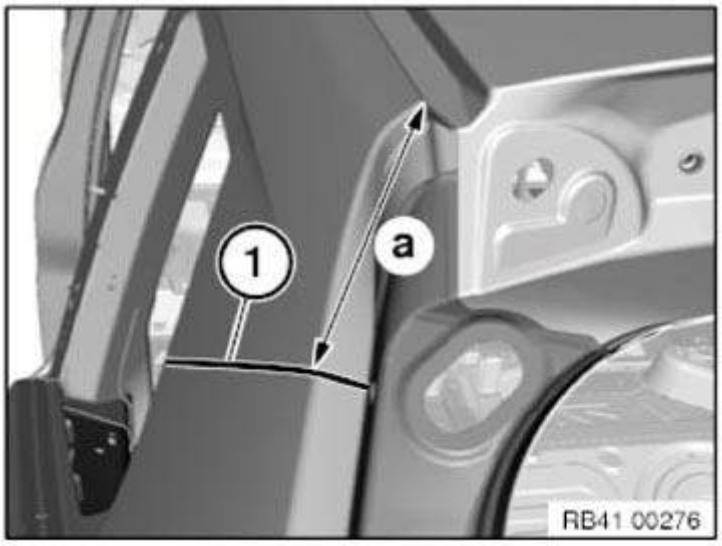


Fig. 332: Identifying Severance Cutting Dimension On D-Pillar
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: **In addition to the dimensions, the position of the separating cut can be determined with a TEMPLATE (1).**

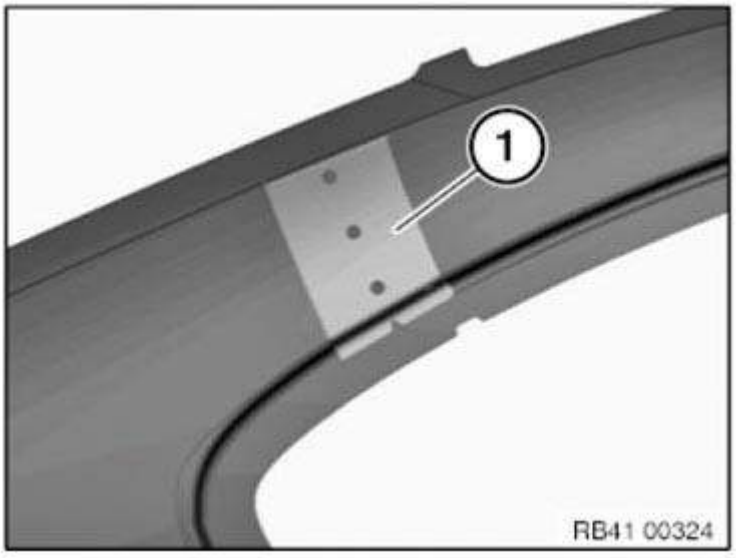


Fig. 333: Identifying D-Pillar Template
Courtesy of BMW OF NORTH AMERICA, INC.

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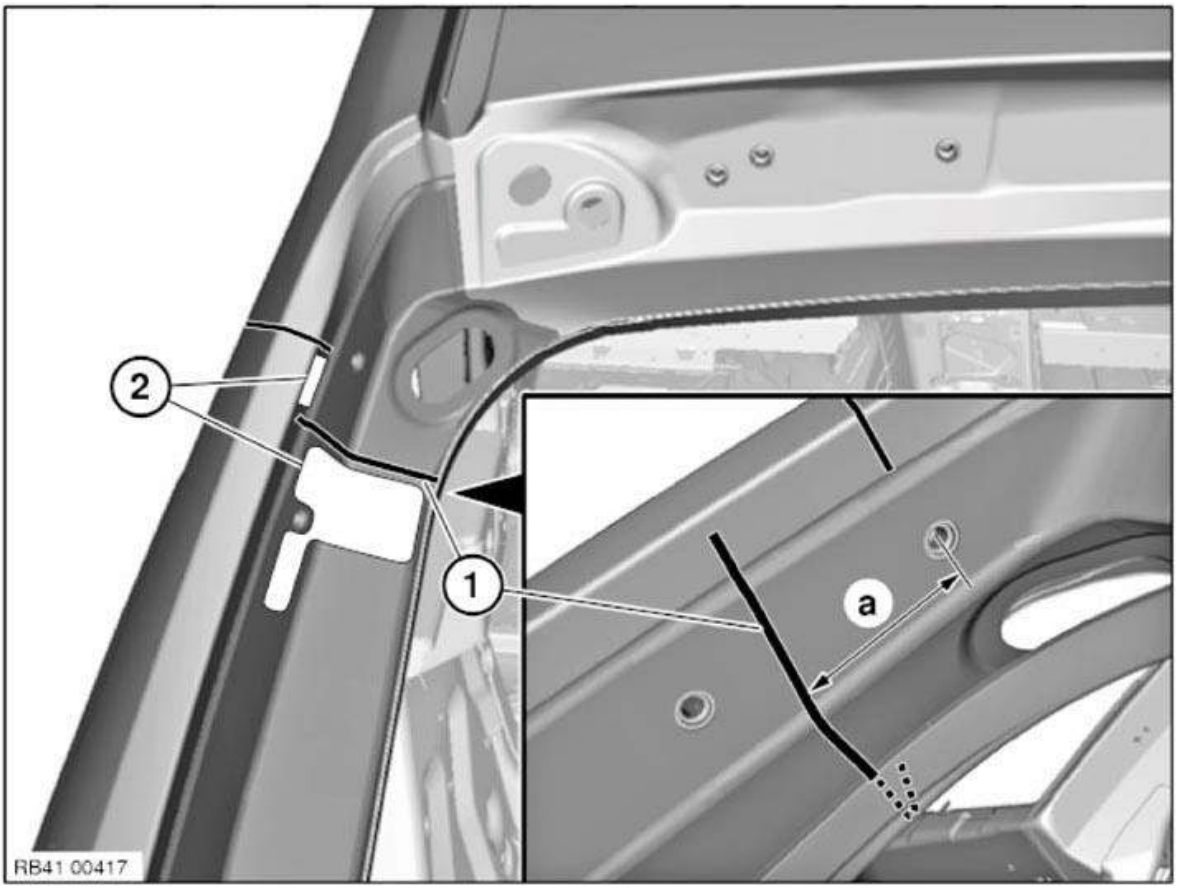


Fig. 334: Identifying D-Pillar Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

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

Dimension a = approx. 60 mm from center point mounting bore for damper holder.

IMPORTANT: Cut outer panel only.

Severance cut (1) must be partially executed using a belt sander.

Open welded connections in areas (2).

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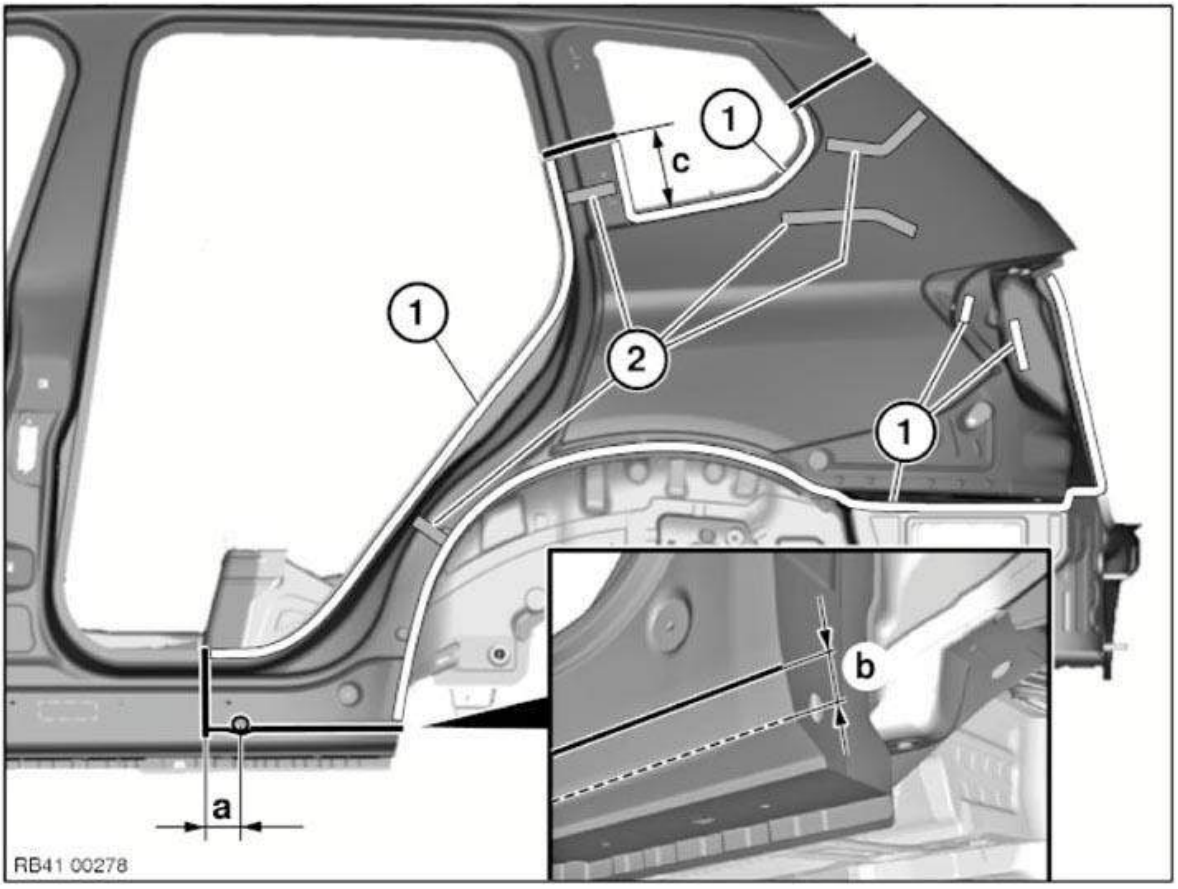


Fig. 335: Identifying Side Wall Component Edge Dimension
Courtesy of BMW OF NORTH AMERICA, INC.

Mark severance cuts in accordance with specified dimensions and cut.

IMPORTANT: Cut outer panel only.

Compare position of severance cuts with **REINFORCEMENT PLATES**.

Dimension a = approx. 65 mm before center of 22 mm dia. hole.

Dimension b = approx. 20 mm from sill edge.

Dimension c = approx. 155 mm from side wall component edge.

Open welded connections in areas (1).

Release side wall from cavity sealing (2).

Open welded connections in areas (1).

Take off side wall.

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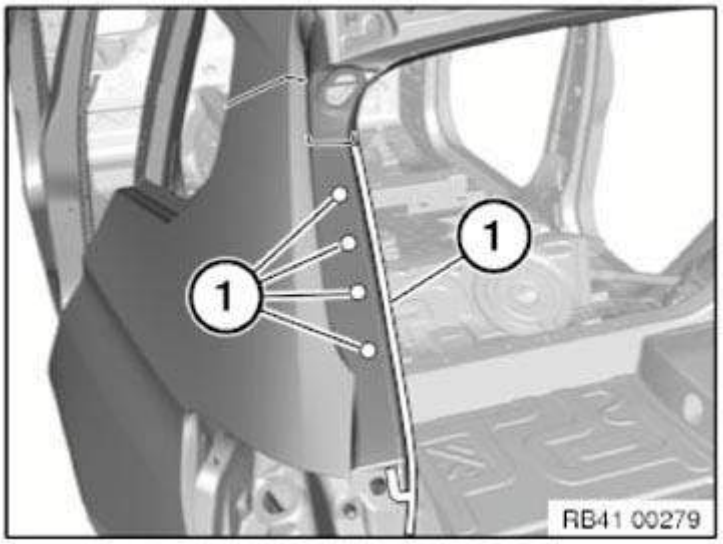


Fig. 336: Identifying Side Wall Welded Connections Areas
Courtesy of BMW OF NORTH AMERICA, INC.

New part preparation

Mark severance cuts on the new part according to vehicle and cut.

Prepare **REINFORCEMENT PLATES** (bonded) at all severance cuts.

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

Mark severance cut (2) at sill edge and cut.

Mark further severance cuts in accordance with vehicle and cut.

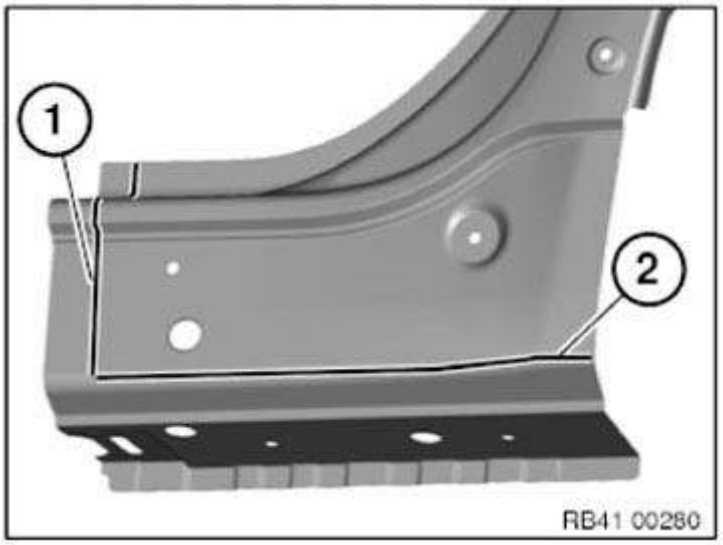


Fig. 337: Identifying Severance Cut Mark At Sill Edge
Courtesy of BMW OF NORTH AMERICA, INC.

D-pillar water channel severance cut area:

Make an additional 2 shims (1) and (2) in the severance cut area.

NOTE: Before installing the side wall:

Coat shim (1) with adhesive and slide in.

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Coat shim (2) with adhesive and secure with a punch rivet N4.

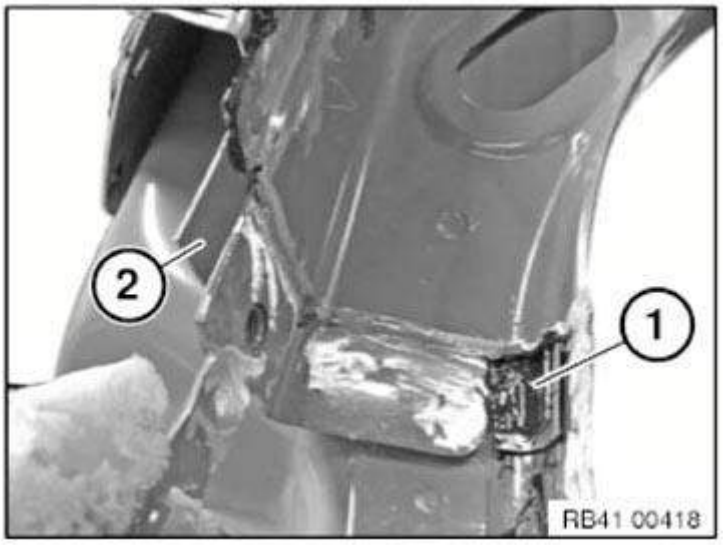


Fig. 338: Identifying Shims In Severance Cut Area
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust new part to fit and secure.

Set three 4.2 mm dia. holes for blind rivets in area (1).

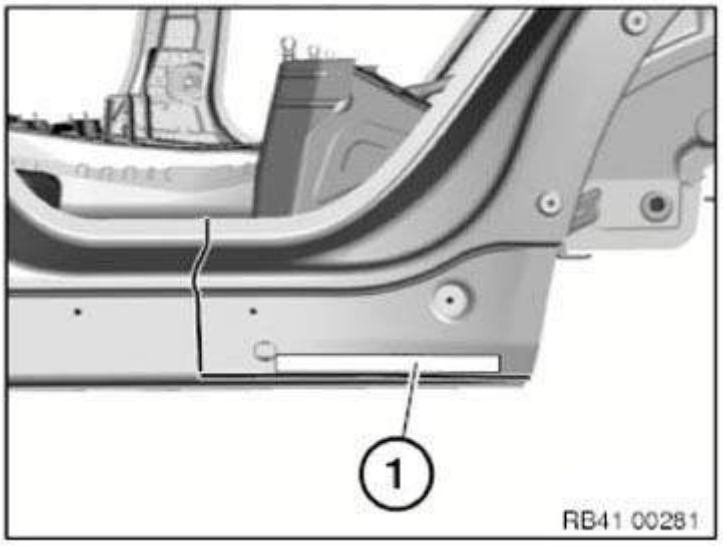


Fig. 339: Identifying Blind Rivets Holes Area
Courtesy of BMW OF NORTH AMERICA, INC.

In areas (1) to (4), set 4.2 mm dia. bore holes for blind rivets.

Area	Number
1	3
2	2
3	2
4	1

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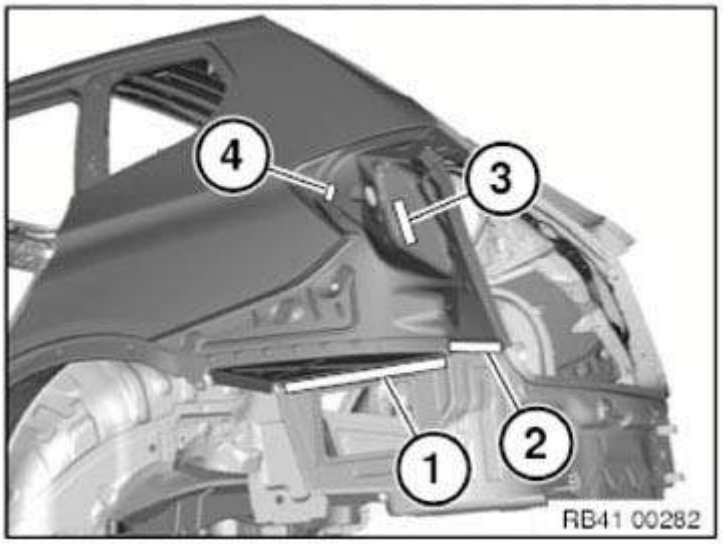


Fig. 340: Identifying Bore Holes Area For Blind Rivets
Courtesy of BMW OF NORTH AMERICA, INC.

Remove new part again and deburr bore holes.

IMPORTANT: Do not grind/sand new part in area of bonding surfaces.

Installing side wall

Clean all bonding surfaces on vehicle, on the new part and on the reinforcement plates with cleaning agent R1.

Apply adhesive to reinforcement plates. Install reinforcement plates.

Apply adhesive in areas (1).

Apply sealant to **CAVITY ACOUSTIC BAFFLES** in areas (2).

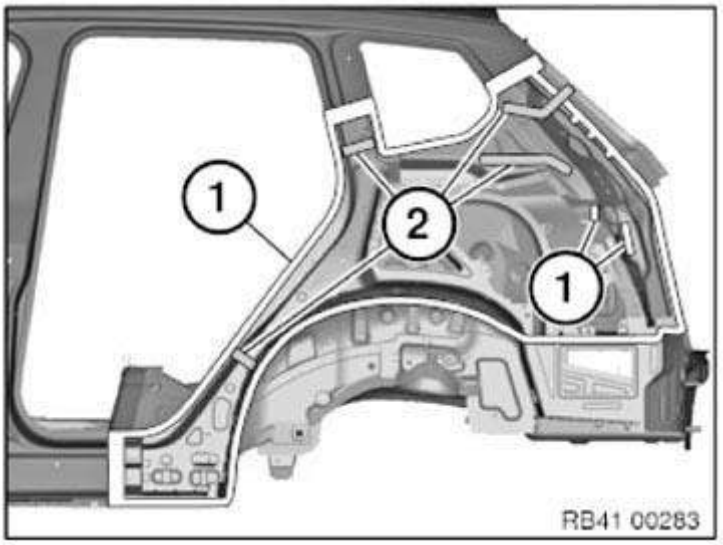


Fig. 341: Identifying Sealant Applying Area On Cavity Acoustic Baffles
Courtesy of BMW OF NORTH AMERICA, INC.

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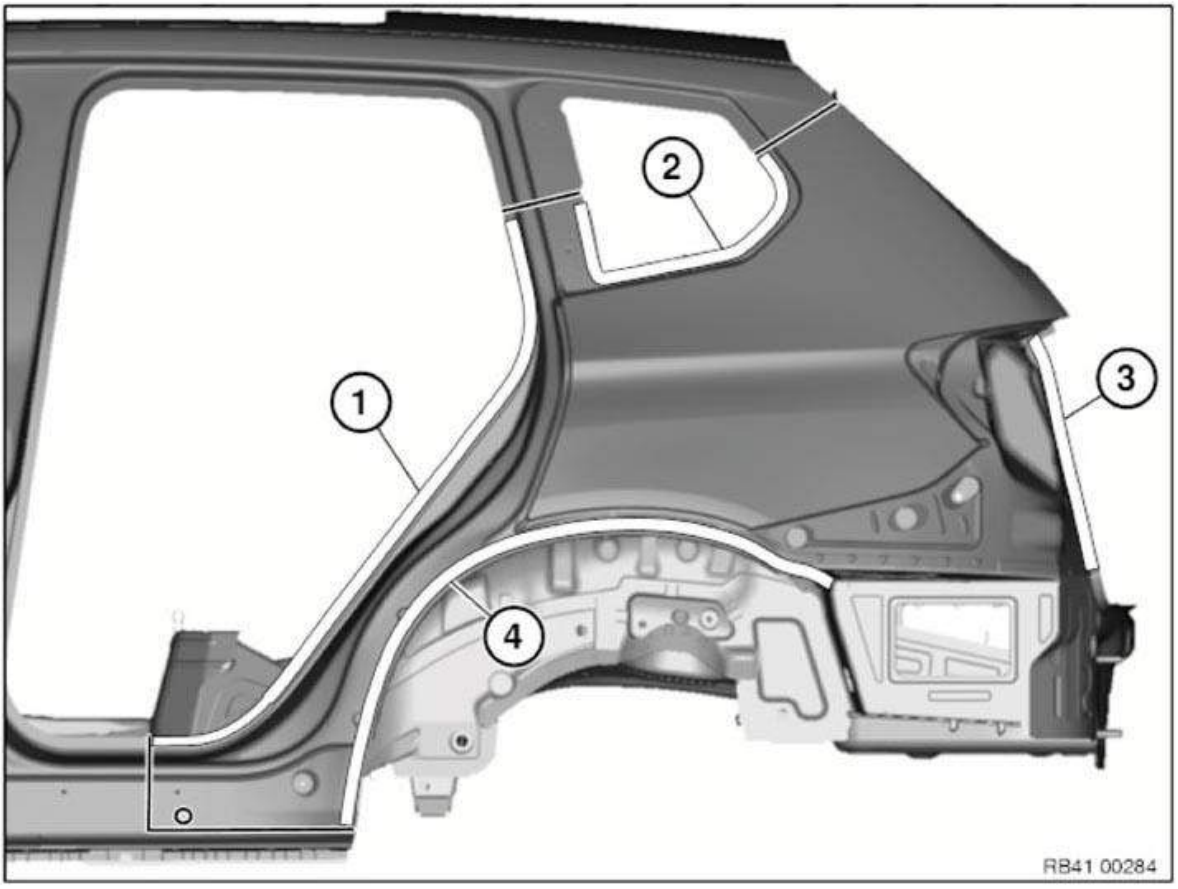


Fig. 342: Identifying Rivet Side Panel Area With Punch Rivets N4
Courtesy of BMW OF NORTH AMERICA, INC.

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 wall to fit, tighten nuts of reinforcement plates.

Align side wall in areas of severance cuts and fix with gripping pliers.

Rivet side wall with blind rivets N3.

In areas (1) to (4) rivet side panel with punch rivets N4.

Area	Number
1	12
2	7
3	5
4	11

Rivet side wall with blind rivets N3.

In areas (1) and (2) rivet side panel with punch rivets N4.

Area	Number
1	5
2	5

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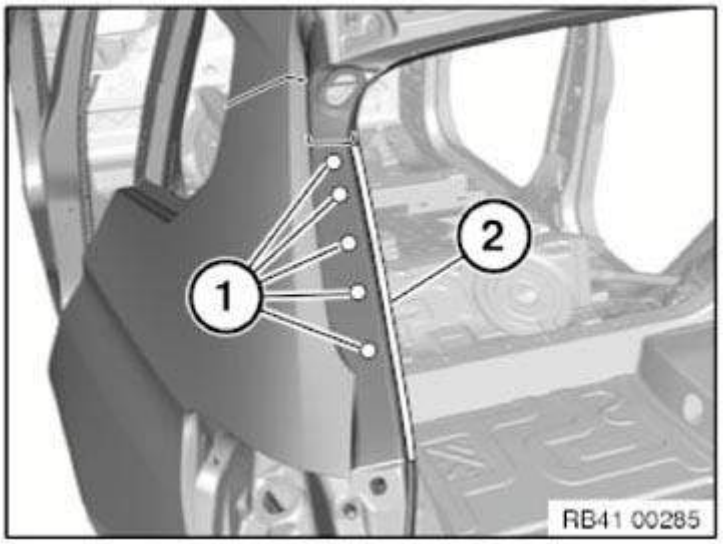


Fig. 343: Identifying Rivet Side Panel Area With Punch Rivets N4
Courtesy of BMW OF NORTH AMERICA, INC.

Once the adhesive has hardened in area (1) and in the area of the side sill, fit one **EMC SCREW** in each area.

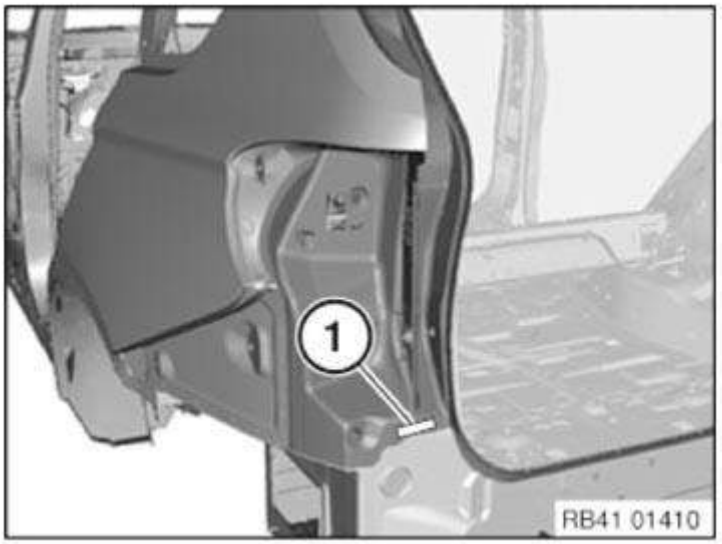


Fig. 344: Identifying EMC Screw Area
Courtesy of BMW OF NORTH AMERICA, INC.

41 11 425 REPLACING RIGHT SIDE SILL

Refer to **41 11 425 REPLACING RIGHT SIDE SILL**.

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 (61 20 900)**
- **Remove bumper trim panel (51 12 156)**
- **Remove rear bumper guide middle (left side) (51 12 825)**
- **Remove left bumper guide (51 12 828)**
- **Remove tail panel cover at top (51 46 050)**

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- **Remove luggage compartment floor trim panel (51 47 102)**
- **Remove left luggage compartment wheel arch panel (51 47 151)**
- **Remove rear left side window (51 36 070)**
- **Partially detach tailgate seal**
- **Release holder for damper**
- **Remove left rear light (63 21 181)**
- **Remove trim panel for left roof pillar (51 43 251)**
- **Remove left lock striker (51 21 003)**
- **Remove rear left door sill cover strip (51 47 030)**
- **Remove rear left rocker panel trim (51 47 072)**
- **Remove left backrest side section (52 26 008)**
- **Remove cover on C-pillar at bottom left (51 43 251)**
- **Remove rear left door edge protection (51 72 010)**
- **Remove rear left wheel arch cover (51 71 041)**
- **Remove cover on rear wheel arch (51 71 478)**
- **Remove trim panel for cover on left side member (51 71 447)**
- **Remove rear left underbody panelling**
- **Remove rear left door**
- **Remove trim strip on left roof frame (51 13 280)**

Undo latch mechanisms and remove rear bleeder (1).

Disconnect plug connections for control unit (2).

Remove bracket (3).

Remove insulating mat (4).

Installation note:

The rear ventilation (1) must not be damaged. (watertightness).

All latch mechanisms must engage audibly.

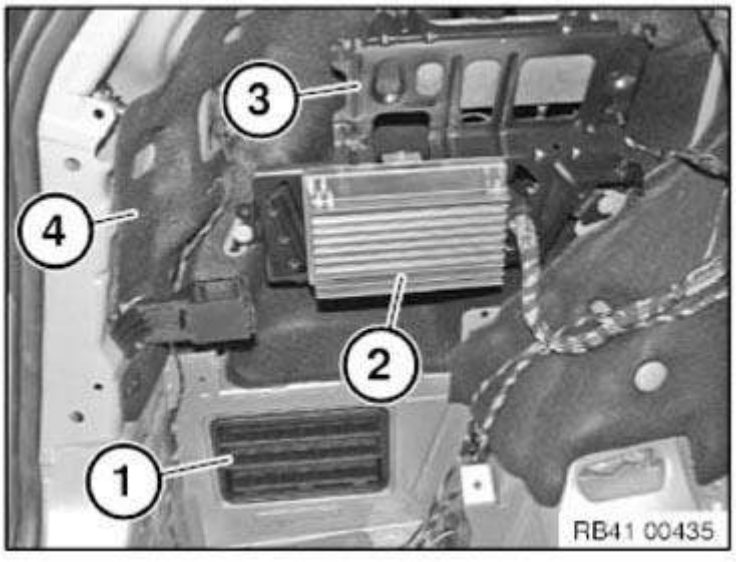


Fig. 345: Identifying Control Unit Plug Connections, Bracket And Insulating Mat

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Courtesy of BMW OF NORTH AMERICA, INC.

FRONT SIDE DOORS

41 51... ADJUST DOOR

Do not damage adjoining body components.
IMPORTANT: 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.
The following illustrations are schematic representations and are to be applied to the relevant vehicle type.

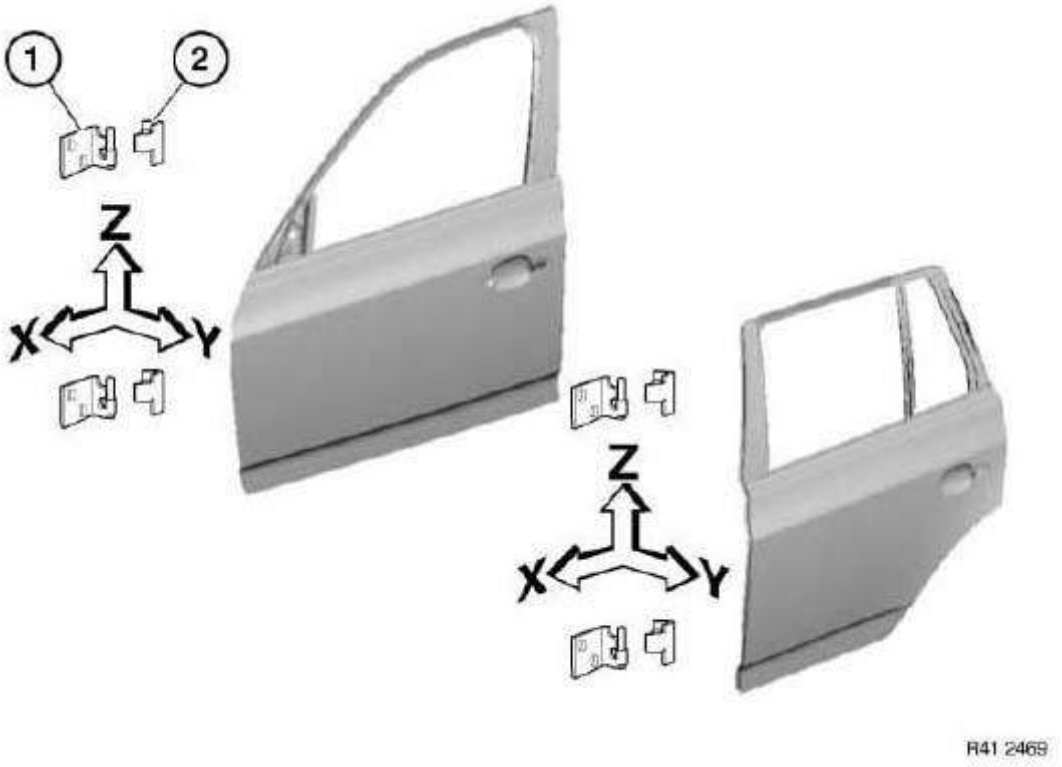


Fig. 346: Adjusting Front Side Door
Courtesy of BMW OF NORTH AMERICA, INC.

Loosen striker and remove, If necessary.

Slacken screws for hinge (2) on door until door can still just be moved.

Front door: Tightening torque **41 51 2AZ** .

Rear door: Tightening torque **41 52 2AZ** .

If adjustment range is not sufficient, slacken screws for hinges (1) on body.

NOTE: **Screw connections only accessible from inside.**
Front door: Tightening torque 41 51 3AZ .
Rear door: Tightening torque 41 52 3AZ .

Check that adjoining body components are flush in terms of height and correct if necessary.

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NOTE: **Height adjustment of door must not be influenced by striker.**
When the door is closed, the striker must not touch or scrape against the door lock. Look out for scratch marks.

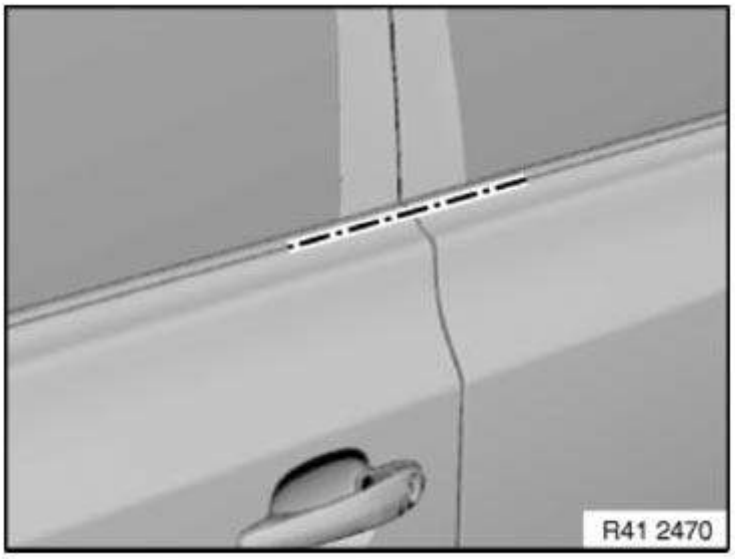


Fig. 347: Identifying Door Height Adjustment Mark
Courtesy of BMW OF NORTH AMERICA, INC.

Tighten down screws (1) until striker can still just be moved.

Move striker sideways in order to adjust transition between door and adjoining bodywork parts.

Tightening torque **51 21 2AZ / 51 22 2AZ** . See **DOOR LOCKS, REAR** or **FRONT DOOR LOCKS** .

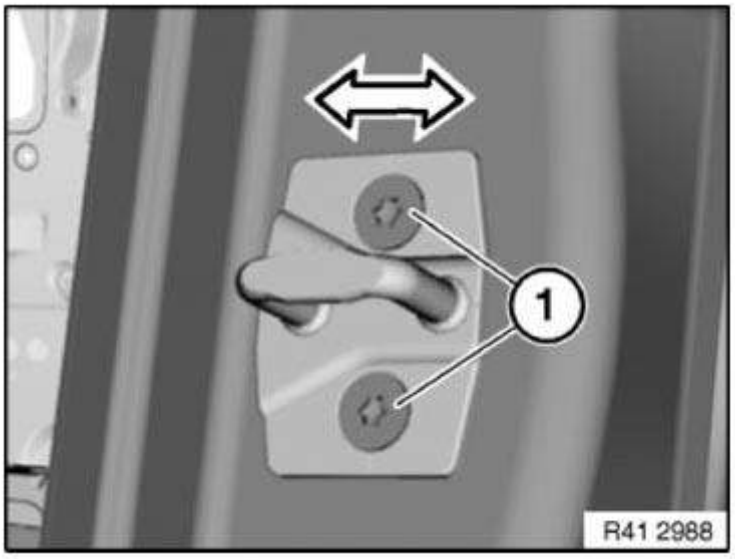


Fig. 348: Adjusting Lock Striker
Courtesy of BMW OF NORTH AMERICA, INC.

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).

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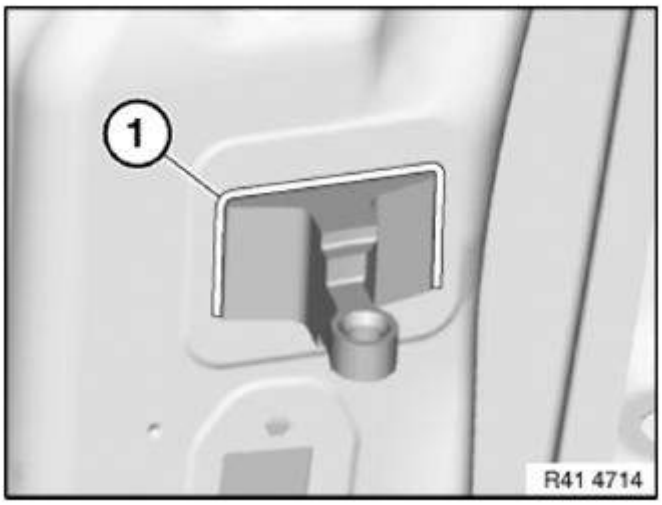


Fig. 349: Identifying Door Hinge Sealant Applying Area
Courtesy of BMW OF NORTH AMERICA, INC.

- Tighten all bolts to specified torque.
- Touch up unpainted surfaces in the appropriate colour.
- If necessary, adjust front door.

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.

41 5.... REMOVING AND INSTALLING DOOR

IMPORTANT: Do not damage adjoining body components.

The graphics are schematic representations and are to be applied to the relevant vehicle type.

Open door.

Release screw on connector frame.

Front door:

Tightening torque **41 51 4AZ** .

Rear door:

Tightening torque **41 52 4AZ** .

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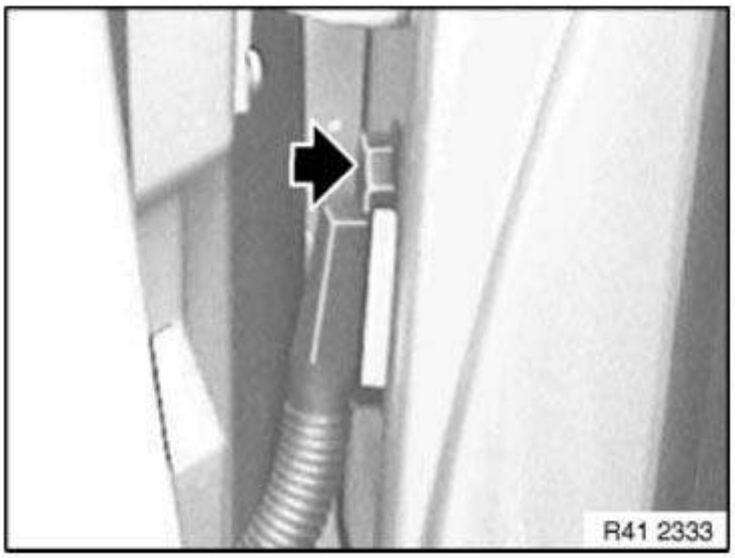


Fig. 350: Locating Screw On Connector Frame
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Secure door against closing.

Release screw (1) on door stop.

Front door:

Tightening torque **51 21 3AZ** .

Rear door:

Tightening torque **51 22 3AZ** .

Open door up to limit position.

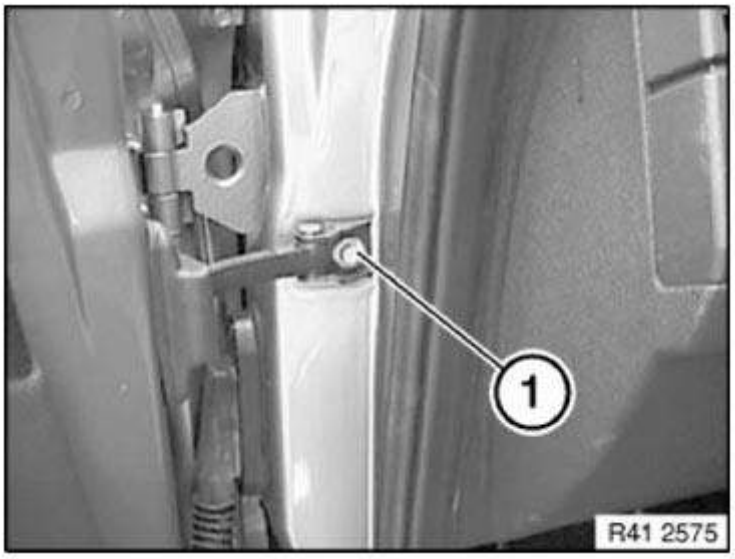


Fig. 351: Identifying Screw On Door Stop
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws between both hinge elements at top and bottom.

Front door:

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Tightening torque **41 51 1AZ** .

Rear door:

Tightening torque **41 52 1AZ** .

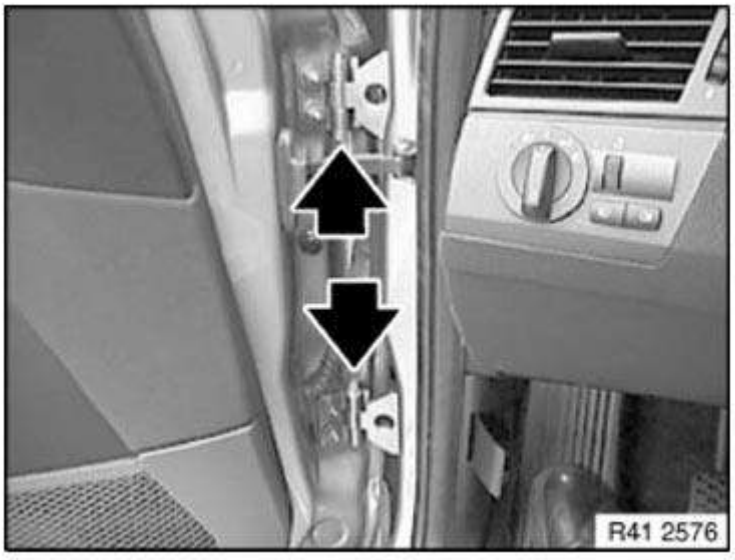


Fig. 352: Locating Door Hinge Elements Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Pull plug connection from door post, unlock by pulling out bar and detach.

Unhinge door by moving upwards and placing it on a suitable surface.

Installation:

If necessary, adjust **DOOR**.

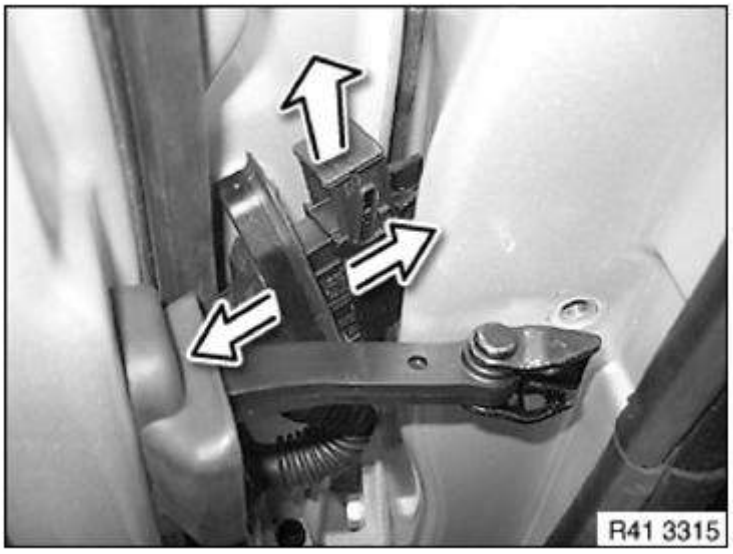


Fig. 353: Pulling Plug Connection From Door Post
Courtesy of BMW OF NORTH AMERICA, INC.

REAR SIDE DOORS

41 51... ADJUST DOOR

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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.
The following illustrations are schematic representations and are to be applied to the relevant vehicle type.

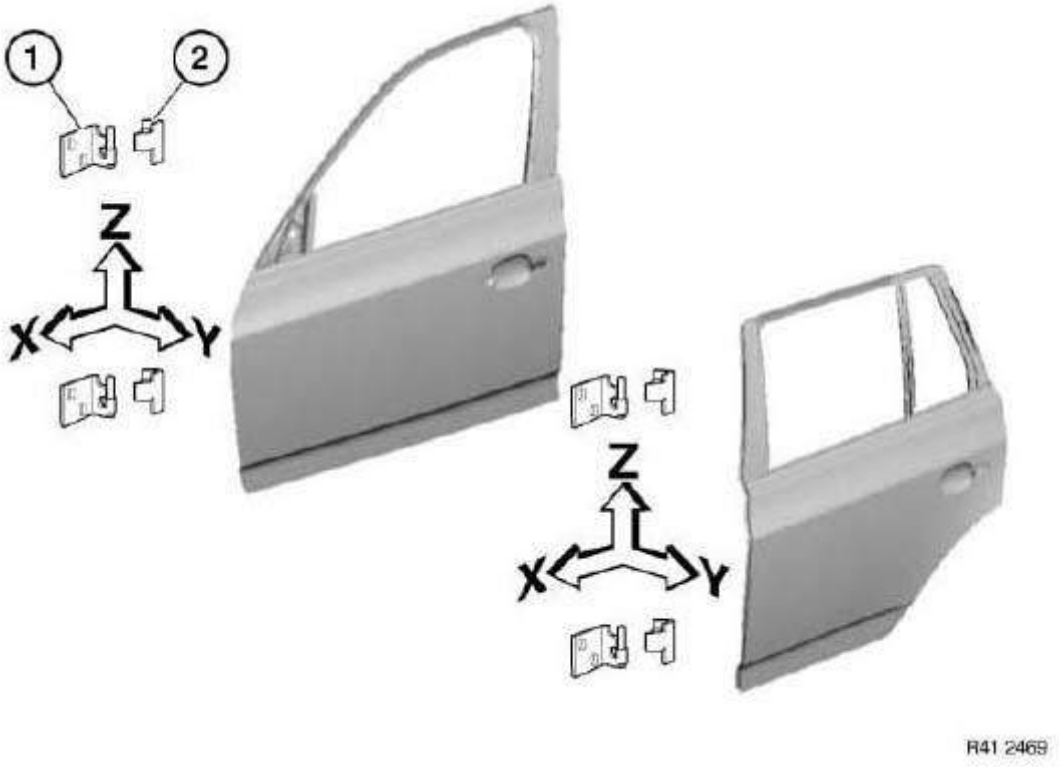


Fig. 354: Adjusting Front Side Door
Courtesy of BMW OF NORTH AMERICA, INC.

Loosen striker and remove, If necessary.

Slacken screws for hinge (2) on door until door can still just be moved.

Front door: Tightening torque **41 51 2AZ** .

Rear door: Tightening torque **41 52 2AZ** .

If adjustment range is not sufficient, slacken screws for hinges (1) on body.

NOTE: **Screw connections only accessible from inside.**

Front door: Tightening torque **41 51 3AZ** .

Rear door: Tightening torque **41 52 3AZ** .

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 striker.**
When the door is closed, the striker must not touch or scrape against the door lock. Look out for scratch marks.

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Fig. 355: Identifying Door Height Adjustment Mark
Courtesy of BMW OF NORTH AMERICA, INC.

Tighten down screws (1) until striker can still just be moved.

Move striker sideways in order to adjust transition between door and adjoining bodywork parts.

Tightening torque **51 21 2AZ / 51 22 2AZ** . See **DOOR LOCKS, REAR** or **FRONT DOOR LOCKS** .

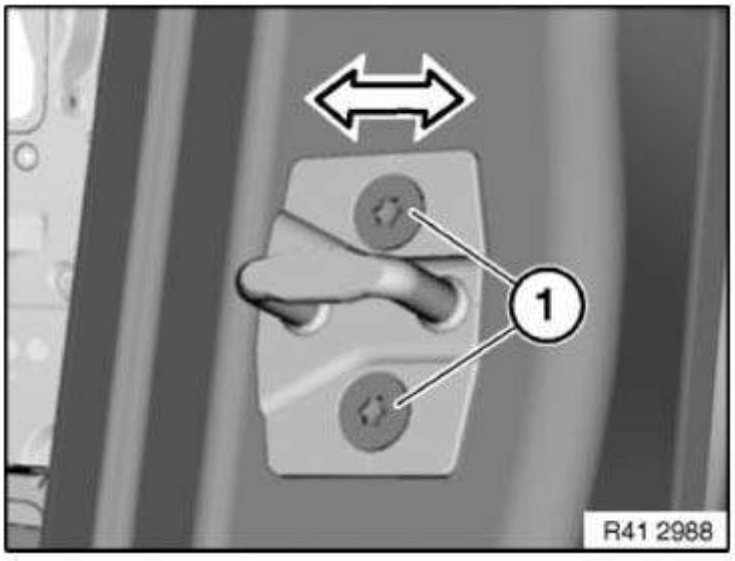


Fig. 356: Adjusting Lock Striker
Courtesy of BMW OF NORTH AMERICA, INC.

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).

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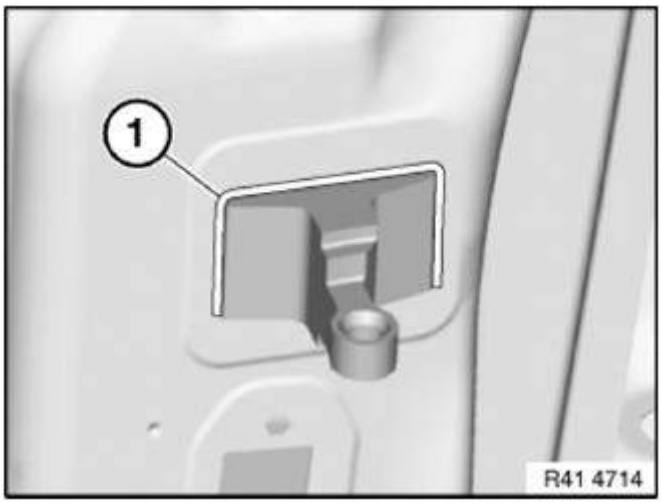


Fig. 357: Identifying Door Hinge Sealant Applying Area
Courtesy of BMW OF NORTH AMERICA, INC.

- Tighten all bolts to specified torque.
- Touch up unpainted surfaces in the appropriate colour.
- If necessary, adjust front door.

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.

41 5.... REMOVING AND INSTALLING DOOR

IMPORTANT: Do not damage adjoining body components.

The graphics are schematic representations and are to be applied to the relevant vehicle type.

Open door.

Release screw on connector frame.

Front door:

Tightening torque **41 51 4AZ** .

Rear door:

Tightening torque **41 52 4AZ** .

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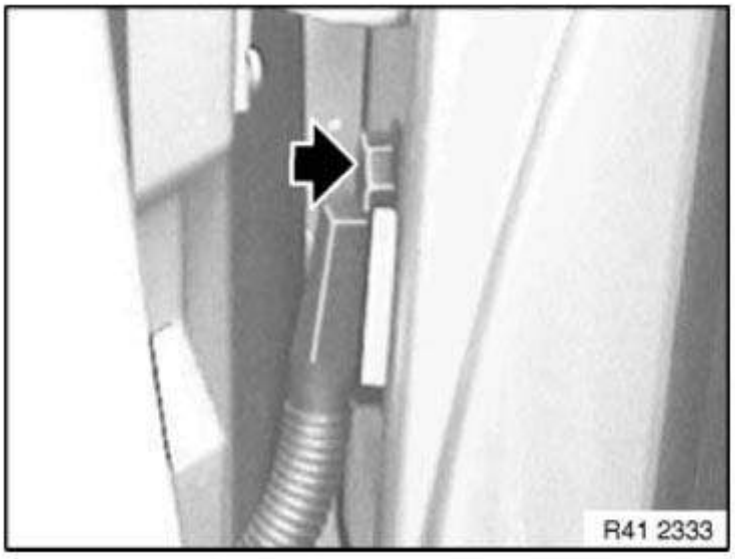


Fig. 358: Locating Screw On Connector Frame
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Secure door against closing.

Release screw (1) on door stop.

Front door:

Tightening torque **51 21 3AZ** .

Rear door:

Tightening torque **51 22 3AZ** .

Open door up to limit position.

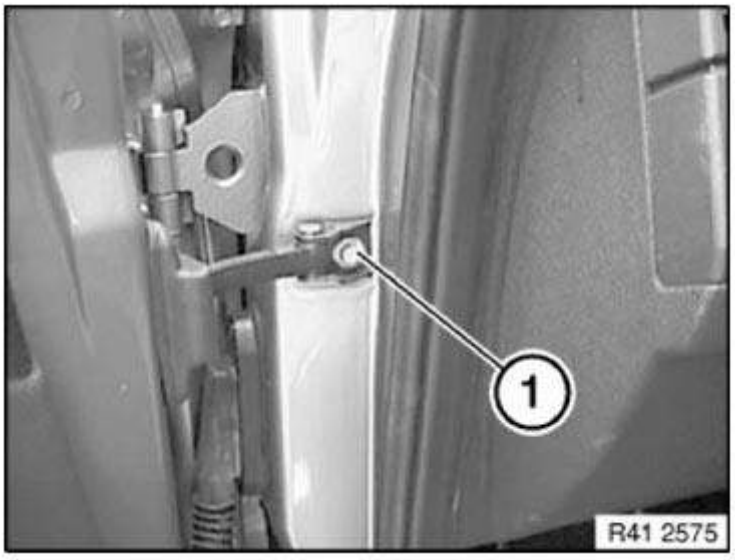


Fig. 359: Identifying Screw On Door Stop
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws between both hinge elements at top and bottom.

Front door:

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Tightening torque **41 51 1AZ** .

Rear door:

Tightening torque **41 52 1AZ** .

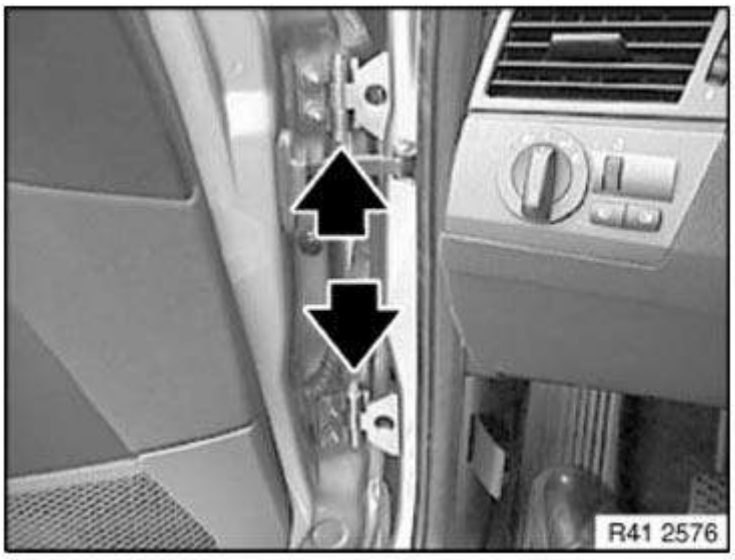


Fig. 360: Locating Door Hinge Elements Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Pull plug connection from door post, unlock by pulling out bar and detach.

Unhinge door by moving upwards and placing it on a suitable surface.

Installation:

If necessary, adjust **DOOR**.

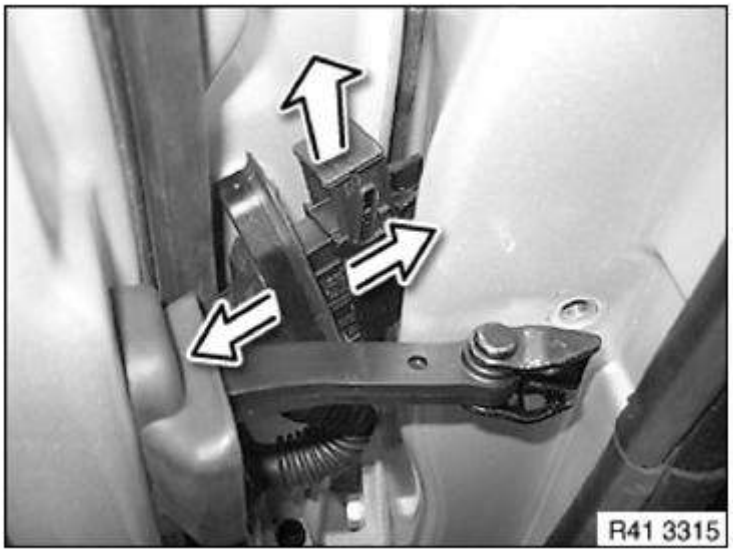


Fig. 361: Pulling Plug Connection From Door Post
Courtesy of BMW OF NORTH AMERICA, INC.

FRONT LID

41 61 014 ADJUSTING ENGINE COMPARTMENT LID

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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!

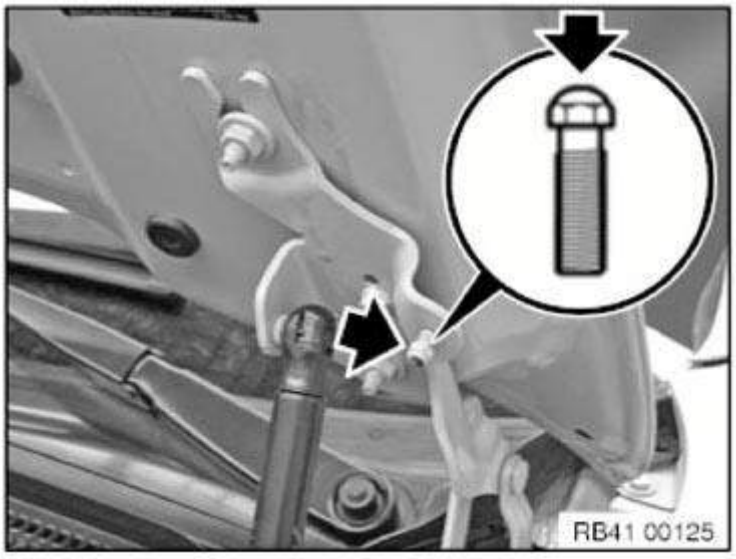


Fig. 362: Locating Engine Compartment Lid Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Slacken nuts (1) of hinges on left and right.

Engine compartment lid must be able to be moved.

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)

Tightening torque **41 61 2AZ** .

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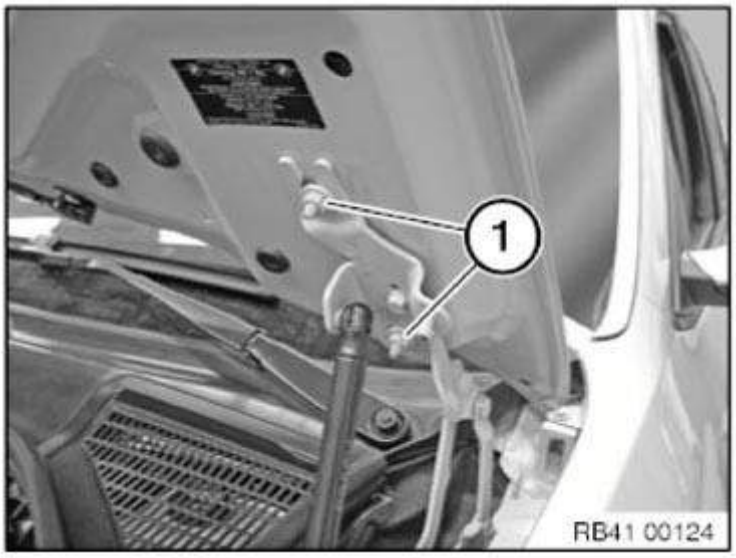


Fig. 363: Identifying Engine Compartment Lid Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

Adjust engine compartment lid sideways and lengthways.

Strikers must snap into place in engine compartment lid catch.



Fig. 364: Adjusting Engine Compartment Lid Sideways And Lengthways
Courtesy of BMW OF NORTH AMERICA, INC.

Height adjustment at hinge:

Slacken screws (1) and adjust engine compartment lid.

Tightening torque **41 61 2AZ** .

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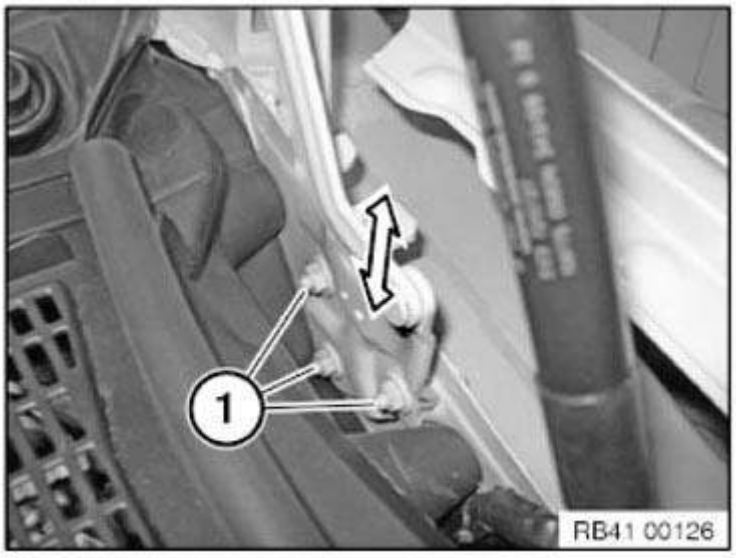


Fig. 365: Adjusting Height Hinge
Courtesy of BMW OF NORTH AMERICA, INC.

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 engine compartment lid or sluggish unlocking.

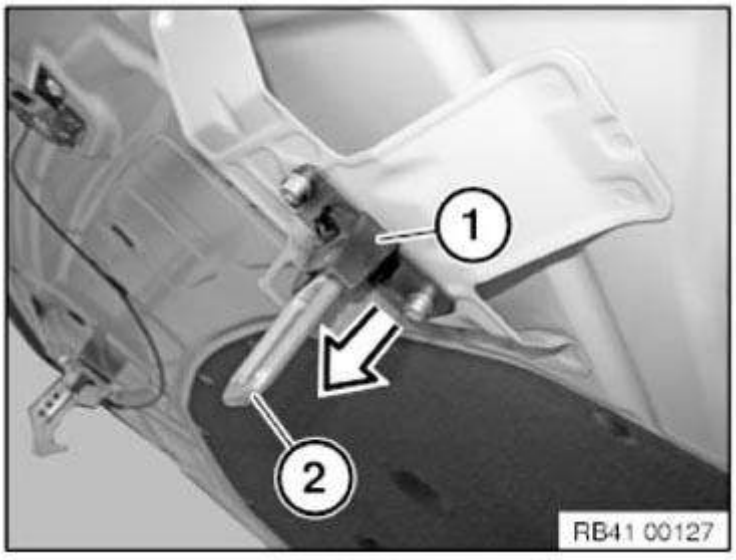


Fig. 366: Adjusting Strikers Height
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Check function of retaining hook.

After Installation note:

- Tighten all screws and nuts to specified torque.

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- Touch up unpainted surfaces in the appropriate colour.
- If necessary, adjust front side panels.

41 61 000 REMOVING AND INSTALLING ENGINE COMPARTMENT LID

Necessary preliminary tasks:

- Remove **RIGHT MICROFILTER HOUSING COVER** .

Turn clamp (3) in direction of arrow and washer fluid line (2) in direction of arrow.

Disconnect plug connection (1) and remove from holder (4).

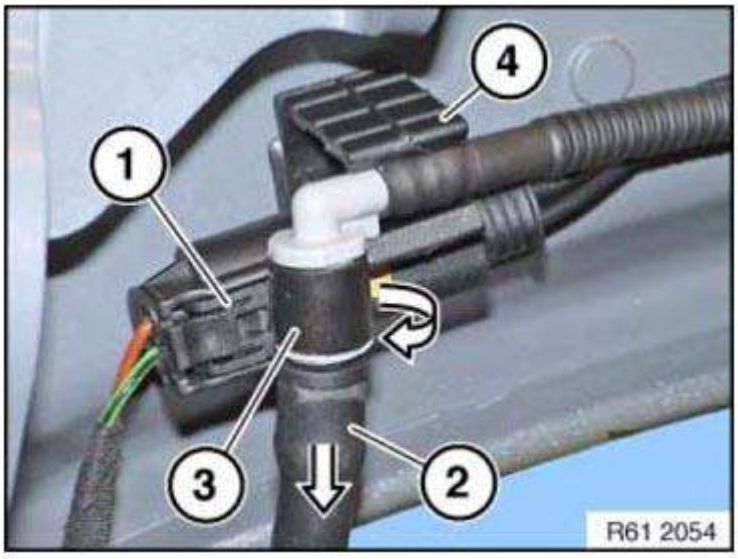


Fig. 367: Turning Clamp And Washer Fluid Line
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: Support the engine compartment lid. Removal of the engine compartment lid must be carried out with the assistance of a second person.

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**.

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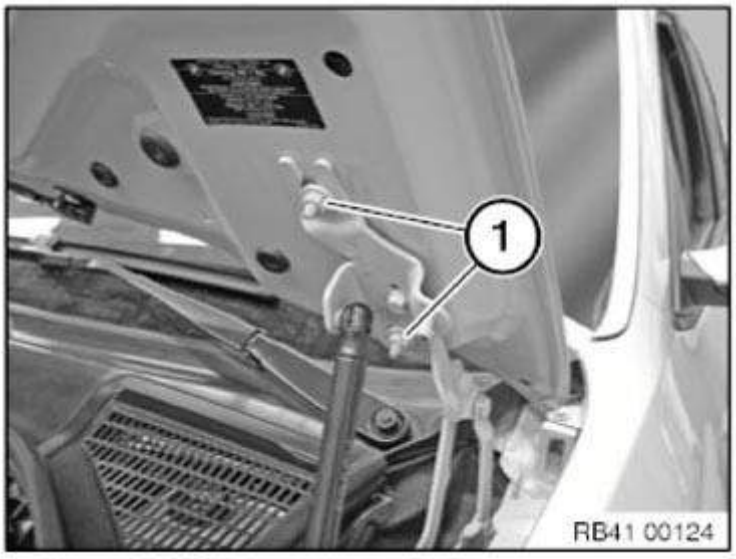


Fig. 368: Identifying Engine Compartment Lid Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

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.**

Necessary preliminary tasks:

Remove left-hand **GAS PRESSURE SPRING** for engine compartment lid

REMOVE left microfilter housing cover

Shown on left side. Right side identical.

Remove filter cover (1) in direction of arrow.

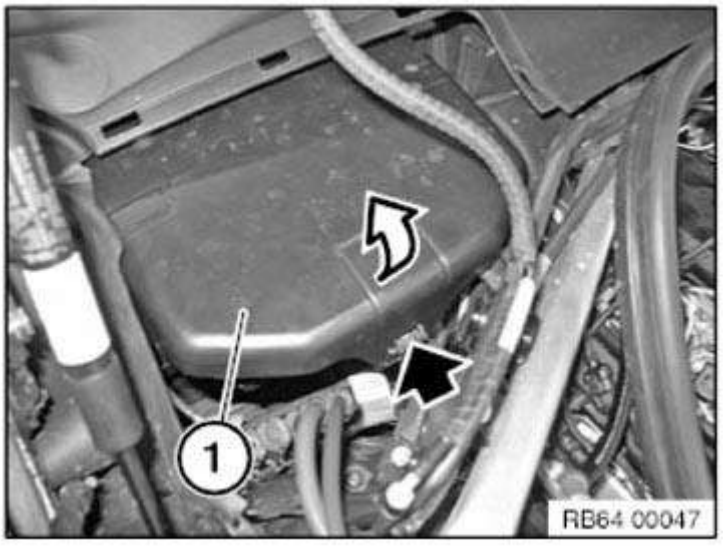


Fig. 369: Removing Filter Cover
Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

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Ensure that latch mechanisms on the microfilter housing cover (1) are correctly seated under retaining lugs on microfilter housing (2).

Retaining lugs on microfilter housing (2) must be neither bent nor damaged.

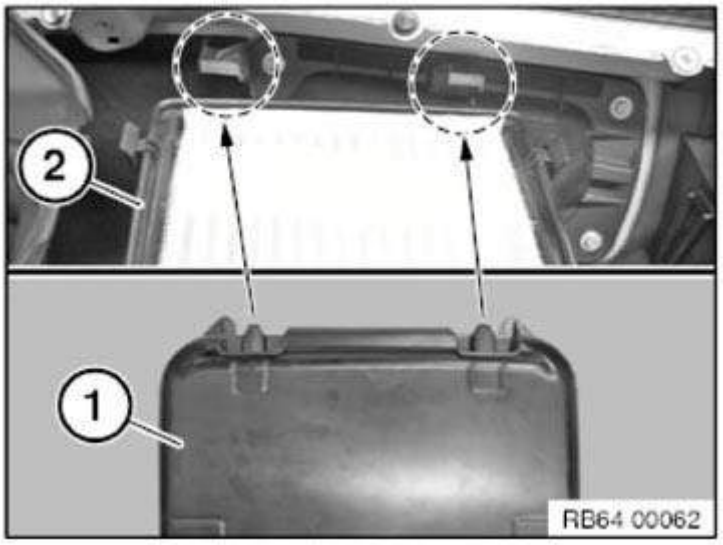


Fig. 370: Locating Retaining Lugs On Microfilter Housing
Courtesy of BMW OF NORTH AMERICA, INC.

Position suitable cloths (1) without any play under engine compartment lid.

IMPORTANT: Make sure the engine compartment lid is supported!

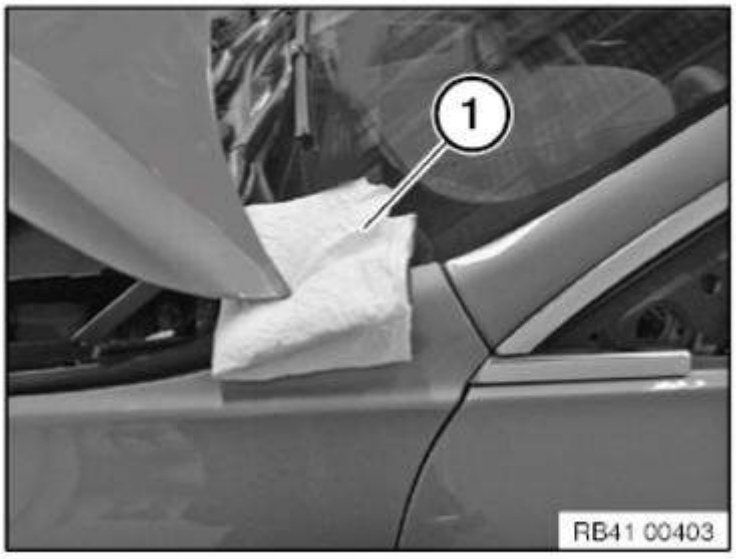


Fig. 371: Positioning Suitable Cloths Under Engine Compartment Lid
Courtesy of BMW OF NORTH AMERICA, INC.

Release nuts (1) and remove partition wall (2).

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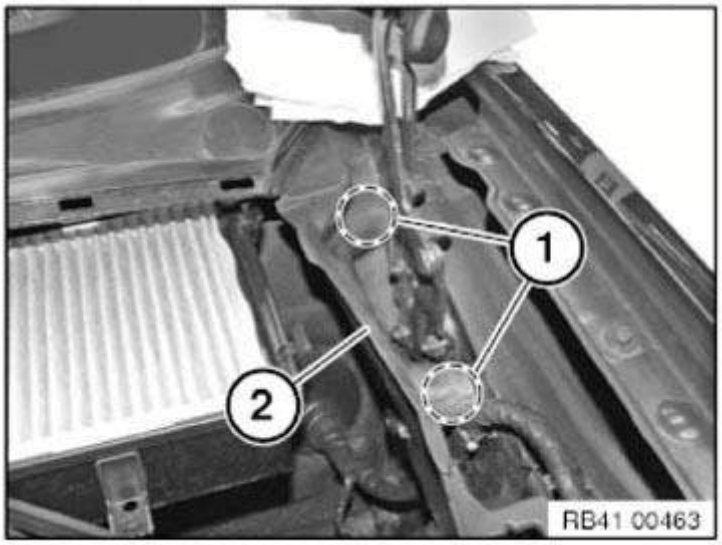


Fig. 372: Identifying Partition Wall Nuts
Courtesy of BMW OF NORTH AMERICA, INC.

IMPORTANT: After screws have been slackened no lateral forces must be exerted on the engine compartment lid!

Release screws (1).

Tightening torque **41 61 1AZ** .

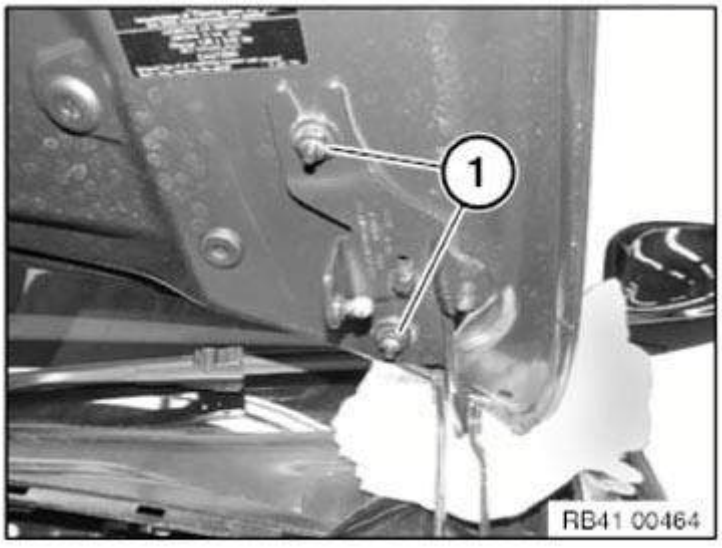


Fig. 373: Identifying Engine Compartment Lid Screws
Courtesy of BMW OF NORTH AMERICA, INC.

Release screws (1) and remove hinge (2).

Tightening torque **41 61 3AZ** .

Installation note:

ADJUST hinge together with engine compartment lid.

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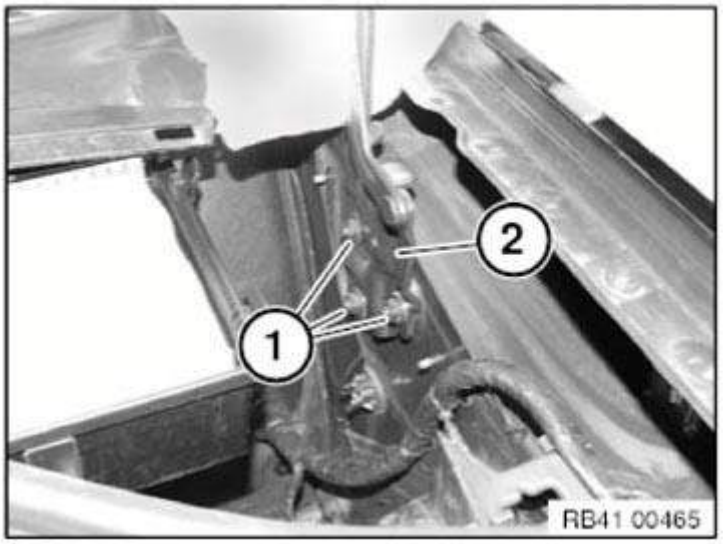


Fig. 374: Identifying Hinge Screws
Courtesy of BMW OF NORTH AMERICA, INC.

41 61 062 REMOVING AND INSTALLING/REPLACING RIGHT HINGE FOR ENGINE COMPARTMENT LID

Operation is identical to removing and installing "**LEFT HINGE FOR ENGINE COMPARTMENT LID**".

REAR LID

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**.

Observe **GAP DIMENSIONS**.

The tailgate must be provided with all attachment parts for correct adjustment.

Version with automatic tailgate actuation:

Disable automatic tailgate actuation:

Separate plug connection at **CONTROL UNIT** for automatic rear lid actuation.

IMPORTANT: Risk of damage to spindle drive: only move tailgate slowly by hand.

Necessary preliminary tasks:

- Remove **TRIM PANEL FOR REAR WINDOW FRAME** .

NOTE: **When the tailgate is closed, the lock striker must not touch or scrape against the tailgate lock.**

Apply systematic figure to vehicle.

Adjusting tailgate laterally and in longitudinal direction:

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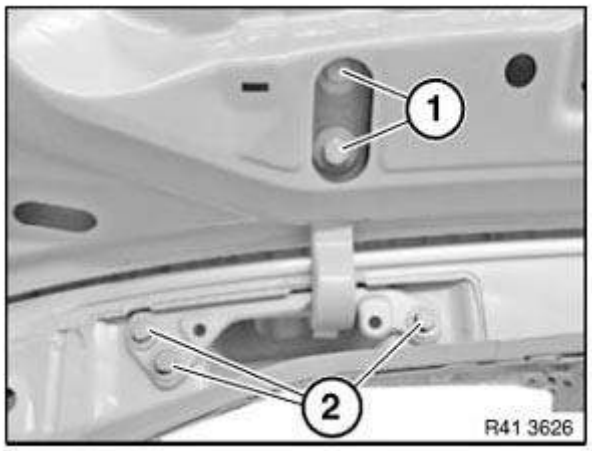


Fig. 375: Identifying Screws On Rear Lid Hinge To Rear Lid
Courtesy of BMW OF NORTH AMERICA, INC.

Slacken screws (1) on rear lid hinge to rear lid until such stage that rear lid can still be moved.

Adjust tailgate.

Tightening torque **41 62 1AZ** .

Height adjustment of rear lid to roof:

Slacken screws (2) and adjust rear lid.

Tightening torque **41 62 2AZ** .

Check holder (1) left and right for damage, replace if necessary.

Tightening torque **51 24 14AZ** .

If necessary, adjust **REAR LID STOP** in water channel.

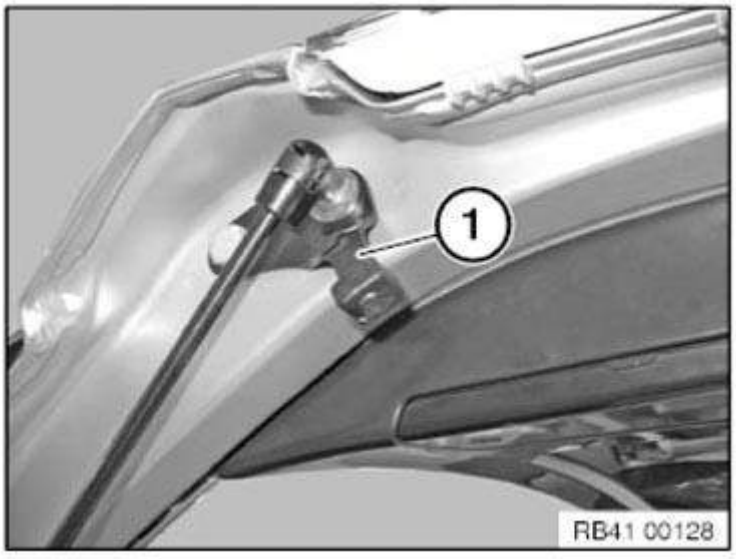


Fig. 376: Identifying Tailgate Holder
Courtesy of BMW OF NORTH AMERICA, INC.

After Installation note:

- Tighten all screws and nuts to specified torque.

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- Touch up unpainted surfaces in the appropriate colour.
- **If reversing camera optional equipment installed:**

  Calibrate **REVERSING CAMERA** .

51 23... ADJUSTING/REPLACING BUMP STOPS

Necessary preliminary tasks:

Remove **luggage compartment wheel arch panel** . See **51 47 151 REMOVING AND INSTALLING/REPLACING LEFT LUGGAGE COMPARTMENT WHEEL ARCH PANEL** or **51 47 161 REMOVING AND INSTALLING/REPLACING RIGHT LUGGAGE COMPARTMENT WHEEL ARCH PANEL** .

Following parts must not be damaged:

- (1) Bump stop
- (2) Lock nut (following illustration)

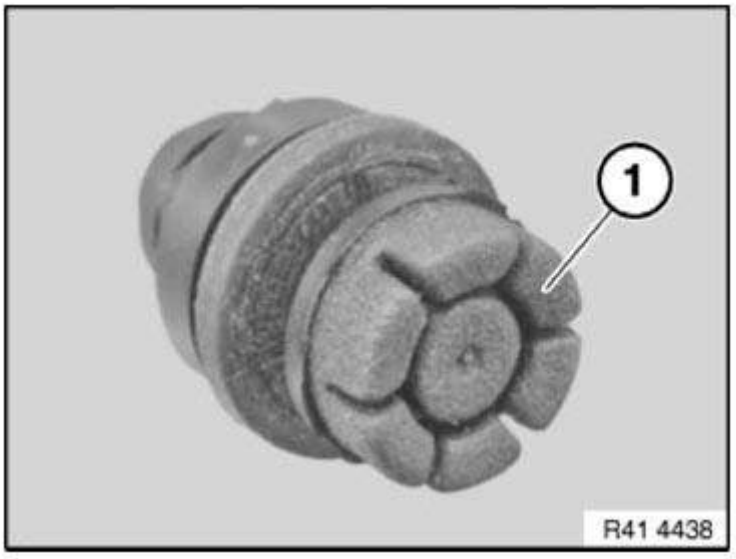


Fig. 377: Identifying Bump Stop
Courtesy of BMW OF NORTH AMERICA, INC.

General view of rear side:

- **Adjust stop pads**

  Remove cap (1).

  Adjust stop pad to correct height by turning screw (2) to left or right.

- **Remove stop pads**

  Release nut (3) and remove stop pads.

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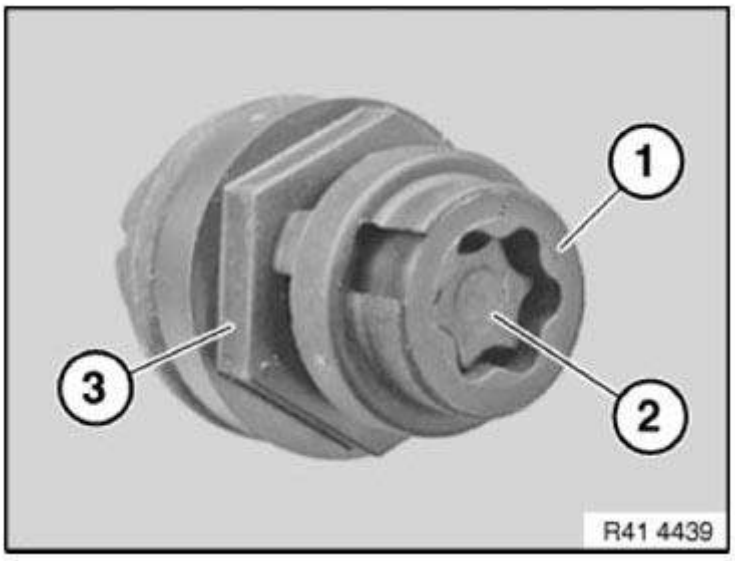


Fig. 378: Identifying Bump Stop, Cap, Screw And Nut
Courtesy of BMW OF NORTH AMERICA, INC.

41 62 000 REMOVING AND INSTALLING REAR LID

Read contents of **BODY, GENERAL**.

Necessary preliminary tasks:

- Remove **trim panels on rear lid** . See **51 49 015 REMOVING AND INSTALLING/REPLACING COVER FOR REAR WINDOW FRAME AT TOP** or **51 49 008 REMOVING AND INSTALLING (REPLACING) TRIM FOR REAR LID** .
- Disconnect all cable connectors and pull wiring harness out of tailgate.
- Remove both **gas-filled struts** . See **51 24 300 REMOVING AND INSTALLING OR REPLACING LEFT OR RIGHT GAS PRESSURE SPRING FOR TAILGATE** , **51 24 350 REMOVING AND INSTALLING/REPLACING LEFT SPINDLE DRIVE (AUTOMATIC TAILGATE ACTIVATION)** or **51 24 351 REMOVING AND INSTALLING/REPLACING RIGHT SPINDLE DRIVE (AUTOMATIC TAILGATE ACTIVATION)** .

NOTE: **This work step must be carried out with a second person assisting.**

Release screws (1) on both sides of vehicle.

Tightening torque **41 62 1AZ** .

Remove tailgate.

Installation note:

Install tailgate at screw locations on hinge.

If necessary, **ADJUST TRUNK LID**.

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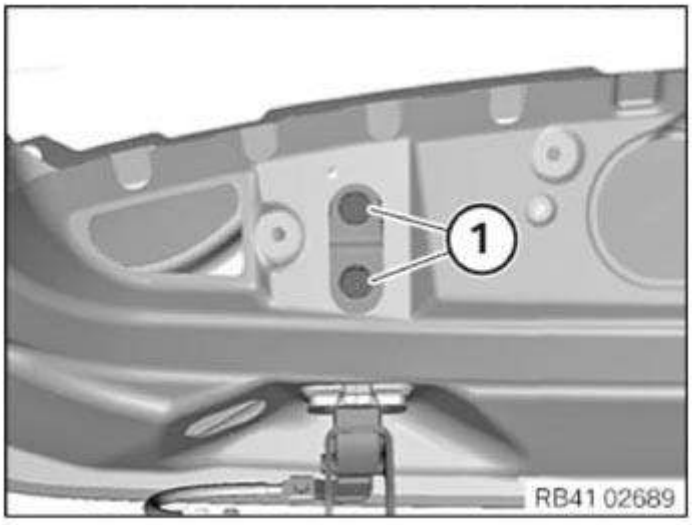


Fig. 379: Identifying Screws Vehicle Rear Lid
Courtesy of BMW OF NORTH AMERICA, INC.

If RFK optional equipment is fitted:

Calibrate **RFK** .

41 62 515 REMOVING/INSTALLING/REPLACING LEFT HINGE FOR TAILGATE (TAILGATE REMOVED)

Read contents of **BODY, GENERAL**.

Loosen screw connections (1) and remove ground cable (2).

Release screws (3) and remove hinge.

Installation note:

Tightening torque **41 62 2AZ/41 62 3AZ** .

ADJUST hinge together with tailgate.

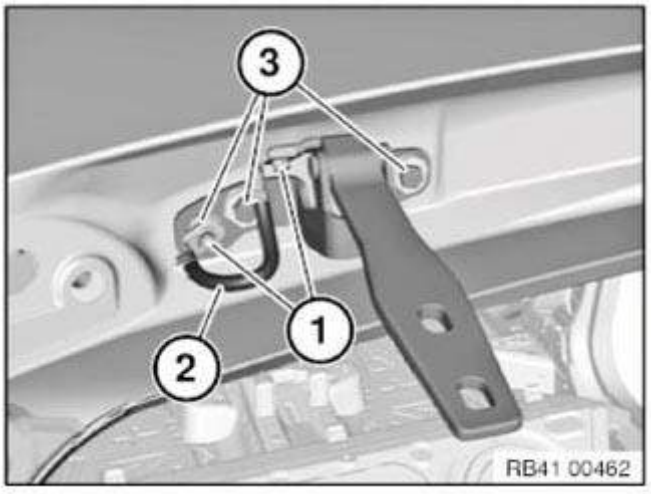


Fig. 380: Identifying Screw Connections And Ground Cable
Courtesy of BMW OF NORTH AMERICA, INC.

OTHER FLAPS

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41 63 000 REMOVING AND INSTALLING FLAP FOR FUEL FILLER NECK

Open fuel filler flap.

Use a suitable tool to lift the latch mechanism out toward the front in direction of arrow.

Detach fuel filler flap (1) in direction of arrow.

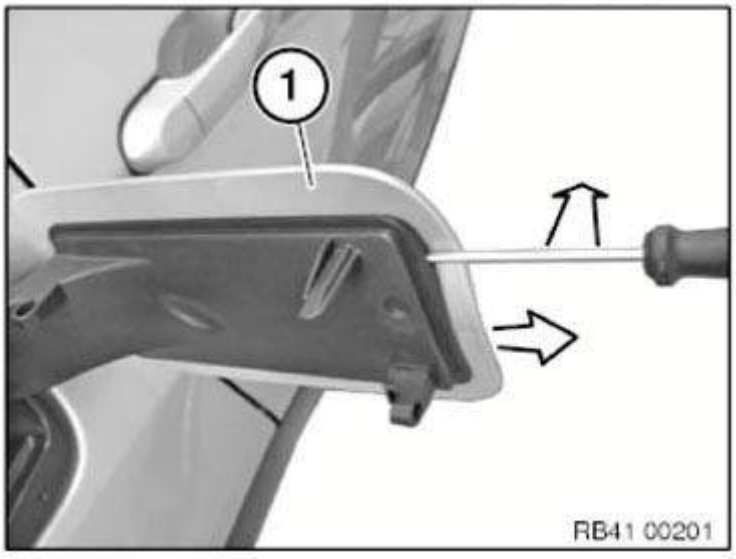


Fig. 381: Detaching Fuel Filler Flap
Courtesy of BMW OF NORTH AMERICA, INC.

Installation note:

The latch mechanism (1) must not be damaged.

If the latch mechanism is damaged, replace the **COVER POT**.

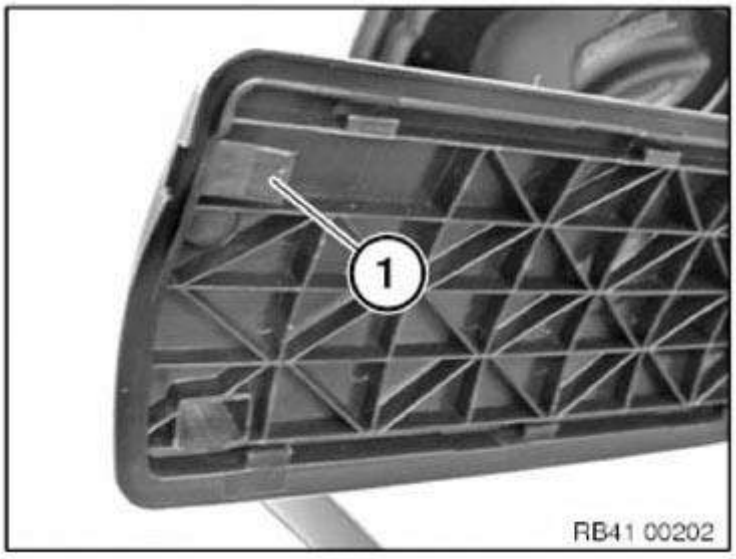


Fig. 382: Identifying Latch Mechanism
Courtesy of BMW OF NORTH AMERICA, INC.

41 63 003 REPLACE COVER BOWL

Special tools required:

- **00 9 321**

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Necessary preliminary tasks:

- Remove **FLAP FOR FUEL FILLER NECK**
- Close the central locking system with open cap

NOTE: **Carry over schematic diagram to the relevant vehicle type.**

IMPORTANT: 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 **OVERVIEW OF CONSUMABLES**):

- (1) Cover bowl

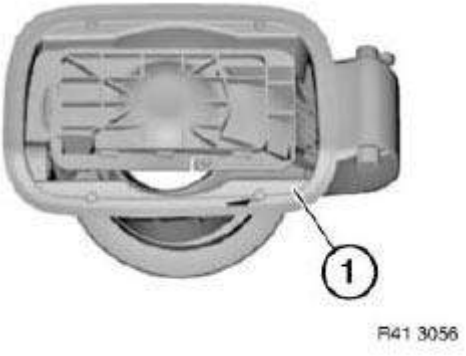


Fig. 383: Identifying Cover Bowl
Courtesy of BMW OF NORTH AMERICA, INC.

Release rubber collar (1) from cover bowl (2) by pressing inward.

NOTE: **Rubber collar (1) remains attached to vehicle.**

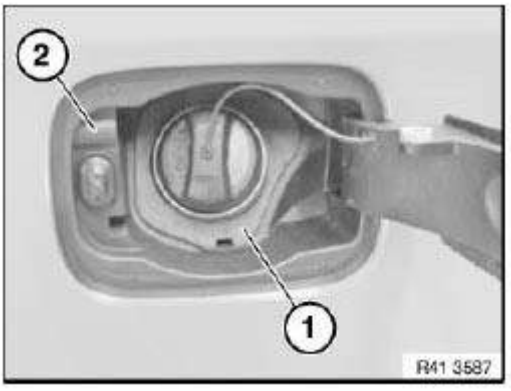


Fig. 384: Identifying Rubber Collar From Cover Bowl
Courtesy of BMW OF NORTH AMERICA, INC.

Remove ejector (1) in direction of arrow.

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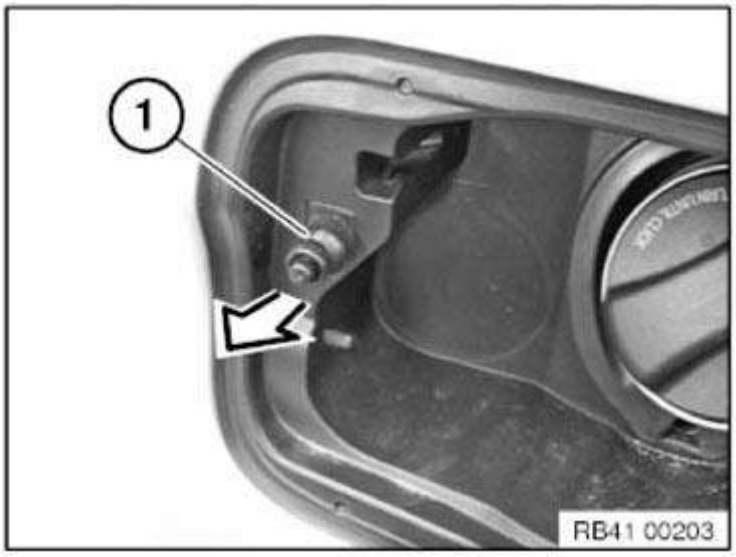


Fig. 385: Removing Ejector
Courtesy of BMW OF NORTH AMERICA, INC.

Lift out the retaining strap (1) and remove the lid.

Pierce markings (2) with a small screwdriver.

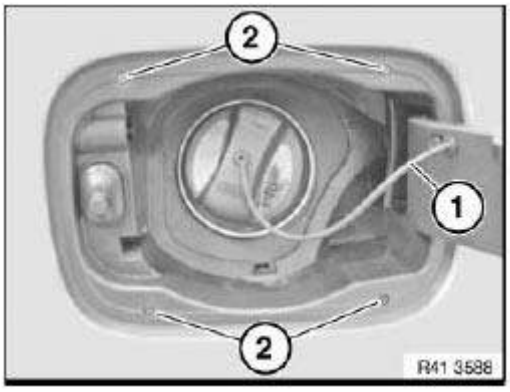


Fig. 386: Identifying Retaining Strap
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: For purposes of clarity, picture shows cover bowl removed.

Insert screwdriver to specified measurement a and unlock cover bowl catch.

Dimension a = approx. 10 mm

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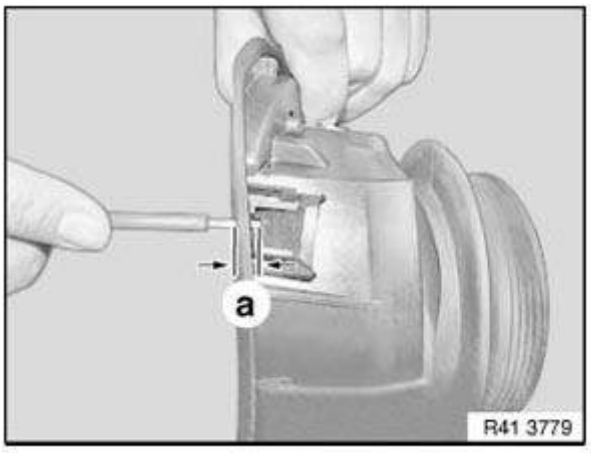


Fig. 387: Removing Cover Bowl Catch Using Screwdriver
Courtesy of BMW OF NORTH AMERICA, INC.

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.

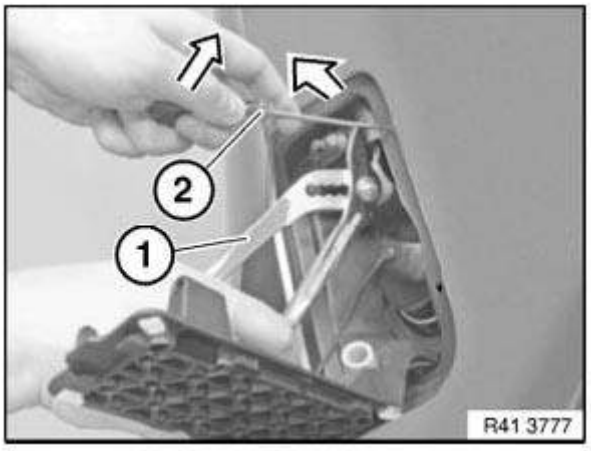


Fig. 388: Removing Catches Individually With Screwdriver
Courtesy of BMW OF NORTH AMERICA, INC.

Slightly pull the locking pin (1) forward in the direction of the arrow, if applicable.

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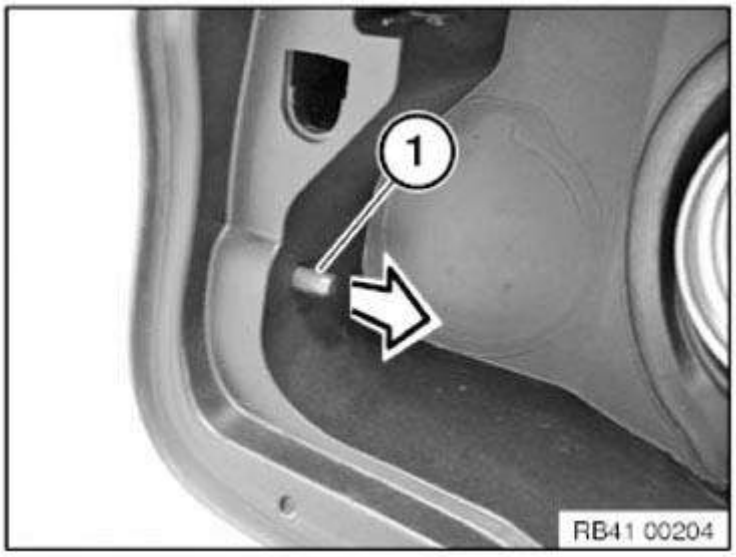


Fig. 389: Pulling Locking Pin
Courtesy of BMW OF NORTH AMERICA, INC.

Close hinge arm (1).

IMPORTANT: 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.

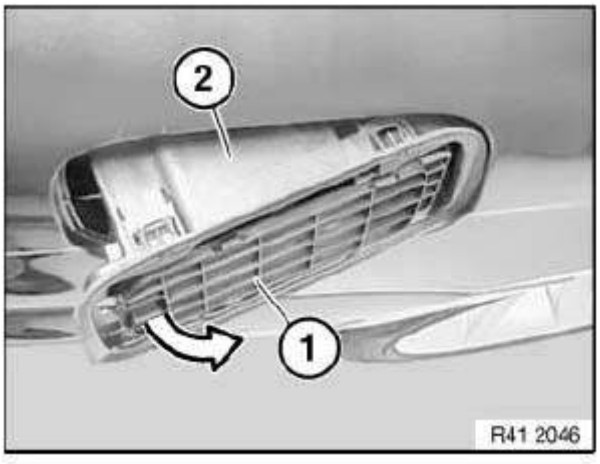


Fig. 390: Twisting Out Cover Bowl
Courtesy of BMW OF NORTH AMERICA, INC.

Unlock and disconnect plug connection (1) for actuator drive.

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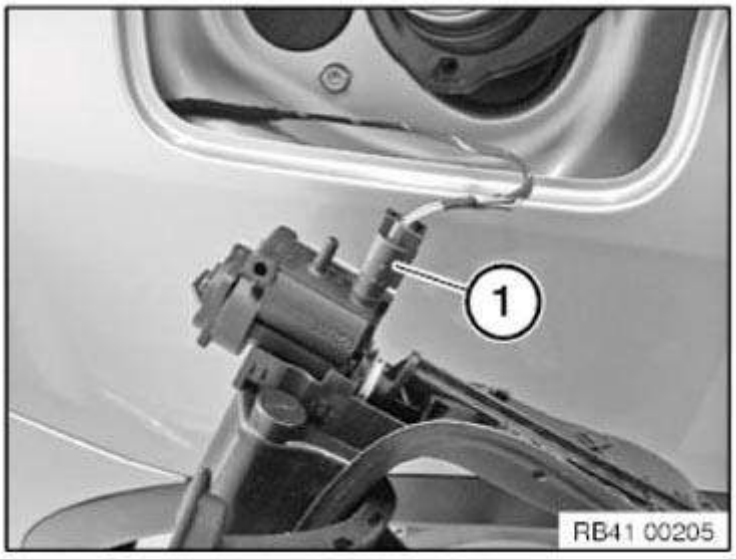


Fig. 391: Identifying Actuator Drive Plug Connection
Courtesy of BMW OF NORTH AMERICA, INC.

Use a suitable tool to unlock the tabs (1) on the front and back.

Remove actuator drive (3) from cover pot (2).

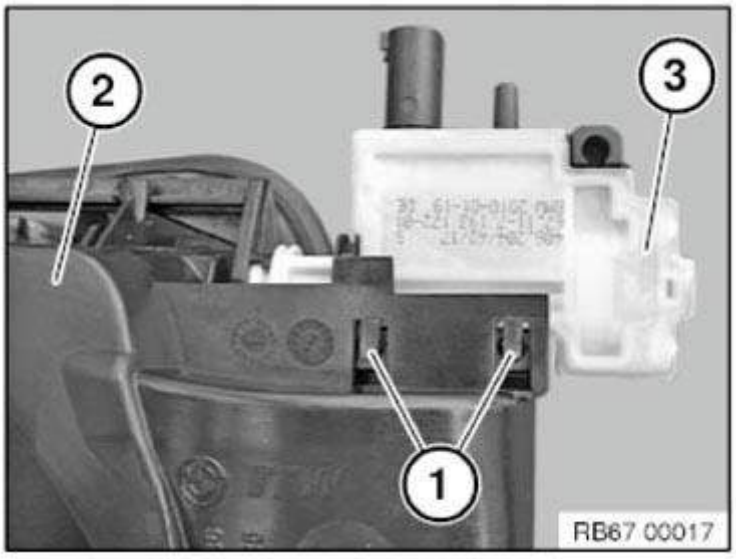


Fig. 392: Identifying Actuator Drive From Cover Pot
Courtesy of BMW OF NORTH AMERICA, INC.

Release the actuator drive (2) by simultaneously turning and pressing the locking pin (1).

Installation note:

Make sure the setting for the actuator drive (2) for the fuel filler flap is correct. It must be possible to lock or unlock the fuel filler flap completely.

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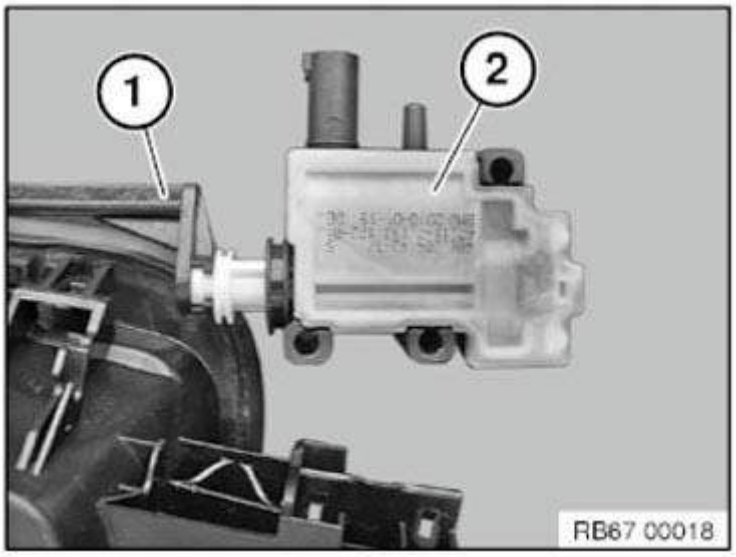


Fig. 393: Identifying Actuator Drive With Locking Pin
Courtesy of BMW OF NORTH AMERICA, INC.

Installing the cover bowl:

Remove rubber collar (1) from new part.

Install and check the function of the actuator drive at the new part.

NOTE: When replacing rubber collar: Remove WHEEL ARCH COVER .

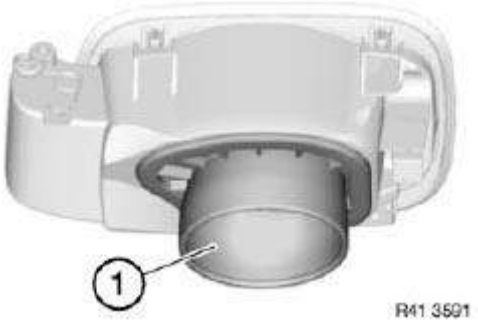


Fig. 394: Identifying Rubber Collar
Courtesy of BMW OF NORTH AMERICA, INC.

Graphic similar.

Check protective cap (3) for correct seating.

Catches (1) on ejector (2) must not be damaged. (Watertightness!)

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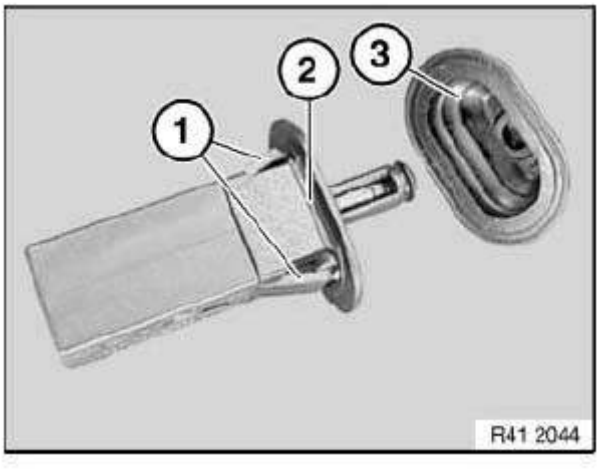


Fig. 395: Identifying Catches On Ejector, Protective Cap
Courtesy of BMW OF NORTH AMERICA, INC.

Fit approx. 0.5 m long cable (1) in groove on rubber collar (2).

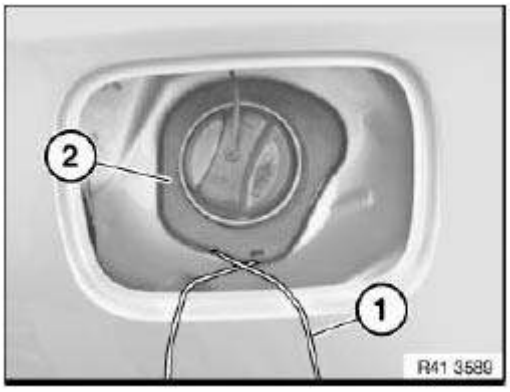


Fig. 396: Identifying Groove On Rubber Collar
Courtesy of BMW OF NORTH AMERICA, INC.

Install cover bowl (1).

Thread ends of cable (2) outwards.

Cover bowl must snap into place 4 times.

Align bottom rubber cup (3) with recess (arrow).

Pull rubber collar (3) over the cover bowl by pulling the ends of cables (2).

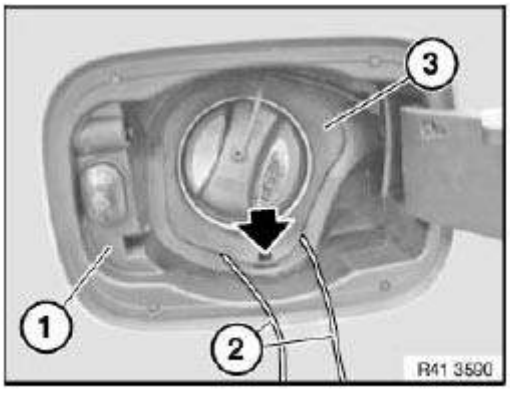


Fig. 397: Pulling Rubber Collar Over Cover Bowl

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Courtesy of BMW OF NORTH AMERICA, INC.

Slowly pull out cable ends (2).

Press rubber cup (1) into groove with special tool **00 9 321**.

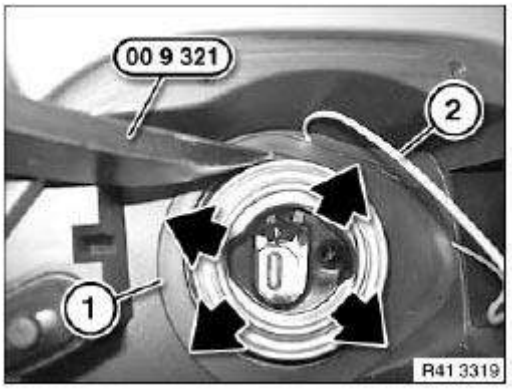


Fig. 398: Pressing Rubber Cup Into Groove With Special Tool 00 9 321
Courtesy of BMW OF NORTH AMERICA, INC.

Carefully check cover bowl (2) in area of latch mechanisms for proper seating.

There must be no discernible gap between the sealing lip of the cover bowl and the side wall in the area. (watertightness).

Make sure rubber collar (1) is correctly seated (watertightness).

Perform function check of the lock/unlocking of the fuel filler cap.

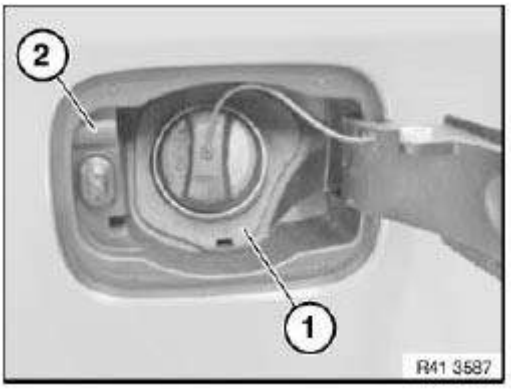


Fig. 399: Identifying Rubber Collar From Cover Bowl
Courtesy of BMW OF NORTH AMERICA, INC.

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BODY

0493635 ADJUSTER

0493635 416250 Adjuster Minimum set: Mechanical tools Mechanical tool

NOTE: (adjusting tool) For parallel alignment of the rear window glass to the tailgate hinge E46/3

Storage Location

A4

SI number

01 21 99 (518)

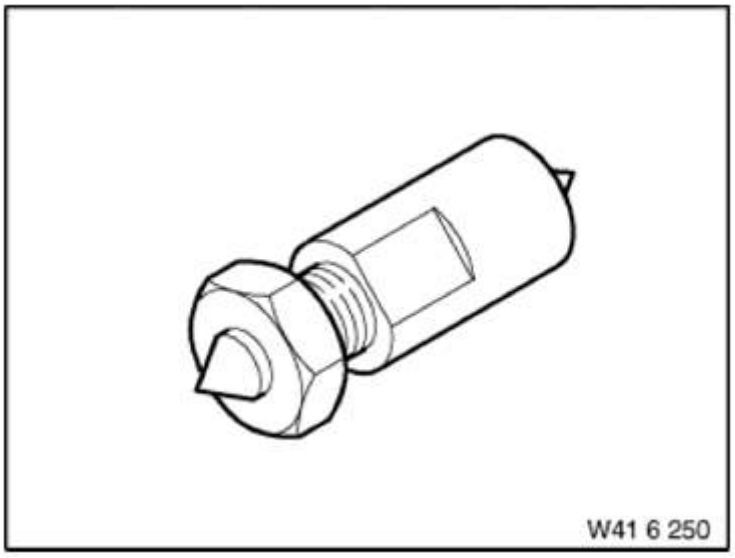


Fig. 1: Identifying Adjuster (0493635)
Courtesy of BMW OF NORTH AMERICA, INC.

0494720 CARTRIDGE

0494720 413003 Cartridge AM

NOTE: (Adhesive cartridge (3 x))

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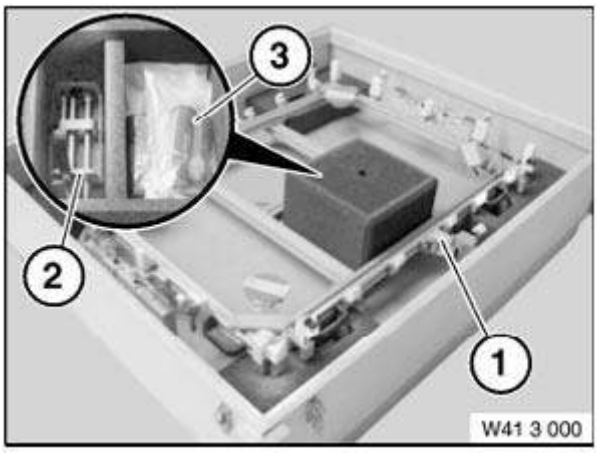


Fig. 2: Identifying Cartridge (0494720)
Courtesy of BMW OF NORTH AMERICA, INC.

0494836 CARTRIDGE GUN

0494836 413010 Cartridge gun Mechanical tool

NOTE: (Cartridge gun) Tool for Campaign SI cracks on rear axle fixture (E46 rear axle fixture, structural foam); manufactured by Core Products (source: Henkel): For structural foam Terocore 1401 (Henkel), part no. 83 42 0 307 530

0494719 CARTRIDGE GUN

0494719 413002 Cartridge gun AM

NOTE: (Adhesive gun)

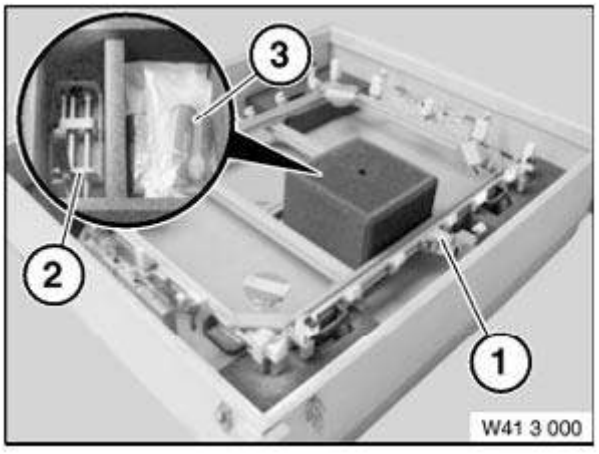


Fig. 3: Identifying Cartridge Gun (0494719)
Courtesy of BMW OF NORTH AMERICA, INC.

0492548 DEVICE

0492548 411000 Device AM

NOTE: For punching in the 17-digit vehicle identification number

Consisting of:

1 = 0492549 Device

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NOTE: **(Guide without punch numbers) Series: all except E38, E39 Only available as part of complete set**

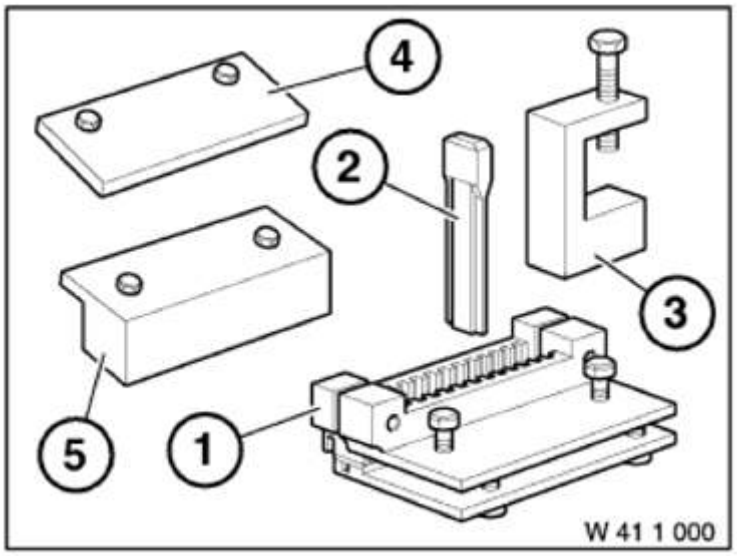


Fig. 4: Identifying Device (0492548)
Courtesy of BMW OF NORTH AMERICA, INC.

2 = 0492550 Punch element

NOTE: **(Individual punch numbers) Specification necessary. Replaced by 41 0 000. (0 495 628)**

3 = 0492551 Holder

NOTE: **(Spacer (2 pieces)) Series: E30**

4 = 0492552 Plate

NOTE: **(Additional plate) Series: E31, E36/4**

5 = 0492553 Plate

NOTE: **(Additional plate) Series: E36/2, convertible**

7 = 0493112 Punch element

NOTE: **(Punch number "BMW Logo") For internal use only**

0492561 DEVICE

0492561 415020 Device Mechanical tool

NOTE: **For attaching the bearing supports for the anti-roll bar (retrospective attachment)**

0492549 DEVICE

0492549 411001 Device AM

NOTE: **(Guide without punch numbers) Series: all except E38, E39 Only available as part of complete set**

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0494718 DEVICE

0494718 413001 Device AM

NOTE: **(Bonding device)**

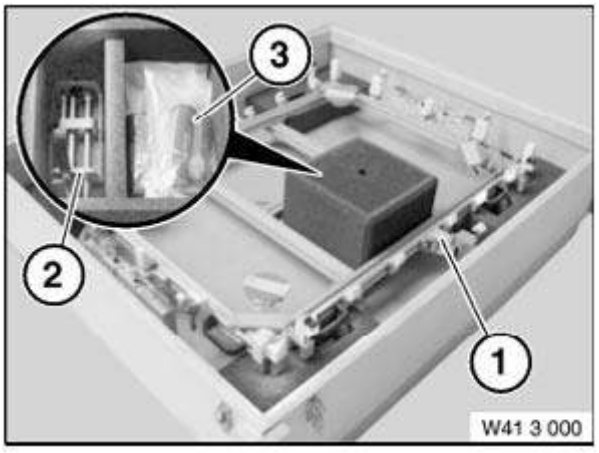


Fig. 5: Identifying Device (0494718)
Courtesy of BMW OF NORTH AMERICA, INC.

0494717 DEVICE

0494717 413000 Device AM

NOTE: **(Bonding device set) For bonding the CFK roof**

SI number

05 04 03 (985)

Consisting of:

1. 0494718 Device

   NOTE: **(Bonding device)**

2. 0494719 Cartridge gun

   NOTE: **(Adhesive gun)**

3. 0494720 Cartridge

   NOTE: **(Adhesive cartridge (3 x))**

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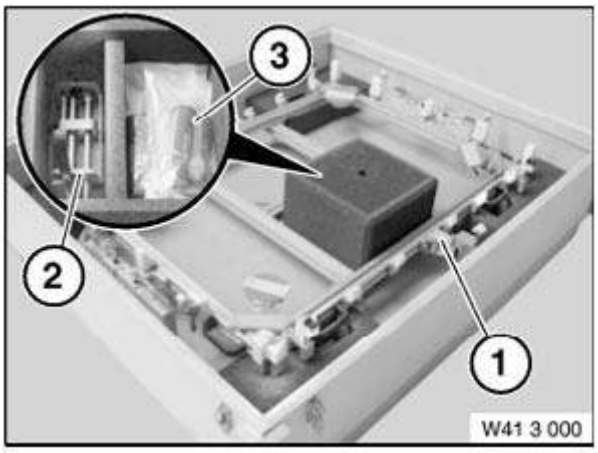


Fig. 6: Identifying Device (0494717)
Courtesy of BMW OF NORTH AMERICA, INC.

0492560 DEVICE

0492560 415010 Device Mechanical tool

NOTE: For installing the bearing bush (door hinges) Discontinued without substitute.

Storage Location

C2

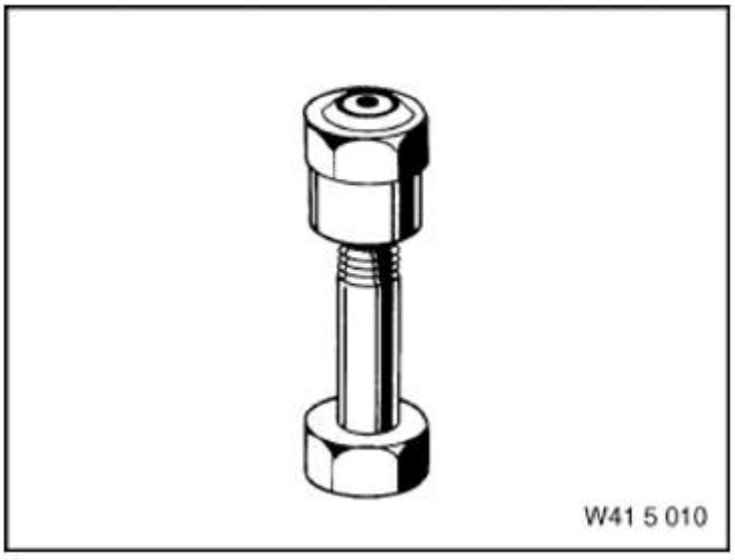


Fig. 7: Identifying Device (0492560)
Courtesy of BMW OF NORTH AMERICA, INC.

0492567 GAUGE

0492567 415035 Gauge AM

NOTE: (gauge for door sill)

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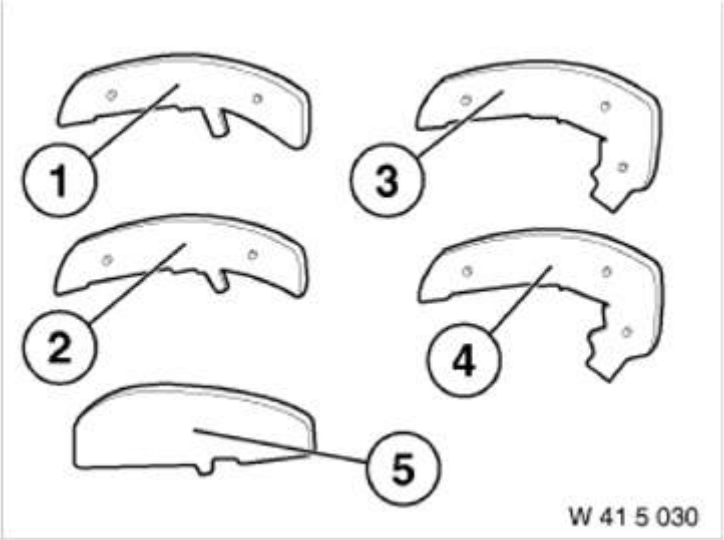


Fig. 8: Identifying Gauge (0492567)
Courtesy of BMW OF NORTH AMERICA, INC.

0492566 GAUGE

0492566 415034 Gauge AM

NOTE: (gauge for front of frame)

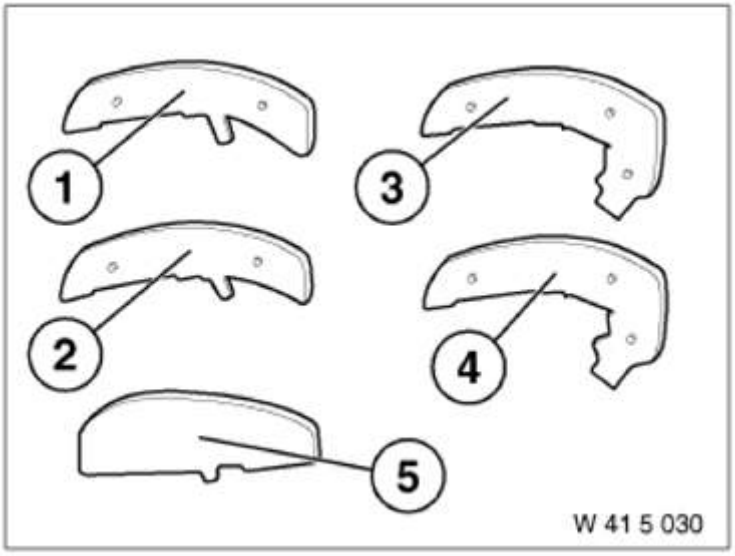


Fig. 9: Identifying Gauge (0492566)
Courtesy of BMW OF NORTH AMERICA, INC.

0492564 GAUGE

0492564 415032 Gauge AM

NOTE: (gauge for front of front door)

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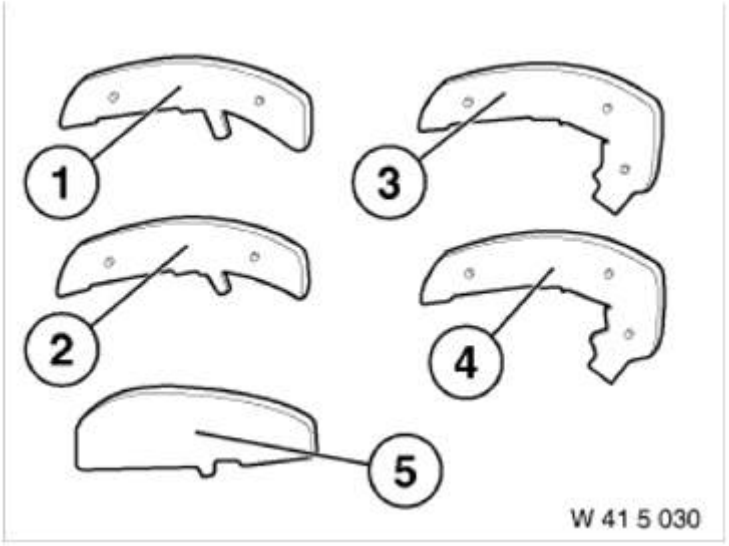


Fig. 10: Identifying Gauge (0492564)
Courtesy of BMW OF NORTH AMERICA, INC.

0492568 GAUGE

0492568 415040 Gauge Mechanical tool

NOTE: **(Spacer gauge) For measuring distance between top of front side door and B-pillar**

Storage Location

Y4

SI number

01 06 94 (801)

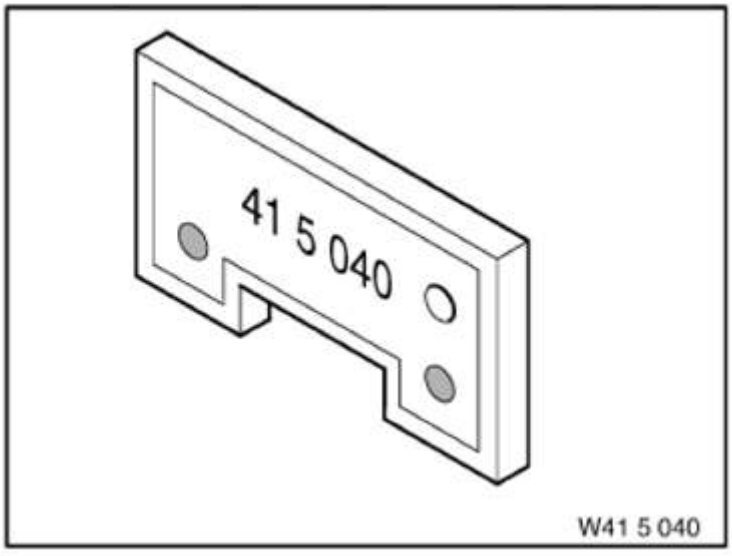


Fig. 11: Identifying Gauge (0492568)
Courtesy of BMW OF NORTH AMERICA, INC.

0493197 GAUGE

0493197 411030 Gauge AM

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NOTE: **(Punching gauge) For punching in the 17-digit vehicle identification number**

SI number

01 02 98 (302)

Consisting of:

1. 0493198 Plate

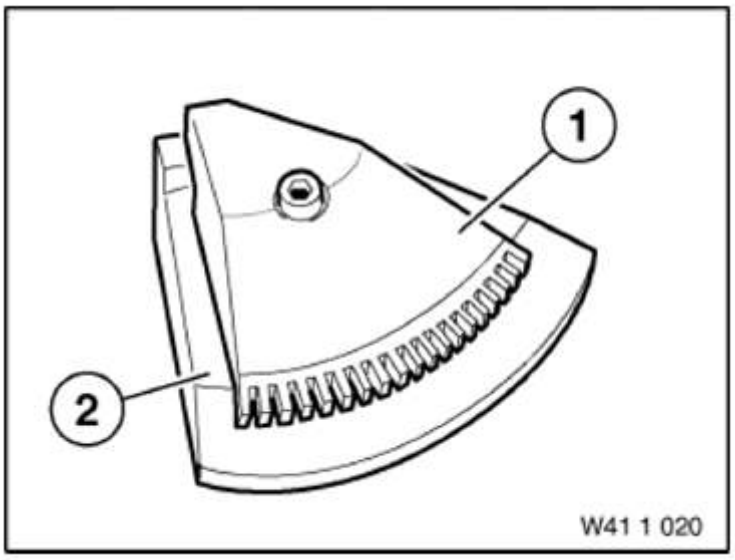


Fig. 12: Identifying Gauge (0493197)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: **(Guide plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

2. 0493199 Plate

NOTE: **(Counter-support plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

0492565 GAUGE

0492565 415033 Gauge AM

NOTE: **(gauge for rear of frame)**

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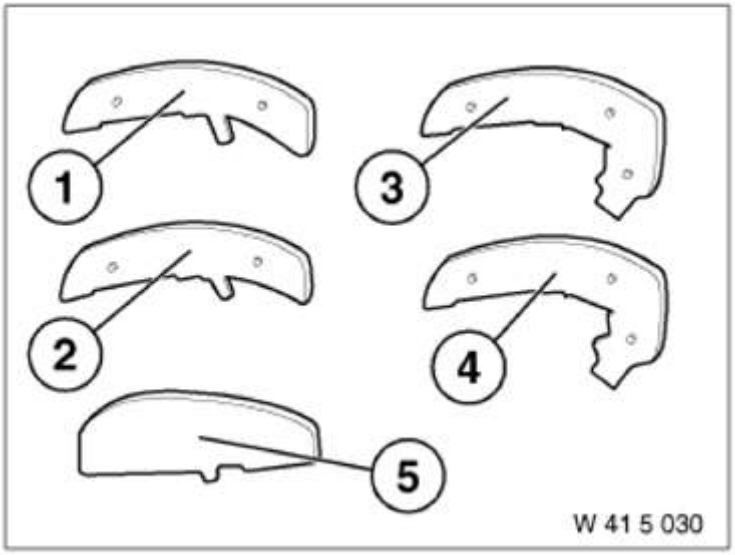


Fig. 13: Identifying Gauge (0492565)
Courtesy of BMW OF NORTH AMERICA, INC.

0494495 GAUGE

0494495 411080 Gauge AM

NOTE: **(Punching gauge) For punching the substitute vehicle identification number in the spring strut dome.**

Consisting of:

1. 0494496 Plate

NOTE: **(Guide plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

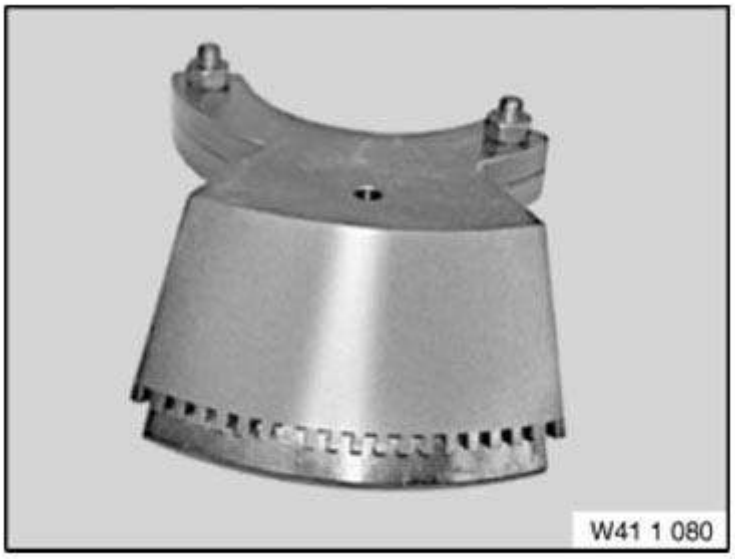


Fig. 14: Identifying Gauge (0494495)
Courtesy of BMW OF NORTH AMERICA, INC.

2. 0494497 Plate

NOTE: **(Counter-support plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

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0493826 GAUGE

0493826 411050 Gauge AM

NOTE: **(Punching gauge) For punching the vehicle identification number into the spring strut dome**

SI number

01 21 00 (642)

Consisting of:

1. 0494064 Plate

NOTE: **(Guide plate) Available only as a complete tool set 41 1 050 = 83 30 0 493 826 - as of 29.11.2011**

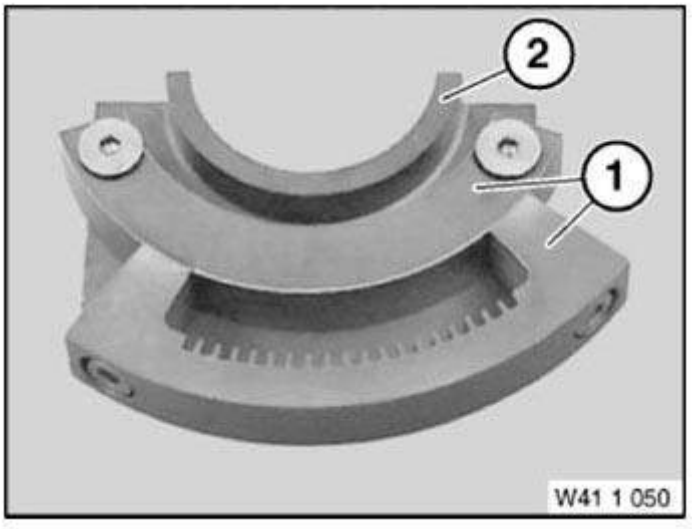


Fig. 15: Identifying Gauge (0493826)
Courtesy of BMW OF NORTH AMERICA, INC.

2. 0494065 Plate

NOTE: **(Counter-support plate) Liquidation of existing inventory and then available only as a complete tool set 41 1 050 = 83 30 0 493 826 - as of 29.11.2011**

3. 0494708 Plate

NOTE: **(Guide plate) Liquidation of existing inventory and then available only as a complete tool set 41 1 050 = 83 30 0 493 826 - as of 29.11.2011**

0492563 GAUGE

0492563 415031 Gauge AM

NOTE: **(gauge for rear of front door)**

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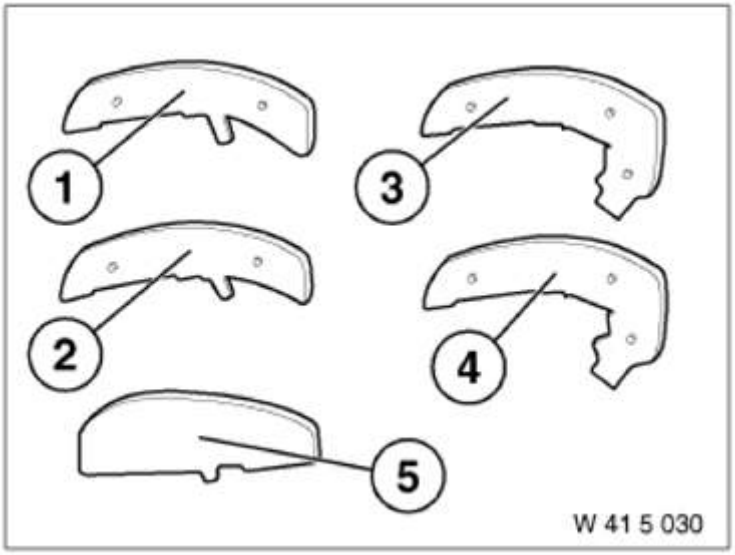


Fig. 16: Identifying Gauge (0492563)
Courtesy of BMW OF NORTH AMERICA, INC.

0492571 GAUGE

0492571 416200 Gauge Mechanical tool

NOTE: **(feeler gauge) For setting the tailgate and for adjusting the tailgate on the E36/5**

Storage Location

Y4

SI number

01 01 94 (766)

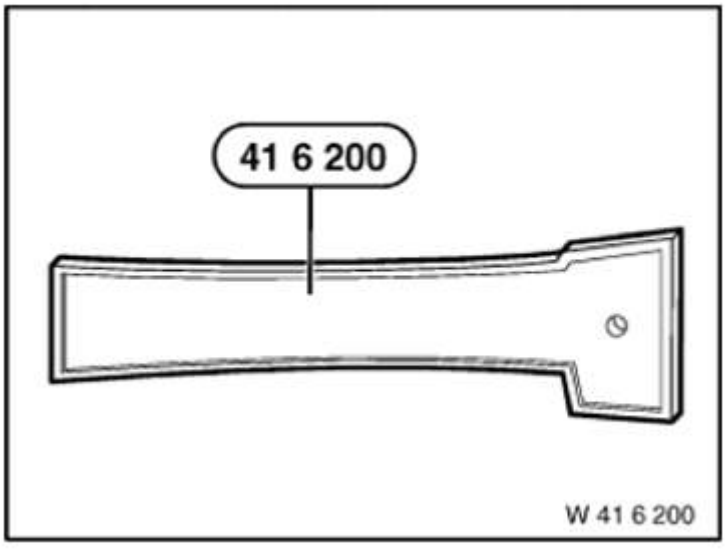


Fig. 17: Identifying Gauge (0492571)
Courtesy of BMW OF NORTH AMERICA, INC.

0494167 GAUGE

0494167 415060 Gauge Mechanical tool

NOTE: **(Setting gauge) For tailgate E46/5**

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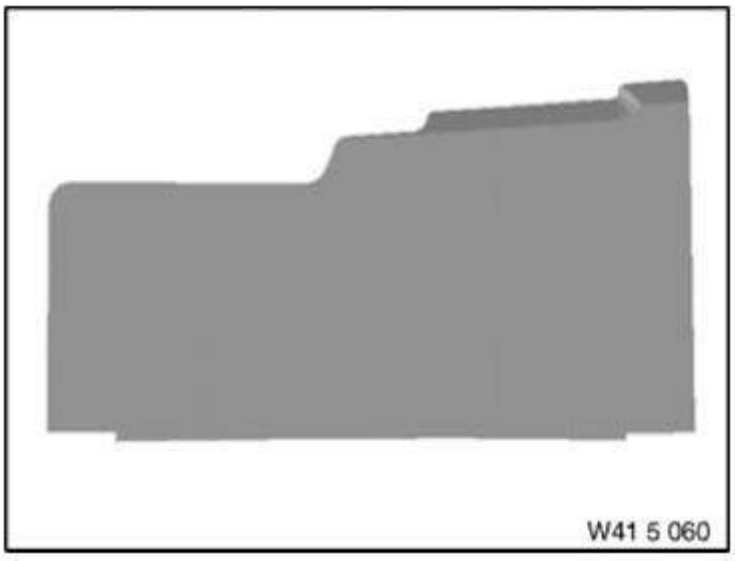


Fig. 18: Identifying Gauge (0494167)
Courtesy of BMW OF NORTH AMERICA, INC.

0493691 GAUGE

0493691 411040 Gauge AM

NOTE: **(Punching gauge) For punching the vehicle identification number into the spring strut dome**

SI number

01 15 99 (483)

Consisting of:

2 = 0493692 Plate

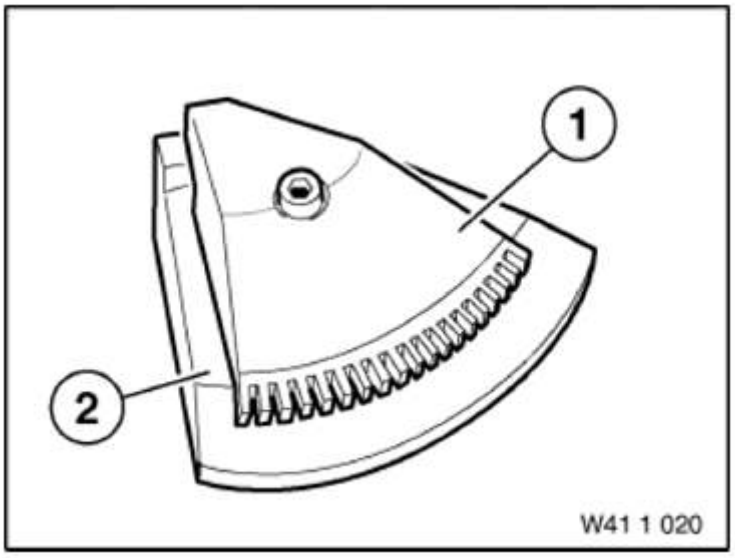


Fig. 19: Identifying Gauge (0493691)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: **(Counter-support plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

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1 = 0493693 Plate

NOTE: **(Guide plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

0493375 GAUGE

0493375 416210 Gauge Mechanical tool

NOTE: **For adjusting the gap dimension of the rear shelf/one-time action**

0495478 GAUGE

0495478 411170 Gauge AM

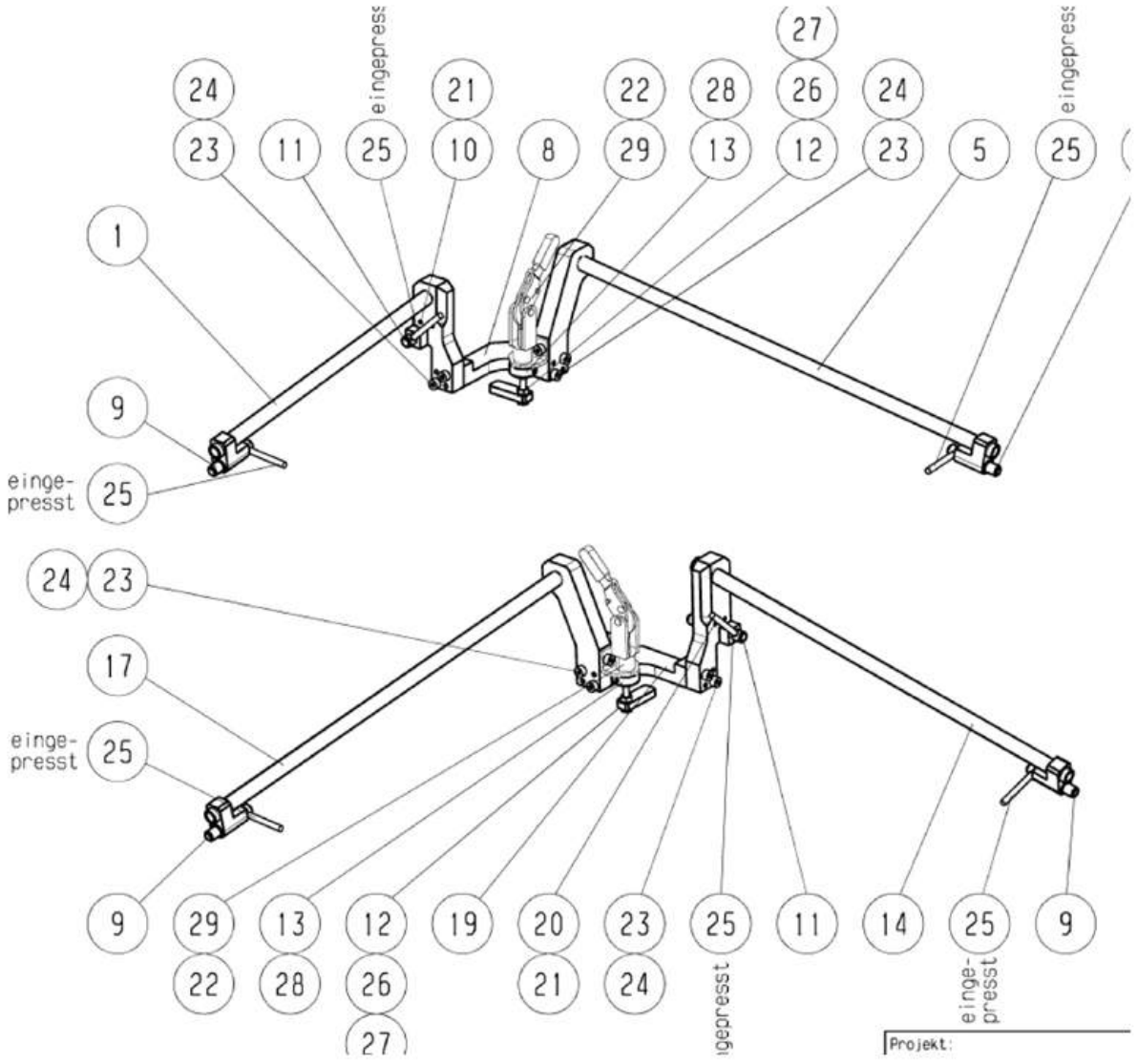


Fig. 20: Identifying Gauge (0495478)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: **(Gauge set for pin puller) Only for high-security vehicle E67 for Technical Campaign - TA 0051130200!**

Consisting of:

1. 0495481 Gauge

NOTE: **(Gauge, left)**

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2. 0495482 Gauge

NOTE: **(Gauge, right)**

0492562 GAUGE

0492562 415030 Gauge AM

NOTE: **(set of gauges) For adjusting the front doors (wind noise)**

Storage Location

Y4

SI number

01 07 91 (406)

Consisting of:

1. 0492563 Gauge

NOTE: **(gauge for rear of front door)**

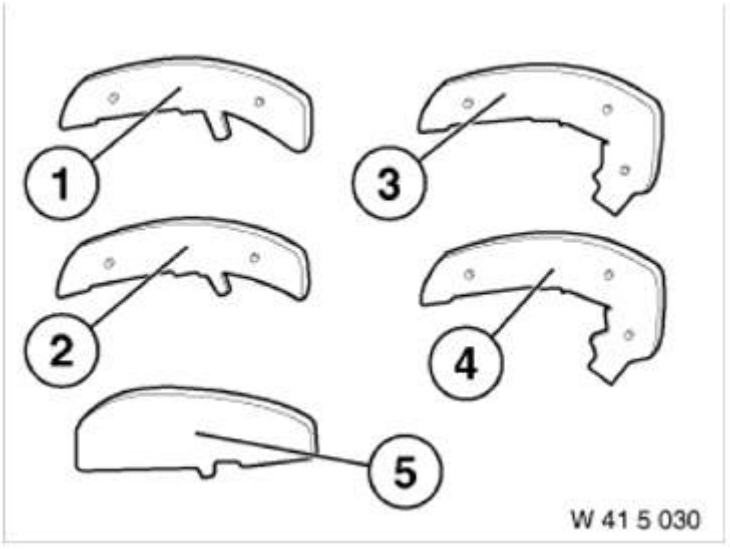


Fig. 21: Identifying Gauge (0492562)
Courtesy of BMW OF NORTH AMERICA, INC.

2. 0492564 Gauge

NOTE: **(gauge for front of front door)**

3. 0492565 Gauge

NOTE: **(gauge for rear of frame)**

4. 0492566 Gauge

NOTE: **(gauge for front of frame)**

5. 0492567 Gauge

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NOTE: (gauge for door sill)

2337983 GUARD

2337983 Guard Mechanical tool

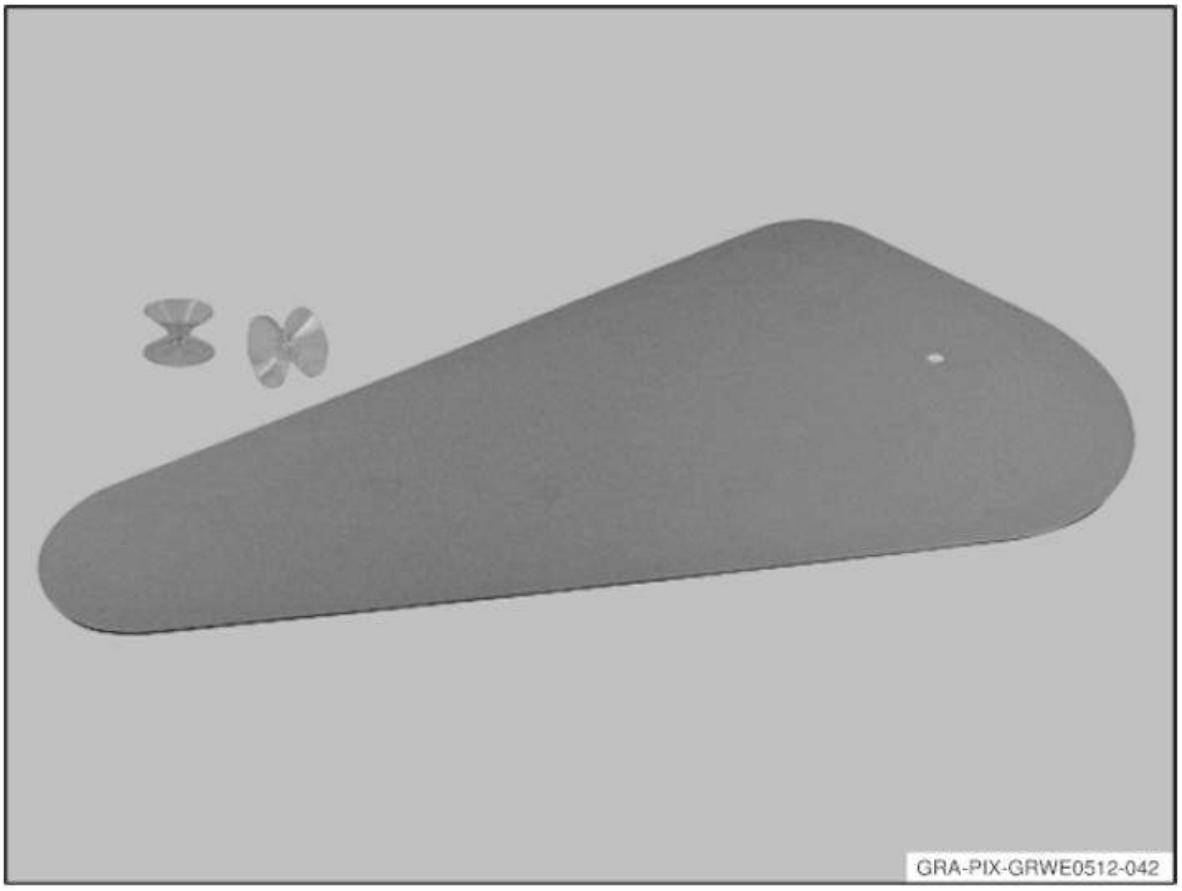


Fig. 22: Identifying Guard (2337983)
Courtesy of BMW OF NORTH AMERICA, INC.

NOTE: Additional information and data stored in project 1030.

SI number

05 09 12 (853)

0492551 HOLDER

0492551 411003 Holder AM

NOTE: (Spacer (2 pieces)) Series: E30

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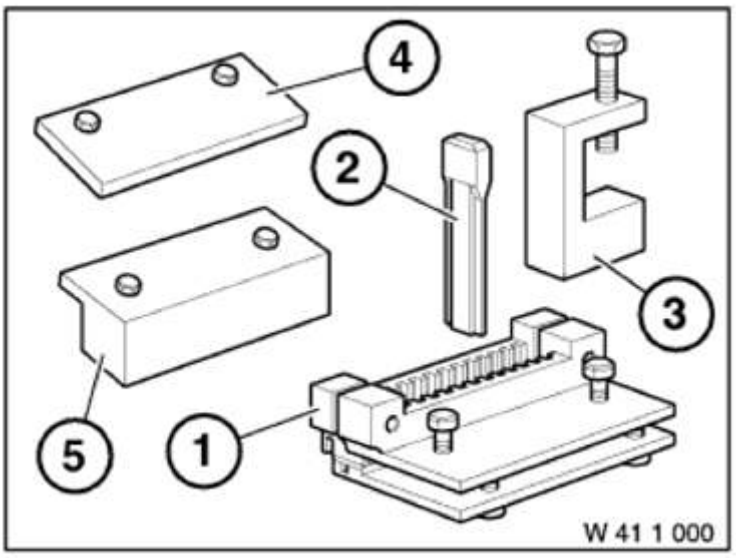


Fig. 23: Identifying Holder (0492551)
Courtesy of BMW OF NORTH AMERICA, INC.

0492555 PLATE

0492555 411011 Plate AM

NOTE: **(Guide plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

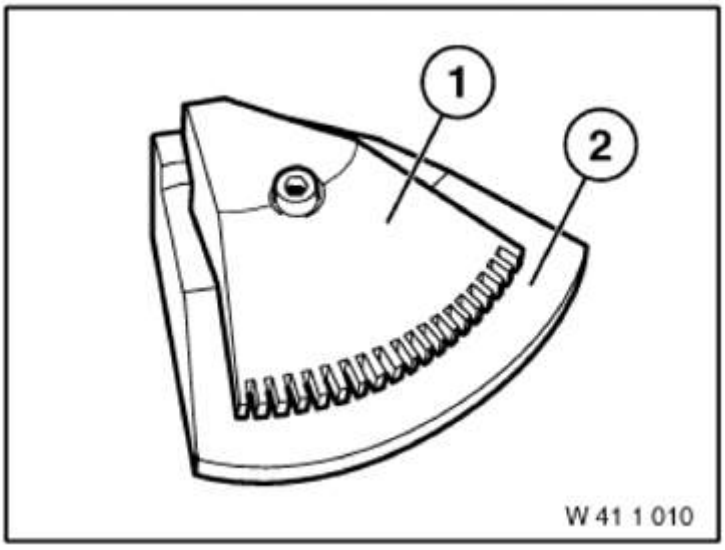


Fig. 24: Identifying Plate (0492555)
Courtesy of BMW OF NORTH AMERICA, INC.

0494497 PLATE

0494497 411082 Plate AM

NOTE: **(Counter-support plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

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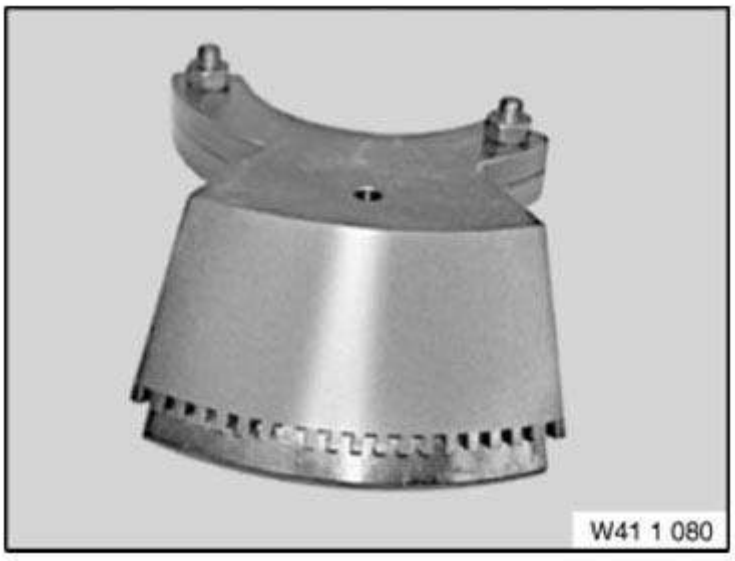


Fig. 25: Identifying Plate (0494497)
Courtesy of BMW OF NORTH AMERICA, INC.

0494064 PLATE

0494064 411051 Plate AM

NOTE: **(Guide plate) Available only as a complete tool set 41 1 050 = 83 30 0 493 826 - as of 29.11.2011**

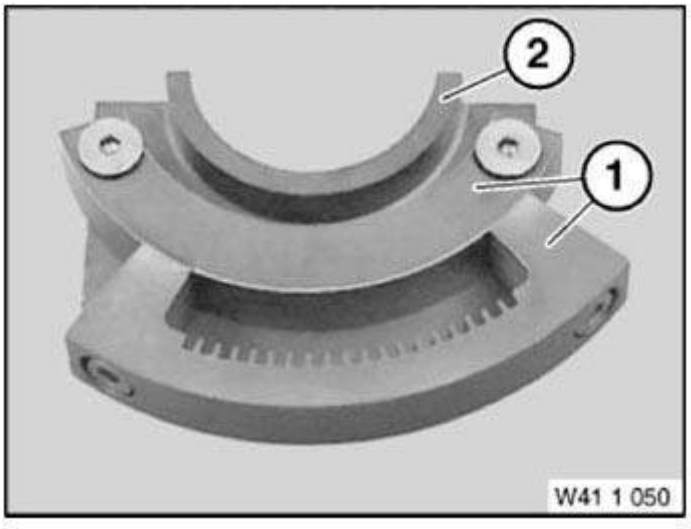


Fig. 26: Identifying Plate (0494064)
Courtesy of BMW OF NORTH AMERICA, INC.

0493199 PLATE

0493199 411032 Plate AM

NOTE: **(Counter-support plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

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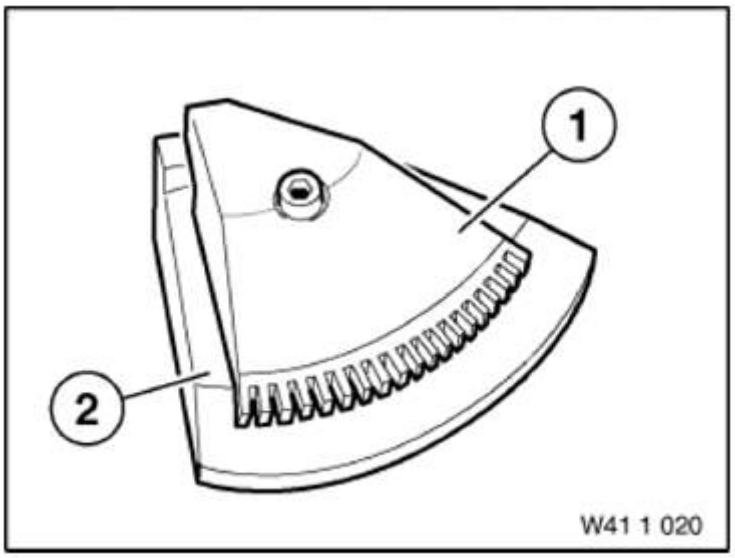


Fig. 27: Identifying Plate (0493199)
Courtesy of BMW OF NORTH AMERICA, INC.

0492558 PLATE

0492558 411021 Plate AM

NOTE: **(Guide plate) Available only as a complete tool set 41 1 020 = 83 30 0 492 557 - as of 29.11.2011**

0494496 PLATE

0494496 411081 Plate AM

NOTE: **(Guide plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

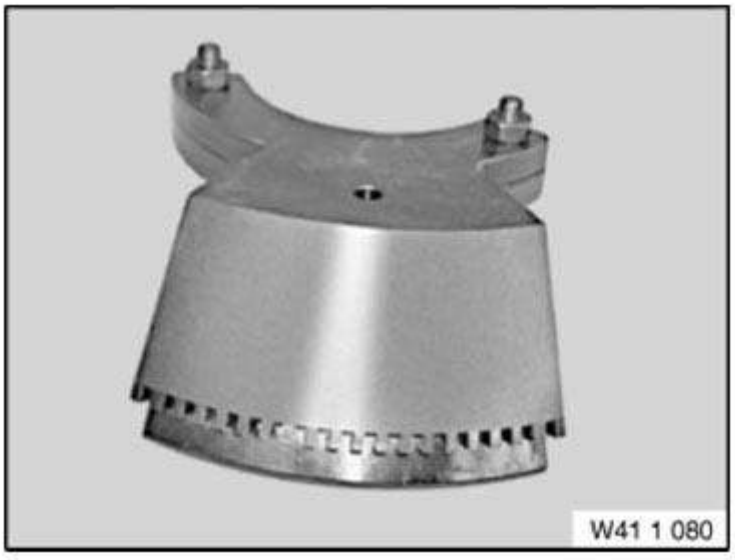


Fig. 28: Identifying Plate (0494496)
Courtesy of BMW OF NORTH AMERICA, INC.

0492552 PLATE

0492552 411004 Plate AM

NOTE: **(Additional plate) Series: E31, E36/4**

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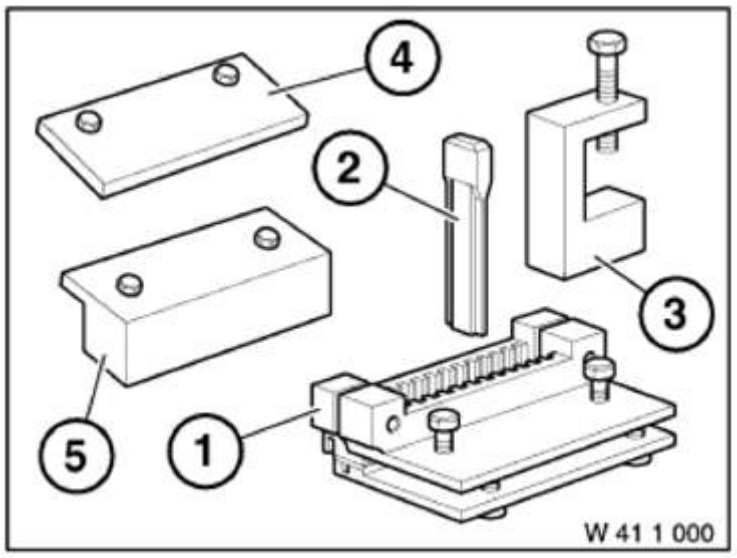


Fig. 29: Identifying Plate (0492552)
Courtesy of BMW OF NORTH AMERICA, INC.

0492559 PLATE

0492559 411022 Plate AM

NOTE: (Counter-support plate) Available only as a complete tool set 41 1 020 = 83 30 0 492 557 - as of 29.11.2011

0493692 PLATE

0493692 411042 Plate AM

NOTE: (Counter-support plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.

0493198 PLATE

0493198 411031 Plate AM

NOTE: (Guide plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.

0492556 PLATE

0492556 411012 Plate AM

NOTE: (Counter-support plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.

0493693 PLATE

0493693 411041 Plate AM

NOTE: (Guide plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.

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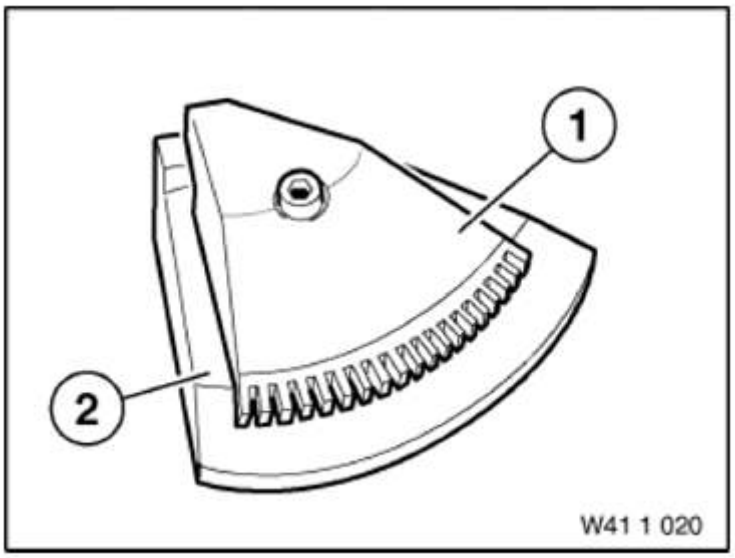


Fig. 30: Identifying Plate (0493693)
Courtesy of BMW OF NORTH AMERICA, INC.

0492553 PLATE

0492553 411005 Plate AM

NOTE: (Additional plate) Series: E36/2, convertible

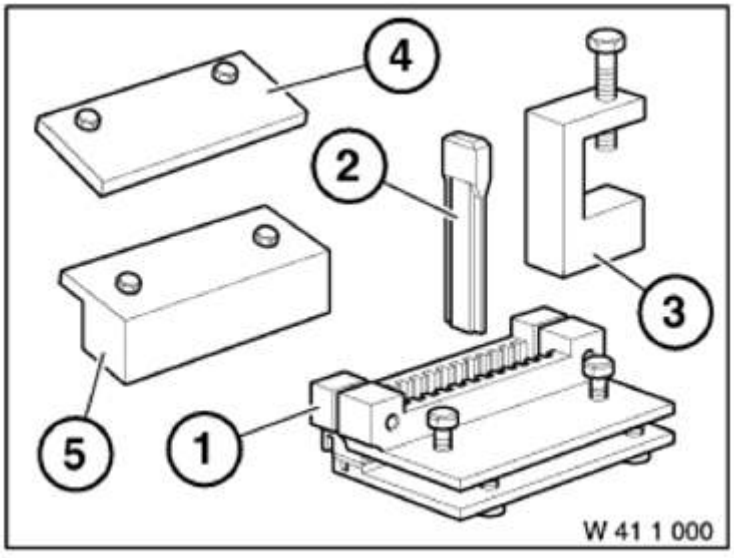


Fig. 31: Identifying Plate (0492553)
Courtesy of BMW OF NORTH AMERICA, INC.

0494708 PLATE

0494708 411053 Plate AM

NOTE: (Guide plate) Liquidation of existing inventory and then available only as a complete tool set 41 1 050 = 83 30 0 493 826 - as of 29.11.2011

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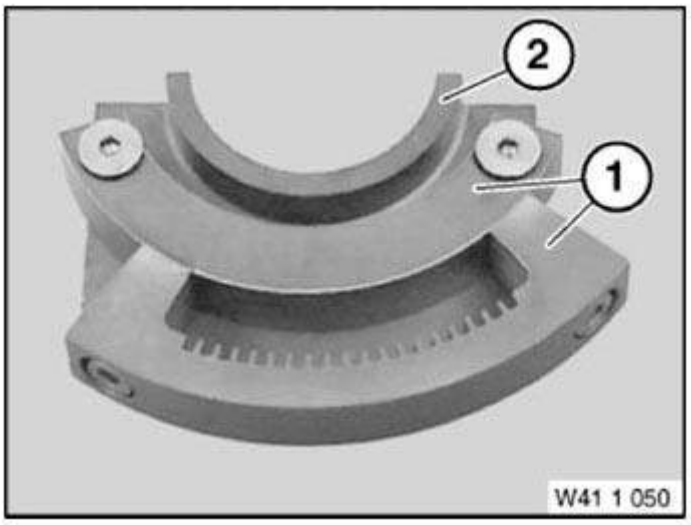


Fig. 32: Identifying Plate (0494708)
Courtesy of BMW OF NORTH AMERICA, INC.

0494065 PLATE

0494065 411052 Plate AM

NOTE: (Counter-support plate) Liquidation of existing inventory and then available only as a complete tool set 41 1 050 = 83 30 0 493 826 - as of 29.11.2011

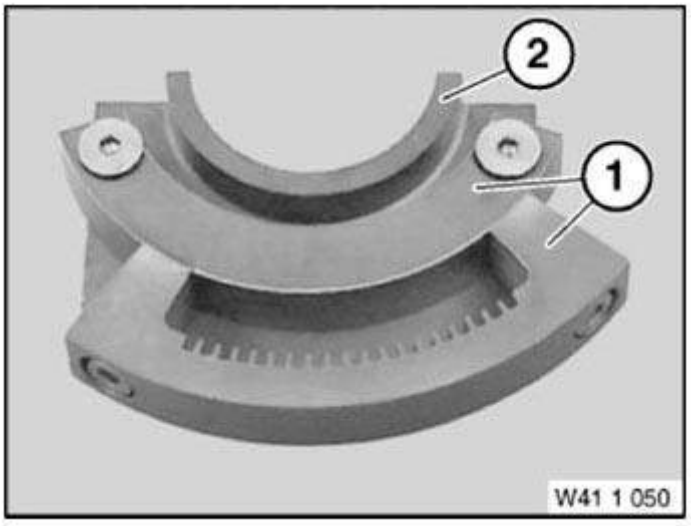


Fig. 33: Identifying Plate (0494065)
Courtesy of BMW OF NORTH AMERICA, INC.

0495639 PUNCH ELEMENT

0495639 410011 Punch element AM

NOTE: (Punch number 0)

0495660 PUNCH ELEMENT

0495660 410032 Punch element AM

NOTE: (Punch letter U) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

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0495632 PUNCH ELEMENT

0495632 410004 Punch element AM

NOTE: (Punch number 4) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495631 PUNCH ELEMENT

0495631 410003 Punch element AM

NOTE: (Punch number 3) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495664 PUNCH ELEMENT

0495664 410036 Punch element AM

NOTE: (Punch letter Y) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495634 PUNCH ELEMENT

0495634 410006 Punch element AM

NOTE: (Punch number 6) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495641 PUNCH ELEMENT

0495641 410013 Punch element AM

NOTE: (Punch letter B)

0495640 PUNCH ELEMENT

0495640 410012 Punch element AM

NOTE: (Punch letter A)

0493112 PUNCH ELEMENT

0493112 411006 Punch element AM

NOTE: (Punch number "BMW Logo") For internal use only

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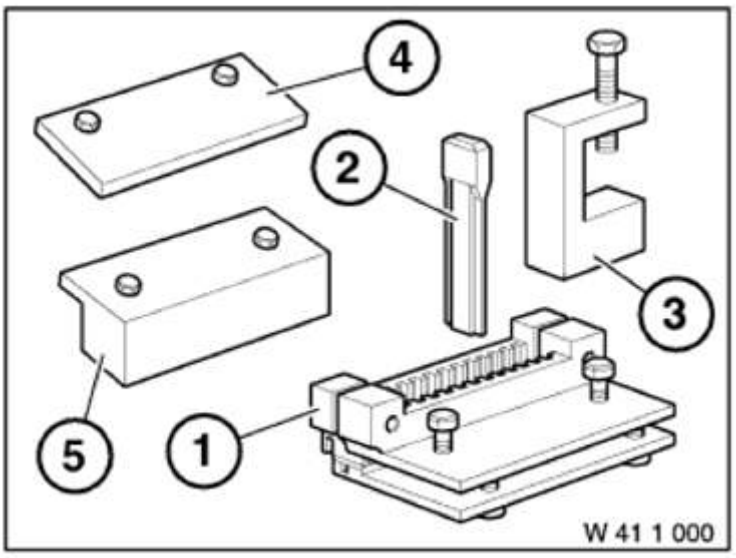


Fig. 34: Identifying Punch Element (0493112)
Courtesy of BMW OF NORTH AMERICA, INC.

0495636 PUNCH ELEMENT

0495636 410008 Punch element AM

NOTE: (Punch number 8) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495629 PUNCH ELEMENT

0495629 410001 Punch element AM

NOTE: (Punch number 1)

0495656 PUNCH ELEMENT

0495656 410028 Punch element AM

NOTE: (Punch letter R) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495662 PUNCH ELEMENT

0495662 410034 Punch element AM

NOTE: (Punch letter W) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495657 PUNCH ELEMENT

0495657 410029 Punch element AM

NOTE: (Punch letter S) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495642 PUNCH ELEMENT

0495642 410014 Punch element AM

NOTE: (Punch letter C)

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0495650 PUNCH ELEMENT

0495650 410022 Punch element AM

NOTE: (Punch letter J) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495655 PUNCH ELEMENT

0495655 410027 Punch element AM

NOTE: (Punch letter P) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495653 PUNCH ELEMENT

0495653 410025 Punch element AM

NOTE: (Punch letter M) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495643 PUNCH ELEMENT

0495643 410015 Punch element AM

NOTE: (Punch letter D)

0495644 PUNCH ELEMENT

0495644 410016 Punch element AM

NOTE: (Punch letter E) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495649 PUNCH ELEMENT

0495649 410021 Punch element AM

NOTE: (Punch letter i) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495659 PUNCH ELEMENT

0495659 410031 Punch element AM

NOTE: (Punch letter T) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495663 PUNCH ELEMENT

0495663 410035 Punch element AM

NOTE: (Punch letter X) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495646 PUNCH ELEMENT

0495646 410018 Punch element AM

NOTE: (Punch letter G) Can only be ordered with the complete tool set 41 0 000 (part

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number 0495628 = punch numbers/letters/special characters).

0495647 PUNCH ELEMENT

0495647 410019 Punch element AM

NOTE: (Punch letter H) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495652 PUNCH ELEMENT

0495652 410024 Punch element AM

NOTE: (Punch letter L)

0492550 PUNCH ELEMENT

0492550 411002 Punch element AM

Replaced by: 83300495628

NOTE: (Individual punch numbers) Specification necessary. Replaced by 41 0 000. (0 495 628)

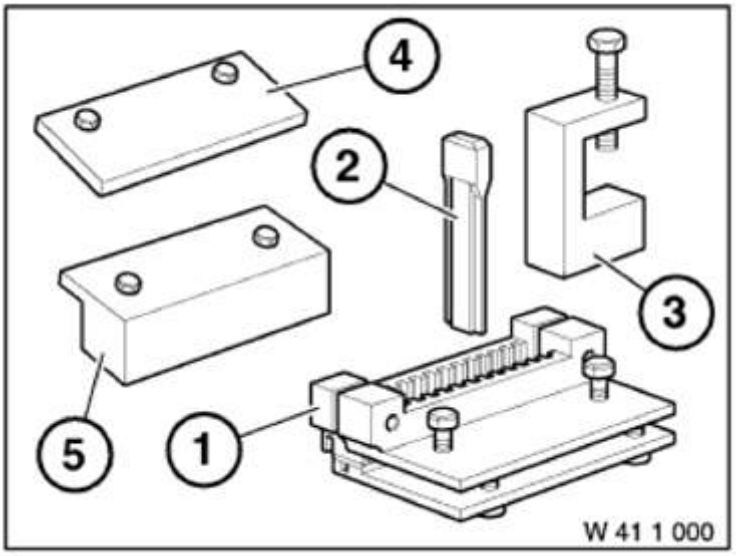


Fig. 35: Identifying Punch Element (0492550)
Courtesy of BMW OF NORTH AMERICA, INC.

0495654 PUNCH ELEMENT

0495654 410026 Punch element AM

NOTE: (Punch letter N) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).

0495637 PUNCH ELEMENT

0495637 410009 Punch element AM

NOTE: (Punch number 9)

0495665 PUNCH ELEMENT

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0495665 410037 Punch element AM

NOTE: **(Punch letter Z) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

0495645 PUNCH ELEMENT

0495645 410017 Punch element AM

NOTE: **(Punch letter F) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

0495628 PUNCH ELEMENT

0495628 410000 Punch element AM

NOTE: **(Punch numbers/letters/special characters) For punching device, e.g. 41 1 000 (41 1 002)**

Consisting of:

1 = 0495629 Punch element

NOTE: **(Punch number 1)**

2 = 0495630 Punch element

NOTE: **(Punch number 2)**

3 = 0495631 Punch element

NOTE: **(Punch number 3) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

4 = 0495632 Punch element

NOTE: **(Punch number 4) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

3 = 0495633 Punch element

NOTE: **(Punch number 3) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

6 = 0495634 Punch element

NOTE: **(Punch number 6) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

7 = 0495635 Punch element

NOTE: **(Punch number 7) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

8 = 0495636 Punch element

NOTE: **(Punch number 8) Can only be ordered with the complete tool set 41 0 000**

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(part number 0495628 = punch numbers/letters/special characters).

9 = **0495637** Punch element

NOTE: **(Punch number 9)**

10 = **0495639** Punch element

NOTE: **(Punch number 0)**

11 = **0495640** Punch element

NOTE: **(Punch letter A)**

12 = **0495641** Punch element

NOTE: **(Punch letter B)**

13 = **0495642** Punch element

NOTE: **(Punch letter C)**

14 = **0495643** Punch element

NOTE: **(Punch letter D)**

15 = **0495644** Punch element

NOTE: **(Punch letter E) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

16 = **0495645** Punch element

NOTE: **(Punch letter F) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

17 = **0495646** Punch element

NOTE: **(Punch letter G) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

18 = **0495647** Punch element

NOTE: **(Punch letter H) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

19 = **0495649** Punch element

NOTE: **(Punch letter i) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

20 = **0495650** Punch element

NOTE: **(Punch letter J) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

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21 = **0495651** Punch element

NOTE: **(Punch letter K) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

22 = **0495652** Punch element

NOTE: **(Punch letter L)**

23 = **0495653** Punch element

NOTE: **(Punch letter M) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

24 = **0495654** Punch element

NOTE: **(Punch letter N) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

25 = **0495655** Punch element

NOTE: **(Punch letter P) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

26 = **0495656** Punch element

NOTE: **(Punch letter R) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

27 = **0495657** Punch element

NOTE: **(Punch letter S) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

28 = **0495659** Punch element

NOTE: **(Punch letter T) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

29 = **0495660** Punch element

NOTE: **(Punch letter U) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

30 = **0495661** Punch element

NOTE: **(Punch letter V) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 =punch numbers/letters/special characters).**

31 = **0495662** Punch element

NOTE: **(Punch letter W) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

32 = **0495663** Punch element

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NOTE: **(Punch letter X) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

33 = **0495664** Punch element

NOTE: **(Punch letter Y) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

34 = **0495665** Punch element

NOTE: **(Punch letter Z) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

35 = **0495666** Punch element

NOTE: **(Punch numbers/letters/special characters) For punching device, e.g. 41 1 000 (41 1 002)**

0495633 PUNCH ELEMENT

0495633 410005 Punch element AM

NOTE: **(Punch number 3) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

0495666 PUNCH ELEMENT

0495666 410038 Punch element AM

NOTE: **(Punch numbers/letters/special characters) For punching device, e.g. 41 1 000 (41 1 002)**

0495635 PUNCH ELEMENT

0495635 410007 Punch element AM

NOTE: **(Punch number 7) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

0495661 PUNCH ELEMENT

0495661 410033 Punch element AM

NOTE: **(Punch letter V) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

0495630 PUNCH ELEMENT

0495630 410002 Punch element AM

NOTE: **(Punch number 2)**

0495651 PUNCH ELEMENT

0495651 410023 Punch element AM

NOTE: **(Punch letter K) Can only be ordered with the complete tool set 41 0 000 (part number 0495628 = punch numbers/letters/special characters).**

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0492570 SOCKET WRENCH INSERT

0492570 416110 Socket wrench insert Mechanical tool

Replaced by: 83300493624

NOTE: **(Wrench socket SW 13) With inside Torx T20 for releasing, tightening and adjusting the engine compartment lid (E31) and power window fixation at the rear (E31, E36Cabrio) - Replaced by 41 6 120. (0 493 624)**

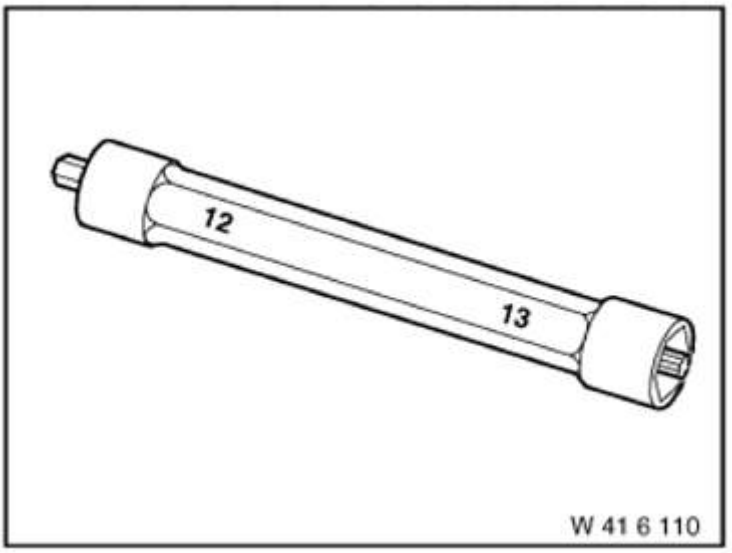


Fig. 36: Identifying Socket Wrench Insert (0492570)
Courtesy of BMW OF NORTH AMERICA, INC.

Storage Location

B10

0492569 SOCKET WRENCH INSERT

0492569 416100 Socket wrench insert Mechanical tool

Replaced by: 83300493624

NOTE: **(Wrench socket SW 13) With inside Torx T20 for releasing, tightening and adjusting the engine compartment lid (E31) and power window fixation at the rear (E31, E36Cabrio)/Replaced by 41 6 120. (0 493 624)**

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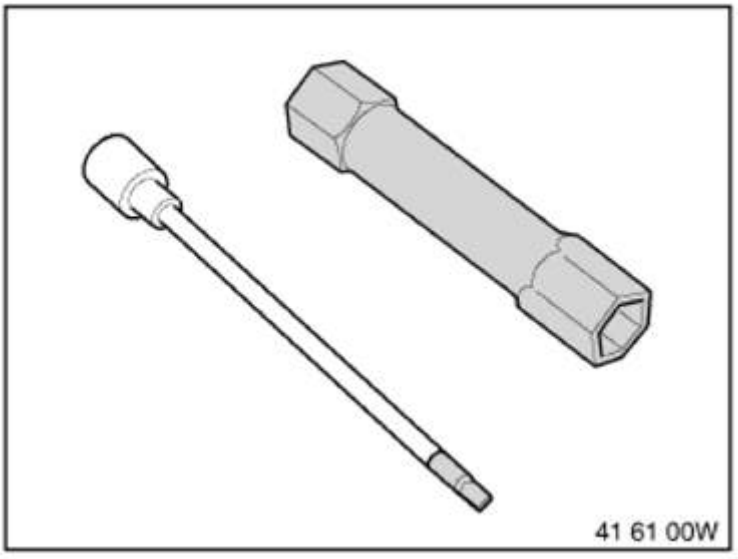


Fig. 37: Identifying Socket Wrench Insert (0492569)
Courtesy of BMW OF NORTH AMERICA, INC.

0492557 TOOL

0492557 411020 Tool AM

NOTE: **(Tool set) For stamping 17- digit vehicle identification number**

SI number

01 12 95 (992)

Consisting of:

1. **0492558** Plate

NOTE: **(Guide plate) Available only as a complete tool set 41 1 020 = 83 30 0 492 557 - as of 29.11.2011**

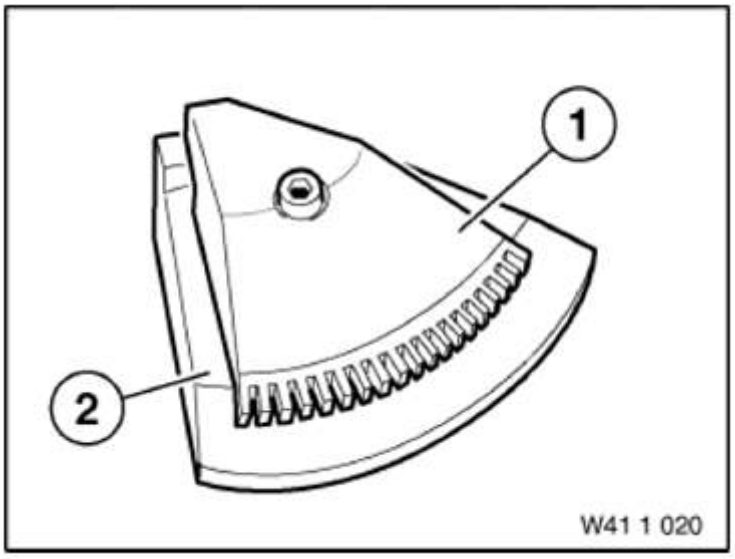


Fig. 38: Identifying Tool (0492557)
Courtesy of BMW OF NORTH AMERICA, INC.

2. **0492559** Plate

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NOTE: **(Counter-support plate) Available only as a complete tool set 41 1 020 = 83 30 0 492 557 - as of 29.11.2011**

2358918 TOOL

2358918 Tool Mechanical tool

NOTE: **Driver for M14 threaded inserts**

SI number

01 02 14 (069)



Fig. 39: Identifying Tool (2358918)
Courtesy of BMW OF NORTH AMERICA, INC.

2358919 TOOL

2358919 Tool Mechanical tool

SI number

01 02 14 (069)



Fig. 40: Identifying Tool (2358919)

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Courtesy of BMW OF NORTH AMERICA, INC.

2365745 TOOL

2365745 Tool AM

NOTE: **Tool for M5 thin wall threaded insert (order number 41 00 2 405 074).**

SI number

01 18 14 (106)

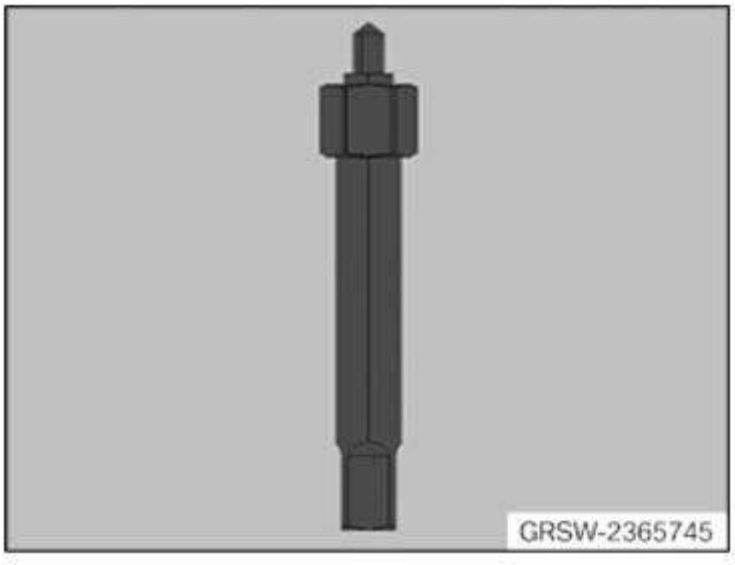


Fig. 41: Identifying Tool (2365745)
Courtesy of BMW OF NORTH AMERICA, INC.

0492554 TOOL

0492554 411010 Tool AM

NOTE: **(set of special tools) For stamping the 17-digit vehicle identification number**

SI number

01 06 94 (801)

Consisting of:

1. 0492555 Plate

NOTE: **(Guide plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

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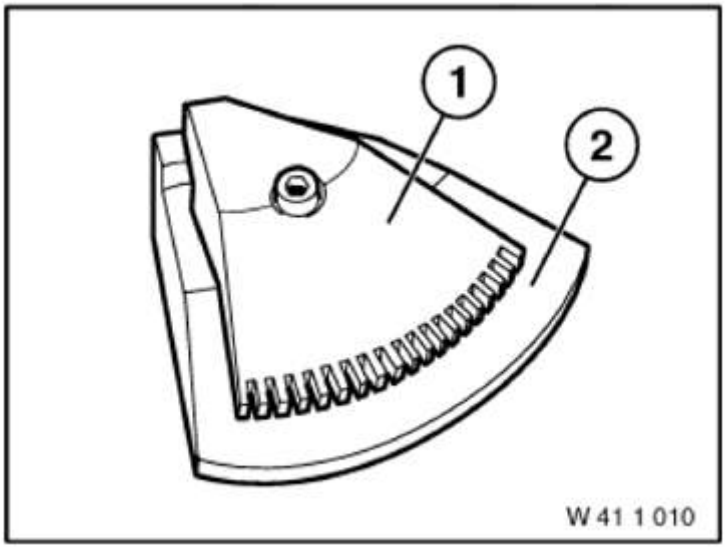


Fig. 42: Identifying Tool (0492554)
Courtesy of BMW OF NORTH AMERICA, INC.

2. 0492556 Plate

NOTE: **(Counter-support plate) Can only be ordered as part of complete tool 41 1 180 = 0495959.**

2285061 TOOL SET

2285061 Tool set Mechanical tool

NOTE: **Tool set for M5 threaded insert**

SI number

01 02 14 (069)

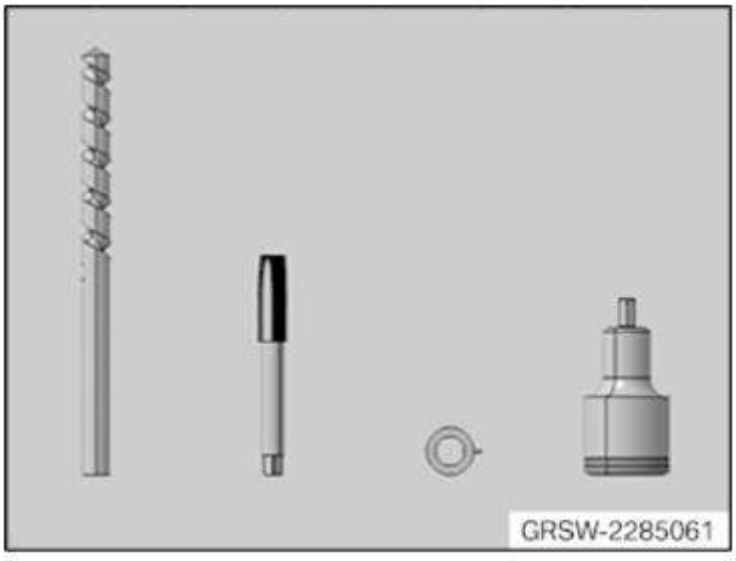


Fig. 43: Identifying Tool Set (2285061)
Courtesy of BMW OF NORTH AMERICA, INC.

2286101 TOOL SET

2286101 Tool set Mechanical tool

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SI number

01 02 14 (069)



Fig. 44: Identifying Tool Set (2286101)
Courtesy of BMW OF NORTH AMERICA, INC.

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ACCESSORIES AND BODY, CAB

Body - Tightening Torques - F25

ENGINE COMPARTMENT LID

41 61 ENGINE COMPARTMENT LID

TIGHTENING TORQUE SPECIFICATION - ENGINE COMPARTMENT LID

Â	Type	Thread	Tightening specifications	Dimension
1AZ Engine compartment lid to hinge	F25/F26	M8	Â	18, 5 Nm
2AZ Hinge to body	F25/F26	M8	Â	18, 5 Nm

FRONT DOORS

41 51 FRONT DOORS

TIGHTENING TORQUE SPECIFICATION - FRONT DOORS

Â	Type	Thread	Tightening specifications	Dimension
1AZ Hinge bolt	F01/F02/F04	M10 x 56	Â	25 Nm
1AZ Screw for hinge halves	F07/F10/F11/F12/F13/F06	M8	Â	30 Nm
1AZ Nut for hinge halves	F25/F26/F15/F16	M8	Â	27 Nm
2AZ Door hinge to door	F01/F02/F04/F07/F10/F11/F12/F13/F25/F26/F06/F15/F16	Countersunk screw, M8 x 28	Â	20 Nm
2AZ Door hinge to door	F03	Countersunk screw, M8 x 28	Â	35 Nm
3AZ Door hinge to body	F01/F02/F04/F07/F10/F11/F12/F13/F25/F26/F06/F15/F16	Hexagon screw with taper, M12 x 36	Â	66 Nm
4AZ Door plug connection to body	F01/F02/F04/F07/F10/F11/F12/F13/F25/F26/F06/F15/F16	M5 x 16	Â	3 Nm

HOLDER, SIDE WALL

41 35 HOLDER, SIDE WALL

TIGHTENING TORQUE SPECIFICATION - HOLDER, SIDE WALL

Â	Type	Thread	Tightening specifications	Dimension
1AZ Holder, sidewall to body	F25/F26	M6x12	Â	7, 6 Nm

REAR DOORS

41 52 REAR DOORS

TIGHTENING TORQUE SPECIFICATION - REAR DOORS

Â	Type	Thread	Tightening specifications	Dimension

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1AZ	Hinge bolt	F01/F02/F04	M10 x 56	Â	25 Nm
1AZ	Screw for hinge halves	F07/F10/F11/F06	M8 x 20	Â	30 Nm
1AZ	Nut for hinge halves	F25/F26/F15/F16	M8	Â	27 Nm
2AZ	Door hinge to door	F01/F02/F04/F07/F10/F11/F25/F26/F06/F15/F16	Countersunk screw, M8 x 28	Â	20 Nm
2AZ	Door hinge to door	F03	Countersunk screw, M8 x 28	Â	35 Nm
3AZ	Door hinge to body	F01/F02/F04/F07/F10/F11/F25/F26/F06/F15/F16	Hexagon screw with taper, M12 x 36	Â	66 Nm
4AZ	Door plug connection to body	F01/F02/F04/F07/F10/F11/F25/F26/F06/F15/F16	M5 x 16	Â	3 Nm

REAR LID

41 62 REAR LID

TIGHTENING TORQUE SPECIFICATION - REAR LID

Â	Type	Thread	Tightening specifications	Dimension
1AZ Tailgate to tailgate hinge	F25/F26	M10x25	Â	40 Nm
2AZ Tailgate hinge to body	F25/F26	M8	Â	20 Nm
3AZ Earth strap to hinge	F25	M5	Â	5 Nm

REINFORCEMENT PLATE (BONDED)

41 14 REINFORCEMENT PLATE (BONDED)

TIGHTENING TORQUE SPECIFICATION - REINFORCEMENT PLATE (BONDED)

Â	Type	Thread	Tightening specifications	Dimension
1AZ Cap nut to reinforcement plate	All	M5	Â	10 Nm

ROOF

41 31 ROOF

TIGHTENING TORQUE SPECIFICATION - ROOF

Â		Type	Thread	Tightening specifications	Dimension
1AZ	Star screw to roof outer skin	F07	M10	Â	20 Nm
2AZ	Hexagon head screw on roof outer skin	F10	M10	Â	20 Nm
3AZ	Roof outer skin on roof frame	F25/F26	KOMBI oval-head self-tapping screw	Â	4, 5 Nm

SIDE PANELS

41 35 SIDE PANELS

TIGHTENING TORQUE SPECIFICATION - SIDE PANELS

			Tightening	

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Â		Type	Thread	specifications	Dimension
1AZ	Front side wall to body	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13/F25/F26	M6x12	Â	7, 6 Nm
2AZ	Front side wall to body	F01/F02/F03/F04/F06/F07/F10/F11/F12/F13	Hexagon head tapping screw ST6.3x13	Â	7, 6 Nm
			Sheet metal nut ST 6.3	Â	7, 6 Nm
3AZ	Side deformation element holder (plastic) to wheel arch support	F15/F16	M6x48	Â	8 Nm
4AZ	Top deformation element holder (plastic) to support	F15/F16	M6x16	Renew screws	8 Nm
5AZ	Front side panel to bumper	F15/F16	M6x16	Renew screws	8 Nm
6AZ	Front side panel to top center deformation element holder (metal)	F15/F16	M6x20	Â	8 Nm
7AZ	Front side panel to holder, windscreen area	F15/F16	M6x16	Renew screws	8 Nm
8AZ	Front side wall to body Area, A-pillar	F15/F16	M6x16	Renew screws	8 Nm
9AZ	Front side panel to body, sill area	F15/F16	Sheet metal screw ST4.8x19	Renew screws	2.5 Nm
10AZ	Front side panel to deformation element holder (plastic)	F15/F16	M6x20	Â	8 Nm
	Front side panel to deformation				

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11AZ	deformation element holder (plastic)	F15/F16	M6x35	Â	8 Nm
12AZ	Pennant holder retaining plate to carrier support	F15	M6x20	Â	8 Nm
13AZ	Pennant holder retaining plate to front side panel	F15	Sheet metal screw	Â	2.5 Nm
14AZ	Adapter plate to pennant holder retaining plate	F15	Self-locking nut	Replace nut	6 Nm

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