

41 Body

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043	Engine support, front left (without wheel arch) – replace	41-	11/4
051	Engine support, left – replace	41-	11/10
141	Cover for side member, left or right (partial replacement B pillar before A pillar) – replace	41-	11/15
41 12 535	Trunk floor, complete rear section (tail panel removed) – replace	41-	12/1
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41 14 160	Wheel arch outer section and side panel, rear right – replace	41-	14/6
180	Wheel arch, complete unit and side panel, rear right – replace	41-	14/13
41 21 510	Door pillar, front left – replace (roof frame, outside or roof frame partial replacement removed)	41-	21/1
41 22 000	Roof frame partial replacement, outside (windshield panel) left or right – replace	41-	22/1
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541	Roof frame, front – replace (roof outer skin panel removed)	41-	22/7
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41 31 010	Roof outer skin panel – replace (on version with slide/tilt sunroof)	41-	31/1
41 34 041	Rear apron – replace	41-	34/1
41 35 110	Side panel, complete rear right section – replace (up to roof connection)	41-	35/1
294	Side panel, rear left or right – replace (partial replacement of B pillar – wheel arch)	41-	35/5
337	Side panel, rear left – replace (partial replacement up to wheel arch)	41-	35/9
341	Side panel, rear left and tail panel – replace (partial replacement up to wheel arch)	41-	35/14
41 51 004	Front door, left or right – adjust	41-	51/1
101	Front door, left or right – replace	41-	51/1
41 61 014	Hood lid – adjust	41-	61/1

General information about body repairs

Body repair instructions are meant for skilled workers who are highly qualified, work conscientiously and accept full responsibility for their work.

The instructions are therefore limited to information and factory-approved repairing methods as well as associated tips and data to make the work easier.

The body repair operations described here refer to complete or partial replacement of parts with Original BMW parts or sections of parts. Necessary straightening and dent removing operations must be adapted to the prevailing damaged condition. Welded and spot-welded seams affected by this must be inspected and repaired where necessary.

The quantity and location of welded spots, inert gas welded seams and brazed connections can be taken from the cut-out part. Use inert gas plug welding for spot-welded connections which are not easily accessible.

Most pictures were taken using an unfinished body shell. All vehicle parts which are in the repair zone and subjected to damage from heat, flying sparks and dust must be removed or covered.

In spite of continuous control over welding operations during standard production, there could be isolated cases of faulty welding. Such welding will be subsequently repaired by inert gas spot welding or by 15 mm long inert gas welded seams on flange end in inaccessible zones. Consequently, the presence of repaired welding seams on the body does not necessarily indicate repairs carried out by a third party.

For example:

Left engine carrier is resistance spot-welded - right engine carrier is repaired with inert gas welding.

Caution!

Steering gear must be checked and, if necessary, replaced after an accident or driving conditions similar to an accident - see SI 320188 (828).

All welding seams sealed off with body sealing compound in original condition must be sealed off again conscientiously immediately after the repair work. Damaged anti-drumming compound must be replaced.

New sheet metal parts or the cavities, seams, cracks and folds formed by new sheet metal parts must be sealed with a body sealing compound immediately.

Disconnect battery ground lead on body support point. Protect electrical leads from damage and the effect of heat.

Caution!

Disconnecting the vehicle battery cancels the fault memory of the control units.

For this reason, before disconnecting the vehicle battery, interrogate the fault memory and print out the results on the BMW SERVICE TESTER. Investigate fault messages in memory.

Only ever connect and disconnect the control unit connector when the ignition is switched off.

The removal and installation of components, relays, fuses etc. can cause faults to be stored in the fault memories of equipment with a diagnosis capability. After working on the electrical system, it is always necessary to interrogate the fault memory. Investigate any fault messages and cancel once rectified.

On vehicles with an airbag system, note relevant instructions in Gr. 32!

Observe the fire and accident prevention regulations!

Welding can be carried out with installed control units if

- there is a maximum distance of about 1 meter between the welding and ground connections and
- there is good electrical contact between welding and ground connections (no rubber, mounts or similar),
- otherwise attention must be paid to the heat developed, especially in the case of autogen welding (decision must be made from case to case).

REMOVING PVC MATERIAL IN REPAIR ZONE

Body protection after repairing begins already with the professional removal of PVC undercoating, anti-drumming compound and seam sealing compound in the repair zone.

Remove PVC material with a rotating steel brush, or heat PVC to maximum 180° C with a hot air blower and scrape off with a spatula. Burning off the PVC material or heating it above 180° C with a gas flame torch or similar tool would produce strong corrosion-promoting hydrochloric acid. Health impairing vapors would also be set free. New undercoating would not have sufficient adhesion on burnt PVC material and consequently undersurface rusting would be possible.

WELDING GALVANIZED SHEET METAL

Hot galvanized and galvanized sheet metal is used to a greater extent for components of the body, which are especially subject to corrosion.

Conformance with the following points is necessary when working with these parts. The welding smoke contains poisonous zinc oxide, so that especially good extraction is necessary in the welding bay.

Do not grind off zinc coat for resistance spot welding and inert gas welding.

The zinc coat must be ground off for brazing jobs.

If at all possible welded connections should be made with resistance spot welding. Welding current is boosted by at least 10 % as compared with blank sheet metal. Apply as high as possible electrode contact force (make break out test on sample sheet metal).

A coat of spot welding paste can be applied for better sealing.

Inert gas welding should be preferred to autogen welding in areas not accessible for resistance spot welding, because of the lower heat dispersion.

Machining or forming of galvanized sheet metal in warm state is normal.

Make sure of thorough extraction of the poisonous vapors.

Remove burnt residual zinc completely.

Align, grind down and tin out visible joints as normally.

Coat ground-through zinc layer with zinc dust paint.

CEMENTING BODY PARTS

Proceed as described below when using cement, BMW 51 0 032:

1. Ambient and material temperature must not be below 18° C during application and up to hardening.
2. Remove oxide, rust, paint or scale from cementing surfaces.
3. Roughen cementing surfaces with a steel brush or sandpaper to improve adhesion.
4. Remove grease from cementing surfaces.
Use universal thinner or acetone to degrease surfaces and allow treated surfaces to air-dry about 1 to 2 minutes so that cementing surfaces are completely dry.
5. Place double-cartridge 51 0 032 in double-cartridge gun 51 0 031, remove cap and mount mixing tube.
6. Eject about 2 cm of the mixed cement and then first apply the mixed cement one-sidedly on the cementing surface. Thickness of coat: about 2 mm; if necessary spread mixed cement on the cementing surface with a spatula.
Potlife of mixed cement at 18 to 25° C: about 1 to 2 hours.
7. Press parts together, hold and punctate.
Extract produced vapors!

8. Remove excessive cement with paper or cloths.

Hardening time of mixed cement at 20° C: about 15 to 20 hours.

Hardening can be sped up by applying heat, e.g. in a spraying booth.

Hardening time at

40° C	=	3 to 6 hours
60° C	=	50 to 60 minutes
80 to 100° C	=	15 to 30 minutes

Important!

Do not select hardening temperature above 120° C.

Keep loads and stress off of cemented parts until completely hardened.

Protective Measures:

Avoid direct contact of cement with eyes and skin.

Do not eat, drink or smoke while carrying out cementing work.

Clean and rub in hands with skin protection creme after finishing work.

First Aid:

In case of contact of cement with eyes, rinse out eyes immediately with running water for about 10 to 15 minutes. If necessary, go to a physician.

In case of contact of cement with skin, clean concerned surface immediately with water and soap and apply a skin creme. If necessary, go to a physician and fill out a safety data sheet.

If cement is swallowed, rinse out mouth and throat thoroughly with running water and go to a physician.

If vapors are inhaled, provide fresh air, keep quiet, breathe intensively and call in a physician.

Immediately remove clothes dirtied with resin residue and wear again only after having them cleaned.

Toxicology Information:

Could have sensibilising effect and cause allergic skin reactions.

Disposal:

Small amounts of mixed and hardened resin residue may be disposed as household refuse.

Important!

These precautions are applicable for regulations valid in Germany. Always apply possibly deviating regulations valid in other countries.

Recommended working methods and tools

1. Cutting Out Damaged Parts:

Determine the location of joints in accordance with the replacement part before starting the operation.

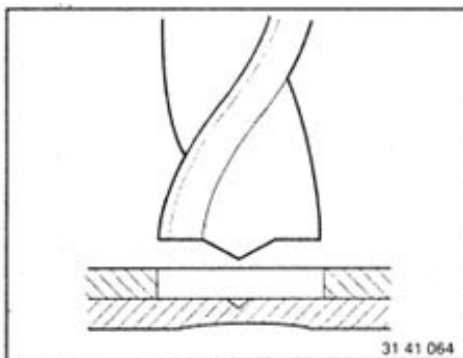
Cut out the damaged part roughly within these joints.

Caution!

Be careful not to damage sheet metal underneath!

Remove sealing compound, anti-drumming compound and, if applicable, paint to neutralize the joints. Drill off welding spots. When drilling off, make sure that the drilled holes are produced in the cut out part. Do not drill in the remaining connection flanges.

Grind off welded seams carefully with a disc grinder. Heat brazed connections with an autogen torch! Do not overheat! Take off scrap metal. Remove remaining spongy brazing solder with a steel brush. Straighten and grind off all joint surfaces thoroughly.



Source of supply for workshop equipment, auxiliary materials, sealants, adhesives and similar items: HWB (a division of BMW AG)

2. Installing New Parts:

Prepare joints in accordance with relevant repair instructions.

Repairs to suspension points for engine or transmission and running gear parts must be carried out on a straightening bench using the set of attachments for a certain vehicle type. Other attachments are also available for various body parts. Check curvature and dimensions of windshield and rear window by installing the original windows. Refer to relevant drawings for gaps in doors, engine hood and trunk lid.

Coat joints required for resistance spot welding with zinc dust paint. Only remove protective paint from galvanized replacement parts. Drill 8 mm dia. holes in joints not accessible for spot welding tongs, using the spacing of drilled-off spots and plug spot weld these joints.

Produce inert gas welded seams according to the cut-out part.

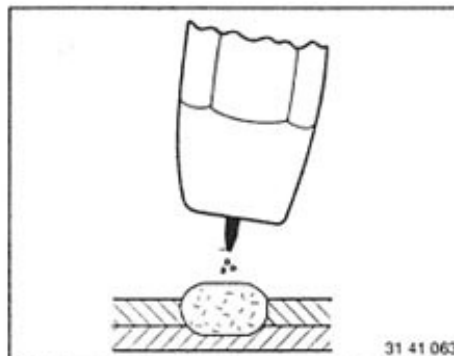
Produce brazed joints with heat dispersion limited to a minimum and without overheating. Joining methods which deviate from standard production will be described in the repair instructions. Grind down welded seams on visible outside surfaces.

Caution!

Do not grind down thickness of sheet metal.

Grind down and fill in irregularities with tin. After tinning, the surface should be prepared to such an extent that only a coat of fine filler has to be applied in the workshop.

All welded seams sealed off with body sealing compound in original state must be sealed off again thoroughly immediately after repairing. Replace damaged anti-drumming compound. New sheet metal parts or cavities, seams, creases and folds formed by the new sheet metal parts must be sealed with a body sealing compound immediately.



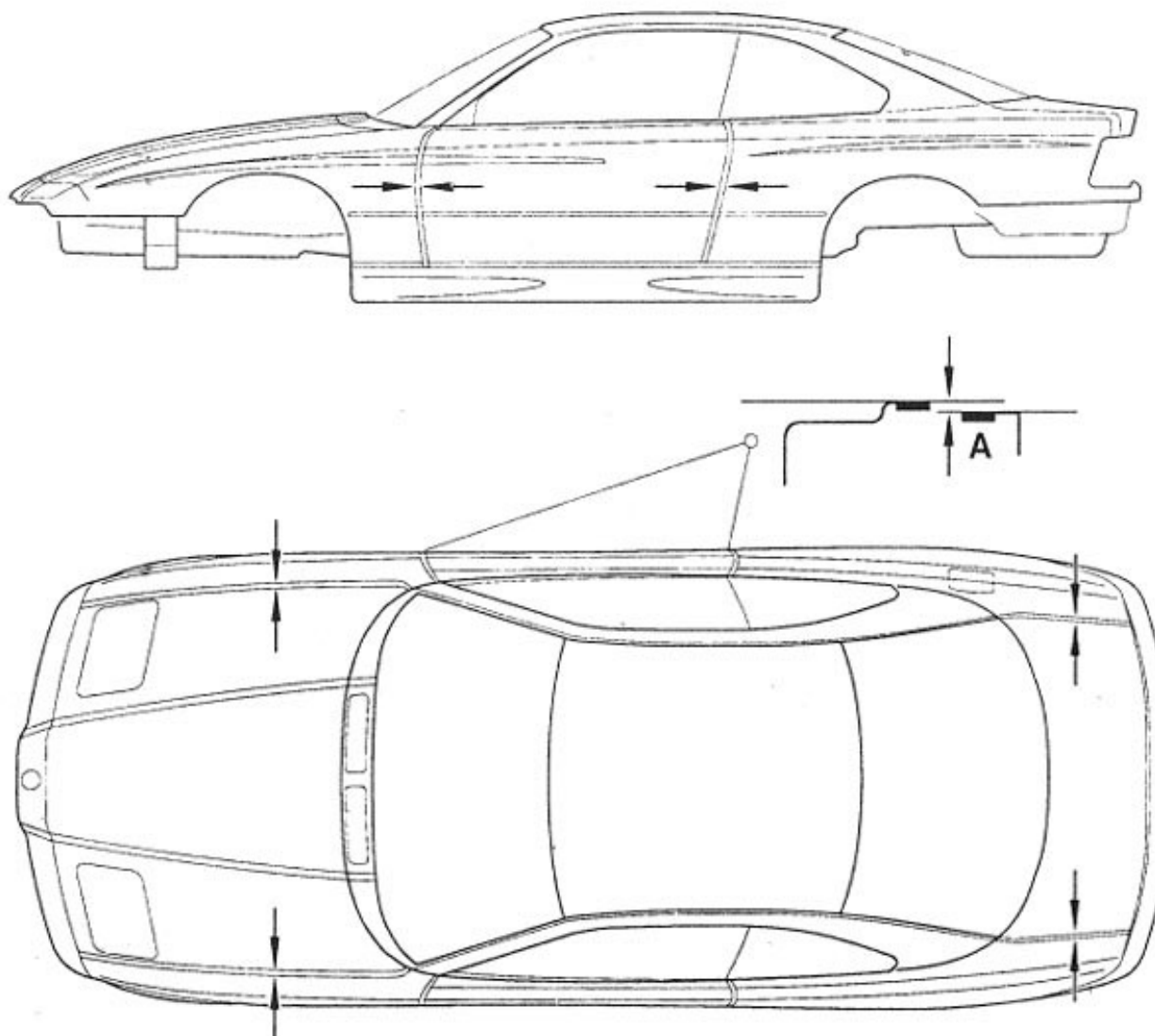
41-0/5

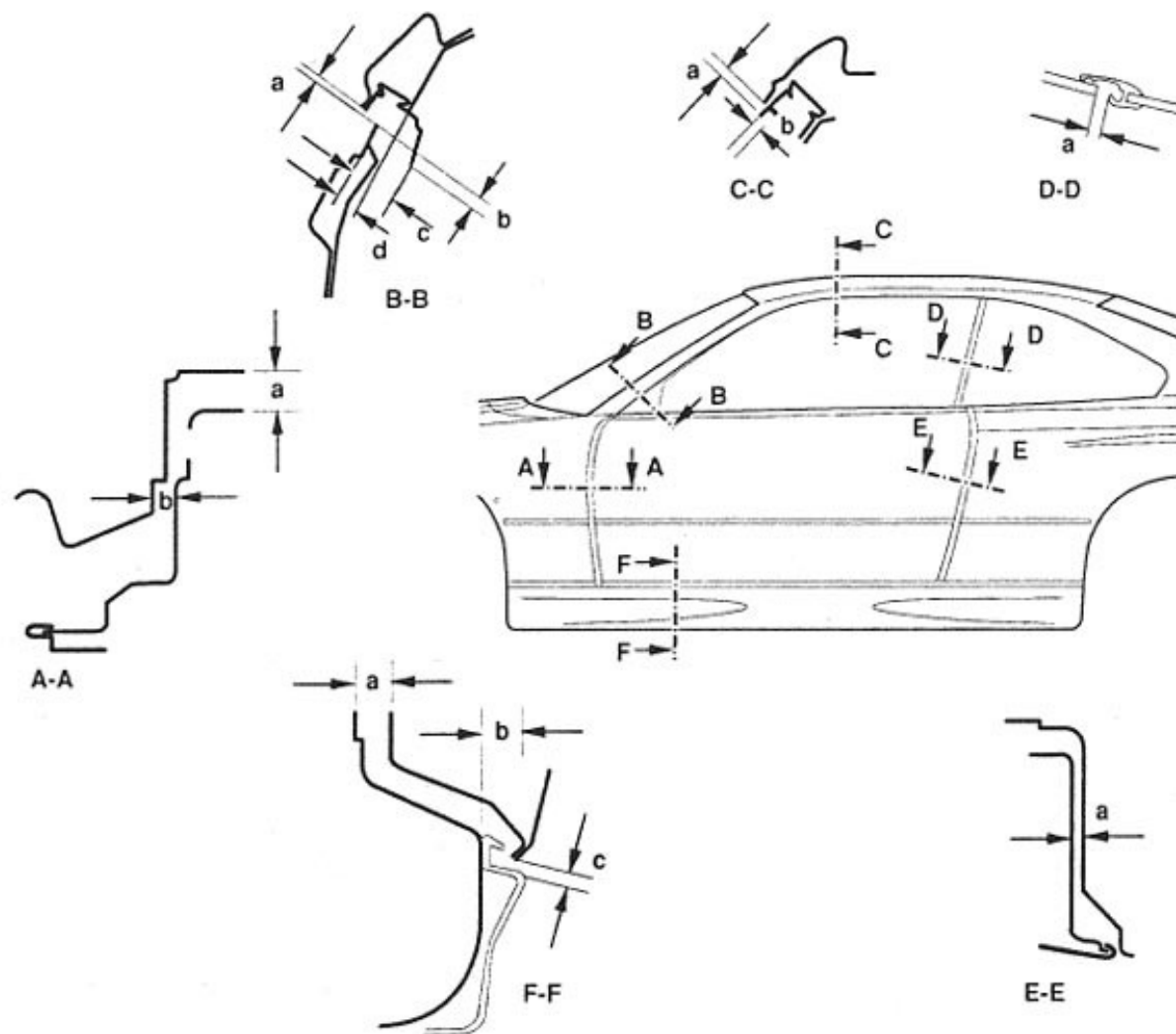
GAPS OF DOORS / ENGINE HOOD AND TRUNK

Door gaps and hood/lid gaps: $5.5^{+0.5}_{-0.1}$ mm.

Max. permissible parallel deviation: 1.0 mm.

Plane displacement A for adjacent body parts
at rear = max. 1 mm toward inside.





Frame alignment control dimensions for BMW 8 series / E 31

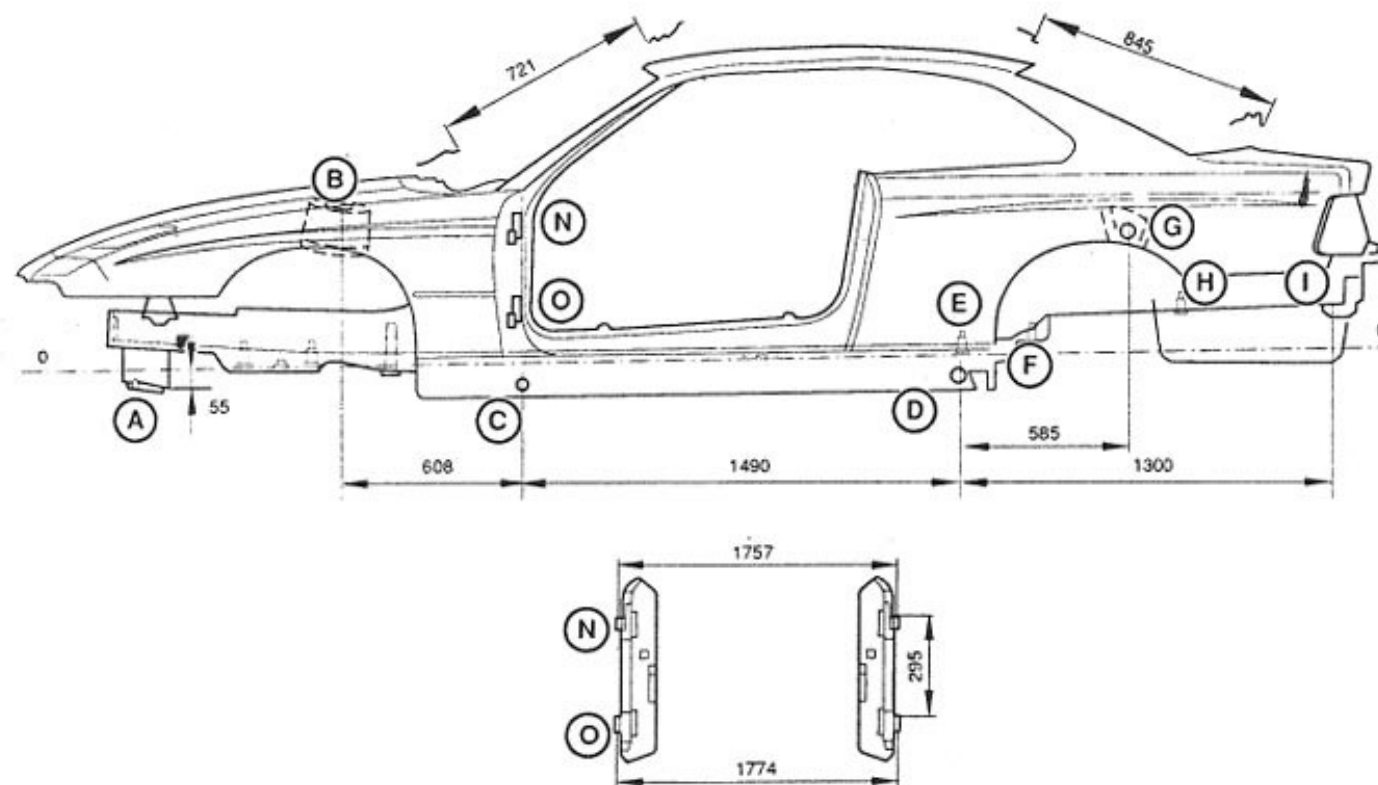
Dimensions in mm, tolerance ± 2.0 mm.

Note:

Only use the following values for a rough inspection.

Repairs can only be carried out correctly with the approved set of attachments and a straightening bench.

- A = bore of front crossmember, 16 mm dia.
- B = Front spring mount
- C = Front car jack take-up
- D = Rear car jack take-up
- E = Rear axle take-up, side, semi-trailing arm
- F = Rear axle take-up, side, front
- G = Shock absorber mount
- H = Rear axle mount, side, rear
- I = Bore of rear crossmember, 12 mm dia.
- N = Hinge axis, upper
- O = Hinge axis, lower



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FRAME ALIGNMENT CONTROL DIMENSIONS FOR BMW 8 SERIES / E 31

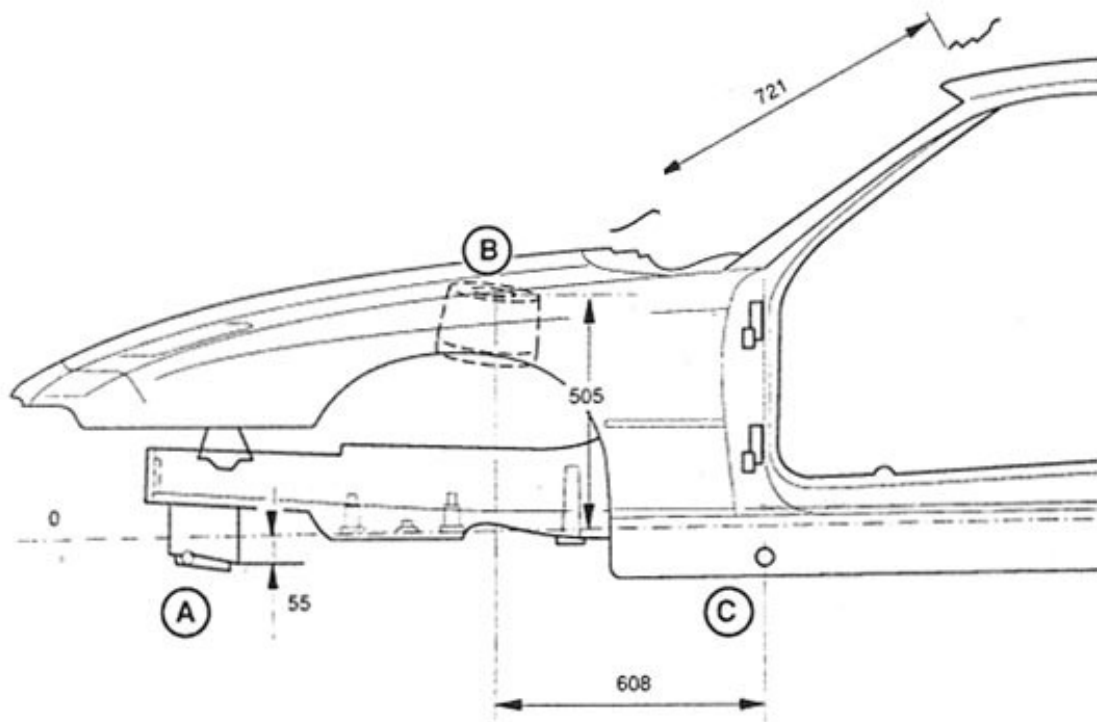
Dimensions in mm, tolerance: ± 2.0 mm.

Note:

Only use the following values for a rough inspection.

Repairs can only be carried out correctly with the approved set of attachments and a straightening bench.

- A Front cross member bore, 16 mm dia.
- B Front spring mount
- C Front car jack take-up



FRAME ALIGNMENT CONTROL DIMENSIONS FOR BMW 8 SERIES / E 31

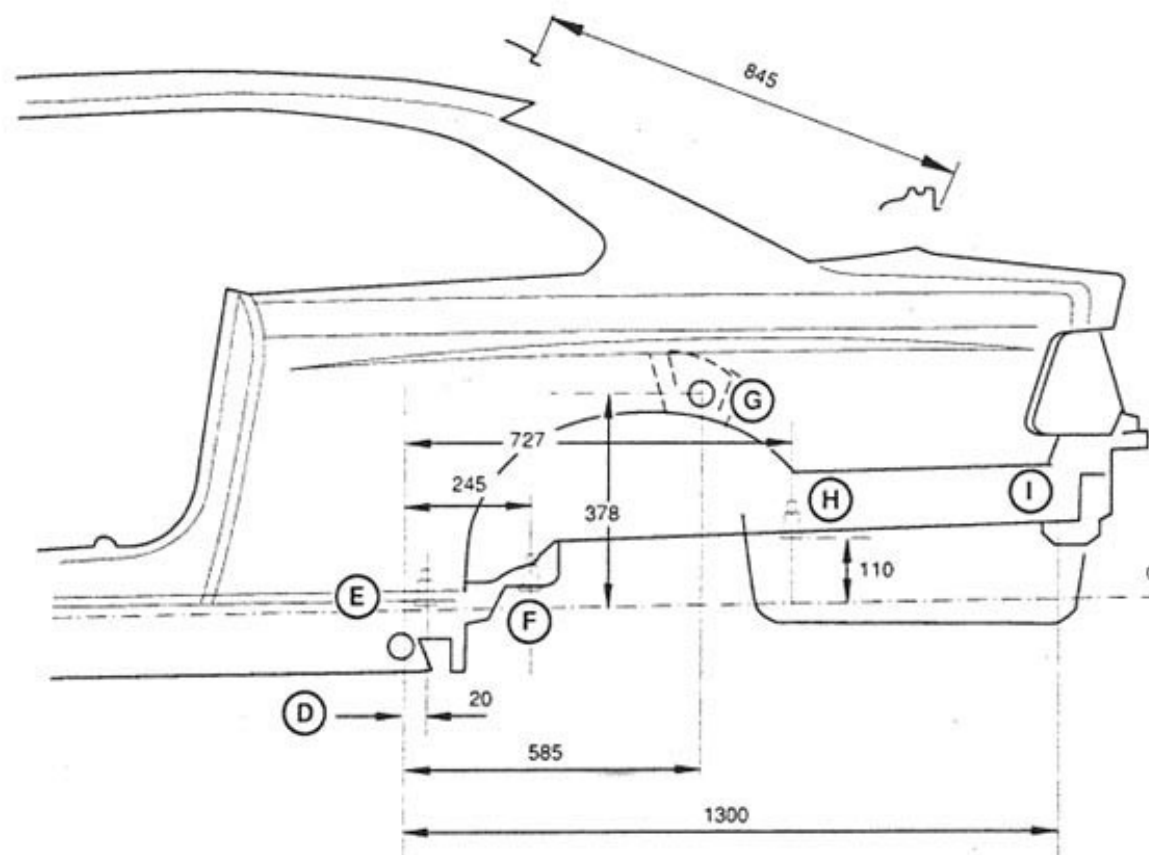
Dimensions in mm, tolerance: ± 2.0 mm.

Note:

Only use the following values for a rough inspection.

Repairs can only be carried out correctly with the approved set of attachments and a straightening bench.

- D Rear car jack take-up
- E Side rear axle take-up, trailing arm
- F Side rear axle take-up, front
- G Shock absorber mount
- H Side rear axle take-up, rear
- I Rear cross member bore, 12 mm dia.



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FRAME ALIGNMENT CONTROL DIMENSIONS FOR BMW 8 SERIES / E 31

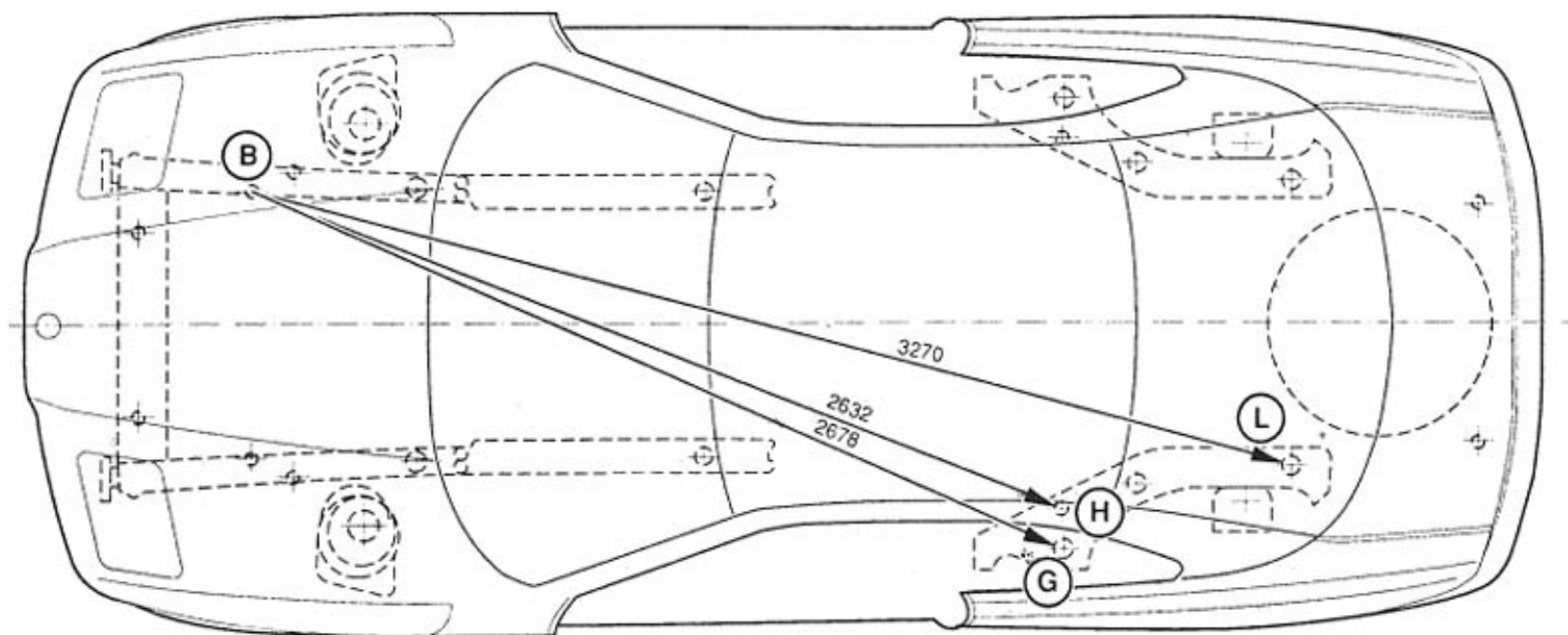
Dimensions*in mm, tolerance: ± 2.0 mm.

Note:

Only use the following values for a rough inspection.

Repairs can only be carried out correctly with the approved set of attachments and a straightening bench.

- B Front axle take-up, front
- G Side rear axle take-up, trailing arm outside
- H Side rear axle take-up, trailing arm inside
- L Side rear axle take-up, rear



41-0/11

FRAME ALIGNMENT CONTROL DIMENSIONS FOR BMW 8 SERIES / E 31

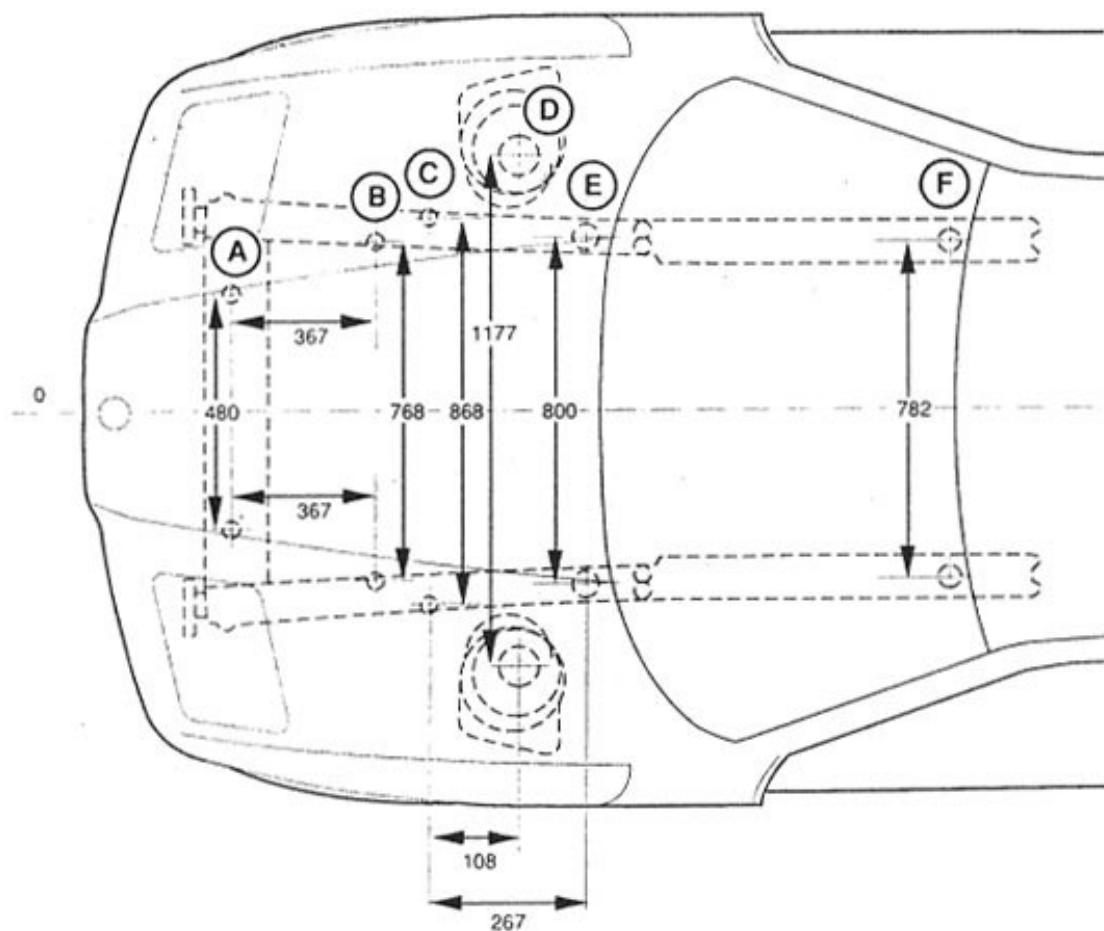
Dimensions in mm, tolerance: ± 2.0 mm.

Note:

Only use the following values for a rough inspection.

Repairs can only be carried out correctly with the approved set of attachments and a straightening bench.

- A Front cross member bore, 16 mm dia.
- B Front axle take-up, front
- C Front axle take-up, center
- D Front axle spring mount
- E Thrust strut take-up
- F Rear engine carrier bore, 6 mm dia.



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FRAME ALIGNMENT CONTROL DIMENSIONS FOR BMW 8 SERIES / E 31

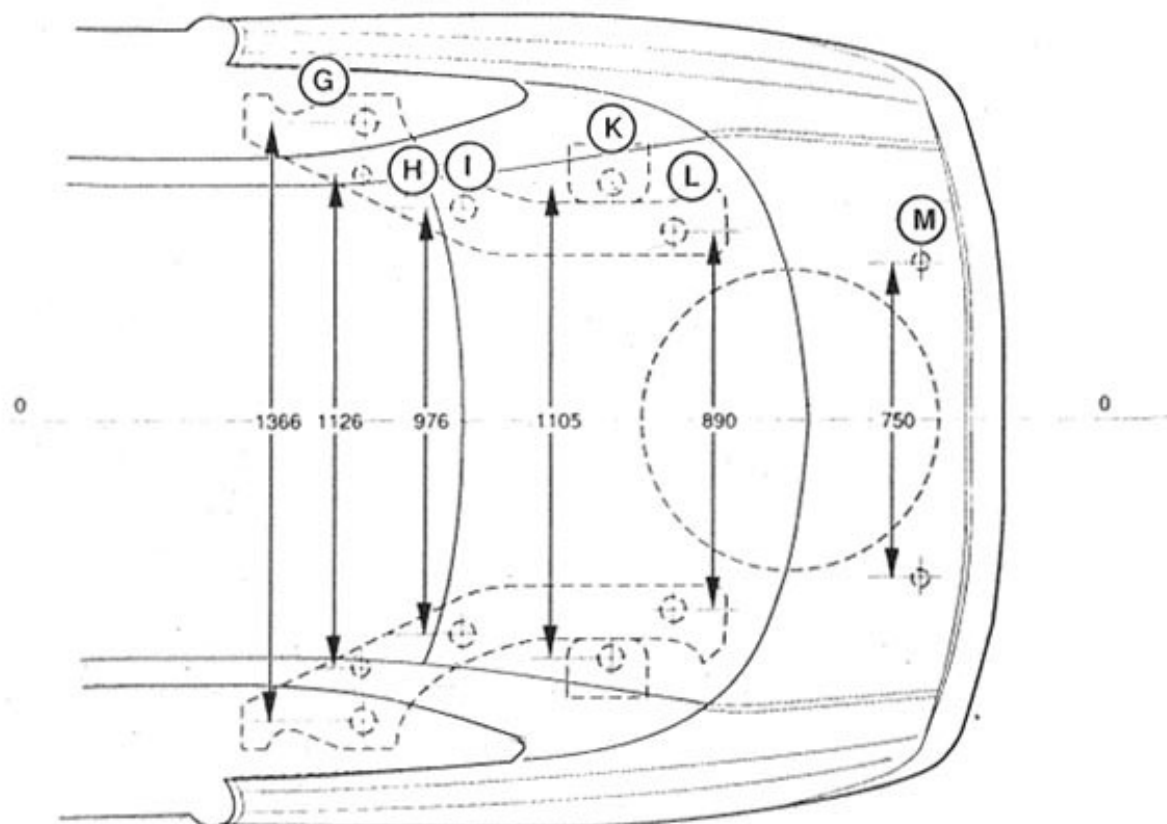
Dimensions in mm, tolerance: ± 2.0 mm.

Note:

Only use the following values for a rough inspection.

Repairs can only be carried out correctly with the approved set of attachments and a straightening bench.

- G Side rear axle take-up, trailing arm outside
- H Side rear axle take-up, trailing arm inside
- I Side rear axle take-up, front
- K Shock absorber mount
- L Side rear axle take-up, rear
- M Rear cross member bore, 12 mm dia.

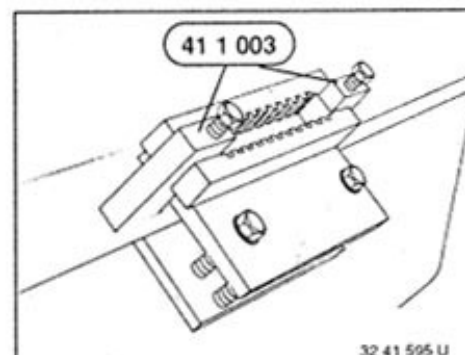


DIE-STAMPING CHASSIS NUMBER

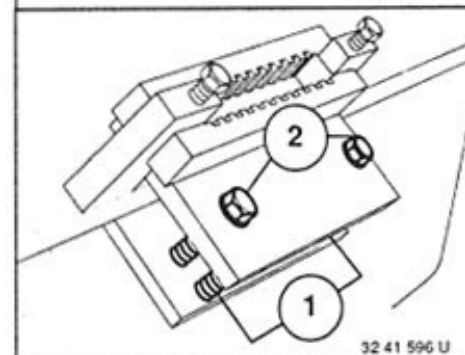
If the die-stamped chassis number is removed during repairs, it must be die-stamped again.

Note:

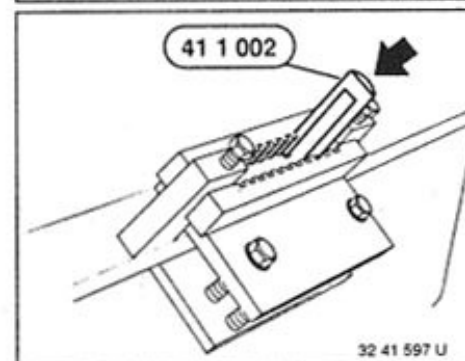
The chassis number can also be die-stamped on a completely assembled vehicle.



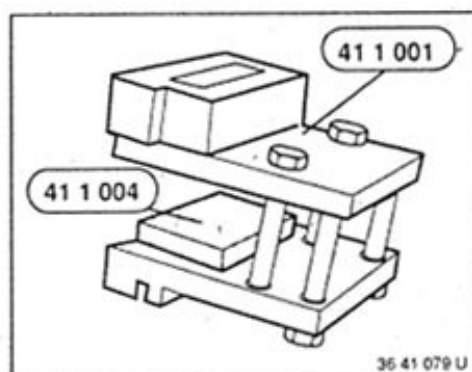
Insert Special Tools 41 1 003 (spacers) on left and right sides and clamp.



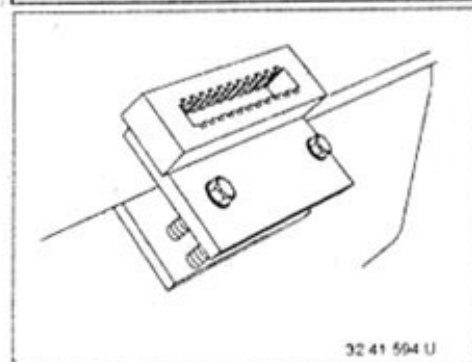
Align Special Tool 41 1 001 parallel with bolts (1).
Tighten bolts (2).



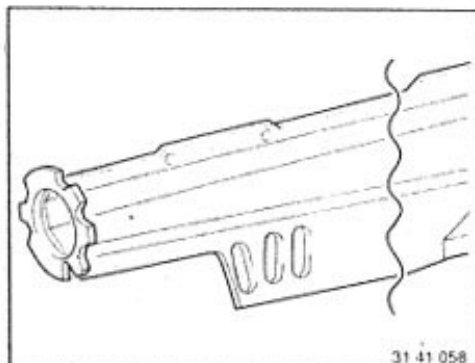
Place die-stamp numbers (Special Tool 41 1 002) in Special Tool 41 1 001 separately and die-stamp number.
Die-stamp a "+" in front of and behind the chassis number instead of the BMW emblem for clear identification of component or body replacements by a workshop.



Assemble Special Tools 41 1 001 and 41 1 004 (additional plate) in such a manner that the additional plate faces the stamp guide.
Screw in bolts only enough that the spacers can still be inserted later.



Apply Special Tool 41 1 001 and have Special Tool 41 1 004 bear on the surface for the chassis number.



41 11 028 Replacing left engine support (partial replacement before front axle)

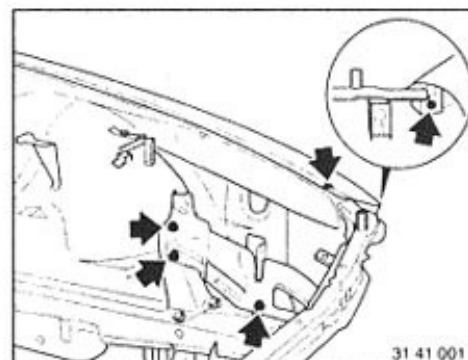
Follow instructions on body repair!

Place vehicle on straightening bench.

Remove or detach the following components:

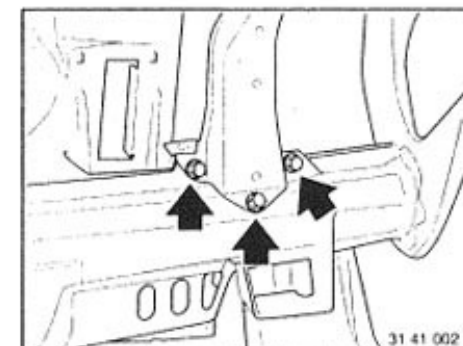
- bumper
- headlight with frame
- radiator
- radiator loop for power steering unit
- condenser for air-condition system
- fan shroud
- volume air flow sensor with air filter
- internal cover of wheel arch

Remove or cover up other vehicle components in the repair zone and which may be at risk from heat, sparks and dust.

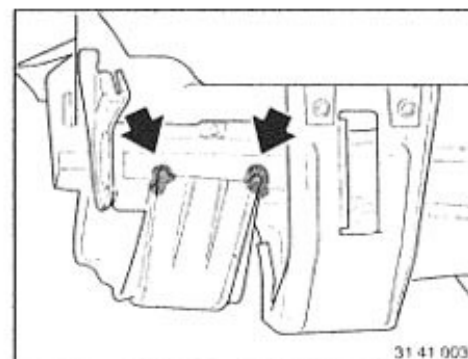


Unscrew and remove support for front bumper bracket.

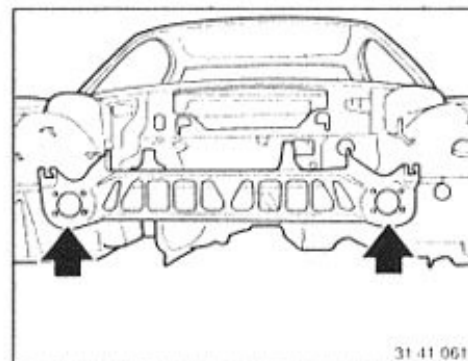
Unscrew bracket.

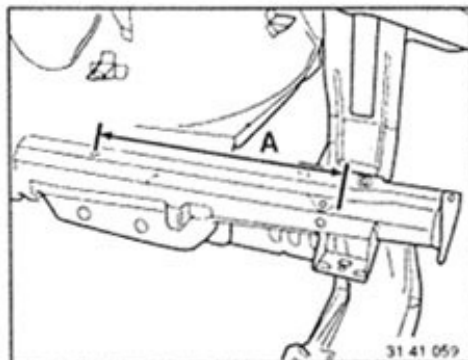


Grind down welding seams on crossmember.

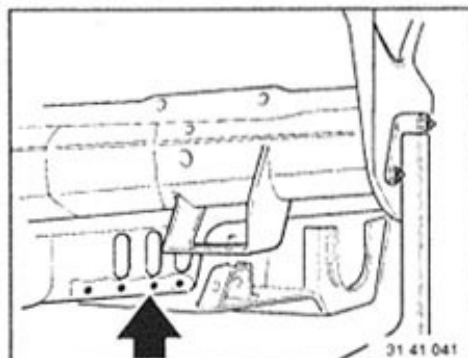


Drill out points between left and right front crossmembers.

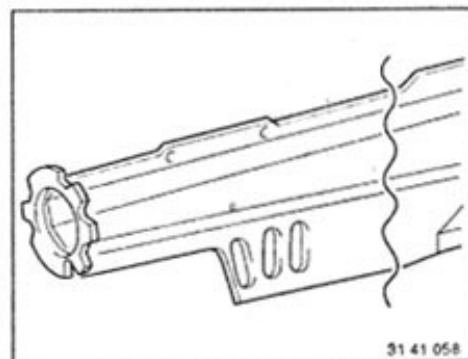




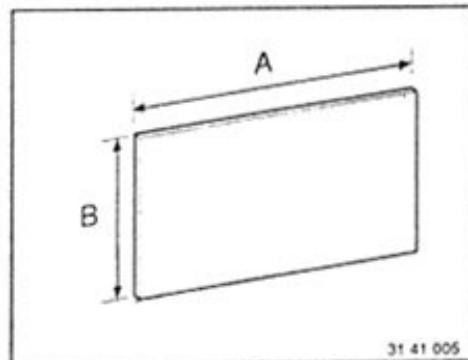
Mark cutting point of engine carrier, distance (A) = max. 355 mm (13.976'').



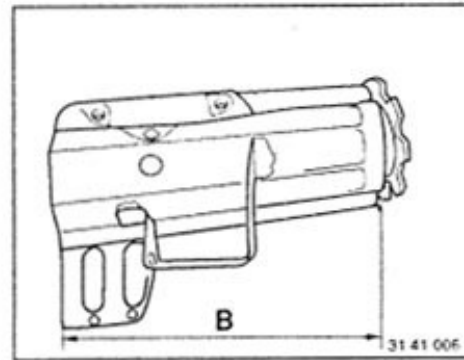
Drill off spot welding on ABS hydraulic control unit holder.



Cut off engine carrier.

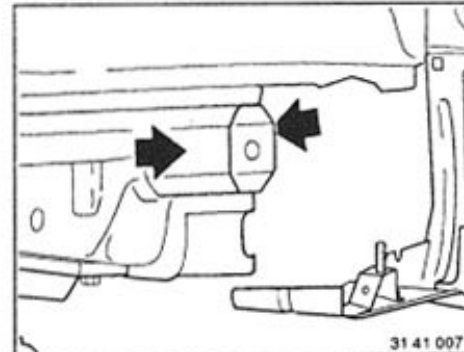


Produce reinforcement plates. Change distances for new cutting point!
 A = 60 mm (2.362'')
 B = 1 x 20 mm (0.787'')
 1 x 23 mm (0.906'')
 4 x 30 mm (1.181'')
 2 x 40 mm (1.575'')

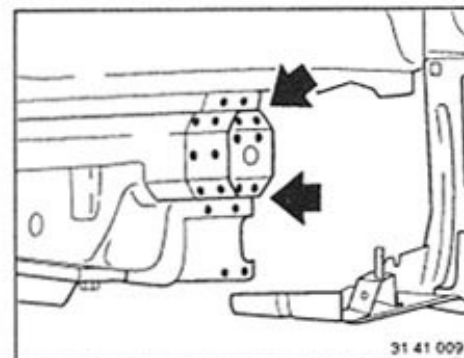


Cut new engine carrier section to distance B and fit.

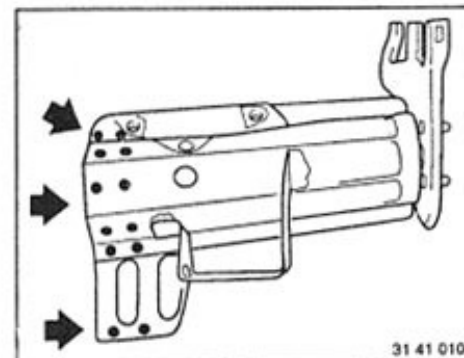
Distance (B) = at least 230 mm (9.055'').



Clean surface for plug welding and mating surfaces on old and new engine carrier sections.
 Clean mating surface for cross member bracket on wheel house.



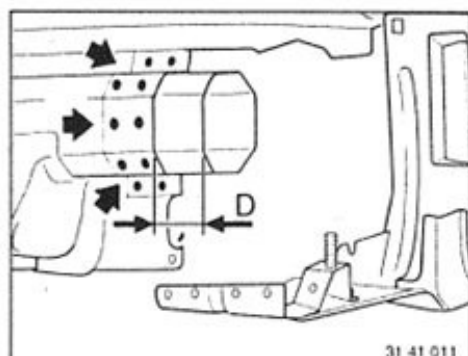
Drill holes for plug welding of reinforcement plates on the engine carrier.



Drill holes for plug welding of reinforcement plates on the engine carrier section.

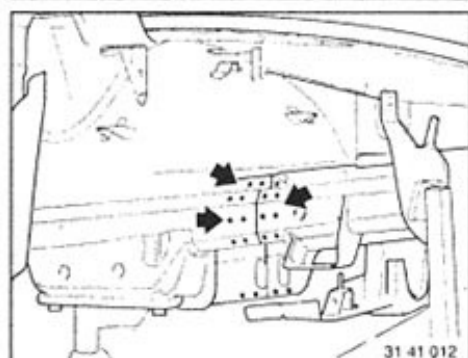
Coat reinforcement plates with zinc dust paint.

Grind down connecting points.

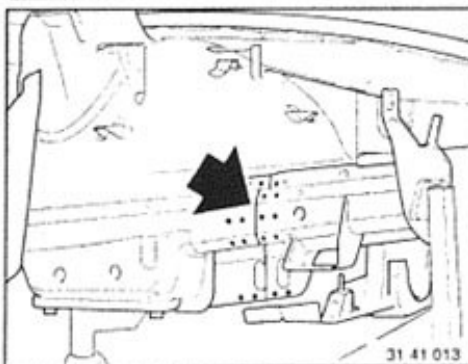


Slide reinforcement plates 30 mm into old engine support, adjust and plug weld.

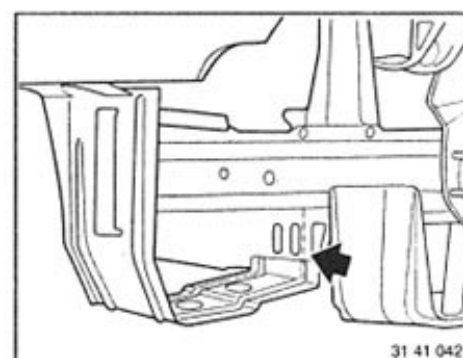
Dimension (D) = 30 mm



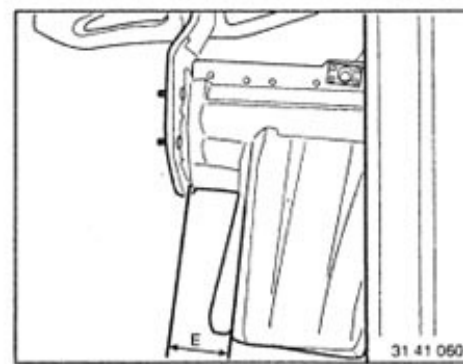
Adjust engine support partial replacement
Spot weld the unit, correcting welded seam distance if necessary.



Weld both engine carrier parts into welded seam.

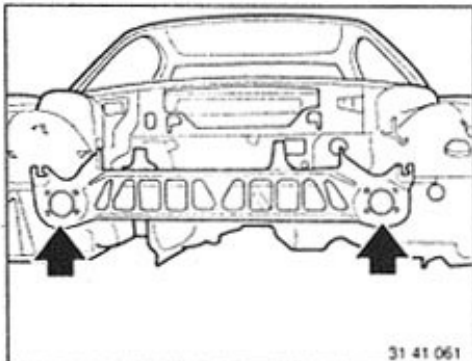


Adjust bracket of hydraulic unit for ABS to engine support and plug weld through holes.
Grind down welding holes.

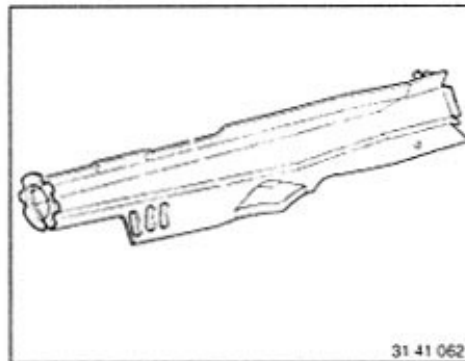


Adjust crossmember and weld into place.
Dimension (E) = 54 mm

41-11/4



Weld front crossmember between left and right engine supports.

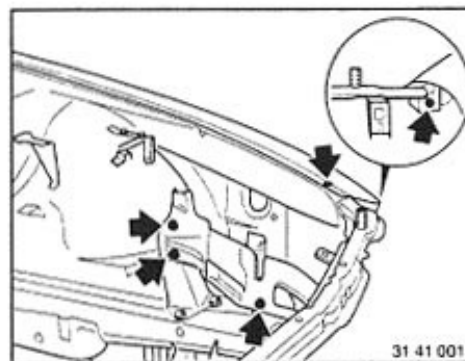


41 11 043 Replacing front left engine support (without wheel arch)

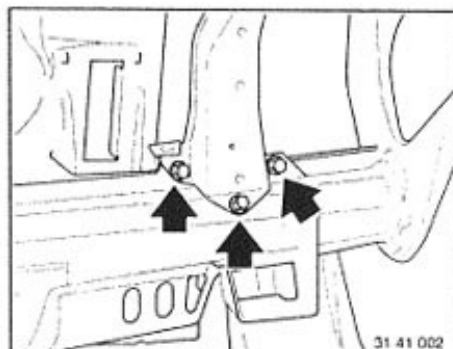
Note introduction 41-0!

Place vehicle on straightening bench.

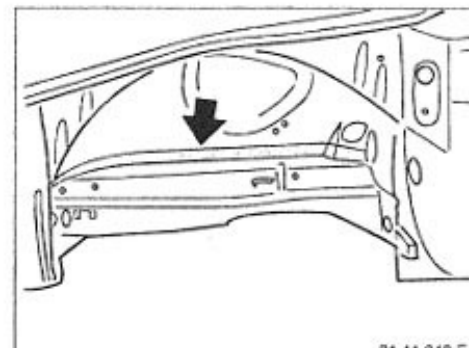
Remove or cover vehicle components in the repair zone which could be damaged by heat, sparks or dust.



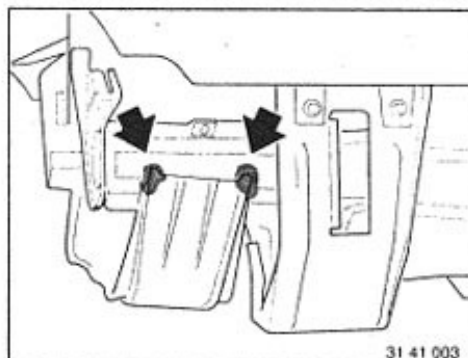
Unscrew mount for front bumper bracket.



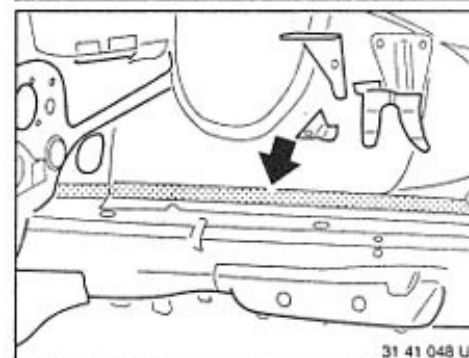
Unscrew bracket.



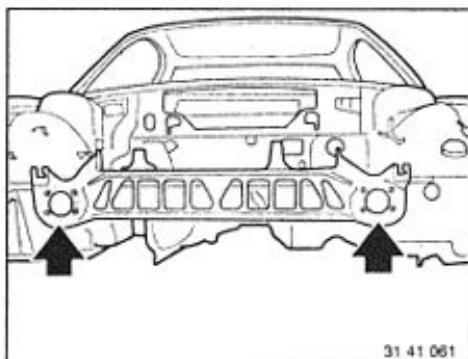
Clean mating surfaces in wheel house.



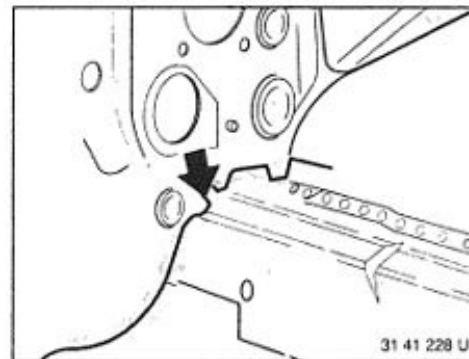
Grind off cross member welding seams.



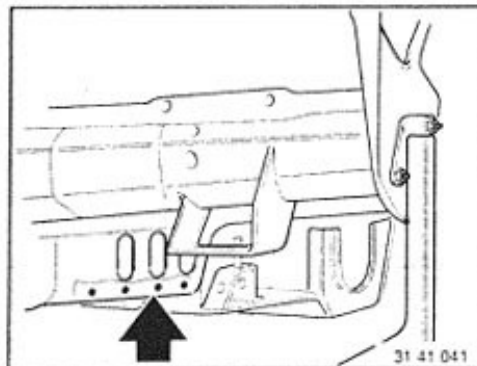
Clean mating surface in engine compartment.



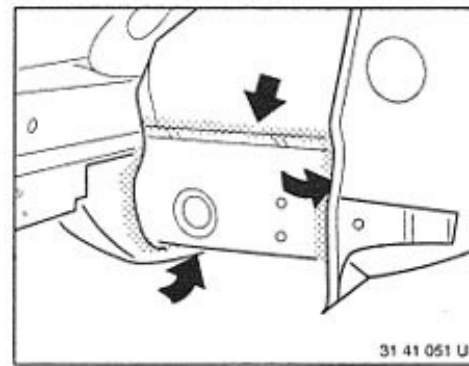
Drill off spot welding on front cross member between left and right engine carriers.
Take off cross member.



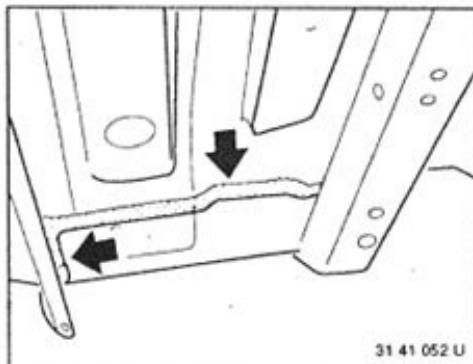
Uncover firewall connection.



Drill off spot welding on holder for ABS hydraulic control unit.



Uncover reinforcement connections between A-pillar and engine carrier in the wheel house.

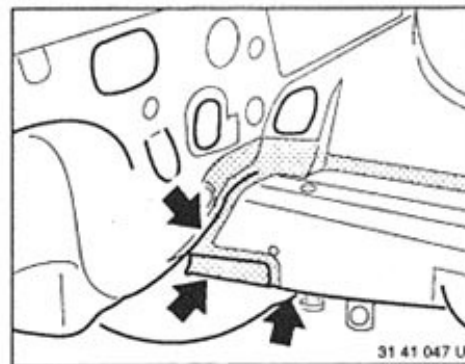


Uncover reinforcement connections between A-pillar and engine cover on underside.

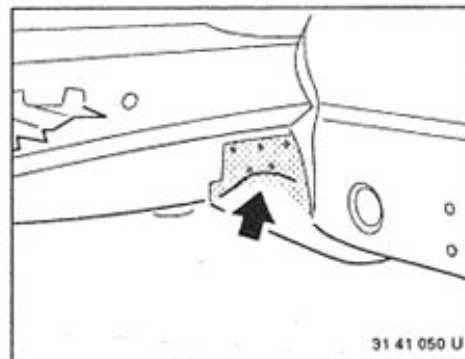
Drill off spot welding.

Cut off Inert gas welding.

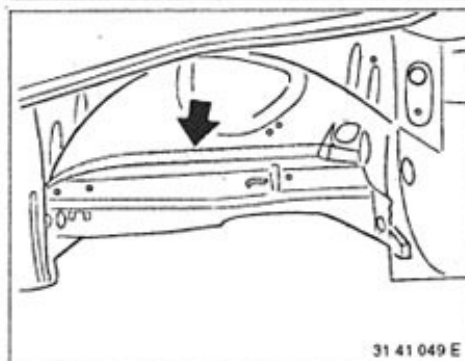
Remove scrap metal.
Clean welded surfaces.



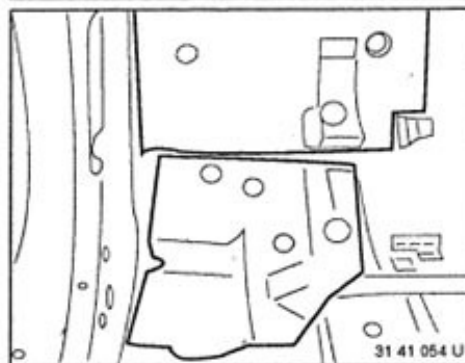
Drill off front engine carrier section spot welding on firewall and rear engine carrier section.



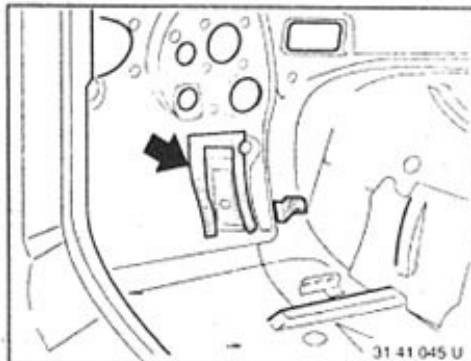
Drill off front engine carrier section spot welding on rear engine carrier section in the wheel house.



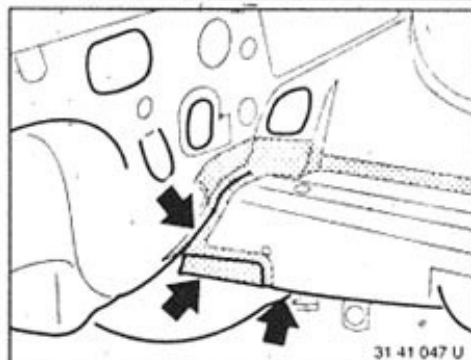
Drill off spot welding on wheel house.



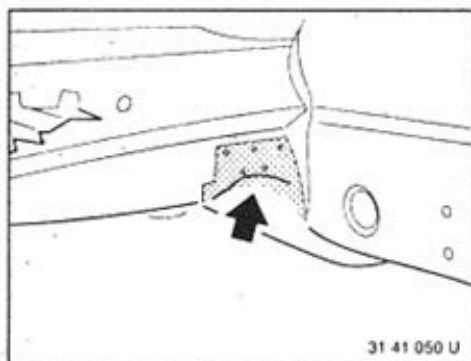
Remove noise insulation sheet on inside of car.



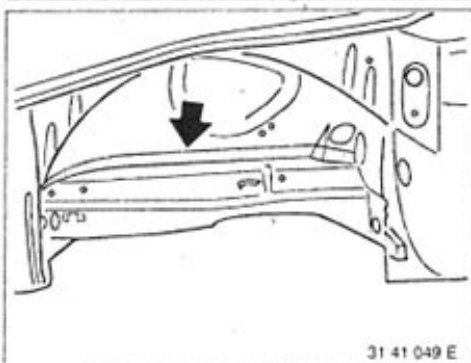
Drill off engine carrier spot welding on firewall from the passenger compartment.



Cut off engine carrier at point of connection.



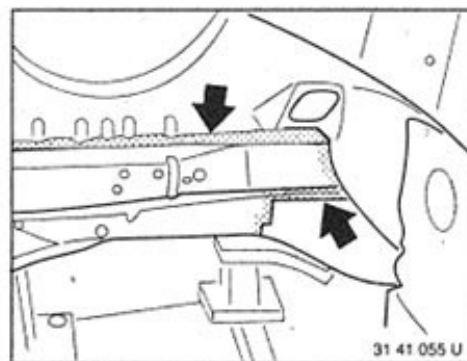
Straighten and grind mating surfaces.



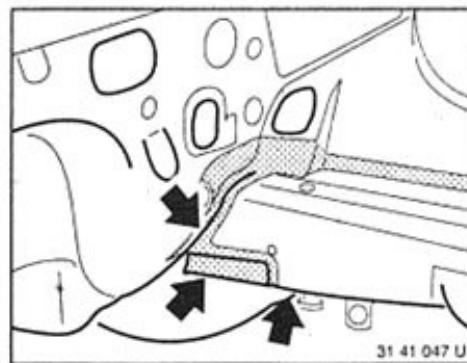
Clean mating surface in wheel house.

Clean welding surfaces on new part.

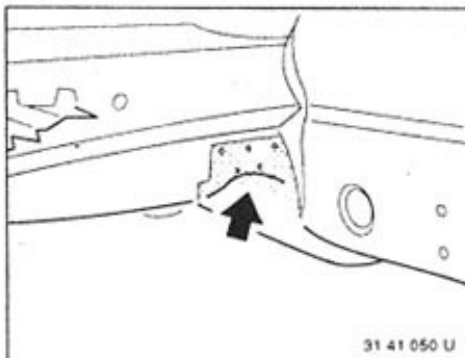
Coat welding surfaces with zinc dust paint.



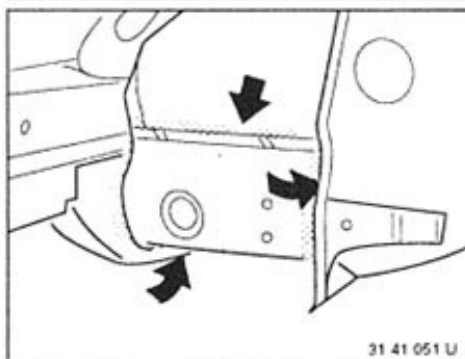
Fit in front engine carrier section on wheel house and rear engine carrier section.



Weld front engine carrier section on firewall and rear engine carrier section.

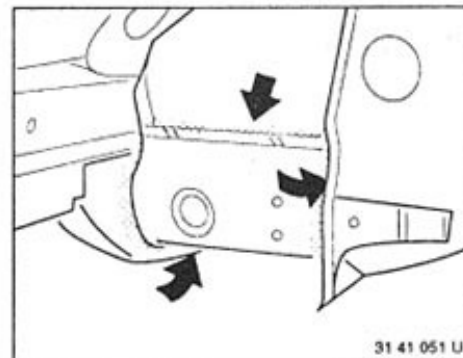


Weld front engine carrier section on rear engine carrier section in the wheel house.

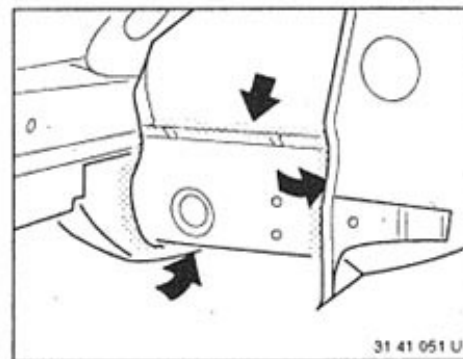


Fit in reinforcement between A-pillar and engine carrier. Mark and clean welding surface.

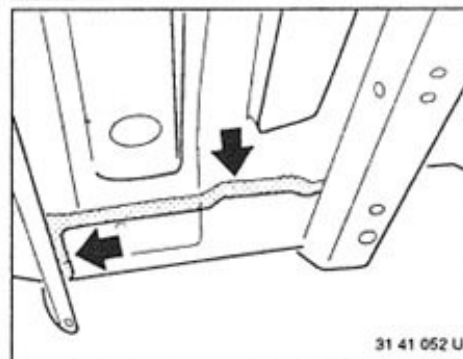
Clean mating surfaces on reinforcement.



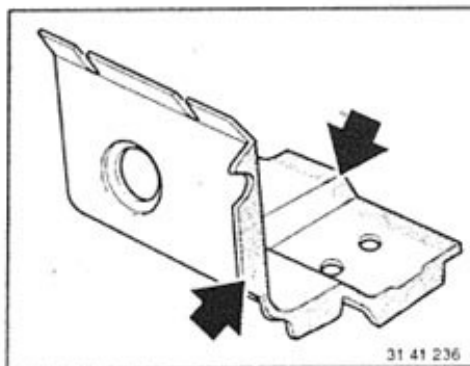
Fit in reinforcement between A-pillar and engine carrier.



Weld reinforcement between A-pillar and engine carrier.

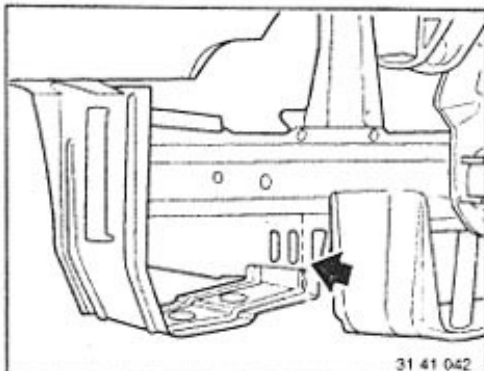


Weld reinforcement between A-pillar and engine carrier on the underside.

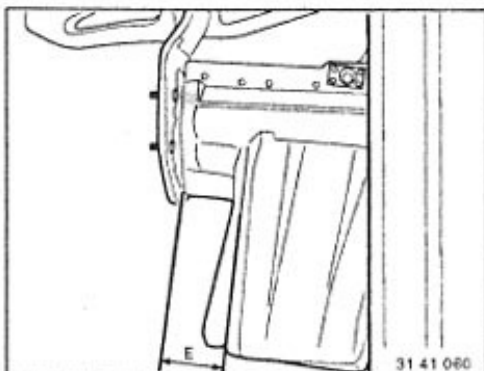


Drill holes in reinforcement for plug welding A-pill connection and floor plate assembly.

Grind welded surfaces smooth.

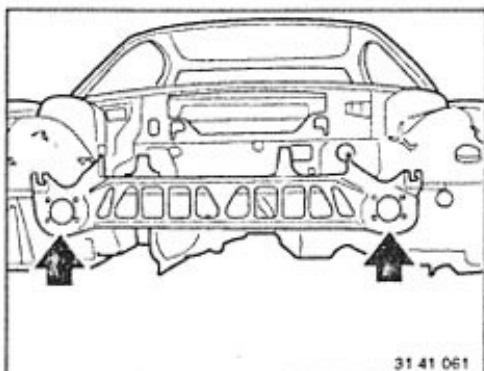


Fit in and weld holder for ABS hydraulic control unit on engine carrier.

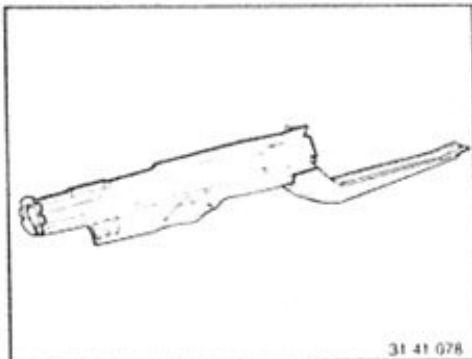


Fit in and weld cross member.

Distance (E) = 54 mm (2.126").



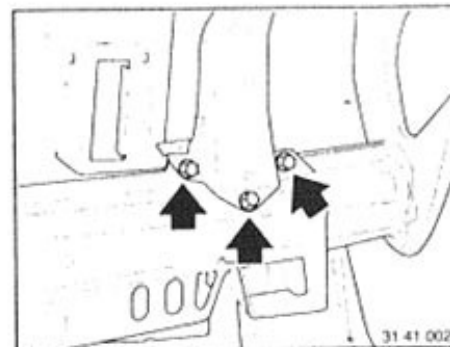
Weld front cross member between left and right engine carriers.



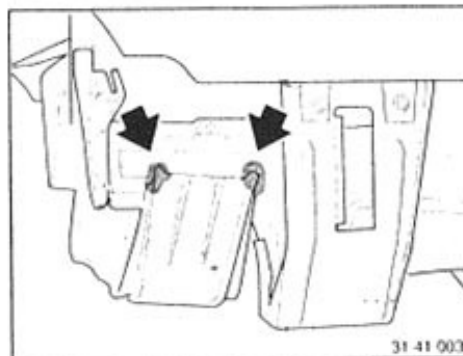
41 11 051 Replace left engine support

Follow instructions on body repair!
Place vehicle on straightening bench.

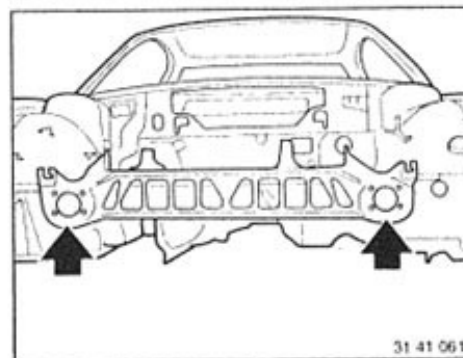
Remove or cover vehicle parts in the repair zone which could be damaged by heat, sparks and dust.



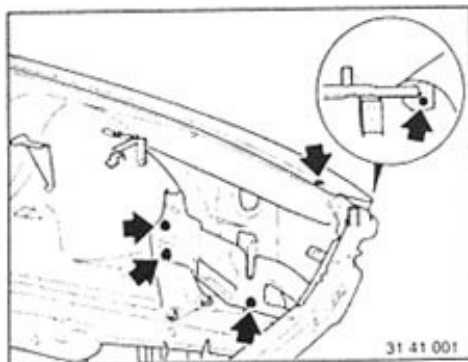
Unscrew and remove bracket.



Grind down welded seams on crossmember.

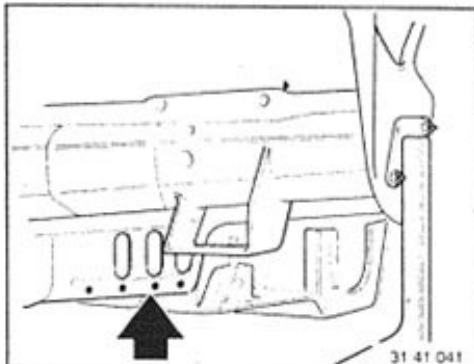


Drill out holes in front crossmember between left and right engine supports.

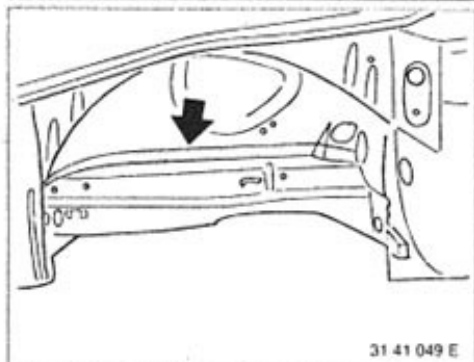


Remove mount for front bumper bracket.

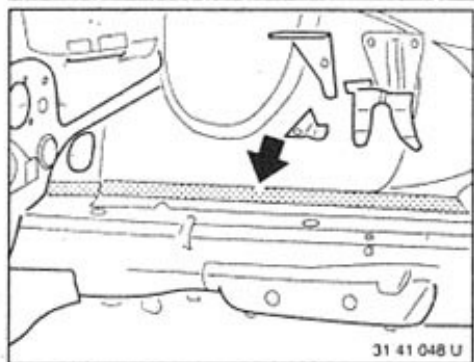
Remove crossmember.



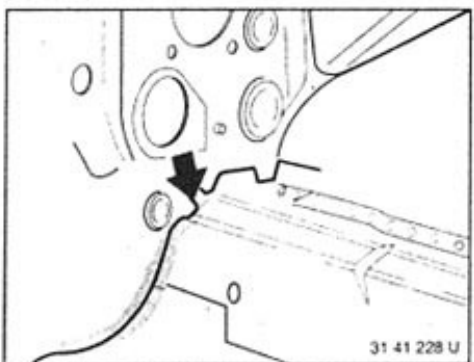
Drill off spot welding on holder for ABS hydraulic control unit.



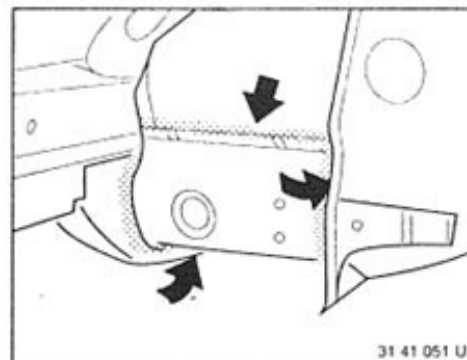
Clean mating surface in wheel house.



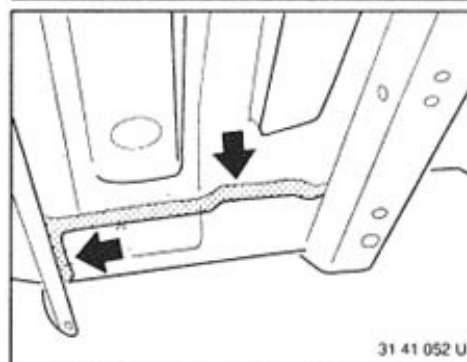
Clean mating surface in engine compartment.



Uncover firewall connection.



Uncover connections of reinforcement between A-pillar and engine carrier in the wheel house.

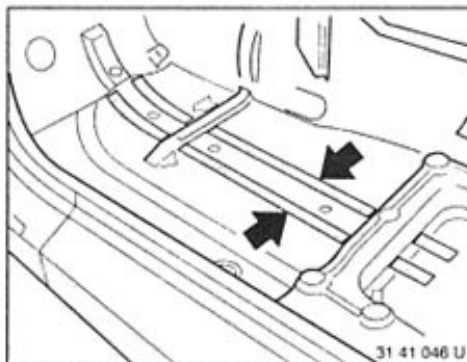


Uncover connections of reinforcement between A-pillar and engine carrier on underside.

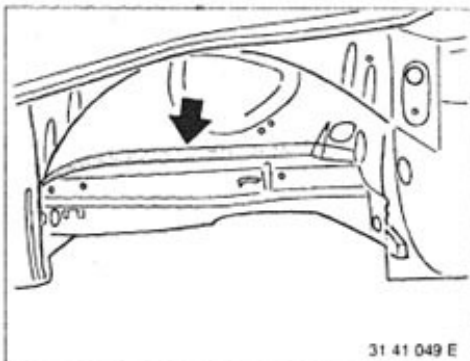
Drill off spot welding.

Cut off inert gas welded sections.

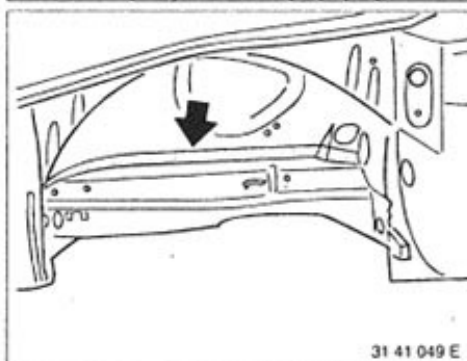
Remove scrap sheet metal parts.
Clean welded areas.



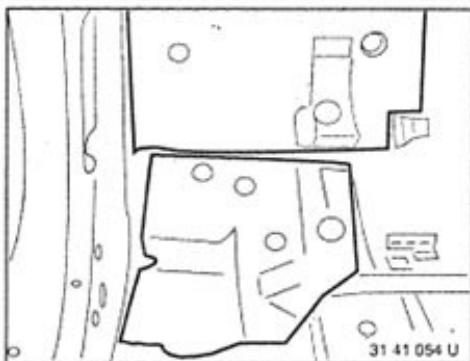
Clean connecting faces and drill out welding points.



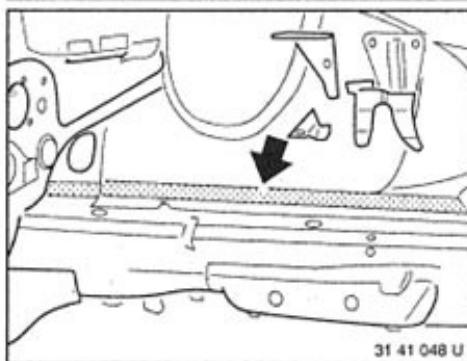
Drill out welding points on wheel arch.



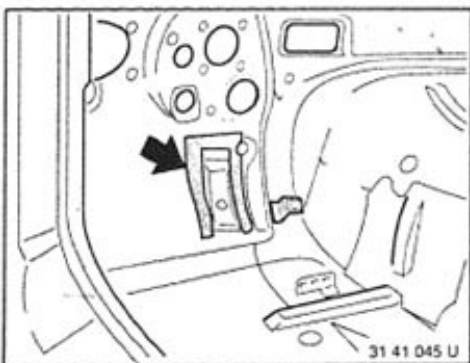
Straighten connecting point in wheel arch.



Remove acoustic insulation from interior.

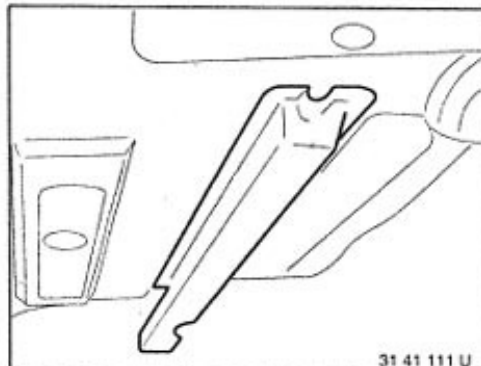


Straighten connecting point in engine compartment.



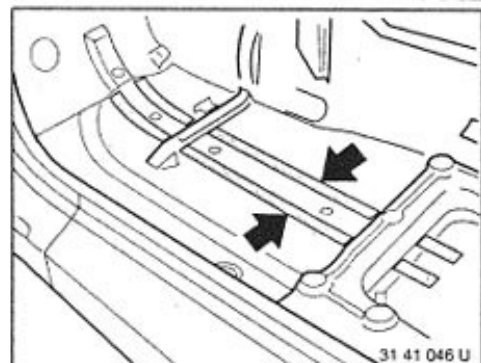
Drill out welding points on engine support wall facing passenger compartment.
Remove engine support.

Clean welded faces of new part.
Coat welding faces with zinc dust paint.



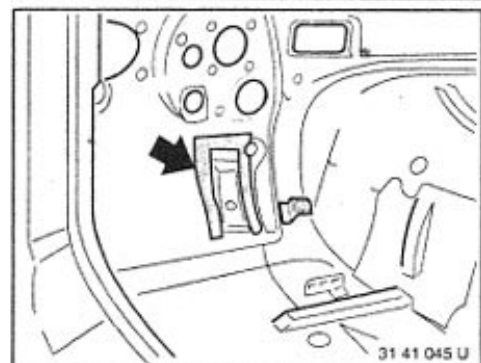
Adjust engine support on straightening bench.

31 41 111 U



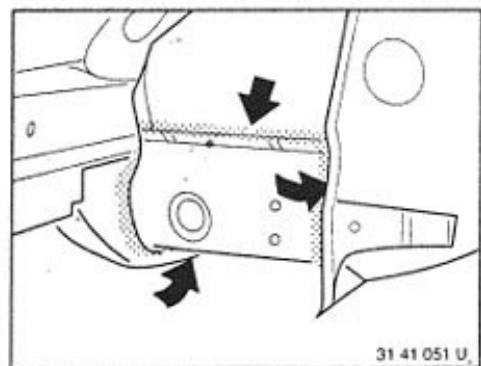
Weld up engine support in interior.

31 41 046 U



Weld up engine support on sidewall.

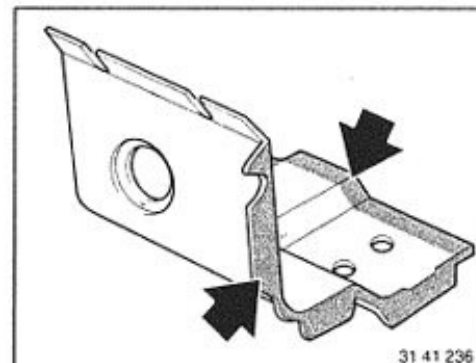
31 41 045 U



Adjust reinforcement between A pillar and engine support.
Mark out welded area and clean.

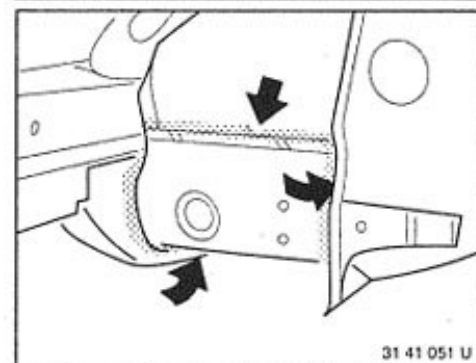
31 41 051 U

Clean reinforcement on connecting faces.



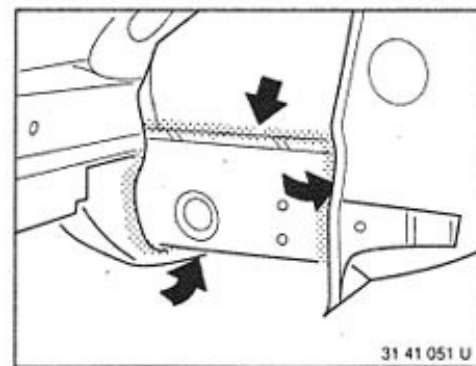
Drill out holes for plug welding connection in A pillar and floor assembly.

31 41 236



Adjust reinforcement between A pillar and engine support.

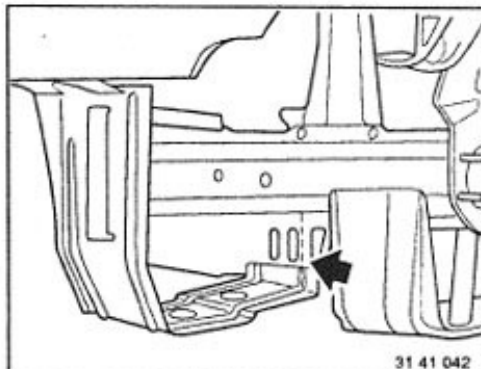
31 41 051 U



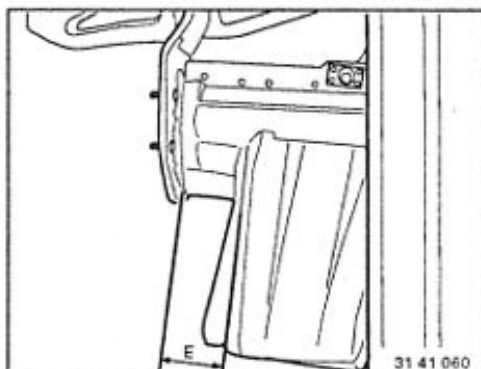
Weld up reinforcement between A pillar and engine support on floor assembly.

Grind down welded faces.

31 41 051 U

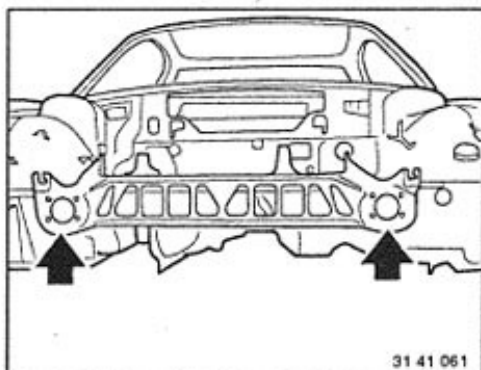


Fit in and weld holder for ABS hydraulic control unit on the engine carrier.

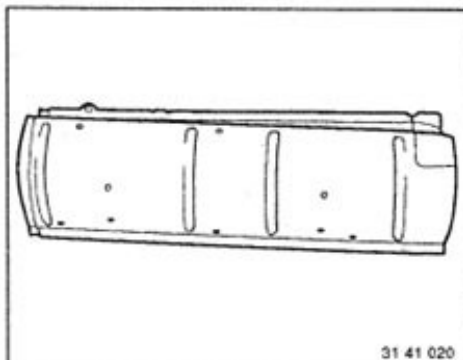


Fit in and weld cross member.

Distance (E) = 54 mm (2.126").



Weld front cross member between left and right engine carriers.



41 11 141 REPLACING COVER FOR LEFT OR RIGHT SIDE MEMBER (Partial Replacement of B-Pillar in Front of A-Pillar)

Refer to Introduction on page 41-0!

Remove or disconnect following parts.

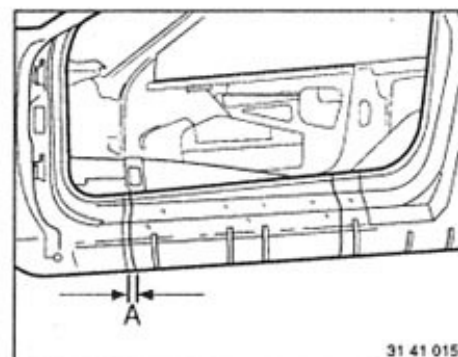
- Seats, front and rear
- Outside side member plate
- Side member
- Rear side trim panel partially
- Wire harness cover
- Relay module

Remove or cover other parts of car, which are located in the repair zone and could be subjected to heat, sparks or dust.

Remove left door.

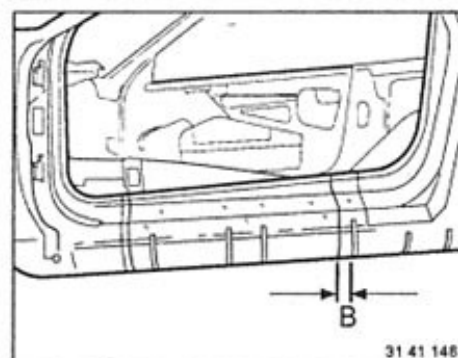
Cut out front section roughly.

Distance (A) = approx. 20 mm (0.787").

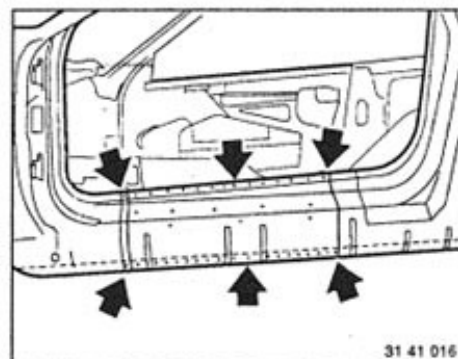


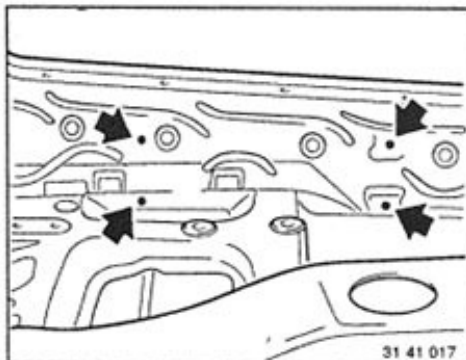
Determine location of rear cutting point with help of the new section; note the edging surface. Cut off section.

Distance (B) to bead = approx. 25 mm (0.984").



Drill off spot welding.

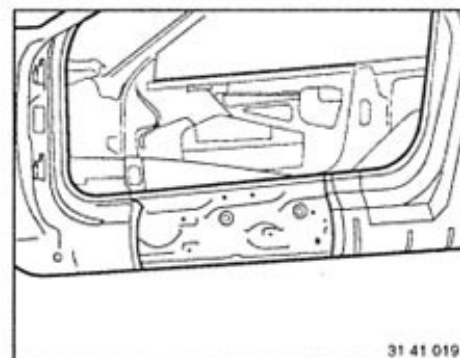




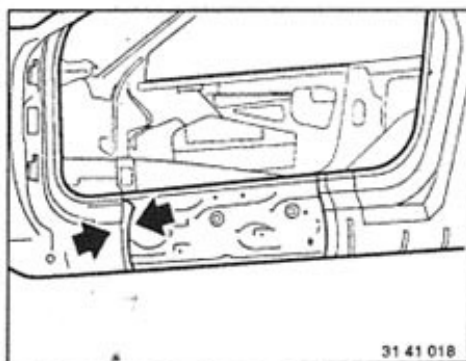
Drill offspot welding for reinforcement plates in the side member from the inside.

Take off side member.

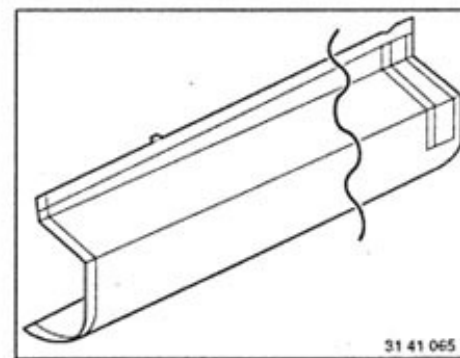
Straighten front and rear mating surfaces.
Straighten inside of side member panel.
Clean mating surfaces.



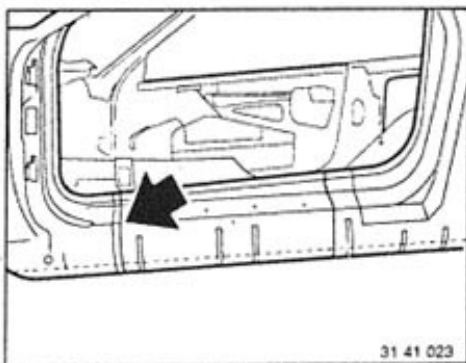
Shoulder rear mating surface.



Drill off spot welding on remaining front section.



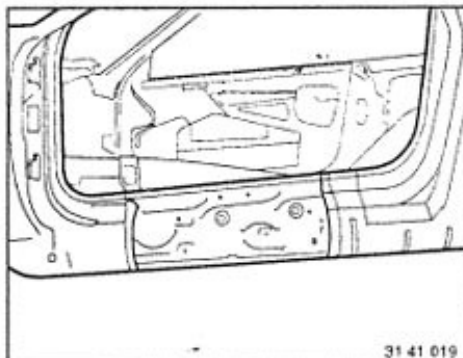
Cut new part to size.



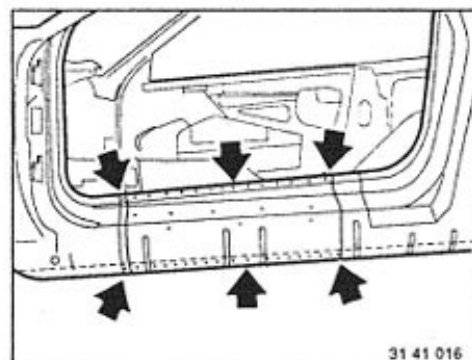
Remove brazing solder from connection between remaining front section and front mating surface.

Fit in new part.
Clean welding surfaces on new part.
Drill and deburr holes for plug welding (take location from old part).

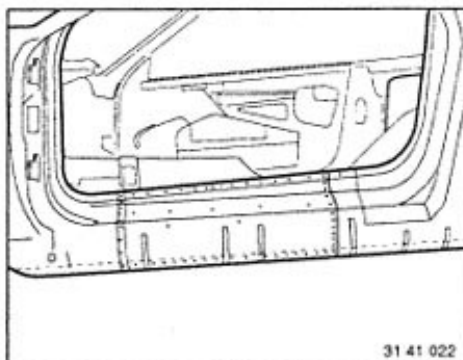
Coat welding surfaces with zinc dust paint.
Fit in and clamp new part.



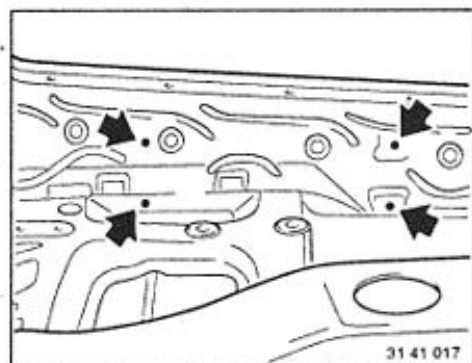
Clean rear seam for floating.



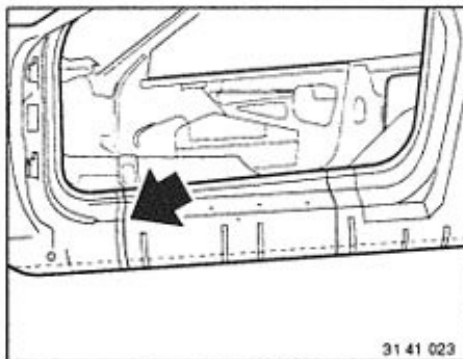
Tack weld new part.



Float rear seam.
Grind floated seam smooth.



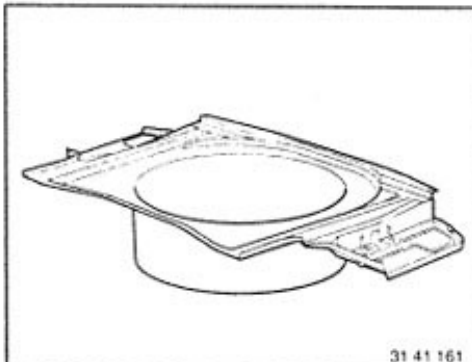
Plug weld new part.



Clean front seam for brazing.
Brazing front seam.
Grind front seam smooth.

Grind welding spots smooth.

Seal off seams.
Coat side member surface with Body-Plast.



41 12 535 Replacing complete rear trunk floor (rear apron removed)

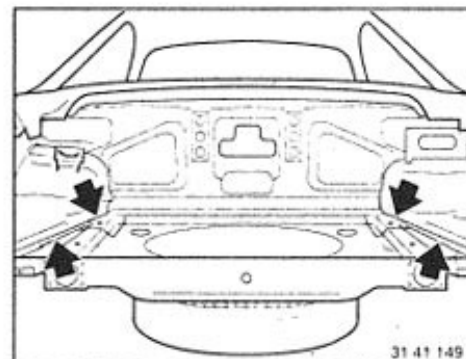
Body repair instructions: see 41-0/1.

Place vehicle on straightening bench.

Remove or unfasten the following components:

- Fuel tank
- Rear axle carrier
- Heat shield on exhaust system
- Upper shock absorber
- Spare wheel

Remove or cover other vehicle parts in the repair zone which could be damaged by heat, sparks and dust.



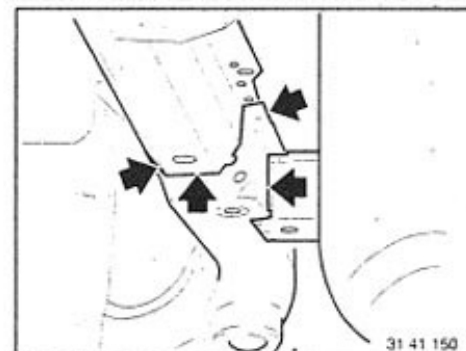
Expose joints in luggage compartment



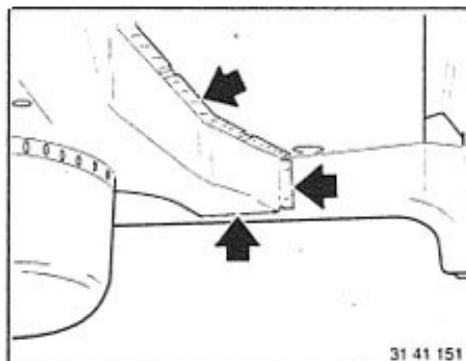
Expose joints on spring reinforcement (spring seat) and drill out spots.

Caution!

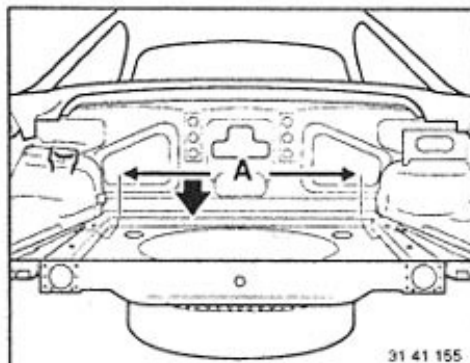
To center spring reinforcement accurately on the contact face of the side member, use set of attachments!



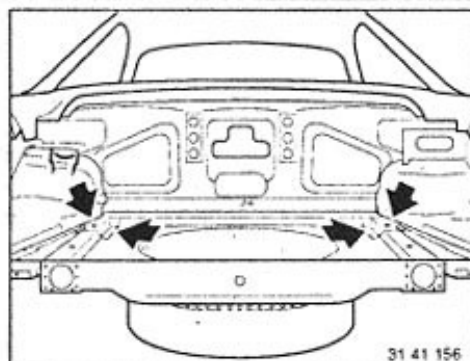
Expose joints in wheel arch on side member and crossmember.



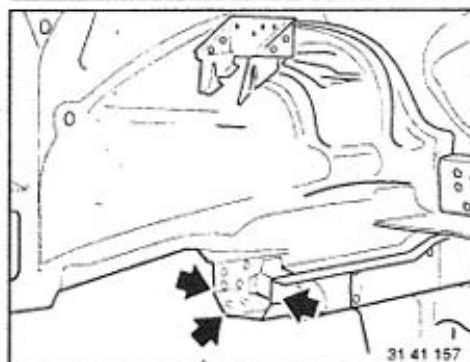
Expose crossmember joints on side member.



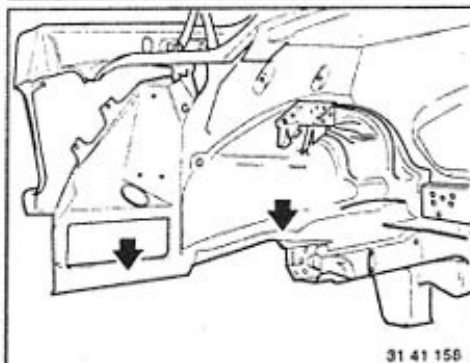
Cut out trunk floor roughly, allowing trunk floor to protrude above side member.
Drill out points in section "A".
Remove trunk floor.



Drill out spots in trunk floor over the side member and remove scrap sheet metal.

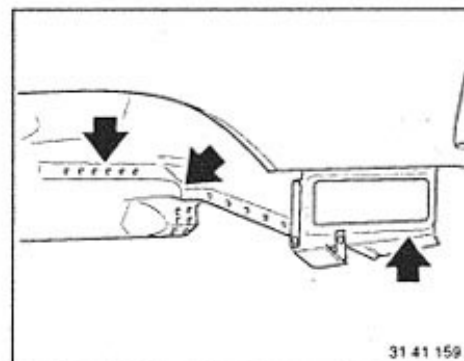


Expose contact faces of side member.
Drill out welding points of scrap sheet metal parts on side member.
Remove scrap sheet metal.
Grind down joints.

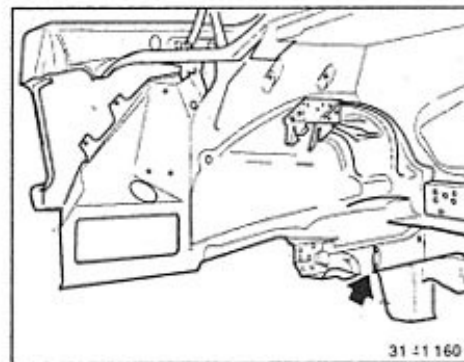


Expose connecting points on wheel arch extension and inside of wheel arch.
Drill out spots.
Remove scrap sheet metal.

Grind down welding surfaces (trunk floor, side member, outer and inner wheel arch).

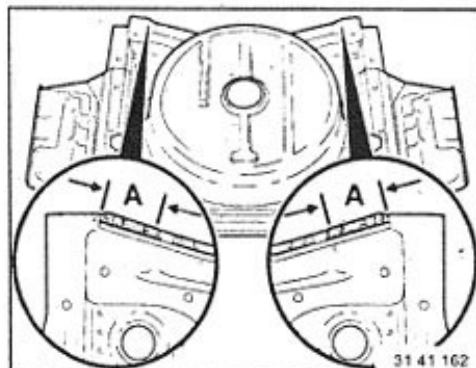


Clean joint on wheel arch extension.
Grind down welding surface.



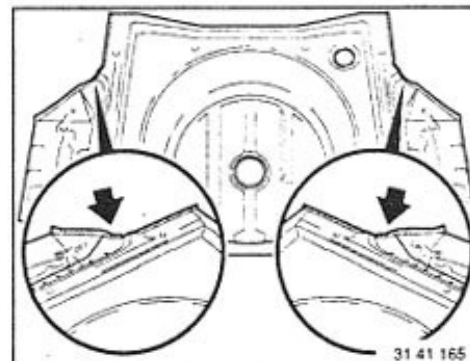
Installation:
Remove underbody protection from both side members.
It is then easier to install the trunk floor.

Align connecting faces.

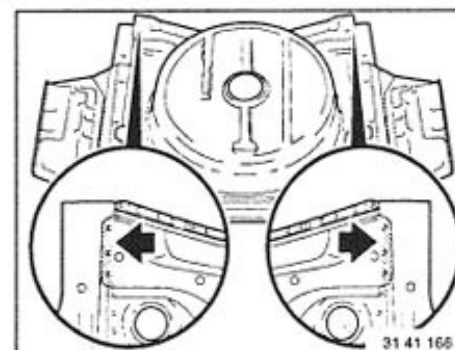
**Installation:**

To facilitate installation of the new trunk floor, drill out welding points in section "A" on left and right sides of upper trunk floor of front side member.

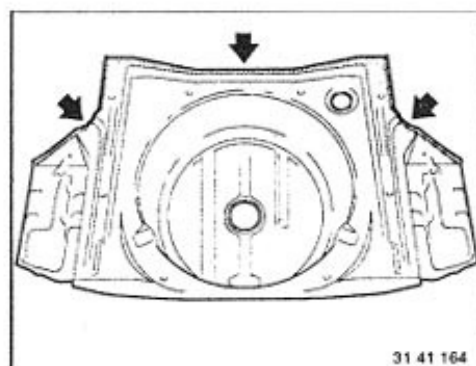
Lift up crossmember from trunk floor in section "A" approx. 10 mm.



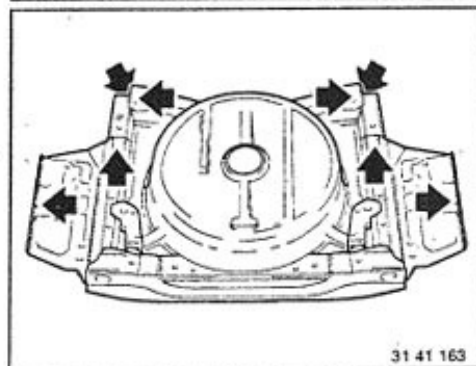
Drill holes for plug welding wheel arch joint to new trunk floor.



Drill holes for plug welding in front crossmember.

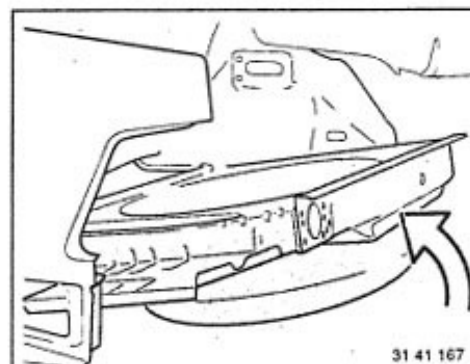


Clean both sides of welding faces on new section of trunk floor.

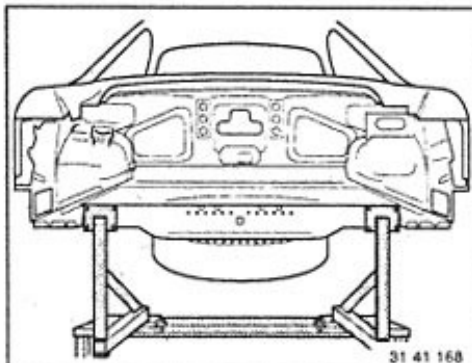


Clean both sides of welding surfaces on new trunk floor section.

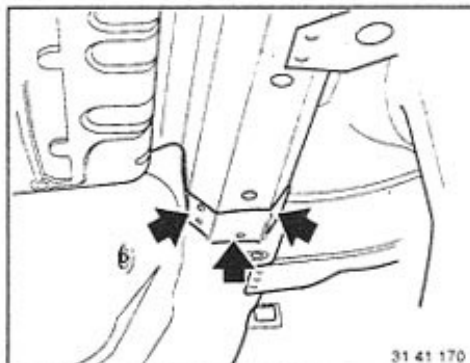
Coat welding surfaces with zinc dust paint.



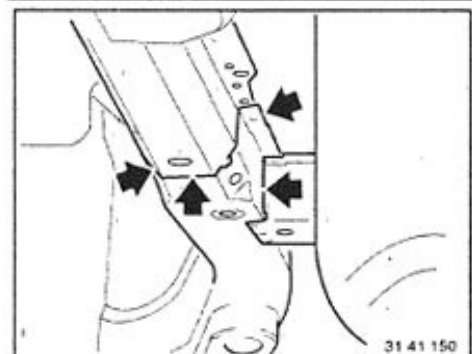
Install trunk floor from above at oblique angle. Gradually work in trunk floor to joints on side member and rear floor section.



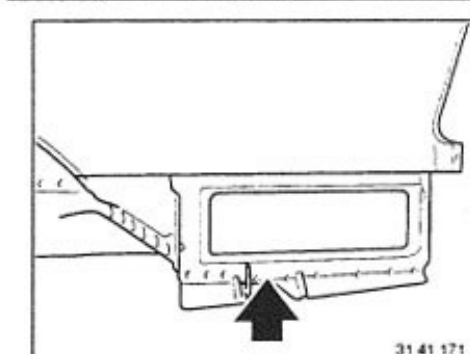
Fit set of attachments.
Secure trunk floor (with tongs)



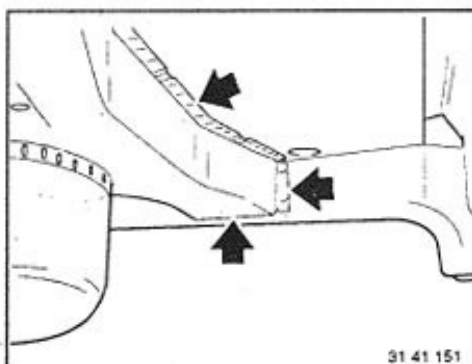
Align side member on joint of trunk floor.
Weld up drilled spots on side member.



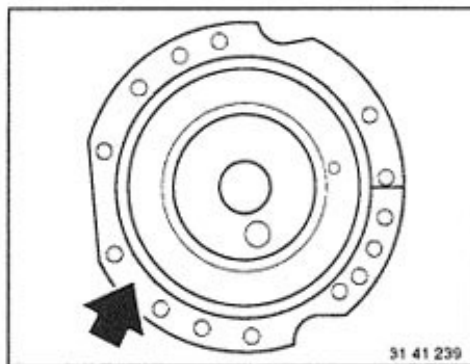
Align joints in side member and crossmember.
Tack weld joints.



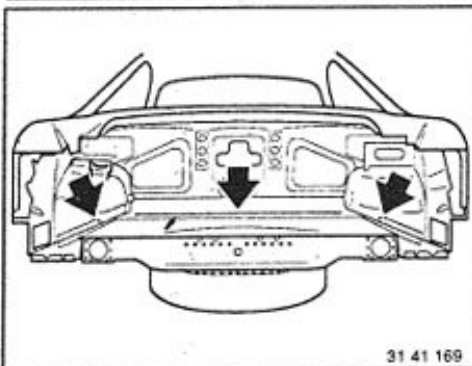
Spot weld wheel arch extension.
Grind down welding surfaces.



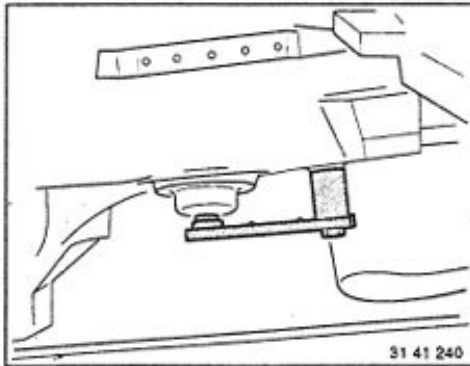
Align joints in side member and crossmember.
Tack weld joints.



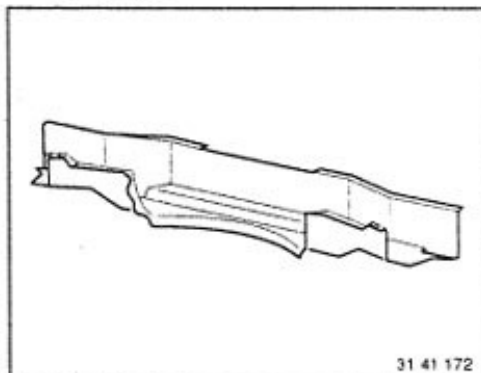
If new spring reinforcement is fitted (spring seat):
Drill out holes for plug welding.



Align joints in trunk floor section.
Tack weld trunk floor section.
Check for correct position and weld up trunk floor.



Align spring reinforcement (spring seat) with
set of attachments and weld up.
Grind down welding surface.



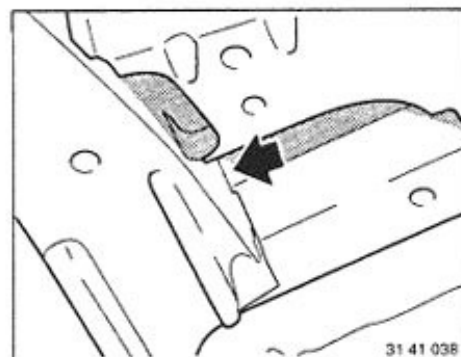
41 12 548 Replacing rear crossmember (tail panel removed)

Note Introduction 41-0!

Remove or detach the following parts:
Scope: see "Replacing Tail Panel"
and, in addition:
Complete exhaust system
Heat shield of exhaust system
Place vehicle on straightening bench

Remove or cover other vehicle parts in the repair zone which could be damaged by heat, sparks and dust.

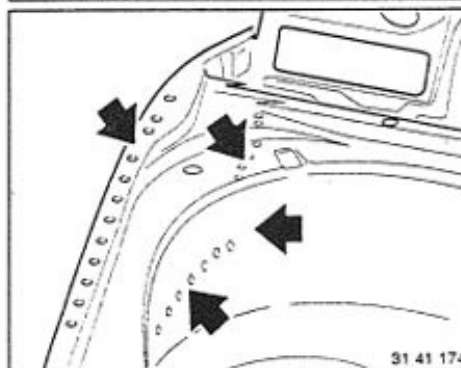
Disconnect rear muffler bracket at readily accessible point.



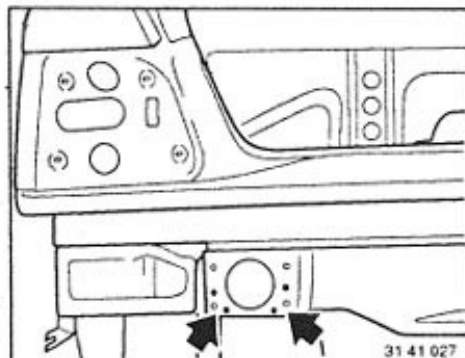
Mill away welded seam at joint between rear section of side member and crossmember.



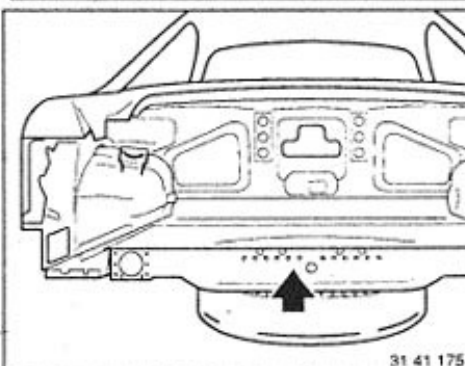
Drill out welding spot in bracket of rear muffler and crossmember at rear of trunk floor section.



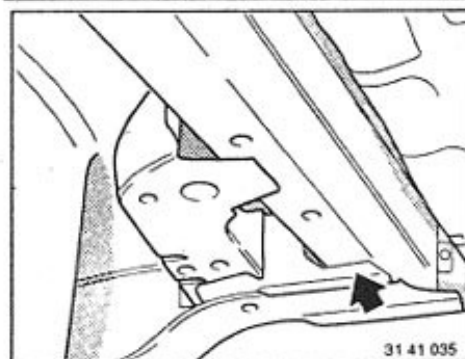
Drill out welding spots in crossmember of trunk floor in the spare wheel recess.



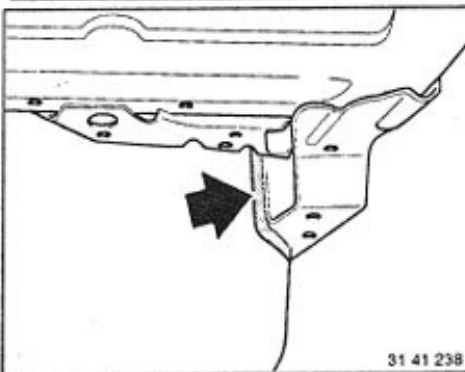
Drill out spots on side member.



Drill out spots in rear trunk floor.

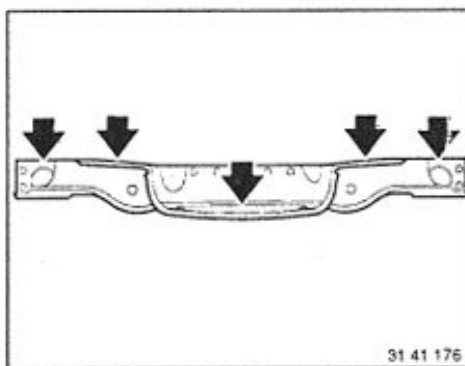


Disconnect crossmember from rear section of side member.

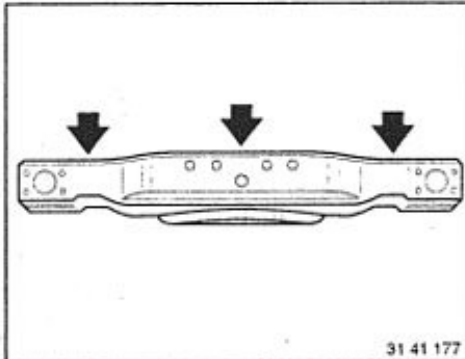


Grind down welded seams on outside of spare wheel recess.

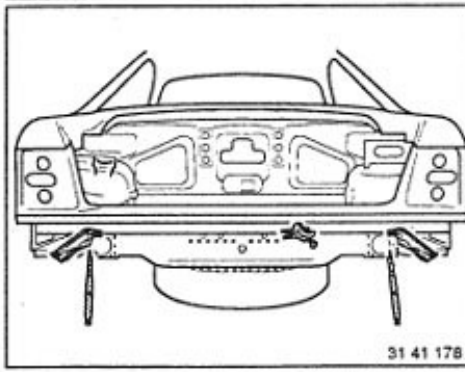
Remove crossmember.
Remove scrap sheet metal from rear muffler bracket on side member.
Clean welding surface.
Align joint



Clean welding surfaces on new part and coat with zinc dust paint.



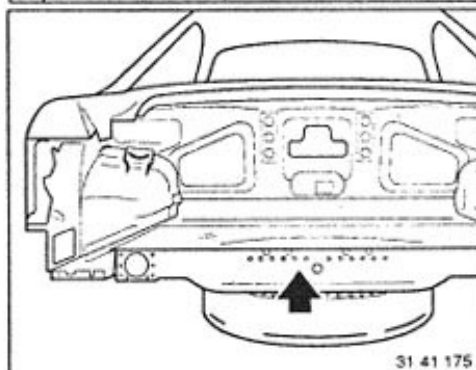
Clean welding surfaces on new part and coat with zinc dust paint.
Coat welding surfaces on joints with zinc dust paint.



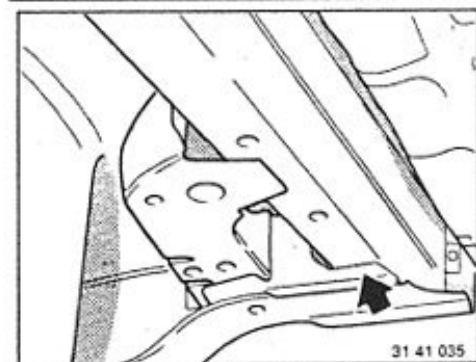
Adjust crossmember with attachments and secure (with tongs).



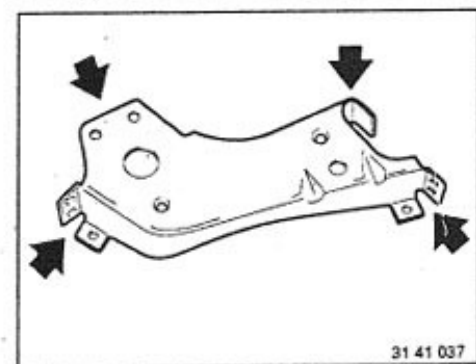
Weld up crossmember in trunk floor and in spare wheel recess.



Weld up crossmember on the rear trunk floor.

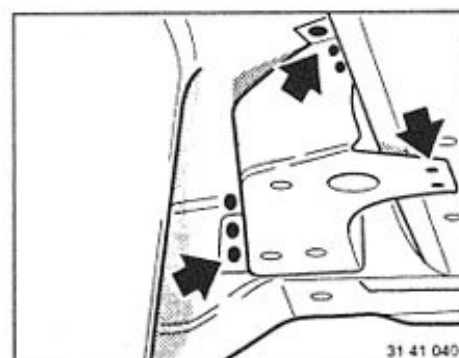


Weld up crossmember on rear section of side member.



Drill out holes for plug welding rear muffler bracket.

Clean joints on rear muffler bracket and adjust rear muffler bracket to fit.

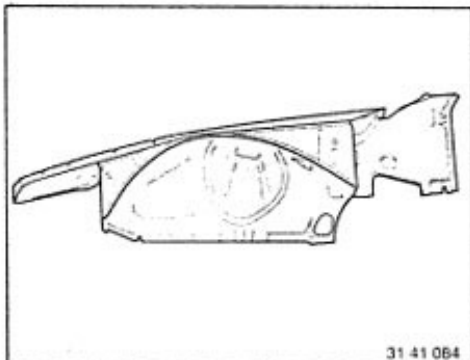


Spot weld relevant points on rear muffler bracket.



Perform inert gas welding on rear muffler bracket.

41-14/1



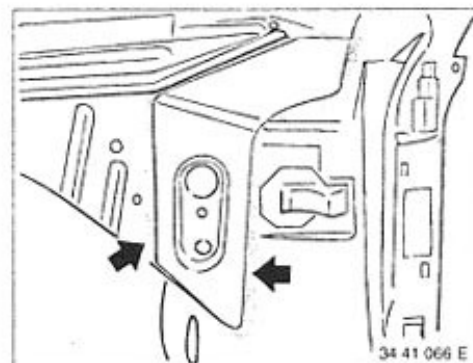
41 14 021 Replacing front left wheel arch - partial replacement -

Body repair instructions - see 41-0/1.

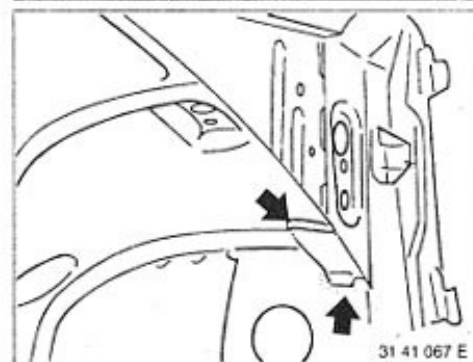
Place vehicle on straightening bench.

Remove or detach the following vehicle parts:
front axle with engine and transmission
impact absorber
bumper
front side panel
radiator
hydraulic accumulator
front seat
hood lid
interior carpet

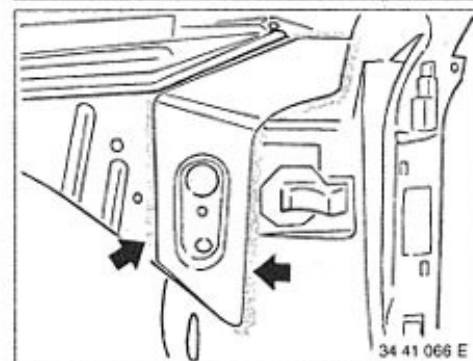
Remove or cover other vehicle parts in the repair zone which could be damaged by heat, sparks and dust.



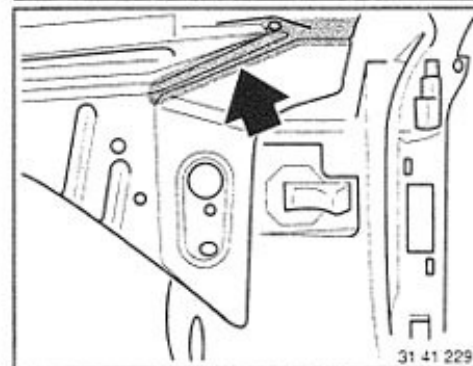
Expose joints on closing plate on A pillar.



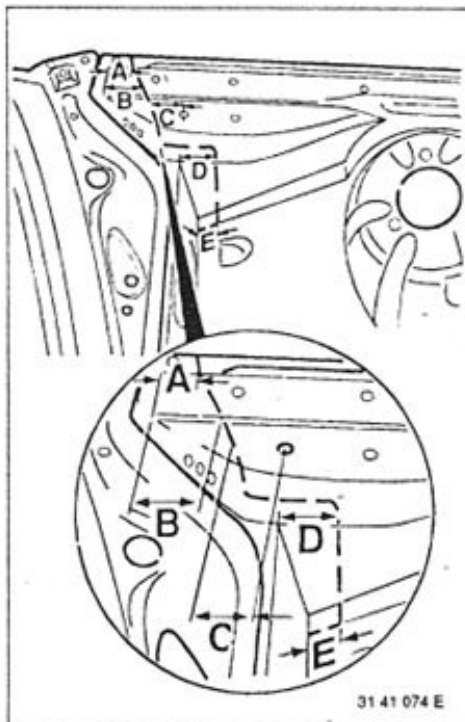
Expose joints on closing plate in wheel housing.



Drill out welding spots and grind down welded seams.

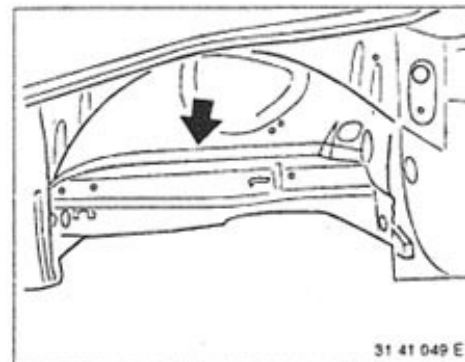


Drill out welding spots.



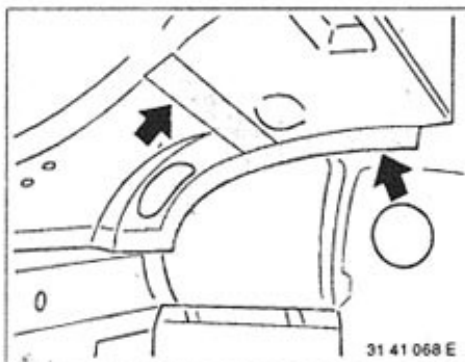
Determine, mark out and clean locating point for partial replacement.

Dimension A = 30 mm
Dimension B = 35 mm
Dimension C = 20 mm
Dimension D = 35 mm
Dimension E = 35 mm

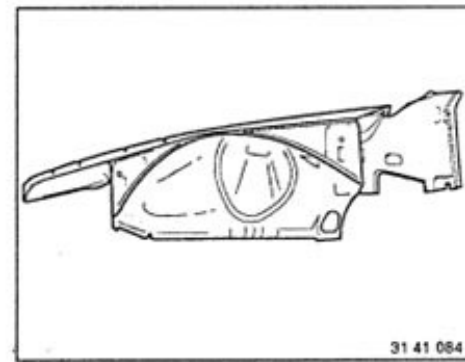


Clean joint in wheel arch and drill out welding spots on engine support.

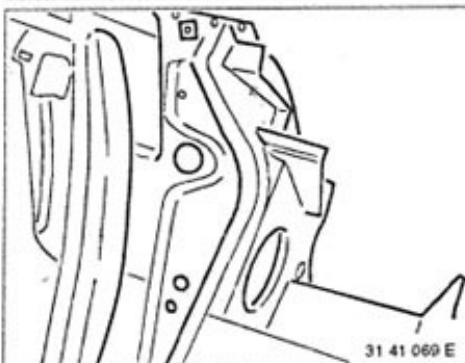
Remove wheel arch.
Clean joints.



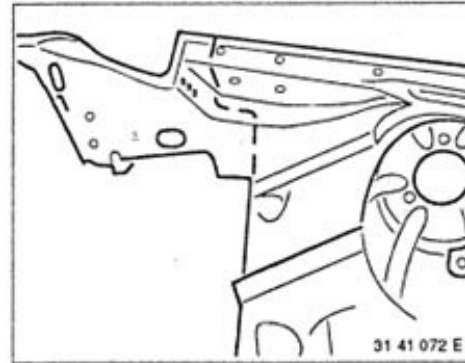
Clean joints for partial replacement on front panel.



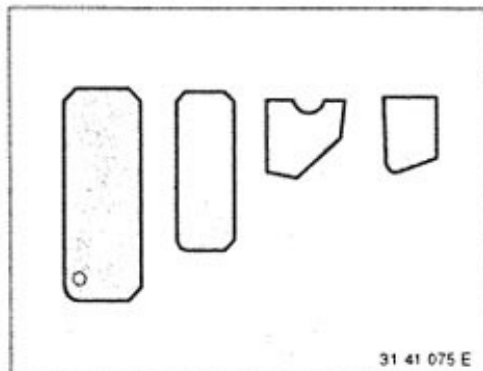
Cut out new wheel arch roughly.



Detach connecting point for partial replacement.



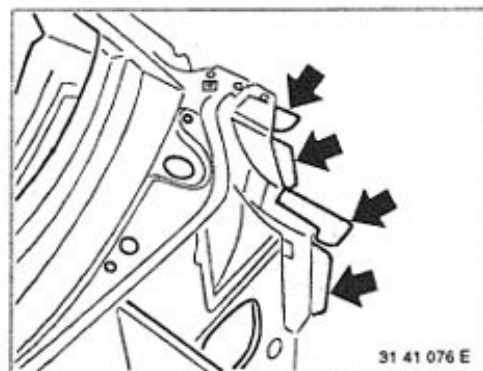
Adjust wheel arch.
Determine locating point and mark out.



Manufacture reinforcement plates (depending on line of cut).
Ensure adequate level of overlap (min. 30 mm at all points)!

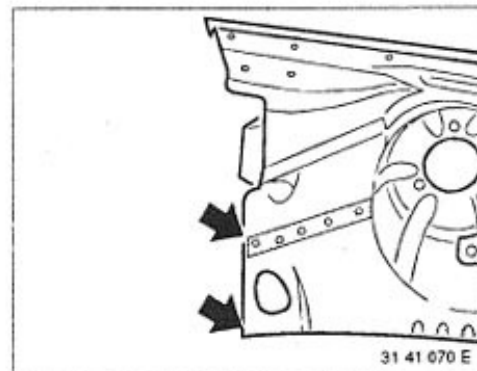
Drill holes for plug welding in the reinforcement plates.

Coat welding surfaces with zinc dust paint.

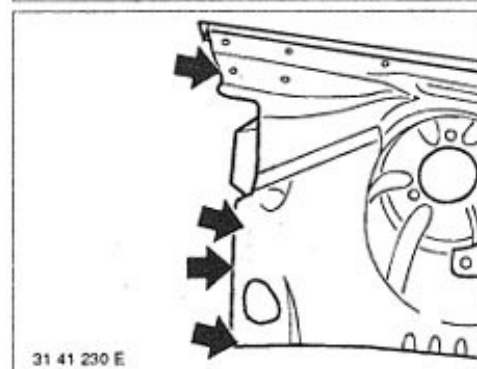


Weld reinforcement plates to body.

Grind out welding spots.



Clean connecting faces on wheel arch / carrier plate.



Clean connecting faces on wheel arch.

Adjust wheel arch to fit.
Mark out spots for plug welding and drill out.

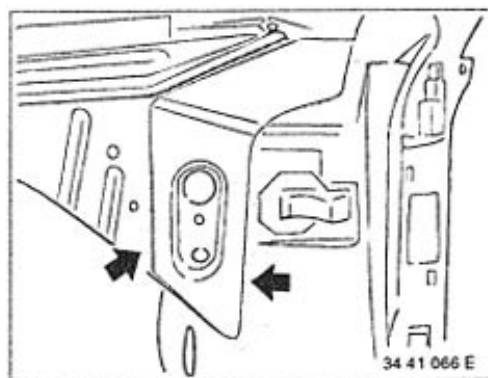
Tack weld wheel arch and adjust joints if necessary.

Weld up wheel arch.

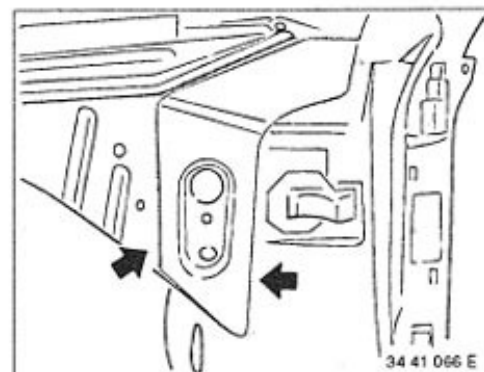
Tack weld closing plate.

Grind down welding seams.

Weld closing plate to A pillar.

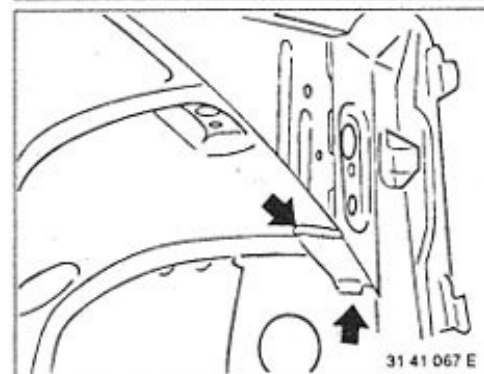


Clean welding surfaces on closing plate and body.



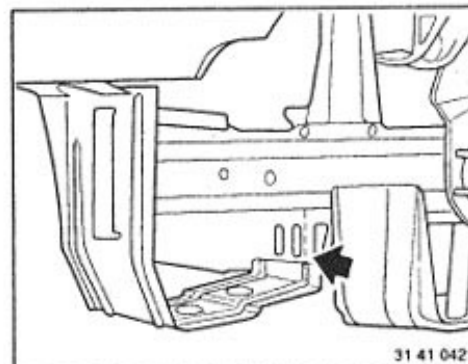
Weld closing plate to wheel arch.

Adjust closing plate.

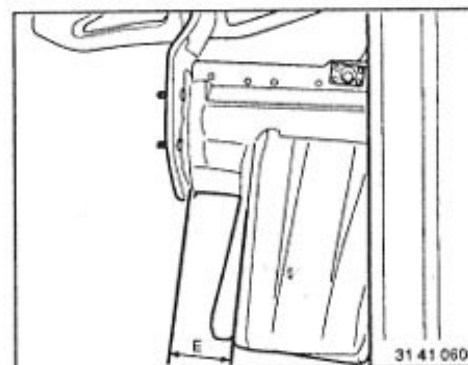


Grind down welding surfaces.

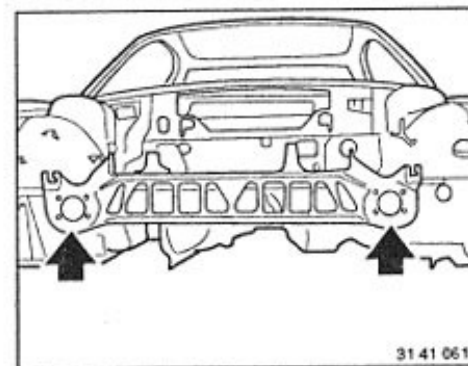
Solder contact surface.
Grind down soldered surface.



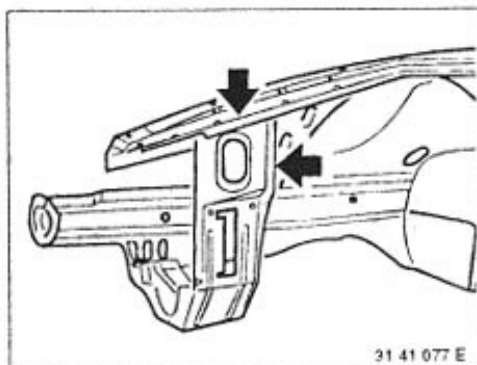
Adjust ABS hydraulic unit to fit engine support and weld up.



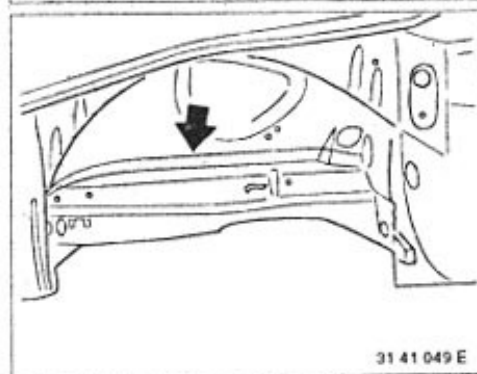
Adjust crossmember and weld up.
Dimension (E) = 54 mm



Weld front crossmember between the left and right engine supports.



Adjust bracket on ABS hydraulic unit to fit wheel arch and weld up.



Weld wheel arch to engine support (plug welding).

Grind down welding surface.

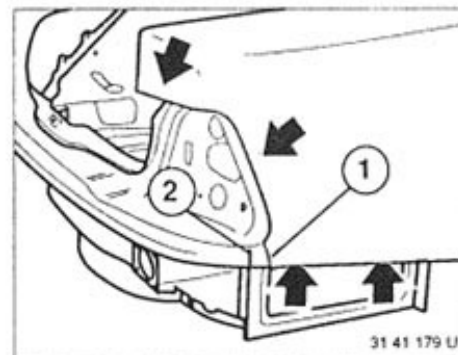
41 14 160 Replacing rear right wheel arch outer section and side panel

Body repair instructions: see 41-0/1.

Remove or disconnect the following parts:

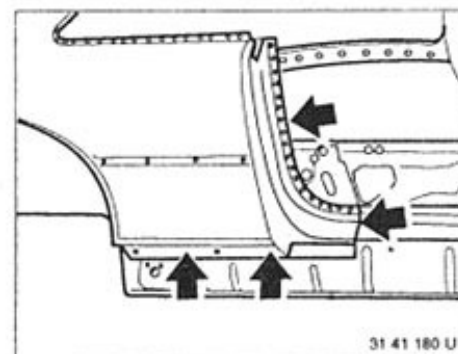
Rear window
Trunk lid
Fuel tank
Rear wheel
Bumper
Battery
Front seat
Interior carpet (partial)

Remove or cover other vehicle parts in the repair zone which could be damaged by heat, sparks and dust.

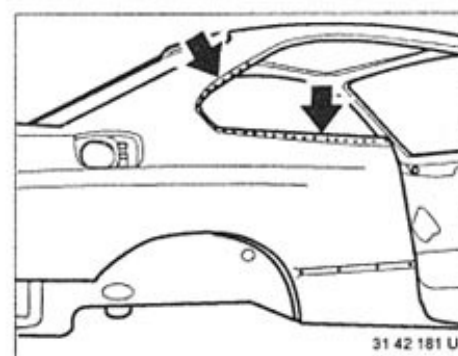


Expose joints on side panel beside lamp support and wheel arch extension. Roughly cut out joint on side panel beside lamp support.

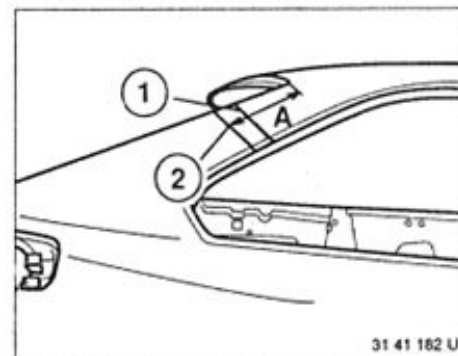
1 = Joint for cut
2 = Bead in rear side panel



Drill out welding spots in door opening.



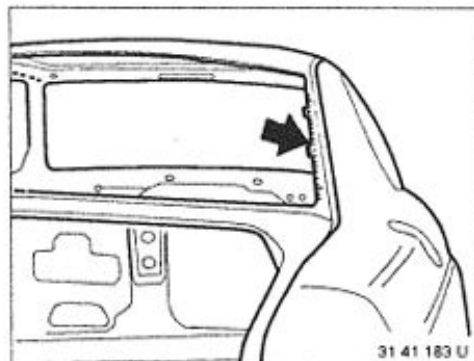
Drill out welding spots in side window.



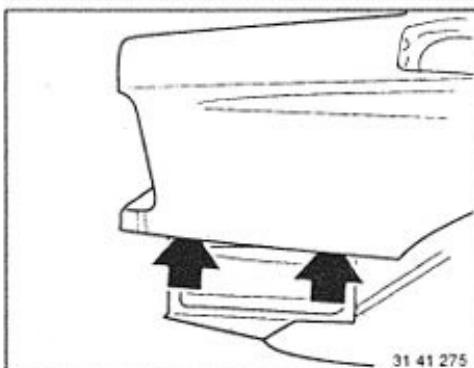
Expose contact face of C pillar on roof frame. Determine location of joint and separate.

Dimension (A) = 170 mm.

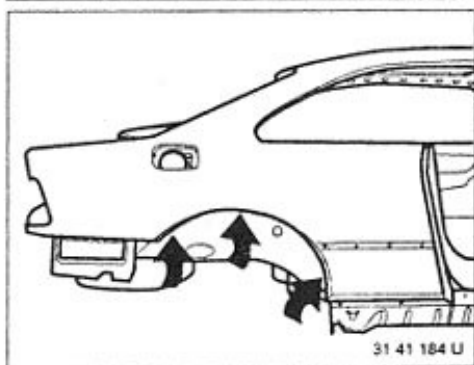
1 = Joint
2 = Separating point for partial replacement



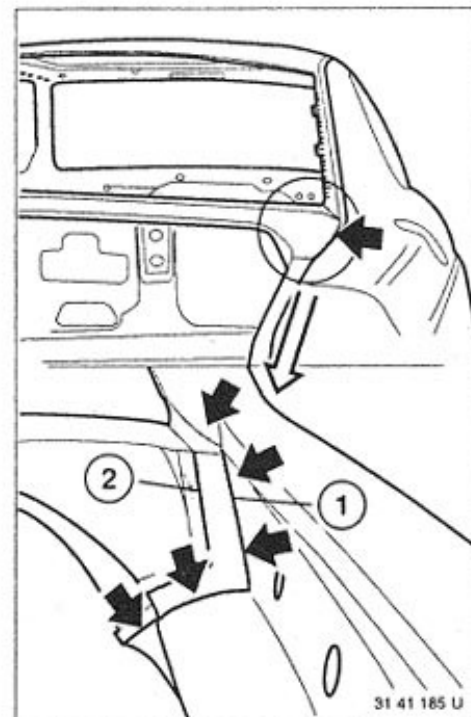
Drill out welding spots on rear window.



Expose welding spots in wheel arch extension and drill out.



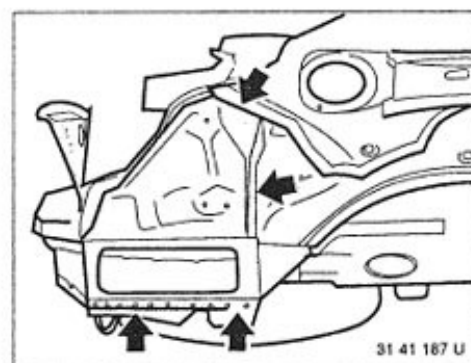
Expose joint in side panel of wheel housing and separate roughly.



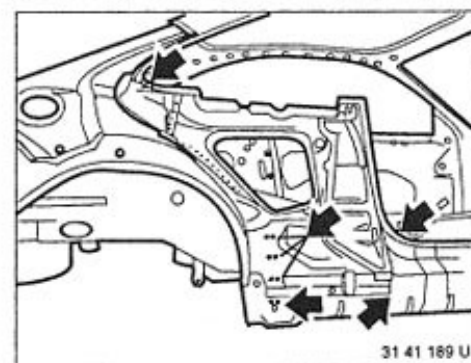
Expose joint on windshield and separate.

Caution!
Detach along welded seam on edge, otherwise part becomes too short.

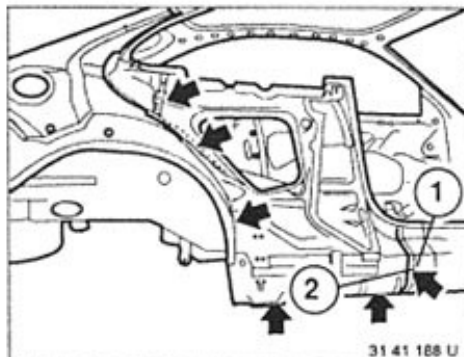
Remove side panel.



Roughly separate wheel arch extension.

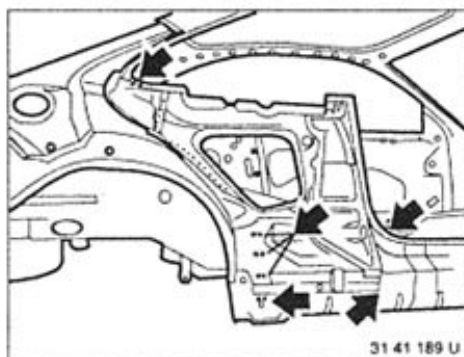


Roughly separate side carrier on rear window frame and roughly separate joint in center pillar.
Roughly separate side carrier on rear window frame.

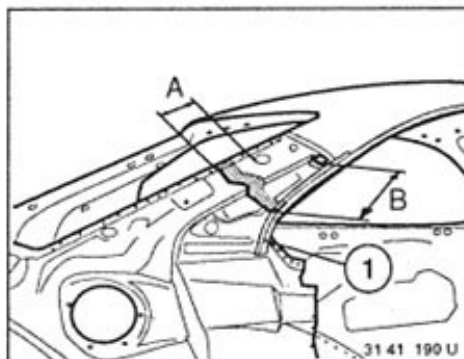


Cut out inside of side section.

1 = joint
2 = joint



Drill out welding spots or grind out.



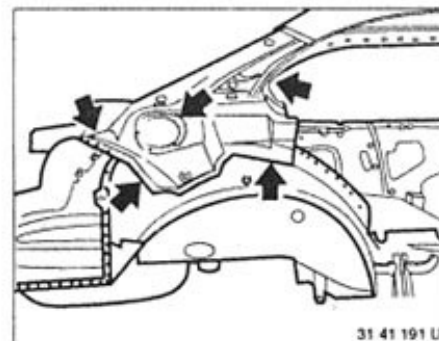
Support roof section.

Determine joint for partial replacement of rear window frame.

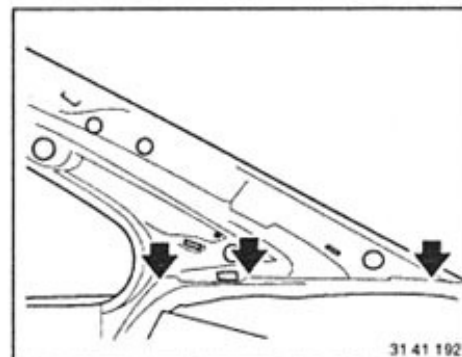
Dimension (A) = 70 mm
Dimension (B) = 160 mm

Cut through joint.

Caution!
Do not sever gasket bracket in roof frame (1)!

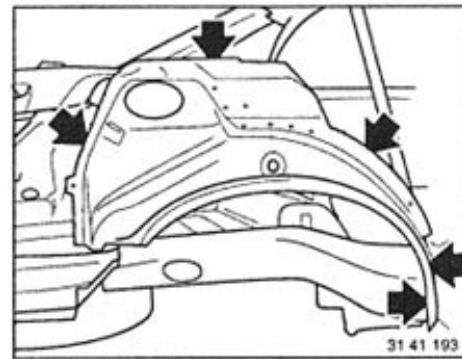


Disconnect rear window frame from outside of wheel arch and lower rear window frame.



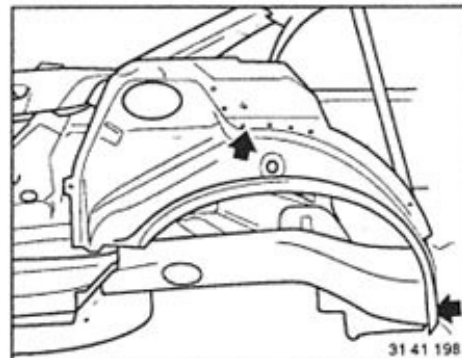
Disconnect outer wheel arch, lower rear panel and rear window frame from interior.

Remove rear window frame.

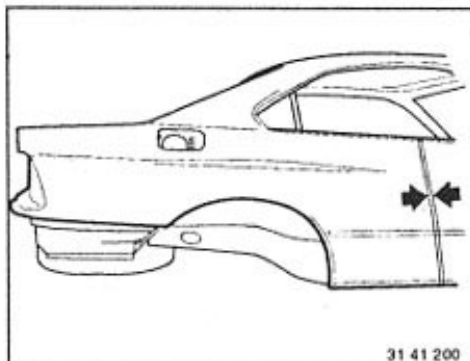


Disconnect outer wheel arch and remove.

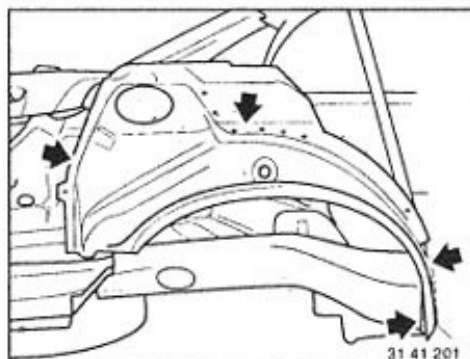
Remove scrap metal.
Align joints and grind down.



Adjust outer section of wheel arch. Mark out surface for plug welding and spot welding.
Clean welded surfaces on outside of new wheel arch.
Coat welding faces with zinc dust paint.

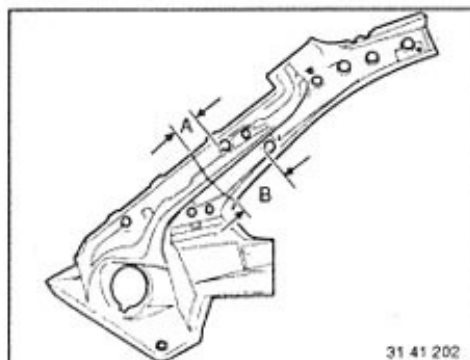


Adjust wheel arch to fit side panel. Ensure that joint is of uniform width!



Remove side panel.

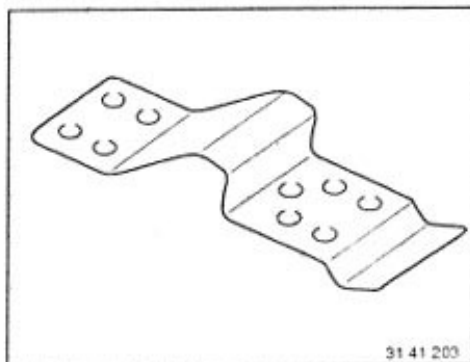
Weld up wheel arch.



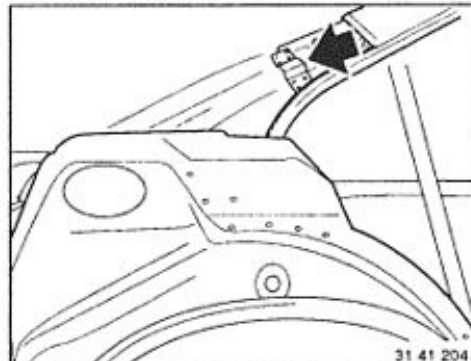
Determine joint for partial replacement of rear window frame and separate.

A = 70 mm
B = 160 mm

Adjust rear window frame.
Clean welding areas.



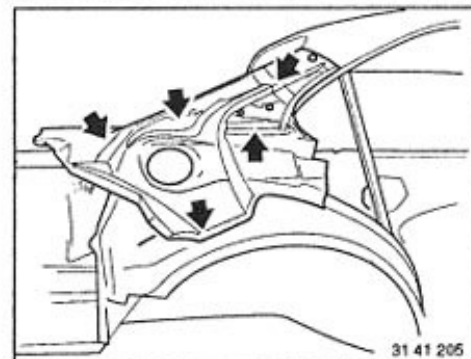
Produce new part from scrap sheet reinforcement metal (approx. 40 mm wide).
Drill holes for plug welding.
Clean welding surface.



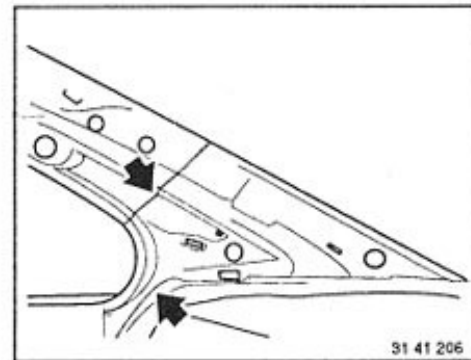
Clean welding surface for reinforcement plate on rear window frame.

Coat welding surface with zinc dust paint.

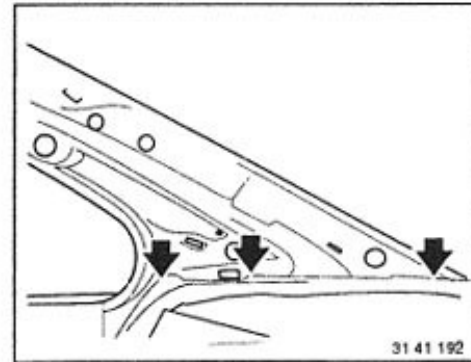
Secure reinforcement plate and weld up (approx. 20 mm overlap on each side).



Adjust rear window and weld up.
Plug weld the reinforcement sheet.

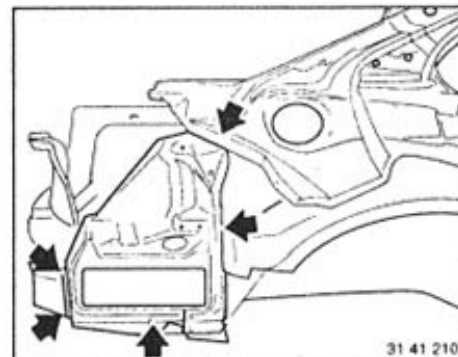


Weld rear window frame from inside vehicle body to wheel arch and lower section of rear window frame.
Weld locating point for partial replacement.

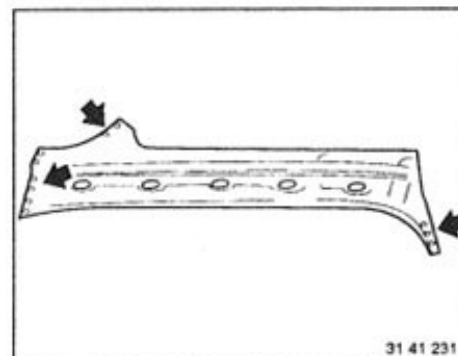


Weld connecting points for rear window frame / wheel arch from inside vehicle body.

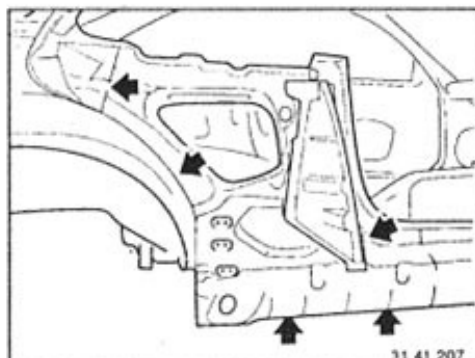
Adjust side panel to fit.
Clean connecting faces on side panel and coat with zinc dust paint.



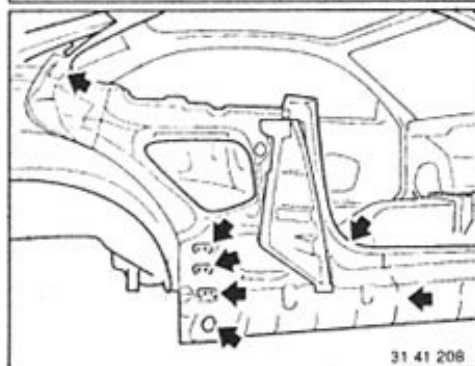
Adjust wheel arch extension and weld into place.
Grind down welding surfaces.



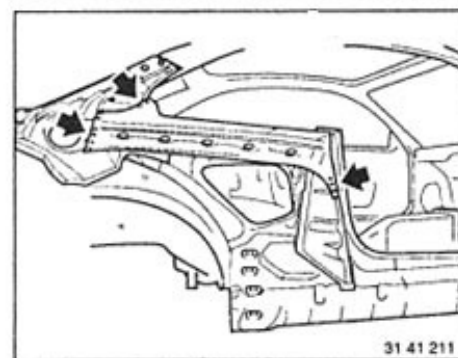
Adjust side carrier to fit and mark out holes for plug welding.
Drill out holes in side carrier for plug welding.
Clean welding surfaces.



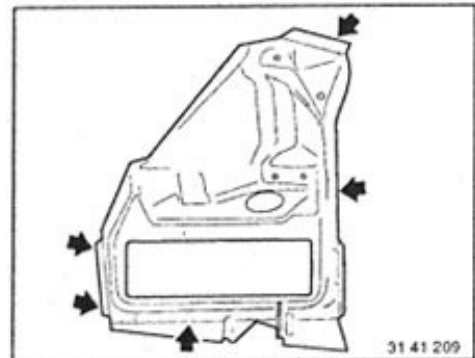
Adjust side panel to fit, secure and weld into place.



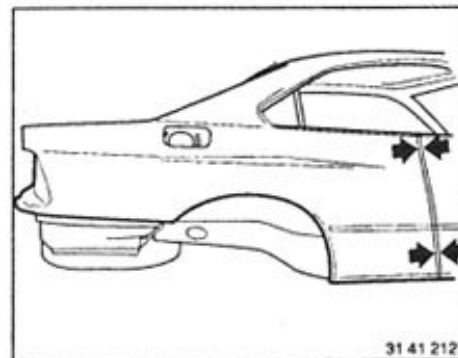
Weld up side panel.
Grind down welding surfaces.



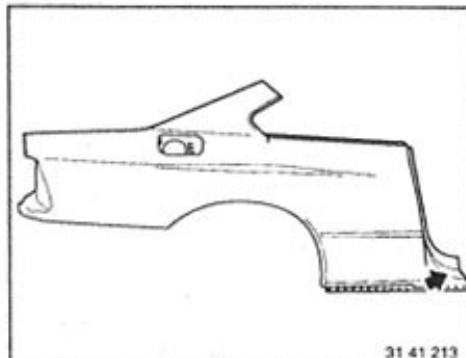
Adjust side carrier to fit side panel and secure.
Remove side panel again.
Weld up side carrier.
Grind down welded areas.



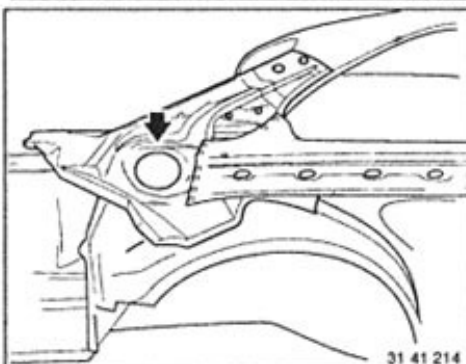
Adjust wheel arch extension to fit.
Clean wheel arch extension to welding surfaces.



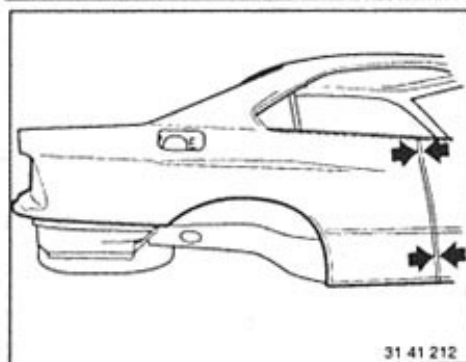
Adjust side panel to fit and ensure that joint is of uniform width!
Mark out holes for plug welding.
Remove side panel.



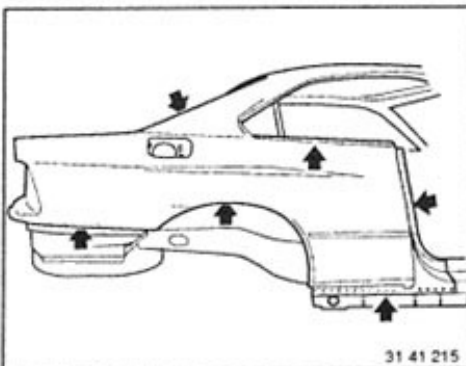
Drill holes for plug welding.
Clean welding surfaces.



Fit sealing material * to recess for tank filler neck.

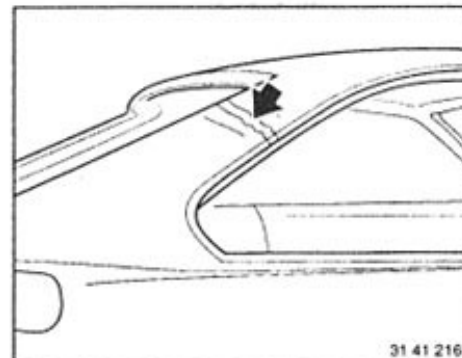


Adjust side panel to fit.
Ensure that joint is of uniform width!



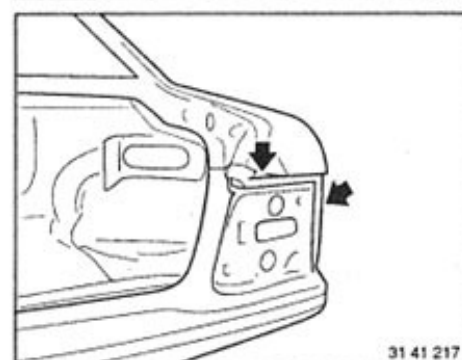
Weld up side panel.

* Refer to BMW Parts Service

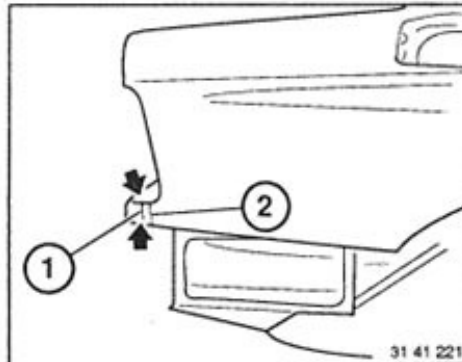


Weld connection for C pillar.
Arrange individual spots so close to one another that a continuous welded seam is created.

Caution!
Always allow each spot to cool down slightly before starting on next spot.
Risk of distortion!

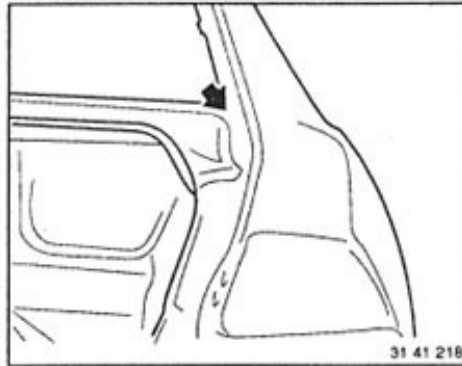


Install welding points in lamp support.
Braze water gutter and link to lamp support.

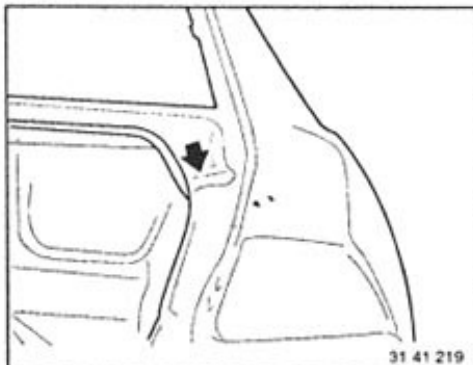


Braze joint between tail panel and rear side panel.

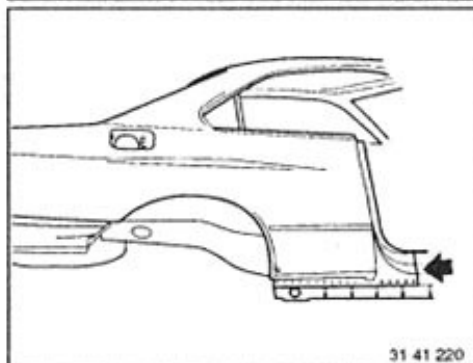
1 = Joint in tail panel (brazed point)
2 = Bead in side panel at rear



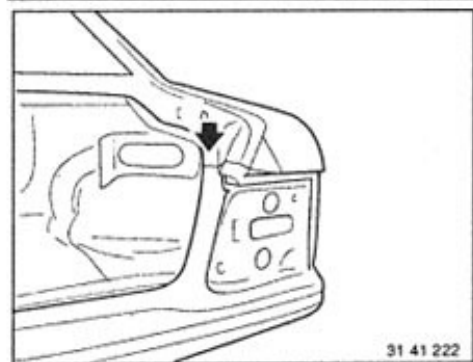
Weld up link between lower rear window frame and side panel.



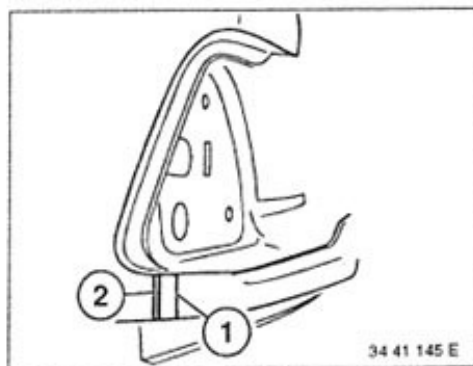
Braze link between lower rear window frame and side panel.



Braze cover for side member in door opening.
Grind down welding and brazing points.

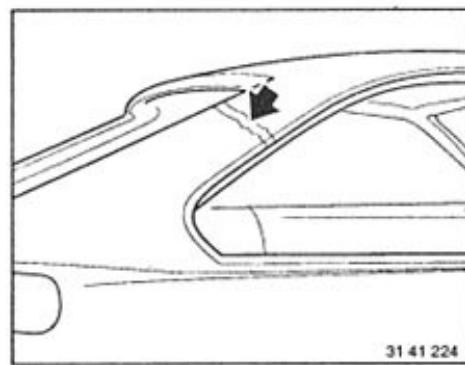


Tin out joint in water gutter and grind down.

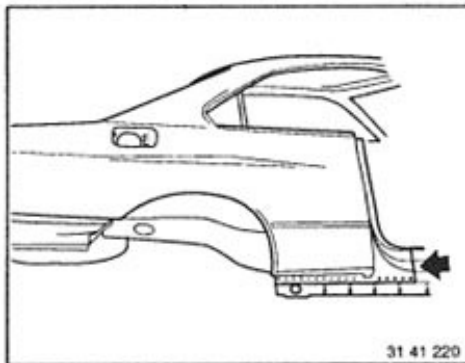


Tin out joint on side panel and grind down.

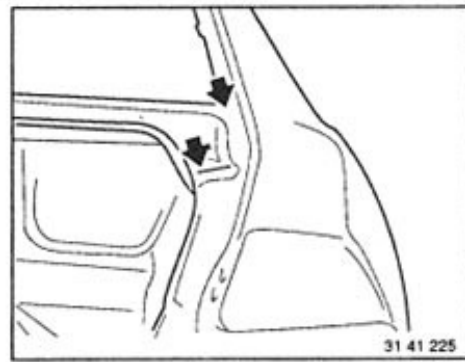
- 1 = Connecting point for tail apron (brazing point)
- 2 = Bead in side panel at rear



Tin out joint on C pillar and grind down.



Tin out cover for side member in door opening and grind down.



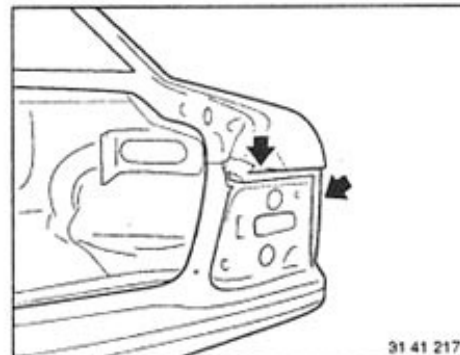
Tin out link between lower section of rear window frame and side panel and grind down.

**41 14 180 REPLACING RIGHT REAR
WHEEL HOUSE COMPLETE
AND SIDE PANEL**

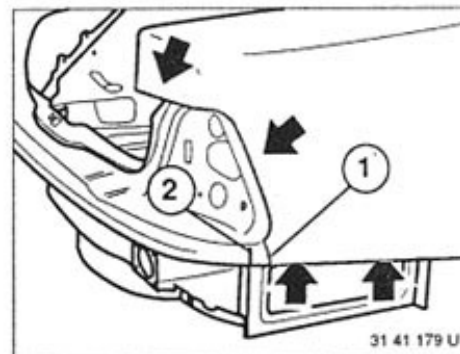
Refer to Information on body repairs!

Set up car on a straightening bench.

Remove or cover parts of car which are
located in the repair zone and could be
subjected to heat, sparks or dust.



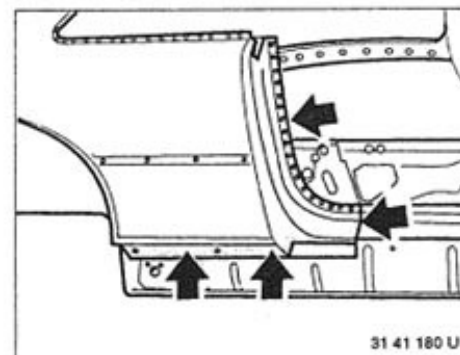
Uncover lamp carrier connection.



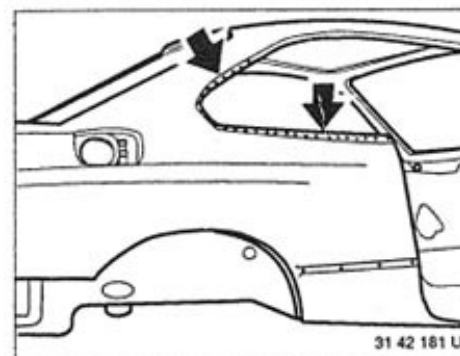
Cut off side panel roughly at the lamp
carrier.

1 = Cutting line
2 = Bead in rear side panel

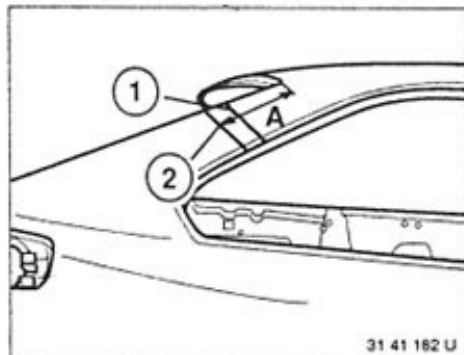
Cut off side panel roughly at the wheel
house extension.



Drill off welding spots in door opening.
Uncover side section to side member
connections.
Cut off side section roughly at the side
member.



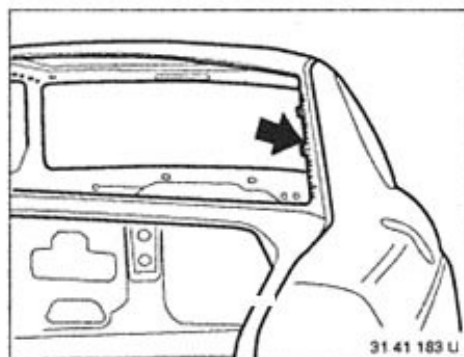
Drill off welding spots at side window and
roof frame.



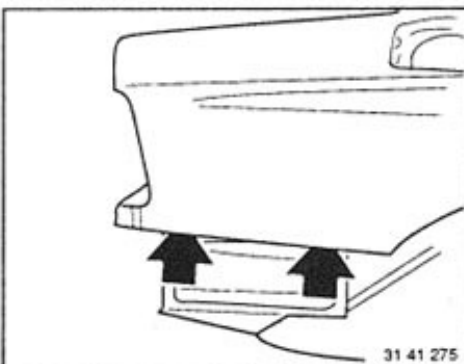
Uncover and cut shouldered surface at C-pillar (roof frame).

Distance A = 170 mm

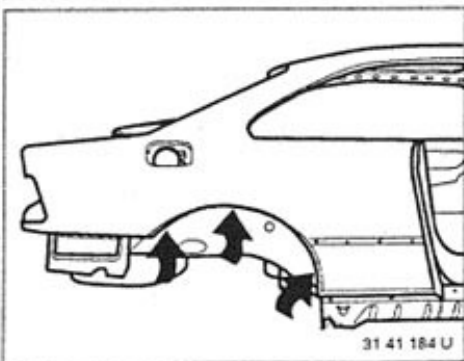
1 = Mating surface
2 = Cutting line for partial replacement



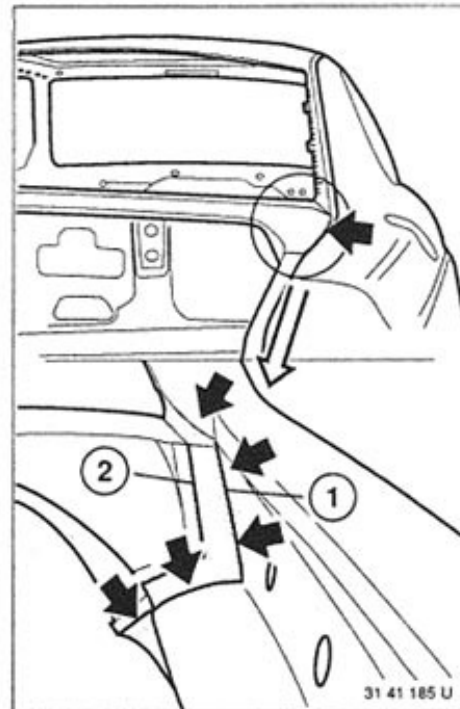
Drill off rear window welding spots.



Uncover and drill off wheel house extension welding spots.



Cut off side panel in wheel house.

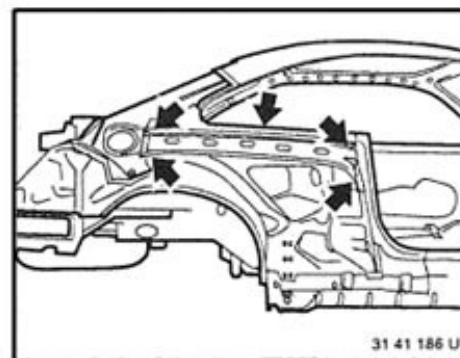


Cut off cowl panel connection.

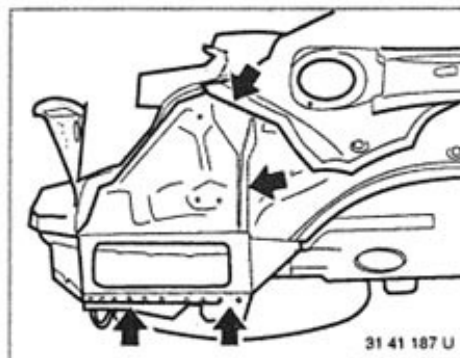
Important!
Cut off in front of the welding seam at edge as otherwise part would be too short.

1 = Cutting line
2 = Mating surface

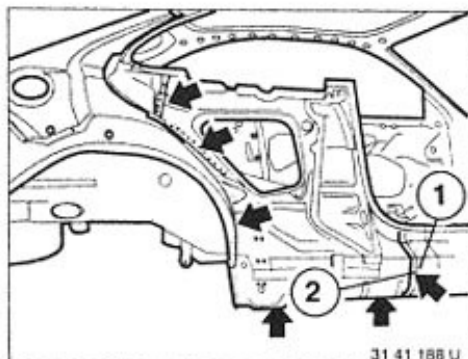
Remove side panel.



Cut through side member roughly at the rear window frame connection and at the center pillar connection.
Cut through side member roughly at the side window.

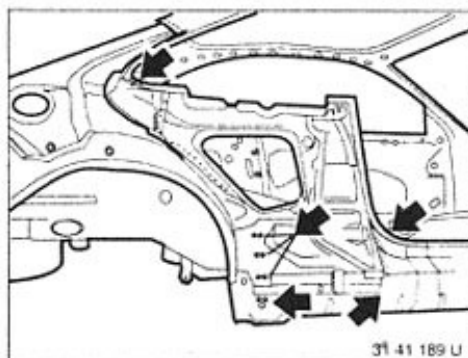


Cut off wheel house extension roughly.

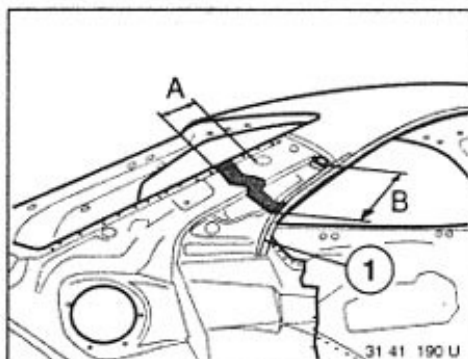


Cut out rear side section.

1 = Mating surface
2 = Cutting line



Drill or grind off welding spots.



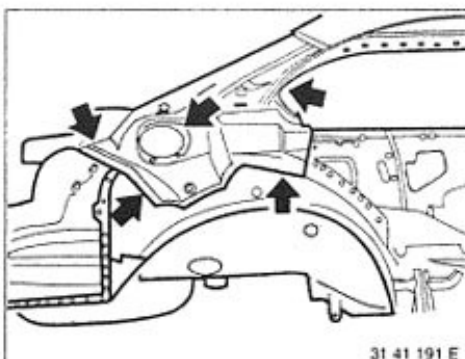
Support roof.

Determine cutting line for partial replacement of the rear window frame.

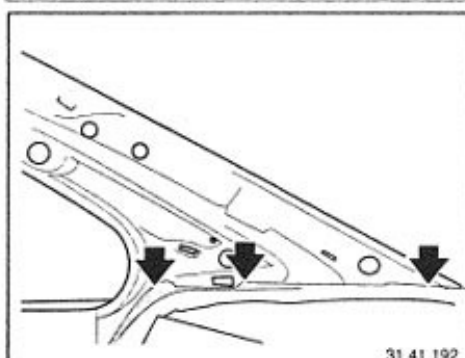
Distance A = 70 mm
Distance B = 160 mm

Cut off connection.

Important!
Don't cut through roof frame seal holder (1).

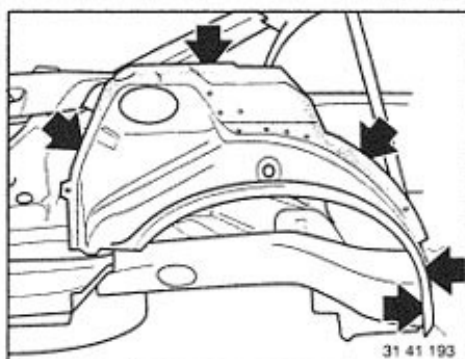


Cut off rear window frame from outside of wheel house and rear window frame at bottom.

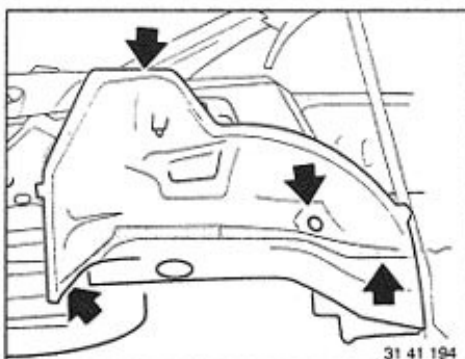


Cut off outer wheel house section, rear wall and rear window frame at bottom from inside of the car.

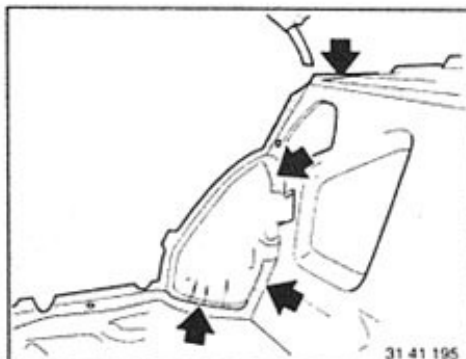
Remove rear window frame.



Cut off and remove outer wheel house section.

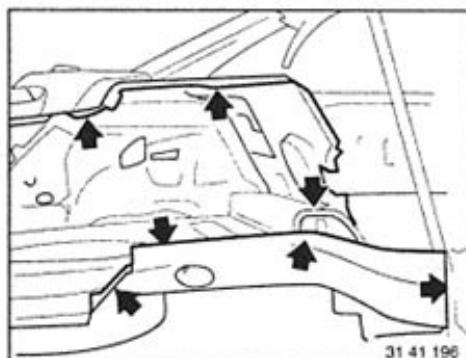


Clean mating surfaces inside of wheel house and drill off welding spots.



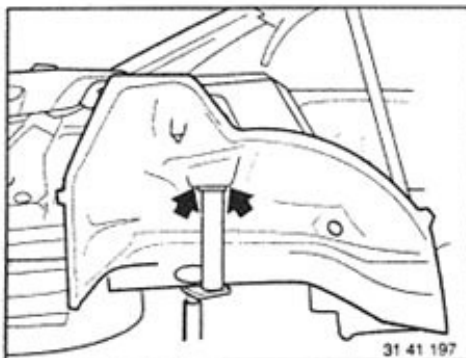
Clean mating surfaces on inner wheel house section from inside of car and drill off welding spots.

Remove inner wheel house section.



Clean mating surfaces.

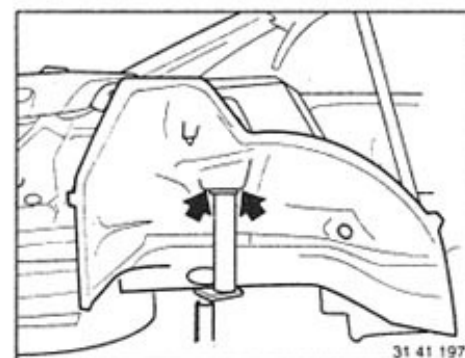
Remove scrap metal from cowl panel and side member.
Clean welding surfaces.



Fit in new inner wheel house section using set of attachments.

Important!
Ensure that attachment seats correctly.

Mark the mating surfaces.



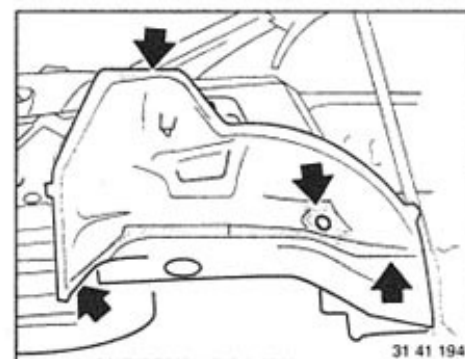
Remove inner wheel house section.

Drill holes for plug welding.

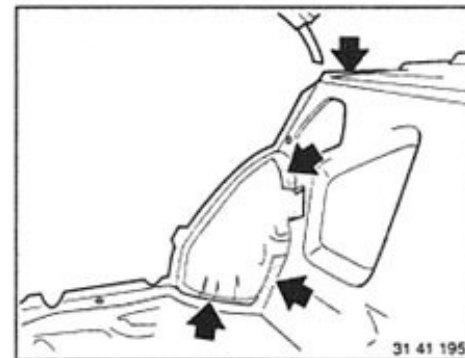
Clean mating surfaces on inner wheel house section and body.
Coat welding surfaces with zinc dust paint.

Install inner wheel house section.

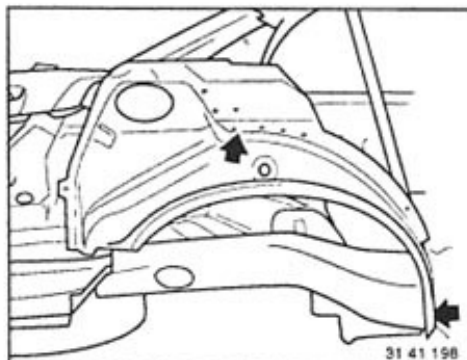
Important!
Ensure that attachment seats correctly.



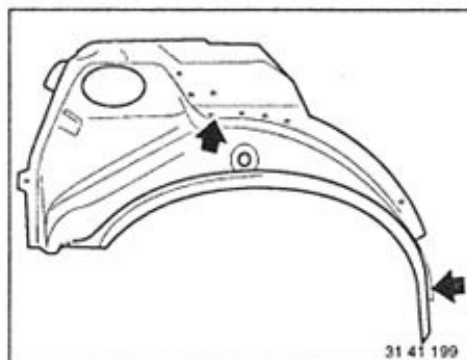
Weld inner wheel house section in wheel house.



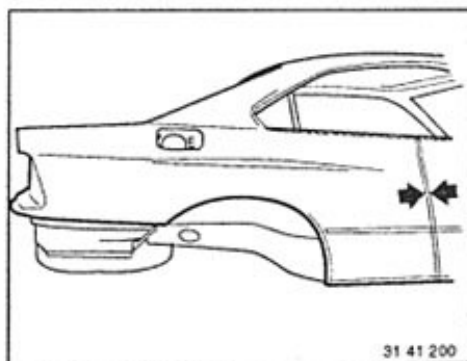
Weld inner wheel house section from inside of car.
Grind welding seams smooth.



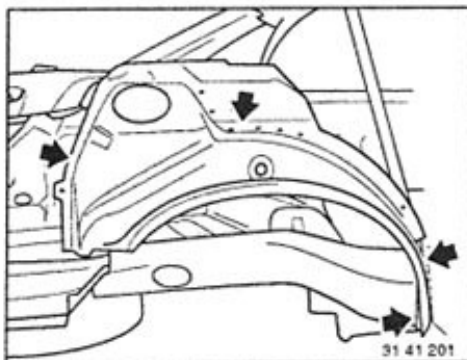
Fit in outer wheel house section.
Mark surfaces for plug welding and spot welding.



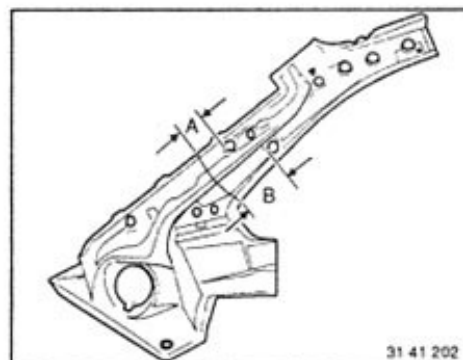
Drill holes for plug welding.
Clean spot welding surfaces.
Coat with zinc dust paint.



Fit in wheel house together with side panel.
Ensure uniform gap!



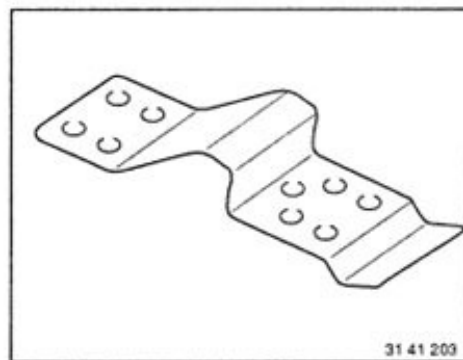
Remove side panel.
Weld wheel house.



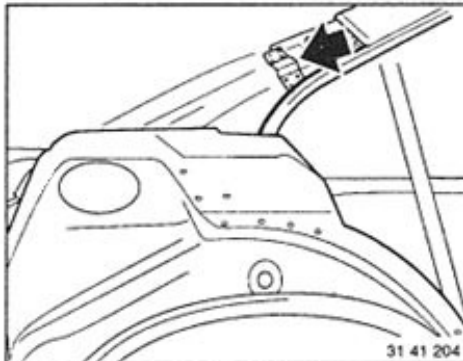
Partial Replacement Cutting Line
Determine line for rear window frame and cut.

A = 70 mm
B = 160 mm

Fit in rear window frame.
Clean welding surfaces.



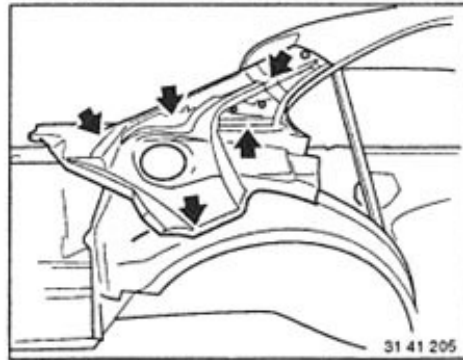
Produce reinforcement from remaining section of new part (approx. 40 mm wide).
Drill holes for plug welding.
Clean welding surfaces.



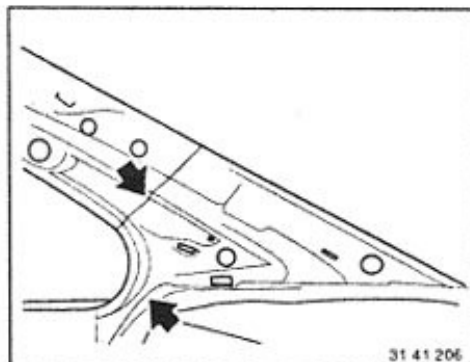
Clean welding surface for reinforcement on the rear window frame.

Coat welding surface with zinc dust paint.

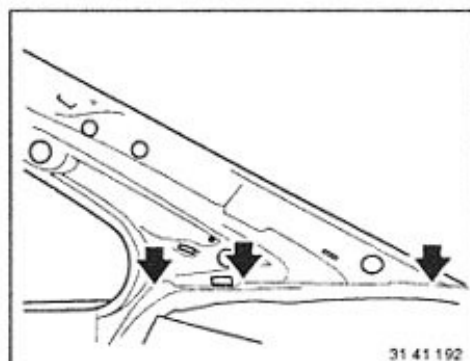
Position and weld reinforcement (approx. 20 mm overlap on each side).



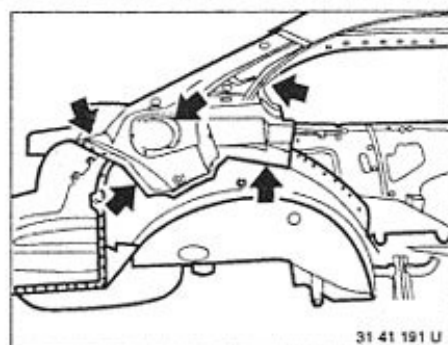
Fit in and weld rear window frame.
Plug weld reinforcement.



Weld rear window frame to wheel house from inside of car and rear window frame at bottom.
Weld partial replacement mating surfaces.

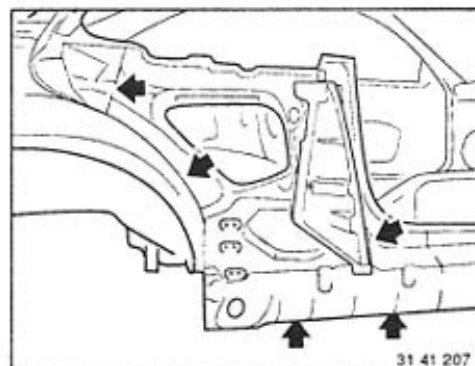


Weld rear window frame to wheel house mating surfaces from inside of car.

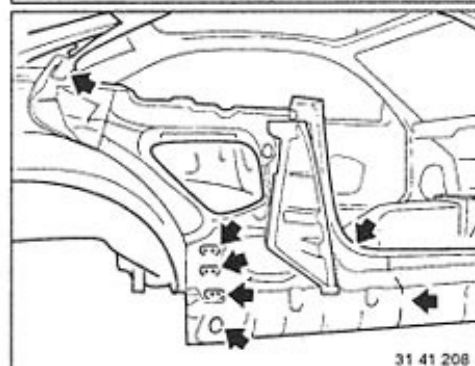


Weld rear window frame to wheel house mating surfaces from the wheel house.

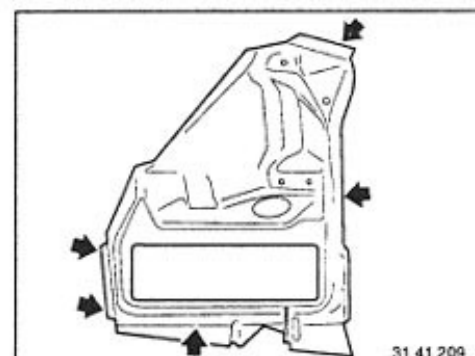
Fit in side section.
Clean mating surfaces on side section and coat with zinc dust paint.



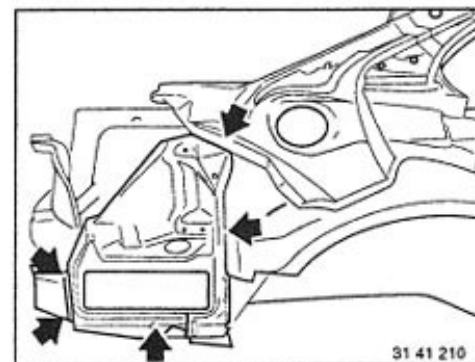
Fit in, clamp and weld side section.



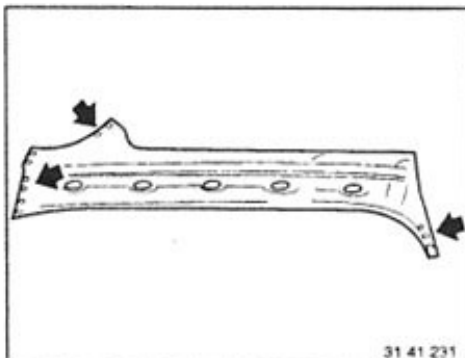
Weld side section.
Grind welded surfaces smooth.



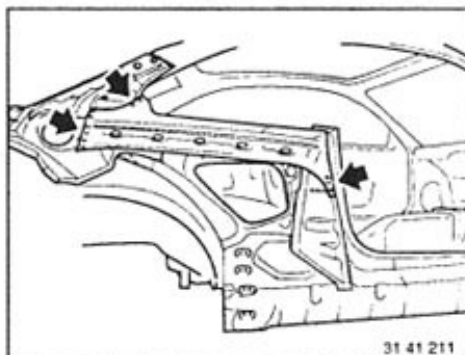
Fit in wheel house extension.
Clean welding surfaces on wheel house extension.



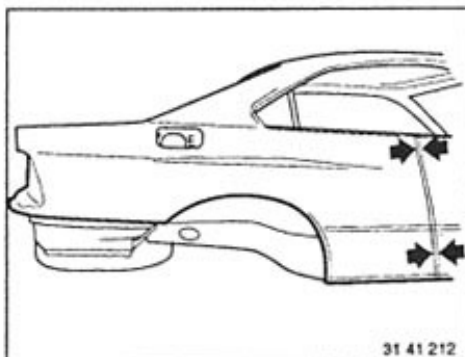
Fit in and weld wheel house extension.
Grind welding surfaces smooth.



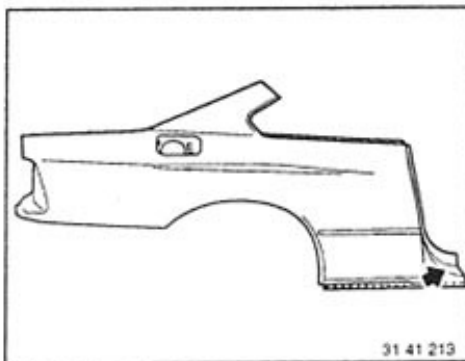
Fit in side member and mark location of holes for plug welding.
Drill holes for plug welding in the side member.
Clean welding surfaces.



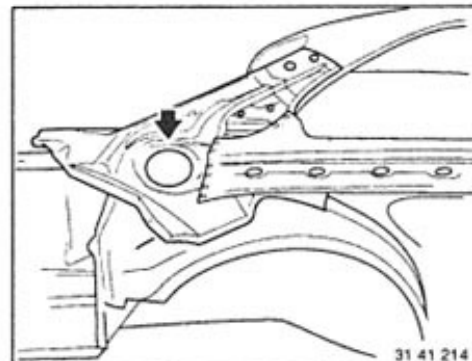
Fit in and clamp side member together with side panel.
Remove side panel.
Weld side member.
Grind welded surfaces smooth.



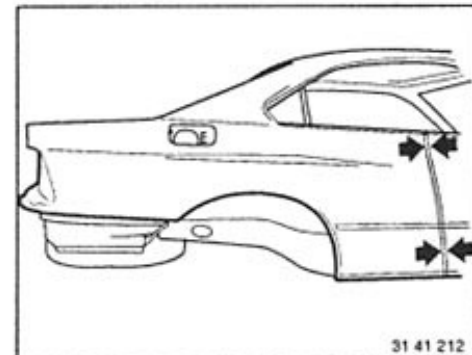
Fit in side panel and ensure uniform gap!
Mark location of holes for plug welding.
Remove side panel.



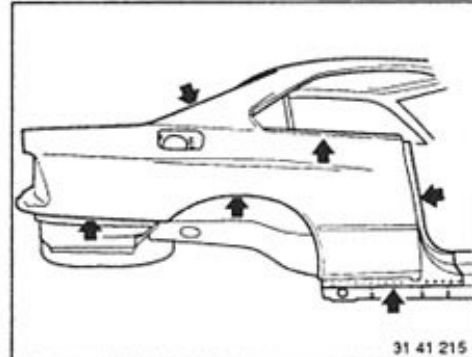
Drill holes for plug welding.
Clean welding surfaces.



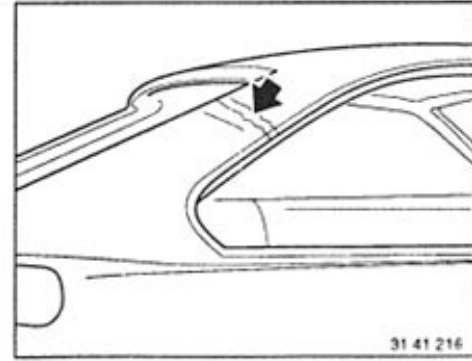
Apply sealing compound* in opening for tank filler neck.



Fit in side panel.
Ensure uniform gap!



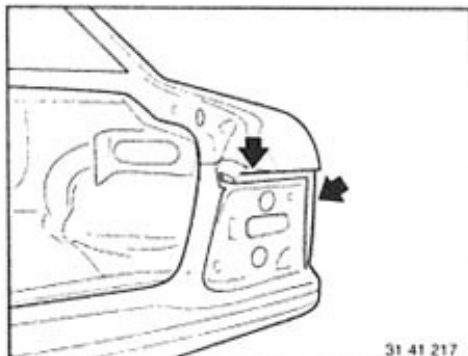
Weld side panel.



Weld C-pillar joint.
Spot weld so close together that a continuous seam is produced.

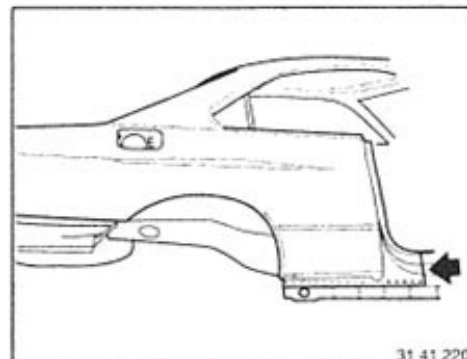
Important!
Always wait until one spot is cold before producing an adjacent spot.
Danger of distortion!

* Source of Supply: BMW Parts



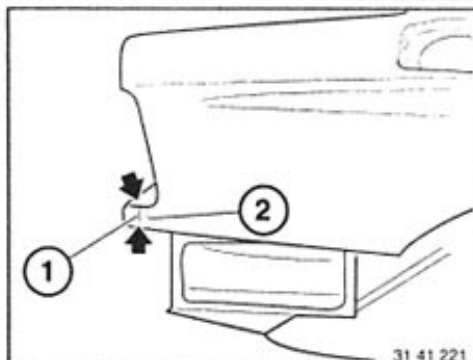
Spot weld in lamp carrier.
Braze water drain channel and lamp carrier transition.

31 41 217



Braze side member cover in door opening.
Grind welded and brazed surfaces smooth.

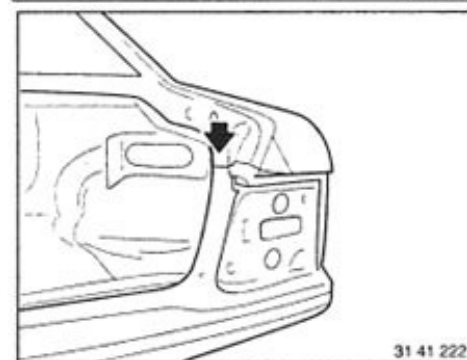
31 41 220



Braze tail panel and rear side panel joint.

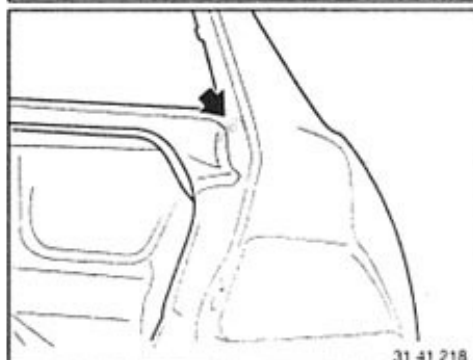
1 = Tail panel mating surface (brazed)
2 = Bead in rear side panel

31 41 221



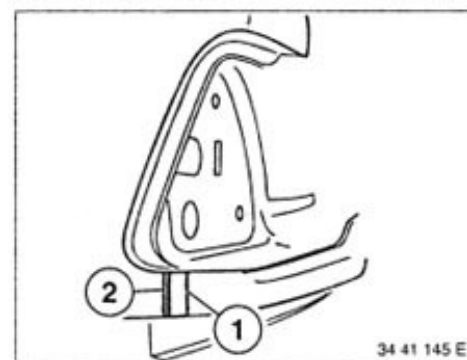
Tin mating surface in the water drain channel and grind smooth.

31 41 222



Weld transition between bottom of rear window frame and side panel.

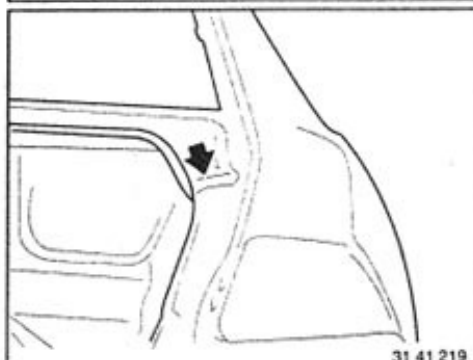
31 41 218



Tin mating surface on side panel and grind smooth.

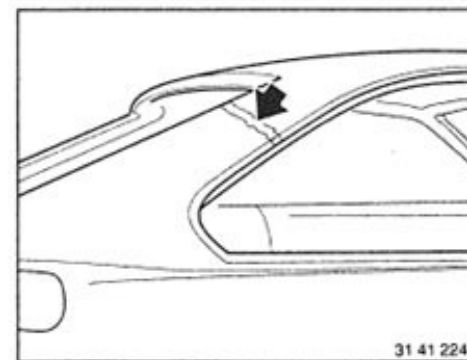
1 = Tail panel mating surface (brazed)
2 = Bead in rear side panel

34 41 145 E



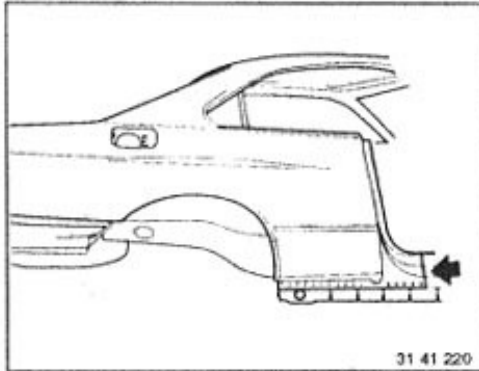
Braze transition between bottom of rear window frame and side panel.

31 41 219

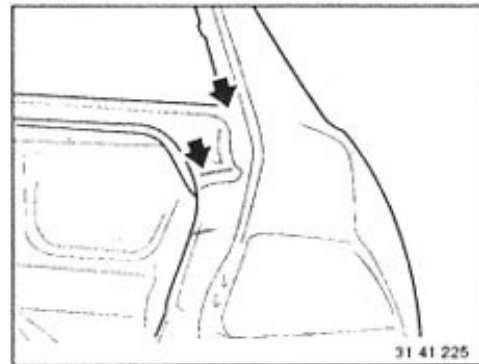


Tin C-pillar joint and grind smooth.

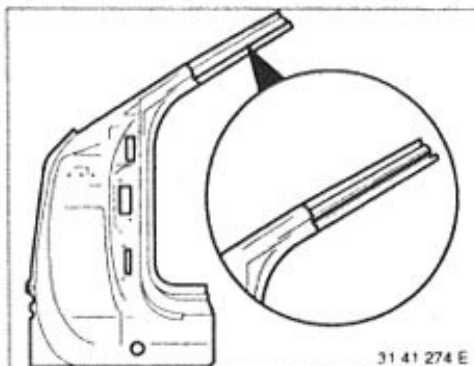
31 41 224



Tin cover for side member in the door opening and grind smooth.



Tin transition between bottom of rear window frame and side panel and grind smooth.

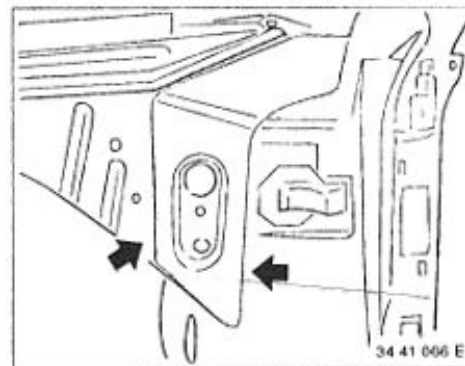


41 21 510 REPLACING LEFT FRONT DOOR PILLAR
(Outer Roof Frame Section or Roof Frame Partial Replacement Section Removed)

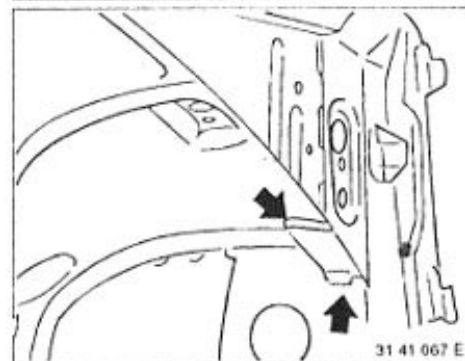
Refer 41-0/1 for information on body repairs.

Remove or disconnect the following parts:
Windshield
Dashboard trim panel
Roof liner
Engine hood
Front door
Side panel
Wire harness (roof liner and door pillar)

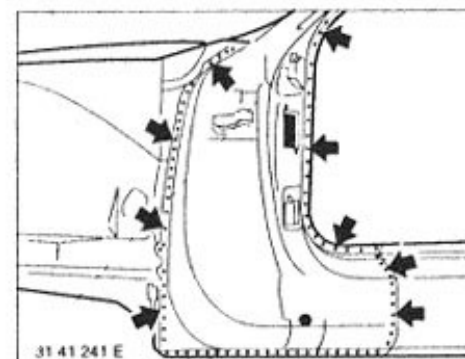
Remove or cover parts of car which are located in the repair zone and could be subjected to heat, sparks or dust.



Uncover welding seams of end plate.
Grind off welding seams.



Drill off spot welding of end plate.
Remove end plate.

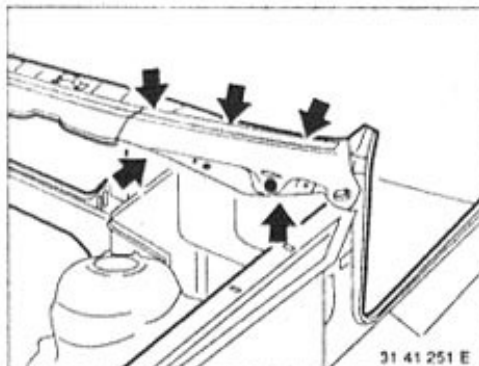


Uncover and drill off spot welding in door opening, on side member and firewall.

Determine cutting line for cowl panel partial replacement.

Important!

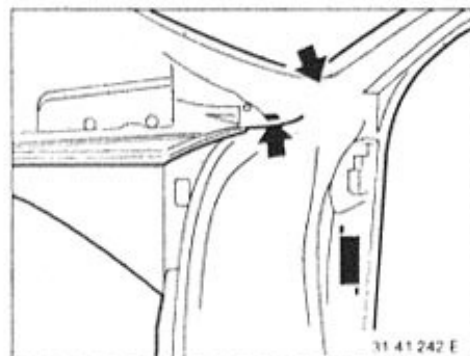
Whenever possible, mark the cowl panel partial replacement cutting line in such a manner that the chassis number does not have to be die-stamped again.



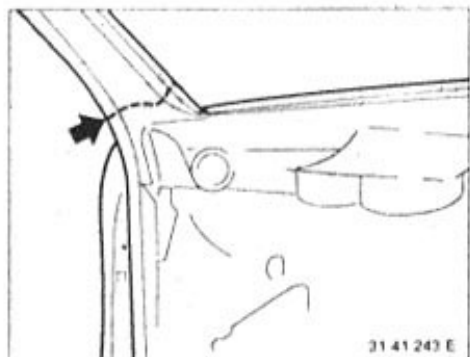
Cut along cutting line.
Uncover and drill off spot welding of cowl panel.

Remove cowl panel.

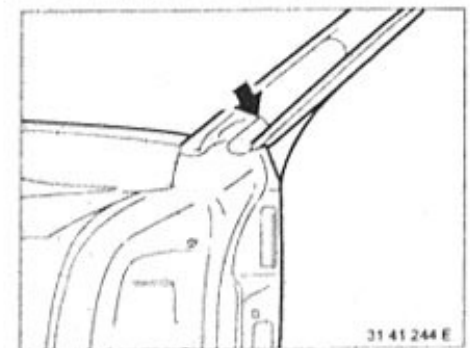
Remove scrap metal.



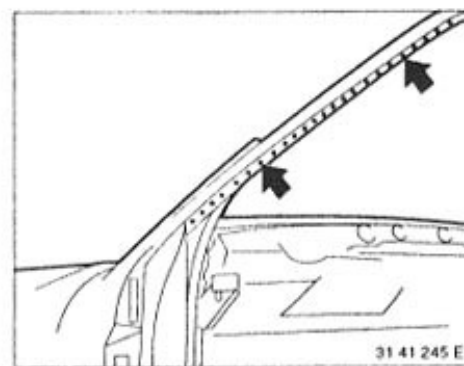
Break welding seam at top of wheel house and cowl panel.



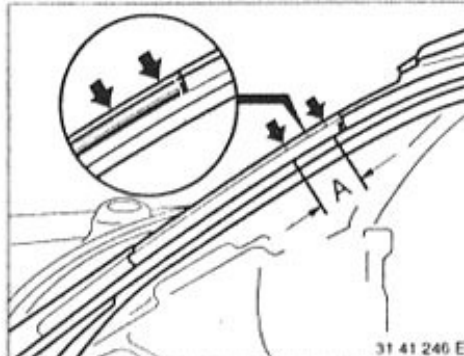
Break welding seam on inside of door pillar.



Uncover and break the brazed seam.

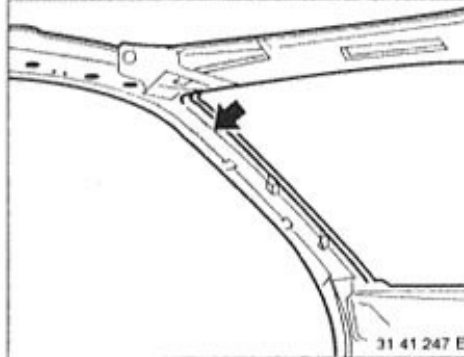


Drill off spot welding for the guide of the door window seal up to approx. 20 mm behind the reinforcement pipe.

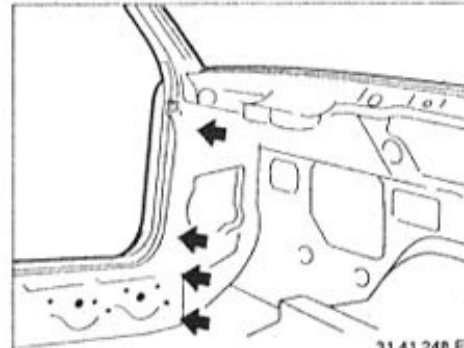


Cut through the inner plate of the A-pillar 100 mm before the end of the reinforcement pipe.

Distance A = 100 mm



Break welding seam of the reinforcement pipe on the inner plate of the door pillar.

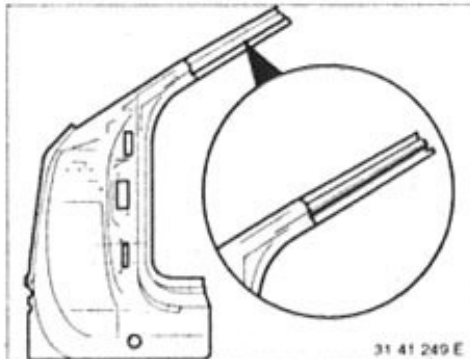


Drill off spot welding for the car jack take-up reinforcement.
Break welding seams of door hinges.

Remove door pillar.
Remove scrap metal.
Straighten and grind mating surfaces.

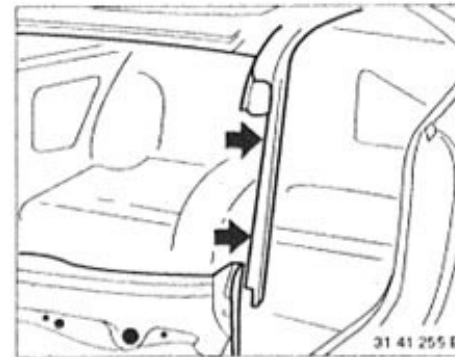
Coat reinforcement and mating surfaces
on the door pillar with zinc dust paint.

Weld reinforcement to A-pillar.

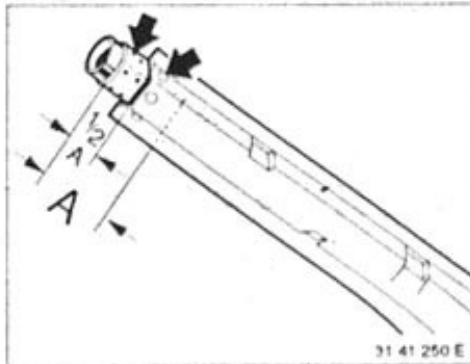


Fit in and cut door pillar to size.

Important!
Don't damage the reinforcement pipe!
Don't cut the reinforcement pipe!



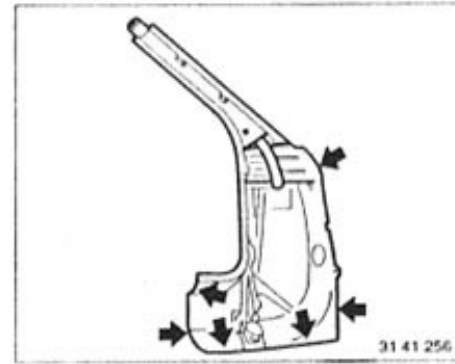
Clean mating surface of guide for the door
window seal.



Produce reinforcement for inner plate of
the door pillar.
Width of reinforcement = 60 mm
= distance A.

Drill holes in A-pillar for plug welding the
reinforcement.

Important!
Don't damage the reinforcement pipe!



Drill holes in door pillar for plug welding.

Clean mating surfaces on side member
and firewall/door pillar at inside.

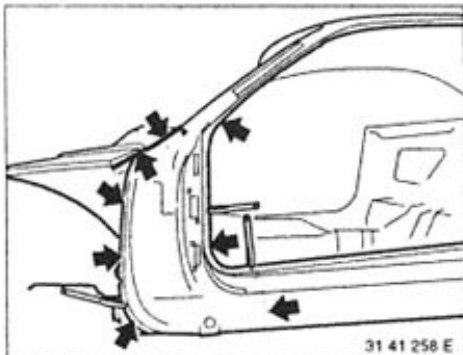
Install reinforcement in door pillar 30 mm
deep = 1/2 of distance A.

Important!
Reinforcement must not cover the hole re-
quired for welding the reinforcement pipe
to the section of the A-pillar remaining on
the car.

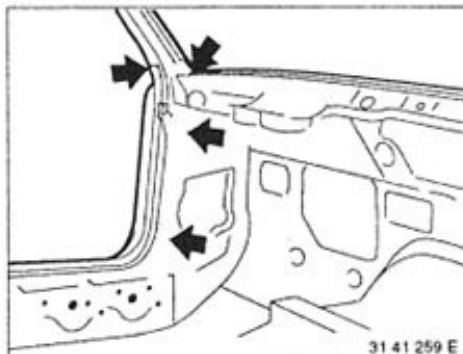


Clean mating surfaces in door opening
and on reinforcement for the car jack
take-up.

Coat mating surfaces with zinc dust paint.



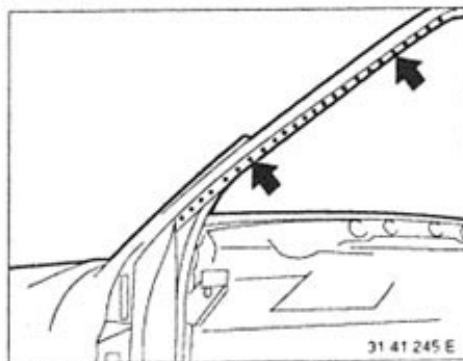
Fit in, clamp and weld door pillar.



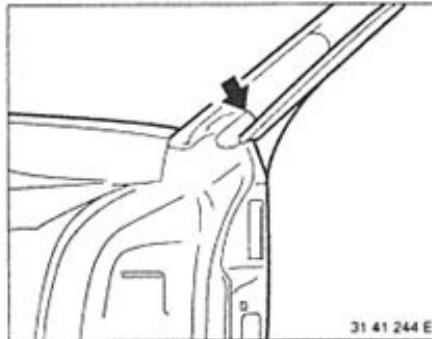
Weld door pillar from inside of car.
Weld reinforcement for car jack take-up.



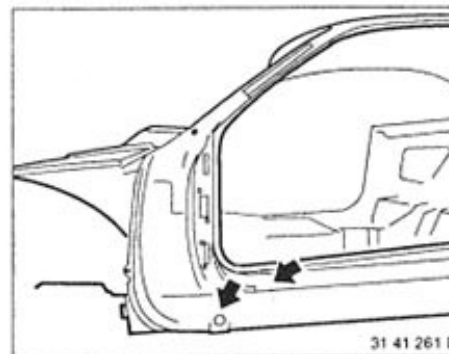
Weld reinforcement pipe in top hole.
Grind welded surfaces smooth.



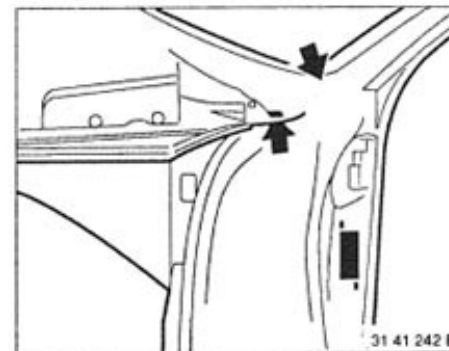
Fit in and weld guide for the door window seal.



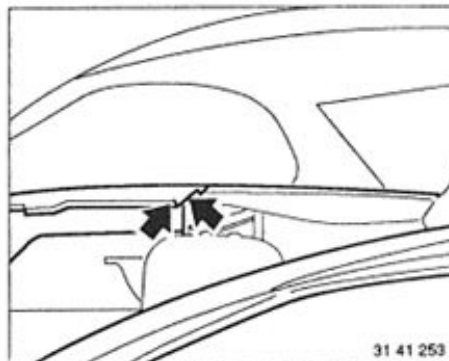
Braze guide for the door window seal.
Grind brazed and welded surfaces smooth.



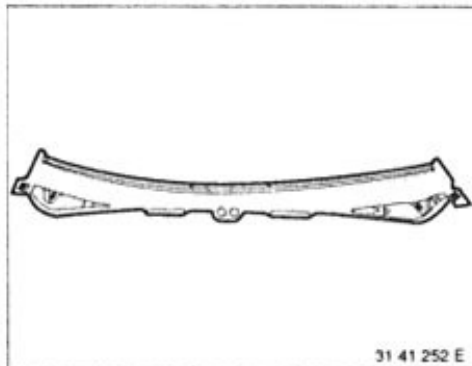
Weld and braze side member joint.
Weld car jack joint.
Grind brazed and welded surfaces smooth.



Weld door pillar at top of wheel house and cowl panel.
Grind welded surfaces smooth.



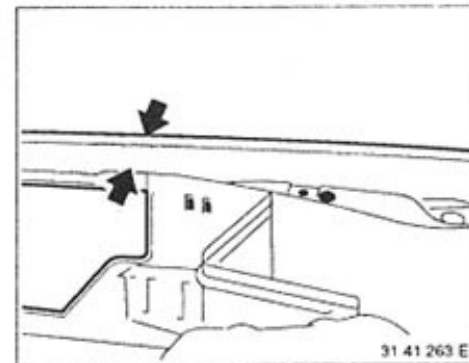
Shoulder cowl panel partial replacement section surface on car.



Fit in and cut cowl panel partial replacement section to size.

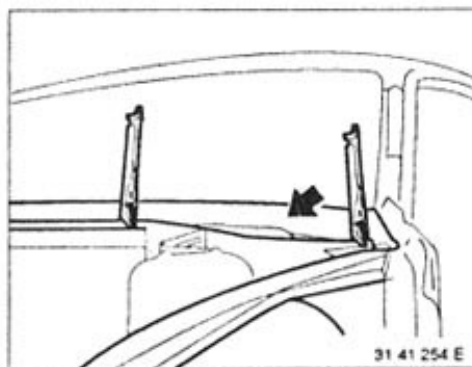
Important!
Size large enough for shouldering!

Clean and coat mating surfaces with zinc dust paint.

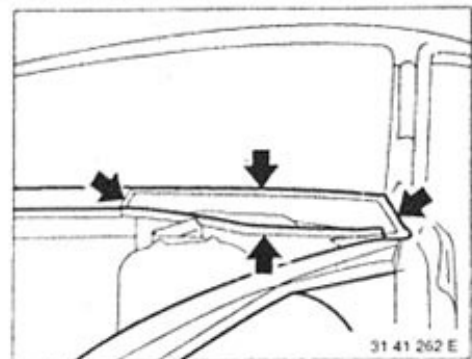


Grind welded surfaces smooth.

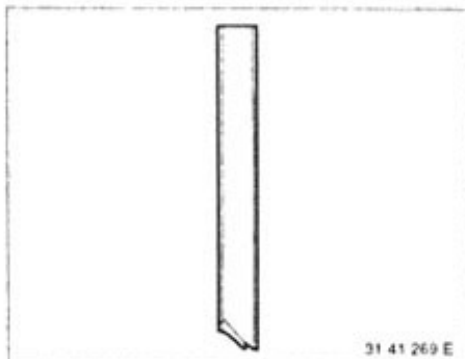
Tin mating surface of cowl panel replacement section and grind smooth.



Fit in and clamp cowl panel partial replacement section.



Weld cowl panel partial replacement section.



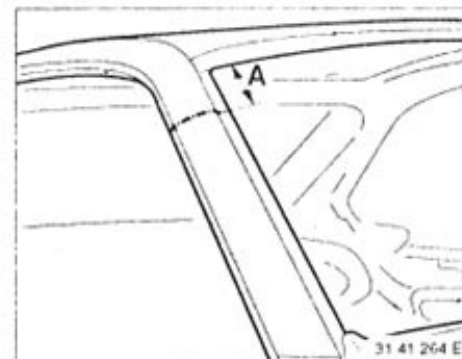
41 22 000 REPLACING LEFT OR RIGHT ROOF FRAME OUTER PARTIAL REPLACEMENT SECTION (COWL PANEL)

Note:
This step is shown on the right-hand side.

Refer 41-0/1 for information on body repairs.

Remove or disconnect the following parts:
Windshield
Dashboard trim panel
Roof liner
Engine hood
Front door
Side panel
Wire harness (roof liner and A-pillar)

Remove or cover parts of car which are located in the repair zone and could be subjected to heat, sparks or dust.

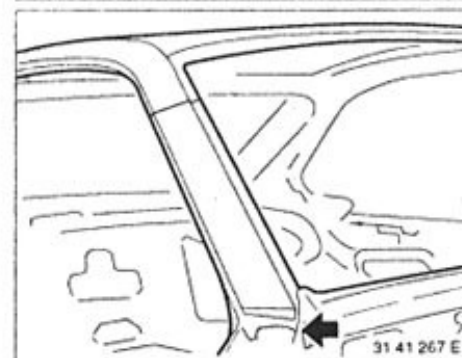


Mark location of cutting line and cut roof frame.

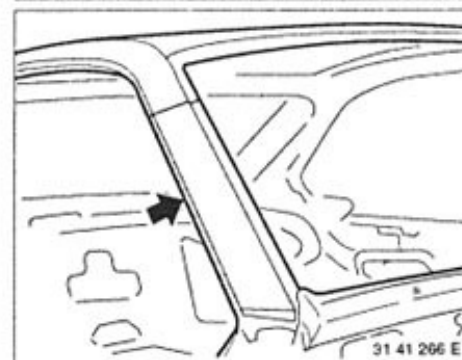
Distance A = 60 mm



Uncover and drill off spot welding.

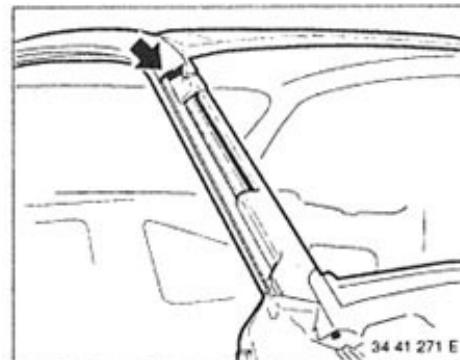


Uncover and break welded seam and brazed seam.

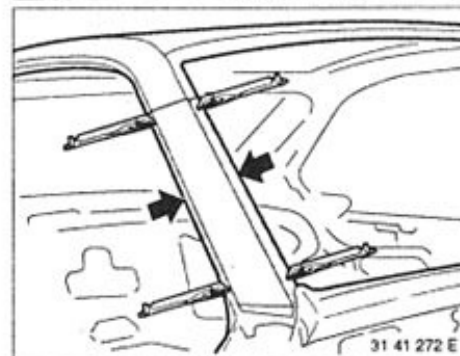


Uncover and break welded seam.
Remove roof frame.

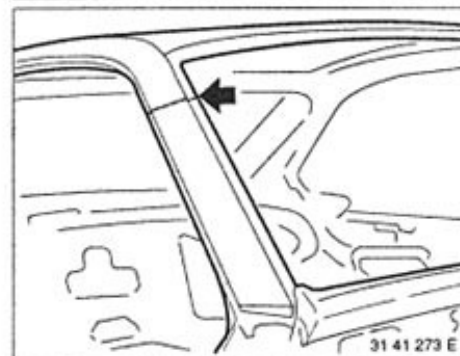
Remove scrap metal.
Straighten and grind mating surfaces.



Clean cowl panel mating surface.
Drill holes for plug welding the reinforcement.

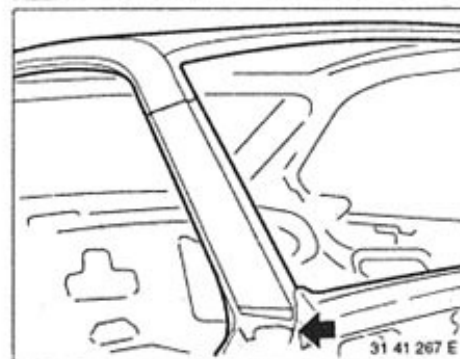


Clean and coat mating surfaces on the
roof frame partial replacement section with
zinc dust paint.
Fit in, clamp and weld roof frame partial
replacement section.

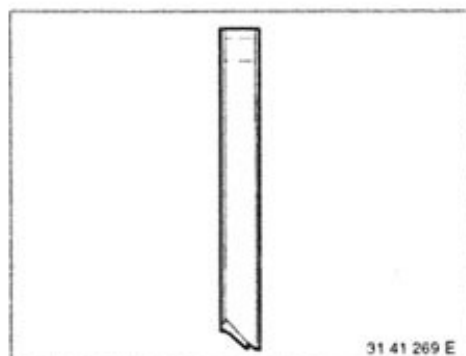


Produce welding spots at the cowl panel
joint so close together to have a continuous
seam.

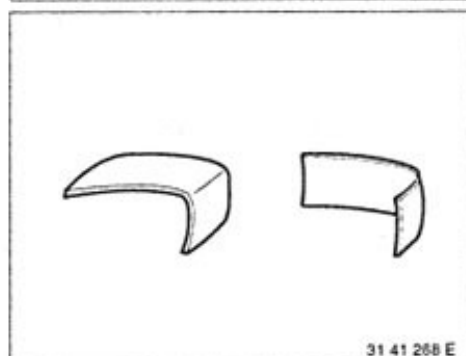
Important!
Wait until the spot is cold before producing
an adjacent spot.
Danger of distortion!



Braze the A-pillar joint.

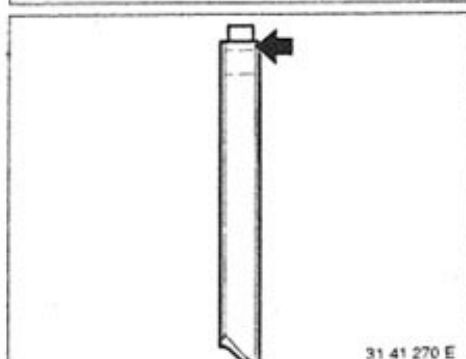


Cut roof frame partial replacement section
to size and fit it in.



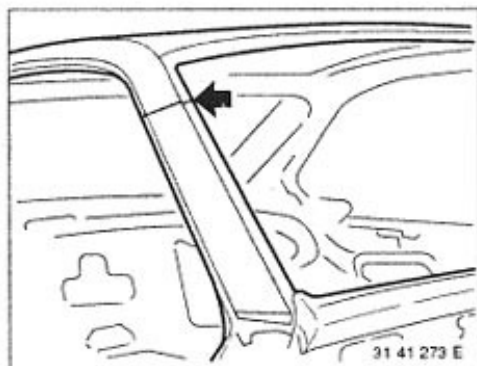
Produce and fit in reinforcement for the
roof frame partial replacement section.

Width of reinforcement = 60 mm.

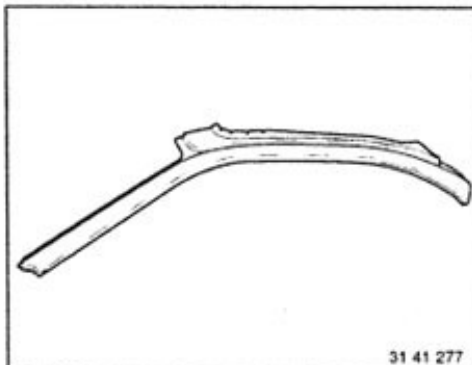


Drill holes in roof frame for plug welding
the reinforcement.
Clean and coat mating surfaces with zinc
dust paint.
Clean and coat reinforcement with zinc
dust paint.
Weld reinforcement to roof frame.

Grind welded and brazed surfaces smooth.



Tin cowl panel mating surface and grind smooth.

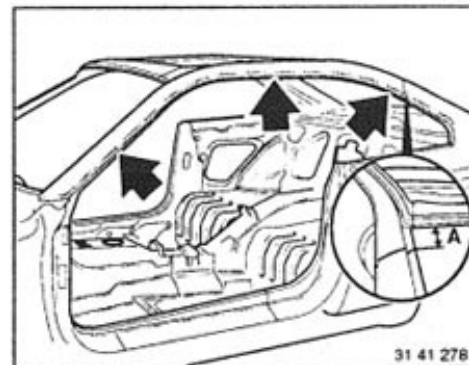


**41 22 050 Replacing left or right outer roof frame
(roof outer skin panel removed)**

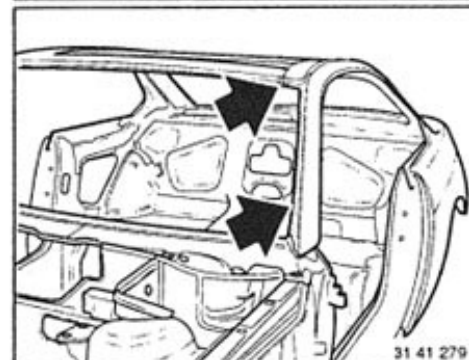
Body repair instructions, see 41-0/1.

Remove or detach the following parts:
Scope: refer to replacing roof outer skin panel

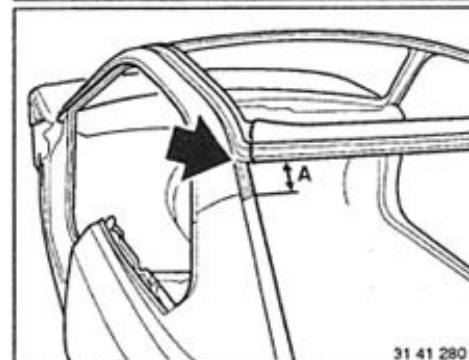
Remove or cover other vehicle parts in the repair zone which could be damaged by heat, sparks and dust.



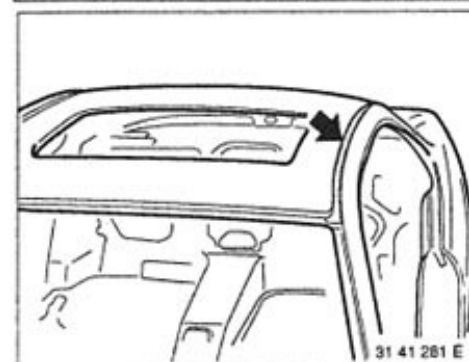
Expose and grind off welded seam.
Expose joint between roof frame / rear side panel.
Dimension "A" = 125 mm.



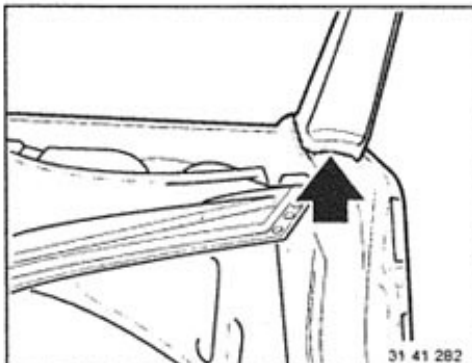
Expose and drill out welding spots on windshield frame.



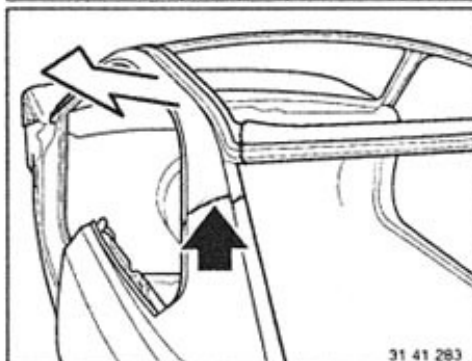
Expose and drill out welding spots on rear window frame and roof frame.
Dimension "A" = 125 mm.



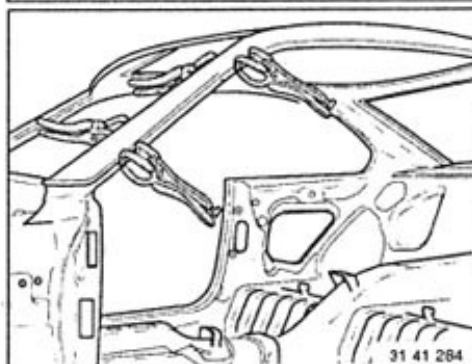
Drill out spots in roof frame / side frame.



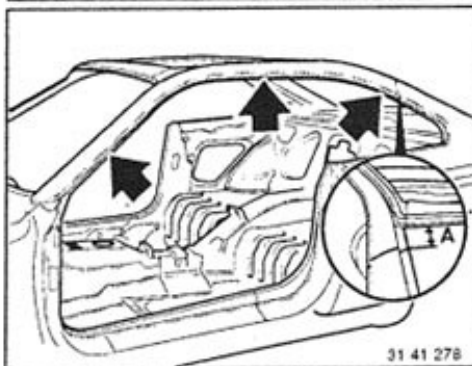
Expose welded seam and brazing point on A pillar / windshield frame and open up.



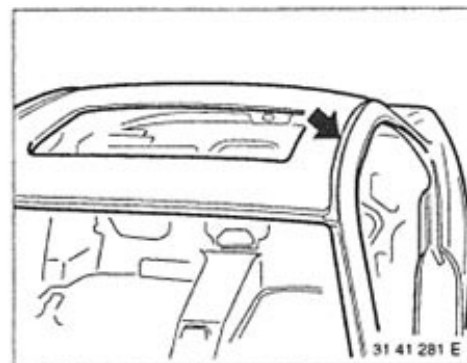
Open rear brazed joint between roof frame / side panel.
Remove roof frame.
Remove scrap sheet metal and grind down joints.



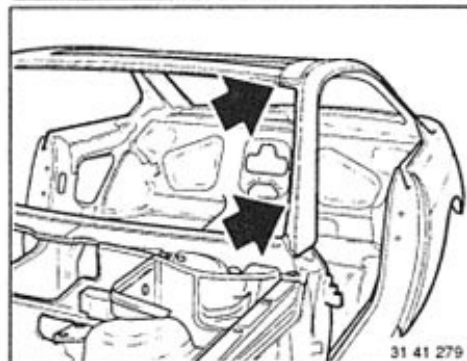
Adjust roof frame to fit.
Clean joints and coat with zinc dust paint.
Adjust roof frame to fit and secure in place.



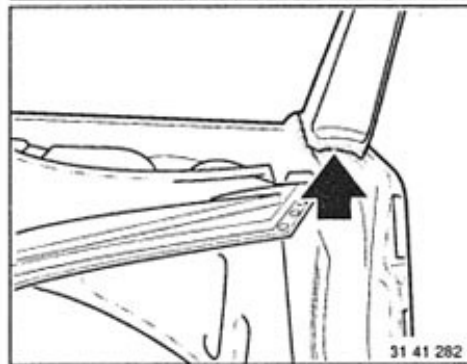
Mark out spots along roof frame beside previous welded seam.



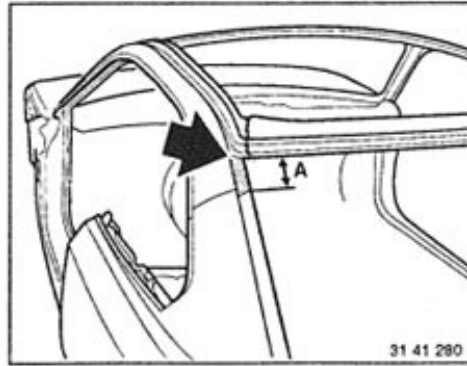
Apply spot welds to roof frame / side frame.



Apply welding spots to windshield frame.

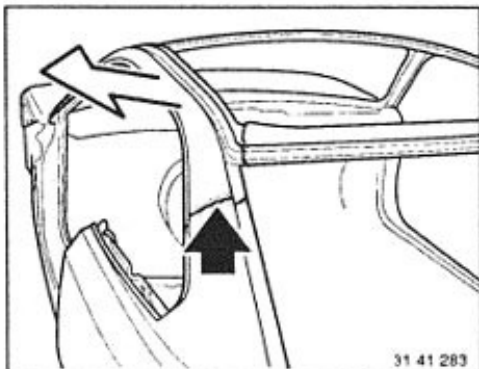


Apply welded seam and brazing point to A pillar / windshield frame.



Apply spot welds to rear window frame and roof frame.

41-22/6



Apply brazed seam to joint between roof frame/
side panel.

Tin out joint and grind down.

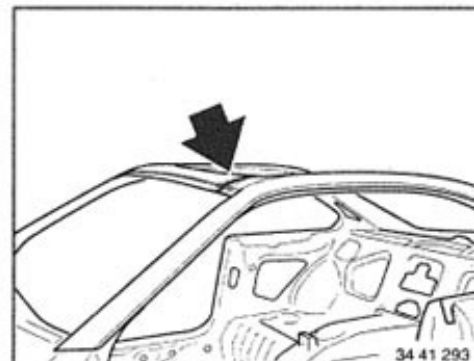
Grind down welding and brazing points.

**41 22 541 Replacing front roof frame
(roof outer skin panel
removed)**

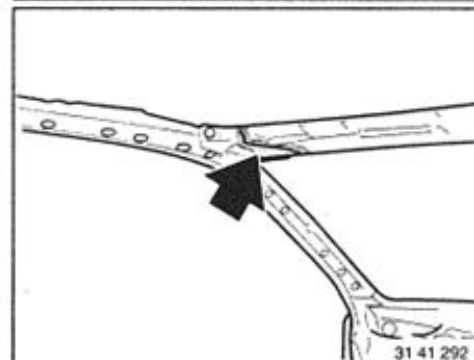
Body repair instructions: see 41-0/1.

Remove or unfasten the following parts:
Scope: refer to Replacing Roof Outer Skin
Panel

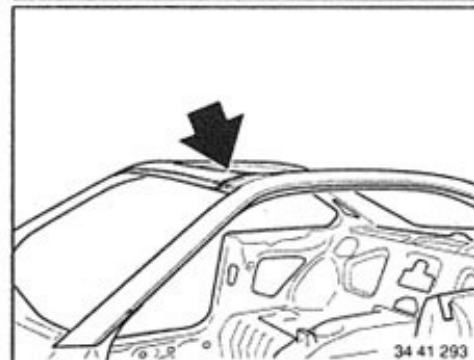
Remove or cover other vehicle parts in the re-
pair zone which could be damaged by heat,
sparks and dust.



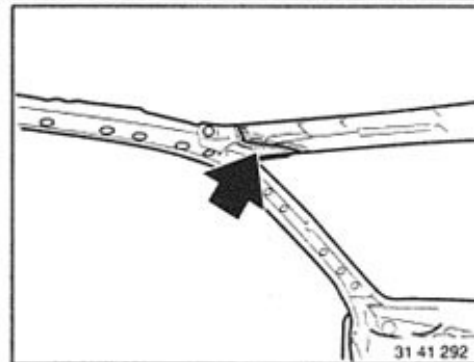
Expose welded seams.
Grind welded seams.



Drill out welding spots and remove roof frame.
Align connecting faces and grind out.



Clean connecting faces on new part.
Adjust new parts to fit and weld up.



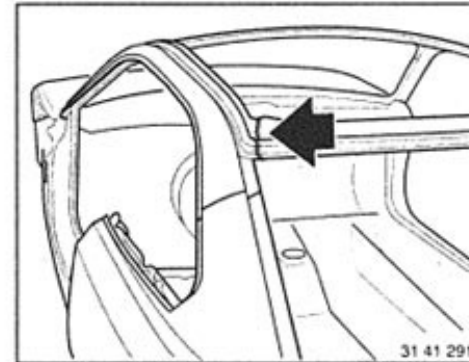
Weld up new parts.
Grind down all welded seams.

**41 22 571 Replacing rear roof frame
(roof outer skin panel
removed)**

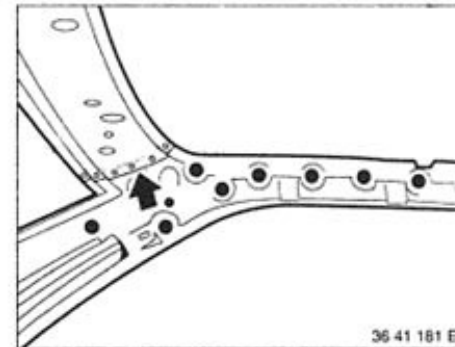
Body repair instructions: see 41-0/1.

Following parts must be removed or detached:
Scope: refer to Replacing Roof Outer Skin
Panel

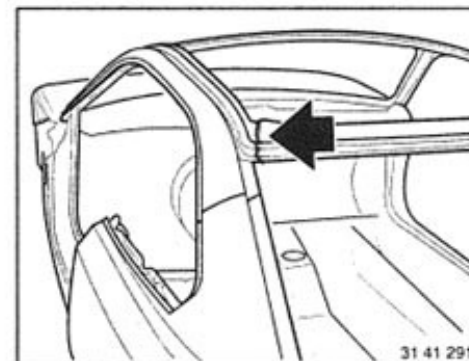
Remove or cover other vehicle parts in the re-
pair zone which could be damaged by heat,
sparks and dust.



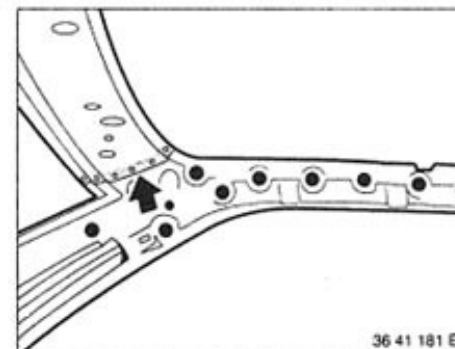
Expose welding surface.
Drill out welding spots.



Drill out welding spots.
Remove roof frame.
Align connecting faces and grind down.



Clean connecting faces on new part.
Adjust new part to fit and weld into place.



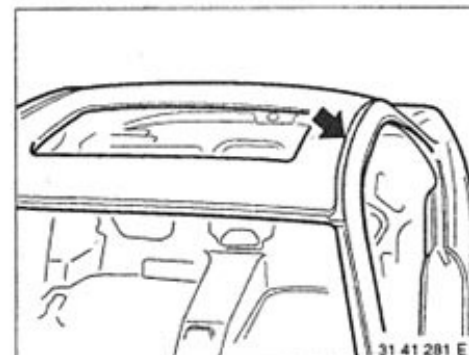
Weld new part into place.
Grind down all welding surfaces.

41 31 010 REPLACING ROOF PANEL (Version with Sun Roof)

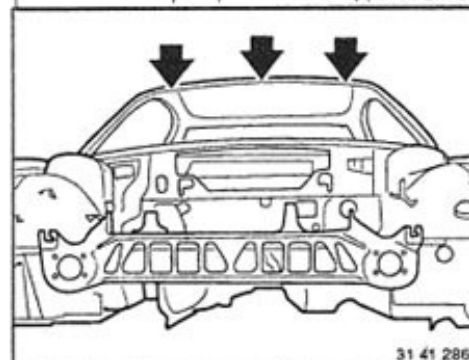
Refer 41-0/1 for information on body repairs.

Remove or disconnect the following parts:
Windshield
Rear window
Roof liner
Sun roof
Hatrack
Wire harness (partially)

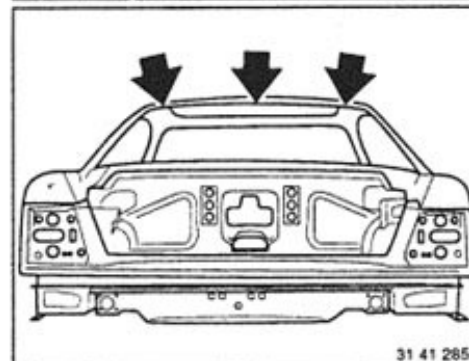
Remove or cover parts of car which are located in the repair zone and could be subjected to heat, sparks or dust.



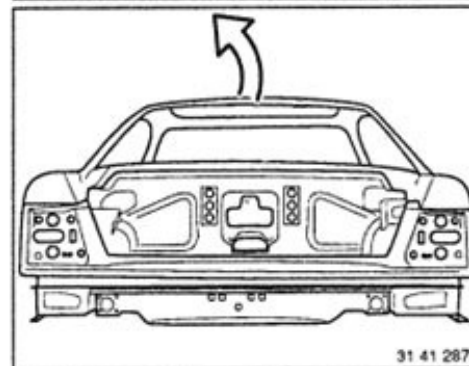
Uncover and drill off spot welding in channel.



Uncover and drill off windshield frame spot welding.



Uncover and drill off rear window frame spot welding.

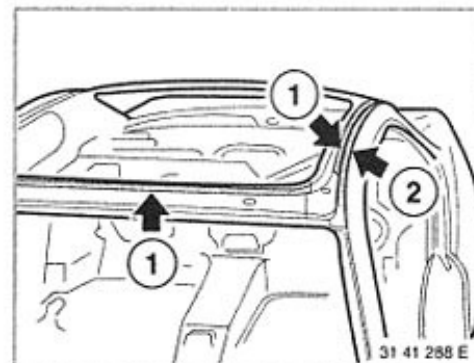


Remove roof panel.

Important!

The roof panel will be easier to remove by heating it at the surfaces coated with sealing compound and cement.
Extract the produced vapors!

Align and grind down joints.



Coat adhesive surface (2) with adhesive 51 0 032.

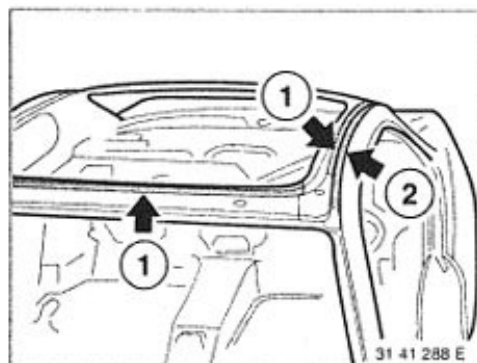
Observe adhesive specifications for body parts, see 41-0/2.

Caution!

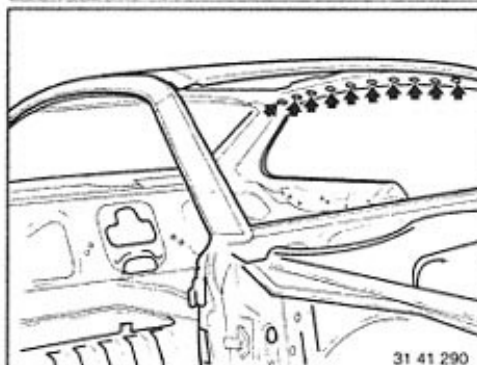
Do not coat retaining thread for roof carrier bracket with adhesive.

Coar roof frame (1) with sealing compound *.

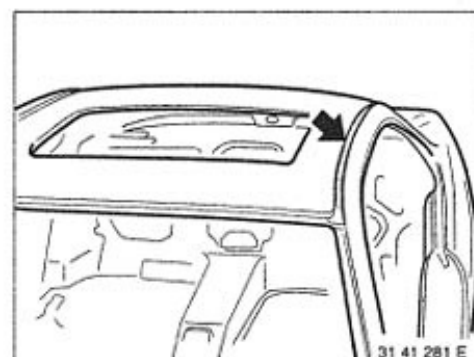
Fit roof outer skin panel and secure.



Remove sealing compound from roof frame (1).
Clean adhesive surface (2).



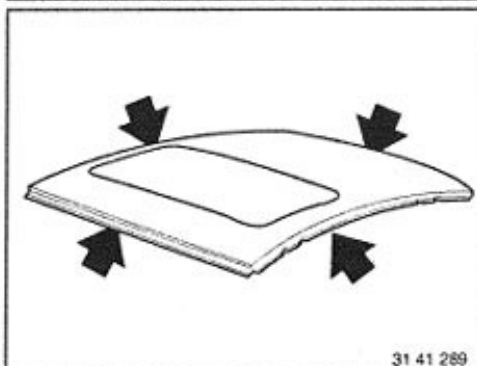
Clean contact points for spot welding electrodes through bores in roof frame.



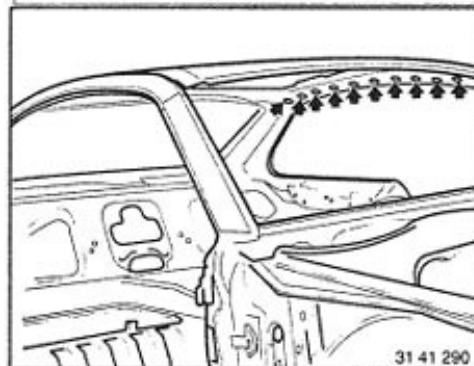
Spot-weld roof outer skin panel along roof gutter.

Note:

Position and number of welding points is determined by the bores in the roof frame provided for spot-welding electrodes.

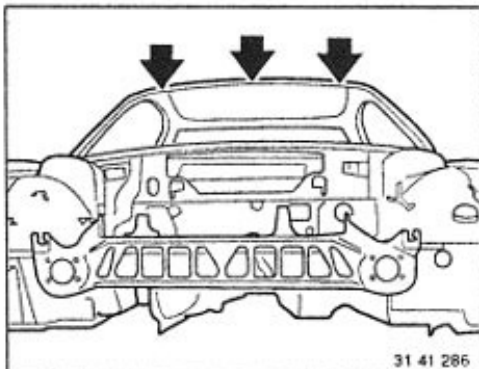


Fit new roof outer skin panel.
Clean joints.
Coat joints which are not going to be coated with adhesive, with zinc dust paint.



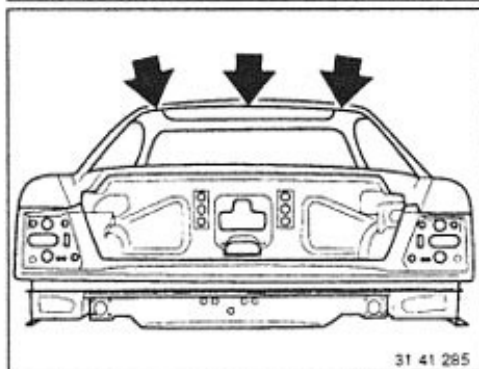
Bores in roof frame for spot-welding electrodes.

* Refer to BMW Parts service.



31 41 286

Spot weld windshield frame.

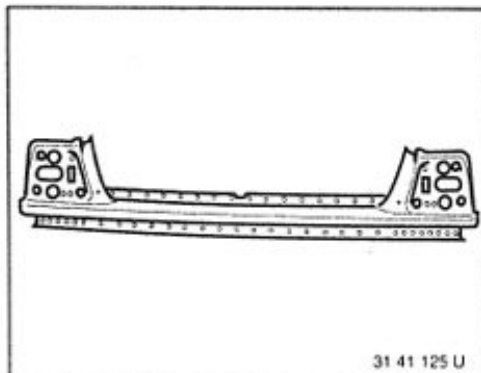


31 41 285

Spot weld rear window frame.

Grind mating surfaces smooth.

Remove excessive cement.



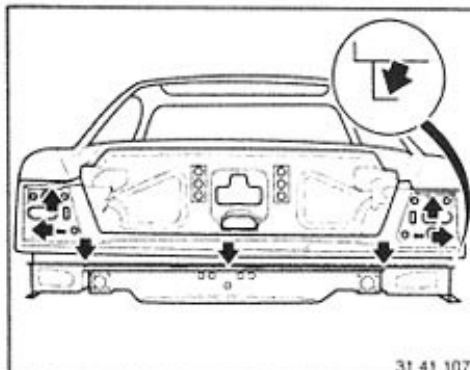
41 34 041 Replacing rear apron

Note body repair instructions!

Remove or cover other vehicle parts in the repair zone which could be damaged by heat, sparks and dust.

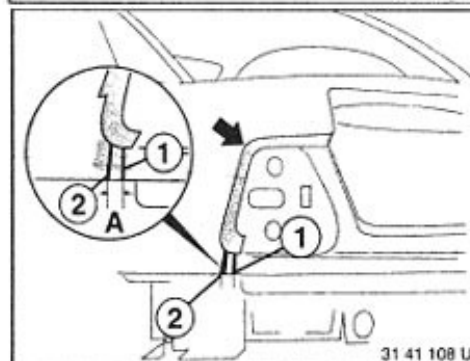
Remove or disconnect the following parts:

- bumper with impact absorber
- complete cover for trunk floor
- batteries
- car jack
- tail lights
- luggage compartment gasket
- part of wiring harness
- spare wheel
- forced ventilation
- trim on spare wheel box
- central ground connection
- lock in tail panel



Clean joints.

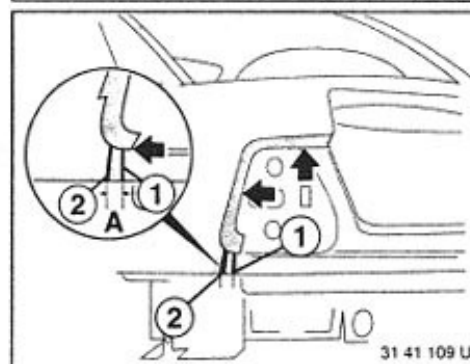
Note:
To make illustration clearer, trunk lid has been removed.



Caution!

1 = connection point for tail panel
(brazed section)
2 = Bead in side panel at rear

Dimension (A) = approx. 20 mm



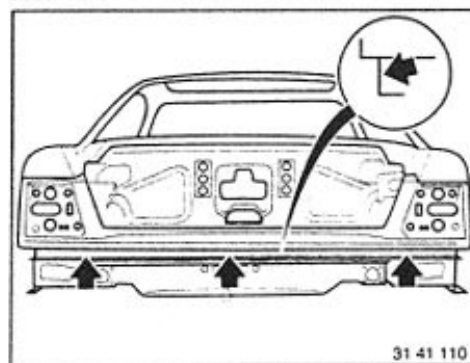
Roughly cut out reversing light section of tail panel with air cutter.

Caution!

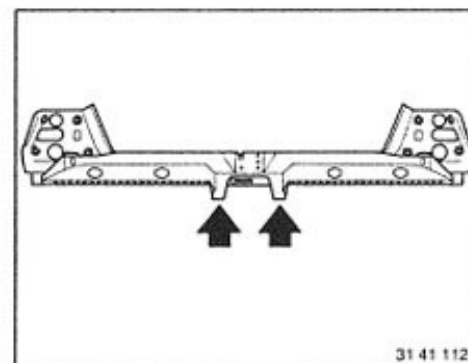
Disconnect tail panel (1) in front of joint.

1 = Joint (brazing point)
2 = Bead in side panel at rear

Dimension (A) = approx. 20 mm



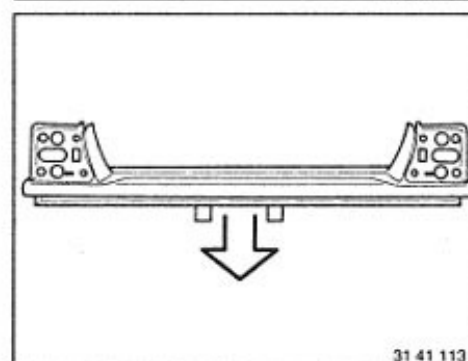
Roughly chisel off tail panel at outside joint with trunk floor.



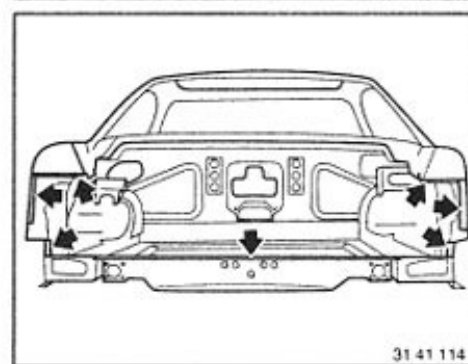
Disconnect joints between internal reinforcing members of tail panel and trunk floor.

Note:

To make the illustration clearer, shown with tail panel removed: viewed from luggage compartment.



Remove tail panel.

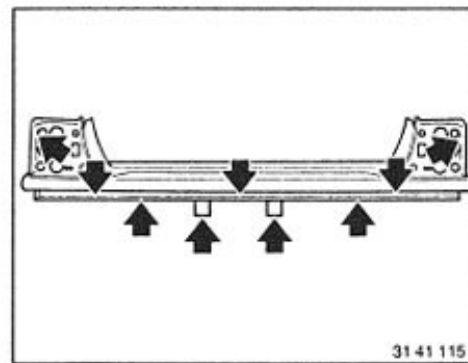


Remove scrap metal.

Note:

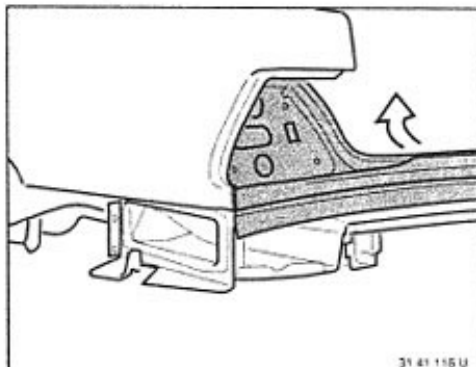
To make the illustration clearer, shown with tail panel removed:

clean welding surfaces and align.



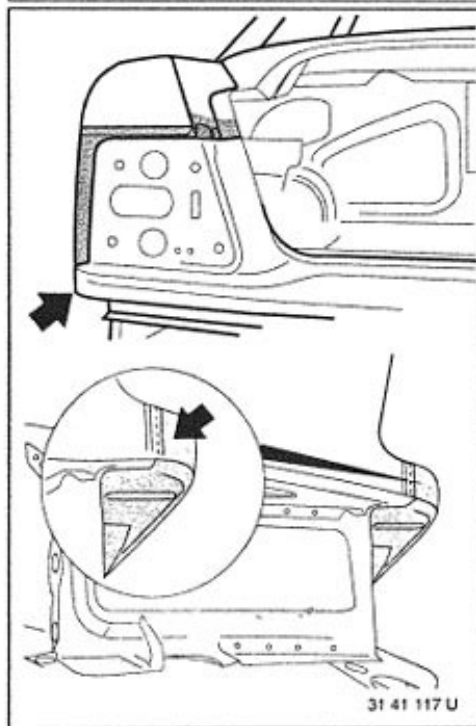
Clean welding surfaces (new part) and coat with zinc dust paint:

- joint in trunk floor
- wheel arch extension
- lighting cluster
- internal reinforcements on trunk floor

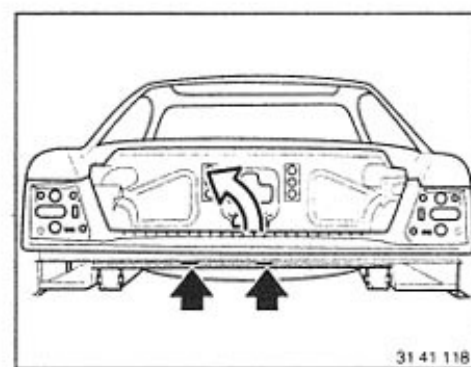


Adjust tail panel to fit

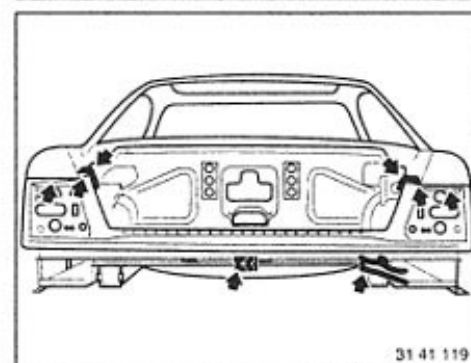
Installation:
Install tail panel obliquely from below



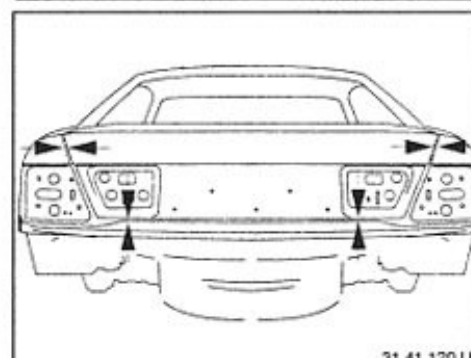
Ensure that tail panel is correctly seated on light cluster!



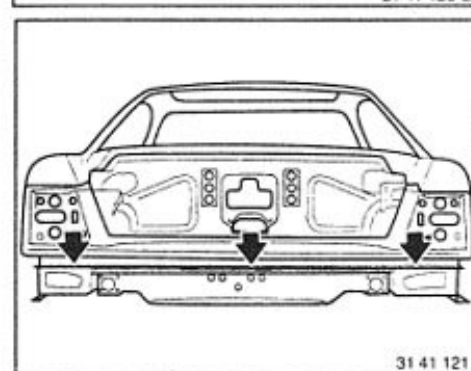
Insert internal reinforcements in trunk floor.
Turn tail panel into correct position.



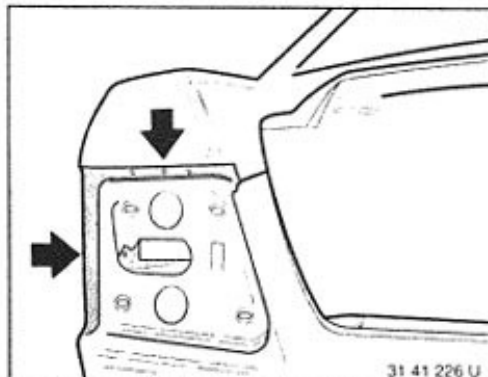
Align contact faces of light cluster.
Secure tail panel with tongs, spot brazing where necessary.



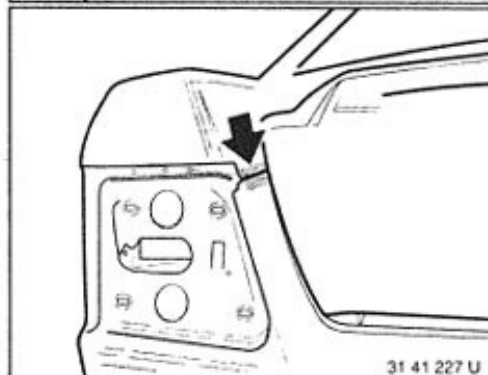
Adjust tail panel to fit trunk lid.
Ensure that joint is of uniform width.



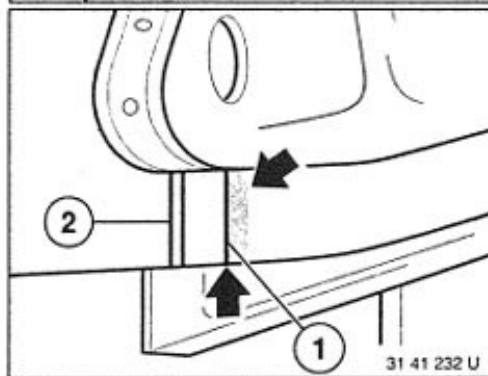
Spot weld tail panel to trunk floor.



Spot weld tail panel at tail light assembly.



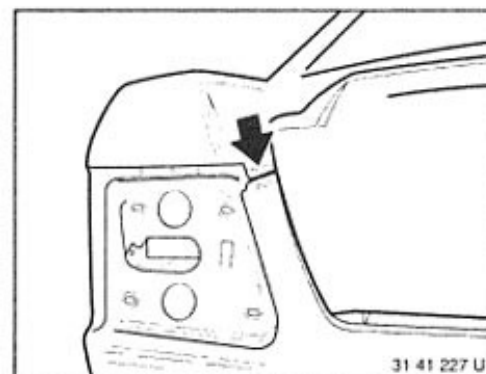
Braze water drain channel and tail light assembly transition.



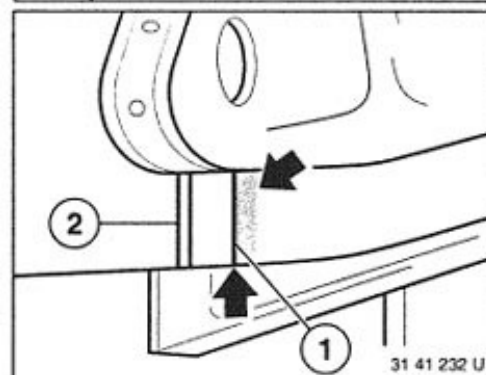
Braze tail panel and rear side panel joint.

1 = Tail panel mating surface (brazed)
2 = Bead in rear side panel

Grind welded and brazed surfaces smooth.

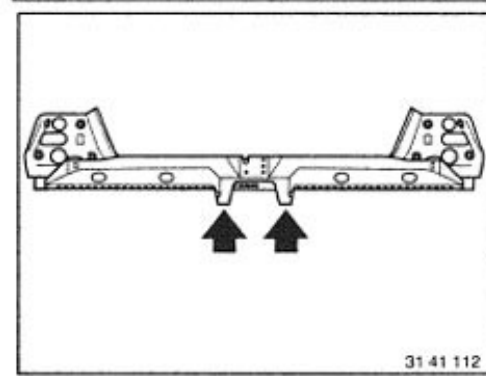


Tin mating surface in water drain channel and grind smooth.



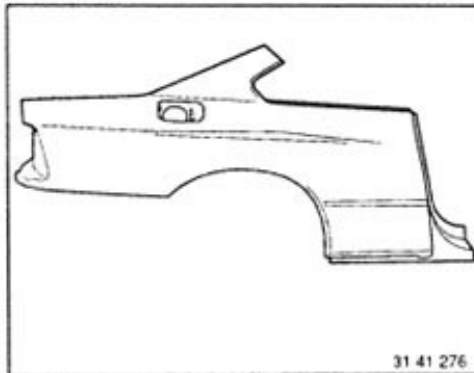
Tin mating surface on side panel and grind smooth.

1 = Tail panel mating surface (brazed)
2 = Bead in rear side panel



Weld inner reinforcements of tail panel.

Note:
Tail panel was removed in picture for better illustration; view from trunk.

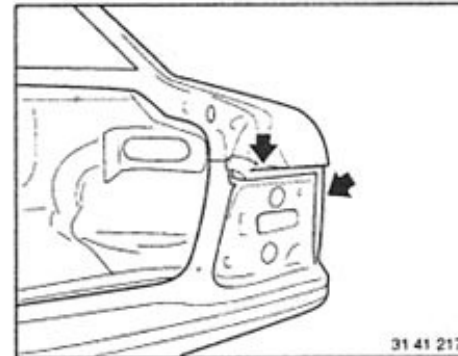


41 35 110 Replacing complete rear side panel (up to roof connection)

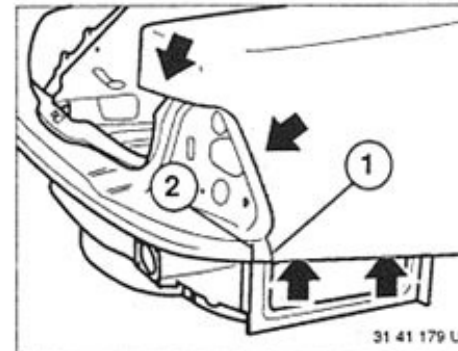
Body repair instructions: see 41-0/1.

- Bumper with impact absorber
- Complete cover on trunk floor
 - Battery
 - Car jack
 - Tail lights
 - Luggage compartment gasket
 - Section of wiring harness
 - Spare wheel
 - Fuel tank
 - Forced ventilation
 - Trim on spare wheel box
 - Back wheel
 - Front seat
 - Rear window
 - Trunk lid

Remove or cover other vehicle parts in the repair zone which could be damaged by heat, sparks and dust.



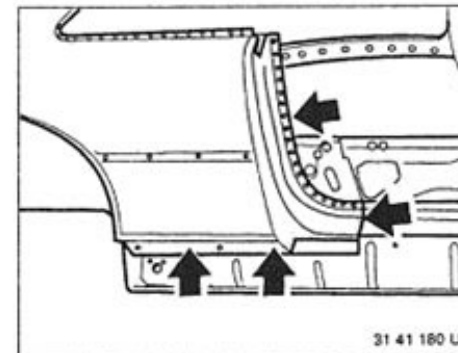
Expose connecting points for lamp support.



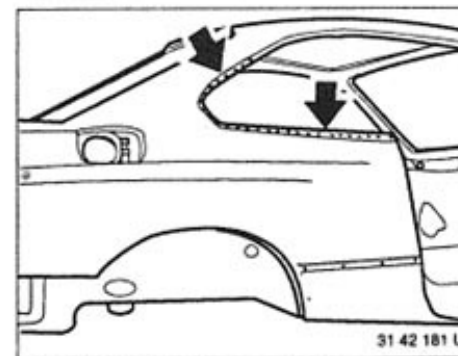
Roughly separate side panel beside lamp support.

- 1 = Joint for cut
2 = Bead in rear side panel

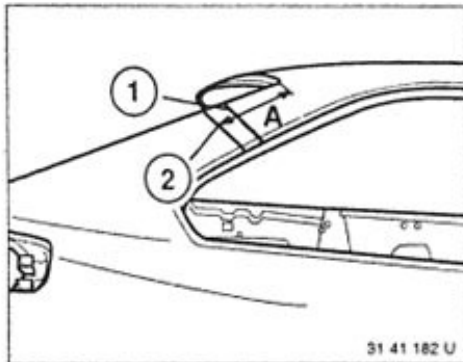
Roughly separate side panel on wheel housing extension.



Drill out welding points beside door opening. Expose joints between side panel and side member. Roughly separate side panel from side member.

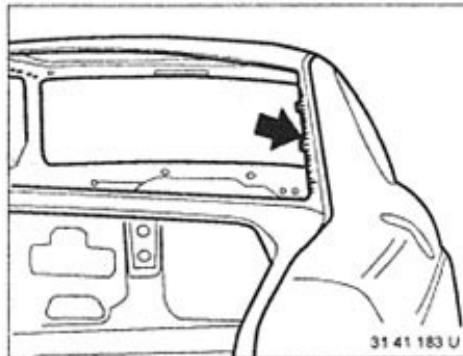


Drill out welding points on side window and roof frame.

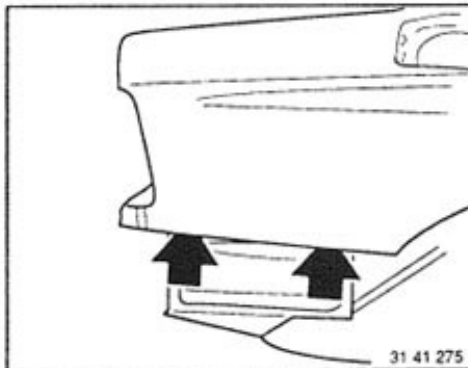


Expose joint between C pillar and roof frame.
Determine and separate joint.

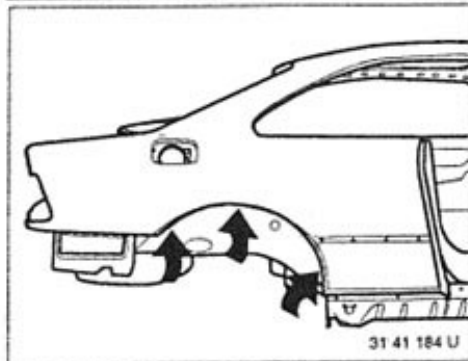
Dimension (A) = 170 mm.
1 = Connecting point
2 = Separating point



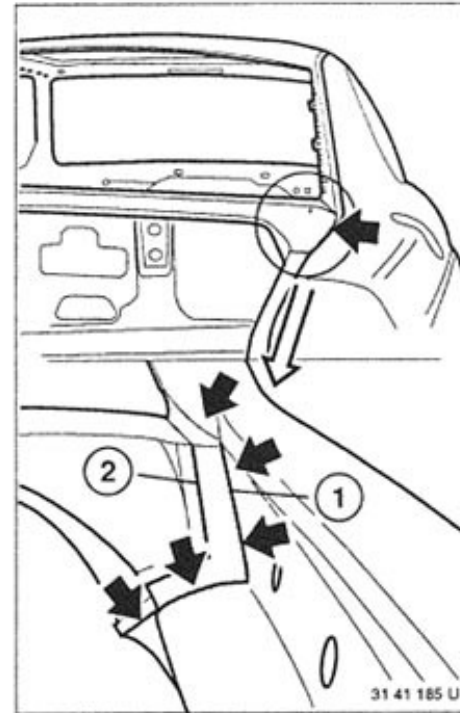
Drill out welding points on rear window.



Expose and drill out welding spots on wheel arch extension.



Expose and roughly separate connecting point on side panel in wheel housing.

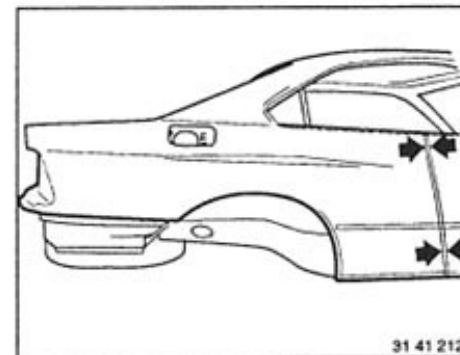


Expose and separate connecting point on windshield.

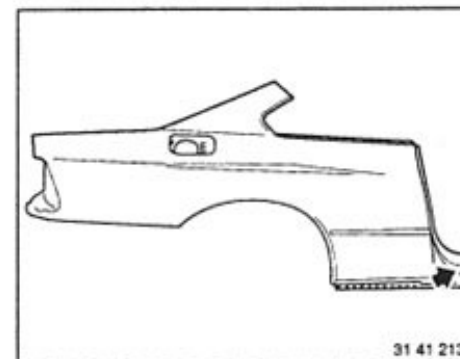
Caution!
Separate along edge in front of welded seam
otherwise part will become too short.

Remove side panel.

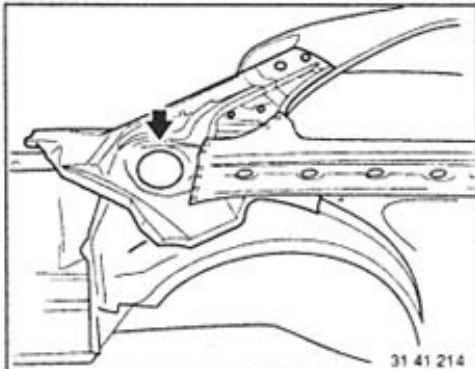
Remove scrap sheet metal.
Align connecting points and grind down.



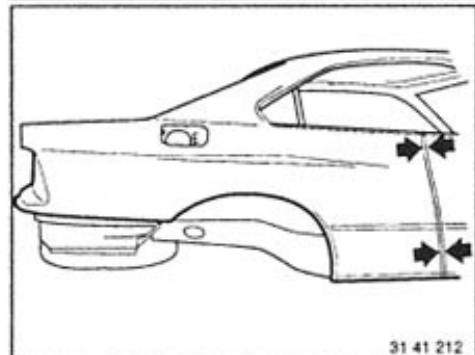
Adjust side panel to fit and ensure that joints
are of uniform width!
Mark out holes for plug welding.
Remove side panel.



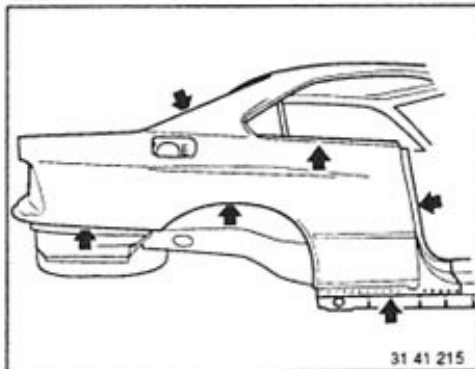
Drill out holes for plug welding.
Clean welding surfaces.



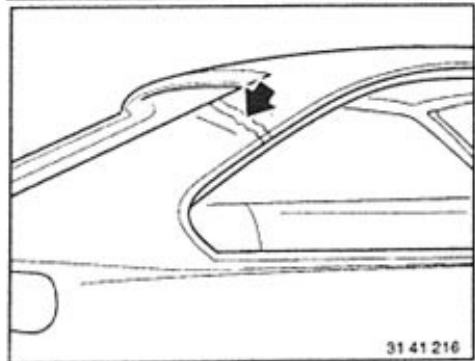
Apply sealant * to recess for tank filler neck.



Adjust side panel to fit.
Ensure that joints are of uniform width!



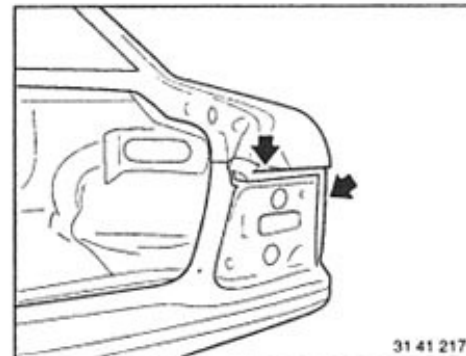
Weld up side panel.



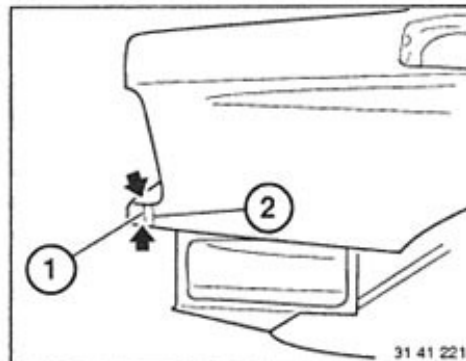
Weld up connection on C pillar.
Place welding spots so close to one another
that a continuous seam is created.

Caution!
Always allow each spot to cool slightly before
applying the next spot weld.
Risk of distortion!

* Refer to BMW Parts Service

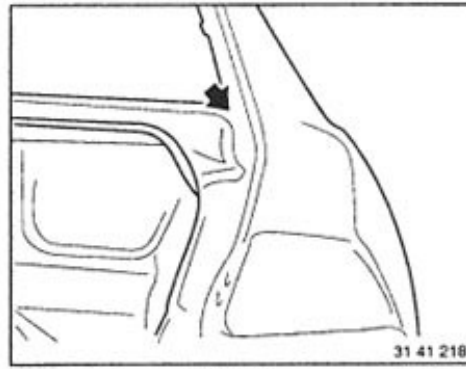


Apply spot welds to lamp support.
Braze water gutter and link to lamp support.

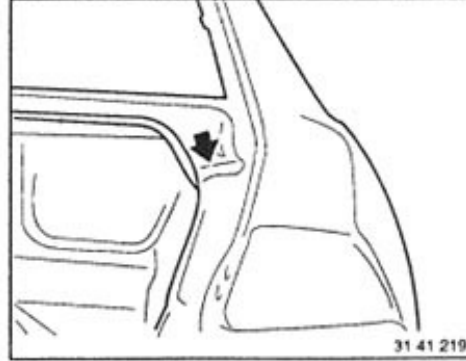


Braze connection between tail panel and rear
side panel.

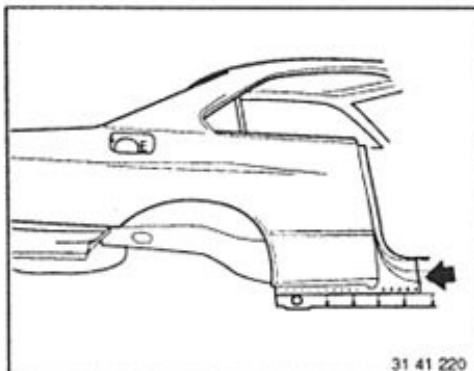
- 1 = Connecting point in tail panel
(brazed point)
- 2 = Bead in rear side panel



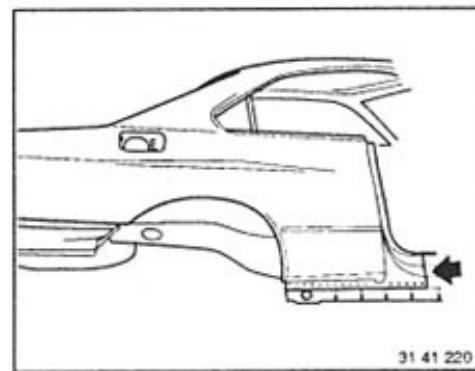
Weld link between lower section of rear win-
dow frame and side panel.



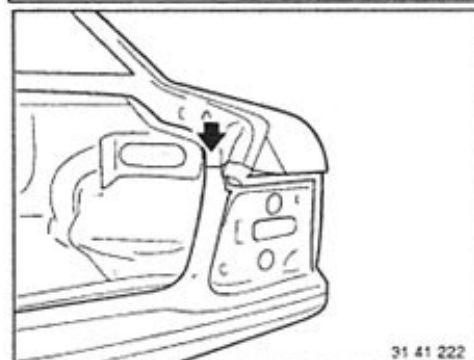
Braze link between lower section of rear win-
dow frame and side panel.



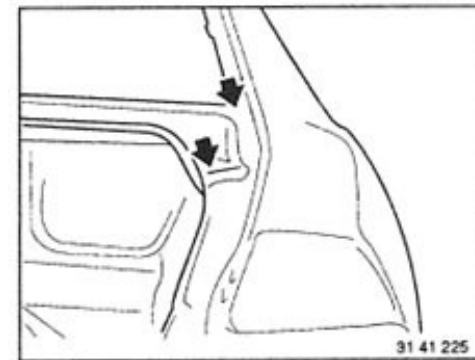
Braze cover on side member in door opening.
Grind down welding and brazing points.



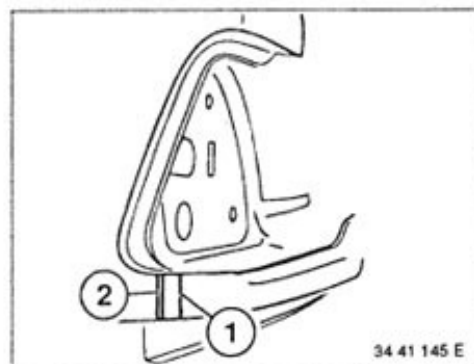
Tin out cover for side member in door opening and grind down.



Tin out connecting point in water gutter and grind down.

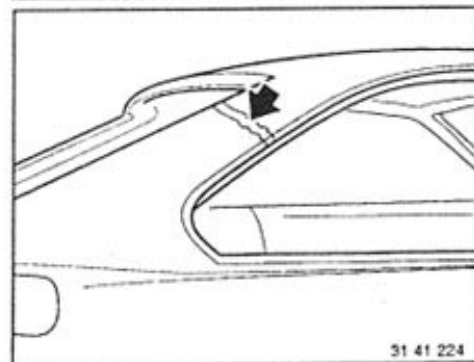


Tin out link between lower rear window frame and side panel and grind down.

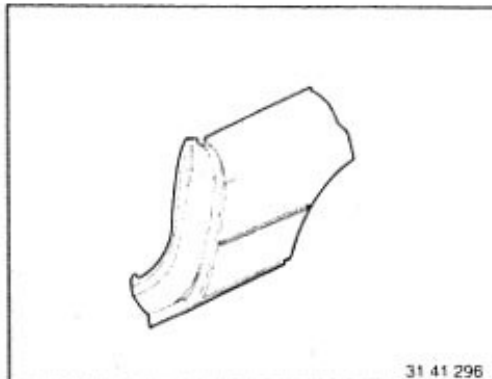


Tin out connecting point on side panel and grind down.

- 1 = Connecting point for tail panel (brazing point)
- 2 = Bead in rear side panel



Tin out connection on C pillar and grind down.



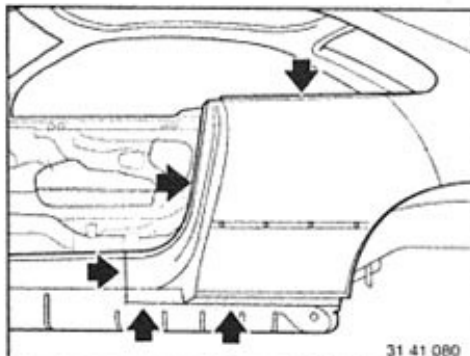
41 35 294 REPLACING LEFT OR RIGHT REAR SIDE PANEL

Remove or cover other parts of car which are located in the repair zone and could be subjected to heat, sparks or dust.

Refer to information on body repairs!

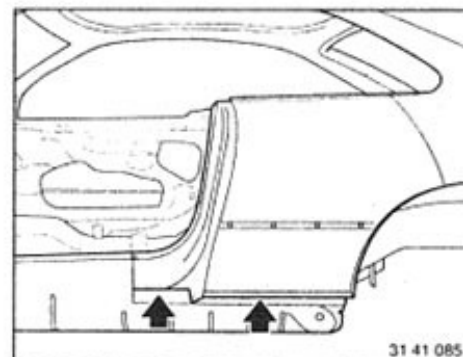
Remove or disconnect following parts.

- Bumper with impact absorbers
- Complete trunk floor cover
- Battery
- Car jack
- Tail light assembly
- Trunk seal
- Wire harness partially
- Spare wheel
- Lock in tail panel
- Extraction slot
- Spare wheel well trim panel
- Rear wheel
- Central ground connection
- Left bottom hinge
- Trunk lid

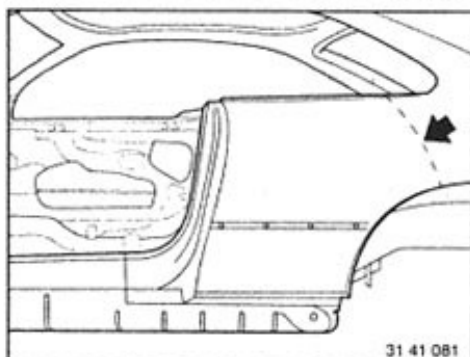


Clean mating surfaces.

- Door opening
- Side member
- Window line
- Wheel house

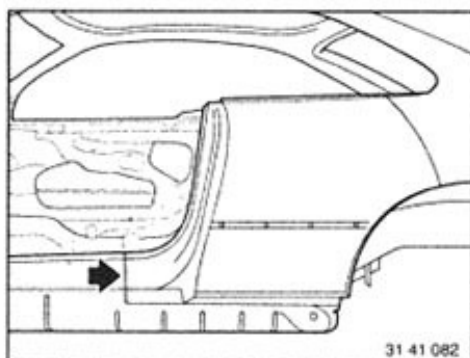


Cut off side member/side panel connection roughly with a sheet metal chisel.

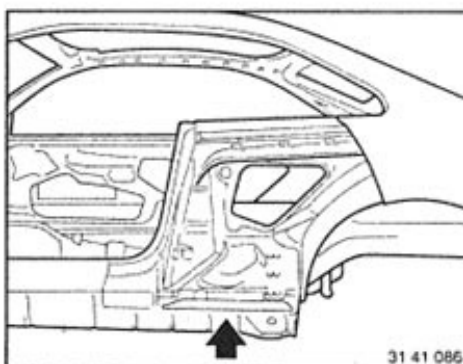


Determine and mark cutting line.
Cut off along cutting line.

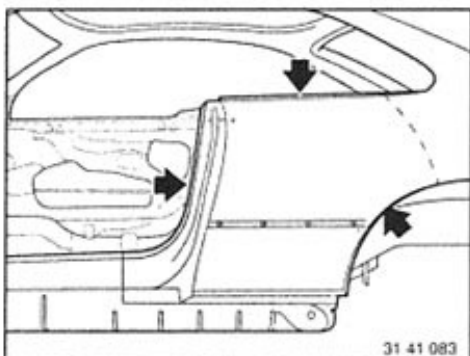
Take off side panel.



Remove brazing solder.

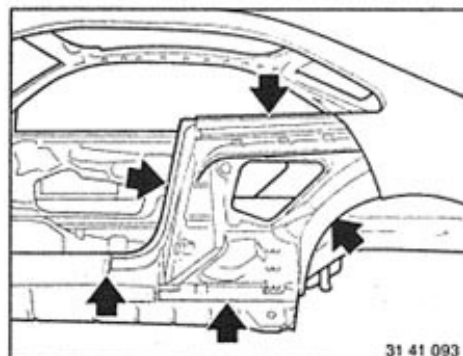


Remove scrap metal.

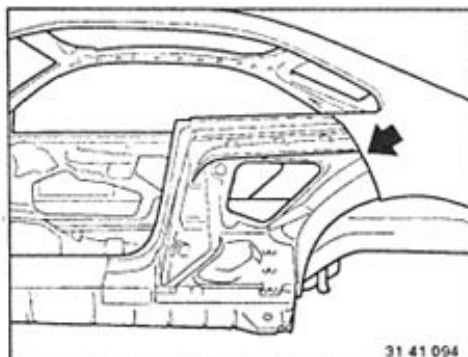


Drill off welding spots.

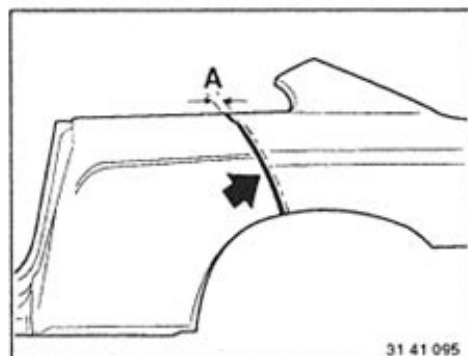
- Door opening
- Window line
- Wheel house



Grind (clean) mating surfaces.
Straighten mating surfaces (wheel house).
Remove undercoating on edge of wheel house.



Clean shouldered surfaces for partial replacement (side panel).

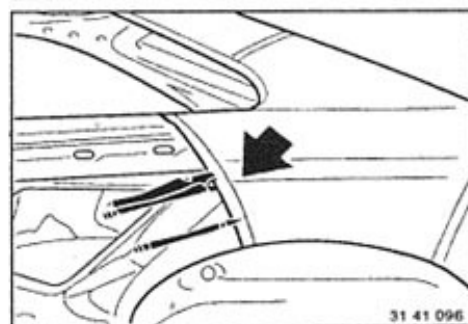


Mark cutting line on new side panel.

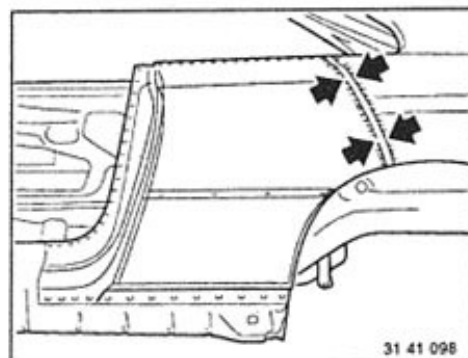
Note:
Consider width for reinforcement.
Reinforcement is produced from new side panel.

A = 40 mm (1.575") wide.

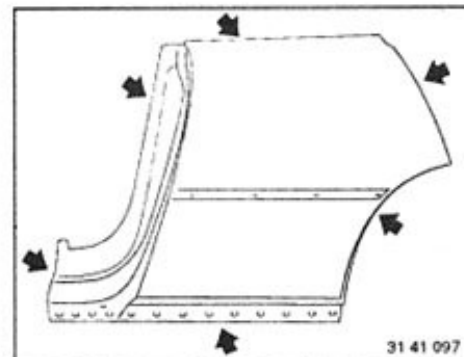
Cut out reinforcement and cut off section not required.



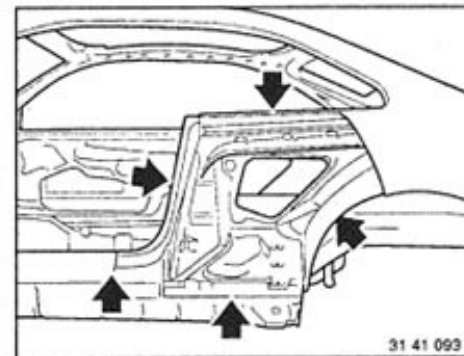
Fit in reinforcement on side panel and drill holes for plug welding.
Fit in and tack weld reinforcement.
Notch at beads.
Plug weld reinforcement.



Fit in partial replacement section.
Check gaps.
Note door gap!



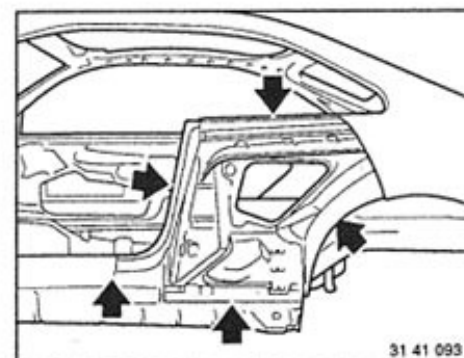
Clean welding surfaces on partial replacement section.
Drill holes for plug welding in partial replacement section.



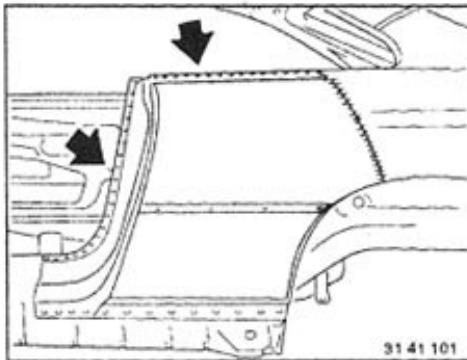
Coat welding surfaces with zinc dust paint.

- Door opening
- Window line
- Side member
- Entrance
- Wheel house

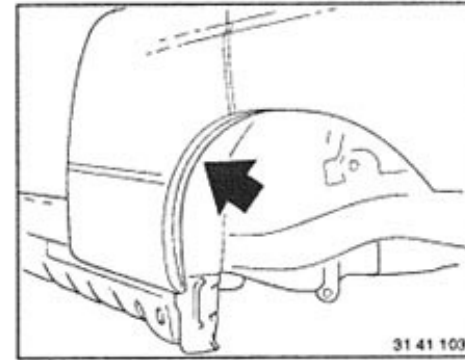
Fit in partial replacement section.



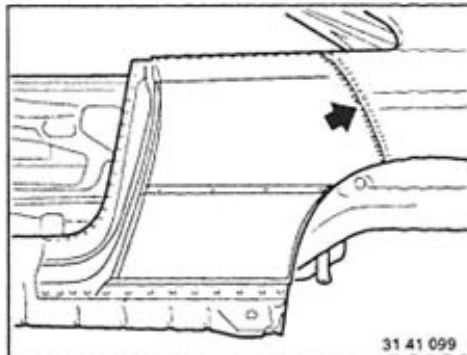
Plug weld reinforcement on partial replacement section at the side panel mating surface.



Spot weld partial replacement along window line
Only tack weld door opening (apply individual spots)
Align door opening
Spot weld door opening



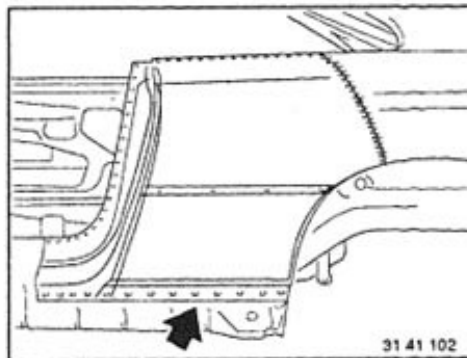
Spot weld wheel housing.



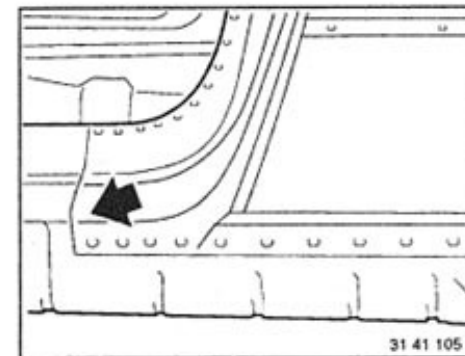
Apply spot welds along joint so close together that a continuous seam is created.

Caution!
Always allow each spot to cool slightly before applying the next spot.
Risk of distortion!

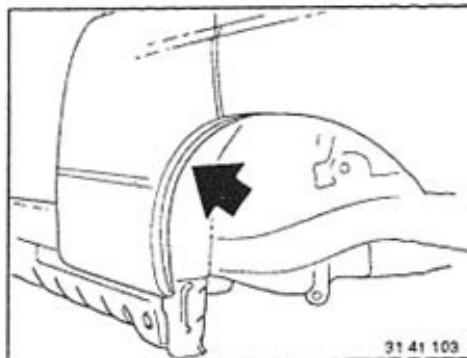
Grind down joints.



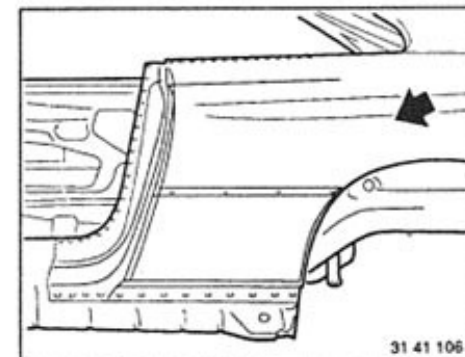
Plug weld connection between side member / side panel.



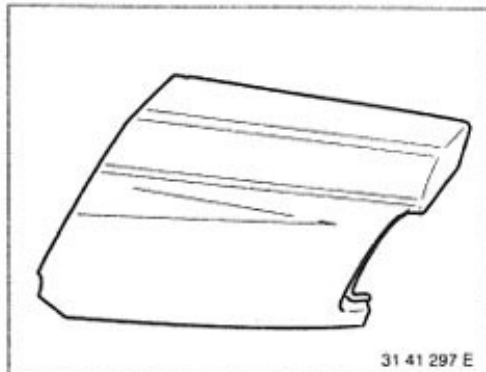
Clean brazing around door opening.
Tin out brazed area of door opening.



Align wheel housing (knurl along edge).
Inert gas weld joint in wheel arch.
Grind down joint.



Tin out connection for partial replacement.
Smooth down tinned areas.



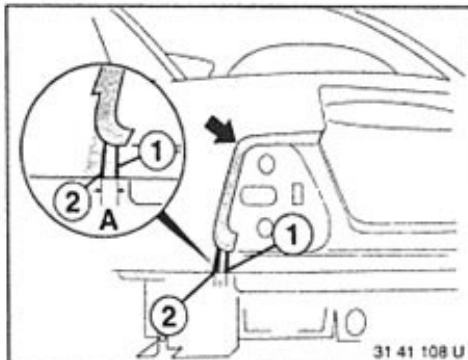
**41 35 337 Replacing rear left side panel
(partial replacement to
wheel arch)**

Body repair instructions - see 41-0/1.

Remove or cover other vehicle parts in the repair zone which could be damaged by heat, sparks and dust.

Remove or detach the following parts:

- Trunk lid
- Bumper
- Cover for trunk floor
- Battery
- Tail light, left
- Gasket for luggage compartment
- Section of wiring harness
- Lower hinge
- Back wheel

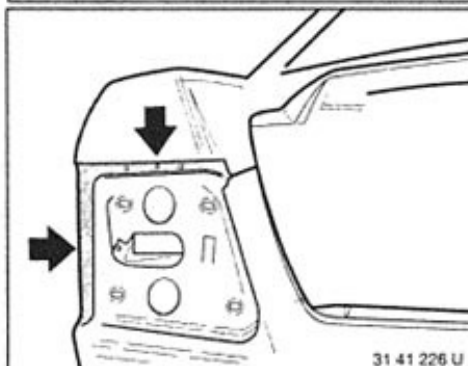


Clean mating surfaces.

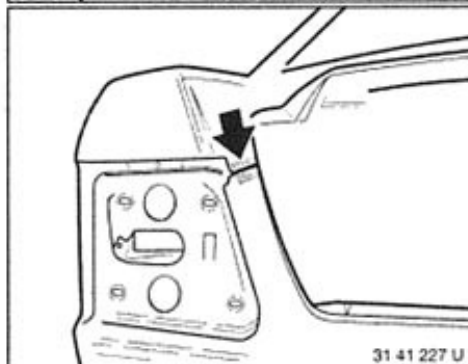
Important!

1 = Tall panel mating surface (brazed)
2 = Bead in rear side panel

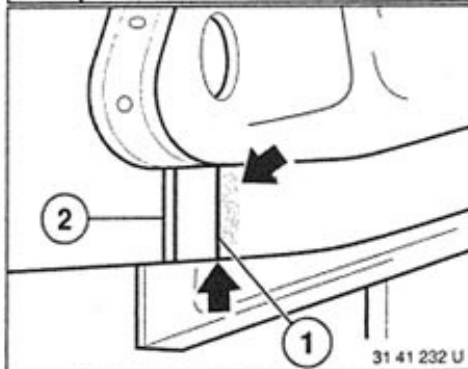
Distance (A) = approx. 20 mm (0.787").



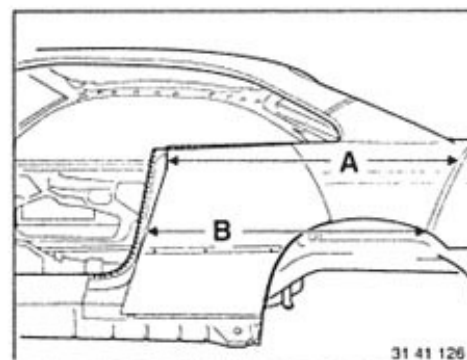
Drill off welding spots in lamp holder.



Grind off brazed surfaces in water drain and lamp holder transition.



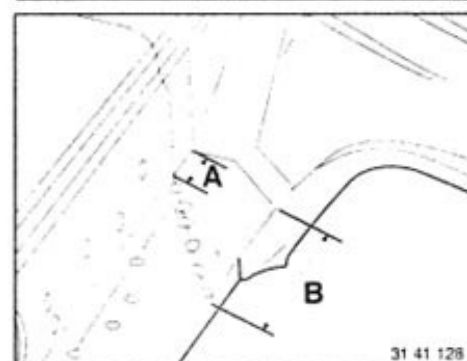
Grind off brazed surface on tall panel mating surface.



Determine and mark cutting line.

Distance A = approx. 1170 mm (46.063")

Distance B = approx. 1040 mm (40.905")



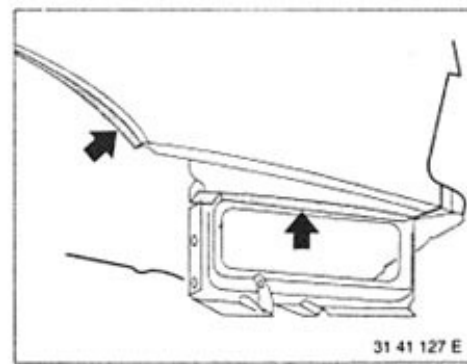
Determine and mark cutting line.

Important!

Make sure of sufficient distance to the window.

Distance A = approx. 30 mm (1.181")

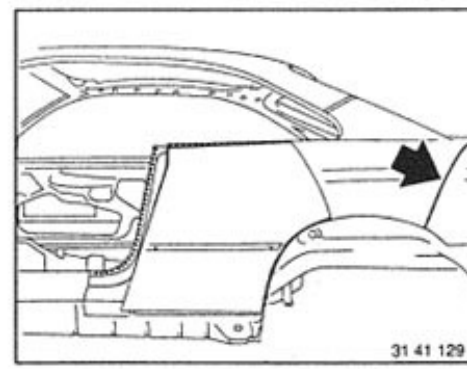
Distance B = approx. 85 mm (3.346")



Remove undercoating on mating surfaces.

Cut off wheel house extension along cutting line roughly.

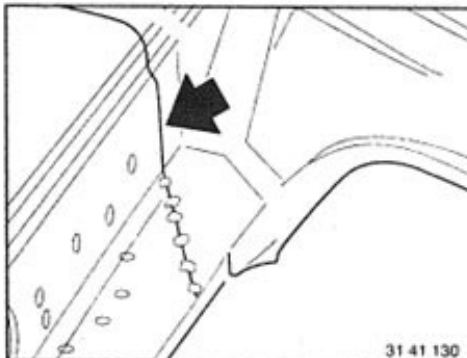
Drill off wheel house welding spots.



Cut off side panel along marked cutting line.

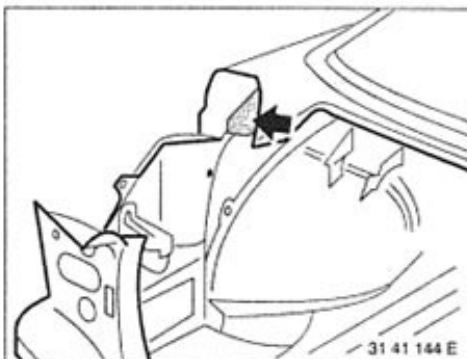
Important!

Don't cut through reinforcements.



Disconnect side panel at marked point on water gutter.

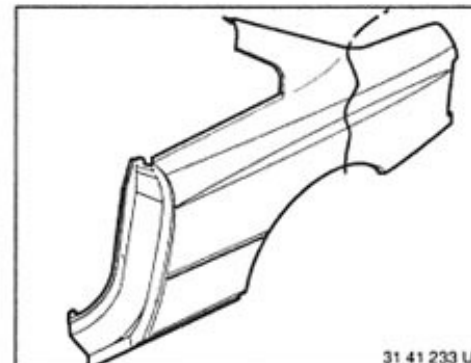
Caution!
Do not cut through sheet metal reinforcements.



Position of sheet metal reinforcements on water gutter.

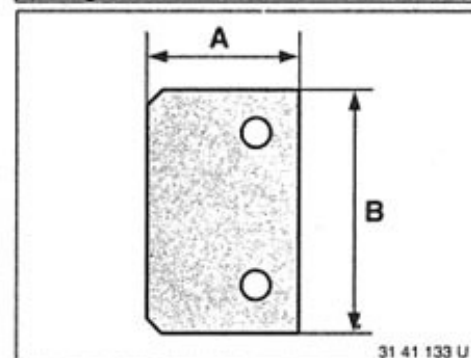
Caution!
Do not cut through sheet metal reinforcement.

Remove side panel.
Remove scrap metal, clean joints (wheel arch extension) and align.



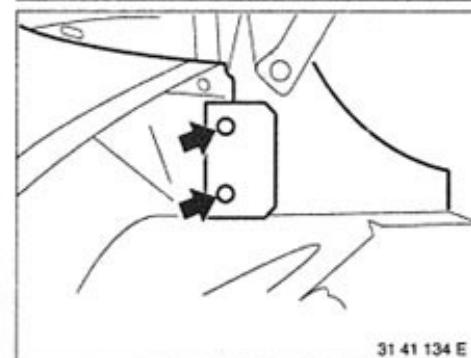
Mark out joint on new part for partial replacement of side panel and cut out roughly.

Caution!
Note offset dimension on remaining side panel!

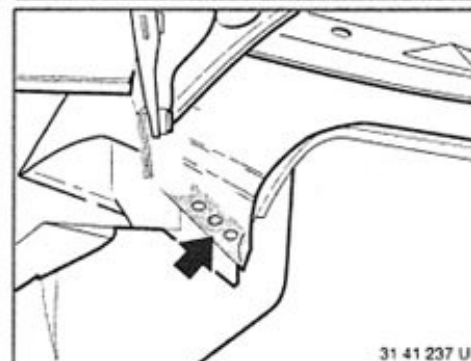


Produce reinforcement plate for side connection of water gutter and drill holes for plug welding.

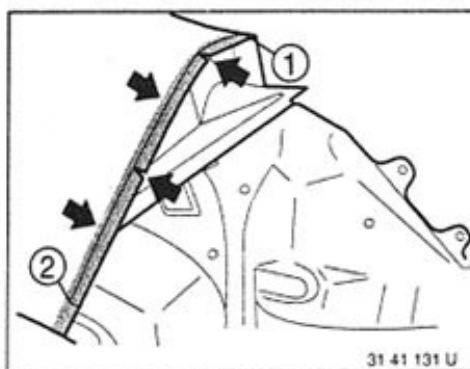
Dimension (A) = approx. 30 mm
Dimension (B) = approx. 50 mm



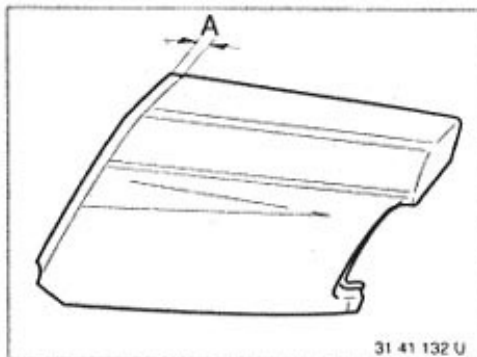
Adjust reinforcement plate to fit and plug weld.
Ensure adequate overlap (min. 15 mm all round)!



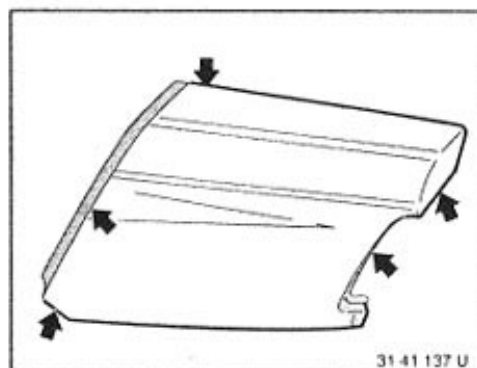
Produce reinforcement plate for lower joint on water gutter and weld into place.



Offset remaining side panel from Point 1 to Point 2 and disconnect at edges.

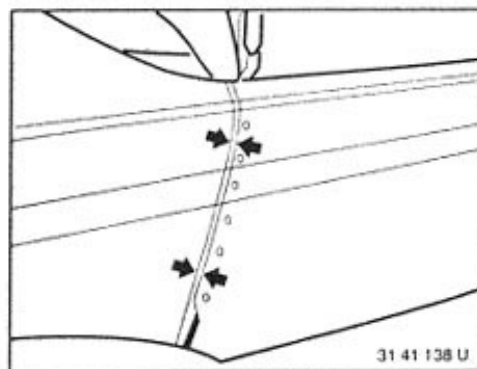


Fit in new part.

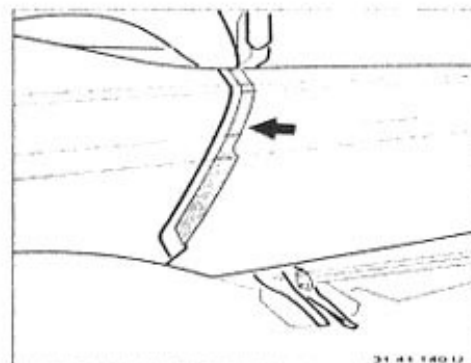


Clean welding surface on new part.
Coat welding surfaces with zinc dust paint.

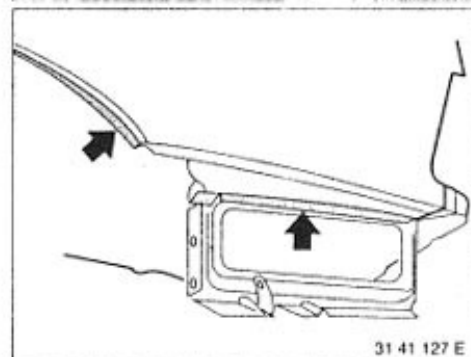
Drill holes for plug welding.



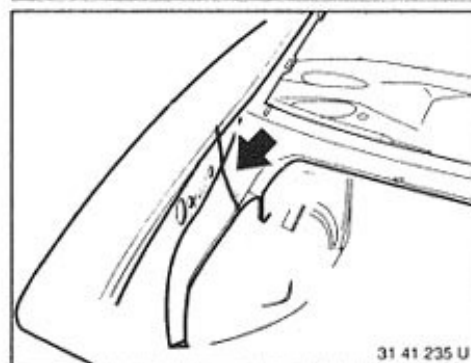
Fit in new part, checking for uniform joint width.



Plug weld shouldered edge of side panel partial replacement section.



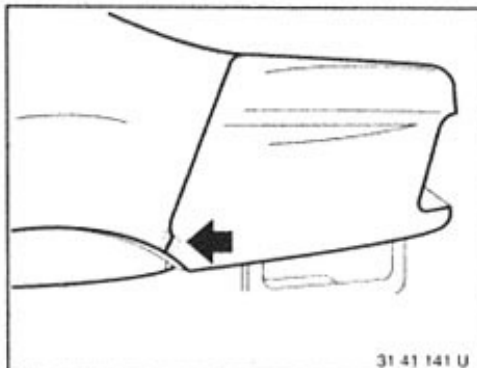
Spot weld on wheel house extension and in wheel house.



Spot weld side and bottom of water drain connection.
Place welding spots so close together that a welded seam is produced.

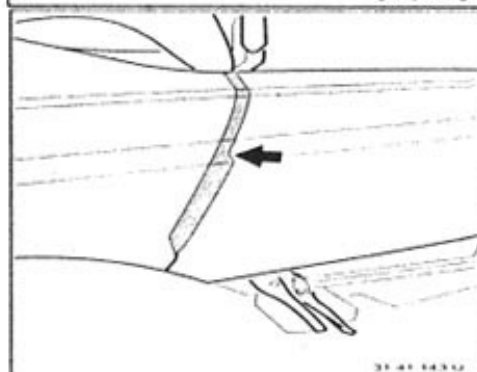
Important!

Protect rear window zone against excessive heat, as rear window could then leak.
Let one welded spot cool off before producing an adjacent spot.



Butt weld along edge of wheel housing.

31 41 141 U



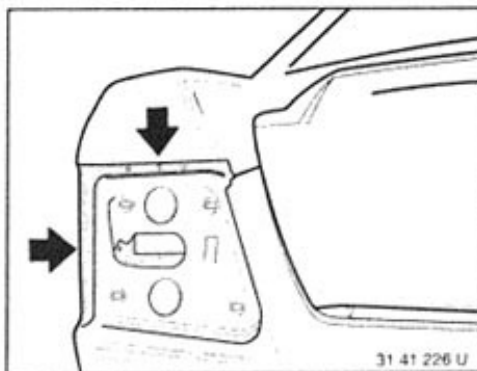
Apply individual spot welds along edge of partial replacement for side panel so close together that a continuous seam is created.

Caution!

Always allow each spot to cool slightly before applying the next spot.
Risk of distortion!

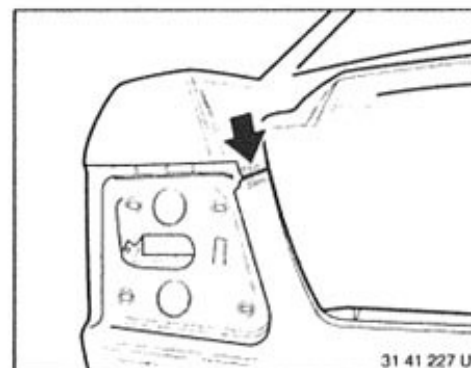
31 41 143 U

Align joints with one another.



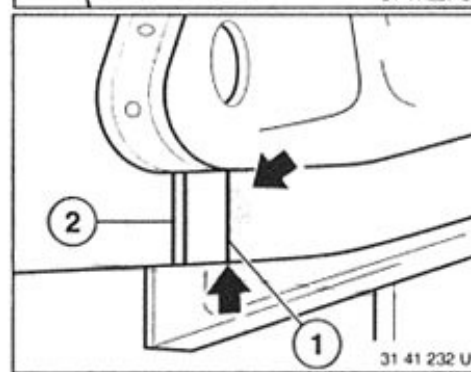
Spot weld in the lamp support.

31 41 226 U



Braze water gutter and link to lamp support.

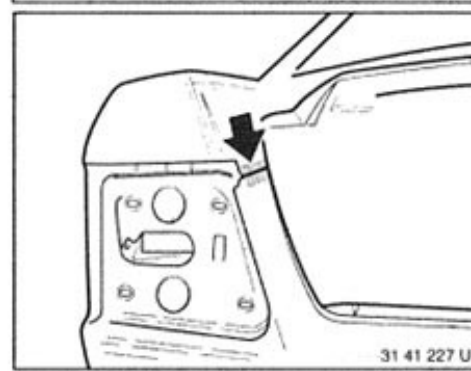
31 41 227 U



Braze link with tail panel and rear side panel.

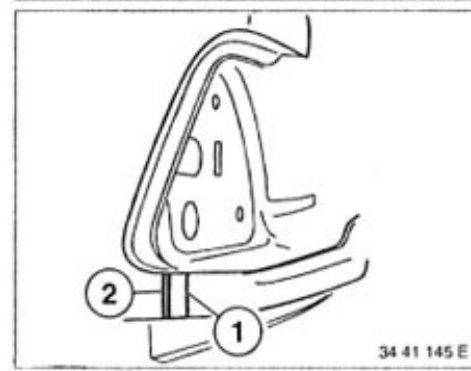
- 1 = Joint on tail panel (brazed point)
- 2 = Bead in rear side panel

31 41 232 U



Tin out connection in water gutter and grind down.

31 41 227 U



Tin out joint on side panel and grind down.

- 1 = Connecting point on tail panel (brazing point)
- 2 = Bead in rear side panel

34 41 145 E

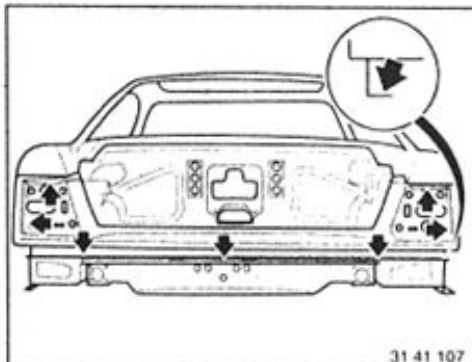
**41 35 341 REPLACING LEFT REAR
SIDE PANEL (Partial Re-
placement Up to Wheel
House) AND TAIL PANEL**

Remove or cover other parts of car
which are located in the repair zone
and could be subjected to heat, sparks
or dust.

Refer to Information on body repairs!

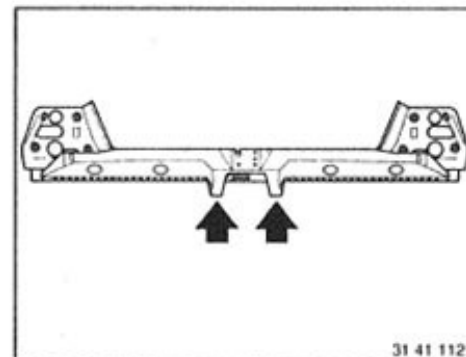
Remove or disconnect following parts.

- Bumper with impact absorbers
- Complete trunk cover
- Batteries
- Car jack
- Tail lights
- Trunk seal
- Wire harness partially
- Spare wheel
- Lock in tail panel
- Extraction slots
- Spare wheel well trim panel
- Rear wheel
- Central ground connection
- Bottom left hinge
- Trunk lid



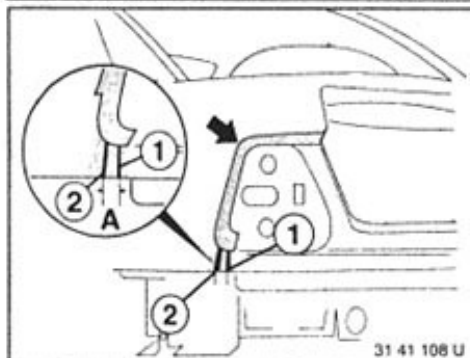
Clean mating surfaces.

Note:
Trunk lid was removed in picture for better illustration.



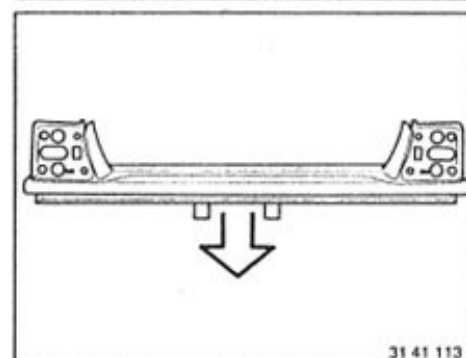
Cut off connecting plate of inside tail panel reinforcements on the trunk floor plate.

Note:
Tail panel was removed in picture for better illustration; view from trunk.

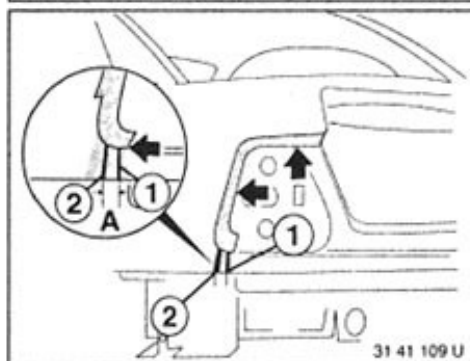


Important!
1 = Tail panel mating surface (brazed)
2 = Bead in rear side panel

Distance A = approx. 20 mm (0.787")



Take off tail panel.

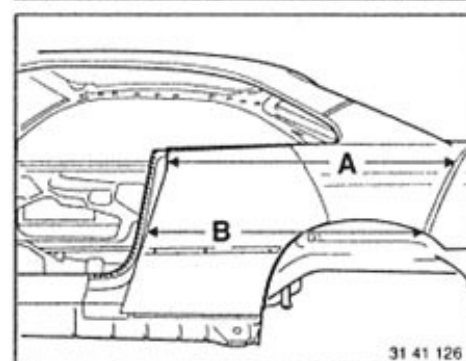


Cut out tail panel in the tail light area roughly with a pneumatic saw.

Important!
Cut in front of tail panel mating surface (1).

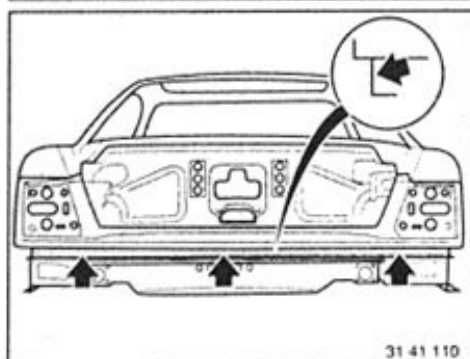
1 = Tail panel mating surface (brazed)
2 = Bead in rear side panel

Distance A = approx. 20 mm (0.787")

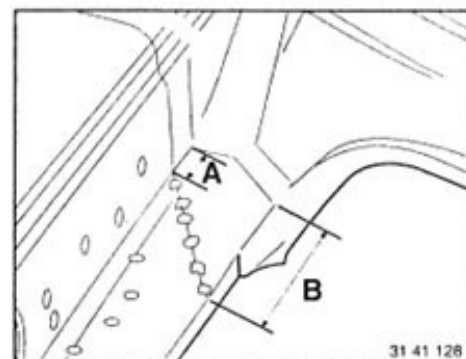


Determine and mark cutting line.

Distance A = approx. 1170 mm (46.063")
Distance B = approx. 1040 mm (40.945")



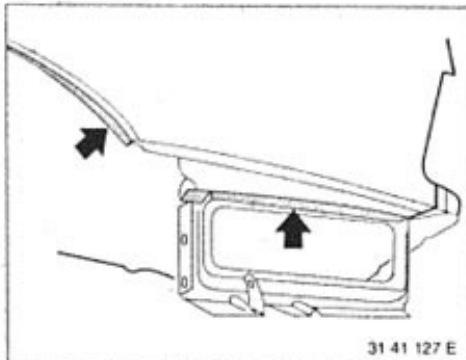
Chisel off tail panel roughly on the outside of the trunk floor plate connection.



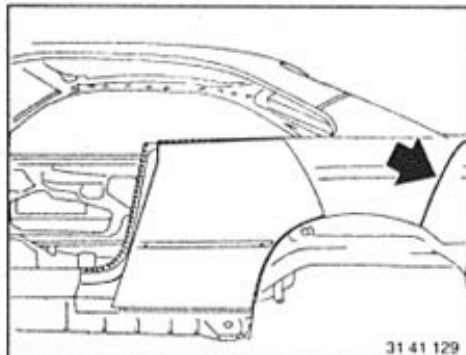
Determine and mark cutting line.

Important!
Make sure of sufficient distance to window!

Distance A = approx. 30 mm (1.181")
Distance B = approx. 85 mm (3.346")

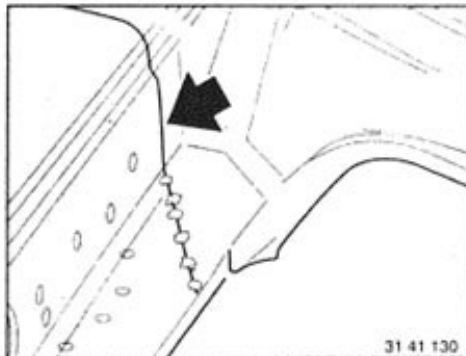


Remove underbody protection from connecting points.
Roughly separate wheel arch extension. Drill out spots in wheel housing.



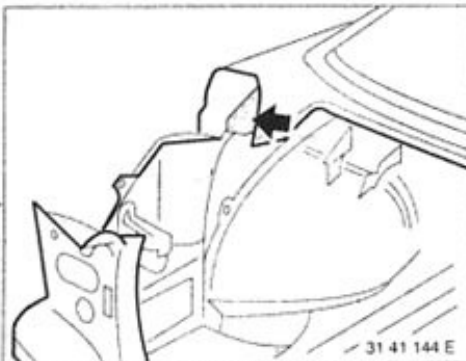
Separate side panel at marked location.

Caution!
Do not cut through reinforcement plate.



Cut through side panel at marked location in water gutter.

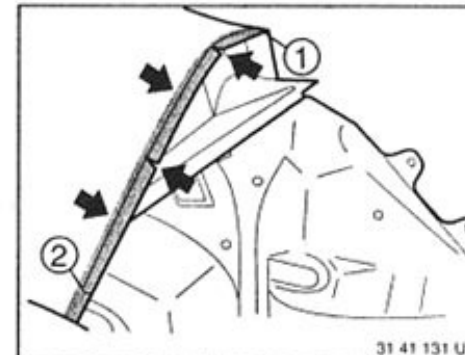
Caution!
Do not cut through sheet metal reinforcements.



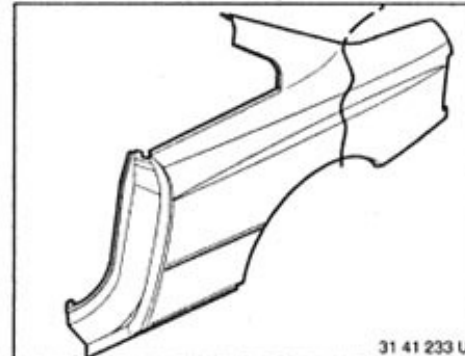
Location of reinforcement plates in water gutter.

Caution!
Do not cut through sheet metal reinforcements.

Remove side panel.
Remove scrap metal, clean joints and align to fit.

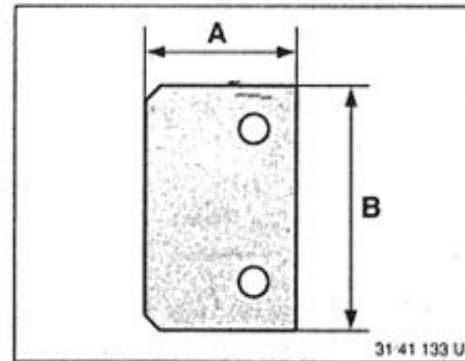


Offset remaining side panel from point 1 to point 2 and disconnect at edges.



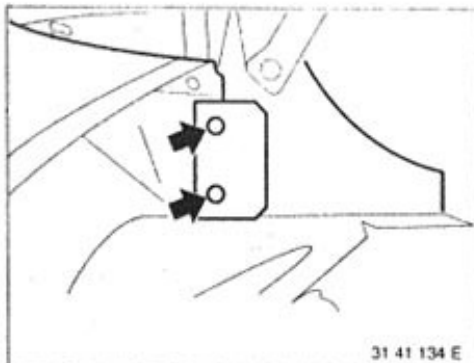
Mark out joint on new part for partial replacement of side panel and cut to shape roughly.

Caution!
Note offset dimension on remaining side panel!

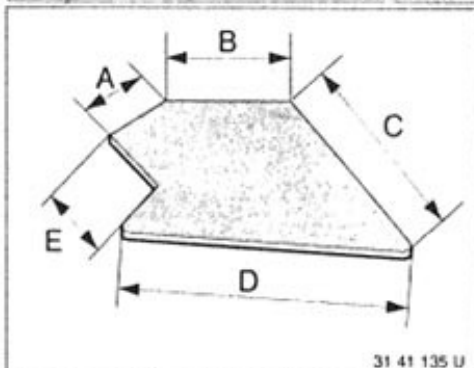


Produce a side reinforcement plate for connection to water gutter and drill out holes for plug welding.

Dimension (A) = approx. 30 mm
Dimension (B) = approx. 50 mm

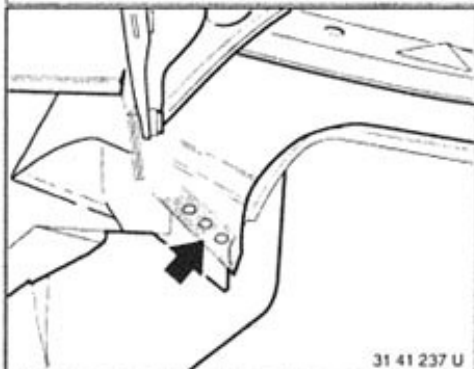


Fit in and plug weld reinforcement.
Make sure of sufficient overlapping –
at least 15 mm (0.591") each.



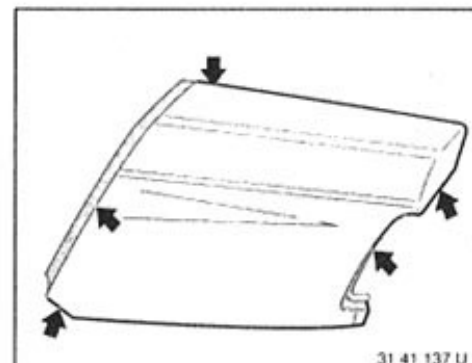
Produce reinforcement for bottom
water drain connection.

Distance A = approx. 20 mm (0.787")
Distance B = approx. 35 mm (1.378")
Distance C = approx. 50 mm (1.969")
Distance D = approx. 75 mm (2.953")
Distance E = approx. 20 mm (0.787")

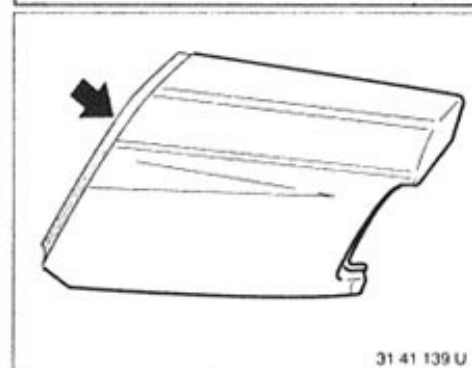


Fit in and spot weld reinforcement.
Make sure of sufficient overlapping!

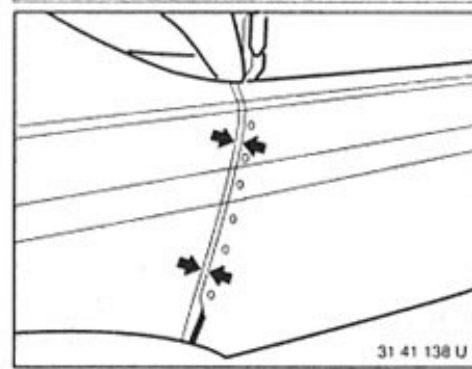
Fit in new part.



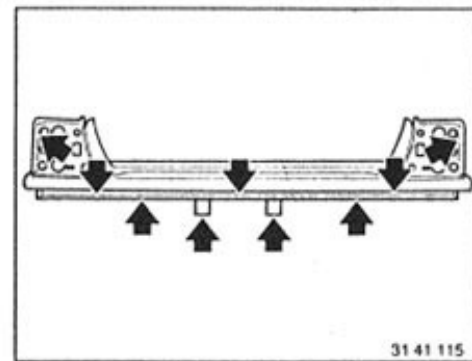
Clean welding surfaces on new part.
Coat welding surfaces with zinc dust
paint.



Drill holes for plug welding.



Fit in new part, checking for uniform
joint width.

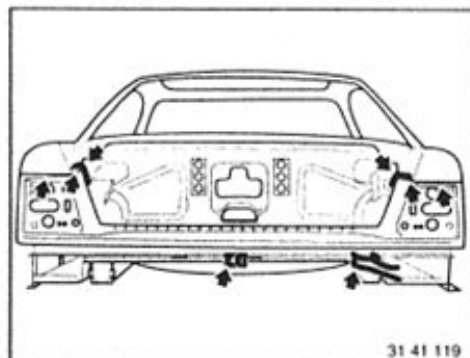


Clean welding surfaces on tail panel.

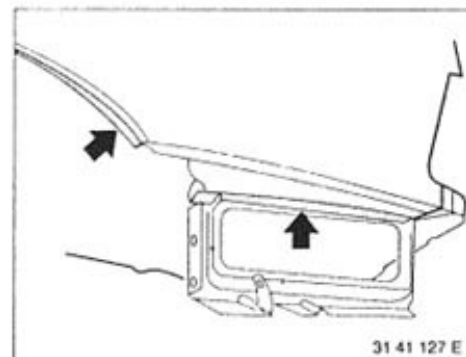
- Trunk floor plate
- Wheel house extension
- Tail light assemblies
- Inner reinforcements on trunk floor

Fit in tail panel and rear side panel partial replacement section.

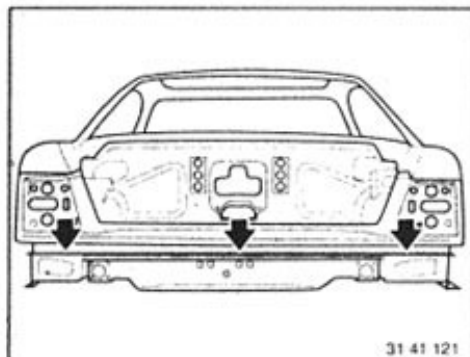
Plug weld along shouldered edge of side panel partial replacement section.



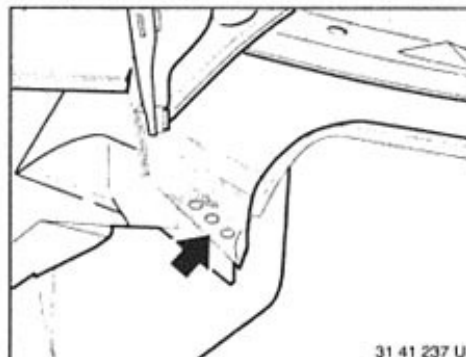
Straighten mating surfaces on tail light assemblies.
Hold tail panel in position with clamps, using brazing spots if necessary.



Spot weld on wheel house extension and in wheel house.

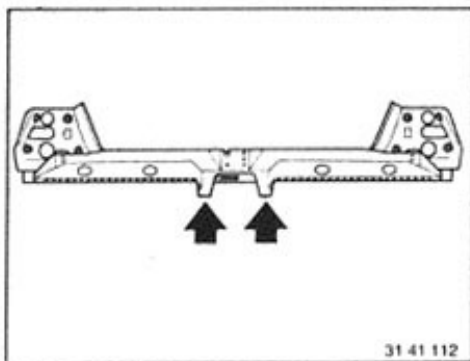


Spot weld tail panel on trunk floor plate.



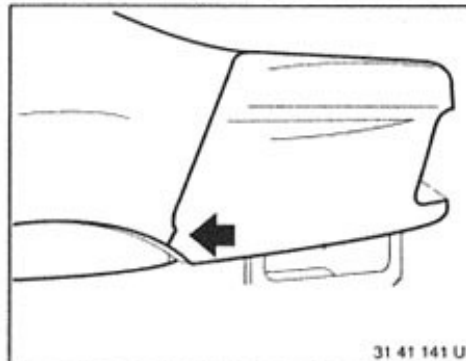
Spot weld side and bottom of water drain connection, placing spots so close together that a welded seam is produced.

Important!
Protect rear window zone against excessive heat, as otherwise the rear window could leak.
Let a welded spot cool off slightly before producing an adjacent spot.

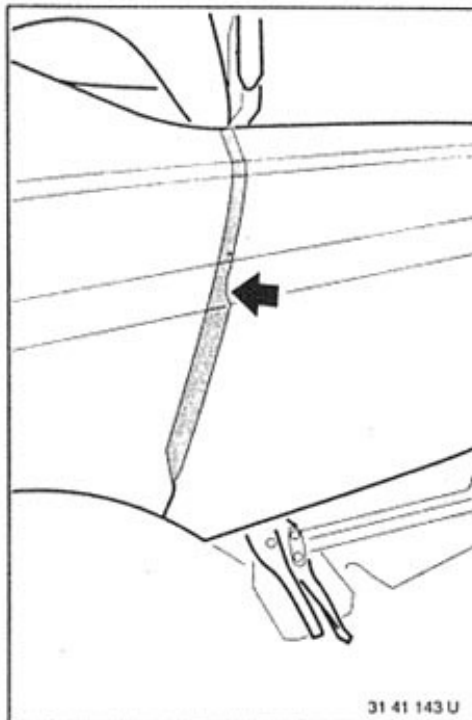


Weld inner reinforcements of tail panel.

Note:
Tail panel was removed in picture for better illustration; view from trunk.



Butt weld along edge of wheel house.

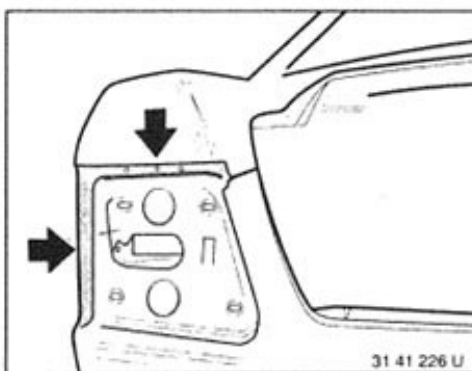


Spot weld along edge of side panel partial replacement section, placing the welded spots so close together that a welded seam is produced.

Important!
Always let a welded spot cool off slightly before producing an adjacent spot.
Danger of distortion!

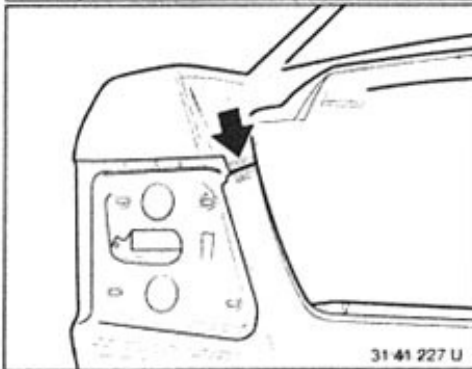
Straighten mating surfaces.

31 41 143 U



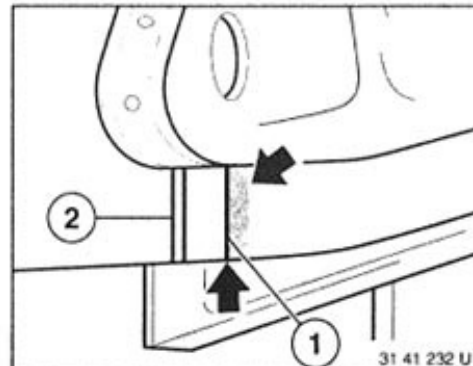
Spot weld in lamp holder.

31 41 226 U



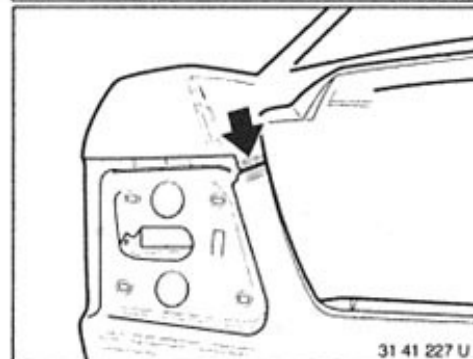
Braze water drain and lamp holder transition.

31 41 227 U



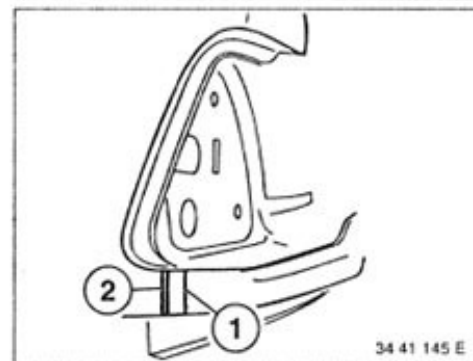
Braze tail panel and rear side panel connection.

31 41 232 U



Tin and grind down mating surface in the water drain.

31 41 227 U



Tin and grind down mating surface on the side panel.

1 = Tail panel mating surface (brazed)
2 = Bead in rear side panel

34 41 145 E

41 51 004 Adjusting left or right front door

Vehicle must be standing on level ground.

Note:

Only perform adjustment operation on one completely mounted door.
The weight of the equipment means that it has a different mounting location than it would without equipment.
Once the door has been adjusted, check the adjustment of the side windows.

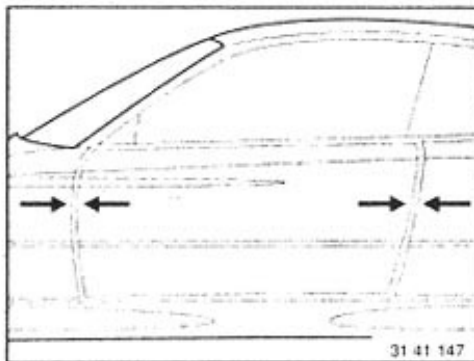
41 51 101 Replacing left or right front door

- Remove pin for arrester hook
- Remove and disconnect cable connector unit
- Remove door

Convert the following parts:

- Door trim and interior trim
- Control unit and wiring harness
- Window cavity cover strip, outside mirror, rear rubber cover, door cavity weather-strip and angle section for trim
- Side window, window regulator and window guides
- Door lock, door handle
- Body molding on outside of door
- Door stop
- Rubber seals

After conversion, fit door and align carefully, see 41 51 004.



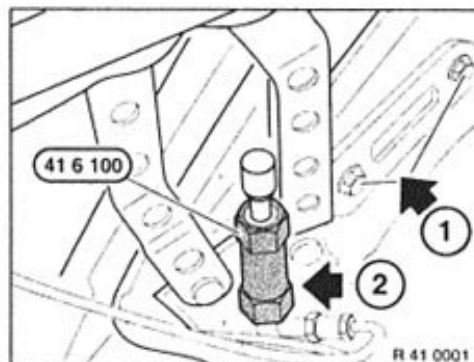
Door joints $5.5 \text{ mm}^{+0.5}_{-1} \text{ mm}$

Permitted parallelity deviation 1 mm.
Level offset of relevant body section, closing to rear is max 1 mm towards inside.

41 61 014 Adjusting hood lid

Note:

The lids and doors are aligned in the body shell and bolted into place. During subsequent movement, unpainted surfaces become exposed. These must be touched up in the appropriate color of paint.



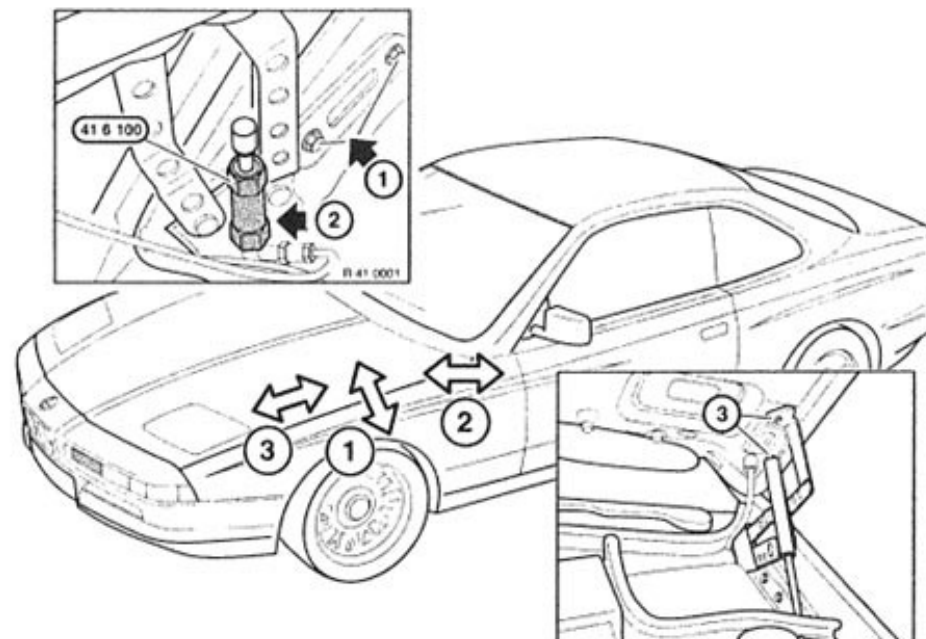
Open hood lid.

Unfasten left and right screws (1) in such a way that the hood lid can be moved.

Loosen screw (2) on left and right with special tool 41 6 100 to enable the hood lid to be moved and adjusted.

Note:

Screws (1) for height adjustment of hood lid.
Screw (2) for angle adjustment of hood lid.



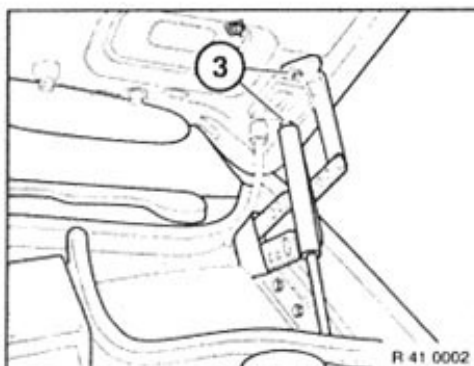
R 41 0003

Summary of hood lid adjustment:

Screw (1) = height adjustment

Screw (2) = angle adjustment

Screws (3) = longitudinal adjustment



Loosen screws (3) on left and right sides to enable these to be inserted in the hood lid.

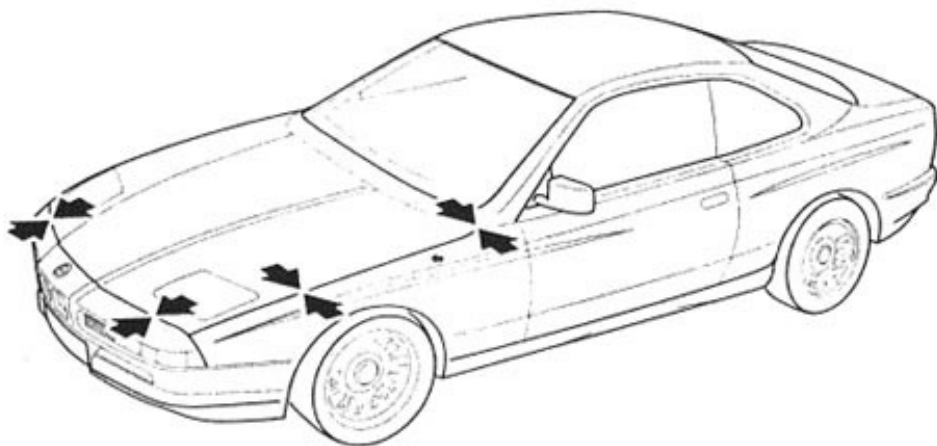
Note:

Screw (3) for longitudinal adjustment of hood lid.

Carefully close hood lid.

Caution!

Hood lid must not make contact with side panels, front trim (bumper) and the headlight pod covers.



R 41 0004

The distance between hood lid and side panels and to front trim (bumper) should feature a uniform width of gap all round. The hood lid should be approx. 1 mm deeper than the side panels.

Adjustment dimensions: refer to gaps for doors / hood lid and trunk lid.

Align hood lid to side panels and to front trim (bumper).

Open hood lid and tighten loosened screws.

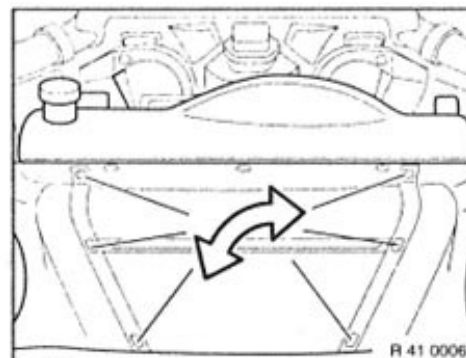
Check setting and repeat if necessary.

Check setting of hood lid locks and adjust if necessary.

Height adjustment and centering of the hood lid locks

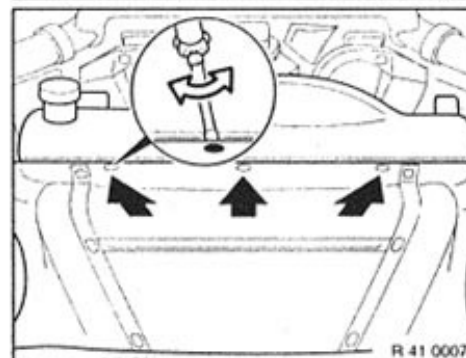
Requirement:
No parts may be worn or damaged!

Height of the hood lid:
The hood lid should be approx. 1 mm lower than the side panels.



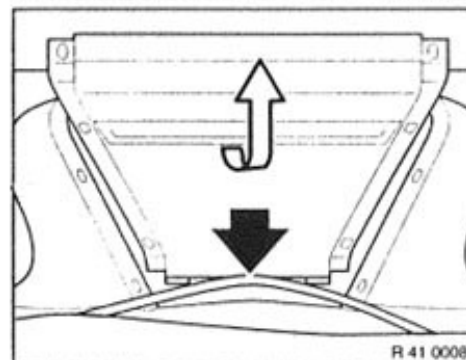
R 41 0006

1. Open hood lid.
2. Open clips on air guide cover for radiator by twisting.



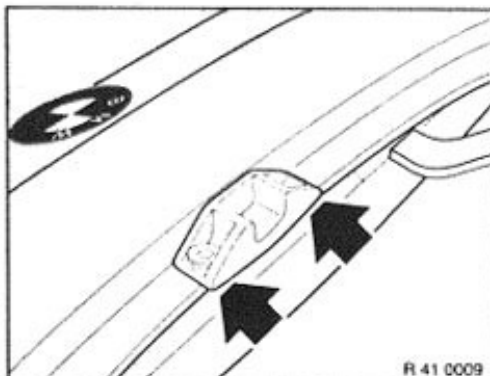
R 41 0007

3. Insert a screwdriver in the groove at the marked points. Twist screwdriver in order to release the lock.

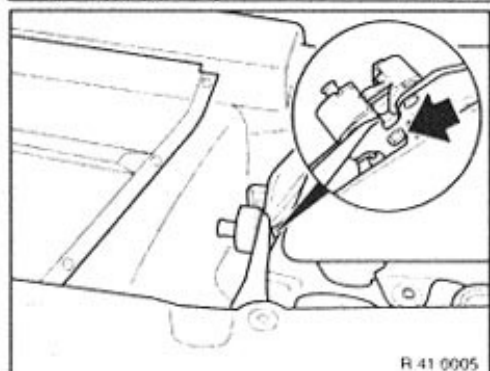


R 41 0008

4. Remove air guide for radiator and unclip Bowden cable for right hood lid lock.



5. Loosen nut on centering plate until it is possible to move the centering plate.



6. Unfasten screws on left and right sides of hood lid lock until it is possible to move the lock.

7. Block Bowden cable on hood lid locks to prevent the hood lid locks from being able to engage.

8. Slowly close hood lid

Caution!

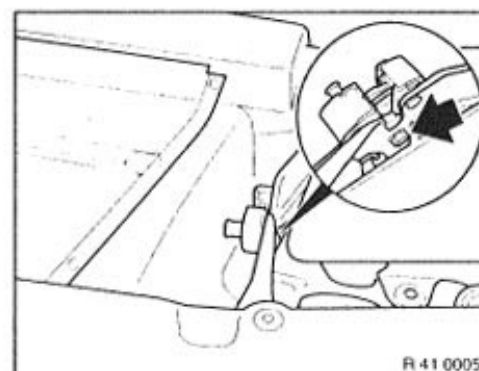
Ensure that centering plate, centering pin and hood lid locks are in the correct position.

The hood lid must not make contact with the side panels and the headlight pod covers.

9. Press down hood lid until the specified height setting is obtained.

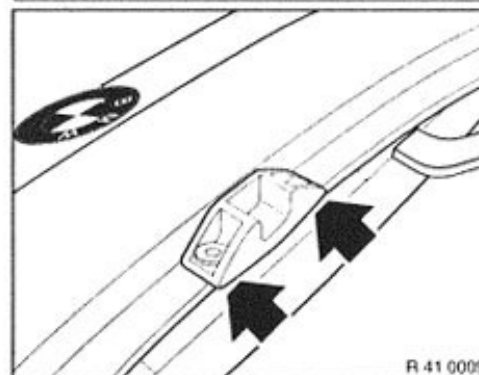
Note:

The hood lid locks are responsible for the height of the hood lid.



10. Open hood lid, tighten screws on left and right hood lid locks.

11. Tighten nut in centering plate.



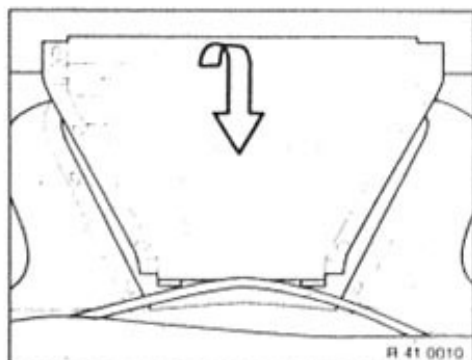
12. Lift interlock on Bowden cable for hood lid locks.

13. Slowly close hood lid.
Check setting of hood lid and repeat procedure if necessary.

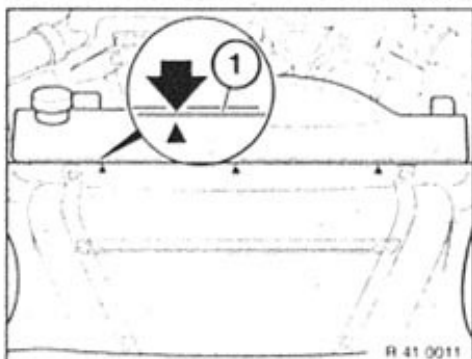
Caution!

Check that hood lid locks have engaged correctly on arrester hook and readjust if necessary.

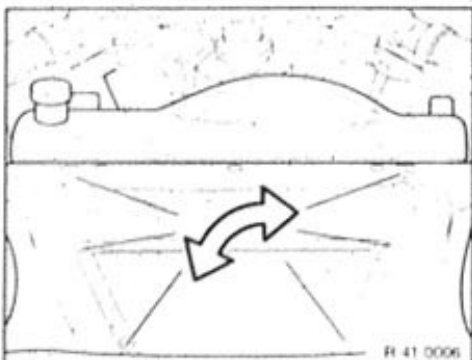
16. Close hood lid.
Check that hood lid is in correct position and is secured correctly.



14. Clip right Bowden cable for hood lid lock into place.
Install air guide for radiator.



Check that air guide is correctly seated in groove (1).



15. Install clips and twist to close.

17. Check position of headlight pod covers relative to hood lid and adjust if necessary, see 63 12 450.