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About plywood
Sandwich compositions

I.) Composition of plywood sheets:

a) Gel coat polyester Function:
Protects the surface against wear and weathering effects; waterproof protective film; can be coloured;

b) GRP coating (polyester resins and glass fibres) Function:
Increases the mechanical strength of the plywood panel and ensures durability

c) Plywood Function:
primary support element

d) Top layer (glass fibre) Function:
Ensures a smooth surface

II.) Special characteristics of plywood sheets:

high bending and compressive strength; hard-wearing; durable; smooth; sanitary; easy construction/repair; low production time; abrasion-resistant; resistant to chemicals; no corrosion and temperature problems; as a sandwich panel impact resistant (glass fibre reinforced); 'gel coat' (surface protection layer) to resist weathering; UV rays do not discolour paint; as a sandwich panel high durability/low weight/long life; odour- and tasteless panels

III.) Damages:

In most cases, damages are localised and only that section should be repaired; this preserves the structure of the body and keeps repair costs low

IV.) Repair:

Procedure for installing sections:

1. Outline (mark) the damaged area and determine the cut to be made
2. Drill the outlined square, making a hole in each corner
3. Cut out the square with a jigsaw
4. Prepare the section to be installed; use e.g. a hand router on the oblong, prepared segment to make a rebate down to the middle layer of the plywood (see drawing 1)
5. Mark the rebate on the installed plywood panel with the applied section; cut the rebate from the inside of the plywood panel with a router
6. Prepare for installing the section by fitting it to the opening; grind down the panel of the side or front wall approx. 7 cm along the edge of the opening from both the inside and outside down to the plywood to later install the glass fibre mat here
7. Prepare the filler; mix the fibre filler with the catalyst
8. Coat the rabbet on the plywood panel with filler
9. Insert the section and remove excess filler; clamp the elements in place with screw clamps (see drawing 2
10. Fill the edge ground down under item 6 with fibre filler; apply the glass fibre mat to the resin; apply another coat of polyester resin
11. Once the resin has cured, grind down the raised areas at the seams; fill uneven areas with polyester filler; sand

Note:
- Only fill scratches in the surface with polyester filler
- repair deep scratches down to the plywood with a glass fibre mat with resin and follow with polyester filler

V.) Tools for repairs:

Power drill, circular saw, hand router, jigsaw, sander, filler, mortise chisel

VI.) Materials for repairs:

Plywood-panel for the sections to be replaced, roll of glass fibre mat, polyester filler with catalyst, polyester resin with catalyst, fibre filler

VII.) Disposing of plywood bodies

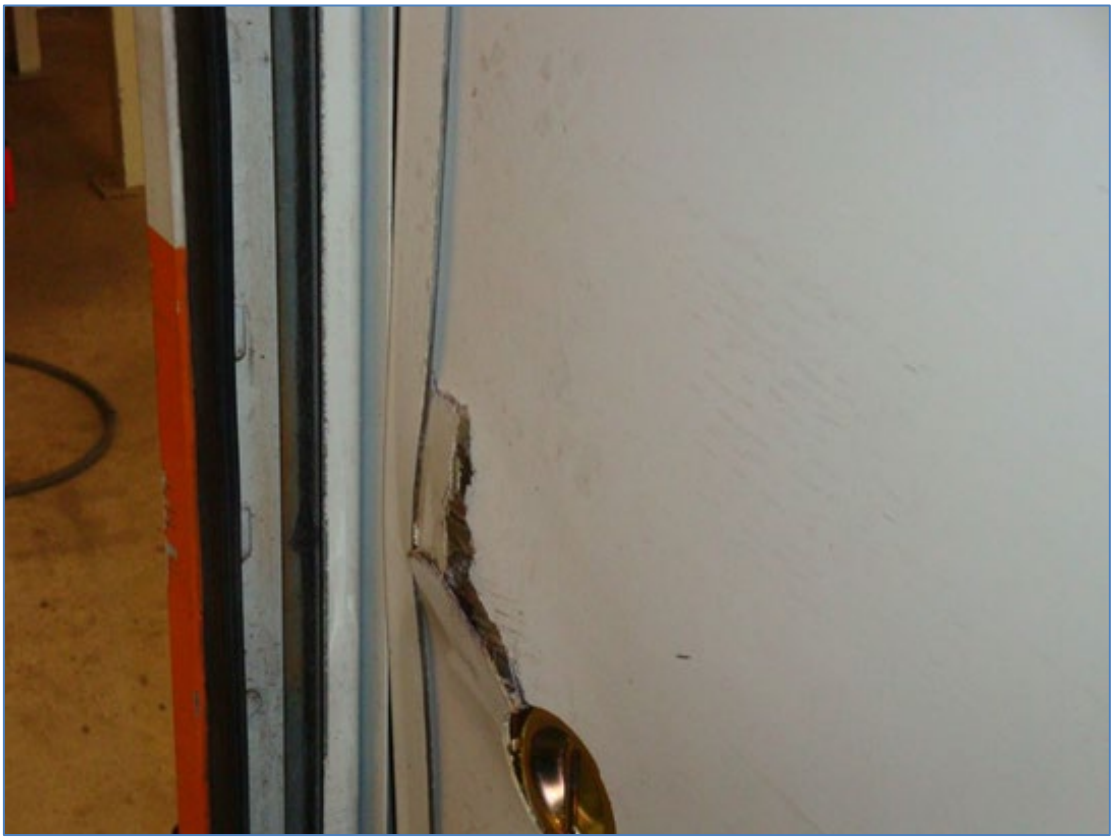
We also offer the disposal of durable plywood bodies. The steel components of the foundation will be melted and recycled. The plywood panels are cut into pieces, shredded externally, then thermally recycled. The energy generated is used to produce electric energy and district heat, which is used to supply production buildings and public buildings. In this way the the steel can be recycled as a resource and the plywood used for energy.

VIII.) Experience in building and repairing plywood bodies:

SPIER has been building plywood bodies since 1978. These are used for special delivery and collection vehicles, swap containers, on truck chassis, for semi-trailers, turntable drawbar trailers and central axle trailers. In 1997 approx. 1,700 plywood bodies were produced. The repair shop has been repairing plywood bodies since 1978.

Picture 1:

Damage to the side wall and rear frame, left side



Picture 2:

Damage to the side wall inside the cargo bay

Picture 3:

Mark damaged areas in the side wall and rear frame

Picture 4:

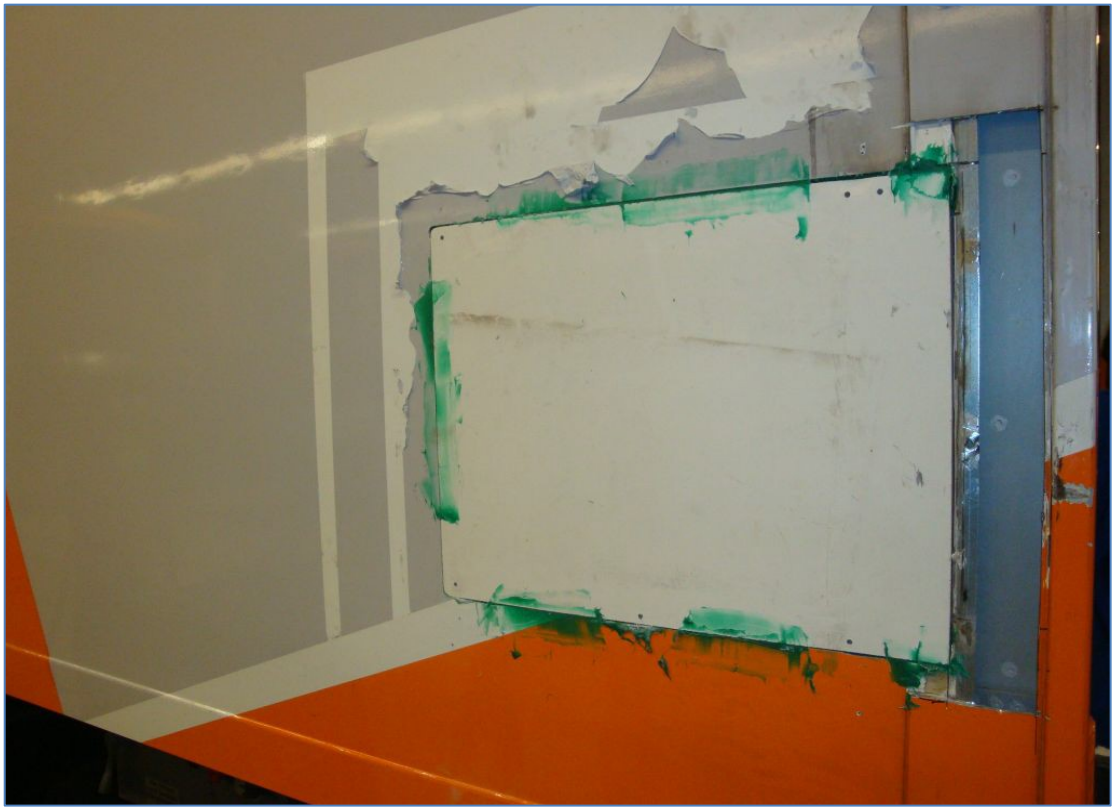
Cut out rear end pillar area with an angle grinder, straighten rear end pillar, cut out the marked rea in the side wall with a jigsaw

Picture 5:

Remove the bond area, approx. 60 mm wide, with a router along all sides

Picture 6:

The bridging gap between the wall and repair section should be at least 2 mm



Picture 7:

Bond the prepared section in place with GRP filler, ensuring the surfaces are flush, secure repair section with wood screws

Picture 8:

Once cured, grind the joint area approx. 60 - 80 mm wide

Picture 9:

Reinforce the bond areas with GRP laminate, overlapping

Picture 10:

Support curing with an infrared heater

Picture 11:

Repair repeated on the inside of the damaged area

Picture 12:

Grind applied laminate, shrink-wrap rear frame section

Picture 13:

Prime repair area with paint

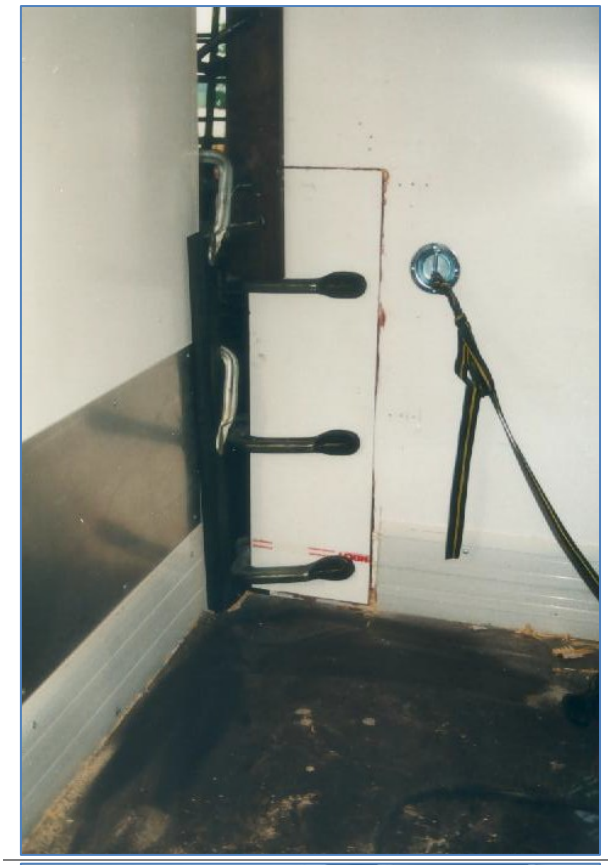
Picture 14:

Apply paint and films, thus completing the repair

	Damage to the front wall and right side wall
	damaged corner post removed

Damaged area cut out of the side wall; damaged plastic surface in the front wall

Prepared replacement piece glued into side wall and secured for curing



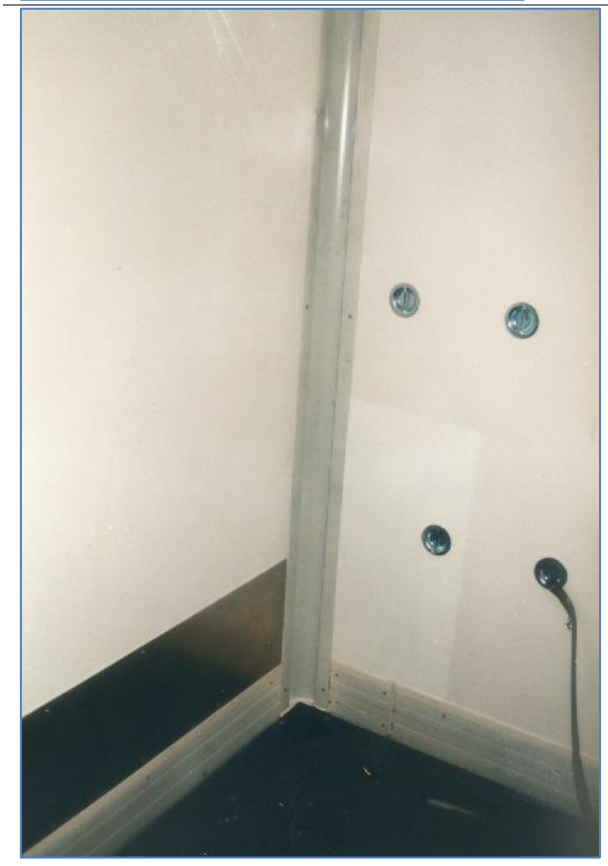
Grind the joint area on the outside of the plastic surface

preparing for applying GRP laminate

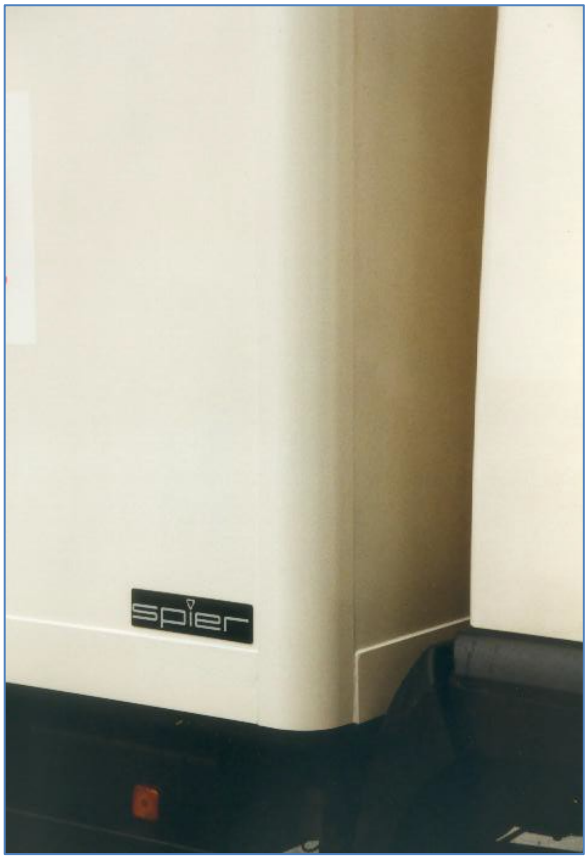
Fine filler

Sanding the fine filler and inserting the corner post

Blend in paint on the repaired side wall and front wall damaged area

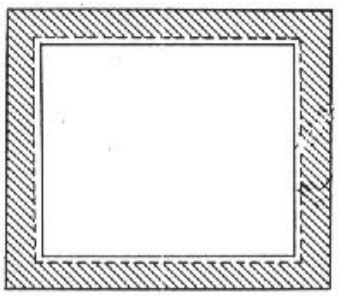


Sanding the fine filler and inserting the corner post

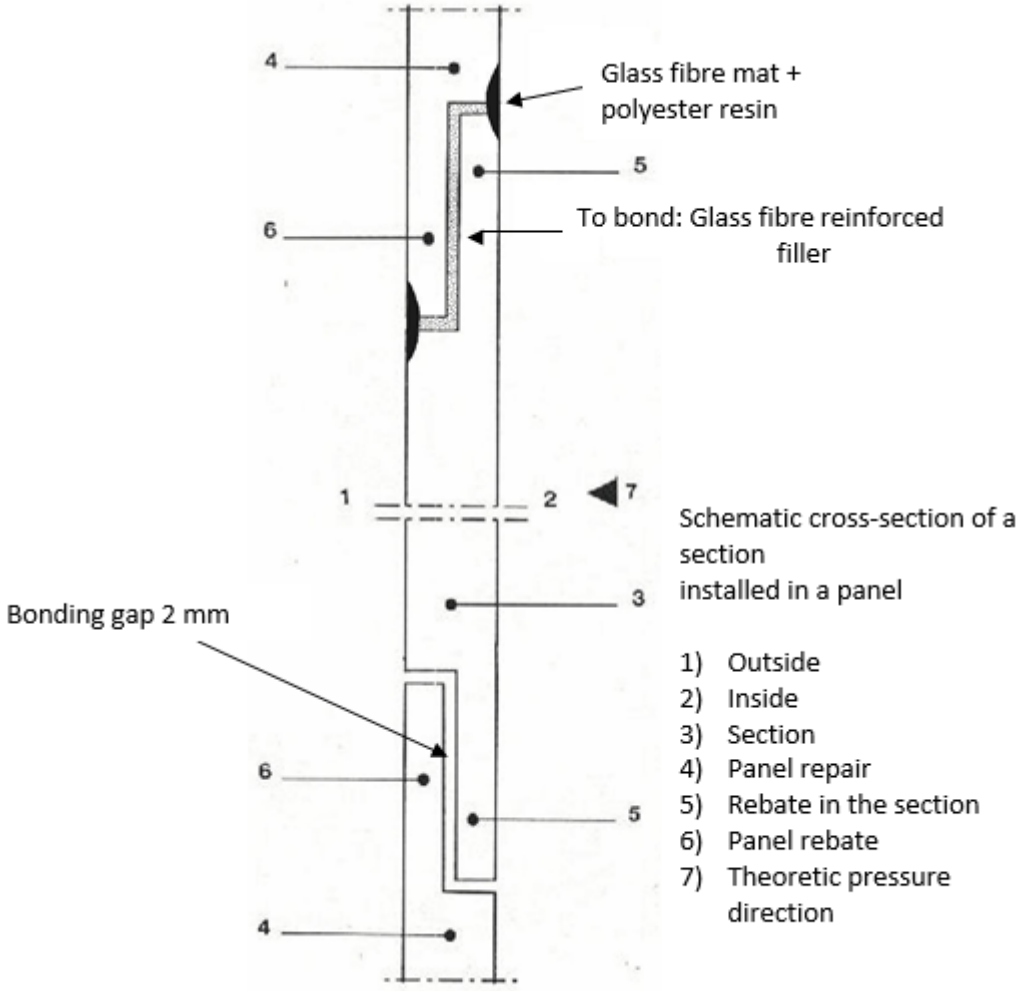


Completing the repair

Schematic figure of the repaired section



Drawing 1

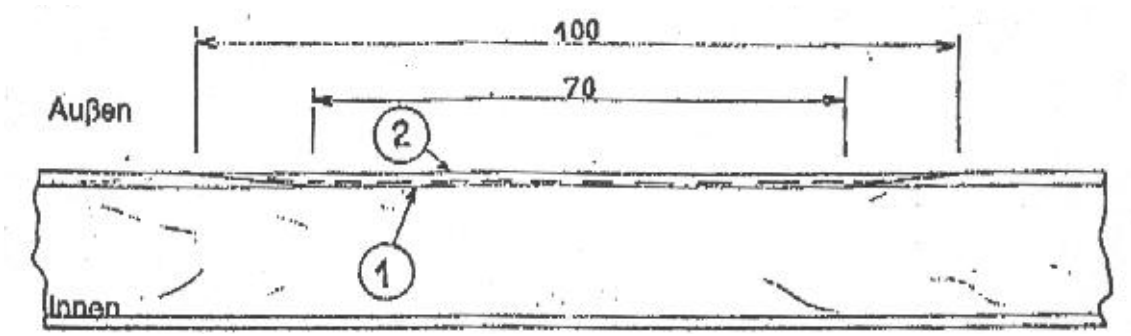


Drawing 2

Schematic cross-section of a section
installed in a panel

1) Outside
2) Inside
3) Section
4) Panel repair
5) Rebate in the section
6) Panel rebate
7) Theoretic pressure direction

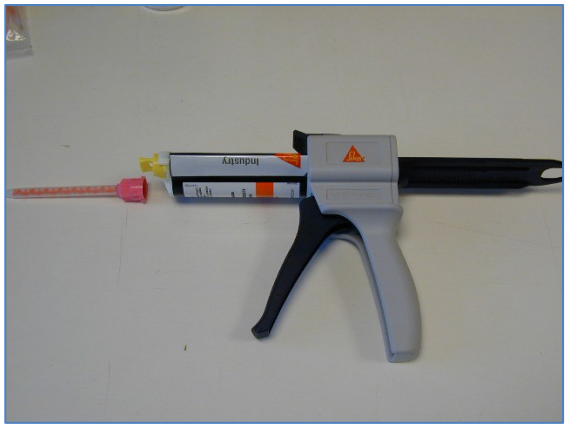
Repairing GRP damages



1. Grind down to the wood, 70mm wide
2. Bevel grind, 100mm wide
3. Dry wood (if necessary)
4. Apply woven roving 25/260g/m² to an 70mm area (mark 1)
5. Apply 450g/m² mat to an 100mm area (mark 2)
6. Coat with polyester resin tinted white
7. Once cured, sand smooth
8. Filling
9. Sand with fine paper
10. Apply acrylic paint
11. Sand with water
12. Finish with white Scotch Brite

Panels should be clean and dry, in moderate humidity

Repair / Bonding Instructions SIKA Fast 5215



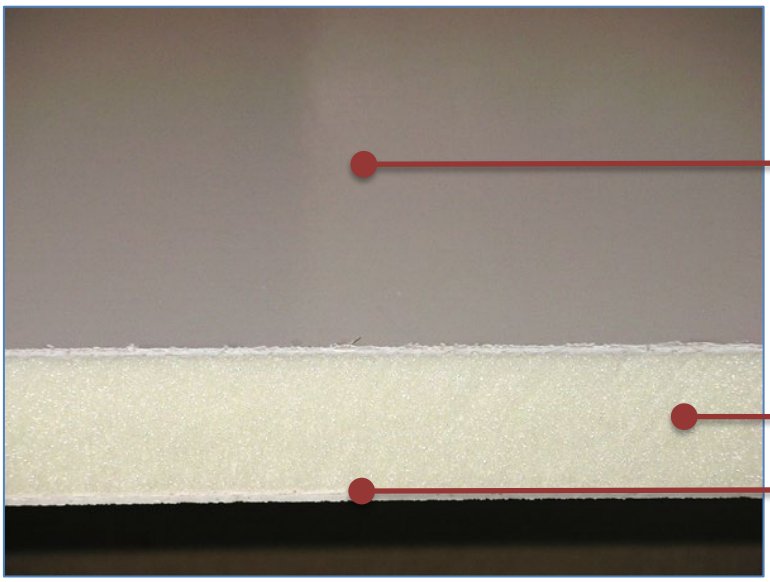
1. Assemble gun per pictures 1-3
2. Remove loose adhesive residue (ships, etc.) from the bond area
3. Treat bond areas with SIKA activator (Attention: wood must be dry) - airing time min. 15 min max. 2h
4. Apply a suitable amount of SIKA Fast 5215 adhesive
5. Apply adhesive evenly by turning the bond areas
6. Secure pieces in place
7. After one hour, remove excess adhesive
8. Fully loadable after 24 h

Repair kit: Glue gun, cartridge SIKA 5215, SIKA activator,
Attention: Adhesive for bridging gap 0

Bonding Instructions Sikaflex - 552

1. Rough clean bond areas
2. Treat bond areas with Sika Activator (30ml, part no. 793151)
3. Let air for min. 20 min – max. 2 h.
4. Apply adhesive (cartridge Sika 552 part no. 1000866)
5. Secure part
6. (Attention: the bridging gap must be at least one millimetre. Can be ensured with shims or similar)
7. Curing time 24h at 18°C.

I. Panel construction

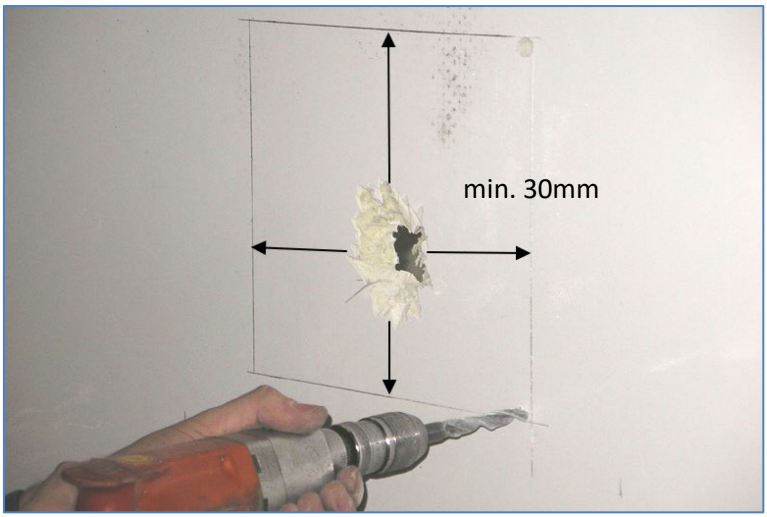


II. Repair

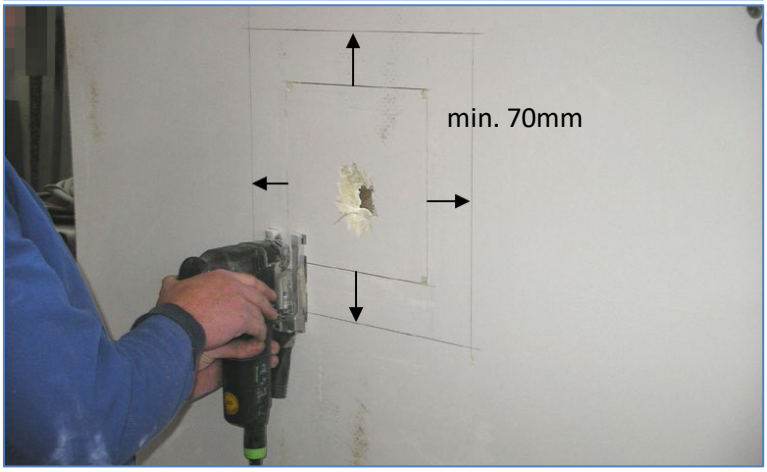
Procedure for installing sections of pierced sandwich panel

Damage: Pierced sandwich panel

On the damaged side of the panel determine and mark the outline of the cut out based on the shape and surface area of the damaged area (cut at least 30 mm larger than damage).



To insert the Jigsaw drill,
holes are drilled in the corners of the area which is to be cut out.



Mark an area with an edge length 4. Cut out all sides of the GRP layer.
approx. 140 mm larger than the rebate to be made. The damaged area can now be cut out with a jigsaw and removed.

Cut out all sides of the GRP layer.

Use a broach to remove the GRP for the rebate

Remove the foam core with a rough file with an approx. 45° bevel

Cut out a foam panel of the same thickness and fit.

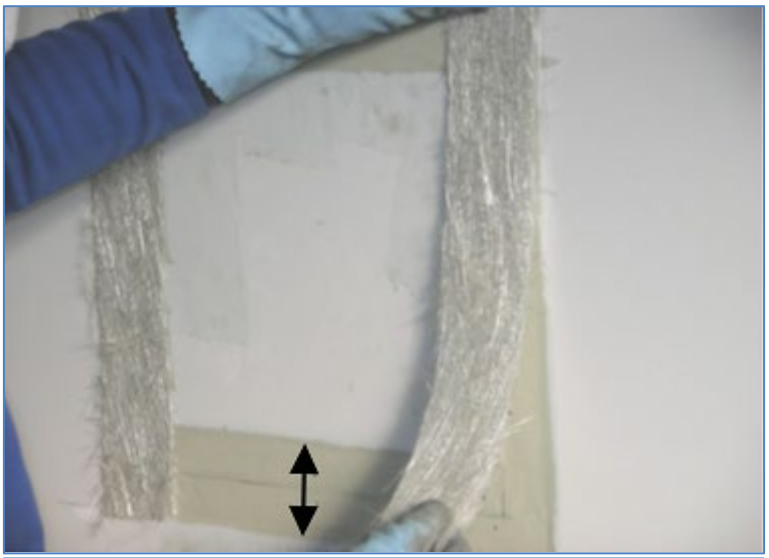
Prepare the two-component PU adhesive Körapur 840/45 Kömmerling per manufacturer instructions.

Apply the adhesive to all
per manufacturer instructions. bond areas.

Insert the replacement section

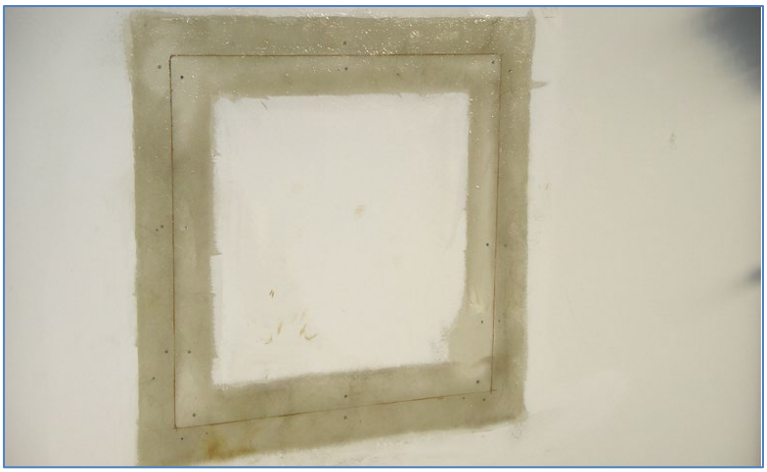
Secure the replacement section and allow adhesive to cure per manufacturer instructions.

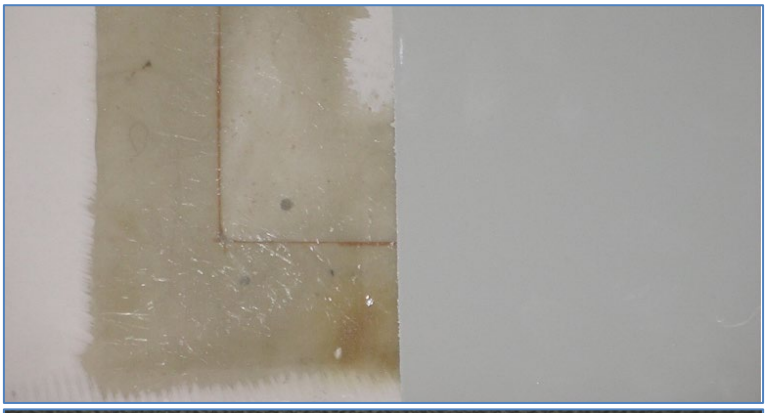
Once the PU adhesive has cured, grind all sides of the edge contour of the body wall and the replacement section approx.

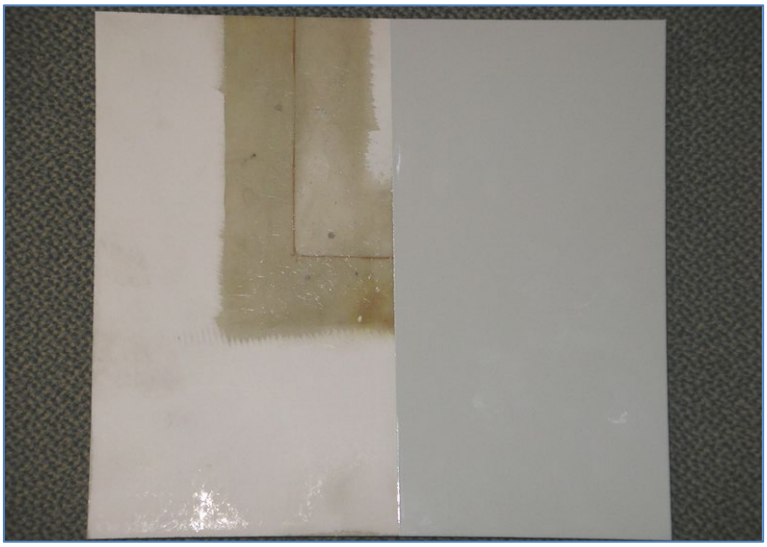


60 mm wide, down to the foam.

Fill the repaired area by applying a glass fibre mat with polyester resin.







Sand the repair area, apply fine filler and paint.

III. Tool for repairs:

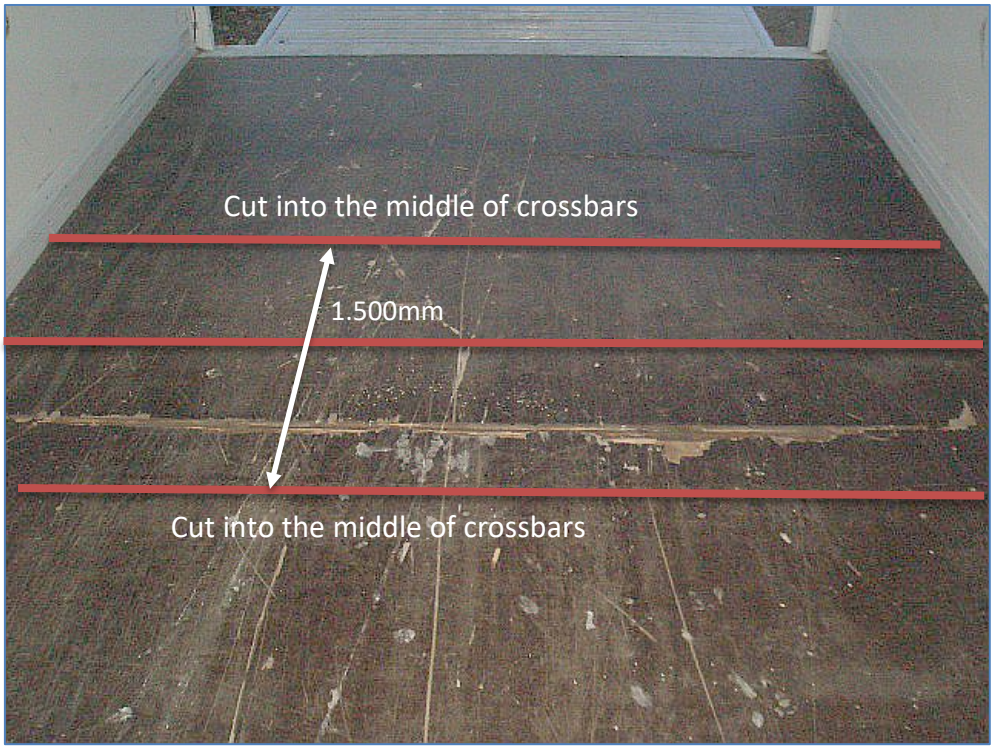
Power drill, jigsaw, grinder, filler, broach, 10 mm drill bit, roll

IV. Materials for repairs:

Sandwich panel for the damaged sections, two-component PU adhesive, glass fibre mat, polyester resin with catalyst, fibre filler

Floor repair instructions

Cut the crack in the middle of two crossbars. Attention: Support 3 bars



Apply sealant to the support area, install a new panel 2500x1500x18. Quality: Solid birch.