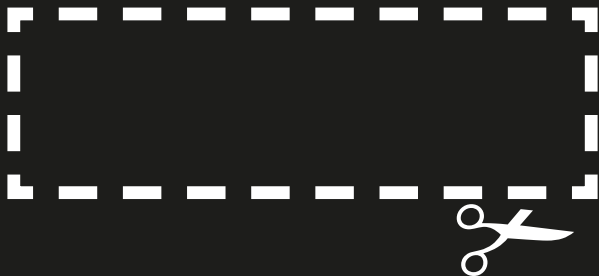


# contec

Installation guidelines





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## Foreword

A generation of progressive thinking entrepreneurs is relying on Contec's secure and quick installation methods. Precise preparation and smart logistics are core factors of a successful realization for an economic efficiency roof system!

Early 1990s, Contec has built its first Contec. proof seal in Switzerland. Since then, approximately 10 million square meters of waterproofing membrane has been produced (figures: end of 2016). Many years of Contec expertise and experience in materials and installation procedures have been collected in this manual. We have compiled all this information into this working aid to help our customers and partners with their projects.

Contec is the system owner of Contec.proof Waterproofing for Switzerland and Liechtenstein since 1992. In 2014, a representation has been established in Baden Württemberg. We are specialists in prefabricated seals and standing for efficient and high-quality workmanship of water-sealing systems. **All from a single source.**

### **Our services as a complete system supplier:**

- Technical advice for any questions and challenges related to water-sealing
- Provision of information for offering and costings for your particular project
- Supplier of vapour barriers, thermal insulation, Contec.proof seal, protective layers, drainage elements as well as greening systems with fall prevention solutions & PV
- Support of the project organization and implementation of your building project
- Quality assurance from experienced instructors at Contec Service GmbH

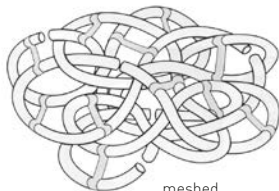
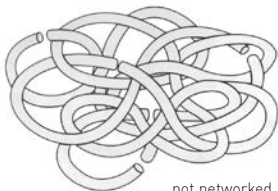
**We're looking forward completing great projects with you as a team!**

## EPDM Rubber **Contec.proof**

### **What is Contec.proof?**

Contec.proof is an EPDM, synthetic rubber made from ethylene and propylene derived from crude oil refining. With the addition of aggregates, the plastomeric materials are further processed and turned into elastomeric products through different processes. The general structure of the mixture contains: EPDM, sulphur as the vulcanising agent, fillers (e.g. carbon black) as well as mineral paraffin oils.

### **Structural meshing Contec.proof**



Like all polymers, rubber is made up of large chain or filamentary molecules. When the raw mixture turns from its plastic state into elastic rubber (vulcanisation), the added sulphur forms bridges between the chains of molecules. This wide-meshed network gives EPDM a permanent elasticity, and makes it highly resistant to chemicals, as well as very durable and eco-friendly.

# Chemical resistance

## Contec.proof EPDM sealing

### A. Acids (non-organic)

Humic acid		1
Acetic acid	10 %	1
	60 %	2
	100 %	2
Hydrochloric acid	36 %	1
Phosphoric acid	90 %	1
Nitric acid	10 %	2
	65 %	3
Sulphuric acid	10 %	1
	80 %	3

### B. Bases (inorganic)

Ammonia	30 %	1
Sodium hydroxide		1
Potassium hydroxide	30 %	1
Calcium hydroxide		1
Ammonium hydroxide		1

### C. Inorganic salts

Sulphates		1
Nitrates		1
Phosphates		1
Chlorides		1
Potassium cyanide		1

### D. Alcohols

Glycerine		1
Butanol		1
Methanol		1
Propanol		1

### E. Phenols

Phenol		1
Cresol		1

### F. Ester

Animal fat		2
Vegetable fat		2
Vegetable oil		2
Cooking oil		2
Linseed oil		2
Butyl acetate		2
Amyl acetate		2

### G. Halogenated hydrocarbons

Trichloroethylene		3
Tretachloroethane		3
Chloroform		3
Chlorobenzene		3

### H. Hydrocarbons

Petrol		3
Butylene		3
Kerosene		3
Benzene		3
Ethyl alcohol		3
Toluene		3
Turpentine		3
Fuels		3

### I. Other

Bitumen		1
Lime		1
Unslaked lime		1
Seawater		1
Cement		1
Vinegar		1
Silicates		1
Silicone oil		1
Tar		2
Bromine		1
Sugar		1
Bacteria		1
Butyric acid		1
Lactic acid		1

The resistance against other chemicals will be examined upon request. All mentioned values have been determined at +20° C.

1=Resistant  
2=Limited resistance  
3=Not resistant

## Recording Measurements on the Building

The fitter needs to submit a proper plan, showing the precise layout and measurements of the roof, allowing the accurate production of the tailored Contec proof water sealing membrane. Upon request and against a fee, the measurement recording can be done by Contec specialist.

### **New buildings**

The roof surface needs to be finished to allow an accurate measurement recording, including any fitting of angular skylight frames, chimneys, ventilators, lift constructions, etc. Inward plowing a precise measuring to avoid mistakes. All collars, molded parts, roof drainage and any accessories that need to be welded or installed during the fitting, need be ordered separately. Please specify the exact number required.

### **Renovation**

If a roof is being renovated, all of the products used in the thermal insulation and subsequent installations must be considered; if necessary, the edge of the roof can be raised.

### **Taking measurements**

The measuring starts from two baselines, which are usually the overall length and width of the roof. If possible, define the zero point at a right-angled corner of the roof. Starting from the defined zero point, each intersection and each outwardly projecting corner must be precisely measured against both of the baselines. An accuracy of one centimeter, referring to the defined zero point, is required for all measures to avoid difficulties during the installation.

The edging has to be measured separately for all roof edges and structures, and entered in the plan, as well as all the lengths and widths.

Any non-vertical rising structures e.g. roof light frames, are measured at the point, where frame and thermal insulation (not at the roof surface) meet. If not possible, the thickness of the insulation can be specified. Please mention also type and make of the frame.

**Tip: After finishing the measuring, carry out random checks by using diagonal measurements. For complicated surfaces, check approx. 5-10 more measurements as basis for the CAD cross-checking.**

### Size of the membrane

The membranes can be prefabricated as one piece up to 2000 m<sup>2</sup> (specific weight Contec.proof 1.5 mm: 1.89 kg/m<sup>2</sup>). For larger sizes or in case of complicated lay-outs, a segmentation into multiple sections needs to be considered. The sections will be welded dur. T needs to be discussed and agreed with the Contec, o u a t w o t membrane.

### Transport

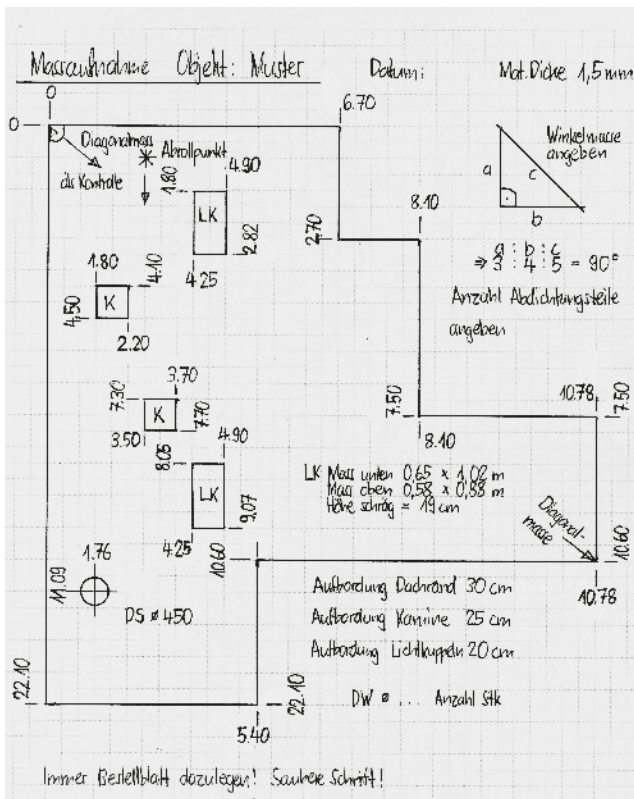
The smooth and safe transport of the membrane requires a defined and easy accessible position point marked on the measuring sheet. After arrival on site, the membrane is lifted to the roof by using cranes or lift rail, provided by the client.

### Miscellaneous

The accuracy of the planning and measuring are key, for making the project a success. Contec specialists are happy to help in case of any questions.



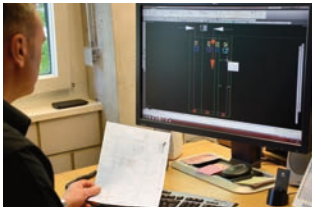
# Example of the recording of measurements



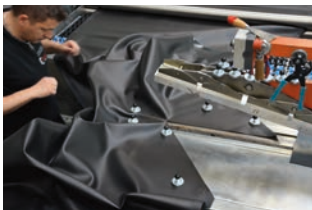
## Procedure from A-Z



Measuring the roof as described on pages 7 to 9



CAD based production planning



Vulcanising of the corners



Confectioning



Packing and transport to the site



Unrolling and installation. In case of membrane sizes of more than 300m<sup>2</sup>, we suggest the use of unrolling tools, available from Contec (needs to be ordered).



Aligning / Material  
Let it rest for at least 30 min in case of surface areas larger than 100 m<sup>2</sup>.



Assembling and welding of extractor pipes and other form pieces

## Contec.proof loosely laid with ballast



Contec.proof tarpaulins are precisely pre-assembled at the factory according to the measurements submitted, using individual Contec.proof membrane strips, to a size of max. 2000 m<sup>2</sup>.



For loose laying installations, the seal is weighted down against the wind uplift with roof greening, gravel, paving tiles or wooden grids.

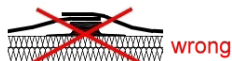


Fleece and drainage plates are water before being used! installed over the waterproofing membrane for the respective structures.

## Contec.proof plain roof with Contec.fix clamps

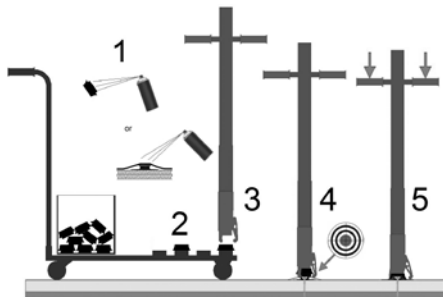
The Contec.fix clamp holder mounting has been specially designed for constructions that do not allow any ballast to protect against wind uplift or suction. It has been used since 1974 and it is designed for a material thickness of 1.5 mm. Contec is responsible for calculating the wind uplift and the division plans of the clamp mountings.

1. Attach the bottom plate with suitable fasteners in the supporting construction. Lay it flush on the insulation but without tension.



Use screws with a sealing elements, such as SFS Isofast (wooden/ trapezoidal steel screws)  
**Important: Observe the Contec.fix data sheet**

2. These have to be fixed in place with the cap, without perforations, after the Contec.proof seal has been installed.



## Contec.proof plain roof with Contec.fix clamps

3. Click the top part in place by hand or with a mounting device.

You can hire an assembly device (to order).

Procedure: To ensure that the clamps are securely installed, the caps must always be sprayed beforehand with the silicone spray provided!

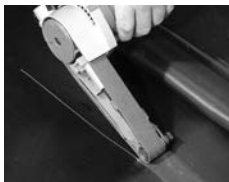


## Preparation / Sanding



### Equipment/Material

- Leister hot-air blower, large nozzle
- Makita belt sander
- Sanding belt (blue metal grain 100)
- Rubber pressure roller
- Scissors, meter, test needle
- Chalk line reel, snap-off blade knife
- Kreide, white drawing pen
- Temperature measuring device, if nec.



### Sanding the surface

1. Where the supporting layer is soft, put sheet metal underneath.
2. Mark grinding area a white pen.
3. Grind the grained structure on the concrete surface (with a Makita belt sander, Metal sanding belt (blue grain 100)).
4. Remove the abrasive particles with the blower and brush. Not by hand (grease!).



### Sanding cross-over joints

1. Carefully chamfer the front edge of the seam.
2. Finish-grind approx. 0.5 cm beyond over the seam. (Direction: from the upper to the lower surface).
3. Remove the sanding dust with the blower and brush.

**Important: When welding on older EPDM, the surface to be welded must be cleaned thoroughly before the sanding with water and the underside of the seal has to be dried with a cloth. Change the sanding belt at frequent intervals!**

## Manual welding (test welding required)



### Equipment/Material

- Manual welding machine/Hot-air blower Leister (Triac S/Triac PID)
- Rubber pressure roller
- Large welding nozzle
- Temperature measuring device, if nec.



### 1. Stapling / Pre-welding

The seam edges and the Thermofast® joining edge (TF) must be completely clean and dry. If the TF is not going to be welded to another TF then prepare one side by sanding it. Secure it in the specified points to prevent, for example, the fittings from moving out of place.



### 2. Welding finish

Use a clean welding underlay (where the supporting structure is soft, e.g. sheet metal or cardboard). Distance between the nozzle and the pressure roller: 1 cm. Roll the pressure roller flat, not on the edges. Clean weld = black uniform „caterpillar“. Width of the weld = 4 cm.

### Temperature guidelines

Contec.proof new:

With Leister Triac S 400°C – 430°C

With Leister Triac PID 390°C – 420°C

Contec.proof old (from around 1 year):

With Leister Triac S 370°C – 400°C

With Leister Triac PID 360°C – 390°C

**Procedure: Store all moulded parts with a TF joining edge in a dry place away from direct sunlight (protection against UV and moisture).**



## Automatic welding



### **Insert /attach Contec.proof sections**

For longer weld seams (> 10 m), and dependent on the onsite conditions, we advise to use Contec lease equipment. Do not change the factory, and adopt the welding speed to the outside temperature:

- up to 20°C: 2.3 m/min
- from 20°C: max. 2.6 m/min
- during winter and below 0°C: max. 1.8 m/min
- We advise to carry out a weld test

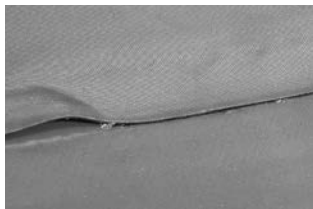


### **Aligning the seam area**

During the machines operation, it must be ensured that both ends of the sealing membrane remain in the machine's limit stop. Overlap: approx. 3.6 – 4 cm

Specialists from Contec Service GmbH may assist with the work at the site upon request.

## Seam inspection



### 1. Visual inspection

After the welding, all the welded seams need to be checked, in particular at cross-over joints, connections, penetrations and collars.



### 2. Check with the test needle

All seams, welded on site, need to be tested with a suiting test needle. Any areas with faults must be marked and re-welded, using a hand-welder or, if required, put together with an additional sealing strip.



### 3. Watering inspection

In case of a prefabricated Contec roof, a watering check can be avoided, as up to 90% of the welding work is done under optimal conditions in the factory. This is another advantage over other systems.

## Glue down the edge of the roof and fix in place **Contec.adhesive – NOVOPROOF® Kleber TA**

The EPDM seal must be fixed on the roof edge with the adhesive.



### Equipment/Material

- Contec.adhesive – NOVOPROOF® Kleber TA, container of 4,7 kg
- Roller, paintbrush, cloths, pressure roller (available from Contec AG)
- NOVOPROOF® cleaning agent for sheet metal connections
- Stir well before use, close the lid properly after use. **Important:** Observe the manufacturer's specifications



The substrate must be solvent-resistant, clean, grease-free and dry. 400 - 600 g of adhesive is required for every m<sup>2</sup> (200 - 300 g/m<sup>2</sup> on the side to be glued). The amount of adhesive required varies depending on the absorbency of the substrate.



**Tip: No adhesive residues is a sign of the optimum drying time.**

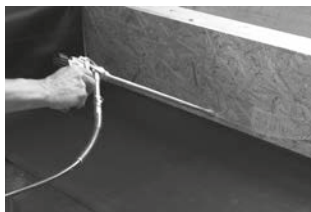
## Glue down the edge of the roof and fix in place **Contec.adhesive – Spraybond**

The EPDM seal must be fixed on the roof edge with the adhesive.



### **Equipment/Material**

- Contec.adhesive – Spraybond  
Pressure vessel 17 l, corresponds to 14 kg
- Roller, paintbrush, cloths, pressure roller (available from Contec AG)
- Open valve before use, close properly after use. **Important:** Observe the manufacturer's specifications



The substrate must be solvent-resistant, clean, grease-free and dry. 300 - 400 g of adhesive is required for every  $m^2$  (150 - 200  $g/m^2$  on the side to be glued). The adhesive must be applied twice on absorbent surfaces.



**Tip: No adhesive residues is a sign of the optimum drying time.**

## Flashings and cappings



1. Press the groove down without gluing the edging.

**Important: Form the groove so the edges are crisp and sharp.**



2. Stick down the entire edging area, from the middle to the corner.

**Tip: Use wet cloths or wet gloves. Work in twos at heights over 50 cm to avoid straining the material.**

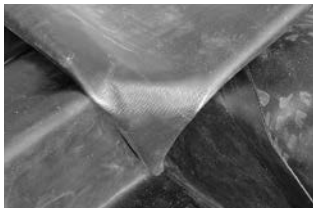


3. Apply the adhesive over the entire area of the crown as well and stick down sealing strips of 4 - 5 cm on external edging, or let 4 - 5 cm hang loose, so that the sealing can be covered with a mounting sheet.



**Important: The entire bonded area must be rolled over with approx. 20 kg of pressure.**

## Inside and outside corners



1. Align the corner, create a fold line.



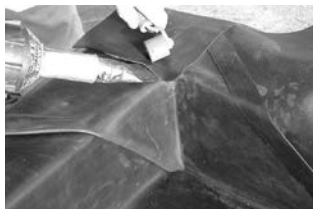
2. Cut horizontally in the crown area to about 1 cm from the top of the edge. Always round off the cut ends and change direction in a round motion (make holes with punch pliers!).



3. Align the sealing strip, mark it with a white pen and ...



- ... sand the gluing strip. Then clean the sanded areas.



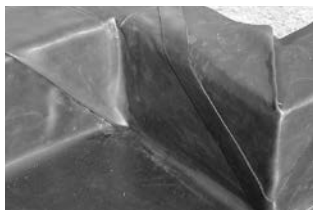
4. Weld the sealing strips and ...



... press the corner area well down.

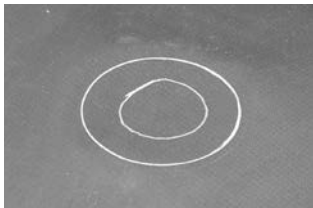


5. If there are any loose „pockets“ apply TA adhesive, let it dry and press it down.



6. Done!  
Outside corners: fold over the vulcanized crown area and glue down.

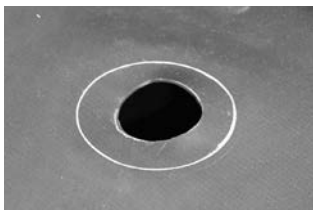
## Roof drainage/ Spout connections (round)



1. Mark out the contour of the drainage on the installed membrane, using a clamping ring. Use the following distances to the outer diameter:  
 $\varnothing 56/63/75 = 20 \text{ mm}$   
 $\varnothing 90/110 = 25 \text{ mm}$   
 $\varnothing 125/160 = 40\text{--}45 \text{ mm}$



2. Cut out the rubber using a scissors, not a knife, cutter or similar tools.



3. Avoid any other cuts as the membrane may tear if over-stretched

**Procedure:** If a prefabricated weld runs over a drainage spot, then a fitting, e.g. 30 x 30 cm must be used (all sides' joint edge).

**Tip:** Do not use any fully coated EPDM pieces. The clamping ring can only be used together with single-layer material.





4. Spray the clamping ring and seal with silicone spray, press the clamping ring with the chamfered side in the push-fit socket. **Important: Do not use brute force (hammer, etc.)!**



5. The connection is complete when the clamping ring is pushed in up to the limit stop. Excessive wrinkling indicates the cutout section is too small. Correct this in order to ensure the unobstructed flow of water!



Installation with a spout connection.

With Pluvia roof drainage systems, follow the manufacturer's guidelines from Geberit. Roof drainage inlet angular (spout)/Emergency overflow angular (spout): Assemble according to the installation instructions. **Welding: see pages 15+16.**



**With renovations:** If possible, always try to remove the roof water with a cavity tray and install the Contec roof drainage elements with backflow protection. This is only necessary if there are no push-fit sockets on the customer's site.

## Finish with gravel borders



1. Mount entry flashing with gutter.
2. Install Contec.fix bottom plate after the slotted hole division of the gravel border rail. Distance between slotted holes 60 cm.
3. Glue the Contec.proof waterproofing membrane onto the entry flashing and clamp together with a suitable metal profile.

The gravel border rails are available in widths of 40 mm and 60 mm. On pitched roofs they are both a form of fastening as well as keeping the roof greening anchored in place.

## Finish with Coated Sheet Metal

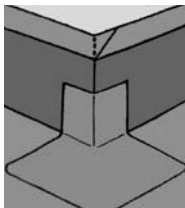
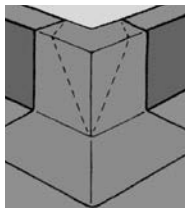


1. Weld over where the sheets cross with sealing strip TF.
2. Weld the joining edge or the waterproofing membrane sanded on one side on the coated sheet.

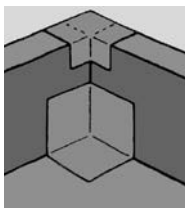
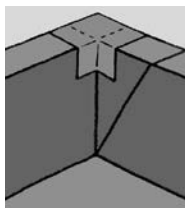
**Welding: see pages 15+16.**

**You can find some comprehensive information on the materials, accessories and systems on our website: [www.contec.ch](http://www.contec.ch).**

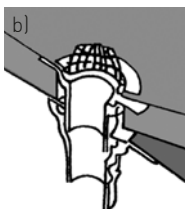
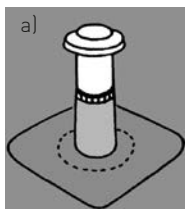
## Connections - general



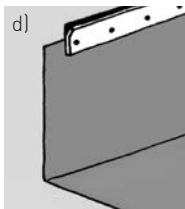
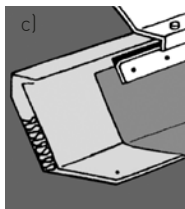
How to form  
external corners



How to form  
internal corners

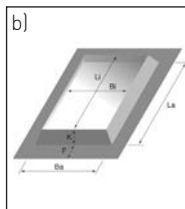
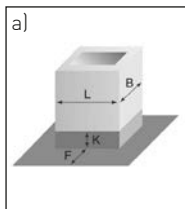


a) Outlet vent connection  
b) Roof drainage  
Pluvia connection

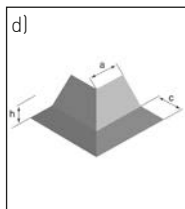
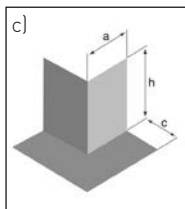


c) Skylight dome  
d) Wall connection

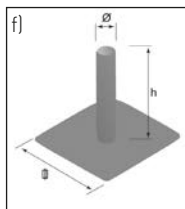
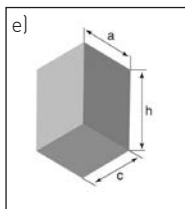
# Fittings



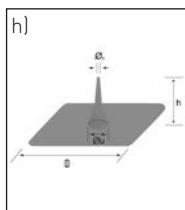
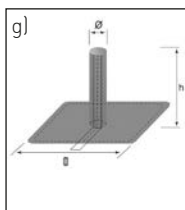
a) Square cuff  
b) Skylight dome cuff



c) Outside corner  
d) Outside corner conical



e) Inside corner  
f) Pipe flashing standard closed



g) Pipe flashing one sided open  
h) Pipe flashing lightning rod





[www.contec.ch](http://www.contec.ch)

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