



# Fonterra Reno Instructions for Use

en\_INT

**viega**



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# 1 About these instructions for use

Trade mark rights exist for this document, further information can be found at [viega.com/legal](http://viega.com/legal).

## 1.1 Target groups

The information in this instruction manual is directed at the following groups of people:

- Heating and sanitary professionals and trained personnel

It is not permitted for individuals without the abovementioned training or qualification to mount, install and, if required, maintain this product. This restriction does not extend to possible operating instructions.

The installation of Viega products must take place in accordance with the general rules of engineering and the Viega instructions for use.

## 1.2 Labelling of notes

Warning and advisory texts are set aside from the remainder of the text and are labelled with the relevant pictographs.



### **DANGER!**

This symbol warns against possible life-threatening injury.



### **WARNING!**

This symbol warns against possible serious injury.



### **CAUTION!**

This symbol warns against possible injury.



### **NOTICE!**

This symbol warns against possible damage to property.



*Notes give you additional helpful tips.*



### 1.3 About this translated version

This instruction for use contains important information about the choice of product or system, assembly and commissioning as well as intended use and, if required, maintenance measures. The information about the products, their properties and application technology are based on the current standards in Europe (e. g. EN) and/or in Germany (e. g. DIN/DVGW).

Some passages in the text may refer to technical codes in Europe/Germany. These should serve as recommendations in the absence of corresponding national regulations. The relevant national laws, standards, regulations, directives and other technical provisions take priority over the German/European directives specified in this manual: The information herein is not binding for other countries and regions; as said above, they should be understood as a recommendation.

## 2 Product information

### 2.1 Standards and regulations

The following standards and regulations apply to Germany / Europe. National regulations can be found on the relevant web site of your country at [viega.com/standards](http://viega.com/standards).

#### Regulations from section: Technical data

Scope / Notice	Regulations applicable in Germany
Use of system panels in damp locations	Merkblatt Zentralverband des Deutschen Baugewerbes (ZDB)
Fire rating class (A1)	EN 13501-1
Fire rating class (A2)	DIN 4102-1
Operating conditions (permissible pressures)	ISO 10508
Pressure resistance class	EN 13830

#### Regulations from section: Floor structures with insulation

Scope / Notice	Regulations applicable in Germany
Installation of underfloor heating	DIN EN 1264-4

#### Regulation from section: Special structures with reduced insulation layers

Scope / Notice	Regulations applicable in Germany
Installation of underfloor heating	DIN EN 1264-4
Minimum requirements in the heat insulation	Energieeinsparverordnung (EnEV)

#### Regulations from section: Structural preconditions

Scope / Notice	Regulations applicable in Germany
Flatness tolerances in surface-finished floors	DIN 18202, Table 3, line 3

### Regulations from section: Manufacturing a pipe cover with casting compound

Scope / Notice	Regulations applicable in Germany
Flatness tolerances in surface-finished floors	DIN 18202 Table 3, line 3
Execution of the construction work	Vergabe- und Vertragsordnung für Bauleistungen (VOB), part C
Flooring work	DIN 18365

### Regulations from section: Forms

Scope / Notice	Regulations applicable in Germany
Pressure test	DIN EN 1264-4

## 2.2 Safety advice



#### **WARNING!**

**Damage due to incorrect installation or insufficient communication**

Viega radiant heating and cooling systems should be calculated by a planning engineer and may only be installed and commissioned by authorised specialist companies.

Observe the following instructions during implementation:

- Mount the fitting in accordance with the instructions and agreement of the planning engineer employed by the builder.
- Pay attention to the product instructions of the components used.
- Agree the beginning of the mounting and the handover to the subsequent workers with the site management.
- Document the mounting process and the results of the culminating leakage test.
- Hand over the planning documentation used as well as the mounting and testing logs to the site management after completion of the work.



## 2.3 Intended use

Fonterra Reno is a dry-construction radiant heating and cooling system for floors in residential and commercial premises, offices, and medical practices. The heating pipes PB 12 x 1.3 mm are laid in factory-milled 18 mm thick system panels made of plaster board; they are suitable for heating circuit lengths of up to 80 m. The pipes can be covered with construction panels, casting compound, or tile surface. Due to the small construction height, Fonterra Reno is particularly suitable for old buildings and for rehabilitation purposes.

In addition to these instructions for use, the processing guidelines for the building materials used must be observed.

## 2.4 System features

### General

- Short drying times, fast further processing
- Low surface weight
- Suitable as a pure dry construction system, no permeating of moisture into the basic structure
- Easy and quick mounting of the system panels
- Meandering pipe installation at a clearance of 100 mm

Fonterra Reno offer three different processing options and a multitude of combinations for the floor sub-construction:

- **Installation of a construction panel**
  - Construction heights of 28 mm and up are possible
  - Suitable for all types of floor coverings
  - No waiting times
- **Direct tiling**
  - Construction heights of 21 mm and up are possible
  - Suitable for tile surface
  - Short waiting times
- **Covering with casting compound**
  - Construction heights of 21 mm and up are possible
  - Suitable for all types of floor coverings (except solid parquet)
  - Application of primer and casting compound
  - Can be walked on two to four hours after application of the casting compound
  - After 24 hours, ready for laying tiles, PVC or carpet; after three days for laying laminate or parquet

## 2.5 Product description

### 2.5.1 System panels



	<b>Fonterra Reno basic panel</b>
Use	for dry underfloor heating with milled grooves for PB 12 pipe
Material	Gypsum board
Dimensions L x W x H	1000 x 620 x 18 mm
Model	1238.10



	<b>Fonterra Reno manifold panel</b>
Use	for safely guided pipe-laying in front of the manifold, 4–10 heating circuits Depending on the quantity of heating circuits and positioning usable as 2- or 3-part
Material	Gypsum board
Dimensions L x W x H	3-part, 310 x 620 x 18 mm each
Model	1238.12



	<b>Fonterra Reno top panel</b>
Use	for dry underfloor heating with milled grooves for PB 12 pipe
Material	Gypsum board
Dimensions L x W x H	620 x 310 x 18 mm
Model	1238.11



	<b>Plaster board</b>
Use	for dry underfloor heating unmilled, for inactive areas
Material	Gypsum board
Dimensions L x W x H	1000 x 620 x 18 mm
Model	1238.2

## 2.5.2 Pipes / connectors

### Fonterra pipes



	<b>Pipe PB</b>
Use	for Fonterra radiant heating and cooling
Material	polybutene (red)
Pipe size	Ø 12 x 1.3 mm
Model	1405



	<b>PB pipe in protective pipe</b>
Use	for Fonterra radiant heating and cooling
Material	Pipe: polybutene (red) Protective pipe: polyethylene protective pipe (black)
Pipe size	Pipe: Ø 12 x 1.3 mm Protective pipe: Ø 21 mm
Model	1203





	<b>Protective pipe for joints</b>
Use	for Fonterra pipe (Ø 12 mm) in the joint area
Material	PE (black / slit)
Pipe size	d 18
Model	1405

**connectors**



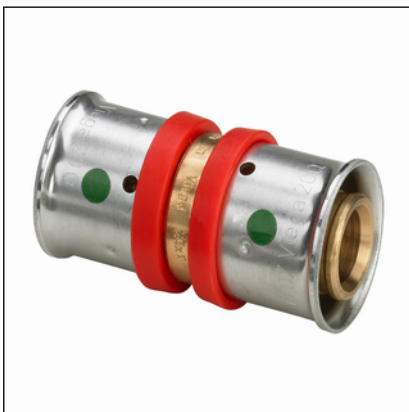
	<b>connection screw fitting</b>
Use	for Fonterra radiant heating and cooling, manifold DN 25
Material	nickel-plated brass
Connection	with euro cone and clamping connection
dimension	12 x 1.3 mm
Model	1037



	<b>Plug-in piece with SC-Contur</b>
Use	for Fonterra radiant heating and cooling adapter for PB pipe 12 x 1.3 mm to Sanpress, Sanpress Inox, Profipress (d15)
Material	gunmetal
Connection	with press connection and plug-in end
dimension	12 x 1.3 mm
Model	1213



	<b>Adapter</b>
Use	for Fonterra radiant heating and cooling, PB pipe 12 x 1.3 mm onto external thread
Material	Matt nickel-plated gunmetal
Connection	with press connection and R-thread, ½ inch
dimension	12 x 1.3 mm
Model	1213.5



	<b>Coupling with SC-Contur</b>
Use	for Fonterra radiant heating and cooling, connection of PB pipe 12 x 1.3 mm
Material	gunmetal
Connection	with press connection
dimension	12 x 1.3 mm
Model	1223



	<b>Connection screw fitting with SC-Contur</b>
Use	for Fonterra radiant heating and cooling, PB pipe 12 x 1.3 mm, manifold DN 25
Material	Nickel-plated gunmetal
Connection	with press connection and euro cone
dimension	12 x 1.3 mm
Model	1236

### 2.5.3 Accessories



	<b>Pipe guide d12</b>
Use	for diversion of the pipe in the manifold area
Model	Model 1272



	<b>Press jaw d12</b>
Use	for press machines for establishing press connections with Fonterra press connectors
Model	Model 2799.7 / 2484.7



	<b>hand press tool</b>
Use	for establishing press connections with Fonterra press connectors for Fonterra pipes PB 12 x 1.3 mm
Model	Model 2782





	<b>Pipe shear</b>
Use	for cutting all sizes of Fonterra pipes to length with protective pipe cutter
Model	Model 5341



	<b>Spreading tool</b>
Use	for casting compound, setting of the covering height, with pins height-adjustable from 0–10 mm
Model	Model 1200.2



	<b>Rubber squeegee</b>
Use	for flush levelling of the casting compound
Model	Model 1200.3



	<b>Pipe reel</b>
Use	for Fonterra radiant heating and cooling, pipe coils holder Folding, detachable, three-armed, with stabilising spring, carrying capacity max. 70 kg
Model	Model 1452



	<b>Drywall screw</b>
Use	for fastening on plaster board, length 25 mm
Model	Model 1259



	<b>Joint protection 12</b>
Use	for Fonterra radiant heating and cooling, joint area self-adhesive, suitable for 12x1.3 mm PB-pipe
Model	Model 1273



	<b>Edge insulation strip 90/10</b>
Use	for Fonterra radiant heating and cooling, special application PE foam perforated, self-adhesive
Model	Model 1456.1



	<b>Fonterra Reno casting compound</b>
Use	for Reno panel, internal area, for all types of floor covering, layer thickness 2–10 mm calcium sulphate bonded
Contents	25 kg
Consumption	10 kg/m <sup>2</sup> (usage at 3 mm overlapping)
Model	Model 1237.6



	<b>Fonterra Reno primer</b>
Use	for Reno panel, EC1 – extremely low-emission, one-pieced, water-dilutable
Contents	1 kg
Consumption	75 g/m <sup>2</sup>
Model	Model 1235.23



	<b>Fonterra Reno screed adhesive</b>
Use	for Fonterra Reno system panel and plaster boards, not labelled
Contents	1 kg
Consumption	100 g/m <sup>2</sup>
Model	Model 1237.4




### Tools (provided on site)

- jigsaw
- Circular hand saw with guide rail and extraction
- Agitator (for casting compounds)
- High mixing bucket 30 l

## 2.6 Technical data


### System panels

Dimension	<b>Top panel:</b> 620 x 310 x 18 mm <b>Basic panel:</b> 620 x 1000 x 18 mm <b>Manifold panel 3-piece:</b> 620 x 310 mm per panel
Weight	<b>Top panel:</b> approx. 15 kg/m <sup>2</sup> <b>Basic panel:</b> approx. 19 kg/m <sup>2</sup> <b>Manifold panel 3-piece:</b> approx. 3.5 kg/panel
Weight incl. casting compound	approx. 35 kg / m <sup>2</sup>
Material	Gypsum board
Fire rating class <sup>1)</sup>	A1 / A2
Pipe clearance	100 mm
Max. permissible supply temperature	50 °C
Max. heating circuit length	80 m / 8 m <sup>2</sup>
Damp rooms <sup>1)</sup>	suitable for residential areas


<sup>1)</sup>according to the applicable directives, see  „Regulations from section: Technical data“ on page 6

### System pipe

Dimensions	12 x 1.3 mm
Minimum bending radius	5 x d <sub>a</sub>
Operating condition <sup>1)</sup>	Class 4: 1 MPa (10 bar) Class 5: 0.8 MPa (8 bar)
Max. operating temperature	95 °C
Mounting temperature	min. -5 °C
Water content	0.069 l/m


<sup>1)</sup>according to the applicable directives, see  „Regulations from section: Technical data“ on page 6

Heat conductivity $\lambda$	0.22 W/(m·K)
Linear expansion coefficient	$1.3 \times 10^{-4} \text{ K}^{-1}$
Weight	50 g/m

<sup>1)</sup>according to the applicable directives, see  „Regulations from section: Technical data“ on page 6

### Casting compound

Pressure resistance class <sup>1)</sup>	CA-C25-F7 / C25
Processing temperatures (up to one week after processing)	10–30 °C (air)
	10–25 °C (subfloor and material)
Processing time at 20 °C and 65 % relative humidity	25-30 minutes
Colour	whitish-grey
Mixing ratio	6.25 l water &#x2029; 25 kg casting compound
Layer thickness	2–10 mm
Usage at 3 mm with covering	approx. 10 kg/m <sup>2</sup>
Can be walked upon after	approx. 3 h
Cannot be covered for at least	24 h

<sup>1)</sup>according to the applicable directives, see  „Regulations from section: Technical data“ on page 6

## 2.7 Floor sub-construction

### 2.7.1 Floor sub-constructions with insulation

The following floor sub-constructions correspond to the applicable directives for surface heating, also see  $\zeta$  „Regulations from section: Floor structures with insulation“ on page 6. A level, firm, non-swinging sub-construction is the precondition for all these floor sub-constructions,  $\zeta$  „Underground“ on page 32.

#### Installation situation I

over a heated room  $R_{\text{insulation}} = 0.75 \text{ m}^2\text{K/W}$

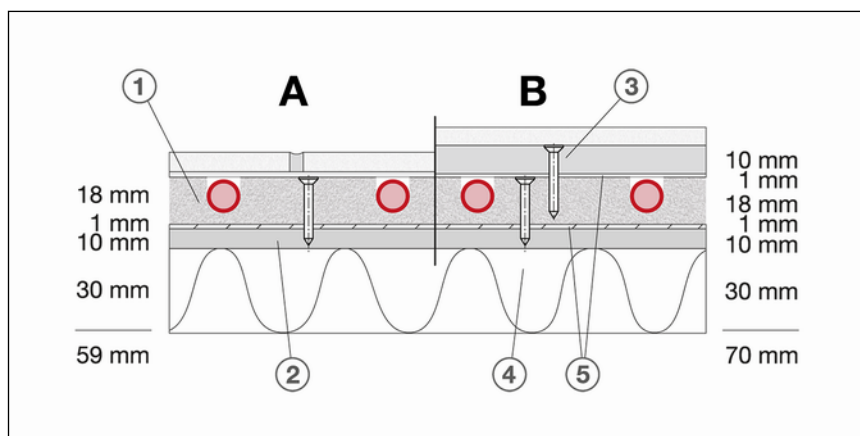


Fig. 1: Fonterra Reno installation situation I

- A - Tiles
- B - other top floors
- 1 - Fonterra Reno system panel
- 2 - Fermacell construction panel
- 3 - Fermacell construction panel ( $\geq 10 \text{ mm}$ )
- 4 - Polystyrene EPS 040 DEO ( $\leq 30 \text{ mm}$ )
- 5 - Screed adhesive

### Installation situation II + III + V

over an unevenly heated room, over an unheated room, and against soil  $R_{\text{insulation}} = 1.25 \text{ m}^2\text{K/W}$

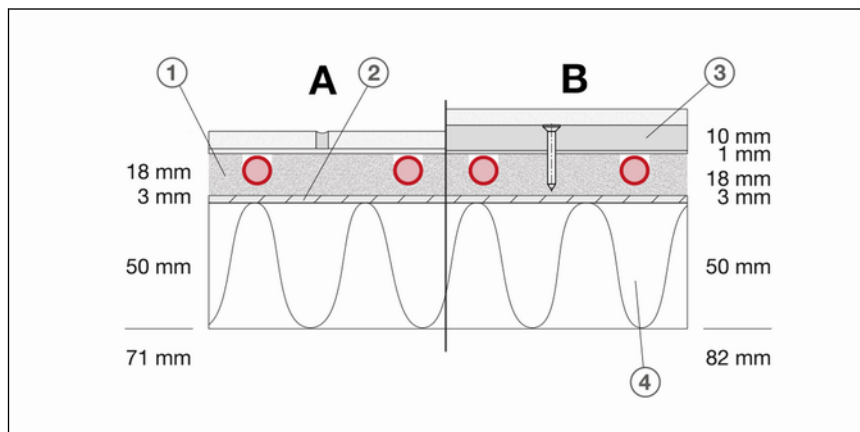


Fig. 2: Fonterra Reno installation situation II

- A - Tiles
- B - other top floors
- 1 - Fonterra Reno system panel
- 2 - Flexible adhesive
- 3 - Fermacell construction panel ( $\geq 10 \text{ mm}$ )
- 4 - PCI rigid foam supporting panel (50 mm)

### Installation situation IV

against outside air  $R_{\text{insulation}} = 2.0 \text{ m}^2\text{K/W}$

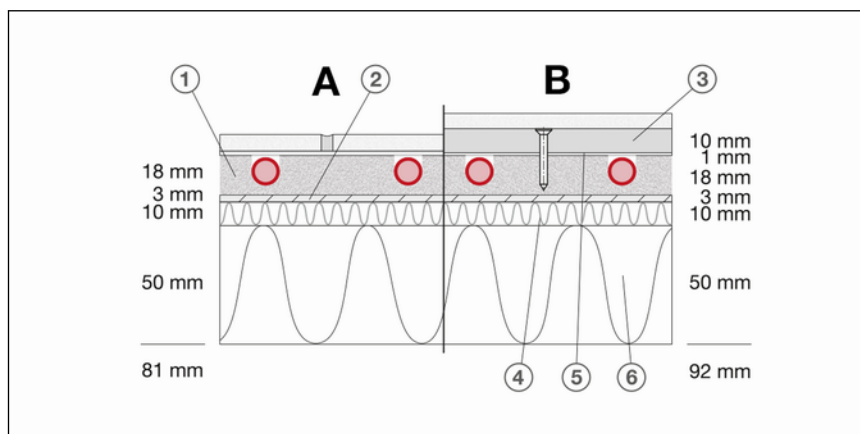


Fig. 3: Fonterra Reno installation situation IV

- A - Tiles
- B - other top floors
- 1 - Fonterra Reno system panel
- 2 - Flexible adhesive
- 3 - Fermacell construction panel ( $\geq 10 \text{ mm}$ )
- 4 - PCI rigid foam supporting panel (10 mm)
- 5 - Screed adhesive
- 6 - Insulation (e.g. PUR 53 mm)

## 2.7.2 Special constructions with reduced insulation layers

The following combinations of insulation and supporting layer do **not** correspond to the minimum requirement specified in the applicable directives, see ↪ „*Regulation from section: Special structures with reduced insulation layers*“ on page 6. These special sub-constructions must be individually coordinated or agreed.

A level, firm, non-swinging sub-construction is the precondition for all these floor sub-constructions, ↪ „*Underground*“ on page 32.



**Fonterra Reno system panels on PCI rigid foam supporting panels**  
with direct tiling

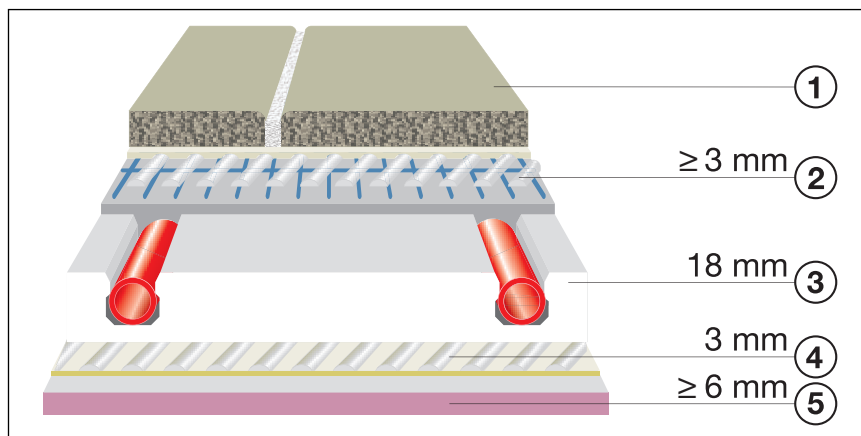


Fig. 4: Tile surface glued on directly

- 1 - Tiles
- 2 - Flexible adhesive with reinforcement fabric
- 3 - Fonterra Reno system panel
- 4 - Flexible adhesive
- 5 - PCI rigid foam supporting panel

**Fonterra Reno system panels on PCI rigid foam supporting panels**  
with wood or carpet as floor covering

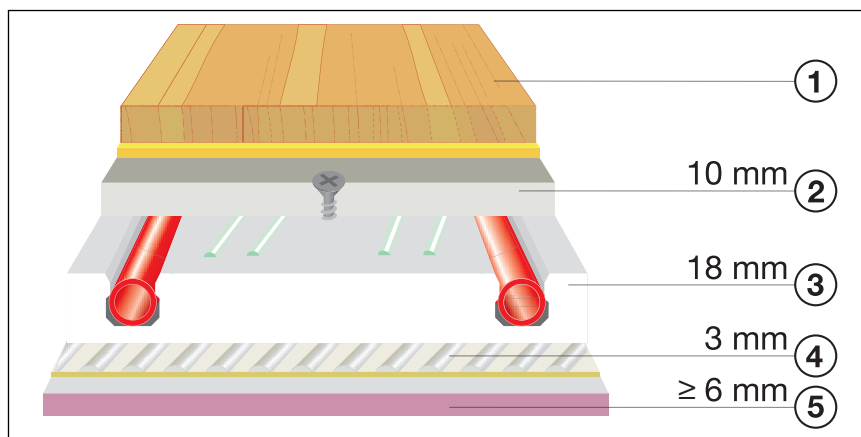


Fig. 5: Wood or carpet floor

- 1 - other top floors
- 2 - Gypsum fibre construction panel
- 3 - Fonterra Reno system panel
- 4 - Flexible adhesive
- 5 - PCI rigid foam supporting panel

**Fonterra Reno system panels on gypsum fibre construction panel**  
with direct tiling

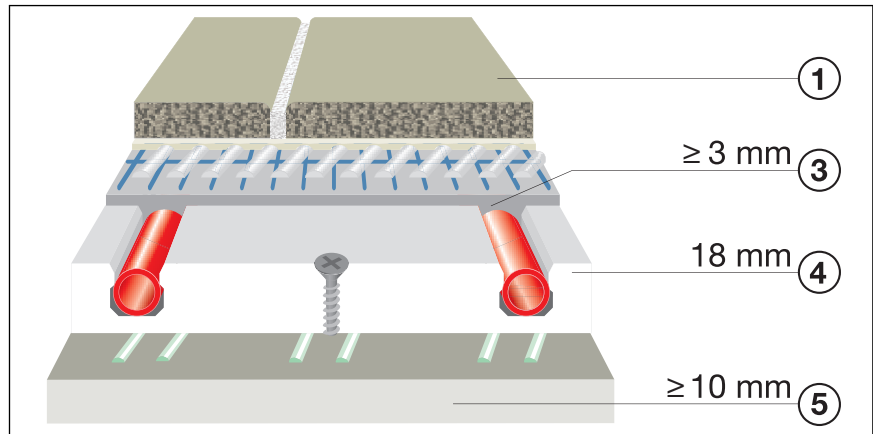


Fig. 6: Tile surface glued on directly

- 1 - Tiles
- 3 - Flexible adhesive with reinforcement fabric
- 4 - Fonterra Reno system panel
- 5 - Gypsum fibre construction panel

**Fonterra Reno system panels on gypsum fibre construction panel**  
with wood or carpet as floor covering

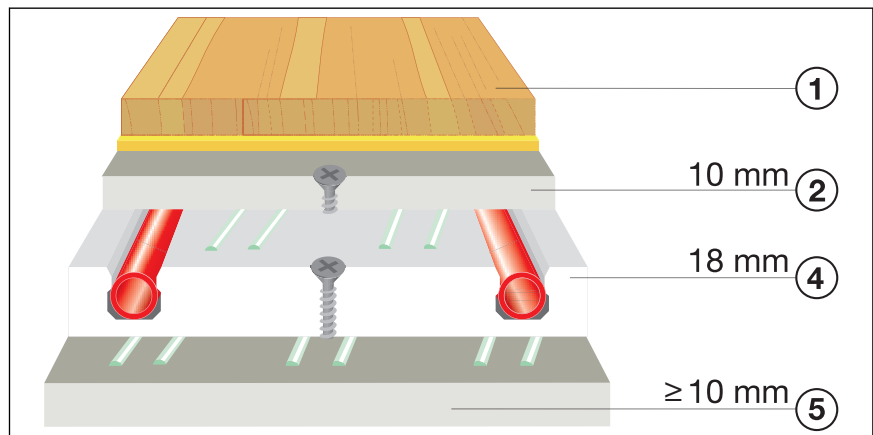


Fig. 7: Wood or carpet floor

- 1 - other top floors
- 2 - Gypsum fibre construction panel
- 4 - Fonterra Reno system panel
- 5 - Gypsum fibre construction panel

**Fonterra Reno system panel with casting compound**

with direct tiling

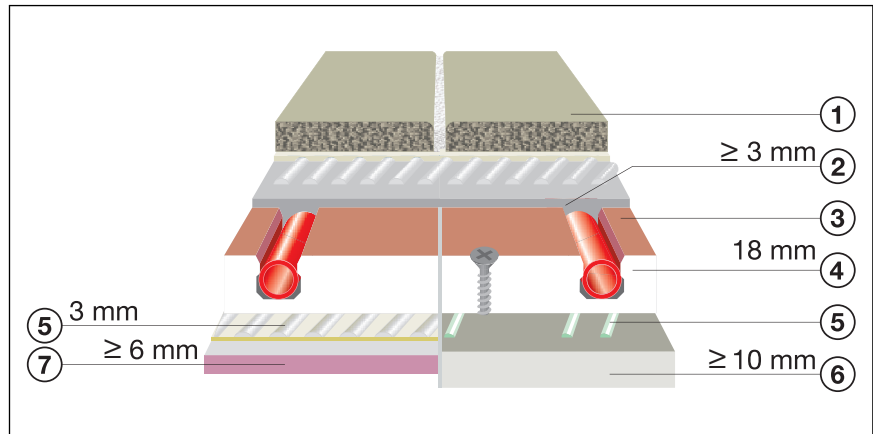


Fig. 8: Tiles glued on directly

- 1 - Tile surface and adhesive layer
- 2 - Casting compound
- 3 - Primer
- 4 - Fonterra Reno system panel
- 5 - Adhesive layer
- 6 - Gypsum fibre construction panel
- 7 - PCI rigid foam supporting panel

**Fonterra Reno system panels with casting compound**

with wood or carpet as floor covering

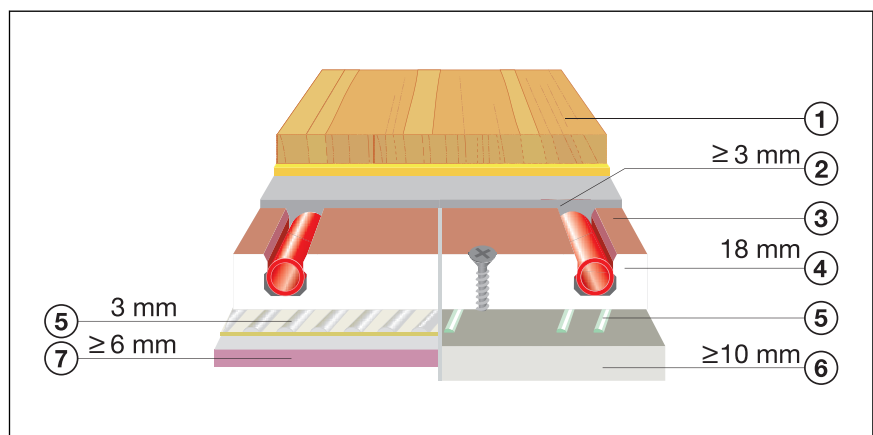


Fig. 9: Variable floor covering glued on directly

- 1 - Variable floor covering and adhesive layer
- 2 - Casting compound
- 3 - Primer
- 4 - Fonterra Reno system panel
- 5 - Adhesive layer
- 6 - Gypsum fibre construction panel
- 7 - PCI rigid foam supporting panel

**Fonterra Reno system panel on old-building floor boards**

with gypsum fibre screed element and bulk product

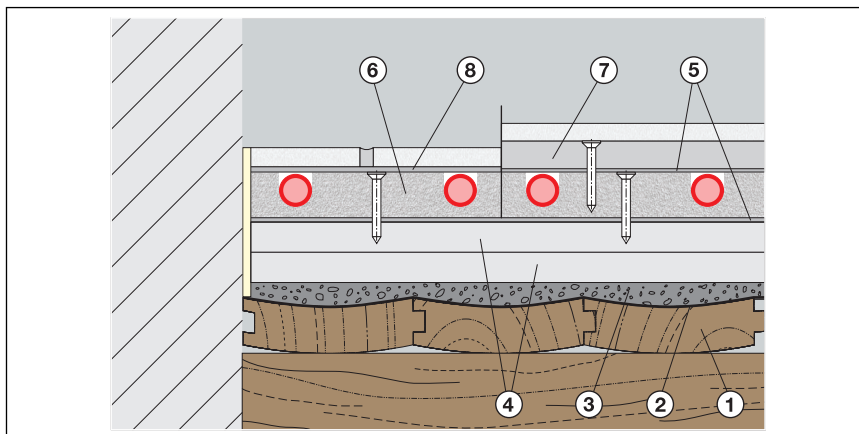


Fig. 10: Sub-construction with gypsum fibre screed element and bulk product

- 1 - Old-building floor boards
- 2 - Cover film
- 3 - Bulk product
- 4 - Gypsum fibre screed element
- 5 - Adhesive layer
- 6 - Fonterra Reno system panel
- 7 - Gypsum fibre construction panel
- 8 - Flexible adhesive with fabric reinforcement

**Fonterra Reno system panel on old-building floor boards**

with insulation and levelling compound

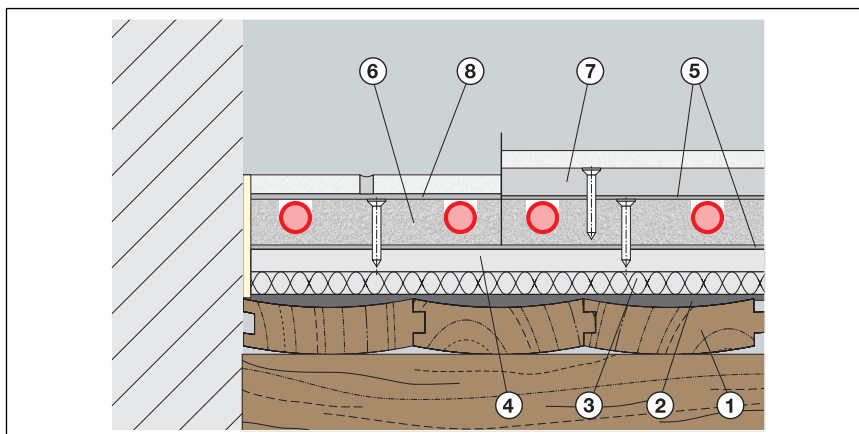



Fig. 11: Sub-construction with insulation and levelling compound

- 1 - Old-building floor boards
- 2 - Levelling compound
- 3 - Insulation EPS DEO
- 4 - Gypsum fibre construction panel
- 5 - Adhesive layer
- 6 - Fonterra Reno system panel
- 7 - Gypsum fibre construction panel
- 8 - Flexible adhesive with fabric reinforcement

## 2.8 General installation examples

### 2.8.1 Notes on laying

Observe the following instructions when laying Fonterra Reno system panels:

- Lay the top panels in the room at a right angle to the connection pipes or pursuant to the installation plan.
- Determine the number and arrangement of the top panel rows from the table in the following.
- Lay the panels on a clean and level underground only, see  „Underground“ on page 32.
- Start laying the manifold panels or top panel rows in the room where the manifold is installed.  
In narrow rooms such as halls, it is recommended to arrange the basic panels lengthwise, or to use top panels only.
- Lay Fonterra Reno system panel offset in staggered bond formation. **Avoid cross joints ( $\geq 20$  cm offset).**  
Usually, residual panels of one row can be arranged as the first element of the new row.
- The pipe guiding grooves of adjacent system panels must fall in line.
- Implement joints and straight-through forms pursuant to the laying plan.
- Use keyhole saws and circular hand saws with extraction to make cutouts in system panels and cut them to length.

The number of the top panel rows is defined by the number of heating circuits. The table below helps you to find the most favourable panel arrangement:

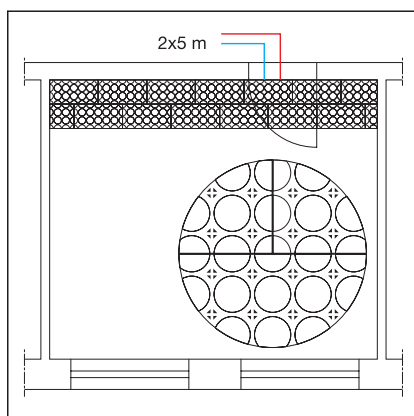
#### Number and position of the top panel rows for the start of laying

Heating circuits	Row of top panels	Area top panels / $\times 2029$ ;meter room length	Top panel $\times 2029$ ;Start laying with	PCI panel $\times 2029$ ;Start laying with
1	1	0.31 m <sup>2</sup> /m	½ top panel	entire PCI panel
2	1	0.31 m <sup>2</sup> /m	½ top panel	entire PCI panel
3	2	0.62 m <sup>2</sup> /m	entire top panel	panel 45 cm wide
4	3	0.93 m <sup>2</sup> /m	½ top panel	panel 45 cm wide
5	4	1.24 m <sup>2</sup> /m	entire top panel	panel 45 cm wide
6	4	1.24 m <sup>2</sup> /m	entire top panel	panel 45 cm wide



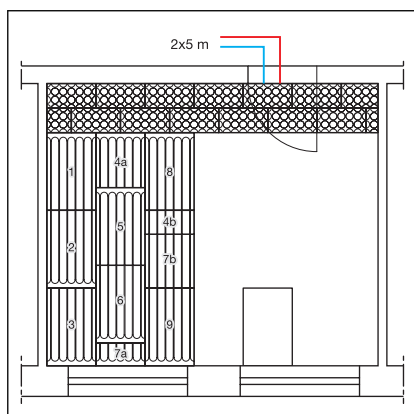
Lay the panels as specified in the table because a joint offset of minimum 15 cm must be provided, in particular in connection with PCI rigid foam supporting panels.

## 2.8.2 Installation example – rectangular room



- Start laying the top panels in the left corner of the room, at a right angle to the wall with the connection pipes.

Start the first row with an entire system panel. Start the second row with a half system panel, .

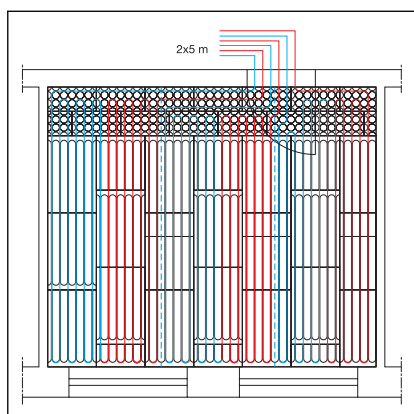


- Start laying the basic panels at the left side of the room, proceeding from the top panels to the opposite wall. The last basic panel of each row must have pipe deflections.

Use residual plates  $\geq 20$  cm in the next row. Pieces can be used later for fitting in between (see panels 4b and 7b).

### NOTICE!

- Avoid cross joints ( $\geq 20$  cm offset).
- The pipe guiding grooves of adjacent system panels must fall in line.

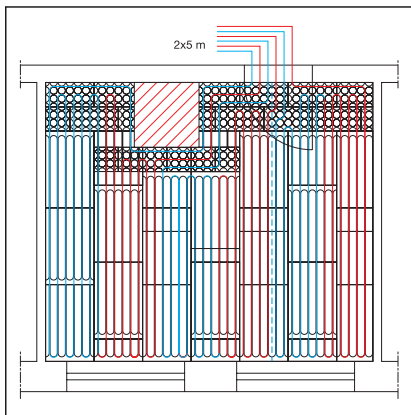


- Mark the heating circuit arrangement on the system panels.
- Use a vacuum cleaner to clean the pipe guiding grooves.
- Start laying the pipes at the heating circuit farthest away from the supply lines or the door - here: from left to right.

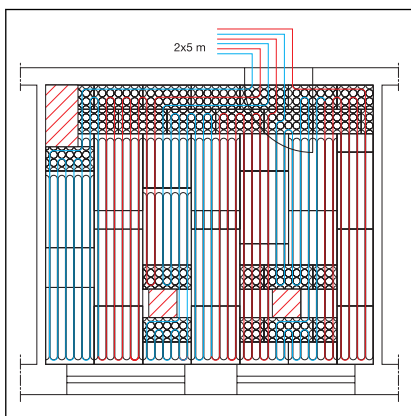
**NOTICE! When using casting compound, prime the system panels first,** [Chapter 3.3.3 „Manufacturing a pipe cover with casting compound“ on page 40.](#)



### Rectangular room with wall projections or columns

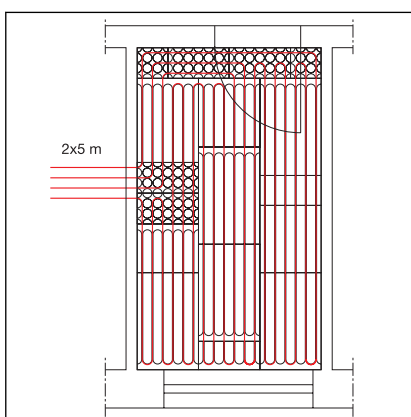


- Wall projections in the area of the top panel rows:  
Arrange additional top panels below the wall projection.



- Columns in the area of the basic panels:  
Arrange a row of top panels in front of and behind the column. At least two free pipe guiding grooves are required.

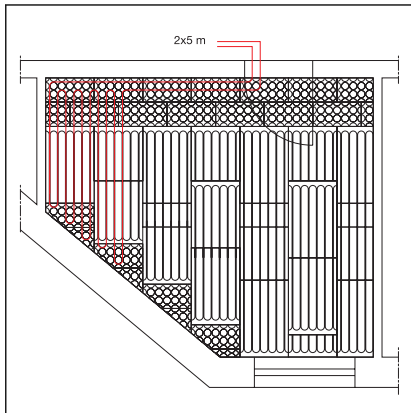
### Narrow space (hallway)



- Connection pipes to narrow rooms running laterally to the pipe installation direction are laid in additional top panels.

**NOTICE! The number of additional top panels is defined by the number of heating circuits.**

### Room with sloped walls



- Use additional top panels to balance out sloped sides in rooms with irregular geometries.

### 2.8.3 Installation example – manifold panel



The Fonterra Reno manifold panel comes as a 3-piece mounting set.

Combine the parts in accordance with the number of heating circuits:

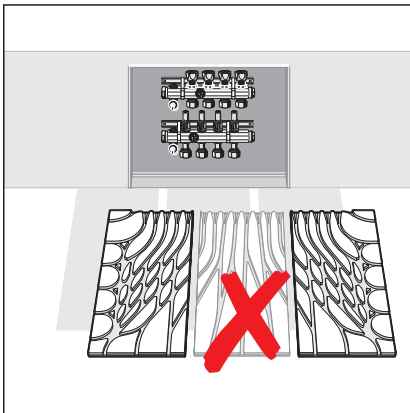
- **1 to 3 heating circuits:** No manifold panel is required (use top panel).
- **4 to 6 heating circuits:** Use the two outer parts only.
- **7 to 10 heating circuits:** Use all three parts.



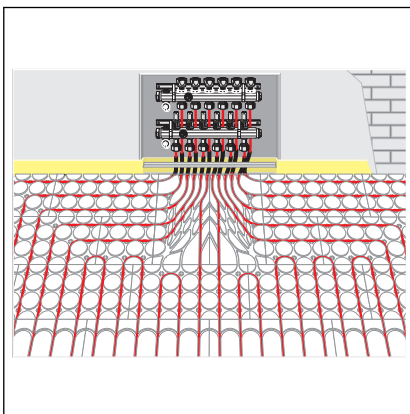
#### NOTICE!

- In the area of the manifold, arrange at least one row of top panels before the manifold panel.
- Use pipe guides to make the weave-out from the concealed manifold cabinet.
- In the area of the manifold, pay special attention to proper sealing of corners, edges, and joints to make sure no casting compound can flow behind the system panels.

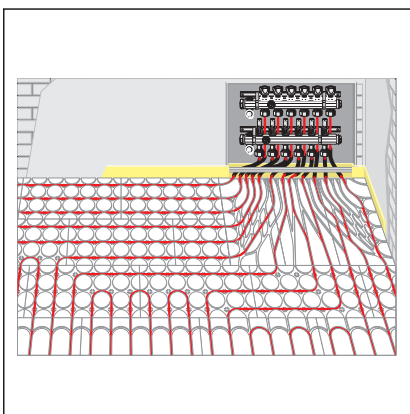
**Mounting situation: 4 to 6 heating circuits**



► Use the two side elements of the manifold panel.

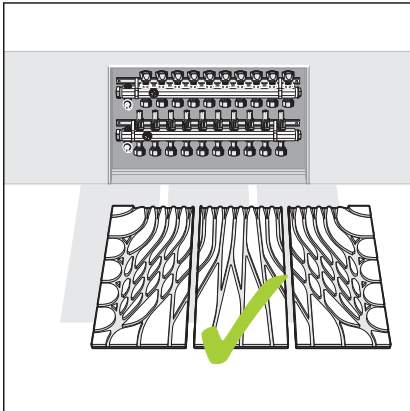


► Guide the connection lines to the manifold as shown in the illustration.

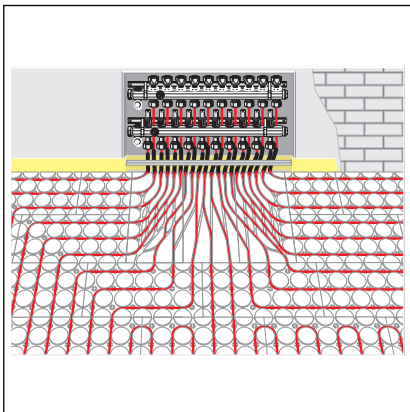


**NOTICE!** With a manifold located in a corner, you need to use all three panel elements also for six heating circuits.

### Mounting situation: 7 to 10 heating circuits



► Use all three elements of the manifold panel.



► Guide the connection lines to the manifold as shown in the illustration.

# 3 Handling

## 3.1 Transport and storage

The following notes apply when working with plaster board.

- Transport system panels in vertical position.
- Store system panels in flat position in a dry and frost-free environment.
- **For acclimatization, store system panels at the installation site for at least twelve hours before use.**

For handling casting compound, observe the following note:

- Do not store the casting compound below 5 °C.

For handling screed adhesive, observe the following note:

- Store the screed adhesive in a temperature range of 5–25 °C.

Observe the manufacturer's information for all products used.

## 3.2 Assembly information

### 3.2.1 Structural requirements

The following structural requirements must be met before installing the floor heating panels:


- Windows and doors have been installed.
- Electrical installations (wall breaking, empty pipe installation etc.), sanitary and other pipeline installations have been completed.
- Plastering work has been completed.

### Underground

- The underground must be firm, dry, and non-resilient.
- The underground must be clean (swept clean).
- The underground must be level and have no raised points.
- Any irregularities in height must be compensated for, e.g. with leveling compound or a suitable filling material (note levelness tolerances).  
Apply an intermediate layer on top of filling material.



#### NOTICE!

The levelness of the underground is particularly important for the installation. Observe the levelness tolerances pursuant to the applicable regulations, see  „Regulations from section: Structural preconditions“ on page 6.

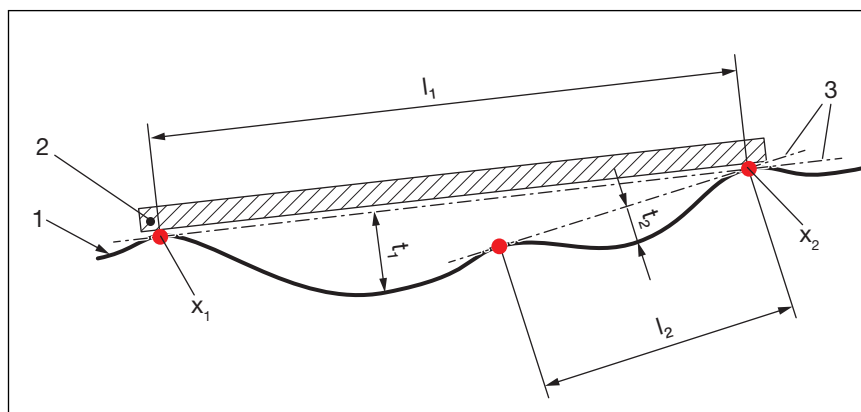


Fig. 12: Check the gauges for bore holes, e.g. by means of levelling staff and V-head

- 1 - Actual surface
- 2 - Levelling staff
- 3 - Vanishing line of the levelling staff
- $x_1, x_2$  - High points
- $t_1, t_2$  - Clearance to the low point (gauge for bore hole)
- $l_1, l_2$  - Measuring point interval

### Determining the levelness deviations:

- Use a levelling staff (2 to 4 m, depending on room size) to check the surface for high points.
- Determine the measuring point interval ( $l_1, l_2$ ) between two high points ( $x_1$  and  $x_2$ ).
- Use a V-head to determine the interval between levelling staff and low point (gauge for bore hole  $t_1, t_2$ ).
- Compare the resulting values to the values in the table below.

Permissible levelness deviations according to applicable directives, see ☞ „Regulations from section: Structural preconditions“ on page 6

Measuring point interval $l_1, l_2$ [m]	Limit value gauge for bore holes $t_1, t_2$ [mm]
0.5	< 3
1.0	< 4
1.5	< 5
2	< 6
3	< 8
4	< 10



#### NOTICE!

Repeat this process to check all the high points in the room. Deviations beyond the tolerances must be compensated before laying the system panels.



Levelness tolerances for various floor coverings with installation of Fonterra Reno, see  „Regulations from section: Structural preconditions“ on page 6

Line	Reference	Gauges for bore holes as limit values in [mm] with measuring point distances in [m] up to				
		0.1	1	4	10	15
3	Finished floor surfaces, e.g. screeds as fit-for-use screeds, screeds for reception of floor coverings, floor coverings, tile surfaces, levelled-out and glued coverings	2	4	10	12	15
4	Same as line 3 but with stricter requirements.	1	3	9	12	15

### Room climate

The mean relative humidity should be less than 70%.

The room temperature should be between 5 and 30 °C.

### Floor waterproofing

Building waterproofing is required for surfaces bordering the soil.

"Waterproofing against soil moisture" and "non-pressing water" must be specified by the building planner and provided before applying the screed. This work should be executed by a specialist company.

It is imperative that polystyrene heat and footfall sound insulation is protected with a PE foil against building waterproofing containing bitumen.

### 3.2.2 Edge insulation strip

With heating screeds, the edge insulation strips must allow for at least 5 mm of movement. Corresponding edge insulation strips must be installed at the walls and other upright building elements, such as door frames or columns.



#### NOTICE!

If you intend to process the Reno system panel with casting compound, then pay special attention to the leak tightness of edges and corners to prevent casting compound from flowing behind the panels.

## Attaching the edge insulation strip

- Attach the edge insulation strip from the insulation of the upper edge of the covering.

**NOTICE! The adhesive layer and the trailing sheet of the edge insulation strip must not be above the height of the finished floor covering.**

- Lay the trailing sheet free of tension over the entire surface in the room.
- Use adhesive tape to seal the foil and the edge insulation strip tightly at the ends.
- Let the foil overlap at the edges.
- Attach additional sealing foil at the external edges.
- Arrange the film flaps of the edge insulation strip under the base layer.

### 3.2.3 Expansion and movement joints

- Expansion joints are required with room lengths of 15 m. Expansion joints are also required with marked projections (door passages, wall projections, constrictions). These joints separate the system surface down to the insulation below; they are generated by means of a suitable expansion joint profile.
- Movement joints of building parts must be constructed along the same lines in the entire structure. Also, a movement joint is required in case of change of material in the sub-constructions or the floor coverings.
- Before the start of the work, the final position of the expansion or movement joints must be determined on site by the planner in coordination with all stakeholders.
- Heating pipes installed in door passages over expansion joints must be equipped with joint protection (model 1273).
- The on-site conditions allowing, the connection pipes can alternatively be guided through the brick wall in a protective pipe.



#### **NOTICE!**

With large-format tiles (edge length > 60 cm), the expansion joints must be coordinated separately with the planning department.

### Section: Floor sub-construction on insulation and gypsum fibre construction panel

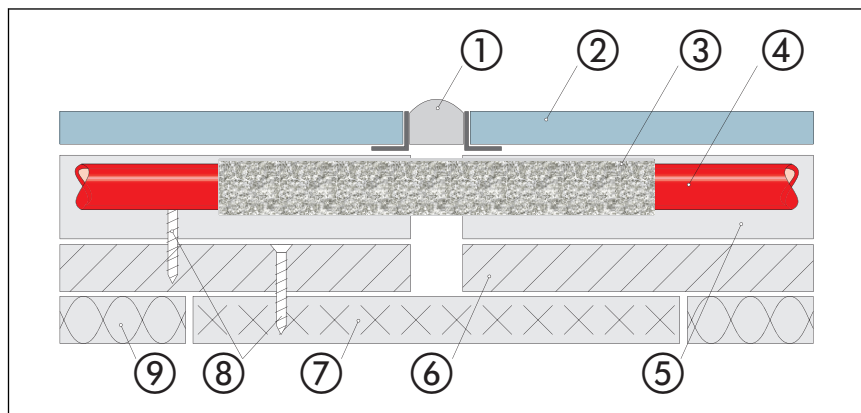


Fig. 13: Fonterra Reno, door passage

- 1 - Silicone joint
- 2 - Tiles
- 3 - Joint protection
- 4 - PB pipe 12
- 5 - Fonterra Reno system panels
- 6 - Gypsum fibre construction panel
- 7 - Shimming panel (e.g. plywood, wider than 100 mm)
- 8 - Drywall screws
- 9 - Rigid foam insulation EPS DEO 040 (max. 30 mm)

### Section: Floor sub-construction with rigid foam supporting panel on level, solid underground

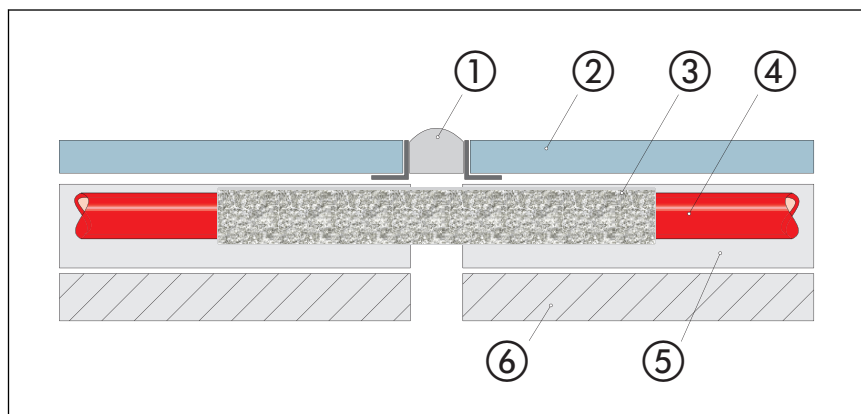


Fig. 14: Fonterra Reno, door passage, solid panel joint

- 1 - Silicone joint
- 2 - Tiles
- 3 - Joint protection
- 4 - PB pipe 12
- 5 - Fonterra Reno system panels
- 6 - PCI rigid foam supporting panel  $\geq 6$  mm

## 3.3 Assembly

### 3.3.1 Pipe covering with gypsum fibre construction panels

Gypsum fibre construction panels can be arranged on the Fonterra Reno system panels as additional underground for the floor covering. This floor construction has a high carrying capacity and is suitable for all types of floor covering.



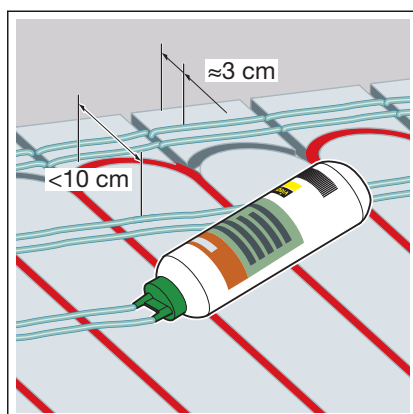
#### NOTICE! Pressure test

Check the installation for leak tightness before covering the pipes. Add the pressure test report to the building documentation, ↪ *Chapter 3.4.1 „Flushing / leakage test“ on page 41.*

The floor has been prepared as follows:

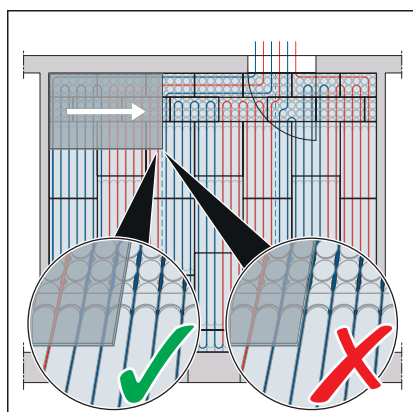
- Fonterra Reno system panels have been properly laid.
- Edges and joints have been sealed.
- The Fonterra Reno system panels have been cleaned and are free of dust.
- The pipelines have been installed and connected to the manifold.
- The pressure test has been successfully completed.
- Apply Fonterra Reno screed adhesive (model 1237.4) at a distance of 10 cm diagonal to the pipe guiding grooves on the Fonterra Reno system panels.

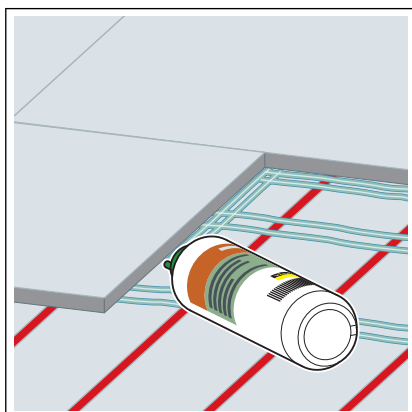
Apply the first line of adhesive in approx. 3 cm distance from the panel edge.



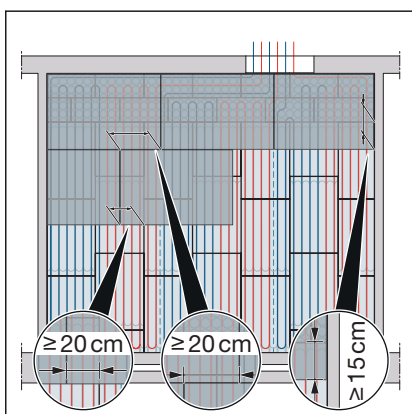
- Turn the gypsum fibre construction panels by 90° to the Fonterra Reno basic panels and lay them down.

**NOTICE! Ensure that the edges of the gypsum fibre construction panels do not end on a pipe groove.**





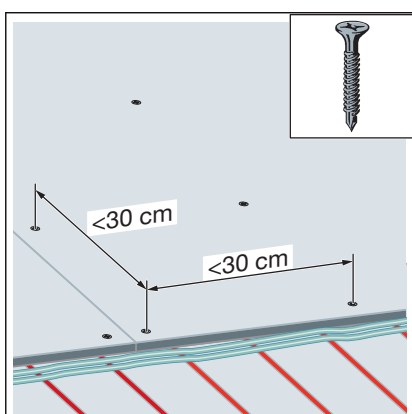
- Apply Fonterra Reno screed adhesive in a distance of max. 1 cm along the connecting ends of the gypsum fibre construction panels.



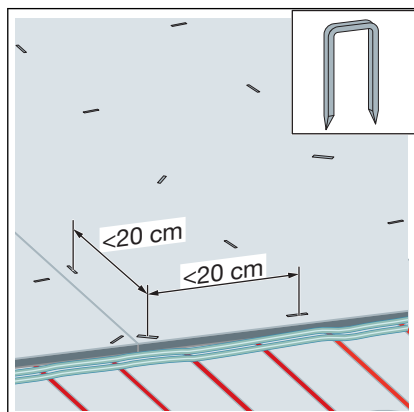
- Lay down the gypsum fibre construction panels with a joint offset of  $\geq 20$  cm.

**NOTICE!** Make sure to provide a panel offset to the Fonterra Reno system panels below of  $\geq 20$  cm. With top panels, a 15 cm offset is sufficient.

There are two different ways to fasten the gypsum fibre construction panels (1 or 2):



- (1) Use drywall screws (model: 1259) spaced at  $\leq 30$  cm to fasten the gypsum fibre construction panels.



- (2) Use expanding clamps spaced at  $\leq 20 \text{ cm}$  to fix the gypsum fibre construction panels.

### 3.3.2 Direct tiling

Tiles may be attached directly onto Fonterra Reno system panels using flexible adhesive in connection with fabric reinforcement. This floor construction is characterised by particularly efficient heat transmission and a low installation height.



#### NOTICE! Pressure test

Check the installation for leak tightness before covering the pipes. Add the pressure test report to the building documentation, ↪ *Chapter 3.4.1 „Flushing / leakage test“ on page 41.*

The floor has been prepared as follows:

- Fonterra Reno system panels have been properly laid.
- Edges and joints have been sealed.
- The Fonterra Reno system panels have been cleaned and are free of dust.
- The pipelines have been installed and connected to the manifold.
- The pressure test has been successfully completed.
- Fill the pipe guiding grooved with flexible adhesive (1).
- Apply another coat of flexible adhesive as well as fabric reinforcement with a mesh width of 6-10 mm (2).
  - ⇒ The surface can be tiled immediately afterwards.

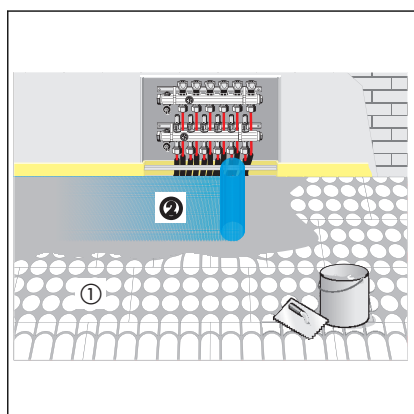


Fig. 15: Fonterra Reno tile surface

### 3.3.3 Manufacturing a pipe cover with casting compound

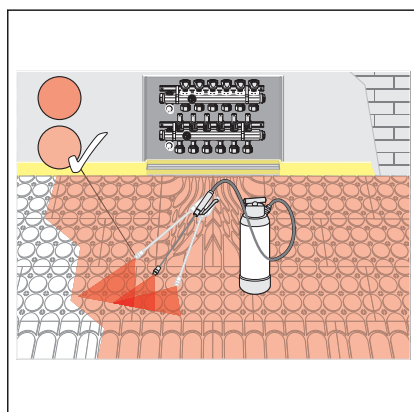
Fonterra Reno system panels covered with Fonterra casting compound create a sound floor construction suitable for all types of floor covering.



#### NOTICE! Pressure test

Check the installation for leak tightness before covering the pipes. Add the pressure test report to the building documentation, ↗ *Chapter 3.4.1 „Flushing / leakage test“ on page 41.*

#### Applying the primer



The floor has been prepared as follows:

- Fonterra Reno system panels have been properly laid.
- Edges and joints have been sealed.
- The Fonterra Reno system panels have been cleaned and are free of dust.
- The pipes have **not been installed yet**.
- Spread the primer (model 1235.23) over the entire area of the panel surface and into the pipe guiding grooves until you reach the required colour value of the control chart.

**INFO!** For best results, apply with a pressure sprayer with a fine, cone-shaped spray jet.

#### INFO!

- Prepare the mixture in the ratio specified in the product information.
- Required room temperature: 5–30 °C
- Required panel temperature: 10–25 °C

- As soon as the primer is dry to the touch, install the pipes in the pipe guiding grooves and connect them.

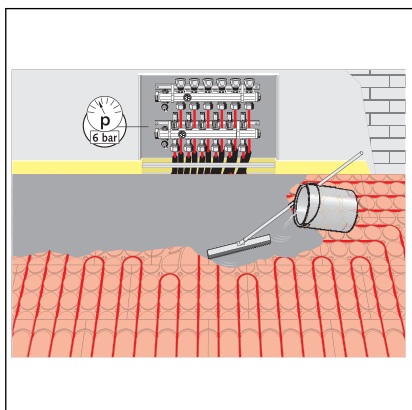
**NOTICE!** Make sure that the pipes snap home properly in to the pipe guiding grooves so that no pipe projects beyond the panel surface.

#### Applying the casting compound

- Prepare the casting compound as specified in the product information.

**NOTICE!** After primer application, wait for minimum 1 h and maximum 48 h before applying the casting compound.





- Apply two coats of casting compound (total coat thickness at least 3 mm):

#### INFO!

- **Required room temperature 10-30 °C**
- **Required panel temperature: 10-25 °C**
- Apply the first coat of casting compound. Using a rubber squeegee (model 1200.3) and applying light pressure, level the coat flush so that the primer is visible.
- After approx. 2-4 hours, apply the second layer and level by means of a height-adjustable spreading tool (model 1200.2) to 3 mm minimum.

**NOTICE! If more than four hours have passed since the first layer has dried, apply another layer of primer.**

**NOTICE! Protect the casting compound from draughts and direct sunlight during curing.**



*By applying one layer of casting compound, the levelness tolerances according to the applicable directives are reached, see ↗ „Regulations from section: Manufacturing a pipe cover with casting compound“ on page 7.*

*Two-stage application of the casting compound provides for levelness tolerances in keeping with increased requirements.*

*In both cases, the floor layer may need re-working by the floor layer. Observe the manufacturers' product information and the applicable directives for flooring work, see ↗ „Regulations from section: Manufacturing a pipe cover with casting compound“ on page 7.*

## 3.4 Commissioning

### 3.4.1 Flushing / leakage test

#### Flushing the pipeline installation

- Flush all heating/cooling circuits individually and subsequently until the leaking water contains no more air.
- Close the supply and return valves at the manifold.
- Open the first supply valve or the first flow quantity gauge.
- Via the boiler filling and draining tap (KFE tap) at the manifold, flush the circuit with filtered water until the leaking water contains no more air.
- Close the valve again and repeat the process for all supply valves.
- Open the supply and return valves at the manifold again and do a pressure test.

### Carrying out the pressure test

- The leakage test of the heating circuits with water is carried out at a pressure of minimum 0.4 MPa (4 bar) and maximum 0.6 MPa (6 bar).
- Retain the test pressure while applying the casting compound. Do not carry out the test at system units not designed for these pressure levels.
- Keep the water temperature constant during the test.
- Document the result of the pressure test in a log and enclose it with the total documentation.



Go to [viega.de](http://viega.de) and the Fonterra product range to download a form on execution and documentation of the pressure test.

### 3.4.2 Functional heating

Functional heating is not required.

### 3.5 Disposal

Separate the product and packaging materials (e. g. paper, metal, plastic or non-ferrous metals) and dispose of in accordance with valid national legal requirements.