HOW IT'S DONE: INSTALLATION OF DRYWALL UNDERFLOOR HEATING

CONTENTS

INSTALLATION GUIDE

1 INSTALLING FLEXIRO UNDERFLOOR HEATING – INTRODUCTION

The FLEXIRO dry-lined underfloor heating is a system kit optimised for easily upgrading an existing dry screed surface of uniform gypsum fibreboards as both a third layer and heating surface in individual rooms such as the bathroom or kitchen of living quarters. All necessary components are included in a kit. Compared to a conventional underfloor heating system, the use of a flexible 10 mm plastic pipe ensures a lower construction height and more even heat distribution. The use of plug-in connections and temperature control boxes for individual room control simplifies the laying of the FLEXIRO dry-lined underfloor heating system so much that it is equally suitable for professional installers or do-it-yourself enthusiasts. The following picture panels (beginning on page 4) illustrate the installation steps required in a test setup of approximately 6.0 m².

Despite the simplified construction, as the manufacturer we would like to point out that we can only guarantee top quality delivered from the factory, but bear no responsibility for installations and connections made by third parties. Furthermore, please observe current valid standards and regulations for heating systems and drywall construction.

2 SCOPE OF DELIVERY FLEXIRO DRYWALL UNDERFLOOR HEATING KIT

Kit size	Pipe (Ø10mm)	Screed panel K (Circular panel)	Screed panel O (Blanking panel)	Feed panel	Flow distributor (Outlets)	Return distributor (Outlets)	Blanking plugs
4.5 m²	30 m	3	1	1	1 (1)	1 (1)	0
6.0 m²	60 m	4	1	1	1 (2)	1 (2)	2
7.5 m²	90 m	5	1	1	1 (4)	1 (4)	4
12.0 m²	120 m	8	1	1	1 (4)	1 (4)	4
Regulating boxes (depending on the selection)							
○ Kompabox RTL – single room temperature control with flow cut-off							
○ Multibox 4K-RTL – single room temperature control and maximum limitation of return temperature, smarthome integration possible							

Kits and further accessories for drywall underfloor heating can be obtained at the FLEXIRO shop: flexiro.de/en/drywall-underfloor-heating.

3 IMPORTANT NOTE BEFORE BEGINNING THE INSTALLATION

- The FLEXIRO dry-lined underfloor heating system may be operated at system temperatures up to a maximum of 54°C higher temperatures will damage the gypsum fibreboard.
- When the work begins, an edge insulation strip at least 30 mm high has to be laid around the area that will have floor heating. Columns and similar structures should also be edged with insulation strip to allow the entire floor structure to expand. The edge insulation strip is later cut off flush after laying the surface coating material. The skirting boards then conceal the elastic joint.
- Determine the arrangement of the heating circuits. The installation site of the temperature control box is chosen such that the heating pipes of all heating circuits can be routed directly up to this box without needing to be extended. CAUTION: Kit 4.5 m² comprises one heating circuit, kit 6.0 m² comprises 2 heating circuits, kit 7.5 m² comprises 3 heating circuits and kit 12.0 m² comprises 4 heating circuits.
- In principle, the pipes of the underfloor heating system can be shortened. However, attention needs to be paid that the difference in length of the individual connections does not become too great (max. 15%). Should a shortening be necessary, it should be distributed over the pipes as evenly as possible. Otherwise, there is a risk of uneven heat distribution.
- Under no circumstances must the flow manifold, return manifold and any plug-in connectors used be grouted with construction chemicals. This could damage the connections and thus result in damage to the entire heating system.
- Avoid crossing the pipes in order to exploit the full benefits of the low construction height of the thin-bed underfloor heating system.
- Make sure that pipes are always cut off straight and burr-free. Pipes must be neither pinched nor kinked.
- No special tools are required to install the distributor and the pipes.
- Avoid walking over the heating pipes unnecessarily during the laying and installation work. Under no circumstances should you step on the pipes. The manufacturer will not accept any liability for damage if this advice is ignored.

4 PREPARING THE INSTALLATION

The following also applies for the FLEXIRO drywall underfloor heating system: Work on heating systems calls for adequate manual skills and abilities. If necessary, engage a professional to carry out the installation work.

- The existing substrate must be a level, clean, load-bearing dry screed surface of gypsum fibreboards.

- Before laying the pipelines, determine the position of the connection distributors for the underfloor heating so that you know exactly where the pipelines must run to.
- Create a layout plan for the arrangement of the FLEXIRO dry screed panels on the floor so that the FLEXIRO heating pipes can subsequently be laid from the temperature control box and back to the temperature control box without overlaps. The heating pipes can be laid in a meandering or spiral pattern (bifilar). In this regard, please refer to the installation drawings (on page 11).
- The arrangement of the heating system and placement of the temperature control box is a matter of individual design. No generally applicable solution exists for this. Please ensure that the control valve can always be reached subsequently. After installing the distributor, the pipe ends must still be pluggable into the individual connections. (Take height from floor into account.)

5 INSTALLATION

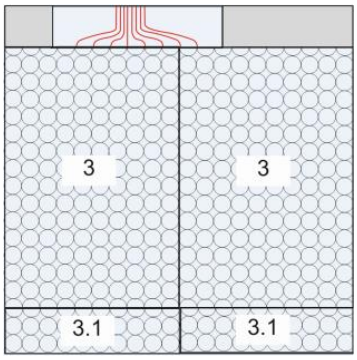
5|1 Installing the temperature control box single room control

- In order to provide efficient temperature control, the temperature control box should be positioned in such a way that the thermostatic head can detect the temperature of the indoor air and the air can flow around it unhindered.
- The distance of the temperature control box to the finished floor should be at least 20 cm from the bottom edge of the UP box.
- The separately enclosed installation and operating instructions must be observed.

5|2 Applying the edge insulation strips

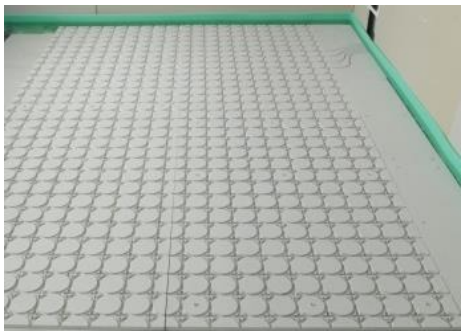
- A continuous edge insulation strip is to be fitted to all walls or vertical building components (stairs, columns, door frames, ascending pipelines). In all cases this must reach up to the top edge of the top coating. The edge insulation strip serves to separate the bottom layer of the masonry or other fixtures.
- The edge insulation strip is cropped once the top layer has been fully laid (with tile-laying only after grouting).

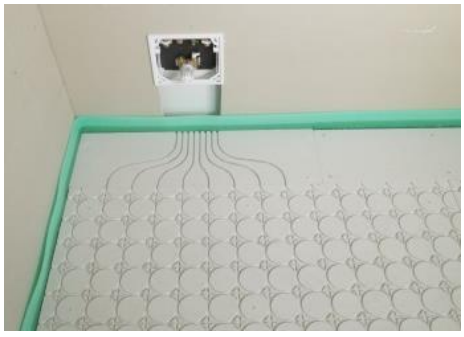
5|3 Laying FLEXIRO screed panels



- Before installation, the planned heating area should be marked out on the floor and the screed panels cut to size accordingly, if necessary. For cutting to size, use a hand-held circular saw, a jig saw or a hand saw with a suitable blade.
- Watch out: The FLEXIRO screed panels are needed only for the intended heating area. Inactive screed panels are prepared in the unheated edge areas and to completely fill the 3rd layer.
- The FLEXIRO screed panels are glued to the existing finished screed with screed adhesive (PU adhesive) and additionally secured with drywall screws or staples.
- No all-over application of the adhesive is required. Lines of adhesive are sufficient. Detailed information can be found in the panel manufacturer's advice leaflet.
- It must be ensured that the grooves in the FLEXIRO screed panels of the separate panels are aligned to one another so that the installation of the FLEXIRO heating pipes is later possible.
- The feed panel must be aligned such that the FLEXIRO heating pipes can be laid to the temperature control box.
  If necessary, the installer can cut additional grooves on site in the blanking or active panels using a surface milling cutter and a suitable 10 mm semi-circular milling cutter.

The adhesive is applied to the floor!

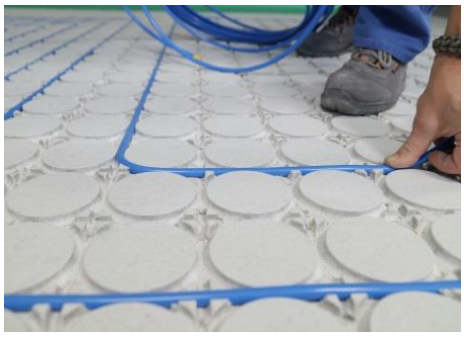




5|4 Laying the heating pipes

- The optimum starting point for laying the pipes is near the distributor arms to keep the pipe length for the connection as short as possible.
- The minimum spacing between the pipes is 10 cm. The distance between the underfloor heating and the room walls should be at least 5 cm. A minimum bending radius of 5 cm must always be maintained in areas where the pipe bends – we recommend keeping the radius as large as possible.

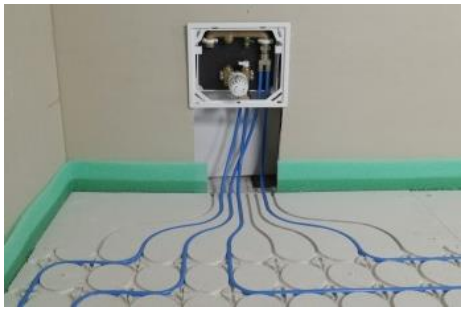
- Cut out any kinks or damaged areas on the heating pipes. The pipe must be reconnected with a permanently tight coupling (under accessories see plug-in connector). The coupling must be protected from direct contact with the grouting compound or top coating by wrapping it in PE film. The position of the coupling must be marked. After this repair the pipes may have to be extended. If a coupling has to be used, the screed panel in this area must be opened out (milled or similar) to the depth and width of the coupling.



- Care must be exercised if you have to step on the screed panels while laying the pipes.
- The pipes must be laid without any twisting.

  Various patterns of laying are possible: Laying in a spiral (bifilar) pattern is particularly advantageous. Besides very even distribution of heat, it allows large radii which makes it easier to avoid twisting he pipes.
  (See 5|11 Installation drawing)
- Before sealing the grooves with a suitable joint filling compound, it must be ensured that the pipe is fixed in place everywhere and not jutting out of the grooves.

5|5 Connecting to the temperature control box

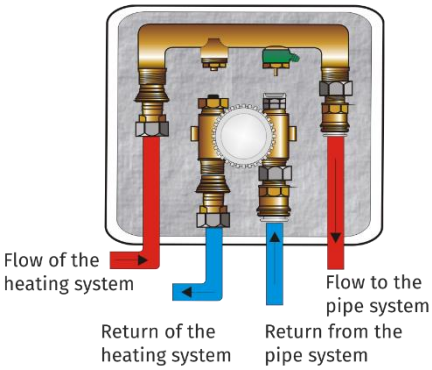


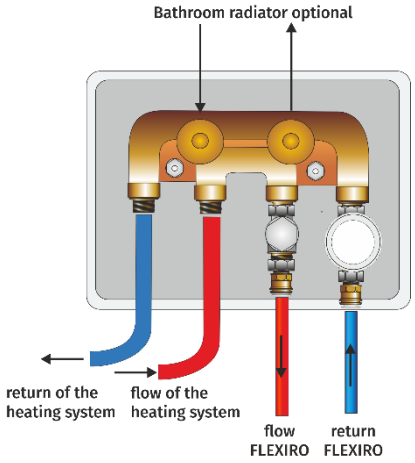
- The distributor arms are connected to the temperature control box with a Eurocone screw connection. The Eurocone has a self-sealing effect while the metal screw connection has a purely safety-related function. Overtightening should absolutely be avoided as this would compromise the safety of the heating system.

- The following illustrations show the arrangement of the heating pipes in the temperature control box. The sequence of connections differs depending on the control box. The heating pipes are connected to the distributor arms using the simple plug-in assembly. The heating pipes, which have been cut straight and possibly shortened, are inserted directly into the plug-in connections of the distributor arms up to the stop.

Multibox 4K-RTL

Kompabox RTL





Making a plug-in connection:

- Cut off the heating pipe straight and burr-free.
- Insert the pipe up to the stop (about 20 mm).
- Caution: The retaining element grasps before it seals.
- Make sure that the pipe is inserted up to the stop. The pipe is now in a fixed position.
- Pull on the heating pipe to check that the connection is held securely.

Note: The pipes must go vertically into the distributor and must not exert any tension or pressure on the connection box!

Releasing a plug-in connection:

- Make sure that the system is depressurised.
- Press on the retaining element against the front side of the housing. The pipe can then be easily removed by pulling it.

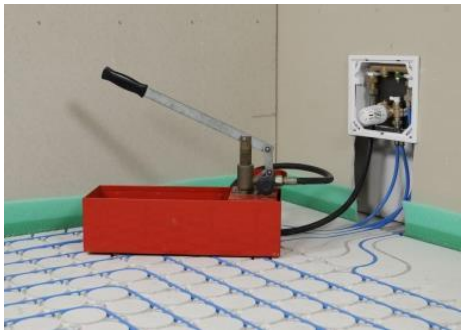
The distributor arms included in the delivery are to be installed without any tools.

5|6 Connecting to the heating system

- Make sure that the flow and return lines are correctly connected in the temperature control box. Mixing up the flow and return lines in the temperature control box will disable thermostatic valve and even prevent the FLEXIRO underfloor heating from working.
- As a rule, you can integrate your FLEXIRO underfloor heating into the existing heating system parallel to the other radiators or in place of a radiator.
- For this purpose, a T-piece (not included in the FLEXIRO kits) is introduced into the flow and return of the heating system.
- One pipeline each (not included in the FLEXIRO kits) is run from the T-pieces of the flow and return to the entrance of the temperature control box and joined there by means of a suitable transition screw fitting. Suitable transition screw fittings for various pipe qualities and sizes can found under accessories in the FLEXIRO web shop or in the trade.

5|7 Pressure testing the heating system

Make sure that the system and all associated components are correctly installed before operating the dry-lined underfloor heating system. Even if it is a brand new product, it must still be tested according to the following procedure:



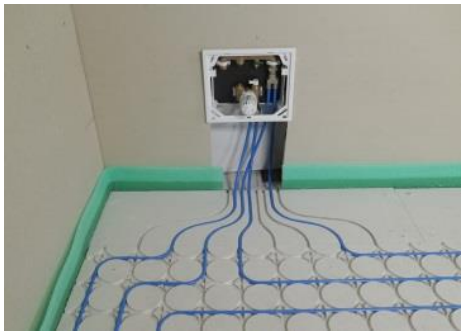
- Close the flow and return valves in the heating system.
- Flush the heating circuit until the water in the return pipe no longer contains air bubbles.
- Afterwards, the system should be pressurized with 10 bars for at least 10 minutes.
- Check the pipe system and all connectors to see that they are watertight.
- Release the pressure from the heating system.
- Afterwards, the system should be tested with an operational pressure of 2 bars for an additional period of 10 minutes.

A suitable pressure test pump is available in the FLEXIRO shop: flexiro.de/en/product/d/86/pressuretestpump.

Please note that if no pressure test is conducted the manufacturer cannot guarantee the long-lasting operation of the heating system.

5|8 Testing the underfloor heating

Make sure to carry out a test run before sealing the pipe system with joint filling compound. This is the last opportunity to correct installation errors or repair damages.



- Unless you have prefilled the wall elements, the pipe system fills itself via the heating system. When using the Multibox 4K-RTL, venting the pipe system directly via the vent valve is possible and advisable.
- Now fill the heating system and restore the operating pressure of your system.
- Once again check there are no leaks.
- Check the pipe system and all connections for tightness.
- Completely open the thermostat valve on the temperature control box and check whether all areas and heating circuits in the FLEXIRO underfloor heating system become warm.

5|9 Applying the joint filler

To seal the grooves in the FLEXIRO screed panels, use a joint filling compound or alternatively a gypsum-based joint filler that manufacturers earmark for the filling of gypsum fibreboards.

- Before you start applying the construction chemical products, make sure that the underfloor heating is fully out of service.
- The curing of the chemical products can be adversely affected or even inhibited if the heating system is in operation.
- The heating pipes then need to be trowelled over with a flexibly hardening joint filling compound. Also seal all unused grooves in the screed plates with joint filling compound.
- Once the joint filling compound has dried thoroughly, you can apply the desired top coating. Observe the manufacturer's instructions with regard to the preparation of the sub-surface.
- All floor coverings and adhesives must be rated "Suitable for underfloor heating systems" by the respective manufacturer. The laying of ceramic or porcelain floor tiles 330 x 330 mm in

size presents no problems at all. Please clarify with the manufacturer in advance whether larger tile sizes are suitable for the floor structure.

Further advice about dry screed materials:

We would like to mention once again the importance of adhering to all laws, regulations, guidelines and standards for the planning and installment of heating systems and drywall construction.

The dry scree materials must have the following properties:

- Suitability for underfloor heating systems

The following manufacturers offer suitable products in the trade and can give further advice:

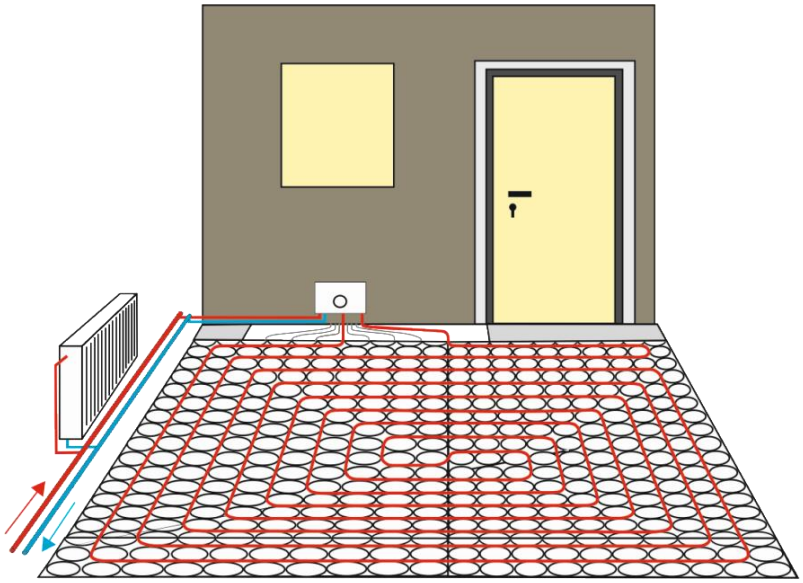
- Fermacell
- Knauf
- Rigidur

More detailed information can be obtained from the manufacturers of grouting compound.

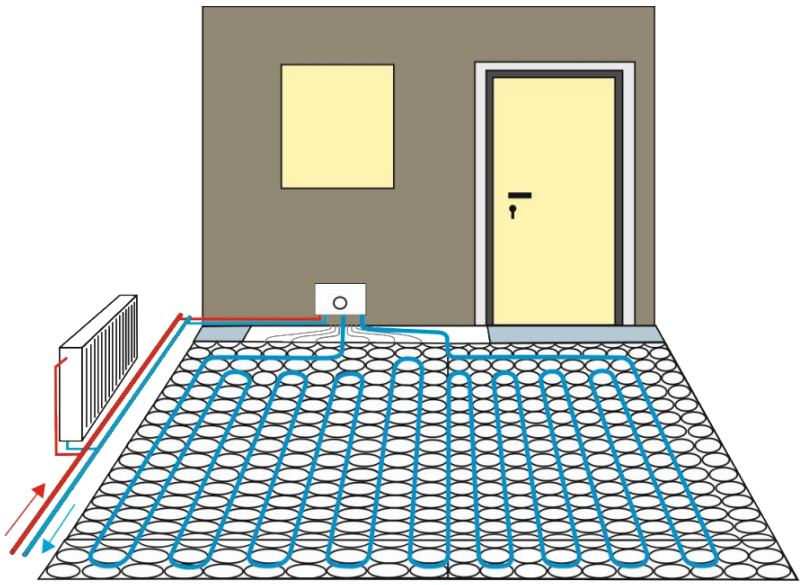
5|10 Commissioning (heating up process)

- After completion and once the surface covering has dried naturally, the heating-up process is carried out. If you have laid tiles, do not begin operating the underfloor heating system until the tile adhesive has completely hardened. It is essential that you follow the manufacturer's handling instructions in this regard.
- The heating-up is usually carried out according to a heating-up protocol. It is essential that you follow the manufacturer's instructions in this regard.

5|11 Installation drawing



FLEXIRO dry-lined underfloor heating, laying pattern: spiral-shaped (bifilar)



FLEXIRO dry-lined underfloor heating, laying pattern: meandering