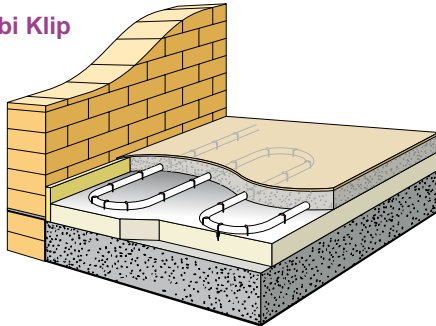


Installation Instructions - Solid Screed Floor

Pipe Dimensions	9.9mm PEX	12mm PEX	16mm PEX	✓	16mm MLC	✓	20mm PEX	✓
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When installing underfloor heating (UFH) within a solid screed, there are a number of different methods of fixing the UFH pipe into position, onto and above the floor grade insulation. The two most common methods are:-

1. Kombi Klip



If using pipe-positioning plates, please use the installation instructions enclosed in each box to assist with the laying of the plates.

Surface Preparation

The floor must be level and swept clean of dust and debris before laying the insulation.

Pipe Bends

When laying the pipe, do not force the pipe into bends. It is easier to lay the pipe with a large radius and then gently pull the pipe to the required bend.

Installation

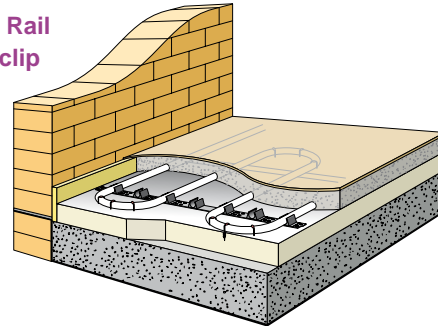


- Fix the edge insulation continuously around all internal and external wall edges, using the adhesive backing. When installed correctly the PE-skirt will be facing out from the wall and the embossed 'Uponor' will be legible.

Once the screed has dried and cured, the edge strip can be trimmed down.

- Lay the floor insulation over the entire floor area butting up to the edge strip, ensuring the PE skirt is overlapped and taped onto the floor insulation. If using Uponor insulation or another foil faced insulation board, tape the joints of all adjoining sections of insulation together to prevent screed slipping down between sheets of insulation and creating a cold bridge. Alternatively, lay a protective layer over the insulation.
- Fix the manifold into position, ensuring there is sufficient room to connect the water temperature controls and flow and return pipework.

2. Clip Rail and U-clip



It is normal for the pipe to bulge out slightly like a 'light bulb' on 180° turns, especially where pipe centres are closer than the standard pipe spacing.

Do not pull the pipe too tight or it may kink.

Pipe Centres

When installing onto floor grade insulation, pipes should be spaced away, 100mm (16mm pipes) and 150mm (for 20mm pipe), from the wall edges. Thereafter, in modern well-insulated buildings the UFH pipe is generally installed at standard centres, 200mm (16mm pipes) and 300mm (for 20mm pipe) across the active floor area, unless otherwise specified.

- If using Clip Rail & U-clips, lay the rail across the floor to create a matrix for the UFH pipe. Use the self-adhesive backing to hold the rail onto the insulation. For meander pattern pipe installation, set the rail out on the insulation at a maximum 500mm spacing from two opposite wall edges and a maximum 2000mm spacing between clip rails. Ensure the clip rail is at a 90° angle to the coldest external wall.

Alternatively, if you wish to lay the pipe in a bifilar pattern, lay the clip rail over the insulation in a cross/star pattern with each clip rail strip converging in the centre of the floor area to be heated.

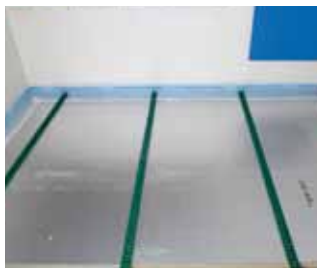
Once you are happy with the clip rail layout in relation to your proposed pipe configuration and routes, fix the rail permanently to the insulation by pushing the 'U'-clips through the holes provided in the clip rail at the leading and trailing end of the rail. If the length of rail exceeds 1m use additional U-clips at 500mm intervals.

On the actual pipe bends you may wish to use the U-clips directly over the pipe and into the insulation for extra hold. Insert u-clips at a 45° angle to gain maximum hold.

If the floor grade insulation is already installed below the floor slab and the additional insulation laid over the concrete slab is not sufficient to fix Uponor U-clips, we would advise fixing the rail directly to the sub concrete floor using suitable floor fixings (screws and plugs).

If using the Kombi Klips to fasten the pipe to the floor grade insulation, clip the pipe at 500mm intervals. More clips may be necessary on the pipe bends. Minimum 35mm insulation depth is required for the Kombi long and 25mm for the short. To assist with fixing the Kombi clips into the insulation we would advise using the Kombi Tacker Gun (Item no. 1002295)

Clip Rail Fixing



Kombi Klip Fixing



Laying the UFH Pipe

In order to prevent the floor from overheating directly below the manifold or through doorways, where pipes are congested together, we would advise insulating the pipe, especially if they are not used to heat the room through which they pass.

- Identify each floor area to be covered by each coil/loop of UFH pipe. If you have had a design prepared by Uponor, the rooms to be heated and the coil lengths allocated to each area will be identified on your quotation and/or design layout drawing.
- When installing the pipe it is important to ensure the pipes do not cross over each other, therefore time should be spent, before actually laying any pipe, configuring the route for the feed pipes from the manifold location to their respective area/room to be heated.
- Typically, feed pipes pass through door openings, etc. However, where possible, particularly to areas adjoining the manifold location, feed pipes could be taken directly through partition walls and into their respective rooms. This will also help alleviate any congestion around the manifold location. Ensure all holes drilled are below the screed floor finished level. Also, when threading the pipe through the hole ensure it has been capped off and there are no

sharp edges, which could score and damage the pipe. It is recommended that the UFH pipes, when passing through walls, are sleeved with Uponor protective conduit.

- Once you have a clear picture of the installation, you can begin to install and lay the pipe. Firstly thread the first coil end behind the return manifold and connect onto the manifold flow port. If passing through a partition wall first thread the pipe through the hole and up behind the return manifold.

If using PEX pipe, 'pipe bend supports' must be fitted on every loop at the point where the pipes rise from the floor/insulation and up to connect to the manifold, i.e. 2 required per loop.

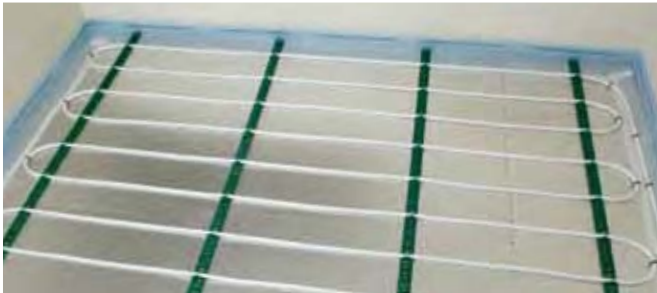
In all cases, the pipe should be laid so that the flow direction is to the coldest area of the room first, for example, under windows and along external walls.

To assist with installation, Uponor pipe is marked at every metre length. It is good practice to make a note of the starting metre at the manifold and keep referencing how much pipe has been laid whilst installing over the intended floor area. This will help ensure you leave sufficient pipe to return to the manifold. Each loop should be installed without any joints in the floor.

Installing the Meander Pattern

Once you have entered the room/area to be covered, first lay the flow pipe around the perimeter with a gap, 100mm (for 16mm pipes) and 150mm (for 20mm pipe), from the wall to the coldest area and then meander up and down across the floor area back towards the point of entry, following the same route back to the manifold, clipping the pipe as necessary depending on the chosen method of fixing. On returning back to the manifold connect the tail end of the pipe to the corresponding return port on the manifold.

Meander pattern



Installing the Bifilar Pattern

Once you have entered the room/area to be covered, lay the pipe around the perimeter of the active floor area to be covered, maintaining a gap, 100mm (for 16mm pipes) and 150mm (for 20mm pipe), from the wall edge and clipping the pipe as necessary. When you have circled the area and are back at your starting point, follow the same route around, but this time, at two times the design pipe spacing. For example, if installing at 200mm centres across the floor area, follow the same route at 400mm centres. Continue spiralling this way until reaching the centre of the area. At this point turn back on yourself, making a hairpin turn and begin laying the pipe outwards centrally between the pipes already fixed on your inward journey, thus ensuring even 200mm pipe centres across the whole floor area and more importantly an even floor temperature. On returning back to the manifold connect the tail end pipe to the corresponding return port on the manifold.

Bifilar pattern



Screed Expansion Joints

Where pipes are to cross over a screed expansion joint, use a small section of conduit over the pipe, up to a minimum of 200mm either side of the joint.



Inspection

Once the pipes have been laid, inspect the system to ensure all is as it should be.

Where used, snip back all sharp edges of mesh that may contact the pipe. Clip down any sections that have lifted to stop the pipe being too close to the finished surface.

Pressure Testing

Once all the pipes have been laid and connected to the manifold, fill and pressure test the system.

Sand-Cement Screed

Lay the screed as soon as possible to protect the pipes. At all times avoid unnecessary foot traffic.

Self Attaching System

Optimal Productivity and Performance

PROJECT SAVINGS

- **Remove work steps**
28db impact noise reduction can remove the need for installing a resilient acoustic layer
Built in membrane removes the need for installing a polythene layer above the roll insulation
- **Reduce overall build programme**
- **Save on cost of supplying and installing a resilient acoustic layer**
- **Halve the time of installing an UFH system or halve the installation cost**

ACOUSTIC & INSULATION QUALITIES

- **28db impact noise reduction**
Tested to DIN4109
Identical laboratory methods to BSEN ISO 140-8:1998
- **Better than some of the leading acoustic underlay products**
- **Potential for significant savings on supply and installation costs**
- **Meets BSEN 1264 insulation requirements for floors with heated rooms below**

PEX-a 16x1.8mm UFH PIPE

- **25 year manufacturing defect warranty**
- **Design life in excess of 50 years in accordance with DIN 16892**
- **Design pressure of 6 bar at 70°C**
- **Available in coil sizes up to 640m**
- **Oxygen diffusion barrier conforming to DIN 4726**
- **Manufactured to ISO 9001 & 14001**
- **3.3 billion metres of pipe sold since 1972**
- **Conforms to EN ISO 15875**



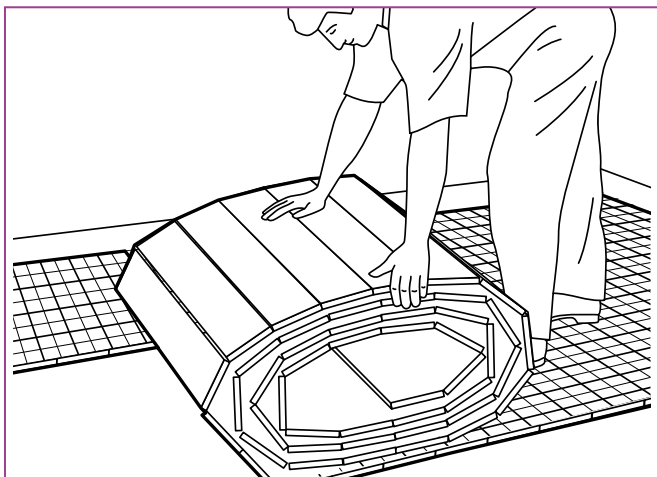
Installation Instructions - Self Attaching System (Solid Screed)

Pipe Dimensions	9.9mm PEX	12mm PEX	16mm PEX ✓	16mm MLC	20mm PEX
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The edging strip must be fitted before the Uponor self-attaching system insulation is laid.

Laying the Uponor self-attaching- system insulation

The Uponor self-attaching-system insulation is to be preferably laid in continuous strips in the room's longitudinal direction. For easier distribution of the heating loops, the marking grid should match the parallel insulating strips. Remaining surfaces in recesses, door opening and strips remaining along the walls are to be subsequently filled in with the remaining insulation. Always place the "free-hand" cut sides of the boards against the edging strip to eliminate gaps in the insulation.

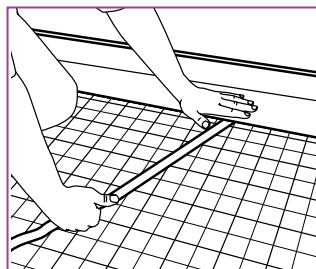
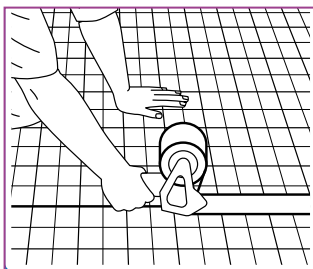


Additional insulation

Additional heat insulation may be needed to comply with DIN EN 1264-4 and EnEV requirements.

Masking the self-attaching system insulation joints

Masking all insulating strips (together with the bonded edging strip apron) creates a sealed trough ready to accept the heating screed. Precise masking stops any screed or screed water from penetrating the insulation as well as stopping acoustical bridges from being formed.

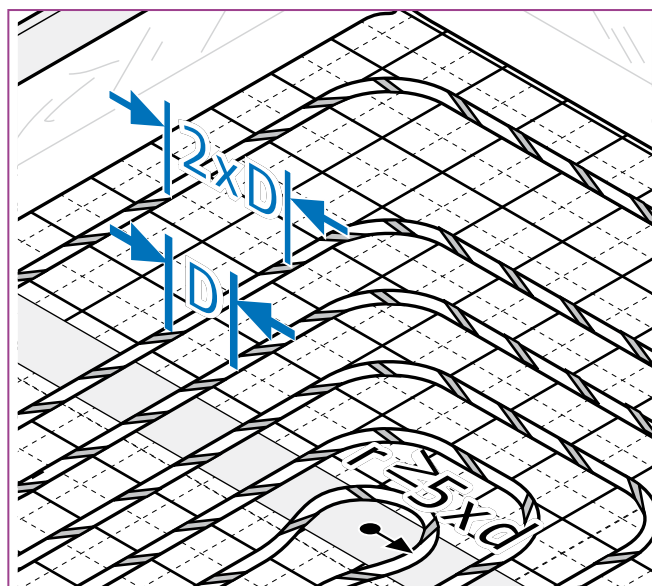


Sealing the edging strip

To eliminate all gaps or cavities the edging strip foil apron must be bonded to the insulation boards. This keeps the foil from ripping and prevents the penetration of screed or screed water.

Pipe laying

The heating pipes are laid on the boards at the predetermined distance without using tools. The microscopic hooks meshing with the looped sheets are sufficient to ensure that the pipes are fixed to the boards. No additional fixing is required. The minimum allowed bending radii of the pipes are to be maintained. All known methods of pipe laying are possible. It makes sense to mark the supply and return of the heating loops to ensure correct distributor connection. Uponor recommends installing pipes in the bifilar (snail) pattern.



Other notes

The radiant heating pipe is to be protected with Uponor protective sleeves in the area of the expansion joints. Before pouring the screed a pressure test is to be made in accordance with BS EN 1264-4. A test report is to be prepared.

The exposed parts of the edging strip may only be removed after completion of the flooring or when laying textiles and flexible coverings only after the hardening of the filler at the predetermined breaking points.

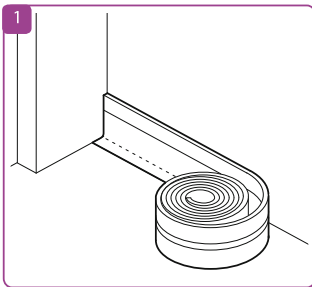
Before any floor covering is laid the screed must be heated up in accordance with BS EN 1264 part 4. For proprietary screeds please consult with the manufacturer for curing times and heat climatisation procedures.

Roll Insulation

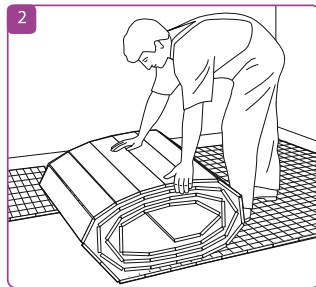
The following pages are intended as a quick reference guide where you can see the main steps of installing self attaching system.

For more details please refer to the installation manuals that can be found inside the packaging of the products.

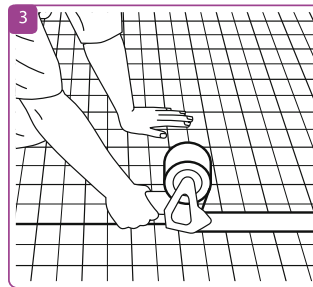
Floor installation main steps



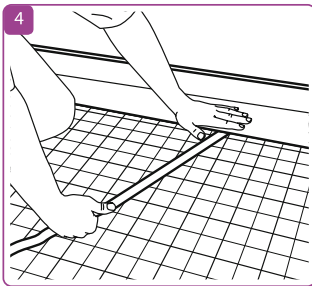
The edging strip should be installed prior to the insulation



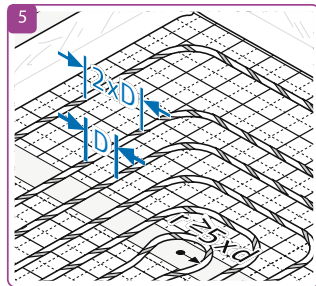
Lay the insulation roll length ways in the room and by matching the pre-printed grid



Seal the panels side by side using tape

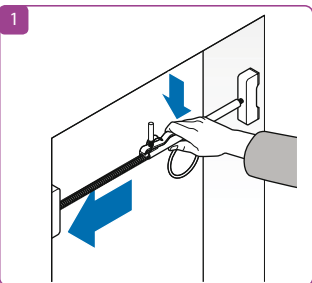


Seal the edging strip along the perimeter of the insulation

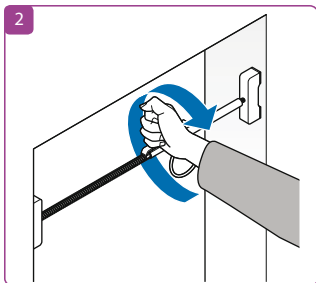


Lay the pipe by applying pressure with your foot to attach it to the insulation panel. Uponor recommends installing the pipe in a bifilar (snail) pattern. Bifilar pattern details shown on page 24.

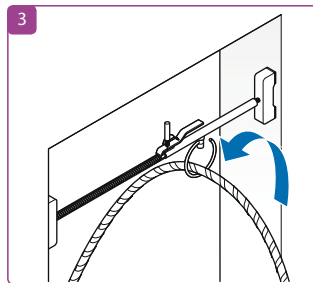
Pipe Leading Tool



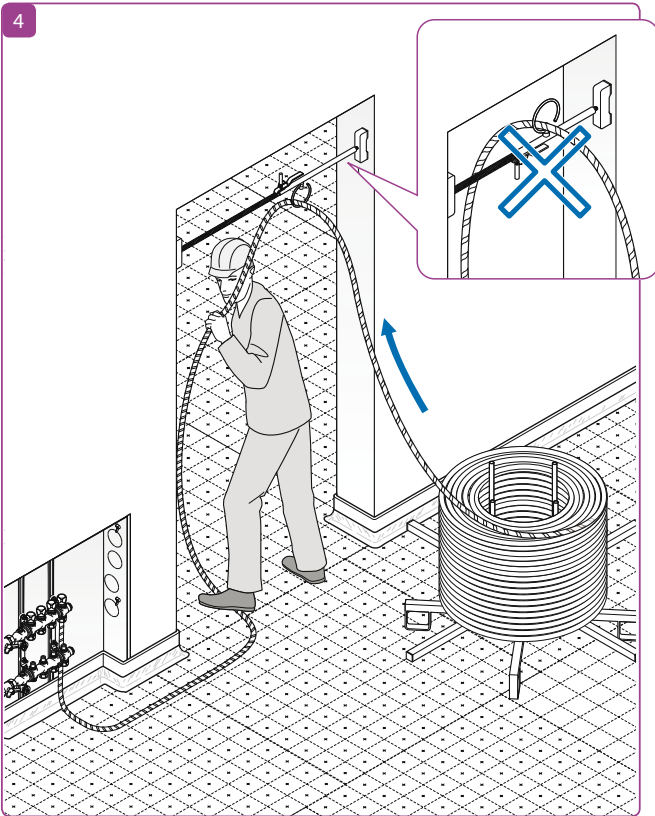
Position the pipe leading tool within the door frame, close to the top



When you are happy with the position, and the ring is on the underside lock the tool in place



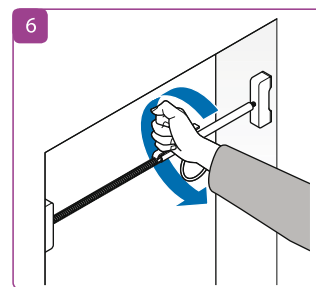
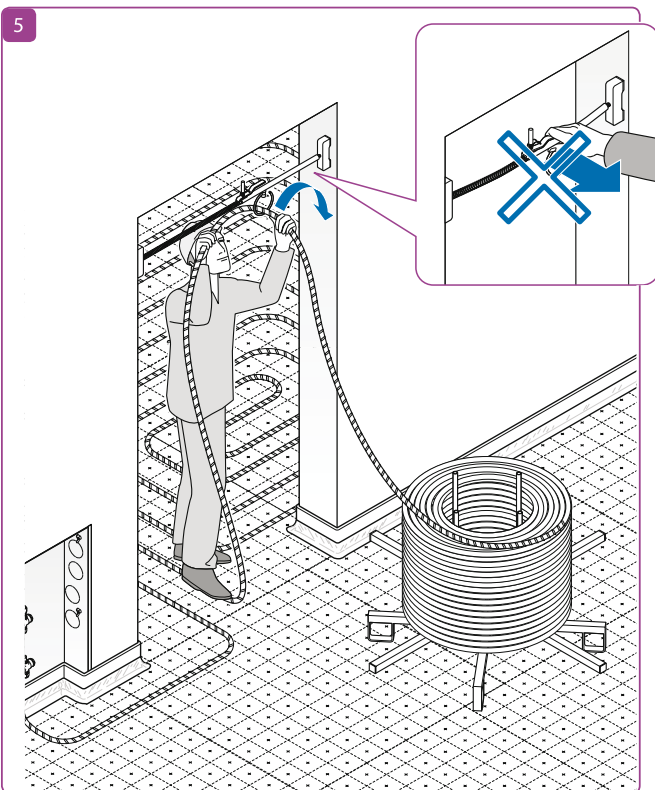
Insert the self attaching system pipe through the ring



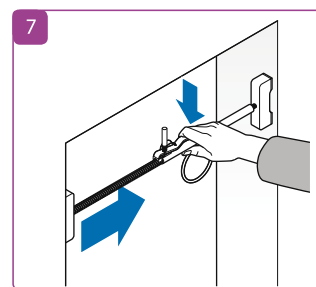
Start laying the self attaching system pipe having previously positioned the de-coiler in an adjacent room

*When connecting pipe to manifold use a 90° bend support for creating a stable bend.

Pipe Leading Tool

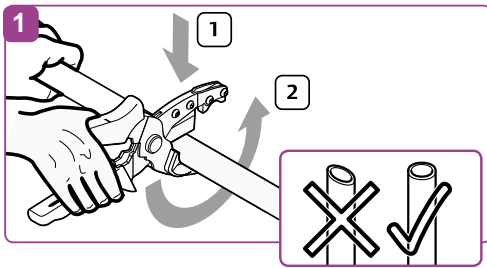


Remove the self attaching system pipe from the pipe leading tool but do not try to remove the tool itself



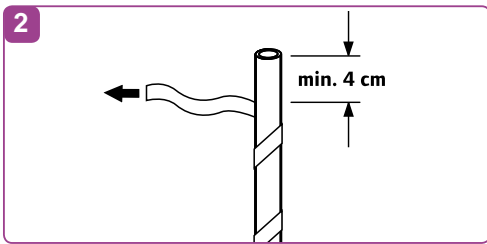
Unlock the pipe leading tool

Compression Adapter



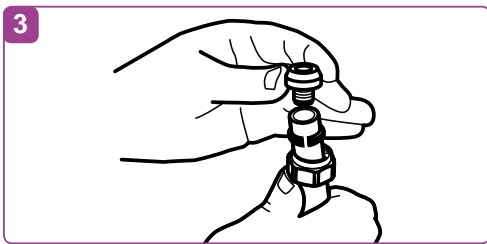
1. Cutting to length

Cut the pipe to length at right angles with a pipe cutter. The edges must be straight and burr-free.



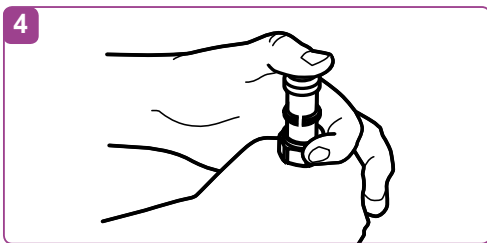
2. Removing the self-attaching-system strip

Loosen and cut off at least 4 cm of the self-attaching system strip from the end of the pipe.



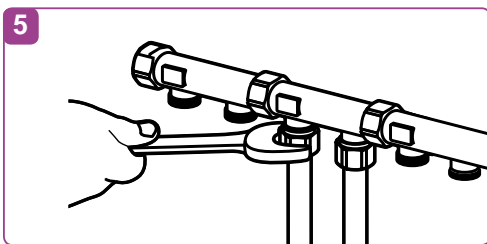
3. Installation of the union nut and locking ring

First push the union nut and then the locking ring onto the end of pipe.



4. Installation of the pipe inset (support sleeves)

Push the pipe inset (support sleeves) by hand into the pipe until the positive stop is reached. If manual force is not sufficient, it is possible to use a plastic hammer.



5. Connection to the distributor

Attach the pipe to the distributor and secure the nut by hand. Then tighten the nut with a wrench until the torque noticeably increases.

Please note

With threaded locking ring connectors you must always use pipe inserts (support sleeves). If the compression adapter is loosened a new locking ring must be used. The reuse of a locking ring is not allowed.