



INSTALLATION GUIDE

1. Install wiring.
2. Install the manifold & pump.
3. Install pipework.
4. Connect UFH pipes to the manifold.
5. Fill UFH Pipes.
6. Pressure Test.
7. Starting-up the UFH System

IMPORTANT NOTES:

Check your invoice and delivery note before installation to make sure that all the materials and the quantities are correct.

Before installation:

- Make sure that the sub-floor is clean, level and the room is empty. Then you can lay down floor insulation (not supplied).
- Ground floor insulation must meet Building Regulations 2006 Part L.
- A minimum requirement for ground floors is 75mm Polyurethane insulation (Celotex, Kingspan, Ecotherm, Xtratherm), or 110mm of EPS (Jablite, etc.).
- Please note that we do not supply the insulation. Any builder's merchant will have Celotex or Kingspan insulation in stock.
- It is the responsibility of the customer to make sure that insulation levels conform to relevant British Standard and any other applicable building code.

1. Install wiring.

All wiring should be undertaken by a qualified electrician. Uheat cannot be held responsible for damage to components, fixtures, fittings or injury caused by incorrect or faulty wiring. (please refer to instructions/diagrams supplied with controls)

2. Install the manifold & pump

The control unit s (manifold + pump) should be always located near or in the room it is serving, or if there's more than one zone the whole unit need to be positioned strategically and central as possible, in order to reduce the length of pipe and uncontrolled energy from pipes passing through the heated areas.

Although the control unit has a built-in pump with a low noise level we advise not to install the unit close to a bed.

Typical locations include understairs cupboard, utility rooms, airing cupboards and cloaks cupboards.

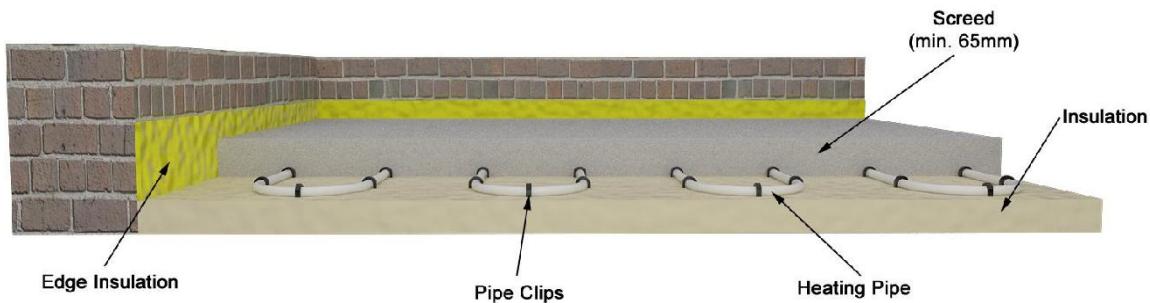
We suggest you select the Control Unit position at the beginning of the design process.

The manifold should be fixed level and approximately 400-600mm above the finish floor to enable easy connection of the UFH Pipework and to be accessible for maintenance and servicing in the future.

3. Install pipework.

When laying UFH loops/circuits, the first pipe end should be connected to the manifold before loop is laid (see section 4).

Solid Screed Floor



Wall/Edging insulation:

Fix the edge insulation continuously around all internal walls. When installed correctly the PE-skirt will be facing out. Tape the PE-shield onto the floor insulation.

Once the screed has dried and cured, the edging insulation can be trimmed down.

Remember the following:

- Maximum circuit length is 100m. If your area requires more than 100m divide it in half and fit two circuits of similar length. For example: Room area 30m² with pipe centres 200mm require 150m of pipe. Fix with 2 circuits of 75m.
- Pipe connections must not be made in the area to be screeded.
- Don't forget to allow for connection lengths back to the manifold in overall circuit design and length.

Pipe centres:

Pipe should be spaced 100mm away from the wall. Always go with flow to the coldest part of the room first e.g. under windows, along outside walls.

In solid screed floors and areas of average to low heat loss UFH pipe is generally laid at standard centres of 200mm, unless otherwise specified.

There are the two most common ways to install the pipe into the floor insulation: pipe clips or using the rail system.

* Pipe Clips Fixing

Pipe is being fixed with clips provided. We recommend two people to fit the pipe, one person to hold the coil and another person to clip the pipe into the insulation. You need approximate 2 clips per metre of pipe.

* Rail System Fixing

With this type of installation lay the rail across the floor to create a matrix for pipe. Rails have the self adhesive backing so you can easily stick them to the insulation. Set them with a maximum of 500mm from two opposite wall edges and a maximum of 1000mm spacing between clip rails. Make sure that the rail is at 90° angle to the coldest external wall. Once you are happy with the clip rail layout fix them permanently to the insulation using additional pipe clips. Also make sure that the pipe turns are secured with additional pipe clips.

Try to use all the pipework supplied. The pipe is marked every metre so you know when it's time to go back to the control unit.

Pipe isn't normally laid under fixed furniture such as kitchen and utility units.

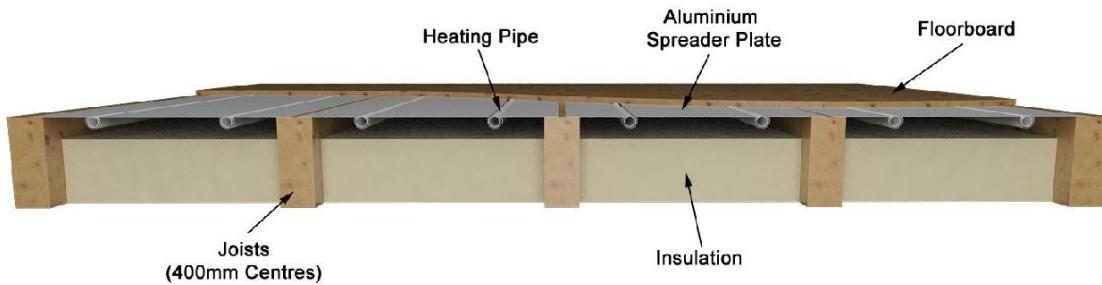
Screed:

We recommend 65mm of screed on top of the insulation (Building Regulations requirements)

The screed must be allowed to dry before heating is operated. The general rule is to allow 1 day per 1 mm of screed.

As the system is used for the first time, the mixing valve must be set to the minimum setting to let the moisture in the screed to dry out. The temperature should be increased by 2 degrees every day until the mixing valve is set at 45°C.

Timber Suspended Floor with Heat Emission Plates



Adept Aluminum Spreader Plates are 1000x390mm and they are suitable for Timber Suspended Floor with floor joists at 400mm centres.

It's essential that insulation is installed between the joists, as close as to the underside of the plates as possible. Usually a minimum of 100mm of mineral wool insulation is used, however, where relevant, the insulation used must comply with current Part L and Part E of the Building Regulations.

Plates normally cover approximately 80% of the floor area and are only laid under straight runs of pipe.

Ensure all insulation and battening work is installed and complete before laying the plates down.

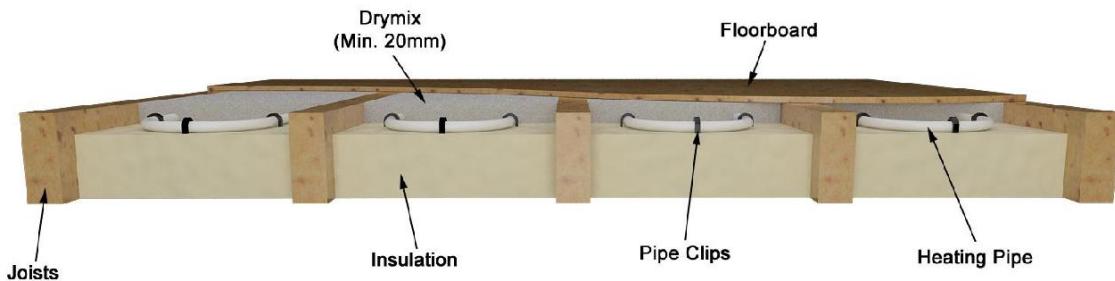
Lay the plates down without fixing. Plates should never touch each other, as they expand when heated so ensure that you leave a gap between ends and sides of each plate. Check to ensure proper number of plates are evenly spread out across the heated area before fixing.

Leave a minimum 300mm gap from the wall to enable the pipe to bend 180° around.

When required area is covered with plates fix them down with a staple gun or tacks and lay down the pipe into the grooves in the plates.

With this system the flow temperature on the mixing valve should be set up for 55°C.

Timber Suspended Floor with Drymix Infill



Drymix – 8:1 damp sand/cement biscuit mix, 20-25mm thick.

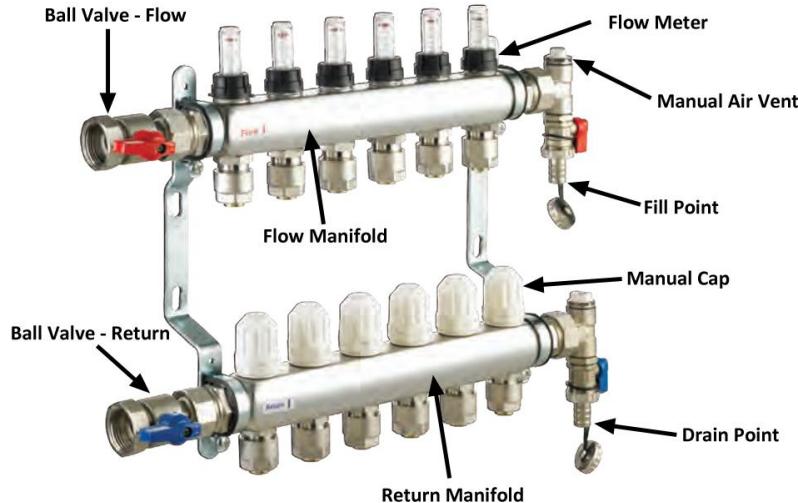
The Drymix is needed for Ground Floor, older buildings and if concrete floor and timber suspended floor are on the same floor.

Always check if your floor can take an extra load of the Drymix (20kg/m²).

Drymix infill system:

- Doesn't increase floor height but joist notches are required for pipe to pass from bay to bay.
- Min 50mm of insulation (Kingspan or Celotex-refer to building regulations) must be installed between the joists.
- When joists centres are 400mm, pipe is clipped into insulation at 200mm centres (unless other specified) with pipe clips.

UFH Manifold



4. Connect UFH pipes to the manifold.

To fit the pipe to the manifold, cut the pipe squarely using the pipe cutter. Re-round the pipe (always clockwise) with the bevelling/calibration tool, place the nut over the pipe, then the olive and finally push in the insert into the pipe.

Once this stage is complete push the pipe into adaptor fitting on the manifold (flow first) and then tighten the adaptor using an appropriate spanner.

5. Fill UFH Pipes.

The UFH System must be filled with water and fully vented of air.

Filling the loops:

- Ensure the valves on fill/drain ports are open while filling the system.
- Make sure both of the isolating ball valves on the main flow/return pipes to the manifold are closed.
- Close all UFH loop flow and return valves on the manifold.
- Fit the hose to the lower manifold hose union and the other end of the hose to a suitable drain point.
- Connect a hose to the upper manifold hose union and connect the other end of the hose to mains water tap.
- Individual loops need to be purged of air. Ensure that all the white caps on the return manifold are closed (remove thermal actuators if fitted and replace with the white manual caps).

DO NOT FILL FROM BOILER

Open the first blue cap on the lower manifold, then open the corresponding topmeter on the upper manifold. To fully open the topmeter, remove the black locking ring and turn the topmeter 3 full turns from the closed position. Turn on the water tap.



- As the first loop fills with water, air will discharge through the hose to the drain. Once the air stops and there is a steady flow of water, close both ports (white cap and flowmeter) and do the same for the next loop. Continue the process until all the loops are fully vented of all the air.
- Close the valves on fill/drain ports, remove the hose union and put the end caps on.

6. Pressure Test.

The system should be pressure tested using a hydraulic pressure test kit before laying the screed or covering with the chosen floor covering.

- Shut both of the isolate ball valves.
- All flow and return valves to the UFH loops must be open.
- Connect a pressure pump to the hose union.
- Using the pressure tester, pressurise the system to 2 Bar for 10 minutes and then 6 Bar for 10 minutes,
- After testing, the system should remain pressurised at 6 Bar throughout the screeding and curing process. This is in accordance with BS EN1264 Part 4.

7. Starting-up the UFH System .

When the system has been connected to the heat source, all pumps, controls fitted, system has been filled, vented, pressure tested and the screed is cured you can start up your UFH.

Loop balancing procedure:

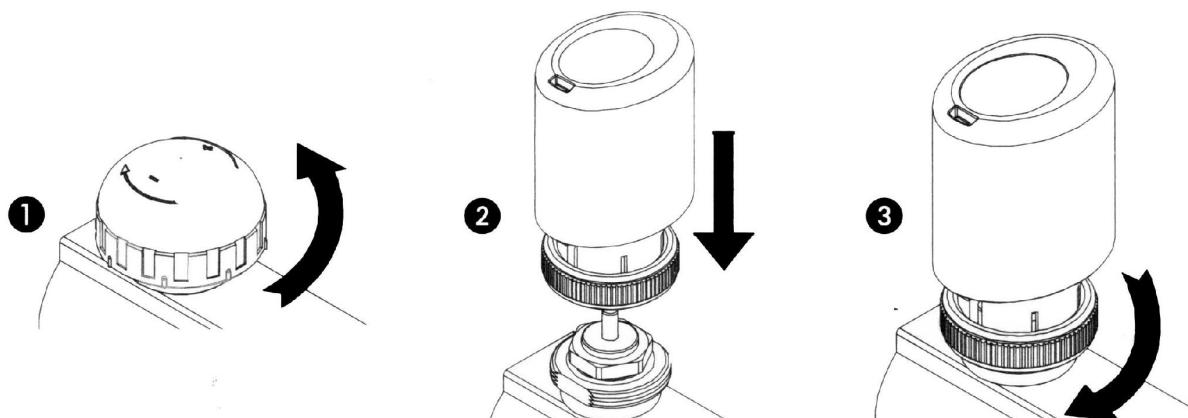
- All topmeters should be fully closed at this stage.
- Return valves must be fully closed as well (remove thermal actuators if fitted and replace with the white manual caps).
- Open the first blue cap and adjust the setting of the corresponding topmeter until the design flow rate is reached, by turning the topmeter anticlockwise from fully closed position.

Flow Rates for 16mm MLCP Pipe:

Loop length (m)	Floor Heat Output (W/m ²)		
	50	70	100
50	1.0 l/m	1.4 l/m	2.0 l/m
75	1.5 l/m	2.1 l/m	3.0 l/m
100	2.0 l/m	2.8 l/m	-

It's important that the system and UFH Pump are running.

- Repeat the process for each loop, then go back and carry out last adjustments, because each loop will have a mutual effect on the others.
When the topmeter is fully open and design flow rate is not achieved you might have to adjust the pump speed.
- If removed, refit all thermal actuators.



- Set the room thermostats 5°C above the current room temperature so that they call for heat
- Thermal actuators take some time to be fully open (about 2-4 minutes)

Once you have completed all the above procedures turn all thermostats down to make sure that the system will stop running.

Once it stops, turn up one of the thermostats and wait for the system to start.

That will confirm that the correct loop actuator is open for that particular room. Once the actuator will open turn the thermostat down.

Repeat that process "room by room". This will confirm that every actuator is controlled by the correct thermostat in each room.

As the system is used for first time, the mixing valve must be set to minimum setting to let the moisture in the screed to dry out. The temperature should be increased by 2 degrees every day until the mixing valve is set at 45°C (about 5 days).

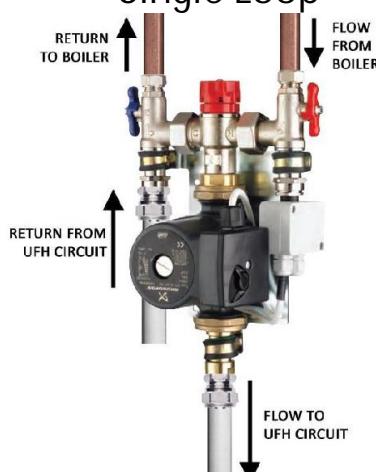
Once the mixing valve is set to:

- 45°C for Screed Floor
- 55°C for Timber Suspended Floor with Aluminum Spreader Plates

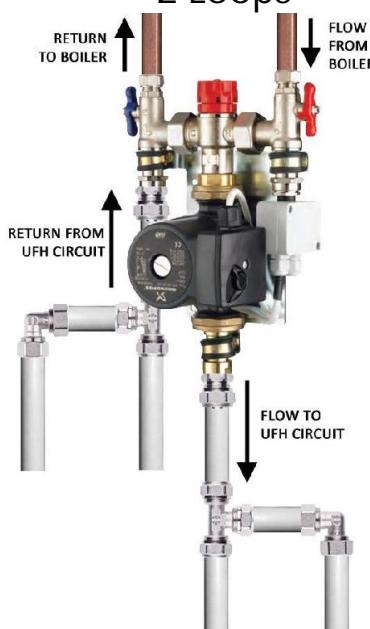
set the room thermostats to required levels and programme the system controls to run as required.

3kW Control Pack Plumbing

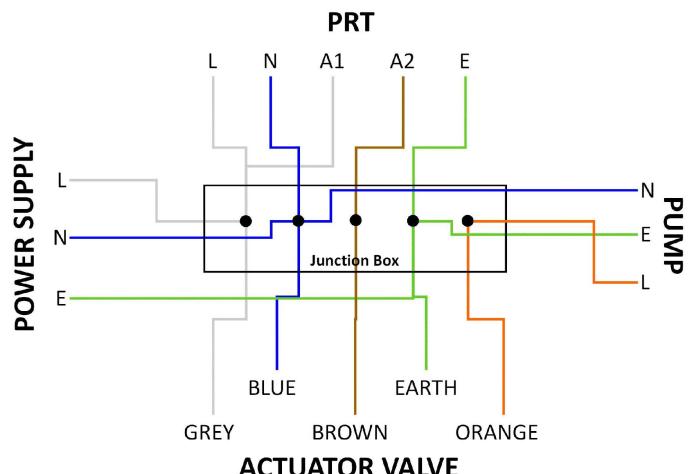
Single Loop



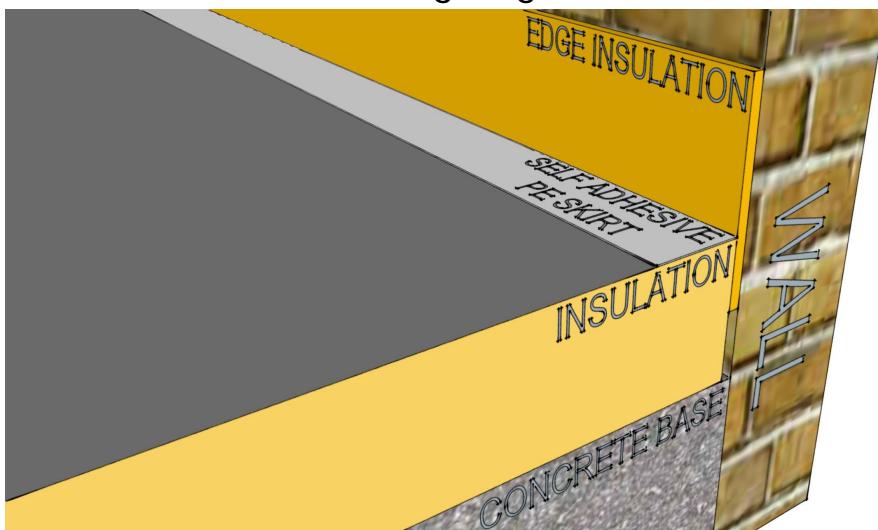
2 Loops



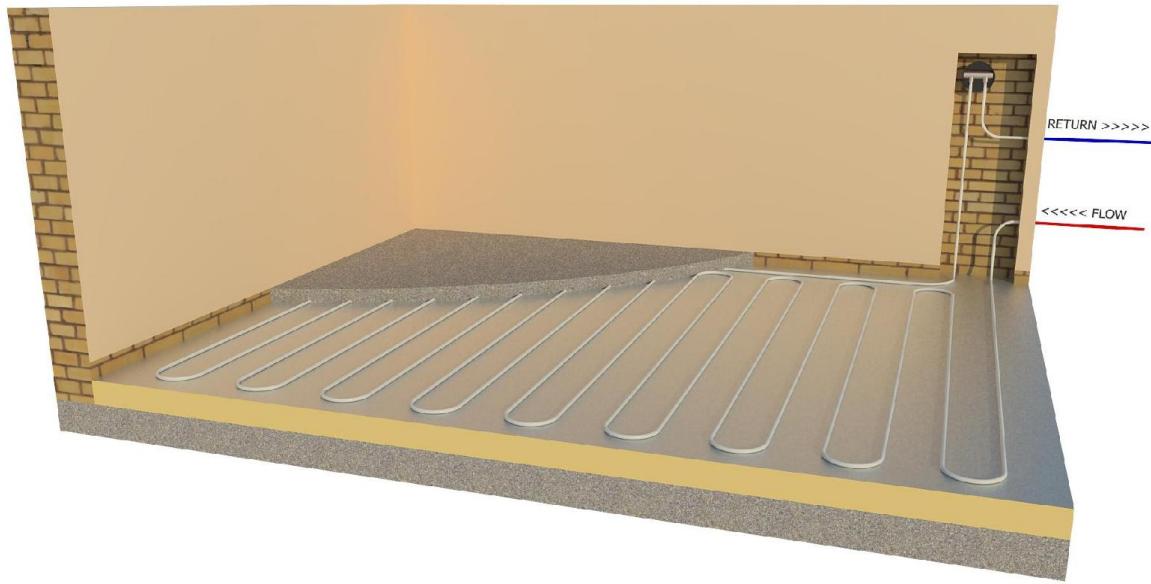
3kW Control Pack Wiring



Installing Edge Insulation



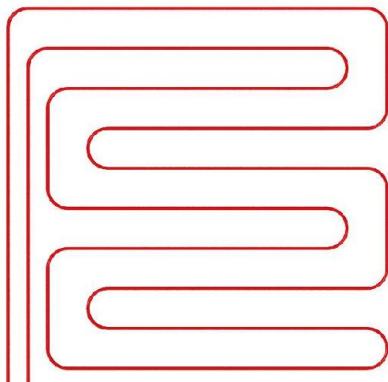
Danfoss FHV



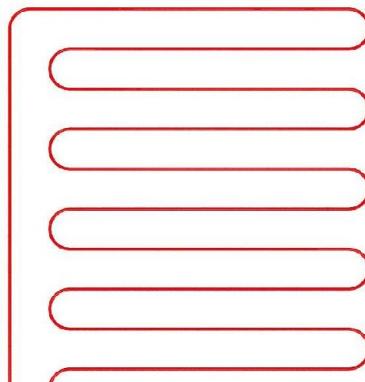
The FHV-R provides temperature control of underfloor heating circuits, using a return temperature limiting valve fitted with a type FJVR sensor element

Typical Pipe Layouts

DOUBLE MEANDER PATTERN



MEANDER PATTERN



BIFILAR PATTERN

