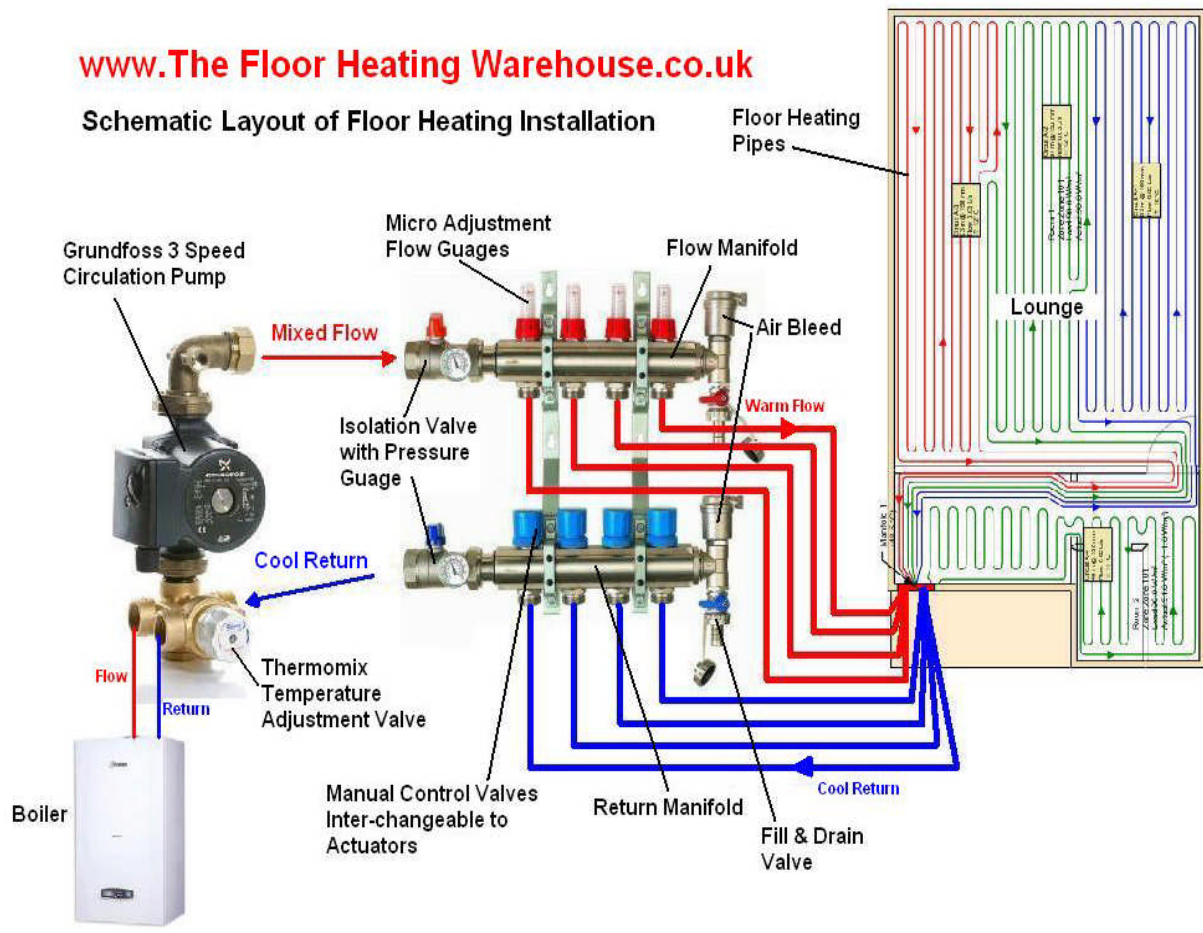


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Underfloor Heating Installation Guide (Grundfoss Pump System)

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Schematic Layout of Floor Heating Installation

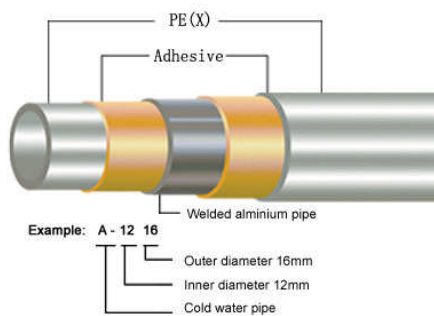


General Overview:

Our water based underfloor heating system can be installed by your own plumber or heating engineer or by yourself. Our technical team is always available to give expert advice on any aspect of your system.

Prior to commencing installation we recommend that you read this guide and familiarise yourself with the components.

- General pipe spacing is 200mm centre to centre of pipes (200mm spacing measured between centre of one pipe across to centre of next pipe).



- For closer pipe spacing than 200mm (to achieve greater outputs in areas of high heat loss) the bend should be swept into a 'C' shape to ensure the bend radius is not tighter than that achieved in the 200mm spacing.

- For ultimate efficiency the pipe should be installed on a minimum 50mm layer of foil backed insulation such as Kingspan or Celotex.

- Pipe should be kept 100 mm from the wall.

- Length of pipe connected to each manifold port should not exceed 100 metres. Rooms larger than 100m should be split into more than 1 loop of pipe and connected across more than 1 port of the manifold.

- Clips provided are designed to fix the pipe to an insulation board such as Kingspan or Celotex at spacings not exceeding 1 metre.

- For concrete floor installations we recommend a 65mm sand and cement/concrete screed over the pipes.

Function:

The temperature control unit is the central component in monitoring and adjusting the water temperature supplied to the underfloor heating system.

The thermostatic mixing head controls the set flow temperature.

Water temperature flowing into the system is monitored by the thermostatic mixing head which will open/close as required. The thermostatic mixing head blends part of the cooler water returning from the underfloor heating circuit, with the hot water flowing into the system directly from the boiler, thus ensuring a constant and ideal underfloor heating temperature.

The required water temperature can be adjusted to preference on the thermostatic mixing head. The thermostatic mixing head will open/close to blend water directly back into the circuit and return some to the boiler for re-heating as required.

Laying the pipe :

1. Beginning at the manifold, run out the pipe to the the desired start location
2. Mark a small line on the floor 100mm out from the wall you wish to start against.
3. Beginning on the small mark on the floor, roll out the coil of pipe parallel with the wall whilst maintaining the 100mm spacing from the wall.
4. Fix the pipe down as you go using the clips provided at maximum spacings of 1 metre.
5. In order to make a turn and run back parallel with the pipe run just laid, form a bend in the pipe, clip the bend down and begin rolling back whilst maintaining the required spacing between pipes (normally 200mm).
6. For spacing closer than 200mm the bend should be shallowed out to form a 'C' shape (light bulb shape), thus ensuring the bend radius is no tighter than that achieved with a 200mm spacing. Please note that the minimum bend radius is 5 times the diameter of the pipe.
7. Ensure you leave enough pipe on the roll to return back to the manifold.

Preparing the Pipe:



Trim the pipe to required length ensuring the cut is straight. Using the supplied pipe reaming tool, round and bevel the pipe end by inserting the tool into the end of the pipe, and whilst applying slight pressure, turn the tool through several rotations until a clean beveled edge is achieved. Ensure removal of any scrapes of pipe from inside and outside edge of the pipe walls

Filling The System:

When you have your pipe laid and before you screed, fill the pipes with water and leave it under pressure. If you connect to the manifold you can use that to check too. Check for any leaks and drop in pressure.

The manifold with the flow gauges (the little clear plastic vials) is the flow manifold, the other manifold is the return manifold. Be sure you get all the air out of the system, it can take a bit of time to make sure it's all out.

The manifold connects to the boiler run (like a rad does) if the boiler is a high temperature output like a gas or oil boiler you will need some form of thermostatic control to reduce the temperature of the water circulating in the floor. This is usually a thermostatic blender valve, if you need a pump too you can make this easier still with a thermostatic and pump blender kit, this bolts straight onto the manifold.

Control:

If your connecting your underfloor to an existing radiator run (maximum 15.0m² advisable) you might find you can just use your existing controls, the underfloor would come on and off with the radiators.

Or you can use a thermostat and a motorized valve in the run from boiler if all the underfloor zones are going to be on at one time.



Or for more control, control over each zone or pipe run you can use actuators on the manifold (they screw straight on). The manifold port actuators (singly or in multiples) can be controlled by a thermostat. You can have a separate room thermostat control each port / zone if you require complete control.



You will need to connect the actuators (at the manifold) to the thermostats, (in the rooms) you can use wired or wireless control. Wired is more economical and robust. You need cables eg 1.5m 3 core flex) running from the manifolds to thermostats, usually both are wired to a Wiring Center Controller which can be put where ever it's convenient, (it's usually near the manifold.)

Just like radiators can be adjusted, the flow through each port of underfloor pipe can be adjusted (at the manifold) to balance the system. The flow gauges give an indication of the rate of flow through each port. Adjust these up and down by pulling up the lock ring (red) and turning the flow meter clockwise (reduce flow) or anti clockwise (increase flow) . When adjusting, remember that underfloor changes temperature more slowly than radiators and you should make small adjustments each time. Sometimes its best to work on 1 zone at a time, helping keep the process a little more simple. In that's case close all the ports by leaving the actuators off the manifold, and connect 1 at a time. Have the pump on permanently by wiring it up to the mains, energize the actuator of the zone you are working on or use the manual cap to turn it on. Check for hot water coming through, increase and decrease the flow adjuster to see the effect, do the same with the thermostatic valve if you have one. The more ports you have open the more the share of the heat is spread out, so don't forget to balance not just the zone itself but the zones against each other.

If you have a zone with no flow the first thing to check is that it's not got an air block, or any obstruction in the manifold. The zones that you might consider surprisingly little flow and even small debris can make a difference.

When you have all the loops set up and everything is attached including the thermostats and the actuators check the operation of each room by turning up and down the thermostat and checking the actuator is doing its job. Don't forget these are not instant on /off switches so give them time to perform their duties.

The thermostatic mixer also blends the flow with the return to moderate the heat in the pipes and is adjustable to increase or decrease overall output too.

The sign of a good underfloor system is that you forget it's there, and that you don't have to mess around with the stat all the time, if you try to push too much heat into the floor you will be getting up to turn the stat down, if you push too little the room will never be warm regardless of what you do with the stat. Of course its harder to get a good set up right in the middle of summer or a heat wave, some times you need to wait till it gets cooler to get it just right. With under floor small steps and patience will be the most productive way of finding the perfect balance.

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