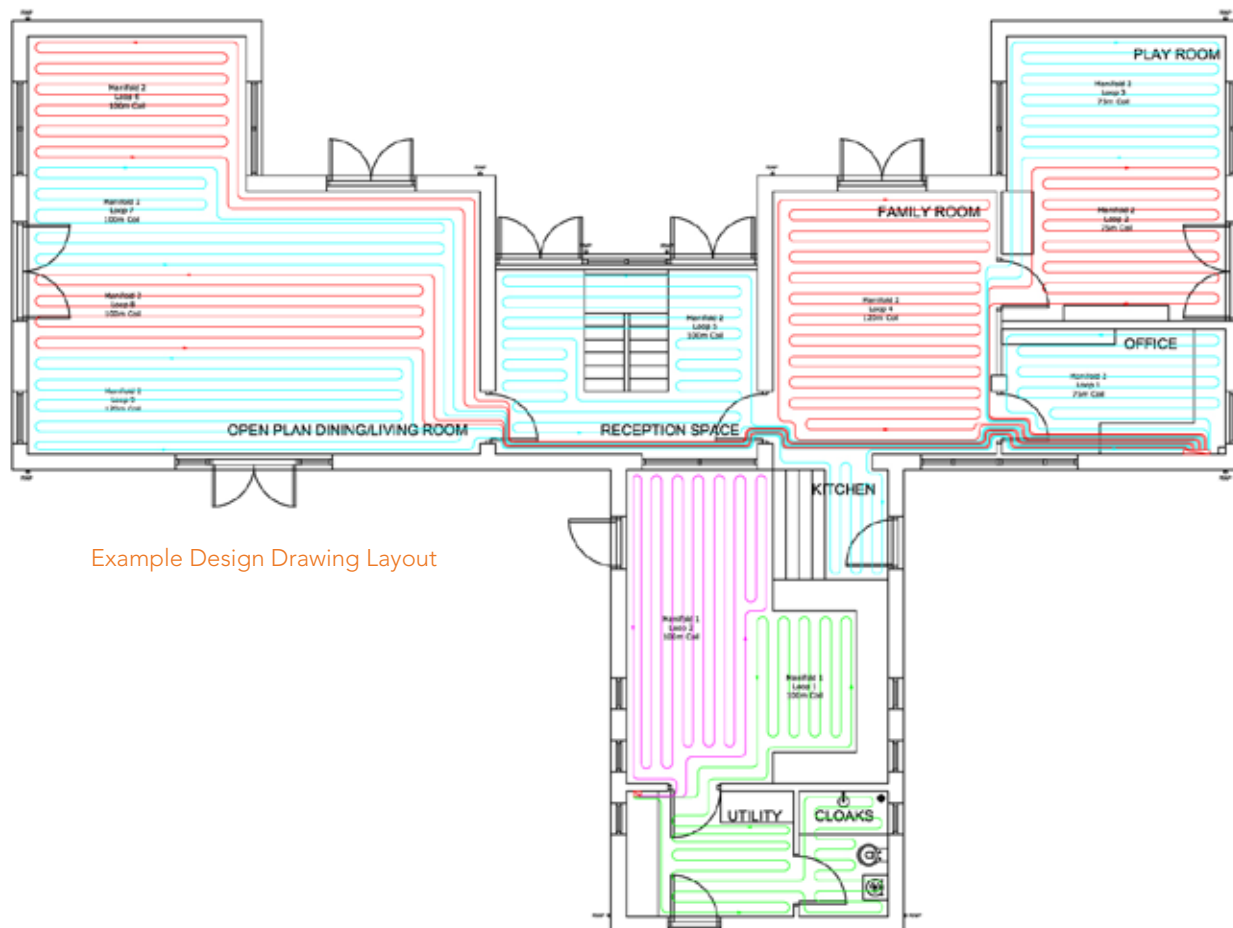
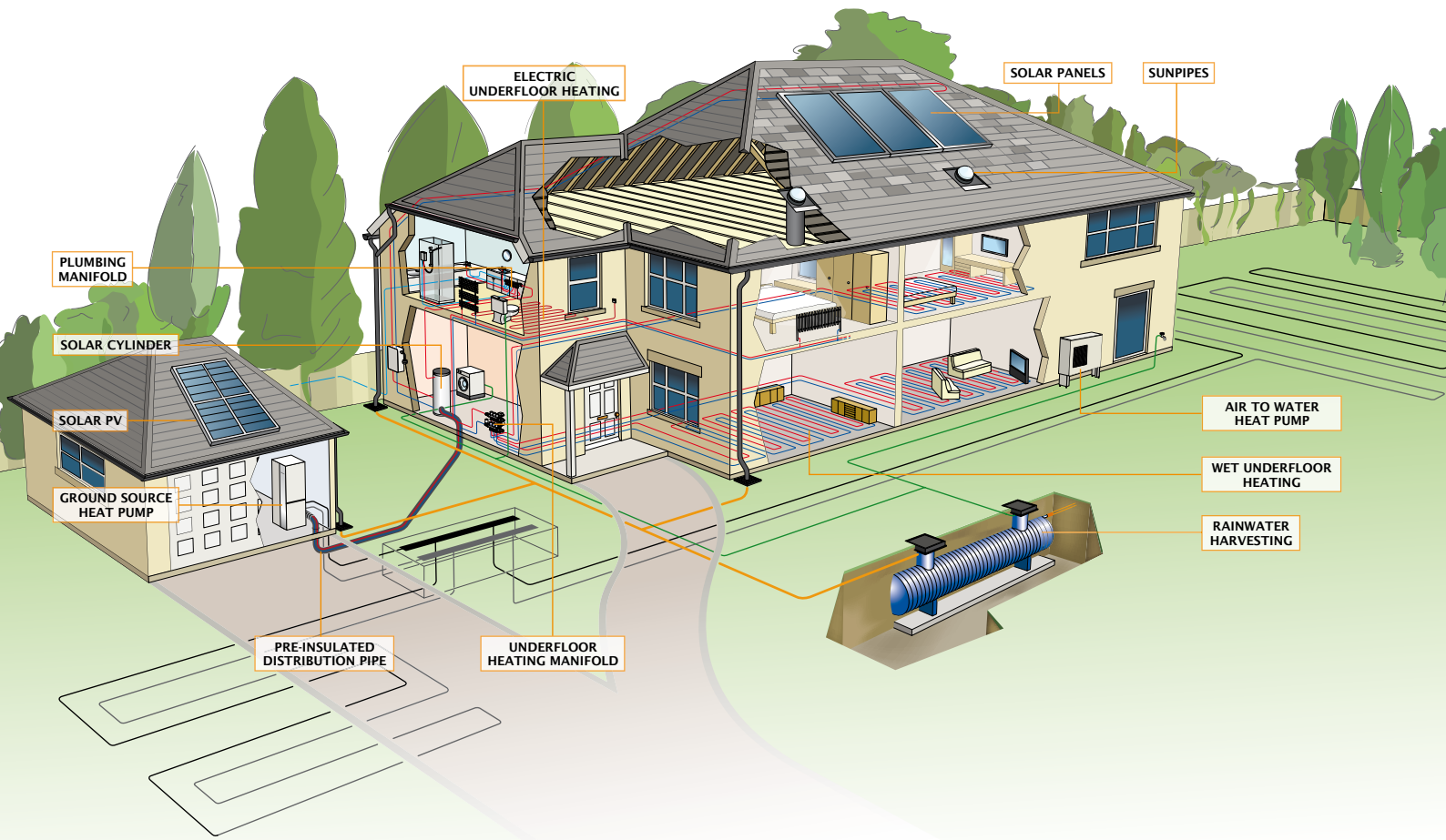


Underfloor Heating Manifold Commissioning Guide

July 2010



Example Design Drawing Layout

Underfloor Heating Manifold Installation / Pipework Connections.

Manifold Location & Position

The Simpleheat manifold should generally be located as central to the property as possible. This is to ensure that the feed pipes / tails are kept to an optimum length. It also ensures that excessive groups of feed pipes are kept to a minimum, large amounts of feed pipes can cause 'hot spots' on the floor surface if not properly protected.

Where large amounts of flow & return pipes are located close together, these should be sleeved with black conduit. This conduit should be slid over pipework prior to connections being made to the manifold.

Please check our design layout drawing (if requested from us) for the proposed location of the manifold.

The manifold should be mounted at a height where pipe connections can easily be made. Typically this is 300mm from the floor to the bottom rail.

Manifold Supply

The Simpleheat manifold is supplied boxed, manifold headers & brackets are loose and need to be assembled prior to fixing to the wall. The headers can be handed either left or right to facilitate main flow & return connections.

Manifold Headers

The flow header should be situated as the top rail; this header features adjustable glass 'topmeters' for individual balancing of underfloor heating loop flow rates. The black locking caps snap on and off to allow the glass meter to be adjusted by hand to regulate flow to the desired level. Upon completion of this the locking cap can be replaced, once this is 'snapped' back into position it stops any unauthorised adjustment taking place after commissioning.

The return header should be situated as the bottom rail, it has black isolating valve caps fitted as standard. These caps can be screwed down to stop the flow on individual loops during the filling & venting procedure.



Manifold Layout

On multizone applications the caps are replaced with actuated heads that are energized via individual room thermostats.

The manifold brackets supplied are offset to allow the return header to sit further away from the wall. This enables the flow header UFH pipework to rise behind.

Each manifold header has a fill and drain point fitted as standard. A 3/4" hosepipe connection union (by others) can be used to allow direct connection of a hosepipe for filling and venting.

Compatible Pipe Systems

Simpleheat manifolds can be used with all of our pipework systems:

- 12mm PEX-a
- 16mm PEX-a
- 16mm Multilayer
- 20mm PEX-a

Pipework location & Connection

It is advisable, when starting to lay the underfloor heating loops to connect the flow pipes one at a time to the top rail of the manifold. This should be fed under the back of the lower manifold header. Any conduit feed pipe protection should be slid over the pipe before connection takes place.

When locating pipework for connection to the manifold, line the pipework up with the threaded part of the manifold loop, mark the pipe where it meets the bottom of the thread and cut squarely with plastic pipe cutters.



Manifold Headers

Pipework Systems

Multilayer Pipework:

Prior to inserting manifold screw connector to the pipe loops, the pipework must firstly be bevelled via 3 pronged bevelling tool (this item is shown on the bottom of our quotations, Pt No SIMBEV16-25, and can be purchased from us).

The 16mm part of tool must be inserted into the pipe until the end blades touch the end of the pipe. The tool should be rotated clockwise 3 or 4 times applying a small amount of downward pressure.

When the tool is removed the internal wall of the pipe will have a 45° chamfer. The screw connector can now be located onto the pipe. Firstly slide the outer nut over the pipe; secondly slide the split ring washer over. Finally insert the adaptor into the pipe.

Push the pipe & assembly into the manifold connection until the rubber insert washer locates. Now tighten the nut onto the manifold thread and secure with a spanner.



MLC pipework bevelling

PEX-a Pipework:

A pipe bend support must be fitted where the pipework rises up to the manifold; this ensures a tight 90° bend is obtained.

The PEX-a system does not need to be bevelled, only cut squarely at the manifold loop thread

Firstly slide the outer nut over the pipe; secondly slide the split ring washer over. Finally insert the adaptor into the pipe.

Push the pipe & assembly into the manifold connection until the rubber insert washer locates. Now tighten the nut onto the manifold thread and secure with a spanner.



Pipe to Manifold Connection

Underfloor Heating Manifold Filling & Testing

As standard, fill & drain points are supplied with each manifold. These have a rubber sealed cap that once removed leaves access to a $\frac{3}{4}$ " male thread. Outside tap hose connectors (by others) are the best products to use to allow direct hose connections to be made.

Filling & Purging Procedure:

- Close both isolating ball valves on flow & return headers.
- Remove the rubber sealed caps from the flow & return manifold fill connectors.
- The cap has an integral square vent key. This should be used to open the fill point valves. Water will not enter the manifold unless these are fully open.
- The return header manifold black caps should be fully turned clockwise to close manifold loops.
- The flow header manifold black locking rings should be removed (tip: twist flat head screwdriver underneath). All glass flow meters should be screwed clockwise to fully close manifold loops.
- Connect hose unions & hose to $\frac{3}{4}$ " fill connectors. The return manifold hose should be run to drain. The flow header hose should be connected to a mains pressure tap.
- To correctly fill the underfloor heating loops, each loop must be dealt with individually. Fully open the black cap on return manifold header by unscrewing anticlockwise, do the same with its corresponding glass flow meter on the flow manifold header.
- Turn on the mains pressure water, as the water enters the manifold flow loop air will purge through the drain hose. Once clear water can be seen discharging from the hose, the loop is filled correctly and is free of air. Close the black cap & its corresponding flow meter.
- All other loops should be purged in the same way. Once all loops have been purged individually open all caps and flow meters so that water can run through the whole system for approximately 2 minutes. This allows any excess air that can be in the system to be purged.
- Close fill connector valves via square vent key and turn off mains water. Disconnect hoses and secure vent caps back onto fill connectors.

Pressure Testing:

- A final pressure test must be carried out prior to any screed or floor covering being laid. This should be done via the use of a hydraulic pressure test pump. This pump can be purchased from us (Pt No SIMUFHPUMP).
- As per filling and purging procedure, close both flow & return isolating valves.
- Open all black caps and glass flow meters.
- Connect hydraulic test pump to flow manifold header via hose union and open fill connector via square vent key.
- Pump to a pressure of 6 bar for a minimum of 1 hour. There will be small drop in pressure as the pipe expands. The pressure will then stabilize. The test pump pressure gauge should be periodically checked during this time to ensure the pressure remains constant.
- The system should stay under pressure as the screed or floor system is laid. Any damage that occurs during this time will result in a decrease in pressure. The work should be stopped and the damage repaired. The system should be re-pressurised before work commences again.
- Particular attention should be taken if the system is being installed during freezing conditions. Water will expand 10% by volume if it freezes. On a pressurised system this can split pipes and mean a repair will need to be made.
- A glycol antifreeze mixture can be added to the system however, this should be fully flushed out of the loops before system start up and replaced with clean water.



Figure 1



Figure 2



Figure 3



Figure 4

Simpleheat Water Temperature Control Packs (SIMWTCS1 & SIMWTCS2).

The Simpleheat water temperature controller is a purpose built device for the control of underfloor heating water temperatures for floor areas up to 160m² or 15kW load.

Typical water temperature settings as follows:

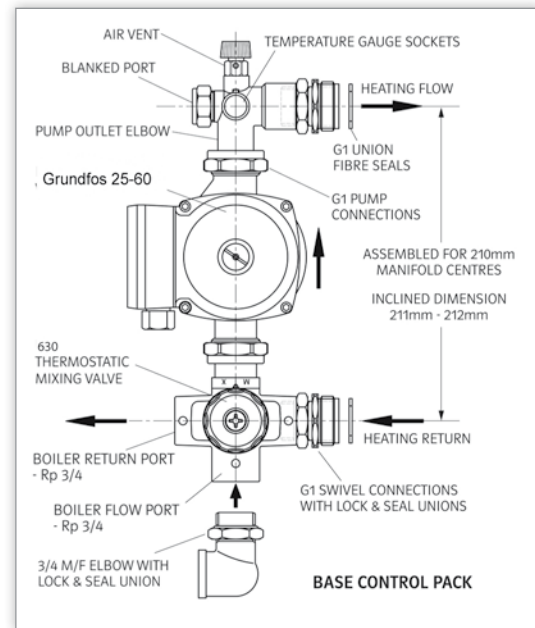
- Screed Floors: 40-45°C
- Timber Suspended / Floating Floors: 50-55°C

On initial start up, water temperatures should be set to lowest possible i.e. 35°C for the first 3 days. Incremental increases of 5°C can be made after this to desired water temperature depending on floor constructions.

Pump speeds should be altered according to the size of the manifold and amount of underfloor heating pipework on the system.

As a guide the following can be used:

2 Port Manifold	Speed 2
3 Port Manifold	Speed 2
4 Port Manifold	Speed 2
5 Port Manifold	Speed 2
6 Port Manifold	Speed 3
7 Port Manifold	Speed 3
8 Port Manifold	Speed 3
9 Port Manifold	Speed 3
10 Port Manifold	Speed 3
11 Port Manifold	Speed 3
12 port Manifold	Speed 3



This compact lightweight underfloor thermostatic mixing control complete with Grundfos 25-60 pump has been designed for direct connection to heating manifolds via isolating ball valves with 210mm centre dimension and is supplied fully assembled in Left Hand format with G1 male swivel flat seal unions as standard.

Its versatile design and O-ring connection system provides for simple and quick conversion on site to Right Hand format if required. The options are illustrated in on page 8.

Installing the control pack to the manifold is simple and quick, requires no additional supporting bracket and so eliminates the need for time consuming drilling and fixing.

Note:

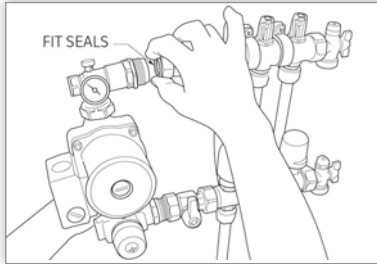
If the primary circuit serving the underfloor heating is not fitted with an automatic bypass valve it is recommended that one is installed across the flow and return pipes upstream of the mixing control to protect the boiler and improve system efficiency.

Simpleheat Water Temperature Control Packs (SIMWTCS1 & SIMWTCS2).

Installation of Base Control Pack (LH)

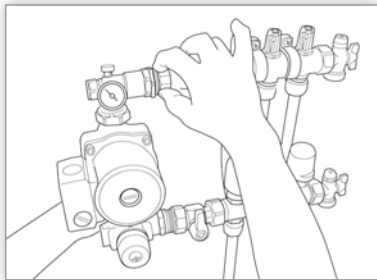
Insert the G1 flat fibre seal into the female sockets of the insulating ball valves on the manifold. Offer the control to the sockets, locating the bottom (return) flat face union connection first (fig.1) then swing the top (flow) flat face union connection to parallel alignment and push whole assembly forward until union swivel nuts contact mating threads.

Fig. 1



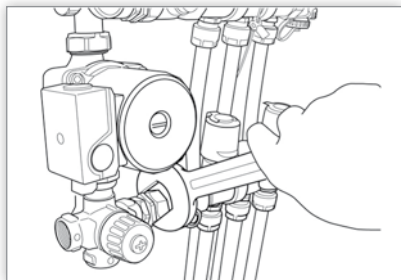
Screw top and bottom union swivel nuts alternatively a few turns at a time (fig.2) until fully engaged.

Fig. 2



Tighten union swivel nuts (fig 3) with 36mm A/F spanner and appropriate spanner on the manifold ball valve.

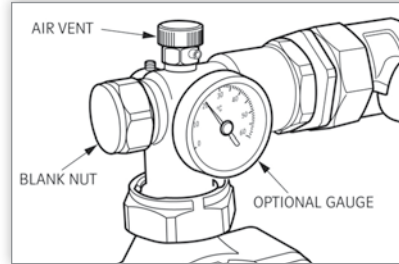
Fig. 3



Pump Outlet Elbow

The pump outlet elbow (fig.4) is fitted with air vent, a blanked port for the optional bypass kit connection and two temperature gauge sockets with fixing screw. A temperature gauge (optional) can be fitted to either socket so allowing for Left Hand (as supplied) or Right Hand (rotate on site) manifold connection.

Fig. 4

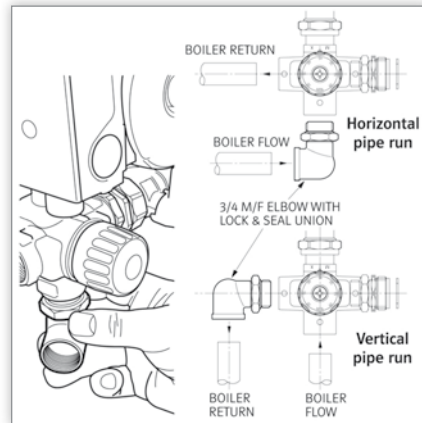


Boiler Connections

The 3/4 M/F elbow supplied provides for the option of vertical or horizontal connection of primary pipe work with the boiler:

For vertical pipe runs connect elbow to the control valve return port and for horizontal pipe runs connect elbow to the control valve flow port (fig.5)

Fig. 5



Screw in the male thread until the O-ring contacts the valve port face then continue to turn clockwise within 1 turn until aligned suitably for the connecting pipe run. Tighten locknut to secure and seal (32mm A/F spanner). Do not over tighten.

Simpleheat Water Temperature Control Packs (SIMWTCS1 & SIMWTCS2).

Commissioning

To protect and prevent damage to the mixing control and other devices in the heating circuits, it is recommended that the pipe work connecting the boiler be flushed thoroughly of flux and debris before final connection, filing and venting the heating control and system.

Mixing Control Adjustment

The thermostatic mixing control is factory set to provide 45°C mixed water to the heating manifold. The mixed water flow temperature can be adjusted and locked very simply to suit the design flow temperature within the range of 30-60°C.

TIP! For commissioning with concrete screed the valve can be set at minimum and in conjunction with the boiler ON time, provide increasing temperature steps in accordance with the screed manufacturer's recommendations.

With the boiler on and the heating circuits balanced the mixed flow temperature is easily adjusted by the unique set-and-lock clutch mechanism. (fig.6)

Fig. 6

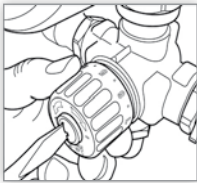


Table 1

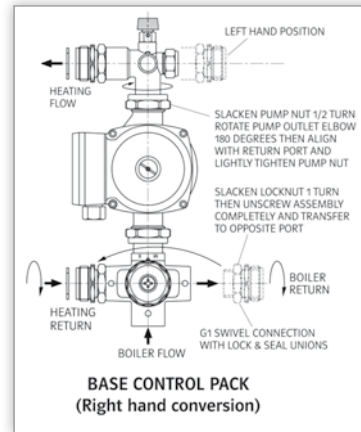
Min	=	30°C
1	=	34°C
2	=	38°C
3	=	41°C
4	=	43°C
5	=	45°C
6	=	47°C
7	=	50°C
8	=	54°C
Max	=	60°C

1. Unscrew the central screw approximately ½ turn anticlockwise to release the clutch locking mechanism.
2. Turn the knob clockwise to decrease and anti-clockwise to increase temperature.
3. The numbers on the control knob indicate the approximate mixed flow temperature when aligned with the indicator rib on the valve body. (refer to table 1)
4. Select and dial to the number required as shown in table 1 then wait briefly for the valve to stabilise by observing the temperature gauge (available separately) on the pump outlet elbow. If required, adjust the control knob accordingly until the desired flow temperature is reached and stable.
5. Tighten the central screw approximately ½ turn clockwise until hand tight to engage clutch mechanism and lock the temperature setting.

Right handed installations

The Simpleheat Mixing Controller can easily be installed in a right handed orientation. The text and diagram (fig.7) below illustrate how:

Fig. 7



Slacken the locknut on the manifold return swivel connection assembly one turn and then unscrew completely from the valve body. Move the swivel connection assembly to the opposite valve return port and screw in the male thread until the O-ring contacts the valve face with light resistance. Tighten the locknut firmly to seal and lock (32mm A/F spanner). Do not over tighten.

Slacken the GM pump outlet union nut approx ½ turn anti-clockwise then rotate the pump outlet assembly 180 degrees to align visually with the repositioned swivel assembly on the return port.

Lightly tighten the G1 union nut to regain alignment. The control pack is now ready for right hand assembly to the manifold.

Follow the installation procedure in (section 1) but in RH context. Tighten the G1 pump outlet union nut last with pump pliers to give firm connection.

Simpleheat Underfloor Heating – Initial System Start.

The underfloor heating should be fully piped and wired into the primary heating source, filling and venting procedures should have been followed. If not please make sure that all air has been purged from the system prior to system start up.

Ensure that floors have had time to dry (i.e. screed floors) in line with manufacturers recommendations. Generally this is approx. 28 days of natural curing time before any heat can be applied.

All wiring is in line with IEE regulations and our wiring schematic applicable for this scheme.

Turn the Simpleheat room thermostats up until the underfloor heating manifold zone valve and circulating pump are energized. If the manifold has actuated heads fitted for multizone application these will take approximately 2 to 3 minutes to open, you will know that these are open when the flow meters start to register a flow rate (between 0 & 6 l/min).

Make sure that boiler / heat source is operational to desired temperature, typical boiler temperatures 82/71°C, and primary circulation pump is running.

To regulate the flow meters, wait until all manifold actuators are open and their corresponding glass flow meters are registering a flow rate. Remove the black locking caps from the flow meters, the flow rates can be regulated by turning the flow meter clockwise to decrease flow or anticlockwise to increase the flow.

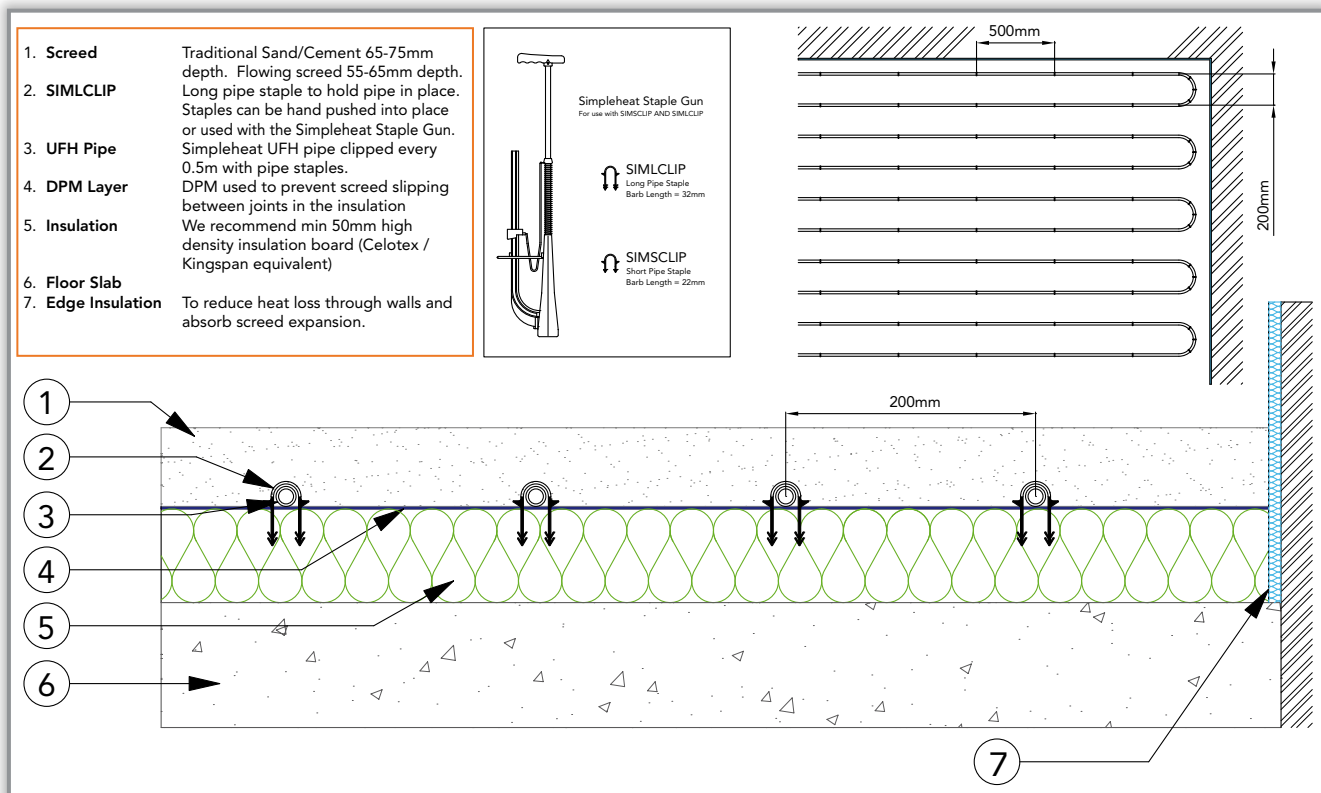
Once the desired flow rates have been achieved, the locking caps can be replaced and 'snapped' into position to stop unauthorised adjustment taking place.

The table below shows typical flow rates according to loop lengths and heat outputs required.

Loop Length (m)	Heating Outputs W/m ²		
	50W/m ²	70W/m ²	100W/m ²
75m	1.5 l/min	2.1 l/min	3.0 l/min
100m	2.0 l/min	2.8 l/min	3.2 l/min
120m	2.4 l/min	3.2 l/min	3.4 l/min

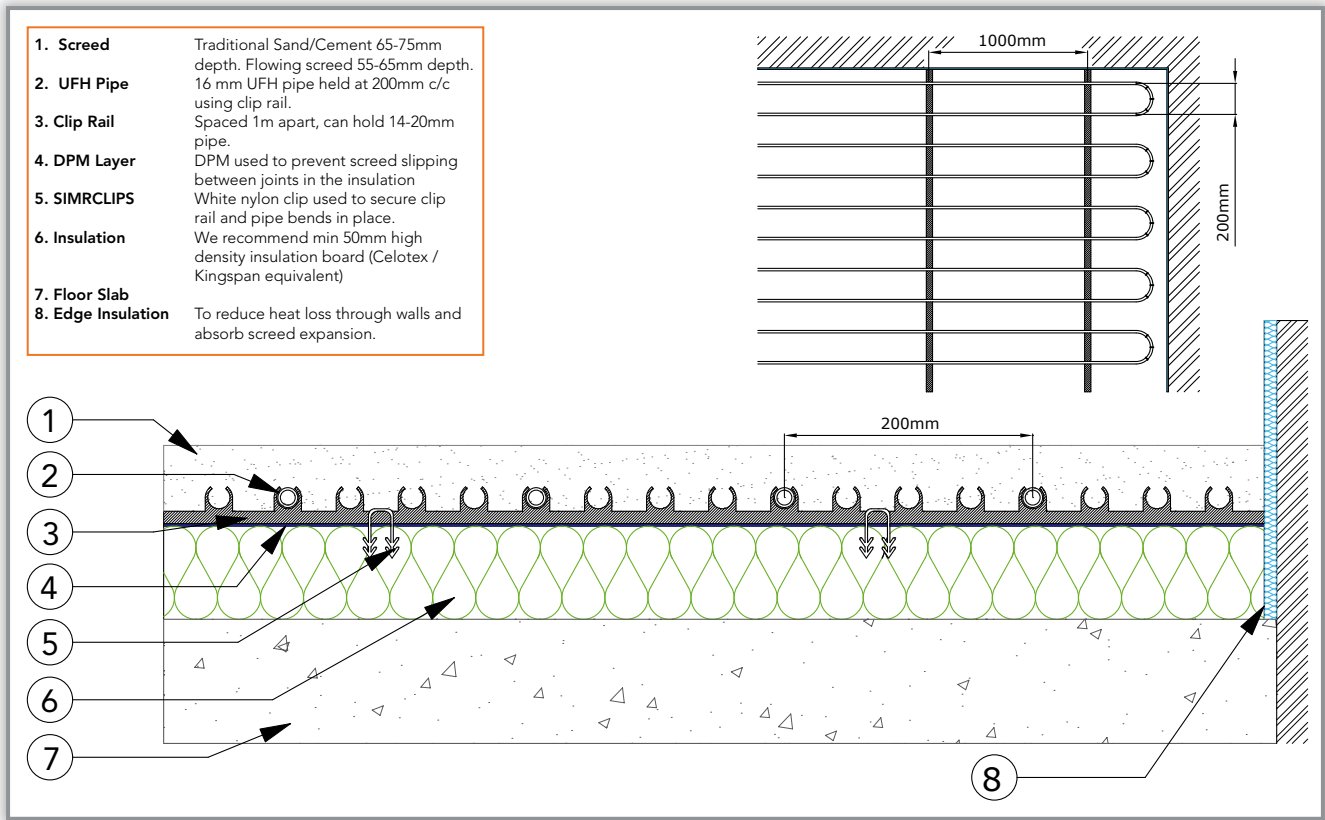
Typical Floor Section Drawings

Simpleheat 16mm Pipe Installed Using Staples

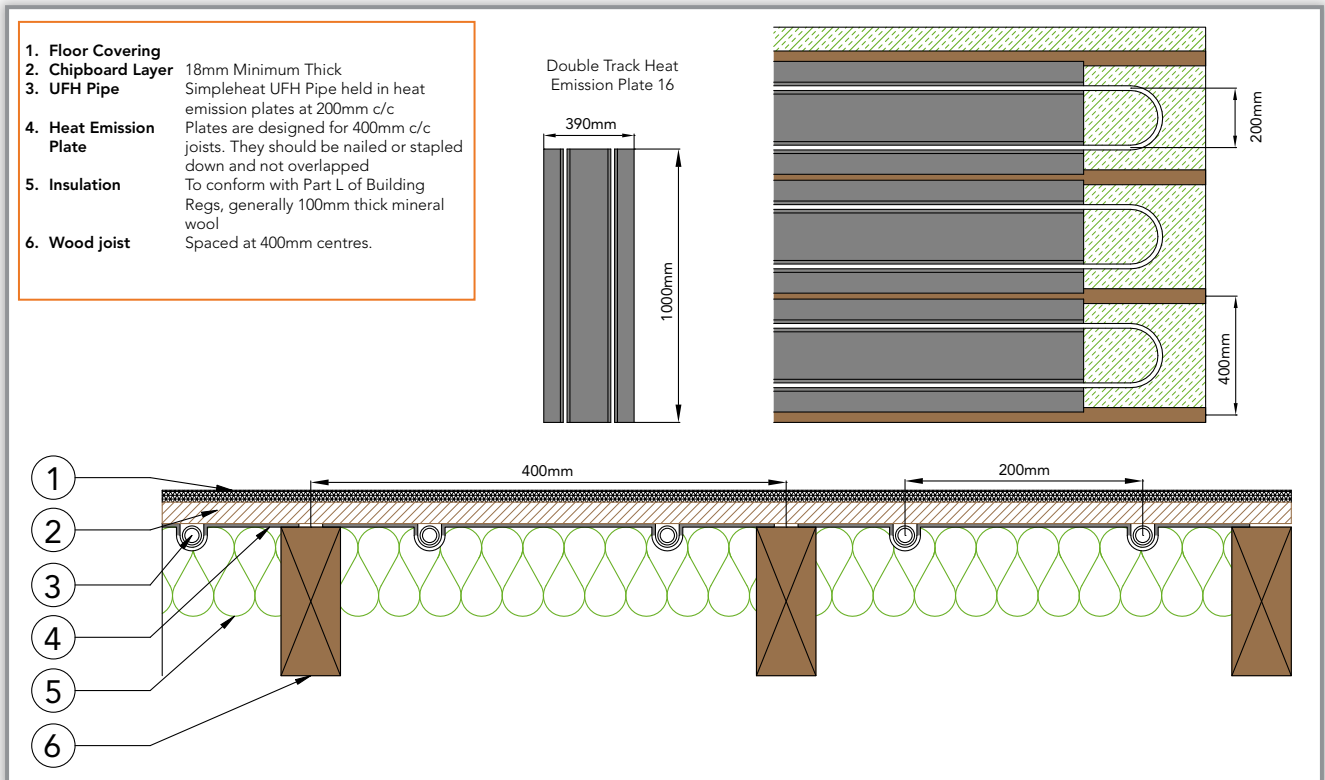


Typical Floor Section Drawings

Simpleheat 16mm Pipe Installed Using Clip Rail

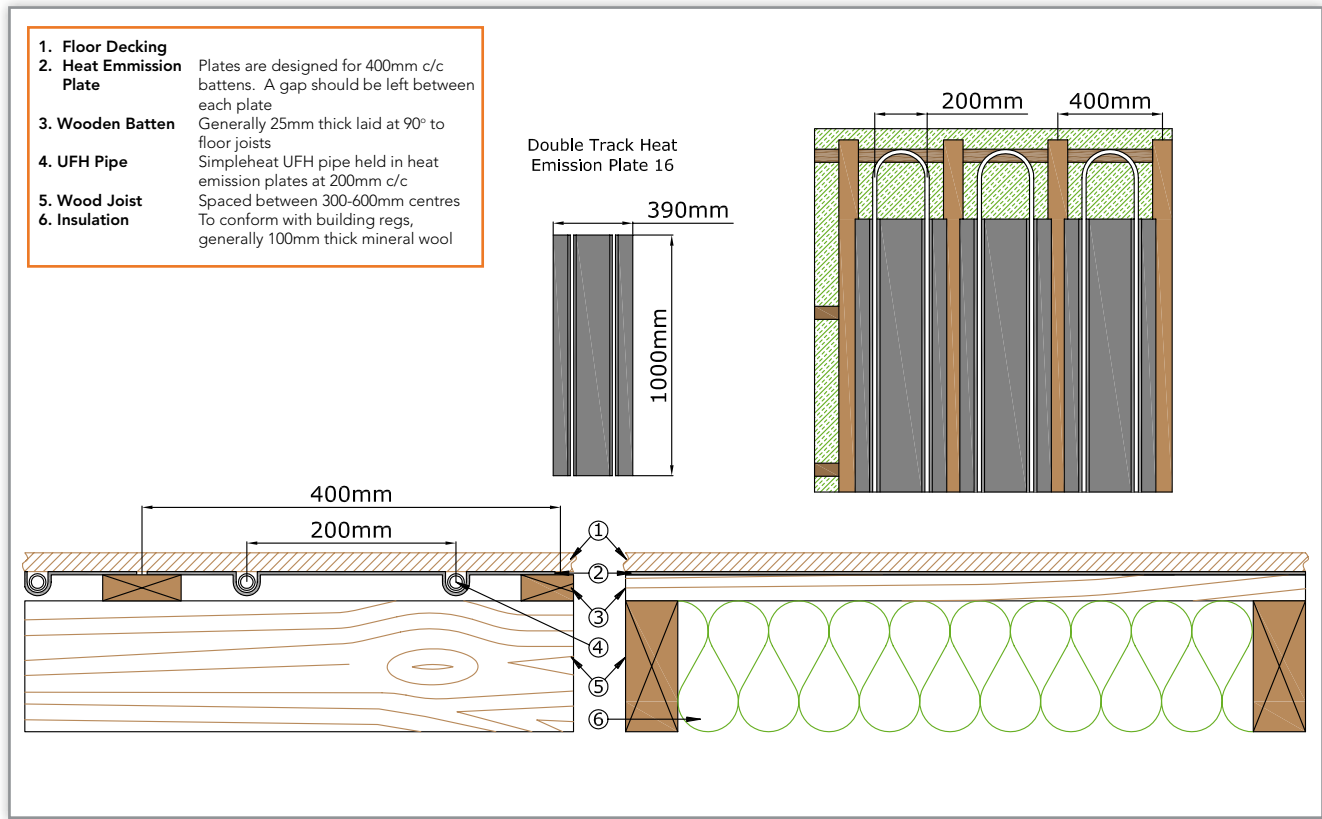


Simpleheat 16mm Pipe Installed Using Heat Emission Plates

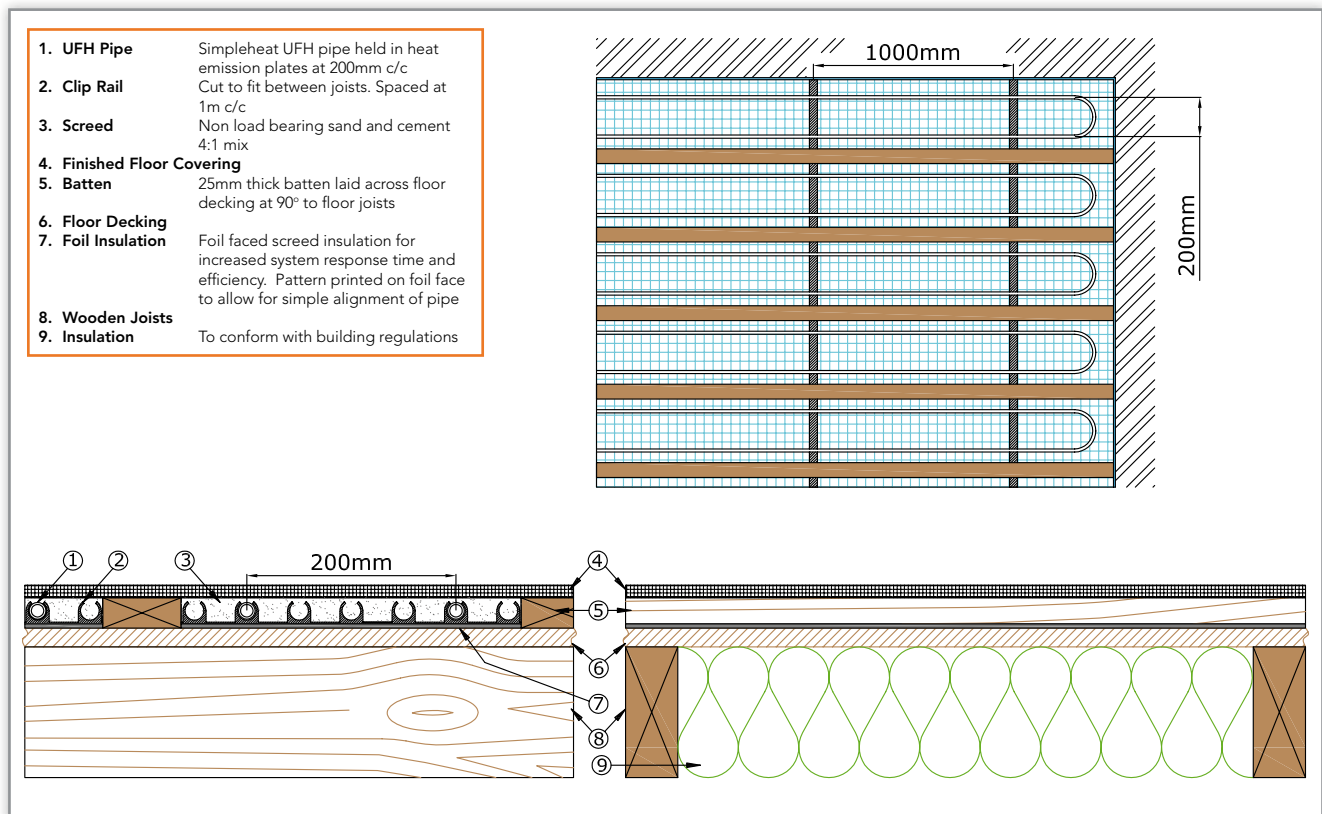


Typical Floor Section Drawings

Simpleheat 16mm Pipe Installed Using Battened Timber and Heat Emission Plate



Simpleheat 16mm Pipe Installed Above Decking With Screed Infill





Tel 0116 258 1410

Email enquiries@ufw.co.uk

Web www.ufw.co.uk

Unit 2, Ecohub, Winchester Avenue, Blaby, LE8 4GZ



www.ufw.co.uk

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