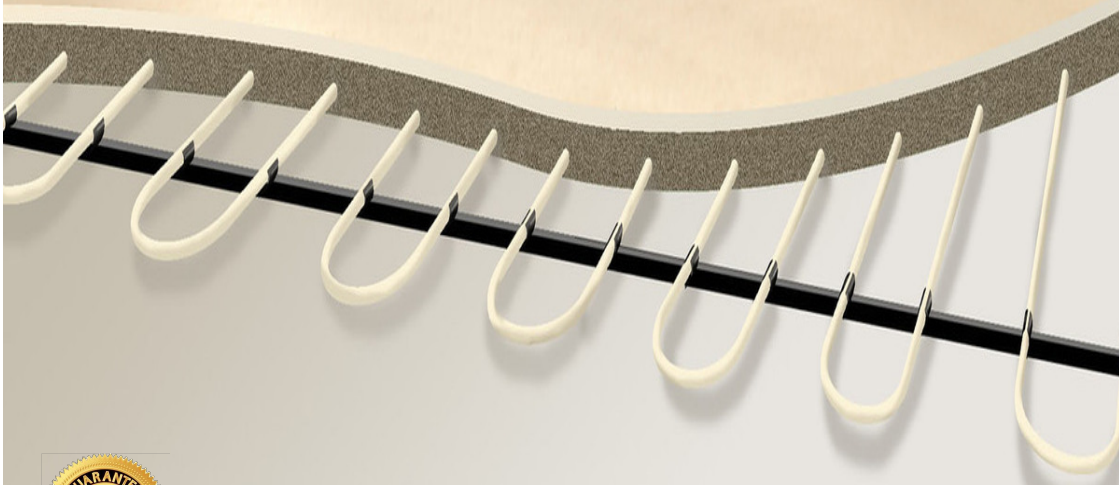
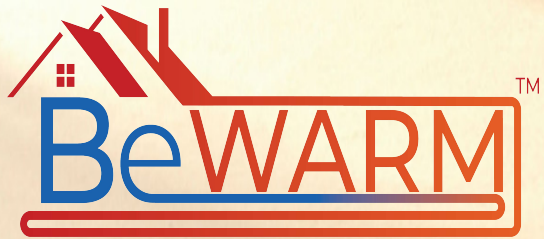




# Joist Kit Installation Manual



[www.Be-warm.co.uk](http://www.Be-warm.co.uk)

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3. STEP BY STEP INSTALLATION
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## JOIST KIT OVERVIEW

Joist Kits require foil backed insulation fixed between joists. Pipe is then laid into heat diffusion plates which are nailed to the joists, then everything is covered by a structural deck



## BEFORE YOU BEGIN INSTALLING:

Aluminium spreader plates are available in two widths and designed to fix between joists set at 400mm or 600mm spacing.

400mm spreader plates come in two options, 3 channel giving 150mm pipe spacing or 2 channel giving 200mm pipe spacing.

600mm spreader plates are supplied with 3 channels giving 200mm pipe spacing.

Pipe is laid into the preformed 'Omega' shape channels, insulation fitted below the spreader plates will ensure maximum performance from this system.

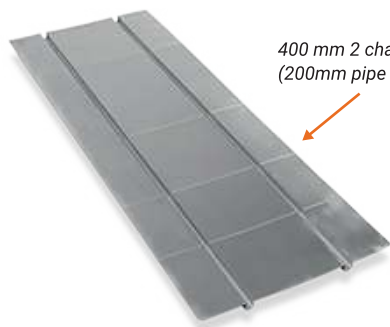
### YOU WILL NEED:

- Hammer
- Saw
- Nails
- Staple Gun
- Scissors
- Stanley knife
- Safety Glasses/Gloves
- Wire Cutters
- Tape Measure

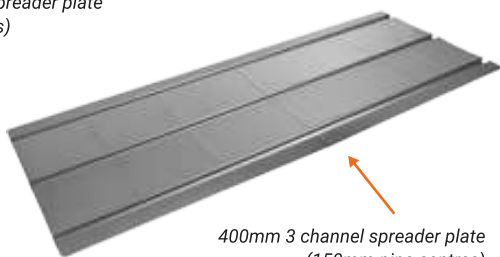


600mm 3 channel spreader plate  
(200mm pipe centres)

**The edges and corners of spreader plates can be very sharp, please wear appropriate clothing and gloves when handling.**



400 mm 2 channel spreader plate  
(200mm pipe centres)

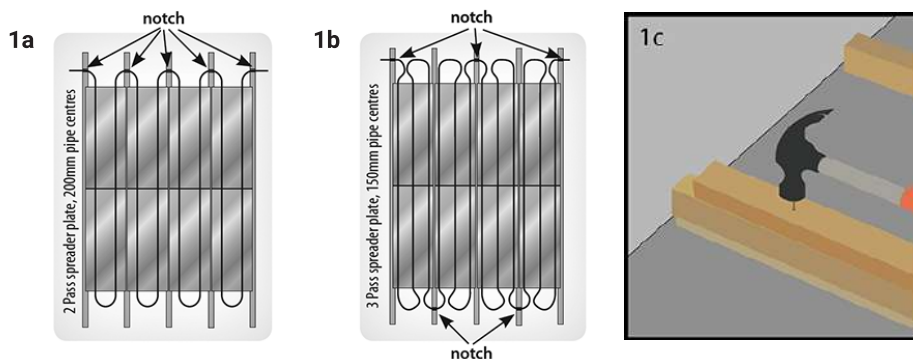


400mm 3 channel spreader plate  
(150mm pipe centres)

## STEP BY STEP INSTRUCTIONS

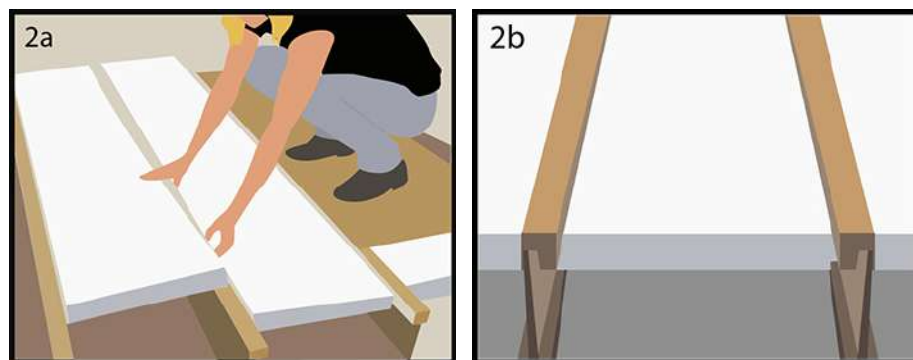
1. Notch joists according to building regulations if permissible (1a)\* or secure battens to the top of joist (1c) to allow pipe to pass between the joists allowing for bends and returns as per pipe layout (adjustment to pipe layout is acceptable on site).

If attaching battens use 18mm minimum depth to allow for pipe and ensure all fixings are secure and hammered flush. If the joists are not at standard 400mm or 600mm centres the battens can be laid at 90° across the joists.



\* When installing spreader plates with 3 passes of pipe (1b), notching of joists will be required to alternate ends of the joist to allow pipes to pass between each joist.

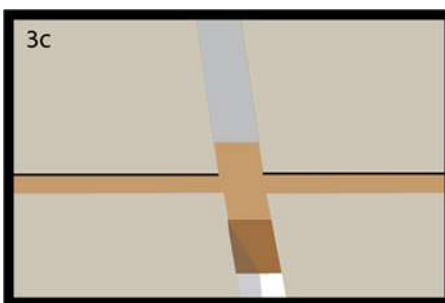
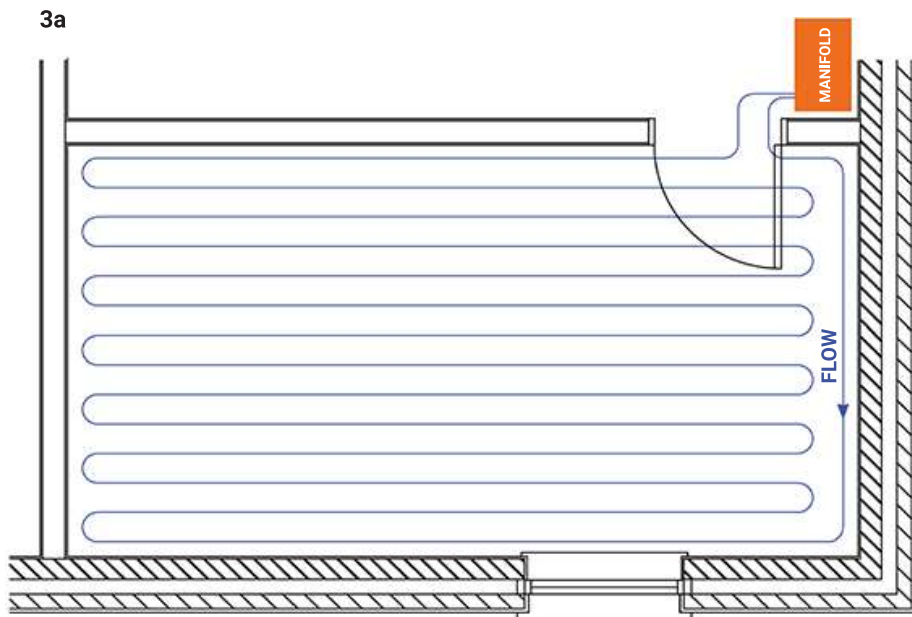
2. Ensure adequate insulation is fitted between joists. If battening, insulation should be level with the top of the joists (2a) leaving an 18mm gap for pipe, if notching joists set the insulation 18mm below the top of the joist (2b). We advise a 50mm solid insulation board or 150mm mineral wool. Electrical wiring and other services contained in the floor construction should pass under the insulation. All other water pipes should be lagged.



**PLEASE NOTE:** Exercise caution when working on exposed joist floors or at heights. Ensure all Health & Safety regulations are followed.

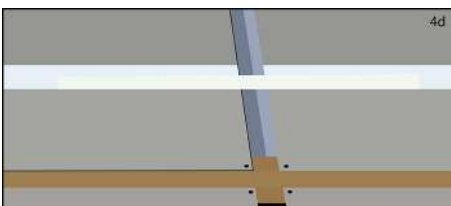
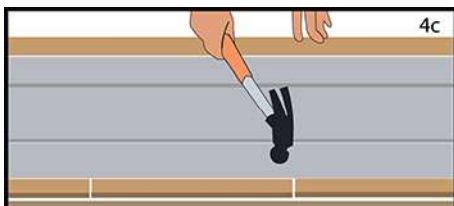
3. Before fitting the spreader plates study the pipe layout if supplied and familiarise yourself with the design and layout (3a).

Plan your pipe routes and spreader plate locations allowing 250mm between the end of the spreader plates and the wall (3b) to allow pipe to turn and return back into the spreader plate and 15mm between the spreader plates for expansion (3c).



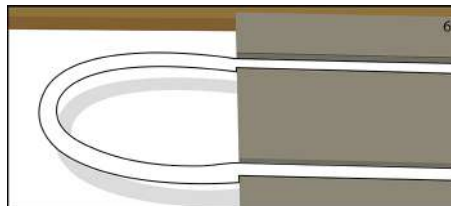
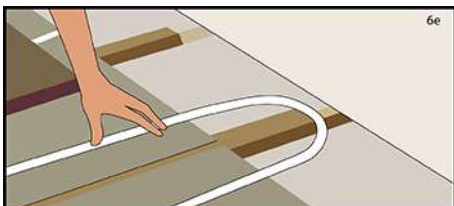
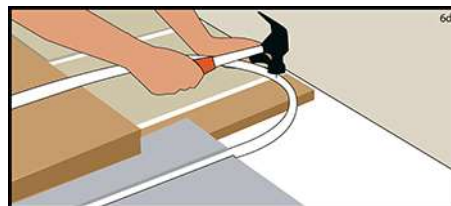
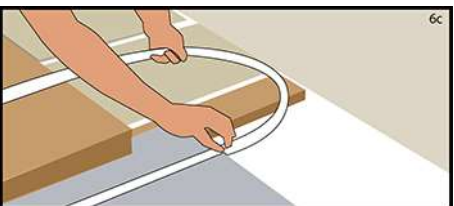
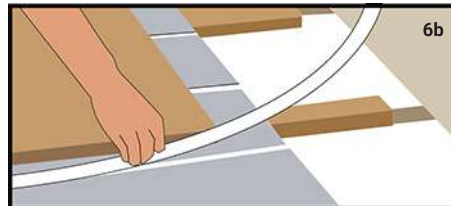
**4.** Wearing safety gloves due to sharp edges lift the first spreader plate into place measuring 250mm from the wall (4a) and fix the spreader plate along the top of the joists using staples, nails or screws ensuring they are flush fitting (4b/c).

Allow a 15mm expansion gap between each plate. A good tip is to press a short length of pipe into the pipe channel to help line up the plates before fixing in place (4d).

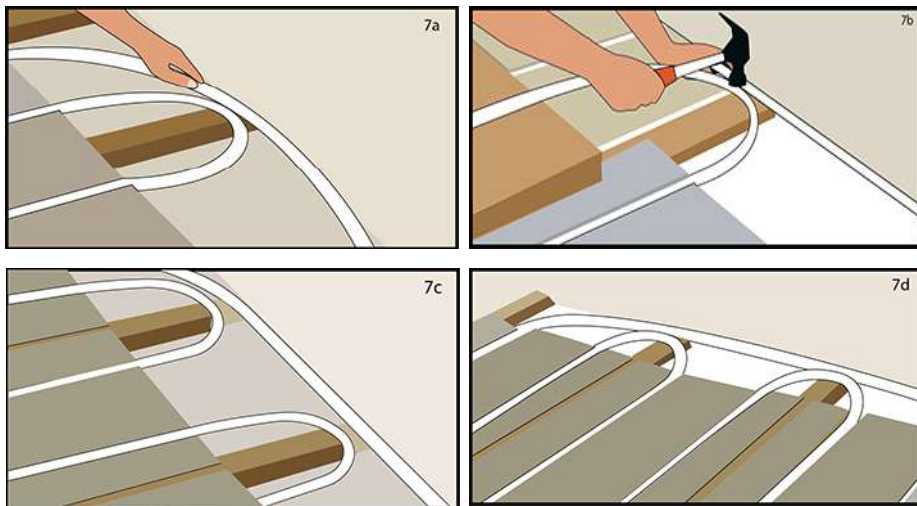


**5.** All pipe runs start and finish at the manifold, by fitting the manifold in place before laying the floor heating pipe this will give a reference point for the start and end points. Allow sufficient pipe for cutting and fitting at a later stage.

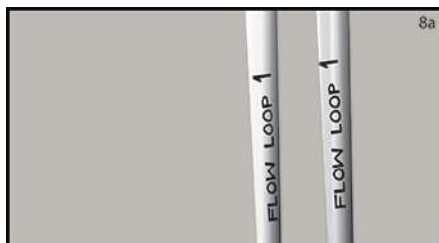
**6.** Pipe is best laid using two people, one to roll out the pipe whilst the other presses the pipe into the channels (6a/b) of the spreader plate, following pipe layout or desired routes. Be careful not to kink the pipe. 15mm masonry nail pipe clips can be used to secure pipes in notch (6c).



7. Having followed the pipe layout (if requested) you will reach the point of having to return the pipe to the manifold. Create your final bend and run the pipe back to the manifold using the notches/gap in batten (7a, b, c, d).



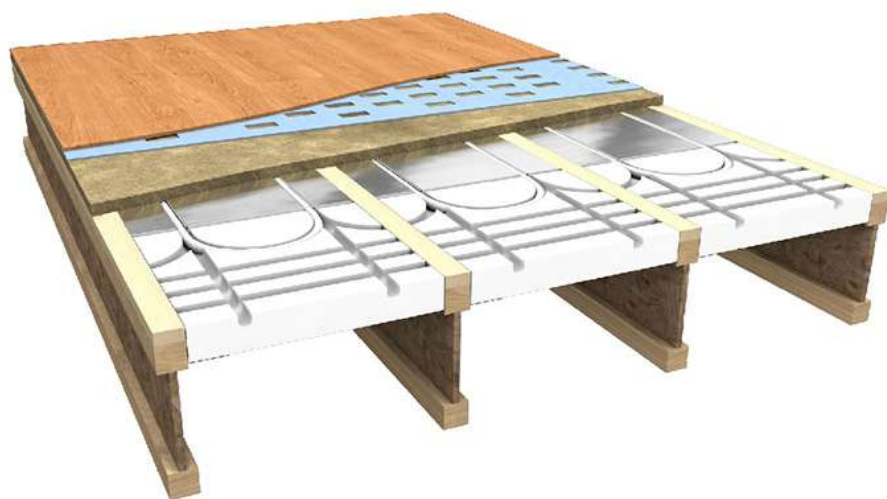
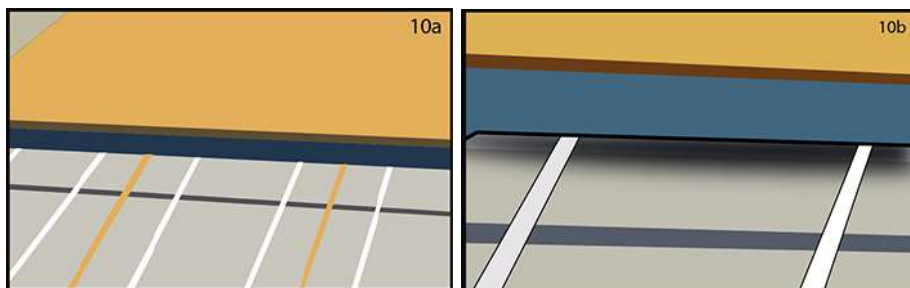
8. Identify flow, return and zone of each pipe in turn using a permanent marker (8a).



9. Floor probes can be fitted if required to measure the temperature of the floor (9a). Limiting floor surface temp to a maximum of 27°C by using floor probes is advisable when using wooden floor finishes. Specialist timber suppliers should be contacted to obtain expert advice on your chosen floor finish. The addition of carpet or rugs on wooden floors can increase the temperature between the floor and carpet, check suitability with specialist suppliers.



**10.** Many flooring manufacturers i.e. solid wood/engineered board recommend the use of a damp proof membrane (DPM) if laying directly onto the joists. Please consult your flooring supplier. It is good practice to install a thin polythene sheet over the spreader plates (10a/b). This will help cut down any potential expansion noise as spreader plates warm up and cool down. This also acts as a DPM.



**PLEASE NOTE:**

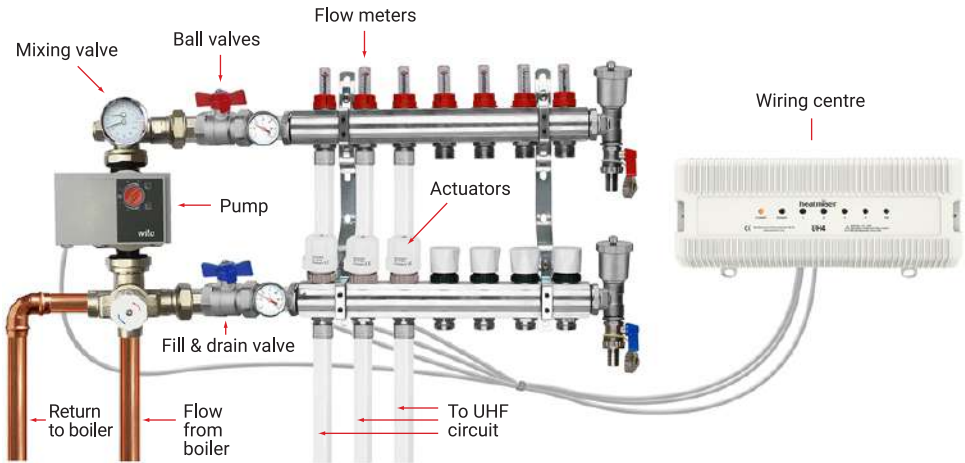
When mixed floor solutions are being served from the same manifold, a floor probe must be used in the floor solution with the lower maximum supply temperature.

This is to limit the temperature in these floor areas and prevent damage to the floor solution and/or floor finish.





# PUMP & MANIFOLD ASSEMBLY



1. Attach manifold to wall.
  2. Fit ball valves to manifold, the end with the loose nut to manifold (remember the washers!).
  3. Assemble pump & mixing valve as shown.
  4. Connect supply pipework to mixing valve using  $\frac{3}{4}$ " male iron compression fittings.
- DO NOT APPLY HEAT TO MIXING VALVE**

## FILLING THE MANIFOLD SYSTEM

1. It is **IMPORTANT** that the underfloor heating system is properly filled with water and purged completely of air to ensure correct operation, it is therefore necessary to follow the procedure below.
2. **IT IS NOT ADEQUATE TO FILL THE SYSTEM USING THE BOILER FILLING LOOP!**
3. Connect a hose from a mains pressure cold water supply to the hose connection on the top (flow) manifold, and another hose from the hose connection on the bottom (return) manifold to a drain.
4. Ensure that all the white caps on the bottom (return) manifold are screwed down, closing the valves.
5. Ensure that the main flow & return ball valves are closed on the manifold.
6. Turn on the water and open the hose connection valve on the top (flow) manifold.
7. Open the first circuit valve by unscrewing the white cap allowing water to flow into the pipe.
8. Open the hose connection valve on the bottom (return manifold) allowing water to flow freely into the drain until the water is clear with no air bubbles.
9. Open the second circuit valve (white cap) and close the first.
10. Open the third circuit valve and close the second etc.

## FILLING THE MANIFOLD SYSTEM (cont.)

11. Continue until the last circuit has been purged and close the hose connection valve on the bottom (return) manifold before closing the last circuit valve (white cap).
12. While under pressure, check manifold & pipework for leakage.
13. Close hose connection valve on the top (flow manifold) and remove the hoses.

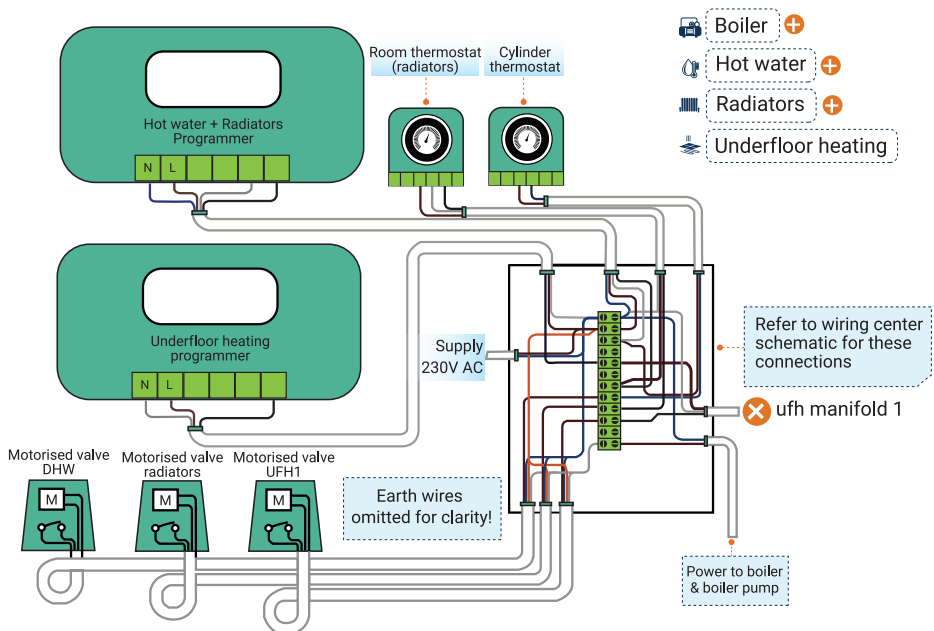
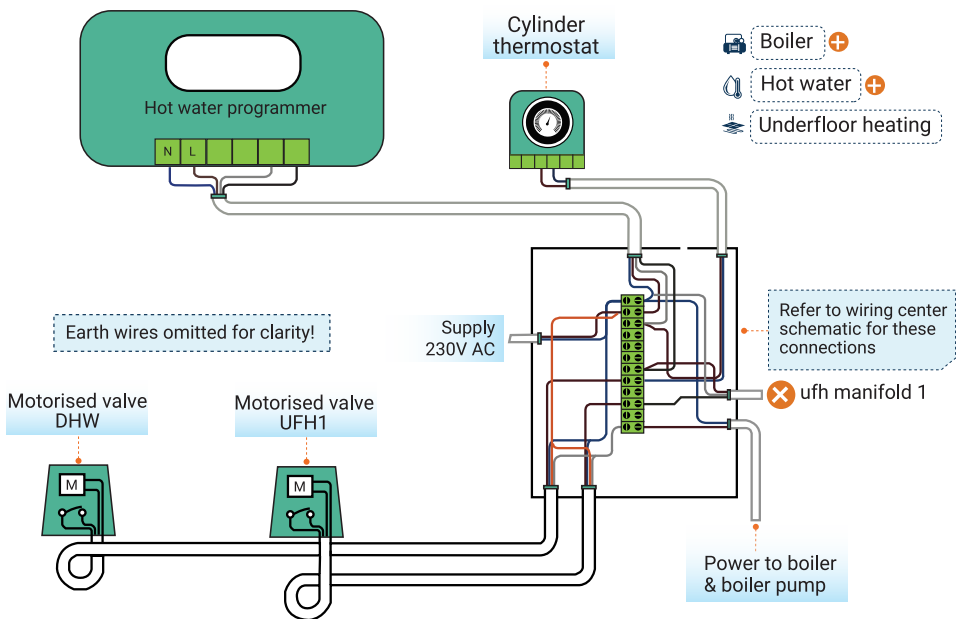
## COMMISIONING





1. Screed or chipboard flooring should be laid immediately after pipelaying to protect the pipe.
2. Concrete screed floors must be cured before any heat is applied, a general rule of thumb is to allow 1 day per 2 millimetres of screed.
3. Timber floor with drymix infill can have heat applied immediately, the drymix must be dried completely before laying the flooring.
4. Hardwood timber flooring must be 'conditioned' before fixing.
5. It is important to purge the pipework from the boiler to the manifold, to avoid air being introduced into the underfloor heating system.
6. It is not normally necessary to balance the system but if required follow this procedure. The system is balanced by running the pump, and adjusting the flow to each zone by turning the square spigots under the white caps on the bottom manifold, the flow in the respective sight glasses should be set at a figure calculated by dividing the length of pipe for that zone by 40. Example: Circuit 1,  $85\text{m}/40 = \text{approx } 2$  on the scale. Low profile systems circuit at  $70\text{m}/40=1.75$ .
7. Fit actuators to valves after connecting the control wiring.
8. It is important that the actuators are screwed tightly on to the valve.
9. Initially start the system with the thermo-static valve set at min (35°C).
10. Increase the setting by 5° per day, up to a maximum of 50° for concrete floors, max 65° for timber floors.
11. The flow & return from the boiler should be connected to the manifold connections shown using compression couplings.
12. NOTE. When first starting up the system it may take 12-24 hours for the heating effect.

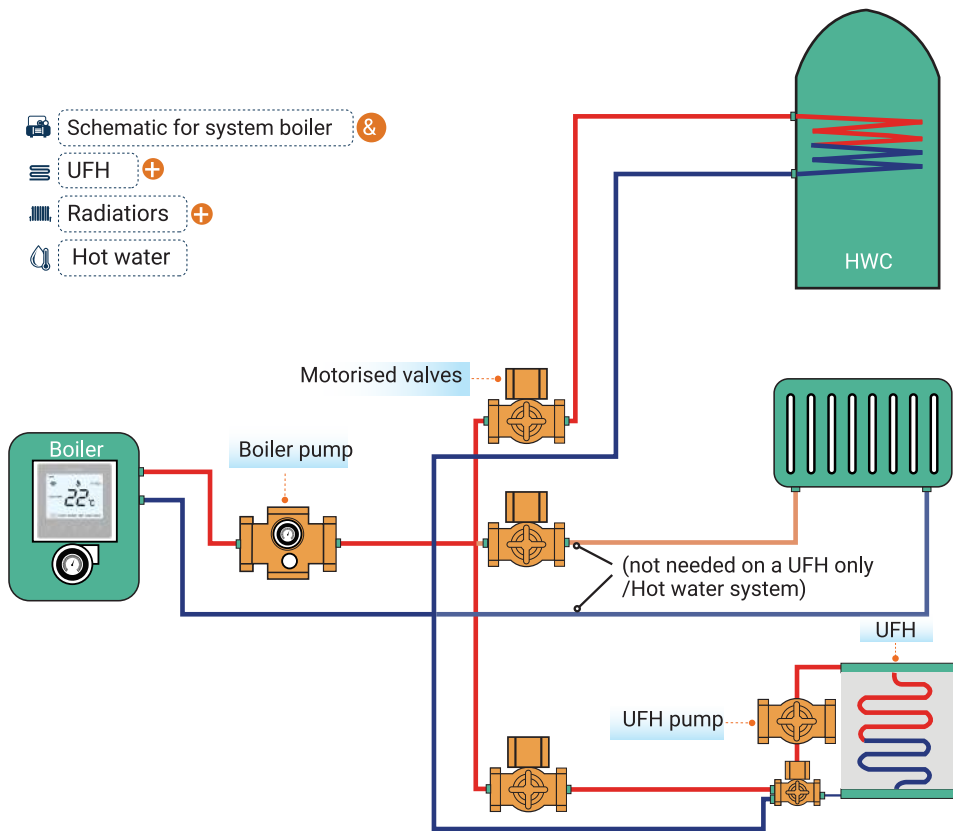
## MAINTENANCE **We recommend that the following maintenance be carried out annually.**




1. Check that all actuator nuts are tightened firmly and that actuators are not loose.
2. Remove end plug from pump and check that pump rotates when energised.
3. Turn up thermostats & check that actuators move into open position also check flow gauges are indicating. If not, re-pressurise manifold, remove indicator, clean & replace, repressurise manifold.

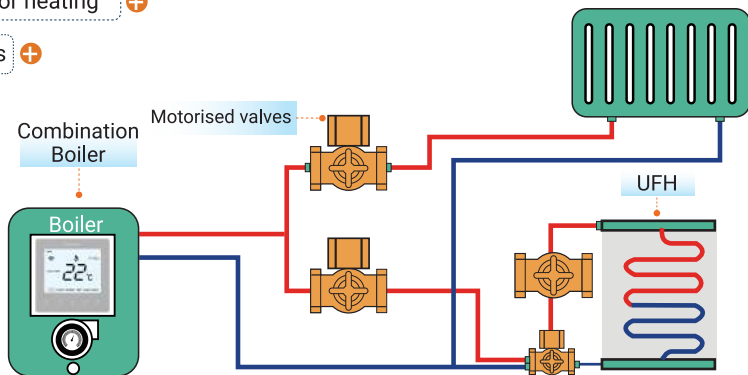




-  Schematic for system boiler &
-  UFH +
-  Radiators +
-  Hot water



-  Schematic for gas combination boiler &
-  Underfloor heating +
-  Radiators +



# TYPICAL FIXING METHODS

## UNDER NEW CONCRETE OR SCREED FLOORS

A cost effective solution for installing water underfloor heating into new build properties or new extensions.

This type of system installation is the most popular and cost effective type on the market today, the pipes are incased in screed or concrete meaning that the whole floor warms up like one huge storage radiator. This system is normally for new build houses or extensions/conservatories.

## CLIP RAIL SYSTEM



## BETWEEN JOISTS OR SUSPENDED FLOORS

Installing water underfloor heating between joists is easy using our different installation solutions.

Please note all in joist systems require the pipe spacing to be 200mm apart or less. This means you need to select a conservatory style kit or a multiple room kit - standard room kits are designed with the pipe spacing at 250mm centers which would mean you would not have enough pipe in the kit.

## SPREADER PLATE SYSTEM



## OVER EXISTING FLOORS

Installing water underfloor heating over existing floors is simple using our different installation solutions.

Our overfloor systems can be installed directly over any solid sub-floor such as existing floorboards, plywood or concrete/screed floors, or any solid surface such as existing tiles/wooden floors.

## OVERLAY FLOOR PANELS



# TYPICAL FIXING METHODS

**PLASTIC EGG CRATE SYSTEM**



**CLIPPED DIRECT WITH STAPLES**



**IN JOIST FOIL BOARDS**

