



**equator**

The hot and cold plumbing system

Underfloor Heating *Single room solutions*

Installation Guide



## Step one Locating and installing the control valve

Locate the valve in a convenient easy to reach place, typically about 0.5 metres off the finished floor level and usually within the underfloor heating area or close to it.

### Installing the control valve in a solid wall:

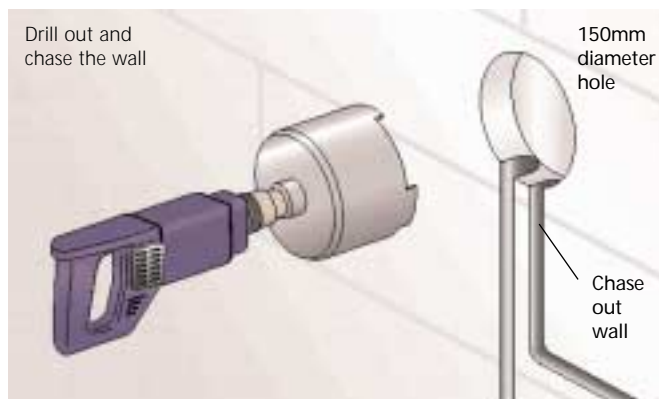
The main valve unit is screwed to the wall with the two ports facing downwards, the port on the left is the water inlet coming from the floor, the port on the right is the return outlet from the valve. An arrow indicates the direction of water flow beneath each port (see image below).



After drilling & plugging wall, relocate valve. For ease, screw fix after connections have been made

### Installing the control valve in a studwork wall

Insert a noggin where the valve is to be sited. Screw the valve to the noggin with the two ports facing downwards as stated above. The noggin should be placed so that the valve casing is flush with the plasterboard when fixed.

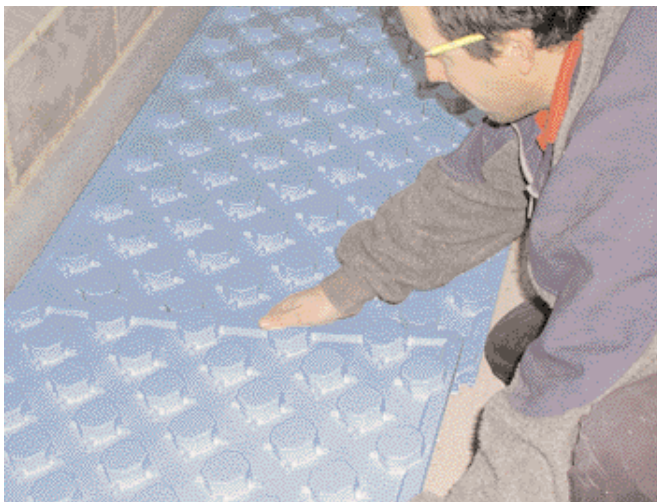


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### Step two Laying the Equator floor panels

Laying the panels is very straight forward:

1. Ensure the sub floor is clean, flat and free of any debris or water.
2. Lay the floor insulation (30mm thick minimum) over the whole underfloor heating area.
3. Lay the appropriate edge insulation, (see page 5).
4. Lay the Equator underfloor heating panels as follows:
  - Start in one corner of the room, ensuring that the visible grooved edge of the panel is placed facing away from the wall.
  - Work through the whole room, interlocking the floor panels firmly in place. Each panel has either a tongue or a grooved edge, these lock together to form a continuous uniform surface.
  - Panels are easily cut using a fine toothed saw.



### Step three Laying Equator pipe

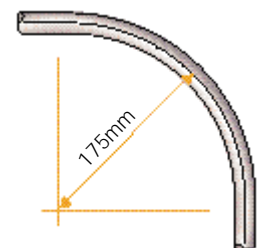
1. Run 15m pipe into the Equator underfloor heating panels in the pattern shown below, working from the room perimeter towards the centre of the room and then back towards the start point. It is essential that the pipework be run in this pattern, ensuring that the flow and return pipes are equally spaced beside each other. This creates an average temperature between the pipes.



2. To lay the Equator pipework, simply "walk" the pipe into the panel. See below.



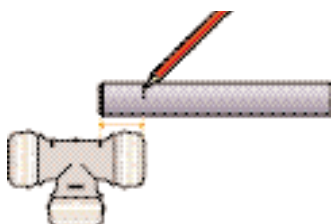
3. The pipe should be laid at regular spacing, either 150 or 225mm in accordance with the design. The pipe needs to be spaced approximately 100-150mm from the perimeter wall. Ensure that the pipe is not bent beyond the bend radius detailed here, this will ensure longevity.



4. If the flow or return pipe passes through edge insulation between separate floor screed zones (a movement joint), then foam pipe insulation should be fitted at this point. The pipe insulation should be at least 20mm thick, and should extend into each screed zone by not less than 200mm. This will allow differential movement.

Pipe insulation should also be fitted where the flow and return rise up through the floor.

Equator pipe and fittings can also be used to route the underfloor heating flow and return pipes to a suitable connection point on the central heating system. The same push-fit jointing method described in step four should be applied. The correct joint insertion depth relative to each pipe size is marked on the moulded fittings.



If connecting the underfloor heating system to existing metric copper piping, the following recommendations apply to Equator fittings.

When jointing 15, 22 and 28mm copper pipe to Equator fittings ensure that the copper pipe end is cut square and de-burred. It is recommended that a wheel cutter is used for cutting copper. Check to make sure the copper pipe is not dented. Any flaws could damage the O-ring during insertion which could affect the joint seal. If the butt of the pipe has not been properly prepared, or if the pipe is not inserted square, this could result in damage to the O-ring. A plastic insert is available for copper pipe, which is designed to eliminate this risk. It is recommended that the inside rim/bore of the cut end is reamed out, in order that the insert is seated neatly in the pipe end.



Before jointing, mark the insertion depth on the pipe, application of lubricant to the tube end is recommended.

When using Equator pipe or fittings next to soldered copper fittings, it is recommended to complete the soldering before any Equator pipe or fittings are installed. Where this is not possible, the following recommendations should be followed:

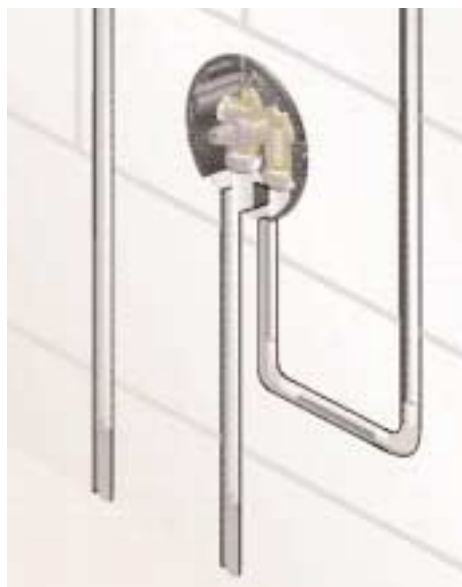
- Do not allow flux to run onto Equator pipe or fittings.
- Keep Equator products away from any sources of naked flame, wrap a damp cloth around the copper pipe during soldering to control conductive heat.
- Do not allow hot solder to come into contact with any Equator products.

Further detailed advice is given in the Equator Design and Installation Guide.

## Step four Connecting up to the control valve

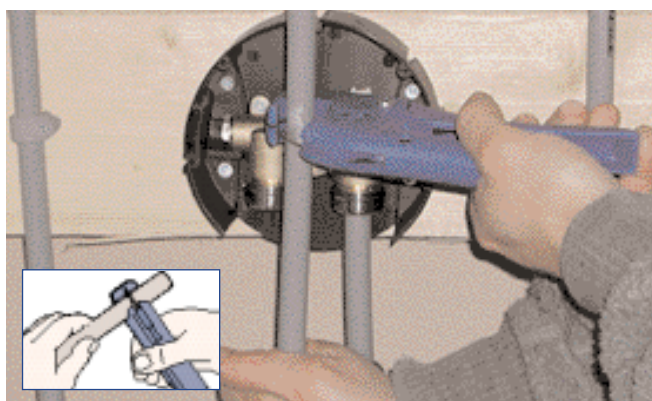
Once the pipework layout is complete, connect up to the Equator underfloor heating valve.

In order to protect the pipework where it enters and exits the floor, it is recommended that the pipework be shrouded using pipe insulation to a level just above the top of the screed.



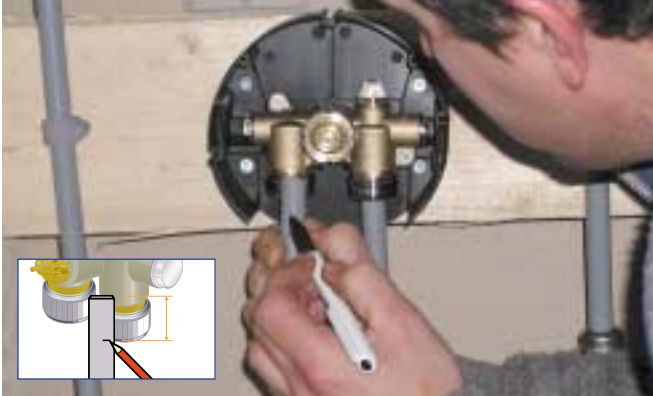
To connect up to the valve follow the connection guidelines below:

1. Trim back the return pipe to allow connection to the valve. When doing this ensure that you leave enough pipe to be pushed fully home into the socket of the port. When cutting the pipe, ensure that you use a suitable pipe cutter and that the pipe is cut square, never use a hacksaw.

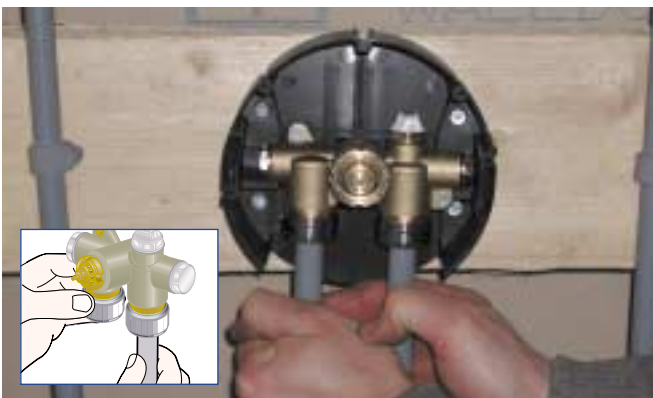
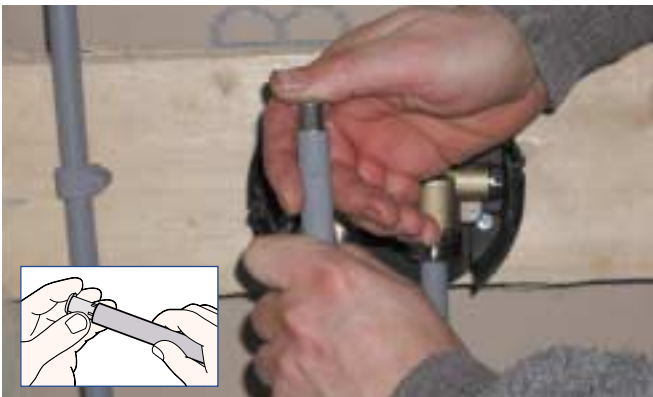


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2. Mark a line on the pipe end, 25mm from the end of the pipe, this is the insertion depth needed to enter the socket of the port fully. Insert a pipe support sleeve, EPSS15, into the end of the pipe.



3. Push the pipe into the socket of the valve ensuring that the pipe is pushed far enough so that the insertion depth line is flush with the socket edge. Tug backwards on the pipe to ensure that it is secure.



4. The control valve must be connected to the return pipe from the underfloor heating circuit, whereas the flow pipe can be routed direct from the central heating connection to the underfloor heating circuit. If the pipes feeding the underfloor heating system drop from an upper level, it is good practice to incorporate a draincock at low level.

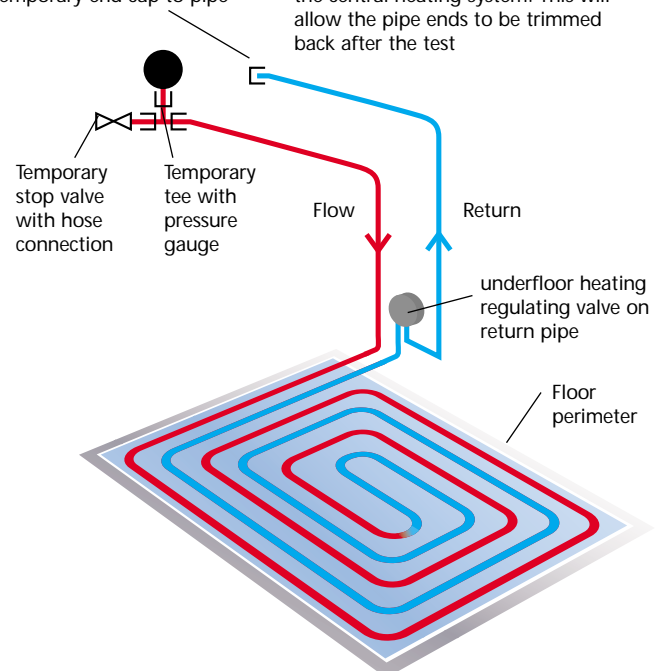
5. If the pipes are located in a chased out wall, it is recommended that they are either run in conduit or that a cable cover strip is fitted. This will provide a void around the pipe which will minimise the risk of the plaster cracking.

6. Before laying the floor screed, it is recommended that the underfloor heating circuit is filled with water and pressure tested using a temporary hose connection. The test pressure should not be less than 2 times the peak operating pressure of the heating system (maximum 10 bar). The cold water mains pressure may be adequate for this. A pressure gauge should be used to monitor the test, which should be kept in operation throughout the laying of the floor screed.



Slowly fill underfloor heating with water then fit temporary end cap to pipe

Extend underfloor heating circuit pipes just beyond the point of connection to the central heating system. This will allow the pipe ends to be trimmed back after the test



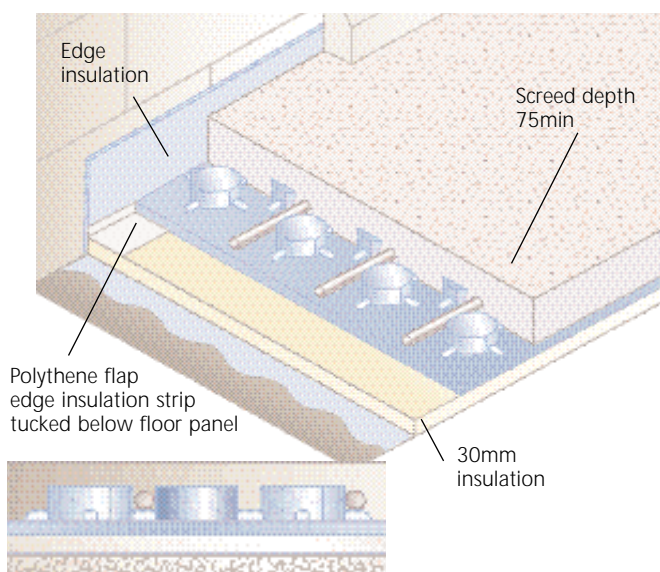
## Step five Laying the floor screed

The Equator underfloor heating system can be covered by all types of screed material including:

- Sand/cement screeds to BS 8204.
- Fine and heavy duty concrete.

Equator PE-X pipe does not impart any excess stress to the screed or the concrete and in no way possesses the strength to crack a screed or concrete floor at the temperatures used.

In order for the Equator underfloor heating system to operate at its maximum efficiency, the following recommendations should be followed when laying the floor screed:



1. Ensure that both the flooring panels and pipework are laid flat and level.
2. A minimum screed depth of 75mm from the floor panel base must be achieved evenly across the whole floor area.
3. Ensure that the screed or concrete is well compacted around the pipe and free of any air cavities. It is recommended that a proprietary floor screed additive is used.
4. Floor screed can be barrowed across the flooring panels providing adequate boarding/planking is laid across the panels.
5. When shovelling screed/concrete onto pipework, take extra care not to damage the pipe or floor panels.
6. During pipe testing, laying and drying-out of the floor screed, the room should be kept draught free and at a temperature above freezing.
7. The floor should be allowed to fully dry out before the underfloor heating is made 'live'. Do not use the Equator underfloor heating system to speed up the drying out process of the floor screed, this could crack and weaken the floor. The time taken for the screed to fully dry out depends on the type and thickness of screed used. For typical sand/cement screed laid to a depth of 75mm, a period of at least 28 days would be normal. Once the floor screed is cured, the system will need to be warmed up gradually over a period of at least three days.

## Step six Commissioning

1. Central heating system
  - a) Existing central heating systems: Before connecting the underfloor heating system to an existing central heating system, the condition of the existing system should be ascertained. If necessary, flush out existing systems, and use a chemical cleanser to remove sludge or debris.
  - b) New central heating systems: Before connection, flush out system, and if necessary chemically cleanse in accordance with BS 7573: 1992 (this is a 'Benchmark' requirement expected by many boiler manufacturers).
2. Release the test pressure, empty water from the high level pipework and remove any temporary fittings (as applicable).
3. Switch off the boiler and empty the water from the central heating system (if applicable).
4. Connect the underfloor heating circuit to the central heating flow and return pipes.
5. Fill the system with water and bleed air. It is recommended to introduce a corrosion inhibitor to the heating system, see page 12 for more information.
6. Air can be released from the underfloor heating pipe loop much the same way as 'bleeding' a radiator. Using the bleed key provided, simply open the bleed valve found inside and on top of the control valve.
7. Remove the grey valve dust cap by pulling forwards.
8. The sensor head has a locating lug which simply pushes over the valve, tighten using an allen key (not supplied). To alter the temperature returning from the underfloor heating pipe loop, and ultimately changing the surface temperature of the floor, simply adjust the dial on the valve selecting either 1, 2, 3 or 4, with 1 being coolest and 4 being hottest temperature. Fit the control valve face plate, by locating the two 'prongs' into the corresponding slots in the valve housing.



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9. Once the Equator underfloor heating system is installed and running it is essential that the whole central heating system in the house is properly balanced. The addition of the underfloor heating loop is very similar to putting a new radiator in the central heating circuit, the existing radiators must be re-balanced to ensure adequate flow through the underfloor heating system.
10. Over the service life of the valve, very little maintenance is required. The most likely part that is likely to need replacing is the gland spindle unit (which incorporates a seal), which is located behind the sensor head. This is easily changed by removing the sensor head and then undoing the hexagonal nut located on the unit (see detail below). A receptacle should be used to catch the constant water dribble which will occur during this process.

