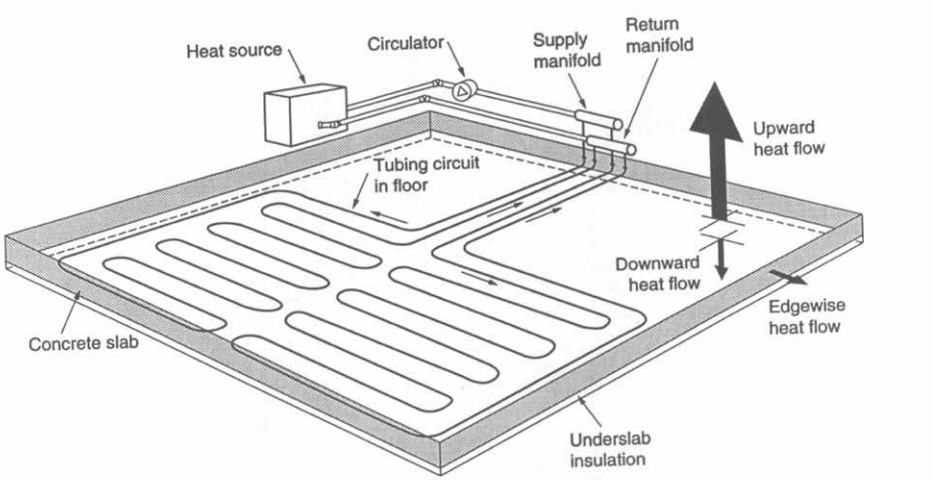


*Example of an underfloor working components.*

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**WARRANTY**

If any material defect arising from the manufacturing process is found in a new tap or valve Waterware Services Ltd. will undertake to repair or replace it (at its option). This undertaking will not apply if:

1. The defect is brought to Waterware's attention later than 5 years from the date of manufacture.
2. Failure by any person to follow installation instructions or installation in an environment outside the recommended limitations or relevant NZ and or Australian Standards and local plumbing codes. No installation should proceed without installation instructions and claims instructions were missing are not accepted as a means of avoiding this condition.
3. Evidence cannot be produced which confirms that the relevant tap or valve was purchased from a known customer of Waterware Services Ltd.
4. Repair work is undertaken without prior arrangement with Waterware Services Ltd.
5. Normal maintenance requirements, refer to specific product maintenance guides.

Waterware Services Ltd. shall in no way be liable for any loss, damage (direct, indirect or consequential), cost or expense suffered or incurred by the purchaser. Obligations accepted by Waterware Products Ltd. are.....

..... in addition to all other rights and remedies had by the Purchaser in law in respect of the valve and does not limit the right the Consumer may have under the Consumers Guarantee Act 1993.

..... subject to the exceptions and conditions previously listed. All expressed or implied conditions, statements or warranties as to the quality or fitness on any purpose of a tap or valve or otherwise are hereby expressly excluded to the fullest extent permitted by law except under conditions and warrants which cannot be legally excluded by law and which are intended in the contract for the supply of the valve by the Trade Practises and any other Act of Law.

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WATERWARE

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WATERWARE

# Underfloor Circuits

Installation Guide

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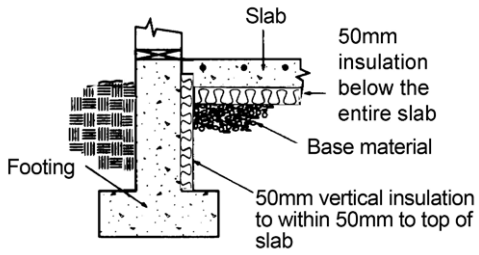
**1. Site preparation**

A properly prepared site is essential for optimum radiant system performance. Radiant systems that are installed on sites that are not well drained, sit on bedrock or clay subsoil can conduct considerable heat away from the system. To prevent tube damage, the compacted subsoil should be smooth and flat. The reinforcing mesh should be securely fastened to prevent the mesh from moving and damaging the pipe.

**2. Insulation**

It is recommended that a layer of 50mm insulation be placed below the slab and standing vertically around the perimeter of the slab to within 50mm of the finished slab height to prevent sideways heat loss.

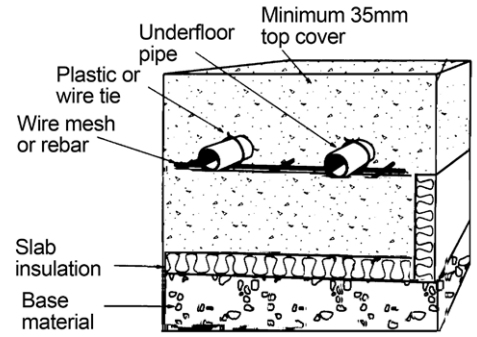



**3. Tube fixing**

It is good practise to mark all walls, partitions, doorways, bench units and expansion joints on the insulation as a guide for tube spacing and fixing.

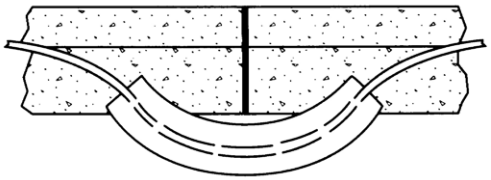
PeX pipe needs to be secured using 'Smartclip' or cable ties every 300mm and on the apex of every turn.

PeX/Al/PeX multilayer pipe needs to be secured using cable ties every 600mm and on the apex of every turn.




**4. Expansion joints**

Special care needs to be taken around expansion joints. Tubes passing below an expansion joint should preserve the minimum 35mm cover and should be sleeved at these points to prevent wear should the slab move at this point.



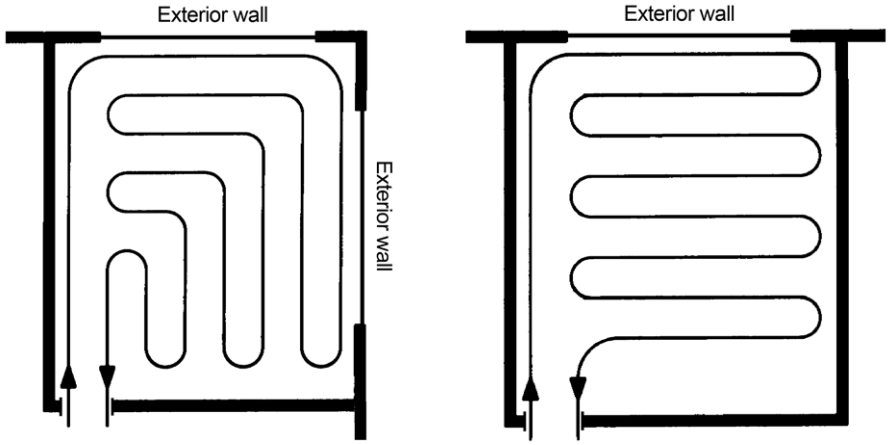
**5. Tube spacing**

For residential applications tube spacing should be set at a minimum of 200mm centres to minimise the presence of heat 'banding' though the floor.

**6. Circuit length**

Maximum circuit length with ID12mm pipe should ideally not exceed 100 metres although 'occasional' longer circuits of up to 110m is acceptable.

**7. Underfloor layouts**




Coils should follow the serpentine pattern entering and leaving through the door way. The hottest water should proceed directly to the coldest wall. Corner rooms should follow the double serpentine pattern where other rooms should follow a single serpentine. This allows the greatest heat into the coldest part of the room and allows the greatest comfort.

**8. Pressure test**

Once all the tube is installed, pressurise the system to 600 kPa and leave under test for the duration of the construction process to guard against accidental damage going unnoticed.

**9. Wood floor overlays**

Care should be exercised when using a wood overlay floor covering. Slab sensing is essential and should be set to within the maximum recommended temperature as specified by the flooring provider. Failure to do so could cause splitting and or lifting.

**10. Corrosion control**

To prevent corrosion to other metal components within the system a corrosion inhibitor should be added to the system and replaced annually. We recommend 'EverBuild Inhibitor Concentrate' (www.waterware.co.nz/central-heating/system-treatments/Inhibitor/everbuild-inhibitor-concentrate) in a gun cartridge for easy application.