AquaHeat Installation Guide

Hydronic Flooring

Dry Below

A systems approach integrating established and emerging technologies

ComfortPro® Systems

2/2021

System Design and Installation

The Mains

PEX pipe mains are recommended to reduce labor and architectural impact. For a slab-on-grade installation, the mains can be buried below or within the slab. For below slab installation refer to insulated supply and returns like ComfortPro Systems Microflex product range. For a wet or dry on plywood application, the mains can be installed within the joist cavity. Always allow for the expansion and contraction of the mains, as the temperature fluctuates. It is recommended that the pipe be allowed free movement and is not fastened directly to the floor joists.

Requirements of a hydronic control system

The intent of a hydronic heating control system is to achieve heating comfort, system protection, energy saving and ease of use.

Heating comfort is achieved by:
- keeping proper system temperatures
- directing the right amount of heat when and where you want it

System protection is achieved by:
- protecting the primary heat source (e.g. boiler) from corrosion and thermal shock
- reducing equipment cycling

Energy saving is achieved by:
- running the system at the lowest water temperature possible
- turning off the system when no heat is demanded
- minimizing boiler short cycling.

Ease of use is achieved by:
- running automatic functions in lieu of manual settings
- providing easy and consistent wiring and installation procedures

AquaHeat Installation Guide Philosophy

A hydronic system can get quiet complicated and with the rapid introduction higher integrated solutions keeping up is challenging more than ever. To keep the basic installation order we have build this series of guides to reflect the typical steps in the implementation of a project.

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Dry below Installation

Heat transfer plates

Fasten plates by stapling them to the underside of the subfloor. Ensure gap spacing does not exceed 6" (150 mm). At the end of each joist space (at the pipe bend), set the first two plates well back (heat transfer plates must be installed 12" (310 mm) from loop ends and crossovers), and fasten on a slight diagonal. This will ensure there is minimal tension on the pipe wall from any expansion or contraction of the piping. Adjust plate gap spacing between 3" to 6". Gap spacing can be manipulated to eliminate the need for trimming the plates.

Foil-backed insulation

Fasten a minimum of 1-1/2" (40 mm) foil-backed insulation with foil facing piping and heat transfer plating directly under the subfloor (a high insulation R-Value of R-20 or higher is recommended to prevent downward heatloss). Install foil-backed insulation in the optimal reflecting distance for a radiant barrier from a heat emitter between 1/2" and 1" away from the pipe and plate assembly.

An alternate method is to fasten only the foil to underside of the subfloor (foil face against piping and plates), and then place some batt insulation against the foil. If this method is used, ensure that the batt insulation is fitted securely to the bottom of the foil and will not fall to the bottom of the joist space (thereby creating an air cavity).

Dry below installation guidelines

- The tightest bend radius for PEX is 6 times the outside diameter.
- Use protective sleeves when penetrating floors, laminated wood, or metal studs.
- Drill holes at least 1/4" (5 mm) larger to provide free movement of pipe.
- Protect pipe with steel plate if it is within 2" (50 mm) of a stud, plate or nailing surface (see Figure 1).
- When running AquaHeat PEX be sure to install at least 6" (150 mm) from any gas appliance vent piping, or 12" (300 mm) from any recessed light fixtures (see Figure 2).
- If AquaHeat PEX piping is notched or cut, section of PEX must be cut out and replaced.
- Beneath cabinets, refrigerators and stoves, insulation should be placed between the subfloor and pipe to prevent overheating those areas.

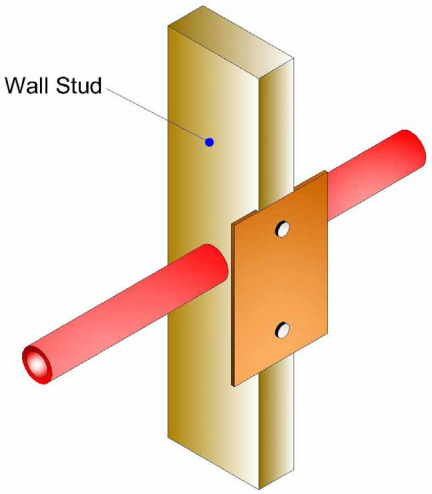


Fig 1

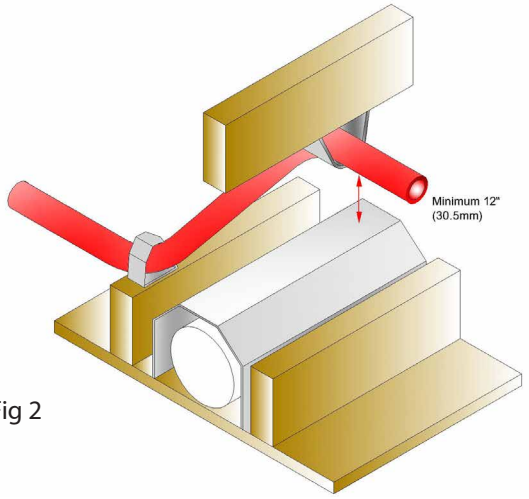
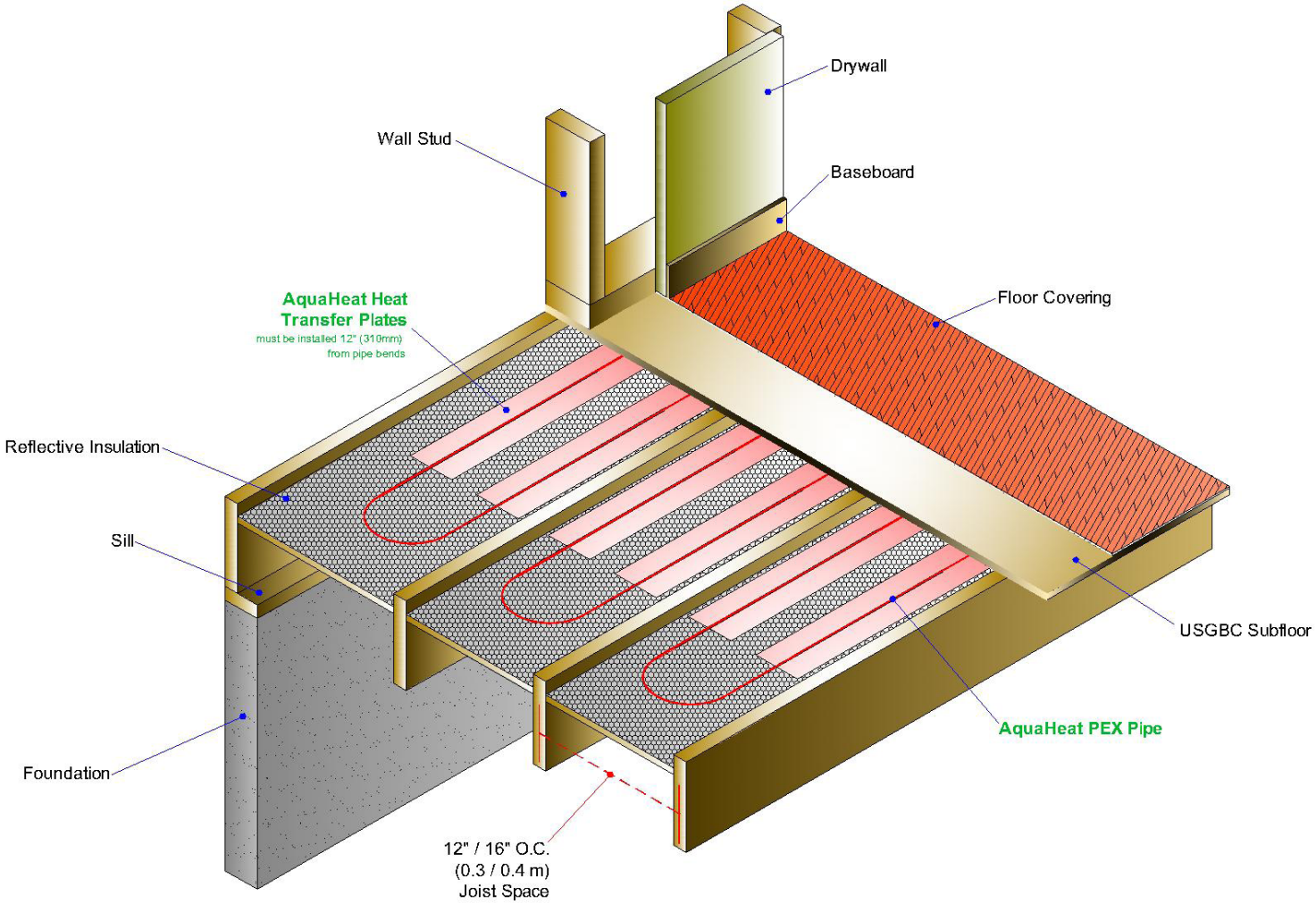


Fig 2

Dry below Double Loop Installation for Under Subfloor Applications
(i.e. between the floor joists)



Notes:

- Foil should be fastened with the optimal reflecting distance for a radiant barrier from a heat emitter between 1/2" and 1" directly under the subfloor.

- Non-Barrier PEX pipe is preferred to ensure elimination of expansion/contraction noises. If AquaHeat O_2 Barrier PEX Pipe (#94000/98000 Series) is required, then a modulating indoor/outdoor controller is required. (Alternatively, a silicon based adhesive can be placed between the plate and pipe.)

Two pipes per joist space

1. Spooling pipe from the dispenser, go first through the hole furthest from the beam to the last joist cavity being supplied by the loop. Then lead the pipe directly back to the distribution manifold. Attach pipe to distribution manifold, and secure.

2. Pull the pipe into the first joist space. (Note: There is no pipe crossover in the first space only.)

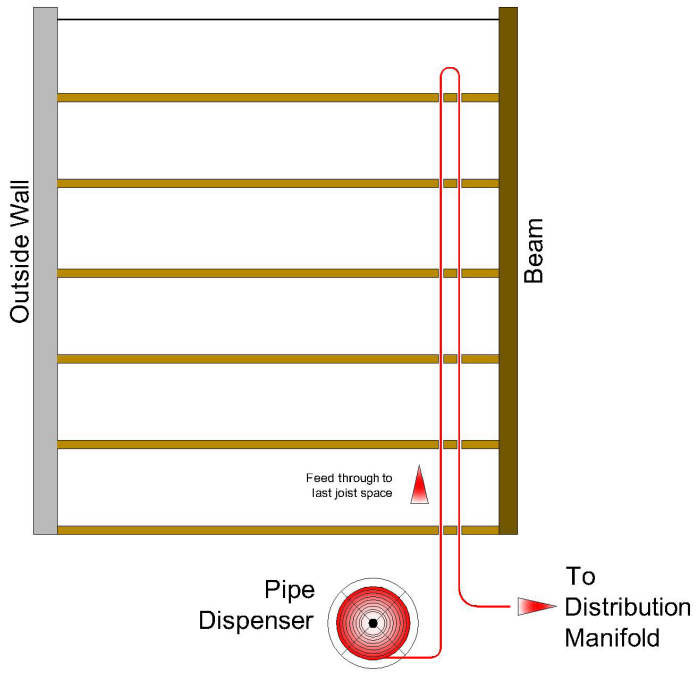
3. Using J-Clips, temporarily attach the pipe to the bottom of the subflooring. The J-Clips remain in place until the heat transfer plating is installed.

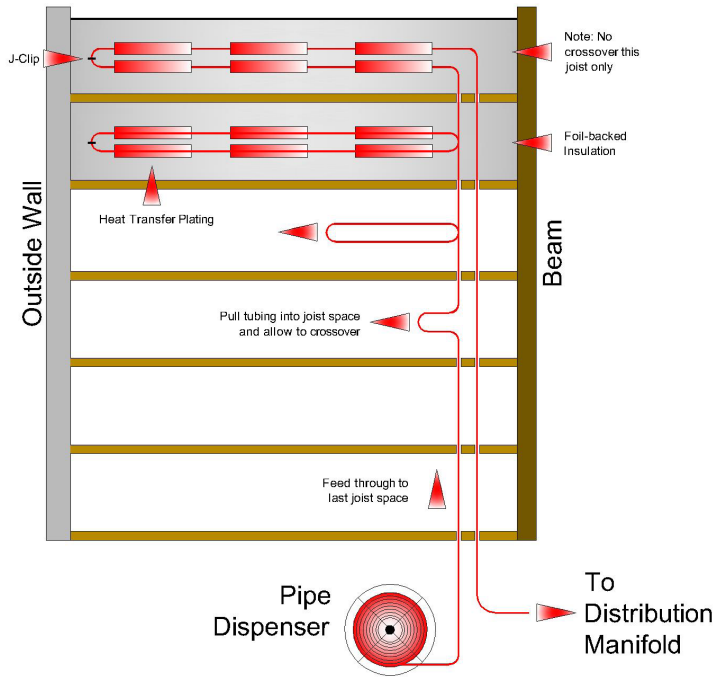
4. Proceed to pull the pipe into each remaining joist space. (Note: Allow pipe to crossover as shown to prevent kinking.)

5. Pulling the pipe into the joist spaces, proceed with the installation of heat transfer plating.

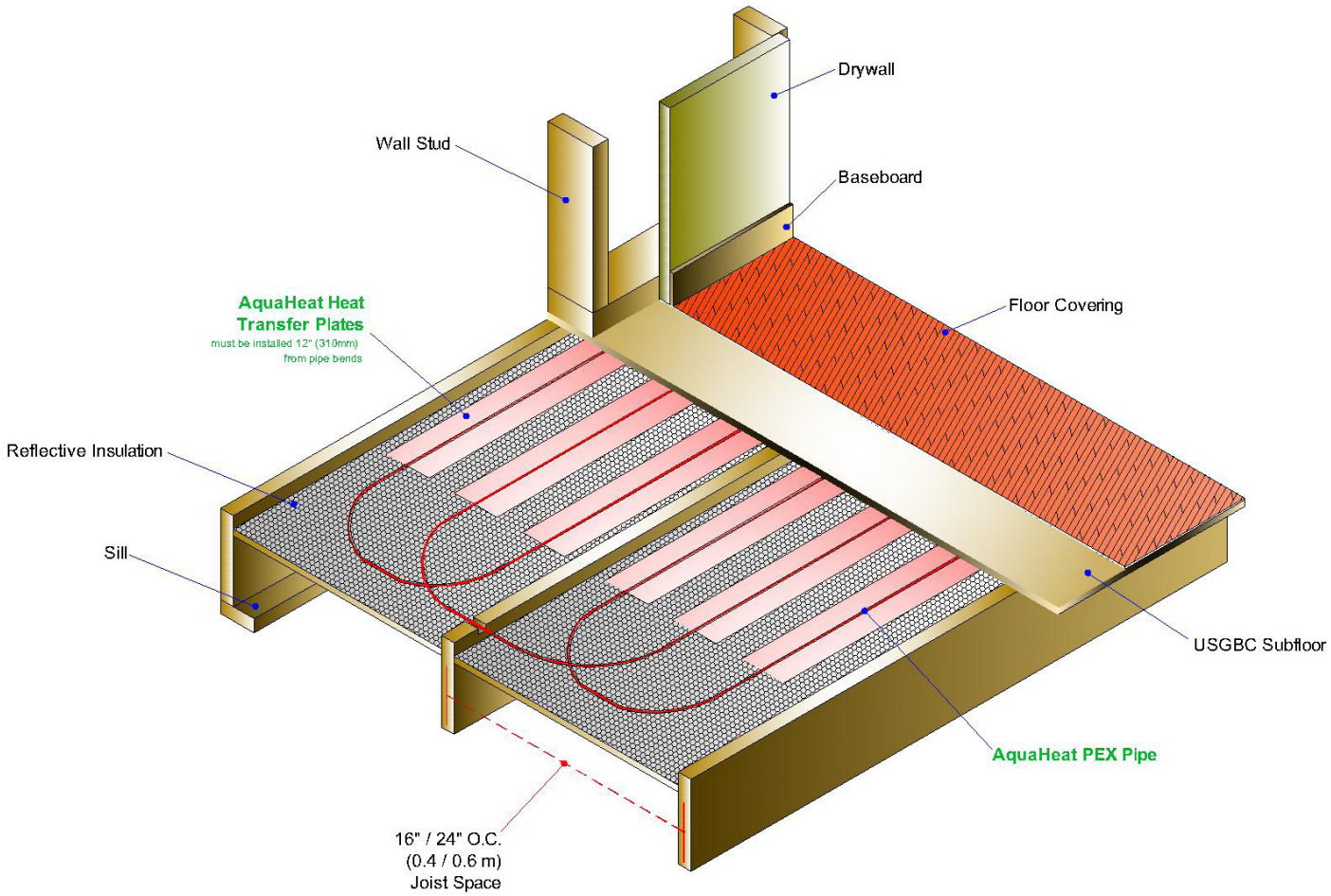
6. Begin plating on one row of one joist. After completing the first row of plates, plate gap spacing can be adjusted from 3" to 6" (75 to 150 mm) for the second row, to ensure that the last plate in a joist cavity does not have to be cut.

7. Place a minimum of 1-1/2" (40 mm) foil-backed insulation in the optimal reflecting distance for a radiant barrier from a heat emitter between 1/2" and 1" tight against the pipe and plate assembly, or alternatively staple a foil to subfloor and then add some minimum R-12 (R-20 recommended) batt insulation.





Dry Below Triple Loop Installation for Under Subfloor Applications
(i.e. between the floor joists)



Note: Foil should be fastened in the optimal reflecting distance for a radiant barrier from a heat emitter between 1/2" and 1" under the subfloor. (Foil face should be facing the pipe and heat transfer plating.)

Three pipes per joist space

1. After drilling holes in the joist; pull the pipe off the dispenser and through the holes in the joist to the manifold.

2. Fasten pipe in the manifold (See chapter 2)

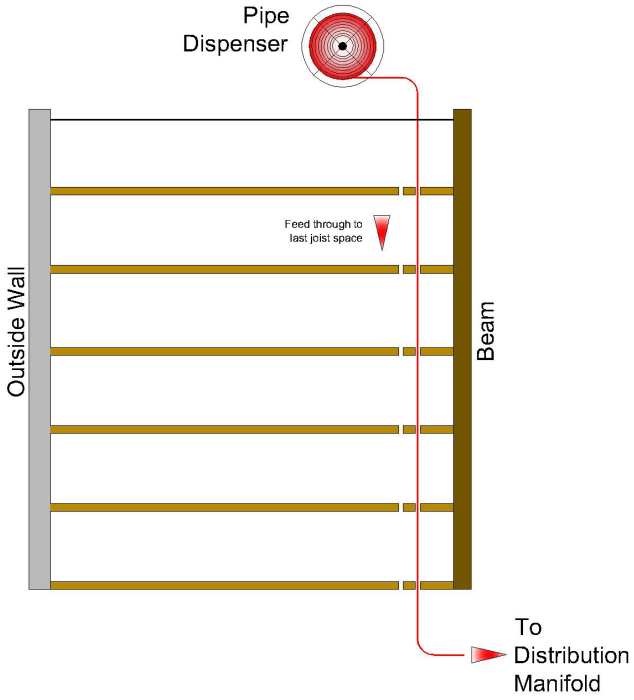
3. Pull pipe into the joist space, allowing for the pipe to cross over. Continue to pull pipe into the length of the joist space.

4. Once all the cross over loops have been pulled, measure the total distance of all joist spaces in the loop, plus any additional piping from the loop back to the manifold.

5. Pull the corresponding amount of pipe off the pipe dispenser and cut the pipe.

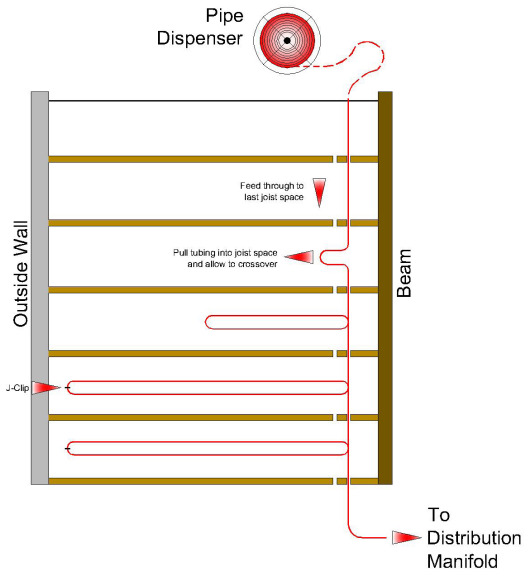
6. Begin feeding the cut end of the pipe through each length of the joist to create the third line.

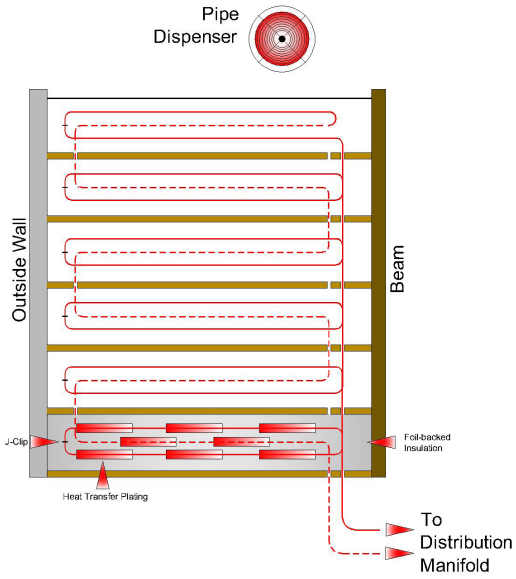
7. String the third line through all the joist spaces and return to the manifold.



8. Begin plating on one row of one joist. After completing the first row of plates, plate gap spacing can be adjusted from 3" to 6" (75 to 150 mm) for the second row, to ensure that the last plate in a joist cavity does not have to be cut.

9. Place a minimum of 1-1/2" (40 mm) foil-backed insulation in the optimal reflecting distance for a radiant barrier from a heat emitter between 1/2" and 1" under the pipe and plate assembly, or alternatively staple a foil to subfloor and then add some minimum R-12 (R-20 recommended) batt insulation.





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