ULTRA-FIN: RADIANT HEATING

Welcome to Ultra-Fin

Ultra-Fin is the leader in cost efficient and high comfort radiant floor heating. Ultra-Fin is a hydronic system designed specifically for wood-frame housing that is simple to install, and is compatible with all floor coverings including carpet, tile, slate and hardwood.

How Ultra-Fin Works

The Ultra-fin system uses tubing to circulate hot water through the under-floor joist spaces, where heat is conducted to louvered aluminum Ultra-Fins attached to the tubing. The Ultra-Fins radiate the heat and warm the air in the joist spaces, creating hot air convection. The heated air warms the floor uniformly and the floor radiates gentle heat throughout the living space above.

What Makes Ultra-Fin Different?

Traditional radiant floor systems are based on heat contact transfer technology where hot water tubing makes direct contact with floor layers. Compared to Ultra-Fin, these systems are overly complicated, time-consuming to install, provide lethargic heat response, and require complicated construction measures such as extra floor layers or concrete.

Ultra-Fin creates new efficiency by generating hot air convection inside regular wood-frame floor systems. By converting the entire floor system into a giant heat radiator, Ultra-Fin generates uniform warmth and comfort at unprecedented cost savings and convenience.

GREAT PERFORMANCE WITH SIMPLE INSTALLATION

1. TUBING INSTALLATION
When you install Ultra-Fin, you start by installing the tubing. You can either run the tubing parallel to the joists using SnakeHangers™ or you can drill the joists and run the tubing through the holes.

2. ATTACH THE ULTRA-FINS
You attach the aluminum Ultra-Fins by lapping two fins over a section of tubing, then inserting two TurnKeys and giving them a 90-degree turn.

3. READY FOR INSULATION
Simply connect your tubing to the supply and return manifold, and you’re ready to insulate the system. Yes, it’s just that easy!
Maximum tubing length is 300 ft.

Depending on your joist spacing, you will typically need Ultra-Fins installed at 24" centers.

If you plan to use a modulating boiler, your system will need a few more ULTRA-FINs to distribute the heat with the lower operating temperature.

If you plan to use a high temperature boiler, you want to design your system according to Ultra-Fin’s recommendation for high temperature installations.

Make sure that your home heating system is operating.

Before your hardwood floors are installed, make sure that all plastering and concrete work is completely dry.

Use a moisture meter to measure the moisture content in the sub floor. Moisture content should be between 6% and 12%. If the moisture content exceeds 12%, turn up the heat and open the basement windows ½”.

For flooring greater than 3" wide, the difference in humidity between the sub floor and the hardwood must be less than 4%. For flooring greater than 3" wide, the difference in humidity between the sub floor and the hardwood must be less than 2%.

This checklist is for general consultation only. It is not intended to replace the guidelines and instructions of your flooring manufacturer.

NOTE

One of Ultra-Fin’s most popular features is its compatibility with hardwood floors. However, any hardwood floor can suffer shrinkage or other damage if it is not installed correctly. Make sure your flooring installer follows the manufacturer’s instructions for your hardwood product, and review the checklist below.

Hardwood Checklist

- Make sure the home has been heated at 72º F (22º C) for at least five days before flooring delivery.
- Allow concrete to cure for a minimum of 30 days before hardwood floors are installed.
- Use a moisture meter to measure the moisture content in the sub floor. Moisture content should be between 6% and 12%. If the moisture content exceeds 12%, turn up the heat and open the basement windows ½”.
- Use a moisture meter to measure the moisture content of the hardwood floor. For flooring less than 3" wide, the difference in humidity between the sub floor and the hardwood must be less than 4%. For flooring greater than 3" wide, the difference in humidity between the sub floor and the hardwood must be less than 2%.
Hanging The Tubing With Snake Hangers

Attaching Ultra-Fins

Attaching the Ultra-fin is easy, just follow these steps:

1. Lap two Ultra-Fins over a section of tubing and insert two TurnKeys.
2. Fasten the Ultra-Fins together by twisting both TurnKeys 90°.

You Must Always Have A Minimum 2" Air Space Around The Ultra-Fins

Insulating Above Heated Areas

Over Heated Area, 10" Joist

NOTE
For all Ultra-Fin installations, ensure the insulation rests flush with the bottom of the joists, and that a minimum 2" air space is always maintained between the Ultra-Fins and the insulation.

Over Unheated & Exposed Areas

Insulating Above Unheated & Exposed Areas

Over Unheated Area, 10" Joist

Over Exposed Area, 10" Joist

Ultra-Fin Can Operate at the Same Temperature as Removed Baseboard Radiators.

Ultra-Fin SideKey

You can choose to install Ultra-Fins from above, before the floor sheathing is installed.

1. Lap two Ultra-Fins over a section of tubing and insert one SideKey.
2. Fasten the Ultra-Fins together by twisting the SideKey 90°.
3. Done. Finish by attaching the SideKey to the joist with a fastener.

The Ultra-Fin system is typically 2" to 3" below subfloor. Safe from nails and screws.

Attaching Ultra-Fins

Lap two Ultra-Fins over a section of tubing and insert two TurnKeys.

Fasten the Ultra-Fins together by twisting both TurnKeys 90°.

R-12 fiberglass insulation

R-20 fiberglass with vapor barrier

R-8 reflective insulation

Insulating Above Unheated & Exposed Areas

Spray foam or styrofoam insulation

As UL certified with vapor barrier

Over Unheated Area, 10" Joist

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SIDE
Design a Tubing & Ultra-Fin Layout

A. Calculate the Number of Heating Zones

Look at all the recent square footage of the home and the total number of rooms. How many rooms does the home have? With the exception of small interior spaces such as hallways and powder rooms, this is the number of heating zones you will want to install.

B. Sketch the Floor Plan

Sketch the floor plan and mark out the heating zones you intend to install, complete with length and width measurements for each zone.

C. Measure the Joist Spacing

The joist spacing in the floor system will usually be 12”, 16” or 19”. In rare instances, it could be 24”. When you have determined the joist spacing, you are ready to calculate the tubing spacing for each zone.

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Tubing Selection

Ultra-Fin is typically designed and installed with 1/2” tubing (5/8” O.D.). Larger diameter tubing may be used up to 3/4” (19/32” O.D.) with larger sized turnkeys specified. When installing an Ultra-Fin system, you need an installation layout sketch the floor plan and mark out the heating zones you intend to install, complete with length and width measurements for each zone.

If you plan to use tubing larger than 1/2”, (5/8” O.D.), please refer to our Approved Tubing List located in the installation section at www.ultra-fin.com

Caution!

Do not use tubing with an EVOH barrier on the exterior of the tubing. However, tubing manufactured with a polyethylene layer extruded over the EVOH barrier is approved.

Approved Tubing for use with Ultra-Fin

Using a tubing brand from our Approved Tubing List will ensure a silent interface between the pex tubing when attached or crossing wood joist. Approved Tubing List located in the installation section at www.ultra-fin.com

Heat-Loss and Material Calculation

When installing an Ultra-Fin system, you need an installation layout that fits the home and the surrounding climate. Use Ultra-Fin’s Ultra-Calc software to calculate the BTU’s and materials required for your installation. In our Approved Tubing List located in the installation section at www.ultra-fin.com

Tubing Expansion

Tubing expands during operation. This noise is created by the outer layer of EVOH barrier when it is in direct contact with wood. To design tubing that will not make this noise, you need to complete the remaining half of the zone and its return run to the manifold. This noise is created by the outer layer of EVOH barrier when it is in direct contact with wood. To design tubing that will not make this noise, you need to complete the remaining half of the zone and its return run to the manifold. Tubing expands during operation. This noise is created by the outer layer of EVOH barrier when it is in direct contact with wood. To design tubing that will not make this noise, you need to complete the remaining half of the zone and its return run to the manifold.

Drilling Joists

Joists should be drilled 3” below floor sheathing, spaced according to the calculations you made. However, there are some exceptions to this rule:

• When the joists are manufactured “true joists” refer to the joist manufacturer’s instructions regarding drilling in the joist web before automatically drilling 3” below sheathing.

• When the joists are 8” or less in depth, you may still drill 3” below floor sheathing, but you must use a thinner, special insulation product.

• Test circuit with water under pressure.

• Pulling Tubing

If you are installing tubing to one or two joists and run the tubing through the joists, use the following procedure to pull the tubing through the holes:

• For each heating zone, feed one continuous length of tubing through the holes and back to the supply/return manifold. Allow the length of tubing you need to complete the remaining half of the zone and its return run to the manifold. Roll that length off the tubing coil and cut it, allowing some extra length to be safe. (See diagram below)

• Connect the ends of the tubing circuit to the supply/return manifold.

• Test circuit with water under pressure.

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• When the joists are 8” or less in depth, you may still drill 3” below floor sheathing, but you must use a thinner, special insulation product.

• Test circuit with water under pressure.

You can save time pulling tubing by starting to pull your coil from the middle of each joist. When you have finished pulling the tubing through one half of the zone and back to the supply/return manifold, allow the length of tubing you need to complete the remaining half of the zone and its return run to the manifold. Roll that length off the tubing coil and cut it, allowing some extra length to be safe. (See diagram below)