Joist Trak™ Heat-Transfer Panel Overview

Introduction
Joist Trak™ heat-transfer panels provide fast and effective installation of radiant heat in virtually every application (floors, walls and ceilings). The rigid channel construction makes it easier for flexible hePEX™ plus tubing to be snapped into place tightly and securely. Joist Trak is also an excellent alternative to poured floor underlayments.

- Outstanding for both new construction and retrofit
- Excellent thermal conductivity makes it the ideal material for today’s radiant heating systems
- Increased heat output and more uniform floor temperatures, at lower water temperatures, compared to staple-up installations
- Easily installed from below the subfloor with no alteration to existing or planned wood-frame floor construction
- Adaptable for above floor, wall and ceiling applications
- No need for additional straps or fasteners to secure hePEX plus tubing
- Open-channel design leaves tubing runs fully visible and accessible during installation
- Convenient 4-foot lengths simplify ordering, handling and installation (if necessary, Joist Trak can be easily cut to length on the job)
- Joist Trak system’s low mass allows for quicker response time to changes in room temperature compared to high-mass systems
Filler Boards
When installing Joist Trak panels to the face of a wall or ceiling, it is necessary to provide \( \frac{5}{8} \)-inch thick filler boards between the channels of the Trak panels (\( \frac{5}{8} \)-inch sheetrock is commonly used). For 8-inch on-center wall spacing, use 7-inch wide filler boards. For 12-inch on-center ceiling spacing, use 11-inch wide filler boards.

The filler boards or sheetrock provide an even surface for finish material application. Install \( \frac{3}{8} \)- or \( \frac{1}{2} \)-inch sheetrock directly over the filler boards.

Manifold Connections and System Start-up
See Section 9 of the Wirsbo Heating Installation Handbook for specific manifold connections and system start-up instructions.

Tubing Runs for Joist Trak Installation

Below Subfloor Installation

**Typical Joist Trak Construction Method**
**Joist Trak Heat-Transfer Panel Installation**

### Joist Trak Installation

Install the Joist Trak panels with either screws or nails into the pre-punched mounting holes. If available, a power nailer or screw gun helps facilitate the installation process. Install the panels with a minimum \( \frac{1}{4} \)-inch gap between them to allow for expansion and contraction. This gap can also be as wide as 5 inches to help maximize the Joist Trak coverage area and minimize the amount of panels that have to be cut to fit into the end of joist bays. The ends of all joist bays require a minimum of 12 inches and a maximum of 18 inches to loop the tubing from panel-to-panel and bay-to-bay.

**Note:** Joist Trak panels are easily cut on a standard miter saw (with a carbide blade) or with a hand hacksaw. Remove any burrs left on the Joist Trak panels before installing them.

### Installing the Tubing

Once the Joist Trak panels are installed, snap the tubing into the channel of the panels. Use a rubber mallet to tap the tubing securely into place. When working overhead, use a suitable length of construction lumber (2" x 4") to push the tubing into place.

When drilling holes in joists for the tubing to pass from bay to bay, allow sufficient clearance for sleeving of the tubing. Never exceed the tubing’s minimum bending radius, and make sure the tubing does not rub against the joist hole. See Chapter 5 in the Wirsbo CDAM for more information about construction methods.

### Insulation

Install fiberglass batt insulation below all Joist Trak installations. Failure to provide suitable insulation decreases system efficiency and may not allow for sufficient heat output. Install insulation tightly against the Joist Trak panels to minimize air gaps between the subfloor and the insulation.

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Step 5
Calculate the Tubing and Joist Trak Panels Needed
Tubing
Multiply the net area by 1.5 to determine the tubing required for 8-inch on-center spacing. Be sure to include the supply and return runs to the manifold location.

Joist Trak
Multiply the total length of tubing by 0.85. This takes into account the turns at the end of each run that are not used by Joist Trak. (Do not include the supply and return runs to the boiler and manifold for this calculation.) Divide this number by four (for 4-feet Joist Trak lengths) to get the estimated number of Joist Trak panels required for the area.

Number of Loops
The maximum circuit length for a Joist Trak loop is 200 feet for \( \frac{3}{8}'' \) tubing and 300 feet for \( \frac{1}{2}'' \) tubing. The maximum area that can be covered per loop using 8-inch on-center Joist Trak spacing, including a 10-foot supply and return leader, is 186 sq. ft. using \( \frac{3}{8}'' \) tubing and 247 sq. ft. using \( \frac{1}{2}'' \) tubing. Taking into account the supply and return runs to the manifold location, determine the number of loops. If the boiler location is a great distance from the area to be heated, establish a remote manifold location.

Step 6
Calculate the Flow Rate and Pressure Drop
See Appendices G and H in the Wirsbo CDAM to calculate the flow rate and pressure drop.