On load-bearing floors with LK Slotted Board EPS 30/50/70

Design

LK Under Floor Heating using LK EPS is suitable for floating floors on solid floor constructions. The system consists of insulation boards of EPS class S200. This material has high insulating properties as well as being excellent for short or long-term loads. Slotted and turning boards are available in 30, 50 and 70 mm thicknesses.

Requirements

We recommend that to achieve optimum efficiency of under floor heating systems the use of weather dependent (weather compensation) flow temperature control, properly balanced and set in line with the design for adjustment of the primary and loop flow. We also recommend the settings are recorded for future reference.

The boards must only be laid on load bearing floors. Load bearing floor refers to concrete or floor grade chipboard fixed to joists spaced at a maximum of 600 mm. Do not lay over other insulation, as multi-layers of insulation causes poor floor resilience (excessive spring).
In general the guidelines apply in accordance with local building codes and for selected bespoke design solutions.

Construction outline

1. Solid floor construction

2. LK Slotted Board EPS 30/50/70

1200 x 600 x 30, 50 or 50 mm, with 6 slots for pipe laying c/c 200 or c/c 300 mm. The slots are suitable for LK Heat Distribution Plate 16 and LK Universal Pipe 16 mm.

3. LK Heat Distribution Plate 16

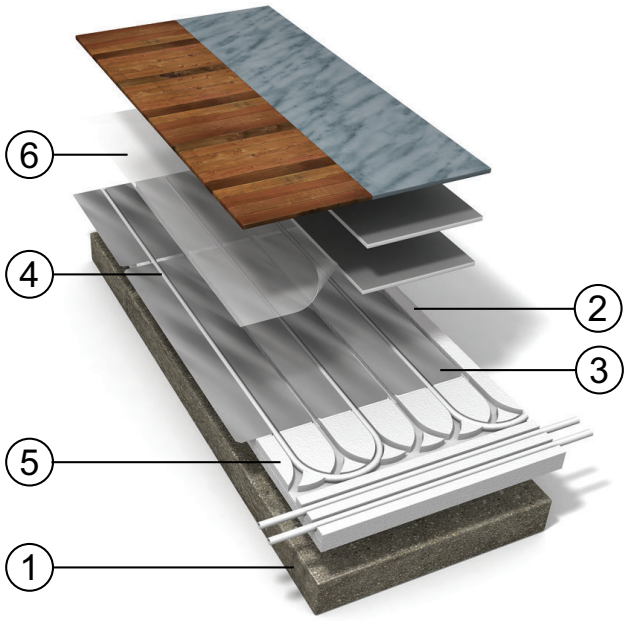
When laying pipe c/c 200 mm use LK Heat Distribution Plate 16/190 (L= 1150 B= 190 mm, Art. no. 241 80 09)
When laying pipe c/c 300 mm use LK Heat Distribution Plate 16/280 (L= 1150 B= 280 mm, Art. no. 241 99 08)

4. LK Universal Pipe dim. 16 mm

5. LK Turning Board EPS 30/50/70

1200 x 300 x 30, 59 or 70 mm, with two extra slots for the supply line.

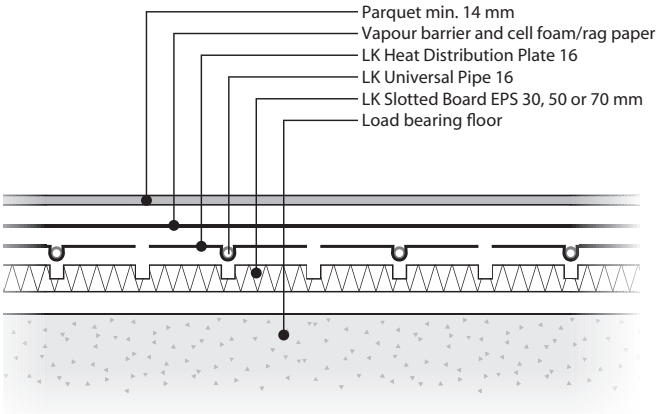
6. Vapour barrier according to the floor manufacturer's instructions and cell foam / rag board



Surface layer

Parquet

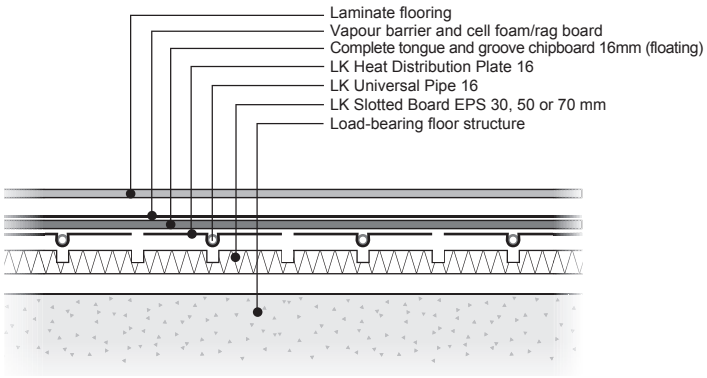
The heating system is first covered with a vapour barrier (age-resistant plastic) according to the floor manufactures instructions followed by rag paper or cell foam. Then install the floor finish, min 14 mm thick, floating across the floor heating loops. The floor is laid in accordance with the supplier´s instructions and local guidelines for wood floors on floor heating. If another laying direction of the parquet is required, a sub-floor made of floor gypsum or chipboard must first be fitted. Bear in mind the effect of the selected materials on the construction's overall heat resistance. Always consult LK for floor thicknesses over 25 mm.



LK EPS 30/50/70 on load bearing floor. Surface layer parquet.

Laminate flooring

When laminate flooring is to be installed, an intermediate floor of 16 mm complete tongue and groove chipboard must be laid first. The intermediate floor is glued as tongue and groove according to the chipboard manufacturer instructions. Laminate flooring is installed as a floating floor on top of the intermediate floor with a vapour barrier and rag board or cell foam between the laminate flooring and intermediate floor. With regard to the total thermal resistance in this structure, the laminate flooring can have a maximum thickness of 9 mm.



Vinyl or linoleum flooring

Dry areas

Vinyl or linoleum requires a floating intermediate floor of 18 mm floor grade chip board. Alternatively 2 layers of 13 mm floor grade plaster board glued together with LK Kiilto Floorfix DF mixed with LK Kiilto Fixbinder and water can be used. Apply the glue with a putty knife, and then comb it out using a notched trowel 8 mm). Mount the plaster board within 10-15 minutes. The board joints must not be placed next to one another. Lay the carpet after 16-32 hours when the glue has dried.

Alternative solution for dry areas

As an alternative solution for dry areas a cover of LK Kiilto Floor Heat DF can be used. Lay 2 layers of age-resistant plastic foil (0,2 mm) and turn up the plastic foil along the walls approx. 100 mm. Lay the LK Steel mesh 70x70x2,5. Allow the mesh mats to overlap one another by at least 70 mm. Cover the installation with LK Kiilto Floor Heat DF. The screed should be at least 30 mm thick. Lay the carpet after 3-5 days when the levelling compound has dried.

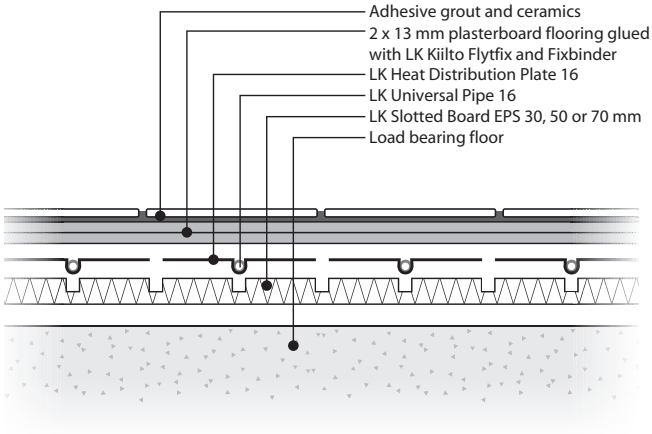
Wet areas

For wet areas we recommend under floor heating systems LK Clip Rail 8, LK Clip Rail 12, LK Clip Rail 16 or LK Slotted Board EPS 16. For more information, se assembly instructions for these products.

Ceramic and stone tiles

Dry areas

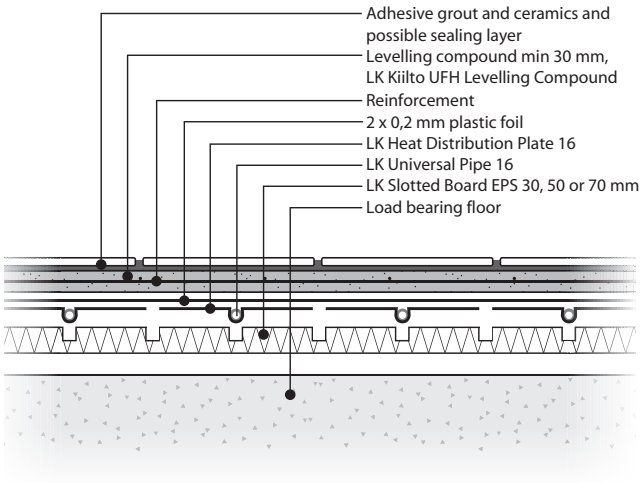
Ceramic or natural stone surface layer in dry rooms requires an additional floating sub-floor of 2 layers of gypsum floor panels, 13 mm thick. The gypsum board panels are bonded together in cross braces with LK Kiilto Floorfix DF mixed with LK Kiilto Fixbinder and water. Apply the glue with a putty knife, and then comb it out using a notched trowel (6-8 mm). Mount the plaster board within 10-15 minutes. The board joints must not be placed next to one another. Tiling can begin after 16-32 hours when the glue has dried.



LK EPS 30/50/70 on load bearing floor in dry areas. Surface ceramics.

Alternative solution for dry areas

As an alternative solution for dry areas a cover of LK Kiilto Floor Heat DF can be used. Lay 2 layers of age-resistant plastic foil (0,2 mm) and turn up the plastic foil along the walls approx. 100 mm. Lay the LK Steel mesh 70x70x2,5. Allow the mesh mats to overlap one another by at least 70 mm. Cover the installation with LK Kiilto Floor Heat DF. The screed should be at least 30 mm thick. Start tiling after 3-5 days when the levelling compound has dried.



LK EPS 30/50/70 on load bearing floor in dry or wet areas with LK Kiilto Floor Heat DF. Surface ceramics.

Wet areas

For wet areas we recommend under floor heating systems LK Clip Rail 8, LK Clip Rail 12, LK Clip Rail 16 or LK Slotted Board EPS 16. For more information, se assembly instructions for these products.

LK Heating Circuit Manifold

The LK Heating Circuit Manifold should be installed as shown in the design drawing. Please read the instructions enclosed with the manifold first.

Laying procedure, boards and heat distribution plate

NOTE:
Before the boards are laid, the desired degree of evenness under the floor should be inspected. Maximum curvature ±3 mm across 2 metres and ±1,2 mm across 0,25 metres.

1. LK Turning Board
Lay out the turning boards where the pipe is to be turned according to the drawing. To allow for movement, leave 5 mm clearance by walls and solid objects.

If the boards tend to rise during laying of tubes, these can be attached using double-coated tape.

2. LK Slotted Board
Then lay out the slotted boards between the turning boards. To allow for movement, leave 5 mm clearance by walls and solid objects.

3. LK Heat Distribution Plate 16
The LK Heat Distribution Plate is laid in the slotted board, edge to edge with the turning board. The plate must cover joints between two slotted boards. To make the necessary adjustments, the plates may be laid out later with a relative distance of 10 - 100 mm and then pressed down into the board slot. The plate may be adjusted lengthways at its break lines. The slots in the slotted board must be carefully cleaned before the plates are laid out.

NOTE:
Once the laying is complete, avoid walking or applying other loads to the floor to prevent damage to the boards. Otherwise, the installation must be covered with floorboards or equivalent.

Laying the pipe

Lay the under floor heating pipe out according to the layout drawing. Arrange the piping to avoid hindering accessibility of the supply and return lines. Pay attention to that the number of floor heating circuits and various pipe distances c/c 200 or c/c 300 mm may occur. Ensure the direction of flow in the loop is such that the supply line is closest to the outer wall.

Check before you lay the pipe that the slots are clean. Number and name the loops according to the drawing.

Using LK Pipe Decoiler will aid pipe laying. Pipes should be cut using pipe shears intended for PE-X.

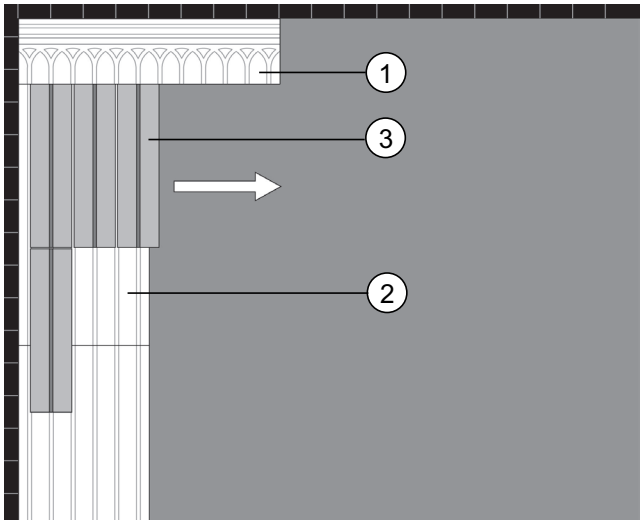
NOTE:
When many under floor heating circuits will be connected to the manifold, there is a risk that the load bearing of the upper floor will be inferior. In such cases, it is appropriate to remove part of the slotted board by the manifold and fill out the space with levelling compound.

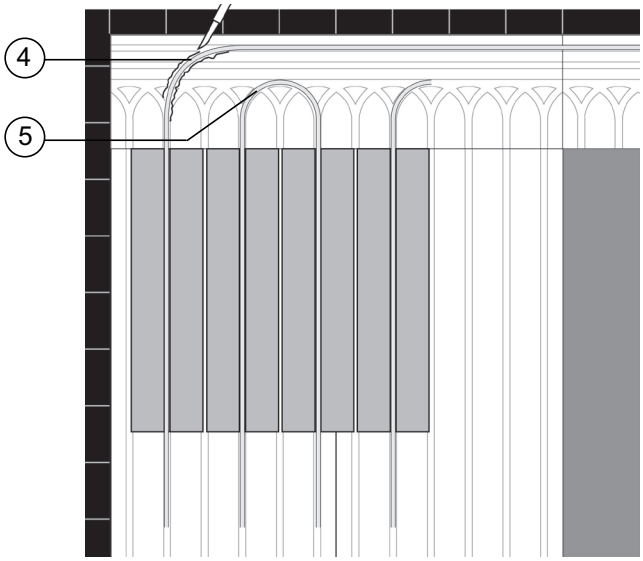
4. Piping over turning boards
Sometimes it is necessary to take make an additional slots to accommodate the return flow over the turning board. The slot is made by cutting out material with a knife or by using LK Heat Cutter. With LK Heat Cutter and its´ groove blades you can easily carve out your own slots. The electrical tool melts the slots in the board. LK Turning template EPS is an accessory, which facilitates making pipe, turns, see product range for ***Tools***.

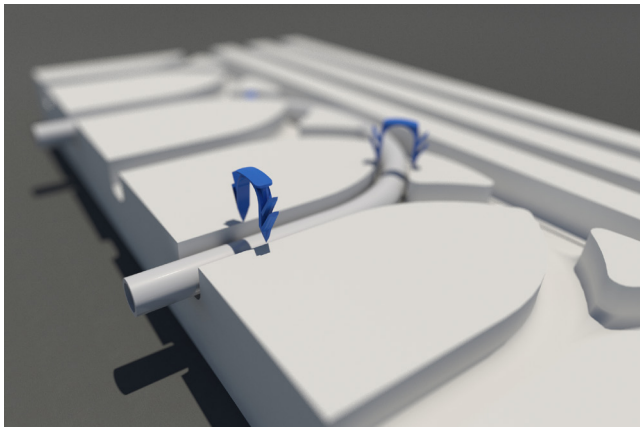
Cutting grooves in EPS-Styrofoam insulation boards using LK Heat Cutter 90 W.

5. Turn the pipe as shown in the sketch

Press or tread down the pipe into the slot of the plate. After assembly the pipe must lie in the slot and must never under any circumstances touch the overlying surface layer. LK TB Staple 16 facilitates installation of the floor heating pipe in the turn.







LK TB Staple 16

Product summary, Glue & primer

LK Art no.	Product name	Usage	Notes	Consumption	Drying time
33525	Kiilto Floorfix DF, 20 kg	Glueing of intermediate floor plates	Mix 5 litres Fixbinder and 2 l water with 20 kg Floorfix DF	3,5 kg/m²	16-32 hours
33522	Kiilto Fixbinder, 5 litres	Glueing of intermediate floor plates	Mix 5 litres Fixbinder and 2 l water with 20 kg Floorfix DF	5 l /20 kg Floorfix DF (+ 2 l water)	Not applicable
33524	Kiilto Floor Heat DF, 20 kg	Floor construction	On 2 layers of 0,2 mm age-resistant plastic	1,7 kg/m²/mm	3-5 days
8912	Steel mesh 70x70x2,5 1800x600 mm	Reinforcement	Reinforcement of floor construction using LK Kiilto Floor Heat	1,3 pcs/m²	Not applicable