On load-bearing floors with LK HeatFloor 22

Design

LK Underfloor Heating in conjunction with LK HeatFloor 22 is intended for laying on load-bearing floors. For laying on standard wooden joists maximum c/c 600 mm, please refer to Assembly instructions - ***On floor joists with LK HeatFloor 22***. LK HeatFloor 22 should not be laid on constructions composed of concrete slabs without insulation. For such cases, please refer to LK Underfloor Heating Systems with insulation plates, e.g. LK Slotted Board EPS 30/50/70.

Requirements

The requirements for a properly functioning underfloor heating system is a weather-controlled regulation system for the supply temperature and a well implemented and documented adjustment to the primary and loop flows.

In general the instructions apply in accordance with AMA Hus (Swedish Construction Industry Standard for house-building) and for specified builders/quality managers.

Construction principle

1. Load-bearing floor construction

Evenness of the surface layer in accordance with local building codes.

2. LK HeatFloor 22, Slotted Board

Slotted chipboard flooring dim. 1800 x 600 x 22 mm. 3 pcs slot c/c 200 mm. The board is tongued/grooved on all sides.

3. LK Turning Board XPE 22

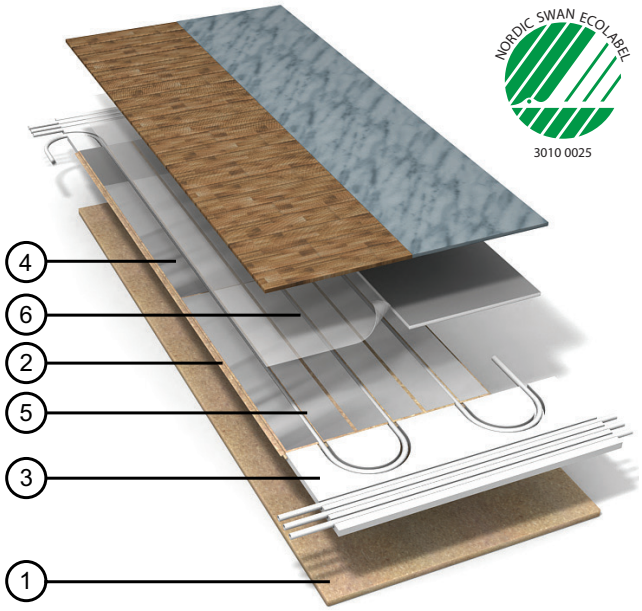
Turning board in XPE. Dim. 300 x 800 x 22 mm. The turning board has 3 transport slots.

4. LK Heat Distribution Plate 16/190

L=1150 mm, W=190 mm

5. LK Universal Pipe dim. 16 mm

6. Vapor barrier according to floor manufacturer's instructions and cellfoam / rag paper



Surface layer

Parquet or laminate floor

For underfloor heating, concrete surfaces are covered with a vapor barrier (DPM) according to the floor manufacturers instructions and then rag paper or cellfoam. The floor covering is laid across the under floor heating circuits. Adhere to the floor manufacturer's instructions and the instructions from The Swedish Flooring Trade Association for wood floor on underfloor heating. Seek advice from LK if the flooring thickness exceeds 25 mm.

Vinyl, linoleum or carpets

Dry areas

When vinyl, linoleum or carpet coverings are to be used, 12 mm floor grade chipboard must be screwed in place according to the manufacturer's instructions. Then lay the carpet as per the supplier's instructions.

Wet areas

For wet areas a 12 mm floor grade chipboard must be screwed in place according to the manufacturer's instructions. Apply LK Kiilto Start Primer to the chipboard. Drying time 1–2 h. Create drainage slope using LK Kiilto Floor Heat DF, in Sweden a minimum of 12 mm compound at floor drain is required. Drying time 3–5 days. The next step is to glue on the vinyl.

Adhere to the instructions provided by the manufacturer and advice from the Swedish Wet Room Inspection.

Ceramic tiling or natural stone

Three different design solutions for ceramic floors are specified below. Note also whether the structure is designed for a dry or wet area.

Ceramics in wet or dry areas with levelling compound

This design is suitable for ceramic surface layers, and also for plastic, linoleum or wet room flooring.

After finishing pipe installation, LK Heat Distribution Plate must be screwed in place in a zigzag pattern, c/c 150 mm. Use suitable flat headed screws, installation screw type (length 14–20 mm). Make sure that the floor and heat distribution plates are clean, vacuum carefully. If there is oil or grease on the plates, the oil/grease must be washed off.

Then apply LK Kiilto Start Primer to the entire surface, allow 1–2 hours to dry. Lay LK Steel mesh 70 x 70 x 2.5. Allow the mesh mats to overlap one another by at least 70 mm. Cover the installation with LK Kiilto Floor Heat DF. The putty should be at least 12 mm thick.

A sealing layer for wet room and ceramics is then applied, follow the instructions for the relevant supplier and the building regulations of the Council on Building Ceramics.

Ceramics in dry areas – panel solution

This design is suitable for ceramic surface layers, and also for plastic or linoleum flooring.

After finishing pipe installation, LK Heat Distribution Plate must be screwed in place in a zigzag pattern, c/c 150 mm. Use suitable flat headed screws (length 14–20 mm).

Make sure that the floor and heat distribution plates are clean, vacuum carefully. If there is oil or grease on the plates, the oil/grease must be washed off. Apply LK Kiilto Start Primer to the entire surface, let dry for 1–2 hours.

Then glue a 12.5 mm Fermacell form stable fiber gypsum board or equivalent to the floor with LK Kiilto Floorfix DF mixed with LK Kiilto Fixbinder and water. Apply the glue with a putty-knife, and then "comb out" the glue with a notched trowel (notched 8 mm). Mount the floor grade form stable board within 10-15 minutes after the glue is applied. Mark out the position of the pipes at the same time, to avoid any damage in the next step, when the form stable boards are screwed in place.

The boards are screwed in place with plaster screws 3.9 x 30 mm along the short and long sides of the boards and between the pipe rows. Start screwing the edges of the board 50 mm in from the corners of the boards and then no more than 300 mm apart. Then screw between the pipe rows, keeping the screws max. 500 mm apart. When the glue has dried after approx. 32-48 h, tiling can begin.

Alternative solution with levelling compound for ceramics in dry areas

This design is suitable for ceramic surface layers, and also for plastic and linoleum flooring.

A casting with LK Kiilto Floor Heat DF can be used as an alternative solution for dry areas.

Lay 2 layers of DPM PE sheet (0.2 mm) and turn up the DPM along the walls (approx. 100 mm). Lay LK Steel mesh 70 x 70 x 2.5 mm and allow the mesh mats to overlap one another by at least 70 mm.

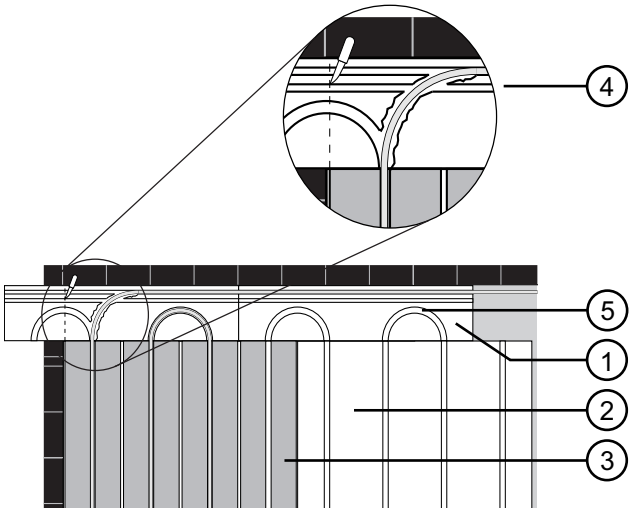
Cover the installation with LK Kiilto Floor Heat DF. The putty should be at least 25 mm thick. When the putty has dried after approx. 3-5 days, the tiling can begin.

LK Manifold

The LK Manifold is assembled at a designated place according to drawing. Please read the assembly instructions enclosed with the manifold first.

Laying of boards and heat distribution plates

Before laying out the boards, inspect the sub-floor to ensure it is level, according to AMA Hus requirements, table 43.DC/-1, class A, i.e. maximum curvature ±3 mm over a distance of 2 meters and ±1.2 mm over a distance of 0.25 meters.

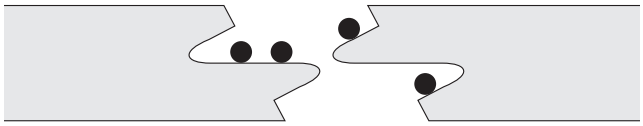


1. Turning boards

Begin the job by laying out the turning boards. Adjust (or perhaps shorten) the first turning board so that the pipe loops match the intended piping.

2. Slotted boards

Slotted boards are laid out with a 10 mm expansion gap against walls and other fixed objects. Mount the boards so that the short sides are mutually displaced. Ensure that the pipe grooves in the boards are aligned with one another. The boards are glued thoroughly in the joints using Casco Trälim 3303 (wood glue). The amount of glue should be generous so that excess glue is pressed from the joint when the boards are joined together. Remove the excess glue before it dries. The amount of glue consumed is approximately 1.3 l per 10 m^2 floor surface.



For ceramic flooring in dry and wet rooms and plastic carpets in wet rooms, the slotted board must be glued and screwed to the sub-floor according to the respective supplier's instructions.

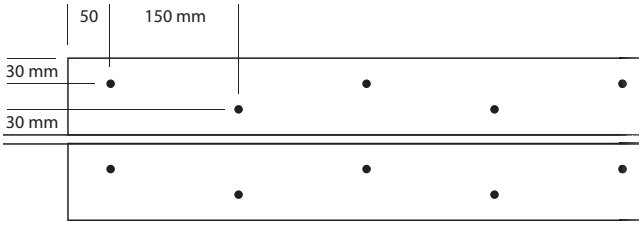
A layer of carpet felt may be laid between the sub-floor and the slotted board to counteract minor irregularities (not suitable for ceramic floor coverings).

3. LK Heat Distribution Plate 16/190

The LK Heat Distribution Plate 16/190 is to be laid 10–100 mm apart and then pressed down into the board slot. The plate length can be adjusted by snapping at the machined scores. The slots in the slotted board must be carefully cleaned before the plates are laid out. Make sure that the slots are in line with each other before the plates are laid.

If the slots are not in line with each other, the heat distribution plates may not fit a board joint. This may otherwise cause the plate to buckle and cause noise in the construction.

When using ceramics as surface layer, the LK Heat Distribution Plates must be screwed in place in a zigzag pattern. See illustration below.



NOTE! Screw the plates after laying the pipes.
Use flat headed screw, length 14 - 20mm.

Laying the pipes

Arrange the piping before assembling the slotted boards to avoid hindering the accessibility of the supply and return pipes.

The pipe lay-out must be done according to the drawing. Use the LK Pipe Decoiler as an aid. Note the direction of flow in the loop so that the supply pipe runs along outer walls. Number and name the loops as per the drawing.

Check before you lay the pipe that the slots are clean. Press or tread down the pipe into the slot of the plate. After the installation, the pipe must be fully in the slots and under no circumstances must the pipe come into contact with the overlying surface layer. Cut the pipe using pipe cutters designed for PE-X only.

4. Pipe laying over the turning board

It is occasionally necessary to lay the piping over the turning board by routing out a slot for the purpose.

5. Turning the pipe

Turn the pipe as shown in the illustration. Lay the semicircles supplied with the turning board in all turning radii of the turning board.

Quality classes

P6 (Standard quality)

Slotted and turning boards labelled with quality class P6 are designed for use in dry indoor environments. They must not be used outdoors or in any manner that exposes them to wetness or very humid air. Quality class P6 is certified with the Nordic Swan Ecolabel.

P7 (Moisture-resistant quality)

Moisture resistant slotted and turning boards labelled with quality class P7 are designed for use in climate class 1. The boards may be exposed at climate class 2 for a brief period during the installation stage. However, the boards must not be exposed to water in the form of precipitation or in any other way without being protected. If the floor is used as platform floor, it must be protected from wetness using a tarpaulin or similar.

Product summary, Glue & primer

The following products have been tested to be used for the gluing and priming of our plates.

LK no.	Product name	Usage	Notes	Consumption	Drying time
33521	Kiilto Start Primer, 3 lit	Priming of the underfloor heating boards with Heat Distribution Plate	Only to be used with other Kiilto products	1 l/10m²	1-2 h
Not stocked	Kiilto Fix Primer, 5 lit (alternative primer to Kiilto Start Primer)	Mainly for priming of solid surfaces, e g aluminum but also absorbing surfaces like the UFH board	Only to be used with other Kiilto products	1 lit/5 m²	1-2 h
33525	Kiilto Floorfix DF, 20 kg	Gluing of the form stable board against underfloor heating plate	Mix 5 liters Fixbinder and 2 liters water with 20 kg Floorfix DF	3.5 kg/m²	32–48 h
33522	Kiilto Fixbinder, 5 lit	Gluing of the form stable board against underfloor heating plate	Mix 5 liters Fixbinder and 2 liters water with 20 kg Floorfix DF	5 l/20 kg Floorfix DF (+2 l water)	n/a
33524	Kiilto Floor Heat DF, 20 kg	Floor construction and creating drainage slope	In 2 layers of 0.2 mm age-resistant plastic foil	1.7 kg/m²/mm	3-5 days
8912	Steel mesh 70 x 70 x 2.5 1800 x 600 mm	Reinforcement	Reinforcement of floor construction using LK Kiilto Floor Heat DF	1.3 pcs/m²	n/a