Embedding in concrete with LK Clip Rail 16/20

Design

LK Under Floor Heating may be fitted using LK Clip Rail 16 or 20 for embedding in one or two-layer concrete and screed constructions. The rail is made of recycled plastic and designed so that the laying procedure of the pipe can be adjusted to the heating requirements of the construction. Its design ensures full encapsulation of the pipe and at the same time the pipe is protected from the reinforcement.

Requirements

We recommend that to achieve optimum efficiency of the under floor heating system 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.

In general the guidelines apply in accordance with local building codes and for selected bespoke design solutions.

Construction outline

1. Insulation / Concrete floor

Insulation thickness must be designed to take account of under floor heating needs. The compressive strength shall be designed taking into account of the house load. A ”rule of thumb” for a normal house with a so-called slab on ground is that the thickness of insulation should be at least 250 mm and compressive strength of min. S100.

2. LK Clip Rail 16 / 20

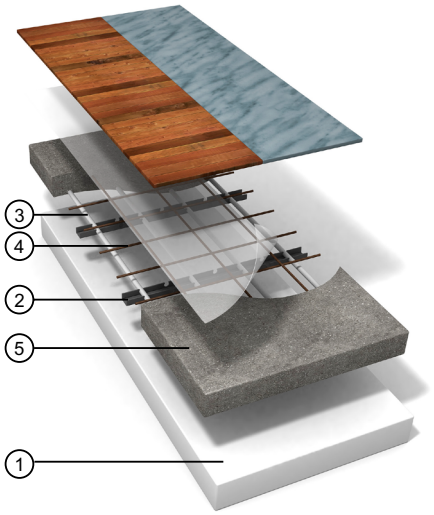
3. Pipe

LK Universal Pipe dim. 16 mm or LK Heating Pipe dim. 20 mm.

4. Reinforcement

5. Concrete

70 mm screed depth (approx. 45 mm required above the pipe) is recommended to allow proper function of the under floor heating, i.e. in order to achieve the most even surface temperature possible. The minimum acceptable depth of screed is 55 mm (i.e. 30 mm above the pipe).



House foundation slab shall be designed taking into account the load of the house in accordance with EN 206-1. A ”rule of thumb” for a normal house with a so-called slab on ground is that the concrete strength class must be at least C20/25

Surface layer

Parquet, solid wood or laminated floor

Concrete surfaces are covered with a vapour barrier (DPM) and then, dependent on floor finish, with rag paper or cellfoam. The flooring should be installed in line with manufacturers instructions. Always consult LK for floor thicknesses above 25 mm.

Vinyl or linoleum flooring

Are laid according to the supplier’s instructions.

Ceramics or natural stone

Are laid according to the supplier’s instructions. In wet areas the sealing layer should be assembled in accordance with the supplier and local valid requirements.

Drying out the concrete screed

It is extremely important that the concrete screed is sufficiently dried out before the floor covering is applied. RH measurement must be carried out in accordance with local building codes. The drying out time may be shortened by using the installed under floor heater. The supply line temperature should in this case be kept around 5 °C higher than the actual temperature of the concrete screed, though no higher than 30 °C. Remember to take into consideration the curing time of the concrete or screed before using this method.

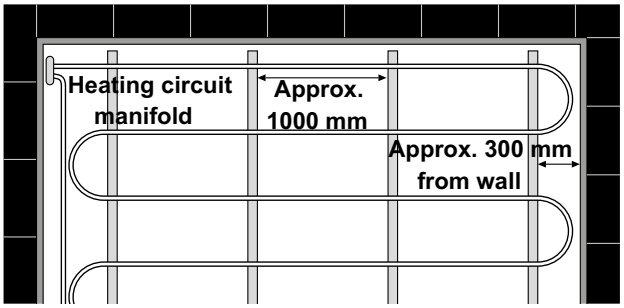
LK Heating Circuit Manifold

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

Laying clip rails

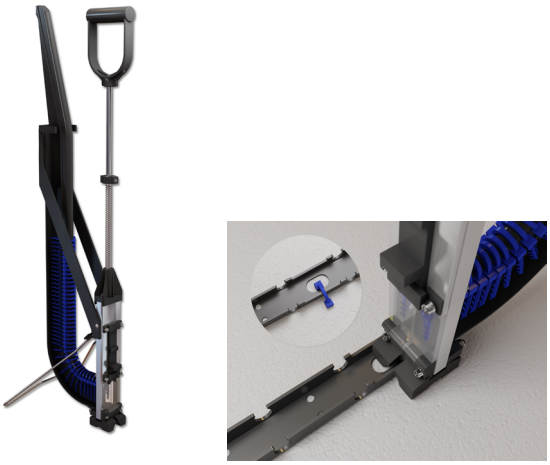
LK Clip Rail 16 or 20 must be laid out at right angles to the loop direction. At the perimeter turn zones, the rail should be laid approx. 350 mm from the wall, allowing enough room for the pipe loop. The remaining distance between the turn zones should then be fitted with further rows of rails spaced at max. 1.000 mm. For larger surfaces, such as industrial premises, spacing between the rails can be increased to a maximum of 1.500 mm.

The clip rail can be shortened by snapping across the break lines.



Attach the rail to the base with LK Pipe Holder (against insulation) or concrete nails. Fix the clip rail to insulation using LK Pipe Holder or masonry nails into concrete. If thin insulation is used (e.g. on pre-insulated ”beam & block”) use LK Pipe Holder Short. Porous cell foam insulation, for example Isodrän, may require extra reinforced attachment; use LK Nail 90 for Clip Rail.

A tip: Use the LK Clamp pistol 3D Premium for convenient anchoring of the LK Clip Rail 16 and Clip Rail 20 against insulation.



LK Clamp pistol 3D Premium, anchoring of LK Clip Rail 16/20.

Laying the pipe

Lay the under floor heating pipe out according to the layout drawing. Using LK Pipe Decoiler aids pipe laying. Ensure the direction of flow in the loop is such that the supply line is closest to the outer wall. The pipe is mounted 50-100 mm from the inside of the outer wall. In the vicinity of a floor well, the pipe should not be mounted closer than 100 mm from the well in order to enable a possible partial repair of floor drain. Number and name the loops according to the drawing. The drawing probably shows various pipe distances in various spaces. An ’edge zone’ may also be necessary, e.g. if there are large window areas. It is very important to note differences in the pipe distances on installation.

In pipe turns the pipe is held into place by LK Pipe Holder. As alternative fixing in pipe turns LK Staple Gun 3D Premium with staples can be used. For more information, see the product range.

LK Clamp pistol 3D Premium, anchoring of LK Under Floor Heating Pipe 16/20.

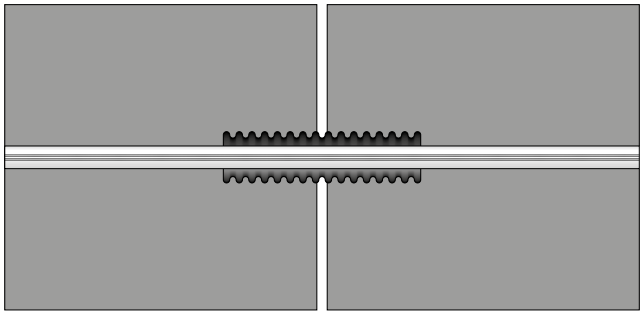
In cases with edge reinforcement, the pipe is fixed to the reinforcement mesh using plastic cable ties. Pipes should be cut using pipe shears intended for PE-X.

Edge insulation

When pouring concrete up to existing walls/sleepers/pillars/ edge insulation strips must be used. The edge insulation absorbs the movements of the concrete and has a heat insulating effect.

Expansion areas

Large areas become ”expansion areas”. A under floor heating loop must be laid within the same expansion area without touching a neighboring area. Only supply and return lines may cross the expansion joint, and then a protective pipe such as LK Conduit protects these. Total length of the conduit should be at least 400 mm and placed centrally, i.e. 200 mm conduit on each side of the expansion joint. This will eliminate the risk of damages that can occur during expansion movement between the concrete slabs.



Outline section – LK Clip Rail 16/20