

Installation Instruction to BEKA Mats in Metal Cassette Ceiling

1. General

By laying the BEKA mats into the metal cassettes, a heating- or cooling ceiling can be made out of any suspended ceiling construction.

Therefore the BEKA mat is simply laid into the cassette from the backside. That the mat will have thorough contact, simply place a mineral insulation mat on top of it. Additional coverings with plasterboards or sheet metal will assure a good contact of the mats to the metal cassettes. It is also possible to glue-in the BEKA mats. The BEKA adhesive is simply applied with a spraying gun onto the mat. After that the mat is placed into the cassette and pressed-onto it with a PU-roller. A drying time is not required for the adhesive. The glue is transparent after hardening; it has a neutral odour. Only full contact of the mat will secure maximum cooling capacity.

Before beginning the work, a pattern has to be prepared as a work- and positioning base. All measurements with the positioning, the direction and the supply lines must be recorded. In the pattern, all areas which will have to stay uncovered (for internal walls, light fixtures and other ceiling in-lays) must be marked. Furthermore, the position of the dew point sensor has to be marked on the pattern.

2. Installation Steps

Hanging the Suspension Ceiling

- The carrier- and basic profiles are aligned and fixed to the raw ceiling with vernier suspension bars according to manufacturer's specification.

Installation of the BEKA Supply Lines

- The supply lines are installed inside the ceiling cavity and are connected to the mains (see → M02 – Instructions for thermal welding of plastics)

Laying the BEKA Mats into the Metal Cassettes

- Full surface contact of the BEKA mats in the ceiling cassettes is achieved by:
 - Covering with mineral fibre mats additional bracing of the mineral fibre mats with the sheet metal covering, sheet metal brace plasterboard or similar
 - bonding of the mats with BEKA adhesive
- Connect the flexible hoses to the quick-action couplings on the BEKA mats.

Laying the Ceiling Boards

- The ceiling boards together with the mats are laid into the row type grid structure.
- During installation of the ceiling mats the flexible connecting hoses are plugged into the quick-action couplings of the supply lines
- Installation of the BEKA dew point sensor for metal ceilings (see → M06 – Instructions for the installation of BEKA dew point sensor)

Pressure Test (see → M07 – Test Instructions for BEKA heating- and cooling systems)

- Pre-test with compressed air, at 10 bar for 1 hour
- Main test with water, at 10 bar for 10 hours
- Idle pressure, maintain at 3 bar until start of operation.

Installation Instruction to BEKA Mats on top of Dry- build Boards

1. General

BEKA mats can be laid onto the backside of dry-build boards without any problem. This way cooling ceiling units can be made out of plasterboards or from fibre plaster boards, which can be installed in the dry-build version. BEKA manufactures also special capillary tube mats just for the use with dry-build boards. Lengths and widths are accommodated to the dry-build standard boards. At areas where they are screwed to the ceiling and/or wall construction, special spacers are provided. The space between the spacers is 300 mm, they determine the space of the profiles at the wood or metal sub-construction.

Illustration of the BEKA heating- and cooling mat for dry-build boards:

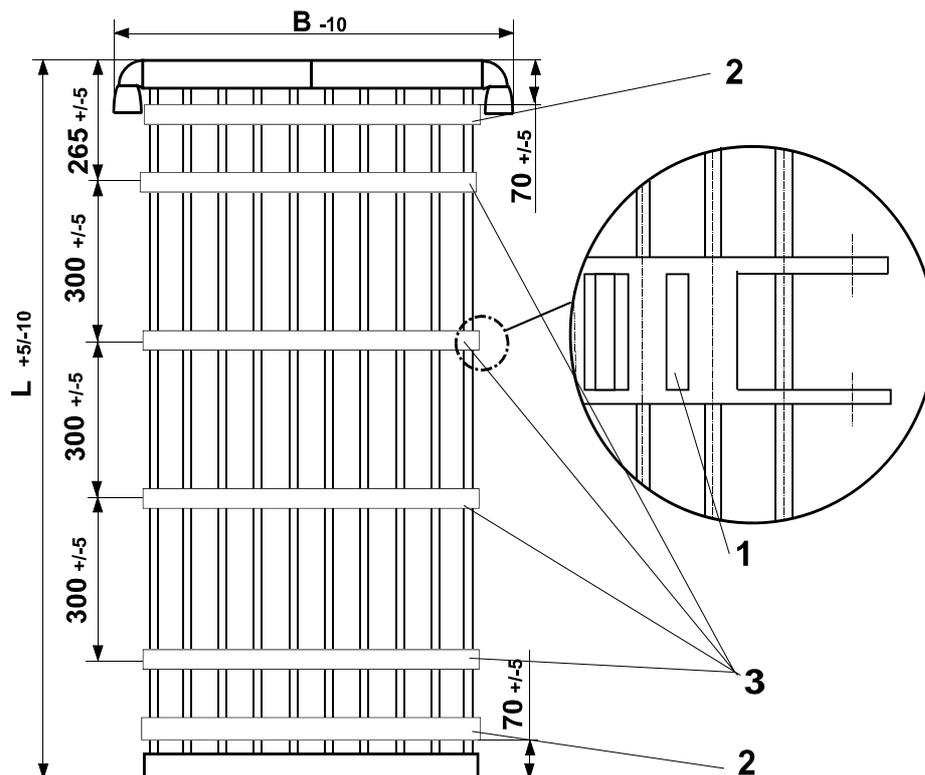


Illustration of BEKA capillary tube mats for heating and cooling

- 1 Oblong hole for fixing screws
- 2 Spacer for the initial fixing
- 3 Spacer for the ceiling profile

2. Installation Steps

A working place where the dry-build board can be fully laid-out is necessary for the installation.

- a) Installation of the additional spacers at the front end. On the installation table the dry-build board is laid with its equipped side facing up. The additional supplied spacers, which are supplied with the BEKA heating- and cooling mats are tacked to the front-end side.

- b) Fastening of the BEKA heating- and cooling mats with tacks.

The heating- and cooling mat is arranged and positioned between the spacers (described in point 1) In this position, the spacers located close to the collector pipes (marked with 2 in picture 1) are tacked to both sides of the heating- and cooling mats. Ongoing the heating- and cooling mats are pulled flush through pulling on the collector pipes. The distances of the other spacers to another is measured and corrected if required. Then the spacers are fastened with tacks.

- c) Application of thermal conductive past with a paint roller, through pouring or other suitable measures, the thermal conductive paste (approx. 800g/m²). After the paste is applied between the spacers it will be brushed in the direction of the capillary tubes towards the base with a narrow brush. At normal temperatures, the thermal conductive paste dries within 20 minutes, so that the ceiling boards can be installed. The spacers who have contact to the ceiling profile are smoothed with a spatula or with other appropriate tools, in case that paste had been applied there.

- d) Drilling of holes for the fixing screws:
Before drilling, the heating- and cooling mats are put under air pressure of 8 to 10 bar. If there are any injuries to the tubes, they can be detected then. The spacers have oblong holes (every 40 mm) (see figure 1, marked with 2). These oblong holes are used for pre-drilling with a $\varnothing 2,5$ mm for the fixing screws. The drill-grid (distances of the holes to another in diagonal direction to the heating- and cooling mats) depends upon the installation instruction of the dry-build board manufacturer.

- e) Finishing
After the pressure test, the quick-action couplings are then closed again with cover caps.

- f) Installation variation
If the installation is done by more than one person or if work is done in work steps it has been found best when work-step 3 is done last.

3. Tools

For the application of the dry-build board to the heating- and cooling mat G.10.X, the following tools are required:

- Installation table
- Scissors to cut plastic material
- Power drill
- Drill-bit $\varnothing 2,5$ mm
- Tackler
- Tacks
- Paint roller
- Narrow brush
- Tape measure
- Spatula
- Compressed air connection

Remark:

With long, narrow and thin dry-build boards, the influence of moisture from the thermal conductive paste can lead to momentarily little reduction in strength of the dry-build boards. Careful handling of the boards is then necessary.

Picture of an equipped dry-build board

