

### Applications

The WAS-30/25 is a heating and cooling system for residential and commercial buildings used as a stand-alone heating solution when the building does not allow installing underfloor heating/cooling. The WAS-30/25 is also an optimal solution for floors exposed to extremely high thermal loads or for special applications.

#### Technical data: MB Euro system pipe 17 (MB-ER17)

Construction height	min. 30 mm
Pipe covering	min. 10 mm
Construction mass	35 – 50 kg/m <sup>2</sup>

#### Technical data: MB Euro system pipe 12 (MB-ER12)

Construction height	min. 25 mm
Pipe covering	min. 10 mm
Construction mass	30 – 40 kg/m <sup>2</sup>

### Installation

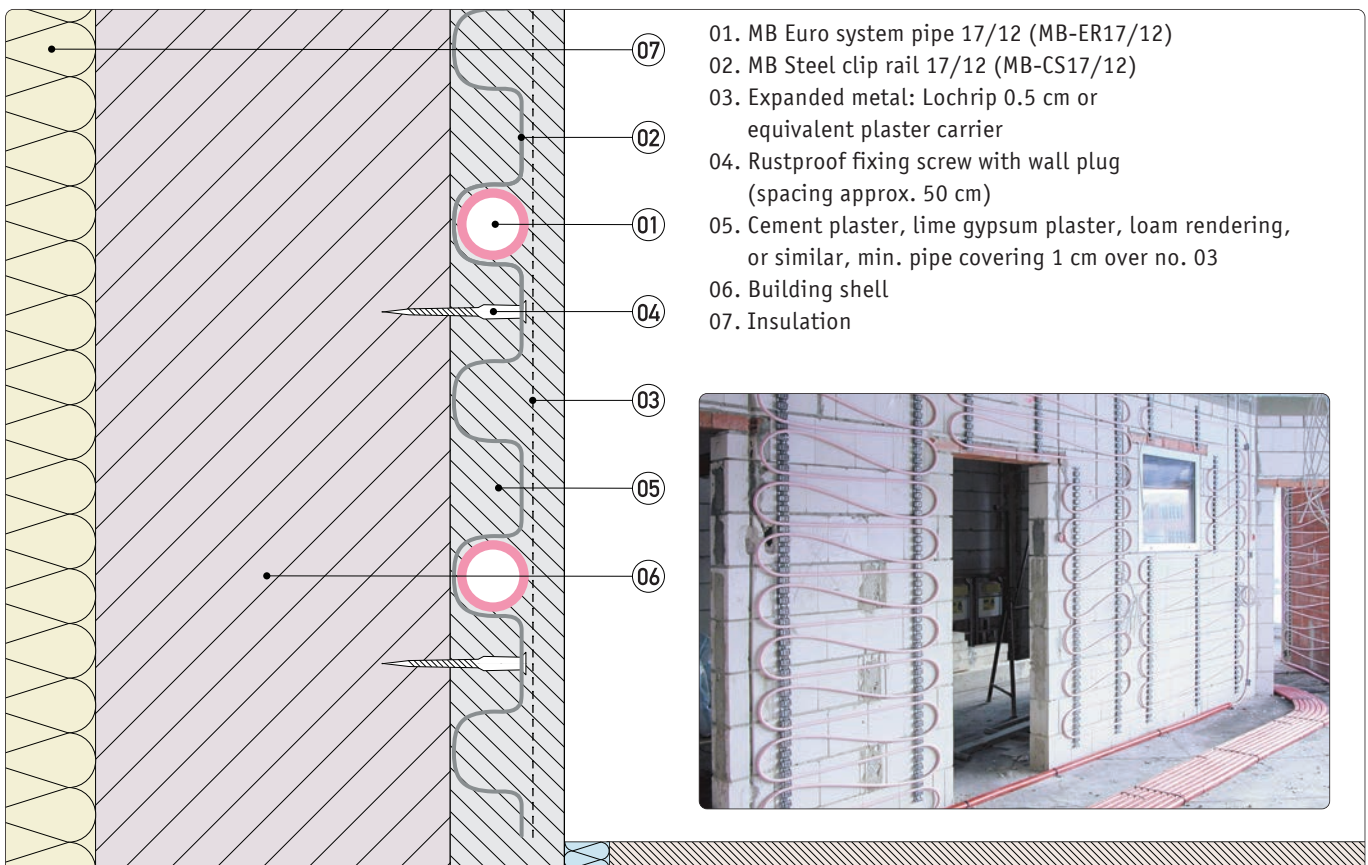
The MB Steel clip rails (MB-CS) are fixed to the wall vertically using wall plugs and screws - spaced about 50 cm apart - up to 1.0 m apart. The MB system pipes are horizontally installed from the flow from the floor up.

### System installation

Installation follows the MULTIBETON plan. Then follow the MULTIBETON installation and technical guidelines. Planning and creating the MULTIBETON surface heating/cooling must further comply with the relevant laws, regulations, directives and standards. Additional instructions of manufacturers for other trades and the recognised rules of technology and proper trade workmanship must be observed.

### General wall construction

MULTIBETON develops and produces energy-efficient heating and cooling systems for a vast variety of applications. When planning the wall construction, the respective laws, regulations, directives and standards must be observed. The MB Euro system pipes (MB-ER17/12) and MB Steel clip rails (MB-CS17/12) allow the planner to choose from two different sized and diffusion resistant heating components. The MB Euro system pipe (MB-ER17/12) is installed warm and therefore strainless and twist-free in the MB Steel clip rail (MB-CS17/12). It's very important the planner/architect/specialist company coordinate the cut points to ensure successful installation of the wall heating/cooling system. The construction process is coordinated in these meetings.



01. MB Euro system pipe 17/12 (MB-ER17/12)
02. MB Steel clip rail 17/12 (MB-CS17/12)
03. Expanded metal: Lochrip 0.5 cm or equivalent plaster carrier
04. Rustproof fixing screw with wall plug (spacing approx. 50 cm)
05. Cement plaster, lime gypsum plaster, loam rendering, or similar, min. pipe covering 1 cm over no. 03
06. Building shell
07. Insulation

The illustration and design are non-binding and only exemplary.

**Underfloor heating combined with wall heating**

Using only an additional 2 m<sup>2</sup> of wall heating in a 6 m<sup>2</sup> bath can lower the flow temperature of the entire heating system by approx. 3 °C. This is of course beneficial for energy use.

**State of construction**

Windows and exterior doors should be installed before installing the WAS-30/25. Building service installations are completed and pipe slits have been sealed. Before installing the wall heating/cooling system, electrical installations such as flush sockets should be installed or at least their location in the wall determined.

**Wall plaster**

Wall plaster is one of the most important components of a heated or cooled wall structure. It must conduct heat well, thus lightweight and heat insulation plaster are not suitable. The following plaster binders are suitable for wall heating: gypsum, gypsum/lime, lime/cement, cement, loam or binders according to the relevant standards. Manufacturer-specific heating plaster may certainly also be used. The fitter may decide to use plaster reinforcement to minimise cracks (e.g. mineral fibres, plastic fibres, fibreglass mesh, expanded metal).

**Flow temperature**

The maximum temperature load of the plaster should normally not exceed 50 °C (except lime cement plaster: 70 °C). In the case of cooling, the flow temperature is controlled via the dew point temperature, which requires planning in a dew point sensor.

**Plaster base**

The fitter will verify the plaster base is adequate before applying the plaster. This will determine if the plaster base needs to be treated. Brick, natural stone, lime sandstone, clay brick, rigid insulation and gypsum fibreboard are suitable substrates for the wall system. The plaster base must be smooth, sound and firm, adequately rigid, not be water-repellent, homogeneous, rough, dry, dust-free, evenly absorbent, clean and free from frost.

**Load-bearing surface**

The walls should on principle meet the following requirements:

1. Adequate statics and load-bearing capacity to hold the wall heating/cooling,
2. Comply with angle and flatness tolerances,
3. The wall heating must also be interrupted in different building parts separated by building joints.

**Plaster surface**

Silicate and synthetic renders are suitable as skims (second plaster coat). They must be processed as specified by the manufacturer.

**Insulation**

For exterior walls and interior walls the insulation must be checked in accordance with the laws and standards. The insulation prevents uncontrolled heat emission from the wall heating. The exterior wall insulation is installed on the outside to virtually rule out the risk of moisture (dew point shift) or frost inside the exterior wall.

**Finished wall surface**

Coverings such as wallpaper, paint, ceramic tiles, textured plaster and ashlar can be used if approved by the manufacturer of the wall treatment. The adhesive for the coverings must also be suitable for underfloor heating/cooling.

**Joints**

Wall plaster expands and contracts by nature. Joints must be placed to allow for this expansion and contraction without damaging the plaster. A joint plan showing the type and location of joints must be drawn. The joint plan is drawn by the building planner and must be submitted to the installer as part of the technical specifications.

**Functional heating**

Functional heating is required until the function of the heated/cooled wall or ceiling construction has been established. The company installing the wall covering must establish the wall is ready for installation (including unheated walls) prior to installation. The report provides the heating contractor with evidence the trade has been completed properly. Depending on the thickness and the binder of the heat distribution layer, at a minimum the following drying times must be observed prior to the heating phase: lime, lime cement: 1 day per mm thickness  
Gypsum: after 24 hours or 1-2 days per manufacturer information  
Loam: can typically be heated immediately.

**Silent cooling**

MULTIBETON surface heating is ideal as "Silent cooling". These systems are inexpensive, as they only require a cooling unit or a reversible heat pump with the corresponding control unit. The maximum output (30 - 50 W/m<sup>2</sup>) of "Silent cooling" comes from the dew point calculation, the calculated lowest cooling flow temperature and the user's comfort level. The design of the cooling components, including the insulation of the heating circuit manifolds, must be carried out in proper trade workmanship.