

### Applications

The FEB-19/18 is a heating and cooling system for general residential and office buildings, particularly for renovating and remodelling existing buildings for high loads with a minimal installation height and weight and fast control.

### Technical data for 1.5 mm MB steel tile (MB-SFO, MB-SFM)

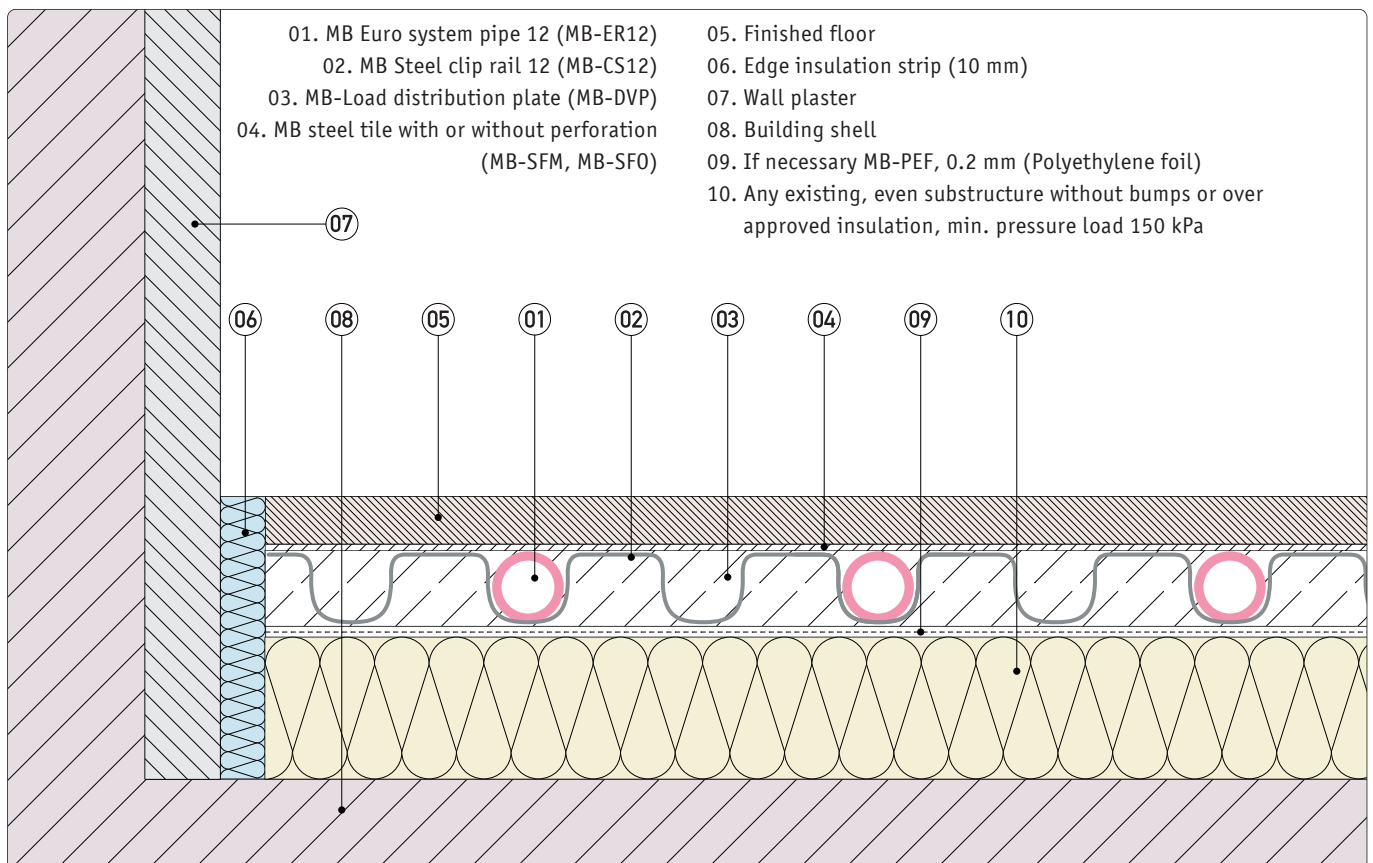
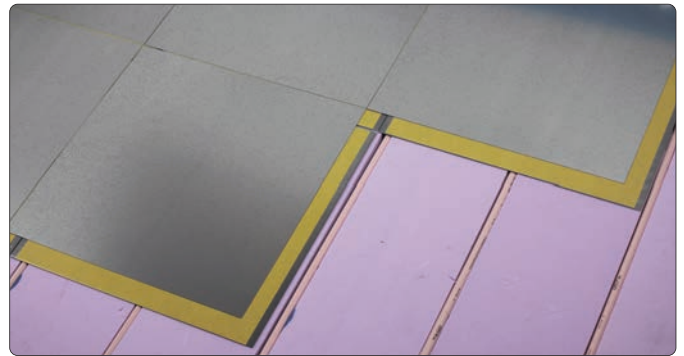
Construction height	18 mm
Construction mass (MB-SFO-15) not perforated	16 kg/m <sup>2</sup>
Construction mass (MB-SFM-15) perforated	15 kg/m <sup>2</sup>
Traffic load	min. 3.0 kN/m <sup>2</sup>
Load	immediately
Flooring installation	immediately
Heating-up time	low delay
Flow temperature	extremely low

### Technical data for 2.0 mm MB steel tile (MB-SFO, MB-SFM)

Construction height	19 mm
Construction mass (MB-SFO-20) not perforated	19.5 kg/m <sup>2</sup>
Construction mass (MB-SFM-20) perforated	18.5 kg/m <sup>2</sup>
Traffic load	min. 5.0 kN/m <sup>2</sup>
Load	immediately
Flooring installation	immediately
Heating-up time	low delay
Flow temperature	extremely low

### General floor construction

MULTIBETON develops and produces energy-efficient heating and cooling systems for a vast variety of applications. Planning the floor construction must comply with the relevant laws, regulations, directives and standards. The MB Euro system pipe (MB-ER12) is installed warm and therefore strainless and twist-free in the MB Steel clip rail (MB-CS12).



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

### System installation

Installation follows the MULTIBETON plan. Then follow the MULTIBETON installation and technical guidelines. Planning and creating the MULTIBETON underfloor heating 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. The system is installed over the solid existing floor. We recommend the MB Steel tile perforated (MB-SFM) for tiles and parquet. The FEB-19/18 must be heated once before installing the flooring to relieve the system.

### Thermal and impact sound insulation

Wood fibre insulation boards (> 150 kPa) up to 40 mm thick can be used as thermal insulation. Wood fibre insulation boards (> 150 kPa) up to 7 mm can also be used as impact sound insulation. Other thermal insulation systems are not approved and must be tested to ensure they are equivalent.

### Edge insulation strip

The edge insulation strip must be secured against shifting when installing the FEB-19/18. The edge insulation strip must be at least 10 mm thick. Once the flooring has been laid, the protruding edge insulation strips can be cut. For textile and elastic flooring, do not cut the edge insulation strip until the spackle/adhesive has cured.

### State of construction

Windows and exterior doors should be installed before installing the FEB-19/18. Building service installations and wall plaster have been completed and pipe slits sealed. If there are building services supply lines where the underfloor heating is being installed, a solid levelling course must be installed. Levelling courses must be flush once installed. Fills may be used if their viability has been established.

### Load-bearing surface

The load-bearing floor must be sufficiently dry to hold the load distribution layer and be even. The flatness tolerances according to DIN 18202 must be observed. The substrate must not have bumps, pipes or similar or the finished floor will show these. On principle, the load-bearing capacity and insulating properties of the existing subfloor must be suitable. In the case of flexible surfaces, movement, sound transmission and noise generation must be expected. If unclear, conduct preliminary tests. In the case of existing PVC flooring, install a Polyethylene foil uncoupling layer (e.g. MB-PEF, Polyethylene film) must be installed between the PVC and the MB-Load distribution plate (MB-DVP) to prevent plasticiser migration.

### Construction waterproofing

Building parts in contact with the ground must be sealed in compliance with the standards. These are floors on the ground floor in buildings without basement, or basement floors. The need and form is determined by the structural design. This seal must be installed before the underfloor heating is installed.

### Joints

FEB-19/18 has a typical contraction and expansion similar to cement screed. Joints must be placed to allow for this expansion and contraction without damaging the floor. 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.

### Flooring

Since underfloor heating is quite common, the builder has vast flooring options to choose from. Almost all manufacturers offer flooring suitable for underfloor heating/cooling. Flooring such as textile flooring, natural stone, elastic flooring, ceramic flooring, parquet, laminate and even wooden flooring can be used.

### Installing ceramic flooring

Only tile sizes up to 30 cm x 30 cm can be used with FEB-19/18. Tiles larger than 30 cm x 30 cm require a uncoupling membrane. To install tiles over the FEB-19/18:

1. The cover plates must be pretreated with ARDEX P 82 primer.
2. Tiles larger than 30 cm x 30 cm require a uncoupling membrane (IndorTec FLEXBONE-2E or IndorTec FLEXBONE-VA by GUT-JAHR Systemtechnik GmbH).
3. Install tiles on the floor using type ARDEX S 28 NEU tile cement with ARDEX E 90 admixture (manufacturer: ARDEX GmbH).

Other adhesive systems are not permitted and must be tested to ensure they are equivalent.