

Assembly according to the MULTIBETON modulation method

MULTIBETON uses the MULTIBETON modulation method to cover the heating load. This type of laying ensures a thermodynamically extremely sensible heat coverage and thus efficient use of energy.

Laying types

The distances and pipe quantities of the MULTIBETON laying types are defined below. Laying type D relates to supply and return lines to the manifold.

Average pipe quantities

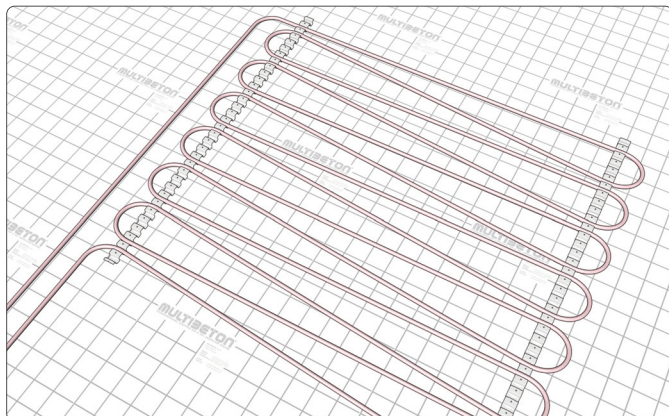
L ¹ :	D	C	B	A20	A25	A30
Q ² :	20.0 m	8.0 m	6.7 m	5.0 m	4.0 m	3.3 m

¹Laying types, ²Pipe quantity per m²

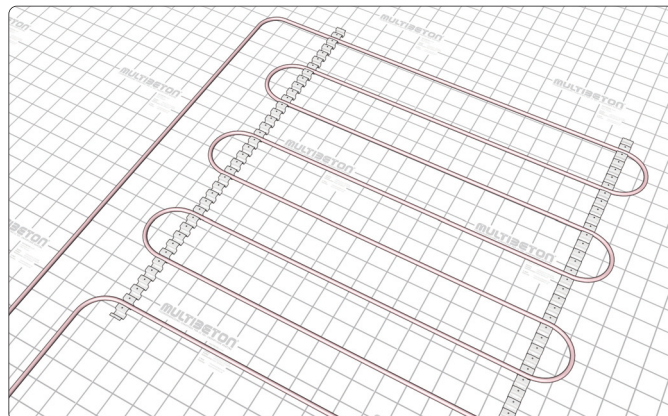
Installation features

L ¹ :	D	C	B	A20	A25	A30
G ² :	5.0 cm	12.5 cm	15.0 cm	20.0 cm	25.0 cm	30.0 cm

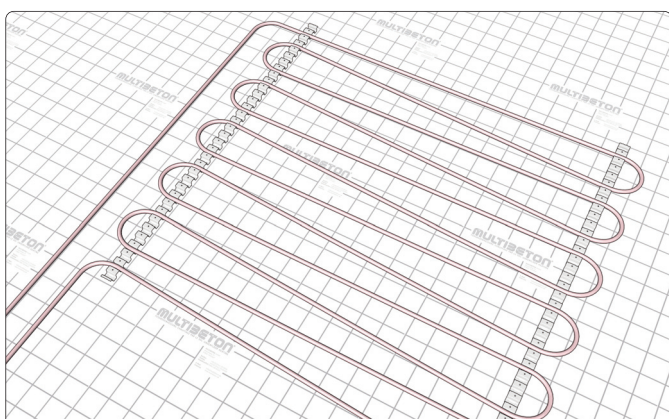
¹Laying types, ²Grid size



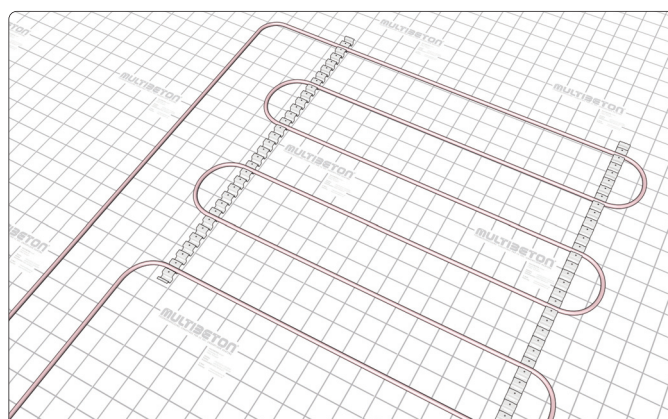
Laying type C



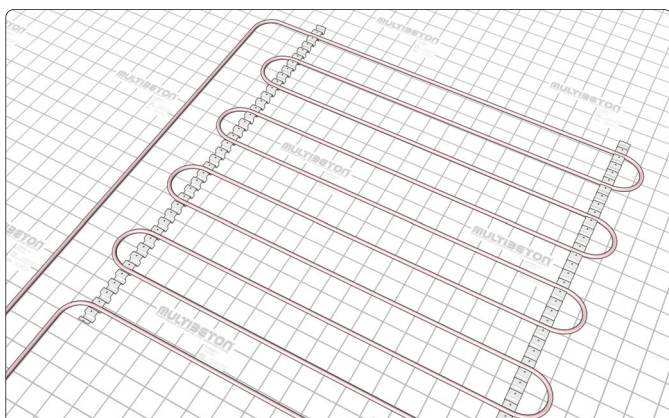
Laying type A25



Laying type B



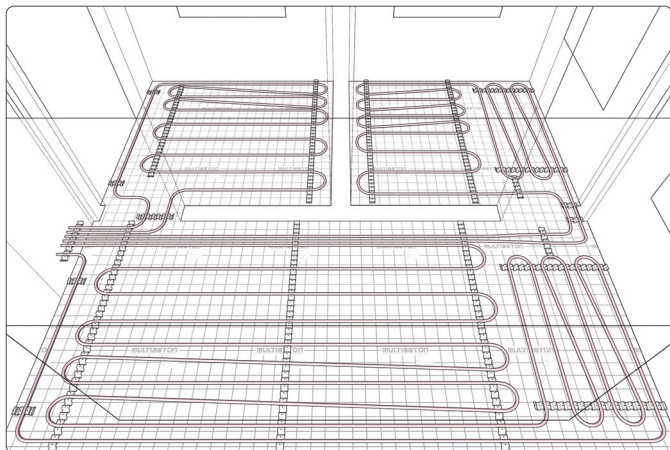
Laying type A30



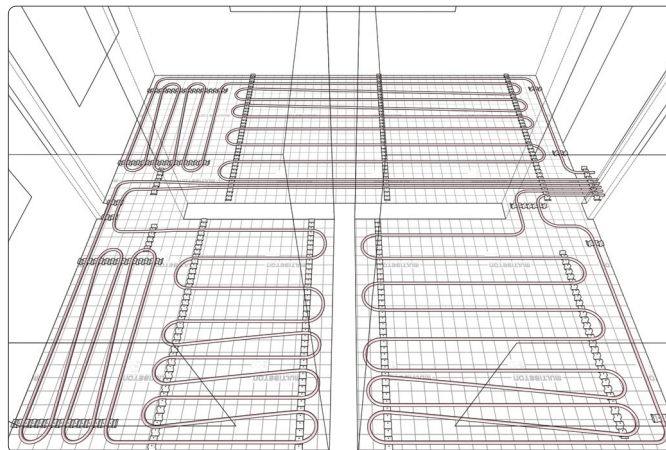
Laying type A20

System installation

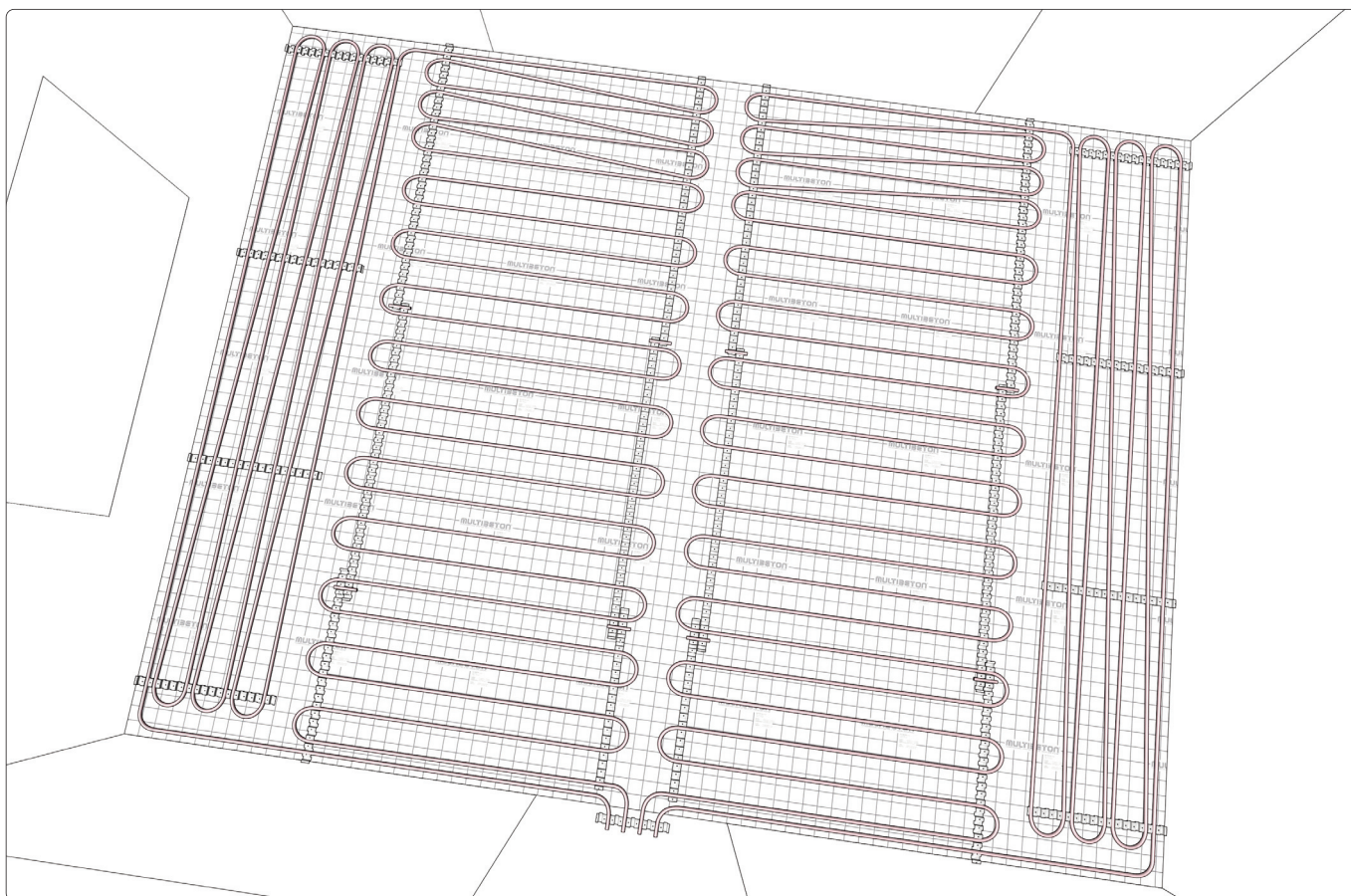
Installation follows the MULTIBETON plan. Then follow the MULTIBETON installation and technical guidelines. Planning and creating the MULTIBETON underfloor heating/cooling must further comply with the relevant laws, regulations, directives and standards. Additional instructions of manufacturers for other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



Front: edge zone B, inner zone A20 and A25



Front right: edge zone C, inner zone A25



2 heating circuits, edge zone C, inner zone A20

Note

These assembly instructions must be read so that you can work efficiently and safely.

Foundation

The foundation must be solid, load-bearing, broom-clean and meet the specified evenness tolerances (DIN 18202).

D¹: 0,1 m 1 m 4 m 10 m 15 m

G²: 5 mm 8 mm 12 mm 15 mm 20 mm

¹Distance of the measuring points, ²Gauge maximum

Installation instructions for MB Thermal installation

01. The MB Steel clip rails are laid as far as the edge insulation strips on all ascending components. For feed pipes, small pieces of clip rails of 3 - 4 clips can be very useful.
02. The MB System pipe is laid with a gap of at least 5 cm from ascending components. Therefore, the MB System pipe is only clipped into the second clip of the MB Steel clip rails.
03. From the flow of the manifold, the MB System pipe is led via supply lines into the room to be installed. If the supply lines are routed through external rooms, they must be insulated against heat loss. Once in the room, the MB System pipe is routed along the coldest zone, passes into the edge zone and then into the inner zone. Then the MB System pipe is laid back to the manifold.
04. The open system pipe ends are mounted on the manifold with connection fittings. The union nut of the connection fitting is pushed over the pipe end. Then the clamping ring is fitted and the grommet is inserted into the pipe. During the hand-tightening of the union nut on the outlet of the manifold, the system pipe together with the grommet must be pressed against the outlet. The union nut is tightened with an open-end spanner by approx. one turn (360°). In general, a tightening of 30 N should not be exceeded.
05. The lateral distance between the supply pipe and the heating circuit or between two heating circuits corresponds to the average installation distance between the edge zone and the inner zone. Example: With an edge zone in laying type C and an inner zone in laying type A30, the lateral distance corresponds to laying type A20.
06. If more than one heating circuit is installed in a room, the flow of each heating circuit must be routed to the zones that have to cover the highest specific heating loads (coldest zones in the room, e.g. windows or outside walls).
07. When laying several heating circuits in one room, the heating circuits have approximately the same pipe lengths.
08. The system pipe bends must be laid flat and at a distance of approx. 15 cm from the clip rail. Rule of thumb: The bend is correct when your hand fits into it.

09. When inserting couplings, these must always be subjected to a leak test under maximum flow temperature load. Couplings must never be placed in the bend area. All couplings in the floor construction must be positioned and marked on an inspection drawing.
10. The MB System pipe must not cross over.
11. After installation, all heating circuits must be tested for leaks with a water pressure test in accordance with EN 1264-4. The test pressure must not be less than 4 bar and not more than 6 bar.
12. When laying the screed, switch off the heating but leave it under pressure.
13. The valve presettings are to be made according to the calculated values of the design.
14. Regardless of which heating source is used, all systems must be provided with a heating medium in accordance with the current VDI guidelines.

Further preparation

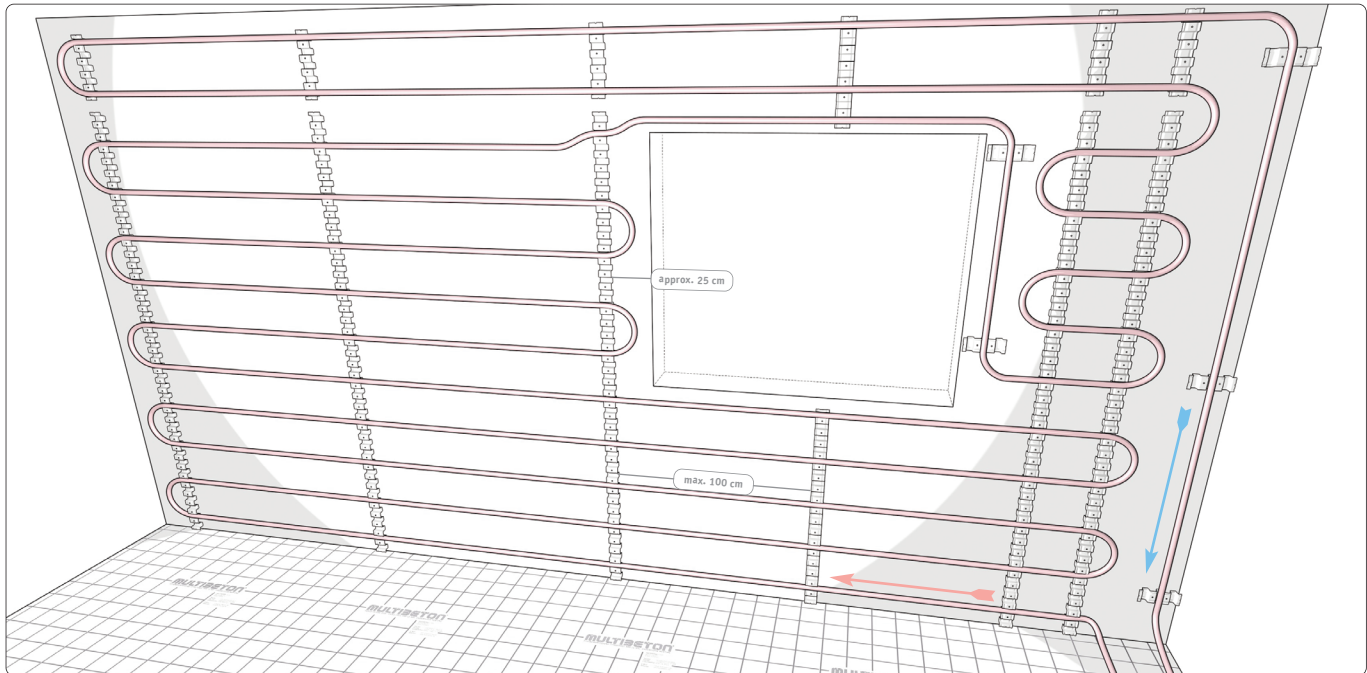
Before you start the MB thermal installation, you should consider where the MB-VH (downcoiling unit) and the MB-VT (installation heating boiler) are best placed. Experience has shown that the MB-VH (installation heating boiler) is best placed on the floor on which the installation is to be carried out. The MB-VT (installation heating boiler) should usually remain outside (ground floor or balcony, etc.).

Components

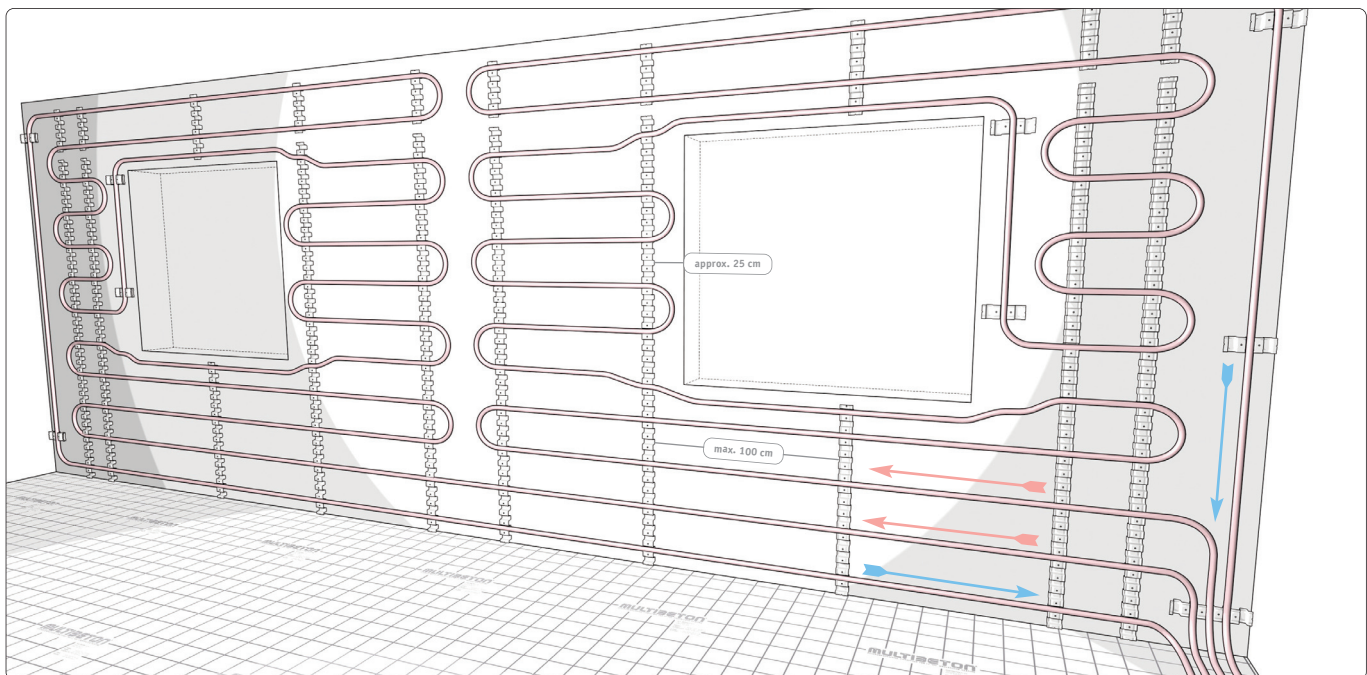
01. Broom, clip rail cutter, pipe cutter, open-ended and ring spanners, pipe plugs, protective gloves
02. Manifold cabinet
03. Edge insulation strip
04. Thermal and/or impact sound insulation
05. MB-PEF (polyethylene foil) 0.2 mm
06. MB-SKB (Special adhesive tape for calcium sulphate liquid screed)
07. Manifolds with connection fittings and ball valves
08. MB-VT (installation heating boiler) and MB-VH (downcoiling unit)
09. Heating water according to VDI 2035
10. 230 V power connection
11. Propane gas
12. MB-CS17/12 (MB Steel clip rail 17/12)
13. MB-SR17 (MB System pipe 17) bzw. MB-ER17/12 (MB Euro System pipe 17/12)
14. Hold-down grid for liquid screed

Installation during frost

01. Before installing the MULTIBETON surface heating/cooling system, windows and window openings should be closed and all exterior doors should be installed and tight.
02. When the heating unit is ready for operation, the house is operated with the frost protection programme.
03. Frost protection can also be carried out with the MB-VT (installation heating boiler). For this purpose, a commercially available antifreeze for heating units is used for the heating water.
04. If the MB System pipes are laid without antifreeze and the heating boiler is not ready for operation, the heating water must be drained after installation. Before screed application, the MULTIBETON underfloorheating/cooling system must be refilled with heating water and pressurised.



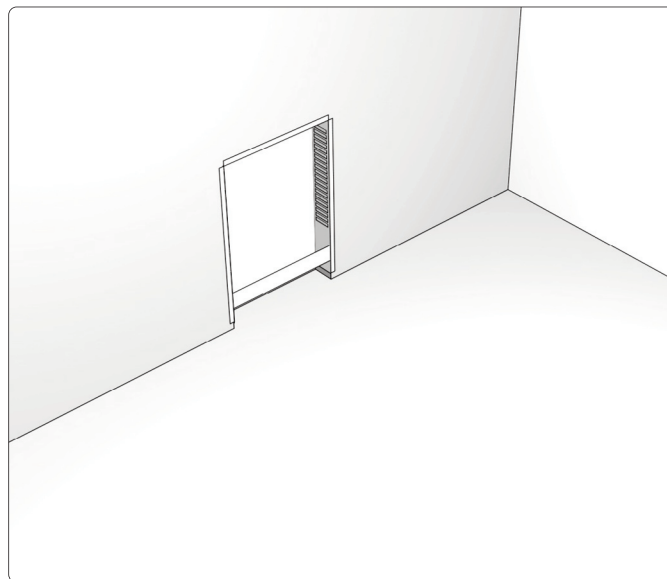
Wall heating: 1 heating circuit, flow starts at the bottom of the wall, A20



Wall heating: 2 heating circuits, flow starts at the bottom, A20

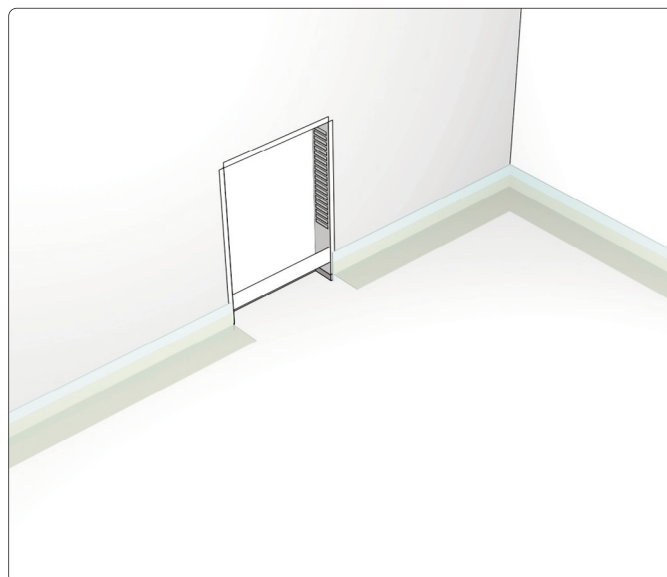
01. Manifold cabinet

The manifold cabinet must be set before the MB Thermal installation.



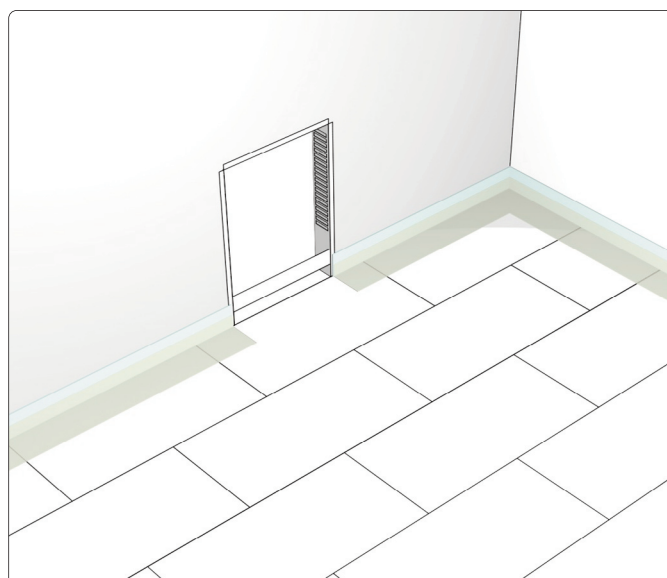
02. Edge insulation strip

The edge insulation strip is placed on the raw construction floor. No cavities may be created during the installation of the edge insulation strip. The edge insulation strip must be fixed in such a way that a change of position during screed application is impossible.



03. Thermal/impact sound insulation

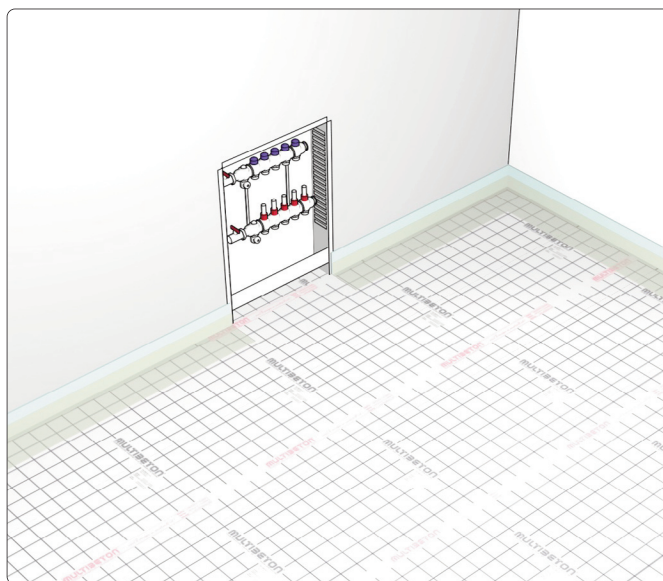
The insulation is placed against the edge insulation strip. The overlapping foil of the edge insulation strip lies on the insulation.



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

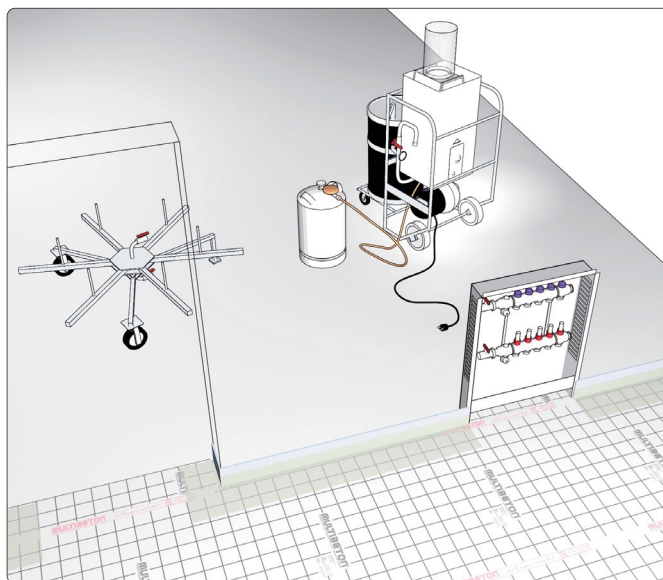
04. Cover foil (MB-PEF)

The MB-PEF (polyethylene foil) is rolled out and laid under the overlapping foil of the edge insulation strip. To avoid a change in position of the cover foil, the foil joints must overlap by at least 10 cm and be taped at points (cement screed) with the MB-SKB (special adhesive tape). When using liquid screed, the foil joints must be completely taped. According to DIN 18560-2, the cover serves to protect the insulation from moisture penetration. The manifold must now be set. Please close ball valves, valves and flow indicators.



05. Water, gas and electricity

Fill the storage tank on the back of the MB-VT (installation heating boiler) with clean heating water in accordance with VDI 2035 (45 l for 300 m ring, 75 l for 500 m ring). Connect the propane cylinder and connect the pump's Schuko plug to the mains.



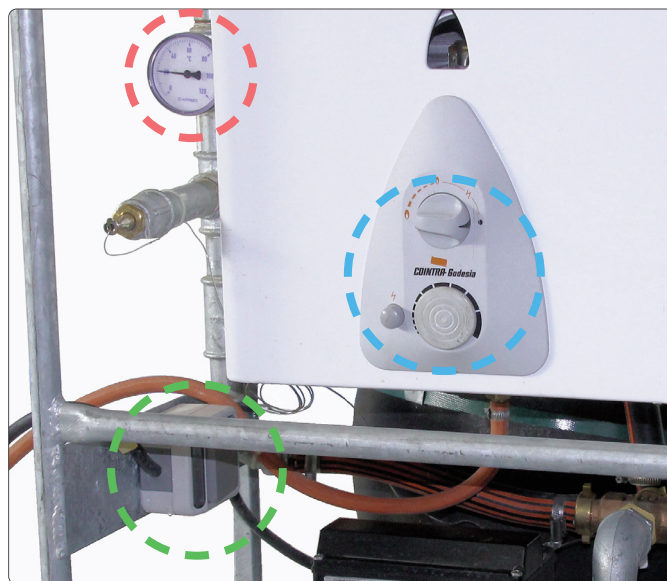
06. Internal circuit

The MB-VT is first set to the internal circuit. To do this, please look at the position of the ball valves.



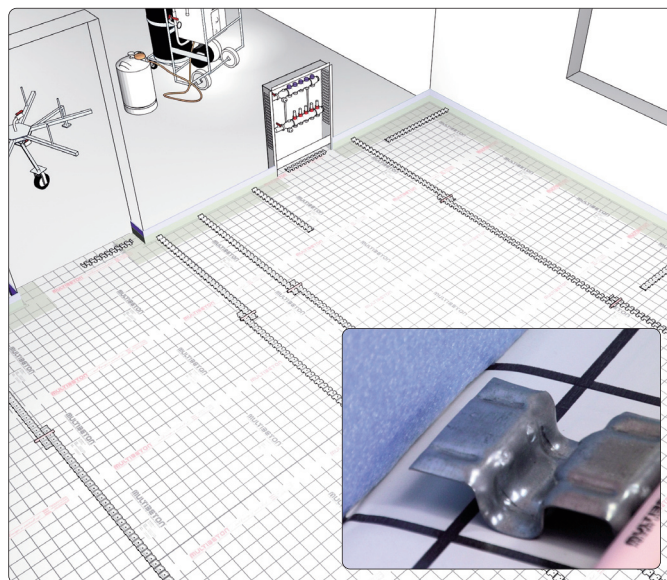
07. Heating up the MB-VT (installation heating boiler)

- Now activate the switch for the electric pump.
- Open the valve of the propane cylinder.
- The thermostatic head must be completely open.
- Now you can start up the gas boiler.
- After the gas boiler is running and the water is heated internally, you can read the temperature on the thermometer on the left. The installation can start from 65 °C.

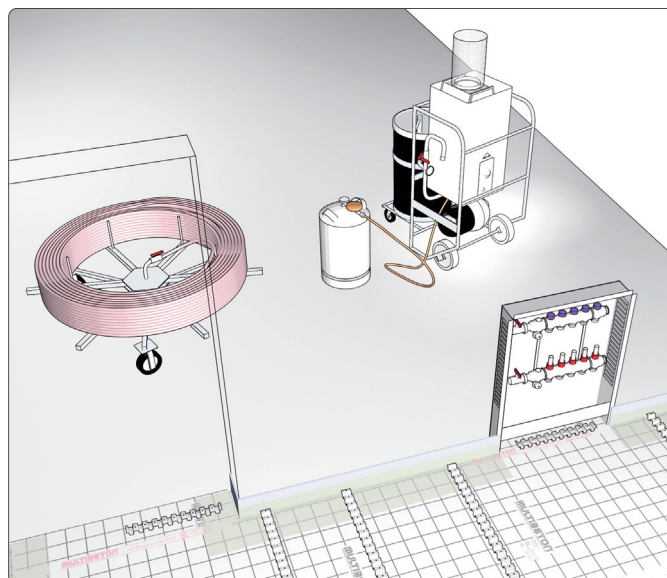

08. Laying the MB Steel clip rails (MB-CS17/12)

While the MB-VT is heating up, you can already lay out the MB Steel clip rails (MB-CS17/12) according to the MULTIBETON laying plan. To extend the rails, they can be clipped together with short pieces of pipe. The MB Steel clip rails (MB-CS17/12) can be shortened with the clip rail cutter.

A minimum distance of at least 1 cm must be maintained between the end of the MB Steel clip rail (MB-CS17/12) and the edge insulation strip. Alternatively, the MB Steel clip rails (MB-CS17/12) are supplied with protective strips that can be positioned between the MB Steel clip rail and the edge insulation strip.


09. Pipe ring and 2 pipe feeds

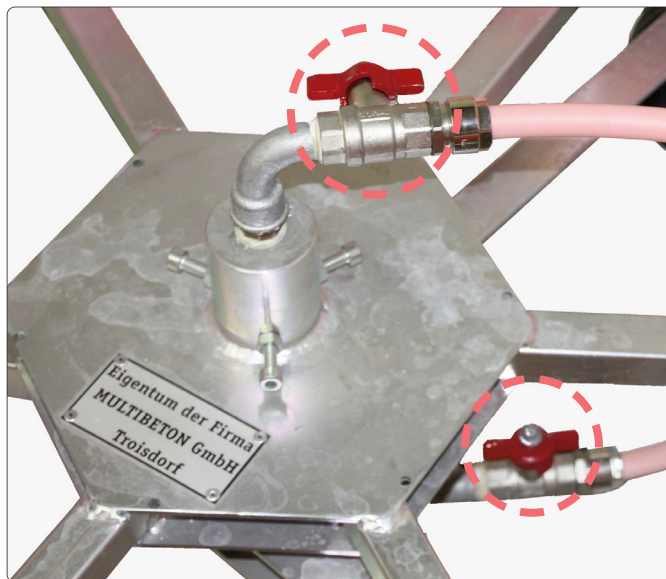
Place a pipe ring on the MB-VH (downcoiling unit). Use the enclosed cutter to remove the protective packaging. Use the pipe cutter to cut two matching pipe supply lines. The lengths of the pipes should be planned in such a way that the first pipe reaches from the MB-VH (downcoiling unit) to the MB-VT (installation heating boiler) and the second pipe reaches from the MB-VT (installation heating boiler) to the manifold. Experience shows that the MB-VH (downcoiling unit) is on the floor of the room to be installed and the MB-VT (installation heating boiler) is on the floor with the least transport effort (usually the ground floor).



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10. Pipe connection to MB-VH (downcoiling unit)

First connect the inner end of the pipe ring to the upper ball valve. Then connect the pipe supply line cut to size first under point 09. to the lower ball valve.



11. Pipe connection to MB-VT (installation heating boiler)

The supply pipe from the underside of the MB-VH (downcoiling unit) is inserted into the feed to the water tank at the top. Then connect the second pipe, already cut to size under point 09., to the flow of the MB-VT (installation heating boiler) which is led to the manifold.

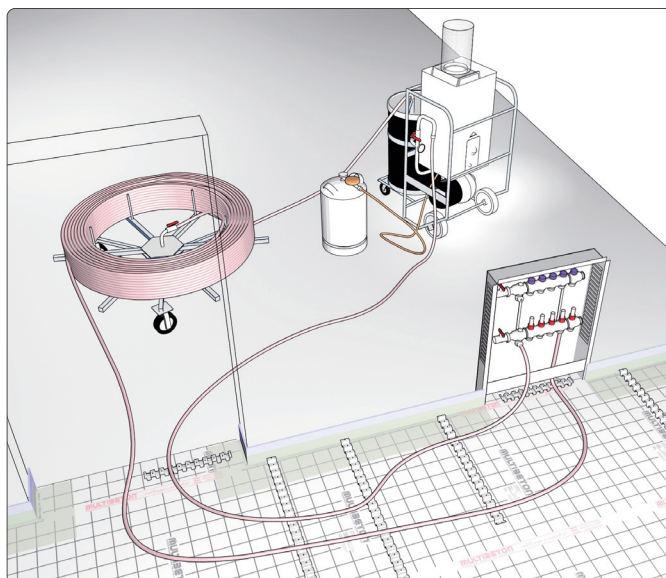


12. At manifold

All flow and return valves are closed.

The free end of the second pipe supply line from the flow of the MB-VT (installation heating boiler) is connected to the service valve (valve for rinsing, filling, and draining the manifold) of the manifold flow beam. The end of the first pipe supply line from the outer end of the ring of the MB-VH (downcoiling unit) is connected to the flow of the heating circuit to be installed first.

Open the service valve (valve for rinsing, filling, and draining the manifold) and the flow valve of the heating circuit.



13. Switching to the external circuit

Now the MB-VT (installation heating boiler) is switched from the internal to the external circuit. To do this, open the right ball valve and close the left one. After a few moments, the MB Thermal installation can be started.

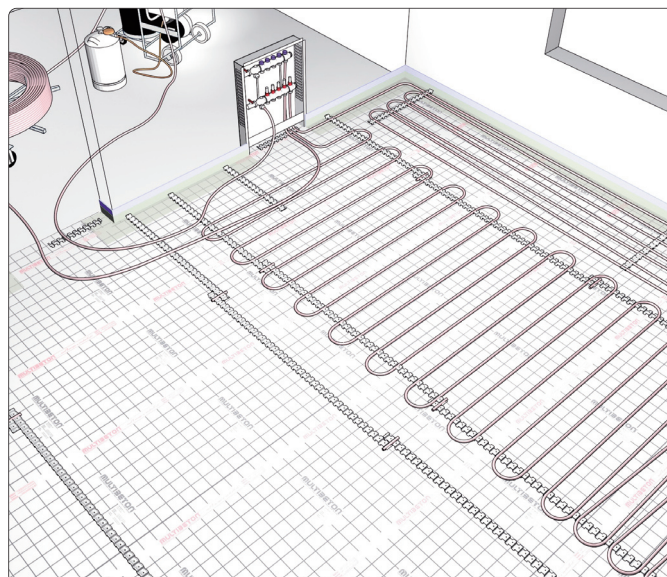


14. Laying the first heating circuit

The first heating circuit is laid in accordance with the MULTIBETON system design.

The proper installation of MB System pipes and MB Steel clip rails can be explained and demonstrated on the construction site by the responsible specialist consultant/installer.

As soon as the first heating circuit has been laid, the internal circuit of the MB-VT (installation heating boiler) is switched over and the flow of the heating circuit just laid is closed. The system pipe is cut off and connected to the return of the first heating circuit.



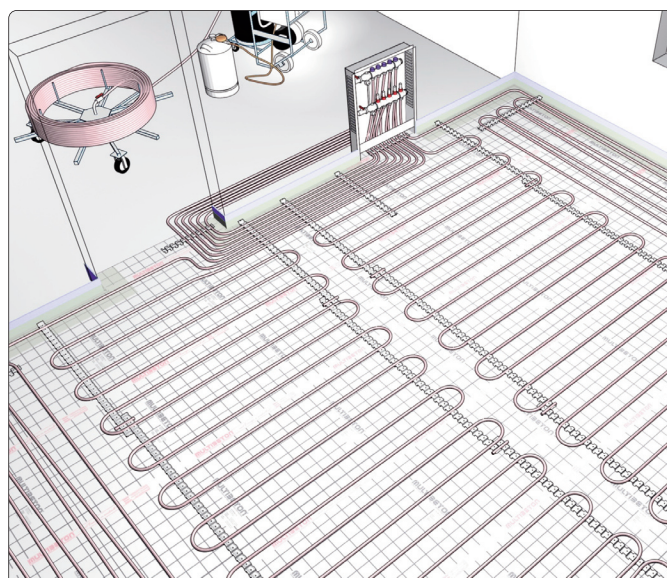
15. Laying the further heating circuits

The just cut pipe end, coming from the MB-VH (downcoiling unit), is led to the flow valve of the next heating circuit to be laid and connected there.

Open the flow valve of the heating circuit to be laid.

Now switch back from the internal circuit of the MB-VT (installation heating boiler) to the external circuit.

The heating circuit is laid. Continue in the same way with the next heating circuits.



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