



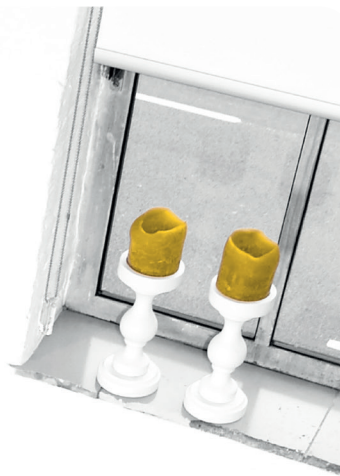
MAGNUM HEATING

Comfort | Safety | Control



Waterborne systems

Installation instructions



Congratulations on the purchase of this MAGNUM product. Our products are manufactured with high-quality and durable materials. To guarantee that your product works optimally, there are some points of attention that are described in the installation instructions. We can only give you the full guarantee if you install the product correctly in accordance with these instructions. Please read these instructions carefully before installation and make sure you use the right tools and materials.

If you have any questions or would like more information, please contact us in the following ways:

- Call Mon-Fri from 08.00-17.00 on 0166 - 609 300.
- Send an e-mail with your question to info@magnumheating.nl

For more information and our other products, please visit magnumheating.com

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1. PREPARATION

Make sure that the rooms where you are going to install underfloor heating are dry and free of dust. Make sure the subfloor is even. Remove any debris and sweep the entire subfloor well. Our underfloor heating systems can be permanently installed in concrete or sand-cement screeds. If required by the building regulations, insulation can be applied under or on top of the construction floor over which the system is laid.

1.1 Centre distances of the pipes

100 mm centre-to-centre

- Main heating with 10 meters tube per m².
- 1 floor heating group per 10 m².

150mm heart-to-heart

- Main or extended supplementary heating(1) with 6.7 meters of tube per m².
- 1 floor heating group per 15 m².

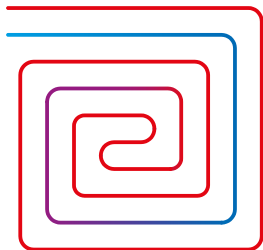
200mm heart-to-heart

- Additional heating with 5 meters tube per m².
- 1 floor heating group per 20 m².

⁽¹⁾ De mogelijkheid om een hartafstand van 150mm te gebruiken bij hoofdverwarming is afhankelijk van de warmtebehoefte en de isolatiewaarde van de desbetreffende ruimte.

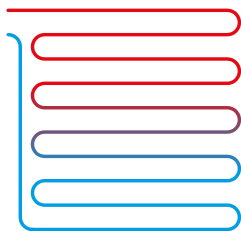
1.2 Layout patterns

Snail shell



For best results with an underfloor heating system, ensure that the entire floor surface reaches the same temperature. When the supply and return pipes are laid side by side, the floor heats up evenly. The water runs through the pipes and gives off its heat, after which the cooled water runs back to the distributor. This laying pattern gives the most economical and energy efficient floor heating system.

Meander



Supply and return pipes are not laid next to each other and do not allow the floor to heat up evenly. However, this can be preferred when underfloor heating is laid in a room with cold outer walls or large windows. When using this laying pattern, the first section of the pipe (supply) should be laid along the coldest wall.

1.3 Points of attention

1. For best results and to avoid problems with circulation, the following maximum pipe lengths per underfloor heating group apply:

- 10mm pipe maximum 80m
- 12mm pipe maximum 100m
- 14mm tube maximum 100m
- 16mm pipe maximum 120m
- 18mm tube maximum 130m
- 20mm tube maximum 150m

2. The above pipe lengths relate to each individual underfloor heating group on the distributor and the pipes must be connected to one supply and one return valve.

3. In addition, an uninterrupted pipe must be laid for each group (couplings in the screed must always be avoided). If it is not possible to avoid the use of a repair coupling or interconnection in the floor, the couplings must be completely wrapped in waterproof tape to prevent the risk of oxidation and leaks.

4. The maximum lengths stated above include supply & return from the distributor and back.

5. Underfloor heating pipes should not cross or overlap each other and should be laid side by side.

6. In rooms that are larger than 40m² or longer than 8m, it is often necessary to use expansion joints in the floor. Also when a floor is staggered, such a joint is usually necessary. If the screed in a large room has an L-shape or U-shape or is narrowed in places, for example, then the floor must be divided into rectangles by means of expansion joints.

1.4 Laying systems

Chapter 2 explains how to proceed with the different systems.

1.5 Screed floors and floor finishes

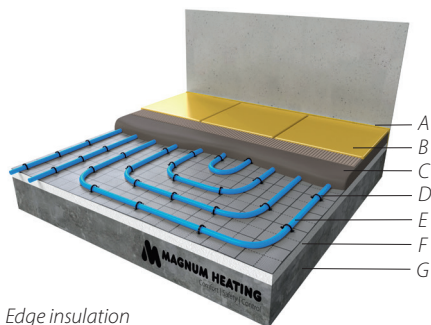
For an efficient and reliable heating system, the screed and floor finish play an important role. For a newly poured screed should completely enclose the floor heating tubes to enable rapid thermal movement (heat transfer). In addition, the screed must have a minimum thickness of about 7 cm (or 5 cm screed on top of the tubes). This prevents crack formation due to point loading. If there is not at least 7 cm available, then it is advisable to let the screed adhere to the (concrete) sub-floor and to reinforce it by means of reinforcement nets on top of the pipes. This will reduce crack formation to a minimum.

Underfloor heating systems can be used under almost any type of floor finish, but each type of floor finish has a different level of thermal resistance. Tiles, natural stone and marble (ceramic floor finishes) have a low thermal resistance and allow for rapid thermal movement. Usually, these types of floors are excellent conductors of heat and will therefore ensure that the underfloor heating system is used optimally.

Carpet, wood and laminate have a higher thermal resistance and slow down the thermal movement. It is also important to bear in mind that the maximum floor temperature of a system under wood and laminate is approximately 28°C. At higher temperatures, these types of floors can expand, which can cause gaps and cracks to appear.

2. INSTALLATIE

2.1 Installation on tacker plates

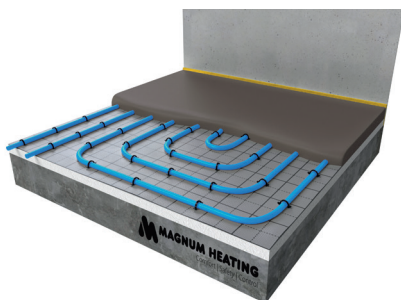
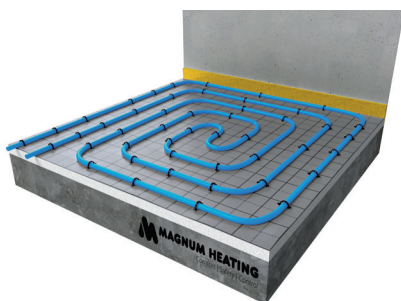
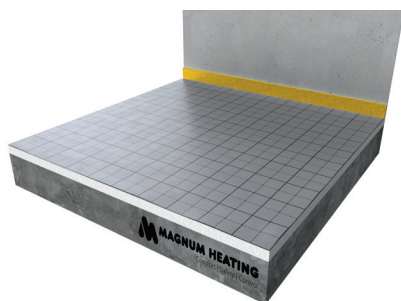
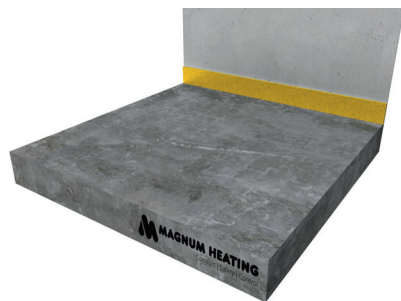


- A. Edge insulation
- B. Floor covering
- C. Screed
- D. Tackernite
- E. Underfloor heating pipe
- F. Tacker plate
- G. Subfloor (construction floor)

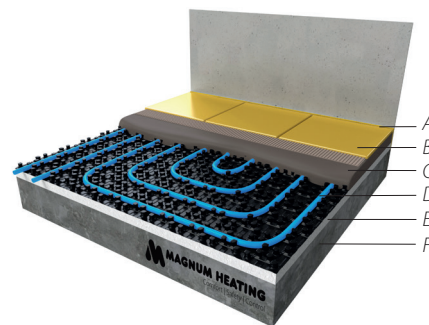
1. Install edge insulation along all walls in the room(s) in which you are going to install the underfloor heating system. If the edge insulation is not provided with an adhesive strip, then attach it using an assembly kit or spray adhesive.

2. Lay the tacker plates over the entire structural floor and place them side by side. Note: This structural floor must be completely dry, clean and flat to prevent damage. If necessary, you can fasten the sheets together using tape or fix them to the structural floor using a mounting kit or glue.

3. Then you start laying the underfloor heating pipes. You attach these to the tacker plates using tackler staples and a tackler stapler. Keep an average of 3 staples per running meter tube, so the tube (especially in bends) will not move when pouring the screed.



2.2 Installatie op noppenplaten

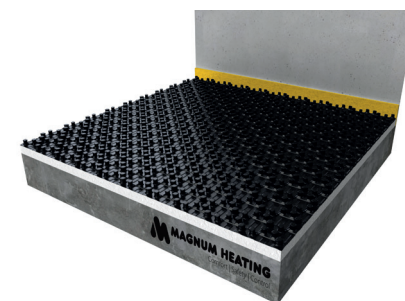
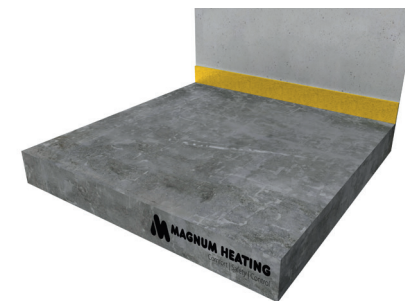


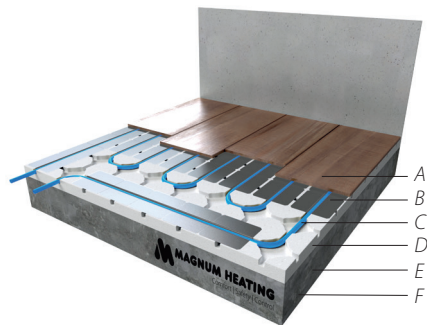
- A. Edge insulation
- B. Floor covering
- C. Screed
- D. Underfloor heating pipe
- E. Floor plate
- F. Subfloor (construction floor)

1. Install edge insulation along all walls in the room(s) in which you are going to install the underfloor heating system. If the edge insulation is not provided with an adhesive strip, then attach it using an assembly kit or spray adhesive.

2. Lay the studded sheets over the entire structural floor and place them next to each other. Note: This structural floor must be completely dry, clean and flat in order to prevent damage. The studded sheets are attached to each other by sliding the outer plastic studs of the sheets over each other. If necessary, you can fix the sheets to the structural floor using a mounting kit or glue.

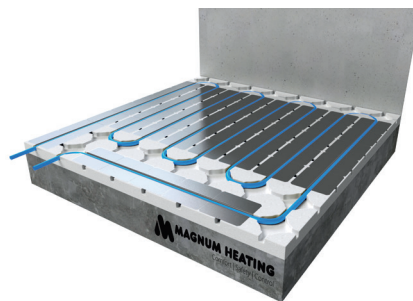
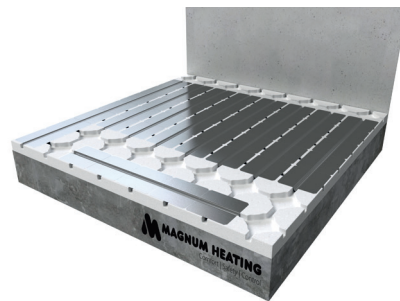
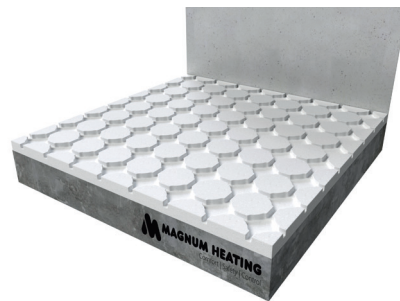
3. Then start laying the underfloor heating pipes. You fix these between the studs by pressing/clamping them in.





Omega sections.

4. Hard floor finishes that can be floated can be applied directly to the system (unless your flooring supplier's specifications state otherwise). It is advisable to lay floating floor finishes at right angles to the system to create a more stable substrate.



- A. Floor covering²
- B. Heat diffusion profiles (Omega profiles)
- C. Floor heating pipe
- D. Drywall insulation board
- E. Floor joists (only in some situations)
- F. Subfloor (structural floor)

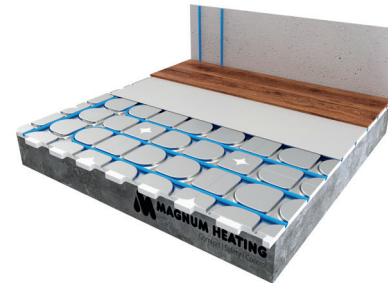
² A tiled floor (or other floor finish requiring a structural subfloor) cannot be laid directly over this system. If you choose for such a floor finish, floor boards must first be laid over the system (for example Fermacell or Knauf boards). After these boards have been fitted, you can install the floor finish.

1. Place the EPS insulation sheets over the entire structural floor of the room(s) in which the system is to be installed. Note: This structural floor must be completely dry, clean and flat to prevent damage. If desired, the insulation boards can be fixed to the subfloor by using a mounting kit or spray adhesive (in this case, please note that the boards can no longer be moved once they have been fixed).

2. Fix the Omega profiles to the insulation boards by pressing them into the grooves provided.

3. After the Omega sections have been pressed onto the EPS insulation sheets and the rails fixed, snap the pipe between the

2.4 HeatBoard W systeemplanen



- A. Floor covering²
- B. Heat diffusion profiles (Omega profiles)
- C. Floor heating pipe
- D. Drywall insulation board
- E. Floor joists (only in some situations)
- F. Subfloor (structural floor)

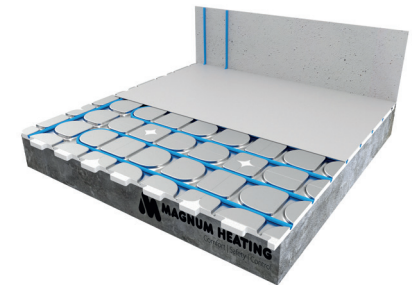
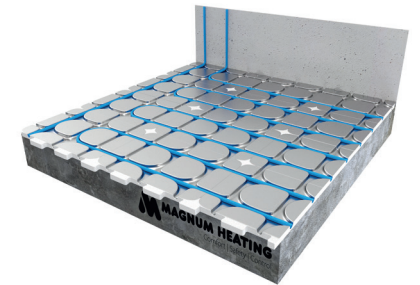
² A tiled floor (or other floor finish that requires a structural subfloor) cannot be laid directly over this system. If you opt for such a floor finish, floor boards must first be laid over the system (e.g. Fermacell or Knauf boards). After these boards have been fitted, you can install the floor finish.

1. Place the system boards on the entire structural floor of the room(s) in which the system is to be installed. Note: This construction floor should be completely dry, clean and flat to prevent damage. If desired, you can fix the system boards on the subfloor by using a mounting kit or spray adhesive (in this case, please note that the boards can no longer be moved once they are fixed).

3. After the system sheets have been pressed down and rails fixed, click the pipe between the profiles.

4. Cover the entire floor with the felt cloth supplied and install MAGNUM DuoBoard if necessary for soft floor coverings (carpet, PVC, Linoleum etc.).

5. Hard floor coverings that can be laid floating on the floor can be laid directly onto the system (unless your flooring supplier specifies otherwise).



2.5 SlimFit 10 and 12

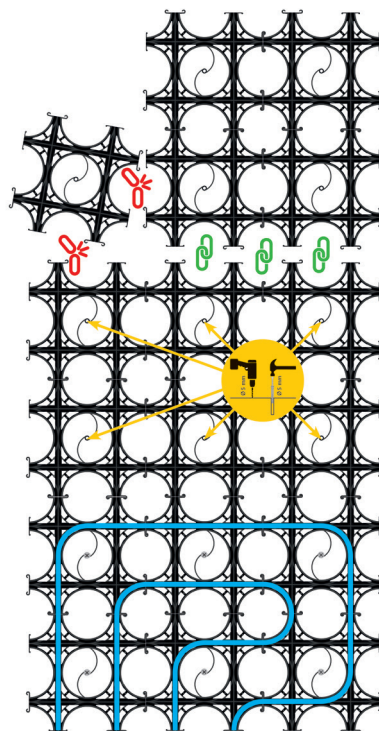


MAGNUM Slimfit 10

LxW SlimFit element: 800 x 600 mm
 Element dimensions: 200 x 200 mm
 Surface area per element: 0.48 m²
 Area per package: 2.4 m²
 System build height: 12mm
 Total height: 15-20mm
 Centre-to-centre distance tube: 100mm
 Suitable for tube size: Ø 10mm (supplied in lengths of 80 and 240 metres)

MAGNUM Slimfit 12

LxW SlimFit element: 1000 x 750 mm
 Element dimensions: 250 x 250 mm
 Surface area per element: 0.75 m²
 Surface area per pack: 3.75 m²
 System build-up height: 14 mm
 Total build-up height: 17-22 mm
 Centre-to-centre distance tube: 125 mm
 Suitable for tube size: Ø 12mm (supplied in lengths of 100 and 300 metres)



Firmly attach the system to the subfloor to prevent it from "floating". Depending on the subfloor, you can secure the system with hammer dowels or nails. Drill size: Ø 5 mm. Hitting plug diameter: Ø 5 mm.

Floor laying pattern: snail shell pattern.
 Laying pattern wall: First attach the pipe to the highest point of the wall and follow a meander pattern downwards.

First read the processing instructions for the self-levelling casting or plastering mortar, check whether the product is suitable for floor heating and follow the manufacturer's instructions. Allow for sufficient drying time before switching on the system.

3. DISTRIBUTORS

Floor heating systems distinguish between high and low temperature systems where the principle of heating remains the same. The difference lies in the temperature of the water supplied by the system. Low-temperature systems generally make use of open distributors whereby the water supplied from the heat source is fed directly into the floor. In high temperature systems (and district heating) the supplied water is first re-mixed before it is let into the floor, because it is too hot to let it directly into the floor. In most cases, a maximum temperature of approximately 40°C applies to ceramic floor finishes and approximately 28°C to wooden floor finishes (if in doubt, consult your flooring supplier).

3.1 Location of distributor

A floor heating distributor can be placed in almost any place in the house, placement in the closet is not allowed. It is recommended that the distributor in a dry, centrally located room to hang. If you are going to use a high temperature distributor equipped with a pump, it is advisable not to place it in or against the wall of a bedroom. When the pump is operating, this could lead to low vibration noise. It is also recommended that the distributor should be hung in a place that is easily accessible should maintenance be required in the future.

3.2 Suspending the distributor

In most cases, the distributor is hung 50 to 60 cm above the floor. You can also choose to hang the distributor lower, but this makes it more difficult to connect the pipes and may also cause problems if the distributor ever needs to be replaced.

3.3 Mounting the tubes on the distributor

Cut the tubes to size at a perfect angle of 90° using a tube cutter before they are connected to the distributor to prevent leaks.



The underfloor heating pipes are mounted on the distributor by means of Eurocone connection couplers. These clamp couplings consist of 3 parts and are connected in the following way;



Tube | Screw fitting (A) | Clamping ring (B) | Grommet (C)

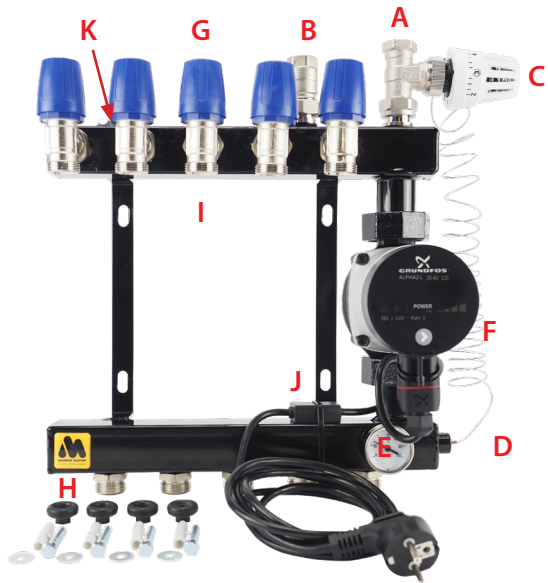
1. Slide A over the end of the tube.
2. Slide B onto the end of the tube.
3. Press C firmly into the opening of the tube.
4. Slide A over B & C and tighten on the pipe connection of the distributor. Then use a spanner to tighten the coupling until it is secure (never tighten too much as this may cause the screw fitting to tear).

CAUTION: Hold nipple in distributor to prevent twisting!

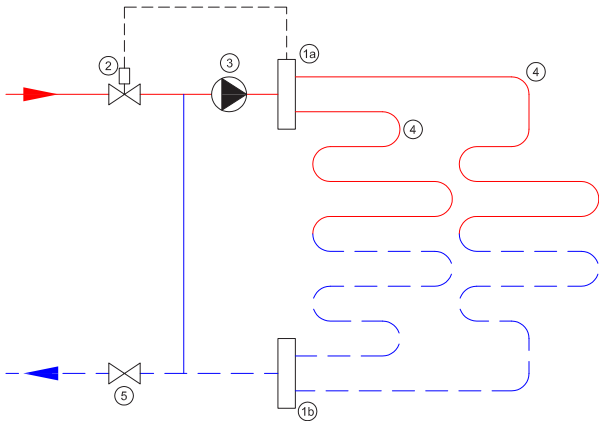
3.4 Installatie verdeler

Op de volgende pagina's kunt u per verdeler zien uit welke onderdelen hij bestaat en hoe deze moet worden aangesloten op het circuit.

3.4.1 Basic Steel

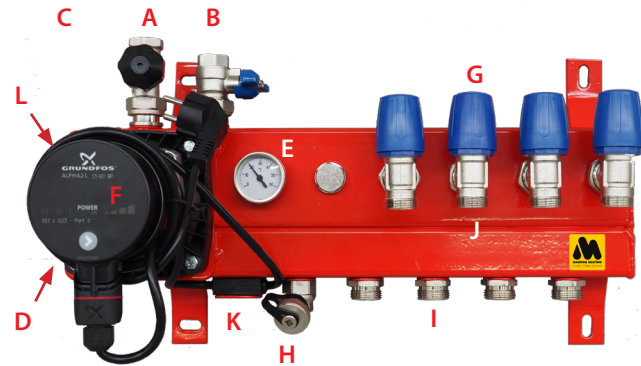


- A. Supply pipe (central heating)
- B. Return pipe (heating)
- C. Thermostat knob
- D. Temp. sensor (in tube)
- E. Temperature gauge
- F. A-Label Pump
- G. Group valves
- H. Supply MAGNUM Tube
- I. Return MAGNUM Tube
- J. Maximum protection
- K. Air vent

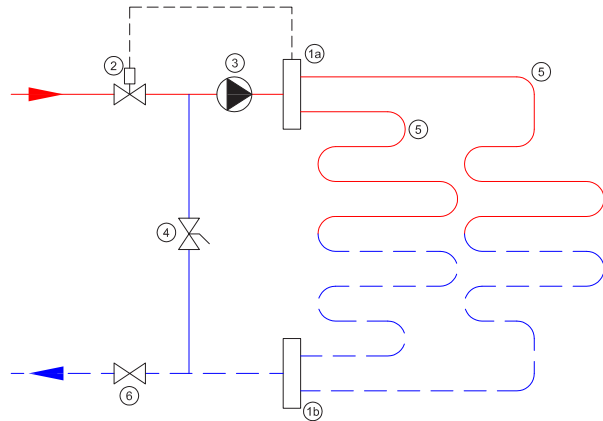


- 1a Distributor
- 1b Collector
- 2 Thermostatic valve
- 3 Circulation pump
- 4 Underfloor heating group(s)
- 5 Stop valve

3.4.2 Front steel (LTV)

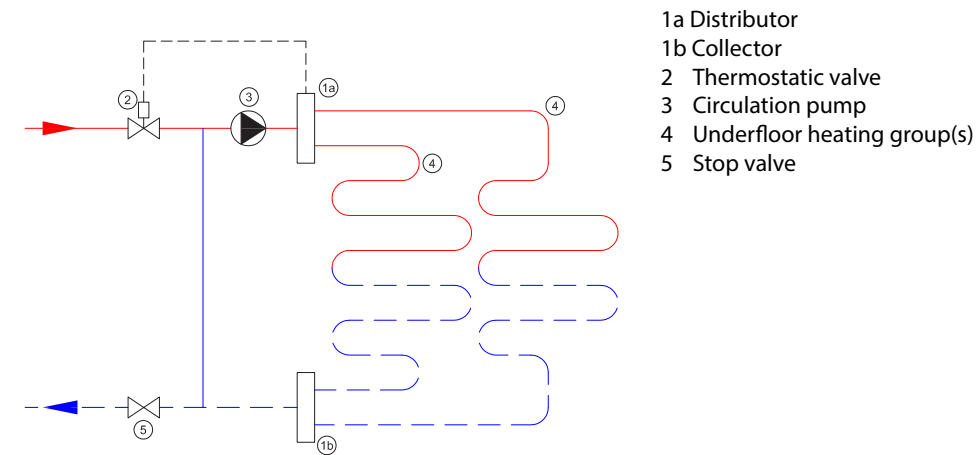
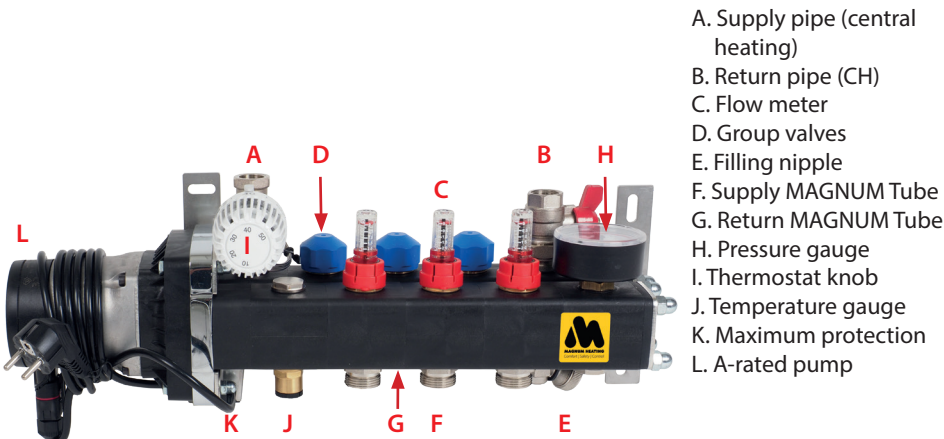


- A. Supply pipe (central heating)
- B. Return pipe (heating)
- C. Thermostat knob
- D. Temperature sensor
- E. Temperature gauge
- F. A-Label Pump
- G. Group valves
- H. Filling Nipple
- I. Supply MAGNUM Tube
- J. Return MAGNUM Tube
- K. Maximum protection
- L. Mixing valve

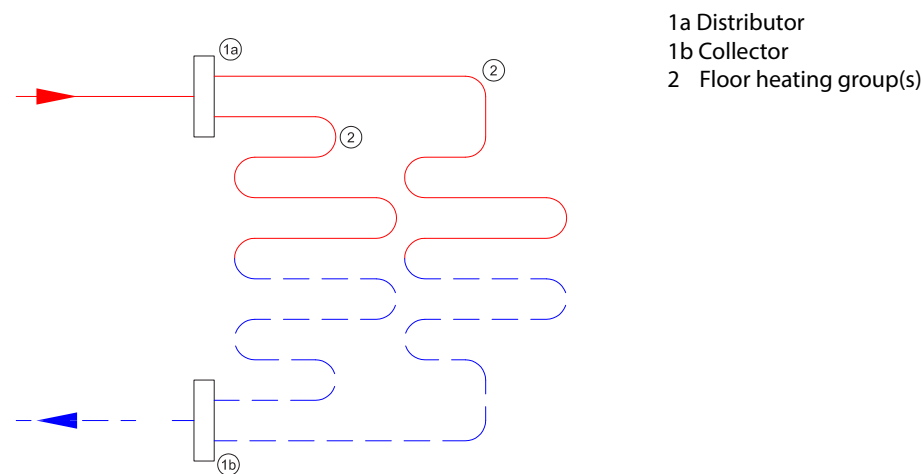
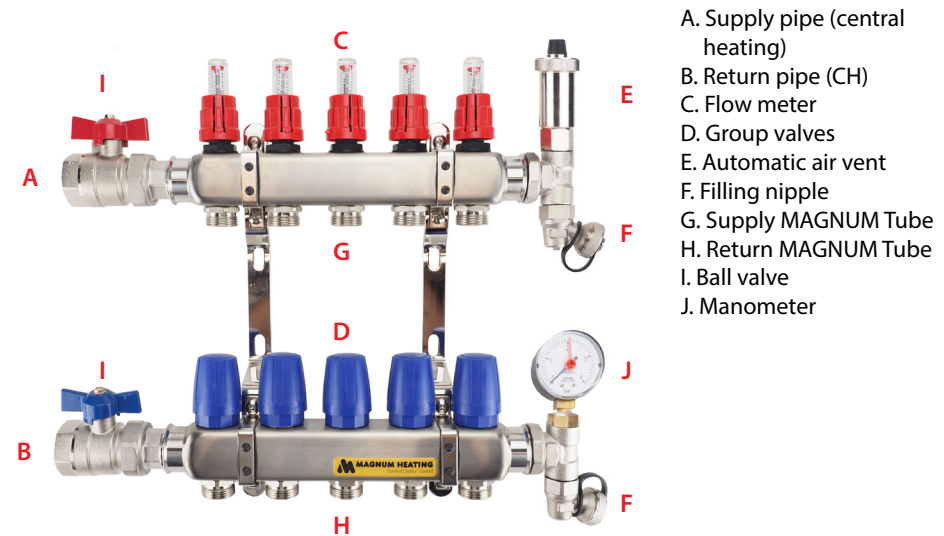


- 1a Distributor
- 1b Collector
- 2 Thermostatic valve
- 3 Circulation pump
- 4 Control valve
- 5 Underfloor heating group(s)
- 6 Stop valve

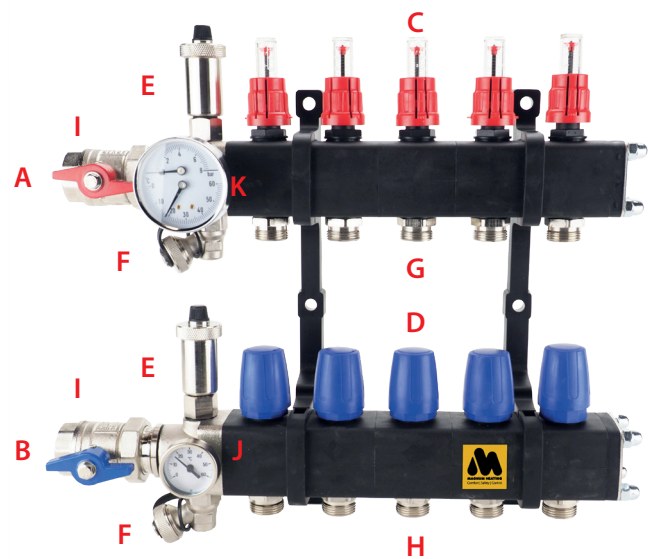
3.4.3 Premium plastic



3.4.4 Premium stainless steel Open

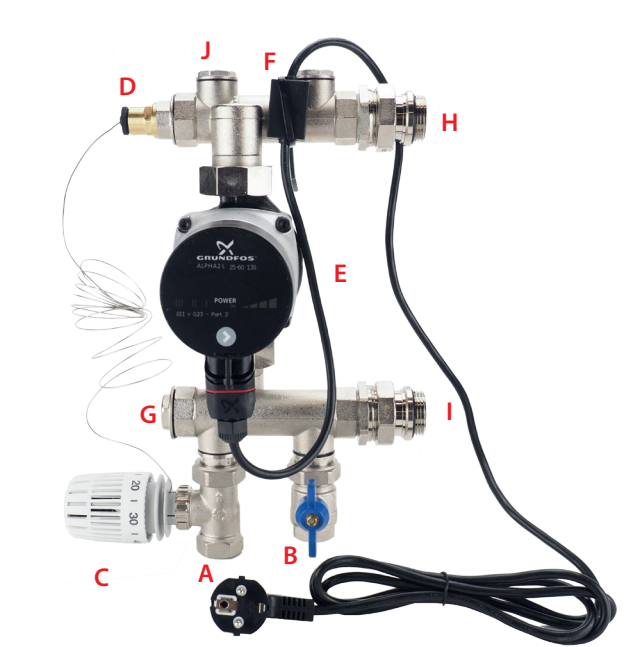


3.4.5 Premium Plastic Open

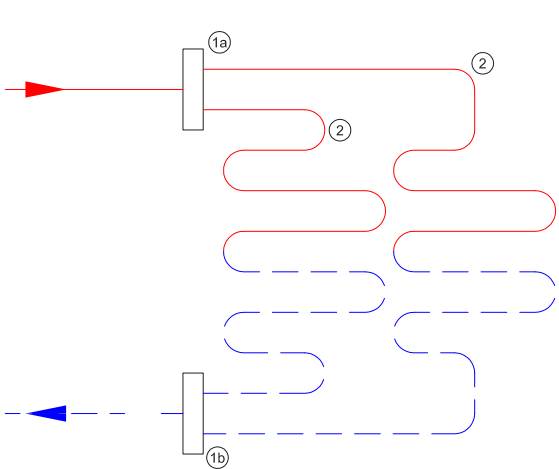


- A. Supply pipe (central heating)
- B. Return pipe (CH)
- C. Flow meter
- D. Group valves
- E. Automatic air vent
- F. Filling nipple
- G. Supply MAGNUM Tube
- H. Return MAGNUM Tube
- I. Ball valve
- J. Temperature gauge
- K. Thermo/Manometer

3.4.6 Pump/temperature controller (for open manifolds)



- A. Primary supply
- B. Primary return
- C. Thermostat knob
- D. Temperature sensor
- E. A-Label Pump
- F. Maximum protection
- G. LTV mixing valve
- H. Underfloor heating supply
- I. Underfloor heating return
- J. Air vent



- 1a Distributor
- 1b Collector
- 2 Floor heating group(s)

4. PRESSURISE SYSTEM / TEST FOR TIGHTNESS

After all the pipes have been connected to the distributor, you can pressurise the system and/or test for tightness;

4.1.1 Filling directly from the (existing) heating circuit:

In this case, proceed as follows (ensure that the plug of the boiler has been removed from the wall socket);

1. For open manifolds: open the ball valve. For distributors with pump: open thermostatic valve in the distributor supply by removing the thermostatic knob or cap.

2. Open the flow meter and the shut-off cap or thermostatic group shut-off valve of the first group that you are going to fill. After this group has been completely filled, close the flow meter and shut-off cap or thermostatic shut-off valve again.

Caution! On other manifold versions, connections may be assembled in a different place. In case of doubt, consult the manual that came with the distributor.

4.1.2 Filling from the water tap

If you cannot fill the floor heating system from a central heating circuit, you can fill the system using the filling nipple on the distributor;

In this case, the ball valves and thermostatic valve (as mentioned in step 1) remain closed and, after connecting a water hose, open the filling nipple by using the recess in the cap. Then fill the floor heating unit(s) as mentioned in step 2. It is recommended to run the pump gently while filling.

4.1.3 Pressurising with air:

If there is a risk that the room in which the underfloor heating is installed could cool down to freezing, then use air to purge the system. In this case, proceed as follows

1. For open distributors: close the ball valves. For distributors with a pump: close the thermostatic valve in the supply and the ball valve in the return of the distributor.

2. Open all flow meters and shut-off caps or the thermostatic group shut-off valves.

3. Connect a compressor to the filling nipple and open it using the recess in the sealing cap. Then test the system for air tightness with the connected compressor (max. 4 bar).

4.2 Putting the system into operation

In connection with the hardening of the floor, the underfloor heating can only be put into use after a period of at least 4 weeks if the floor finish has been glued or at least 8 weeks if a new floor screed has been laid.

4.2.1 High temperature manifolds with Grundfos ALPHA2L pump

N.B: Instructions for steel distributor with Wilo pump can be found on our website.

After the screed and/or floor finish has fully cured, carry out the following actions;

1. Plug the pump into the outlet and make sure the valves of the heating groups are open (if the distributor is equipped with flow meters, make sure they are open by pulling the red protection cap upwards and turning the black adjustment wheel at the bottom).

2. Check that the pump is running and then set it to the desired position. You can use the following guideline for this;

- Position 1: Distributors up to 4 groups
- Position 2: Distributors from 5 to 9 groups
- Position 3: Distributors with 10 groups or more



With the Grundfos ALPHA2 L you can use the following settings in addition to the above:

- A: Lowest constant pressure curve for manifolds up to 7 groups
- B: Highest constant pressure curve for manifolds with 8 groups or more

By using these settings the pump will automatically adjust its operation to changes in the heat demand.

3. The water temperature of the underfloor heating system can be set with a thermostat knob mounted on the valve in the supply of the distributor and then read on the thermometer or thermo/manometer.

4. To prevent cracks from appearing in the screed, it is advisable to gradually increase the water temperature when putting the system into operation (for the first time). Start with 2 days at 10 degrees, then 2 days at 15 degrees and then at 20 degrees. This way, you set the temperature by increasing the thermostat knob every two days by 5 degrees until the temperature on the thermometer reads approximately 35 to 40 degrees.

4.2.2 Low-temperature manifolds (open manifold units)

After the screed and/or floor finish has fully cured, carry out the following actions;

1. Make sure that the heat source (e.g. low-temperature boiler or heat pump) is correctly connected and has been put into operation. Consult the manual of your boiler or heat pump to find out how to set the water temperature of the heating system or ask your installer.

2. In order to prevent cracks from appearing in the screed, it is advisable to increase the water temperature stepwise when putting the system into operation (for the first time). Start with 2 days at 10 degrees, then 2 days at 15 degrees and then at 20 degrees. You adjust the temperature by increasing the thermostat knob every two days by 5 degrees until the temperature on the thermometer reads approximately 35 to 40 degrees.

3. Open the ball valves in the supply and return of the distribution unit and also ensure that the valves of the heating groups are open (if the distributor is equipped with flow meters, ensure that they are open by pulling the red protection cap upwards and turning the black dial at the bottom).

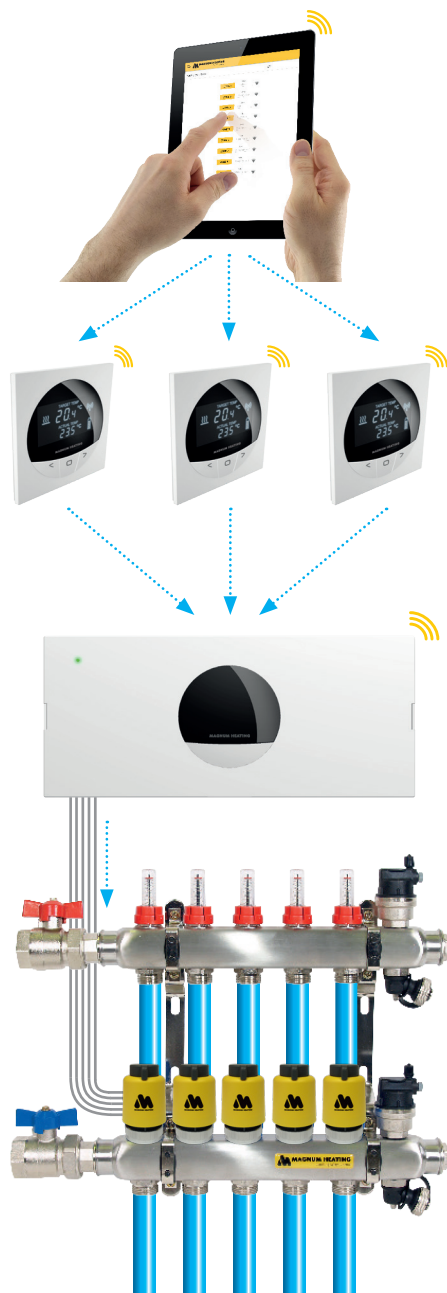
4. Check that the heat source pump is running correctly and that there is a circulation of water (both in the primary circuit and in the underfloor heating system).

5. CONTROL OF THE SYSTEM

Like wall radiators, waterborne underfloor heating is maintained at temperature by a supply of hot water from a boiler or other heat source in the primary CH circuit. In most cases, the boiler is switched by a thermostat placed in the living room. If underfloor heating is installed in different rooms, it is also possible to give each room its own thermostat that is (wirelessly) connected to a receiver, which controls the different heating groups. In addition, underfloor heating can also be used as supplementary heating, where, for example, a room is also heated by radiators. To ensure that the floor heats up sufficiently, there are a number of things you need to take into account.

5.1 Control by MAGNUM Remote Zone Control (Page 22)

When several rooms are heated by underfloor heating and not all rooms have to be at the same temperature, you can choose to use a zone control. In this form of adjustment, the various rooms have their own thermostat that sets the desired temperature. Our MAGNUM W thermostats control wirelessly a receiver (MAGNUM W-Controller), which uses thermal motors (MAGNUM actuators) to control the various underfloor heating groups. Because the groups can be opened and closed independently of each other in this way, it is possible to achieve different room temperatures. The MAGNUM W-Controller is equipped with a potential-free contact or a boiler contact, which allows the boiler to be switched on when heat is requested by one or more thermostats.



5.2 Controlled via an (existing) room thermostat

When underfloor heating is used as the only and/or primary heat source, you can set and programme the room thermostat to the room temperature you want and to the programme you want. In this case, the room thermostat will switch on the boiler when there is a demand for heat. Through the supply of hot water from the boiler, the floor heating manifold will heat the tubes of the system until the desired room temperature is reached.

However, it is advisable not to use day/night switching of more than approximately 2 degrees with underfloor heating, as this type of heating system will not heat a room as quickly as, for example, wall radiators. If the desired room temperature is 20 degrees when the room is in use, make sure that the temperature does not drop below 18 degrees Celsius when you are away. You can also choose to maintain the same temperature continuously, as an underfloor heating system is more energy-efficient when a room has to be kept at the same temperature than when a room has to be reheated continuously due to large temperature differences between day and night, for example.

5.3 Instructions for using underfloor heating and wall radiators

If underfloor heating is used as a supplementary heating system (to take cold away from the floor, for example) or if underfloor heating is used in situations where the room where the room thermostat is installed is heated by radiators, it is important to temper the heat given off by the radiators as much as possible to give the underfloor heating system time to warm up. Room thermostats are designed to switch the boiler on when a room is no longer at the set temperature. This does not take into account the way the room is heated.

If radiators are fitted with thermostat knobs, set them 3 degrees lower than the desired room temperature (e.g. $21 - 3 = 18$ degrees). If you do not do this, your underfloor heating system will not heat up sufficiently, because the radiators will heat up the room so quickly that the boiler will stop supplying hot water before the floor has warmed up. If the radiators are not fitted with thermostat buttons (or are fitted with thermostat buttons with a setting of 1 to 5), you can adjust them manually. This is mostly done by feel and can differ per situation.

6. MAGNUM REMOTE CONTROL FOR ZONES



- Wireless operation via thermostat, PC, tablet or smartphone
- Heating and cooling mode
- Set up to 8 zones
- Merge zones easily
- Connect up to 32 actuators
- LAN connection
- Pump control function
- Self-modulating
- Customised weekly programme
- Bus connection for Smart Home functionality
- Room/floor sensor function

MAGNUM Remote Zone Control is a complete system for controlling your underfloor heating. The system consists of thermostats that can be hung in each room and a controller that is mounted near the distributor. The advanced actuators receive a signal via the controller whether they should be opened or closed depending on the temperature demand. Control the zones separately via the thermostat or via your tablet or smartphone. This allows you to set the different zones in your home with the greatest of ease.

6.1 MAGNUM W-Thermostat

The MAGNUM W-Hockey ensures precise control of the room temperature. With this clock thermostat you can adjust the temperature based on a series of programmed settings that take effect at different times of the day. The thermostat is connected wirelessly to the MAGNUM W-Controller and transmits a signal when the temperature changes.



6.2 MAGNUM W-Controller

The MAGNUM W-Controller receiver is specially designed to control the temperature of underfloor heating systems via the "normally closed" actuators. Each receiver can control 8 zones and can be expanded as required.



6.3 MAGNUM W-Actuators

These electro-thermal actuators are used to automatically control the stopcocks. When the actuators are mounted on the taps, they automatically shut off the water supply from the boiler. As soon as there is a heat demand from the underfloor heating system, the thermostat, which is connected to the receiver, causes the actuators to open the stopcocks so that hot water from the boiler can be let into the groups. When the correct temperature is reached, they close the stop valves again.



6.4 MAGNUM Eco Pump Switch

This automatic pump switch switches on the circulation pump of the floor heating when the temperature of the heating water is higher than the set temperature and switches it off when it is lower than the set temperature. This ensures that the pump is not switched on 24 hours a day, which can significantly reduce energy costs.





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