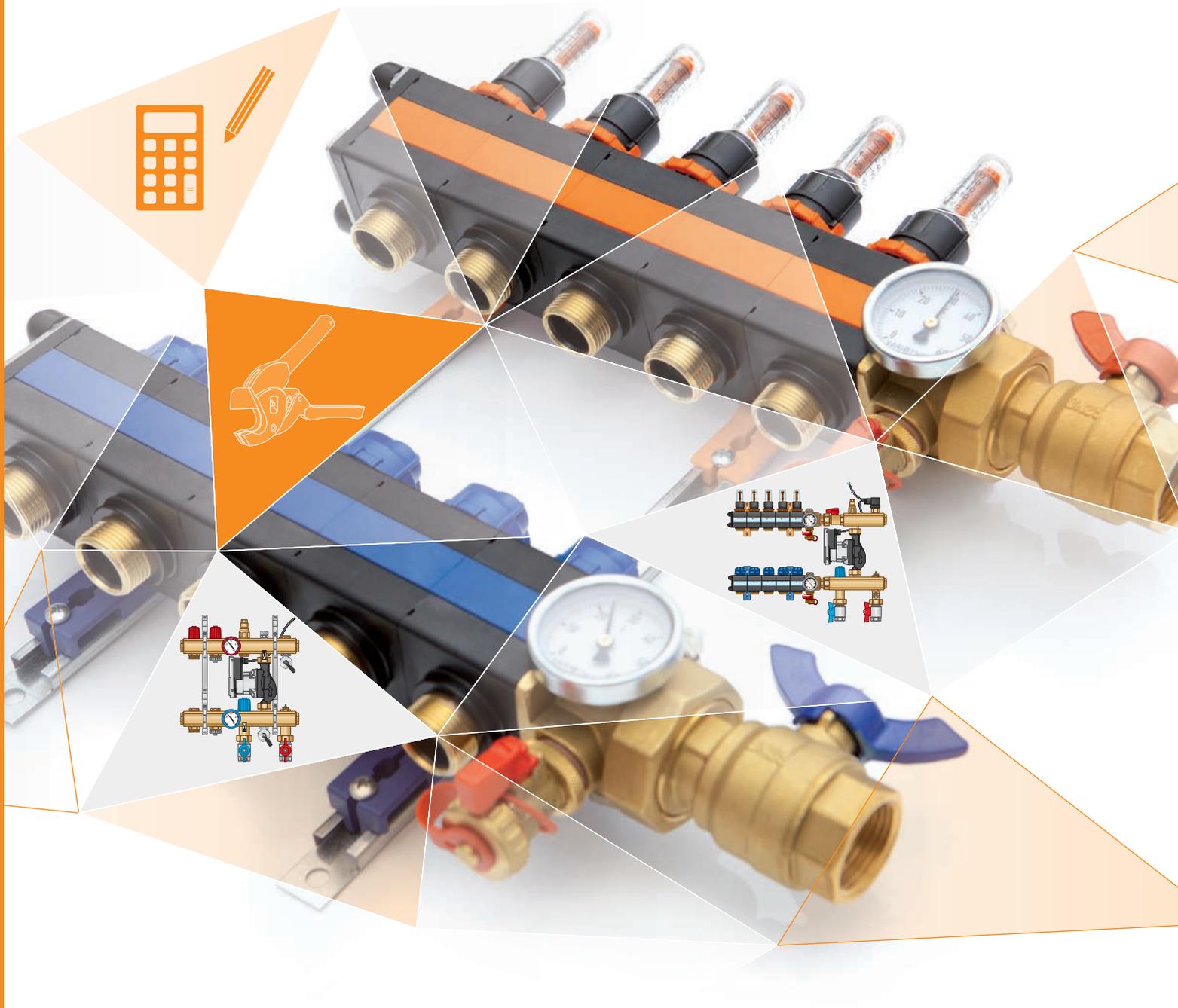
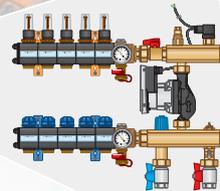
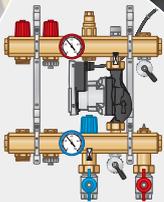


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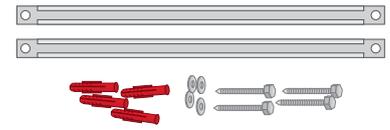


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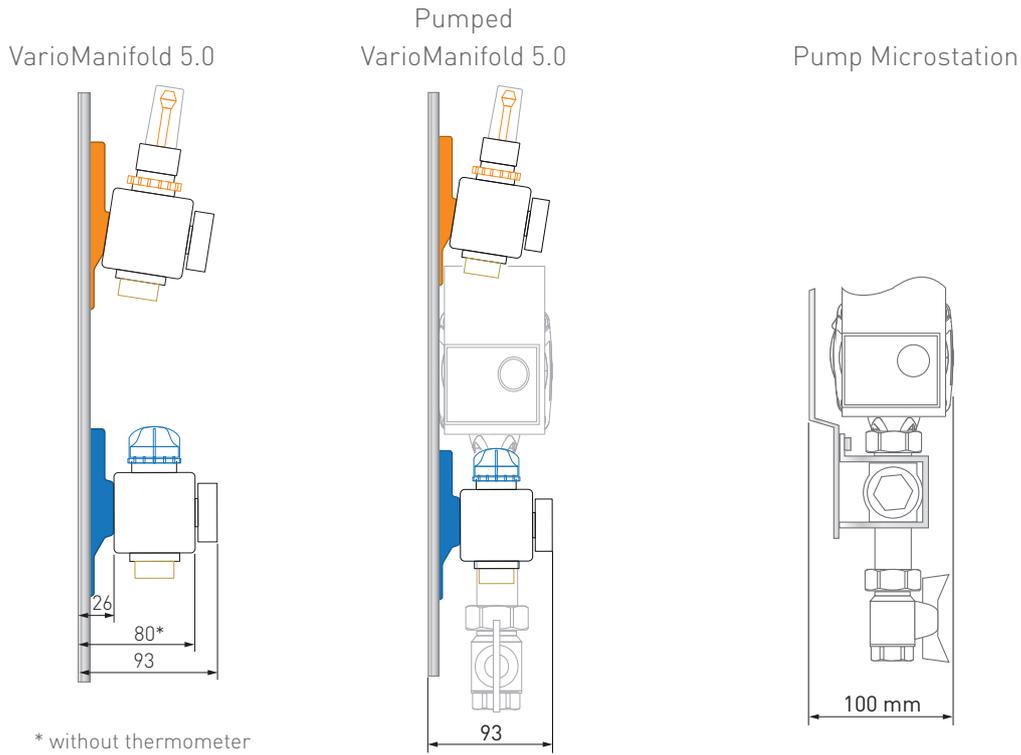
VARIOTHERM

2.3 Wall mounting without manifold cabinet

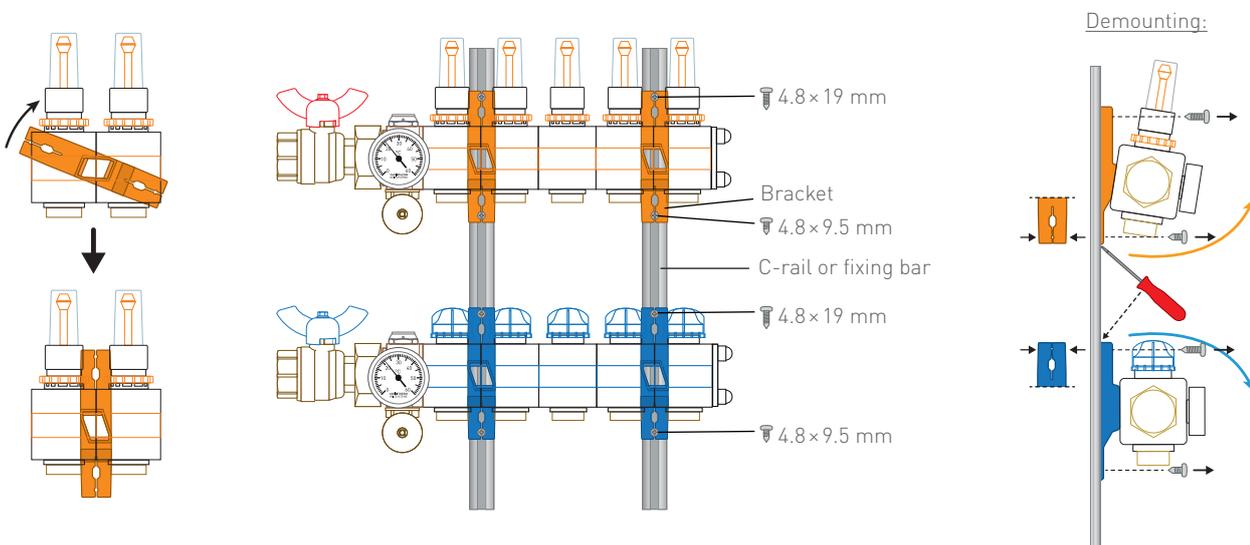
The fixing bars are mounted to the wall at a suitable distance depending on the manifold size using the screws provided. The VarioManifold, Pumped VarioManifold or Pump Microstation can then be attached to them.



2.4 Installation depths of the manifolds



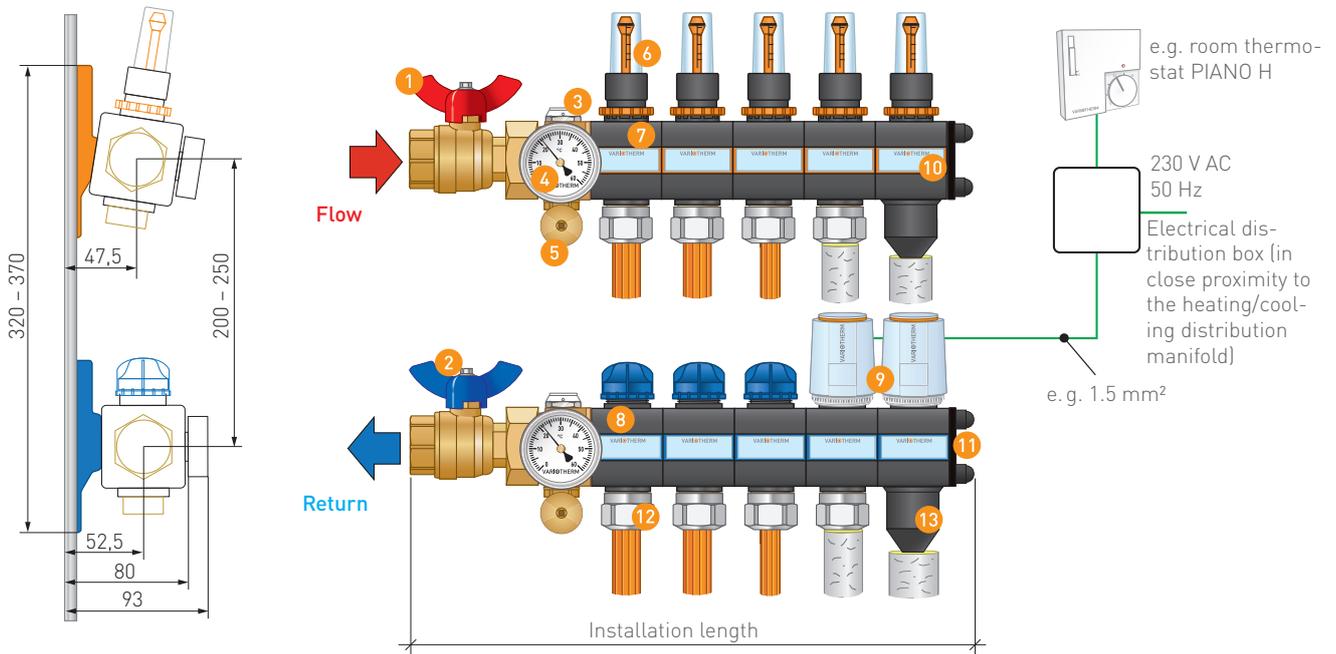
2.5 Installation on C-rails/fixing bars



3 VARIOMANIFOLD 5.0

3.1 Description

The VarioManifold 5.0 is made of plastic modules which are fitted together according to the number of heating/cooling circuits required.



Manifold circuits	Installation length	Fitting manifold	Remaining space VSU/VSA
1 circuit*	345 mm	VSU1/VSA2	50/305 mm
2 circuits	245 mm	VSU1/VSA1	150/205 mm
3 circuits	295 mm	VSU1/VSA1	100/155 mm
4 circuits	345 mm	VSU1/VSA2	50/305 mm
5 circuits	395 mm	VSU2/VSA2	139/255 mm
6 circuits	445 mm	VSU2/VSA2	89/205 mm
7 circuits	495 mm	VSU2/VSA2	39/155 mm
8 circuits	545 mm	VSU3/VSA3	289/405 mm
9 circuits	595 mm	VSU3/VSA3	239/355 mm
10 circuits	645 mm	VSU3/VSA3	189/305 mm
11 circuits	695 mm	VSU3/VSA3	139/255 mm
12 circuits	745 mm	VSU3/VSA3	89/205 mm
13 circuits	795 mm	VSU3/VSA3	39/155 mm
14 circuits	845 mm	VSU4/VSA4	289/405 mm
15 circuits	895 mm	VSU4/VSA4	239/355 mm
16 circuits	945 mm	VSU4/VSA4	189/305 mm
17 circuits	995 mm	VSU4/VSA4	139/255 mm

* 1-block variant

- 1 Flow locking ball valve (1" female thread)
- 2 Return locking ball valve (1" female thread)
- 3 Manual air vent
- 4 Thermometer
- 5 Fill & drain cock 1/2", twistable
- 6 Flow indicator, viewing glass can be unscrewed under pressure
- 7 Flow segment with flow indicator which can be pre-set (10–160 l/h)
- 8 Return segment with shut-off valve
- 9 Thermoelectric actuator (for individual room regulation)
- 10 Identification labels
- 11 End panel (insulated)
- 12 Variotherm clamping screw fitting 3/4" Eurocone (For Variotherm pipes \varnothing 11.6, \varnothing 16 and \varnothing 20 mm)
- 13 Insulating grommet (optional for cooling)

Advantages

- Plastic manifold with internal air chambers for heat insulation
- Flexible to convert to thermostat operation
- Pre-set flow indicator in the flow (10–160 l/h) according to ÖN/DIN EN 1264/4, viewing glass can be cleaned
- Optimised for **low temperature** surface heating/cooling
- Detachable locking ball valves on the flow and return pipes
- Ventilation and flushing option via the twistable fill & drain cock
- Modular structure
- Completely oxygen-tight
- Identification labels
- All parts self-sealing, manifolds pressure-tested
- Adjustable spacing between the flow and return pipes

Technical data

Max. test pressure: 10 bar (only with water)

Max. operating overload pressure: 6 bar

Operating temperatures:

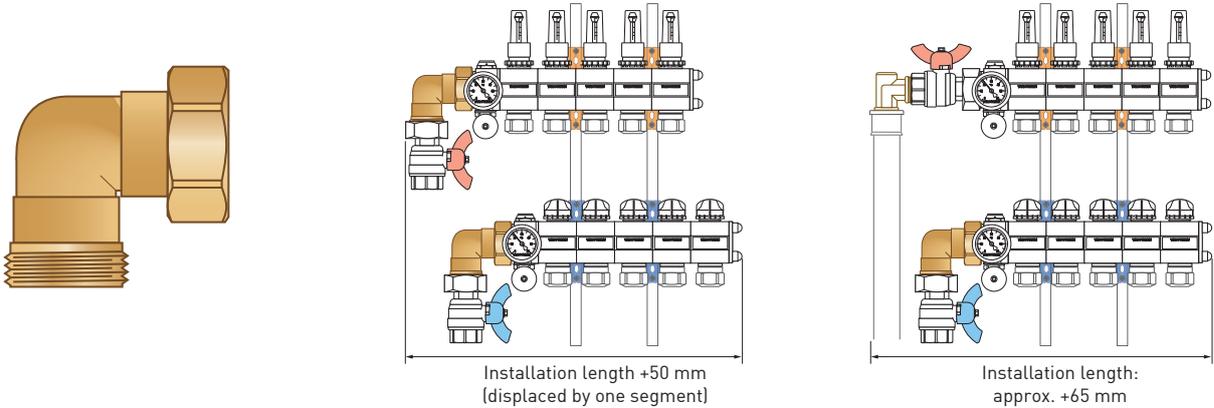
–20 to +90 °C (anti-freeze filling)

Installation depth of manifold:

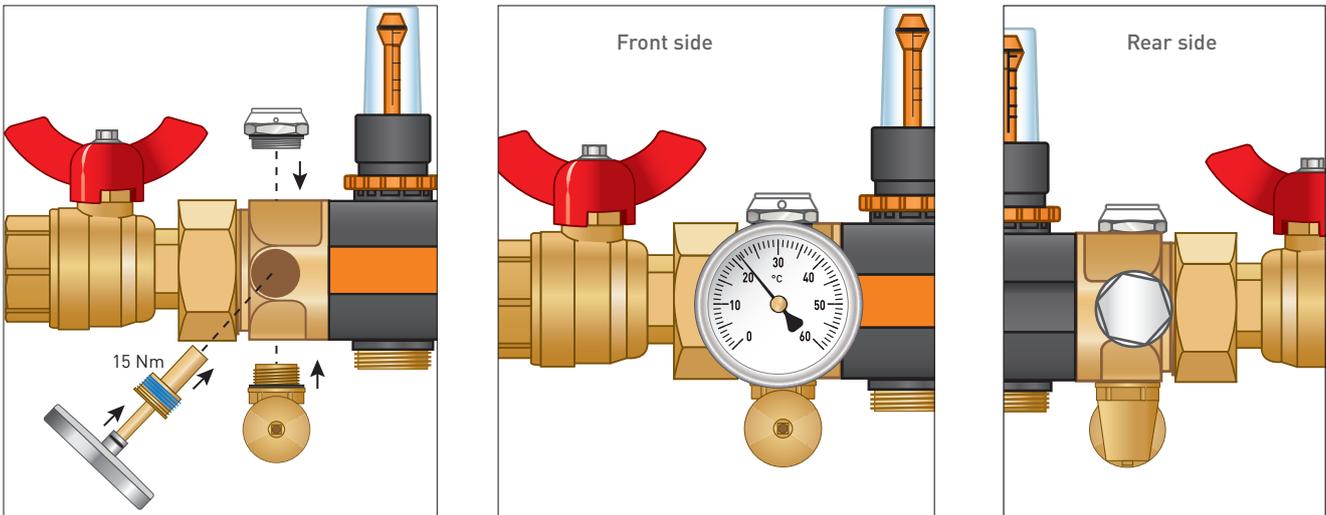
93 mm or 80 mm with removed thermometers

3.2 Elbow fitting 6/4" 90°

To fit the vertical supply lines to the VarioManifold. Remaining space in the manifold box can be used for additional installation length, see table Section 3.1.



3.3 Completion of the connecting block



3.4 Dimensioning examples for supply pipe

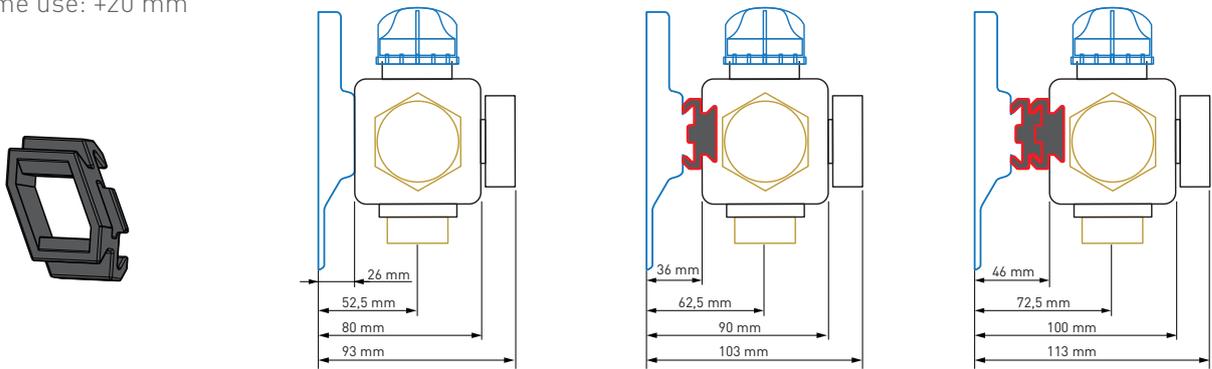
Dimensioning example for supply pipe to heating distribution manifold $\Delta t (t_F - t_R) = 10 \text{ K}$		
Heating circuit	Heat load	Dimensions for multi-layer supply pipes / copper
≤ 6	≤ 7.5 kW	for example 26x3 / Cu22x1.0
7-11	7.5-14 kW	for example 32x3 / Cu28x1.0
12-17	14-20 kW	for example 40x4 / Cu35x1.2
Dimensioning example for supply pipe to cooling distribution manifold $\Delta t (t_F - t_R) = 4 \text{ K}$		
Cooling circuit	Cooling load	Dimensions for multi-layer supply pipes / copper
≤ 6	≤ 3.5 kW	for example 26x3 / Cu22x1.0
7-11	3.5-6.5 kW	for example 32x3 / Cu28x1.0
12-17	6.5-9.5 kW	for example 40x4 / Cu35x1.2

3.5 Spacer for bracket set

To increase the distance between the wall and the return block.

One time use: +10 mm

Two time use: +20 mm



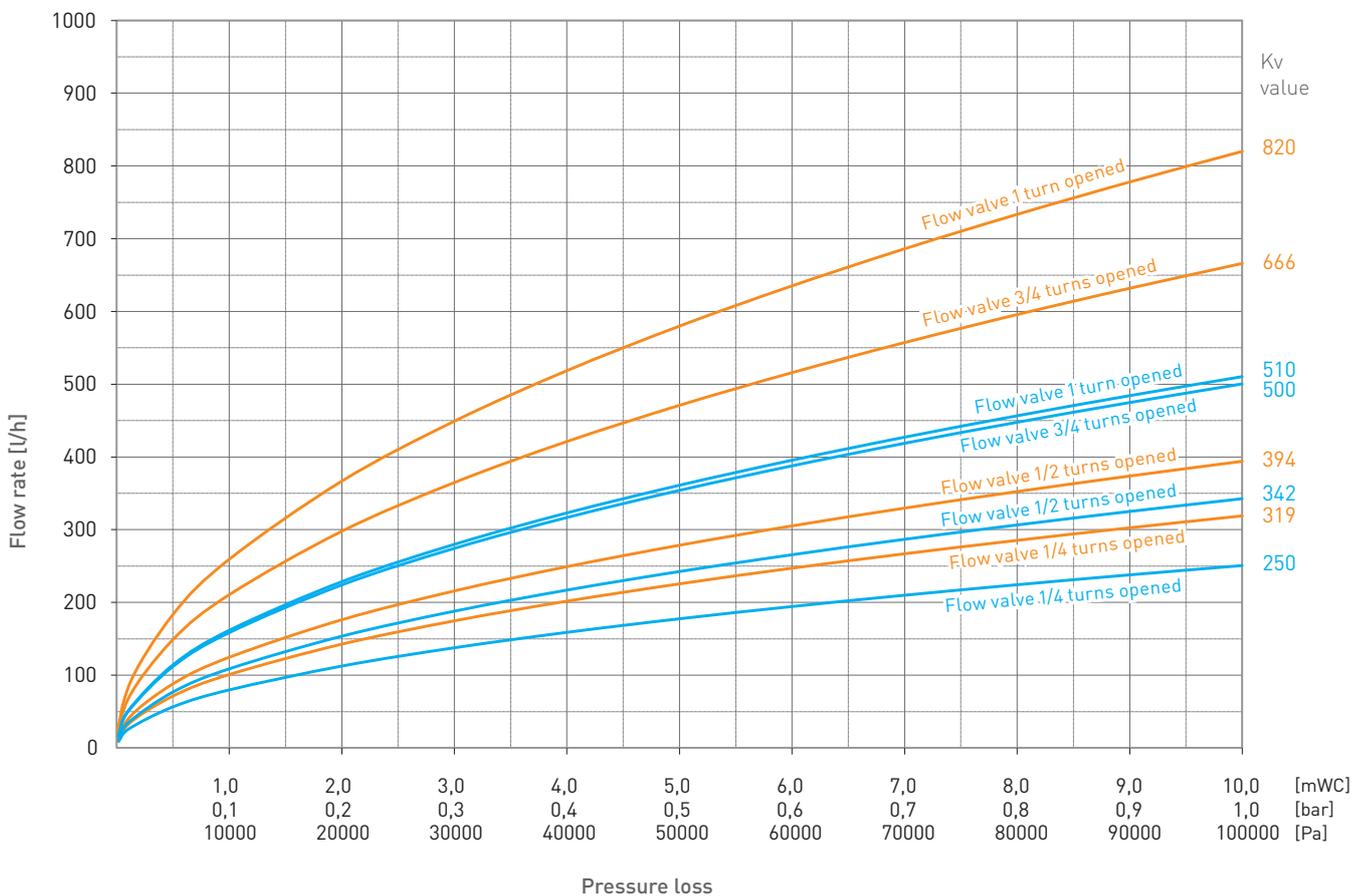
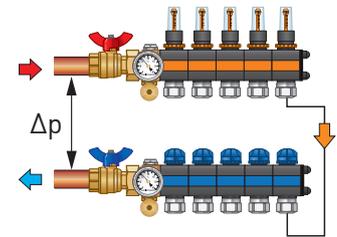
3.6 Flow characteristic curve

To ascertain the pressure loss of the heating/cooling distribution manifold for the respective heating/cooling circuits (without pressure loss of pipes).

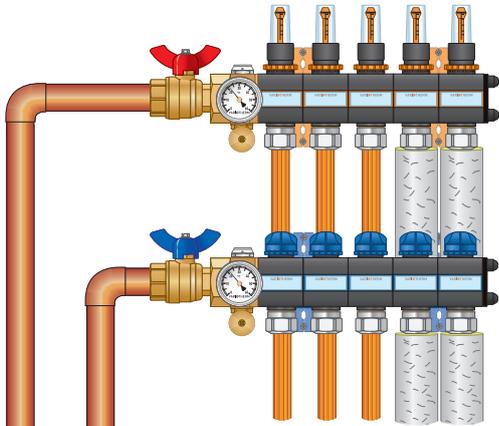
Max. opened return valve

- with clamping screw fitting for VarioProFile pipe 11.6x1.5

- with clamping screw fitting for VarioProFile pipe 16x2



3.7 Possible variations

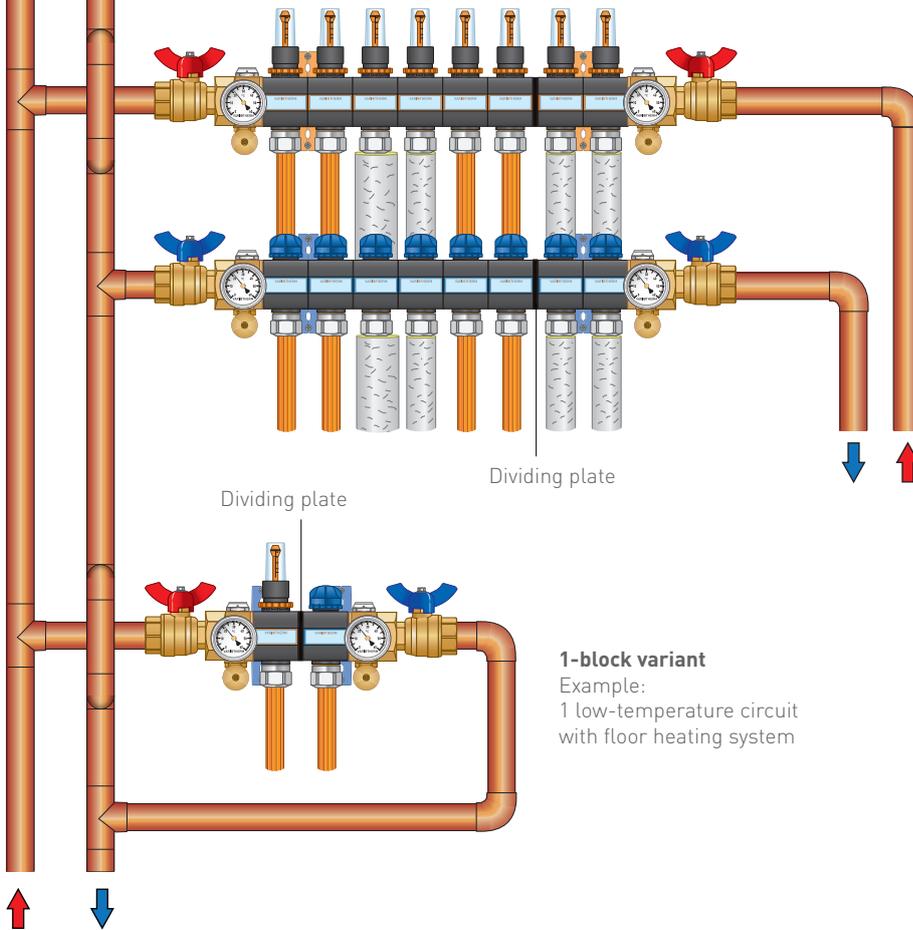


Basic Version

Example:
5 low-temperature circuits with floor heating system and wall heating system

Combination – two different temperature circuits

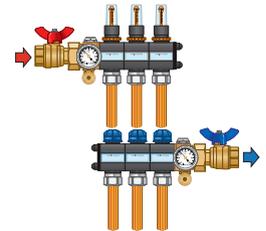
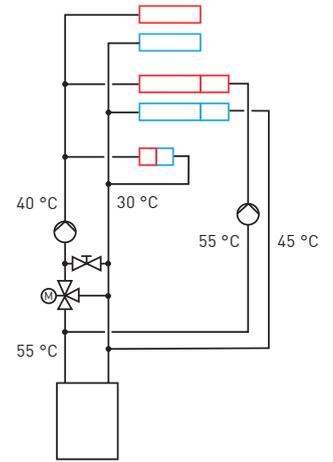
Example: 6 low-temperature circuits with wall and floor heating, 2 high-temperature circuits for trench heating and cosy corner bench



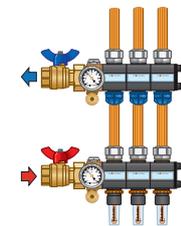
1-block variant

Example:
1 low-temperature circuit with floor heating system

Example diagram:

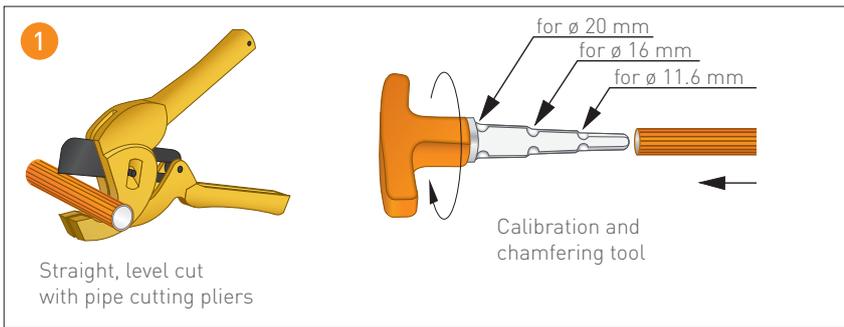


Flow connected to the left, return to the right

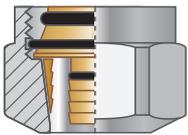
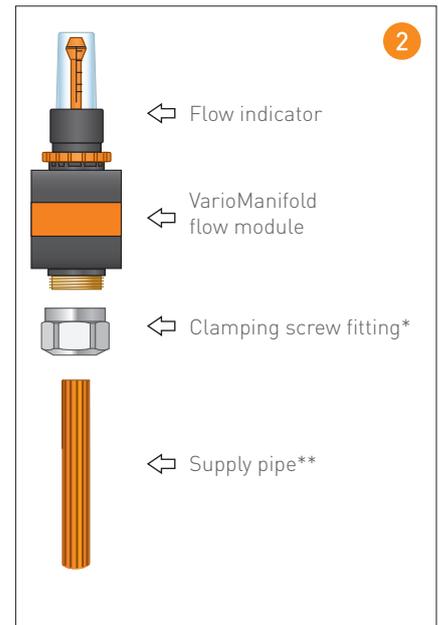


All circuits facing upwards

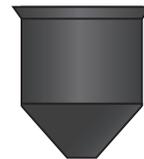
3.8 Connecting the Variotherm pipes



- 1 The supply pipe is cut off straight across and then calibrated.
- 2 Push the pipe into the clamping screw fitting up to the stop, and in this position tighten the union nut hand-tight. Tighten the clamping screw fitting for one more turn with an open-end wrench (AF30). The tightening torque is 35 Nm.



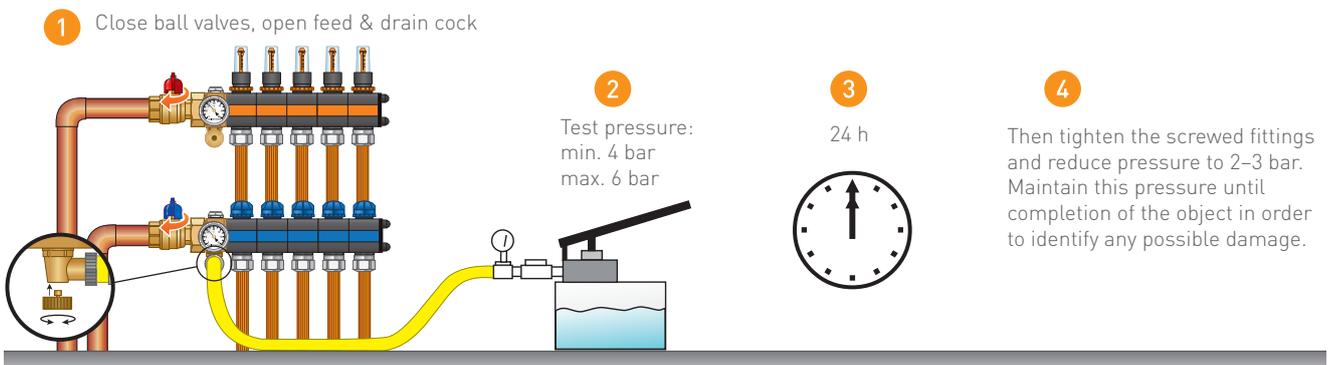
Clamping screw fitting* 3/4"EURO, especially developed for Variotherm pipes, nickel plated, single-piece, with metal clamping ring and galvanic isolation, tested according to EN 21003



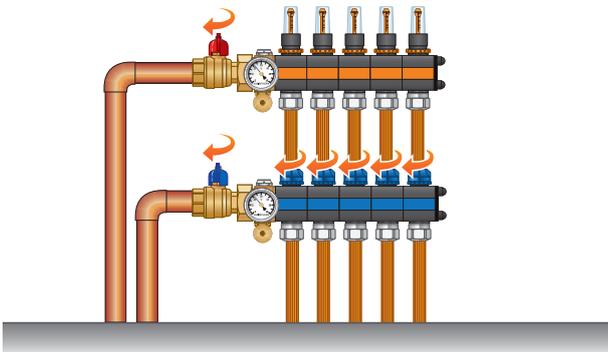
Insulating grommet, protection against condensation at the clamping screw fitting in case of cooling.

** Supply pipe	* Clamping screw fitting
Variomodular pipe 20x2 Laser	3/4"EUROx20 (Z1500)
VarioProFile pipe 16x2 Laser	3/4"EUROx16 (Z1400)
VarioProFile pipe 11.6x1.5 Laser	3/4"EUROx11.6 (Z1300)
Pre-insulated Variomodular pipe 16x2 Laser	3/4"EUROx16 (Z1400)

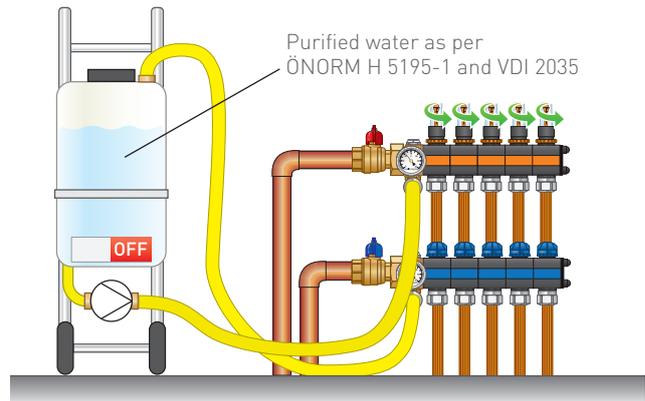
3.9 Pressure test



3.10 Filling/flushing/deaerating the system

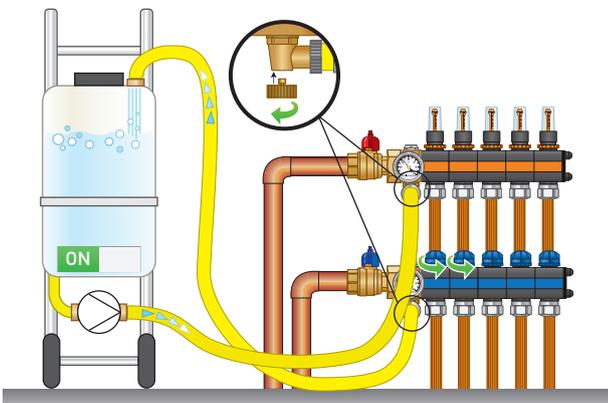


1. Main locking ball valves and all return modules are closed ↻.

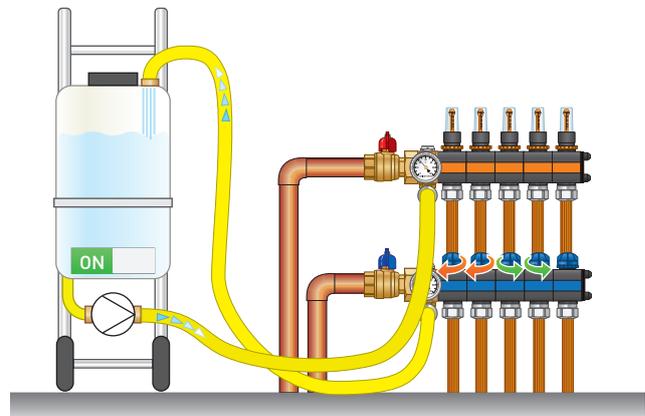


2. All flow valves are opened ↻.

3. Then connect the filling and flushing station to both feed & drain cocks on the supply and return pipes.



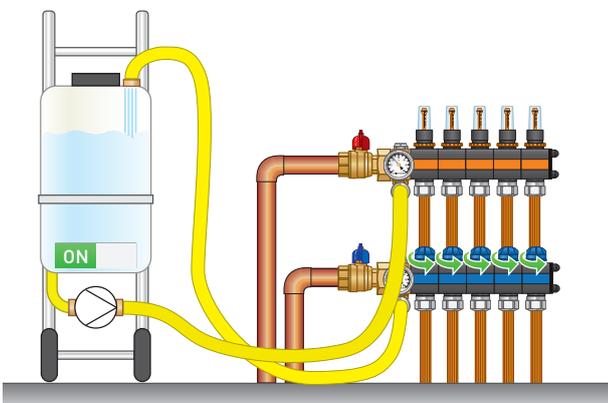
4. Switch on the flushing and filling station. Then open the fill & drain cock, the flow pipe is pressurised and the return segments of the first two heating/cooling circuits will open ↻. This thoroughly flushes water through the flow into the heating/cooling circuits.



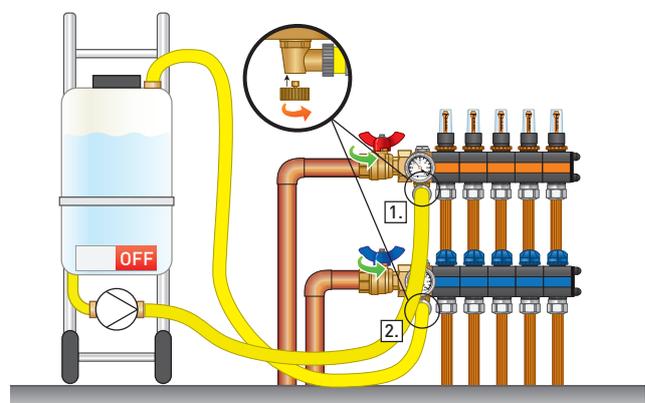
5. Once the water comes out with no air bubbles, the opened return modules are to be closed ↻.

6. Immediately afterwards, the next two return modules are to be opened ↻.

The same procedure is followed for the other circuits in sequential order, until the entire system is filled.



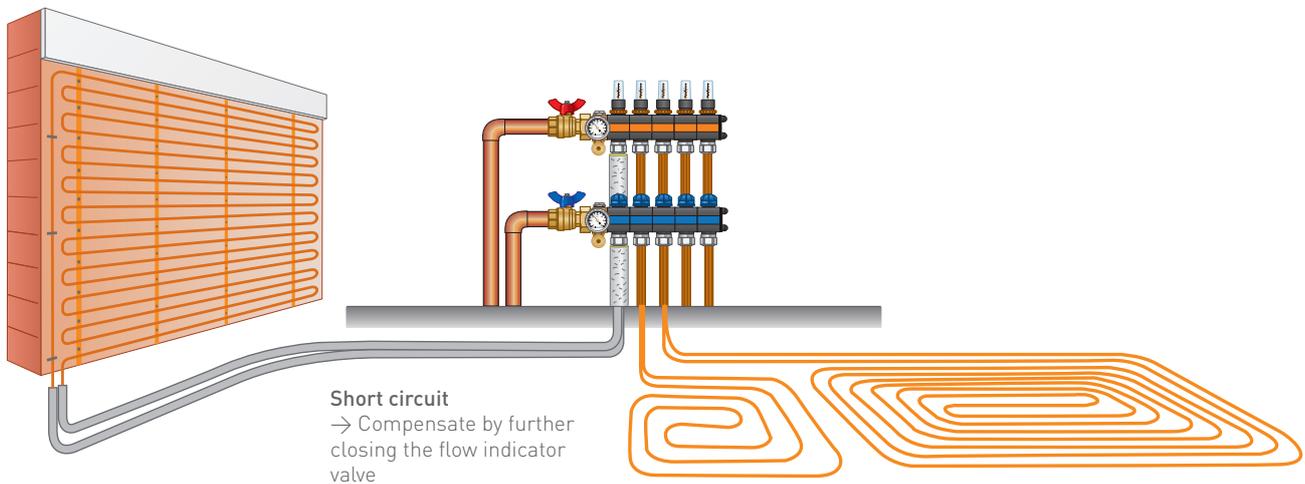
7. Finally, this "flushing procedure" is repeated upon opening of all flow and return modules ↻.



8. First turn off the fill & drain cock on the return pipe, then immediately turn off the fill & drain cock on the flow pipe ↻. Turn off the flushing and filling station. Open the main locking ball valves ↻.

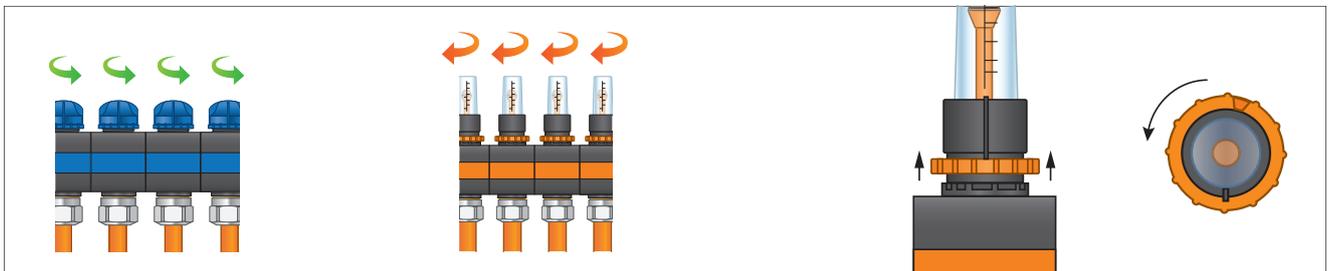
3.11 Hydronic balancing

The length of the Variotherm pipe (heating surface + supply pipes), possible connection parts (e.g. press-fit couplings) and the distribution manifold determine the pressure loss in the individual heating/cooling circuits. For hydronic balancing, the relevant circulation pump must be running. A water flow rate is assigned to each heating/cooling circuit.



Hydronic balancing is performed by means of the flow rate valve in the flow (orange segment).

1. Fully open all return valves. Close all flow valves. Pull up the affixing ring and turn it anticlockwise until it stops. Then press down the affixing ring.



2. Slowly open the flow indicators in sequential order until the display has reached the required flow rate. Because the flow rates of the individual heating/cooling circuits affect one another, it may be necessary to make corrections to the values in a second flow. Pull up the affixing ring and turn it clockwise until it stops. Then press the affixing ring down.

