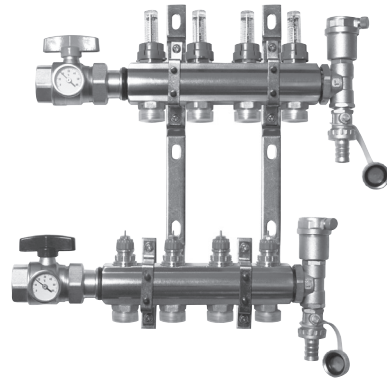


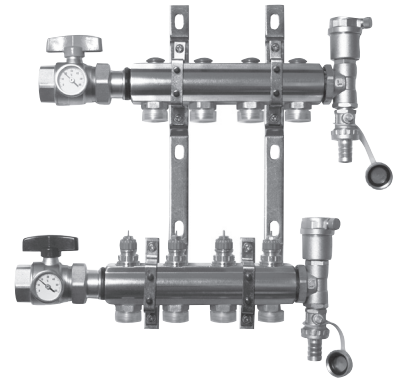
Data Sheet

FHF Floor Heating Manifold

Application



Manifold with flowmeter



Manifold without flowmeter

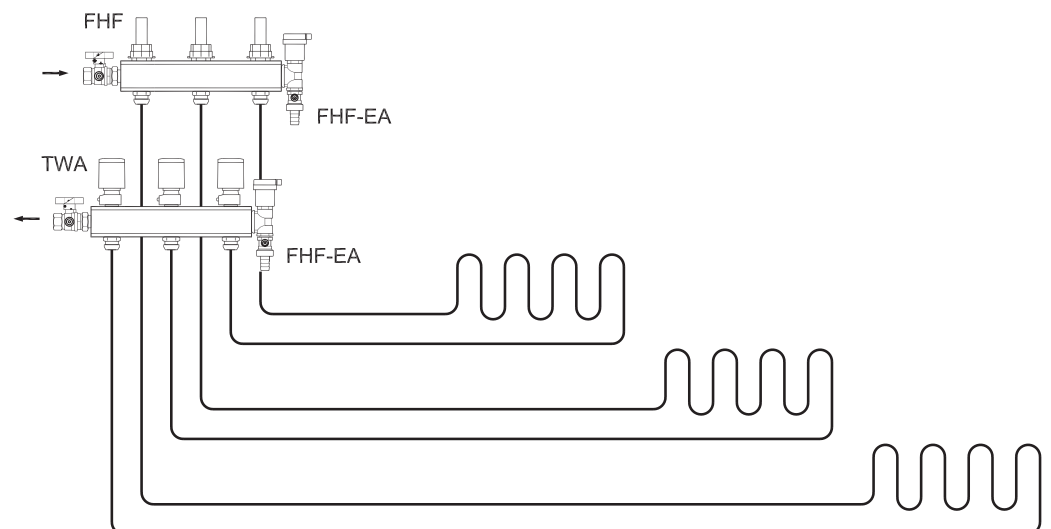
The Manifold FHF is used for controlling water flow in under floor heating systems. Each tube of the floor heating system is connected to the manifold, thus making it possible to control water flow or heat supply to each room in the building individually. The manifold consists of a supply and return manifold. The supply manifold includes possibility for individual shut-off of each circuit and as an option also flowmeter. The return manifold is equipped with integrated Danfoss pre-setting valves securing optimal hydraulic balance in the system.

The valves can be controlled electronically by thermal actuators or act as self-acting units by means of remote temperature adjusters.

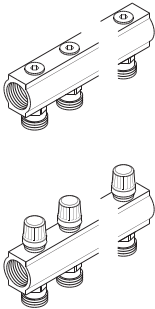
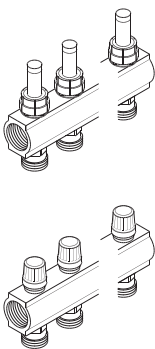
The manifold is supplied in modules of up to 12 outlets. In addition extension pieces are available for connecting the manifolds in series. Ball valves are available as an option for positive shut-off between manifold and system.

The end pieces FHF-EM and FHF-EA are supplied with manual airvent or alternatively with automatic airvent, purge valve. The end pieces are placed at the end of the manifold.



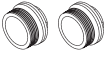



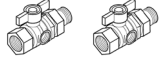

System layout






Ordering

Description	Type	Code no.	
	Manifold set 2+2	FHF-2	088U0502
	Manifold set 3+3	FHF-3	088U0503
	Manifold set 4+4	FHF-4	088U0504
	Manifold set 5+5	FHF-5	088U0505
	Manifold set 6+6	FHF-6	088U0506
	Manifold set 7+7	FHF-7	088U0507
	Manifold set 8+8	FHF-8	088U0508
	Manifold set 9+9	FHF-9	088U0509
	Manifold set 10+10	FHF-10	088U0510
	Manifold set 11+11	FHF-11	088U0511
	Manifold set 12+12	FHF-12	088U0512
		Manifold set 2+2, with flowmeter	FHF-2F
Manifold set 3+3, with flowmeter		FHF-3F	088U0523
Manifold set 4+4, with flowmeter		FHF-4F	088U0524
Manifold set 5+5, with flowmeter		FHF-5F	088U0525
Manifold set 6+6, with flowmeter		FHF-6F	088U0526
Manifold set 7+7, with flowmeter		FHF-7F	088U0527
Manifold set 8+8, with flowmeter		FHF-8F	088U0528
Manifold set 9+9, with flowmeter		FHF-9F	088U0529
Manifold set 10+10, with flowmeter		FHF-10F	088U0530
Manifold set 11+11, with flowmeter		FHF-11F	088U0531
Manifold set 12+12, with flowmeter		FHF-12F	088U0532



Accessories

Description	Type	Code no.	
	End section — automatic airvent and purge valve	FHF-EA	088U0785
	End section — manual airvent and purge valve	FHF-EM	088U0786
	End caps — set	FHF-E	088U0582
	Connection pieces — set	FHF-C	088U0583
	Reduction bushes/pieces — set 1" - 3/4"	FHF-R	088U0584
	Mounting brackets — set	FHF-MB	088U0585
	2 × ball valve 1" with tail piece — for connection to manifold and for blocking of floor heating system	FHF-BV	088U0822
	1 × thermometer 0 °C to 60 °C, Ø 35 mm — for flow/return temperature measurement	FHD-T	088U0029

Accessories

Description	Type	Code no.
 <p>Thermal actuator, 24V, NC, Danfoss RA connection to valve</p>	TWA-A	088H3110
	TWA-A	088H3112
	TWA-A	088H3114
 <p>Stuffing box for manifolds</p>	DZR	013G0554
 <p>Flowmeter</p>	—	088U0819
Manifold insulation	—	088U0587

Compression fittings

Description	Size, mm	Code no.
 <p>Compression fittings for PEX tubing in accordance with DIN16893 & DIN4726.</p> <p>Max working pressure: 6 bar Test pressure: 10 bar Max, flow temperature: 95 °C G 3/4" internal thread</p> <p>Max, flow temperature given by the tube manufacturer must not be exceeded.</p>	12 × 2	013G4152
	13 × 2	013G4153
	14 × 2	013G4154
	15 × 2,5	013G4155
	16 × 1,5	013G4157
	16 × 2	013G4156
	16 × 2,2	013G4163
	17 × 2	013G4162
	18 × 2	013G4158
	18 × 2,5	013G4159
	20 × 2	013G4160
20 × 2,25	013G4093	
20 × 2,5	013G4161	
 <p>Compression fittings for ALUPEX tubing in accordance with DIN16893 & DIN4726.</p> <p>Max working pressure: 6 bar Test pressure: 10 bar Max flow temperature: 95 °C G 3/4" Internal thread</p> <p>Max flow temperature given by the tube manufacturer must not be exceeded.</p>	12 × 2	013G4182
	14 × 2	013G4184
	15 × 2,5	013G4185
	16 × 2	013G4186
	16 × 2,25	013G4187
	18 × 2	013G4188
	20 × 2	013G4190
	20 × 2,25	013G4093
20 × 2,5	013G4191	

Capacity/ commissioning

The pre-setting of the manifold valves determines the flow in the floor heating tubes and is therefore an important factor for obtaining optimal hydraulic balance in the system. A correct hydraulic balance is important if optimal comfort shall be achieved with a minimum of energy consumption and is easily carried out following the example shown below.

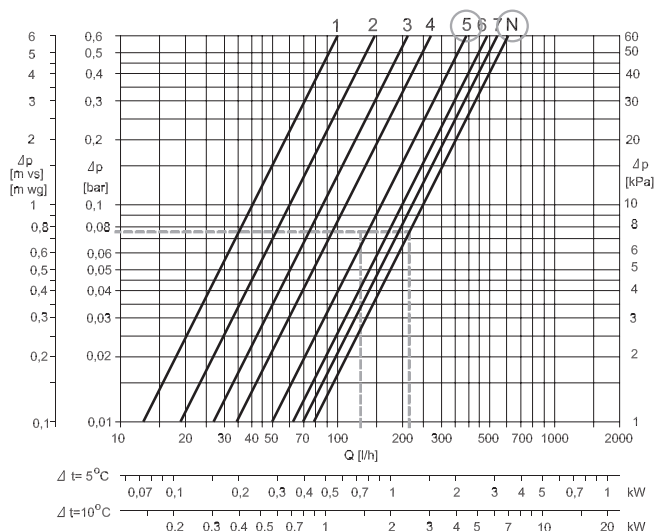
Example

Room 1	1. Determine longest tube/largest room	25 m ²
	2. Desired cooling (ΔT)	5 °C (typical)
	3. Determine heat requirement for the room	50 W/m ²
	4. Conversion factor	1,16
	5. Calculation of flow for the room	$Q \text{ (l/h)} = \frac{50 \text{ W/m}^2 \times 25 \text{ m}^2}{5 \text{ °C} \times 1,16} = 216 \text{ l/h}$
Room 2	6. Determine area for the next room	15 m ²
	7. Calculation of flow for the room (ΔT and heat requirement is assumed identical for the rooms in this case)	$Q \text{ (l/h)} = \frac{50 \text{ W/m}^2 \times 15 \text{ m}^2}{5 \text{ °C} \times 1,16} = 129 \text{ l/h}$

Manifold with flowmeter

Pre-setting:

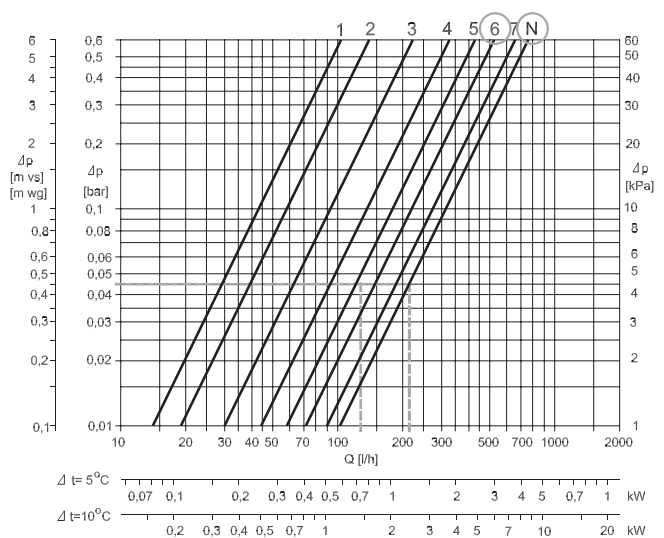
Room 1 -> N
Room 2 -> 5



Manifold without flowmeter

Pre-setting:

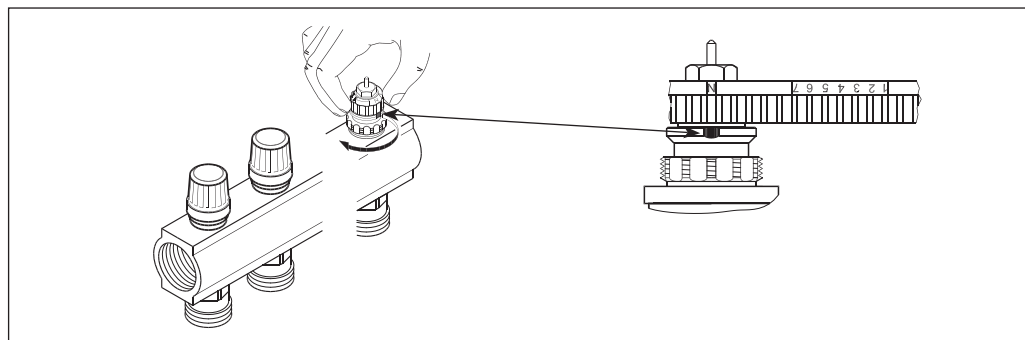
Room 1 -> N
Room 2 -> 6



Pre-setting the manifold valves

The diagrams shows the capacities for each heating circuit at different pre-settings of the manifold valves. Please note that the capacities are slightly different depending on whether a manifold with flowmeter or a manifold without flowmeter has

been chosen. Based on the above calculations and capacity diagrams each manifold valve is pre-set by rotating the red ring until the correct value on the ring is in-line with the sight mark on the valve.



Design

Item	Description	Material	
<p>Supply manifold with flowmeter</p>	1	Sightglass	Heat resistant plastic
	2	Flowmeter nut	Brass, CuZn39Pb3
	3	Flowmeter insert	Brass, CuZn39Pb3
	4	Supply manifold body	Brass, CuZn40Pb2
	5	O-ring	EPDM
	6	Union for compression fitting	Brass, CuZn40Pb2

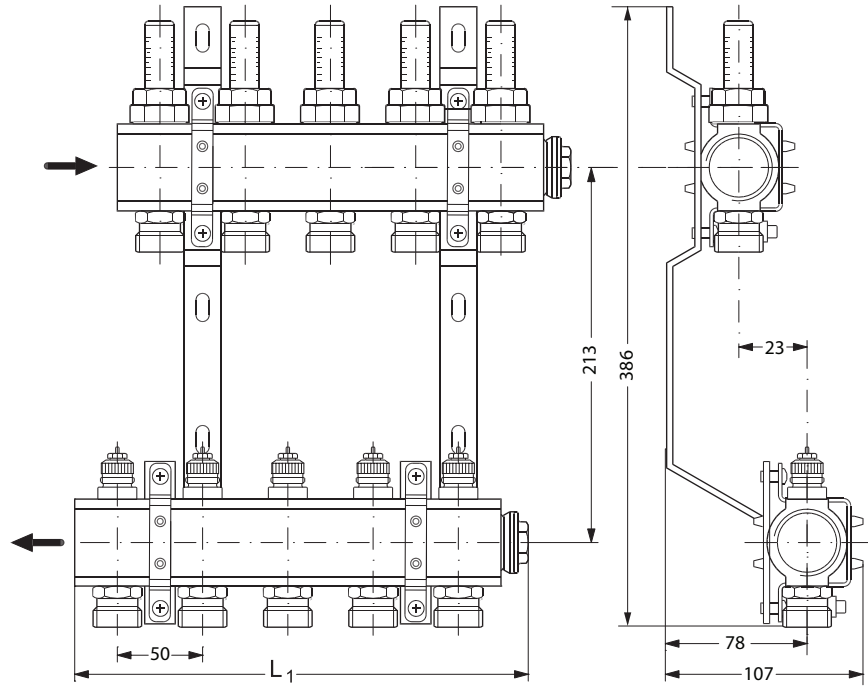
Item	Description	Material	
<p>Supply manifold without flowmeter</p>	1	Lock washer	Brass, CuZn40Pb2
	2	O-ring	EPDM
	3	Valve spindle	Brass, CuZn40Pb2
	4	O-ring	EPDM
	5	Valve tube	Brass, CuZn40Pb2
	6	Supply manifold body	Brass, CuZn40Pb2
	7	O-ring	EPDM

Item	Description	Material	
<p>Return manifold with control valve</p>	1	Gland seal	—
	2	Pre-setting ring	PBT
	3	Valve body	Brass, CuZn40Pb2
	4	Return manifold body	Brass, CuZn40Pb2
	5	K _v insert	Brass, CuZn39Pb3
	6	O-ring	EPDM
	7	Union for compression fitting	Brass, CuZn40Pb2

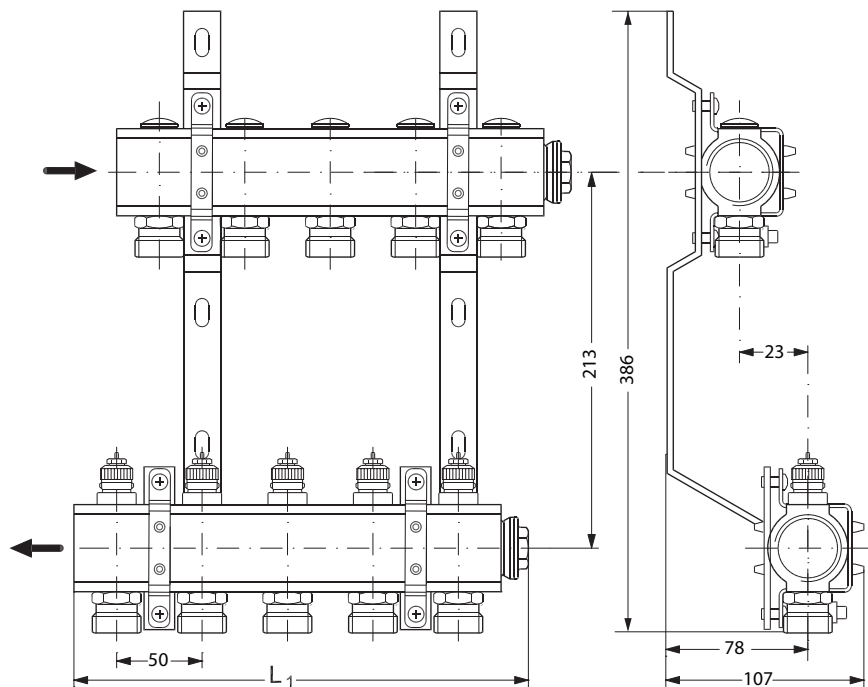
Operation conditions

Max. differential pressure: 0,6 bar.
 Max. working pressure: Manifold without flowmeter 10 bar / Manifold with flowmeter 6 bar.
 Max. test pressure: Manifold without flowmeter 16 bar / Manifold with flowmeter 10 bar.
 Max. flow temperature: Manifold without flow meter 90 °C / Manifold with flow meter 60 °C.

Dimensions

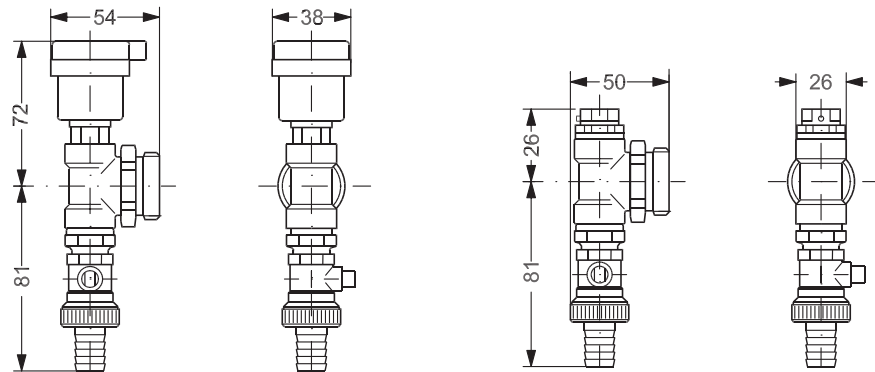


Type	2+2	3+3	4+4	5+5	6+6	7+7	8+8	9+9	10+10	11+11	12+12
L1 (mm)	111	161	211	261	311	361	411	461	511	561	611



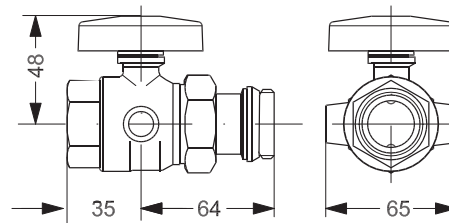
Type	2+2	3+3	4+4	5+5	6+6	7+7	8+8	9+9	10+10	11+11	12+12
L1 (mm)	111	161	211	261	311	361	411	461	511	561	611

Dimensions



FHF-EA

FHF-EM



FHF-BV

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