

Data sheet

Floor Heating Manifold FHF-F

Application

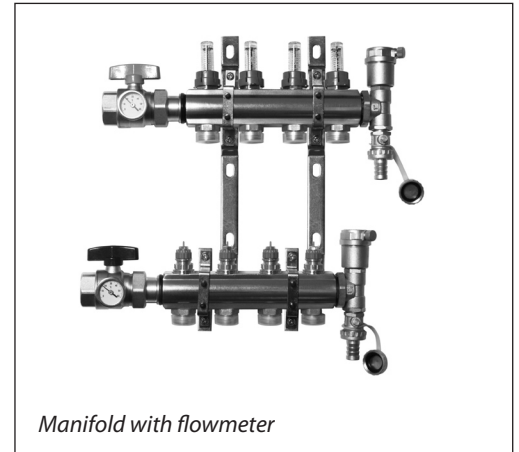
The FHF-F Manifold is used for controlling water flow in underfloor heating systems. Each pipe in the floor heating system is connected to the manifold, thus making it possible to control water flow or heat supply to each room in the building individually.

The manifold comprises of a supply and return manifold. The supply manifold includes individual shut-off of each circuit as well as an individual flowmeter per circuit. The return manifold is equipped with integrated Danfoss pre-setting valves securing optimal hydraulic balance in the system.

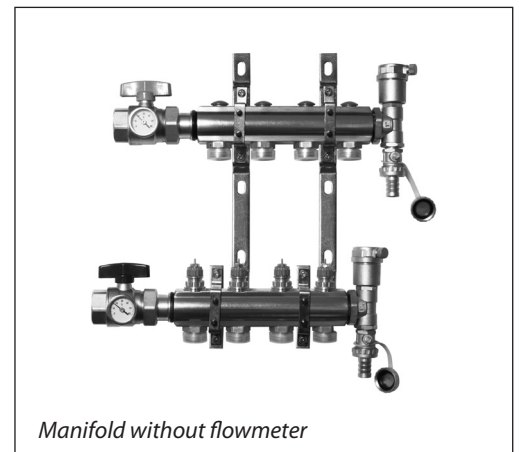
The valves can be controlled electronically by thermal actuators or act as self-acting units by means of remote temperature adjusters.

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

The end pieces FHF-EM and FHF-EA are supplied with manual airvents or alternatively with automatic airvents.

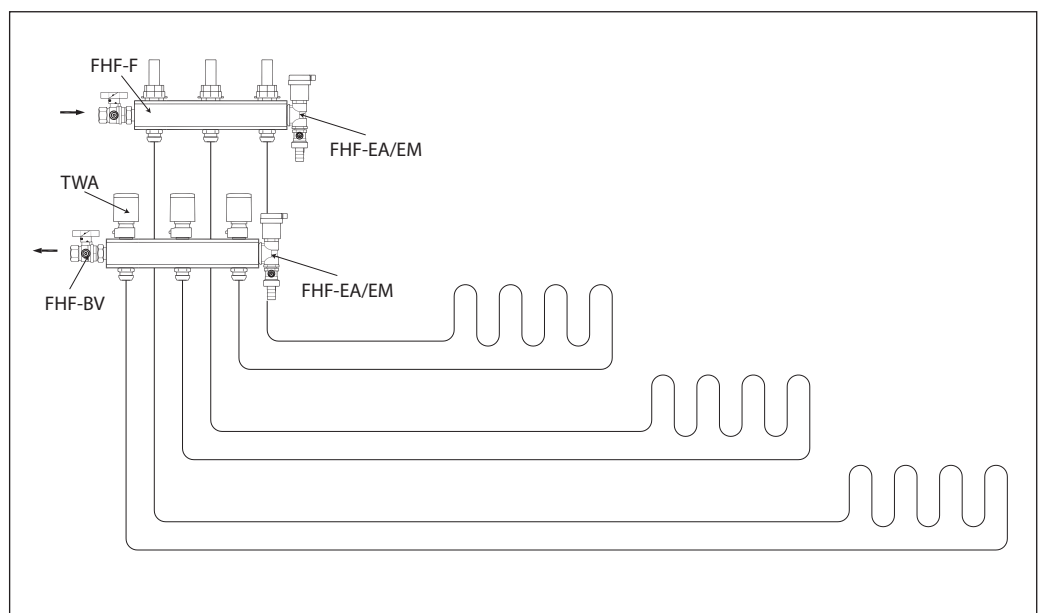


Manifold with flowmeter



Manifold without flowmeter


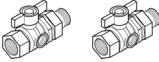




System layout






Ordering

	Description	Type	Code no.
	Manifold set 2+2, with flowmeter	FHF-2F	088U052200
	Manifold set 3+3, with flowmeter	FHF-3F	088U052300
	Manifold set 4+4, with flowmeter	FHF-4F	088U052400
	Manifold set 5+5, with flowmeter	FHF-5F	088U052500
	Manifold set 6+6, with flowmeter	FHF-6F	088U052600
	Manifold set 7+7, with flowmeter	FHF-7F	088U052700
	Manifold set 8+8, with flowmeter	FHF-8F	088U052800
	Manifold set 9+9, with flowmeter	FHF-9F	088U052900
	Manifold set 10+10, with flowmeter	FHF-10F	088U053000
	Manifold set 11+11, with flowmeter	FHF-11F	088U053100
	Manifold set 12+12, with flowmeter	FHF-12F	088U053200
		End section - automatic airvent and purge valve	FHF-EA
	End section - manual airvent and purge valve	FHF-EM	088U058100
	End caps -set	FHF-E	088U058200
	Connection pieces - set	FHF-C	088U058300
	Reduction bushes/pieces -set 1" - 3/4"	FHF-R	088U058400

Ordering

	Description	Type	Code no.
	Mounting brackets - set	FHF-MB	088U058500
	2 x ball valve 1" with tail piece - for connection to manifold and for blocking of floor heating system	FHF-BV	088U058600
	1 x thermometer 0-60°C Ø35mm - for flow/return temperature measurement	FHD-T	088U002900
	Thermal actuator, 24V, NC, Danfoss RA connection to valve	TWA-A	088H311000
	Thermal actuator, 230V, NC, Danfoss RA connection to valve	TWA-A	088H311200
	Thermal actuator, 24V, NC, with end switch, Danfoss RA connection to valve	TWA-A	088H311400

	Description	Type	Code no.
	<p>Compression fittings for PEX tubing in accordance with DIN 16892/16893.</p> <p>Max working pressure - 6 bar Test pressure - 10 bar Max flow temp. - 95 °C G 3/4" Internal thread</p> <p>Max flow temperature given by the tube manufacturer must not be exceeded.</p>	12x2 mm	013G415200
		13x2 mm	013G415300
		14x2 mm	013G415400
		15x2,5 mm	013G415500
		16x1,5 mm	013G415700
		16x2 mm	013G415600
		16x2,2 mm	013G416300
		17x2 mm	013G416200
		18x2 mm	013G415800
		18x2,5 mm	013G415900
		20x2 mm	013G416000
		20x2,5 mm	013G416100
	<p>Compression fittings for ALUPEX tubing.</p> <p>Max working pressure - 6 bar Test pressure - 10 bar Max flow temp. - 95 °C G 3/4" Internal thread</p> <p>Max flow temperature given by the tube manufacturer must not be exceeded.</p>	12x2 mm	013G418200
		14x2 mm	013G418400
		15x2,5 mm	013G418500
		16x2 mm	013G418600
		16x2,25 mm	013G418700
		18x2 mm	013G418800
		20x2 mm	013G419000
20x2,5 mm	013G419100		
	<p>Compression fittings for STEEL and COPPER tubing.</p> <p>Max working pressure - 6 bar Test pressure - 10 bar Max flow temp. - 120 °C G 3/4" Internal thread</p>	10 mm	013G412000
		12 mm	013G412200
		14 mm	013G412400
		15 mm	013G412500
		16 mm	013G412600
18 mm	013G412800		

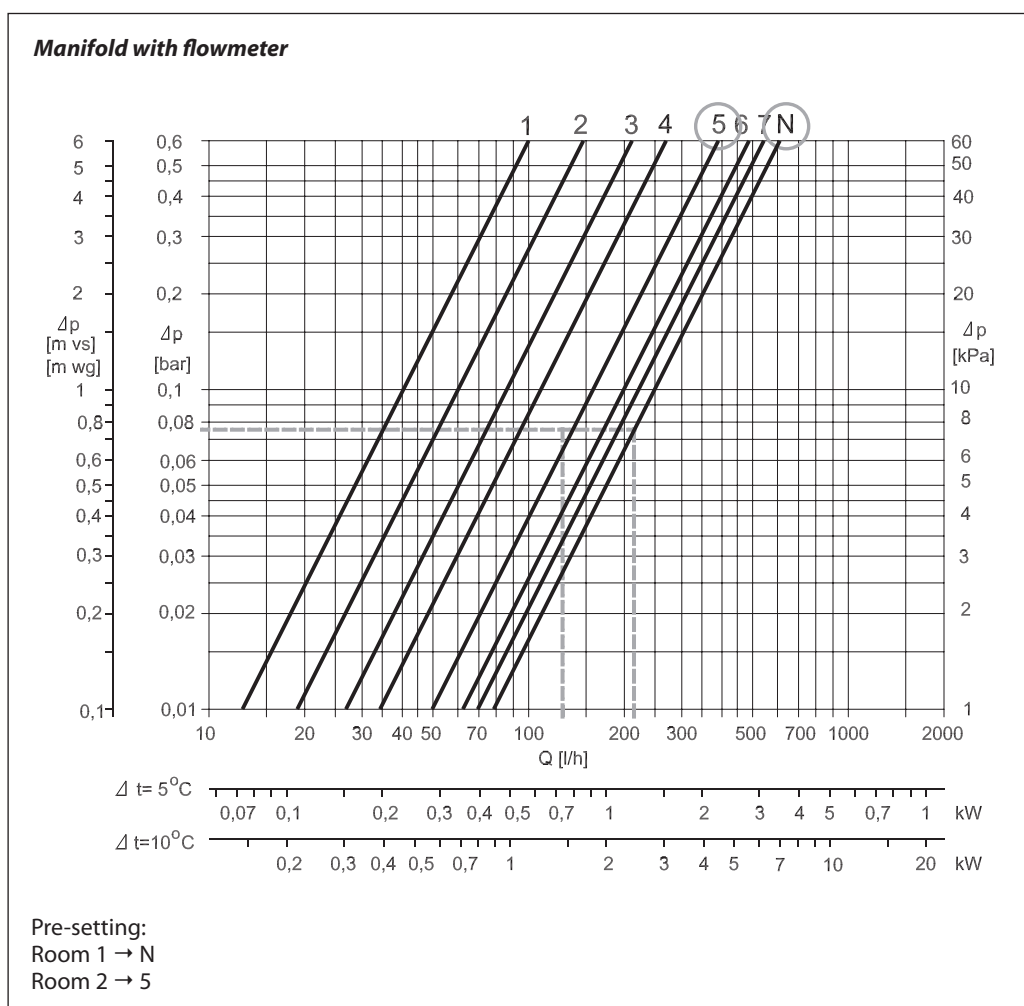
Capacity/ commissioning

The pre-setting of the manifold valves determines the flow in the floor heating pipes and is therefore an important factor for obtaining optimal hydraulic balance in the system. Correct hydraulic

balance is important if optimal comfort is to be achieved with minimum energy consumption and is easily carried out following the example shown below.

Example

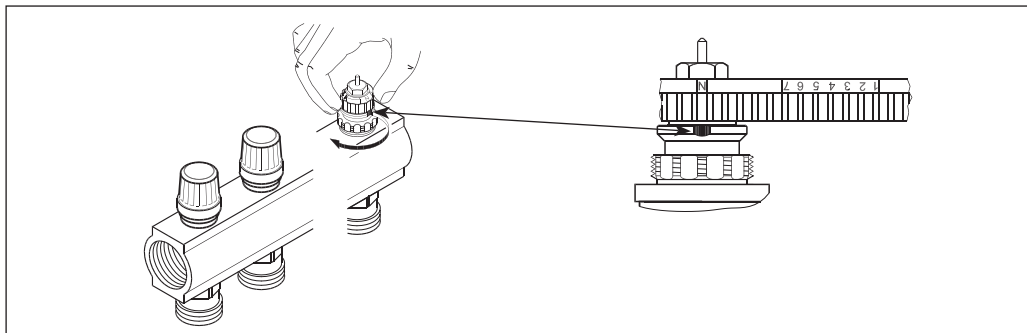
Room 1	1 Determine longest pipe/largest room	25 m ²
	2 Desired cooling (ΔT)	5 °C (typical)
	3 Determine heat requirement for the room	50 W/m ²
	4 Conversion factor	1.16
	5 Calculation of flow for the room	$Q \text{ (l/h)} = \frac{50 \text{ W/m}^2 \times 25 \text{ m}^2}{5 \text{ °C} \times 1.16}$ $Q \text{ (l/h)} = \underline{216 \text{ l/h}}$
Room 2	6 Determine area of 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)	$Q \text{ (l/h)} = \frac{50 \text{ W/m}^2 \times 15 \text{ m}^2}{5 \text{ °C} \times 1.16}$ $Q \text{ (l/h)} = \underline{129 \text{ l/h}}$



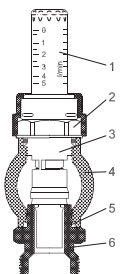
Pre-setting the manifold valves

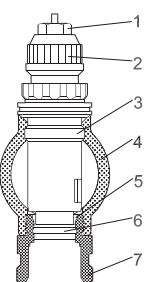
The diagrams show the capacities for each heating circuit at different pre-settings of the manifold valves. Based on the above calculations and capacity diagrams each manifold valve is pre-set by

rotating the red ring until the correct value on the ring is in-line with the sight mark on the valve.



Design

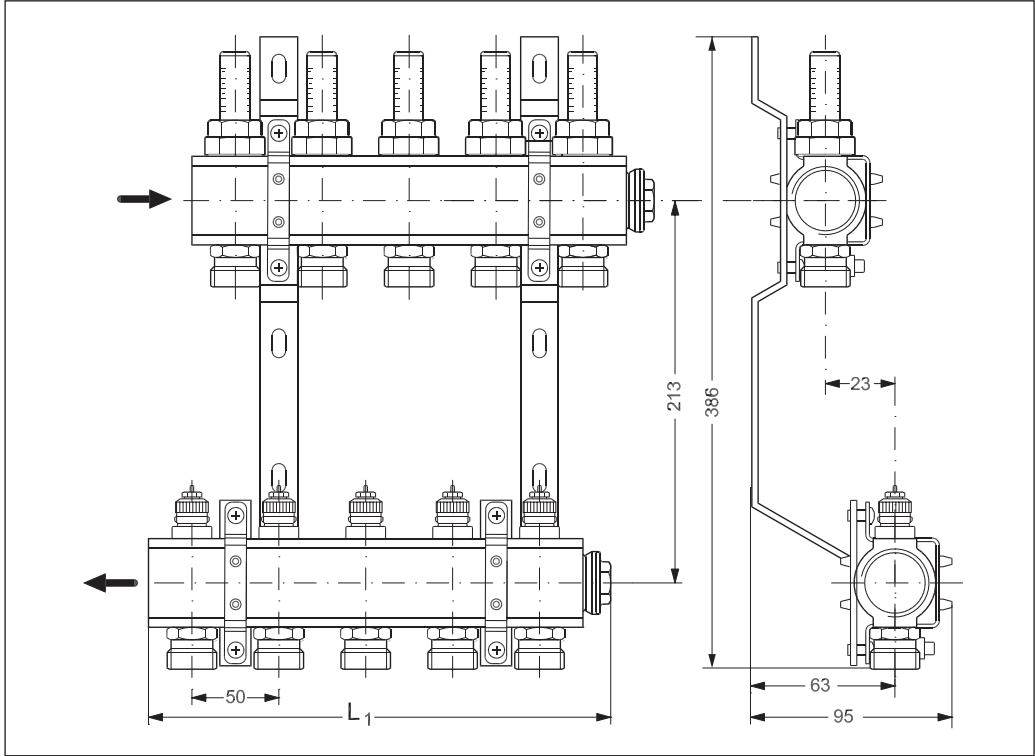
 <p><i>Supply manifold with flowmeter</i></p>	Item	Description	Material
	1	Sightglass	Heat resistant plastic
	2	Flowmeter nut	Brass, CuZn39Pb3
	3	Flowmeter insert	Brass, CuZn39Pb3
	4	Supply manifold body	Brass, CuZn40Pb2
	5	O-ring	EPDM
	6	Union for compression fitting	Brass, CuZn40Pb2

 <p><i>Return manifold with control valve</i></p>	Item	Description	Material
	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

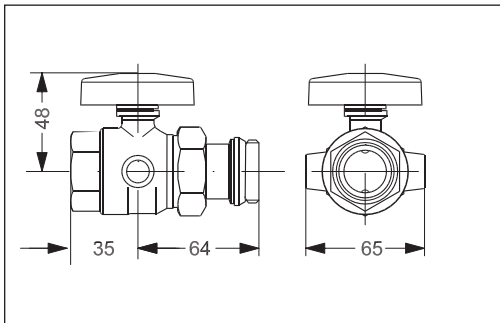
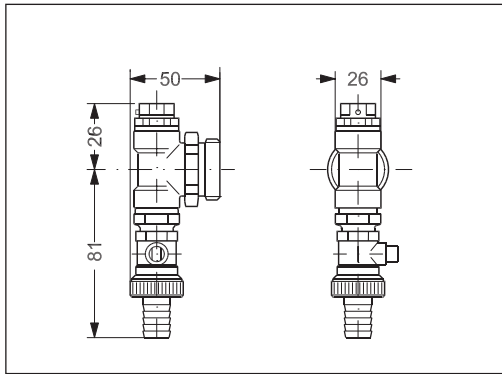
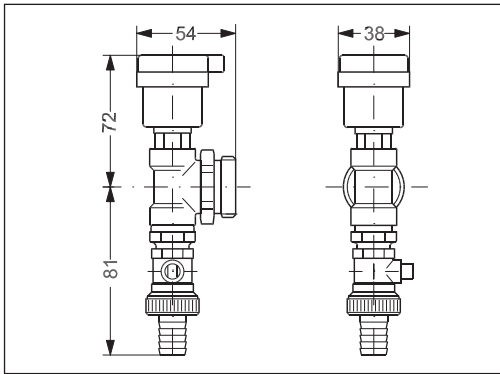
Operation conditions

Max differential pressure: 0.6 bar
 Max working pressure: Manifold with flowmeter 6 bar
 Max test pressure: Manifold with flowmeter 10 bar
 Max flow temperature: 90 °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



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