Data sheet

Floor Heating Manifold FHF-F

Application

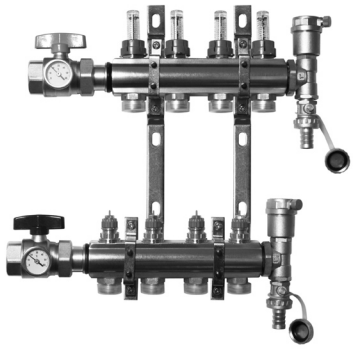
The FHF-F Manifold is used for controlling water flow in underfloor heating systems. Each pipe in the floor heating system is connected to the manifold, thus making it possible to control water flow or heat supply to each room in the building individually.

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.

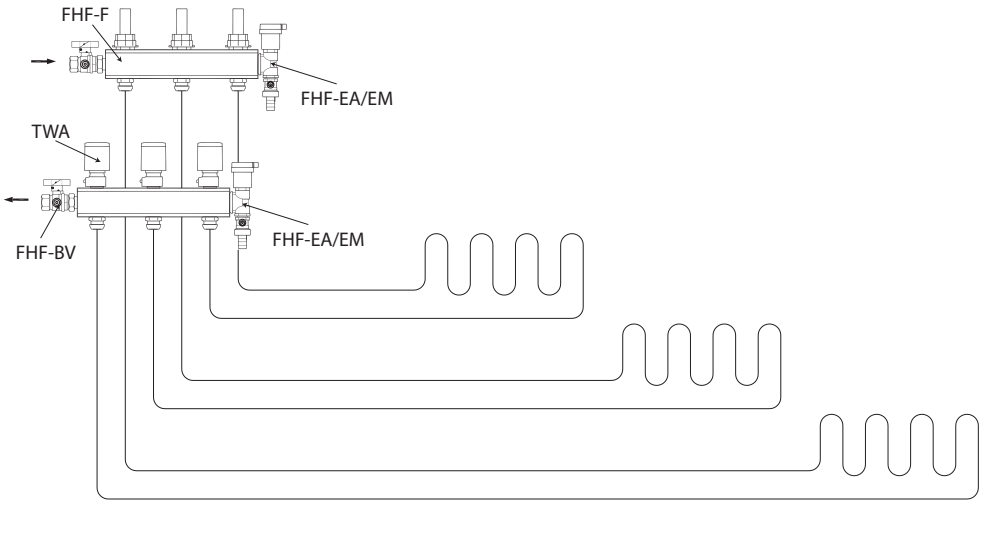
The end pieces FHF-EM and FHF-EA are supplied with manual airvents or alternatively with automatic airvents.



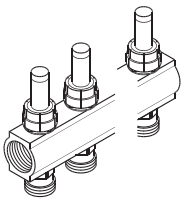
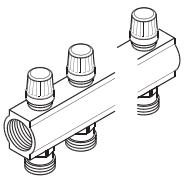
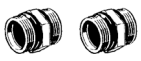
Manifold with flowmeter

Manifold without flowmeter

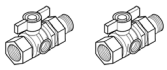
System layout



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	**088U058000**
	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.
	Compression fittings for **PEX** tubing in accordance with DIN 16892/16893. Max working pressure - 6 bar Test pressure – 10 bar Max flow temp. – 95 °C G ¾" Internal thread Max flow temperature given by the tube manufacturer must not be exceeded.	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**
	Compression fittings for **ALUPEX** tubing. Max working pressure - 6 bar Test pressure – 10 bar Max flow temp. – 95 °C G ¾" Internal thread Max flow temperature given by the tube manufacturer must not be exceeded.	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**
	Compression fittings for **STEEL** and **COPPER** tubing. Max working pressure - 6 bar Test pressure – 10 bar Max flow temp. – 120 °C G ¾" Internal thread	10 mm	**013G412000**
		12 mm	**013G412200**
		14 mm	**013G412400**
		15 mm	**013G412500**
		16 mm	**013G412600**
		18 mm	**013G412800**

Capacity/ commissioning

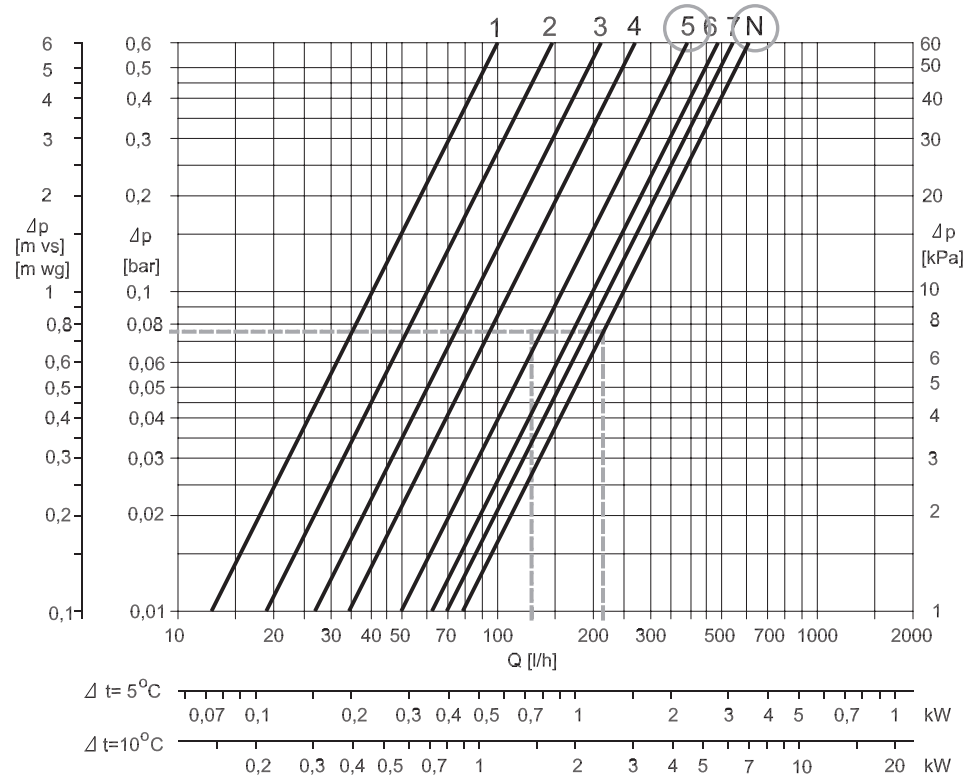
The pre-setting of the manifold valves determines the flow in the floor heating pipes and is therefore an important factor for obtaining optimal hydraulic balance in the system. Correct hydraulic balance is important if optimal comfort is to be achieved with minimum energy consumption and is easily carried 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 (l/h) = $\frac{50\ W/m^2 \times 25\ m^2}{5\ °C \times 1.16}$ Q (l/h) = 216 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 (l/h) = $\frac{50\ W/m^2 \times 15\ m^2}{5\ °C \times 1.16}$ Q (l/h) = 129 l/h

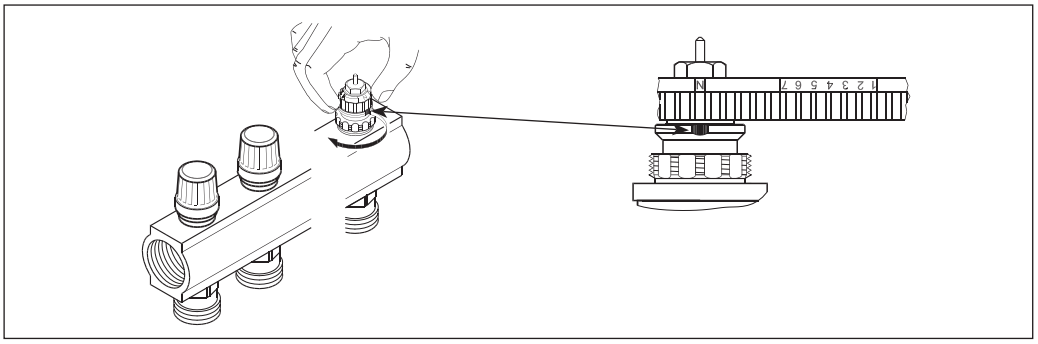
Manifold with flowmeter



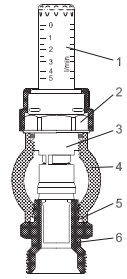
Pre-setting:
Room 1 → N
Room 2 → 5

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.

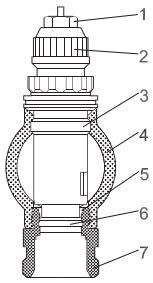


Design



Supply manifold with flowmeter

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



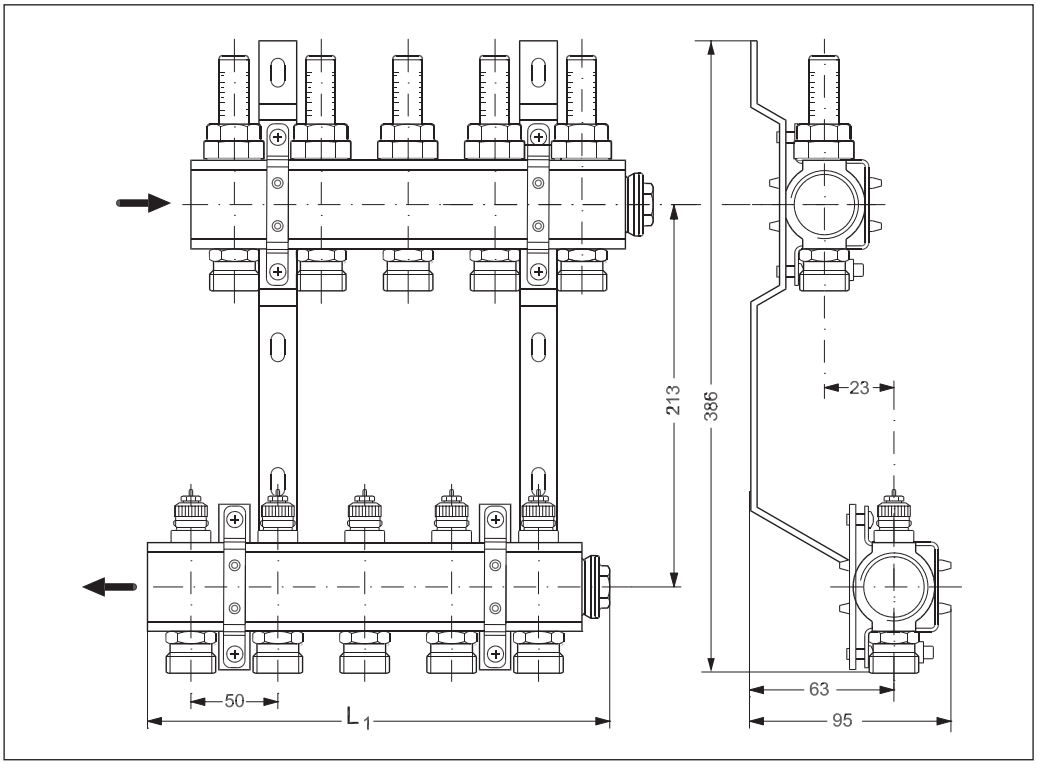
Return manifold with control valve

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

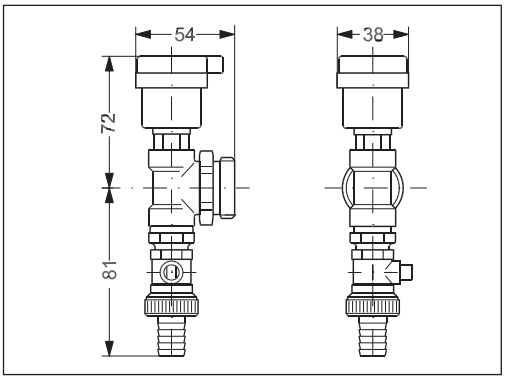
Operation conditions

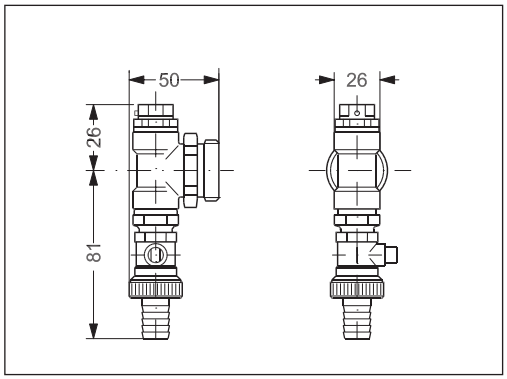
Max differential pressure:	0.6 bar
Max working pressure:	Manifold with flowmeter 6 bar
Max test pressure:	Manifold with flowmeter 10 bar
Max flow temperature:	90 °C

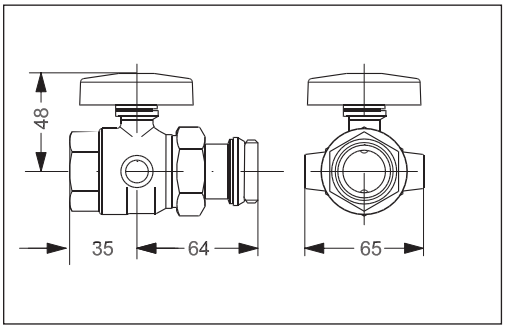
Dimensions



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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