

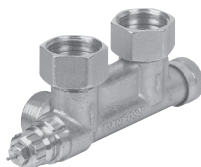
Datasheet

VHS-FN High Flow Valves for Two-Pipe Parallel and Base-Connection Radiators

Application



VHS-FN straight



VHS-FN angle

The VHS-FN is the ideal control valve for modern base-connection radiators, as well as for universal or bathroom radiators with connection distances of 50mm between flow and return. Quick and easy to install, it will accept standard Danfoss snap-lock sensor elements.

The VHS-FN incorporates a combined flow regulation and shut-off/drain device. Connection to copper, soft steel, alupex and PEX plastic pipes can be carried out with Danfoss clamping joints.

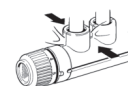
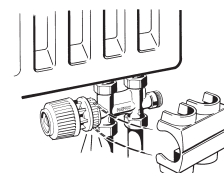
An optional fill-and-drain fitting is available.

To avoid the occurrence of scale and corrosion in the system, the composition of the heating water should comply with VDI guidelines 2035.

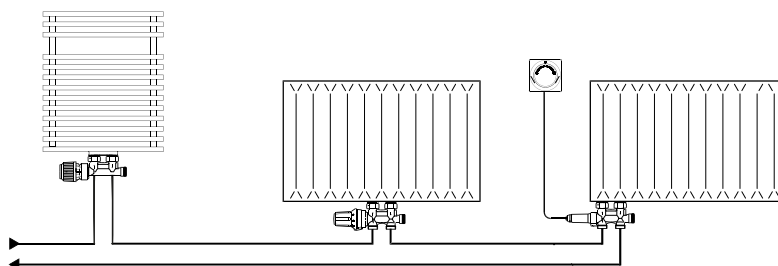
To ensure an appealing finish different types of valve covers are available:

In white ABS material (RAL 9010), suitable for wet lacquering or in black PPO, suitable for electrostatic powder lacquering.

Enclosure designed for towel dryers with angled valves.



System layout



Ordering and data

VHS-FN high flow valves

Type	Connection (ISO 228-1)		Turns on the flow regulation screw									Code no.
			k _V -values ^{1) 3)} (m³/h)								k _{VS} (m³/h)	
	Radiator	System	¼	½	¾	1	1½	2	3	4		
VHS-FN 15, angle	R½	G¾A	0.16	0.31	0.44	0.49	0.54	0.57	0.61	0.65	0.70	013G4225
VHS-FN 15, straight	R½	G¾A	0.16	0.31	0.44	0.49	0.54	0.57	0.61	0.65	0.70	013G4226

Technical data

Max. water temperature	120 °C
Recommended differential pressure	0.05-0.2 bar
Max. technical differential pressure	0.6 bar
Testing pressure	16 bar
Max. operating pressure	10 bar

Data sheet

VHS-FN high flow valves for two-pipe systems

¹⁾ The k_v values represent the flow volume (Q) in m³/h at a pressure drop (Δp) through the valve of 1 bar. $k_v = Q : \sqrt{\Delta p}$. The k_v -values are given for $X_p = 2K$.

²⁾ The stated maximum technical differential pressure indicates the limit for maintaining optimum control. For low-noise operation, system differential pressures should be held within the recommended range. Pumps should never be oversized; select those that generate just sufficient pressure to circulate the required volume of water. From experience, a differential pressure of 0.05-0.2 bar across the valve is adequate in most systems. In systems where it is too high, a Danfoss differential pressure regulator can be used to reduce it.

³⁾ If sensors RAW, RAS-C, RAE or remote setting unit is used, the P-band increases by a factor of 1.6. Manufacturer's value is at "N" setting.

Accessories

Product	Code no.
 Cover* for VHS valve for panel radiators, straight pattern White RAL 9016, suitable for wet lacquering**	013G4774
 Cover* for VHS valve for panel radiators, angle pattern White RAL 9016, suitable for wet lacquering**	013G4775
 Cover* for VHS valve for towel rail radiators, straight pattern White RAL 9010, suitable for wet lacquering**	013G4672
 Cover* for VHS valve for towel rail radiators, straight pattern White RAL 9016, suitable for wet lacquering**	013G4674
 Cover* for VHS valve for towel rail radiators, angle pattern White RAL 9010, suitable for wet lacquering**	013G4671
 Cover* for VHS valve for towel rail radiators, angle pattern White RAL 9016, suitable for wet lacquering**	013G4673
 Cover for VHS valve, straight pattern, chrome	013G4780
 Cover for VHS valve, angle pattern, chrome	013G4779
 Enclosure* for VHS valve for towel rail radiators, angle pattern White RAL 9010, suitable for wet lacquering**	013G4751
 Enclosure* for VHS valve for towel rail radiators, angle pattern White RAL 9016, suitable for wet lacquering**	013G4755
 Sealing cone incl. seal for valve radiator with 3/4" ext. thread (20 pcs.)	003L0294
 Self-sealing connection nipple for valve radiator with G1/2 int. thread (20 pcs.)	003L0295
 Manual handwheel for all RA type valves (valve diff. pressure max. 0.6 bar)	013G5002
 Fill-and-drain fitting, not nickel-plated, with 3/4" ext. thread and hose nozzle	003L0152
 Connection bracket for sensors without snap-lock connection (10 pcs.)	013G4925
 Metal cover for VHS valves, nickel-plated	003L0153

* Requires a sensor with snap-lock.

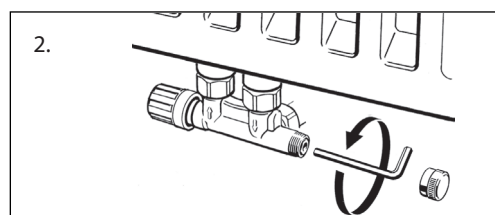
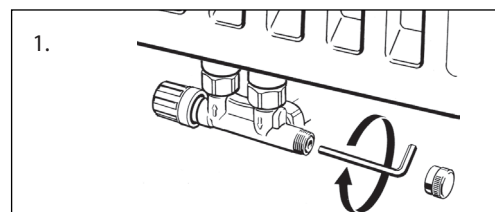
** Guidelines for lacquering are enclosed in the product carton.

VHS is suited for connection of copper, soft steel, PE-X plastic and aluminium alloys. Connection is made with the help of Danfoss clamping joints.

Presetting

Presetting of flow is easily made with a 6 mm Allen key:

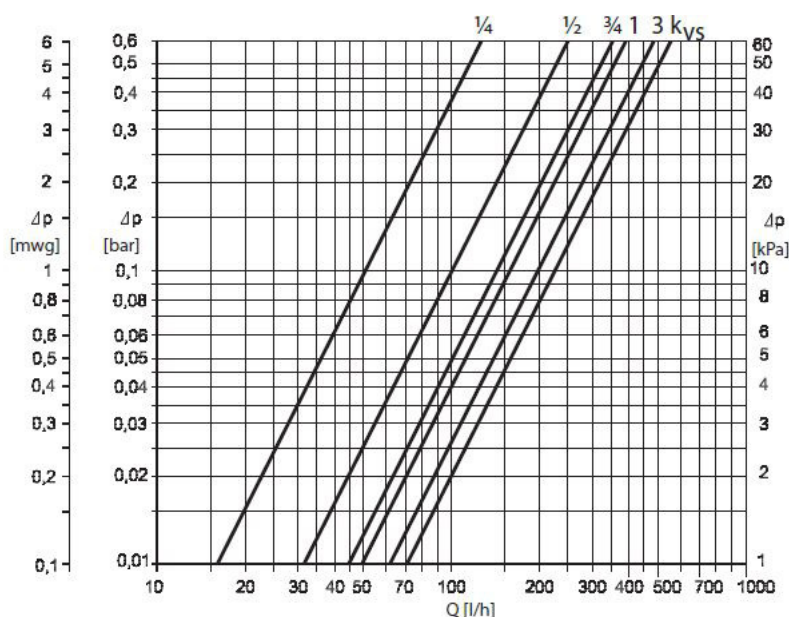
1. Remove the metal cover.
Close the return by turning the Allen key *clockwise*.
2. Set the flow by turning the Allen key *counter-clockwise*, according to values given in "Ordering and data" on page 1.
After setting, refit the metal cover.



Data sheet

VHS-FN high flow valves for two-pipe systems

Capacity



Capacities, using RA 2000 sensor elements at a P-band of 2 K.

The capacity range of the VHS matches today's radiator performance figures.

The amount by which the room temperature changes during operation is termed the P-band of a valve. This change is necessary to move the valve from the closed position to that at which the required volume flow (depending on dimensions) is achieved.

With the excellent control performance of RA2000 and RAW sensing elements, the valve should be sized for a P-band between 0.5 and 2K to achieve optimum energy saving under 'small room' temperature change conditions.

Example of valve sizing:

Heat requirement: $Q = 2.3 \text{ kW}$
 Temperature spread: $\Delta T = 20^\circ \text{C}$
 Water volume through radiator:

$$Q = \frac{2.3}{20 \times 1.16} = 0.10 \text{ m}^3/\text{h} = 100 \text{ l/h}$$

Pressure drop across the valve: $\Delta p = 0.1 \text{ bar} = 1 \text{ mwg}$
 Turns on the presetting screw: $\frac{1}{2}$ turn (from closed)

Alternatively, the setting can be read directly from the "Ordering and data" table:

$$k_v = \frac{Q \text{ (m}^3/\text{h)}}{\sqrt{\Delta p \text{ (bar)}}}$$

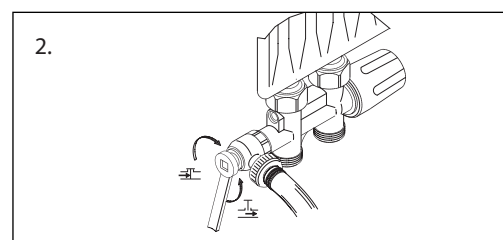
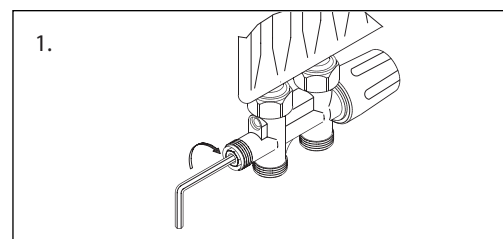
Draining the radiators

If the sensor element is removed temporarily while the system is under pressure, it should be replaced by an appropriate handwheel (available from Danfoss) to ensure positive and safe shut-off.

1. Remove the metal cover, then firmly shut off the return with an Allen key.
2. Fix the drain fitting in position.
 Drain by turning the drain screw to the left.
 The enclosed hose nozzle can be rotated freely.

Note:

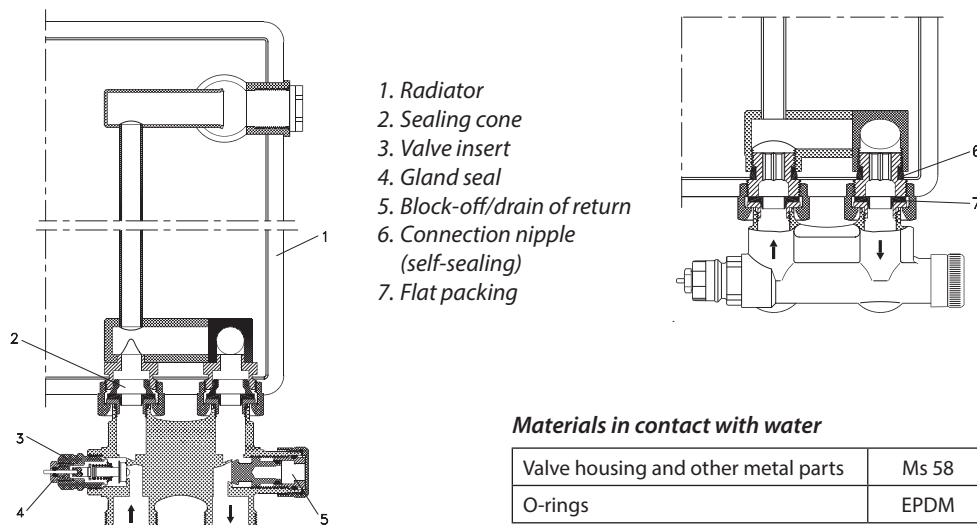
The static pressure must not exceed 10 bar.



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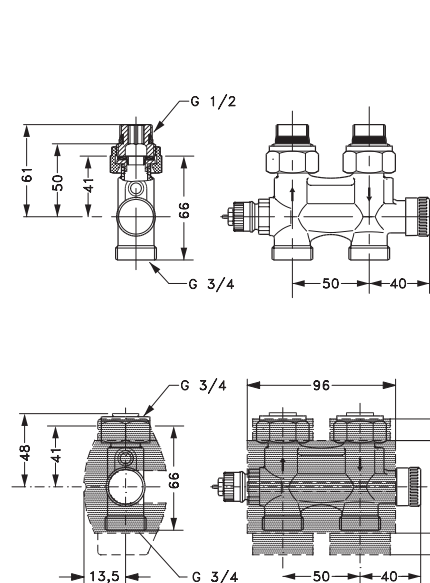
Design



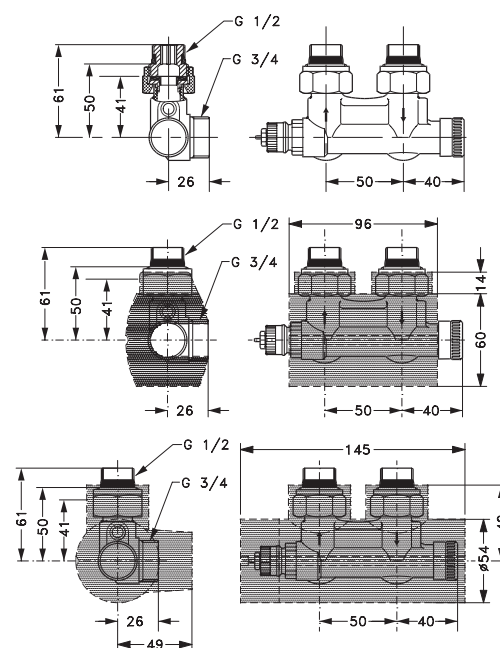
Materials in contact with water

Valve housing and other metal parts	Ms 58
O-rings	EPDM

Dimensions



VHS-FN, straight pattern
1/2" or 3/4" radiator connection



VHS-FN, angle pattern,
1/2" or 3/4" radiator connection

Covers are shaded grey.

Danfoss A/S

Heating Solutions

Haarupvaenget 11

8600 Silkeborg

Denmark

Phone: +45 7488 8000

Fax: +45 7488 8100

Email: heating.solutions@danfoss.com

www.heating.danfoss.com

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