



Motorized control valves

VFM 2

Two way valve, flange

Description

Valve for heating, district heating and district cooling systems.

VFM 2 valve can be used together with the following Danfoss actuators:

- AMV(E) 655;
- AMV(E) 658 SU/SD;
- AME 659 SD;
- AMV(E) 85/86 (for VFM 2 DN 150-250).

Features & benefits

- Low seat leakage rate ($< 0,03\%$ of k_{vs})
- Rangeability $R = >100:1$ by PN 16; $>100:1$ by PN 25 up till DN 125 otherwise $>80:1$
- Pressure relieved design

Ordering

Product code numbers

Valve **VFM 2**

Type	Pressure class	Valve size	Kvs values [m ³ /h]	Code number	VVS DK
VFM 2	PN 25	DN 65	63.00	065B3081	
VFM 2	PN 25	DN 80	100.00	065B3082	
VFM 2	PN 25	DN 100	160.00	065B3083	
VFM 2	PN 25	DN 125	250.00	065B3084	
VFM 2	PN 25	DN 150	400.00	065B3085	
VFM 2	PN 25	DN 200	630.00	065B3086	
VFM 2	PN 25	DN 250	900.00	065B3087	
VFM 2	PN 16	DN 65	63.00	065B3500	461006113
VFM 2	PN 16	DN 80	100.00	065B3501	461006114
VFM 2	PN 16	DN 100	160.00	065B3502	461006116
VFM 2	PN 16	DN 125	250.00	065B3503	461006117
VFM 2	PN 16	DN 150	400.00	065B3504	461006118
VFM 2	PN 16	DN 200	630.00	065B3505	461006120
VFM 2	PN 16	DN 250	900.00	065B3506	461006122
VFM 2	PN 25	DN 65		065B3528	461006923

Note:

1. $\Delta p_{\max}$ is the maximum permissible differential pressure across the valve referred for the whole actuating range of motorised valve (a function of actuator's performance).

$\Delta p_{\max}$

	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250
AMV(E)65x	8	8	8	8	4	4	3
AMV(E)85/86	-	-	-	-	10	7	5

2. Δp_s is maximum permissible closing differential pressure applied in fully closed position of the valve, at which valve will seal tightly (close off pressure).

Δp_s

	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250
PN 16	16	16	16	16	10	10	10
PN 25	20	20	16	16	10	10	10

3. For DN 200 in combination with AMV(E)85/86: k_{vs} is reduced by 15%.

4. For DN 250 in combination with AMV(E)85/86: k_{vs} is reduced by 20%.

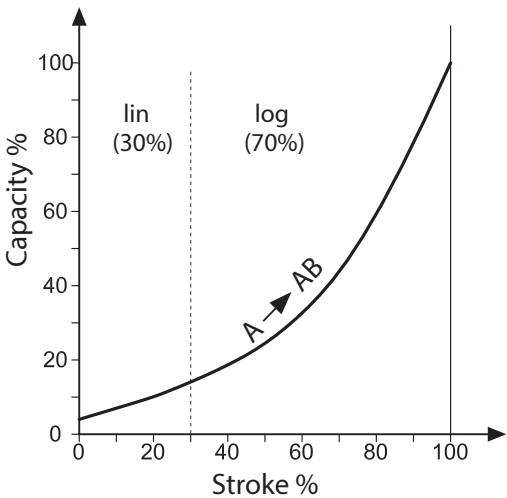
Accessories code numbers

Type	Description	Code number	VVS DK
VFM 2		065B3528	461006923
MCV - Service kits	Stuffing box VFM DN65-125	065B3529	461006913
MCV - Service kits	Stuffing box VFM DN150-250	065B3530	461006918
Stem heaters	STEM HEATER	065Z7020	460946903
Stem heaters	STEAM HEATER	065Z7021	460946905
Stem heaters	Stem heater AMV55/56	065Z7022	461006904



Functions

Valve characteristics



Lin by 0-30% and Log by 30-100% valve stroke

Product details

General data

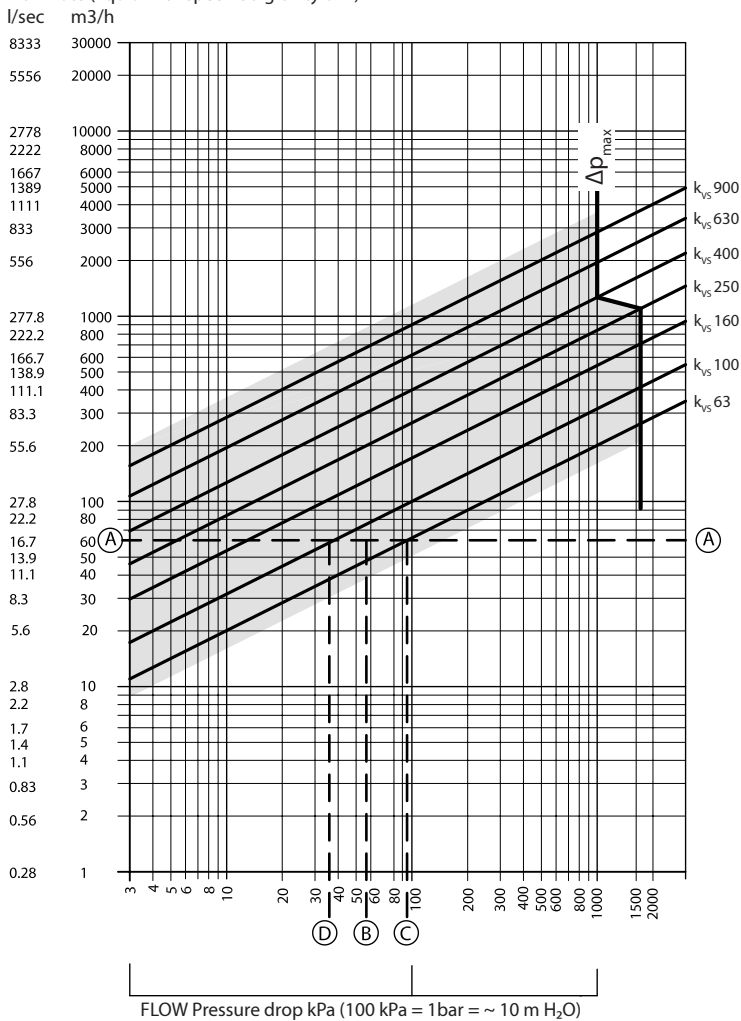
Technical data

Nominal diameter, DN	65	80	100	125	150	200	250
k _{VS} value (m³/h)	63	100	160	250	400	630	900
Stroke (mm)	30	34	40	40	40	50	50
Rangeability PN 16	>100:1	>100:1	>100:1	>100:1	>100:1	>100:1	>100:1
Rangeability PN 25	>100:1	>100:1	>100:1	>100:1	>100:1	>80:1	>80:1
Control characteristic	Lin by 0-30% and Log characteristic by 30-100% valve stroke						
Cavitation factor z PN16 & PN 25	0.45	0.40	0.35	0.35	0.35	0.25	0.21
Leakage acc. to standard IEC 534	< 0.03% of k _{VS}						
Nominal pressure (PN)	16 & 25						
Medium	Circulation water / glycolic water up to 50% (standard VDI 2035)						
Medium pH	Min. 7, Max. 10						
Medium temperature (°C)	2 (-10 ¹) ... 150						
Connections	Flange PN 16 & 25 acc. to EN 1092-2						

¹⁾ At temperatures from –10 °C up to +2 °C use stem heater

Sizing

Flow Rate (liquid with specific a gravity of 1)



Example:

Design data:

Flow rate: 60 m³/h

System pressure drop: 55 kPa

Locate the horizontal line representing a flow rate of 60 m³/h (line A-A). The valve authority is given by the equation:

$$\text{Valve authority, } a = \frac{\Delta p_1}{\Delta p_1 + \Delta p_2}$$

Where:

Δp_1 = pressure drop across the fully open valve

Δp_2 = pressure drop across the rest of the circuit with a full open valve

The ideal valve would give a pressure drop equal to the system pressure drop (i.e. an authority of 0,5), if:

$$\Delta p_1 = \Delta p_2$$

$$a = \frac{\Delta p_1}{2 \times \Delta p_2} = 0.5$$

In this example an authority of 0,5 would be given by a valve having a pressure drop of 55 kPa at that flow rate (point B). The intersection of line A-A with a vertical line drawn from B lies between two diagonal lines; this means that no ideally-sized valve is available.

The intersection of line A-A with the diagonal lines gives the pressure drops stated by real, rather than ideal, valves. In this case, a valve with k_{vs} 63 would give a pressure drop of 90,7 kPa (point C):

$$\text{hence valve authority} = \frac{90.7}{90.7 + 55} = 0.62$$

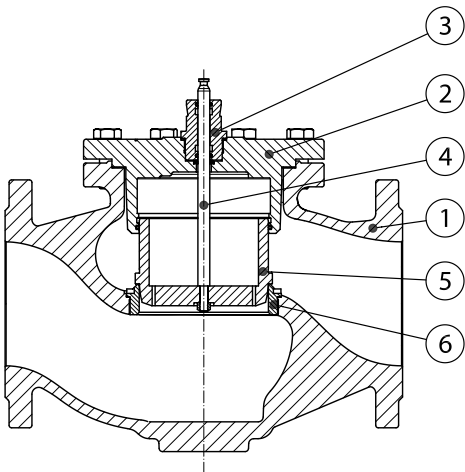
The second largest valve, with k_{vs} 100, would give a pressure drop of 36 kPa (point D):

$$\text{hence valve authority} = \frac{36}{36 + 55} = 0.395$$



Design

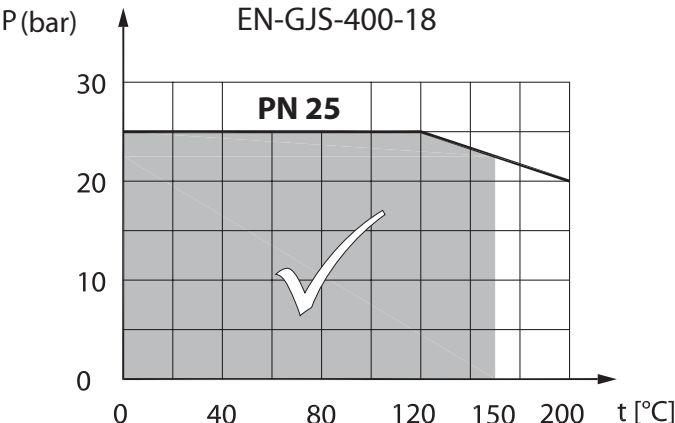
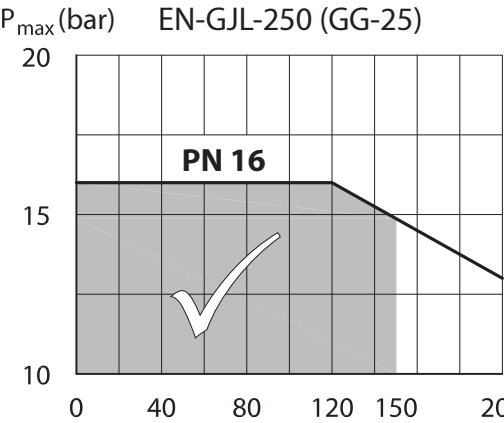
- 1 Valve body
- 2 Valve cover
- 3 Stuffing box
- 4 Valve stem
- 5 Valve cone (pressure relieved)
- 6 Valve seat



Materials

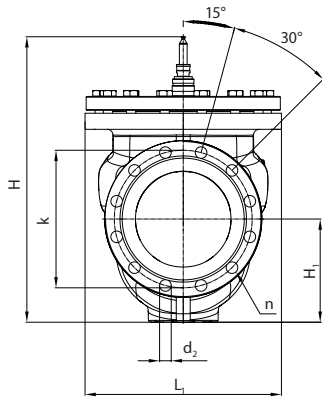
Nominal diameter, DN	65, 80, 100, 125, 150, 200, 250
Valve body and cover	Grey cast iron EN-GJL-250 (GG-25) for PN 16 Ductile iron EN-GJS-400-18 for PN 25
Valve seat, cone and spindle	Stainless steel
Stuffing box sealing	EPDM

Pressure and temperature data

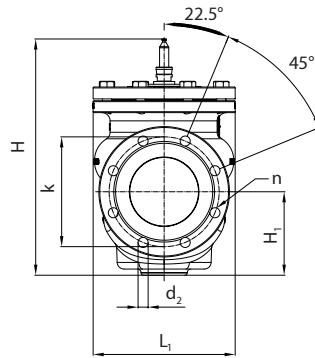


Maximum allowed operating pressure as a function of medium temperature (according to EN 1092-2).

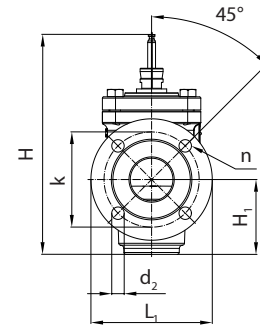
Dimensions



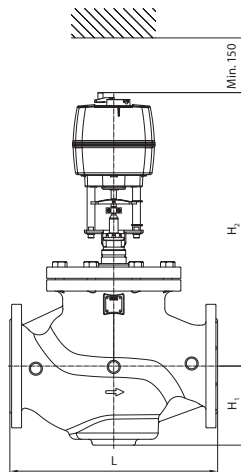
VFM 2 DN 200, 250



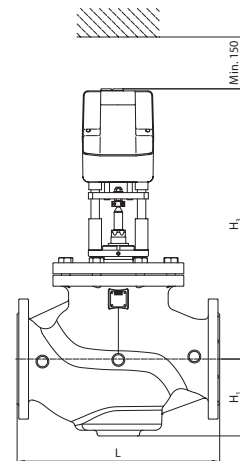
VFM 2 DN 80-150



VFM 2 DN 65



AMV(E) 65x + VFM 2 (DN 65-250)



AMV(E) 85/86 + VFM 2 (DN 150-250)

Type VFM 2 PN 16

DN	L (mm)	L ₁ (mm)	H (mm)	H ₁ (mm)	H ₂ (mm)	H ₃ (mm)	k (mm)	d ₂ (mm)	n (mm)	Weight (kg)
65	290	185	336	114	493.5	-	145	19	4	25
80	310	200	336	114	494.5	-	160	19	8	33
100	350	242	414	148	528.5	-	180	19	8	48
125	400	250	416	149	529.5	-	210	19	8	57
150	480	310	516	182.5	628.5	639	240	22	8	101
200	600	385	669	245	686	685	295	23	12	208
250	730	500	728	267	732	732	355	26	12	348



Type **VFM 2 PN 25**

DN	L (mm)	L ₁ (mm)	H (mm)	H ₁ (mm)	H ₂ (mm)	H ₃ (mm)	k (mm)	d ₂ (mm)	n (mm)	Weight (kg)
65	290	185	336	114	493.5	-	145	19	8	23.5
80	310	200	336	114	494.5	-	160	19	8	27
100	350	242	414	148	528.5	-	190	23	8	46
125	400	270	416	149	529.5	-	220	28	8	56
150	480	320	516	182.5	628.5	639	250	28	8	102
200	600	385	669	245	686	685	310	28	12	197
250	730	500	728	267	732	732	370	31	12	334

Installation

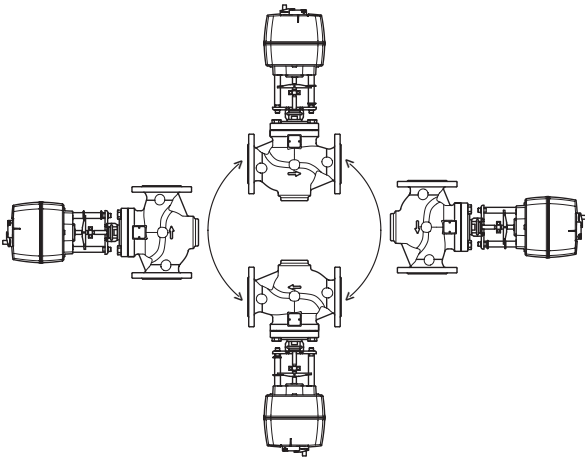
Hydraulic connections

Mount according to flow direction as indicated on valve body.

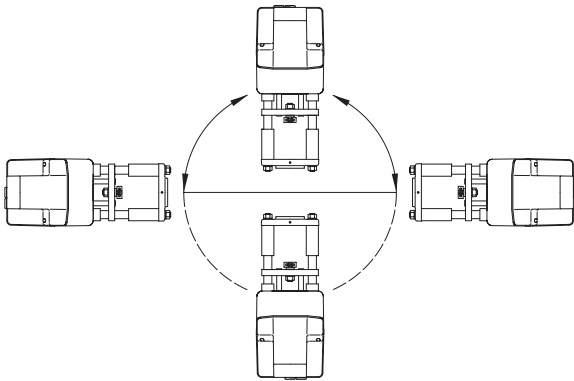
Valve mounting

Before mounting the valve be sure that the pipes are clean and free from swarf. It is essential that the pipes are lined up squarely with the valve at each connection and that they are free from vibrations.

Install the motorized control valves with the actuator in allowed position as described below.



VFM 2 DN 65 - 250 + AMV(E) 65x

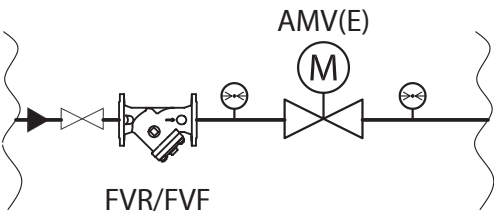


VFM 2 DN 150 - 250 + AMV(E) 85 / 86

Leave sufficient clearance to facilitate the dismantling of the actuator from the valve body for maintenance purposes.

Note that the actuator may be rotated up to 360° with respect to the valve body by loosening the retaining fixture. After this operation re-tighten.

Note: Install a strainer upstream of the valve (e.g. Danfoss FVR/FVF)



Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Issuer	Approval topic
EAC Declaration	EAC KZ 7100841.13.12.02339	EAC - Eurasian Customs Union	MD
UA Declaration	Danfoss UA 10.01.23 Heat Control Valves	Danfoss	
UA Declaration	Danfoss UA 20240607 VFS 2 VFM 2	Danfoss	Pressure
Export Control Declaration	Motorized control valves	Danfoss	
EU Declaration	PL08-28_230612EN0854103_EU declaration of conformity_rev6_Control Valves.docx.pdf	Danfoss	Pressure

Contact details

Online support

Danfoss offers a wide range of support along with our products, including digital information, software, mobile apps and expert guidance. See the possibilities below.



The Danfoss Design center

Discover the Design Center, our advanced digital platform that streamlines product selection. With integrated tools and enhanced type pages, it's simpler than ever to access product information and documentation, and to select the right products. Check the availability of Danfoss products at partner locations and enjoy seamless transitions from selection to purchase with our basket-to-basket functionality. Whether you're buying from our distributors or directly from the Product Store, the Design Center simplifies your experience. Learn more at: designcenter.danfoss.com.



The Danfoss product store

The Danfoss Product Store is a one-stop shop available 24/7 for our customers, no matter where you are in the world or what area of industry you work in. Browse our catalog, check product details and documentation, view your prices and product availability, and quickly finalize your purchase. Start browsing at: store.danfoss.com.



Danfoss Partner Portal/Product Data tool

Designed to support you with easy access to product data extracts, essential resources, tools, and information. The Partner Portal provides a centralized hub for product documentation, training materials, marketing assets, and technical support, ensuring you have everything you need to succeed and grow your business with Danfoss. The Partner Portal is available 24/7 at: partner.danfoss.com and is ready to support your business.



Find technical documentation

Find technical documentation you need to get your project up running. Get direct access to our official collection of data sheets, certificates and declarations, manuals and guides, 3D models and drawings, case stories, brochures, and much more. Start searching now at: documentation.danfoss.com.



Danfoss Learning

Danfoss Learning is a free online learning platform. It features courses and materials specifically designed to help engineers, installers, service technicians, and wholesalers better understand the products, applications industry topics, and trends that will help you do your job better. Find your local Danfoss website here: learning.danfoss.com.



Get local information and support

Local Danfoss websites are the main sources for help and information about our company and products. Find product availability, get the latest regional news, or connect with a nearby expert - all in your own language. Find your local Danfoss website here: danfoss.com.

Danfoss A/S

Climate Solutions . danfoss.com . +45 7488 2222

Any information, including, but not limited to information on selection of product, its application or use, product design, weight, dimensions, capacity or any other technical data in product manuals, catalogues description, advertisements, etc. and whether made available in writing, orally, electronically, online or via download, shall be considered informative, and is only binding if and to the extent, explicit reference is made in a quotation or order confirmation. Danfoss cannot accept any responsibility for possible errors in catalogues, brochures, videos and other material. Danfoss reserves the right to alter its products without notice. This also applies to products ordered but not delivered provided that such alterations can be made without changes to form, fit or function of the products. All trademarks in this material are property of Danfoss A/S or Danfoss group companies. Danfoss and the Danfoss logo are trademarks of Danfoss A/S. All rights reserved.
