



Motorized control valves

VS 2

2-way valve, external thread

Description

VS 2 is two-way valve designed to work with Danfoss electric actuators AMV 150, AMV(E) 10, AMV(E) 20, AMV(E) 30 or Danfoss electric actuators with spring return function AMV(E) 13, AMV(E) 23 and AMV(E) 33.

VS 2 valve is generally recommended for use in most demanding conditions in systems such as:

- district heating,
- heating,
- hot water service with heat exchanger or storage tank, where they ensure long and unproblematic performance.

Features & benefits

- SPLIT characteristic developed for most demanding applications (DN 20 and DN 25)
- Several k_{vs} values
- Push connection for easy mechanical connection with actuator
- Control range min. 50:1
- Fast and stable regulation
- More comfort due to stable DHW temp.
- Energy saving due to stable control
- Longer lifetime of components due to less temperature oscillation

Ordering

Product code numbers

Diameter [mm]	Kvs values [m ³ /h]	Pressure nominal [bar]	Connection size	Code number	VVS DK
15	0.25	16	G 3/4 A	065F2111	461045004
15	0.40	16	G 3/4 A	065F2112	461045104
15	0.63	16	G 3/4 A	065F2113	461045204
15	1.00	16	G 3/4 A	065F2114	461045304
15	1.60	16	G 3/4 A	065F2115	461045404
20	2.50	16	G 1 A	065F2120	461045006
25	4.00	16	G 1 1/4 A	065F2125	461045008

Example:

2-way valve, DN 15, kVS 1.6, PN 16, t_{max} 130 °C, external thread

- 1× VS 2 DN 15 valve:

Code No.: **065F2115**

Option:

- 1× Tailpieces:

Code No.: **003H6908**

Accessories code numbers



003H6902

**Thread tailpieces, PN 25,
DN 15, R 1/2; G 3/4,
External Thread**

Tailpiece ext.thr R1/2 PN25
(G3/4)



003H6903

**Thread tailpieces, PN 25,
DN 20, R 3/4; G 1, External
Thread**

Tailpiece ext.thr R3/4 PN25
DN20 (G1)



003H6908

**Weld-on tailpieces, PN 25,
DN 15, G 3/4**

Tailpiece weld-on PN25 DN15
(G3/4)



003H6910

**Weld-on tailpieces, PN 25,
DN 25, G 1 1/4**

Tailpiece weld-on PN25 DN25
(G11/4)



003H6904

**Thread tailpieces, PN 25,
DN 25, R 1; G 1 1/4,
External Thread**

Tailpiece ext.thr R1 PN25 DN25
(G11/4)



003H6909

**Weld-on tailpieces, PN 25,
DN 20, G 1**

Tailpiece weld-on PN25 DN20
(G1)

Note: Each accessory is supplied as a set of two tailpieces.

Accessory code numbers only for Danish market:

Code number	Code number	VVS-nr.
003H6908	003H6902	45 1099.906
003H6909	003H6903	45 1099.908
003H6910	003H6904	45 1099.910

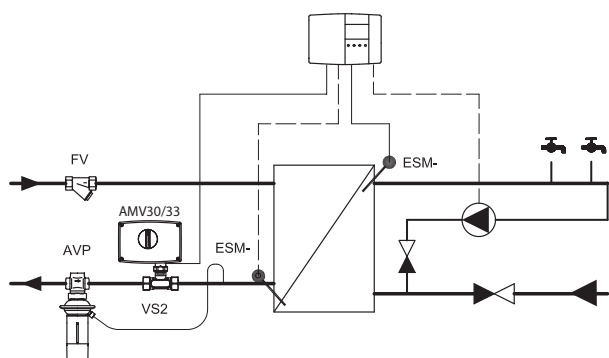
Overview

Product portfolio

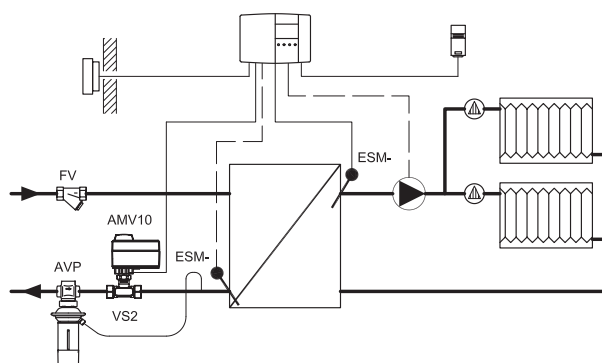
Type	AMV 150	AMV 10/13	AME 10/13	AMV 20/23	AME 20/23	AMV 30/33	AME 30/33
VS 2 DN 15 *	.	.	.	.	.	.	.
VS 2 DN 20	.	.	.	.	.	.	.
VS 2 DN 25	.	.	.	.	.	.	.

* VS2 DN 15 valve has linear characteristic and cannot be recommended for DHW production, particularly not in combination with modulating (AME) actuators, as precise control of DHW within such combinations is not ensured.

Application examples



Hot water service application with heat exchanger



Heating application, indirect district heating substation

Product details

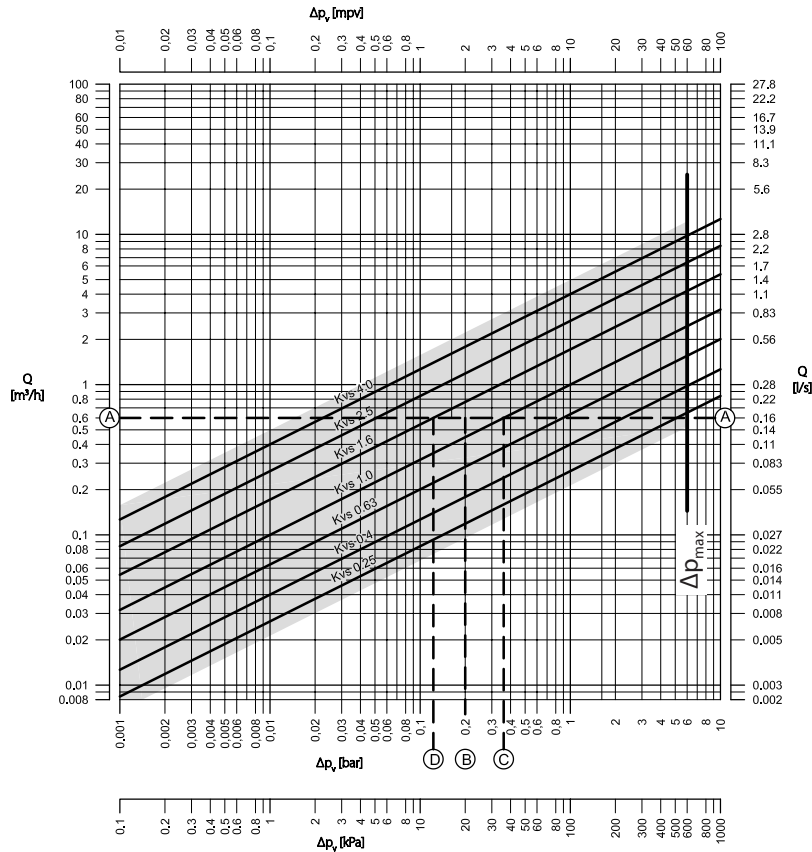
General data

Technical data

Nominal diameter, DN	15	20	25
k_{vs} value (m ³ /h)	0.25 0.40 0.63 1.0 1.6	2.5	4.0
Stroke (mm)	4	5	5
Control range	> 50:1	> 50:1	> 50:1
Control characteristic	lin	split	split
Cavitation factor z	≥ 0.5	≥ 0.5	≥ 0.5
Leakage acc. to standard IEC 534	Max. 0.05% of k_{vs}	Max. 0.05% of k_{vs}	Max. 0.05% of k_{vs}
Nominal pressure, PN	16	16	16
Max. operating pressure (bar)	6 bar *	6 bar *	6 bar *
Max. closing pressure (bar)	10	10	10
Medium	Circulation water/glycolic water up to 30 %	Circulation water/glycolic water up to 30 %	Circulation water/glycolic water up to 30 %
Medium pH	Min. 7, Max. 10	Min. 7, Max. 10	Min. 7, Max. 10
Medium temperature (°C)	2 ... 130	2 ... 130	2 ... 130
Connections	Ext. thread	Ext. thread	Ext. thread

* Increased noise level when pressure is higher than 4 bar

Sizing



Example:

Design data:

Flow rate: 0.6 m³/h

System pressure drop: 20 kPa

Locate the horizontal line representing a flow rate of 0.6 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 $\Delta p_1 = \Delta p_2$

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

In this example an authority of 0.5 would be given by a valve having a pressure drop of 20 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} 1.0 would give a pressure drop of 36.0 kPa (point C):

$$\text{hence valve authority} = \frac{36}{36+20} = 0.64$$

The second largest valve, with k_{vs} 1.6, would give a pressure drop of 14 kPa (point D):

$$\text{hence valve authority} = \frac{14}{14+20} = 0.41$$

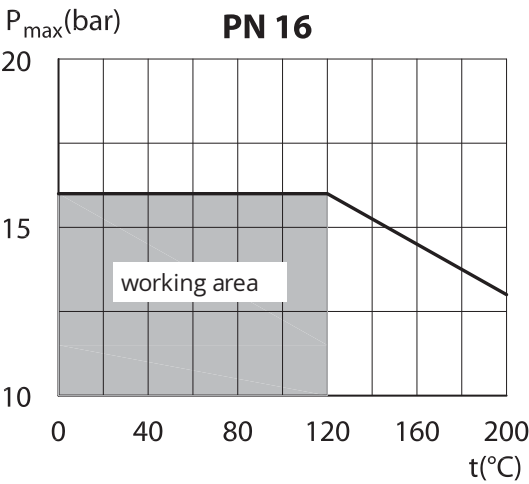
Generally, the smaller valve would be selected (resulting in a valve authority higher than 0.5 and therefore improved control). However, this will increase the total pressure and should be checked by the system designer for compatibility with available pump heads, etc. The ideal authority is 0.5 with a preferred range of between 0.4 and 0.7.



Materials

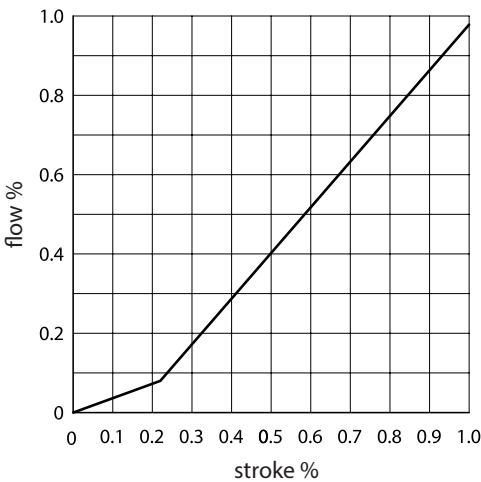
Nominal diameter, DN	15, 20, 25
Valve body	Dezincing free brass
Cone, seat and spindle	Stainless steel

Pressure and temperature data



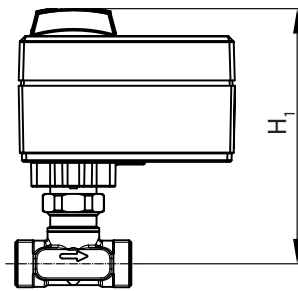
Maximum allowed operating pressure as a function of medium temperature (according to EN 1092-3)

Split characteristic

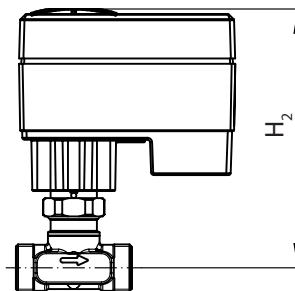


Fast and stable regulation also at small flow rates. Less temperature oscillation.

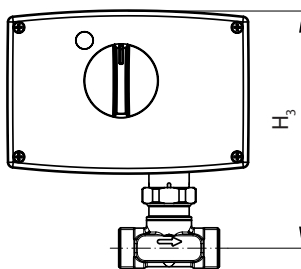
Dimensions



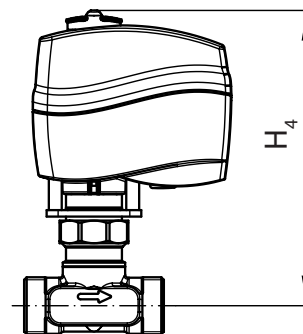
AMV(E) 10 + VS 2 DN 15*-25



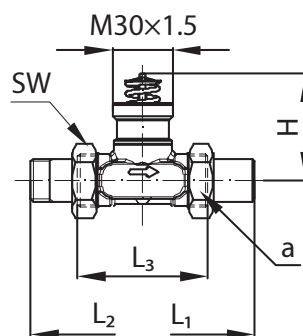
AMV(E) 13 + VS 2 DN 15*-25



AMV(E) 20/30, 23/33 + VS 2 DN 15*-25



AMV 150 + VS 2 DN 15



* VS2 DN 15 valve has linear characteristic and cannot be recommended for DHW production, particularly not in combination with modulating (AME) actuators, as precise control of DHW within such combinations is not ensured.

DN	L ₁	L ₂	L ₃	H	H ₁	H ₂	H ₃	H ₄	a (ISO 228/1)	SW (mm)	Weight (kg)
	mm										
15	139	131	65	54	142	145	155	140	G ¾A	32	0.25
20	154	142	70	58	149	152	162	-	G 1A	41	0.35
25	159	159	75	58	155	158	168	-	G 1¼A	46	0.57

Type	AMV 150	AMV 10/13	AME 10/13	AMV 20/23	AME 20/23	AMV 30/33	AME 30/33
VS 2 DN 15 *	.	.	.	.	.	.	.
VS 2 DN 20	.	.	.	.	.	.	.
VS 2 DN 25	.	.	.	.	.	.	.

* VS2 DN 15 valve has linear characteristic and cannot be recommended for DHW production, particularly not in combination with modulating (AME) actuators, as precise control of DHW within such combinations is not ensured

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	Certification body	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	
Export Control Declaration	Motorized control valves	Danfoss	

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