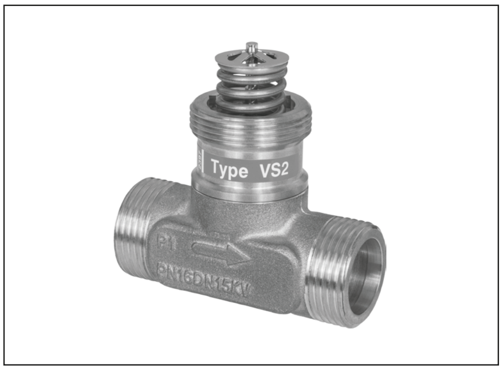
Data sheet

Seated valves (PN 16)

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:
- 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

Benefits:
- 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

Main Data:
- DN 15-25
- k_{VS} 0.25-4.0 m³/h
- PN 16
- Temperature:
  - Circulation water/glycolic water up to 30 %: 2 … 130 °C
- Connections:
  - External thread

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.*

Ordering

Example:
2-way valve, DN 15, k_{VS} 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***

DN	k_{vs} (m³/h)	PN	Ext. thread ISO 228/1	Code No.
15	0.25	16	G ¾ A	**065F2111**
	0.40			**065F2112**
	0.63			**065F2113**
	1.0			**065F2114**
	1.6			**065F2115**
20	2.5		G 1 A	**065F2120**
25	4.0		G 1¼ A	**065F2125**

Accessories-**Tailpieces**

DN	Weld-on tailpieces* **Code No.**	Tailpieces* with ext. threads **Code No.**
15	**003H6908**	**003H6902**
20	**003H6909**	**003H6903**
25	**003H6910**	**003H6904**

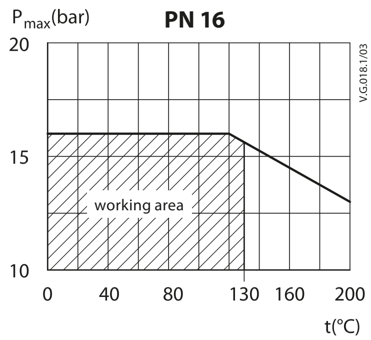
** set of 2 tailpieces*

Technical data

Nominal diameter	**DN**	**15**					**20**	**25**
k_{VS} value	m³/h	0.25	0.40	0.63	1.0	1.6	2.5	4.0
Stroke	mm	4					5	
Control range		> 50:1						
Control characteristic		lin					split	
Cavitation factor z		≥ 0.5						
Leakage acc. to standard IEC 534		Max. 0.05% of k_{vs}						
Nominal pressure	PN	16						
Max. operating pressure	bar	6 bar *						
Max. closing pressure	bar	10						
Medium		Circulation water/glycolic water up to 30 %						
Medium pH		Min. 7, Max. 10						
Medium temperature	°C	2 … 130						
Connections		Ext. thread						
Materials								
Valve body		Dezincing free brass						
Cone, seat and spindle		Stainless steel						

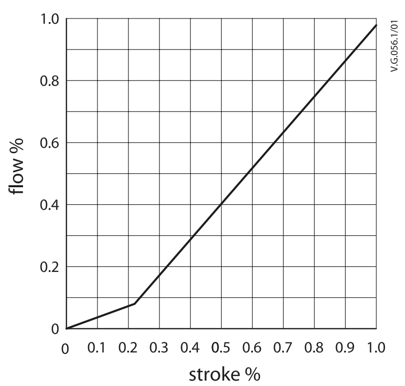
* *Increased noise level when pressure is higher than 4 bar*

Pressure temperature diagram



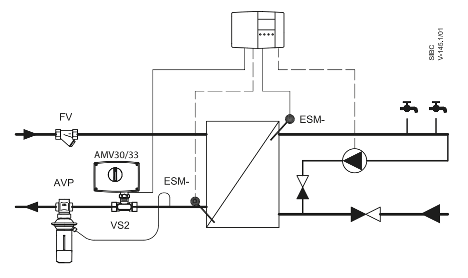
Maximum allowed operating pressure as a function of medium temperature (according to EN 1092-3)

Split characteristic

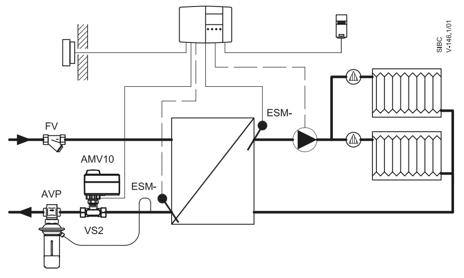


Fast and stable regulation also at small flow rates. Less temperature oscillation.

Application principles



Hot water service application with heat exchanger

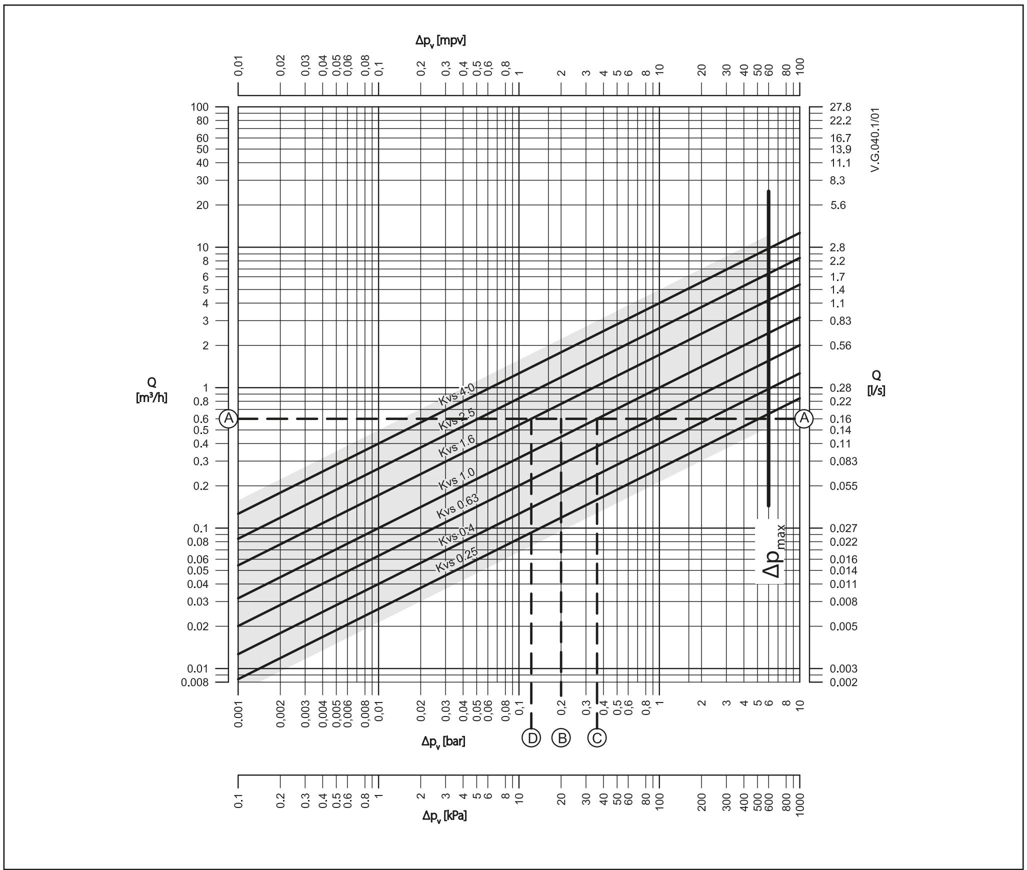


Heating application, indirect district heating substation

Disposal

The valve must be dismantled and the elements sorted into various material groups before disposal.

Sizing



Example

Design data:
Flow rate: 0.6 m^3/h
System pressure drop: 20 kPa

Locate the horizontal line representing a flow rate of 0.6 m^3/h (line A-A). The valve authority is given by the equation:

$$\text{Valve authority, } a = \frac{\Delta p1}{\Delta p1 + \Delta p2}$$

Where:

- Δp1 = pressure drop across the fully open valve
- Δp2 = 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: Δp1 = Δp2

$$a = \frac{\Delta p1}{2 \times \Delta p1} = 0.5$$

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):

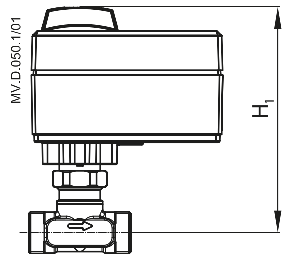
$$\text{hencevalveauthority} = \frac{36}{36 + 20} = 0.64$$

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

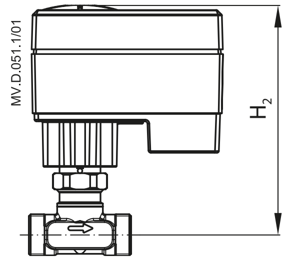
$$\text{hencevalveauthority} = \frac{14}{14 + 20} = 0.41$$

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.

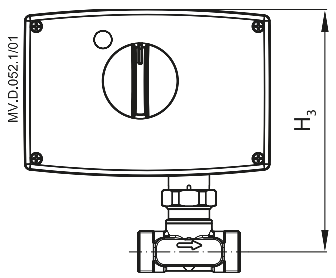
Dimensions



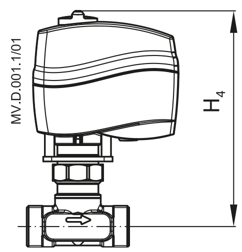
AMV(E) 10 +
VS 2 DN 15- 25*



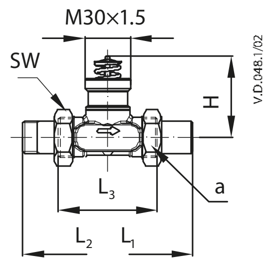
AMV(E) 13 +
VS 2 DN 15-25*



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



AMV 150 +
VS 2 DN 15



DN	L_1	L_2	L_3	H	H_1	H_2	H_3	H_4	a	SW	Weight
	mm								(ISO 228/1)	(mm)	(kg)
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	-	•	•	•	•	•	•

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