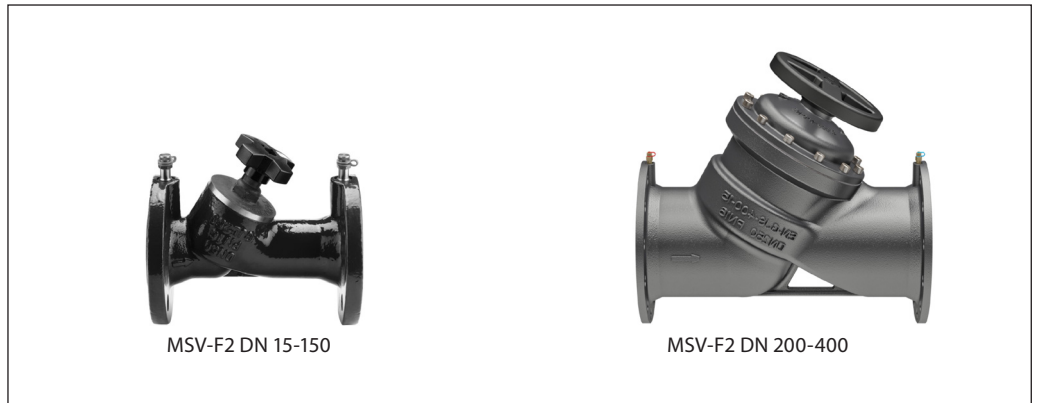


Data sheet

# Manual presetting valve MSV-F2, PN 16/25, DN 15-400

Description



MSV-F2 valves are manual presetting valves with flanged connections. They are used for balancing the flow in heating and cooling installations.

The valves have a position indicator and stroke limiter as standard. The hand wheel of the valve is integrated with the stroke limiter.

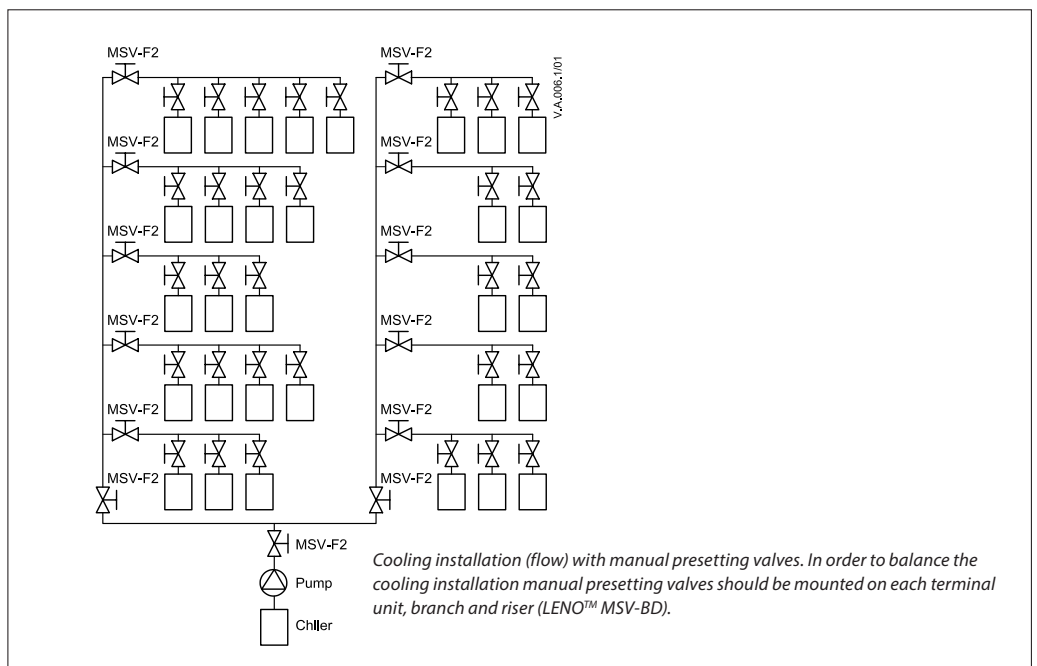
The setting can be locked. Valve characteristics are set up in measuring device PFM 1000/ PFM 100. Valves are free of asbestos.

Shut-off function.

**Main data:**

- DN 15-400
- PN 16:
  - Flow temperature: -10°C ... 130°C
- PN 25:
  - Flow temperature: -10°C ... 150°C
- Valves can be mounted in the supply or return pipe.

Application



Ordering

MSV-F2 valves - PN 16

Picture	DN (mm)	$k_{vs}$ (m <sup>3</sup> /h)	$T_{max}$ (°C)	PN (bar)	Code No. (with needle test plugs)
	15	3.1	130	16	003Z1085
	20	6.3			003Z1086
	25	9.0			003Z1087
	32	15.5			003Z1088
	40	32.3			003Z1089
	50	53.8			003Z1061
	65	93.4			003Z1062
	80	122.3			003Z1063
	100	200.0			003Z1064
	125	304.4			003Z1065
	150	400.8			003Z1066
	200	850			003Z1140
	250	1207			003Z1141
	300	1636			003Z1142
	350	2300			003Z1143
	400	3500			003Z1144

MSV-F2 valves - PN 25

Picture	DN (mm)	$k_{vs}$ (m <sup>3</sup> /h)	$T_{max}$ (°C)	PN (bar)	Code No. (with needle test plugs)
	15	3.1	150	25	003Z1092
	20	6.3			003Z1093
	25	9.0			003Z1094
	32	15.5			003Z1095
	40	32.3			003Z1096
	50	53.8			003Z1070
	65	93.4			003Z1071
	80	122.3			003Z1072
	100	200.0			003Z1073
	125	304.4			003Z1074
	150	400.8			003Z1075
	200	850			003Z1145
	250	1207			003Z1146
	300	1636			003Z1147
	350	2300			003Z1148
	400	3500			003Z1149

Accessories

Type	Code No.
Standard test plugs with O-ring, 2 pcs.	003Z0104
Extension piece for test plugs 45 mm, 2 pcs.	003Z0103
Extended test plugs mounted under pressure, 2 pcs.	003Z3946
Flow measuring instrument PFM100 (10bar)	003L8260
Flow measuring instrument PFM1000 (10 bar)	003Z8260
Flow measuring instrument PFM1000 (20 bar)	003Z8261

Type	Code No.	
Hand-wheel	DN 15-50	003Z0179
	DN 65-150	003Z0180
	DN 200-250	003Z1180
	DN 300	003Z1181
	DN 350	003Z1182
	DN 400	003Z1183

Technical data

MSV-F2 valves - PN 16

Nominal diameter	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	
$k_{vs}$	m <sup>3</sup> /h	3.1	6.3	9.0	15.5	32.3	53.8	93.4	122.3	200.0	304.4	400.8	850	1207	1636	2300	3500	
Nominal pressure	bar	16																
Max. pressure drop		1.5																
Leakage rate	Grade A; According to ISO5208, Table 5 (No visible leakage)																	
Flow medium	Water and water mixtures with secondary coolants (like glycols <sup>1)</sup> ) for closed heating and cooling systems																	
Max. flow temperature	°C	130																
Connections	Flanges according to EN 1092-2																	
Weight	kg	2.3	2.9	3.8	5.6	7.2	9.4	17	21	32	44	56.5	98	153	247	374	525	
<b>Material</b>																		
Body	Ductile iron EN-GJS 400-15 (GGG-40)																	
Seat sealing	EPDM																	
Cone	CW602N									Stainless steel	Stainless steel/ CW602N		Casted stainless steel					

<sup>1)</sup> Please verify compability between materials and secondary coolants with supplier.

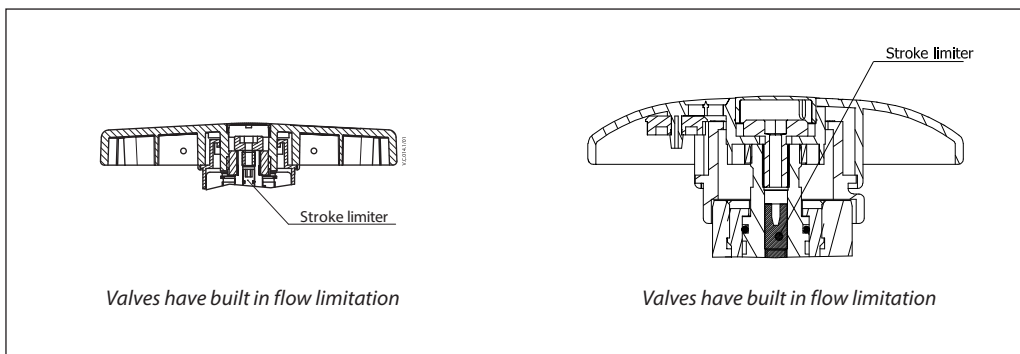
MSV-F2 valves - PN 25

Nominal diameter	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	
$k_{vs}$	m <sup>3</sup> /h	3.1	6.3	9.0	15.5	32.3	53.8	93.4	122.3	200.0	304.4	400.8	850	1207	1636	2300	3500	
Nominal pressure	bar	25																
Max. pressure drop		2.0																
Leakage rate	Grade A; According to ISO5208, Table 5 (No visible leakage)																	
Flow medium	Water and water mixtures with secondary coolants (like glycols <sup>1)</sup> ) for closed heating and cooling systems																	
Max. flow temperature	°C	150																
Connections	Flanges according to EN 1092-2																	
Weight	kg	2.3	3.0	3.8	5.8	7.2	9.4	17	21	33	44	56.5	107	172	278	420	603	
<b>Material</b>																		
Body	Ductile iron EN-GJS 400-15 (GGG-40)																	
Seat sealing	EPDM																	
Cone	CW602N									Stainless steel	Stainless steel CW602N		Casted stainless steel					

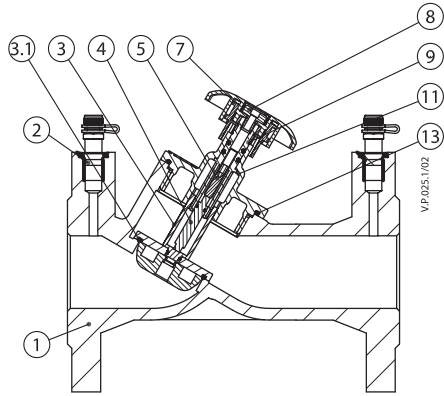
<sup>1)</sup> Please verify compability between materials and secondary coolants with supplier.

Pressure-temperature classification (flanges according to EN 1092-2)

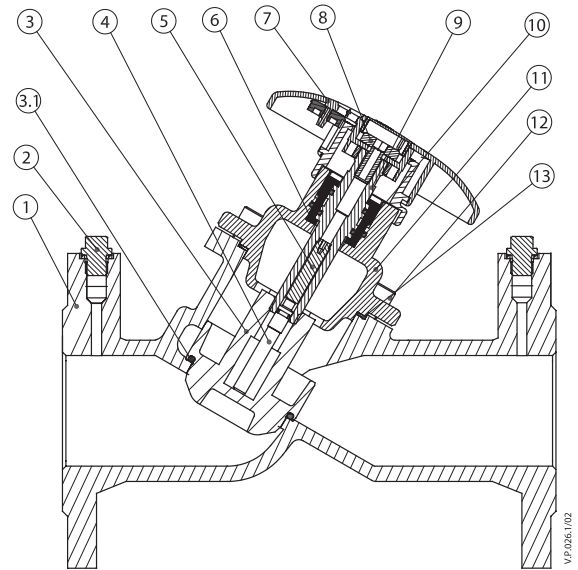
Material	PN		Temperature		
			-10 °C	120 °C	150 °C
EN-GJS 400-15	25	bar	25	25	24.3



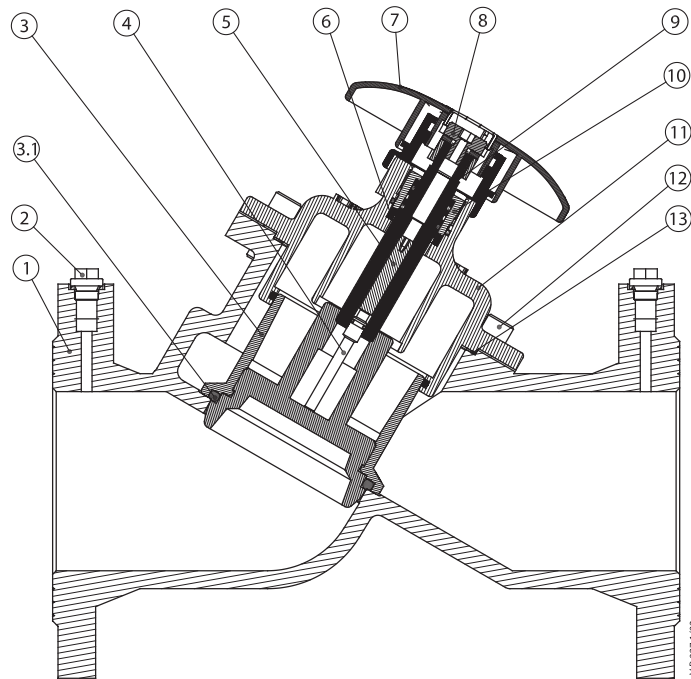
Design



MSV-F2 DN 15-50



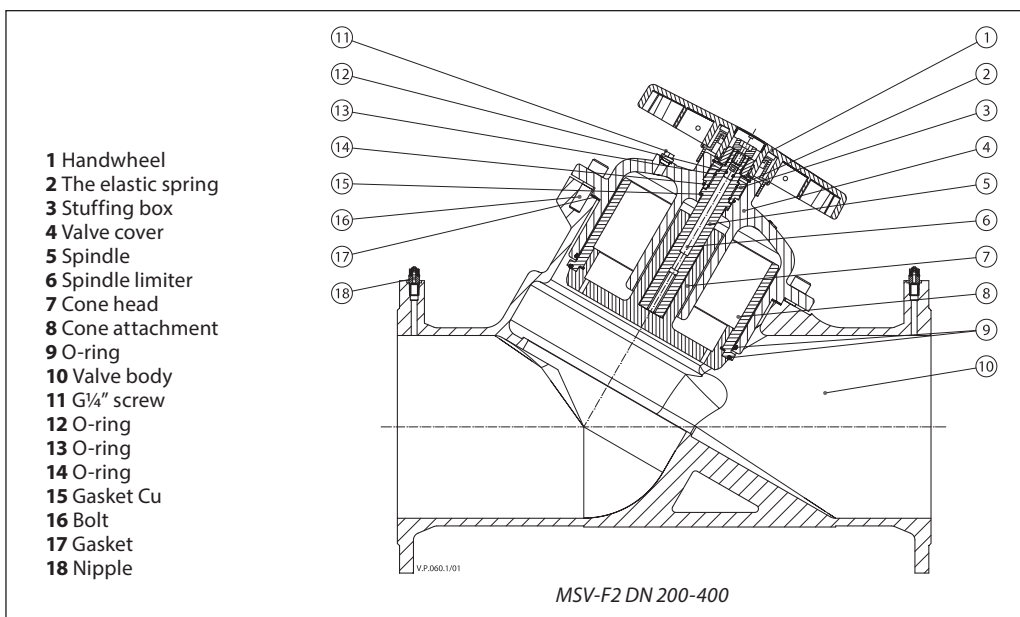
MSV-F2 DN 65-80



MSV-F2 DN 100-150

- |   |                              |
|---|------------------------------|
| 1 Body  | 8 Fixed screw                |
| 2 Plug  | 9 Spindle                    |
| 3 Valve cone  | 10 Stuffing box              |
| 3.1 Seat soft sealing                                   | 11 Bonnet                    |
| 4 Rod   | 12 Allen screw/Hexagon screw |
| 5 Stroke limiter/Allen screw                            | 13 Flat gasket               |
| 6 Gasket  |                              |
| 7 Handwheel with digital display<br>- DN 15-150 plastic |                              |

Design (continued)



- 1 Handwheel
- 2 The elastic spring
- 3 Stuffing box
- 4 Valve cover
- 5 Spindle
- 6 Spindle limiter
- 7 Cone head
- 8 Cone attachment
- 9 O-ring
- 10 Valve body
- 11 G $\frac{1}{4}$ " screw
- 12 O-ring
- 13 O-ring
- 14 O-ring
- 15 Gasket Cu
- 16 Bolt
- 17 Gasket
- 18 Nipple

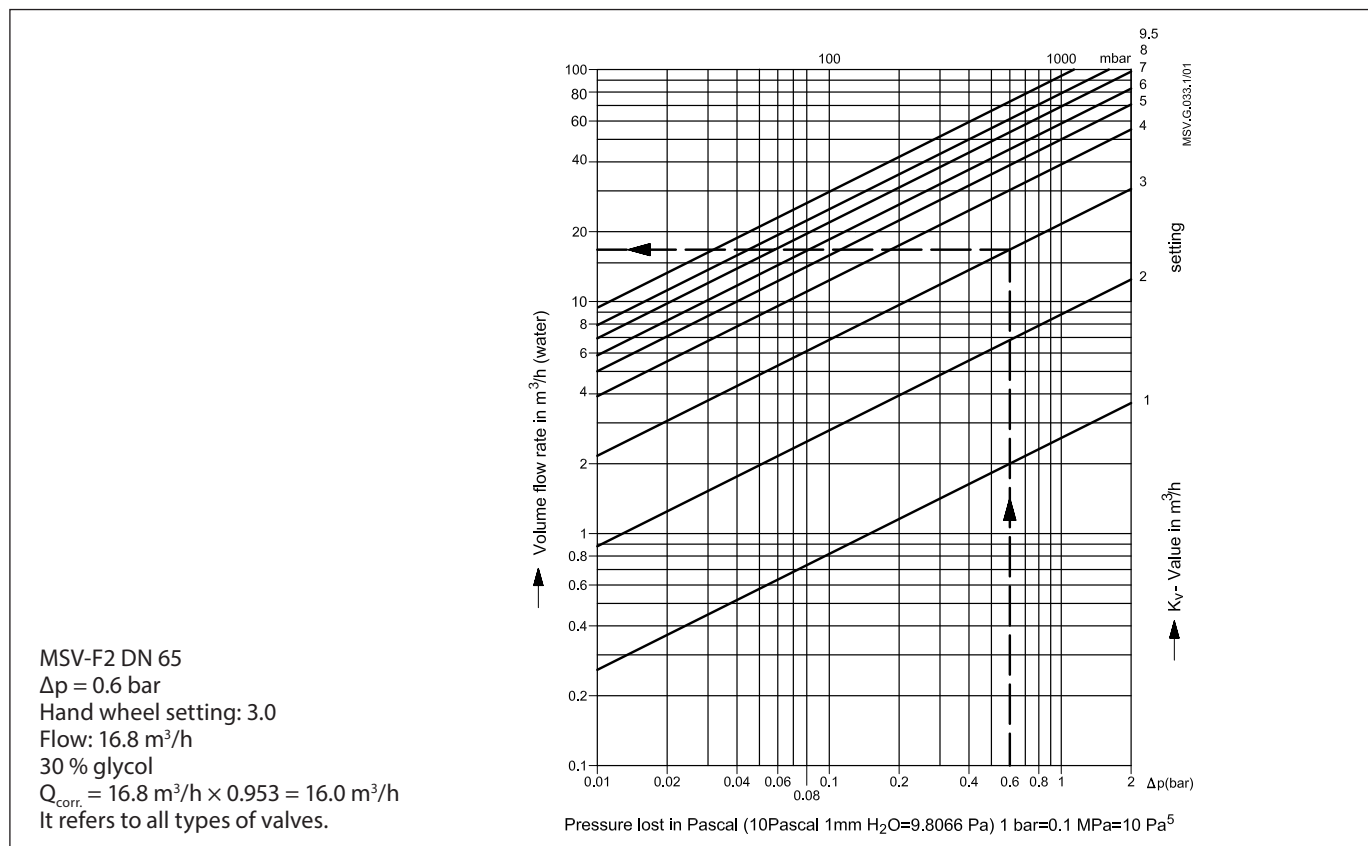
Setting

Ethylenglycol correction factor

Formula:  $C_2H_6O_2$   
 Density at 20 °C:  $\rho_{water} = 1 \text{ kg/dm}^3$   
 $\rho_{glycol} = 1.338 \text{ kg/dm}^3$

$$Q_{corr.} = \frac{Q_{water}}{\sqrt{\text{Share of water} \times \rho_{water} + \text{Share of glycol} \times \rho_{glycol}}}$$

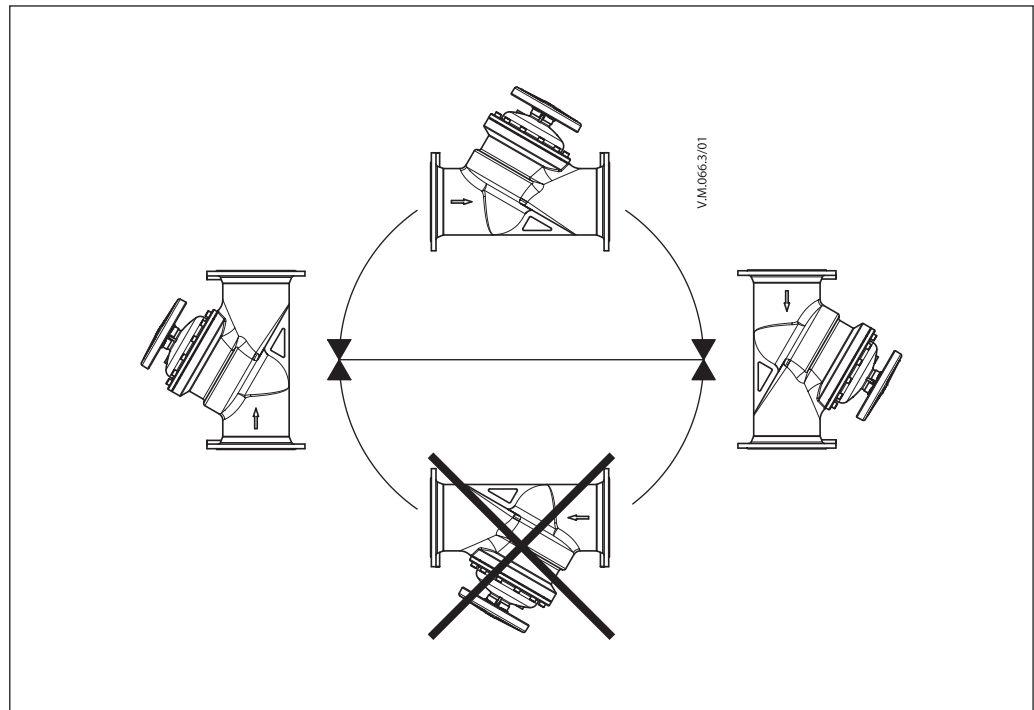
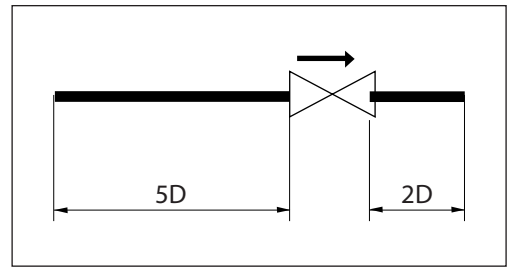
Ethylenglycol part xg (%)	0	10	20	30	40	50	60	70	80	90	100
Correction factor	1.0	0.983	0.968	0.953	0.939	0.925	0.912	0.899	0.887	0.876	0.864



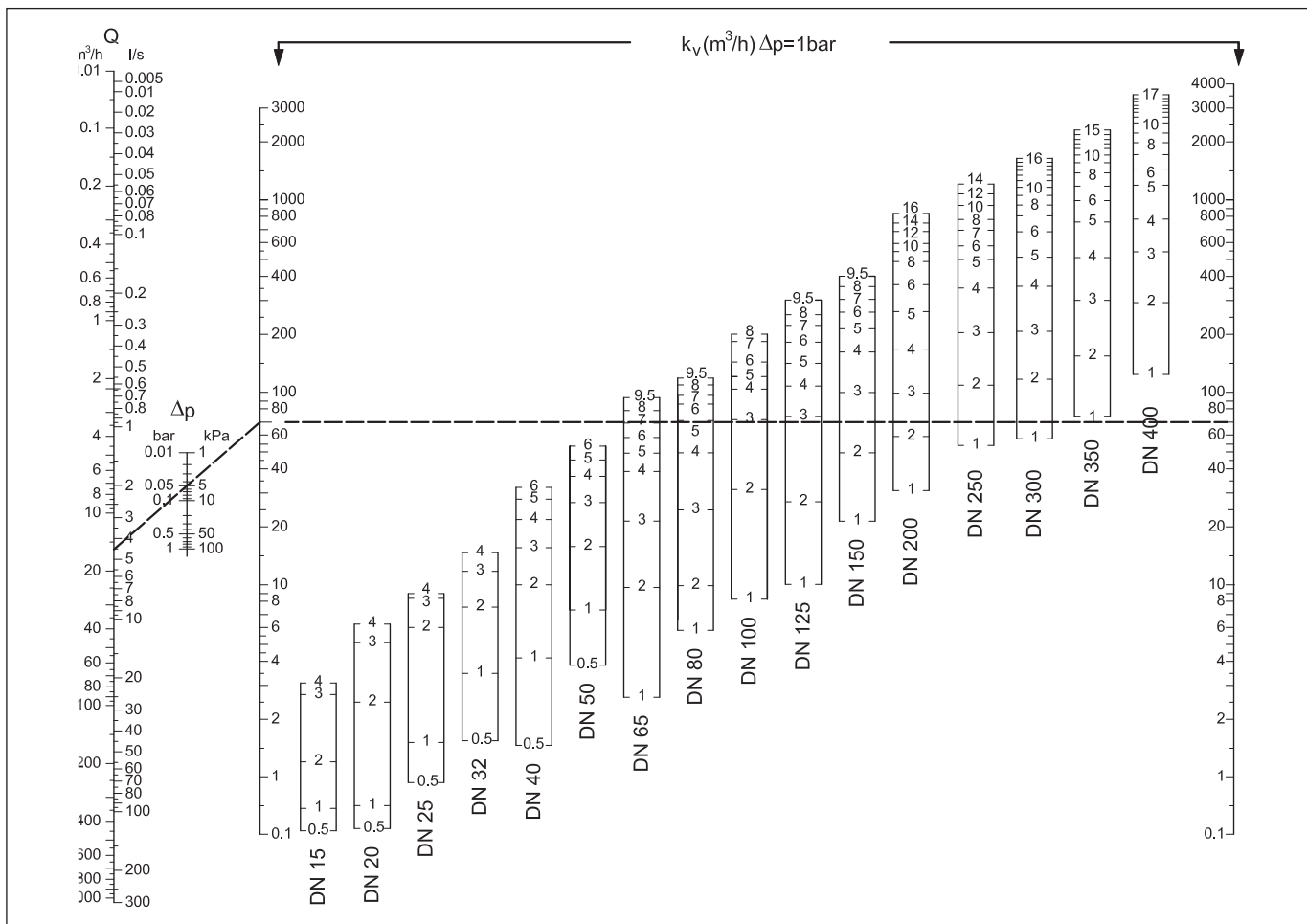
Installation

Always install the valve with the arrow on the body in the same direction as the flow. In order to avoid turbulence, which will affect the measuring accuracy, it is recommended to have a straight length of pipe up and down stream from the valve as shown (D - diameter of pipe).

The influence of turbulence, if our recommendations are not adhered to, can influence the flow up to 20%.



Sizing



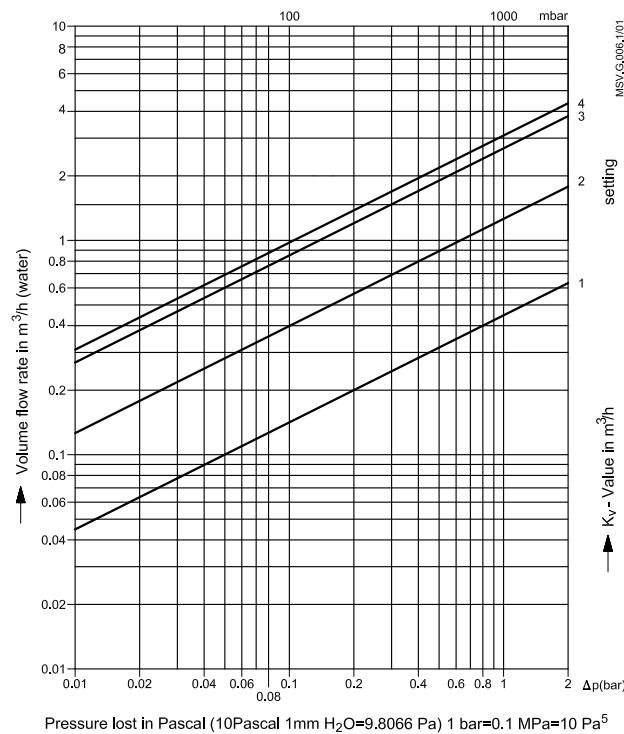
**Example:**  
 MSV-F2 DN 65  
 Q = 16 m³/h  
 Δp = 5 kPa

Calculation for the valve setting:  
 Draw a straight line from the desired flow  
 (16 m³/h) through the differential pressure  
 (5 kPa) to  $k_v$  scale.

From the  $k_v$  value draw a horizontal line. Where  
 it intersects the given valve (DN65) you can find  
 the valve setting.

**Result:**  
 presetting 7.0

Flow diagrams



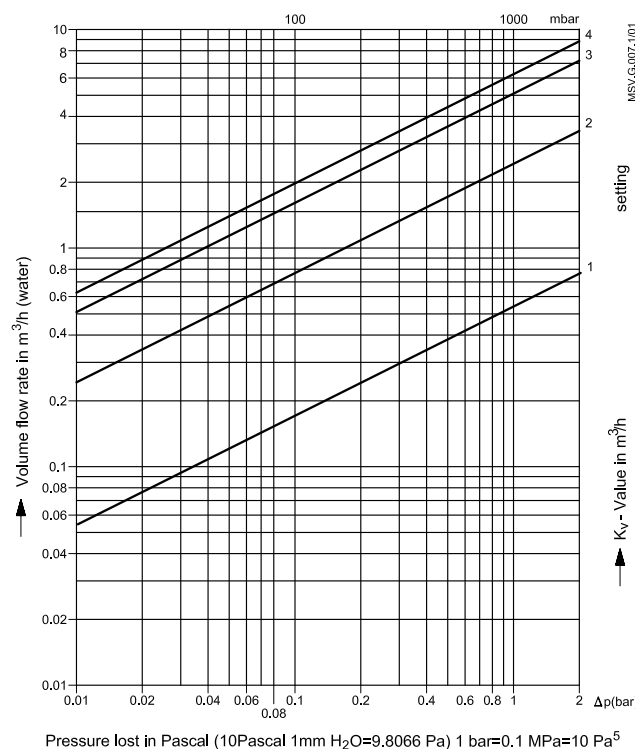
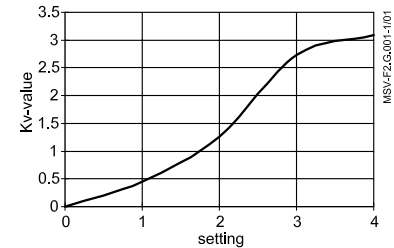
DN 15 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	0.45
2	1.26
3	2.73
4	3.09

Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



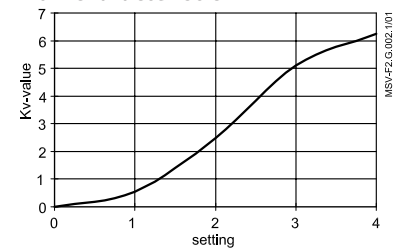
DN 20 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	0.54
2	2.48
3	5.11
4	6.26

Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

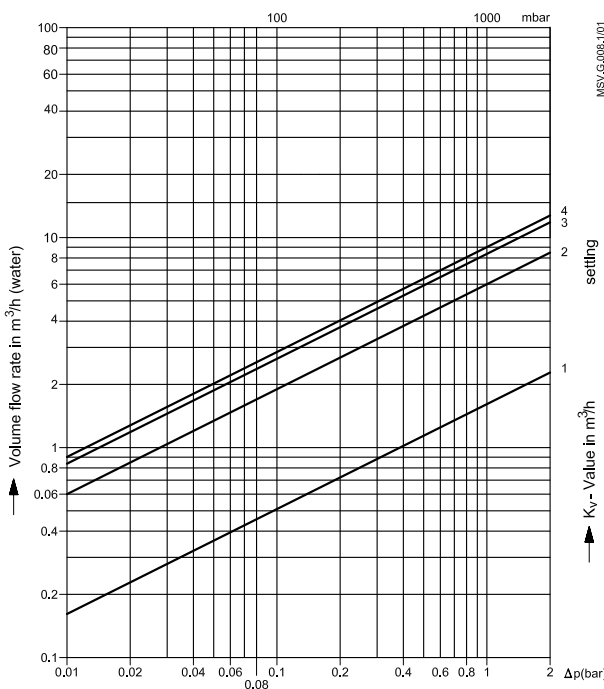
- The flow must be free of cavitation.

Flow characteristic





Flow diagrams (continued)



Pressure lost in Pascal (10Pascal 1mm H<sub>2</sub>O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa<sup>5</sup>

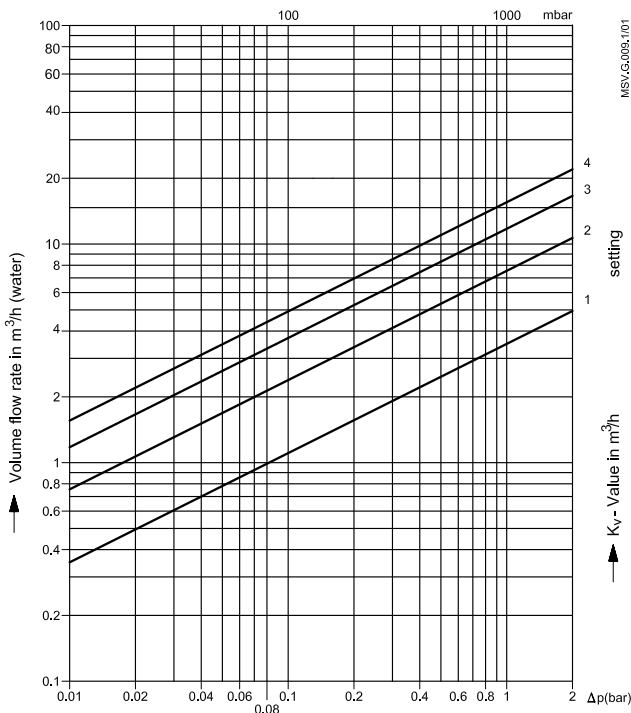
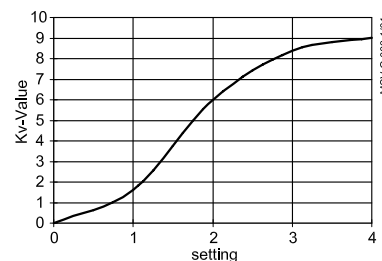
DN 25 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	1.61
2	6.0
3	8.38
4	9.01

Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



Pressure lost in Pascal (10Pascal 1mm H<sub>2</sub>O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa<sup>5</sup>

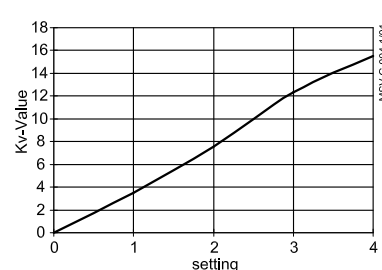
DN 32 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	3.53
2	7.56
3	12.32
4	15.54

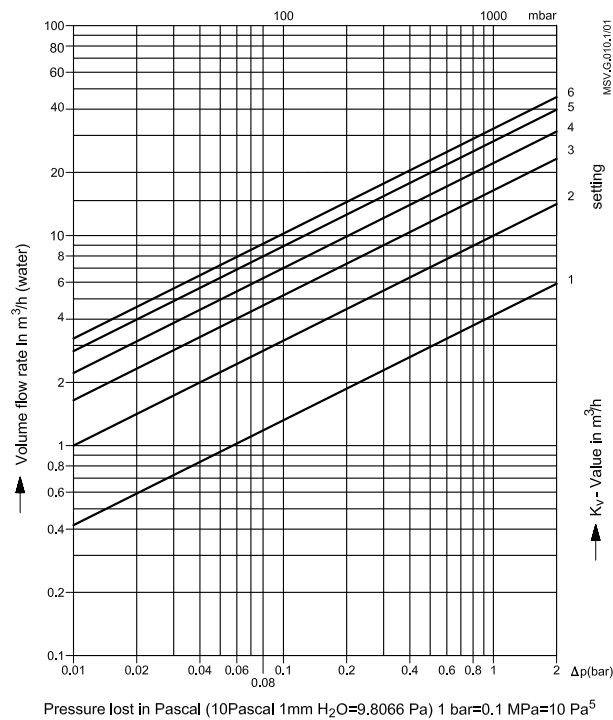
Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams (continued)

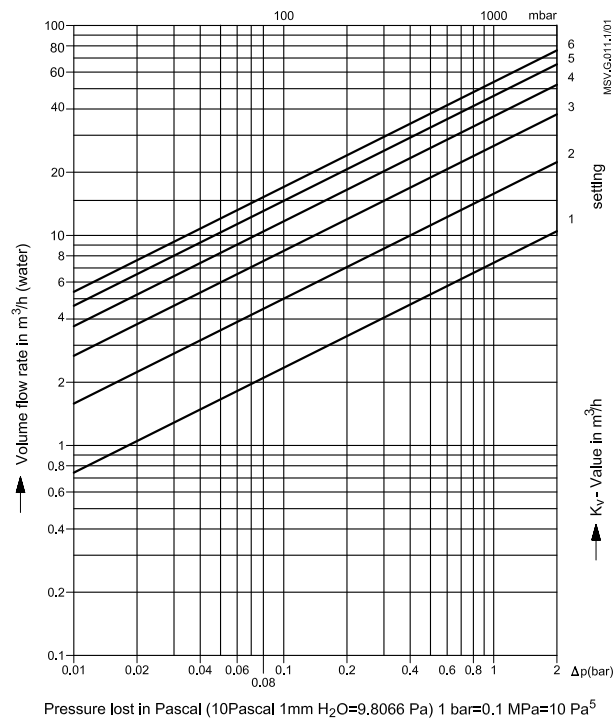
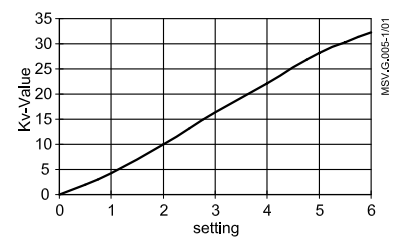


DN 40 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	4.19
2	9.98
3	16.42
4	22.13
5	28.14
6	32.31

Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:  
 • The flow must be free of cavitation.

Flow characteristic

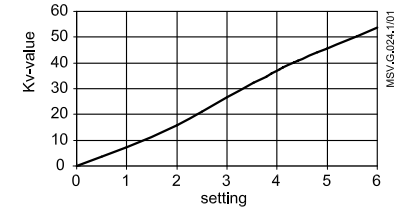


DN 50 / PN 16 / PN 25

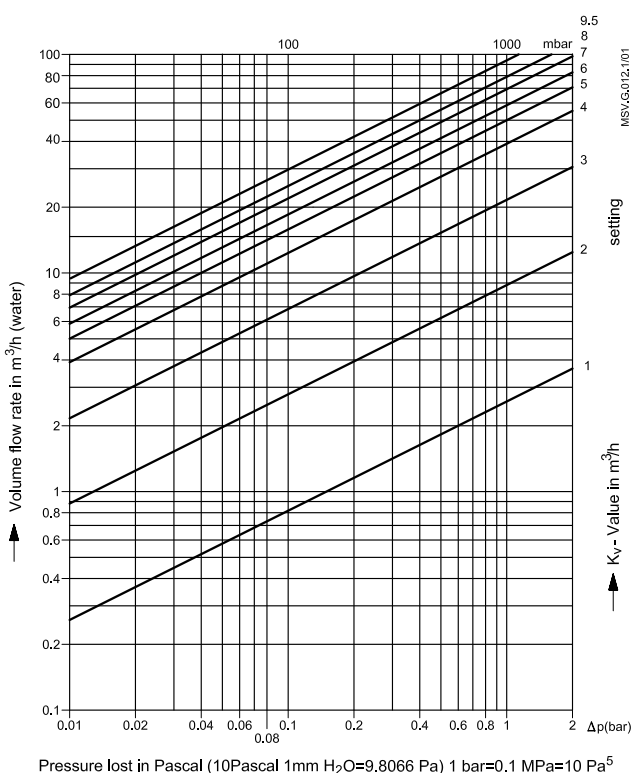
Setting	k <sub>v</sub> -value
1	7.4
2	15.8
3	26.7
4	36.9
5	46.2
6	53.8

Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:  
 • The flow must be free of cavitation.

Flow characteristic



Flow diagrams (continued)



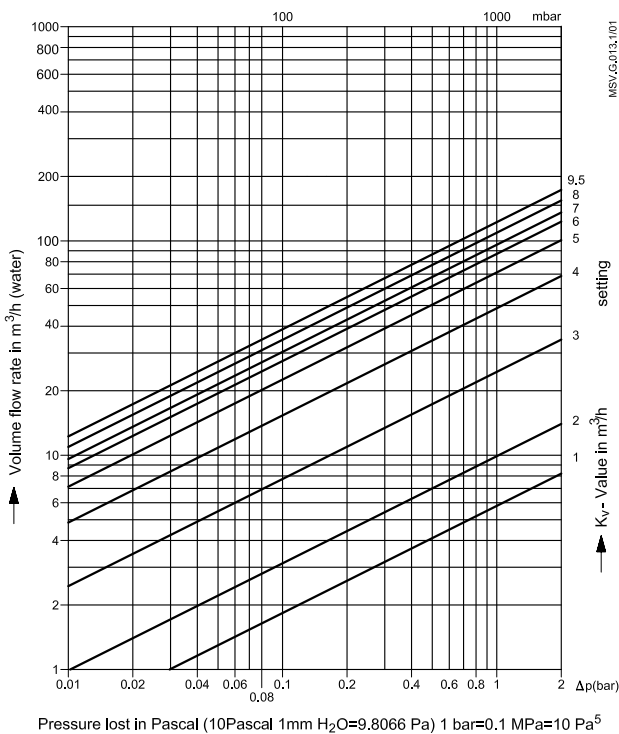
DN 65 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	2.6
2	8.8
3	21.6
4	39.0
5	49.8
6	58.5
7	69.3
8	79.0
9	87.8
9.5	93.4

Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



DN 80 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	5.8
2	9.9
3	24.5
4	48.5
5	71.3
6	87.0
7	96.4
8	109.3
9.5	122.3

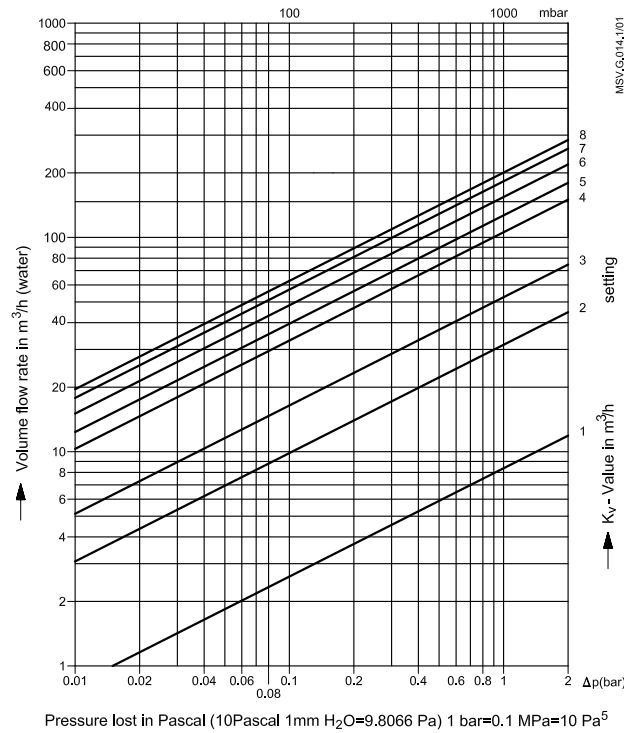
Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams (continued)



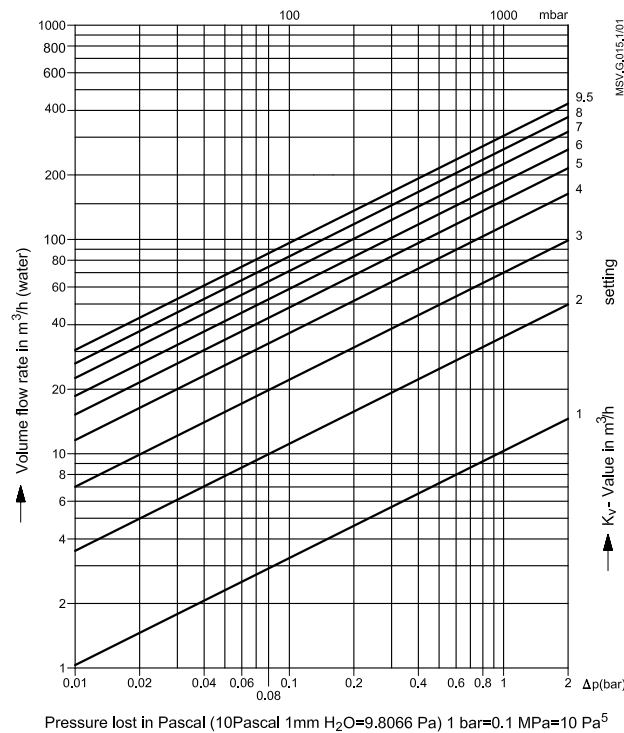
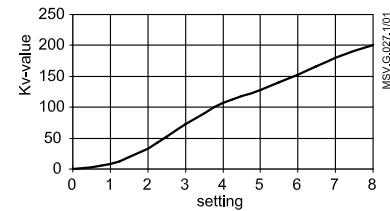
DN 100 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	8.3
2	32.4
3	72.9
4	107.2
5	128.2
6	152.8
7	180.0
8	200.0

Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



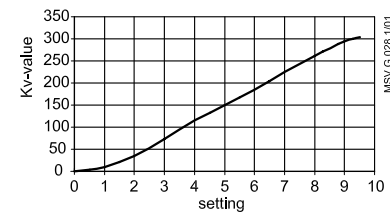
DN 125 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	10.3
2	35.4
3	73.0
4	114.9
5	150.5
6	185.2
7	225.1
8	261.1
9	294.2
9.5	304.4

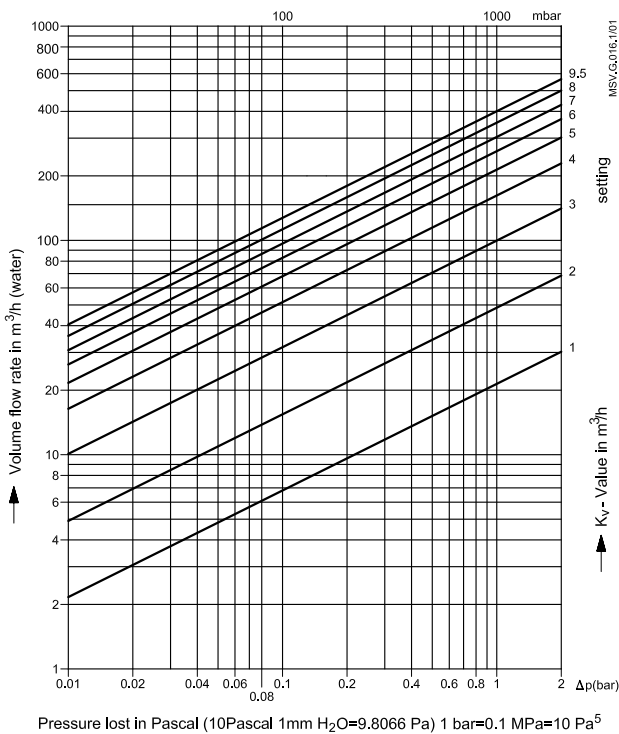
Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams (continued)



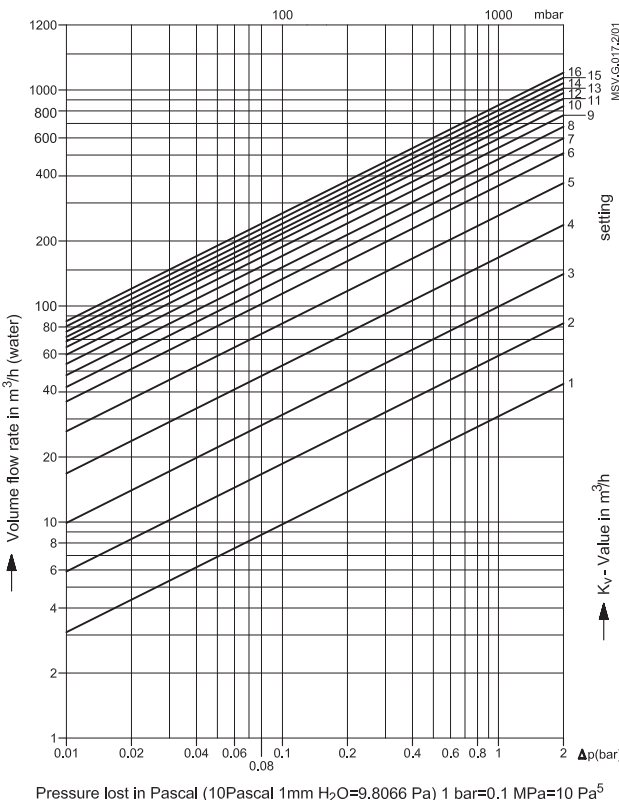
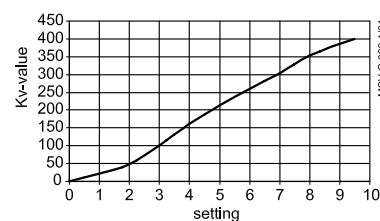
DN 150 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	21.4
2	48.5
3	99.8
4	162.0
5	214.0
6	260.9
7	304.1
8	354.6
9.5	400.8

Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



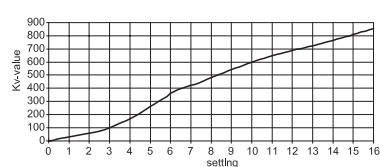
DN 200 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	30.8
2	58.7
3	100
4	170
5	262
6	361
7	423
8	481
9	542
10	597
11	647
12	684
13	722
14	763
15	807
16	850

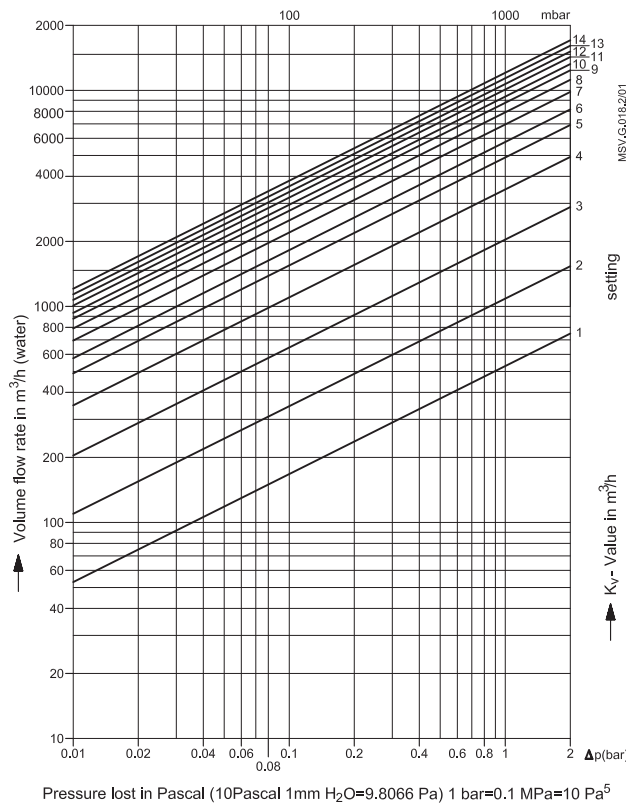
Max. permissible differential pressure in throttling function 1.5 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams (continued)



DN 250 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	53.6
2	109
3	207
4	349
5	490
6	580
7	693
8	791
9	877
10	942
11	1012
12	1076
13	1140
14	1211

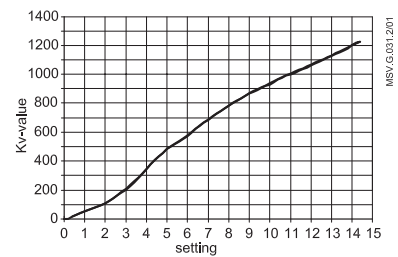
Max. permissible differential pressure in throttling function 1.5 bar.

Max. permissible flow speed: ≤ 4 m/s

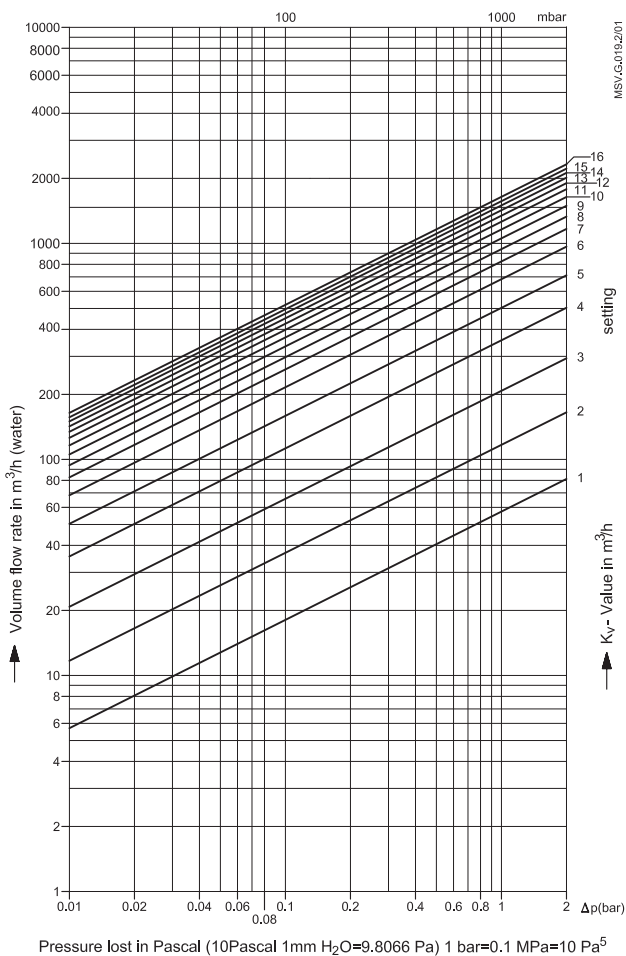
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams (continued)

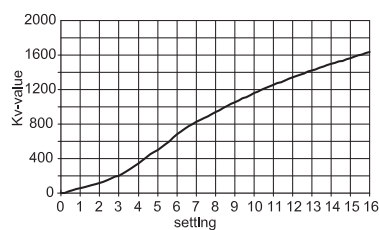


DN 300 / PN 16 / PN 25

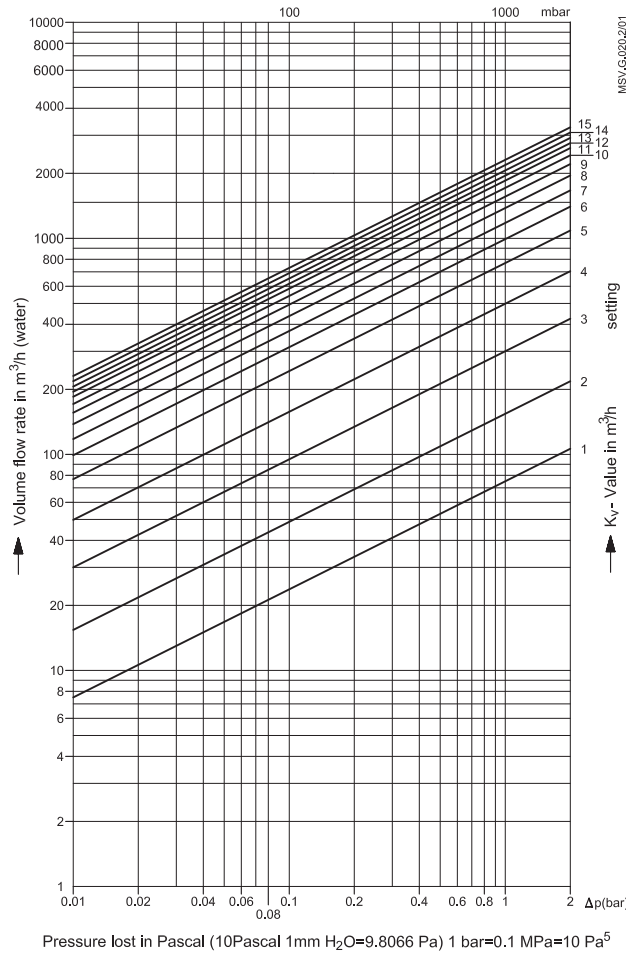
Setting	k <sub>v</sub> -value
1	57.4
2	117
3	208
4	356
5	503
6	683
7	826
8	940
9	1055
10	1161
11	1260
12	1343
13	1423
14	1500
15	1568
16	1643

Max. permissible differential pressure in throttling function 1.5 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:  
 • The flow must be free of cavitation.

Flow characteristic



Flow diagrams (continued)



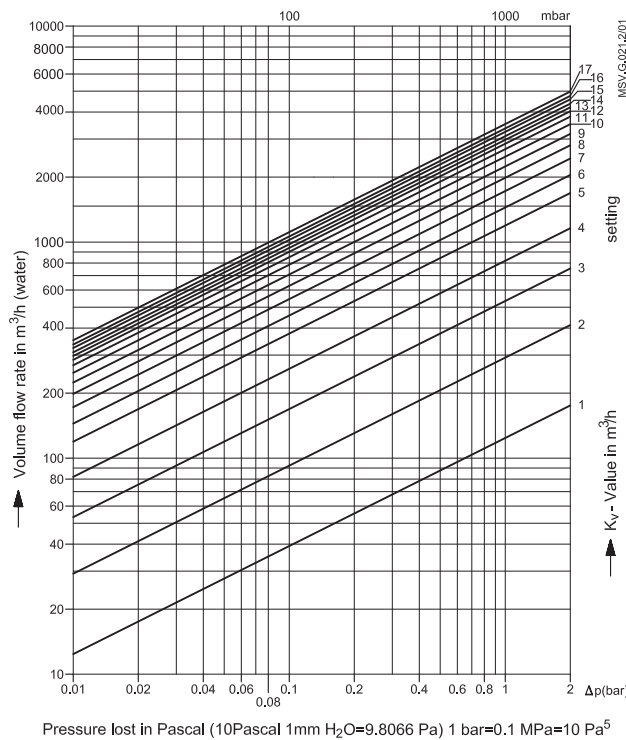
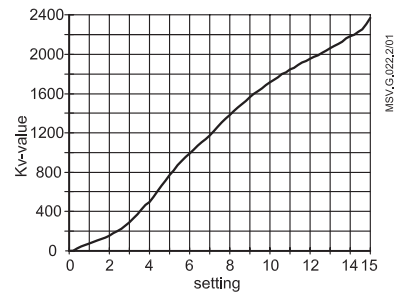
DN 350 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
1	75.1
2	154
3	300
4	498
5	768
6	991
7	1177
8	1382

Setting	k <sub>v</sub> -value
9	1559
10	1711
11	1848
12	1952
13	2059
14	2182
15	2305

Max. permissible differential pressure in throttling function 1.5 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:  
 • The flow must be free of cavitation.

Flow characteristic



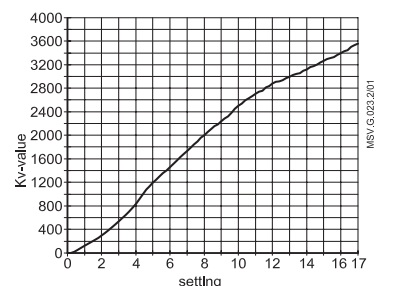
DN 400 / PN 16 / PN 25

Setting	k <sub>v</sub> -value
0	0
1	124
2	292
3	533
4	819
5	1192
6	1445
7	1720
8	1983

Setting	k <sub>v</sub> -value
9	2223
10	2482
11	2682
12	2848
13	2973
14	3093
15	3241
16	3359

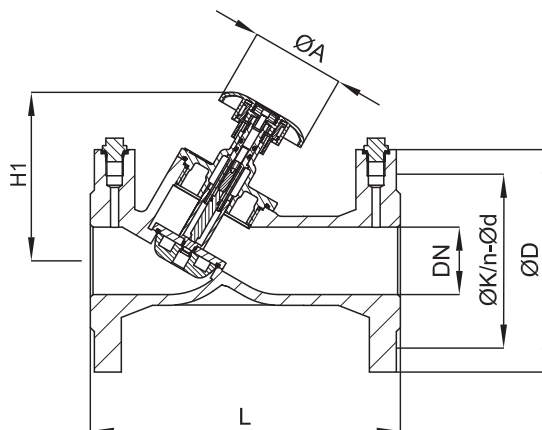
Max. permissible differential pressure in throttling function 1.5 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:  
 • The flow must be free of cavitation.

Flow characteristic





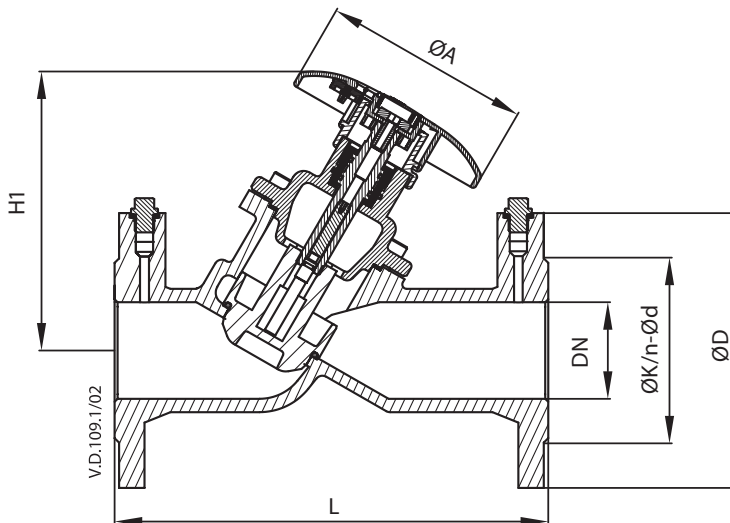
Dimensions



MSV-F2 DN 15-50

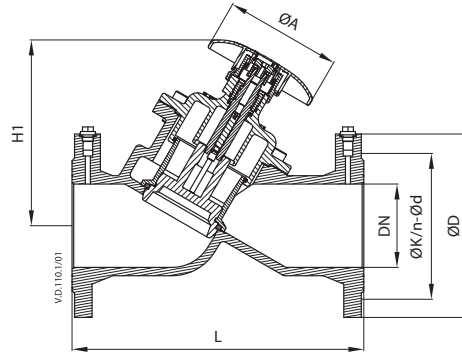
DN	L	ØA	H1	PN 16				PN 25			
				ØD	ØK	n × Ød	Weight	ØD	ØK	n × Ød	Weight
				mm			kg	mm			kg
15	130	78	88	95	65	4x14	2.3	95	65	4x14	2.3
20	150	78	88	105	75	4x14	2.9	105	75	4x14	3.0
25	160	78	100	115	85	4x14	3.8	115	85	4x14	3.8
32	180	78	100	140	100	4x19	5.6	140	100	4x19	5.8
40	200	78	123	150	110	4x19	7.2	150	110	4x19	7.2
50	230	78	125	165	125	4x19	9.4	165	125	4x19	9.4
65	290	140	187	185	145	4x19	17	185	145	8x19	17
80	310	140	205	200	160	8x19	21	200	160	8x19	21

Remark: "n" is number of holes in the flange.



MSV-F2 DN 65-80

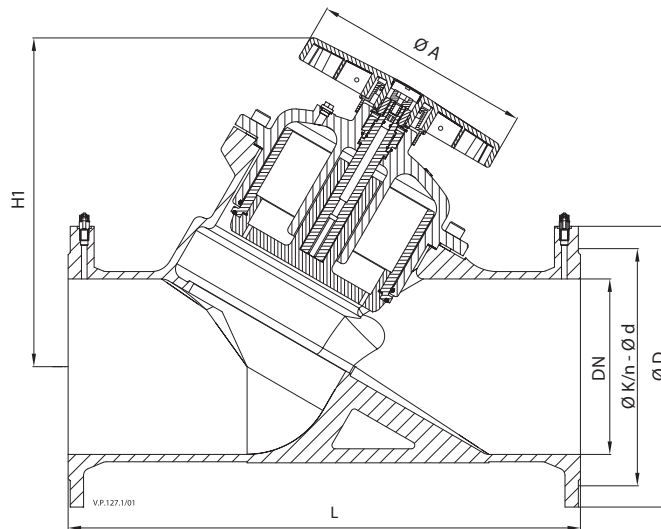
Dimensions (continued)



MSV-F2 DN 100-150

DN	L	ØA	H1	PN 16				PN 25			
				ØD	ØK	n × Ød	Weight	ØD	ØK	n × Ød	Weight
				mm			kg	mm			kg
100	350	140	223	220	180	8x19	32	235	190	8x23	33
125	400	140	251	250	210	8x19	44	270	220	8x28	44
150	480	140	247	285	240	8x23	56	300	250	8x28	56
200	600	306	418	340	295	12x23	98	360	310	12x28	107
250	730	306	471	400	355	12x28	153	425	370	12x31	172
300	850	306	525	460	410	12x28	247	485	430	16x31	278
350	980	306	590	520	470	16x28	374	555	490	16x34	420
400	1100	306	684	580	525	16x31	525	620	550	16x37	603

Remark: "n" is number of holes in the flange.



MSV-F2 DN 200-400

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