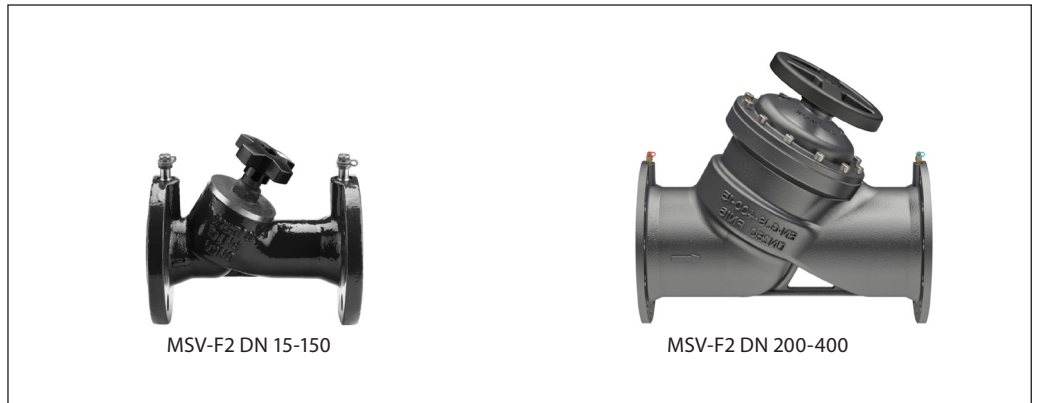


Data sheet

# 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.

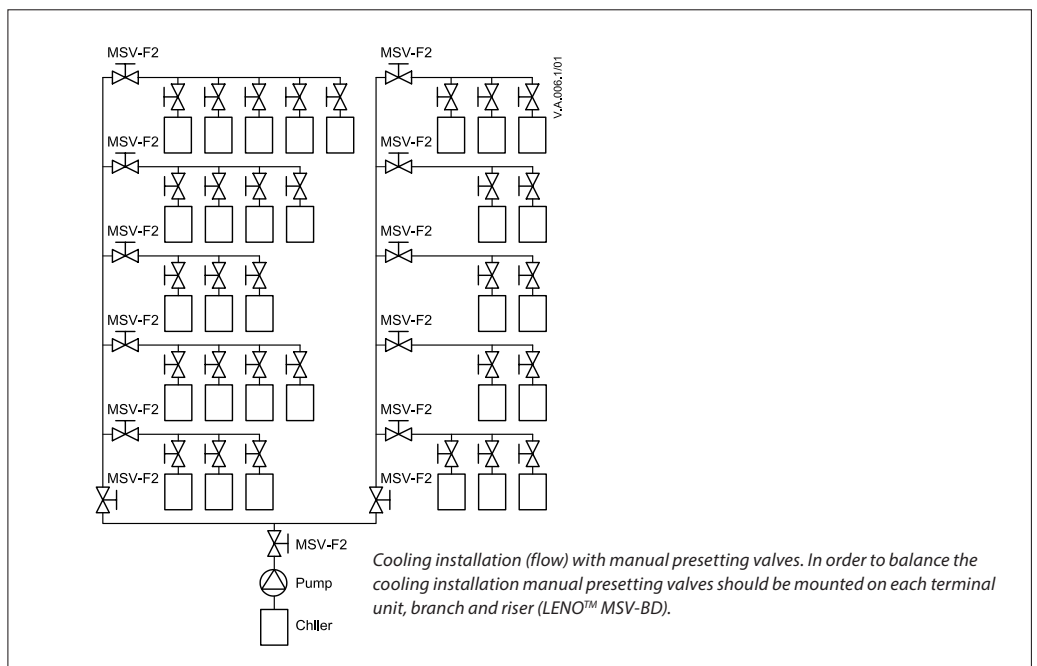
The setting can be locked. Valve characteristics are set up in measuring device PFM 1000/ PFM 100. Valves are free of asbestos.

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	<b>003Z1085</b>
	20	6.3			<b>003Z1086</b>
	25	9.0			<b>003Z1087</b>
	32	15.5			<b>003Z1088</b>
	40	32.3			<b>003Z1089</b>
	50	53.8			<b>003Z1061</b>
	65	93.4			<b>003Z1062</b>
	80	122.3			<b>003Z1063</b>
	100	200.0			<b>003Z1064</b>
	125	304.4			<b>003Z1065</b>
	150	400.8			<b>003Z1066</b>
	200	872			<b>003Z1140</b>
	250	1,238			<b>003Z1141</b>
	300	1,662			<b>003Z1142</b>
	350	2,359			<b>003Z1143</b>
	400	3,516			<b>003Z1144</b>

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	<b>003Z1092</b>
	20	6.3			<b>003Z1093</b>
	25	9.0			<b>003Z1094</b>
	32	15.5			<b>003Z1095</b>
	40	32.3			<b>003Z1096</b>
	50	53.8			<b>003Z1070</b>
	65	93.4			<b>003Z1071</b>
	80	122.3			<b>003Z1072</b>
	100	200.0			<b>003Z1073</b>
	125	304.4			<b>003Z1074</b>
	150	400.8			<b>003Z1075</b>
	200	872			<b>003Z1145</b>
	250	1,238			<b>003Z1146</b>
	300	1,662			<b>003Z1147</b>
	350	2,359			<b>003Z1148</b>
	400	3,516			<b>003Z1149</b>

Accessories

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

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

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	872	1238	1662	2359	3516
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	Cast iron EN-GJL 250 (GG 25)																
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.

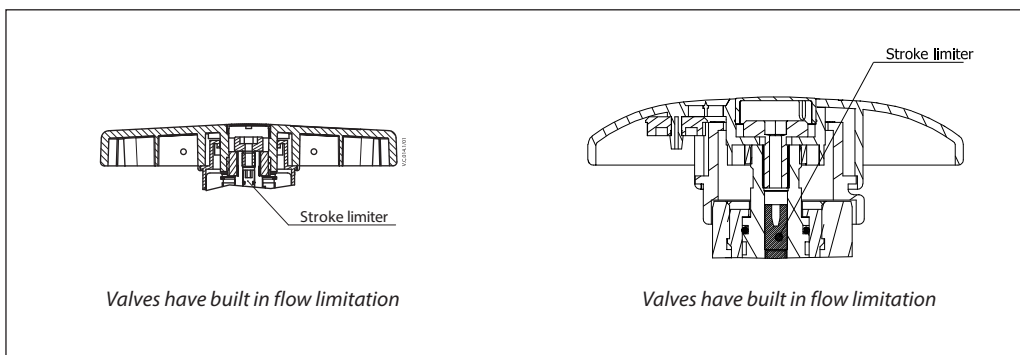
MSV-F2 valves - PN 25

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	872	1238	1662	2359	3516
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					

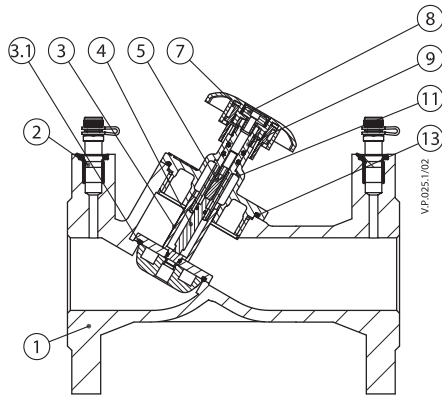
<sup>1)</sup> Please verify compability between materials and secondary coolants with supplier.

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

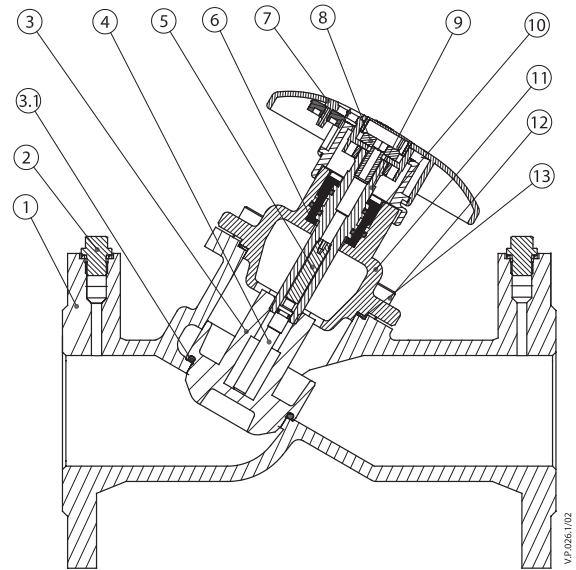
Material	PN		Temperature			
			-10 °C	120 °C	130 °C	150 °C
EN-GJL 250 (MSV-F2 DN 15-150)	16	bar	16	16	15.5	-
EN-GJL 250 (MSV-F2 DN 200-400)	16		16	16	15.5	-
EN-GJS 400-15 (MSV-F2 DN 15-150)	25		25	25	-	24.3
EN-GJS 400-15 (MSV-F2 DN 200-400)	25		25	25	-	24.3



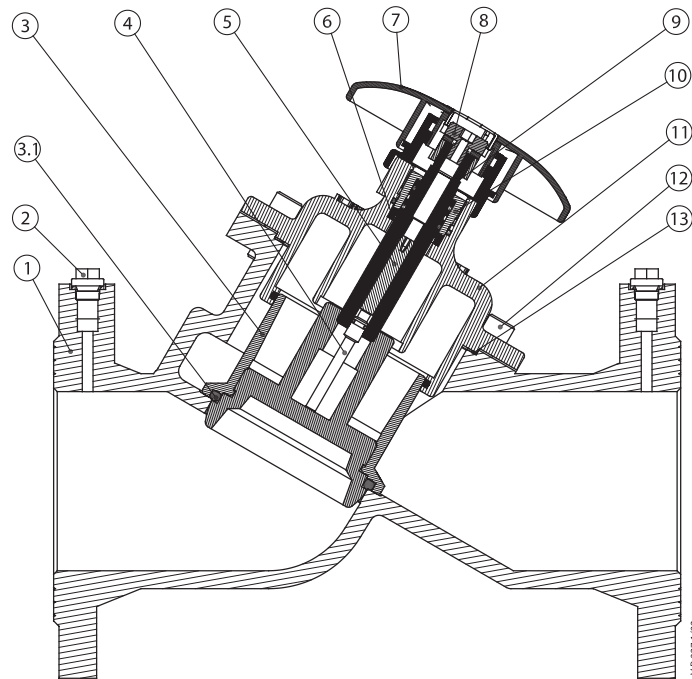
Design



MSV-F2 DN 15-50



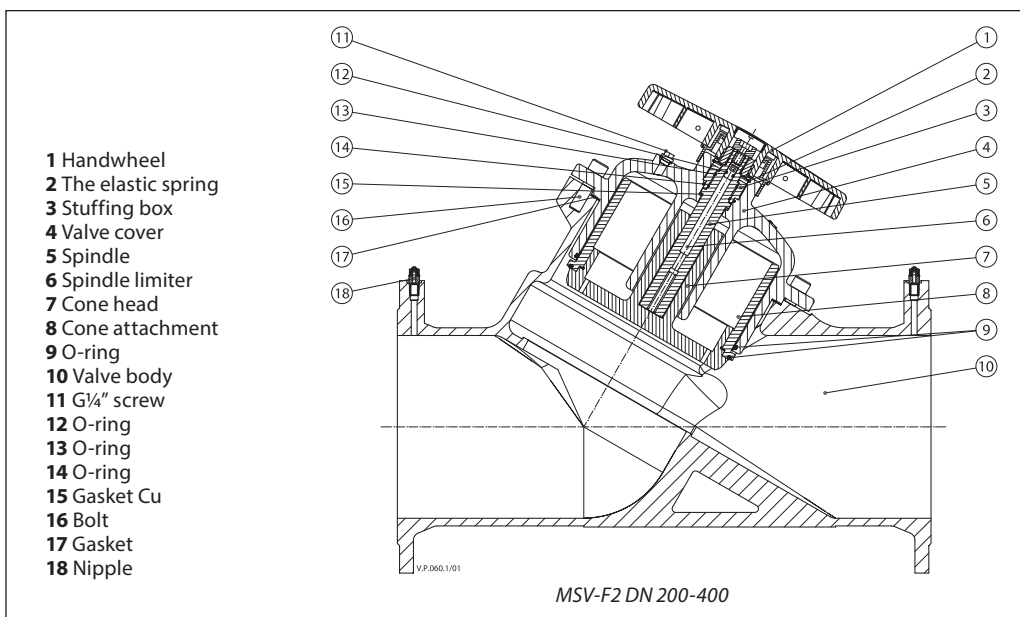
MSV-F2 DN 65-80



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 G1/4" screw
- 12 O-ring
- 13 O-ring
- 14 O-ring
- 15 Gasket Cu
- 16 Bolt
- 17 Gasket
- 18 Nipple

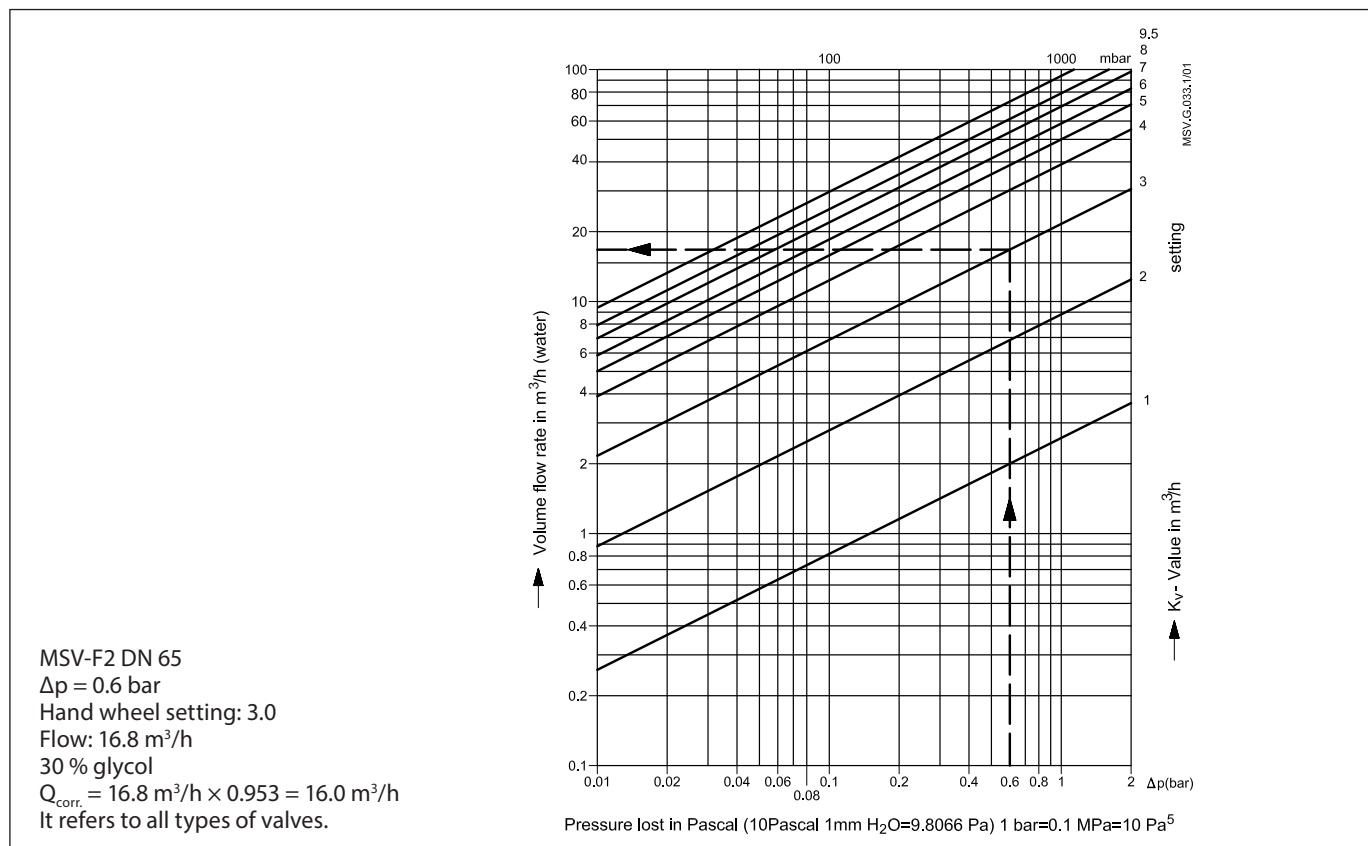
Setting

Ethylenglycol correction factor

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

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

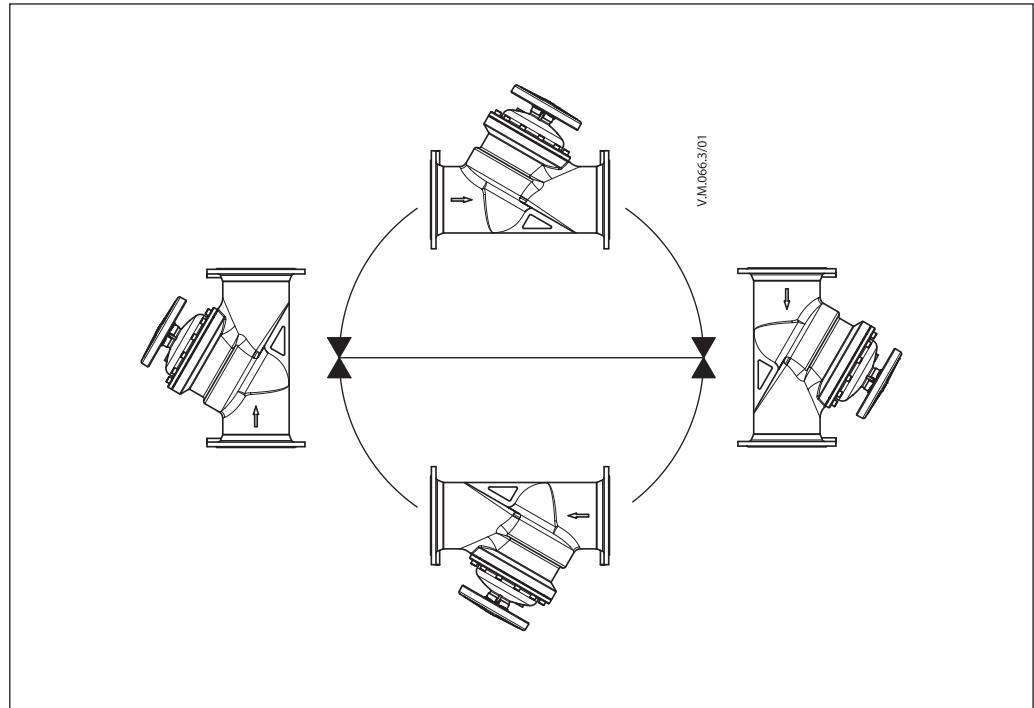
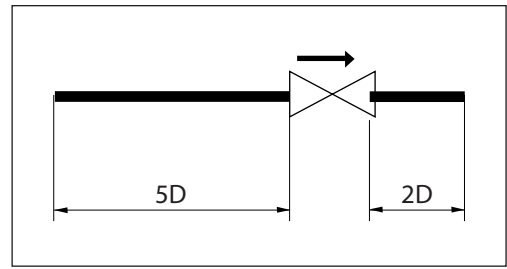
Ethylenglycol part xg (%)	0	10	20	30	40	50	60	70	80	90	100
Correction factor	1.0	0.983	0.968	0.953	0.939	0.925	0.912	0.899	0.887	0.876	0.864



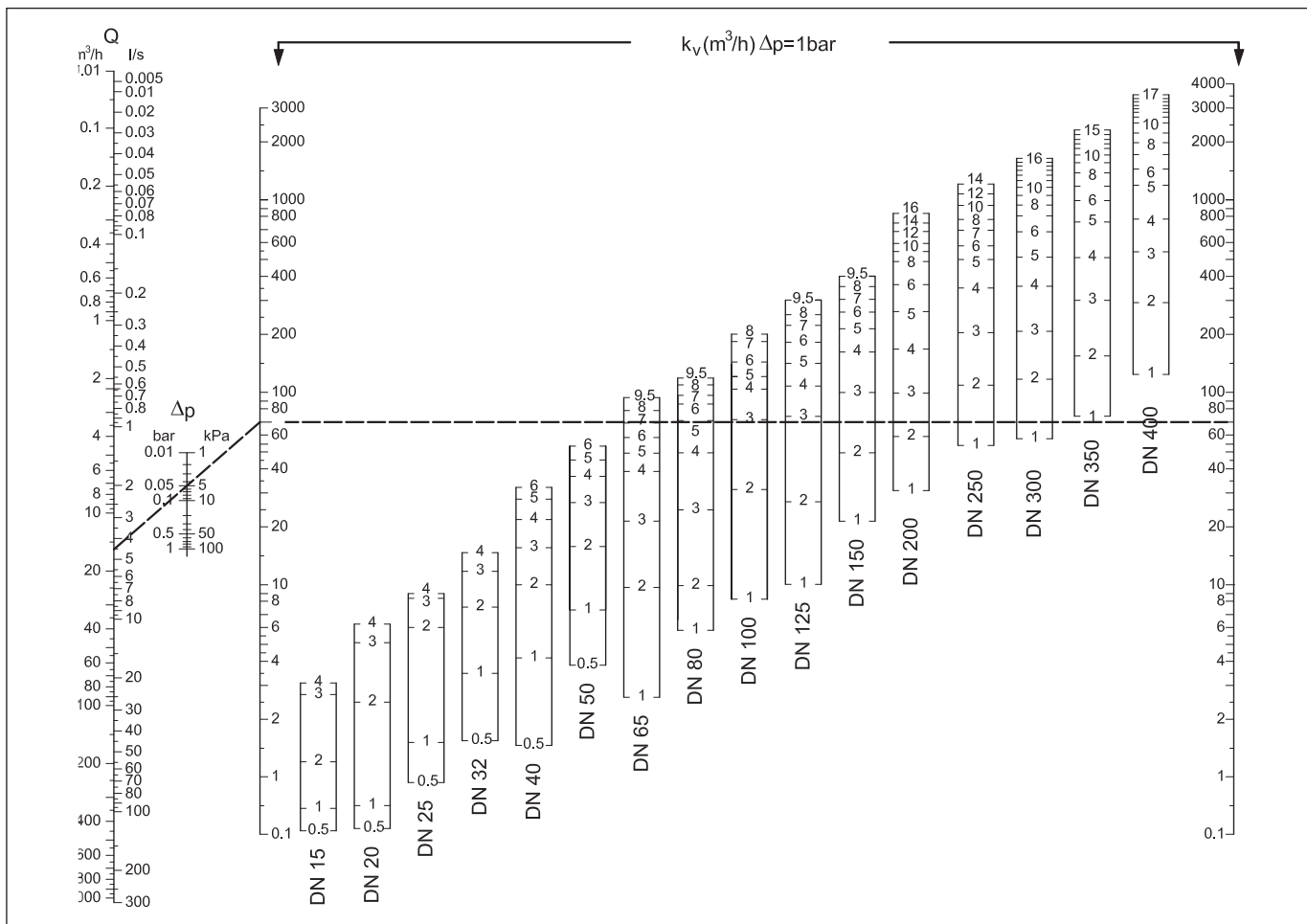
Installation

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



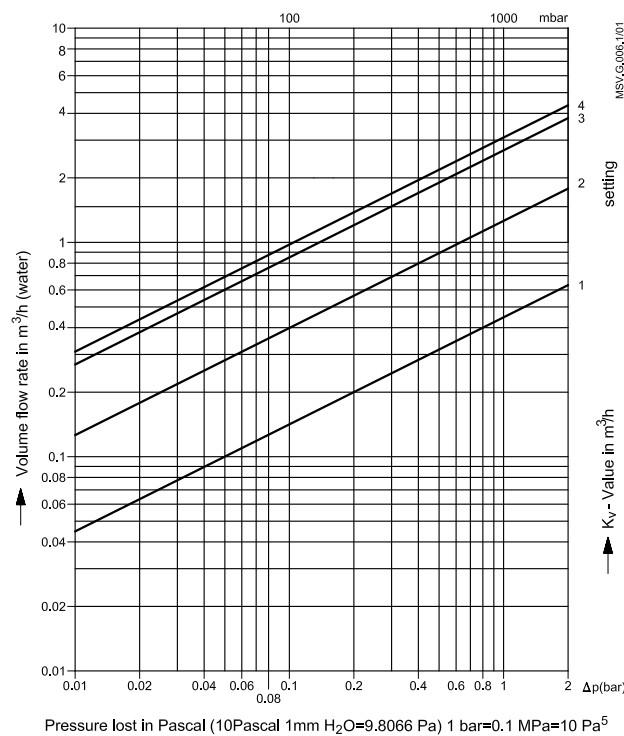
*Example:*  
 MSV-F2 DN 65  
 Q = 16 m³/h  
 Δp = 5 kPa

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



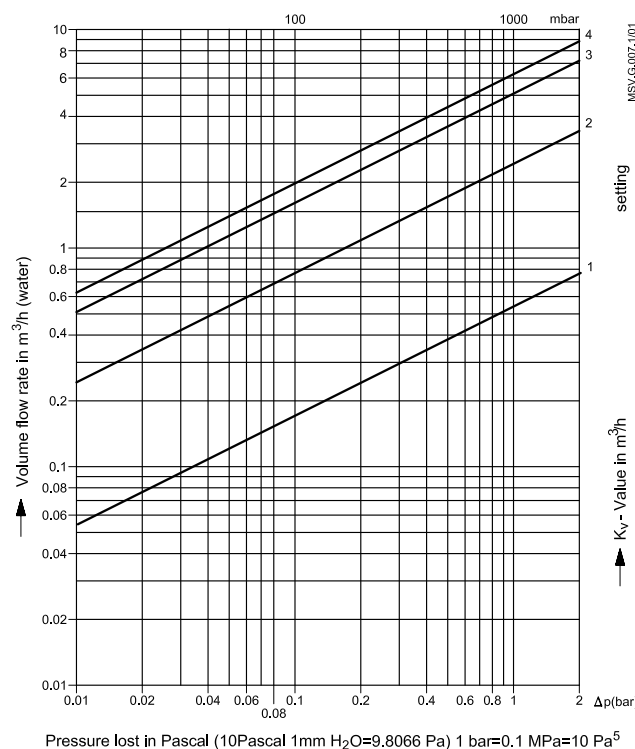
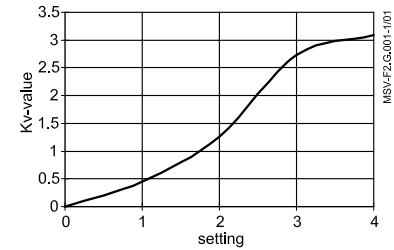
DN 15 / PN 16 / PN 25

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



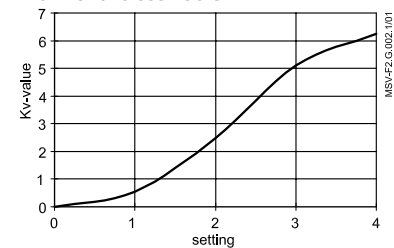
DN 20 / PN 16 / PN 25

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:

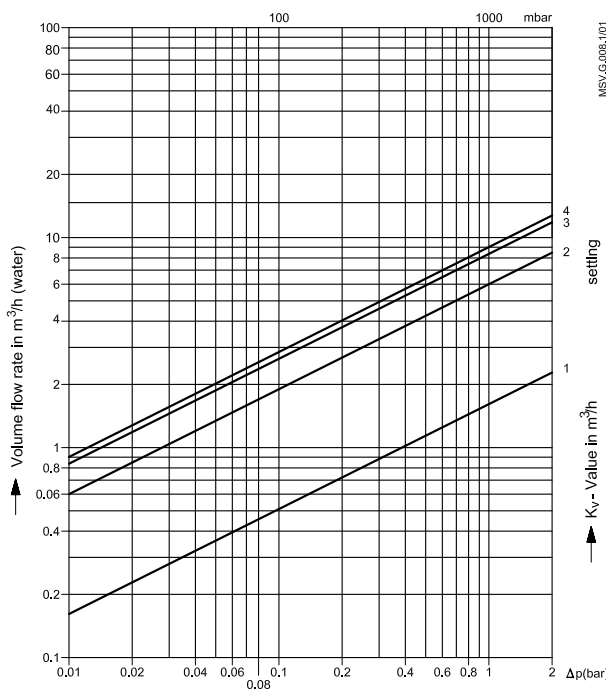
- The flow must be free of cavitation.

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>

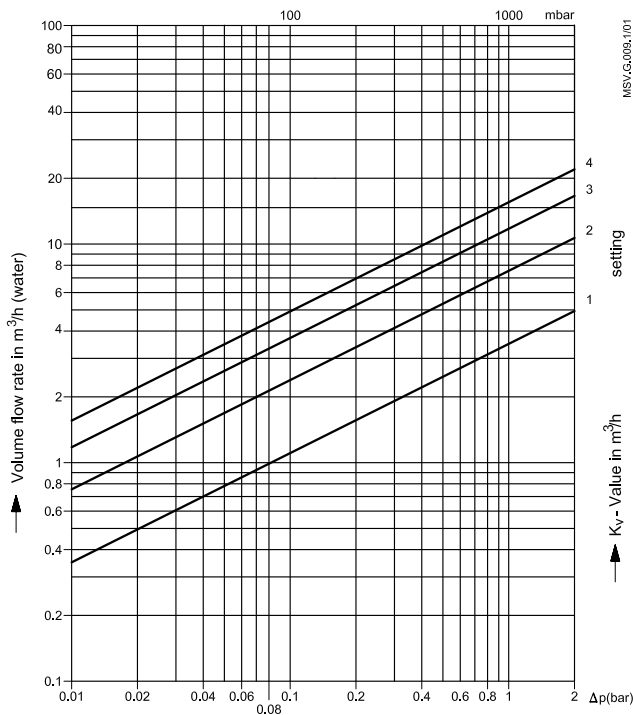
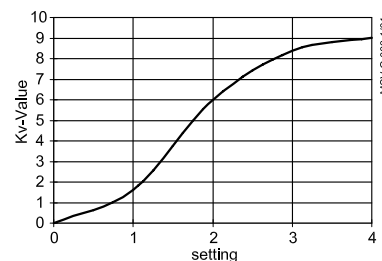
DN 25 / PN 16 / PN 25

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>

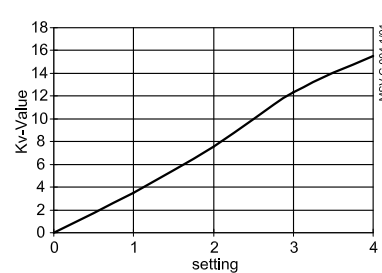
DN 32 / PN 16 / PN 25

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

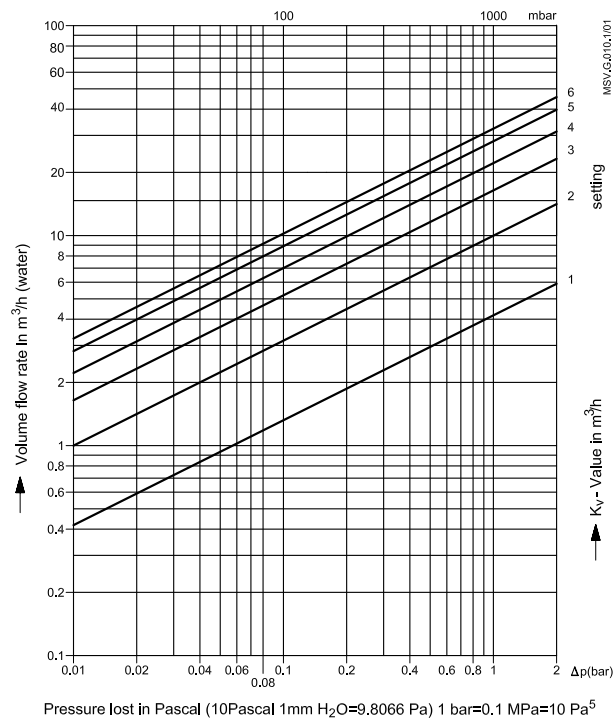
Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams (continued)

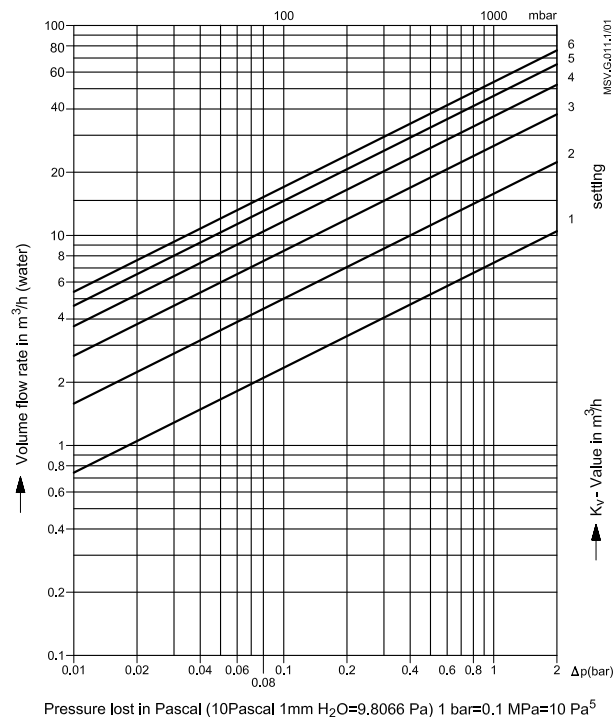
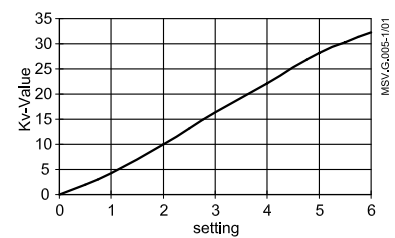


DN 40 / PN 16 / PN 25

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

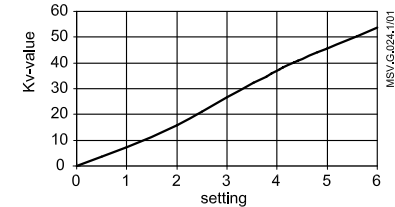


DN 50 / PN 16 / PN 25

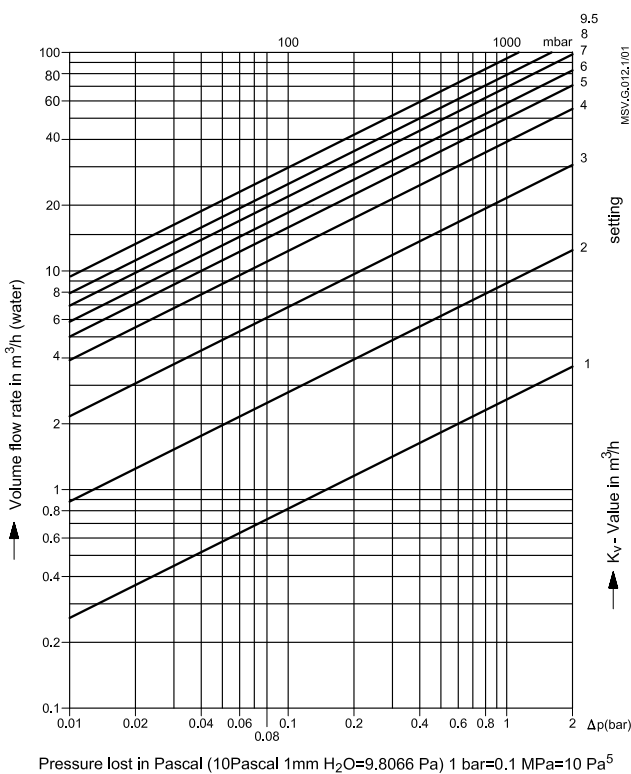
Setting	k <sub>v</sub> -value
1	7.4
2	15.8
3	26.7
4	36.9
5	46.2
6	53.8

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)



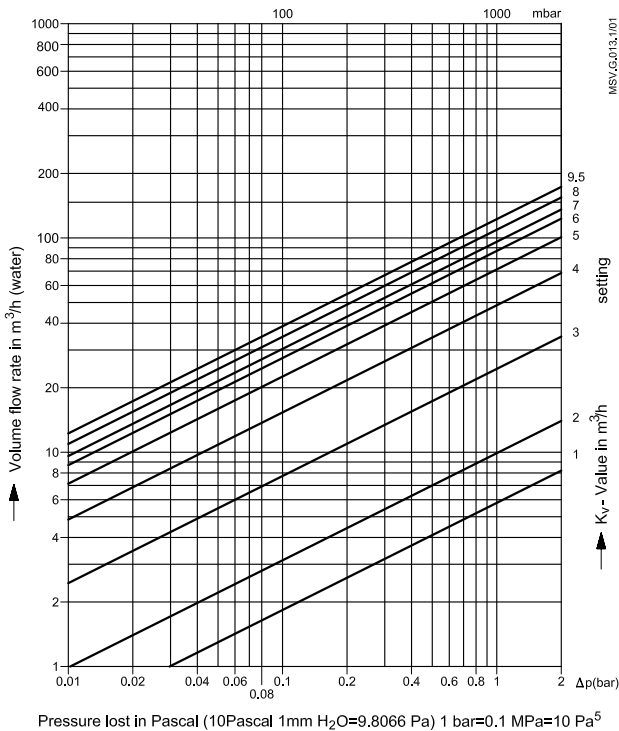
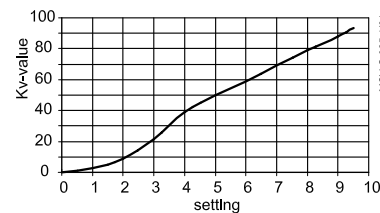
DN 65 / PN 16 / PN 25

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



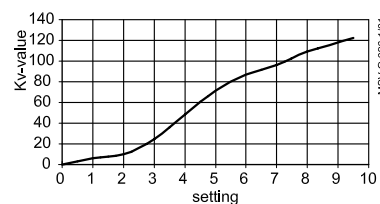
DN 80 / PN 16 / PN 25

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

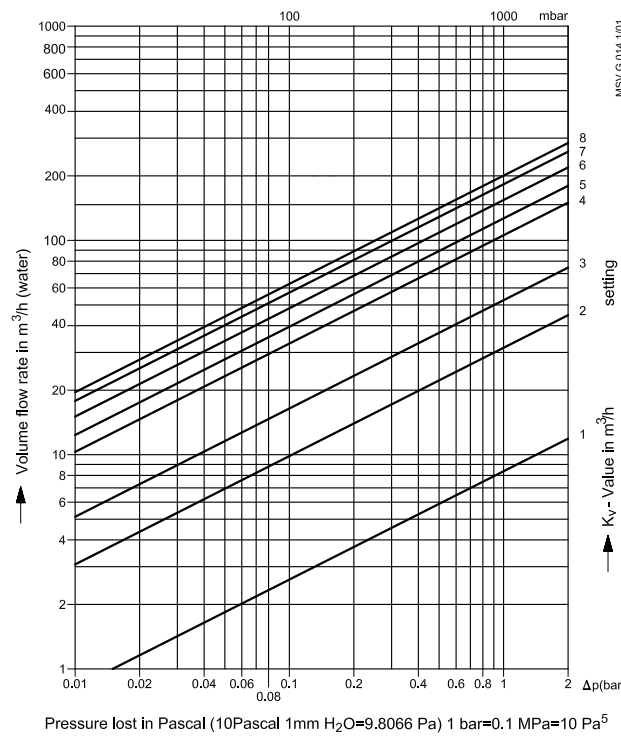
Max. permissible differential pressure in throttling function 1.5/2.0 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams (continued)



DN 100 / PN 16 / PN 25

Setting	$k_v$ -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

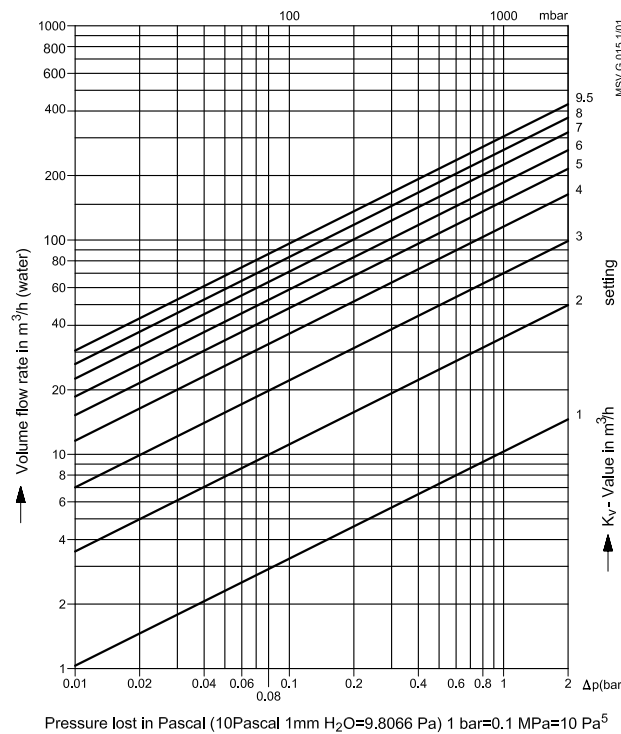
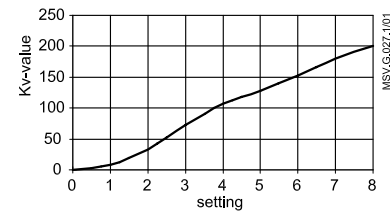
Max. permissible differential pressure in throttling function 1.5/2.0 bar.

Max. permissible flow speed:  $\leq 4$  m/s

Condition:

- The flow must be free of cavitation.

Flow characteristic



DN 125 / PN 16 / PN 25

Setting	$k_v$ -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

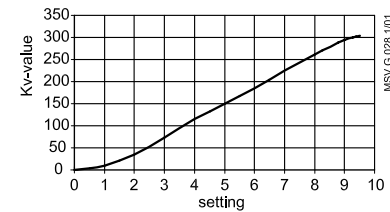
Max. permissible differential pressure in throttling function 1.5/2.0 bar.

Max. permissible flow speed:  $\leq 4$  m/s

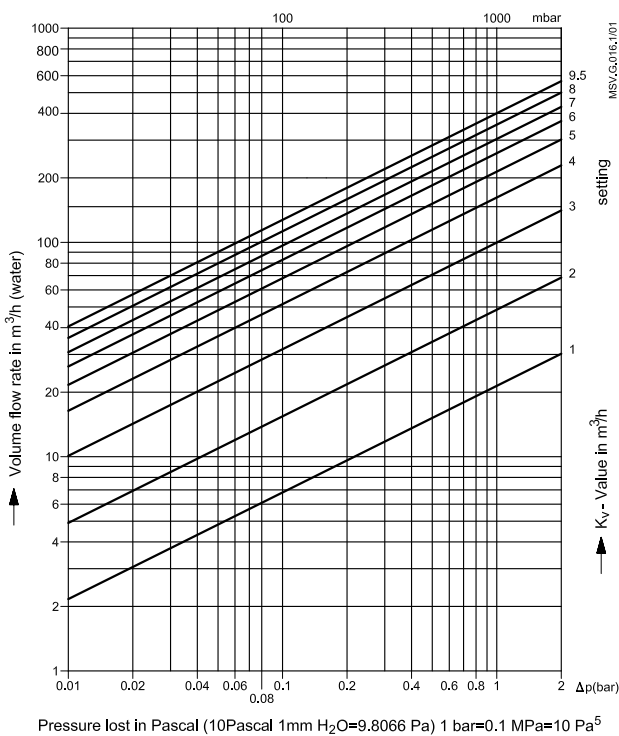
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams (continued)

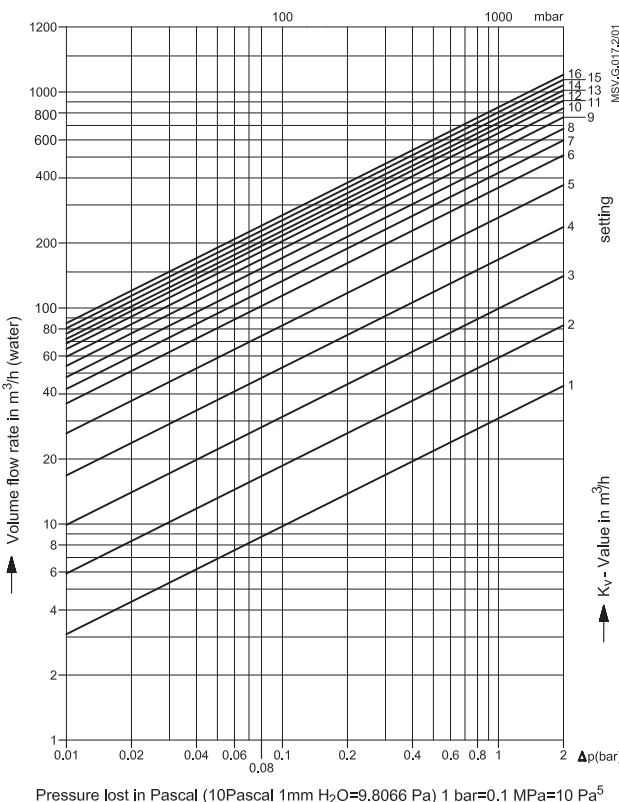
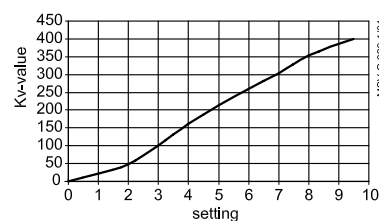


DN 150 / PN 16 / PN 25

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

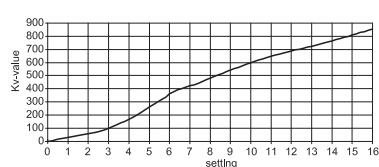


DN 200 / PN 16 / PN 25

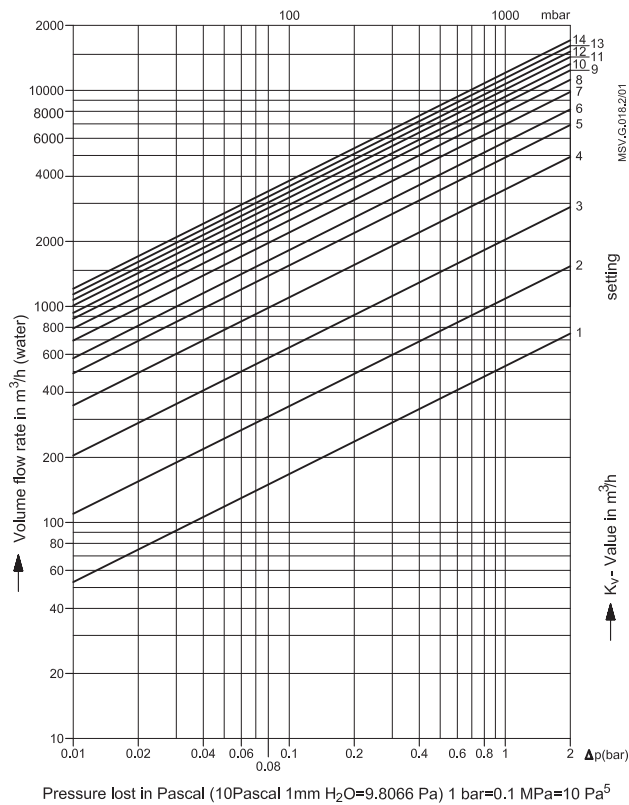
Setting	k <sub>v</sub> -value
1	30.8
2	58.7
3	100
4	170
5	262
6	361
7	423
8	481
9	542
10	597
11	647
12	684
13	722
14	763
15	807
16	850
Max: 16.7	872

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)

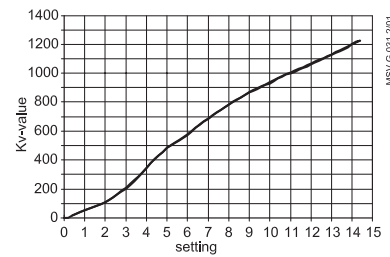


DN 250 / PN 16 / PN 25

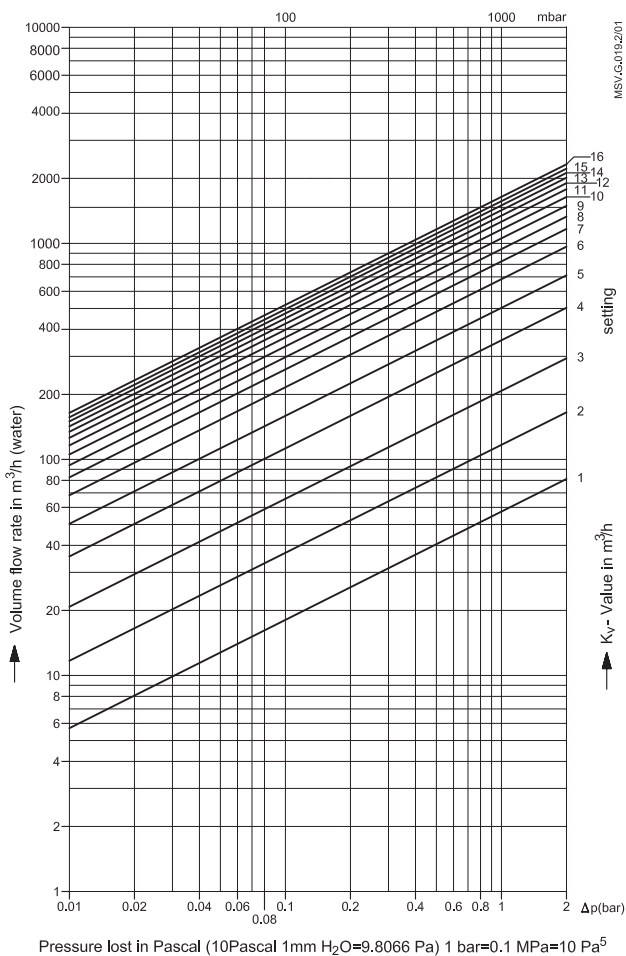
Setting	k <sub>v</sub> -value
1	53.6
2	109
3	207
4	349
5	490
6	580
7	693
8	791
9	877
10	942
11	1012
12	1076
13	1140
14	1211
Max: 14.4	1238

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)



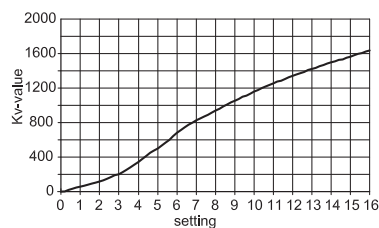
DN 300 / PN 16 / PN 25

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: 16.4	1662

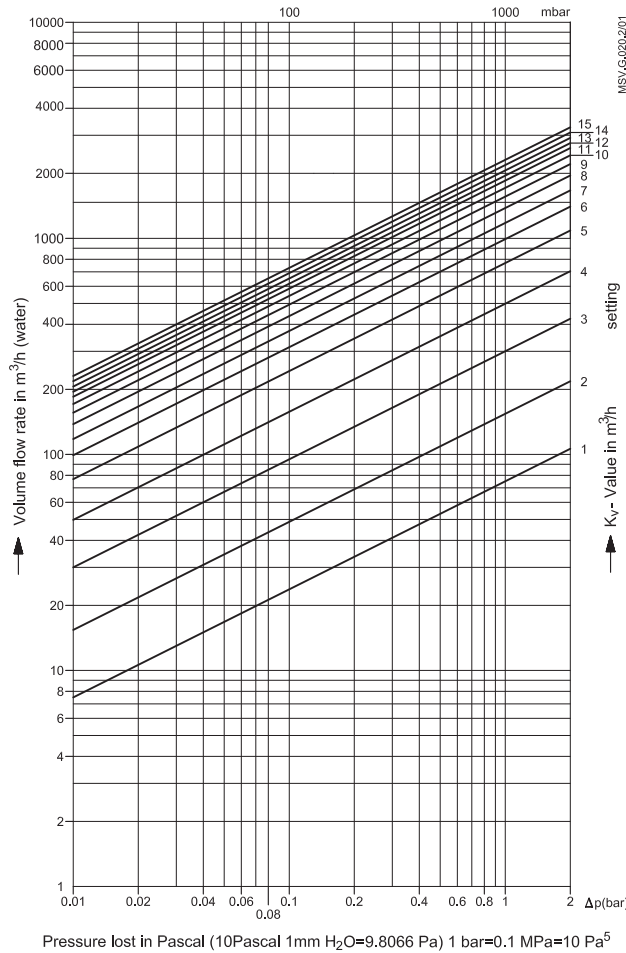
Max. permissible differential pressure in throttling function 1.5 bar.  
 Max. permissible flow speed: ≤ 4 m/s  
 Condition:

- 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

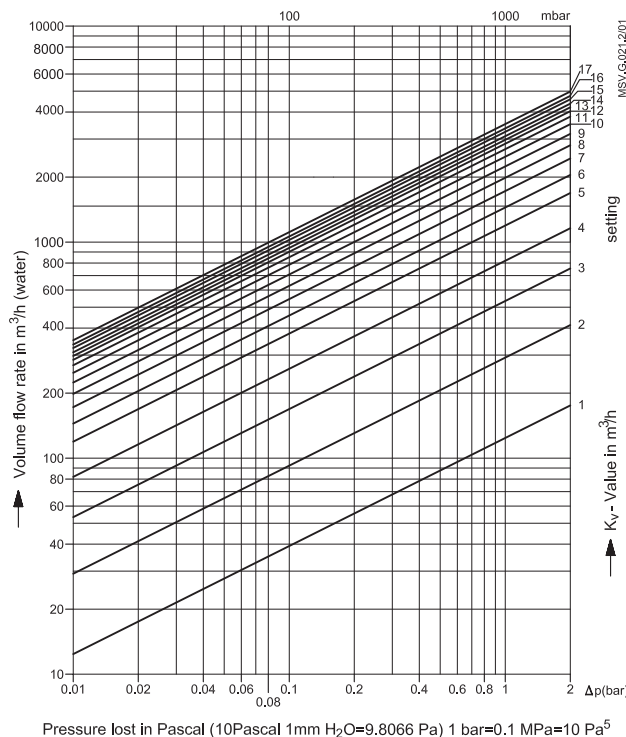
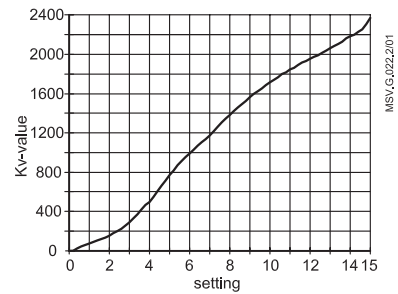
Setting	k <sub>v</sub> -value
9	1559
10	1711
11	1848
12	1952
13	2059
14	2182
15	2305
15.4	2359

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

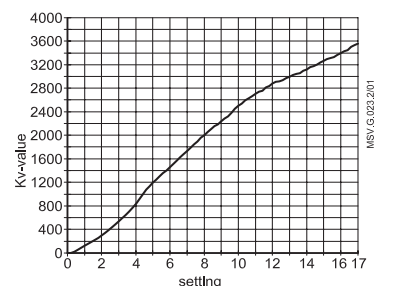
Setting	k <sub>v</sub> -value
9	2223
10	2482
11	2682
12	2848
13	2973
14	3093
15	3241
16	3359
Max: 17	3516

Max. permissible differential pressure in throttling function 1.5 bar.

Max. permissible flow speed: ≤ 4 m/s

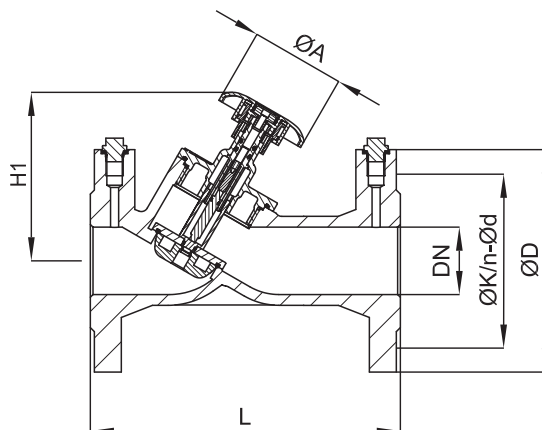
- Condition:
- The flow must be free of cavitation.

Flow characteristic





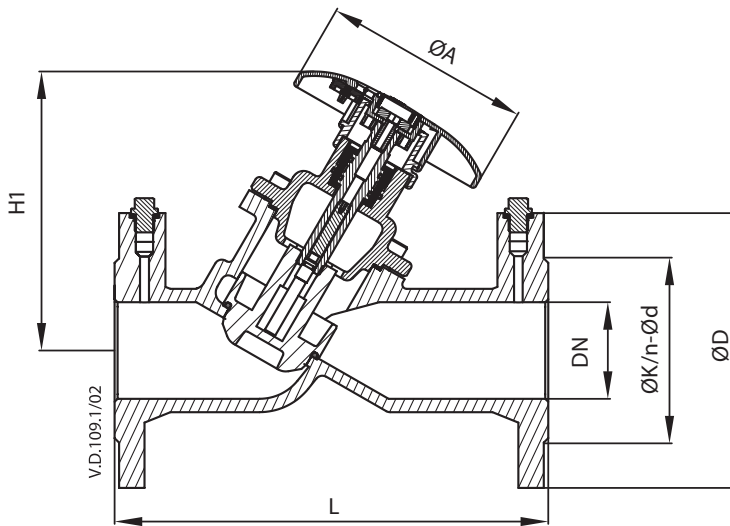
Dimensions



MSV-F2 DN 15-50

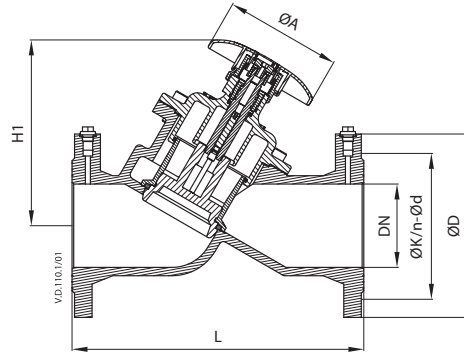
DN	L	ØA	H1	PN 16				PN 25			
				ØD	ØK	n × Ød	Weight	ØD	ØK	n × Ød	Weight
				mm			kg	mm			kg
15	130	78	80	95	65	4x14	2.3	95	65	4x14	2.3
20	150	78	90	105	75	4x14	2.9	105	75	4x14	3.0
25	160	78	105	115	85	4x14	3.8	115	85	4x14	3.8
32	180	78	110	140	100	4x19	5.6	140	100	4x19	5.8
40	200	78	125	150	110	4x19	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

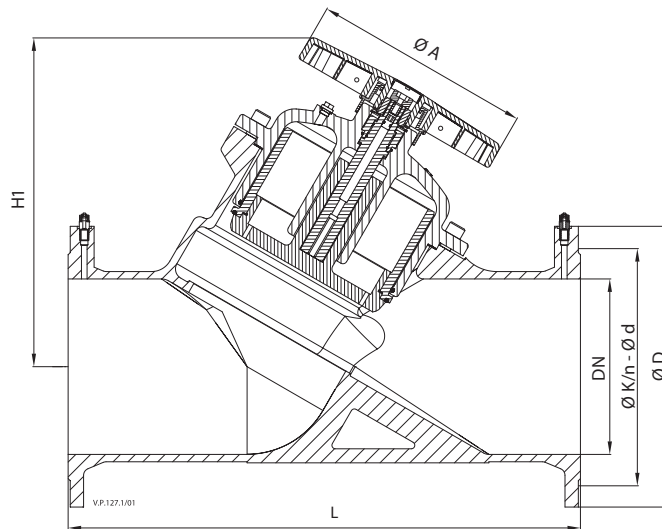
Dimensions (continued)



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	222	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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