ENGINEERING
TOMORROW

Data sheet

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

Description

MSV-F2 DN 15-150

MSV-F2 DN 200-400 (PN 16)

MSV-F2 DN 200-400 (PN 25)

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.

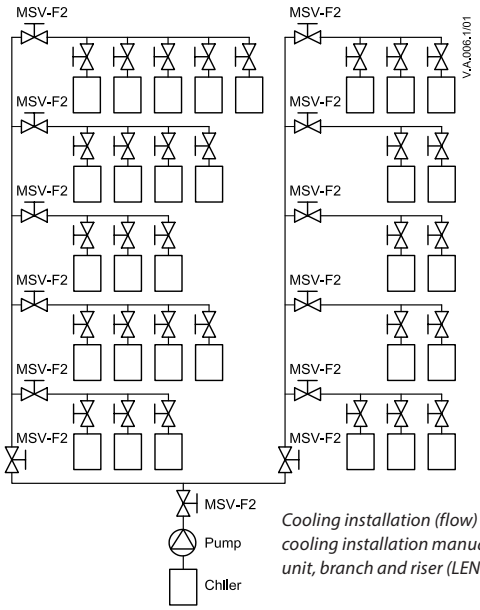
The setting can be locked. Valve characteristics are set up in measuring device PFM 1000/PFM 100. Valves are free of asbestos.

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.

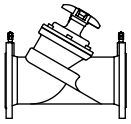
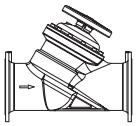
Application



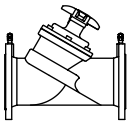
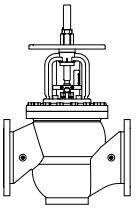
Cooling installation (flow) with manual presetting valves. In order to balance the cooling installation manual presetting valves should be mounted on each terminal unit, branch and riser (LENO™ MSV-BD).

Ordering

MSV-F2 valves - PN 16

Picture	DN [1] (mm)	k_{VS} (m^3/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	872			**003Z1140**
	250	1,238			**003Z1141**
	300	1,662			**003Z1142**
	350	2,359			**003Z1143**
	400	3,516			**003Z1144**

MSV-F2 valves - PN 25

Picture	DN [1] (mm)	k_{VS} (m^3/h)	$T_{max.}$ (°C)	PN (bar)	Code No. (with needle test plugs)
	15		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	685.6			**003Z1076**
	250	952.3			**003Z1077**
	300	1,380.2			**003Z1078**
	350	2,046.1			**003Z1097**
	400	2,584.6			**003Z1098**

[1] *Flange valves dimension DN 15-40, 350 and 400 available on request.*

Accessories

Type	Code No.
Rectus test plugs, 2 pcs.	**003Z0108**
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 PFM5001 (10 bar)	**003L8343**
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	**003Z0181**
	DN 250-300	**003Z0182**
	DN 350-400	**003Z0183**

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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}	m³/h	3.1	6.3	9.0	15.5	32.3	53.8	93.4	122.3	200.0	304.4	400.8	872	1,238	1,662	2,359	3,516
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 [1]) 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	550
Material																	
Body		Cast iron EN-GJL 250 (GG 25)															
Seat sealing		EPDM															
Cone		CW602N								Stainless steel	Stainless steel/ CW602N		Casted stainless steel				

[1] Please verefy compability between materials and secondary coolants with supplier.

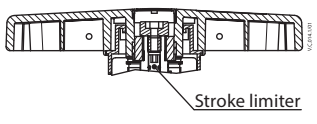
MSV-F2 valves - PN 25W

Nominal diameter	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400
k_{VS}	m³/h	3.1	6.3	9.0	15.5	32.3	53.8	93.4	122.3	200.0	304.4	400.8	685.6	952.3	1380.2	2046.1	2584.6
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 [1]) 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	228	345	488	748	900
Material3, we ha																	
Body		Ductile iron EN-GJS 400-15 (GGG-40)															
Seat sealing		EPDM															
Cone		CW602N								Stainless steel	Stainless steel CW602N		Casted stainless steel				

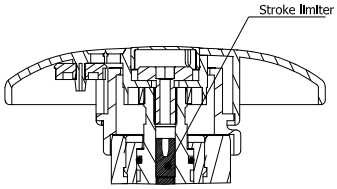
[1] Please verefy compability between materials and secondary coolants with supplier.qw

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

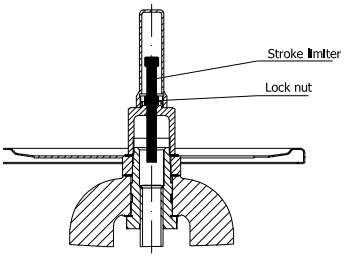
Material	**PN**		**Temperature**			
			–10 °C	120 °C	130 °C	150 °C
EN-GJL 250 (MSV-F2 DN 15-150)	16	bar	16	16	15.5	-
EN-GJL 250 (MSV-F2 DN 200-400)	16		16	16	15.5	-
EN-GJS 400-15 (MSV-F2 DN 15-150)	25		25	25	-	24.3
EN-GJS 400-15 (MSV-F2 DN 200-400)	25		25	25	-	24.3



Valves have built in flow limitation

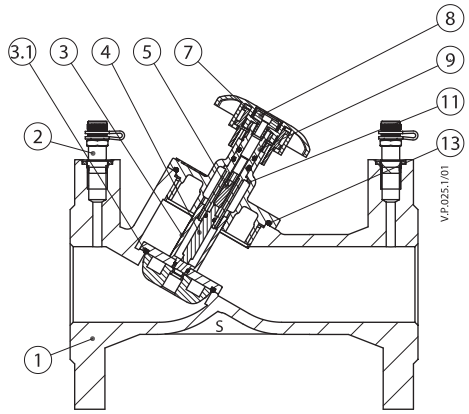


Valves have built in flow limitation

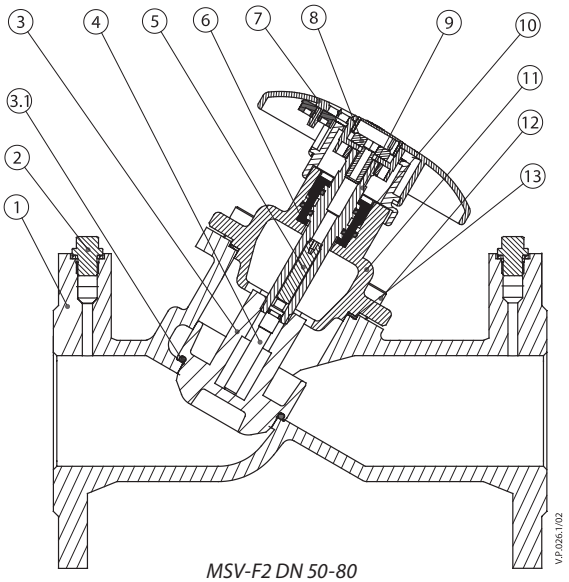


Valves have stroke limiter locked by lock-nut

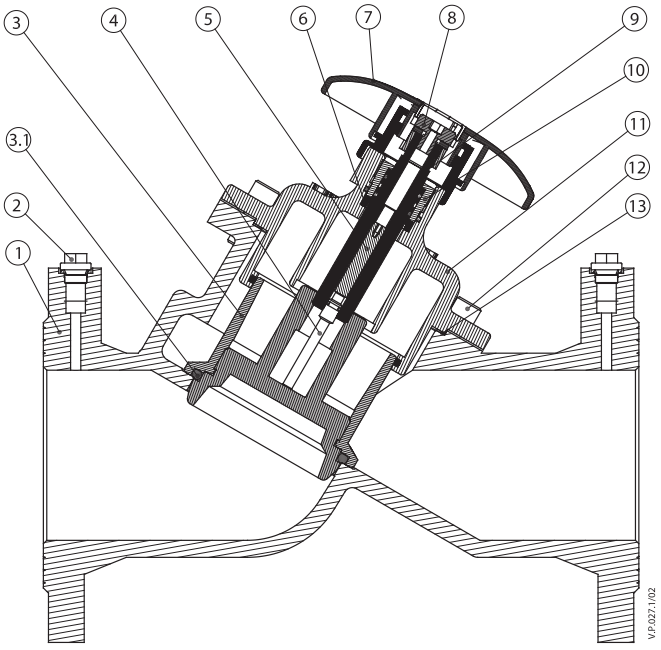
Design



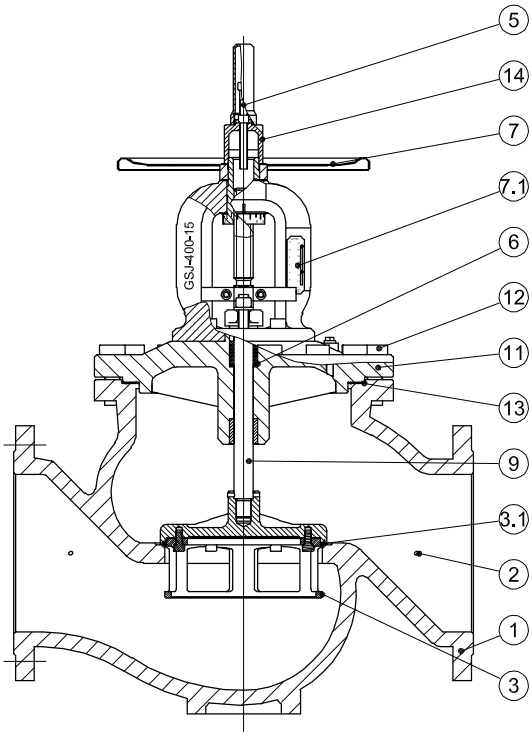
MSV-F2 DN 15-40



MSV-F2 DN 50-80



MSV-F2 DN 100-150



MSV-F2 DN 200-400 (PN 25)

1 Body EN-GJL250
2 Plug
3 Valve cone
3,1 Seat soft sealing
4 Rod
5 Stroke limiter/Allen screw
6 Gasket
7 Handwheel with digital display
- DN 15-150 plastic
- DN 200-400 metal

7,1 Display
8 Fixed screw
9 Spindle
10 Stuffing box
11 Bonnet
12 Allen screw /Hexagon screw
13 Flat gasket
14 Hood with stroke

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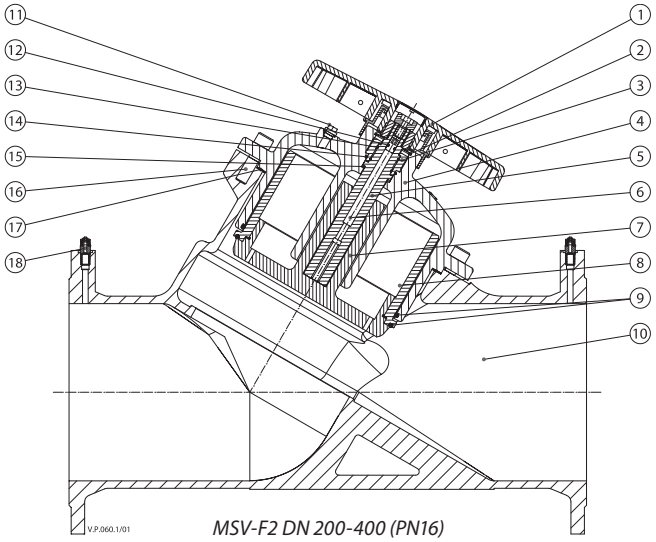
Design *(continued)*

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 G¼" screw
12 O-ring
13 O-ring
14 O-ring
15 Gasket Cu
16 Bolt
17 Gasket
18 Nipple



MSV-F2 DN 200-400 (PN16)

Setting

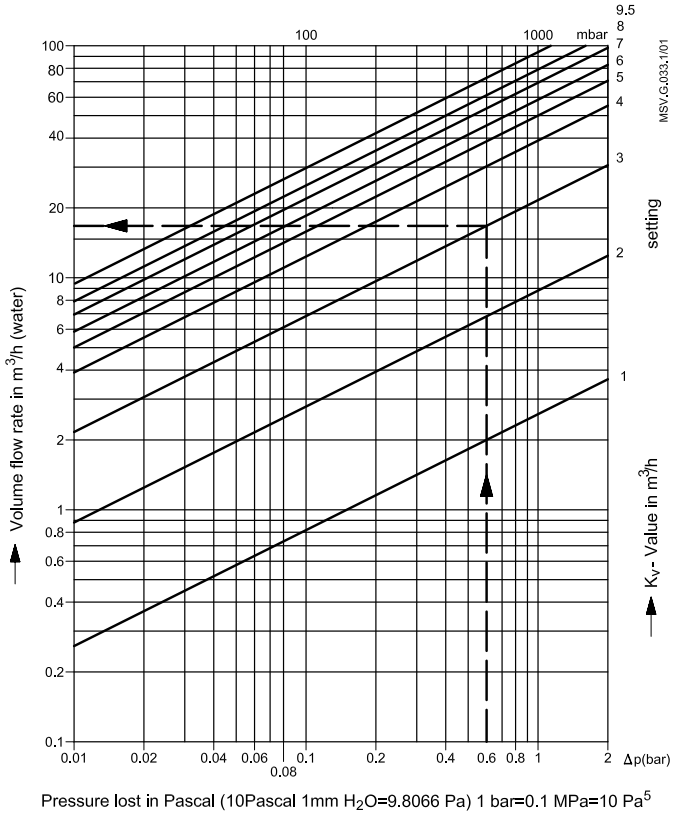
Ethylenglycol correction factor

Formula: $C_2H_6O_2$
Density at 20 °C: $\rho_{water} = 1$ kg/dm³
$\rho_{glycol} = 1.338$ kg/dm³

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

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

MSV-F2 DN 65
Δp = 0.6 bar
Hand wheel setting: 3.0
Flow: 16.8 m³/h
30 % glycol
$Q_{corr.}$ = 16.8 m³/h × 0.953 = 16.0 m³/h
It refers to all types of valves.

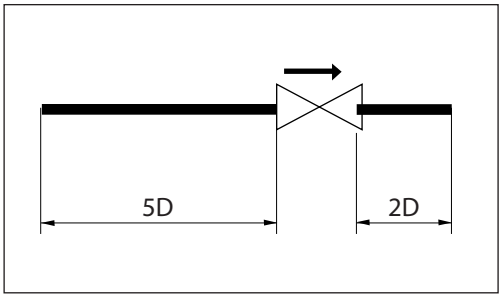


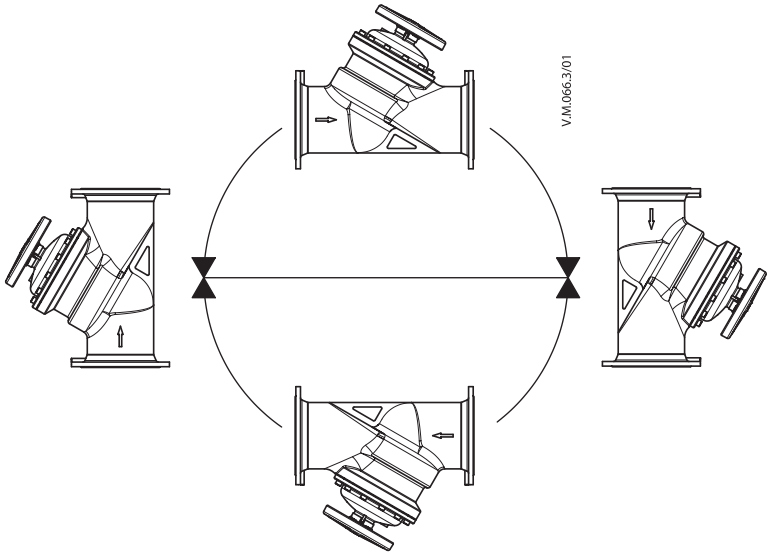
Pressure lost in Pascal (10Pascal 1mm H_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa[5]

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 %.





MSV F2 DN 200-400 may not be mounted with handle pointing down.

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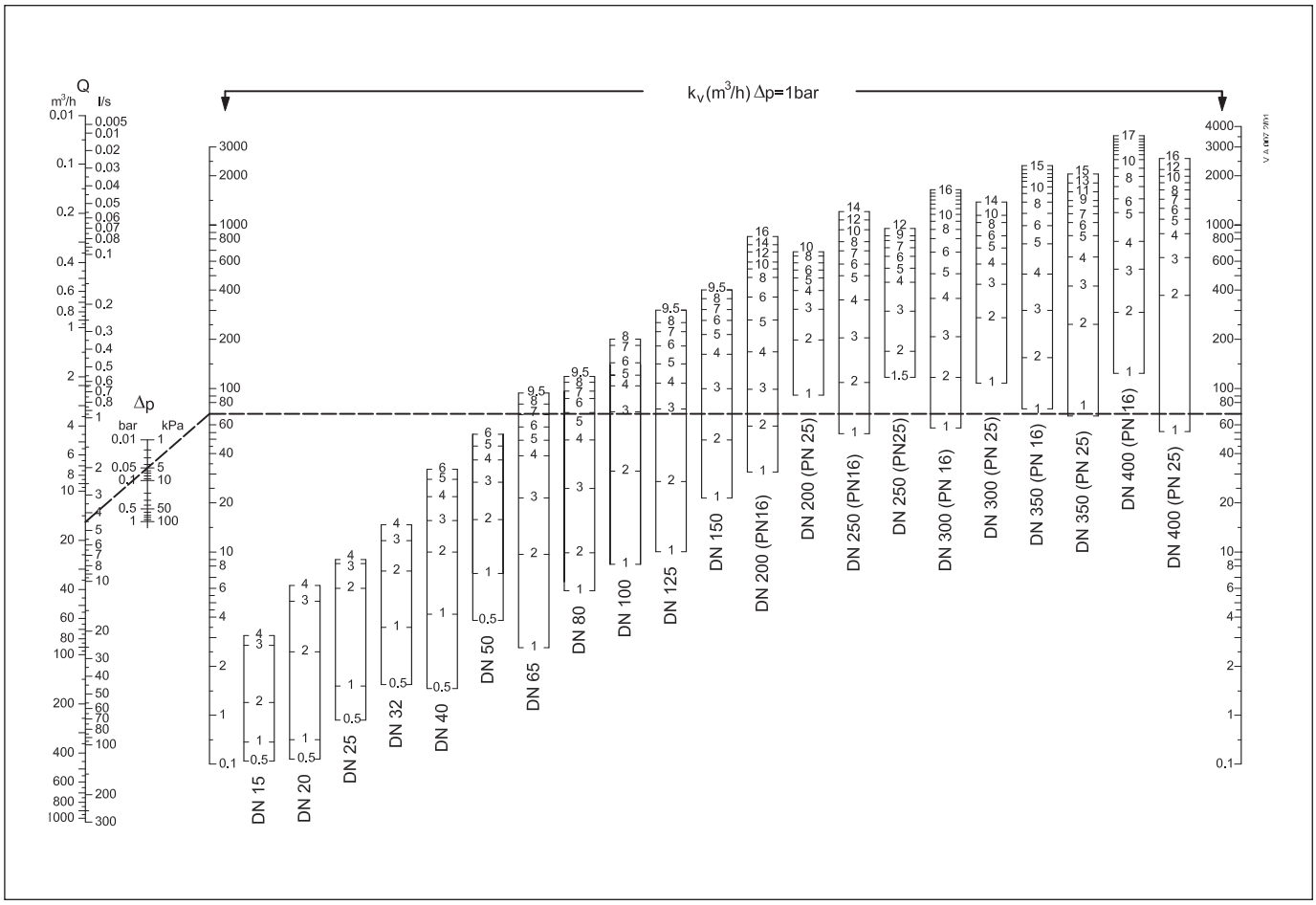
Sizing



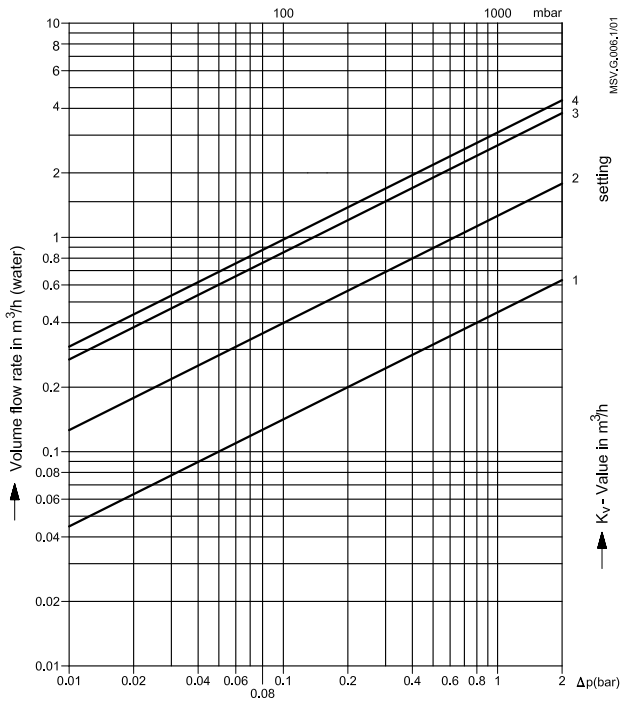
Example:
MSV-F2 DN 65
Q = 16 m³/h
Δp = 5 kPa

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



Pressure lost in Pascal (10Pascal 1mm H_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa^5

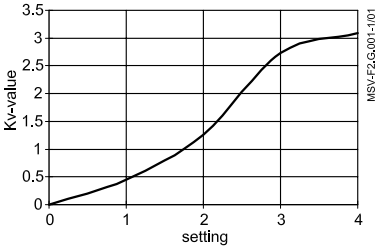
DN 15 / PN 16 / PN 25

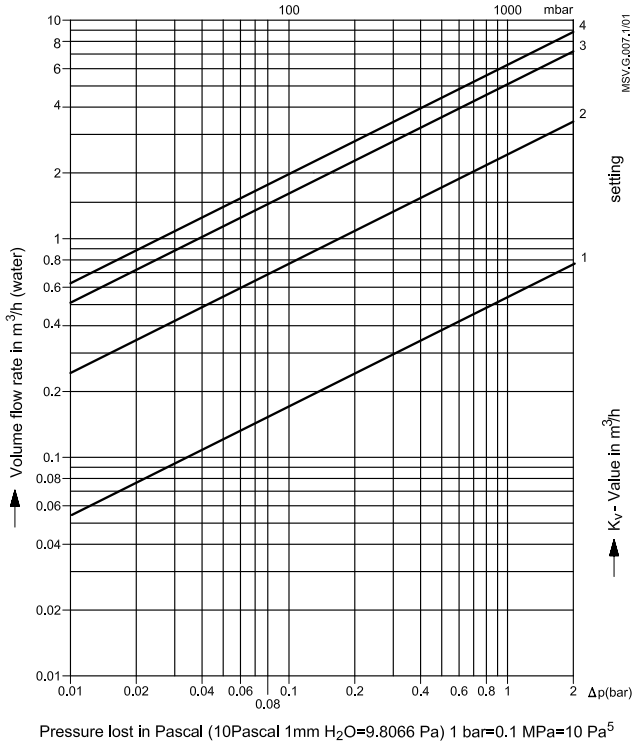
Setting	k_v-value
1	0.45
2	1.26
3	2.73
4	3.09

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





Pressure lost in Pascal (10Pascal 1mm H_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa^5

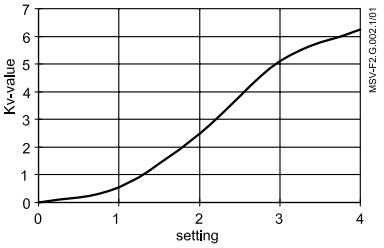
DN 20 / PN 16 / PN 25

Setting	k_v-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



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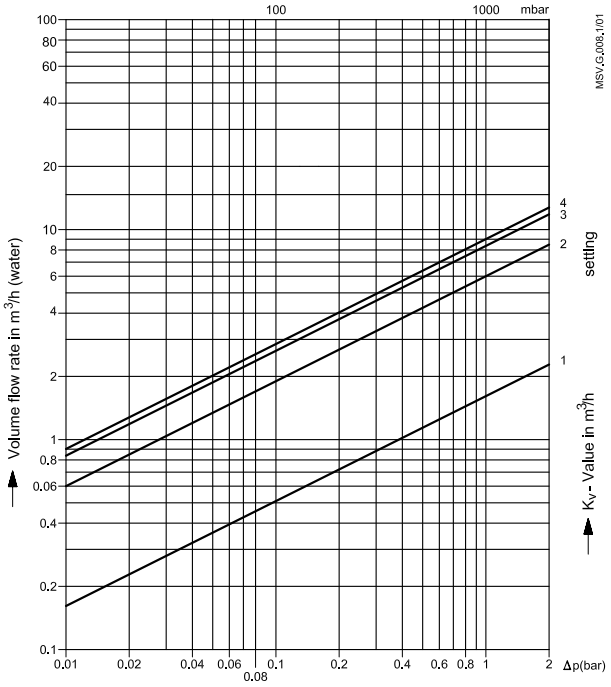
Flow diagrams *(continued)*



Pressure lost in Pascal (10Pascal 1mm H_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa^5

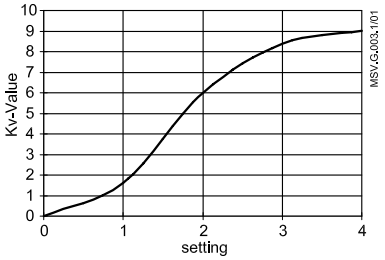
DN 25 / PN 16 / PN 25

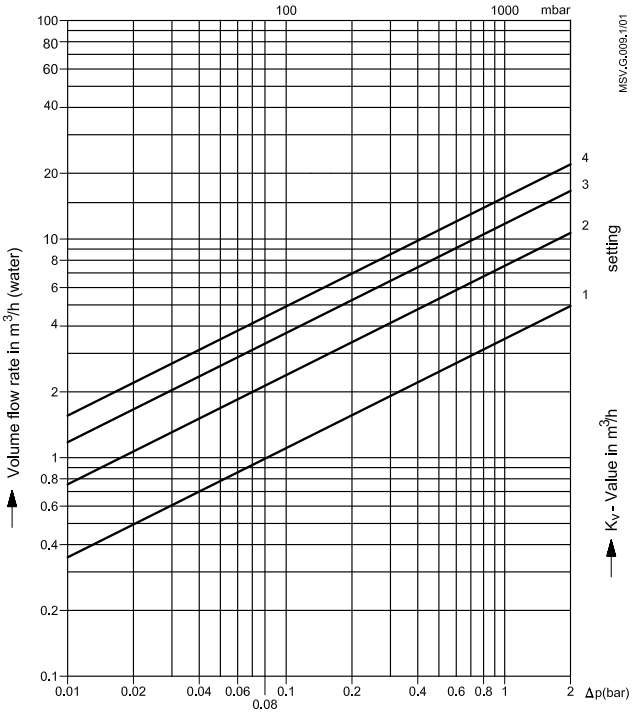
Setting	k_v-value
1	1.61
2	6.0
3	8.38
4	9.01

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_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa^5

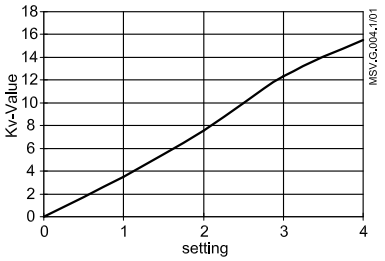
DN 32 / PN 16 / PN 25

Setting	k_v-value
1	3.53
2	7.56
3	12.32
4	15.54

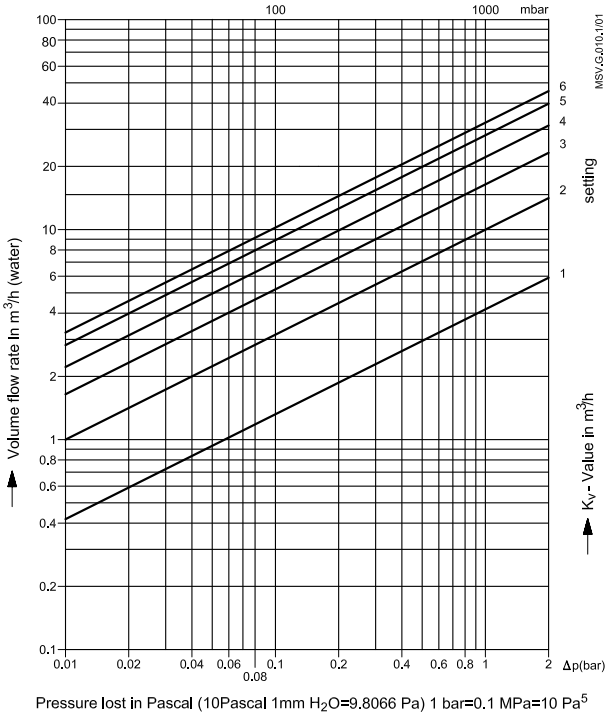
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



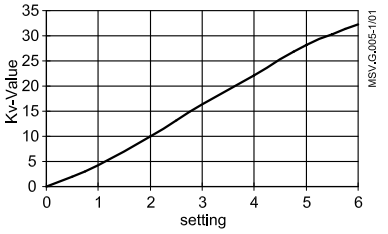
DN 40 / PN 16 / PN 25

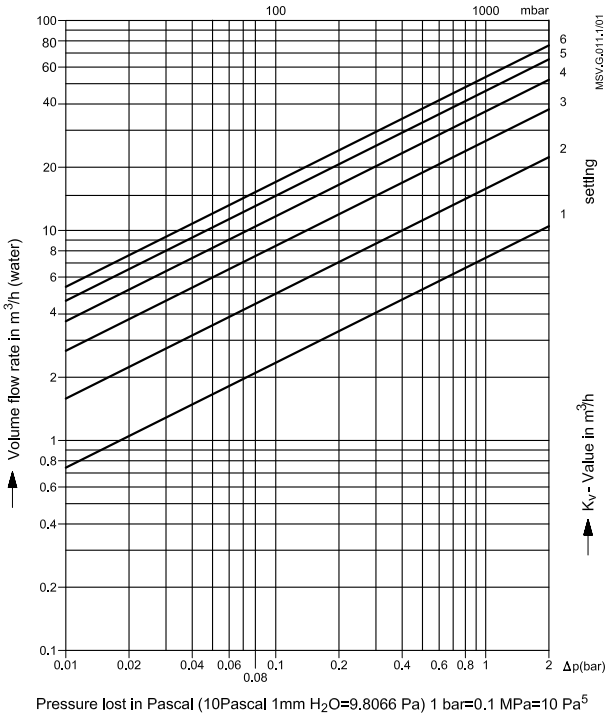
Setting	k_v-value
1	4.19
2	9.98
3	16.42
4	22.13
5	28.14
6	32.31

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





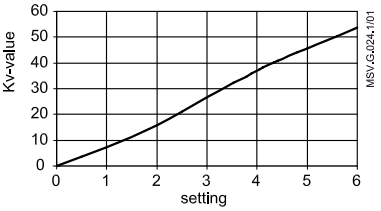
DN 50 / PN 16 / PN 25

Setting	k_v-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



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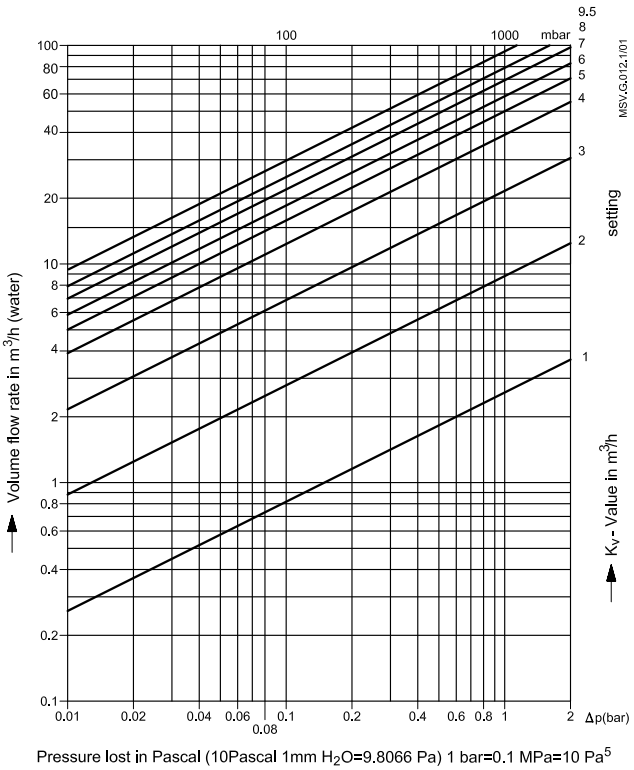
Flow diagrams *(continued)*



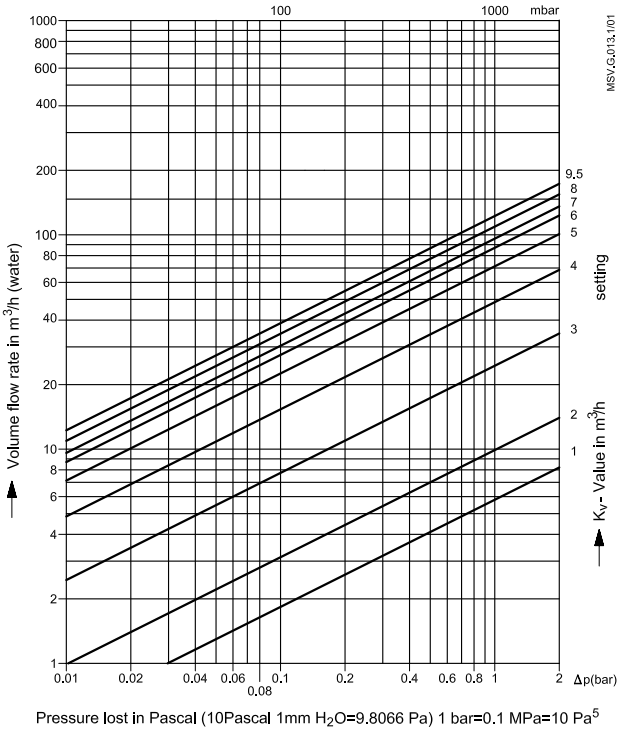
DN 65 / PN 16 / PN 25

Setting	k_v-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



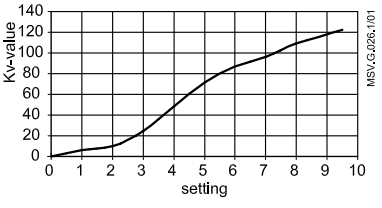
DN 80 / PN 16 / PN 25

Setting	k_v-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

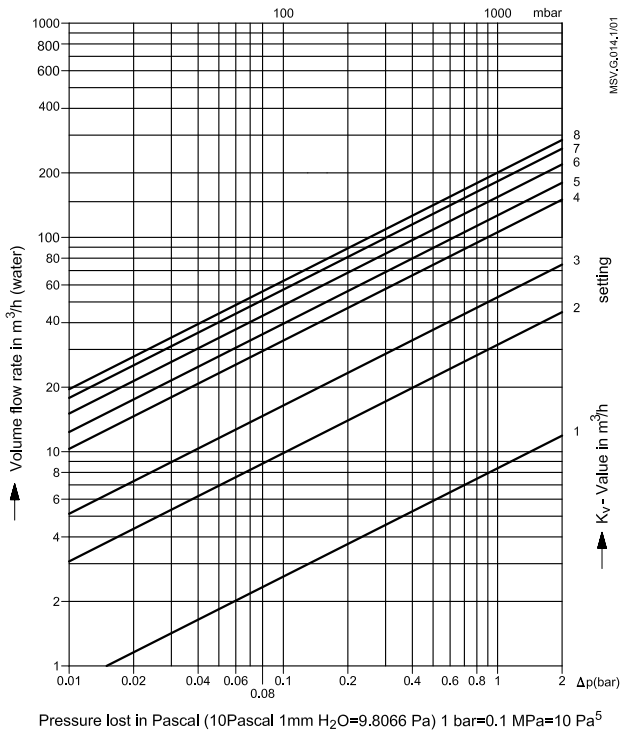
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



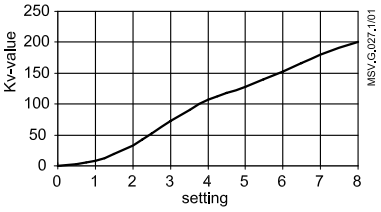
DN 100 / PN 16 / PN 25

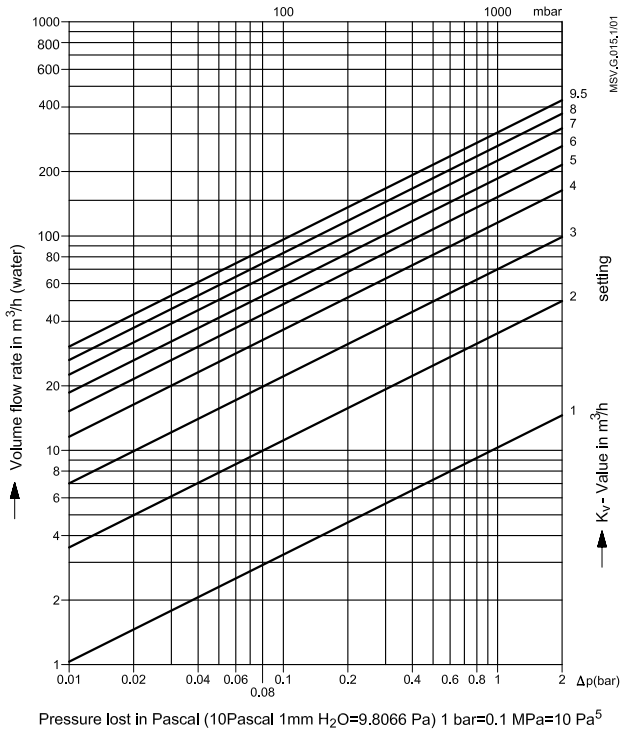
Setting	k_v-value
1	8.3
2	32.4
3	72.9
4	107.2
5	128.2
6	152.8
7	180.0
8	200.0

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

- The flow must be free of cavitation.

Flow characteristic





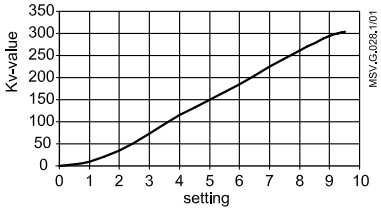
DN 125 / PN 16 / PN 25

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: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



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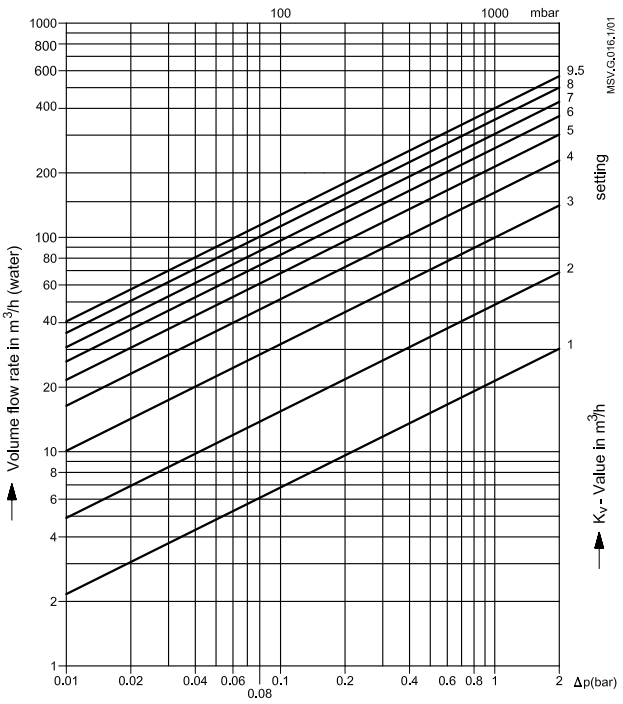
Flow diagrams *(continued)*



Pressure lost in Pascal (10Pascal 1mm H_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa^5

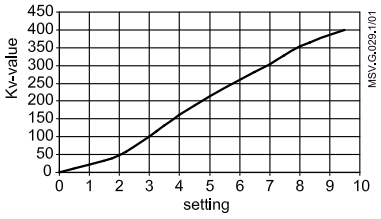
DN 150 / PN 16 / PN 25

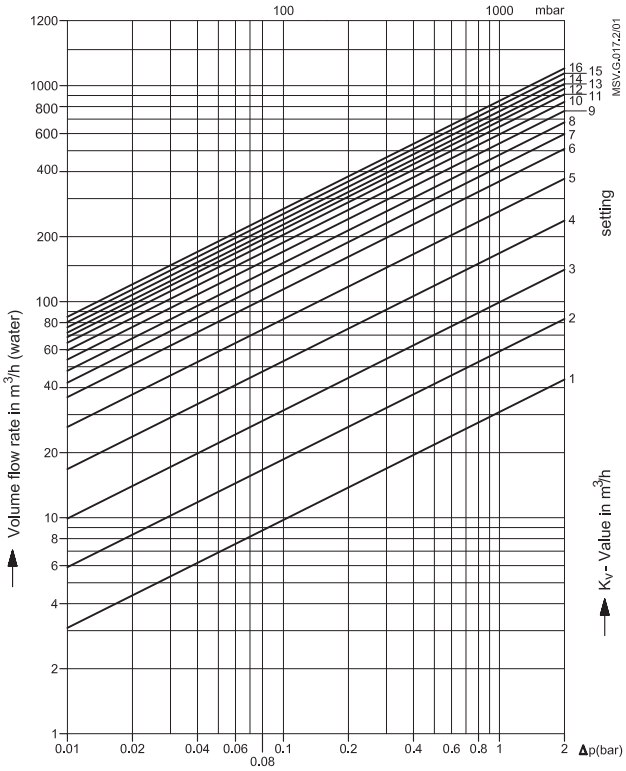
Setting	k_v-value
1	21.4
2	48.5
3	99.8
4	162.0
5	214.0
6	260.9
7	304.1
8	354.6
9.5	400.8

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





Pressure lost in Pascal (10Pascal 1mm H_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa^5

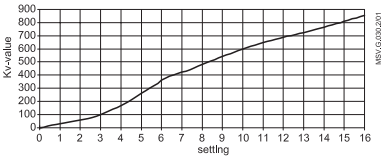
DN 200 / PN 16

Setting	k_v-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

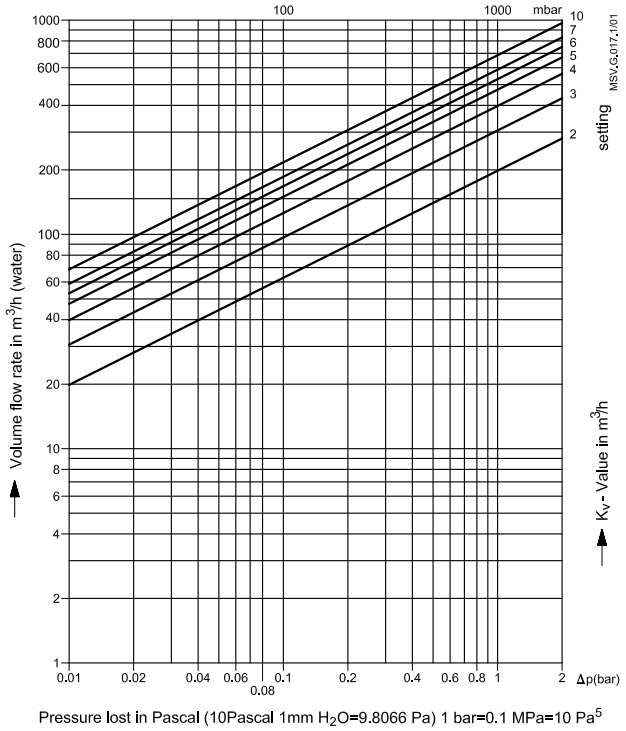
Max. permissible differential pressure in throttling function 1.5 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



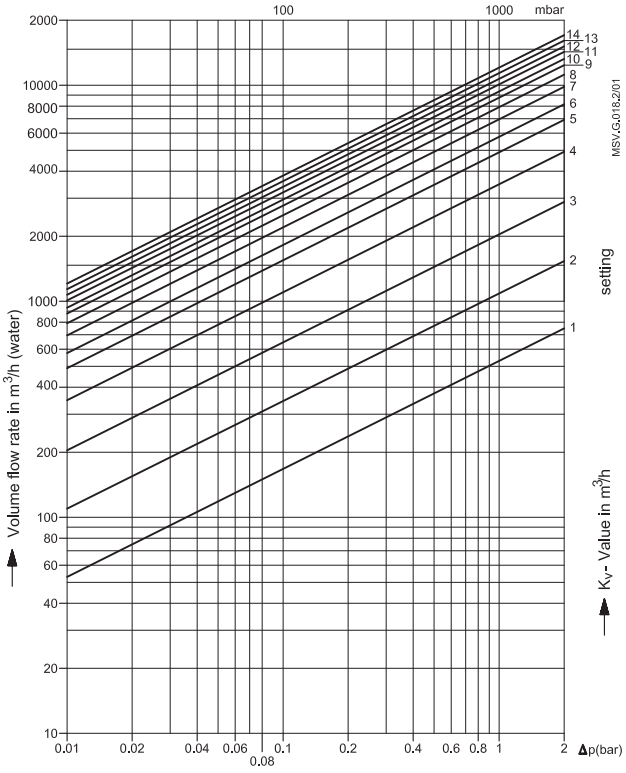
DN 200 / PN 25

Setting	k_v-value
2	198.2
3	305.3
4	397.5
5	474.0
6	530.4
7	586.8
8	645.9
10	685.6

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

- The flow must be free of cavitation.

Flow characteristic



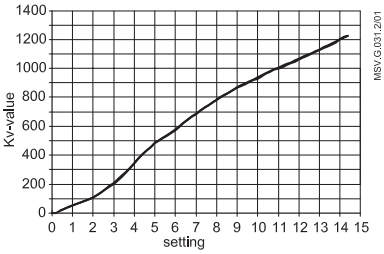
DN 250 / PN 16

Setting	k_v-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



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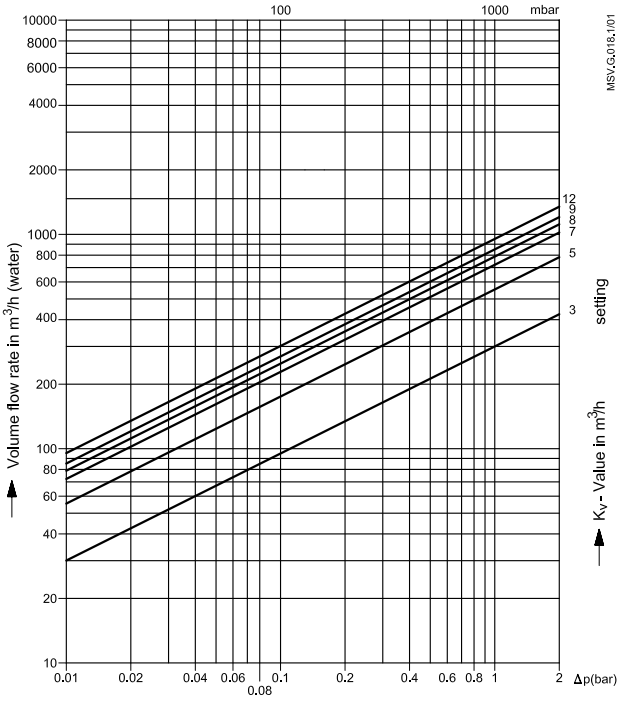
Flow diagrams *(continued)*



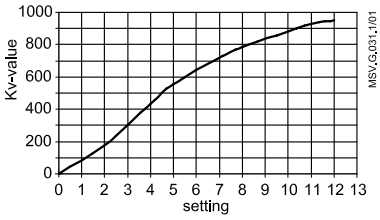
DN 250 / PN 25

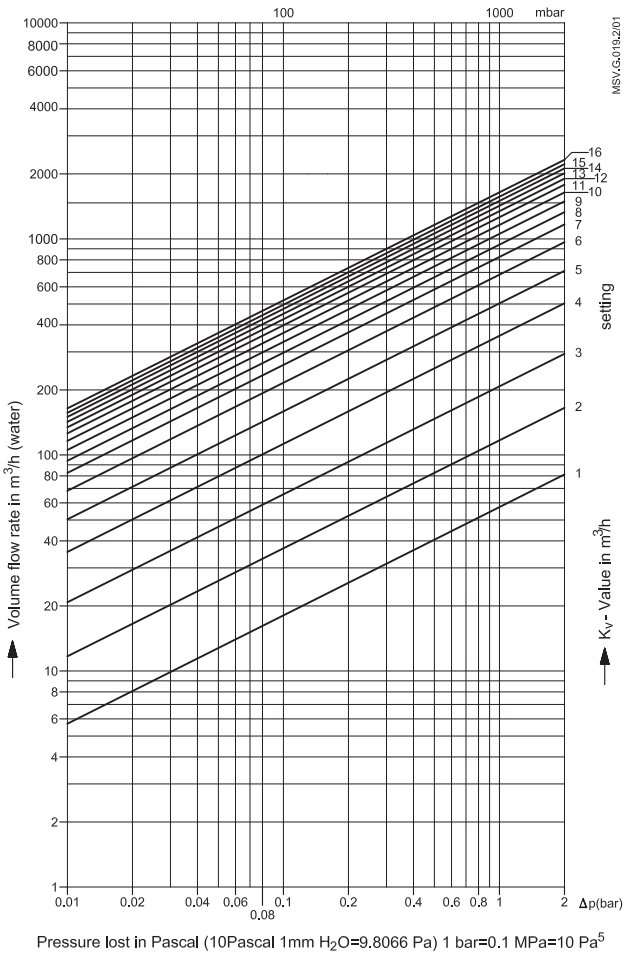
Setting	k_v-value
3	299.4
5	553.1
7	721.2
8	788.1
9	851.1
10	926.1
12	952.3

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

- The flow must be free of cavitation.

Flow characteristic





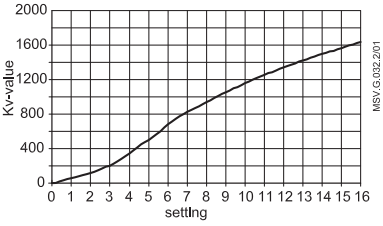
DN 300 / PN 16

Setting	k_v-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

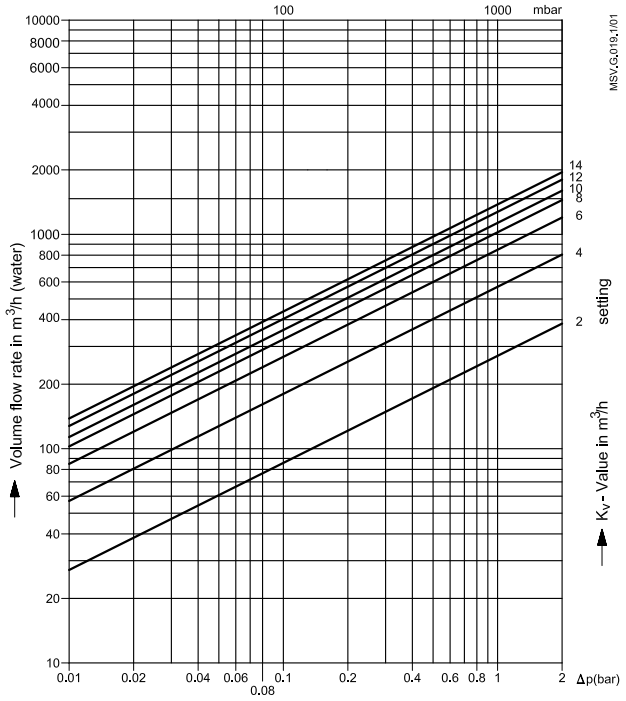
Max. permissible differential pressure in throttling function 1.5 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



Pressure lost in Pascal (10Pascal 1mm H_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa^5

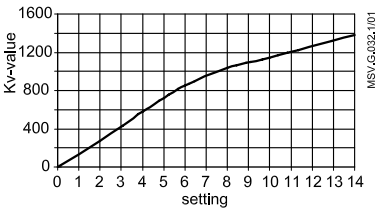
DN 300 / PN 25

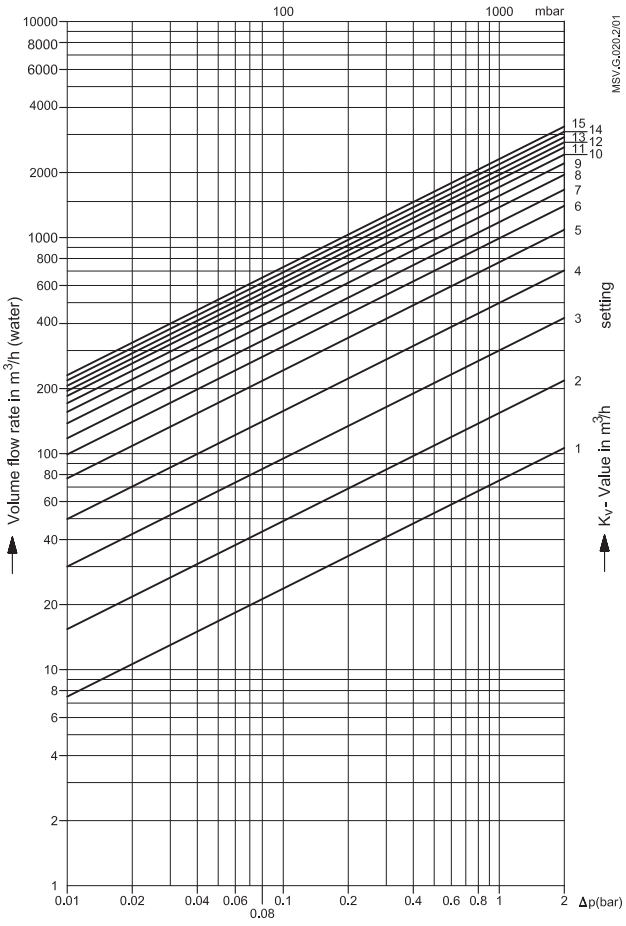
Setting	k_v-value
2	270.9
4	575.8
6	856.0
8	1035.9
10	1142.8
12	1273.7
14	1380.2

Max. permissible differential pressure in throttling function 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_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa^5

DN 350 / PN 16

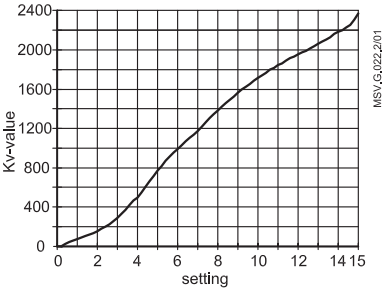
Setting	k_v-value
1	75.1
2	154
3	300
4	498
5	768
6	991
7	1177
8	1382

Setting	k_v-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



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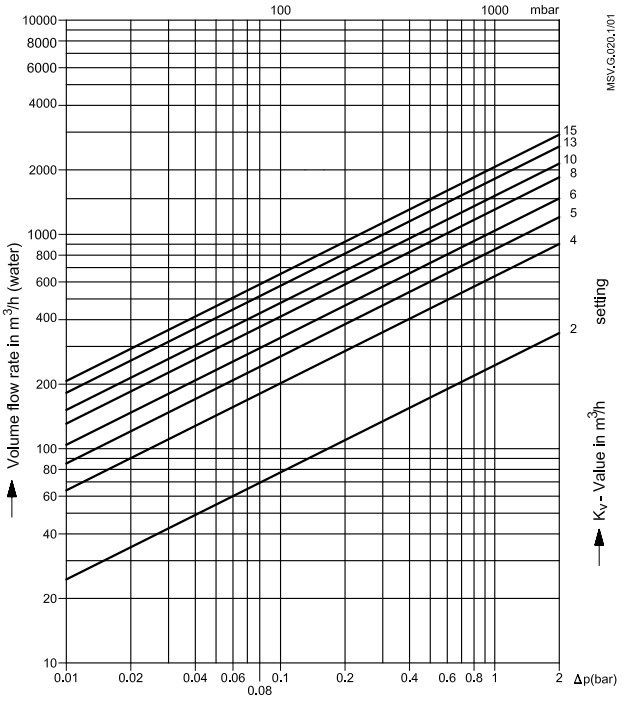


Pressure lost in Pascal (10Pascal 1mm H_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa^5

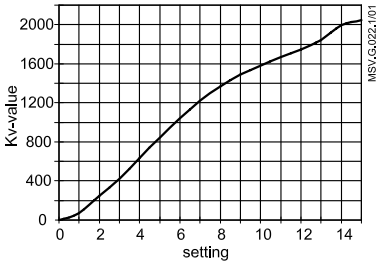
DN 350 / PN 25

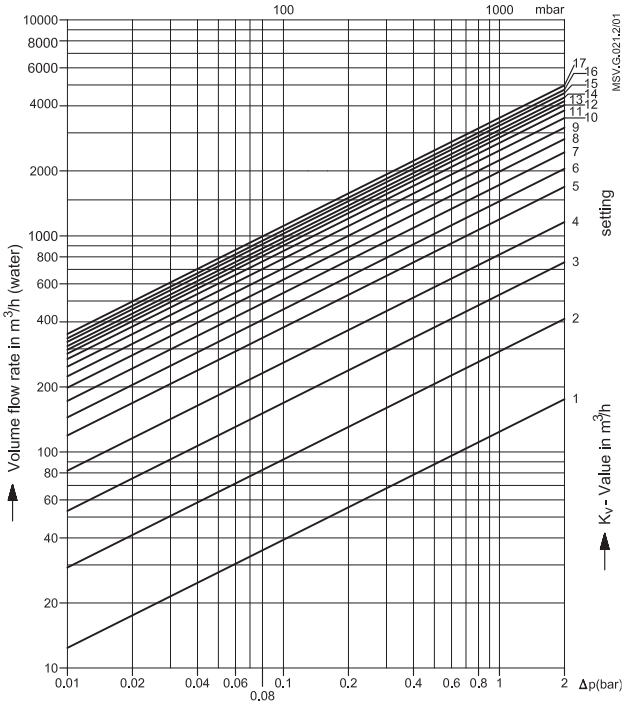
Setting	k_v-value
2	249.06
4	634.4
5	844.72
6	1041.93
8	1369.45
10	1580.67
13	1844.74
15	2046.14

Max. permissible differential pressure in throttling function 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_2O=9.8066 Pa) 1 bar=0.1 MPa=10 Pa^5

DN 400 / PN 16

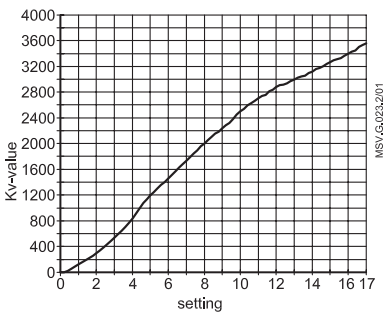
Setting	k_v-value
0	0
1	124
2	292
3	533
4	819
5	1192
6	1445
7	1720
8	1983

Setting	k_v-value
9	2223
10	2482
11	2682
12	2848
13	2973
14	3093
15	3241
16	3359
Max: 17	3516

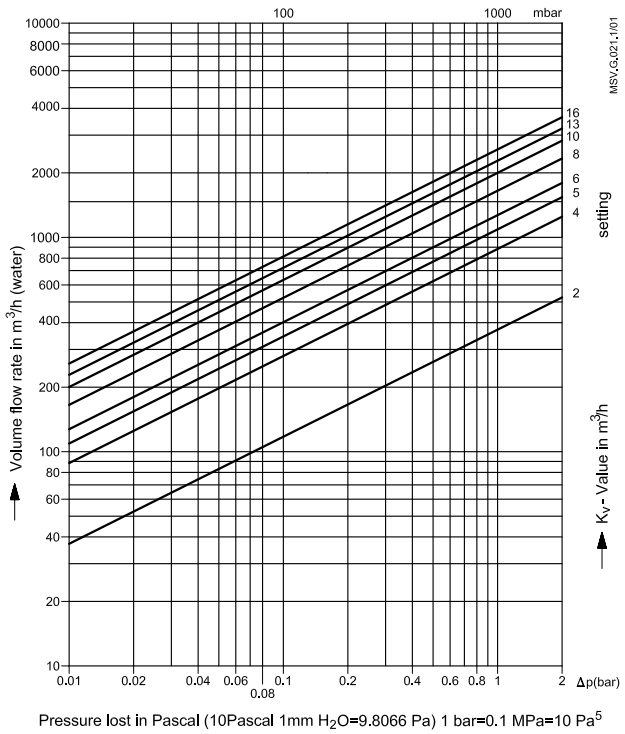
Max. permissible differential pressure in throttling function 1.5 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



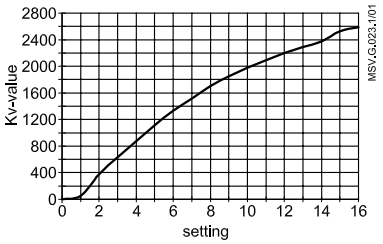
DN 400 / PN 25

Setting	k_v-value
2	371.75
4	875.26
5	1109.31
6	1328.86
8	1705.24
10	1980.56
13	2287.81
16	2584.95

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

- The flow must be free of cavitation.

Flow characteristic



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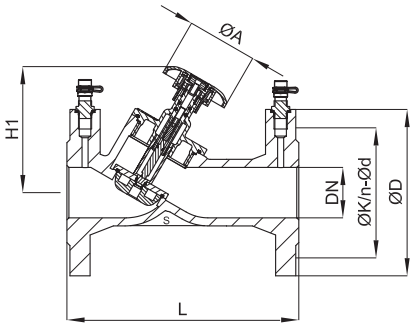
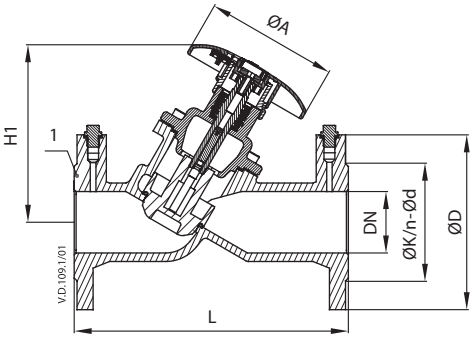
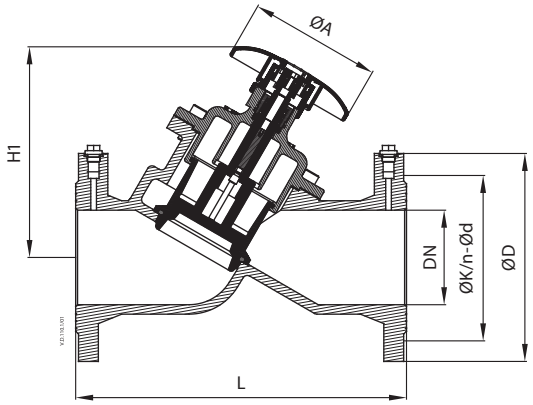
Dimensions



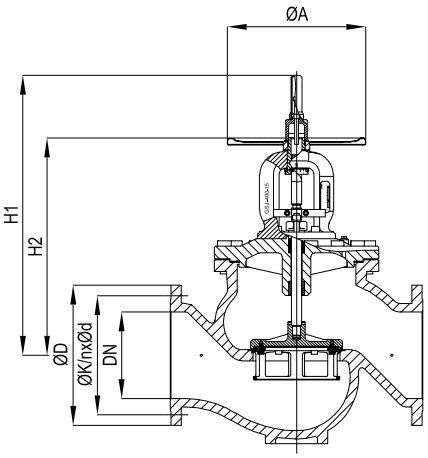
MSV-F2 DN 15-50



MSV-F2 DN 50-80



MSV-F2 DN 100-150

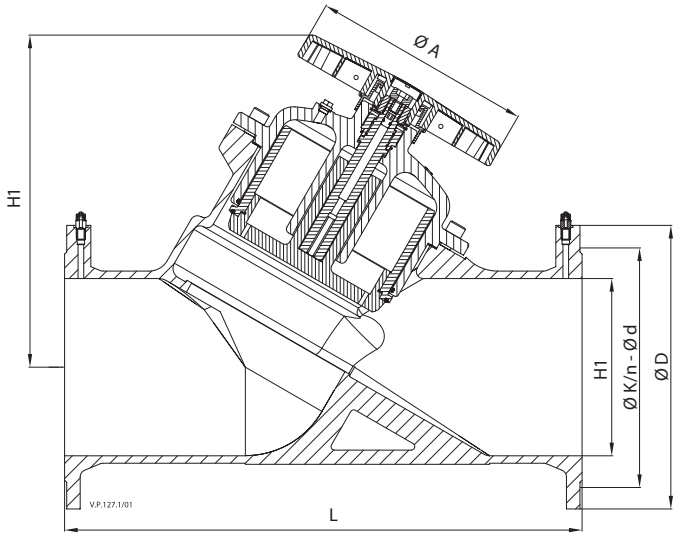


MSV-F2 DN 200-400 (PN 25)

DN	L	H1	H2	ØA	PN 16			PN 25		
					ØD	ØK	n × Ød	ØD	ØK	n × Ød
	mm									
15	130	80	-	78	95	65	4 × 14	95	65	4 × 14
20	150	90	-	78	105	75	4 × 14	105	75	4 × 14
25	160	105	-	78	115	85	4 × 14	115	85	4 × 14
32	180	110	-	78	140	100	4 × 19	140	100	4 × 19
40	200	125	-	78	150	110	4 × 19	150	110	4 × 19
50	230	125	-	78	165	125	4 × 19	165	125	4 × 19
65	290	187	-	140	185	145	4 × 19	185	145	8 × 19
80	310	205	-	140	200	160	8 × 19	200	160	8 × 19
100	350	222	-	140	220	180	8 × 19	235	190	8 × 23
125	400	251	-	140	250	210	8 × 19	270	220	8 × 28
150	480	247	-	140	285	240	8 × 23	300	250	8 × 28
200	600	721	533	360	340	295	12 × 23	360	310	12 × 28
250	730	808	617	400	405	355	12 × 28	425	370	12 × 31
300	850	855	664	400	460	410	12 × 28	485	430	16 × 31
350	980	910	729	500	520	470	16 × 28	555	490	16 × 34
400	1100	960	762	500	580	525	16 × 31	620	550	16 × 37

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

Dimensions *(continued)*



MSV-F2 DN 200-400 (PN 16)

DN	L	H1	Ø A	Ø D	Ø K	n x Ø d
	mm					
200	600	418	306	340	295	12 x 23
250	730	471	306	400	355	12 x 28
300	850	525	306	460	410	12 x 28
350	980	590	306	520	470	12 x 28
400	1100	684	306	580	525	16 x 31

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

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