Data sheet

Manual presetting valves
MSV-F2, PN 16/25, DN 50 - 300

Description

MSV-F2 DN 50-150

MSV-F2 DN 200-300

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

The valves have position indicator and stroke limiter as standard. Hood of spindle is integrated with stroke limiter.

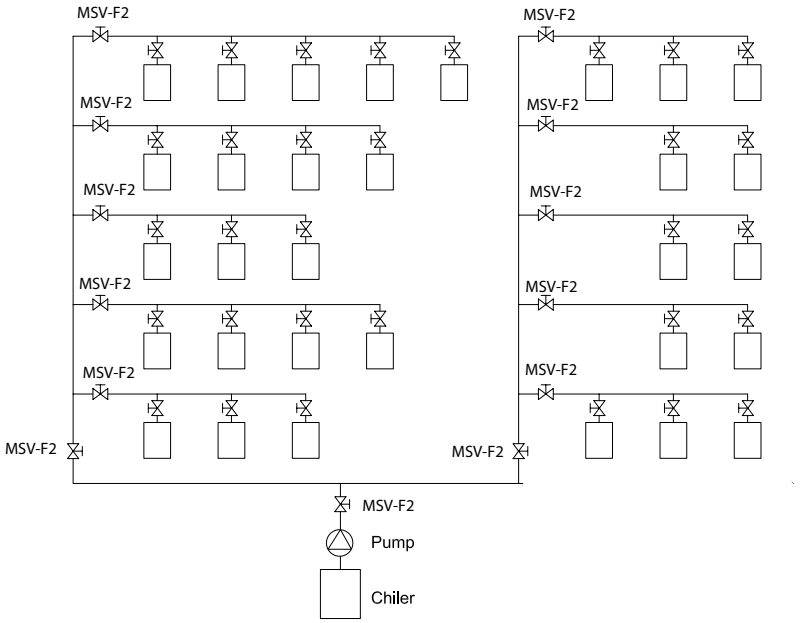
Setting can be locked. Valve characteristics are set up in measuring unit PFM.

Valves are free of asbestos.

Main data:

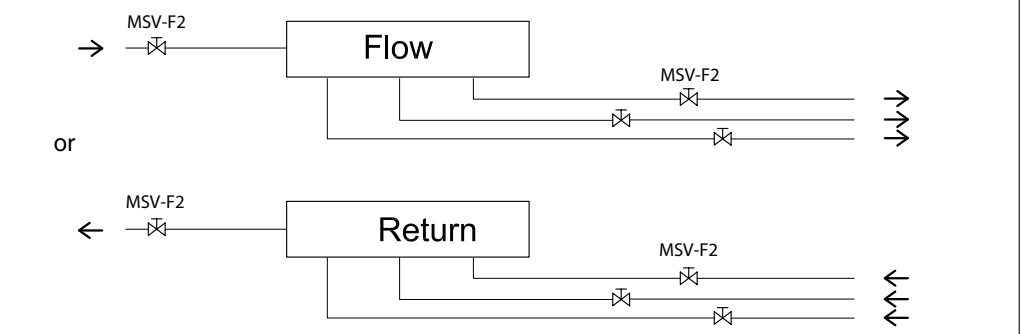
- DN 50 - 300
- PN 16
  - Flow temperature -10 °C … 130 °C
- PN 25 (*available in autumn 2006*)
  - Flow temperature -10 °C … 150 °C
- Valves are mounted on flow or return pipe.

Applications



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

Applications *(continuous)*

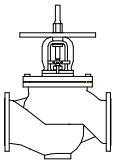


Example of balancing application of MSV-F2 valves in heating installation (supply or return side).

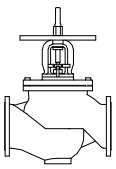
In constant flow installations MSV valves keeps constant pressure drop. Its value may be set on several levels depending on presetting.

Ordering

MSV-F2 valves - PN 16

Picture	DN mm	k_{vs} m^3/h	$T_{max.}$ °C	PN	Code No. (without measuring nipples)	Code No. (with measuring nipples)
	50	53.8	130	16	**003Z0161**	**003Z1061**
	65	93.4			**003Z0162**	**003Z1062**
	80	122.3			**003Z0163**	**003Z1063**
	100	200.0			**003Z0164**	**003Z1064**
	125	304.4			**003Z0165**	**003Z1065**
	150	400.8			**003Z0166**	**003Z1066**
	200	685.6			**003Z0167**	**003Z1067**
	250	952.3			**003Z0168**	**003Z1068**
	300	1380.2			**003Z0169**	**003Z1069**

MSV-F2 valves - PN 25*

Picture	DN mm	k_{vs} m3/h	$T_{max.}$ °C	PN	Code No. (without measuring nipples)	Code No. (with measuring nipples)
	50	53.8	150	25	**003Z0170**	**003Z1070**
	65	93.4			**003Z0171**	**003Z1071**
	80	122.3			**003Z0172**	**003Z1072**
	100	200.0			**003Z0173**	**003Z1073**
	125	304.4			**003Z0174**	**003Z1074**
	150	400.8			**003Z0175**	**003Z1075**
	200	685.6			**003Z0176**	**003Z1076**
	250	952.3			**003Z0177**	**003Z1077**
	300	1380.2			**003Z0178**	**003Z1078**

** available in autumn 2006*

Note: Flange valves dimension DN 15-40, 350 and 400 available on request.

Ordering *(continuous)*

Accessories

Type	Code No.
Rectus nipple, 2 pcs.	**003Z0108**
Needle nipple, 2 pcs.	**003Z0104**
Extension of measuring nipple 45 mm, 2 pcs.	**003Z0103**
Extension of measuring nipple 80 mm, 2 pcs.	**003Z0105**
Measuring needle, 2 pcs.	**003Z0107**
PFM 3000 measuring unit	**003L8230**

Type		Code No.
Hand-wheel	DN 50	**003Z0179**
	DN 65 - 150	**003Z0180**
	DN 200	**003Z0181**
	DN 250 - 300	**003Z0182**

Technical data

MSV-F2 valves - PN 16

Nominal diameter	DN	50	65	80	100	125	150	200	250	300
k_{vs}	(m^3/h)	53.8	93.4	122.3	200.0	304.4	400.8	685.6	952.3	1380.2
Nominal pressure	(PN)	16								
Max. pressure drop	(bar)	1.5								
Leakage rate		According to ISO 5208, Table 5								
Water quality acc. to DIN 3440		Water in heating and cooling systems								
Max. flow temperature	(˚C)	130								
Connections		Flanges according to EN 1092-2								
Weight	(kg)	10	16	20	29	42	54	196	358	464
Material of body		Cast iron EN-GJL 250 (GG 25)								
Seat sealing		EPDM	PTFE							
Material of cone		CW602N		CuSn5Zn5Pb5				Casted stainless steel		

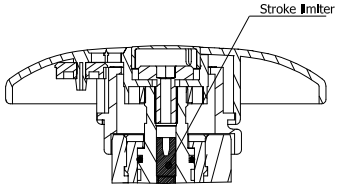
MSV-F2 valves - PN 25*

Nominal diameter	DN	50	65	80	100	125	150	200	250	300
k_{vs}	(m^3/h)	53.8	93.4	122.3	200.0	304.4	400.8	685.6	952.3	1380.2
Nominal pressure	(PN)	25								
Max. pressure drop	(bar)	2.0								
Leakage rate		According to ISO 5208, Table 5								
Water quality acc. to DIN 3440		Water in heating and cooling systems								
Max. flow temperature	(˚C)	150								
Connections		Flanges according to EN 1092-2								
Weight	(kg)	10	16	20	29	42	54	196	358	464
Material of body		Ductile iron EN-GJS 400-15 (GGG 40.3)								
Seat sealing		PTFE								
Material of cone		Stainless steel						Casted stainless steel		

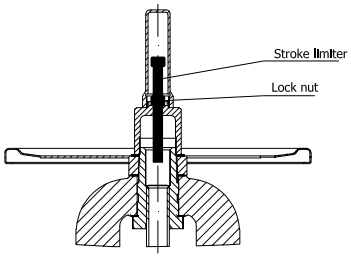
** available in autumn 2006*

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 50-150)	16	16 bar	16 bar	15.5 bar	-
EN-GJL 250 (MSV-F2 DN 200-300)	16	16 bar	16 bar	15.5 bar	-
EN-GJS 400-15 (MSV-F2 DN 50-150)	25	25 bar	25 bar	-	24.3 bar
EN-GJS 400-15 (MSV-F2 DN 200-300)	25	25 bar	25 bar	-	24.3 bar

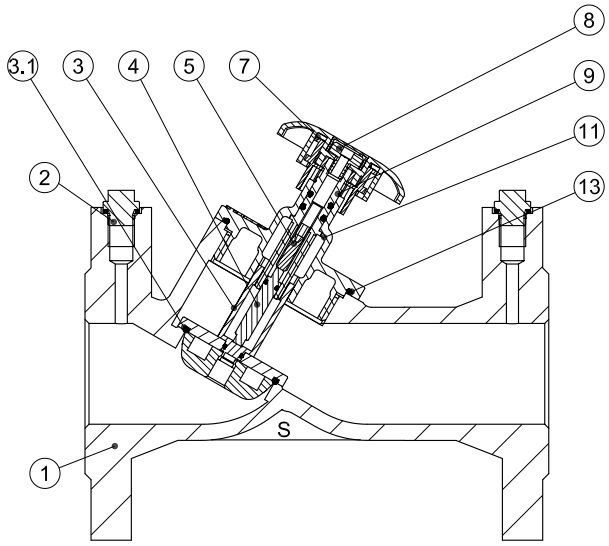


Valves have built in flow limitation

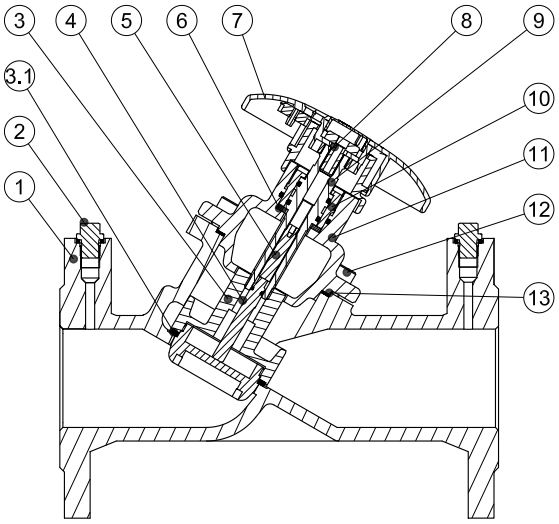


Valves have stroke limiter locked by lock-nut

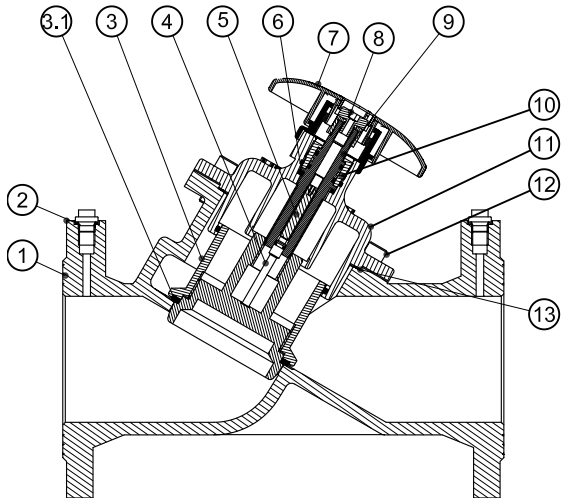
Design



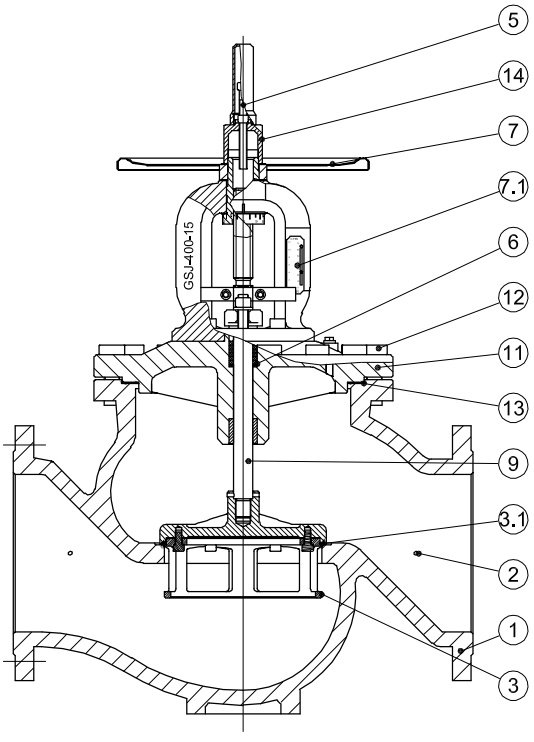
MSV-F2 DN 50



MSV-F2 DN 65



MSV-F2 DN 80 - 150



MSV-F2 DN 200 - 300

1 Body EN-GJL250
2 Plug G ¼"
3 Valve cone
3.1 Seat soft sealing
4 Rod
5 Stroke limiter/Allen screw
6 Gasket
7 Handwheel with digital display
- DN 50-150 plastic
- DN 200-300 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

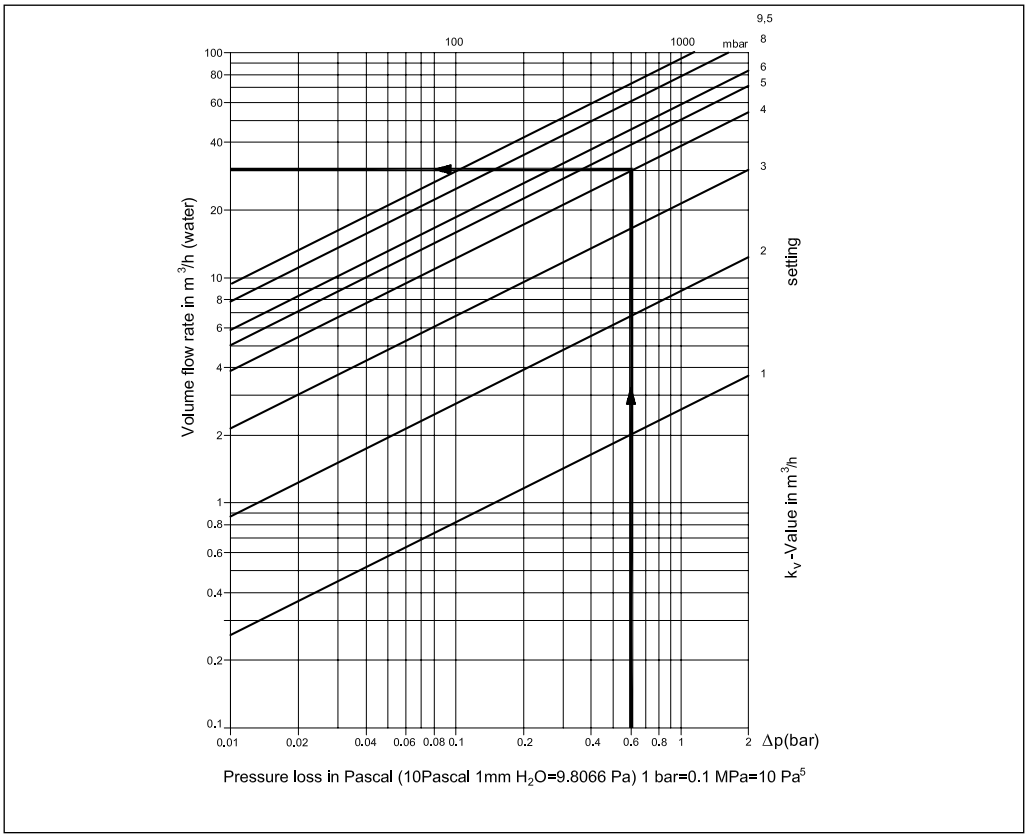
Setting

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

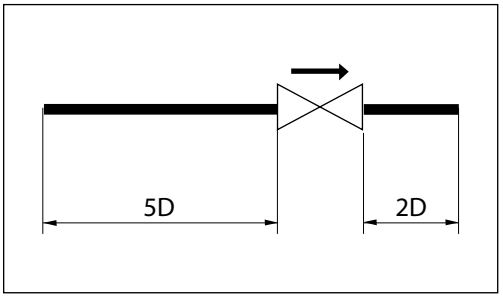


MSV-F2 DN 65
Δp = 0.6 bar
Hand wheel setting: 3.0
Flow: 16.7 m³/h
30% solution of glycol
$Q_{corr.} = 16.4$ m³/h × 0.953 = 16.0 m³/h
It refers to all types of valves.

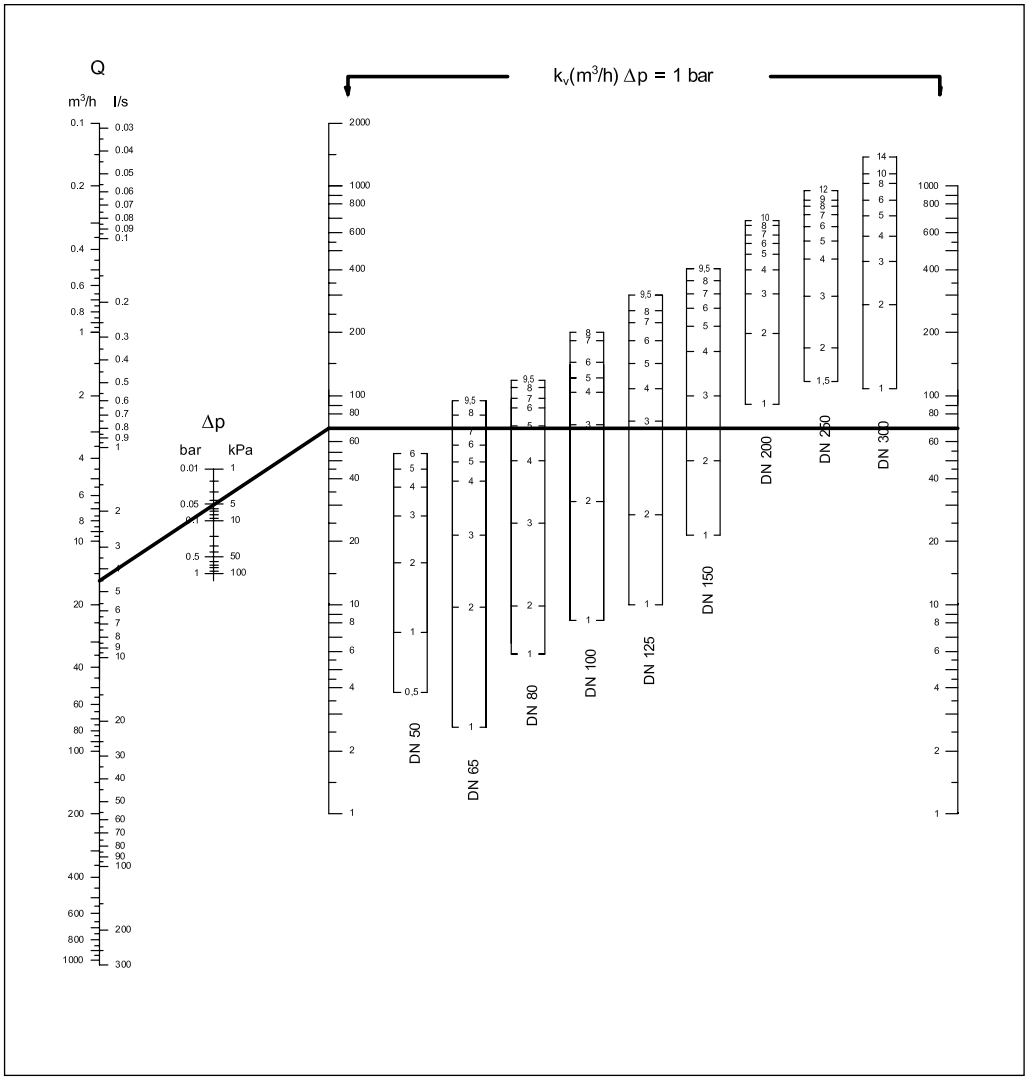
Installation

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



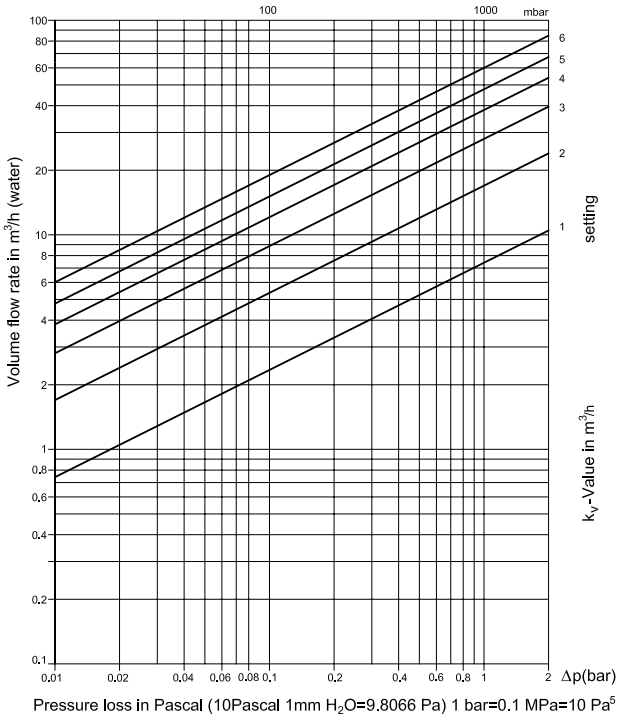
Example:
MSV-F2 DN 65
Q = 16 m³/h
Δp = 5 kPa

Calculation of setting for valve:
In the diagram a straight line connecting the bars for flow 16 m³/h, differential pressure 5 kPa and k_v value shows the relationship between these three variables.

A horizontal line from intersection with the k_v bar shows the presetting value for each valve size.

Result:
presetting 7.0

Flow diagrams



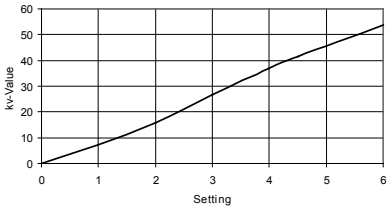
DN 50 / PN 16 / PN 25

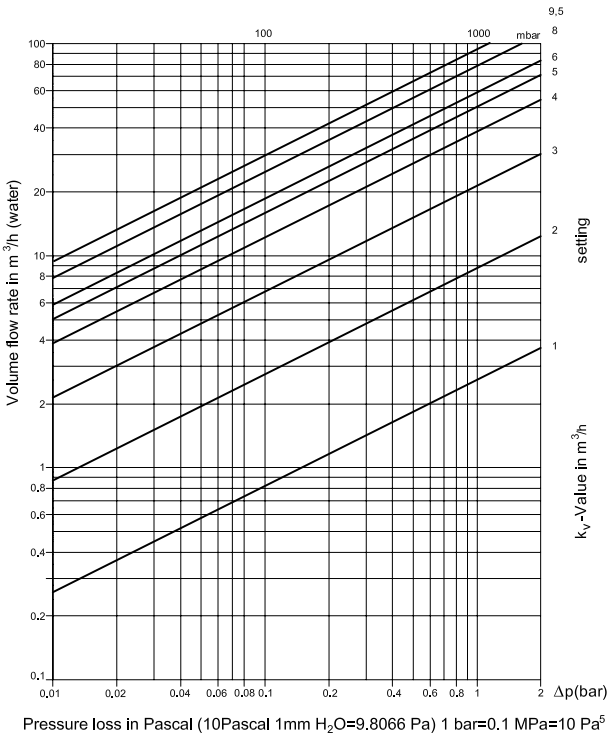
Setting	k_v-value
1	7.4
2	15.8
3	26.7
4	36.9
5	46.2
6	53.8

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





DN 65 / PN 16 / PN 25

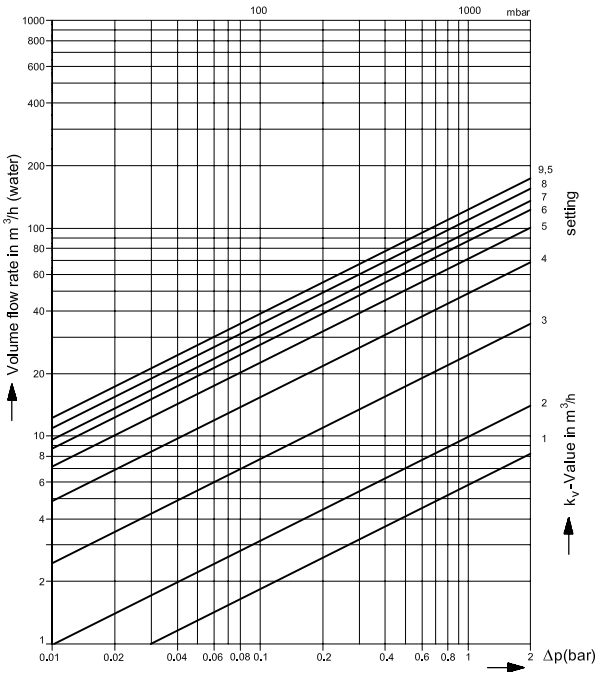
Setting	k_v-value
1	2.6
2	8.8
3	21.6
4	39.0
5	49.8
6	58.5
7	69.3
8	79.0
9	87.8
9.5	93.4

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

Flow diagrams *(continuous)*



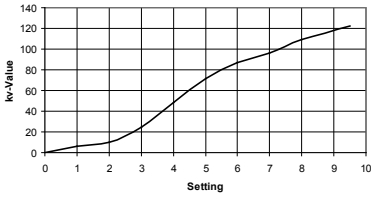
DN 80 / PN 16 / PN 25

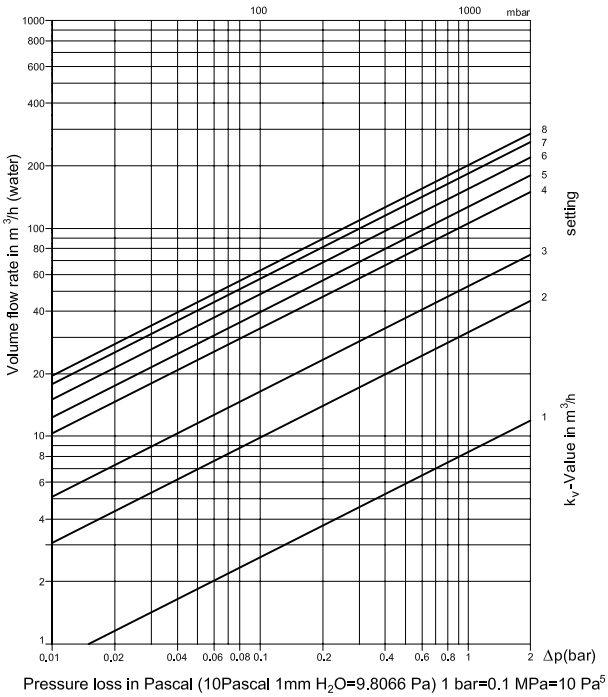
Setting	k_v-value
1	5.8
2	9.9
3	24.5
4	48.5
5	71.3
6	87.0
7	96.4
8	109.3
9.5	122.3

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





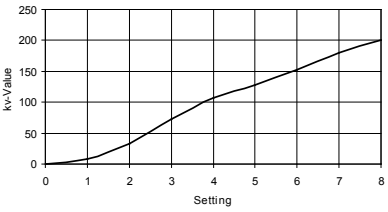
DN 100 / PN 16 / PN 25

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

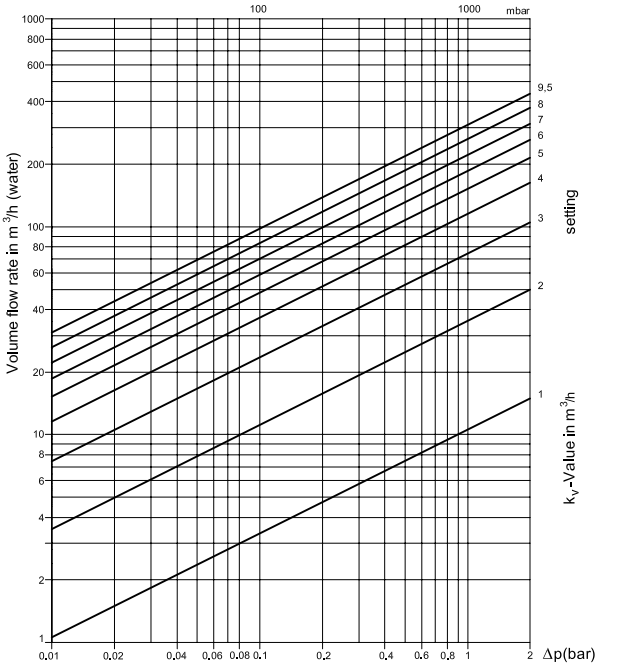
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continuous)*



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

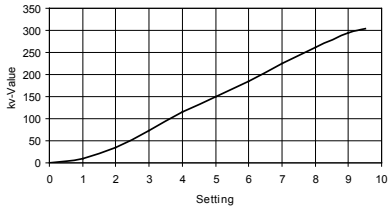
DN 125 / PN 16 / PN 25

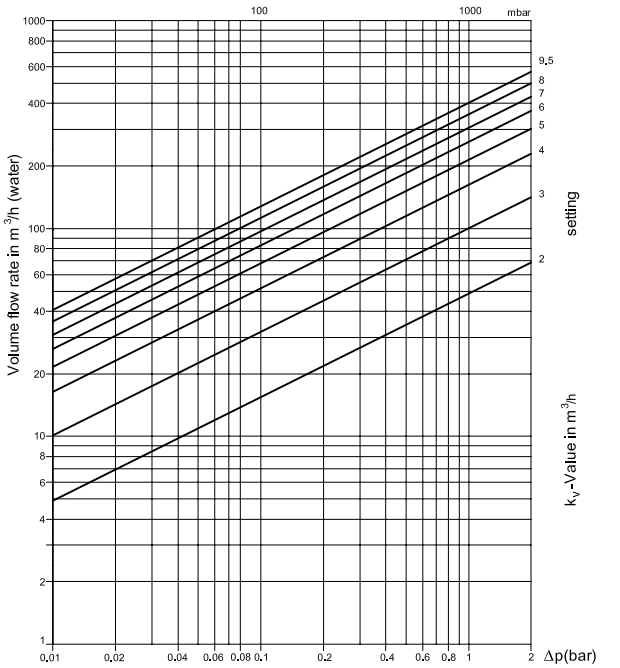
Setting	k_v-value
1	10.3
2	35.4
3	73.0
4	114.9
5	150.5
6	185.2
7	225.1
8	261.1
9	294.2
9.5	304.4

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





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

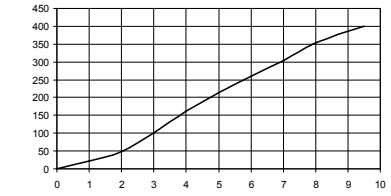
DN 150 / PN 16 / PN 25

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

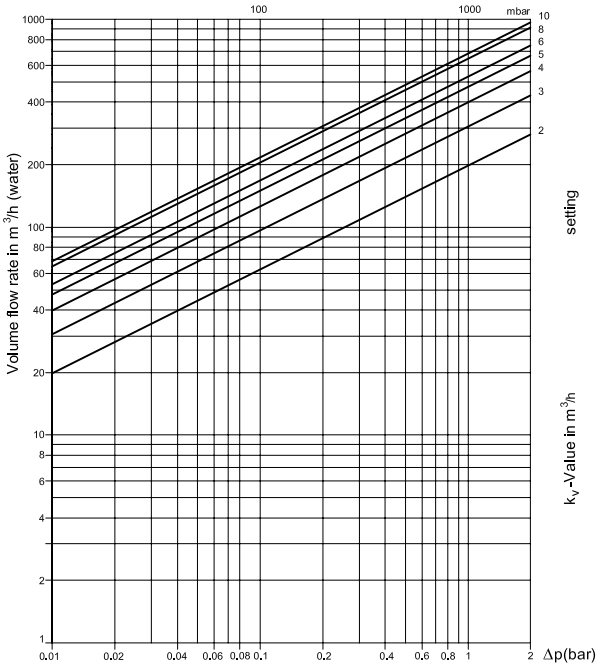
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continuous)*



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

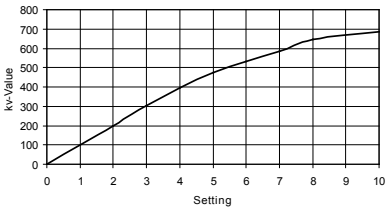
DN 200 / PN 16 / PN 25

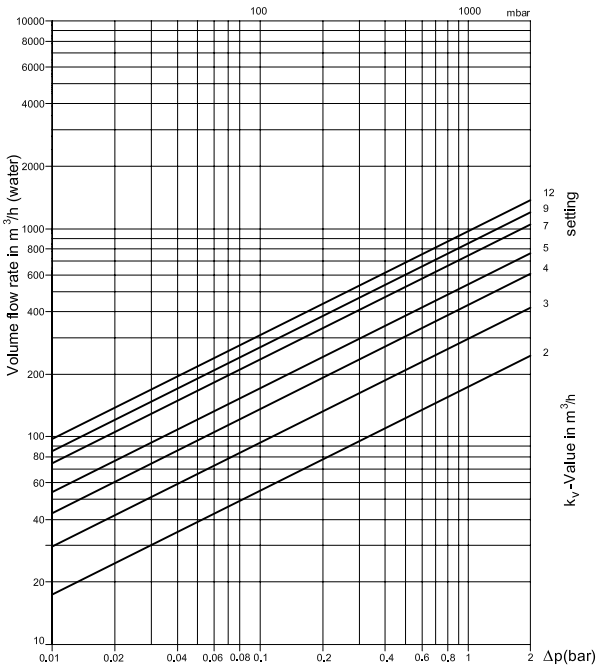
Setting	k_v-value
2	198.2
3	305.3
4	397.5
5	474.0
6	530.4
7	586.8
8	645.9
10	685.6

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

- The flow must be free of cavitation.

Flow characteristic





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

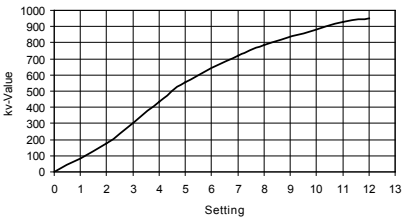
DN 250 / PN 16 / PN 25

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

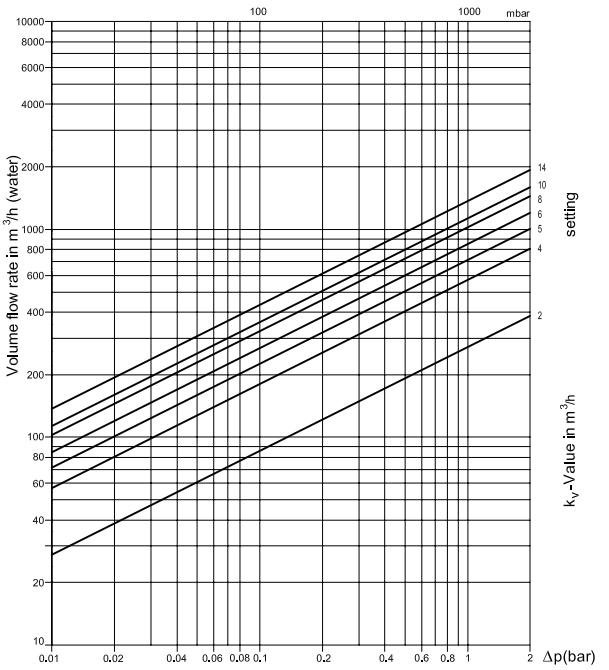
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continuous)*



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

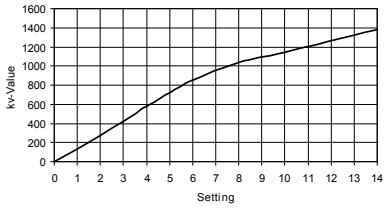
DN 300 / PN 16 / PN 25

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

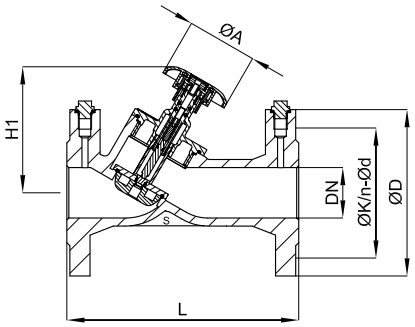
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

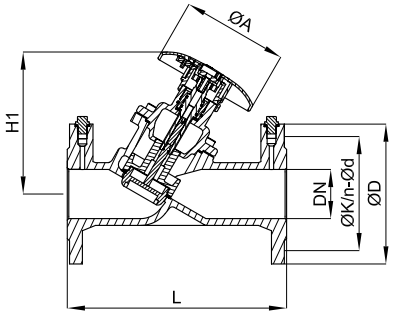
Flow characteristic



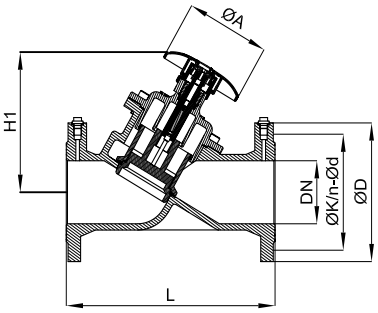
Dimensions



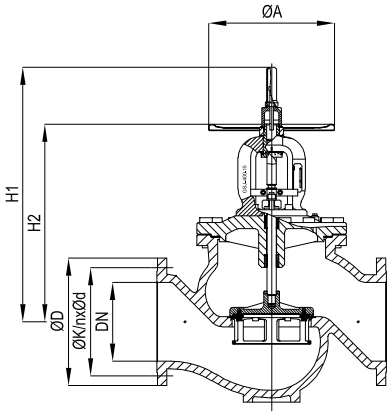
MSV-F2 DN 50



MSV-F2 DN 65



MSV-F2 DN 80 - 150



MSV-F2 DN 200 - 300

DN	L	H1	H2	ØA	PN 16			PN 25		
					ØD	ØK	n × Ød	ØD	ØK	n × Ød
	mm									
50	230	125	-	70	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	12 × 31

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