Data sheet

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

Description

MSV-F2 DN 15-150

MSV-F2 DN 200-400

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 3000.

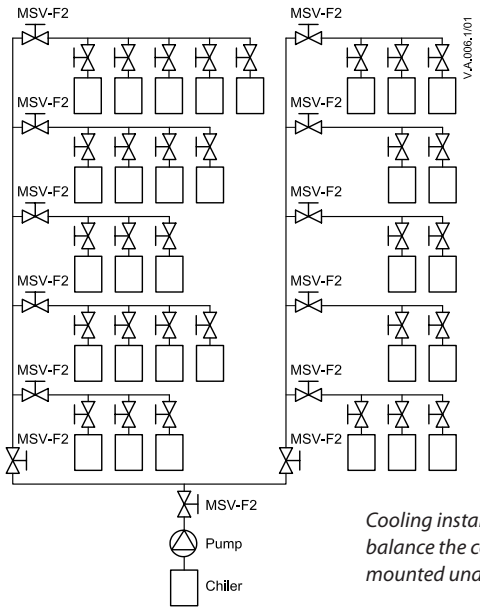
Valves are free of asbestos.

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 are mounted on flow or return pipe.

Applications

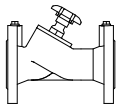
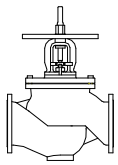


Cooling installation (flow) with manual presetting valves. In order to balance the cooling installation manual presetting valves should be mounted under each riser, branch and single terminal unit (MSV-C).

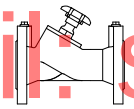
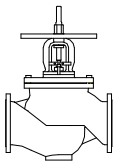
In constant flow installations MSV valves keeps constant pressure drop. Its value may be set on several levels depending on presetting.

Ordering

MSV-F2 valves - PN 16

Picture	DN [1] (mm)	k_{vs} (m^3/h)	$T_{max.}$ (°C)	PN (bar)	Code No. (with needle measuring nipples)
	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	685.6			003Z1067
	250	952.3			003Z1068
	300	1380.2			003Z1069
	350	2046.1			003Z1090
	400	2584.6			003Z1091

MSV-F2 valves - PN 25

Picture	DN [1] (mm)	k_{vs} (m^3/h)	$T_{max.}$ (°C)	PN (bar)	Code No. (with needle measuring nipples)
	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	685.6			003Z1076
	250	952.3			003Z1077
	300	1380.2			003Z1078
	350	2046.1			003Z1097
	400	2584.6			003Z1098

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

Accessories

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

Type		Code No.
Hand-wheel	DN 15 - 50	003Z0179
	DN 65 - 150	003Z0180
	DN 200	003Z0181
	DN 250 - 300	003Z0182
	DN 350 - 400	003Z0183

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^3/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)	16															
Max. pressure drop	(bar)	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)* 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	43	56	231	354	497	747	890
Material of body		Cast iron EN-GJL 250 (GG 25)															
Seat sealing		EPDM															
Material of cone		CW602N							CuSn5Zn5Pb5				Casted stainless steel				

** Please verefy compability between materials and secondary coolants with supplier.*

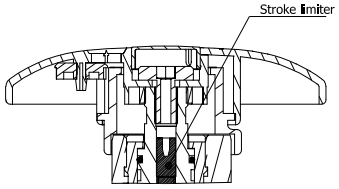
MSV-F2 valves - PN 25

Nominal diameter	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400
k_{vs}	(m^3/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	(bar)	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)* 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	43	56	228	345	488	748	900
Material of body		Ductile iron EN-GJS 400-15 (GGG 40.3)															
Seat sealing		EPDM															
Material of cone		CW602N							CuSn5Zn5Pb5				Casted stainless steel				

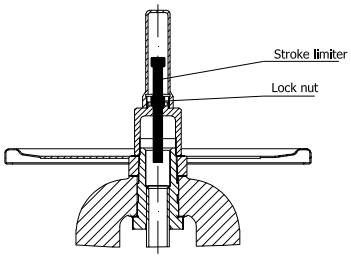
** Please verefy compability between materials and secondary coolants with supplier.*

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

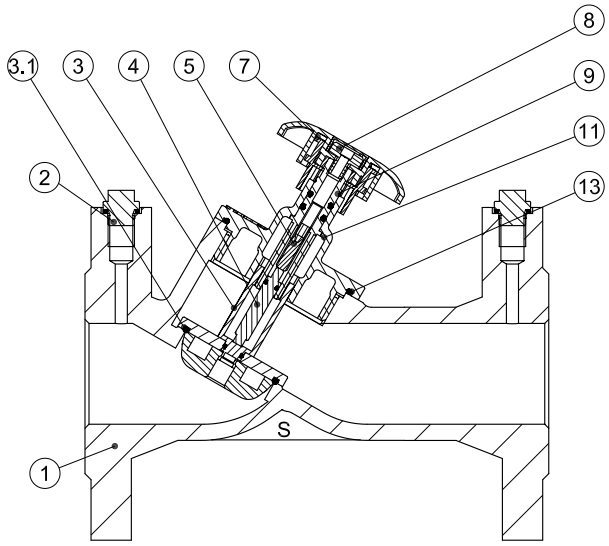


Valves have built in flow limitation

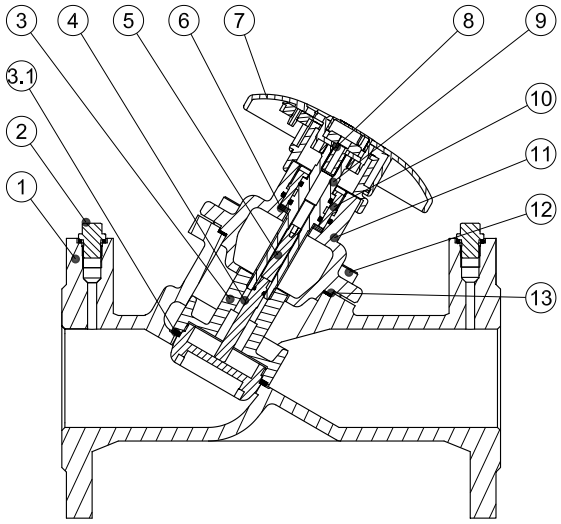


Valves have stroke limiter locked by lock-nut

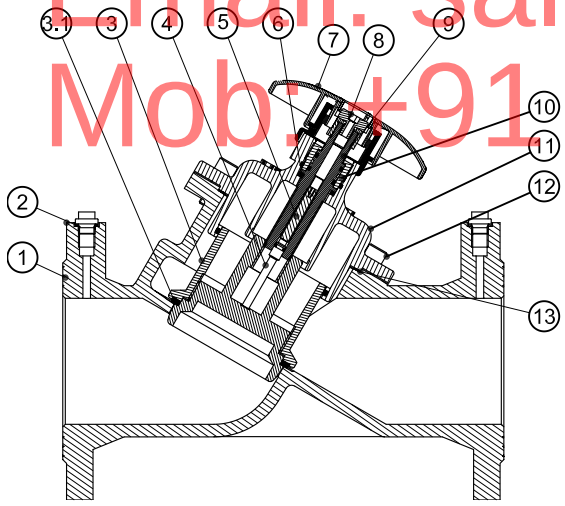
Design



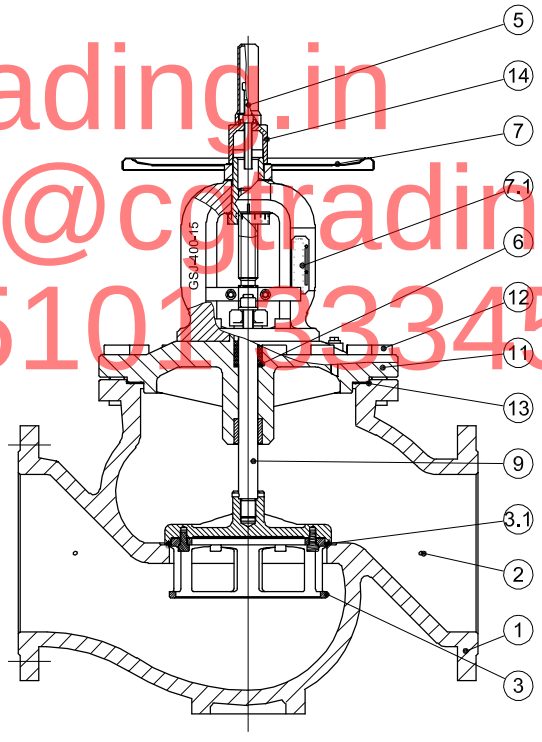
MSV-F2 DN 15 - 50



MSV-F2 DN 65



MSV-F2 DN 80 - 150



MSV-F2 DN 200 - 400

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 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

Setting

Ethylenglycol correction factor

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

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

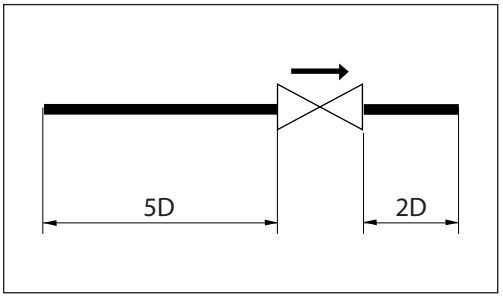
Ethylenglycol part xg (%)	0	10	20	30	40	50	60	70	80	90	100
Correction factor	1.0	0.983	0.968	0.953	0.939	0.925	0.912	0.899	0.887	0.876	0.864

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.

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

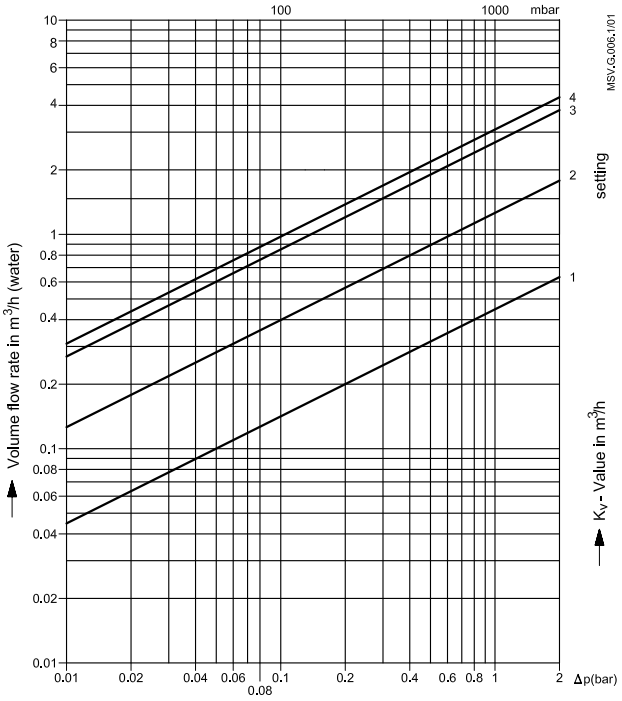
Example:
MSV-F2 DN 65
Q = 16 m³/h
Δp = 5 kPa

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



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

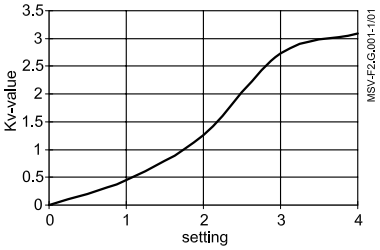
DN 15 / PN 16 / PN 25

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

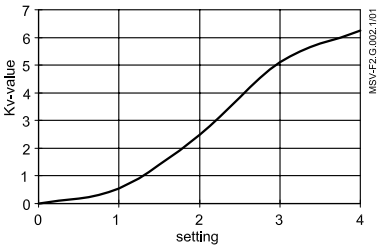
DN 20 / PN 16 / PN 25

Setting	k_v-value
1	0.54
2	2.48
3	5.11
4	6.26

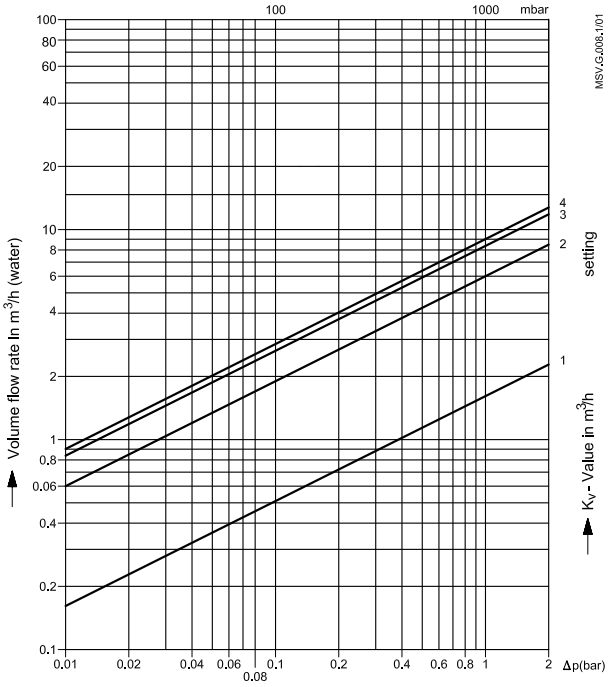
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



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

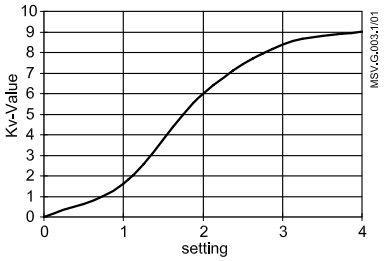
DN 25 / PN 16 / PN 25

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

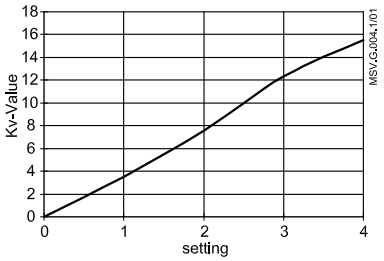
DN 32 / PN 16 / PN 25

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

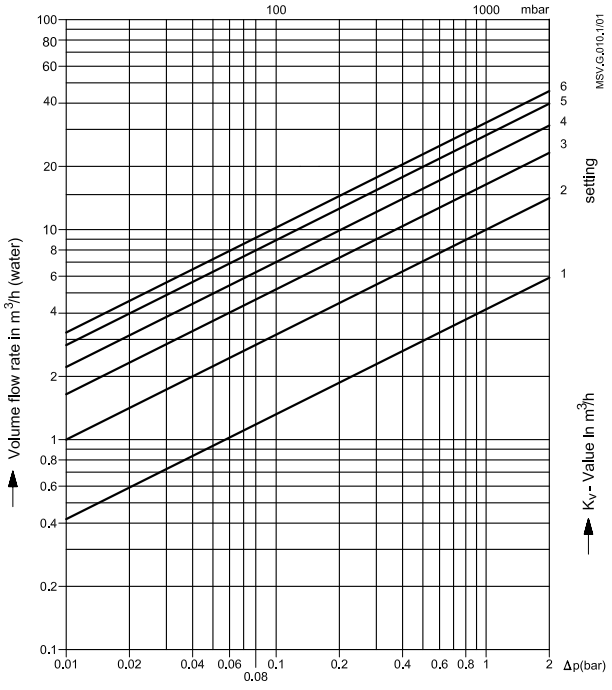
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



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

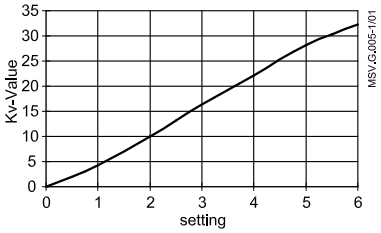
DN 40 / PN 16 / PN 25

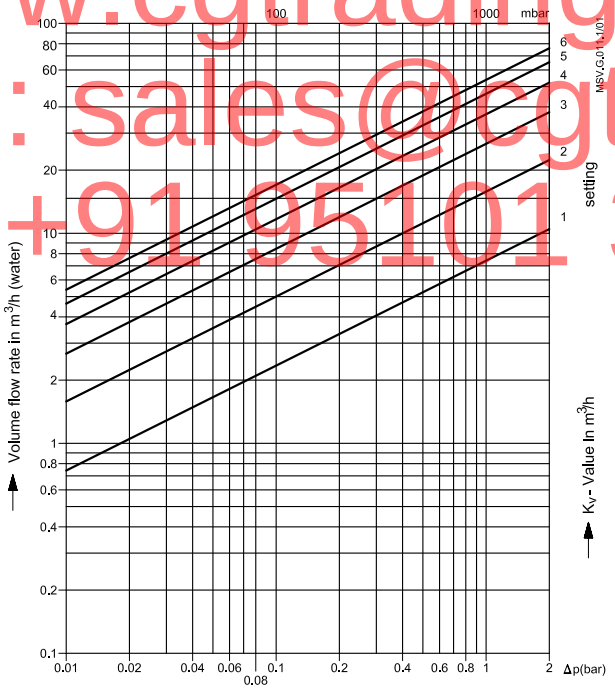
Setting	k_v-value
1	4.19
2	9.98
3	16.42
4	22.13
5	28.14
6	32.31

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





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

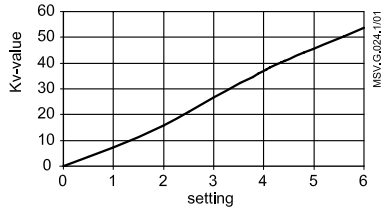
DN 50 / PN 16 / PN 25

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

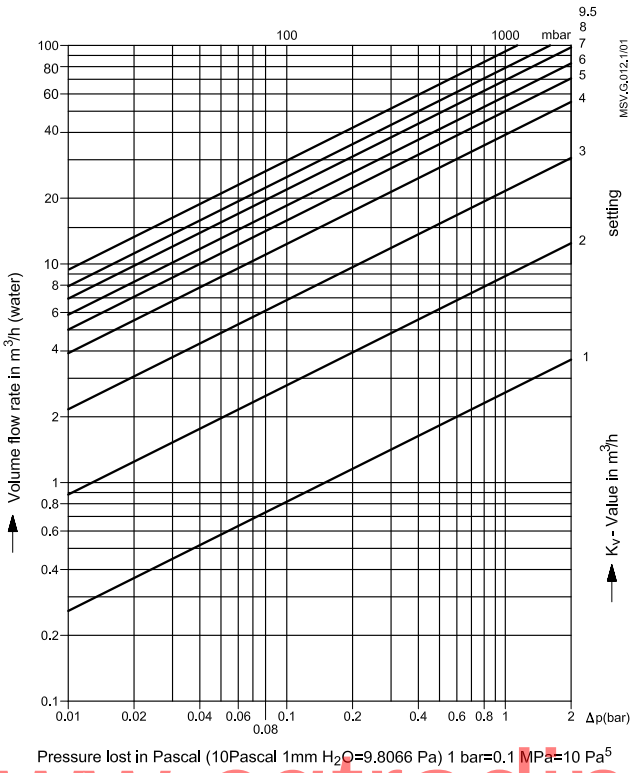
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



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

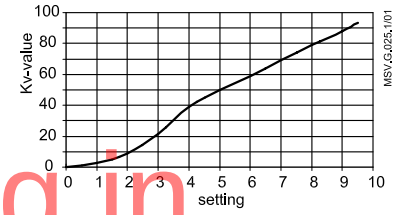
DN 65 / PN 16 / PN 25

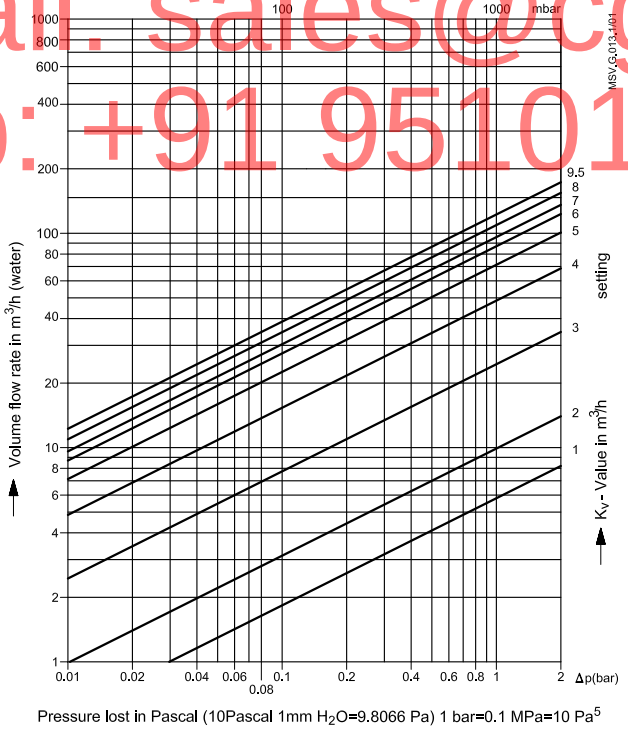
Setting	k_v-value
1	2.6
2	8.8
3	21.6
4	39.0
5	49.8
6	58.5
7	69.3
8	79.0
9	87.8
9.5	93.4

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





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

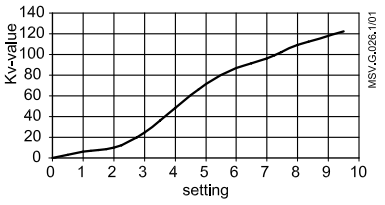
DN 80 / PN 16 / PN 25

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

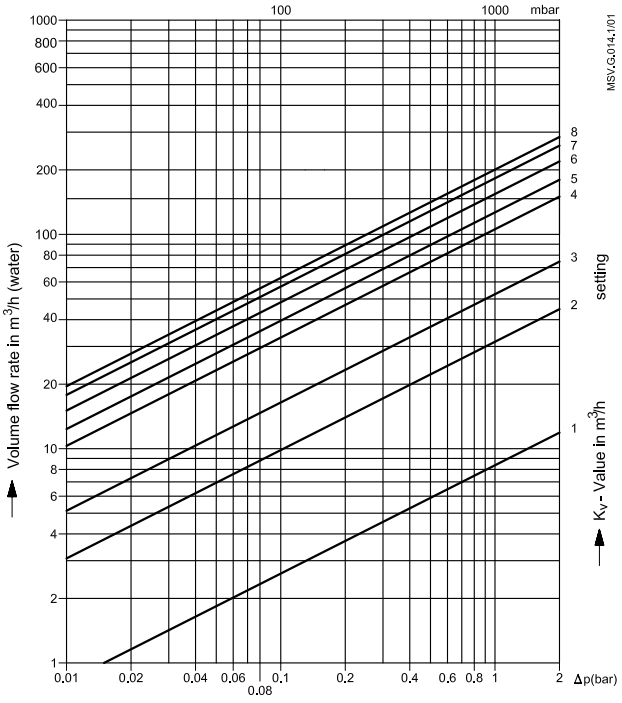
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



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

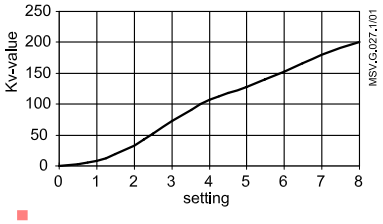
DN 100 / PN 16 / PN 25

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



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

DN 125 / PN 16 / PN 25

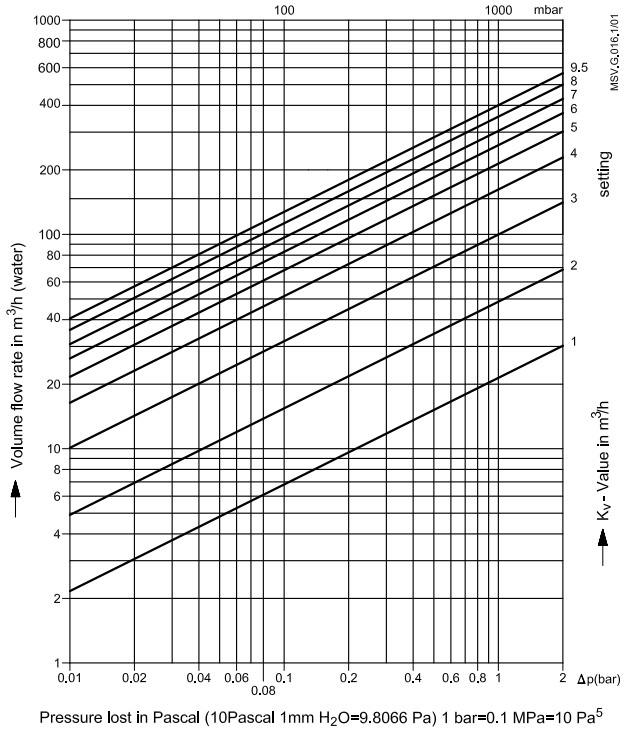
Setting	k_v-value
1	10.3
2	35.4
3	73.0
4	114.9
5	150.5
6	185.2
7	225.1
8	261.1
9	294.2
9.5	304.4

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

Flow diagrams *(continued)*



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

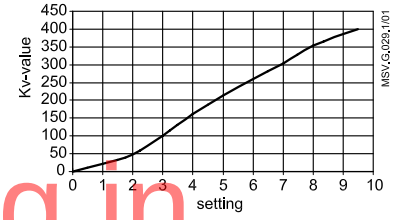
DN 150 / PN 16 / PN 25

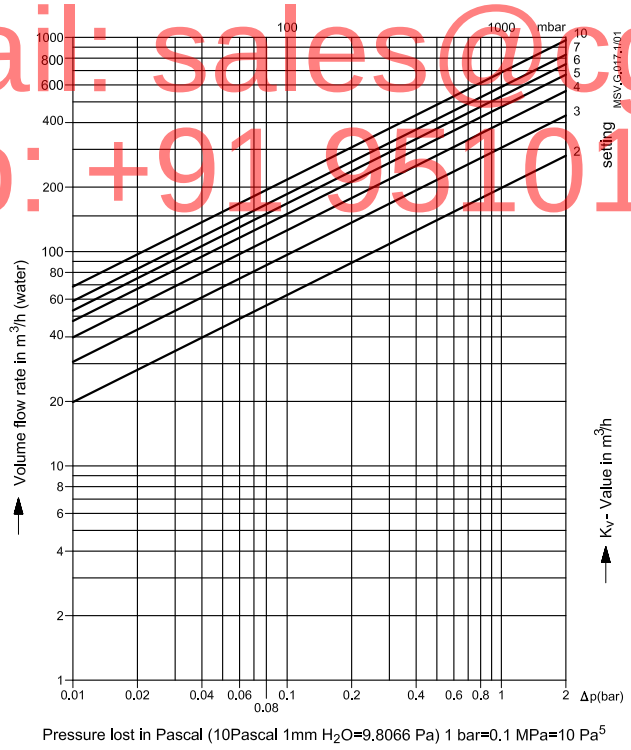
Setting	k_v-value
1	21.4
2	48.5
3	99.8
4	162.0
5	214.0
6	260.9
7	304.1
8	354.6
9.5	400.8

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

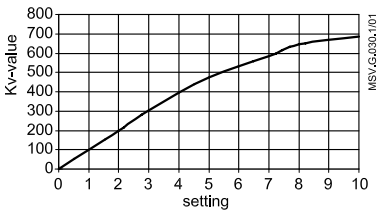
DN 200 / PN 16 / PN 25

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

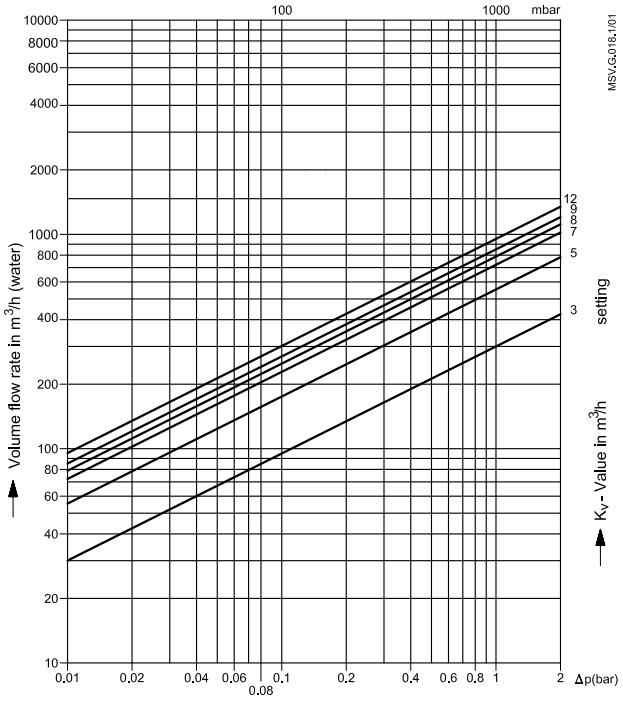
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



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

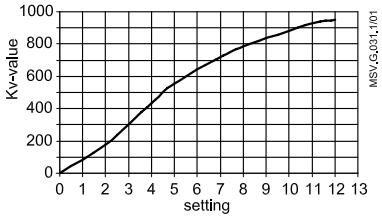
DN 250 / PN 16 / PN 25

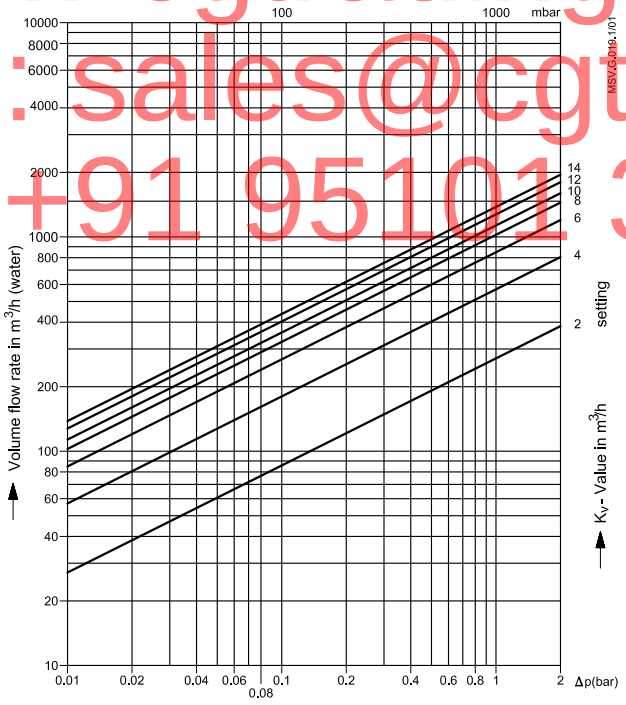
Setting	k_v-value
3	299.4
5	553.1
7	721.2
8	788.1
9	851.1
10	926.1
12	952.3

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





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

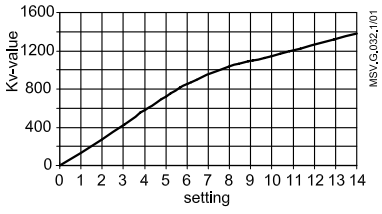
DN 300 / PN 16 / PN 25

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

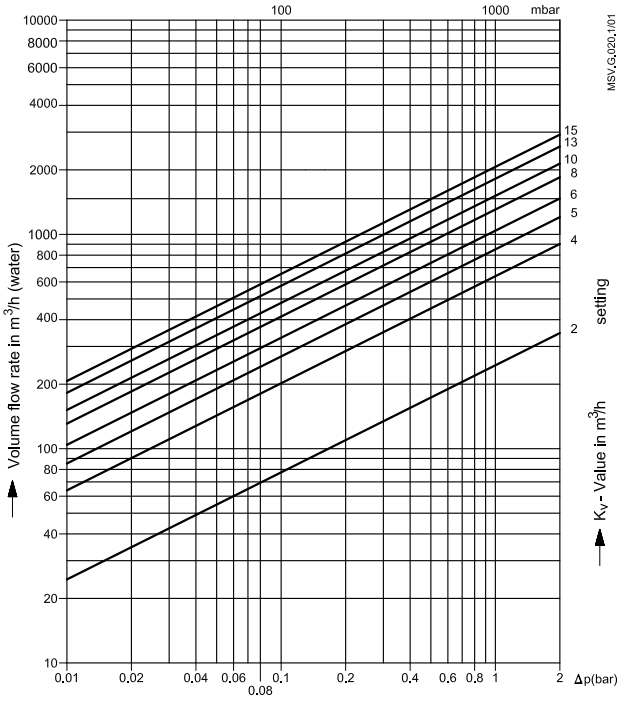
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

Flow characteristic



Flow diagrams *(continued)*



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

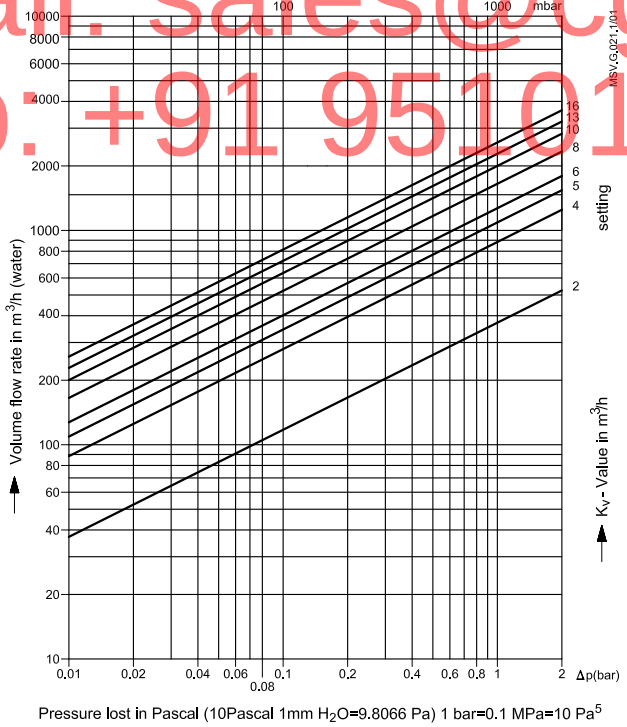
DN 350 / PN 16 / PN 25

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 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

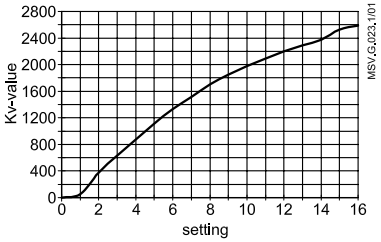
DN 400 / PN 16 / PN 25

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

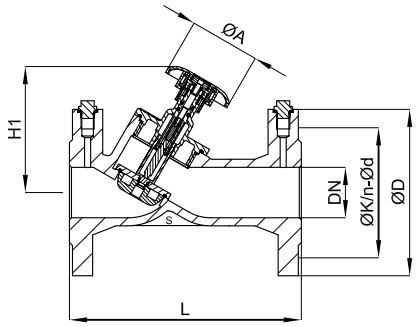
Max. permissible differential pressure in throttling function 1.5/2.0 bar.
Max. permissible flow speed: ≤ 4 m/s
Condition:

- The flow must be free of cavitation.

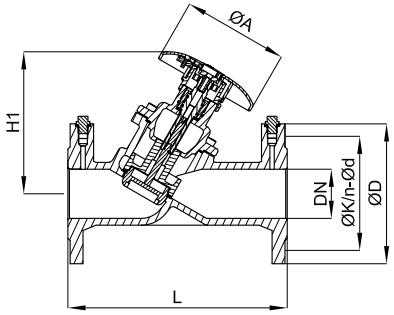
Flow characteristic



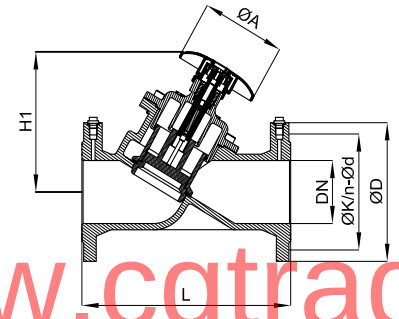
Dimensions



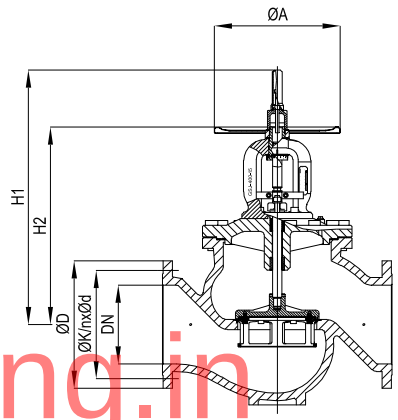
MSV-F2 DN 15 - 50



MSV-F2 DN 65



MSV-F2 DN 80 - 150



MSV-F2 DN 200 - 400

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.