Data sheet Manual presetting valves LENO™ MSV-BD

Description

LENO™ MSV-BD is a new generation of manual valves for balancing flow in heating, cooling and domestic hot water systems.

LENO™ MSV-BD is a combined presetting and shut off valve with a range of unique features:

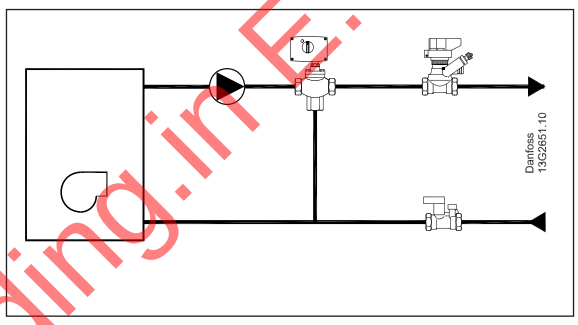
- Removable hand wheel for easy mounting.
- 360° rotating measuring station for convenient measuring and draining.
- Numeric presetting scale, visible from more angles.
- Easy locking of presetting.
- Built-in measuring nipples for 3mm needles.
- Built-in drain cock with separate flow/return draining.
- Open-close with Allen key in emergency.
- Open-closed colour indicator.

It is recommended to use LENO™ MSV-BD in constant flow systems. The valve may be mounted in flow or return.

DN 15 and 20 valves are available with internal or external thread. Other dimensions with internal thread.

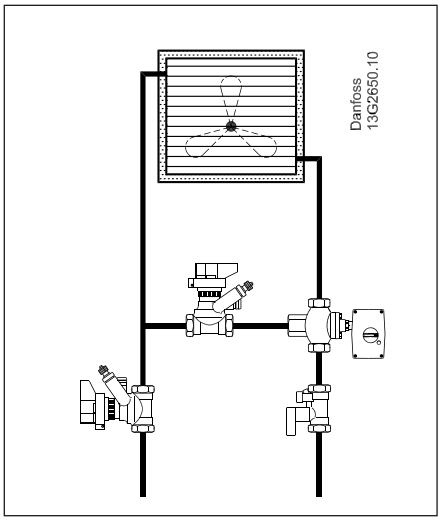
Danfoss PFM 3000/4000 measuring instruments contain valve data for LENO™ MSV-BD in memory.

Application



Boiler, flat station or heat pump in 1-family houses.

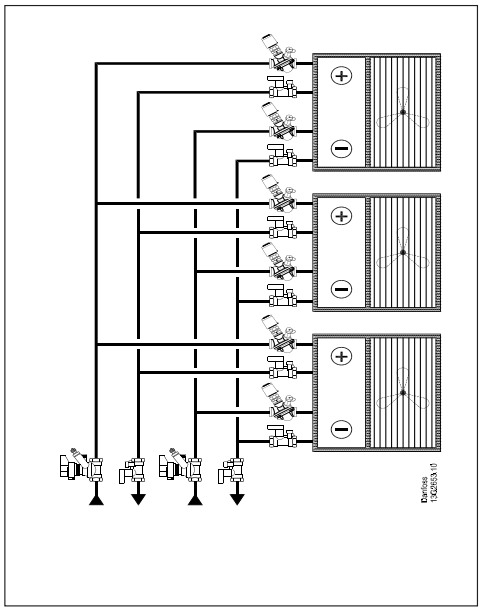
- For balancing.
- Shut-off function for service/repair.



Air handling unit

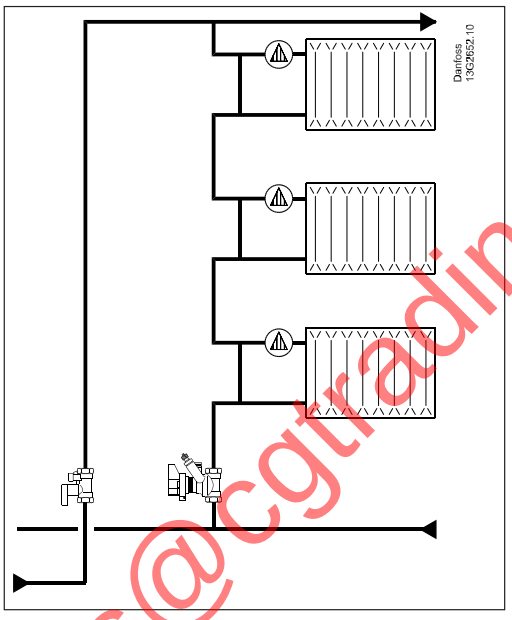
- For constant flow.
- For balancing.
- Shut-off function for service/ repair.

Application



Fan coils

- For flow verification.
- Shut-off function for service/ repair.



1-pipe system

- For balancing.
- Shut-off function for service/repair.

Ordering

LENO™ MSV-BD valve with internal thread

Type	Material	Size	k_{VS}(m³/h)	Connection	Code no.
	DZR* Brass	DN 15 LF	2.5	Rp ½"	**003Z4000**
		DN 15	3.0	Rp ½"	**003Z4001**
		DN 20	6.0	Rp ¾"	**003Z4002**
		DN 25	9.5	Rp 1"	**003Z4003**
		DN 32	18	Rp 1¼"	**003Z4004**
		DN 40	26	Rp 1½"	**003Z4005**
		DN 50	40	Rp 2"	**003Z4006**

LENO™ MSV-BD valve with external thread

Type	Material	Size	k_{VS}(m³/h)	Connection	Code no.
	DZR* Brass	DN 15 LF	2.5	G ¾ A**	**003Z4100**
		DN 15	3.0	G ¾ A**	**003Z4101**
		DN 20	6.0	G 1 A	**003Z4102**

*Corrosion resistant brass **Eurocone DIN V 3838

LENO™ MSV-BD/S set solution

Type	Material	Size	k_{VS}(m³/h)	Drain flow* (l/h)	Connection	Code no.
	DZR**brass	DN 15	3.0	281	Rp ½"	**003Z4051**
		DN 20	6.0	277	Rp ¾"	**003Z4052**
		DN 25	9.5	316	Rp 1"	**003Z4053**
		DN 32	18	305	Rp 1¼"	**003Z4054**
		DN 40	26	208	Rp 1½"	**003Z4055**
		DN 50	40	308	Rp 2"	**003Z4056**

*Drain flow is measured at 1 bar static pressure and 0.1 bar differential pressure.

Ordering

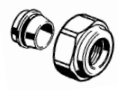
Accessories

Type	Code no.
Standard measuring nipples, 2 pcs.	003Z4662
Extended measuring nipples, 60 mm, 2 pcs.	003Z4657
Operating handle	003Z4652
Drain cock, ½"	003Z4096
Drain cock, ¾"	003Z4097
Flow measuring instrument PFM 4000	003L8200
Flow measuring instrument PFM 4000 Multi Source	003L8202
Identification tag & strips, 10 pcs.	003Z4660
Insulation cap, DN 15	003Z4781
Insulation cap, DN 20	003Z4782
Insulation cap, DN 25	003Z4783
Insulation cap, DN 32	003Z4784
Insulation cap, DN 40	003Z4785
Insulation cap, DN 50	003Z4786

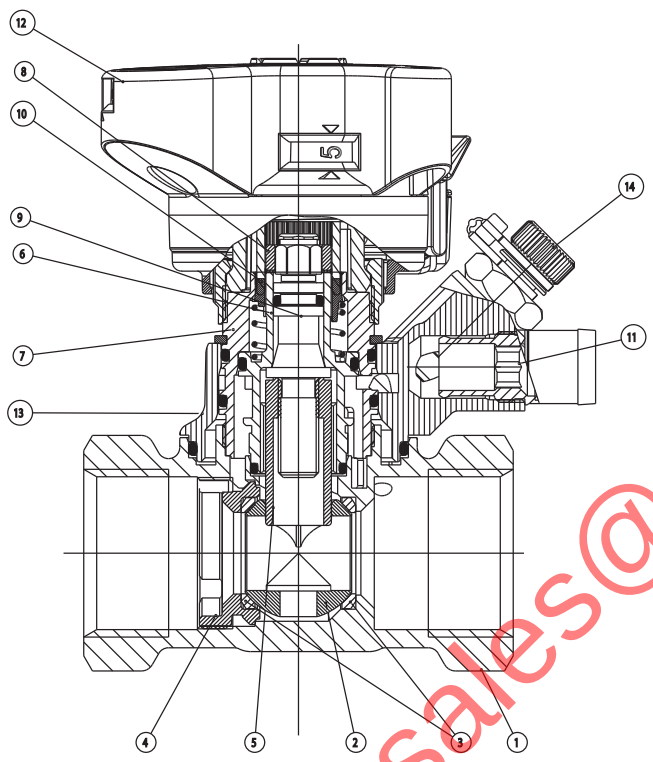
Compression fittings for valves with external thread

Pipe (mm)	Valve thread	PEX fittings, code no.	Alupex fittings, code no.
12 x 1.1	G ¾	013G4150	
12 x 2	G ¾	013G4152	013G4182
13 x 2	G ¾	013G4153	
14 x 2	G ¾	013G4154	013G4184
15 x 1.7	G ¾	013G4165	
15 x 2.5	G ¾	013G4155	013G4185
16 x 1.5	G ¾	013G4157	
16 x 2	G ¾	013G4156	013G4186
16 x 2.25	G ¾		013G4187
17 x 2	G ¾	013G4162	
18 x 2	G ¾	013G4158	013G4188
18 x 2.5	G ¾	013G4159	
20 x 2	G ¾	013G4160	013G4190
20 x 2.5	G ¾	013G4161	013G4191

Compression fittings for valves with external thread

Steel/copper pipes	Dimension	Code no.
	G ¾ x 15	013G4125
	G ¾ x 16	013G4126
	G ¾ x 18	013G4128
	G 1 x 18	013U0134
	G 1 x 22	013U0135

Design



1. Valve house
2. Ball
3. Ball seat
4. Supporting screw
5. Throttle bush
6. Closing bush
7. Valve top
8. Spindle head
9. Spindle
10. Rotation lock
11. Drain cock
12. Handle
13. Rotating measuring station
14. Measuring nipple

Technical data

Materials and parts in contact with water

Valve body	DZR brass
O-rings	EPDM
Ball	Brass/chromium plated
Ball sealing	Teflon

Max. static working pressure	20 bar
Static test pressure	30 bar
Max. differential pressure across valve	2.5 bar (250 kPa)
Max. flow temperature	120 °C
Min. temperature	-20°C
Cooling liquids	Ethylene glycol / propylene glycol and HYCOOL (max. 30 %)

Fitting

Before fitting the valve the installer must ensure that the pipe system is clean and:

1. the valve can be turned 360 degrees (if threaded pipe is used).
2. the valve is fitted according to the flow direction arrow.

Removal of the handle

1. Set the handle at 0 / 0.
2. Release the setting lock (green).
3. Unscrew the union nut.

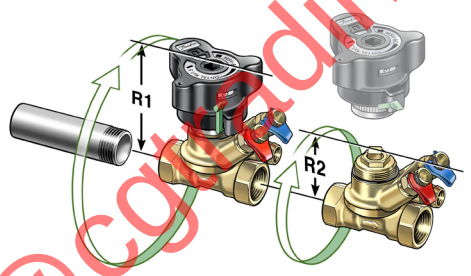
Calibration of the handle

Before refitting, ensure that the handle setting is 0 / 0.

For DN 15 - 20 valves with external thread

Danfoss offers a complete range of compression fittings for steel, cobber and PEX pipes.

DN	R1/R2 (mm)
15	86/67
20	89/69
25	91/71
32	118/84
40	118/84
50	124/90



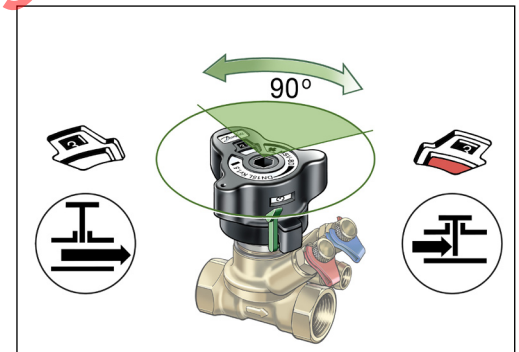
Shut-off

In order to shut-off the valve the handle must be pressed down.

The shut-off function features a ball valve, which only requires a 90 degree turn to shut the valve completely.

An indicator window shows the actual setting:

- red = closed
- white = open

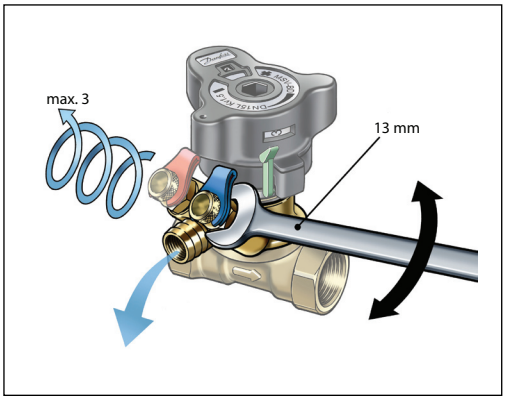


Draining

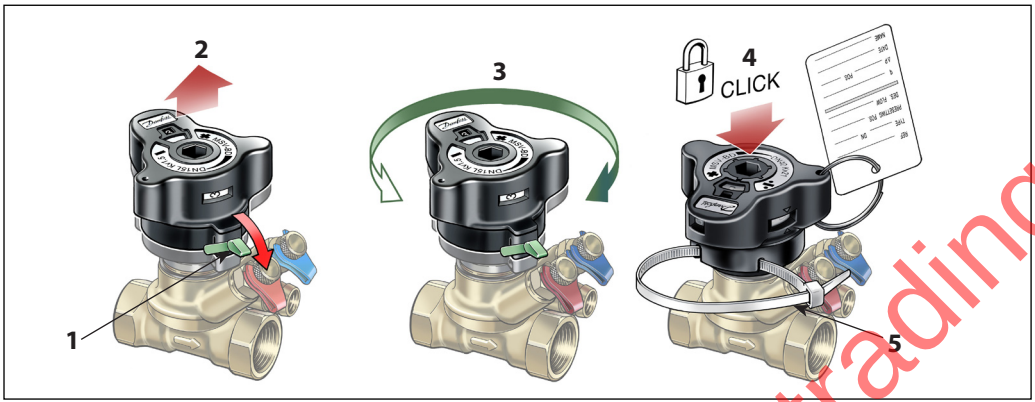
The drain cock can rotate 360 degrees for convenient operation.

Draining the system pipes can be done selectively:
When the red measuring nipple is opened, the valve inlet pipe is drained.

Opening the blue nipple will drain the pipe on the valve outlet side.



Setting and locking



The valve has a built-in presetting feature for accurate flow ratings.

Setting the required flow is made in 5 steps:

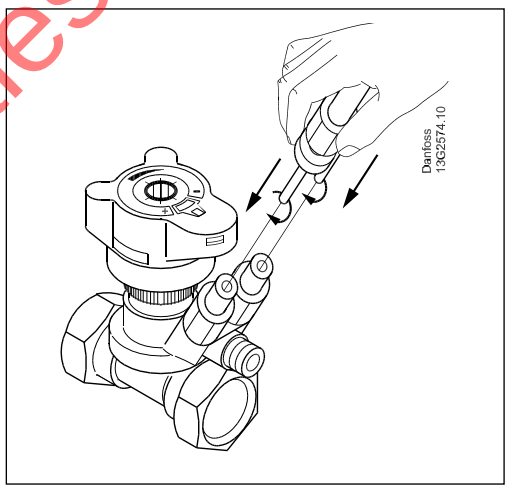
1. In open position, release the lock using the green lever or a 3 mm Allen key.
2. The handle pops up automatically.
3. The calculated value can now be set.
4. The setting is locked when the handled is pressed to click.
5. Seal - the setting can be protected by using a strip as shown.

Measuring

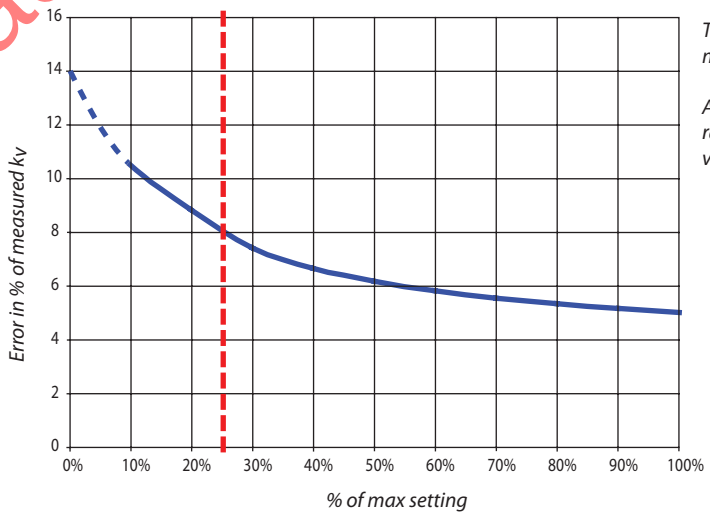
The flow through the LENO™ MSV-BD valve can be measured using Danfoss PFM 3000/4000 or other brands of measuring instruments.
The LENO™ MSV-BD valve is supplied with two measuring nipples for 3 mm needles. A twin bracket enables the user to connect both needles simultanously.

Procedure for flow measuring:

1. Select flow measuring
2. Select valve brand
3. Select valve type and dimension
4. Enter presetting
5. Connect valve and instrument
6. Calibrate static pressure
7. Measure the flow



Measuring accuracy



The red line indicates 25% of max. flow.

According to BS7350:1990 flow rates must be within following values:

- *± 18% at 25% open position*
- *± 10% at fully open position*

LENO™ MSV-BD is very accurate, due to the separate functions for presetting and shut-off.

K_V-signal

k_V-signal values are used for non-Danfoss measuring instruments. Danfoss PFM 3000*/4000 have all data in memory, and the instruments are using this formula:

$$\Delta P_{val} = \Delta P_{sig} \left(\frac{k_{v\text{-}sig}}{k_{v\text{-}val}} \right)^2$$

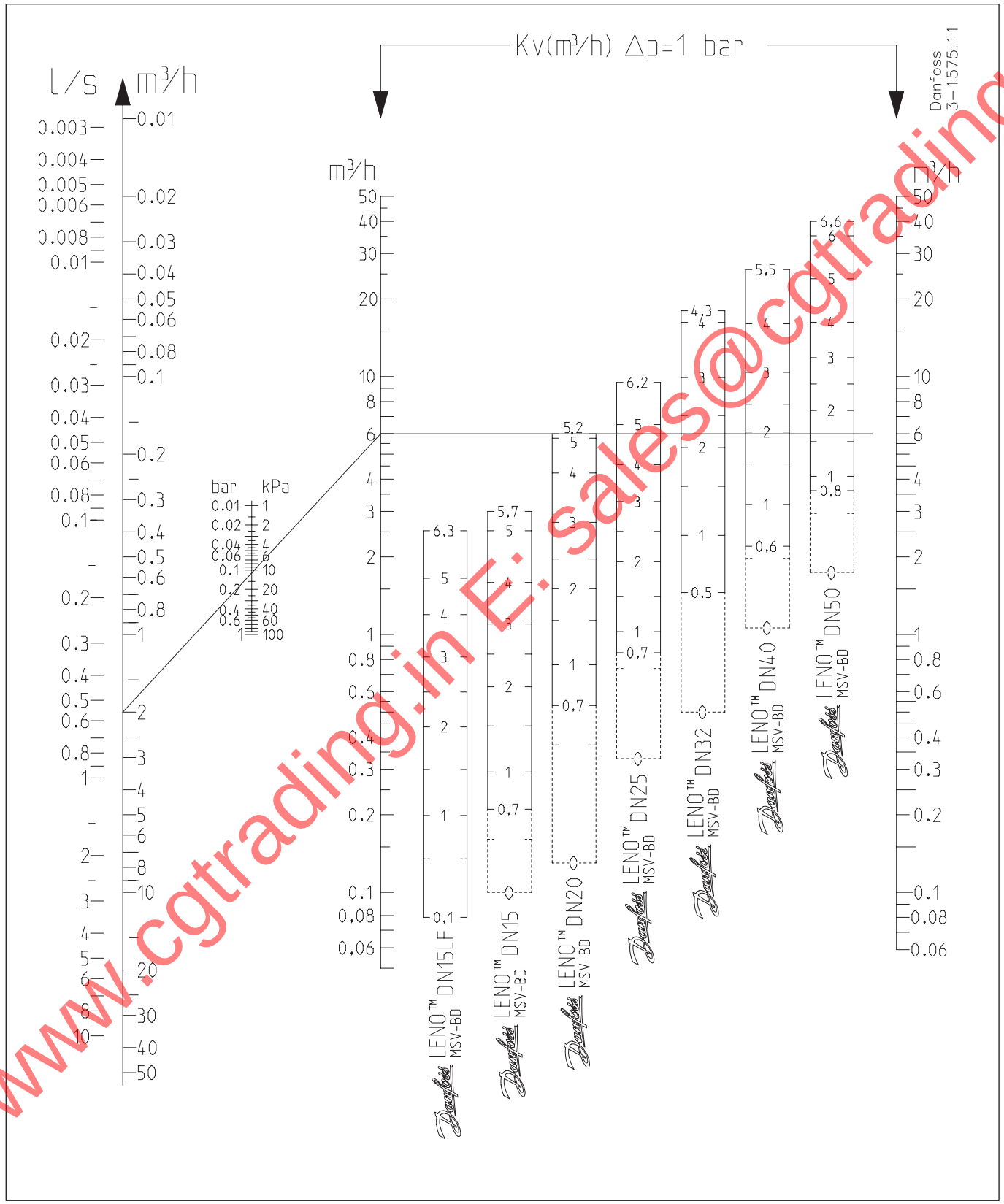
Δp across the measuring nipples (k_V-sig) and Δp across the valve (k_V-val) is not the same due to turbulence influence for pressure measuring.

** with software 9.4 or higher.*

K_V-signal values

Setting	DN 15LF	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
0.0	0.07	0.10	0.12	0.34	0.51	1.05	1.75
0.1	0.08	0.11	0.16	0.44	0.73	1.20	2.01
0.2	0.09	0.12	0.20	0.53	0.92	1.36	2.25
0.3	0.11	0.13	0.26	0.61	1.10	1.55	2.47
0.4	0.12	0.14	0.32	0.67	1.26	1.74	2.69
0.5	0.13	0.16	0.38	0.73	1.43	1.95	2.91
0.6	0.15	0.19	0.45	0.79	1.60	2.17	3.12
0.7	0.16	0.21	0.53	0.84	1.78	2.40	3.35
0.8	0.17	0.24	0.60	0.90	1.97	2.64	3.58
0.9	0.19	0.26	0.67	0.95	2.18	2.88	3.82
1.0	0.20	0.29	0.74	1.01	2.39	3.13	4.07
1.1	0.21	0.32	0.82	1.08	2.62	3.39	4.33
1.2	0.23	0.34	0.89	1.14	2.87	3.64	4.60
1.3	0.25	0.37	0.96	1.22	3.12	3.90	4.89
1.4	0.27	0.40	1.03	1.29	3.38	4.16	5.18
1.5	0.30	0.44	1.09	1.37	3.64	4.43	5.49
1.6	0.32	0.47	1.16	1.46	3.92	4.69	5.80
1.7	0.35	0.51	1.23	1.55	4.19	4.96	6.13
1.8	0.37	0.54	1.30	1.65	4.48	5.24	6.46
1.9	0.40	0.58	1.38	1.75	4.76	5.51	6.80
2.0	0.43	0.61	1.45	1.85	5.05	5.80	7.14
2.1	0.46	0.65	1.53	1.96	5.35	6.08	7.49
2.2	0.49	0.69	1.61	2.07	5.65	6.38	7.84
2.3	0.52	0.73	1.69	2.18	5.96	6.68	8.19
2.4	0.56	0.77	1.78	2.29	6.27	6.99	8.55
2.5	0.59	0.80	1.87	2.41	6.60	7.30	8.91
2.6	0.62	0.85	1.97	2.53	6.94	7.63	9.27
2.7	0.66	0.89	2.07	2.65	7.29	7.98	9.64
2.8	0.69	0.93	2.17	2.77	7.67	8.33	10.00
2.9	0.73	0.97	2.29	2.89	8.06	8.70	10.37
3.0	0.76	1.01	2.40	3.01	8.48	9.08	10.74
3.1	0.80	1.04	2.52	3.13	8.92	9.48	11.11
3.2	0.83	1.08	2.65	3.25	9.38	9.90	11.49
3.3	0.87	1.12	2.78	3.37	9.87	10.33	11.88
3.4	0.90	1.16	2.91	3.49	10.38	10.79	12.27
3.5	0.94	1.20	3.05	3.62	10.91	11.26	12.67
3.6	0.97	1.25	3.19	3.74	11.46	11.74	13.09
3.7	1.01	1.30	3.33	3.87	12.02	12.25	13.51
3.8	1.06	1.35	3.47	4.00	12.58	12.77	13.95
3.9	1.10	1.41	3.61	4.13	13.12	13.30	14.41
4.0	1.14	1.47	3.75	4.26	13.64	13.85	14.88
4.1	1.18	1.53	3.89	4.39	14.12	14.41	15.38
4.2	1.23	1.59	4.02	4.53	14.52	14.98	15.89
4.3	1.27	1.66	4.15	4.68	14.84	15.55	16.44
4.4	1.31	1.73	4.28	4.82		16.13	17.00
4.5	1.35	1.81	4.40	4.98		16.69	17.59
4.6	1.39	1.91	4.52	5.13		17.25	18.21
4.7	1.43	2.00	4.62	5.29		17.80	18.86
4.8	1.47	2.08	4.72	5.46		18.32	19.54
4.9	1.51	2.16	4.82	5.64		18.80	20.24
5-0	1.54	2.23	4.90	5.81		19.25	20.97
5.1	1.60	2.30	4.97	6.00		19.65	21.73
5.2	1.66	2.36	5.04	6.19		19.98	22.51
5.3	1.72	2.41		6.38		20.24	23.30
5.4	1.79	2.46		6.57		20.41	24.12
5.5	1.87	2.50		6.77		20.48	24.94
5.6	1.93	2.54		6.96			25.76
5.7	1.99	2.57		7.15			26.58
5.8	2.04			7.34			27.38
5.9	2.09			7.52			28.16
6.0	2.14			7.69			28.90
6.1	2.18			7.85			29.59
6.2	2.22			7.98			30.21
6.3	2.26			8.09			30.74
6.4				8.17			31.17
6.5				8.22			31.47
6.6							31.61

Sizing



Correction factors

Temp. °C	Correction factors, ethylene glycol / propylene glycol percentage (max. 30 %)						
	25	30	40	50	60	65	100
-40.0	[1]	[1]	[1]	[1]	0.89	0.88	[1]
-17.8	[1]	[1]	0.93	0.91	0.90	0.89	0.86
4.4	0.95	0.95	0.93	0.92	0.91	0.90	0.87
26.6	0.96	0.95	0.94	0.93	0.92	0.91	0.88
48.9	0.97	0.96	0.95	0.94	0.93	0.92	0.90
71.1	0.98	0.98	0.96	0.95	0.94	0.94	0.95
93.3	1.00	0.99	0.97	0.96	0.95	0.95	0.92
115.6	[2]	[2]	[2]	[2]	[2]	[2]	0.94

[1] Below freezing point

[2] Above boiling point

Example: Flow needed = 30 m³/h
Flow after correction:
30 x 0.95 = 28 m³/h

Valve size and presetting

Example:

Given Max. pipe flow Q = 2.0 m³/h
Δp_r = 15 kPa
Δp_a = 45 kPa
Δp_m =10 kPa
$\Delta p_i = \Delta p_a - \Delta p_v - \Delta p_m$
Δp_i = 45 kPa - 15 kPa - 10KPa = 20 kPa

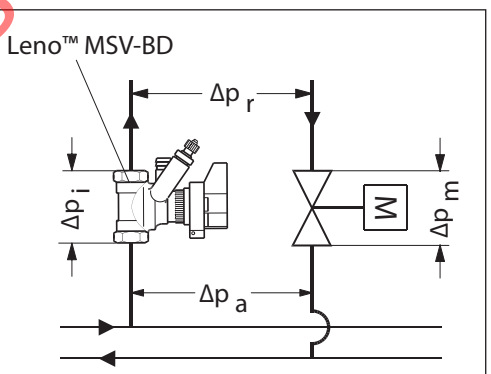
Correct valve size and presetting is found in flow diagramme, page 7.
Q= 2.0 m³/h and Δp_i = 20 kPa

On page 11 intersect guides and presetting is found to be 4.2 (DN 20 valve)

Setting can be also calculated from the formula:

$$k_v = \frac{Q[m^3/h]}{\sqrt{\Delta p_i}[bar]} = \frac{2.0}{\sqrt{0.20}} = 4.5\ m^3/h$$

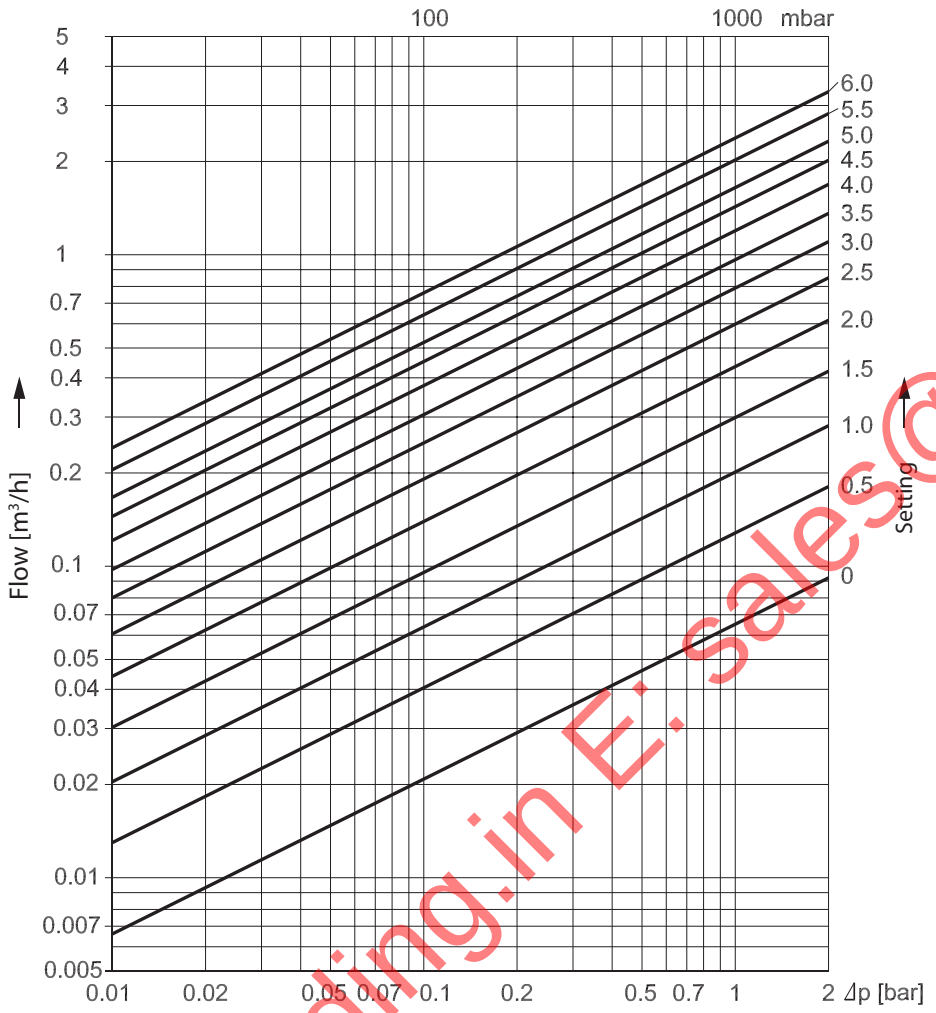
which corresponds to presetting 4.2 as shown on pages 7 and 11.



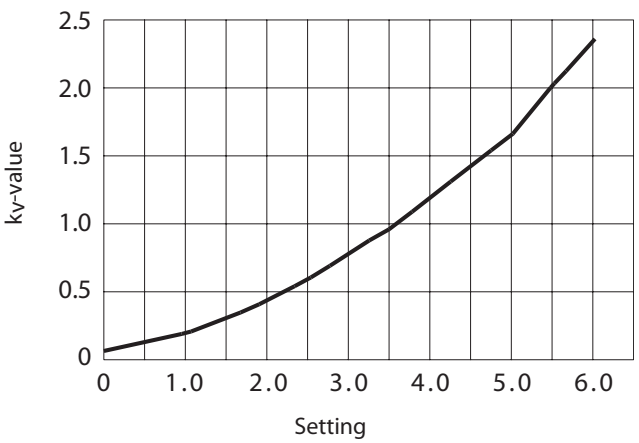
Δp_i valve *Pressure drop across LENO™ MSV-BD*
Δp_m *Pressure drop across valve*
Δp_r *Necessary pressure for the riser*
Δp_a *Available pressure for the riser*

Flow diagrammes, DN 15 LF

LENO™ MSV-BD DN 15 LF



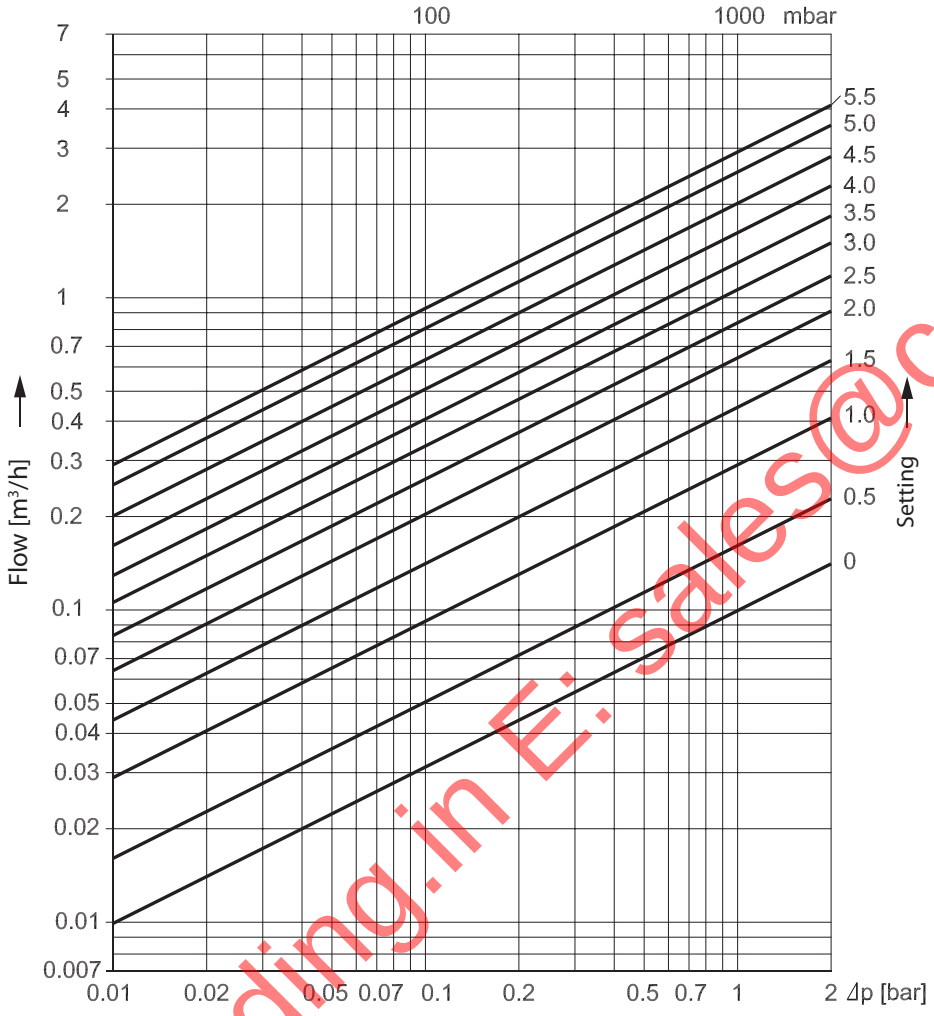
Flow characteristics



Setting	k_v-value
0.0	0.07
0.1	0.08
0.2	0.09
0.3	0.11
0.4	0.12
0.5	0.13
0.6	0.15
0.7	0.16
0.8	0.17
0.9	0.19
1.0	0.20
1.1	0.22
1.2	0.23
1.3	0.25
1.4	0.28
1.5	0.30
1.6	0.32
1.7	0.35
1.8	0.38
1.9	0.41
2.0	0.44
2.1	0.47
2.2	0.50
2.3	0.53
2.4	0.56
2.5	0.60
2.6	0.63
2.7	0.67
2.8	0.71
2.9	0.74
3.0	0.78
3.1	0.82
3.2	0.86
3.3	0.89
3.4	0.93
3.5	0.97
3.6	1.01
3.7	1.05
3.8	1.10
3.9	1.15
4.0	1.19
4.1	1.24
4.2	1.29
4.3	1.33
4.4	1.38
4.5	1.43
4.6	1.48
4.7	1.52
4.8	1.56
4.9	1.61
5.0	1.65
5.1	1.72
5.2	1.78
5.3	1.86
5.4	1.94
5.5	2.03
5.6	2.10
5.7	2.17
5.8	2.23
5.9	2.30
6.0	2.36
6.1	2.42
6.2	2.47
6.3	2.53

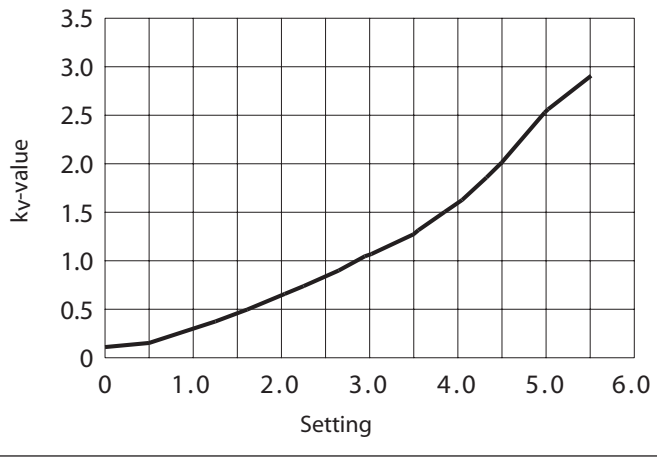
Flow diagrammes, DN 15

LENO™ MSV-BD DN 15

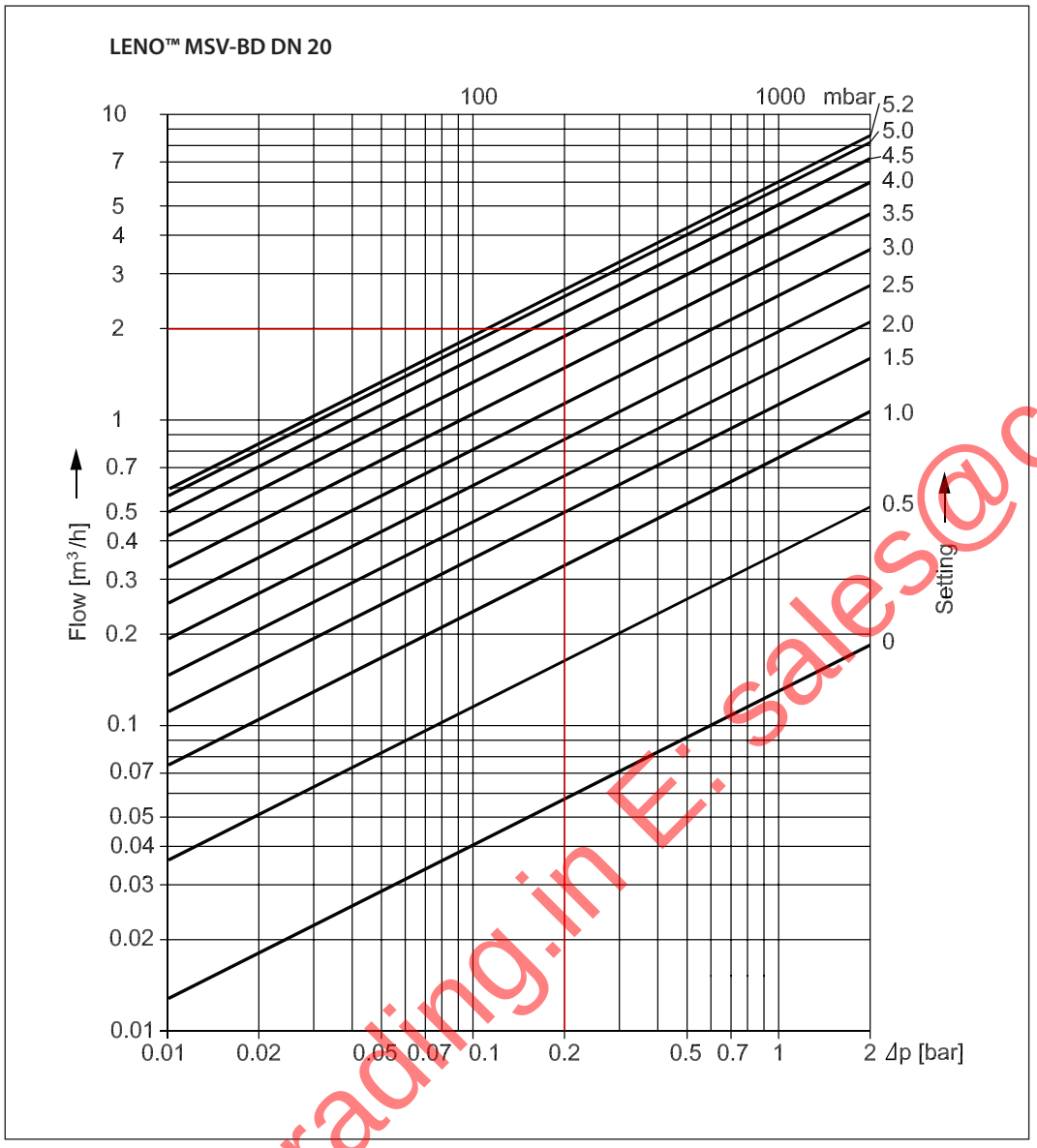


Setting	k_v-value
0.0	0.10
0.1	0.11
0.2	0.12
0.3	0.13
0.4	0.14
0.5	0.16
0.6	0.19
0.7	0.21
0.8	0.24
0.9	0.27
1.0	0.29
1.1	0.32
1.2	0.35
1.3	0.38
1.4	0.41
1.5	0.44
1.6	0.48
1.7	0.51
1.8	0.55
1.9	0.59
2.0	0.63
2.1	0.67
2.2	0.71
2.3	0.75
2.4	0.80
2.5	0.84
2.6	0.88
2.7	0.93
2.8	0.97
2.9	1.02
3.0	1.06
3.1	1.10
3.2	1.14
3.3	1.19
3.4	1.23
3.5	1.28
3.6	1.34
3.7	1.40
3.8	1.46
3.9	1.52
4.0	1.59
4.1	1.66
4.2	1.74
4.3	1.82
4.4	1.91
4.5	2.00
4.6	2.12
4.7	2.23
4.8	2.33
4.9	2.43
5.0	2.53
5.1	2.61
5.2	2.70
5.3	2.77
5.4	2.84
5.5	2.90
5.6	2.95
5.7	3.00

Flow characteristics

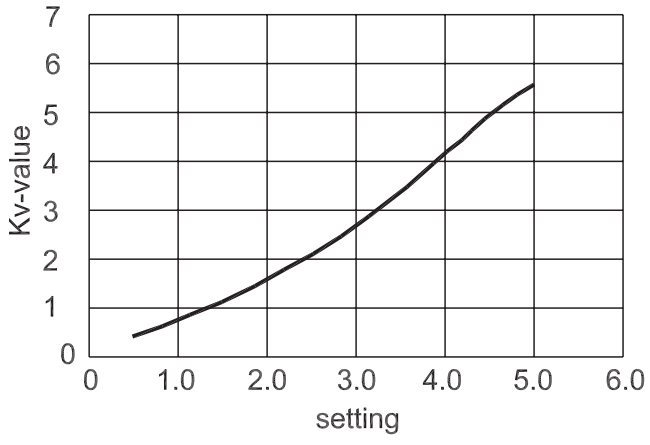


Flow diagrammes, DN 20



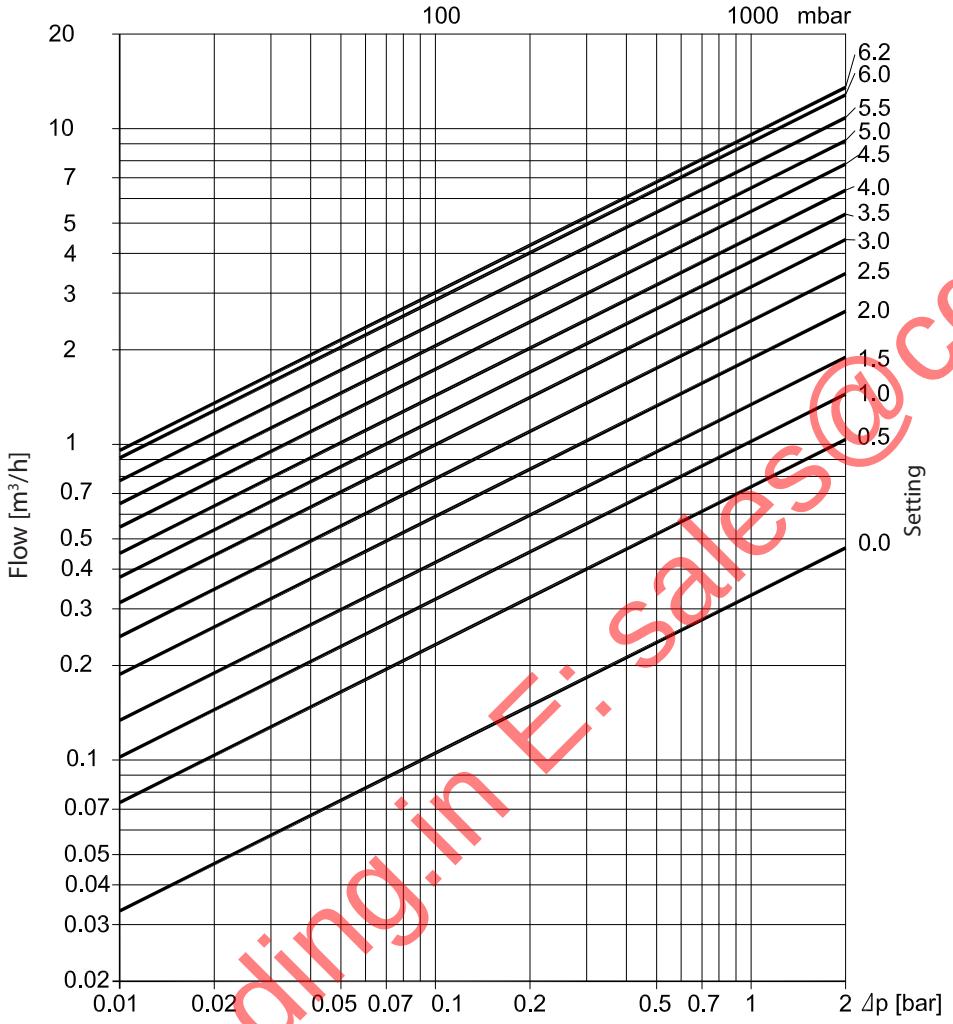
Setting	k_v-value
0.0	0.13
0.1	0.15
0.2	0.19
0.3	0.24
0.4	0.30
0.5	0.37
0.6	0.45
0.7	0.53
0.8	0.61
0.9	0.68
1.0	0.76
1.1	0.84
1.2	0.92
1.3	0.99
1.4	1.06
1.5	1.13
1.6	1.21
1.7	1.28
1.8	1.35
1.9	1.43
2.0	1.50
2.1	1.59
2.2	1.67
2.3	1.76
2.4	1.86
2.5	1.96
2.6	2.07
2.7	2.19
2.8	2.31
2.9	2.44
3.0	2.58
3.1	2.72
3.2	2.87
3.3	3.03
3.4	3.19
3.5	3.36
3.6	3.53
3.7	3.70
3.8	3.87
3.9	4.05
4.0	4.23
4.1	4.40
4.2	4.58
4.3	4.75
4.4	4.91
4.5	5.07
4.6	5.22
4.7	5.37
4.8	5.51
4.9	5.64
5.0	5.77
5.1	5.88
5.2	6.00

Flow characteristics

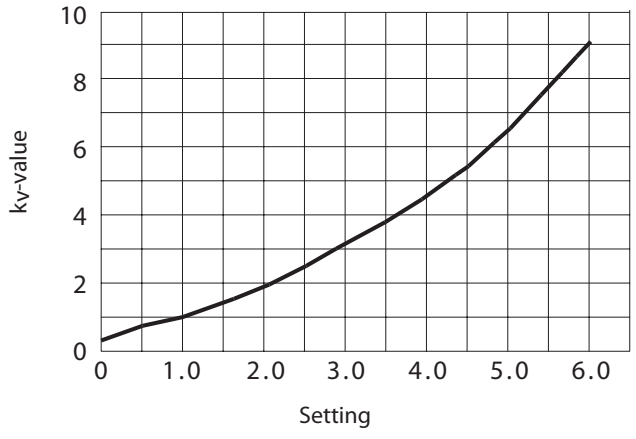


Flow diagrammes, DN 25

LENO™ MSV-BD DN 25



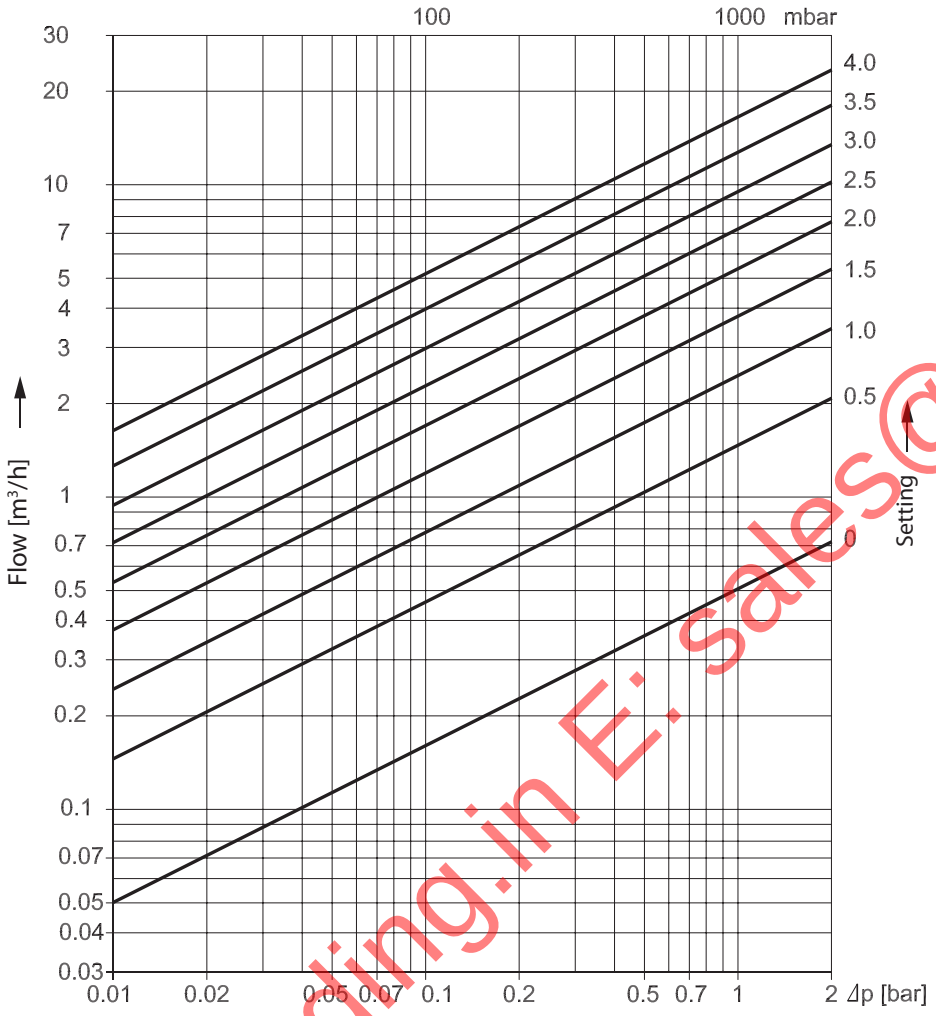
Flow characteristics



Setting	k_v-value
0.0	0.33
0.1	0.44
0.2	0.53
0.3	0.61
0.4	0.68
0.5	0.74
0.6	0.79
0.7	0.85
0.8	0.91
0.9	0.96
1.0	1.03
1.1	1.09
1.2	1.16
1.3	1.24
1.4	1.32
1.5	1.41
1.6	1.50
1.7	1.60
1.8	1.70
1.9	1.80
2.0	1.91
2.1	2.03
2.2	2.15
2.3	2.26
2.4	2.39
2.5	2.51
2.6	2.64
2.7	2.76
2.8	2.89
2.9	3.02
3.0	3.15
3.1	3.28
3.2	3.41
3.3	3.54
3.4	3.68
3.5	3.81
3.6	3.95
3.7	4.09
3.8	4.24
3.9	4.39
4.0	4.55
4.1	4.71
4.2	4.88
4.3	5.05
4.4	5.23
4.5	5.42
4.6	5.62
4.7	5.83
4.8	6.05
4.9	6.27
5.0	6.51
5.1	6.75
5.2	7.00
5.3	7.26
5.4	7.53
5.5	7.80
5.6	8.06
5.7	8.33
5.8	8.59
5.9	8.84
6.0	9.08
6.1	9.30
6.2	9.50

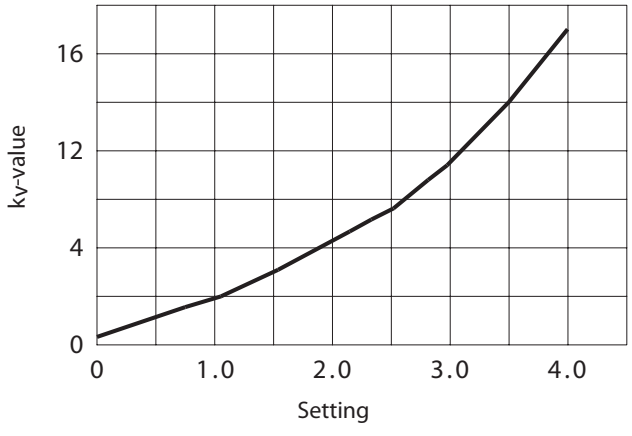
Flow diagrammes, DN 32

LENO™ MSV-BD DN 32



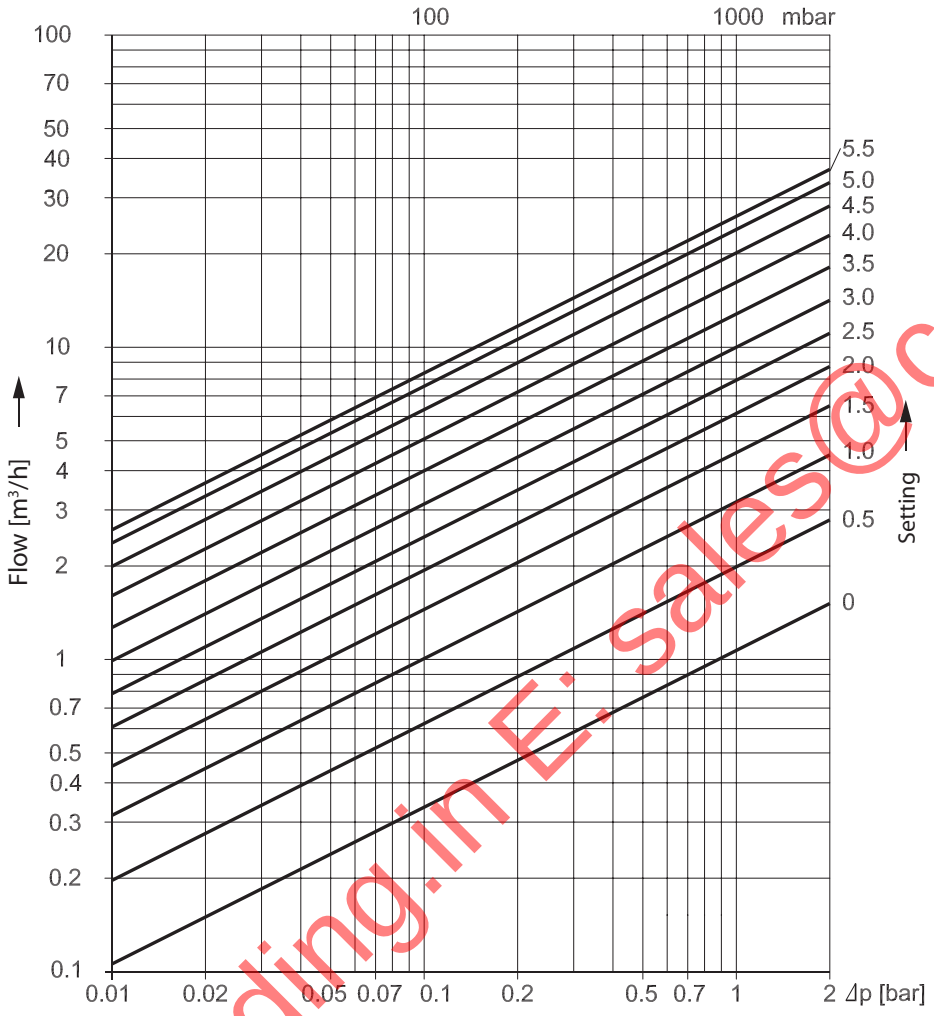
Setting	k_v-value
0.0	0.50
0.1	0.75
0.2	0.95
0.3	1.13
0.4	1.29
0.5	1.45
0.6	1.62
0.7	1.80
0.8	1.99
0.9	2.20
1.0	2.42
1.1	2.66
1.2	2.92
1.3	3.19
1.4	3.47
1.5	3.75
1.6	4.05
1.7	4.36
1.8	4.67
1.9	4.98
2.0	5.30
2.1	5.63
2.2	5.97
2.3	6.32
2.4	6.68
2.5	7.06
2.6	7.46
2.7	7.89
2.8	8.34
2.9	8.83
3.0	9.35
3.1	9.92
3.2	10.52
3.3	11.16
3.4	11.85
3.5	12.51
3.6	13.23
3.7	13.98
3.8	14.74
3.9	15.49
4.0	16.23
4.1	16.91
4.2	17.51
4.3	18.00

Flow characteristics



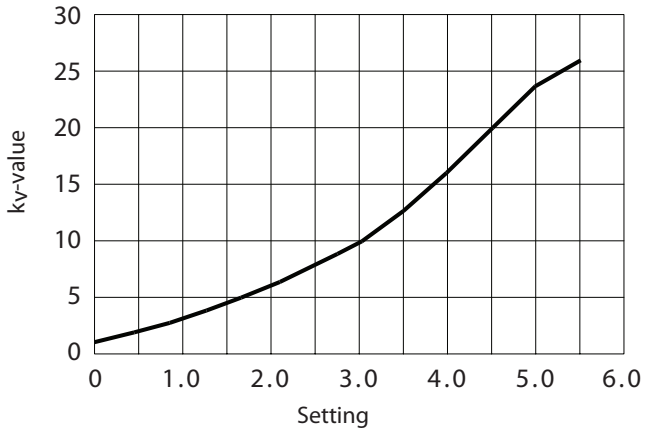
Flow diagrammes, DN 40

LENO™ MSV-BD DN 40



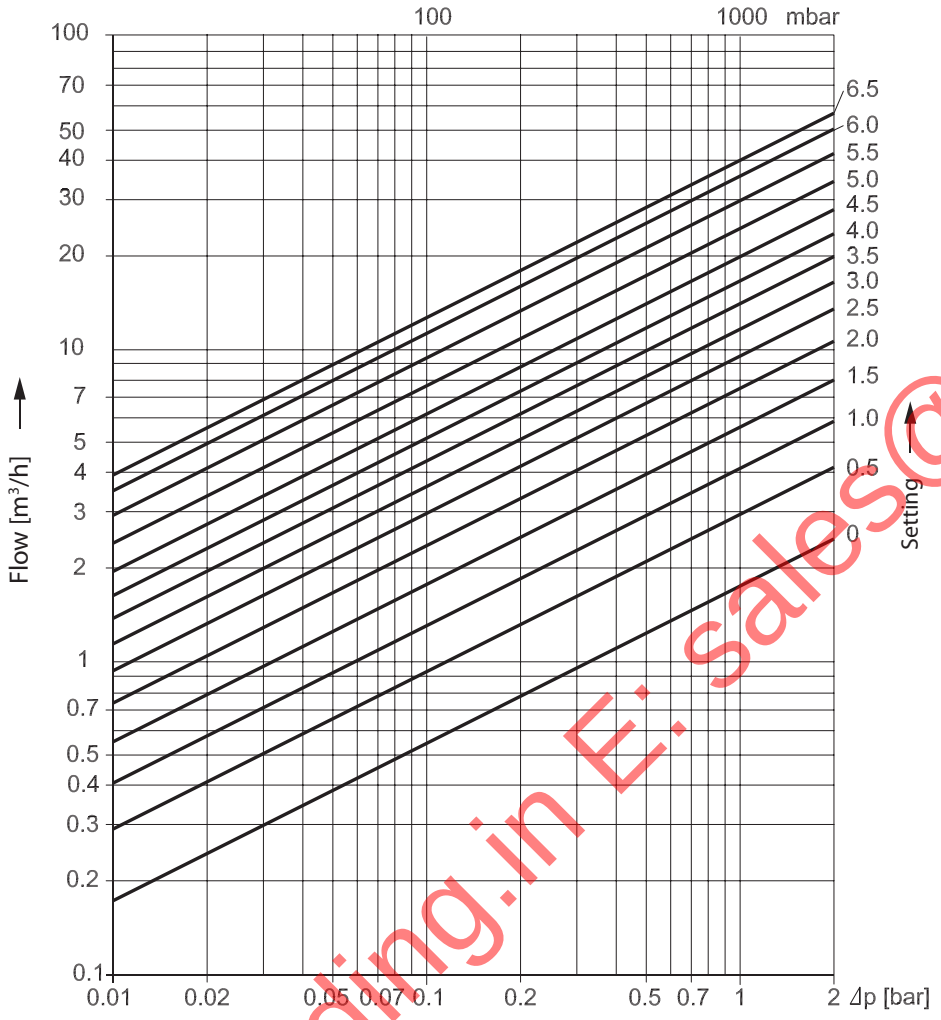
Setting	k_v-value
0.0	1.06
0.1	1.21
0.2	1.38
0.3	1.56
0.4	1.76
0.5	1.97
0.6	2.20
0.7	2.43
0.8	2.68
0.9	2.93
1.0	3.19
1.1	3.46
1.2	3.73
1.3	4.01
1.4	4.29
1.5	4.58
1.6	4.87
1.7	5.17
1.8	5.47
1.9	5.78
2.0	6.09
2.1	6.41
2.2	6.74
2.3	7.09
2.4	7.44
2.5	7.80
2.6	8.18
2.7	8.58
2.8	9.00
2.9	9.44
3.0	9.90
3.1	10.38
3.2	10.89
3.3	11.43
3.4	12.00
3.5	12.60
3.6	13.22
3.7	13.88
3.8	14.56
3.9	15.28
4.0	16.02
4.1	16.79
4.2	17.57
4.3	18.38
4.4	19.19
4.5	20.02
4.6	20.82
4.7	21.61
4.8	22.38
4.9	23.12
5.0	23.81
5.1	24.44
5.2	25.00
5.3	25.46
5.4	25.80
5.5	26.00

Flow characteristics

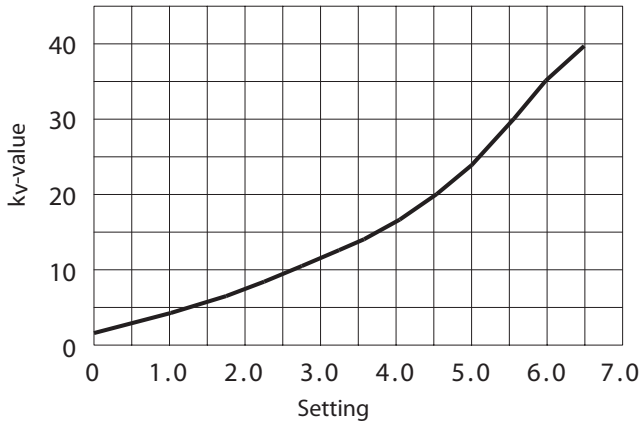


Flow diagrammes, DN 50

LENO™ MSV-BD DN 50

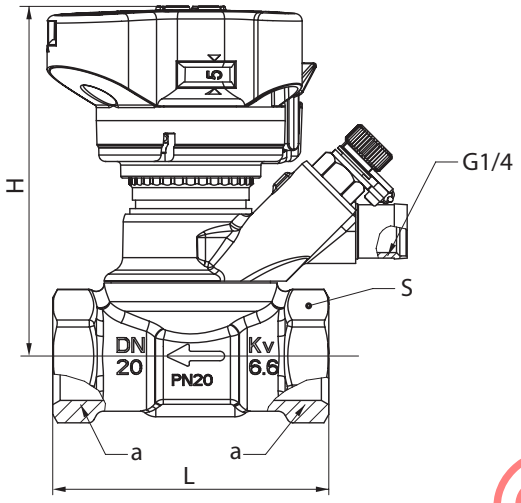


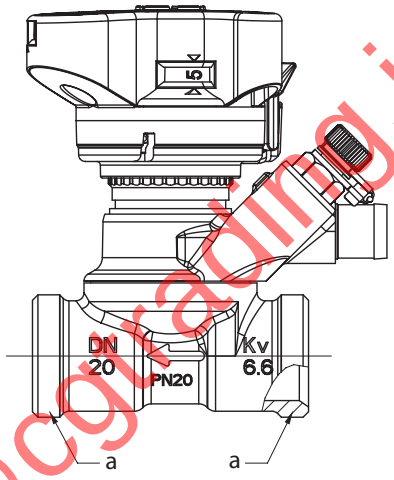
Flow characteristics



Setting	k_v-value
0.0	1.74
0.1	2.03
0.2	2.28
0.3	2.51
0.4	2.73
0.5	2.95
0.6	3.16
0.7	3.38
0.8	3.61
0.9	3.85
1.0	4.10
1.1	4.37
1.2	4.65
1.3	4.95
1.4	5.26
1.5	5.59
1.6	5.93
1.7	6.28
1.8	6.64
1.9	7.01
2.0	7.39
2.1	7.78
2.2	8.17
2.3	8.56
2.4	8.96
2.5	9.36
2.6	9.76
2.7	10.17
2.8	10.58
2.9	10.99
3.0	11.41
3.1	11.84
3.2	12.27
3.3	12.71
3.4	13.16
3.5	13.62
3.6	14.10
3.7	14.60
3.8	15.12
3.9	15.66
4.0	16.23
4.1	16.84
4.2	17.47
4.3	18.14
4.4	18.84
4.5	19.59
4.6	20.38
4.7	21.21
4.8	22.08
4.9	23.00
5.0	23.96
5.1	24.96
5.2	26.00
5.3	27.07
5.4	28.17
5.5	29.30
5.6	30.44
5.7	31.64
5.8	32.83
5.9	34.01
6.0	35.14
6.1	36.23
6.2	37.24
6.3	38.14
6.4	38.93
6.5	39.56
6.6	40.00

Dimensions





Size (DN)	ISO 228-1 a (mm)	L (mm)	H (mm)	S (mm)
15	G ½	65	92	27
20	G ¾	75	95	32
25	G 1	85	98	41
32	G 1¼	95	121	50
40	G 1½	100	125	55
50	G 2	130	129	67

Size (DN)	ISO 228-1 a (mm)	L (mm)	H (mm)
15	G ¾A	70	92
20	G 1A	75	95

Tender specifications

LENO™ MSV –BD can be used in heating, cooling and domestic hot water systems.

Features	*LENO™ MSV-BD*
Balancing / Commissioning	•
Presetting	•
Fixed orifice	
Self sealing measuring nipples	•
Digital visible scale from more sides	•
Shut-off function (ball valve)	•
Draining / filling	•
Draining / filling on both sides of the valve	•
Removable handle	•
Closing indicator	•
Allen key for ball valve	•
Parallel measuring nipples	•
360° rotating measuring station (drain cock and measuring nipples)	•

Presetting values are visible on top of the valve and from all sides.
Presetting is locked by pressing down the handle. When locked, the shut-off function can be used without changing the presetting.
The handle is released with the green key or with a 3 mm Allen key.
To prevent unintended changes of the presetting, the handle can be sealed by using a strip.

The system can be drained and filled on both sides of the ball valve.

External thread versions comes in sizes DN 15 and DN 20 and are prepared for Danfoss standard fittings. DN 15 is designed with Euro cone, according to DIN V 3838.

LENO™ MSV-BD has a leakage rate A according to BS 7350 : 1990, the ball valve is 100% tight.

The LENO™ MSV-BD measuring accuracy is 8% up to 25% of max. setting.
Accuracy is according to BS 7350 : 1990.

Measuring instruments must be equipped with 3 mm measuring needles. Danfoss measuring instruments PFM 3000/4000 contain all relevant valve data.

Valve sizes..... DN 15 (LF) – DN 50
Pressure class.....PN20
Static test pressure.....30 bar
Working temperature..... -20°C to 120°C
Working area..... 10-100% of the k_{VS}-value

The valve body is made of DZR brass.
The ball is made of chromium plated brass.
O-rings are made of EPDM rubber.