

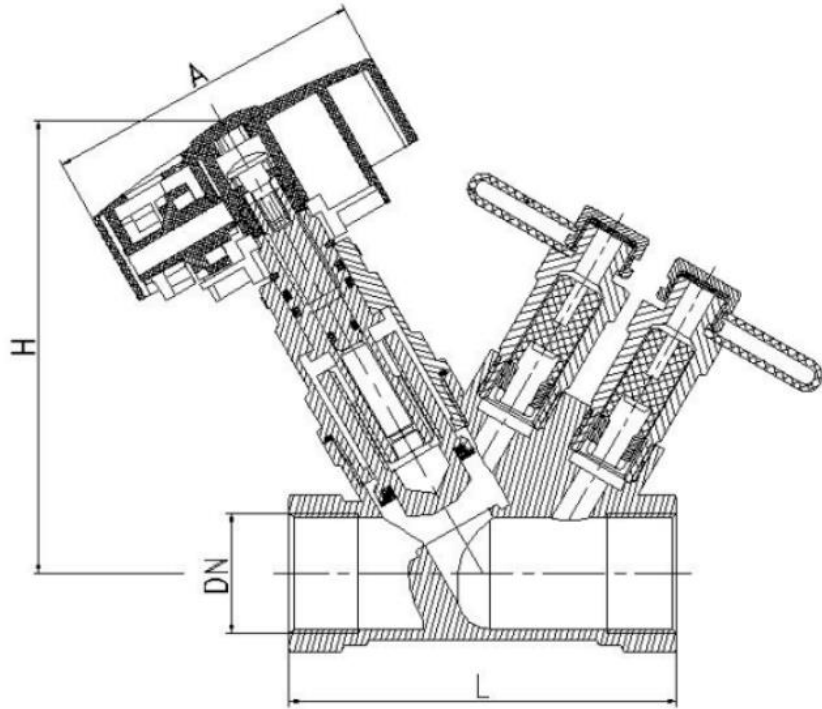


Working Pressure:  $\leq 2.0\text{Mpa}$

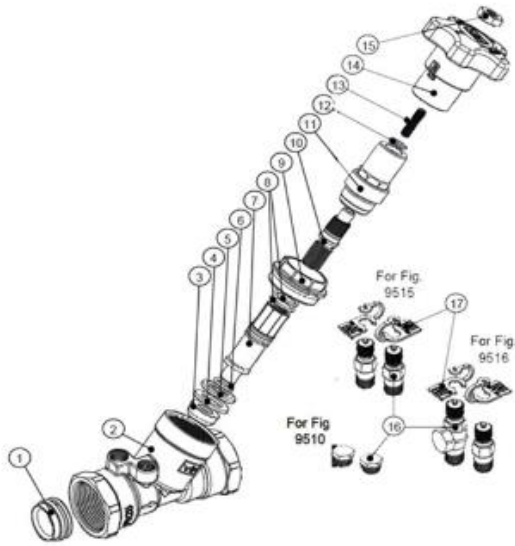
Media: water,Glycol mixture

Working Temperature:  $-20^{\circ}\text{C} \leq T \leq 120^{\circ}\text{C}$

Note : below  $0^{\circ}\text{C}$  only for water with added antifreeze fluids, over  $100^{\circ}\text{C}$  only for water with added anti-boiling fluids.

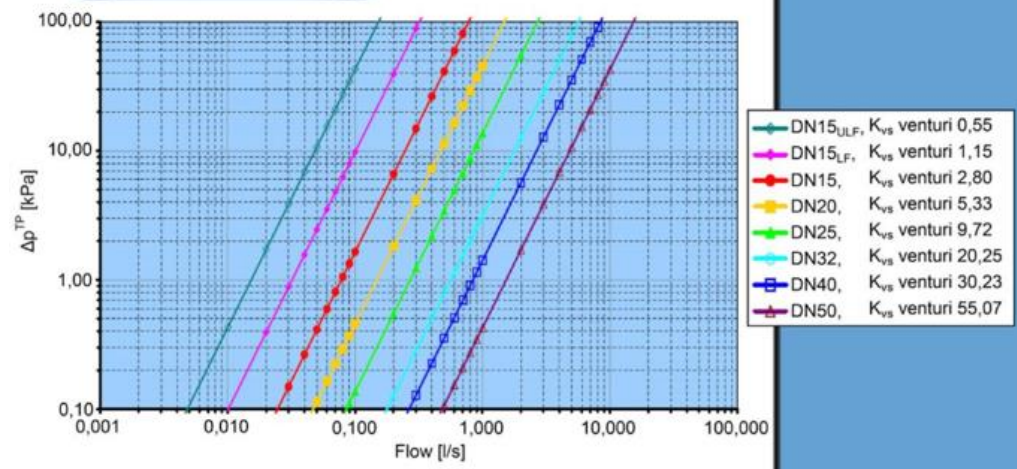


DN	Size	L	H	A	Weight(g)
DN15	1/2	76	67	69	360
DN20	3/4	80	70	69	415
DN25	1	88	75	69	540
DN32	1 1/4	95	85	69	730
DN40	1 1/2	105	95	69	980
DN50	2	1470	110	69	1470



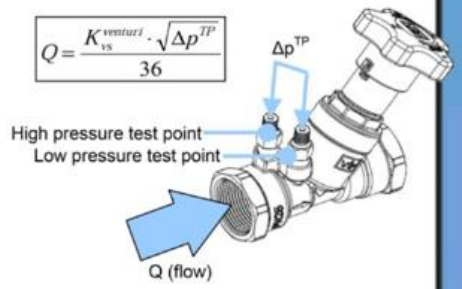
No.	Part	Material	Norm
1	Venturi Insert	DZR Brass	EN12164 CW602N
2	Body	DZR Brass	EN12165 CW602N
3	Balancing Cone	DZR Brass	EN12164 CW602N
4	Gasket Disc	PTFE	-
5	Disc <sup>1</sup>	DZR Brass	EN12164 CW602N
6	Disc O-Ring <sup>1</sup>	EPDM Perox	-
7	Disc Stem	DZR Brass	EN12164 CW602N
8	Stem O-Ring	EPDM Perox	-
9	Union <sup>1</sup>	DZR Brass	EN12165 CW602N
10	Stem O-Ring	Brass	EN12164 CW617N
11	Bonnet	DZR Brass	EN12164 CW602N
12	Stop Spring Ring	Spring Steel	-
13	Screw	Steel	-
14	Handwheel	ABS (Blue)	-
15	Nut	Zinc plated Steel	EN10025 Fe42
16	Test Point/Plug	DZR Brass	EN12164 CW602N
17	Tie	Polyprop. (Blue / red)	-

## Flow Measurement



Formula linking flow Q (in l/s) and  $\Delta p$  measured at test points (in kPa).  
 Minimum flow that can be measured for each diameter may be calculated by using in the formula minimum  $\Delta p$  that can be measured by used manometer.  
 Valves are anyway designed for best performances when used on range previously suggested and as indicated by BS7350.

$$Q = \frac{K_{vs}^{venturi} \cdot \sqrt{\Delta p^{TP}}}{36}$$

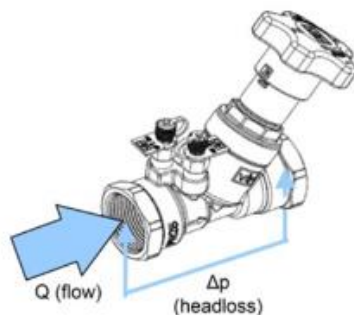


## Headloss calculation

Handwheel position	Kv (m <sup>3</sup> /h @ 1bar)							
	015 <sub>ULF</sub>	015 <sub>LF</sub>	015	020	025	032	040	050
0,5	0,153	0,138	0,41	0,41	1,47	2,56	2,72	5,36
0,7	0,178	0,161	0,41	0,47	1,73	2,92	3,12	6,54
1,0	0,245	0,248	0,53	0,58	2,09	3,42	3,69	8,35
1,3	0,286	0,341	0,62	0,78	2,44	3,88	4,29	10,54
1,5	0,307	0,381	0,70	0,97	2,70	4,18	4,82	12,37
1,7	0,335	0,433	0,78	1,08	3,01	4,54	5,71	14,39
2,0	0,385	0,507	0,86	1,20	3,57	5,42	7,78	17,45
2,3	0,442	0,579	0,95	1,40	4,18	6,76	10,45	20,20
2,5	0,447	0,602	1,02	1,72	4,57	7,92	12,29	21,73
2,7	0,456	0,643	1,14	1,94	4,87	9,05	14,13	23,06
3,0	0,487	0,716	1,38	2,13	5,27	10,56	16,34	24,84
3,3	0,500	0,747	1,63	2,54	5,61	11,58	17,88	26,44
3,5	0,514	0,771	1,76	2,93	5,74	12,06	18,63	27,44
3,7	0,515	0,800	1,83	3,24	5,88	12,40	19,17	28,42
4,0	0,522	0,824	1,89	3,51	6,14	12,54	19,59	29,72
4,4	0,523	0,852	1,92	3,67	6,24	-	-	-

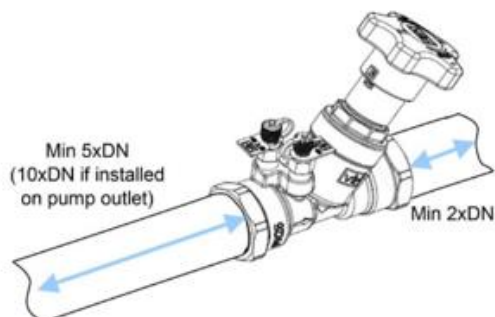
Formula linking flow Q (in l/s) and theoretical valve headloss  $\Delta p$  (in kPa).  $K_v$  depends on handwheel position as indicated on table.

$$\Delta p = \left( \frac{36 \cdot Q}{K_v} \right)^2$$

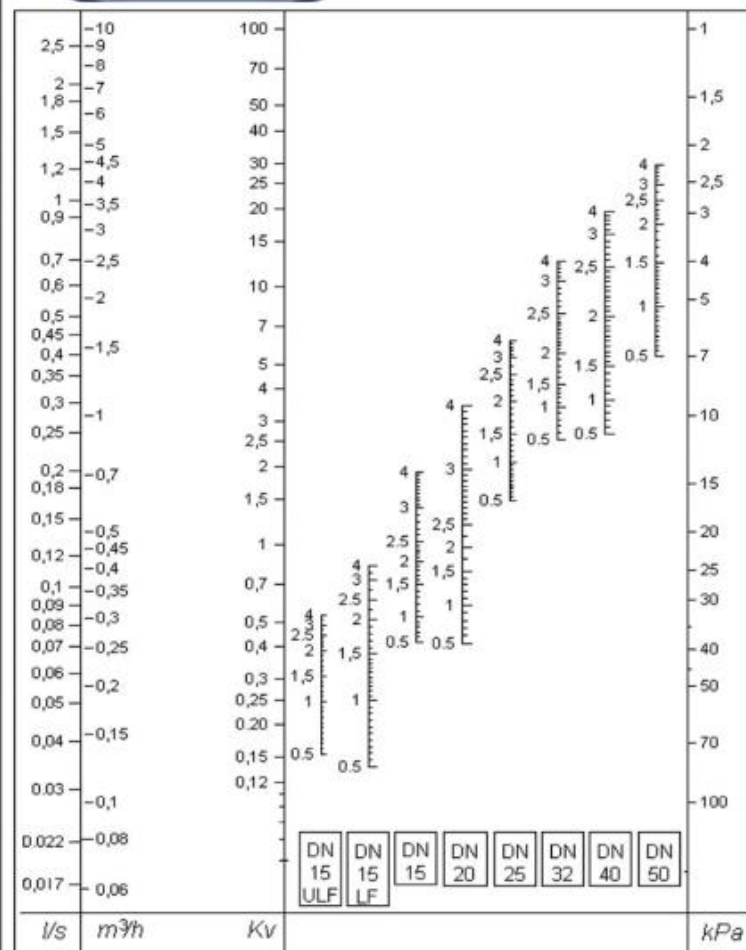


## Installation

To obtain the best performances valve must be installed on a pipe with its same nominal size preceded and followed by straight pipe lengths as per figure indications.

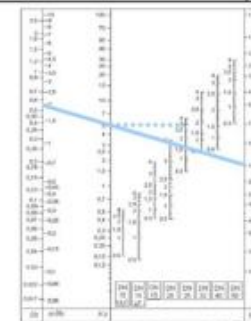


## Presetting

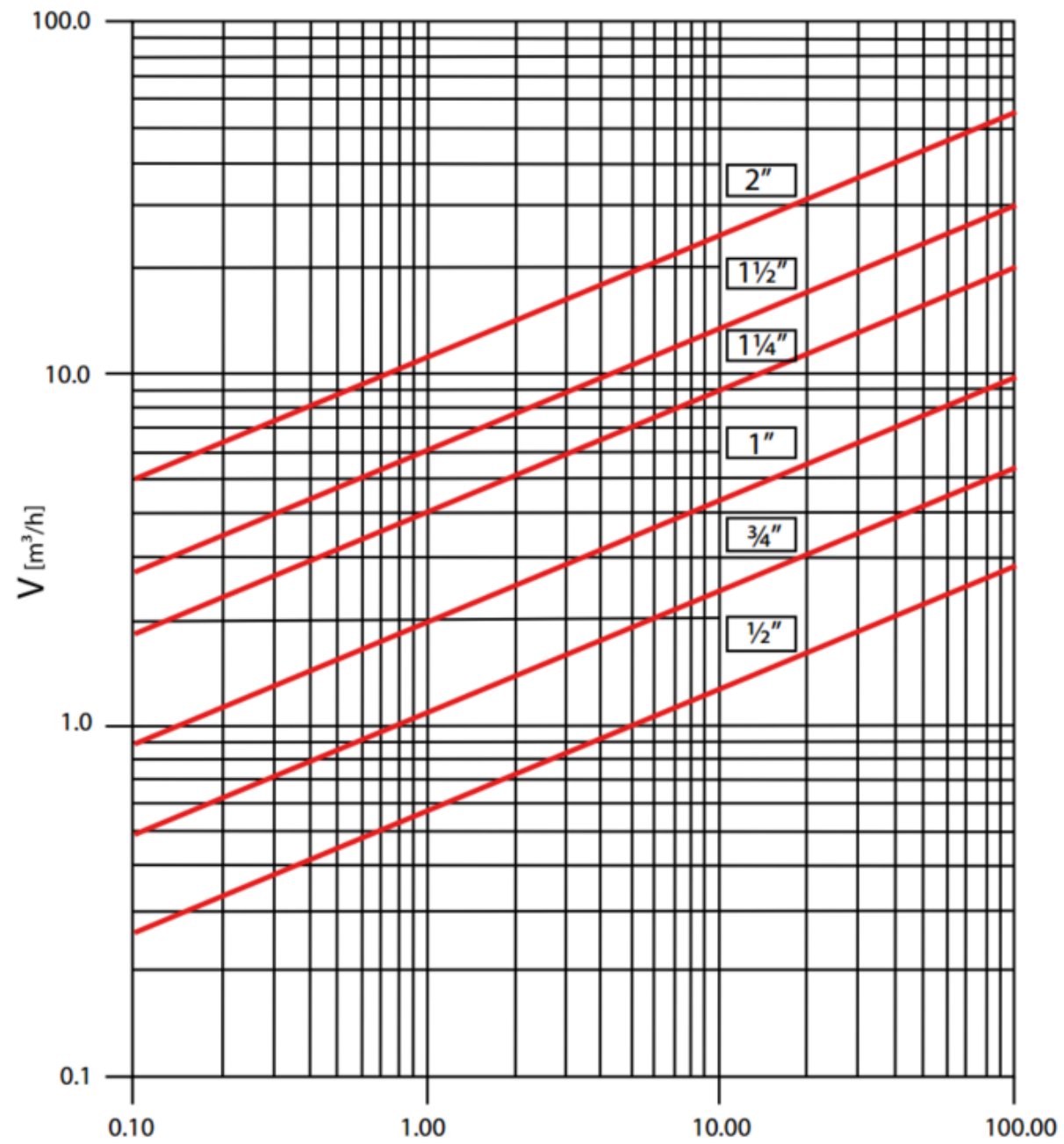


By using diagram above is possible to esteem the presetting position of the valve with given design flowrate and headloss:

- 1) draw a straight line joining design flowrate and design headloss;
- 2) determine design  $K_v$  value as intersection of drawn line and  $K_v$  axis;
- 3) draw a straight horizontal line from intersection previously identified and the specific valve DN Axis;
- 4) intersection determines handwheel position to use for presetting.



In the example for a design flowrate of 2m<sup>3</sup>/h and design  $\Delta p$  15kPa handwheel position of 2.9 is determined for a DN25 valve



Flow Rates					
DN	In	KV <sub>sig</sub>	Kv	HLF	K
15	1/2"	2.8	1.92	2.14	29.3
20	3/4"	5.33	3.66	2.12	26.5
25	1"	9.72	6.25	2.42	22.8
32	1 1/4"	20.25	12.64	2.57	16.9
40	1 1/2"	30.23	19.65	2.37	12.8
50	2"	55.07	29.59	3.46	14.6

$$\text{Flow rate } V = \frac{Kv_{sig} \sqrt{\Delta p_{sig}}}{36} \text{ [L/sek]} \quad V = 0,1 \cdot Kv_{sig} \sqrt{\Delta p_{sig}} \text{ [m}^3\text{/h]}$$

$$\text{Pressure loss in fully open position } \Delta p = HLF \cdot \Delta p_{sig} \text{ [KPa]}$$

$$\text{Pressure loss in fully open position } \Delta p = \frac{v^2}{2 \cdot g} \text{ [mH}_2\text{O]}$$

KV<sub>sig</sub> [m<sup>3</sup>/h]

Kv [m<sup>3</sup>/h]

HLF

K

v [m/sek]

g [9,81m/sek<sup>2</sup>]

Δp<sub>sig</sub> [KPa]

Flow coefficient through the pressure test points of the valve

Flow coefficient through the valve

Head loss factor

Head loss coefficient

Flow velocity

Gravitational constant

Differential pressure through the pressure test points of the valve

Settings						
Handwheel Position	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
0.5	0.41	0.41	1.47	2.56	2.72	5.36
0.7	0.41	0.47	1.73	2.92	3.12	6.54
1.0	0.53	0.58	2.09	3.42	3.69	8.35
1.3	0.62	0.78	2.44	3.88	4.29	10.54
1.5	0.70	0.97	2.70	4.18	4.82	12.37
1.7	0.78	1.08	3.01	4.54	5.71	14.39
2.0	0.86	1.20	3.57	5.42	7.78	17.45
2.3	0.95	1.40	4.18	6.76	10.45	20.20
2.5	1.02	1.72	4.57	7.92	12.29	21.73
2.7	1.14	1.94	4.87	9.05	14.13	23.06
3.0	1.38	2.13	5.27	10.56	16.34	24.84
3.3	1.63	2.54	5.61	11.58	17.88	26.44
3.5	1.76	2.93	5.74	12.06	18.63	27.44
3.7	1.83	3.24	5.88	12.40	19.17	28.42
4.0	1.89	3.51	6.14	12.54	19.59	29.72
4.4	1.92	3.67	6.24	--	--	--

Flow Rates		
DN15 / ½"		KV <sub>sig</sub> = 2.8 m <sup>3</sup> /h
Flow rate		Signal
[l/s]	[m <sup>3</sup> /h]	[kPa]
0.01	0.04	0.02
0.02	0.07	0.07
0.03	0.11	0.15
0.04	0.14	0.26
0.05	0.18	0.41
0.06	0.22	0.60
0.07	0.25	0.81
0.08	0.29	1.06
0.09	0.32	1.34
0.10	0.36	1.65
0.20	0.72	6.61
0.30	1.08	14.88
0.40	1.44	26.45
0.50	1.80	41.33
0.60	2.16	59.51
0.70	2.52	81.00
0.80	2.88	105.80
0.90	3.24	133.90
1.00	3.60	165.31
2.00	7.20	661.22
3.00	10.80	1487.76

Flow Rates		
DN20 / ¾"		KV <sub>sig</sub> = 5.33 m <sup>3</sup> /h
Flow rate		Signal
[l/s]	[m <sup>3</sup> /h]	[kPa]
0.01	0.04	0.00
0.02	0.07	0.02
0.03	0.11	0.04
0.04	0.14	0.07
0.05	0.18	0.11
0.06	0.22	0.16
0.07	0.25	0.22
0.08	0.29	0.29
0.09	0.32	0.37
0.10	0.36	0.46
0.20	0.72	1.82
0.30	1.08	4.11
0.40	1.44	7.30
0.50	1.80	11.40
0.60	2.16	16.42
0.70	2.52	22.35
0.80	2.88	29.20
0.90	3.24	36.95
1.00	3.60	45.62
2.00	7.20	182.48
3.00	10.80	410.58
4.00	14.40	729.91
5.00	18.00	1140.49
6.00	21.60	1642.30

Flow Rates		
DN25 / 1"		KV <sub>sig</sub> = 9.72 m <sup>3</sup> /h
Flow rate		Signal
[l/s]	[m <sup>3</sup> /h]	[kPa]
0.01	0.04	0.00
0.02	0.07	0.01
0.03	0.11	0.01
0.04	0.14	0.02
0.05	0.18	0.03
0.06	0.22	0.05
0.07	0.25	0.07
0.08	0.29	0.09
0.09	0.32	0.11
0.10	0.36	0.14
0.20	0.72	0.55
0.30	1.08	1.23
0.40	1.44	2.19
0.50	1.80	3.43
0.60	2.16	4.94
0.70	2.52	6.72
0.80	2.88	8.78
0.90	3.24	11.11
1.00	3.60	13.72
2.00	7.20	54.87
3.00	10.80	123.46
4.00	14.40	219.48
5.00	18.00	342.94
6.00	21.60	493.83
7.00	25.20	672.15
8.00	28.80	877.91
9.00	32.40	1111.11
10.00	36.00	1371.74

Flow Rates		
DN32 / 1¼"		KV <sub>sig</sub> = 20.25 m³/h
Flow rate		Signal
[l/s]	[m³/h]	[kPa]
0.01	0.04	0.00
0.02	0.07	0.00
0.03	0.11	0.00
0.04	0.14	0.01
0.05	0.18	0.01
0.06	0.22	0.01
0.07	0.25	0.02
0.08	0.29	0.02
0.09	0.32	0.03
0.10	0.36	0.03
0.20	0.72	0.13
0.30	1.08	0.28
0.40	1.44	0.51
0.50	1.80	0.79
0.60	2.16	1.14
0.70	2.52	1.55
0.80	2.88	2.02
0.90	3.24	2.56
1.00	3.60	3.16
2.00	7.20	12.64
3.00	10.80	28.44
4.00	14.40	50.57
5.00	18.00	79.01
6.00	21.60	113.78
7.00	25.20	154.86
8.00	28.80	202.27
9.00	32.40	256.00
10.00	36.00	316.05
20.00	72.00	1264.20

Flow Rates		
DN40 / 1½"		KV <sub>sig</sub> = 30.23 m³/h
Flow rate		Signal
[l/s]	[m³/h]	[kPa]
0.01	0.04	0.00
0.02	0.07	0.00
0.03	0.11	0.00
0.04	0.14	0.00
0.05	0.18	0.00
0.06	0.22	0.01
0.07	0.25	0.01
0.08	0.29	0.01
0.09	0.32	0.01
0.10	0.36	0.01
0.20	0.72	0.06
0.30	1.08	0.13
0.40	1.44	0.23
0.50	1.80	0.35
0.60	2.16	0.51
0.70	2.52	0.69
0.80	2.88	0.91
0.90	3.24	1.15
1.00	3.60	1.42
2.00	7.20	5.67
3.00	10.80	12.76
4.00	14.40	22.69
5.00	18.00	35.45
6.00	21.60	51.05
7.00	25.20	69.49
8.00	28.80	90.76
9.00	32.40	114.87
10.00	36.00	141.82
20.00	72.00	567.27
30.00	108.00	1276.35
40.00	144.00	2269.07

Flow Rates		
DN50 / 2"		KV <sub>sig</sub> = 55.07 m³/h
Flow rate		Signal
[l/s]	[m³/h]	[kPa]
0.01	0.04	0.00
0.02	0.07	0.00
0.03	0.11	0.00
0.04	0.14	0.00
0.05	0.18	0.00
0.06	0.22	0.00
0.07	0.25	0.00
0.08	0.29	0.00
0.09	0.32	0.00
0.10	0.36	0.00
0.20	0.72	0.02
0.30	1.08	0.04
0.40	1.44	0.07
0.50	1.80	0.11
0.60	2.16	0.15
0.70	2.52	0.21
0.80	2.88	0.27
0.90	3.24	0.35
1.00	3.60	0.43
2.00	7.20	1.71
3.00	10.80	3.85
4.00	14.40	6.84
5.00	18.00	10.68
6.00	21.60	15.38
7.00	25.20	20.94
8.00	28.80	27.35
9.00	32.40	34.61
10.00	36.00	42.73
20.00	72.00	170.93
30.00	108.00	384.60
40.00	144.00	683.74
50.00	180.00	1068.34
60.00	216.00	1538.41
70.00	252.00	2093.95