Product Data

HydroCom V

Double regulating and commissioning valve PN 16, DN 15...32

The HydroCom V is a double regulating and commissioning valve with variable orifice for the static hydronic balancing of pipelines in closed heating and cooling systems.

The HydroCom V consists of a flow optimised Y-pattern body, a valve insert with O-ring sealing and ergonomically designed handwheel with shutoff in less than one turn as well as two HydroPort auxiliary valves. All functions are accessible from the top and include the following:

- Accurate flow regulation
- Reproducible and lockable presetting
- Pipeline shutoff
- Flow measurement connection
- Impulse tube connection
- Draining, filling and bleeding, in front of and/or behind the valve seat

Features

+ Quick shutoff and setting in less than one turn of the handwheel
+ Handwheel with Kv value dial
+ New HydroPort auxiliary valves for easy, quick and safe connection of accessories

Technical data

Nominal sizes	DN 15...32
Versions	Internal threads according to EN 10226
Operating temperature	-20...120 °C
Operating pressure	Max. 16 bar / PN 16
Medium	Heating and cooling water according to VDI 2035 or ÖNORM 5195 Water-glycol mixtures with a max. glycol content of 50 %
Kvs values	DN 15: 2.0 DN 20: 3.7 DN 25: 5.9 DN 32 13.0

Product Details

Functions

Flow Regulation

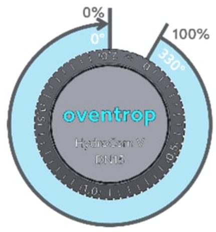
Flow regulation is done by limiting the valve lift and hence the opening between plug and seat. The lift is adjusted by turning the handwheel. Quick setting is facilitated by a short travel of less than one turn from open to fully closed. The plug position is shown as Kv value on the dial of the handwheel so no cross reference tables are required to find the right presetting value.

Presetting

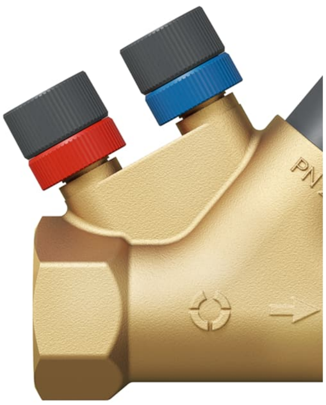
- Reproducible: when the valve is closed, e.g. to shutoff the pipeline, it can only be opened up to the set presetting value
- Blockable: the valve is blocked at the presetting position

Shutoff

Pipeline shutoff is achieved by turning the handwheel clockwise until it stops. From open to fully closed the handwheel travel is a bit less than one full turn.



HydroPort



Every HydroCom V is equipped with two HydroPort auxiliary valves as standard. The HydroPort allows snap on connection of accessories. The HydroPort is opened by turning anticlockwise. A quarter turn is sufficient to measure the pressure, a full turn is sufficient to drain and fill.

DRAINING, FILLING AND BLEEDING

Draining, filling and bleeding is done with the HydroPort adapter (item no. 1069601). When the main valve is in the shut-off position, the system section upstream or downstream of the valve can be selectively filled or drained. If the entire system is to be filled or drained, both HydroPorts can be used with the main valve open to increase the capacity. One HydroPort drain adapter is required per HydroPort auxiliary valve.

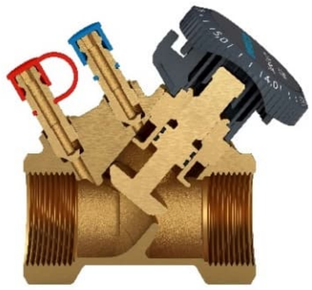
IMPULSE TUBE CONNECTION

The HydroPort enables a quick, safe and secure connection of the impulse tube of a HydroControl D differential pressure regulator. Impulse tubes of other differential pressure regulators can be connected with the HydroPort drain adapter and suitable connection pieces.

CONNECTION OF OV-DMC 3

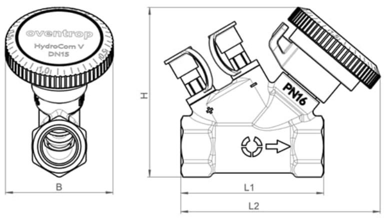
The measuring hoses of an OV-DMC 3 measuring device can be connected directly to the HydroPort.

Design and Materials



Component	Material
Handwheel assembly	Polyamide plastic PA6
Body	Dezincification resistant brass CW602
Bonnet	Dezincification resistant brass CW602
Spindle and plug	Dezincification resistant brass CW602
Spindle sealing	EPDM O-ring
HydroPort valve	Dezincification resistant brass CW602
HydroPort sealing	EPDM O-ring
Protection caps	TPE

Dimensions



DN	Connection	B [mm]	L1 [mm]	L2 [mm]	H [mm]	Weight [kg]
15	Rp ½	53	71	99	84	0.40
20	Rp ¾	53	74	96	86	0.42
25	Rp 1	53	82	101	98	0.62
32	Rp 1 ¼	53	104	113	110	1.05

Selection

Item Numbers

DN	Connection size	Kvs	Item no.
15	Rp ½	2.0	1062704
20	Rp ¾	3.7	1062706
25	Rp 1	5.9	1062708
32	Rp 1 ¼	13.0	1062710

Accessories

Thermal insulation shell

Suitable for	Item-No.
DN 15	1069660
DN 20	1069661
DN 25	1069662
DN 32	1069663

HydroPort adapter

Suitable for	Item-No.
All nominal sizes	1069601

Sizing

This data sheet offers you various options to size your HydroCom V:

- Use the table below and the alignment chart on the next page for a quick sizing across all nominal sizes.
- Use the flow charts on the following pages for an accurate determination of the presetting value.
- At the end of the data sheet you will find information on the exact Kv value calculation taking into account the medium temperature. Furthermore, you will find information on the approximate calculation of corrected flow values when using glycol mixtures.

Flow at various pressure loss values

The dial on the handwheel of the HydroCom V is also the Kv value of the valve at this position. Therefore, it is easy to set the HydroCom V: as soon as you have determined the Kv value you also have the setting position of the valve. That is valid for all nominal sizes: all HydroCom V have a Kv value of 2.0 at handwheel setting 2.

The below table lists the mass flow of water in kg/h for various Kv and pressure loss values. The value for density was set at 1,000 kg/m³ so that the values are identical for mass flow and volume flow.

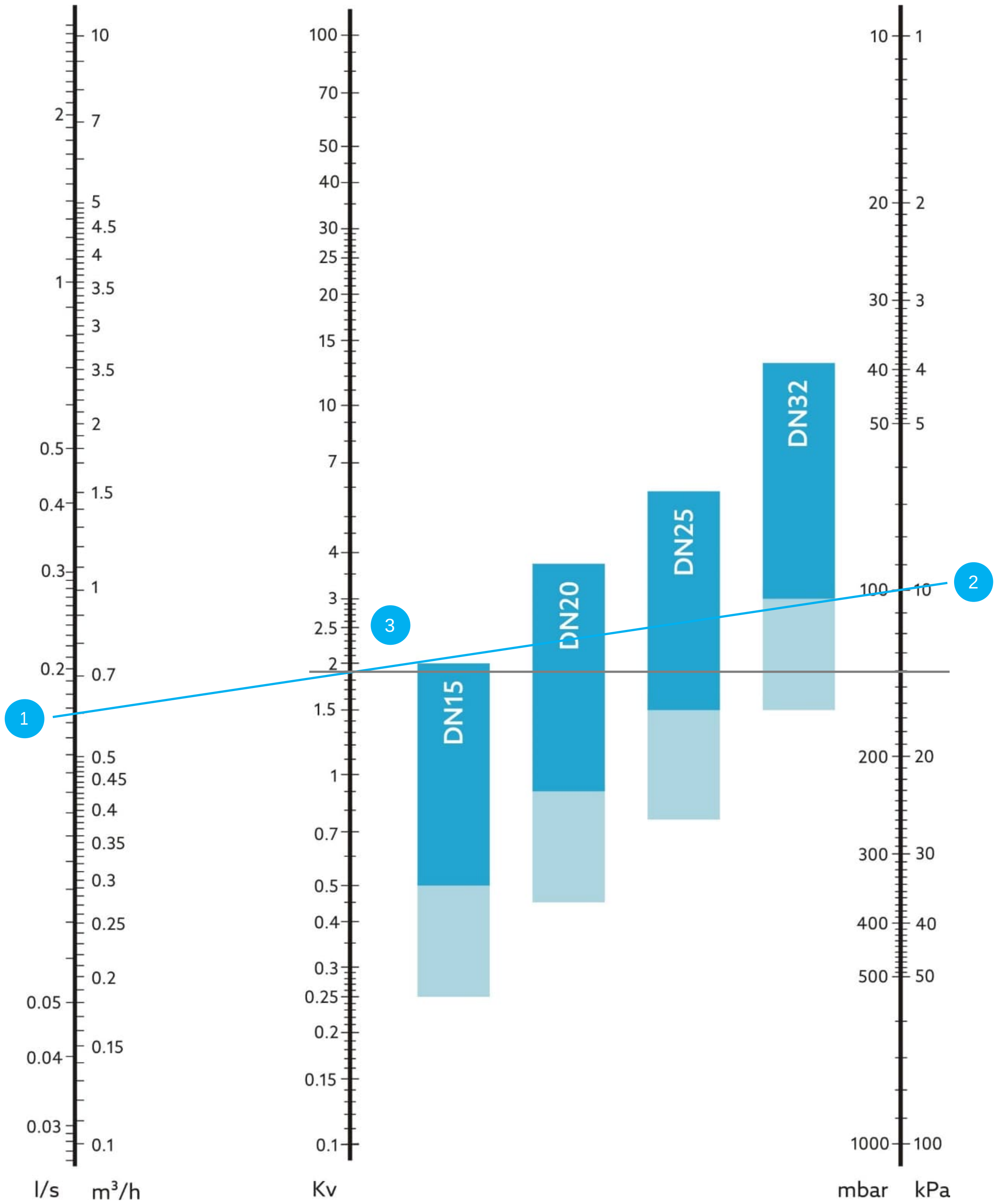
Setting (=Kv value)	Mass flow in kg/h at a pressure loss of		
	8 kPa	**10** kPa	**12** kPa
0.1	28	32	35
0.2	57	63	69
0.3	85	95	104
0.4	113	126	139
0.5	141	158	173
0.6	170	190	208
0.7	198	221	242
0.8	226	253	277
0.9	255	285	312
1.0	283	316	346
1.2	339	379	416
1.3	368	411	450
1.4	396	443	485
1.5	424	474	520
1.6	453	506	554
1.7	481	538	589
1.8	509	569	624
1.9	537	601	658
2.0	566	632	693
2.1	594	664	727

Setting (=Kv value)	Mass flow in kg/h at a pressure loss of		
	8 kPa	**10** kPa	**12** kPa
2.2	622	696	762
2.3	651	727	797
2.4	679	759	831
2.5	707	791	866
3.0	849	949	1,039
3.5	990	1,107	1,212
4.0	1,131	1,265	1,386
4.5	1,273	1,423	1,559
5.0	1,414	1,581	1,732
5.5	1,556	1,739	1,905
6.0	1,697	1,897	2,078
6.5	1,838	2,055	2,252
7.0	1,980	2,214	2,425
7.5	2,121	2,372	2,598
8.0	2,263	2,530	2,771
8.5	2,404	2,688	2,944
9.0	2,546	2,846	3,118
9.5	2,687	3,004	3,291
10.0	2,828	3,162	3,464
11.0	3,111	3,479	3,811

Alignment Chart

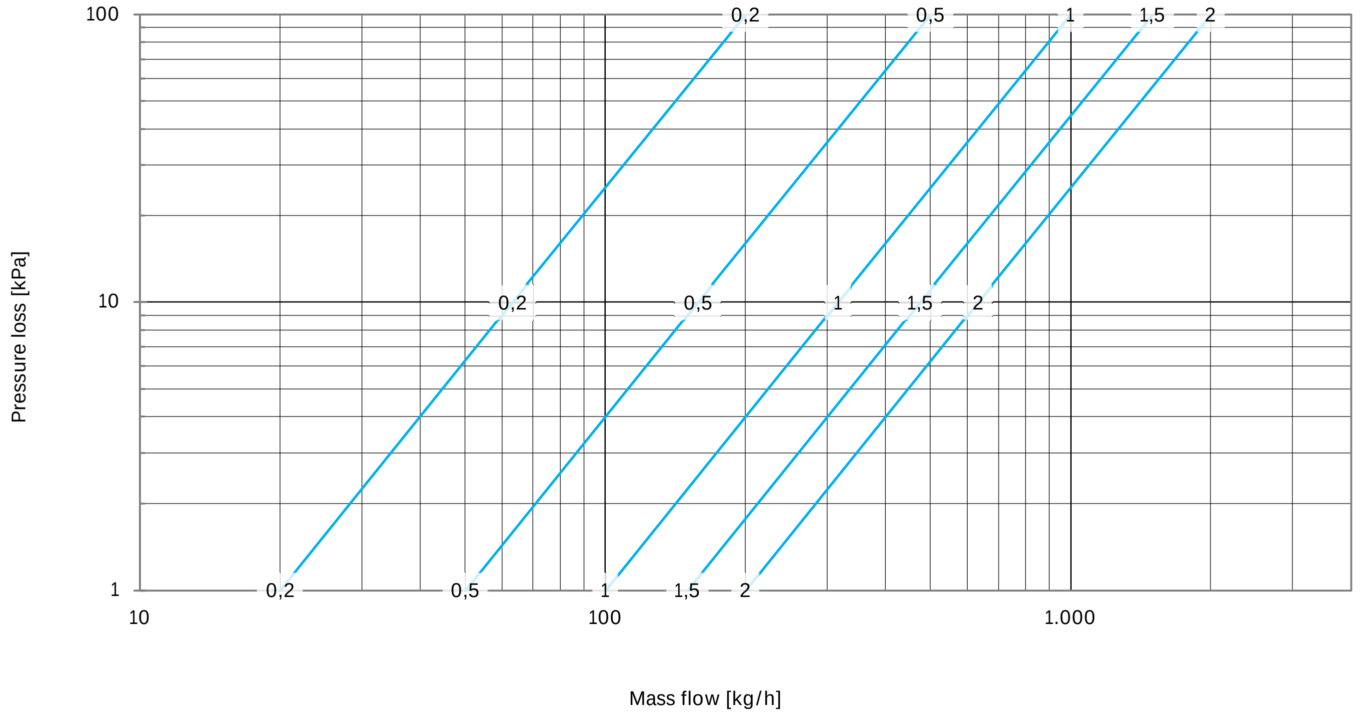
The alignment chart allows you to determine the Kv value and thus the presetting of the Hydrocom V. Draw a line and place it so that it crosses the desired flow rate (1) on the left scale and the available differential pressure (2) on the right scale – in the example below it is the blue line that crosses the respective scales at 0.6 m^3/h and 10 kPa. Now you can read off the Kv value (3) and thus the valve presetting from the middle scale, in this case 1.9.

If you draw a line from the Kv value scale to the right (in the example below, the grey line), you will immediately see which nominal sizes come into question for the required flow rate. For a Kv value of 1.9, all nominal sizes are possible in principle. DN 15 to DN 32 seem suitable. Since control and regulating valves are reluctant to operate at the lower end of their capacity, you should preferably use DN 15 or DN 20 in this case and avoid DN 32. In the light blue area, the valve has a lower flow accuracy.



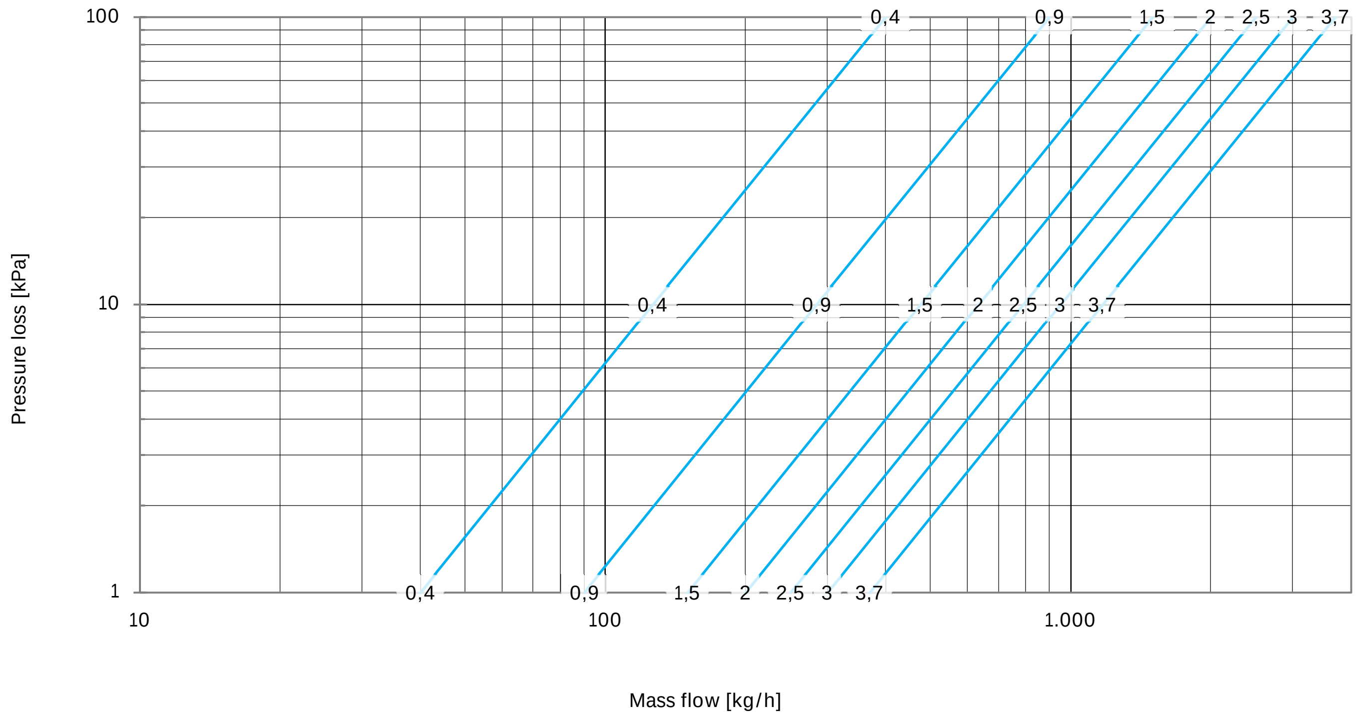
Flow Charts

DN 15



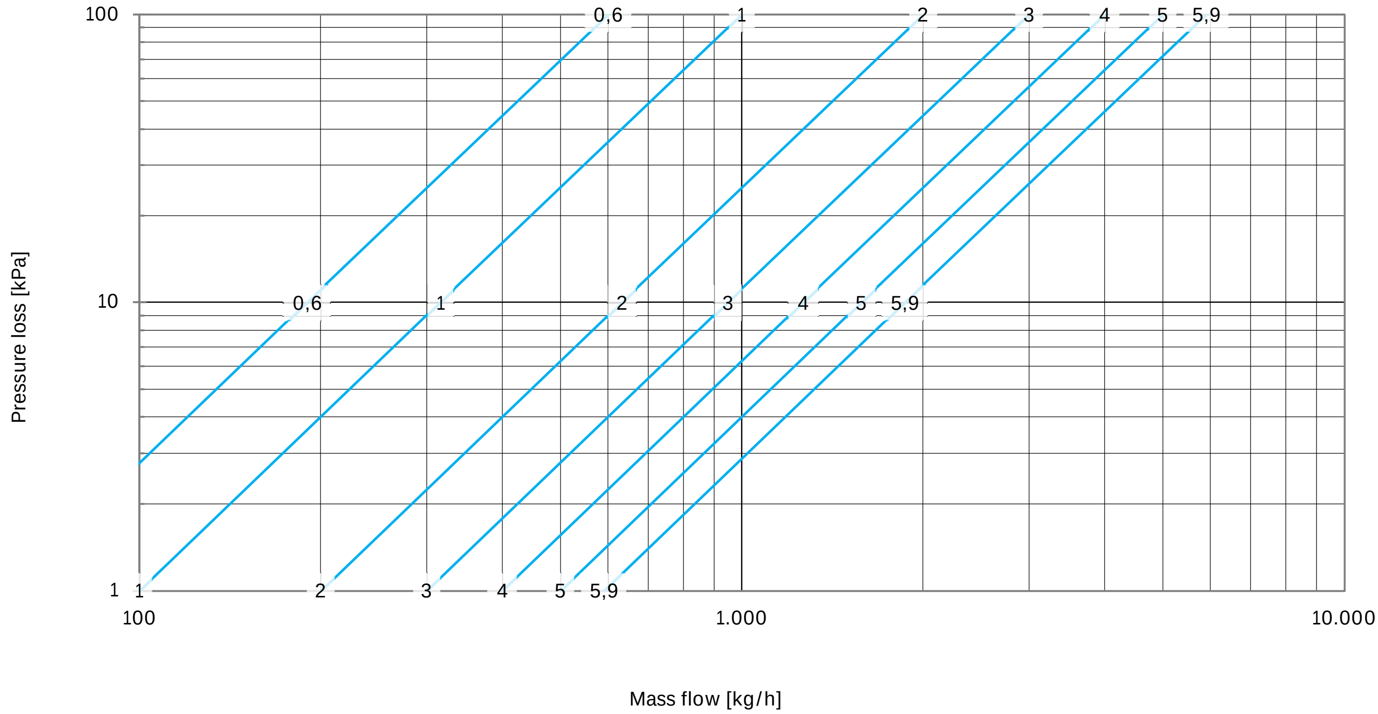
Recommended setting: not below 0.2

DN 20



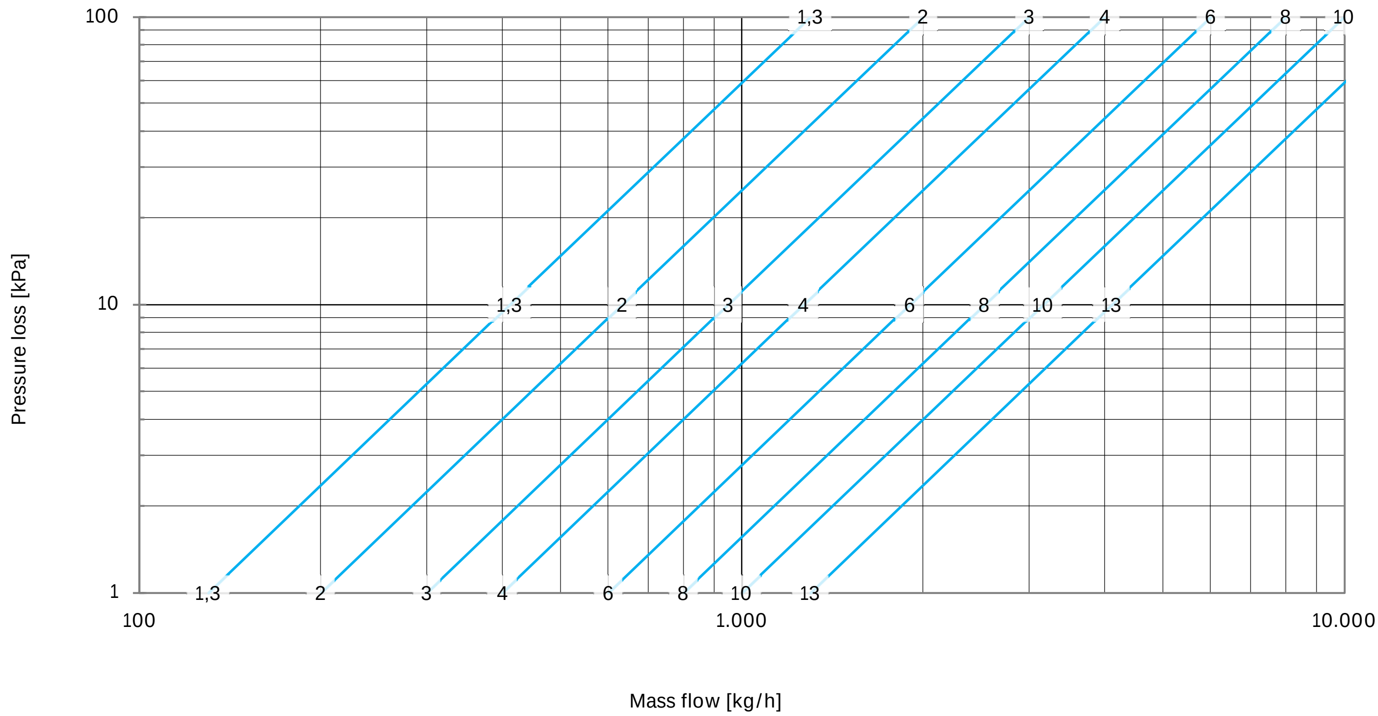
Recommended setting: not below 0.4

DN 25



Recommended setting: not below 0.6

DN 32



Recommended setting: not below 1.3

Kv Value Calculation

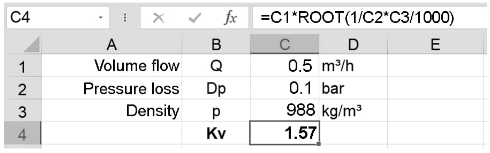
The required Kv value can easily be calculated by using the Kv formula:

$$Kv = Q * \sqrt{\frac{1\,bar}{\Delta p} * \frac{\rho}{1000\,\frac{kg}{m^3}}}$$

- Q is the volume flow in m³/h
- Δp is the pressure loss in bar
- ρ is the density in kg/m³ — water with a temperature of 4 °C has a density of 1,000 kg/m³. At 50 °C water has a density of 988 kg/m³, at 70 °C of 978 kg/m³ and at 100°C of 958 kg/m³

For use with Excel or other spreadsheets, the formula is:

=Q*ROOT((1/DP)*(p/1000))



C4		=C1*ROOT(1/C2*C3/1000)		
	A	B	C	D
1	Volume flow	Q	0.5	m³/h
2	Pressure loss	Dp	0.1	bar
3	Density	p	988	kg/m³
4		Kv	1.57	

The objects in semibold cyan are to be replaced by values or cell references. Brackets have been added for easier mapping.

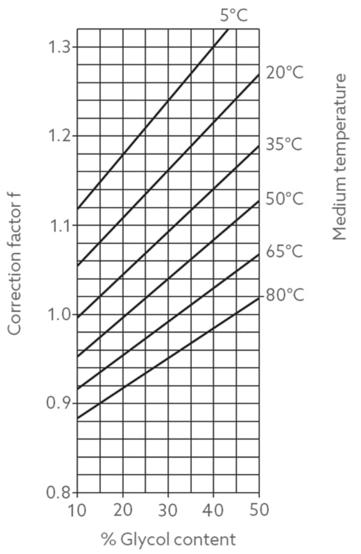
Correction Factors

Additives change the viscosity of water and thus its flow properties. Manufacturers of additives often provide calculation aids that take into account the changed properties of the medium when using their products.

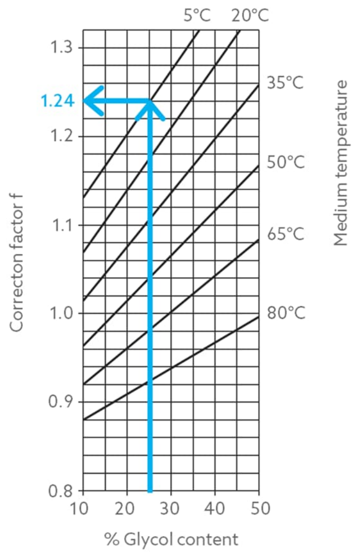
The flow data in this data sheet are based on the properties of water without additives. A quick, but only approximate calculation of the changed flow values when using glycol mixtures is made with the correction factor f, which can be used to recalculate the Kv value or the required pressure loss:

To be calculated	Formula	Spreadsheet formula
Kv value	$kv_{(corr)} = kv \times \frac{1}{\sqrt{f}}$	Kv*(1/(ROOT(f)))
Pressure loss	$\Delta p_{(corr)} = \Delta p \times f$	Dp*f

The correction factor can be read in the following two charts at the intersection of the values for media temperature and glycol content.



Correction factor f for ethylene glycol



Correction factor f for propylene glycol

Example:

A glycol content of 25 % and a medium temperature of 5 °C result in a factor of 1.24 with the following impacts:

- If the original Kv value was 10, it is now reduced to just short of 9
- If the original flow rate was 10 m³/h, it is now reduced to just short of 9 m³/h (at the same differential pressure)
- If the original differential pressure was 10 kPa, it must now be increased to 12.4 kPa to ensure the same flow rate

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