HydroCom V

Double Regulating Valve

DN 15...32

The HydroCom V is a double regulating 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 housing, 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:

Functions

- Flow regulation
- Blockable and lockable pre-setting
- Pipeline shutoff
- Flow measurement connection
- Impulse tube connection
- Draining, filling and venting, before and/or after 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

Product Details

Specifications

Sizes	DN 15 to DN 32
Versions	internal threads to EN 10226
Operating temperature	-20...120 °C
Operating pressure	PN 16
Medium	Heating and chilled system water, for example according to VDI 2035 Water glycol mixtures with max. 50% glycol content
Kvs values	2.0...13.0

Functions

Flow regulation

Flow regulation is done by limiting the valve stroke and hence the opening between plug and seat. The stroke 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 pre-setting value.

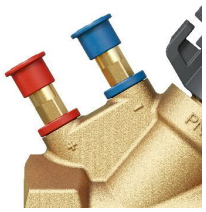
Presetting

- Reproducible: when the valve is closed, e.g. to shutoff the pipeline, it can only be opened up to the pre-setting value
- Blockable: the valve is blocked at the presetting value and can neither be closed nor opened any further

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 anti clockwise with an 8 mm spanner. For pressure (measuring and impulse tube) one quarter of a turn is sufficient. For draining, filling and venting full capacity is reached after one full turn.

DRAINING, FILLING AND VENTING

Draining, filling and venting is done with the HydroPort drain adapter (Item No. 1069601). When the main valve is closed the system part to drain or fill can be selected by using the red connection for the system side (before the main valve seat) and the blue connection for the consumer side (behind of main valve seat). If the complete system should be drained or filled both HydroPort valves can be used to increase the capacity. One HydroPort drain adapter is required per HydroPort auxiliary valve.

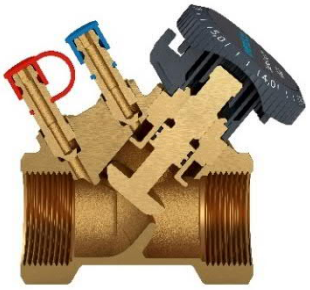
IMPULSE TUBE CONNECTION

The HydroPort also provides a quick, safe and locked connection for the impulse tube of the HydroControl D differential pressure controller. Impulse tubes of other differential pressure controllers can be connected by using the drain adapter and suitable fittings.

CONNECTION OF OV-DMC3

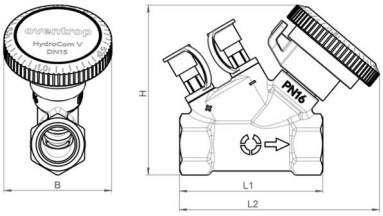
The HydroPort allows snap on connection of the OV-DMC3 measuring computer. The tubes are attached directly to the HydroPort without need of any adapters.

Design and Materials



Item	Material
Handwheel assembly	Polyamide plastic PA6
Housing	Dezincification resistant brass CW602
Insert	Dezincification resistant brass CW602
Stem and plug	Dezincification resistant brass CW602
Stem sealing	EPDM o-ring
HydroPort valve	Dezincification resistant brass CW602
HydroPort sealing	EPDM o-ring
Protection cap	TPE

Dimensions and Item Numbers



DN	Connection	Kvs	B [mm]	L1 [mm]	L2 [mm]	H [mm]	Weight [kg]	Item No.
15	Rp ½	2,0	53	71	99	84	0.40	1062704
20	Rp ¾	3,7	53	74	96	86	0.42	1062706
25	Rp 1	5,9	53	82	101	98	0.62	1062708
32	Rp 1 ¼	13,0	53	104	113	110	1.05	1062710

Accessories

Insulation shells

For heating applications only.
Building material class B2 to DIN 4102 / E to EN 13501-1.
Operating temperature up to 110 °C.

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

HydroPort Adapter

G ¾ external thread.
For connection of accessories to HydroPort auxiliary valves. Also suitable for permanent connection. For example, of an impulse tube of a ΔP controller. Not required to connect the impulse tube of an Oventrop HydroControl D ΔP controller.

Suitable for	Item No.
All sizes	1069601

Sizing

This data sheet offers various options to size the HydroCom V:

- Use the table below and the alignment chart on the next page for a quick estimation over all sizes
- Use the pressure drop charts on the following pages to determine the pre-setting
- Use the instructions at the end of this data sheet to make an exact calculation of the required Kv-value and an approximate calculation of the flow values for 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. Due to this it is easy to set the HydroCom V: as soon as you have the Kv-value you also have the setting value. That is valid for all sizes: all HydroCom V have a Kv-value of 2.0 at handwheel setting 2.

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.

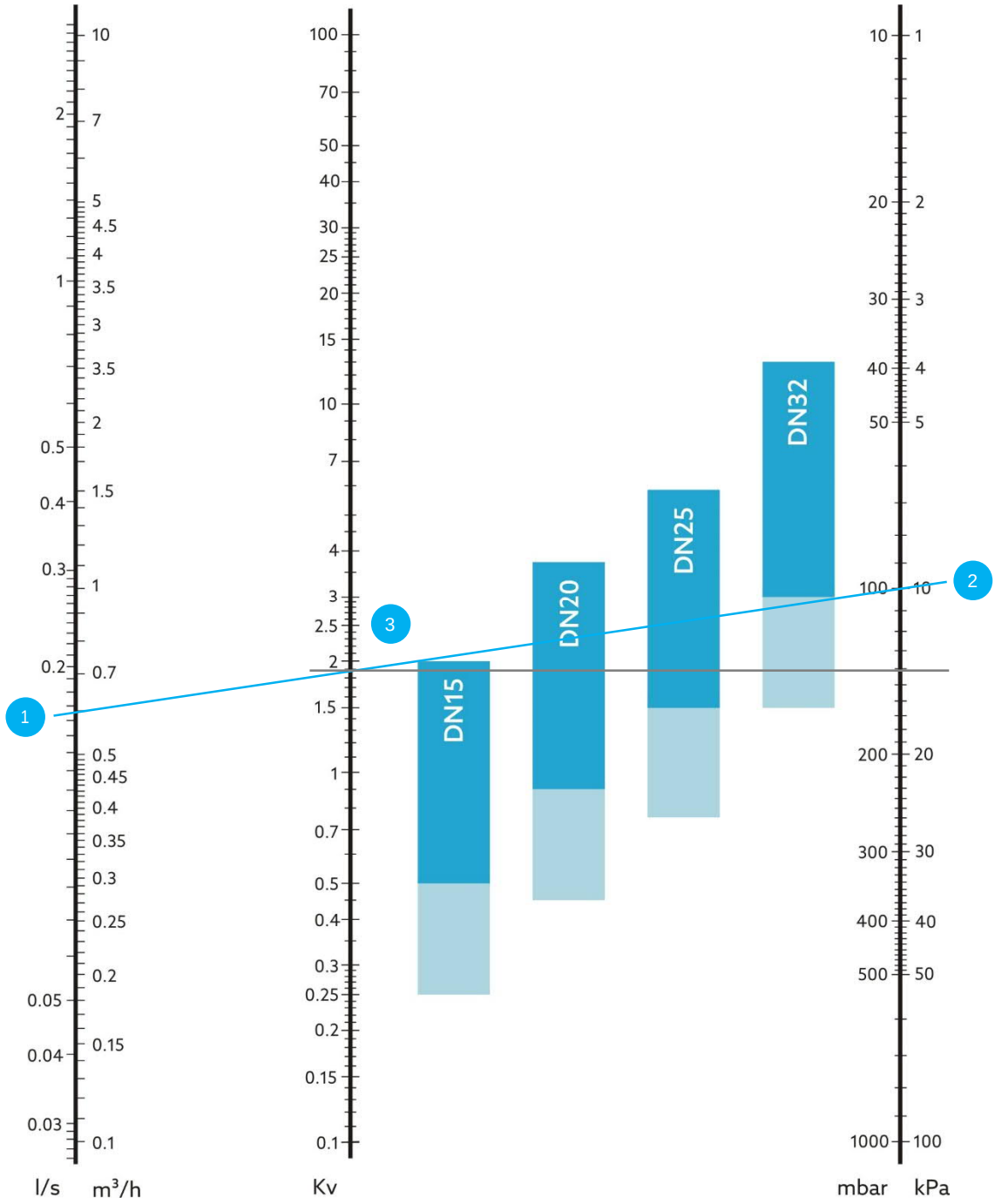
Setting (=Kv value)	Mass flow in kg/h at pressure loss of		
	8 kPa	**10** kPa	**12** kPa
0.1	28	32	35
0.2	57	63	69
0.3	85	95	104
0.4	113	126	139
0.5	141	158	173
0.6	170	190	208
0.7	198	221	242
0.8	226	253	277
0.9	255	285	312
1.0	283	316	346
1.2	339	379	416
1.3	368	411	450
1.4	396	443	485
1.5	424	474	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 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

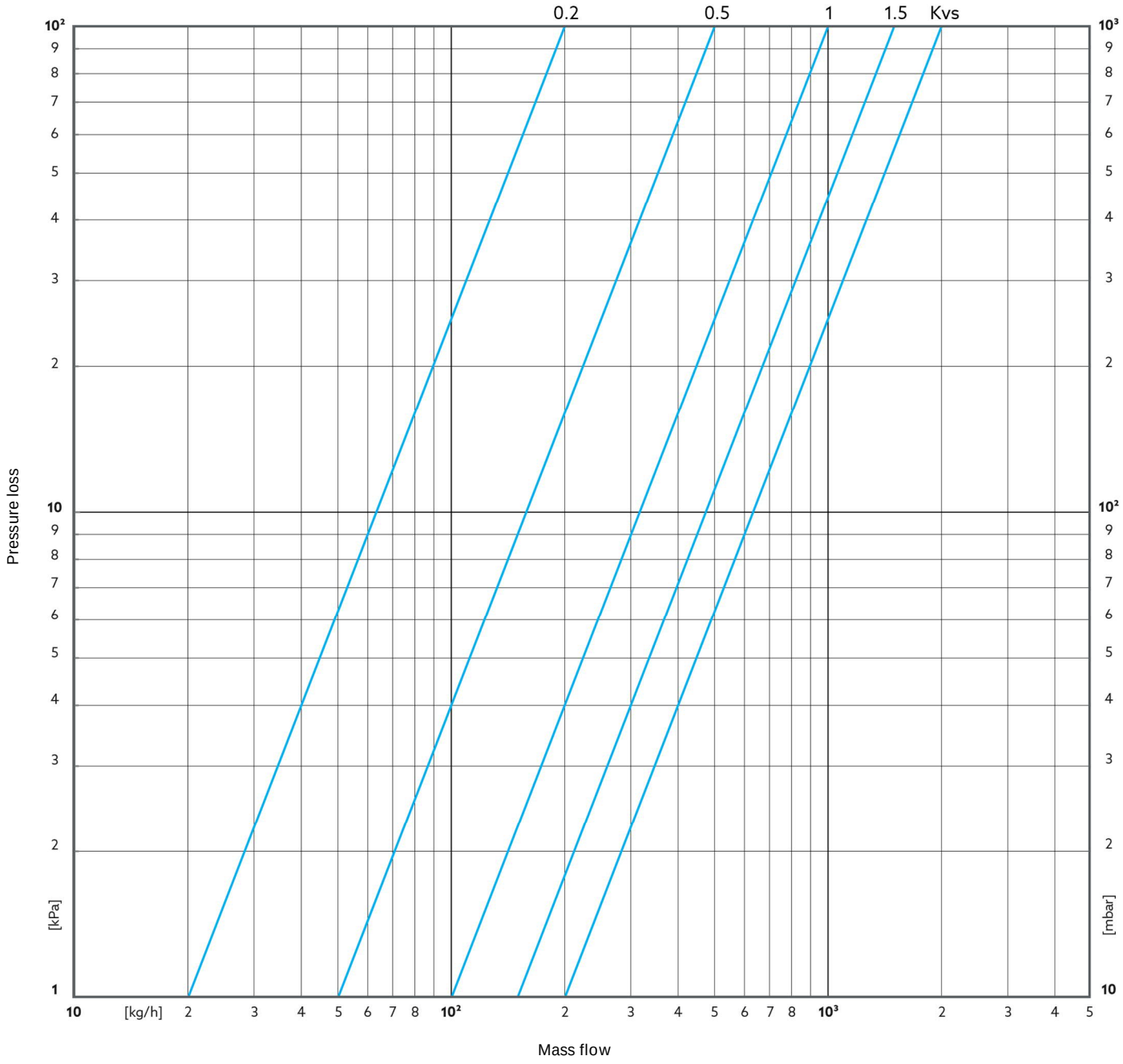
The alignment chart allows you to determine the Kv-value by plotting flow and pressure drop on the chart. Draw a straight line from the desired flow on the left scale (1 – 0.6 m³/h, the blue line in below example) to the available pressure loss on the right scale (2 – 10 kPa). The intersection of the line with the scale in the middle is the Kv-value (3), in below example 1.9.

Now draw a horizontal line to the right (the grey line in below example) to determine which sizes are suitable for the determined Kv-value. DN15 to DN32 seem suitable. However, balancing valves are more precise at the upper end of their capacity. In this case you should select DN15 or DN20 and avoid DN32. The light blue area has a decreased flow accuracy.



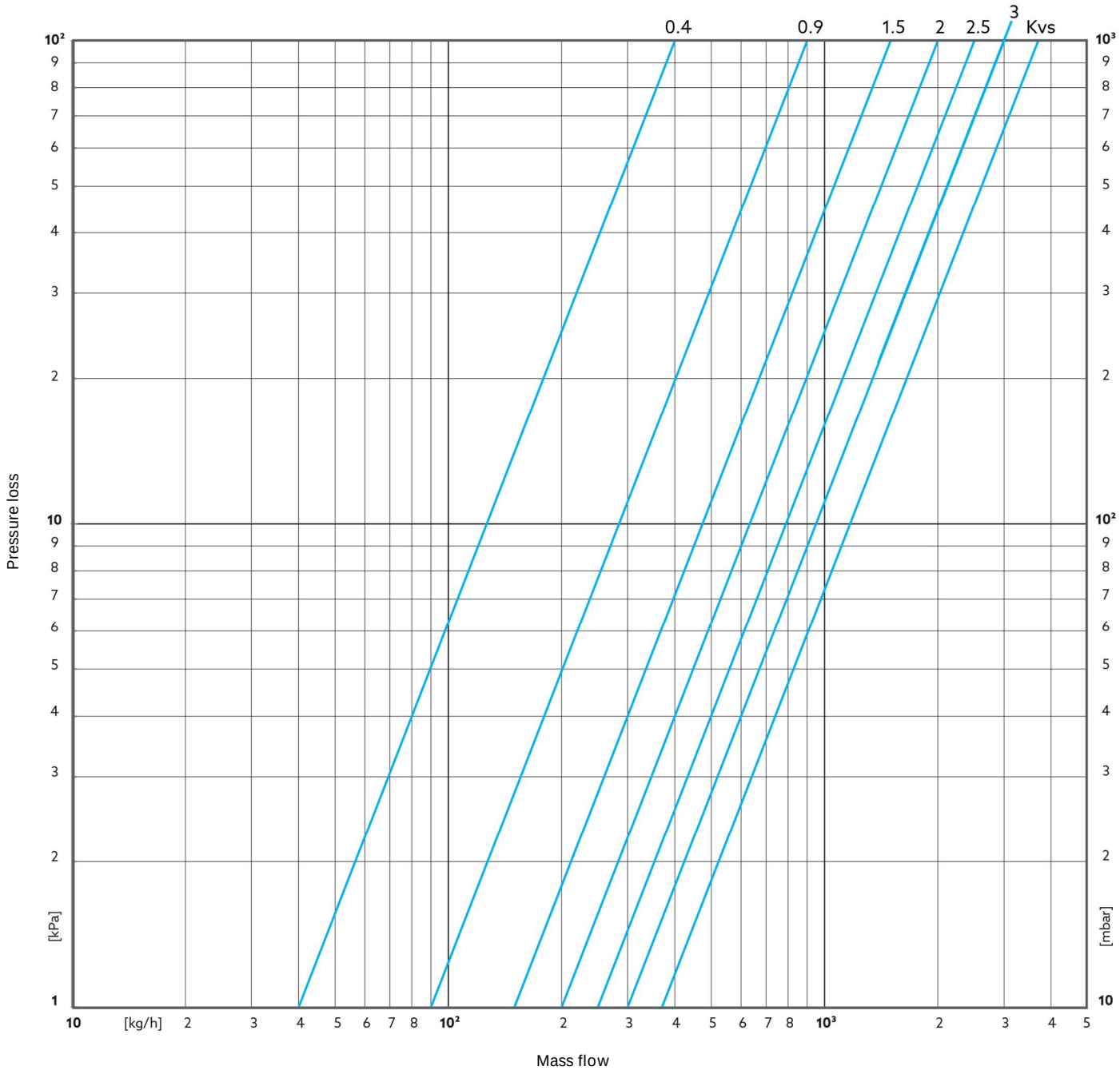
Pressure loss charts

DN15



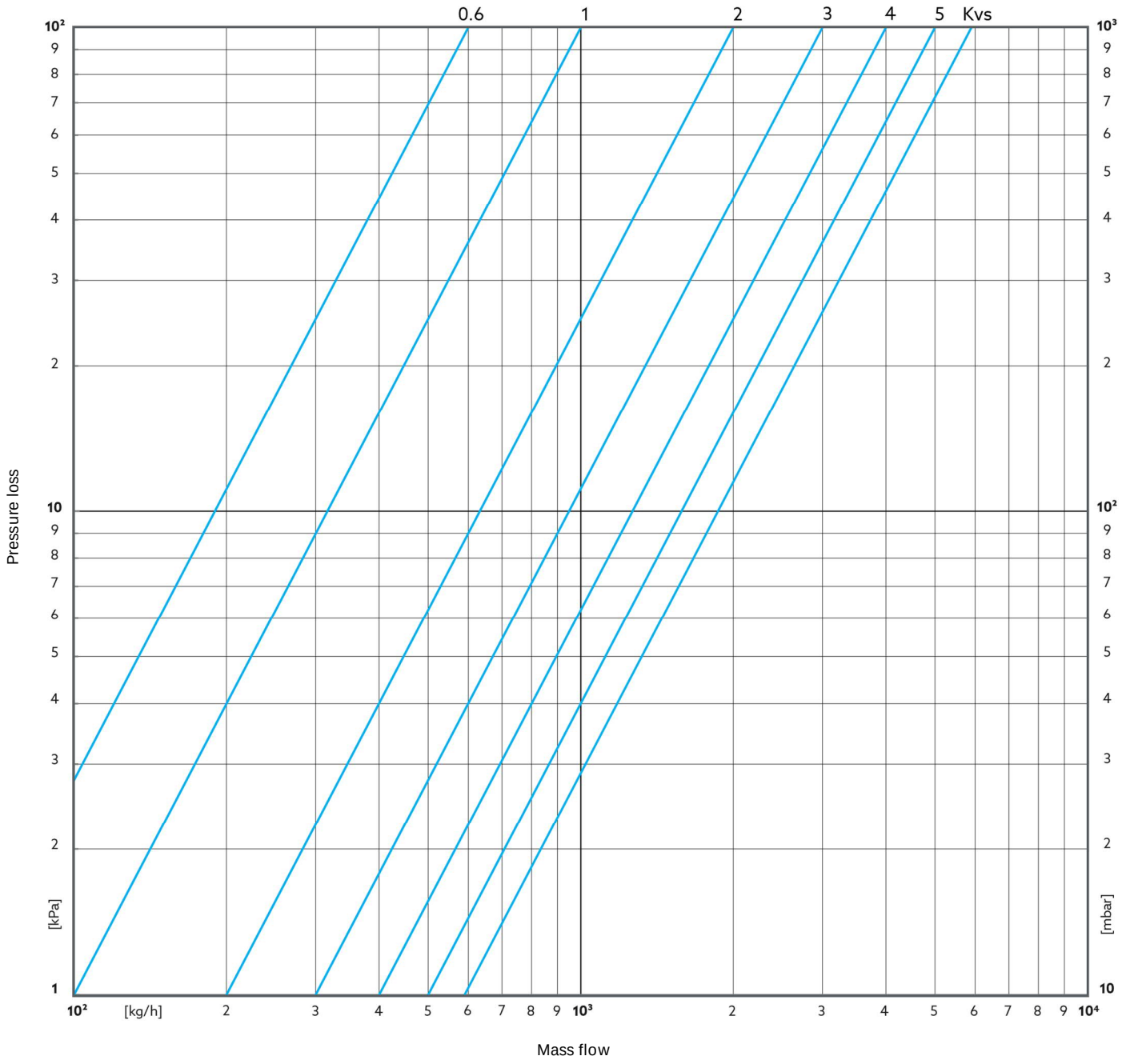
Recommended setting: not below 0.2

DN20



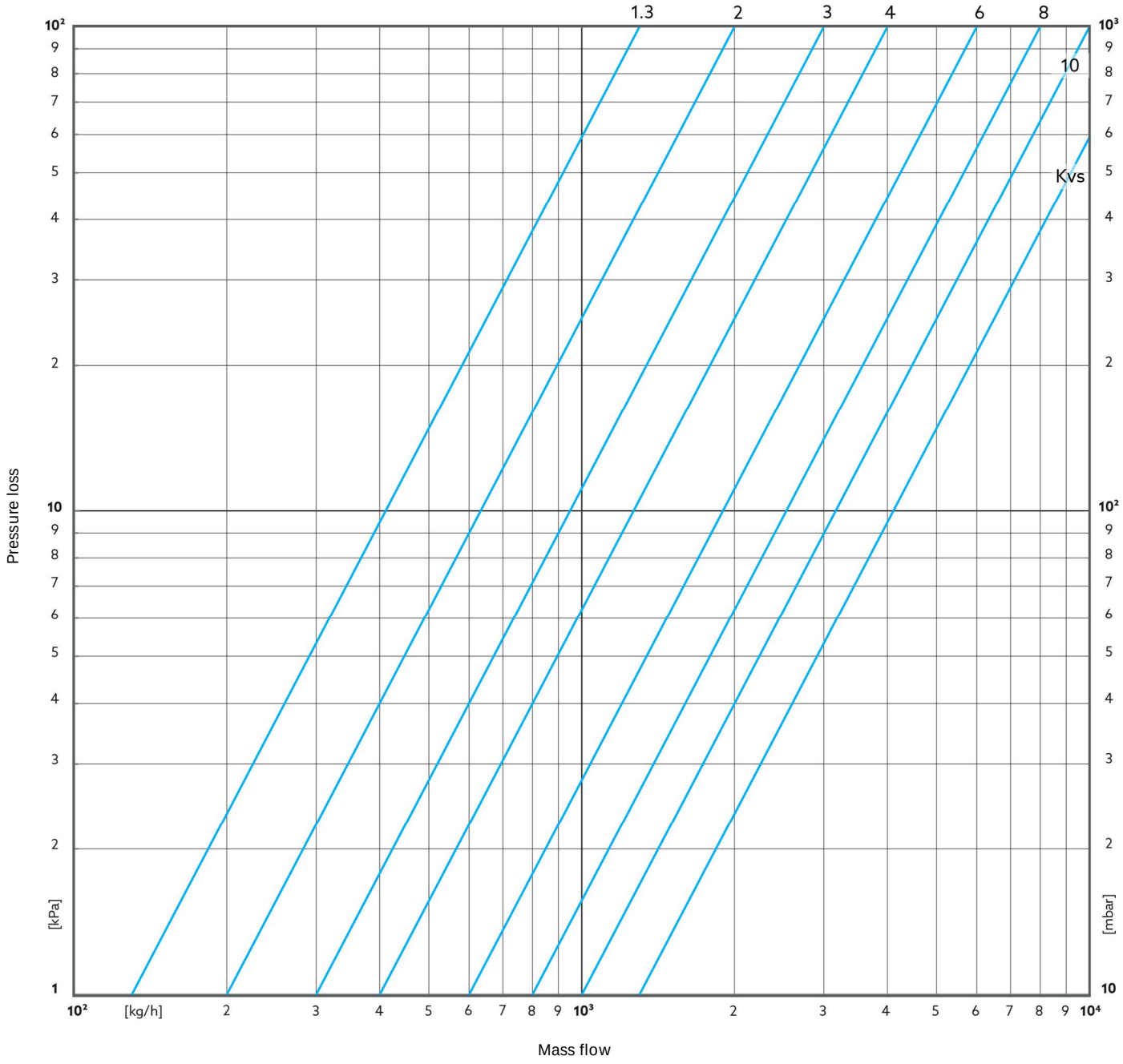
Recommended setting: not below 0.4

DN25



Recommended setting: not below 0.6

DN32



Recommended setting: not below 1.3

Kv-value calculation

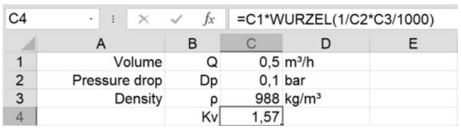
The required Kv-value can easily be calculated by using the Kv formula:

- 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 and 958 kg/m³ at 100°C

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

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

The bold cyan letters are replaced by a cell reference or value. Additional brackets have been added for easier mapping.



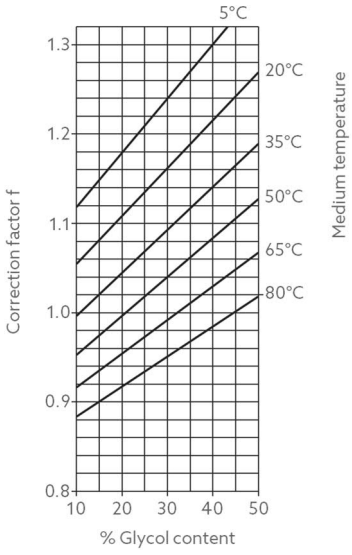
Correction values

As additives, like glycol, change the viscosity of water the flow values are also changed. Suppliers of glycol additives often provide calculation tools for their products as there is no material standard for glycol and the properties of glycol vary from different suppliers.

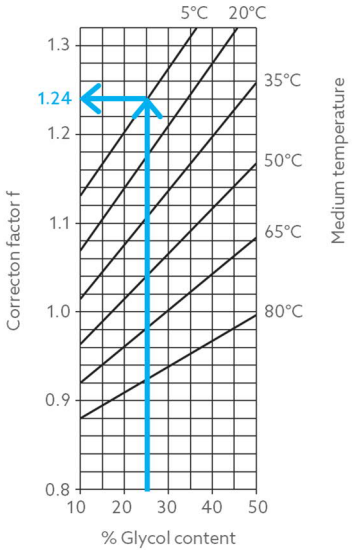
In this data sheet all values and charts are based on the properties of water without additives. A quick way to recalculate flow values is by using the correction factor f which can be applied to recalculate Kv-value or pressure loss:

To recalculate	the formula is	and the spreadsheet formula is
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 taken from below charts by plotting the intersection of medium temperature and glycol content.



Correction factor f for ethylene glycol



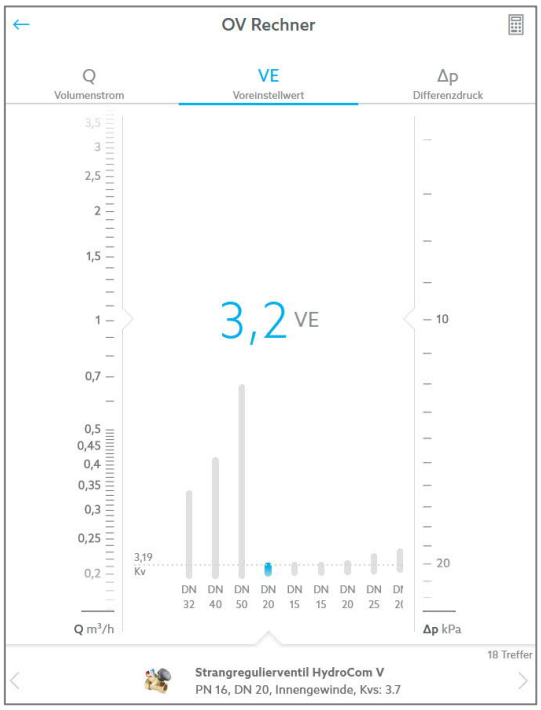
Correction factor f for propylene glycol

Example:

A glycol content of 25% and a medium temperature of 5°C result in a correction factor of 1.24 which has some impact on the flow data:

- If the original Kv-value was 10 it is now reduced to just short of 9
- If the original flow 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

HydroSet



HydroSet is the digital slide ruler for Oventrop regulating valves. HydroSet calculates the Kv value after input of desired flow and available differential pressure. Further the presetting position of the selected valve.

HydroSet works platform independent with all operating systems and is available free of charge from the following site:

hydroset.oventrop.com

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