



# Braukmann V5000, V5010 Kombi-3-plus

Balancing and shut-off valves

## APPLICATION

The hydronic balance is a significant requirement for the efficient operation of a hydronic heating or cooling installation. In an unbalanced system under or over provision of hot water to individual radiators or circuits can occur. Apart from the correct selection of radiator valves, regulation of individual circuits is also necessary and in some cases, such as in DIN 18380, VOB part C, required by national standards.

This requirement is met with Kombi-3-plus Series balancing valves.

The V5000 Kombi-3-plus RED is a fixed orifice measuring valve for the supply with additional functions shut-off, draining and filling.

The V5010 Kombi-3-plus BLUE for the return is a regulating balancing valve with additional functions shut-off, draining and filling.

Together with a V5012 Kombi-DP diaphragm unit the Kombi-3-plus can be upgraded to an automatic balancing valve – even after the system has been taken into commission and under system pressure.



## SPECIAL FEATURES

- V5010 Kombi-3-plus BLUE DN10 to DN40 can be retrofitted with a Kombi-DP diaphragm unit (V5012) – with-out interrupting operation of the system
- High accuracy of presetting because of individual adjustment
- Visible presetting dial with concealed presetting wheel (V5010 Kombi-3-plus BLUE)
- All functions of the Kombi-3-plus valves can be installed through the spindle
- Combination of Kombi-3-plus RED and BLUE allows measuring in the supply and pre-setting in the return – at the same time
- Robust valve body made of dezincification resistant brass
- Available in sizes up to DN80
- Maintenance free spindle with double O-ring sealings
- PTFE-seat sealing

## TECHNICAL DATA

Media	
Medium:	Water or water-glycol mixture, quality to VDI 2035
Pressure values	
Max. operating pressure:	max. 16 bar (232 psi)
Operating temperatures	
DN15 to DN50:	-20 - 130 °C (-4 - 266 °F)
DN65 and DN80:	-20 - 110 °C (-4 - 230 °F)
Specifications	
k <sub>vs</sub> (cv)-values:	see tables and flow diagrams
Note:	To avoid stone deposit and corrosion the composition of the medium should conform with VDI-Guideline 2035
Note:	Additives have to be suitable for EPDM sealings
Note:	System has to be flushed thoroughly before initial operation with all valves fully open
Note:	Any complaints or costs resulting from non-compliance with above rules will not be accepted
Note:	Please contact us if you should have any special requirements or needs

## CONSTRUCTION

Overview	Components	Materials
	<b>1</b> Handwheel, presetting dial and display	Plastic, red or blue and white Metal for DN65 and DN80
	<b>2</b> Valve body DN10 to DN80 with internal threads to DIN EN 10226-1 for threaded pipe	Dezincification-resistant brass
	<b>3</b> Valve body DN10 to DN50 with external threads to ISO 228	Dezincification-resistant brass
	<b>4</b> Connection nut	Brass
<b>Not depicted components:</b>		
	Valve insert	Brass
	Seat sealing	PTFE
	O-rings and soft seals	EPDM

## METHOD OF OPERATION

The Kombi-3-plus Series consists of the following valves:

- V5000 Kombi-3-plus RED fixed orifice measuring valve body
- V5010 Kombi-3-plus BLUE regulating balancing valve

A red and a blue Kombi-3-plus are installed as combination in the supply and return pipeline and can be further upgraded with the following components:

- V5012 Kombi-DP upgrade kit to convert the V5010 Kombi-3-plus BLUE into an automatic balancing valve (also see separate data sheet EN0H-0281GE23)

## INSTALLATION GUIDELINES

### Installation Example

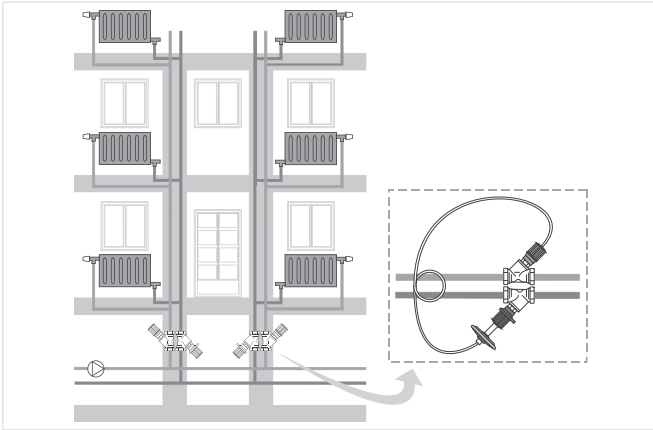


Fig. 1 Kombi-3-plus RED and BLUE in ascending pipeline

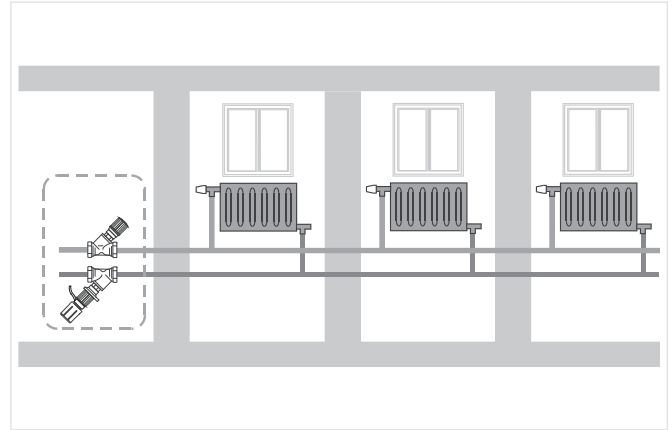


Fig. 3 Kombi-3-Plus - Zone control

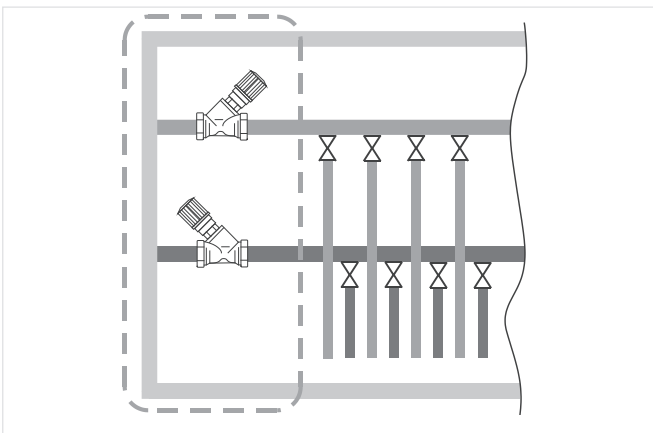


Fig. 2 Kombi-3-Plus - Distribution

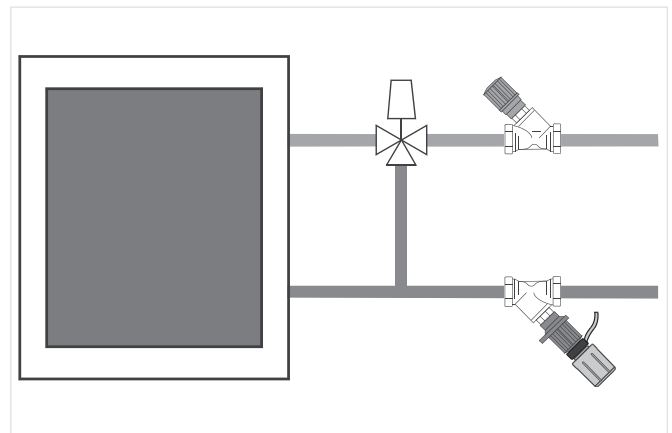


Fig. 4 Kombi-3-Plus - Fan coil

## TECHNICAL CHARACTERISTICS

### Influence of Coolants on Flow Values

The flow through a valve is defined by the  $k_v$ -value. The  $k_v$ -value is the flow  $m$  through a valve in [m<sup>3</sup>/h] at a differential pressure of 1 bar (14.5 psi) and is only valid for fluids with a density of  $\sigma_0 = 1000 \text{ kg/m}^3$ . This condition is met by water at a temperature of 20 °C (68 °F). For fluids with another density the following formula can be applied:

$$k_{v_{\text{Medium}}} = \frac{m}{\sqrt{\Delta p}} \times \frac{\sqrt{\rho_{\text{Medium}}}}{\sqrt{\rho_0}}$$

### Correction factor $f$

When the density  $\sigma$  is expressed in t/m<sup>3</sup> instead of kg/m<sup>3</sup> the correction factor  $f$  is the result. The correction factor  $f$  can be used to re-calculate  $k_v$ -value, pressure drop and flow:

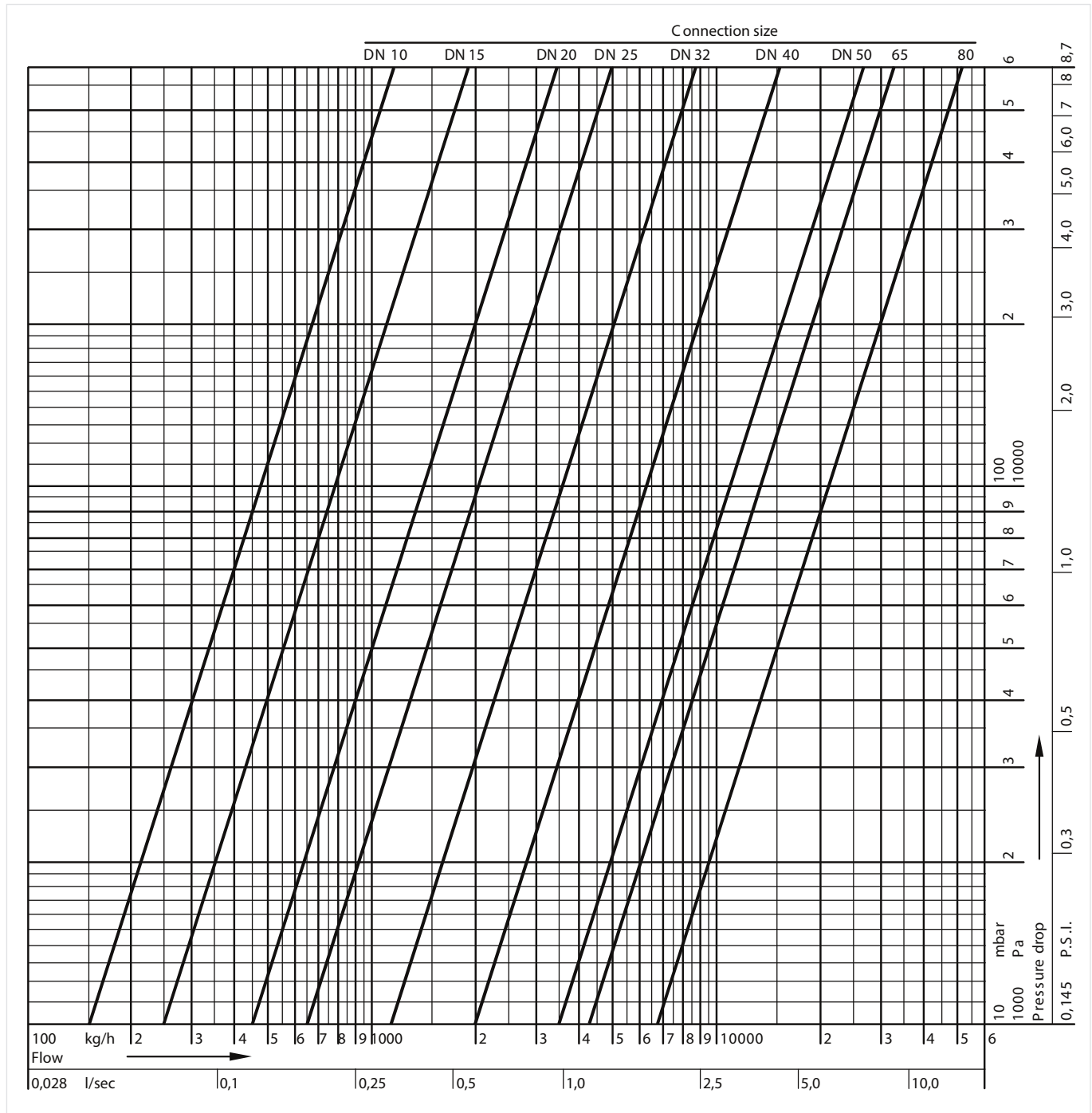
$$k_{v_{\text{Medium}}} = k_{v_0} \times \frac{1}{\sqrt{f}} \quad \Delta p_{\text{Medium}} = \Delta p_0 \times f \quad m_{\text{Medium}} = m_0 \times \frac{1}{\sqrt{f}}$$

Medium	water part	Correction factor $f$					
		5 °C (41 °F)	20 °C (68 °F)	35 °C (95 °F)	50 °C (122 °F)	65 °C (149 °F)	80 °C (176 °F)
Normal water	100 %	1.0	0.998	0.994	0.988	0.981	0.972
Ethylen glycol e.g. Antifrogen N	70 %	1.052	1.047	1.041	1.033	1.024	1.015
	50 %	1.086	1.079	1.070	1.061	1.052	1.042
Propylen glycol e.g. Antifrogen L	70 %	1.035	1.029	1.021	1.012	1.002	0.991
	50 %	1.053	1.044	1.035	1.025	1.014	1.002

**kvs-Values V5000 Kombi-3-plus RED**

Connection sizes:	10	15	20	25	32	40	50	65	80
k <sub>v</sub> -value:	1.5	2.5	4.5	6.5	13.0	20.0	35.0	42.0	68.0
cv-value:	1.76	2.93	5.27	7.61	15.2	23.4	41.0	49.1	80.0

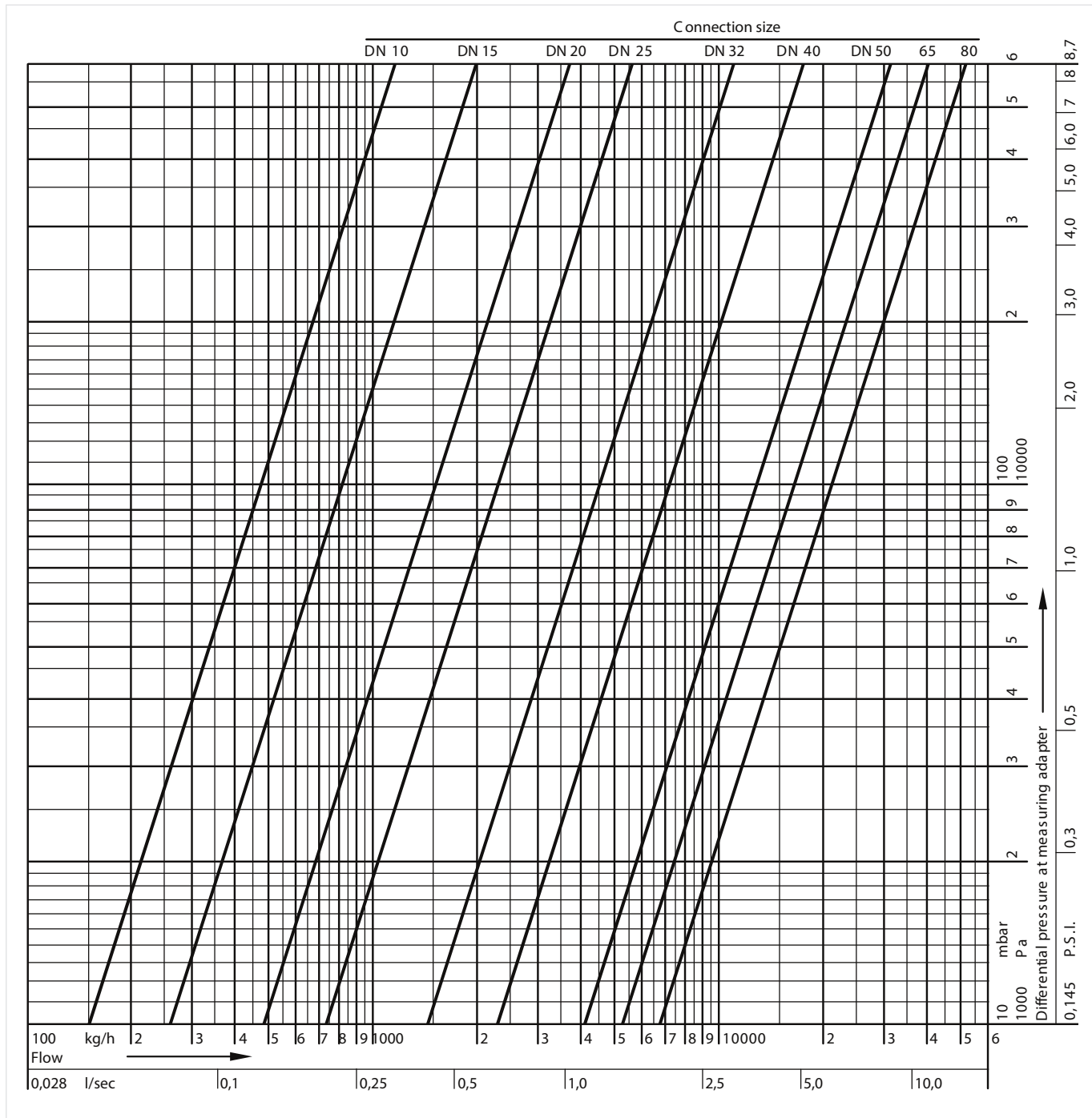
**Flow Data V5000 Kombi-3-plus RED**



**kvs-Values V5000 Kombi-3-plus RED for flow measurement**

Connection sizes:	10	15	20	25	32	40	50	65	80
k <sub>v</sub> -value:	1.55	2.65	4.88	7.3	14.5	23.0	41.0	53.0	68.0
cv-value:	1.81	3.10	5.71	8.54	17.0	26.9	48.0	62.0	80.0

**Flow Data V5000 Kombi-3-plus RED for flow measurement**



**kvs-Values V5010 Kombi-3-plus BLUE, DN10**

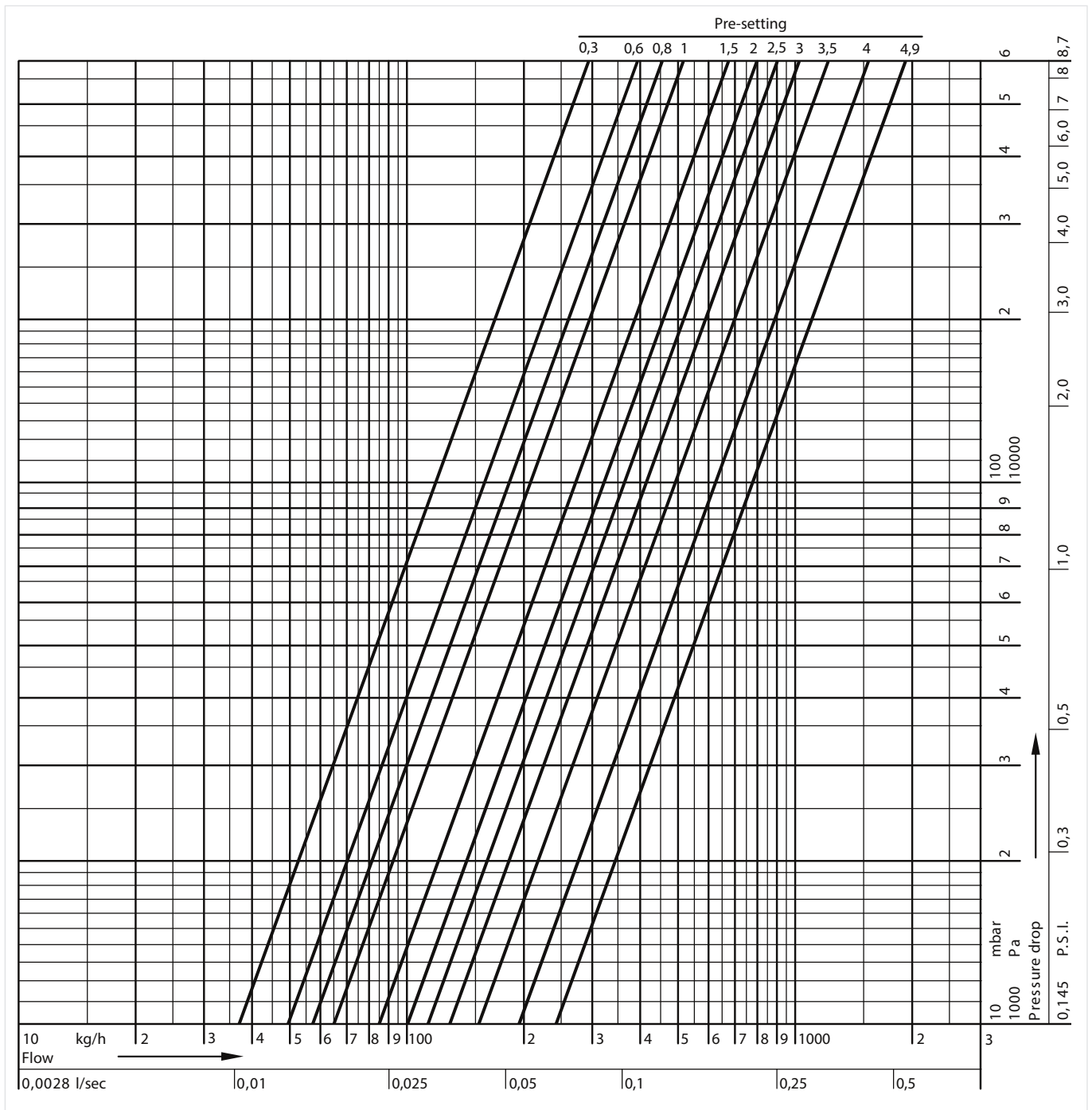
Presetting:	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4
k <sub>v</sub> -value:	0.37	0.43	0.49	0.57	0.65	0.73	0.81	0.88	0.94	1.0	1.05	1.10
cv-value:	0.43	0.5	0.57	0.67	0.76	0.85	0.95	1.03	1.10	1.17	1.23	1.29

Presetting:	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8
k <sub>v</sub> -value:	1.16	1.22	1.3	1.39	1.5	1.63	1.77	1.92	2.07	2.21	2.32	2.39
cv-value:	1.36	1.43	1.52	1.63	1.76	1.91	2.07	2.25	2.42	2.59	2.71	2.80

Presetting:	4.9 = open
k <sub>v</sub> -value:	k <sub>VS</sub> = 2.40
cv-value:	2.81

Note: Flow diagram is only valid for valve without installed actuator (-adapter) or Kombi-Diaphragm Unit.

**Flow Data V5010 Kombi-3-plus BLUE, DN10**



**kvs-Values V5010 Kombi-3-plus BLUE, DN15**

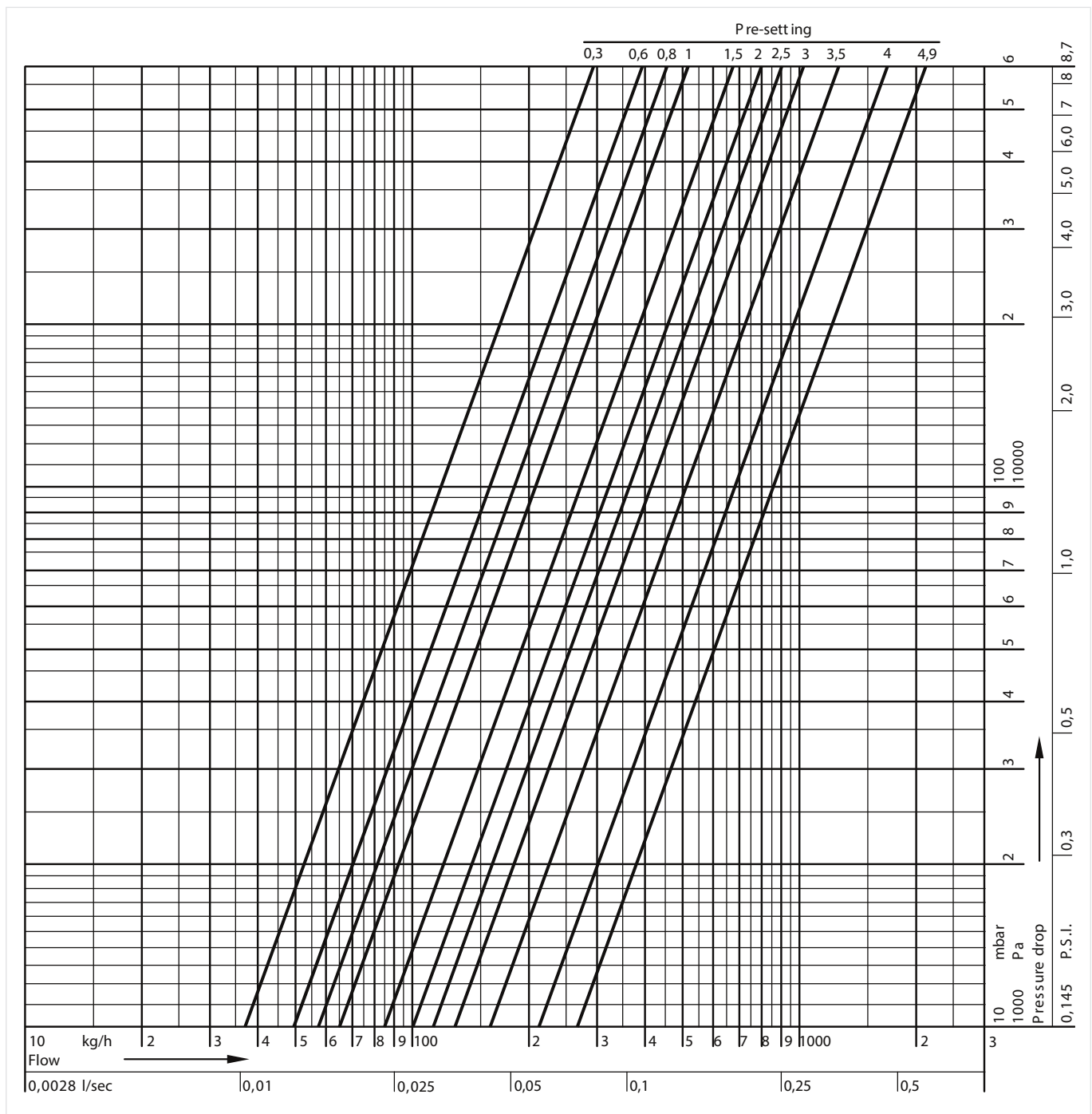
Pre-setting:	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4
k <sub>v</sub> -value:	0.37	0.43	0.49	0.57	0.65	0.73	0.81	0.88	0.94	1.0	1.05	1.10
cv-value:	0.43	0.5	0.57	0.67	0.76	0.85	0.95	1.03	1.10	1.17	1.23	1.29

Pre-setting:	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8
k <sub>v</sub> -value:	1.16	1.22	1.3	1.42	1.57	1.74	1.92	2.12	2.31	2.49	2.63	2.67
cv-value:	1.36	1.43	1.54	1.66	1.84	2.04	2.25	2.48	2.7	2.91	3.08	3.12

Pre-setting:	4.9 = open
k <sub>v</sub> -value:	k <sub>vs</sub> = 2.70
cv-value:	3.16

Note: Flow diagram is only valid for valve without installed actuator (-adapter) or Kombi-Diaphragm Unit.

**Flow Data V5010 Kombi-3-plus BLUE, DN15**



**kvs-Values V5010 Kombi-3-plus BLUE, DN20**

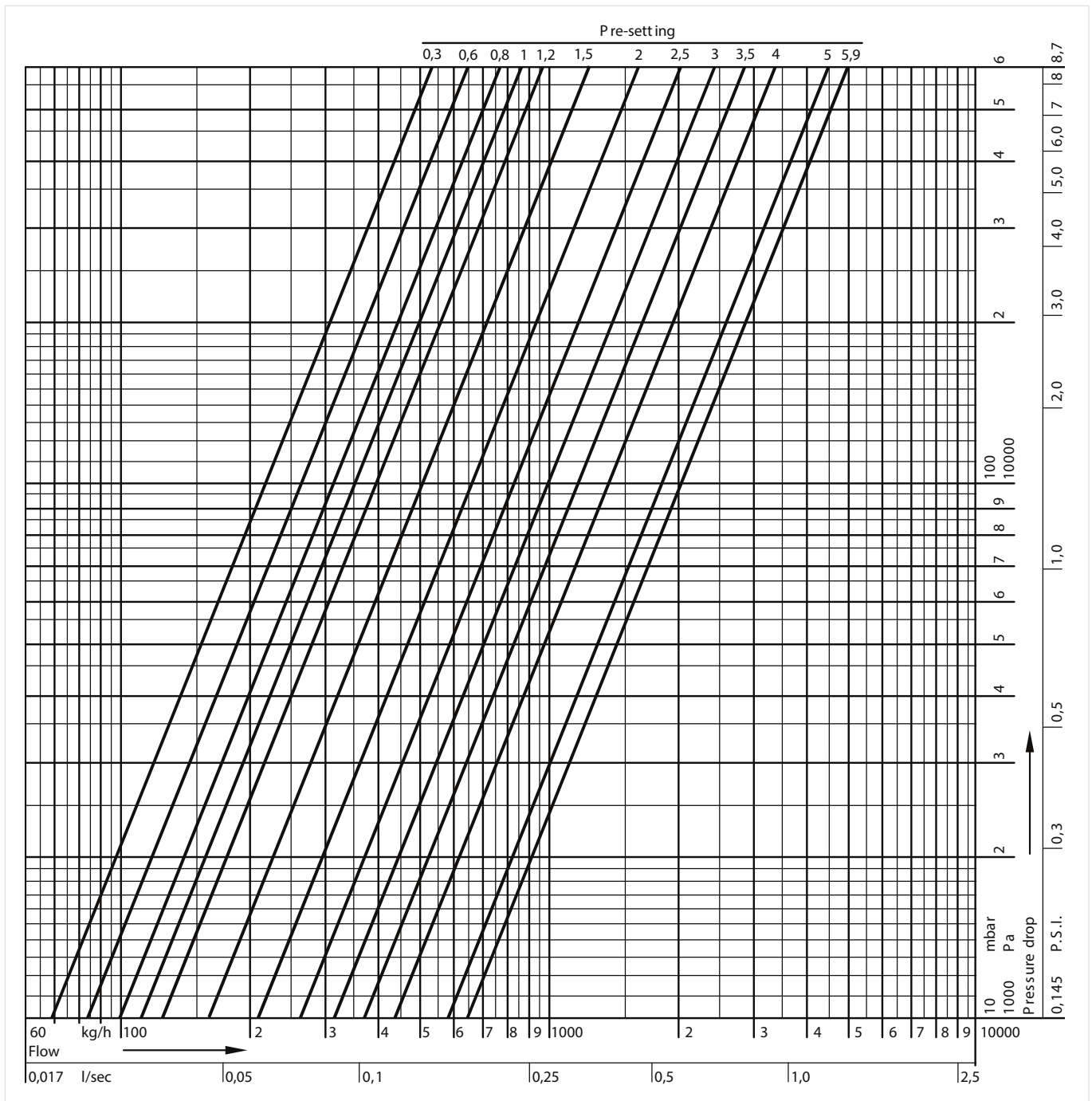
Presetting:	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4
k <sub>v</sub> -value:	0.68	0.72	0.84	0.97	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5
cv-value:	0.80	0.84	0.98	1.13	1.29	1.52	1.76	1.99	2.22	2.46	2.69	2.93

Presetting:	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8
k <sub>v</sub> -value:	2.7	2.91	3.12	3.36	3.6	3.86	4.12	4.4	4.69	4.99	5.28	5.57
cv-value:	3.16	3.4	3.65	3.93	4.21	4.52	4.82	5.15	5.49	5.84	6.18	6.52

Presetting:	5.0	5.2	5.4	5.6	5.8	5.9 = open
k <sub>v</sub> -value:	5.84	6.07	6.26	6.32	6.38	k <sub>VS</sub> = 6.40
cv-value:	6.83	7.10	7.32	7.39	7.46	7.49

Note: Flow diagram is only valid for valve without installed actuator (-adapter) or Kombi-Diaphragm Unit.

**Flow Data V5010 Kombi-3-plus BLUE, DN20**





**kvs-Values V5010 Kombi-3-plus BLUE, DN25**

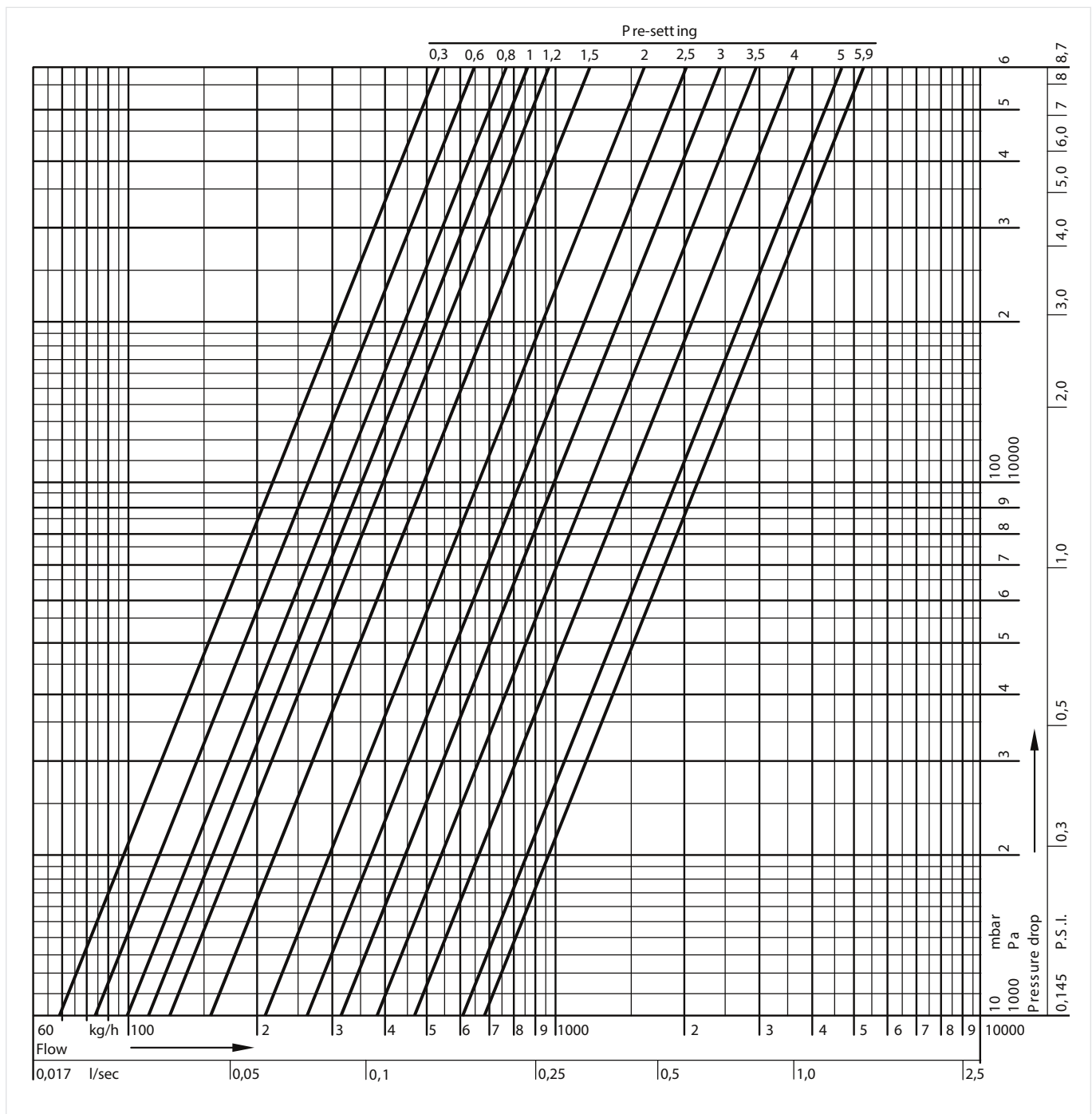
<b>Presetting:</b>	<b>0.3</b>	<b>0.4</b>	<b>0.6</b>	<b>0.8</b>	<b>1.0</b>	<b>1.2</b>	<b>1.4</b>	<b>1.6</b>	<b>1.8</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>
k <sub>v</sub> -value:	0.68	0.72	0.84	0.97	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5
cv-value:	0.80	0.84	0.98	1.13	1.29	1.52	1.76	1.99	2.22	2.46	2.69	2.93

<b>Presetting:</b>	<b>2.6</b>	<b>2.8</b>	<b>3.0</b>	<b>3.2</b>	<b>3.4</b>	<b>3.6</b>	<b>3.8</b>	<b>4.0</b>	<b>4.2</b>	<b>4.4</b>	<b>4.6</b>	<b>4.8</b>
k <sub>v</sub> -value:	2.7	2.95	3.20	3.48	3.76	4.05	4.34	4.64	4.94	5.24	5.52	5.8
cv-value:	3.16	3.45	3.74	4.07	4.4	4.74	5.08	5.43	5.78	6.13	6.46	6.79

<b>Presetting:</b>	<b>5.0</b>	<b>5.2</b>	<b>5.4</b>	<b>5.6</b>	<b>5.8</b>	<b>5.9 = open</b>
k <sub>v</sub> -value:	6.06	6.3	6.5	6.65	6.75	k <sub>vS</sub> = 6.80
cv-value:	7.09	7.37	7.61	7.78	7.9	7.96

Note: Flow diagram is only valid for valve without installed actuator (-adapter) or Kombi-Diaphragm Unit.

**Flow Data V5010 Kombi-3-plus BLUE, DN25**



**kvs-Values V5010 Kombi-3-plus BLUE, DN32**

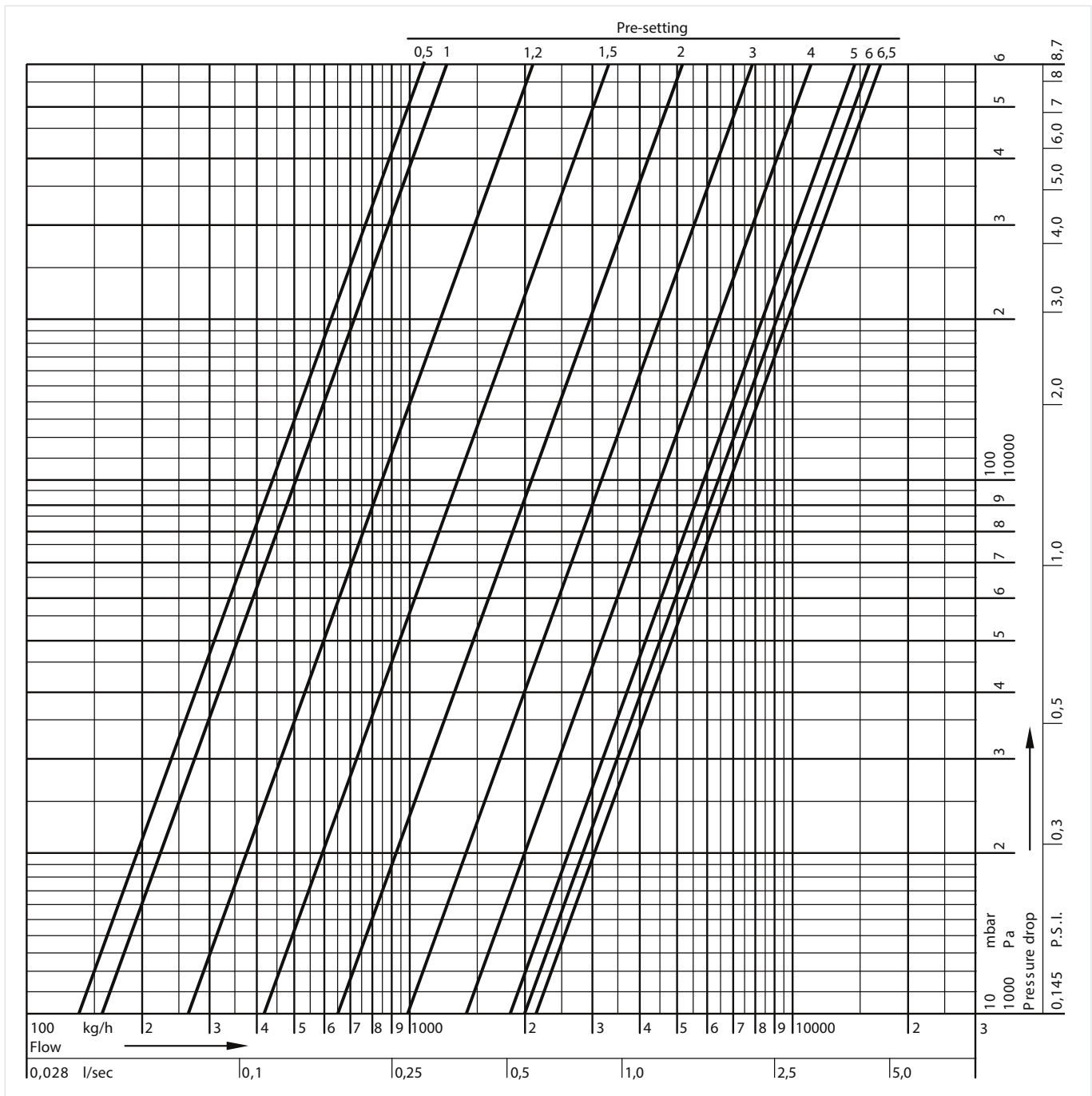
<b>Presetting:</b>	<b>0.5</b>	<b>0.6</b>	<b>0.8</b>	<b>1.0</b>	<b>1.2</b>	<b>1.4</b>	<b>1.6</b>	<b>1.8</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>	<b>2.6</b>
k <sub>v</sub> -value:	1.4	1.45	1.55	1.6	2.6	3.7	4.8	5.9	6.5	6.9	7.5	8.3
cv-value:	1.64	1.7	1.81	1.87	3.04	4.33	5.62	6.9	7.61	8.07	8.78	9.71

<b>Presetting:</b>	<b>2.8</b>	<b>3.0</b>	<b>3.2</b>	<b>3.4</b>	<b>3.6</b>	<b>3.8</b>	<b>4.0</b>	<b>4.2</b>	<b>4.4</b>	<b>4.6</b>	<b>4.8</b>	<b>5.0</b>
k <sub>v</sub> -value:	9.2	10.2	11.2	12.2	13.2	14.1	15.0	15.8	16.5	17.1	17.7	18.2
cv-value:	10.8	11.9	13.1	14.3	15.4	16.5	17.6	18.5	19.3	20.0	20.7	21.3

<b>Presetting:</b>	<b>5.2</b>	<b>5.4</b>	<b>5.6</b>	<b>5.8</b>	<b>6.0</b>	<b>6.2</b>	<b>6.4</b>	<b>6.5 = open</b>
k <sub>v</sub> -value:	18.6	19.0	19.4	19.7	20.0	20.4	20.8	k <sub>vS</sub> = 21.0
cv-value:	21.8	22.2	22.7	23.0	23.4	23.9	24.3	24.6

Note: Flow diagram is only valid for valve without installed actuator (-adapter) or Kombi-Diaphragm Unit.

**Flow Data V5010 Kombi-3-plus BLUE, DN32**



**kvs-Values V5010 Kombi-3-plus BLUE, DN40**

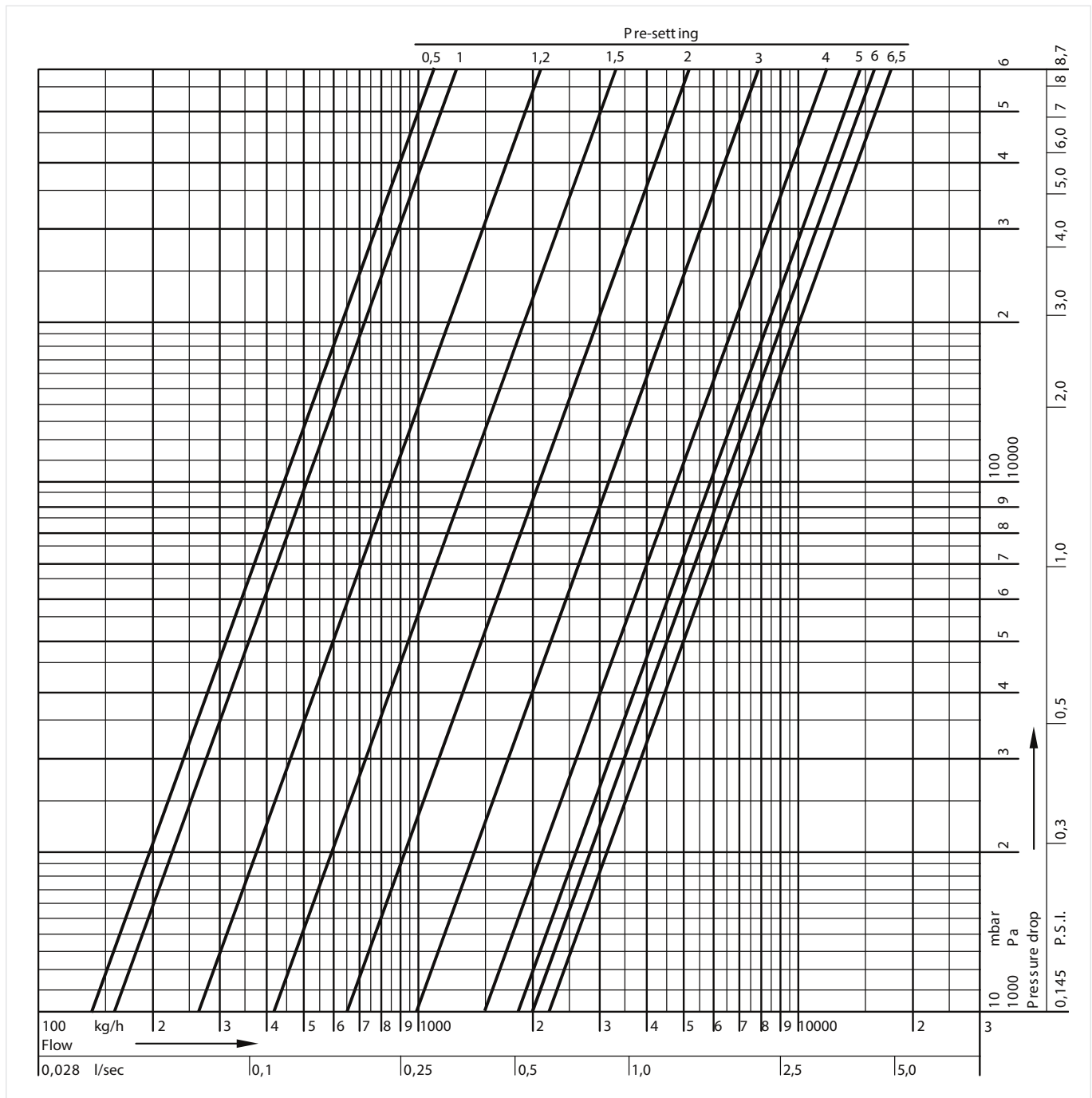
Presetting:	0.5	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6
k <sub>v</sub> -value:	1.4	1.45	1.55	1.6	2.6	3.7	4.8	5.9	6.5	6.9	7.5	8.3
cv-value:	1.64	1.7	1.81	1.87	3.04	4.33	5.62	6.9	7.61	8.07	8.78	9.71

Presetting:	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0
k <sub>v</sub> -value:	9.2	10.2	11.2	12.2	13.2	14.1	15.0	15.8	16.5	17.1	17.7	18.2
cv-value:	10.8	11.9	13.1	14.3	15.4	16.5	17.6	18.5	19.3	20.0	20.7	21.3

Presetting:	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.5 = open
k <sub>v</sub> -value:	18.6	19.0	19.4	19.7	20.0	20.8	21.6	k <sub>vs</sub> = 22.0
cv-value:	21.8	22.2	22.7	23.0	23.4	24.3	25.3	25.7

Note: Flow diagram is only valid for valve without installed actuator (-adapter) or Kombi-Diaphragm Unit.

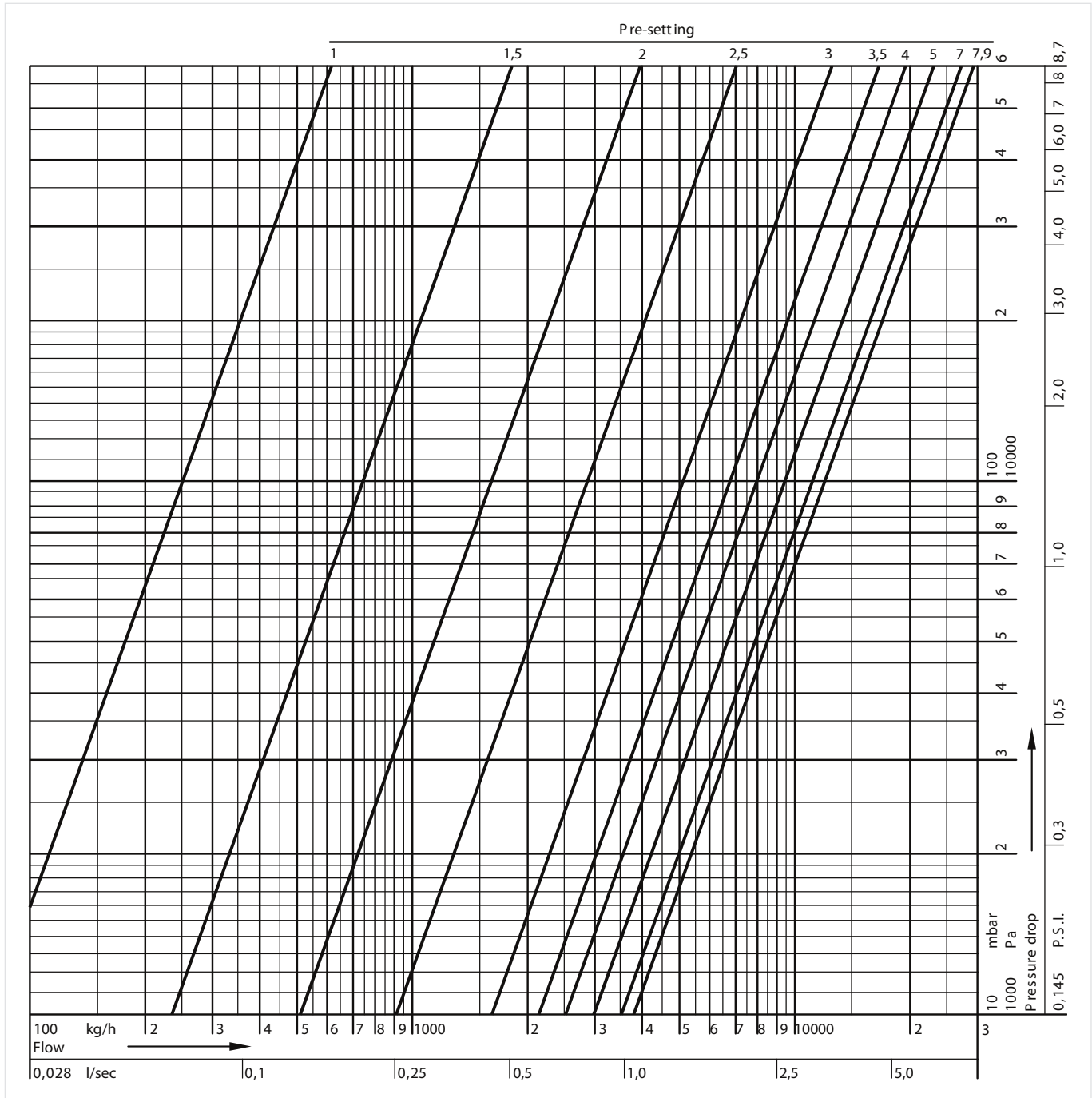
**Flow Data V5010 Kombi-3-plus BLUE, DN40**



**kvs-Values V5010 Kombi-3-plus BLUE, DN50**

<b>Presetting:</b>	<b>1.0</b>	<b>1.2</b>	<b>1.4</b>	<b>1.6</b>	<b>1.8</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>	<b>2.6</b>	<b>2.8</b>	<b>3.0</b>	<b>3.2</b>
k <sub>v</sub> -value:	0.8	1.25	1.88	2.72	3.78	5.1	6.68	8.45	10.7	13.0	15.6	18.7
cv-value:	0.94	1.46	2.2	3.18	4.42	5.97	7.82	9.99	12.5	15.2	18.3	21.9
<b>Presetting:</b>	<b>3.4</b>	<b>3.6</b>	<b>3.8</b>	<b>4.0</b>	<b>4.2</b>	<b>4.4</b>	<b>4.6</b>	<b>4.8</b>	<b>5.0</b>	<b>5.2</b>	<b>5.4</b>	<b>5.6</b>
k <sub>v</sub> -value:	21.0	22.8	24.3	25.4	26.4	27.2	28.0	28.8	29.5	30.2	31.0	31.7
cv-value:	24.6	26.7	28.4	29.7	30.9	31.8	32.8	33.7	34.5	35.3	36.3	37.1
<b>Presetting:</b>	<b>5.8</b>	<b>6.0</b>	<b>6.2</b>	<b>6.4</b>	<b>6.6</b>	<b>6.8</b>	<b>7.0</b>	<b>7.2</b>	<b>7.4</b>	<b>7.6</b>	<b>7.9 = open</b>	
k <sub>v</sub> -value:	32.4	33.0	33.6	34.1	34.6	35.0	35.4	35.8	36.2	36.8	k <sub>vS</sub> = 38.0	
cv-value:	37.9	38.6	39.3	39.9	40.5	41.0	41.4	41.9	42.4	43.1	44.5	

**Flow Data V5010 Kombi-3-plus BLUE, DN50**



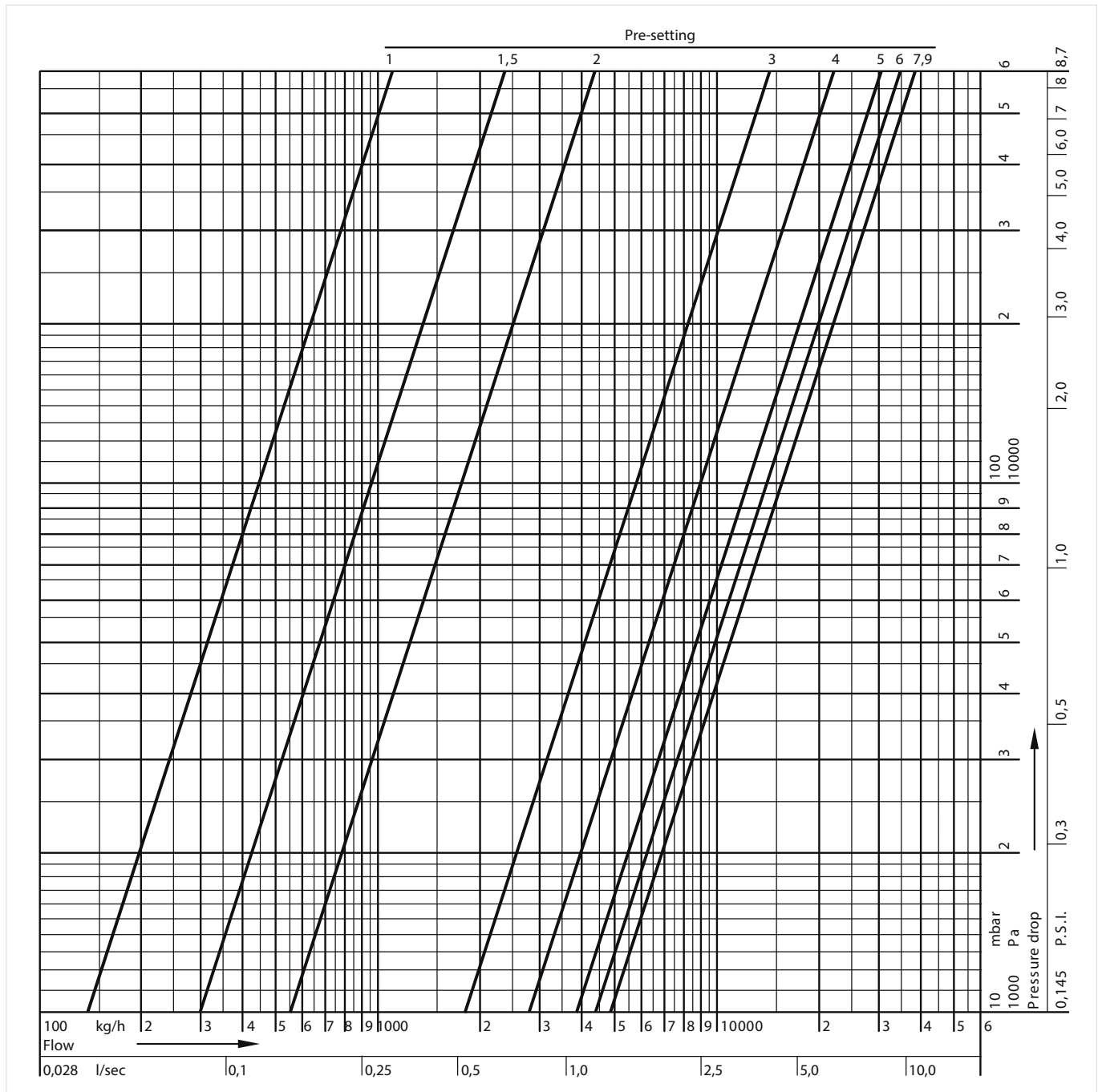
**kvs-Values V5010 Kombi-3-plus BLUE, DN65**

<b>Presetting:</b>	<b>1.0</b>	<b>1.2</b>	<b>1.4</b>	<b>1.6</b>	<b>1.8</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>	<b>2.6</b>	<b>2.8</b>	<b>3.0</b>	<b>3.2</b>
k <sub>v</sub> -value:	1.4	1.5	2.5	3.5	4.5	5.5	7.7	10.0	12.2	14.5	16.7	19.0
cv-value:	1.64	1.76	2.93	4.1	5.27	6.44	9.01	11.7	14.3	17.0	19.5	22.2

<b>Presetting:</b>	<b>3.4</b>	<b>3.6</b>	<b>3.8</b>	<b>4.0</b>	<b>4.2</b>	<b>4.4</b>	<b>4.6</b>	<b>4.8</b>	<b>5.0</b>	<b>5.2</b>	<b>5.4</b>	<b>5.6</b>
k <sub>v</sub> -value:	21.3	23.7	26.0	28.3	30.1	31.9	33.6	35.4	37.2	38.6	40.1	41.5
cv-value:	24.9	27.7	30.4	33.1	35.2	37.3	39.3	41.4	43.5	45.2	46.9	48.6

<b>Presetting:</b>	<b>5.8</b>	<b>6.0</b>	<b>6.2</b>	<b>6.4</b>	<b>6.6</b>	<b>6.8</b>	<b>7.0</b>	<b>7.2</b>	<b>7.4</b>	<b>7.6</b>	<b>7.9 = open</b>
k <sub>v</sub> -value:	43.0	44.0	44.9	45.4	46.0	46.5	47.0	47.1	47.3	47.4	k <sub>vs</sub> = 47.7
cv-value:	50.3	51.5	52.5	53.1	53.8	54.4	55.0	55.0	55.3	55.5	55.8

**Flow Data V5010 Kombi-3-plus BLUE, DN65**



**kvs-Values V5010 Kombi-3-plus BLUE, DN80**

<b>Presetting:</b>	<b>1.0</b>	<b>1.2</b>	<b>1.4</b>	<b>1.6</b>	<b>1.8</b>	<b>2.0</b>	<b>2.2</b>	<b>2.4</b>	<b>2.6</b>	<b>2.8</b>	<b>3.0</b>	<b>3.2</b>
k <sub>v</sub> -value:	2.2	4.2	6.2	8.1	10.1	12.1	15.3	18.5	21.6	24.8	28.0	30.9
cv-value:	2.57	4.91	7.25	9.48	11.8	14.2	17.9	21.6	25.3	29.0	32.8	36.1

<b>Presetting:</b>	<b>3.4</b>	<b>3.6</b>	<b>3.8</b>	<b>4.0</b>	<b>4.2</b>	<b>4.4</b>	<b>4.6</b>	<b>4.8</b>	<b>5.0</b>	<b>5.2</b>	<b>5.4</b>	<b>5.6</b>
k <sub>v</sub> -value:	33.9	36.8	39.8	42.7	44.9	47.0	49.2	51.3	53.5	55.2	57.0	58.7
cv-value:	39.7	43.1	46.6	50.0	52.5	55.0	57.6	60.0	62.6	64.6	66.7	68.7

<b>Presetting:</b>	<b>5.8</b>	<b>6.0</b>	<b>6.2</b>	<b>6.4</b>	<b>6.6</b>	<b>6.8</b>	<b>7.0</b>	<b>7.2</b>	<b>7.4</b>	<b>7.6</b>	<b>7.9 = open</b>
k <sub>v</sub> -value:	60.5	62.2	63.4	64.5	65.7	66.8	68.0	68.6	69.2	69.8	k <sub>vS</sub> = 71.0
cv-value:	70.8	72.8	74.2	75.5	76.9	78.2	79.6	80.3	81.0	81.7	83.1

**Flow Data V5010 Kombi-3-plus BLUE, DN80**

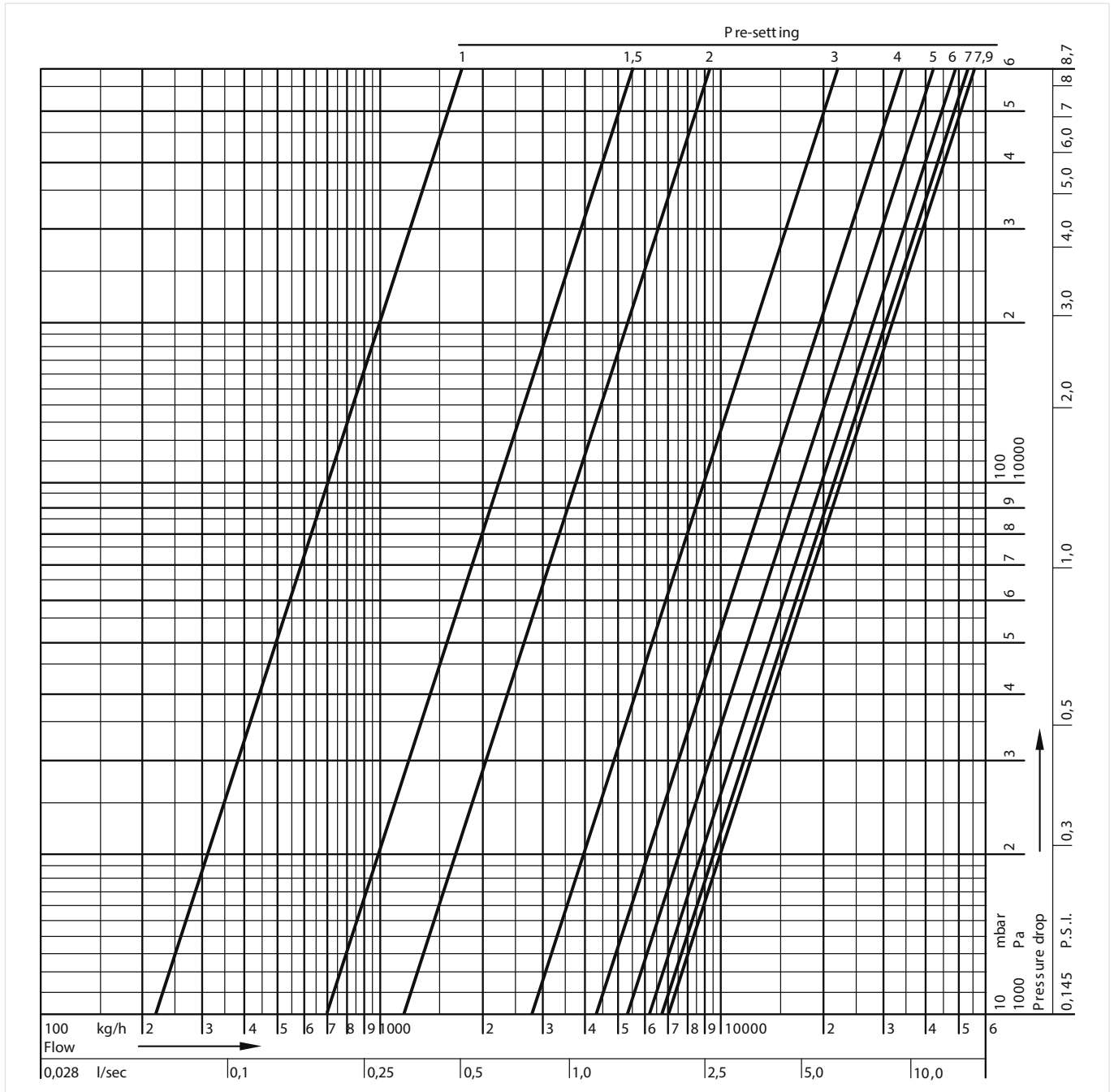
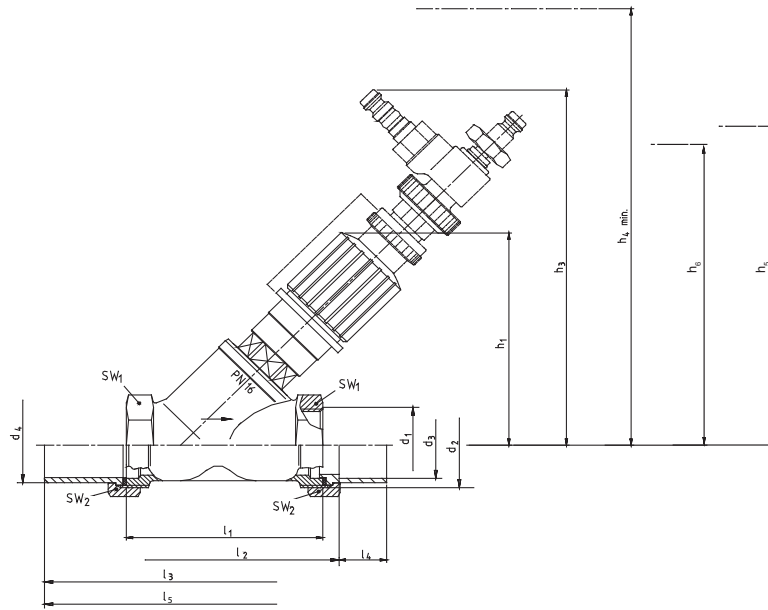


Fig. 5 Flow Data V5010 Kombi-3-plus BLUE, DN80

## DIMENSIONS

### Overview

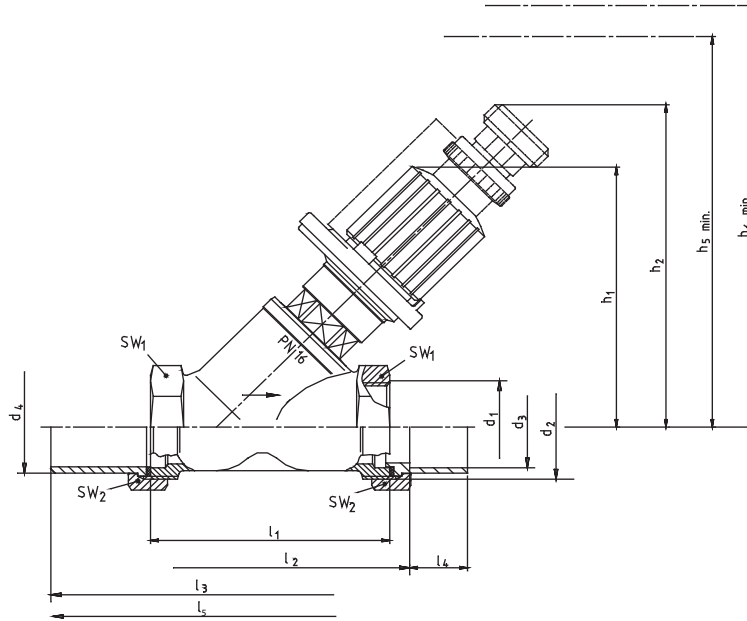


Parameter		Values								
Connection sizes:	R	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Nominal sizes:	DN	10	15	20	25	32	40	50	65	80
k <sub>vs</sub> (c <sub>v</sub> )-values:	m <sup>3</sup> /h	1.5 (1.76)	2.5 (2.93)	4.5 (5.27)	6.5 (7.61)	13.0 (15.2)	20.0 (23.4)	35.0 (41.0)	42.0 (49.1)	68.0 (79.6)
Dimensions:	h <sub>1</sub>	85	85	100	100	137	137	158	195	210
	h <sub>3</sub>	145	145	160	160	195	195	215	225	240
	h <sub>4</sub>	195	195	210	210	280	280	300	310	325
	h <sub>5</sub>	135	135	150	150	185	185	205	215	230
	h <sub>6</sub>	130	130	145	145	210	210	230	-	-
	l <sub>1</sub>	60	65	76	90	110	120	150	180	200
	l <sub>2</sub>	74	81	92	108	128	140	170	-	-
	l <sub>3</sub>	110	125	146	170	200	220	260	-	-
	l <sub>4</sub>	10	12	17	20	25	29	34	-	-
	l <sub>5</sub>	110	125	140	155	184	128	274	-	-
	d <sub>1</sub>	Rp3/8"	Rp1/2"	Rp3/4"	Rp1"	Rp1 1/4"	Rp1 1/2"	Rp2"	Rp2 1/2"	Rp3"
	d <sub>2</sub>	G5/8"A	G3/4"A	G1"A	G1 1/4"A	G1 1/2"A	G1 3/4"A	G2 3/8"A	-	-
	d <sub>3</sub>	12	15	22	28	35	42	54	-	-
d <sub>4</sub>	16	20.5	26	33	41	47.5	60	-	-	
SW <sub>1</sub>	22	27	32	41	50	55	70	85	100	
SW <sub>2</sub>	27	30	37	47	52	60	75	-	-	

Note: All dimensions in mm unless stated otherwise.

Note: Dimensions V5000 Kombi-3-plus RED with pressure measuring set

**Overview**



Parameter		Values								
Connection sizes:	R	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Nominal sizes:	DN	10	15	20	25	32	40	50	65	80
k <sub>vs</sub> (c <sub>v</sub> )-values:	m <sup>3</sup> /h	2.4 (2.81)	2.7 (3.16)	6.4 (7.49)	6.8 (7.96)	21.0 (24.6)	22.0 (25.7)	38.0 (44.5)	47.7 (55.8)	71.0 (83.1)
Dimensions:	h <sub>1</sub>	85	85	100	100	137	137	158	195	210
	h <sub>2</sub>	105	105	120	120	155	155	176	186	201
	h <sub>5</sub>	135	135	150	150	185	185	205	215	230
	h <sub>6</sub>	130	130	145	145	210	210	230	-	-
	l <sub>1</sub>	60	65	76	90	110	120	150	180	200
	l <sub>2</sub>	74	81	92	108	128	140	170	-	-
	l <sub>3</sub>	110	125	146	170	200	220	260	-	-
	l <sub>4</sub>	10	12	17	20	25	29	34	-	-
	l <sub>5</sub>	110	125	140	155	184	238	274	-	-
	d <sub>1</sub>	Rp3/8"	Rp1/2"	Rp3/4"	Rp1"	Rp1 1/4"	Rp1 1/2"	Rp2"	Rp2 1/2"	Rp3"
	d <sub>2</sub>	G5/8"A	G3/4"A	G1"A	G1 1/4"A	G1 1/2"A	G1 3/4"A	G2 3/8"A	-	-
	d <sub>3</sub>	12	15	22	28	35	42	54	-	-
	d <sub>4</sub>	16	20.5	26	33	41	47.5	60	-	-
SW <sub>1</sub>	22	27	32	41	50	55	70	85	100	
SW <sub>2</sub>	27	30	37	47	52	60	75	-	-	

Note: All dimensions in mm unless stated otherwise.  
 Note: Dimensions V5010 Kombi-3-plus BLUE with draining adapter

**Abbreviations used for dimensions**

- |                |   |                 |   |
|----------------|---|-----------------|---|
| DN             | Nominal size diameter                       | h <sub>5</sub>  | Clearance required to fit draining adapter  |
| d <sub>1</sub> | Internal thread on body (connection size)   | h <sub>6</sub>  | Clearance required to fit tamper-proof cap  |
| d <sub>2</sub> | External thread on body                     | l <sub>1</sub>  | Body length according to DIN 3502           |
| d <sub>3</sub> | Inner Ø of connection                       | l <sub>2</sub>  | Installed length with soldering connections |
| d <sub>4</sub> | Outer Ø of connection                       | l <sub>3</sub>  | Installed length with welding connections   |
| h <sub>1</sub> | Height with valve fully open                | l <sub>4</sub>  | Length of soldering connection              |
| h <sub>2</sub> | Height with installed draining adapter      | l <sub>5</sub>  | Installed length with threaded connections  |
| h <sub>3</sub> | Height with installed measuring adapter     | SW <sub>1</sub> | Wrench size                                 |
| h <sub>4</sub> | Clearance required to fit measuring adapter | SW <sub>2</sub> | Wrench size                                 |



## ORDERING INFORMATION

The following tables contain all the information you need to make an order of an item of your choice. When ordering, please always state the type, the ordering or the part number.

### Options

Order text:	DN:	Thread:	$k_{vs}$ ( $C_{vs}$ )-value:	OS-No.:
<b>V5000Y Kombi-3-plus RED</b> fixed orifice measuring valve with internal threads to DIN EN 10226-1 on inlet and outlet	DN10	Rp 3/8"	1.5 (1.8)	V5000Y0010
	DN15	Rp 1/2"	2.5 (2.9)	V5000Y0015
	DN20	Rp 3/4"	4.5 (5.3)	V5000Y0020
	DN25	Rp 1"	6.5 (7.6)	V5000Y0025
	DN32	Rp 1 1/4"	13.0 (15.2)	V5000Y0032
	DN40	Rp 1 1/2"	20.0 (23.4)	V5000Y0040
	DN50	Rp 2"	35.0 (41.0)	V5000Y0050
	DN65	Rp 2 1/2"	42.0 (49.1)	V5000Y0065
	DN80	Rp 3"	68.0 (79.6)	V5000Y0080
<b>V5000X Kombi-3-plus RED</b> fixed orifice measuring valve with external threads to DIN ISO 228 on inlet and outlet	DN10	G 3/8" A	1.5 (1.8)	V5000X0010
	DN15	G 3/4" A	2.5 (2.9)	V5000X0015
	DN20	G 1" A	4.5 (5.3)	V5000X0020
	DN25	G 1 1/4" A	6.5 (7.6)	V5000X0025
	DN32	G 1 1/2" A	13.0 (15.2)	V5000X0032
	DN40	G 1 3/4" A	20.0 (23.4)	V5000X0040
	DN50	G 2 3/8" A	35.0 (41.0)	V5000X0050
<b>V5010Y Kombi-3-plus BLUE</b> double regulating balancing valve with internal threads to DIN EN 10226-1 on inlet and outlet	DN10	Rp 3/8"	2.4 (2.8)	V5010Y0010
	DN15	Rp 1/2"	2.7 (3.2)	V5010Y0015
	DN20	Rp 3/4"	6.4 (7.5)	V5010Y0020
	DN25	Rp 1"	6.8 (8.0)	V5010Y0025
	DN32	Rp 1 1/4"	21.0 (24.6)	V5010Y0032
	DN40	Rp 1 1/2"	22.0 (25.7)	V5010Y0040
	DN50	Rp 2"	38.0 (44.5)	V5010Y0050
	DN65	Rp 2 1/2"	47.7 (55.8)	V5010Y0065
<b>V5010X Kombi-3-plus BLUE</b> double regulating balancing valve with external threads to DIN ISO 228 on inlet and outlet	DN80	Rp 3"	71.0 (83.1)	V5010Y0080
	DN10	G 3/8" A	2.4 (2.8)	V5010X0010
	DN15	G 3/4" A	2.7 (3.2)	V5010X0015
	DN20	G 1" A	6.4 (7.5)	V5010X0020
	DN25	G 1 1/4" A	6.8 (8.0)	V5010X0025
	DN32	G 1 1/2" A	21.0 (24.6)	V5010X0032
	DN40	G 1 3/4" A	22.0 (25.7)	V5010X0040
DN50	G 2 3/8" A	38.0 (44.5)	V5010X0050	

## Accessories

	Description	Dimension	Part No.
	<b>VA2510 Insulation shells</b>		
	Note: For product information see product data sheet 'VA2510B Insulation Shells'.		
	for valves DN15		VA2510C015
	for valves DN20		VA2510C020
	for valves DN25		VA2510C025
	for valves DN32		VA2510C032
	for valves DN40		VA2510C040
	for valves DN50		VA2510C050
	<b>VA3400 Draining adapter</b>		
		for all types and sizes	VA3400A001
	<b>VA2501 Tamper-proof cap</b>		
	for valves DN10 - DN25		VA2501A010
	for valves DN32 - DN50		VA2501A032
	<b>VA3502 Pressure measuring set</b>		
		for V5000 Kombi-3-plus RED	VA3502A001
	<b>VM242A BasicMes-2 handheld measuring computer</b>		
	Note: To connect the VM241 BasicMes to SafeCon™ pressure test cocks please order measuring adapter VA3600C001 separately.		
	Computer is supplied with case and accessories	for all sizes	VM242A0101
	<b>VA5540 Welding connection made of steel</b>		
	for valves DN10 (3/8")		VA5540A010
	for valves DN15 (1/2")		VA5540A015
	for valves DN20 (3/4")		VA5540A020
	for valves DN25 (1")		VA5540A025
	for valves DN32 (1 1/4")		VA5540A032
	for valves DN40 (1 1/2")		VA5540A040
	for valves DN50 (2")		VA5540A050
	<b>VA5500 Externally threaded connection made of brass</b>		
	for valves DN10 (3/8")		VA5500A010
	for valves DN15 (1/2")		VA5500A015
	for valves DN20 (3/4")		VA5500A020
	for valves DN25 (1")		VA5500A025
	for valves DN32 (1 1/4")		VA5500A032
	for valves DN40 (1 1/2")		VA5500A040
	for valves DN50 (2")		VA5500A050

	<b>VA5530</b>	<b>Soldering connection made of brass</b>		
		for valves DN10	12 mm	VA5530A010
		for valves DN15	15 mm	VA5530A015
		for valves DN20	22 mm	VA5530A020
		for valves DN25	28 mm	VA5530A025
		for valves DN32	35 mm	VA5530A032
		for valves DN40	42 mm	VA5530A040
		for valves DN50	54 mm	VA5530A050
	<b>VA5090</b>	<b>Sealing ring</b>		
		for valves DN10 (3/8")		VA5090A010
		for valves DN15 (1/2")		VA5090A015
		for valves DN20 (3/4")		VA5090A020
		for valves DN25 (1")		VA5090A025
		for valves DN32 (1 1/4")		VA5090A032
		for valves DN40 (1 1/2")		VA5090A040
		for valves DN50 (2")		VA5090A050
	<b>V5012C</b>	<b>Kombi-DP Diaphragm Unit</b>		
		Note: For product information and diagrams see product data sheet 'V5012 Kombi-DP Diaphragm Unit'. The Kombi-3-plus BLUE valve must be pre-set to 1.5 (for DN10 - DN25) or 1.0 (DN32 - DN40) when used with the V5012 Kombi-DP Diaphragm Unit. Pump pressure: max. 2 bar (29 psi)		
		for V5010 Kombi-3-plus BLUE DN10 - DN40	Setting range 0.1 - 0.3 bar (1.45 - 4.35 psi) differential pressure	V5012C0103
		for V5010 Kombi-3-plus BLUE DN10 - DN40	Setting range 0.3 - 0.6 bar (4.35 - 8.7 psi) differential pressure	V5012C0306
	<b>VA2503</b>	<b>External presetting device</b>		
		for diaphragm unit 0.1 - 0.3 bar		VA2503A001
	<b>VA2500</b>	<b>Adapter for actuators with M30 x 1.5 connection</b>		
		Note: For product information and diagrams see product data sheet 'V5012 Kombi-DP Diaphragm Unit'. The Kombi-3-plus BLUE valve must be pre-set to 1.5 (for DN10 - DN25) or 1.0 (DN32 - DN40) when used with the V5012 Kombi-DP Diaphragm Unit. Pump pressure: max. 2 bar (29 psi)		
		for V5010 Kombi-3-plus BLUE DN10 - DN40		VA2500A001
	<b>VA2502</b>	<b>Spring for differential pressure presetting to 5 ... 25 kPa</b>		
		for capillary tube 4 x 1 mm	for diaphragm unit V5012C0103	VA2502A002

**Spare Parts**

Overview	Description	Dimension	Part No.
	<b>1 Handwheel screw</b>		VS2000A010
	<b>2 Replacement insert for Kombi-3 PLUS BLUE, from 2001 onwards</b>		
		DN10	VS1501B010
		DN15	VS1501B015
		DN20	VS1501B020
		DN25	VS1501B025
		DN32	VS1501B032
		DN40	VS1501B040
		DN50	VS1501B050
		DN65	VS1501B065
	<b>3 Replacement insert for Kombi-3 PLUS RED, from 1991 onwards</b>		
		DN10	VS1501R010
		DN15	VS1501R015
	DN20	VS1501R020	
	DN25	VS1501R025	
	DN32	VS1501R032	
	DN40	VS1501R040	
	DN50	VS1501R050	
	DN65	VS1501R065	



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