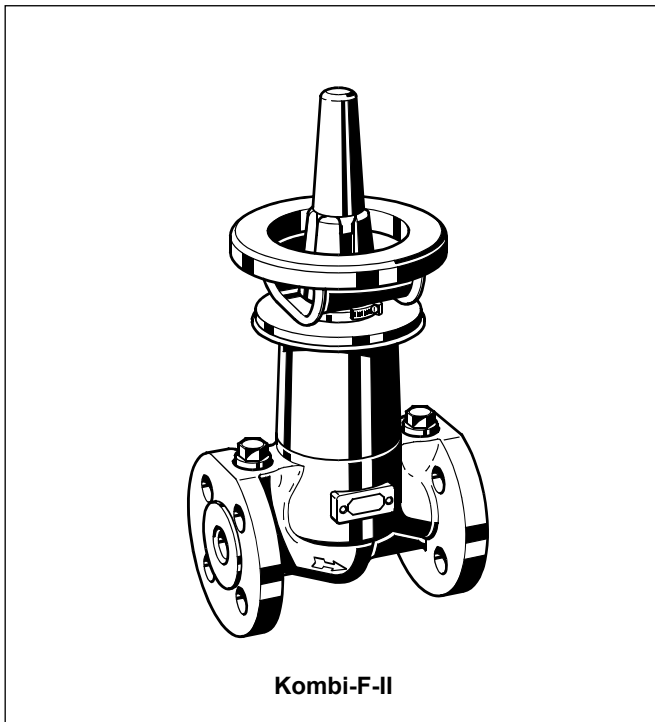


Kombi Valves

V6000 Kombi-F-II, Kombi-F FLANGED BALANCING AND SHUTOFF VALVES

PRODUCT DATA



Design

- Valve body with flanges drilled to DIN
- Valve insert with handwheel and pre-setting display
- Pressure test cocks

Materials

- Valve housing made of cast iron GG25, painted blue
- Valve insert made of stainless steel with seat sealing made of PTFE
- Pressure test cocks made of brass
- Handwheel made of steel, painted black
- Fairing made of plastic, black

CONTENTS

Design	1
Materials	1
Application	1
Features	1
Specifications	2
Dimensions and Ordering Information	2
Accessories	3
Measuring Equipment	3
Spare Parts	3
Installation Example	3
Flow Data Kombi-F-II (DN15...DN200)	4 to 15
Flow Data Kombi-F (DN250...DN400)	16 to 19
Influence of Coolants on Flow Values	20
Correction Factor f	20

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 18 380, VOB part C, is required by national standards. This requirement is met with Kombi-F-II and Kombi-F shutoff and balancing valves.

Kombi-F-II and Kombi-F have functions shut-off, pre-setting and measuring.

Features

- **Balancing through stroke limitation with digital pre-setting and visible pre-setting indicator**
- **Equipped with 2 pressure test cocks for differential pressure measurement**
- **Non rising spindle with EDD**
- **Pre-setting isn't altered when handwheel is turned**
- **Stroke limitation-screw protected by protection cap**
- **PTFE seat sealing**
- **Spindle made of stainless steel**
- **Valve body made of corrosion resistant cast iron**
- **Available in dimensions up to DN400**

Specifications

Medium	Water, water-glycol mixture
Operating temperature	-10...120°C (14...248°F) short run 130°C (266°F)
Operating pressure	max. 16 bar (232 psi)
k_{vs} (cv)-values	see table below and flow diagrams

Dimensions and Ordering Information

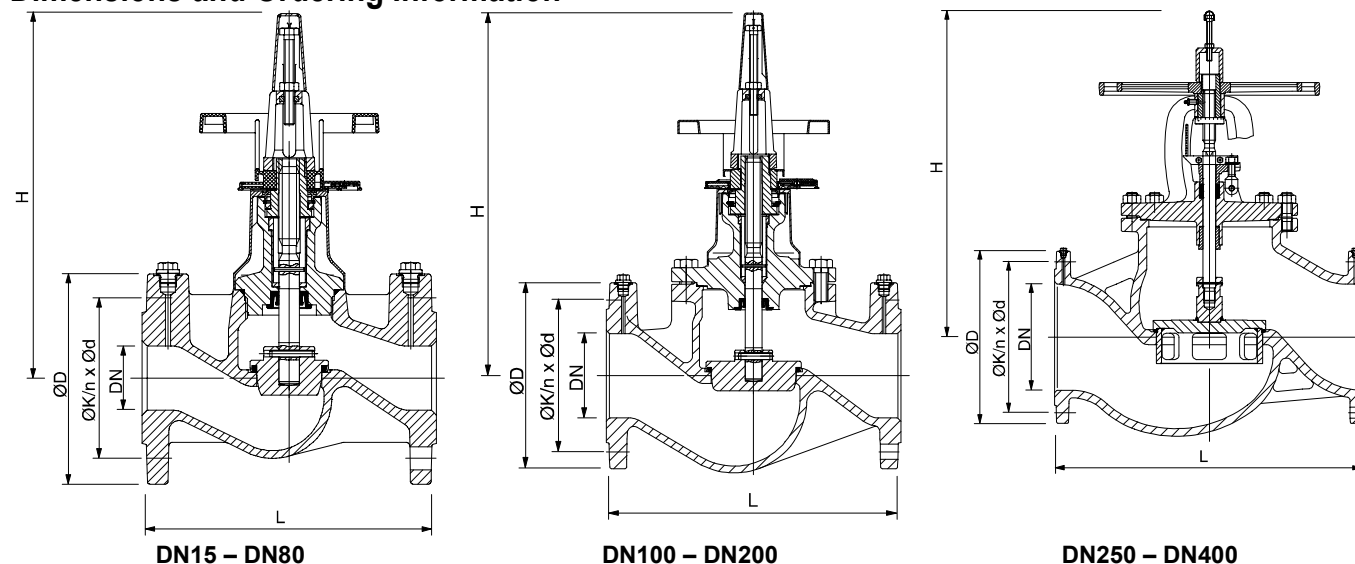


Fig. 1. Dimensions

Table 1. Dimensions Kombi-F-II

DN	(R)	k _{vs} (cv)-value	L	H	Ø D	Ø K	n x Ø d	Weight	OS-No.
15	1/2"	4,50 (5,27)	130	225	95	65	4 x 14	3,5 kg	V6000D0015
20	3/4"	6,60 (7,72)	150	225	105	75	4 x 14	4,1 kg	V6000D0020
25	1"	9,80 (11,5)	160	225	115	85	4 x 14	4,8 kg	V6000D0025
32	1 1/4"	15,1 (17,7)	180	225	140	100	4 x 18	6,6 kg	V6000D0032
40	1 1/2"	24,9 (29,1)	200	280	150	110	4 x 18	9,0 kg	V6000D0040
50	2"	48,5 (56,7)	230	280	165	125	4 x 18	11,5 kg	V6000D0050
65	2 1/2"	74,4 (87,0)	290	365	185	145	4 x 18	18,5 kg	V6000D0065
80	3"	111 (130)	310	395	200	160	8 x 18	24,5 kg	V6000D0080
100	4"	165 (193)	350	430	220	180	8 x 18	40,0 kg	V6000D0100
125	5"	242 (283)	400	495	250	210	8 x 18	79,0 kg	V6000D0125
150	6"	372 (435)	480	530	285	240	8 x 22	91,0 kg	V6000D0150
200	8"	704 (824)	600	665	340	295	8 x 22	170 kg	V6000D0200

Table 2. Dimensions Kombi-F

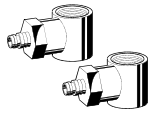
DN	(R)	k _{vs} (cv)-value	L	H	Ø D	Ø K	n x Ø d	Weight	OS-No.
250	10"	812 (950)	730	600	405	355	12 x 22	265 kg	V6000D0250
300	12"	1.380 (1.615)	850	685	460	410	12 x 26	360 kg	V6000D0300
350	14"	1.651 (1.932)	980	775	520	470	16 x 26	535 kg	V6000D0350
400	16"	2.389 (2.795)	1.100	790	580	525	16 x 30	765 kg	V6000D0400

NOTE: All dimensions in mm if not stated otherwise.

Accessories

Measuring Equipment

Set of 2 measuring adapters

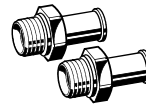


for all dimensions

VA3600A008

Spare Parts

Spare set of 2 pressure test cocks G1/4"



for all dimensions

VA2600A008

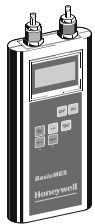
Extension piece for pressure test cocks, length 45 mm, for insulated Kombi-F-II and Kombi-F



for all dimensions

VA2601A008

'BasicMES' handheld measuring computer



for all dimensions;
computer is supplied with
case and accessories

VM241A1002

Installation Example

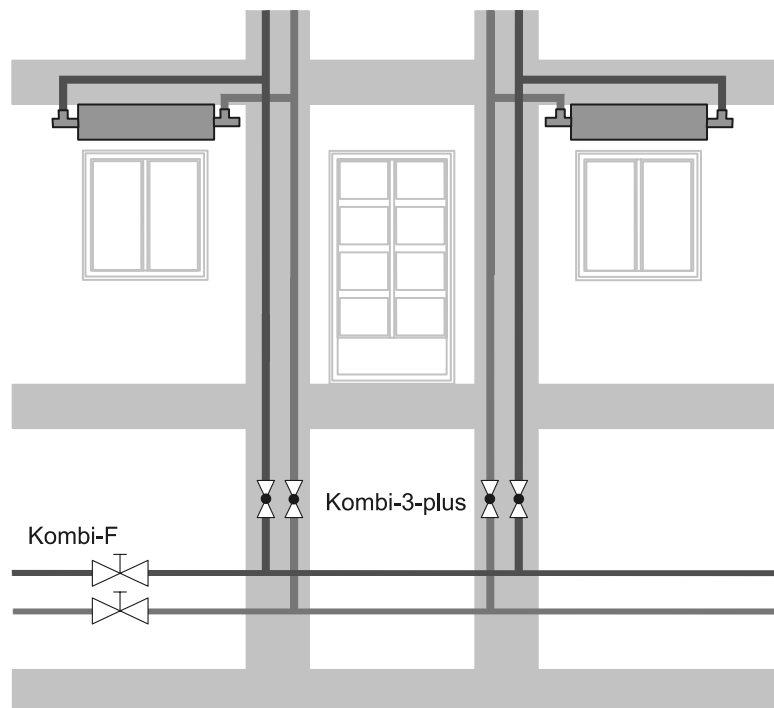
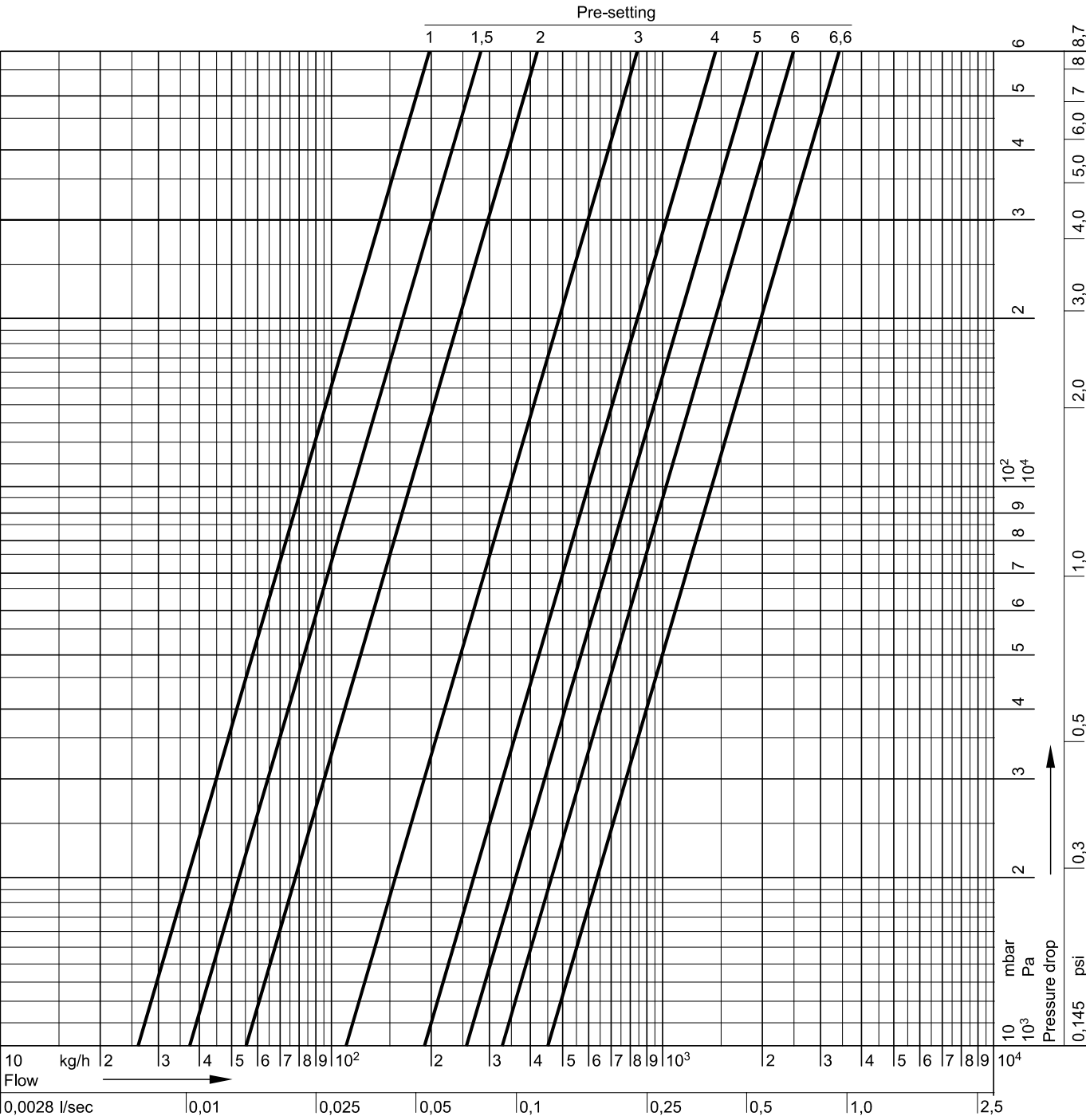


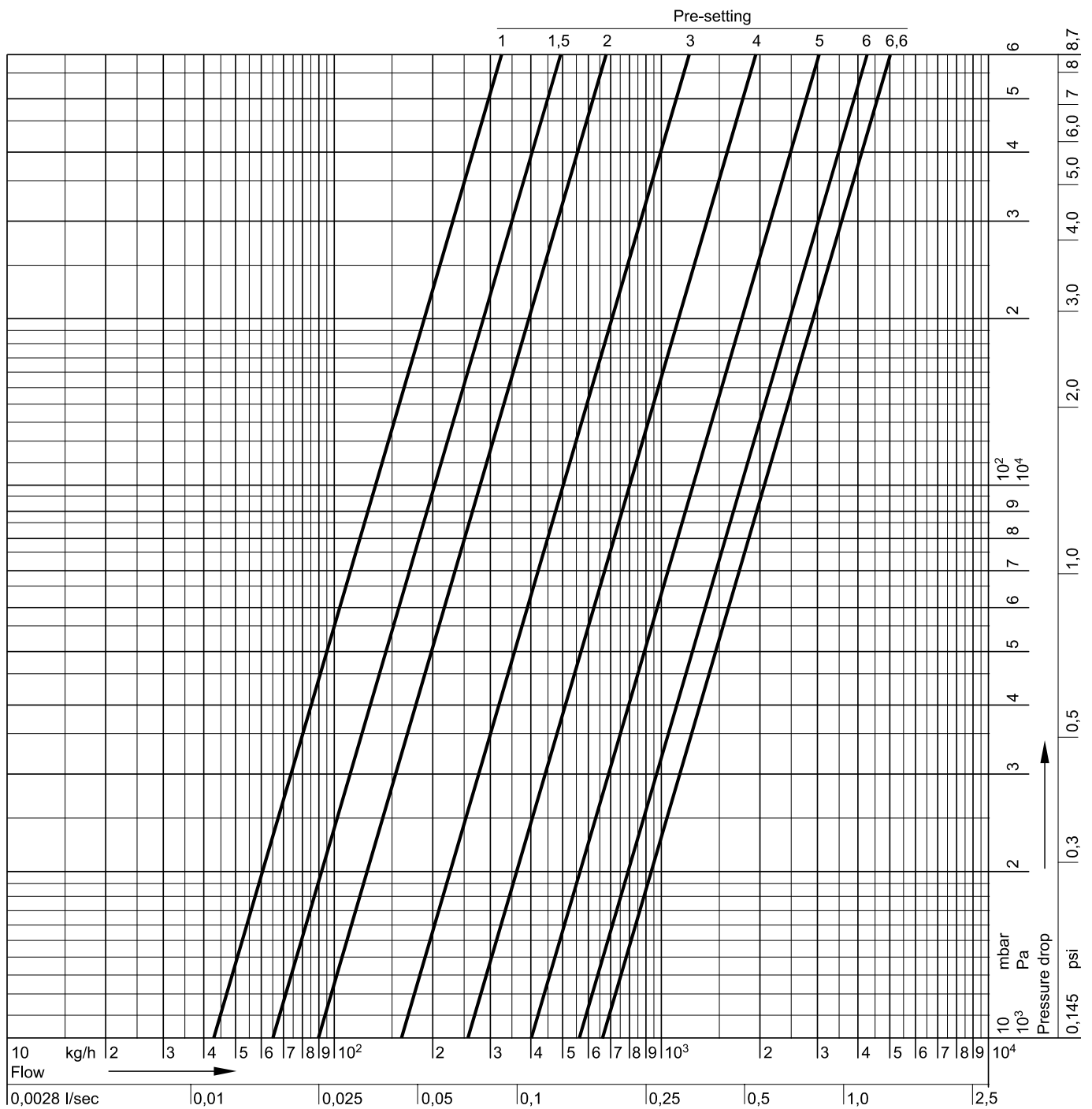
Fig. 3. Kombi-F in a cooling system

Flow Data Kombi-F-II, DN15



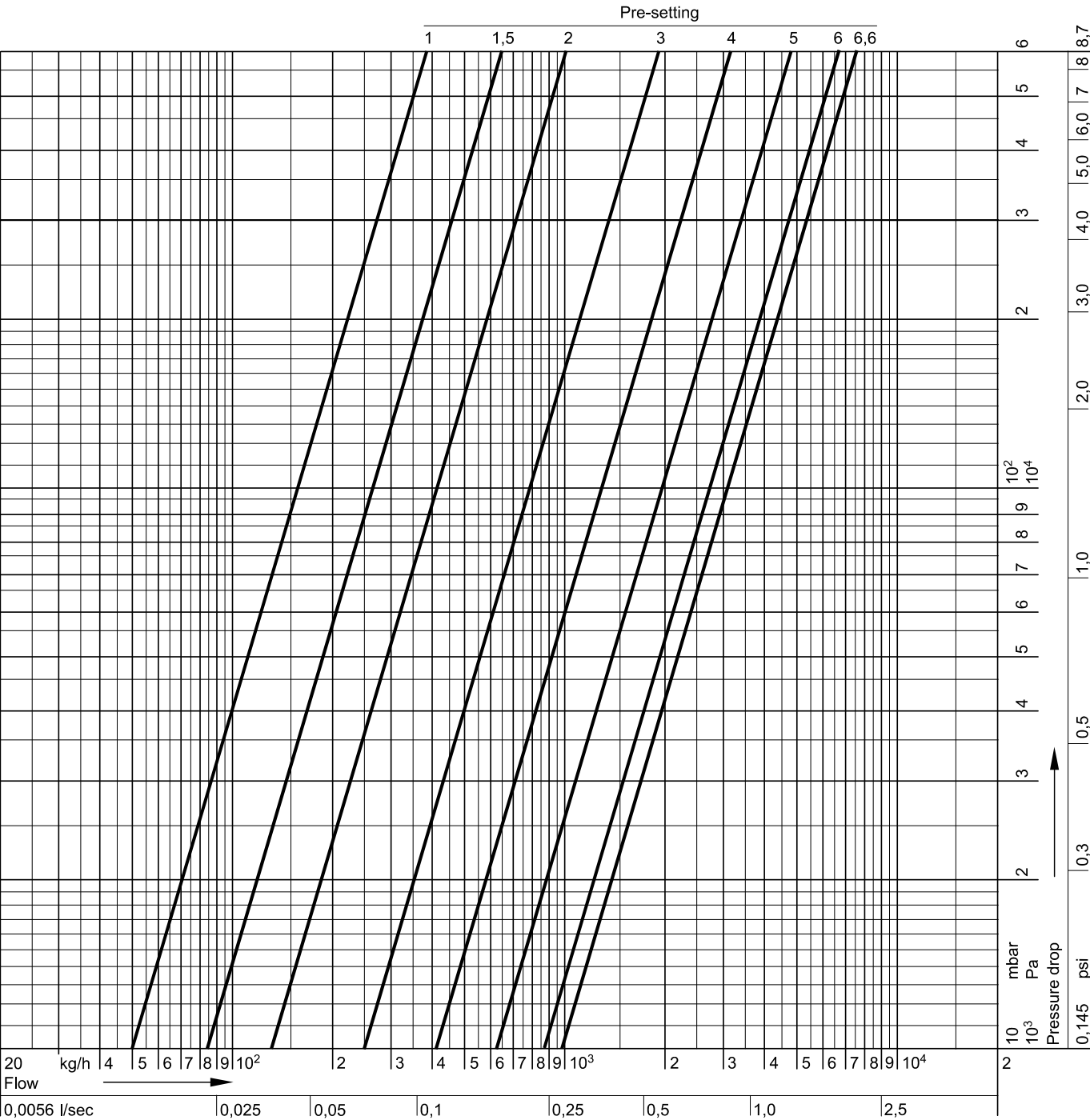
Pre-setting	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	6,6 = open
k _v -value	0,13	0,26	0,37	0,55	0,80	1,10	1,50	1,90	2,30	2,60	2,90	3,30	4,20	k _{vs} = 4,50
cv-value	0,15	0,30	0,43	0,64	0,94	1,29	1,76	2,22	2,69	3,04	3,39	3,86	4,91	5,27

Flow Data Kombi-F-II, DN20



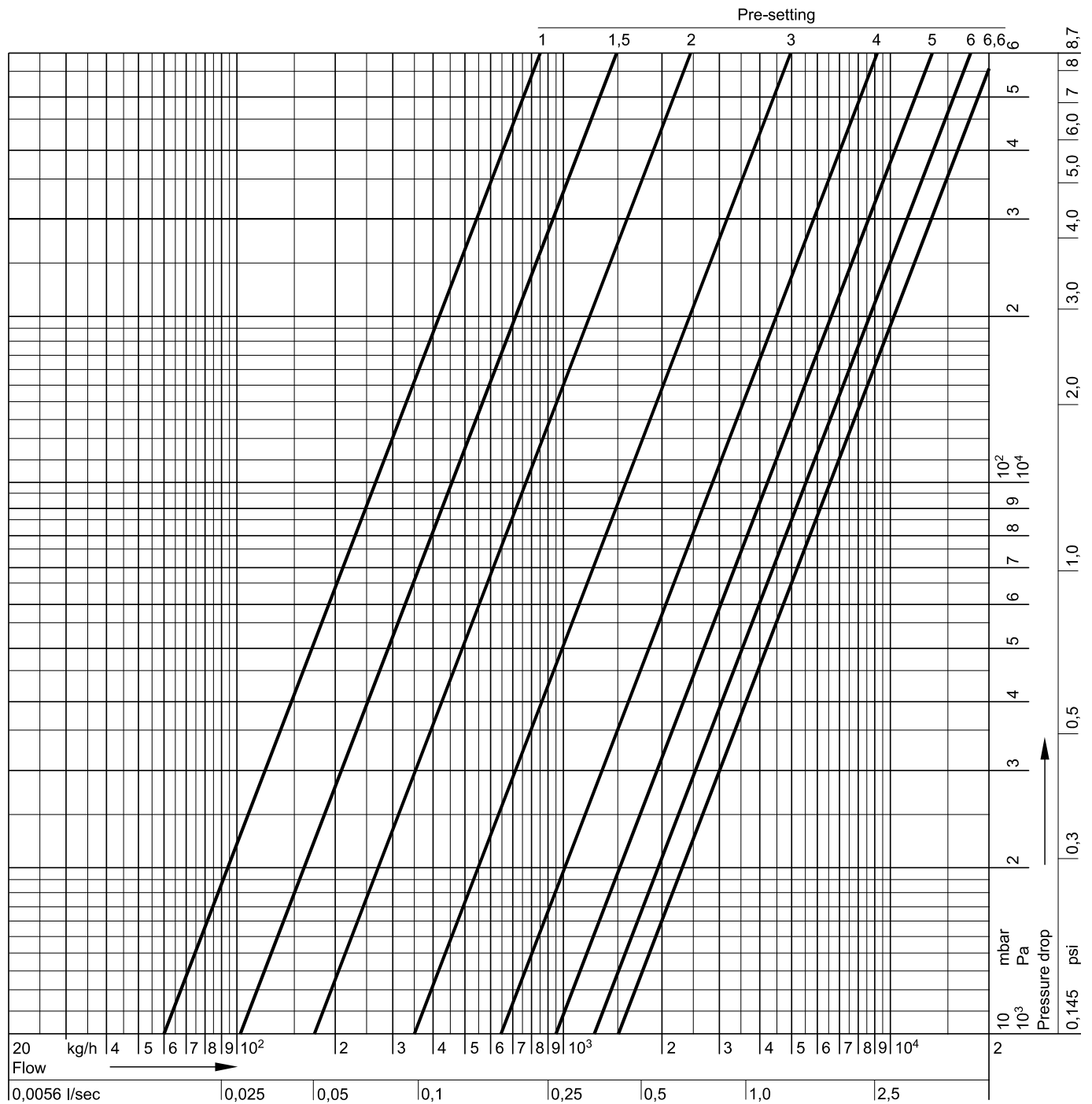
Pre-setting	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	6,6 = open
k _v -value	0,22	0,43	0,65	0,90	1,15	1,60	2,06	2,60	3,26	4,00	4,79	5,60	6,43	k _{vs} = 6,60
cv-value	0,26	0,50	0,76	1,05	1,35	1,87	2,41	3,04	3,81	4,68	5,60	6,55	7,52	7,72

Flow Data Kombi-F-II, DN25



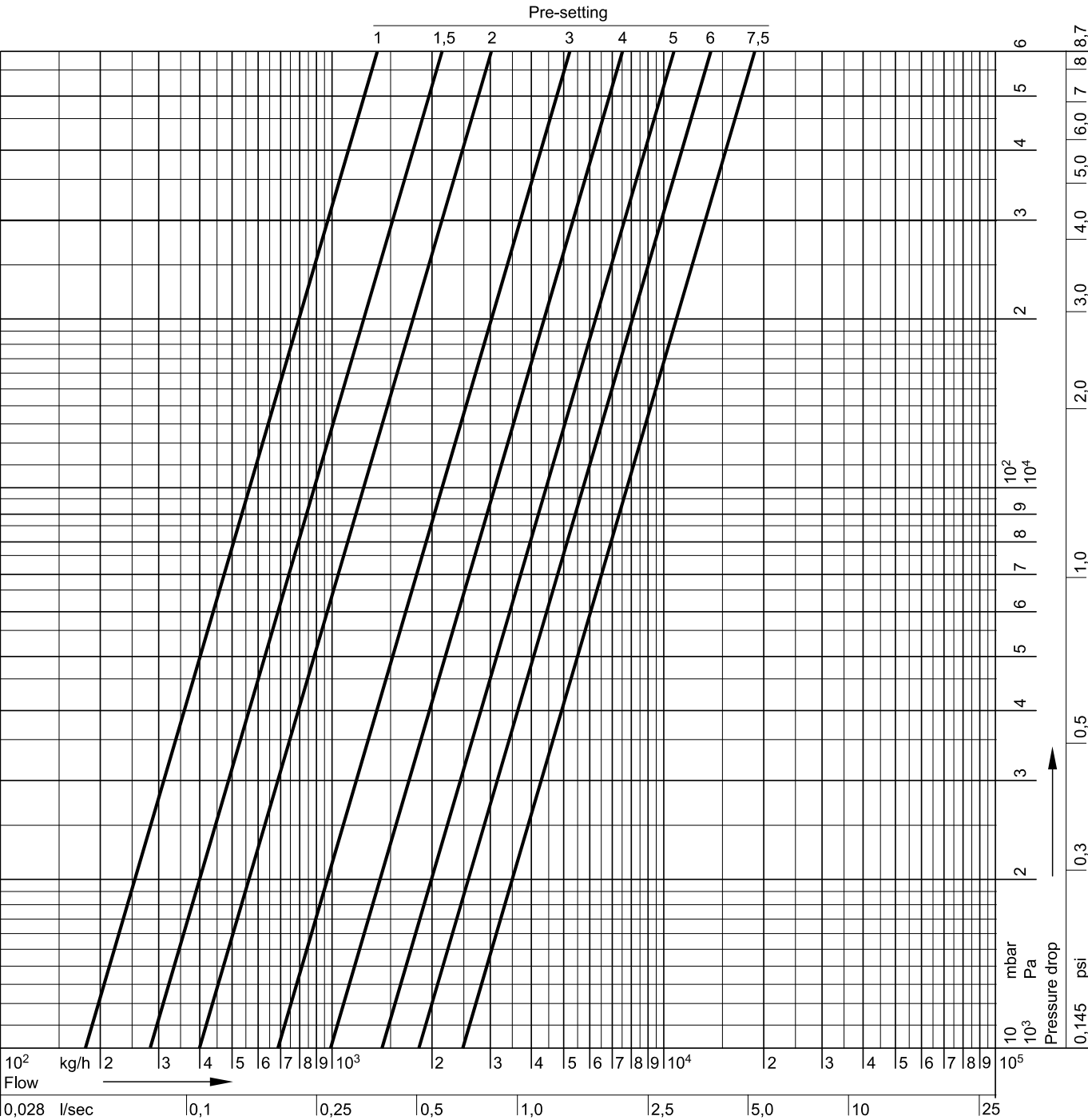
Pre-setting	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	6,6 = open
k _v -value	0,22	0,49	0,84	1,30	1,85	2,50	3,25	4,10	5,07	6,20	7,50	8,70	9,63	k _{vs} = 9,80
c _v -value	0,26	0,57	0,98	1,52	2,16	2,93	3,80	4,80	5,93	7,25	8,78	10,2	11,3	11,5

Flow Data Kombi-F-II, DN32



Pre-setting	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	6,6 = open
k _v -value	0,28	0,60	1,06	1,68	2,48	3,54	4,91	6,46	7,97	9,47	11,0	12,8	14,7	k _{vs} = 15,1
cv-value	0,33	0,70	1,24	1,97	2,90	4,14	5,74	7,56	9,32	11,1	12,9	15,0	17,2	17,7

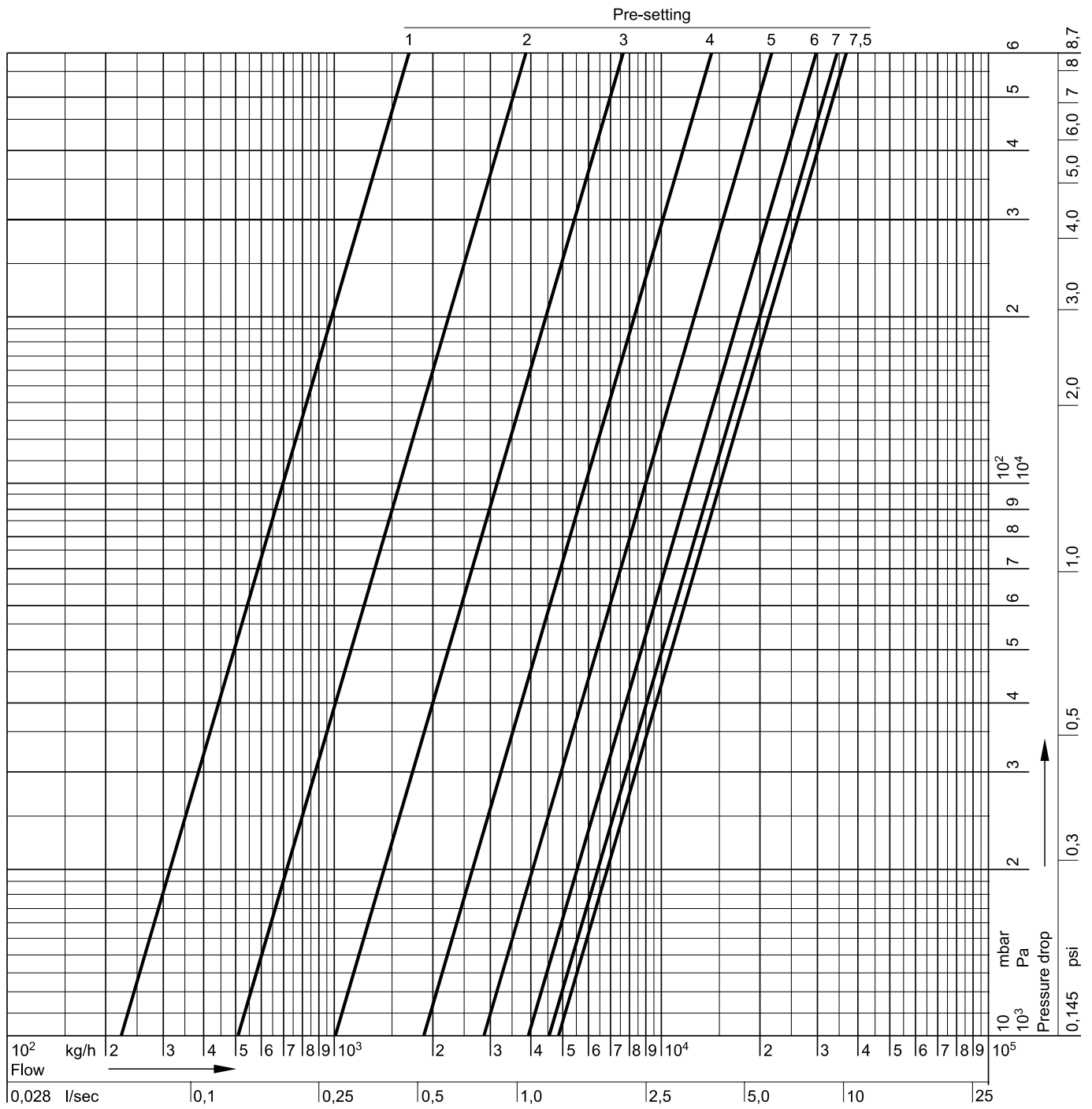
Flow Data Kombi-F-II, DN40



Pre-setting	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0
k _v -value	0,88	1,80	2,80	4,00	5,42	6,90	8,31	9,90	11,9	14,3	16,8	18,8	20,4	22,2
cv-value	1,03	2,11	3,28	4,68	6,34	8,07	9,72	11,6	13,9	16,7	19,7	22,0	23,9	26,0

Pre-setting	7,5 = open
k _v -value	k _{vs} = 24,9
cv-value	29,1

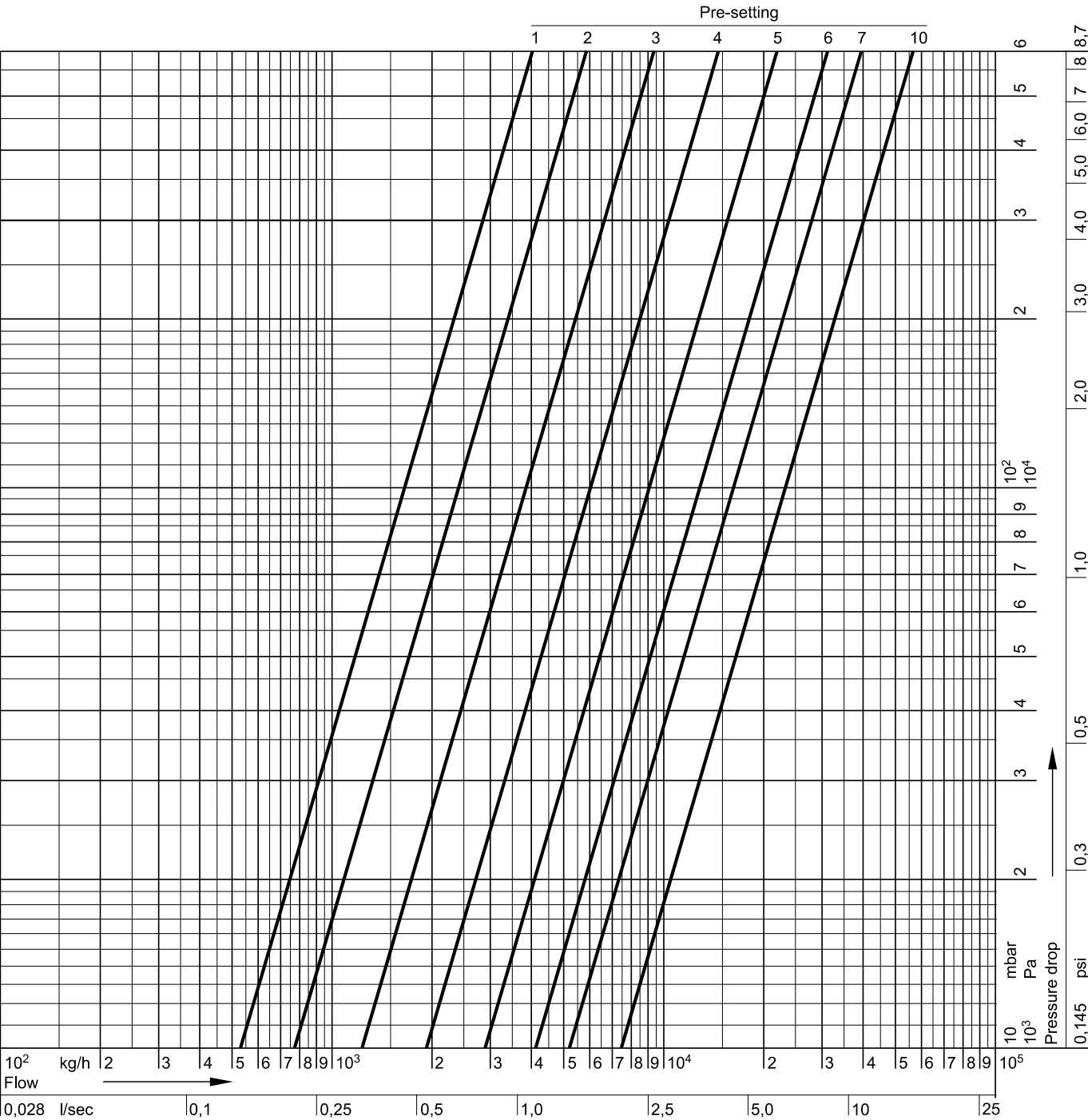
Flow Data Kombi-F-II, DN50



Pre-setting	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0
k _v -value	1,07	2,20	3,46	5,10	7,36	10,3	13,9	18,1	22,7	28,0	34,1	39,3	42,8	45,6
cv-value	1,25	2,57	4,05	5,97	8,61	12,1	16,3	21,2	26,6	32,8	39,9	46,0	50,1	53,4

Pre-setting	7,5 = open
k _v -value	k _{vs} = 48,5
cv-value	56,7

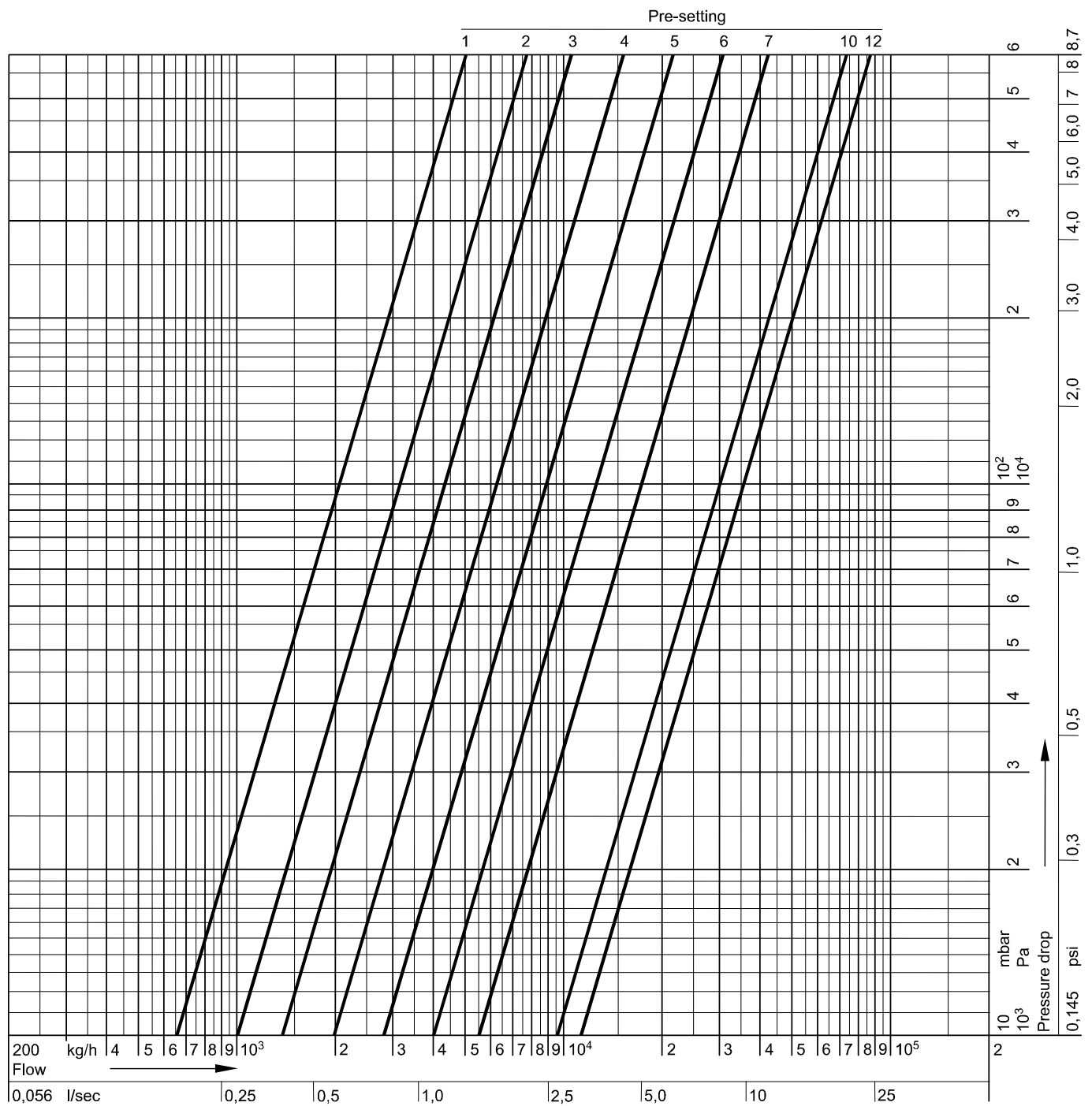
Flow Data Kombi-F-II, DN65



Pre-setting	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	8,0
k _v -value	2,98	5,30	6,64	7,80	9,60	12,1	15,2	19,0	23,6	29,1	35,2	41,3	47,0	52,1	60,7
cv-value	3,49	6,20	7,77	9,13	11,2	14,2	17,8	22,2	27,6	34,0	41,2	48,3	55,0	61,0	71,0

Pre-setting	9,0	10,0 = open
k _v -value	67,9	k _{vs} = 74,4
cv-value	79,4	87,0

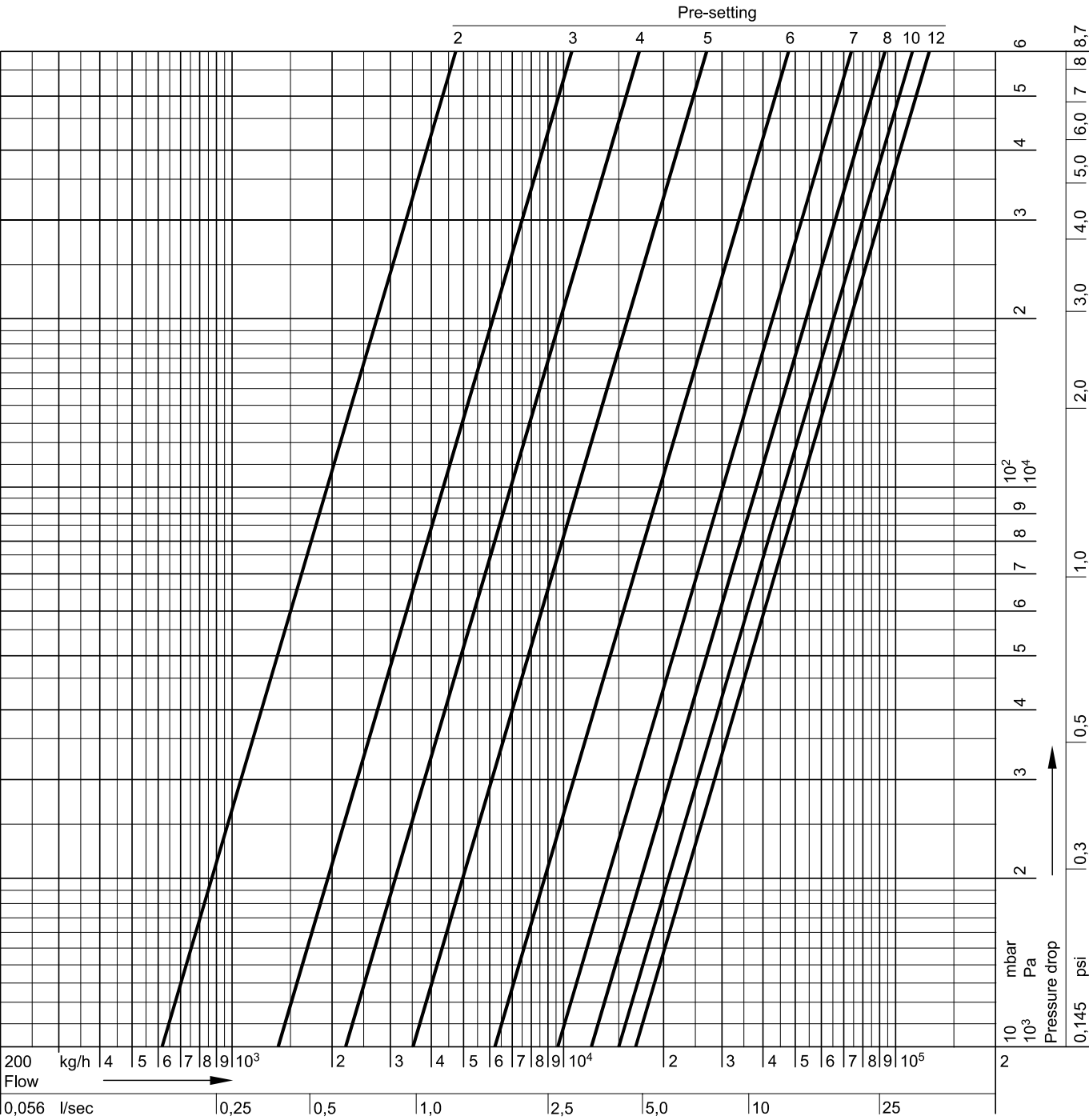
Flow Data Kombi-F-II, DN80



Pre-setting	0,5	1,0	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	6,0	7,0	8,0	9,0	10,0
k _v -value	3,65	6,60	8,52	10,0	11,7	13,7	16,1	19,2	23,2	28,1	40,4	55,4	70,9	84,8	96,1
cv-value	4,27	7,72	9,97	11,7	13,7	16,0	18,8	22,5	27,1	32,9	47,3	64,8	83,0	99,2	112

Pre-setting	11,0	12,0 = open
k _v -value	104	k _{vs} = 111
cv-value	122	130

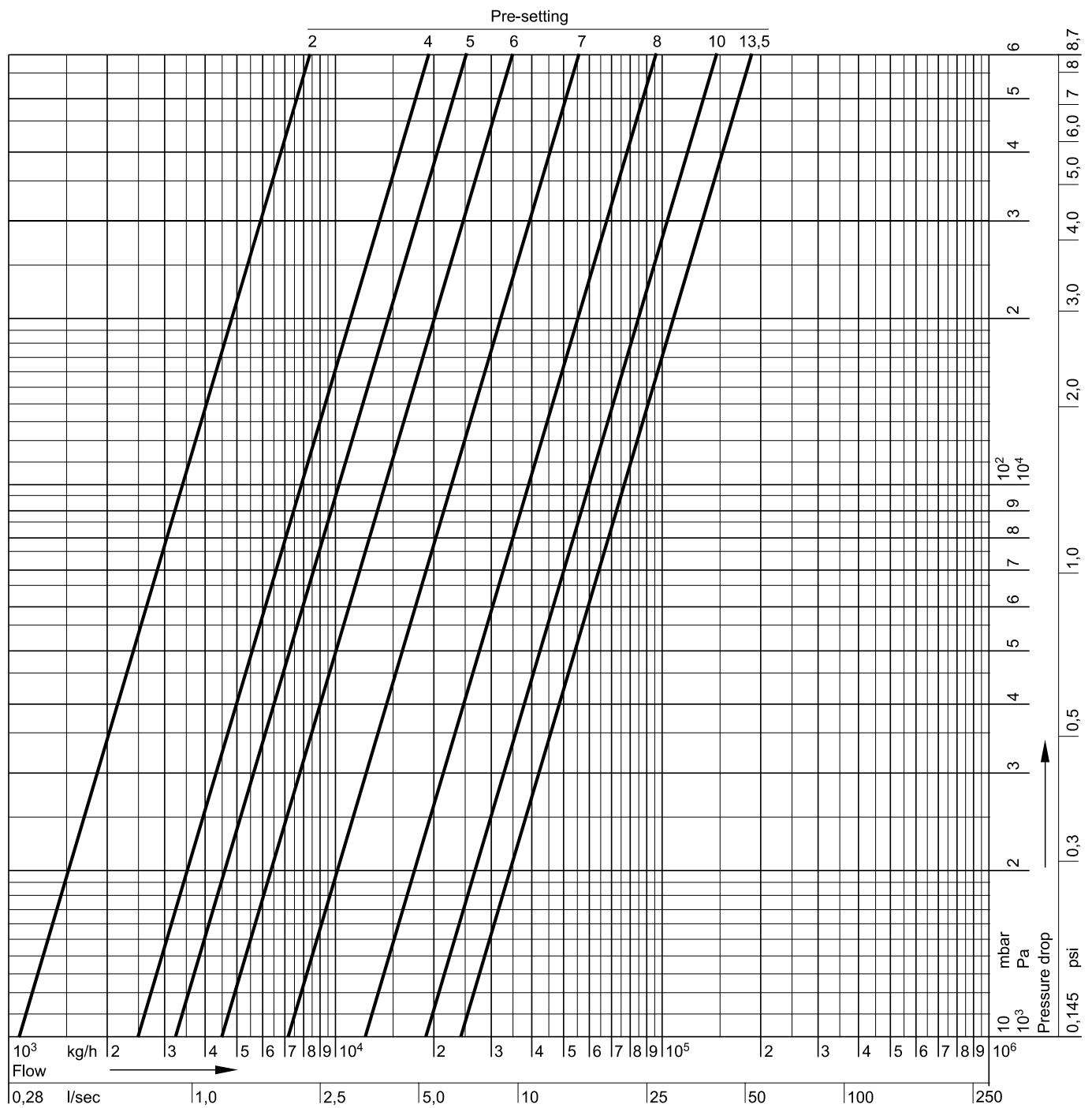
Flow Data Kombi-F-II, DN100



Pre-setting	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	7,5	8,0	9,0
k _v -value	3,80	6,20	9,60	13,4	17,3	21,8	27,6	35,7	47,2	62,4	79,3	96,6	110	121	137
cv-value	4,45	7,25	11,2	15,7	20,2	25,5	32,3	41,8	55,2	73,0	92,8	113	129	142	160

Pre-setting	10,0	11,0	12,0 = open
k _v -value	148	157	k _{vs} = 165
cv-value	173	184	193

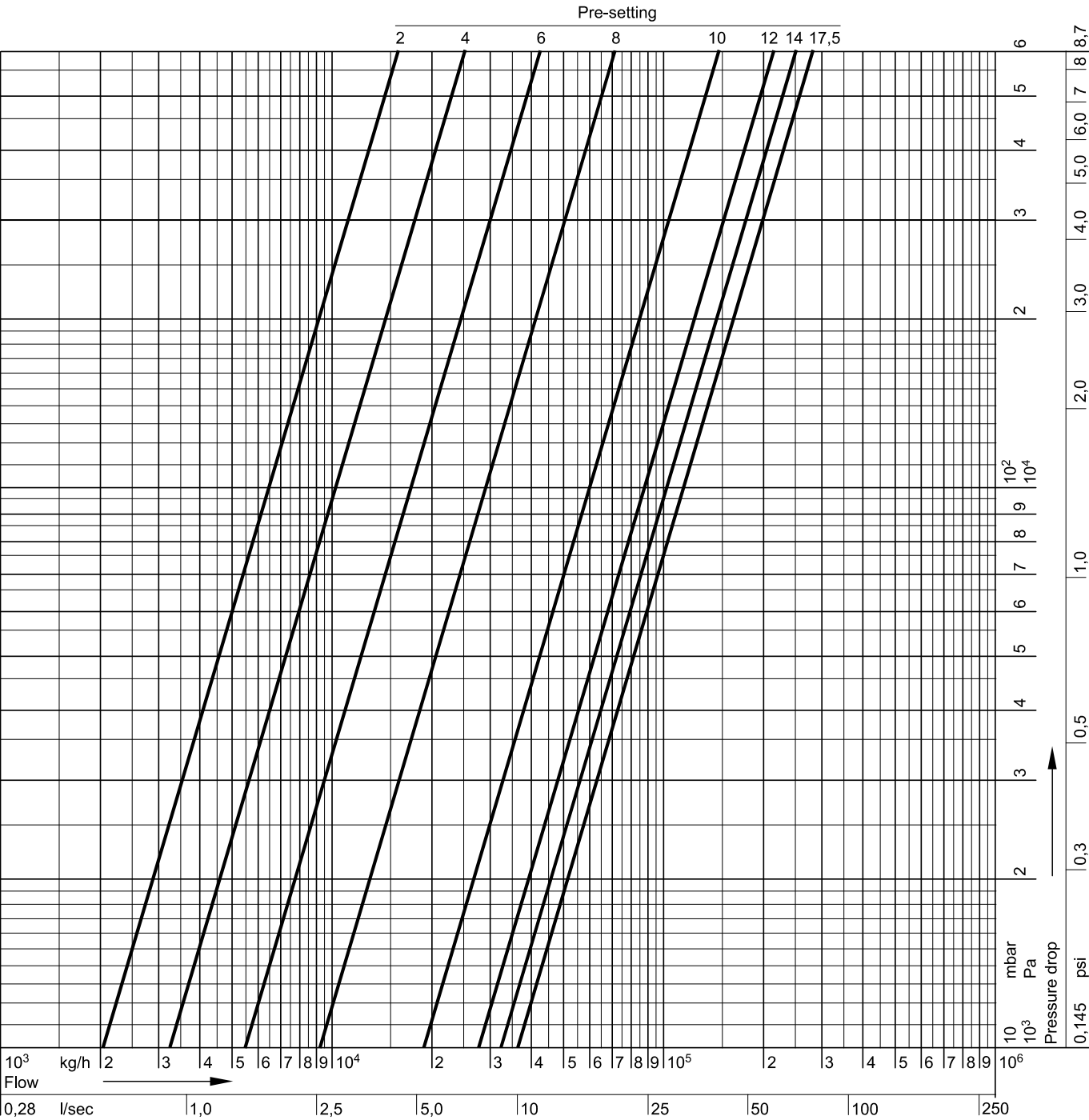
Flow Data Kombi-F-II, DN125



Pre-setting	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	7,5	8,0	9,0
k_v -value	8,30	11,3	14,4	17,7	21,1	24,6	28,2	32,3	37,4	44,9	56,1	72,5	93,2	120	162
cv-value	9,71	13,2	16,8	20,7	24,7	28,8	33,0	37,8	43,8	52,5	65,6	84,8	109	140	190

Pre-setting	10,0	11,0	12,0	13,0	13,5 = open
k_v -value	192	211	225	236	$k_{vs} = 242$
cv-value	225	247	263	276	283

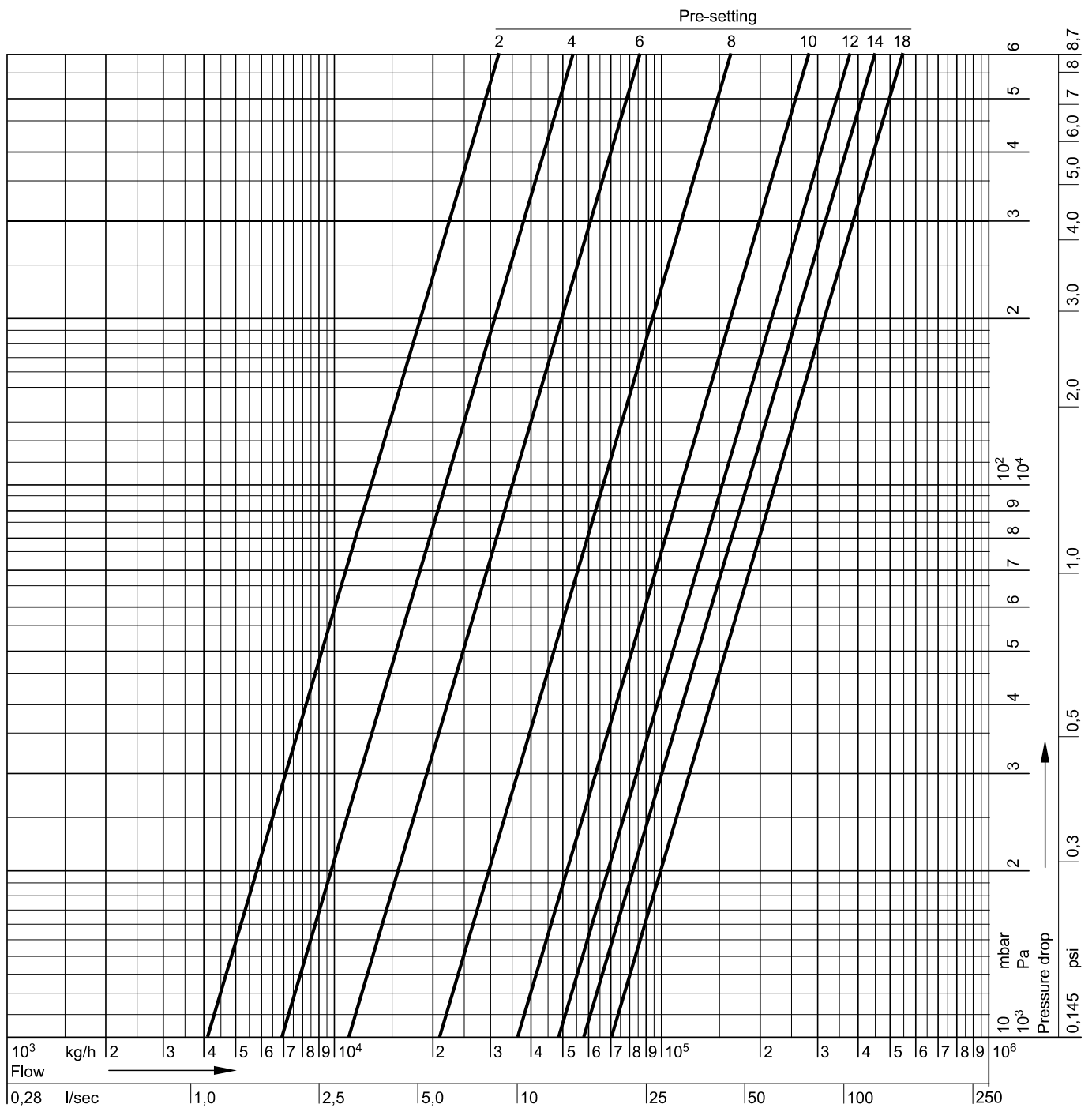
Flow Data Kombi-F-II, DN150



Pre-setting	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	7,5	8,0	9,0
k _v -value	16,2	20,4	23,8	26,7	29,5	33,0	37,6	42,3	48,0	54,5	61,5	69,6	80,0	92,9	136
cv-value	19,0	23,9	27,8	31,2	34,5	38,6	44,0	49,5	56,2	63,8	72,0	81,4	93,6	109	159

Pre-setting	10,0	11,0	12,0	13,0	14,0	15,0	16,0	17,0	17,5 = open
k _v -value	193	240	274	300	320	337	352	365	k _{vs} = 372
cv-value	226	281	321	351	374	394	412	427	435

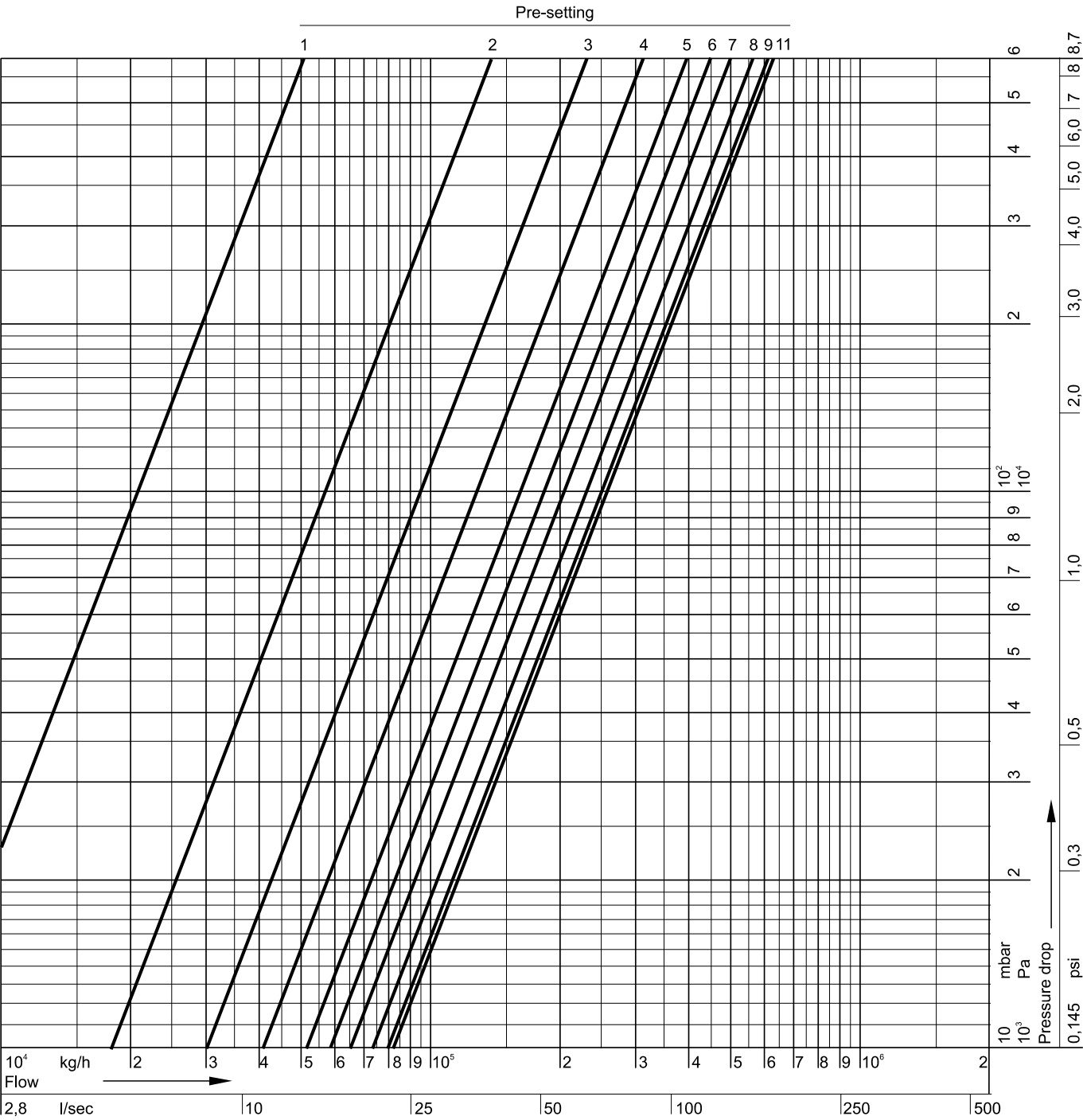
Flow Data Kombi-F-II, DN200



Pre-setting	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	6,5	7,0	7,5	8,0	9,0
k _v -value	32,5	41,3	48,9	55,5	62,1	69,3	77,8	88,1	101	115	133	154	179	208	284
cv-value	38,0	48,3	57,2	64,9	72,7	81,1	91,0	103	118	135	156	180	209	243	332

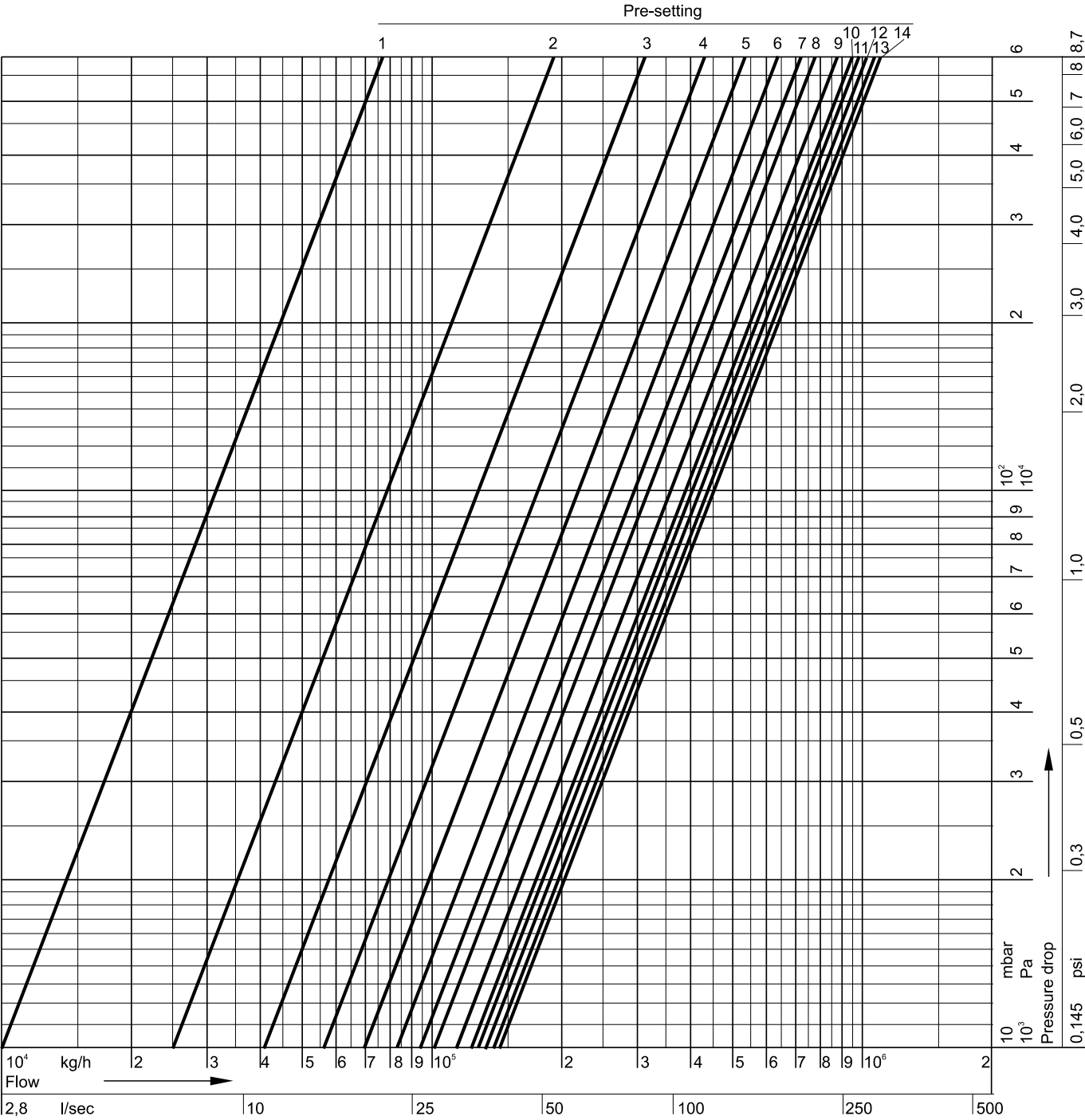
Pre-setting	10,0	11,0	12,0	13,0	14,0	15,0	16,0	17,0	18,0 = open
k _v -value	364	435	489	537	575	613	646	677	k _{vs} = 704
cv-value	426	509	572	628	673	717	756	792	824

Flow Data Kombi-F, DN250



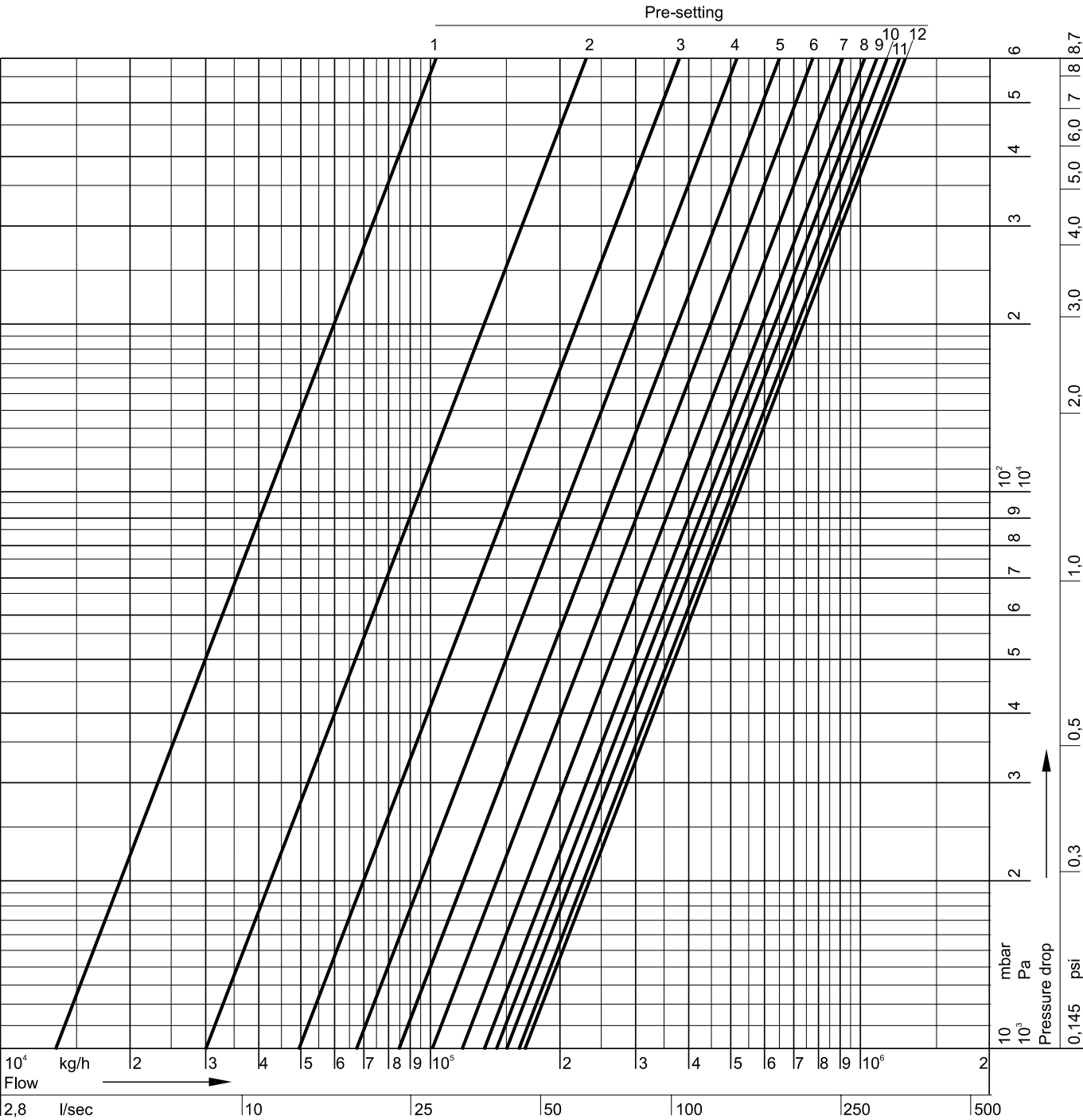
Pre-setting	1	2	3	4	5	6	7	8	9	11,0 = open
k _v -value	66	178	297	410	514	587	649	731	800	k _{vs} = 812
cv-value	77	208	347	480	601	687	759	855	936	950

Flow Data Kombi-F, DN300



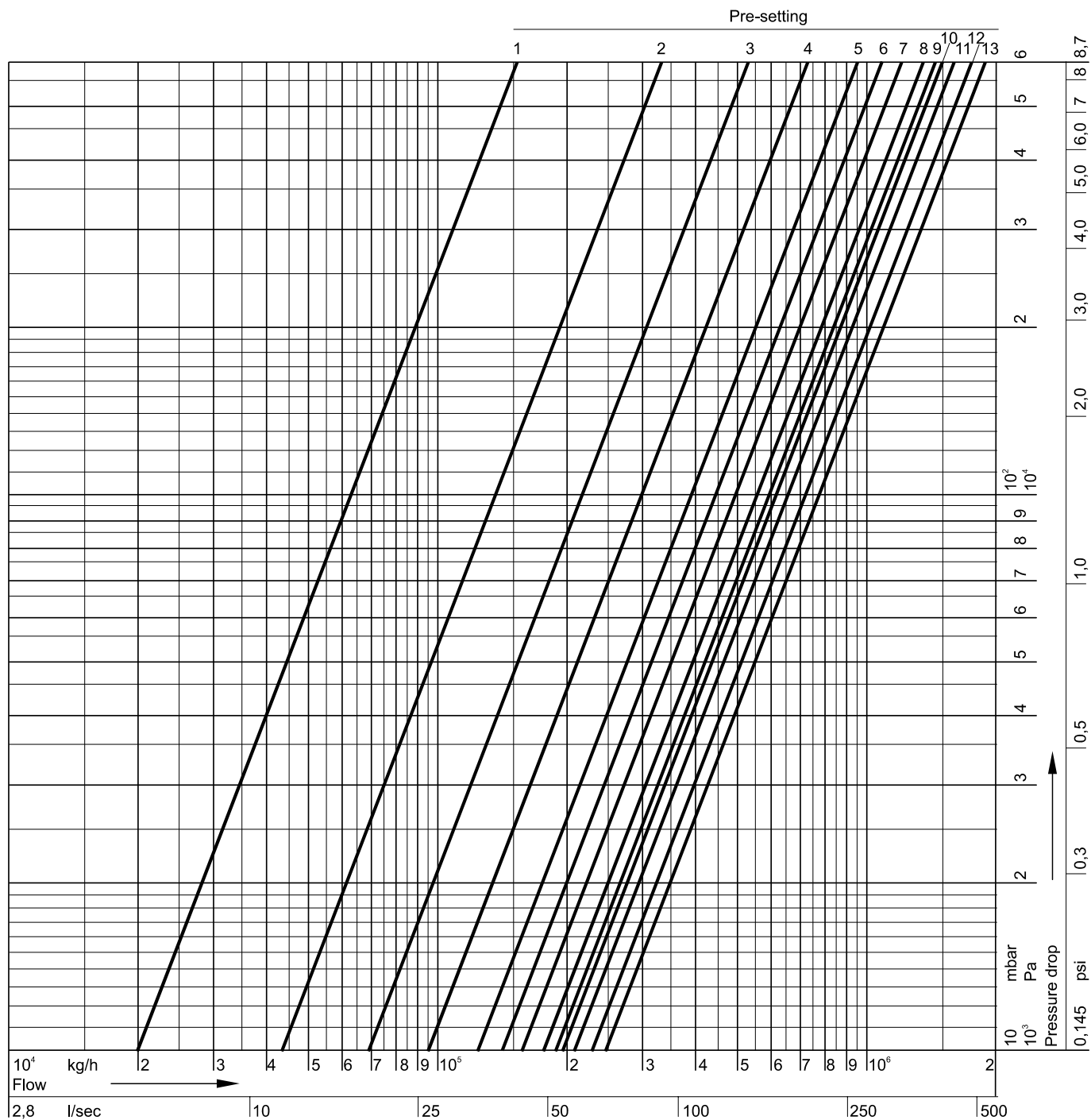
Pre-setting	1	2	3	4	5	6	7	8	9	10	11	12	13	14,0 = open
k _v -value	109	248	411	560	696	825	944	1044	1138	1226	1291	1324	1345	k _{vs} = 1380
cv-value	128	290	481	655	814	965	1104	1221	1331	1434	1510	1549	1573	1615

Flow Data Kombi-F, DN350



Pre-setting	1	2	3	4	5	6	7	8	9	10	11	12,0 = open
k _v -value	128	300	495	677	851	1019	1163	1272	1386	1513	1606	k _{vs} = 1651
c _v -value	150	351	579	792	996	1192	1361	1488	1622	1770	1879	1932

Flow Data Kombi-F, DN400



Pre-setting	1	2	3	4	5	6	7	8	9	10	11	12	13.0 = open
k_v-value	201	430	690	946	1182	1409	1612	1752	1874	1991	2092	2256	k _{vs} = 2389
cv-value	235	503	807	1107	1383	1649	1886	2050	2193	2329	2448	2640	2795

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 [m³/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:

$$Kv_{Medium} = \frac{m}{\sqrt{\Delta p}} \times \frac{\sqrt{\rho_{Medium}}}{\sqrt{\rho_0}}$$

Correction Factor f

When the density σ is expressed in t/m³ instead of kg/m³ the correction factor f is the result. The correction factor f can be used to re-calculate k_v -value, pressure drop and flow:

$$Kv_{Medium} = Kv_0 \times \frac{1}{\sqrt{f}}$$

$$\Delta p_{Medium} = \Delta p_0 \times f$$

$$m_{Medium} = m_0 \times \frac{1}{\sqrt{f}}$$

Table 1. Values for correction factor 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%	1,000	0,998	0,994	0,988	0,981	0,972
Ethylen glycol	70%	1,052	1,047	1,041	1,033	10,24	1,015
e.g. Antifrogen N	50%	1,086	1,079	1,070	1,061	1,052	1,042
Propylen glycol	70%	1,035	1,029	1,021	1,012	1,002	0,991
e.g. Antifrogen L	50%	1,053	1,044	1,035	1,025	1,014	1,002

Honeywell

Automation and Control Products

Honeywell AG
Zu den Ruhrwiesen 3
D-59755 Arnsberg-Neheim

Phone: (49) 2932 9880
Fax: (49) 2932 988224
mng@honeywell.com

<http://europe.hbc.honeywell.com>