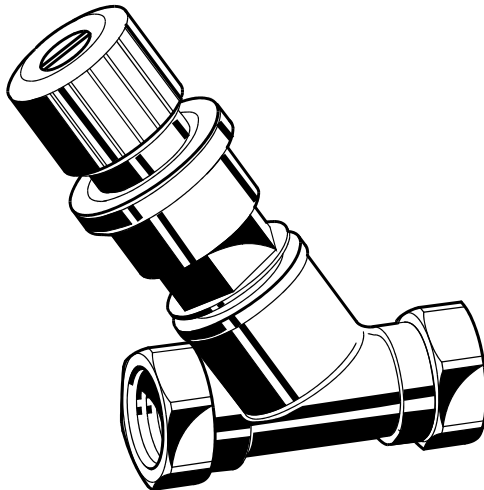


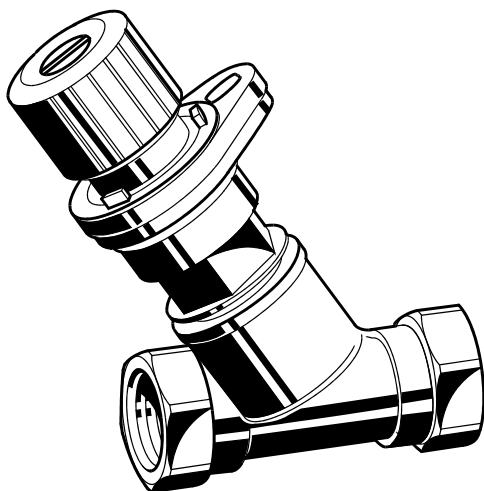
V5000, V5010 Kombi-3-plus

BALANCING AND SHUTOFF VALVES

PRODUCT DATA



V5000 Kombi-3-plus RED



V5010 Kombi-3-plus BLUE

CONTENTS

Overview	2
Design	2
Materials	2
Application	2
Features	2
Specifications	2
Ordering Information	3
Dimensions	4
V5000 Kombi-3-plus RED	4
V5010 Kombi-3-plus BLUE	5
Accessories	6
Connections for valves with external threads (V5000X and V5010X)	6
Connections for valves with internal threads (V5000Y and V5010Y)	6
Accessories	7
Measuring equipment (V5000 only)	7
Installation Examples	8
Flow Data V5000 Kombi-3-plus RED	9
Flow Data V5000 Kombi-3-plus RED for flow measurement	10
Flow Data V5010 Kombi-3-plus BLUE, DN10	11
Flow Data V5010 Kombi-3-plus BLUE, DN15	12
Flow Data V5010 Kombi-3-plus BLUE, DN20	13
Flow Data V5010 Kombi-3-plus BLUE, DN25	14
Flow Data V5010 Kombi-3-plus BLUE, DN32	15
Flow Data V5010 Kombi-3-plus BLUE, DN40	16
Flow Data V5010 Kombi-3-plus BLUE, DN50	17
Flow Data V5010 Kombi-3-plus BLUE, DN65	18
Flow Data V5010 Kombi-3-plus BLUE, DN80	19
Influence of Coolants on Flow Values	20
Correction Factor f	20

Overview

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 double-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 EN3H-0281GE25)
- Valve body DN10 to DN50 with external threads to ISO228 for use with connections (see Accessories)
- Valve insert with handwheel
- Pre-setting dial and display (V5010 only)

Design

- Valve body DN10 to DN20 with internal threads to DIN2999 (ISO7) for threaded pipe or copper and precision steel pipe 10...20 mm (see Accessories), or
- Valve body DN25 to DN80 with internal threads to DIN2999 (ISO7) for threaded pipe, or
- Valve body DN10 to DN50 with external threads to ISO228 for use with connections (see Accessories)
- Valve insert with handwheel
- Pre-setting dial and display (V5010 only)

Materials

- Valve housing made of red bronze
- Valve insert made of brass with seat sealing made of PTFE
- O-rings and soft seals made of EPDM
- Handwheel, pre-setting dial and display made of plastic, red or blue and white
- Connection nuts made of brass

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, 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 shutoff, draining and filling.

The V5010 Kombi-3-plus BLUE for the return is a double regulating balancing valve with additional functions shutoff, 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.

Please Note:

- To avoid stone deposit and corrosion the composition of the medium should conform with VDI-Guideline 2035
- Additives have to be suitable for EPDM sealings
- System has to be flushed thoroughly before initial operation with all valves fully open
- Any complaints or costs resulting from non-compliance with above rules will not be accepted by Honeywell
- Please contact us if you should have any special requirements or needs

Features

- **All functions of the Kombi-3-plus valves can be installed through the spindle**
- **V5010 Kombi-3-plus BLUE DN10 to DN40 can be retrofitted with a Kombi-DP diaphragm unit (V5012) – without interrupting operation of the system**
- **Combination of Kombi-3-plus RED and BLUE allows measuring in the supply and pre-setting in the return – at the same time.**
- **High accuracy of pre-setting because of individual adjustment**
- **Robust valve body made of corrosion resistant red bronze**
- **Available in sizes up to DN80**
- **Visible pre-setting dial with concealed pre-setting wheel (V5010 Kombi-3-plus BLUE)**
- **Maintenance free spindle with double O-ring sealings**
- **PTFE seat sealing**

Specifications

Medium	Water or water-glycol mixture according to VDI 2035
Operating temperature	2...130°C (36...266°F)
Operating pressure	max. 16 bar (232 psi)
k_{vs} (cv)-values	see table on page 3 and flow diagrams

Ordering Information

Table 4. OS-Nos. (OS=Ordering System)

Order text	DN	Thread	k _{vs} (cv)-value	OS-No.
V5000Y Kombi-3-plus RED fixed orifice measuring valve with internal threads to DIN 2999 (ISO 7) on inlet and outlet	10	Rp 3/8"	1.5 (1.8)	V5000Y0010
	15	Rp 1/2"	2.5 (2.9)	V5000Y0015
	20	Rp 3/4"	4.5 (5.3)	V5000Y0020
	25	Rp 1"	6.5 (7.6)	V5000Y0025
	32	Rp 1 1/4"	13.0 (15.2)	V5000Y0032
	40	Rp 1 1/2"	20.0 (23.4)	V5000Y0040
	50	Rp 2"	35.0 (41.0)	V5000Y0050
	65	Rp 2 1/2"	42.0 (49.1)	V5000Y0065
	80	Rp 3"	68.0 (79.6)	V5000Y0080
V5000X Kombi-3-plus RED fixed orifice measuring valve with external threads to DIN ISO 228 on inlet and outlet	10	G 5/8" A	1.5 (1.8)	V5000X0010
	15	G 3/4" A	2.5 (2.9)	V5000X0015
	20	G 1" A	4.5 (5.3)	V5000X0020
	25	G 1 1/4" A	6.5 (7.6)	V5000X0025
	32	G 1 1/2" A	13.0 (15.2)	V5000X0032
	40	G 1 3/4" A	20.0 (23.4)	V5000X0040
	50	G 2 3/8" A	35.0 (41.0)	V5000X0050
V5010Y Kombi-3-plus BLUE double regulating balancing valve with inter- nal threads to DIN 2999 (ISO 7) on inlet and outlet	10	Rp 3/8"	2.4 (2.8)	V5010Y0010
	15	Rp 1/2"	2.7 (3.2)	V5010Y0015
	20	Rp 3/4"	6.4 (7.5)	V5010Y0020
	25	Rp 1"	6.8 (8.0)	V5010Y0025
	32	Rp 1 1/4"	21.0 (24.6)	V5010Y0032
	40	Rp 1 1/2"	22.0 (25.7)	V5010Y0040
	50	Rp 2"	38.0 (44.5)	V5010Y0050
	65	Rp 2 1/2"	47.7 (55.8)	V5010Y0065
	80	Rp 3"	71.0 (83.1)	V5010Y0080
V5010X Kombi-3-plus BLUE double regulating balancing valve with exter- nal threads to DIN ISO 228 on inlet and outlet	10	G 5/8" A	2.4 (2.8)	V5010X0010
	15	G 3/4" A	2.7 (3.2)	V5010X0015
	20	G 1" A	6.4 (7.5)	V5010X0020
	25	G 1 1/4" A	6.8 (8.0)	V5010X0025
	32	G 1 1/2" A	21.0 (24.6)	V5010X0032
	40	G 1 3/4" A	22.0 (25.7)	V5010X0040
	50	G 2 3/8" A	38.0 (44.5)	V5010X0050

Dimensions

V5000 Kombi-3-plus RED

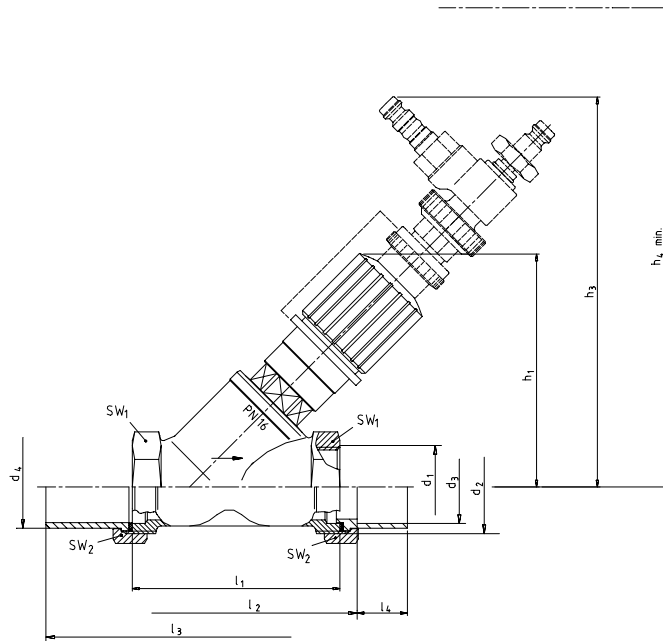


Fig. 1. V5000 Kombi-3-plus RED

Table 1. Dimensions V5000 Kombi-3-plus RED

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

NOTE: All dimensions in mm if not stated otherwise.

Table 2. Abbreviations used for dimensions

DN	Nominal size
d₁	Internal thread on body (connection size)
d₂	External thread on body
d₃	Inner Ø of connection
d₄	Outer Ø of connection
h₁	Height with valve fully open
h₂	Height with installed draining adapter
h₃	Height with installed measuring adapter
h₄	Clearance required to fit measuring adapter

h₅	Clearance required to fit draining adapter
h₆	Clearance required to fit tamper-proof cap
l₁	Body length according to DIN3502
l₂	Installed length with soldering connections
l₃	Installed length with welding connections
l₄	Length of pipe penetration
SW₁	Wrench size
SW₂	Wrench size

V5010 Kombi-3-plus BLUE

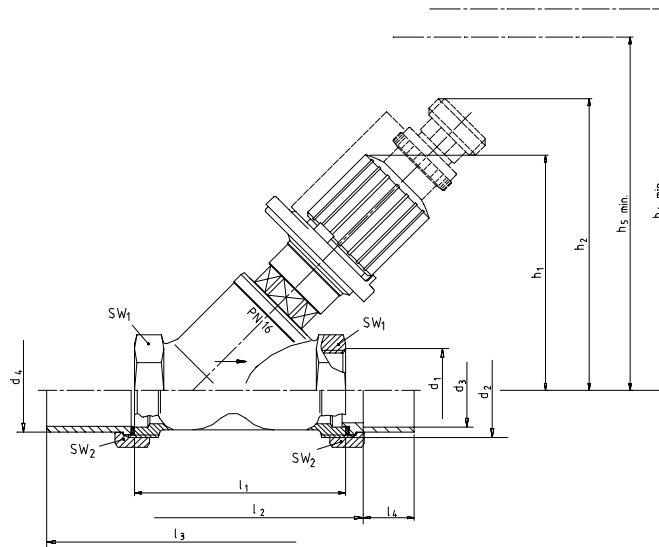


Fig. 2. V5010 Kombi-3-plus BLUE

Table 3. Dimensions V5010 Kombi-3-plus BLUE

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

NOTE: All dimensions in mm if not stated otherwise.

Table 4. Abbreviations used for dimensions

DN	Nominal size	h₅	Clearance required to fit draining adapter
d₁	Internal thread on body (connection size)	h₆	Clearance required to fit tamper-proof cap
d₂	External thread on body	l₁	Body length according to DIN3502
d₃	Inner Ø of connection	l₂	Installed length with soldering connections
d₄	Outer Ø of connection	l₃	Installed length with welding connections
h₁	Height with valve fully open	l₄	Length of pipe penetration
h₂	Height with installed draining adapter	SW₁	Wrench size
h₃	Height with installed measuring adapter	SW₂	Wrench size
h₄	Clearance required to fit measuring adapter		

Accessories

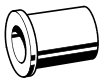
Connections for valves with external threads (V5000X and V5010X)

Soldering connection made of brass



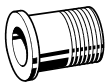
12 mm, for valves DN10	VA5530A010
15 mm, for valves DN15	VA5530A015
22 mm, for valves DN20	VA5530A020
28 mm, for valves DN25	VA5530A025
35 mm, for valves DN32	VA5530A032
42 mm, for valves DN40	VA5530A040
54 mm, for valves DN50	VA5530A050

Welding connection made of steel



for valves DN10	VA5540A010
for valves DN15	VA5540A015
for valves DN20	VA5540A020
for valves DN25	VA5540A025
for valves DN32	VA5540A032
for valves DN40	VA5540A040
for valves DN50	VA5540A050

Externally threaded connection made of brass



3/8", for valves DN10	VA5500A010
1/2", for valves DN15	VA5500A015
3/4", for valves DN20	VA5500A020
1", for valves DN25	VA5500A025
1 1/4", for valves DN32	VA5500A032
1 1/2", for valves DN40	VA5500A040
2", for valves DN50	VA5500A050

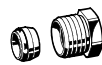
Sealing ring



3/8", for valves DN10	VA5090A010
1/2", for valves DN15	VA5090A015
3/4", for valves DN20	VA5090A020
1", for valves DN25	VA5090A025
1 1/4", for valves DN32	VA5090A032
1 1/2", for valves DN40	VA5090A040
2", for valves DN50	VA5090A050

Connections for valves with internal threads (V5000Y and V5010Y)

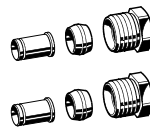
Set of compression ring and nut



3/8" x 10 mm	VA650A1010
3/8" x 12 mm	VA650A1012
1/2" x 10 mm	VA650A1210
1/2" x 12 mm	VA650A1212
1/2" x 14 mm	VA650A1214
1/2" x 15 mm	VA650A1215
1/2" x 16 mm	VA650A1216
3/4" x 18 mm	VA650A2018
3/4" x 22 mm	VA650A2022

NOTE: Support inserts have to be used for soft copper and steel pipe (wall thickness 1 mm).

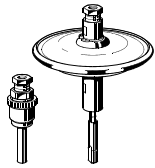
Set of compression ring, nut and support insert (2 pcs each)



3/8" x 12 mm	VA651A1012
1/2" x 12 mm	VA651A1212
1/2" x 15 mm	VA651A1215
1/2" x 16 mm	VA651A1216
3/4" x 18 mm	VA651A2018

Accessories

V5012C Kombi-Diaphragm Unit



Setting range 0.1...0.3 bar (1.45...4.35 psi) differential pressure; V5012C0103

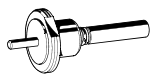
for V5010 Kombi-3-plus BLUE DN10...DN40

Setting range 0.3...0.6 bar (4.35...8.7 psi) differential pressure; V5012C0306

for V5010 Kombi-3-plus BLUE DN10...DN40

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...25) or 1.0 (DN32...40) when used with the V5012 Kombi-DP Diaphragm Unit.
Pump pressure: max. 2 bar (29 psi)

VA2500A Adapter for actuators with M30 x 1,5 connection



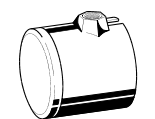
for V5010 Kombi-3-plus BLUE VA2500A001
DN10...DN40

Flow values for V5010 Kombi-3-plus BLUE with installed adapter:

DN	10	15	20	25	32	40
kvs-value	1.50	1.50	3.50	3.50	5.50	5.50
cv-value	1.76	1.76	4.10	4.10	6.44	6.44

NOTE: The V5010 Kombi-3-plus BLUE valve must be pre-set to 1.5 (for DN10...25) or 1.0 (DN32...40) when used with actuator.
Actuator adapter can only be used with DN10 valve housings with 'H' marking (valve housings since 10/1999).
Pump pressure: max. 2 bar (29 psi)

VA2501A Tamper-proof cap



for valves DN15...DN25 VA2501A010
for valves DN32...DN50 VA2501A032

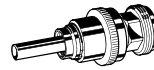
VA2510B Insulation shells



for valves DN10...DN15 VA2510B015
for valves DN20 VA2510B020
for valves DN25 VA2510B025
for valves DN32 VA2510B032
for valves DN40 VA2510B040
for valves DN50 VA2510B050

NOTE: For product information see product data sheet 'VA2510B Insulation Shells'.

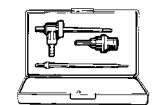
VA3500A Draining adapter



for all types and sizes VA3500A001

Measuring equipment (V5000 only)

VA3502A Pressure measuring set



for V5000Kombi-3-plus RED VA3502A001

VM241 BasicMES handheld measuring computer



for V5000 Kombi-3-plus RED; VM241A1002
computer is supplied with case and accessories

Installation Examples

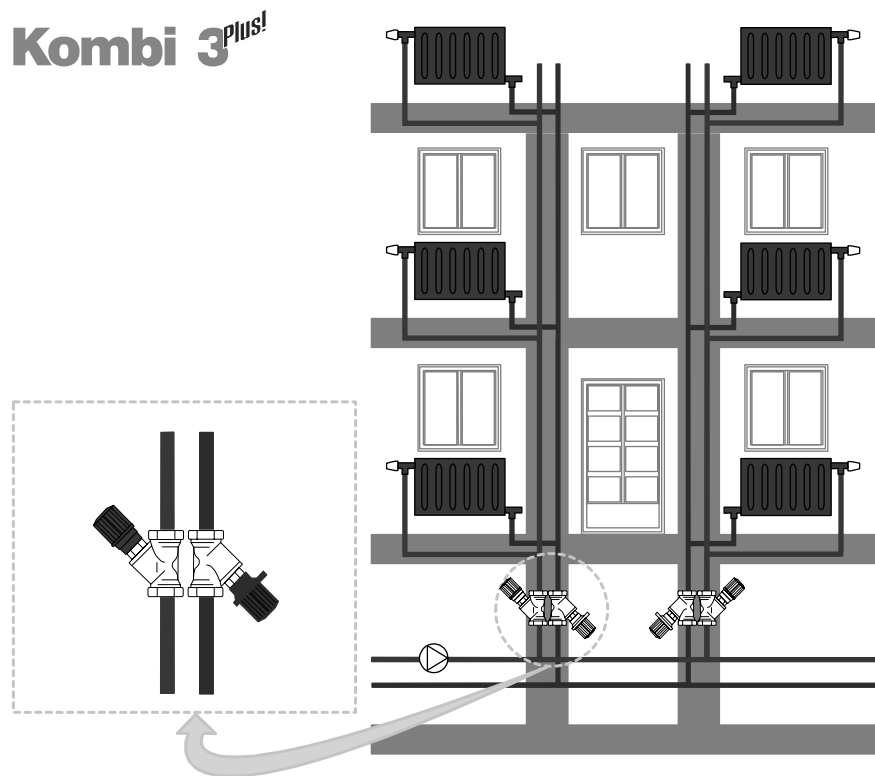


Fig. 3. Kombi-3-plus as static solution

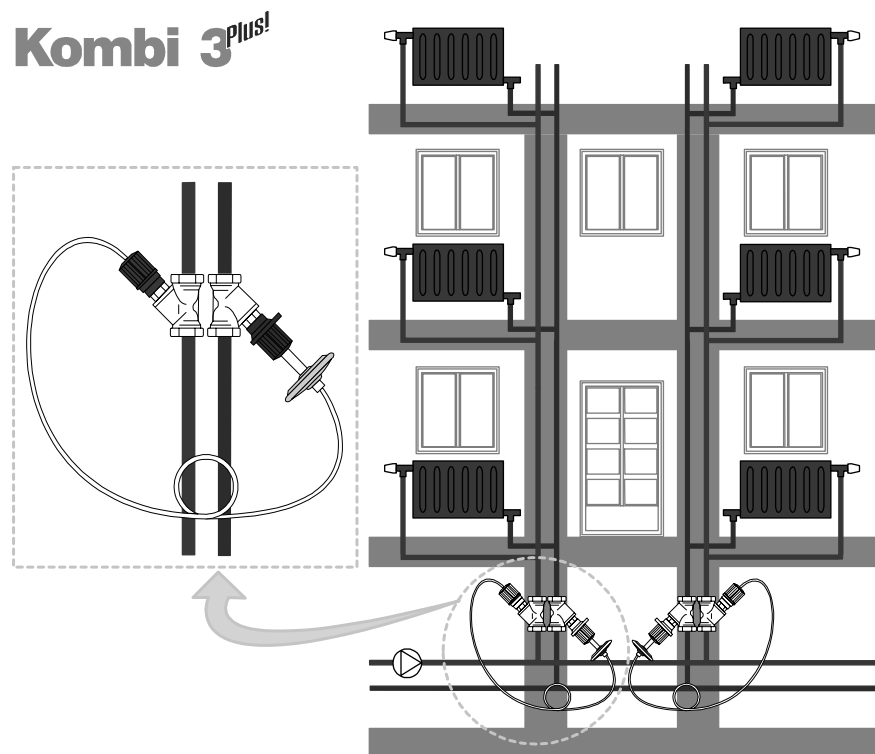
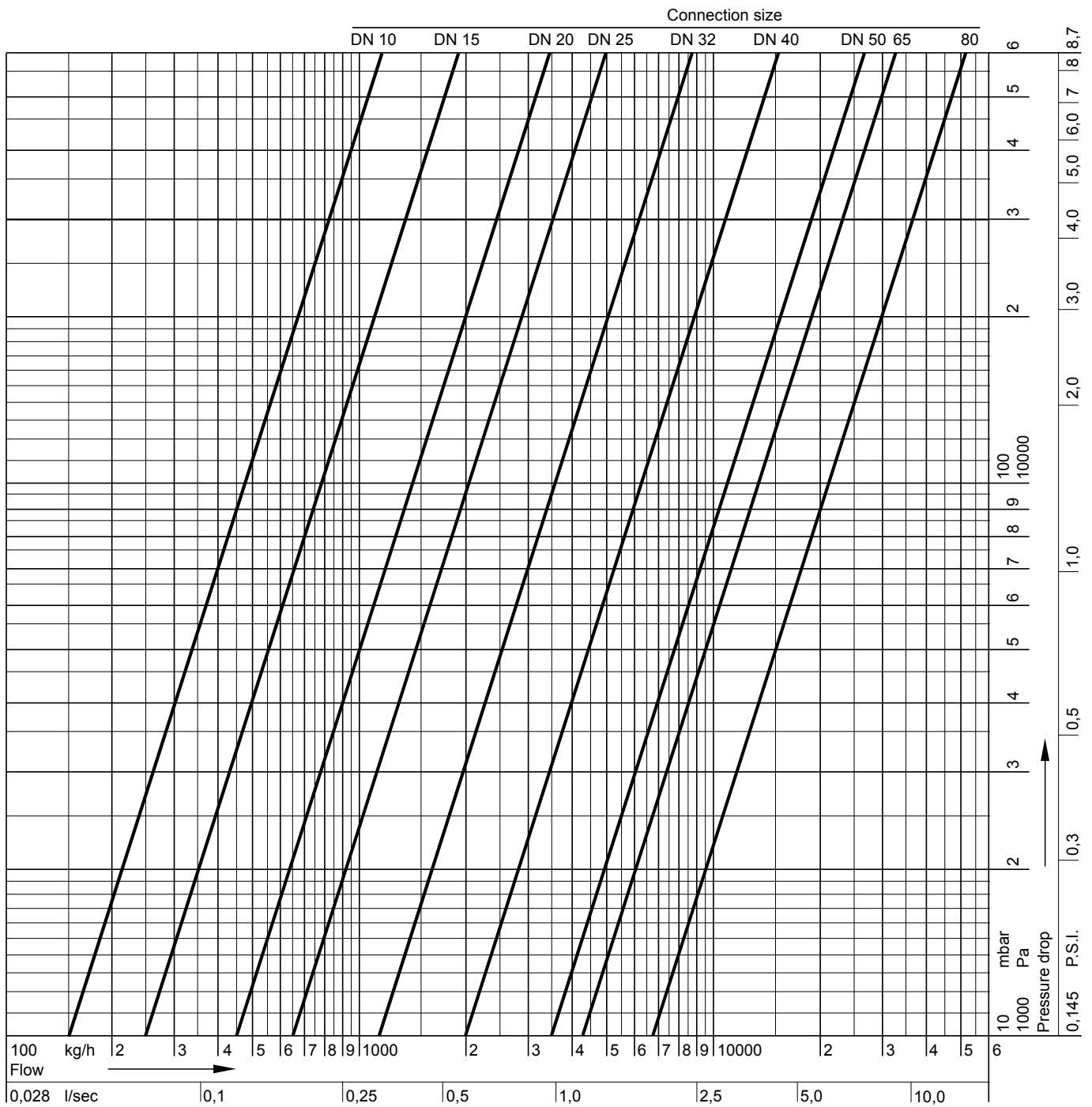


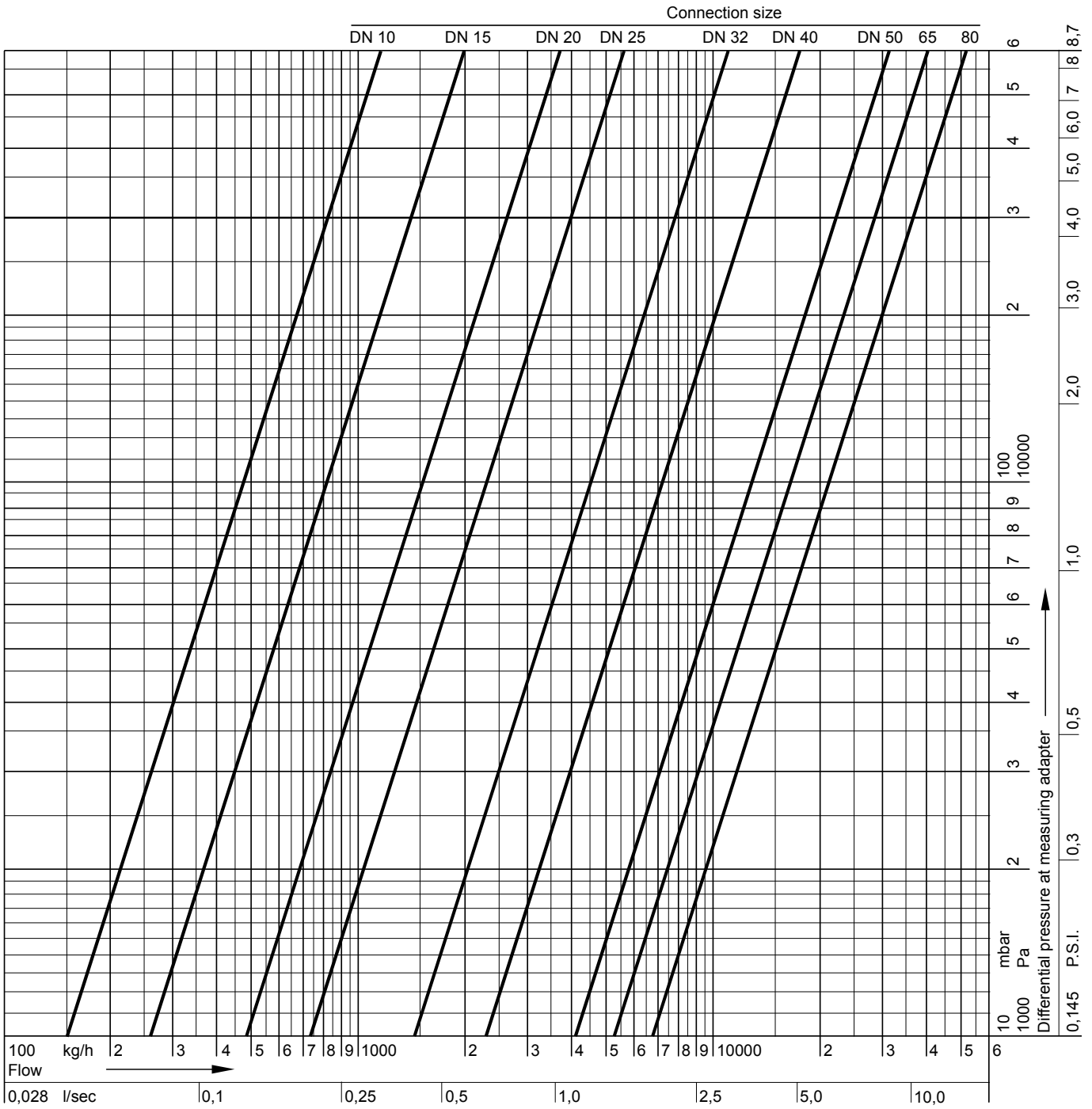
Fig. 4. Kombi-3-plus as automatic solution (with optional V5012C Kombi-DP)

Flow Data V5000 Kombi-3-plus RED



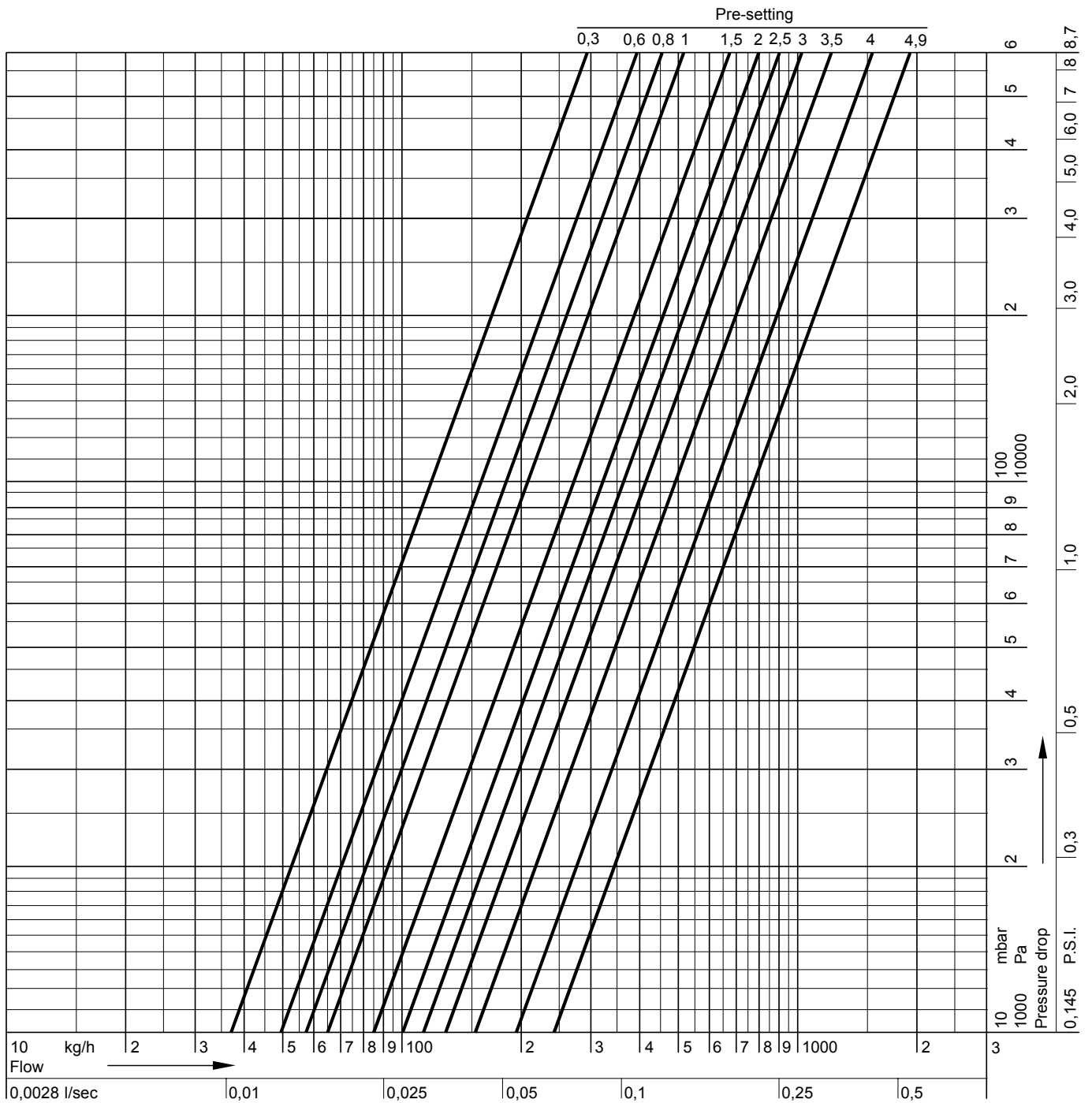
DN	10	15	20	25	32	40	50	65	80
kvs-value	1.50	2.50	4.50	6.50	13.0	20.0	35.0	42.0	68.0
cv-value	1.76	2.93	5.27	7.61	15.2	23.4	41.0	49.1	80.0

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



DN	10	15	20	25	32	40	50	65	80
kvs-value	1.55	2.65	4.88	7.30	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 V5010 Kombi-3-plus BLUE, DN10

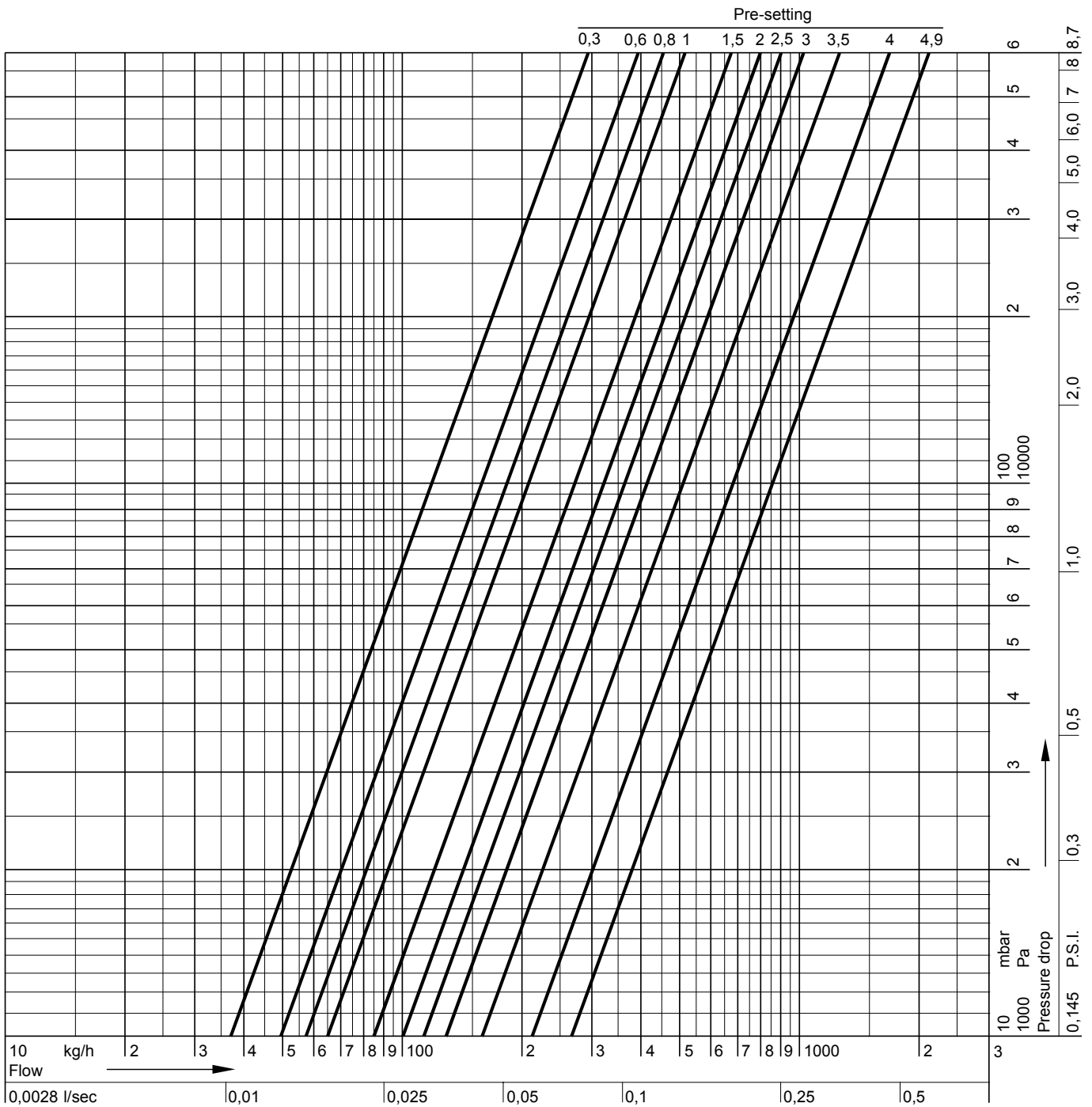


Pre-setting	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
k_v-value	0.37	0.43	0.49	0.57	0.65	0.73	0.81	0.88	0.94	1.00	1.05	1.10	1.16	1.22	1.30	1.39	1.50	1.63
cv-value	0.43	0.50	0.57	0.67	0.76	0.85	0.95	1.03	1.10	1.17	1.23	1.29	1.36	1.43	1.52	1.63	1.76	1.91

Pre-setting	3.8	4.0	4.2	4.4	4.6	4.8	4.9 = open
k_v-value	1.77	1.92	2.07	2.21	2.32	2.39	k _{vs} = 2.40
cv-value	2.07	2.25	2.42	2.59	2.71	2.80	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, DN15

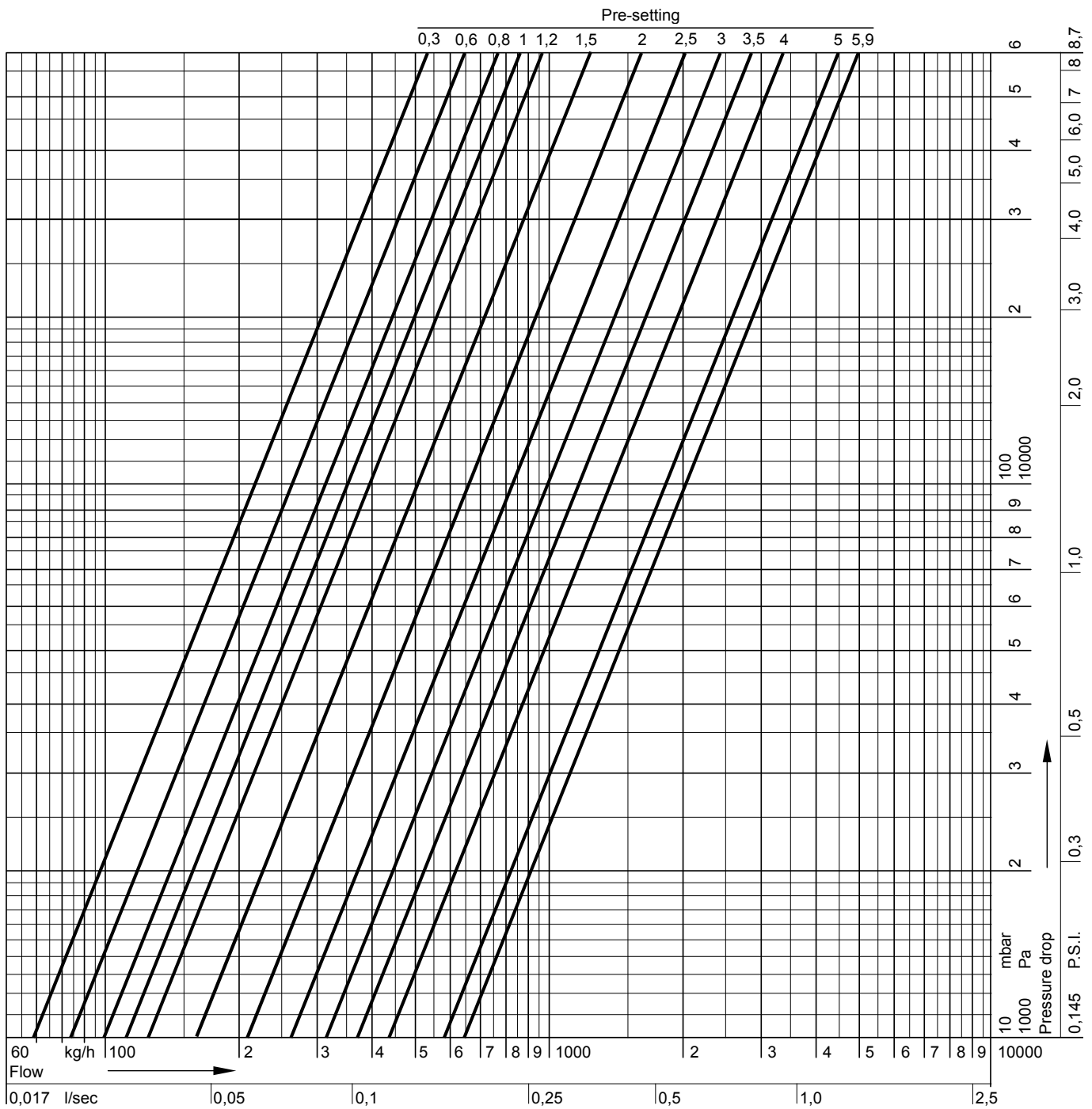


Pre-setting	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
k_v-value	0.37	0.43	0.49	0.57	0.65	0.73	0.81	0.88	0.94	1.00	1.05	1.10	1.16	1.22	1.32	1.42	1.57	1.74
cv-value	0.43	0.50	0.57	0.67	0.76	0.85	0.95	1.03	1.10	1.17	1.23	1.29	1.36	1.43	1.54	1.66	1.84	2.04

Pre-setting	3.8	4.0	4.2	4.4	4.6	4.8	4.9 = open
k_v-value	1.92	2.12	2.31	2.49	2.63	2.67	k _{vs} = 2.70
cv-value	2.25	2.48	2.70	2.91	3.08	3.12	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, DN20

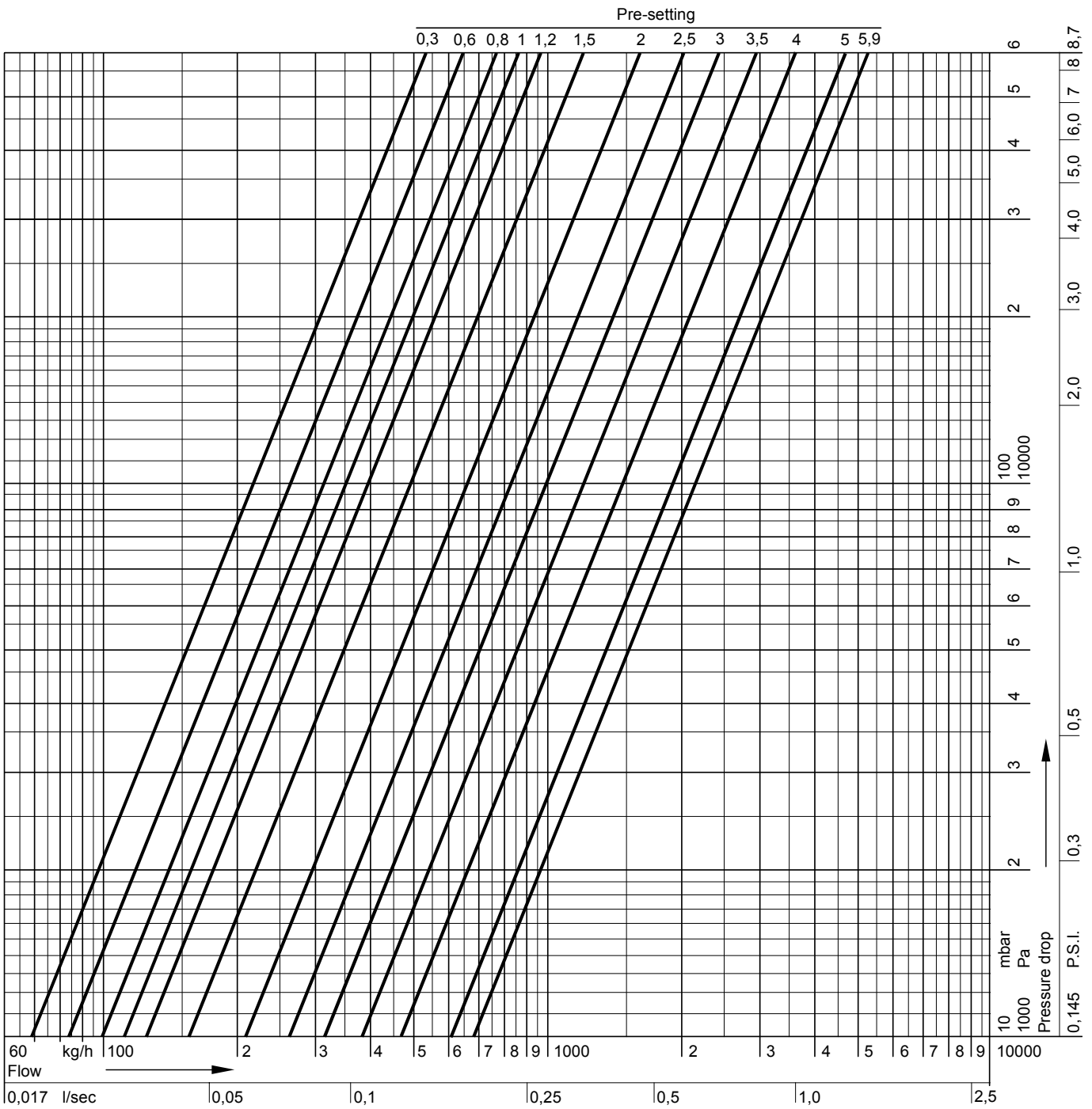


Pre-setting	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
k _v -value	0.68	0.72	0.84	0.97	1.10	1.30	1.50	1.70	1.90	2.10	2.30	2.50	2.70	2.91	3.12	3.36	3.60	3.86
cv-value	0.80	0.84	0.98	1.13	1.29	1.52	1.76	1.99	2.22	2.46	2.69	2.93	3.16	3.40	3.65	3.93	4.21	4.52

Pre-setting	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	5.9 = open
k _v -value	4.12	4.40	4.69	4.99	5.28	5.57	5.84	6.07	6.26	6.32	6.38	k _{vs} = 6.40
cv-value	4.82	5.15	5.49	5.84	6.18	6.52	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, DN25

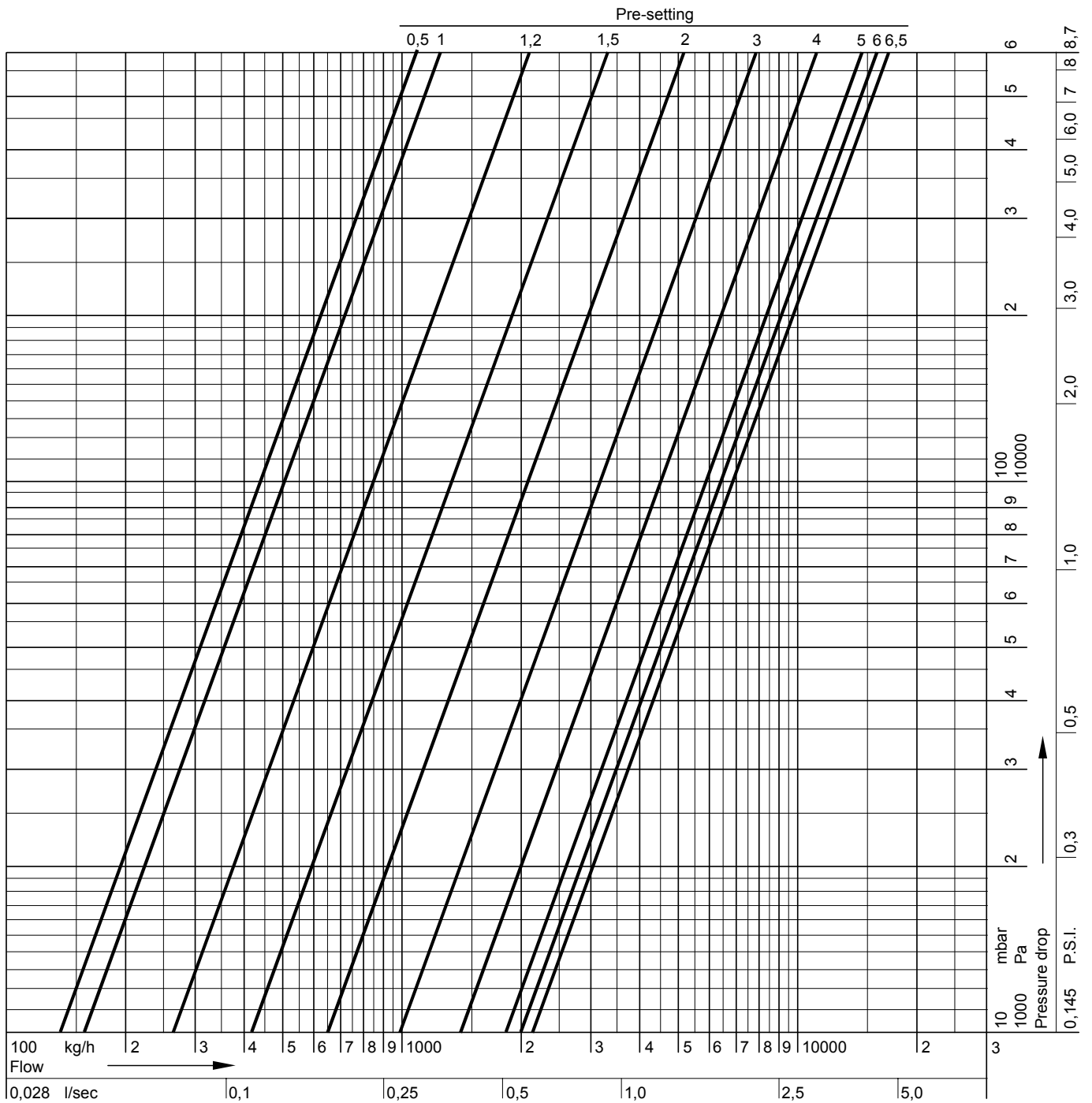


Pre-setting	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
k_v-value	0.68	0.72	0.84	0.97	1.10	1.30	1.50	1.70	1.90	2.10	2.30	2.50	2.70	2.95	3.20	3.48	3.76	4.05
cv-value	0.80	0.84	0.98	1.13	1.29	1.52	1.76	1.99	2.22	2.46	2.69	2.93	3.16	3.45	3.74	4.07	4.40	4.74

Pre-setting	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	5.9 = open
k_v-value	4.34	4.64	4.94	5.24	5.52	5.80	6.06	6.30	6.50	6.65	6.75	k _{vs} = 6.80
cv-value	5.08	5.43	5.78	6.13	6.46	6.79	7.09	7.37	7.61	7.78	7.90	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, DN32

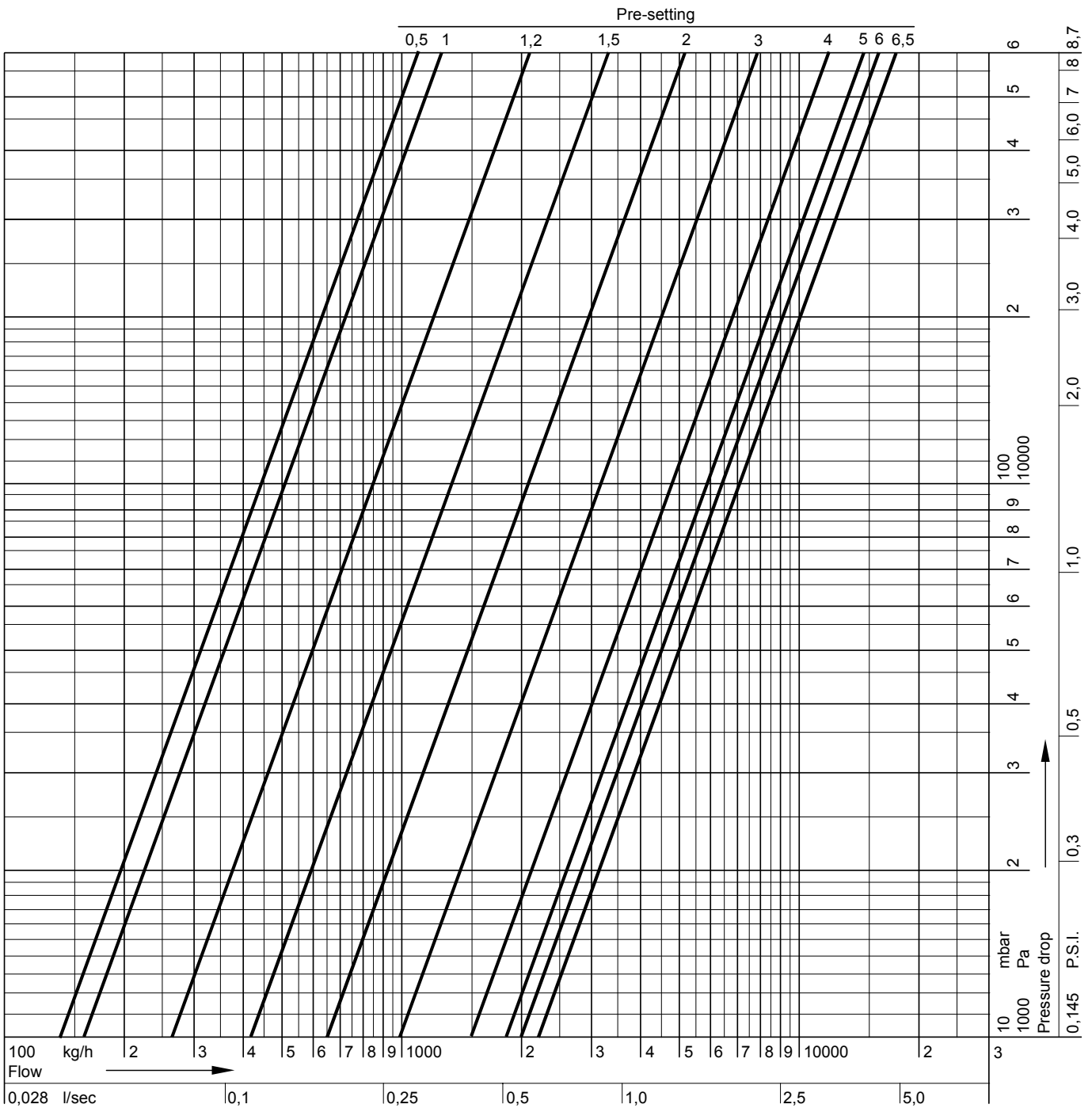


Pre-setting	0.5	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8
k_v-value	1.40	1.45	1.55	1.60	2.60	3.70	4.80	5.90	6.50	6.90	7.50	8.30	9.20	10.2	11.2	12.2	13.2	14.1
cv-value	1.64	1.70	1.81	1.87	3.04	4.33	5.62	6.90	7.61	8.07	8.78	9.71	10.8	11.9	13.1	14.3	15.4	16.5

Pre-setting	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.5 = open
k_v-value	15.0	15.8	16.5	17.1	17.7	18.2	18.6	19.0	19.4	19.7	20.0	20.4	20.8	k _{vs} = 21.0
cv-value	17.6	18.5	19.3	20.0	20.7	21.3	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, DN40

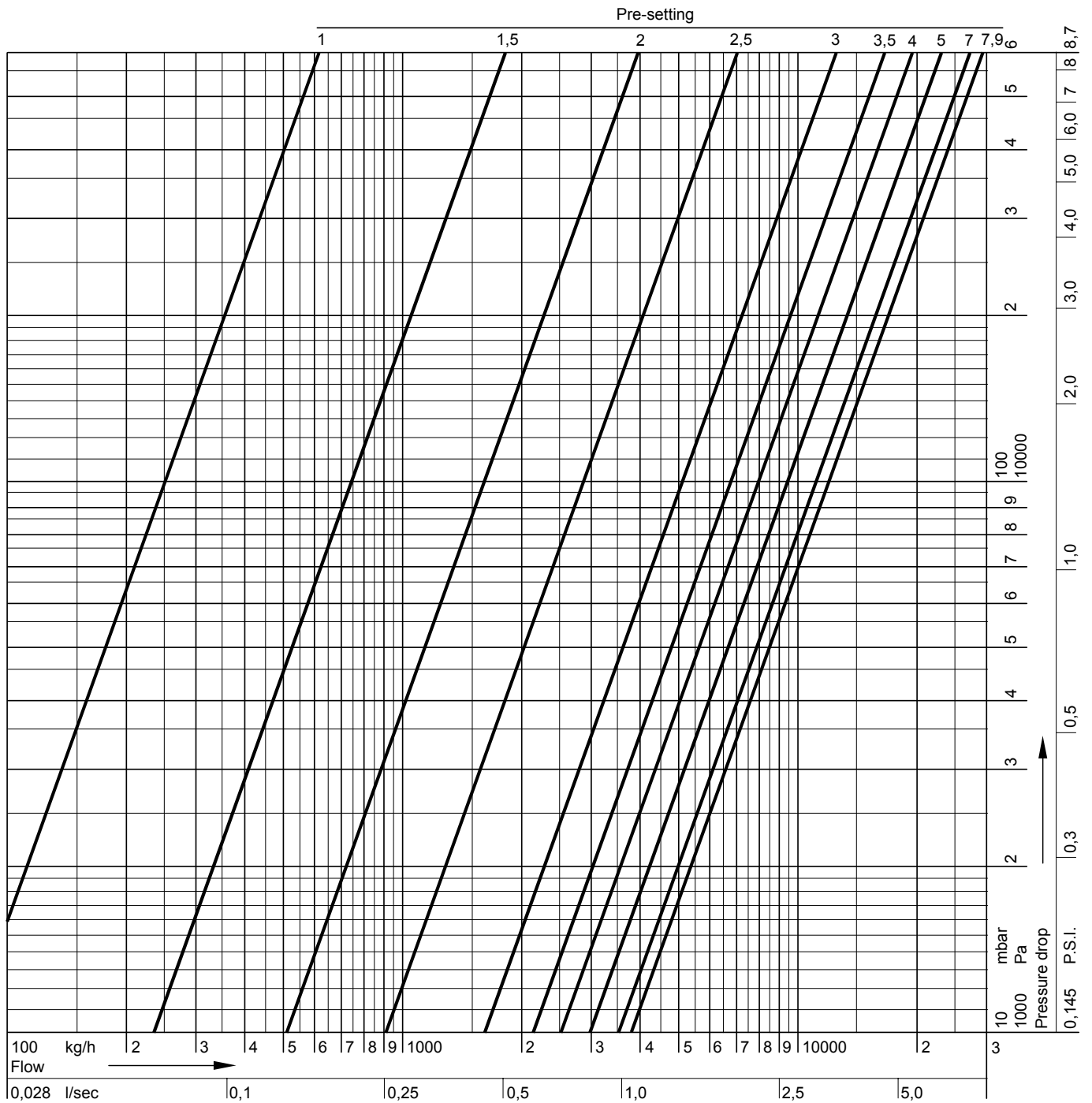


Pre-setting	0.5	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8
k_v-value	1.40	1.45	1.55	1.60	2.60	3.70	4.80	5.90	6.50	6.90	7.50	8.30	9.20	10.2	11.2	12.2	13.2	14.1
cv-value	1.64	1.70	1.81	1.87	3.04	4.33	5.62	6.90	7.61	8.07	8.78	9.71	10.8	11.9	13.1	14.3	15.4	16.5

Pre-setting	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.5 = open
k_v-value	15.0	15.8	16.5	17.1	17.7	18.2	18.6	19.0	19.4	19.7	20.0	20.8	21.6	k _{vs} = 22.0
cv-value	17.6	18.5	19.3	20.0	20.7	21.3	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

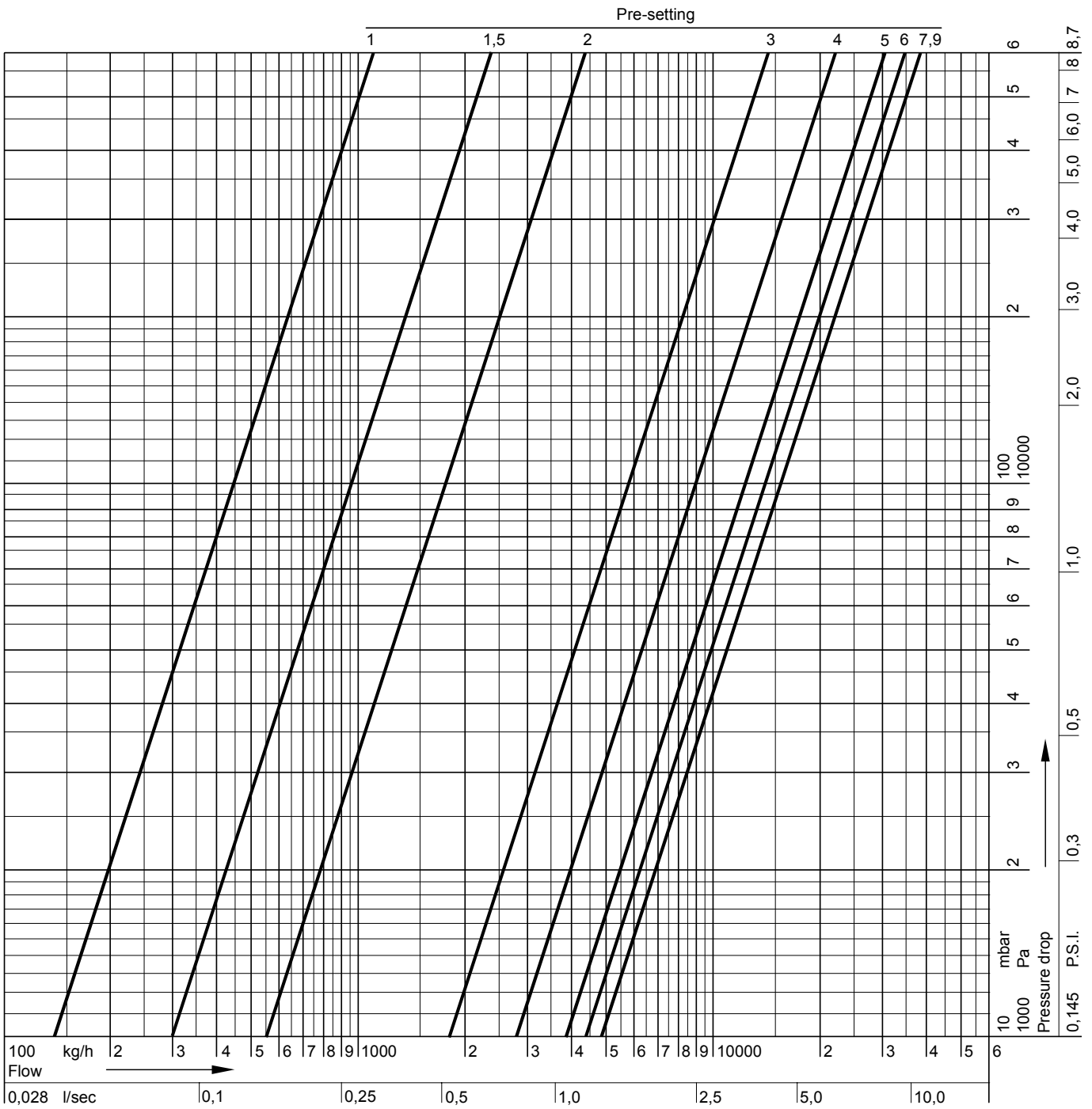
Flow Data V5010 Kombi-3-plus BLUE, DN50



Pre-setting	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4
k_v-value	0.80	1.25	1.88	2.72	3.78	5.10	6.68	8.54	10.7	13.0	15.6	18.7	21.0	22.8	24.3	25.4	26.4	27.2
cv-value	0.94	1.46	2.20	3.18	4.42	5.97	7.82	9.99	12.5	15.2	18.3	21.9	24.6	26.7	28.4	29.7	30.9	31.8

Pre-setting	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.9 = open
k_v-value	28.0	28.8	29.5	30.2	31.0	31.7	32.4	33.0	33.6	34.1	34.6	35.0	35.4	35.8	36.2	36.8	k _{vs} = 38.0
cv-value	32.8	33.7	34.5	35.3	36.3	37.1	37.9	38.6	39.3	39.9	40.5	41.0	41.4	41.9	42.4	43.1	44.5

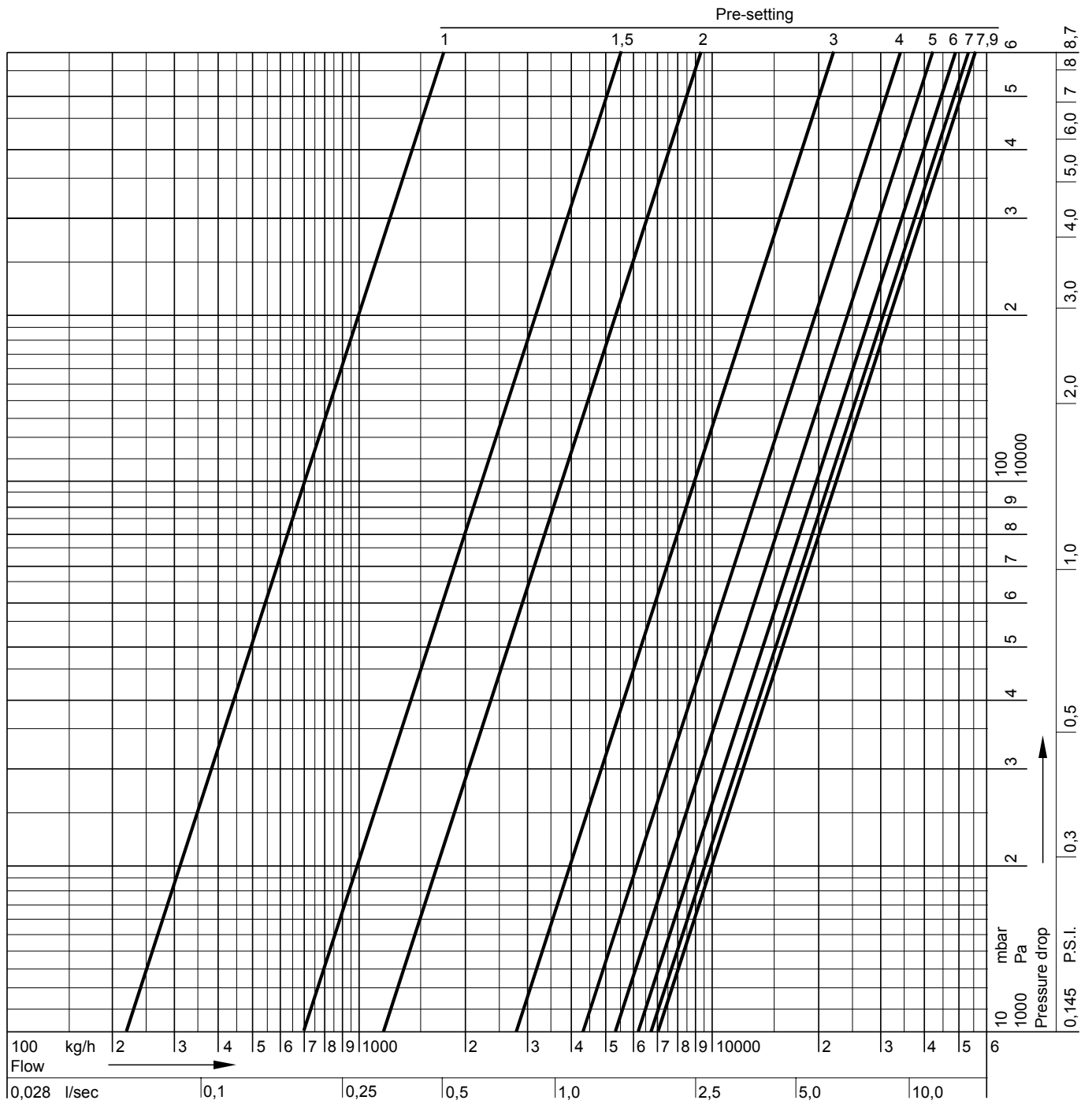
Flow Data V5010 Kombi-3-plus BLUE, DN65



Pre-setting	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4
k_v-value	1.40	1.50	2.50	3.50	4.50	5.50	7.70	10.0	12.2	14.5	16.7	19.0	21.3	23.7	26.0	28.3	30.1	31.9
cv-value	1.64	1.76	2.93	4.10	5.27	6.44	9.01	11.7	14.3	17.0	19.5	22.2	24.9	27.7	30.4	33.1	35.2	37.3

Pre-setting	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.9 = open
k_v-value	33.6	35.4	37.2	38.6	40.1	41.5	43.0	44.0	44.9	45.4	46.0	46.5	47.0	47.1	47.3	47.4	k _{vs} = 47.7
cv-value	39.3	41.4	43.5	45.2	46.9	48.6	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, DN80



Pre-setting	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4
k_v-value	2.20	4.20	6.20	8.10	10.1	12.1	15.3	18.5	21.6	24.8	28.0	30.9	33.9	36.8	39.8	42.7	44.9	47.0
k_v-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	39.7	43.1	46.6	50.0	52.5	55.0

Pre-setting	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.9 = open
k_v-value	49.2	51.3	53.5	55.2	57.0	58.7	60.5	62.2	63.4	64.5	65.7	66.8	68.0	68.6	69.2	69.8	k _{vs} = 71.0
k_v-value	57.6	60.0	62.6	64.6	66.7	68.7	70.8	72.8	74.2	75.5	76.9	78.2	79.6	80.3	81.0	81.7	83.1

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 $\rho_0 = 1000 \text{ kg/m}^3$. 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:

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

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:

$$K_{V_{Medium}} = K_{V_0} \times \frac{1}{\sqrt{f}} \qquad \Delta p_{Medium} = \Delta p_0 \times f \qquad m_{Medium} = m_0 \times \frac{1}{\sqrt{f}}$$

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	1.024	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

For more information on Honeywell Balancing and Pipeline Valves see www.honeywell-valvesizing.com.

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