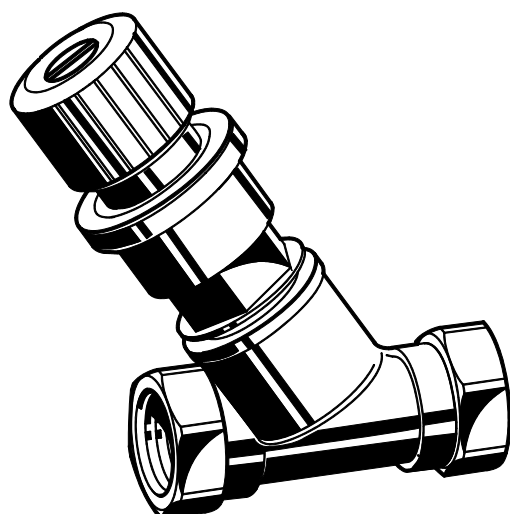


Honeywell

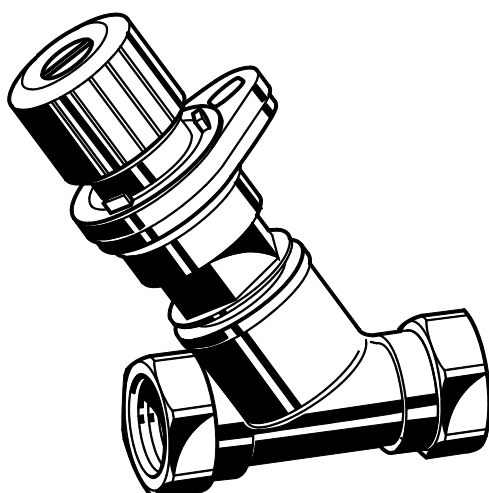
V5000, V5010

Kombi-3-plus

BALANCING AND SHUTOFF VALVES



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

The balancing valve consists of:

- 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 and 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
- Brass connection nut
- Handwheel, pre-setting dial and display made of plastic, red or blue and white

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 in-stalled through the spindle
- V5010 Kombi-3-plus BLUE DN10 to DN40 can be retro-fitted with a Kombi-DP diaphragm unit (V5012) – with-out 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

- **for water** -20 ...130°C (-4...266°F)
- **water-glycol mixture** -20 ...110°C (-4...230°F)

Operating pressure	max. 16 bar (232 psi)
---------------------------	-----------------------

K_{vs} (C_{vs})-value	see tables and flow diagrams
--	------------------------------

Ordering Information

Table 1. OS-Nos. (OS=Ordering System)

Order text	DN	Thread	k _{VS} (C _{VS})-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 internal 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 external 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

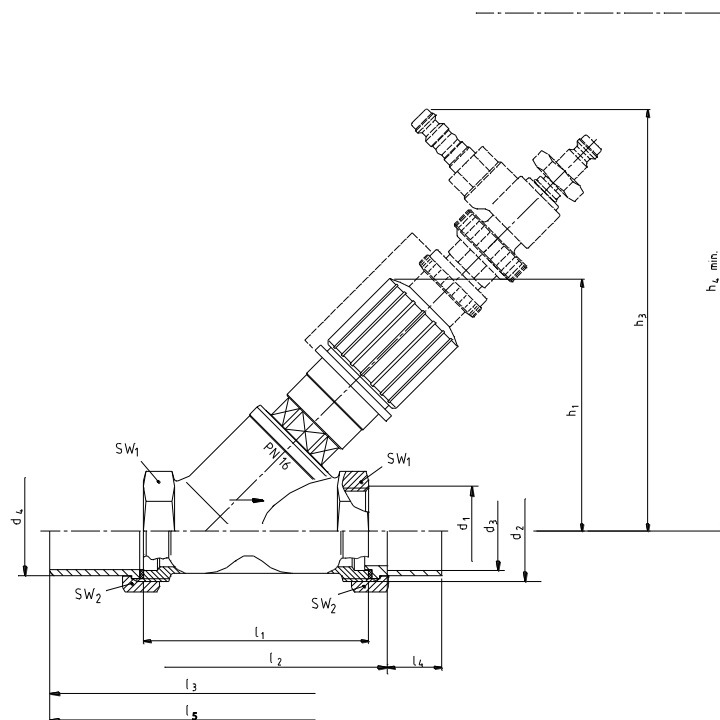


Fig. 1. V5000 Kombi-3-plus RED

Table 2. Dimensions V5000 Kombi-3-plus RED

DN	k _{vs} (C _{vs})-value	h ₁	h ₃	h ₄	h ₅	h ₆	l ₁	l ₂	l ₃	l ₄	l ₅	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	110	Rp 3/8"	G 5/8"A	12	16	22	27
15	2.5 (2.93)	85	145	195	135	130	65	81	125	12	125	Rp 1/2"	G 3/4"A	15	20.5	27	30
20	4.5 (5.27)	100	160	210	150	145	75	92	146	17	140	Rp 3/4"	G 1"A	22	26	32	37
25	6.5 (7.61)	100	160	210	150	145	90	108	170	20	155	Rp 1"	G 1 1/4"A	28	33	41	47
32	13.0 (15.2)	137	195	280	185	210	110	128	200	25	184	Rp 1 1/4"	G 1 1/2"A	35	41	50	52
40	20.0 (23.4)	137	195	280	185	210	120	140	220	29	128	Rp 1 1/2"	G 1 3/4"A	42	47.5	55	60
50	35.0 (41.0)	158	215	300	205	230	150	170	260	34	274	Rp 2"	G 2 3/8"A	54	60	70	75
65	42.0 (49.1)	195	225	310	215	-	180	-	-	-	-	Rp 2 1/2"	-	-	-	85	-
80	68.0 (79.6)	210	240	325	230	-	200	-	-	-	-	Rp 3"	-	-	-	100	-

NOTE: All dimensions in mm unless stated otherwise.

Table 3. Abbreviations used for dimensions

DN Nominal size diameter

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 soldering connection

l₅ Installed length with threaded connections

SW₁ Wrench size

SW₂ Wrench size

Dimensions

V5010 Kombi-3-plus BLUE

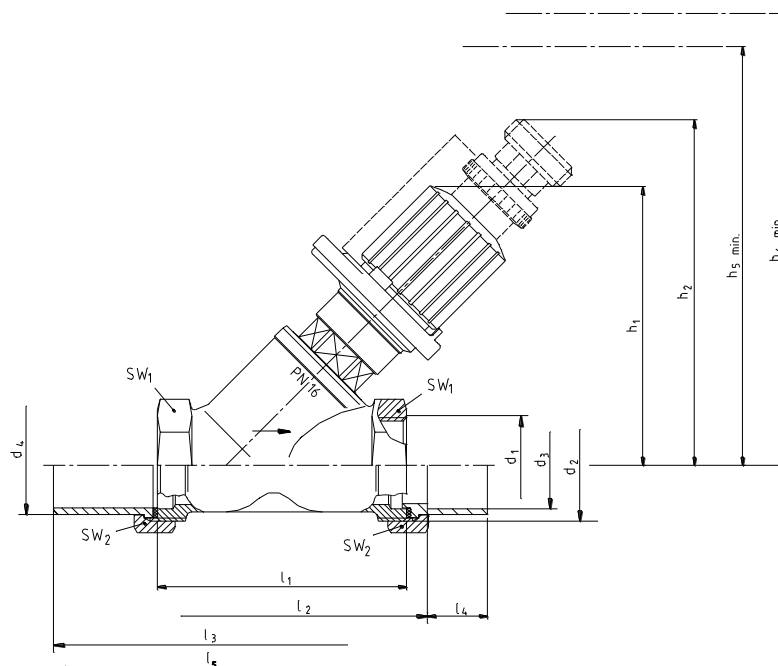


Fig. 2. V5010 Kombi-3-plus BLUE

Table 4. Dimensions V5010 Kombi-3-plus BLUE

DN	k_{vs} (c_{vs})-value	h_1	h_2	h_5	h_6	l_1	l_2	l_3	l_4	l_5	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	110	Rp $\frac{3}{8}$ "	G $\frac{5}{8}$ "A	12	16	22	27
15	2.7 (3.16)	85	105	135	130	65	81	125	12	125	Rp $\frac{1}{2}$ "	G $\frac{3}{4}$ "A	15	20.5	27	30
20	6.4 (7.49)	100	120	150	145	75	92	146	17	140	Rp $\frac{3}{4}$ "	G 1"A	22	26	32	37
25	6.8 (7.96)	100	120	150	145	90	108	170	20	155	Rp 1"	G $1\frac{1}{4}$ "A	28	33	41	47
32	21.0 (24.6)	137	155	185	210	110	128	200	25	184	Rp $1\frac{1}{4}$ "	G $1\frac{1}{2}$ "A	35	41	50	52
40	22.0 (25.7)	137	155	185	210	120	140	220	29	238	Rp $1\frac{1}{2}$ "	G $1\frac{3}{4}$ "A	42	47.5	55	60
50	38.0 (44.5)	158	176	205	230	150	170	260	34	274	Rp 2"	G $2\frac{3}{8}$ "A	54	60	70	75
65	47.7 (55.8)	195	186	215	-	180	-	-	-	-	Rp $2\frac{1}{2}$ "	-	-	-	85	-
80	71.0 (83.1)	210	201	230	-	200	-	-	-	-	Rp 3"	-	-	-	100	-

NOTE: All dimensions in mm unless stated otherwise.

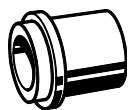
Table 5. Abbreviations used for dimensions

DN Nominal size diameter**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 soldering connection**l₅** Installed length with threaded connections**SW₁** Wrench size**SW₂** Wrench size

Accessories

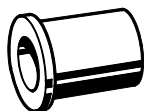
Connections for valves with external threads (V5000X and V5010X)

Soldering connection made of brass



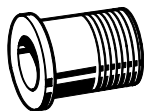
12 mm, for valves DN10	VA5530A010
15 mm, for valves DN15	VA5530A015
22 mm, for valves DN20	VA5530A020
28 mm, for valves DN25	VA5530A025
35 mm, for valves DN32	VA5530A032
42 mm, for valves DN40	VA5530A040
54 mm, for valves DN50	VA5530A050

Welding connection made of steel



for valves DN10 (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

Externally threaded connection made of brass



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

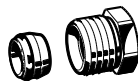
Sealing ring



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

Connections for valves with internal threads (V5000Y and V5010Y)

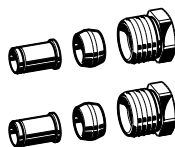
Set of compression ring and nut



3/8" x 10 mm	VA620A1010
3/8" x 12 mm	VA620A1012
1/2" x 10 mm	VA620A1510
1/2" x 12 mm	VA620A1512
1/2" x 14 mm	VA620A1514
1/2" x 15 mm	VA620A1515
1/2" x 16 mm	VA620A1516
3/4" x 18 mm	VA620A2018
3/4" x 22 mm	VA620A2022

NOTE: Support inserts have to be used for copper or soft steel pipe with 1.0 mm wall thickness

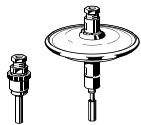
Compression ring and nut with support insert (2 pcs each)



3/8" x 12 mm	VA621A1012
1/2" x 12 mm	VA621A1512
1/2" x 15 mm	VA621A1515
1/2" x 16 mm	VA621A1516
3/4" x 18 mm	VA621A2018

Accessories

Kombi-Diaphragm Unit



Setting range 0.1...0.3 bar
(1.45...4.35 psi) differential
pressure; for V5010
Kombi-3-plus BLUE
DN10...DN40

V5012C0103

Setting range 0.3...0.6 bar
(4.35...8.7 psi) differential
pressure; for V5010
Kombi-3-plus BLUE
DN10...DN4

V5012C0306

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)

Adapter for actuators with M30 x 1.5 connection



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

VA2500A001

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)

Tamper-proof cap



for valves DN15...DN25

VA2501A010

for valves DN32...DN50

VA2501A032

Spring to reduce differential pressure pre-setting



for diaphragm unit
0.1 - 0.3 bar

VA2502A001

Draining adapter



for all types and sizes

VA3400A001

Insulation shells for internal threaded valve



for valves DN15

VA2510D015

for valves DN20

VA2510D020

for valves DN25

VA2510D025

for valves DN32

VA2510D032

for valves DN40

VA2510D040

for valves DN50

VA2510D050

Insulation shells for external threaded valve



for valves DN15

VA2510C015

for valves DN20

VA2510C020

for valves DN25

VA2510C025

for valves DN32

VA2510C032

for valves DN40

VA2510C040

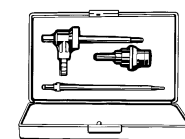
for valves DN50

VA2510C050

NOTE: For product information see product data sheet 'VA2510D and VA2510C Insulation Shells'.

Measuring equipment (V5000 only)

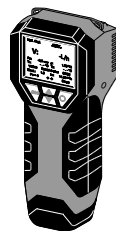
Pressure measuring set



for V5000 Kombi-3-plus RED

VA3502A001

VM242A BasicMes-2 handheld measuring computer



For all sizes. Computer is
supplied with case and
accessories

VM242A0101

NOTE: To connect the VM242 BasicMes-2 to SafeCon™ pressure test cocks please order measuring adapter VA3600C001 separately.

Handwheel screw

for all sizes.

VS2000A010

Impulse tube and connection



4 x 1mm compression
tube and fitting

VS5001A006

Installation Examples

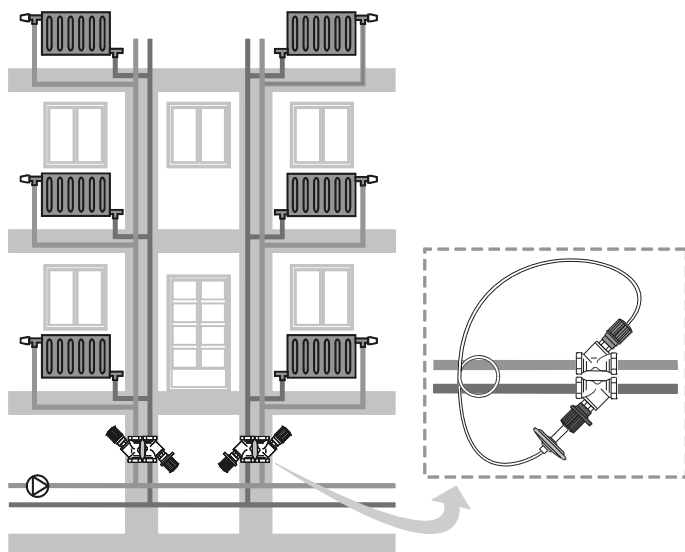


Fig. 3. Kombi-3-plus RED and BLUE in ascending pipeline

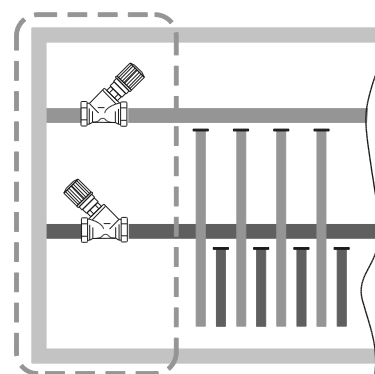


Fig. 4. Kombi-3-Plus - Distribution

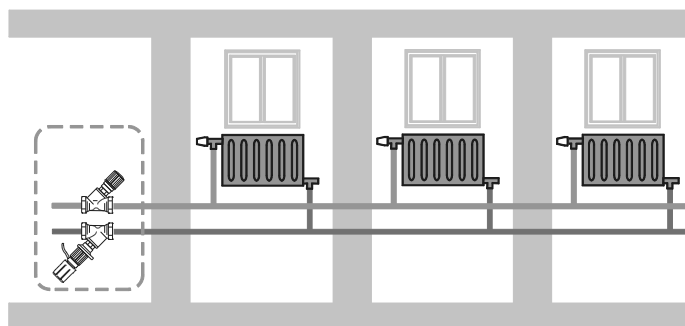


Fig. 5. Kombi-3-Plus - Zone control

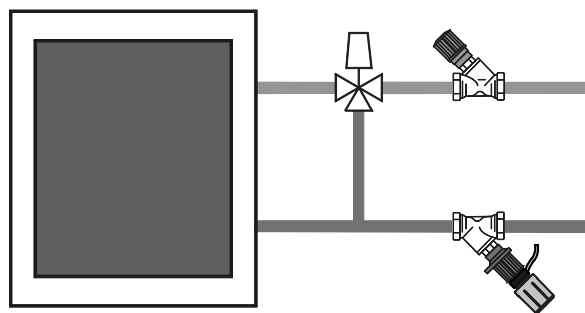
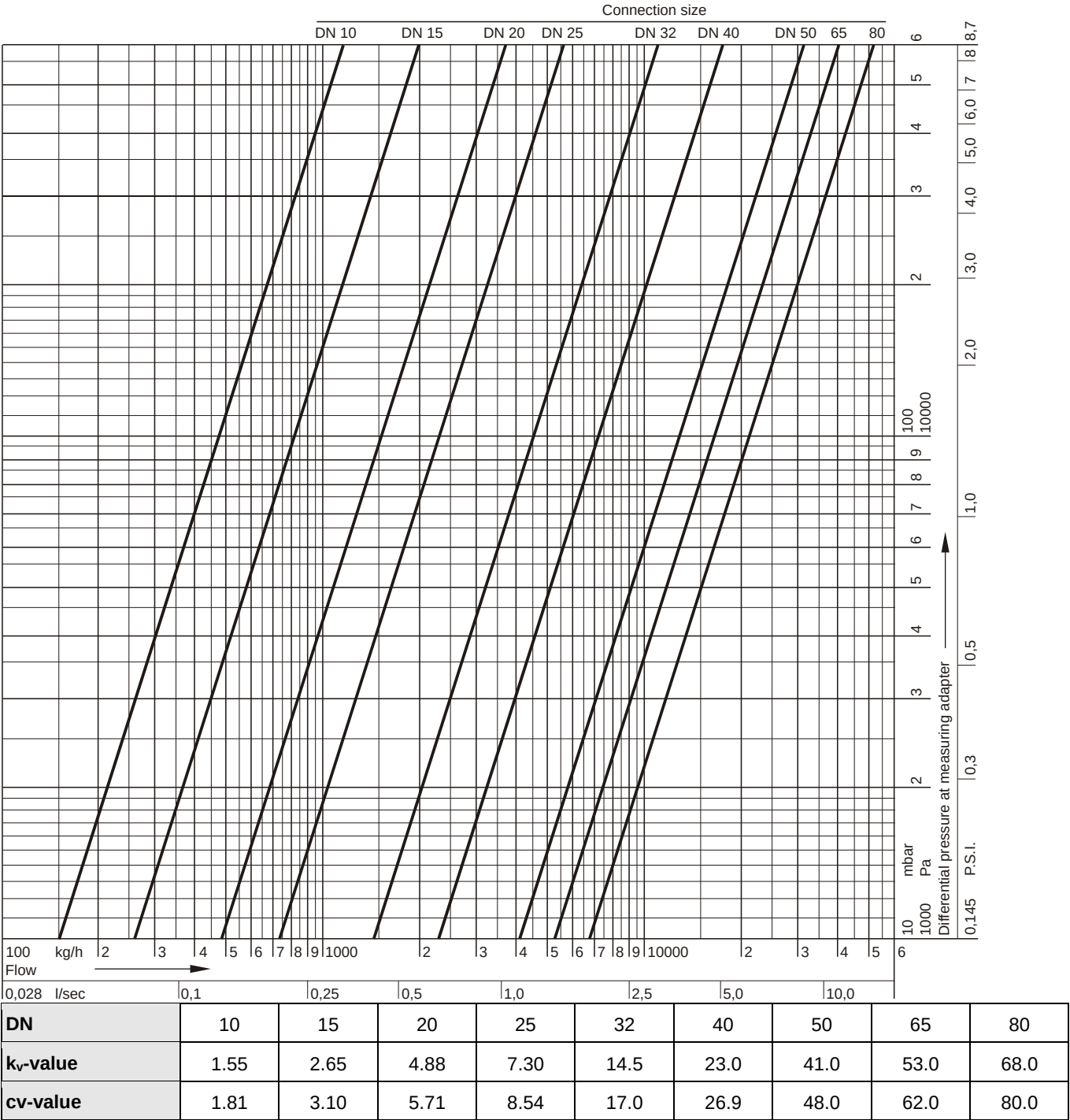
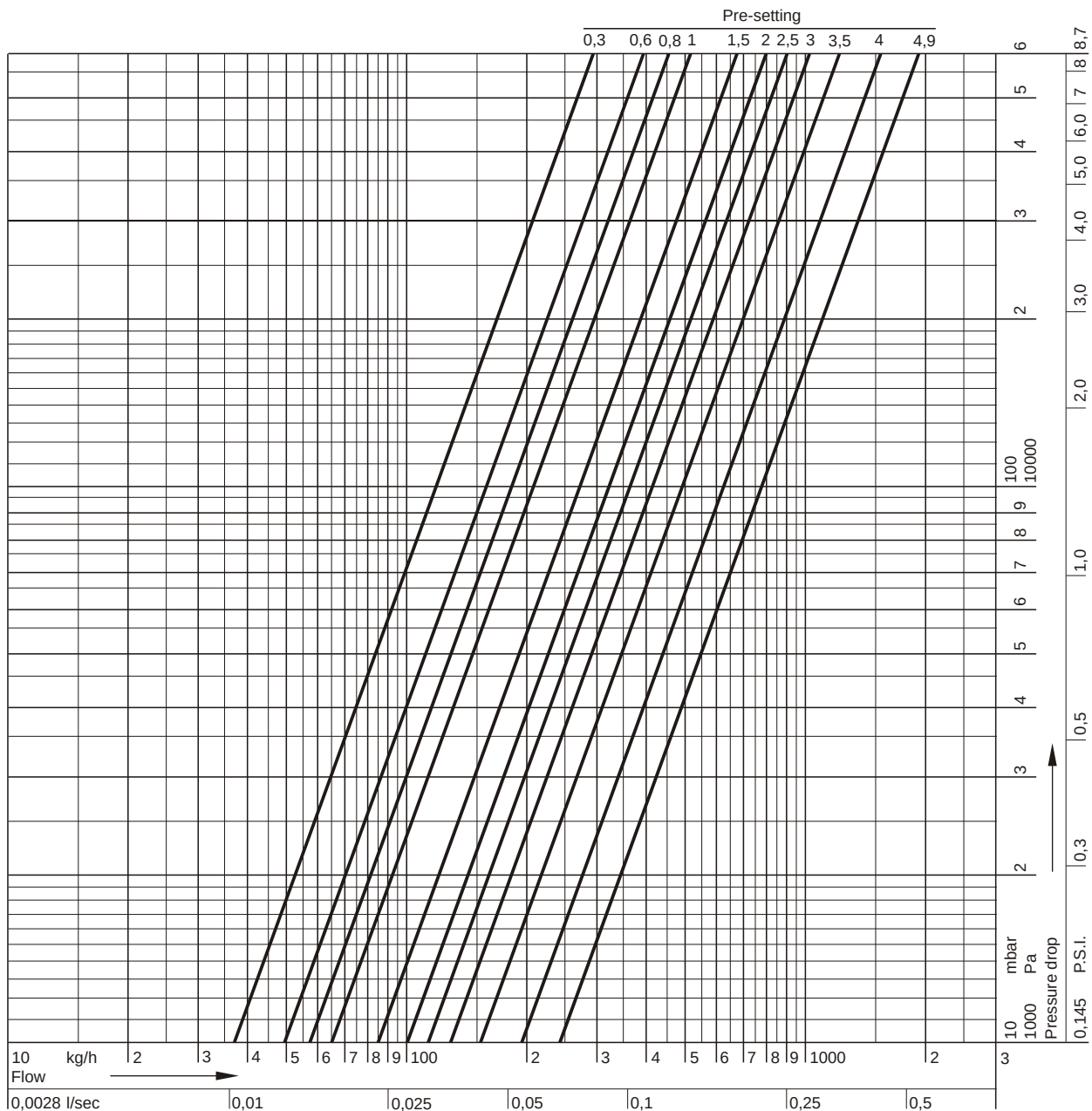


Fig. 6. Kombi-3-Plus - Fan coil

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



Flow Data V5010 Kombi-3-plus BLUE, DN10

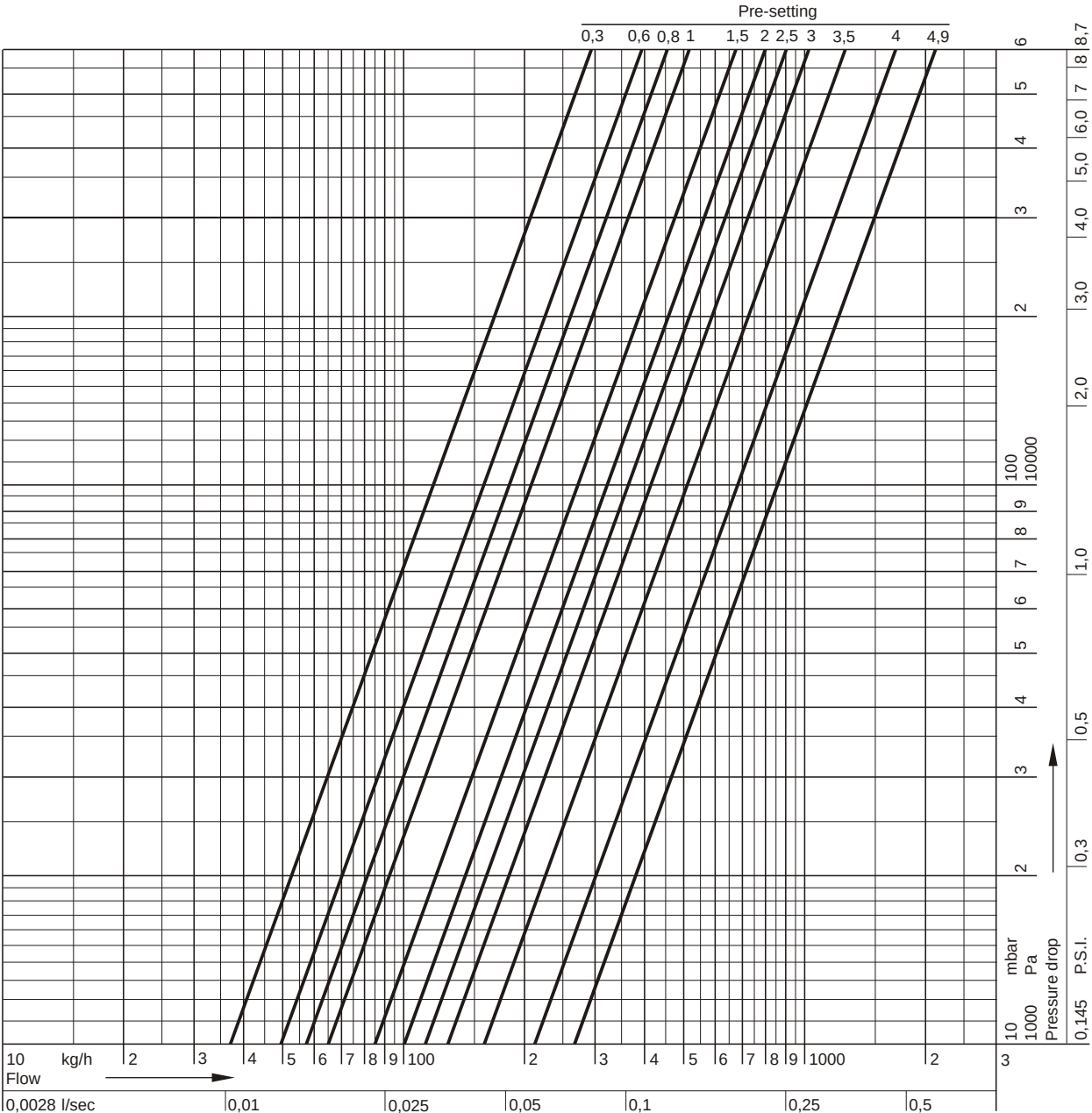


Pre-setting	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
k _v -value	0.37	0.43	0.49	0.57	0.65	0.73	0.81	0.88	0.94	1.00	1.05	1.10	1.16	1.22	1.30	1.39	1.50	1.63
cv-value	0.43	0.50	0.57	0.67	0.76	0.85	0.95	1.03	1.10	1.17	1.23	1.29	1.36	1.43	1.52	1.63	1.76	1.91

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

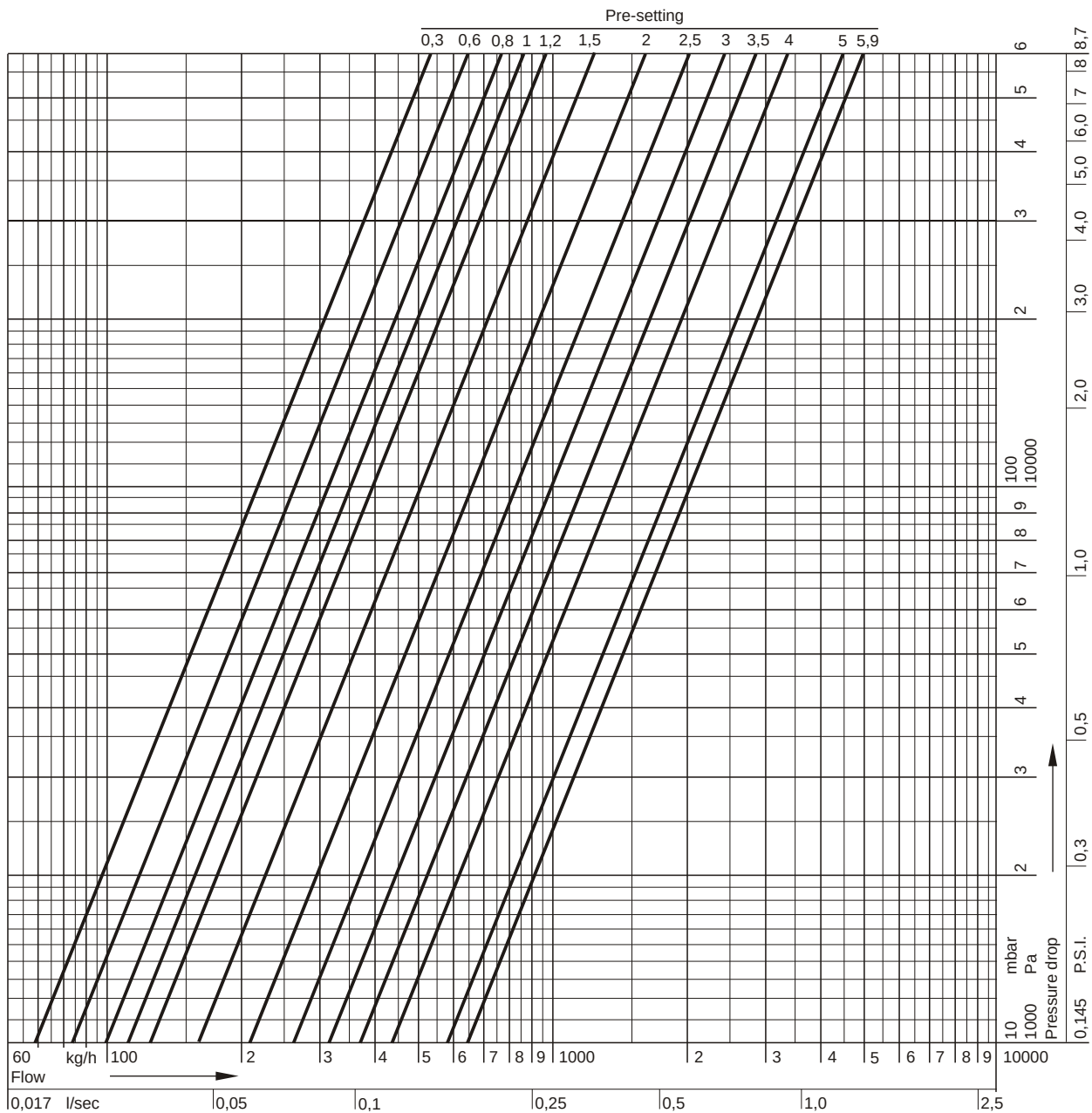


Pre-setting	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
k _v -value	0.37	0.43	0.49	0.57	0.65	0.73	0.81	0.88	0.94	1.00	1.05	1.10	1.16	1.22	1.32	1.42	1.57	1.74
cv-value	0.43	0.50	0.57	0.67	0.76	0.85	0.95	1.03	1.10	1.17	1.23	1.29	1.36	1.43	1.54	1.66	1.84	2.04

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

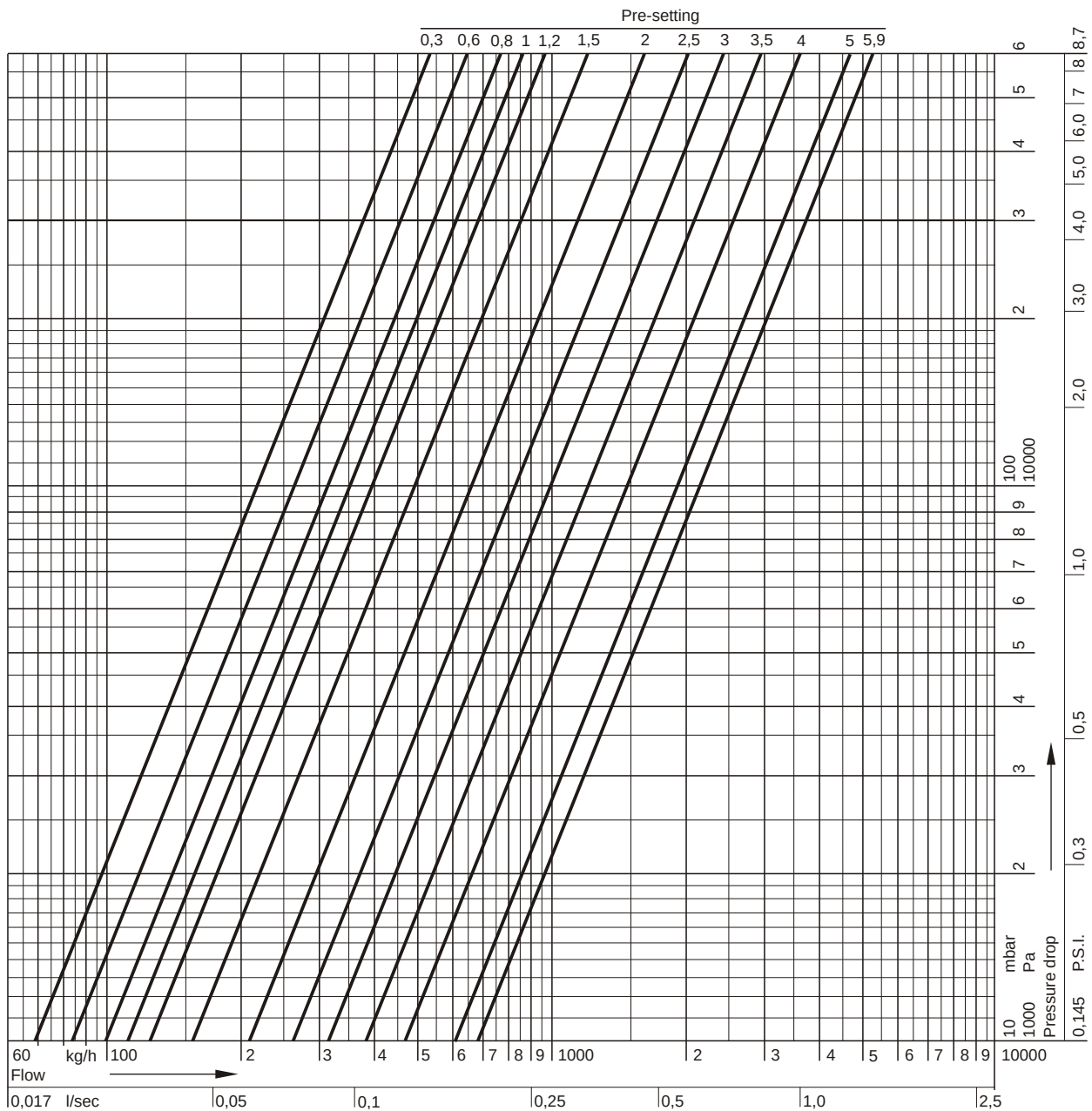


Pre-setting	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
k _v -value	0.68	0.72	0.84	0.97	1.10	1.30	1.50	1.70	1.90	2.10	2.30	2.50	2.70	2.91	3.12	3.36	3.60	3.86
cv-value	0.80	0.84	0.98	1.13	1.29	1.52	1.76	1.99	2.22	2.46	2.69	2.93	3.16	3.40	3.65	3.93	4.21	4.52

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

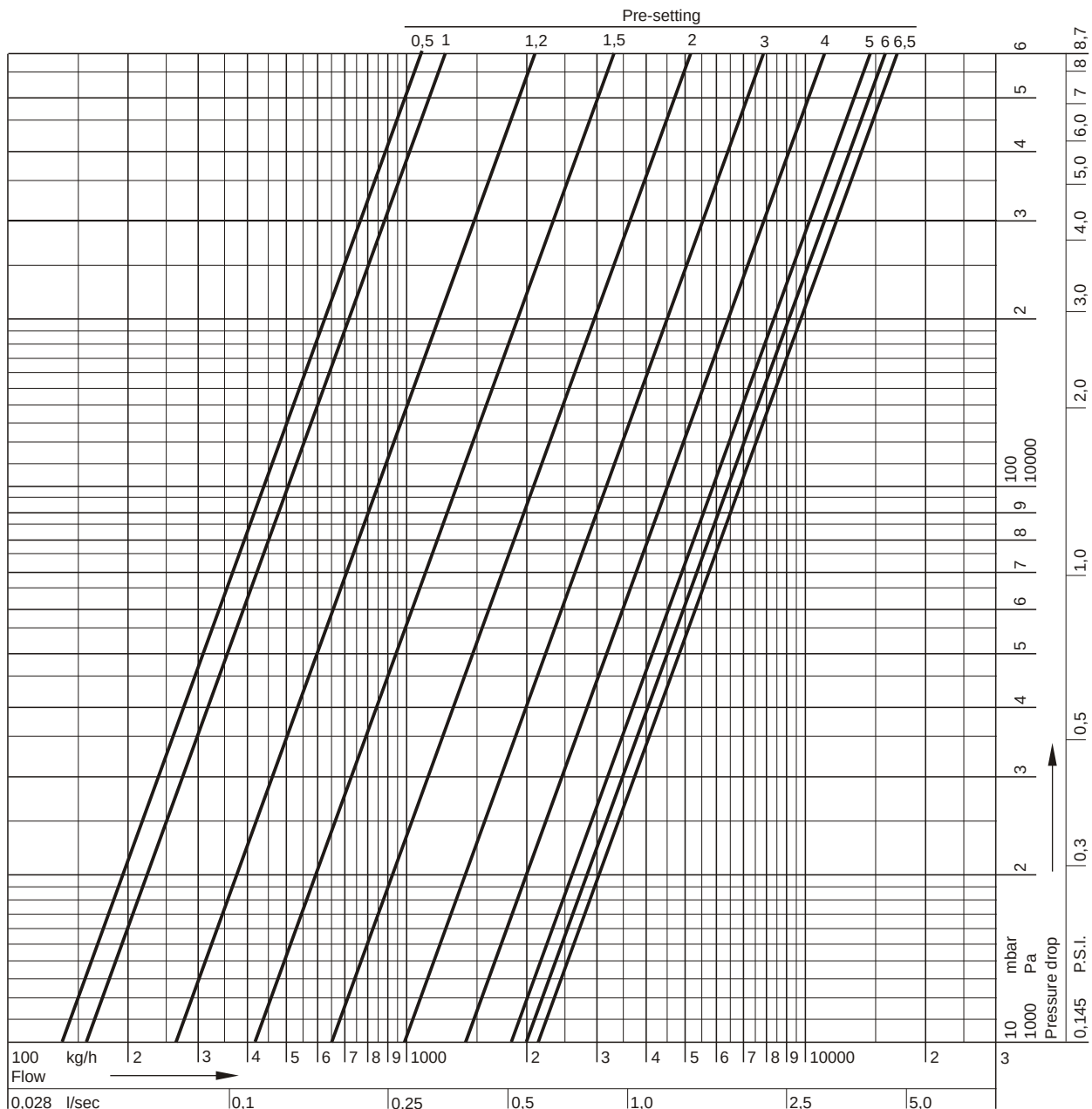


Pre-setting	0,3	0,4	0,6	0,8	1,0	1,2	1,4	1,6	1,8	2,0	2,2	2,4	2,6	2,8	3,0	3,2	3,4	3,6
k _v -value	0,68	0,72	0,84	0,97	1,10	1,30	1,50	1,70	1,90	2,10	2,30	2,50	2,70	2,95	3,20	3,48	3,76	4,05
cv-value	0,80	0,84	0,98	1,13	1,29	1,52	1,76	1,99	2,22	2,46	2,69	2,93	3,16	3,45	3,74	4,07	4,40	4,74

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

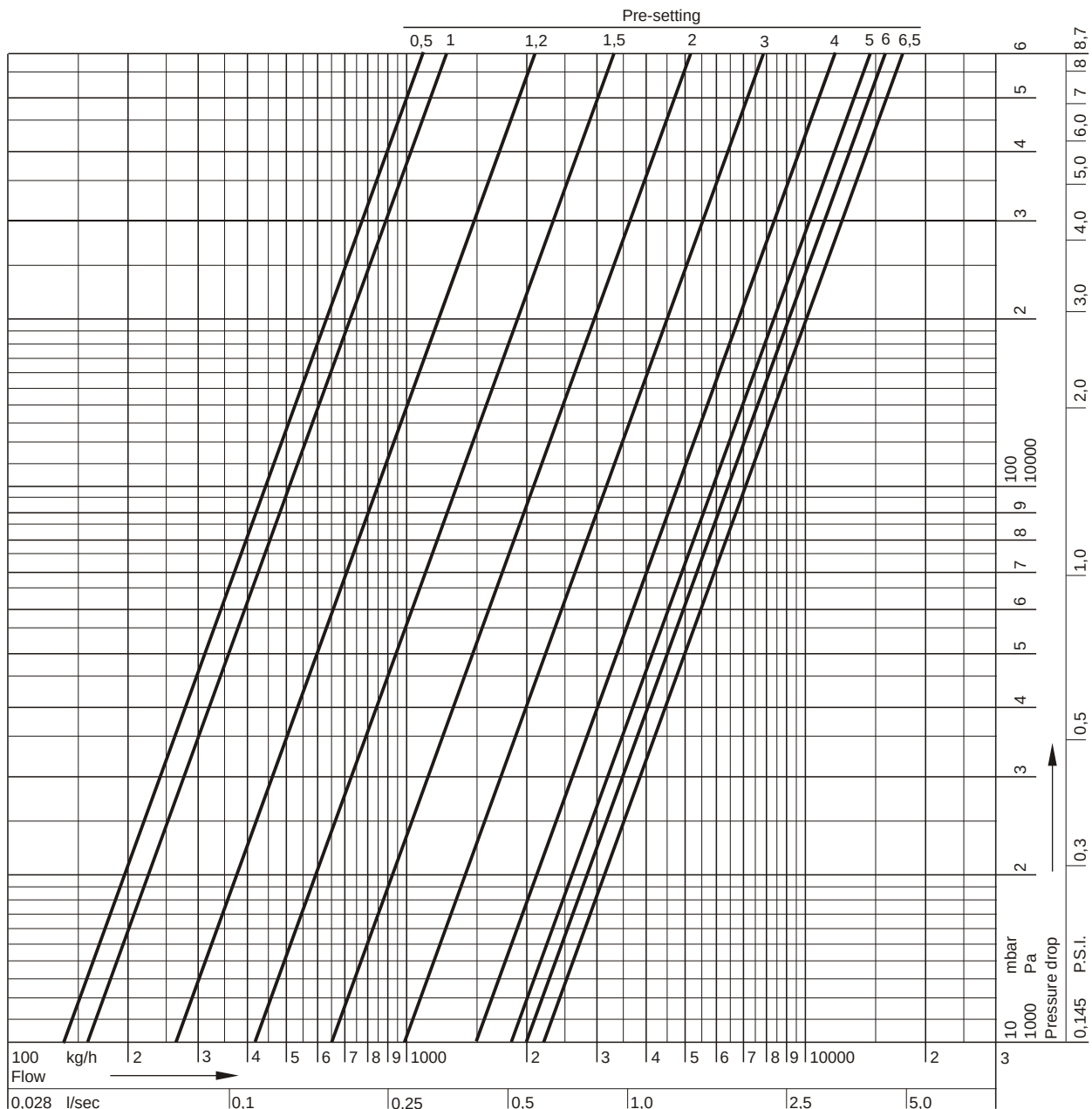


Pre-setting	0.5	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8
k_v -value	1.40	1.45	1.55	1.60	2.60	3.70	4.80	5.90	6.50	6.90	7.50	8.30	9.20	10.2	11.2	12.2	13.2	14.1
cv-value	1.64	1.70	1.81	1.87	3.04	4.33	5.62	6.90	7.61	8.07	8.78	9.71	10.8	11.9	13.1	14.3	15.4	16.5

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

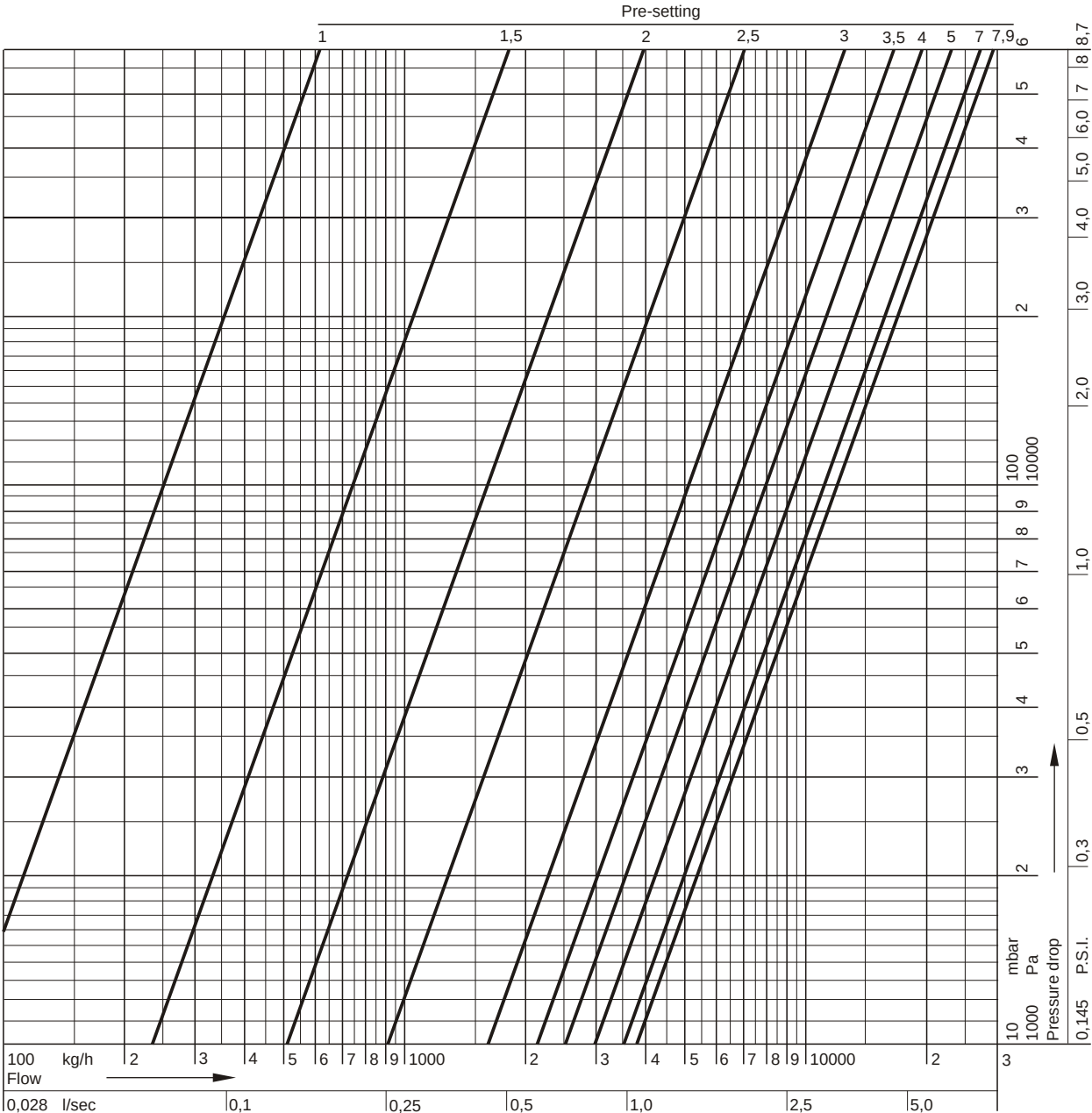


Pre-setting	0.5	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8
k _v -value	1.40	1.45	1.55	1.60	2.60	3.70	4.80	5.90	6.50	6.90	7.50	8.30	9.20	10.2	11.2	12.2	13.2	14.1
cv-value	1.64	1.70	1.81	1.87	3.04	4.33	5.62	6.90	7.61	8.07	8.78	9.71	10.8	11.9	13.1	14.3	15.4	16.5

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.

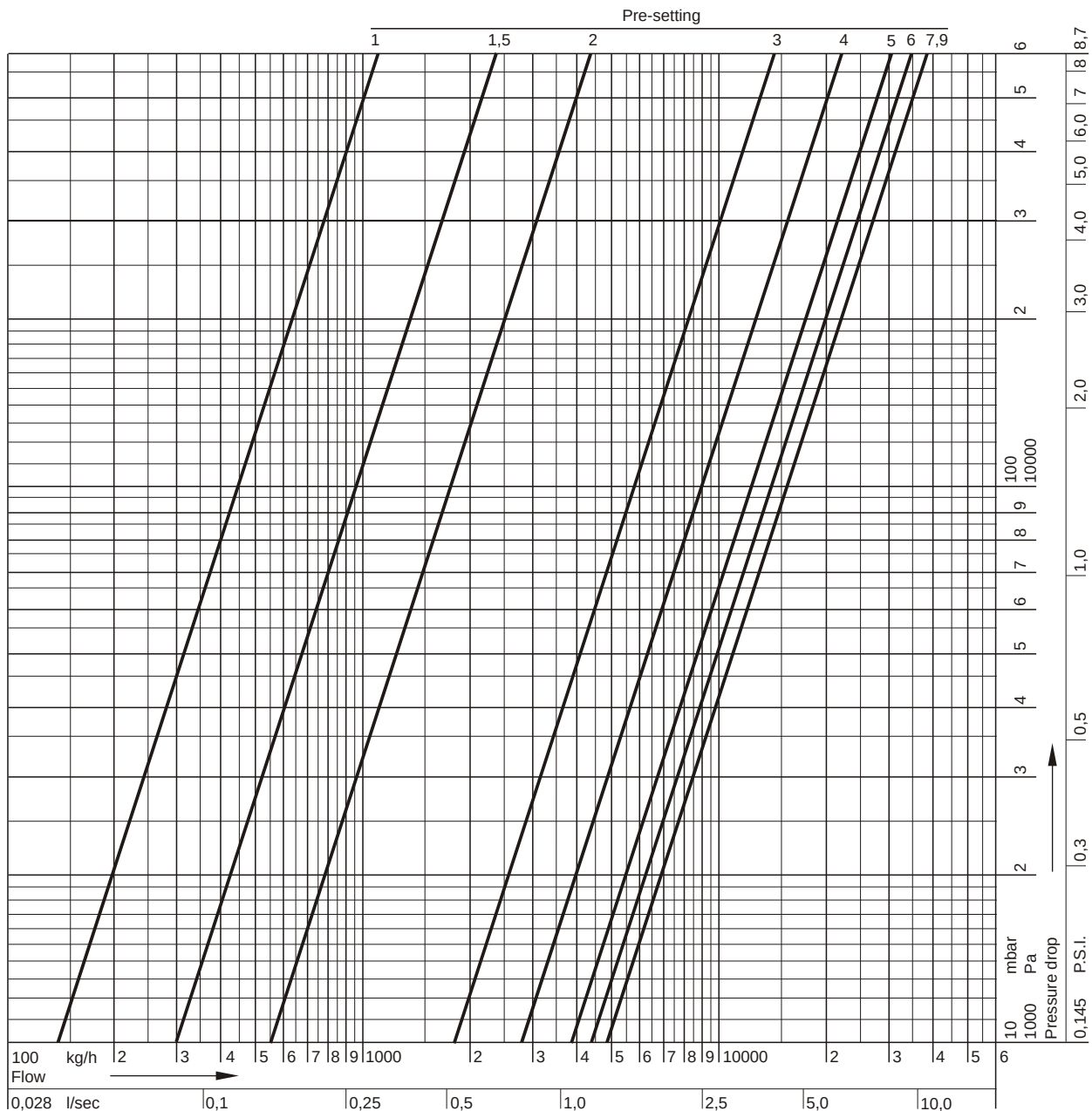
Flow Data V5010 Kombi-3-plus BLUE, DN50



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	

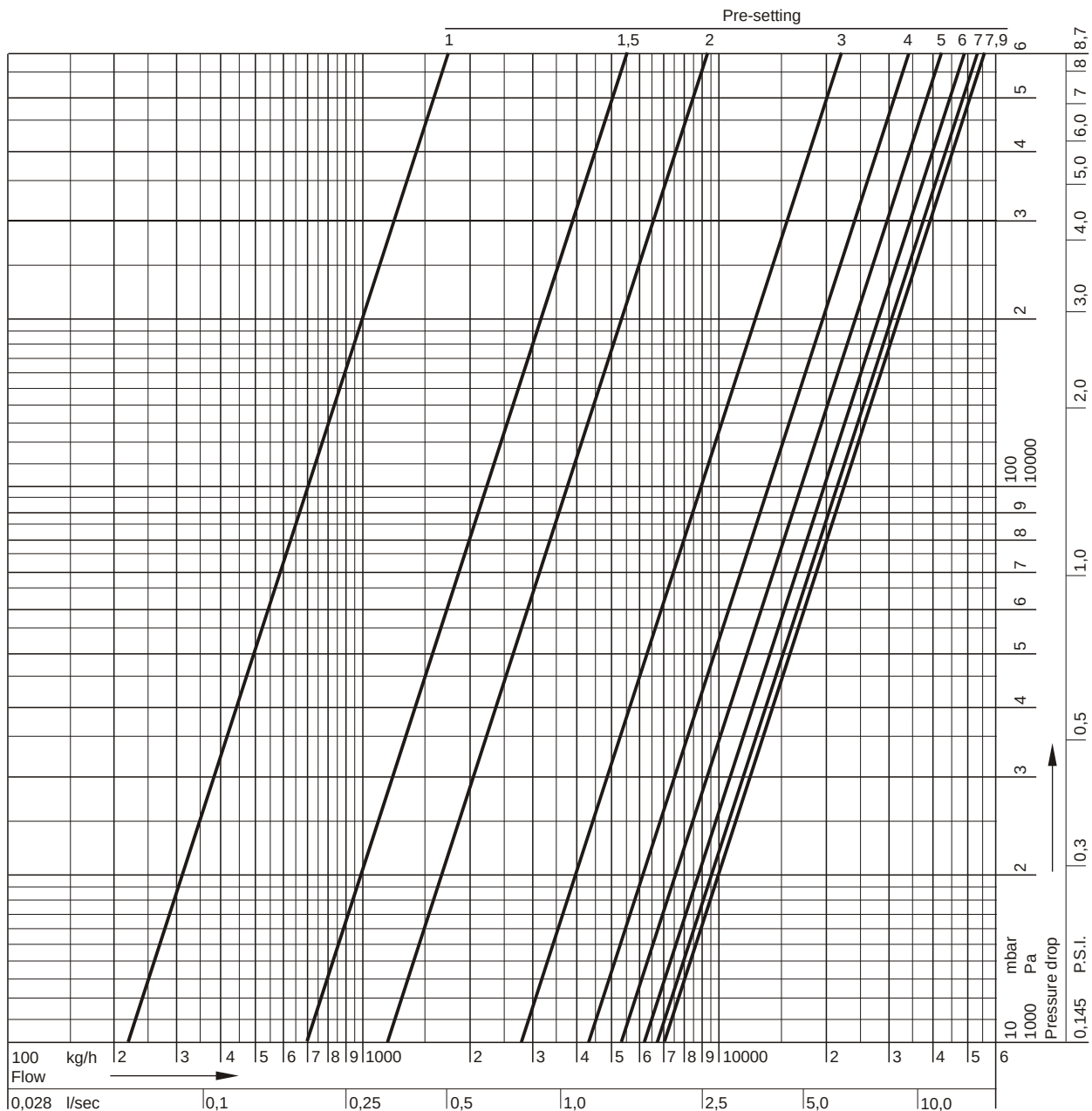
Flow Data V5010 Kombi-3-plus BLUE, DN65



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
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	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
cv-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 $\sigma_0 = 1000 \text{ kg/m}^3$. 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:

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

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:

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

Table 6. 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

Environmental & Energy Solutions

Honeywell GmbH
 Hardhofweg
 74821 MOSBACH
 GERMANY
 Phone: +49 (6261) 810
 Fax: +49 (6261) 81393
<http://ecc.emea.honeywell.com>

Manufactured for and on behalf of the
 Environmental and Combustion Controls Division of
 Honeywell Technologies Sàrl, Rolle, Z.A. La Pièce 16,
 Switzerland by its Authorised Representative Honeywell
 GmbH
 EN 0H-2300GE25 R1116
 Novembre 2016
 © 2016 Honeywell International Inc.
 Subject to change without notice

Honeywell