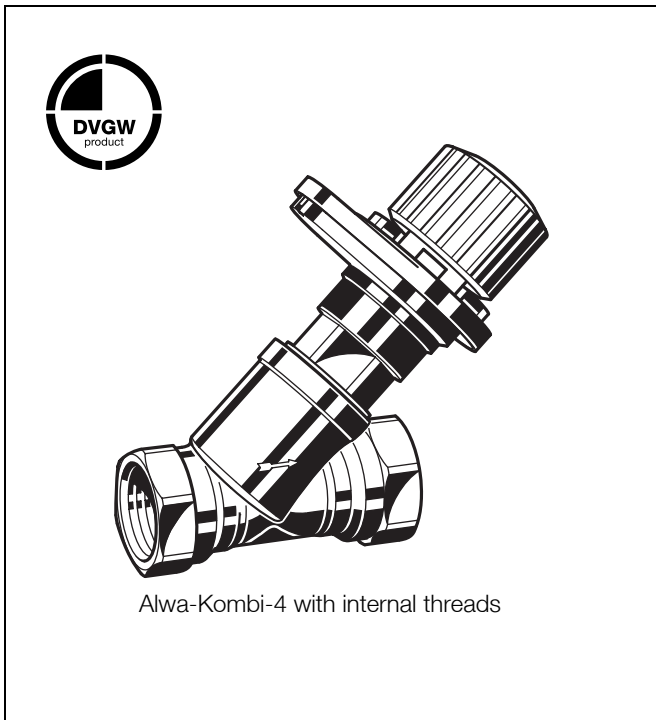


# V1810

## Alwa-Kombi-4 Circulation throttle valve

### Product data



### Design

The Alwa-Kombi-4 valve consists of:

- Valve housing in straight pattern with internal threads to ISO 7 (DIN 2999) or external threads according to DIN ISO 228
- Valve insert
- Handwheel with digital display of pre-setting
- Thermal actuator (accessory)
- Pipe connections (accessory)

### Materials

- Valve housing made of red bronze
- Valve insert made of red bronze and brass
- EPDM O-rings
- PTFE seat sealing
- Handwheel, pre-setting dial and display made of plastic, orange

### Application

The Alwa-Kombi-4 is used as throttle valve for hydronic balancing of warm potable water circulation systems.

To achieve a hydronic balance the flow in the circulation pipe is throttled by manually pre-setting the valve. The valve can also be equipped with a thermal actuator which allows a regulation of the water temperature in the circulation system to the exact degree. The thermal actuator can be installed without interruption of the warm water supply.

When the thermal actuator 50 - 60 °C (122 - 140 °F) is used, a thermal disinfection according to DVGW worksheet W551 and W553 is supported. Hydronic balance is also retained during the thermal disinfection process to ensure disinfection of all pipelines and risers.

### Features

- Meets KTW requirements
- For regulation according to DVGW worksheets W551 and W553
- Valve housing and all parts with flow-contact made of corrosion-resistant red bronze
- Retrofittable automatic temperature-control with support of thermal disinfection
- Draining option with retrofittable and removable draining adapter
- No additional side connections to valve housing
- Cavity-free cartridge with maintenance-free spindle sealing
- Spindle thread is isolated from the flow
- Seat sealing made of PTFE
- Visible, digital pre-setting dial with concealed pre-setting handwheel
- High accuracy due to factory calibration to every single valve

### Specifications

Medium	Water	
Operating temperature	max. 130 °C (266°F)	
Operating pressure	max. 16 bar (232 p.s.i.)	
$k_{vs}$ -value	DN 15	2.7
	DN 20	6.4
	DN 25	6.8
	DN 32 und DN 40	16.0

## Function

As throttle valve the Alwa-Kombi-4 limits the flow through the circulation pipe. This is achieved either by manually closing the valve to a certain position or automatically, when the valve is equipped with a thermal actuator.

**Manual pre-setting:** the valve is pre-set according to a calculated value and stays in that position. The flow of the water is limited by the narrowed valve opening.

**Automatic regulation:** the valve is equipped with a thermal actuator and pre-set to the desired water temperature. The thermal actuator holds the water temperature at the valve to the exact degree.

When the water temperature falls the valve opens and the flow of warm water increases. When the water temperature rises, the valve closes and shuts-off when the pre-set water temperature is reached (except for a leakage rate).

With manual pre-setting the valve can only be set for optimal operation under „full load“. The automatic regulation process allows a permanent regulation and by that an optimal supply of all pipelines under most economical energy use.

As part of Honeywell's "Kombi" family of valves, additional functions can also be fitted and used after the valve has been installed. The functions are carried out by installing adapters into the cartridge spindle:

- The thermal actuator (preferably 50 - 60 °C [122 - 140 °F]) can be installed at any time without interrupting the supply of warm water. The actuator is simply screwed into the spindle and allows permanent hydronic balancing based on the water temperature in the circulation pipe.
- The draining adapter is fitted to drain a pipe or riser and can be removed when the draining process is finished. It can be used with any Alwa-Kombi-4 potable water balancing valve and also with any Honeywell Kombi-3-plus heating/cooling balancing valve.
- The current temperature in the circulation line can be read on the thermometer at any time. The thermometer can be used or retrofitted for variants both with and without a temperature-controlled actuator.
- The sampling valve is used in conjunction with the drain adapter and is used to determine chemical and microbiological parameters.

## Thermal disinfection at temperatures over 70 °C (158 °F)

Supported by Alwa-Kombi-4 with fitted thermal actuator 50 - 60 °C (122 - 140 °F)

Starting from the leakage rate the valve opens at a water temperature of 63 °C (145 °F) and the flow rate increases.

When the water reaches a temperature of 72 °C (162 °F) the flow of the water is throttled to a flow rate below the leakage rate. This has the advantage that the hydronic balance is retained and the hot water is repily distributed in all risers and pipelines.

When the thermal disinfection process is finished and the water temperature drops again, Alwa-Kombi-4 returns to the standard control position..

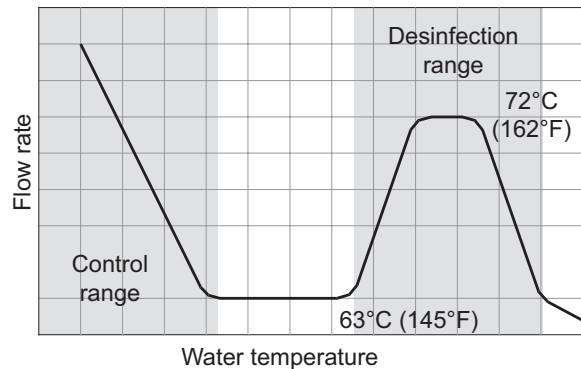


Fig.1 Relation of flow rate and water temperature

**Note:** The thermal disinfection is only supported by the thermal actuator 50 - 60 °C (122 - 140 °F), OS-No. VA2400A002. The thermal actuator has to be set to 55 °C (131 °F) = pre-setting 1.5.

Dimensions

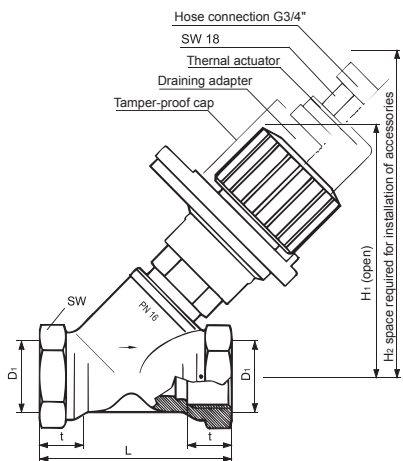


Fig.2 Alwa-Kombi-4 with internal threads

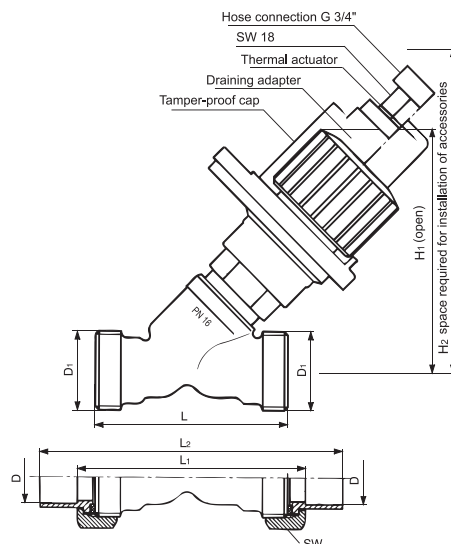


Fig.3 Alwa-Kombi-4 with external threads

Note: Draining adapter and thermal actuator available, see accessories.

Table 1. Alwa-Kombi-4

Version	DN	D1	kvs(Cvs)-value	D2	L	L1	L2	H1	H2	SW
Alwa-Kombi-4 with internal threads (Fig. 2)	15	Rp 1/2"	2.7	-	65	-	-	85	135	27
	20	Rp 3/4"	6.4	-	75	-	-	100	150	32
	25	Rp 1"	6.8	-	90	-	-	100	150	41
	32	Rp 1 1/4"	16.0	-	110	-	-	137	210	50
	40	Rp 1 1/2"	16.0	-	120	-	-	137	210	55
Alwa-Kombi-4 with external threads (Fig. 3)	15	G 3/4" A	2.7	15/18	65	81	105	85	135	30
	20	G 1" A	6.4	22	75	91	125	100	150	37
	25	G 1 1/4" A	6.8	28	90	108	148	100	150	47
	32	G 1 1/2" A	16.0	35	110	128	178	137	210	52
	40	G 1 3/4" A	16.0	42	120	140	198	137	210	60

Note: All dimensions in mm unless stated otherwise.

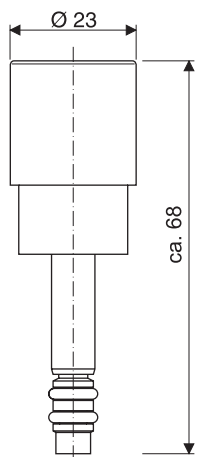


Fig.4 Thermal actuator for Alwa-Kombi-4

## Order information

Table 2. Ordering text and OS-Nos. (OS = Ordering System).


Version	OS.-No.	DN mm R	15	15	20	25	32	40
			15	18	22	28	35	42
			1/2"	1/2"	3/4"	1"	1 1/4"	1 1/2"
Alwa-Kombi-4 throttle valve with internal threads	V1810Y0		015	-	020	025	032	040
Alwa-Kombi-4 throttle valve with internal threads and fitted 'Mapress' press-fittings	V1816Y0		015	018	020	025	032	040
Alwa-Kombi-4 throttle valve with internal threads and fitted 'Sanpress' press-fittings	V1817Y0		015	018	020	025	032	040
Alwa-Kombi-4 throttle valve with external threads	V1810X0		015	-	020	025	032	040

Note: Add desired size to OS-No.: V1810X0 in DN15 = V1810X0015

## Accessories

## Connections for external threads

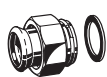
## Union nut, sealing and red bronze soldering tailpiece

	DN 15, for 15 mm pipe-Ø	VA7400A015
	DN 15, for 16 mm pipe-Ø	VA7400A016
	DN 20, for 18 mm pipe-Ø	VA7400A018
	DN 20, for 22 mm pipe-Ø	VA7400A020
	DN 25, for 28 mm pipe-Ø	VA7400A025
	DN 32, for 35 mm pipe-Ø	VA7400A032
	DN 40, for 42 mm pipe-Ø	VA7400A040


## Union nut, sealing and externally threaded red bronze tail-piece for external threads

	DN 15	VA7401A015
	DN 20	VA7401A020
	DN 25	VA7401A025
	DN 32	VA7401A032
	DN 40	VA7401A040


## Union nut with MAPRESS-fitting for external threads

	DN 15, für 15 mm Rohr-Ø	VA7403A015
	DN 15, für 18 mm Rohr-Ø	VA7403A018
	DN 20, für 22 mm Rohr-Ø	VA7403A020
	DN 25, für 28 mm Rohr-Ø	VA7403A025
	DN 32, für 35 mm Rohr-Ø	VA7403A032
	DN 40, für 42 mm Rohr-Ø	VA7403A040

## Draining adapter

	for all types and sizes	VA3400A001
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## Sanpress/Profipress System connection set (red bronze)

	DN 15, for 15 mm pipe-Ø	VA7404A015
	DN 15, for 18 mm pipe-Ø	VA7404A018
	DN 20, for 22 mm pipe-Ø	VA7404A020
	DN 25, for 28 mm pipe-Ø	VA7404A025
	DN 32, for 35 mm pipe-Ø	VA7404A032
	DN 40, for 42 mm pipe-Ø	VA7404A040

## Union nut, sealing and internally threaded red bronze tail-piece for external threads


	DN 15	VA7405A015
	DN 20	VA7405A020
	DN 25	VA7405A025
	DN 32	VA7405A032
	DN 40	VA7405A040

## Thermal actuator

	for all sizes, temperature setting range 50 - 60°C (122-140°F)	VA2400A002
	for all sizes, temperature setting range 40 - 65°C (104-149°F)	VA2400B002


Note: Thermal disinfection is supported by thermal actuator 50 - 60°C (OS-No. VA2400A001) with pre-setting between 1.5 and 2.0.

## Thermometer

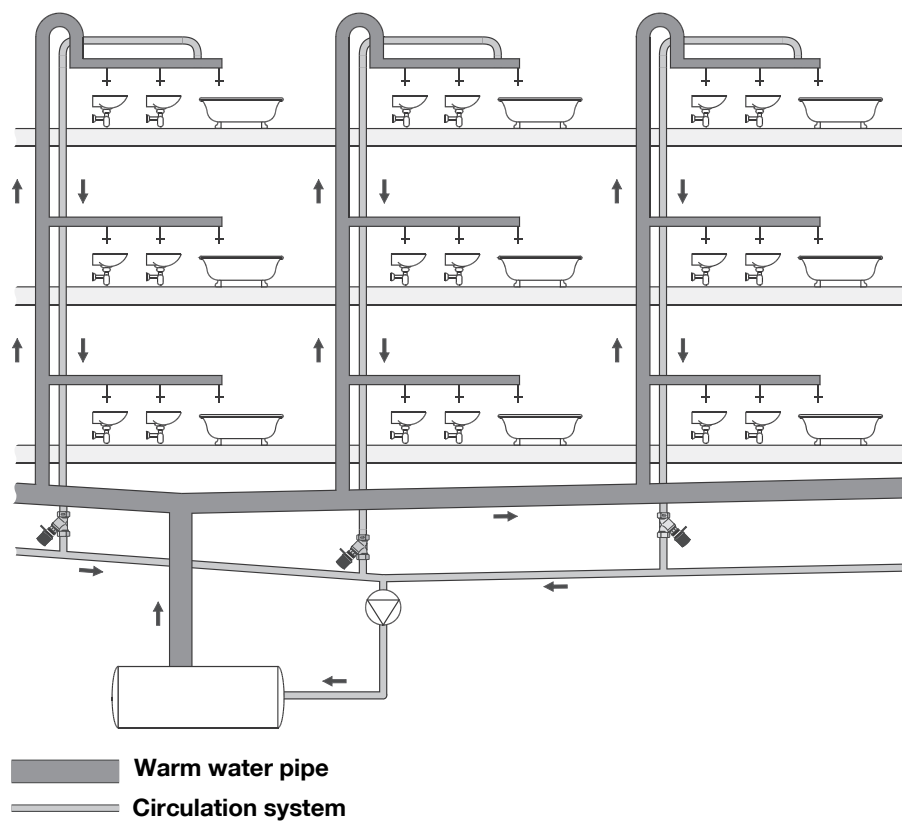
	for all DN sizes, temperature range 0 - 120 °C, tolerance +2 K / -5 K	TH07K
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Note: Thermometer TH07K cannot be used in combination with thermal actuators VA2400A002 and VA2400B002

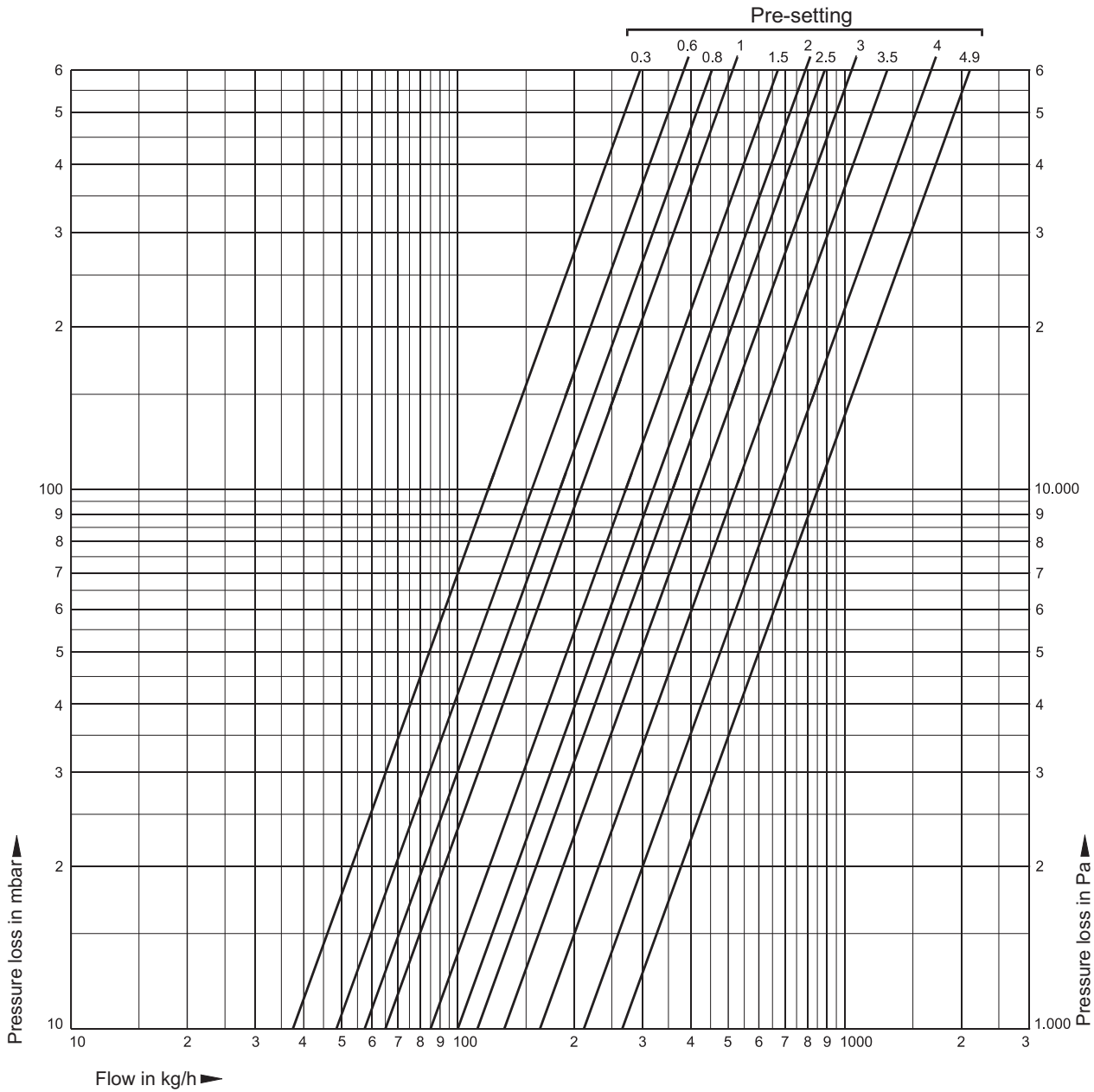
## Sampling valve

	for all sizes only in conjunction with drain adapter VA3400A001	VA3400C001
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**Installation Example**



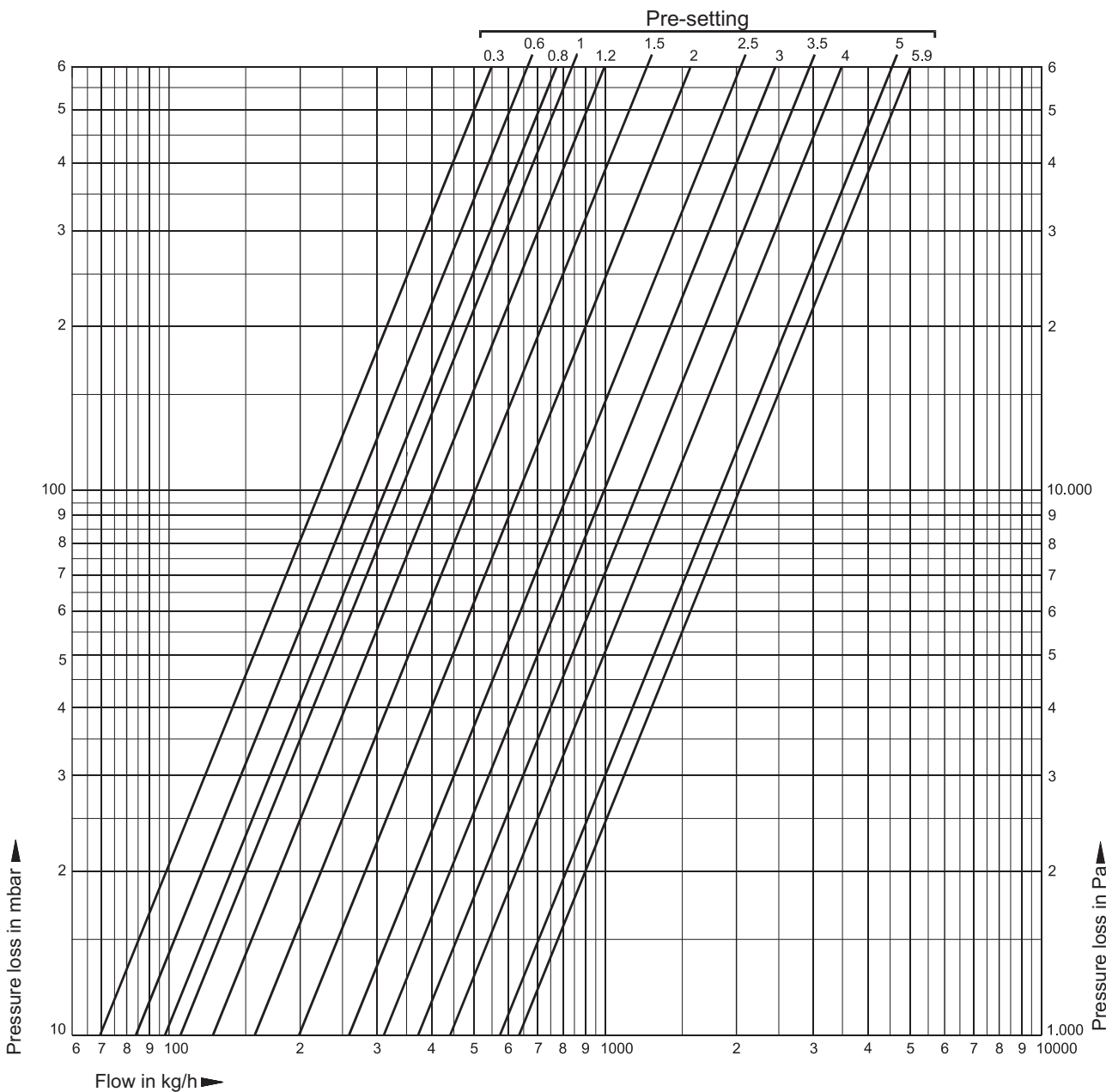
**Flow Diagram for DN 15**



<b>Pre-setting</b>	0.3	0.6	0.8	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.9 = open
<b>k<sub>vs</sub>-value</b>	0.37	0.49	0.57	0.65	0.85	1.00	1.13	1.32	1.66	2.12	k <sub>vs</sub> = 2.70

Note: Due to manufacturing reasons the closes position (shutoff) is already reached between pre-setting 0.2 and 0.4.

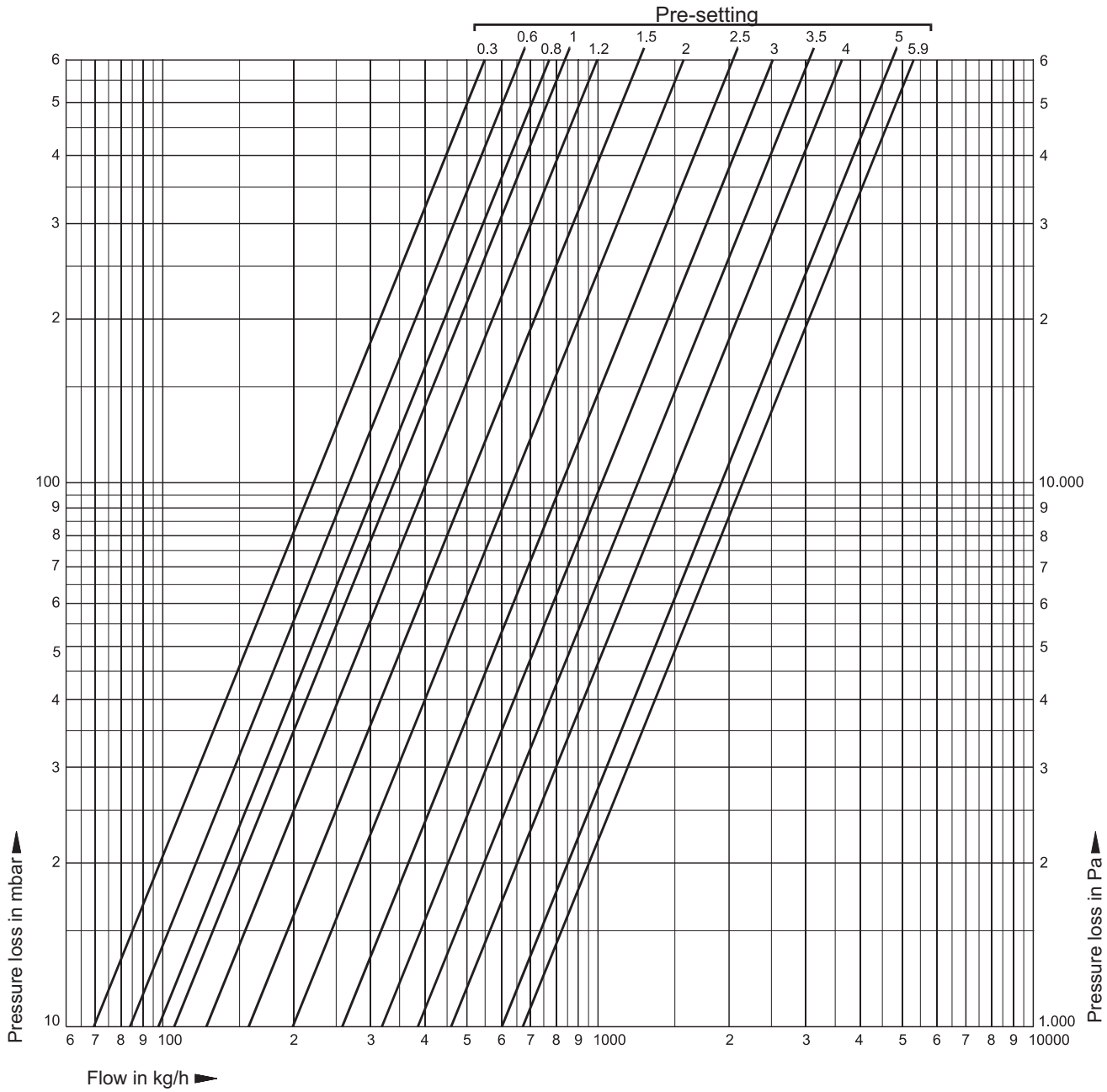
Flow Diagram for DN 20



<b>Pre-setting</b>	0.3	0.6	0.8	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0	5.0	5.9 = open
<b>k<sub>vs</sub>-value</b>	0.68	0.84	0.97	1.10	1.30	1.60	2.10	2.60	3.12	3.73	4.40	5.84	k <sub>vs</sub> = 6.40

Note: Due to manufacturing reasons the closes position (shutoff) is already reached between pre-setting 0.2 and 0.4.

**Flow Diagram for DN 25**

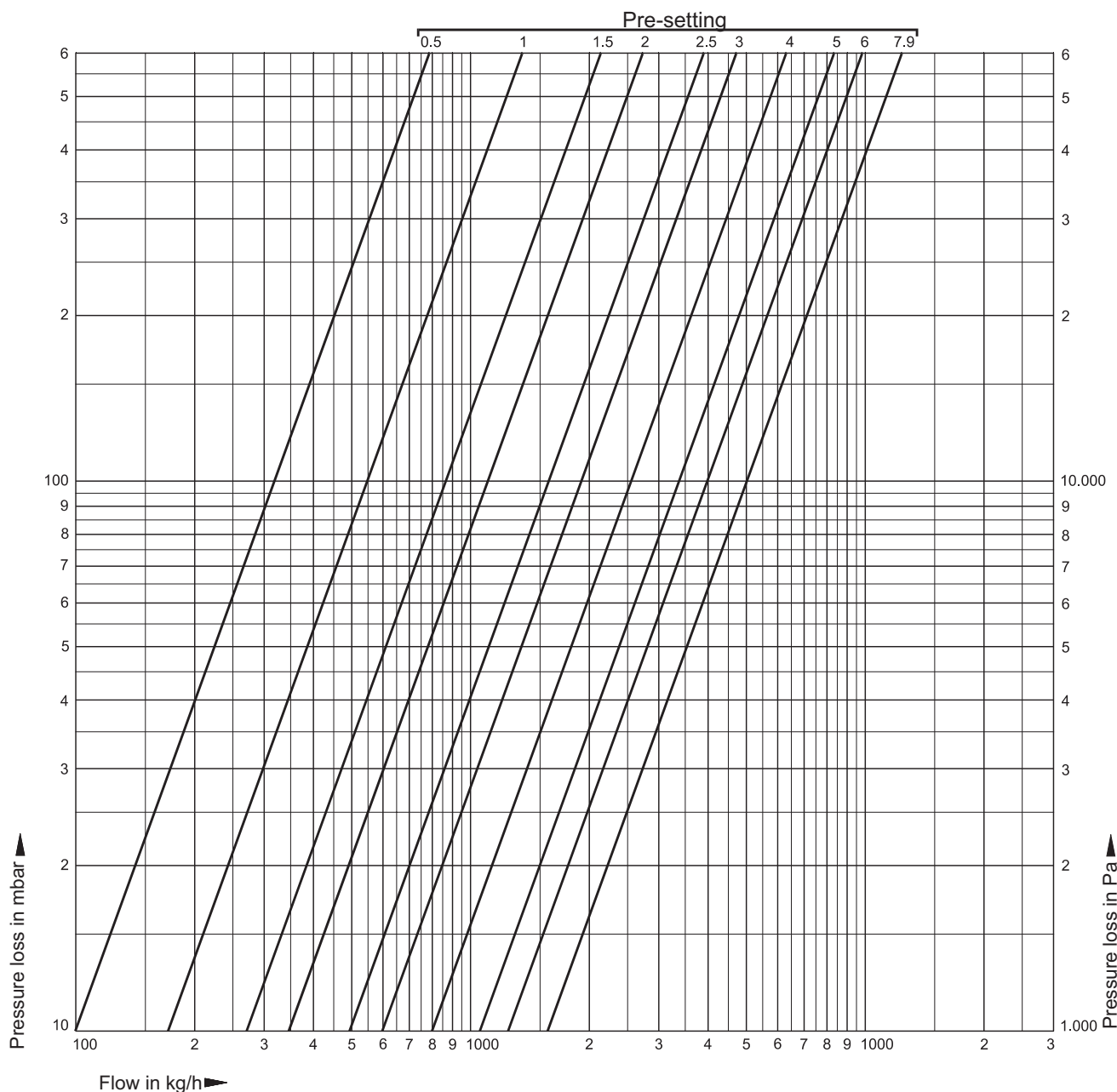


<b>Pre-setting</b>	0.3	0.6	0.8	1.0	1.2	1.5	2.0	2.5	3.0	3.5	4.0	5.0	5.9 = open
<b>k<sub>vs</sub>-value</b>	0.68	0.84	0.97	1.10	1.30	1.60	2.10	2.60	3.20	3.90	4.64	6.06	k <sub>vs</sub> = 6.80

Note: Due to manufacturing reasons the closes position (shutoff) is already reached between pre-setting 0.2 and 0.4.



**Flow Diagram for DN 32 and DN 40**



<b>Pre-setting</b>	0.5	0.6	0.7	0.8	1.0	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8
<b>k<sub>VS</sub>-value</b>	1.02	1.13	1.42	1.48	1.70	2.16	2.44	2.96	3.54	4.12	4.71	5.28	5.77

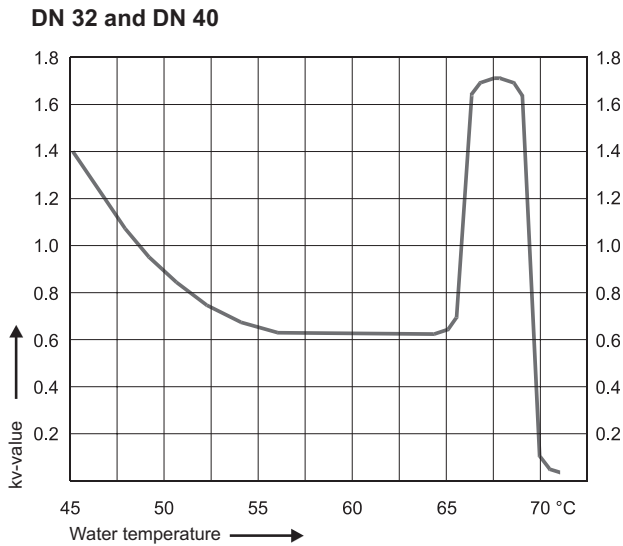
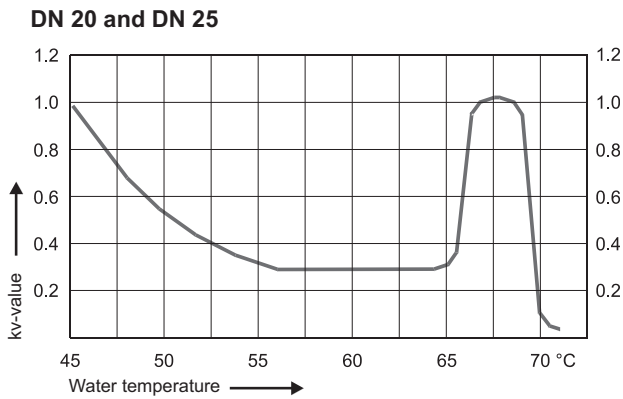
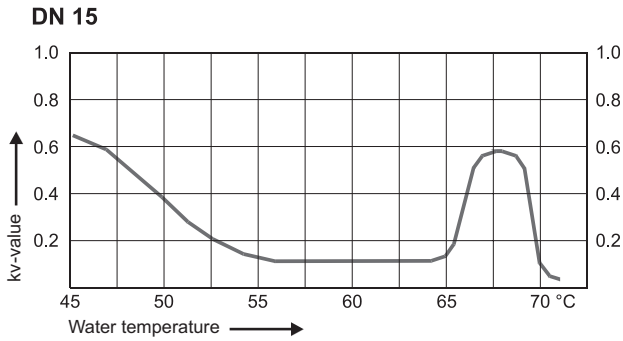
<b>Pre-setting</b>	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4
<b>k<sub>VS</sub>-value</b>	6.13	6.44	6.91	7.77	8.19	8.74	9.20	9.36	9.62	10.1	10.5	11.0	11.5

<b>Pre-setting</b>	5.8	6.0	6.2	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.8	7.9 = open
<b>k<sub>VS</sub>-value</b>	12.0	12.5	12.8	13.3	13.7	14.1	14.5	14.8	15.0	15.3	15.6	k <sub>VS</sub> = 16.0

Note: Due to manufacturing reasons the closes position (shutoff) is already reached between pre-setting 0.2 and 0.4.

**Alwa-Kombi-4 with installed thermal actuator**

**$k_{vs}$ -value of Alwa-Kombi-4 with installed thermal actuator 50 - 60 °C (122 - 140 °F) in relation to water temperature at pre-setting 1.5**



**Pre-setting values for thermal actuators**

We recommend:

Pre-setting value = desired minimal temperature (standard setting)

Desired minimal temperature  
55 °C (131 °F) = Pre-setting 1.5

If the required throttle position according to DVGW worksheet W553 is to the right of the 2K-line (temperature in pipe is below 53°C [127°F] at pre-setting 1.5) the pre-setting has to be increased by 2K:

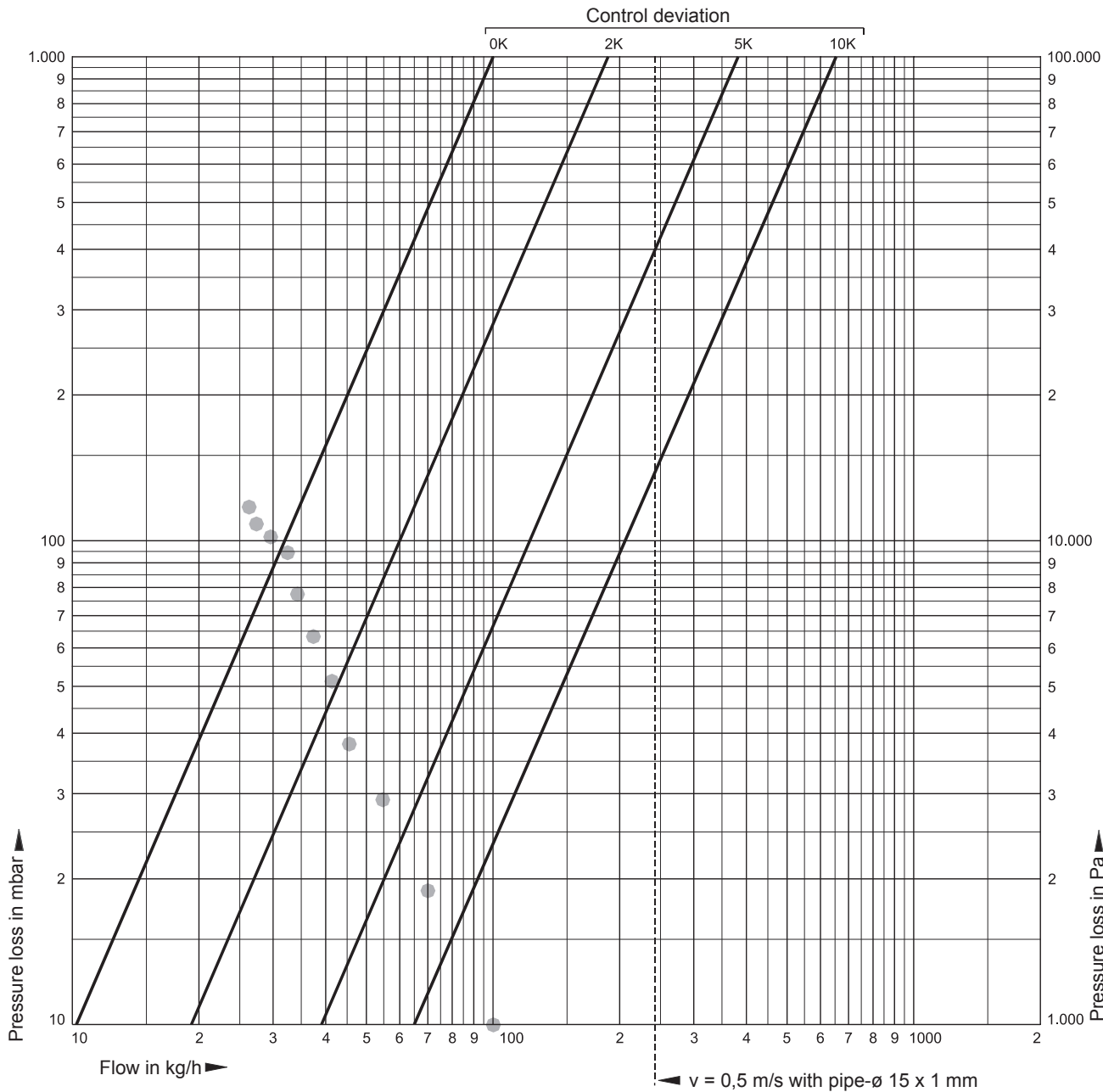
Desired minimal temperature  
55 °C (131 °F) + 2K = Pre-setting 1.7

If the required throttle position according to W553 is to the right of the 5K-line (temperature in pipe is below 53 °C [127 °F] at pre-setting 1.7) the following possibilities are left:

- Manually pre-set thermal actuator and valve with values calculated according to DVGW worksheet W553.
- Use valve of larger dimension.
- Increase pre-setting by 5K:  
55 °C (131 °F) + 5K = pre-setting 2.0  
The increased pressure loss over the valve must be taken into account when the pump is specified!

When installation is set according to above recommendations the hydronic balance is also retained at 70 °C (158 °F) - during the thermal disinfection process.

Flow Diagram for DN 15 with thermal actuator 50 - 60 °C

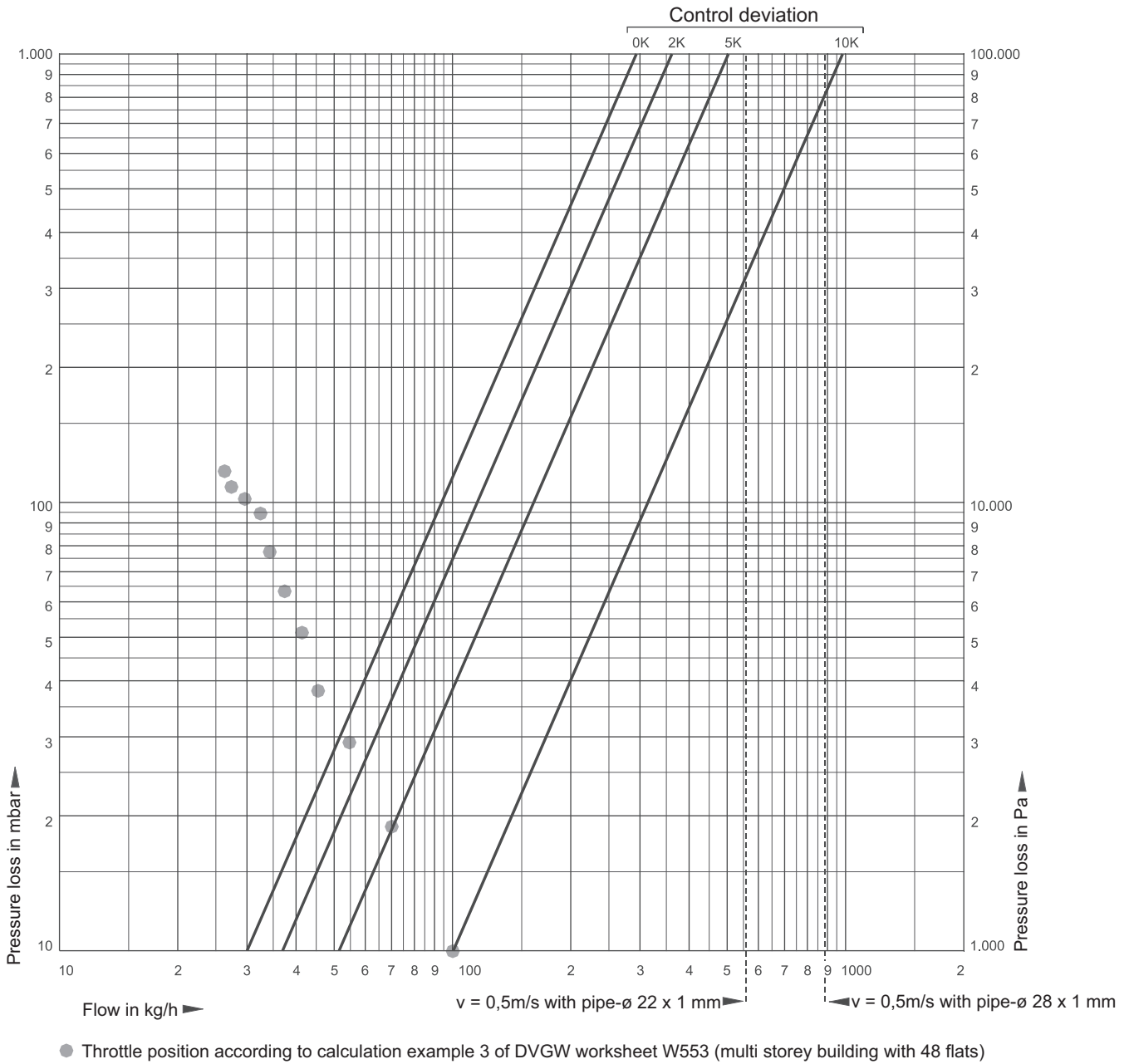


● Throttle position according to calculation example 3 of DVGW worksheet W553 (multi storey building with 48 flats)

<b>Pre-setting</b>	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
<b>Temperature °C</b>	50	51	52	53	54	55	56	57	58	59	60

Note: Due to manufacturing reasons the closes position (shutoff) is already reached between pre-setting 0.2 and 0.4.

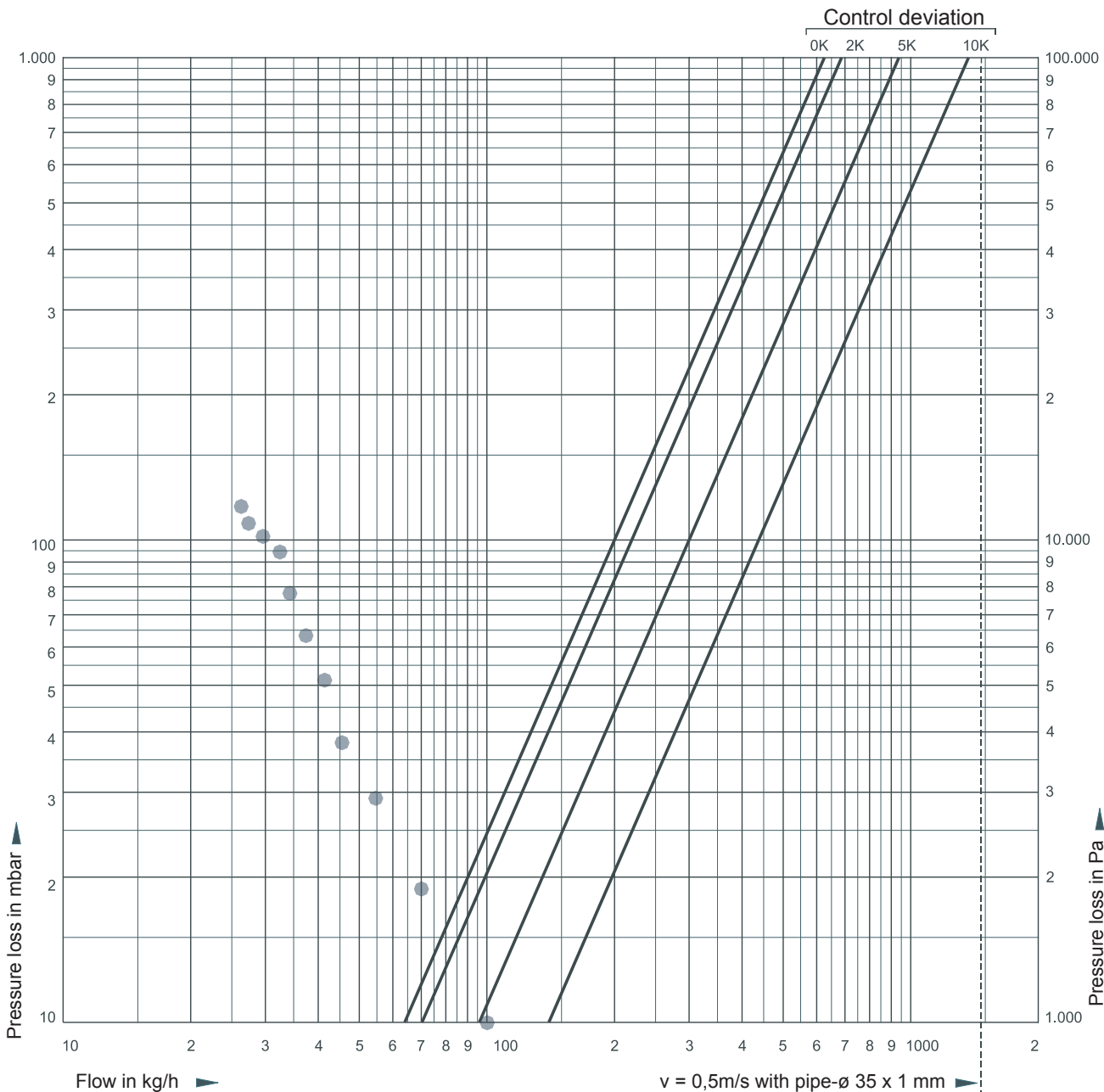
**Flow Diagram for DN 20 and DN 25 with thermal actuator 50 - 60 °C**



<b>Pre-setting</b>	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
<b>Temperature °C</b>	50	51	52	53	54	55	56	57	58	59	60

Note: Due to manufacturing reasons the closes position (shutoff) is already reached between pre-setting 0.2 and 0.4.

Flow Diagram for DN 32 and DN 40 with thermal actuator 50 - 60 °C

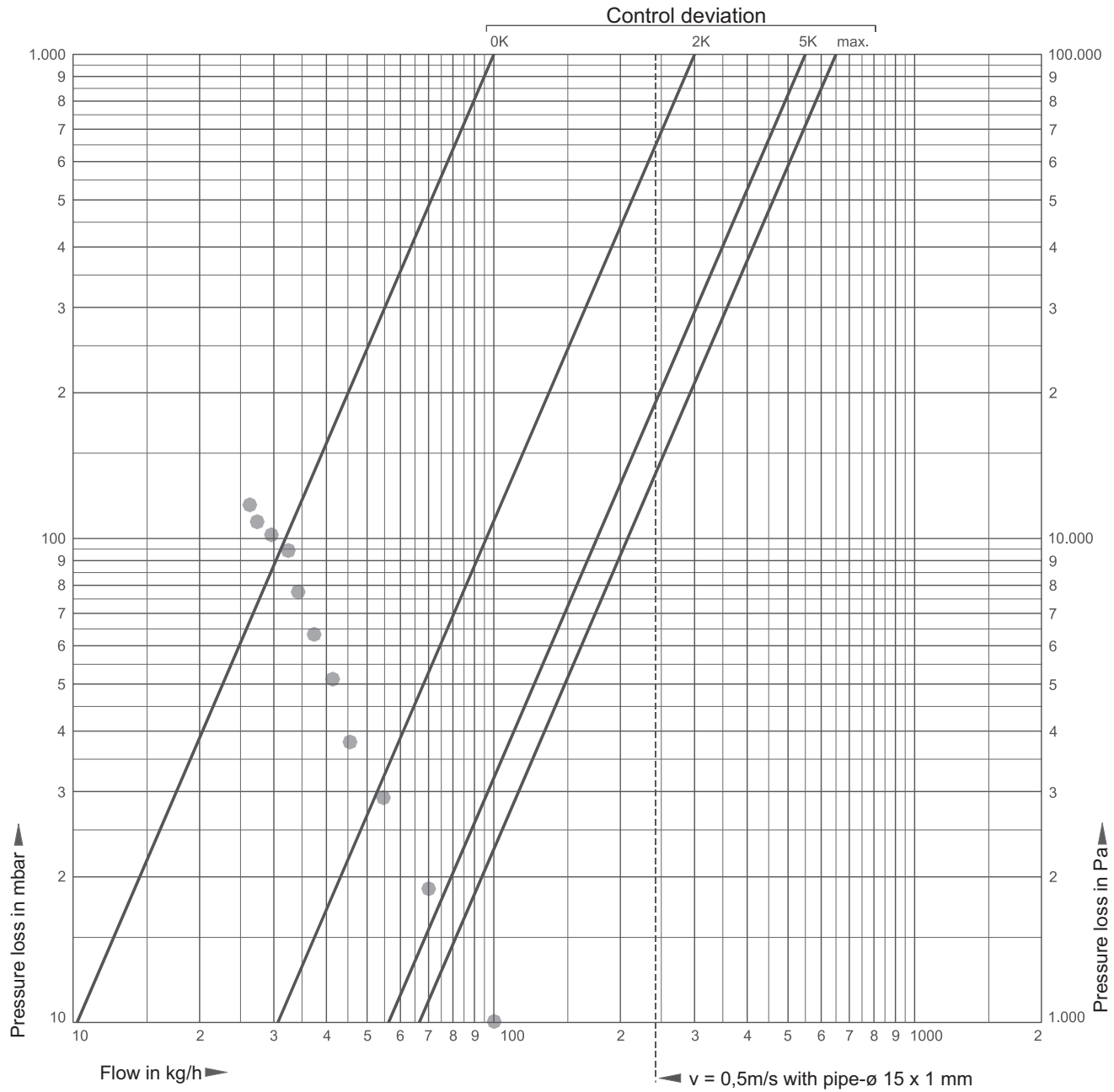


● Throttle position according to calculation example 3 of DVGW worksheet W553 (multi storey building with 48 flats)

<b>Pre-setting</b>	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2,0
<b>Temperature °C</b>	50	51	52	53	54	55	56	57	58	59	60

Note: Due to manufacturing reasons the closes position (shutoff) is already reached between pre-setting 0.2 and 0.4.

**Flow Diagram for DN 15 with thermal actuator 40 - 65 °C**

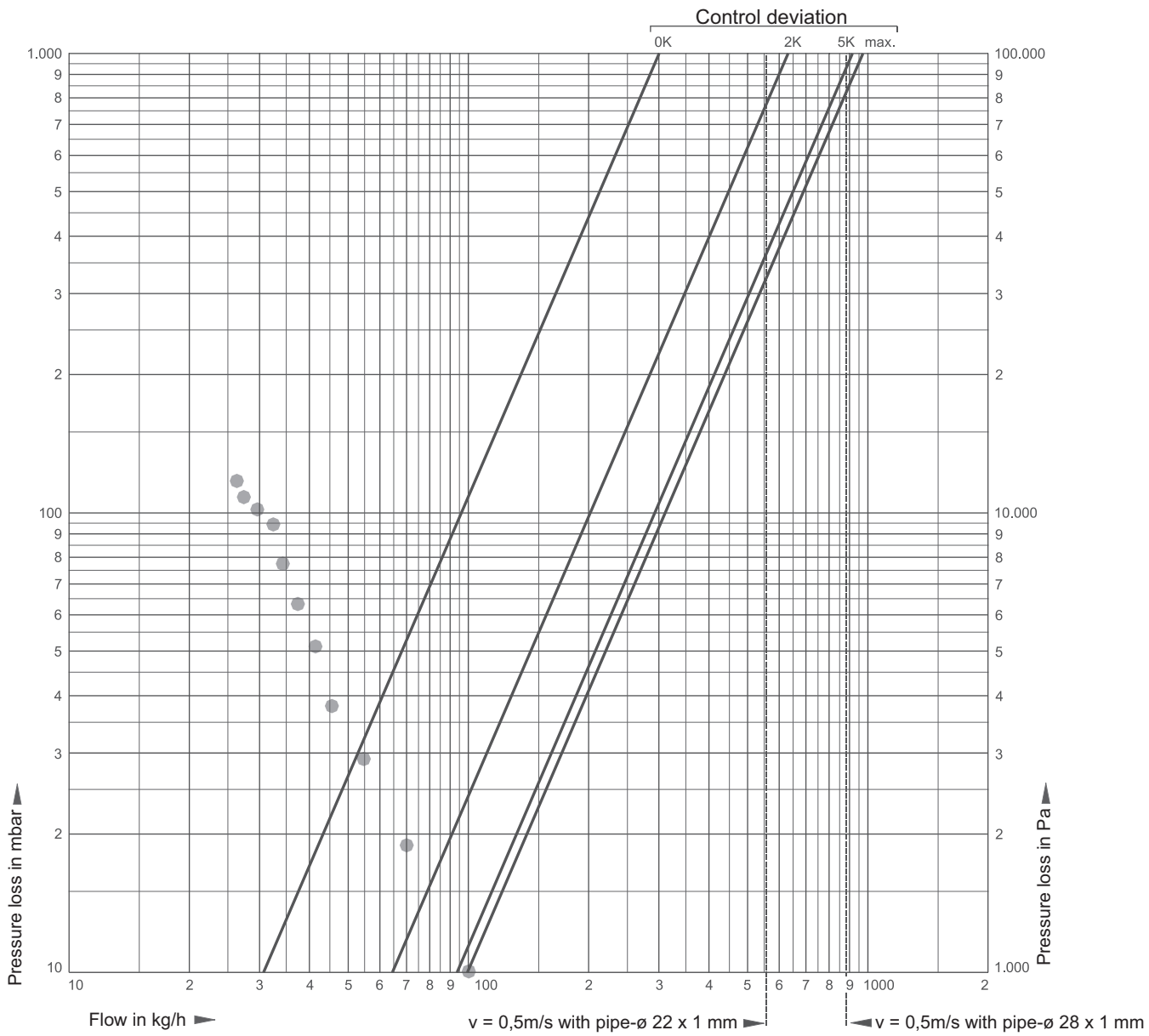


● Throttle position according to calculation example 3 of DVGW worksheet W553 (multi storey building with 48 flats)

<b>Pre-setting</b>	0.5	0.7	1.0	1.2	1.5	2,0
<b>Temperature °C</b>	40	45	50	55	60	65

Note: Due to manufacturing reasons the closes position (shutoff) is already reached between pre-setting 0.2 and 0.4.

Flow Diagram for DN 20 and DN 25 with thermal actuator 40 - 65 °C

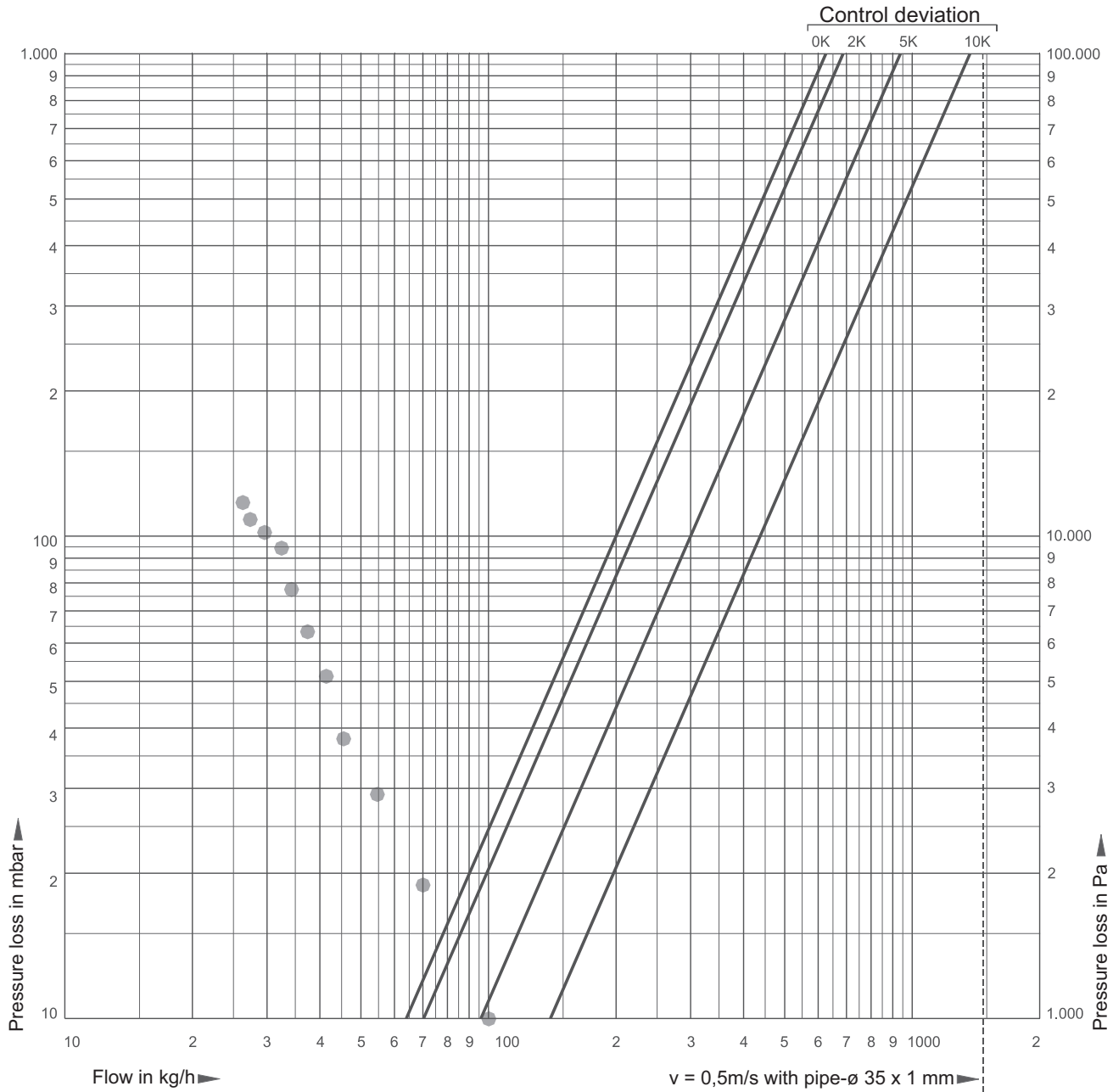


● Throttle position according to calculation example 3 of DVGW worksheet W553 (multi storey building with 48 flats)

<b>Pre-setting</b>	0,5	0,7	1,0	1,2	1,5	2,0
<b>Temperature °C</b>	40	45	50	55	60	65

Note: Due to manufacturing reasons the closes position (shutoff) is already reached between pre-setting 0.2 and 0.4.

**Flow Diagram for DN 32 and DN 40 with thermal actuator 40 - 65 °C**



● Throttle position according to calculation example 3 of DVGW worksheet W553 (multi storey building with 48 flats)

<b>Pre-setting</b>	0.5	0.7	1.0	1.2	1.5	2,0
<b>Temperature °C</b>	40	45	50	55	60	65

Note: Due to manufacturing reasons the closes position (shutoff) is already reached between pre-setting 0.2 and 0.4.

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