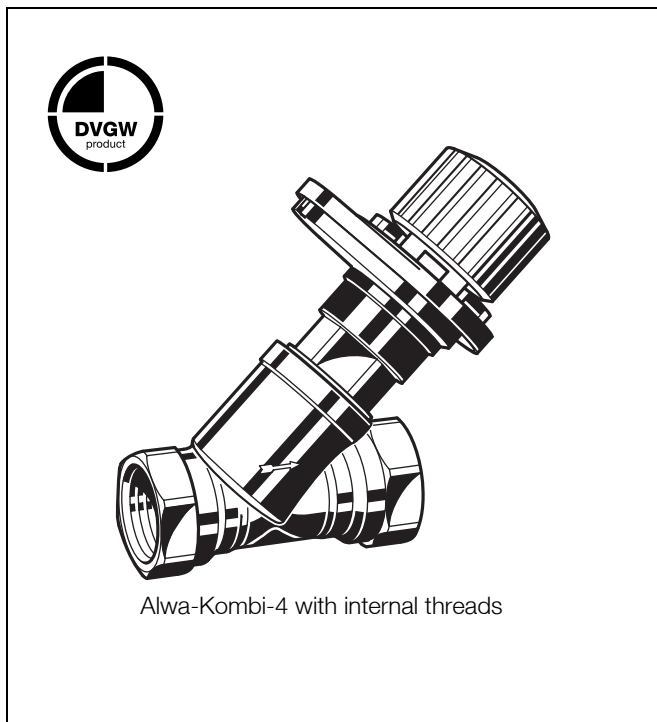


## V1810

### Alwa-Kombi-4 Circulation throttle valve

#### Product specification sheet



#### Construction

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.

#### Special 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

#### Technical Data

|                            |                 |      |
|----------------------------|-----------------|------|
| Medium                     | Water           |      |
| Operating temperature max. | 130 °C          |      |
| Operating pressure         | max. 16 bar     |      |
| k <sub>vs</sub> -value     | DN 15           | 2.7  |
|                            | DN 20           | 6.4  |
|                            | DN 25           | 6.8  |
|                            | DN 32 und DN 40 | 16.0 |

## Method of Operation

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 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..

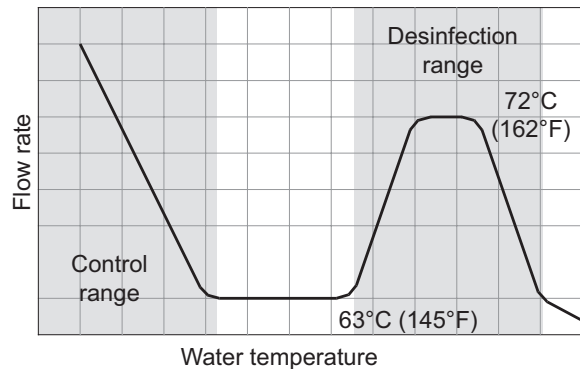


Fig.1 Relation of flow rate and water temperature

**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

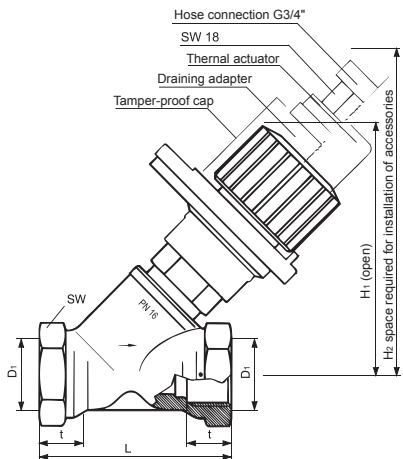


Fig.2 Alwa-Kombi-4 with internal threads

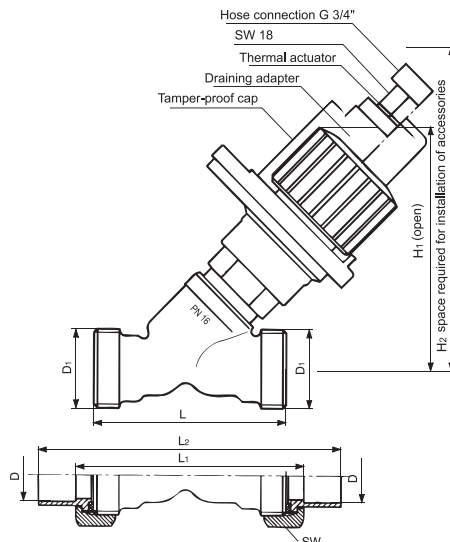


Fig.3 Alwa-Kombi-4 with external threads

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

Table 1. Alwa-Kombi-4

| Version                                     | DN | D1         | k <sub>vs</sub> (cv)-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.

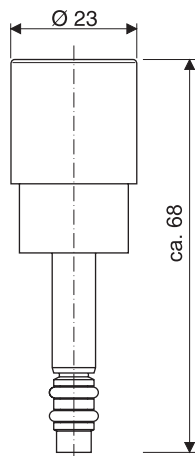


Fig.4 Thermal actuator for Alwa-Kombi-4

## Order information

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

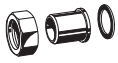
| Version  | OS.-No. | DN<br>mm<br>R | 15   | 15   | 20   | 25  | 32     | 40     |
|--|---------|---------------|------|------|------|-----|--------|--------|
|  |         |               | 15   | 18   | 22   | 28  | 35     | 42     |
|  |         |               | 1/2" | 1/2" | 3/4" | 1"  | 1 1/4" | 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 for external threads



|                         |            |
|-------------------------|------------|
| 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 tailpiece for external threads



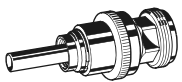
|       |            |
|-------|------------|
| DN 15 | VA7401A015 |
| DN 20 | VA7401A020 |
| DN 25 | VA7401A025 |
| DN 32 | VA7401A032 |
| DN 40 | VA7401A040 |

## 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



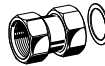
|                         |            |
|-------------------------|------------|
| for all types and sizes | VA3400A001 |
|-------------------------|------------|

## 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 tailpiece 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



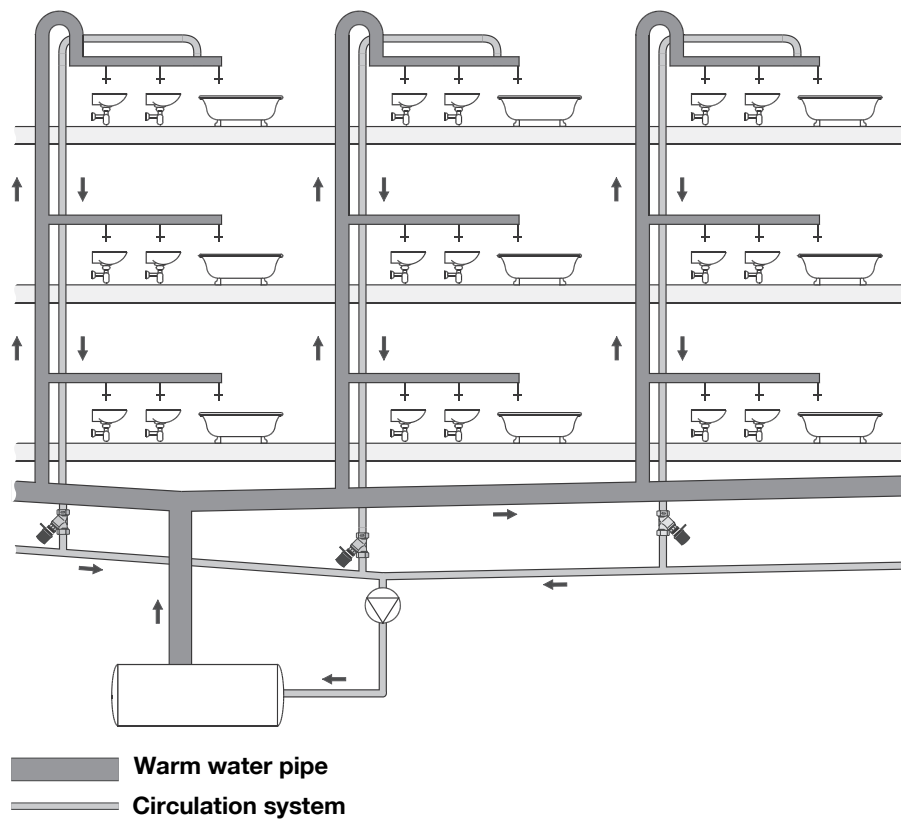
|                          |       |
|--------------------------|-------|
| for all sizes 0 - 120 °C | TH07K |
|--------------------------|-------|

## Sampling valve

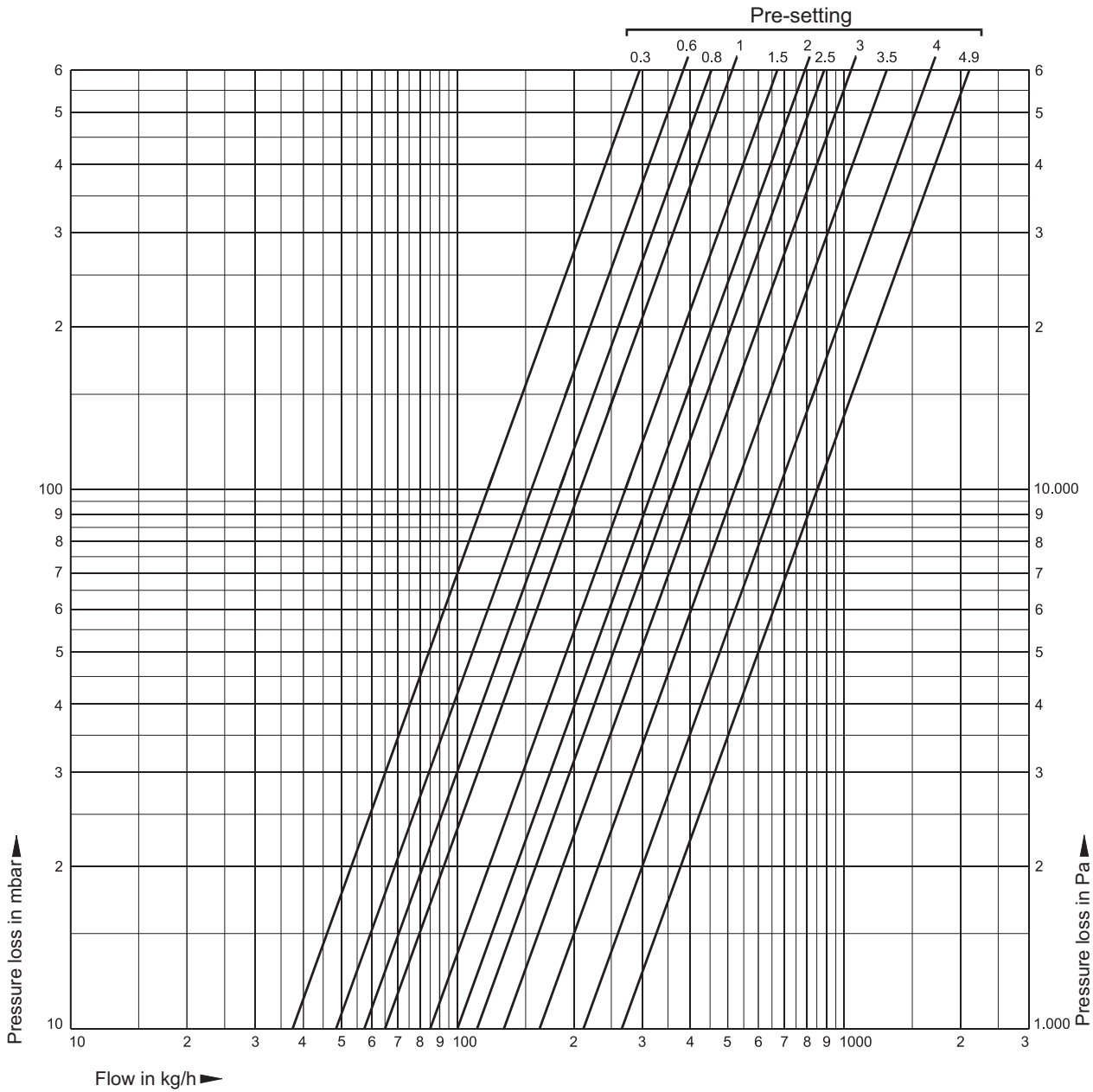


|   |            |
|---|------------|
| for all sizes only in conjunction with drain adapter VA3400A001 | VA3400C001 |
|---|------------|

Installation Example



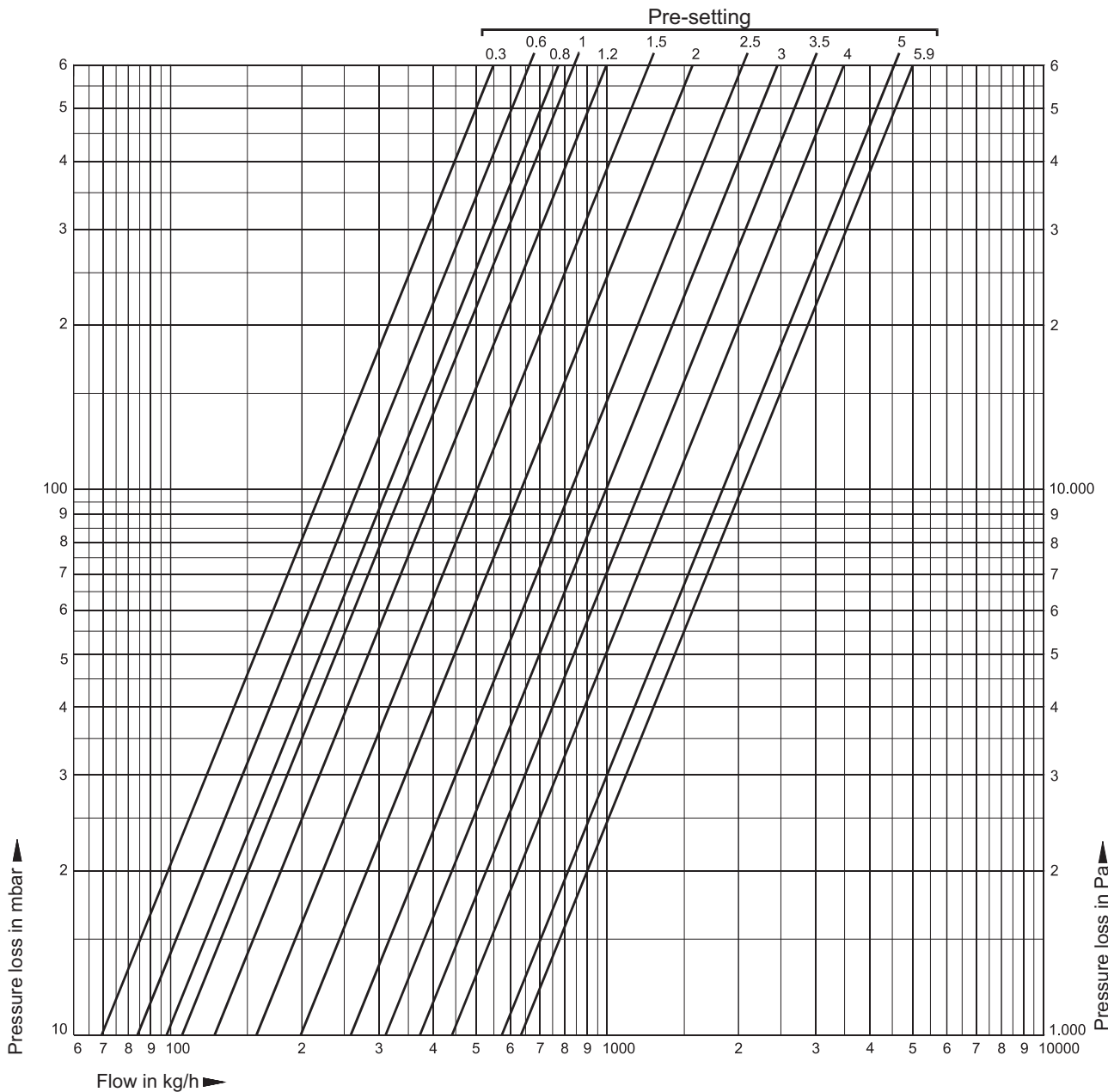
**Flow Diagram for DN 15**



|                             |      |      |      |      |      |      |      |      |      |      |                        |
|-----------------------------|------|------|------|------|------|------|------|------|------|------|------------------------|
| <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.

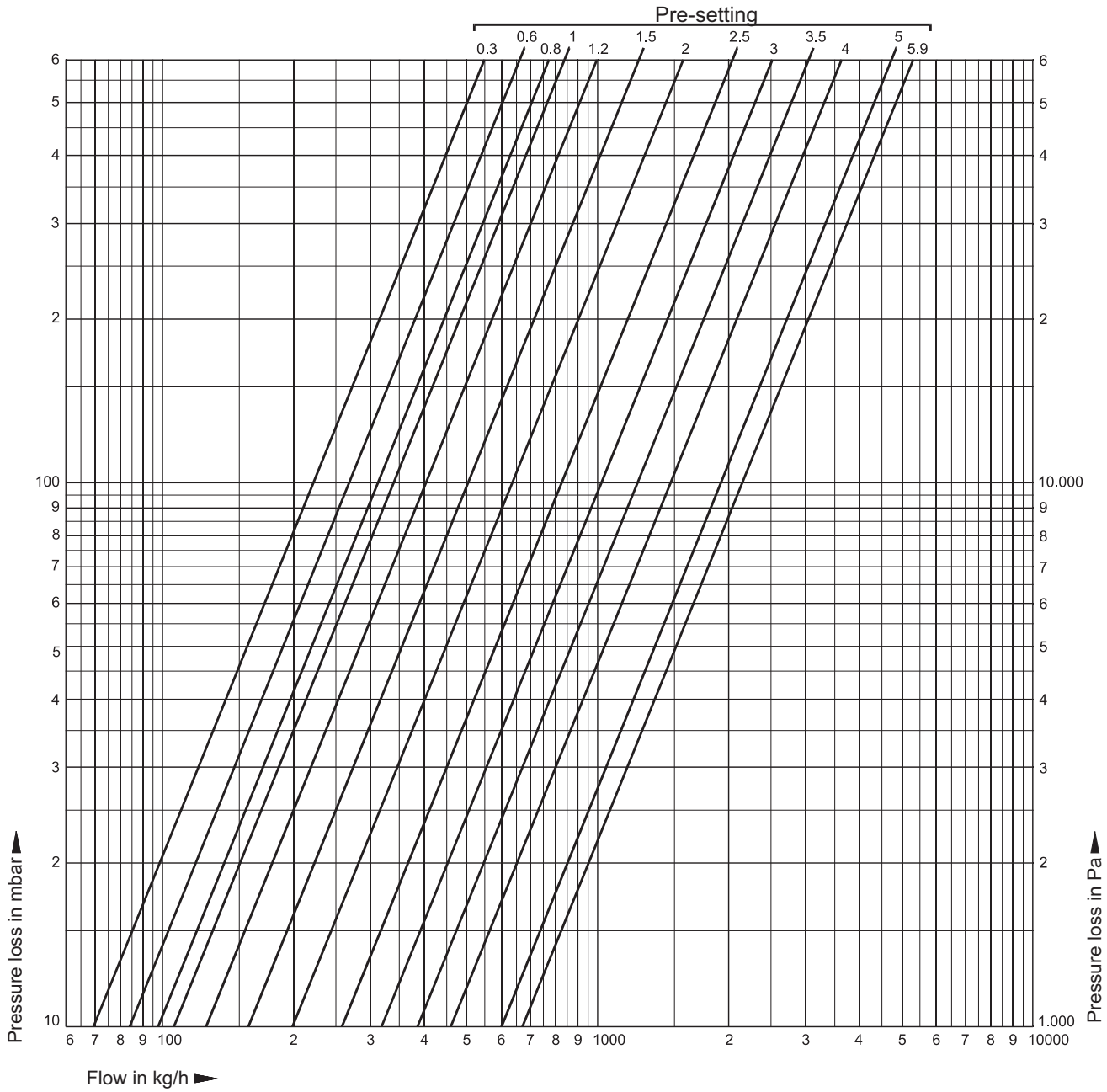
**Flow Diagram for DN 20**



|                             |      |      |      |      |      |      |      |      |      |      |      |      |                        |
|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------------------------|
| <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**

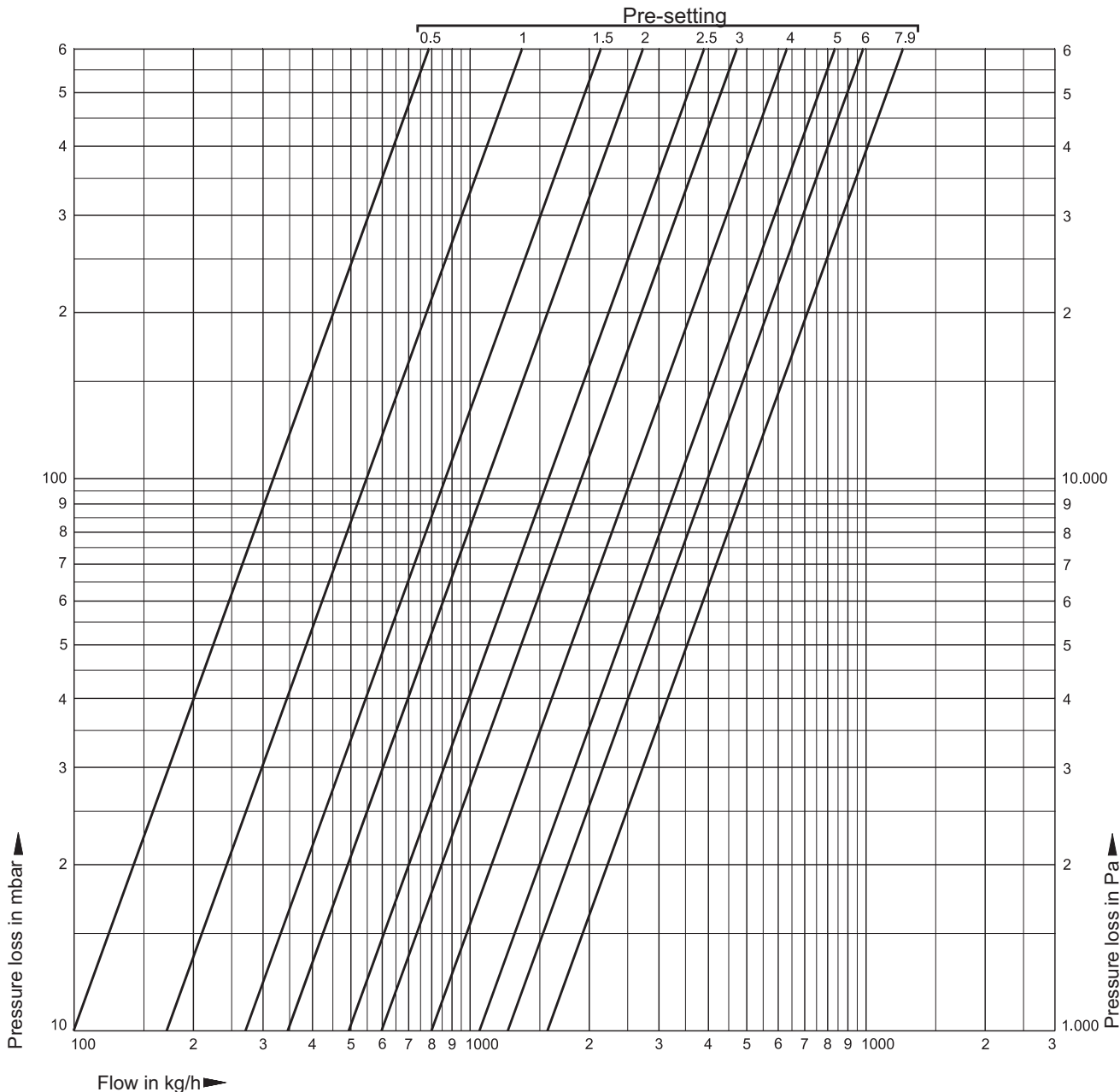


|                             |      |      |      |      |      |      |      |      |      |      |      |      |                        |
|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------------------------|
| <b>Pre-setting</b>          | 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 |

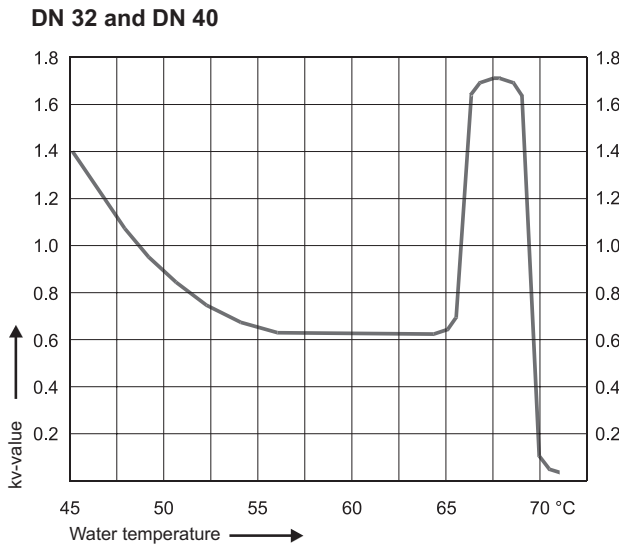
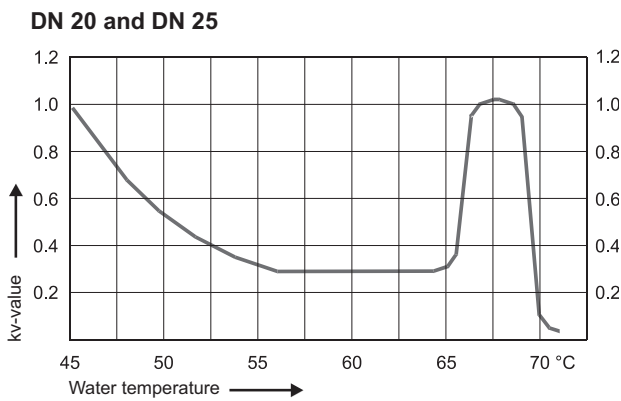
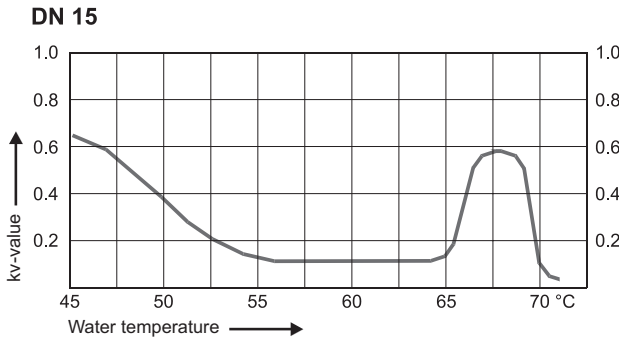
|                             |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>Pre-setting</b>          | 3.0  | 3.2  | 3.4  | 3.6  | 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:

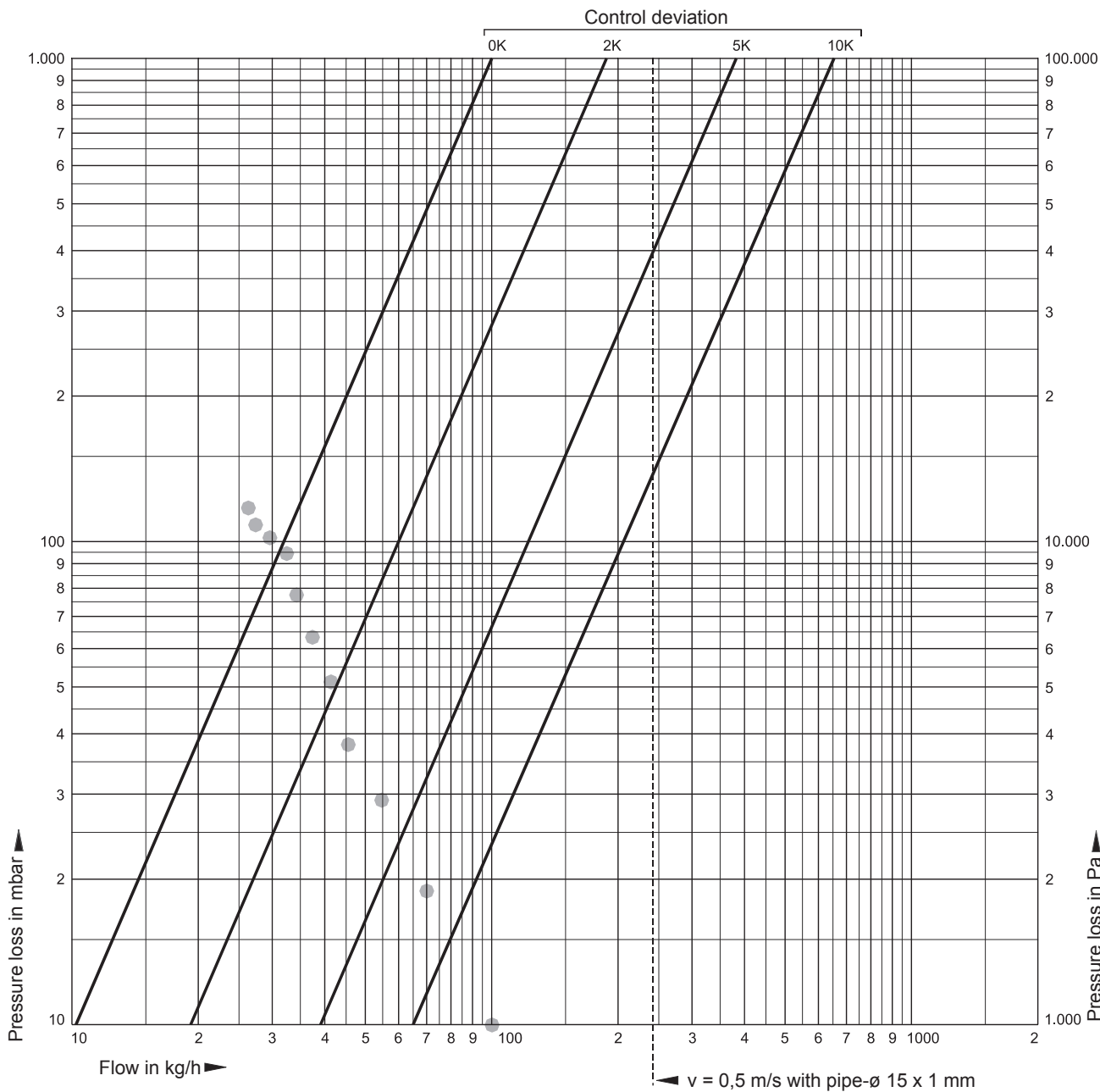
Desired minimal temperature  
55 °C (131 °F) + 2K = Pre-setting 1.7

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

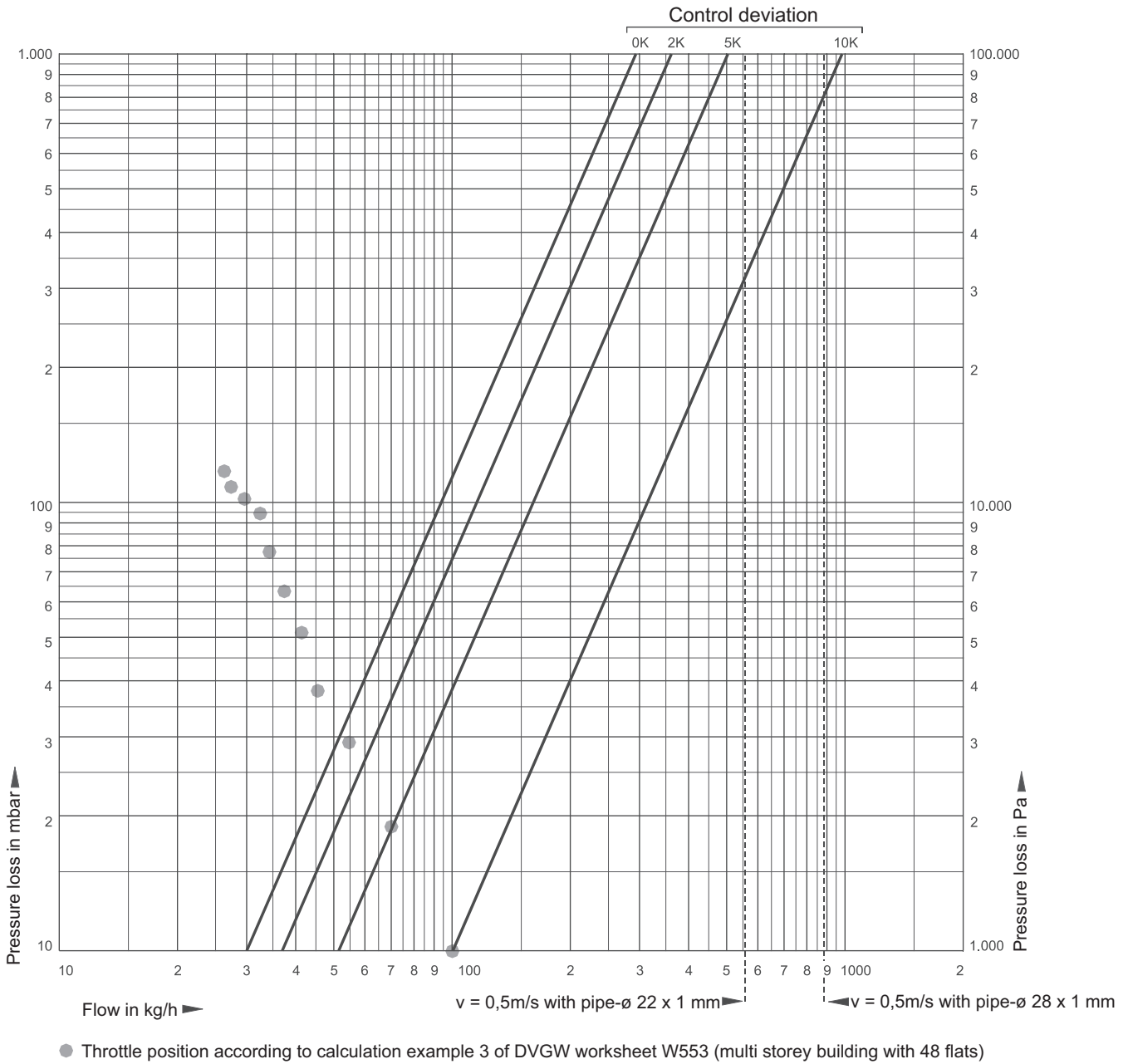


● Throttle position according to calculation example 3 of DVGW worksheet W553 (multi storey building with 48 flats)

|                       |     |     |     |     |     |     |     |     |     |     |     |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <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.

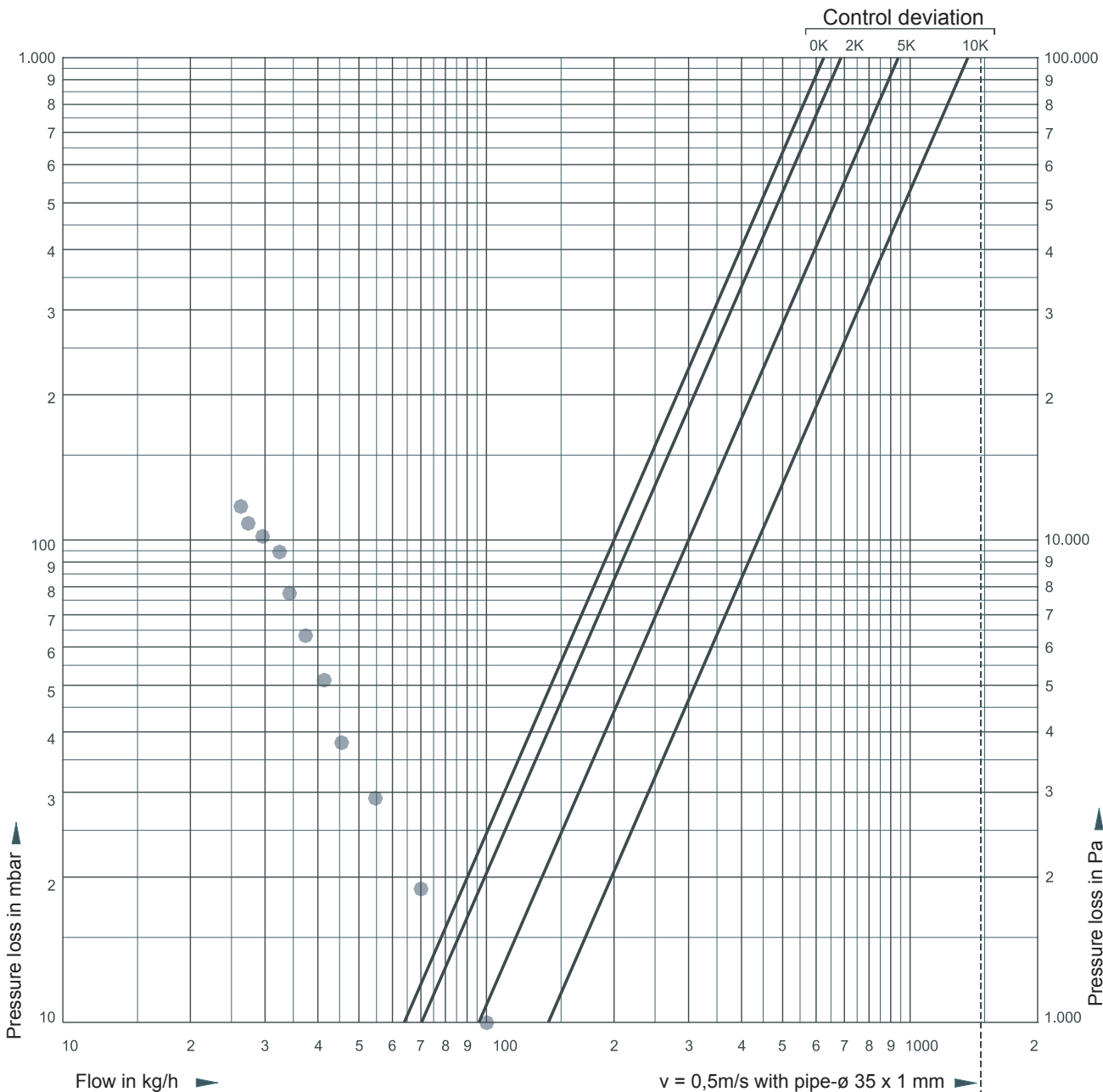
**Flow Diagram for DN 20 and DN 25 with thermal actuator 50 - 60 °C**



|                       |     |     |     |     |     |     |     |     |     |     |     |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <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

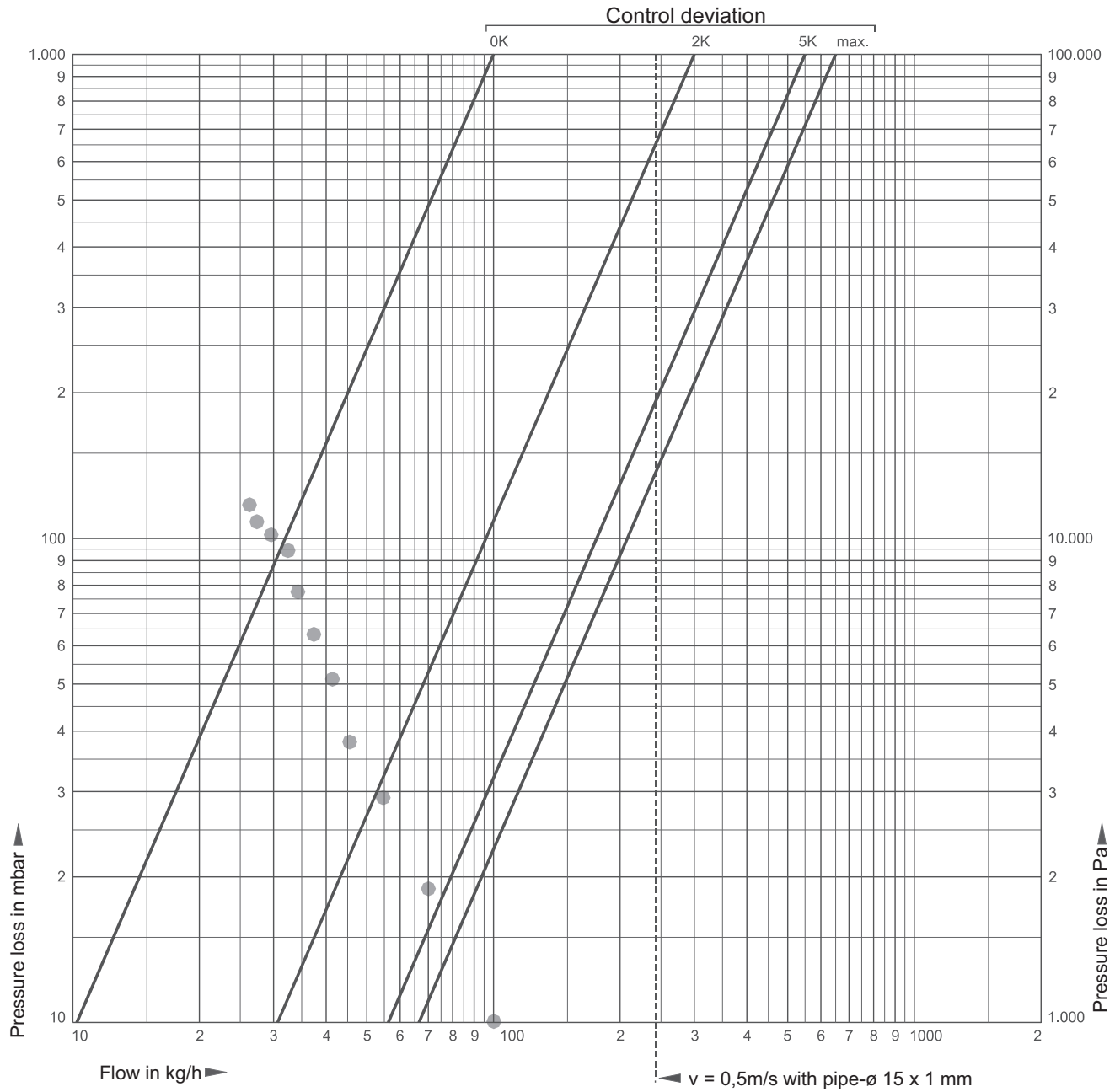


● Throttle position according to calculation example 3 of DVGW worksheet W553 (multi storey building with 48 flats)

|                       |     |     |     |     |     |     |     |     |     |     |     |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <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**

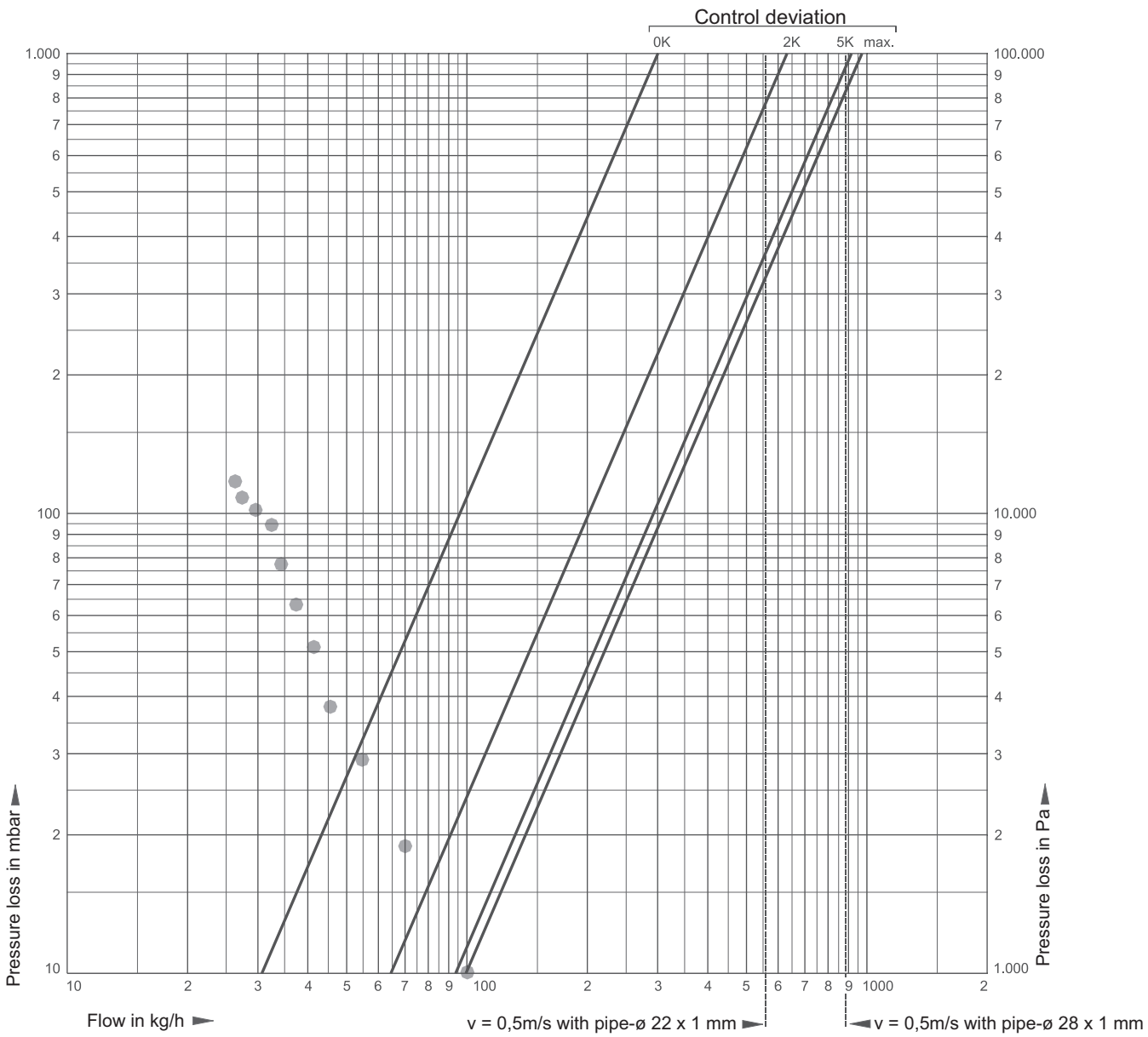


● Throttle position according to calculation example 3 of DVGW worksheet W553 (multi storey building with 48 flats)

|                       |     |     |     |     |     |     |
|-----------------------|-----|-----|-----|-----|-----|-----|
| <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

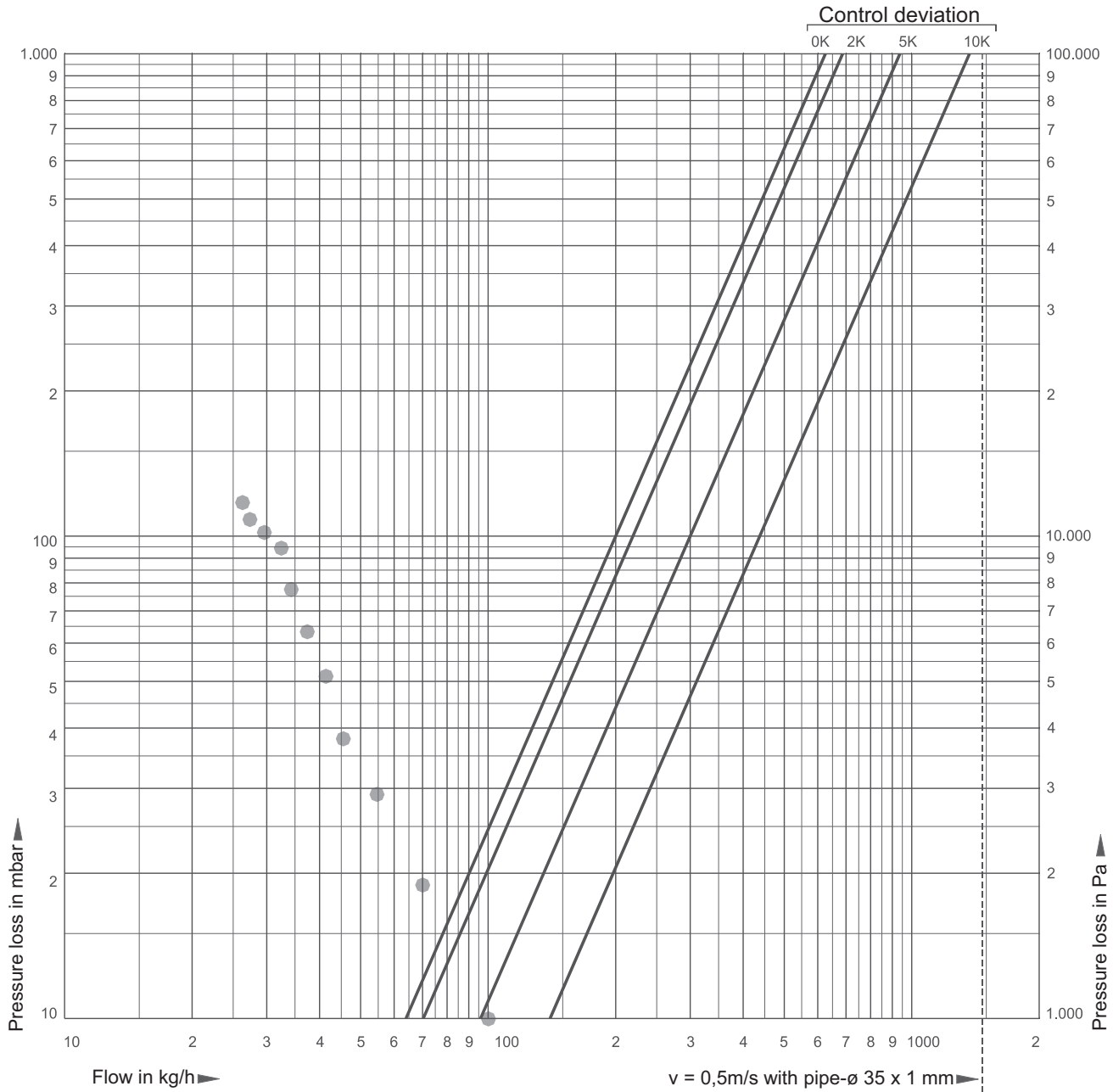


● Throttle position according to calculation example 3 of DVGW worksheet W553 (multi storey building with 48 flats)

|                       |     |     |     |     |     |     |
|-----------------------|-----|-----|-----|-----|-----|-----|
| <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.

**Automation and Control Solutions**

Honeywell GmbH  
 Hardhofweg  
 D-74821 Mosbach  
 Phone: (49) 6261 810  
 Fax: (49) 6261 81309  
<http://europe.hbc.honeywell.com>  
[www.honeywell.com](http://www.honeywell.com)

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 Environmental and Combustion Controls Division  
 of Honeywell Technologies Sàrl, Ecublens, Route  
 du Bois 37, Switzerland by its Authorised Repre-  
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