The Oventrop Quality Management System is certified to DIN-EN-ISO 9001

Thermostatic regulating valve “Aquastrom T plus” with presetting for circulation pipes

Technical information

Tender specification:

Oventrop thermostatic regulating valves “Aquastrom T plus” with presetting for circulation pipes according to DVGW work sheets W551 and W553.

Thermal control:

Recommended control range: 55°C up to 60°C

(max. control range 40°C up to 65°C, control accuracy ± 1°C)

The valve automatically supports thermal disinfection. The volume of flow is increased about 6K above the set temperature and is reduced – irrespective of the set temperature – to the residual volume of flow when reaching approx. 73°C. The valve thus guarantees an optimum support of thermal disinfection in the circulation system.

The max. volume of flow may be preset and isolated irrespective of the set control temperature. The valve is equipped with a drain valve with hose connection allowing to drain the system for maintenance work.

The temperature may be controlled with the help of a thermometer or a sensor element. Temperature setting can be protected against unauthorised tampering by use of a protection cap. The set temperature can still be read off.

Temperature controller does not come into contact with the fluid; all parts coming into contact with the fluid made of non brass material; bronze body; EPDM O-rings.

Max. working temperature:	90°C
Nominal pressure:	16 bar
Factory settings:	
-temperature:	57°C
-set volume of flow:	DN 15: 2.0
	DN 20: 3.0
	DN 25: 4.0

DVGW certification and WRAS approval applied for.

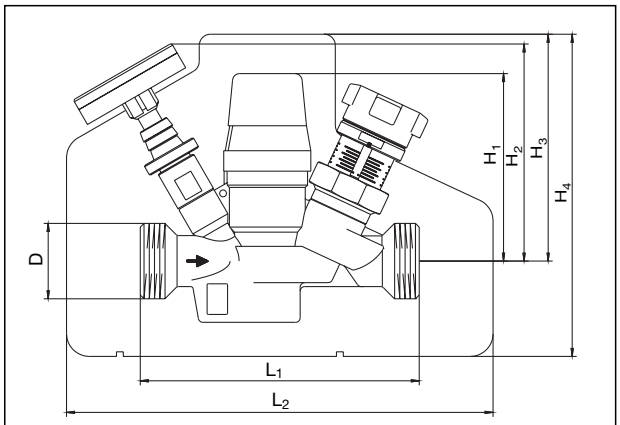
Advantages:

- automatic thermal control of the volume of flow
- support of thermal disinfection
- volume of flow increases about 6K above the set temperature, disinfection temperature in the riser is reached quickly
- volume of flow is limited above 73°C to guarantee thermal disinfection of succeeding sections of the system
- corrosion resistant due to bronze material
- temperature setting can be read off even with fitted lockshield cap
- body with hose for lead sealing
- temperature monitoring with the help of a thermometer or a sensor element (accessories) via centralised building control systems
- presetting of the max. volume of flow irrespective of the set control temperature and isolation for maintenance work
- with integrated drain valve for hose connection

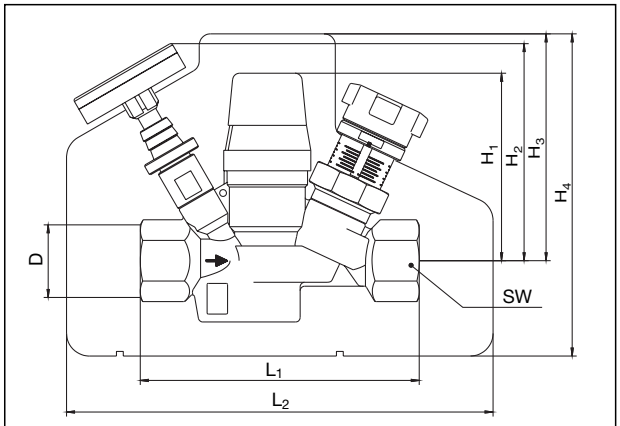
Installation advice:

Valve has to be installed in the direction of flow (observe arrow on the valve body).

Dimensions:



Item no.	DN	L_1	L_2	H_1	H_2	H_3	H_4	D
420 65 04	15	110	188	83	96	100	142	¾”
420 65 06	20	123	188	83	96	100	142	1”
420 65 08	25	133	188	83	98	100	142	1¼”



Item no.	DN	L_1	L_2	H_1	H_2	H_3	H_4	D	SW*
420 55 04	15	110	188	83	96	100	142	¾”	27
420 55 06	20	123	188	83	96	100	142	1”	32
420 55 08	25	133	188	83	98	100	142	1¼”	41

* SW = spanner size

Setting of nominal temperature:

– Pull of lockshield cap.
– Turn the handwheel of the temperature control unit until the desired temperature value on the scale is in line with the mark on the valve body.
  Recommended temperature range: 55°C up to 60°C (DVGW W551)
  Factory setting: 57°C
– Replace lockshield cap by pushing the slit of the lockshield cap over the marking ridge at the body. This allows an easy reading of the set temperature even with the lockshield cap being mounted.
– The set temperature can be protected against unauthorised tampering. To do so, the lockshield cap is secured by leading the sealing wire through the hole at the body.

Modification of limitation of the set maximum volume of flow:

Setting is carried out at the throttling valve installed behind the control unit. The throttling valve may also be used for isolation. The required presetting values can be obtained from chart 3. All intermediate values are infinitely adjustable.

Factory setting: DN 15: 2.0
DN 20: 3.0
DN 25: 4.0

The chosen presetting can be read off two scales (basic setting = longitudinal scale, fine setting = peripheral scale, see illustration). The limit stop is even kept if the throttling valve is closed for maintenance work.

Presetting:

1. Set value of presetting at the throttling valve by turning the handwheel.
   a. The display of the basic setting is shown by the longitudinal scale together with the sliding indicator.
   b. The display of fine setting is shown by the peripheral scale on the handwheel together with the marking.
   The subdivisions of the peripheral scale correspond to 1/10th of a half turn of the handwheel.
2. Limitation of the set value of presetting by turning the inner adjustment stem clockwise until it seats. This can be done by using a screwdriver with a cutting edge width of 3 to 4 mm.
3. The value of presetting may be locked with the help of a locking pin (accessory).

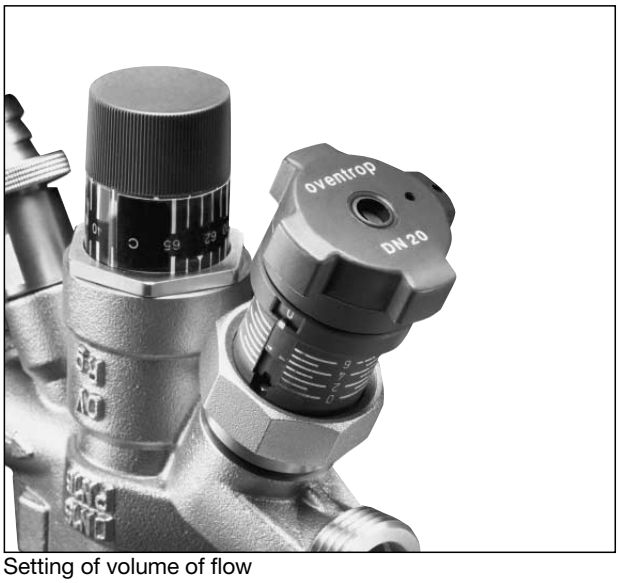
Information regarding installation of accessories:

The regulating valve “Aquastrom T plus” may be integrated into an existing centralised building control system with the help of the sensor element PT1000 which may be installed subsequently. To do so, the thermometer is removed and is replaced by the sensor element PT1000 (accessory).

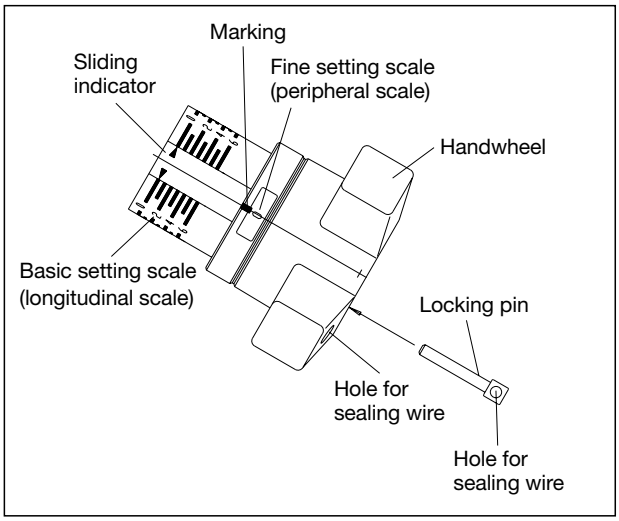
Accessories:

420 55 91	Thermometer 20°C – 100°C as replacement
420 55 92	Sensor element PT1000 for centralised building control systems
420 55 93	Drain valve as replacement
420 55 81	Insulation shell for DN 15/DN 20 as replacement
420 55 83	Insulation shell for DN 25 as replacement
106 17 92	Locking pin with sealing wire for limitation of volume of flow
108 90 91	Lead sealing set

Setting of nominal temperature



Setting of volume of flow



Handwheel

Description of thermal regulation behaviour:

The thermal regulation behaviour of the circulation valve is described in chart 1.

During normal operation (temperature range up to 60°C), the circulation valve limits the volume of flow derived from the nominal temperature to a residual volume of flow.

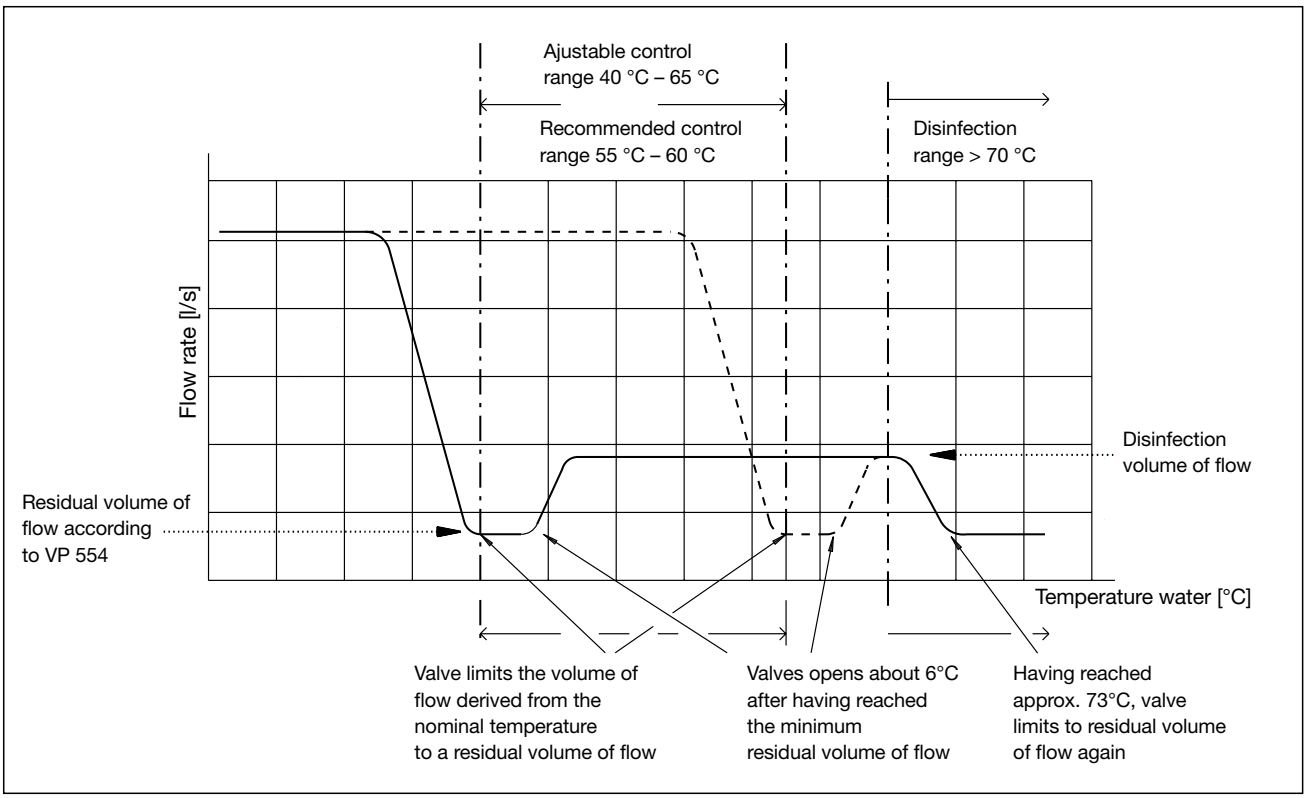


Chart 1

With the water temperature rising during thermal disinfection phase about 6K above the set control temperature, the Oventrop valve “Aquastrom T plus” installed in a circulation riser automatically regulates from a minimum volume of flow to a higher flow value. When reaching a temperature of approx. 73°C, the increased flow is limited to the minimum volume of flow again. As a result, a higher differential pressure is reached in the corresponding riser and thermal disinfection in the succeeding risers is accelerated. These pipes thus reach the required disinfection temperature faster than pipes which are not supported hydraulically during disinfection phase. This hydronic support helps to reduce the disinfection phase in a circulation system and energy is saved as a result. When disinfection is completed and the water temperature drops, the valve “Aquastrom T plus” returns to normal operation and the temperature is limited to the set nominal value.

Limitation of the volume of flow:

The maximum volume of flow (which is situated in the temperature range before the set nominal temperature) can be limited with the help of the circulation valve “Aquastrom T plus”. This allows the hydronic balance of the circulation pipes especially in case of an important drop in temperature, e.g. in case of boiler breakdown or in case of too high a water consumption. The volume of flow is limited within the preset flow range by the temperature regulation according to the regulation characteristics shown in chart 2. The flow values and the corresponding presetting values can be taken from chart 3.

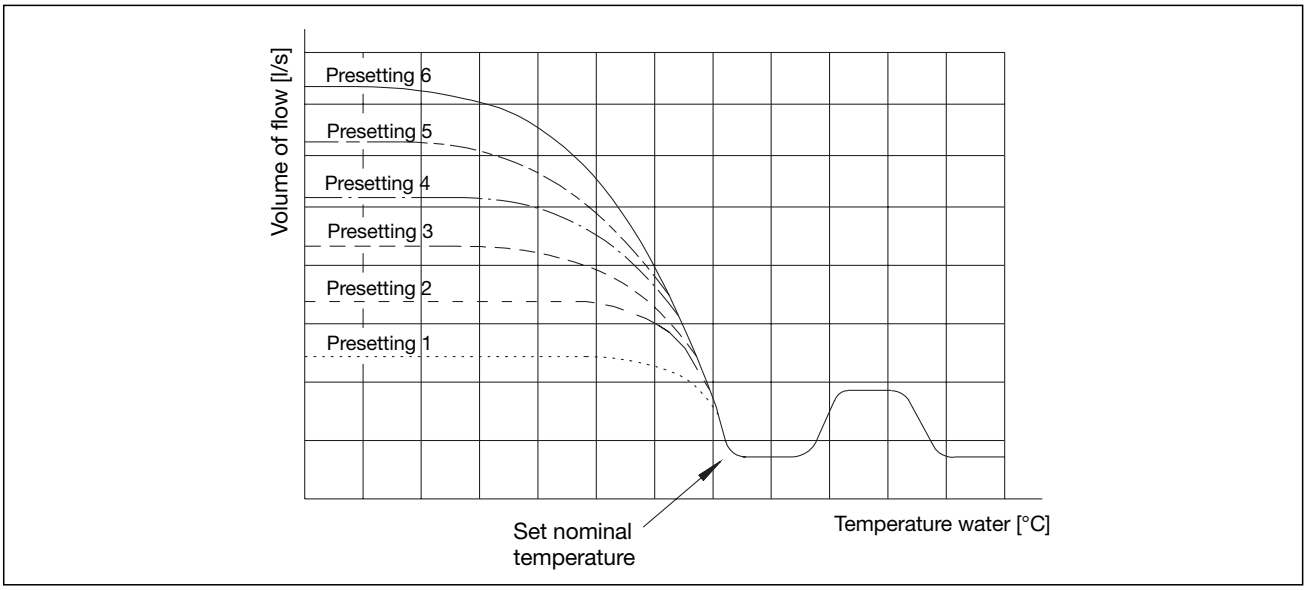


Chart 2

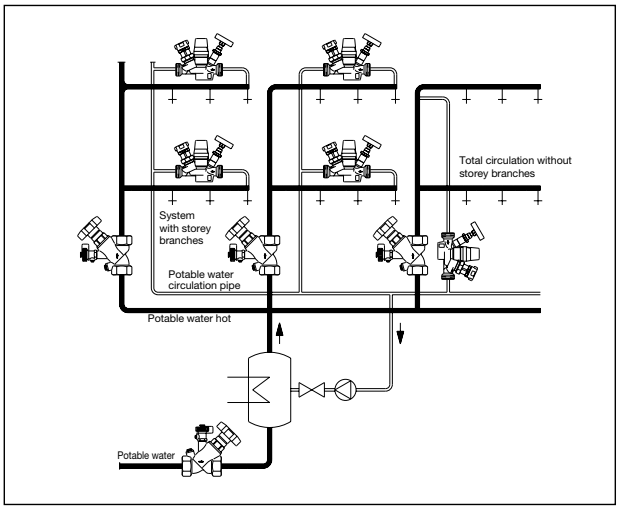
Explanations:

The immediate supply of hot water to the draw off points of a potable water network is realised by the distribution of the hot water from the potable water heater to one or several circulation risers. Each circulation riser feeds the hot water to the draw off points via a supply pipe which is connected to the main riser and the water is fed back to the potable water heater via a return pipe.

The contractor is responsible for the design of such potable water networks. He has to observe the hydronic conditions within these pipe networks in order to ensure that a sufficient temperature is maintained in all circulation risers. The pipework conditions must guarantee that a noxious concentration of pathogenic agents (especially legionella) is avoided.

On the one hand, the hydronic conditions are determined by the flow losses in the pipework of the circulation risers and on the other hand by the heat losses of hot water when flowing through the circulation pipes. These heat losses depend on different parameters (pipe length and dimension, insulation, ambient and pipe temperature) and have to be considered individually for each system.

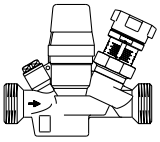
System illustration: Circulation pipe



The following model of the valve “Aquastrom T plus” is also available:

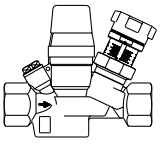
With isolation facility, but **without** drain valve for hose connection, **without** thermometer and **without** insulation.

both ports male thread, flat sealing, according to DIN ISO 228



DN 15	¾” x ¾”	**420 66 04**
DN 20	1” x 1”	**420 66 06**
DN 25	1¼” x 1¼”	**420 66 08**

both ports female thread according to EN 10226



DN 15	½” x ½”	**420 56 04**
DN 20	¾” x ¾”	**420 56 06**
DN 25	1” x 1”	**420 56 08**

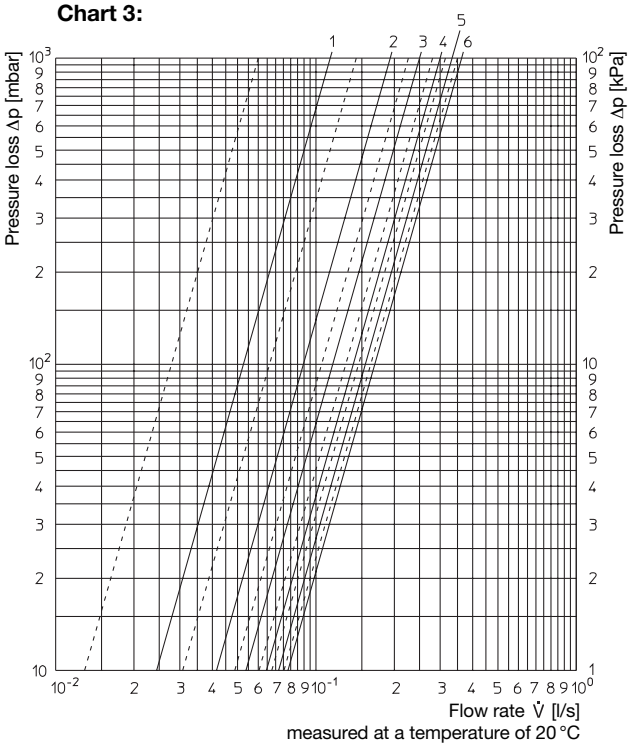
Draining orifice ¼” in front of the thermal control unit closed with a plug.

Dimensions as item nos. 420 55/65 (page 1).

To compensate the heat losses and to keep the temperature high enough, a certain volume of flow or, strictly speaking, a certain heat flow has to pass through the circulation pipe. For this reason, a larger water quantity has to flow through the circulation risers which are located far away from the potable water heater than through the risers at a nearer location. This is achieved by a limitation of the volume of flow in the nearer circulation pipes by establishing a corresponding differential pressure with the help of regulating valves.

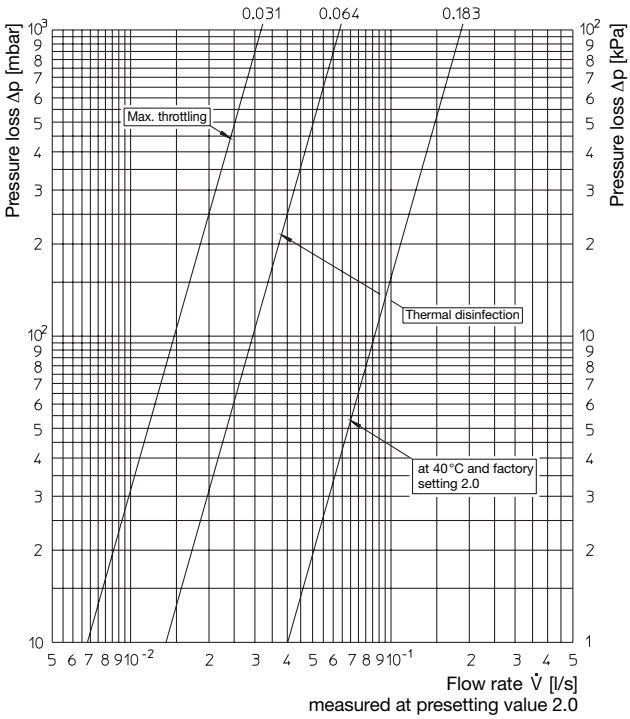
Taking given temperature limits into consideration, these differential pressures can be determined by the contractor with the help of the calculation procedure of the DVGW work sheet W 553. The calculation of a circulation pipe within a domestic water installation can only be made approximately for stationary operation (without draining hot water). As the drawn quantities vary at the different locations (bathroom, kitchen, etc.) during normal operation, the water quantity required to maintain the circulation pipe is also varying continuously. An optimum adaptation to these changing hydronic conditions is guaranteed by the automatic thermostatic regulating valve “Aquastrom T plus”.

Chart 3:



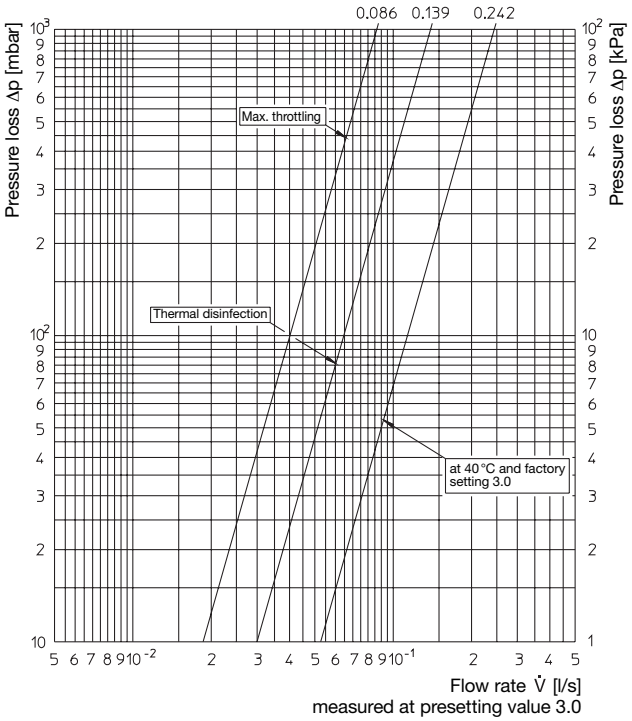
measured at a temperature of 20 °C

"Aquastrom T plus" DN 15



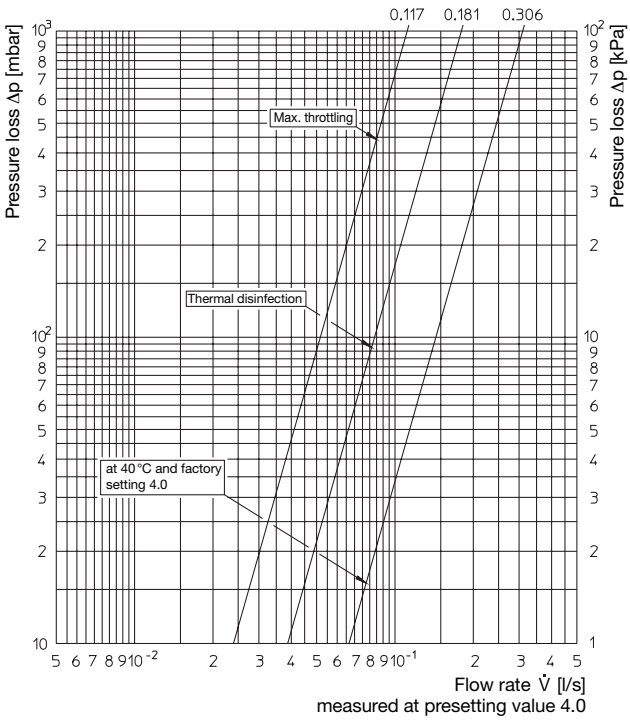
measured at presetting value 2.0

"Aquastrom T plus" DN 20



measured at presetting value 3.0

"Aquastrom T plus"DN 25



measured at presetting value 4.0

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