



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

## “Aquastrom VT” Thermostatic valve with presettable residual flow volume for circulation pipes PN 10

Technical information

### Tender specification:

Oventrop thermostatic valve “Aquastrom VT” with presettable control temperature for the thermal control and presettable residual flow volume for the hydronic balancing of circulation pipes according to DVGW work sheet W551/W553.

### Thermal control:

Recommended control range: 55°C up to 60°C  
(max. control range 50°C up to 65°C, control accuracy  $\pm 1^\circ\text{C}$ )  
Having reached a preset temperature (e.g. 57°C), the valve limits the flow volume to a residual volume which must be calculated according to the DVGW work sheet and be set at the valve.  
The valve supports thermal disinfection. Approximately 6°C above the set temperature, the flow volume rises again and is again limited to the residual flow volume approximately 16°C above the set temperature. The limitation to the residual flow volume ensures that, due to the restored hydronic balance, the subsequent parts of the system are also supplied with a disinfection flow volume. The valve thus guarantees an optimum thermal disinfection of the circulation system. Once the disinfection phase has finished, the valve returns to its starting position.

### Hydronic balancing:

For a hydronic balancing of the risers in a potable water circulation system, the residual flow volume which shall be reached at a set control temperature may also be set at the valve. This setting is irrespective of the set control temperature and 6 different settings are available. The valve is preset at works to a residual flow volume for DN 15 of  $k_v = 0.1$  (= presetting 6) or DN 20 of  $k_v = 0.3$  (= presetting 6). With this basic setting, the valve meets the requirements of the test standard VP554.

The valve is additionally equipped with an isolating ball valve, a drain valve for hose connection and insulation shells. In combination with an isolating valve in the supply pipe, this allows to isolate and drain the riser for maintenance and repair.

With the help of the thermometer, the water temperature in the circulation riser can be monitored at any time and enables the user to trace malfunctions quickly and easily.

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, plastic components made of PPO (polyphenylene oxide).

Max. working temperature: 90°C

Nominal pressure: 16 bar

Working pressure: 10 bar

Factory settings:

Temperature: 57°C

Residual flow volume: DN 15:  $k_v = 0.1$  (= presetting 6)

DN 20:  $k_v = 0.3$  (= presetting 6)

Max. differential pressure: 1 bar

Installation position: any, but easily accessible

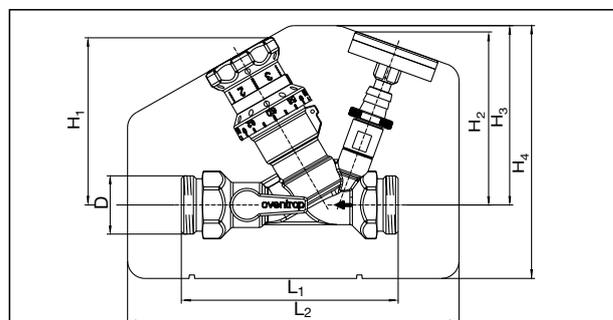
Applied for DVGW certification

### Advantages:

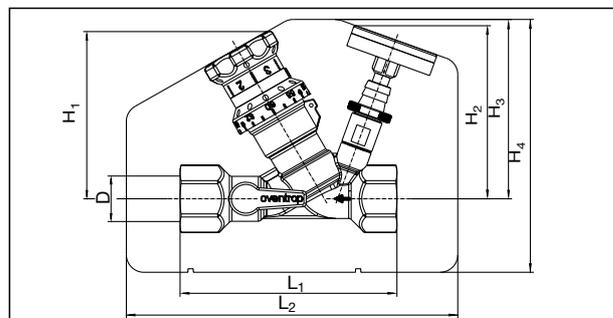
- automatic thermal control of the flow volume
- support of thermal disinfection
- flow volume increases at about 6°C above the set temperature, therefore disinfection temperature in the riser is reached quickly



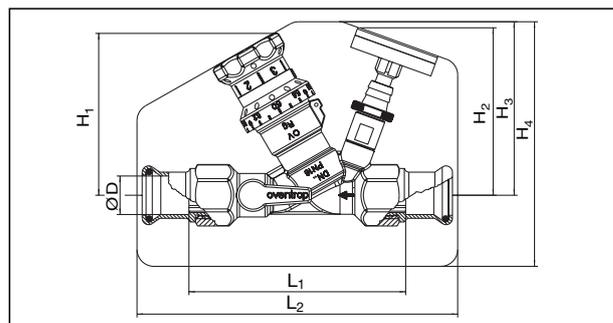
### Dimensions:



Item no.	DN	L <sub>1</sub>	L <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	D
420 67 04	15	110	188	95	98	103	145	G 3/4
420 67 06	20	123	188	95	98	103	145	G 1



Item no.	DN	L <sub>1</sub>	L <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	D
420 57 04	15	110	188	95	98	103	145	G 1/2
420 57 06	20	123	188	95	98	103	145	G 3/4



### Bronze press connections SANHA

Item no.	DN	ØD	L <sub>1</sub>	L <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>
420 57 52	15	15	115	188	95	98	103	145
420 57 53	15	18	115	188	95	98	103	145
420 57 54	20	22	130	188	95	98	103	145

- at approx. 16°C above the set temperature, the flow volume returns to the set residual volume to guarantee the hydronic balance of the system
- residual flow volume with six different presetting positions
- self-cleaning valve assembly
- corrosion resistant due to bronze material
- lead lockable to prevent tampering
- temperature monitoring with the help of a thermometer or a sensor element (accessories) via centralised building control systems
- ball valve isolation facility for maintenance work
- integrated drain valve for hose connection

**Installation advice:**

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

**Setting of the nominal temperature value:**

Turn the handwheel of the temperature control unit until the desired temperature value on the scale is in line with the marking on the valve body. **Do not lift the handwheel during temperature setting!**

Recommended control range: 55°C up to 60°C  
 (DVGW W 551)  
 Factory setting 57°C



Temperature setting

**Setting of the residual flow volume:**

The residual flow volume can be set by using the same temperature control handwheel. To do so, keep hold of the temperature ring and **pull the handwheel upwards until stop (approx. 3 mm)**. Now turn the lifted handwheel clockwise to the desired presetting value.

**The chosen presetting value must be in line with the raised black triangular arrow on the temperature ring!**

After releasing the handwheel, please ensure that it engages flush with the cogs of the temperature ring.

- Residual flow volume:
- DN 15: Presetting 1:  $k_V = 0.035$
  - Presetting 2:  $k_V = 0.045$
  - Presetting 3:  $k_V = 0.058$
  - Presetting 4:  $k_V = 0.069$
  - Presetting 5:  $k_V = 0.081$
  - Presetting 6:  $k_V = 0.098$
  - DN 20: Presetting 1:  $k_V = 0.10$
  - Presetting 2:  $k_V = 0.14$
  - Presetting 3:  $k_V = 0.18$
  - Presetting 4:  $k_V = 0.22$
  - Presetting 5:  $k_V = 0.26$
  - Presetting 6:  $k_V = 0.30$

Factory setting:     DN 15:  $k_V = 0.1$  (presetting = 6)  
                           DN 20:  $k_V = 0.3$  (presetting = 6)

Residual flow volume increase:  $k_V = \text{presetting} + 0.025$  ( $k_V$ )  
 (disinfection phase)

Flow rate:  
 at 40°C:             DN 15:  $k_V = 0.47$   
                           DN 20:  $k_V = 0.55$

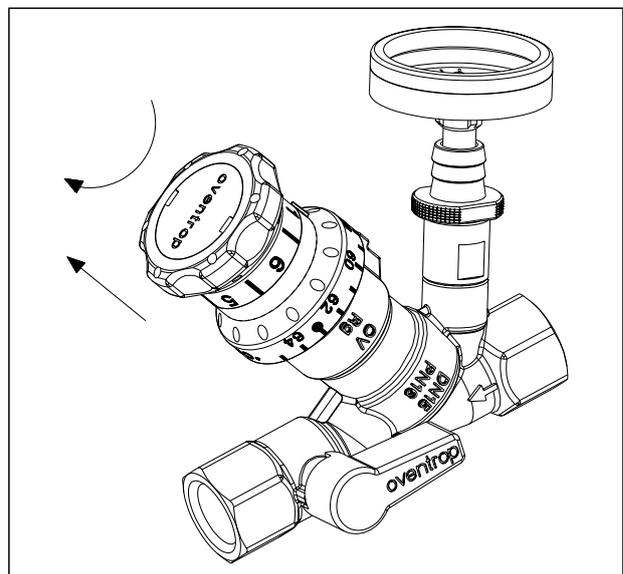
To protect the set parameters against unauthorized tampering, the handwheel is lead lockable.

**Information regarding installation of accessories:**

The thermostatic valve “Aquastrom VT” 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).



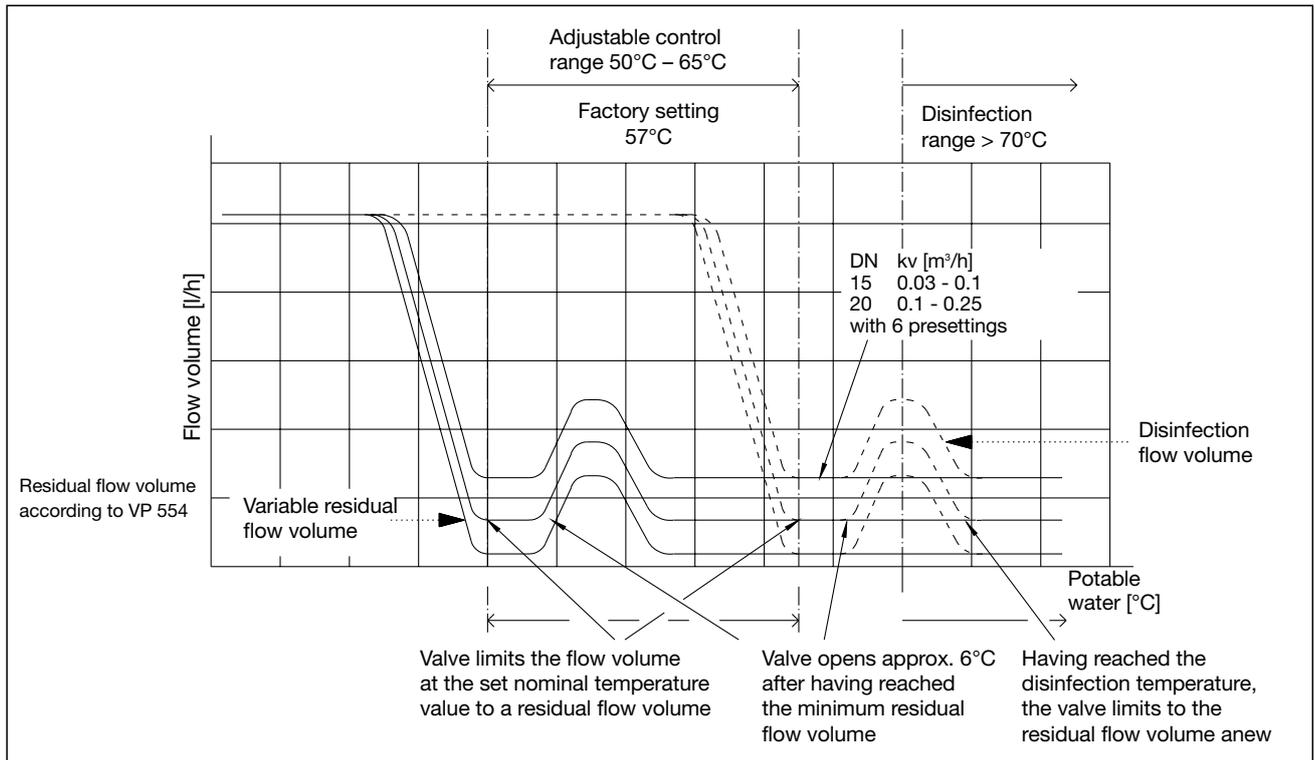
Setting of flow volume



**Description of thermal behaviour:**

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

During normal operation (temperature range up to 65°C), the circulation valve limits the flow volume derived from the nominal temperature to a residual flow volume.



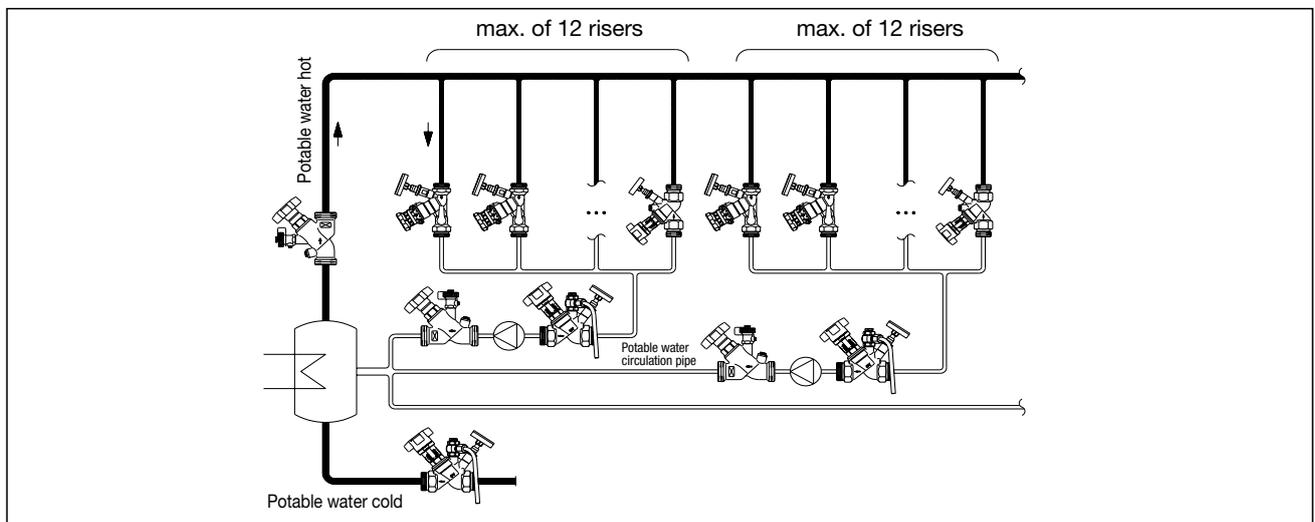
**Chart 1**

**Description:**

With the temperature rising during the disinfection phase, approx. 6°C above the set temperature control, the Oventrop valve “Aquastrom VT” allows a higher flow volume. Due to the higher flow rate, the heat supply in the corresponding circulation riser is accelerated. When reaching a temperature approx. 16°C above the set control temperature, the flow rate is decreased back to the chosen residual flow volume. As a result, a higher differential pressure is reached in the corresponding riser and thermal disinfection in the succeeding risers is accelerated. This allows the disinfection temperature within the circulation to be reached faster than within a circuit which is not hydraulically supported during the disinfection phase. As a result, significant energy savings can be made. When disinfection is completed, the water temperature drops, the valve “Aquastrom VT” returns to normal operation and the temperature returns to the set nominal value.

**Note:**

To guarantee the hydronic balance required in a circulation system according to DVGW-W553, not more than 12 branches should be installed per main circulation pipe. In case of more than 12 branches per main circulation pipe, pumps with a higher output would have to be used to produce the prescribed residual flow volume in the furthest branches. In the nearer branches, the pump would, however, produce excessive differential pressures at the balancing valves which would lead to noise problems and a possible damage of the components. With more than 12 branches (see chart 2), additional main circulation pipes installed in parallel are therefore recommended. Each main pipe should be equipped with its own pump and a hydronic balance of the individual pipes should be carried out. With this type of installation, the circulation pumps can be designed with smaller outputs.

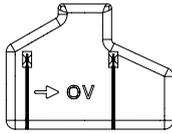


**Chart 2**

**“Aquastrom VT”  
Thermostatic valve with presettable  
residual flow volume for circulation pipes PN 10**

**Accessories**

Insulation for DN 15 and DN 20  
Item no. 420 57 81



Sensor element PT1000  
Item no. 420 55 92



Thermometer  
Item no. 420 55 91  
(the draining valve for hose connection  
is required for the installation of a  
thermometer)



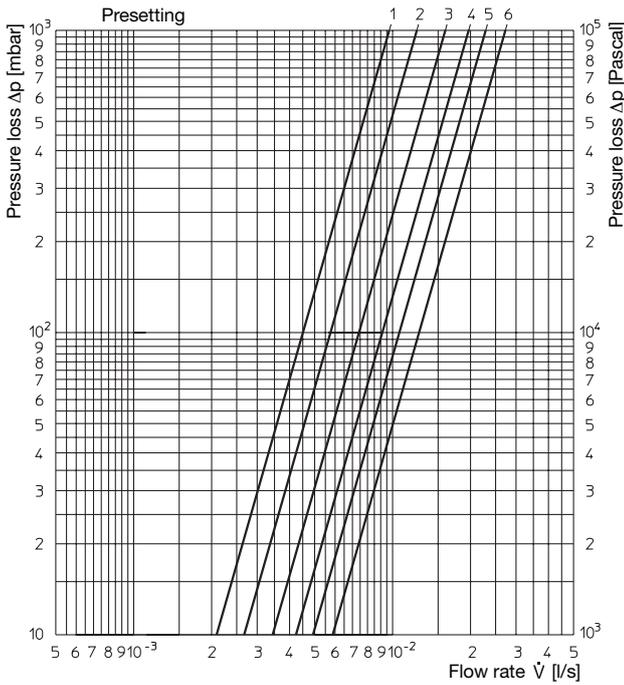
Draining valve for hose connection  
Item no. 420 55 93



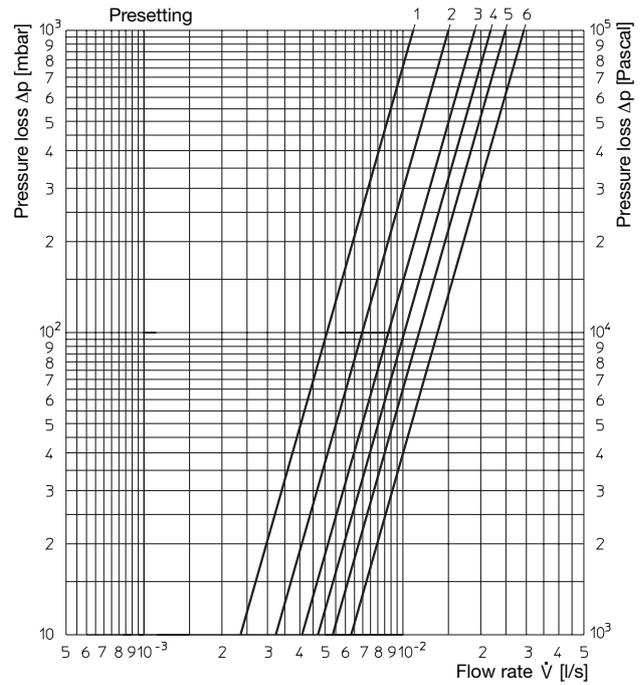
Lead locking set  
Item no. 108 90 91, 10 pieces



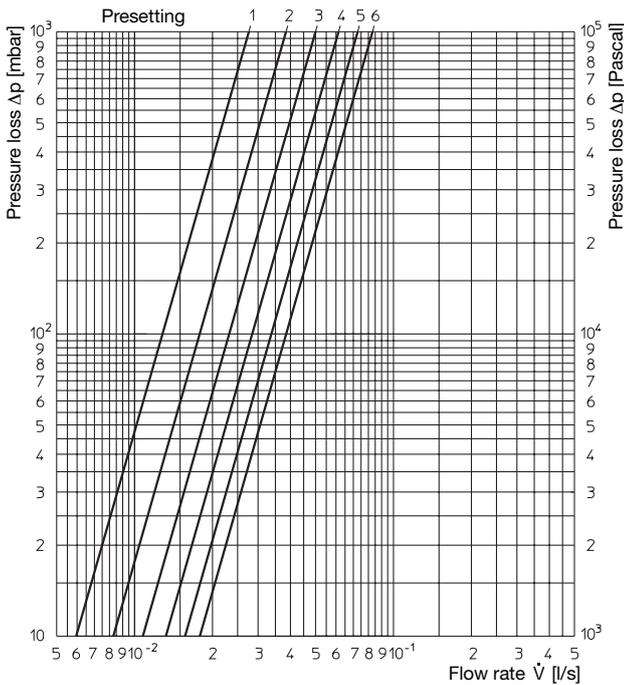
“Aquastrom VT” DN 15 Residual flow rate



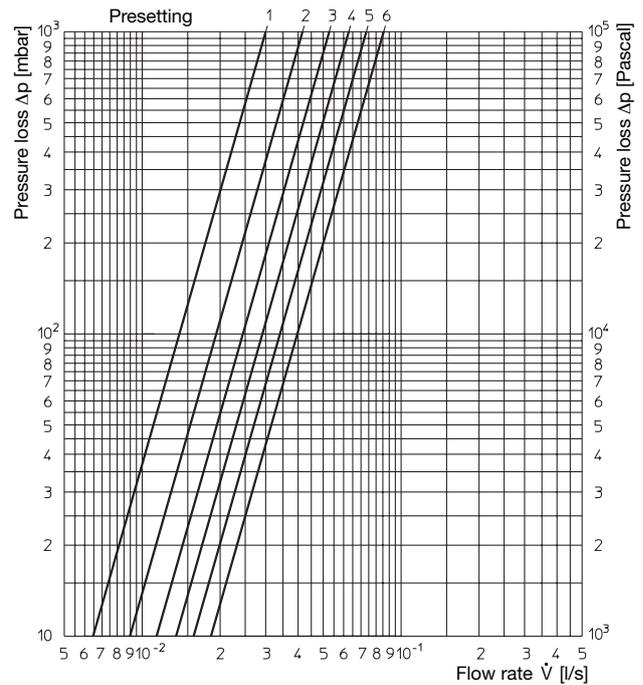
“Aquastrom VT” DN 15 Disinfection flow rate



“Aquastrom VT” DN 20 Residual flow rate



“Aquastrom VT” DN 20 Disinfection flow rate



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