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

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

with higher residual volume of flow than required as per VP 554

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 38°C up to 60°C; control accuracy ± 2°C)
The thermal disinfection within a control range T>70°C is automatically supported by the valve irrespective of the set control temperature.

Temperature controller does not come into contact with the fluid.

Limitation and isolation of the max. volume of flow by a separate valve disc. Values of presetting can be read off.

Parts coming into contact with the fluid made of non brass material. Bronze body. EPDM O-rings.

With location to receive a thermometer (option) or a sensor for temperature monitoring. Draining orifice ¼” closed with a plug (drain ball valve optional).

Temperature setting can be protected against unauthorised tampering with the help of a lockshield cap. The set temperature can still be read off.

Max. working temperature:	90°C
Nominal pressure:	16 bar
Factory settings:	
- temperature control	57°C
- set volume of flow	DN 15: 1.5
	DN 20: 2.5
	DN 25: 2.5

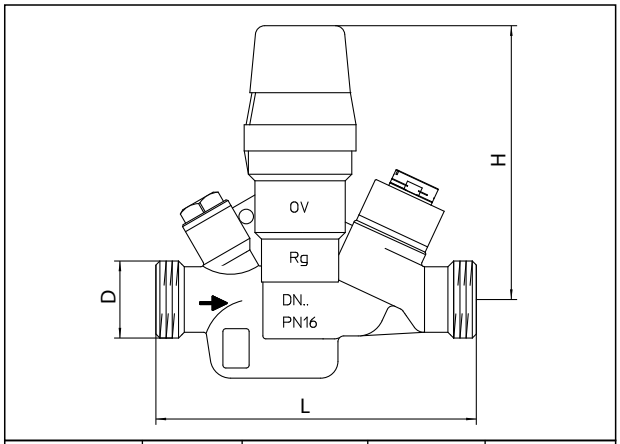
Advantages:

- automatic thermal control of the volume of flow
- support of thermal disinfection by disinfection volume of flow
- automatically limits the volume of flow above disinfection temperature
- regulation behaviour during disinfection phase irrespective of set temperature
- corrosion resistant due to bronze material
- drain ball valve (accessory)
- temperature setting can be read off even with fitted lockshield cap
- body with hole for lead sealing
- temperature monitoring facility
- isolation facility for maintenance work
- SVGW tested and approved

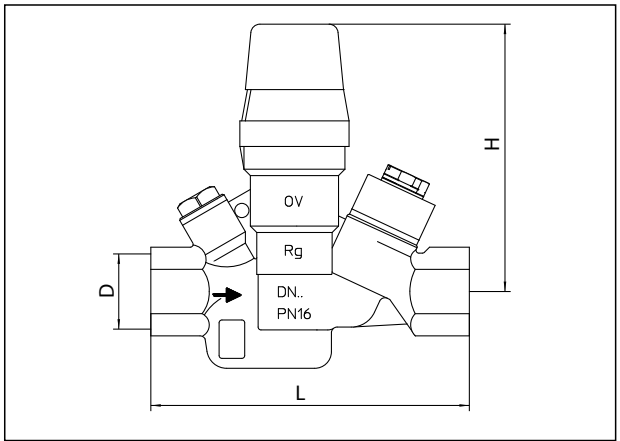
Information regarding installation:

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

Dimensions:



Item no.	DN	L	H	D
420 61 04	15	110	95	¾”
420 61 06	20	123	95	1”
420 61 08	25	133	95	1¼”

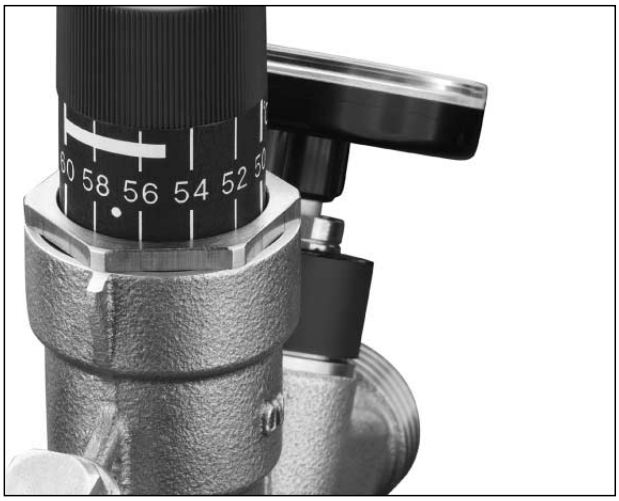


Item no.	DN	L	H	D
420 51 04	15	110	95	½”
420 51 06	20	123	95	¾”
420 51 08	25	133	95	1”

Setting of nominal temperature:

– Pull off 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.
  By turning the handwheel to the upper stop, the maximum temperature of 60°C is reached. The lower stop is situated at about 38°C.
  Recommended temperature range: 55°C up to 60°C (see mark).
– 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.

Factory setting of temperature: 57°C



Setting of nominal temperature

Modification and limitation of the set maximum volume of flow:

A corresponding presetting value can be related to the desired max. volume of flow with the help of chart 4. The valve disc at the isolation device is set at the hexagon socket by use of a 10 mm Allen key. The setting scale is divided in 1/10th of a turn.

Factory setting: Presetting value 1.5 for DN 15
Presetting value 2.5 for DN 20
Presetting value 2.5 for DN 25

Example: Setting of presetting value 2.3

The value 2.3 means that the isolating stem is unscrewed by 2.3 turns parting from the “closed position”.

Reading of the set value 2.3

The number of the exterior grooves of the stem indicates the position before the point. The number is identical with the number of complete points parting from the “closed position”. In this case, two grooves are thus visible.

The slit at the upper edge of the hexagon socket of the stem points at the value .3 on the surrounding scale (this indicates the position after the point).

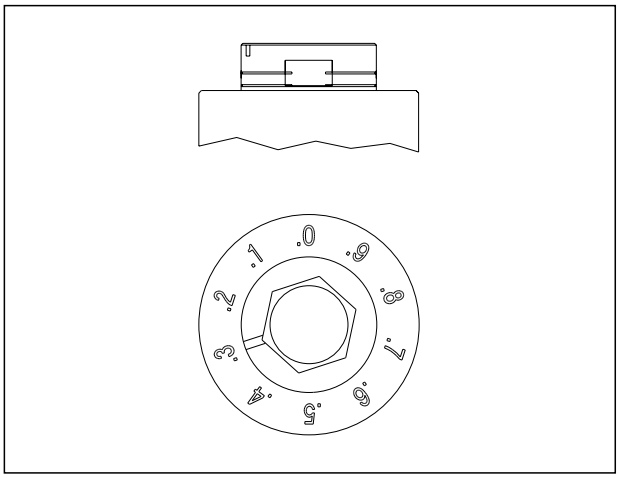

Limitation of volume of flow

Information regarding installation of accessories:

A thermometer (item no. 420 51 91) and a drain ball valve (item no. 420 01 91) are optional accessories of the “Aquastrom T plus”. The thermometer is inserted into the designed location at the isolation (with conducting paste at the bottom) until stop. The thermometer should be introduced slowly and centrally. The plug at the draining orifice has to be removed to mount the drain ball valve.

Accessories:

420 51 91	Thermometer 20°C – 100°C
	Insulation
420 51 81	Insulation for DN 15/20
420 51 82	Insulation for DN 25
420 01 91	Drain ball valve with hose connection ¾”
110 20 02	Drain valve, rotating

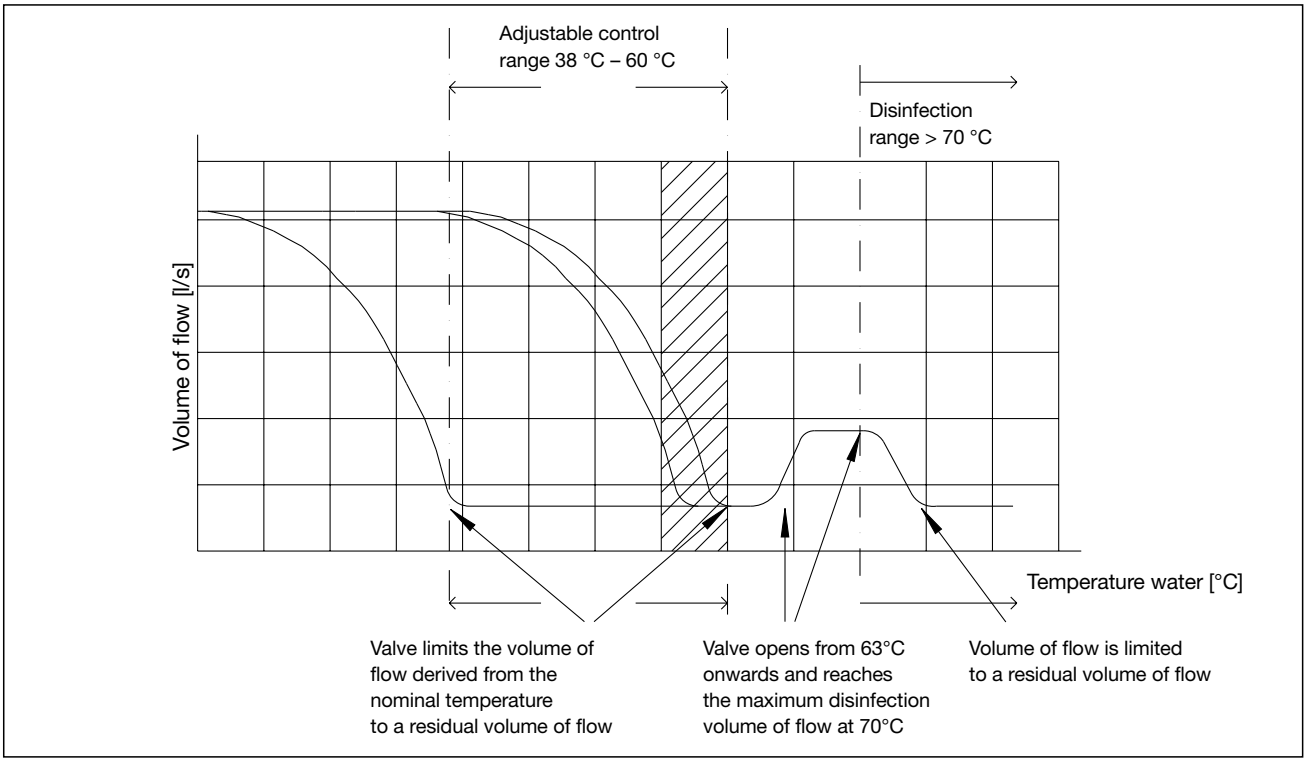

Reading of the set value, e.g. presetting value 2.3

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: Characteristic lines for different nominal temperatures



With the water temperature rising during the thermal disinfection phase, the Oventrop “Aquastrom T plus” automatically regulates the minimum volume of flow at higher values from about 63°C onwards. This always takes place within the same temperature range irrespective of the set nominal temperature. A maximum disinfection volume of flow is reached at about 70°C.

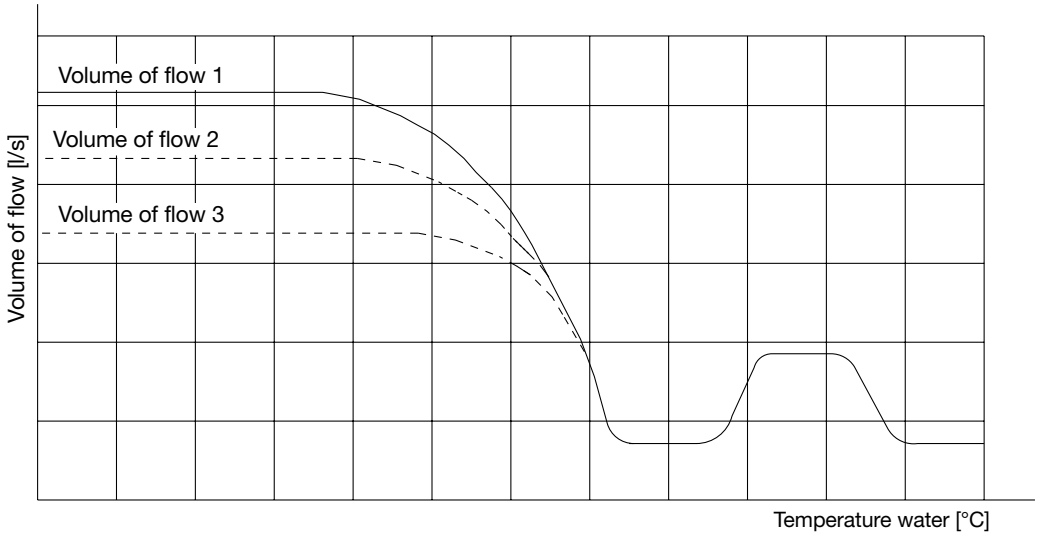
When reaching temperature higher than 70°C, the volume of flow is limited again. In systems with several risers, this increase in differential pressure guarantees that the hydraulically underprivileged pipes may profit, to the same degree as the hydraulically privileged pipes, from the same temperatures during the disinfection phase. 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 temperature.

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 t the regulation characteristics in the chart. In case of very small presetting values, the limitation remains effective even within the disinfection range as the limitation and the temperature regulation are connected in series. The flow values as well as the corresponding presetting values can be taken from chart 4.

Chart 2: Characteristic lines for different limited volumes of flow



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.

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”.

System illustration: Circulation pipe

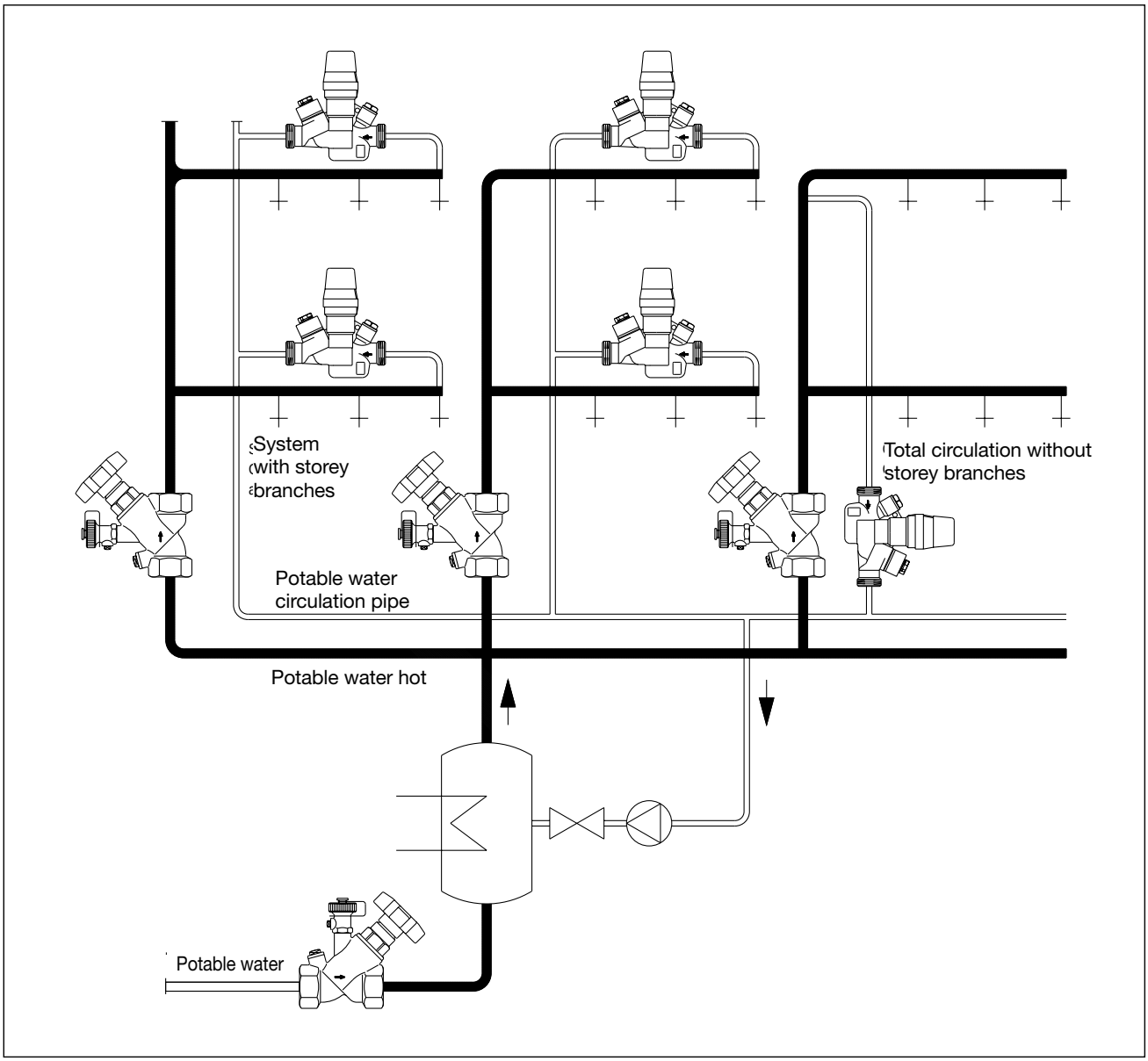
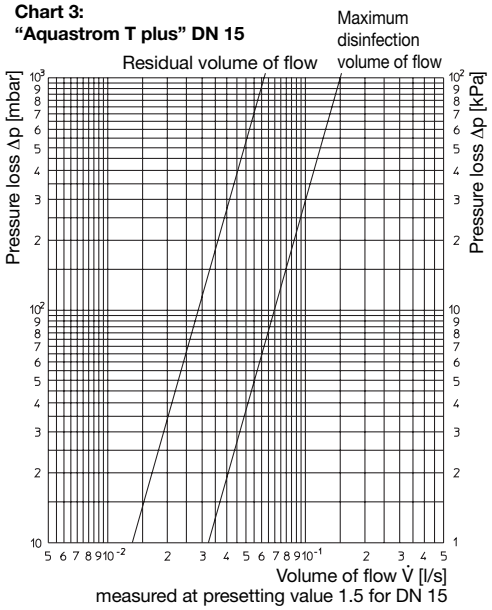
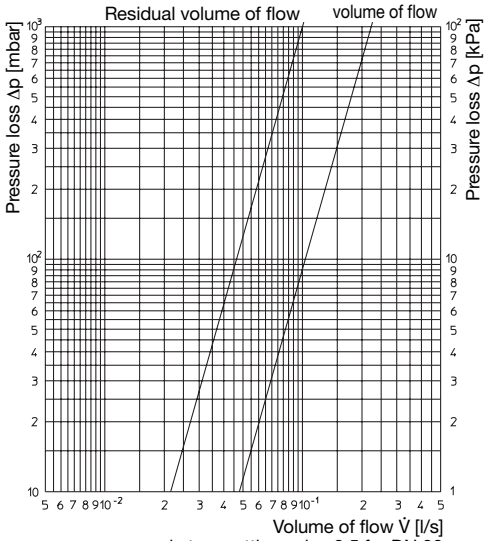


Chart 3:
“Aquastrom T plus” DN 15



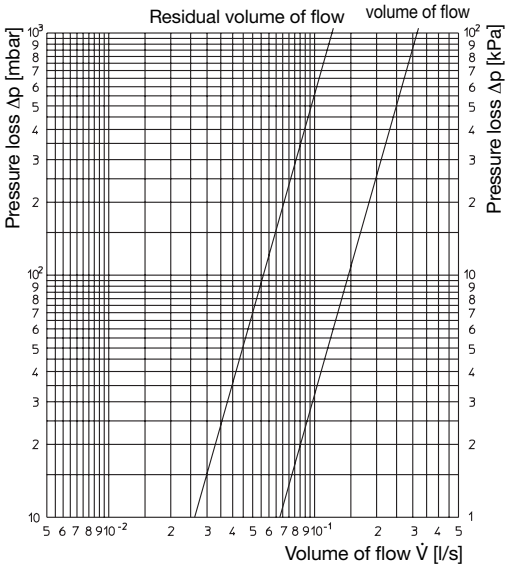
measured at presetting value 1.5 for DN 15

Chart 3:
“Aquastrom T plus” DN 20



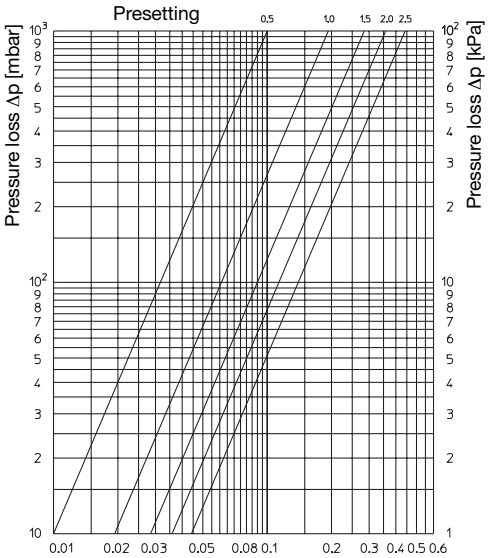
measured at presetting value 2.5 for DN 20

Chart 3:
“Aquastrom T plus” DN 25



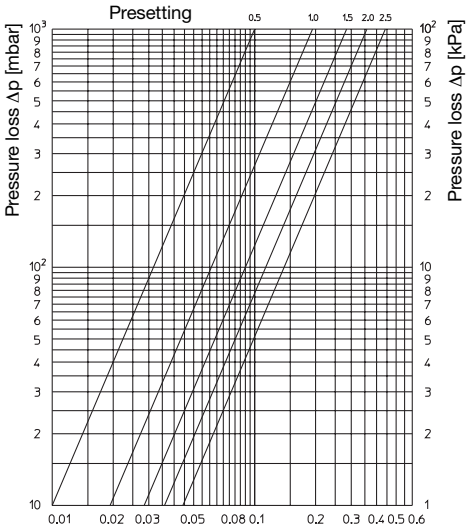
measured at presetting value 2.5 for DN 25

Chart 4:
“Aquastrom T plus” DN 15



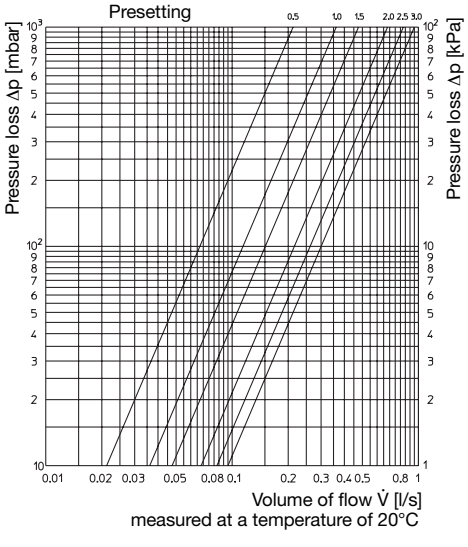
measured at a temperature of 20°C

Chart 4:
“Aquastrom T plus” DN 20



measured at a temperature of 20°C

Chart 4:
“Aquastrom T plus” DN 25



measured at a temperature of 20°C

F. W. OVENTROP GmbH & Co. KG
Paul-Oventrop-Straße 1
D-59939 Olsberg
Telephone (02962) 82-0
Telefax (02962) 82-450
Internet www.oventrop.de
E-Mail mail@oventrop.de

OVENTROP UK LTD.
Unit I – The Loddon Centre
Wade Road
Basingstoke, Hampshire RG24 8FL
Telephone (01256) 330441
Telefax (Sales) (01256) 330525
Telefax (General) (01256) 470970
E-Mail sales@oventrop.co.uk

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