

## Data sheet

# Differential pressure, flow and temperature controller (PN 25)

AVPQT - return mounting, adjustable setting

### Description



The AVPQT is a self-acting differential pressure, flow and temperature controller primarily for use in district heating systems. The controller closes on rising differential pressure or temperature, or when set max. flow is exceeded.

AVPQT controller can be combined with AVT or STM thermostatic actuators.

The AVPQT controller have a control valve with adjustable flow restrictor, combination piece with connection neck for thermostat, an actuator with two control diaphragms and handle for differential pressure setting.

The controllers combined with AVT and STM thermostats are type-tested acc. to EN 14597.

Controllers combined with STM thermostats protect systems against exceeding temperatures.

### Applications:

- District heating systems acc. to DIN 4747
- Heating systems acc. to EN 12828 (DIN 4751) and EN 12953-6 (DIN 4752)
- Water heating systems for drinking and industrial waters acc. to DIN 4753.

### Main data:

- DN 15-50
- $k_{vs}$  4,0-25 m<sup>3</sup>/h
- Flow range: 0,07-15 m<sup>3</sup>/h
- PN 25
- Setting range: 0,2-1,0 bar
- Flow restrictor  $\Delta p_b$ : 0,2 bar
- Setting ranges:
  - AVT:
    - 10 ... 40 °C / 20 ... 70 °C / 40 ... 90 °C / 60 ... 110 °C and
    - 10 ... 45 °C / 35 ... 70 °C / 60 ... 100 °C / 85 ... 125 °C
  - STM:
    - 20 ... 75 °C / 40 ... 95 °C / 30 ... 110 °C
- Temperature:
  - Circulation water / glycolic water up to 30 %: 2 ... 150 °C
- Connections:
  - Ext. thread (weld-on, thread and flange tailpieces)
  - Flange

# Ordering

Example:  
**AVT (or STM) / AVPQT controller:**  
 Differential pressure; flow and temperature controller; return mounting; DN 15;  $k_{vs}$  4,0; PN 25; setting range 0,2-1,0 bar;  $T_{max}$  150 °C; ext. thread;

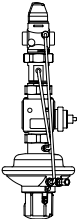
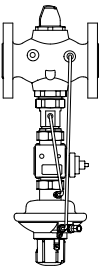
- 1x AVPQT DN 15 controller  
Code No: **003H6807**
- 1x AVT thermostatic actuator, 40 ... 90 °C  
Code No: **065-0598**
- 1x Impulse tube set AV R 1/8  
Code No: **003H6852**

Option:

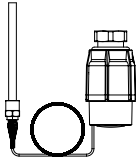
- 1x Weld-on tailpieces  
Code No: **003H6908**

The controller AVPQT will be delivered completely assembled, inclusive combination piece and impulse tubes between valve and actuator. Thermostatic actuator AVT will be delivered separately. External impulse tube (AV) must be ordered separately.  
 In case of safety temp. monitoring STM should be ordered instead of AVT.

## AVPQT Controller (return mounting)

| Picture                                                                           | DN<br>(mm) | $k_{vs}$<br>(m³/h) | Connection                             | Δp setting range<br>(bar) | Code No.        |
|-----------------------------------------------------------------------------------|------------|--------------------|----------------------------------------|---------------------------|-----------------|
|  | 15         | 4,0                | Cylindr, ext, thread acc, to ISO 228/1 | 0,2-1,0                   | <b>003H6807</b> |
|                                                                                   | 20         | 6,3                |                                        |                           | <b>003H6808</b> |
|                                                                                   | 25         | 8,0                |                                        |                           | <b>003H6809</b> |
|  | 32         | 12,5               | Flanges PN 25, acc, to EN 1092-2       | 0,2-1,0                   | <b>003H6810</b> |
|                                                                                   | 40         | 20                 |                                        |                           | <b>003H6811</b> |
|                                                                                   | 50         | 25                 |                                        |                           | <b>003H6812</b> |

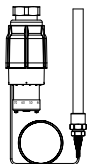
## AVT Thermostatic actuator

| Picture                                                                             | For valves | Setting range<br>(°C) | Temperature sensor with brass immersion pocket, length, connection | Code No.        |
|-------------------------------------------------------------------------------------|------------|-----------------------|--------------------------------------------------------------------|-----------------|
|  | DN 15-25   | -10 ... +40           | 170 mm, R 1/2 <sup>1)</sup>                                        | <b>065-0596</b> |
|                                                                                     |            | 20 ... 70             |                                                                    | <b>065-0597</b> |
|                                                                                     |            | 40 ... 90             |                                                                    | <b>065-0598</b> |
|                                                                                     |            | 60 ... 110            |                                                                    | <b>065-0599</b> |
|                                                                                     | DN 32-50   | -10 ... +40           | 210 mm, R 3/4 <sup>1)</sup>                                        | <b>065-0600</b> |
|                                                                                     |            | 20 ... 70             |                                                                    | <b>065-0601</b> |
|                                                                                     |            | 40 ... 90             |                                                                    | <b>065-0602</b> |
|                                                                                     |            | 60 ... 110            |                                                                    | <b>065-0603</b> |
|                                                                                     | DN 15-50   | 10 ... 45             | 255 mm, R 3/4 <sup>1) 2)</sup>                                     | <b>065-0604</b> |
|                                                                                     |            | 35 ... 70             |                                                                    | <b>065-0605</b> |
|                                                                                     |            | 60 ... 100            |                                                                    | <b>065-0606</b> |
|                                                                                     |            | 85 ... 125            |                                                                    | <b>065-0607</b> |

<sup>1)</sup> conic male thread EN 10226-1

<sup>2)</sup> without immersion pocket

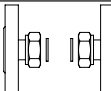
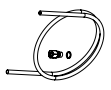
## STM Safety temperature monitor (actuator)

| Picture                                                                             | For valves | Limit range<br>(°C) | Temperature sensor with brass immersion pocket, length, connection | Code No.        |
|-------------------------------------------------------------------------------------|------------|---------------------|--------------------------------------------------------------------|-----------------|
|  | DN 15-50   | 30 ... 110          | 210 mm, R 3/4 <sup>1)</sup>                                        | <b>065-0608</b> |
|                                                                                     |            | 20 ... 75           |                                                                    | <b>065-0609</b> |
|                                                                                     |            | 40 ... 95           |                                                                    | <b>065-0610</b> |

<sup>1)</sup> conic male thread EN 10226-1

## Ordering (continuous)

## Accessories for AVPQT

| Picture                                                                           | Type designation                                                                          | DN                                                                                                                                        | Connection                                |          | Code No. |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------|----------|
|  | Weld-on tailpieces                                                                        | 15                                                                                                                                        | -                                         |          | 003H6908 |
|                                                                                   |                                                                                           | 20                                                                                                                                        |                                           |          | 003H6909 |
|                                                                                   |                                                                                           | 25                                                                                                                                        |                                           |          | 003H6910 |
|  | External thread tailpieces                                                                | 15                                                                                                                                        | Conical ext. thread acc. to<br>EN 10226-1 | R ½      | 003H6902 |
|                                                                                   |                                                                                           | 20                                                                                                                                        |                                           | R ¾      | 003H6903 |
|                                                                                   |                                                                                           | 25                                                                                                                                        |                                           | R 1      | 003H6904 |
|  | Flange tailpieces                                                                         | 15                                                                                                                                        | Flanges PN 25, acc. to EN 1092-2          |          | 003H6915 |
|                                                                                   |                                                                                           | 20                                                                                                                                        |                                           |          | 003H6916 |
|                                                                                   |                                                                                           | 25                                                                                                                                        |                                           |          | 003H6917 |
|  | Impulse tube set AV                                                                       | Description:<br>- 1× copper tube Ø6 × 1 × 1500 mm<br>- 1× compression fitting <sup>1)</sup> for imp. tube<br>connection to pipe Ø6 × 1 mm | R ⅛                                       | 003H6852 |          |
|                                                                                   |                                                                                           |                                                                                                                                           | R ⅜                                       | 003H6853 |          |
|                                                                                   |                                                                                           |                                                                                                                                           | R ½                                       | 003H6854 |          |
|  | <sup>1)</sup> 10 compression fittings for imp. tube connection to pipe, Ø6 × 1 mm R ½     |                                                                                                                                           |                                           |          | 003H6857 |
|                                                                                   | <sup>1)</sup> 10 compression fittings for imp. tube connection to pipe, Ø6 × 1 mm R ¾     |                                                                                                                                           |                                           |          | 003H6858 |
|                                                                                   | <sup>1)</sup> 10 compression fittings for imp. tube connection to pipe, Ø6 × 1 mm R ½     |                                                                                                                                           |                                           |          | 003H6859 |
|                                                                                   | <sup>1)</sup> 10 compression fittings for imp. tube connection to actuator, Ø6 × 1 mm G ⅛ |                                                                                                                                           |                                           |          | 003H6931 |
|  | Shut off valve Ø6 mm                                                                      |                                                                                                                                           |                                           |          | 003H0276 |

<sup>1)</sup> Compression fitting consists of a nipple, compression ring and nut.

## Accessories for thermostats

| Picture                                                                             | Type designation          | For controllers                              | Material                         | Code No.                      |
|-------------------------------------------------------------------------------------|---------------------------|----------------------------------------------|----------------------------------|-------------------------------|
|  | Immersion pocket<br>PN 25 | AVT / AVPQT DN 15-25                         | Brass                            | <b>065-4414</b> <sup>1)</sup> |
|                                                                                     |                           |                                              | Stainless steel, mat. No. 1.4571 | <b>065-4415</b> <sup>1)</sup> |
|                                                                                     |                           | AVT / AVPQT DN 32-50<br>STM / AVPQT DN 15-50 | Brass                            | <b>065-4416</b> <sup>1)</sup> |
|                                                                                     |                           |                                              | Stainless steel, mat. No. 1.4435 | <b>065-4417</b> <sup>1)</sup> |
|  | Combination piece K2      |                                              |                                  | <b>003H6855</b>               |
|                                                                                     | Combination piece K3      |                                              |                                  | <b>003H6856</b>               |

<sup>1)</sup> Not for AVT thermostatic actuator code numbers: 065-0604, 065-0605, 065-0606, 065-0607

## Service kits

| Picture                                                                             | Type designation                | DN                        | k <sub>vs</sub><br>(m <sup>3</sup> /h) | Code No. |
|-------------------------------------------------------------------------------------|---------------------------------|---------------------------|----------------------------------------|----------|
|  | Valve insert                    | 15                        | 2,5                                    | 003H6864 |
|                                                                                     |                                 |                           | 4,0                                    | 003H6865 |
|                                                                                     |                                 | 20                        | 6,3                                    | 003H6866 |
|                                                                                     |                                 | 25                        | 8,0                                    | 003H6867 |
|                                                                                     |                                 | 32 / 40 / 50              | 12,5 / 20 / 25                         | 003H6868 |
|  | Type designation                | Δp setting range<br>(bar) |                                        | Code No. |
|                                                                                     | Actuator with adjustable handle | 0,2-1,0                   |                                        | 003H6842 |
|  | Housing of sensor stuffing box  | for sensors               |                                        |          |
|                                                                                     |                                 | AVT R 1/2                 |                                        | 065-4420 |
|                                                                                     |                                 | AVT R 3/4                 |                                        | 065-4421 |

## Technical data

## Valve

| Nominal diameter                 |                                         |                  | DN                                            | 15                       | 20     | 25     | 32                                          | 40  | 50  |
|----------------------------------|-----------------------------------------|------------------|-----------------------------------------------|--------------------------|--------|--------|---------------------------------------------|-----|-----|
| k <sub>vs</sub> value            |                                         |                  | m³/h                                          | 4,0                      | 6,3    | 8,0    | 12,5                                        | 20  | 25  |
| Range of max. flow setting       | Δp <sub>b</sub> <sup>1)</sup> = 0,2 bar | from             |                                               | 0,07                     | 0,16   | 0,2    | 0,4                                         | 0,8 | 0,8 |
|                                  |                                         | to               |                                               | 2,2                      | 3,0    | 3,5    | 8,0                                         | 10  | 12  |
|                                  |                                         | to <sup>3)</sup> |                                               | 2,4                      | 3,5    | 4,5    | 10                                          | 12  | 15  |
| Cavitation factor z              |                                         |                  | ≥ 0,6                                         |                          | ≥ 0,55 |        | ≥ 0,5                                       |     |     |
| Leakage acc. to standard IEC 534 |                                         |                  | % of k <sub>vs</sub>                          | ≤ 0,02                   |        |        | ≤ 0,05                                      |     |     |
| Nominal pressure                 |                                         |                  | PN                                            | 25                       |        |        |                                             |     |     |
| Min. differential pressure       |                                         |                  | bar                                           | see remark <sup>2)</sup> |        |        |                                             |     |     |
| Max. differential pressure       |                                         |                  |                                               | 20                       |        |        | 16                                          |     |     |
| Medium                           |                                         |                  | Circulation water / glycolic water up to 30 % |                          |        |        |                                             |     |     |
| Medium pH                        |                                         |                  | Min. 7, max. 10                               |                          |        |        |                                             |     |     |
| Medium temperature               |                                         |                  | °C                                            | 2 ... 150                |        |        |                                             |     |     |
| Connections                      | valve                                   |                  | External thread                               |                          |        | Flange |                                             |     |     |
|                                  | tailpieces                              |                  | Weld-on, external thread and flange           |                          |        | -      |                                             |     |     |
| Materials                        |                                         |                  |                                               |                          |        |        |                                             |     |     |
| Valve body                       | thread                                  |                  | Red bronze CuSn5ZnPb (Rg5)                    |                          |        |        | -                                           |     |     |
|                                  | flange                                  |                  | -                                             |                          |        |        | Ductile iron<br>EN-GJS-400-18-LT (GGG 40.3) |     |     |
| Valve seat                       |                                         |                  | Stainless steel, mat. No. 1.4571              |                          |        |        |                                             |     |     |
| Valve cone                       |                                         |                  | Dezincing free brass CuZn36Pb2As              |                          |        |        |                                             |     |     |
| Sealing                          |                                         |                  | EPDM                                          |                          |        |        |                                             |     |     |
| Pressure relieve system          |                                         |                  | Piston                                        |                          |        |        |                                             |     |     |

<sup>1)</sup>  $\Delta p_b$  - differential pressure over flow restrictor

<sup>2)</sup> Depends on the flow rate and valve k<sub>vs</sub>; For  $Q_{set} = Q_{max} \rightarrow \Delta p_{min} \geq 0,5 \text{ bar}$ ; For  $Q_{set} < Q_{max} \rightarrow \Delta p_{min} = \left( \frac{Q}{k_{vs}} \right)^2 + \Delta p_b$ 
<sup>3)</sup> Higher max flow are achieved at higher differential pressures over AVPQT controller. In general at  $\Delta p > 1-1,5 \text{ bar}$ 

## Actuator

| Type                                             |                           | AVPQT                            |
|--------------------------------------------------|---------------------------|----------------------------------|
| Actuator size                                    | cm²                       | 54                               |
| Nominal pressure                                 | PN                        | 25                               |
| Flow restrictor diff. pressure, Δp <sub>b</sub>  | bar                       | 0,2                              |
| Diff. pressure setting ranges and spring colours |                           | 0,2-1,0                          |
|                                                  |                           | yellow                           |
| Materials                                        |                           |                                  |
| Actuator housing                                 | Upper casing of diaphragm | Stainless steel, mat. No.1.4301  |
|                                                  | Lower casing of diaphragm | Dezincing free brass CuZn36Pb2As |
| Diaphragm                                        |                           | EPDM                             |
| Impulse tube                                     |                           | Copper tube Ø6 × 1 mm            |

## AVT Thermostatic actuator

|                                     |                        |       |                                                                                                    |
|-------------------------------------|------------------------|-------|----------------------------------------------------------------------------------------------------|
| Setting range X <sub>s</sub>        |                        | °C    | -10 ... 40 / 20 ... 70 / 40 ... 90 / 60 ... 110<br>10 ... 45 / 35 ... 70 / 60 ... 100 / 85 ... 125 |
| Time constant T acc. to EN 14597    |                        | s     | max. 50 (170 mm, 210 mm), max. 30 (255 mm)                                                         |
| Gain K <sub>s</sub>                 |                        | mm/°K | 0,2 (170 mm), 0,3 (210 mm), 0,7 (255 mm)                                                           |
| Max. adm. temperature at sensor     |                        |       | 50 °C above maximum setpoint                                                                       |
| Max. amb. temperature at thermostat |                        | °C    | 0 ... 70                                                                                           |
| Nominal pressure sensor             |                        | PN    | 25                                                                                                 |
| Nominal pressure immerison pocket   |                        |       |                                                                                                    |
| Capillary tube length               |                        |       | 5 m (170 mm, 210 mm), 4 m (255 mm)                                                                 |
| <b>Materials</b>                    |                        |       |                                                                                                    |
| Temperature sensor                  |                        |       | Cooper                                                                                             |
| Immersion pocket <sup>1)</sup>      | Ms design              |       | Brass, nickel-plated                                                                               |
|                                     | Stainless steel design |       | Mat. No. 1.4571 (170 mm), mat. No. 1.4435 (210 mm)                                                 |
| Handle for temp. setting            |                        |       | Polyamide, glass fiber-reinforced                                                                  |
| Scale carrier                       |                        |       | Polyamide                                                                                          |

<sup>1)</sup> for sensor 170 and 210 mm

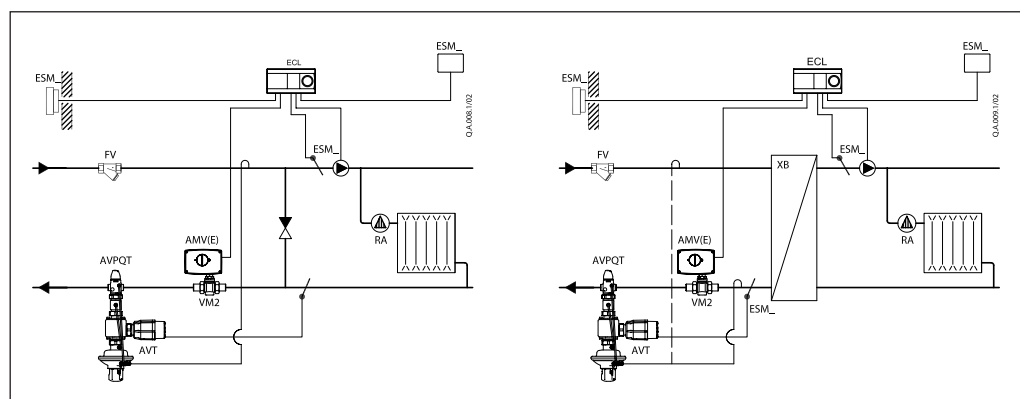
**Technical data** (continuous)

**STM Safety temperature monitor (actuator)**

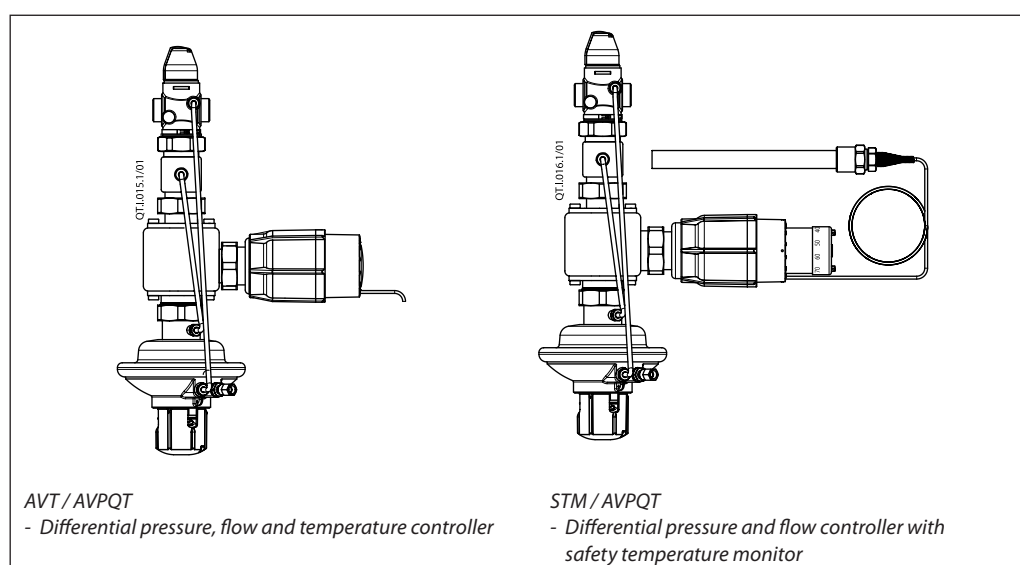
|                                     |                        |                                    |
|-------------------------------------|------------------------|------------------------------------|
| Limit range $X_s$                   | °C                     | 20 ... 75 / 40 ... 95 / 30 ... 110 |
| Time constant T acc. to EN 14597    | s                      | max. 100                           |
| Gain $K_s$                          | mm/°K                  | 0,3                                |
| Max. adm. temperature at sensor     |                        | 80 °C above maximum setpoint       |
| Max. amb. temperature at thermostat | °C                     | 0 ... 70                           |
| Nominal pressure sensor             | PN                     | 25                                 |
| Nominal pressure immersion pocket   |                        |                                    |
| Capillary tube length               | m                      | 5                                  |
| <b>Materials</b>                    |                        |                                    |
| Temperature sensor                  |                        | Cooper                             |
| Immersion pocket                    | Ms design              | Brass, nickel-plated               |
|                                     | Stainless steel design | mat. No. 1.4435                    |
| Handle for temp. setting            |                        | Polyamide, glass fiber-reinforced  |
| Scale carrier                       |                        | Polyamide                          |

**Application principles**

The controller must be installed in the return pipe only.



**Combinations**

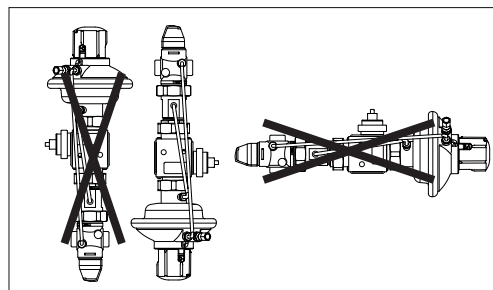
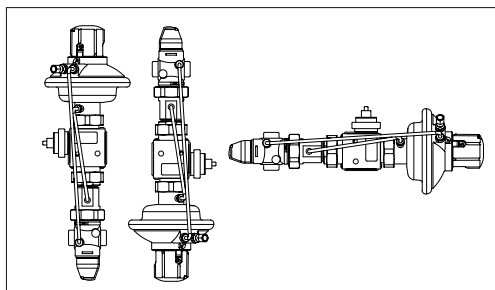


**Installation positions**

*Differential pressure, flow and temperature controller*

Up to medium temperature of 100 °C the controllers can be installed in any position.

For higher temperatures the controllers have to be installed in horizontal pipes only, with a pressure and temperature actuator oriented downwards.



*Temperature sensor*

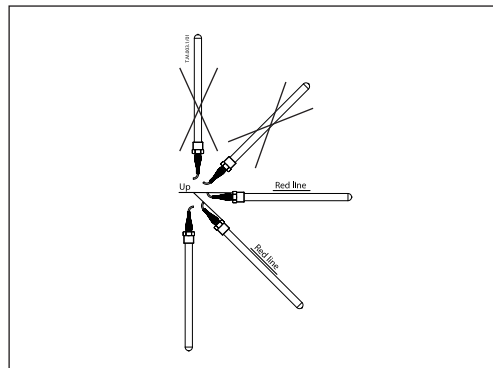
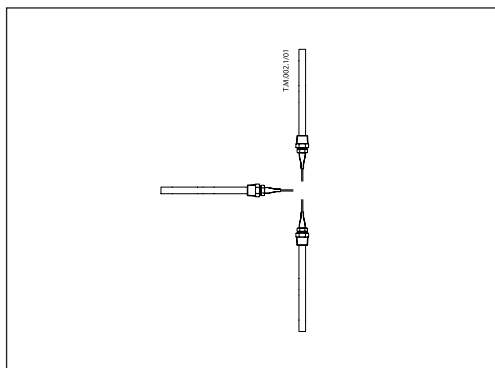
The place of installation must be chosen in a way that the temperature of the medium is directly taken without any delay. Avoid overheating of temperature sensor. The temperature sensor must be immersed into the medium in its full length.

Temperature sensors 170 mm R $\frac{1}{2}$  and 210 mm R $\frac{3}{4}$

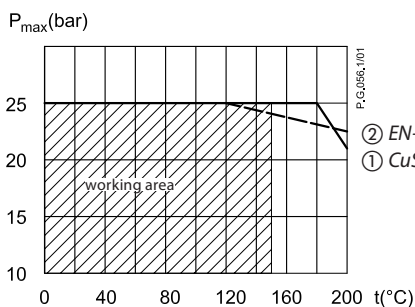
- The temperature sensor may be installed in any position.

Temperature sensor 255 mm R $\frac{3}{4}$

- The temperature sensor must be installed as shown on the picture.



**Pressure temperature diagram**



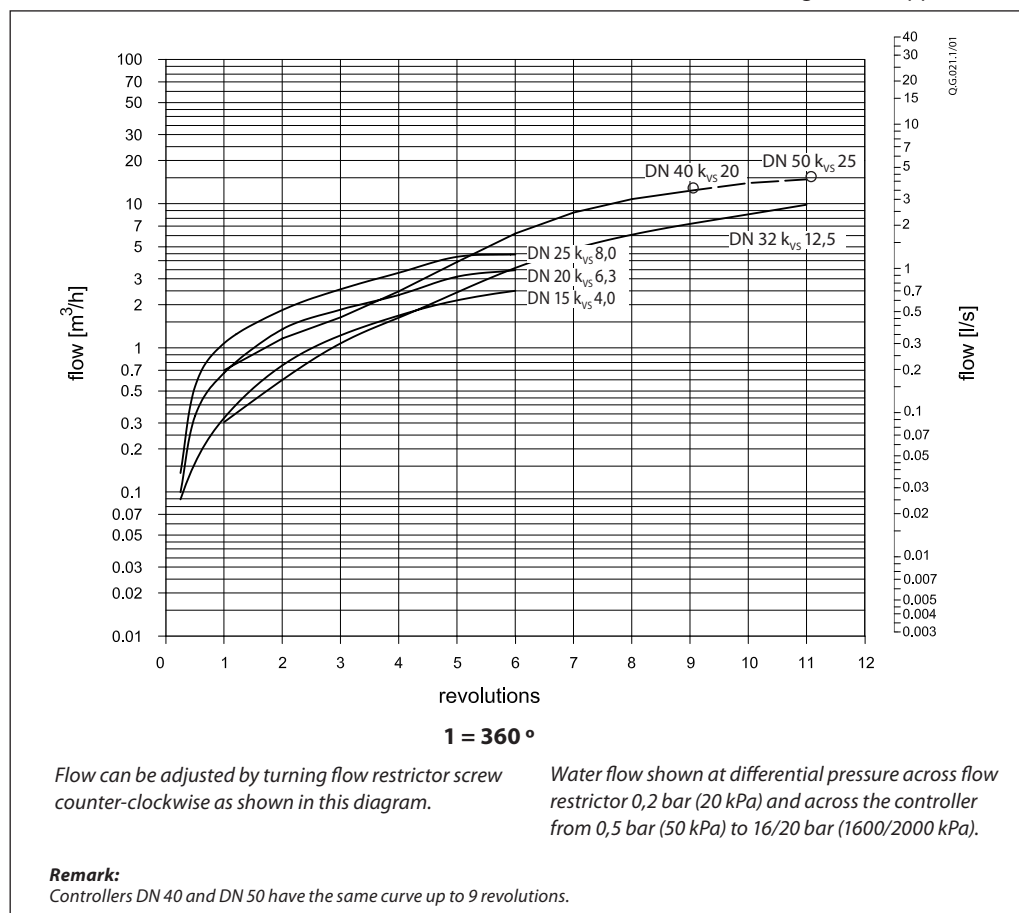
- ② EN-GJS-400-18-LT (GGG 40.3) PN 25
- ① CuSn5ZnPb (Rg5) PN 25

Maximum allowed operating pressure as a function of medium temperature (according to EN 1092-2 and EN 1092-3).

# Flow diagram

## Sizing and setting diagram

Relation between actual flow and number of revolutions on flow restrictor. Values given are approximate.



### Sizing

- indirectly connected heating system

### Example

Motorised control valve (MCV) for indirectly connected heating system requires differential pressure of 0,3 (30 kPa) bar and flow less than 1150 l/h. Return temperature is limited to 70 °C.

Given data (AVPQT):

$$\begin{aligned} Q_{\max} &= 1,15 \text{ m}^3/\text{h} \text{ (1150 l/h)} \\ \Delta p_{\min} &= 1,0 \text{ bar (100 kPa)} \\ \Delta p_{\text{exchanger}} &= 0,05 \text{ bar (5 kPa)} \\ \Delta p_{\text{MCV}} &= 0,3 \text{ bar (30 kPa) selected} \\ \Delta p_b^{1)} &= 0,2 \text{ bar (20 kPa)} \end{aligned}$$

Remark:

<sup>1)</sup>  $\Delta p_b$  is differential pressure over flow restrictor

The differential pressure set value is:

$$\begin{aligned} \Delta p_{\text{set value}} &= \Delta p_{\text{exchanger}} + \Delta p_{\text{MCV}} \\ \Delta p_{\text{set value}} &= 0,05 + 0,3 \\ \Delta p_{\text{set value}} &= 0,35 \text{ bar (35 kPa)} \end{aligned}$$

The total pressure loss across the controller is:

$$\begin{aligned} \Delta p_{\text{AVPQT}} &= \Delta p_{\min} - \Delta p_{\text{exchanger}} - \Delta p_{\text{MCV}} \\ \Delta p_{\text{AVPQT}} &= 1,0 - 0,05 - 0,3 \\ \Delta p_{\text{AVPQT}} &= 0,65 \text{ bar (65 kPa)} \end{aligned}$$

Possible pipe pressure losses in tubes, shut-off fittings, heatmeters, etc. are not included.

$k_v$  value is calculated according to formula:

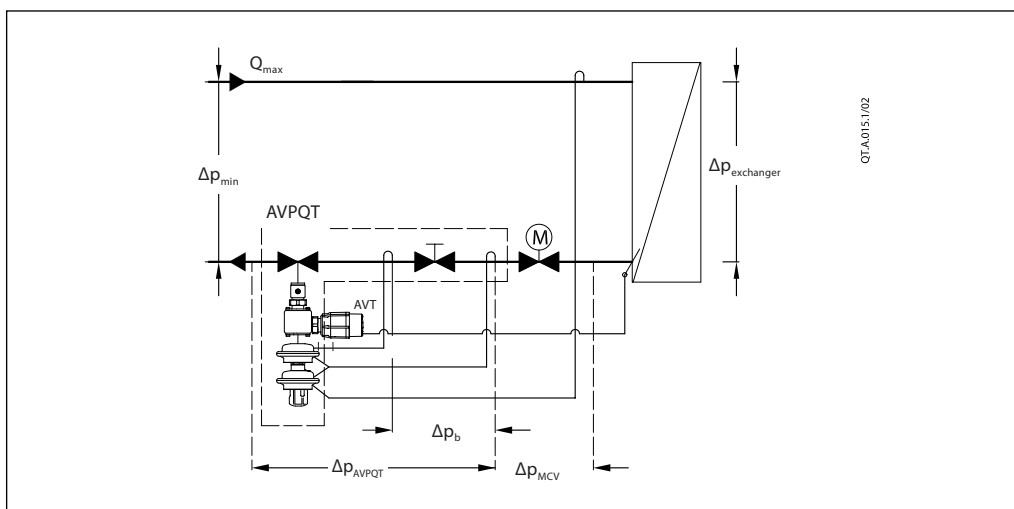
$$k_v = \frac{Q_{\max}}{\sqrt{\Delta p_{\text{AVPQT}} - \Delta p_b}} = \frac{1,15}{\sqrt{0,65 - 0,2}}$$

$$k_v = 1,7 \text{ m}^3/\text{h}$$

Solution:

The example selects:

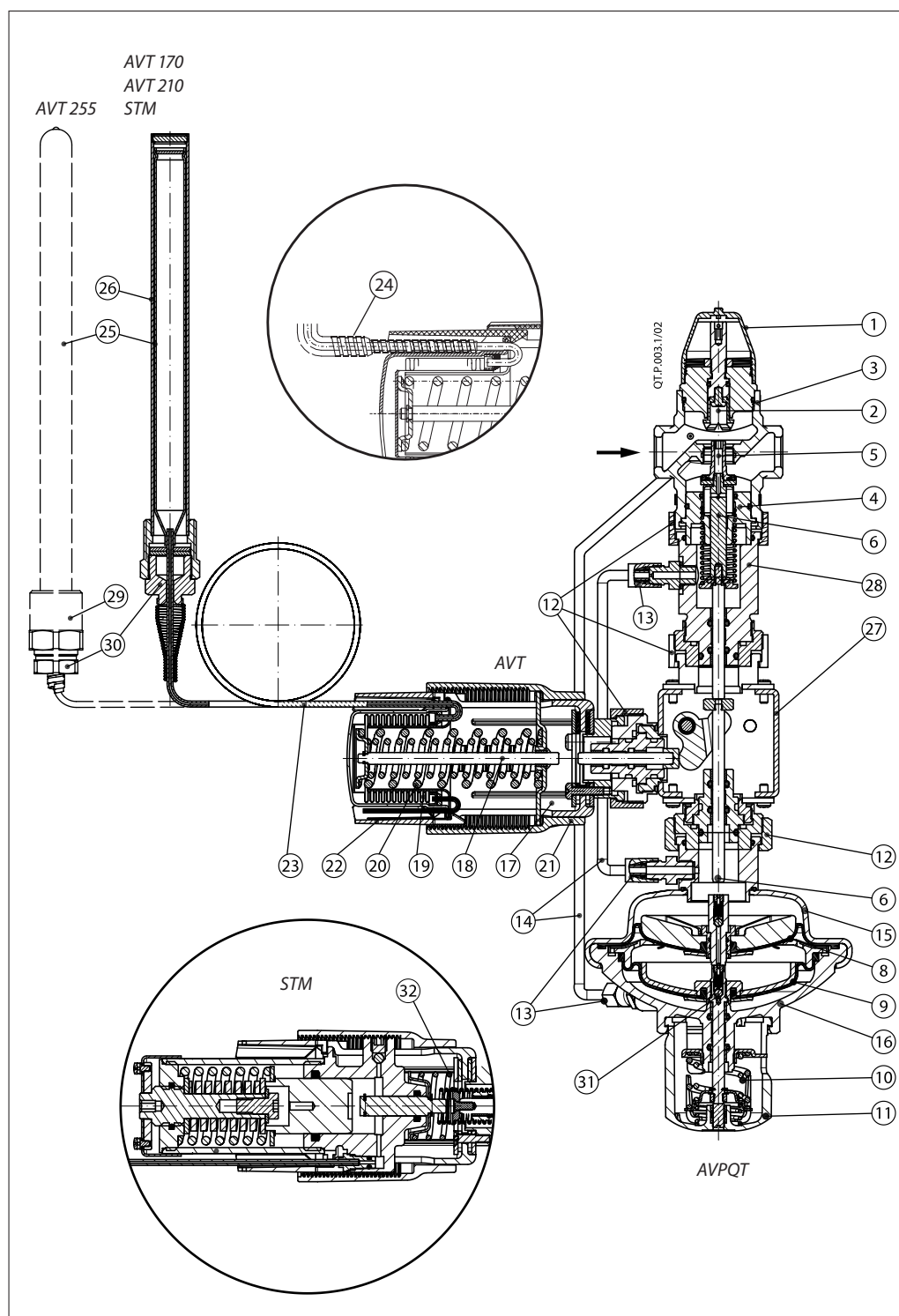
- AVPQT DN 15,  $k_{vs}$  value 4,0, with differential pressure setting range 0,2-1,0 bar, flow setting range 0,15-1,4 m<sup>3</sup>/h and
- AVT 170 mm, temperature setting range 40 ... 90 °C.





# Design

1. Cover
2. Adjustable flow restrictor
3. Valve body
4. Valve insert
5. Pressure relieved valve cone
6. Valve stem
7. Control drain
8. Control diaphragm for flow control
9. Control diaphragm for diff. pressure control
10. Setting spring for diff. pressure control
11. Handle for diff. pressure setting, prepared for sealing
12. Union nut
13. Compression fitting for impulse tube
14. Impulse tube
15. Upper casing of diaphragm
16. Lower casing of diaphragm
17. Thermostatic actuator AVT, STM
18. Thermostat stem
19. Bellows
20. Setting spring for temperature control
21. Handle for temperature setting, prepared for sealing
22. Scale carrier
23. Capillary tube
24. Flexible protected pipe (at 255mm only)
25. Temperature sensor
26. Immersion pocket
27. Combination piece K2
28. Connection piece V
29. Sensor stuffing box
30. Housing of sensor stuffing box
31. Excess pressure safety valve
32. Safety spring



## Function

### *Differential pressure, flow and temperature controller*

Flow volume causes pressure drop across the adjustable flow restrictor. Resulting pressures are being transferred through the impulse tubes and/or control drain in the actuator stem to the actuator chambers and act on control diaphragm for flow control. The flow restrictor diff. pressure is controlled and limited by means of built-in spring for flow control. Control valve closes on rising differential pressure and opens on falling differential pressure to control max flow.

Pressure changes from flow and return pipes are being transferred through the impulse tubes to the actuator chambers and act on control diaphragm for diff. pressure control. The diff. pressure is controlled by means of setting spring for diff. pressure control. Control valve closes on rising differential pressure and opens on falling differential pressure to maintain constant differential pressure.

Controller is equipped with excess pressure safety valve, which protects control diaphragm for diff. pressure control from too high differential pressure.

### *Safety Temperature Monitor (STM)*

- Function  
The safety temperature monitor is proportional temperature controller which controls temperature and protects the system against exceeding temperatures. The valve cone is soft sealed and pressure relieved.

In case the temperature at the temperature sensor exceeds the adjusted set point, safety temperature monitor interrupts energy supply by closing the valve. As soon as the temperature at the temperature sensor drops, the valve opens automatically.

Handle for limit setting can be sealed.

- Extended safety function  
If there is a leakage in the area of the temperature sensor, the capillary tube, or the thermostat, the valve closes by a safety spring in the safety thermostat. In this case safety temperature monitor (actuator) must be replaced.

- Physical Function Principle  
The safety temperature monitor operates in accordance with the liquid expansion principle. The temperature sensor, the capillary tube and the bellows are filled with liquid. As the temperature at the temperature sensor rises, the liquid expands, the thermostat stem moves out and closes the valve.

### *Temperature Controller (AVT)*

- Function  
By increasing of medium temperature valve cone moves towards the seat (valve closes), by decreasing of medium temperature valve cone moves away from the seat (valve opens).

Handle for temperature setting can be sealed.

- Physical Function Principle  
Medium temperature changes cause pressure changes in temperature sensor. Resulting pressure is being transferred through the capillary tube to the bellows. Bellows moves thermostat stem and opens or closes the valve.

## Settings

### *Flow setting*

Flow setting is being done by the adjustment of the flow restrictor position. The adjustment can be performed on the basis of flow adjustment diagram (see relevant instructions) and/or by the means of heat meter.

### *Differential pressure setting*

Differential pressure setting is being done by the adjustment of the setting spring for diff. pressure control. The adjustment can be done by means of handle for diff. pressure setting and/or pressure indicators.

### *Temperature setting (AVT)*

Temperature setting is being done by the adjustment of the setting spring for temperature control. The adjustment can be done by means of handle for temperature setting and/or temperature indicators.

### *Limit setting (STM)*

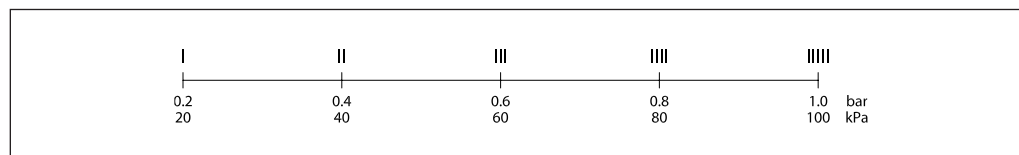
Limit setting is being done by the adjustment of the setting spring for temperature control. The adjustment can be done by means of handle for limit setting and/or temperature indicators.

# Adjustment diagram

## Differential pressure setting

Relation between scale figures and differential pressure.

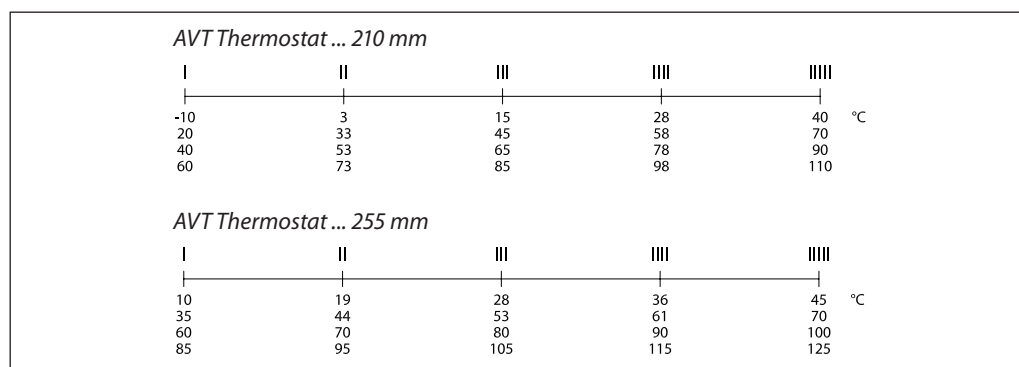
**Note:** The values given are approximate



## Temperature setting

Relation between scale numbers 1-5 and closing temperature.

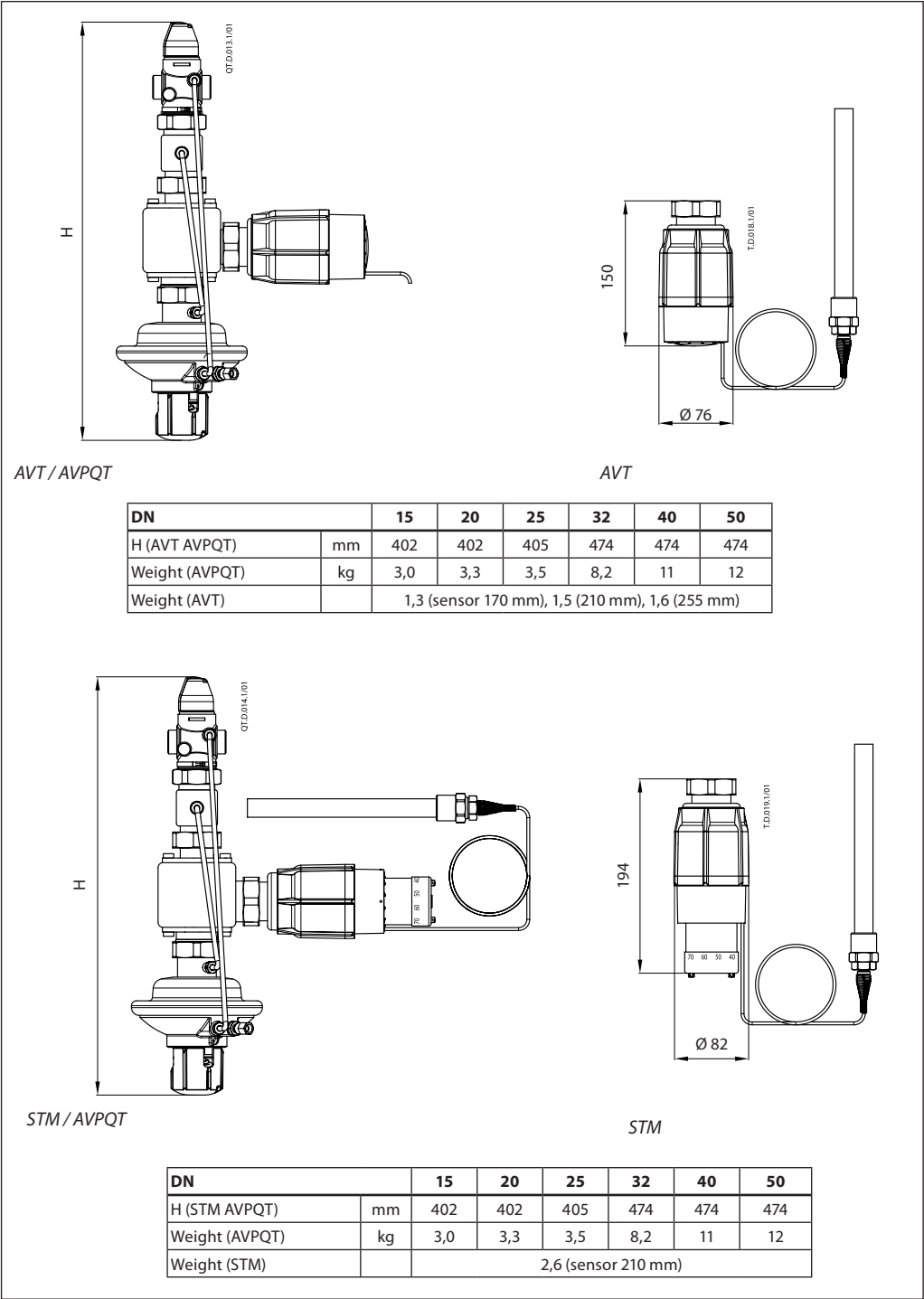
**Note:** The values given are approximate



## Note:

STM Safety temperature monitor (actuator):  
temperature scale is already written on the product

Dimensions



Dimensions (continuous)

