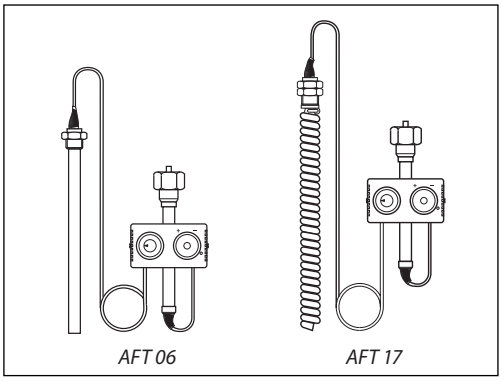
ENGINEERING
TOMORROW

Data sheet

Thermostats AFT 06, AFT 17

Description

DIN Geprüft TR(TW)761



AFT 06 *AFT 17*

The thermostats operate according to the liquid expansion principle. The set point adjuster is directly fitted to the actuator.

There are two sensor designs with different time constants:
- AFT 06 smooth sensor ~120 sec
- AFT 17 spiral sensor ~20 sec

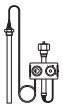
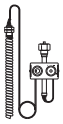
Temperature control of domestic hot water systems with storage tanks and restriction of the return flow temperature in district heating transfer station are the main fields of application. Combinations: temperature controller, safety temperature monitor type STFW, see page 4.

Type-tested according to EN 14597 in connection with the following valves:
VFG 2, VFG 21, VFGS 2, VFG 33 and VFU 2.

Main data (thermostat & valve):
- Setting ranges:
  - AFT 06: -20 ... 50 °C / 20 … 90 °C / 40 … 110 °C / 60 … 130 °C / 110 … 180 °C
  - AFT 17: -20… 50 °C / 20 … 90 °C / 40 … 110 °C / 60 … 130 °C
- Valves: VFG 2, VFG 21, VFGS 2, VFG 33 and VFU
- DN: 15-125
- PN: 16, 25 and 40
- Connection: Flange EN 1092-2

Ordering

AFT Thermostat

Picture	Type	Set-point[1] (°C)	Sensor / time constant [2]	Code No.
	AFT 06	–20 … 50	Sensor with immersion pocket bronze, Ø24×386/120 s	**065-4390**
		20 … 90		**065-4391**
		40 … 110		**065-4392**
		60 … 130		**065-4393**
		110 … 180		**065-4394**
	AFT 17	–20 … 50	Spiral sensor, Ø30×500/20 s	**065-4400**
		20 … 90		**065-4401**
		40 … 110		**065-4402**
		60 … 130		**065-4403**

[1] *Thermostats are proportional controllers, thus certain deviation from set point can be expected and varies from valve DN:*
AFT../VFG.. closing point can deviate up to +/- 10 %
AFT../VFU.. opening point can deviate up to +/- 15 %
More details in sizing example on page 3

[2] *acc. to EN 14597*

Accessories

Picture	Type designation	For thermostat	Material	Code No.
	Immersion pocket	AFT 06	Stainless steel mat. No. 1.4571	**003G1412**
	Combination piece KF2			**003G1440**
	ZF4 Stem extension			**003G1394**

Spare parts

Picture	Type designation	For thermostat	Material	Code No.
	Immersion pocket	AFT 06	Bronze	**003G1399**

Technical data

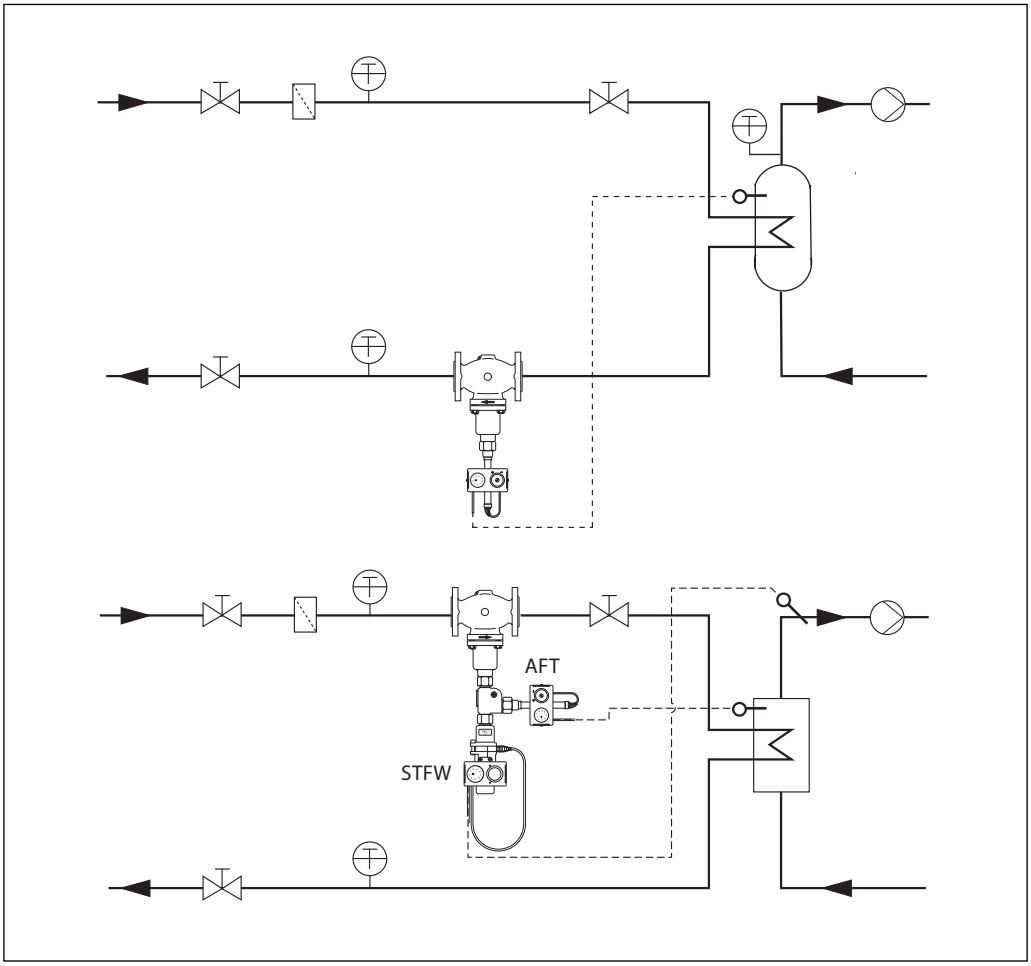
Thermostat

Type		AFT 06	AFT 17
Setting range X_s	°C	–20 … 50, 20 … 90, 40 … 110, 60 … 130, 110 … 180	–20 … 50, 20 … 90, 40 … 110, 60 … 130
Time constant T	s	120 (with immersion pocket)	20 (without immersion pocket)
Gain K_s	mm/°C	0.8	
Max. temperature at sensor		100 °C above the adjusted set-point	
Max. amb. temperature	°C	0 … 70	
Nominal pressure sensor	PN	40	
Nominal pressure immersion pocket			
Capillary tube length	m	5	
Materials			
Temperature sensor		Smooth sensor Ø24 × 386	Spiral sensor Ø30 × 500
Sensor medium		Silicon oil	
Sensor material		Brass, bronze	Cu spiral, nickel-plated
Immersion pocket material		Nickel-plated	No immersion pocket
		Stainless steel Mat. No. 1.4571	
Weight	kg	3.0	3.5

Valves

Nominal diameter	DN	15	20	25	32	40	50	65	80	100	125
k_{VS} value	m^3/h	4	6.3	8	16	20	32	50	80	125	160

Application principles



Sizing

To get the valve DN two parameters are needed:
1. the system k_v and
2. the acceptable temperature deviation Xp.

Given data:

Capacity:	600 kW
Hot water temperature:	50 °C
Primary temperature difference ΔT:	40 °C
Differential pressure ΔPv:	0.8 bar

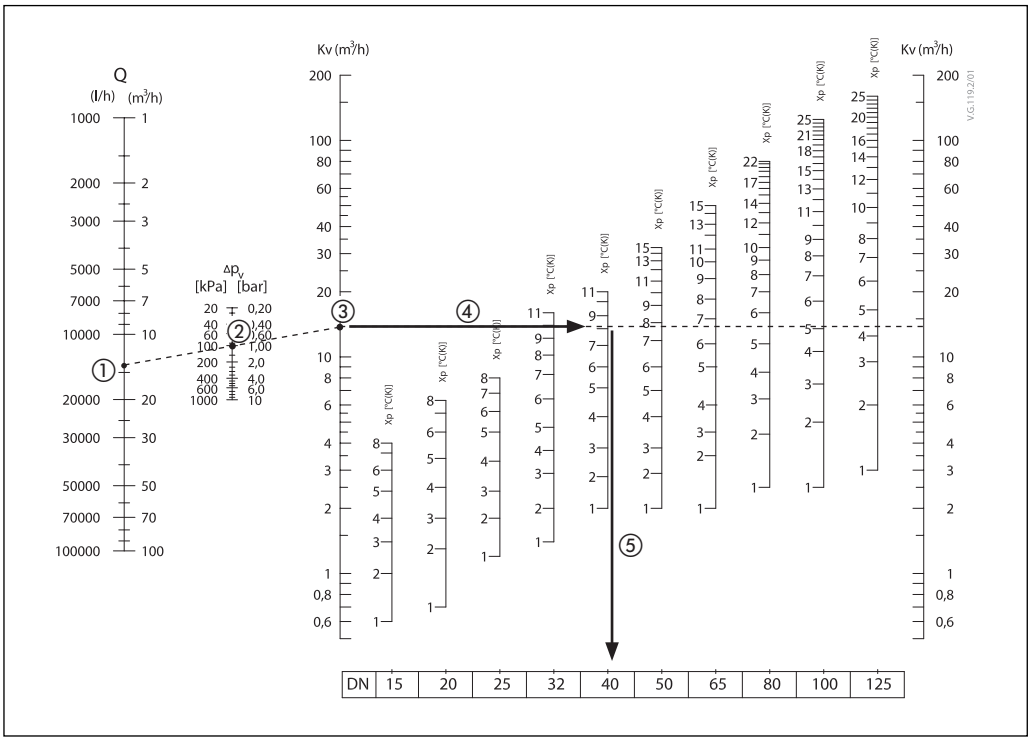
Flow as data or calculated:

$$\text{Flow} = \frac{\text{Capacity (kW)}}{\text{Primary temp. diff. (°C)}} 0.86 = \frac{600}{40} 0.86 = 12.9\,\text{m}^3/\text{h}$$

1. The system k_v can be calculated or read from a graph.

$$k_v = \frac{\text{Flow}\,(\text{m}^3/\text{h})}{\sqrt{\text{Diff. presure (bar)}}} = \frac{12.9}{\sqrt{0.8}} = 14.4\,\text{m}^3/\text{h}$$

   k_v readout from a graph:
   from the Q scale ① draw a straight line through a Δp ② to a k_v scale ③.
2. The acceptable temperature deviation:
   From the needed k_v draw a horizontal line ④ over the graph. Choose the acceptable temperature deviation and read the valve DN below the reading ⑤.



Example:
Xp = 8 °C –>DN 40, AFT 20 … 90 °C, setting 50 °C

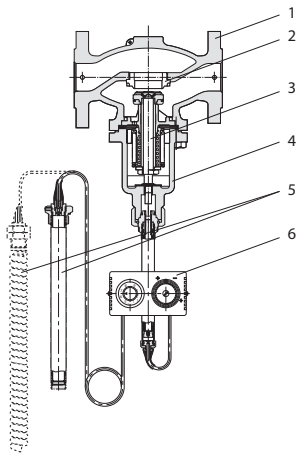
VFG:
The sensor has:
a) 50 °C: the valve is **fully closed**
b) 50 °C–Xp=42 °C: the valve is max. opened

VFU:
The sensor has:
a) 50 °C: the valve **starts opening**
b) 50 °C+Xp=58 °C: the valve is max. opened

Data sheet **Thermostats AFT 06, AFT 17**

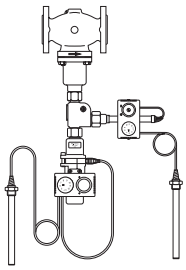
Design

1. Valve body
2. Valve seat
3. Trim
4. Bonnet
5. Sensor
6. Set- point adjuster



Sensor: AFT 06, AFT 17
Valve: VFG2, VFG 21, VFU 2, VFGS 2, VFG 33

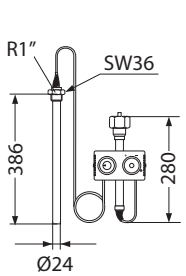
Combinations



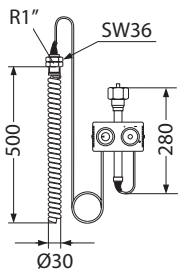
AFT.. / STFW / VFG

Valve type	VFG 2/21	VFU 2	VFGS 2	VFG 33
DN	15-125	15-125	15-125	25-125
Medium	Water		Steam	Water
Max. temp. (°C)	200 (VFG 2) 150 (VFG 21)	200	200 350 (with ZF4)	200 350 (with ZF4)
PN	16, 25, 40			25
Remark	NO valve	NC valve	Steam valve	3-way valve mixing valve

Dimensions

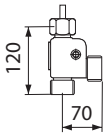


AFT 06

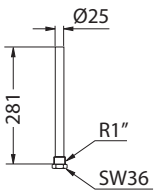


AFT 17

Accessories



Comb. piece KF2



Stainless steel

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