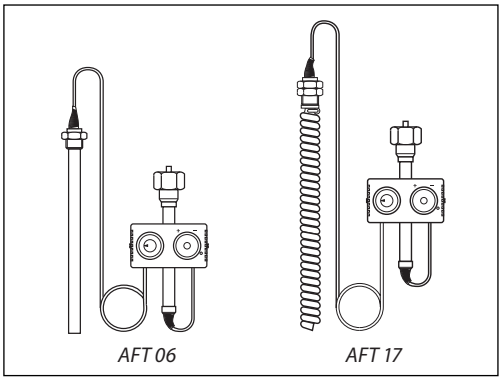
ENGINEERING
TOMORROW

Data sheet

Thermostats AFT 06, AFT 17

Description



The thermostats operate according to the liquid expansion principle.

For the AFT 06, AFT 17 designs, the setpoint adjuster is directly fitted to the actuator.

There are two sensor designs with different time constants:
- AFT06 smooth sensor ~120 sec
- AFT17 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.

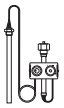
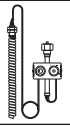
Combinations: temperature controller, safety temperature monitor type STFW, see page 4.

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: VFG2, VFG21, VFGS2, VFG33 and VFU
- DN: 15-125
- PN: 16,25 and 40
- Connection: Flange EN 1092-2

Ordering

AFT Thermostat

Picture	Type	Setpoint[1] °C	Sensor / time constant[2]	Mounting	Code No.
	AFT 06	–20 … 50	Sensor with immersion pocket bronze, Ø24×401/ 120 s with immersion pocket	Setpoint adjuster at the actuator	**065-4390**
		20 … 90			**065-4391**
		40 … 110			**065-4392**
		60 … 130			**065-4393**
		110 … 180			**065-4394**
	AFT 17	–20 … 50	Spiral sensor, ø30x500/ 20 s without immersion pocket	Setpoint adjuster at the actuator	**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 for thermostat

Picture	Type designation	For thermostat	Material	Code No.
	Immersion pocket	AFT 06	Stainless steel mat. No. 1.4571	**003G1412**
			Bronze	**003G1399**
	Combination piece KF2			**003G1398**

Technical data

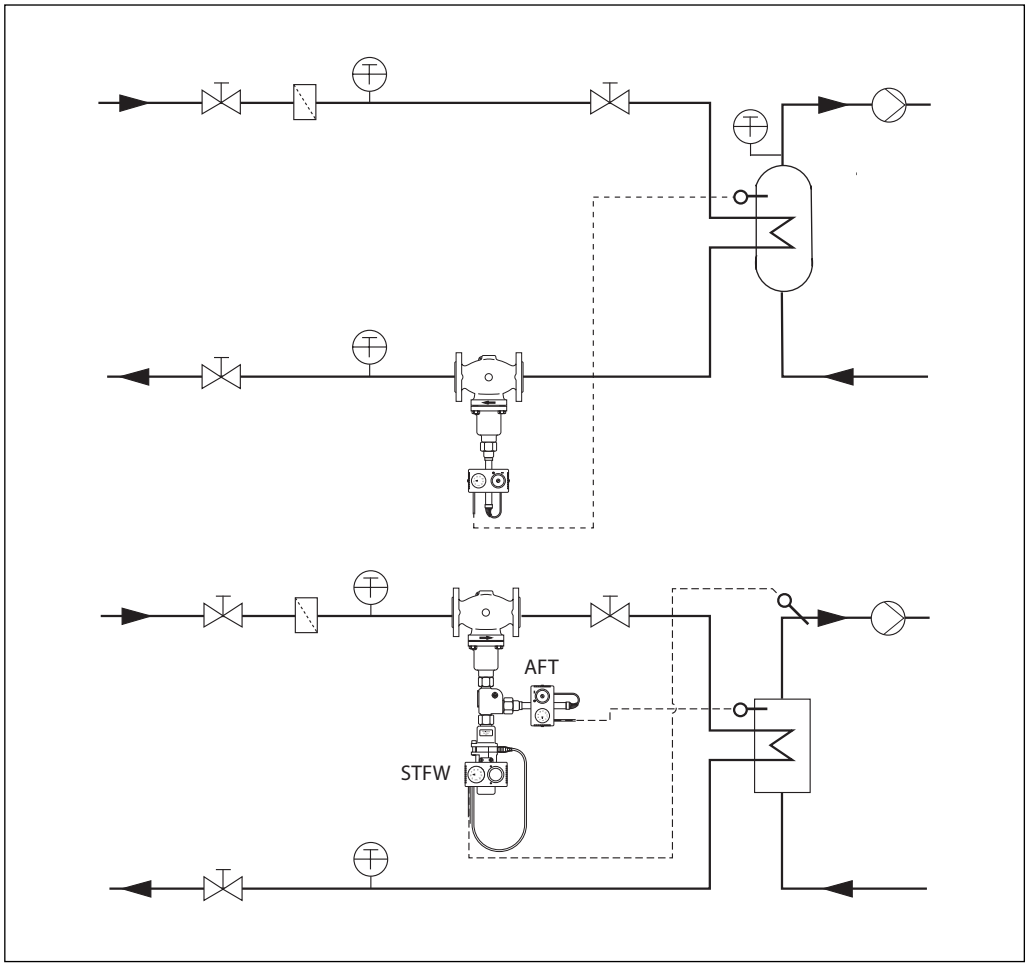
Thermostat

Type		**AFT 06**	**AFT 17**
Setting range X_s	°C	-20 … 50, 20 … 90, 40 … 110, 60… 130, 60 … 130	
Time constant T	s	120 (with immersion pocket)	20 s (without immersion pocket)
Gain K_s	mm/°C	0.8	
Max. temperature at sensor		100 °C above the adjusted setpoint	
Max. amb. temperature	°C	0 … 70	
Nominal pressure sensor	PN	40	
Nominal pressure immersion pocket			
Capillaty tube lenght		5 meter	
Materials			
Temperature sensor		Smooth sensor Ø24 × 401	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

Example:
The necessary Kv values is determined using the given flow volumne Q (m^3/h), and the available differential pressure across the control valve ΔPv (Bar).
A suitable valve size (DN) and temperature variation (Xp°) can then be chosen.

Hot water temperature control in hot water tank .

Given data:

Capacity:	600 kW
Hot water temperature:	50 °C
Primary temperature differnce ΔT°:	40 °C
Differential pressure ΔPv:	0,8 bar

Calculated flow (m^3/h):

$$\frac{600}{40} x 0{,}86 = 12{,}9 m^3/h$$

Calculated valve Kv:

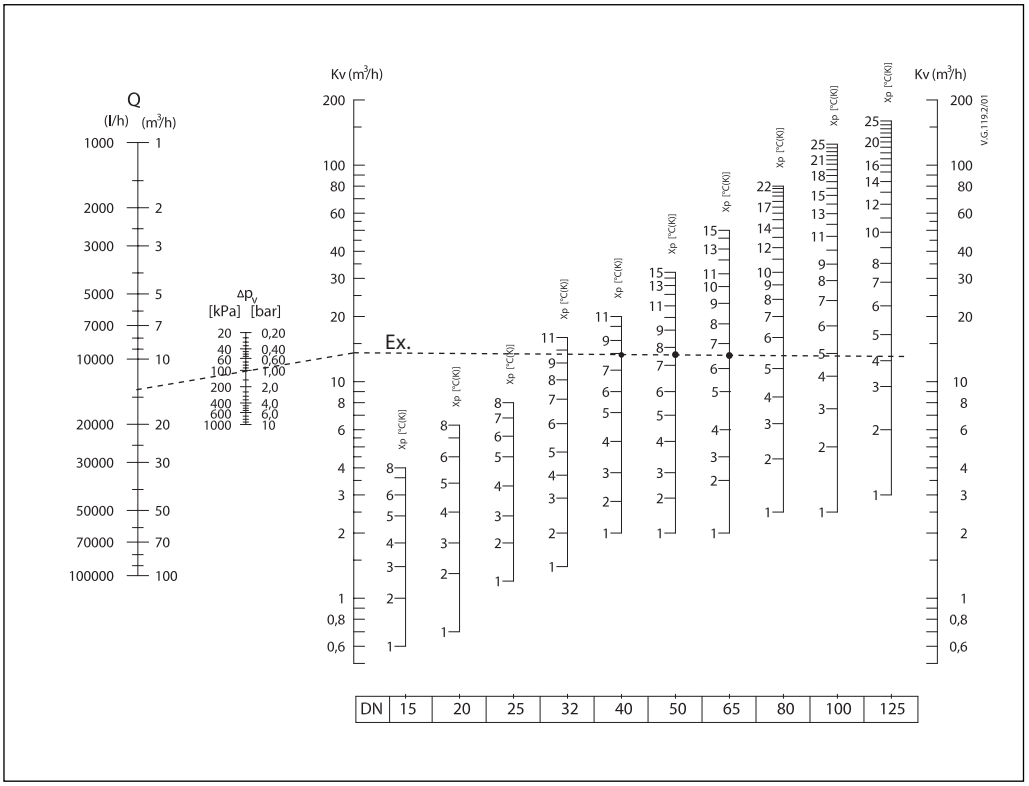
$$12{,}9/\sqrt{0{,}8} = 14{,}4 m^3/h$$

From graph:
From the calculated Kv value (14,4) take a line horizontally to intersect the Xp columns.
The valve DN and temperature variation (Xp°) can be read from the diagram.

Selection:
Valve DN selection depends on the required / specified temperatur deviation (Xp°)
typical 6°- 8°C for hot water tank and max flow speed in the pipes (< 3 m/sec.)

VFG DN40 (xP°~8°C) and DN50 (xP°~7,5°C) can be chosen
Prefareable:
Take the smallest valve DN = VFG DN40 Kvs=20

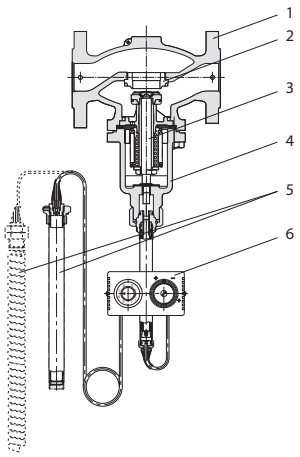
Thermostat:
Required DHW temperature 55°C
AFT06 20°-90°C / AFT17 20-90°C
Hot water temperature at 600 kW capacity = 50°C
Temperature at closed valve:
50° + xP° = 50° + 8° = 58°C



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

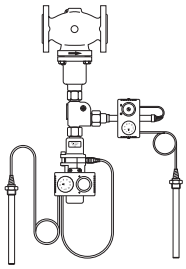
Design

1. Valve body
2. Valve seat
3. Trim
4. Bonnet
5. Sensor
6. Setpoint adjuster

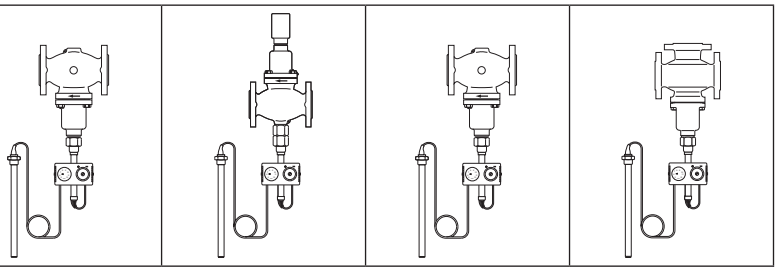


Sensor: AFT 06, AFT 17
Valve: VFG2, VFG 21, VFU 2, VFGS 2, VFG 33

Combinations

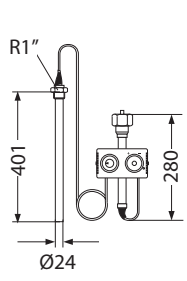


AFT.. / STFL / VFG

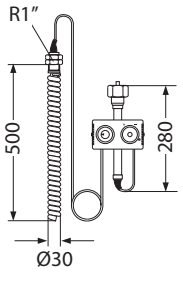


Valve type	VFG 2/21	VFU 2	VFGS 2	VFG 33
DN	15-125	15-125	15-125	25-125
Medium	Water		Steam	Water
Max. temp. (°C)	200 (VFG 2) 150 (VFG 21)	200	200 350 (with ZF4)	200 350 (with ZF4)
PN	16, 25, 40			25
Remark	NO valve	NC valve	Steam valve	3-way valve mixing valve

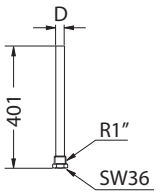
Dimensions



AFT 06



AFT 17



Immersion pocket

Material	D	Code No.
Stainless steel Mat No 1.4571	Ø $25^{+0,3}_{-0}$	**003G1412**
Bronze	Ø 24	**003G1399**