

Data sheet

Differential pressure controller AFP / VFG 2 (VFG 21)

Description



AFP VFG2 (VFG 21) is a self-acting differential pressure controller primarily for use in district heating systems. The controller closes on rising differential pressure.

The controller has a control valve (flange connection), an actuator with control diaphragm and a spring for setting differential pressure.

Main data:

- DN 15 - 250
- k_{vs} 4.0 - 400 m³/h
- PN 16, 25, 40
- Max. operating pressure: 16, 25 bar
- Temperature: 2 ... 200 °C
- Connections:
 - Flange
- Flow and return mounting

Ordering

Example:
Differential pressure controller
AFP / VFG 2, DN 65, PN 25,
 $t_{max.}$ 150 °C, differential pressure
0.15 - 1.5 bar

- 1x VFG 2 DN 65 valve
Code no: **065B2407**
- 1x AFP actuator
Code no: **003G1016**

Option:
- 2x AF impulse tubes
Code no: **003G1391**

Parts will be delivered separately.

VFG 2 Valves (metallic sealing cone)

Picture	DN (mm)	k_{vs} (m ³ /h)	$t_{max.}$ (°C)		Code No.		
					PN 16	PN 25	PN 40
	15	4.0	150	200*	065B2388	065B2401	065B2411
	20	6.3			065B2389	065B2402	065B2412
	25	8.0			065B2390	065B2403	065B2413
	32	16			065B2391	065B2404	065B2414
	40	20			065B2392	065B2405	065B2415
	50	32			065B2393	065B2406	065B2416
	65	50			065B2394	065B2407	065B2417
	80	80			065B2395	065B2408	065B2418
	100	125			065B2396	065B2409	065B2419
	125	160			065B2397	065B2410	065B2420
	150	280	140		065B2398		065B2421
	200	320			065B2399	-	065B2422
	250	400			065B2400		065B2423
	150	280	200*		065B2424		065B2427
	200	320			065B2425	-	065B2428
	250	400			065B2426		065B2429

* temperatures up to 200 °C only with seal pot (see accessories), for impulse tubes connected to flow line

Ordering (continuous)
VFG 21 Valves (soft sealing cone)

Picture	DN (mm)	k _{vs} (m ³ /h)	t _{max.} (°C)	Code No.	
				PN 16	PN 25
	15	4.0	150	065B2502	065B2515
	20	6.3		065B2503	065B2516
	25	8.0		065B2504	065B2517
	32	16		065B2505	065B2518
	40	20		065B2506	065B2519
	50	32		065B2507	065B2520
	65	50		065B2508	065B2521
	80	80		065B2509	065B2522
	100	125		065B2510	065B2523
	125	160		065B2511	065B2524
	150	280	140	065B2512	-
	200	320		065B2513	
	250	400		065B2514	

AFP / AFP-9 Actuators

Picture	Type	Diff. pressure (bar)	for DN	Code No.
	AFP-9	1 - 6	15 - 125	003G1014
		0.5 - 3		003G1015
	AFP	0.15 - 1.5	15 - 250	003G1016
		0.1 - 0.7		003G1017
		0.05 - 0.35 (630 cm ²)		003G1018

Example:
Differential pressure controller
AFP / VFG 2, DN 65, PN 25,
t_{max.} 200 °C, differential pressure
0.15 - 1.5 bar

- 1x VFG 2 DN 65 valve
Code no: **065B2407**
- 1x AFP actuator
Code no: **003G1016**
- 1x V1 seal pot
Code no: **003G1392**
- 2x AF impulse tubes
Code no: **003G1391**

Parts will be delivered separately.

Accessories

Picture	Type	Description	Ordering nr.	Code No.
	Seal pot V1 (capacity 1 l)	With threaded fittings for tube Ø 10	1 ×	003G1392
	Seal pot V2 (capacity 3 l)	With threaded fittings for tube Ø 10 (for actuator size 630 cm ²)	1 ×	003G1403
	Impulse tube AF	- Copper tube Ø 10 × 1 × 1500 mm - 1x threaded fitting G ¼ ISO 228 - 2x socket	2 ×	003G1391
	Combination piece KF2 ¹⁾			003G1398
	Combination piece KF3			003G1397

¹⁾ use always in combination with thermostats

Technical data
VFG 2, VFG 21 valves

Nominal diameter	DN	15	20	25	32	40	50	65	80	100	125	150	200	250	
k_{vs} value	m ³ /h	4.0	6.3	8.0	16	20	32	50	80	125	160	280	320	400	
Cavitation factor z^{**}		0.6	0.6	0.6	0.55	0.55	0.5	0.5	0.45	0.4	0.35	0.3	0.2	0.2	
Nominal pressure	PN	16, 25 or 40, flanges acc. to EN 1092-2													
Dif. pressure $\Delta p_{max.}$ PN 16	bar	16	16	16	16	16	16	16	16	15	15	12	10	10	
Dif. pressure $\Delta p_{max.}$ PN 25, 40		20	20	20	20	20	20	20	20	20	15	15	12	10	10
Medium	Water for heating, district heating and cooling systems, min. 5 °C														
Medium temperature	VFG 2	Metalic sealing cone: 150 °C (with seal pot up to 200 °C)										140 °C (200 °C*)			
	VFG 21	Soft sealing cone: 150 °C										140 °C*			
Flow medium	Water for heating, district heating and cooling systems, min. 5 °C														
Connections	Flange (acc. to EN 1092-2)														
Materials															
Valve body	PN 16	Grey cast iron EN-GJL-250 (GG 25)													
	PN 25	Ductile iron EN-GJS-400-18-LT (GGG 40.3)													
	PN 40	Cast steel GP240GH (GS-C 25)													
Valve cone	Stainless steel, mat. No. 1.4404														
Sealing	EPDM (only version VFG 21)														
Pressure balance	Stainless steel bellows, mat. No.1.4571											Rolling diaphragm			

* with seal pot and body extension

** noise coefficient as per VDMA 24 422

AFP actuators

Type		AFP-9	AFP
Actuator size	cm ²	80	250 ¹⁾ / 630 ¹⁾
Max. operating pressure	bar	25	25 / 16*
Setpoint ranges with spring colour	red	1 - 6	0.15 - 1.5 / -
	yellow	0.5 - 3	0.1 - 0.7 / 0.05 - 0.35
Materials			
Actuator housing	Steel, mat. No. 1.0338, zinc plated and yellow chromate		
Diaphragm	EPDM with inforced with fibre		
Impulse tube	Copper tube Ø10 × 1 mm		
Seal pot	Steel, lacquered, capacity 1l (V1), 3l (V2) mounted in impulse tubes above 150 °C, (140 °C - DN 200 + 250)		

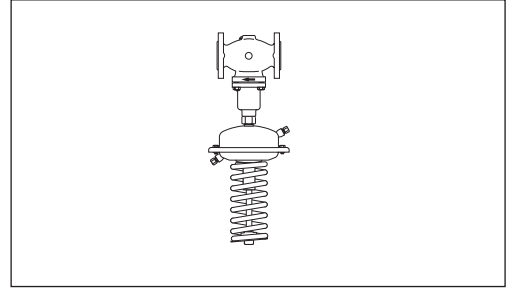
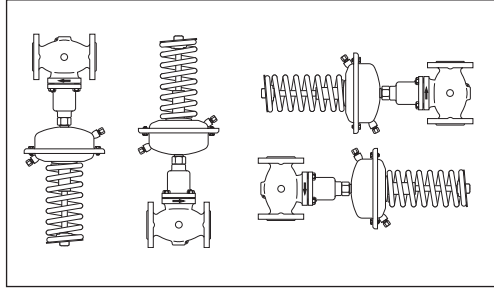
¹⁾ excess pressure safety valve

* 25 bar on request

Installation position

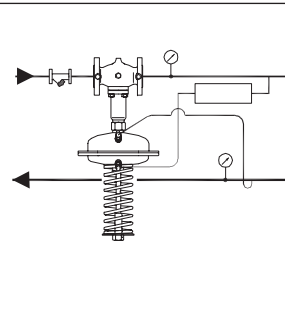
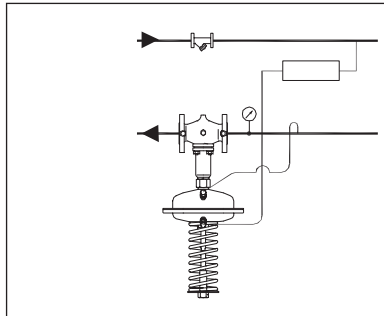
Controls DN 15 - 80 with flow medium temperature up to 120 °C can be installed in any position.

In case of controls DN 100 - 250 and if temperature exceeds 120 °C (all nominal diameter), they have to be installed in horizontal pipes only, with a pressure actuator oriented downwards.



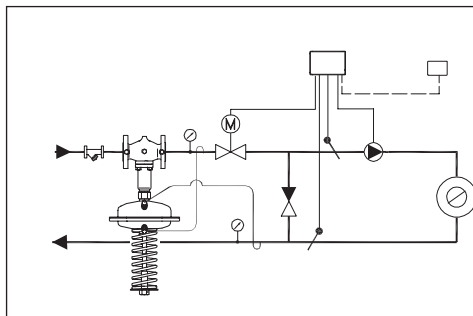
Impulse tubes must be fitted between the flow- or return line and control actuator. When used in media temperature between 150 to 200 °C seal pots must be used on the impulse tubes connected to the flow line.

AF impulse tubes listed under Accessories can be used.

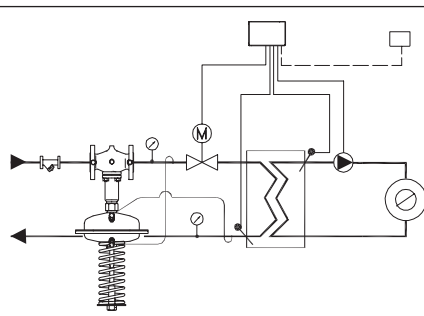


Application principles

- Flow mounting

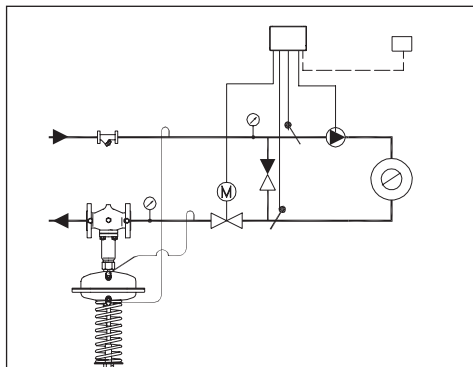


Direct-connected heating system

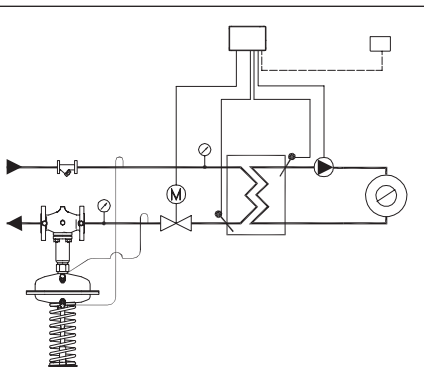


Indirectly connected heating system

- Return mounting



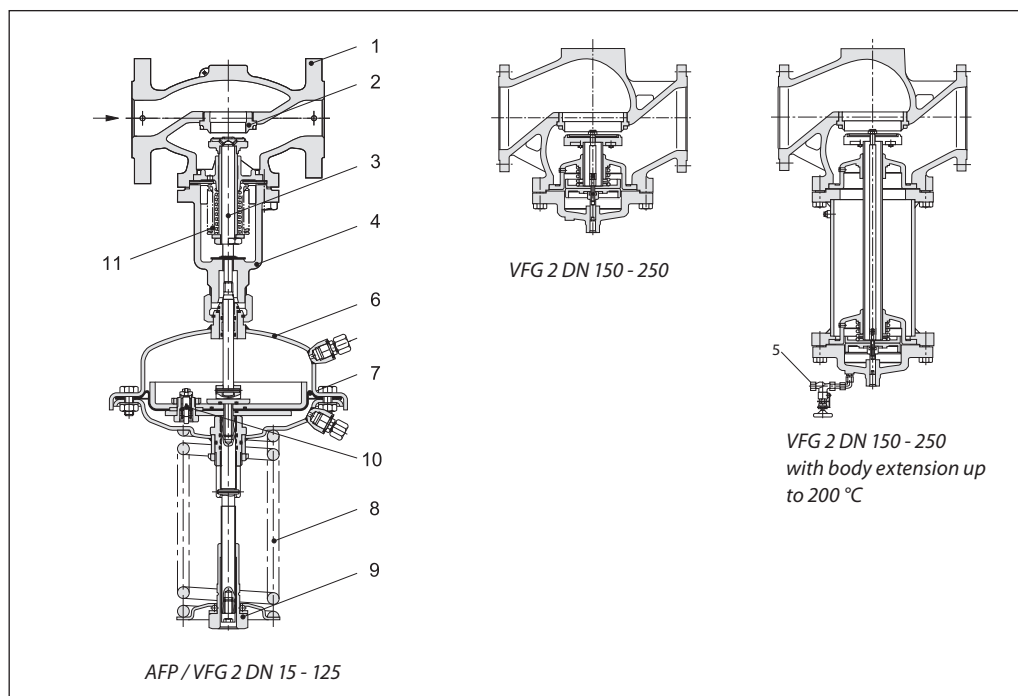
Direct-connected heating system



Indirectly connected heating system

Design

- 1. Valve body
- 2. Valve seat
- 3. Trim
- 4. Bonnet
- 5. Filling valve
- 6. Actuator housing
- 7. Diaphragm
- 8. Setpoint spring
- 9. Setpoint adjustment
- 10. Excess pressure safety valve (for 250 and 630 cm²)
- 11. Bellow



Function

Pressure arising from the flow and return line are being transferred through the impulse tubes on the actuator. Control valve closes on rising differential pressure and opens when differential pressure is reduced to maintain constant differential pressure.

AFP controls are fitted with pressure limiting valve, which protects actuator and control valve from too high differential pressure.

Setting

Differential control is set by adjusting the setting spring.

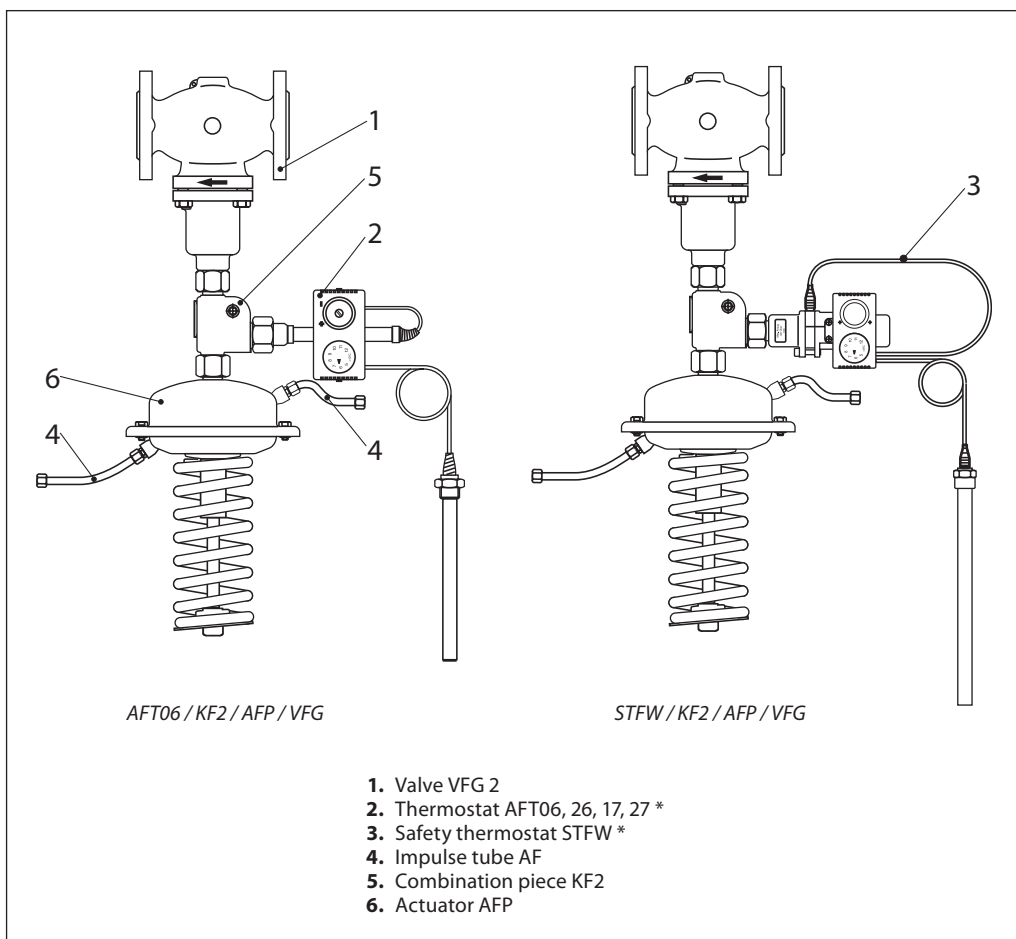
Combinations

Example

Differential pressure controller
AFP / AFT06 / VFG 2, DN 65, PN 25,
 t_{max} 150 °C, 0.15 - 1.5 bar,
range 20 ... 90 °C

- 1x VFG 2 DN 65 valve
Code no: **065B2407**
- 1x AFP actuator
Code no: **003G1016**
- 1x AFT06 thermostat
Code no: **065-4391**
- 1x KF2 combination piece
Code no: **003G1398**
- 2x AF impulse tubes
Code no: **003G1391**

Parts will be delivered separately.



* see Data sheet AFT06, STFW

Dimensions

VFG DN 15 - 125 VFG DN 150 - 250 VFG DN 150 - 250 with body extension up to 200 °C

VFG 2 valve

DN	15	20	25	32	40	50	65	80	100	125	150	200	250		
L	130	150	160	180	200	230	290	310	350	400	480	600	730		
B	212	212	238	238	240	240	275	275	380	380	326	354	404		
Weight (valve)	PN16	6.2	6.8	8.9	11.5	14.5	17.2	28.6	31.9	60.4	67.0	117.5	193	337	
	PN25	6.2	7.0	9.4	11.5	14.2	17.3	29.3	31.8	59.5	65.5	-	-	-	
	PN40	6.6	7.6	10.3	12.4	16.1	18.2	32.1	34.5	69.6	79.5	146	263	346.6	
B1	mm										-	630	855	1205	
Weight (valve with body ext.)	PN16	kg										-	152.5	273	515.5
	PN40	kg										-	150.5	328.5	475.5

VFG 21 valve

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	
Weight (valve)	PN16	5.8	6.7	9.4	11.3	14.5	17.4	30.0	32.2	61.6	64.5	116.5	201.5	315.5
	PN25	6.5	7.6	9.3	11.7	13.7	17.6	29.3	32.6	62.6	72.5	-	-	-

AFP actuator

Actuator size	cm ²	80	250	630
L	mm	172	263	380
H	mm	430	470	520
Weight	kg	7.5	13	28

Seal pot V1: Ø 89, 240

Seal pot V2: Ø 140, 298

Comb. piece KF2, KF3: 120, 70

