Data sheet

Pressure relief controller
AFA / VFG 2 (VFG 21)

Description

AFA VFG2 (VFG 21) is a self-acting pressure relief controller primarily for use in district heating systems. The controller opens on rising pressure.

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

Main data:
- DN 15 - 250
- PN 16, 25, 40
- Max. temperature 200 °C
- By-pass mounting

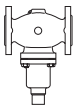
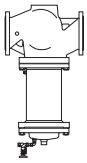
Ordering

Example:
Pressure relief controller
AFA / VFG 2, DN 65, PN 25,
t_{max} 150 °C, differential pressure 3 - 11 bar

- *1× VFG 2 DN 65 valve*
  Code no: ***065B2407***
- *1× AFA actuator*
  Code no: ***003G1008***
- *1× AF impulse tubes*
  Code no: ***003G1391***

Parts will be delivered separatly.

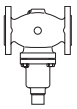
*Valves **VFG 2** (metallic sealing cone)*

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*	on request		
	200	320					
	250	400					

** temperatures up to 200 °C only with seal pot (see accessories), mounted in the impulse tube before and behind the controller*

Ordering *(continuous)*

*Valves **VFG 21** (soft sealing cone)*

Picture	DN (mm)	k_{VS} (m^3/h)	$t_{max.}$ (°C)	Code No. PN 16	Code No. 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**	-

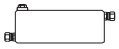
***AFA** actuators*

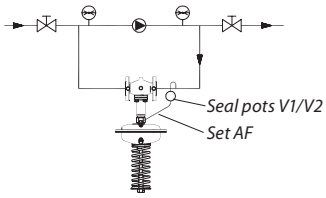
Picture	Diff. pressure (bar)	For DN	Code No.
	10 - 16	15 - 125	**003G1007**
	3 - 11		**003G1008**
	1 - 5		**003G1009**
	0.5 - 2.5		**003G1010**
	0.15 - 1.2	15 - 250	**003G1011**
	0.1 - 0.6		**003G1012**
	0.05 - 0.35 (630 cm^2)		**003G1013**

Example:
Pressure relief controller
AFA / VFG 2, DN 65, PN 25,
$t_{max.}$ 200 °C,
diff. pressure 3 - 11 bar

- *1× VFG 2 DN 65 valve*
  *Code no: **065B2407***
- *1× AFA actuator*
  *Code no: **003G1008***
- *1× V1 seal pot*
  *Code no: **003G1392***
- *1× AF impulse tube*
  *Code no: **003G1391***

Parts will be delivered separatly.

Picture	Type	Description	Ordering no.	Code No.
	Seal pot V1(capacity 1l)	With threaded fittings for tube Ø 10	1 ×	**003G1392**
	Seal pot V2 (capacity 3l)	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	1 ×	**003G1391**
		- 1 × threaded fitting G ¼ ISO 228		
		- 2 × socket		



Technical data

Valves **VFG 2, VFG 21**

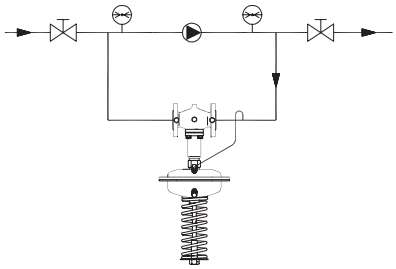
Nominal diameter		**(DN)**	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**
k_{VS} value		(m^3/h)	4	6.3	8	16	20	32	50	80	125	160	280	320	400
z value			0.6	0.6	0.6	0.55	0.55	0.5	0.5	0.45	0.4	0.35	0.3	0.2	0.2
Dif. pressure Δp_{max}	PN 16	(bar)	16	16	16	16	16	16	16	16	15	15	12	10	10
Dif. pressure Δp_{max}	PN 25, 40	(bar)	20	20	20	20	20	20	20	20	15	15	12	10	10
Nominal pressure			PN 16, 25 or 40, flanges to DIN 2501												
Max. 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												
Pressure balance			Stainless steel bellows, mat. No.1.4571										Rolling diaphragm		
Valve body material	PN 16		Grey cast iron EN-GJL-250 (GG-25)												
	PN 25		Ductile iron EN-GJS-400 (GGG-40.3)												
	PN 25 / PN 40		Cast steel GP240GH (GS-C 25)												
Cone material			Stainless steel, mat. No. 1.4404												
Seal material			EPDM only version VFG 21												

* *with seal pot and body extension*
z value: noise coefficient as per VDMA 24 422

Pressure actuators **AFA**

Actuator size		**(cm^2)**	**32 (DN 15 - 125)**	**80**	**250**	**630**
Setpoint ranges with spring colour	silver	(bar)	3 - 11	1 - 5	0.15 - 1.2	-
	yellow	(bar)	-	0.5 - 2.5	0.1 - 0.6	0.05 - 0.35
	black	(bar)	10 - 16	-	-	-
Max. operating pressure		(bar)	25			16
Actuator casing			Steel, mat. No.1.0338, zinc plated and yellow chromate			
Rolling diaphragm			EPDM with inforced with fibre			
Connection for impulse tubes			Stainless steel tube Ø10 × 0.8 mm, threaded fitting G ¼, ISO 228			
Seal pot			Steel, lacquered, capacity 1l (V1), 3l (V2), mounted in impulse tubes above 150 °C, (140 °C - DN 200 + 250)			

Application principle

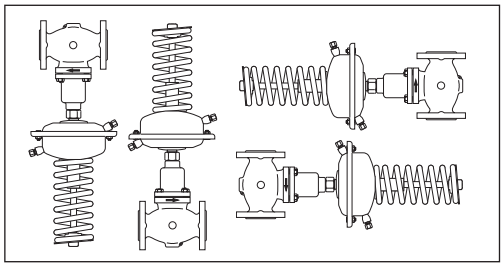


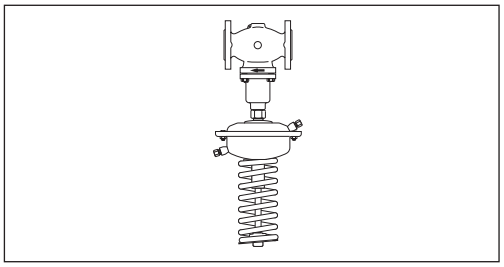
Controlling of pressure for a pump in by-pass.

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.



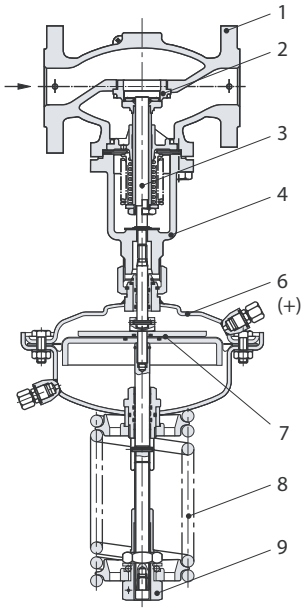


Setting

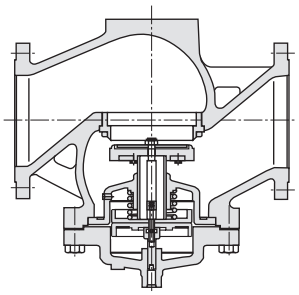
Differential control is set by adjusting the setting spring.

Design and function

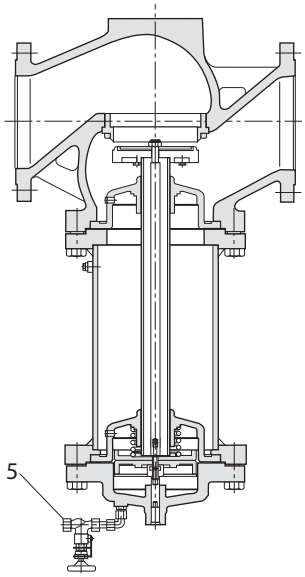
1. Valve body
2. Valve seat
3. Trim
4. Bonnet
5. Filling valve
6. Actuator casing
7. Rolling diaphragm
8. Setpoint spring
9. Setpoint adjustment



AFA / VFG 2 DN 15 - 125



VFG 2 DN 150 - 250

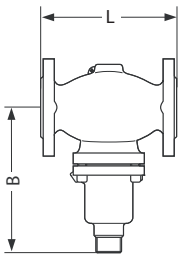


VFG 2 DN 150 - 250
with body extension up to 200 °C

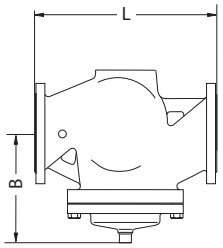
When the system is idle, the valve is fully closed. The pressure of the system after the pump is transferred to the upper (+) side of the actuator diaphragm through the impulse tube on the other side of the diaphragm atmospheric pressure is acting.

When the controlled pressure increase over the set valve the valve opens untill a balance, between forces of the diaphragm and the spring is reached the pressure can be adjusted via the setpoint adjustment.

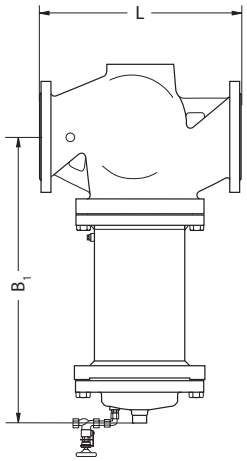
Dimensions



VFG DN 15 - 125



VFG DN 150 - 250



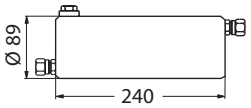
VFG DN 150 - 250
with body extension up to 200 °C

VFG 2 valve

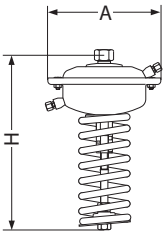
DN			15	20	25	32	40	50	65	80	100	125	150	200	250
L		mm	130	150	160	180	200	230	290	310	350	400	480	600	730
B			212	212	238	238	240	240	275	275	380	380	326	354	404
Weight (valve)	PN16	kg	6.2	6.8	8.9	11.5	14.5	17.2	28.6	31.9	60.4	67.0	117.5	193	337
	PN25		6.2	7.0	9.4	11.5	14.2	17.3	29.3	31.8	59.5	65.5	-	-	-
	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												150.5	328.5	475.5

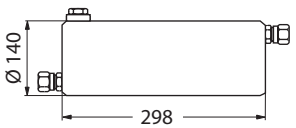
VFG 21 valve

DN			15	20	25	32	40	50	65	80	100	125	150	200	250
Weight (valve)	PN16	kg	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	-	-	-



Seal pot V1

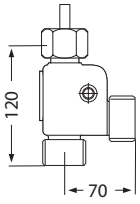




Seal pot V2

Actuator AFA

Actuator size	(cm^2)	32	80	250	630
Ø A	(mm)	172	172	263	380
H	(mm)	435	430	470	520
Weight	(kg)	7.5	7.5	13	28



Comb. piece KF2, KF3