Data sheet

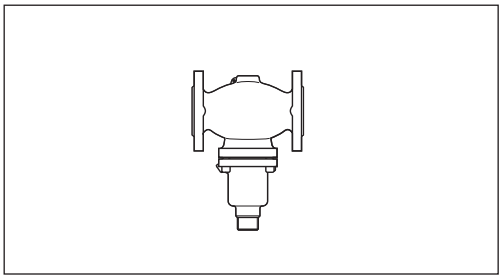
Two- and three way valves VFG.. / VFGS2 / VFU.. for thermostats and electrical actuators

Description

Valves for heating, district heating and cooling systems.

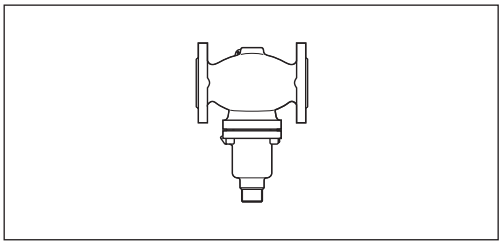
The valves can be used with following actuators:
- Thermostats AFT..
- Actuators AMV(E) 4..
- Actuators AMV(E) 6..

VFG 2
VFG 21
(see pages 2, 3)



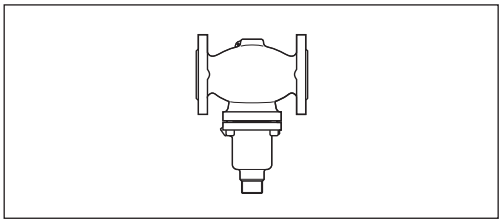
Main data:
- DN 15 - 250
- $t_{max.}$ 200 °C
- 2-way valve (Normaly Open)
- Medium:
  circulation water and glycolic water up to 30%
- Cone:
  VFG 2 metal / metal sealing
  VFG 21 soft sealing
- Pressure relieved

VFG 25
(see page 4)



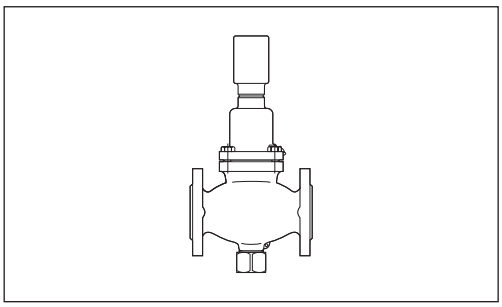
Main data:
- DN 15 - 80
- $t_{max.}$ 200 °C
- 2-way valve (Normaly Open)
- Medium:
  circulation water and glycolic water up to 30%
- Cone: metal / metal sealing
- Not pressure relieved

VFGS 2
(see pages 5, 6)



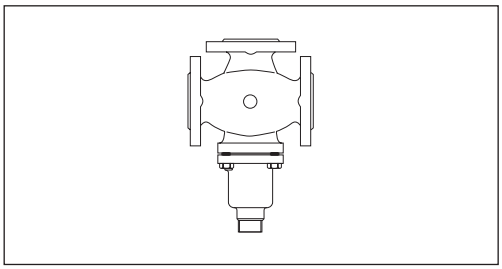
Main data:
- DN 15 - 250
- $t_{max.}$ 350 °C
- 2-way valve (Normaly Open)
- Medium: steam
- Cone: metal / metal sealing
- Pressure relieved

VFU 2
(see page 7)



Main data:
- DN 15 - 125
- $t_{max.}$ 200 °C
- 2-way valve (Normaly Close)
- Medium:
  circulation water and glycolic water up to 30%
- Cone: metal / metal sealing
- Pressure relieved

VFG 33
VFG 34
(see pages 8, 9)



Only for use with thermostat AFT.

Main data:
- DN 25 - 125
- $t_{max.}$ 350 °C
- Medium:
  circulation water and glycolic water up to 30%
- VFG 33 mixing pressure balanced valve
- VFG 34 diverting pressure balanced valve
- Cone: metal / metal sealing

Ordering (VFG 2)

Cone:
metal /metal sealing, pressure relieved.

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

Technical data (VFG 2)

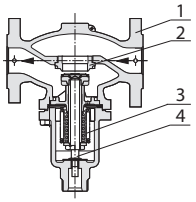
Nominal diameter		DN	15	20	25	32	40	50	65	80	100	125	150	200	250
k_{VS} value		(m^3/h)	4	6.3	8	16	20	32	50	80	125	160	280 320 [1]	320 450 [1]	400 630 [1]
z value acc. to VDMA 24 422			0.6	0.6	0.6	0.55	0.55	0.5	0.5	0.45	0.4	0.35	0.3	0.2	0.2
	$\Delta p_{max.}$ [2] (bar)	PN 16	16	16	16	16	16	16	16	16	15				
	AFT	PN 25, 40	20	20	20	20	20	20	20	20	15				
	$\Delta p_{max.}$ [3] (bar)	PN 16	16	16	16	16	16	16	16	16					
	AMV(E) 4..	PN 25, 40	20	20	20	20	20	20	20	20					
	$\Delta p_{max.}$ [3] (bar)	PN 16	16	16	16	16	16	16	16	16	15	15	12	10	10
	AMV(E) 6..	PN 25, 40	20	20	20	20	20	20	20	20	15	15	12	10	10
Nominal pressure [2]			PN 16, 25 or 40, flanges to EN 1092-2												
Flow medium / Temperature			Circulation water / Glycolic water up to 30% / thermo oil / 2 … 200 °C												
Pressure balance			Stainless steel bellow, 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-400-18-LT (GGG-40.3)												
		PN 40	Cast steel GP240GH (GS-C 25)												
Cone material			Stainless steel, mat. No. 1.4404										mat. No. 1.4021		
Seat material			Stainless steel, mat. No. 1.4021										mat. No. 1.4313		

[1] *In combination with actuators AMV 613-Y60 (**082G0617**), k_{VS} values are higher.*
[2] *Above operating pressure of 14 bar use of valve stem extension ZF4, ZF6 or combination piece KF2 is necessary.*
[3] ***In order the actuator can close at max differential pressure flow velocity musn't exceed 2 m/s.***

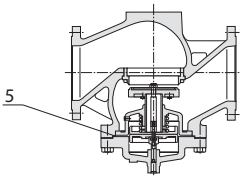
Design (VFG 2)

1 Valve body
2 Valve seat
3 Bellow
4 Valve insert
5 Diaphragm

VFG 2 DN 15 - 125

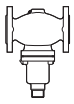


VFG 2 DN 150 - 250

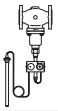


Ordering (VFG 21)

Cone:
soft sealing, pressure relieved.

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

Technical data (VFG 21)

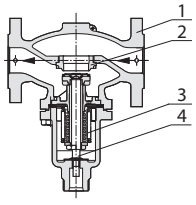
Nominal diameter DN		DN	15	20	25	32	40	50	65	80	100	125	150	200	250
k_{VS} value		(m^3/h)	4	6.3	8	16	20	32	50	80	125	160	280 320[1]	320 450[1]	400 630[1]
z value acc. to VDMA 24 422			0.6	0.6	0.6	0.55	0.55	0.5	0.5	0.45	0.4	0.35	0.3	0.2	0.2
	$\Delta p_{max.}$ [2] (bar)	PN 16	16	16	16	16	16	16	16	16	15	15			
	AFT	PN 25	20	20	20	20	20	20	20	20	15	15			
	$\Delta p_{max.}$ [3] (bar)	PN 16	16	16	16	16	16	16	16	16					
	AMV(E) 4..	PN 25	20	20	20	20	20	20	20	20					
	$\Delta p_{max.}$ [3] (bar)	PN 16	16	16	16	16	16	16	16	16	15	15	12	10	10
	AMV(E) 6..	PN 25	20	20	20	20	20	20	20	20	15	15	12	10	10
Nominal pressure [2]			PN 16 or 25, flanges to EN 1092-2												
Flow medium / Temperature			Circulation water / Glycolic water up to 30% / 2 … 150 °C (DN 15 - 125), 2 … 140 °C (DN 150 - 250)												
Pressure balance			Stainless steel bellow, 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-400-18-LT (GGG-40.3)												
Cone material			Stainless steel, mat. No. 1.4404										mat. No. 1.4021		
Seat material			Stainless steel, mat. No. 1.4021										mat. No. 1.4313		
Conical seal			EPDM												

[1] *in combination with actuators AMV 613-Y60 (**082G0617**), k_{VS} values are higher.*
[2] *above operating pressure of 14 bar use of valve stem extension ZF4, ZF6 or combination piece KF2 is necessary.*
[3] ***In order the actuator can close at max differential pressure flow velocity musn't exceed 2 m/s.***

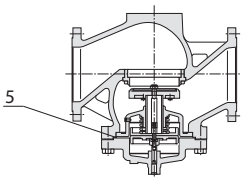
Design (VFG 21)

1 Valve body
2 Valve seat
3 Bellow
4 Valve insert
5 Diaphragm

VFG 21 DN 15 - 125

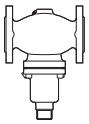


VFG 21 DN 150 - 250

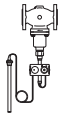


Ordering (VFG 25)

Cone:
metal / metal sealing
Not pressure balanced

Picture	DN (mm)	k_{vs} (m^3 /h)	$t_{max.}$ (°C)	Code No. PN 16
	15	4.0	200	**065B2568**
	20	6.3		**065B2569**
	25	8.0		**065B2570**
	32	16		**065B2571**
	40	20		**065B2572**
	50	32		**065B2573**
	65	50		**065B2574**
	80	80		**065B2575**

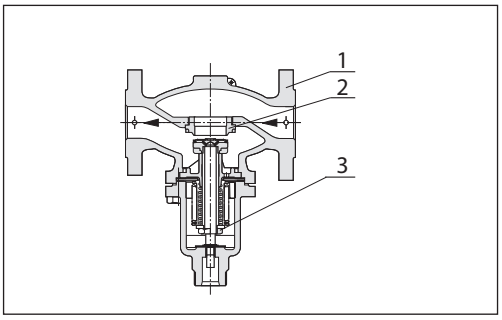
Technical data (VFG 25)

Nominal diameter DN		15	20	25	32	40	50	65	80
k_{VS} value (m^3/h)		4	6.3	8	16	20	32	50	80
z value acc. to VDMA 24 422		0.6	0.6	0.6	0.55	0.55	0.5	0.5	0.45
	$\Delta p_{max.}$ [1] (bar) AFT	10	10	5	5	2.5	2.5	0.8	0.8
	$\Delta p_{max.}$ (bar) AMV(E) 4..	12	12	7	7	3.5	3.5	1.2	1.2
	$\Delta p_{max.}$ (bar) AMV(E) 6..	16	16	12	12	7	7	2.5	2.5
Nominal pressure [1]		PN 16, flanges acc. to EN 1092-2							
Flow medium / Temperature		Circulation water / Glycolic water up to 30% / thermo oil / 2 … 200 °C							
Valve body material (PN 16)		Grey cast iron EN-GJL-250 (GG-25)							
Cone material		Stainless steel, mat. No. 1.4404							
Seat material		Stainless steel, mat. No. 1.4021							

[1] *Above operating pressure of 14 bar use of valve stem extension ZF4, ZF6 or combination piece KF2 is necessary.*

Design (VFG 25)

1 Valve body
2 Valve seat
3 Valve insert



Ordering (VFGS 2 - for steam)

Cone: metal / metal sealing, pressure relieved.

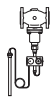
Picture	DN (mm)	k_{VS} (m^3/h)	k_{VS} [1] (m^3/h)	$t_{max.}$ [2] (° C)	Code No.			Code No. [1]		
					PN 16	PN 25	PN 40	PN 16	PN 25	PN 40
	15	4.0	2.5	350	**065B2430**	**065B2443**	**065B2453**	**065B2466**	**065B2479**	**065B2489**
	20	6.3	4.0		**065B2431**	**065B2444**	**065B2454**	**065B2467**	**065B2480**	**065B2490**
	25	8.0	6.3		**065B2432**	**065B2445**	**065B2455**	**065B2468**	**065B2481**	**065B2491**
	32	16	10		**065B2433**	**065B2446**	**065B2456**	**065B2469**	**065B2482**	**065B2492**
	40	20	16		**065B2434**	**065B2447**	**065B2457**	**065B2470**	**065B2483**	**065B2493**
	50	32	25		**065B2435**	**065B2448**	**065B2458**	**065B2471**	**065B2484**	**065B2494**
	65	50	40		**065B2436**	**065B2449**	**065B2459**	**065B2472**	**065B2485**	**065B2495**
	80	80	63		**065B2437**	**065B2450**	**065B2460**	**065B2473**	**065B2486**	**065B2496**
	100	125	100		**065B2438**	**065B2451**	**065B2461**	**065B2474**	**065B2487**	**065B2497**
	125	160	125		**065B2439**	**065B2452**	**065B2462**	**065B2475**	**065B2488**	**065B2498**
	150	280	200	300	**065B2440**	–	**065B2463**	**065B2476**	–	**065B2499**
	200	320	225		**065B2441**	–	**065B2464**	**065B2477**	–	**065B2500**
	250	400	280		**065B2442**	–	**065B2465**	**065B2478**	–	**065B2501**

[1] *Valves with flow divider for noise reduction (see accessories)*
[2] *Max. medium temperatures for valves VFGS 2 see table below.*

[2] Max. medium temperatures for valves VFGS 2

VFGS 2	PN	DN 15 - 125	DN 150 - 250
Steam, max. 200 °C	16, 25, 40	with seal pot	–
Steam, max. 300 °C	16, 40	–	with seal pot
Steam, max. 300 °C	16	with seal pot and valve stem extension ZF4, ZF5	–
Steam, max. 350 °C	25, 40	with seal pot and valve stem extension ZF4, ZF5	–

Technical data (VFGS 2)

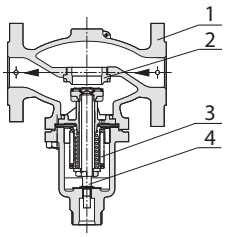
Nominal diameter		DN	15	20	25	32	40	50	65	80	100	125	150	200	250
k_{VS} value		(m^3/h)	4	6.3	8	16	20	32	50	80	125	160	280 320[2]	320 450[2]	400 630[2]
k_{VS} value[1]		(m^3/h)	2.5	4.0	6.3	10	16	25	40	63	100	125	200	225	280
z value acc. to VDMA 24 422			0.6	0.6	0.6	0.55	0.55	0.5	0.5	0.45	0.4	0.35	0.3	0.2	0.2
	$\Delta p_{max.}$ [3] (bar)	PN 16	16	16	16	16	16	16	16	16	15	15			
	AFT	PN 25, 40	20	20	20	20	20	20	20	20	15	15			
	$\Delta p_{max.}$ [4] (bar)	PN 16	16	16	16	16	16	16	16	16					
	AMV(E) 4..	PN 25, 40	20	20	20	20	20	20	20	20					
	$\Delta p_{max.}$ [4] (bar)	PN 16	16	16	16	16	16	16	16	16	15	15	12	10	10
	AMV(E) 6..	PN 25, 40	20	20	20	20	20	20	20	20	15	15	12	10	10
Nominal pressure [3]			PN 16, 25 or 40, flanges to EN 1092-2												
Flow medium / Temperature			Steam / max. 350 °C										Steam / max. 300 °C		
Pressure balance			Stainless steel bellow, 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-400-18-LT (GGG-40.3)												
		PN 40	Cast steel GP240GH (GS-C 25)												
Cone material			Stainless steel, mat. No. 1.4021										mat. No. 1.4313		
Seat material			Stainless steel, mat. No. 1.4021												

[1] *Valves with flow divider for noise reduction (see accessories)*
[2] *In combination with actuators AMV 613-Y60 (082G0617), k_{vs} values are higher.*
[3] *Above operating pressure of 14 bar use of valve stem extension ZF4, ZF6 or combination piece KF2 is necessary.*
[4] ***In order the actuator can close at max differential pressure flow velocity musn't exceed 2 m/s.***

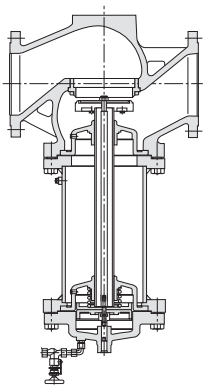
Design (VFGS 2)

1 Valve body
2 Valve seat
3 Bellow
4 Valve insert

VFGS 2 DN 15 - 125



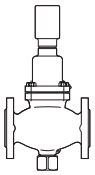
VFGS 2 DN 150 - 250



Ordering (VFU 2)

Opening valve, pressure relieved.

VFU 2 (metallic sealing cone)

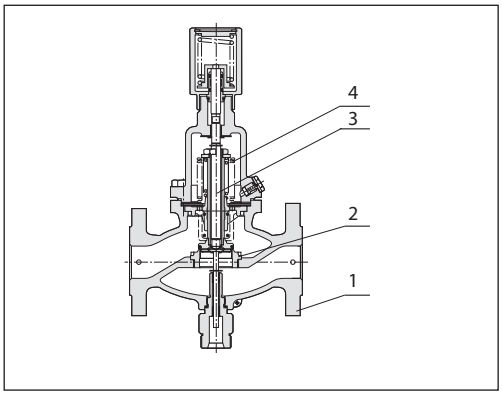
Picture	DN (mm)	k_{vs} (m^3/h)	$t_{max.}$ (°C)	Code No. PN 16
	15	4.0	200	**065B2738**
	20	6.3		**065B2739**
	25	8.0		**065B2740**
	32	16		**065B2741**
	40	20		**065B2742**
	50	32		**065B2743**
	65	50		**065B2744**
	80	80		**065B2745**
	100	125		**065B2746**
	125	160		**065B2747**

Technical data (VFU 2)

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
z value acc. to VDMA 24 422		0.6	0.6	0.6	0.55	0.55	0.5	0.5	0.45	0.4	0.35
 $\Delta p_{max.}$ (bar) AFT..	PN 16	10								8	
 $\Delta p_{max.}$ (bar) AMV(E) 4..	PN 16	12							–		
 $\Delta p_{max.}$ (bar) AMV(E) 6..	PN 16	12							10	8	
Nominal pressure		PN 16, flanges to EN 1092-2									
Flow medium / Temperature		Circulation water / Glycolic water up to 30% / 2 … 200 °C									
Pressure balance		Stainless steel bellow, mat. No.1.4571									
Valve body material		Grey cast iron EN-GJL-250 (GG-25)									
Cone material / Conical seal		Stainless steel, mat. No. 1.4404									
Seat material		Stainless steel, mat. No. 1.4021									

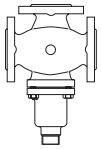
Design (VFU 2)

1 Valve body
2 Valve seat
3 Valve insert
4 Bellow

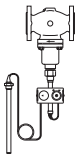


Ordering (VFG 33)

VFG 33 (mixing valve - pressure balanced)

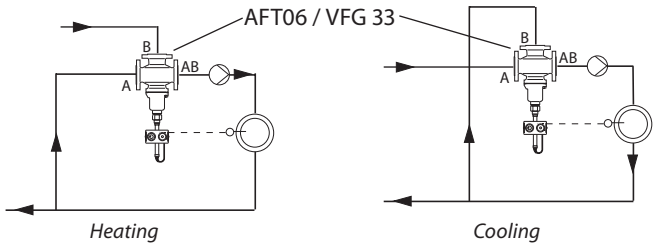
Picture	DN (mm)	k_{vs} (m^3 /h)	$t_{max.}$ (°C)	Code No.	
				PN 16	PN 25
	25	8.0	200	**065B2598**	**065B2606**
	32	12.5		**065B2599**	**065B2607**
	40	20		**065B2600**	**065B2608**
	50	32		**065B2601**	**065B2609**
	65	50		**065B2602**	**065B2610**
	80	80		**065B2603**	**065B2611**
	100	125		**065B2604**	**065B2612**
	125	160		**065B2605**	**065B2613**

Technical data (VFG 33)

Nominal diameter		DN	25	32	40	50	65	80	100	125
k_{VS} value		(m^3/h)	8	12.5	20	32	50	80	125	160
	$\Delta p_{max.}$ [1] (bar)	PN 16	16	16	16	14	12	10	10	10
	VFG 33 / AFT	PN 25	18	18	16	14	12	10	10	10
Nominal pressure[1]			PN 16 or 25, flanges to EN 1092-2							
Flow medium / Temperature			Circ.water / Glycolic water up to 30% / 2 … 200 °C (350 °C with ZF4)							
Pressure balance			Stainless steel bellow, mat. No.1.4571							
Valve body material		PN 16 ,25	Ductile iron EN-GJS-400-18-LT (GGG-40.3)							
Cone material			Stainless steel, mat. No. 1.4404							
Seat material			Stainless steel, mat. No. 1.4021							

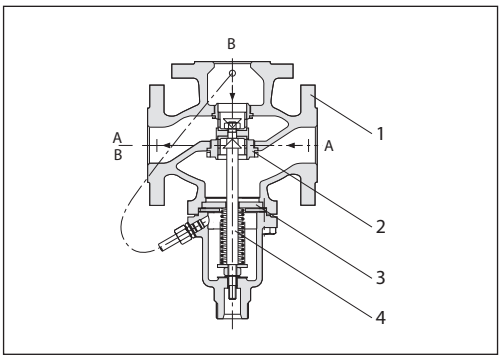
[1] *Above operating pressure of 14 bar use of valve stem extension ZF4, ZF6 or combination piece KF2 is necessary.*

Applications (VFG 33)



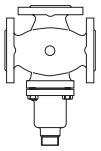
Design (VFG 33)

1 Valve body
2 Valve seat
3 Bellow
4 Valve insert

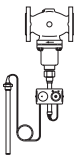


Ordering (VFG 34)

VFG 34 (diverting valve - pressure balanced)

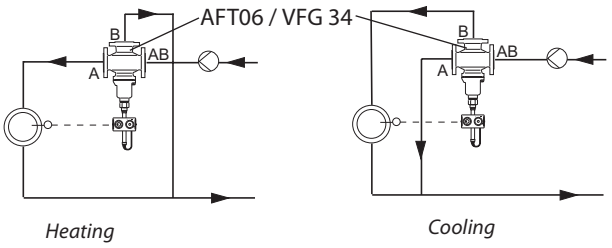
Picture	DN (mm)	k_{vs} (m^3/h)	$t_{max.}$ [1] (°C)	Code No.	
				PN 16	PN 25
	25	8.0	200	**065B2614**	**065B2622**
	32	12.5		**065B2615**	**065B2623**
	40	20		**065B2616**	**065B2624**
	50	32		**065B2617**	**065B2625**
	65	50		**065B2618**	**065B2626**
	80	80		**065B2619**	**065B2627**
	100	125		**065B2620**	**065B2628**
	125	160		**065B2621**	**065B2629**

Technical data (VFG 34)

Nominal diameter		DN	25	32	40	50	65	80	100	125
k_{vs} value		(m^3/h)	8	12.5	20	32	50	80	125	160
	$\Delta p_{max.}$ [1] (bar) VFG 34 / AFT	PN 16	16	16	16	14	12	10	10	10
		PN 25	18	18	16	14	12	10	10	10
Nominal pressure[2]			PN 16 or 25, flanges to EN 1092-2							
Flow medium / Temperature			Circ.water / Glycolic water up to 30% / 2 … 200 °C (350 °C with ZF4)							
Pressure balance			Stainless steel bellow, mat. No.1.4571							
Valve body material		PN 16 ,25	Ductile iron EN-GJS-400-18-LT (GGG-40.3)							
Cone material			Stainless steel, mat. No. 1.4404							
Seat material			Stainless steel, mat. No. 1.4021							

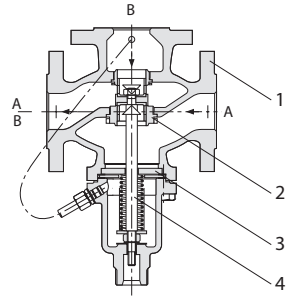
[1] *Above operating pressure of 14 bar use of valve stem extension ZF4, ZF6 or combination piece KF2 is necessary.*

Applications (VFG 34)

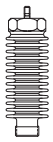


Design (VFG 34)

1 Valve body
2 Valve seat
3 Bellow
4 Valve insert



Accessories

Picture	Type	Note			Code No.
	Comb. piece KF2	For combinations with thermostats			**003G1398**
	Comb. piece KF3	For combinations with thermostats, pressure controllers and motorised actuators			**003G1397**
	Valve stem extension ZF4	Only DN 15 - 125 For temperatures above 200 °C			**003G1394**
	Valve stem extension ZF5	Only DN 15 - 125 For water, steam or oil above 200 °C			**003G1396**
	Valve stem extension ZF6	For temperatures until 200 °C			**003G1393**
Picture		**DN**	**k_{vs}**	**reduced k_{vs}**	**Code No.**
	Flow divider for VFGS 2 (for noise reduction)	15	4	2.5	**065B2775**
		20	6.3	4	
		25	8	6.3	**065B2776**
		32	16	10	
		40	20	16	**065B2777**
		50	32	25	
		65	50	40	**065B2778**
		80	80	63	
		100	125	100	**065B2779**
		125	160	125	

Remark:

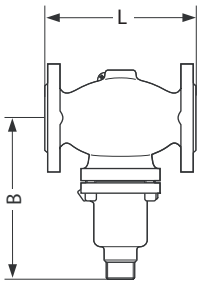
Temperature controller with thermostat AFT..:

This controller can be used until operating pressure of 14 bar. If the operating pressure is higher than 14 bar the valve stem extension ZF4, ZF6 or the combination piece KF2 must be used.

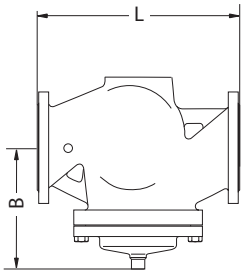
Pressure / temperature table acc. EN 1092-2

Nominal pressure	Material flange valves			Permitted operational pressure in bar subject to temperature in °C					
	Grey cast iron	Ductile iron	Cast steel	–10 … 120 °C	150 °C	200 °C	250 °C	300 °C	350 °C
PN 10	EN-GJL-250 (GG25)	-	-	10	9	8	7	6	-
PN 16				16	14.4	12.8	11.2	9.6	
PN 10	-	EN-GJS-400-18-LT (GGG40.3)		10	9.5	9	8	7	5.5
PN 16				16	15.2	14.4	12.8	11.2	8.8
PN 25				25	23.8	22.5	20	17.5	13.8
PN 16		-	GP240GH (GS-C25)	16	15.7	15.2	14.4	12.8	11.2
PN 25				25	24.5	23.8	22.5	20	17.5
PN 40				40	39	38	36	32	28

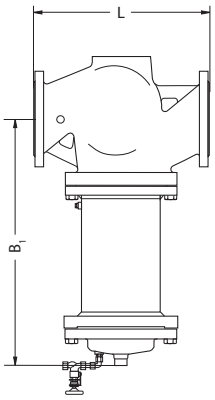
Dimensions



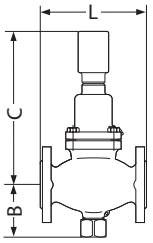
VFG 2 / 21 / 25, VFGS 2
DN 15 - 125



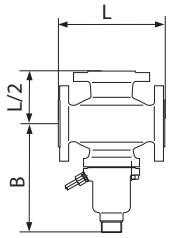
VFG 2 / 21
DN 150 - 250



VFG 2, VFGS 2
DN 150 - 250
with body extension



VFU 2
DN 15 - 125



VFG 33 / 34
DN 25 - 125

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	-	-	-

VFGS 2 valve

DN			15	20	25	32	40	50	65	80	100	125	150	200	250
Weight (valve)	PN16	kg	6.2	6.8	9.3	11.6	14.8	17.1	29.7	32.0	62.1	65.5	-		
	PN25		6.0	7.1	9.3	11.1	14.5	17.2	30.0	32.6	60.0	65.3			
	PN40		6.6	7.8	9.3	12.4	15.6	18.1	32.8	35.1	70.1	76.0			
Weight (valve with body ext.)	PN16		-										174.7	305.5	512.1
	PN40												193.5	314.3	539.5

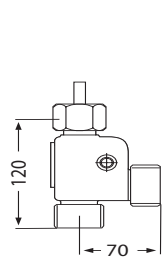
VFG 33/34 valves

DN		25	32	40	50	65	80	100	125
L	mm	160	180	200	230	290	310	350	400
B		238	238	240	240	275	275	380	380
Weight	kg	10.5	12	17	21	35	41	75	93

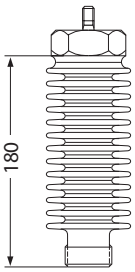
VFU 2 valve

DN		15	20	25	32	40	50	65	80	100	125
L	mm	130	150	160	180	200	230	290	310	350	400
B		95	95	106	106	123	123	135	135	165	165
C		306	306	332	332	334	334	369	369	474	474
Weight	kg	7.0	9.0	10	13	17	22	33	41	70	79

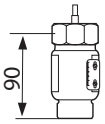
Dimensions



Comb. piece KF2



Valve stem extension ZF4



Valve stem extension ZF6