ENGINEERING
TOMORROW

Data sheet

Two- and three way valves VFG.. / VFGS 2 / VFU.. for self-acting 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) 655, 658 , 659 (from Q4 2014)

VFG 2
VFG 21
(see pages 2, 3, 4)

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

VFGS 2
(see pages 5, 6)

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

VFG 33
(see pages 6, 7)

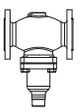
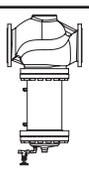
Main data:
- DN 25-125
- T_{max} 200 °C
- Media:
  circulation water and glycolic water up to 30%
- mixing pressure balanced valve
- Cone: metal/metal sealing

VFU 2
(see page 7, 8)

Main data:
- DN 15-125
- T_{max} 150 °C
- 2-way valve (Normaly Close)
- Media:
  circulation water and glycolic water up to 30%
- Cone: metal/metal sealing
- Pressure relieved

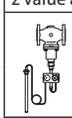
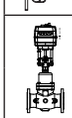
Ordering (VFG 2)

Cone:
metal /metal sealing, pressure relieved.

Picture	DN (mm)	k_{VS} (m^3 /h)	Connections	T_{max} (°C)	Code No. PN 16	T_{max} (°C)	Code No. PN 25	Code No. PN 40
	15	4,0	Flanges acc. to EN 1092-1	150[1]	**065B2388**	200[1]	**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		150[1]	**065B2398**	150[1]	–	**065B2421**
	200	320			**065B2399**		–	**065B2422**
	250	400			**065B2400**		–	**065B2423**
	150	280		150[1]	**065B2424**	200[1]	–	**On request**
	200	320			**065B2425**		–	**On request**
	250	400			**065B2426**		–	**On request**

[1] *for detailed temperature limits refer to pressure/temperature diagram pg 9*

Technical data (VFG 2)

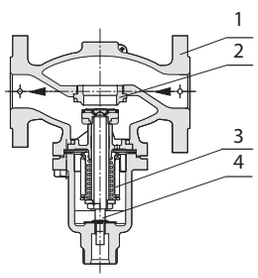
Nominal diameter		DN	15	20	25	32	40	50	65	80	100	125	150	200	250
k_{VS} value		(m^3/h)	4	6,3	8	16	20	32	50	80	125	160	280 320[1]	320 450[1]	400 630[1]
z value acc. to VDMA 24 422			0,6	0,6	0,6	0,55	0,55	0,5	0,5	0,45	0,4	0,35	0,3	0,2	0,2
	$\Delta p_{max.}$[2] (bar)	PN 16	16	16	16	16	16	16	16	16	15	15			
	AFT	PN 25, 40	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	15	15	12	10	10
	AMV(E) 655, 658 , 659 (from Q4 2014)[4]	PN 25, 40	20	20	20	20	20	20	20	20	15	15	12	10	10
Nominal pressure[2]			PN 16, 25 flanges to EN 1092-2 or 40, flanges to EN 1092-1												
Flow media/Temperature		PN 16	Circulation water / Glycolic water up to 30 % / thermo oil / 2 … 150 °C												
		PN 25, 40	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(E), k_{VS} values are higher if Y60 piece is removed from valve.*
[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.*
[4] *With adapter:* ***065B3527***

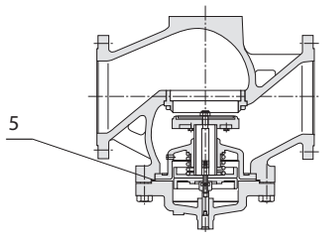
Design (VFG 2)

1. Valve body
2. Valve seat
3. Bellows
4. Valve insert
5. Diaphragm
6. Valve body extension
7. Shut off valve for water filling
8. Closing plug

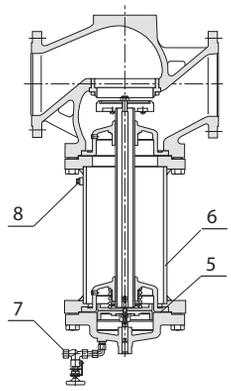
VFG 2 DN 15-125



VFG 2 DN 150-250

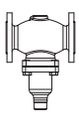
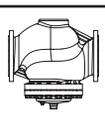


VFG 2 DN 150-250, T_{max} 200 °C

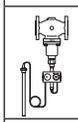
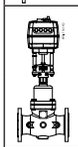


Ordering (VFG 21)

Cone:
soft sealing, pressure relieved.

Picture	DN (mm)	k_{VS} (m^3/h)	Connections	T_{max} (°C)	Code No. PN 16
	15	4,0	Flanges acc. to EN 1092-1	150	**065B2502**
	20	6,3			**065B2503**
	25	8,0			**065B2504**
	32	16			**065B2505**
	40	20			**065B2506**
	50	32			**065B2507**
	65	50			**065B2508**
	80	80			**065B2509**
	100	125			**065B2510**
	125	160			**065B2511**
	150	280		150	**065B2512**
	200	320			**065B2513**
	250	400			**065B2514**

Technical data (VFG 21)

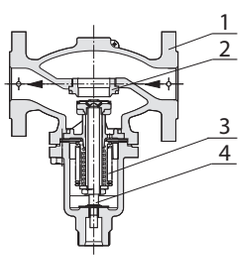
Nominal diameter DN		DN	15	20	25	32	40	50	65	80	100	125	150	200	250
k_{VS} value		(m^3/h)	4	6,3	8	16	20	32	50	80	125	160	280 320[1]	320 450[1]	400 630[1]
z value acc. to VDMA 24 422			0,6	0,6	0,6	0,55	0,55	0,5	0,5	0,45	0,4	0,35	0,3	0,2	0,2
	$\Delta p_{max.}$[2] (bar)	PN 16	16	16	16	16	16	16	16	16	15	15			
	$\Delta p_{max.}$[3] (bar)	PN 16	16	16	16	16	16	16	16	16	15	15	12	10	10
	AMV(E) 655, 658 , 659 (from Q4 2014)[4]	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 media/Temperature			Circulation water / Glycolic water up to 30 % / 2 … 150 °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)												
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(E), k_{VS} values are higher if Y60 piece is removed from valve.*
[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.*
[4] *With adapter:* ***065B3527***

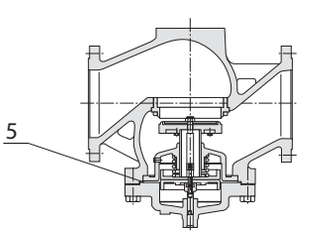
Design (VFG 21)

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

VFG 21 DN 15-125

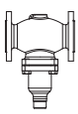
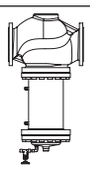


VFG 21 DN 150-250



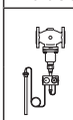
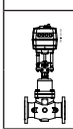
Ordering (VFGS 2 – for steam)

Cone: metal/metal sealing, pressure relieved.

Picture	DN (mm)	k_{VS} (m^3/h)	k_{VS}[1] (m^3/h)	Connections	T_{max} (° C)	Code No. PN 16	T_{max} (° C)	Code No. PN 25	Code No. PN 40
	15	4,0	2,5	Flanges acc. to EN 1092-1	150[2]	**065B2430**	350[2]	**065B2443**	**065B2453**
	20	6,3	4,0			**065B2431**		**065B2444**	**065B2454**
	25	8,0	6,3			**065B2432**		**065B2445**	**065B2455**
	32	16	10			**065B2433**		**065B2446**	**065B2456**
	40	20	16			**065B2434**		**065B2447**	**065B2457**
	50	32	25			**065B2435**		**065B2448**	**065B2458**
	65	50	40			**065B2436**		**065B2449**	**065B2459**
	80	80	63			**065B2437**		**065B2450**	**065B2460**
	100	125	100			**065B2438**		**065B2451**	**065B2461**
	125	160	125			**065B2439**		**065B2452**	**065B2462**
	150 [3]	280	200		150[2]	**065B2440**	300[2]	–	**065B2463**
	200 [3]	320	225			**065B2441**		–	**065B2464**
	250 [3]	400	280			**065B2442**		–	**065B2465**

[1] *Valves with flow divider for noise reduction (see accessories)*
[2] *for detailed temperature limits refer to pressure/temperature diagram pg 9*
[3] *Valve has valve body extension (VBE) and pre-installed flow divider*

Technical data (VFGS 2)

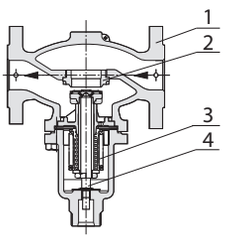
Nominal diameter		DN	15	20	25	32	40	50	65	80	100	125	150	200	250
k_{VS} value		(m^3/h)	4	6,3	8	16	20	32	50	80	125	160	280 320[2]	320 450[2]	400 630[2]
k_{VS} value[1]		(m^3/h)	2,5	4,0	6,3	10	16	25	40	63	100	125	200	225	280
z value acc. to VDMA 24 422			0,6	0,6	0,6	0,55	0,55	0,5	0,5	0,45	0,4	0,35	0,3	0,2	0,2
	$\Delta p_{max.}$[3] (bar) AFT	PN 16	16	16	16	16	16	16	16	16	15	15			
		PN 25, 40	20	20	20	20	20	20	20	20	15	15			
	$\Delta p_{max.}$[4] (bar) AMV(E) 655, 658, 659 (from Q4 2014)[5]	PN 16	16	16	16	16	16	16	16	16	15	15	12	10	10
		PN 25, 40	20	20	20	20	20	20	20	20	15	15	12	10	10
Nominal pressure[3]			PN 16, 25 flanges to EN 1092-2 or 40, flanges to EN 1092-1												
Flow media/Temperature		PN 16	Steam / max. 150 °C										Steam / max. 300 °C		
		PN 25, 40	Steam / max. 350 °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(E), k_{VS} values are higher if Y60 piece is removed from valve.*
[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.*
[5] *With adapter:* ***065B3527***

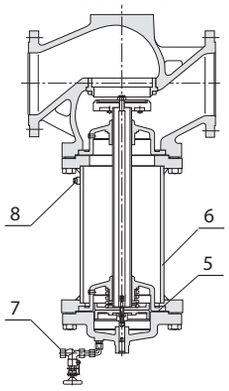
Design (VFGS 2)

1. Valve body
2. Valve seat
3. Bellow
4. Valve insert
5. Diaphragm
6. Valve body extension
7. Shut off valve for water filling
8. Closing plug

VFGS 2 DN 15-125

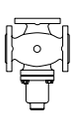


VFGS 2 DN 150-250



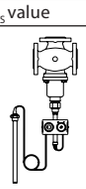
Ordering (VFG 33)

VFG 33 (mixing valve – pressure balanced)

Picture	**DN** (mm)	**k_{VS}** (m^3/h)	**Connections**	**T_{max}** (°C)	**Code No.** PN 16	**T_{max}** (°C)	**Code No.** PN 25
	25	8.0	Flanges acc. to EN 1092-1	150 [1]	**065B2598**	200 [1]	**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**

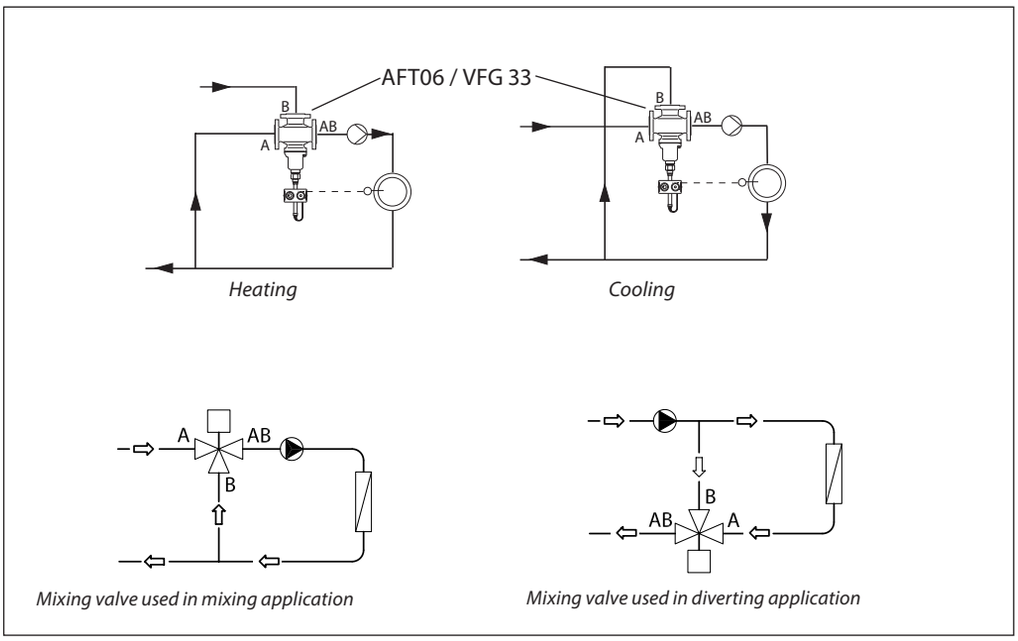
[1] for detailed temperature limits refer to pressure/temperature ratings diagram pg 9

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) AFT	PN 16	16	16	16	14	12	10	10	10
		PN 25	18	18	16	14	12	10	10	10
	$\Delta p_{max.}$ [2] (bar)	PN 16	16	16	16	16	16	16	15	15
	AMV(E) 655, 658, 659 (from Q4 2014)[3]	PN 25, 40	20	20	20	20	20	20	15	15
Nominal pressure[1]			PN 16 or 25, flanges to EN 1092-2							
Flow media/Temperature		PN 16	Circ.water / Glycolic water up to 30 % / 2 … 150 °C							
		PN 25	Circ.water / Glycolic water up to 30 % / 2 … 200 °C							
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							

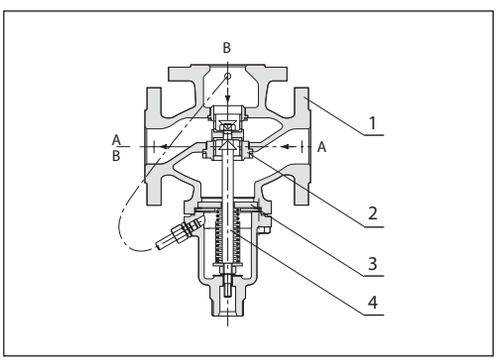
[1] Above operating pressure of 14 bar use of valve stem extension ZF4, ZF6 or combination piece KF2 is necessary.
[2] In order the actuator can close at max differential pressure flow velocity musn't exeed 2 m/s.
[3] With adapter: ***065B3527***

Applications (VFG 33)



Design (VFG 33)

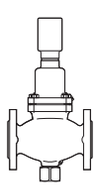
1 Valve body
2 Valve seat
3 Bellow
4 Valve insert



Ordering (VFU 2)

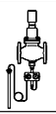
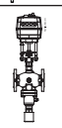
Opening valve, pressure relieved.

VFU 2 (metallic sealing cone)

Picture	DN (mm)	k_{VS} (m^3/h)	Connections	T_{max} (°C)	Code No. PN 16
	15	4,0	Flanges acc. to EN 1092-1	150[1)]	**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**

[1)] *for detailed temperature limits refer to pressure/temperature diagram pg 9*

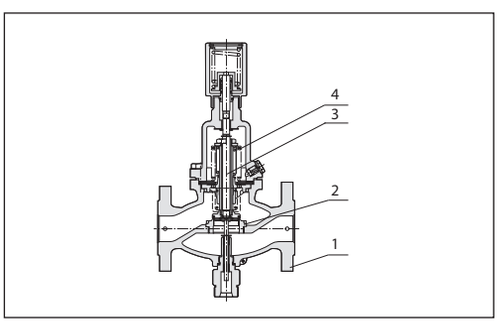
Technical data (VFU 2)

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) 655, 658, 659 (from Q4 2014)[1]	PN 16	12							10	8	
Nominal pressure			PN 16, flanges to EN 1092-2									
Flow media/Temperature			Circulation water / Glycolic water up to 30 % / 2 … 150 °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									

[1] *With adapter:* ***065B3527***

Design (VFU 2)

1 Valve body
2 Valve seat
3 Valve insert
4 Bellow



Accessories

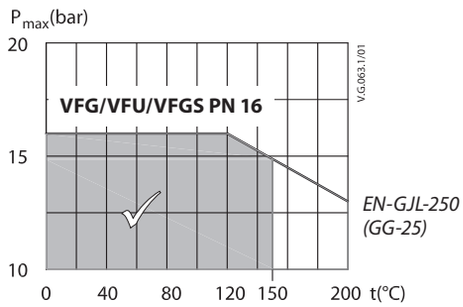
Picture	Type	Note		Code No.
	Comb. piece KF2	For combinations with thermostats		**003G1398**
	Comb. piece KF3	For combinations with thermostats, pressure controllers and motorised actuators		**003G1397**
	Valve stem extension ZF4	Valves DN 15-125	For water, steam above 200 °C	**003G1394**
			For oil above 200°C	**003G1395**
	Valve stem extension ZF5	Valves DN 15-125	For water, steam or oil above 200 °C	**003G1396**
	Valve stem extension ZF6	For water, steam temperatures until 200 °C		**003G1393**

Picture	Type	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	

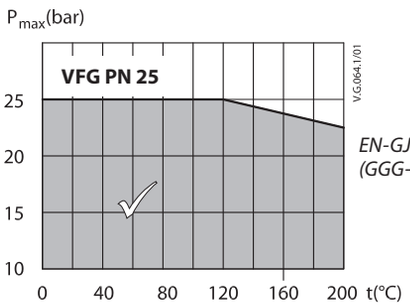
Remark:
Temperature controller with thermostat AFT..:
This controller can be used until operating pressure of 14 bar. If the operating pressure is higher than 14 bar the valve stem extension ZF4, ZF6 or the combination piece KF2 must be used.

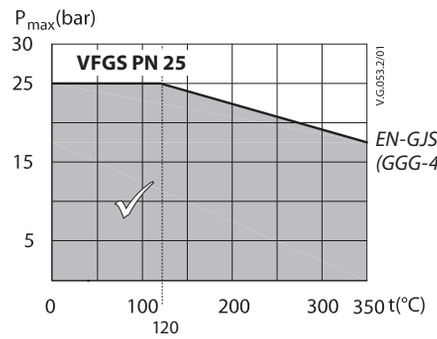
Pressure temperature diagram

Working area is below P-T line and it ends at T_{max} for each valve

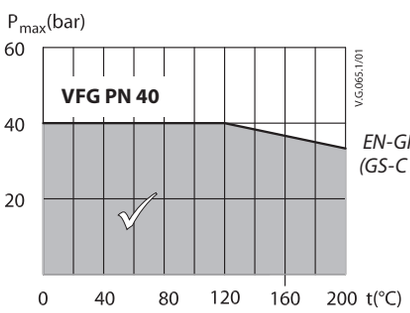


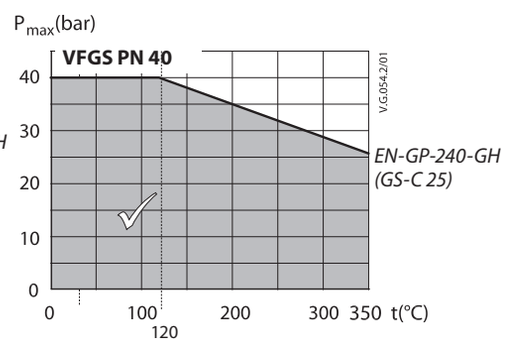
Maximum allowed operating pressure as a function of media temperature (according to EN 1092-2)





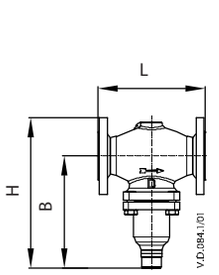
Maximum allowed operating pressure as a function of media temperature (according to EN 1092-2)



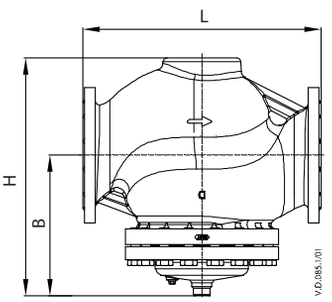


Maximum allowed operating pressure as a function of media temperature (according to EN 1092-1)

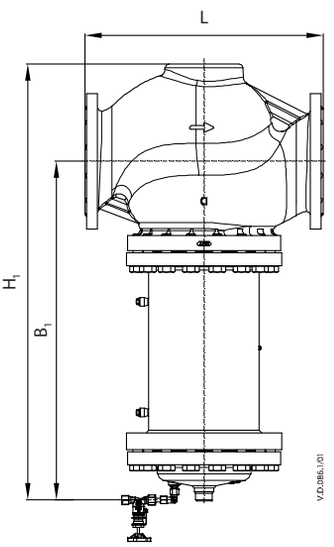
Dimensions



VFG(S) DN 15-125



VFG DN 150-250

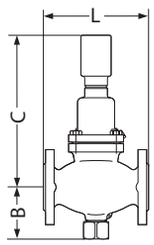


VFG(S) DN 150-250
with valve body extension
up to 200 (300) °C

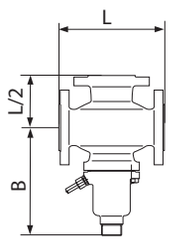
VFG 2, VFG 21, VFGS 2 Valves

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			213	213	239	239	241	241	276	276	381	381	326	354	401
H			267	267	304	304	323	323	370	370	505	505	505	591	661
Weight	PN 16 / 25	kg	7,5	8,5	10	12	15	18	27,5	30	58	68	115	185	323
	PN 40								30	32,5	60,5	69	141	253	333
B_1		mm											620	852	1199
H_1													700	994	1359
Weight (valve with body extension)	PN 16 / 25	kg											154	301	469
	PN 40												179	336	505

Dimensions (continuous)



VFU 2
DN 15-125



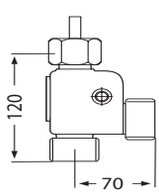
VFG 33
DN 25-125

VFG 33 valves

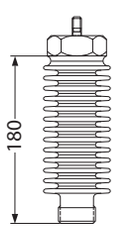
DN		25	32	40	50	65	80	100	125
L	mm	160	180	200	230	290	310	350	400
B		238	238	240	240	275	275	380	380
Weight	kg	10,5	12	17	21	35	41	75	93

VFU 2 valve

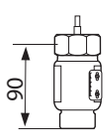
DN		15	20	25	32	40	50	65	80	100	125
L	mm	130	150	160	180	200	230	290	310	350	400
B		95	95	106	106	123	123	135	135	165	165
C		306	306	332	332	334	334	369	369	474	474
Weight	kg	7,0	9,0	10	13	17	22	33	41	70	79



Comb. piece KF2 , KF3



Valve stem extension
ZF4, ZF5



Valve stem extension
ZF6