

Positive displacement flow sensors // VZGG // VZVA



US versions available

Note: The US versions are separate products.
The units are not converted, but pre-configured at the factory for the respective variants.

Highlights

- High-precision measurement with excellent repeatability
- HT version for temperatures up to 150 °C (302 °F) with thermally insulated preamplifier (option)
- Variety of casing and sealing materials → Universally use for different measurement media
- Standard process connection via connecting plates → Quickly replaceable without lengthy interruptions to the process

Technical data

Technical data									
Type	VZ0.025	VZ0.04	VZ0.1	VZ0.2	VZ0.4	VZ1	VZ3	VZ5	
Size	0.025	0.04	0.1	0.2	0.4	1	3	5	
Process connection	Via subplate with lateral female thread connection								
Measuring range* [l/min]	0.008...2	0.02...4	0.04...8	0.16...16	0.2...40	0.4...80	0.6...160	1...250	
Measuring range* [l/h]	0.48...120	1.2...240	2.4...480	9.6...960	12...2,400	24...4,800	36...9,600	60...15,000	
Measuring range* [GPM]	0.002...0.53	0.005...1.06	0.01...2.1	0.04...4.23	0.05...10.6	0.11...21	0.16...42	0.26...66	
Measuring range* [GPH]	0.13...31.7	0.32...63.5	0.6...127	2.5...254	3.17...635	6.3...1,270	9.5...2,540	15.9...3,968	
Geometric gear volume [cm ³]	0.025	0.04	0.1	0.245	0.4	1.036	3	5.222	
Measuring accuracy	±0.3 % of reading (≥20 mm ² /s)								
Repeatability	< 0.1 % under same conditions								
Start of gear wheel rotation [l/min]	0.001	0.004	0.008	0.01	0.01	0.02	0.03	0.04	
Start of gear wheel rotation [l/h]	0.06	0.24	0.48	0.6	0.6	1.2	1.8	2.4	
Start of gear wheel rotation [GPM]	0.0003	0.001	0.002	0.003	0.003	0.005	0.008	0.01	
Start of gear wheel rotation [GPH]	0.016	0.06	0.13	0.16	0.16	0.32	0.48	0.63	
Viscosity of medium	1...100 000 mm ² /s								
Medium temperature range**	FKM		FEP			EPDM			
→ Standard	-15...120 °C (5...248 °F)		-30...120 °C (-22...248 °F)			-30...120 °C (-22...248 °F)			
→ Without preamplifier (for TD8250)	0...60 °C (32...140 °F)		0...60 °C (32...140 °F)			0...60 °C (32...140 °F)			
→ High temperature	-40...150 °C (-40...302 °F)		-40...150 °C (-40...302 °F)			-40...150 °C (-40...302 °F)			
Ambient temperature range**	FKM		FEP			EPDM			
	-15...80 °C (5...176 °F)		-30...80 °C (-22...176 °F)			-30...80 °C (-22...176 °F)			
Maximum pressure rating	480 bar	480 bar	480 bar	480 bar	480 bar	480 bar	350 bar	350 bar	
Maximum pressure rating	6962 psi	6962 psi	6962 psi	6962 psi	6962 psi	6962 psi	5076 psi	5076 psi	
Maximum foreign particle size	20 µm								
→ Versions with ball bearing	20 µm								
→ Versions with plain bearing	30 µm								
Degree of protection EN 60529	IP65								
Output signals									
→ Puls rate [pulses/l]	40,000	25,000	10,000	4,081.63	2,500	965.25	333.33	191.5	
→ Puls rate [pulses/gallon]	151,417.60	94,636.00	37,854.00	15,450.77	9,463.60	3,653.90	1,261.81	724.90	
→ Resolution [ml/pulse]	0.025	0.04	0.1	0.245	0.4	1.036	3	5.222	
→ Signal shape	2-channel, squarewave, PNP, pulse duty ratio 1:1								
Electrical data									
Electrical connection	Plug connector incl. cable socket								
Power supply	12...30 VDC / max. 90 mA								
Power consumption [short-circuit proof]	0.9 W								

* For media with high viscosity the measuring range is reduced. The max. pressure drop shouldn't exceeded 16 bar (230 psi) (see pressure drop diagrams).

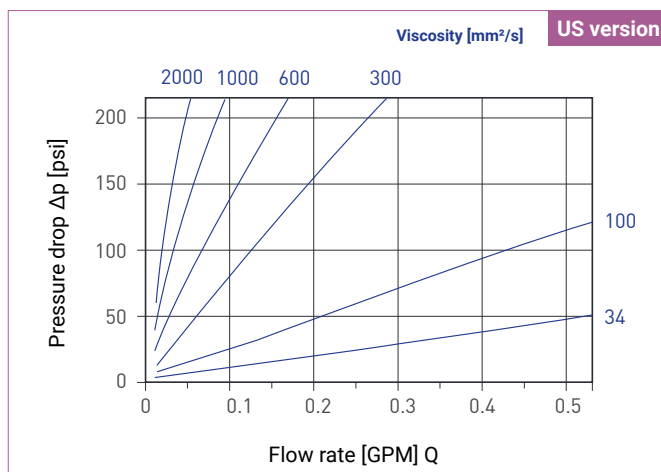
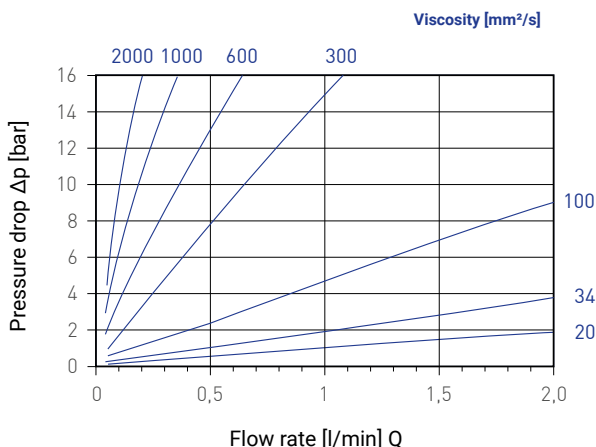
** Depending on sealing material

Options

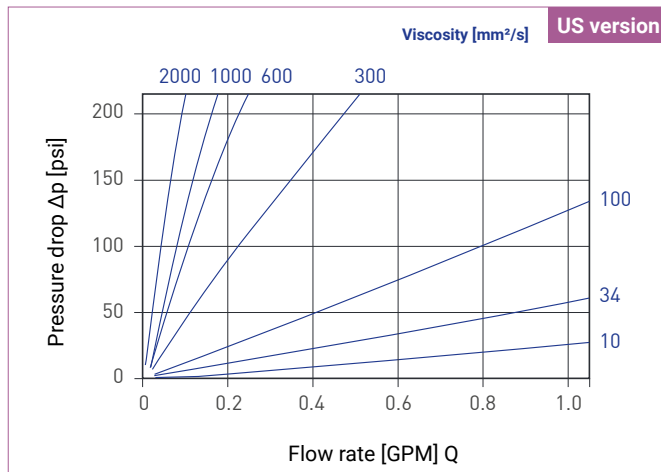
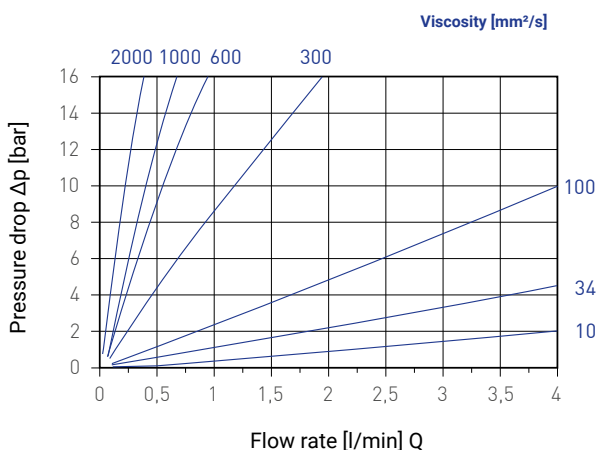
Options	
For type	On request
VZVA	→ Direct process connection

Typical pressure drop // VZ0.025 // VZ0.04 // VZ0.1

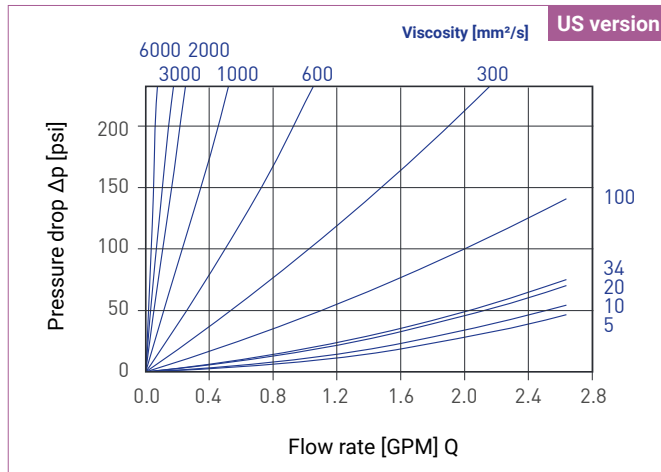
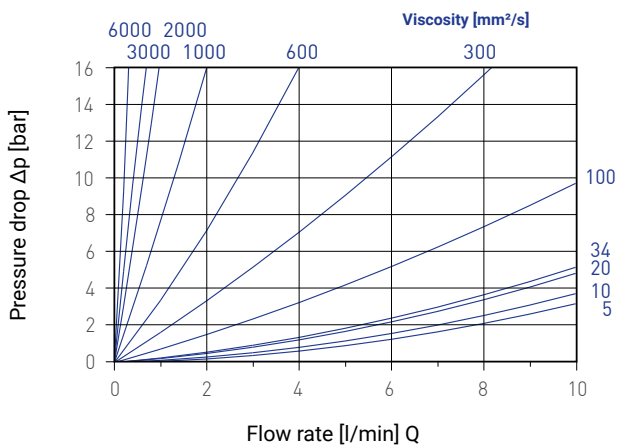
Typical pressure drop VZ0.025



Typical pressure drop VZ0.04

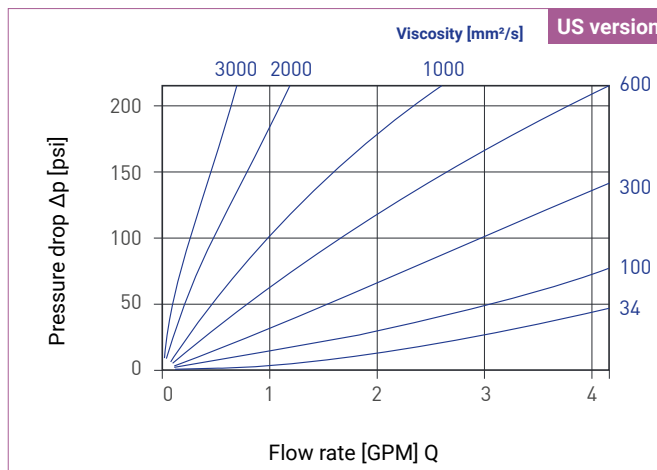
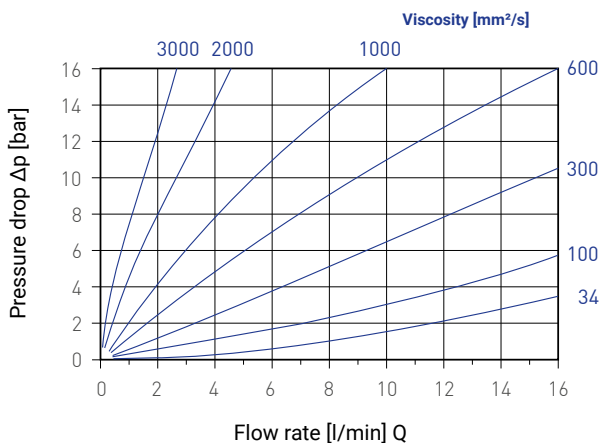


Typical pressure drop VZ0.1

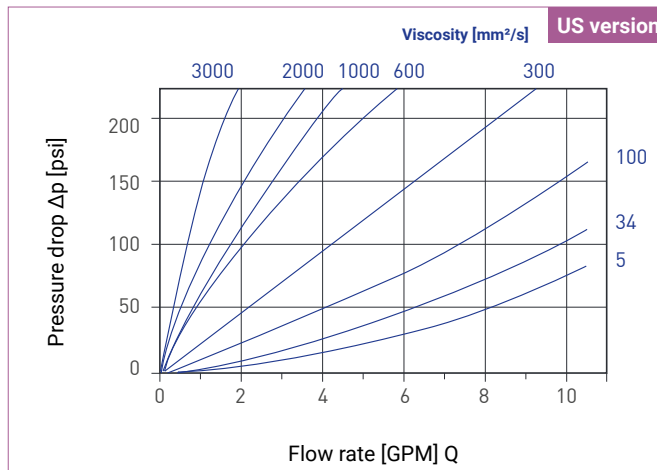
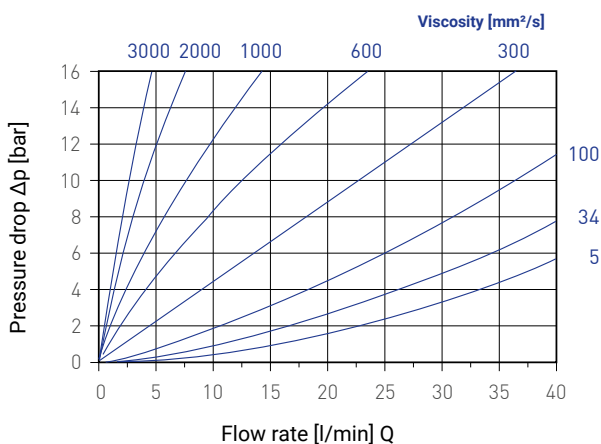


Typical pressure drop // VZ0.2 // VZ0.4 // VZ1

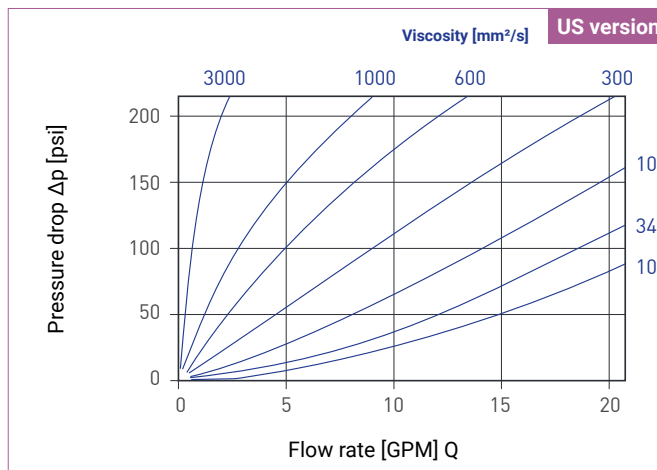
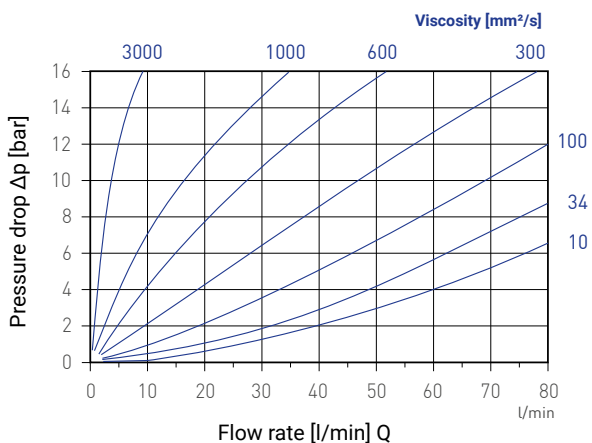
Typical pressure drop VZ0.2



Typical pressure drop VZ0.4

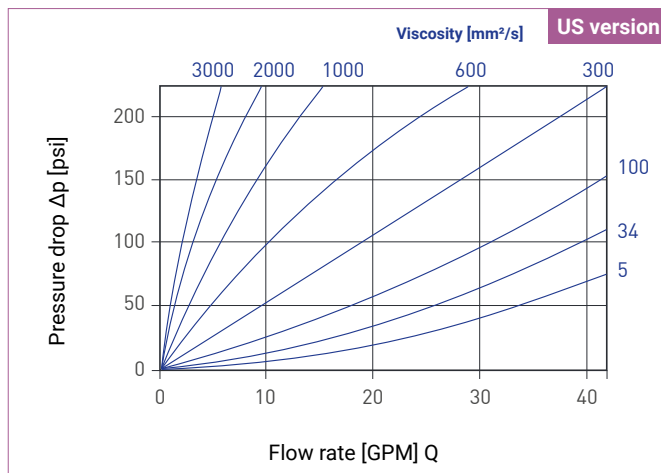
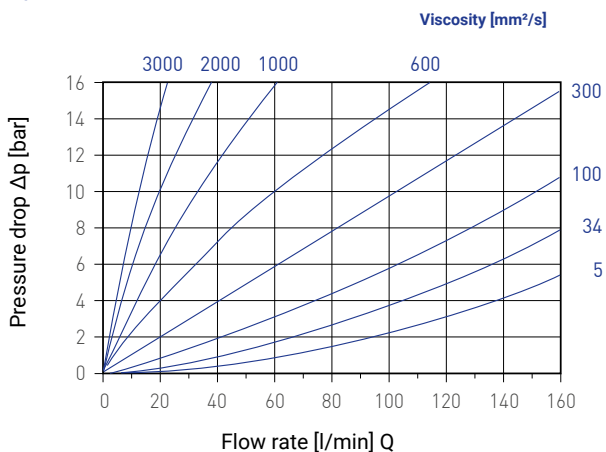


Typical pressure drop VZ1

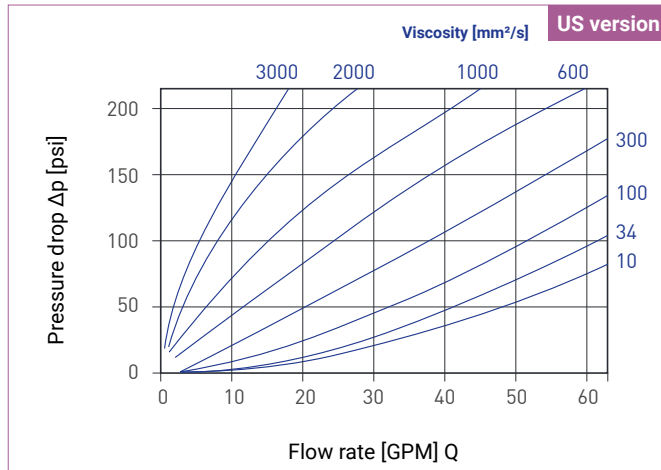
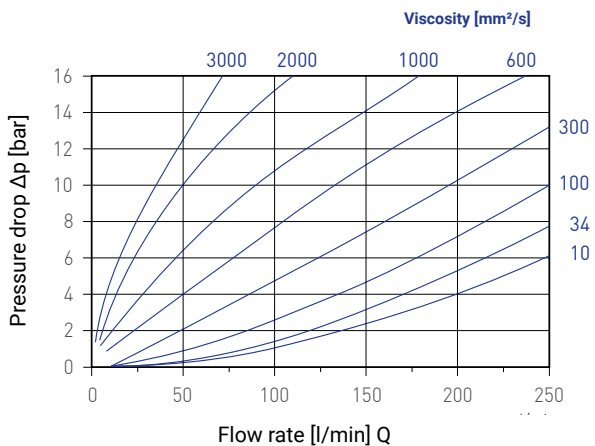


Typical pressure drop // VZ3 // VZ5

Typical pressure drop VZ3

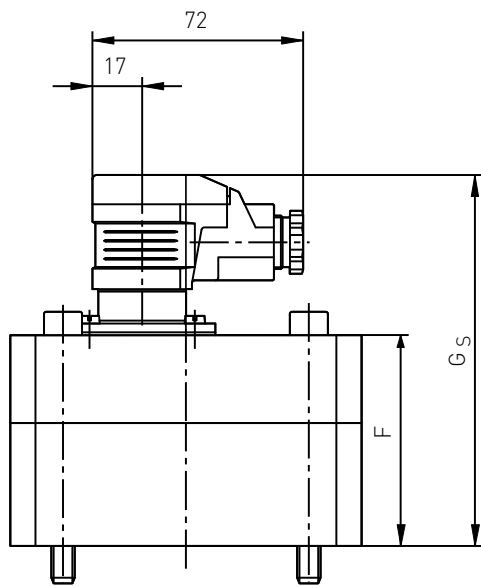


Typical pressure drop VZ5

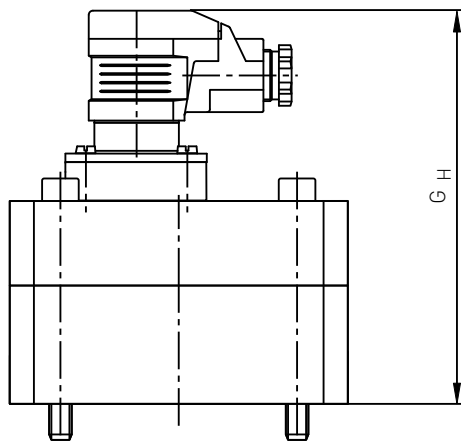
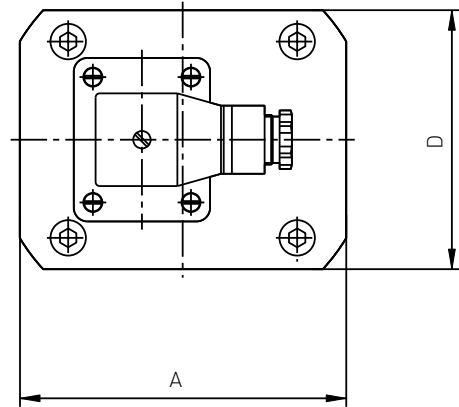


VZGG // Technical drawings // Materials // Dimensions

VZGG



Standard version

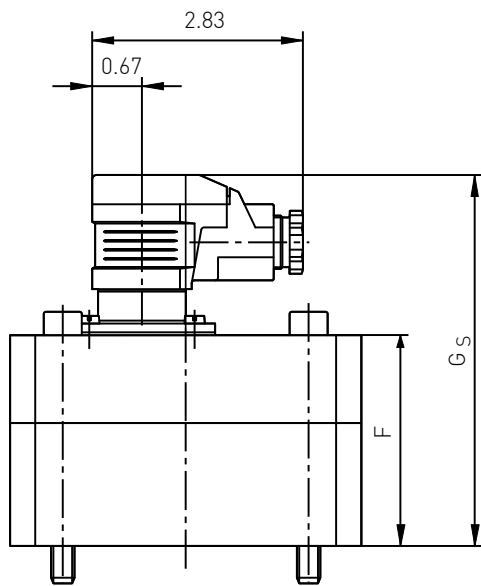


High temperature version

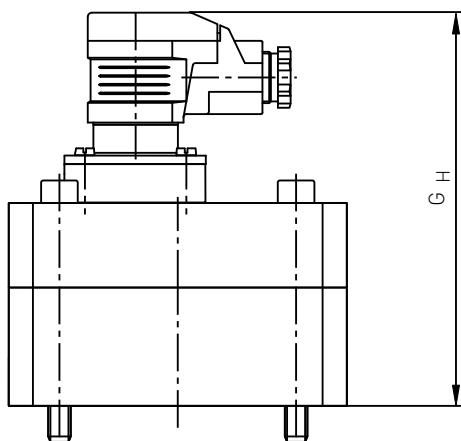
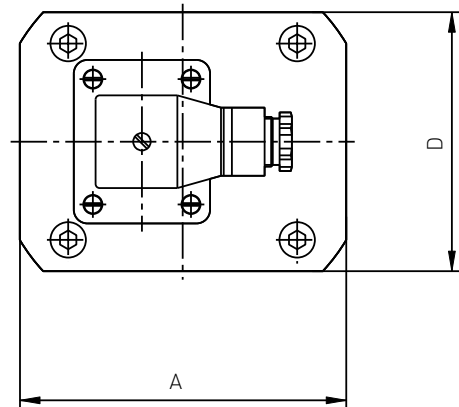
Materials	
Housing	Ductile iron EN-GJS-400-15
Gear wheels	Steel 1.7139
Bearings	Standard: Ball bearings stainless steel Option: Hard metal plain bearing
Seals	Standard: FKM Option: EPDM, FEP

Dimensions								
Type	VZ0.025GG	VZ0.04GG	VZ0.1GG	VZ0.2GG	VZ0.4GG	VZ1GG	VZ3GG	VZ5GG
A [mm]	85	85	85	85	100	120	170	170
D [mm]	60	60	60	60	90	95	120	120
F [mm]	50	56	65	57	63	72	89	105
GS [mm]	101	107	106	108	114	123	140	156
GH [mm]	113	119	118	120	126	135	152	168
Weight [kg]	1.8	2	2.5	2	3.7	5.2	9	13

VZGG



Standard version



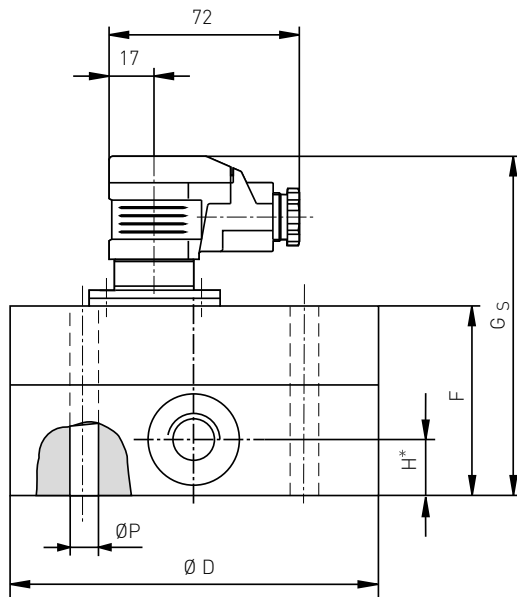
High temperature version

Material	
Housing	Ductile iron EN-GJS-400-15
Gear wheels	Steel 1.7139
Bearings	Standard: Ball bearings stainless steel Option: Hard metal plain bearing
Seals	Standard: FKM Option: EPDM, FEP

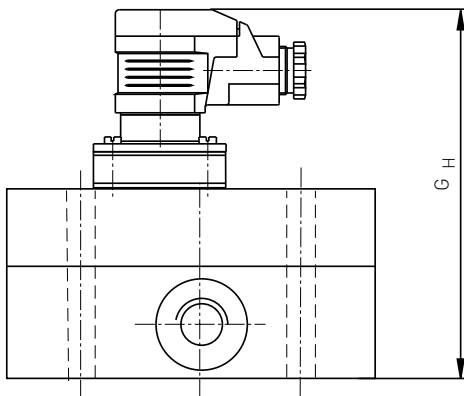
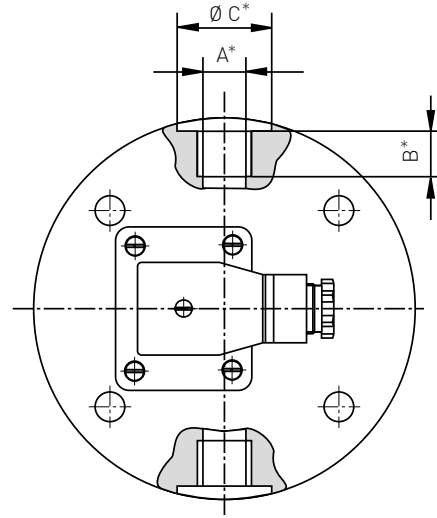
Dimensions								
Type	VZ0.025GG	VZ0.04GG	VZ0.1GG	VZ0.2GG	VZ0.4GG	VZ1GG	VZ3GG	VZ5GG
A [inch]	3.35	3.35	3.35	3.35	3.94	4.72	6.69	6.69
D [inch]	2.36	2.36	2.36	2.36	3.54	3.74	4.72	4.72
F [inch]	2.0	2.2	2.6	2.2	2.5	2.8	3.5	4.1
GS [inch]	3.98	4.21	4.17	4.25	4.49	4.84	5.51	6.14
GH [inch]	4.45	4.69	4.65	4.72	5.31	4.96	5.98	6.61
Weight [lb]	4	4.4	5.5	4.4	8.2	11.5	19.8	28.6

VZVA // Technical drawings // Materials // Dimensions

VZVA



Standard version



High temperature version

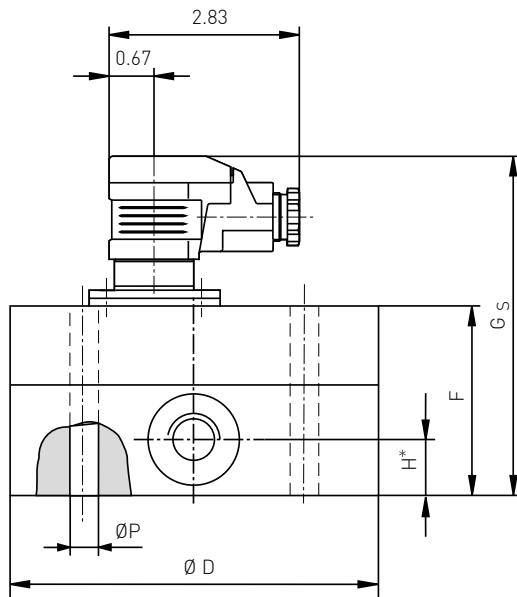
* For direct process connection

Material	
Housing	Stainless steel 1.4404
Gear wheels	Stainless steel 1.4462
Bearings	Standard: Ball bearings stainless steel Option: Hard metal plain bearing
Seals	Standard: FKM Option: EPDM, FEP

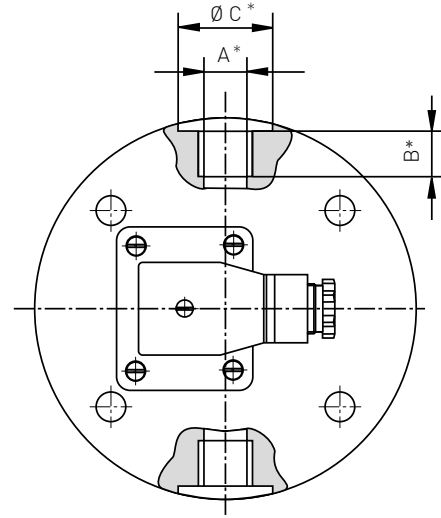
Dimensions							
Type	VZ0.025VA	VZ0.04VA	VZ0.1VA	VZ0.2VA	VZ1VA	VZ3VA	VZ5VA
D [mm]	94	94	94	94	124	170	170
F [mm]	55	56	55	57	72	89	105
GS [mm]	106	107	106	108	123	140	156
GH [mm]	118	119	118	120	135	152	168
Weight [kg]	3	3	3	3.1	7	15.9	18.7
Direct process connection							
A [mm]	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G 1	G 1
B [mm]	9	13	13	13	15	19	19
C [mm]	17	21	25	25	29	42	42
H [mm]	15	15	20	16	22	30	30

VZVA // US-Versions // Technical drawings // Materials // Dimensions

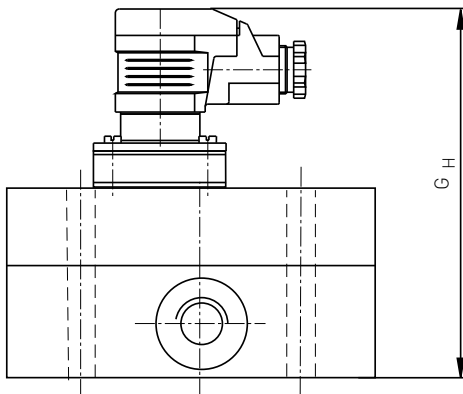
VZVA



Standard version



* For direct process connection

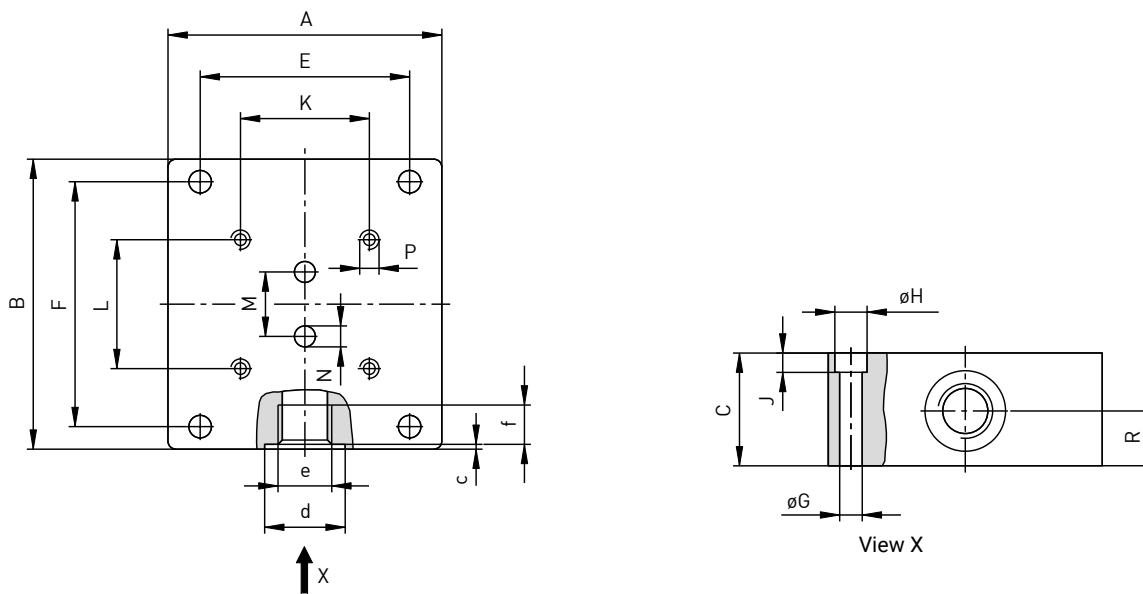


High temperature version

Material	
Housing	Stainless steel 1.4404
Gear wheels	Stainless steel 1.4462
Bearings	Standard: Ball bearings stainless steel Option: Hard metal plain bearing
Seals	Standard: FKM Option: EPDM, FEP

Dimensions							
Type	VZ0.025VA	VZ0.04VA	VZ0.1VA	VZ0.2VA	VZ1VA	VZ3VA	VZ5VA
D [inch]	3.70	3.70	3.70	3.70	4.88	6.69	6.69
F [inch]	2.2	2.2	2.2	2.2	2.8	3.5	4.1
GS [inch]	4.17	4.21	4.57	4.25	4.84	5.51	6.14
GH [inch]	4.65	4.69	4.65	4.72	5.31	5.98	6.61
Weight [lb]	6.6	6.6	6.6	6.8	15.4	35	41.2
Direct process connection							
A [inch]	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G 1	G 1
B [inch]	0.35	0.51	0.51	0.51	05.9	0.75	0.75
C [inch]	0.67	0.83	0.98	0.98	1.14	1.65	1.65
H [inch]	0.59	0.59	0.79	0.63	0.87	1.18	30

VZGG // Subplates



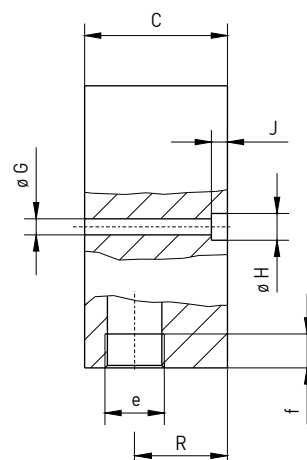
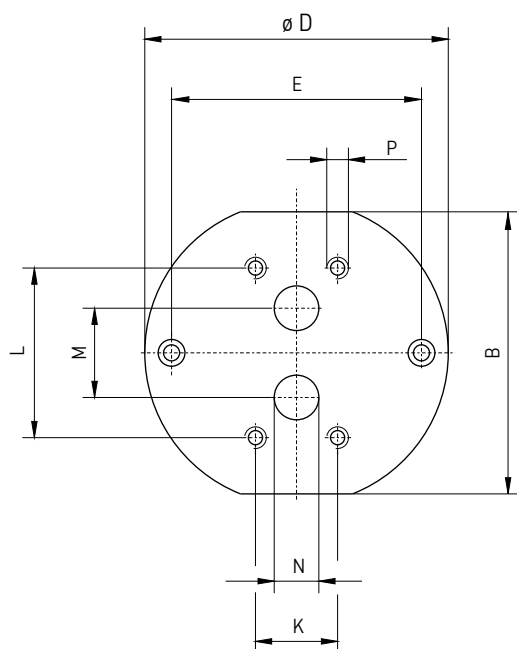
For type	VZ0.025GG / VZ0.04GG / VZ0.1GG / VZ0.2GG	VZ0,4GG	VZ1GG	VZ3GG / VZ5GG
A [mm]	85	100	100	160
B [mm]	90	110	120	165
C [mm]	35	37	37	80
c [mm]	0.7	0,7	0.7	1
d [mm]	25	29	29	42
E [mm]	65	86	80	140
e	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{1}{2}$	G 1
F [mm]	76	96	106	145
f [mm]	13	15	15	19
G [mm]	7	7	7	9
H [mm]	11	11	11	15
J [mm]	7	7	7	9
K [mm]	70	80	84	46
L [mm]	40	38	72	95
M [mm]	20	34	35	50
N [mm]	6,5	16	12	25
P [mm]	M 6/14t	M 8/18t	M 8/18t	M 12/24t
R [mm]	17	18.5	17.5	28
Weight [kg]	1.8	2.7	2.9	14
Material	Ductile iron EN-GJL-250	Ductile iron EN-GJL-400-15		Ductile iron EN-GJL-250

VZGG // Subplates // US-Versions

For type	VZ0.025GG / VZ0.04GG / VZ0.1GG / VZ0.2GG		VZ0.4GG
A [inch]	3.35		3.94
B [inch]	3.54		4.33
C [inch]	1.38		1.46
c [inch]	0.03		0.03
d [inch]	1.0	1.1	1.1
E [inch]	2.56		3.39
e	$\frac{9}{16}$ -18 UNF-2 B	$\frac{3}{4}$ -16 UNF-2 B	$\frac{3}{4}$ -16 UNF-2 B
F [inch]	3.0		3.8
f [inch]	0.51	0.59	0.59
G [inch]	0.28		0.28
H [inch]	0.43		0.43
J [inch]	0.28		0.28
K [inch]	2.76		3.15
L [inch]	1.57		1.50
M [inch]	0.79		1.34
N [inch]	0.26		0.63
P [inch]	M 6/t = 0.55		M 8/t = 0.71
R [inch]	0.67	0.69	0.73
Weight [lb]	4.0	3.7	6.0
Material	Ductile iron EN-GJL-250		Ductile iron EN-GJL-400-15

For type	VZ1GG			VZ3GG / VZ5GG
A [inch]	3.94	4.72	3.94	6.30
B [inch]	4.72			6.50
C [inch]	1.46	1.65	2.56	3.15
c [inch]	0.03	0.04		0.04
d [inch]	1.1	1.4	1.7	1.7
E [inch]	3.15			5.51
e	$\frac{3}{4}$ -16 UNF-2 B	1-1 $\frac{1}{16}$ -12 UN-2B	1-1 $\frac{5}{16}$ -12 UN-2B	1-1 $\frac{5}{16}$ -12 UN-2B
F [inch]	4.2			5.7
f [inch]	0.59	0.67	0.75	0.75
G [inch]	0.28			0.35
H [inch]	0.43			0.59
J [inch]	0.28			0.35
K [inch]	3.31			1.81
L [inch]	2.83			3.74
M [inch]	1.38			1.97
N [inch]	0.47	0.51		0.98
P [inch]	M 8/t = 0.71			M 12/t = 0.94
R [inch]	0.69	0.83	1.38	1.10
Weight [lb]	6.4	8.8	10.8	30.9
Material	Ductile iron EN-GJL-400-15			Ductile iron EN-GJL-250

VZVA // Subplates



For type	VZ0.025VA / VZ0.04VA / VZ0.1VA / VZ0.2VA	VZ1VA	VZ3VA / VZ5VA
B [mm]	85	116	158
C [mm]	35	37	80
D [mm]	94	124	170
E [mm]	75	100	140
e	G 3/8	G 1/2	G 1
f [mm]	13	15	19
G [mm]	7	9	9
H [mm]	11	15	15
J [mm]	7	9	9
K [mm]	70	84	46
L [mm]	40	72	95
M [mm]	20	35	50
N [mm]	6.5	12	25
P [mm]	M 6/14t	M 8/18t	M 12/24t
R [mm]	18	19.5	52
Weight [kg]	1.7	3.2	13.9
Material	Stainless steel 1.4404		

VZVA // Subplates // US-Versions

For type	VZ0.025VA / VZ0.04VA / VZ0.1VA / VZ0.2VA	VZ1VA		VZ3VA / VZ5VA	
B [inch]	3.35	4.57		6.22	
C [inch]	1.38	1.46	1.65	3.15	4.13
D [inch]	3.70	4.88		6.69	
E [inch]	2.95	3.94		5.51	
e	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G 1	G 1 $\frac{1}{2}$
f [inch]	0.51	0.59	0.67	0.75	0.91
G [inch]	0.28	0.35		0.35	
H [inch]	0.43	0.59		0.59	
J [inch]	0.28	0.35		0.35	
K [inch]	2.76	3.31		1.81	
L [inch]	1.57	2.83		3.74	
M [inch]	0.79	1.38		1.97	
N [inch]	0.26	0.47		0.98	
P [inch]	M 6/t = 0.55	M 8/t = 0.71		M 12/t = 0.94	
R [inch]	0.71	0.77	0.83	2.05	2.48
Weight [lb]	3.7	7.1	7.7	30.6	39.5
Material	Stainless steel 1.4404				

Article numbers

Order code						
Type	Size					
VZ0.025	0.025	VZ0025				
VZ0.04	0.04	VZ004				
VZ0.1	0.1	VZ010				
VZ0.2	0.2	VZ020				
VZ0.4	0.4 (only ductile iron)	VZ040				
VZ1	1	VZ100				
VZ3	3	VZ300				
VZ5	5	VZ500				
Material						
Ductile iron			GG			
Stainless steel			VA			
Seals						
FKM				V3		
EPDM				E3		
FEP				P3		
Process connection						
Via subplates					2	
Direct (only for stainless steel)					1	
Preamplifier						
Integrated						I0
Without preamplifier, for TD8250						K0
Isolated for high temperature version						E0
Bearings						
Ball bearings stainless steel						OS
Hard metal plain bearing						PS
Example order number		VZ0025	GG	V3	2	I0 OS

Order code						
Subplates appropriate to						
VZ0.025 / VZ0.04 / VZ0.1 / VZ0.2			AP004			0380S
VZ0.4 (only ductile iron)			AP040			0120S
VZ1			AP100			0120S
VZ3 / VZ5			AP500			1000S
Material						
Ductile iron					GG	
Stainless steel					VA	
Example order number			AP004	GG		0380S

Article numbers // US-Versions

Order code						
Type	Size					
VZ0.025	0.025	VZ0025				
VZ0.04	0.04	VZ004				
VZ0.1	0.1	VZ010				
VZ0.2	0.2	VZ020				
VZ0.4	0.4 (only ductile iron)	VZ040				
VZ1	1	VZ100				
VZ3	3	VZ300				
VZ5	5	VZ500				
Material						
Ductile iron			GG			
Stainless steel			VA			
Seals						
FKM				V3		
EPDM				E3		
FEP				P3		
Process connection						
Via subplates					2	
Direct (only for stainless steel)					1	
Preamplifier						
Integrated						I0
Without preamplifier, for TD8250						K0
Isolated for high temperature version						E0
Bearings						
Ball bearings stainless steel						OU
Hard metal plain bearing						PU
Example order number		VZ0025	GG	V3	2	I0
						OU

Order code		
Subplates for VZVA appropriate to		
VZ0.025 / VZ0.04 / VZ0.1 / VZ0.2	G 3/8	AP004VA0380S
VZ0.4 (only ductile iron)	G 1/2	AP040VA0120S
VZ1	G 1/2	AP100VA0120S
VZ1	G 3/4	AP100VA0340S
VZ3 / VZ5	G 1	AP500VA1000S
VZ3 / VZ5	G 1 1/2	AP500VA1120S

Order code		
Subplates for VZVA appropriate to		
VZ0.025 / VZ0.04 / VZ0.1 / VZ0.2	9/16-18	AP004GG0916U
VZ0.025 / VZ0.04 / VZ0.1 / VZ0.2	3/4-16	AP004GG0304U
VZ0.4 (only ductile iron)	3/4-16	AP040GG0304U
VZ1	3/4-16	AP100GG0304U
VZ1	1 1/16-12	AP100GG1116U
VZ1	1 5/16-12	AP100GG1516U
VZ3 / VZ5	1 5/16-12	AP500GG1516U