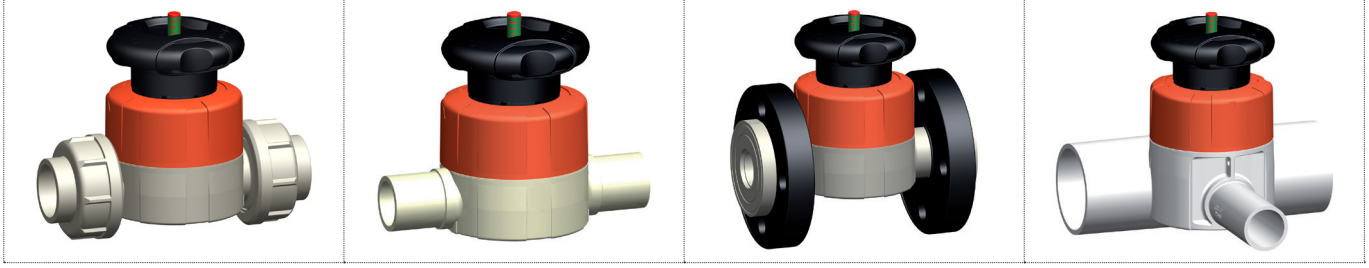
Diaphragm Valve type 514, 515, 517, 519



Type 514 Radial installation and removal	**Type 515** Spigot version	**Type 517** Flange version	**Type 519** Branched valve

Product description

Diaphragm valves of the type 5 series from GF Piping Systems are used for regulating, closing, controlling and monitoring volume flows. Especially when transporting contaminated, aggressive or abrasive media, this type of valve has decisive advantages thanks to its simple function and optimized construction. Only the valve body and diaphragm come into contact with the medium.

The valve is suitable for use with gases and liquids and can be used in any location and drained completely.

Unlike other Valve types, no pressure surges can be caused by closing the diaphragm valve. GF Piping Systems offers this Valve type as a manually operated valve and automatic valve.

Applications

- Chemical process industry
- Microelectronics
- Water treatment
- Cooling
- Control applications

Benefits/features

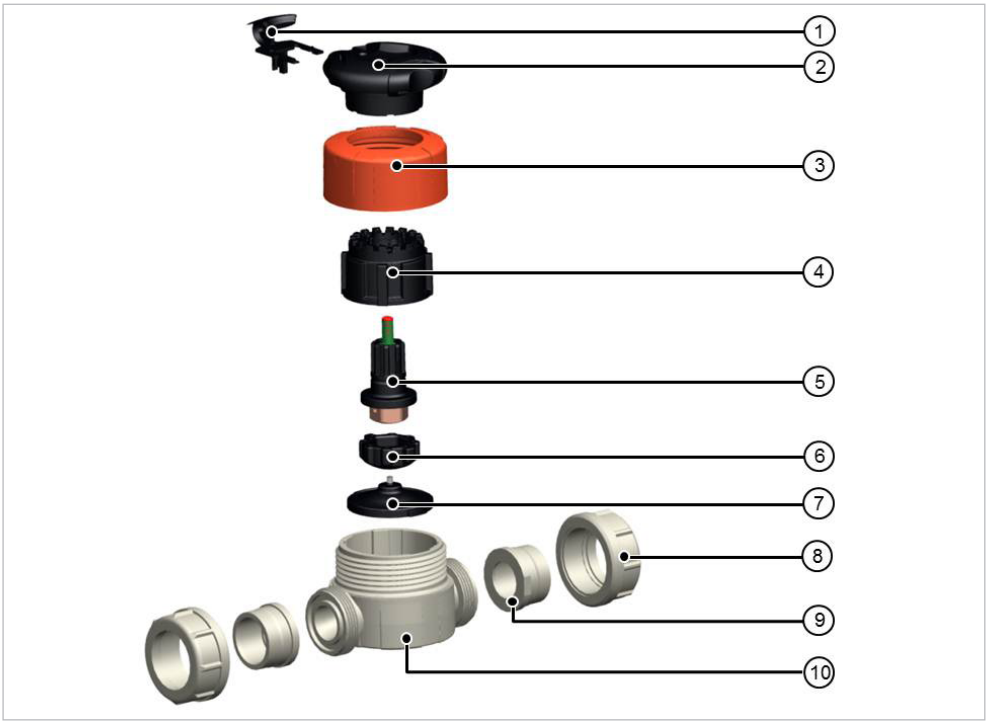
- Full plastic valve without metal screws
- No corrosion due to aggressive media/environment
- Constant leak-tightness in the event of changes in temperature without tightening screws
- Plastic-appropriate, highly stable connection of upper part and valve body by means of a buttress thread
- Maximum flow and linear characteristic curves for easier control
- Diaphragm geometry for longer service life
- Integrated handwheel locking device
- Valve is free of dead space, sealing web lies close to the pipe wall

Possible flow media

Contaminated, solid or ultrapure media.

Liquid and gaseous medium which do not negatively affect the physical and chemical properties of the respective housing and diaphragm material during normal mode. Information on chemical resistance is available from the GF Piping Systems Sales Company or at www.gfps.com.

Technical data



1 Handwheel locking device
2 Handwheel
3 Central housing nut
4 Inner housing
5 Spindle assembly incl. diaphragm holder
6 Pressure piece
7 Diaphragm
8 Coupling nut
9 Insert
10 Valve body

Specification						
Approved media		Liquid and gaseous media which, in normal operation, do not adversely affect the physical and chemical properties of the respective housing and diaphragm material. Information on chemical resistance is available from the Georg Fischer Sales Company or at www.gfps.com.				
Dimensions		Type 514	d20/DN15 – d63/DN50, ½" - 2"			
		Type 517	d20/DN15 – d63/DN50, ½" - 2"			
		Type 515	d20/DN15 – d63/DN50, ½" - 2"			
		Type 519	d20/DN15 – d20/DN15, ½"; d160/DN150 – d63/DN50, 4"- 2"			
Materials	**Valve body**	Type 514	PVC-U, PVC-C, ABS, PP-H, PVDF, PVDF-HP			
		Type 515	PVC-U, PVC-C, ABS, PP-H, PP-N, PVDF, PVDF-HP			
		Type 517	PVC-U, PVC-C, PP-H, PVDF, PVDF-HP			
		Type 519	PP-H, PP-N, PVDF-HP			
	Housing nut	PPGF 30 for PN10 PPSGF40 for PN 16 (only for water applications)				
	Gasket/ diaphragm[1]	Diaphragm O-Ring	NBR EPDM	FKM FKM	EPDM EPDM	PTFE PTFE
Operating temperature[2] **(valve body material)**		PVC-U	0 to 60 °C			
		PVC-C	0 to 80 °C			
		ABS	-30 to 60 °C			
		PP	0 to 80 °C			
		PVDF	-20 to 140 °C			
Pressure levels		PN16	PVC-U, PVDF, PVDF-HP (dependant from threaded bush)			
		PN10	PVC-U, PVC-C, ABS, PP-H, PP-N, PVDF, PVDF-HP			
Actuation variants		Manually operated				
		Pneumatic (see type DIASTAR)				

Specification		
Connections	Type 514	Screw connection with solvent cement sockets, threaded sockets, fusion sockets, butt fusion spigots
	Type 515	Solvent cement spigot, socket fusion spigot, butt fusion spigot
	Type 517	Fixed flange, backing flange
	Type 519	3-way valve with butt fusion spigot
Product standard	EN ISO 16138	
Test standard	ISO 9393-2, EN 12266-1 (leackage rate A)	
Approvals	ACS, FDA, DIBt	

[1] Other combinations on request.

[2] According to pressure-temperature diagram. Temperature ranges may vary depending on the seal material combination.

Kv 100 values

Type 514 – 517

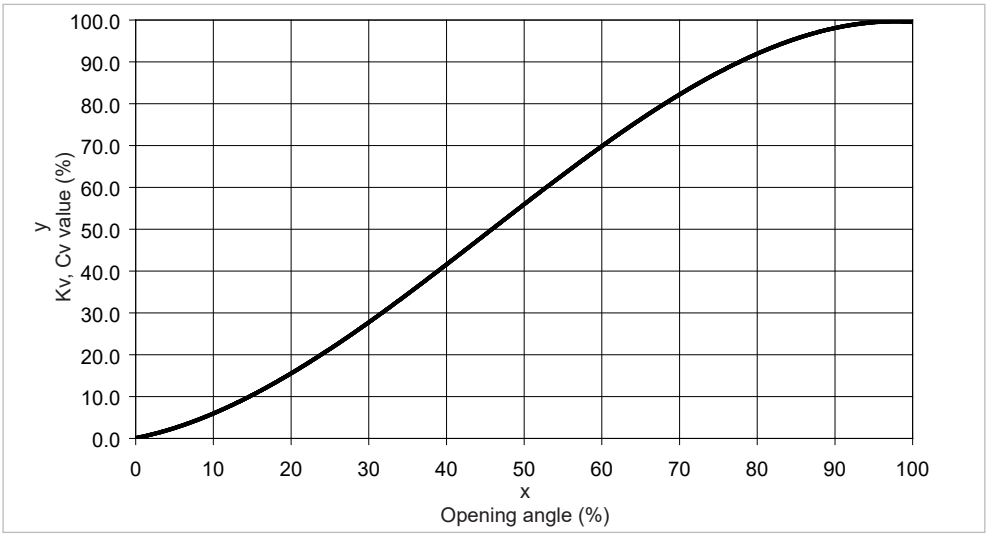
Dim. (mm)	DN (mm)	Inch (inch)	Kv 100 (l/min)	Cv 100 (US gal/min)	Kv 100 (m^3/h)
20	15	½	125	9	8
25	20	¾	271	19	16
32	25	1	481	33	29
40	32	1 ¼	759	52	45
50	40	1 ½	1'263	87	76
63	50	2	1'728	119	104

Type 519

d (mm)	DN (mm)	Inch (")	d1 (mm)	DN1 (mm)	Inch1 (")	Kv 100 (l/min)	Cv 100 (US gal/min)	Kv 100 (m^3/h)
20	15	½	20	15	½	57	4	3
25	20	¾	20	15	½	89	6	5
25	20	¾	25	20	¾	118	8	7
32	25	1	20	15	½	80	6	5
32	25	1	25	20	¾	105	7	6
32	25	1	32	25	1	231	16	14
40	32	1 ¼	20	15	½	85	6	5
40	32	1 ¼	25	20	¾	119	8	7
40	32	1 ¼	32	25	1	153	11	9
40	32	1 ¼	40	32	1 ¼	187	13	11
50	40	1 ½	20	15	½	86	6	5
50	40	1 ½	25	20	¾	160	11	10
50	40	1 ½	32	25	1	206	14	12
50	40	1 ½	40	32	1 ¼	524	36	31
50	40	1 ½	50	40	1 ½	667	46	40
63	50	2	20	15	½	84	6	5
63	50	2	25	20	¾	150	11	9
63	50	2	32	25	1	184	13	11
63	50	2	40	32	1 ¼	471	32	28
63	50	2	50	40	1 ½	610	42	37
63	50	2	63	50	2	747	52	45
90	80	3	20	15	½	82	6	5
90	80	3	25	20	¾	103	7	6
90	80	3	32	25	1	129	9	8
90	80	3	50	40	1 ½	623	43	37
90	80	3	63	50	2	696	48	42

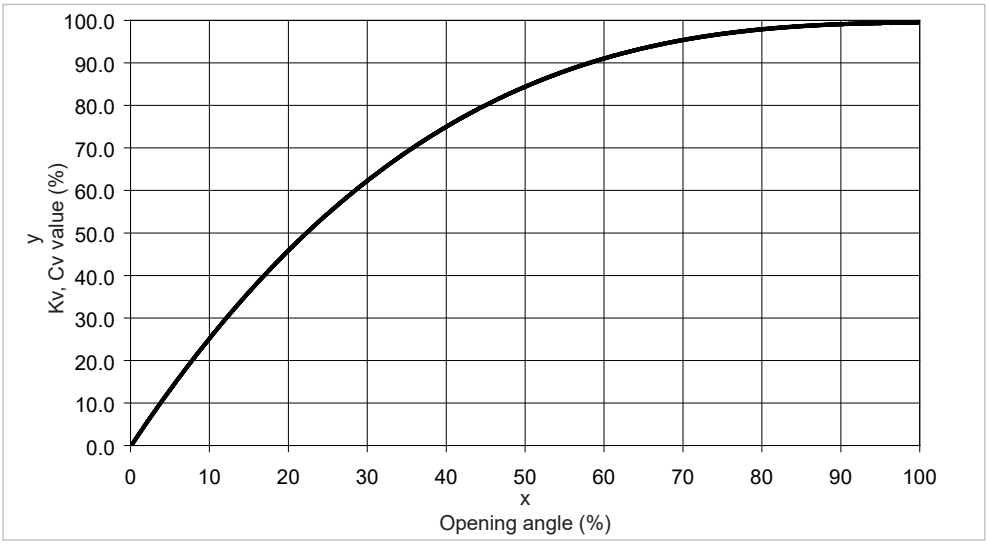
d (mm)	DN (mm)	Inch (")	d1 (mm)	DN1 (mm)	Inch1 (")	Kv 100 (l/min)	Cv 100 (US gal/min)	Kv 100 (m^3/h)
110	100	4	20	15	½	78	5	4
110	100	4	25	20	¾	103	7	6
110	100	4	32	25	1	131	9	8
110	100	4	50	40	1 ½	604	42	36
110	100	4	63	50	2	661	46	40
140	125	5	32	25	1	146	10	9
140	125	5	40	32	1 ¼	382	26	23
140	125	5	50	40	1 ½	440	30	26
140	125	5	63	50	2	502	35	30
160	150	6	32	25	1	139	10	8
160	150	6	40	32	1 ¼	382	26	23
160	150	6	50	40	1 ½	436	30	26
160	150	6	63	50	2	498	34	30

Flow characteristics type 514–517



x Open angle (%)
y Kv, Cv value (%)

Flow characteristics type 519

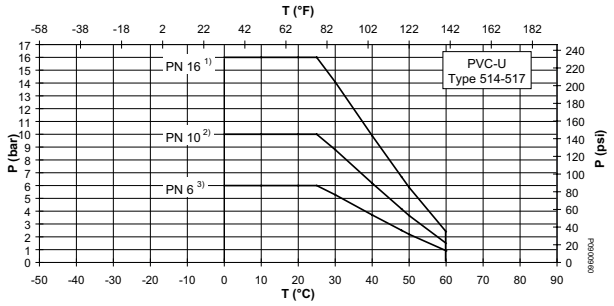


x Open angle (%)
y Kv, Cv value (%)

Pressure-temperature diagrams

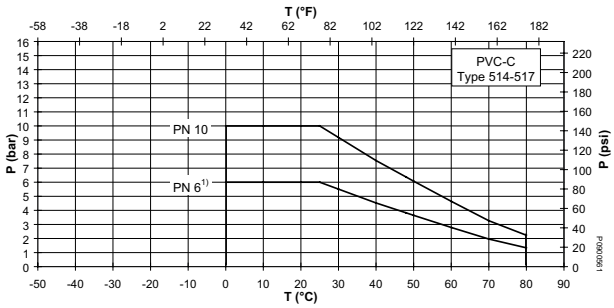
T Temperature (°C, °F)
P Permissible pressure (bar, psi)

PVC-U



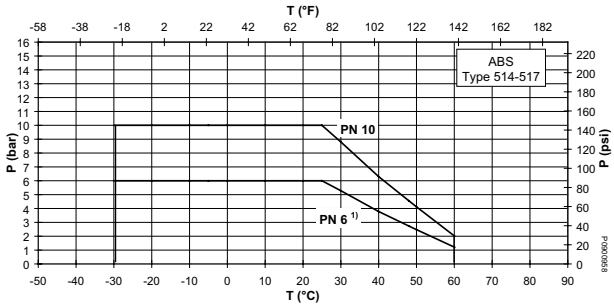
1) Only with black PPS housing nut for water applications
2) Depending on the connection type and actuator, the nominal pressure is reduced to PN10
3) Depending on the connection type and actuator, the nominal pressure is reduced to PN6

PVC-C



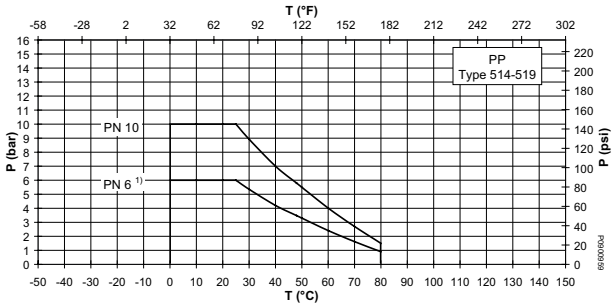
1) Depending on the connection type and actuator, the nominal pressure is reduced to PN6

ABS



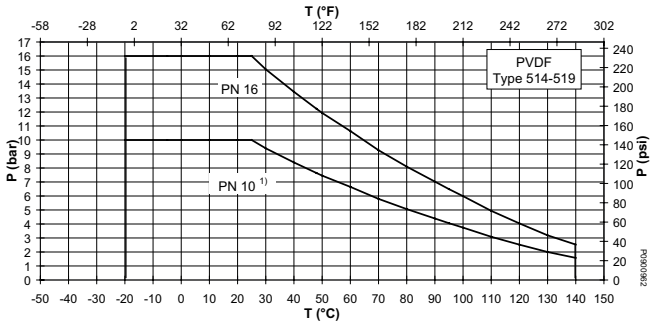
1) Depending on the connection type and actuator, the nominal pressure is reduced to PN6

PP



1) Depending on the connection type, actuator and sealing material, the nominal pressure is reduced to PN6

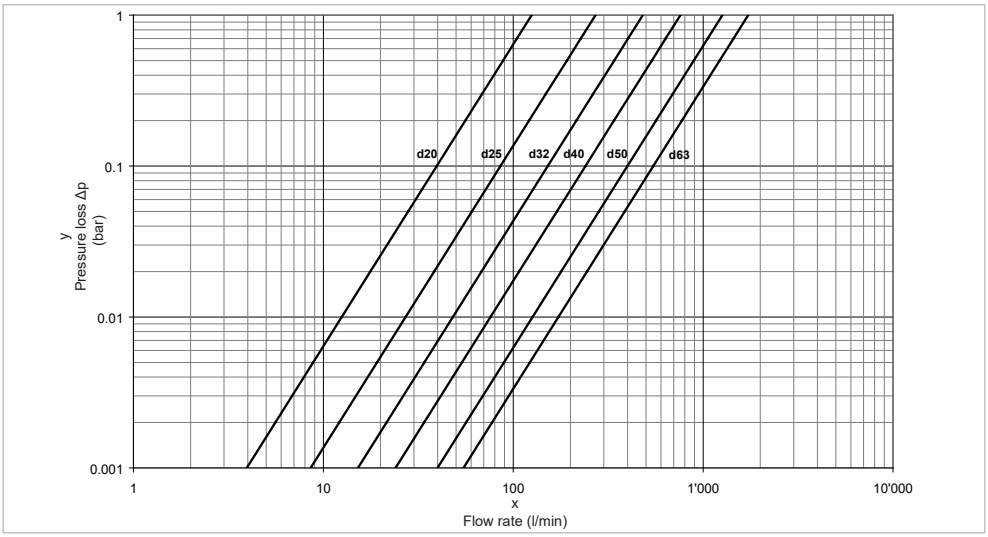
PVDF



1) PN16 only with black PPS housing nut. Depending on the connection type and actuator, the nominal pressure is reduced to PN10

Pressure losses

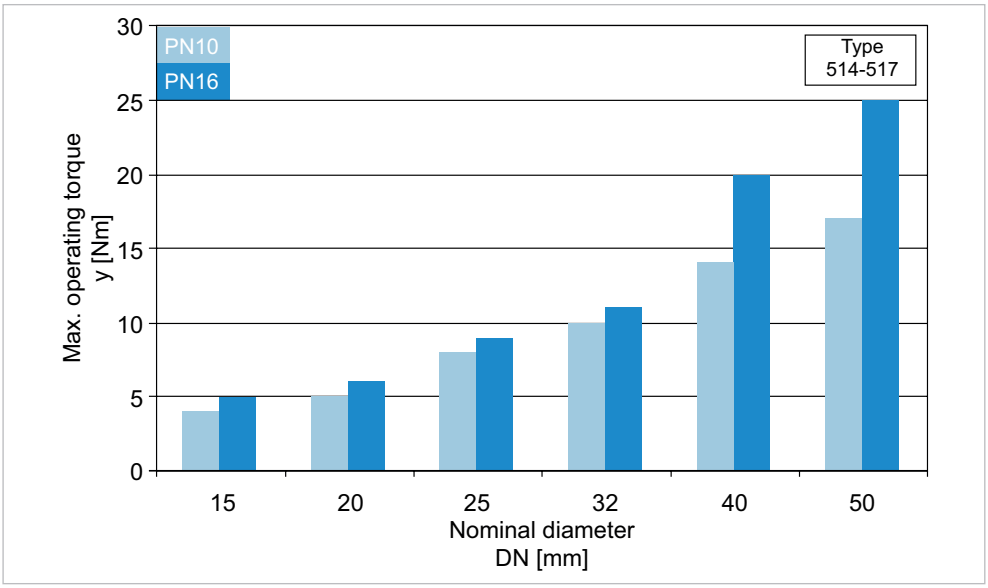
Type 514 – 517



x Flow rate (l/min, US gal/min)
y Pressure loss Δp (bar, psi)

Operating torque

Type 514 – 517



Technical basics

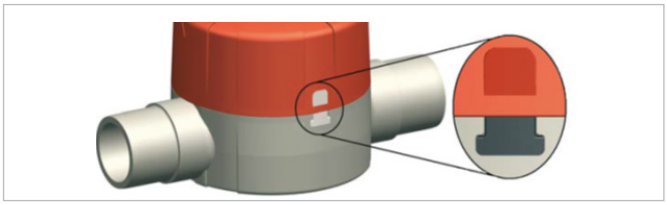
The upper part of the housing is made of PPGF (fiberglass-reinforced polypropylene) and is screwed to the lower part of the housing using a central plastic nut, which avoids exposed metal screws. The handwheel is lockable as a standard. The two-colored position indicator pin indicates the current position of the diaphragm.

i All diaphragm valves are manufactured in accordance with EN ISO 16138.

Indicator for diaphragm material

The color of the index plate on the valve body shows the type of diaphragm material:

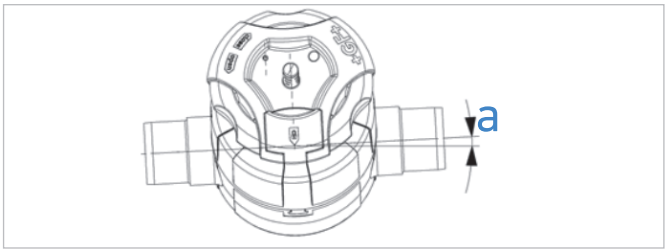
Color	Diaphragm material
Black	EPDM
White	PTFE/EPDM
Green	PTFE/FKM
Red	FKM
Blue	NBR



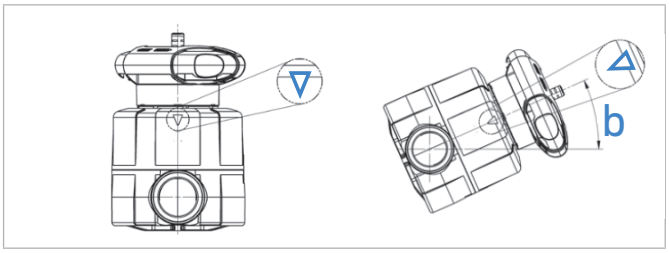
Installation angle for optimal draining of the valve

To achieve optimal draining, GF Piping Systems recommends installing the individual dimensions in accordance with the corresponding angle (a and b). An installation inclination of about 1° to 2° is not taken into consideration with the stated angles.

Dimension	Angle a for types 514, 515, 517
d20/DN15	2
d25/DN20	2
d32/DN25	3
d40/DN32	4
d50/DN40	5
D63/DN50	7

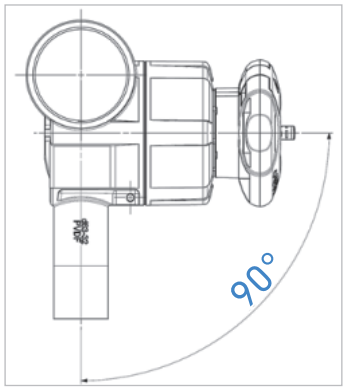


Dimension	Angle b for types 514, 515, 517
d20/DN15	27
d25/DN20	24
d32/DN25	25
d40/DN32	23
d50/DN40	24
d63/DN50	22



Optimum angle with one of the triangle legs horizontal.

Emptying angle for type 519 (3-way valve) is 90°, independent of the dimension



Integrated fastening and PP mounting blocks

Integrated mounting

ENSAT® bushings on the underside of the valve allow simple and stable attachment of the diaphragm valve. With this, the forces that can occur when operating the valve (e.g. breakaway torque) are absorbed and therefore not transferred to the piping system.

PP mounting block for diaphragm valves

The mounting blocks for diaphragm valves help compensate for the different distances from the mounting surface to the pipe axis, even when using different dimensions. The blocks can also be used for the PVC diaphragm Valve type 514 to compensate for the coupling nut to the mounting surface.

- Material: PP-GF15, black
- 5 sizes, numbered from 1 to 5
- Adjustable, in order to achieve the desired height

Valve handling

Installation notes

- Thermal expansion due to temperature changes can lead to longitudinal or bending forces in the pipe.
- Install the diaphragm valve as a fixed point. Install the pipe bracket directly in front of and behind the diaphragm valve.
- Only use the specified control pressures and use the diaphragm valve in optimum regulating mode.

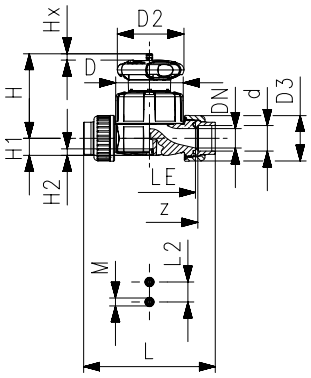
Selection of lubricants

Gaskets and spare parts can be mounted with silicon-based grease. Other lubricants may corrode the diaphragm valve material or diaphragm. Therefore, never use mineral-oil-based grease or Vaseline. Pay attention to special instructions for silicon-free and High Purity diaphragm valves.

⚠ Installation and maintenance must be performed in accordance with the corresponding installation manual. The installation manual is provided with the product, see also the online product catalog at www.gfps.com

Dimensions

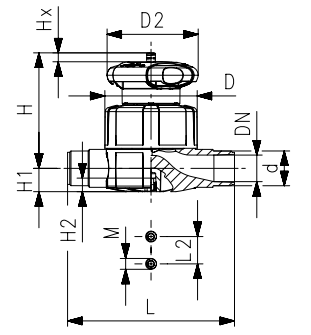
Type 514



L_1 – Threaded socket
L_2 – Solvent cement socket
L_3 – Fusion socket
L_4 – Butt fusion spigot

Dim. (mm)	DN (mm)	Inch (inch)	D (mm)	D2 (mm)	D3 (mm)	L_1 (mm)	L_2 (mm)	L_3 (mm)	L_4 (mm)	L2 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	z (mm)	LE (mm)	Hx (mm)
20	15	½	65	65	43	128	128	128	196	25	73	14	12	M6	96	90	7
25	20	¾	80	65	51	152	152	150	221	25	81	18	12	M6	114	108	10
32	25	1	88	87	58	166	166	162	234	25	107	22	12	M6	122	116	13
40	32	1 ¼	101	87	72	192	192	184	260	45	115	26	15	M8	140	134	15
50	40	1 ½	117	135	83	222	222	210	284	45	148	32	15	M8	160	154	19
63	50	2	144	135	100	266	266	148	321	45	166	39	15	M8	190	184	25

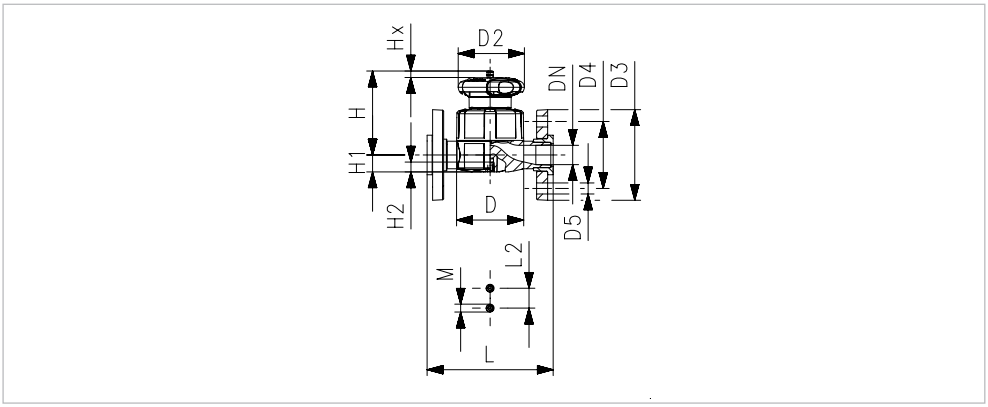
Type 515



L_5 – Fusion spigot
L_6 – Solvent cement spigot
L_7 – Butt fusion spigots

Dim. (mm)	DN (mm)	inch (inch)	D (mm)	D2 (mm)	L_5 (mm)	L_6 (mm)	L_7 (mm)	L2 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	Hx (mm)
20	15	½	65	65	124	124	124	25	73	14	12	M6	7
25	20	¾	80	65	144	144	144	25	81	18	12	M6	10
32	25	1	88	87	155	154	154	25	107	22	12	M6	13
40	32	1 ¼	101	87	176	174	174	45	115	26	15	M8	15
50	40	1 ½	117	135	193	194	194	45	148	32	15	M8	19
63	50	2	144	135	223	224	223	45	166	39	15	M8	25

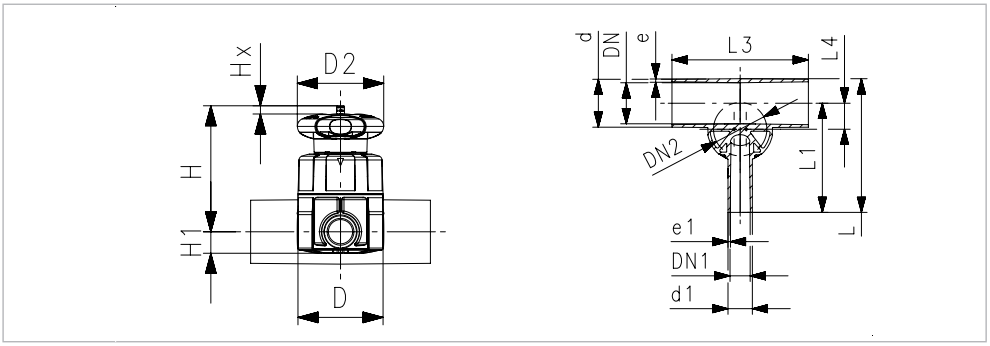
Type 517



L_8 – Backing flange

Dim. (mm)	DN (mm)	Inch (inch)	D (mm)	D2 (mm)	D3 (mm)	D4 (mm)	D5 (mm)	L_8 (mm)	L2 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	Hx (mm)
20	15	½	65	65	95	65	14	130	25	73	14	12	M6	7
25	20	¾	80	65	105	75	14	150	25	81	18	12	M6	10
32	25	1	88	87	115	85	14	160	25	107	22	12	M6	13
40	32	1 ¼	101	87	140	100	18	180	45	115	26	15	M8	15
50	40	1 ½	117	135	150	110	18	200	45	148	32	15	M8	19
63	50	2	144	135	165	125	18	232	45	166	39	15	M8	25

Type 519



L_5 – Fusion spigot

D (mm)	d1 (mm)	DN (mm)	inch (inch)	DN1 (mm)	Inch1 (")	DN2 (mm)	Inch2 (")	D (mm)	D2 (mm)	L_5 (mm)	L1 (mm)	L3 (mm)	L4 (mm)	H (mm)	H1 (mm)	Hx (mm)
20	20	15	½	15	½	15	½	65	65	117	96	162	12	75	14	7
25	20	20	¾	15	½	20	¾	80	65	133	108	162	16	80	17.5	10
25	25	20	¾	20	¾	20	¾	80	65	133	108	162	16	80	17.5	10
32	20	25	1	15	½	20	¾	80	65	142	120	162	19	84	21.5	10
32	25	25	1	20	¾	20	¾	80	65	142	120	162	19	84	21.5	10
32	32	25	1	25	1	25	1	88	87	145	120	160	19	107	21.5	13
40	20	32	1 ¼	15	½	25	1	88	87	149	128	180	23	115	21.5	13
40	25	32	1 ¼	20	¾	25	1	88	87	149	128	180	23	115	21.5	13
40	32	32	1 ¼	25	1	25	1	88	87	149	128	180	23	115	21.5	13
40	40	32	1 ¼	32	1 ¼	25	1	88	87	174	159	180	23	115	21.5	13
50	20	40	1 ½	15	½	20	¾	80	65	160	134	180	27	97	17.5	10
50	25	40	1 ½	20	¾	25	1	88	87	160	134	180	28	120	21.5	13
50	32	40	1 ½	25	1	25	1	88	87	160	134	180	28	120	21.5	13
50	40	40	1 ½	32	1 ¼	50	2	144	135	209	169	209	33	164	32	25
50	50	40	1 ½	40	1 ½	50	2	144	135	209	169	209	33	164	32	25
63	20	50	2	15	½	20	2	80	65	177	144	180	33	104	17.5	10
63	25	50	2	20	¾	25	1	88	87	177	144	180	35	127	21.5	13
63	32	50	2	25	1	25	1	88	87	177	144	180	35	127	21.5	13

D (mm)	d1 (mm)	DN (mm)	inch (inch)	DN1 (mm)	Inch1 (")	DN2 (mm)	Inch2 (")	D (mm)	D2 (mm)	L_5 (mm)	L1 (mm)	L3 (mm)	L4 (mm)	H (mm)	H1 (mm)	Hx (mm)
63	40	50	2	32	1 ¼	50	1	144	135	225	192	220	39	170	39	25
63	50	50	2	40	1 ½	50	2	144	135	225	192	220	39	170	39	25
63	63	50	2	50	2	50	2	144	135	225	192	220	39	170	39	25
90	20	80	3	15	½	25	1	88	87	205	159	190	47	140	21.5	13
90	25	80	3	20	¾	25	1	88	87	205	159	190	47	140	21.5	13
90	32	80	3	25	1	25	1	88	87	205	159	190	47	140	21.5	13
90	50	80	3	40	1 ½	50	2	144	135	254	207	250	51	184	39	25
90	63	80	3	50	2	50	2	144	135	254	207	250	51	184	39	25
110	20	100	4	15	½	25	1	88	87	227	171	190	56	149	21.5	13
110	25	100	4	20	¾	25	1	88	87	227	171	190	56	149	21.5	13
110	32	100	4	25	1	25	1	88	87	227	171	190	56	149	21.5	13
110	50	100	4	40	1 ½	50	2	144	135	276	219	250	60	194	39	25
110	63	100	4	50	2	50	2	144	135	276	219	250	60	194	39	25
140	32	125	5	25	1	25	1	87	87	258	186	310	70	155	21.5	25
140	40	125	5	32	1 ¼	50	2	144	135	291	219	310	78	204	39	50
140	50	125	5	40	1 ½	50	2	144	135	291	219	310	78	204	39	50
140	63	125	5	50	2	50	2	144	135	291	219	310	78	204	39	50
160	32	150	6	25	1	25	1	87	87	278	196	310	81	161	21.5	25
160	40	150	6	32	1 ¼	50	2	144	135	301	219	310	87	213	39	50
160	50	150	6	40	1 ½	50	2	144	135	301	219	310	87	213	39	50
160	63	150	6	50	2	50	2	144	135	301	219	310	87	213	39	50

Accessories

- Electrical position indicator with Ag Ni or AU limit switch

For further information on accessories, refer to the online product catalog at www.gfps.com

Mobile apps and online tools to support configuration and calculation at www.gfps.com/tools

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