3-way Ball Valve Type 543

Horizontal

Vertical

Product description

Ball Valve Type 543 is the perfect valve for all mixing and diverting processes. The availability in horizontal design with L or T-ball and vertical design with L or tripod ball makes many application options possible. Diverting, mixing, distributing or even shutting off a medium are only a few possibilities.

Applications

- Chemical process industry
- Seawater desalinization systems
- Life science industry
- Microelectronics
- Measurement and control
- Water treatment
- Diverting function in shipbuilding

Benefits/features

- Ideal diverting and mixing fitting
- Ball with L-port / T-port
- Dimension range DN10 – DN50
- Lever material made of fiberglass-reinforced polypropylene (PP-GF)
- 90° end stop standard, 180° end stop on request
- Tool integrated into lever
- Very good flow properties
- Long service life
- Automation with electrical or pneumatic actuator possible

Flow media

Neutral and aggressive media with a small amount of particles/solids. The chemical resistance depends on the selected valve material (see online tool ChemRes PLUS).

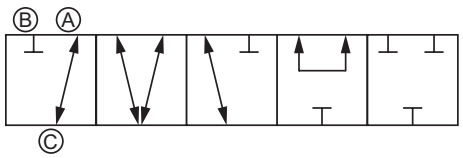
Technical basics

Versions

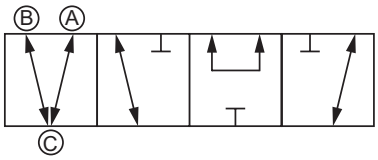
The Ball Valve Type 543 is available as a horizontal and vertical version. The horizontal valve can be ordered with L- or T-port ball. The vertical fitting comes in the L-port configuration or with a optional tripod ball.

Type 543, horizontal

The decision whether to use a 3-way ball valve with L-port or-T-port depends on the desired functions the valve has to perform:

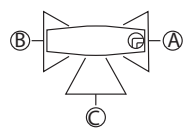


L-port: diverting, shutting off (two inputs closed)

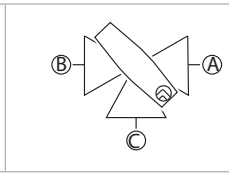


T-port: diverting function, mixing function, throughput

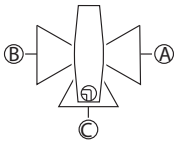
L-port



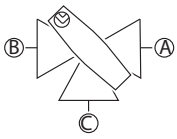
A-C open



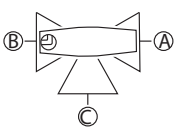
A-B-C open



B-C open



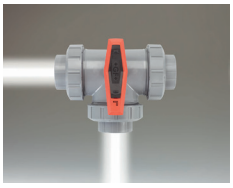
A-B open



Closed

Diverting function in the base position

Mixing function with decreased flow

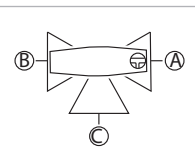


Diverting function

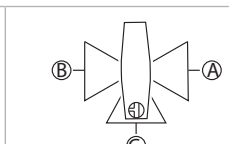
Outlet closed, passage open with decreased flow

Shutting off function

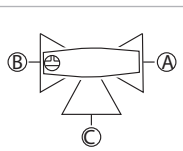
T-port



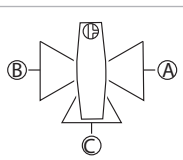
A-B-C open



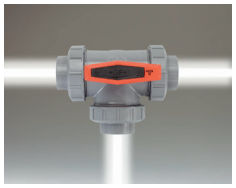
B-C open



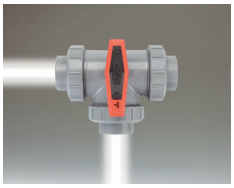
A-B open



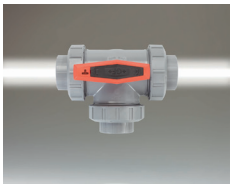
A-C open



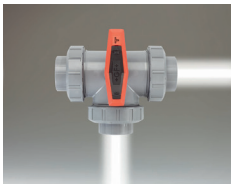
Diverting function in the base position



Diverting function



Outlet closed, passage opened

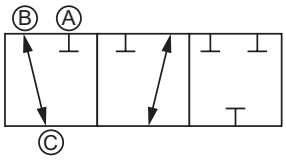


Diverting function

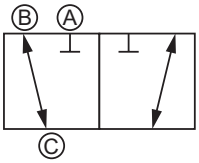
Type 543, vertical

The decision whether to use a 3-way ball valve with L- or tripod-port depends on the desired functions the valve has to perform:

- L-port: diverting function, closing (two ports closed)
- Tripod port: diverting, change from B-C open to A-C open with 90° turn of the lever

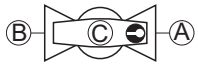


L-port: diverting, shutting off

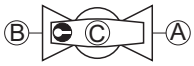


Tripod: diverting

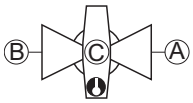
L-port



B-C open*

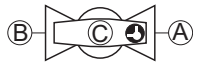


A-C open

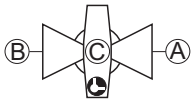


closed

Tripod-port



B-C open*

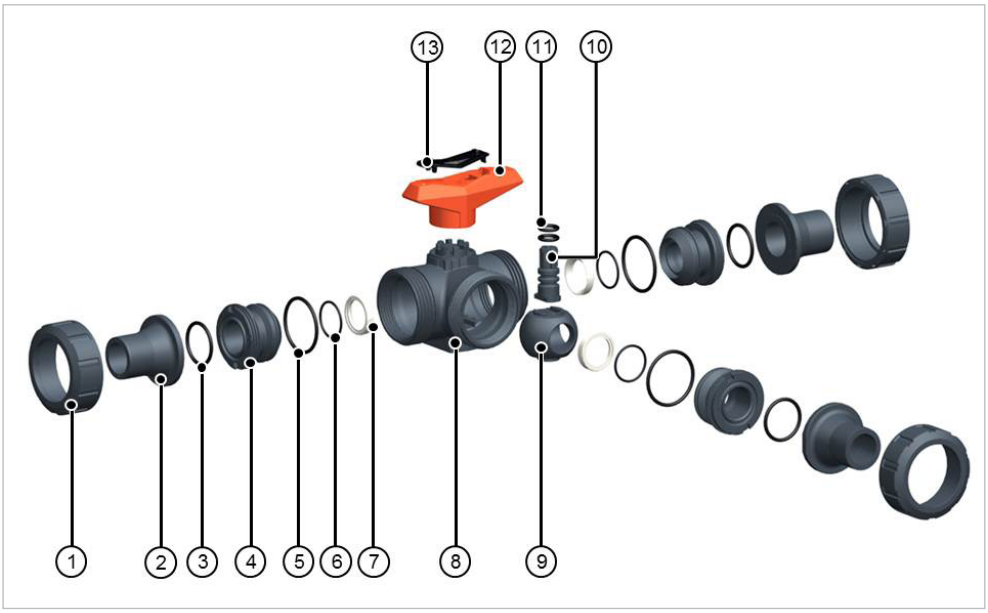


A-C open

*Normal position

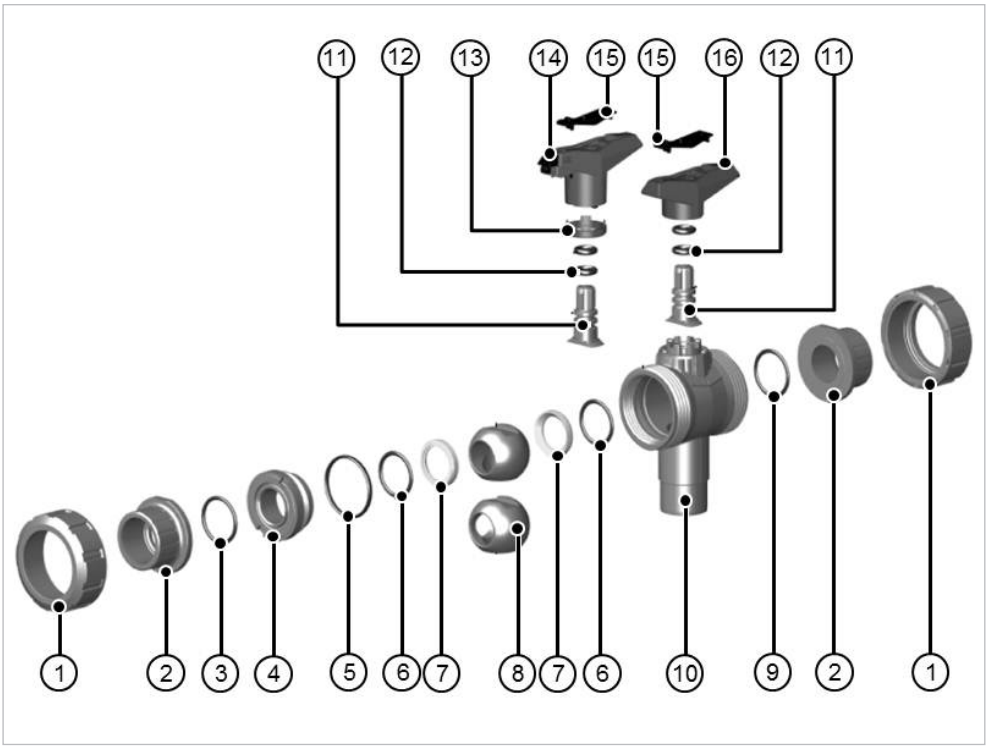
Technical data

Ball valve, horizontal



① Coupling nut
② Connecting part
③ Connection part gasket
④ Union bushing
⑤ Body seal
⑥ Backing seal
⑦ Ball seal
⑧ Housing
⑨ Ball L/T
⑩ Stem
⑪ Stem seal
⑫ Standard hand lever
⑬ Hand lever clip

Ball valve, vertical



① Coupling nut
② Connecting part
③ Connection part gasket
④ Union bushing
⑤ Body seal
⑥ Backing seal
⑦ Ball seal
⑧ Ball
⑨ Body seal
⑩ Housing
⑪ Stem
⑫ Stem seal
⑬ Spacer
⑭ Multifunctional hand lever
⑮ Hand lever clip
⑯ Standard hand lever

Specification		
Dimensions	d16/DN10 – d63/DN50, ⅜"– 2"	
Materials	Valve body, horizontal	PVC-U, PVC-C, ABS, PP-H, PVDF
	Valve body, vertical	PVC-U, ABS
	Lever	PP-GF 30
Gasket materials	O-rings	EPDM, FKM, FFKM
	Ball seal	PTFE, PVDF
Pressure levels	PN10	
Actuation variants, horizontal	Hand-operated	
	Pneumatically or electrically actuated	
	Ball with L/T port 180° end stop on request	
	Multifunctional handle optional	
Actuation variants, vertical	Manual; electric and pneumatic (only with tripod ball) actuation	
	Ball with L-Port and tripod port	
	Multifunctional handle optional	
Connections	Fusion / solvent cement sockets	ISO, ASTM, JIS, BS
	Fusion / solvent cement spigot	ISO
	Threaded socket	Rp, NPT, Rc
	PE100 electrofusion spigot or butt fusion spigot in SDR11	
Approvals	DVGW, ACS, ABS, NSF, WRAS, DIBt, TA Luft, RINA, BV, FDA, SEPRO, TSSA	

Pressure-temperature diagrams

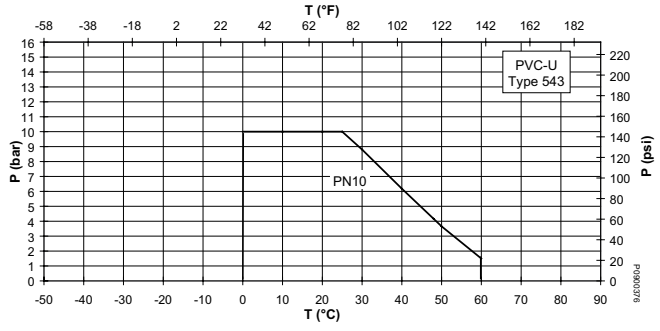
The pressure-temperature diagram is based on a service life of 25 years using water or similar media.

T Temperature (°C, °F)

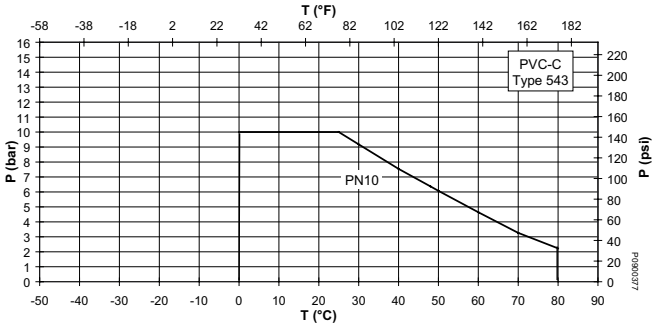
P Permissible pressure (bar, psi)

EPDM sealing to max. 100 °C

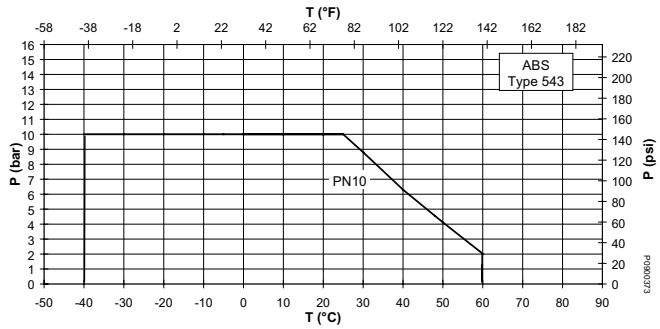
PVC-U



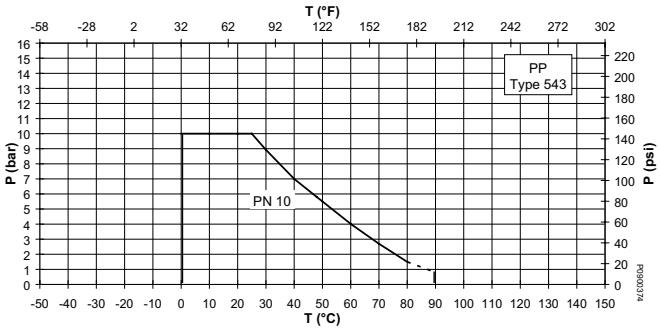
PVC-C



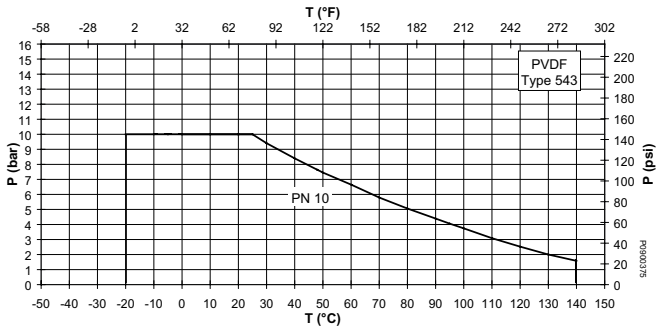
ABS



PP



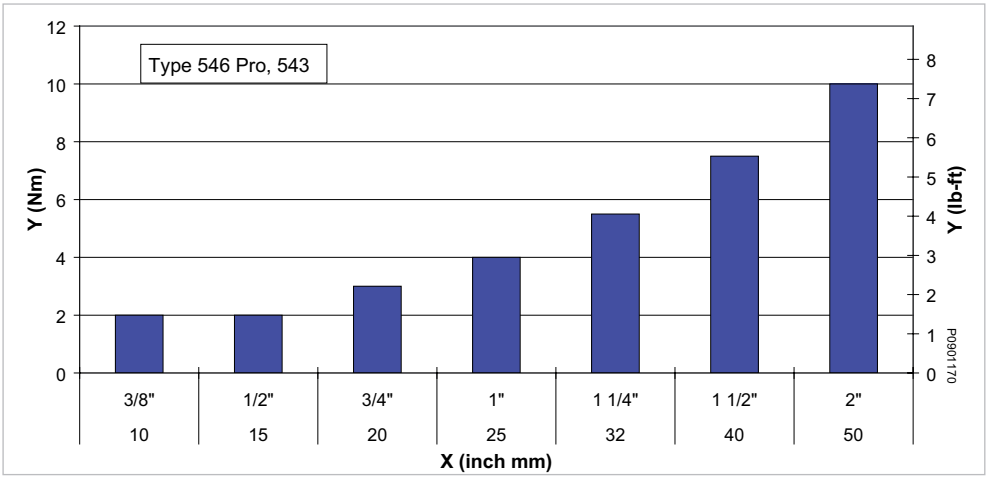
PVDF



Pressure losses and flow characteristics

X Flow rate (l/min, US gal/min)
Y Pressure loss Δp (bar, psi)
a Opening angle (°)
kv kv, Cv value (%)

Operating torque



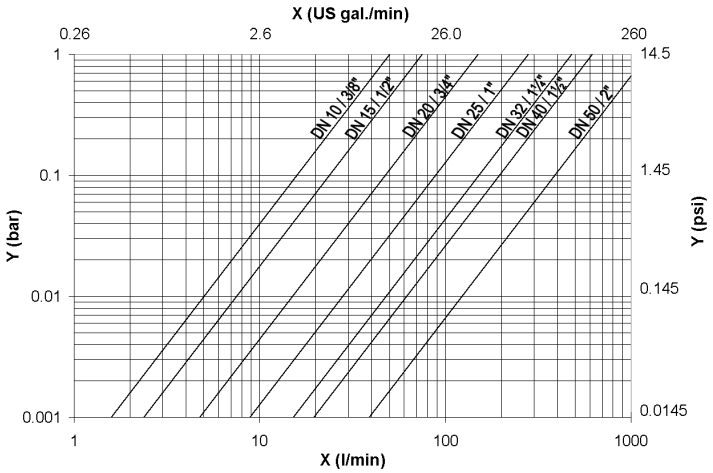
X Nominal diameter DN (mm, inch)
Y Tightening torque (Nm, lb-ft)

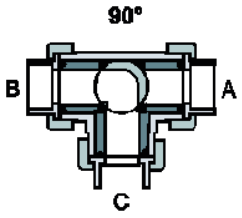
Depending on the application (e.g. operating speed, fluid, temperature, etc.), breakaway torques of approx. 2 times the operating torque should be taken into consideration for third-party actuators.

Characteristics – Ball Valve Type 543 horizontal: Ball with L-port

Flow direction C → B, B → C, A → C, C → A

Pressure loss



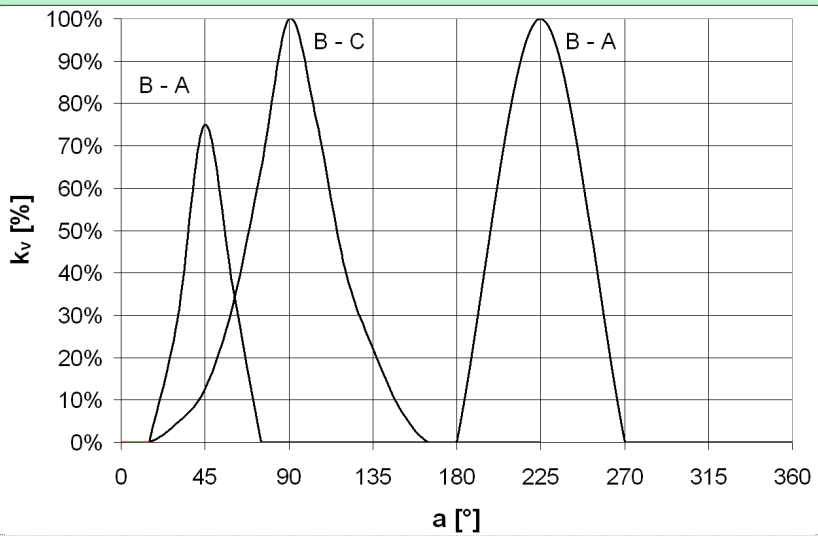


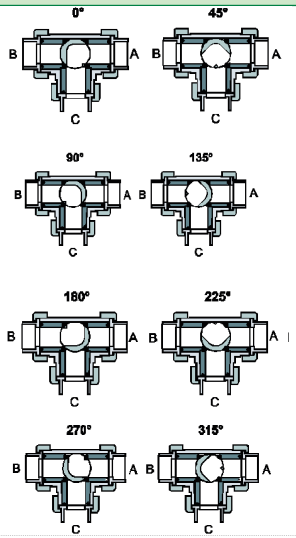
Medium: Water, 20 °C
X Flow rate (l/min, US-gal/min)
Y Pressure loss Δp (bar, psi)

Kv 100 values

DN (mm)	Zoll (inch)	d (mm)	Kv 100 (l/min)	Cv 100 (gal/min)	Kv 100 (m^3/h)
10	⅜	16	50	3.5	3
15	½	20	75	5.3	4.5
20	¾	25	150	10.5	9
25	1	32	280	19.6	16.8
32	1 ¼	40	480	33.6	28.8
40	1 ½	50	620	43.4	37
50	2	63	1230	86.1	74

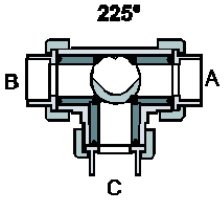
Flow characteristics





Flow direction B → A

Ball position



Medium: Water, 20 °C
X Flow rate (l/min, US-gal/min)
Y Pressure loss Δp (bar, psi)

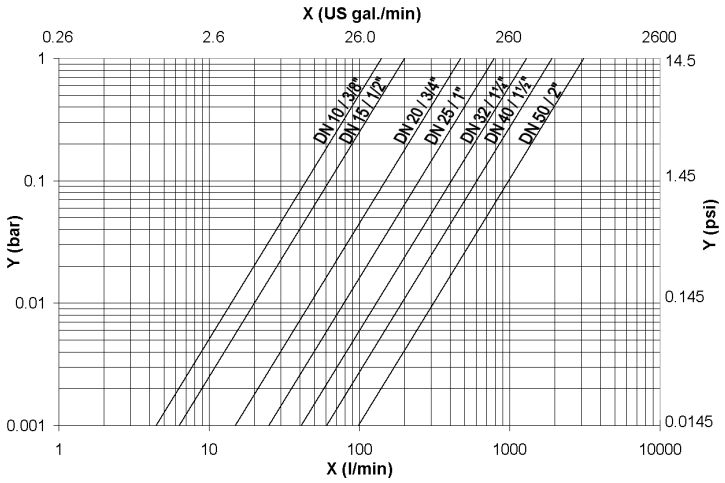
Kv 100 values

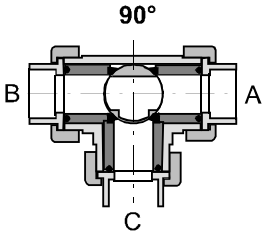
DN (mm)	Zoll (inch)	d (mm)	Kv 100 (l/min)	Cv 100 (gal/min)	Kv 100 (m^3/h)
10	⅜	16	10	0.7	0.6
15	½	20	15	1.1	0.9
20	¾	25	30	2.1	1.8
25	1	32	50	3.5	3
32	1 ¼	40	90	6.3	5.4
40	1 ½	50	110	7.7	6.6
50	2	63	220	15.4	13.2

Characteristics – Ball Valve Type 543 horizontal: Ball with T-port

Flow direction B → A

Pressure loss



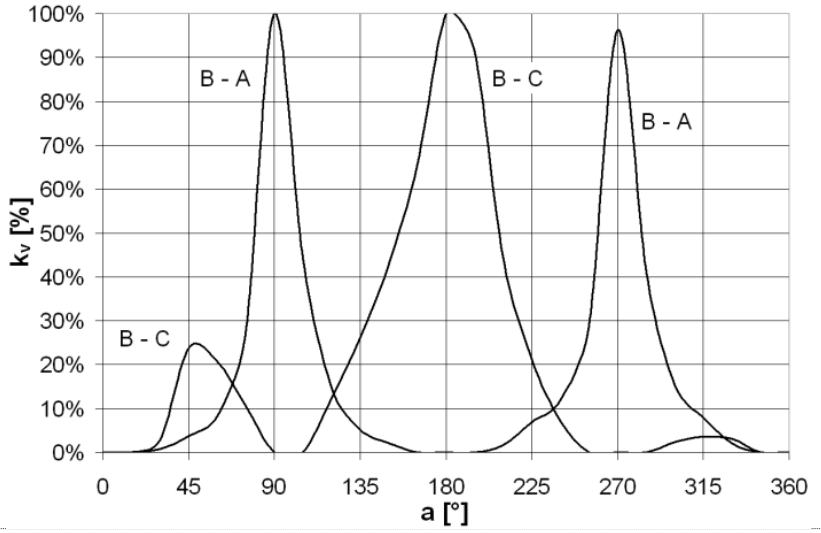


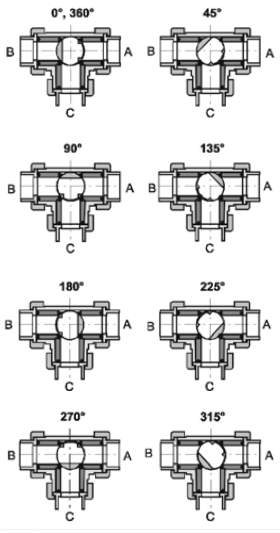
Medium: Water, 20 °C
X Flow rate (l/min, US-gal/min)
Y Pressure loss Δp (bar, psi)

Kv 100 values

DN (mm)	Zoll (inch)	d (mm)	Kv 100 (l/min)	Cv 100 (gal/min)	Kv 100 (m^3/h)
10	⅜	16	140	9.8	8.4
15	½	20	200	14	12.0
20	¾	25	470	32.9	28.2
25	1	32	793	55.5	47.8
32	1 ¼	40	1290	90.3	77.4
40	1 ½	50	1910	133.7	115
50	2	63	3100	217	186

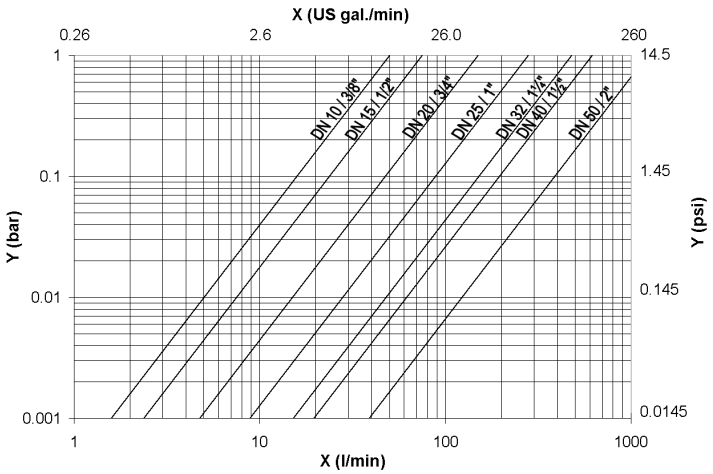
Flow characteristics

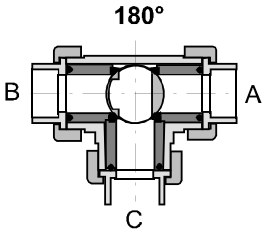




Flow direction B → C

Pressure loss



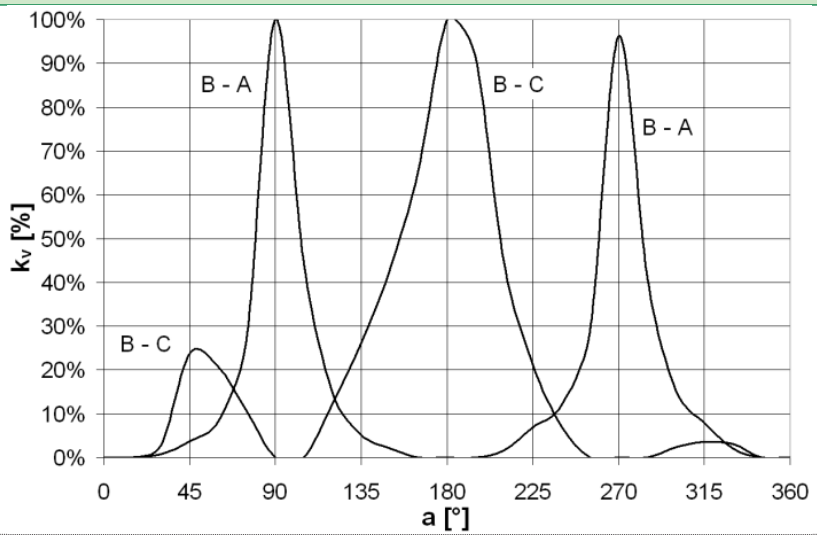


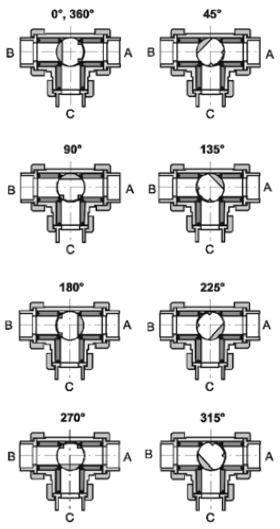
Medium: Water, 20 °C
X Flow rate (l/min, US-gal/min)
Y Pressure loss Δp (bar, psi)

Kv 100 values

DN (mm)	Zoll (inch)	d (mm)	Kv 100 (l/min)	Cv 100 (gal/min)	Kv 100 (m^3/h)
10	⅜	16	40	2.8	2.4
15	½	20	70	4.9	4.2
20	¾	25	150	10.5	9
25	1	32	250	17.5	15
32	1 ¼	40	470	32.9	28
40	1 ½	50	600	42	36
50	2	63	1210	84.7	73

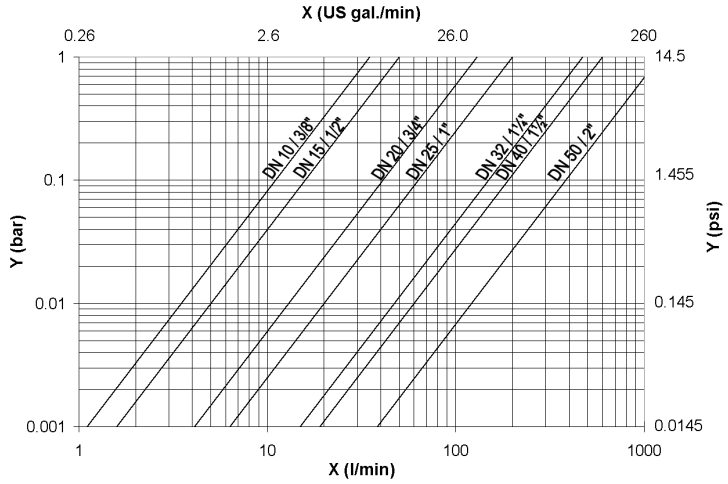
Flow characteristics

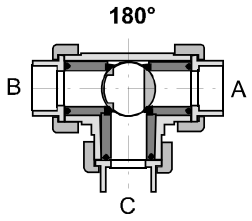




Flow direction C → B, C → A

Pressure loss



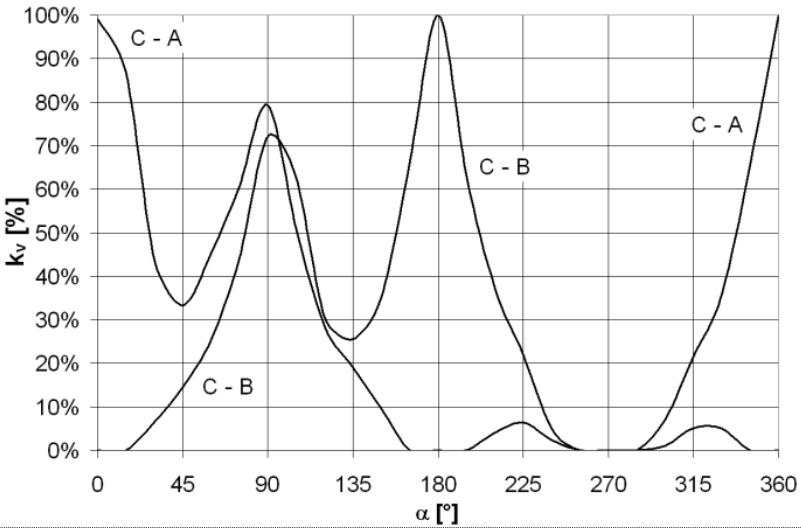


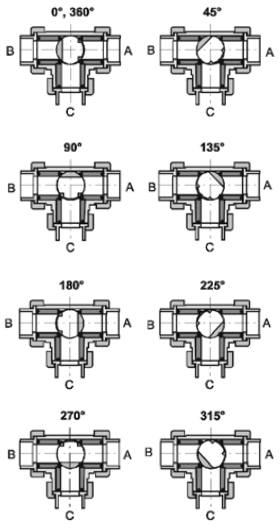
Medium: Water, 20 °C
X Flow rate (l/min, US-gal/min)
Y Pressure loss Δp (bar, psi)

Kv 100 values

DN (mm)	Zoll (inch)	d (mm)	Kv 100 (l/min)	Cv 100 (gal/min)	Kv 100 (m^3/h)
10	⅜	16	35	2.5	2.1
15	½	20	50	3.5	3
20	¾	25	130	9.1	7.8
25	1	32	200	14	12
32	1 ¼	40	380	26.6	23
40	1 ½	50	470	32.9	28
50	2	63	890	62.3	53

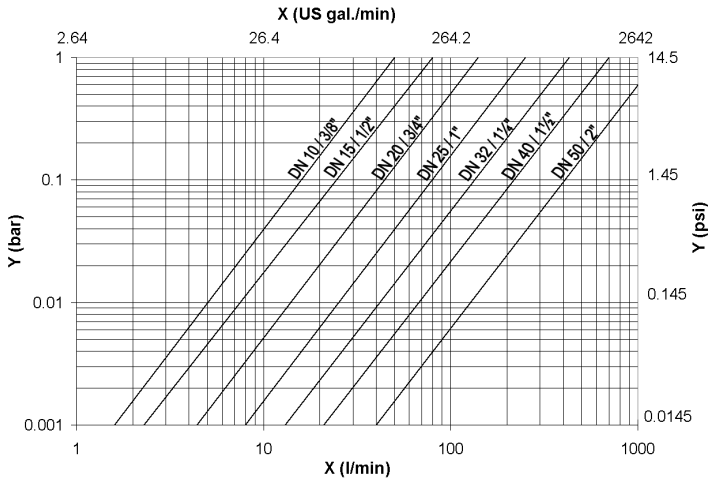
Flow characteristics





Characteristics – Ball Valve Type 543 vertikal: Ball with L-port

Pressure loss

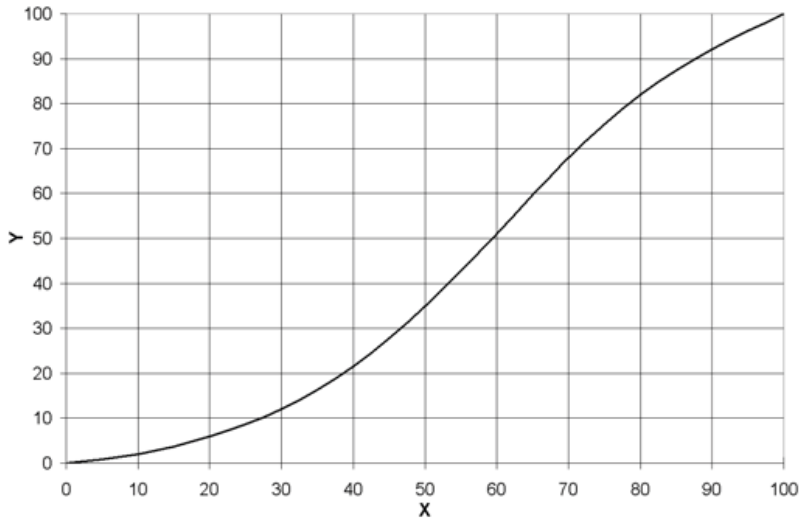


Medium: Water, 20 °C
X Flow rate (l/min, US-gal/min)
Y Pressure loss Δp (bar, psi)

Kv 100 values

DN (mm)	Zoll (inch)	d (mm)	Kv 100 (l/min)	Kv 100 (m^3/h)
10	⅜	16	50	3
15	½	20	80	4.8
20	¾	25	140	8.4
25	1	32	250	15
32	1 ¼	40	430	26
40	1 ½	50	700	42
50	2	63	1300	78

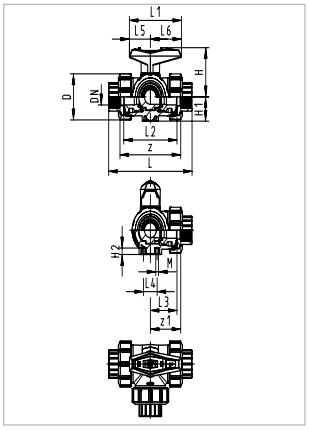
Flow characteristics



Dimensions – Ball Valve Type 543 horizontal: Ball with L-port

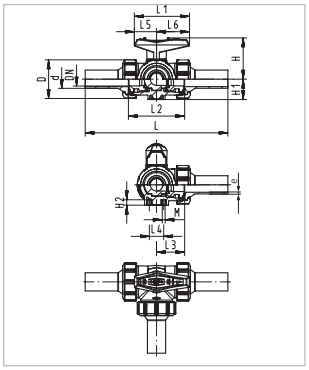
Solvent cement socket, metric

d (mm)	D (mm)	L (mm)	L1 (mm)	l2 (mm)	l3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	z (mm)	z1 (mm)	closest inch
16	50	109	77	73	36	25	32	45	57	28	8	6	81	40	⅜
20	50	112	77	73	36	25	32	45	57	28	8	6	81	40	½
25	58	131	97	86	43	25	39	58	67	32	8	6	94	47	¾
32	68	151	97	99	50	25	39	58	73	36	8	6	107	54	1
40	84	181	128	120	60	45	54	74	90	45	9	8	130	65	1 ¼
50	97	205	128	137	69	45	54	74	97	51	9	8	143	72	1 ½
63	124	261	152	179	89	45	66	87	116	65	9	8	185	92	2



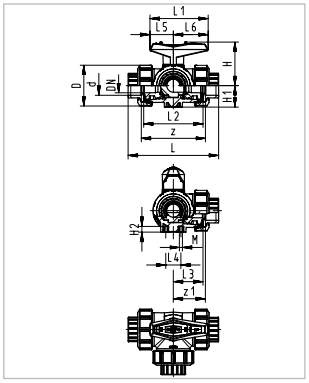
Threaded socket Rp

Rp Inch	D (mm)	L (mm)	L1 (mm)	l2 (mm)	l3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	z (mm)	z1 (mm)
⅜	50	113	77	73	36	25	32	45	57	28	8	6	87	43
½	50	117	77	73	36	25	32	45	57	28	8	6	85	42
¾	58	135	97	86	43	25	39	58	67	32	8	6	100	50
1	68	155	97	99	50	25	39	58	73	36	8	6	113	57
1 ¼	84	179	128	120	60	45	54	74	90	45	9	8	134	67
1 ½	97	201	128	137	69	45	54	74	97	51	9	8	155	78
2	124	255	152	179	89	45	66	87	116	65	9	8	199	99



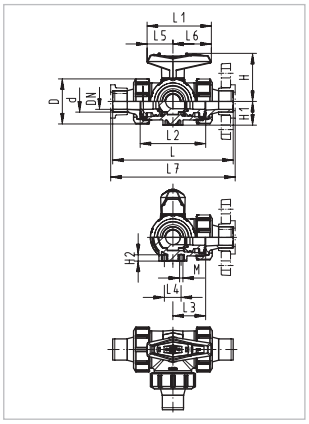
Solvent cement spigot, metric

d (mm)	D (mm)	L (mm)	L1 (mm)	l2 (mm)	l3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	L7 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	Closest inch
16	50	131	77	73	36	25	32	45	137	57	28	8	6	⅜
20	50	141	77	73	36	25	32	45	147	57	28	8	6	½
25	58	165	97	86	43	25	39	58	171	67	32	8	6	¾
32	68	182	97	99	50	25	39	58	188	73	36	8	6	1
40	84	209	128	120	60	45	54	74	215	90	45	9	8	1 ¼
50	97	242	128	137	69	45	54	74	248	97	51	9	8	1 ½
63	124	302	152	179	89	45	66	87	308	116	65	9	8	2



Butt fusion spigot, long

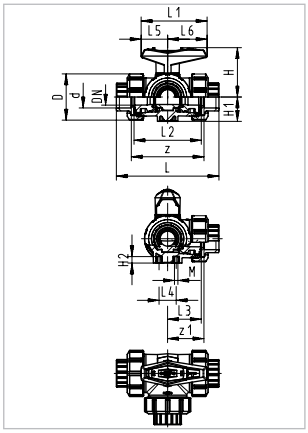
d (mm)	D (mm)	L (mm)	L1 (mm)	l2 (mm)	l3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	e (mm)	Closest inch
20	50	210	77	73	36	25	32	45	57	28	8	6	2.3	½
25	58	237	97	86	43	25	39	58	67	32	8	6	2.3	¾
32	68	251	97	99	50	25	39	58	73	36	8	6	3	1
40	84	283	128	120	60	45	54	74	90	45	9	8	3.7	1 ¼
50	97	319	128	137	69	45	54	74	97	51	9	8	4.6	1 ½
63	124	399	152	179	89	45	66	87	116	65	9	8	5.8	2



Dimensions – Ball Valve 543 horizontal: Ball with T-port

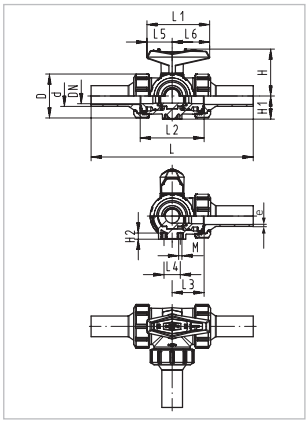
Solvent cement socket, metric

d (mm)	D (mm)	L (mm)	L1 (mm)	l2 (mm)	l3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	z (mm)	z1 (mm)	Closest inch
16	50	109	77	73	36	25	32	45	57	28	8	6	81	40	⅜
20	50	112	77	73	36	25	32	45	57	28	8	6	81	40	½
25	58	131	97	86	43	25	39	58	67	32	8	6	94	47	¾
32	68	151	97	99	50	25	39	58	73	36	8	6	107	54	1
40	84	181	128	120	60	45	54	74	90	45	9	8	130	65	1 ¼
50	97	205	128	137	69	45	54	74	97	51	9	8	143	72	1 ½
63	124	261	152	179	89	45	66	87	116	65	9	8	185	92	2



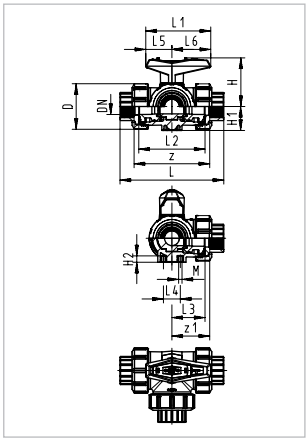
Threaded socket Rp

Rp inch	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	z (mm)	z1 (mm)
⅜	50	113	77	73	36	25	32	45	57	28	8	6	87	43
½	50	117	77	73	36	25	32	45	57	28	8	6	85	42
¾	58	135	97	86	43	25	39	58	67	32	8	6	100	50
1	68	155	97	99	50	25	39	58	73	36	8	6	113	57
1 ¼	84	179	128	120	60	45	54	74	90	45	9	8	134	67
1 ½	97	201	128	137	69	45	54	74	97	51	9	8	155	78
2	124	255	152	179	89	45	66	87	116	65	9	8	199	99



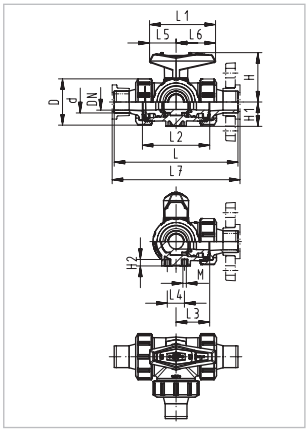
Solvent cement spigot, metric

d (mm)	D (mm)	L (mm)	L1 (mm)	l2 (mm)	l3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	L7 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	closest inch
16	50	131	77	73	36	25	32	45	137	57	28	8	6	⅜
20	50	141	77	73	36	25	32	45	147	57	28	8	6	½
25	58	165	97	86	43	25	39	58	171	67	32	8	6	¾
32	68	182	97	99	50	25	39	58	188	73	36	8	6	1
40	84	209	128	120	60	45	54	74	215	90	45	9	8	1 ¼
50	97	242	128	137	69	45	54	74	248	97	51	9	8	1 ½
63	124	302	152	179	89	45	66	87	308	116	65	9	8	2



Butt fusion spigot, long

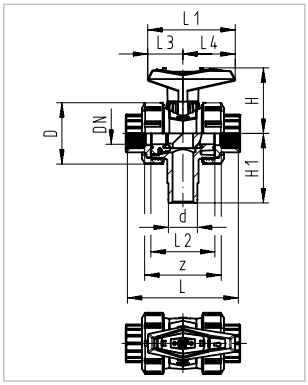
d (mm)	D (mm)	L (mm)	L1 (mm)	l2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	e (mm)	closest (mm)
20	50	210	77	73	36	25	32	45	57	28	8	6	2.3	½
25	58	237	97	86	43	25	39	58	67	32	8	6	2.3	¾
32	68	251	97	99	50	25	39	58	73	36	8	6	3	1
40	84	283	128	120	60	45	54	74	90	45	9	8	3.7	1 ¼
50	97	319	128	137	69	45	54	74	97	51	9	8	4.6	1 ½
63	124	399	152	179	89	45	66	87	116	65	9	8	5.8	2



Dimensions – Ball Valve Type 543 vertical: Ball with L-port

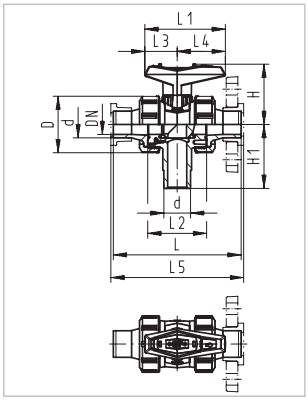
Solvent cement socket, metric

d (mm)	D (mm)	L (mm)	L1 (mm)	l2 (mm)	l3 (mm)	L4 (mm)	H (mm)	H1 (mm)	z (mm)	closest inch
16	50	92	77	56	32	45	57	62	64	⅜
20	50	95	77	56	32	45	57	62	64	½
25	58	111	97	66	39	58	67	72	74	¾
32	68	123	97	71	39	58	73	77	79	1
40	84	146	128	85	54	74	90	87	95	1 ¼
50	97	157	128	89	54	74	97	97	95	1 ½
63	124	183	152	101	66	87	116	112	107	2



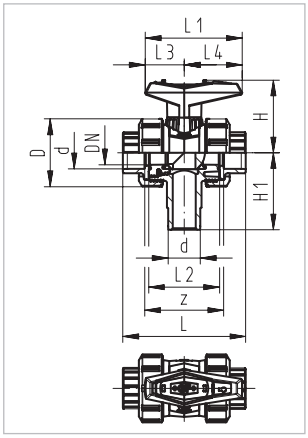
Threaded socket Rp

Rp inch	D (mm)	L (mm)	L1 (mm)	L2 (mm)	l3 (mm)	L4 (mm)	H (mm)	H1 (mm)	z (mm)
⅜	50	96	77	56	32	45	57	62	69
½	50	99	77	56	32	45	57	62	67
¾	58	115	97	66	39	58	67	72	78
1	68	127	97	71	39	58	73	77	85
1 ¼	84	144	128	85	54	74	90	87	100
1 ½	97	153	128	89	54	74	97	97	106
2	124	177	152	101	66	87	116	112	121



Solvent cement spigot, metric

d (mm)	D (mm)	L (mm)	L1 (mm)	l2 (mm)	l3 (mm)	L4 (mm)	L5 (mm)	H (mm)	H1 (mm)	closest inch
16	50	114	77	56	32	45	120	57	62	⅜
20	50	124	77	56	32	45	130	57	62	½
25	58	144	97	66	39	58	150	67	72	¾
32	68	154	97	71	39	58	160	73	77	1
40	84	174	128	85	54	74	180	90	87	1 ¼
50	97	194	128	89	54	74	200	97	97	1 ½
63	124	224	152	101	66	87	230	116	112	2



Accessories

- Multifunctional module
- Multifunctional hand lever with ratchet settings, lockable
- Hand lever extension
- Mounting block
- Klip-it pipe clips
- Klip-it spacers
- 90° – 180° stop

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

Mobile apps and online tools to support configuration and calculation at

www.gfps.com/tools

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