3-way Ball Valve Type 543 Pro

3-way Ball Valve Type 543 Pro, manually operated

Horizontal

Vertical

Product description

Ball Valve Type 543 Pro 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

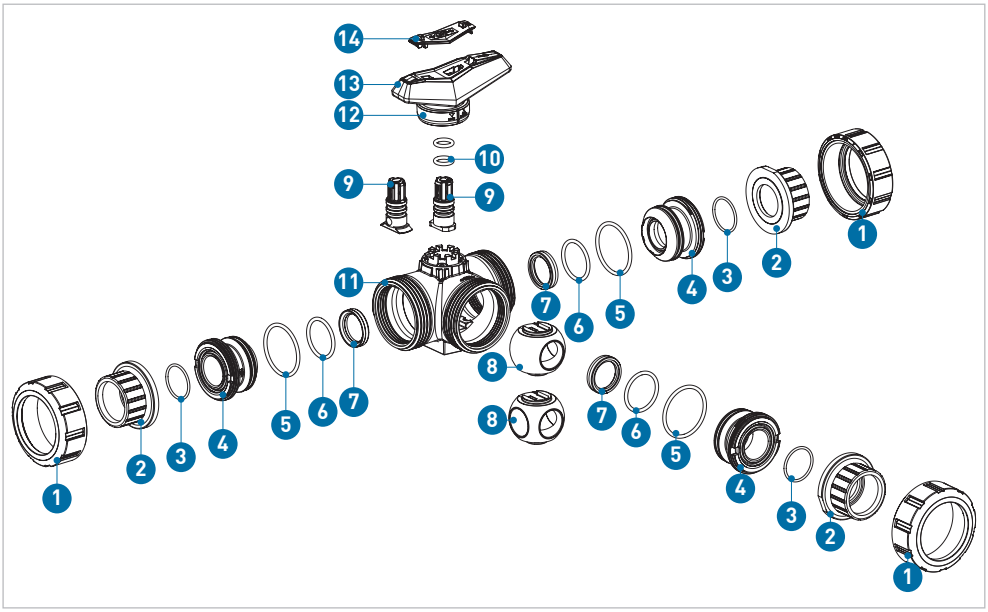
- Lockable lever as standard (lockable every 90°)
- Electric position feedback via NPN/PNP/Namur Sensor
- Data Matrix Code on every valve
- Ideal diverting and mixing fitting
- Ball with L-port / T-port
- Dimension range DN10 – DN50
- Lever material made of fiberglass-reinforced polypropylene (PP-GF)
- 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).

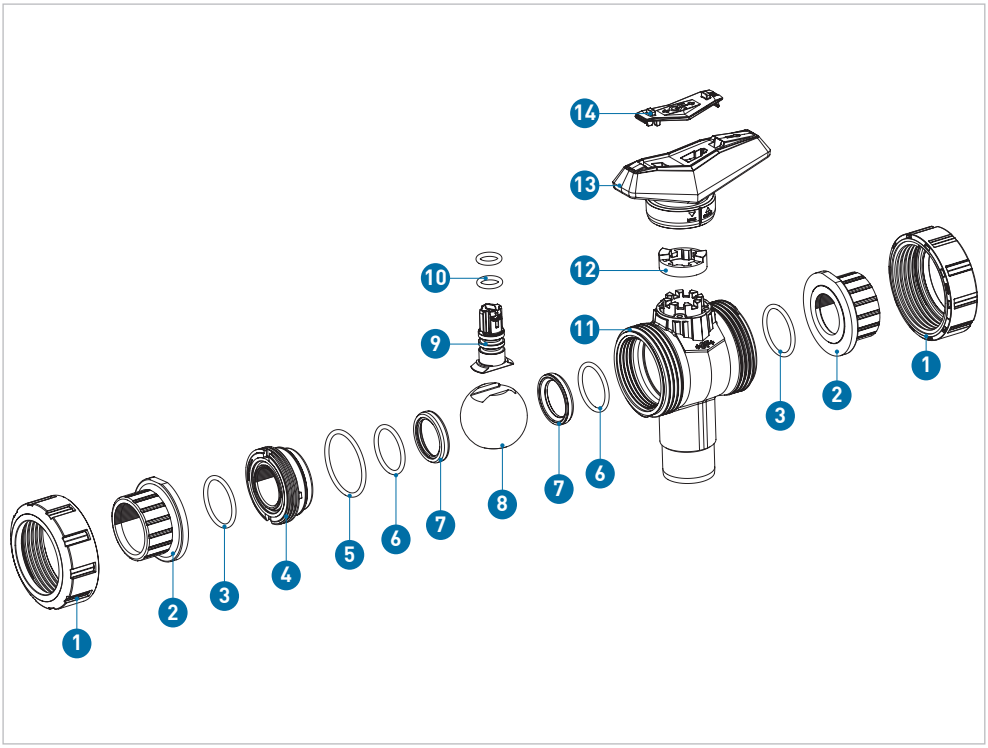
Technical data

Ball valve type 543 Pro, horizontal



1 Union nut
2 Connecting part
3 Union seal
4 Union bush
5 Body seal
6 Backing seal
7 Ball seat
8 Ball (L-or T-bore)
9 Stem
10 Stem seals
11 Body
12 Locking ring
13 Lever (lockable)
14 Lever clip

Ball valve type 543 Pro, vertical



1 Union nut
2 Connecting part
3 Union seal
4 Union bush
5 Body seal
6 Backing seal
7 Ball seat
8 Ball
9 Stem
10 Stem seals
11 Body
12 Locking ring
13 Lever (lockable)
14 Lever clip

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 seat	PTFE, PVDF
Pressure levels	PN10	
Actuation variants, horizontal	Manually operated	
	Pneumatically or electrically actuated	
	Ball with L/T port 180° end stop on request	
Actuation variants, vertical	Manual; electric and pneumatic (only with tripod ball) actuation	
	Ball with L-Port and tripod port	
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	
Product standard	EN ISO 16135	
Test standard	ISO 9393-2, EN 12266-1 (leackage rate A)	
Approvals	ACS, FDA, QAP/ITP; DiBT, RINA, LR	

Pressure-temperature diagrams

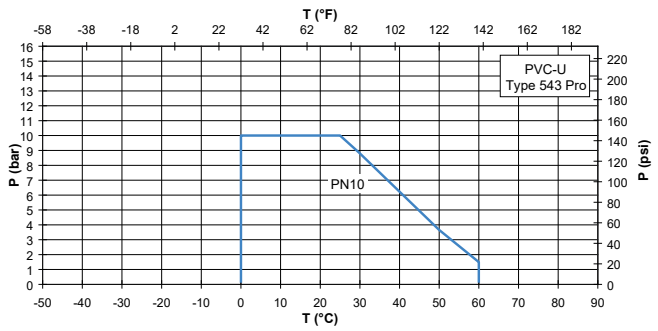
The pressure-temperature diagram is based on a service life of 25 years using water or similar media.

T Temperature (°C, °F)

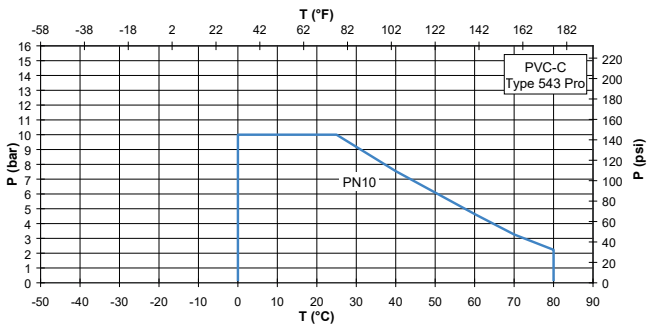
P Permissible pressure (bar, psi)

EPDM sealing to max. 100 °C

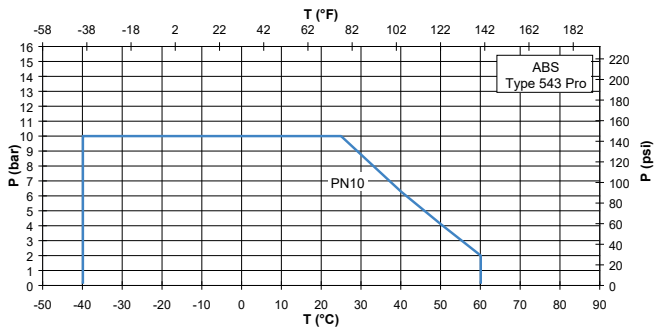
PVC-U



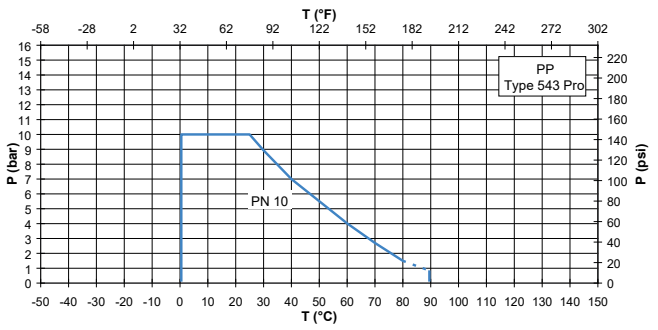
PVC-C



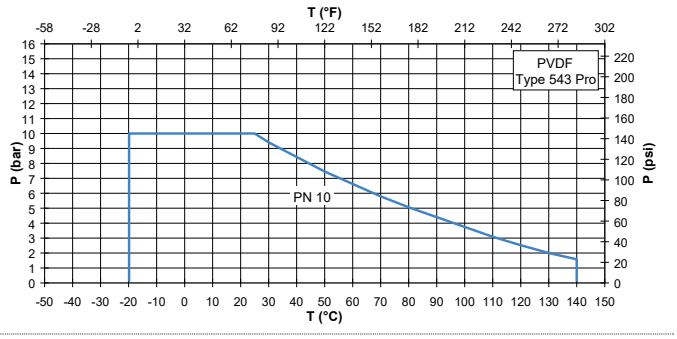
ABS



PP



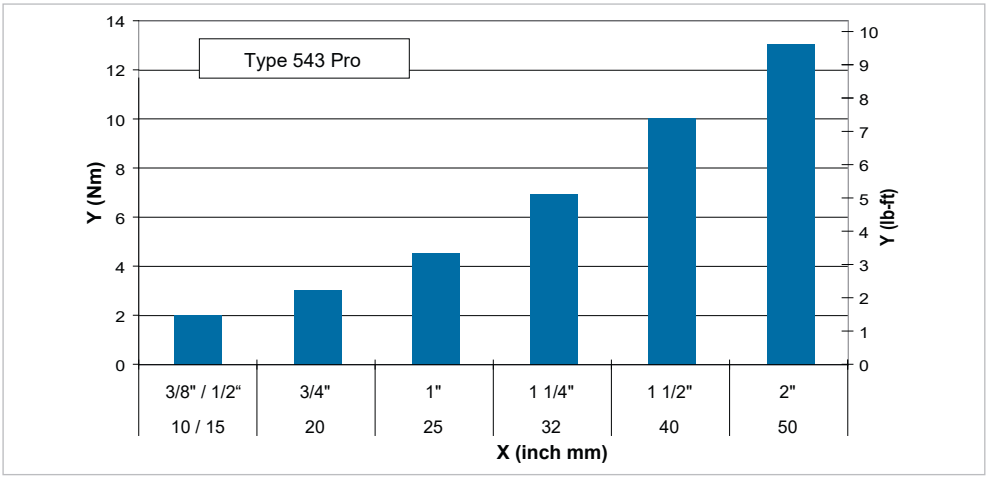
PVDF



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



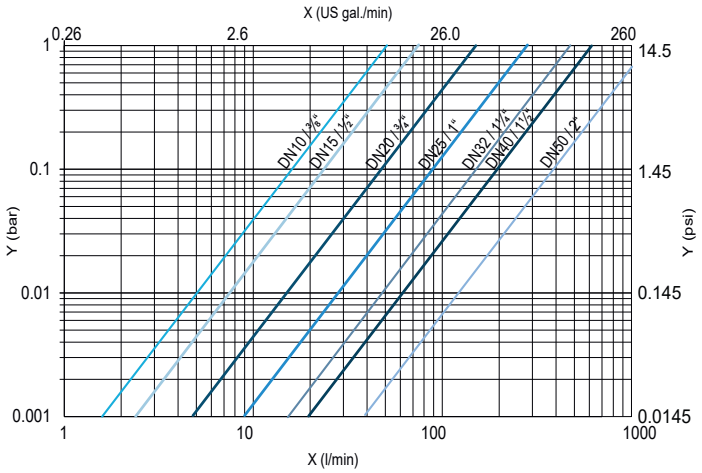
X Nominal diameter DN (mm, inch)
Y Torque (Nm, lb-ft)

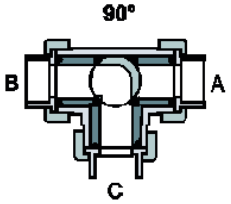
Average values at nominal pressure. Depending on the application (e.g. operating speed, fluid, temperature, etc.) about 2 times the operating torque should be taken for sizing actuators.

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

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

Pressure loss



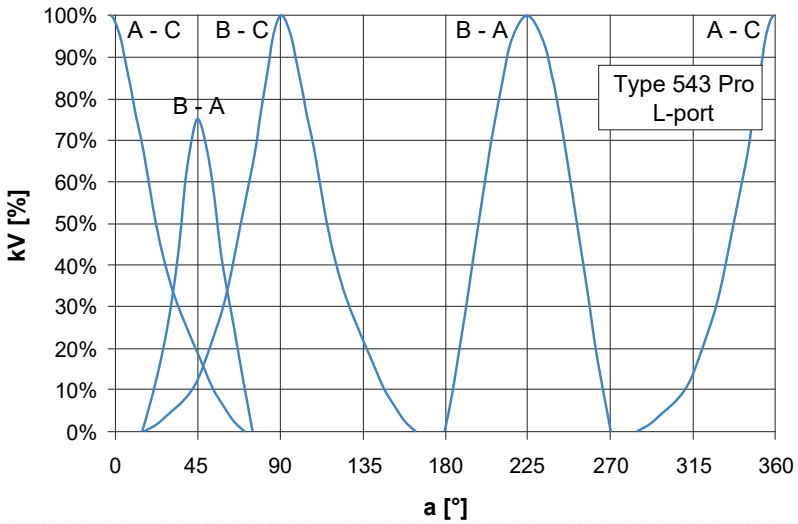


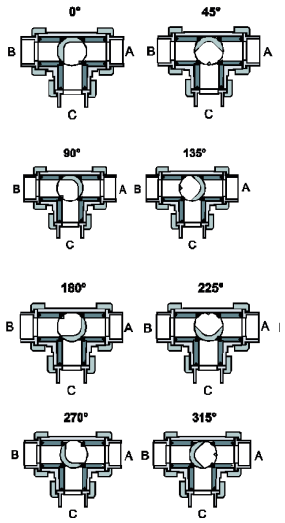
Medium: Water, 20 °C
X Flow rate (l/min, US-gal/min)
Y Pressure loss Δp (bar, psi)

Kv 100 Values

DN (mm)	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	1'230	86.1	74

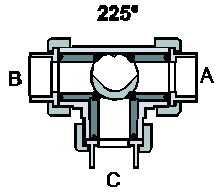
Flow characteristics





Flow direction B → A

Ball position



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

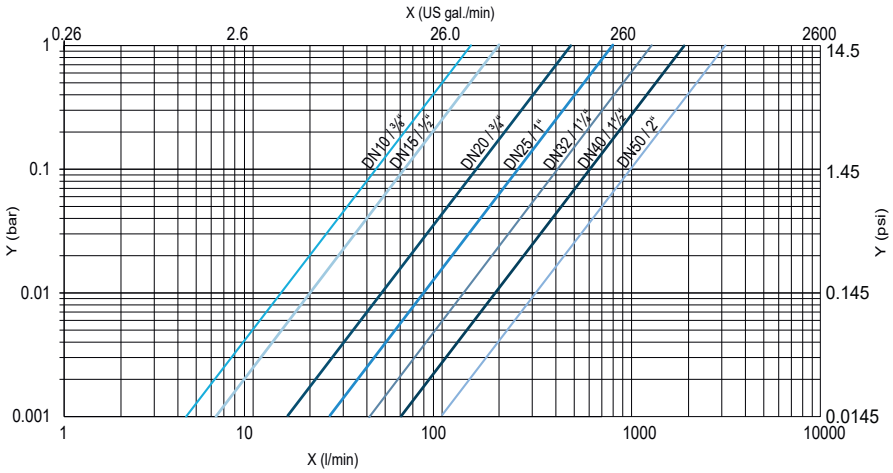
Kv 100 values

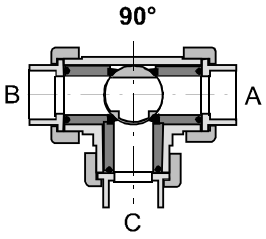
DN (mm)	Inch "	d (mm)	Kv 100 (l/min)	Cv 100 (gal/min)	Kv 100 (m^3/h)
10	⅜	16	10	0.7	0.6
15	½	20	15	1.1	0.9
20	¾	25	30	2.1	1.8
25	1	32	50	3.5	3
32	1 ¼	40	90	6.3	5.4
40	1 ½	50	110	7.7	6.6
50	2	63	220	15.4	13.2

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

Flow direction B → A

Pressure loss





Medium: Water, 20 °C

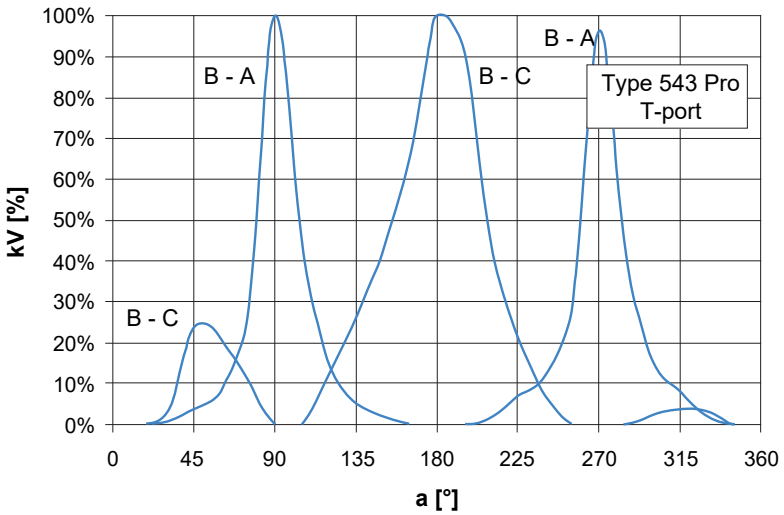
X Flow rate (l/min, US-gal/min)

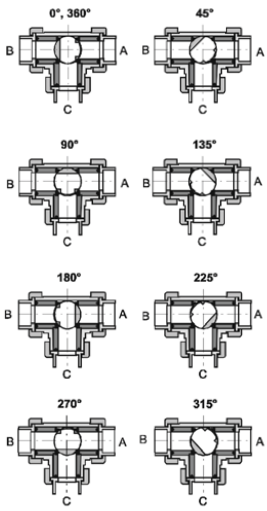
Y Pressure loss Δp (bar, psi)

Kv 100 values

DN (mm)	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	1'290	90.3	77.4
40	1 ½	50	1'910	133.7	115
50	2	63	3'100	217	186

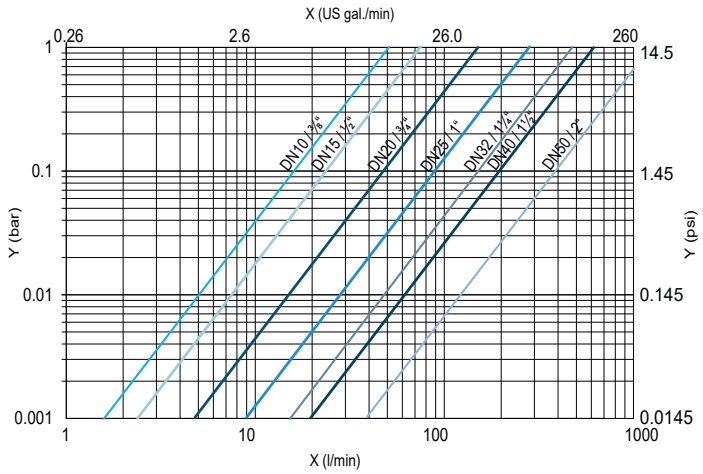
Flow characteristics

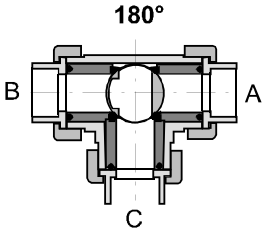




Flow direction B → C

Pressure loss





Medium: Water, 20 °C

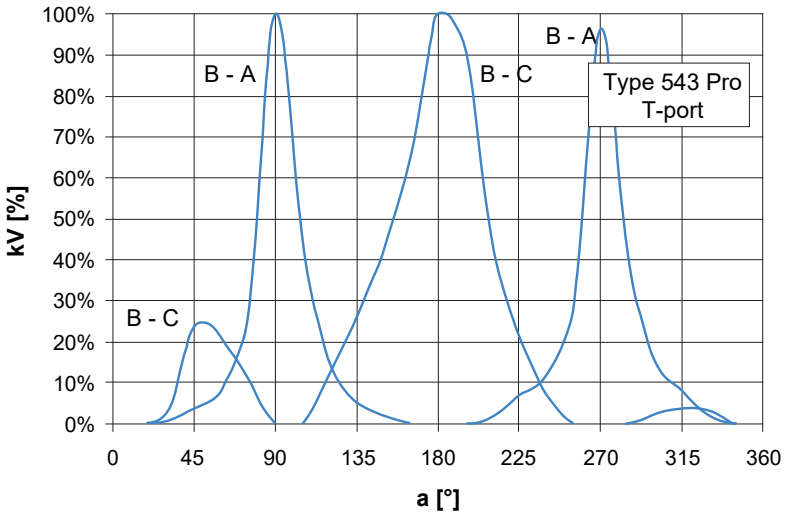
X Flow rate (l/min, US-gal/min)

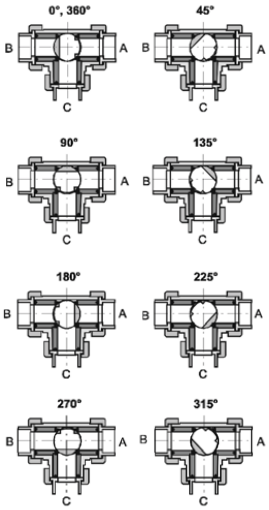
Y Pressure loss Δp (bar, psi)

Kv 100 values

DN (mm)	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	1'210	84.7	73

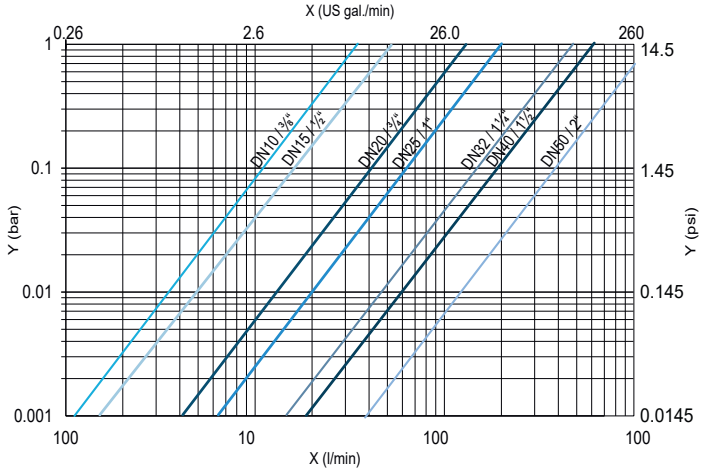
Flow characteristics

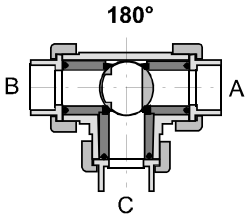




Flow direction C → A and C → B

Pressure loss



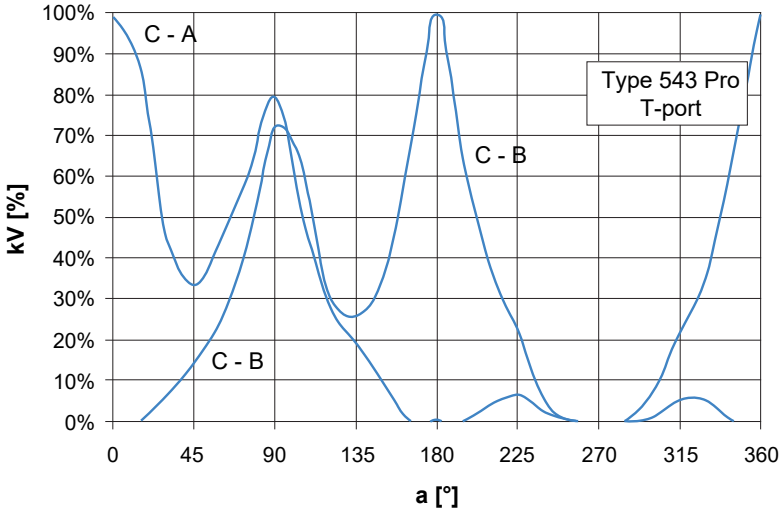


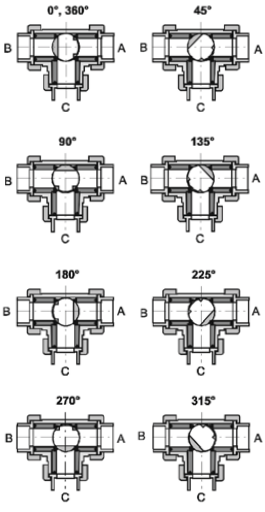
Medium: Water, 20 °C
X Flow rate (l/min, US-gal/min)
Y Pressure loss Δp (bar, psi)

Kv 100 values

DN (mm)	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

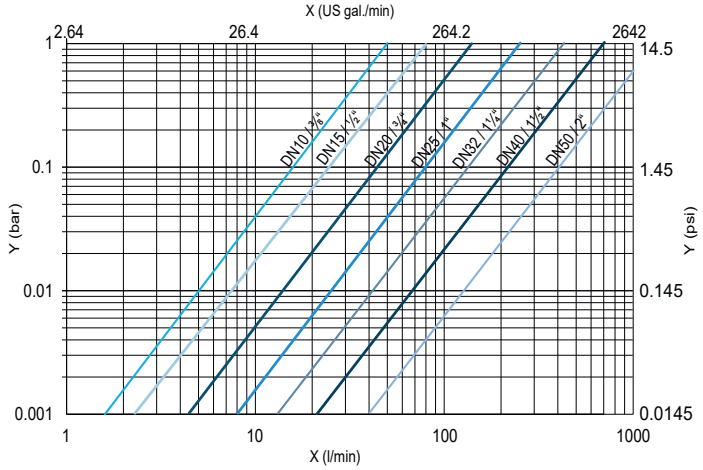
Flow characteristics





Characteristics – Ball Valve Type 543 Pro vertical: Ball with L-port

Pressure loss

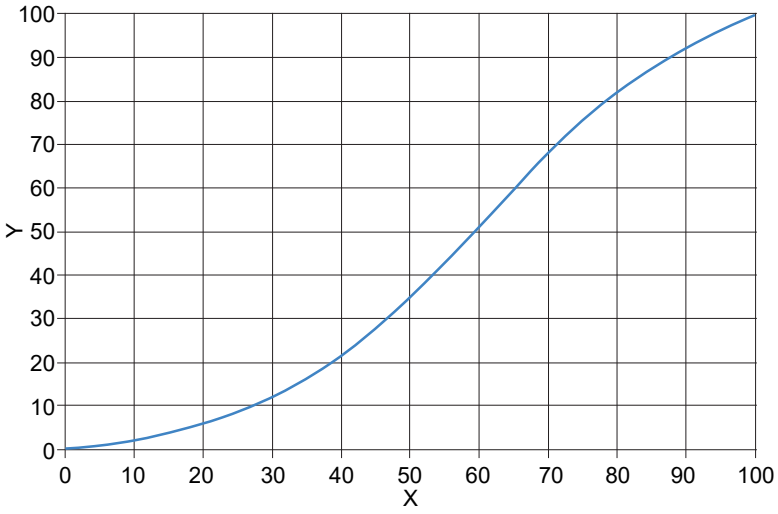


Medium: Water, 20 °C
X Flow rate (l/min, US-gal/min)
Y Pressure loss Δp (bar, psi)

Kv 100 values

DN (mm)	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	1'300	78

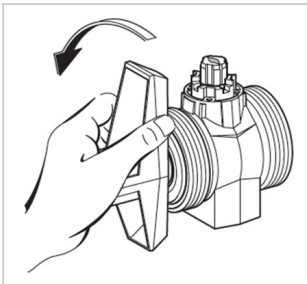
Flow characteristics



X Opening angle (%)
Y Kv, Cv value (%)

Technical basics

- With the backing seals, the ball has a floating position. This results in preloading and hence a constant seal. Stem, housing and connection seals are made of EPDM or FKM.
- The stems with rated break point above the upper O-ring help prevent leaks to the outside in case of damage.
- The design of the hand lever serves as a tool for installing the screw-in fitting. Screw-in fittings have a reverse thread in order to avoid unintentional opening when removing the coupling nuts or the thread connections.



All ball valves in DN10 – 50 are available as radially removable fittings with two threaded connections according to EN ISO 16135.

Valve handling

Installation notes

When installing the ball valve, ensure that it is always installed into the system in an opened ball position.

Selection of lubricant

All seals should be lubricated with a silicone-based grease. Using the wrong lubricants can damage the material of the ball valve or seals.

- Mineral oil-based and Vaseline (petrolatum) are not appropriate.
- For silicone-free ball valves, please consult the special manufacturer's instructions.

Maintenance notes

Ball valves require no maintenance under normal operating conditions (clear water). However, the following measures must be considered:

- Regularly check that no medium escapes to the outside.
- We recommend a function test for ball Type valves which are kept permanently in the same position 1 – 2 times per year to check functionality.

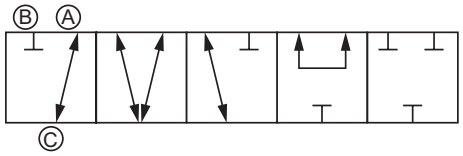
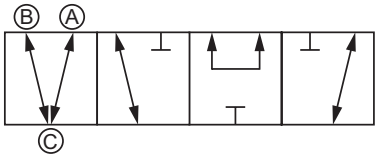
Installation and maintenance must be performed according to the corresponding installation instructions. The installation manual is included with the product, see also the online product catalogue at www.gfps.com

Versions

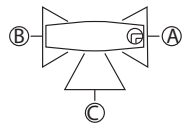
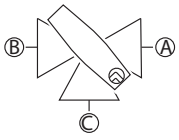
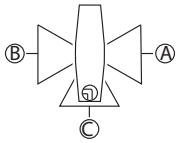
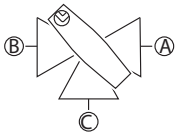
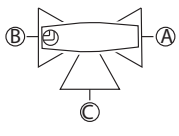
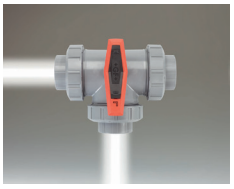
The Ball Valve Type 543 Pro is available as a horizontal and vertical version. The horizontal valve can be ordered with L- or T-port ball. The vertical fitting comes in the L-port configuration or with a optional tripod ball.

Type 543 Pro, horizontal

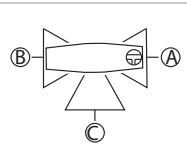
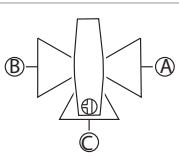
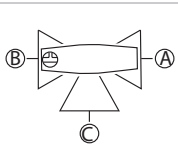
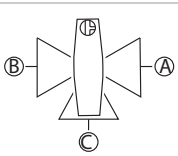
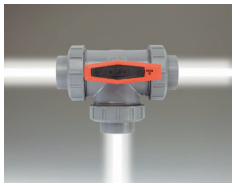
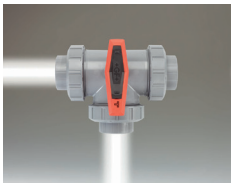
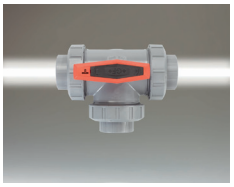
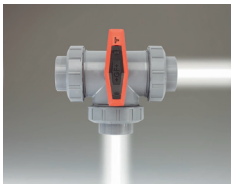
The decision whether to use a 3-way ball valve with L-port or-T-port depends on the desired functions the valve has to perform:

	
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

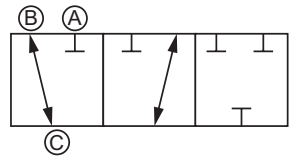
T-port

			
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

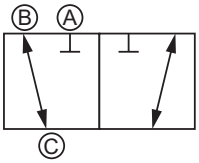
Type 543 Pro, vertical

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

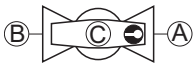


L-port: diverting, shutting off

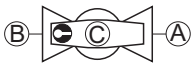


Tripod: diverting

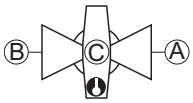
L-port



B-C open*

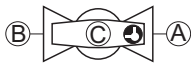


A-C open

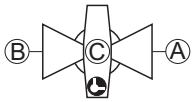


closed

Tripod-port



B-C open*



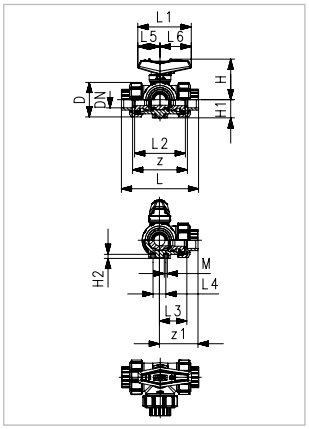
A-C open

*Normal position

Dimensions – Ball Valve Type 543 Pro, horizontal

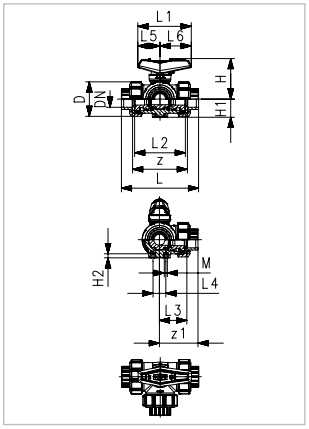
Ball valve type 543 Pro horizontal with solvent cement sockets, metric or JIS

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	82	73	36	25	35	47	61	28	8	6	81	40	⅜
20	50	112	82	73	36	25	35	47	61	28	8	6	81	40	½
25	58	131	106	86	43	25	44	62	74	32	8	6	94	47	¾
32	68	151	106	99	50	25	44	62	80	36	8	6	107	54	1
40	84	181	131	120	60	45	57	74	95	45	9	8	130	65	1 ¼
50	97	205	131	137	69	45	57	74	102	51	9	8	143	72	1 ½
63	124	261	152	179	89	45	66	86	117	65	9	8	185	92	2



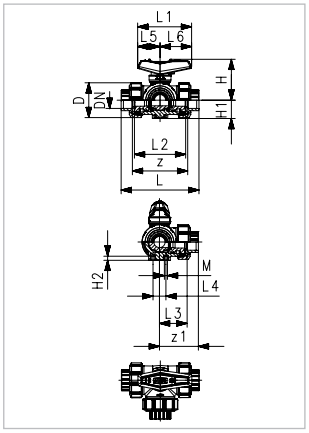
Ball valve type 543 Pro horizontal with solvent cement sockets, ASTM or BS

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	123	82	73	36	25	35	47	61	28	8	6	85	42
½	50	122	82	73	36	25	35	47	61	28	8	6	77	38
¾	58	141	106	86	43	25	44	62	74	32	8	6	92	46
1	68	161	106	99	50	25	44	62	80	36	8	6	105	53
1 ¼	84	187	131	120	60	45	57	74	95	45	9	8	126	63
1 ½	97	213	131	137	69	45	57	74	102	51	9	8	143	72
2	124	261	152	179	89	45	66	86	117	65	9	8	185	92



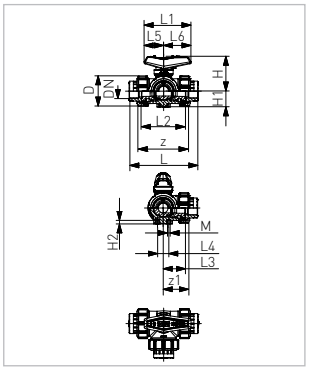
Ball valve type 543 Pro horizontal with fusion sockets, metric

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	110	82	72	36	25	35	47	61	28	8	6	82	41	⅜
20	50	112	82	72	36	25	35	47	61	28	8	6	82	41	½
25	58	129	106	85	43	25	44	62	74	32	8	6	97	49	¾
32	68	146	106	98	49	25	44	62	80	36	8	6	110	55	1
40	84	170	131	118	59	45	57	74	95	45	9	8	132	66	1 ¼
50	97	193	131	135	68	45	57	74	102	51	9	8	151	76	1 ½
63	124	244	152	176	88	45	66	86	117	65	9	8	188	94	2



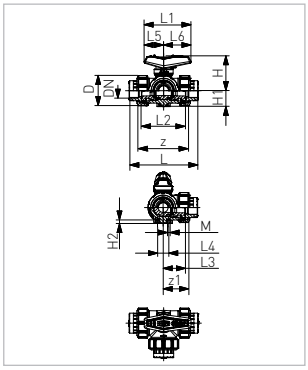
Ball valve type 543 Pro horizontal with threaded sockets (reinforced), Rp

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	82	73	36	25	35	47	61	28	8	6	87	43
½	50	117	82	73	36	25	35	47	61	28	8	6	85	42
¾	58	135	106	86	43	25	44	62	74	32	8	6	100	50
1	68	155	106	99	50	25	44	62	80	36	8	6	113	57
1 ¼	84	179	131	120	60	45	57	74	95	45	9	8	134	67
1 ½	97	201	131	137	69	45	57	74	102	51	9	8	155	78
2	124	255	152	179	89	45	66	86	117	65	9	8	199	99



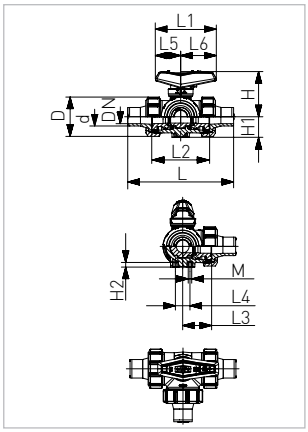
Ball valve type 543 Pro horizontal with threaded sockets (reinforced), NPT

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	112	82	72	36	25	35	47	61	28	8	6	86	43
½	50	114	82	72	36	25	35	47	61	28	8	6	80	40
¾	58	131	106	85	43	25	44	62	74	32	8	6	95	48
1	68	154	106	98	49	25	44	62	80	36	8	6	110	55
1 ¼	84	180	131	118	59	45	57	74	95	45	9	8	132	66
1 ½	97	203	131	135	68	45	57	74	102	51	9	8	157	79
2	124	258	152	176	88	45	66	86	117	65	9	8	210	105



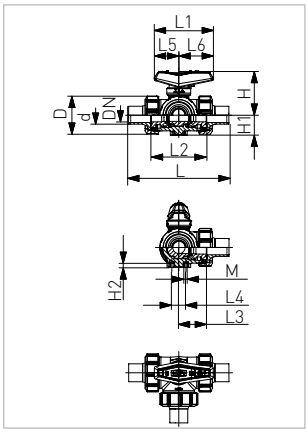
Ball valve type 543 Pro horizontal with solvent cement sockets or socket fusion spigots, metric

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	126	82	72	36	25	35	47	133	61	28	8	6	⅜
20	50	136	82	72	36	25	35	47	144	61	28	8	6	½
25	58	159	106	85	43	25	44	62	170	74	32	8	6	¾
32	68	178	106	98	49	25	44	62	191	80	36	8	6	1
40	84	204	131	118	59	45	57	74	223	95	45	9	8	1 ¼
50	97	237	131	135	68	45	57	74	256	102	51	9	8	1 ½
63	124	296	152	176	88	45	66	86	319	117	65	9	8	2



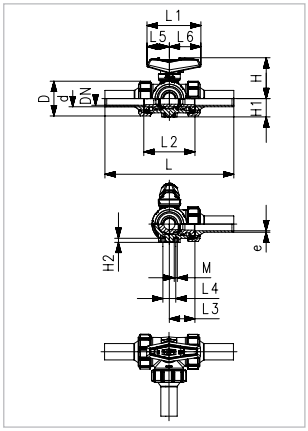
Ball valve type 543 Pro horizontal with butt fusion spigots short, metric

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	e (mm)	closest inch
20	50	146	82	72	36	25	35	47	61	28	8	6	2	½
25	58	163	106	85	43	25	44	62	74	32	8	6	2	¾
32	68	178	106	98	49	25	44	62	80	36	8	6	2	1
40	84	204	131	118	59	45	57	74	95	45	9	8	2	1 ¼
50	97	237	131	135	68	45	57	74	102	51	9	8	3	1 ½
63	124	296	152	176	88	45	66	86	117	65	9	8	3	2



Ball valve type 543 Pro horizontal with butt fusion spigots long, metric

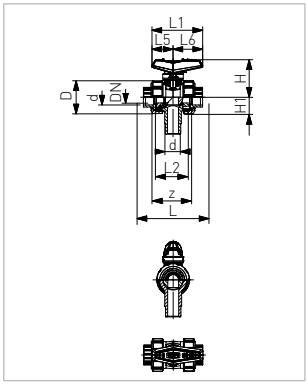
d (mm)	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	H2 (mm)	M	e (mm)	closest inch
20	50	210	82	73	36	25	35	47	61	28	8	6	1.9	½
25	58	237	106	86	43	25	44	62	74	32	8	6	2.3	¾
32	68	251	106	99	50	25	44	62	80	36	8	6	2.9	1
40	84	283	131	120	60	45	57	74	95	45	9	8	3.7	1 ¼
50	97	319	131	137	69	45	57	74	102	51	9	8	4.6	1 ½
63	124	399	152	179	89	45	66	86	117	65	9	8	5.8	2



Dimensions – Ball Valve Type 543 Pro, vertical

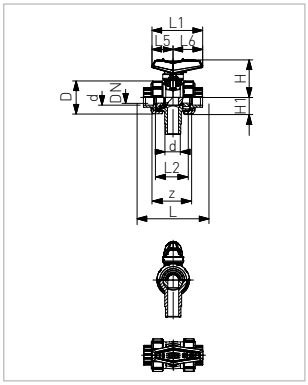
Ball valve type 543 Pro vertical with solvent cement sockets, metric or JIS

d (mm)	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	z (mm)	closest inch
16	50	92	82	56	35	47	61	62	64	⅜
20	50	95	82	56	35	47	61	62	64	½
25	58	111	106	66	44	62	74	72	74	¾
32	68	123	106	71	44	62	80	77	79	1
40	84	146	131	85	57	74	95	87	95	1 ¼
50	97	157	131	89	57	74	102	97	95	1 ½
63	124	183	152	101	66	86	117	112	107	2



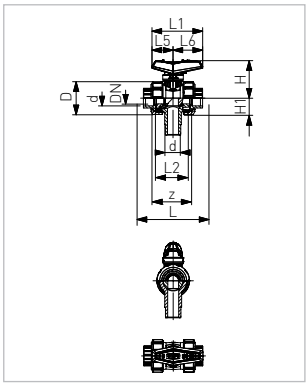
Ball valve type 543 Pro vertical with solvent cement sockets, ASTM or BS

Inch	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	z (mm)
⅜	50	106	82	56	35	47	61	62	67
½	50	105	82	56	35	47	61	62	61
¾	58	121	106	66	44	62	74	72	70
1	68	133	106	71	44	62	80	77	76
1 ¼	84	152	131	85	57	74	95	87	90
1 ½	97	165	131	89	57	74	102	97	94
2	124	183	152	101	66	86	117	112	107



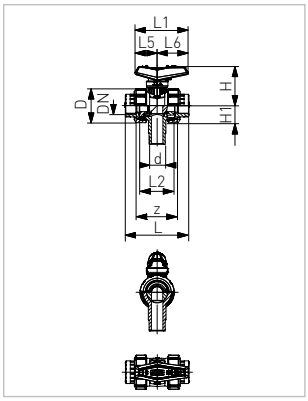
Ball valve type 543 Pro vertical with fusion sockets, metric

d (mm)	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	z (mm)	closest inch
16	50	92	82	56	35	47	61	62	64	⅜
20	50	95	82	56	35	47	61	62	64	½
25	58	111	106	66	44	62	74	72	74	¾
32	68	123	106	71	44	62	80	77	79	1
40	84	146	131	85	57	74	95	87	95	1 ¼
50	97	157	131	89	57	74	102	97	95	1 ½
63	124	183	152	101	66	86	117	112	107	2



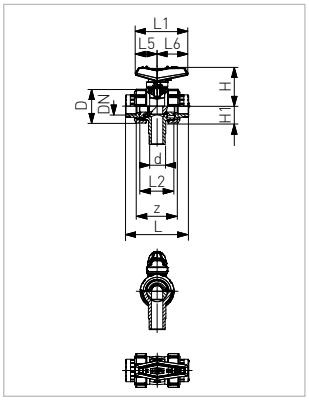
Ball valve type 543 Pro vertical with threaded sockets (reinforced), Rp

Inch	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	z (mm)
⅜	50	96	82	56	35	47	61	62	69
½	50	99	82	56	35	47	61	62	67
¾	58	115	106	66	44	62	74	72	78
1	68	127	106	71	44	62	80	77	85
1 ¼	84	144	131	85	57	74	95	87	100
1 ½	97	153	131	89	57	74	102	97	106
2	124	177	152	101	66	86	117	112	121



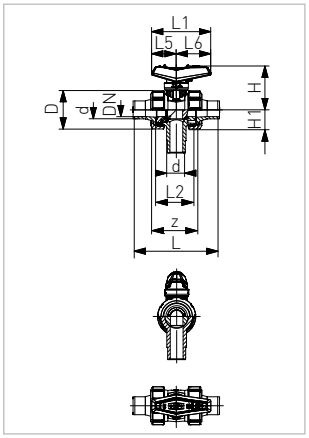
Ball valve type 543 Pro vertical with threaded sockets (reinforced), NPT

Rp Inch	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	z (mm)
⅜	50	98	82	56	35	47	61	62	70
½	50	98	82	56	35	47	61	62	64
¾	58	112	106	66	44	62	74	72	76
1	68	127	106	71	44	62	80	77	83
1 ¼	84	146	131	85	57	74	95	87	99
1 ½	97	157	131	89	57	74	102	97	111
2	124	183	152	101	66	86	117	112	135



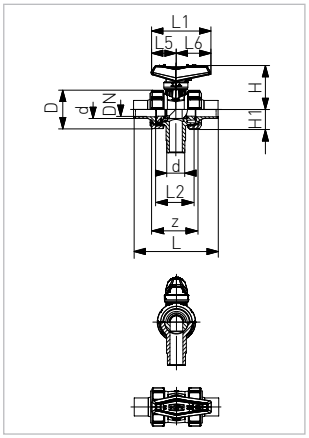
Ball valve type 543 Pro vertical with solvent cement or socket fusion spigots, metric

d (mm)	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	closest inch
16	50	114	82	56	35	47	61	62	⅜
20	50	124	82	56	35	47	61	62	½
25	58	144	106	66	44	62	74	72	¾
32	68	154	106	71	44	62	80	77	1
40	84	174	131	85	57	74	95	87	1 ¼
50	97	194	131	89	57	74	102	97	1 ½
63	124	224	152	101	66	86	117	112	2



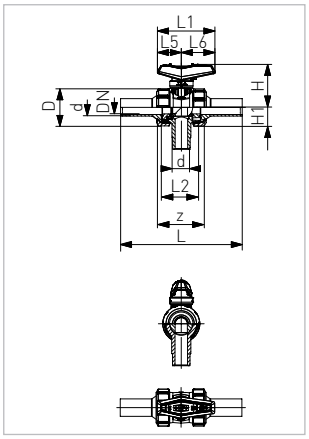
Ball valve type 543 Pro vertical with butt fusion spigot short, metric

d (mm)	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	closest inch
16	50	114	82	56	35	47	61	62	⅜
20	50	124	82	56	35	47	61	62	½
25	58	144	106	66	44	62	74	72	¾
32	68	154	106	71	44	62	80	77	1
40	84	174	131	85	57	74	95	87	1 ¼
50	97	194	131	89	57	74	102	97	1 ½
63	124	224	152	101	66	86	117	112	2



Ball valve type 543 Pro vertical with butt fusion spigots long, metric

d (mm)	D (mm)	L (mm)	L1 (mm)	L2 (mm)	L5 (mm)	L6 (mm)	H (mm)	H1 (mm)	closest inch
16	50	114	82	56	35	47	61	62	⅜
20	50	124	82	56	35	47	61	62	½
25	58	144	106	66	44	62	74	72	¾
32	68	154	106	71	44	62	80	77	1
40	84	174	131	85	57	74	95	87	1 ¼
50	97	194	131	89	57	74	102	97	1 ½
63	124	224	152	101	66	86	117	112	2



Accessories

Double sensor for electrical position feedback

After being mounted in the valve or in the interface module, the double sensor is used to signal the CLOSED or OPEN position of the valve via an electric signal to a controller, supplied by the customer. The switching states are also output optically via two integrated LEDs.

DN (mm)	LED signal color	Function	Code
10 - 50	Closed: Green / Open: Red	PNP	198546001
10 - 50	Closed: Red / Open: Green	PNP	198546002
10 - 50	Closed: Green / Open: Red	NPN	198546005
10 - 50	Closed: Red / Open: Green	NPN	198546006
10 - 50	Closed: Green / Open: Red	NAMUR	198546003
10 - 50	Closed: Red / Open: Green	NAMUR	198546004

Suitable connection cables available as accessories

Spring reset unit, manual actuation (dead man's switch)

The spring reset unit (dead man's switch) is installed onto the ball valve type 546 Pro or type 543 Pro and ensures that the ball valve is closed automatically as soon as the handle is released. It is opened against the spring force.

DN (mm)	Code
DN10/15	198546082
DN20/25	198546083

Interface module, manual actuated

With the manually actuated interface module the open or closed position of the ball valve type 546 Pro or type 543 Pro can be transmitted via an electric signal to a customer control.

DN (mm)	Code
DN10/15	198546102
DN20/25	198546103
DN32/40	198546105
DN50	198546107

Interface module, automatic actuated

With the help of the automatically actuated interface module, electric or pneumatic actuators can be attached on the ball valve type 546 Pro or type 543 Pro, which allows the automation of the ball valve's change of position. In addition, an interface is available for the installation of an electrical position feedback indicator.

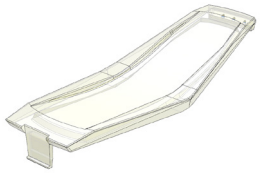
DN (mm)	Code Pneumatic GF actuators PPA	Code Electric GF actuators EA15/EA25/dEA	Code Ring for Type 543 Pro
DN10/15	198546162	198546142	198543000
DN20	198546163	198546143	198543001
DN25	198546164	198546144	198543001
DN32	198546135	198546145	198543002
DN40	198546136	198546146	198543002
DN50	198546137	198546147	198543003

DN (mm)	SW	Code Norm actuators according to ISO 5211
DN10/15	SW09	198546122
DN10/15	SW11/14	198546123
DN20/25	SW09	198546124
DN20/25	SW11/14	198546125
DN32-40	SW11/14	198546126
DN50	SW11/14	198546127

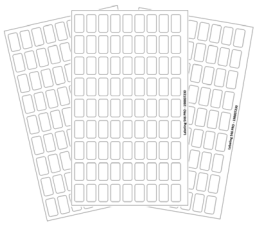
Transparent lever clip

Type 546 Pro or type 543 Pro ball valves can be quickly and easily labelled with the most important information. Operation and maintenance can thus be made safer, faster and clearer. In addition, there are various standards which prescribe a clear marking of the pipeline.

DN (mm)		Code
DN10/15	10 Stk.	198807221
DN20/25	10 Stk.	198807222
DN32/40	5 Stk.	198807223
DN50	5 Stk.	198807224



Printing sheets for ball valve labelling	Printing sheets for ball valve labelling



Further accessories

- Hand lever extension
- Adapter for padlocks

- Tool for disassembling interface modules
- Additional limit switches

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

3-way Ball Valve Type 543 Pro, electric actuated (Type 167-170)

Type 543 Pro horizontal, electric actuated (Type 167-169)
With electric actuator EA or smart electric actuator dEA

Type 543 Pro vertical, electric actuated (Type 170)
With electric actuator EA or smart electric actuator dEA, horizontal

Product description

The types 167-170 pneumatic actuated 3-way ball valves consist of the ball valve Type 543 Pro and the elektric actuator EA or smart electric actuator dEA. The modular expandable 3-way ball valve Type 543 Pro is designed for mixing and diverting applications which demand special process requirements.

Applications

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

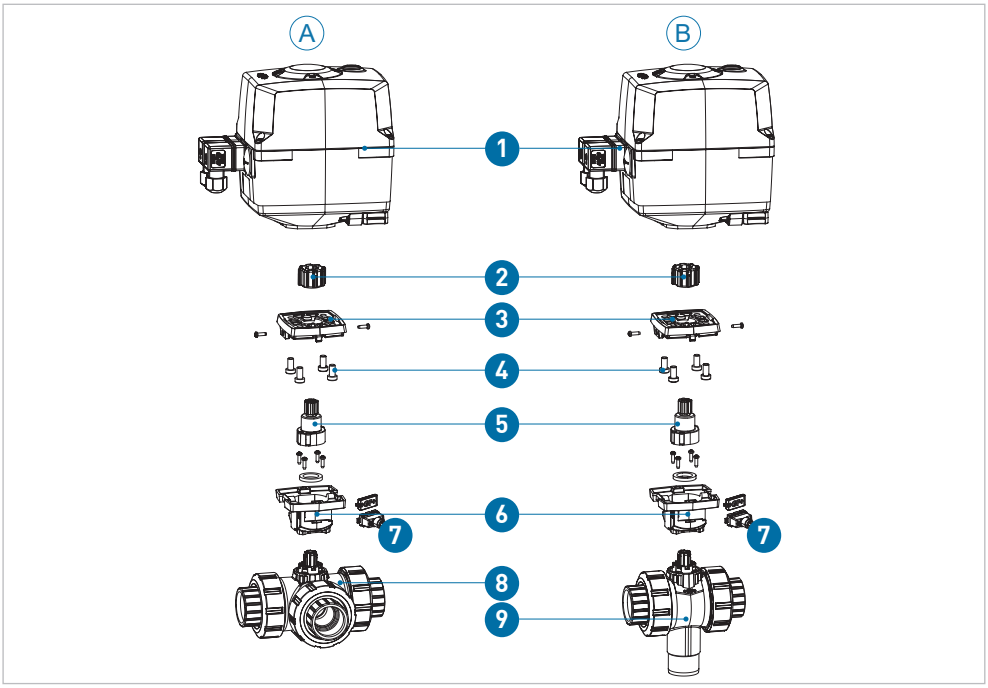
Benefits/features

- Electrical feedback with additional limit switches of different designs integrated into the actuator or in the multifunction module (optional 4-20 mA with Positioner)
- Rotation angle up to 355°; Preset to 0°-90°
- Up to 3 freely selectable stop positions (open/middle/close)
- Integrated emergency manual override
- Optional: Fail-safe return unit with or without integrated battery pack
- Optional: Cycle time monitoring
- Optional: Cycle counter
- Optional: Cycle time extension
- Optional: Motor current monitoring

Flow media

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

Technical data



A Type 167-169: Type 543 Pro horizontal, with electric actuator EA
B Type 170: Type 543 Pro vertical, with electric actuator EA
1 Actuator type EA
2 Adapter
3 Adapter plate
4 Screws
5 Coupling piece
6 Interface housing
7 Labelling clip or double sensor for electrical position feedback (custom versions only)
8 Ball Valve Type 543 Pro horizontal
9 Ball Valve Type 543 Pro vertical

Spezification			
Dimensions	DN10 - DN50	EA15/EA25/dEA25	
Type 543 Pro	Types	Horizontal, vertical	
	Housing materials	PVC-U, PVC-C, ABS, PP-H, PVDF	
	Gasket materials	O-ring gasket	EPDM ,FKM
		Ball gasket	PTFE, PVDF
	Pressure rating	PN10	
	Connections	Sockets, spigots, threaded sockets	
	Standards	ISO, BS, ASTM, JIS	
Accessories	Double sensor for electrical position feedback, manual override		

The following technical data can be found in the Planning Fundamentals under "Ball Valve Type 543 Pro, manually operated":

- Pressure-temperature diagram
- Pressure loss
- Flow characteristics
- Kv values
- Reference values for screw fastenings

Technical basics

Differences between types 167 – 170

	Type 167, horizontal	Type 168, horizontal	Type 169, horizontal	Type 170, vertical
PVC-U	x			x
PVC-C	x			
ABS	x			x
PP-H		x		
PVDF			x	
ISO	x	x	x	x
ASTM	x	x	x	
BS	x			
JIS	x			x

- The actuators are manufactured according to the specification of EN 61010-1, EC 89/336/EEC-EMV 73/23/EEC, LVD.
- All actuators have the CE marking.
- The actuator housings are made of PPGF (fiberglass-reinforced polypropylene) and external, stainless steel screws with low flammability.
- All electric actuators have an emergency manual override and an optical position indicator.

Properties of electric actuators

Actuator	Cycle time	Nominal torque	Actuating cycles at 20 °C	Duty cycle at 20 °C
EA15/EA25/ dEA25	5 s/90°	10 Nm	250'000	100 %

i Also, the electric actuators have a protection rating 65 as per EN 60529 – IP67 (with vertical cable connection and wall bushing) at a voltage of 100 – 230 V, 50 – 60 Hz or 24 V, 50 – 60 Hz.

- The actuators are manufactured according to the specification of EN 61010-1, EC 89/336/EEC-EMV 73/23/EEC, LVD.
- All actuators have the CE marking.
- The actuator housings are made of PPGF (fiberglass-reinforced polypropylene) and external, stainless steel screws with low flammability.
- All electric actuators have an emergency manual override and an optical position indicator.

Valve handling

Installation notes

During installation, ensure that the actuator is correctly built onto and connected to the correct valve. In order to guarantee control provided on the customer side, the following points must be observed:

- Actuate valves with 90° rotary movement.
- Indicate the previously calibrated end positions of the valve via an electrical signal to the aforementioned system control.
- In case of interruption in the supply voltage, ensure that the actuator remains in the current position. For this, installation of an emergency manual override or reset unit is recommended (refer to "Accessories").

Maintenance notes

Set maintenance intervals as per the conditions of use (e.g., actuating cycles, medium, ambient temperature). As part of the regular system inspection, carry out the following maintenance activities.

- Regularly check that no medium escapes to the outside.

- We recommend a function test for ball type valves that are kept permanently in the same position 1 – 2 times per year to check functionality.
- Check that cover of the emergency manual override is correctly fitted. If necessary, fit cover.
- Check that housing cover of the actuator is fitted with 4 screws. Insert screws if necessary.
- Check if grating noises are coming from the actuator. Replace actuator, see assembly instructions for building valve with actuator.
- Check that position display matches signal of the control. If necessary, adjust limit switches.

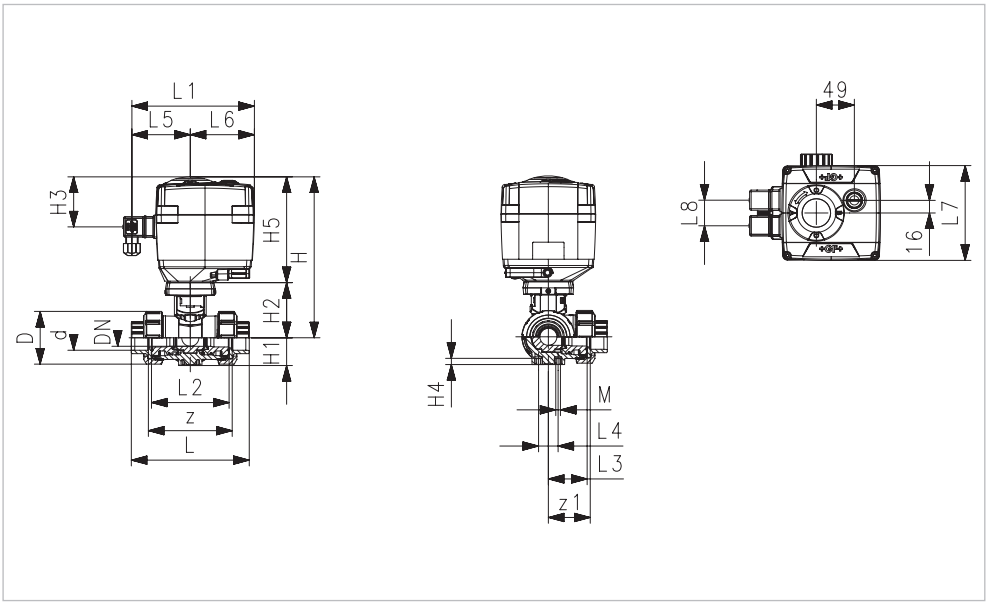
For frequent control operations or due to chemical attack on the sealing material, it may become necessary to replace parts inside the valve.

⚠ Installation and maintenance must be performed according to the corresponding installation instructions. The installation manual is included with the product, see also the online product catalog at www.gfps.com

Dimensions

Type 543 Pro horizontal, solvent cement sockets metric

Ball valve type 543 Pro horizontal, with solvent cement sockets metric, with electric actuator EA/dEA

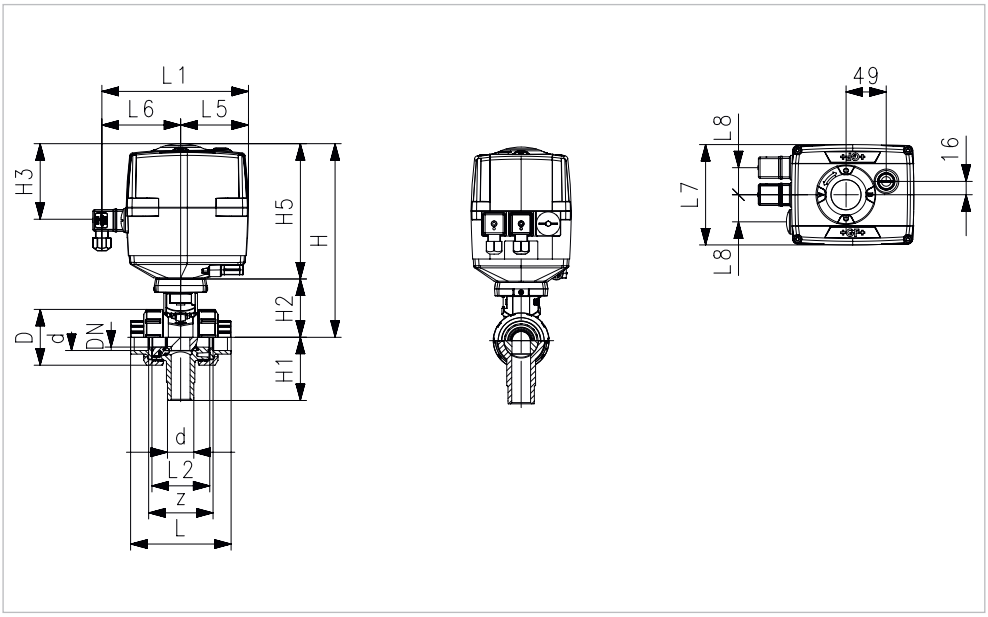


d (mm)	DN (mm)	D (mm)	EA dEA	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)
16	10	50	25	231	28	64	94	8	167
20	15	50	25	231	28	64	94	8	167
25	20	58	25	240	32	73	94	8	167
32	25	68	25	240	36	73	94	8	167
40	32	84	25	251	45	84	94	9	167
50	40	97	25	251	51	84	94	9	167
63	50	124	25	273	65	106	94	9	167

d (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	M	z (mm)	z1 (mm)	closest inch
16	109	180	73	36	25	97	83	122	33	6	81	40	⅜
20	112	180	73	36	25	97	83	122	33	6	81	40	½
25	131	180	86	43	25	97	83	122	33	6	94	47	¾
32	151	180	99	50	25	97	83	122	33	6	107	54	1
40	181	180	120	60	45	97	83	122	33	8	130	65	1 ¼
50	205	180	137	69	45	97	83	122	33	8	143	72	1 ½
63	261	180	179	89	45	97	83	122	33	8	185	92	2

Type 543 Pro vertical, solvent cement sockets, metric

Ball valve type 543 Pro vertical, with solvent cement sockets metric, with electric actuator EA/dEA



d (mm)	DN (mm)	D (mm)	EA dEA	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H5 (mm)
16	10	50	25	231	62	64	94	167
20	15	50	25	231	62	64	94	167
25	20	58	25	240	72	73	94	167
32	25	68	25	240	77	73	94	167
40	32	84	25	251	87	84	94	167
50	40	97	25	251	97	84	94	167
63	50	124	25	273	112	106	94	167

d (mm)	L (mm)	L1 (mm)	L2 (mm)	L5 (mm)	L6 (mm)	L7 (mm)	L8 (mm)	z (mm)	closest inch
16	92	180	56	97	83	122	33	64	⅜
20	95	180	56	97	83	122	33	64	½
25	111	180	66	97	83	122	33	74	¾
32	123	180	71	97	83	122	33	79	1
40	146	180	85	97	83	122	33	95	1 ¼
50	157	180	89	97	83	122	33	95	1 ½
63	183	180	101	97	83	122	33	107	2

Accessories

- Fail-safe return unit with or without integrated battery package
- AS-interface plug on module
- Limit switch assembly kits for multi function module AgNi, Au, NPN, PNP
- Monitoring board with cycle time extension, cycle time monitoring, cycle cycle time monitoring, cycle counter and motor current monitoring
- Positioner board for modulating operation with 4-20 mA Feebback and integrated motor current monitoring
- Profibus DP V0

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

3-way Ball Valve Type 543 Pro P, pneumatic actuated

Type 543 Pro P horizontal, pneumatic actuated
With pneumatic actuator PPA

Type 543 Pro P vertical, pneumatic actuated
With pneumatic actuator PPA

Product description

The pneumatic 3-way ball valves consist of the ball valve Type 543 Pro and the pneumatic actuator PPA. The modular expandable 3-way ball valve Type 543 Pro is designed for mixing and diverting applications which demand special process requirements.

Applications

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

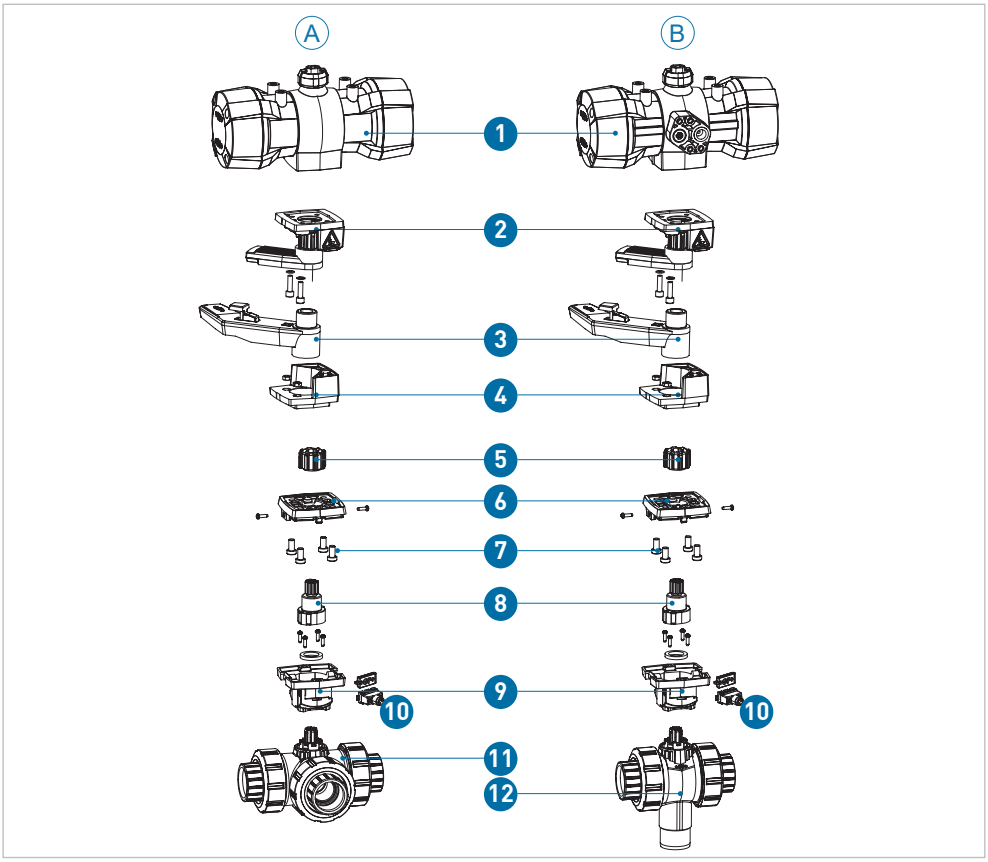
Benefits/features

- Compact design and modular construction of the valves
- Preloaded spring packages, standard version FC, DA; (FO on request)
- Short switching time
- For FC/FO stroke limitation possible
- Control air connection according to NAMUR

Flow media

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

Technical data



10 A Type 543 Pro horizontal, with pneumatic actuator type PPA, with manual override (optional)
11 B Type 543 Pro vertical, with pneumatic actuator PPA, with manual override (optional)
1 Actuator type PPA
2 Coupling lever with upper intermediate element
3 Control lever
4 Lower intermediate element
5 Adapter
6 Adapter plate
7 Screws
8 Coupling piece
9 Interface housing
10 Labelling clip or double sensor for electrical position feedback
11 Ball Valve Type 543 Pro horizontal
12 Ball Valve Type 543 Pro vertical

Specification

Pneumatic actuator Type PPA			Control pressure 5.6 bar	Control pressure 4.2 bar
	DN10/15	FC	PPA08 198155081	PPA15 198155151
		FO	PPA08 198155082	PPA15 198155152
		DA	PPA04 198155043 PPA08 198155083	PPA04 198155043 PPA08 198155083
	DN20	FC	PPA15 198155151	PPA15 198155151
		FO	PPA15 198155152	PPA15 198155152
		DA	PPA08 198155083	PPA08 198155083
	DN25	FC	PPA15 198155151	PPA15 198155151
		FO	PPA15 198155152	PPA15 198155152
		DA	PPA08 198155083	PPA08 198155083
	DN32	FC	PPA15 198155151	PPA40 198155401
		FO	PPA15 198155152	PPA40 198155402
		DA	PPA15 198155153	PPA15 198155153
	DN40	FC	PPA40 198155401	PPA40 198155401
		FO	PPA40 198155402	PPA40 198155402
		DA	PPA15 198155153	PPA15 198155153
	DN50	FC	PPA40 198155401	PPA40 198155401
		FO	PPA40 198155402	PPA40 198155402
		DA	PPA40 198155403	PPA40 198155403
Type 543 Pro	Versions	Horizontal, vertical		
	Housing Materials	PVC-U, ABS, PP-H, PVDF		
	Gasket materials	O-ring gasket		EPDM, FKM, PTFE, PVDF
		Ball gasket		PTFE, PVDF
	Pressure rating	PN10		
	Connections	Socket, spigot, threaded socket		
	Standards	ISO, BS, ASTM, JIS		

Specification	
Accessories	Double sensor for electrical position feedback, manual override

The following technical data can be found in the Planning Fundamentals under "Ball Valve Type 543 Pro, manually operated":

- Pressure-temperature diagram
- Pressure loss
- Flow characteristics
- Kv values
- Reference values for screw fastenings

Technical basics

Properties of pneumatic actuators type PPA

The pneumatic actuators PPA are available with the functions fail-safe to close (FC), fail-safe to open (FO) and double-acting (DA) and have an optical position indicator. The housing of the actuator is made of fiberglass-reinforced polypropylene (PP-GF) and therefore has low flammability. For easy mounting of positioners, limit switches and accessories, the actuator type PPA is equipped with an integrated NAMUR interface.
The actuator is mounted to the ball valve via the interface module. The optional double sensor can be attached to the interface module for electrical feedback.

Pneumatic actuators are distinguished with regard to the valve sizes by actuators 1 (for valve sizes DN10 – 25 mm) and actuators 2 (for valve sizes DN32 – 50 mm).

Valve handling

Installation notes

- Ensure that the ball valves are actuated with a control pressure of 2.8 to 7 bar via control pressure and up to a control pressure of 20 Nm.
- Depending on the actuator type, double-acting (Type designation DA) or single-acting with spring for fail-safe to CLOSE (Type designation FC) or single-acting for fail-safe to OPEN (Type designation FO).
- Control these valves to the OPEN and CLOSED positions via a built-in solenoid valve. The solenoid valve must be either supplied outside of the GF factory or mounted by the customer.
- Indicate these positions OPEN and CLOSED via an electric signal to the system control, if the actuator is equipped for this with the respective subassembly.
- Enable control of these positions through manual operation in case of failure in the compressed air supply, if the actuator is equipped for this with the respective subassembly.

Maintenance notes

Ball valves require no maintenance under normal operating conditions (clear water). However, the following measures must be considered:

- Regularly check that no medium escapes to the outside.
- We recommend a function test for ball type valves that are kept permanently in the same position 1 – 2 times per year to check functionality.

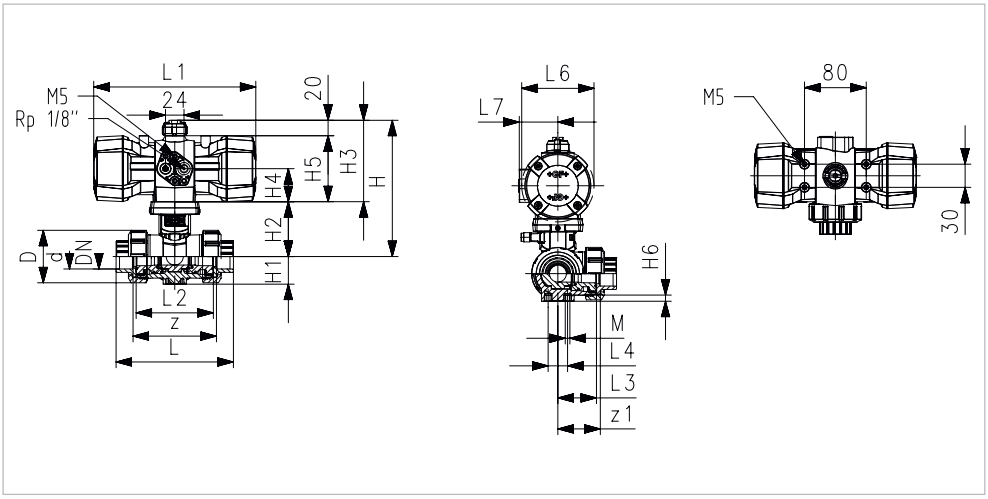
For frequent control operations or due to chemical attack on the sealing material, it may become necessary to replace parts inside the valve. For this purpose, the valve must be removed from the piping system.

Installation and maintenance must be performed according to the corresponding installation instructions. The installation manual is included with the product, see also the online product catalog at www.gfps.com

Dimensions

Type 543 Pro P horizontal, solvent cement sockets metric

Ball valve type 543 Pro horizontal, with solvent cement sockets metric, with pneumatic actuator type PPA FC/FO

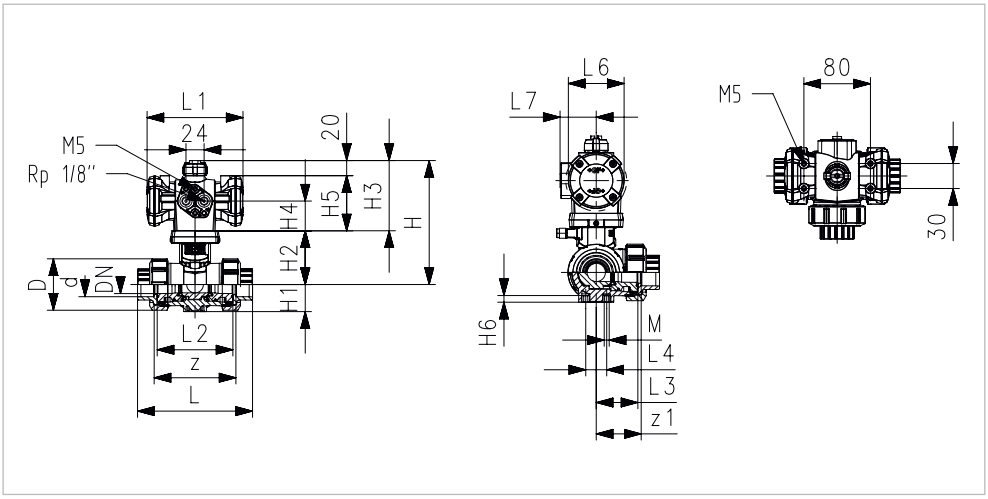


DN (mm)	d (mm)	Actua-tor	D (mm)	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	H6 (mm)
10	16	PPA08	50	157	28	62	95	41	75	8
15	20	PPA08	50	157	28	62	95	41	75	8
20	25	PPA15	58	179	32	71	108	45	88	8
25	32	PPA15	68	179	36	71	108	45	88	8
32	40	PPA40	84	215	45	84	131	56	111	9
40	50	PPA40	97	215	51	84	131	56	111	9
50	63	PPA40	124	237	65	106	131	56	111	9

d (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L6 (mm)	L7 (mm)	M	z (mm)	z1 (mm)	closest inch
16	109	159	73	36	25	74	32	6	81	40	⅜
20	112	159	73	36	25	74	32	6	81	40	½
25	131	211	86	43	25	94	38	6	94	47	¾
32	151	211	99	50	25	94	38	6	107	54	1
40	181	246	120	60	45	120	47	8	130	65	1 ¼
50	205	246	137	69	45	120	47	8	143	72	1 ½
63	261	246	179	89	45	120	47	8	185	92	2

Type 543 Pro P horizontal, solvent cement sockets metric

Ball valve type 543 Pro horizontal, with solvent cement sockets metric, with pneumatic actuator type PPA DA

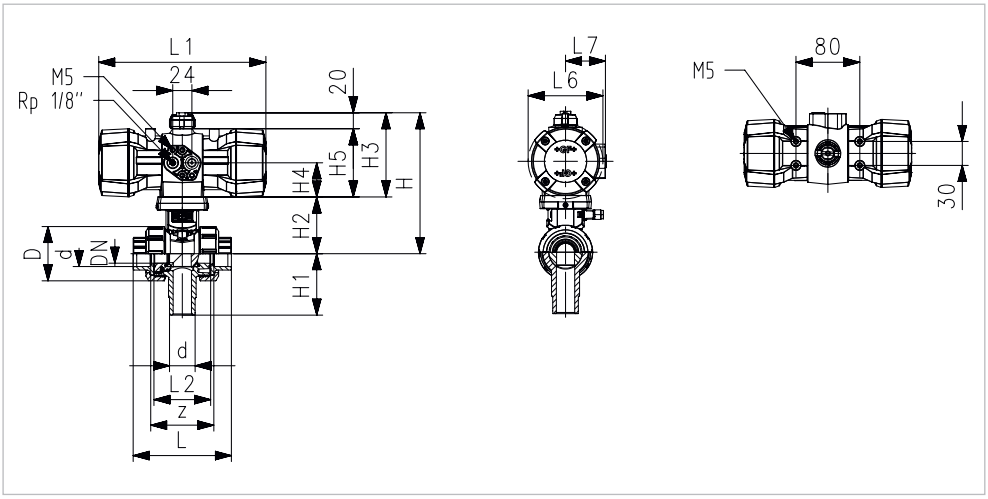


DN (mm)	d (mm)	Actua-tor	D (mm)	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	H6 (mm)
10	16	PPA08	50	157	28	62	95	41	75	8
15	20	PPA08	50	157	28	62	95	41	75	8
20	25	PPA08	58	166	32	71	95	41	75	8
25	32	PPA08	68	166	36	71	95	41	75	8
32	40	PPA15	84	192	45	84	108	45	88	9
40	50	PPA15	97	192	51	84	108	45	88	9
50	63	PPA40	124	237	65	106	131	56	111	9

d (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L6 (mm)	L7 (mm)	M	z (mm)	z1 (mm)	closest inch
16	109	128	73	36	25	74	32	6	81	40	⅜
20	112	128	73	36	25	74	32	6	81	40	½
25	131	128	86	43	25	74	32	6	94	47	¾
32	151	128	99	50	25	74	32	6	107	54	1
40	181	165	120	60	45	94	38	8	130	65	1 ¼
50	205	165	137	69	45	94	38	8	143	72	1 ½
63	261	184	179	89	45	120	47	8	185	92	2

Type 543 Pro P vertical, solvent cement sockets metric

Ball valve type 543 Pro vertical, with solvent cement sockets metric, with pneumatic actuator type PPA FC/FO

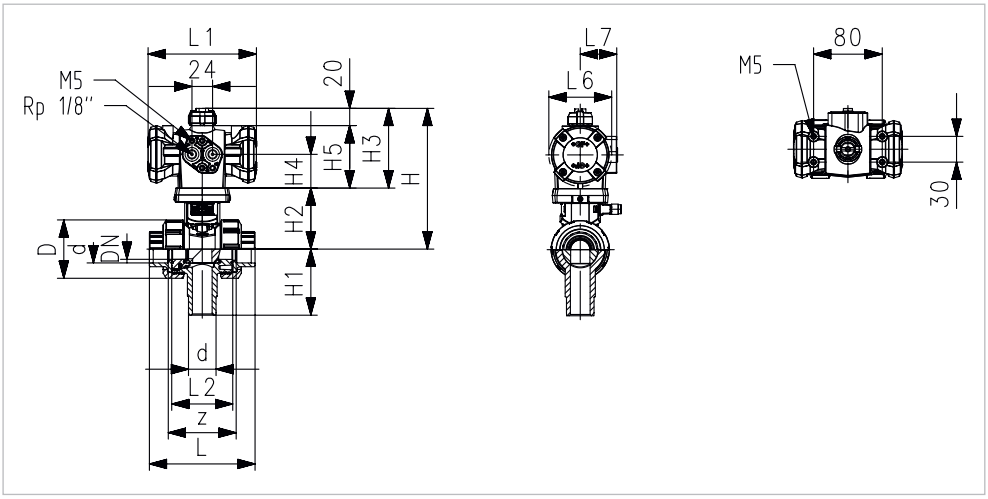


DN (mm)	d (mm)	Actua-tor	D (mm)	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	H6 (mm)
10	16	PPA08	50	157	28	62	95	41	75	8
15	20	PPA08	50	157	28	62	95	41	75	8
20	25	PPA15	58	179	32	71	108	45	88	8
25	32	PPA15	68	179	36	71	108	45	88	8
32	40	PPA40	84	215	45	84	131	56	111	9
40	50	PPA40	97	215	51	84	131	56	111	9
50	63	PPA40	124	237	65	106	131	56	111	9

d (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L6 (mm)	L7 (mm)	M	z (mm)	z1 (mm)	closest inch
16	110	159	72	36	25	74	32	6	82	41	⅜
20	112	159	72	36	25	74	32	6	82	41	½
25	129	211	85	43	25	94	38	6	97	49	¾
32	146	211	97	49	25	94	38	6	110	55	1
40	170	246	118	59	45	120	47	8	132	66	1 ¼
50	193	246	135	68	45	120	47	8	151	76	1 ½
63	244	246	176	88	45	120	47	8	188	94	2

Type 543 Pro P vertical, solvent cement sockets metric

Ball valve type 543 Pro vertical, with solvent cement sockets metric, with pneumatic actuator type PPA DA



DN (mm)	d (mm)	Actua-tor	D (mm)	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	H6 (mm)
10	16	PPA08	50	157	28	62	95	41	75	8
15	20	PPA08	50	157	28	62	95	41	75	8
20	25	PPA08	58	166	32	71	95	41	75	8
25	32	PPA08	68	166	36	71	95	41	75	8
32	40	PPA15	84	192	45	84	108	45	88	9
40	50	PPA15	97	192	51	84	108	45	88	9
50	63	PPA40	124	237	65	106	131	56	111	9

d (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L6 (mm)	L7 (mm)	M	z (mm)	z1 (mm)	closest inch
16	110	128	72	36	25	74	32	6	82	41	⅜
20	112	128	72	36	25	74	32	6	82	41	½
25	129	128	85	43	25	74	32	6	97	49	¾
32	146	128	98	49	25	74	32	6	110	55	1
40	170	165	118	59	45	94	38	8	132	66	1 ¼
50	193	165	135	68	45	94	38	8	151	76	1 ½
63	244	184	176	88	45	120	47	8	188	94	2

Accessories

- Manual override -10° to 50° C
- Double sensor for electrical position indicator
- 3/2 way pilot valve type PV94/95
- 3/2 - 5/2 way solenoid valve type MNL532
- 4/2 way pilot valve type 5470
- Valve terminal type PV2000
- Digital positioner type RPC
- Position indicator - feedback box
- AS-Interface ASVC 2300
- See accessories pneumatic actuator PPA

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

10/2023-A

Tel. +41 52 631 11 11 • www.gfps.com • E-Mail: info.ps@georgfischer.com

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