

Ball valve type 546



Product description

Due to its material diversity, ball valve type 546 is the ideal valve for use in applications ranging from simple water applications right up to demanding chemical processes. Its modular construction guarantees simple operation, flexibility, universal automation options and the greatest possible process safety.

Function

The ball valve is similar in concept to the plug valve but uses a rotating ball with a hole through it that allows straight-through flow in the open position and shuts off flow when the ball is rotated 90° to block the flow passage. This fitting is primarily used for open/close functions and also for throttling services.

Applications

- Chemical process industry
- Water treatment
- Microelectronics
- Measurement and control
- Shipbuilding
- Food & beverage

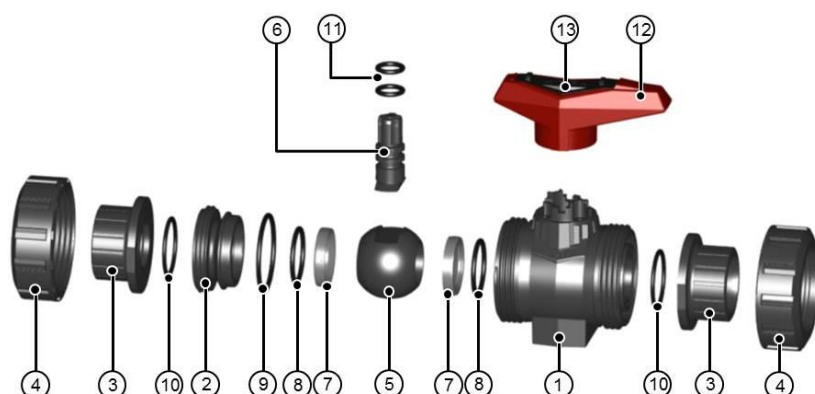
Benefits/features

- Manual valve or automatic valve with/without electrical feedback
- Ergonomic hand lever with integrated tool for removing union bushing
- Lockable lever (optional)
- Integrated fixation system with mounted threaded inserts
- Spacers keep the level of the piping system constant and simplify installation
- Individual online configuration is possible
- Oil-free and silicone-free version
- Very high flow rate
- Universal interface makes possible a combination with all actuators

Flow media

Neutral and aggressive media with a small amount of particles/solids. The chemical resistance is independent of the selected valve material (see list of chemical resistance from GF Piping Systems).

Technical data



No.	Description
1	Housing
2	Union bushing
3	Connecting part
4	Coupling nut
5	Ball
6	Stem
7	Ball seal
8	Backing seal
9	Body seal
10	Face seal
11	2 x stem seal
12	Standard hand lever
13	Hand lever clip

Specification

Dimensions	d16/DN10 – d110/DN100 (d160/DN150), 3/8" – 4" (6")	
Materials	Valve body	PVC-U, PVC-C, ABS, PP, PVDF
	Lever	PP-GF30
Gasket materials	O-rings	EPDM, FPM, FFPM
	Ball seal	PTFE, PVDF
Pressure levels	ABS / PP	PN10
	PVC / PVDF	PN16
Connections	Fusion / solvent cement sockets	ISO, ASTM, JIS, BS
	Fusion / solvent cement spigot	ISO
	Threaded socket	Rp, NPT, Rc
	Backing flange	ISO, ANSI, BS, JIS
	Butt fusion spigots	SDR11 and SDR17.6
	PE100 electrofusion spigot or butt fusion spigot	SDR11 and SDR17.6
Actuation variants	Hand-operated	
	Lockable hand lever	
	Pneumatic FC, FO, DA with and without manual override	
	Electrical AC: 100 – 230 V, AC/DC: 24 V, with / without manual override	
Approvals	DVGW, ACS, ABS, NSF, WRAS, DIBt, RINA, BV, FDA, SEPRO, TSSA	

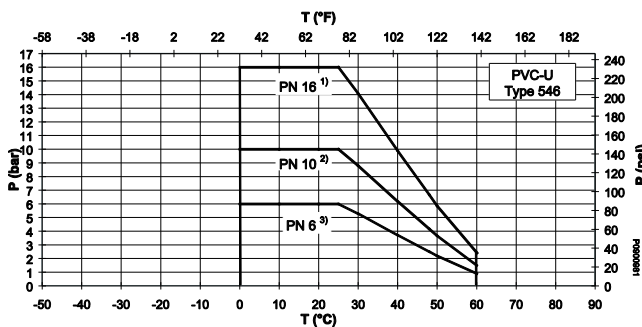
Kv 100 values

DN (mm)	Inch (inch)	d (mm)	Kv 100 (l/min)	Cv 100 (gal/min)	Kv 100 (m ³ /h)
10	3/8	16	70	4.9	4
15	1/2	20	185	12.9	11
20	3/4	25	350	24.5	21
25	1	32	700	49.0	42
32	1 1/4	40	1000	70.0	60
40	1 1/2	50	1600	112.0	96
50	2	63	3100	217.1	186
65	2 1/2	75	5000	350.0	300
80	3	90	7000	490.0	420
100	4	110	11000	770.0	660

Pressure-temperature diagrams

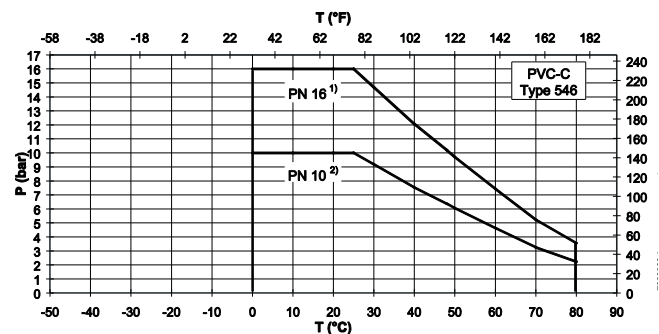
T Temperature (°C, °F)
P Permissible pressure (bar, psi)

PVC-U



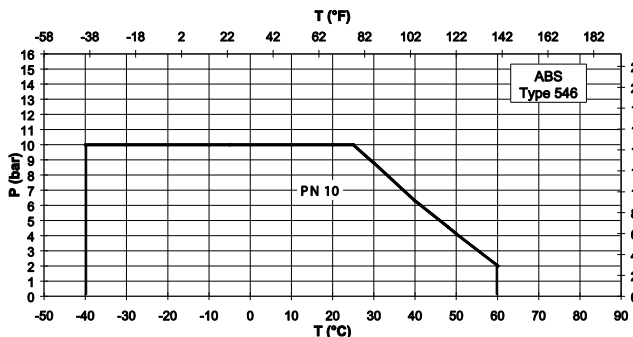
- 1) The central part of the ball valve is designed for the nominal pressure PN16
- 2) Depending on the connection, the nominal pressure is reduced to PN10
- 3) Depending on the connection, the nominal pressure is reduced to PN6

PVC-C

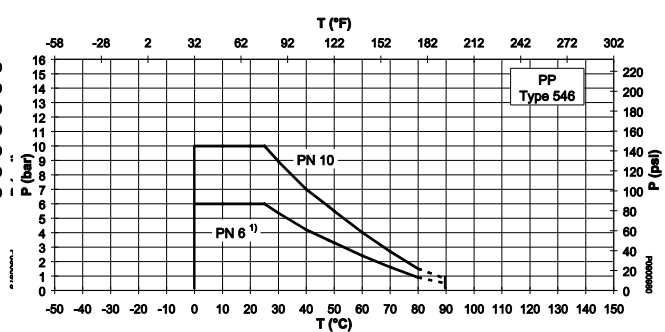


- 1) The central part of the ball valve is designed for the nominal pressure PN16
- 2) Depending on the connection, the nominal pressure is reduced to PN10

ABS

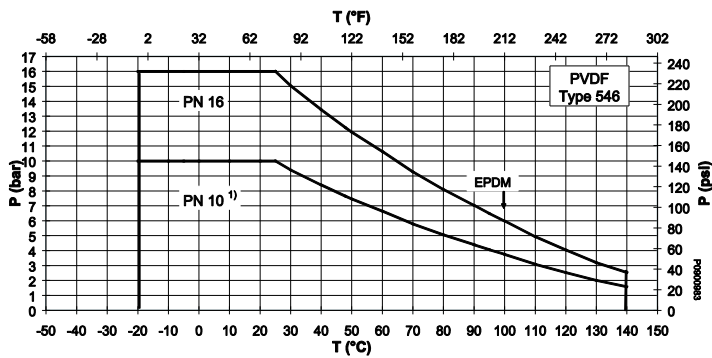


PP



- 1) For example, ball valve with butt fusion spigot PP or PE100, SDR 17

PVDF



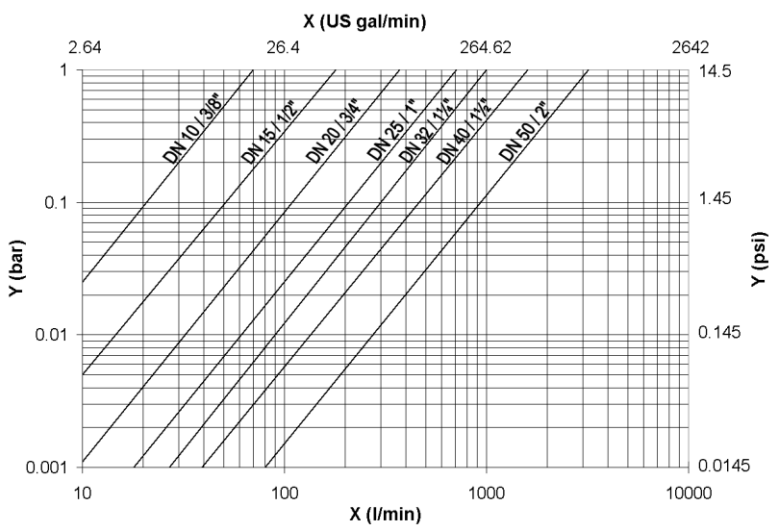
1) For example, ball valve with threaded socket EPDM gasket up to max. 100 °C

The following pressure-temperature diagrams are based on a service life of 25 years and water or similar media.

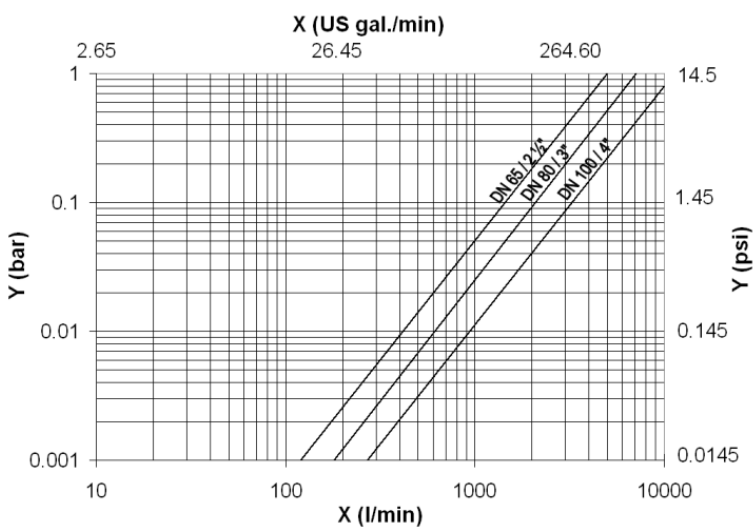
Pressure losses

X Flow rate (l/min, US gal/min)
Y Pressure loss Δp (bar, psi)

d16/DN10 – d63/DN50

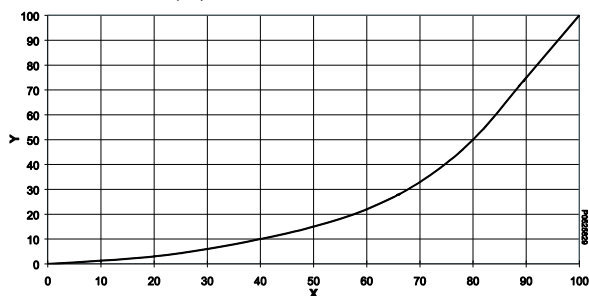


d75/DN65 – DN100



Flow characteristics

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



Flow characteristics for linear ball valve type 546

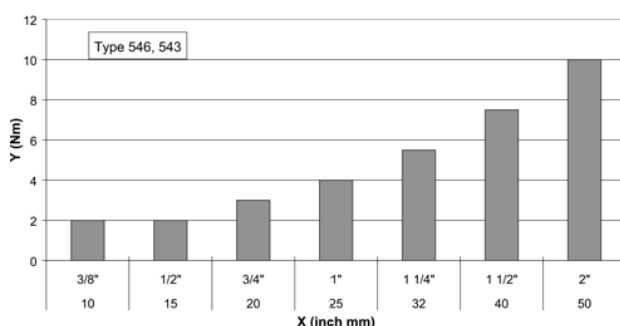


For dimensions d20/DN15, d32/DN25 and d63/DN50, a special ball with linear flow characteristics is available.

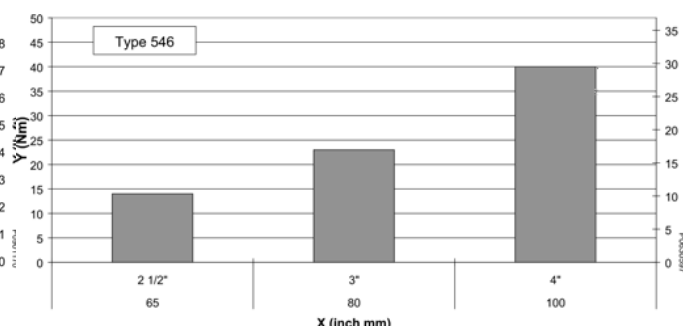
Operating torque

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

DN10 – DN50



DN65 – DN100



Reference values for tightening torque of screws

Flange connections with profile flange seal or flat gaskets

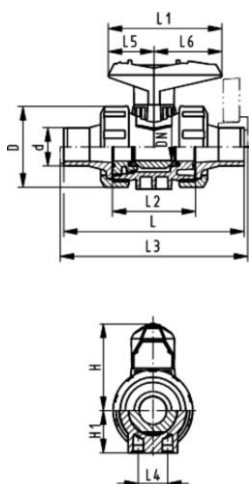
d (mm)	DN (mm)	Inch (inch)	Total number of screws (for 2 flange connections) standard nut (Height 0.8 x d) ¹⁾	Torque (Reference values) Profile flange gasket ²⁾		Torque (Reference values) Flat gasket	
				(Nm)	(lb-ft)	(Nm)	(lb-ft)
20	15	½	8 x M12 x 50	10	7.4	10	7.4
25	20	¾	8 x M12 x 55	10	7.4	10	7.4
32	25	1	8 x M12 x 60	10	7.4	15	11
40	32	1 ¼	8 x M16 x 70	15	11	20	15
50	40	1 ½	8 x M16 x 70	15	11	25	18
63	50	2	8 x M16 x 80	20	15	35	26
75	65	2 ½	8 x M16 x 90	25	18	50	37
90	80	3	16 x M16 x 100	15	11	30	22
110	100	4	16 x M20 x 130	20	15	35	26

¹⁾ For valve ends type 546 made of PP in combination with backing flanges, use half of the standard nut height

²⁾ Preferred gasket type (suited for plastics)

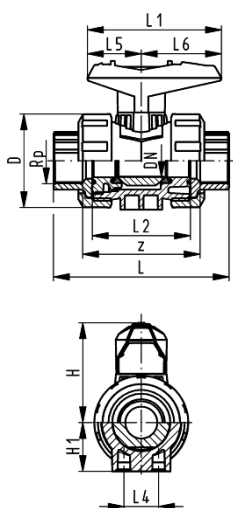
Dimensions

Ball valve type 546 with solvent cement spigots, metric



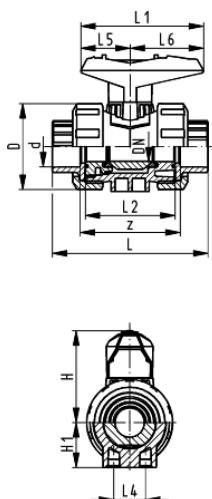
d (mm)	D (mm)	H (mm)	H1 (mm)	L (mm)	L1 (mm)	I2 (mm)	I3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)
16	50	57	27	114	77	56		25	32	45
20	50	57	27	124	77	56	130	25	32	45
25	58	67	30	144	97	65	150	25	39	58
32	68	73	36	154	97	71	160	25	39	58
40	84	90	44	174	128	85	180	45	54	74
50	97	97	51	194	128	89	200	45	54	74
63	124	116	64	224	152	101	230	45	66	87
75	166	149	85	284	270	136	290	70	64	206
90	200	161	105	300	270	141	310	70	64	206
100	238	178	123	340	320	164	350	120	64	256

Ball valve type 546 with solvent cement sockets, metric



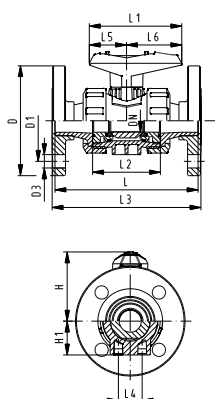
d (mm)	D (mm)	H (mm)	H1 (mm)	L (mm)	L1 (mm)	I2 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	z (mm)
16	50	57	27	92	77	56	25	32	45	64
20	50	57	27	95	77	56	25	32	45	64
25	58	67	30	110	97	65	25	39	58	72
32	68	73	36	123	97	71	25	39	58	79
40	84	90	44	146	128	85	45	54	74	94
50	97	97	51	157	128	89	45	54	74	95
63	124	116	64	183	152	101	45	66	87	107
75	166	149	85	233	270	136	70	64	206	144
90	200	161	105	254	270	141	70	64	206	151
100	238	178	123	301	320	164	120	64	256	174

Ball valve type 546 with threaded sockets Rp



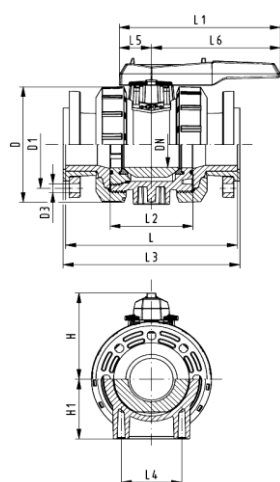
Rp inch	D (mm)	H (mm)	H1 (mm)	L (mm)	L1 (mm)	I2 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	z (mm)
3/8	50	57	27	92	77	56	25	32	45	64
1/2	50	57	27	95	77	56	25	32	45	64
3/4	58	67	30	110	97	65	25	39	58	72
1	68	73	36	123	97	71	25	39	58	79
1 1/4	84	90	44	146	128	85	45	54	74	94
1 1/2	97	97	51	157	128	89	45	54	74	95
2	124	116	64	183	152	101	45	66	87	107
2 1/2	166	149	85	233	270	136	70	64	206	144
3	200	161	105	254	270	141	70	64	206	151
4	238	178	123	301	320	164	120	64	256	174

Ball valve type 546 with fixed flange serrated, metric



c (mm)	D (mm)	D1 (mm)	D3 (mm)	H (mm)	H1 (mm)	L (mm)	L1 (mm)	I2 (mm)	I3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)
20	95	65	14	57	27	124	77	56	130	25	32	45
25	105	75	14	67	30	144	97	65	150	25	39	58
32	115	85	14	73	36	154	97	71	160	25	39	58
40	140	100	18	90	44	174	128	85	180	45	54	74
50	150	110	18	97	51	194	128	89	200	45	54	74
63	165	125	18	116	64	224	152	101	230	45	66	87

Ball valve type 546 with backing flange, metric



d (mm)	D (mm)	H (mm)	H1 (mm)	H2 (mm)	L (mm)	L1 (mm)	I2 (mm)	L4 (mm)	L5 (mm)	L6 (mm)	M
75	166	149	85	15	284	270	136	70	64	206	M8
90	200	161	105	15	300	270	141	70	64	206	M8
110	238	178	112	22	340	320	164	120	64	256	M12

Accessories

- Multifunctional module
- Multifunctional hand lever with ratchet settings, lockable
- Hand lever extension
- Linear flow line
- Additional limit switches



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

Rev A (1/16)

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