

Three-way Ball Valve Type 543



General

- **Size:** 3/8"–2"
- **Material:** PVC, CPVC, PROGEF® Standard PP, ABS, SYGEF® Standard PVDF
- **Seat:** PTFE
- **Seals:** EPDM or FPM
- **End Connection:** Solvent cement socket, threaded, flanged, fusion spigot, fusion socket
- **Horizontal Mounting:** Stainless steel threaded inserts

Key Certifications

- **FDA CFR 21 177.1520:** PP and PVDF
- **FDA CFR 21 177.2600:** EPDM and FPM
- **FDA CFR 21 177.1550:** PTFE
- **USP 25 Class VI (physiological non-toxic):** PP and PVDF

Specification

The Type 543 3-way Ball Valve shall be available in horizontal and vertical body types. The ball shall be fully molded and full port with blocking capability when in the OFF position. The stem shall be blowout proof, utilizing a double o-ring seal and a predetermined break point opposite the media side of the stem seals. The seat carrier shall be adjustable and reverse threaded. The handle shall double as a seat carrier adjustment or removal tool. Horizontal versions shall utilize a true union connection with a seat carrier on all three ports. Vertical versions shall utilize a true union connection and seat on the two main ports only. The branch connection on vertical versions shall be metric spigot and a metric-ASTM coupling shall be provided. The valve nut threads shall be of buttress type. Ball seats shall have an elastomeric backing o-ring and all elastomeric seals shall be of like material. All valves shall be tested in accordance to ISO9393 and designed to ISO16135 standards. All valves shall be manufactured under ISO9001 for Quality and ISO14001 for Environmental Management. Following assembly, every valve shall be certified bubble tight.

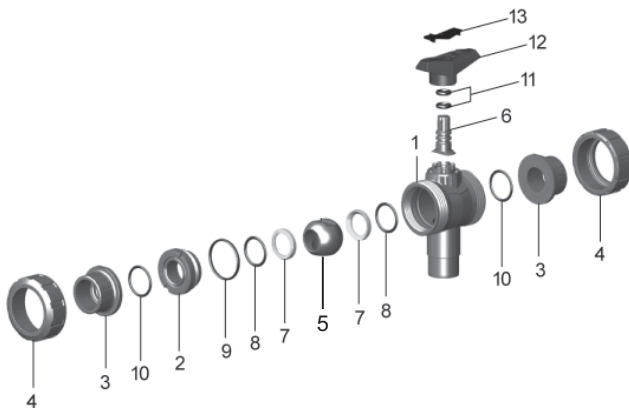
Material Specification

PVC valves shall meet ASTM D1784 cell classification 12454 standards. CPVC valves shall meet ASTM D1784 cell classification 23447 standards. PP valves shall meet ASTM D5847-14 cell classification PP0510B66851 standards. ABS valves shall meet ASTM D3965 cell classification 42222 standards. PVDF valves shall be type 1, grade 2 according to ASTM D3222 standards. Valves of all materials shall be RoHS compliant.

Material Availability

Material	Horizontal	Vertical
PVC	All Sizes	All Sizes
CPVC	All Sizes	-
PP	All Sizes	-
ABS	All Sizes	All Sizes
PVDF	All Sizes	-

Components



Optional Features

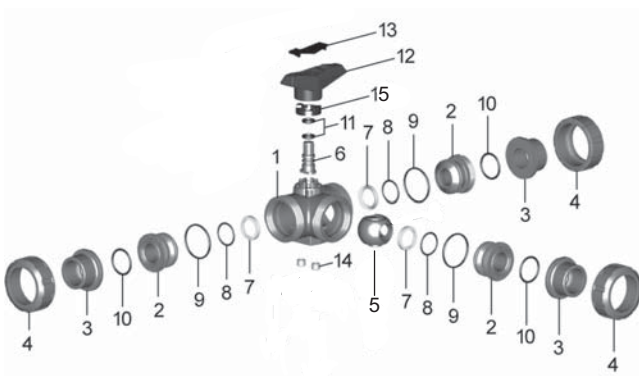
- **Actuation:** Electric, pneumatic
- **Limit Switches:** Mechanical, inductive
- **Handle:** Lockable handle, handle extension
- **Stop:** 90° turn limiter
- **Mounting pad:** Additional mounting option for valve base
- **Universal Adapter Kit:** ISO mount for actuation
- **Seals:** Alternative materials available upon request
- **Seat:** PVDF
- **End Connection:** Alternatives available upon request
- **Cleaned:** Silicone free/oil free

Vertical Valve Components

Part	Description	Material
1	Valve body	PVC, CPVC, PP, ABS or PVDF
2	Seat carrier	PVC, CPVC, PP, ABS or PVDF
3	Valve end	PVC, CPVC, PP, PPn, ABS, PE or PVDF
4	Valve nut	PVC, CPVC, PP, ABS or PVDF
5	Ball	PVC, CPVC, PP, ABS or PVDF
6	Stem	PVC, CPVC, PP, ABS or PVDF
7	Seat	PTFE
8	Backing seal	EPDM or FPM
9	Body seal	EPDM or FPM
10	Face seal	EPDM or FPM
11	Stem seal	EPDM or FPM
12	Handle	Glass-filled PP
13	Handle clip	Glass-filled PP

Horizontal Valve Components

Part	Description	Material
1	Valve body	PVC, CPVC, PP, ABS or PVDF
2	Seat carrier	PVC, CPVC, PP, ABS or PVDF
3	Valve end	PVC, CPVC, PP, PPn, ABS, PE or PVDF
4	Valve nut	PVC, CPVC, PP, ABS or PVDF
5	Ball	PVC, CPVC, PP, ABS or PVDF
6	Stem	PVC, CPVC, PP, ABS or PVDF
7	Seat	PTFE
8	Backing seal	EPDM or FPM
9	Body seal	EPDM or FPM
10	Face seal	EPDM or FPM
11	Stem seal	EPDM or FPM
12	Handle	Glass-filled PP
13	Handle clip	Glass-filled PP
14	Mounting insert	304 Stainless steel
15	Turn limiter	Glass-filled PP

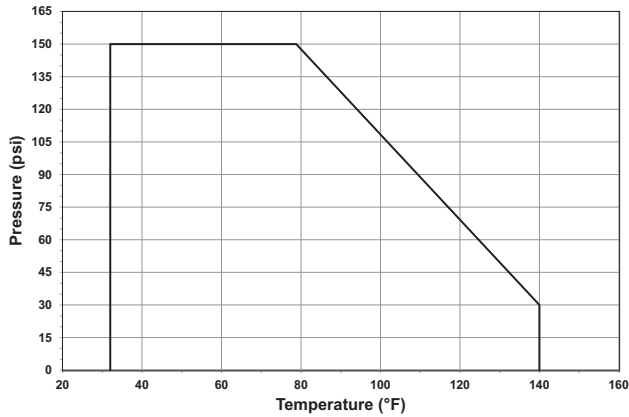


Technical Data

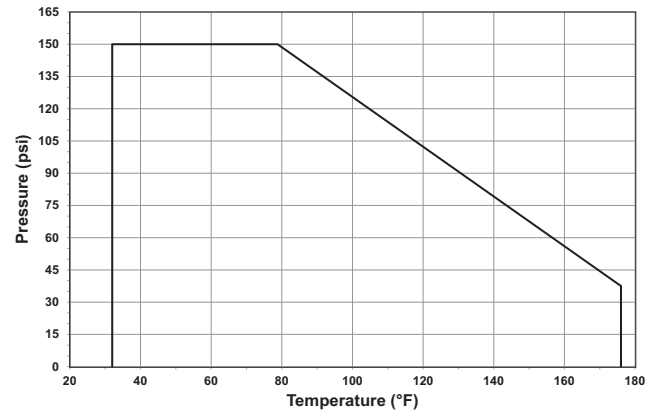
Pressure Temperature Curves

The following graphs are based on a 25 year lifetime water or similar media application

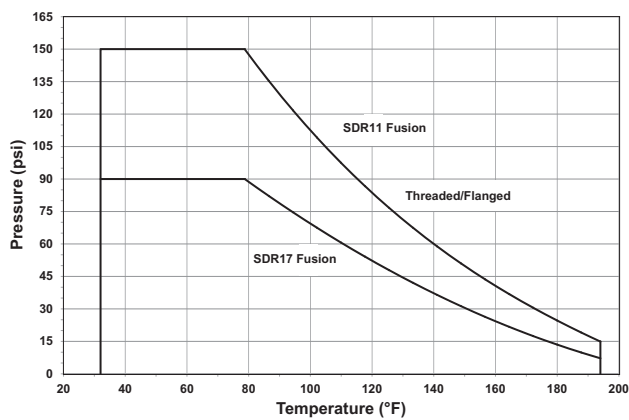
PVC



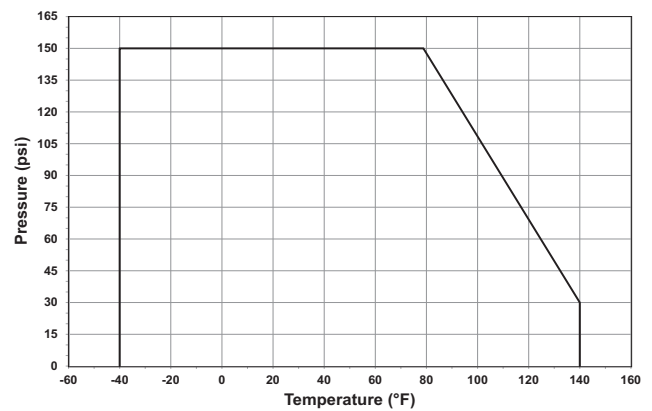
CPVC



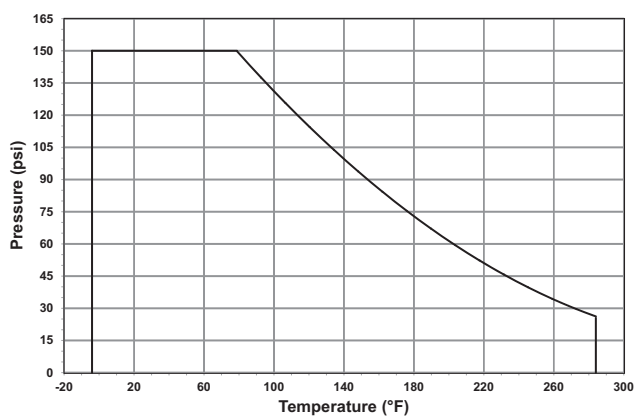
PP



ABS



PVDF



Pressure-Temperature

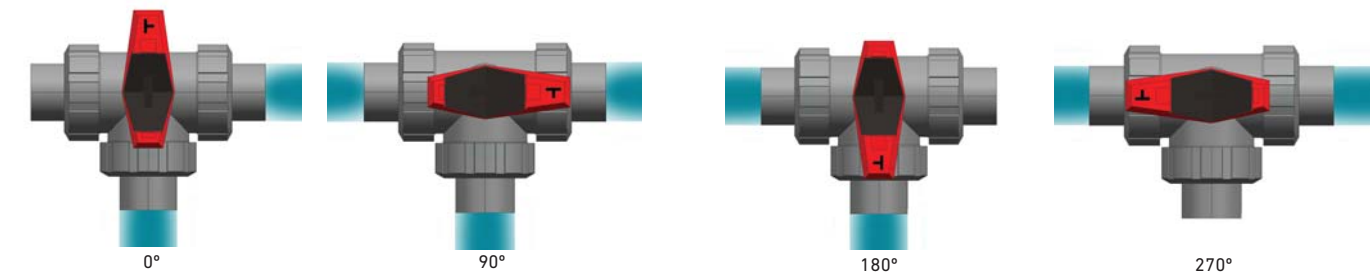
Material	Temperature Range (°F)	Max Pressure (psi)
PVC	32 to 140	150
CPVC	32 to 176	150
PP	32 to 176	150
ABS	-40 to 140	150
PVDF	-4 to 284	150

Vacuum Service

The Type 543 is rated for full vacuum service. Maximum differential pressure of 15psi at 122°F.

Porting

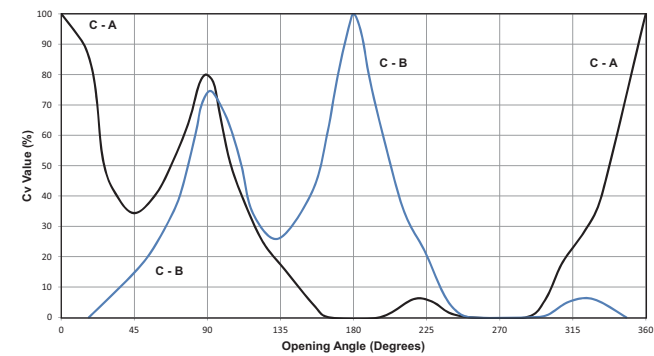
Options shown turning the valve handle clockwise. Redundant positions not shown.



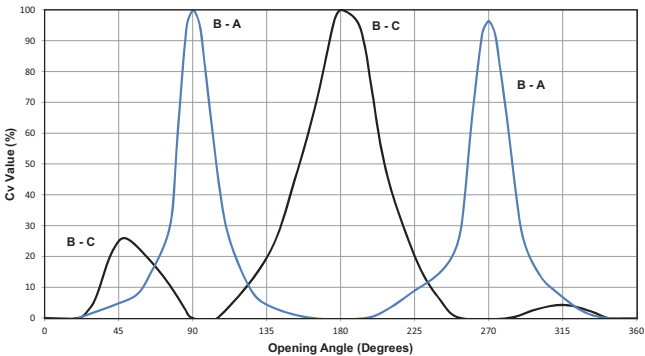
Flow Horizontal T-port

The following information is based on water applications at 68° F

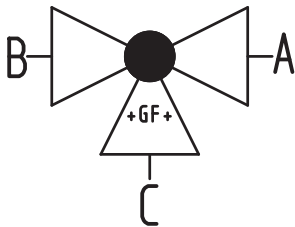
Flow Characteristics: C Common



Flow Characteristics: B Common



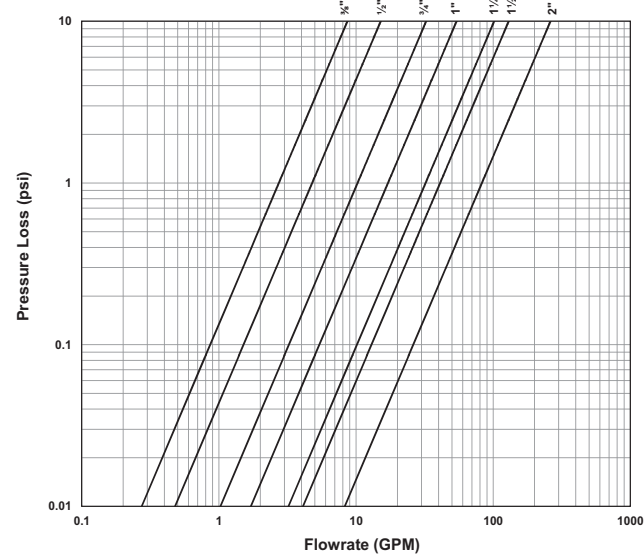
Common is referring to the single port media is flowing either to or from. The A common curve is the same as the B common shifted 180 degrees. Any opening angle with points on both lines indicates flow through both non-common ports.



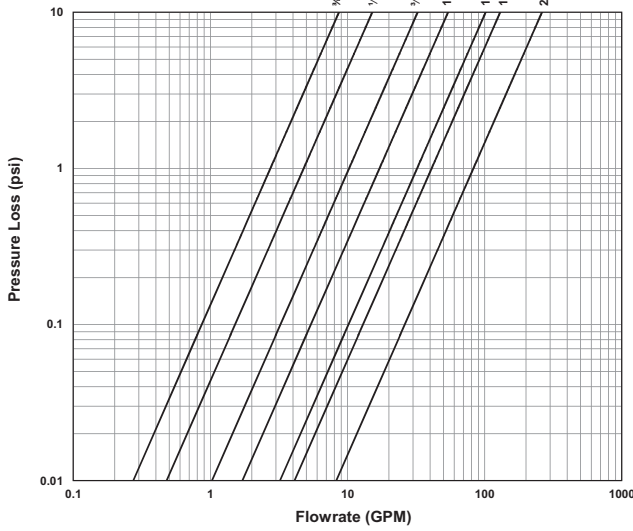
Cv Value (gal/min)

Size (inch)	d (mm)	A-B	C-B or C-A	B-C or A-C
3/8	16	9.8	2.5	2.8
1/2	20	14	3.5	4.9
3/4	25	32.9	9.1	10.5
1	32	55.5	14	17.5
1 1/4	40	90.3	26.6	32.9
1 1/2	50	133.7	32.9	42
2	63	217	62.3	84.7

Pressure Loss: A-B

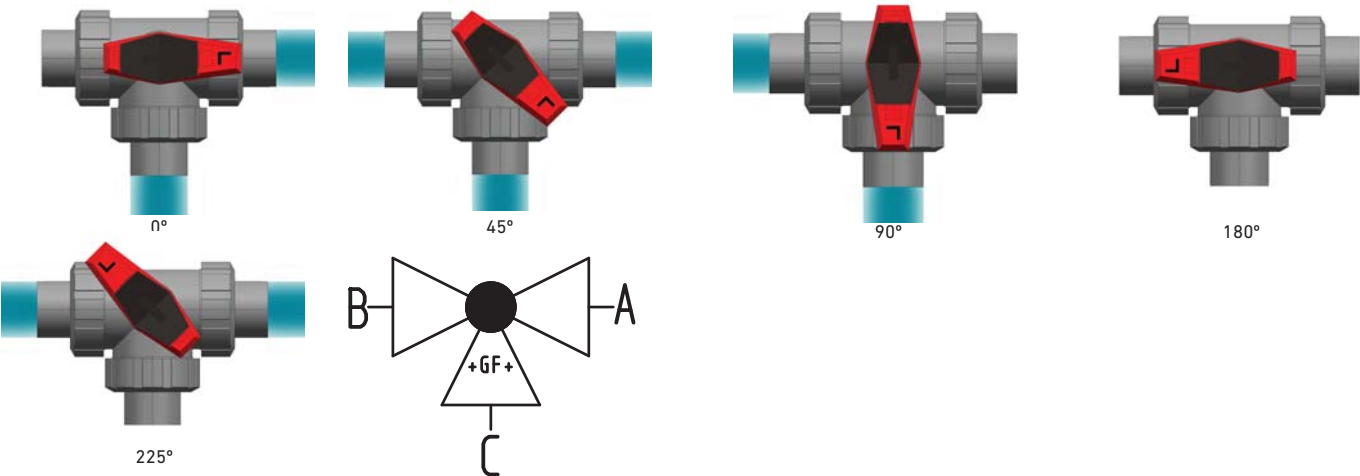


Pressure Loss: A-C or B-C



Porting Horizontal L-port

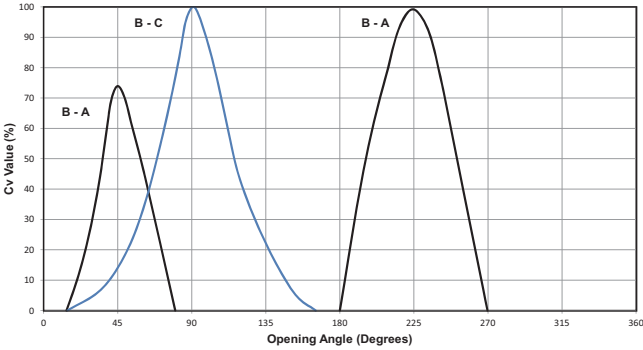
Options shown turning the valve handle clockwise. Redundant positions not shown.



Flow Horizontal L-port

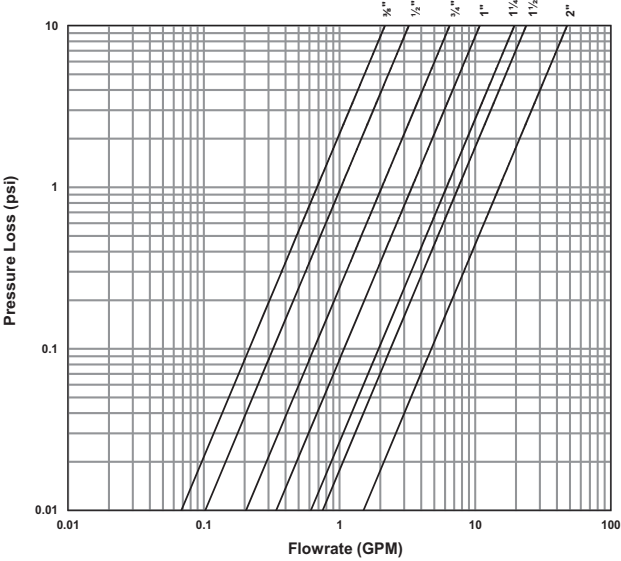
The following information is based on water applications at 68° F

Flow Characteristics - B Common



Common is referring to the single port media is flowing either to or from. The A common curve is the same as the B common shifted 180 degrees. Any opening angle with points on both lines indicates flow through both non-common ports.

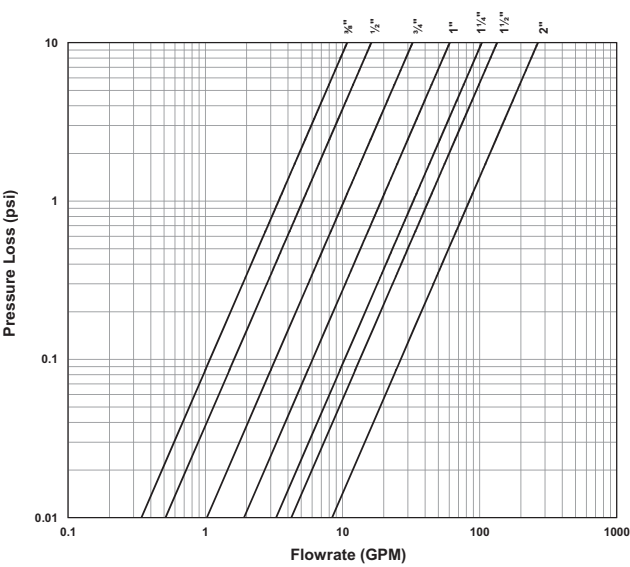
Pressure Loss: A-B



Cv Value (gal/min)

Size (inch)	d (mm)	A-B	C-B or C-A	B-C or A-C
3/8	16	0.7	3.5	3.5
1/2	20	1.1	4.5	4.5
3/4	25	2.1	10.5	10.5
1	32	3.5	19.6	19.6
1 1/4	40	6.3	33.6	33.6
1 1/2	50	7.7	43.4	43.4
2	63	15.4	86.1	86.1

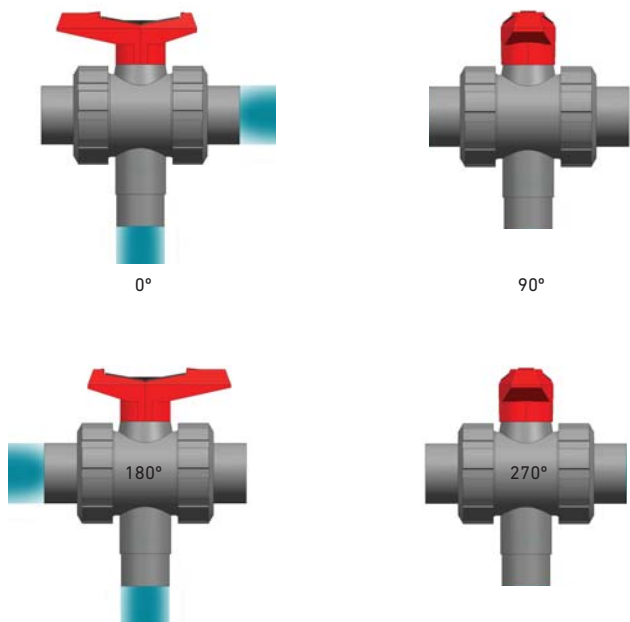
Pressure Loss: A-C or B-C



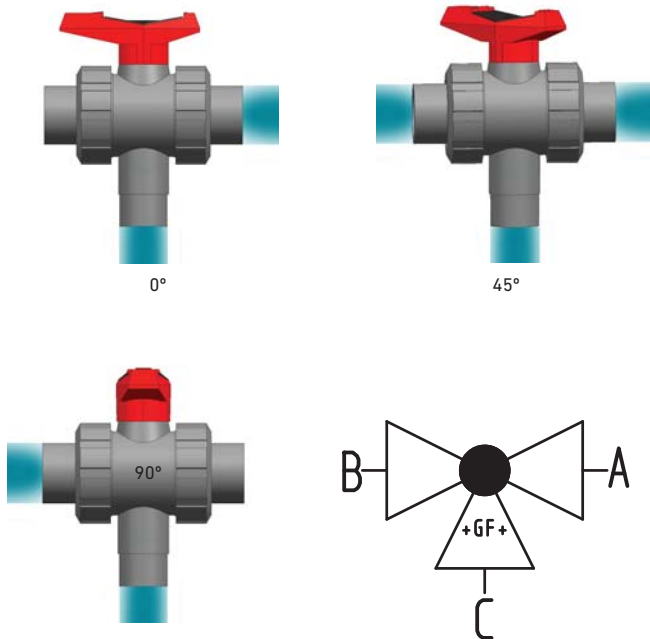
Porting Vertical

Options shown turning the valve handle clockwise. Redundant positions not shown.

Vertical L-port



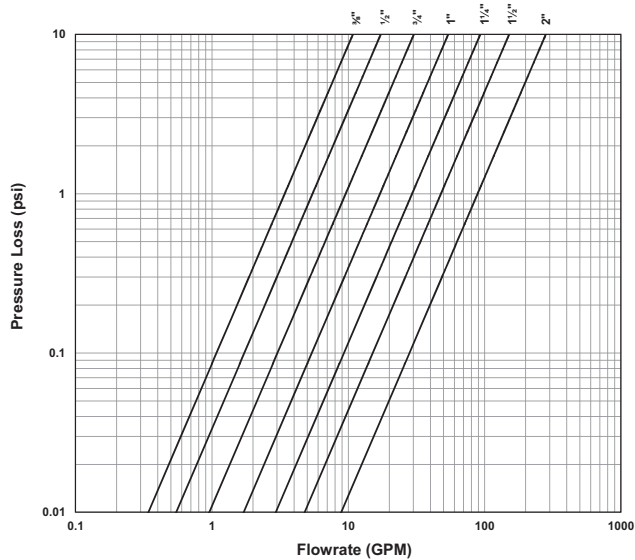
Vertical Diverter



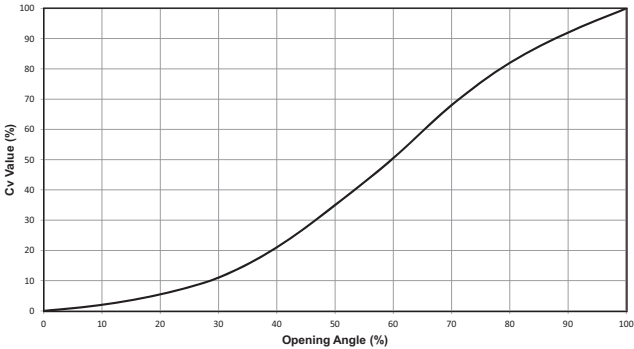
Flow Vertical

The following information is based on water applications at 68° F

Pressure Loss: A-C or B-C



Flow Characteristics: A-C or B-C

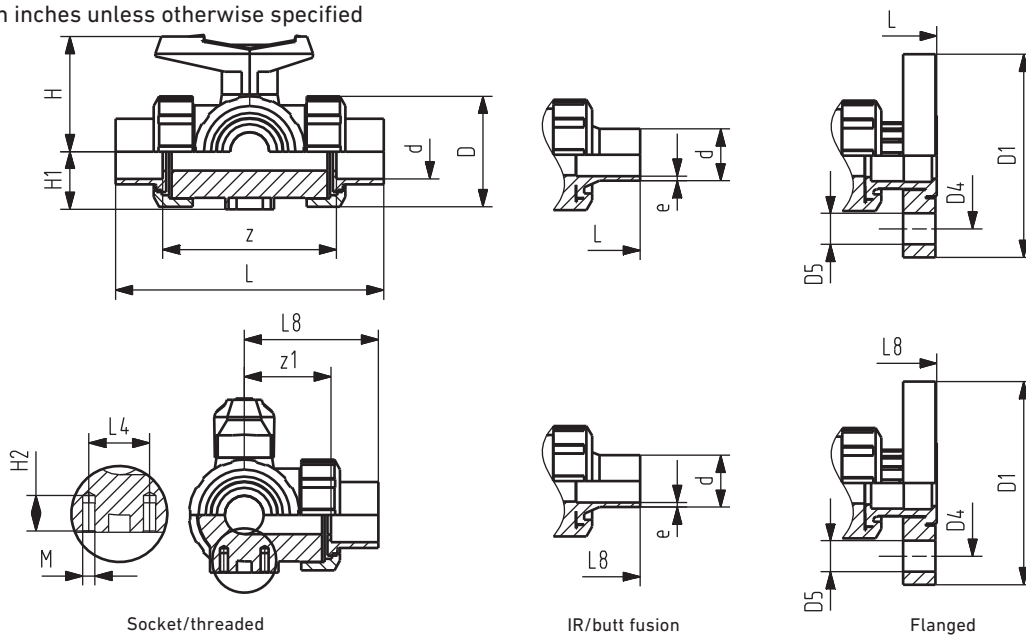


Cv Value (gal/min)

Size (inch)	d (mm)	A-C or B-C
3/8	16	3.5
1/2	20	5.3
3/4	25	10.5
1	32	19.6
1 1/4	40	33.6
1 1/2	50	43.4
2	63	86.1

Dimensions

The following tables are shown in inches unless otherwise specified



Type 543 Horizontal: All Materials

Size	d (mm)	D	L4	H	H1	H2	M
3/8	16	1.97	0.98	2.24	1.10	0.31	M6
1/2	20	1.97	0.98	2.24	1.10	0.31	M6
3/4	25	2.28	0.98	2.64	1.26	0.31	M6
1	32	2.68	0.98	2.87	1.42	0.31	M6
1 1/4	40	3.31	1.77	3.54	1.77	0.35	M8
1 1/2	50	3.82	1.77	3.82	2.01	0.35	M8
2	63	4.88	1.77	4.57	2.56	0.35	M8

Type 543 Horizontal: PVC/CPVC

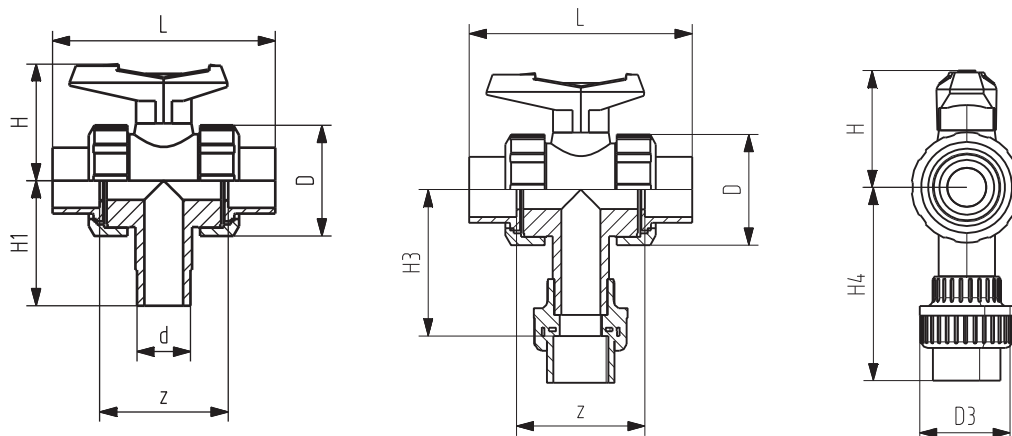
	Socket				Threaded				Flanged					
Size	L	L8	z	z1	L	L8	z	z1	L	L1	D1	D4	D5	R
3⁄8	4.84	2.41	3.35	1.65	4.53	2.25	3.43	1.69	-	-	-	-	-	-
1⁄2	4.80	2.39	3.03	1.50	4.49	2.23	3.19	1.57	6.33	3.15	3.5	2.38	0.50	0.57
3⁄4	5.55	2.77	3.62	1.81	5.16	2.58	3.78	1.89	7.18	3.59	3.88	2.75	0.50	0.58
1	6.34	3.19	4.13	2.09	6.1	3.07	4.37	2.20	8.17	4.11	4.25	3.13	0.50	0.66
1¼	7.36	3.68	4.96	2.48	7.13	3.57	5.28	2.64	9.36	4.68	4.63	3.5	0.50	0.69
1½	8.39	4.22	5.63	2.83	8.07	4.06	6.26	3.15	10.43	5.23	5	3.88	0.50	0.76
2	10.28	5.12	7.28	3.62	10.28	5.12	8.39	4.17	12.72	6.34	6	4.75	0.63	0.82

Type 543 Horizontal: ABS

d (mm)	Socket		
	L	z	z1
16	4.29	3.19	1.57
20	4.41	3.19	1.57
25	5.16	3.7	1.85
32	5.94	4.21	2.13
40	7.13	5.12	2.56
50	8.07	5.63	2.83
63	10.28	7.28	3.62

Type 543 Horizontal: PP/PVDF

d (mm)	Socket				IR/Butt			Threaded			
	L	L8	z	z1	L	L8	e	L	L8	z	z1
16	4.33	2.17	3.23	1.61	-	-	-	4.41	2.21	3.39	1.69
20	4.41	2.21	3.23	1.61	5.75	2.88	1.9	4.49	2.25	3.15	1.57
25	5.08	2.56	3.82	1.93	6.42	3.23	1.9	5.16	2.6	3.74	1.89
32	5.75	2.88	4.33	2.17	7.01	3.51	2.4	6.06	3.03	4.33	2.17
40	6.69	3.34	5.20	2.60	8.03	4.01	2.4	7.09	3.54	5.20	2.60
50	7.60	3.83	5.94	2.99	9.33	4.69	3.0	7.99	4.02	6.18	3.11
63	9.61	4.8	7.40	3.70	11.65	5.82	3.0	10.16	5.08	8.27	4.13



Type 543 Vertical: All Materials

Size	d (mm)	D	D3	H	H1
3/8	16	1.97	-	2.24	2.44
1/2	20	1.97	1.69	2.24	2.44
3/4	25	2.28	2.01	2.64	2.83
1	32	2.68	2.28	2.87	3.03
1 1/4	40	3.31	2.83	3.54	3.43
1 1/2	50	3.82	3.27	3.82	3.82
2	63	4.88	3.94	4.57	4.41

Type 543 Vertical: PVC

Size	Socket				Threaded			
	L	z	H3	H4	L	z	H3	H4
3/8	4.17	2.64	3.50	4.25	3.86	2.76	3.54	4.05
1/2	4.13	2.40	3.54	4.41	3.86	2.52	3.54	4.21
3/4	4.76	2.76	4.05	5.03	4.41	2.99	4.13	4.84
1	5.24	2.99	4.41	5.55	5.00	3.27	4.49	5.31
1 1/4	5.98	3.54	4.93	6.19	5.75	3.9	5.2	6.11
1 1/2	6.50	3.70	5.43	6.81	6.18	4.37	6.06	6.97
2	7.20	4.21	6.14	7.64	7.20	5.31	7.36	8.31

Type 543 Vertical: ABS

d	Socket	
	L	z
16	3.62	2.52
20	3.74	2.52
25	4.37	2.91
32	4.84	3.11
40	5.75	3.74
50	6.18	3.74
63	7.2	4.21

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