

Manual Valves in PVC, CPVC, Polypropylene (PP-H), Natural Polypropylene (PP-n) and SYGEF-PVDF

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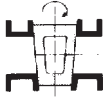
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Common Types of Valves

Quarter Turn Valves

Plug valve



Ball valve



Butterfly valve



Diaphragm valve



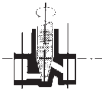
Globe valve



Y-Globe valve



Needle valve



Gate valve



The **Plug Valve** is used primarily for on-off service and some throttling services. It controls flow by means of a cylindrical or tapered plug with a hole in the center that lines up with the flow path of the valve to permit flow. A quarter turn in either direction blocks the flow path.

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. It is used for on-off and some throttling services.

The **Butterfly Valve** controls flow by using a circular disk or vane with its pivot axis at right angles to the direction of flow in the pipe. The butterfly valve requires a minimum of space and is used both for on-off and throttling services.

The **Metering Ball Valve** is a unique control valve that allows instantaneous selection of any given flow rate within its range. The V-shaped groove in the ball continuously increases in width and depth so that the size of the orifice is changed from complete shut-off to maximum size as the ball is rotated over the whole setting range. The metering ball valve has an integrated gauge to measure exactly the required throughput over the whole setting range of 0 to 180°.

Multi-Turn Valves

The **Diaphragm Valve** effects closure by means of a flexible diaphragm attached to a compressor. When the compressor is lowered by the valve stem onto a weir, the diaphragm seals and cuts off flow. The diaphragm valve handles corrosive, erosive, and dirty services. It is an easily maintained valve.

The **Globe Valve** effects closure by a plug with a flat or convex bottom lowered onto a matching horizontal seat located in the center of the valve. Raising the plug opens the valve to let flow through. The globe valve is used for on-off service and handles clean service throttling applications.

The **Needle Valve** is a volume control valve that restricts flow in small lines. The fluid going through the valve turns 90° and passes through an orifice that is the seat for a rod with a cone-shaped tip. The size of the orifice is changed by positioning the cone in relation to the seat.

The **Gate Valve** is a general service valve used primarily for on-off, non-throttling service. The valve is closed by a flat face, vertical disk or gate that slides down through the valve to block the flow.

The **Pinch Valve** finds wide application on slurries or liquids with large amounts of suspended solids. It seals by means of one or more flexible elements, such as a rubber tube, that can be pinched to shut off flow.

Selection Criteria for George Fischer Plastic Valves

Type	Medium to be transported				Function requirements					
	Free of foreign bodies	Containing solid particles or crystals	Viscous	Gaseous	Adjustable (i.e. for throttling)	Position indicator	Permits use of in-line cleaning (pigging)	Leakproof under vacuum	Pressure surge behavior	Seal materials available
Diaphragm valve	+	+	+ / O	+ / O	+	+	–	O	O	EPDM, PTFE
Ball valve	+	O / –	+	+	+ / O	+	+	+	+	EPDM, FPM
Y-Globe valve	+	O	+	O	+	O	–	O	–	PE, PTFE
Butterfly valve	+	+ / O	+ / O	+	+ / O	+	–	+	+	EPDM, FPM

+ = recommended O = conditionally suitable – = not recommended

Selection Criteria for George Fischer Ball Valves

Type	346	370	560	353, 354, 355
Size Range	3/8" – 2"	2-1/2" – 6"	1/2" – 6"	1/2" – 2"
End Connectors	true union socket thread	true union flange socket	true union socket thread	true union socket thread
Body Materials	PVC, CPVC, PP, PVDF	PVC, CPVC PP	PVC, CPVC	PVC, PP, Nat. PP
Seal Materials	EPDM, FPM	EPDM, FPM	EPDM, FPM	EPDM, FPM
Method of Mounting	mounting bracket	incorporated in valve body	–	–
Dismantling possible	yes	yes	yes	no
Actuator Unit possible	yes	yes	no	no

Summary of George Fischer Plastic Valves

Description	Type Number		Range of Nominal Sizes				Available Seal Materials	Pressure in psi (water 68°F)
	Manually Operated	Actuated	PVC	CPVC	PP	PVDF		
Ball valve	346	106, 112-119 221-226	3/8" – 2"	3/8" – 2"	3/8" – 2"	3/8" – 2"	EPDM, FPM	150,232 psi*
Ball valve	370	108, 208	2-1/2" – 6"	2-1/2" – 4"	2-1/2" – 6"	—	EPDM, FPM	150 psi
Ball valve	560	—	1/2" – 6"	1/2" – 6"	—	—	EPDM, FPM	150 psi
Ball valve COLORO	353, 354, 355	—	1/2" – 2"	—	1/2"-2" (355)	—	EPDM, FPM	150,232 psi*
Ball valve MIP	350	—	1/2" – 2"	—	—	—	EPDM	150 psi
3-way ball valve	343	101-103, 115, 118, 119, 201-203, 215, 229	3/8" – 6"	1/2" – 2"	1/2" – 2"	1/2" – 2"	EPDM, FPM	150 psi**
Metering ball valve	323	(optional)	3/8" & 1/2"	—	3/8" - 1/2"	—	EPDM, FPM	150 psi
Laboratory ball cock	324	—	1/4"	—	—	—	EPDM	150 psi
Diaphragm valve	314	018, Diastar	1/2" – 2"	—	—	—	EPDM, PTFE	150 psi**
	315	018, Diastar	—	1/2" – 2"	—	—	EPDM, PTFE	150 psi**
	317	Diastar	1/2" – 6"	1/2" – 6"	1/2" – 6"	1/2" – 6"	EPDM, PTFE	150 psi**
	319	Diastar	20x20 mm – 110x63 mm	SYGEF PVDF			PTFE	150 psi
Butterfly valve	037	037E, 037P	2" – 16" Rilsan coated Aluminum body / EPDM or FPM liner					150 psi
Butterfly valve	367	035 , 036	2-1/2" – 12"	3" – 8"	2-1/2" – 12"	2-1/2" – 8"	EPDM, FPM	150 psi***
Butterfly valve	570	—	1-1/2" – 12"	1-1/2" – 12"	—	—	EPDM, FPM	150 psi
Ball check	360	—	3/8" – 3"	3/8" – 2"	3/8" – 2"	3/8" – 2"	EPDM, FPM	150 psi
Y-Check	304	—	1/2" – 3"	—	—	—	EPDM, FPM	150 psi
Y-Globe valve	301	211	1/2" – 3"	—	—	—	PE, PTFE	150 psi
Line Strainer	306	—	1/2" – 3"	—	—	—	EPDM, FPM	150 psi
Needle valve	522	—	—	—	1/2"	1/4" – 1/2"	PTFE	150, 200 psi
Sampling valve	525	—	—	—	—	3/8"	PTFE	200 psi

* PVC, CPVC, PVDF socket (232 psi), PP socket (150 psi), threaded all materials (150 psi)

** Reduced pressure ratings on 4" Diastar (120 psi), 6" Diastar (90 psi), 6" Type 317 (105 psi), 2-1/2"–6" Type 343 (87 psi)

*** Reduced pressure ratings on 6", 8", 10" PVC & PP (90 psi); 12" (60 psi)

Technical Data for Ball Valves

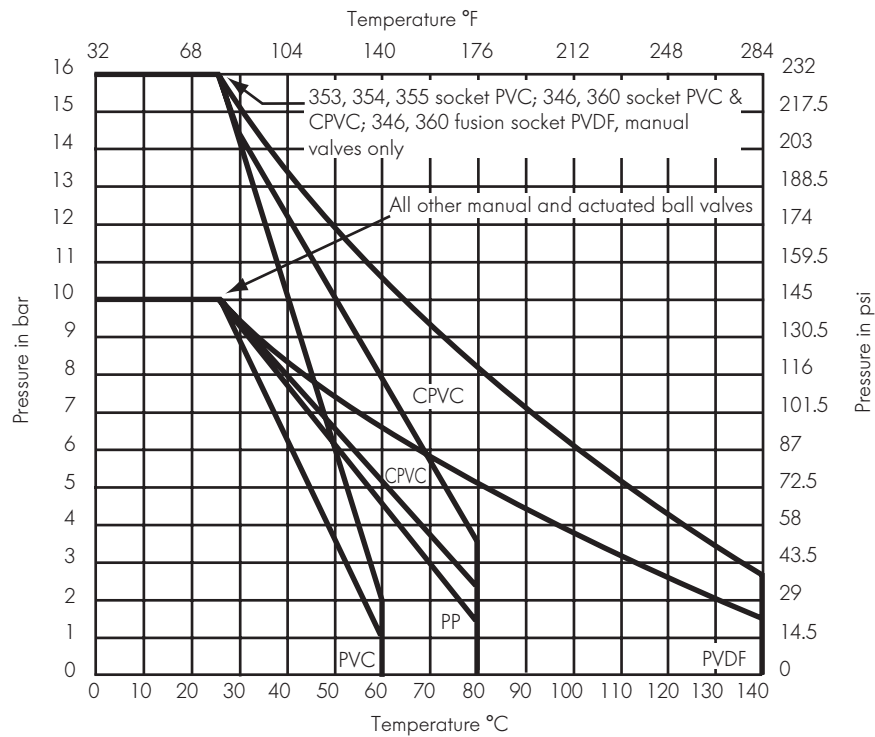
Pressure/Temperature Diagrams

All pressures are given in atmospheric excess pressure values. Ambient temperature max. 122°F/50°C.

Safety factors for selected Thermoplastics

Based on a 50 year operating life at 68°F/20°C with water

Material	Safety factor
PVC	2.5
CPVC	2.75
PVDF	2
PP	2.1



Bolt tightening torque values for flanged joints

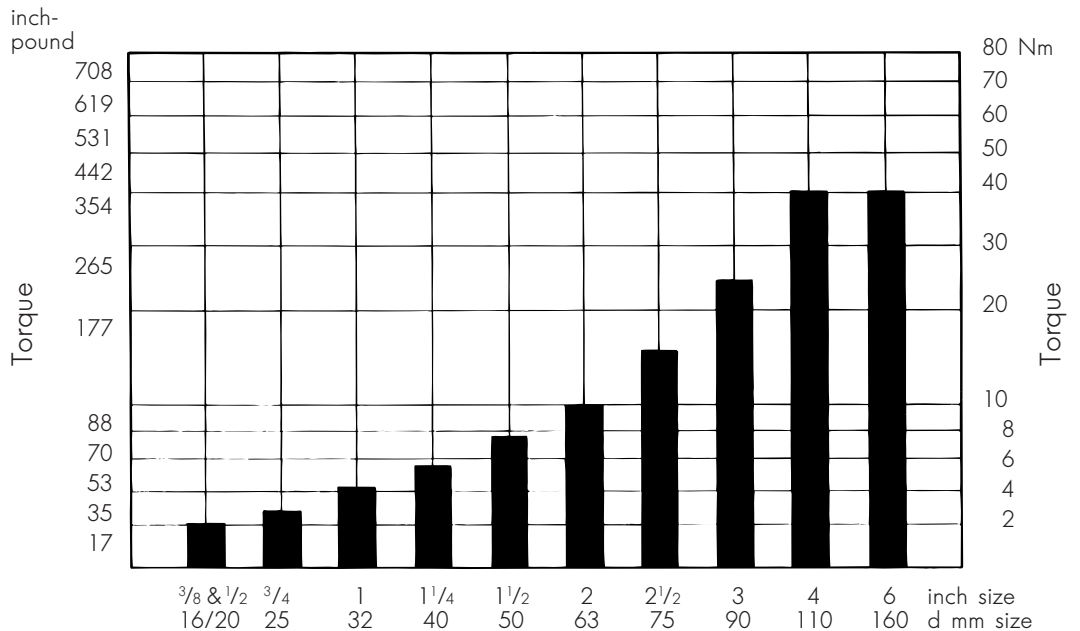
Type 346

Inch size	in. lbs.
1/2	133
3/4	133
1	133
1 1/4	177
1 1/2	266
2	310

Type 370

Inch size	in. lbs.
2 1/2	354
3	354
4	354
6	531

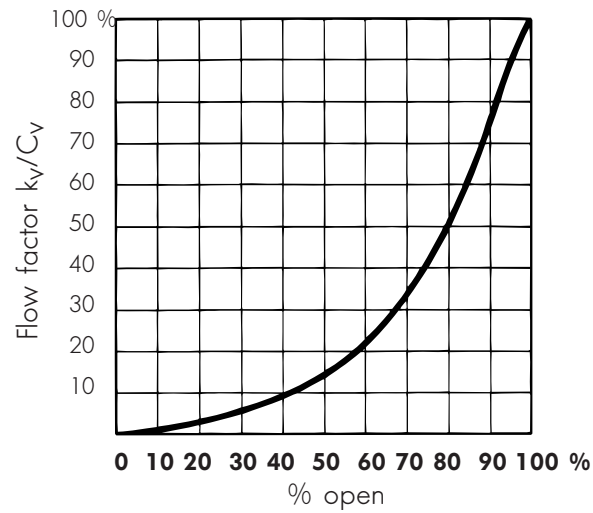
Torque for all ball valve types



Flow Characteristics

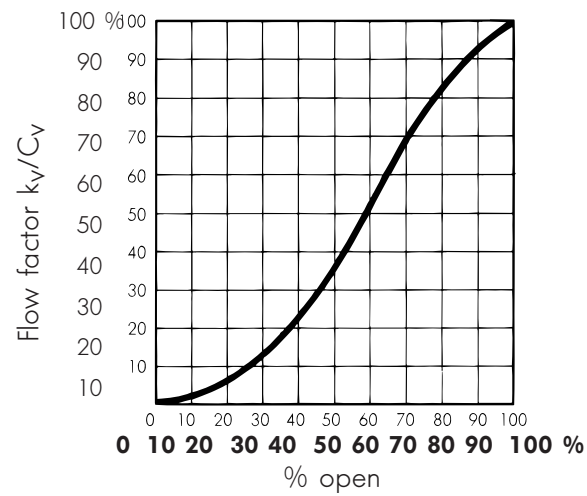
for Ball Valves

Types 324, 346, 350, 353, 354, 355, 370, 560

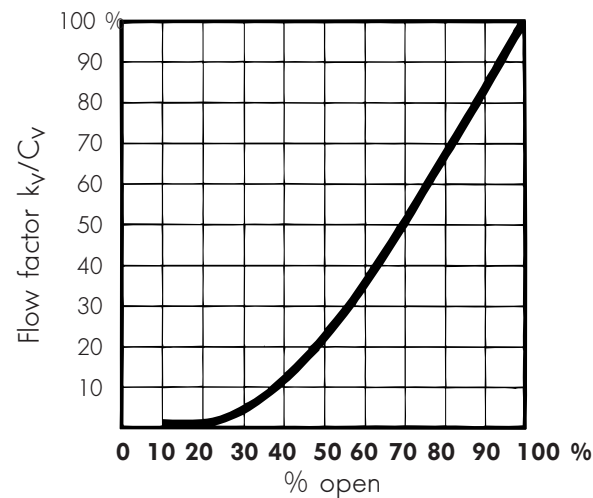


for Vertical 3-way Ball Valve (L-port)

Type 343 (see type 343 vertical and horizontal for additional flow charts)



for Metering Ball Valve Type 323



Pressure Loss Characteristics

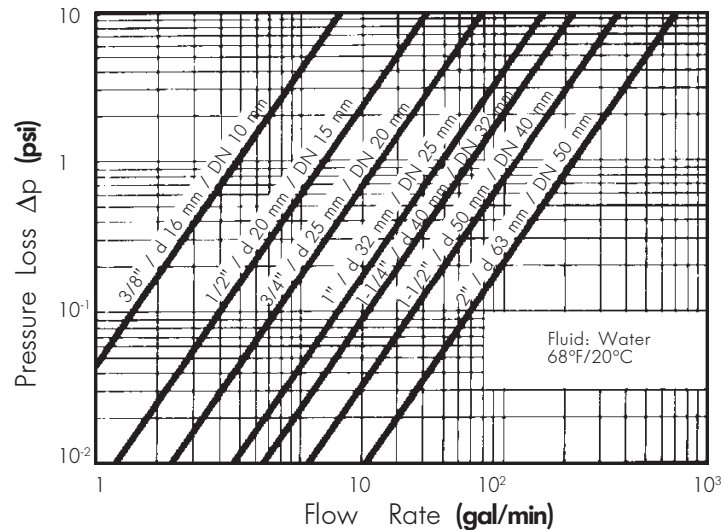
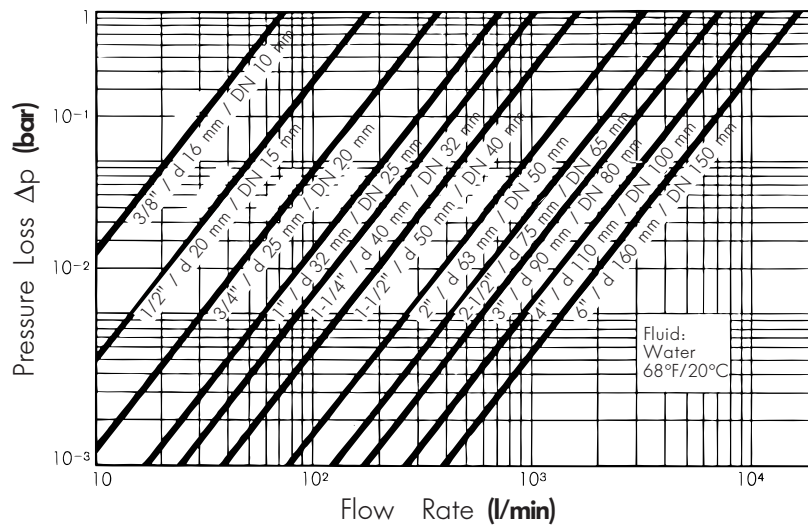
Cv/kv Values

Inch size	Cv	kv	d mm size
1/4	2.20	32	12
3/8	4.97	71	16
1/2	12.95	185	20
3/4	24.50	350	25
1	49.01	700	32
1 1/4	70.02	1000	40
1 1/2	112.04	1600	50
2	217.08	3100	63
2 1/2	350.00	5000	75
3	490.00	7000	90
4	770.00	11000	110
6*	1120.00	16000	160

*6" Type 370, only

1 bar = 14.5 psi ≈ 15 psi
1 gal = 3.785 liters

for Ball Valves Types 324, 346, 353, 354, 355, 370, 560



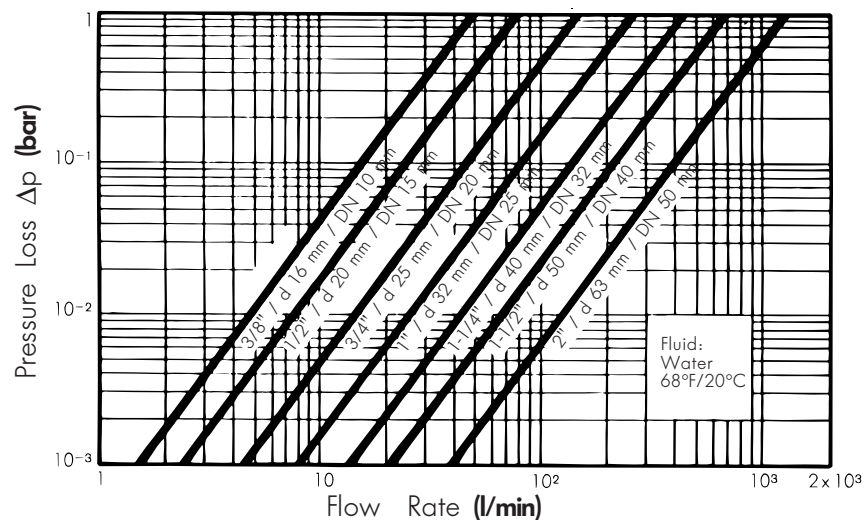
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Cv/kv Values

Inch size	Cv	kv	d mm size
3/8	3.43	49	16
1/2	5.39	77	20
3/4	10.22	146	25
1	18.20	260	32
1 1/4	30.60	437	40
1 1/2	46.70	667	50
2	90.54	1293	63

1 bar = 14.5 psi ≈ 15 psi
1 gal = 3.785 liters

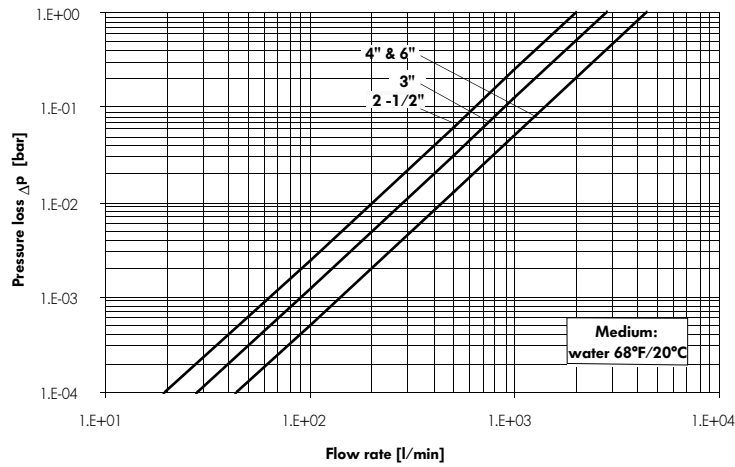
for 3-way Ball Valve Type 343 (Vertical, L-port Ball) 3/8"-2"



Cv/kv Values

Inch size	Cv	kv
2 1/2	139.3	1990
3	185.5	2650
4	307.3	4390

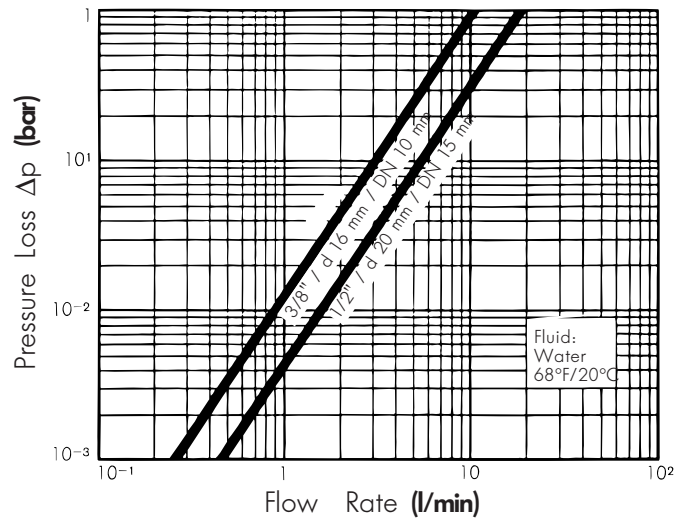
for 3-way Ball Valve Type 343 (Vertical, L-port Ball) 2 1/2"-4"



Cv/kv Values

Inch size	Cv	kv	d mm size
3/8	.77	11	16
1/2	1.40	20	20

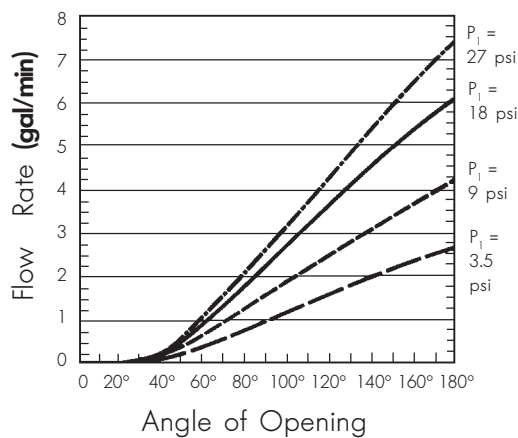
for Metering Ball Valve Type 323



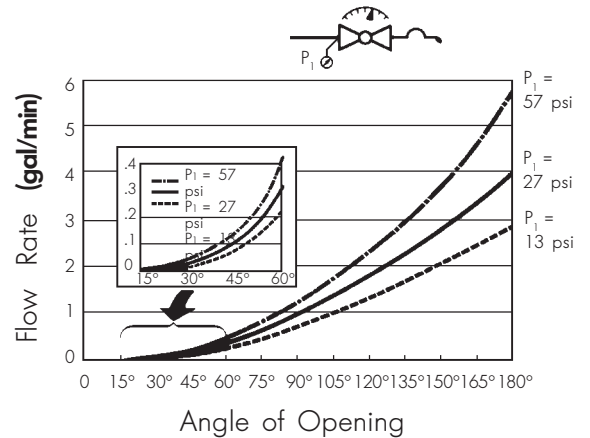
1 bar = 14.5 psi ≈ 15 psi
1 gal = 3.785 liters

$Q = C_v \sqrt{\Delta p}$ to determine flow rate at higher Δp 's.

1/2" metering ball valve



3/8" metering ball valve



George Fischer True Union Ball Valve Type 346



George Fischer plastic valves have the following outstanding features:

- Corrosion resistance
- Ideal flow characteristics
- Long working life, maintenance-free
- Light weight
- Ball valves Type 346 can be equipped with George Fischer electric or pneumatic actuators (refer to Type 112-119 or Type 220-226 resp.)
- Can be actuated after installation
- Capable of vacuum service down to 1 Torr (1mm of Hg) or 1.33 mbar. 29.881 inches of Mercury (U.S. units)
- Silicone free versions available
- EPDM and FPM seals available

General

The Type 346 Ball Valve permits radial installation or removal. Flow in either direction irrespective of installation position.

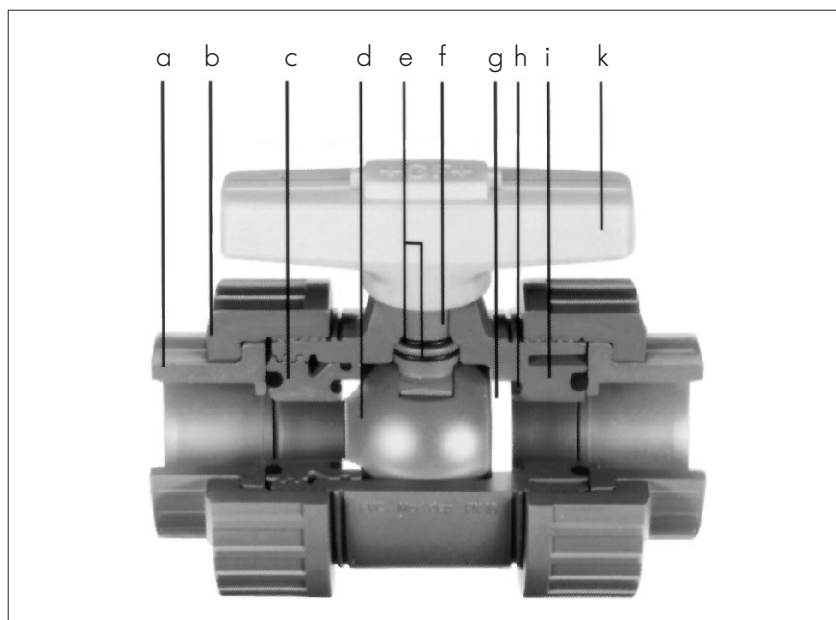
Available in sizes 3/8" – 2", (16 mm – 63 mm) in PVC, CPVC, SYGEF-PVDF, and polypropylene (PP).

Pressure rating 232 psi in accordance with DIN 3441 for PVC, CPVC, and SYGEF-PVDF socket; 150 psi for polypropylene and all threaded valves.

Access to all components, ball, stem, seats, and seals is provided by removal of the single threaded seat carrier. The double lever handle has a molded-in wrench to engage the seat carrier for removal by rotating clockwise to remove, counter-clockwise to tighten (left-hand threads).

Technical Features

- Socket and threaded end connections.
- Union ends allow for repair or replacement. Also allow positioning of valve.
- Screwed-in seat carrier (left-hand threads) enables downstream connection to be removed without leakage.
- Floating ball principle provides leak-proof closure. Full bore cross section gives minimum pressure loss.
- Double stem sealing for maintenance free operation.
- Blow out proof stem (no undercut for O-ring seals).
- PTFE seats provide tight sealing with long service life.
- Backing O-rings provide a self-adjusting seal between seat and floating ball.
- Full block valve functions.

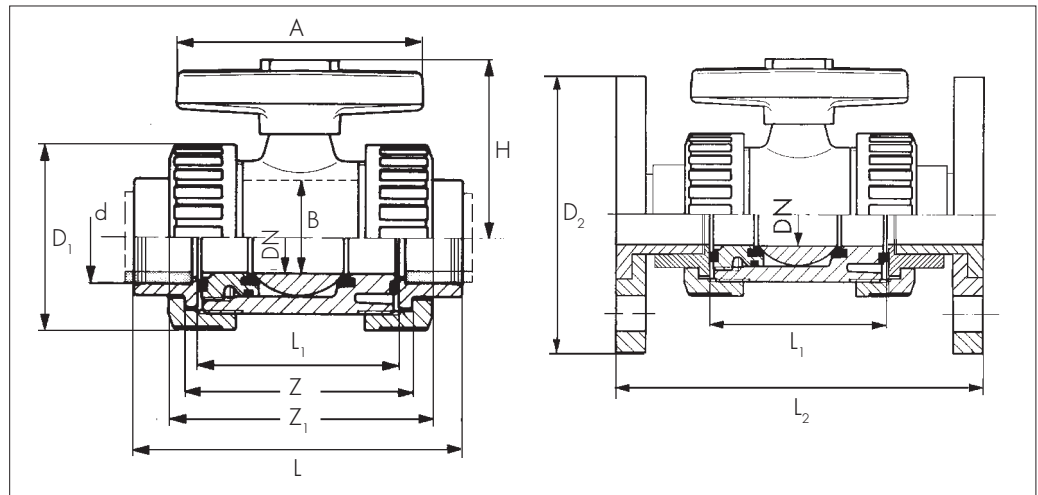


- Snap-on handle indicates open or close, can only be mounted correctly, and maintains clearance for knuckles. The handle remains firmly fixed.

Dimensions for Type 346 True Union Ball Valve, PVC and CPVC

Z^* Solvent cement socket valve (laying length)

Z_1^{**} Threaded valve (laying length is herein defined as the dimension between the ends of pipe when threaded into valve to a depth equal to the nominal "Handtight" plus $\frac{1}{2}$ turn)



Inch size	L inch socket	threaded	L ₁ inch	L ₂ inch	Z* inch	Z ₁ ** inch	B inch	D ₁ inch	D ₂ inch	H inch	A inch	Weight lbs.
3/8	4.45	4.14	2.48	—	2.93	3.61	.55	1.81	—	1.97	3.07	.33
1/2	4.49	4.17	2.48	6.21	2.70	3.46	.55	1.81	3.50	1.97	3.07	.33
3/4	5.18	4.75	2.95	7.01	3.15	4.00	.74	2.20	3.88	2.36	3.62	.55
1	5.62	5.30	3.11	7.68	3.34	4.41	.94	2.64	4.25	2.76	3.94	.79
1-1/4	6.58	5.91	3.50	8.69	4.05	4.98	1.21	3.23	4.63	3.14	4.33	1.32
1-1/2	6.76	6.42	3.74	8.86	3.98	5.49	1.53	3.86	5.00	3.62	4.72	2.05
2	7.97	7.76	4.53	10.54	4.95	6.80	1.92	4.72	6.00	4.33	5.75	3.75

Part Numbers for Type 346 True Union Ball Valve

PVC



PTFE Seats

Inch size	solvent cement socket/NPT thread		flanged	
	EPDM	FPM*	EPDM	FPM*
3/8	161 346 301	161 346 311	N/A	N/A
1/2	161 346 302	161 346 312	161 346 342	161 346 352
3/4	161 346 303	161 346 313	161 346 343	161 346 353
1	161 346 304	161 346 314	161 346 344	161 346 354
1-1/4	161 346 305	161 346 315	161 346 345	161 346 355
1-1/2	161 346 306	161 346 316	161 346 346	161 346 356
2	161 346 307	161 346 317	161 346 347	161 346 357

CPVC



PTFE Seats

Inch size	solvent cement socket/NPT thread		flanged	
	EPDM	FPM*	EPDM	FPM*
1/2	163 346 302	163 346 312	163 346 342	163 346 352
3/4	163 346 303	163 346 313	163 346 343	163 346 353
1	163 346 304	163 346 314	163 346 344	163 346 354
1-1/4	N/A	N/A	N/A	N/A
1-1/2	163 346 306	163 346 316	163 346 346	163 346 356
2	163 346 307	163 346 317	163 346 347	163 346 357

FPM seals are made of Viton® or equal materials.

Viton® is a registered trademark of DuPont Dow Elastomers.

Teflon® is a registered trademark of DuPont.

**Assembled with silicone free lubricant

Type 346 Silicone-Free True Union Ball Valve for Paint and Coating Applications**

Contact Technical Service at 800-854-4090 for applications other than paint and coatings.

PVC



PTFE Seats

Inch Size	with solvent cement socket, ASTM		with taper female thread, NPT	
	EPDM seals	FPM* seals	EPDM seals	FPM* seals
3/8	161 346 681	161 346 691	161 346 701	161 346 711
1/2	161 346 682	161 346 692	161 346 702	161 346 712
3/4	161 346 683	161 346 693	161 346 703	161 346 713
1	161 346 684	161 346 694	161 346 704	161 346 714
1-1/4	161 346 685	161 346 695	161 346 705	161 346 715
1-1/2	161 346 686	161 346 696	161 346 706	161 346 716
2	161 346 687	161 346 697	161 346 707	161 346 717

CPVC



PTFE Seats

Inch Size	with solvent cement socket, ASTM		with taper female thread, NPT	
	EPDM seals	FPM* seals	EPDM seals	FPM* seals
1/2	163 346 682	163 346 692	163 346 702	163 346 712
3/4	163 346 683	163 346 693	163 346 703	163 346 713
1	163 346 684	163 346 694	163 346 704	163 346 714
1-1/4	163 346 685	163 346 695	163 346 705	163 346 715
1-1/2	163 346 686	163 346 696	163 346 706	163 346 716
2	163 346 687	163 346 697	163 346 707	163 346 717

Product Specification

Type 346 True Union Ball Valve - PVC

PVC true union ball valves 3/8" through 2" shall have either solvent cement socket or threaded pipe connections. Incorporated into its design safety features is a blow-out proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE (Teflon®) with backing rings creating self-adjusting seals and constant operating torque. Backing rings and seals shall be EPDM or FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to having sufficient elevation to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connectors are removed from pipe. Material shall meet or exceed the requirements of 12454-B according to the classifications and requirements of ASTM D-1784. Socket end connection dimensions shall conform to ASTM D-2467. Threaded pipe connections shall be in accordance with ASTM D-2464 which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. Optional flanged version shall be in accordance with ANSI B16.5, class 150 flanges. The valve, type 346, shall carry a pressure rating of 232 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

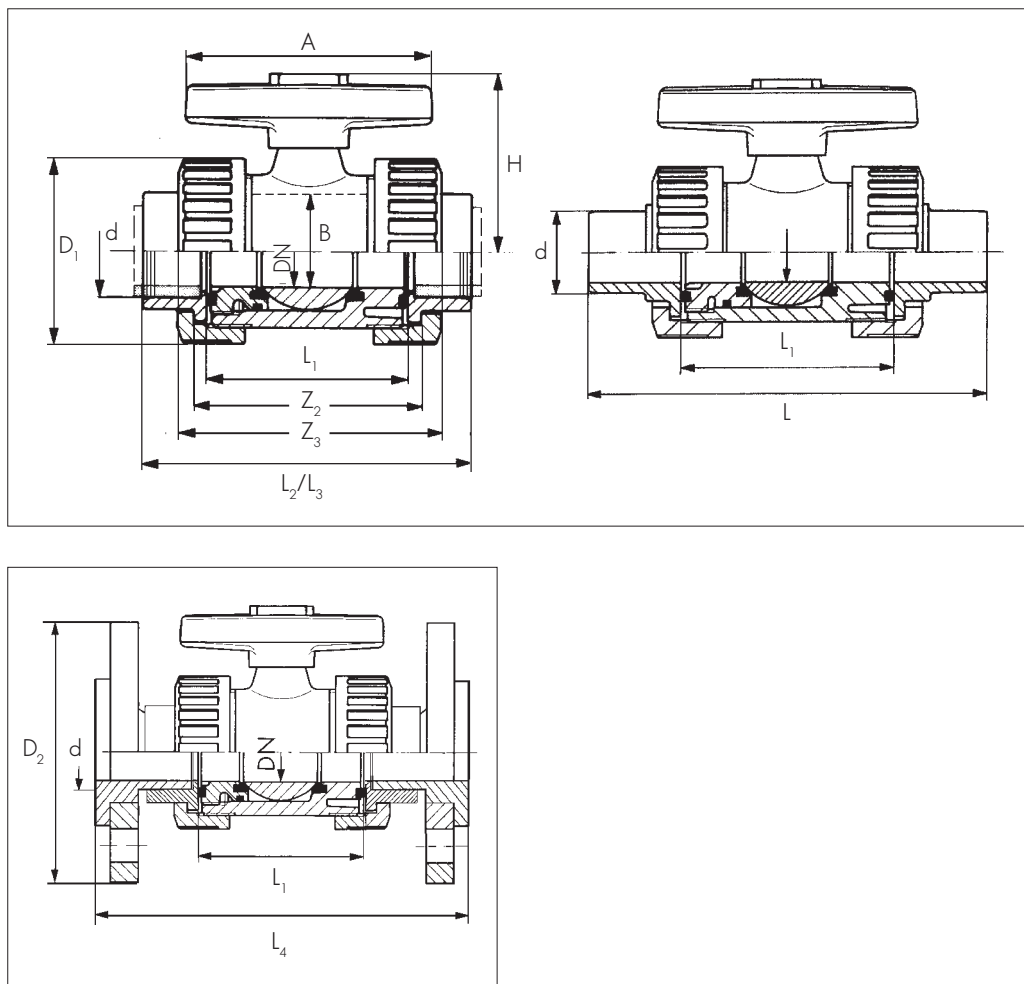
Type 346 True Union Ball Valve - CPVC

CPVC true union ball valves 1/2" through 2" shall have either solvent cement socket or threaded pipe connections. Incorporated into its design safety features is a blow-out proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE (Teflon®) with backing rings creating self-adjusting seals and constant operating torque. Backing rings and seals shall be EPDM or FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to having sufficient elevation to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connectors are removed from pipe. Material shall meet or exceed the requirements of 23447-B according to the classifications and requirements of ASTM D-1784. Socket end connection dimensions shall conform to ASTM F439 (formerly D-2467). Threaded end connections shall conform to the dimensions as listed in ASTM F437 (formerly D-2464) which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. Optional flanged version shall be in accordance with ANSI B16.5, class 150 flanges. The valve, type 346, shall carry a pressure rating of 232 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

**FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers. Teflon® is a registered trademark of DuPont.*

Dimensions for Type 346 True Union Ball Valve, Polypropylene and SYGEF-PVDF

- L Overall length of IR/
butt fusion valve
- L_2 Overall length of
metric fusion socket
valve
- L_3 Overall length of
threaded valve
- L_4 Face to face dim.
- Z_2^* Metric fusion socket
valve (laying length)
- Z_3^{**} Threaded valve (laying
length is herein defined
as the dimension
between the ends of
pipe when threaded
into valve to a depth
equal to the nominal
"Handtight" plus $\frac{1}{2}$
turn)



OD d mm	ID DN mm	L inch	L ₁ inch	L ₂ inch	L ₃ inch	L ₄ inch	Z ₂ [*] inch	Z ₃ ^{**} inch	B inch	D ₁ inch	PP D ₂ inch	SYGEF D ₂ inch	H inch	A inch	Inch size
16	10	4.29	2.44	3.86	4.37	—	2.83	3.48	.55	1.81	—	—	1.97	3.07	3/8
20	15	5.12	2.44	3.98	4.37	6.81	2.87	3.31	.55	1.81	3.74	3.50	1.97	3.07	1/2
25	20	5.67	2.91	4.69	5.12	7.36	3.43	3.88	.74	2.20	4.13	3.86	2.36	3.62	3/4
32	25	5.91	3.07	5.12	5.51	7.95	3.70	4.30	.94	2.64	4.53	4.25	2.76	3.94	1
40	32	6.73	3.46	5.87	6.50	8.62	4.29	5.19	1.21	3.23	5.51	4.61	3.11	4.33	1-1/4
50	40	7.52	3.70	6.38	6.57	9.45	4.57	5.12	1.53	3.86	5.91	5.00	3.58	4.72	1-1/2
63	50	8.66	4.45	7.68	7.83	10.51	5.55	6.28	1.92	4.72	6.50	5.98	4.29	5.75	2

OD d mm	ID DN mm	Weight lbs.		Inch size
		PP	PVDF	
16	10	.22	.37	3/8
20	15	.22	.37	1/2
25	20	.35	.64	3/4
32	25	.53	.97	1
40	32	.86	1.61	1-1/4
50	40	1.34	2.49	1-1/2
63	50	2.47	4.52	2

Part Numbers for Type 346 True Union Ball Valve

Polypropylene (PP)



OD d mm	ID DN mm	metric fusion sockets		threaded NPT		Inch size
		EPDM seals PTFE seats	FPM* seals PTFE seats	EPDM seals PTFE seats	FPM* seals PTFE seats	
16	10	167 346 001	167 346 011	167 346 321	167 346 331	3/8
20	15	167 346 002	167 346 012	167 346 322	167 346 332	1/2
25	20	167 346 003	167 346 013	167 346 323	167 346 333	3/4
32	25	167 346 004	167 346 014	167 346 324	167 346 334	1
40	32	167 346 005	167 346 015	167 346 325	167 346 335	1-1/4
50	40	167 346 006	167 346 016	167 346 326	167 346 336	1-1/2
63	50	167 346 007	167 346 017	167 346 327	167 346 337	2



OD d mm	ID DN mm	IR/butt fusion ends		flanged		Inch size
		EPDM seals PTFE seats	FPM* seals PTFE seats	EPDM seals PTFE seats	FPM* seals PTFE seats	
20	15	167 346 082	167 346 092	167 346 362	167 346 372	1/2
25	20	167 346 083	167 346 093	167 346 363	167 346 373	3/4
32	25	167 346 084	167 346 094	167 346 364	167 346 374	1
40	32	167 346 085	167 346 095	167 346 365	167 346 375	1-1/4
50	40	167 346 086	167 346 096	167 346 366	167 346 376	1-1/2
63	50	167 346 087	167 346 097	167 346 367	167 346 377	2

Polypropylene Specially Cleaned for Microelectronics Service** Single bagged, available by special order only



OD d mm	ID DN mm	metric fusion sockets		IR/butt fusion ends		Inch size
		EPDM seals PTFE seats	FPM* seals PTFE seats	EPDM seals PTFE seats	FPM* seals PTFE seats	
16	10	700 244 020	700 244 027	—	—	3/8
20	15	700 244 021	700 244 028	700 244 034	700 244 040	1/2
25	20	700 244 022	700 244 029	700 244 035	700 244 041	3/4
32	25	700 244 023	700 244 030	700 244 036	700 244 042	1
40	32	700 244 024	700 244 031	700 244 037	700 244 043	1-1/4
50	40	700 244 025	700 244 032	700 244 038	700 244 044	1-1/2
63	50	700 244 026	700 244 033	700 244 039	700 244 045	2

Polypropylene Specially Cleaned for Paint and Coating Applications** Single bagged, available by special order only

OD d mm	ID DN mm	metric fusion sockets		IR/butt fusion ends		Inch size
		EPDM seals PVDF seats	FPM* seals PVDF seats	EPDM seals PVDF seats	FPM* seals PVDF seats	
16	10	167 346 601	167 346 611	—	—	3/8
20	15	167 346 602	167 346 612	167 346 662	167 346 672	1/2
25	20	167 346 603	167 346 613	167 346 663	167 346 673	3/4
32	25	167 346 604	167 346 614	167 346 664	167 346 674	1
40	32	167 346 605	167 346 615	167 346 665	167 346 675	1-1/4
50	40	167 346 606	167 346 616	167 346 666	167 346 676	1-1/2
63	50	167 346 607	167 346 617	167 346 667	167 346 677	2

**FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers.*

***Assembled with silicone free lubricant*

Part Numbers for Type 346 True Union Ball Valve

SYGEF-PVDF



OD d mm	ID DN mm	metric fusion sockets	IR/butt fusion ends	flanged	threaded NPT	Inch size
		FPM* seals PTFE seats	FPM* seals PTFE seats	FPM* seals PTFE seats	FPM* seals PTFE seats	
16	10	175 346 011	N/A	N/A	175 346 331	3/8
20	15	175 346 012	175 346 092	175 346 372	175 346 332	1/2
25	20	175 346 013	175 346 093	175 346 373	175 346 333	3/4
32	25	175 346 014	175 346 094	175 346 374	175 346 334	1
40	32	175 346 015	175 346 095	175 346 375	175 346 335	1-1/4
50	40	175 346 016	175 346 096	175 346 376	175 346 336	1-1/2
63	50	175 346 017	175 346 097	175 346 377	175 346 337	2

SYGEF-PVDF Specially Cleaned for Microelectronics Service** Single bagged



OD d mm	ID DN mm	metric fusion sockets		Inch size
		FPM* seals PTFE seats		
16	10	700.243.449		3/8
20	15	700.243.450		1/2
25	20	700.243.451		3/4
32	25	700.243.452		1
40	32	700.243.453		1-1/4
50	40	700.243.454		1-1/2
63	50	700.243.455		2

SYGEF-PVDF Specially Cleaned for Paint and Coating Applications** Single bagged, available by special order only

OD d mm	ID DN mm	metric fusion sockets		IR/butt fusion ends		Inch size
		FPM seals PVDF seats		FPM* seals PVDF seats		
16	10	175 346 691		—		3/8
20	15	175 346 692		175 346 752		1/2
25	20	175 346 693		175 346 753		3/4
32	25	175 346 694		175 346 754		1
40	32	175 346 695		175 346 755		1-1/4
50	40	175 346 696		175 346 756		1-1/2
63	50	175 346 697		175 346 757		2

*FPM seals are made of Viton® or equal materials.

Viton® is a registered trademark of DuPont Dow Elastomers.

Teflon® is a registered trademark of DuPont.

**Assembled with silicone free lubricant

Product Specification

Type 346 True Union Ball Valve – Polypropylene

Polypropylene true union ball valves 3/8" through 2" (16 mm – 63 mm) shall have either metric fusion socket or threaded type pipe connections. Incorporated into its design safety features is a blow-out-proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE (Teflon®) with backing rings creating self-adjusting, constant operating torque sealing characteristics. Backing rings and seals shall be EPDM or FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to providing sufficient height to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connector is installed on the pipe. Material shall meet or exceed the requirements of ASTM D 4101 as pertains to a type I homopolymer compound having a minimum tensile strength of 4350 psi/300 bar at 73°F/20°C when tested in accordance with ASTM D 638 and shall have a melt point which initiates at 316°F/158°C. The melt flow index (at 374°F/190°C/50 N) shall be 0.4 –0.8 grams per 10 minutes in accordance with ASTM D 1238. End connections shall be as outlined in ASTM D 2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. Threaded end connections shall be in accordance with ASTM D 2464 which references ANSI B 1.20 (was B 2.1) for tapered pipe threads. Optional flanged version shall be in accordance with ANSI B 16.5 class 150 flanges. The valve, Type 346, shall carry a pressure rating of 150 psi/10 bar at 68°F/20°C as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 346 True Union Ball Valve – PVDF

PVDF true union ball valves 3/8" through 2" (16 mm – 63 mm) shall have either metric fusion socket or threaded type pipe connections. Incorporated into its design safety features is a blow-out-proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE (Teflon®) with backing rings creating self-adjusting, constant operating torque sealing characteristics. Backing rings and seals shall be FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to providing sufficient height to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connector is installed on the pipe. Material shall meet or exceed the requirements of ASTM D 3222 as pertains to a natural, unpigmented, virgin, noncompounded polyvinylidene fluoride compound having a minimum tensile strength of 7800 psi/538 bar at 73°F/20°C when tested in accordance with ASTM D 638 and shall have a flexural strength of 10,700 psi/738 bar at 73°F/20°C when tested according to ASTM D 790. End connections shall be as outlined in ASTM D 2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. Threaded end connections shall be in accordance with ASTM D 2464 which references ANSI B 1.20 (was B 2.1) for tapered pipe threads. Optional flanged version shall be in accordance with ANSI B 16.5 class 150 flanges. The valve, Type 346, shall carry a pressure rating of 232 psi/16 bar at 68°F/20°C as supplied by George Fischer, Inc., Tustin, CA 92780.

**FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers. Teflon® is a registered trademark of DuPont.*

Type 346 True Union Ball Valve

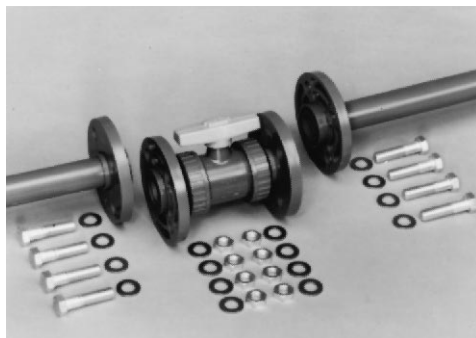
Installation Suggestions



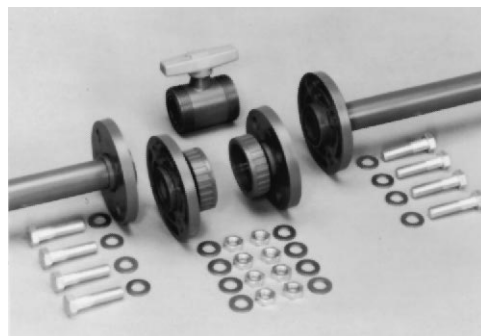
(Fig. 1)



(Fig. 2)



(Fig. 3)



(Fig. 4)

(Fig. 1)

Whenever possible valves should be mounted independently, i.e. they should become a fixed point so that the operating forces are not transmitted along the pipeline. To assist in the correct installation George Fischer ball valve brackets Type 126 are available. Ball valve and pipeline must be correctly aligned to keep the valve free from excess stresses.

Heat fusion/cement/threaded connections: Installation into pipeline (Fig. 2)

Loosen the valve nuts and slide them onto the two pipe ends. The two valve ends depending on type are either solvent cemented, heat fusion welded or screwed onto the pipeline. The valve body is then inserted between the two valve ends and the valve nuts tightened by hand onto the valve body. Do not over-tighten or use pipe or strap wrenches.

Dismantling the valve (Fig. 2)

Please note: Do not dismantle while under pressure. Drain pipeline first. Undo valve nuts and remove ball valve radially from line. Keep an eye on the O-rings so as not to lose them.

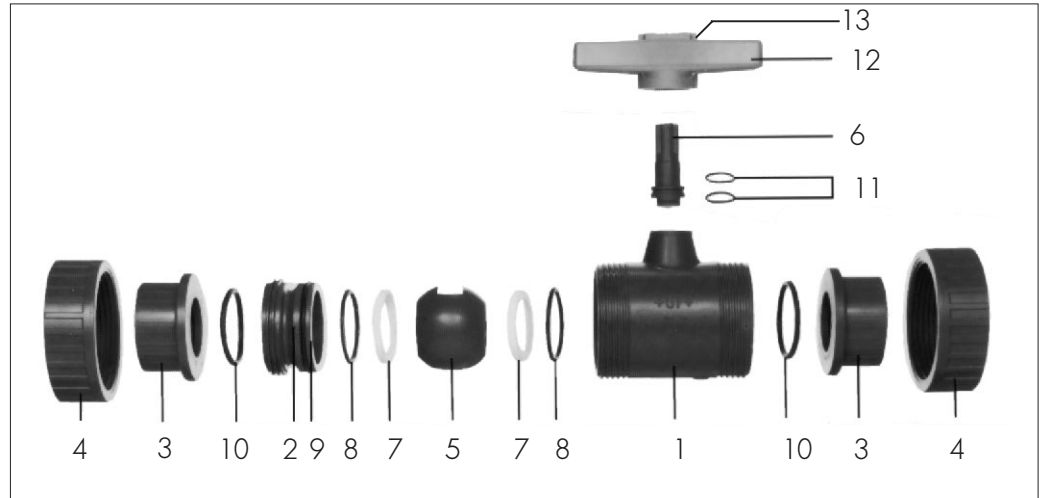
Backing flange connection: Installation into pipeline (Fig. 3)

Making sure that backing flanges are in place, solvent cement or fuse the flange adaptors onto the pipe ends. Place assembled valve and gaskets between the flanged pipe ends and connect using nuts, washers and bolts.

Dismantling the valve (Fig. 4)

Please note: Do not dismantle while under pressure. Drain pipeline first. Undo flange screws and remove ball valve radially from line. To remove the ball valve from the flanges, loosen valve nuts. Keep an eye on the O-rings so as not to lose them.

Type 346 True Union Ball Valve



Assembly Instruction

** use only grease with silicone or polyglycol base in conjunction with EPDM O-rings. Vaseline or mineral oils in particular are not to be used.*

Introduce backing seal (8) and Teflon seal (7) into the grooves on the inside of the body, solid end (1).

Position two fully lubricated* stem seals (11) into the groove and over the neck of stem (6).

Introduce the pre-assembled stem (6) into the body (1) from inside and press against the stop. Push the ball (5) onto the stem guide inside the body.

Position the lubricated* body seal (9) into the groove of the threaded part (2). Mount backing seal (8) and Teflon seal (7) into threaded part (2).

Screw threaded part (2) into the body (1). (Note: left hand thread) The lugs (13) on the double lever handle (12) are used as keys. Tighten until the ball can still be rotated snugly.

Slide face seals (10) into the grooves of the threaded part (2) and the body (solid end) (1) and attach the valve ends (3) onto the body on both sides using the valve nuts (4). Only tighten by hand. Do not use pipe or strap wrenches.

Mount the double lever handle (12) onto the stem (6).

Dismantling

Please note: Do not dismantle while under pressure. Drain pipeline first.

Loosen valve nuts (4) and remove ball valve radially from pipeline.

Remove double lever handle (12) from stem (6). Remove threaded part (2) using the lugs (13) of the handle (12).

Note: left hand thread! (Fig. 5)

Rotate the ball (5) into position "closed". It can now be pushed out with a soft plastic or wooden rod.

Press stem (6) into body (1) and remove.

Indications

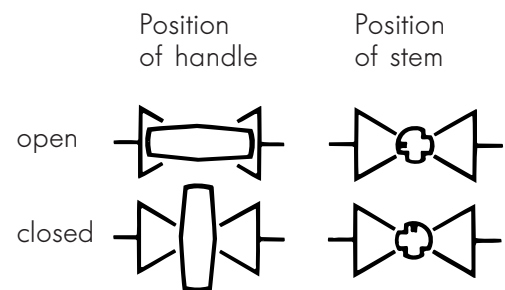
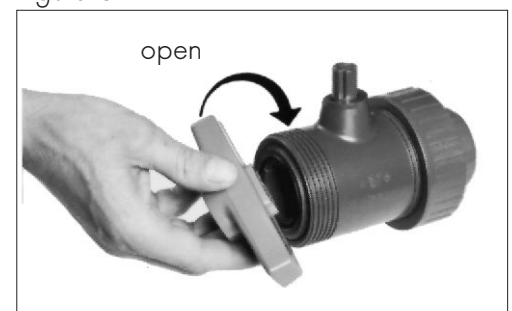


Figure 5



Do not dismantle while under pressure.

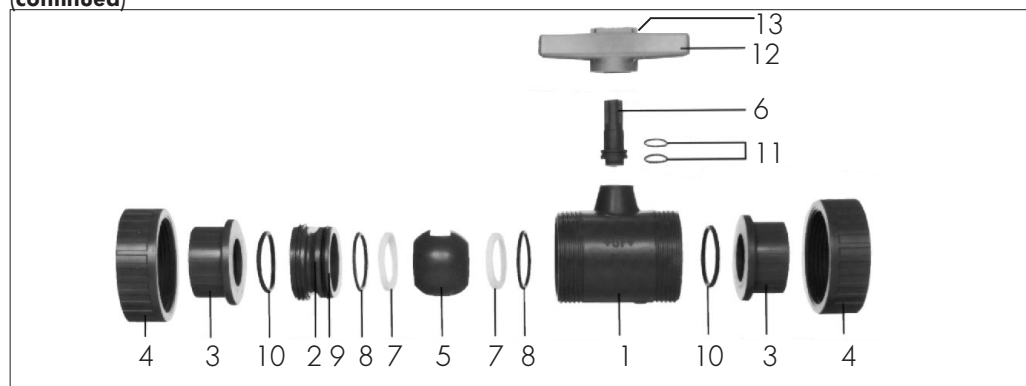
Component Parts for Type 346 True Union Ball Valve

Nr./Part	Mat.	Qty.	3/8" OD d 16 mm ID DN 10 mm	1/2" d 20 mm DN 15 mm	3/4" d 25 mm DN 20 mm	1" d 32 mm DN 25 mm	1-1/4" d 40 mm DN 32 mm	1-1/2" d 50 mm DN 40 mm	2" d 63 mm DN 50 mm
1 Valve body	PVC	1	161 482 332	161 482 333	161 482 334	161 482 335	161 482 336	161 482 337	161 482 338
	CPVC	1	—	163 480 221	163 480 222	163 480 223	—	163 480 225	163 480 226
	PP	1	167 480 510	167 480 511	167 480 512	167 480 513	167 480 514	167 480 515	167 480 516
	SYGEF	1	175 480 770	175 480 771	175 480 772	175 480 773	175 480 774	175 480 775	175 480 776
2 Seat carrier	PVC	1	161 482 339	161 482 339	161 482 340	161 482 341	161 482 342	161 482 343	161 482 344
	CPVC	1	—	163 480 228	163 480 229	163 480 230	—	163 480 232	163 480 233
	PP	1	167 480 519	167 480 519	167 480 520	167 480 521	167 480 522	167 480 523	167 480 524
	SYGEF	1	175 480 779	175 480 779	175 480 780	175 480 781	175 480 782	175 480 783	175 480 784
3 End connector cement socket	PVC	1	161 482 377	161 482 378	161 482 379	161 482 380	161 482 381	161 482 382	161 482 383
	CPVC	1	—	163 480 173	163 480 174	163 480 175	—	163 480 177	163 480 178
	PVC	1	161 482 389	161 482 390	161 482 391	161 482 392	161 482 393	161 482 394	161 482 395
	CPVC	1	—	163 480 185	163 480 186	163 480 187	—	163 480 189	163 480 190
End connector NPT thread	PP	1	167 480 452	167 480 453	167 480 454	167 480 455	167 480 456	167 480 457	167 480 458
	SYGEF	1	175 480 727	175 480 728	175 480 729	175 480 730	175 480 731	175 480 732	175 480 733
End connector fusion socket	PP	1	167 480 159	167 480 160	167 480 161	167 480 162	167 480 163	167 480 164	167 480 165
	SYGEF	1	175 480 031	175 480 032	175 480 033	175 480 034	175 480 035	175 480 036	175 480 037
End connector butt fusion	PP	1	—	167 480 546	167 480 547	167 480 548	167 480 549	167 480 550	167 480 551
	SYGEF	1	—	175 480 797	175 480 798	175 480 799	175 480 800	175 480 801	175 480 802
4 Valve nut	PVC	1	161 340 617	161 340 617	161 340 618	161 340 619	161 340 620	161 340 621	161 480 522
	CPVC	1	163 480 995	163 480 995	163 480 081	163 480 082	—	163 480 084	163 480 085
	PP	1	167 480 786	167 480 786	167 480 787	167 480 788	167 480 789	167 480 790	167 480 791
	SYGEF	1	175 480 819	175 480 819	175 480 820	175 480 821	175 480 822	175 480 823	175 480 824
Ball set consisting of:			161 482 869	161 482 869	161 482 870	161 482 871	161 482 872	161 482 873	161 482 874
5 Ball	PVC	1							
7 Ball seat	PTFE	2							
6 Stem	PVC	1							
11 Stem seal	EPDM	2*							
12 Handle	PVC	1							
Ball set consisting of:			161 482 875	161 482 875	161 482 876	161 482 877	161 482 878	161 482 879	161 482 880
5 Ball	PVC	1							
7 Ball seat	PTFE	2							
6 Stem	PVC	1							
11 Stem seal	FPM	2*							
12 Handle	PVC	1							
Ball set consisting of:			—	163 480 535	163 480 536	163 480 537	—	163 480 539	163 480 540
5 Ball	CPVC	1							
7 Ball seat	PTFE	2							
6 Stem	CPVC	1							
11 Stem seal	EPDM	2*							
12 Handle	PVC	1							

*1 piece for sizes 3/8" & 1/2"

Component Parts for Type 346 True Union Ball Valve

(continued)



*1 piece for sizes 3/8" & 1/2"

Nr./Part	Mat.	Qty	3/8" OD d 16 mm ID DN 10 mm	1/2" d 20 mm DN 15 mm	3/4" d 25 mm DN 20 mm	1" d 32 mm DN 25 mm	1-1/4" d 40 mm DN 32 mm	1-1/2" d 50 mm DN 40 mm	2" d 63 mm DN 50 mm
Ball set consisting of:			—	163 480 545	163 480 546	163 480 547	—	163 480 549	163 480 550
5 Ball	CPVC	1							
7 Ball seat	PTFE	2							
6 Stem	CPVC	1							
11 Stem seal	FPM	2*							
12 Handle	PVC	1							
Ball set consisting of:			167 480 875	167 480 875	167 480 876	167 480 877	167 480 878	167 480 879	167 480 880
5 Ball	PP	1							
7 Ball seat	PTFE	2							
6 Stem	PP	1							
11 Stem seal	EPDM	2*							
12 Handle	ASA	1							
Ball set consisting of:			167 480 883	167 480 883	167 480 884	167 480 885	167 480 886	167 480 887	167 480 888
5 Ball	PP	1							
7 Ball seat	PTFE	2							
6 Stem	PP	1							
11 Stem seal	FPM	2*							
12 Handle	ASA	1							
Ball set consisting of:			175 480 900	175 480 900	175 480 901	175 480 902	175 480 903	175 480 904	175 480 905
5 Ball	SYGEF	1							
7 Ball seat	PTFE	2							
6 Stem	SYGEF	1							
11 Stem seal	FPM	2*							
12 Handle	ASA	1							
Seal set consisting of:			161 482 883	161 482 883	161 482 884	161 482 885	161 482 886	161 482 887	161 482 888
8 Backing seal	EPDM	2							
9 Body seal	EPDM	1							
10 O-Ring	EPDM	2							
11 Stem seal	EPDM	2*							
Seal set consisting of:			161 482 892	161 482 892	161 482 893	161 482 894	161 482 895	161 482 896	161 482 897
8 Backing seal	FPM	2							
9 Body seal	FPM	1							
10 O-Ring	FPM	2							
11 Stem seal	FPM	2*							
10 O-Ring	EPDM	2	748 410 042	748 410 042	748 410 116	748 410 103	748 410 027	748 410 010	748 410 011
	FPM	2	749 410 042	749 410 042	749 410 116	749 410 103	749 410 027	749 410 010	749 410 011

Control Ball Valve Type 110 in PVC, PP and PVDF, 1/2" - 2"



Product Features

- All-plastic valve
- Dimension range 1/2" - 2"
- Large selection of materials PVC, PP, PVDF
- Linear flow characteristics
- High Cv value
- Manual and actuated versions
- Simple design
- George Fischer product quality

10

General

Plastic ball valves are ideal shut-off valves for aggressive media. With increased automation in piping systems, the need for control functions also increases. The "characterized" ball of the Type 110 Control Ball Valve allows for very small pressure loss in the open position and excellent flow control utilizing both manual and actuated versions.

George Fischer has adapted the ball design of the familiar Type 346 and developed the Type 110 series, a ball valve program which, with its flow characteristics, is ideally suited for control tasks. This new line of ball valves is available in PVC, PP and PVDF, in manual as well as actuated versions (electric and pneumatic).

Valve Design/Type Overview

The valves can be assembled according to your specific requirements.

The manual version always serves as the basic unit.

For more information on the actuated versions, see the Actuated Valves Section.

Ball valve Type 110 with handle and mounting bracket

Sockets * PP and PVDF with fusion sockets

Inch size	PVC EPDM	FPM	PP* EPDM	FPM	PVDF* FPM	d mm	DN mm
1/2	199 110 011	199 110 016	199 110 021	199 110 026	199 110 031	20	15
3/4	199 110 012	199 110 017	199 110 022	199 110 027	199 110 032	25	20
1	199 110 013	199 110 018	199 110 023	199 110 028	199 110 033	32	25
1 1/2	199 110 014	199 110 019	199 110 024	199 110 029	199 110 034	50	40
2	199 110 015	199 110 020	199 110 025	199 110 030	199 110 035	63	50

Butt Fusion Spigots

d mm	DN mm	PP EPDM	FPM	PVDF FPM	Inch size
20	15	199 110 061	199 110 066	199 110 071	1/2
25	20	199 110 062	199 110 067	199 110 072	3/4
32	25	199 110 063	199 110 068	199 110 073	1
50	40	199 110 064	199 110 069	199 110 074	1 1/2
63	50	199 110 065	199 110 070	199 110 075	2

For other differential pressures:

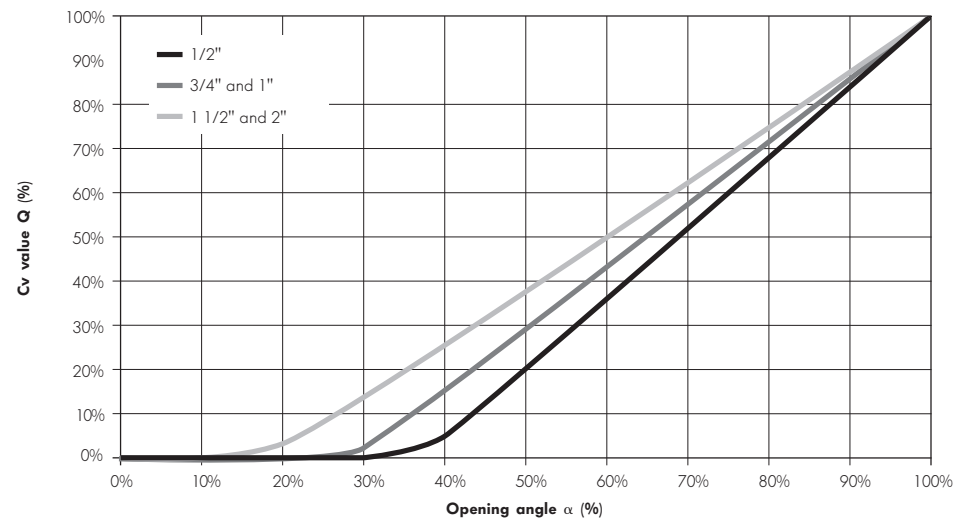
$$Q_{\text{gpm}} = C_v \sqrt{\Delta p}$$

C_v = gallons per minute at 1 psi pressure drop

3/4" (25mm) valves are 1" (32mm) valves with special end connectors.

1 1/2 (50mm) valves are 2" (63mm) valves with special end connectors.

Flow Diagram



Cv values for different control angles @Δp = 1 psi

Set values				Flow											
Angle (°)	%	Voltage (V) 0-10 V	Current (A) 4-20 mA	1/2" (gpm)	%	3/4" (gpm)	%	1" (gpm)	%	1 1/2" (gpm)	%	2" (gpm)	%		
0	0	0	4.0	0	0	0	0	0	0	0	0	0	0		
9	10	1	5.6	0	0	0	0	0	0	0	0	0	0		
18	20	2	7.2	0	0	0	0	0	0	1.1	2	1.5	3		
27	30	3	8.8	0	0	0	0	0.3	2	7.4	14	7.8	15		
36	40	4	10.4	0.3	5	2.2	14	2.5	16	13.8	27	14.0	27		
45	50	5	12.0	1.3	20	4.6	28	4.6	30	20.1	39	20.2	39		
54	60	6	13.6	2.2	36	6.9	43	6.7	44	26.5	51	26.5	51		
63	70	7	15.2	3.2	52	9.2	57	8.9	58	32.8	63	32.8	64		
72	80	8	16.8	4.1	68	11.5	71	11.1	72	39.1	76	39.0	76		
81	90	9	18.4	5.0	84	13.8	86	13.2	86	45.5	88	45.2	88		
90	100	10	20.0	6.0=C _v	100	16.1=C _v	100	15.4=C _v	100	51.9=C _v	100	51.5=C _v	100		

Electric Position Indicator for Ball Valve Type 346



- Compact design
- Electric indication of valve position for 3/8" – 2" (16 mm – 63 mm)
- Visual indication
- Protection IP 65 / Nema 4X
- Very easy installation
- Lockable with padlock
- Corrosion resistant
- Shock proof housing
- Lockout only (can be ordered without switch box)

10

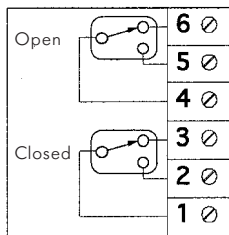
General

Electric position indicators are generally used to signal the valve positions. This particular model can be attached directly, through an intermediate part mounted on the manual George Fischer ball valve Type 346 and can

indicate two valve positions: open and closed. The electric position indicator is electrically connected via the unit plug PG 13,5 to the connections integrated in the housing. The customer can lock the complete valve unit with a padlock.

Technical Data

Wiring diagram 199 190 320



Version with mechanical auxiliary switches*

Nominal voltage: max. 250V/50-60 Hz
Nominal current: 10 A

Version with inductive auxiliary switches PNP*

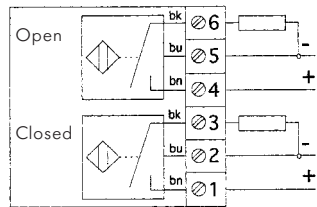
Nominal voltage: 10 – 30 V-DC
Continuous current: 100 mA

General Data

Housing: Vestamid
Cover: Macrolone (transparent)
Seal material: Neoprene
Connection: PG 13,5 cable connector
Ambient temperature: -13 up to 122°F
(-25 up to 50°C)

* Versions with other type of contacts (e.g.: with gold contacts, inductive NPN, inductive Namur, EExd, etc.) upon request

Wiring diagram 199 190 321

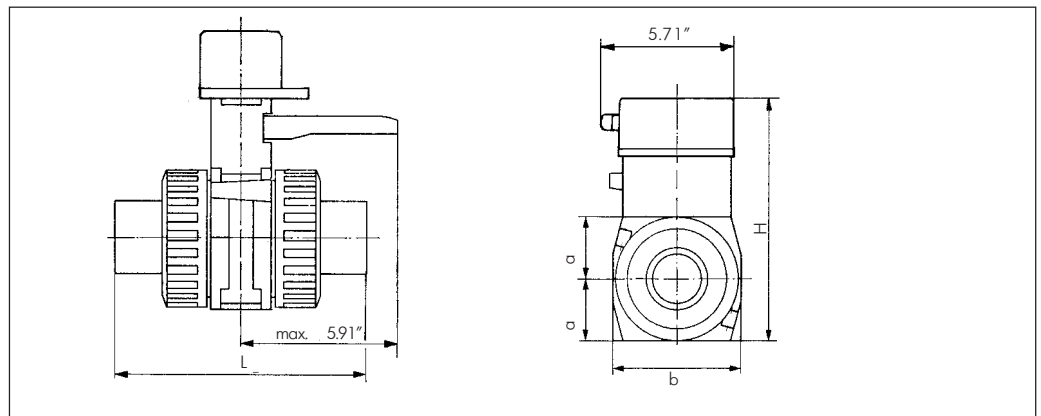


Types available

Description	Part Number
Kit with 2 auxiliary mechanical switches	199 190 320
Kit with 2 auxiliary inductive switches PNP	199 190 321
Each kit consisting of:	auxiliary switch unit PVC intermediate piece PVC manual override lever 6 coupling pieces $\frac{3}{8}$ "-1 $\frac{1}{2}$ " (10 mm – 50 mm) PVC mounting / locking plate 6 bolts
Lockable intermediate kit	199 190 343

The valve bracket Type 126 for the ball valve Type 346 as well as the ball valve itself are not included in the assembly kit and must be ordered separately. Please consult the corresponding documentation.

Dimensions



Inch size	a inch	b inch	H inch	L inch	Weight lbs.	OD d mm	ID DN mm
3/8	0.945	4.646	6.929	3.898	3.527	16	10
1/2	0.945	4.646	6.929	4.016	3.527	20	15
3/4	1.142	4.646	7.323	4.724	3.748	25	20
1	1.339	4.646	7.717	5.157	4.189	32	25
1-1/4	1.673	4.646	8.386	5.906	5.511	40	32
1-1/2	1.969	4.646	8.976	6.417	6.393	50	40
2	2.402	5.118	9.843	7.756	8.157	63	50

George Fischer Ball Valve Handle Extension Type 615

The Type 615 Handle Extension set in PVC is intended for use with the Type 346 ball valve and consists of two end pieces: a male spline X 3/4" socket and a female spline X 3/4" socket. The assembly is completed by solvent welding both ends to a length of 3/4" PVC Sch. 80 pipe. (George Fischer does not supply the pipe.)

To insure proper positioning of the handle with the valve, it is essential that the raised ribs on the outside of the sockets be aligned. This can be easily accomplished by positioning the ribs along the identification stripe on the pipe.



Dimensions

Inch size	X inch	K inch	M+N inch	Min. J inch
3/8	.94	.89	3.11	4.23
1/2	.94	.89	3.11	4.23
3/4	1.14	1.00	3.49	4.61
1	1.34	1.08	3.86	4.98
1-1/4	1.67	1.12	4.26	5.38
1-1/2	1.97	1.28	4.70	5.82
2	2.41	1.52	5.39	6.51

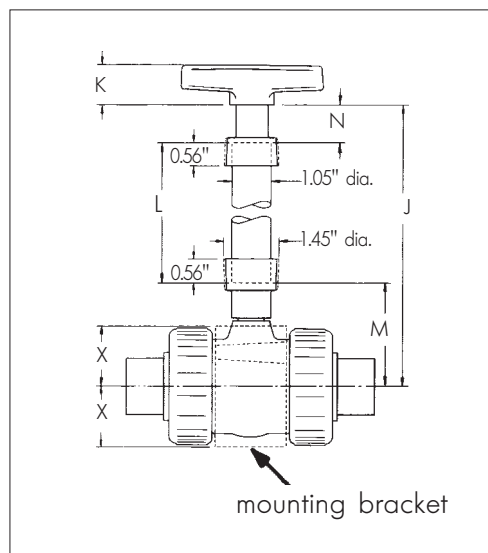
Example:

Assume for a 2" valve the required distance from its centerline to the underside of the handle (J) is 24".

Formula:

$$J - (M+N) = L \text{ pipe length}$$

$$24" - 5.39" = 18.61"$$



Part Numbers for Type 615

Handle Extension



Inch size	
3/8	161 483 561
1/2	161 483 561
3/4	161 483 562
1	161 483 563
1-1/4	161 483 564
1-1/2	161 483 565
2	161 483 566

Handle for Type 346 ball valve



Inch size	
3/8	161 480 725
1/2	161 480 725
3/4	161 480 726
1	161 480 727
1-1/4	161 480 728
1-1/2	161 480 729
2	161 480 730



George Fischer Ball Valve Type 370



George Fischer plastic valves have the following outstanding features:

- Corrosion resistance
- Ideal flow characteristics
- Long working life, maintenance-free
- Light weight
- Ball valves Type 370 can be equipped with George Fischer electric or pneumatic actuators (see Type 108 or Type 208 resp.)
- Silicone free versions available

General

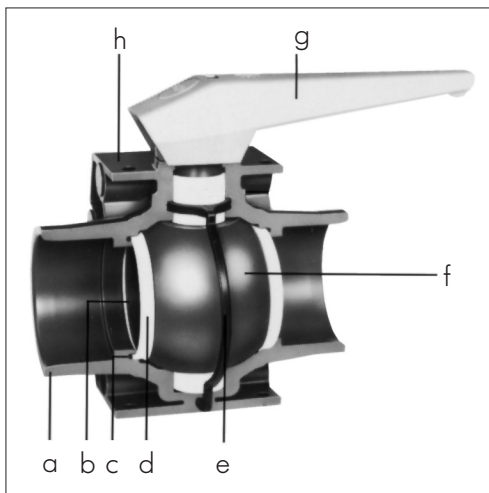
The Type 370 Ball Valve was designed to overcome the inherent weaknesses in large diameter plastic ball valves. Along with 2-1/2" through 4" full flow valves, there is also a 6" version employing venturi type increaser flanges.

Due to its cubic design, the 370 has the shortest overall laying length of any plastic ball valve of similar size. It is available in PVC and polypropylene (PP).

The true union version in PVC and CPVC allows for easy removal from the pipe line.

Technical Features

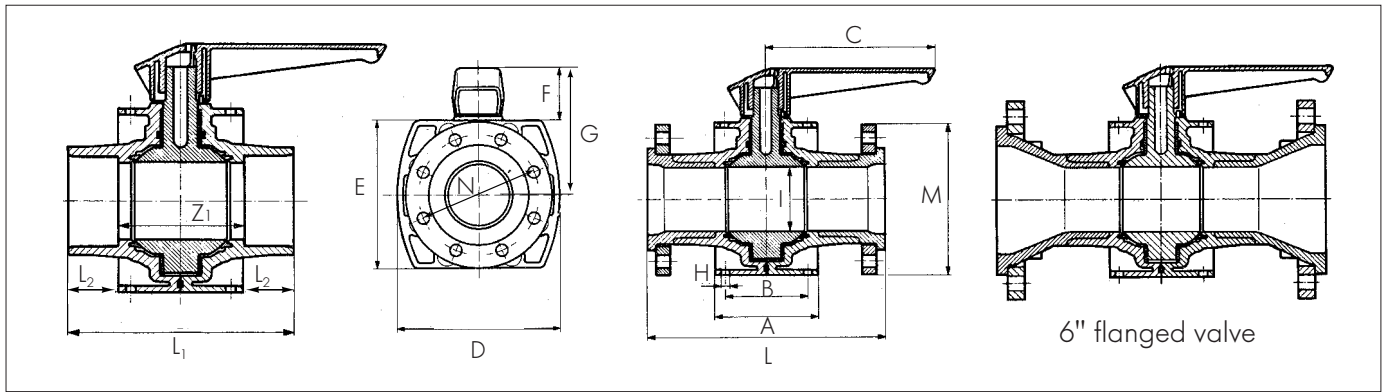
- Joining:
 - Flanged joints according to ANSI standards
 - Solvent cement joining
 - True union solvent cement socket ends
- Full bore – minimal loss of pressure.
- The backing seal compensates for expansion of the valve body and wearing of the seal; therefore, no adjustment is required.
- Special features of the PTFE ball seal provide good resistance to wear, low frictional properties, good chemical resistance, and a long working life.
- The body seal in EPDM or FPM ensures leakproof closure, and can be easily replaced.
- The ball, stem and, trunnion are an integrally molded unit. This one piece construction, with the Teflon sleeve bearings, allows a constant optimal torque through the entire pressure range (0-150 psi). This feature also assures longer seat life at the higher



ends of the pressure range.

- The easy-to-grip, streamlined lever handle always stands parallel to the flow direction, thus allowing a quick optical check that the valve is closed.
- The cubic configuration of this valve provides a natural, stable platform for actuator mounting, either as an original product or for later retrofitting.

Dimensions for Type 370 Ball Valve, Socket and Flanged



Inch size	L inch	A inch	B inch	C inch	D inch	E inch	F inch	G inch	H inch	I flanged dia.inch	M inch	OD d mm	ID DN mm
2-1/2	11.4	4.0	3.3	8.1	6.3	5.9	2.9	5.9	.39	2.45	7.0	75	65
3	12.2	4.7	4.0	8.1	7.4	6.9	2.9	6.4	.39	2.95	7.5	90	80
4	13.8	6.0	4.8	9.8	8.9	8.8	3.1	7.5	.47	3.71	9.0	110	100
6	18.9	6.0	4.8	9.8	8.9	8.8	3.1	7.5	.47	3.71	11.0	160	150

Inch size	L ₁ inch	L ₂ inch	Z ₁ inch	Weight socket lbs.	Weight flanged lbs.	N inch	bolt hole dia. inch	number of bolt holes	OD d mm	ID DN mm
2-1/2	8.2	2.1	4.6	6.0	8.8	5.5	.75	4	75	65
3	9.6	2.4	5.6	8.5	12.1	6.0	.75	4	90	80
4	10.8	2.4	6.0	16.0	21.4	7.5	.75	8	110	100
6	—	—	—	—	26.7	9.5	.88	8	160	150

Z₁ = socket laying length

N = flange bolt circle diameter



*FPM seals are made of Viton® or equal materials.

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Part Numbers

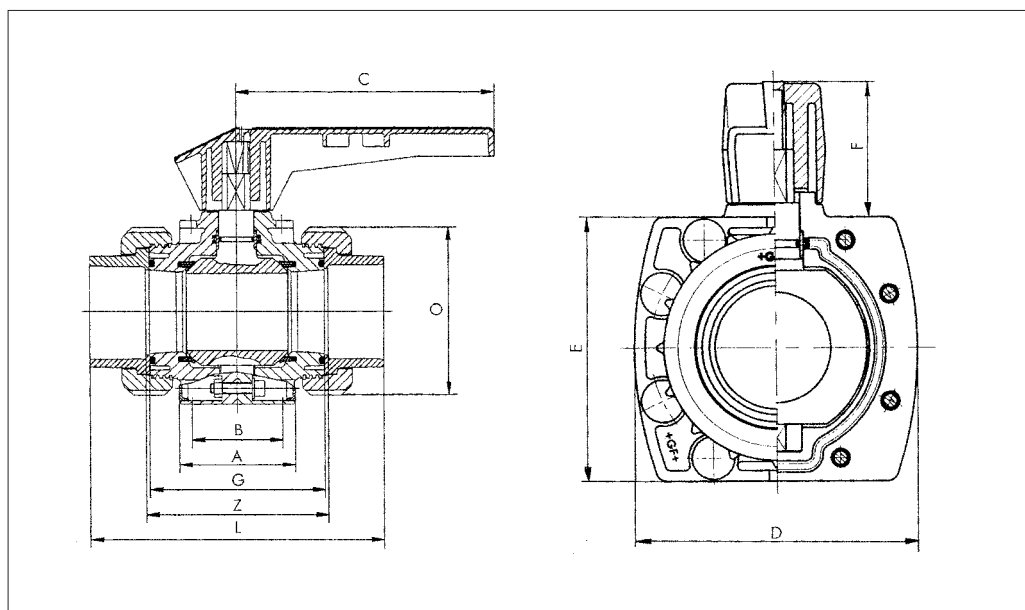
PVC

Inch size	flanged		solvent cement socket	
	EPDM	FPM*	EPDM	FPM*
2-1/2	161 370 362	161 370 387	161 370 262	161 370 287
3	161 370 363	161 370 388	161 370 263	161 370 288
4	161 370 364	161 370 389	161 370 264	161 370 289
6	161 370 366	161 370 391	—	—

Polypropylene (PP)

Inch size	flanged			OD d mm	ID DN mm
	EPDM	FPM*			
2-1/2	167 370 362	167 370 387		75	65
3	167 370 363	167 370 388		90	80
4	167 370 364	167 370 389		110	100
6	167 370 366	167 370 391		160	150

Dimensions for Type 370 Ball Valve, True Union



Inch size	z	A	B	C	D	E	F	G	L	O	Weight lbs.	OD d mm	ID DN mm
	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch			
2-1/2	5.71	3.54	2.83	8.07	6.30	5.83	2.91	5.47	9.17	5.31	7.3	75	65
3	6.50	4.09	3.46	8.07	7.40	6.93	2.91	6.10	10.51	6.22	9.5	90	80
4	7.72	5.04	4.09	9.84	8.86	8.78	3.07	7.32	12.52	7.40	19.2	110	100

10

Part Numbers

PVC

Inch Size	solvent cement socket, true union	
	EPDM	FPM*
2-1/2	161.370.568	161.370.583
3	161.370.569	161.370.584
4	161.370.570	161.370.585

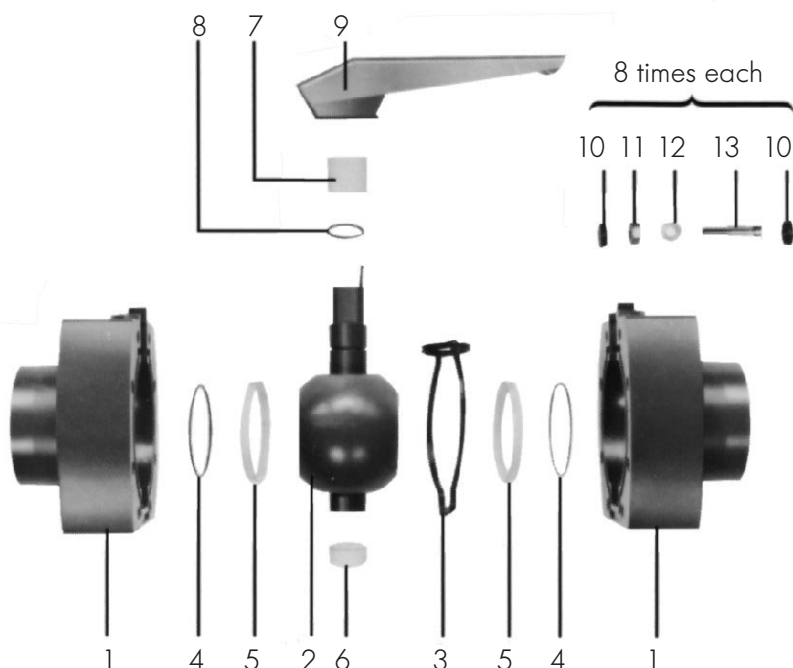
CPVC

Inch Size	solvent cement socket, true union	
	EPDM	FPM*
2-1/2	163.370.068	163.370.083
3	163.370.069	163.370.084
4	163.370.070	163.370.085



*FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers.

Type 370 Ball Valve



Assembly Instructions

Preassembly of the ball (2)

Position the fully lubricated*) stem seal (8) in the groove in the ball (2), and push the stem sleeve (7) and the bushing (6) on the ball. Draw the body seal (3) over the stem sleeve (7) and ball (2).

Preassembly of the body half sections (1)

Place the backing seal (4) (two each in the case of sizes 2 1/2" and 3", one each for sizes 4" and 6") and the ball seal (5) in the body half sections (1).

Final assembly

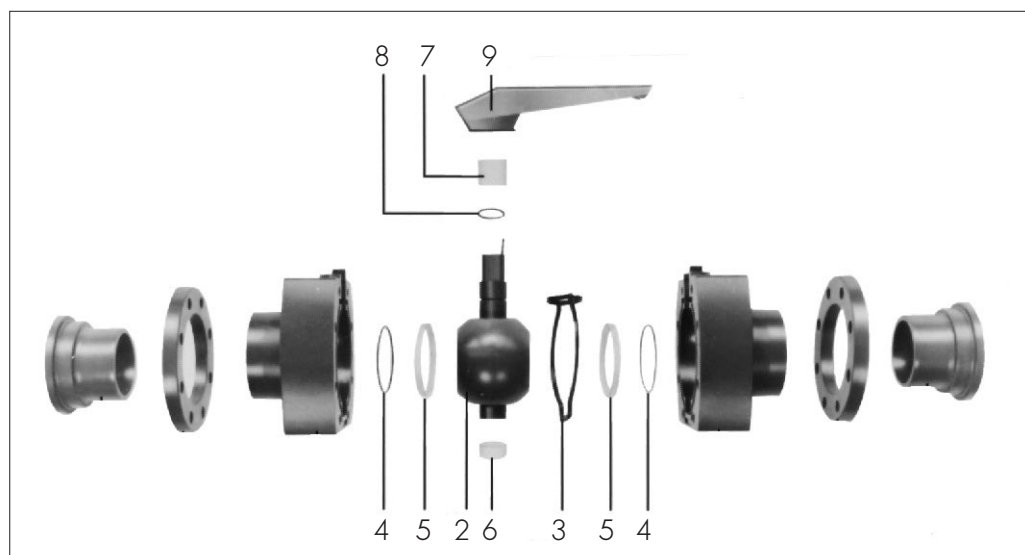
Insert the preassembled ball (2) in the prepared body half sections (1) and fasten these together, tightening the screw set (13) (12) (11) 8 times crosswise with a torque wrench (see table for torques). Close the screw-holes in the body half sections (1) with the covering discs or plugs (10). Press the lever handle (9) on to the ball (2).

* Use only lubricant with polyglycol base in conjunction with EPDM O-rings. Vaseline or mineral oils in particular are not to be used.

Torque for Body Bolts

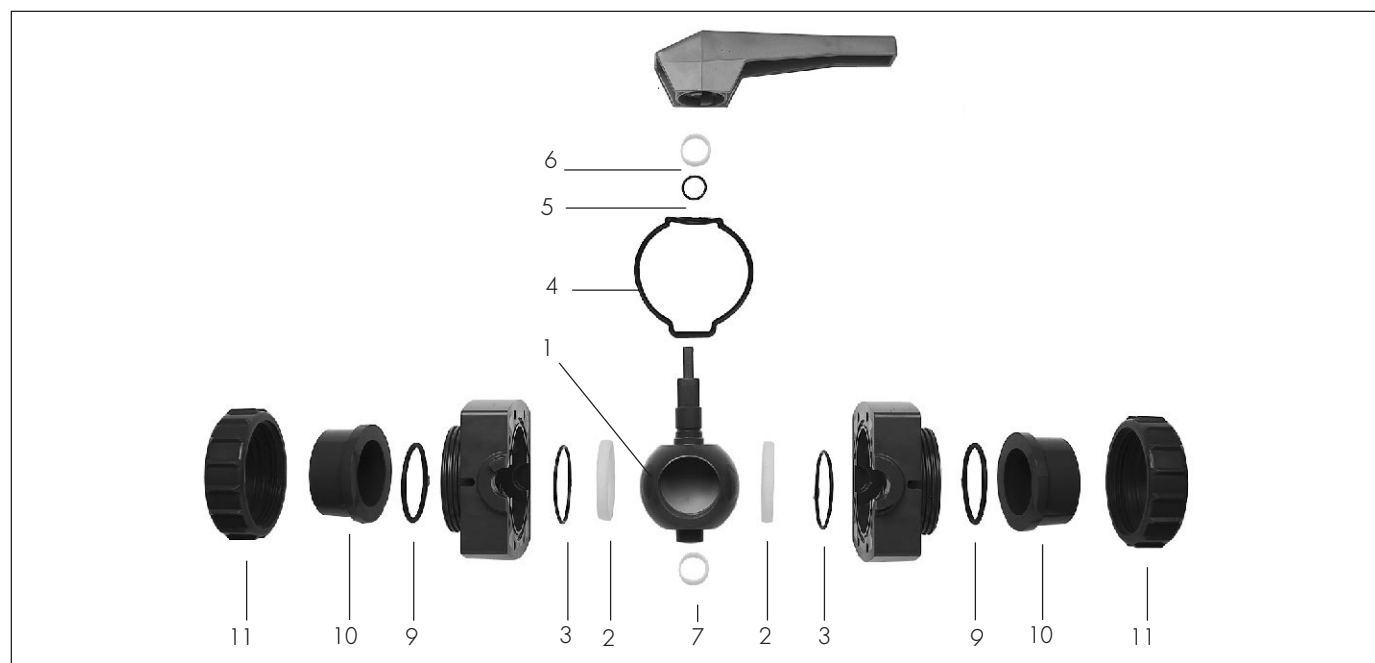
Inch size			OD d mm	ID DN mm
2 1/2	11 ft.lbs.	} ± .4 ft.lbs.	75	65
3	15 ft.lbs.		90	80
4	17 ft.lbs.		110	100
6	17 ft.lbs.		160	150

Component Parts for Type 370 Ball Valve



Nr.	Part	Mat.	Qty.	2-1/2" OD d 75 mm ID DN 65 mm	3" OD d 90 mm ID DN 80 mm	4" OD d 110 mm ID DN 100 mm	6" OD d 160 mm ID DN 150 mm
2	Ball set consisting of:	PVC		161 482 958	161 482 959	161 482 960	161 482 960
5	Ball	PTFE	1				
7	Ball seal	PTFE	2				
8	Stem sleeve	PTFE	1				
6	Stem seal	EPDM	1				
6	Bushing	PTFE	1				
2	Ball set consisting of:	PVC		161 482 963	161 482 964	161 482 965	161 482 965
5	Ball	PTFE	1				
7	Ball seal	PTFE	2				
8	Stem sleeve	PTFE	1				
6	Stem seal	FPM	1				
6	Bushing	PTFE	1				
2	Ball set consisting of:	PP		167 480 891	167 480 892	167 480 893	167 480 893
5	Ball	PTFE	1				
7	Ball seal	PTFE	2				
8	Stem sleeve	PTFE	1				
6	Stem seal	EPDM	1				
6	Bushing	PTFE	1				
2	Ball set consisting of:	PP		167 480 896	167 480 897	167 480 898	167 480 898
5	Ball	PTFE	1				
7	Ball seal	PTFE	2				
8	Stem sleeve	PTFE	1				
6	Stem seal	FPM	1				
6	Bushing	PTFE	1				
3	Seal set consisting of:	EPDM		161 482 968	161 482 969	161 482 970	161 482 970
4	Body seal	EPDM	1				
8	Backing seal	EPDM	2				
8	Stem seal	EPDM	1				
3	Seal set consisting of:	FPM		161 482 974	161 482 975	161 482 976	161 482 976
4	Body seal	FPM	1				
8	Backing seal	FPM	2				
8	Stem seal	FPM	1				
9	Handle for PVC valve	PVC	1	161 480 763	161 480 764	161 480 420	161 480 420
9	Handle for PP valve	PVC	1	161 481 260	161 481 261	161 481 262	161 481 262

Component Parts for Type 370 True Union Ball Valve



Nr.	Part	Mat.	Qty.	2-1/2" OD d 75 mm ID DN 65 mm	3" OD d 90 mm ID DN 80 mm	4" OD d 110 mm ID DN 100 mm	6" OD d 160 mm ID DN 150 mm
1	Ball set consisting of:	CPVC		163.480.798	163.480.799	163.480.800	
2	Ball		1				
6	Ball seal		2				
5	Stem sleeve		1				
7	Stem seal		1				
7	Bushing	EPDM	1				
		PTFE	1				
1	Ball set consisting of:	CPVC		163.480.803	163.480.804	163.480.805	
2	Ball		1				
6	Ball seal		2				
5	Stem sleeve		1				
7	Stem seal		1				
7	Bushing	FPM	1				
		PTFE	1				
4	Seal set consisting of:	EPDM		161.482.968	161.482.969	161.482.970	161.482.970
3	Body seal		1				
5	Backing seal		2				
5	Stem seal	EPDM	1				
4	Seal set consisting of:	FPM		161.482.974	161.482.975	161.482.976	161.482.976
3	Body seal		1				
5	Backing seal		2				
5	Stem seal	FPM	1				
9	Union seal	EPDM	2	748.410.119	748.410.112	748.410.099	—
		FPM	2	749.410.119	749.410.112	749.410.099	—
10	Socket end conn.	PVC	2	721.602.012	721.602.013	721.602.014	—
		CPVC	2	723.602.012	723.602.013	723.602.014	—
11	Union nut	PVC	2	721.690.012	721.690.013	721.690.014	—
		CPVC	2	723.690.012	723.690.013	723.690.014	—

Product Specification

Type 370 Ball Valve - PVC

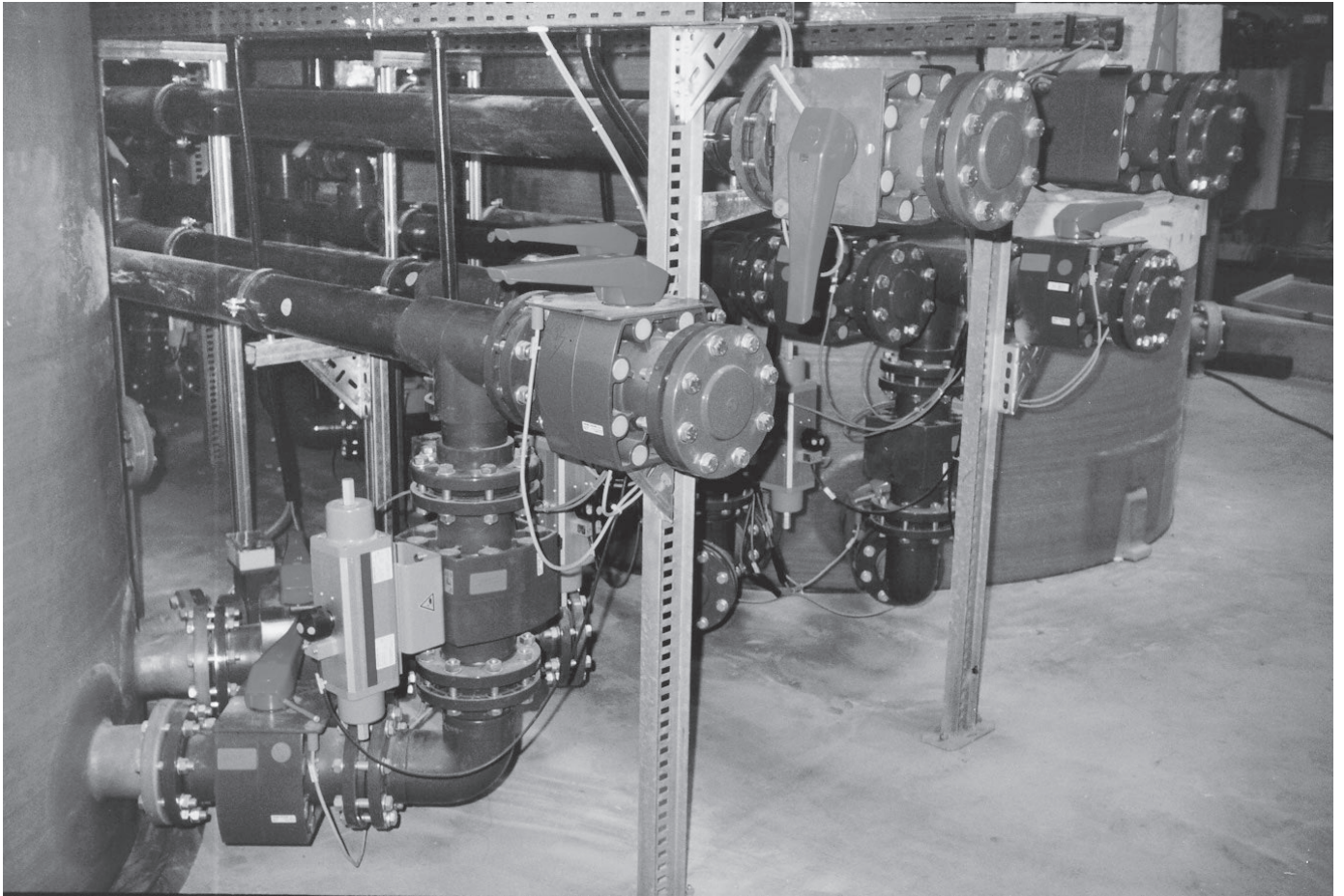
PVC ball valves 2 1/2" through 6" shall have either solvent cement socket, flanged, or true union socket end connections. High strength body halves shall be bolted together with bolts to overcome the inherent weaknesses of large diameter, plastic valves with union nut design. Ball, stem, and trunion shall be an integrally molded unit running in PTFE bushings to insure constant torque throughout the entire pressure range. Seats shall be PTFE with EPDM or FPM backing O-rings creating self-adjusting seals and constant operating torque. PVC material shall meet or exceed the requirements of 12454B according to the classifications of ASTM D 1784. Valves equipped with flanged end connections shall have dimensions conforming to ANSI B16.5, class 150. Solvent cement socket end connections shall conform to ASTM D 2467. The valve, Type 370, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 370 True Union Ball Valve - CPVC

CPVC ball valves 2 1/2" through 4" shall have true union solvent cement socket end connections. High strength body halves shall be bolted together with bolts to overcome the inherent weaknesses of large diameter, plastic valves with union nut design. Ball, stem, and trunion shall be an integrally molded unit running in PTFE bushings to insure constant torque throughout the entire pressure range. Seats shall be PTFE with EPDM or FPM backing O-rings creating self-adjusting seals and constant operating torque. CPVC material shall meet or exceed the requirements of 23447B according to the classifications of ASTM D 1784. Solvent cement socket end connections shall conform to ASTM F 439 (formerly D2467). The valve, Type 370, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 370 Flanged Ball Valve - PP

Polypropylene flanged ball valves 2 1/2" through 6" shall have flanged end connections. High strength body halves shall be bolted together with bolts to overcome the inherent weaknesses of large diameter, plastic valves with union nut design. Ball, stem, and trunion shall be an integrally molded unit running in PTFE bushings to insure constant torque throughout the entire pressure range. Seats shall be PTFE with EPDM or FPM backing O-rings creating self-adjusting seals and constant operating torque. PP material shall meet or exceed the requirements of ASTM D4101 as pertains to a type I homopolymer compound having a minimum tensile strength of 4350 psi/300 bar at 68°F/20°C when tested in accordance with ASTM D638 and shall have a melt point which initiates at 316°F/158°C. The melt flow index (at 374°F/190°C/50N) shall be 0.4-0.8 grams per 10 minutes in accordance with ASTM D1238. Flanges shall be in accordance with ANSI B 16.5, class 150. The valve, Type 370, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.



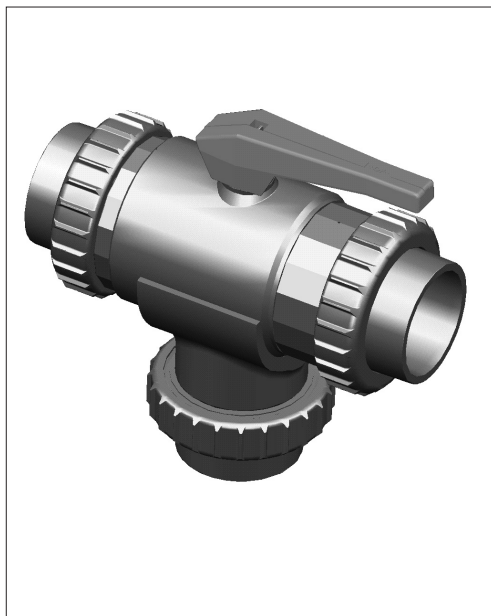
George Fischer Vertical 3-Way Ball Valve Type 343



The Type 343 vertical 3-way ball valve is available in PVC in sizes 3/8" – 6", in CPVC in sizes 1/2" – 2", and in PVDF in sizes 1/2" – 2" (20 mm – 63 mm) with EPDM or FPM seals.

Technical Features

- a) connections in accordance with ISO, BSI and ANSI standards
 - solvent cement socket
 - threaded socket
 - flanged
- b) the metric by U.S. outlet coupling or threaded adapter supplied with valve can be cemented to outlet spigot, or a George Fischer metric union can be attached making the valve fully removable.
- c) union ends facilitate radial mounting and removal.
- d) ball: floating ball system ensures total shut-off; full circular cross-section.
- e) double stem sealing ensures maintenance-free operation and guarantees total shut-off.
- f) blow-out proof stem
- g) PTFE ball seal is extremely abrasion-resistant, and has good antifriction properties, chemical resistance, and a long working life.
- h) backing O-rings continuously adjust the ball seal, thus ensuring maintenance-free operation with smooth ball movement.

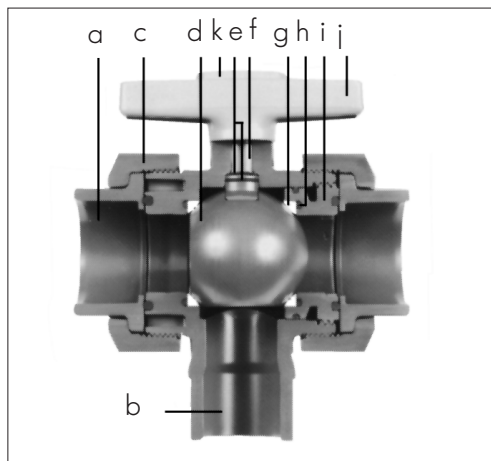


L-port ball:

Provides independent connection of inlets with outlet and positive shutoff in between.

3-way (diverter) ball:

Provides interconnection of two inlets with outlet for mixing or, interconnection of outlets for proportional diverter operation.



- i) union bushing prevents the ball from being blown out; the ball valve thus remains intact after removal of downstream nut.
- j) the indicator on the T-handle shows the direction of flow; molded lugs (k) on handle enable the union bushing to be assembled into and removed from valve body without additional tools (Caution: the union bushing has a left-hand thread!).

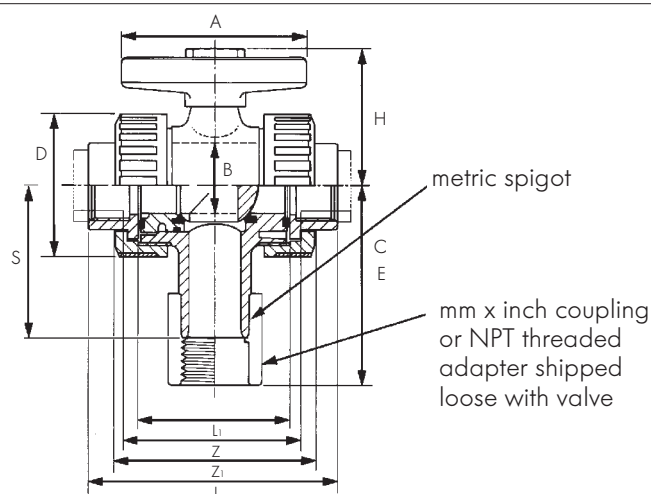
George Fischer plastic ball valves have the following outstanding features:

- Corrosion resistance
- Ideal flow characteristics
- Long working life, maintenance-free
- Light weight
- Silicone free versions available
- Ball valves Type 343 can be equipped with George Fischer electric or pneumatic actuators (refer to Type 115 and Type 229 in Section 11)
- Can be actuated after installation

Dimensions for Type 343 Vertical 3-way Ball Valve, 3/8" - 2", PVC, CPVC

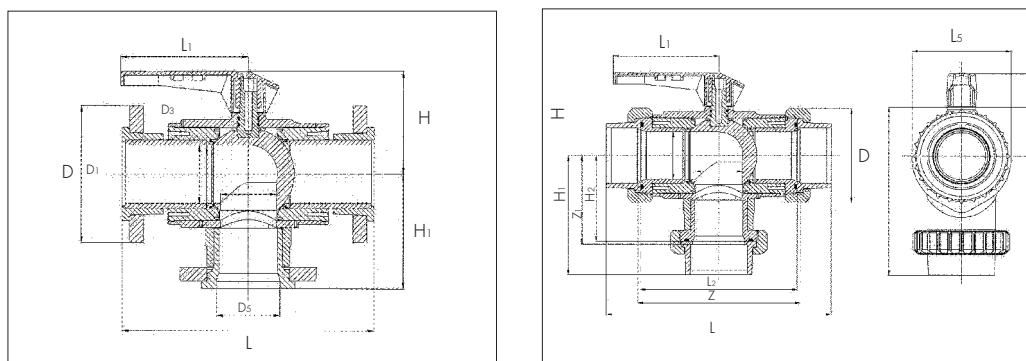
Z solvent cement
socket laying length

Z_1 threaded laying length is herein defined as the dimension between the ends of the pipe when threaded into the valve to a depth equal to the nominal "handtight" plus 1/2 turn



Inch size	thrd Z ₁ inch	socket Z inch	socket L inch	thrd L inch	L ₁ inch	B inch	D inch	A inch	H inch	thrd E inch	socket C inch	spigot length S inch	Weight lbs.
3/8	3.61	2.93	4.45	4.14	2.48	0.55	1.81	3.07	1.97	2.91	3.06	2.24	0.33
1/2	3.46	2.70	4.49	4.17	2.48	0.55	1.81	3.07	1.97	3.20	3.34	2.44	0.33
3/4	4.00	3.15	5.18	4.75	2.95	0.74	2.20	3.62	2.36	3.70	3.86	2.83	0.55
1	4.41	3.34	5.62	5.30	3.11	0.94	2.64	3.94	2.76	3.97	4.17	3.03	0.79
1-1/4	4.98	4.05	6.58	5.91	3.50	1.21	3.23	4.33	3.14	4.46	4.79	3.43	1.32
1-1/2	5.49	3.98	6.76	6.42	3.74	1.53	3.86	4.72	3.62	4.95	5.19	3.82	2.05
2	6.80	4.95	7.97	7.76	4.53	1.92	4.72	5.75	4.33	5.63	6.06	4.41	3.75

Dimensions for Type 343 Vertical 3-way Ball Valve, 2-1/2"-6", PVC



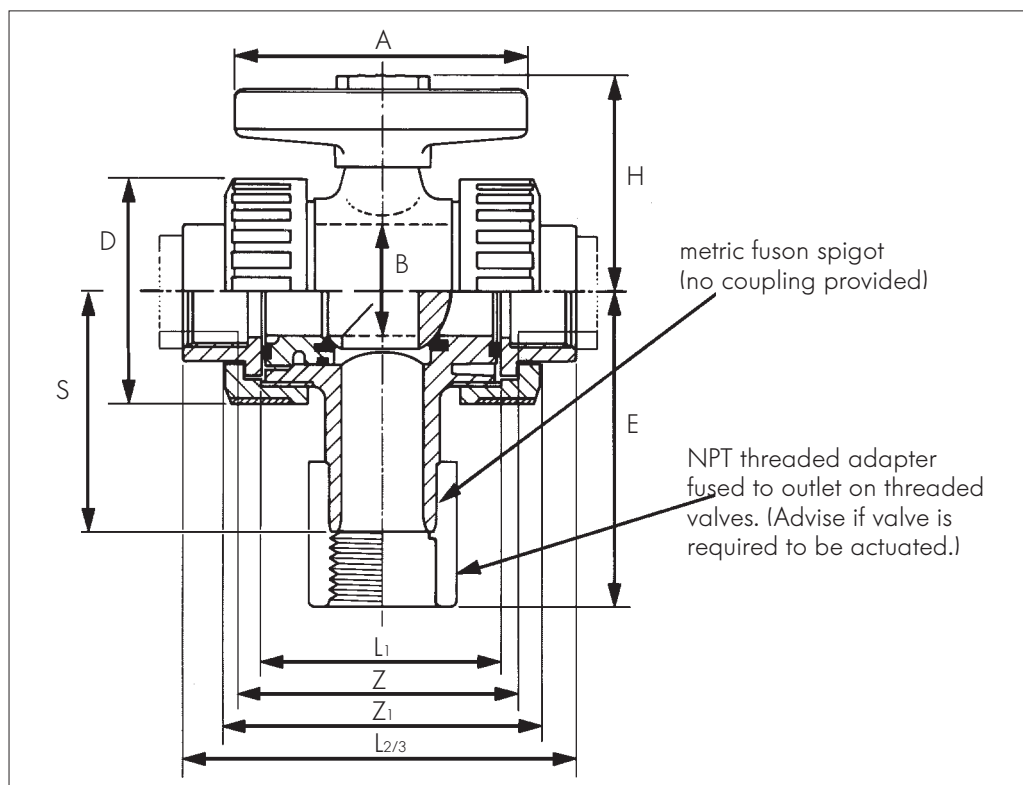
Backing flange

Inch Size	L inch	L ₁ inch	H ₁ inch	D ₅ inch	D ANSI inch	D ₁ ANSI inch	D ₃ ANSI inch
2-1/2	13.00	8.07	6.37	2.68	7.28	5.51	0.75
3	13.50	8.07	6.37	3.23	7.87	5.98	0.75
4	15.94	8.07	7.24	4.02	8.66	7.48	0.75
6	18.07	8.07	9.80	6.14	11.22	9.49	0.87

Solvent cement socket
(upon request)

Inch Size	D inch	L inch	L ₁ inch	L ₂ inch	L ₅ inch	H inch	H ₁ inch	H ₂ inch	Z inch	Z ₁ inch
2-1/2	5.31	12.99	8.07	10.31	6.77	7.01	6.38	5.55	10.71	5.75
3	6.22	13.46	8.07	10.43	5.94	7.64	6.38	5.91	10.83	6.10
4	7.40	15.94	8.07	11.97	7.56	8.62	7.24	6.73	12.36	6.93

Dimensions for Type 343 Vertical 3-way Ball Valve, 3/8" - 2", PVDF



- Z Metric fusion socket valve (laying length)
- Z₁ Threaded valve (laying length)
- L₂ Overall length of metric fusion socket valve
- L₃ Overall length of threaded valve
- S Spigot length

OD d mm	ID DN mm	Thd Z ₁ inch	Skt Z inch	L ₁ inch	L ₂ inch	L ₃ inch	B inch	D inch	A inch	H inch	Thd E inch	Spigot S inch	Weight lbs.	Inch size
20	15	3.31	2.87	2.44	3.98	4.37	0.55	1.81	3.07	1.97	3.20	2.44	0.33	1/2
25	20	3.88	3.43	2.91	4.69	5.12	0.74	2.20	3.62	2.36	3.70	2.83	0.55	3/4
32	25	4.30	3.70	3.07	5.12	5.51	0.94	2.64	3.94	2.76	3.97	3.03	0.79	1
50	40	5.12	4.57	3.70	6.38	6.57	1.53	3.86	4.72	3.58	4.95	3.82	2.05	1-1/2
63	50	6.28	5.55	4.45	7.68	7.83	1.92	4.72	5.75	4.29	5.63	4.41	3.75	2

Installation Hints

Valves should be directly mounted so that pipeline stresses are not transmitted to valve components. Ball valve and pipeline must be aligned so that the valve is not subject to additional stress.

Solvent cement socket/threaded socket connections; installation in the pipeline

Loosen the valve nuts and slide them on to the two pipe ends. The two valve ends are cemented or screwed onto the pipeline, according to type. The ball valve is then inserted between the two valve ends and the valve nuts are tightened manually.

Dismantling the valve

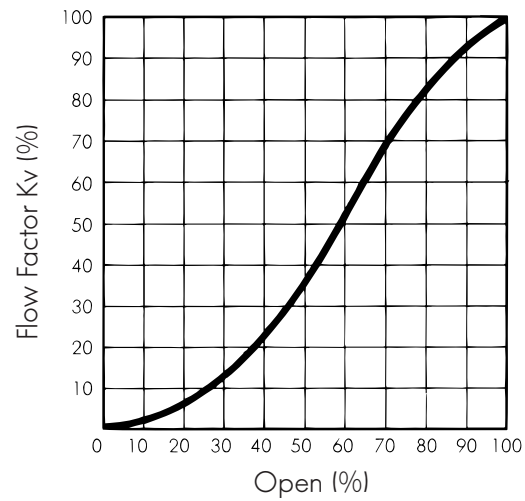
Caution: do not dismantle while under pressure; drain the pipeline. Unscrew the valve nuts and remove the ball valve radially from the pipeline. Take care not to lose the O-rings in the process.

Quality Control

According to DIN 3441, part 1. Each valve is tested for proper functioning and leaktightness during manufacturing and leaktightness during manufacture. This test is performed under water, using air.

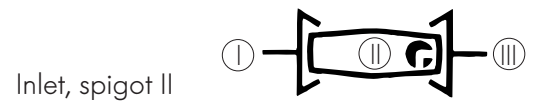
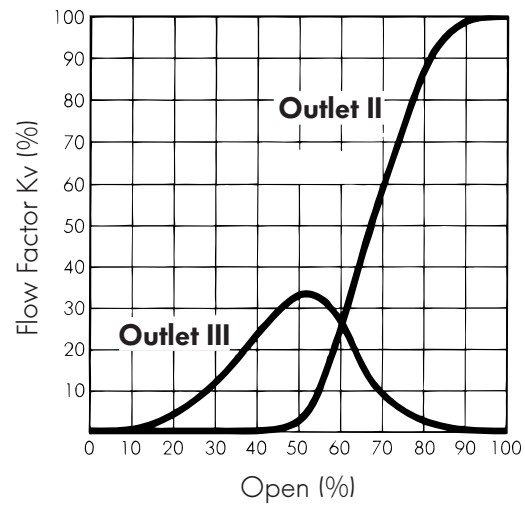
Flow Characteristics for Type 343 Vertical 3-way Ball Valve

L-port

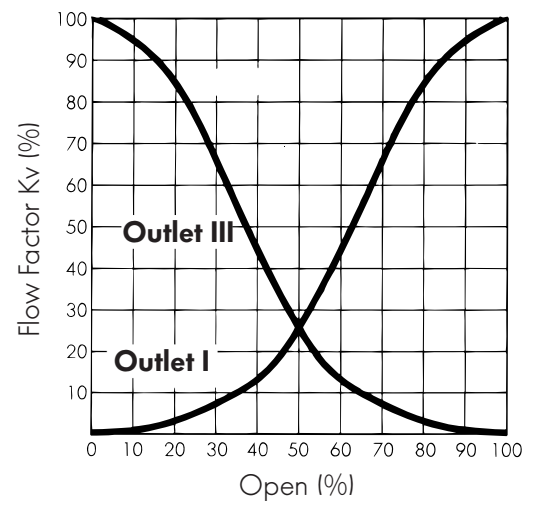


3-way

Inlet, spigot I



Inlet, spigot II



Part Numbers for Type 343 Vertical Model, L-port Ball

PVC 1/2" - 2"

Inch size	with solvent cement socket, ASTM		with taper female thread, NPT	
	EPDM seals	FPM* seals	EPDM seals	FPM* seals
3/8	161 343 661	161 343 671	161 343 681	161 343 691
1/2	161 343 662	161 343 672	161 343 682	161 343 692
3/4	161 343 663	161 343 673	161 343 683	161 343 693
1	161 343 664	161 343 674	161 343 684	161 343 694
1-1/4	161 343 665	161 343 675	161 343 685	161 343 695
1-1/2	161 343 666	161 343 676	161 343 686	161 343 696
2	161 343 667	161 343 677	161 343 687	161 343 697

PVC 2 1/2" - 6"

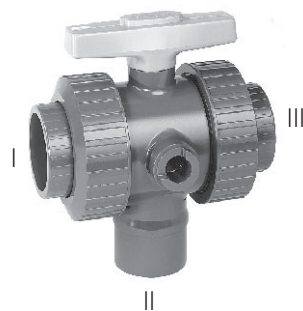
Inch size	flanged ANSI EPDM seals	solvent cement socket EPDM seals	ASTM socket end connection
2-1/2	161 343 481	161 343 466	721 602 012
3	161 343 482	161 343 467	721 602 013
4	161 343 483	161 343 468	721 602 014
6	161 343 484	—	—

CPVC

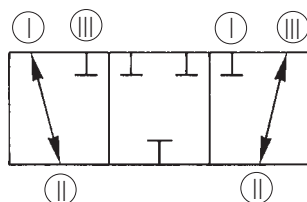
Inch size	socket FPM* seals	threaded NPT FPM* seals
1/2	700 252 513	700 253 713
3/4	700 252 514	700 253 714
1	700 252 515	700 253 715
1-1/2	700 252 516	700 253 716
2	700 252 517	700 253 717

PVDF

OD d mm	ID DN mm	metric fusion socket FPM* seals	threaded NPT FPM* seals	Inch size
20	15	700 252 518	700 253 718	1/2
25	20	700 252 519	700 253 719	3/4
32	25	700 252 520	700 253 720	1
50	40	700 252 521	700 253 721	1-1/2
63	50	700 252 522	700 253 722	2



Operation



*FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers.

Product Specification

**FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers.*

Type 343 True Union 3-Way Ball Valve - PVC

PVC true union 3-way ball valves 3/8" through 2" shall be available in vertical configuration and have either solvent cement socket or threaded pipe connections. Incorporated into its design safety features is a blow-out proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE with backing rings creating self-adjusting seals and constant operating torque. Backing rings and seals shall be EPDM or FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to having sufficient elevation to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connectors are removed from pipe. Material shall meet or exceed the requirements of 12454-B according to the classifications and requirements of ASTM D-1784. Socket end connection dimensions shall conform to ASTM D-2467. Threaded pipe connections shall be in accordance with ASTM D-2464 which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. Optional flanged version shall be in accordance with ANSI B16.5, class 150 flanges. The valve, type 343, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 343 True Union 3-Way Ball Valve - CPVC

CPVC true union ball valves 1/2" through 2" shall be available in vertical configuration and have either solvent cement socket or threaded pipe connections. Incorporated into its design safety features is a blow-out proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE with backing rings creating self-adjusting seals and constant operating torque. Backing rings and seals shall be EPDM or FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to having sufficient elevation to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connectors are removed from pipe. Material shall meet or exceed the requirements of 23447-B according to the classifications and requirements of ASTM D-1784. Socket end connection dimensions shall conform to ASTM F439 (formerly D-2467). Threaded end connections shall conform to the dimensions as listed in ASTM F437 (formerly D-2464) which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. The valve, type 343, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

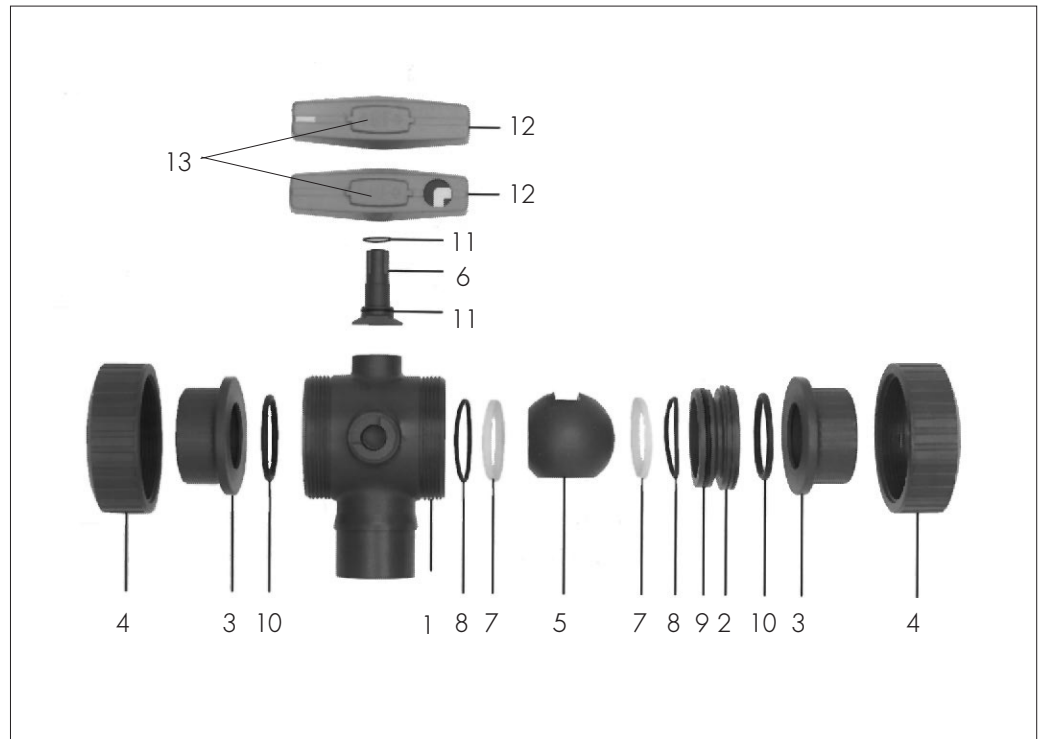
Product Specification

**FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers.*

Type 343 True Union 3-way Ball Valve - PVDF

PVDF true union 3-way ball valves 1/2" through 2" (20 mm - 63 mm) shall be available in a vertical configuration and have either metric fusion socket or threaded type pipe connections. Incorporated into its design safety features is a blow-out-proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE with backing rings creating self-adjusting, constant operating torque sealing characteristics. Backing rings and seals shall be FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to providing sufficient height to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connector is installed on the pipe. Material shall meet or exceed the requirements of ASTM D 3222 as pertains to a natural, unpigmented, virgin, noncompounded polyvinylidene fluoride compound having a minimum tensile strength of 7800 psi/538 bar at 73°F/20°C when tested in accordance with ASTM D 638 and shall have a flexural strength of 10,700 psi/738 bar at 73°F/20°C when tested according to ASTM D 790. End connections shall be as outlined in ASTM D 2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. Threaded end connections shall be in accordance with ASTM D 2464 which references ANSI B 1.20 (was B 2.1) for tapered pipe threads. The valve, Type 343, shall carry a pressure rating of 150 psi/10 bar at 68°F/20°C as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 343 Vertical 3-way Ball Valve



Assembly Instructions

Insert backing seal (8) and Teflon ball seat (7) into the grooves provided on the inside of the body. Position two fully lubricated* stem seals (11) in the groove and over the neck of stem (6) respectively. Introduce the preassembled stem (6) into the valve body (1) from the inside and press it against the stop. Push ball (5) onto the stem guide inside the body so that the ports are aligned with the position indicator on handle (12). This is very important!

Position the lubricated* body seal (9) in the groove of seat carrier (2). Insert backing seal (8) and Teflon ball seat (7) into seat carrier (2).

Screw seat carrier (2) into body (1) (left-hand thread). Lugs (13) on double lever handle (12) serve as a key. Tighten until the ball can still be rotated smoothly. Slide connector seals (10) into the grooves of the seat carrier (2) and body (1) and attach end connectors (3) onto the body at both sides with valve nuts (4). Mount double lever handle (12) on stem (6).

Dismantling

Caution: do not dismantle while under pressure. Drain the pipeline.

Loosen valve nuts (4) and remove the ball valve radially from the pipeline. Remove double lever handle (12) from stem (6). Unscrew seat carrier (2) using lugs (13) of double lever handle (12). Caution: left-hand thread!



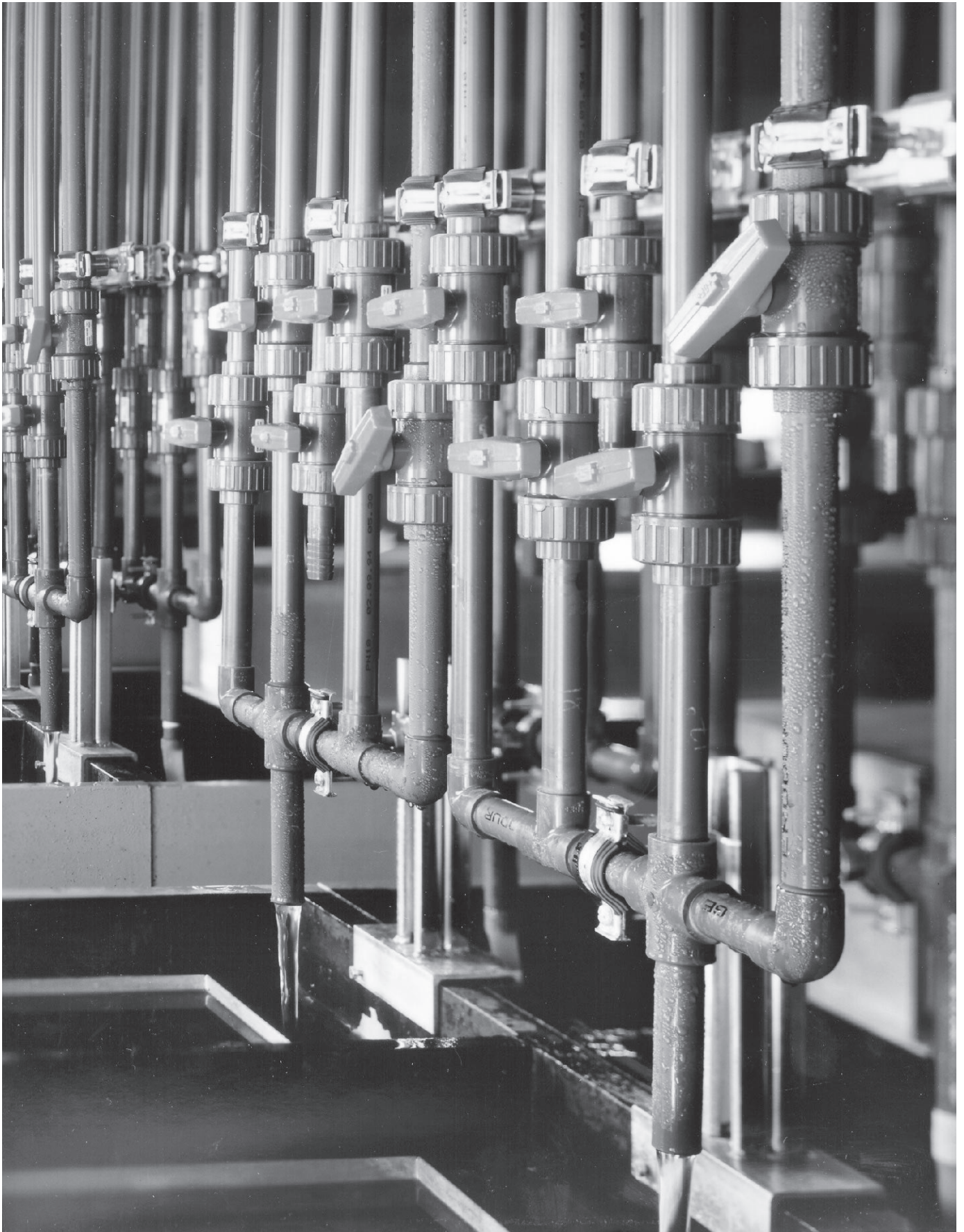
Turn ball (5) so that the handle is at right-angles to the direction of flow. The ball can now be pushed out using a soft plastic or wooden rod. Press stem (6) into body (1) and remove it.

**Use only grease with a silicon or polyglycol base in conjunction with EPDM O-rings. Vaseline or mineral oils in particular are not to be used.*

Component Parts for Type 343 Vertical 3-way Ball Valve

Nr./Part	Mat.	Qty.	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
Valve body									
1 1 Vertical	PVC	1	161 482 707	161 482 708	161 482 709	161 482 710	161 482 711	161 482 712	161 482 713
2 Seat carrier	PVC	1	161 482 339	161 482 339	161 482 340	161 482 341	161 482 342	161 482 343	161 482 344
3 End connector									
Socket	PVC	1	161 482 377	161 482 378	161 482 379	161 482 380	161 482 381	161 482 382	161 482 383
NPT thread	PVC	1	161 482 389	161 482 390	161 482 391	161 482 392	161 482 393	161 482 394	161 482 395
4 Valve Nut	PVC	1	161 340 617	161 340 617	161 340 618	161 340 619	161 482 567	161 482 119	161 482 613
Ball set for vertical valve:			161 483 343	161 483 343	161 483 344	161 483 345	161 483 346	161 483 347	161 483 348
5 1 Ball (L port)	PVC	1	1 piece for 3/8" and 1/2"						
7 Ball seat	PTFE	2							
6 Stem	PVC	1							
11 Stem seal	EPDM	2							
12 1 Handle	PVC	1							
Ball set for vertical valve:			161 483 351	161 483 351	161 483 352	161 483 353	161 483 354	161 483 355	161 483 356
5 1 Ball (L port)	PVC	1	1 piece for 3/8" and 1/2"						
7 Ball seat	PTFE	2							
6 Stem	PVC	1							
11 Stem seal	FPM	2							
12 1 Handle	PVC	1							
"L" port ball	CPVC	1	198 203 845	198 203 845	198 203 846	198 203 847	–	198 203 848	198 203 849
"L" port ball	PVDF	1	198 203 855	198 203 855	198 203 856	198 203 857	–	198 203 858	198 203 859
Diverter ball (vertical)	PVC	1	161 482 604	161 482 604	161 482 605	161 482 606	161 482 607	161 482 608	161 482 609
Diverter ball (vertical)	CPVC	1	198 203 845D	198 203 845D	198 203 846D	198 203 847D	–	198 203 848D	198 203 849D
Diverter ball (vertical)	PVDF	1	198 203 855D	198 203 855D	198 203 856D	198 203 857D	–	198 203 858D	198 203 859D
Handle for diverterball	PVC	1	161 482 821	161 482 821	161 482 822	161 482 823	161 432 824	161 482 825	161 482 826
Set of EPDM seals:			161 482 883	161 482 883	161 482 884	161 482 885	161 482 886	161 482 887	161 482 888
8 Backing seal	EPDM	2	1 piece for 3/8" and 1/2"						
9 Body seal	EPDM	1							
10 Connector seal	EPDM	2							
11 Stem seal	EPDM	2							
Set of FPM seals:			161 482 892	161 482 892	161 482 893	161 482 894	161 482 895	161 482 896	161 482 897
8 Backing seal	FPM	2	1 piece for 3/8" and 1/2"						
9 Body seal	FPM	1							
10 Connector seal	FPM	2							
11 Stem seal	FPM	2							
10 O-ring	EPDM	2	748 410 042	748 410 042	748 410 116	748 410 103	748 410 027	748 410 010	748 410 011
	Viton	2	749 410 042	749 410 042	749 410 116	749 410 103	749 410 027	749 410 010	749 410 011
Outlet socket coupling PVC ¹⁾			721 913 105	721 913 106	721 913 107	721 913 108	721 913 109	721 913 110	721 913 111
Outlet threaded adapter PVC ²⁾			721 914 205	721 914 206	721 914 207	721 914 208	721 914 209	721 914 210	721 914 211

¹⁾ solvent cement socket²⁾ NPT thread



George Fischer 3-Way Horizontal Ball Valve Type 343



George Fischer plastic ball valves have the following outstanding features:

- Corrosion resistance
- Ideal flow characteristics
- Long working life, maintenance-free
- Light weight
- Silicone free versions available
- Ball valves Type 343 can be equipped with George Fischer electric or pneumatic actuators (refer to Type 101 and Type 201 in Section 11)
- Can be actuated after installation

George Fischer offers a wide range of manually operated ball valves. The introduction of the new 3-way ball valve further extends the industrial product range. 3-way ball valves are usually installed for diverting and mixing liquids in piping systems. While the 3-way ball valve with L-port is used for the distribution of liquids or the interruption of the flow, the T-port ball valve is the ideal solution for mixing of liquids.

The Type 343 is available in PVC, CPVC, PP and PVDF and also in all the relevant standards ISO/DIN, BS, ASTM/ANSI, JIS.

L-port ball:

Provides independent connection of inlets with outlet.

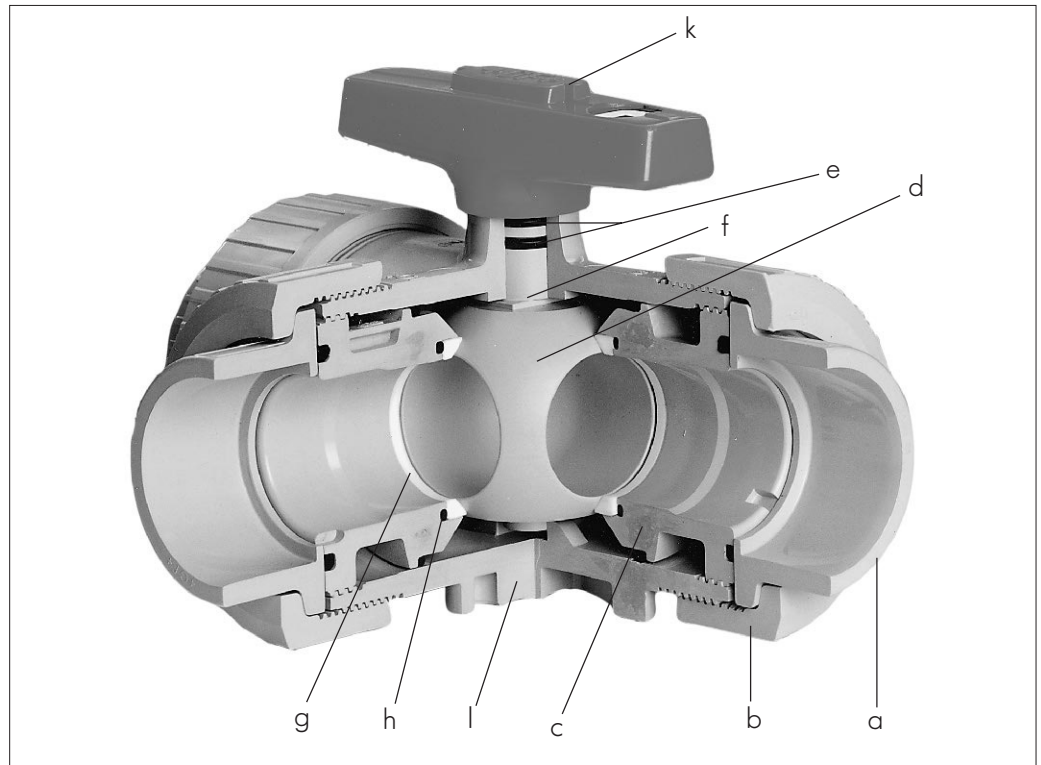
T-port ball:

Provides straight through flow (left to right), independent connection of inlets with outlets or interconnection of all three ports.

Technical Features

- Position indicator on handle and stem for easy recognition of function
- Union ends for easy installation and disassembly
- Handle with integrated tool for easy maintenance
- High safety via 3 separately integrated union bushings with left hand threads
- High reliability and long life-span via 3 separate PTFE ball seals directly in contact with the ball, supported by an O-ring
- Integrated universal mounting system for simple and efficient installation.

Technical Data



- a) Connections
 - sockets
 - spigots
 - threaded sockets
 - IR/butt fusion ends
- b) Union ends, allow installation or removal of the connection parts for easy inspection and maintenance.
The pipeline should be depressurised before dismantling.
- c) Union bushing with left-hand thread and molded end prevents ball from being blown out by line fluid.
- d) Balls with L- or T-port with diverting/mixing function.
- e) Double sealing on the stem for maintenance free operation.
- f) High strength stem.
- g) PTFE ball seal is extremely abrasion resistant and has good antifriction properties, good chemical resistance and a long service life.
- h) Backing O-ring automatically compensates for expansion and contraction in the valve and ball seal wear, resulting in maintenance free operation with low friction ball movement.
- i) Integrated fixing with insert screws.
- k) Handle with integrated position indicator and tool function: the position of the ball is visible on the handle. The integrated cams allow the assembly and dismantling of the ball valve without additional tooling.

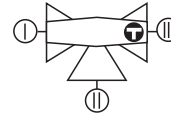
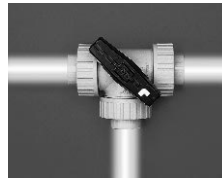
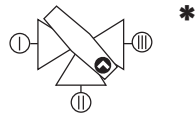
Functions

The following illustrations show the functions and the corresponding position of the handle:

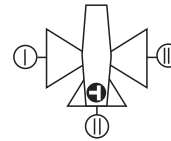
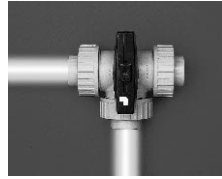
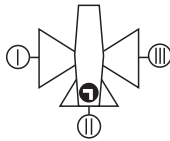
L-port

T-port

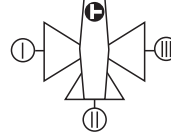
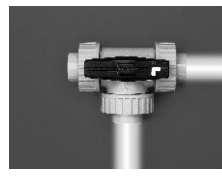
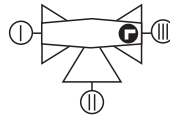
Mixing function



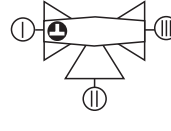
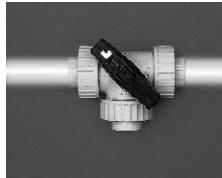
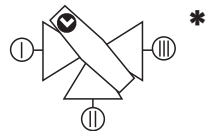
Diverting function



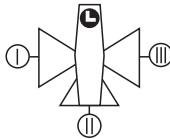
Diverting function



Branch closed/ passage open



Closed



Example 1

Example 2

* Cv/kv-value low

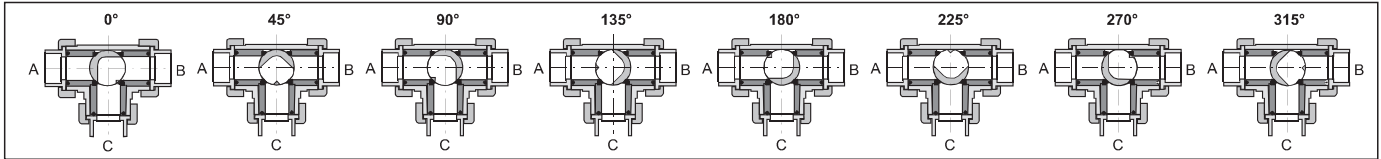
Flow Characteristics

The k_v factor is defined as the flow rate of water in litres per minute with a pressure drop of 1 kg/cm² across the valve.

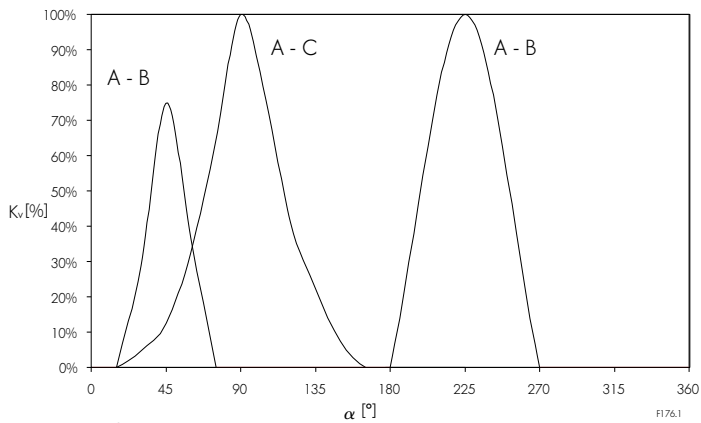
The shown k_v -values are in %, to calculate the absolute flow multiply these values with the corresponding values from the tables.

L-port

Valve positions L-port:

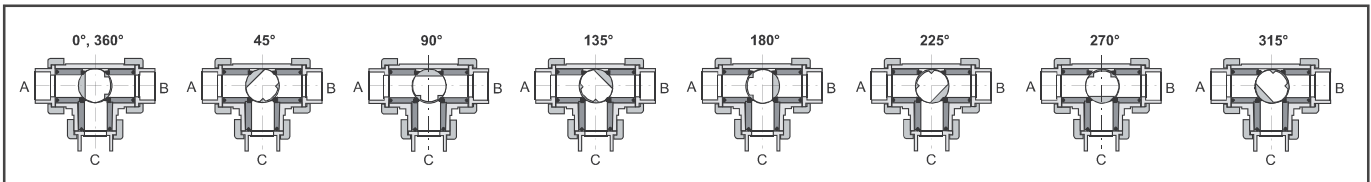


Flow A → B and A → C

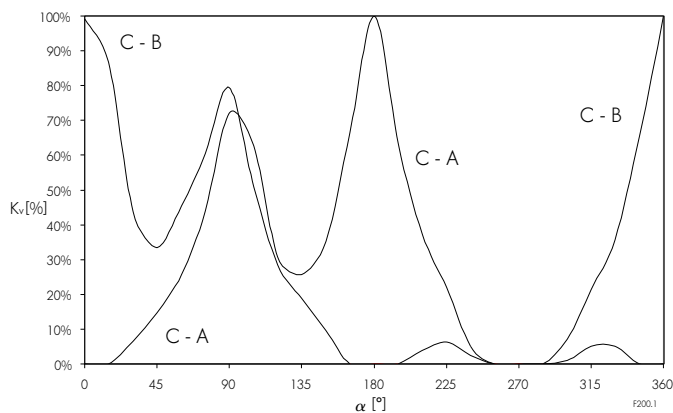


T-port

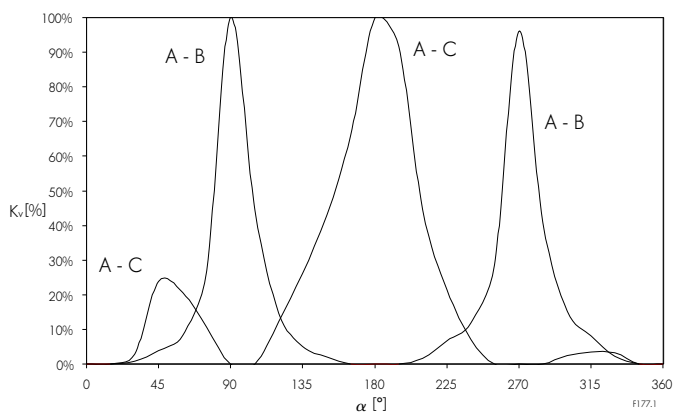
Valve positions T-port:



Flow C → A and C → B



Flow A → B and A → C

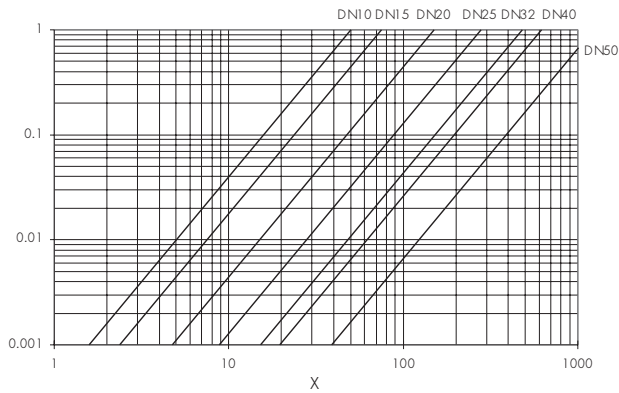


Pressure Loss Characteristics

L-port

Flow C → A

Valve position: 90°



Medium: water, 20°C

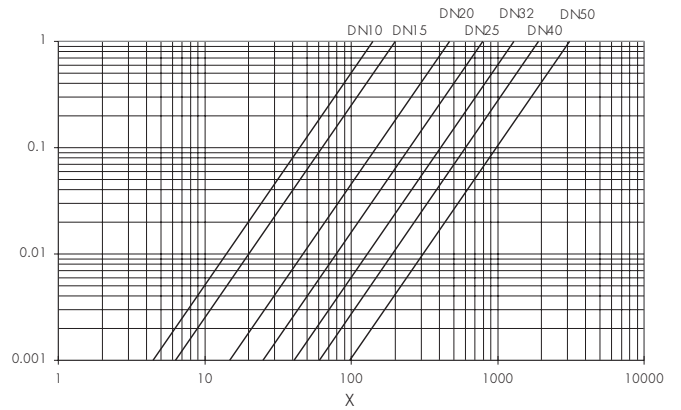
X Flow rate (l/min)

Y Pressure loss p (bar)

T-port

Flow A → B

Valve position: 90°



Medium: water, 20°C

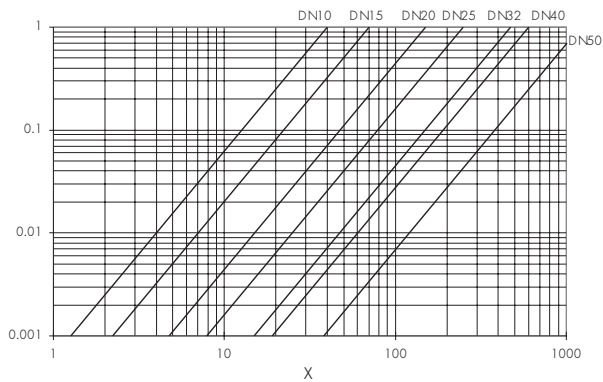
X Flow rate (l/min)

Y Pressure loss p (bar)

T-port

Flow A → C

Valve position: 180°



Medium: water, 20°C

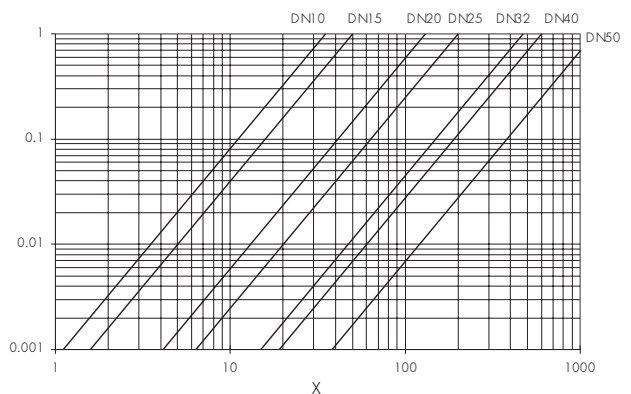
X Flow rate (l/min)

Y Pressure loss p (bar)

T-port

Flow C → A and C → B

Valve position: 180°



Medium: water, 20°C

X Flow rate (l/min)

Y Pressure loss p (bar)

L-port

Flow A → C, C → A, B → C, C → B

Valve position: 90°

Inch size	C _v gal/min	K _v 100 l/min	d mm
3/8	3.50	50	16
1/2	5.25	75	20
3/4	10.50	150	25
1	19.60	280	32
1 1/4	33.61	480	40
1 1/2	43.42	620	50
2	86.13	1230	63

L-port

Flow A → B

Valve position: 225°

Inch size	C _v gal/min	K _v 100 l/min	d mm
3/8	0.70	10	16
1/2	1.05	15	20
3/4	2.10	30	25
1	3.50	50	32
1 1/4	6.30	90	40
1 1/2	7.70	110	50
2	15.41	220	63

T-port

Flow A → B

Valve position: 90°

Inch size	C _v gal/min	K _v 100 l/min	d mm
3/8	9.80	140	16
1/2	14.01	200	20
3/4	32.91	470	25
1	55.53	793	32
1 1/4	90.34	1290	40
1 1/2	133.75	1910	50
2	217.09	3100	63

T-port

Flow A → C

Valve position: 180°

Inch size	C _v gal/min	K _v 100 l/min	d mm
3/8	2.80	40	16
1/2	4.90	70	20
3/4	10.50	150	25
1	17.51	250	32
1 1/4	32.91	470	40
1 1/2	42.02	600	50
2	84.73	1210	63

T-port

Flow C → A and C → B

Valve position: 180°

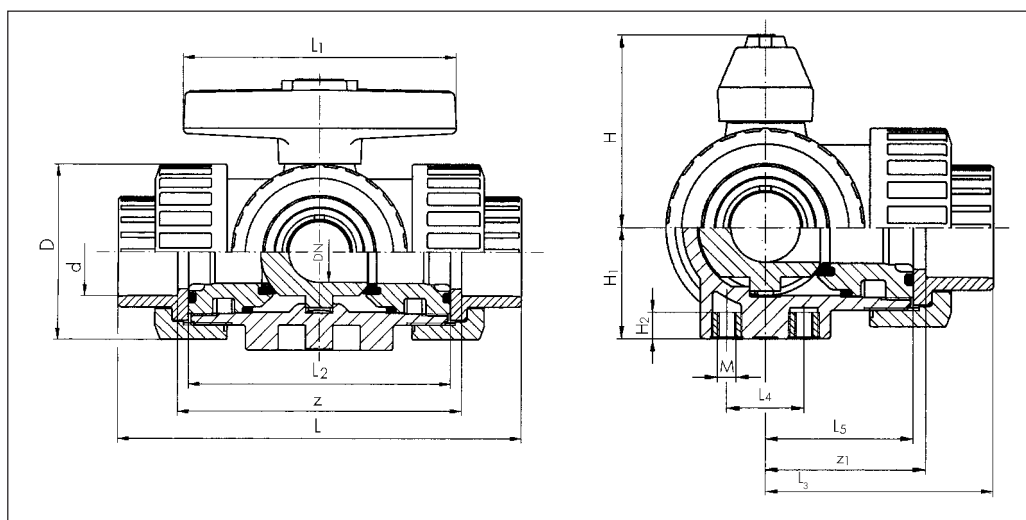
Inch size	C _v gal/min	K _v 100 l/min	d mm
3/8	2.45	35	16
1/2	3.50	50	20
3/4	9.10	130	25
1	14.01	200	32
1 1/4	26.61	380	40
1 1/2	32.91	470	50
2	62.32	890	63

C_v = gal./min at 1 psi pressure drop

K_v = litres/min at 1 bar pressure drop

Dimensions

3-Way Ball Valve Type 343 Horizontal with sockets



PVC CPVC solvent cement sockets

d mm	DN mm	Inch size	z inch	z ₁ inch	D inch	H inch	H ₁ inch	H ₂ inch	L inch	L ₁ inch	L ₂ inch	L ₃ inch	L ₄ inch	L ₅ inch	M mm
16	10	3/8	3.15	1.57	1.69	1.97	1.06	0.31	4.76	3.07	2.83	2.40	0.98	1.42	6
20	15	1/2	3.15	1.57	1.69	1.97	1.06	0.31	4.76	3.07	2.83	2.40	0.98	1.42	6
25	20	3/4	3.70	1.85	2.05	2.36	1.30	0.31	5.59	3.62	3.39	2.80	0.98	1.69	6
32	25	1	4.09	2.05	2.56	2.68	1.42	0.31	6.22	3.94	3.78	3.11	0.98	1.89	6
40	32	1 1/4	4.96	2.48	3.07	3.11	1.73	0.35	7.60	4.33	4.57	3.82	1.77	2.28	8
50	40	1 1/2	5.67	2.83	3.62	3.54	1.93	0.35	8.35	4.72	5.39	4.17	1.77	2.72	8
63	50	2	7.32	3.66	4.57	4.29	2.40	0.35	10.43	5.75	7.05	5.24	1.77	3.54	8

PP metric fusion sockets

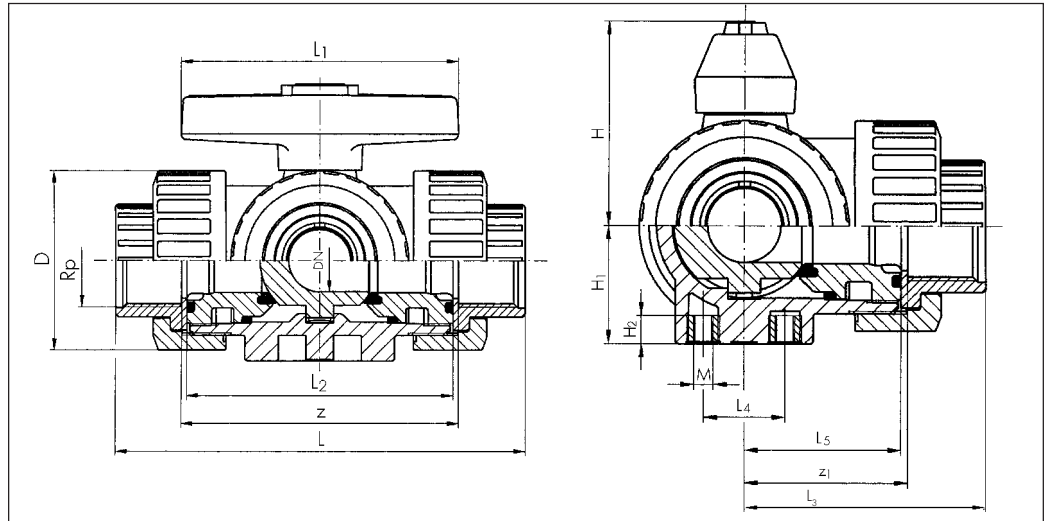
d mm	DN mm	Inch size	z inch	z ₁ inch	D inch	H inch	H ₁ inch	H ₂ inch	L inch	L ₁ inch	L ₂ inch	L ₃ inch	L ₄ inch	L ₅ inch	M mm
16	10	3/8	3.07	1.54	1.81	1.97	1.06	0.31	4.25	3.07	2.76	2.13	0.98	1.42	6
20	15	1/2	3.11	1.57	1.81	1.97	1.06	0.31	4.37	3.07	2.76	2.20	0.98	1.42	6
25	20	3/4	3.74	1.89	2.20	2.36	1.30	0.31	5.16	3.62	3.39	2.60	0.98	1.69	6
32	25	1	4.25	2.13	2.64	2.68	1.42	0.31	5.83	3.94	3.78	2.91	0.98	1.89	6
40	32	1 1/4	5.24	2.64	3.23	3.11	1.73	0.35	6.97	4.33	4.49	3.50	1.77	2.28	8
50	40	1 1/2	6.10	3.07	3.86	3.54	1.93	0.35	8.07	4.72	5.39	4.06	1.77	2.72	8
63	50	2	7.99	4.02	4.76	4.29	2.40	0.35	10.28	5.75	7.05	5.16	1.77	3.54	8

PVDF metric fusion sockets

d mm	DN mm	Inch size	z inch	z ₁ inch	D inch	H inch	H ₁ inch	H ₂ inch	L inch	L ₁ inch	L ₂ inch	L ₃ inch	L ₄ inch	L ₅ inch	M mm
16	10	3/8	3.07	1.54	1.81	1.97	1.06	0.31	4.25	3.07	2.76	2.13	0.98	1.42	6
20	15	1/2	3.11	1.57	1.81	1.97	1.06	0.31	4.37	3.07	2.76	2.20	0.98	1.42	6
25	20	3/4	3.74	1.89	2.20	2.36	1.30	0.31	5.16	3.62	3.39	2.60	0.98	1.69	6
32	25	1	4.25	2.13	2.64	2.68	1.42	0.31	5.79	3.94	3.78	2.91	0.98	1.89	6
40	32	1 1/4	5.24	2.64	3.19	3.11	1.73	0.35	6.93	4.33	4.49	3.46	1.77	2.28	8
50	40	1 1/2	6.10	3.07	3.82	3.54	1.93	0.35	8.03	4.72	5.39	4.02	1.77	2.72	8
63	50	2	7.99	4.02	4.69	4.29	2.40	0.35	10.20	5.75	7.05	5.12	1.77	3.54	8

Dimensions

3-Way Ball Valve Type 343 Horizontal with threaded sockets NPT



PVC CPVC

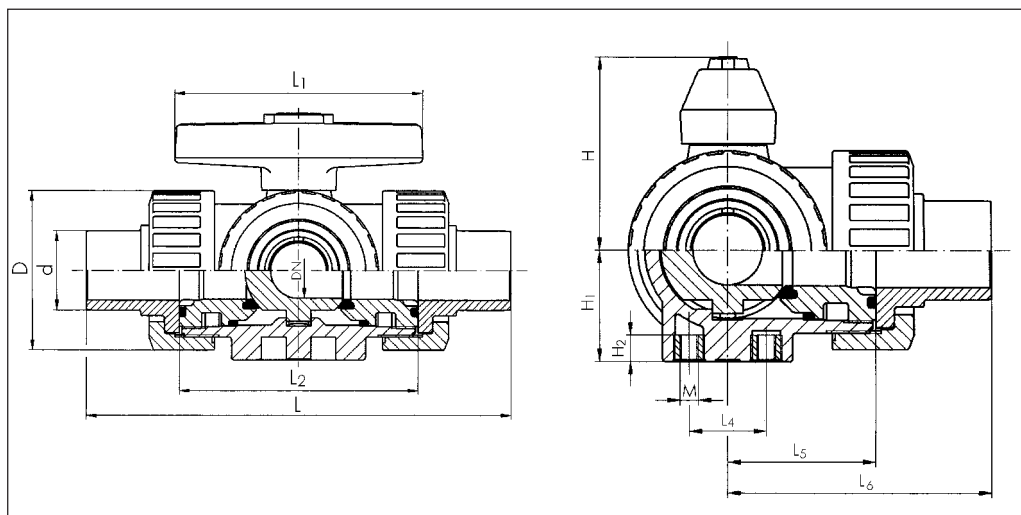
Inch size	d mm	z inch	z ₁ inch	D inch	H inch	H ₁ inch	H ₂ inch	L inch	L ₁ inch	L ₂ inch	L ₃ inch	L ₄ inch	L ₅ inch	M mm
3/8	16	2.99	1.50	1.69	1.97	1.06	0.31	4.49	3.07	2.83	2.24	0.98	1.42	6
1/2	20	2.99	1.50	1.69	1.97	1.06	0.31	4.53	3.07	2.83	2.28	0.98	1.42	6
3/4	25	3.54	1.77	2.05	2.36	1.30	0.31	5.20	3.62	3.39	2.60	0.98	1.69	6
1	32	3.94	1.97	2.56	2.68	1.42	0.31	5.98	3.94	3.78	2.99	0.98	1.89	6
1 1/4	40	4.80	2.40	3.07	3.11	1.73	0.35	6.97	4.33	4.57	3.50	1.77	2.32	8
1 1/2	50	5.98	2.99	3.62	6.54	1.93	0.35	8.07	4.72	5.39	4.06	1.77	2.72	8
2	63	7.87	3.94	4.57	4.29	2.40	0.35	10.28	5.75	7.05	5.16	1.77	3.54	8

PP PVDF

Inch size	d mm	z inch	z ₁ inch	D inch	H inch	H ₁ inch	H ₂ inch	L inch	L ₁ inch	L ₂ inch	L ₃ inch	L ₄ inch	L ₅ inch	M mm
3/8	16	2.99	1.50	1.81	1.97	1.06	0.31	4.49	3.07	2.76	2.24	0.98	1.42	6
1/2	20	2.99	1.50	1.81	1.97	1.06	0.31	4.53	3.07	2.76	2.28	0.98	1.42	6
3/4	25	3.54	1.77	2.20	2.36	1.30	0.31	5.20	3.62	3.39	2.60	0.98	1.69	6
1	32	3.94	1.97	2.64	2.68	1.42	0.31	5.98	3.94	3.78	2.99	0.98	1.89	6
1 1/4	40	4.80	2.40	3.19	3.11	1.73	0.35	6.97	4.33	4.49	3.50	1.77	2.32	8
1 1/2	50	5.98	2.99	3.82	6.54	1.93	0.35	8.07	4.72	5.39	4.06	1.77	2.72	8
2	63	7.87	3.94	4.69	4.29	2.40	0.35	10.28	5.75	7.05	5.16	1.77	3.54	8

Dimensions

3-Way Ball Valve Type 343 Horizontal with IR/butt fusion ends



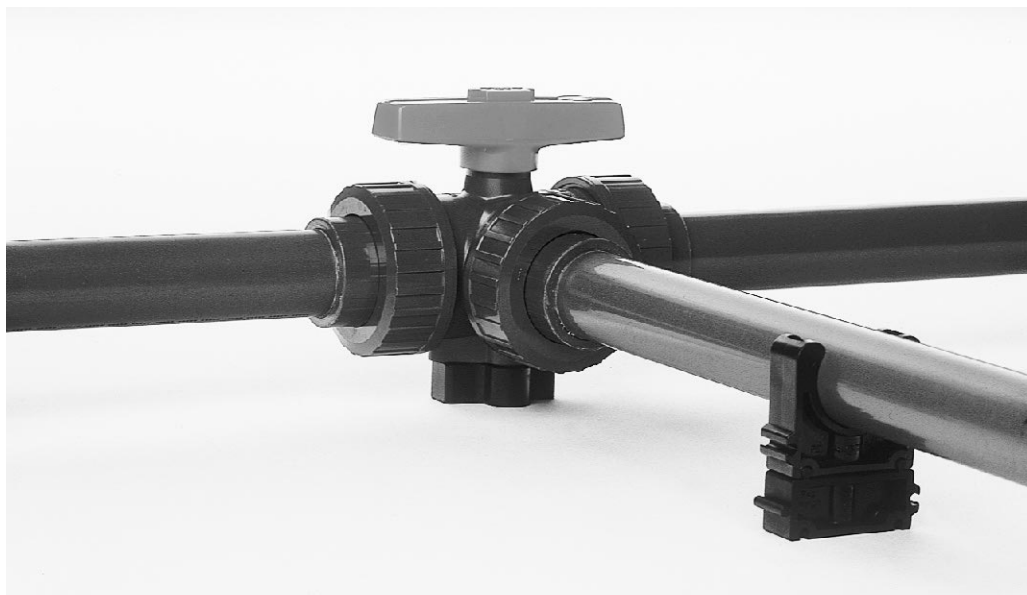
PP

d mm	DN mm	Inch size	D inch	H inch	H ₁ inch	H ₂ inch	L inch	L ₁ inch	L ₂ inch	L ₄ inch	L ₅ inch	L ₆ inch	M mm
20	15	1/2	1.81	1.97	1.06	0.31	5.51	3.07	2.76	0.98	1.42	2.76	6
25	20	3/4	2.20	2.36	1.30	0.31	6.14	3.62	3.39	0.98	1.69	3.07	6
32	25	1	2.64	2.68	1.42	0.31	6.61	3.94	3.78	0.98	1.89	3.31	6
40	32	1 1/4	3.23	3.11	1.73	0.35	7.80	4.33	4.40	1.77	2.28	3.90	8
50	40	1 1/2	3.86	3.54	1.93	0.35	9.17	4.72	5.39	1.77	2.72	4.61	8
63	50	2	4.76	4.29	2.40	0.35	11.18	5.75	7.05	1.77	3.54	5.59	8

PVDF

d mm	DN mm	Inch size	D inch	H inch	H ₁ inch	H ₂ inch	L inch	L ₁ inch	L ₂ inch	L ₄ inch	L ₅ inch	L ₆ inch	M mm
16	10	3/8	1.81	1.97	1.06	0.31	4.69	3.07	2.76	0.98	1.42	2.36	6
20	15	1/2	1.81	1.97	1.06	0.31	5.51	3.07	2.76	0.98	1.42	2.76	6
25	20	3/4	2.20	2.36	1.30	0.31	6.14	3.62	3.39	0.98	1.69	3.07	6
32	25	1	2.64	2.68	1.42	0.31	6.61	3.94	3.78	0.98	1.89	3.31	6
40	32	1 1/4	3.19	3.11	1.73	0.35	7.80	4.33	4.40	1.77	2.28	3.90	8
50	40	1 1/2	3.82	3.54	1.93	0.35	9.17	4.72	5.39	1.77	2.72	4.61	8
63	50	2	4.69	4.29	2.40	0.35	11.22	5.75	7.05	1.77	3.54	5.63	8

Integrated, Universal Mounting System



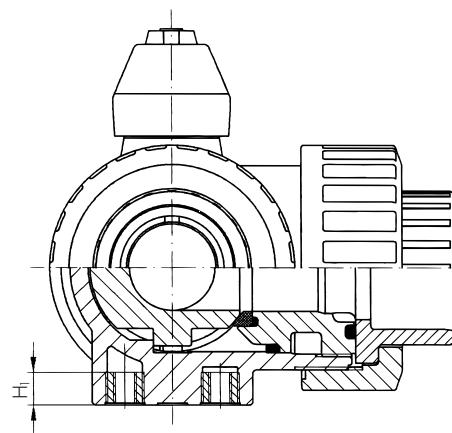
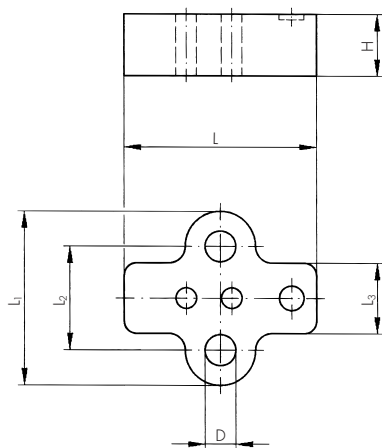
The 3-way ball valve Type 343 has an integrated mounting unit (insert screws in high-grade steel). The George Fischer mounting blocks are designed to allow different size George Fischer Valves to be aligned with the same pipe center line by equalizing the different heights from the base to the center line of the pipe. They are designed to be compati-

ble with George Fischer's pipe clips. The mounting blocks can be used for PVC, CPVC, PP, PVDF ball valves Type 343 horizontal, 3/8" - 2".

Mounting blocks:
material PP-GF 15, black,
3 sizes

Mounting Blocks for 3-Way Horizontal Ball Valve Type 343

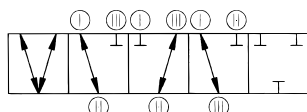
Types/Dimensions



Inch size	DN mm	d mm	Part Number	H inch	L ₂ inch	L ₃ inch	L ₁ inch	L inch	D inch	H ₁ inch	Weight lbs.
3/8-1/2 ¹⁾	16/20	10/15	167 480 423	0.14	0.98	0.67	1.65	1.83	0.30	0.31	0.088
			167 482 238	0.59	0.98	0.67	1.65	1.83	0.30		
3/4-1	25-32	20-25	167 482 238	0.59	0.98	0.67	1.65	1.83	0.30	0.31	0.0352
1 1/4-2	40-63	32-50	167 482 239	0.43	1.77	0.87	2.64	3.15	0.37	0.35	0.0616

¹⁾ For dimensions 3/8" & 1/2", the two mounting blocks need to be ordered separately and have to be assembled.

Operation



Part Numbers for Type 343, Horizontal Model, L-port Ball

PVC

Inch size	with solvent cement socket, ASTM		with taper female thread, NPT	
	EPDM seals	FPM* seals	EPDM seals	FPM* seals
3/8	161 343 081	161 343 091	161 343 101	161 343 111
1/2	161 343 082	161 343 092	161 343 102	161 343 112
3/4	161 343 083	161 343 093	161 343 103	161 343 113
1	161 343 084	161 343 094	161 343 104	161 343 114
1-1/4	161 343 085	161 343 095	161 343 105	161 343 115
1-1/2	161 343 086	161 343 096	161 343 106	161 343 116
2	161 343 087	161 343 097	161 343 107	161 343 117

CPVC

Inch size	with solvent cement socket, ASTM		with taper female thread, NPT	
	EPDM seals	FPM* seals	EPDM seals	FPM* seals
3/8	163 343 081	163 343 091	163 343 101	163 343 111
1/2	163 343 082	163 343 092	163 343 102	163 343 112
3/4	163 343 083	163 343 093	163 343 103	163 343 113
1	163 343 084	163 343 094	163 343 104	163 343 114
1-1/4	163 343 085	163 343 095	163 343 105	163 343 115
1-1/2	163 343 086	163 343 096	163 343 106	163 343 116
2	163 343 087	163 343 097	163 343 107	163 343 117

Polypropylene

d mm	DN Dmm	metric fusion socket		metric IR/butt fusion		Inch size
		EPDM Seals	FPM* Seals	EPDM Seals	FPM* Seals	
16	10	167 343 001	167 343 011	N/A	N/A	3/8
20	15	167 343 002	167 343 012	167 343 062	167 343 072	1/2
25	20	167 343 003	167 343 013	167 343 063	167 343 073	3/4
32	25	167 343 004	167 343 014	167 343 064	167 343 074	1
40	32	167 343 005	167 343 015	167 343 065	167 343 075	1-1/4
50	40	167 343 006	167 343 016	167 343 066	167 343 076	1-1/2
63	50	167 343 007	167 343 017	167 343 067	167 343 077	2

Polypropylene

Inch size	with taper female thread, NPT	
	EPDM seals	FPM* seals
3/8	167 343 161	167 343 171
1/2	167 343 162	167 343 172
3/4	167 343 163	167 343 173
1	167 343 164	167 343 174
1-1/4	167 343 165	167 343 175
1-1/2	167 343 166	167 343 176
2	167 343 167	167 343 177

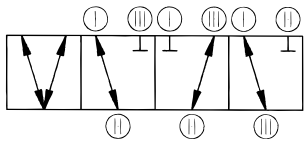
PVDF

d mm	DN mm	metric fusion socket FPM* seals	metric IR/butt fusion FPM* seals	threaded NPT FPM* seals	Inch size
16	10	175 343 011	N/A	175 343 071	3/8
20	15	175 343 012	175 343 052	175 343 072	1/2
25	20	175 343 013	175 343 053	175 343 073	3/4
32	25	175 343 014	175 343 054	175 343 074	1
40	32	175 343 015	175 343 055	175 343 075	1-1/4
50	40	175 343 016	175 343 056	175 343 076	1-1/2
63	50	176 343 017	175 343 057	175 343 077	2

* FPM seals are made of Viton® or equal materials.

Viton® is a registered trademark of DuPont Dow Elastomers.

Operation



Part Numbers for Type 343, Horizontal Model, T-port Ball

PVC

Inch size	with solvent cement socket, ASTM		with taper female thread, NPT	
	EPDM seals	FPM* seals	EPDM seals	FPM* seals
3/8	161 343 281	161 343 291	161 343 301	161 343 311
1/2	161 343 282	161 343 292	161 343 302	161 343 312
3/4	161 343 283	161 343 293	161 343 303	161 343 313
1	161 343 284	161 343 294	161 343 304	161 343 314
1-1/4	161 343 285	161 343 295	161 343 305	161 343 315
1-1/2	161 343 286	161 343 296	161 343 306	161 343 316
2	161 343 287	161 343 297	161 343 307	161 343 317

CPVC

Inch size	with solvent cement socket, ASTM		with taper female thread, NPT	
	EPDM seals	FPM* seals	EPDM seals	FPM* seals
3/8	163 343 281	163 343 291	163 343 301	163 343 311
1/2	163 343 282	163 343 292	163 343 302	163 343 312
3/4	163 343 283	163 343 293	163 343 303	163 343 313
1	163 343 284	163 343 294	163 343 304	163 343 314
1-1/4	163 343 285	163 343 295	163 343 305	163 343 315
1-1/2	163 343 286	163 343 296	163 343 306	163 343 316
2	163 343 287	163 343 297	163 343 307	163 343 317

Polypropylene

d mm	DN mm	metric fusion socket		metric IR/butt fusion		Inch size
		EPDM seals	FPM* seals	EPDM seals	FPM* seals	
16	10	167 343 201	167 343 211	N/A	N/A	3/8
20	15	167 343 202	167 343 212	167 343 262	175 343 272	1/2
25	20	167 343 203	167 343 213	167 343 263	175 343 273	3/4
32	25	167 343 204	167 343 214	167 343 264	175 343 274	1
40	32	167 343 205	167 343 215	167 343 265	175 343 275	1-1/4
50	40	167 343 206	167 343 216	167 343 266	175 343 276	1-1/2
63	50	167 343 207	167 343 217	167 343 267	175 343 277	2

Polypropylene

Inch size	with taper female thread, NPT	
	EPDM seals	FPM* seals
3/8	167 343 361	167 343 371
1/2	167 343 362	167 343 372
3/4	167 343 363	167 343 373
1	167 343 364	167 343 374
1-1/4	167 343 365	167 343 375
1-1/2	167 343 366	167 343 376
2	167 343 367	167 343 377

PVDF

d mm	DN mm	metric fusion socket	metric IR/butt fusion	threaded NPT	Inch size
		FPM* seals	FPM* seals	FPM* seals	
16	10	175 343 111	N/A	175 343 171	3/8
20	15	175 343 112	175 343 152	175 343 172	1/2
25	20	175 343 113	175 343 153	175 343 173	3/4
32	25	175 343 114	175 343 154	175 343 174	1
40	32	175 343 115	175 343 155	175 343 175	1-1/4
50	40	175 343 116	175 343 156	175 343 176	1-1/2
63	50	176 343 117	175 343 157	175 343 177	2

* FPM seals are made of Viton® or equal materials.
 Viton® is a registered trademark of DuPont Dow Elastomers.

Product Specification

**FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers.*

Type 343 True Union 3-Way Ball Valve - PVC

PVC true union 3-way ball valves 3/8" through 2" shall be available in horizontal configuration and have either solvent cement socket or threaded pipe connections. Horizontal configurations shall be supplied with a union connection on the outlet branch, it having its own individual ball seat (seal) enabling the option to be supplied with a "T" ported ball for flow-through operation. Incorporated into its design safety features is a blow-out proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE with backing rings creating self-adjusting seals and constant operating torque. Backing rings and seals shall be EPDM or FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to having sufficient elevation to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connectors are removed from pipe. Material shall meet or exceed the requirements of 12454-B according to the classifications and requirements of ASTM D-1784. Socket end connection dimensions shall conform to ASTM D-2467. Threaded pipe connections shall be in accordance with ASTM D-2464 which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. Optional flanged version shall be in accordance with ANSI B16.5, class 150 flanges. The valve, type 343, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 343 True Union 3-Way Ball Valve - CPVC

CPVC true union ball valves 1/2" through 2" shall be available in horizontal configuration and have either solvent cement socket or threaded pipe connections. Horizontal configurations shall be supplied with a union connection on the outlet branch, it having its own individual ball seat (seal) enabling the option to be supplied with a "T" ported ball for flow-through operation. Incorporated into its design safety features is a blow-out proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE with backing rings creating self-adjusting seals and constant operating torque. Backing rings and seals shall be EPDM or FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to having sufficient elevation to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connectors are removed from pipe. Material shall meet or exceed the requirements of 23447-B according to the classifications and requirements of ASTM D-1784. Socket end connection dimensions shall conform to ASTM F439 (formerly D-2467). Threaded end connections shall conform to the dimensions as listed in ASTM F437 (formerly D-2464) which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. The valve, type 343, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Product Specification

**FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers.*

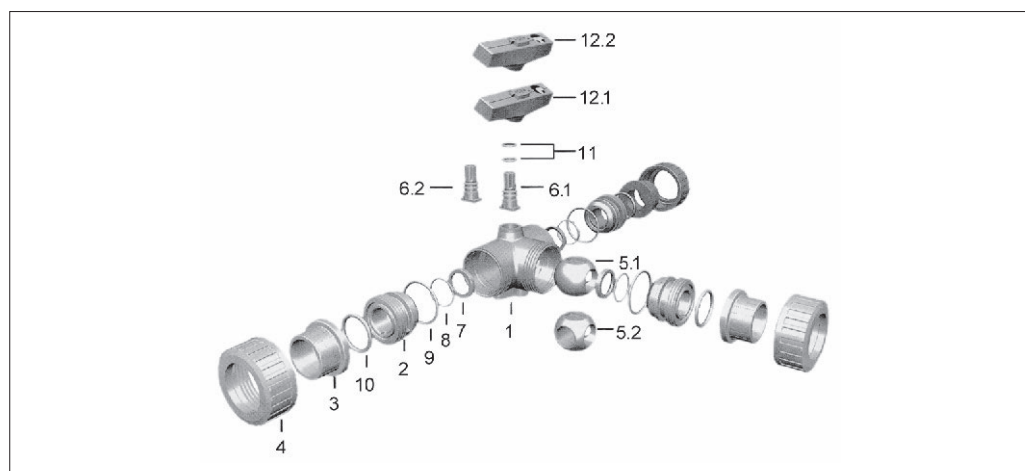
Type 343 True Union 3-way Ball Valve - PVDF

PVDF true union 3-way ball valves 1/2" through 2" (20 mm - 63 mm) shall be available in horizontal configuration and have either metric fusion socket or threaded type pipe connections. Horizontal configurations shall be supplied with a union connection on the outlet branch, it having its own individual ball seat (seal) enabling the option to be supplied with a "T" ported ball for flow-through operation. Incorporated into its design safety features is a blow-out-proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE with backing rings creating self-adjusting, constant operating torque sealing characteristics. Backing rings and seals shall be FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to providing sufficient height to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connector is installed on the pipe. Material shall meet or exceed the requirements of ASTM D 3222 as pertains to a natural, unpigmented, virgin, noncompounded polyvinylidene fluoride compound having a minimum tensile strength of 7800 psi/538 bar at 73°F/20°C when tested in accordance with ASTM D 638 and shall have a flexural strength of 10,700 psi/738 bar at 73°F/20°C when tested according to ASTM D 790. End connections shall be as outlined in ASTM D 2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. Threaded end connections shall be in accordance with ASTM D 2464 which references ANSI B 1.20 (was B 2.1) for tapered pipe threads. The valve, Type 343, shall carry a pressure rating of 150 psi/10 bar at 68°F/20°C as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 343 True Union 3-way Ball Valve – Polypropylene

Polypropylene true union 3-way ball valves 1/2" through 2" (20 mm – 63 mm) shall be available in horizontal configuration and have either metric fusion socket or threaded type pipe connections. Horizontal configurations shall be supplied with a union connection on the outlet branch, it having its own individual ball seat (seal) enabling the option to be supplied with a "T" ported ball for flow-through operation. Incorporated into its design safety features is a blow-out-proof stem and the ability to hold pressure when the downstream union nut is removed. Seats shall be PTFE (Teflon®) with backing rings creating self-adjusting, constant operating torque sealing characteristics. Backing rings and seals shall be EPDM or FPM*. The handle shall include in its design a key for removal of the seat carrier in addition to providing sufficient height to permit hand clearance. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connector is installed on the pipe. Material shall meet or exceed the requirements of ASTM D 4101 as pertains to a type I homopolymer compound having a minimum tensile strength of 4350 psi/300 bar at 73°F/20°C when tested in accordance with ASTM D 638 and shall have a melt point which initiates at 316°F/158°C. The melt flow index (at 374°F/190°C/50 N) shall be 0.4 –0.8 grams per 10 minutes in accordance with ASTM D 1238. End connections shall be as outlined in ASTM D 2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. Threaded end connections shall be in accordance with ASTM D 2464 which references ANSI B 1.20 (was B 2.1) for tapered pipe threads. Optional flanged version shall be in accordance with ANSI B 16.5 class 150 flanges. The valve, Type 346, shall carry a pressure rating of 150 psi/10 bar at 68°F/20°C as supplied by George Fischer, Inc., Tustin, CA 92780.

Component Parts for Type 343 PVC True Union Ball Valve

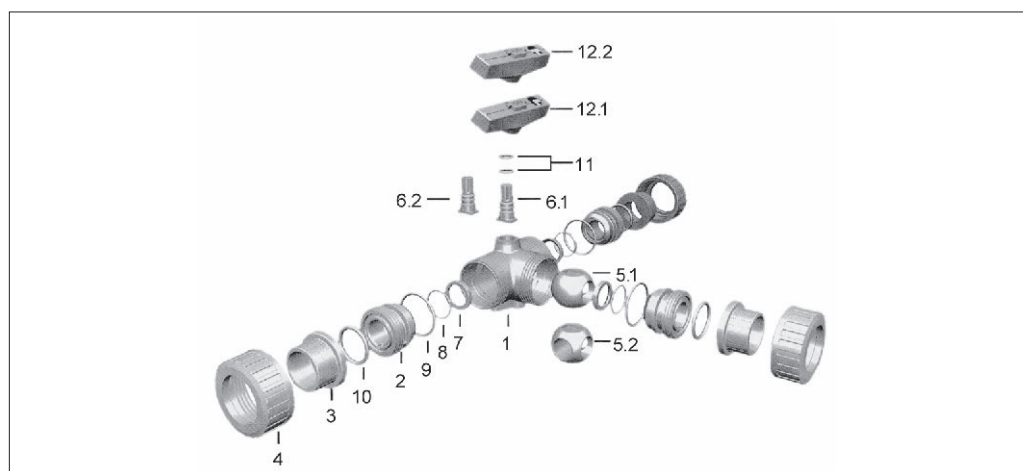


No.	Part/Material	Qty	3/8" OD d 16 mm ID DN 10 mm	1/2" d 20 mm DN 15 mm	3/4" d 25 mm DN 20 mm	1" d 32 mm DN 25 mm	1-1/4" d 40 mm DN 32 mm	1-1/2" d 50 mm DN 40 mm	2" d 63 mm DN 50 mm
8	Seal sets: Backing seals EPDM	3	161 484 941	161 484 941	161 484 942	161 484 943	161 484 944	161 484 945	161 484 946
9	Body seal EPDM	3							
10	Face seal EPDM	3							
11	Stem seals EPDM	2							
8	Seal sets: Backing seals FPM	3	161 486 951	161 486 951	161 486 952	161 486 953	161 486 954	161 486 955	161 486 956
9	Body seal FPM	3							
10	Face seal FPM	3							
11	Stem seals FPM	2							
5.1	Ball sets, L-port: L-port ball PVC	1	161 486 015	161 486 015	161 486 016	161 486 017	161 486 018	161 486 019	161 486 020
7	Ball seals PTFE	3							
6.1	Stem PVC	1							
11	Stem seals EPDM	3							
12.1	Handle PVC	1							
5.1	Ball sets, L-port: L-port ball PVC	1	161 486 027	161 486 027	161 486 028	161 486 029	161 486 030	161 486 031	161 486 032
7	Ball seals PTFE	3							
6.1	Stem PVC	1							
11	Stem seals FPM	3							
12.1	Handle PVC	1							
5.2	Ball sets, T-port: T-port ball PVC	1	161 486 039	161 486 039	161 486 040	161 486 041	161 486 042	161 486 043	161 486 044
7	Ball seals PTFE	3							
6.2	Stem PVC	1							
11	Stem seals EPDM	2							
12.2	Handle PVC	1							
5.2	Ball sets, T-port: T-port ball PVC	1	161 486 051	161 486 051	161 486 052	161 486 053	161 486 054	161 486 055	161 486 056
7	Ball seals PTFE	3							
6.2	Stem PVC	1							
11	Stem seals FPM	2							
12.2	Handle PVC	1							

Component Parts for Type 343 PVC True Union Ball Valve (continued)

No.	Part/Material	Qty	3/8" OD d 16 mm ID DN 10 mm	1/2" d 20 mm DN 15 mm	3/4" d 25 mm DN 20 mm	1" d 32 mm DN 25 mm	1-1/4" d 40 mm DN 32 mm	1-1/2" d 50 mm DN 40 mm	2" d 63 mm DN 50 mm
1	Central parts, L-port: Body PVC	1	161 490 439	161 490 439	161 490 440	161 490 441	161 490 442	161 490 443	161 490 444
5.1	L-port ball PVC	1							
7	Ball seals PTFE	3							
8	Backing seals EPDM	3							
9	Body seal EPDM	3							
2	Union bush PVC	3							
6.1	Stem PVC	1							
11	Stem seals EPDM	2							
12.1	Handle PVC	1							
1	Central parts, L-port: Body PVC	1	161 490 450	161 490 450	161 490 451	161 490 452	161 490 453	161 490 454	161 490 455
5.1	L-port ball PVC	1							
7	Ball seals PTFE	3							
8	Backing seals FPM	3							
9	Body seal FPM	3							
2	Union bush PVC	3							
6.1	Stem PVC	1							
11	Stem seals FPM	2							
12.1	Handle PVC	1							
1	Central parts, T-port: Body PVC	1	161 490 461	161 490 461	161 490 462	161 490 463	161 490 464	161 490 465	161 490 466
5.2	T-port ball PVC	1							
7	Ball seals PTFE	3							
8	Backing seals EPDM	3							
9	Body seals EPDM	3							
2	Union bush PVC	3							
6.2	Stem PVC	1							
11	Stem seals EPDM	2							
12.2	Handle PVC	1							
1	Central parts, T-port: Body PVC	1	161 490 472	161 490 472	161 490 473	161 490 474	161 490 475	161 490 476	161 490 477
5.2	T-port ball PVC	1							
7	Ball seals PTFE	3							
8	Backing seals FPM	3							
9	Body seal FPM	3							
2	Union bush PVC	3							
6.2	Stem PVC	1							
11	Stem seals FPM	2							
12.2	Handle PVC	1							
3	Valve ends with socket, PVC ASTM	1	161 482 377	161 482 378	161 482 379	161 482 380	161 482 381	161 482 382	161 482 383
3	Valve ends, PVC NPT	1	161 482 389	161 482 390	161 482 391	161 482 392	161 482 393	161 482 394	161 482 395
3	Valve ends with spigot, PVC ISO/DIN	1	161 482 345	161 482 346	161 482 347	161 482 348	161 482 349	161 482 350	161 482 351
4	Union nuts, PVC	1	161 340 617	161 340 617	161 340 618	161 340 619	161 340 620	161 340 621	161 480 522

Component Parts for Type 343 PP True Union Ball Valve



No.	Part/Material	Qty	3/8" OD d 16 mm ID DN 10 mm	1/2" d 20 mm DN 15 mm	3/4" d 25 mm DN 20 mm	1" d 32 mm DN 25 mm	1-1/4" d 40 mm DN 32 mm	1-1/2" d 50 mm DN 40 mm	2" d 63 mm DN 50 mm
8	Seal sets: Backing seals EPDM	3	161 484 941	161 484 941	161 484 942	161 484 943	161 484 944	161 484 945	161 484 946
9	Body seal EPDM	3							
10	Face seal EPDM	3							
11	Stem seals EPDM	2							
8	Seal sets: Backing seals FPM	3	161 484 951	161 484 951	161 484 952	161 484 953	161 484 954	161 484 955	161 484 956
9	Body seal FPM	3							
10	Face seal FPM	3							
11	Stem seals FPM	2							
5.1	Ball sets, L-port: L-port ball PP	1	167 482 190	167 482 190	167 482 191	167 482 192	167 482 193	167 482 194	167 482 195
7	Ball seals PTFE	3							
6.1	Stem PP	1							
11	Stem seals EPDM	2							
12.1	Handle ASA	1							
5.1	Ball sets, L-port: L-port ball PP	1	167 482 202	167 482 202	167 482 203	167 482 204	167 482 205	167 482 206	167 482 207
7	Ball seals PTFE	3							
6.1	Stem PP	1							
11	Stem seals FPM	2							
12.1	Handle ASA	1							
5.2	Ball sets, T-port: T-port ball PP	1	167 482 214	167 482 214	167 482 215	167 482 216	167 482 217	167 482 218	167 482 219
7	Ball seals PTFE	3							
6.2	Stem PP	1							
11	Stem seals EPDM	2							
12.2	Handle ASA	1							
5.2	Ball sets, T-port: T-port ball PP	1	167 482 226	167 482 226	167 482 227	167 482 228	167 482 229	167 482 230	167 482 231
7	Ball seals PTFE	3							
6	Stem PP	1							
11	Stem seals FPM	2							
12.2	Handle ASA	1							

Component Parts for Type 343 PP True Union Ball Valve (continued)

No.	Part/Material	Qty	3/8" OD d 16 mm ID DN 10 mm	1/2" d 20 mm DN 15 mm	3/4" d 25 mm DN 20 mm	1" d 32 mm DN 25 mm	1-1/4" d 40 mm DN 32 mm	1-1/2" d 50 mm DN 40 mm	2" d 63 mm DN 50 mm
1	Central parts, L-port: Body PP	1	167 482 137	167 482 137	167 482 138	167 482 139	167 482 140	167 482 141	167 482 142
5.1	L-port ball PP	1							
7	Ball seals PTFE	3							
8	Backing seals EPDM	3							
9	Body seal EPDM	3							
2	Union bush PP	3							
6	Stem PP	1							
11	Stem seals EPDM	2							
12.1	Handle ASA	1							
1	Central parts, L-port: Body PP	1	167 482 148	167 482 148	167 482 149	167 482 150	167 482 151	167 482 152	167 482 153
5.1	L-port ball PP	1							
7	Ball seals PTFE	3							
8	Backing seals FPM	3							
9	Body seal FPM	3							
2	Union bush PP	3							
6	Stem PP	1							
11	Stem seals FPM	2							
12.1	Handle ASA	1							
1	Central parts, T-port: Body PP	1	167 482 159	167 482 159	167 482 160	167 482 161	167 482 162	167 482 163	167 482 164
5.2	T-port ball PP	1							
7	Ball seals PTFE	3							
8	Backing seals EPDM	3							
9	Body seals EPDM	3							
2	Union bush PP	3							
6	Stem PP	1							
11	Stem seals EPDM	2							
12.2	Handle ASA	1							
1	Central parts, T-port: Body PP	1	167 482 170	167 482 170	167 482 171	167 482 172	167 482 173	167 482 174	167 482 175
5.2	T-port ball PP	1							
7	Ball seals PTFE	3							
8	Backing seals FPM	3							
9	Body seal FPM	3							
2	Union bush PP	3							
6	Stem PP	1							
11	Stem seals FPM	2							
12.2	Handle ASA	1							
3	Valve ends with socket, PP	1	167 480 159	167 480 160	167 480 161	167 480 162	167 480 163	167 480 164	167 480 165
3	Valve ends with spigots, PP	1	167 480 527	167 480 528	167 480 529	167 480 530	167 480 531	167 480 532	167 480 533
3	Valve ends with parallel female thread Rp, PP	1	167 480 166	167 480 167	167 480 168	167 480 169	167 480 170	167 480 171	167 480 172
3	Valve ends with tapered female thread NPT, PP	1	167 480 452	167 480 453	167 480 454	167 480 455	167 480 456	167 480 457	167 480 458
3	Butt fusion spigots, PP SDR11	1	—	167 480 546	167 480 547	167 480 548	167 480 549	167 480 550	167 480 551
4	Union nuts, PP	1	167 480 786	167 480 786	167 480 787	167 480 788	167 480 789	167 480 790	167 480 791
12	Handles, ASA	1	160 480 115	160 480 115	160 480 116	160 480 117	160 480 118	160 480 119	160 480 120

George Fischer Metering Ball Valve Type 323



George Fischer plastic valves have the following outstanding features:

- corrosion resistance
- ideal flow characteristics
- long working life, maintenance-free
- light weight
- EPDM or FPM Seals

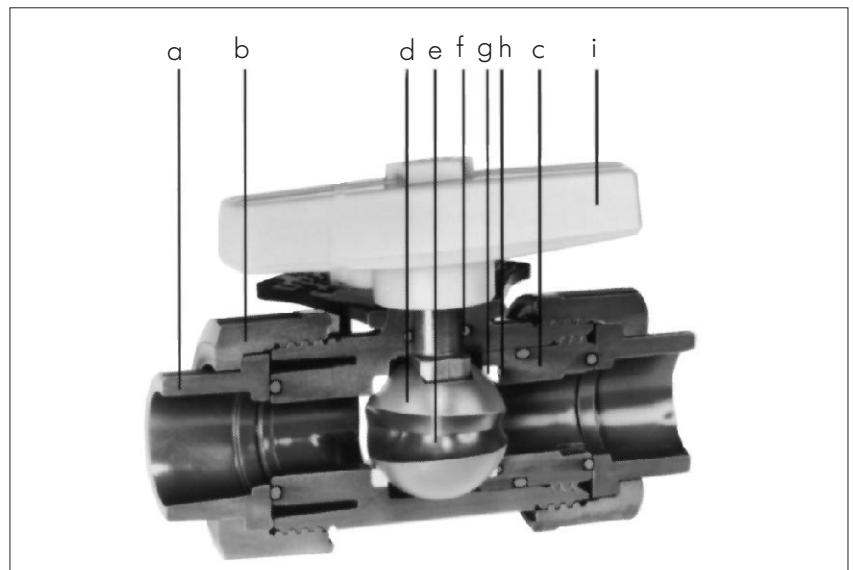
General

The metering ball valve Type 323 is equipped with union ends and has an integrated scale to indicate degrees of opening (0°–180°) which can be related to a flow rate at a known pressure (see

charts in "Technical Data for Ball Valves". The direction of flow is indicated. Available in PVC and polypropylene (PP) in sizes 3/8" (16 mm) and 1/2" (20 mm).

Technical Features

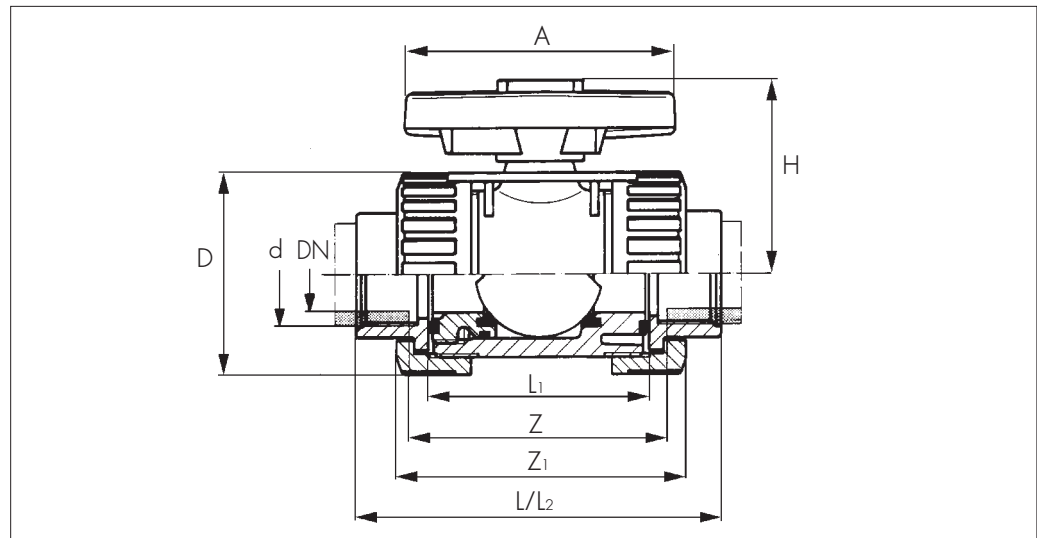
- a) End connections:
 - solvent cement sockets (PVC) (short overall length)
 - NPT threaded sockets (PVC)
 - heat fusion sockets (PP)
- b) Union ends facilitate installation or removal of valve body, allowing for easy inspection and maintenance
- c) Threaded end bushing and solid end (see cutaway) prevent ball from being blown out by line fluid
- d) Floating ball principle provides leak-proof closure
- e) Tapered groove for accurate flow metering
- f) Double stem sealing for maintenance-free operation
- g) PTFE ball seal is extremely abrasion resistant, and has good anti-friction properties, good chemical resistance and long service life
- h) Backing O-ring automatically compensates for valve expansion and ball seal wear, resulting in maintenance-free operation with smooth ball movement



- i) The double lever handle with its two pointers indicates the degree of opening (short pointer 0°–90°, long pointer 90°–180°). The molded lugs on the handle allow the valves to be dismantled and assembled without the use of special tools (the threaded bushing is a left-hand thread)

Dimensions for Type 323 Metering Ball Valve

- L** Overall length of threaded and solvent cement socket valve in PVC
- L₂** Overall length of metric fusion socket valve in PP
- Z*** Solvent cement socket valve in PVC (laying length)
- Z₁**** Threaded valve in PVC (laying length is herein defined as the dimension between the ends of pipe when threaded into valve to a depth equal to the nominal "Handtight" plus 1/2 turn)
- Z₂*** Metric fusion socket valve in PP (laying length)



Inch size	L (PVC) inch sock	thrd	L ₂ (PP) inch	L ₁ (PVC) inch	L ₁ (PP) inch	Z* inch	Z ₁ ** inch	Z ₂ * inch	D inch	H (PVC) inch	H (PP) inch	A inch	Weight PVC lbs.	PP lbs.	OD d mm	ID DN mm
3/8	4.45	4.14	3.86	2.48	2.44	2.91	3.61	2.68	1.81	1.97	1.93	3.07	.33	.22	16	10
1/2	4.49	4.17	3.98	2.48	2.44	2.64	3.46	2.72	1.81	1.97	1.93	3.07	.33	.22	20	15

Part Numbers

Inch size	PVC solvent cement socket		PVC NPT thread		PP metric fusion socket		OD d mm	ID DN mm
	EPDM	FPM*	EPDM	FPM*	EPDM	FPM*		
3/8	161 323 521	161 323 531	161 323 541	161 323 551	167 323 401	167 323 411	16	10
1/2	161 323 522	161 323 532	161 323 542	161 323 552	167 323 402	167 323 412	20	15

*FPM seals are made of Viton® or equal materials.
Viton® is a registered trademark of DuPont Dow Elastomers.

Installation Suggestions

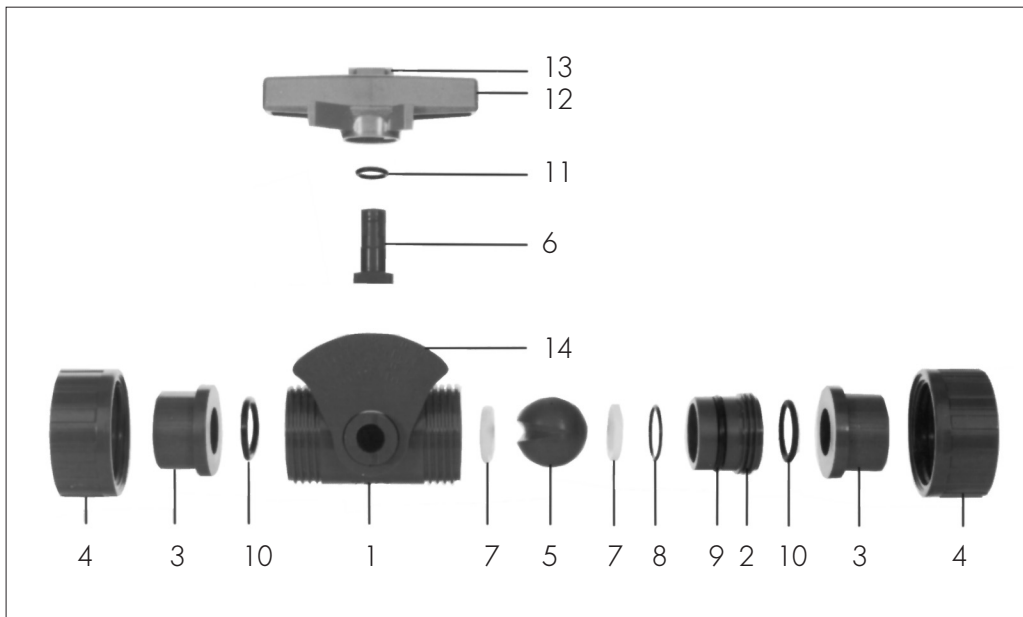
Valves should be mounted as direct as possible, i.e. they should be formed as fixed points. The actuating force is thus transmitted directly and not through the pipeline. Metering ball valve and pipeline must be perfectly aligned to keep the valve free of any overlapping strain. Loosen the valve nuts and slide them onto the two pipe ends. The two coupling components are either solvent cemented, heat fused, or threaded into the pipeline depending on type. The metering ball valve is then inserted between the two coupling parts (**note flow direction**) and tightened by hand with the two valve nuts.

Removing the Valve

Please note: Do not remove while under pressure. Drain pipeline first. Undo valve nuts and remove ball valve radially from line. Keep an eye on the O-rings so as not to lose them.



Type 323 Metering Ball Valve



Assembly Instructions

Insert the PTFE ball seal (7) in the recess provided inside the valve body (1).

Insert the greased* stem seal (11) in the valve body (1).

Feed the stem (6) into the body (1) from the inside, and press against the stop. Caution: the valve opening indicator groove must be on the same side as the scale (14).

Push the ball (5) into the body (1) with the groove towards the fixed stop.

Place the greased* body seal (9) on to the threaded seal carrier (2). Press the backing seal (8) and PTFE ball seal (7) into the threaded seal carrier.

Screw the end connector (2) into the body (1).

Caution: left-handed thread.

The handle (12) molded lugs (13) serves as a key for this purpose. Tighten until the ball can still be rotated.

Insert the end connector seals (10) into the grooves on the threaded seal carrier (2) and valve body (1). Tighten flanged bushings (3) with union nuts (4) on both sides of the casing (1). Place the handle (12) on the valve stem (6).

* For EPDM O-rings use only silicon or polyglycol grease. Never use vaseline or mineral oils.

Dismantling Instructions

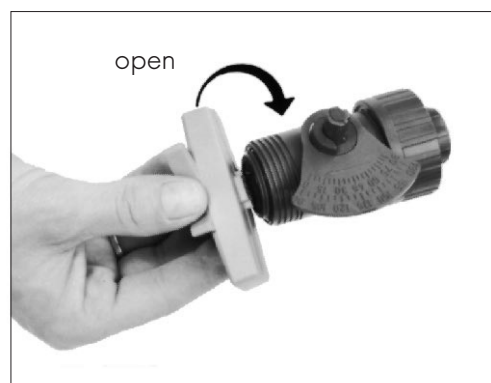
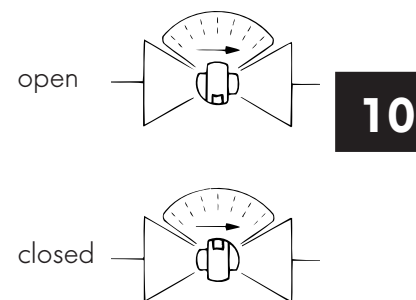
Caution: Make sure the valve is not under pressure before dismantling, and drain the pipeline.

Release the union nuts (4) and remove the ball valve sideways from the pipeline. Remove the handle (12) from the valve stem (6). Use the molded lugs (13) on the handle for unscrewing the threaded seal carrier (2).

Caution: left-handed thread.

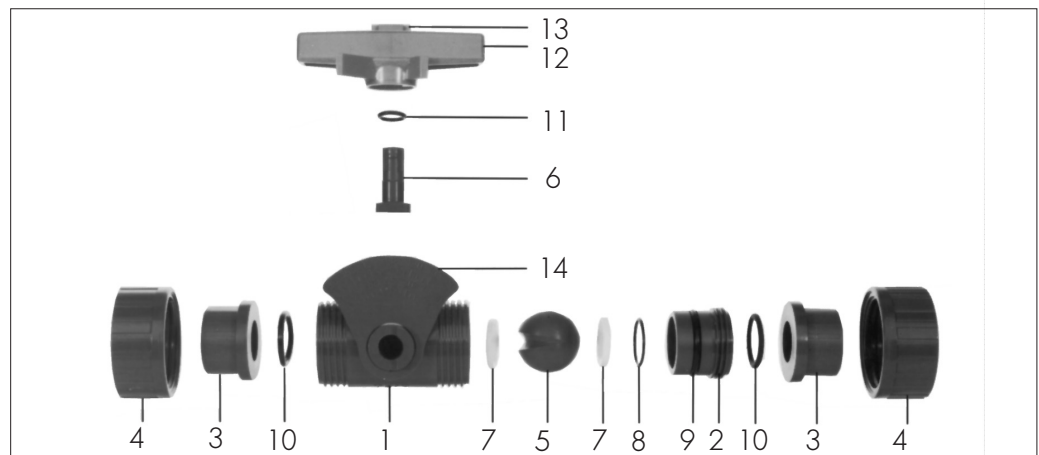
Turn the ball (5) into the closed position. It can now be removed, using a plastic or wooden rod to avoid damage. Press the stem (6) out of the body (1).

Stem Position



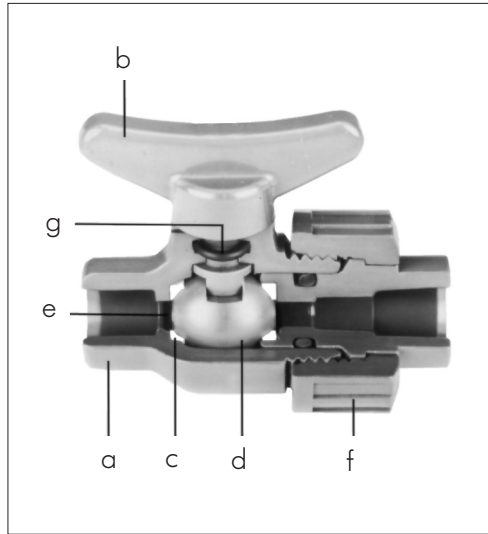
Do not dismantle while under pressure.

Component Parts for Type 323 Metering Ball Valve



Nr./Part	Mat.	Qty.	3/8" OD d 16mm/ID DN 10 mm	1/2" OD d 20 mm/ID DN 15 mm
1 Body with scale	PVC	1	161 482 619	161 482 620
	PP	1	167 480 771	167 480 772
2 Seat carrier	PVC	1	161 482 339	161 482 339
	PP	1	167 480 519	167 480 519
3 End Connector	PVC	1	161 482 377	161 482 378
solvent cement socket	PVC	1	161 482 389	161 482 390
NPT thread	PP	1	167 480 159	167 480 160
fusion socket				
4 Valve nut	PVC	1	161 340 617	161 340 617
	PP	1	167 480 786	167 480 786
Ball set consisting of:			161 482 986	161 482 987
5 Ball	PVC	1		
7 Ball seat	PTFE	2		
6 Stem	PVC	1		
11 Stem seal	EPDM	1		
12 Handle	PVC	1		
Ball set consisting of:			161 482 989	161 482 990
5 Ball	PVC	1		
7 Ball seat	PTFE	2		
6 Stem	PVC	1		
11 Stem seal	FPM	1		
12 Handle	PVC	1		
Ball set consisting of:			167 480 904	167 480 905
5 Ball	PP	1		
7 Ball seat	PTFE	2		
6 Stem	PP	1		
11 Stem seal	FPM	1		
12 Handle	PP	1		
Seal set consisting of:			161 482 883	161 482 883
8 Backing seal	EPDM	1		
9 Body seal	EPDM	1		
10 O-Ring	EPDM	2		
11 Stem seal	EPDM	1		
Seal set consisting of:			161 482 892	161 482 892
8 Backing seal	FPM	1		
9 Body seal	FPM	1		
10 O-Ring	FPM	2		
11 Stem seal	FPM	1		
10 O-Ring	EPDM	2	748 410 042	748 410 042
	FPM	2	749 410 042	749 410 042

George Fischer Laboratory Ball Cock Type 324



George Fischer plastic valves have the following outstanding features:

- corrosion resistance
- ideal flow characteristics
- long working life, maintenance-free
- light weight

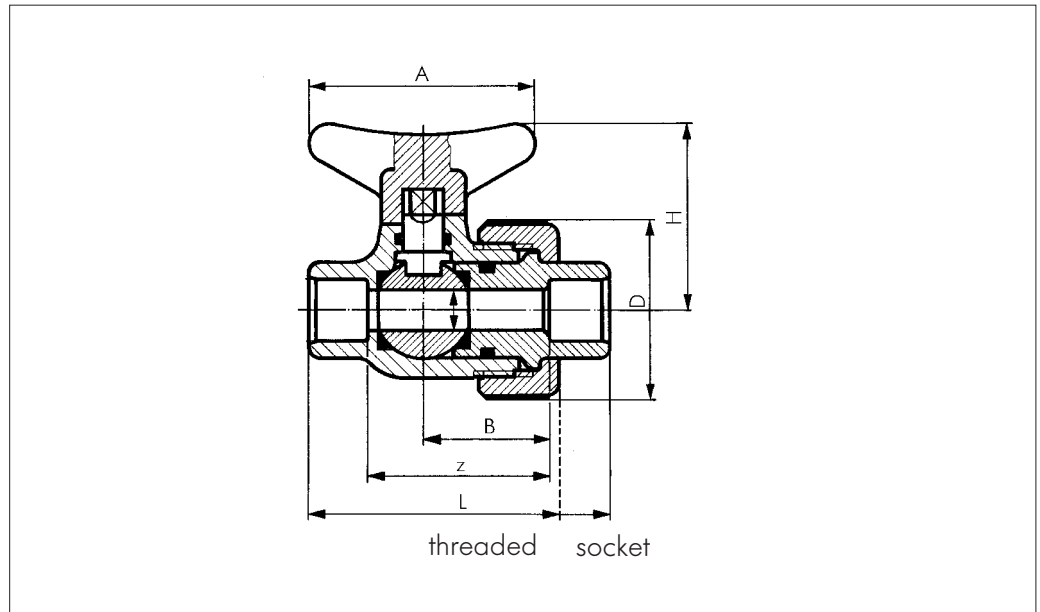
General

The ball cock Type 324 is a small ball valve for laboratory use. It also finds application for isolation of various gauges attached to large piping systems. It is available in PVC and can be dismantled from one side. The flow direction has no influence on the positioning of the valve.

Technical Features

- a) End connections:
 - female threads, NPT
 - solvent cement sockets
- b) The double lever handle is always parallel to the flow direction, thus allowing a quick optical check of the valve's position.
- c) Special features of the PTFE ball seal are good resistance to wear, low frictional properties, good chemical resistance and a long working life.
- d) The "floating ball" design guarantees leakproof closure.
- e) The flow aperture has a fully circular cross-section.
- f) The valve nut enables the valve to be dismantled at one side, so that the components can be easily exchanged.
- g) The design of the stem seal permits maintenance free operation.

Dimensions for Type 324 Laboratory Ball Cock



Inch size	A inch	C inch	D inch	H inch	L inch	z inch	B inch	Weight lbs.
1/4 T	1.77	.32	1.34	1.50	1.96	1.02	.59	.088
1/4 S	1.77	.32	1.34	1.50	2.36	1.42	.98	.099

Part Numbers

Inch size	socket x socket O-ring: EPDM	thread x thread O-ring: EPDM
1/4	161 324 200	161 324 454

Assembly Instructions for Type 324 Laboratory Ball Cock

Insert the fully lubricated* stem seal (8) into the valve body (1).

Feed the stem (6) into the body (1) from the inside, and press against the stop. Push the ball seal (7) into the body.

Push the ball (4) on to the stem guide inside the body (1).

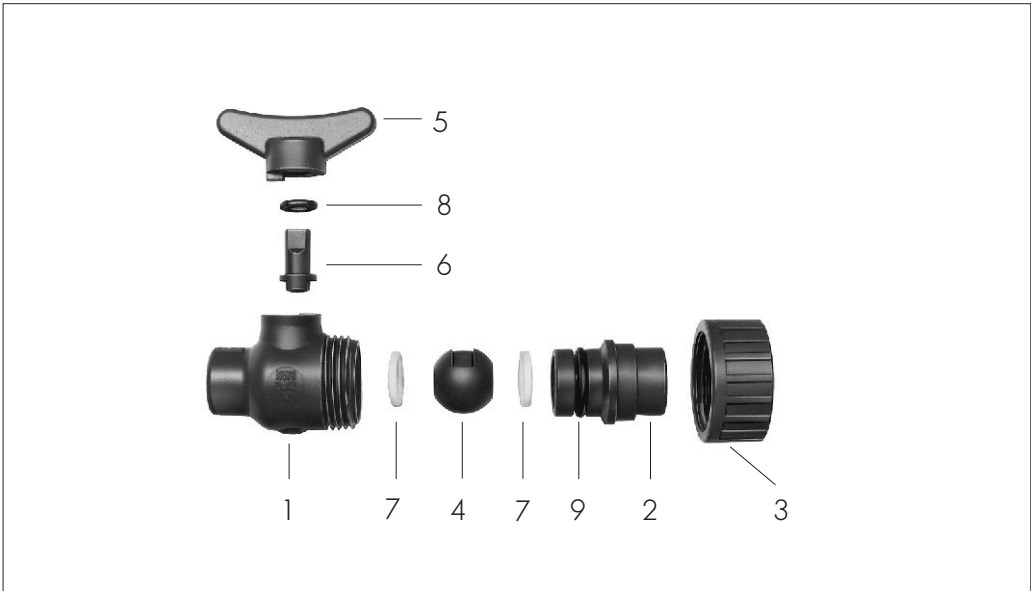
Slide the body seal (9) on to the valve end (2) and press the second ball seal (7) inside the valve end.

Push the pre-assembled valve end (2) into the body (1).

Screw the valve nut (3) on to the valve body (1).

Mount the handle (5) on the stem (6) and fasten with the screw (10).

**) Use only grease with silicon or polyclycol base in conjunction with EPDM O-rings. Vaseline or mineral oils in particular are not to be used.*

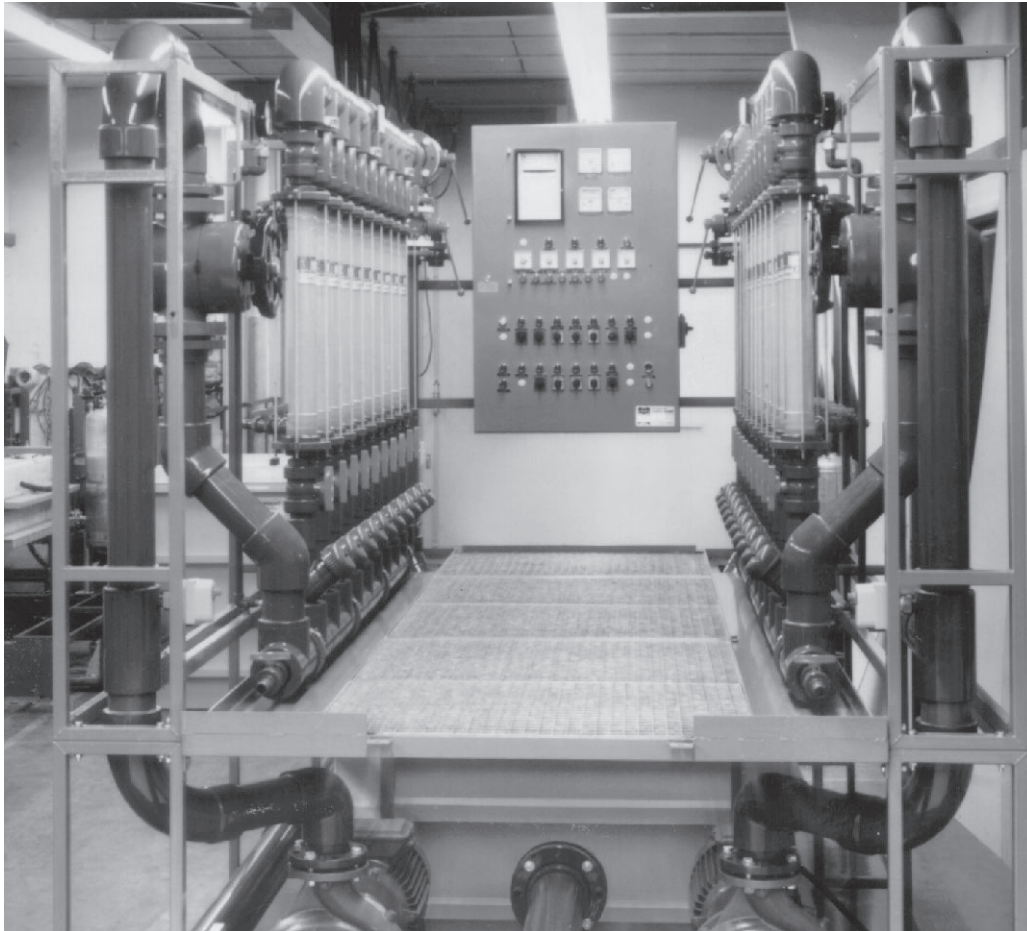


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Component Parts

Nr./Part	Mat.	Qty.	1/4"/OD d 12 mm/ID DN 8 mm
3 Valve nut	PVC	1	161 322 203
Ball set consisting of:			161 482 978
4 Ball	PVC	1	
7 Ball seat	PTFE	2	
6 Stem	PVC	1	
8 Stem seal	EPDM	1	
Seal set consisting of:			161 482 982
8 Stem seal	EPDM	1	
9 Body seal	EPDM	1	

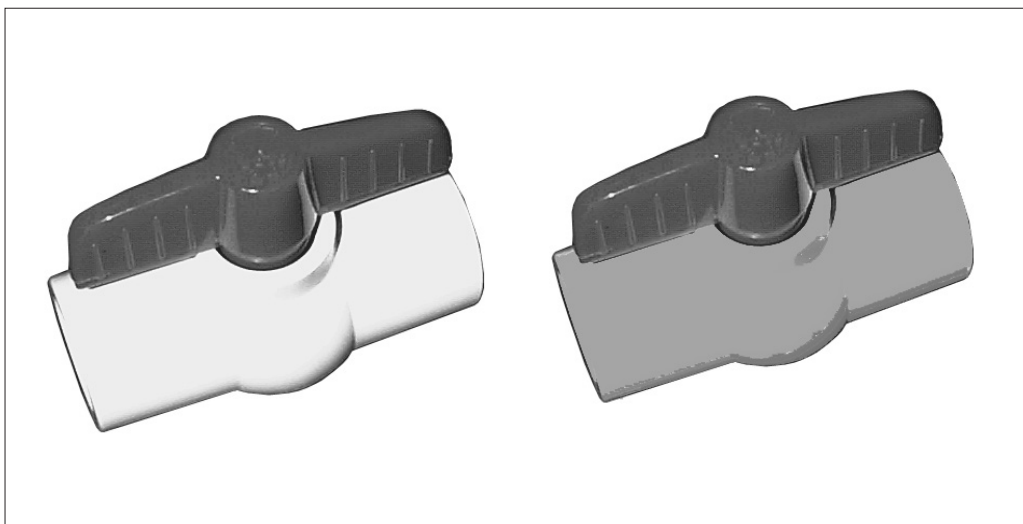
Application:
Neutralization of Industrial Waste Water



Ultrafiltration of oily waste water in the metal processing industry.

George Fischer products used: butterfly valves, line strainers, diaphragm valves, ball valves, fittings.

George Fischer Ball Valve Type 350 "MIP"



George Fischer plastic valves have the following outstanding features:

- Corrosion resistant
- Good flow characteristics
- Long working life, maintenance-free
- Light weight
- High quality
- High performance, low cost
- 150 psi pressure rating at 73° F.

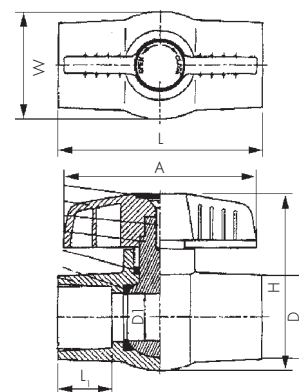
General

Manual, 2-way economy ball valves in gray or white PVC with either solvent cement socket or threaded end connections.

"MIP" (molded-in-place) construction. Available in sizes 1/2" - 2" with PTFE seats and EPDM seals.

Dimensions

Inch size	A inch	D inch	D ₁ inch	H inch	L inch	L ₁ inch	W inch	Weight lbs.
1/2	2.75	1.19	0.56	2.44	3.25	0.88	1.50	0.17
3/4	3.75	1.50	0.75	3.06	3.75	1.00	1.94	0.31
1	3.94	1.75	1.00	3.63	4.19	1.13	2.25	0.48
1-1/4	3.94	2.13	1.19	3.88	4.50	1.25	2.50	0.59
1-1/2	4.19	2.44	1.44	4.50	5.13	1.38	2.94	0.92
2	5.31	3.00	1.81	5.31	5.75	1.50	3.63	1.53



10

Part Numbers

White PVC MIP Ball Valve

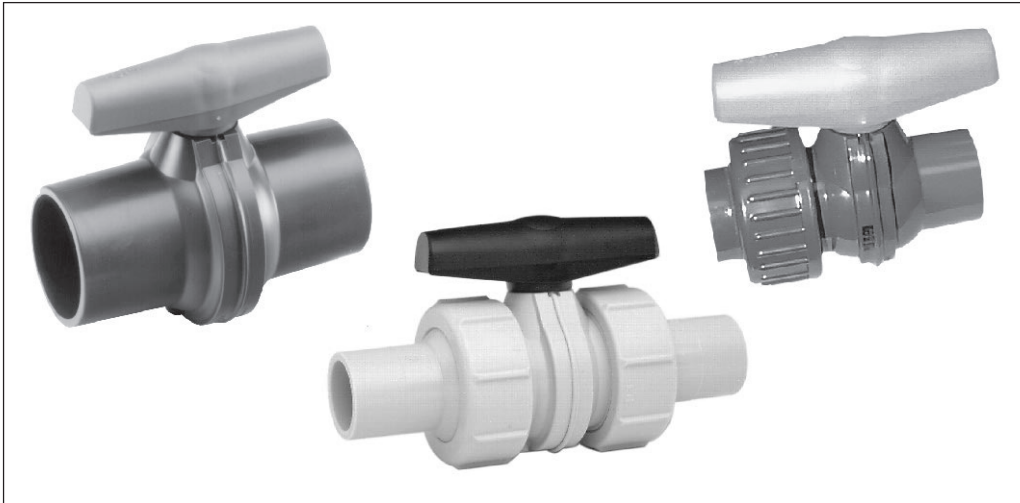
Inch Size	Socket EPDM	Threaded NPT EPDM
1/2	161 350 702	161 350 712
3/4	161 350 703	161 350 713
1	161 350 704	161 350 714
1-1/4	161 350 705	161 350 715
1-1/2	161 350 706	161 350 716
2	161 350 707	161 350 717

Grey PVC MIP Ball Valve

Inch Size	Socket EPDM	Threaded NPT EPDM
1/2	161 350 722	161 350 732
3/4	161 350 723	161 350 733
1	161 350 724	161 350 734
1-1/4	161 350 725	161 350 735
1-1/2	161 350 726	161 350 736
2	161 350 727	161 350 737



George Fischer Type 353, 354, 355 COLORO Ball Valves



The George Fischer Type 353, 354, and 355 plastic ball valves feature:

- monobloc structure provides high safety level: user cannot disassemble or adjust
- compact and space saving
- low torque
- EPDM or FPM Seals (except Type 354)
- low cost

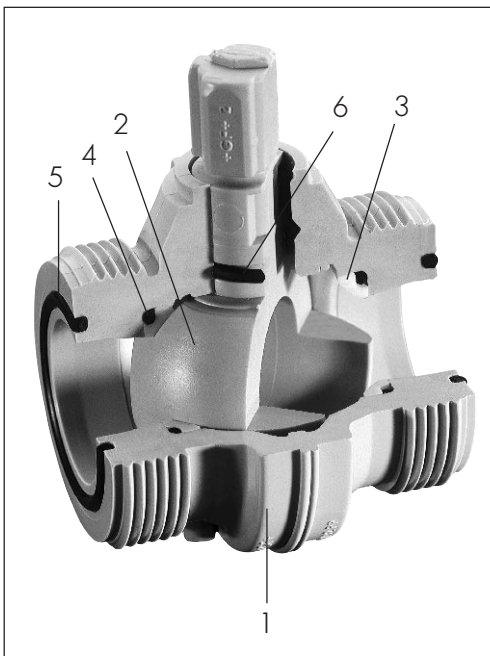
General

The George Fischer Type 353, 354, and 355 COLORO ball valves are ideal for most industrial applications. The high-tech design, with monobloc structure provides a high level of safety – user cannot disassemble or adjust. A two piece body, permanently fused around an integral ball and stem eliminates stem blowout and ball position backlash. Automated manufacturing with integrated quality control offers uniform performance and low torque. Rugged PVC construction. Piping stress transmitted through integral body, not end connectors or ball.

Technical Features

- Sizes 1/2" to 2", NPT threaded or solvent cement socket
- Pressure rating: 232 psi socket, 150 psi threaded
- Valve position indication visible, with or without lever handle
- Ideal sealing materials: ball seat from PTFE; stem, and seat backing O-rings from EPDM or FPM
- Ball seat backing O-rings compensate for seal wear; no readjustment necessary; uniform, low torque.
- Short overall length
- Short laying length
- Low profile
- Few component parts

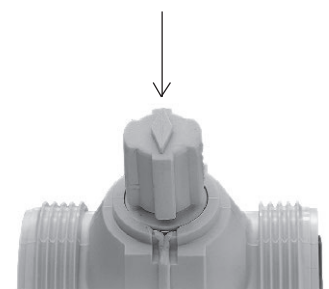
1. Compact body
2. Ball and shaft in one piece
3. Ball seal
4. Backing seal
5. Union end seal
6. Shaft seal



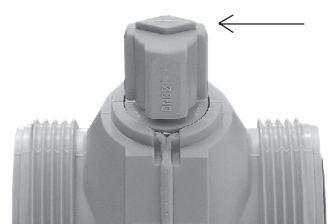
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Safety

The ball position is also visible on the shaft when the handle is withdrawn.

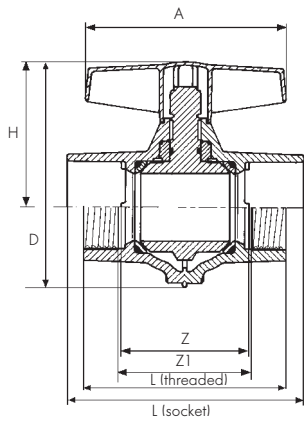


Closed position



Open position

Dimensions and Part Numbers for Type 353 Compact Ball Valve



Z = socket laying length
Z1 = threaded laying length



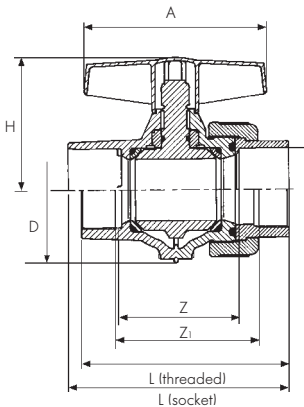
PVC with ASTM solvent cement socket 232 psi/16 bar

Inch size	Part Numbers EPDM	FPM	wt. lbs.	A inch	D inch	H inch	L inch	Z inch
1/2	161 353 342	161 353 352	0.16	3.07	2.97	2.01	3.04	1.29
3/4	161 353 343	161 353 353	0.21	3.62	3.35	2.28	3.51	1.51
1	161 353 344	161 353 354	0.30	3.62	3.72	2.46	4.13	1.87
1 1/4	161 353 345	161 353 355	0.49	4.57	4.55	3.01	4.69	2.19
1 1/2	161 353 346	161 353 356	0.68	4.57	5.04	3.27	5.35	2.60
2	161 353 347	161 353 357	1.43	5.51	6.20	4.00	6.30	3.27

PVC with NPT threads 150 psi/10 bar

Inch size	Part Numbers EPDM	FPM	wt. lbs.	A inch	D inch	H inch	L inch	Z inch
1/2	161 353 362	161 353 372	0.16	3.07	2.97	2.01	2.76	1.41
3/4	161 353 363	161 353 373	0.21	3.62	3.35	2.28	3.06	1.68
1	161 353 364	161 353 374	0.30	3.62	3.72	2.46	3.73	2.03
1 1/4	161 353 365	161 353 375	0.49	4.57	4.55	3.01	4.28	2.50
1 1/2	161 353 366	161 353 376	0.68	4.57	5.04	3.27	4.62	2.83
2	161 353 367	161 353 377	1.43	5.51	6.20	4.00	5.71	3.82

Dimensions and Part Numbers for Type 354 Single Union Ball Valve



PVC with ASTM solvent cement socket 232 psi/16 bar

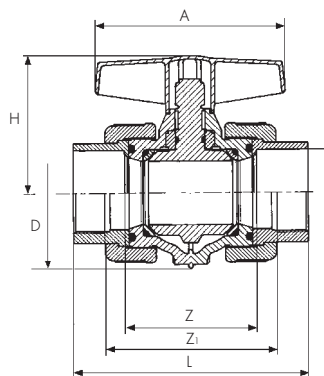
Inch size	Part Numbers EPDM	FPM*	wt. lbs.	A inch	D inch	H inch	L inch	Z inch
1/2	161 354 342	N/A	0.22	3.07	2.97	2.01	3.56	1.82
3/4	161 354 343	N/A	0.31	3.62	3.35	2.28	4.02	2.06
1	161 354 344	N/A	0.44	3.62	3.72	2.46	4.56	2.30
1 1/4	161 354 345	N/A	0.74	4.57	4.55	3.01	5.16	2.67
1 1/2	161 354 346	N/A	1.01	4.57	5.04	3.27	5.73	2.97
2	161 354 347	N/A	1.90	5.51	6.20	4.00	6.54	3.54

PVC with NPT threads 150 psi/10 bar

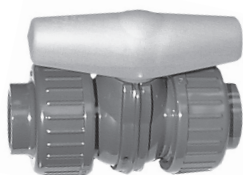
Inch size	Part Numbers EPDM	FPM *	wt. lbs.	A inch	D inch	H inch	L inch	Z inch
1/2	161 354 362	N/A	0.22	3.07	2.97	2.01	3.19	1.84
3/4	161 354 363	N/A	0.31	3.62	3.35	2.28	3.57	2.20
1	161 354 364	N/A	0.44	3.62	3.72	2.46	4.09	2.39
1 1/4	161 354 365	N/A	0.74	4.57	4.55	3.01	4.74	2.95
1 1/2	161 354 366	N/A	1.01	4.57	5.04	3.27	5.20	3.42
2	161 354 367	N/A	1.90	5.51	6.20	4.00	6.26	4.37

*500 pc. minimum order required

Dimensions and Part Numbers for Type 355 True Union Ball Valve



Z = socket laying length
Z₁ = threaded laying length



PVC with ASTM solvent cement socket 232 psi/16 bar

Inch size	Part Numbers EPDM	FPM	wt. lbs.	A inch	D inch	H inch	L inch	Z inch
1/2	161 355 382	161 355 392	0.29	3.07	2.97	2.01	3.74	2.36
3/4	161 355 383	161 355 393	0.40	3.62	3.35	2.28	4.22	2.60
1	161 355 384	161 355 394	0.57	3.62	3.72	2.46	4.59	2.72
1 1/4	161 355 385	161 355 395	1.00	4.57	4.55	3.01	5.39	3.15
1 1/2	161 355 386	161 355 396	1.29	4.57	5.04	3.27	5.72	3.35
2	161 355 387	161 355 397	2.38	5.51	6.20	4.00	6.69	3.82

PVC with NPT threads 150 psi/10 bar

Inch size	Part Numbers EPDM	FPM	wt. lbs.	A inch	D inch	H inch	L inch	Z inch
1/2	161 355 362	161 355 372	0.29	3.07	2.97	2.01	3.62	2.59
3/4	161 355 363	161 355 373	0.40	3.62	3.35	2.28	4.09	2.91
1	161 355 364	161 355 374	0.57	3.62	3.72	2.46	4.45	3.11
1 1/4	161 355 365	161 355 375	1.00	4.57	4.55	3.01	5.20	3.70
1 1/2	161 355 366	161 355 376	1.29	4.57	5.04	3.27	5.79	4.29
2	161 355 367	161 355 377	2.38	5.51	6.20	4.00	6.89	5.00

Valve Ends and Nuts-PVC

Fits type 354 , 355 Ball Valves and 314 Diaphragm Valves

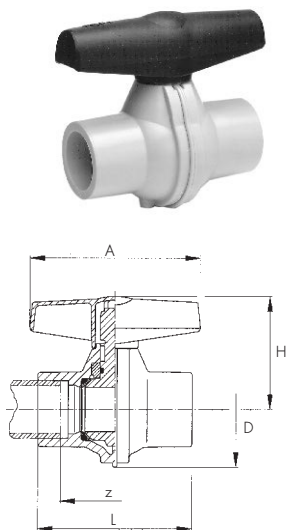
Inch size	ASTM socket Part number	NPT thread Part number	Metric socket Part number	Metric size	Nuts
1/2	721 602 006	721602 656	721 600 106	20 mm	721 690 006
3/4	721 602 007	721602 657	721 600 107	25 mm	721 690 007
1	721 602 008	721602 658	721 600 108	32 mm	721 690 008
1 1/4	721 602 009	721602 659	721 600 109	40 mm	721 690 009
1 1/2	721 602 010	721602 660	721 600 110	50 mm	721 690 010
2	721 602 011	721602 661	721 600 111	60 mm	721 690 011

Component Parts for Valve Body

Inch size	O-Rings – EPDM	O-Rings FPM	Size/Dash #
1/2	748 410 042	749 410 042	(2.5x18mm)
3/4	748 410 116	749 410 116	-120
1	748 410 103	749 410 103	-217
1 1/4	748 410 027	749 410 027	-222
1 1/2	748 410 010	749 410 010	-328
2	748 410 011	749 410 011	-332

Dimensions and Part Numbers for Type 353 Compact Ball Valve

Polypropylene with metric fusion socket ends 150 psi/10 bar, black handle



d mm	DN mm	Part Numbers EPDM			wt. lbs.	A inch	D inch	H inch	L inch	z inch	Closest inch size
20	15	167 353 002			0.12	3.07	1.93	2.01	2.68	1.57	½
25	20	167 353 003			0.16	3.62	2.13	2.28	3.19	1.93	¾
32	25	167 353 004			0.23	3.62	2.48	2.48	3.66	2.24	1
40	32	167 353 005			0.37	4.57	3.07	3.03	4.37	2.80	1¼
50	40	167 353 006			0.51	4.57	3.54	3.27	4.76	2.95	1½
60	50	167 353 007			1.07	5.51	4.37	3.98	5.79	3.66	2

Minimum order quantities required; consult factory for details

Component Parts for Type 353 Polypropylene

Adaptor socket, PP Rp (British Std. pipe threads)

d-Rp mm/inch	Part Numbers	
20 – ½"	727 910 266	
25 – ¾"	727 910 267	
32 – 1"	727 910 268	
40 – 1¼"	727 910 269	
50 – 1½"	727 910 270	
63 – 2"	727 910 271	

Adaptor nipple, PP NPT (male threads)

d-NPT mm/inch	Part Numbers	
20 – ½"	727 914 556	
25 – ¾"	727 914 557	
32 – 1"	727 914 558	
40 – 1¼"	727 914 559	
50 – 1½"	727 914 560	
63 – 2"	727 914 561	

Adaptor nipple, PP NPT (female threads)

d-NPT mm/inch	Part Numbers	
20 – ½"	727 914 356	
25 – ¾"	727 914 357	
32 – 1"	727 914 358	
40 – 1¼"	727 914 359	
50 – 1½"	727 914 360	
63 – 2"	727 914 361	

Hoze nozzle, PP

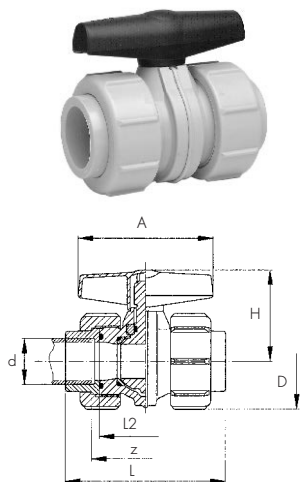
d mm	Part Numbers	
20	727 960 406	
25	727 960 407	
32	727 960 408	
40	727 960 409	
50	727 960 410	
63	727 960 411	

Adaptor nipple, PP (male BSP threads)

d-R mm/inch	Part Numbers	
20 – ½"	727 910 506	
25 – ¾"	727 910 507	
32 – 1"	727 910 508	
40 – 1¼"	727 910 509	
50 – 1½"	727 910 510	
63 – 2"	727 910 511	

Dimensions and Part Numbers for Type 355 True Union Ball Valve

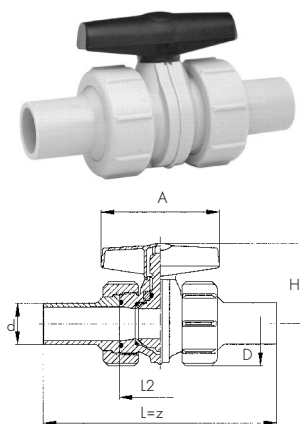
Polypropylene with metric fusion socket ends 150 psi/10 bar, black handle



d mm	DN mm	Part Numbers EPDM	wt. lbs.	A inch	D inch	H inch	L inch	L2 inch	z inch	Inch size
20	15	167 355 102	0.22	3.07	1.93	2.01	3.62	2.13	2.52	½
25	20	167 355 103	0.30	3.62	2.24	2.28	4.02	2.36	2.76	¾
32	25	167 355 104	0.44	3.62	2.56	2.44	4.29	2.48	2.87	1
40	32	167 355 105	0.75	4.57	3.07	3.03	4.76	2.84	3.23	1¼
50	40	167 355 106	0.95	4.57	3.50	3.27	5.31	3.11	3.50	1½
63	50	167 355 107	1.72	5.51	4.37	4.02	6.10	3.58	3.98	2

Minimum order quantities required; consult factory for details

Polypropylene with IR/butt fusion ends 150 psi/10 bar, black handle



d mm	DN mm	Part Numbers EPDM	wt. lbs.	A inch	D inch	H inch	L=z inch	L2 inch	Inch size
20	15	167 355 082	0.22	3.07	1.93	2.01	7.40	2.13	½
25	20	167 355 083	0.30	3.62	2.24	2.28	7.95	2.36	¾
32	25	167 355 084	0.44	3.62	2.56	2.44	8.23	2.48	1
40	32	167 355 085	0.75	4.57	3.07	3.03	9.21	2.84	1¼
50	40	167 355 086	0.95	4.57	3.50	3.27	9.92	3.11	1½
63	50	167 355 087	1.72	5.51	4.37	4.02	10.91	3.58	2

Minimum order quantities required; consult factory for details

Valve body (without handle)

Polypropylene EPDM/PTFE incl. union end seal



d mm	DN mm	Part Numbers	Inch size
20	15	167 482 010	½
25	20	167 482 011	¾
32	25	167 482 012	1
40	32	167 482 013	1¼
50	40	167 482 014	1½
63	50	167 482 015	2

O-Rings EPDM

d mm	DN mm	Part Numbers	Dash #
20	15	748 410 042	(2.5x18mm)
25	20	748 410 116	-120
32	25	748 410 103	-217
40	32	748 410 027	-222
50	40	748 410 010	-328
63	50	748 410 011	-332

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Component parts for valve body

Union nuts PP glass-fiber reinforced

mm size	Part Numbers
20	727 690 406
25	727 690 407
32	727 690 408
40	727 690 409
50	727 690 410
63	727 690 411

Union ends PP socket fusion ISO/DIN

mm size	Part Numbers
20	727 600 106
25	727 600 107
32	727 600 108
40	727 600 109
50	727 600 110
63	727 600 111

Union ends spigot PP for IR/butt fusion

mm size	Part Numbers
20	727 608 516
25	727 608 517
32	727 608 518
40	727 608 519
50	727 608 520
63	727 608 521

Compact ball valve Types 353 and 355

Colored handles for greater safety and clear identification



Green handle

Ball valve size		Part Number
inch	mm	
1/2	20	167 481 145
3/4	25	167 481 146
1	32	167 481 146
1-1/4	40	167 481 147
1-1/2	50	167 481 147
2	63	167 481 148



Red handle

Ball valve size		Part Number
inch	mm	
1/2	20	167 481 160
3/4	25	167 481 161
1	32	167 481 161
1-1/4	40	167 481 162
1-1/2	50	167 481 162
2	63	167 481 163



Yellow handle

Ball valve size		Part Number
inch	mm	
1/2	20	167 481 155
3/4	25	167 481 156
1	32	167 481 156
1-1/4	40	167 481 157
1-1/2	50	167 481 157
2	63	167 481 158



Blue handle

Ball valve size		Part Number
inch	mm	
1/2	20	167 481 090
3/4	25	167 481 091
1	32	167 481 091
1-1/4	40	167 481 092
1-1/2	50	167 481 092
2	63	167 481 093



White handle

Ball valve size		Part Number
inch	mm	
1/2	20	167 481 570
3/4	25	167 481 571
1	32	167 481 571
1-1/4	40	167 481 572
1-1/2	50	167 481 572
2	63	167 481 573



Black handle

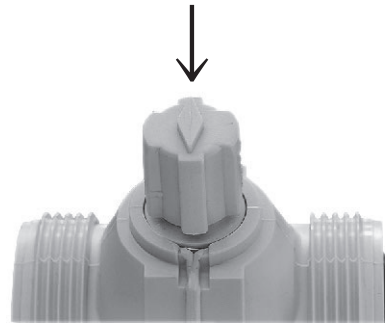
Ball valve size		Part Number
inch	mm	
1/2	20	167 481 150
3/4	25	167 481 151
1	32	167 481 151
1-1/4	40	167 481 152
1-1/2	50	167 481 152
2	63	167 481 153



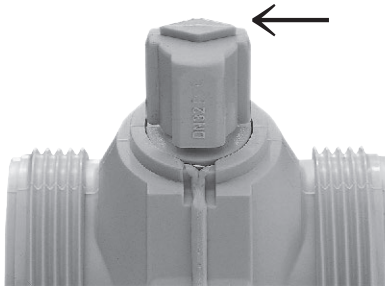
Orange handle

Ball valve size		Part Number
inch	mm	
1/2	20	167 481 575
3/4	25	167 481 576
1	32	167 481 576
1-1/4	40	167 481 577
1-1/2	50	167 481 577
2	63	167 481 578

Many system operators require clear identification of the individual pipelines. With the compact ball valve modular system we offer a choice of 7 colors for clear and unmistakable identification. The ball valves can also be retrofitted with these colored handles. The standard handles supplied with the valve cannot be returned.



Closed position



Open position

Safety

The ball position is still visible on the shaft when the handle is withdrawn.

Product Specification for Type 353 Compact Ball Valve - PVC

The PVC compact ball valve, Type 353, 1/2" through 2", shall have either solvent socket or NPT threaded pipe connections. The valve shall have a two-piece body, permanently fused around the integral ball and stem. The valve shall have low, uniform torque to complement factory preadjusted performance specifications. Construction prevents user ability to disassemble or adjust. The stem shall indicate valve position if handle is removed. Handles are available in five colors for color-coding capabilities of handling different fluids. Material shall meet or exceed the requirements of 12454-B according to the classifications and requirements of ASTM D 1784. Socket end connection dimensions shall conform to ASTM D 2467. Threaded pipe connections shall be in accordance with ASTM D 2464 which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. The valve, Type 353, shall have PTFE ball seats with EPDM or FPM seals. The valve with solvent cement socket ends shall carry a pressure rating of 232 psi at 73°F. Valve with threaded ends, 150 psi at 73°F. as supplied by George Fischer, Inc., Tustin, CA 92780.

Product Specification for Type 354 Single Union Coloro Ball Valve - PVC

The PVC Coloro ball valve, Type 354, 1/2" through 2", shall have either solvent socket or NPT threaded pipe connections with a single, true union end. The valve shall have a two-piece body, permanently fused around the integral ball and stem. The valve shall have low, uniform torque to complement factory preadjusted performance specifications. Construction prevents user ability to disassemble or adjust. The stem shall indicate valve position if handle is removed. Handles are available in five colors for color-coding capabilities of handling different fluids. Material shall meet or exceed the requirements of 12454-B according to the classifications

and requirements of ASTM D 1784. Socket end connections are suitable for IPS pipe. Threaded pipe connections shall be in accordance with ASTM D 2464 which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. The valve, Type 354, shall have PTFE ball seats with EPDM or FPM seals. The valve with solvent cement socket ends shall carry a pressure rating of 232 psi at 73°F. Valve with threaded ends, 150 psi at 73°F. as supplied by George Fischer, Inc., Tustin, CA 92780.

Product Specification for Type 355 True Union Coloro Ball Valve - PVC

The PVC Coloro ball valve, Type 355, 1/2" through 2", shall have either solvent socket or NPT threaded pipe connections with double true union ends. The valve shall have a two-piece body, permanently fused around the integral ball and stem. The valve shall have low, uniform torque to complement factory preadjusted performance specifications. Construction prevents user ability to disassemble or adjust. The stem shall indicate valve position if handle is removed. Handles are available in five colors for color-coding capabilities of handling different fluids. Material shall meet or exceed the requirements of 12454-B according to the classifications and requirements of ASTM D 1784. Socket end connections are suitable for IPS pipe. Threaded pipe connections shall be in accordance with ASTM D 2464 which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. The valve, Type 354, shall have PTFE ball seats with EPDM or FPM seals. The valve with solvent cement socket ends shall carry a pressure rating of 232 psi at 73°F. Valve with threaded ends, 150 psi at 73°F. as supplied by George Fischer, Inc., Tustin, CA 92780.

George Fischer Ball Valve Type 560



General

The George Fischer Ball Valve Type 560 permits radial installation or removal and allows flow in either direction irrespective of installation position. Available in PVC and CPVC in sizes 1/2" through 6" (venturied from 4"), the Type 560 is rated at 150 psi, non-shock, at 73° F. The Type 560 ball valve features superior chemical

and corrosion resistance and is assembled with soap based lubricant for high purity applications.

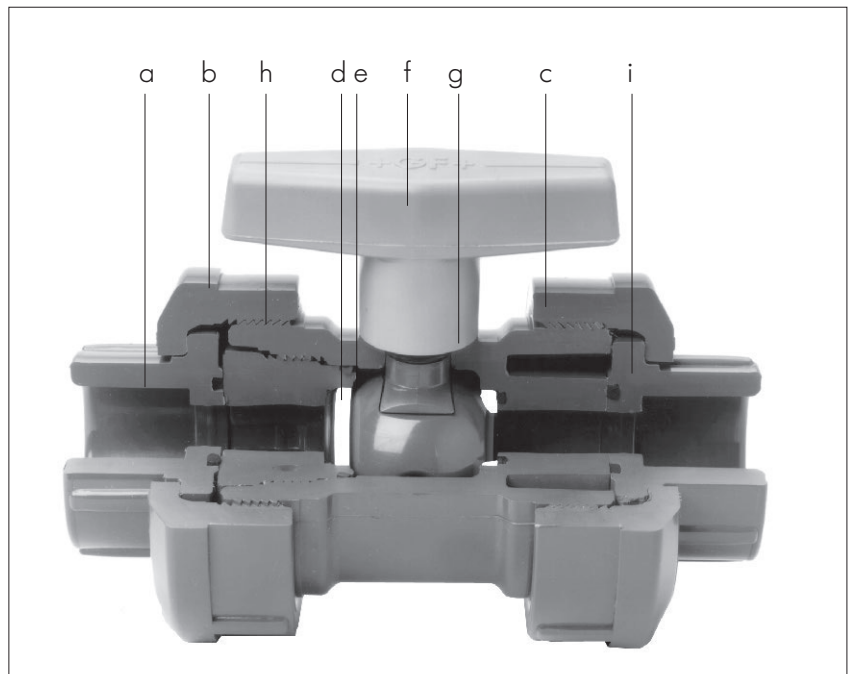
This full-port, schedule 80 ball valve is NSF approved. Round handle and stem extensions are available.

**FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers. Teflon® is a registered trademark of DuPont.*

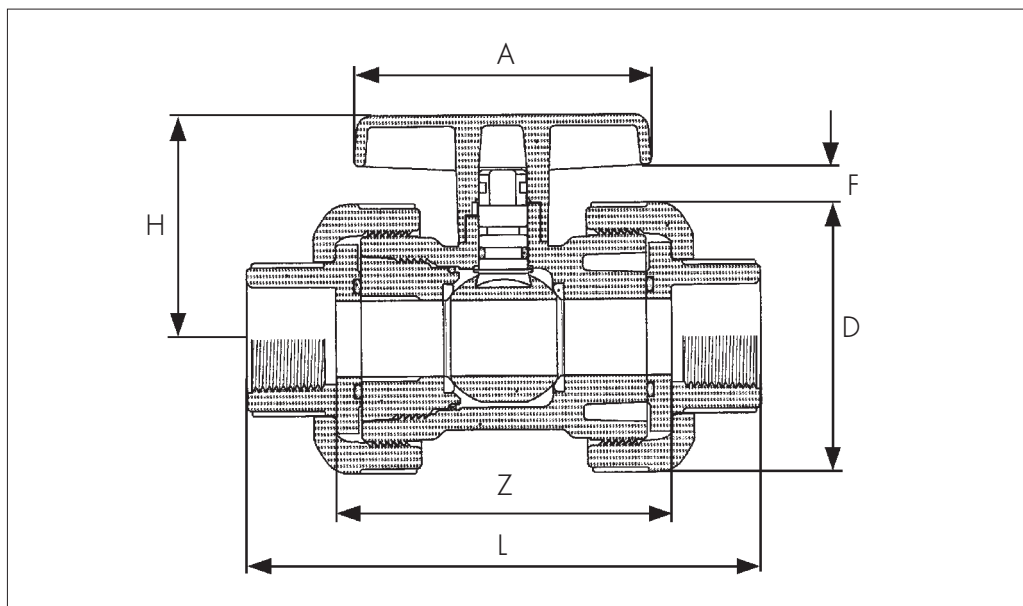
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Technical Features

- a) True Union Ball valves 1/2" through 2" are furnished with a pair of threaded and a pair of socket end connectors for simplification of distributor and end-user inventories.
- b) Union ends allow for repair or replacement and positioning of valve.
- c) Full block valve function.
- d) O-ring seals are offered in either FPM* or EPDM.
- e) Ball seals are made from PTFE Teflon®, a fluorocarbon material that is virtually insoluble and chemically inert. PTFE seals provide both extremely high mechanical strength and lubricity to make valve operation smooth, with minimal wear.
- f) Snap-on handle indicates open or closed position.
- g) Stem seal O-ring, EPDM or FPM*.
- h) Seat carrier, screwed-in (right-hand threads) for adjustment.
- i) Union seal O-ring, EPDM or FPM*.



Dimensions for Type 560 Ball Valve



Inch size	D inch	Z * inch	L inch	L ₁ inch	H inch	A inch	F inch
1/2	2.56	3.31	5.13	6.76	2.31	2.75	0.50
3/4	3.00	4.00	6.13	7.90	2.69	3.25	0.61
1	3.44	4.25	6.50	8.55	2.81	3.75	0.48
1-1/4	3.69	4.50	7.00	9.10	3.31	4.13	0.81
1-1/2	4.38	5.31	8.00	10.18	3.69	4.50	0.78
2	5.13	5.75	8.75	11.33	4.31	5.25	0.92
2-1/2	7.38	8.41	11.88	14.68	5.81	9.88	1.30
3	7.38	8.13	11.88	15.13	5.81	9.88	1.30
4	8.94	8.50	12.94	16.00	6.75	10.81	1.20
6 socket	8.94	19.63	26.06	-	6.75	10.81	1.20
6 flanged	11.19**	-	-	29.38	6.75	10.81	1.20

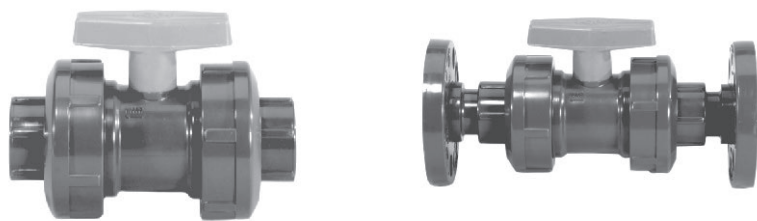
L = overall length
L₁ = face to face (flanged)
 *socket laying length
 ** 6" flg. O.D.

Lubrication Note

Lubrication of the stem seal and the seat carrier body seal depends on end use and seal material.

1. The Type 560 valve was designed to be used as a manually operated valve. It is suitable for applications where purity is important and where various lubricants are undesirable. It has been factory assembled with a soap based lubricant which makes it satisfactory for use in:
 - a. Semiconductor high purity water return lines.
 - b. Sensitive solutions used in the manufacture of photographic films and papers.
 - c. Automotive paint lines using water based paints.
 - d. Similar applications in other industries.
2. If the valve is being used for other applications EPDM seals may be lubricated with either a silicone or poly-glycol based grease. **Vaseline or mineral oils in particular are not to be used.**

Part Numbers for Type 560 Ball Valve



PVC

Inch size	Solvent Cement Socket** EPDM	NPT Thread** EPDM	Flanged EPDM	Solvent Cement Socket** FPM*	NPT Thread** FPM*	Flanged FPM*
1/2	161 560 002	161 560 002	161 560 062	161 560 017	161 560 017	161 560 077
3/4	161 560 003	161 560 003	161 560 063	161 560 018	161 560 018	161 560 078
1	161 560 004	161 560 004	161 560 064	161 560 019	161 560 019	161 560 079
1-1/4	161 560 005	161 560 005	161 560 065	161 560 020	161 560 020	161 560 080
1-1/2	161 560 006	161 560 006	161 560 066	161 560 021	161 560 021	161 560 081
2	161 560 007	161 560 007	161 560 067	161 560 022	161 560 022	161 560 082
2-1/2	161 560 008	161 560 038	161 560 068	161 560 023	161 560 053	161 560 083
3	161 560 009	161 560 039	161 560 069	161 560 024	161 560 054	161 560 084
4	161 560 010	161 560 040	161 560 070	161 560 025	161 560 055	161 560 085
6	161 560 011	—	161 560 071	161 560 026	—	161 560 086

(6" venturied from 4" value)

CPVC

Inch size	Solvent Cement Socket** EPDM	NPT Thread** EPDM	Flanged EPDM	Solvent Cement Socket** FPM*	NPT Thread** FPM*	Flanged FPM*
1/2	163 560 002	163 560 002	163 560 062	163 560 017	163 560 017	163 560 077
3/4	163 560 003	163 560 003	163 560 063	163 560 018	163 560 018	163 560 078
1	163 560 004	163 560 004	163 560 064	163 560 019	163 560 019	163 560 079
1-1/4	163 560 005	163 560 005	163 560 065	163 560 020	163 560 020	163 560 080
1-1/2	163 560 006	163 560 006	163 560 066	163 560 021	163 560 021	163 560 081
2	163 560 007	163 560 007	163 560 067	163 560 022	163 560 022	163 560 082
2-1/2	163 560 008	163 560 038	163 560 068	163 560 023	163 560 053	163 560 083
3	163 560 009	163 560 039	163 560 069	163 560 024	163 560 054	163 560 084
4	163 560 010	163 560 040	163 560 070	163 560 025	163 560 055	163 560 085
6	163 560 011	—	163 560 071	163 560 026	—	163 560 086

(6" venturied from 4" value)

*FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers. Teflon® is a registered trademark of DuPont.

** 1/2" – 2" are assembled with threaded end connectors, two socket end connectors are included to allow choice of end connection.

PVC Round Handle

Inch size	Part Number
1/2	161 560 526
3/4	161 560 527
1	161 560 528
1-1/4	161 560 529
1-1/2	161 560 530
2	161 560 531
2-1/2 & 3	161 560 532
4	161 560 533

PVC Stem Extension

Inch size	Part Number	Schedule 80 pipe diameter requirement
1/2	161 560 563	3/4"
3/4	161 560 564	3/4"
1	161 560 565	1"
1-1/4	161 560 566	1"
1-1/2	161 560 567	1"
2	161 560 568	1"
2-1/2 & 3	161 560 569	1"
4	161 560 570	1-1/2"

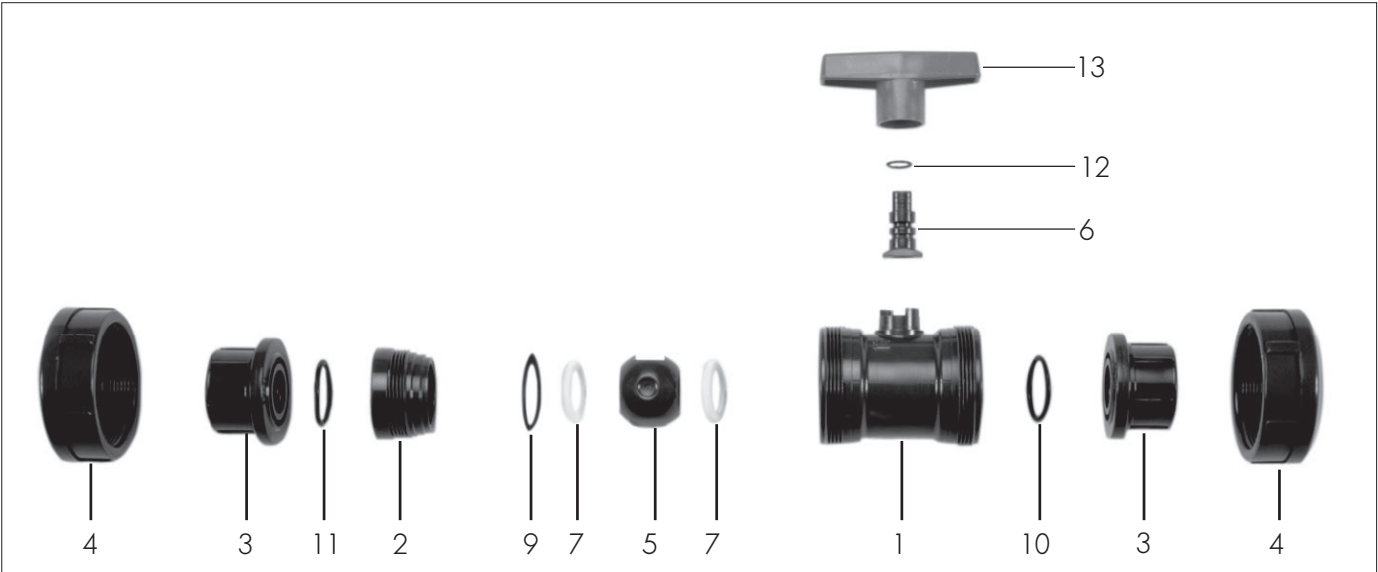


PVC Round Handle



PVC Stem Extensions

Type 560 Ball Valve



Assembly Instructions

Assemble seat backing seal (8) and PTFE ball seat (7) into the groove of the solid end inside the body (1).

Position stem seal (12) into groove on stem (6). (See note on previous page regarding lubrication.)

Introduce the stem assembly (12 & 6) into the body (1) from the inside and press until fully seated. Push the ball (5) onto the stem guide inside the body.

Assemble the body seal (9) onto the external groove of the seat carrier (2). (See note below regarding lubrication.) Mount the seat backing seal (8) and the ball seat (7) into the groove on the inner face of the seat carrier (2).

Screw the seat carrier (2) into the body (1). Note this is a standard right-hand thread clockwise to tighten and counter clockwise to loosen. Use a hex nut or hex wrench to tighten. Tighten until the ball can still be rotated easily. (Use tool VT-025-040 for 2-1/2" – 4" valves.)

Place union seal O-rings (10) and (11) into the grooves of the end connectors (3). Assemble the end connectors (3) to the body using the union nuts (4). Hand tighten union nuts sufficiently to compress the union seals. **Do not over tighten.**

Mount the double lever handle (13) onto the stem (6).

Dismantling

Please note: Do not dismantle while under pressure. Drain pipeline.

Loosen valve nuts (4) and remove radially from pipeline.

Remove the seat carrier (2) using hex nuts or hex wrenches per table at left. The seat carrier unscrews in a counterclockwise direction. On larger diameter valves it is necessary to use a holding fixture to contain the valve body firmly while unscrewing the seat carrier. Downward pressure on the lug key is necessary to insure that it remains firmly seated.

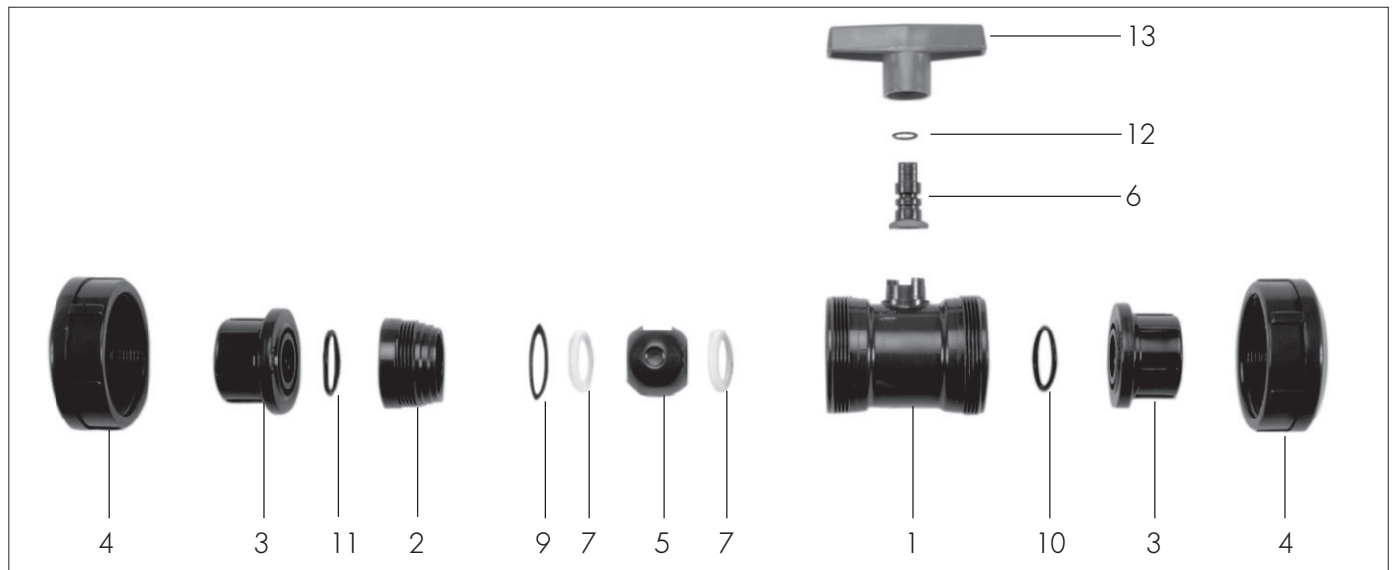
Note: Use tool VT-025-040 for 2-1/2" – 4" valves.

Rotate the ball (5) into the "closed" position. It can now be pushed out with a soft plastic or wooden rod. Press stem (6) out of body (1) and remove.

Seat Carrier Removal Tool

Valve size	Hex size	Bolt
1/2	9/16	3/8
3/4	3/4	1/2
1	15/16	5/8
1-1/4	1-5/16	7/8
1-1/2	1-1/2	1
2	1-7/8	1-1/4
2-1/2-4	VT-025-040 removal tool	

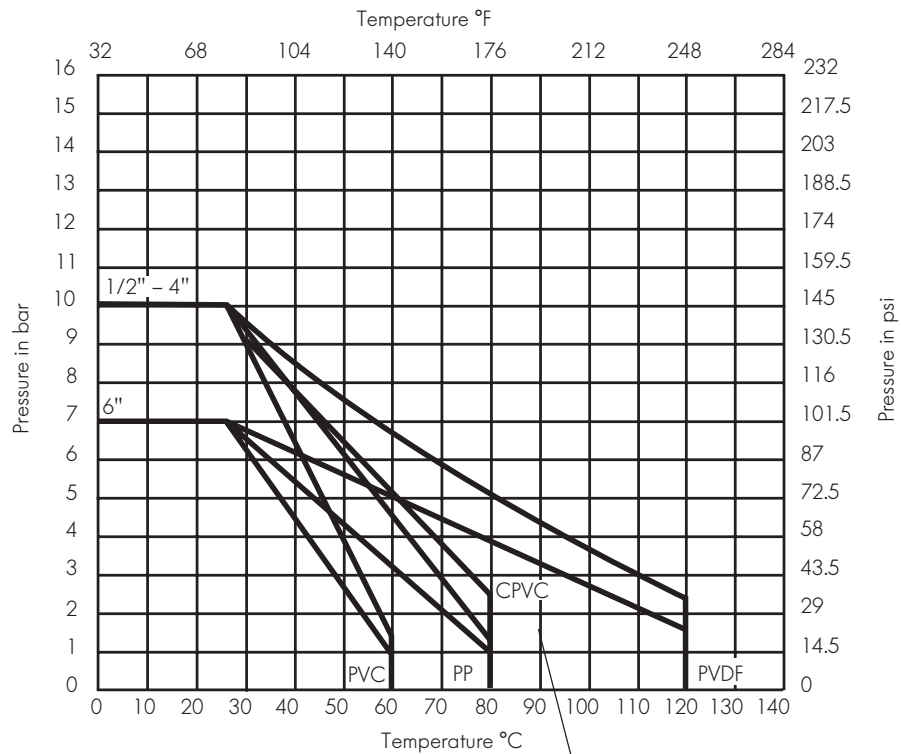
Component Parts for Type 560 Ball Valve



Nr./Part	Mat.	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
1 Valve Body	PVC CPVC	161 560 201 163 560 301	161 560 202 163 560 302	161 560 203 163 560 303	161 560 204 163 560 304	161 560 205 163 560 305	161 560 206 163 560 306	161 560 207 163 560 307	161 560 207 163 560 307	161 560 209 163 560 309
2 Seal Carrier	PVC CPVC	161 560 214 163 560 314	161 560 215 163 560 315	161 560 216 163 560 316	161 560 217 163 560 317	161 560 218 163 560 318	161 560 219 163 560 319	161 560 220 163 560 320	161 560 220 163 560 320	161 560 222 163 560 322
3 End Connector	PVC (1) PVC (2) CPVC (1) CPVC (2)	161 560 226 161 560 238 163 560 326 163 560 338	161 560 227 161 560 239 163 560 327 163 560 339	161 560 228 161 560 240 163 560 328 163 560 340	161 560 229 161 560 241 163 560 329 163 560 341	161 560 230 161 560 242 163 560 330 163 560 342	161 560 231 161 560 243 163 560 331 163 560 343	161 560 232 161 560 244 163 560 332 163 560 344	161 560 233 161 560 245 163 560 333 163 560 345	161 560 234 161 560 246 163 560 334 163 560 346
4 Valve Nut	PVC CPVC	161 560 251 163 560 351	161 560 252 163 560 352	161 560 253 163 560 353	161 560 254 163 560 354	161 560 255 163 560 355	161 560 256 163 560 356	161 560 257 163 560 357	161 560 258 163 560 358	161 560 259 163 560 359
5 Ball	PVC CPVC	161 560 264 163 560 364	161 560 265 163 560 365	161 560 266 163 560 366	161 560 267 163 560 367	161 560 268 163 560 368	161 560 269 163 560 369	161 560 270 163 560 370	161 560 270 163 560 370	161 560 272 163 560 372
6 Stem	PVC CPVC	161 560 276 163 560 376	161 560 277 163 560 377	161 560 278 163 560 378	161 560 279 163 560 379	161 560 280 163 560 380	161 560 281 163 560 381	161 560 282 163 560 382	161 560 282 163 560 382	161 560 284 163 560 384
Seal set consisting of: 7 Ball Seat 9 Body Seal 10 Union Seal 11 Seal Carrier Union Seal 12 Stem Seal	PTFE EPDM EPDM EPDM EPDM EPDM	161 560 501	161 560 502	161 560 503	161 560 504	161 560 505	161 560 506	161 560 507	161 560 507	161 560 509
Seal set consisting of: 7 Ball Seat 9 Body Seal 10 Union Seal 11 Seal Carrier Union Seal 12 Stem Seal	PTFE FPM FPM FPM FPM FPM	161 560 513	161 560 514	161 560 515	161 560 516	161 560 517	161 560 518	161 560 519	161 560 519	161 560 521
13 Handle	PVC	161 560 288	161 560 289	161 560 290	161 560 291	161 560 292	161 560 293	161 560 294	161 560 294	161 560 294
14 Assembly Tool		—	—	—	—	—	—	VT-025-040	VT-025-040	VT-025-040

Technical Data for Diaphragm Valves Type 314, 315, 315-HTR, 317, 319, 319-HTR

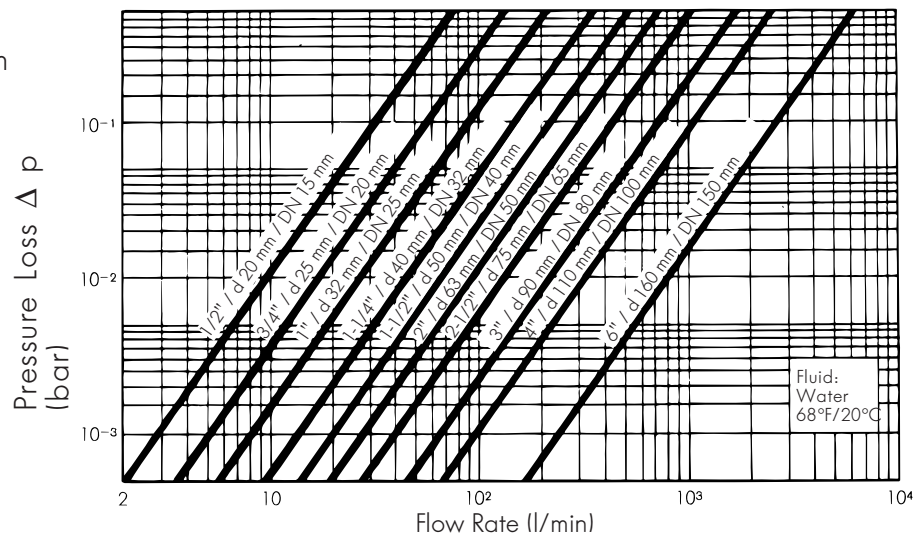
Pressure-Temperature Diagram



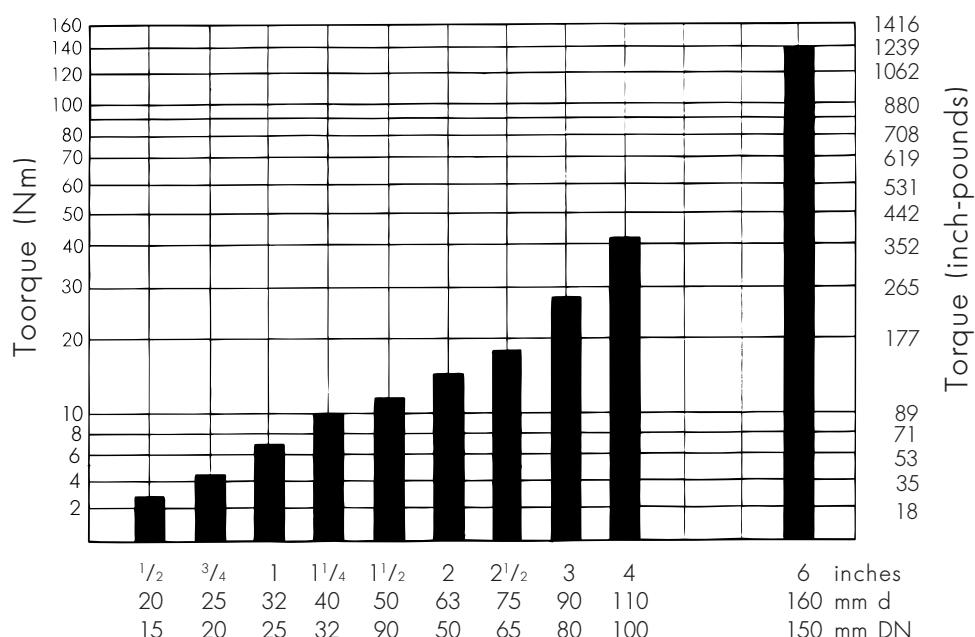
For continuous operation at temperatures over 194°F (90°C) it is recommended to use a FPM supporting diaphragm instead of an EPDM supporting diaphragm.

Pressure Loss Characteristics

$$\Delta p = \left(\frac{Q}{C_v} \right)^2 \quad \begin{array}{l} Q = \text{gpm} \\ p = \text{psi} \end{array}$$



Operating Torque (average value)

 C_v/k_v Values

Types 314, 315, 317

Inch size	C_v	k_v	d mm size
1/2	5.0	72	20
3/4	9.6	137	25
1	14.5	207	32
1 1/4	24.8	354	40
1 1/2	36.2	517	50
2	49.9	713	63
2 1/2	69.4	992	75
3	119.00	1700	90
4	189.00	2700	110
6	422.00	6033	160

Type 319 Zero Static Valve

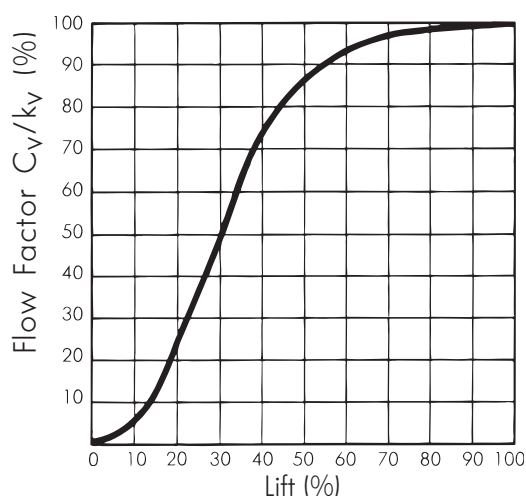
d1 - d2 size	Closest inch size	Valve ass'y. size	C_v gpm	k_v lpm
20x20 mm	1/2" x 1/2"	20	3.3	47
25x20 mm	3/4" x 1/2"	25	4.8	69
25x25 mm	3/4" x 3/4"	25	6.4	91
32x20 mm	1" x 1/2"	32	6.0	86
32x25 mm	1" x 3/4"	32	8.8	126
32x32 mm	1" x 1"	32	10.8	154
40x20 mm	1 1/4" x 1/2"	32	5.9	84
40x25 mm	1 1/4" x 3/4"	32	8.7	124
40x32 mm	1 1/4" x 1"	32	11.3	161
40x40 mm	1 1/4" x 1 1/4"	40	17.5	250
50x20 mm	1 1/2" x 1/2"	32	5.7	82
50x25 mm	1 1/2" x 3/4"	32	8.7	124
50x32 mm	1 1/2" x 1"	32	11.1	159
50x40 mm	1 1/2" x 1 1/4"	50	21.8	312
50x50 mm	1 1/2" x 1 1/2"	50	24.9	356
63x20 mm	2" x 1/2"	32	5.7	81
63x25 mm	2" x 3/4"	32	8.3	118
63x32 mm	2" x 1"	32	10.9	156
63x40 mm	2" x 1 1/4"	63	26.8	383
63x50 mm	2" x 1 1/2"	63	34.1	487
63x63 mm	2 x 2"	63	38.1	544
75x40 mm	2 1/2" x 1 1/4"	40	18.6	265
75x50 mm	2 1/2" x 1 1/2"	63	34.8	497
75x63 mm	2 1/2" x 2"	63	38.2	546
90x20 mm	3" x 1/2"	32	6.2	88
90x25 mm	3" x 3/4"	32	9.3	133
90x32 mm	3" x 1"	32	11.3	162
90x50 mm	3" x 1 1/2"	63	35.3	504
90x63 mm	3" x 2"	63	37.1	530
110x20 mm	4" x 1/2"	32	6.2	89
110x25 mm	4" x 3/4"	32	8.6	123
110x32 mm	4" x 1"	32	11.1	159
110x50 mm	4" x 1 1/2"	63	35.2	503
110x63 mm	4" x 2"	63	38.0	543

$$k_v \div 14.28 = C_v$$

 $C_v = \text{gallons per minute @ 1 psi } \Delta p$
 $K_v = \text{liters per minute @ 1 bar } \Delta p$

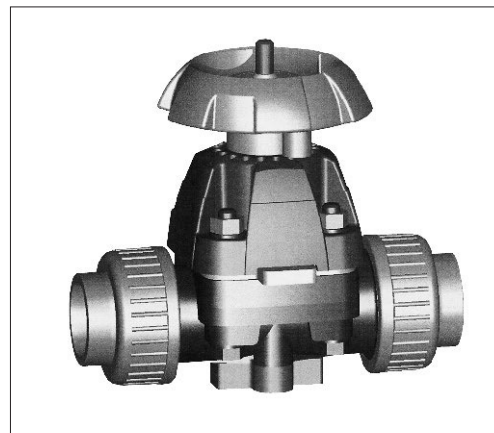
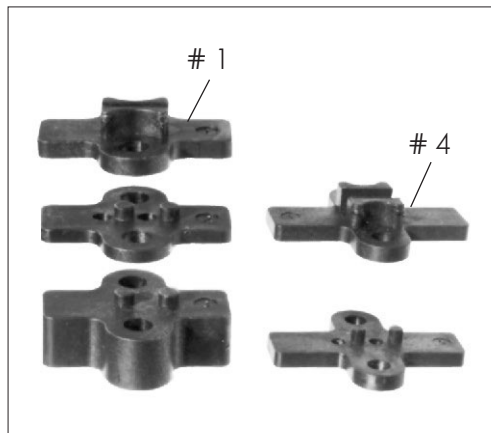
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Flow Characteristics



Mounting Blocks for Diaphragm Valves

Types 314, 315, 315-HTR, 317, 319, 319-HTR



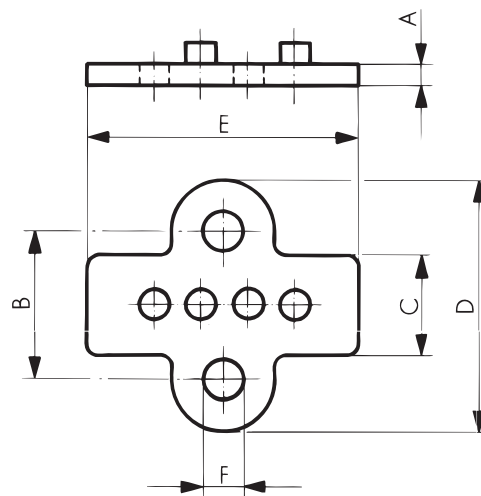
The mounting blocks are designed to allow different sized George Fischer diaphragm valves to be aligned on the same pipe center line by equalizing the different heights from the base to the center line of the pipe.

The blocks may be used with Types 314–319 diaphragm valves in sizes 1/2" – 2" (d 20 mm – 63 mm) and pneumatically actuated diaphragm valve Type 025.

- Material: glass-filled polypropylene 15, black
- 5 sizes, numbered 1 through 5. Can be stacked to achieve the desired height.

Dimensions

The length of the mounting bolts is calculated by adding the length of the thread in the valve base to the height of the block and the thickness of the mounting bracket. Mounting brackets #1 and #4 insert directly into the valve base.



Types available

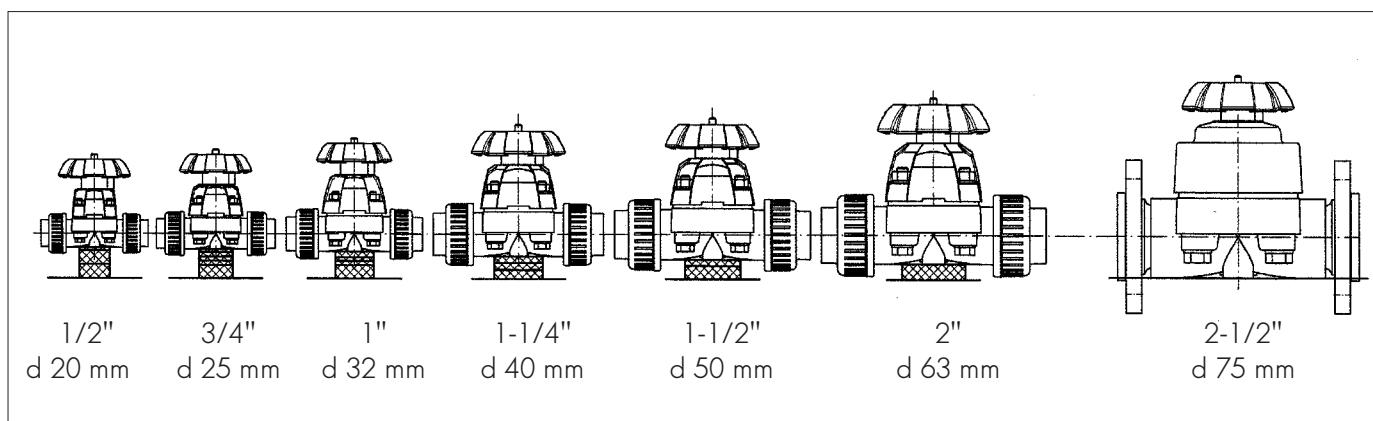
Diaphragm valve size	Mounting block #	Part number	A inch	B inch	C inch	D inch	E inch	F inch	Weight lbs.
1/2"–1" d 20 - 32 mm	1	167 480 422	.177	.984	.669	1.653	1.850	.295	.033
	2	167 480 423	.138	.984	.669	1.653	1.850	.295	.031
	3	167 480 424	.531	.984	.669	1.653	1.850	.295	.033
1-1/4"-2" d 50 - 63 mm	4	167 480 425	.266	1.772	.866	2.638	3.189	.374	.040
	5	167 480 426	.266	1.772	.866	2.638	3.189	.374	.035

Equalizing Height

Quantity required x block #

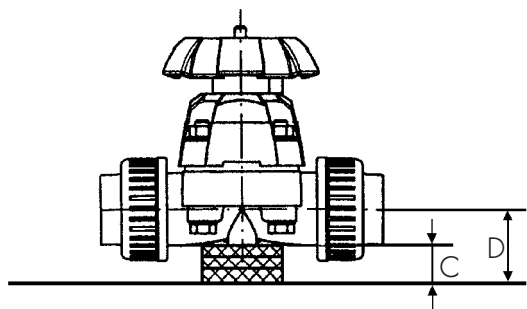
	... to 3/4" d 25 mm	1" d 32 mm	1-1/4" d 40 mm	1-1/2" d 50 mm	2" d 63 mm	2-1/2" d 75 mm
from ... 1/2" d 20 mm	1 x #2	2 x #2	1 x #1 + 2 x #2	1 x #1 + 1 x #3	1 x #1 + 2 x #2 + 1 x #3	1 x #1 + 2 x #3
3/4" d 25 mm		1 x #2	1 x #1 + 1 x #2	1 x #1 + 3 x #2	1 x #1 + 1 x #2 + 1 x #3	1 x #1 + 3 x #2 + 1 x #3
1" d 32 mm			1 x #1	1 x #1 + 2 x #2	1 x #1 + 1 x #3	1 x #1 + 2 x #2 + 1 x #3
1-1/4" d 40 mm				1 x #4	1 x #4 + 1 x #5	1 x #4 + 2 x #5
1-1/2" d 50 mm					1 x #4	1 x #4 + 1 x #5
2" d 63 mm						1 x #4

Equalizing the Assembly Height for All Sizes

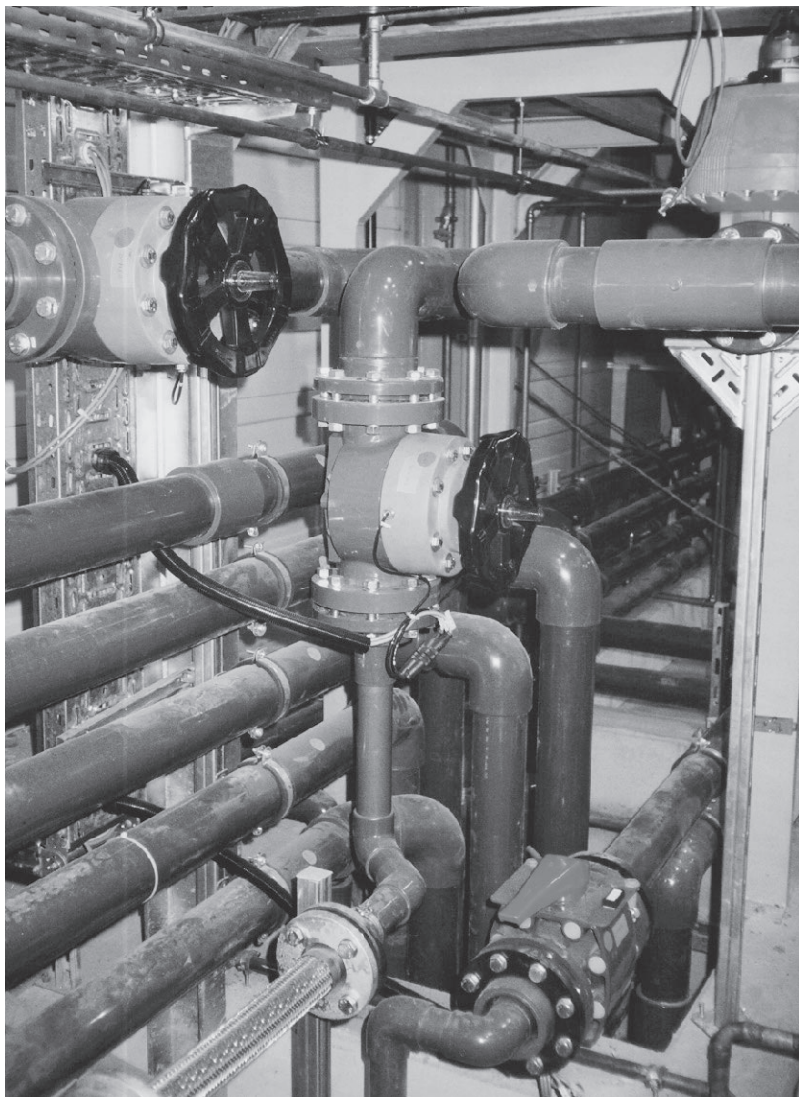
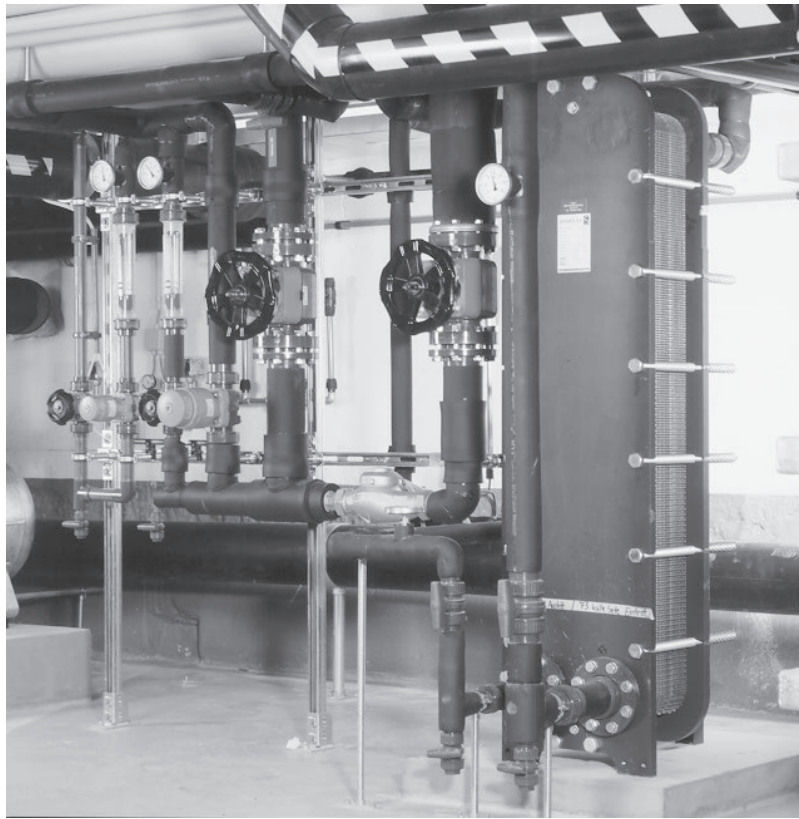


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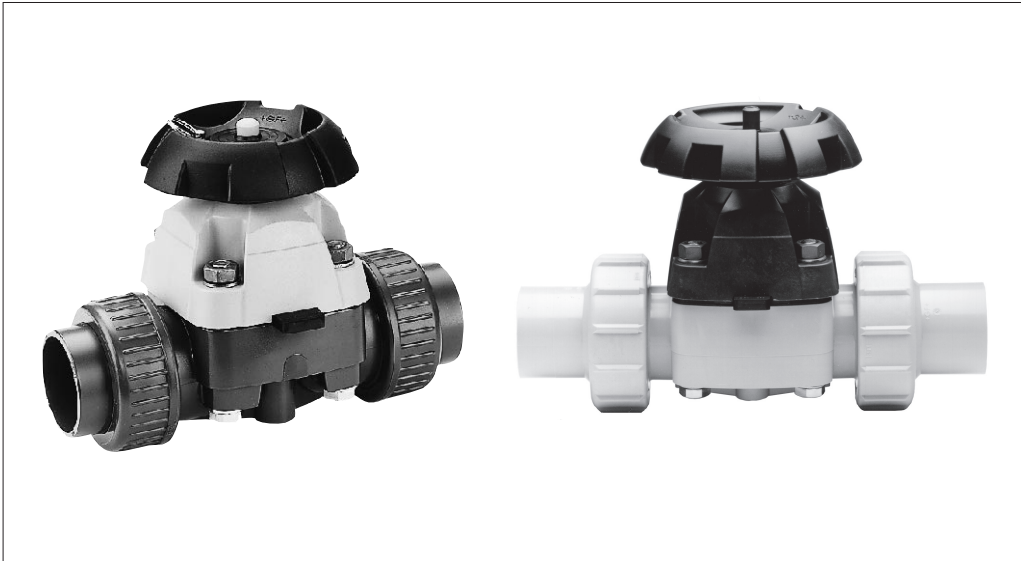
Equalizing the Union Height for Type 314



Inch size	Quantity required x block #	C inch	D inch
1/2 3/4 1	1 x #1 + 2 x #2	0.453	0.886 1.142 1.280
1-1/4 1-1/2 2	1 x #4 + 1 x #5	0.531	1.535 1.811 2.067



George Fischer Diaphragm Valve Type 314



Diaphragm valves are especially suitable for flow control applications. Also suitable for slurries and abrasive media.

- “Snap-on” handwheel - easy to remove
- Option: lockable handle
- Position indicator, improved robustness
- Can also be used in vacuum applications

General

Manual, weir type diaphragm valve Type 314 with union ends in sizes 1/2" – 2" (20 mm – 63 mm) in PVC, Polypropylene (PP), SYGEF-PVDF and SYGEF-PVDF HP.

Can be connected into the pipeline without additional fittings.

Short overall length.

Flow in either direction irrespective of installation position.

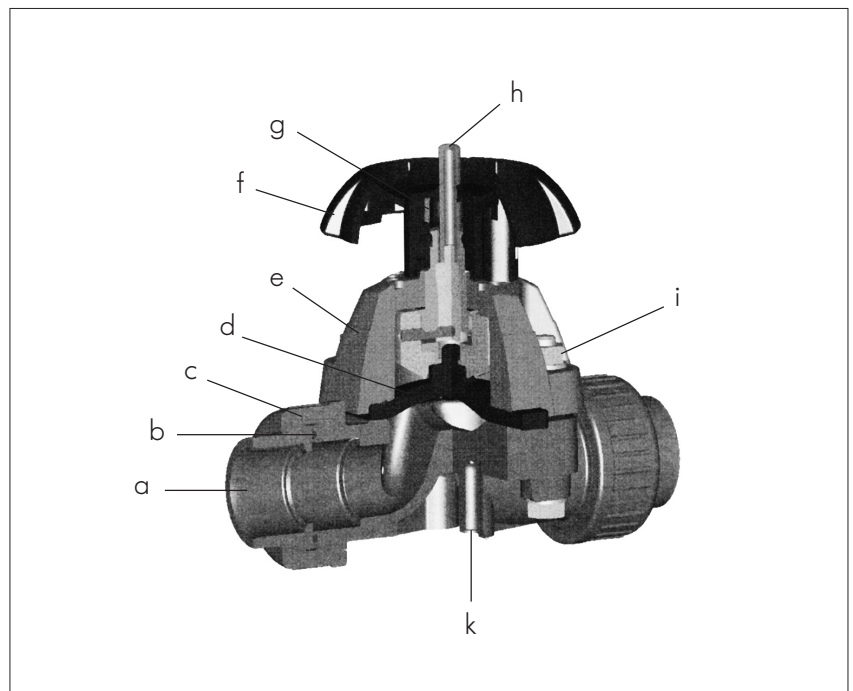
Easy replacement of the diaphragm without removal of the body from the pipeline.

Bracketing facility incorporated in the valve.

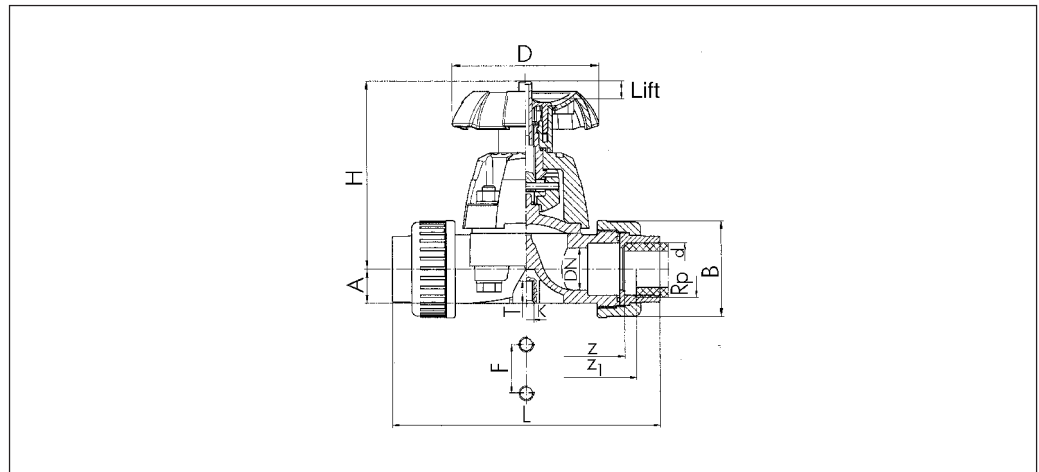
Also available pneumatically actuated, see +GF+ DIASTAR information.

Technical Features

- True union ends with sockets
 - Polypropylene, SYGEF-PVDF: plain spigots for socket fusion joining (mm sizes)
 - Polypropylene and SYGEF IR: butt fusion ends for butt fusion joining (mm sizes)
 - SYGEF BCF ends for Bead and Crevice free joining
- Union nuts allow easy valve installation and removal
- EPDM O-ring with EPDM diaphragm or FPM O-ring with PTFE diaphragm
- EPDM or PTFE diaphragm with compression rib
- PP GF 30 (glass-fiber reinforced polypropylene) bonnet
- Polypropylene handwheel
- PE handwheel seal
- PE position indicator
- Stainless steel (304) assembly bolts
- Stainless steel threaded bushing facilitates bracketing of the valve. Do not overtighten bolts.



Dimensions for Type 314 True Union Diaphragm Valve PVC (solvent cement socket ends)



Inch size	A inch	B inch	D inch	F inch	K mm	H inch	L inch	T inch	Z inch	Lift inch	Weight lbs.
1/2	0.55	1.69	3.15	0.98	M6	3.54	5.35	.47	3.78	0.32	0.88
3/4	0.69	2.09	3.15	0.98	M6	4.02	6.30	.47	4.49	0.43	1.32
1	0.83	2.36	3.70	0.98	M6	4.67	6.93	.47	4.80	0.51	1.98
1-1/4	1.00	2.91	4.61	1.77	M8	4.96	7.80	.59	5.51	0.63	2.65
1-1/2	1.28	3.27	4.61	1.77	M8	5.47	9.13	.59	6.30	0.83	3.53
2	1.54	4.06	5.98	1.77	M8	6.77	10.55	.59	7.48	1.10	6.17

Part Numbers - PVC



Inch size	solvent cement socket (ASTM) Diaphragm Material:	
	EPDM	PTFE (Teflon®)
1/2	161 314 677	161 314 692
3/4	161 314 678	161 314 693
1	161 314 679	161 314 694
1-1/4	161 314 680	161 314 695
1-1/2	161 314 681	161 314 696
2	161 314 682	161 314 697

Silicon free - PVC

Part number

Inch size	solvent cement socket (ASTM) Diaphragm Material:	
	EP	PTFE (Teflon®)
1/2	161 314 777	161 314 792
3/4	161 314 778	161 314 793
1	161 314 779	161 314 794
1-1/4	161 314 780	161 314 795
1-1/2	161 314 781	161 314 796
2	161 314 782	161 314 797

Other diaphragm materials available on request.

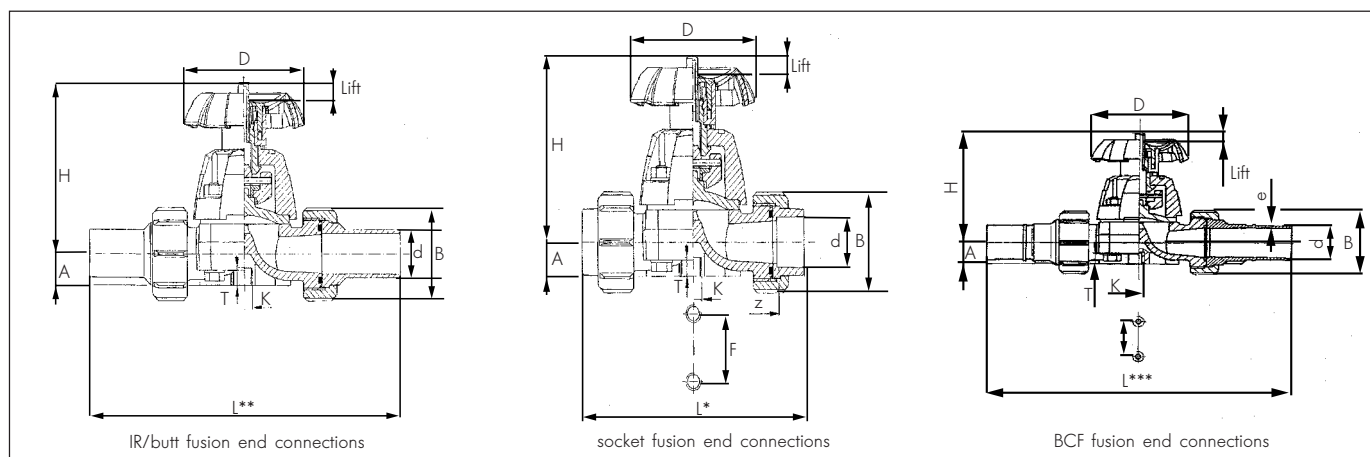
Handwheel with built-in locking mechanism



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Inch Size	Part Number	
1/2	167 481 943	
3/4	167 481 943	
1	167 481 944	
1-1/4	167 481 945	
1-1/2	167 481 945	
2	167 481 946	
2-1/2	167 481 946	

Dimensions for Type 314 True Union Diaphragm Valve Polypropylene and SYGEF-PVDF (IR-Butt, socket and BCF fusion ends)



Metric size d mm	e mm	A inch	B inch	D inch	F inch	H inch	K mm	L* inch	L** PP inch	L** PVDF inch	L*** PVDF inch	T PP inch	T PVDF inch	z inch	Lift inch	
20	1.9	0.55	1.77	3.15	0.98	3.54	M6	5.04	7.72	7.72	8.86	0.47	0.49	3.94	0.31	
25	1.9	0.69	2.17	3.15	0.98	3.98	M6	5.91	8.70	8.66	9.53	0.47	0.49	4.65	0.43	
32	2.4	0.85	2.44	3.70	0.98	4.61	M6	6.38	9.21	9.21	10.00	0.47	0.49	4.96	0.51	
40	2.4	1.00	2.95	4.61	1.77	5.00	M6	7.24	10.24	10.16	12.13	0.59	0.49	5.67	0.63	
50	3.0	1.26	3.29	4.61	1.77	5.47	M6	8.27	11.18	11.18	12.99	0.59	0.49	6.46	0.83	
63	3.0	1.54	3.98	5.98	1.77	6.77	M6	9.76	12.64	12.60	14.69	0.59	0.49	7.64	1.10	

Metric size d mm	Weight* PP lbs.	Weight** PP lbs.	Weight* PVDF lbs.	Weight** PVDF lbs.	Weight*** PVDF lbs.						
20	0.904	0.93	1.04	1.08	1.10						
25	1.279	1.32	1.52	1.57	1.61						
32	1.742	1.79	2.07	2.14	2.20						
40	2.734	2.80	3.31	3.42	3.53						
50	3.527	3.64	4.32	4.50	4.61						
63	6.261	6.48	7.52	7.80	7.98						

* socket fusion

** IR/butt fusion

***BCF fusion

Part Numbers for Type 314 Diaphragm Valve



SYGEF HP

	d mm	psi			Part Number PTFE/EPDM				Closest inch size
with BCF fusion ends	20	150			175 314 362				1/2
	25	150			175 314 363				3/4
	32	150			175 314 364				1
	40	150			175 314 365				1 1/4
	50	150			175 314 366				1 1/2
	63	150			175 314 367				2
with metric fusion sockets	20	150			175 314 462				1/2
	25	150			175 314 463				3/4
	32	150			175 314 464				1
	40	150			175 314 465				1 1/4
	50	150			175 314 466				1 1/2
	63	150			175 314 467				2

SYGEF Standard

	d mm	psi			Part Number PTFE/EPDM				Closest inch size
with metric fusion sockets	20	150			175 314 432				1/2
	25	150			175 314 433				3/4
	32	150			175 314 434				1
	40	150			175 314 435				1 1/4
	50	150			175 314 436				1 1/2
	63	150			175 314 437				2
with IR/butt fusion ends	20	150			175 314 532				1/2
	25	150			175 314 533				3/4
	32	150			175 314 534				1
	40	150			175 314 535				1 1/4
	50	150			175 314 536				1 1/2
	63	150			175 314 537				2

Part Numbers for Type 314 Diaphragm Valve



Beta Polypropylene

	d mm	psi		Part Number EPDM		Part Number PTFE/EPDM	Closest inch size
with metric fusion sockets	20	150		167 314 417		167 314 432	1/2
	25	150		167 314 418		167 314 433	3/4
	32	150		167 314 419		167 314 434	1
	40	150		167 314 420		167 314 435	1 1/4
	50	150		167 314 421		167 314 436	1 1/2
	63	150		167 314 422		167 314 437	2
with IR/butt fusion ends	20	150		167 314 517		167 314 532	1/2
	25	150		167 314 518		167 314 533	3/4
	32	150		167 314 519		167 314 534	1
	40	150		167 314 520		167 314 535	1 1/4
	50	150		167 314 521		167 314 536	1 1/2
	63	150		167 314 522		167 314 537	2

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Silicone-Free Beta Polypropylene

	d mm	psi		Part Number EPDM		Part Number PTFE/EPDM	Closest inch size
with metric fusion sockets	20	150		167 314 477		167 314 492	1/2
	25	150		167 314 478		167 314 493	3/4
	32	150		167 314 479		167 314 494	1
	40	150		167 314 480		167 314 495	1 1/4
	50	150		167 314 481		167 314 496	1 1/2
	63	150		167 314 482		167 314 497	2
with IR/butt fusion ends	20	150		167 314 577		167 314 592	1/2
	25	150		167 314 578		167 314 593	3/4
	32	150		167 314 579		167 314 594	1
	40	150		167 314 580		167 314 595	1 1/4
	50	150		167 314 581		167 314 596	1 1/2
	63	150		167 314 582		167 314 597	2

Product Specifications

Type 314 PVC True Union Diaphragm Valve

PVC diaphragm valve 1/2" through 2" shall be of True Union design. Upper body shall be of glass-filled polypropylene material connected to lower body with exposed stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM, or PTFE with EPDM backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. PVC body material shall meet or exceed the requirements of Class 12454B of ASTM D-1784. Valve to be equipped with solvent cement socket end connections with IPS dimensions. The valve, Type 314, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc. Tustin, CA 92780.

Type 314 Polypropylene (PP) True Union Diaphragm Valve

PP diaphragm valve 1/2" through 2" shall be of True Union design. Upper body shall be of glass-filled polypropylene material connected to lower body with exposed stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM, or PTFE with EPDM backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. PP body material shall meet or exceed the requirements of ASTM D-4101 as pertains to a type I homopolymer compound having a minimum tensile strength of 4350 psi/300 bar at 73°F/20°C when tested in accordance with ASTM D-638 and shall have a melt point which initiates at 316°F/158°C. The melt flow index (at 374°F/190°C/50N) shall be 0.4 - 0.8 grams per 10 minutes in accordance with ASTM D-1238. End connections shall be as outlined in ASTM D-2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. The valve, Type 314, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc. Tustin, CA 92780.

Product Specification

Type 314 PVDF True Union Diaphragm Valve

PVDF diaphragm valve 1/2" through 2" shall be of True Union design. Upper body shall be of glass-filled polypropylene material connected to lower body with exposed stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM, or PTFE with EPDM backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. PVDF body material shall meet or exceed the requirements of ASTM D-3222 as pertains to a natural, unpigmented, virgin, noncompounded polyvinylidene fluoride compound having a minimum tensile strength of 7800 psi/538 bar at 73°F/20°C when tested in accordance with ASTM D-638 and shall have a flexural strength of 10,700 psi/738 bar at 73°F/20°C when tested according to ASTM D-790. End connections shall be as outlined in ASTM D-2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. The valve, Type 314, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc. Tustin, CA 92780.

George Fischer Diaphragm Valve Type 315/315 HTR



Diaphragm valves are especially suitable for flow control applications. Also suitable for slurries and abrasive media.

- "Snap-on" handwheel - easy to remove
- Option: lockable handle
- Position indicator, improved robustness
- Can also be used in vacuum applications
- The HTR valve offers improved performance with wide temperature changes

General

Manual, weir type diaphragm valve Type 315 with spigot ends in sizes 1/2" through 2" (20 mm through 63 mm) in CPVC, polypropylene, natural polypropylene, SYGEF-PVDF, and SYGEF-PVDF HP. Special High Temperature Resistant (HTR) valves in SYGEF-PVDF HP with IR/butt fusion ends are also available.

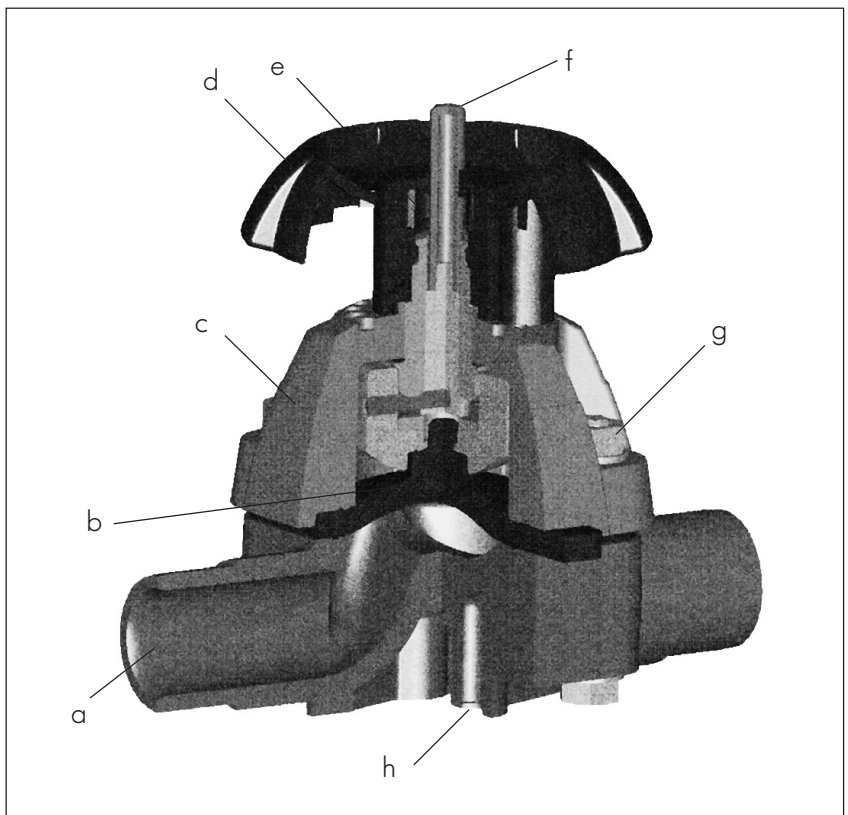
Standard overall length in accordance with DIN 3202.

Flow in either direction irrespective of installation position. Bracketing facility incorporated in the valve.

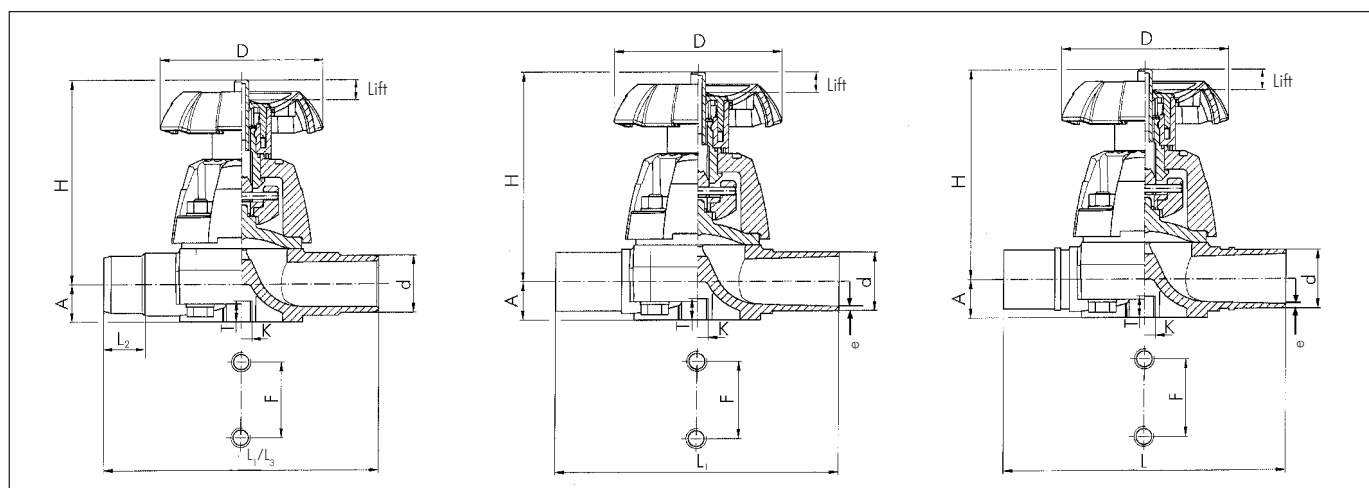
Also available pneumatically actuated, see +GF+ DIASTAR information.

Technical Features

- a) • CPVC: plain spigots for solvent cement joining (inch sizes)
- Polypropylene, natural polypropylene, SYGEF-PVDF: plain spigots for socket fusion joining (mm sizes)
- Polypropylene and SYGEF IR: IR/butt fusion ends for IR/butt fusion joining (mm sizes)
- SYGEF BCF ends for Bead and Crevice free joining
- b) EPDM or PTFE diaphragms for valves with CPVC and polypropylene bases. PTFE diaphragms for SYGEF-PVDF valves
- c) PP GF 30 (glass-fiber reinforced polypropylene) topworks
- d) PP handwheel
- e) PE handwheel seal
- f) PE position indicator
- g) Stainless steel (304) assembly bolts
- h) Stainless steel threaded bushing facilitates bracketing of valve



Dimensions for Type 315 Diaphragm Valve



Metric size	e PVDF	e PP	A	D	F	K	H	L ₁ PP-n, PP, PVDF	L ₂	L ₃ CPVC	L BCF	T	Lift	Weight CPVC	Weight PP/PVDF	Closest Inch Size
d mm	mm	mm	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	lbs.	lbs.	
20	1.9	1.9	0.55	3.15	0.98	M6	3.54	4.88	0.75	5.62	5.24	0.47	0.31	0.66	0.64	1/2
25	1.9	2.3	0.69	3.15	0.98	M6	4.02	5.67	0.83	6.30	5.67	0.47	0.43	0.95	0.97	3/4
32	2.4	3.0	0.83	3.70	0.98	M6	4.67	6.06	0.91	6.83	6.06	0.47	0.51	1.63	1.57	1
40	2.4	3.7	1.00	4.61	1.77	M8	4.96	6.85	0.98	7.40	7.83	0.59	0.63	2.05	2.20	1 1/4
50	3.0	4.6	1.28	4.61	1.77	M8	5.47	7.64	1.10	8.07	8.07	0.59	0.83	2.77	2.87	1 1/2
63	3.0	5.8	1.53	5.98	1.77	M8	6.77	8.82	1.26	8.86	8.82	0.59	1.10	5.22	5.07	2

L BCF ends (PVDF valves only)

L₁ spigot end connections for socket fusion and IR/butt fusion ends for IR/butt fusion (also PP-n for BCF and IR/butt fusion)

L₃ for CPVC solvent cement spigot ends

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Part Numbers for Type 315 Diaphragm Valve



CPVC

Inch size	solvent cement spigot EPDM	PTFE (Teflon®)
1/2	163 315 717	163 315 732
3/4	163 315 718	163 315 733
1	163 315 719	163 315 734
1-1/4	163 315 720	163 315 735
1-1/2	163 315 721	163 315 736
2	163 315 722	163 315 737

CPVC Silicone Free

Inch size	solvent cement spigot EPDM	PTFE (Teflon®)
1/2	163 315 817	163 315 832
3/4	163 315 818	163 315 833
1	163 315 819	163 315 834
1-1/4	163 315 820	163 315 835
1-1/2	163 315 821	163 315 836
2	163 315 822	163 315 837



Handwheel with built-in locking mechanism

Inch Size	Part Number
1/2	167 481 943
3/4	167 481 943
1	167 481 944
1-1/4	167 481 945
1-1/2	167 481 945
2	167 481 946

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Part Numbers for Type 315 Diaphragm Valve

Polypropylene (PP)



OD d mm	ID DN mm	metric fusion spigots for socket fusion		IR/butt fusion ends		Inch size
		EPDM	PTFE (Teflon®)	EPDM	PTFE (Teflon®)	
20	15	167 315 417	167 315 432	167 315 517	167 315 532	1/2
25	20	167 315 418	167 315 433	167 315 518	167 315 533	3/4
32	25	167 315 419	167 315 434	167 315 519	167 315 534	1
40	32	167 315 420	167 315 435	167 315 520	167 315 535	1-1/4
50	40	167 315 421	167 315 436	167 315 521	167 315 536	1-1/2
63	50	167 315 422	167 315 437	167 315 522	167 315 537	2

PP Silicone Free

OD d mm	ID DN mm	metric fusion spigots for socket fusion		IR/butt fusion ends		Inch size
		EPDM	PTFE (Teflon®)	EPDM	PTFE (Teflon®)	
20	15	167 315 477	167 315 462	167 315 577	167 315 562	1/2
25	20	167 315 478	167 315 463	167 315 578	167 315 563	3/4
32	25	167 315 479	167 315 464	167 315 579	167 315 564	1
40	32	167 315 480	167 315 465	167 315 580	167 315 565	1-1/4
50	40	167 315 481	167 315 466	167 315 581	167 315 566	1-1/2
63	50	167 315 482	167 315 467	167 315 582	167 315 567	2

SYGEF-PVDF



OD d mm	ID DN mm	metric fusion spigots for socket fusion PTFE (Teflon®)	IR/butt fusion ends PTFE (Teflon®)	Inch size
20	15	175 315 432	175 315 532	1/2
25	20	175 315 433	175 315 533	3/4
32	25	175 315 434	175 315 534	1
40	32	175 315 435	175 315 535	1-1/4
50	40	175 315 436	175 315 536	1-1/2
63	50	175 315 437	175 315 537	2

SYGEF-PVDF HP

OD d mm	ID DN mm	metric fusion spigots for socket fusion PTFE (Teflon®)	IR/butt fusion ends PTFE (Teflon®)	BCF fusion ends PTFE (Teflon®)	HTR* with IR/ butt fusion ends PTFE (Teflon®)	Inch size
20	15	175 315 462	175 315 562	175 315 362	175 315 602	1/2
25	20	175 315 463	175 315 563	175 315 363	175 315 603	3/4
32	25	175 315 464	175 315 564	175 315 364	175 315 604	1
40	32	175 315 465	175 315 565	175 315 365	175 315 605	1-1/4
50	40	175 315 466	175 315 566	175 315 366	175 315 606	1-1/2
63	50	175 315 467	175 315 567	175 315 367	175 315 607	2

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* HTR = High Temperature Resistant

Part Numbers for Type 315 Diaphragm Valve

PP-n Natural Polypropylene



OD d mm	ID DN mm	IR-Butt / BCF fusion ends		Inch size
		PTFE (Teflon®)	EPDM	
20	15	168 315 532	168 315 517	1/2
25	20	168 315 533	168 315 518	3/4
32	25	168 315 534	168 315 519	1
40	32	168 315 535	168 315 520	1-1/4
50	40	168 315 536	168 315 521	1-1/2
63	50	168 315 537	168 315 522	2

Product Specifications

Type 315 CPVC Diaphragm Valve

CPVC diaphragm valve 1/2" through 2" shall be of spigot end connection. Upper body shall be of glass-filled polypropylene material connected to lower body with exposed stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM or PTFE with EPDM elastomer backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. CPVC body material shall meet or exceed the requirements of Class 23447-B of ASTM D-1784. Valve to be equipped with spigot type connections with dimensions conforming to ASTM F441 (formerly D-1785). The valve Type 315 shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 315 PP Diaphragm Valve

Polypropylene diaphragm valve 1/2" through 2" shall be of spigot end connection. Upper body shall be of glass-filled polypropylene material connected to lower body with exposed stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM or PTFE with EPDM elastomer backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. PP body material shall meet or exceed the requirements of ASTM D-4101 as pertains to type I homopolymer compound having a minimum tensile strength of 4350 psi/300 bar at 73°F/ 20°C when tested in accordance with ASTM D-638 and shall have a melt point which initiates at 316°F/158°C. The melt flow index (at 374°F/190°C/50N) shall be 0.4 - 0.8 grams per 10 minutes in accordance with ASTM D-1238. End connections shall be as outlined in ASTM D-2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. The valve Type 315 shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Product Specification

Type 315 PVDF Diaphragm Valve

PVDF diaphragm valve 1/2" through 2" shall be of spigot end connection. Upper body shall be of glass-filled polypropylene material connected to lower body with exposed stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM or PTFE with EPDM elastomer backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. PVDF body material shall meet or exceed the requirements of ASTM D-3222 as pertains to a natural, unpigmented, virgin, noncompounded polyvinylidene fluoride compound having a minimum tensile strength of 7800 psi/538 bar at 73°F/20°C when tested in accordance with ASTM D-638 and shall have a flexural strength of 10,700 psi/738 bar at 73°F/20°C when tested according to ASTM D-790. End connections shall be as outlined in ASTM D-2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. The valve Type 315 shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 315-HTR SYGEF-PVDF HP IR Diaphragm Valve

High temperature resistant PVDF diaphragm valves in dimensional sizes 20 mm (1/2") through 63 mm (2") shall be IR Type 315-HTR PVDF Diaphragm Valves as manufactured by George Fischer. All IR Type 315-HTR PVDF Diaphragm Valves shall be compatible with the George Fischer IR Plus™ (Infrared) fusion technology and made from virgin, unpigmented PVDF material.

All IR Type 315-HTR PVDF Diaphragm Valves shall be weir style with PTFE diaphragm seals backed with EPDM. All PVDF valves shall be precleaned for ultrapure service and double bagged in Nylon 6/PE packaging.

Type 315 PP-n Natural PP, BCF/IR Diaphragm Valve

Natural Polypropylene diaphragm valves 1/2" through 2" shall be of spigot end connection for IR and BCF joining. Upper body shall be of glass-filled polypropylene material connected to lower body with exposed stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM or PTFE with EPDM elastomer backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. PP body material shall meet or exceed the requirements of ASTM D 4101 as pertains to group 02, random copolymer compound having a minimum tensile strength of 3771 psi/260 bar at 73°F/23°C when tested in accordance with ASTM D 638 and shall have a melt point which initiates at 320°F/160°C. The melt flow index (at 230°C and 2.16 kg) shall be 0.3 grams per 10 minutes in accordance with ASTM D 1238. End connections shall be as outlined in ASTM D 2657 for fusion joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. The valve, Type 315, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

George Fischer Diaphragm Valve Type 317



Diaphragm valves are especially suitable for flow control applications. Also suitable for use with slurries and abrasive media as well as for flanged requirements in a UPW system.

1/2" – 2 1/2" sizes feature an easily removable handwheel
 • option: lockable handle

General

Manually operated diaphragm valve Type 317 with flanges. Available with PVC, CPVC (through 4"), polypropylene, natural polypropylene, SYGEF-PVDF, or SYGEF-PVDF HP bodies in sizes 1/2" through 6" (20 mm through 160 mm). Flow in either direction irrespective of installation position.

Bracketing facility incorporated in the valve.

Position indicator.

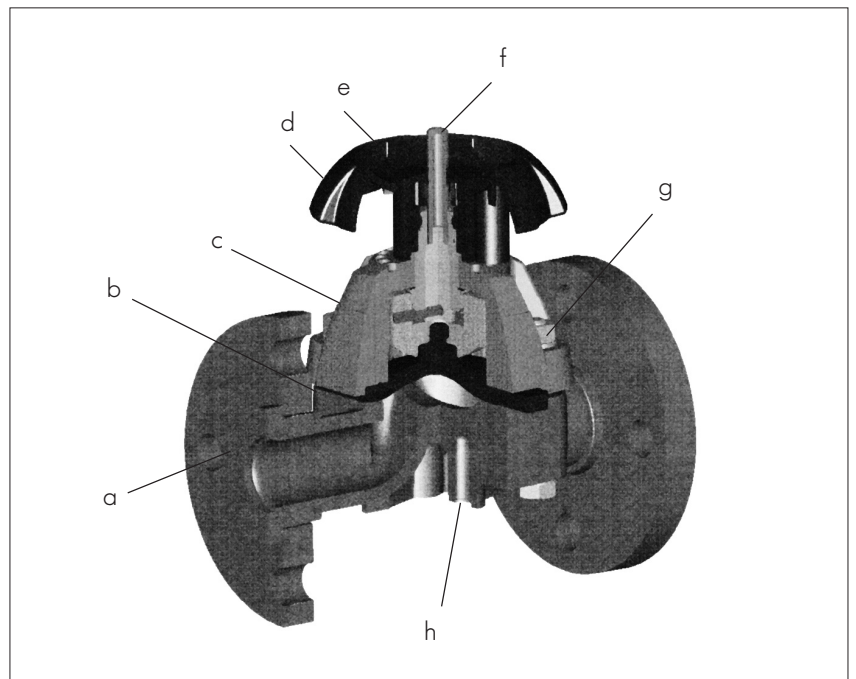
Easy replacement of diaphragm without removal of the body from the pipeline.

Also available pneumatically actuated, see +GF+ DIASTAR information.

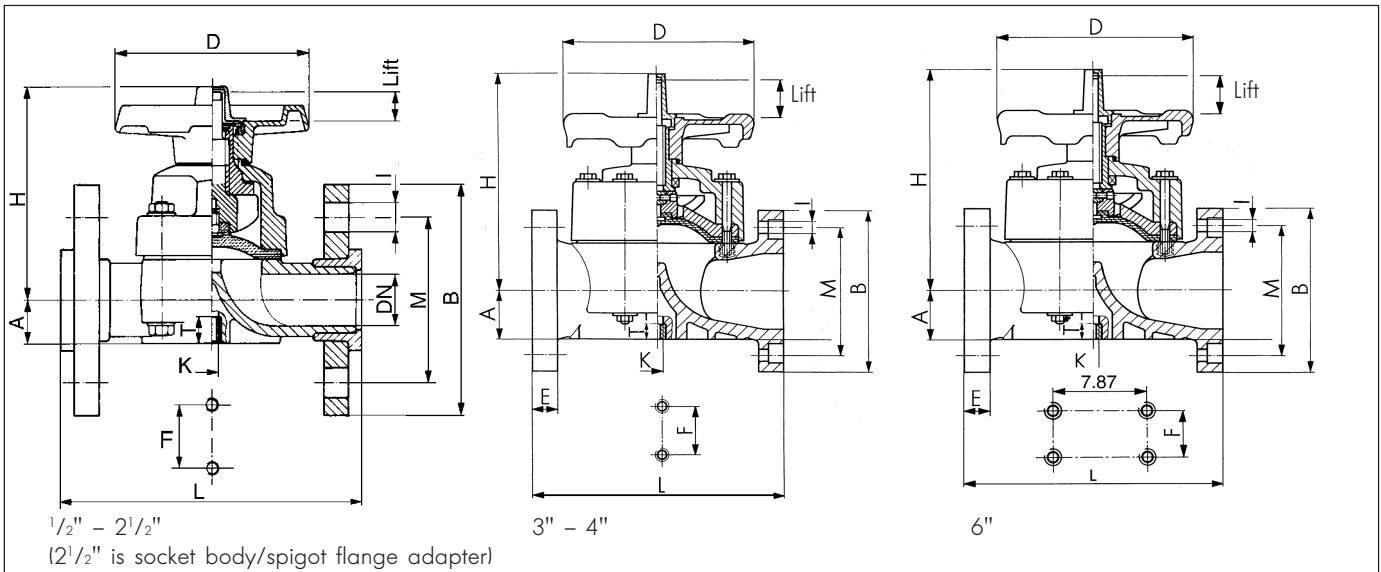
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Technical Features

- a) Flanges drilled to ANSI Class 150 pattern
- b) Diaphragm in EPDM or PTFE for PVC, CPVC, and polypropylene valves. PTFE diaphragm for SYGEF-PVDF valves
- c) PP GF 30 (glass-fiber reinforced polypropylene) topworks
- d) PP handwheel (PVC for 3" and 4", PPTSG for 6")
- e) PE handwheel seal
- f) PE position indicator
- g) Stainless steel (304) assembly bolts
- h) Stainless steel threaded bushing facilitates bracketing of valve



Dimensions for Type 317 Flanged Diaphragm Valve



Inch size	A inch	B CPVC inch	B PVC/PP/PVDF inch	D inch	E CPVC inch	E PVC/PP/PVDF inch	H inch	L PVC/PP/PVDF inch	L CPVC inch	M inch	I inch	No. bolt holes	F inch	K* mm
1/2	0.55	3.50	3.74	3.15	0.50	0.43	3.54	5.12	5.91	2.38	0.55	4	0.98	M6
3/4	0.69	3.88	4.13	3.15	0.50	0.47	4.02	5.91	6.54	2.75	0.55	4	0.98	M6
1	0.83	4.25	4.53	3.70	0.56	0.55	4.67	6.30	7.09	3.13	0.55	4	0.98	M6
1 1/4	1.00	4.63	5.51	4.61	0.63	0.59	4.96	7.09	7.56	3.50	0.71	4	1.77	M8
1 1/2	1.28	5.00	5.91	4.61	0.69	0.63	5.47	7.87	8.27	3.88	0.71	4	1.77	M8
2	1.53	6.00	6.50	5.98	0.75	0.71	6.77	9.06	9.06	4.75	0.71	4	1.77	M8
2 1/2	1.81	7.28	7.28	5.98	0.79	0.79	7.91	11.42	11.42	5.50	0.71	4	2.76	M8
3	2.24	7.87	7.87	10.63	1.38	1.38	10.43	12.20	12.20	6.00	0.71	4	4.72	M12
4	2.72	8.86	8.86	10.63	1.38	1.38	11.97	13.78	13.78	7.50	0.71	8	4.72	M12
6	4.25	—	11.22	15.75	—	1.38	17.20	18.90	—	9.50	0.87	8	3.94	M12

Loose ring flanges 1/2" - 2 1/2"

Integrally molded, fixed flanges 3" - 6"

*metric thread

Weights

Inch size	T inch	Lift inch	PVC/CPVC lbs.	PVDF lbs.	PP lbs.
1/2	0.47	0.31	1.0	1.3	1.2
3/4	0.47	0.43	1.5	1.9	1.8
1	0.47	0.51	2.2	2.6	2.7
1 1/4	0.59	0.63	3.5	5.1	3.1
1 1/2	0.59	0.83	4.2	5.1	5.3
2	0.59	1.10	7.1	8.2	7.9
2 1/2	0.59	1.18	9.5	12.6	12.0
3	0.91	1.57	21.4	23.6	19.0
4	0.91	1.97	30.0	32.8	25.0
6	0.91	2.76	59.5	68.3	55.2

Bolt tightening torque values for flanged joints

Inch size	Inch pounds	ft. lbs
1/2	133	11
3/4	133	11
1	133	11
1 1/4	177	15
1 1/2	266	22
2	310	26
2 1/2	354	29.5
3	354	29.5
4	354	29.5
6	531	44

Handwheel with built-in locking mechanism

Inch size	Part Number
1/2	167 481 943
3/4	167 481 943
1	167 481 944
1-1/4	167 481 945
1-1/2	167 481 945
2	167 481 946
2-1/2	167 481 946



Part Numbers for Type 317 Diaphragm Valve



PVC (PVC loose ring flanges)

Inch size	Diaphragm material:	
	EPDM	PTFE (Teflon®)
1/2	161 317 617	161 317 632
3/4	161 317 618	161 317 633
1	161 317 619	161 317 634
1-1/4	161 317 620	161 317 635
1-1/2	161 317 621	161 317 636
2	161 317 622	161 317 637
2-1/2	161 317 623	161 317 638
3	161 317 024	161 317 039
4	161 317 325	161 317 340
6	161 317 027	161 317 042

PVC

Inch size	Diaphragm material:	
	CSM (Hypalon)	
1/2	161 317 647	
3/4	161 317 648	
1	161 317 649	
1-1/4	161 317 650	
1-1/2	161 317 651	
2	161 317 652	
2-1/2	161 317 653	
3	161 317 054	
4	700 244 114	
6	161 317 027	

Silicone-Free PVC

Inch size	Diaphragm material:	
	EPDM	PTFE (Teflon®)
1/2	161 317 747	161 317 762
3/4	161 317 748	161 317 763
1	161 317 749	161 317 764
1-1/4	161 317 750	161 317 765
1-1/2	161 317 751	161 317 766
2	161 317 752	161 317 767
2-1/2	161 317 753	161 317 768
3	161 317 424	161 317 439
4	161 317 455	161 317 470
6	161 317 427	161 317 442

CPVC (CPVC loose ring flanges)

Inch size	Diaphragm material:	
	EPDM	PTFE (Teflon®)
1/2	163 317 617	163 317 632
3/4	163 317 618	163 317 633
1	163 317 619	163 317 634
1-1/4	163 317 620	163 317 635
1-1/2	163 317 621	163 317 636
2	163 317 622	163 317 637
2-1/2	163 317 623	163 317 638
3	163 317 024	163 317 039
4	163 317 325	163 317 340
6	—	—

3, 4, and 6" valves have integrally molded flanges.

Polypropylene (UP-GF* loose ring flange)

OD d mm	ID DN mm	Diaphragm material:	
		EPDM	PTFE (Teflon®)
20	15	167 317 242	167 317 257
25	20	167 317 243	167 317 258
32	25	167 317 244	167 317 259
40	32	167 317 245	167 317 260
50	40	167 317 246	167 317 261
63	50	167 317 247	167 317 262
75	65	167 317 523	167 317 538
90	80	167 317 024	167 317 039
110	100	167 317 325	167 317 340
160	150	167 317 027	167 317 042

Natural Polypropylene (UP-GF* loose ring flange)

Inch size	Diaphragm material:	
	EPDM	PTFE (Teflon®)
1/2	168 317 517	168 317 532
3/4	168 317 518	168 317 533
1	168 317 519	168 317 534
1-1/4	168 317 520	168 317 535
1-1/2	168 317 521	168 317 536
2	168 317 522	168 317 537
2-1/2	—	—
3	—	—
4	—	—
6	—	—



SYGEF-PVDF (UP-GF* loose ring flange)

OD d mm	ID DN mm	Diaphragm material:	
		PTFE (Teflon®)	
20	15	175 317 532	
25	20	175 317 533	
32	25	175 317 534	
40	32	175 317 535	
50	40	175 317 536	
63	50	175 317 537	
75	65	175 317 538	
90	80	175 317 009	
110	100	175 317 340	
160	150	175 317 012	

PVDF HP (PVDF coated steel loose ring flange)

Inch size	Diaphragm material:	
	PTFE (Teflon®)	
1/2	175 317 562	
3/4	175 317 563	
1	175 317 564	
1-1/4	175 317 565	
1-1/2	175 317 566	
2	175 317 567	
2-1/2	175 317 568	
3	175 317 054	
4	175 317 355	
6	175 317 057	

*UP-GF unsaturated polyester glass fiber reinforced.

Teflon® is a registered trademark of DuPont.

Product Specifications

Type 317 PVC Diaphragm Valve

PVC diaphragm valve 1/2" through 6" shall be of flanged design. Upper body shall be of glass-filled polypropylene material connected to lower body with stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM or PTFE with EPDM elastomer backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. PVC body material shall meet or exceed the requirements of Class 12454B of ASTM D-1784. Valve to be equipped with flanged end connections with dimensions conforming to ANSI B16.5, class 150. The valve, Type 317, shall carry a pressure rating of 150 psi at 68°F (6" 105 psi) as supplied by George Fischer, Inc. Tustin, CA 92780.

Type 317 CPVC Diaphragm Valve

CPVC diaphragm valve 1/2" through 4" shall be of flanged end connection. Upper body shall be of glass-filled polypropylene material connected to lower body with stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM or PTFE with EPDM elastomer backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. CPVC body material shall meet or exceed the requirements of Class 23447-B of ASTM D-1784. Valve to be equipped with flanged end connections with dimensions conforming to ANSI B16.5, class 150. The valve Type 317 shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

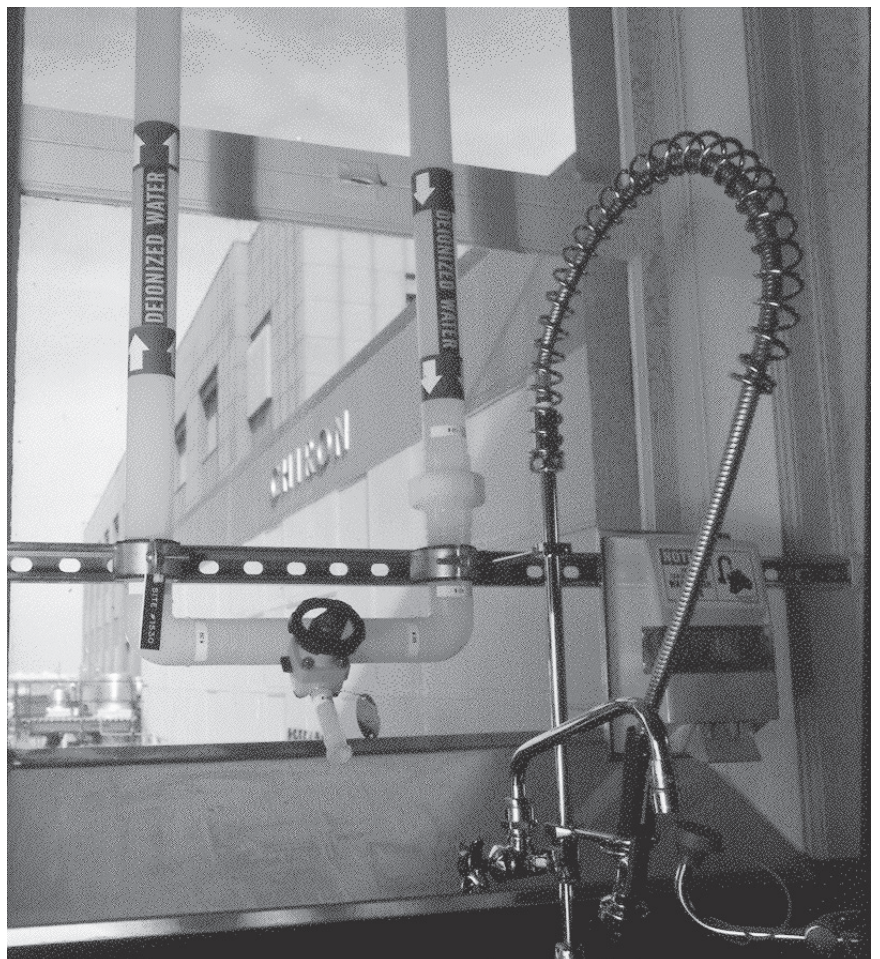
Product Specifications

Type 317 PP Diaphragm Valve

PP diaphragm valve 1/2" through 6" shall be of flanged end connection. Upper body shall be of glass-filled polypropylene material connected to lower body with stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM or PTFE with EPDM elastomer backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. PP body material shall meet or exceed the requirements of ASTM D-4101 as pertains to a type I homopolymer compound having a minimum tensile strength of 4350 psi/300 bar at 73 F/20 C when tested in accordance with ASTM D-638 and shall have a melt point which initiates at 316 F/158 C. The melt flow index (at 374 F/190 C/50N) shall be 0.4 - 0.8 grams per 10 minutes in accordance with ASTM D-1238. Valve to be equipped with flanged end connections with dimensions conforming to ANSI B16.5, class 150. The valve Type 317 shall carry a pressure rating of 150 psi at 68°F (6" 105 psi) as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 317 PVDF Diaphragm Valve

PVDF diaphragm valve 1/2" through 6" shall be of flanged end connection. Upper body shall be of glass-filled polypropylene material connected to lower body with stainless steel bolts. All interior metal parts are to be sealed from outside influence. A position indicator must be present to determine diaphragm position. Diaphragms to be either EPDM or PTFE with EPDM elastomer backing. Metal threaded bushings shall be molded into lower body to facilitate mounting. PVDF body material shall meet or exceed the requirements of ASTM D-3222 as pertains to a natural, unpigmented, virgin, noncompounded polyvinylidene fluoride compound having a minimum tensile strength of 7800 psi/538 bar at 73 F/20 C when tested in accordance with ASTM D-638 and shall have a flexural strength of 10,700 psi/738 bar at 73 F/20 C when tested according to ASTM D-790. Valve to be equipped with flanged end connections with dimensions conforming to ANSI B16.5, class 150. The valve Type 317 shall carry a pressure rating of 150 psi at 68°F (6" 105 psi) as supplied by George Fischer, Inc., Tustin, CA 92780.



George Fischer Zero Static Valve Type 319 and 319-HTR



The Type 319 Zero Static Valve is ideally suited to eliminate dead legs in ultrapure water systems.

- Ergonomic, "snap-on" handwheel – easy to remove
- Option: lockable handle
- Position indicator, improved robustness
- Can also be used in vacuum applications
- The HTR valve offers improved performance with wide temperature changes

General

Manually operated diaphragm valve Type 319 with ends compatible for socket, Infrared or Bead and Crevice Free (BCF) fusion. Available in polypropylene and SYGEF-PVDF HP material in mm sizes.

Special High Temperature Resistant (HTR) valves in SYGEF-PVDF HP are also available.

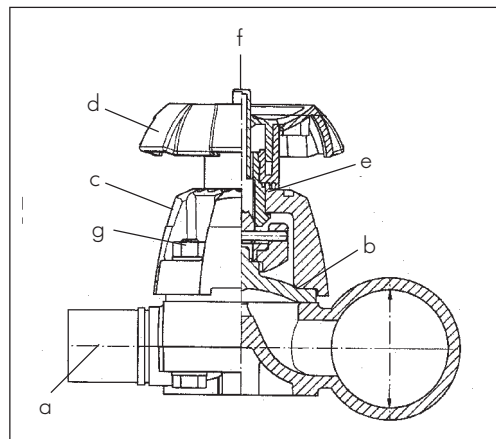
Shortest possible branch geometry. Compact construction requiring the least amount of space for installation. Outstanding internal surface characteristics.

Also available pneumatically actuated, see +GF+ DIASTAR information.

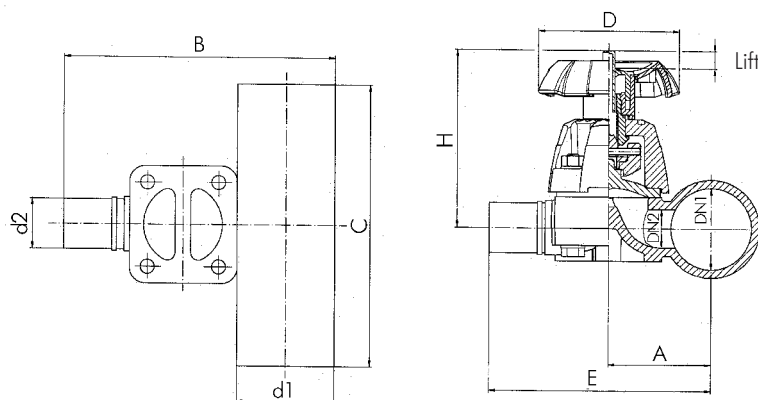
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Technical Features

- a) SYGEF-PVDF HP; compatible with Infrared (IR) or Bead and Crevice Free (BCF) fusion.
Polypropylene with IR/butt fusion ends.
- b) PTFE diaphragm with compression rib
- c) PP GF 30 (glass-fiber reinforced polypropylene) bonnet
- d) PP handwheel
- e) PE handwheel seal
- f) PE position indicator
- g) Stainless steel (304) assembly bolts



Dimensions for Zero Static Valve Type 319/319-HTR



d1 – d2	Valve ass'y. size mm	Type*	A inch	B inch	E inch	C inch	D inch	H inch	lift inch	Weight lbs.	Closest inch size
20x20 mm	20	M	1.18	4.17	3.78	5.51	3.15	3.43	0.28	0.82	1/2" x 1/2"
25x20 mm	25	M	1.42	4.74	4.25	5.91	3.15	3.98	0.39	1.23	3/4" x 1/2"
25x25 mm	25	M	1.42	4.74	4.25	5.91	3.15	3.98	0.39	1.22	3/4" x 3/4"
32x20 mm	32	M	1.70	5.40	4.73	6.30	3.70	4.57	0.47	1.85	1" x 1/2"
32x25 mm	32	M	1.70	5.40	4.73	6.30	3.70	4.57	0.47	1.85	1" x 3/4"
32x32 mm	32	M	1.70	5.40	4.73	6.30	3.70	4.57	0.47	1.85	1" x 1"
40x20 mm	32	M	2.01	5.87	5.04	7.09	3.70	4.57	0.47	1.79	1 1/4" x 1/2"
40x25 mm	32	M	2.01	5.87	5.04	7.09	3.70	4.57	0.47	1.79	1 1/4" x 3/4"
40x32 mm	32	M	2.01	5.87	5.04	7.09	3.70	4.57	0.47	1.79	1 1/4" x 1"
40x40 mm	40	M	2.20	6.83	6.00	7.48	4.61	5.00	0.63	2.67	1 1/4" x 1 1/4"
50x20 mm	32	M	2.22	6.24	5.26	7.09	3.70	4.57	0.47	1.96	1 1/2" x 1/2"
50x25 mm	32	M	2.22	6.24	5.26	7.09	3.70	4.57	0.47	1.96	1 1/2" x 3/4"
50x32 mm	32	M	2.22	6.24	5.26	7.09	3.70	4.57	0.47	1.94	1 1/2" x 1"
50x40 mm	50	M	2.60	7.66	6.63	7.87	4.61	5.47	0.75	3.71	1 1/2" x 1 1/4"
50x50 mm	50	M	2.60	7.66	6.63	7.87	4.61	5.47	0.75	3.72	1 1/2" x 1 1/2"
63x20 mm	32	M	2.62	6.89	5.65	7.09	3.70	4.57	0.47	2.10	2" x 1/2"
63x25 mm	32	M	2.62	6.89	5.65	7.09	3.70	4.57	0.47	2.09	2" x 3/4"
63x32 mm	32	M	2.62	6.89	5.65	7.09	3.70	4.57	0.47	2.09	2" x 1"
63x40 mm	63	M	3.15	8.84	7.56	8.66	5.98	6.77	1.06	5.73	2" x 1 1/4"
63x50 mm	63	M	3.15	8.84	7.56	8.66	5.98	6.77	1.06	5.73	2" x 1 1/2"
63x63 mm	63	M	3.15	8.84	7.56	8.66	5.98	6.77	1.06	5.73	2" x 2"
75x40 mm	40	M	3.07	8.01	6.53	7.48	4.61	4.96	0.63	2.91	2 1/2" x 1 1/4"
75x50 mm	63	M	3.39	9.27	7.80	8.66	5.98	6.77	1.06	5.98	2 1/2" x 1 1/2"
75x63 mm	63	M	3.39	9.27	7.80	8.66	5.98	6.77	1.06	5.98	2 1/2" x 2"
90x20 mm	32	M	3.21	8.01	6.24	6.30	3.70	4.57	0.47	2.60	3" x 1/2"
90x25 mm	32	M	3.21	8.01	6.24	6.30	3.70	4.57	0.47	2.60	3" x 3/4"
90x32 mm	32	M	3.21	8.01	6.24	6.30	3.70	4.57	0.47	2.60	3" x 1"
90x50 mm	63	M	3.75	9.93	8.16	8.66	5.98	6.77	1.10	6.55	3" x 1 1/2"
90x63 mm	63	M	3.75	9.93	8.16	8.66	5.98	6.77	1.10	6.55	3" x 2"
110x20 mm	32	M	3.70	8.90	6.73	6.30	3.70	4.57	0.47	2.89	4" x 1/2"
110x25 mm	32	M	3.70	8.90	6.73	6.30	3.70	4.57	0.47	2.88	4" x 3/4"
110x32 mm	32	M	3.70	8.90	6.73	6.30	3.70	4.57	0.47	2.87	4" x 1"
110x50 mm	63	M	4.25	10.83	8.66	8.66	5.98	6.77	1.10	7.19	4" x 1 1/2"
110x63 mm	63	M	4.25	10.83	8.66	8.66	5.98	6.77	1.10	7.17	4" x 2"

* Type M = molded body configuration



with IR/butt and BCF
fusion ends

Part Numbers for Zero Static Valve Type 319 and 319-HTR

SYGEF-PVDF HP

d mm	psi	Diaphragm material: PTFE with EPDM supp. diaphragm		Closest inch size
		Type 319	Type 319-HTR	
20x20	150	175 319 301	175 319 601	1/2x1/2
25x20	150	175 319 303	175 319 603	3/4x1/2
25x25	150	175 319 304	175 319 604	3/4x3/4
32x20	150	175 319 307	175 319 607	1x1/2
32x25	150	175 319 308	175 319 608	1x3/4
32x32	150	175 319 309	175 319 609	1x1
40x20	150	175 319 312	175 319 612	1 1/4x1/2
40x25	150	175 319 313	175 319 613	1 1/4x3/4
40x32	150	175 319 314	175 319 614	1 1/4x1
40x40	150	175 319 315	175 319 615	1 1/4x1 1/4
50x20	150	175 319 318	175 319 618	1 1/2x1/2
50x25	150	175 319 319	175 319 619	1 1/2x3/4
50x32	150	175 319 320	175 319 620	1 1/2x1
50x40	150	175 319 321	175 319 621	1 1/2x1 1/4
50x50	150	175 319 322	175 319 622	1 1/2x1 1/2
63x20	150	175 319 325	175 319 625	2x1/2
63x25	150	175 319 326	175 319 626	2x3/4
63x32	150	175 319 327	175 319 627	2x1
63x40	150	175 319 328	175 319 628	2x1 1/4
63x50	150	175 319 329	175 319 629	2x1 1/2
63x63	150	175 319 330	175 319 630	2x2
75x40	150	175 319 336	175 319 636	2 1/2x1 1/4
75x50	150	175 319 337	175 319 637	2 1/2x1 1/2
75x63	150	175 319 338	175 319 638	2 1/2x2
90x20	150	175 319 341	175 319 641	3x1/2
90x25	150	175 319 342	175 319 642	3x3/4
90x32	150	175 319 343	175 319 643	3x1
90x50	150	175 319 345	175 319 645	3x1 1/2
90x63	150	175 319 346	175 319 646	3x2
110x20	150	175 319 351	175 319 651	4x1/2
110x25	150	175 319 352	175 319 652	4x3/4
110x32	150	175 319 353	175 319 653	4x1
110x50	150	175 319 355	175 319 655	4x1 1/2
110x63	150	175 319 356	175 319 656	4x2



with IR/butt fusion
ends

*consult factory for availability
date

Part Numbers for Zero Static Valve Type 319

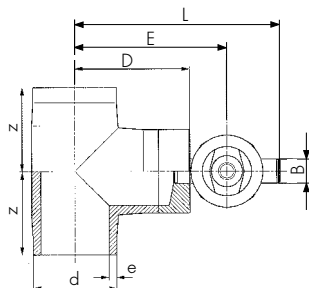
		Polypropylene (PP-H)*	Natural Polypropylene (PP-n)*	
d mm	psi	Diaphragm material: PTFE with EPDM supp. diaphragm only	Diaphragm material: EPDM only	Closest Inch size
20x20	150	167 319 301	168 319 401	1/2 x 1/2
25x20	150	167 319 303	168 319 403	3/4 x 1/2
25x25	150	167 319 304	168 319 404	3/4 x 3/4
32x20	150	167 319 307	168 319 407	1 x 1/2
32x25	150	167 319 308	168 319 408	1 x 3/4
32x32	150	167 319 309	168 319 409	1 x 1
40x20	150	167 319 312	168 319 412	1 1/4 x 1/2
50x20	150	167 319 318	168 319 418	1 1/2 x 1/2
50x25	150	167 319 319	168 319 419	1 1/2 x 3/4
50x32	150	167 319 320	168 319 420	1 1/2 x 1
63x20	150	167 319 325	168 319 425	2 x 1/2
63x25	150	167 319 326	168 319 426	2 x 3/4
63x32	150	167 319 327	168 319 427	2 x 1



Reducing Tee/Valve Assembly

Beta PP, IR Butt					PP-n IR/BCF				
d mm	psi	LT	Part Number PTFE Diaphragm		SP	Part Number EPDM Diaphragm		SP	Closest inch size
40 x 25	150	20	727 993 209		1	728 993 1209E		1	1 1/4 x 3/4
40 x 32	150	20	727 993 210		1	728 993 1210E		1	1 1/4 x 1
50 x 40	150	20	727 993 215		1	728 993 1215E		1	1 1/2 x 1 1/4
63 x 40	150	20	727 993 220		1	728 993 1220E		1	2 x 1 1/4
63 x 50	150	20	727 993 221		1	728 993 1221E		1	2 x 1 1/2

Reducing Tee/Valve Dimensions



mm	d mm	B mm	D inch	Z inch	e mm	E inch	L inch			Closest inch size
40 x 25	40	25	2.60	2.01	3.7	4.88	7.72			1 1/4 x 3/4
40 x 32	40	32	2.60	2.01	3.7	5.00	8.03			1 1/4 x 1
50 x 40	50	40	3.03	2.28	4.6	5.75	9.18			1 1/2 x 1 1/4
63 x 40	63	40	3.35	2.60	5.8	6.06	9.49			2 x 1 1/4
63 x 50	63	50	3.47	2.60	5.8	6.46	10.28			2 x 1 1/2

Product Specifications

Zero Static Valve Type 319 SYGEF-PVDF HP

High purity PVDF zero static valves with primary sizes 20 mm (1/2") through 110 mm (4") and reductions down to 20 mm shall be Type 319 Zero Static Valves as manufactured by George Fischer. All Zero Static valves shall be compatible with the George Fischer Bead and Crevice Free (BCF) and Infrared (IR) fusion technology and molded from virgin, unpigmented PVDF material. All Zero Static Valves shall be weir style with PTFE diaphragm seals backed with EPDM. All valves shall be precleaned for ultrapure service and double bagged in Nylon 6/PE packaging.

Zero Static Valve Type 319-HTR SYGEF-PVDF HP

High temperature resistant PVDF zero static valves with primary sizes 20 mm (1/2") through 110 mm (4") and reductions down to 20 mm (1/2") shall be Type 319-HTR Zero Static Valves as manufactured by George Fischer. All valves shall be compatible with the George Fischer Bead and Crevice Free (BCF) and Infrared (IR) fusion technology and molded from virgin, unpigmented PVDF material. All Zero Static Valves shall be weir style with PTFE diaphragm seals backed with EPDM and supported by a secondary O-ring seal made of white FPM. All valves shall be precleaned for ultrapure service and double bagged in Nylon 6/PE packaging.

Zero Static Valve Type 319 Beta (β) Polypropylene

Beta (β) Polypropylene Zero Static Valves with primary sizes 20mm (~1/2") through 63mm (~2") and reductions down to 20mm shall be Type 319 Zero Static Valves as manufactured by George Fischer, Inc. All Beta (β) Polypropylene Zero Static Valves shall be compatible with the George Fischer Infrared (IR) fusion technology and molded from Beta nucleated, pigmented, homopolymer polypropylene. All Zero Static Valves shall be weir style with PTFE diaphragm seals backed with EPDM.

Zero Static Valve Type 319 PP-n Natural Polypropylene

PP-n Natural Polypropylene Zero Static Valves with primary sizes 20mm (~1/2") through 63mm (~2") and reductions down to 20mm shall be Type 319 Zero Static Valves as manufactured by George Fischer, Inc. All PP-n Natural Polypropylene Zero Static Valves shall be compatible with the George Fischer Bead and Crevice Free (BCF) and Infrared (IR) fusion technology and molded from un-pigmented, copolymer natural polypropylene. All Zero Static Valves shall be weir style with EPDM diaphragm seals.

Assembly Instructions for Diaphragm Valves Types 314, 315, 317, 319

Fit diaphragm to compressor. PTFE diaphragms have a bayonet connection. Join bonnet assembly to body by means of bolts, washers, and nuts.

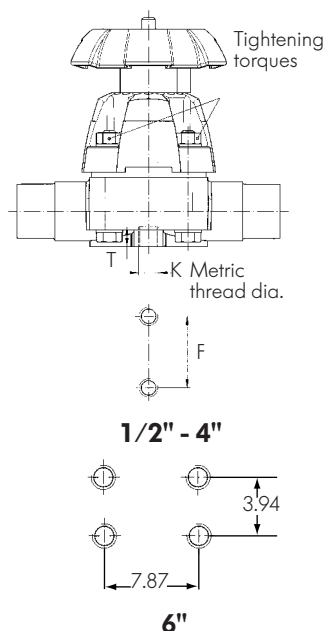
The valve you are about to install was thoroughly checked for performance before it left our factory. **However due to natural relaxation of the diaphragm material, we strongly recommend that the bolt torque be checked prior to installation or immediately prior to pressure testing if the piping installation is under construction for a long period of time.**

Bolt Tightening Torques

Metric size d mm	Suggested starting torque inch-lbs.	Max. torque in lbs.*	Socket wrench size mm	F inch	K dia. mm	T depth inch	Inch size
20	22	34		0.98	M6	0.47	1/2
25	27	40	10	0.98	M6	0.47	3/4
32	35	53	10	0.98	M6	0.47	1
40	53	80	13	1.77	M8	0.59	1 1/4
50	89	133	13	1.77	M8	0.59	1 1/2
63	133	204	17	1.77	M8	0.59	2
75	221	221	19	2.76	M8	0.59	2 1/2
90	248	248	19	4.72	M12	0.91	3
110	266	266		4.72	M12	0.91	4
160	354	354		3.94	M12	0.91	6

* Max. Torque for PTFE diaphragms, only

Attention: The diaphragms are not to be over-compressed.



A special note for users of High Purity valves

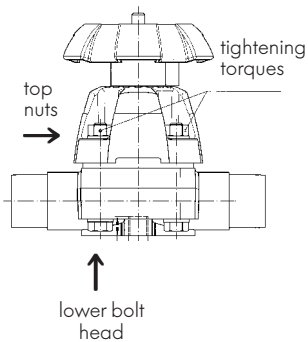
Occasionally it is necessary to demount the valve bonnet from the body to facilitate fusion. Whenever possible it is better to remove just the handle than the complete bonnet but if complete demounting is the only solution or if you are disassembling the valve for maintenance we recommend the following procedure: In a cleanroom environment the two halves of the valve should be held firmly together while all bolts are removed. The bolt holes should then be blown clean with filtered air or an inert gas. This will substantially reduce the risk of contamination of the inner surfaces of the valve caused by particles rubbed from the elastomer backing diaphragm when the bolts are removed. If there is any evidence of contamination it should be removed using a cleanroom approved cloth and cleanroom grade Iso Propyl Alcohol prior to reassembly. Again the two halves of the valve must be closed before inserting the bolts and final tightening.

Installation Instructions for SYGEF-PVDF HP Diaphragm Valves Type 315-HTR, 319-HTR

Recommended for newly purchased SYGEF® PVDF HP HTR Diaphragm Valves. Failure to follow these instructions may result in valve leakage which could be time consuming and expensive to correct.

The valve you are about to install was thoroughly checked for performance before it left our factory. **However due to natural relaxation of the diaphragm material, we strongly recommend that the bolt torque be checked prior to installation or immediately prior to pressure testing if the piping installation is under construction for a long period of time.**

1) Ensure that the system is fully drained and free of internal pressure.



2) Hold the lower bolt head with a wrench. Use a torque wrench, with the correct socket, to tighten the nuts on the top of the bonnet to the proper starting torque values (see table). These values are valid for an installation environment with normal ambient temperatures (20 – 25°C).

3) It is important that the four bolts are progressively tightened in a cross pattern to the required torque and that this is done **with the valve open** so the load is evenly distributed upon the diaphragm and valve body.

4) If the system pressure test is to follow immediately, all necessary valves can be closed (normal hand tightness is sufficient; more than this may result in damage to the valve) and the system can be filled and tested.

5) For optimum performance after the first temperature cycle, George Fischer recommends to retighten the bolts to the defined torque (see table). Prior to retightening, follow the instructions above.

Component Parts for Diaphragm Valve Types 314, 315, 317, 319

		Inch size / OD d mm						
Part	Material	1/2" / 20 mm	3/4" / 25 mm	1" / 32 mm	1 1/4" / 40 mm	1 1/2" / 50 mm	2" / 63 mm	2 1/2" / 75 mm
Bonnet complete (without diaphragm) for:	Elastomer – diaphragm (PVC, CPVC, PP)	161 484 625	161 484 626	161 484 627	161 484 628	161 484 629	161 484 630	161 484 631
	PTFE ¹ – diaphragm	161 484 632	161 484 633	161 484 634	161 484 635	161 484 636	161 484 637	161 484 638
	PTFE (PVDF, PVDF HP) ² – diaphragm	161 484 632	161 484 633	175 481 860	175 481 861	175 481 862	175 481 863	161 484 638
Diaphragm ³	NBR	161 311 710	161 311 711	161 311 712	161 311 713	161 311 714	161 311 715	161 480 231
	EPDM	161 481 022	161 481 023	161 481 024	161 481 025	161 481 026	161 481 027	161 481 028
	CSM	161 311 728	161 311 729	161 311 730	161 311 731	161 311 732	161 311 733	161 480 237
	FPM	161 484 152	161 484 153	161 484 154	161 484 155	161 484 156	161 484 157	161 484 158
	PTFE/EPDM	161 311 698	161 311 699	161 311 700	161 311 701	161 311 702	161 311 703	161 480 240
	PTFE/FPM	161 481 926	161 481 927	161 481 928	161 481 929	161 481 930	161 481 931	161 481 932
	PTFE/EPDM HP	161 484 452	161 484 453	161 484 454	161 484 455	161 484 456	161 484 457	161 484 458
Compressor / Spindle assembly	Elastomer ¹ – diaphragm (PVC, CPVC, PP)	161 484 688	161 484 689	161 484 690	161 484 691	161 484 692	161 484 693	161 484 694
	PTFE ¹ – diaphragm	161 484 696 (brass)	161 484 697 (brass)	161 484 698 (black PP)	161 484 699 (black PP)	161 484 700 (black PP)	161 484 701 (black PP)	161 484 702
	PTFE (PVDF, PVDF HP) ² – diaphragm	161 484 696 (brass)	161 484 697 (brass)	175 481 896 (wht PBT)	175 481 897 (wht PBT)	175 481 898 (wht PBT)	175 481 899 (wht PBT)	161 484 702
Fastening set		161 484 704	161 484 705	161 484 706	161 484 707	161 484 708	161 484 709	161 483 032

Type 314 PVC

Valve body	PVC		161 481 218	161 481 219	161 481 220	161 481 221	161 481 222	161 481 223	–
Union nut	PVC		721 690 006	721 690 007	721 690 008	721 690 009	721 690 010	721 690 011	–
Solvent cement socket end connector	PVC	ANSI	721 602 006	721 602 007	721 602 008	721 602 009	721 602 010	721 602 011	–
O-ring (union) (Elastomeric diaphragm)	EPDM	2 ea.	748 410 038	748 410 044	748 410 195	748 410 052	748 410 134	748 410 135	–
O-ring (union) (PTFE diaphragm)	FPM	2 ea.	749 410 038	749 410 044	749 410 195	749 410 052	749 410 134	749 410 135	–
NPT threaded end connector	PVC	2 ea.	721 602 656	721 602 657	721 602 658	721 602 659	721 602 660	721 602 661	–

Type 315 CPVC, PP, PVDF, PP-n

Valve body ³	CPVC	Spigot ASTM	163 480 135	163 480 136	163 480 137	163 480 138	163 480 139	163 480 140	–
	PP	Socket fusion (spigot)	167 480 328	167 480 329	167 480 330	167 480 331	167 480 332	167 480 333	–
		IR/butt fusion	167 481 175	167 481 176	167 481 177	167 481 178	167 481 179	167 481 180	–
	SYGEF PVDF	Socket fusion (spigot)	175 480 069	175 480 070	175 480 071	175 480 072	175 480 073	175 480 074	–
		IR/butt fusion	175 481 840	175 481 841	175 481 842	175 481 843	175 481 844	175 481 845	–
	SYGEF PVDF HP	Socket fusion (spigot)	175 481 875	175 481 876	175 481 877	175 481 878	175 481 879	175 481 880	–
		IR/butt fusion	175 481 850	175 481 851	175 481 852	175 481 853	175 481 854	175 481 855	–
		BCF	175 480 710	175 480 711	175 480 712	175 480 713	175 480 714	175 480 715	–
	PP-n	IR-butt/BCF fusion (spigot)	168 480 125	168 480 126	168 480 127	168 480 128	168 480 129	168 480 130	–

¹ Suitable only for PVC, CPVC and PP diaphragm valves

² Suitable only for PVDF and PVDF HP diaphragm valves

³ Customers requiring Silicone Free specify when ordering

Type 317 PVC, CPVC, PP, PVDF

Part	Material		Inch size / OD d mm						
			1/2" / 20 mm	3/4" / 25 mm	1" / 32 mm	1 1/4" / 40 mm	1 1/2" / 50 mm	2" / 63 mm	2 1/2" / 75 mm
Valve body	PVC	mm Spigot	161 481 274 ¹⁾	161 481 275 ¹⁾	161 481 276 ¹⁾	161 481 277 ¹⁾	161 481 278 ¹⁾	161 481 279 ¹⁾	161 481 224 *
¹⁾ metric spigot	CPVC	ANSI Spigot	163 480 135	161 480 136	161 480 137	161 480 138	161 480 139	161 480 140	—
	PP	mm Spigot	167 480 328 ¹⁾	167 480 329 ¹⁾	167 480 330 ¹⁾	167 480 331 ¹⁾	167 480 332 ¹⁾	167 480 333 ¹⁾	167 480 377
	SYGEF/PVDF	mm Spigot	175 480 069 ¹⁾	175 480 070 ¹⁾	175 480 071 ¹⁾	175 480 072 ¹⁾	175 480 073 ¹⁾	175 480 074 ¹⁾	—

All above spigot bodies require flange adapters and flange rings to complete flanged body assemblies.

*mm socket

Part	Material	3"/90 mm	4"/110 mm	6"/160 mm
O-Ring	NBR, EPDM*	745 410 107	745 410 107	748 410 121*
Bonnet Assy for elas dia		161 482 514	161 482 515	161 482 901
Bonnet Assy for PTFE dia		161 482 516	161 482 517	161 482 906
Cap	SAN, PVC*	161 481 759	161 481 760	161 482 744*
Diaphragm	NBR	161 480 232	161 480 233	161 482 751
	EPDM	161 481 029	161 481 030	161 482 754
	PTFE	161 480 241	161 480 242	161 482 760
	CSM	161 480 238	161 480 239	161 482 757
Compressor Set for elas dia		161 483 008	161 483 009	161 483 011
Compressor Set for PTFE dia		161 483 020	161 483 021	161 483 023
Fastening Set SS		161 483 033	161 483 034	161 483 037
Body, ANSI flanged, PVC		161 481 764	161 482 566	161 482 696
Body, ANSI flanged, CPVC		163 480 677	163 480 681	—
Body, ANSI flanged, PP		167 480 427	167 480 478	167 480 577
Body, ANSI flanged, PVDF		175 480 189	175 480 748	175 481 002

Type 319 SYGEF-PVDF HP

Part		d 20mm 1/2"	d 25mm 3/4"	d 32mm 1"	d 40mm 1 1/4"	d 50mm 1 1/2"	d 63mm 2"	d 75mm 2 1/2"
Valve body*	d 20 mm	175 481 128	175 481 130	175 481 085	175 481 088	175 481 091	175 481 095	—
	d 25 mm	—	175 481 131	175 481 086	—	175 481 092	175 481 096	—
	d 32 mm	—	—	175 481 087	—	175 481 093	175 481 097	—
	d 40 mm	—	—	—	—	—	—	175 481 103
	d 50 mm	—	—	—	—	—	—	—
	d 63 mm	—	—	—	—	—	—	—
						d 90 mm	d 110 mm	
	d 20 mm					175 481 106	175 481 113	
	d 25 mm					175 481 107	175 481 114	
	d 32 mm					175 481 108	175 481 115	
	d 40 mm					—	—	
	d 50 mm					175 481 110	175 481 117	
	d 63 mm					175 481 111	175 481 118	

*Determine correct bonnet size by checking dimension shown on diaphragm.

Type 314 PP (see Type 314 PVC for O-rings, required)

Part	d 20mm 1/2"	d 25mm 3/4"	d 32mm 1"	d 40mm 1 1/4"	d 50mm 1 1/2"	d 63mm 2"
Valve body	167 481 977	167 481 978	167 481 979	167 481 980	167 481 981	167 481 982
Metric fusion socket, end connector	727 600 106	727 600 107	727 600 108	727 600 109	727 600 110	727 600 111
IR butt fusion, end connector	727 608 506	727 608 507	727 608 508	727 608 509	727 608 510	727 608 511
Electro fusion spigot, end connector	727 608 516	727 608 517	727 608 518	727 608 519	727 608 520	727 608 521
NPT female threaded, end connector	198 203 603	198 203 602	198 203 604	198 203 605	198 203 606	198 203 607
Union nut	727 690 406	727 690 407	727 690 408	727 690 409	727 690 410	727 690 411
PP-n natural PP IR/BCF end connection	728 608 506	728 608 507	728 608 508	728 608 509	728 608 510	728 608 511

Type 314 PVDF (see Type 314 PVC for O-rings, required)

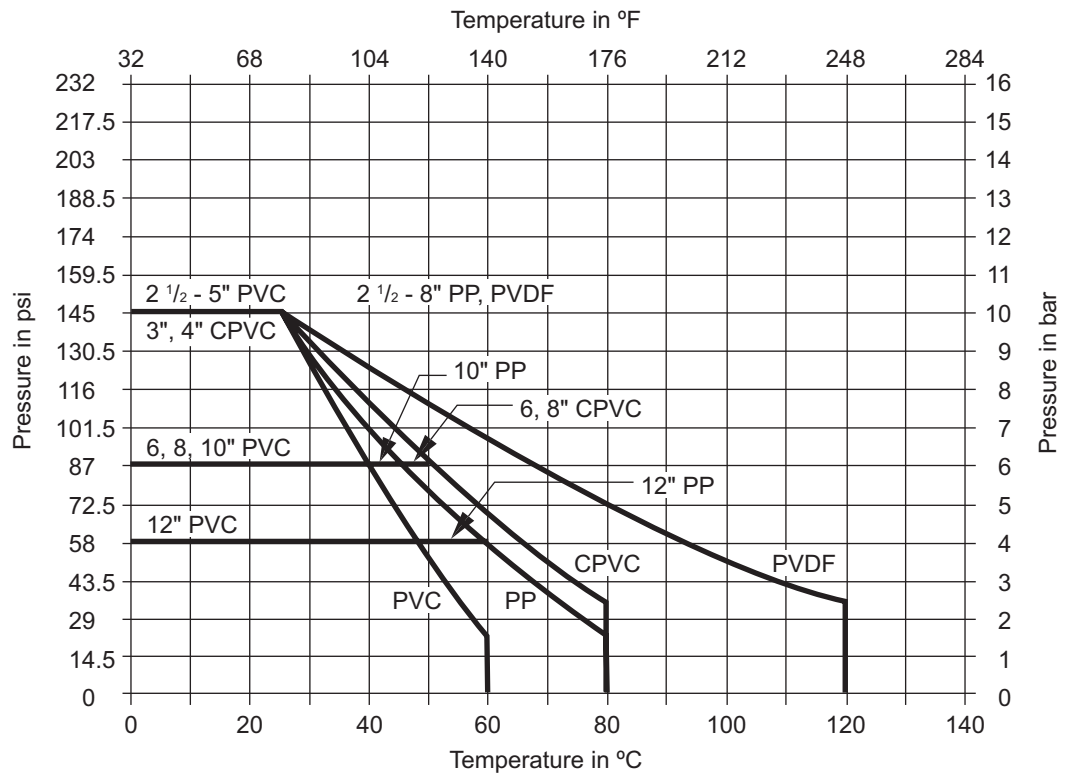
Part	d 20mm 1/2"	d 25mm 3/4"	d 32mm 1"	d 40mm 1 1/4"	d 50mm 1 1/2"	d 63mm 2"
Valve body (standard)*	175 481 977	175 481 978	175 481 979	175 481 980	175 481 981	175 481 982
Metric fusion socket, end connector	735 600 106	735 600 107	735 600 108	735 600 109	735 600 110	735 600 111
IR butt fusion, end connector	735 608 606	735 608 607	735 608 608	735 608 609	735 608 610	735 608 611
NPT female threaded, end connector	198 203 611	198 203 610	198 203 612	198 203 613	198 203 614	198 203 615
Union nut	735 690 406	735 690 407	735 690 408	735 690 409	735 690 410	735 690 411

*for HP or BCF bodies, please contact factory

Technical Data for Butterfly Valves Type 367

Pressure/Temperature Diagram

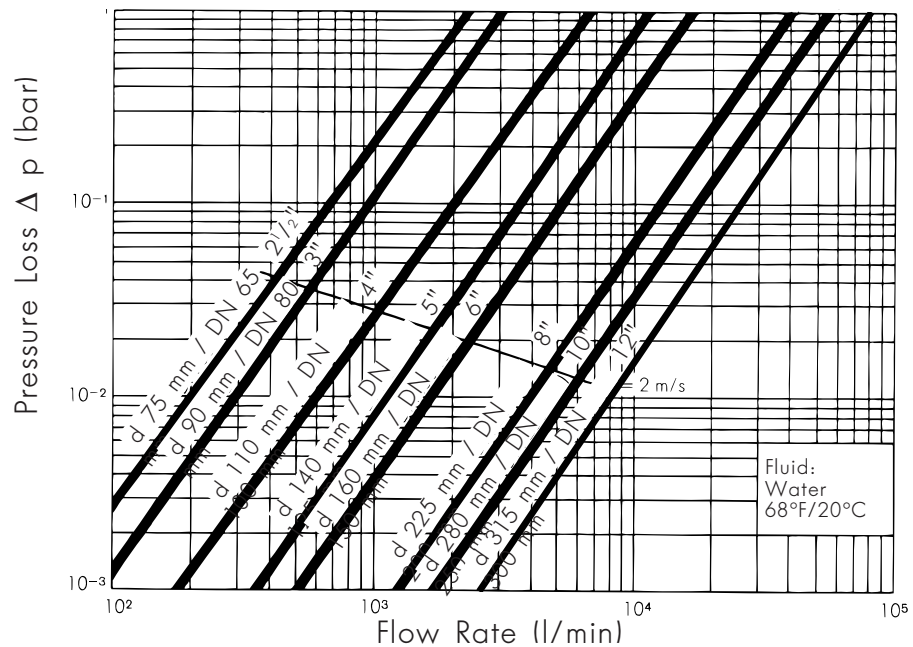
All pressures are given in atmospheric excess pressure values. Ambient temperature max. 122°F/50°C.



Cv/kv Values

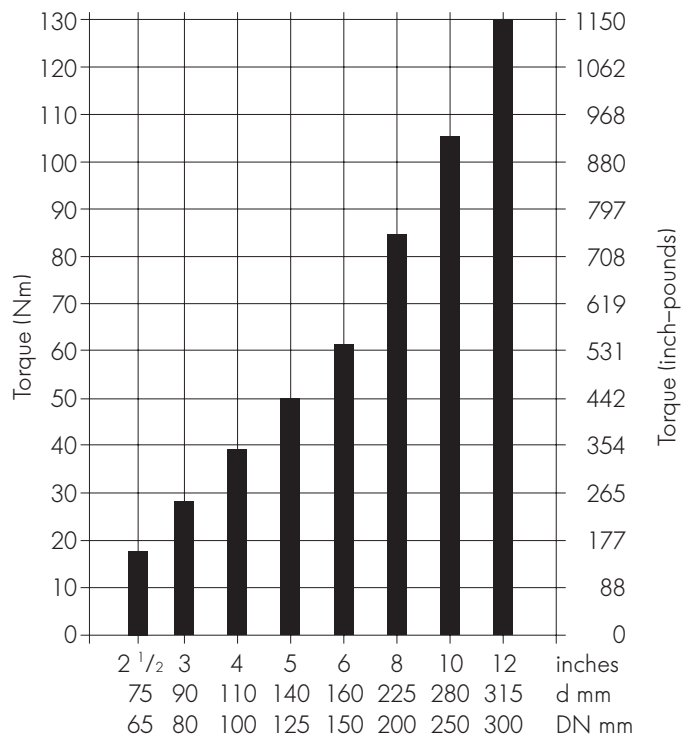
Inch size	Cv	kv	d mm size
2 1/2	154	2200	75
3	210	3000	90
4	455	6500	110
5	805	11500	140
6	1162	16600	160
8	2773	39600	225
10	3866	55200	280
12	5602	80000	315

Pressure Loss Characteristics

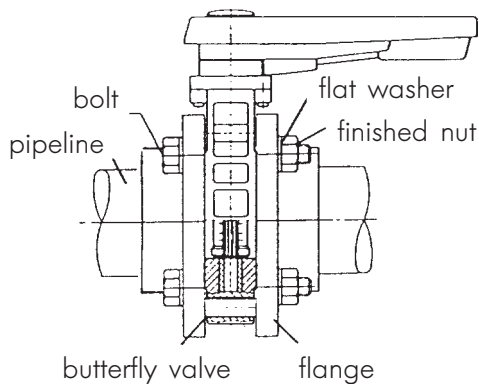
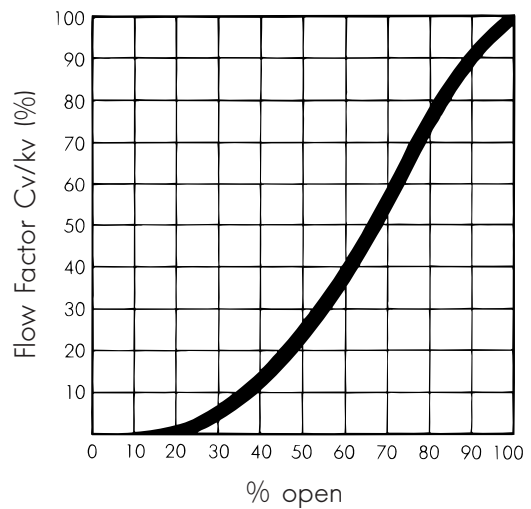


$$1 \text{ bar} = 0.1 \text{ N/mm}^2 \approx 1 \text{ kp/cm}^2$$

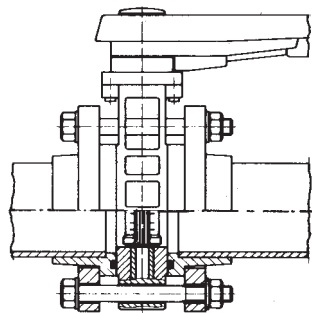
Closing Torque (standard values)



Flow Characteristics



5" – 10"
with solid flanges

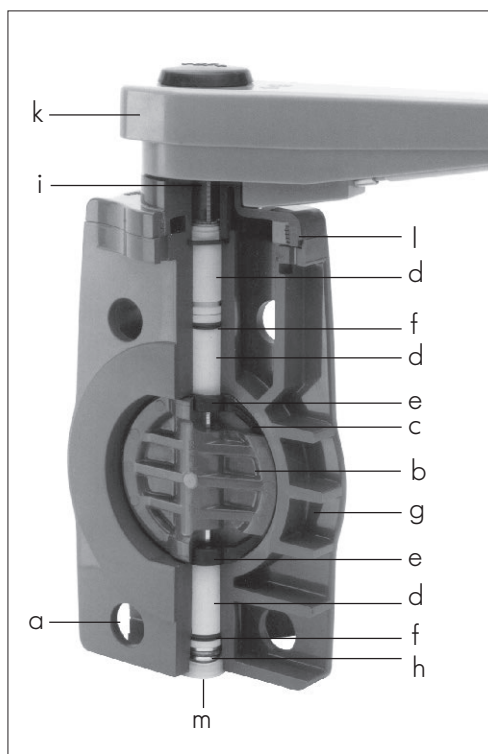


2 1/2" – 4"
with flange adaptors and loose
ring flanges (Van Stone)

Valve size inch	No. of bolts	Bolt size	Bolt length		Recommended Torque (for flat gaskets) ft. lbs.
			Solid flanges	Loose ring flanges & adaptors	
1 1/2	4	1/2 – 13			(see page 10.137)
2	4	5/8 – 11			(see page 10.137)
2 1/2	4	5/8 – 11	5"	6"	29.5
3	4	5/8 – 11	5"	6 1/2"	29.5
4	8	5/8 – 11	6"	7"	29.5
5	8	3/4 – 10	8"	7"	37
6	8	3/4 – 10	6 1/2"	8 1/2"	44
8	8	3/4 – 10	7"	9 1/2"	51.6
10	12	7/8 – 9	8"	–	59
12	12	7/8 – 9			74



George Fischer Butterfly Valve Type 367



General

The butterfly valve Type 367 is designed for large nominal sizes of pipelines (2-1/2" thru 12"). Butterfly valves due to their design require minimum space for mounting. It is available in PVC, Polypropylene, and SYGEF-PVDF. The flow direction has no influence on the positioning of the valve. Available with lever handle or gear operator and electric or pneumatic actuators.

Technical Features

- a) Joining: Flanged joints according to ASA, ISO, and DIN (JIS on special request).
- b) Maximum waterway consistent with good plastic disc design.
- c) Unique dynamic seal as primary waterway seal, captivated in an undercut groove in disc. The greater the pressure the tighter the seal.
- d) Three polypropylene shaft bushings to insure accurate alignment and long life.
- e) Static secondary seal isolates the shaft from fluid being transported.

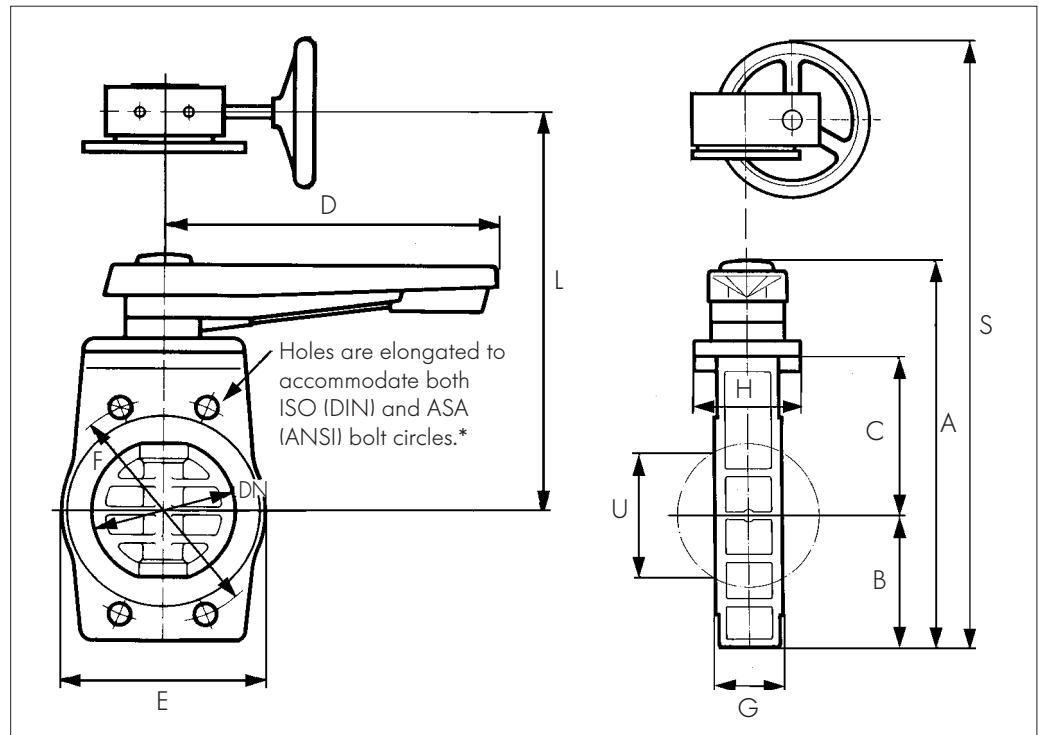
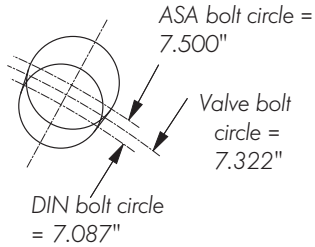
- f) Two dynamic O-ring seals provide secondary sealing to prevent escape of transported fluid to external environment in the event of a primary seal failure.
- g) PVC, polypropylene, or SYGEF-PVDF body construction.
- h) Belleville washers keep shaft, bushings, disc and dynamic seal loaded as single assembly.
- i) Shaft and handle are keyed so as to insure alignment of handle with disc, indicating open when handle is parallel to pipeline.
- k) Easy-to-grip streamlined heavy duty handle incorporates indexing device to position disc (at 18° intervals for 2-1/2" and 3", and 15° intervals for 4" thru 10").
- l) Easily removable index plate provides for quick conversion to actuated valve use, also incorporates O-ring seal to seal out corrosive atmospheres.
- m) Polyethylene caps over top of shaft and bottom protect against corrosive attack.

George Fischer butterfly valves have excellent properties, such as:

- Corrosion resistance
- Maintenance free operation over a long working life
- Easy manual operation
- Optimum flow properties
- Easy-to-grip streamlined lever handle
- Light weight
- Vacuum tight to 1 mbar (.75 Torr or .75 mm of Mercury). 29.89 inches of Mercury (U.S. measurement units)
- 308 S.S. shaft sealed from fluid stream
- Flange patterns are ANSI B16.5, class 150. (2 1/2", 4", 6", and 8" are also compatible with DIN pattern). 3", 10", and 12" DIN pattern available on special order.
- Now available in CPVC (3", 4", 6" and 8")

Dimensions for Type 367 Butterfly Valve

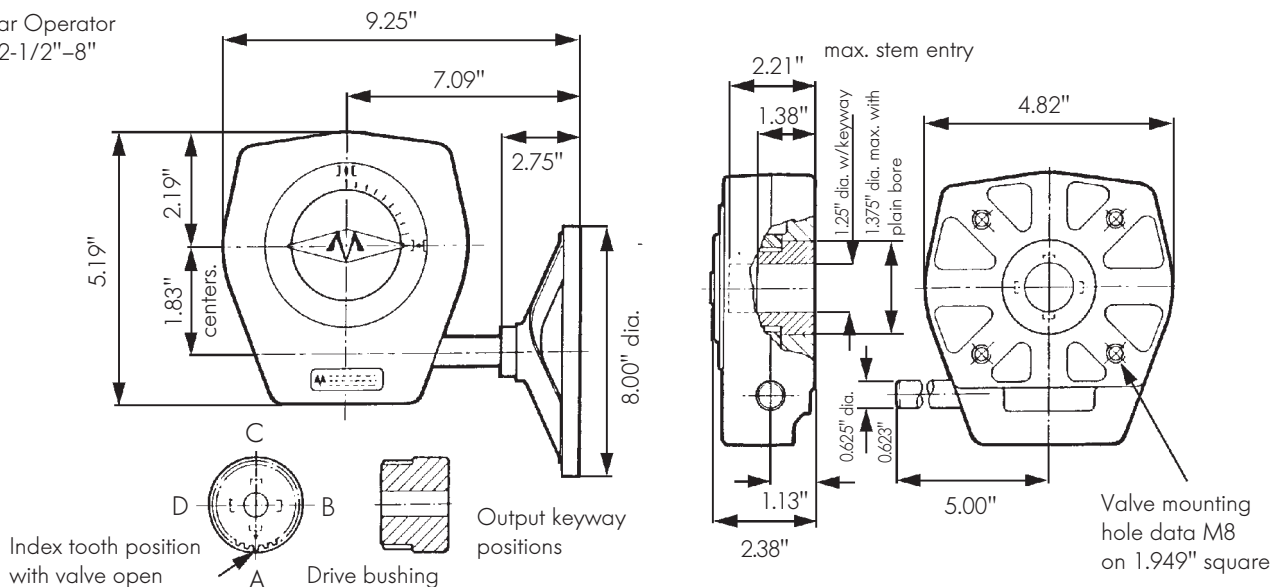
*Elongated holes do not cause any misalignment possibilities in installation. Disc is prevented from contact with pipe because bolt pattern in either DIN or ASA flanges still positions valve properly. Bolts will always contact one bolt hole surface or another to firmly hold valve in position (see 4" example below).



Note: Use pre-chamfered flange adapters (PP or PVDF) as listed in fitting section, or chamfer selected flanges to clear disc dimension "U".

Inch size	A	B	C	D	E	F	ISO (DIN)	ASA	G	H	L	S	U	OD d	ID DN
	inch	inch	inch	inch	inch	mm	mm	inch	inch	inch	inch	inch	inch	mm	mm
2-1/2	10.51	3.15	4.33	9.06	4.41	142		5.50	1.81	2.91	5.78	12.93	1.93	75	65
3	11.42	3.62	4.72	9.06	5.20	160		6.00	1.93	3.03	6.17	13.80	2.60	90	80
4	12.91	4.25	5.43	9.06	6.30	186		7.50	2.21	3.62	6.88	15.14	3.35	110	100
5	15.00	4.72	6.14	13.98	7.48	215		8.50	2.52	4.25	7.59	16.32	4.33	140	125
6	16.34	5.51	6.69	13.98	8.50	240		9.50	2.76	4.57	8.14	17.66	5.32	160	150
8	19.49	6.89	8.46	13.98	10.71	297		11.75	2.80	5.04	9.92	20.81	7.44	225	200
10	21.93	8.66	9.76	16.14	16.54	350		14.25	2.99	5.98	11.89	24.55	9.37	280	250
12	25.39	10.47	11.42	16.14	20.00	400		17.00	3.27	5.98	13.54	27.17	11.26	315	300

Gear Operator for 2-1/2"-8"



Part Numbers

PVC



161 367 725–730

161 367 735–740 (silicone-free)

Inch size	seal material EPDM		seal material FPM (Viton)	
		with gear operator		with gear operator
2-1/2	161 367 605	161 367 645	161 367 615	161 367 655
3	161 367 606	161 367 646	161 367 616	161 367 656
4	161 367 607	161 367 647	161 367 617	161 367 657
5	161 367 608	161 367 648	161 367 618	161 367 658
6	161 367 609	161 367 649	161 367 619	161 367 659
8	161 367 610	161 367 650	161 367 620	161 367 660
10	161 367 131	161 367 251	161 367 151	161 367 271
12	161 367 132	161 367 252	161 367 152	161 367 272

CPVC



Inch size	seal material EPDM		seal material FPM (Viton)	
		with gear operator		with gear operator
3	163 367 606	163 367 646	163 367 616	163 367 656
4	163 367 607	163 367 647	163 367 617	163 367 657
6	163 367 609	163 367 649	163 367 619	163 367 659
8	163 367 610	163 367 650	163 367 620	163 367 660

Polypropylene



167 367 725–730

167 367 735–740 (silicone-free)

OD d mm	ID DN mm	seal material EPDM		seal material FPM (Viton)		Inch size
			with gear operator		with gear operator	
75	65	167 367 605	167 367 645	167 367 615	167 367 655	2-1/2
90	80	167 367 606	167 367 646	167 367 616	167 367 656	3
110	100	167 367 607	167 367 647	167 367 617	167 367 657	4
140	125	167 367 608	167 367 648	167 367 618	167 367 658	5
160	150	167 367 609	167 367 649	167 367 619	167 367 659	6
225*	200	167 367 610	167 367 650	167 367 620	167 367 660	8/9*
280	250	167 367 131	167 367 251	167 367 151	167 367 271	10
315	300	167 367 132	167 367 252	167 367 152	167 367 272	12

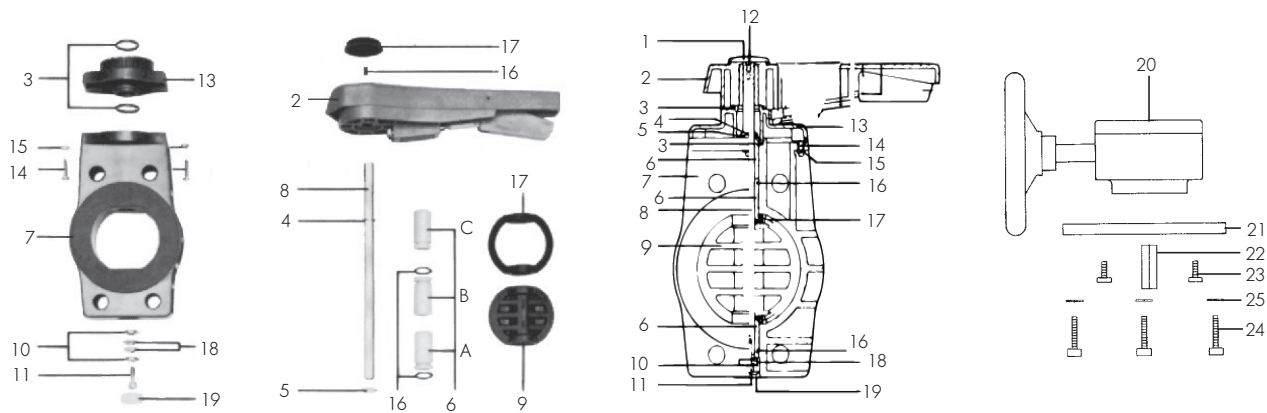
SYGEF-PVDF



ID d mm	OD DN mm	seal material FPM (Viton) with handle	seal material FPM with gear operator	silicone free with handle	silicone free with gear operator	Inch size
75	65	175 367 615	175 367 655	175 367 735	175 367 775	2-1/2
90	80	175 367 616	175 367 656	175 367 736	175 367 776	3
110	100	175 367 617	175 367 657	175 367 737	175 367 777	4
140	125	175 367 618	175 367 658	175 367 738	175 367 778	5
160	150	175 367 619	175 367 659	175 367 739	175 367 779	6
225*	200	175 367 620	175 367 660	175 367 740	175 367 780	8/9*

*used on both d 200 mm (8") and d 225 mm (9") piping systems

Assembly Instructions for Butterfly Valve Type 367



2 1/2"-8/9" / d 75-225 mm / DN 65-200 mm

Disassembly

Remove polyethylene cap (19) from bottom of valve.

Remove socket head cap screw (11), two special washers (10), and two Belleville spring washers (18) from bottom of shaft. Remove two screws (14) and washers (15) from the underside of the top flange (these screws hold the index plate (13) in position). There are three polypropylene bushings (A), (B) and (C), two at the top and one at the bottom. The uppermost has no O-ring seal (C). The other two engage the dynamic disc seal (17). These polypropylene bushings must be pushed out as follows: Pull shaft (8) halfway out of butterfly valve. Turn shaft with disc by 45°. Push bottom polypropylene bushing (A) out of housing by pushing handle with attached shaft all the way back into the valve. Pull shaft all the way out of butterfly valve. Push shaft from lower side of butterfly valve halfway into the valve. Turn disc with shaft by 45°. Push upper two bushings (B) and (C) out of valve's body by pushing shaft all the way into the valve. Remove shaft from valve.

Push disc (9) out of valve.

Using small screw driver lift dynamic O-ring seals (16) from retaining slot of bushings and dynamic seal (17) from retaining slot of disc.

If handle is removed from shaft while shaft and disc are separated, care should be taken on reassembly that handle is oriented in the same plane as disc. Shaft and handle are keyed; shaft and disc are not keyed.

Assembly

Put new dynamic O-ring seals into the retaining slots of two bushings.

Put a light film of Silicon grease onto the outside surface of all polypropylene bushings. Fill the groove of the bushing without a dynamic O-ring with Silicon grease.

Push new dynamic seal (17) into retaining slot of disc. This is done easiest by starting near one end of disc (some Silicon grease may help quite a bit).

Note that one side of waterway on valve has a beveled surface at top and bottom leading to flattened area of waterway. Push disc in from this side to avoid cutting dynamic seal (Silicon grease will help).

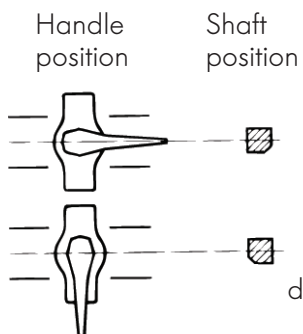
Align disc visually on upper side of valve, so that polypropylene bushings could be pushed in easily.

Push in one polypropylene bushing (B) with dynamic O-ring placed away from the disc (towards the handle). Push bushing without dynamic O-ring seal (C) into the top side of the valve housing with groove showing towards the disc. Push this second bushing all the way in, so its face is aligned with the face of the valve body.

Turn valve upside down so that large flange for the index plate is downwards. Align disc on bottom side of valve such that third polypropylene bushing (A) can easily be pushed in. Push third bushing (A) into the bottom side of the valve housing with O-ring seal showing away from disc.

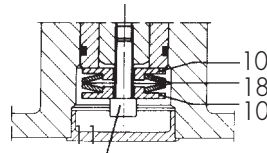
Make sure that flat washer (5) is against underside of "C" clip (4) at

If the seal (3) needs to be replaced, we recommend ordering the disc (2) assembled with EPDM or FPM seal (3) and replacing the entire disc.



upper end of shaft. Push in shaft from top side of valve into the bushing. Align bushings and disc by rotation of shaft and push shaft all the way into the valve.

Make sure that bottom bushing is pushed into final position against dynamic seal, and screw socket head cap screw (11) into shaft after mounting a special washer (10), two Belleville washers (concave sides facing each other) (18) and a special washer (10) on the screw.



Tighten screw on lower side of shaft by two turns after head of screw touches special washer. Cover bottom opening with polyethylene cap (19).

Plastic Handle Kit Mounting

After placing O-ring (3) in position on bottom of index plate (13), it may be mounted with the two self tapping screws (14) and washers (15) (2 1/2" - 5") at front and back, or the two socket head cap screws (14) and washers (15) at either side (6" & 8"). With valve in open position, beveled corner of shaft should be in 4 o'clock position in relation to notched portion on index plate as viewed from top. Place O-ring (3) in position, on top of index plate (13). Handle should now engage shaft properly oriented in the open position and lever into the open notch. Handle is secured with screw (12) by inserting into and expanding shaft.

Gear Operator Kit Mounting

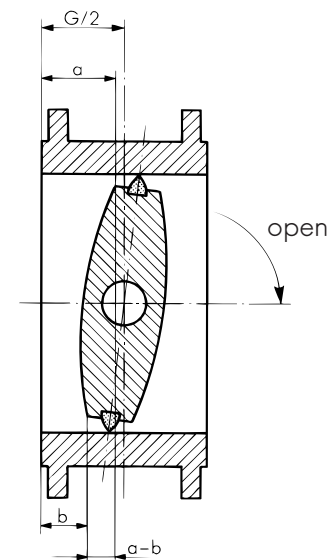
A sub-assembly should be assembled as step one. This will consist of the gear operator (20), mounting plate (21) and 4 bolts (23). Care should be taken to insure the sub-assembly will properly align the gear operator indicator with disc of valve when mounted.

Mounting the sub-assembly is accomplished by bolting the mounting plate (21) (with gear operator) using the four mounting holes in top of valves with bolts (24) and washers (25) provided. Shaft shims (22) are provided to insure

proper fit for 2 1/2" and 5" sizes. Travel adjustments for full open or full close may be accomplished by removing socket head screws on end of operator and turning internal socket head adjustment screws. Make sure that assembly of valve has been done properly by operating valve before installation into pipe (disc seal should easily slide into waterway of body).

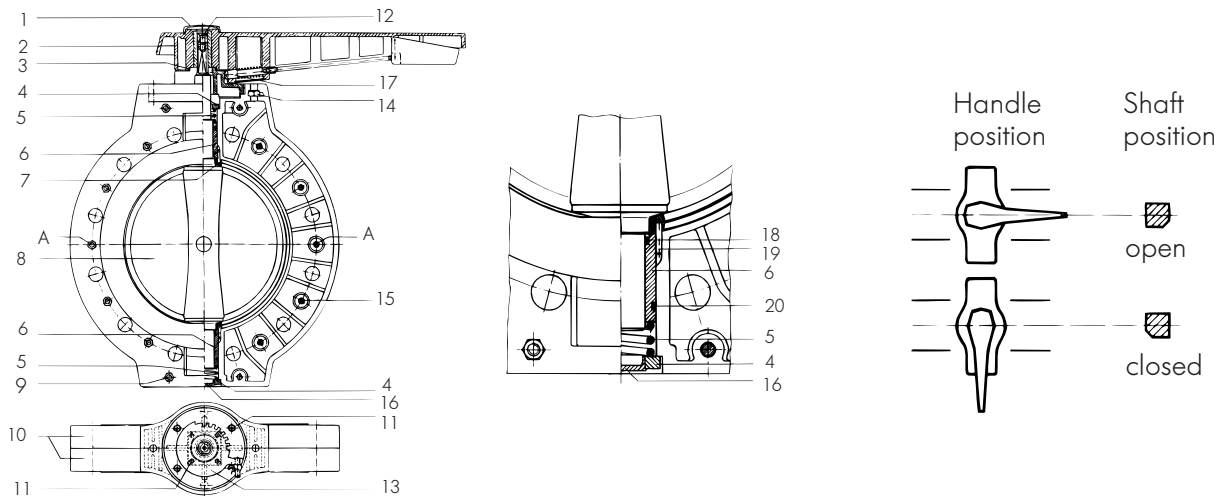
Setting the "Closed" position for actuators

When the butterfly valve is in the CLOSED position, the disc is not perfectly at right angles to the axis of the valve. The table below contains the deviations.



inch size	a-b inch	d mm	DN mm
2 1/2	.157	75	65
3	.157	90	80
4	.197	110	100
5	.197	140	125
6	.236	160	150
8	.236	225	200
10	0	280	250

Assembly Instructions for Butterfly Valve Type 367



10"/d 280 mm/DN 250 mm

Assembly

Equip special seal (7) with four pins (19) (using drill chuck). Grease* disc (8) on both sides of the shaft where the gasket eye is mounted. Fit special seal (7) on disc (8), first on the longer shaft side. Push greased O-rings (18) on to both sides of the shaft as far as special seal (7). Fit two M10 nuts (14) on the first body half (10). Insert disc (8) with premounted seal (7) in body half (10). Fit seal (7) in the body groove and mount the second body half (10). The two body halves are centered at positions A by means of the two bolts (15), which should be fitted first. Press special seal (7) manually into the sealing groove at the same time as pulling together body halves (10) by means of bolts (15) and nuts (9). Ensure that nuts (14) remain in position. Fit the remaining bolts (15) so that body halves (10) are flush and seal (7) is seated properly in the body groove. Fit greased* O-rings (20) on bushings (6). Grease* the inside of bushings (6). Mount bushings (6) on both sides of the shaft and the body. Bolts (15) may have to be slackened slightly to move bushings (6) into position. They must then be tightened again. Fit springs (5) with sealing plates (4) on both sides and secure them with four PT bolts (11) each. Seal the bottom opening with plug (16). Attach index plate (13) with PT bolts (11). Insert greased* O-ring (3) in the

handle. Fit handle (2) on shaft (8); the handle can only be fitted in one position relative to disc (8). Retract latch (17) and press handle (2) as far as the stop on index plate (13). Fix handle (2) on shaft (8) by firmly tightening countersunk screw (12). Fit cap (1). Adjust the disc to the correct closed position by means of the set screw on index plate (13). Grease* special seal (7) in the body.

Dismantling

Remove the cap (1) from the top of the handle. Loosen the screw (12) on top of the shaft (8). Pull the handle (2) from the shaft (8). Remove the index plate (13).

Remove the top and bottom sealing plates (4). Remove the top and bottom compression springs (5). Unscrew the half body (10). Remove the disc (8) with seal (7) and bushing (6). Pull the bushing (6) from the disc (8). Remove the seal (7). Remove the compression springs (5) from the top and bottom of the shaft.

Recommendation

When the valve is dismantled, we recommend replacing the O-rings or flat gaskets for safety reasons.

* Use only polyglycol based grease for lubrication.

Product Specification

Type 367 Wafer Style Butterfly Valve – PVC

PVC butterfly valve 2-1/2" through 12" shall be a wafer type designed to fit between two flanges and properly positioned by the flange bolting. Valve body and disk shall be constructed of PVC. Seals may be either FPM* or EPDM. Shaft material shall be stainless steel. Disc seat must be of a dynamic design, creating a tighter seal as pressure increases. The valve must be equipped with an index plate to allow positioning of the disc and permit position locking. Shaft seals shall be kept under pressure by means of a "Belleville" type washer, maintaining a tight seal and compensating for normal wear. The handle to shaft connection shall be keyed to ensure proper orientation to the index plate. The flange drilling shall allow installation of ANSI B16.5 standard flanges. Butterfly valves shall be vacuum tight to 1 mbar and have a pressure rating of 150 psi at 68°F for 2-1/2" through 5"; 90 psi at 68°F for 6", 8", and 10"; and 60 psi at 68°F for 12". PVC material shall meet or exceed the requirements of 12454B according to the classifications of ASTM D-1784. The butterfly valve, Type 367, is as supplied by George Fischer, Inc., Tustin, CA 92780.

**FPM seals are made of Viton® or equal materials.
Viton® is a registered trademark of DuPont Dow
Elastomers.*

Type 367 Wafer Style Butterfly Valve – CPVC

CPVC butterfly valve 3", 4", 6", and 8" shall be a wafer type designed to fit between two flanges and properly positioned by the flange bolting. Valve body and disk shall be constructed of CPVC. Seals may be either FPM* or EPDM. Shaft material shall be stainless steel. Disc seat must be of a dynamic design, creating a tighter seal as pressure increases. The valve must be equipped with an index plate to allow positioning of the disc and permit position locking. Shaft seals shall be kept under pressure by means of a "Belleville" type washer, maintaining a tight seal and compensating for normal wear. The handle to shaft connection shall be keyed to ensure proper orientation to the index plate. The flange drilling shall allow installation of ANSI B16.5 standard flanges. Butterfly valves shall be vacuum tight to 1 mbar and have a pressure rating of 150 psi at 68°F for 3" and 4" and 90 psi at 68°F for 6" and 8. CPVC material shall meet or exceed the requirements of 23447B according to the classifications of ASTM D-1784. The butterfly valve, Type 367, is as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 367 Wafer Style Butterfly Valve – PVDF

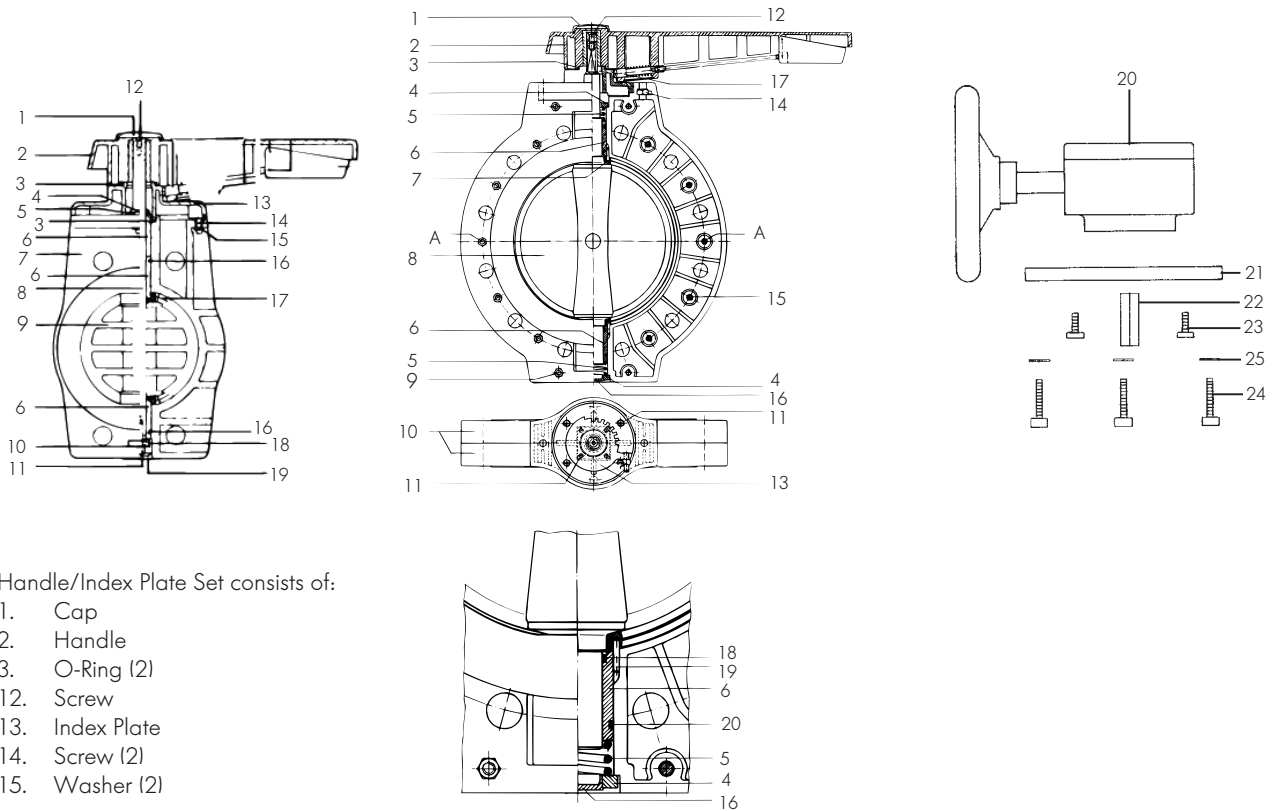
PVDF butterfly valve 2-1/2" through 8" shall be a wafer type designed to fit between two flanges and properly positioned by the flange bolting. Valve body and disk shall be constructed of PVDF. Seals are FPM*. Shaft material shall be stainless steel. Disc seat must be of a dynamic design, creating a tighter seal as pressure increases. The valve must be equipped with an index plate to allow positioning of the disc and permit position locking. Shaft seals shall be kept under pressure by means of a "Belleville" type washer, maintaining a tight seal and compensating for normal wear. The handle to shaft connection shall be keyed to ensure proper orientation to the index plate. The flange drilling shall allow installation of ANSI B16.5 standard flanges. Butterfly valves shall be vacuum tight to 1 mbar and have a pressure rating of 150 psi at 68°F for 2-1/2" through 5"; 90 psi at 68°F for 6" and 8". PVDF material shall meet or exceed the requirements of ASTM D3222 as pertains to a natural, unpigmented, virgin, noncompounded polyvinylidene fluoride compound having a minimum tensile strength of 7800 psi/538 bar at 73°F/20°C when tested in accordance with ASTM D638 and shall have a flexural strength of 10,700 psi/738 bar at 73°F/20°C when tested according to ASTM D790. The butterfly valve, Type 367, is as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 367 Wafer Style Butterfly Valve – PP

PP butterfly valve 2-1/2" through 12" shall be a wafer type designed to fit between two flanges and properly positioned by the flange bolting. Valve body and disk shall be constructed of PP. Seals may be either FPM* or EPDM. Shaft material shall be stainless steel. Disc seat must be of a dynamic design, creating a tighter seal as pressure increases. The valve must be equipped with an index plate to allow positioning of the disc and permit position locking. Shaft seals shall be kept under pressure by means of a "Belleville" type washer, maintaining a tight seal and compensating for normal wear. The handle to shaft connection shall be keyed to ensure proper orientation to the index plate. The flange drilling shall allow installation of ANSI B16.5 standard flanges. Butterfly valves shall be vacuum tight to 1 mbar and have a pressure rating of 150 psi at 68°F for 2-1/2" through 5"; 90 psi at 68°F for 6", 8", and 10"; and 60 psi at 68°F for 12". PP material shall meet or exceed the requirements of ASTM D4101 as pertains to a type I homopolymer compound having a minimum tensile strength of 4350 psi/300 bar at 73°F/20°C when tested in accordance with ASTM D638 and shall have a melt point which initiates at 316°F/158°C. The melt flow index (at 374°F/190°C/50N) shall be 0.4-0.8 grams per 10 minutes in accordance with ASTM D1238. The butterfly valve, Type 367, is as supplied by George Fischer, Inc., Tustin, CA 92780.

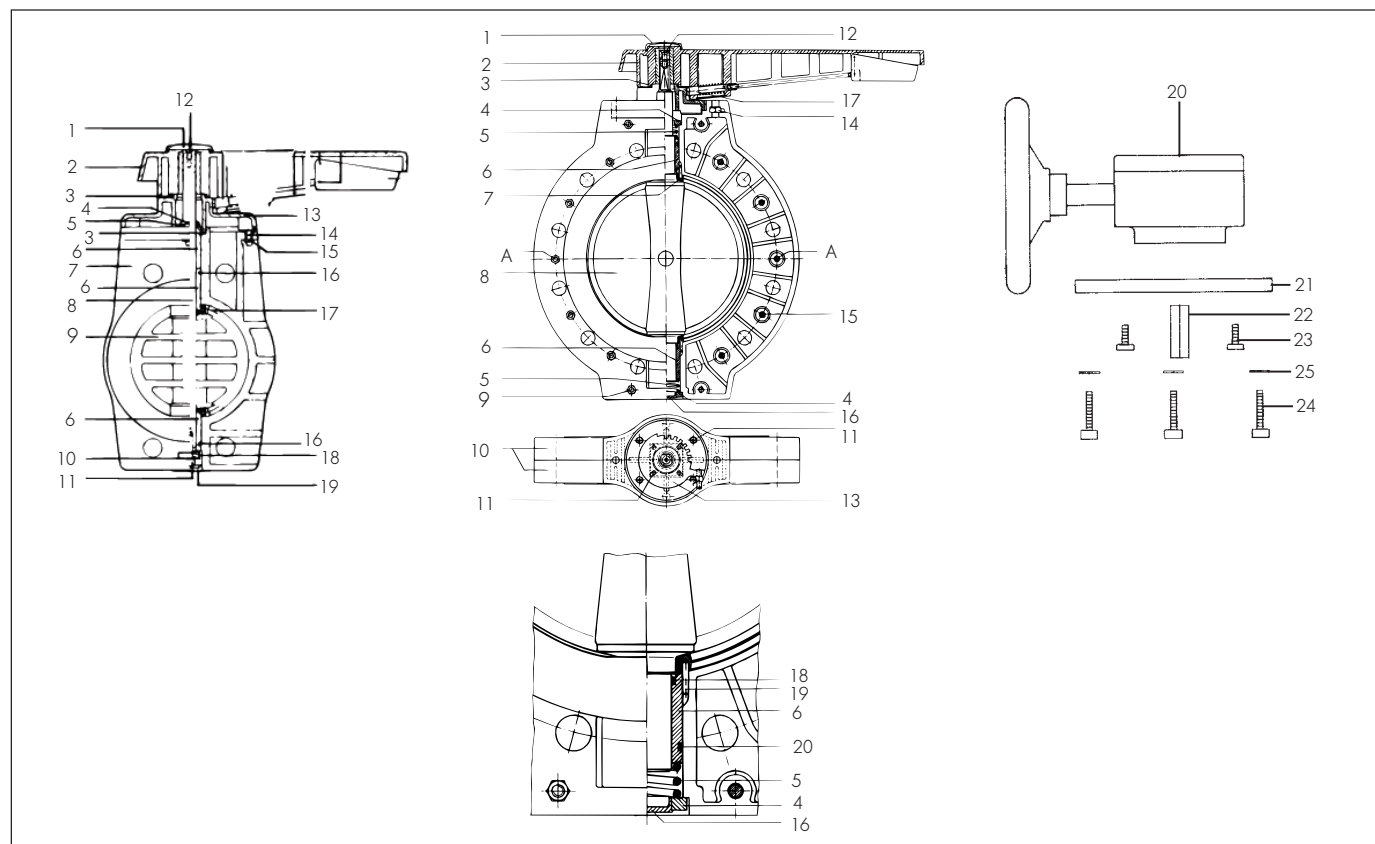
**FPM seals are made of Viton® or equal materials.
Viton® is a registered trademark of DuPont Dow Elastomers.*

Spare Parts for Butterfly Valve Type 367



No.	Part	Material	Qty.	2 1/2" d 75/DN 65	3" 90/80	4" 110/100	5" 140/125	6" 160/150	8" 225/200	10" 280/250	12" 315/300
13	Handle/Index plate set	PVC	1	161 486 192	161 486 193	161 486 194	161 486 195	161 486 196	161 486 197	(index plate only) 161 484 836	(index plate only) 161 484 837
		CPVC	1	—	161 486 193	161 486 194	—	161 486 196	161 486 197	—	—
		PP	1	161 486 192	161 486 193	161 486 194	161 486 195	161 486 196	161 486 197	161 484 836	161 484 837
		PVDF	1	175 483 069	175 483 070	175 483 071	175 483 072	175 483 073	175 483 074	—	—
Disc set consisting of:				161 483 040	161 483 041	161 483 042	161 483 043	161 483 044	161 483 045	EPDM Disc Seal Set	EPDM Disc Seal Set
9	Disc	PVC	1							161 482 664	161 482 665
17	Seal	EPDM	1							Disc/Shaft	Disc/Shaft
18	Disc washer, steel plated	50 Cr V4	1							161 482 656	161 482 657
Disc set consisting of:				161 483 052	161 483 053	161 483 054	161 483 055	161 483 056	161 483 057	FPM Disc Seal Set	FPM Disc Seal Set
9	Disc	PVC	1							161 482 668	161 482 669
17	Seal	FPM	1							Disc/Shaft	Disc/Shaft
18	Disc washer, steel plated	50 Cr V4	1							161 482 656	161 482 657
Disc set consisting of:				167 480 909	167 480 910	167 480 911	167 480 912	167 480 913	167 480 914	EPDM Disc Seal Set	EPDM Disc Seal Set
9	Disc	PP	1							161 482 664	161 482 665
17	Seal	EPDM	1							Disc/Shaft	Disc/Shaft
18	Disc washer, galv. steel	50 Cr V4	1							167 480 931	167 480 932
Disc set consisting of:				167 480 917	167 480 918	167 480 919	167 480 920	167 480 921	167 480 922	FPM Disc Seal Set	FPM Disc Seal Set
9	Disc	PP	1							161 482 668	161 482 669
17	Seal	FPM	1							Disc /Shaft	Disc/Shaft
18	Disc washer, galv. steel	50 Cr V4	1							167 480 931	167 480 932
Disc set consisting of:				175 480 910	175 480 911	175 480 912	175 480 913	175 480 914	175 480 915		
9	Disc	PVDF	1								
17	Seal	FPM	1								
18	Disc washer, galv. steel	50 Cr V4	1								
Disc set for CPVC:											
	EPDM	1		—	163 481 351	163 481 352	—	163 481 354	163 481 355	—	—
	FPM	1		—	163 481 359	163 481 360	—	163 481 362	163 481 363	—	—

Spare Parts for Butterfly Valve Type 367

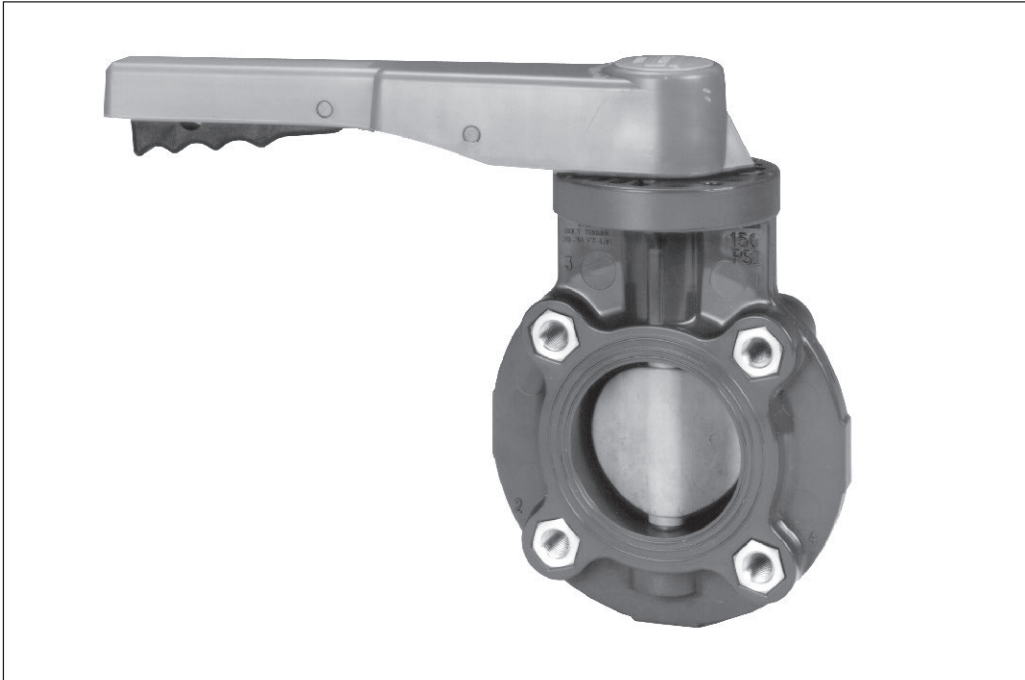


No.	Part	Material	Qty.	2 1/2" d 75/DN 65	3" 90/80	4" 110/100	5" 140/125	6" 160/150	8" 225/200	10" 280/250	12" 315/300
2	Handle assembly		1	–	–	–	–	–	–	161 483 987	161 483 987
3	O-rings	EPDM	2 (10" and 12")	748 410 123	748 410 137	748 410 137	748 410 138	748 410 139	748 410 139	748 410 139	748 410 139
8	Shaft set consisting of items 4, 5, 8, 10, 11, 12, 18		1	161 483 135	161 483 136	161 486 199	161 483 138	161 483 139	161 483 140	–	–
6	(for PCV, CPVC and PP valves) Bushings	PP T20	3	167 480 334	167 480 335	167 480 336	167 480 337	167 480 338	167 480 339	–	–
	(for PVDF valves) Bushings	PVDF	3	175 480 109	175 480 110	175 480 111	175 480 112	175 480 113	175 480 114	(2 req'd) 175 480 805	(2 req'd) 175 480 805
16*	O-rings for bushings	EPDM	2	748 410 136	748 410 059	748 410 059	748 410 106	748 410 116	748 410 116	(2 each) 748 410 027 748 410 007	
	O-rings for bushings	FPM	2	749 410 136	749 410 059	749 410 059	749 410 106	749 410 116	749 410 116	(2 each) 749 410 027 749 410 007	
5	Compression springs	ss	2	–	–	–	–	–	–	161 482 672	
4	Sealing plates EP 30% GF		2	–	–	–	–	–	–	161 482 660	
16**	Plug	PE	1	161 480 784	161 481 400	161 481 400	161 481 401	161 481 402	161 481 402	161 481 401	161 481 401
19	Dowel pin		4	–	–	–	–	–	–	161 483 463	
20	Gear			150 101 611	150 101 611	150 101 611	150 101 611	150 101 611	150 101 611	150 101 612	150 101 612
Mounting kit for gear op. includes below				161 484 768	161 484 769	161 484 770	161 484 771	161 484 772	161 484 773	161 484 774	161 484 774
21	Mounting plate, painted st.			198 800 813	198 800 814	198 800 815	198 800 816	198 800 817	198 800 818		
22	Shaft shim, plated steel			198 800 819	198 800 820	198 800 821	198 800 821	–	–		
23	Gear mounting bolts, ss			198 800 823	198 800 823	198 800 823	198 800 823	198 800 823	198 800 823		
24	Plate mounting bolts, ss			161 481 358	161 481 358	161 481 358	198.800 826	198 800 826	198 800 771		
25	Plate washer	ss		198 800 828	198 800 828	198 800 829	198 800 830	198 800 830	198 800 831		

* item 16 for 2 1/2"–8" valves (items 18 and 20 for 10" valves)

** item 16 for 10" and 12" valves (item 11 for 2 1/2"–8" valves)

George Fischer Type 570 Butterfly Valve



- Corrosion resistant thermoplastic
- Optional lug inserts for dead-end service
- Rugged PVC or CPVC high strength body

(Optional lug inserts shown in place)

General

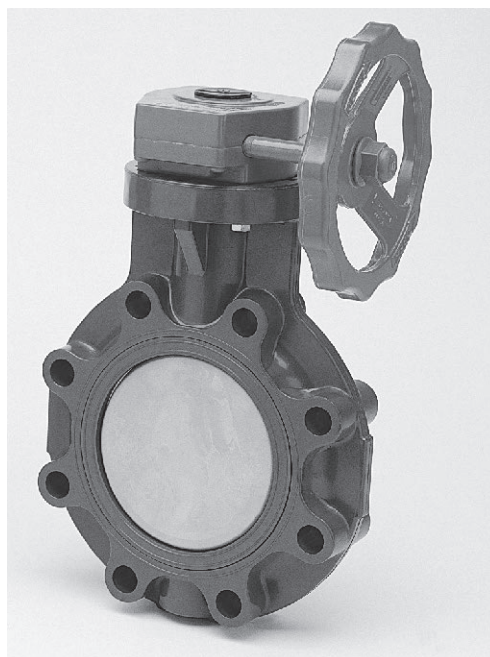
The Type 570 is an economical, high performance, lug or wafer style butterfly valve designed specifically for situations where a dead-end line is needed. The 570 features a high strength disc with a special offset design which provides reduced seat wear and lower operating torque.

100% positive seal (EPDM or FPM) for high pressure, low pressure or vacuum service. Made of PVC or CPVC high strength body, the 570 valve is available in 1½" – 12" sizes. Pressure rating is 150 psi @ 73°F (including dead-end service).

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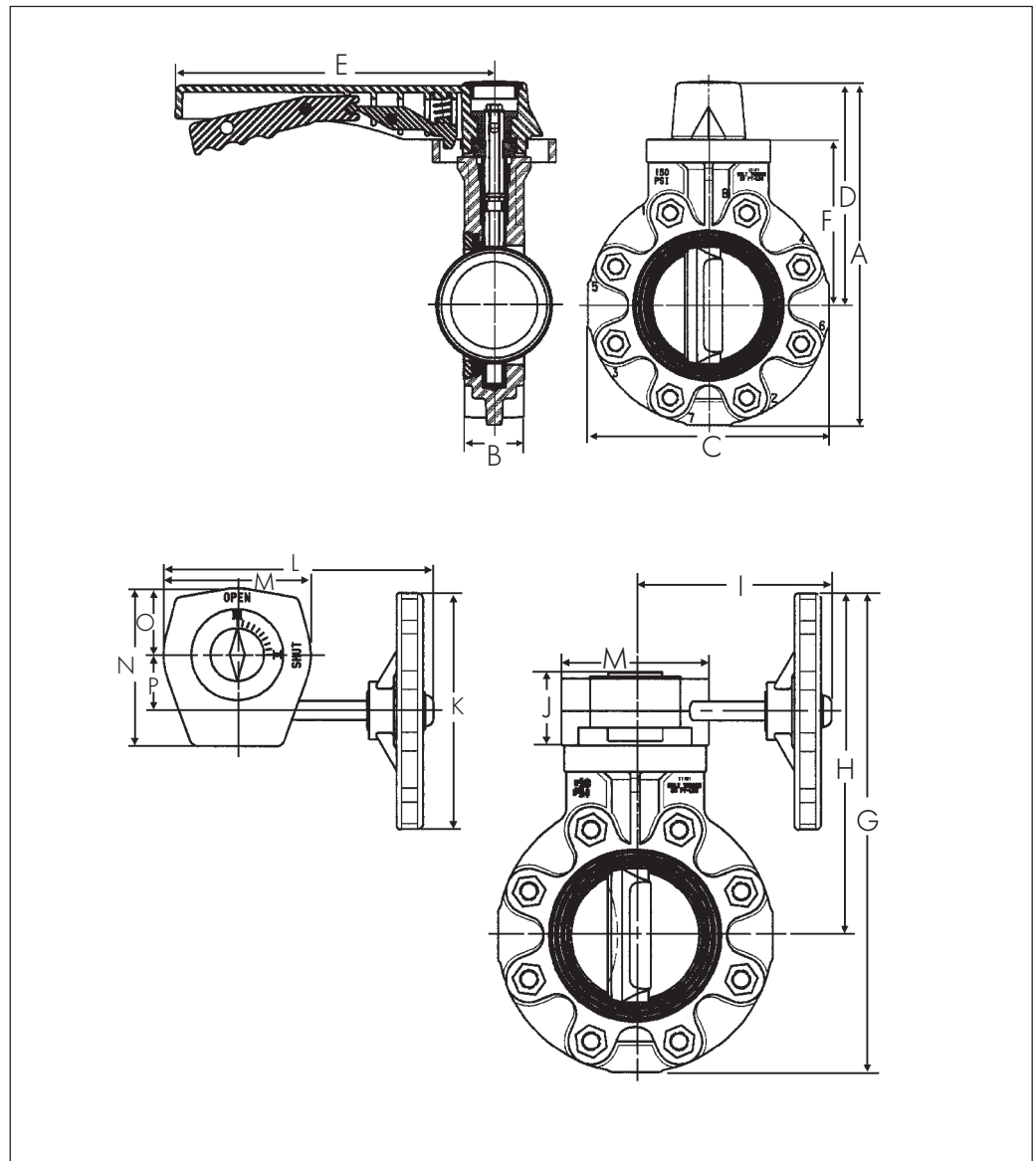
Technical Features

- Corrosion resistant thermoplastic
- Optional lug inserts for dead-end service available in 316 stainless steel or zinc plated steel
- Rugged PVC or CPVC high strength body
- Glass filled PVC or CPVC Offset disk
- Built-in lockout capability, 3"-8"
- Reversible handle
- 316 stainless steel shaft and hardware standard
- 7 position, high-impact Polypropylene lever handle indexes every 15°
- Gear operator standard on 10" and 12" sizes; optional on 1½"-8" sizes. Features polypropylene handwheel, position indicator, epoxy coated housing
- EPDM or FPM disc seals replaceable without full disassembly torque.



Type 570 with gear operator

Dimensions for Type 570 Butterfly Valve



Inch size	A inch	B inch	C inch	D inch	E inch	F inch	G inch	H inch
1 1/2	8.28	1.56	5.00	5.78	9.25	4.25	11.16	8.66
2	9.28	1.94	6.00	6.28	9.25	4.75	13.13	10.13
2 1/2	10.28	2.00	7.00	6.78	9.25	5.25	13.13	9.63
3	11.22	2.00	7.50	7.47	12.00	5.28	14.16	10.41
4	12.69	2.25	9.00	8.19	12.00	6.00	15.63	11.13
6	16.25	2.81	11.00	10.75	14.00	8.63	19.25	13.75
8	18.50	2.94	13.50	11.75	14.00	9.63	21.50	14.75
10	N/A	3.13	16.00	N/A	N/A	11.00	26.63	18.63
12	N/A	3.38	19.00	N/A	N/A	12.00	29.13	19.63

Inch size	I inch	J inch	K inch	L inch	M inch	N inch	O inch	P inch
1 1/2	6.44	2.38	8.00	8.81	4.81	5.19	2.19	1.84
2	6.44	2.38	8.00	8.81	4.81	5.19	2.19	1.84
2 1/2	6.44	2.38	8.00	8.81	4.81	5.19	2.19	1.84
3	6.44	2.38	8.00	8.81	4.81	5.19	2.19	1.84
4	6.44	2.38	8.00	8.81	4.81	5.19	2.19	1.84
6	6.44	2.38	8.00	8.81	4.81	5.19	2.19	1.84
8	7.44	2.38	8.00	9.81	5.38	5.94	2.44	2.34
10	8.16	2.72	8.00	10.56	6.88	7.50	3.13	3.00
12	8.16	2.72	8.00	10.56	6.88	7.50	3.13	3.00

Technical Data for Butterfly Valves Type 570

George Fischer Butterfly Valves are designed for installation with user supplied full-face, 1/8" thick Neoprene (or desired elastomer) gaskets, hex bolts, nuts, and washers. Valves may be installed for flow in either direction in a dual flange (flange each side) installation, but require attention to direction of flow when installed in a single-side (flange one-side only) application for dead-end service. Consult installation instructions for details of single-side installation and special instructions for use of lug-insert option.

Note: Chemical resistance is limited to that of 316 stainless steel shaft.

General Conformance Specifications:

Material: ASTM D 1784, PVC 12454-B, CPVC 23447-B; NSF approved for potable water service.
Bolt pattern: ANSI/ASME B16.5, class 150; ASTM D 4024
Pressure class 150 (AWWA C504-87)
Hydrostatic pressure test: AWWA C504-87, ASTM D 1599

Not for use with compressed air.

C_v Values and Operating Torque

Valve Size	C _v Degrees Open						Operating Torque (in.-lbs.)
	15°	30°	45°	60°	75°	90°	
1-1/2"	2	8	20	36	61	81	100
2"	3	11	27	49	82	109	110
2-1/2"	5	19	48	86	144	192	206
3"	9	35	86	155	259	345	360
4"	10	41	103	185	308	411	420
6"	28	113	281	506	844	1125	720
8"	56	225	562	1012	1687	2249	1200
10"	111	444	1110	1998	3330	4440	1320
12"	173	690	1726	3106	5177	6903	1920

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Temperature Pressure Rating

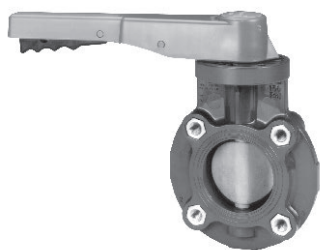
System Operating Temperature °F (°C)		100 (38)	110 (43)	120 (49)	130 (54)	140 (60)	150 (66)	160 (71)	170 (77)	180 (82)	190 (88)	200 (93)	210 (99)
Valve Pressure Rating	PVC	150 (1.03)	135 (.93)	110 (.76)	75 (.52)	50 (.34)	0 (-0-)	0 (-0-)	0 (-0-)	0 (-0-)	0 (-0-)	0 (-0-)	0 (-0-)
	CPVC	150 (1.03)	140 (.97)	130 (.90)	120 (.83)	110 (.76)	100 (.69)	90 (.62)	80 (.55)	70 (.49)	60 (.41)	50 (.34)	0 (-0-)

Engineering Specification for Type 570 Butterfly Valve

All Type 570 Butterfly Valves shall be supplied by George Fischer, manufactured from PVC, cell classification 12454-B or CPVC cell classification 23447-B, per ASTM D 1784, NSF approved for potable water services. Seats and seals shall be EPDM or FPM*. Bolt patterns shall conform to ANSI B16.5 class 150. Disc shall be offset design with 316 s.s.

shaft and hardware. Handles shall be high impact PP with lockout capability through 8". Gear operators shall be standard on sizes 10" and 12", optional on all other sizes, equipped with position indicator and PP handwheel. Lug inserts shall be either 316 s.s. or zinc plated steel (as specified).

Part Numbers for Type 570 Wafer or Lug Style Butterfly Valve PVC



Inch size	EPDM Seals		FPM* Seals	
	with handle	with Gear Operator	with handle	with Gear Operator
1-1/2	161 570 003	161 570 043	161 570 023	161 570 063
2	161 570 004	161 570 044	161 570 024	161 570 064
2-1/2	161 570 005	161 570 045	161 570 025	161 570 065
3	161 570 006	161 570 046	161 570 026	161 570 066
4	161 570 007	161 570 047	161 570 027	161 570 067
6	161 570 010	161 570 050	161 570 030	161 570 070
8	161 570 011	161 570 051	161 570 031	161 570 071
10	N/A	161 570 052	N/A	161 570 072
12	N/A	161 570 053	N/A	161 570 073

CPVC

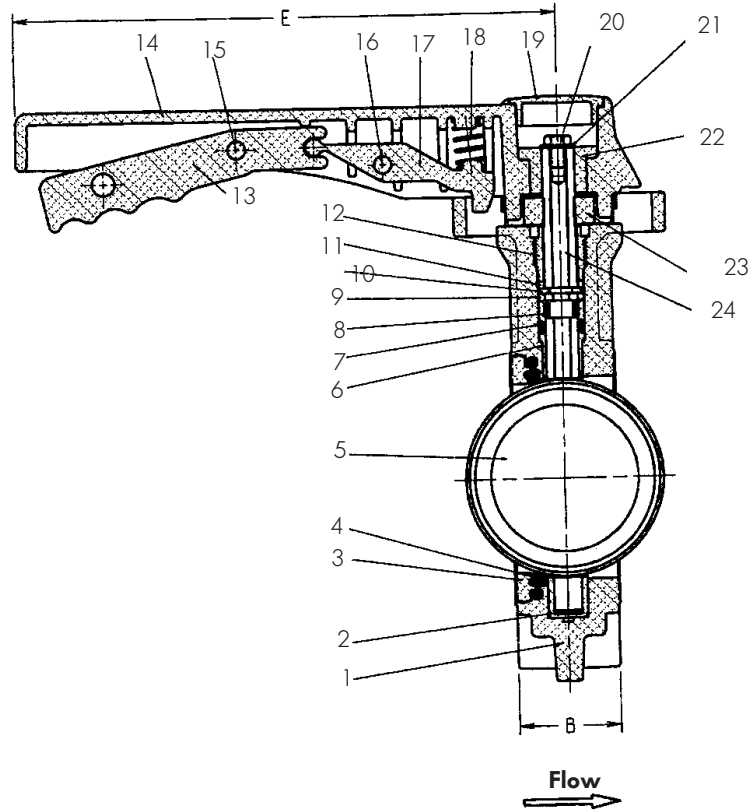
*FPM seals are made of Viton® or equal materials.
Viton® is a registered trademark of DuPont Dow Elastomers.

Inch size	EPDM Seals		FPM* Seals	
	with handle	with Gear Operator	with handle	with Gear Operator
1-1/2	163 570 003	163 570 043	163 570 023	163 570 063
2	163 570 004	163 570 044	163 570 024	163 570 064
2-1/2	163 570 005	163 570 045	163 570 025	163 570 065
3	163 570 006	163 570 046	163 570 026	163 570 066
4	163 570 007	163 570 047	163 570 027	163 570 067
6	163 570 010	163 570 050	163 570 030	163 570 070
8	163 570 011	163 570 051	163 570 031	163 570 071
10	N/A	163 570 052	N/A	163 570 072
12	N/A	163 570 053	N/A	163 570 073

Optional Lug Inserts

Inch size	# in set	316 stainless steel	Zinc plated steel	Bolt Dia.
1-1/2	4	161 570 198	161 570 208	1/2
2	4	161 570 199	161 570 209	5/8
2-1/2	4	161 570 199	161 570 209	5/8
3	4	161 570 201	161 570 211	5/8
4	8	161 570 202	161 570 212	5/8
6 & 8	8	161 570 205	161 570 215	3/4
10 & 12	12	161 570 206	161 570 216	7/8

Replacement Parts



No	Component	Qty.	Material
1	Body	1	PVC/CPVC
2	Stem bearing	1	PTFE
3	Seal Carrier	1	PVC/CPVC
4	Seat	1	Buna-N, EPDM, FPM
5	Disc	1	PVC/CPVC
6	Stem Bushing	1	PTFE
7	Bushing O-Ring	2	Buna-N, EPDM, FPM
8	Stem O-Ring	2	Buna-N, EPDM, FPM
9	Stem Washer - Hex	1	PTFE
10	Stem Washer - Slot*	1-2	SS316
11	Stem Washer - Round	1	PTFE
12	Stem Nut	1	PVC/CPVC
13	Handle Grip	1	GFPVC
14	Handle Body	1	PP
15	Grip Pin	1	PP
16	Lock Pin	1	PP

No	Component	Qty.	Material
17	Handle Lock	1	GFPVC
18	Handle Spring	1	SS316
19	Handle Cover	1	PP
20	Hex Head Cap Screw	1	SS316
21	Flat Washer	1	SS316
22	Handle Bushing	1	GFPVC
23	Timing Stop	1	PP
24	Stem	1	SS316
25	Lug Insert	4-12	SS/Zinc Plated Steel
26	Gear Operator Assembly	1	Cast Aluminium
27	Hand Wheel	1	PP

Not shown	Handle Assembly Complete
1-1/2	BFH-015GF
2	BFH-020GF
2-1/2	BFH-025GF
3	BFH-030GF
4	BFH-040GF
6	BFH-060GF
8	BFH-080GF

Installation Instructions for Type 570 Butterfly Valves

George Fischer Type 570 Butterfly Valves are designed for system connections either between two flanges, or with single-side (flange one-side only) connection for dead-end service using optional lug inserts. The valve handle (or gear operator) is reversible (180 degrees) for either left or right side operation. George Fischer Butterfly Valves are designed for installation with user supplied 1/8" full-faced gaskets, hex bolts, nuts and flat washers.

Dual Flange (flange each side) Installation Using Standard, Wafer Style Valve

Step 1:

Attach connecting flanges to system piping as required, using standard flanging procedures for each particular type of piping material.

NOTE: One-piece flanges will require precise alignment of bolt holes with desired valve position.

Step 2:

Check flange face alignment and spacing. Faces of flanges should be parallel and spaced apart just enough to allow insertion of the flange gaskets and valve body.

Step 3:

With valve in closed position, place valve body with flange gaskets on each side, between flanges and install all connecting bolts with flat washers and nuts (see "Single-side Installation", Lug Insert option, Step 6, when using 2nd flange.) Tighten hand tight only.

Step 4:

Open valve and check axial displacement and disc clearance. No more than 1/8" displacement from the pipe centerline is allowed. Adjust valve position as necessary. Using an 180 degree opposing sequence, tighten flange bolts in 5 ft-lb increments to required specifications (see chart on next page). DO NOT attempt to draw together any gaps without allowing free movement on one side of the system connection.

Lug Valve Installation (Standard wafer valve with optional lug inserts)

Lug inserts allow valves to be used for both dead end service and connection of a second flange to the open side without disassembly of the initial valve connection. George Fischer standard wafer style Type 570 butterfly valves accept field installable lug insert sets for quick conversion to a lug style valve, but require attention to direction of flow for single-side installation as shown below.

Single-Side (flange one side) Installation Using Standard Valve with Lug Inserts

Step 1:

Attach connecting flange to system piping as required (use appropriate procedure for solvent cement welded or threaded connection of flange hub).

NOTE: One-piece flange will require precise alignment of bolt holes with desired valve position.

Step 2:

Install lug inserts in each bolt hole from the side of valve containing the hex recess. Press lightly until the lug insert is fully seated into the recess.

Step 3:

With valve in closed position, locate flange and gasket on the side of valve opposite the hex nut recesses.

Step 4:

Insert the proper size/length hex bolts with flat washers (see chart on next page) through the flange and engage lug inserts. Tighten hand tight only.

Step 5:

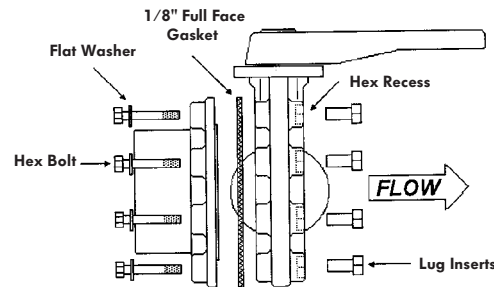
Open valve and check axial displacement and disc clearance. No more than 1/8" displacement from the pipe centerline is allowed. Adjust valve position as necessary. Using an 180 degree opposing sequence, tighten flange bolts in 5 ft-lb increments to required specifications (see chart below). NOTE: Flange bolts may require re-torquing after initial pressure testing.

Step 6:

2nd Flange Installation Option

(System add-on): Lug inserts must have been used and installed with specified single-side bolt lengths or else the valve will have to be removed and installed as described under "Dual Flange Installation", above.

Place gasket between add-on flange and valve body, insert specified size/length hex bolts (see "2nd Flange" bolt lengths on chart below) with flat back-up washer, through flange holes and engaged with lug inserts. Tighten, hand tight only. Repeat Step 5 above.



CAUTION:

Flange must be installed on side of valve opposite the hex nut recesses for Single-Side Installation as illustrated.

(Flange, bolts, nuts, washers and gaskets not included. Lug inserts may be ordered separately.)

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Valve Size (in.)	No. of Bolt Holes	Bolt Diameter (in.)	Flat Washer O.D. (in.)	Lug Insert Threads per Inch	Standard Valve Bolt Lengths ¹ (in.)				Bolt Torque (ft-lb)	
					Installed with Lug Inserts		Installed without Lug Inserts			
					Single-side	2nd Flange ²	Single-side	Dual Flange ³		
1-1/2	4	1/2	1-3/8	13	1-3/4	1-1/2	3-1/4	4-1/4	12	
2	4	5/8	1-3/4	11	2	1-3/4	3-3/4	4-3/4	25	
2-1/2	4	5/8	1-3/4	11	2-1/4	2	4-1/4	5-1/4	25	
3	4	5/8	1-3/4	11	2-1/4	2	3-3/4	5-1/2	25	
4	8	5/8	1-3/4	11	2-1/2	2	4	5-3/4	25	
6	8	3/4	2	10	3-1/4	2-1/4	4-3/4	6-1/2	40	
8	8	3/4	2	10	3-1/2	2-1/4	5-1/4	7-1/4	40	
10	12	7/8	2-1/4	9	4	3	5-3/4	8-1/4	64	
12	12	7/8	2-1/4	9	4-1/4	3	6	8-1/2	95	

¹: Minimum bolt lengths based on use of Spears flanges, 1/8" full faced gaskets, standard S.A.E. hex bolts and Standard Plate "W" Series flat washers

²: Specified bolt lengths are maximum allowable for maintaining proper clearance in initial Single-side installation with lugs where anticipated 2nd Flange installation option is to be retained without removal of valve.

³: Minimum bolt length through 2 flanges, 2 gaskets, 2 flat washers and 1 valve body.

Reversing Handle, or Gear Operator Position

Step 1:

Close valve. Remove the snap-in cover from the handle to expose retaining nut and handle bushing. Remove retaining nut and flat washer. For gear operator, remove four (4) mounting bolts and flat washers.

Step 2:

Disengage handle and handle bushing assembly from valve stem. For gear operator, lift assembly and drive bushing from stem.

NOTE: Drive bushing is timed to operator with large splined tooth and index mark. Rotate handle assembly, or gear operator and drive bushing, 180 degrees and reinstall on valve stem.

CAUTION: Do not remove Disc Timing-Stop Plate located immediately below handle bushing.

Step 3:

Reinstall retaining nut with flat washer, torque to 40 in-lb. Snap cover back into place. For gear operator, reinstall mounting bolts and flat washers, torque 10 ft-lb.

Maintenance Service Instructions for Butterfly Valves

Butterfly Valves can be easily removed from in-line position for quick seat replacement using the Butterfly Valves Seat Replacement Kit. Reconditioning can also be accomplished using the Butterfly Valve Overhaul Kit. Specific instructions for full valve overhaul are included with kit.

CAUTION: Before any servicing, system should be shut down, depressurized and drained.

Valve Seat Replacement

Step 1:

Remove flange bolts, nuts and washers. Remove valve (if dual flange installation, place valve in closed position and slide valve from between flange connectors and gaskets.)

Step 2:

The seat can be easily replaced without full valve disassembly. Place valve in full open position. From inside of valve, drive seal carrier out of body taking care not to damage body or disc.

NOTE: Seal carrier and seat will be damaged during removal; both are included in seat replacement kit.

Examine body seat area for damage or debris. Clean as necessary.

Step 3:

Reinstall Seat and Seal Carrier: Lay body flat on a solid surface with seal carrier side up. Install seat centered in body groove. Carefully center seal carrier, rib side up, on body and press seal carrier evenly into body until seal carrier is flush with body.

NOTE: This can best be accomplished with an arbor press. However, seal carrier may be gradually tapped into place with a mallet and wood block, working incrementally around the perimeter of the seal carrier on alternating sides. Valve is now ready for installation.

Handle Service

Step 1:

Remove handle cover and hex head retaining bolt and washer. Lift handle from stem shaft. If handle components are being replaced, tap grip pin and lock pins from handle. Remove handle grip, handle lock and handle spring from handle body. Remove handle bushing from handle body. Examine all components for damage, wear and debris. Clean and replace as necessary.

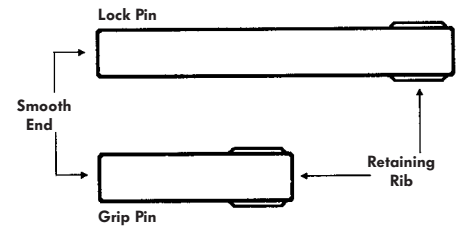
CAUTION: Do not remove Disc Timing-Stop Plate located immediately below handle bushings.

Step 2:

Reassemble Handle: Install handle spring over lug in handle body. Insert handle lock into handle body. Align holes and install lock pin through handle body and handle lock.

NOTE: Both lock pin and grip pin have a smooth end and retaining ribs on opposite end of pin; engage smooth ends first.

Insert handle grip into handle body being sure to engage fork of grip with end-bar of handle lock. Align holes and install grip pin through handle body and handle grip. Install handle bushing in handle body. Handle is now ready for assembly to valve.



Gear Operator Removal & Installation Instructions

Gear operator (not shown) is standard on 10" and larger valves.

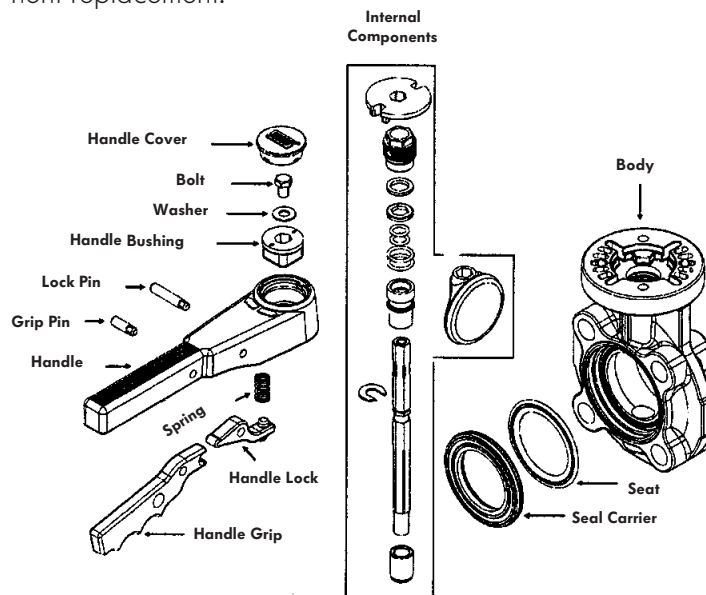
Step 1:

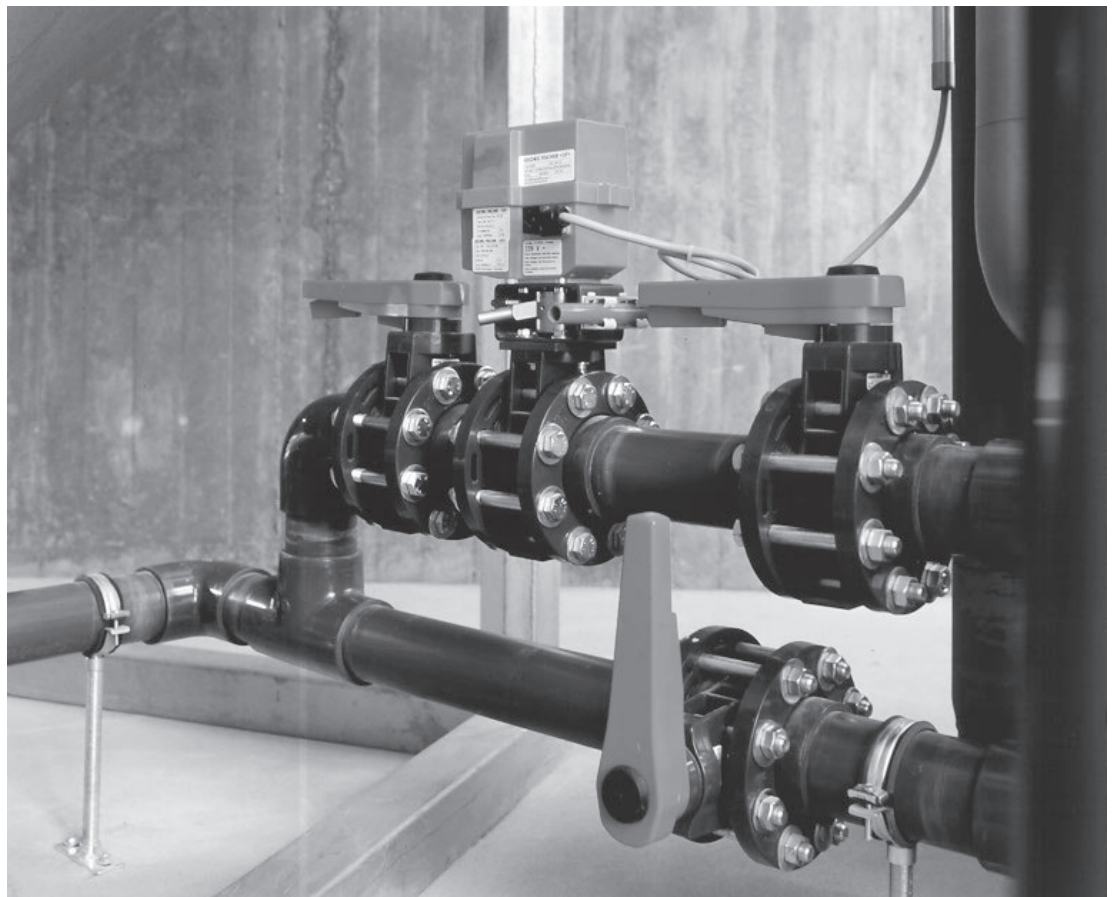
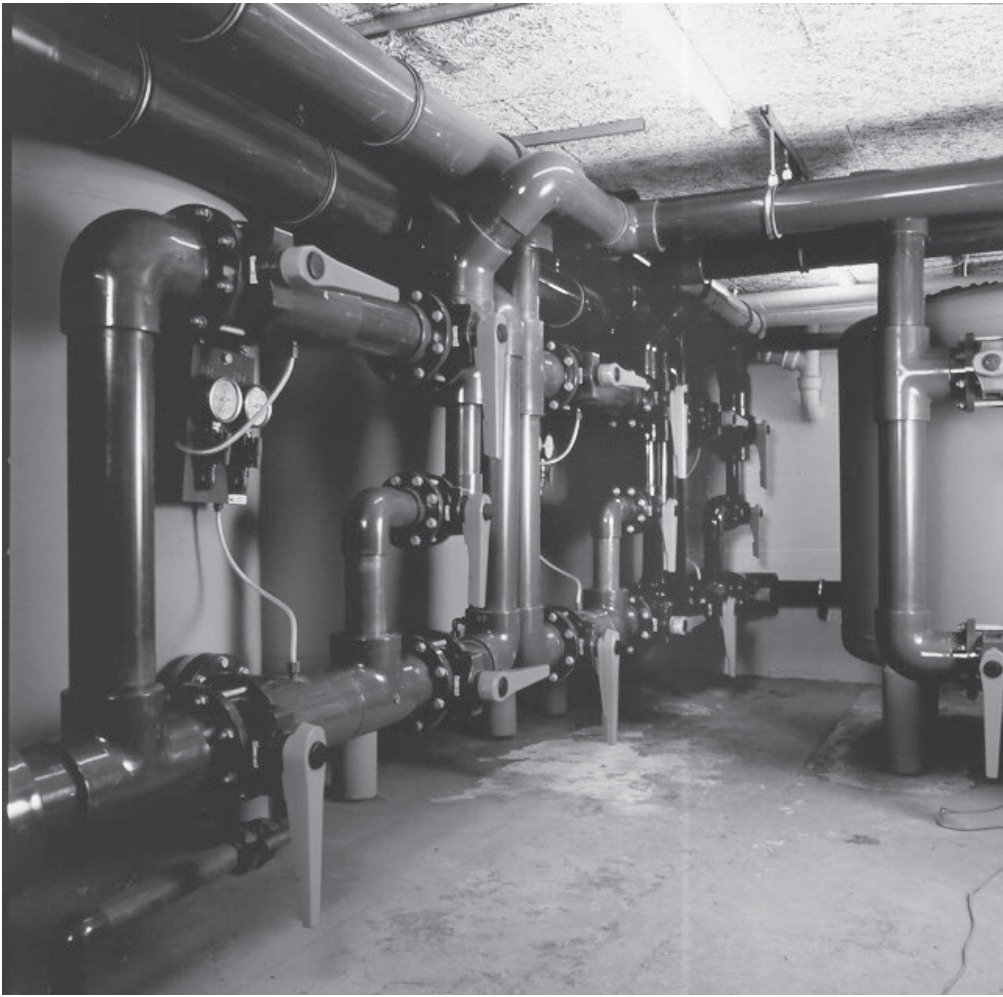
Remove gear operator retaining bolts (4). Lift operator from stem shaft.

Step 2:

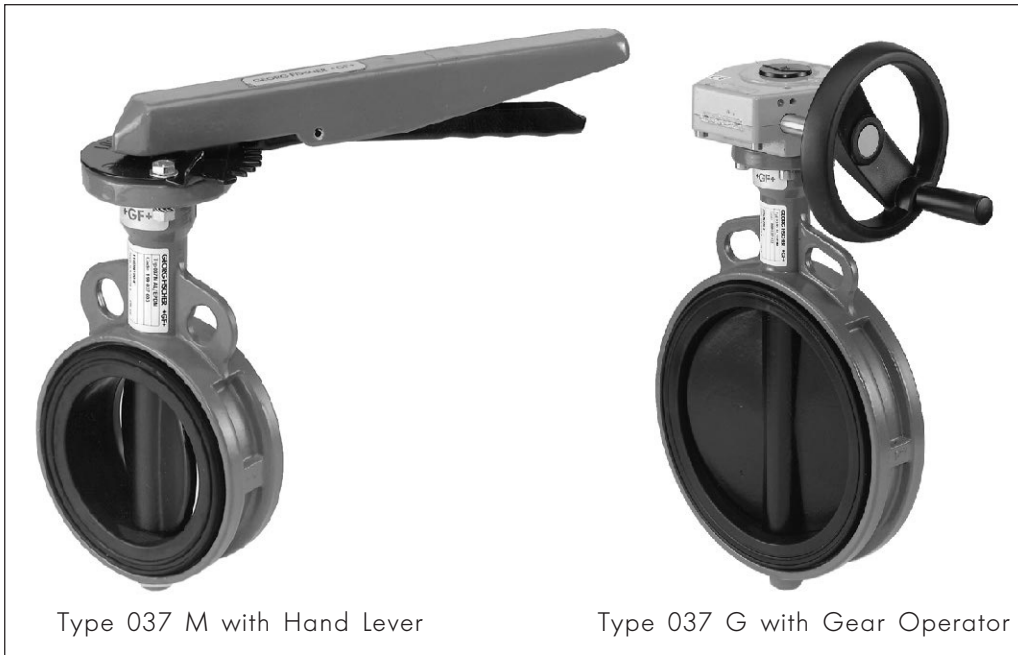
To reinstall, place valve disc and operator in near closed position. Insert operator drive bushing over stem hex. Align holes and install retaining bolts through underside of mounting flange. Torque bolts to 25 ft-lb.

Note: Factory reconditioning is available and recommended for internal component replacement.





George Fischer Metal Butterfly Valve Type 037



NSF 50 Certification:
Valves (2" to 12") are certified to meet the health effect, structural integrity, and head loss requirements for pool and spa end use with a maximum working pressure of 100 psi as specified by the requirements of NSF (National Sanitation Foundation) 50.

General

The Type 037 metal butterfly valve can be used universally as shut-off or control valves. The easy installation of the valve between pipe flanges warrants dependable operation and sealing. The aluminium valve housing means that it is lightweight, a special advantage in transport and installation. The Rilsan® coating of the valve housing and the ductile iron or stainless steel valve disc provide high resistance to corrosion. The Type 037 valves are equipped for manual operation with a hand lever or gear operator, and electric or pneumatic actuators. Retrofitting is possible at any time, even for built-in valves. Ideal for swimming pools, aquariums, water parks, theme parks, salt water, and water treatment applications.

Product Features

Dimension range:

- 2"–12" (DN 50 mm– 300 mm)
- up to 40" (DN 1000 mm) on request

Materials:

- housing of aluminium, Rilsan®-coated
- valve disc of ductile iron/Rilsan®-coated or stainless steel
- seat of EPDM or FPM

Pressure rating:

- 150 psi/10 bar
- leak rating A according to ISO 5208.93

Versions:

- with hand lever or gear-operated
- with electric or pneumatic actuators
- flange adaptor according to ISO 5211

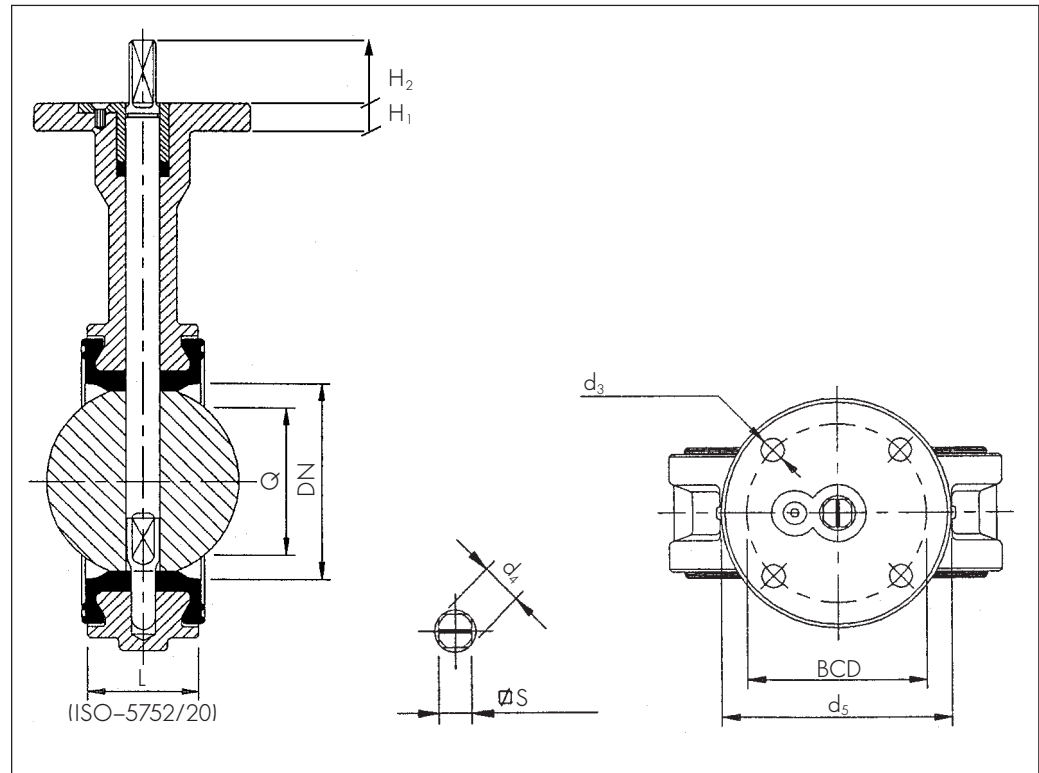
Insertion depth:

- according to ISO 5752/20
- with ISO/DIN or ANSI flange connection
- seat is also a flange seal

Temperature range:

- 14°F – 248°F (10°C –120°C) depending on the version
- up to 176°F (80°C) with valve disc, coated with Rilsan®

Dimensions for Type 037 Butterfly Valve



Inch size	Inch ¹⁾ lbs.	Q ²⁾ inch	L ³⁾ inch	Mounting flange Mtg. # of type	d ₃ inch	BCD inch	d ₅ inch	Shaft end H ₁ inch	H ₂ inch	d ₄ inch	ØS inch
2	212	1.26	1.69	F-07 4	.35	2.76	3.54	.51	1.02	.55	.43
2 1/2	265	2.01	1.81	F-07 4	.35	2.76	3.54	.51	1.02	.55	.43
3	345	2.72	1.81	F-07 4	.35	2.76	3.54	.51	1.02	.55	.43
4	522	3.50	2.05	F-07 4	.35	2.76	3.54	.63	1.18	.71	.55
5	690	4.53	2.20	F-07 4	.35	2.76	3.54	.63	1.18	.71	.55
6	867	5.63	2.20	F-07 4	.35	2.76	3.54	.67	1.30	.87	.67
8	1389	7.64	2.36	F-07 4	.35	2.76	3.54	.67	1.30	.87	.67
10	1850	9.57	2.68	F-10 4	.47	4.02	4.92	.67	1.85	1.10	.87
12	2664	1.54	3.07	F-10 4	.47	4.02	4.92	.67	1.85	1.10	.87

¹⁾ Inch lbs. = closing torques

²⁾ Q = disc outlet diameter

³⁾ L = insertion depth

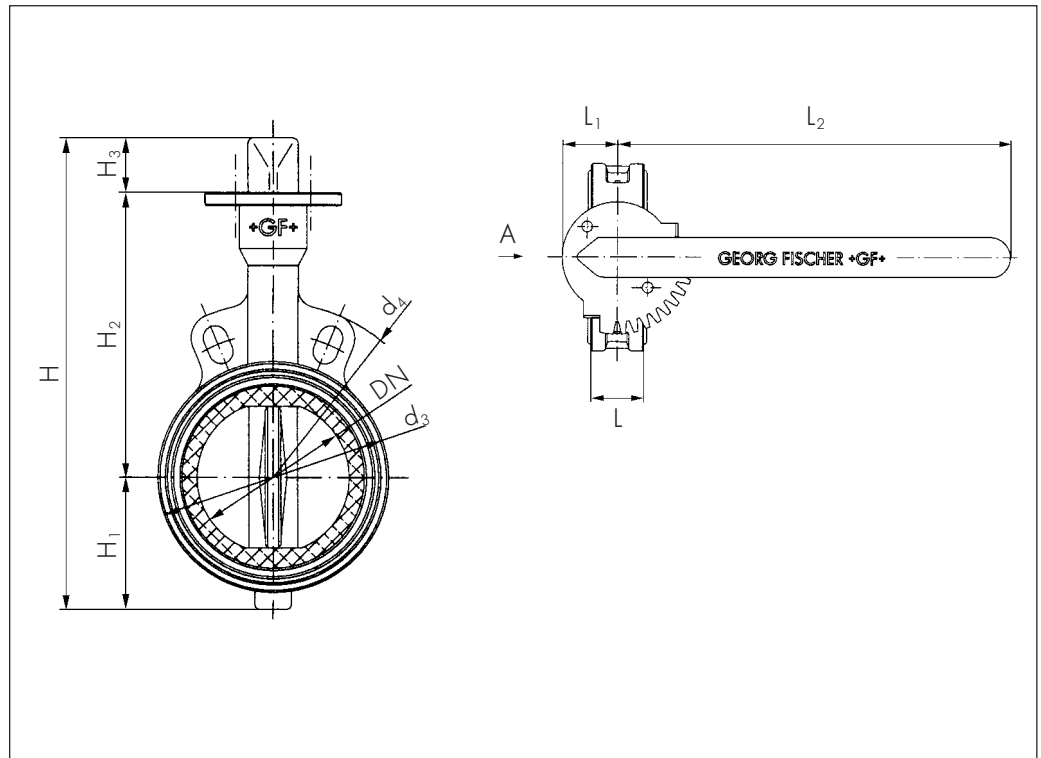
Product Specification

Type 037 M/037 G Butterfly Valve

Available in 2"–12" with Rilsan (Nylon 11) coated aluminum bodies ASTM S12A and EPDM or FPM seal materials. Valve disc materials shall be Rilsan coated ductile iron GGG-40/ASTM 536, with optional stainless 1.4408/ASTM A351 CF8M or aluminum bronze. Shaft material of stainless steel 1.4021/AISI 420 with optional

stainless steel 1.4401/AISI 316 for ISO/DIN or ANSI flange connection. The valve Type 037 shall carry pressure rating of 150 psi and temperature rating of 176°F with ductile iron Rilsan coated disc, or up to 248°F with stainless steel disc/EPDM seal. Contact George Fischer Inc., Tustin CA 92780 for additional details.

Dimensions for Type 037 M Butterfly Valve with Hand Lever



Inch size	L inch	L ₁ inch	L ₂ inch	H inch	H ₁ inch	H ₂ inch	H ₃ inch	d ₃ inch	d ₄ inch	DN mm	d mm
2	1.69	1.77	8.66	8.94	2.09	5.51	1.34	3.78	6.50	50	63
2 1/2	1.81	1.77	8.66	9.80	2.48	5.98	1.34	4.49	7.28	65	75
3	1.81	1.77	8.66	10.39	2.80	6.26	1.34	5.16	7.48	80	90
4	2.05	1.77	12.60	11.77	3.43	7.01	1.34	5.98	9.02	100	110
5	2.20	1.77	12.60	12.87	4.02	7.52	1.34	7.17	10.00	125	140
6	2.20	1.77	12.60	14.13	4.80	7.99	1.34	8.23	11.22	150	160
8	2.36	1.77	16.54	16.69	5.87	9.49	1.34	10.31	13.50	200	225
10	2.68	2.46	22.05	20.75	7.91	10.75	1.97	12.72	13.11	250	280
12	3.07	2.46	22.05	23.31	9.09	12.24	1.97	14.69	13.90	300	315

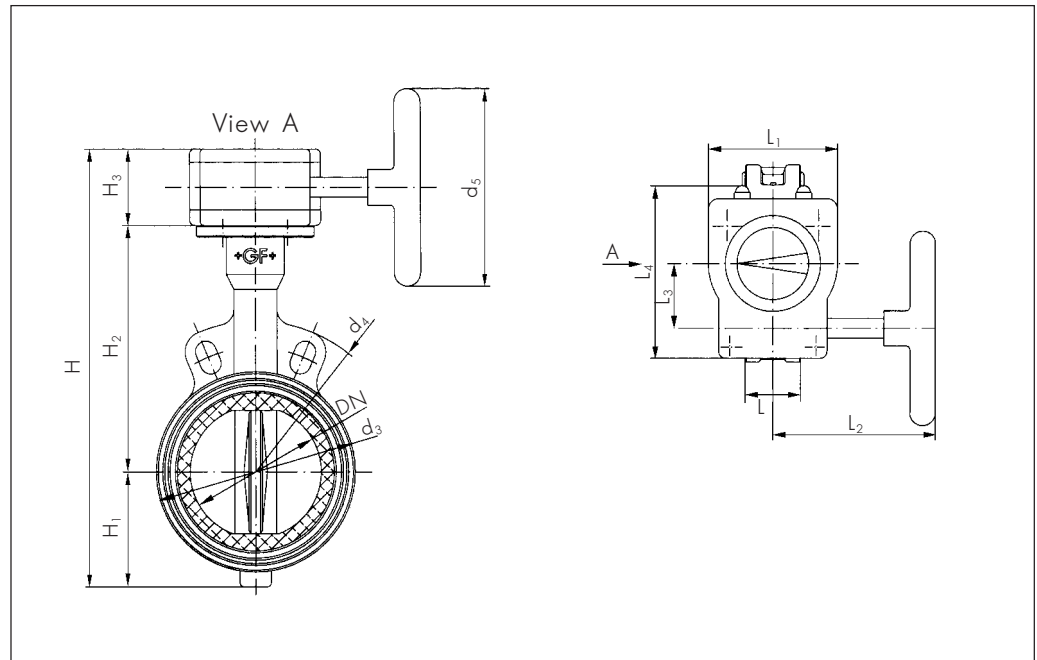
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Part Numbers



Inch size	k _v value l/min (Δp = 1 bar)	C _v value gpm (Δp = 1 psi)	Valve disc: ductile iron/Rilsan®-coated		Valve disc: stainless steel		Weight	
			Seat:		Seat:		kg	lbs.
			EPDM	FPM	EPDM	FPM		
2	3140	220	199 037 000	199 037 013	199 037 200	199 037 213	1.8	3.96
2 1/2	4570	320	199 037 001	199 037 014	199 037 201	199 037 214	2.1	4.62
3	7140	500	199 037 002	199 037 015	199 037 202	199 037 215	2.3	5.06
4	11710	820	199 037 003	199 037 016	199 037 203	199 037 216	3.5	7.70
5	18570	1300	199 037 004	199 037 017	199 037 204	199 037 217	4.3	9.46
6	27130	1900	199 037 005	199 037 018	199 037 205	199 037 218	5.7	12.54
8	47130	3330	199 037 006	199 037 019	199 037 206	199 037 219	8.4	18.48
10	77110	5400	199 037 007	199 037 020	199 037 207	199 037 220	17.0	37.40
12	114240	8000	199 037 008	199 037 021	199 037 208	199 037 221	21.0	46.20

Dimensions for Type 037 G Butterfly Valve with Gear Operator



Inch size	L inch	L ₁ inch	L ₂ inch	L ₃ inch	L ₄ inch	H inch	H ₁ inch	H ₂ inch	H ₃ inch	d ₃ inch	d ₄ inch	d ₅ inch
2	1.69	3.94	4.96	1.97	5.24	9.88	2.09	5.51	2.28	3.78	6.50	5.91
2 1/2	1.81	3.94	4.96	1.97	5.24	10.75	2.48	5.98	2.28	4.49	7.28	5.91
3	1.81	3.94	4.96	1.97	5.24	11.34	2.80	6.26	2.28	5.16	7.48	5.91
4	2.05	3.94	4.96	1.97	5.24	12.72	3.43	7.01	2.28	5.98	9.02	5.91
5	2.20	3.94	4.96	1.97	5.24	13.82	4.02	7.52	2.28	7.17	10.00	5.91
6	2.20	3.94	4.96	1.97	5.24	15.08	4.80	7.99	2.28	8.23	11.22	5.91
8	2.36	3.94	4.96	1.97	5.24	17.64	5.87	9.49	2.28	10.31	13.50	5.91
10	2.68	5.75	8.94	2.36	7.01	21.54	7.91	10.75	2.87	12.72	13.11	11.81
12	3.07	5.75	8.94	2.36	7.01	24.21	9.09	12.24	2.87	14.69	13.90	11.81
14	3.07	5.43	9.02	2.80	6.85	26.18	10.67	12.09	3.43	3.07	-	9.84
16	4.02	7.87	9.13	3.39	8.90	29.53	12.36	13.62	3.54	4.02	-	11.81

Part Numbers



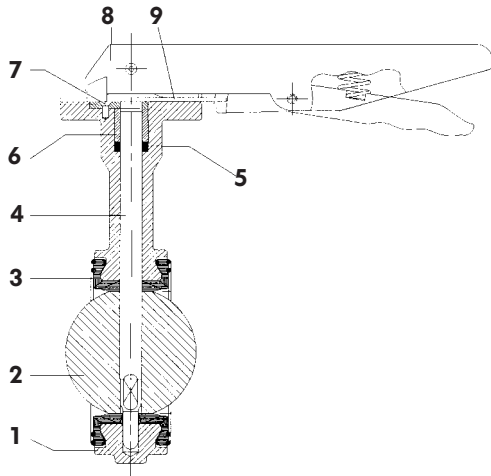
*Spinner wheel available on request.

Inch	k _v value l/min (Δp = 1 bar)	C _v value gpm (Δp = 1 psi)	Valve disc: ductile iron/Rilsan®-coated		Valve disc: stainless steel		Weight size	
			Seat: EPDM	FPM	Seat: EPDM	FPM	kg	lbs.
2	3140	220	199 037 026	199 037 039	199 037 226	199 037 239	3.3	7.26
2 1/2	4570	320	199 037 027	199 037 040	199 037 227	199 037 240	3.6	7.92
3	7140	500	199 037 028	199 037 041	199 037 228	199 037 241	3.8	8.36
4	11710	820	199 037 029	199 037 042	199 037 229	199 037 242	4.8	10.56
5	18570	1300	199 037 030	199 037 043	199 037 230	199 037 243	5.6	12.32
6	27130	1900	199 037 031	199 037 044	199 037 231	199 037 244	7.0	15.4
8	47130	3330	199 037 032	199 037 045	199 037 232	199 037 245	9.5	20.9
10	77110	5400	199 037 033	199 037 046	199 037 233	199 037 246	19.0	41.8
12	114240	8000	199 037 034	199 037 047	199 037 234	199 037 247	23.0	50.6

GG-25/ASTM A126 CR.B, with epoxy coating

14	142800	10000	199 037 900	199 037 912	199 037 904	199 037 916	114.4	52.0
16	185600	13000	199 037 901	199 037 913	199 037 905	199 037 917	176.0	80.0

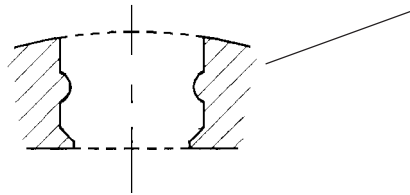
Components



(ISO-5752/20)

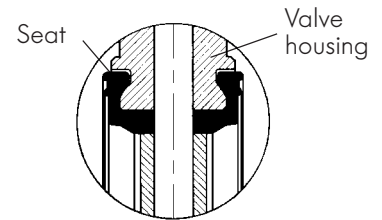
Shaft Sealing

is warranted due to the special profile of the seat in the area of the shaft seal . . .



Longitudinal section of the seat in the shaft seal area

. . . and fixation of the seat with the valve housing



Cross-section of the valve housing with seat

The outer grooves of the seat seal the flange connection, so that no additional flange seals are required.

Parts	Materials
1 Valve housing	• to 12": aluminium ASTM S12A, Rilsan®-coated
2 Valve disc	• of ductile iron GGG-40/ASTM A536, Rilsan®-coated • of stainless steel 1.4408/ASTM A351 CF8M
3 Seat	• of EPDM or FPM
4 Shaft	• of stainless steel 1.4021/AISI 420
5 "Chevron" shaft sealing	• of Buna-N
6 Shaft bushing with retention ring	• of natural nylon-6
7 Bolt	• of stainless steel (DIN-7991) for 6
8 Hand lever	• of aluminium
9 10-position plate	• of steel

Other materials on request,

e.g. for valve disc: aluminium bronze
for shaft: stainless steel 1.4401/AISI 316
for seat: CSM, NBR, EPDM "high temp"

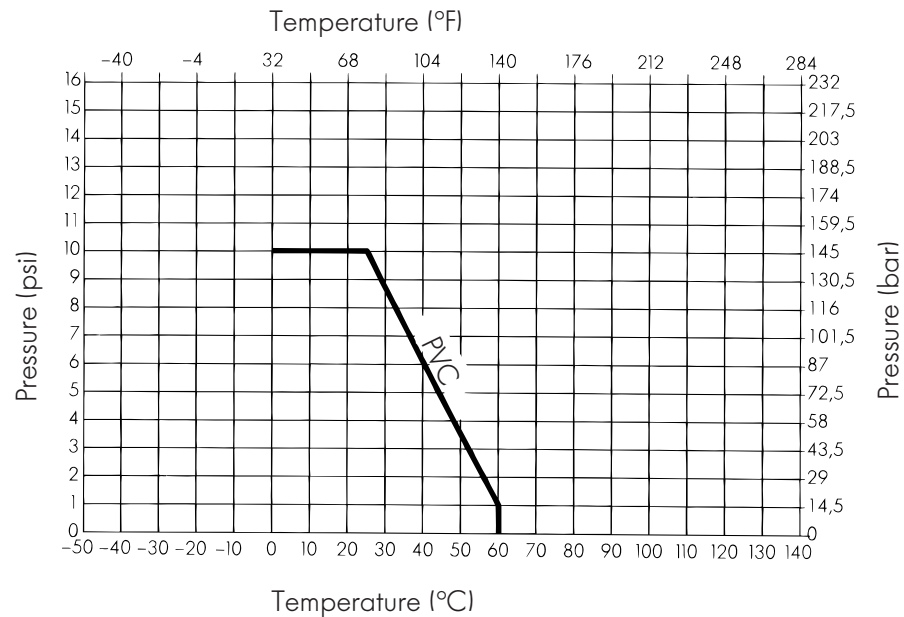


Technical Data for Y-Globe Valves

Pressure/Temperature Diagram

Average values* for non-hazardous fluids to which the valve material is resistant (see George Fischer's Chemical Resistance Tables). The life expectancy of parts subject to wear depends on the operating conditions. All pressures are given at excess over prevailing atmospheric pressure. Information on ambient temperatures over 104°F/40°C is available on request.

*25-year values with safety factor included.

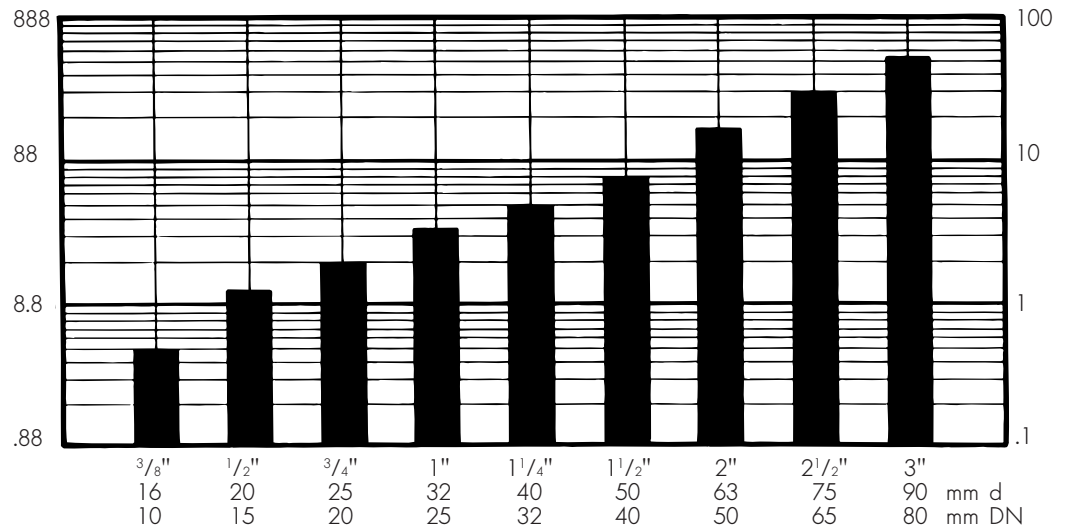


1 bar = 14.5 psi ≈ 15 psi

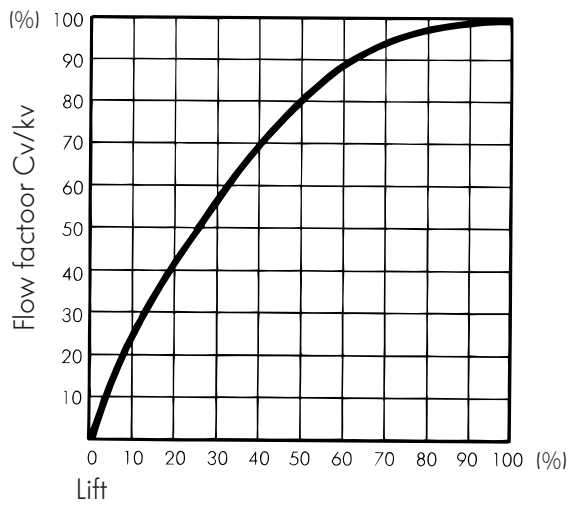
Torque (conditional values)

inch-pounds

888



Flow Characteristics

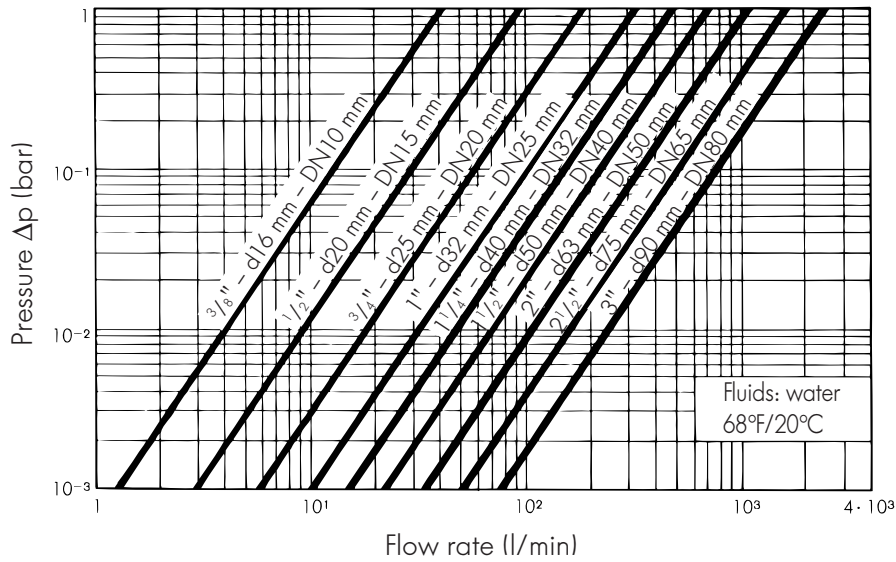


C_v/k_v Values

Inch size	C_v	k_v	d mm	DN mm
1/2	6.7	95	20	15
3/4	12.6	180	25	20
1	22.9	327	32	25
1 1/4	33.9	484	40	32
1 1/2	50.8	725	50	40
2	79.1	1130	63	50
3	175.0	2500	90	80

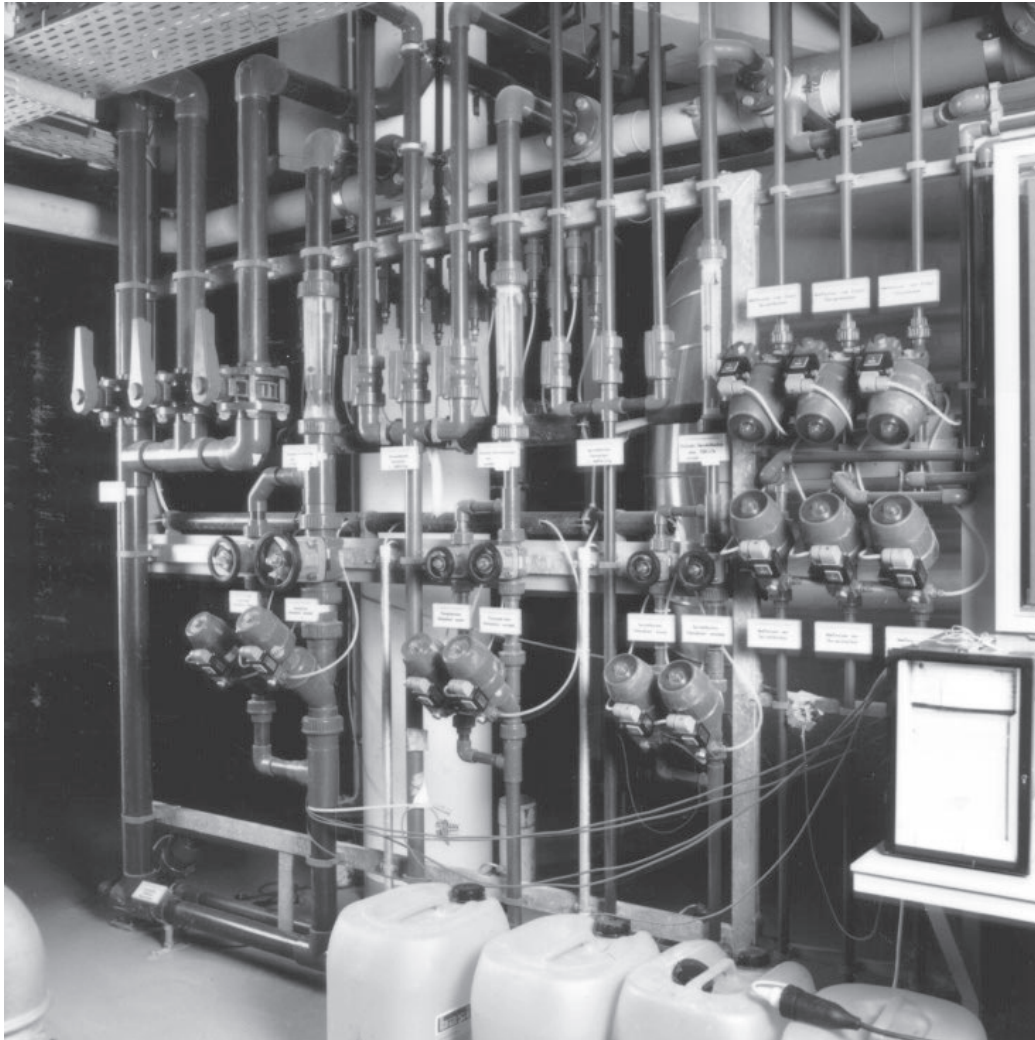
$$k_v \div 14.28 = C_v$$

Pressure Loss Characteristics



$$\Delta p = \left(\frac{Q}{C_v} \right)^2 \quad \begin{array}{l} Q = \text{gpm} \\ p = \text{psi} \end{array}$$

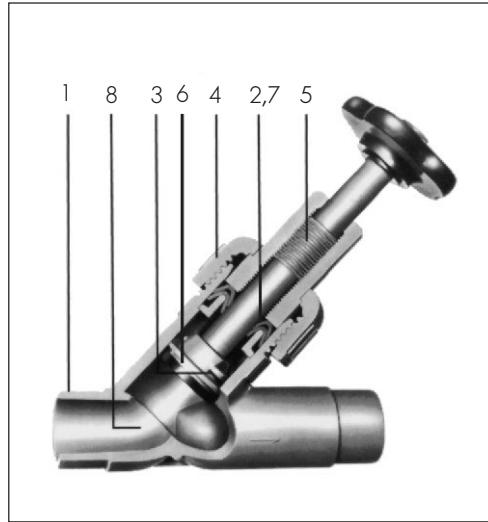
Application: Thermal Bath



Distribution, metering, and water treatment system for thermal baths.

George Fischer butterfly valves, ball valves, diaphragm valves, and pneumatically actuated Y-globe valves.

George Fischer Y-Globe Valve Type 301



- No metal components
- No gland seals
- Good control characteristics
- Corrosion resistant
- Highly leakproof
- Easy manual operation
- Good flow characteristics
- Low weight

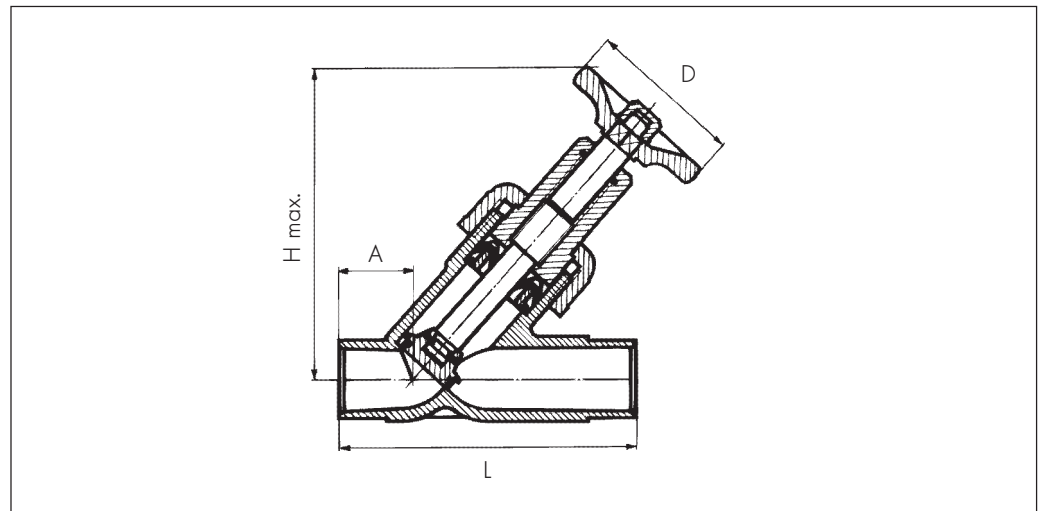
General

The Y-Globe valve Type 301 is an angle seat valve of transparent PVC. It is available in sizes 1/2" through 3" and is used primarily for throttling purposes. The Y-Globe valve may be considered a general purpose flow control valve. It is generally faster to open and close than a gate valve. The seating surfaces are less subject to wear and their high pressure drop makes them useful controlling pressures.

Technical Features

1. Exclusive inch size spigot ends for universal mounting.
2. Cup, gland seals protect stem threads from seizure by crystallizing media.
3. Easy removal of disc and seat by removal of retaining U-pin.
4. Valve bonnet nut facilitates exchange of components.
5. Multiple turns open to close provides fine adjustment.
6. Disc and seat float freely on shaft since the retaining U-pin rides in groove on shaft. Seat wear is thus minimized.
7. Exclusive PTFE seals and seats eliminate elastomeric seals. Polyethylene seals available.
8. Unimpeded flow giving low pressure loss.
9. Can be pneumatically actuated after installation.

Dimensions for Type 301 Y-Globe Valve



Inch size	L inch	D inch	H max. inch	A inch	Weight lbs.
1/2	5.62	2.48	4.96	1.47	.40
3/4	6.30	2.48	5.51	1.77	.55
1	6.83	3.15	6.54	1.84	.85
1 1/4	7.40	3.15	7.52	2.08	1.30
1 1/2	8.07	3.94	9.17	2.11	2.15
2	8.86	3.94	10.39	2.46	3.25
3	12.23	7.87	15.35	3.56	8.70

Part Numbers

Inch size	Seal Material	
	PE	PTFE
1/2	192 301 300	192 301 349
3/4	192 301 350	192 301 399
1	192 301 400	192 301 449
1 1/4	192 301 450	192 301 499
1 1/2	192 301 500	192 301 549
2	192 301 550	192 301 599
3	192 301 650	192 301 699

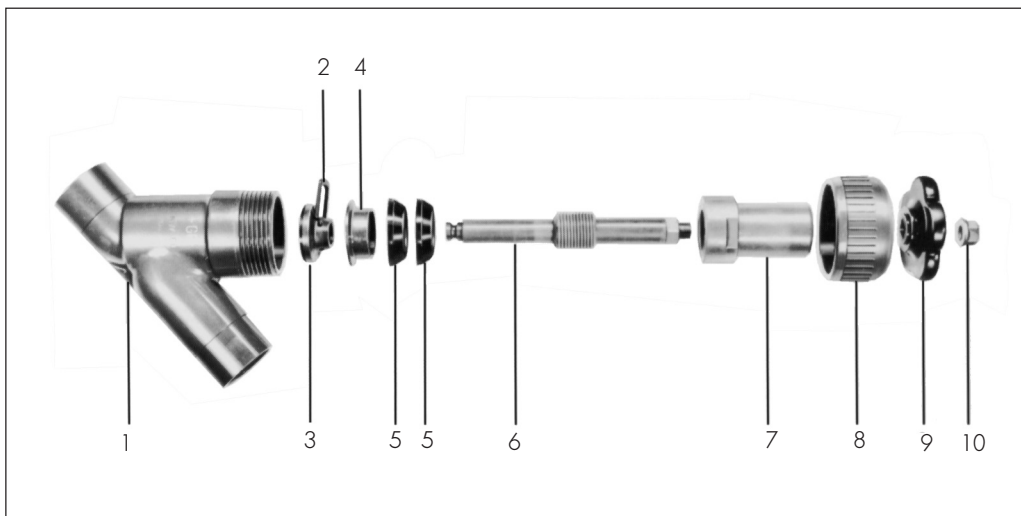
Product Specification

Type 301 Y-Globe Valve – PVC

PVC Y-type globe valve 1/2" through 3" shall have spigot type end connections. Seats and seals shall be either PTFE or polyethylene as specified by user. Valve bonnet (handwheel and disk area) shall be removable from body for service without removing valve from line. Disk and seat shall "float" on the shaft to reduce seat wear. Valve body material

to be transparent PVC to meet or exceed the requirements of 12454B according to the classifications and requirements of ASTM D-1785. The globe valve, Type 301, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Assembly Instructions for Y-Globe Valve Type 301



Draw the two glands (5) onto the stem (6), then push on the seal support ring (4). Fit the disc and seating (2) to the end of the stem, and secure with the retaining pin (3). Screw the threaded bushing (7) onto the stem (6).

Push the valve nut (8) over the threaded bushing (7).

Mount the handwheel (9) on the stem (6) and secure by means of the handwheel nut (10).

Insert the complete assembly into the body (1) and tighten up the valve nut (8).

Spare Parts

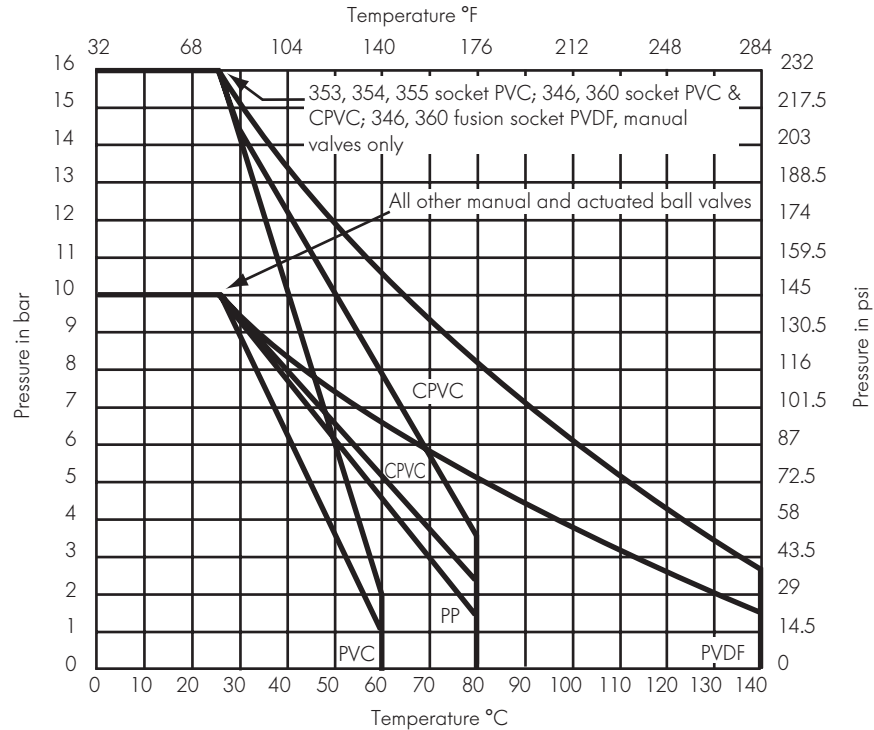
No. Part	Material	Qty.	1/2" 20 15	3/4" 25 20	1" 32 25	1 1/4" 40 32	1 1/2" 50 40	2" 63 50	3" 90 mm d 80 mm DN
1 Body	PVC transp.	1	192 301 301	192 301 351	192 301 401	192 301 451	192 301 501	192 301 551	192 301 651
8 Valve nut	PVC	1	161 300 308	161 300 358	161 300 408	161 300 458	161 300 508	161 300 558	161 300 658
9 Handwheel		1	161 300 309	161 300 309	161 300 409	161 300 459	161 300 509	161 300 559	161 300 659
10 Handwheel nut	PVC	1	721 960 603	721 960 603	721 960 603	721 960 604	721 960 604	721 960 604	721 960 607
Disc/retaining pin set consisting of:			161 483 077	161 483 078	161 483 079	161 483 080	161 483 081	161 483 082	161 483 084
2 Disc & seating	PE	1							
3 Retaining pin	PVC	1							
4 Seal support ring	PVC	1							
5 Cup seals	PE	2							
Disc/retaining pin set consisting of:			161 483 090	161 483 091	161 483 092	161 483 093	161 483 094	161 483 095	161 483 097
2 Disc & seating	PTFE	1							
3 Retaining pin	PVC	1							
4 Seal support ring	PVC	1							
5 Cup seals	PTFE	2							
Stem set consisting of:			161 483 063	161 483 064	161 483 065	161 483 066	161 483 067	161 483 068	161 483 070
6 Stem	PVC	1							
7 Threaded bushing	PVC	1							

Technical Data for Y-Check and Ball Check Valves

Pressure/Temperature Diagram

for Types 304 and 360

All pressures are given in atmospheric excess pressure values. Ambient temperature max. 122°F/50°C.



Vibration free - even at high flow rates.

Conditions for Opening and Closing of Type 360 Ball Check Valve

Inch size	Opening				Closing
	diff. pressure to lift ball psi	diff. pressure to completely open ball psi	flow rate to keep ball completely open gmp	min. velocity to keep ball fully opened ft/sec	diff. pressure for leak tight seal psi
3/8	.07	.15	1.3	3.28	2.9
1/2	.07	.15	2.1	3.28	2.9
3/4	.07	.15	3.4	3.28	2.9
1	.07	.15	5.5	3.28	2.9
1 1/4	.07	.15	8.7	3.28	2.9
1 1/2	.07	.15	13.5	3.28	2.9
2	.15	.15	21.4	3.28	2.9
3	.29	1.45	79.3	4.92	2.9

Conditions for Opening and Closing of Type 304 "Y" Check Valve

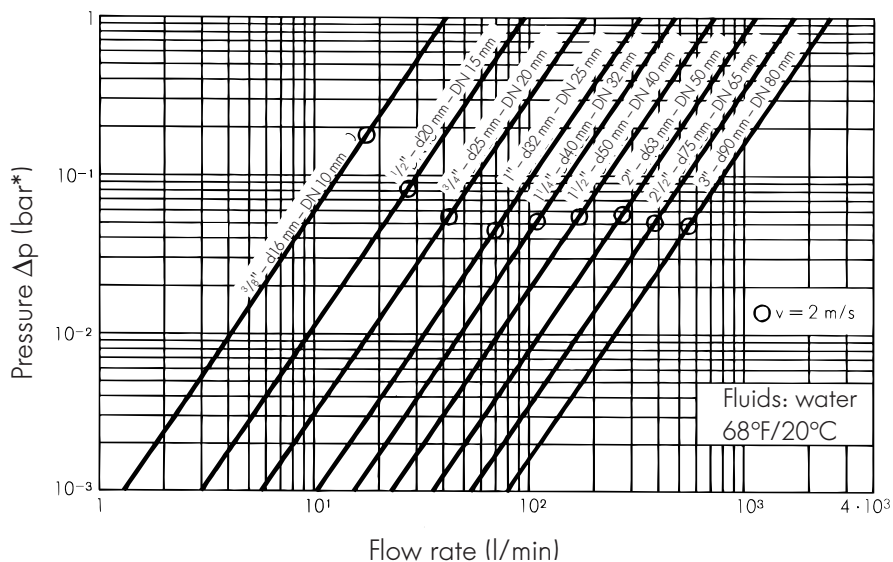
Inch size	Opening			min. velocity to keep plunger fully opened ft/sec	Closing diff. pressure for leak tight seal psi
		diff. pressure to open plunger psi	flow rate to keep plunger completely open gmp		
1/2		.29	2.6	3.6	2.9
3/4		.29	4.8	3.6	2.9
1		.29	7.4	3.6	2.9
1 1/4		.29	13.2	3.9	2.9
1 1/2		.44	25.1	4.6	2.9
2		.44	52.8	4.9	2.9
3		.44	111.0	5.9	2.9

C_V/k_V Valuesfor Y-Check valves
Type 304

Inch size	C_V	k_V	d mm	DN mm
1/2	6.7	95	20	15
3/4	12.6	180	25	20
1	22.9	327	32	25
1 1/4	33.9	484	40	32
1 1/2	50.7	725	50	40
2	79.1	1130	63	50
3	175.0	2500	90	80

Pressure Loss Characteristics

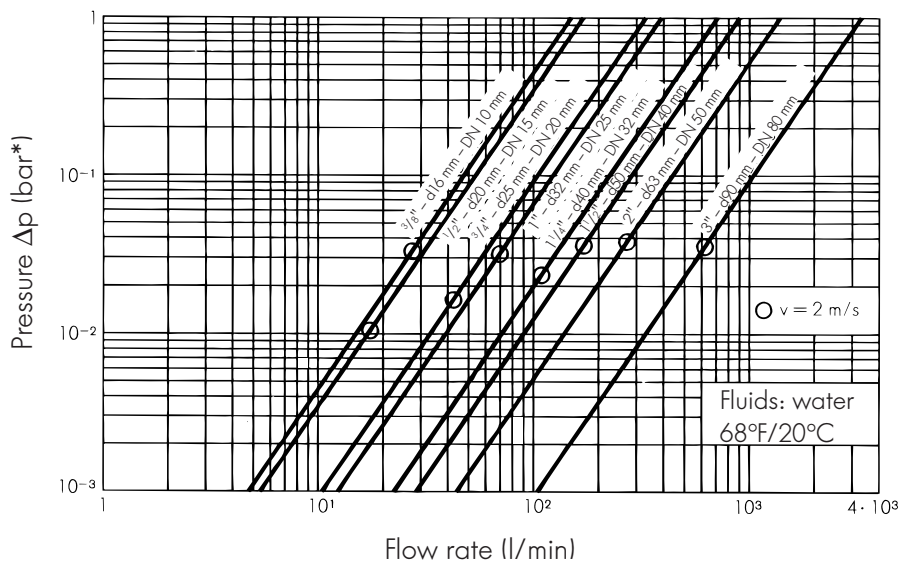
for Y-Check valves Type 304

*1 bar = 14.5 psi $\approx$ 15 psi **C_V/k_V Values**for Ball Check valves
Type 360

Inch size	C_V	k_V	d mm	DN mm
3/8	11.9	170	16	10
1/2	10.5	150	20	15
3/4	23.1	330	25	20
1	27.3	390	32	25
1 1/4	49.7	710	40	32
1 1/2	63.0	900	50	40
2	97.3	1390	63	50
3	224.0	3200	90	80

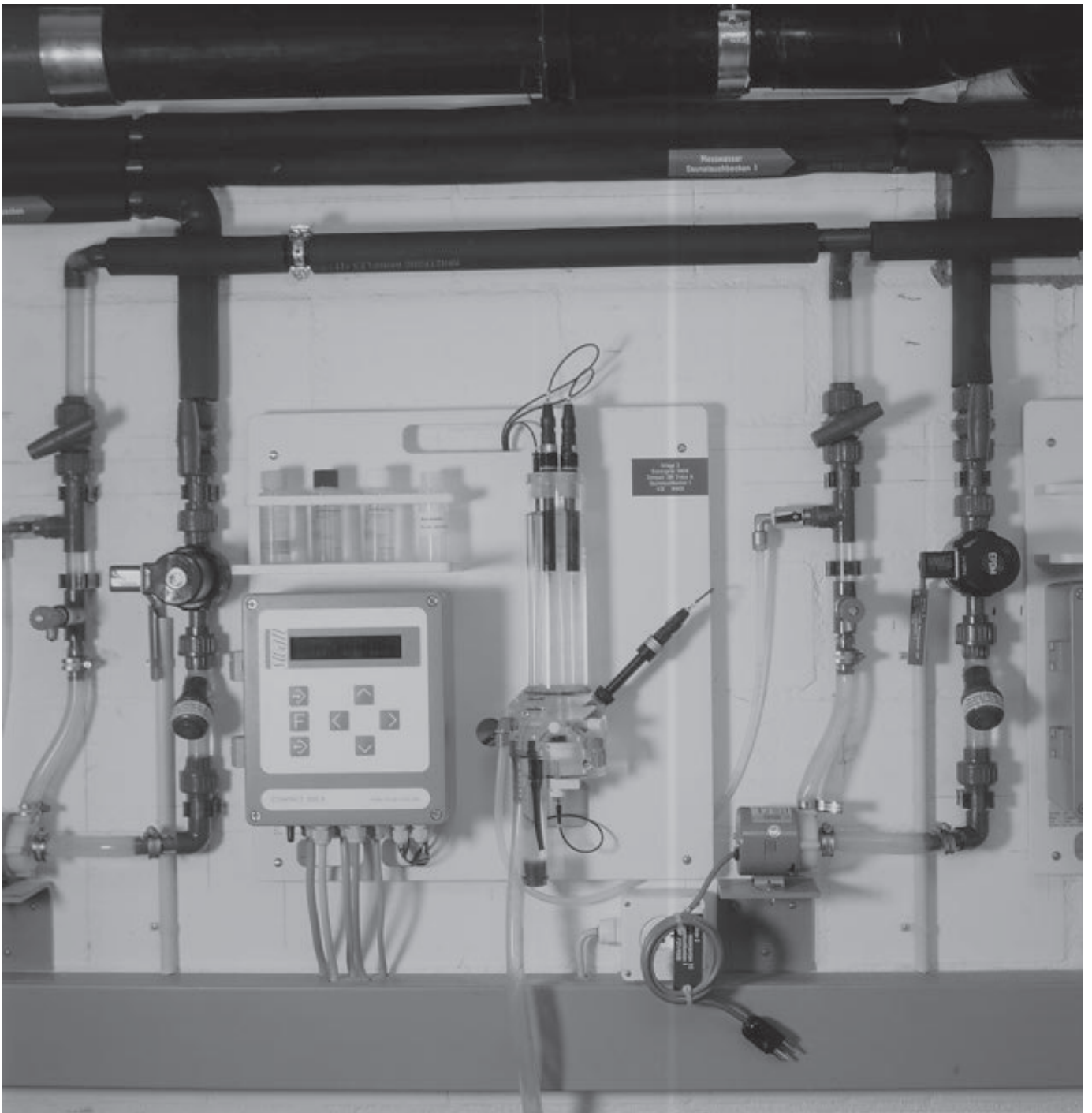
Pressure Loss Characteristics

for Ball Check valves Type 360

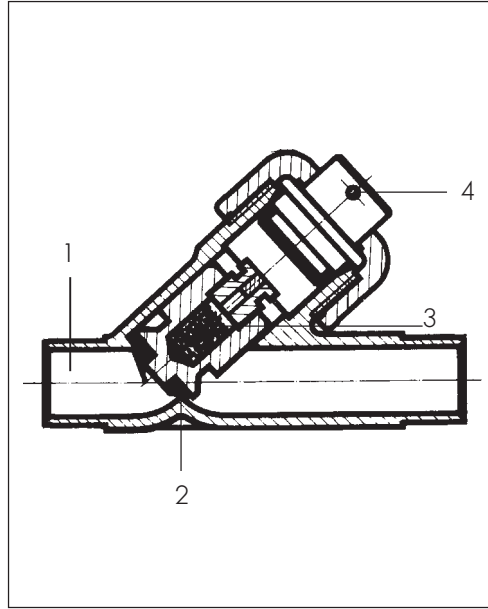


$$\frac{k_V}{14.28} = C_V$$

 C_V = gpm @ 1 psi pressure drop k_V = liters per minute @ 1 bar pressure drop



George Fischer Y-Check Valve Type 304



- Can be installed horizontally or vertically
- Turbulent flow has minimum effect on Y-check valve
- Optimal flow characteristics
- Long service life
- Corrosion resistant
- Light weight

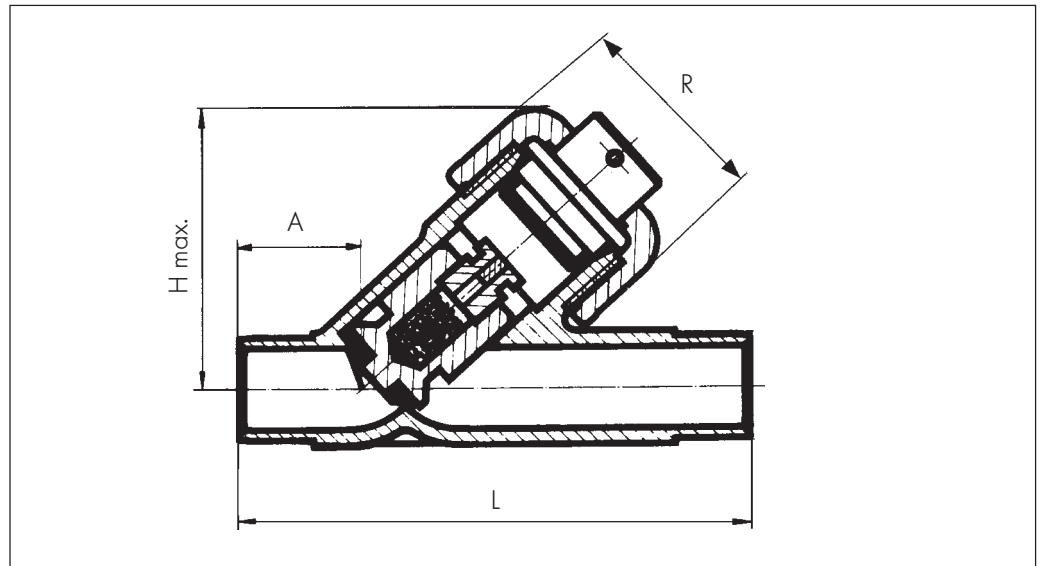
General

The Y-Check valve Type 304 is a weighted angle check valve and is used to automatically stop flow in the back direction when the fluid in the line reverses. The valve closes by the dead weight of the weighted seat and functions when mounted in either the horizontal or vertical plane. Y-Check valve Type 304 is superior to spring loaded checks for corrosive service since they are not temperature sensitive. Y-Check valves generally have lighter shut-off characteristics than ball checks at the same pressures.

Technical Features

1. Transparent body allows visual check of operation.
2. Soft seat provides leak tight seal at very low pressures.
3. Weight loaded check outperforms PVC spring loaded designs.
4. Metal pin through removal eye and then turning bonnet nut provides easy removal of end plug.

Dimensions for Type 304 Y-Check Valve



Inch size	L inch	H inch	A inch	R inch	Weight lbs.
1/2	5.62	2.56	1.47	1.89	0.31
3/4	6.30	3.00	1.77	2.13	0.44
1	6.83	3.56	1.84	2.44	0.77
1 1/4	7.40	4.13	2.08	2.80	1.10
1 1/2	8.07	4.88	2.11	3.47	1.91
2	8.86	5.81	2.46	4.06	3.15
3	12.23	8.06	3.56	4.72	7.70

Part Numbers

**FPM seals are made of Viton® or equal materials.
Viton® is a registered trademark of DuPont Dow Elastomers.*

Inch size	Seal Material EPDM	FPM*
1/2	192 304 006	192 304 031
3/4	192 304 007	192 304 032
1	192 304 008	192 304 033
1 1/4	192 304 009	192 304 034
1 1/2	192 304 010	192 304 035
2	192 304 011	192 304 036
3	192 304 013	192 304 038

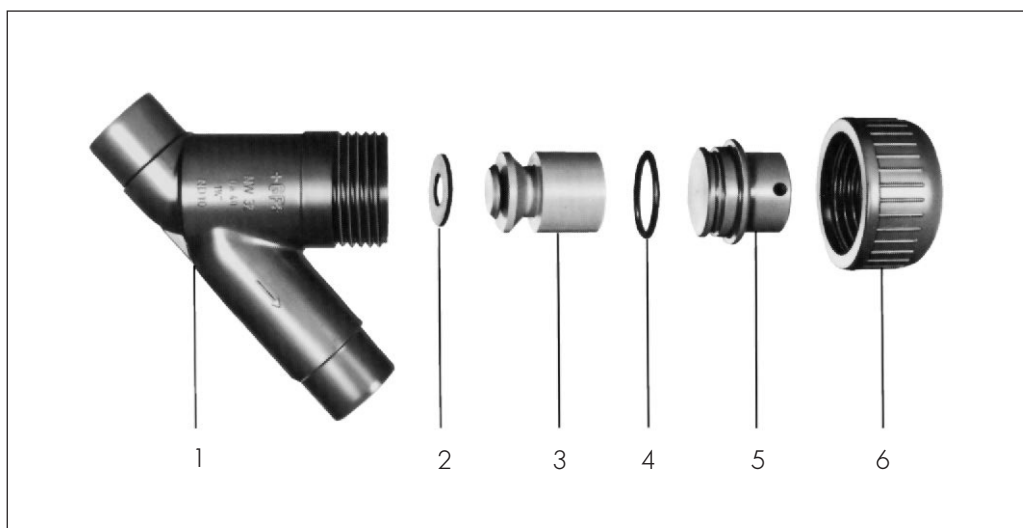
Product Specification

Type 304 Y-Check Valve – PVC

PVC Y-Check valve 1/2" through 3" shall have spigot type pipe connections. Seals shall be either FPM or EPDM as specified by the user. A weighted piston seat carrier assures tight sealing in either the vertical or horizontal plane. Valve end (bonnet) shall be configured with a removal eye pin. Valve body shall be of transparent PVC which meets or exceeds

the requirements of 12454B according to the classifications and requirements of ASTM D-1784. Spigot end pipe connections shall be in accordance with ASTM D-1785. The valve, Type 304, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Assembly Instructions for Y-Check Valve Type 304



Fitting the piston

Push the flat gasket (2) onto the piston (3). With the gasket foremost, slide the piston into the body (1).

Installing valve end and valve nut

Fit O-ring (4) over the valve end (5). Insert the valve end (5) into the body (1). Screw the valve nut (6) fully onto the body (1). Install circlip (7) on valve end(s).

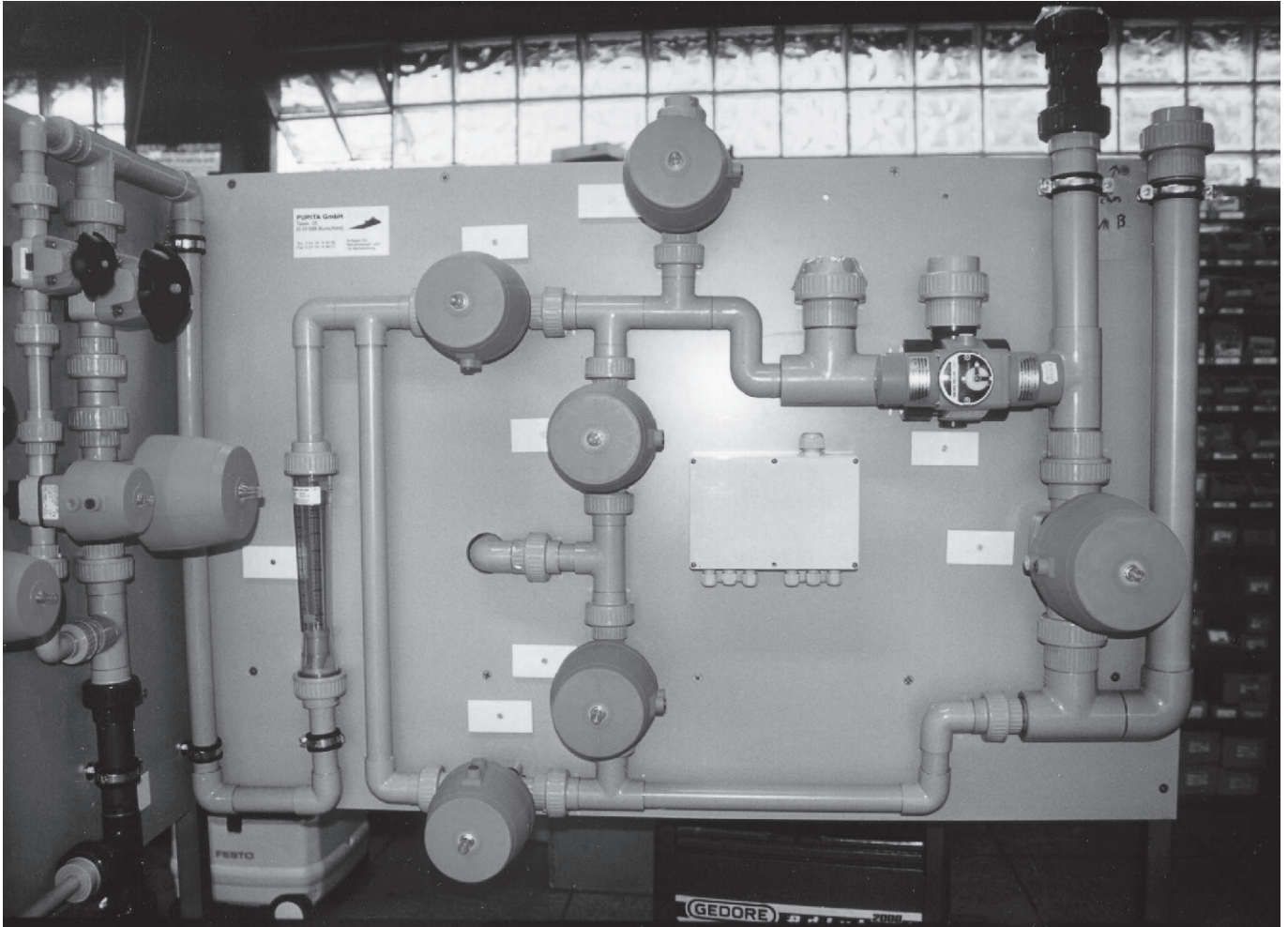
Dismantling

To remove the internal components of the valve, simply unscrew the valve nut (6); the valve end (5) and O-ring seal (4) will then be withdrawn as the nut is unscrewed. The piston (3) may subsequently be removed.

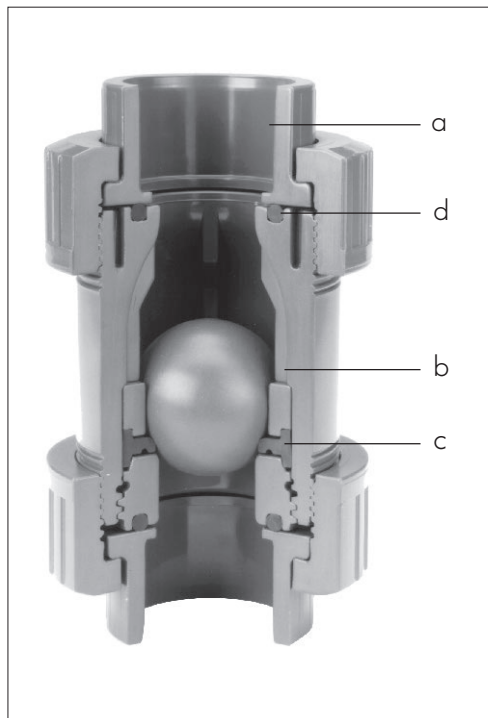
10

Spare Parts

No.	Part	Material	Qty.	1/2" 20 15	3/4" 25 20	1" 32 25	1 1/4" 40 32	1 1/2" 50 40	2" 63 50	3" 90 mm d 80 mm DN
1	Body	PVC transp.	1	192 480 001	192 480 002	192 301 401	192 301 451	192 301 501	192 301 551	192 301 651
3	Piston	PVC	1	161 480 683	161 480 684	161 480 685	161 480 686	161 480 687	161 480 688	161 480 690
2	Flat gasket	EPDM	1	161 480 665	161 480 666	161 480 667	161 480 668	161 480 669	161 480 670	161 480 672
2	Flat gasket	FPM	1	161 480 674	161 480 675	161 480 676	161 480 677	161 480 678	161 480 679	161 480 681
4	O-ring	EPDM	1	748 410 106	748 410 001	748 410 007	748 410 002	748 410 102	748 410 101	748 410 014
4	O-ring	FPM	1	749 410 106	749 410 001	749 410 007	749 410 002	749 410 102	749 410 101	749 410 014
5	Valve end	PVC	1	161 480 649	161 480 650	161 480 651	161 480 652	161 480 653	161 480 654	161 490 413
6	Valve nut	PVC	1	161 300 308	161 300 358	161 300 408	161 300 458	161 300 508	161 300 558	161 305 654
7	Circlip	PVC	1	161 482 017	161 482 018	161 482 019	161 482 020	161 482 021	161 482 022	—



George Fischer Ball Check Valve Type 360



- Flow characteristics through the Type 360 Ball Check Valve are excellent
- When combined with the George Fischer Type 050 screen, the Ball Check Valve can be converted to a Foot Valve
- Good sealing properties with low head pressures (3 foot min. head preferred)

General

The George Fischer Type 360 Ball Check Valve is used to automatically stop flow in the back direction when the fluid in the line reverses. The valve closes by the deadweight of the ball when vertically mounted.

The true union end connections (available in sizes 3/8" – 2" only) allow removal of the valve from the line for replacement of the seals. The design also eliminates the expense of a union and nipple to provide access to the valve.

Installation Note

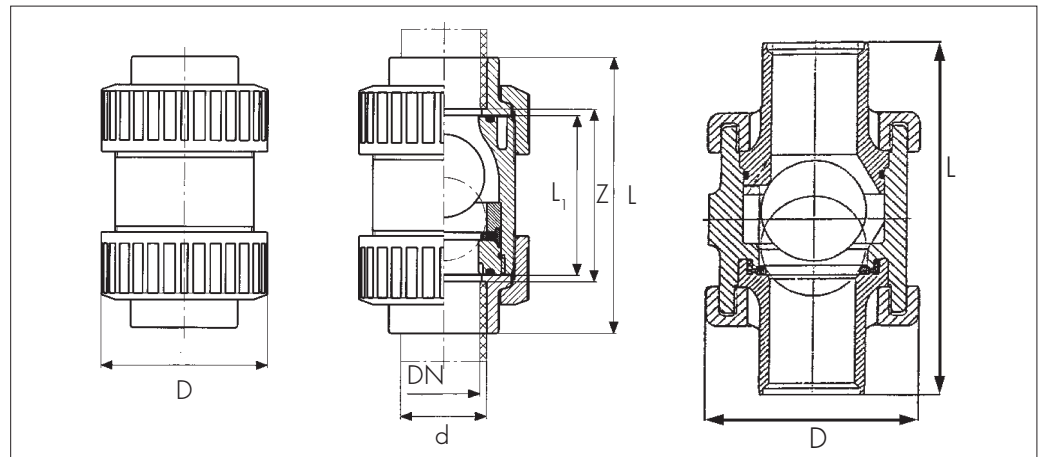
We recommend that the line fluid velocity should not exceed 6.5 ft./second (2 m/sec.). For higher velocities the George Fischer Y-Check valve Type 304 should be used.

Technical Features

- Available with socket, threaded, or butt fusion end connections in sizes 3/8" through 2", and spigot ends for the 3" size in PVC.
- Ball cage molded into body.
- Single elastomeric seal serves as ball seat and seal for external closure.
- Constructed of PVC, CPVC, polypropylene, or SYGEF-PVDF with the option of EPDM or FPM seals.

Dimensions for Type 360 Ball Check Valve

PVC and CPVC

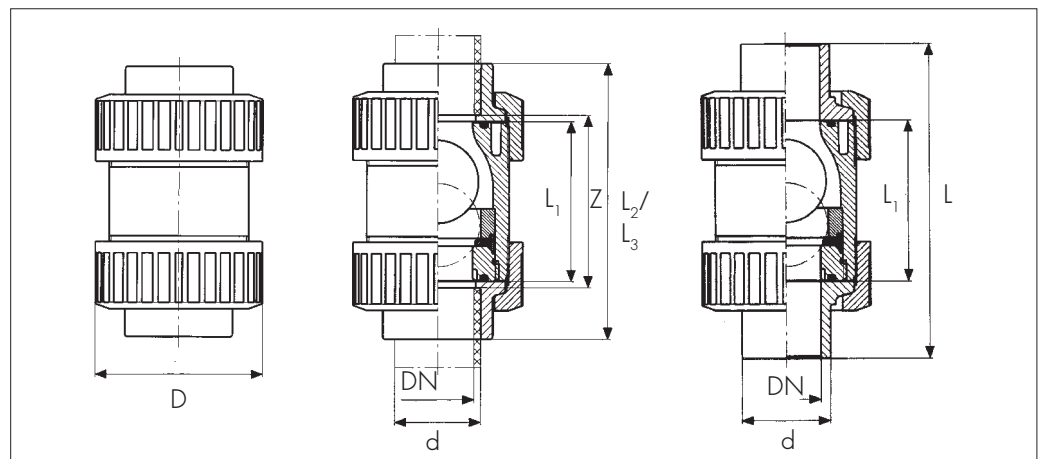


Z* Solvent cement socket valve (laying length)

Z** Threaded valve (laying length is herein defined as the dimension between the ends of pipe when threaded into valve to a depth equal to the nominal "Handtight" plus 1/2 turn)

Inch size	L inch socket	thrd	L inch	Z* inch	Z** inch	D inch	Weight lbs.
3/8	4.45	4.14	2.48	2.93	3.61	1.81	.27
1/2	4.49	4.17	2.48	2.70	3.46	1.81	.27
3/4	5.18	4.75	2.95	3.15	4.00	2.20	.45
1	5.62	5.30	3.11	3.34	4.41	2.64	.70
1-1/4	6.58	5.91	3.50	4.05	4.98	3.23	1.16
1-1/2	6.76	6.42	3.74	3.98	5.49	3.86	1.85
2	7.97	7.76	4.53	4.95	6.80	4.72	3.30
3 (spigot)	11.81	—	—	—	—	7.09	10.8

Polypropylene and SYGEF-PVDF



L Overall length of butt fusion valve

L2 Overall length of metric fusion socket valve

L3 Overall length of threaded valve

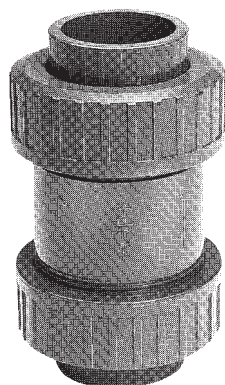
Z* Metric fusion socket valve (laying length)

Z** Threaded valve (laying length is herein defined as the dimension between the ends of pipe when threaded into valve to a depth equal to the nominal "Handtight" plus 1/2 turn)

OD d mm	ID DN mm	L inch	L2 inch	L3 inch	L1 inch	Z* inch	Z** inch	D inch	Weight lbs. PP	SYGEF	Inch size
16	10	—	3.86	4.37	2.44	2.83	3.48	1.81	.17	.34	3/8
20	15	5.12	3.98	4.37	2.44	2.87	3.31	1.81	.17	.34	1/2
25	20	5.67	4.69	5.12	2.91	3.43	3.88	2.20	.30	.58	3/4
32	25	5.91	5.12	5.51	3.07	3.70	4.30	2.64	.45	.87	1
40	32	6.73	5.87	6.50	3.46	4.29	5.19	3.23	.84	1.46	1-1/4
50	40	7.52	6.38	6.57	3.70	4.57	5.12	3.86	1.35	2.30	1-1/2
63	50	8.66	7.68	7.83	4.45	5.55	6.28	4.72	2.46	4.32	2

Part Numbers for Type 360 Ball Check Valve

PVC



Inch size	Solvent cement socket		NPT thread	
	EPDM	FPM*	EPDM	FPM*
3/8	161 360 561	161 360 571	161 360 581	161 360 591
1/2	161 360 562	161 360 572	161 360 582	161 360 592
3/4	161 360 563	161 360 573	161 360 583	161 360 593
1	161 360 564	161 360 574	161 360 584	161 360 594
1-1/4	161 360 565	161 360 575	161 360 585	161 360 595
1-1/2	161 360 566	161 360 576	161 360 586	161 360 596
2	161 360 567	161 360 577	161 360 587	161 360 597
Solvent cement spigot				
3	161 360 369	161 360 384		

CPVC

Inch size	Solvent cement socket		NPT thread	
	EPDM	FPM*	EPDM	FPM*
3/8	163 360 561	163 360 571	163 360 581	163 360 591
1/2	163 360 562	163 360 572	163 360 582	163 360 592
3/4	163 360 563	163 360 573	163 360 583	163 360 593
1	163 360 564	163 360 574	163 360 584	163 360 594
1-1/4	163 360 565	163 360 575	163 360 585	163 360 595
1-1/2	163 360 566	163 360 576	163 360 586	163 360 596
2	163 360 567	163 360 577	163 360 587	163 360 597

Polypropylene



OD d mm	ID DN mm	Metric fusion socket		NPT thread		Inch size
		EPDM	FPM*	EPDM	FPM*	
16	10	167 360 401	167 360 411	167 360 581	167 360 591	3/8
20	15	167 360 402	167 360 412	167 360 582	167 360 592	1/2
25	20	167 360 403	167 360 413	167 360 583	167 360 593	3/4
32	25	167 360 404	167 360 414	167 360 584	167 360 594	1
40	32	167 360 405	167 360 415	167 360 585	167 360 595	1-1/4
50	40	167 360 406	167 360 416	167 360 586	167 360 596	1-1/2
63	50	167 360 407	167 360 417	167 360 587	167 360 597	2

OD d mm	ID DN mm	Butt fusion ends			Inch size
		EPDM	FPM*		
20	15	167 360 482	167 360 492		1/2
25	20	167 360 483	167 360 493		3/4
32	25	167 360 484	167 360 494		1
40	32	167 360 485	167 360 495		1-1/4
50	40	167 360 486	167 360 496		1-1/2
63	50	167 360 487	167 360 497		2

Polypropylene Specially Cleaned**

OD d mm	ID DN mm	Metric fusion socket		Butt fusion ends		Inch size
		EPDM	FPM*	EPDM	FPM*	
16	10	167 360 601	167 360 611	—	—	3/8
20	15	167 360 602	167 360 612	167 360 642	167 360 652	1/2
25	20	167 360 603	167 360 613	167 360 643	167 360 653	3/4
32	25	167 360 604	167 360 614	167 360 644	167 360 654	1
40	32	167 360 605	167 360 615	167 360 645	167 360 655	1-1/4
50	40	167 360 606	167 360 616	167 360 646	167 360 656	1-1/2
63	50	167 360 607	167 360 617	167 360 647	167 360 657	2

**Assembled with silicone free lubricant

*FPM seals are made of Viton® or equal materials.

Viton® is a registered trademark of DuPont Dow Elastomers.

Part Numbers for Type 360 Ball Check Valve



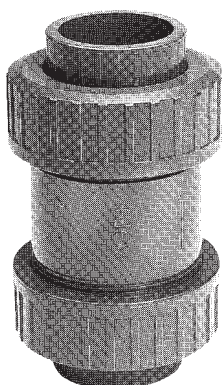
SYGEF-PVDF

OD d mm	ID DN mm	Metric fusion socket SYGEF-PVDF FPM*	Butt fusion ends SYGEF-PVDF FPM*	Inch size
16	10	175 360 411	—	3/8
20	15	175 360 412	175 360 492	1/2
25	20	175 360 413	175 360 493	3/4
32	25	175 360 414	175 360 494	1
40	32	175 360 415	175 360 495	1-1/4
50	40	175 360 416	175 360 496	1-1/2
63	50	175 360 417	175 360 497	2

SYGEF-PVDF Specially Cleaned**

OD d mm	ID DN mm	Metric fusion socket SYGEF-PVDF FPM*	Butt fusion ends SYGEF-PVDF FPM*	Inch size
16	10	175 360 611	N/A	3/8
20	15	175 360 612	175 360 672	1/2
25	20	175 360 613	175 360 673	3/4
32	25	175 360 614	175 360 674	1
40	32	175 360 615	175 360 675	1-1/4
50	40	175 360 616	175 360 676	1-1/2
63	50	175 360 617	175 360 677	2

**Assembled with silicone free lubricant



Part Numbers for Silicone-Free Type 360 Ball Check Valve for Paint and Coating Applications

PVC

Inch size	Socket/Spigot*** EPDM	FPM*	NPT thread EPDM	FPM*
3/8	161.360.641	161.360.651	161.360.661	161.360.671
1/2	161.360.642	161.360.652	161.360.662	161.360.672
3/4	161.360.643	161.360.653	161.360.663	161.360.673
1	161.360.644	161.360.654	161.360.664	161.360.674
1-1/4	161.360.645	161.360.655	161.360.665	161.360.675
1-1/2	161.360.646	161.360.656	161.360.666	161.360.676
2	161.360.647	161.360.657	161.360.667	161.360.677
3***	700.243.600	consult factory	—	—

***3" is not true union

CPVC

Inch size	Socket EPDM	FPM*	NPT thread EPDM	FPM*
3/8	163 360 641	163 360 651	163 360 661	163 360 671
1/2	163 360 642	163 360 652	163 360 662	163 360 672
3/4	163 360 643	163 360 653	163 360 663	163 360 673
1	163 360 644	163 360 654	163 360 664	163 360 674
1-1/4	163 360 645	163 360 655	163 360 665	163 360 675
1-1/2	163 360 646	163 360 656	163 360 666	163 360 676
2	163 360 647	163 360 657	163 360 667	163 360 677

*FPM seals are made of Viton® or equal materials.

Viton® is a registered trademark of DuPont Dow Elastomers.

Product Specifications

Type 360 Ball Check Valve – PVC

Ball check valves 3/8" through 2" shall be of true union design with either solvent cement socket or threaded pipe connections. Body interior to have molded ribs to serve as a cage and ball guide to assure proper seating. Valve may be equipped with a screen to create a foot valve. Solvent cement socket pipe connection dimensions shall conform to ASTM D-2467. Threaded pipe connections shall be in accordance with ASTM D-2464 which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. Seat and seals may be either EPDM or FPM as specified by user. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connector is installed on the pipe. PVC material shall meet or exceed the requirements of 12454B of ASTM D-1784. The valve, Type 360, shall carry a pressure rating of 232 psi at 68°F for solvent cement socket end connectors, and 150 psi at 68°F for threaded end connections, as supplied by George Fischer, Inc. Tustin, CA 92780.

Type 360 True Union Ball Check Valve – Polypropylene

Polypropylene true union ball check valves 3/8" through 2" (16 mm – 63 mm) shall have either IR butt fusion, metric fusion socket or threaded type pipe connections. Seals shall be EPDM or FPM. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connector is installed on the pipe. Material shall meet or exceed the requirements of ASTM D 4101 as pertains to a type I homopolymer compound having a minimum tensile strength of 4350 psi/300 bar at 73°F/20°C when tested in accordance with ASTM D 638 and shall have a melt point which initiates at 316°F/158°C. The melt flow index (at 374°F/190°C/50 N) shall be 0.4 –0.8 grams per 10 minutes in accordance with ASTM D 1238. End connections shall be as outlined in ASTM D 2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. Threaded end connections shall be in accordance with ASTM D 2464 which references ANSI B 1.20 (was B 2.1) for tapered pipe threads. The valve, Type 360, shall carry a pressure rating of 232 psi at 68°F for fusion socket and butt fusion end connectors, and 150 psi at 68°F for threaded end connections, as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 360 True Union Ball Check Valve – PVDF

PVDF true union ball check valves 16 mm – 63 mm shall have either metric fusion socket or IR butt fusion pipe connections. Seals shall be FPM. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connector is installed on the pipe. Material shall meet or exceed the requirements of ASTM D 3222 as pertains to a natural, unpigmented, virgin, noncompounded polyvinylidene fluoride compound having a minimum tensile strength of 7800 psi/538 bar at 73°F/20°C when tested in accordance with ASTM D 638 and shall have a flexural strength of 10,700 psi/738 bar at 73°F/20°C when tested according to ASTM D 790. End connections shall be as outlined in ASTM D 2657 for butt fusion or fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. The valve, Type 360, shall carry a pressure rating of 150 psi/10 bar at 68°F/20°C as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 360 True Union Ball Check Valve – CPVC

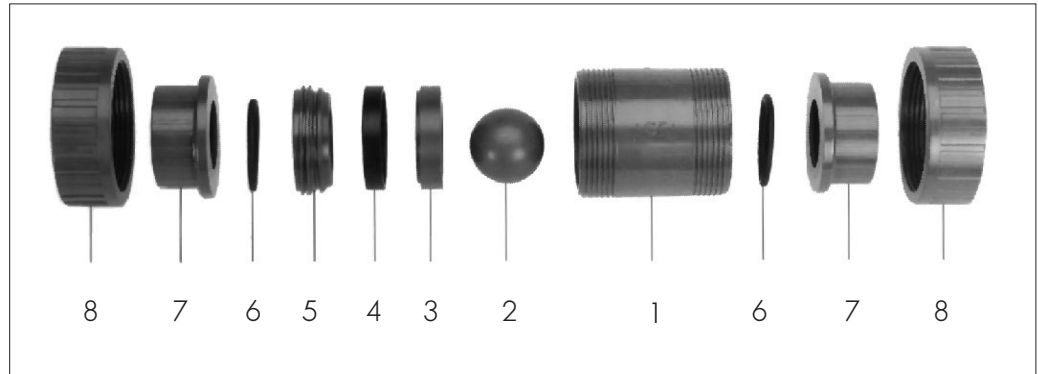
Ball check valves 3/8" through 2" shall be of true union design with either solvent cement socket or threaded pipe connections. Body interior is to have molded ribs to serve as a cage and ball guide to assure proper seating. Solvent cement socket pipe connection dimensions shall conform to ASTM F 439 (formerly ASTM D 2467). Threaded pipe connections shall be in accordance with ASTM F 437 (formerly D 2464) which references ANSI B1.20.1 (was B2.1) for tapered pipe threads. Seat and seals may be either EPDM or FPM as specified by user. Seat carrier shall have left-hand threads to prevent possible unscrewing when threaded end connector is installed on the pipe. CPVC material shall meet or exceed the requirements of 23447-B according to the classifications and requirements of ASTM D 1784. The valve type 360 shall carry a pressure rating of 232 psi at 68°F for solvent cement socket end connectors, and 150 psi at 68°F for threaded end connections, as supplied by George Fischer, Inc., Tustin, CA 92780.

Assembly Instructions for Type 360 Ball Check Valve

Recommendation:

Rinse PVC piping system before installing valve.

Reason: The fumes produced by the solvent cement can cause a swelling of the ball and the internal surfaces of the valve, thereby considerably affecting its operation.



1/2" - 2" Style

Insert ball (2), support ring (3), and ball sealing ring (4) into body (1). Screw retaining ring (5) into body (1). Put O-ring (6) into O-ring groove on face of retaining ring (5). Place end connector (7) against face of O-ring (6) and hold in place with union nut (8), screwing union nut firmly onto body (1). Place O-ring (6) in groove on outlet end of body. Place end connector (7) against O-ring. Screw union nut (8) over end connector (7) onto body (1) until seated firmly.

3" Style

Fit the flat side of the seal into the valve end.

Place the ball in the valve body and insert the pre-assembled valve end.

Screw the valve nut into the body handtight.

Fit the body seal to the valve end. Insert the pre-assembled valve end into the body and screw on the valve nut.

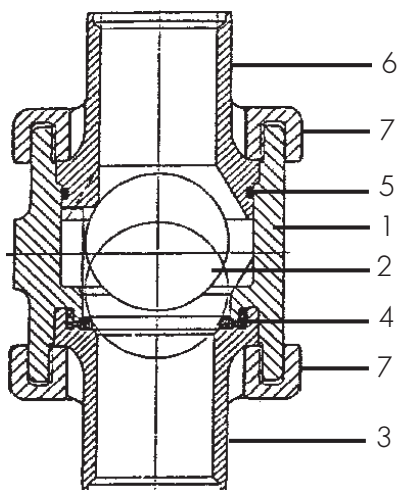
Component Parts for Type 360 Ball Check Valve – PVC

Nr./Part	Mat.	Qty.	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
Center section consisting of:			161 483 851	161 483 852	161 483 853	161 483 854	161 483 855	161 483 856	161 483 857
1 Valve body	PVC	1							
2 Ball	PVC	1							
3 Support ring	PVC	1							
4 Ball sealing ring	EPDM	1							
5 Retaining ring	PVC	1							
Center section consisting of:			161 483 861	161 483 862	161 483 863	161 483 864	161 483 865	161 483 866	161 483 867
1 Valve body	PVC	1							
2 Ball	PVC	1							
3 Support ring	PVC	1							
4 Ball sealing ring	FPM	1							
5 Retaining ring	PVC	1							
8 Union nut	PVC	1	161 340 617	161 340 617	161 340 618	161 340 619	161 340 620	161 340 621	161 340 522
7 End connectors:									
solvent cement socket		1	161 482 377	161 482 378	161 482 379	161 482 380	161 482 381	161 482 382	161 482 383
NPT thread	PVC	1	161 482 389	161 482 390	161 482 391	161 482 392	161 482 393	161 482 394	161 482 395
2 Ball	PVC	1	161 330 304	161 330 304	161 330 354	161 330 404	161 330 454	161 330 504	161 330 554
4 Ball sealing ring	EPDM	1	161 483 259	161 483 259	161 483 260	161 483 261	161 483 262	161 483 263	161 483 264
	FPM	1	161 483 265	161 483 265	161 483 266	161 483 267	161 483 268	161 483 269	161 483 270
6 O-ring	EPDM	1	748 410 042	748 410 042	748 410 116	748 410 103	748 410 027	748 410 010	748 410 011
	FPM	1	749 410 042	749 410 042	749 410 116	749 410 103	749 410 027	749 410 010	749 410 011

10

3" spigot valve, PVC only

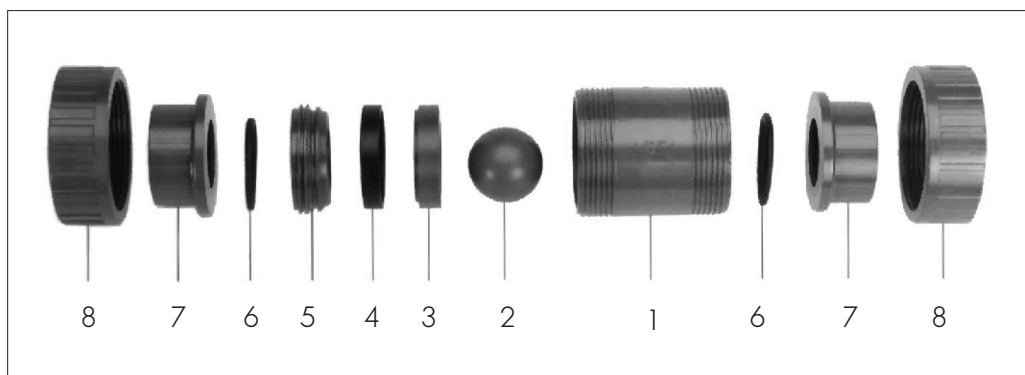
1 Body	PVC	1	161 480 158
2 Ball	PVC	1	161 330 654
3 Inlet spigot	PVC	1	161 480 333
4 Ball sealing ring	EPDM	1	161 480 141
	FPM	1	161 480 149
5 Body Seal	EPDM	1	748 410 099
	FPM	1	749 410 099
6 Outlet spigot	PVC	1	161 480 334
7 Valve nut	PVC	1	161 340 623



Component Parts for Type 360 Ball Check Valve – Polypropylene/SYGEF-PVDF

¹¹Talc Filled ball (1.24 specific gravity)

²¹ 100% polypropylene (0.9 specific gravity) (special order)

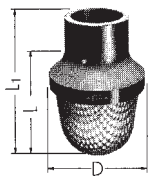


Nr /Part	Mat /Qty	OD d 16 mm ID DN 10 mm 3/8"	OD d 20 mm ID DN 15 mm 1/2"	OD d 25 mm ID DN 20 mm 3/4"	OD d 32 mm ID DN 25 mm 1"	OD d 40 mm ID DN 32 mm 1-1/4"	OD d 50 mm ID DN 40 mm 1-1/2"	OD d 63 mm ID DN 50 mm 2"
Center section consisting of:		167 481 125	167 481 126	167 481 127	167 481 128	167 481 129	167 481 130	167 481 131
1 Valve body	PP 1							
2 Ball	PP 1							
3 Support ring	PP 1							
4 Ball sealing ring	EPDM 1							
5 Retaining ring	PP 1							
Center section consisting of:		167 481 135	167 481 136	167 481 137	167 481 138	167 481 139	167 481 140	167 481 141
1 Valve body	PP 1							
2 Ball	PP 1							
3 Support ring	PP 1							
4 Ball sealing ring	FPM 1							
5 Retaining ring	PP 1							
8 Union nut	PP 1	167 480 786	167 480 786	167 480 787	167 480 788	167 480 789	167 480 790	167 480 791
	PVDF 2	175 480 819	175 480 819	175 480 820	175 480 821	175 480 822	175 480 823	175 480 824
7 End connectors: metric fusion soc	PP 1	167 480 159	167 480 160	167 480 161	167 480 162	167 480 163	167 480 164	167 480 165
	PVDF 1	175 480 031	175 480 032	175 480 033	175 480 034	175 480 035	175 480 036	175 480 037
butt fusion spigot	PP 1	167 480 545	167 480 546	167 480 547	167 480 548	167 480 549	167 480 550	167 480 551
	PVDF 1	175 480 796	175 480 797	175 480 798	175 480 799	175 480 800	175 480 801	175 480 802
NPT thread	PP 1	167 480 452	167 480 453	167 480 454	167 480 455	167 480 456	167 480 457	167 480 458
	PVDF 1	175 480 727	175 480 728	175 480 729	175 480 730	175 480 731	175 480 732	175 480 733
2 Ball	PP ¹¹ 1	167 481 165	167 481 165	167 481 166	167 481 167	167 481 168	167 481 169	167 481 170
	PP ²¹ 1	167 480 024	167 480 024	167 480 025	167 480 026	167 480 027	167 480 028	167 480 029
	PVDF 1	175 480 153	175 480 153	175 480 154	175 480 155	175 480 156	175 480 157	175 480 158
4 Ball sealing ring	EPDM 1	161 483 259	161 483 259	161 483 260	161 483 261	161 483 262	161 483 263	161 483 264
	FPM 1	161 483 265	161 483 265	161 483 266	161 483 267	161 483 268	161 483 269	161 483 270
6 O-ring	EPDM 2	748 410 042	748 410 042	748 410 116	748 410 103	748 410 027	748 410 010	748 410 011
	FPM 2	749 410 042	749 410 042	749 410 116	749 410 103	749 410 027	749 410 010	749 410 011

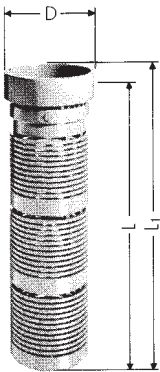
George Fischer Screen Assemblies Type 050



The Type 050 screen assemblies can be used with the Type 360 ball check valve to assemble a foot valve. Material is PVC, without metal parts. Available in sizes 1/2" through 3". 1/2" through 2" are metric socket with metric x IPS adapter nipple and the 3" version is IPS socket.



1/2" – 2"



3"

Dimensions

Inch size	L inch	L ₁ inch	D inch
1/2	2.52	3.15	1.97
3/4	2.52	3.27	1.97
1	2.52	3.39	1.97
1 1/4	4.13	5.16	3.54
1 1/2	4.13	5.63	3.54
2	4.13	5.63	3.54
3	12.28	13.58	4.33

Part Numbers

Inch size	solvent cement socket/adap.nipple
1/2	161 050 186
3/4	161 050 187
1	161 050 188
1 1/4	161 050 189
1 1/2	161 050 190
2	161 050 191
	solvent cement socket (IPS)
3	161 050 053

Assembly Examples

1



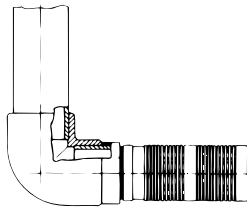
Cemented directly to a PVC pipe of the same size.

2



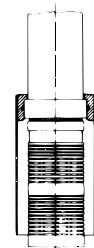
Cemented directly to a smaller sized pipe with reducer bushing.

3



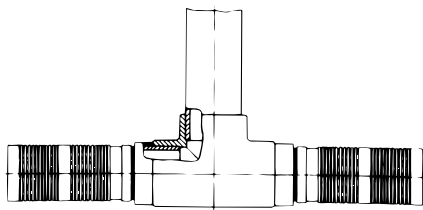
As horizontal single-armed screen assembly, with elbow.

4



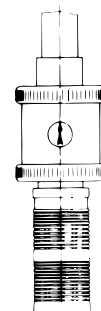
As vertical screen assembly for complete extraction, with mounted pipe cover, selfmade from PVC piping with cemented-in seal and fixing ring.

5

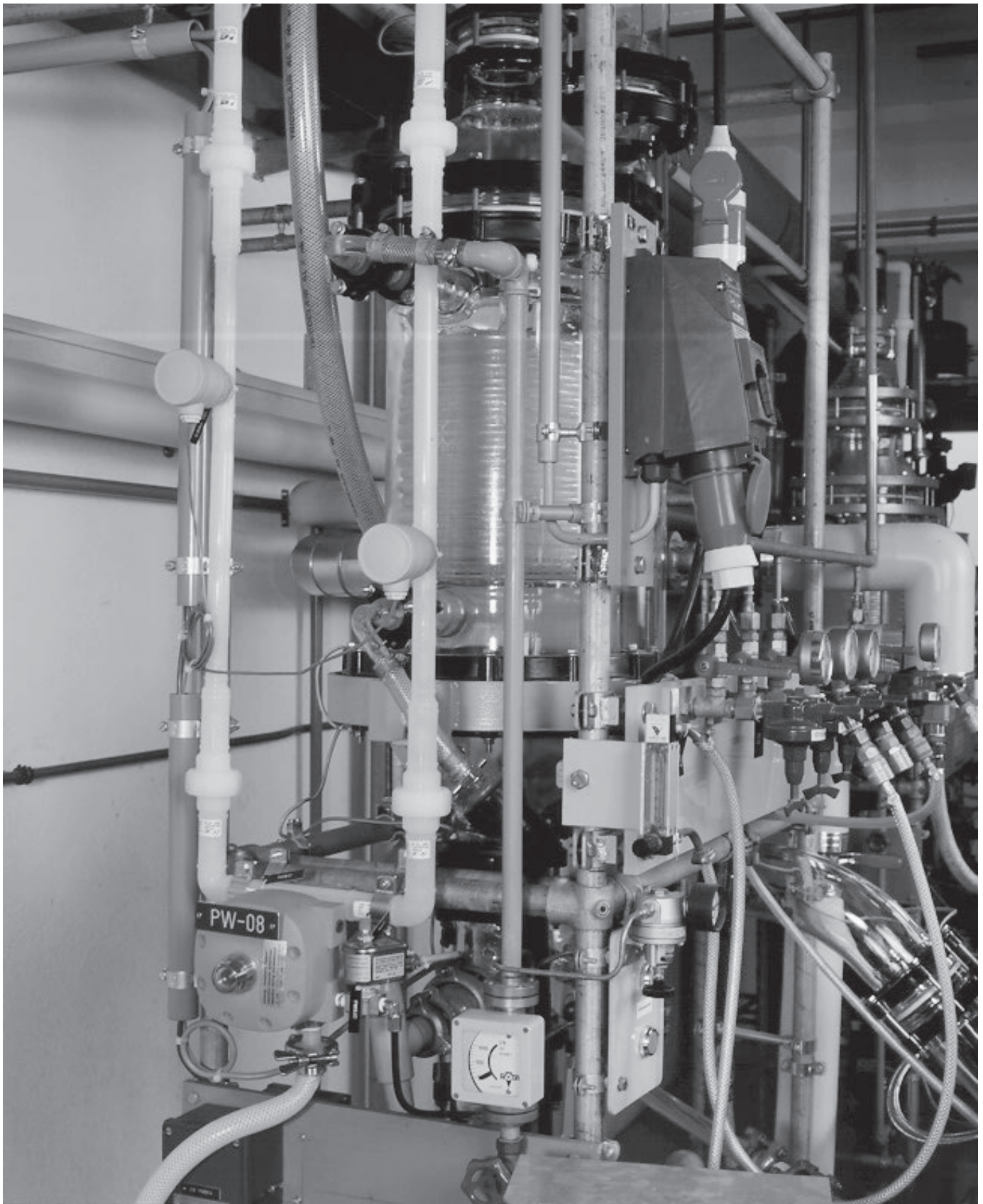


As horizontal double-armed screen assembly with 90° tee.

6

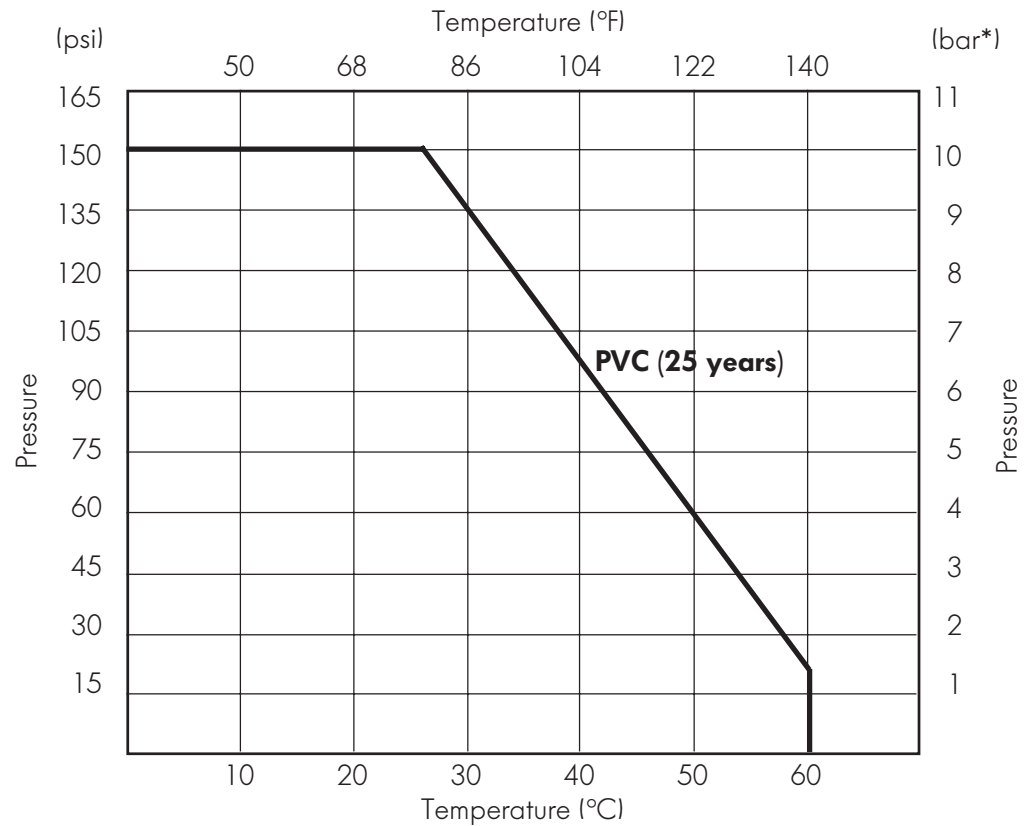


Combined with check valve. Type 360 of similar size or smaller (as in examples 1 and 2).



Technical Data for Line Strainers

Pressure/Temperature Diagram



$$\Delta p = \left(\frac{Q}{C_v} \right)^2 \quad \begin{array}{l} Q = \text{gpm} \\ p = \text{psi} \end{array}$$

$$1 \text{ bar} = 14.5 \text{ psi} \approx 15 \text{ psi}$$

$$K_v \div 14.28 = C_v$$

k_v Values

(liters/min. @ 1 bar drop)

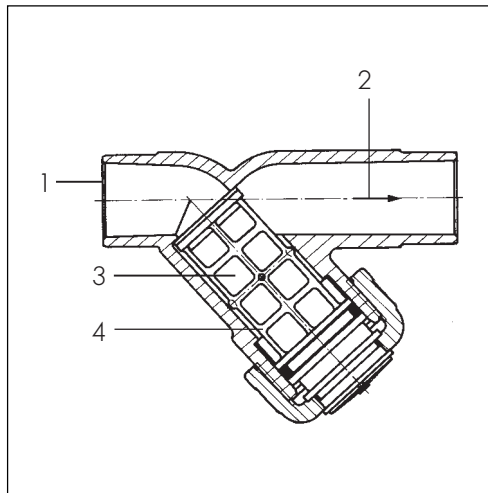
Metric size mm	screen diameter mm			
	0.5	0.8	1.4	2.2
20	39	35	30	36
25	63	63	63	67
32	92	85	93	92
40	145	150	155	167
50	228	225	206	244
63	361	346	383	395
75	540	535	580	645
90	930	950	970	970

C_v Values

(gal./min. @ 1 psi drop)

Inch size	screen diameter inch			
	.020	.031	.055	.087
1/2	2.7	2.5	2.1	2.5
3/4	4.4	4.4	4.4	4.7
1	6.4	6.0	6.5	6.4
1-1/4	10.2	10.5	10.9	11.7
1-1/2	16.0	15.8	14.4	17.1
2	25.3	24.2	26.8	27.7
2-1/2	37.8	37.5	40.6	45.2
3	65.1	66.5	67.9	67.9

George Fischer Line Strainer Type 306



- Condition of screens clearly visible from outside
- Screens easily removed for cleaning

General

The Line Strainer Type 306 is suitable for protecting valves, pumps, and other equipment against solid particles. It is available in transparent PVC in sizes 1/2" through 3".

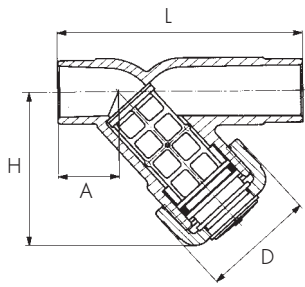
Installation position is dependent on flow direction.

Screens can be removed and cleaned without removing strainer from line.

Technical Features

1. Exclusive inch size spigot ends for universal installation.
2. Flow direction is clearly indicated.
3. Choice of four screen sizes: 8, 12, 20 and 30 mesh.
4. Screens are separate from cage providing inexpensive replacement of broken screens.

Dimensions for Type 306 Line Strainer



Inch size	L inch	D inch	H inch	A inch	Weight lbs.
1/2	5.62	1.89	2.56	1.34	0.24
3/4	6.30	2.13	3.00	1.70	0.37
1	6.83	2.44	3.56	1.72	0.56
1 1/4	7.40	2.80	4.13	1.83	0.84
1 1/2	8.07	3.47	4.88	2.05	1.40
2	8.86	4.06	5.81	2.36	2.21
3	12.23	4.72	8.06	3.84	5.66

Part Numbers for Type 306 Line Strainer and Screens

Inch size	Line Strainer w/20 mesh screen		Screens			
	Seal Material EPDM	FPM*	8 mesh hole Ø 3/32"	12 mesh hole Ø 1/16"	20 mesh hole Ø 1/32"	30 mesh hole Ø 1/64"
1/2	192 306 300	192 306 349	161 305 336	161 305 337	161 305 338	161 305 339
3/4	192 306 350	192 306 399	161 305 386	161 305 387	161 305 388	161 305 389
1	192 306 400	192 306 449	161 305 436	161 305 437	161 305 438	161 305 439
1 1/4	192 306 450	192 306 499	161 305 486	161 305 487	161 305 488	161 305 489
1 1/2	192 306 500	192 306 549	161 305 536	161 305 537	161 305 538	161 305 539
2	192 306 550	192 306 599	161 305 586	161 305 587	161 305 588	161 305 589
3	192 306 650	192 306 699	161 305 686	161 305 687	161 305 688	161 305 689

Silicone-Free Type 306 Line Strainer



with 20 mesh screens

Inch size	Spigot	
	EPDM seals	FPM* seals
1/2	192 306 951	192 306 961
3/4	192 306 952	192 306 962
1	192 306 953	192 306 963
1-1/4	192 306 954	192 306 964
1-1/2	192 306 955	192 306 965
2	192 306 956	192 306 966
3	192 306 958	192 306 968

*FPM seals are made of Viton® or equal materials. Viton® is a registered trademark of DuPont Dow Elastomers.

Product Specification

Type 306 Y-Strainer Valve – PVC

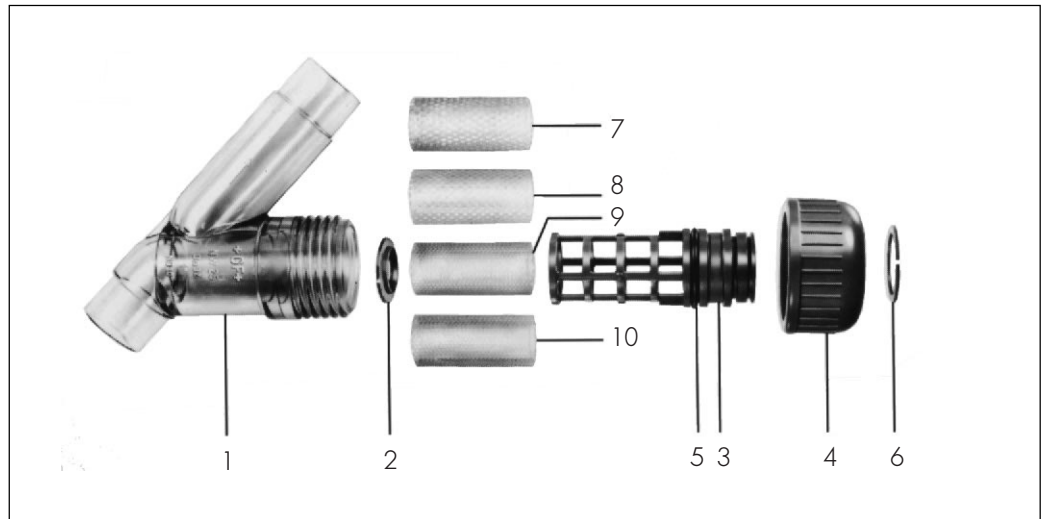
PVC Y-Strainer 1/2" through 3" shall have spigot type pipe connections. Seals shall be either FPM or EPDM, as specified by the user. Strainer screens shall be removable for replacement without removing the body from the line. Screen perforations sizes are 8, 12, 20, and 30 mesh (3/32", 1/15", 1/32" and 1/64" respectively). Body shall be of translucent PVC

to facilitate inspection. The PVC body will meet or exceed the requirements of 12454B according to the classifications and requirements of ASTM D-1784. Spigot end dimensions shall be in accordance with ASTM D-1785. The strainer, Type 306, shall carry a pressure rating of 150 psi at 68°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Assembly Instructions for Line Strainer Type 306

Recommendation

When the valve is dismantled, we recommend replacing the O-rings or flat gaskets for safety reasons.



Place the body seal (5) in the groove on the screen cage (3).

Carefully ease the screen selected, e.g. (7), (8), (9), or (10), into the screen cage (3).

Place the screen support ring (2) in the end of the screen cage (3).

Insert the complete screen assembly into the body (1), and screw on the bonnet nut (4).

Secure with circlip (6).

For disassembly, the screen cage (3) will be pulled from body (1) by the circlip (6). 3" size will require a pin inserted through the hole in top of screen cage.

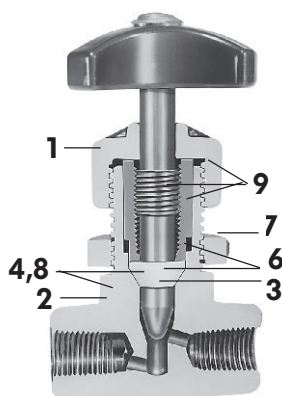
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Spare Parts

No. Part	Material	Qty.	1/2" 20 15	3/4" 25 20	1" 32 25	1 1/4" 40 32	1 1/2" 50 40	2" 63 50	3" 90 mm d 80 mm DN
1 Body	PVC transp.	1	192 300 301	192 300 351	192 300 401	192 300 451	192 300 501	192 300 551	192 300 651
5 Body seal	EPDM	1	748 410 006	748 410 001	748 410 007	748 410 002	748 410 003	748 410 012	748 410 014
5 Body seal	FPM	1	749 410 006	749 410 001	749 410 007	749 410 002	749 410 003	749 410 012	749 410 014
4 Valve nut	PVC	1	161 300 308	161 300 358	161 300 408	161 300 458	161 300 508	161 300 558	161 305 654
Screen set consisting of:			161 483 126	161 483 127	161 483 128	161 483 129	161 483 130	161 483 131	161 483 133
3 Screen		1							
2 Screen support ring		1							
6 Circlip		1							
3 Screen	PVC	1	161 305 303	161 305 353	161 305 403	161 305 453	161 305 503	161 305 553	161 305 653
7 Cylindrical screen perforation Ø 3/32"	PVC	1	161 305 336	161 305 386	161 305 436	161 305 486	161 305 536	161 305 586	161 305 686
8 Cylindrical screen perforation Ø 1/16"	PVC	1	161 305 337	161 305 387	161 305 437	161 305 487	161 305 537	161 305 587	161 305 687
9 Cylindrical screen perforation Ø 1/32"	PVC	1	161 305 338	161 305 388	161 305 438	161 305 488	161 305 538	161 305 588	161 305 688
10 Cylindrical screen perforation Ø 1/64"	PVC	1	161 305 339	161 305 389	161 305 439	161 305 489	161 305 539	161 305 589	161 305 689



George Fischer Type 522 Needle Valve



General

The George Fischer needle valve may be used in a wide range of services where SYGEF is suitable in the chemical and general environmental limits of the installation.

Specific applications should be evaluated on the basis of pressure, temperature (see pressure temperature chart) and flow capacity desired. The 1/4" and 3/8" ports are standard pipe threads NPT) and may be adapted to tube fittings, socket adaptors or other piping components. 16 mm metric fusion socket connections are available as well as NPT and socket connection combinations on a special order basis.

Chemical resistance data is provided by George Fischer for a wide variety of combinations, concentrations, temperatures, and degree of safety factors required.

A specific inquiry to George Fischer providing complete service data and service requirements will provide you with an opinion as to suitability.

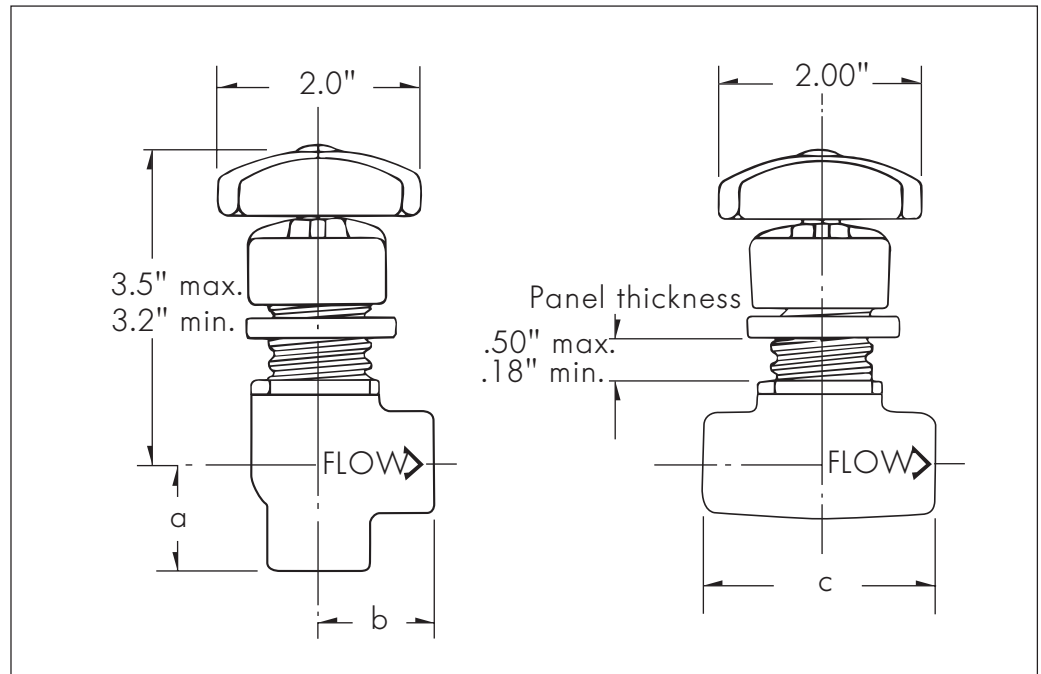
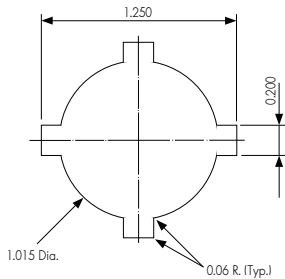
Technical Features

1. Valve is all PVDF or PP (glass reinforced) construction with exception of valve seal which is PTFE "Teflon" machined from virgin bar stock.
2. Holds burst test up to 100 bars (1470 psi) with no valve damage (excellent safety factor).
3. Non-lubricated/no contaminants to leach into process fluid.
4. High purity construction materials.
5. Rated at 200 psi continuous service at 73°F; 302°F maximum at zero psi.
6. Precise metering control inherent in needle valve design. No "O" ring seals.
7. Panel mounting possible.
8. Excellent chemical resistance of PVDF/ Teflon materials.
9. Designed to allow complete disassembly for inspection or cleaning.

Dimensions for Type 522 Needle Valve

Mounting template

The template provided, outlines the hole and orientation slots for the panel or bracket, where required. The orientation slots may be cut in multiple positions to allow versatility in mounting the valve to accommodate the piping alignment requirements. Panel thicknesses of 3/16" to 1/2" are accepted range, thinner or thicker sizes can be handled by shims or modifications.



Inch size	Angle body style					Globe body style				Metric size mm
	Inlet inch	Outlet inch	a inch	b inch	C _v	c inch	Inlet inch	Outlet inch	C _v	
1/4	0.25	0.187	1.00	1.10	0.426	2.28	0.187	0.187	0.310	12
3/8	0.25	0.187	1.00	1.10	0.426	2.28	0.187	0.187	0.310	16
1/2	0.25	0.218	1.10	1.20	0.780	2.57	0.218	0.218	0.620	20

Design Details

The metering chamber is controlled by a 30° included angle, precision machined seat that matches the ground needle tip.

The needle thread of 20 pitch provides five turns from closed to full- open. The single Teflon seal is located below the thread, thereby isolating the thread and topworks from the fluid media.

The seal wear is compensated for by simply hand-tightening the cap (gland).

The panel mount system, built into this valve, provides a simple and inexpensive means to attach to panels or brackets in a secure manner.

Chemical Resistance Considerations

Because only the body, needle, and the Teflon seal contact the fluid media, and Teflon is, for practical purposes, immune to attack, the needle and body are all we must consider.

No elastomers, metals or other secondary materials are involved in the question of suitability for a service. You need apply only the basic material in your evaluation- using chemical service charts, experience or tests performed in your system or labs.

The high purity rating of this valve is of the same basis that provides the resistance to chemical attack.

Type 522 Part Numbers

PVDF Standard

Connection	Angle Body Style	Globe Body Style
1/4 NPT	155 522 579	155 522 554
3/8 NPT	155 522 580	155 522 555
1/2 NPT	155 522 581	155 522 556
16mm socket	—	155 522 255

PVDF HP

Connection	Angle Body Style	Globe Body Style
1/4 NPT	155 522 579H	155 522 554H
3/8 NPT	155 522 580H	155 522 555H
1/2 NPT	155 522 581H	155 522 556H

PP Beta, glass reinforced

Connection	Angle Body Style	Globe Body Style
1/2 NPT	157 522 581	157 522 556

Service

Inspection or service of the valve is simply accomplished by loosening the cap and withdrawing the entire topworks assembly from the body. The topworks assembly is interchangeable between the 1/4" and 3/8" valve.

Each valve is packed with installation instructions including a parts list, mounting information, and general technical data of interest to the user.

Teflon tape is recommended as a thread sealant. No pipe dope, not specifically recommended for plastic pipe by the manufacturers, should be used.

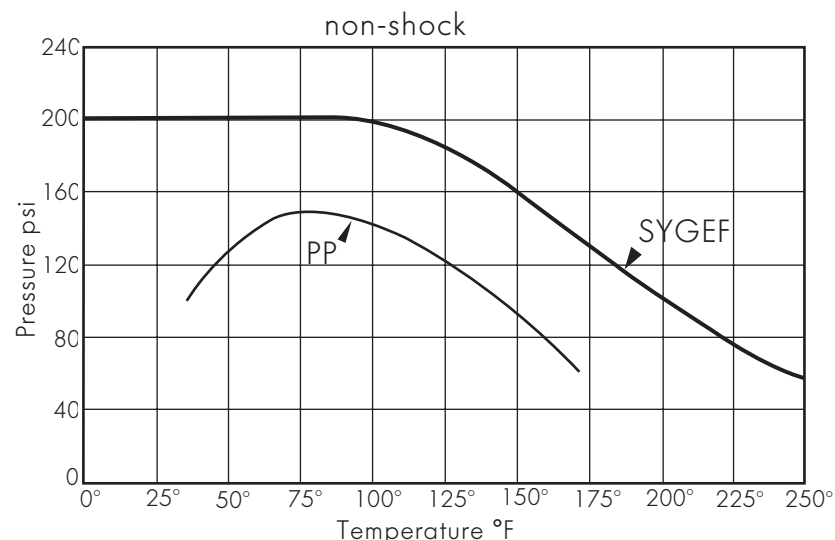
A firm, hand tight torque is normally sufficient for small plastic pipe threads over-tightening may deform threads and cause leaking.

The single seal in the Needle Valve is precision machined of virgin Teflon and is virtually immune to chemical attack and it will NOT contaminate sensitive media.

This stability, low friction, and high sealing effectiveness provides an almost unlimited life potential in this component—the small wear can be taken up by simple tightening of the cap.

10

Pressure/Temperature Range



Product Specification

Type 522 Needle Valve Polypropylene

Polypropylene needle valves 1/2" shall have threaded type pipe connections. Seal shall be PTFE. Material shall meet or exceed the requirements of ASTM D 4101 as pertains to a type I homopolymer compound having a minimum tensile strength of 4350 psi/300 bar at 73°F/20°C when tested in accordance with ASTM D 638 and shall have a melt point which initiates at 316°F/158°C. The melt flow index (at 374°F/190°C/50 N) shall be 0.4 –0.8 grams per 10 minutes in accordance with ASTM D 1238. Threaded end connections shall be in accordance with ASTM D 2464 which references ANSI B 1.20 (was B 2.1) for tapered pipe threads. The valve, Type 522, shall carry a pressure rating of 150 psi at 73°F as supplied by George Fischer, Inc., Tustin, CA 92780.

Type 522 Needle Valve PVDF

PVDF needle valves 1/4" through 1/2" shall have threaded ends and PVDF needle valves 16 mm shall have metric socket fusion type pipe connections. Seal shall be PTFE. Material shall meet or exceed the requirements of ASTM D 3222 as pertains to a natural, unpigmented, virgin, noncompounded polyvinylidene fluoride compound having a minimum tensile strength of 7800 psi/538 bar at 73°F/20°C when tested in accordance with ASTM D 638 and shall have a flexural strength of 10,700 psi/738 bar at 73°F/20°C when tested according to ASTM D 790. End connections shall be as outlined in ASTM D 2657 for fusion socket joining, and shall be compatible with metric pipe and fittings as manufactured by George Fischer, Inc. Threaded end connections shall be in accordance with ASTM D 2464 which references ANSI B 1.20 (was B 2.1) for tapered pipe threads. The valve, Type 522, shall carry a pressure rating of 200 psi at 73°F as supplied by George Fischer, Inc., Tustin, CA 92780.

George Fischer “Low Profile” PVDF Gauge Isolator Type 523 available with Pre-mounted Gauge (optional)



Protection against chemical and physical reaction on pressure sensing devices.

System fluids, gas or liquid, are dependably separated from sensitive components by an impermeable membrane.

Corrosive media are effectively contained and high purity media are protected from contamination.

General

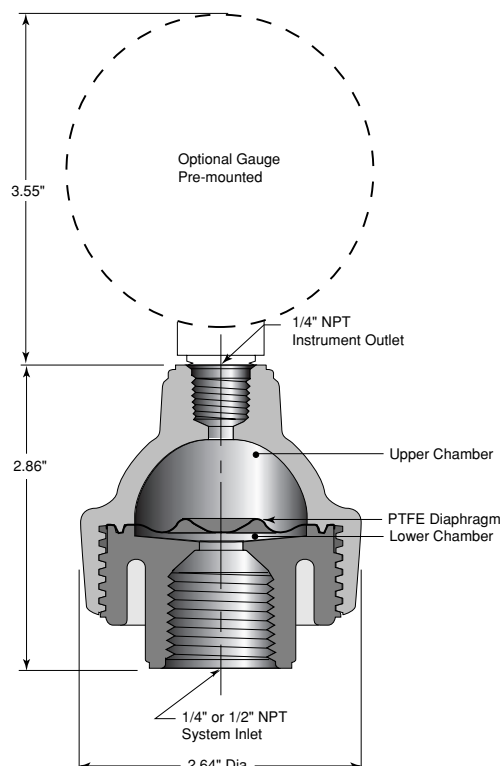
The newly designed George Fischer low profile Gauge Isolator Type 523 is designed to isolate and protect pressure sensing instruments from process media. This is accomplished by the impermeable membrane. The new design makes the 523 gauge isolator ideal for high purity media. The instrument side of the gauge isolator is filled with a compatible liquid that will transmit the pressure of the processing system to the instrument. The inherent volumetric and sensing area design features allow an extremely accurate transmittal of pressure.

The gauge isolator Type 523 should be used whenever liquids or gases will cause metal instrument components to corrode and fail or contaminate system fluids. Gauge isolators should also be used to protect against clogging of instruments due to suspended solids or high viscosity process fluids. The new design also features a process fluid chamber that is self-draining and easily flushed for cleaning.

The gauge isolator provides two fluid chambers separated by an impermeable PTFE (Teflon®) membrane. The upper

chamber (gauge side) is normally filled with a stabilized fluid. The lower chamber receives the media under pressure.

A 1/4" NPT threaded outlet for pressure sensing devices is standard. The media inlet side is standard 1/2" NPT or 1/4" NPT.



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Part Numbers for Type 523 Gauge Isolator

Body material: SYGEF® PVDF
PTFE (Teflon®) Diaphragm

Size	Part number
Without gauge	
1/4" x 1/4" NPT	155 523 533
1/4" x 1/2" NPT	155 523 535
With gauge	
1/4" x 1/4" NPT	155 523 537
1/4" x 1/2" NPT	155 523 539

Body material: Polypropylene
PTFE (Teflon®) Diaphragm

Size	Part number
Without gauge	
1/4" x 1/4" NPT	157 523 533
1/4" x 1/2" NPT	157 523 535
With gauge	
1/4" x 1/4" NPT	157 523 537
1/4" x 1/2" NPT	157 523 539

Gauge:

2 1/2" diameter
304 stainless steel case
316 stainless steel bourdon tube
Polycarbonate window
Liquid filled (Glycerin)
1/4" NPT connection

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Installation

1. Fill the upper chamber of the gauge isolator with a compatible liquid by pouring the fill liquid through the instrument outlet orifice. The spherical design of the chamber will allow the air to evacuate the chamber, providing the orifice is not bridged by the fill liquid. The chamber shall be considered full when the liquid level reaches the top of the thread.

2. The gauge or instrument may be filled in the same manner, although a small probing device may be necessary to evacuate the trapped air. For certain applications where a high degree of accuracy is imperative, the instrument should be filled on a vacuum manifold device.

3. The standard orifices on most gauges are such that the fill liquid will be retained when the orifice is faced down and in position to thread into the gauge isolator. Teflon® tape is recommended as the thread sealant. Hand tighten instrument to gauge isolator.

NOTE: Air left in the chamber or instrument may cause some loss in accuracy of the instrument reading. However, the internal design features of the gauge isolator will tolerate some void of fill liquid.

4. Connect to the processing system using a 1/4" or 1/2" NPT plastic nipple using Teflon® tape as the recommended thread sealant.

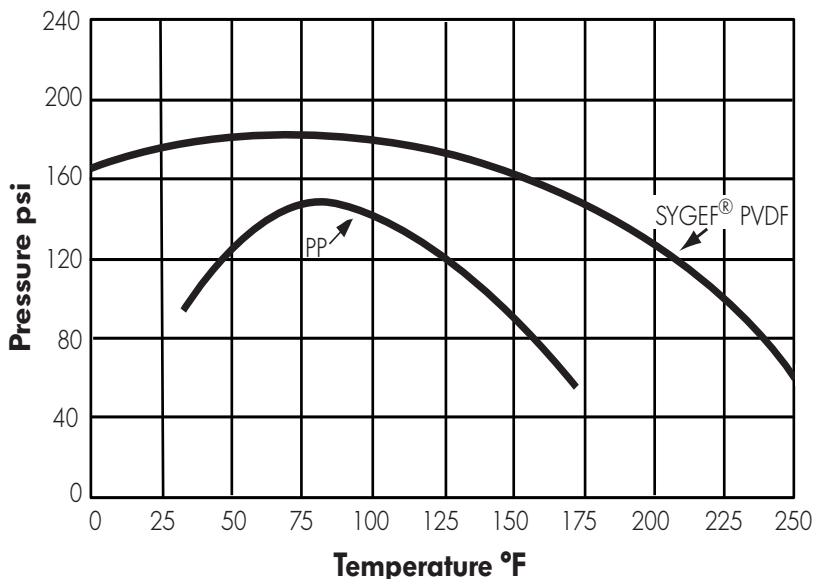
Membrane Replacement

Your gauge isolator is supplied with a PTFE (Teflon®) membrane.

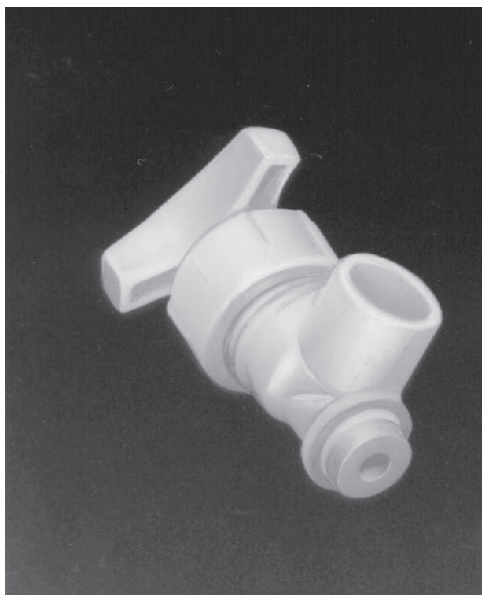
The membrane provides the isolation of the process media from the pressure sensing instruments. Should it become necessary to replace the membrane, or change the membrane material, this can only be done at the factory. Unit must be sent in.

Never remove upper chamber from assembly while system is pressurized.

Pressure/Temperature Range



Ultra-Pure Sampling Valve Type 525



- Introduces "Zero Dead Leg"
- True Sampler inlet is constantly flushed, preventing a stagnation area and the possibility of contamination.
- Contamination-free 100% virgin PVDF (polyvinylidene fluoride) with PTFE (Teflon®) seal – no elastomers.

General Description

The George Fischer Ultra-Pure Sampling Valve is designed to deliver a true representative specimen of the piped media, while offering "Zero Dead Leg" to the system. This is accomplished by having the inlet port of the valve tangent with the media flow. When in the closed position, the needle fully displaces the inlet orifice.

Specifications

Materials

100% virgin PVDF (polyvinylidene fluoride), PTFE (Teflon®) stem seal – no elastomers.

Connections

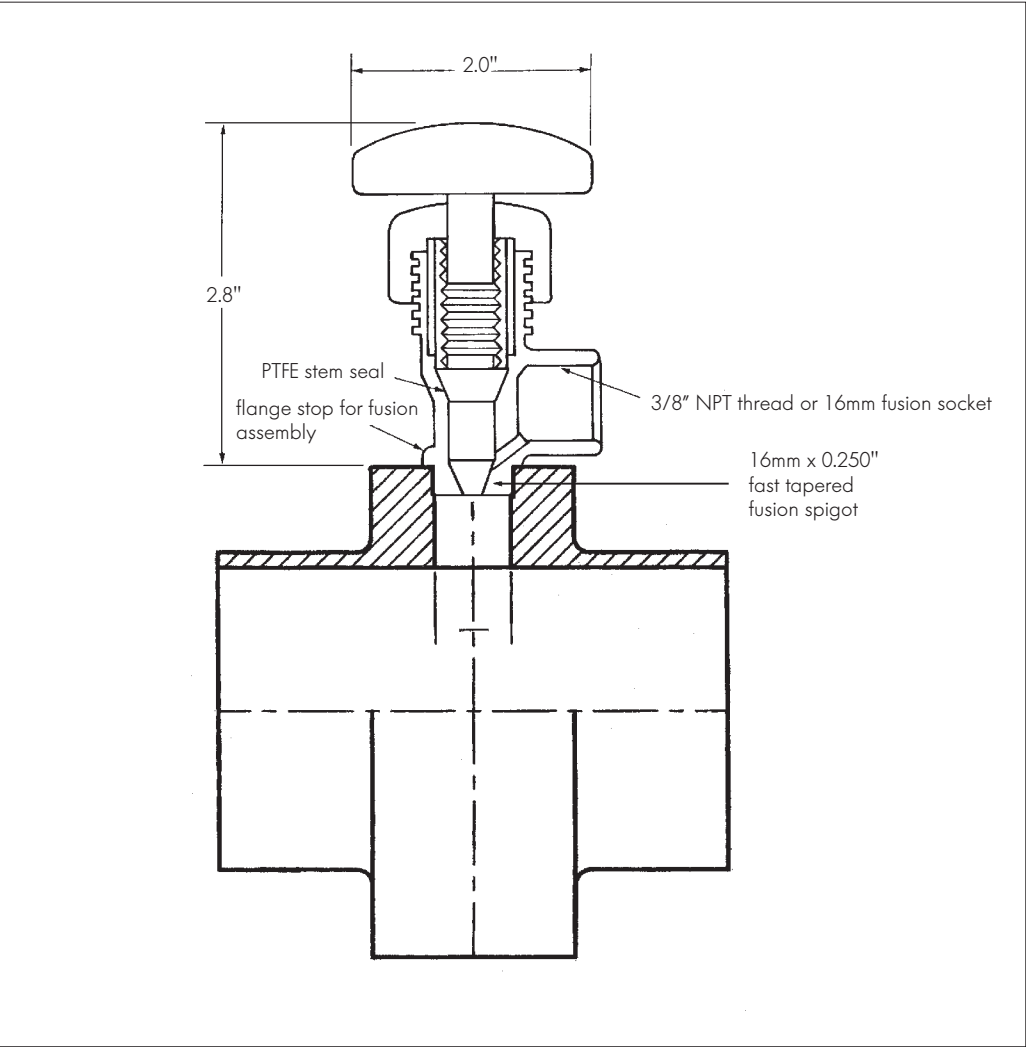
Inlet: 16 mm fast tapered fusion spigot
Outlet: 3/8" NPT female thread or 16mm fusion socket

Features

Ideally suited in special applications for process engineers and designers of ultrapure water systems (semiconductor, pharmaceutical, power, biotech, medical), the valve's purity standards are maintained by constant flushing of the inlet port, preventing a stagnation area or dead leg and the possibility of contamination.

The valve features a specially designed, short, fast tapered fusion spigot for "Zero Dead Leg". To install the Ultra-Pure Sampling Valve into 63 – 225 mm piping systems, use a George Fischer sampling port fitting or pre-assembled pressure gauge assembly (see SYGEF-PVDF IR section). To install it into 50 mm and smaller piping systems, use pre-assembled pressure gauge assembly (see SYGEF-PVDF IR section, page 4.74).

Dimensions for Type 525 Sampling Valve



Part Numbers

Taping spigot mm	Outlet	PVDF Standard PTFE seal	PVDF HP PTFE seal
16	16mm	155 525 255	155 525 255H
16	3/8"NPT	155 525 555	155 525 555H

Ultra-Pure Fluid Dispenser



- **Contamination-free 100% Virgin PVDF** (Polyvinylidene fluoride) assures purity.
- **Precise George Fischer Needle Valve** (w/Teflon® seal — no elastomers) has no “dead area.”
- **Molded outlet fitting connects to different tubing sizes.**
- **Molded base has large diameter for proper load distribution.**
- **Standard NPT fitting offers easy inlet connection.**

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General Description

The George Fischer Ultra-Pure Fluid Dispenser is designed to provide a contamination-free supply, combined with precise flow regulation.

Features

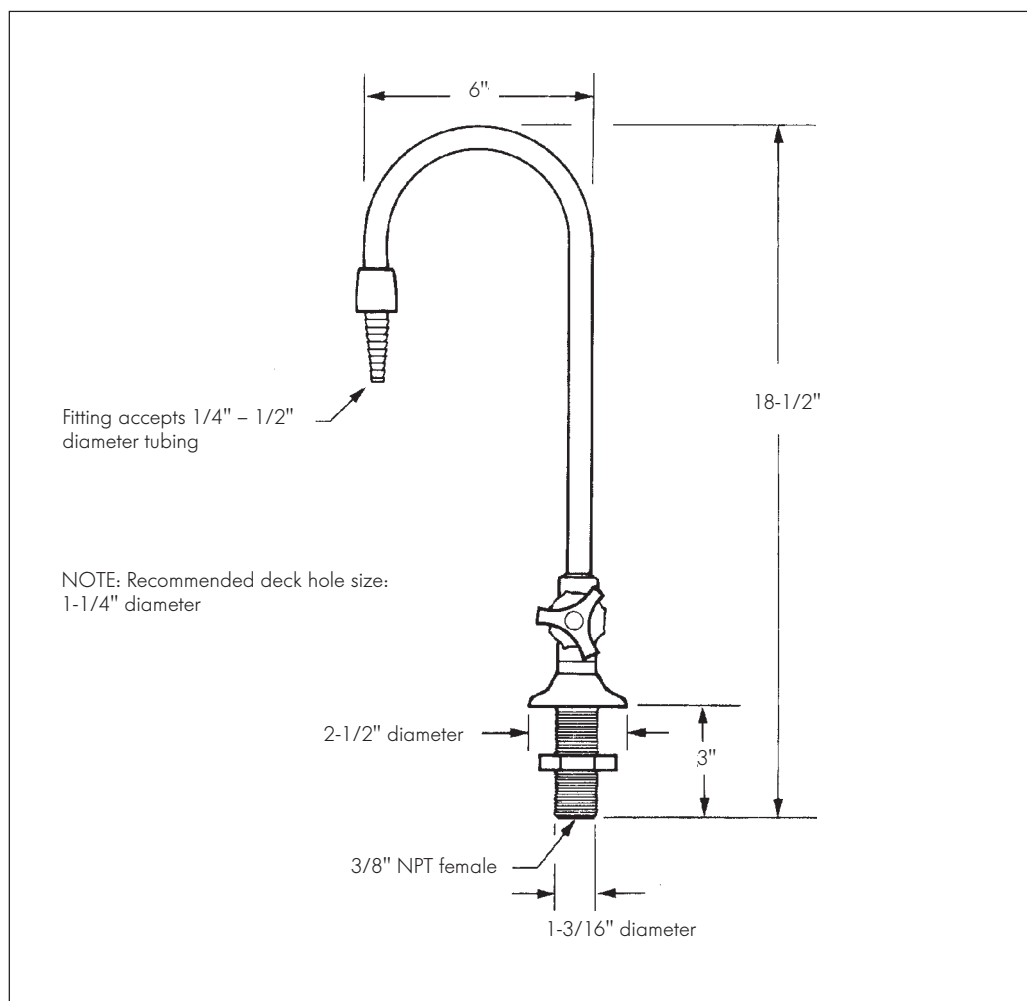
To meet the demanding requirements of industries involved in high-purity fluid dispensing, George Fischer uses PVDF to eliminate introduction of contamination and to maintain high purity levels. In addition to the use of the finest quality construction materials, three of the connections are fusion welded. The fourth connection (valve to base) is

purposely threaded, offering a means for inspection or service.

The easy-to-operate and proven Needle Valve is used for precise control of flow rates from off to full flow. This valve has established the standard for sampling and control of the highest purity fluid systems, since the design essentially eliminates “dead areas” for growth and permits immediate access to purity level.

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Dimensions for Ultra-Pure Fluid Dispenser



Specifications

Materials

100% virgin PVDF (polyvinylidene fluoride).

Control Valve

George Fischer Needle Valve (with Teflon® seal – no elastomers).

Inlet Connection

3/8" NPT female fitting for connection ease.

Ordering Information

All PVDF "Goose neck" dispenser with Teflon seals.

Metric size: 16 mm

Inch size: 3/8"

NPT Threads

Part Number: 155.524.580