

Valves Technical
True Union, Spigot, Flanged Diaphragm Valves



Features — PVC, CPVC & PP

This full-featured valve is engineered to provide accurate throttling control and shutoff for industrial, chemical and water treatment applications. Weir-type design eliminates entrapped fluids in valve and is excellent for handling liquids with suspended solids, viscous fluids and slurries. Available in PVC, CPVC and Glass Filled Polypropylene with a variety of Diaphragm material options. PVC & CPVC 1/2" – 2" valves with Flanged Body, Spigot Body or True Union style Socket & Threaded ends or Optional Special Reinforced (SR) Threads, and sizes 2-1/2" – 8" with Flanged Body. Polypropylene 1/2" – 2" valves with True Union style Special Reinforced (SR) Threaded ends and sizes 2-1/2" – 8" with Flanged Body. True Union style also available in metric socket and BSP thread sizes 1/2" through 2".

Sample Engineering Specification

All thermoplastic Diaphragm valves shall be Weir-type constructed from PVC Type I, ASTM D 1784 Cell Classification 12454 or CPVC Type IV, ASTM D 1784 Cell Classification 23447, or Polypropylene, ASTM D 4101. All diaphragms shall be EPDM, FKM or PTFE with EPDM or FKM backing. All valves shall have built-in position indicator with polypropylene handwheel. All True Union style valve union nuts shall have Buttress threads. All PVC and CPVC 1/2" through 2" valves shall be pressure rated to 235 psi for water at 73° F. All 2-1/2" through 4", Polypropylene 1/2" through 4", all flanged valves, and all valves with PTFE diaphragms through 4" shall be pressure rated to 150 psi for water at 73°F. All 6" valves shall be pressure rated to 100 psi, and all 8" valves shall be pressure rated to 75 psi for water at 73°F, as manufactured by Spears® Manufacturing Company.

- True Union Style with Buttress Thread Union Nuts - Mate with Spears® True Union 2000 Ball valves and Union 2000 Pipe Unions.
- EPDM, FKM, or Elastomer Backed (EPDM or FKM) PTFE Diaphragms.
- PVC & CPVC Sizes 1/2" – 2", Pressure Rated to 235 psi @ 73°F; Sizes 2-1/2" – 4" and all Flanged and all PTFE Diaphragm through 4", Pressure Rated to 150 psi @ 73°F; 6" Pressure Rated to 100 psi and 8" to 75 psi @ 73°F
- Polypropylene Sizes 1/2" – 4", Pressure Rated to 150 psi @ 73°F; 6" Pressure Rated to 100 psi and 8" Pressure Rated to 75 psi @ 73°F
- Easy-Grip, High Impact Polypropylene Handwheel
- Built-in, Clear-View Position Indicator
- Stainless Steel External Hardware
- Fully Serviceable, Replaceable Components
- Suitable for Vacuum Service (except with PTFE Diaphragms)
- Assembled with Silicone-Free Lubricants (no lubricant in media contact area)



Special Options

- Hypalon® (CSM) Diaphragms
- Natural Polypropylene Body
- Electric or Pneumatic Actuation



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PVC, CPVC & PP Diaphragm Valve Quick-View Selection Chart

Size	O-ring Material	Diaphragm Material	PVC Part Number ¹				PP Part Number		Pressure Rating
			Soc/Thd	SR Threaded	Spigot	Flanged	SR Threaded	Flanged	
1/2	EPDM	EPDM	2729-005	2721-005SR	2727-005	2723-005	2721-005PSR	True Union & Spigot Style w/ Elastomer Diaphragms 235 psi Non-Shock Water @ 73°F	
		PTFE ²	2729T-005	2721T-005SR	2797T-005	2793T-005	2721T-005PSR		
	FKM	FKM	2739-005	2731-005SR	2737-005	2733-005	2731-005PSR		
		PTFE ²	2739T-005	2731T-005SR	2797T-005	2793T-005	2731T-005PSR		
3/4	EPDM	EPDM	2729-007	2721-007SR	2727-007	2723-007	2721-007PSR		
		PTFE ²	2729T-007	2721T-007SR	2797T-007	2793T-007	2721T-007PSR		
	FKM	FKM	2739-007	2731-007SR	2737-007	2733-007	2731-007PSR		
		PTFE ²	2739T-007	2731T-007SR	2797T-007	2793T-007	2731T-007PSR		
1	EPDM	EPDM	2729-010	2721-010SR	2727-010	2723-010	2721-010PSR		
		PTFE ²	2729T-010	2721T-010SR	2797T-010	2793T-010	2721T-010PSR		
	FKM	FKM	2739-010	2731-010SR	2737-010	2733-010	2731-010PSR		
		PTFE ²	2739T-010	2731T-010SR	2797T-010	2793T-010	2731T-010PSR		
1-1/4	EPDM	EPDM	2729-012	2721-012SR	2727-012	2723-012	2721-012PSR		
		PTFE ²	2729T-012	2721T-012SR	2797T-012	2793T-012	2721T-012PSR		
	FKM	FKM	2739-012	2731-012SR	2737-012	2733-012	2731-012PSR		
		PTFE ²	2739T-012	2731T-012SR	2797T-012	2793T-012	2731T-012PSR		
1-1/2	EPDM	EPDM	2729-015	2721-015SR	2727-015	2723-015	2721-015PSR		
		PTFE ²	2729T-015	2721T-015SR	2797T-015	2793T-015	2721T-015PSR		
	FKM	FKM	2739-015	2731-015SR	2737-015	2733-015	2731-015PSR		
		PTFE ²	2739T-015	2731T-015SR	2797T-015	2793T-015	2731T-015PSR		
2	EPDM	EPDM	2729-020	2721-020SR	2727-020	2723-020	2721-020PSR		
		PTFE ²	2729T-020	2721T-020SR	2797T-020	2793T-020	2721T-020PSR		
	FKM	FKM	2739-020	2731-020SR	2737-020	2733-020	2731-020PSR		
		PTFE ²	2739T-020	2731T-020SR	2797T-020	2793T-020	2731T-020PSR		
2-1/2	EPDM	EPDM				2723-025		2723-025P	2-1/2 – 4, Flanged Style & Valves w/ PTFE Diaphragms 150 psi Non-Shock Water @ 73°F
		PTFE ²				2793T-025		2793T-025P	
	FKM	FKM				2733-025		2733-025P	
		PTFE ²				2793T-025		2793T-025P	
3	EPDM	EPDM				2723-030		2723-030P	
		PTFE ²				2793T-030		2793T-030P	
	FKM	FKM				2733-030		2733-030P	
		PTFE ²				2793T-030		2793T-030P	
4	EPDM	EPDM				2723-040		2723-040P	
		PTFE ²				2793T-040		2793T-040P	
	FKM	FKM				2733-040		2733-040P	
		PTFE ²				2793T-040		2793T-040P	
6	EPDM	EPDM				2723-060		2723-060P	100 psi Non-Shock Water @ 73°F
		PTFE ²				2793T-060		2793T-060P	
	FKM	FKM				2733-060		2733-060P	
		PTFE ²				2793T-060		2793T-060P	
8	EPDM	EPDM				2723-080		2723-080P	75 psi Non-Shock Water @ 73°F
		PTFE ²				2793T-080		2793T-080P	
	FKM	FKM				2733-080		2733-080P	
		PTFE ²				2793T-080		2793T-080P	

1: For CPVC valves, add the letter "C" to part numbers listed (e.g., 2729-005C). Custom end connections available upon request.

2: Elastomer-backed PTFE (standard EPDM backed; special order FKM backed)

Suitable for Oil-Free air handling to 25 psi, not for distribution of compressed air or gas

See Spears® Product Sourcebook for product offerings

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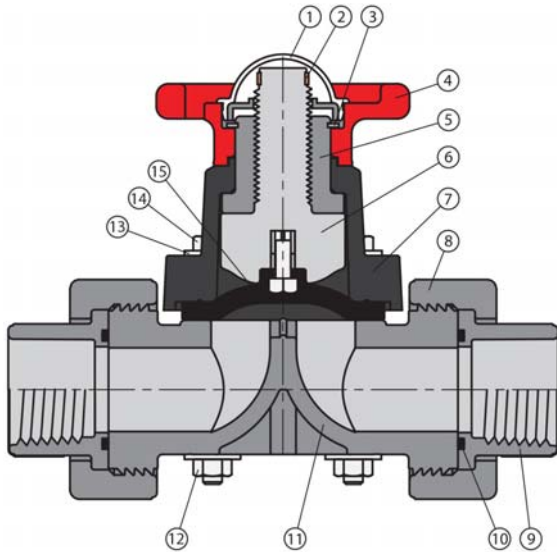
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Replacement Parts

No.	Component	Qty.	Material
1	Indicator Cover	1	PVC Clear
2	Indicator	1	PE
3	Retaining Ring	1	SS
4	Handwheel	1	PP
5	Compressor Bushing	1	PTFE/CPVC
6	Compressor	1	CPVC
7	Bonnet	1	GFPP
8	Union Nut	1	PVC/CPVC/GFPP
9	Union End	2	PVC/CPVC/GFPP
10	Union End O-ring	2	EPDM/FKM
11	Body	1	PVC/CPVC/GFPP
12	Nut	4-16	SS
13	Flat Washer	8-32	SS
14	Bolt	4-16	SS
15	Diaphragm	1	EPDM/FKM/PTFE

1: Component applicable to True Union style valves only.
2: True Union Socket/Threaded Valve illustrated

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 psi (MPa)	1/2" - 2"	PVC	235 (1.62)	211 (1.45)	150 (1.03)	75 (.52)	50 (.34)	-0-	-0-	-0-	-0-	-0-	-0-	-0-
		CPVC	235 (1.62)	219 (1.51)	170 (1.17)	145 (1.00)	130 (.90)	110 (.76)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0-
		PP	150 (1.03)	105 (.72)	90 (.62)	80 (.55)	75 (.52)	65 (.45)	55 (.38)	50 (.34)	45 (.31)	-0-	-0-	-0-
	2-1/2" - 4"	PVC	150 (1.03)	135 (.93)	110 (.76)	75 (.52)	50 (.34)	-0-	-0-	-0-	-0-	-0-	-0-	-0-
		CPVC	150 (1.03)	140 (.97)	130 (.90)	120 (.83)	110 (.76)	100 (.70)	90 (.62)	80 (.55)	70 (.48)	60 (.41)	50 (.34)	-0-
		PP	150 (1.03)	105 (.72)	90 (.62)	80 (.55)	75 (.52)	65 (.45)	55 (.38)	50 (.34)	45 (.31)	-0-	-0-	-0-
	6"	PVC	100 (.70)	90 (.62)	80 (.55)	65 (.38)	50 (.34)	-0-	-0-	-0-	-0-	-0-	-0-	-0-
		CPVC	100 (.70)	95 (.66)	90 (.62)	85 (.59)	80 (.55)	75 (.52)	70 (.48)	65 (.45)	60 (.41)	55 (.38)	50 (.34)	-0-
		PP	100 (.70)	90 (.62)	85 (.59)	75 (.52)	70 (.48)	60 (.41)	55 (.38)	50 (.34)	45 (.31)	-0-	-0-	-0-
	8"	PVC	75 (.52)	70 (.48)	65 (.45)	60 (.41)	50 (.34)	-0-	-0-	-0-	-0-	-0-	-0-	-0-
		CPVC	75 (.52)	72 (.49)	70 (.48)	67 (.46)	65 (.45)	62 (.43)	60 (.41)	55 (.38)	50 (.34)	45 (.31)	40 (.28)	-0-
		PP	75 (.52)	62 (.43)	60 (.41)	57 (.39)	55 (.38)	52 (.36)	50 (.34)	47 (.32)	45 (.31)	-0-	-0-	-0-

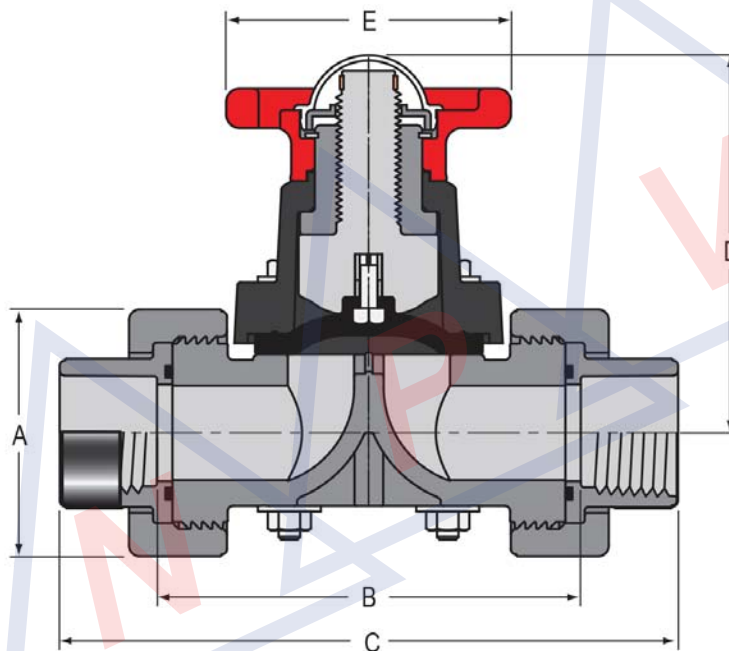


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C_v Values PVC, CPVC & PP

Valve Size	PERCENT OPEN			
	100%	75%	50%	25%
1/2	5.1	4.8	4.2	2.4
3/4	8.0	7.5	6.5	3.8
1	11.5	10.8	9.4	5.4
1-1/4	22.0	20.6	18.0	10.3
1-1/2	28.2	26.4	23.0	13.3
2	52.9	49.6	43.2	24.9
2-1/2	119.0	111.5	97.1	55.9
3	119.0	111.5	97.1	55.9
4	189.2	177.3	154.4	88.9
6	402.2	375.8	327.0	187.5
8	700.0	659.5	573.2	328.4

Gallons per minute at 1 psi pressure drop.



Socket, Threaded & SR Threaded End Connectors Dimension & Weights

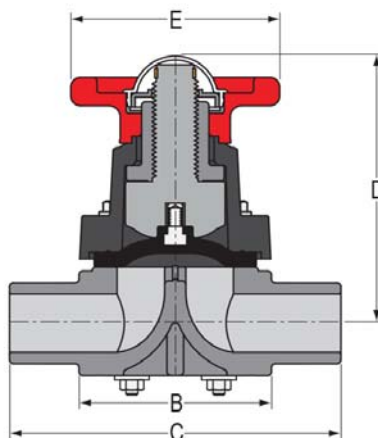
Nominal Size	Dimension Reference (inches, ± 1/16)						Approx. Wt. (Lbs.)	
	A	B ¹	C		D	E	PVC	CPVC
			Socket	Threaded				
1/2	1-15/16	3-7/8	5-9/16	5-3/16	3-11/32	2-7/8	1.12	1.14
3/4	2-1/2	4-1/2	6-7/16	5-15/16	3-3/4	3-1/8	1.37	1.36
1	2-9/16	4-15/16	7-3/16	6-13/16	4-7/16	3-3/8	2.35	2.43
1-1/4	3-5/16	5-1/2	8-7/8	8-1/4	5-5/8	3-7/8	3.91	4.03
1-1/2	3-17/32	6-5/16	9-5/16	8-7/16	5-5/8	4-5/8	4.08	4.21
2	4-7/32	7-1/2	10-9/16	9-1/2	7	6-5/8	7.06	7.25

1: Valve Lay Length.

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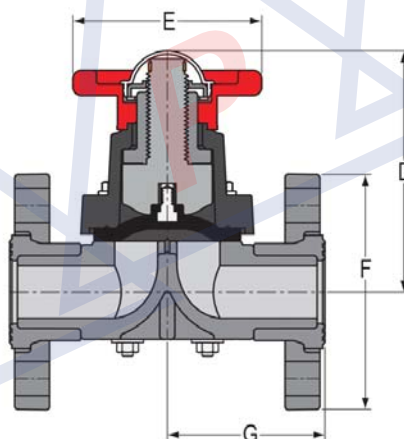
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Spigot Diaphragm Dimensions & Weights

Nominal Size	Dimension Reference (inches, $\pm 1/16$)				Approx. Wt. (Lbs.)	
	B	C	D	E	PVC	CPVC
1/2	2-5/8	4-7/8	3-11/32	2-7/8	.61	.63
3/4	2-3/4	5	3-3/4	3-1/4	.79	.82
1	3-1/8	5-3/8	4-7/16	3-5/16	1.32	1.36
1-1/4	3-3/4	6-1/4	5-5/8	4-19/32	2.41	2.50
1-1/2	3-3/4	6-1/2	5-5/8	4-19/32	2.43	2.52
2	4-3/4	7-3/4	7	5-7/8	4.15	4.43



Flanged Diaphragm Dimensions & Weights

Nominal Size	Dimension Reference (inches, $\pm 1/16$)				Approx. Wt. (Lbs.)	
	D	E	F	G	PVC	CPVC
1/2	3-11/32	2-7/8	3-1/2	2-9/16	.98	1.02
3/4	3-3/4	3-1/4	3-7/8	2-5/8	1.31	1.37
1	4-7/16	3-5/16	4-1/4	2-13/16	2.00	2.08
1-1/4	5-5/8	4-19/32	4-5/8	3-1/4	3.71	3.76
1-1/2	5-5/8	4-19/32	5	3-3/8	3.88	4.04
2	7	5-7/8	6	4	5.59	5.71
2-1/2	10-1/4	8-7/8	7-1/2	5-19/32	15.75	16.43
3	10-1/4	8-7/8	7-1/2	5-19/32	15.75	16.45
4	12-1/4	10-1/2	9	6-5/8	24.44	25.37
6	16-3/4	18-13/32	11	9-3/8	53.90	58.43
8	21	21-19/32	13-1/2	11-5/32	96.28	100.05

Made in the U.S.A.

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