

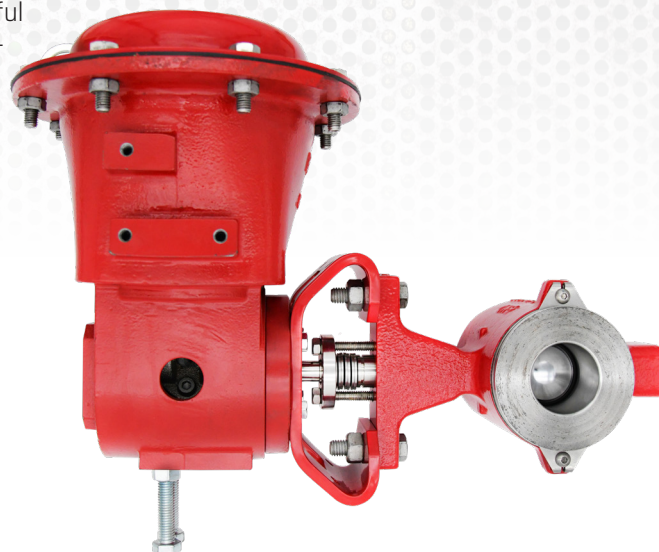
V-BALL ROTARY CONTROL VALVE



The V-Ball valve stands out by merging the robust durability of a globe valve with the efficient, high-speed performance of a rotary design. At its core is a uniquely contoured, segmented V-notch ball. This design creates a powerful shearing action against the seat ring, ensuring exceptionally smooth, non-clogging operation. Its unrestricted, straight-through flow path delivers superior capacity for handling media such as gases, steam, various liquids, and challenging fibrous slurries. To optimize performance for any specific application, the soft seat valve ensures tight shutoff application. Additionally, the square shaft option integrates seamlessly with various power actuators, providing the reliable, high-performance throttling or precise on-off control essential for diverse process industry applications.

FEATURES

- Easy Installation
- Sour Service Capability
- Smooth Valve Operation
- Quick & Easy Maintenance
- Low Temperature Capability
- Robust Design



VALVE SPECIFICATIONS

Sizes:

- 2" - 12"
- 150, 300, 600 RF

Maximum Inlet Pressures:

- See Pressure Table

Shutoff Classification:

- Class VI per ANSI/FCI 70-2

Temperature Capabilities:

- -50 to 450 °F (-46 to 232 °C)

Packing Construction:

- PTFE V-ring
- Live-loaded packing

Flow Characteristic:

- Modified equal percentage

Face-to-Face Dimensions:

- Standard Face-to-Face Dimensions comply with ISA 575.08.02

Standard Flow Direction:

- Forward (into the convex face of the V-notch ball)

Maximum Ball Rotation:

- 90 degrees

Valve/Actuator Action:

- With diaphragm rotary actuator, the valve is field-reversible between PDT0 or PDT0
 - Push-down-to-close (extending actuator rod closes valve) and
 - Push-down-to-open (extending actuator rod opens valve)

VALVE MATERIALS

Valve Body:

- LCC Steel

Ball:

- Chromium-plated CG8M

Seat Ring:

- BMD Engineered Plastic Seat

Bearings:

- PEEK/Carbon-filled PTFE liner

Seal Ring Gasket:

- Laminated graphite

Packing:

- BMD Super Red

Shafts:

- Nitronic 50

Taper Key:

- R50550

Seal Retainer Screws and Washers:

- Stainless Steel

Packing Follower and Box Ring:

- 316

Actuator Mounting Bolts and Nuts:

- Grade 5 Steel

ACTUATOR SPECIFICATIONS

Maximum Diaphragm Casing Pressure:

- 73 psig (5 barg)

Actuator Temperature Capabilities:

- Standard: -50 to 176°F (-45 to 80°C)

Adjustable Travel Stops:

- Standard adjustable up and down stops

capable of 30 degrees of adjustment per stop

Pressure Connection:

- Size 1 and 2: ¼ NPT Standard
- Size 3: ½ NPT Standard

ACTUATOR MATERIALS

Top Casing:

- Steel

Housing:

- Ductile Iron

Diaphragm:

- Nitrile with nylon reinforcement

Cam:

- Steel

Diaphragm Plate:

- Ductile Iron



PRESSURE RATINGS

VALVE BODY PRESSURE RATINGS

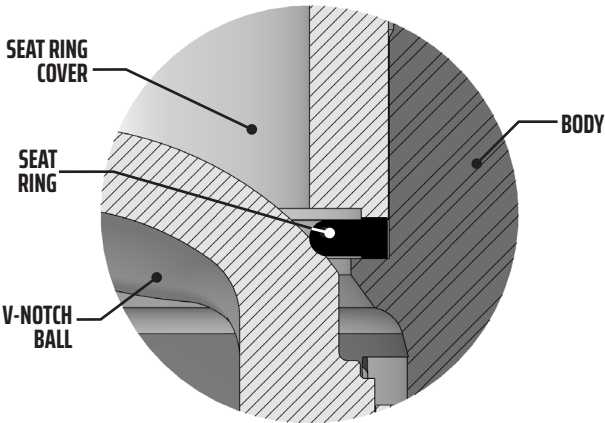
TEMPERATURE RANGE	PRESSURE CLASS		
	150	300	600
°F	PSI		
-50 to 100	290	750	1500
200	260	750	1500
300	230	730	1455
400	200	705	1410
450	185	685	1370
500	170	665	1330
550	155	635	1270
600	140	605	1210
650	125	590	1175
°C	BAR		
-46 to -38	20	51.7	103
93	17.9	51.7	103
149	15.9	50.3	100
204	13.8	48.6	97.2
232	12.8	47.2	94.5
260	11.7	45.9	91.7
316	10.7	43.8	87.6
343	9.65	41.7	83.4

MAXIMUM PRESSURE DROPS

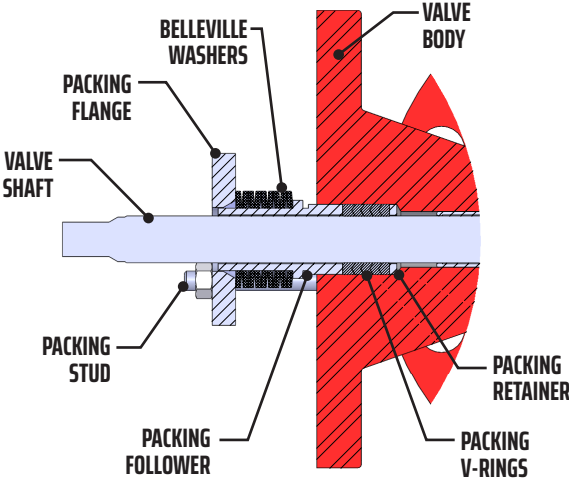
NOTE: DO NOT EXCEED THE PN OR ASME PRESSURE/TEMPERATURE RATING OF THE VALVE OR MATING FLANGES

TEMPERATURE RANGE	SHAFT SIZE						
	5/8	3/4	1	1 1/4	1 1/4	1 1/2	
°F	VALVE SIZE (INCHES)						
	psi						
	2	3	4	6	8	10	12
-50 to 100	750	750		750	750	583	545
200	550	550		550	550	550	545
300	350	350		350	350	350	350
400	150	150		150	150	150	150
450	50	50		50	50	50	50
°C	VALVE SIZE (mm)						
	bar						
	50	80	100	150	200	250	300
-46 to 38	51.7	51.7		51.7	51.7	40.2	37.6
93	37.9	37.9		37.9	37.9	37.9	37.6
149	24.1	24.1		24.1	24.1	24.1	24.1
204	10.3	10.3		10.3	10.3	10.3	10.3
232	3.45	3.45		3.45	3.45	3.45	3.45

V-Ball Construction Features, Seal



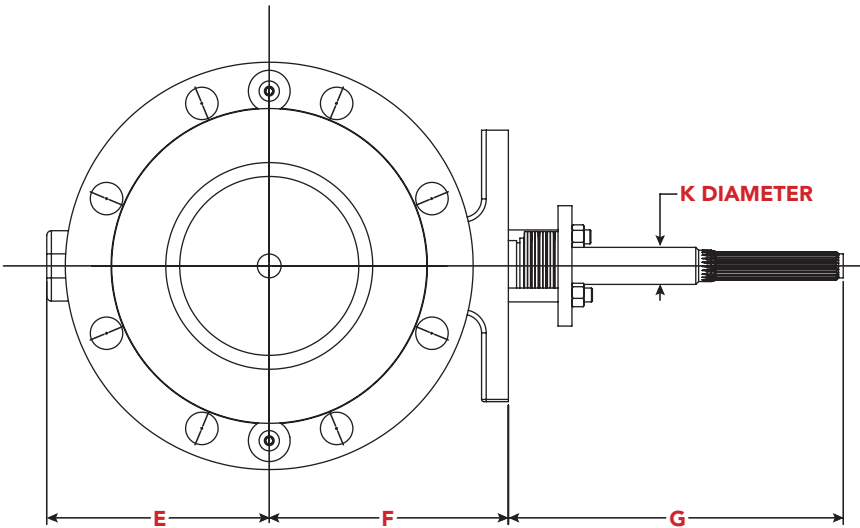
Live Loaded Packing Arrangements



V-BALL DIMENSIONS

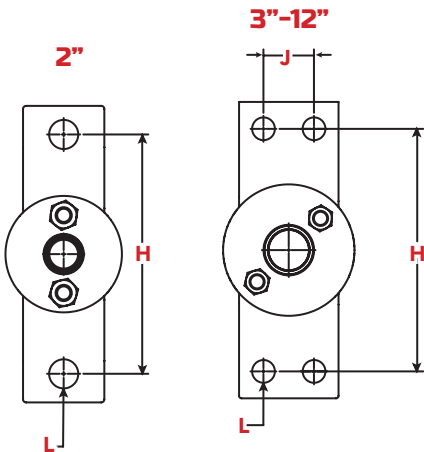
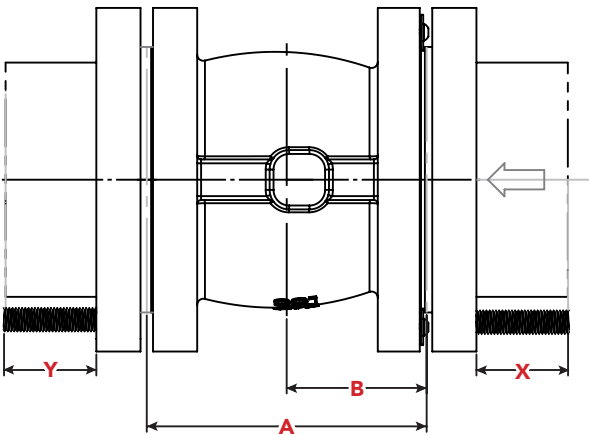
VALVE SIZE	A	B	G	E	F	X'			Y'				K	H	J	L
						CL 150	CL 300	CL 600	CL 150	CL 300	CL 600					
NPS	Inch															
2	4.88	2.63	7.38	4.19	5.00	3.94	4.19	4.75	3.44	3.94	4.75		5/8	4.62	--	0.56
3	6.50	3.10	8.44	4.62	5.12	4.19	5.25	5.50	3.94	4.75	5.50		3/4	6.00	1.25	
4	7.62	3.99		5.25	5.56	4.69	5.50	6.50	3.94	5.00	6.50		3/4			
6	9.00	4.29		5.94	6.44	5.00	6.00	7.75	4.50	5.50	7.75		1			
8	9.56	4.88	8.19	7.69	9.12	5.25	6.50	8.50	5.00	6.00	8.50		1 1/4	9.25	1.81	0.69
10	11.69	5.77		8.75	10.25	5.75	7.31	8.50	5.25	6.81	8.50		1 1/4			
12	13.31	6.87		10.56	11.94	6.00	7.81	8.75	5.25	7.31	8.75		1 1/2			
DN	mm															
50	124	67	188	106	127	100	106	121	87	100	121		15.9	117	--	14.2
80	165	79	214	117	130	106	133	140	100	121	140		19.1	152	31.8	
100	194	101		133	141	119	140	165	100	127	165		19.1			
150	229	109		159	164	127	152	196	114	140	196		25.4			
200	243	124	208	195	232	133	165	216	127	152	216		31.8	235	46.0	17.5
250	297	147		222	260	146	186	216	133	173	216		31.8			
300	338	174		268	303	152	198	222	133	186	222		38.1			

1. Clearance necessary to remove flange bolts



VALVE SIZE		# Of Threaded Holes		Bolt Size
		CLASS		
NPS	DN	300	600	
2	50	4	4	5/8 - 11
3	80	4	4	3/4 - 10
4	100	--	--	--
6	150	--	2	1 - 8
8	200	--	4	1 1/8 - 8
10	250	--	4	1 1/4 - 8

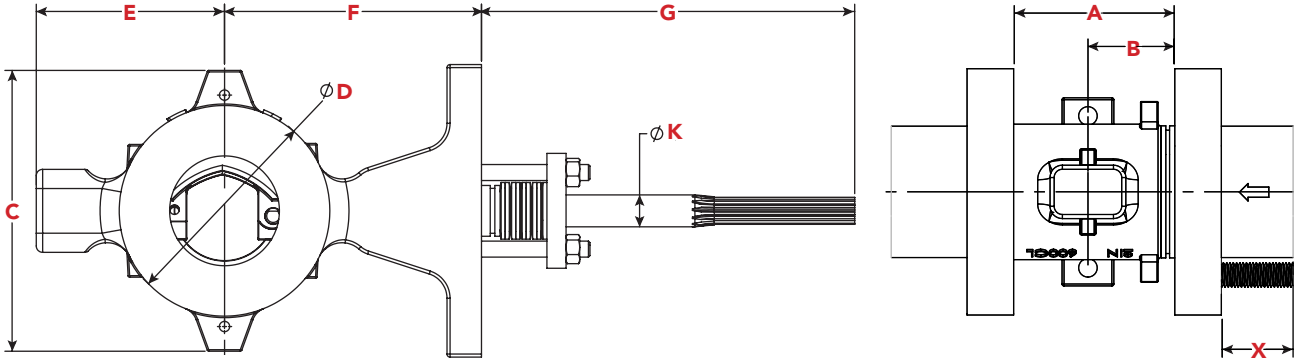
NOTE: DUE TO SPACE CONSTRAINTS SOME FLANGE HOLES ARE THREADED



V-BALL DIMENSIONS (CONT.)

FLANGELESS WAFER STYLE

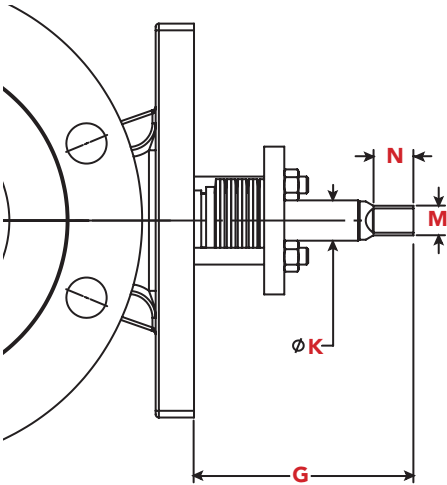
VALVE SIZE	A	B	G	E	F	X			D	C	K	H	L
						CL150	CL300	CL600					
NPS	Inch												
2	4.88	2.63	7.38	4.19	5.00	8.31	9.31	9.31	3.63	5.38	5/8	4.62	0.56
DN	mm												
50	124	67	188	106	127	211	236	236	92	137	15.7	117	14.2



SQUARE SHAFT

VALVE SIZE		M		G		N		K	
NPS	DN	inches	mm	inches	mm	inches	mm	inches	mm
2	50	0.4	11.0	2.99	76.0	.59	15.0	5/8	15.9
3	80	0.6	14.0	4.06	103.0	.75	19.0	3/4	19.1
4	100	0.6	14.0	4.06	103.0	.75	19.0	3/4	19.1
6	150	0.8	19.0	4.25	108.0	0.94	25.0	1	25.4
8	200	0.9	22.0	4.29	109.0	1.18	30.0	1 1/4	31.8
10	250	0.9	22.0	4.29	109.0	1.18	30.0	1 1/4	31.8
12	300	1.1	27.0	4.49	114.0	1.38	35.0	1 1/2	38.1

SQUARE SHAFT DIMENSIONS



WEIGHTS

VALVE SIZE		CL150		CL300		CL600		Flangeless		ACTUATOR SIZE		lbs	kg
NPS	DN	lbs	kg	lbs	kg	lbs	kg	lbs	kg	1			
2	50	21	9.1	23	10	38	17	23	10			49	22.2
3	80	43	13	34	15	61	28	--	--				
4	100	57	26	48	22	81	37	--	--				
6	150	93	42	80	36	133	60	--	--				
8	200	158	72	136	62	226	103	--	--				
10	250	235	107	252	114	440	200	--	--				
12	300	347	157	--	--	645	293	--	--				
										2		120	54.4
										3		250	113

CV VALUES

COEFFICIENTS	VALVE SIZE, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
Cv	2	0.028	2.64	9.60	19.1	31.4	46.1	67.2	93.6	123
Fl		0.94	0.89	0.90	0.85	0.84	0.83	0.78	0.75	0.75
Xt		0.386	0.490	0.585	0.628	0.597	0.559	0.474	0.409	0.366
Cv	3	1.91	12.5	28.4	49.9	78	116	168	229	364
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99
Fl		0.90	0.90	0.89	0.87	0.83	0.78	0.75	0.75	0.65
Xt		0.455	0.619	0.667	0.618	0.555	0.490	0.424	0.388	0.235
Cv	4	5.21	25.4	52.6	90.4	135	189	260	352	523
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99
Fl		0.87	0.88	0.87	0.84	0.82	0.79	0.77	0.74	0.65
Xt		0.546	0.677	0.684	0.603	0.561	0.516	0.446	0.371	0.255
Cv	6	9.45	41.9	88.8	153	230	329	461	646	1080
Fd		0.51	0.62	0.73	0.81	0.86	0.91	0.95	0.97	0.99
Fl		0.88	0.93	0.90	0.88	0.85	0.81	0.77	0.72	0.55
Xt		0.633	0.737	0.761	0.665	0.599	0.521	0.436	0.346	0.194
Cv	8	6.27	44	111	200	319	466	649	924	1750
Fd		0.51	0.62	0.73	0.81	0.86	0.91	0.95	0.97	0.99
Fl		0.93	0.94	0.93	0.90	0.86	0.83	0.79	0.74	0.51
Xt		0.703	0.795	0.745	0.678	0.615	0.555	0.481	0.378	0.156
Cv	10	21.8	110	251	433	659	947	1300	1780	2710
Fd		0.51	0.64	0.75	0.82	0.87	0.91	0.95	0.98	0.99
Fl		0.95	0.95	0.92	0.87	0.84	0.80	0.77	0.72	0.61
Xt		0.733	0.759	0.697	0.661	0.594	0.499	0.433	0.367	0.233
Cv	12	34	163	359	619	936	1340	1860	2580	4100
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99
Fl		0.94	0.98	0.94	0.91	0.88	0.83	0.80	0.75	0.60
Xt		0.766	0.819	0.795	0.723	0.653	0.559	0.471	0.389	0.233

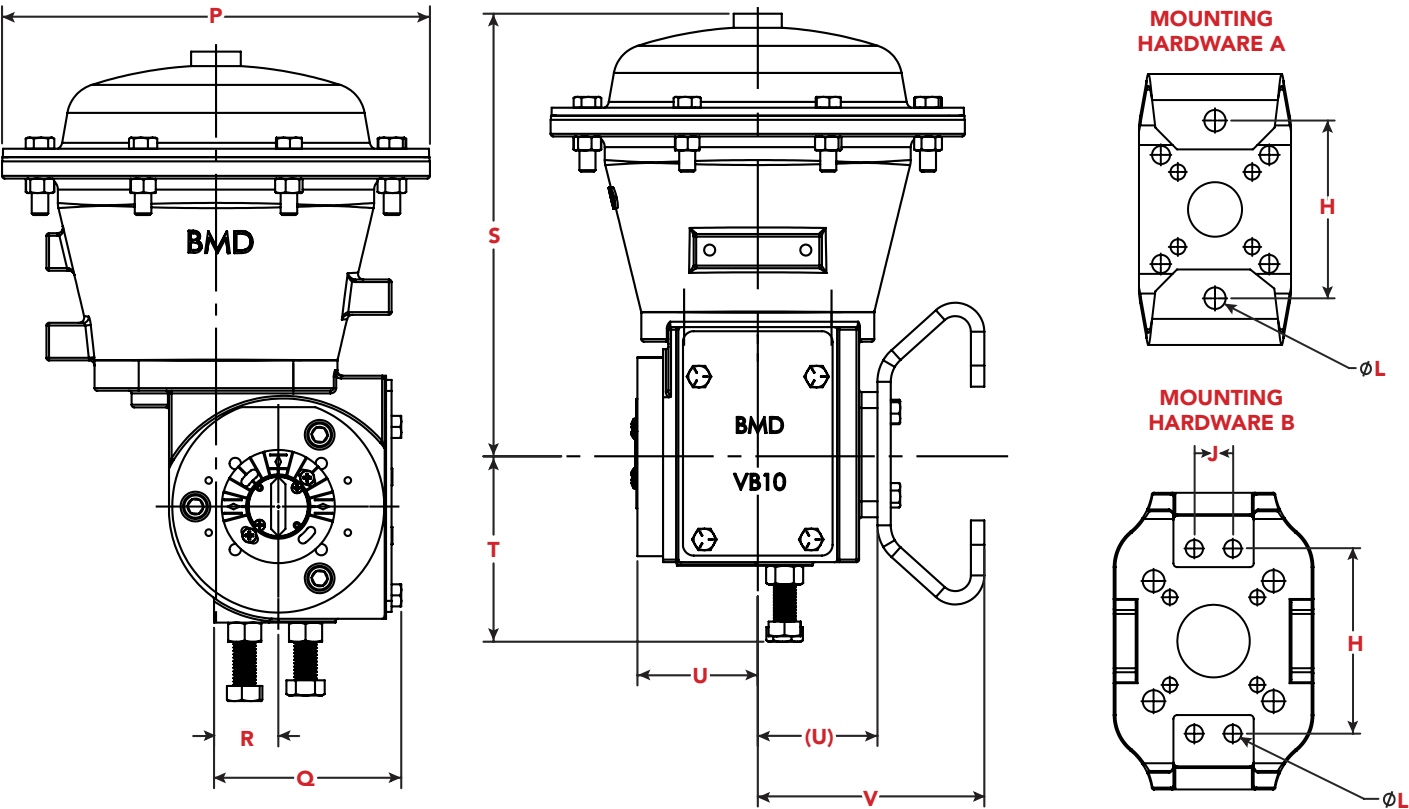
ACTUATOR & SHAFT SIZE

VALVE SIZE	SHAFT SIZE		ACTUATOR SIZE		
	Inches	mm	1	2	3
2	5⁄8	15.9	X	X	--
3	¾	19.1	X	X	X
4					
6	1	25.4	--	X	X
8	1¼	31.8	--	X	X
10					
12	1½	38.1	--	--	X

TORQUE VERSUS ACTUATOR SIZE

ACTUATOR SIZE AND ACTION	OPERATING PRESSURE							
	29 psig (2 barg)		44 psig (3 barg)		58 psig (4 barg)		68 psig (4.7 barg)	
	TORQUE							
	lbf·in	N·m	lbf·in	N·m	lbf·in	N·m	lbf·in	N·m
1 (PDT0)	226	25.5	226	25.5	453	51.2	453	51.2
1 (PDTC)	226	25.5	320	36.2	453	51.2	641	72.4
2 (PDT0)	930	105	930	105	1860	210	1860	210
2 (PDTC)	930	105	1550	175	1860	210	2840	320
3 (PDT0)	2890	327	2890	327	5580	631	5580	631
3 (PDTC)	2480	280	4930	557	5170	584	8230	930

ACTUATOR DIMENSIONS



ACTUATOR SIZE	P		S		R		T		Q		U	
	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
1	9.65	245	10.51	267	1.14	29	4.06	103	4.21	107	2.80	71
2	13.78	350	16.69	424	1.93	49	7.36	187	6.69	170	3.33	84.5
3	19.53	496	23.31	592	2.52	64	10.0	254	7.28	185	3.62	92

ACTUATOR/VALVE BODY MOUNTING DIMENSIONS

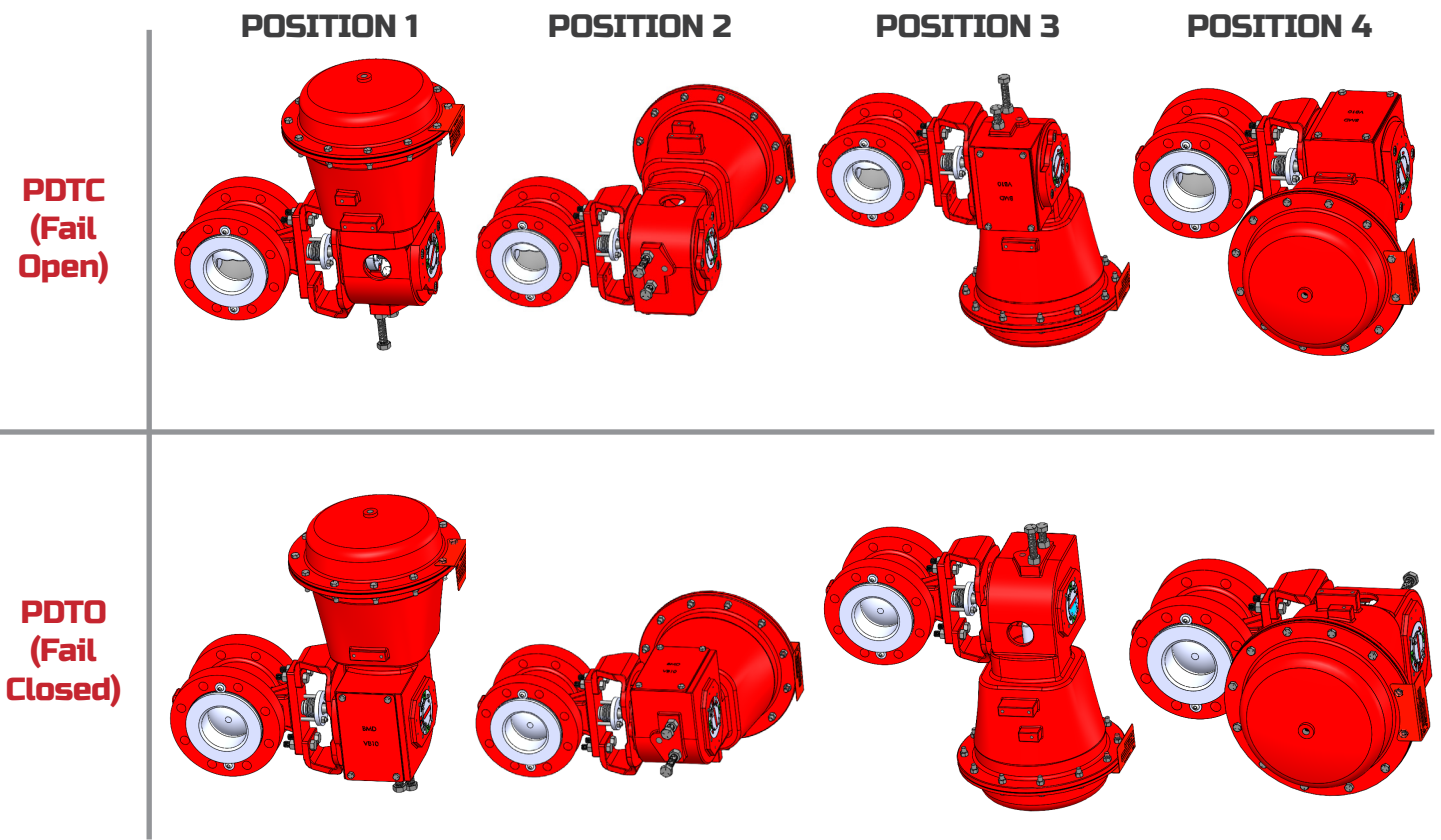
VALVE SHAFT DIAMETER		MOUNTING HARDWARE REFERENCE	H		J		L	
Inches	mm		Inches	mm	Inches	mm	Inches	mm
5/8	12.7 - 15.9	A	4.62	117	--	--	0.56	14.2
3/4 - 1	19.1 - 25.4	B	6.00	152	1.25	32	0.56	14.2
1 1/4 - 1 1/2	31.8 - 38.1	B	9.25	235	1.81	46	0.69	17.5

ACTUATOR/VALVE BODY MOUNTING DIMENSIONS

VALVE SHAFT DIAMETER		V					
		Size 1		Size 2		Size 3	
Inches	mm	Inches	mm	Inches	mm	Inches	mm
5/8	15.9	5.3	135	5.8	148.5	--	--
3/4	19.1	6.2	158	6.8	171.5	7.0	179
1	25.4	--	--	6.8	171.5	7.0	179
1 1/4	31.8	--	--	6.7	169.5	7.0	177
1 1/2	38.1	--	--	--	--	7.0	177

ACTUATOR MOUNTING STYLES

Standard actuator mounting is on the right-hand side, as viewed from the valve inlet. The standard ball design and actuator action is counter-clockwise to close so the ball will rotate to the top of the valve body when open for a horizontal pipe run with the valve shaft positioned horizontal.



HOW TO ORDER

EXAMPLE MODEL NO. **VB10-04F10L-1T1-12A1**

VB10 Series Valve, 4" Flanged Body, LCC Material Body, Standard Splined Shaft, Soft Seat, BMD Super Red Packing With 29 Psi Spring, Push Down To Open Actuator Mounted In Position 1

VB10 - 04 F 10 L - 1 T 1 - 1 2 A 1
SERIES

BODY SIZE

02 - 2" **04** - 4" **08** - 8" **12** - 12"
03 - 3" **06** - 6" **10** - 10"

CONNECTION

W - Wafer (2 inch only) **F** - RFF

CLASS

00 - Wafer **10** - 150 **30** - 300 **60** - 600

MATERIAL

L - LCC

SHAFT CONNECTION

1 - Splined (Std.) **2** - Square

SEAT TYPE

T - Soft Seat

PACKING

1 - Standard

CONTINUE FOR ACTUATOR

ACTUATOR SIZE

1 - Size 1 **2** - Size 2 **3** - Size 3

SPRING

2 - 29 PSI **5** - 58 PSI

ACTUATOR POSITION

A - PDTO (Fail Closed) **B** - PDTC (Fail Open)

ACTUATOR POSITION

1 - 1 **2** - 2 **3** - 3 **4** - 4

BEAUMONTMANUFACTURING.COM

PHONE: 409.225.5863

850 FANNIN STREET, BEAUMONT, TEXAS 77701

Beaumont Manufacturing
bmd
and Distribution Company