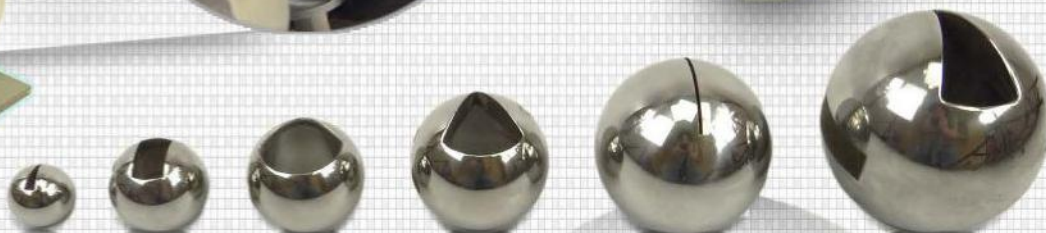




# V-Ball Control Valves

## Modulating Control Ball Valves



### **DESIGN FEATURES**

- Higher Flow Capacities
- Excellent Repeatability
- Bubble-Tight Shut-Off
- Precise Flow Control
- Non-Clogging Flow-Streams for General And Slurry Applications
- Compact Control Package
- High pressure drop capability available with special order.

V-Ball Control Valves  
STANDARD PRODUCT NUMBER  
V3-15° Vball  
V4-30° Vball  
V5-60° Vball  
V6-90° Vball

- Self-Compensating Live-Loaded Stem Packing
- Maintenance Is As Easy As Changing A Standard Seat
- High Temperature seats available
- Pneumatically Or Electrically Controlled, 3-15 PSI or 4-20 MA
- Matched Ball and Stem Connection
- Economical Low Operating Cost

[www.flotite.com](http://www.flotite.com)



**Flo-Tite's Ball Control Valves Features a solid stainless steel ball, not a seat insert like many others.**

Ball Valves have an inherent equal percentage characteristic flow curve which is very desirable for a majority of control applications. The standard and full round port valves as well as V-Ports exhibit equal percentage characteristics.

**Kompact Series**

Full Port - Size - 3/4" – 6"  
Full Flanged Wafer, Compact Design, Low Torque Operation, Cavity Filled option, Steam Jacket option.  
Compact Control Package  
Characterized Linear V & Slotted Ball  
Tech Bulletin page 111



**CP - Series**

Trunnion Design  
Spring Loaded Single Seat  
Lowest Torque Design  
V Port Segmented Ball  
Accurate Control over 90° Rotation with Fast Accurate Response to Signal Change  
Tech Bulletin page 120



**Full-Flo Series**

ISO Type Mounting Pad  
Anti-Static Device  
ANSI Class 150, 300, 600  
Metal Seats Class V & VI  
Size 1/2 Thru 12"  
V-Ball Control Valves  
Fire Safe-API 607 & NACE  
Tech Bulletin page 58



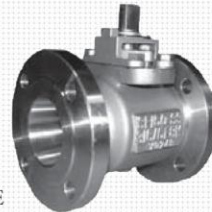
**Multi Choice**

3 Piece Series  
1/4" thru 4" 1500 PSI  
All Types of Ends  
Weld-in Place SW & BW  
Flanged End Class 150, 300  
Metal Seats Class V & VI  
Tech Bulletin page 45



**Uni-Flo Series**

ISO Type Mounting Pad  
One Piece Body  
Anti-Static Device  
ANSI Class, 150, 300, 600  
Metal Seats Class V & VI  
Size 3/4" Thru 12"  
Fire Safe-API 607 & NACE  
Tech Bulletin page 58



**Tri-Pro Series**

High pressure 3 Piece Series  
Full & Reduced Bore  
1/4" thru 4" 2250 PSI  
Fire safe to API 607-4  
ANSI B16.34  
Protected Seat design  
Captive Seats & Seals  
Weld-in Place SW & BW options  
Flanged End Class 600 & 900  
Metal Seats Class V & VI  
Tech Bulletin page 51



**Segment Ball Control Valve**

This series is a concentric segment ball valve for modulating service. V-notch cut at disc improves rangeability and creates shearing effect by disc and seal ring. Therefore, suitable for large flow variations and/or control of fluids with fiber and/or slurry.



**EZ Series**

Reduced Bore Ball Valves are Ideal for Control Applications.  
ISO Type Mounting Pad  
2 Piece Body  
Anti-Static Grounding Device  
ANSI Class 150, 300, 600  
Metal Seats Meeting Class VI  
Size Range 4" Thru 12"  
V-Ball Control Valves  
Fire Safe-API 607 And NACE  
Tech Bulletin page 70



**Titan Series**

High Pressure 3 Piece Series  
1/4" thru 2" 5000 WOG  
V Ball Control Valve  
Fire Safe, ANSI B16.34  
NPT, SW, BW and  
ANSI Class 900 &  
ANSI Class 1500  
RF or RTJ Flanged End  
Metal Seats Class V & VI  
Tech Bulletin page 53



Flo-Tites V-Type control valves are designed to offer maximum Cv 's which are substantially larger than other throttling globe type control valves. In many cases, the use of short pattern valves result in cost savings for the valves, the actuator and in maintenance.

**VAC D400 Digital Positioners**

The D400 Digital "Smart Positioner" is a microprocessor based, "intelligent" instrument that can be mounted to rotary pneumatic actuators for accurate positioning and control. This unit, while sophisticated in its design, accuracy and performance, is simple to install and calibrate. Available with HART, FOUNDATION Fieldbus, or Profibus communication, the D400 range of applications and communication capabilities meets the latest industry standards.

- Microprocessor based "Smart" positioner
- User friendly. Menu driven programming
- LCD on board display (multilingual)
- Push button configuration-no handheld device necessary
- Low air consumption
- Proven, dependable design
- Modular design-Feedback, switches and other options available.
- Aluminum Housing- Nema 4X IP 65 Enclosure is standard
- Unique adaptive control feature is built-in as standard
- Explosion Proof, ATEX,FM,CSA.IEC approvals are available.
- Finish is electrostatically dipped with stove oven hardened epoxy resin
- Available for both rotary and linear valves



**Max-Seal Complete Series of Butterfly Type Control Valves**





Full Port VF150/VF300 V200/V300 VHPF40/VHPF50											
Valve Size	V Port Angle	Percent and Angle of Ball Rotation									
		10% 9°	20% 18°	30% 27°	40% 36°	50% 45°	60% 54°	70% 63°	80% 72°	90% 81°	100% 90°
1/2"	15°	0.04	0.18	0.44	0.69	0.99	1.64	2.12	2.85	3.64	4.30
	30°	0.04	0.23	0.47	0.77	1.19	1.83	2.47	3.43	4.65	5.58
	60°	0.05	0.28	0.73	1.11	1.83	2.92	4.29	7.00	9.43	12.78
	90°	0.06	0.47	0.85	1.28	2.05	3.24	4.74	8.26	11.61	14.72
3/4"	15°	0.05	0.24	0.56	0.90	1.34	2.15	2.75	3.76	4.75	5.56
	30°	0.07	0.30	0.61	0.99	1.57	2.42	3.25	4.52	6.12	7.34
	60°	0.08	0.35	0.93	1.46	2.42	3.85	5.64	9.21	12.41	16.28
	90°	0.09	0.59	1.11	1.69	2.69	4.27	6.24	10.85	15.28	19.39
1"	15°	0.06	0.32	0.95	1.50	2.35	3.80	4.70	6.50	8.50	9.85
	30°	0.08	0.45	1.25	2.06	3.54	5.30	7.70	10.49	12.84	15.48
	60°	0.09	0.68	1.74	2.78	5.13	8.00	11.88	18.71	23.22	32.84
	90°	0.12	0.93	2.78	5.09	7.74	12.20	17.33	24.48	26.79	43.89
1-1/4"	15°	0.03	0.27	0.83	1.65	2.79	4.09	5.88	7.99	10.84	12.85
	30°	0.06	0.48	1.37	2.47	4.12	6.08	8.82	11.76	14.87	17.39
	60°	0.07	0.67	2.04	3.41	6.47	10.80	15.39	22.35	33.37	44.20
	90°	0.09	0.78	2.92	5.41	10.23	17.28	19.48	34.93	51.76	66.00
1-1/2"	15°	0.06	0.38	1.17	2.28	3.85	5.59	8.10	10.99	14.86	17.85
	30°	0.08	0.65	1.88	3.39	5.66	8.36	12.12	16.17	20.44	23.90
	60°	0.09	0.92	2.81	4.69	8.89	14.85	21.16	30.73	45.88	59.74
	90°	0.11	1.07	4.01	7.44	14.06	23.76	26.78	48.03	71.17	90.50
2"	15°	0.06	0.69	2.26	4.45	7.30	10.68	15.40	21.39	28.75	35.05
	30°	0.09	1.18	3.79	7.53	12.26	17.83	26.44	36.45	48.09	55.92
	60°	0.11	1.51	5.80	10.39	20.60	33.98	48.75	69.04	104.23	136.50
	90°	0.17	1.89	7.28	13.58	25.38	42.30	55.56	87.04	129.75	167.34
2-1/2"	15°	0.08	0.77	2.44	5.25	8.08	11.75	16.44	22.36	27.24	32.10
	30°	0.10	1.15	4.42	7.91	13.39	20.05	30.43	41.92	69.75	77.20
	60°	0.14	1.46	5.91	11.90	23.24	37.92	59.31	83.29	113.65	162.50
	90°	0.18	1.83	7.29	16.45	31.16	53.53	77.89	118.29	177.32	240.10
3"	15°	0.08	0.92	2.98	6.65	9.60	13.50	19.62	26.69	31.80	38.40
	30°	0.13	1.20	4.15	9.49	15.96	26.78	38.91	53.31	69.77	85.91
	60°	0.16	2.89	6.70	15.82	29.36	46.32	73.60	106.74	149.88	193.20
	90°	0.21	4.12	8.65	21.09	41.09	69.27	105.91	161.04	237.23	359.21
4"	15°	0.12	1.40	3.76	8.88	16.79	27.92	41.85	59.27	75.55	97.05
	30°	0.18	1.75	7.84	18.59	35.21	58.60	87.89	124.41	158.53	197.10
	60°	0.27	2.20	12.44	33.67	62.98	106.26	160.49	233.96	329.50	437.29
	90°	0.36	4.37	19.68	50.29	91.83	157.43	240.51	365.15	546.62	830.86
6"	15°	0.21	2.50	6.66	15.79	29.88	49.74	74.56	105.55	134.48	172.05
	30°	0.30	3.12	13.97	33.15	62.70	104.37	156.53	221.56	282.33	349.70
	60°	0.47	5.41	22.15	59.97	112.16	189.24	285.82	416.68	586.83	800.80
	90°	0.68	7.79	35.05	89.56	163.56	280.37	428.34	650.32	973.50	1480.08
8"	15°	0.34	4.25	11.33	26.86	50.80	84.60	126.88	195.08	345.80	497.52
	30°	0.50	5.32	23.77	56.35	106.70	177.62	266.39	377.06	480.47	595.20
	60°	0.80	6.66	23.81	102.06	190.87	322.06	486.41	709.11	998.69	1325.40
	90°	1.08	13.26	59.64	152.42	278.33	477.14	728.96	1106.69	1656.77	2518.20
FL		0.96	0.95	0.94	0.93	0.92	0.90	0.89	0.86	0.82	0.75
Xt		0.98	0.77	0.71	0.67	0.64	0.63	0.62	0.55	0.43	0.40

Sizing Recommendations

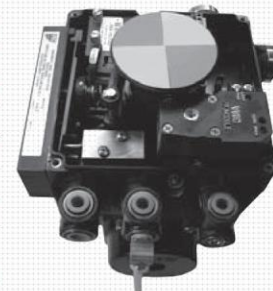
Control Valves work best in the rotary range of about 65°-75°. After computing the required Cv choose the valve that has a rated Cv (Full open) at least 20% larger than your calculated Cv.

Select the smallest valve possible for the application. Oversizing reduces the useful range in which the valve positioner will operate. Use the largest actuator feasible for the valve size chosen. This increases the positioning accuracy of the valve positioner.

Valve Flow Coefficient (Cv)

Number of U.S. gallons per minute of 60°F water that will flow through a valve with a one psi pressure drop. Ball Valves have an inherent equal percentage characteristic flow curve which is very desirable for a majority of control applications. The standard and full round port valves as well as V-Ports exhibit equal percentage characteristics.

Pneumatic & Electro-Pneumatic Positioners



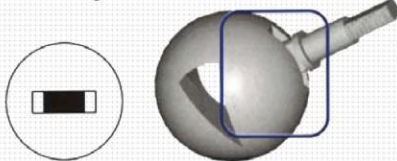
The V Series Positioner is designed for simple and precise positioning of single & double acting pneumatic rotary actuators. The V Series offers reliable economical operation performance with a 30 year proven track record. Available in 4-20 MA or 3-15 PSI

- Modular/totally field upgradeable
- Corrosion & Vibration resistant

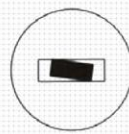
General Purpose Hazardous Location

MATCHED BALL AND STEM CONNECTION

Flo-Tite's Design



Competitors' Design



Matched Fit Provides More Precise Control

ENCAPSULATED COUPLERS

Precision machined to tight tolerances, completely encapsulates the valve stem to reduce any possible hysteresis while locking the actuator gear in place.





Valve Size	V Port Angle	Percent and Angle of Ball Rotation										
		10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
		9°	18°	27°	36°	45°	54°	63°	72°	81°	90°	
3"	15°	0.05	0.56	1.90	4.20	6.00	8.60	12.28	16.74	19.96	24.58	
	30°	0.06	0.75	2.60	5.95	10.00	16.13	23.51	36.63	55.22	81.58	
	60°	0.08	0.95	4.20	9.91	18.40	29.02	46.12	66.88	93.91	121.08	
	90°	0.09	1.20	5.45	13.21	25.75	43.41	66.23	100.91	148.65	225.00	
4"	15°	0.06	0.23	1.58	2.50	4.56	8.25	11.96	18.68	27.95	41.58	
	30°	0.08	0.44	1.89	4.62	9.18	16.13	23.51	36.63	55.22	81.76	
	60°	0.11	1.03	4.59	11.34	24.68	37.37	54.47	84.86	127.91	189.91	
	90°	0.15	1.85	8.27	20.41	37.05	66.98	98.04	150.50	230.34	340.87	
6"	15°	0.07	0.34	2.27	3.58	6.52	11.80	17.18	26.75	40.12	59.58	
	30°	0.10	0.64	2.71	6.62	13.17	23.14	33.74	52.56	79.23	117.28	
	60°	0.16	1.47	6.59	16.27	34.41	53.61	78.15	121.75	183.52	272.50	
	90°	0.24	2.66	11.86	29.28	53.16	96.09	140.67	215.93	330.48	489.00	
8"	15°	0.16	0.76	5.26	8.35	15.25	27.40	39.88	62.04	93.40	138.35	
	30°	0.24	1.48	6.29	15.39	30.59	53.77	78.38	122.11	184.07	272.47	
	60°	0.35	3.45	15.30	37.79	82.27	124.55	181.38	282.85	426.36	633.00	
	90°	0.47	6.18	27.55	68.02	123.50	223.25	326.80	501.66	767.79	1136.20	
10"	15°	0.35	1.45	10.25	16.24	29.30	53.50	77.66	120.90	182.30	269.40	
	30°	0.44	2.89	12.88	31.75	57.72	104.71	152.63	237.80	358.46	530.63	
	60°	0.67	6.66	29.79	73.59	160.21	242.53	353.57	550.82	830.28	1232.90	
	90°	0.89	12.03	53.65	240.50	434.75	636.40	976.91	976.91	1495.20	2212.78	
12"	15°	0.60	2.80	19.75	31.20	56.60	102.80	149.40	232.60	350.50	520.20	
	30°	0.80	5.56	24.79	61.12	111.11	201.57	293.81	457.77	690.04	1021.90	
	60°	1.30	12.82	57.35	141.66	308.40	466.87	680.62	1060.33	1598.29	2373.30	
	90°	1.73	24.10	104.30	465.10	838.10	1230.05	1565.10	1900.10	2880.10	4300.50	
FL		0.96	0.95	0.94	0.93	0.92	0.90	0.89	0.86	0.82	0.75	
Xt		0.98	0.77	0.71	0.67	0.64	0.63	0.62	0.55	0.43	0.40	

Flo-Tite's V-Seat control valves are ideal for any application where critical high performance characterized flow is required.

**Important Information Required to size control valves:**

1. Type of media, ie liquid, gas or steam
2. What type of calculation
  - a, CV required given the rate through the valve
  - b, flow rate given the CV
3. Flow rate, GPM, PPH, SCFM
4. Inlet pressure of media to valve (PSIG)
5. Outlet pressure of media from valve (PSIG)
6. Inlet temperature of media at valve
7. Specific gravity of media at valve
8. Media vapor pressure (PSIG)
9. Media critical pressure
10. Pipe size to valve
11. Pipe size from valve

**Flow Characteristics**

Appropriate flow characteristics for control elements will be determined by application:

Linear - slotted seats from 0.0156", 0.0313", 0.0625" and 0.1250" or any combination conforming to customer's requirement.

Equal % - Triangular shape of 15°, 30°, 60°, 90°, and 120° are available with special combinations for custom flows.



**ACTUATORS & CONTROLS**

**Air-Con Series Pneumatic Actuators**

Designed for quarter-turn valves incorporating the latest technology in actuator design.

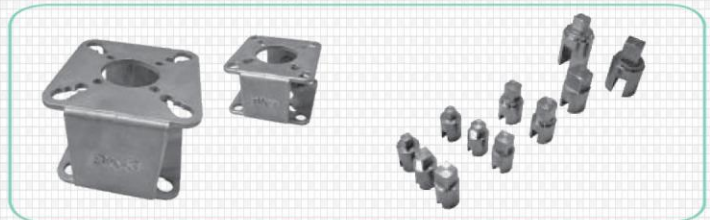
- Hard anodized aluminum body
- Namur interface & ISO5211 Mounting
- 5° - travel stops (Both open & closed)
- Torque range up to 1,565,200 in-lbs



Flo-Tite, Inc. offers a complete package of pneumatic, electric & hydraulic actuators. All types of controls & accessories for a vast number of special automated applications

**Easy-Link ISO Mounting Hardware**

wide range fits most all valves



**Control Accessory Options**



Limit Switch Series ALS



Limit Switch Moniteur Series



Solenoid Valves Speed Controls



Positioners Electric Fail Safe



P. O. Box 1293  
Lumberton, NC 28359  
Website: www.flotite.com

Tel: (910) 738-8904  
Fax: (910) 738-9112

E-mail: flotite@flotite.com