

# CONTROL VALVES

## BALL VALVE- V-BALL V-BALL SERIES



VSI  
VALVE SOLUTIONS INC.



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CONTROL VALVES



VSI V-Ball Series

### DESCRIPTION

The **VSI V-Ball Series** is a unique, industrial-grade valve with temperature, pressure, leakage, and close-off ratings that far exceed those of standard commercial grade valves. The **V-Ball Series** assures positive low-leakage control in higher pressure systems such as those with variable speed pumps. With a standard carbon steel body and a Standard ANSI 150/300 pressure-temperature rating, the **V-Ball Series** can handle up to 250 psi differential (closeoff) in hot or chilled water systems and up to 125 psi saturated steam. These valves excel in high-rise building applications and any high-temperature/high-pressure/high-range-ability application.

### FEATURES

- Up to 250 psi close off
- Good for chilled or hot water, 50% Glycol, and steam
- ANSI 150/300
- Stainless steel body available
- Equal percent flow characteristics
- Factory mounted actuators
- Electric or Pneumatic operation
- Spring Return (SR) or Non-Spring Return (NSR)
- Electronic or Pneumatic Actuators (factory mounted)

### SPECIFICATIONS

<b>Body Pattern</b>	2-way only	<b>Materials (Standard):</b>	
<b>Sizes</b>		<b>Body</b>	Carbon steel
<b>Threaded/Wafered</b>	1" to 2"	<b>Ball</b>	304 stainless steel
<b>Flanged</b>	3" to 6"	<b>Stem</b>	304 stainless steel
<b>Rangeability</b>	300:1 turndown ratio	<b>Seat</b>	PTFE
<b>Flow Characteristic</b>	Equal percentage	<b>Packing</b>	Teflon®
<b>Body Rating</b>		<b>Bushing</b>	Stanyl PA46
<b>1" to 2"</b>	ANSI 150/300 multi-rated	<b>Pressure Rating</b>	250 psi
<b>3" to 6"</b>	ANSI 150 or ANSI 300	<b>Temperature Range</b>	-50° to 400°F (-45°C to 204°C)
<b>Leakage Rating</b>	ANSI Class VI	<b>Approvals</b>	CSA US File 226201
<b>Media Compatibility</b>	125 psi steam, 50% glycol	<b>Warranty</b>	1 year
<b>Maximum Closeoff</b>	250 psi		
<b>Maximum Pressure</b>	300 psi		
<b>Pressure Drop</b>	100 psi		
<b>Dimensions</b>	ASME B16.10 face to ace		



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### CV VALUES

#### Flow Coefficients (Cv) for V-Series Ball Valves 1" - 6"

Flow Coefficient	Valve Size, Inches	Valve Rotation in Degrees										Torque Required @ 250 psi Close Off in-lb
		10	20	30	40	50	60	70	75	80	90	
Cv	V-01 (1")	0.04	0.5	3	5	8	12	17	24	29	31	40
	V-15 (1.5")	0.07	3	7	12	21	29	40	55	68	73	80
	V-02 (2")	0.09	4	10	21	34	43	65	77	85	96	130
	V-03 (3")	1	12	29	49	68	117	157	207	215	270	200
	V-04 (4")	4	22	46	86	130	195	279	350	421	529	400
	V-06 (6")	5	33	79	148	230	330	440	507	575	850	650

### ELECTRIC ACTUATOR SPECIFICATIONS (SIZED FOR 250 PSI CLOSE-OFF)

VALVE SIZE	CLOSE OFF PSI	ELECTRIC ACTUATOR	ELECTRIC POWER	CONTROL SIGNAL	TORQUE (IN/LB)	FAIL SAFE	RUN TIME (SECONDS)	DIMENSIONS (HxWxL)
1"	250	KA-44	24 VAC (6VA)	2-POS, FLOAT, 2-10 VDC	44	YES	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
1.5"	250	KA-88	24 VAC (6VA)	2-POS, FLOAT, 2-10 VDC	88	YES	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
2"	250	KAS-175	24 VAC (16VA)	2-POS, FLOAT, 2-10 VDC	175	YES	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
3"	250	KA-301	24 VAC (9VA)	2-POS, FLOAT, 2-10 VDC	301	NO	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
3"	250	EFB24	24 VAC (6VA)	2-POS, FLOAT, 2-10 VDC	270	YES	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
4"	250	EFB24 (X2)	24 VAC (6VA)	2-POS, FLOAT, 2-10 VDC	540	YES	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
4"-6"	250	GMB24 (X2)	24 VAC (6VA)	2-POS, FLOAT, 2-10 VDC	360	NO	95	8" x 7" x 9.25" (20.3 x 17.8 x 23.5 cm)
6"	250	GKX24MFT(X2)	24 VAC (42VA)	2-POS, FLOAT, 2-10 VDC	720	YES	95	13" x 7" x 9.25" (33 x 17.8 x 23.5 cm)
1" - 3"	250	1005-X	24 VAC (40VA) or 120 VAC (40VA)	2-POS, FLOAT, 2-10 VDC, 4-20mA	443	NO	20	6.3" x 5.4" x 6.3" (16 x 13.7 x 16 cm)
4"-6"	250	1010-X	24 VAC (46VA) or 120 VAC (97VA)	2-POS, FLOAT, 2-10 VDC, 4-20mA	885	NO	30	7.2" x 5.8" x 7.7" (18.2 x 14.7 x 19.6 cm)

- Series 1000-X modulating units are equipped with control modules that accept 2-10V or 4-20mA control signal and feedback signal of 4-20mA.
- The KA and KAS actuators are Kele brand direct coupled actuators and are rated NEMA 2 - indoor use. They can be used on the smaller sized 2-4" valves. The same applies to the G Series Belimo brand.
- The Series 1000-X actuators are standard equipped with a heater and are NEMA 4 rated for outdoor usage.

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KA / KAS ACTUATOR WIRING		
<p><b>KA-175-2T - KA-301-2T Two-position Control</b></p>	<p><b>KA-301-P Proportional Control 24 VAC Power 0/2-10 VDC or 0/4-20 mA Signal</b></p>	<p><b>KA-175-P - KA-301-P Proportional Control 24 VDC Power 0/2-10 VDC or 0/4-20 mA Signal</b></p>
<p><b>KA-175-2T - KA-301-2T Floating Control</b></p>	<p><b>KAS-175-M Floating Control</b></p>	<p><b>KAS-175-M Proportional Control</b></p> <p>* 500Ω, 1/2"W or greater resistor required when control signal is 4-20 mA</p>
<p><b>KAS-175-2 Two-position Control</b></p>	<p><b>KAS-175-M Floating Control</b></p>	<p><b>KAS-175-M Proportional Control</b></p> <p>* 500Ω, 1/2"W or greater resistor required when control signal is 4-20 mA</p>

1000 SERIES WIRING	
<p><b>PROPORTIONAL/MODULATING</b></p> <p><b>ACTUATOR</b></p> <ul style="list-style-type: none"> <li>Grey (3) - Full-close End Switch</li> <li>Brown (2) - Full-open End Switch</li> <li>White (1) - Com for End Switch</li> </ul> <p><b>SERVO-CONTROLLER</b></p> <ul style="list-style-type: none"> <li>Pink (7) - Output Signal F.B. (4-20mA sourcing)</li> <li>Purple (6) - Output Signal F.B. (4-20mA sourcing)</li> <li>Orange (5) - Input Signal (4-20mA or 2-10 VDC)</li> <li>Black (4) - Input Signal (4-20mA or 2-10 VDC)</li> <li>Red (3) - Input Signal (4-20mA or 2-10 VDC)</li> <li>Blue (2) - Power Supply</li> <li>Blue (1) - Power Supply</li> </ul> <p>Other components: Thermal Protector, Push Button, PE, HEATER.</p>	<p><b>TWO-POSITION/FLOATING</b></p> <p><b>ACTUATOR</b></p> <ul style="list-style-type: none"> <li>Y&amp;G (7) - Full-close End Switch</li> <li>Grey (6) - Full-close End Switch</li> <li>Brown (5) - Full-open End Switch</li> <li>White (4) - COM for End Switch</li> </ul> <p><b>SERVO-CONTROLLER</b></p> <ul style="list-style-type: none"> <li>Black (3) - Floating/2-position controller</li> <li>Red (2) - Floating/2-position controller</li> <li>Blue (1) - Floating/2-position controller</li> </ul> <p>Other components: Thermal Protector, Push Button*, PE.</p> <p>* Not available on 1005-X</p>



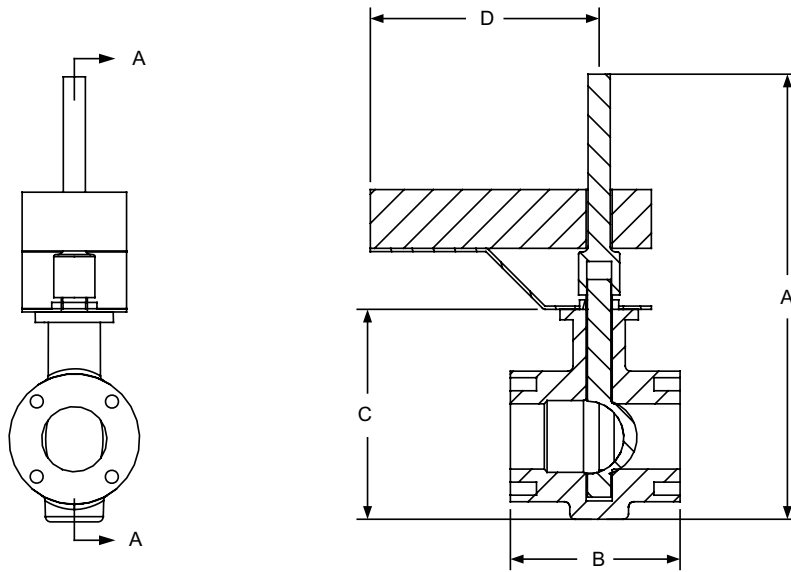
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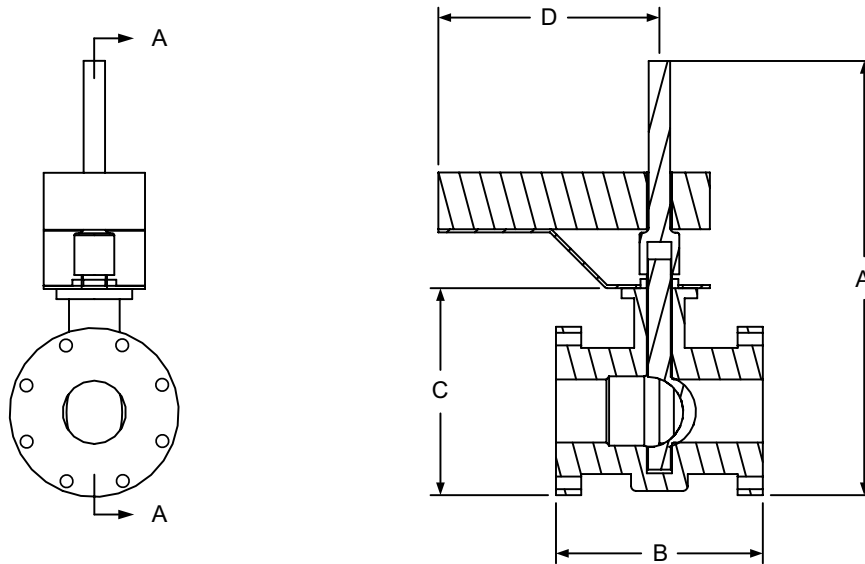
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### DIMENSIONS



VALVE SIZE	SERIES V 2-WAY THREADED/WAFERED			
	A	B	C	D
1"	15	5	7	10
1.5"	17	6.5	8	10
2"	19	7	9	10



VALVE SIZE	SERIES V 2-WAY FLANGED			
	A	B	C	D
3"	22.5	8	10.5	10
4"	24	9	12	10
6"	26.5	10.5	14.5	10

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ELECTRIC ACTUATOR CODES (NEMA 4 ELECTRIC)				
VALVE SIZE	1E2V	2E2V	1EMV2 / 1EMV4	2EMV2 / 2EMV4
1"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
1.5"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
2"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
3"	1005-X	1005-X-24V	1005/S-X-2(4)	1005/S-X-24V-2(4)
4"	1010-X	1010-X-24V	1010/S-X	1010/S-X-24V-2(4)
6"	1010-X	1010-X-24V	1010/S-X	1010/S-X-24V-2(4)

ELECTRIC ACTUATOR CODES (NEMA 2 ELECTRIC)				
VALVE SIZE	2E2D	2E2DSC / 2E2DS0	2EMD	2EMDSC / 2EMDSO
1"	KA-44-2T	KAS-44-2	KA-44-M	KAS-44-M
1.5"	KA-88-2T	KAS-88-2	KA-88-M	KAS-88-M
2"	KA-175-2T	KAS-175-2	KA-175-P	KAS-175-M
3"	KA-301-2T	EFB24	KA-301-P	EFB24-SR
4"	GMB24-3(X2)	EFB24(X2)	GMB24-SR(X2)	EFB24-SR(X2)
6"	GMB24-3(X2)	GKX24-MFT(X2)	GMB24-SR(X2)	GKX24-MFT(X2)

ACTUATOR CODES (LOW PRESSURE PNEUMATIC- 20PSI AIR)				
VALVE SIZE	LP2SC	LP2SO	LPMSC	LPMSO
1"	D-3153-5130	D-3153-5130	D-3153-5120	D-3153-5120
1.5"	D-3153-5130	D-3153-5130	D-3153-5120	D-3153-5120
2"	D-3153-5130	D-3153-5130	D-3153-5120	D-3153-5120
3"	D-3244-5110	D-3244-5110	D-3244-5100	D-3244-5100
4"	D-3246-5110	D-3246-5110	D-3246-5100	D-3246-5100
6"	D-3246-5110	D-3246-5110	D-3246-5100	D-3246-5100

ACTUATOR CODES (HIGH PRESSURE PNEUMATIC-80 PSI AIR)				
VALVE SIZE	HP21 / HP22 HP2S01 / HP2S02	HP2SC1 / HP2SC2	HPM	HPMSC / HPMSO
1"	C-DA63/WT8	C-SR63/WT8	C-DA63/VP7G	C-SR63/VP7G
1.5"	C-DA63/WT8	C-SR63/WT8	C-DA63/VP7G	C-SR63/VP7G
2"	C-DA63/WT8	C-SR83/WT8	C-DA63/VP7G	C-SR83/VP7G
3"	C-DA63/WT8	C-SR83/WT8	C-DA63/VP7G	C-SR83/VP7G
4"	C-DA83/WT8	C-SR105/WT8	C-DA83/VP7G	C-SR105/VP7G
6"	C-DA092/WT8	C-SR125/WT8	C-DA092/VP7G	C-SR125/VP7G



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### ORDERING INFORMATION

MODEL	DESCRIPTION			
V	2-Way V-Ball Close off = 250 psi, Equal Percentage			
	<b>SIZE</b>			
-01	1" FNPT, Cv @ 90° = 31			
-15	1.5" FNPT, Cv @ 90° = 73			
-02	2" FNPT, Cv @ 90° = 96			
-03	3" Flange, Cv @ 90° = 270			
-04	4" Flange, Cv @ 90° = 529			
-06	6" Flange, Cv @ 90° = 850			
	<b>ACTUATOR</b>			
-2E2V	NEMA 4, 24V electric, 2-position	-LP2SC	Low pressure pneumatic, 2-position, spring return, NC	
-2EMV2	NEMA 4, 24V electric, modulating, 2-10 VDC input	-LP2SO	Low pressure pneumatic, 2-position, spring return, NO	
-2EMV4	NEMA 4, 24V electric, modulating, 4-20 mA input	-LPMSC	Low pressure pneumatic, 3-15 positioner, spring return, NC	
-1E2V	NEMA 4, 120V electric, 2-position	-LPMO	Low pressure pneumatic, 3-15 positioner, spring return, NO	
-1EMV2	NEMA 4, 120V electric, modulating, 2-10 VDC input	-HP21	High pressure pneumatic, double acting, 120V solenoid	
-1EMV4	NEMA 4, 120V electric, modulating, 4-20 mA input	-HP22	High pressure pneumatic, double acting, 24V solenoid	
-2E2D	NEMA 2, 24V electric, 2-position	-HPM	High pressure pneumatic, double acting, 3-15 positioner	
-2E2DSC	NEMA 2, 24v electric, 2-position, spring return, NC	-HP2SC1	High pressure pneumatic, spring return, NC, 120V solenoid	
-2E2DSO	NEMA 2, 24v electric, 2-position, spring return, NO	-HP2SO1	High pressure pneumatic, spring return, NO, 120V solenoid	
-2EMD	NEMA 2, 24V electric, modulating	-HP2SC2	High pressure pneumatic, spring return, NC, 24V solenoid	
-2EMDSC	NEMA 2, 24v electric, modulating, spring return, NC	-HP2SO2	High pressure pneumatic, spring return, NO, 24V solenoid	
-2EMDSO	NEMA 2, 24v electric, modulating, spring return, NO	-HPMSC	High pressure pneumatic, spring return, NC, 3-15 positioner	

V -02 -1EMV2 **Example: V-02-1EMV2** Two-inch NEMA4, 120V electric, modulating 2-10 VDC output

### RELATED PRODUCTS

- KOV-3** NEMA 3R fabric weather cover 10" x 10"
- KOV-4** NEMA 3R fabric weather cover 14" x 12"
- SSTAG** Stainless steel tag on bead chain, 1" x 2" dog tag, custom engraved per order