

Series V

Segmented Ball Control Valves



Implementations

To reduce headaches and simplify installation, the Series V segmented control valve is available with either a flangeless wafer style body with NPT threads or an integral double flange body. With lay lengths conforming to common industry standards the Series V can be used to easily replace other valves including obsolete linear globe valves

Designed for Automation

The Series V, from design brief to over 10 years of production, has been designed specifically for automation of all varieties in HVAC control applications. The standard mounting plate for actuators and square or double-D type shafts allow mounting of all VSI or third party actuators to meet any project requirement. The single seat design and offset actuation of the valve ensure low operating torque allowing for a more broad and cost effective choice of automation. Special configurations such as 3-way assemblies, spring return actuators, or explosion proof accommodations are available through Valve Solutions or your Authorized Reseller.

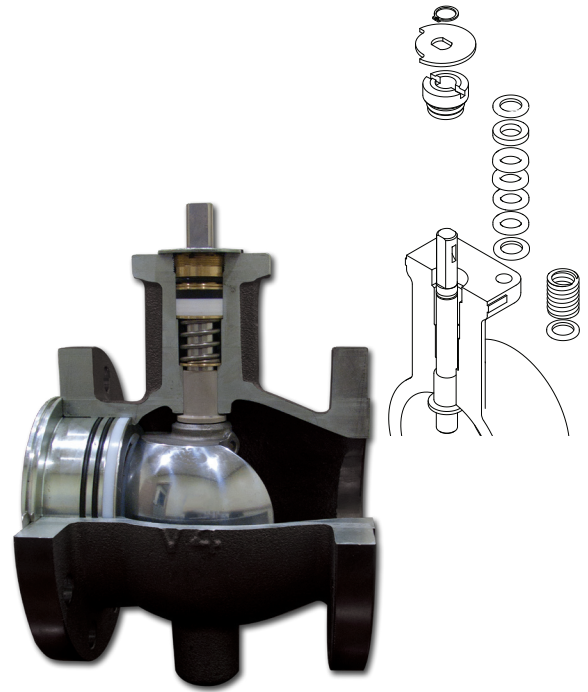


Easy Inspection and Service

With an in-line replaceable packing and a seat that only requires simple hand tools to replace, the Series V is designed to ensure that the valve lasts for the life of the system with little or no downtime.

The heavy duty TFM seat and stainless backup ring can be removed and inspected by removing as little as two screws then pulling them from the body by hand. For double flanged and NPT installations a full seat replacement can be preformed with the valve in-line by removing an upstream pipe segment or fitting.

A self adjusting spring loaded set of PTFE packing rings requires no preventative maintenance. Packing replacements are a painless affair, with the available packing service kit containing all necessary parts including the packing rings, o-rings, and even the spanner wrench for the packing gland. A complete packing replacement can be preformed with the valve remaining in the line, and without draining the line in most cases.



Characterized Flow

The characterized "V" port type notched ball of the Series V is designed to provide a modified equal percentage flow curve. This flow characterization matches well in coil and temperature control applications, both modern and as retrofit for obsolete or damaged control valves such as globe valves. The high 300:1 turn down rangeability ensure that each valve can be used for flow control over essentially its entire range of travel with minimal cavitation and noise. Designers utilizing the Series V are able to create systems with wider swings in flow than traditional control valves while still maintaining the accuracy required by modern building automation packages.

Series V

Segmented Ball Control Valves

VSI

LIVE LOADED PACKING

The spring loaded Teflon V-ring type packing provides maintenance free service

PREMIUM FINISHING

The stainless steel ball is Nickel-Chromium plated and polished for the ultimate in corrosion resistance and extended seat life

HIGH PERFORMANCE BODY

Dual rated for installation between both ANSI Class 150 and Class 300 flanges. Includes NPT connection for threaded installations

POSITIVE POSITIONING

Shaft and segmented ball are connected by a knurled pin pressed in place and welded to ensure minimal backlash

UNIVERSAL ACTUATION

The ISO 5211 top mount allows VSI to offer a wide range of electric, pneumatic, hydraulic, failsafe, and other actuation packages

IDENTIFICATION

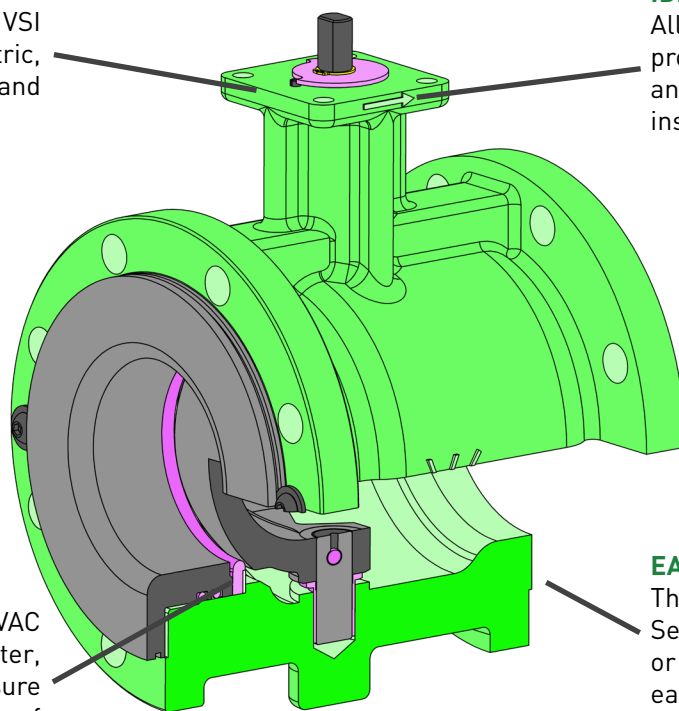
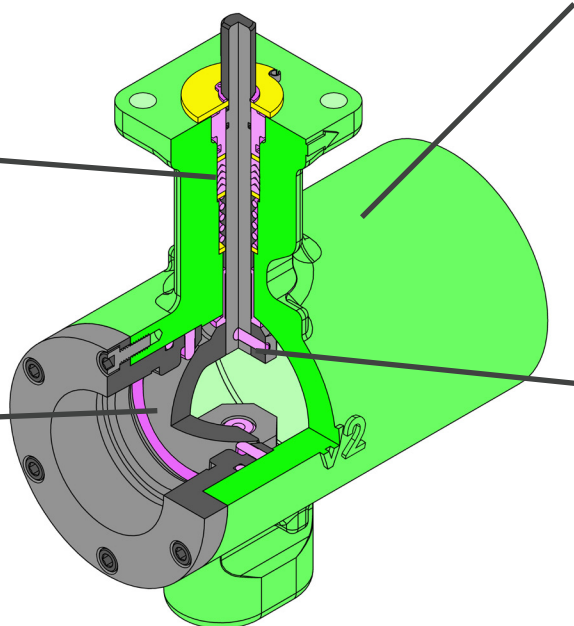
All valve castings feature a prominent flow direction indicator and size designation for easy installation and future inspections

DESIGNED FOR STEAM

Specifically designed for HVAC systems including chilled water, hot water, and low pressure steam; the TFM seat is capable of handling up to 125psi steam

EASY RETROFIT INSTALLATION

The face to face dimensions of the Series V conform to ASME B16.10 or ISA S75.08.02 to accommodate easy retrofit replacement of older globe and other outdated control valves.





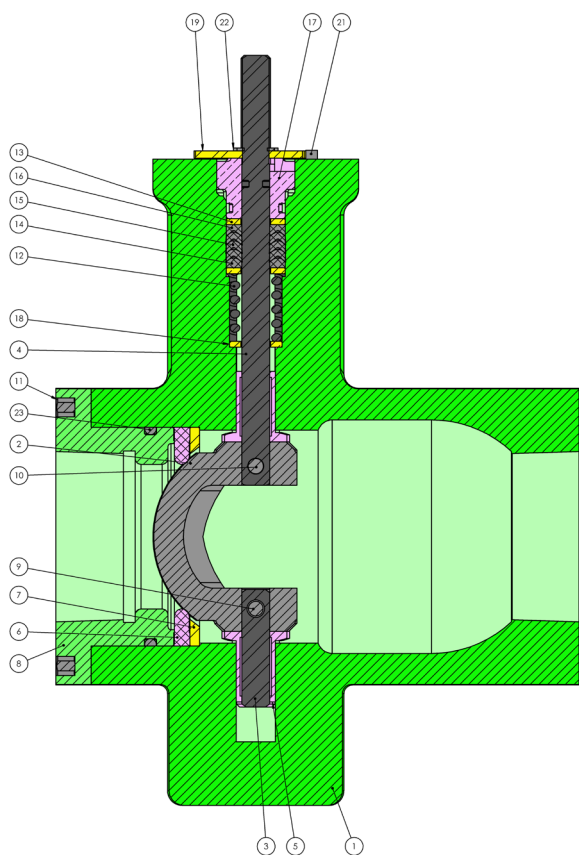
Design Standards

Size Range	1"-2" Wafer Flanged CL150/CL300 & NPT 3"-12" Double Flanged
Connections	ANSI B16.1 Class 125/ANSI B16.5 Class 150 ANSI B16.1 Class 250/ANSI B16.5 Class 300 National Pipe Thread (NPT) ANSI/ASME 1.20.1
Lay Length	ASME B16.10 (1"-6") ISA S75.08.02 (8"-12")
Leakage	ANSI FCI 70-2 Class VI
Shutoff	Maximum Allowable 250psig CWP
Temperature	-10°F to 450°F Maximum Allowable 150psig Steam (365°F)
Velocity	Liquid: 20 ft/s controllable, 40 ft/s max at open Steam: 150 ft/s controllable, 300 ft/s max at open
Flow	Modified Equal Percentage Characteristics 300:1 Turn Down Ratio
Ball Rotation	90 degrees, clockwise close
Bonnet	ISO 5221

Resistance Guide

Designation	Common Names	Composition	Min/Max Temperature Range	General Properties	Resistant to:	Attacked by:
TFM™	TFM™, Modified PTFE	Polytetrafluoro-ethylene	-100F/450F	Excellent abrasion resistance and chemically inert	Acids, harsh inorganic and organic chemicals, oils, oxidizing agents, and solvents	Molten alkali metals and fluorine at high temperatures
PTFE	PTFE, Teflon™	Polytetrafluoro-ethylene	-100F/450F	Excellent abrasion resistance and chemically inert	Acids, harsh inorganic and organic chemicals, oils, oxidizing agents, and solvents	Molten alkali metals and fluorine at high temperatures
FPM	FPM, Viton™	Hexafluoropropylene-vinylidene fluoride	-10F/450F	Excellent oil and air resistances both at low and high temperatures. Very good chemical resistance	All aliphatic, aromatic, and halogenated hydrocarbons, acids, animal and vegetable oils	Ketones, low molecular weight esters and nitro containing compounds
PEEK	PEEK, PAEK	Polyether-ether-ketone	-50F/500F	Excellent low friction properties, low thermal conductivity, and highly resistant to thermal degradation and creep	Steam, seawater, Animal and vegetable oils, hydrocarbons, ozone, strong and oxidizing chemicals.	Halogens and strong acids, halogenated compounds, and aliphatic hydrocarbons at high temperatures

Materials of Construction 1"-2"



Item	Description	Materials Available	Standard
1	Body	Carbon Steel*	ASTM A216 WCC ⁽¹⁾
		Stainless Steel 316	ASTM A351 CF8M
2	Ball	Stainless Steel 316	ASTM A351 CF8M ⁽²⁾
3	Lower Shaft	Stainless Steel 304	ASTM A276 304
4	Upper Shaft	Stainless Steel 304	ASTM A276 304
5	Bushing	PEEK	Commercial
6	Seat	TFM*	3M Dyneon™ 7193
		Graphite Reinforced PTFE	Commercial
7	Seat Backup Ring	Stainless Steel 304	ASTM A276 304
8	Seat Retainer	Plated Steel*	ASTM A28 ⁽³⁾
		Stainless Steel 304	ASTM A276 304
9	Pin	Stainless Steel 304	ASTM A276 304
10	Pin	Stainless Steel 304	ASTM A276 304
11	Cap Screws	Stainless Steel 304	ASTM A593M 304
12	Spring	Stainless Steel 304	Commercial
13	Washer	Brass	ASTM B455 C38000
14	Lower Packing Ring	PTFE	Commercial
15	Packing Rings	PTFE	Commercial
16	Upper Packing Ring	PTFE	Commercial
17	Packing Gland	Brass	ASTM B455 C38000
18	Washer	Brass	ASTM B455 C38000
19	Stop Plate	Plated Steel	Commercial ⁽³⁾
20	Woodruff Key	Steel	Commercial
21	Spring Pin	Spring Steel	Commercial
22	Snap Ring	Steel	AISI 1080
23	O-ring	Viton	Commercial
NS	Tag	Aluminum	UV Screen Printed

* Standard material option

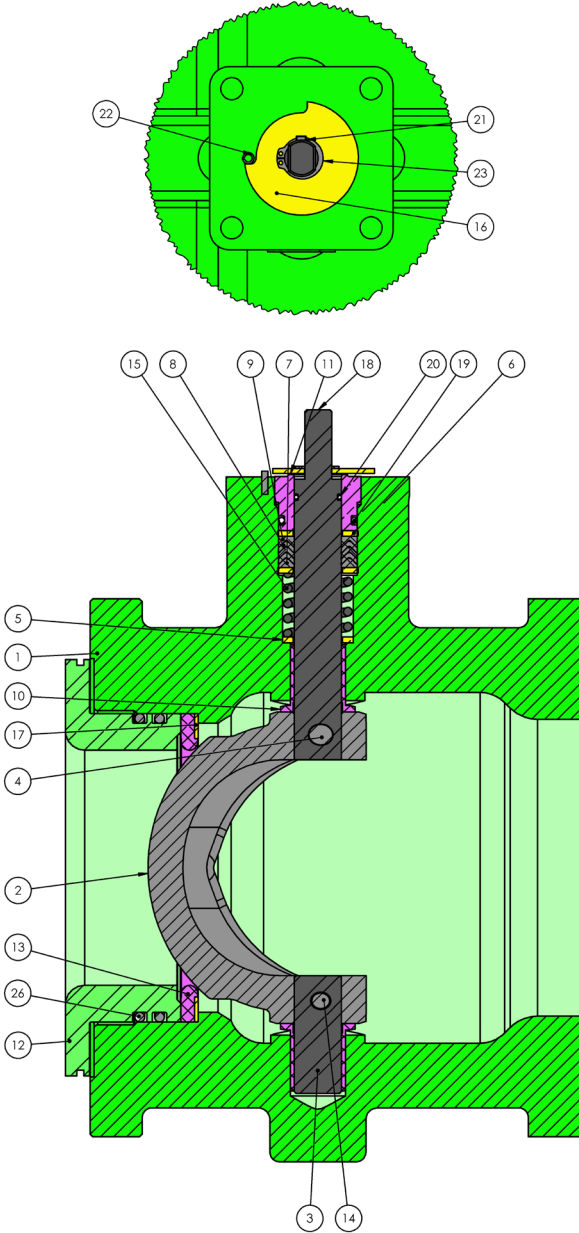
1. Black Oxide coated per MIL-DTL-13924

2. Ni-Cr plated, minimum 30 micron

3. Zinc Chromate plated, minimum 8 micron

Additional material options available as special order

Materials of Construction 3"-6"



Item	Description	Materials Available	Standard
1	Body	Carbon Steel*	ASTM A216 WCC ⁽¹⁾
		Stainless Steel 316	ASTM A351 CF8M
2	Ball	Stainless Steel 316	ASTM A351 CF8M ⁽²⁾
3	Lower Shaft	Stainless Steel 304	ASTM A276 304
4	Pin	Stainless Steel 304	ASTM A276 304
5	Washer	Brass	ASTM B455 C38000
6	Washer	Brass	ASTM B455 C38000
7	Lower Packing Ring	PTFE	Commercial
8	Packing Rings	PTFE	Commercial
9	Upper Packing Ring	PTFE	Commercial
10	Bushing	PEEK	Commercial
11	Packing Gland	Brass	ASTM B455 C38000
12	Seat Retainer	Plated Steel*	ASTM A28 ⁽³⁾
		Stainless Steel 304	ASTM A276 304
13	Seat	TFM*	3M Dyneon™ 7193
		Graphite Reinforced PTFE	Commercial
14	Pin	Stainless Steel 304	ASTM A276 304
15	Spring	Stainless Steel 304	Commercial
16	Stop Plate	Plated Steel	Commercial ⁽³⁾
17	Seat Backup Ring	Stainless Steel 304	ASTM A276 304
18	Upper Shaft	Stainless Steel 304	ASTM A276 304
19	O-Ring	Viton	Commercial
20	O-Ring	Viton	Commercial
21	Woodruff Key	Steel	Commercial
22	Spring Pin	Spring Steel	Commercial
23	Snap Ring	Steel	AISI 1080
26	O-Ring	Viton	Commercial
NS	Seat Retaining Screw	Stainless Steel 304	ASTM A593M 304
NS	Tag	Aluminum	UV Screen Printed

* Standard material option

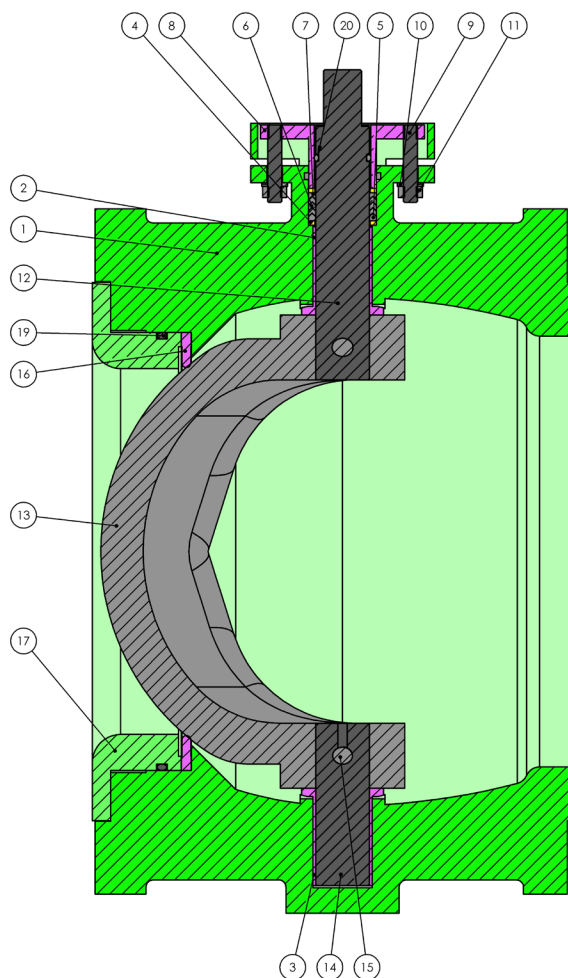
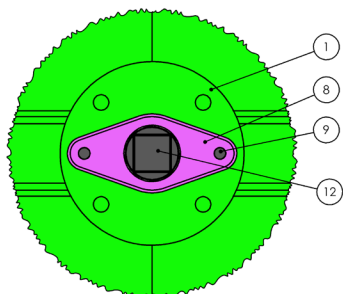
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2. Ni-Cr plated, minimum 30 micron

3. Zinc Chromate plated, minimum 8 micron

Additional material options available as special order

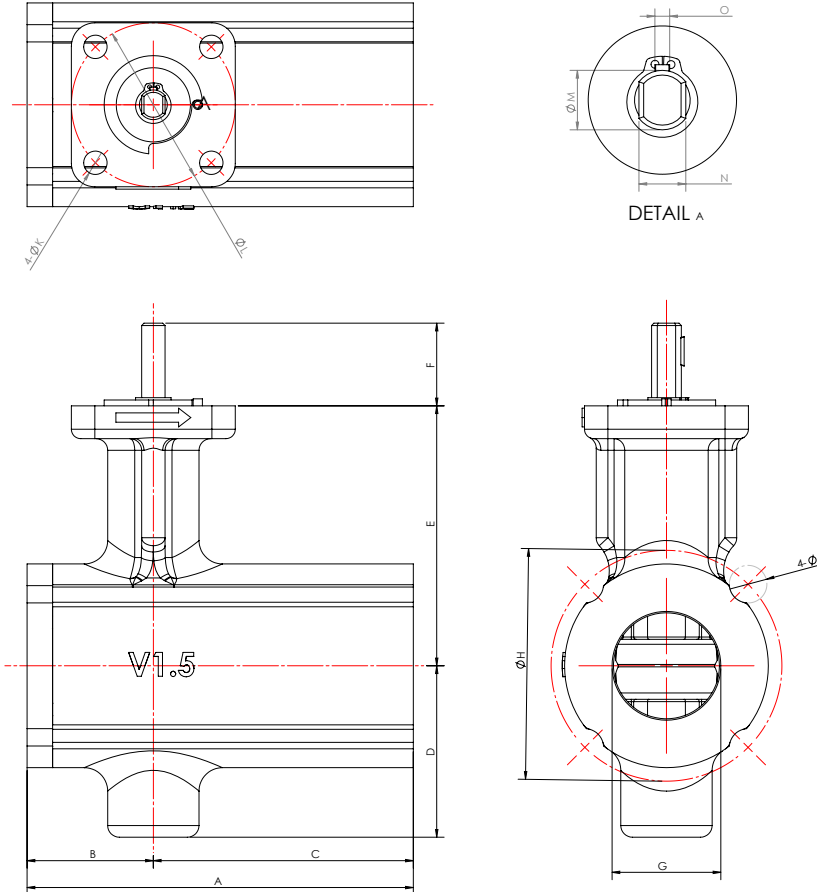
Materials of Construction 8"-12"



Item	Description	Materials Available	Standard
1	Body	Carbon Steel	ASTM A216 WCC ⁽¹⁾
2	Bushing	PEEK	Commercial
3	Bushing	PEEK	Commercial
4	Washer	Brass	ASTM B455 C38000
5	Lower Packing Ring	PTFE	Commercial
6	Packing Rings	PTFE	Commercial
7	Upper Packing Ring	Graphite	Commercial
8	Packing Gland	Stainless Steel 304	ASTM A351 CF8
9	Packing Gland Stud	Stainless Steel 304	ASTM A194M Gr 8
10	Lock Washer	Stainless Steel 304	Commercial
11	Hex Nut	Stainless Steel 316	ASTM A194M Gr 8M
12	Upper Shaft	Stainless Steel 304	ASTM A276 304
13	Ball	Stainless Steel 316	ASTM A351 CF8M ⁽²⁾
14	Lower Shaft	Stainless Steel 304	ASTM A276 304
15	Pin	Stainless Steel 304	ASTM A276 304
16	Seat	TFM	3M Dyneon™ 7193
17	Seat Retainer	Plated Steel	ASTM A28 ⁽³⁾
19	O-Ring	Viton	Commercial
20	O-Ring	Viton	Commercial
NS	Seat Retaining Screw	Stainless Steel 304	ASTM A593M 304
NS	Tag	Aluminum	UV Screen Printed

1. Black Oxide coated per MIL-DTL-13924
2. Ni-Cr plated, minimum 30 micron
3. Zinc Chromate plated, minimum 8 micron

1"-2" BARESTEM CL150/CL300

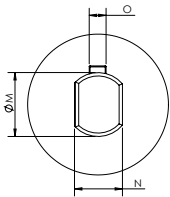
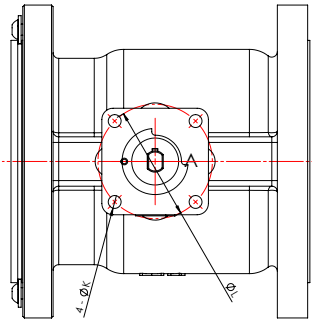


SIZE	A	B	C	D	E	F	G	H
1"	5.00	1.81	3.19	2.56	4.04	1.33	1"NPT	3.13
1-1/2"	6.50	2.13	4.37	2.88	4.43	1.33	1.5"NPT	3.88
2"	7.00	2.68	4.33	3.60	5.12	1.33	2"NPT	5.00

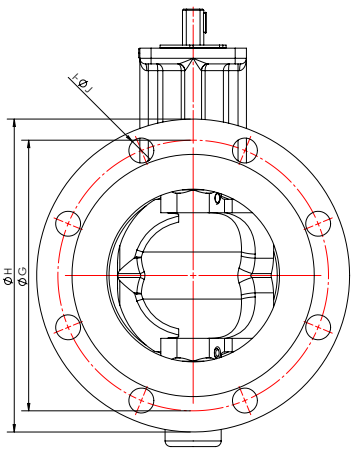
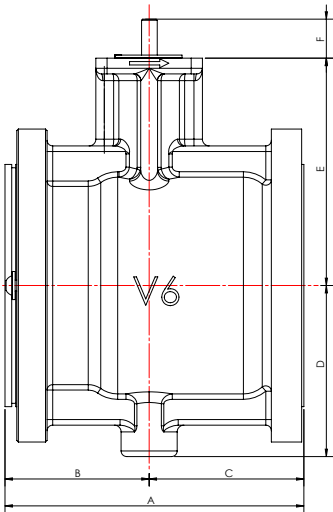
SIZE	J	K	L	M	N	O	WEIGHT (LBS)
1"	0.63	0.39	2.76	0.500	0.390	0.125	9
1-1/2"	0.63	0.39	2.76	0.500	0.390	0.125	15
2"	0.63	0.39	2.76	0.500	0.390	0.125	19



3"-6" FLANGED CL150 BARESTEM



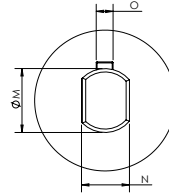
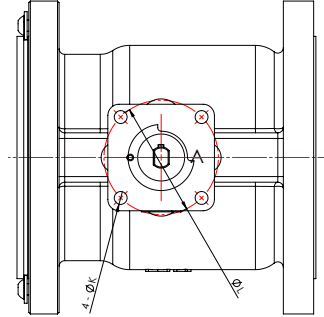
DETAIL A



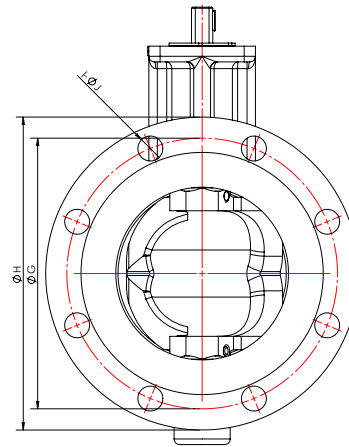
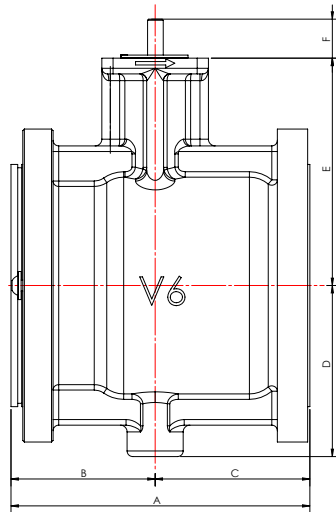
SIZE	A	B	C	D	E	F	G	H
3"	8.00	3.54	4.45	4.33	5.98	1.37	6.00	7.5
4"	9.00	4.33	4.69	5.11	7.05	1.37	7.50	9.0
6"	10.50	5.06	5.43	6.00	7.98	1.37	9.50	11.0

SIZE	I	J	K	L	M	N	O	WEIGHT (LBS)
3"	4	0.75	0.45	4.01	0.750	0.550	0.188	38
4"	8	0.75	0.45	4.01	0.750	0.550	0.188	56
6"	8	0.88	0.45	4.01	0.750	0.550	0.188	93

3"-6" FLANGED CL300 BARESTEM



DETAIL A

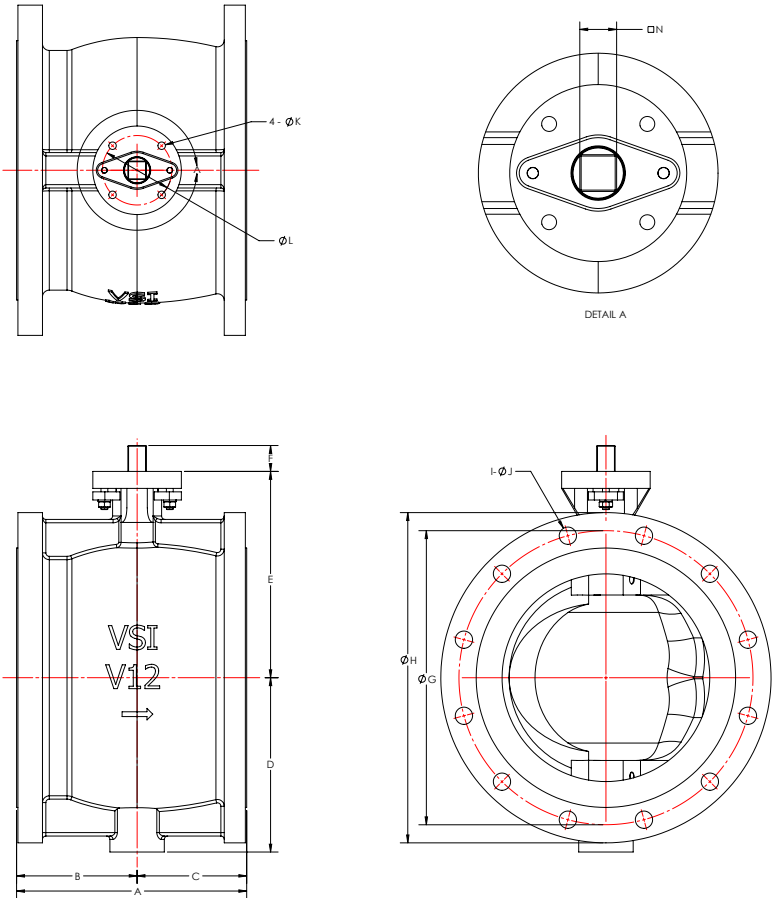


SIZE	A	B	C	D	E	F	G	H
3"	8.00	3.54	4.45	4.33	5.98	1.37	6.61	8.3
4"	9.00	4.33	4.69	5.11	7.05	1.37	7.87	10.0
6"	10.50	5.06	5.43	6.00	7.98	1.37	10.62	12.5

SIZE	I	J	K	L	M	N	O	WEIGHT (LBS)
3"	8	0.88	0.45	4.01	0.750	0.550	0.188	50
4"	8	0.88	0.45	4.01	0.750	0.550	0.188	80
6"	12	0.88	0.45	4.01	0.750	0.550	0.188	129



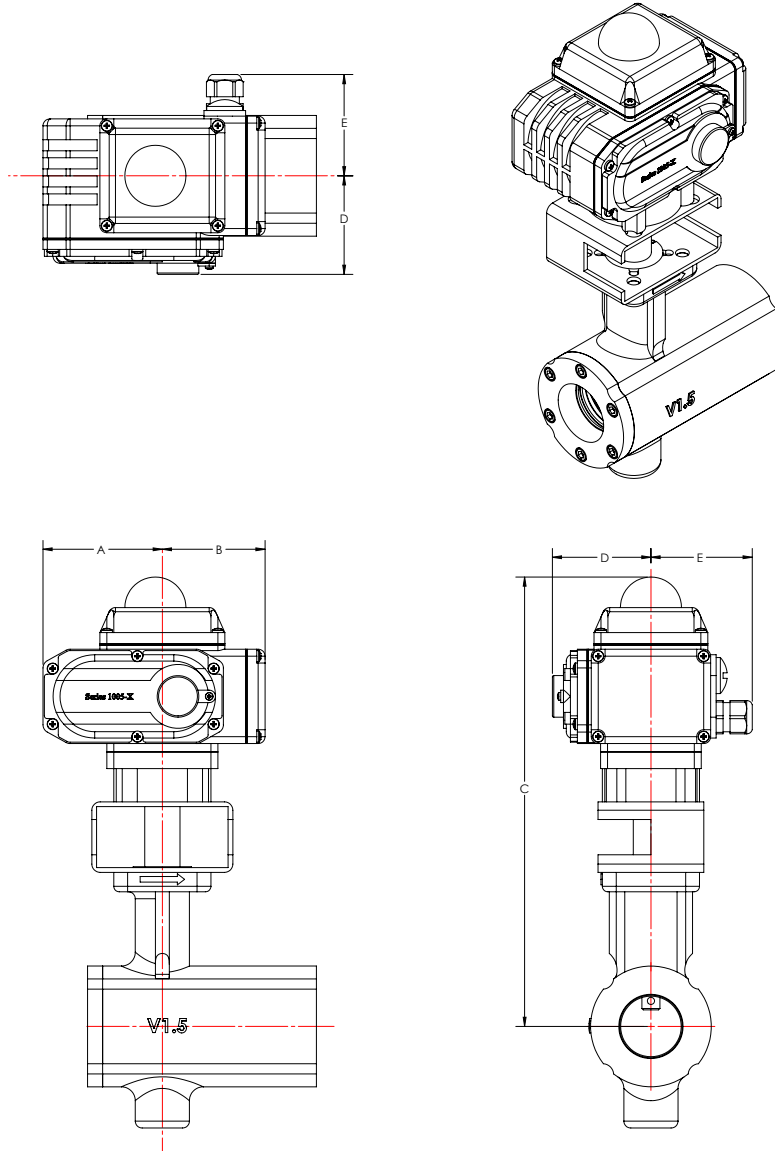
8"-12" FLANGED CL150 BARESTEM



SIZE	A	B	C	D	E	F	G
8"	9.57	4.53	5.04	6.85	9.13	1.50	11.75
10"	11.69	5.94	5.75	8.35	10.24	1.50	14.25
12"	13.31	6.97	6.34	10.08	11.93	1.50	17.00

SIZE	H	I	J	K	L	N	WEIGHT (LBS)
8"	13.6	8	0.88	0.43	4.02	1.060	153
10"	15.9	12	1.00	0.43	4.02	1.060	215
12"	19.1	12	1.00	0.43	4.02	1.060	336

1"-2" WITH SERIES 1000-X ELECTRIC ACTUATOR

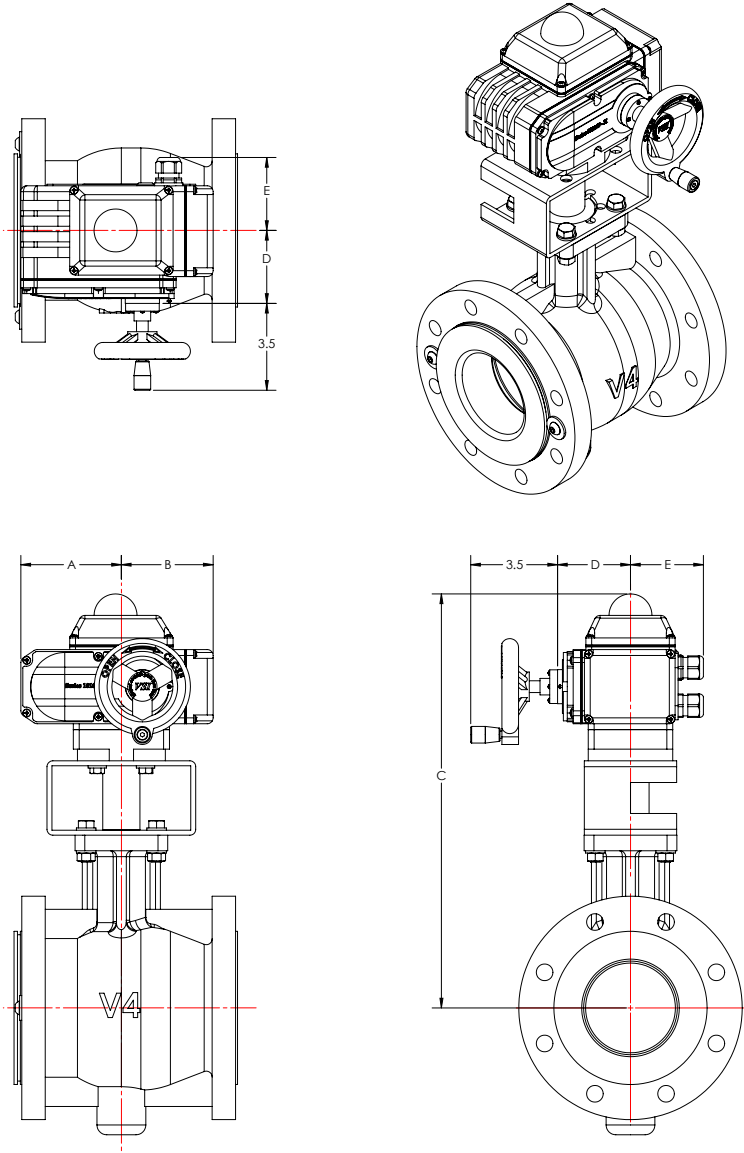


SIZE	2-POS ACTUATOR	MODULATING ACTUATOR
1"	1005-X	1005/S-X
1-1/2"	1005-X	1005/S-X
2"	1005-X	1005/S-X

SIZE	A	B	C	D	E
1"	3.27	3.03	12.4	2.48	2.87
1-1/2"	3.27	3.03	12.8	2.48	2.87
2"	3.27	3.03	13.4	2.48	2.87



3”-6” WITH SERIES 1000-X ELECTRIC ACTUATOR

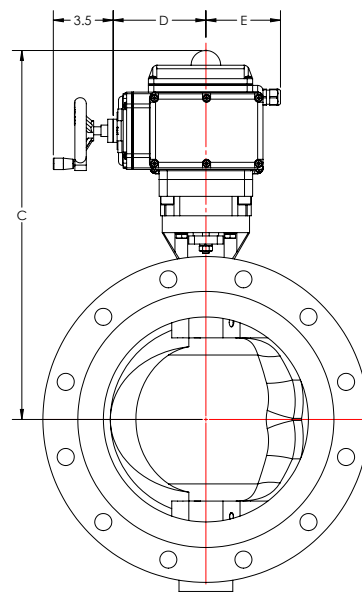
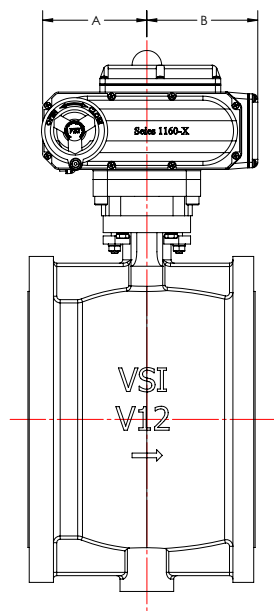
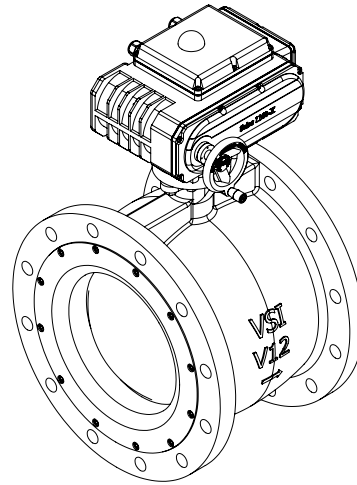
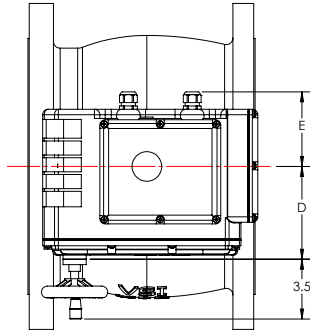


SIZE	2-POS ACTUATOR	MODULATING ACTUATOR
3"	1005-X	1005/S-X
4"	1010-X	1010/S-X
6"	1010-X	1010/S-X

SIZE	A	B	C	D	E
3"	3.27	3.03	15.3	2.48	2.87
4"	3.86	3.86	17.2	2.80	2.91
6"	3.86	3.86	18.1	2.80	2.91

*HANDWHEEL NOT AVAILABLE ON 1005-X OR 1005/S-X

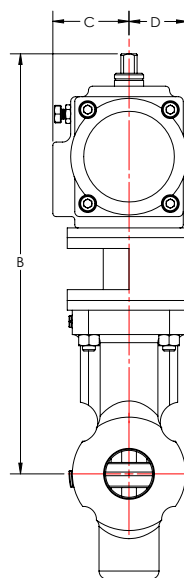
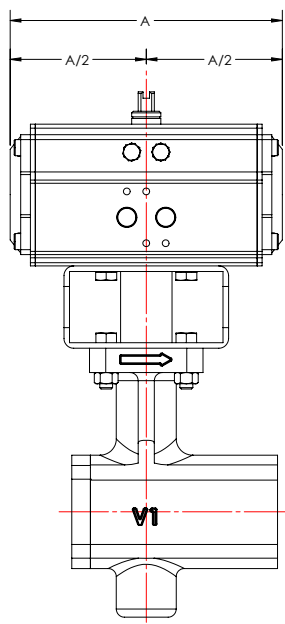
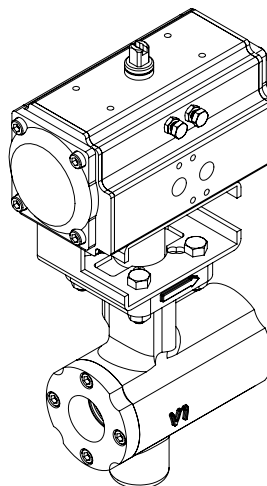
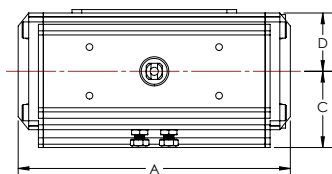
8"-12" WITH SERIES 1000-X ELECTRIC ACTUATOR



SIZE	2-POS ACTUATOR	MODULATING ACTUATOR
8"	1020-X	1020/S-X
10"	1040-X	1040/S-X
12"	1060-X	1060/S-X

SIZE	A	B	C	D	E
8"	4.76	5.28	17.7	3.74	3.43
10"	4.76	5.28	18.8	3.74	3.43
12"	4.76	5.28	20.5	3.74	3.43

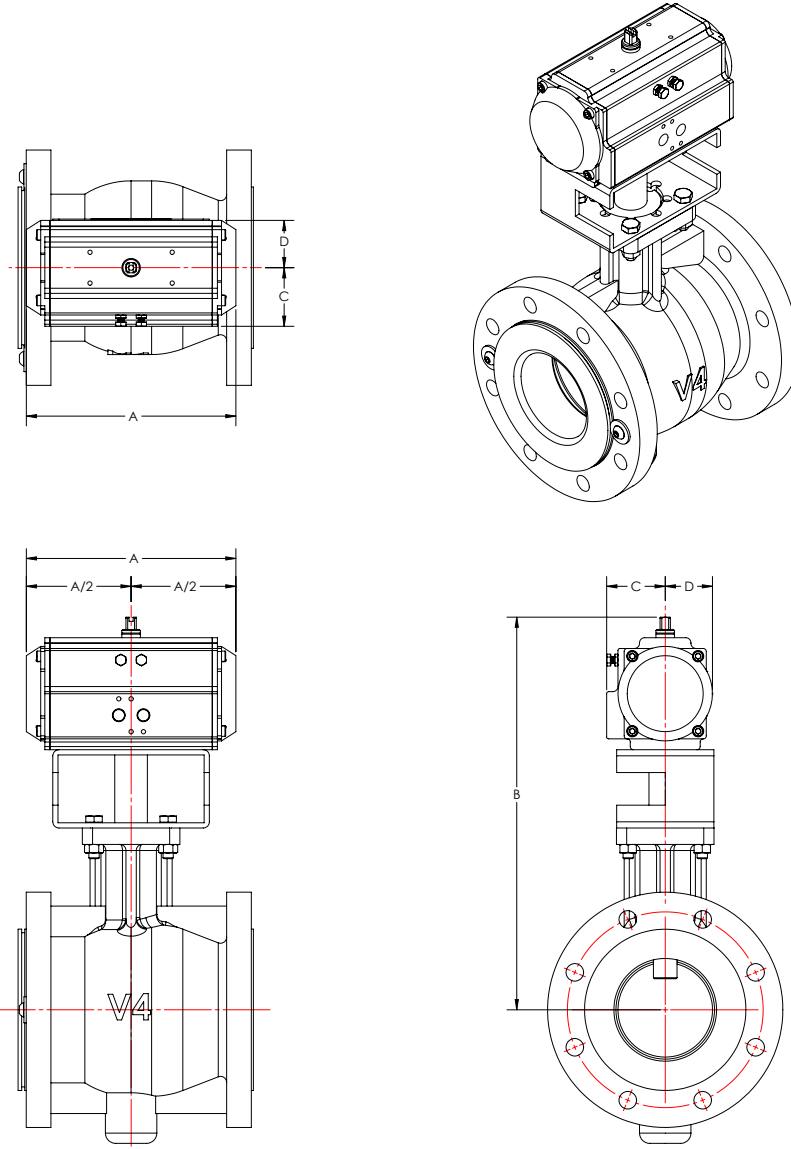
1"-2" WITH SERIES C PNEUMATIC ACTUATOR



SIZE	DA ACTUATOR	A	B	C	D
1"	C-DA045	4.80	9.2	1.44	1.12
1-1/2"	C-DA045	4.80	9.6	1.44	1.12
2"	C-DA063	6.61	11.4	1.85	1.42

SIZE	SR ACTUATOR	A	B	C	D
1"	C-SR063	6.61	10.3	1.85	1.42
1-1/2"	C-SR063	6.61	10.7	1.85	1.42
2"	C-SR083	8.03	12.2	2.24	1.81

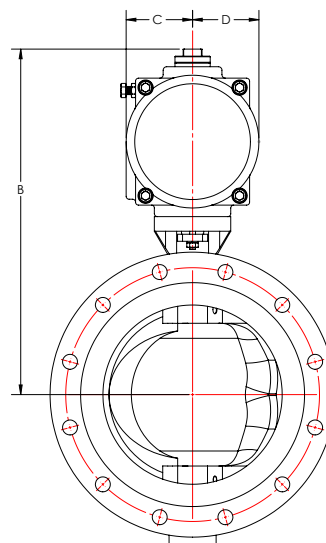
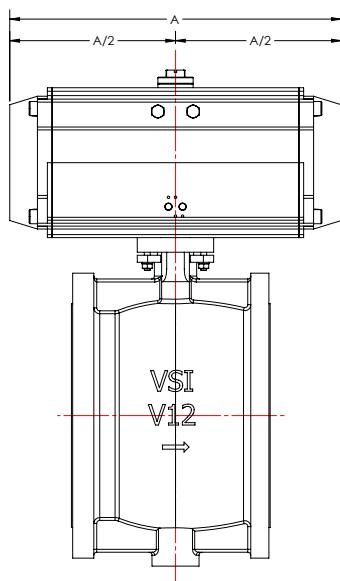
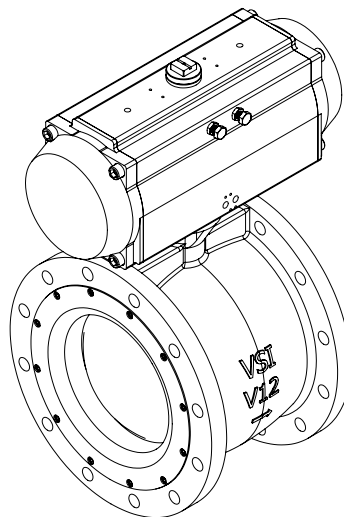
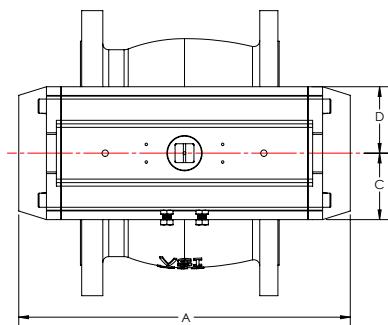
3"-6" WITH SERIES C PNEUMATIC ACTUATOR



SIZE	DA ACTUATOR	A	B	C	D
3"	C-DA063	6.61	13.2	1.85	1.42
4"	C-DA083	8.03	15.1	2.24	1.81
6"	C-DA092	10.31	16.4	2.30	1.97

SIZE	SR ACTUATOR	A	B	C	D
3"	C-SR83	8.03	14.1	2.24	1.81
4"	C-SR105	10.55	16.1	2.52	2.26
6"	C-SR125	11.85	16.9	2.93	2.66

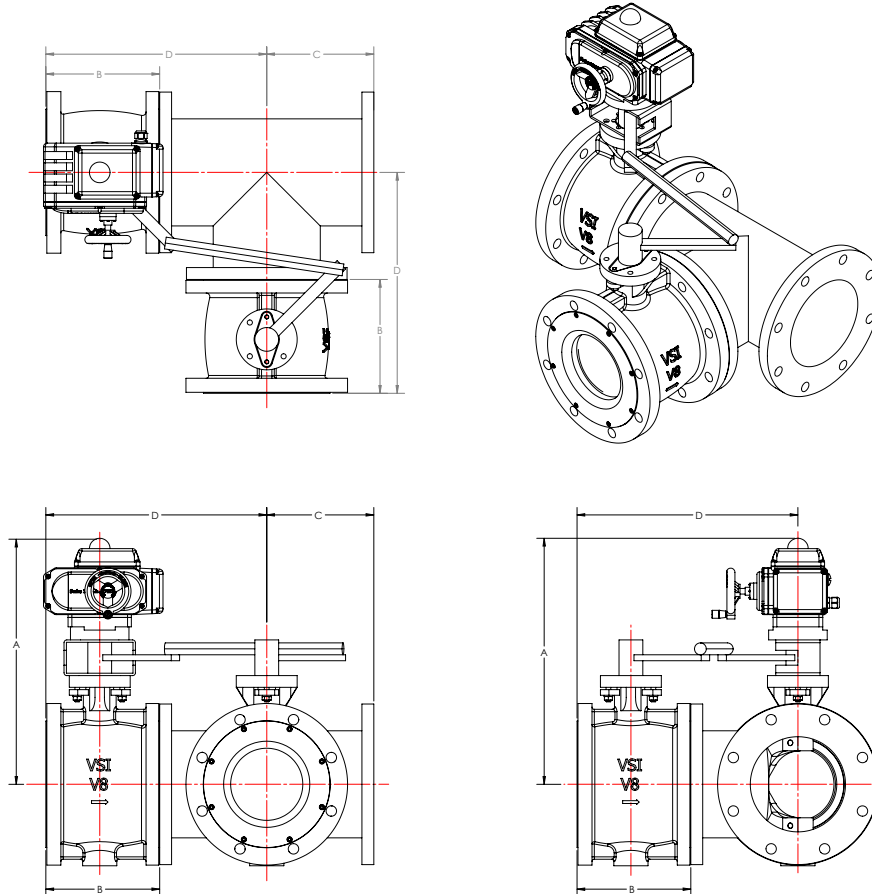
8"-12" WITH SERIES C PNEUMATIC ACTUATOR



SIZE	DA ACTUATOR	A	B	C	D
8"	C-DA125	11.85	16.0	2.93	2.66
10"	C-DA140	15.35	17.8	3.03	2.95
12"	C-DA160	18.03	20.5	3.43	3.43

SIZE	SR ACTUATOR	A	B	C	D
8"	C-SR160	18.03	17.7	3.43	3.43
10"	C-SR190	20.67	20.5	4.06	4.06
12"	C-SR210	20.94	23.2	4.45	4.45

3"-12" FLANGED 3-WAY ASSEMBLIES



SIZE	A*	B	C	D
3"	18	8.00	5.5	13.5
4"	19	9.00	6.5	15.5
6"	21	10.50	8.0	18.5
8"	22	9.57	9.0	18.6
10"	23	11.69	11.0	22.7
12"	26	13.31	12.0	25.3

*Height varies according to actuator chosen and accessories used



FLOW COEFFICIENTS AND DATA

SIZE	Valve Flow Coefficient (Cv)									
	Valve Rotation in Degrees									
	10	20	30	40	50	60	70	75	80	90
1"	0.04	0.5	3	5	8	12	17	24	29	31
1-1/2"	0.07	3	7	12	21	29	40	55	68	73
2"	0.09	4	10	21	34	43	65	77	85	96
3"	1	12	29	49	68	117	157	207	215	270
4"	4	22	46	86	130	195	279	350	421	529
6"	5	33	79	148	230	330	440	507	575	850
8"	9	55	135	255	395	565	755	865	985	1455
10"	15	100	240	450	705	1010	1345	1550	1755	2600
12"	19	125	300	555	865	1240	1655	1905	2165	3200

Flowrate (GPM) At Differential Pressure (PSI) Across Valve

Size	Degrees Open	Cv	2 Position Applications		HVAC Modulating Applications									
			0.5 PSI	1 PSI	1.5 PSI	2 PSI	3 PSI	4 PSI	5 PSI	6 PSI	7 PSI	8 PSI	9 PSI	10 PSI
1"	75°	24	17.0	24.0	29.4	33.9	41.6	48.0	53.7	58.8	63.5	67.9	72.0	75.9
	90°	31	21.9	31.0	38.0	43.8	53.7	62.0	69.3	75.9	82.0	87.7	93.0	98.0
1-1/2"	75°	55	38.9	55.0	67.4	77.8	95.3	110.0	123.0	134.7	145.5	155.6	165.0	173.9
	90°	73	51.6	73.0	89.4	103.2	126.4	146.0	163.2	178.8	193.1	206.5	219.0	230.8
2"	75°	77	54.4	77.0	94.3	108.9	133.4	154.0	172.2	188.6	203.7	217.8	231.0	243.5
	90°	96	67.9	96.0	117.6	135.8	166.3	192.0	214.7	235.2	254.0	271.5	288.0	303.6
3"	75°	207	146.4	207.0	253.5	292.7	358.5	414.0	462.9	507.0	547.7	585.5	621.0	654.6
	90°	270	190.9	270.0	330.7	381.8	467.7	540.0	603.7	661.4	714.4	763.7	810.0	853.8
4"	75°	350	247.5	350.0	428.7	495.0	606.2	700.0	782.6	857.3	926.0	989.9	1050	1107
	90°	529	374.1	529.0	647.9	748.1	916.3	1058	1183	1296	1400	1496	1587	1673
6"	75°	507	358.5	507.0	620.9	717.0	878.1	1014	1134	1242	1341	1434	1521	1603
	90°	850	601.0	850.0	1041	1202	1472	1700	1901	2082	2249	2404	2550	2688
8"	75°	865	611.6	865.0	1059	1223	1498	1730	1934	2119	2289	2447	2595	2735
	90°	1455	1029	1455	1782	2058	2520	2910	3253	3564	3850	4115	4365	4601
10"	75°	1550	1096	1550	1898	2192	2685	3100	3466	3797	4101	4384	4650	4902
	90°	2600	1838	2600	3184	3677	4503	5200	5814	6369	6879	7354	7800	8222
12"	75°	1905	1347	1905	2333	2694	3300	3810	4260	4666	5040	5388	5715	6024
	90°	3200	2263	3200	3919	4525	5543	6400	7155	7838	8466	9051	9600	10119

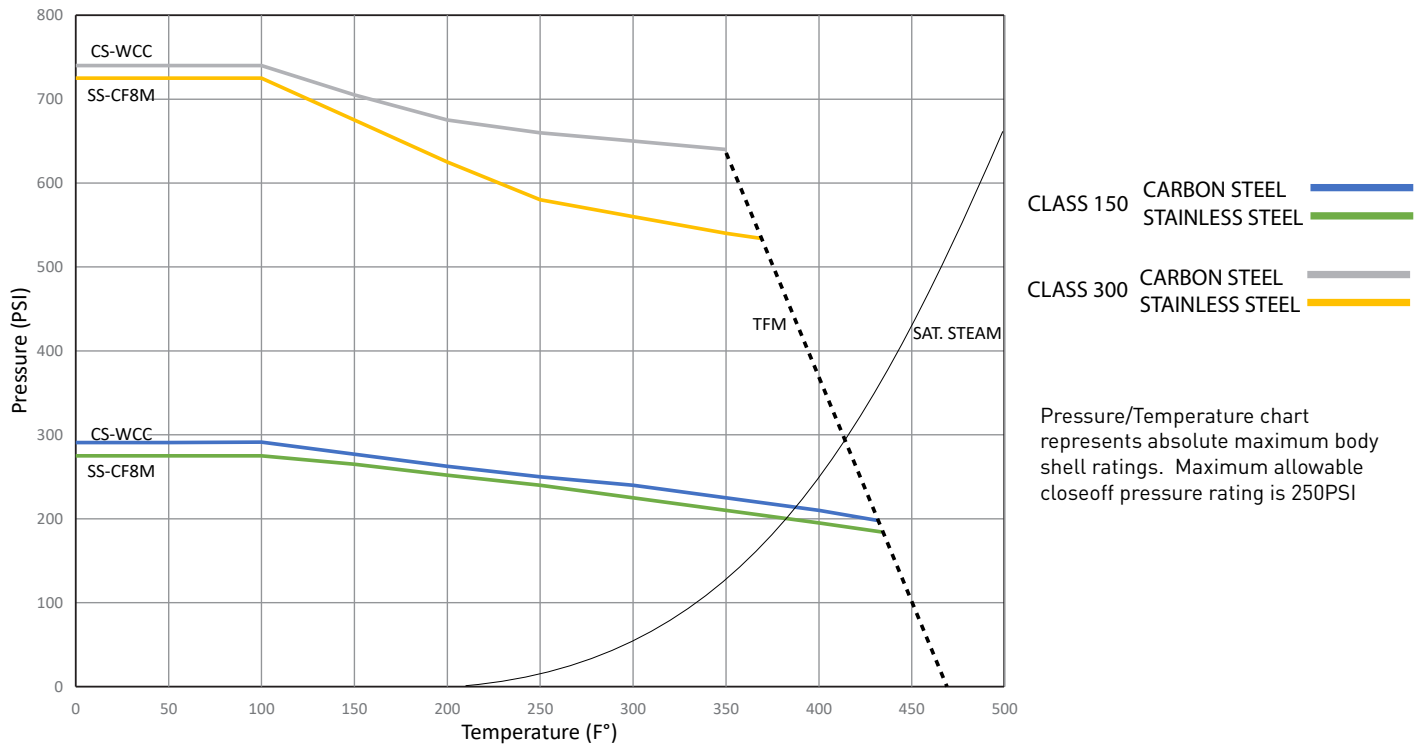


OPERATING TORQUE

Size	1"	1-1/2"	2"	3"	4"	6"	8"	10"	12"
inlb	40	80	130	200	400	650	1400	2600	3700
ftlb	3.3	6.7	10.8	16.7	33.3	54.2	117	217	308
Nm	4.5	9.0	14.7	22.6	44.2	73.4	158	294	418

Operating torque in in-lbs, no safety factor included. Torques are with water as operating fluid, dry media may require a higher safety factor

PRESSURE/TEMPERATURE RATINGS CHART



Pressure/Temperature chart represents absolute maximum body shell ratings. Maximum allowable closeoff pressure rating is 250PSI

WARRANTY

This limited warranty applies in the United States to products manufactured by VSI, LLC. VSI, LLC. warrants the product purchased from it or its authorized reseller to be free from defects in material and workmanship under normal use during the three year warranty period from the date of its purchase. Other products not manufactured by VSI, LLC. which are provided as part of an assembly may carry additional warranties from that manufacturer or supplier.

During the warranty period, VSI, LLC. will repair or replace defective parts of the product, or, at VSI, LLC. sole option, issue a credit for the original purchase price of the product. Repaired or replaced product will be warranted hereunder only for the remaining portion of the original warranty period. All exchanged products under this Limited Warranty will become the property of VSI, LLC. A proper Return Material Authorization (RMA) number will have to be obtained for all products to be returned under this Limited Warranty. Any claim under this Limited Warranty must include a description of the problem encountered and any relevant information that may assist VSI, LLC. in the replication or resolution of the problem.

This Limited Warranty is transferable during its term to the end user of the product. Any transfer shall not extend or alter the terms of this Limited Warranty.

This Limited Warranty extends only to products purchased from VSI, LLC. or its authorized reseller and does not extend to any product that has been damaged or rendered defective as a result of (a) modification, repair, alteration or improper installation by any person other than VSI, LLC. or its authorized representative; (b) unreasonable or improper use or storage, use beyond rated conditions, operation other than per VSI, LLC. or the manufacturer's instructions, or being otherwise subjected to improper maintenance, negligence or accident; or (c) any use of the product after purchaser has knowledge of any defect in the product.

The warranties provided above are in lieu of and exclude all other warranties, statutory, express or implied, including without limitation any warranty or merchantability or fitness for a particular purpose. VSI, LLC. expressly disclaims all warranties not stated in this limited warranty. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty.

VSI, LLC. warranty liability shall not exceed the original purchase price of the defective product. VSI, LLC. is not liable for any damages caused by the product or other products or the failure of the product or other products to perform, including any lost profits, lost savings, incidental or consequential damages. VSI, LLC. is not responsible for charges resulting from the removal and/or replacement of the product. VSI, LLC. is not liable for any claims made by third parties or by the purchaser for a third party. This limitation applies whether damages are sought, or a claim is made, under the Limited Warranty or as a tort claim, product liability claim, contract claim, or any other claim. This limitation cannot be waived by any person. This limitation of liability will be effective even if VSI, LLC. or its authorized representative has been advised by the purchaser of the possibility of such damages.



PART NUMBER MATRIX

Material	Carbon Steel			Stainless Steel		
Size	NPT	Class 150	Class 300	NPT	Class 150	Class 300
1"	V-1	V-1	V-1	V-1SS	V-1SS	V-1SS
1-1/2"	V-1.5	V-1.5	V-1.5	V-1.5SS	V-1.5SS	V-1.5SS
2"	V-2	V-2	V-2	V-2SS	V-2SS	V-2SS
3"	-	V-3	V-3-300	-	V-3SS	V-3SS-300
4"	-	V-4	V-4-300	-	V-4SS	V-4SS-300
6"	-	V-6	V-6-300	-	V-6SS	V-6SS-300
8"	-	V-8	-	-	-	-
10"	-	V-10	-	-	-	-
12"	-	V-12	-	-	-	-

OTHER PART NUMBER INFORMATION

ASSEMBLIES

The part numbers above represent only the part number for the valve without any operator or accessories. When purchased with an actuator as part of an assembly the entire part number will be formatted as the valve part number, forward slash, then the actuator and accessory part numbers.

Example: V-3/C-SR105/ALS-100

The above valve is a 3" valve model V-3 with a C-SR105 spring return pneumatic actuator and ALS-100 switch-box

REPAIR PARTS

Packing repair kits are available. Kits for the 1"-6" also include the necessary tool to remove the packing gland:

- V-[size]/PKG-KIT

Replacement seats are available. Seat replacement kits include the o-ring seal for the seat retainer:

- V-[size]/SEAT-KIT



Sample Specification

1. **Automatic Control Ball Valves for HVAC Control**

- 1.1. This specification covers the design, manufacture, and testing of V-notch type ball valves 1- inch (25 mm) to 12-inch (300mm) under shell pressures of up to 290 psig (2,000 kPa) for CL150 and 750 psig (5,171 kPa) for CL300.
- 1.2. Ball valves shall be of the V-notch type with high rangeability

2. **CONNECTIONS**

- 2.1. Valves 1-inch to 2-inch shall be of the wafer flange type. Wafer flanged valves shall be multi-rated for installation between ANSI B16.5, Class 150 and Class 300 flanges. Wafer valves shall also be equipped with NPT connections conforming to ANSI B1.20.1.
- 2.2. Valves 3-inch to 12-inch shall be double flanged type. Flanged valves shall conform to all standards of ANSI B16.5, Class 150 or Class 300 as required by application.
- 2.3. Lay length for valves 1-inch to 6-inch shall conform to ASME B16.10. Lay length for valves 8-inch to 12-inch shall conform to ISA S75.08.02.

3. **MARKINGS**

- 3.1. Each valve shall be marked with the manufacturer's name, the model designation, and valve size cast into the body of the valve. Lettering shall be a minimum of 1/2 inch tall and project 1/10 inch from body.
- 3.2. Valves shall be equipped with a tag identifying the size, the model designation, the ANSI rating, the seat material, and a unique traceable serial number in addition to manufacturer's name and contact information.

4. **DESIGN**

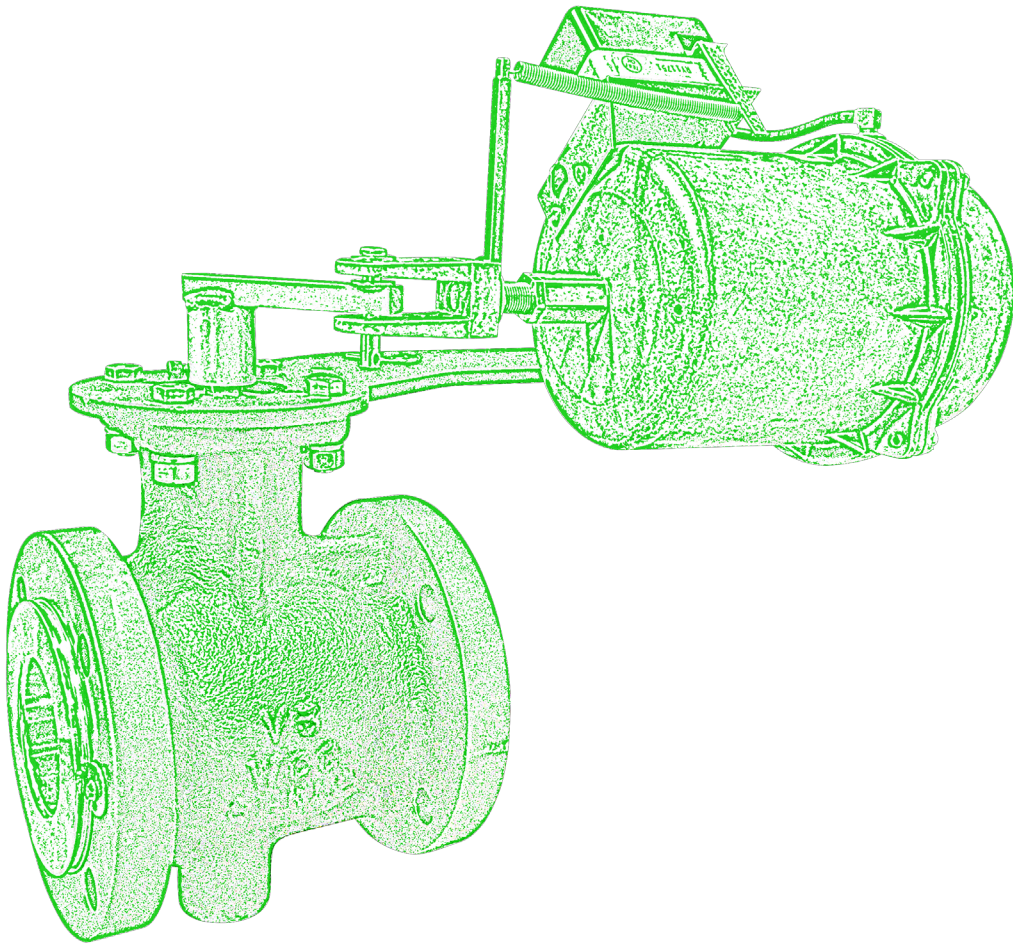
- 4.1. Valves shall be designed and suitable for use in water, steam, and glycol water mixes for HVAC control
- 4.2. Valves shall be designed and tested to ANSI Class VI leakage rate.
- 4.3. The valve shall be rated to an allowable shutoff pressure of 250psi.
- 4.4. The valve shall be designed to withstand steam pressure of up to 150psi
- 4.5. The shell thickness shall be designed to conform to ASME B16.34 pressure and temperature requirements
- 4.6. All valves shall be equipped with a v-notch type ball designed specifically for HVAC control applications. The ball shall exhibit 300:1 rangeability and have equal percentage control characteristics.
- 4.7. Valves from 1-inch to 6-inch shall feature a live-loaded packing design to reduce the need for inspection and adjustment. Valves 8-inch to 12-inch shall feature an easily adjustable pull down packing design. Packing shall be capable of being replaced in all valves without removing the valve from piping.
- 4.8. The ball shall be positively connected by pins to the upper and lower shafts. The pins shall be welded to the ball to prevent failure. The use of pins with friction fit only will not be accepted. The upper and lower shaft shall be supported fully by low friction bearings.
- 4.9. The seat shall be securely retained between the valve body and a one-piece seat retainer. The use of clips or friction fit to retain the seat will not be accepted.
- 4.10. A stop plate shall be installed on 1-inch to 6-inch valves to prevent the valve from being closed or open past the 90 degree movement of the valve.
- 4.11. The valves shall be equipped with a mounting area conforming to International Organization of Standardization (ISO) 5211 so that any standardized lever, gearbox, pneumatic, hydraulic, or electric actuator may be installed as required by application. There shall be sufficient clearance to directly mount standardized operators with easily accessible fasteners.

5. **MATERIALS**

- 5.1. The valve body shall be constructed of ASTM A216 WCC Carbon Steel or ASTM A351 CF8M Stainless Steel 316.
- 5.2. The valve v-notch ball shall be constructed of ASTM A351 CF8M Stainless 316. The valve ball shall be polished and shall be Nickel-Chromium (Ni-Cr) plated to a minimum of 30 micron for additional corrosion protection and torque reduction.
- 5.3. The seat shall be low friction TFM as manufactured by 3M Dyneon or Graphite reinforced PTFE.
- 5.4. The seat retainer shall be zinc chromate plated steel to a minimum of 8 micron for steel body valves. The seat retainer shall be Stainless Steel for Stainless Steel body valves.
- 5.5. Packing shall be of PTFE or graphite reinforced v-rings
- 5.6. All carbon steel valves shall be black oxide coated per MIL-DTL-13924

6. **MANUFACTURER**

- 6.1. Automatic control valves for HVAC control shall be VSI Series V segmented control valves as manufactured by Valve Solutions, Inc., Alpharetta, GA USA or approved equal
- 6.2. All valves shall be warranted by manufacturer for a minimum of 36 months.



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VSI

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As part of a process of on-going product development, VSI reserves the right to amend or change specifications without prior notice. Published data may be subject to change. For the latest version, visit our website at www.valvesolutions.com