



V-PORT

**SEGMENT
BALL VALVE**



Subo Automation Company Info

The main cooperative distributor of foreign pump and valve products

- Specialized in the sale of automation products and complete system engineering, providing solutions for industrial automation, control and management of complex processes.
- introduces the latest foreign products and technologies to meet the maximum needs of customers.
- Our products are widely used in petrochemical, natural gas, shipbuilding, metallurgy, electric power, pulp and paper, food and beverage, pharmaceutical and other industrial fields.

Subo Automation focuses on three main fields, valves, pumps and instruments.



Valves

Ball Valves, Gate Valves, Block Valves, Butterfly Valves, Check Valves, Safety Valves, Regulating Valves, Superheated Steam, Desuperheaters, Shutoff Valves, High Pressure Ball Valves, Vacuum Valves, Air Valves, Pump Protection Valves, Fire Control Valves, Sprinkler Valves



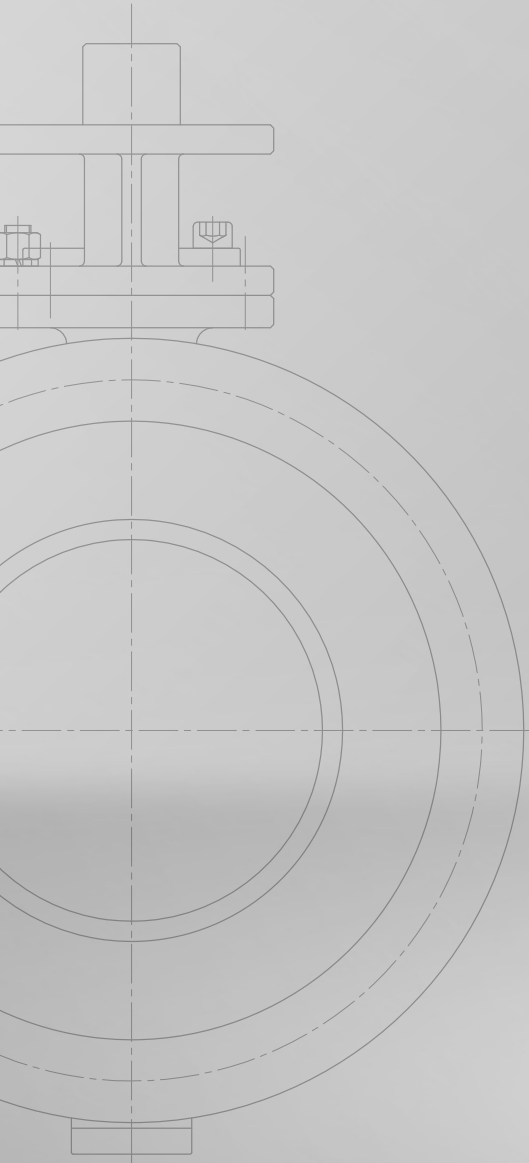
Pumps

Centrifugal pumps, Magnetic pumps, Vacuum pumps, Screw pumps, Gear oil pumps, Deep well cargo pumps, Fire pumps, Submersible pumps, Diaphragm pumps, Metering pumps, Gear pumps, Volumetric pumps



Instruments

Flow Meter, Pressure Transmitter, Temperature Transmitter, Pressure Switches, Pressure Gauges, Recorder



V-port Segment Ball Valve

S108

■ Overview

The v-port segment ball valve is primarily designed for flow control, and it can also be used for shut-off operation. The notched port on the segment ball contributes to strong shear stress to cut through media with fibers and particles. Consequently, this v-port segment valve is a good general control valve for most pulp and paper process applications, or similar flow contains fibers and particles.

■ Application

Pulp and Paper/Waste Water Treatment/ Food and Beverage/Chemical Plants/ Power Plants/ Steel Industry/Etc.



High temperature and corrosion resistance



Low fluid resistance



Good adjustment performance



Long lifetime



Good sealing performance

Design Feature

■ Body

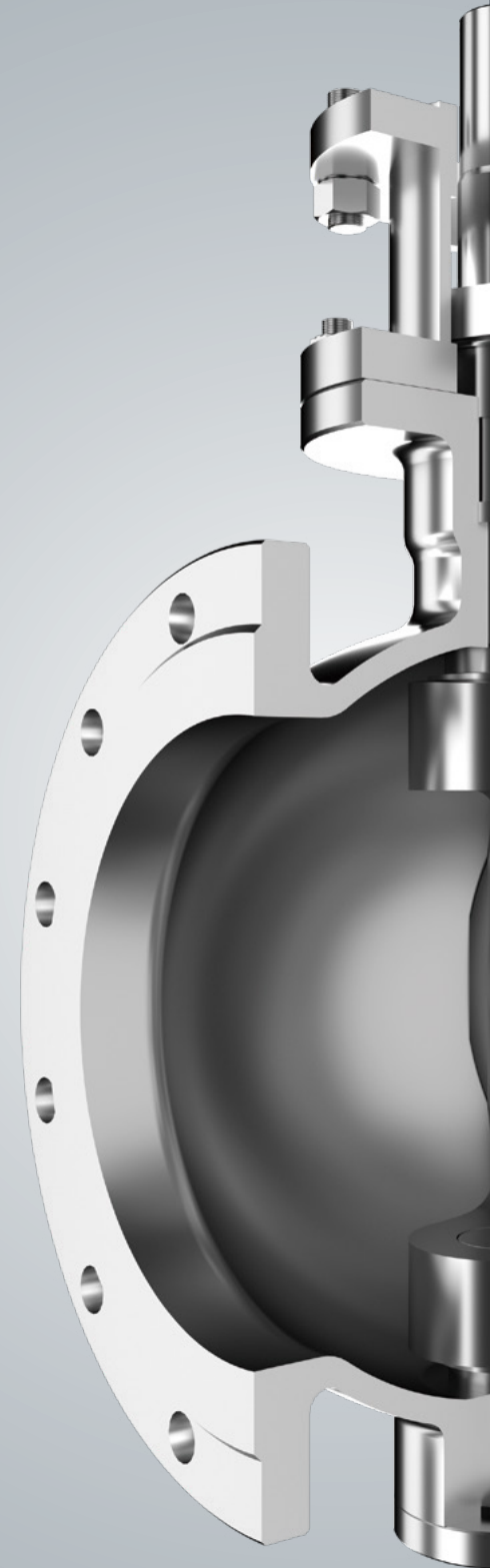
- Single-piece body prevents leaks caused by separate flanges or locking rings.

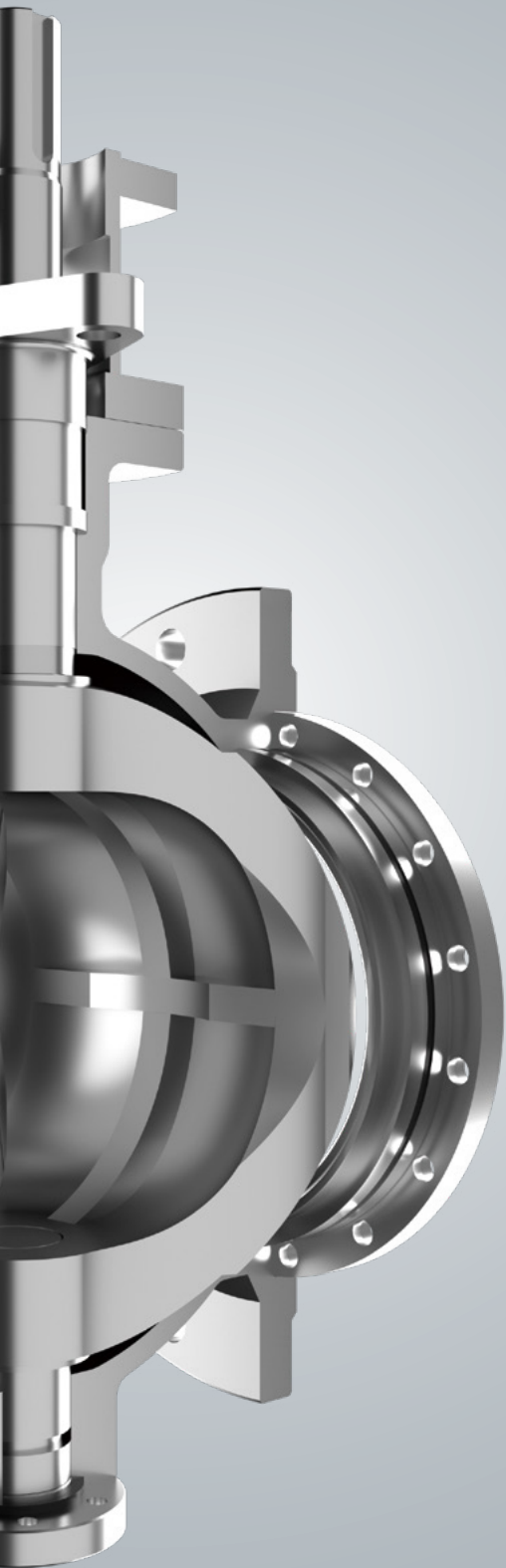
■ V-port Segment Ball

- Specially designed V-notch ball provides strong cutting stress and tight sealing. Well ground notched ball surface ensures small operating torque and tight seal, especially for metal seated segment valve.

■ Seat

- Special seat design eliminates cavity between seat and valve body. This, consequently, prevents media from jamming between seat and body, ensure reliable sealing.





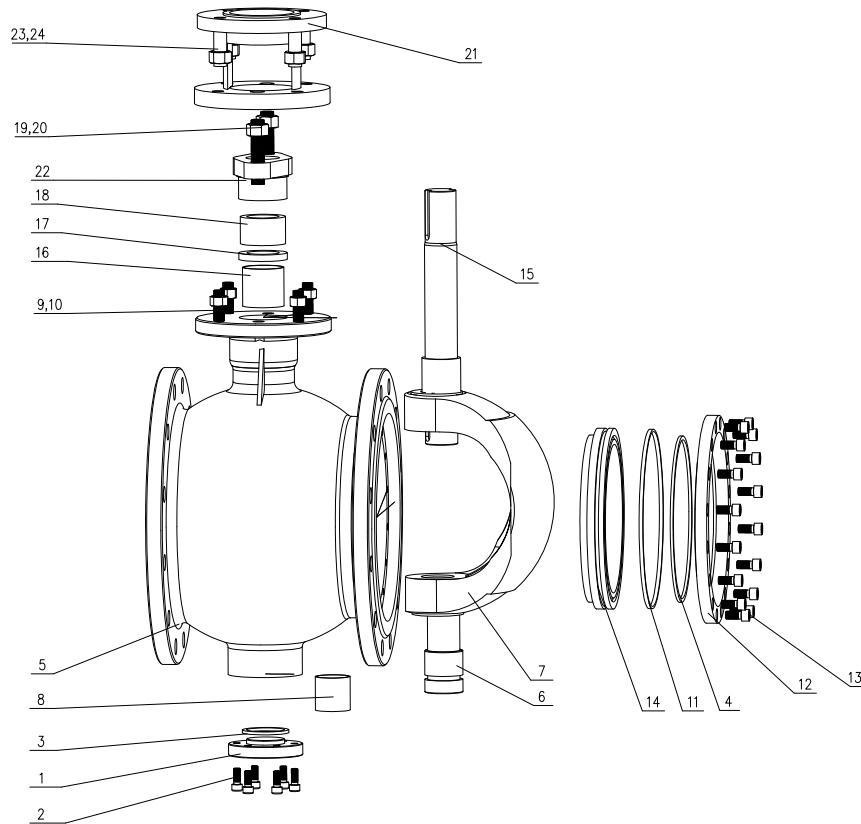
■ Seal Surface

- Nitriding/Tungsten Carbide/Satellite Alloy/Nickle Base Alloy plating are available for abrasive media.

■ Stem

- Stem is finely ground to match actuator excellently, which prevents rocking motion and potential failure of the v-port segmented valve.
- Close-fit spline or pin-key are available for stem-segment ball connection to provide reliable transmission without motion lost or dead band.

Material & Configuration



ITEM	PART NAME	MATERIAL		ITEM	PART NAME	MATERIAL	
1	BLIND FLANGE	ASTM A351 CF8M	ASTM A1216 WCB	13	BOLT	ASTM A193 B8M	ASTM A193 B7
2	SCREW	ASTM A193 B8M	ASTM A193 B7	14	O-RING	VITON	VITON
3	GASKET	PTFE or SS316+GRAPHITE	PTFE or SS316+GRAPHITE	15	STEM	ASTM A182 F316	ASTM A182 F316
4	SPRING	SS316 or INCONEL X-750	SS316 or INCONEL X-750	16	BEARING	SS316+PTFE	SS316+PTFE
5	BODY	ASTM A351 CF8M	ASTM A216 WCB	17	PACKING SUPPORT	ASTM A182 F316	ASTM A182 F316
6	LOWER STEM	ASTM A182 F316	ASTM A182 F316	18	PACKING	PTFE or GRAPHITE	PTFE or GRAPHITE
7	BALL	ASTM A182 F316+STL	ASTM A182 F316+STL	19	BOLT	ASTM A193 B8M	ASTM A193 B7
8	BEARING	SS316+PTFE	SS316+PTFE	20	NUT	ASTM A194 8M	ASTM A194 2H
9	SEAT	ASTM A182 F316+STL	ASTM A182 F316+STL	21	YOKE	ASTM A351 CF8M	ASTM A216 WCB
10	BOLT	ASTM A193 B8M	ASTM A193 B7	22	PACKING GLAND	ASTM A351 CF8M	ASTM A216 WCB
11	NUT	ASTM A194 8M	ASTM A194 2H	23	BOLT	ASTM A193 B8M	ASTM A193 B7
12	SEAT SUPPORT	ASTM A182 F316	ASTM A105	24	NUT	ASTM A194 8M	ASTM A194 2H

Technical Data

Class 150 Pressure Temperature Rating

Valve Size		Max Shut Off Differential Pressure				Max Control Differential Pressure				Maximum Torque *	
		Wafer		Flanged		Wafer		Flanged			
NPS	DN	bar	psi	bar	psi	bar	psi	bar	psi	NM	In-Lbs
1"	25	20	290	20	290	15	217	15	217	25	221
1¼"	32	20	290	20	290	15	217	15	217	25	221
1½"	40	20	290	20	290	15	217	15	217	30	266
2"	50	20	290	20	290	15	217	15	217	35	310
2½"	65	20	290	20	290	15	217	15	217	60	531
3"	80	20	290	20	290	15	217	15	217	80	708
4"	100	16	232	16	232	12	174	12	174	140	1239
5"	125	16	232	16	232	12	174	12	174	160	1416
6"	150	16	232	16	232	12	174	12	174	220	1947
8"	200	16	232	16	232	12	174	12	174	350	3098
10"	250	14	203	14	203	10	145	10	145	660	5841
12"	300	/	/	14	203	/	/	10	145	1200	10621
14"	350	/	/	12	174	/	/	8	116	1700	15046
16"	400	/	/	12	174	/	/	8	116	2600	23012
18"	450	/	/	10	145	/	/	6	87	3500	30978
20"	500	/	/	10	145	/	/	6	87	3800	33633
24"	600	/	/	8	116	/	/	4	58	6000	53105

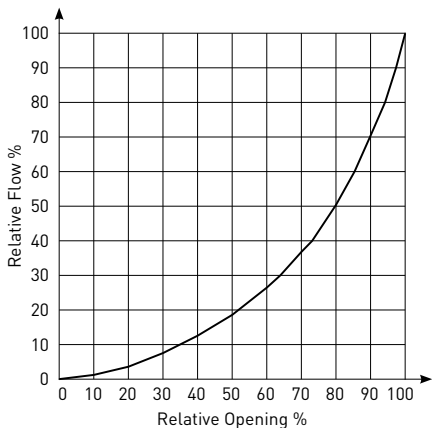
Class 300 Pressure Temperature Rating

Valve Size		Max Shut Off Differential Pressure				Max Control Differential Pressure				Maximum Torque *	
		Wafer		Flanged		Wafer		Flanged			
NPS	DN	bar	psi	bar	psi	bar	psi	bar	psi	NM	In-Lbs
1"	25	20	290	20	290	15	217	15	217	25	221
1¼"	32	20	290	20	290	15	217	15	217	25	221
1½"	40	20	290	20	290	15	217	15	217	30	266
2"	50	20	290	20	290	15	217	15	217	35	310
2½"	65	20	290	20	290	15	217	15	217	60	531
3"	80	20	290	20	290	15	217	15	217	80	708
4"	100	16	232	16	232	12	174	12	174	140	1239
5"	125	16	232	16	232	12	174	12	174	160	1416
6"	150	16	232	16	232	12	174	12	174	220	1947
8"	200	16	232	16	232	12	174	12	174	350	3098
10"	250	14	203	14	203	10	145	10	145	660	5841
12"	300	/	/	14	203	/	/	10	145	1200	10621
14"	350	/	/	12	174	/	/	8	116	1700	15046
16"	400	/	/	12	174	/	/	8	116	2600	23012
18"	450	/	/	10	145	/	/	6	87	3500	30978
20"	500	/	/	10	145	/	/	6	87	3800	33633
24"	600	/	/	8	116	/	/	4	58	6000	53105

* For more information please contact with us.

Typical Inherent Equal

Percentage Flow Characteristics



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 Flow Rate Through the Valve
 - b. Flow Rate given the
3. Flow Rate, GPM, PPH (LB/H), SCFM
4. Inlet Pressure of Media to Valve (PSIG)
5. Outlet Pressure of Media to Valve (PSIG)
6. Inlet Temperature of Media at Valve
7. Specific Gravity of Media at Valve
8. Media Vapor Pressure (PSIA)
9. Media Critical Pressure
10. Pipe Size Upstream of Valve
11. Pipe Size Downstream of Valve

Rated CV

VALVE SIZE		CV
NPS	DN	
1"	25	30
1-1/4"	32	50
1-1/2"	40	79
2"	50	140
2-1/2"	65	230
3"	80	360
4"	100	550
5"	125	805
6"	150	1250
8"	200	2050
10"	250	3250
12"	300	4800
14"	350	7500
16"	400	9600
18"	450	11500
20"	500	14500
24"	600	16000

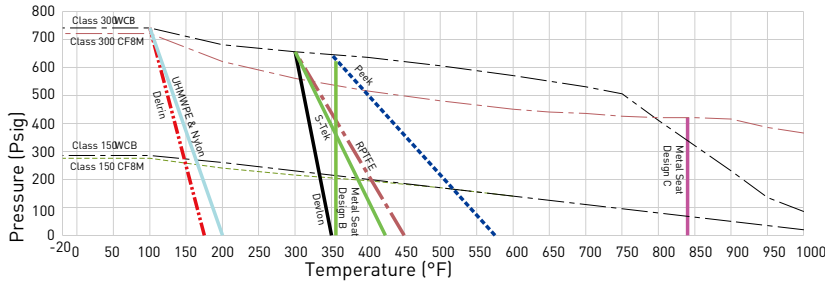
Segment Ball Valve

- **Cv:** The volume of water in United States gallons per minute that will pass through a given valve opening with a pressure drop of 1 pound per square inch. (water at temp = 60 deg.f)
- **Capacity:** Rate of flow through a valve under stated conditions. "Rated Capacity" is the flow through a valve in the full open position.
- **Control Valve:** A final controlling element (through which a fluid passes) which adjusts the size of the flow passage as directed by a signal from a controller to modify the rate of flow of the fluid.
- **Equal Percentage Flow Characteristic:** An inherent flow characteristic which, for equal increments of rated travel, will ideally give equal percentage changes of the existing flow.
- **Rangeability:** It is the ratio of the maximum to the minimum controllable flow coefficients(Cv). A control valve that still does a good job of controlling when flow increases to 100 times the minimum controllable flow has a rangeability of 100 : 1.
- **Turndown:** Turndown is a simple ratio of the maximum to the minimum controllable flow rate. For example, if the minimum flow rate were 10 gpm and maximum flow rate were 100 gpm, the turndown would be 10:1.

Flow characteristic

Valve Size	Percent of Ball Rotation																
	1"	1-¼"	1-½"	2"	2-½"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
5%	0.73	1.21	1.92	3.40	5.59	8.74	13.36	19.55	30.36	49.79	78.93	116.57	182.14	233.14	279.29	352.14	388.57
10%	0.89	1.48	2.34	4.14	6.80	10.65	16.26	23.81	36.96	60.62	96.11	141.94	221.79	283.89	340.07	428.79	473.14
15%	1.08	1.80	2.84	5.04	8.28	12.96	19.80	28.98	45.00	73.80	117.00	172.80	270.00	345.60	414.00	522.00	576.00
20%	1.31	2.19	3.45	6.12	10.05	15.74	24.04	35.19	54.64	89.61	142.07	209.83	327.86	419.66	502.71	633.86	699.43
25%	1.59	2.66	4.20	7.44	12.22	19.13	29.23	42.78	66.43	108.94	172.71	255.09	398.57	510.17	611.14	770.57	850.29
30%	1.94	3.24	5.11	9.06	14.88	23.30	35.59	52.10	80.89	132.66	210.32	310.63	485.36	621.26	744.21	938.36	1035.43
35%	2.36	3.94	6.22	11.02	18.10	28.34	43.29	63.37	98.39	161.36	255.82	377.83	590.36	755.66	905.21	1141.36	1259.43
40%	2.87	4.78	7.55	13.38	21.98	34.41	52.56	76.94	119.46	195.92	310.61	458.74	716.79	917.49	1099.07	1385.79	1529.14
45%	3.49	5.81	9.19	16.28	26.75	41.86	63.96	93.61	145.36	238.39	377.93	558.17	872.14	1116.34	1337.29	1686.14	1860.57
50%	4.24	7.07	11.17	19.80	32.53	50.91	77.79	113.85	176.79	289.93	459.64	678.86	1060.71	1357.71	1626.43	2050.71	2262.86
55%	5.16	8.60	13.59	24.08	39.56	61.92	94.60	138.46	215.00	352.60	559.00	825.60	1290.00	1651.20	1978.00	2494.00	2752.00
60%	6.27	10.46	16.52	29.28	48.10	75.29	115.03	168.36	261.43	428.74	679.71	1003.89	1568.57	2007.77	2405.14	3032.57	3346.29
65%	7.63	12.71	20.09	35.60	58.49	91.54	139.86	204.70	317.86	521.29	826.43	1220.57	1907.14	2441.14	2924.29	3687.14	4068.57
70%	9.28	15.46	24.43	43.30	71.14	111.34	170.11	248.98	386.61	634.04	1005.18	1484.57	2319.64	2969.14	3556.79	4484.64	4948.57
75%	11.28	18.80	29.70	52.64	86.48	135.36	206.80	302.68	470.00	770.80	1222.00	1804.80	2820.00	3609.60	4324.00	5452.00	6016.00
80%	13.72	22.86	36.13	64.02	105.18	164.62	251.51	368.12	571.61	937.44	1486.18	2194.97	3429.64	4389.94	5258.79	6630.64	7316.57
85%	16.68	27.81	43.94	77.86	127.91	200.21	305.88	447.70	695.18	1140.09	1807.46	2669.49	4171.07	5338.97	6395.64	8064.07	8898.29
90%	20.29	33.81	53.43	94.68	155.55	243.46	371.96	544.41	845.36	1386.39	2197.93	3246.17	5072.14	6492.34	7777.29	9806.14	10820.57
95%	24.67	41.11	64.96	115.12	189.13	296.02	452.26	661.94	1027.86	1685.69	2672.43	3946.97	6167.14	7893.94	9456.29	11923.14	13156.57
100%	30	50	79	140	230	360	550	805	1250	2050	3250	4800	7500	9600	11500	14500	16000

Pressure Temperature Rating



- Seat Design B is standard metal seat with a temperature limit of 356 °F.
- Seat Design C is optional metal seat with a temperature limit of 842 °F.
- S-Tek = 50% Stainless/50% PTFE

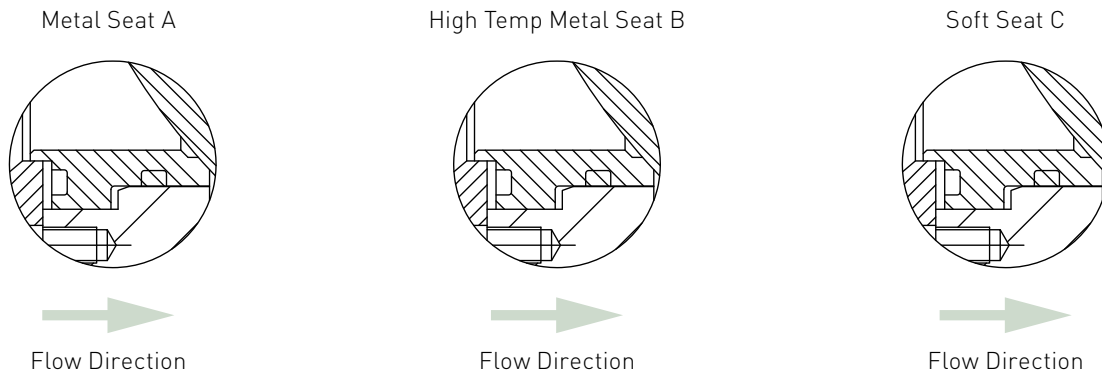
S-Tek (stainless filled PTFE) combines the strength of metal with the lubricity of PTFE.

50% 316 powder combined with 50% PTFE. Offers the abrasion resistance of metal with higher pressure and temperature ratings than RPTFE.

Temperature rating -20° to 425° / Steam rating 175 SWP.

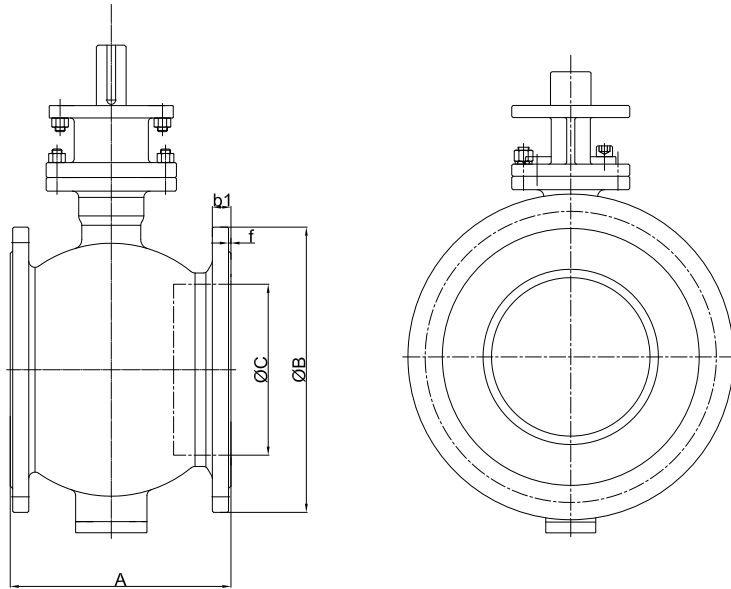
WCB is not recommended for prolonged use above 800 °F.

Seat Options



	Metal Seat A	High Temp Metal Seat B	Soft Seat C			
Seat	304/316+STL	304/316+STL	DEVLON	PCTFE	PEEK	
Spring	17-7PH/316L	17-7PH/316L	17-7PH/316L			
O-ring	Viton	Graphite	Viton			
Packing	PTFE	Graphite	PTFE		Graphite	
Temp. Range	-29-150°C	-29-350°C	-29-120°C	-29-120°C	-29-150°C	-29-240°C

Technical Specification



■ Product Description

Design Standard

ASME B16.34

Top Flange

ISO 5211

Nominal Diameter

DN25-DN500 (1"-20")

Flange Connection

ASME B16.5 / ASME B16.47

Pressure Rating

Class150, Class300, Class600

Face to Face acc

ISA 75.04

Test Standard

ANSI FCI 70.2

CL 150

DN	A	B	b1	f	DN	A	B	b1	f
25	102	115	16	2	150	229	285	24	2
32	102	140	18	2	200	243	340	24	2
40	114	150	18	2	250	297	405	26	2
50	124	165	20	2	300	338	460	28	2
65	145	185	20	2	350	400	520	30	2
80	165	200	20	2	400	400	580	32	2
100	194	220	22	2	450	520	640	40	2
125	194	250	22	2	500	600	715	44	2



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