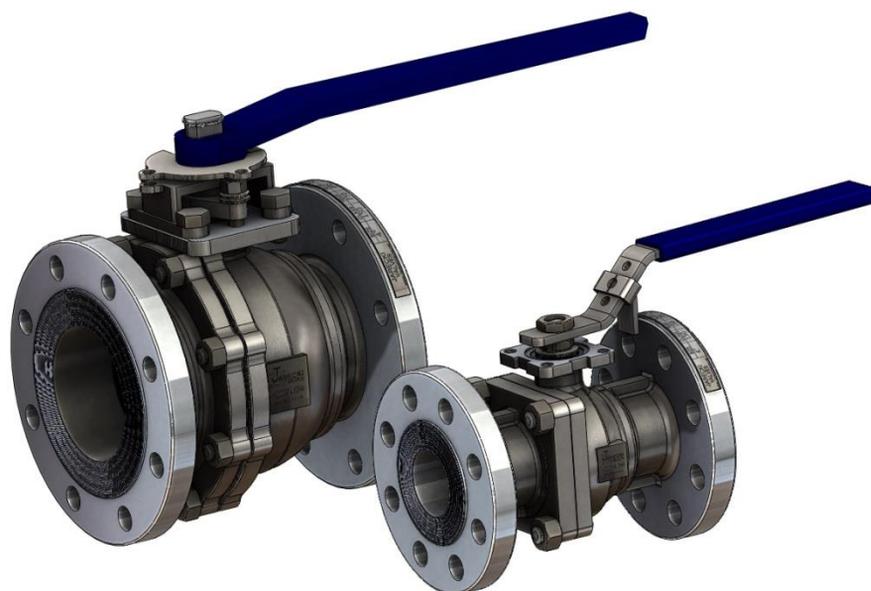


SV SERIES 2-PIECE V PORT CONTROL VALVES

Split Body metal seated control valves for industrial and process applications.



The Jarecki SV Series Control valve is an economical choice for your high temperature and abrasive media valve needs. SV Series valves are used for applications in the Chemical, Power, Pulp and Paper, Petrochemical, Oil and Gas, and Mining Industries.

Standard Applications:

Green, Black, White Liquor
Hot Oil
Saturated Steam
Feedwater
Abrasive Media
Chlorine
Nitrogen
TiCl₄

Seat Leakage Class:

RTFE Seats Bubble Tight
RTFE Seats API 598
Metal Seats Class V - **Standard**
Metal Seats Class VI
Metal Seats Zero Leakage
Metal Seats API 598
Metal Seats ISO 5208

Design

Pressure Rating

- 150# Available in Sizes ½" to 12"
- 300# Available in Sizes ½" to 12"

Valve Size

- 1/2" to 12" Full Port
- 6" to 12" Reduced Port

End Connections

- Flanged
- Butt weld Available On Request

Valve Construction

- 2 Piece Valve Design
- Investment Cast Body Size ½" to 4"
- Split Body
- Floating Ball
- Spiral Wound Body Gasket with Secondary Metal to Metal Seal
- Actuator Mounting Pad
- Live Loaded Stem Packing
- Designed to B16.34
- Blow Out Proof Stem
- Heavy Duty Stem For High Torque

Seat Designs

- Bi-Direction RTFE Seats
- Bi-Direction Metal Seats
- Uni-Directional Metal Seats – **Standard**

Service Conditions

- Temperatures Up to 1000 deg F
- Pressures as low as Vacuum Service
- Pressures as High as 740 psi
- For Clean and Abrasive Services

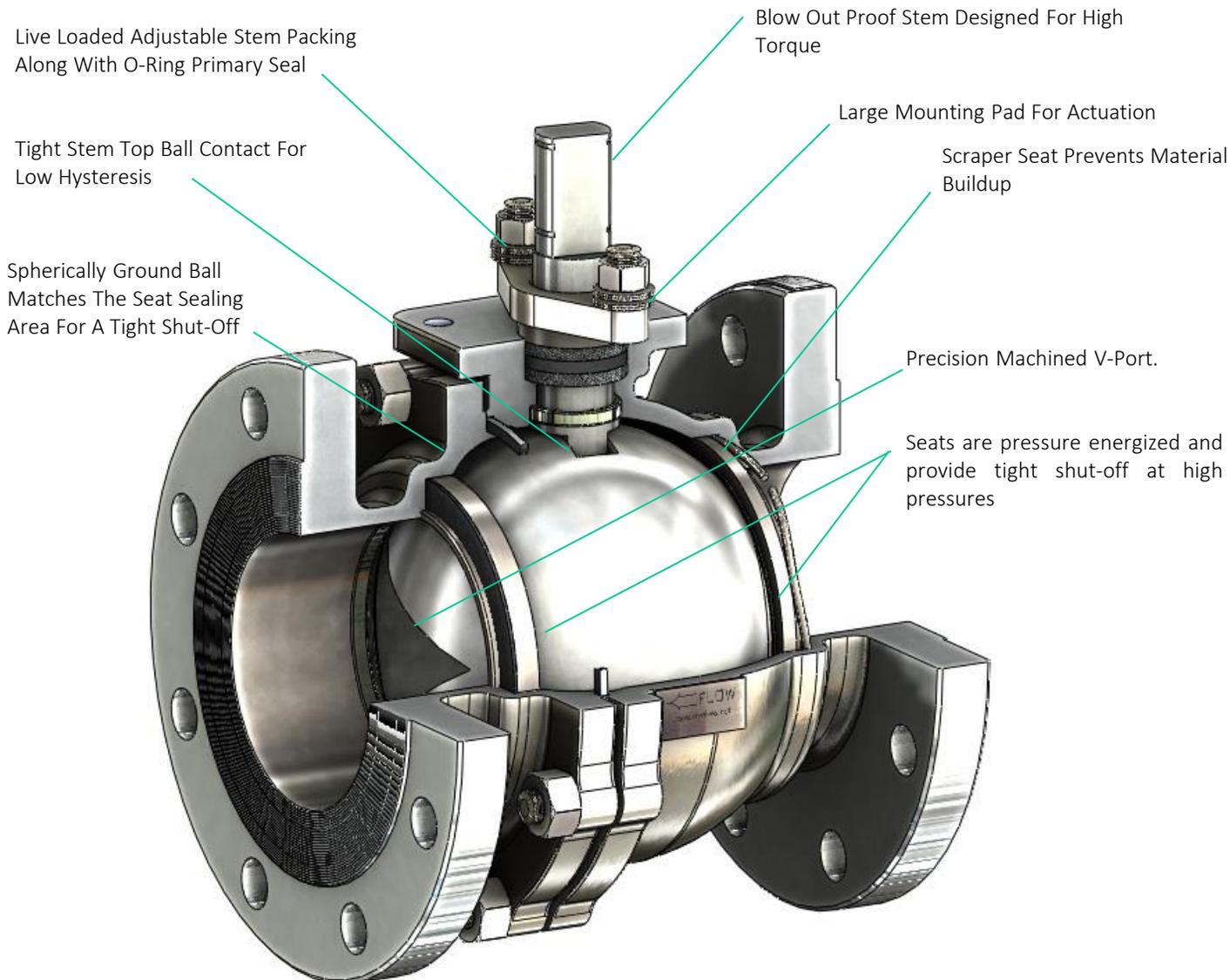
FEATURES

Reliable Shut-Off

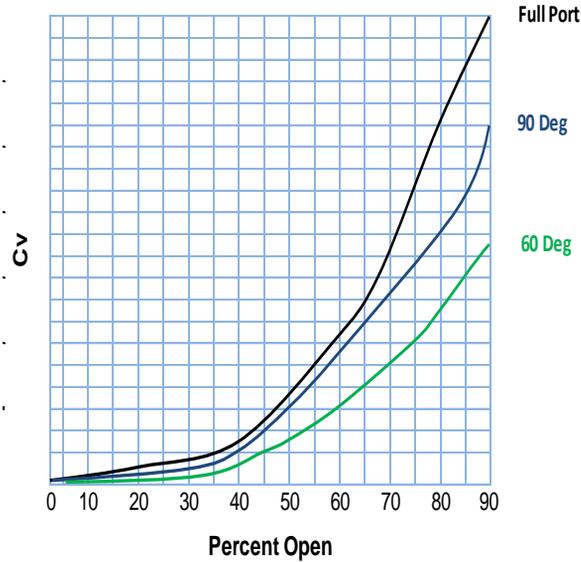
- Tight shut-off is accomplished by grinding every ball to very tight tolerances and excellent finish, generating a true radius each individual seat to its mating ball, and then carefully lapping them together through our proven polishing process.
- Every valve that leaves the plant has both a hydrostatic, torque and cycle test, and seat leakage test performed on it.
- Standard Shut-Off is Class V. ISO 5208 Rate A,B,C and ANSI Class VI available As Options.

Quality

- Jarecki Valves is an ISO 9000 Company and quality is an important part of our culture
- In Metal Seat Valves, .003 Thousands of an inch can make all the difference in torque, shut-off and overall valve performance. Our quality system requires this.
- At Jarecki Valves, 95% of our business is metal seated ball valves. The employees understand and excel at producing the highest quality metal seated valves available.



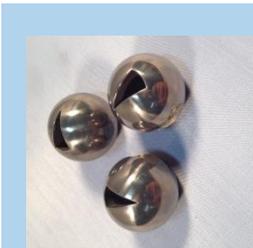
MODIFIED EQUAL PERCENTAGE CURVE



Modified Equal Percentage

Linear Flow

Other



- 90 Deg V Port
- 60 Deg V Port
- 30 Deg V Port.
- 15 Deg V Port
- 10 Deg V Port
- 5 Deg V Port

- .0156" Slot
- .0313" Slot
- .0625" Slot
- .0125" Slot
- Special Designed Shapes

- . Special Designed Shapes

V PORT ADVANTAGE

- Great Rangeability, can exceed 800:1.
- V-Port Ball design provides both excellent control and tight shut-off.
- Higher flow rates than similar sized globe valves means smaller pipeline sizes required.
- Capable of higher temperatures than other control valves
- Increased Linear Response due to direct flow pattern through the valve body.
- Slotted Ball ports available for micro control
- Modified shapes available on request
- Precise and accurate control



V BALL VALVE FLOW COEFFICIENT Cv CHART

V-Port Ball Valves

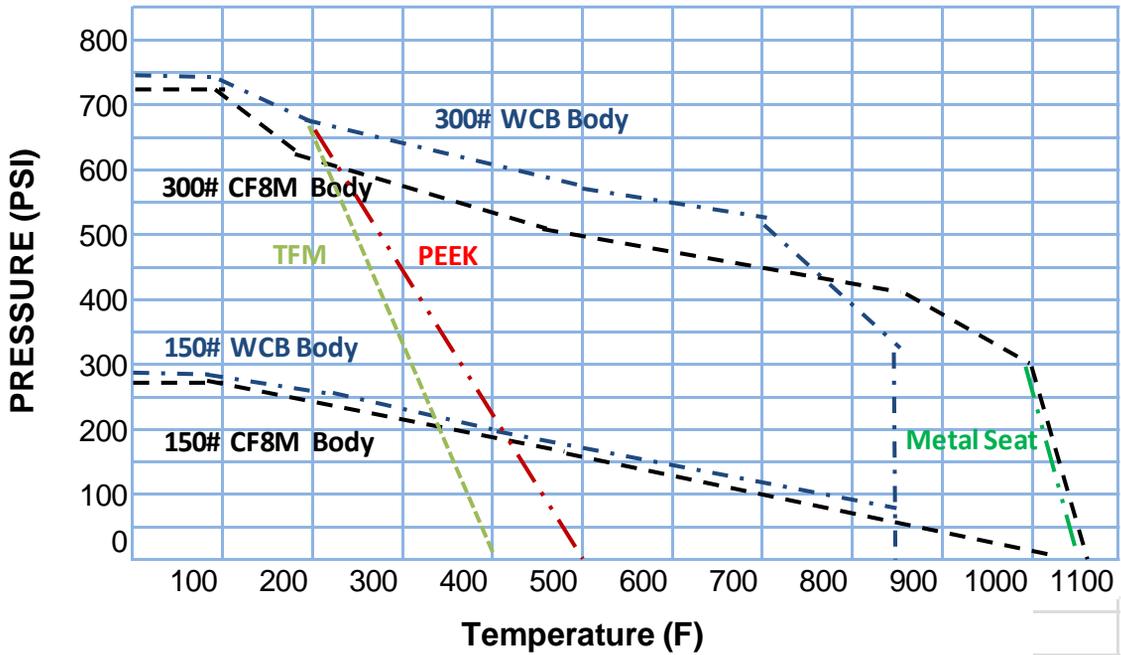
Valve Size	V-Port Angle	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
		9	18	27	36	45	54	63	72	81	90
1/2"	15	0.03	0.17	0.43	0.68	0.98	1.63	2.11	2.84	3.63	4.29
1/2"	30	0.03	0.23	0.46	0.76	1.18	1.81	2.46	3.42	4.66	5.57
1/2"	60	0.04	0.28	0.72	1.11	1.84	2.91	4.28	6.99	9.43	12.77
1/2"	90	0.05	0.46	0.84	1.27	2.04	3.23	4.74	8.24	11.62	14.73
3/4"	15	0.04	0.23	0.55	0.89	1.33	2.14	2.74	3.75	4.74	5.54
3/4"	30	0.06	0.29	0.61	0.98	1.55	2.42	3.23	4.51	6.11	7.34
3/4"	60	0.07	0.34	0.92	1.45	2.41	3.84	5.63	9.22	12.42	16.27
3/4"	90	0.08	0.58	1.11	1.68	2.68	4.26	6.22	10.84	15.27	19.38
1"	15	0.05	0.31	0.94	1.48	2.33	3.81	4.69	6.49	8.49	9.85
1"	30	0.07	0.45	1.24	2.05	3.53	5.31	7.71	10.48	12.83	15.47
1"	60	0.08	0.67	1.73	2.77	5.12	8.01	11.87	18.69	23.21	32.85
1"	90	0.11	0.93	2.77	5.08	7.73	12.21	17.32	24.47	26.78	43.88
1-1/4"	15	0.02	0.26	0.82	1.64	2.8	4.08	5.89	7.98	10.85	12.86
1-1/4"	30	0.05	0.48	1.37	2.47	4.12	6.09	8.83	11.76	14.88	17.38
1-1/4"	60	0.07	0.66	2.03	3.42	6.48	10.79	15.38	22.34	33.36	44.19
1-1/4"	90	0.09	0.78	2.93	5.42	10.23	17.28	19.48	34.94	51.75	66.01
1-1/2"	15	0.05	0.38	1.16	2.28	3.84	5.59	8.11	10.98	18.86	17.85
1-1/2"	30	0.07	0.64	1.87	3.41	5.67	8.35	12.13	16.18	20.43	23.89
1-1/2"	60	0.09	0.91	2.8	4.69	8.88	14.86	21.16	30.72	45.89	59.75
1-1/2"	90	0.11	1.06	4.02	7.43	14.05	23.77	26.77	48.02	71.16	90.51
2"	15	0.05	0.68	2.25	4.44	7.29	10.68	15.41	21.38	28.76	35.06
2"	30	0.08	1.18	3.78	7.53	12.26	17.82	26.43	36.45	48.08	55.92
2"	60	0.11	1.52	5.79	10.39	20.59	33.99	48.76	69.03	104.24	136.51
2"	90	0.16	1.88	7.29	13.57	25.38	42.29	55.55	87.05	129.76	167.33
2-1/2"	15	0.08	1.76	2.43	5.24	8.09	11.74	16.43	22.36	27.23	32.11
2-1/2"	30	0.09	1.14	4.42	7.92	13.4	20.04	30.42	41.92	69.76	77.19
2-1/2"	60	0.13	1.45	5.91	11.91	23.23	37.93	59.32	83.28	113.65	162.5
2-1/2"	90	0.18	1.82	7.28	16.45	31.15	53.54	77.89	118.29	177.32	240.11
3"	15	0.07	0.91	2.99	6.64	9.59	13.49	19.62	26.68	31.8	38.39
3"	30	0.12	1.21	4.14	9.48	15.97	26.77	38.92	53.32	69.76	85.92
3"	60	0.16	2.88	6.69	15.83	29.36	46.33	73.59	106.73	149.89	193.19
3"	90	0.2	4.11	8.66	21.08	41.08	69.28	105.92	161.03	237.22	360.22
4"	15	0.11	1.39	3.76	8.88	16.78	27.91	41.86	59.27	75.54	97.06
4"	30	0.18	1.74	7.83	18.58	35.22	58.59	87.88	124.42	158.52	197.09
4"	60	0.26	2.19	12.45	33.67	62.98	106.25	160.5	233.97	329.49	437.3
4"	90	0.35	4.36	19.68	50.28	91.82	157.42	240.52	365.16	546.61	830.86
6"	15	0.22	2.49	6.66	15.78	29.89	49.74	74.55	105.55	134.47	172.06
6"	30	0.29	3.12	13.96	33.15	62.69	104.36	156.54	221.57	282.32	349.7
6"	60	0.46	5.42	22.14	59.98	112.16	189.23	285.82	416.69	586.82	800.79
6"	90	0.68	7.79	35.06	89.57	163.56	280.37	428.33	650.33	973.49	1479.25
8"	15	0.33	4.24	11.32	26.87	50.79	84.6	126.89	395.08	503.39	292.35
8"	30	0.51	5.33	23.77	56.36	106.69	177.63	266.38	377.05	480.46	595.19
8"	60	0.8	6.67	23.82	102.06	190.87	322.05	486.42	709.12	998.69	1325.4
8"	90	1.07	13.25	59.63	152.42	278.32	477.14	728.95	1106.68	1656.78	2518.19
10"	15	0.52	6.65	17.69	41.98	79.59	132.2	198.19	617.29	786.49	457.11
10"	30	0.77	8.31	37.13	88.06	166.74	277.52	416.23	589.15	750.73	930.09
10"	60	1.24	10.42	37.19	159.46	298.24	503.21	760.01	1107.99	1560.44	2070.89
10"	90	1.67	20.73	93.19	238.14	434.91	745.52	1139.01	1729.19	2588.69	3934.66
12"	15	0.75	9.39	24.79	58.79	111.16	185.01	277.5	864.21	1101.06	640.49
12"	30	1.09	11.62	52.01	123.26	233.41	388.53	582.72	824.83	1051.03	1301.81
12"	60	1.73	14.57	52.08	223.24	417.53	704.52	1064.02	1551.18	2184.64	2910.26
12"	90	2.32	29.99	132.09	338.39	610.75	1045.59	1601.01	2449.25	3640.21	5505.25
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

Valve Flow Coefficient (Cv):

Number of U.S. gallons per minute of 60 deg 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 V Profile provides a more linear equal percentage flow characteristic.

PRESSURE / TEMPERATURE CHART



Live Loaded Packing System

- Blow-Out proof stem design to ensure workman safety.
- Live-Loaded stem packing to compensate for temperature fluctuations and normal wear.
- Care is taken not to over torque the stem packing at the testing facility.

Reliable Body Seal

- The body and end connections are bolted with a metal to metal contact to ensure that proper compression on the body gasket is achieved.
- This metal to metal contact also guarantees that the dimensions inside the valve are correct. The torque is constant, and both the body and seat seal gaskets will always have the proper compression.

Specifications

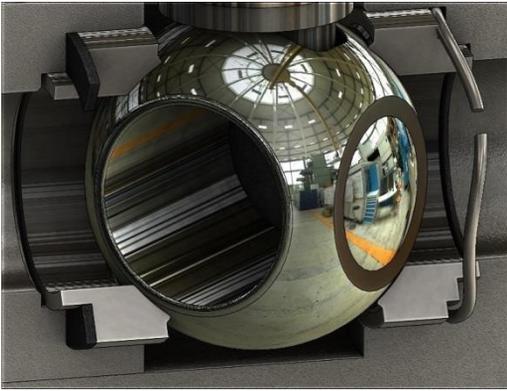
Valves covered in this bulletin are available to conform to the following industry standards and specifications

- Flanged Ends meet ANSI B16.10 and B16.5
- Butt Weld end connections meet MSS SP72
- Pressure Testing Of Valves MSS-SP-61
- Standard Marking for Valves MSS-SP-25
- Valves are tested per ANSI FCI 70-2-1976
- Minimum wall thickness meets ANSI B16.34
- Valves are tested per ANSI FCI 70-2-1991 and B16.34
- ASME B31.1 Power Piping
- ASME B31.3 Chemical Plant Piping
- MSS SP-55 Quality Standards For Castings
- MSS SP-6 Standard Finishes for Contact Faces of Pipe Flanges
- API 607 Fire Test For Soft Seated Valves
- NACE MRO175 Sulfide Stress Cracking Resistant Materials For oilfied Equipment*
- API 6D Specifications for Pipeline Valves

* Must specify this as a requirement at time of order

SEAT STYLES

P Seat - Spring Loaded (Standard)



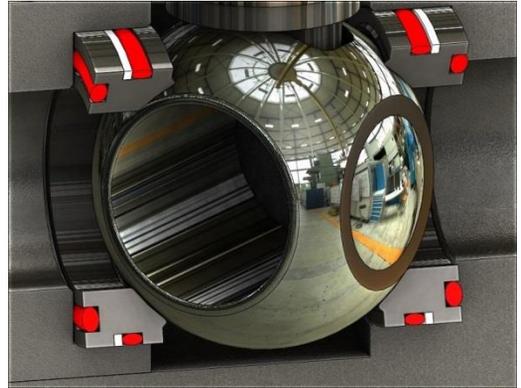
For unidirectional applications. The sealing seat is available as a separate seat ring for reparability, or integral with the tailpiece for high temperature applications. The spring seat OD seal prevents media from building up between the spring and the back of the seat.

Temperature Range: -40 to 1000 deg F

Application: Steam, Hot Air, Gases, Low Pressure Differentials, High Temperatures

Shut-Off: Class V, Class VI, Bubble Tight

O Seal – O Ring Sealed Seat



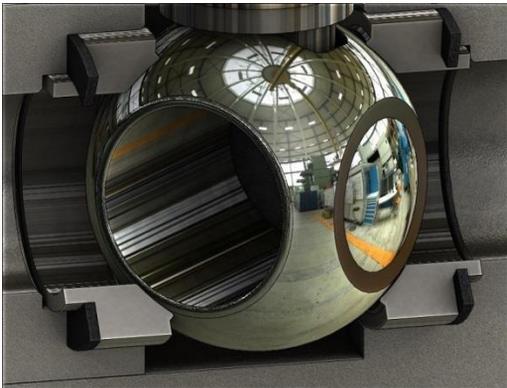
A double seal design providing both spring loading and excellent sealing capabilities. There is no area for media to build up behind the seat, which prevents the valve from locking up.

Temperature Range: --40 to 650 deg F

Application: Steam, Abrasion, Low Pressure Differentials, Fine Solids, Emulsions

Shut-Off: Class V, Class VI, Bubble Tight

G Seal - Graphite Sealed Seat



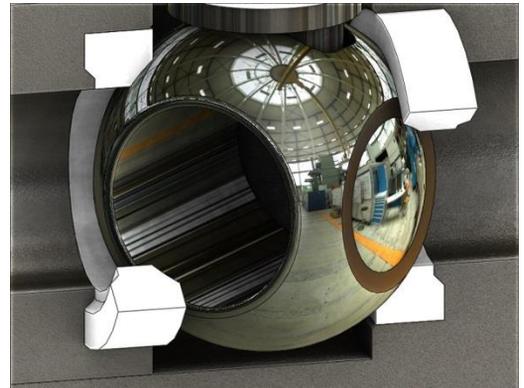
A series of Graphite seal rings behind the metal seat prevents media from building up behind the seat. The rings also allow for expansion of the internal valve components in high temperature applications. This design is great for applications involving fine solids as the graphite prevents the media from building up behind the seats.

Temperature Range: -20 to 1000 deg F

Application: Steam, Abrasion, High Temperatures, Fine Solids, Slurry

Shut-Off: Class V, Class VI, Bubble Tight

T Seat - Reinforced TFE Seat



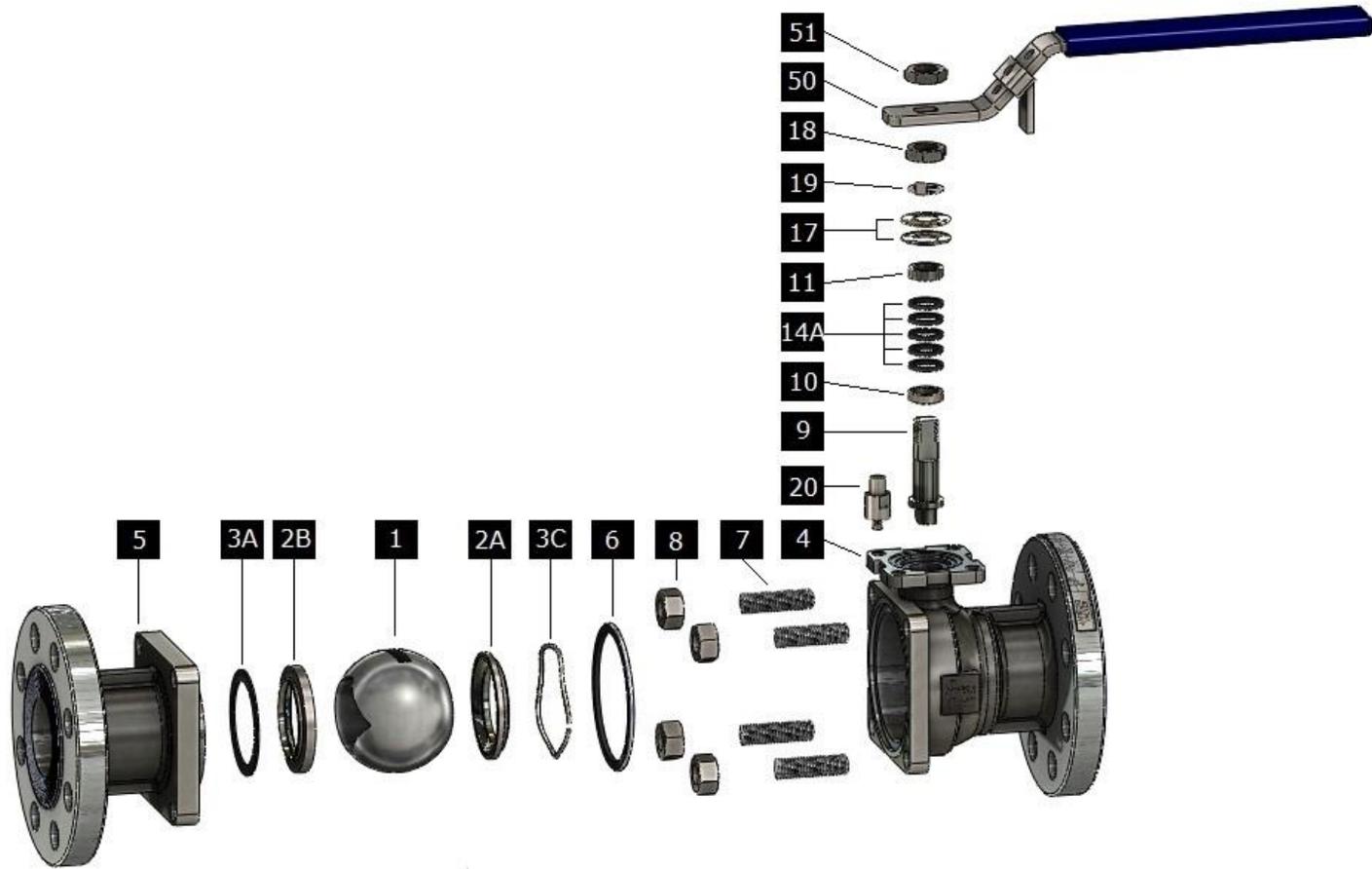
The T Seat Style designates a soft seat material. There are many seat materials available with TFM being the standard option. A metal lip on the body and tailpiece provides fire safety and meets API 607 requirements.

Temperature Range: -20 to 450 deg F

Application: Steam, Low Pressure Differentials, Emulsions, Nonabrasive Media

Shut-Off: Class VI, Bubble Tight

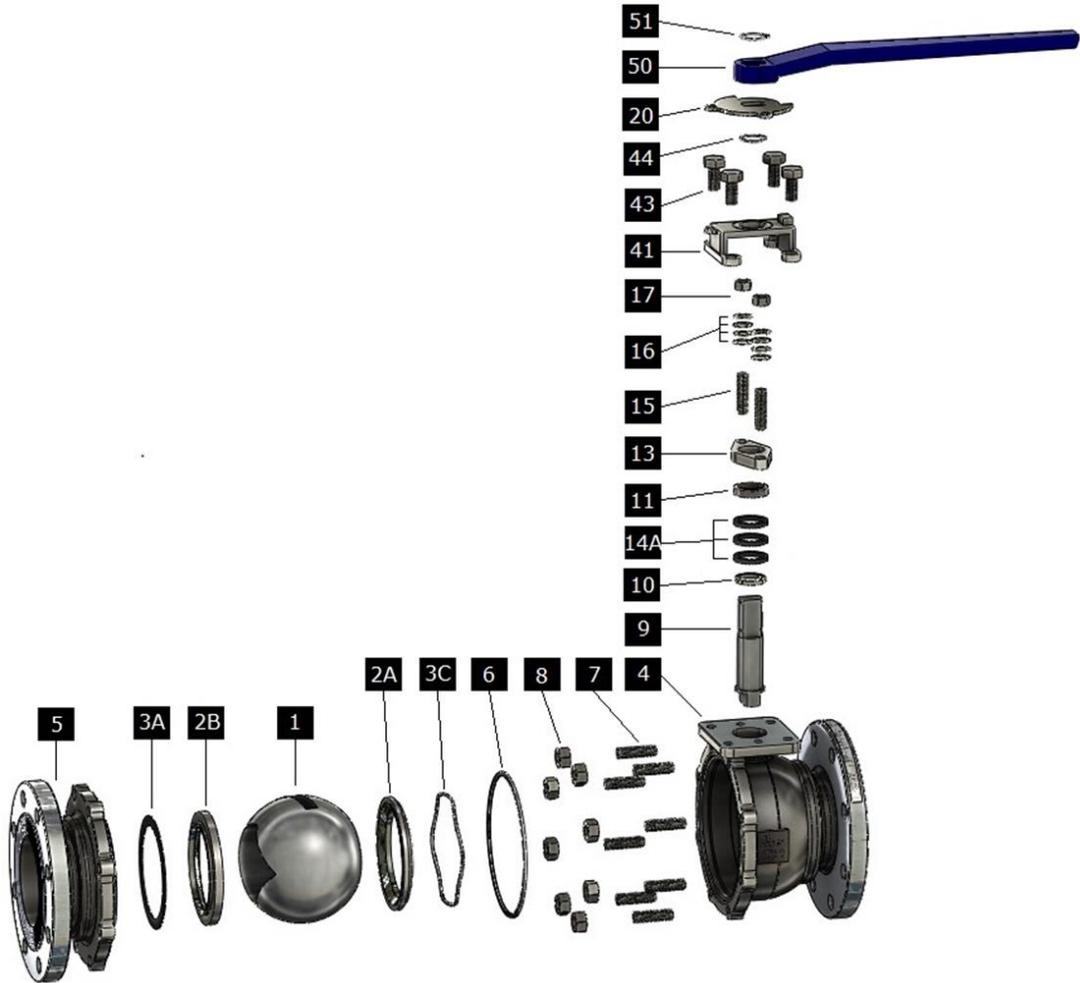
BILL OF MATERIAL



ITEM NO.	NAME	STAINLESS STEEL	CARBON STEEL	ALLOY 20	DUPLEX
1	BALL	316 W/ HARD CHROME*	316 W/ HARD CHROME*	ALLOY 20 W/ COLMONOY*	2205 W/ Tantalum Chrome Oxide *
2A	GUIDE SEAT (IF APPLICABLE)	316 W/ STELLITE HF*	316 W/ STELLITE HF*	ALLOY 20 W/ COLMONOY*	2205 W/ Tantalum Chrome Oxide *
2B	SEALING SEAT	316 W/ STELLITE HF*	316 W/ STELLITE HF*	ALLOY 20 W/ COLMONOY*	2205 W/ Tantalum Chrome Oxide *
3A	SEAT SEAL	TFE/Viton/Graphite	TFE/Viton/Graphite	TFE/Viton/Graphite	TFE/Viton/Graphite
3C	SEAT SPRING (IF APPLICABLE)	17-7 SST/ A286	17-7 SST/ A286	ALLOY 20	2205 DUPLEX SST
4	BODY	A351 CF8M	A216 WCB	A351 2 CN7M	A351 CD3MN
5	TAILPIECE	A351 CF8M	A216 WCB	A351 2 CN7M	A351 CD3MN
6	BODY GASKET	316sst w/ Graphite Filler*	316sst w/ Graphite Filler*	ALLOY 20 w/ Graphite Filler*	2205sst w/ Graphite Filler*
7	BODY STUD	ASTM A193 B8	ASTM A193 B8	ASTM A193 B8	ASTM A193 B8
8	BODY NUT	ATM A194 Gr. 8	ATM A194 Gr. 8	ATM A194 Gr. 8	ATM A194 Gr. 8
9	STEM	17-4SST/XM-19*	17-4SST/XM-19*	ALLOY 20*	2205 DUPLEX SST*
10	THRUST WASHER	Nitronic 60/TFE*	Nitronic 60/TFE*	STELLITE*	STELLITE*
11	COMPRESSION RING	316 SST	316 SST	ALLOY 20	2205 DUPLEX SST
14A	STEM PACKING	TFE/GRAPHITE	TFE/GRAPHITE	TFE/GRAPHITE	TFE/GRAPHITE
16	GLAND NUT	ATM A194 Gr. 8	ATM A194 Gr. 8	ATM A194 Gr. 8	ATM A194 Gr. 8
17	BELLEVILLE WASHER	301 SST	301 SST	301 SST	301 SST
18	PACKING NUT	304 SST	304 SST	304 SST	304 SST
19	PACKING NUT LOCK	304 SST	304 SST	304 SST	304 SST
50	LEVER W/ LOCKING DEVICE	304 SST	304 SST	304 SST	304 SST
51	NUT	304 SST	304 SST	304 SST	304 SST

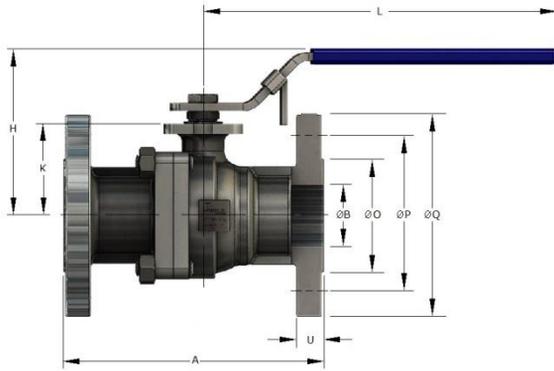
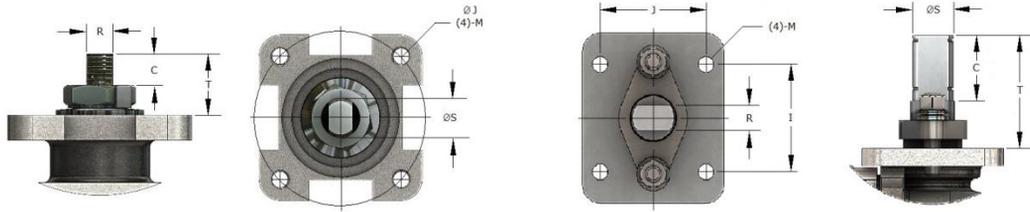
* Other materials and coatings available upon request

BILL OF MATERIAL

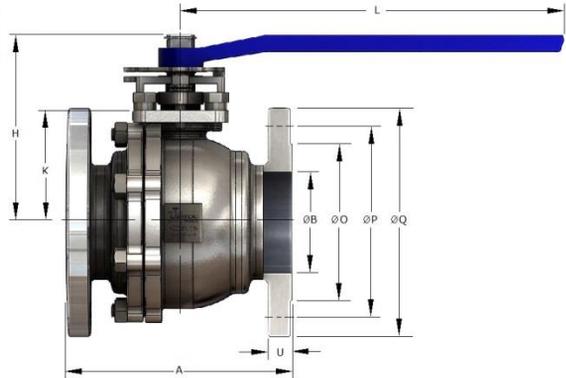


ITEM NO.	NAME	STAINLESS STEEL	CARBON STEEL	ALLOY 20	DUPLEX
1	BALL	316 W/ HARD CHROME*	316 W/ HARD CHROME*	ALLOY 20 W/ COLMONOY*	2205 W/ Tantalum Chrome Oxide *
2A	GUIDE SEAT (IF APPLICABLE)	316 W/ STELLITE HF*	316 W/ STELLITE HF*	ALLOY 20 W/ COLMONOY*	2205 W/ Tantalum Chrome Oxide *
2B	SEALING SEAT	316 W/ STELLITE HF*	316 W/ STELLITE HF*	ALLOY 20 W/ COLMONOY*	2205 W/ Tantalum Chrome Oxide *
3A	SEAT SEAL	TFE/Viton/Graphite	TFE/Viton/Graphite	TFE/Viton/Graphite	TFE/Viton/Graphite
3C	SEAT SPRING (IF APPLICABLE)	17-7 SST/ A286	17-7 SST/ A286	ALLOY 20	2205 DUPLEX SST
4	BODY	A351 CF8M	A216 WCB	A182 CN7M	A351 CD3MN
5	TAILPIECE	A351 CF8M	A216 WCB	A182 CN7M	A351 CD3MN
6	BODY GASKET	316sst w/ Graphite Filler*	316sst w/ Graphite Filler*	ALLOY 20 w/ Graphite Filler*	2205sst w/ Graphite Filler*
7	BODY STUD	ASTM A193 B8	ASTM A193 B8	ASTM A193 B8	ASTM A193 B8
8	BODY NUT	ATM A194 Gr. 8	ATM A194 Gr. 8	ATM A194 Gr. 8	ATM A194 Gr. 8
9	STEM	17-4SST/XM-19*	17-4SST/XM-19*	2205 DUPLEX SST*	2205 DUPLEX SST*
10	THRUST WASHER	Nitronic 60/TFE	Nitronic 60/TFE	STELLITE	STELLITE
11	COMPRESSION RING	316 SST	316 SST	ALLOY 20*	2205 DUPLEX SST*
13	COMPRESSION PLATE	304 SST	304 SST	304 SST	304 SST
14a	STEM PACKING	TFE/GRAPHITE	TFE/GRAPHITE	TFE/GRAPHITE	TFE/GRAPHITE
15	GLAND STUD	ASTM A193 B8	ASTM A193 B8	ASTM A193 B8	ASTM A193 B8
16	BELLEVILLE WASHER	301 SST	301 SST	301 SST	301 SST
17	GLAND NUT	ATM A194 Gr. 8	ATM A194 Gr. 8	ATM A194 Gr. 8	ATM A194 Gr. 8
20	TRAVEL STOP	304 SST	304 SST	304 SST	304 SST
41	STOP HOUSING	304 SST	304 SST	304 SST	304 SST
43	BOLTS	304 SST	304 SST	304 SST	304 SST
44	SNAP RING	301 SST	301 SST	301 SST	301 SST
50	LEVER	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON	DUCTILE IRON
51	SNAP RING	301 SST	301 SST	301 SST	301 SST

DIMENSIONS



Size 1/2" to 2"



Size 3" to 12"

ANSI 150# FULL PORT

SIZE	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
A	4.25	4.61	5.00	5.50	6.50	7.00	7.85	8.00	9.00	14.00	15.50	18.00	21.00	24.00
ØB	0.58	0.78	1.00	1.25	1.50	2.00	2.55	3.00	4.00	5.00	5.99	7.90	9.85	11.82
ØR	1.38	1.69	2.00	2.50	2.88	3.62	4.12	5.00	6.19	7.31	8.50	10.62	12.75	15.00
ØS	2.38	2.75	3.12	3.50	3.88	4.75	5.50	6.00	7.50	8.50	9.50	11.75	14.25	17.00
ØF	3.50	3.88	4.25	4.62	5.00	6.00	7.00	7.50	9.00	10.00	11.00	13.50	16.00	19.00
Cv	20	45	80	150	260	410	650	1000	1730	3650	5250	10075	15250	21500
WEIGHT	5	6	8	11	15	25	39	43	69	110	182	305	555	672

ANSI 300# FULL PORT

SIZE	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12
A	5.50	6.00	6.50	7.00	7.50	8.50	9.50	11.12	12.00	15.00	15.88	19.75	22.40	25.50
ØB	0.58	0.78	1.00	1.25	1.50	1.98	2.55	2.99	3.99	5.00	5.98	7.88	9.85	11.82
ØR	1.38	1.69	2.00	2.50	2.88	6.32	4.12	5.00	6.19	7.31	8.50	10.62	12.75	15.00
ØS	2.62	3.25	3.50	3.88	4.50	5.00	5.88	6.62	7.88	9.25	10.62	13.00	15.25	17.75
ØF	3.75	4.62	4.88	5.25	6.12	6.50	7.50	8.25	10.00	11.00	12.50	15.00	17.50	20.50
Cv	15	40	75	140	255	405	645	990	1715	3500	5000	10000	15000	21000
WEIGHT	6	8	11	14	23	28	47	74	106	160	255	395	715	875

ANSI 150# REDUCED PORT

SIZE	6	8	10	12
A	10.50	11.50	13.00	14.00
ØB	5.98	7.88	9.85	11.82
ØR	8.50	10.62	12.75	15.00
ØS	10.62	13.00	15.25	17.75
ØF	12.50	15.00	17.50	20.50
Cv	1795	4835	10398	17852
WEIGHT	85	199	335	530

MOUNTING DIMENSIONS

SIZE	1/2 - 3/4"	1"	1 1/2" - 2"	2 1/2" - 4"	6"	8"	10 - 12"
L	1.169	1.392	1.949	2.840	3.370	3.370	3.897
W	1.169	1.392	1.949	2.840	3.370	3.370	3.897
N	0.320	0.430	0.550	1.750	1.610	1.610	2.130
H	0.550	0.750	0.910	3.070	3.580	3.580	3.860
ØD	0.366	0.429	0.618	1.102	1.713	1.713	1.969
F	0.250	0.315	0.374	0.669	1.024	1.024	1.378
T	#10-24	1/4 - 20	5/16-18	1/2 - 13	1/2 - 13	1/2 - 13	5/8" - 11



Jarecki Valves has been an American valve manufacturer and rebuilder for more than 40 years, providing customers with high quality metal and soft seated ball, control, and check valves. Jarecki Valves got its start engineering and manufacturing valves for the Navy Nuclear Industry, which involved working with exotic materials and manufacturing valves for critical service. In 1980 Jarecki Valves worked closely with Hammermill Paper and developed a specially designed valve for Green and Black Liquor Service. Jarecki Valves has had high temperature valves in Power Plants since the mid 1980's. It has been producing high alloy valves for the Chemical Industry since 1989.

Jarecki supplies metal seated ball valves to a variety of industries. Some of which include Aerospace, Chemical, Petrochemical, Power, Oil and Gas, Mining, and Municipal.



ORDERING INFORMATION

SIZE	SERIES	PORT SIZE	SEAT	SEAT MATERIAL	BALL	BALL COATING	BODY	CLASS	END CONNECTION	OPTIONS
1/2" TO 12"	SV	F FULL	0 NONMETAL	B Boronizing	A 316SST	B Boronizing	A CF8M	01 150# 03 300#	B FLANGED	V90 90 Deg V
			1 O SEAT	C COLMONOY	F Hastelloy	C CHROME	B WCB		D BUTTWELD	V60 60 Deg V
		R REDUCED	2 G SEAL	G Graphite	G Incoloy	E ENP	H Alloy 20		V30 30 Deg V	
			4 P SEAT	M Tantalum	H Alloy 20	M Tantalum	X 2205 SST		V15 15 Deg V	
		>750 F	5 P SEAT	Chrome Oxide	I Monel	Chrome Oxide			SL.12 Slot .125	
			P PEEK	X 2205 SST	L Colmonoy				SL.063 Slot .063	
			R CHROME CARBIDE		R CHROME CARBIDE					
			S STELLITE		S STELLITE					
			T TFE		T TFE					
			U UHMWPE		W TUNGSTEN CARBIDE					
		W TUNGSTEN CARBIDE		O no coating						

Example: 2" SV Series, Full Port, Spring Loaded Unidirectional Seats, Stellite Seats, 316ss Ball with Chrome Plating, CF8M body, 150# Flanged RF, 90 deg V Port

2 - SV F 4 S A C A - 01 B V90

