

brands you trust.



Process Ball Valves



www.cranechempharma.com



Anti-static electrical continuity between ball, stem, and body.

5)(0)

Locking washer

Blow-out proof stem.

Live loaded packing assures reliable performance for the life of the valve.

Only

CRANE ChemPharma, Xomox Ball Valves embody all the quality, performance, value, and safety features required in process applications.

The basics:

CRANE ChemPharma, Xomox Process Ball Valves are available in the following configurations:

- One-piece flanged
- Two-piece flanged
- Three-piece screwed, socketweld, and butt-weld ends
- Sizes 1/2 through 8 inches
- ANSI Class pressure ratings of 150, 300, and 600
- CRANE ChemPharma, Xomox Ball Valves provide tight shutoff from vacuum through rated pressure at temperatures from -20°F to 450°F.

© Copyright Xomox Corporation 2001, 2010. All rights reserved. Xomox®, Tufline®, and Matryx® are registered trademarks of Xomox Corporation. S2™ and XRP™ are trademarks of Xomox Corporation. Innovative engineering and the precision machined ball assure lower operating torque and more economical actuation. Seat wear is reduced and operating life is greatly extended. All valves come standard with 316 stainless steel balls.

The compact two-piece body meets end-to-end requirements of ASME/ANSI B16.10.

15

The integral **ISO 5211** actuator mounting pad assures easy, low cost automation.

With optional graphite stem packing, the valve is fire-tested to **API-607**, **4th Edition**.

For inventory economy and convenience, onepiece and two-piece valves have interchangeable internal parts.

The patented **S2**[™] sealing system assures superior stem sealing.

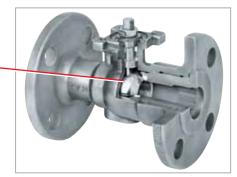
Dual body gaskets are standard on 1-piece and 2-piece CRANE ChemPharma, Xomox Process Ball Valves. This includes a PTFE chemically inert seal and a secondary FT graphite seal (Patent No. 6,837,482 on 2-piece valves).

Standard **Chemically Modified PTFE (CMP)** seat material reduces the need for multiple seat options.

Compared to PTFE, CMP provides superior mechanical and thermal characteristics. CMP is more resistant to chemicals and cold flow. Other seal materials are available upon request.

Large port openings maximize **Cv factors**, increasing flow rates and minimizing pressure loss.

Development of casting is to ASTM E-446 Level II standards.



Above: The compact one-piece valve meets ASME/ANSI B16.10 specifications.



Above: The compact three-piece valve body design allows for disassembly and maintenance without removing the valve from the line.*

* Non FT valves only.



CRANE ChemPharma, Xomox's exclusive S2 ™ stem seal system provides superior fugitive emissions control in process applications.

Live loaded primary **\$2** spherical stem seal to atmosphere

The **S2** seal is designed to prevent process media from reaching the stem

Side loading solution.

With the patented **S2** design, stem leakage due to side loading is virtually eliminated

Media-free stem.

The primary spherical **S2** stem seal eliminates media build-up on the stem. This prevents stem binding and torque increase. The secondary stem seal is not exposed to the process media.

Maintenance-free operation.

The spherical **S2** stem sealing system automatically adjusts to compensate for wear, temperature, and pressure fluctuations.

Exceptional performance.

Belleville washers provide continuous compression of sealing elements

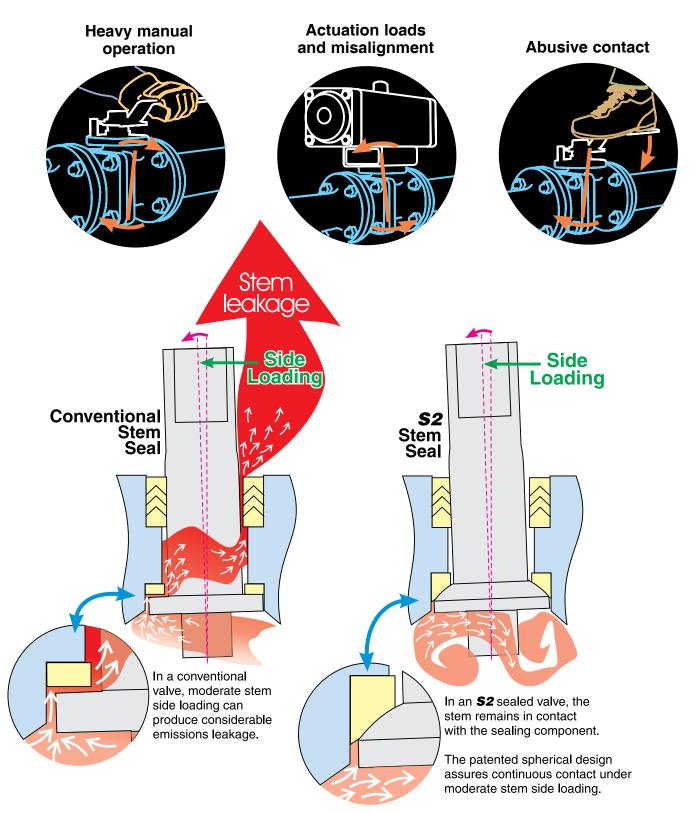
> Documented performance, under actual service conditions, of more than 3-million cycles without measurable stem leakage.

Live loaded secondary stem seal to atmosphere

Spherical stem sealing surface (ball segment)

The patented S2™ stem seal stops normal side loading stem leakage.

Typical causes of stem side loading resulting in leakage to atmosphere:

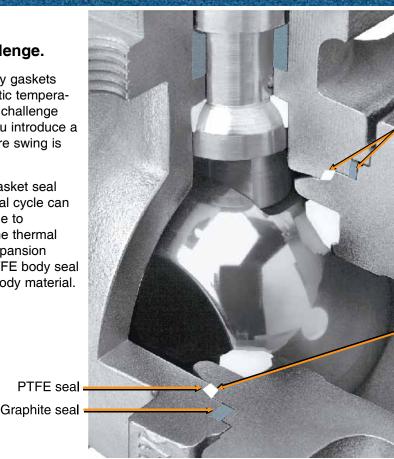


CRANE ChemPharma, Xomox meets the thermal challenge with the most effective body seal available.

The thermal cycling challenge.

Most PTFE body gaskets work well at static temperatures. The real challenge comes when you introduce a wide temperature swing is introduced.

In a standard gasket seal design, a thermal cycle can cause a leak due to differences in the thermal coefficient of expansion between the PTFE body seal and the metal body material.



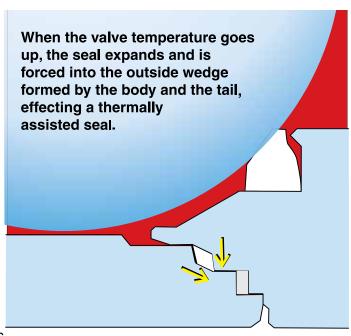
Dual body gaskets are standard on 1-piece and 2-piece CRANE ChemPharma, Xomox Process Ball Valves.This includes a PTFE chemically inert seal and a secondary FT graphite seal (patentpending on 2-piece valves).

Compression of the two body joint gaskets is precisely controlled to prevent cold flow and distortion. The gasket seal is uniform and secure.

Thermallyassisted sealing.

CRANE ChemPharma, Xomox's diamond shaped, thermally assisted PTFE body seal, will seal at all temperatures in its design range, even during thermal cycling.

To enhance the seal, this unique design takes advantage of the differences in the rates of thermal expansion between the PTFE and the metal to enhance the seal.



When the temperature goes down, the seal contracts faster than the valve body and tail. This causes the seal to shrink onto the inside wedge shape formed by the body and the tail, again, effecting a thermally assisted seal.

Fugitive Emissions Module

ISO 5211 mounting pad top & bottom makes installation on CRANE ChemPharma, Xomox Ball Valves and mounting of actuators simple and economical

PTFE chevron stem packing provides a secondary dynamic stem seal

316SS Investment Casting developed to ASTM E-446 Level II standards assures casting integrity and provides corrosion resistance

Blow-out proof stem

Boss for optional secondary purging/sensing port

Interface matches valve making it field convertible with existing mounting kit or handle

150

Double set of belleville washers live load both stem packing and the **\$2** spherical seal. This assures positive sealing in high cycle severe service applications

Exclusive spherical **S2** stem seal (See pages 4 & 5 of this catalog for details)

Stainless steel powder filled PTFE bushing supports stem, extending life of all stem seals

Monitoring port for mounting of pressure/sensing devices. Boss is tapped and plugged

PTFE gasket provides positive static seal between valve & FEM unit

Standard design meets the requirements of ASME B16.34 CL150. Consult factory for other applications.

Sample CRANE ChemPharma, Xomox Process Ball Valve Specifications

Sizes Body Tail Pressure-Temperature Rating Size Range **End Connections** Seat Stem Seal Primary Body Gasket Secondary Body Gasket Ball Stem Stem Packing Studs Nuts Operator References Design Manufacturer **Figure Number**

 1/2" - 4" Class 150 Full Port Carbon / Stainless Trim
ASTM A216, WCB
ASTM A216, WCB
285 psig 100°F
100 psig 480°F
1/2" - 4"

Flanged ASME 16.5, Class 150, raised face

CMP (Chemically modified PTFE)

PTFE **S2** stem seal

PTFE diamond shaped, thermally assisted

Grafoil 316SS 316SS Blowout proof PTFE live loaded ASTM A193, B7M ASTM A194, 2HM SS latching / locking lever ASME / ANSI B16.10, ASME B16.34 2-piece, full bore Xomox Corporation 521F-266-TAP16-LL 6" - 8" Class 150 Full Port Stainless / Stainless Trim ASTM A351, CF8M ASTM A351, CF8M

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275 psig 100°F

6" - 8"

Flanged ASME 16.5, Class 150, raised face

CMP (Chemically modified PTFE)

CMP S2 stem seal

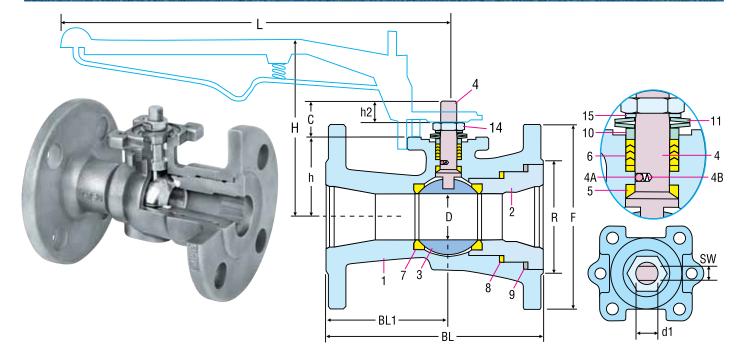
PTFE diamond shaped, thermally assisted

Grafoil

316SS 316SS Blowout proof PTFE live loaded ASTM A193, B8M ASTM A194, 8MA Gear operator ASME / ANSI B16.10, ASME B16.34 2-piece, full bore Xomox Corporation 521F-666-TAP16-G



One-Piece Body / ANSI B16.34 / Class 150 & 300



Reduced Port

 $^{3}/_{4}$ to 4 inch

End-to-end dimensions: ASME / ANSI B16.10 **Short Pattern**

Xomox Figure Numbers: Class 150 - **511R** Class 300 - **513R**

The exclusive, patented **S2** stem design is:

- Blow-out proof
- Fire-tested
- Highly resistant to side-loading leakage.

Parts & Materials

No.	Part Description	Carbon	Stainless
1	Body	ASTM A216. WCB	ASTM A351. CF8M
2	Tail	ASTM A216. WCB	ASTM A351. CF8M
3	Ball	316SS	316SS
4	Stem	316SS	316SS
4A	Anti-Static Ball	316SS	316SS
4B	Anti-Static Spring	316SS	316SS
5	S2 Stem Seal Ring	PTFE	PTFE
	Packing Set	PTFE	PTFE
6	Fire Tested Packing Set	Graphite	Graphite
7	Soft Seat Seal Ring	СМР	СМР
8	Body Gasket - Inner Seal	PTFE	PTFE
9	Body Gasket - Outer Seal	GRAPHITE	GRAPHITE
10	Gland	316SS	316SS
11	Spring Washer	SST	SST
14	Stem Nut	ASTM A194. 8MA	ASTM A194. 8MA
15	Locking Washer	304SS	304SS

		e Dia. ⁻)		Flange Holes		Flange Holes		Flange Circle
Size	CI. 150	CI. 300	CI. 150	CI. 300	CI. 150	CI. 300	CI. 150	CI. 300
3/4	3.88	4.62	4.00	4.00	0.62	0.75	2.75	3.25
1	4.25	4.88	4.00	4.00	0.62	0.75	3.12	3.50
11/2	5.00	6.12	4.00	4.00	0.62	0.88	3.88	4.50
2	6.00	6.50	4.00	8.00	0.75	0.75	4.75	5.00
3	7.50	8.25	4.00	8.00	0.75	0.88	6.00	6.62
4	9.00	10.00	8.00	8.00	0.75	0.88	7.50	7.88

	D Flow	Face-t Dim	o-Face . BL	Dim.	BL1								Raised Face	ISO	ISO Bolt Size Metric	ISO Bolt	Wei (pou	
Size	Dia.	CI. 150	CI. 300	CI. 150	CI. 300	h	h2	Н	L	С	SW	d1	Dia.(R)		Metric	Circle	CI.150	CI.300
³ /4	.50	4.62	6.00	2.35	3.74	1.54	0.43	4.88	5.75	0.75	.248	0.38	1.69	F04	M5xP.8	1.65	5	8
1	.75	5.00	6.50	2.62	4.12	1.77	0.35	5.13	5.75	0.63	.248	0.38	2.00	F04	M5xP.8	1.65	7	10
1 1/2	1.25	6.50	7.50	3.84	4.84	2.19	0.59	5.50	6.93	0.91	.315	0.44	2.88	F05	M6xP1	1.97	18	24
2	1.50	7.00	8.50	3.93	5.43	2.60	0.70	5.63	10.88	1.07	.374	0.63	3.62	F07	M8xP1.25	2.76	19	25
3	2.50	8.00	11.12	4.04	7.16	3.64	1.00	8.50	12.40	1.74	.669	0.88	5.00	F10	M10xP1.5	4.02	40	54
4	3.00	9.00	12.00	4.93	7.93	4.02	1.00	8.88	12.40	1.74	.669	0.88	6.19	F10	M10xP1.5	4.02	58	81

Two-Piece Body / B16.34 / ANSI Class 150 & 300

Reduced Port

6 & 8 inch

End-to-end dimensions: ASME / ANSI B16.10 Short Pattern

Xomox Figure Numbers: Class 150 - **521R** Class 300 - **523R**

The exclusive, patented S2 stem design is:

- Blow-out proof
- Fire-tested
- Highly resistant to side-loading leakage.



Full Port

Long Pattern

 $\frac{1}{2}$ to 8 inch

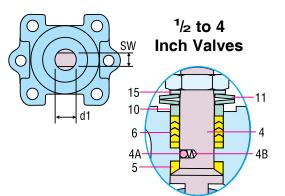
Class 150 - 521F

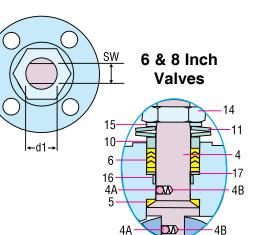
Class 300 - 523F

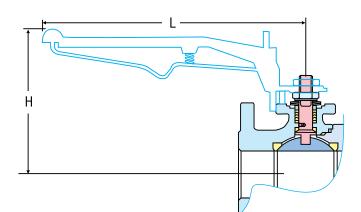
End-to-end dimensions:

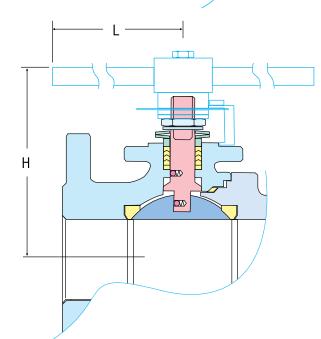
Xomox Figure Numbers:

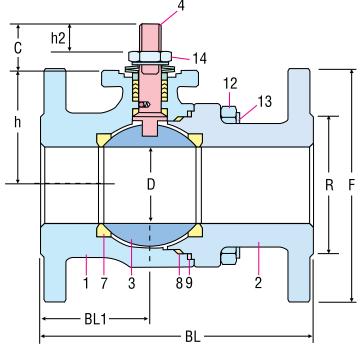
ASME / ANSI B16.10











Reduced Port

Siz	ze	D Flow Dia.	Dim		Dim. Cl. 150	BL.1 Cl. 300	h	h2	Н	L	C	SW	d1	Raised Face Dia. (R)	ISO Flange	ISO Bolt Size Metric	ISO Bolt Circle	(pou	ight nds) Cl. 300
6	3	4.00	10.50	15.88	4.88	7.28	5.91	1.41	10.77	18.70	2.95	1.063	1.42	8.50	F12	M12x1.75	4.92	114	181
8	3	6.00	11.50	16.50	5.51	7.28	7.87	1.94	13.60	23.62	3.78	1.417	1.89	10.62	F14	M16x2.0	5.51	200	313

Full Port

	D Flow	Face-to Dim		Dim.									Raised Face	ISO	ISO Bolt Size	ISO Bolt	(pou	ight Inds)
Size	Dia.	CI. 150	CI. 300	CI. 150	CI. 300	h	h2	Н	L	С	SW	d1	Dia. (R)	Flange	Metric	Circle	CI. 150	CI. 300
1/2	.50	4.25	5.50	1.82	2.30	1.54	0.43	4.88	5.75	0.74	.248	0.38	1.38	F04	M5xP.8	1.65	5	6
³ /4	.75	4.62	6.00	1.92	2.41	1.77	0.35	5.13	5.75	0.63	.248	0.38	1.69	F04	M5xP.8	1.65	5	9
1	1.00	5.00	6.50	1.91	2.69	2.03	0.61	5.50	6.93	0.93	.315	0.44	2.00	F05	M6xP1.0	1.97	8	13
1 1/2	1.50	6.50	7.50	2.20	3.27	2.58	0.70	5.63	10.88	1.09	.374	0.63	2.88	F07	M8xP1.25	2.76	14	22
2	2.00	7.00	8.50	2.76	3.03	2.95	0.70	6.00	10.88	1.07	.374	0.63	3.62	F07	M8xP1.25	2.76	21	30
3	3.00	8.00	11.12	3.83	4.98	4.02	1.00	8.88	12.40	1.74	.669	0.88	5.00	F10	M10xP1.5	4.02	47	69
4	4.00	9.00	12.00	3.62	5.12	4.82	1.44	9.63	20.31	2.44	.669	1.13	6.19	F10	M10xP1.5	4.02	76	88
	D Flow		o-Face 1. BL	Dim	n. BL1				_	0	0.14		Raised Face	ISO	ISO Bolt	ISO Bolt	Wei (pou	
Size	Dia.	CI. 150	CI. 300	CI. 150) CI. 300	h	h2	Н	L	C	SW	d1	Dia.(R)	Flange	Size Metric	Circle	CI. 150	CI. 300
6	6.00	15.50	15.88	7.28	8.46	7.87	1.94	13.60	23.62	3.78	1.417	1.89	8.50	F14	M16x2.0	5.51	193	267
8	8.00	18.00	19.75	7.28	9.37	10.04	2.00	-	-	4.13	1.811	2.36	10.62	F16	M20x2.5	6.50	371	517

Flange Data

		e Dia. -)		Flange Holes		Flange Holes	Dia. of Bolt (
Size	CI. 150	CI. 300	CI. 150	CI. 300	CI. 150	CI. 300	CI. 150	CI. 300
1/2	3.50	3.75	4	4	0.62	0.62	2.38	2.62
³ /4	3.88	4.62	4	4	0.62	0.75	2.75	3.25
1	4.25	4.88	4	4	0.62	0.75	3.12	3.50
1 ½	5.00	6.12	4	4	0.62	0.88	3.88	4.50
2	6.00	6.50	4	8	0.75	0.75	4.75	5.00
3	7.50	8.25	4	8	0.75	0.88	6.00	6.62
4	9.00	10.00	8	8	0.75	0.88	7.50	7.88
6	11.00	12.50	8	12	0.88	0.88	9.50	10.62
8	13.50	15.00	8	12	0.88	1.00	11.75	13.00

Parts For 6 & 8 Inch Valves Only

No.	Part Description	Carbon	Stainless
5	S2 Stem Seal Ring	CMP	CMP
10	Bearing, Stem	25% Glass Filled PTFE	25% Glass Filled PTFE
16	Fire Tested Bearing, Stem	Nickel Plated SST Bearing	Nickel Plated SST Bearing
17	Anti-Extrusion Ring	316SS	316SS

Parts & Materials

No.	Part Description	Carbon	Stainless
1	Body	ASTM A216. WCB	ASTM A351. CF8M
2	Tail	ASTM A216. WCB	ASTM A351. CF8M
3	Ball	316SS	316SS
4	Stem	316SS	316SS
4A	Anti-Static Ball	316SS	316SS
4B	Anti-Static Spring	316SS	316SS
5	S2 Stem Seal Ring	PTFE	PTFE
	Packing Set	PTFE	PTFE
6	Fire Tested Packing Set	Graphite	Graphite
7	Soft Seat Seal Ring	СМР	СМР
8	Body Gasket - Inner Seal	PTFE	PTFE
9	Body Gasket - Outer Seal	GRAPHITE	GRAPHITE
10	Gland	316SS	316SS
11	Spring Washer	SST	SST
12	Nut	ASTM A194. 2HM	ASTM A194. 8M
13	Stud	ASTM A193. B7M	ASTM A193. B8M
14	Stem Nut	ASTM A194. 8M	ASTM A194. 8M
15	Locking Washer	304SS	304SS

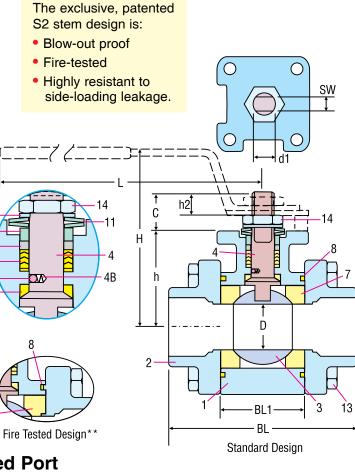
Three-Piece Body / ANSI B16.34 / Class 150, 300 & 600

Reduced Port

³/₄ to 2 inch Xomox Figure Numbers: Class 600 - **536R**

Full Port

¹/₂ to 2 inch Xomox Figure Numbers: Class 600: ¹/₂" - 1¹/₂" - **536F** Class 300: 2" - **533F**



Reduced Port

13

10

22

6

4A 5

Size	D Flow Dia.	C	h2	L	SW	d1	Н	h	Face To Face BL	BL1	ISO 5211	ISO Bolt Size	Wt. Ibs.
3/4	.59	.67	.35	5.31	.25	.38	3.31	1.52	2.82	.99	F04	M5xP.8	1.90
1	.79	.67	.35	5.31	.25	.38	3.46	1.65	3.80	1.27	F04	M5xP.8	3.26
1 ½	1.26	.79	.47	6.50	.31	.44	3.98	2.19	4.61	1.94	F05	M6xP1.0	6.08
2	1.57	.92	.55	7.87	.37	.63	4.61	2.58	5.08	2.25	F07	M8xP1.25	8.82

Full Port

Size	D Flow Dia.	С	h2	L	SW	d1	Н	h	Face To Face BL	BL1	ISO 5211	ISO Bolt Size	Wt. Ibs.
1/2	.59	.67	.35	5.31	.25	.38	3.31	1.52	2.82	.99	F04	M5	2.20
³ /4	.79	.67	.35	5.31	.25	.38	3.46	1.65	3.80	1.27	F04	M5	3.31
1	.98	.79	.47	6.50	.31	.44	3.86	2.03	4.29	1.67	F05	M6	4.45
11/2	1.50	.92	.55	7.87	.37	.63	4.61	2.58	5.08	2.25	F07	M8	9.08
2	2.00	.92	.51	7.87	.37	.63	4.61	2.93	5.59	2.81	F07	M8	14.93



The three piece body is designed for easy in-line maintenance.* * Non FT valves only.

Parts & Materials

No.	Part Description	Carbon	Stainless
1	Body	ASTM A216 WCB	ASTM A351 CF8M
2	End Caps	ASTM A216 WCB	ASTM A351 CF8M
3	Ball	316SS	316SS
4	Stem	316SS	316SS
4A	Anti-Static Ball	316SS	316SS
4B	Anti-Static Spring	316SS	316SS
5	S2 Stem Seal Ring	PTFE	PTFE
6	Packing Set	PTFE Graphite**	PTFE Graphite**
7	Soft Seat Seal Ring	СМР	СМР
8	Body Gasket	PTFE Graphite**	PTFE Graphite**
10	Gland	316SS	316SS
11	Spring Washer	SST	SST
13	Bolt (Body Joint)	ASTM A193 B7M	ASTM A193 B8M
14	Stem Nut	ASTM A194 Gr8	ASTM A194 Gr8
15	Locking Washer	304SS	304SS
22	Thrust Washer	50% TFE 50% SST	50% TFE 50% SST

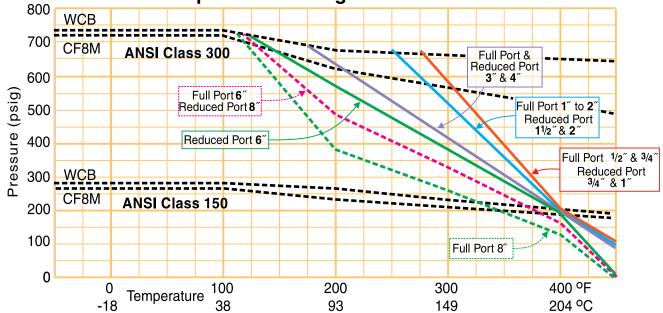
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//0100					1019400		20					
Valve	Size		Maxim	um Diff	erential	Pressu	re, psi .	Seat	Materia	I: CMP]
Reduced Port	Full Port	0-100	200	285	400	500	600	740	1000	1200	1480	
³ /4	¹ /2	45	45	45	45	45	47	50	53	56	60	r
1	³ /4	60	60	60	60	66	73	80	83	86	90	c
	1	90	90	90	90	96	103	110	116	123	130	
11/2		130	130	130	130	142	155	170	185	200	220	
2	11/2	225	225	225	225	240	265	290	325	360	400	
	2	380	380	380	400	425	450	480	-	-	-	
3		500	500	500	550	610	675	750	-	-	-	
4	3	750	750	750	890	1,050	1,250	1,480	-	-	-	
	4	1,980	1,980	1,980	2,175	2,400	2,650	2,950	-	-	-	
6		2,175	2,175	2,175	2,450	2,775	3,150	3,600	-	-	-	
8	6	4,475	4,475	4,475	5,100	5,800	6,600	7,550	-	-	-	
	8	9,550	9,550	9,550	10,450	11,400	12,450	13,625	-	-	-	1

Actuator Sizing Torques Torques in IN-LBS

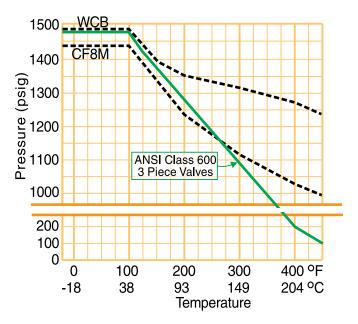
Note: Torques are for clean and clear fluids.

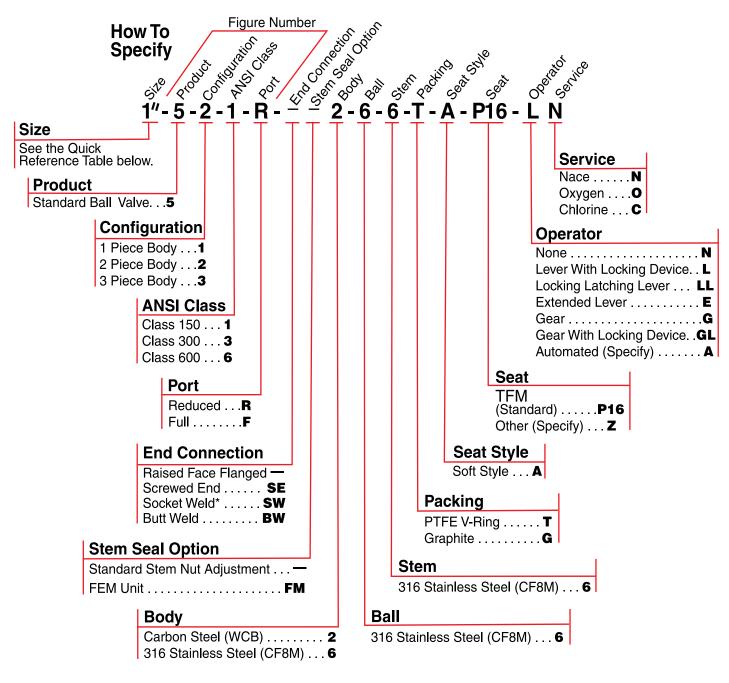
Pressure/Temperature Ratings - CMP Seat



Cv Factors

Valve Size	Classes 150 & 300 Full Port	Classes 150 & 300 Reduced Port	Class 600 Full Port	Class 600 Reduced Port	
¹ /2	30	-	25	-	
3/4	51	16	50	19	
1	95	35	80	42	
1 1/4	-	-	150	60	
1 1/2	255	105	240	125	
2	440	120	460	165	
3	1,240	380	-	-	
4	2,150	650	-	-	
6	5,500	1,650	-	-	
8	9,950	1,950	-	-	





*Schedule 40 only.

Consult factory for alternate materials.

Product Availability Quick Reference Table

4	Body Configuration	Port	ANSI	Locking Lever				Enclosed Gear		Tufline			
			Pressure Class	1/2	³ /4	1	1 1/2	2	3	4	6	8	Figure Number
	1-Piece Flanged	Reduced	150										511R
			300							\bullet			513R
	2-Piece Flanged	Full	150			\bullet	\bullet			\bullet			521F
			300										523F
		Reduced	150								\bullet		521R
			300									\bullet	523R
	3-Piece Screwed End Socket Weld End Butt Weld End	Full	300										533F*
			600				\bullet						536F
		Reduced	600										536R

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*533F valves are class 600 valves that all derated to operate at 1,000 PSI @ 100° F.



CRANE ChemPharma, Xomox & Matryx[®] Actuators.

Tufline Valves are available as part of a complete valve package.

Actuators are

- available in three models:
- Double acting vane
- Rack & pinion spring return
- Electric

Tufline automated valve packages assure you of single-source responsibility for flow control equipment.

With Tufline valves, Matryx and CRANE ChemPharma, Xomox actuators, Xomox control accessories, and Tufline problem solving expertise, our customers are assured of valve packages that will provide optimum performance in any application.

Comprehensive side-by-side testing confirms that the Matryx and CRANE ChemPharma, Xomox rack and pinion actuators provide longer service life with more consistent torque.

Solid performance data means processors can size actuators with more of a confidence factor and less of a "fudge-factor". Initial cost, repair costs, replacement costs, and costly downtime can all be reduced.

Rack and pinion actuators are available in both double-acting and spring-return models with both 90° and 180° rotation.

CRANE ChemPharma, Xomox Automation & Service Centers.

Strategically located CRANE ChemPharma, Automation & Service Centers provide a variety of services. These range from standard repair to major modification and accessory packaging.











CRANE ChemPharma Flow Solutions™

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ChemPharma Flow Solutions



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