

XOMOX[®]

brands you trust.



XLB - Lined Ball Valves

CRANE

ChemPharma Flow Solutions

www.cranepharmaceutical.com

Lower Torque - Smaller Actuators

Lower torque
smaller actuators,
reduced costs, space
and weight saving

Size range
1/2" / DN15 through
6" / DN150
Other sizes available up to 12" / DN300

Temperature range
ASME: -20°F (-29°C) to
400°F (204°C)
EN: -10°C (14°F) to
204°C (400°F)

See pressure temperature rating on page 12,
for applications down to -60°C (-76°F)
contact your Crane ChemPharma Flow Solutions
sales office.

Actuator mounting
fully compliant with ISO
5211 allowing use of
standardized mounting kits
(see page 14)

Valve pressure classes
EN PN16 and
ASME Class 150

Compact design
allows installation
in space restricted
areas in parallel
piping systems

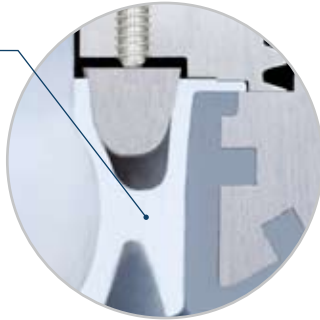
All wetted components
are fully lined with
permeation resistant PFA
Teflon[®] material as a
barrier to corrosion



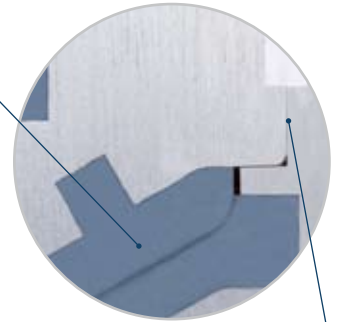
Teflon[®] is a registered trademark of
DuPont[™] used under license.

Innovative Stem Sealing System

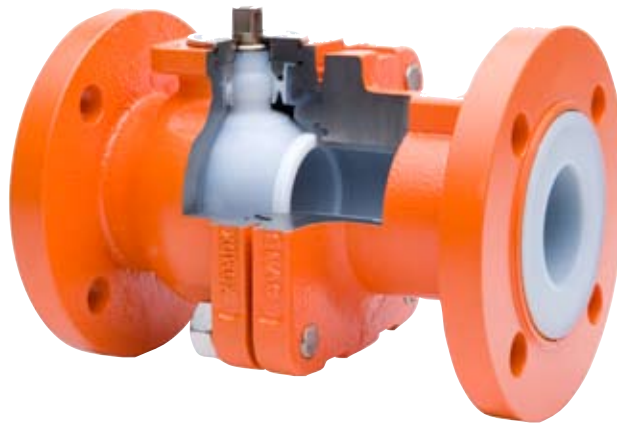
Atmospheric seal
innovative "pressure assisted" SX seal device providing the highest protection from fugitive emissions.



Wide conical plastic connection
designed to maintain total seal even under extreme thermal cycling.



Anti blow-out integral ball and stem
retains positive control and eliminates the danger of stem/ball failures due to liner damage at wear points.

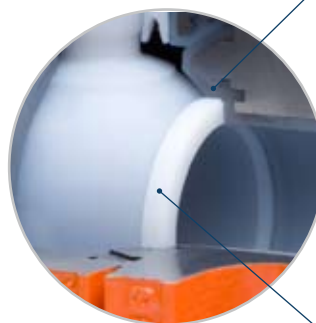


Metal to metal contact
at the body joint ensures that no parts of the lining can be crushed or deformed because of forces within the piping system.

Locked in fluoroplastic liner
resists shrinkage, collapse and permits vacuum applications.



Stainless steel lever
latching device minimizes possibility of accidental operation. Locking capability as standard. Made of stainless steel material ideal for corrosive environments.



Chemically modified PTFE (CMP) seats
provide greater pressure stability at higher temperatures than conventional PTFE.

Dynamic Body Joint Design

When valves are closed under pressure, the ball is able to float with line pressure and pressurize the downstream seat to further enhance the in-line seal. However, the stem will tend to tilt and can side load conventional packing, leading to potential wear and eventual leakage to atmosphere. The SX seal in the XLB valve moves in conjunction with the spherical portion of the stem, maintaining a constant seal to atmosphere.

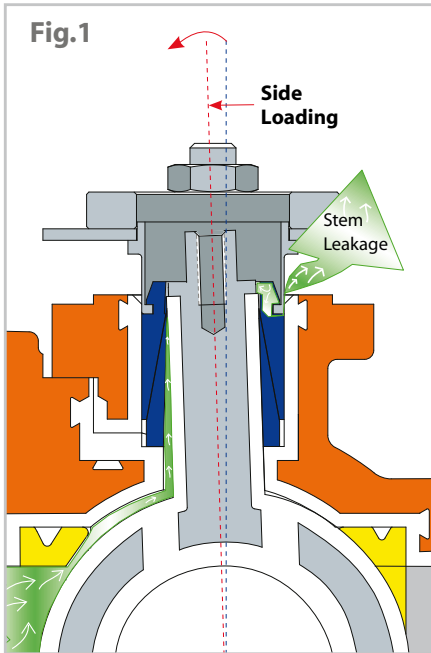


Fig.1: In a conventional valve, moderate stem side loading can lead to significant emissions issues.

Other situations where side loading can occur during valve actuation include: Heavy manual operation, actuation loads and misalignment, abusive contact.

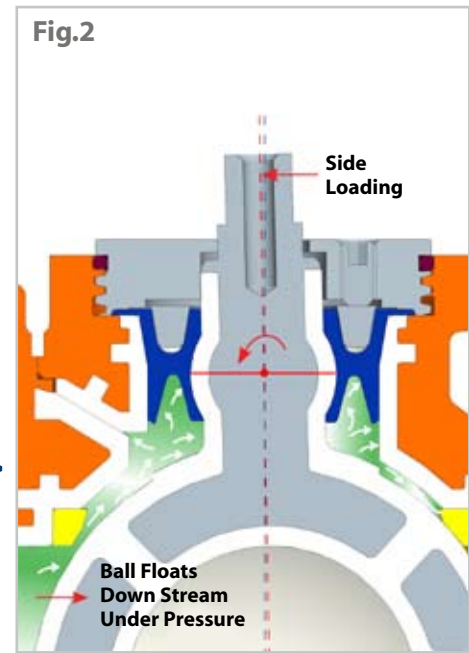
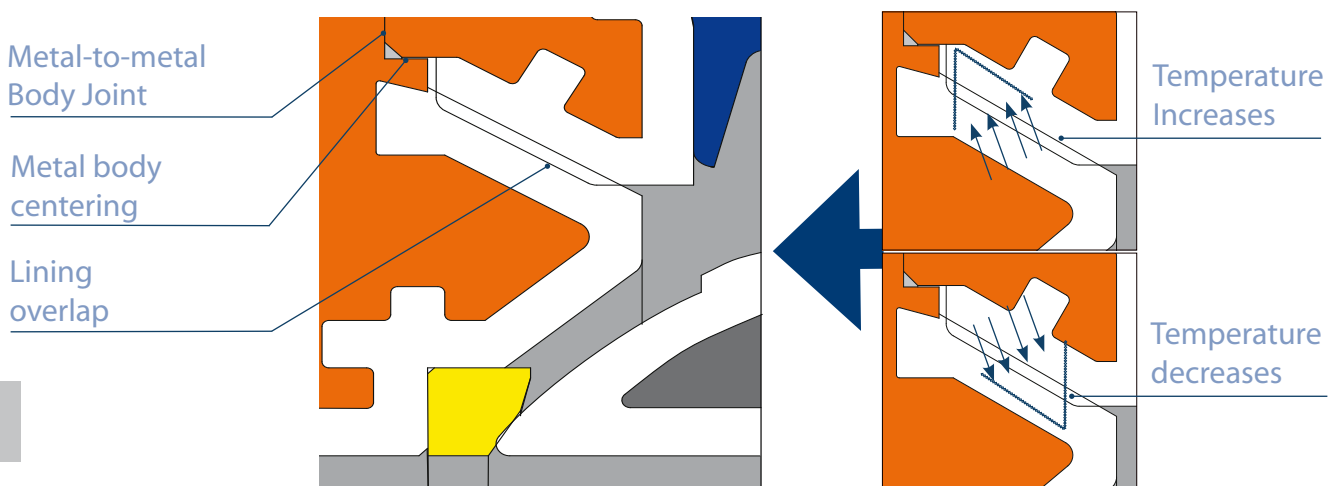


Fig.2: The XLB valve's pressure assisted SX seal stays in constant contact with stem spherical seal surface to significantly reduce the chance of atmospheric leakage.

XLB dynamic body joint design retains pressure boundary during thermal cycles

The body assembly has metal-to-metal connection that offers resistance against forces that may be created in the pipework. This feature is designed to alleviate deformation and damage to the lining, even under pressure induced stresses. Also, the body joint sealing is provided with taper lining overlap, which is especially effective under high internal pressure and temperature variations.



XLB Lined Ball Valve Applications

XLB Valves offer economical solutions for the vast majority of chemical applications while maintaining the highest possible degree of performance in terms of in-line leakage and fugitive emissions. They can be used in many diverse industries such as:

- Industrial Inorganic Chemicals
- Industrial Organic Chemicals
- Alkali's & Chlorine
- Detergent production
- Bromine production
- Nitrogenous & Phosphorus Fertilizers
- Pharmaceutical preparation
- Petroleum Refining
- Metal & Mining industry
- Plant Protective Agent production
- Pulp, Paper & Wood
- Water treatment
- Sulfur recovery
- Food processing
- Sugar industry
- Corn industry

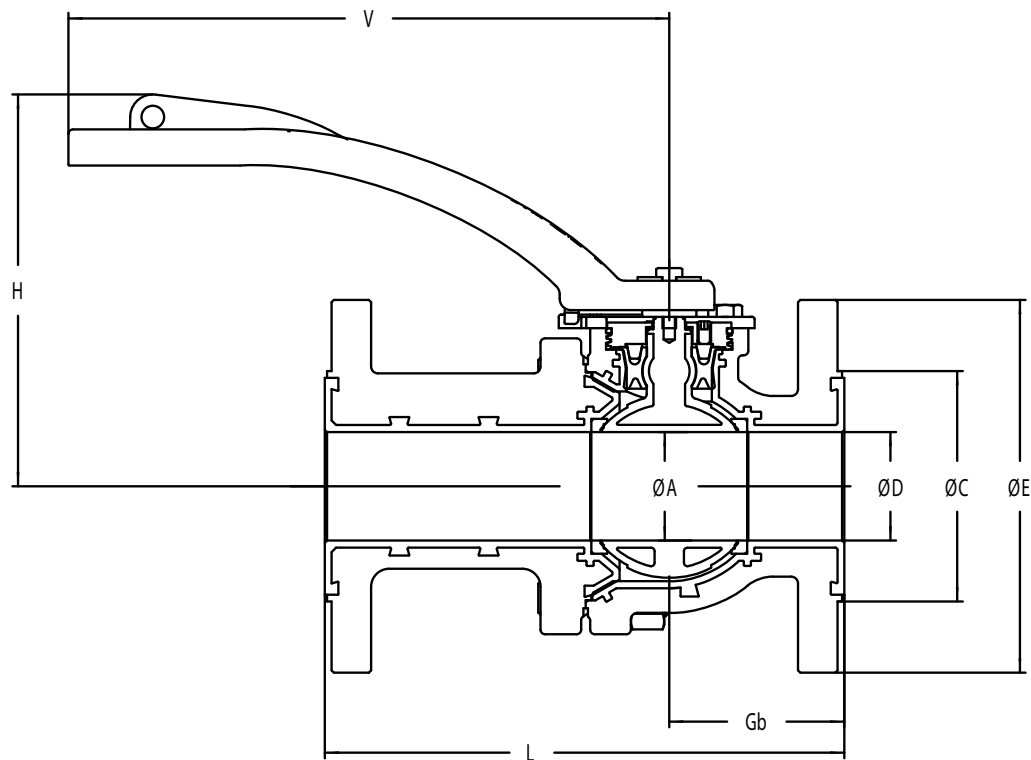
Xomox XLB Lined Ball Valve - Application/Performance Chart

FUNCTION			MEDIA													APPLICATION REQUIREMENTS														
On / Off	Throttling	Diversion	Clean Liquids & Gases	Dirty Liquids & Gases	Corrosive Liquids & Gases	Mineral Acids	Organic Acids	Alkalis	Hazardous Liquids & Gases	Viscous Liquids	Scaling Liquids & Slurries	Abrasive Slurries	Fibrous Slurries	Bromine	Waste water	Dry Materials	Food / Pharmaceutical	Vacuum Service	High Flow Capacity	Low Torque	Fugitive Emissions Control	Reduced Maintenance	Extended Service Life	Sizes	Pressure Ratings	High Temperature (ASME/EN)	Low Temperature (EN)	Low Temperature (ASME)	Key Benefit	
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
																1/2" - 6"	DN15 - DN150	Class 150 / PN16	400°F / 204°C	-10°C / 14°F	-20°F / -29°C	Safety / Economy								
																<p>● Superior Performance ● Limited Application (Consult Factory) ● Not Applicable</p>														

XLB Lined Ball Valve EN Dimensions

XLB 24A

XOMOX Fully Lined Ball Valve Full Port
Flange Connection EN 1092-2 PN16
Face-to-Face Dimension acc. to EN 558
(Table 2, Row1) (Former R201)



Dimensions in mm

DN	A	C	D	E	L	Gb	H	V	Weight	ISO 5211
									kg	
15	23	45	15	95	130	52	143	170	4.2	F05
20	23	58	20	105	150	52	143	170	4.7	F05
25	23	68	23	115	160	51	143	170	5.7	F05
40	37	88	37	150	200	67	163	266	11	F07
50	47	102	47	165	230	75	171	266	13.5	F07
65/50*	47	122	62	185	290	78	171	266	17	F07
80	75	138	75	200	310	86	230	350	29	F10
100	97	158	97	220	350	98	257	350	42	F10
150	145	212	145	285	480	118	286	350	77	F12

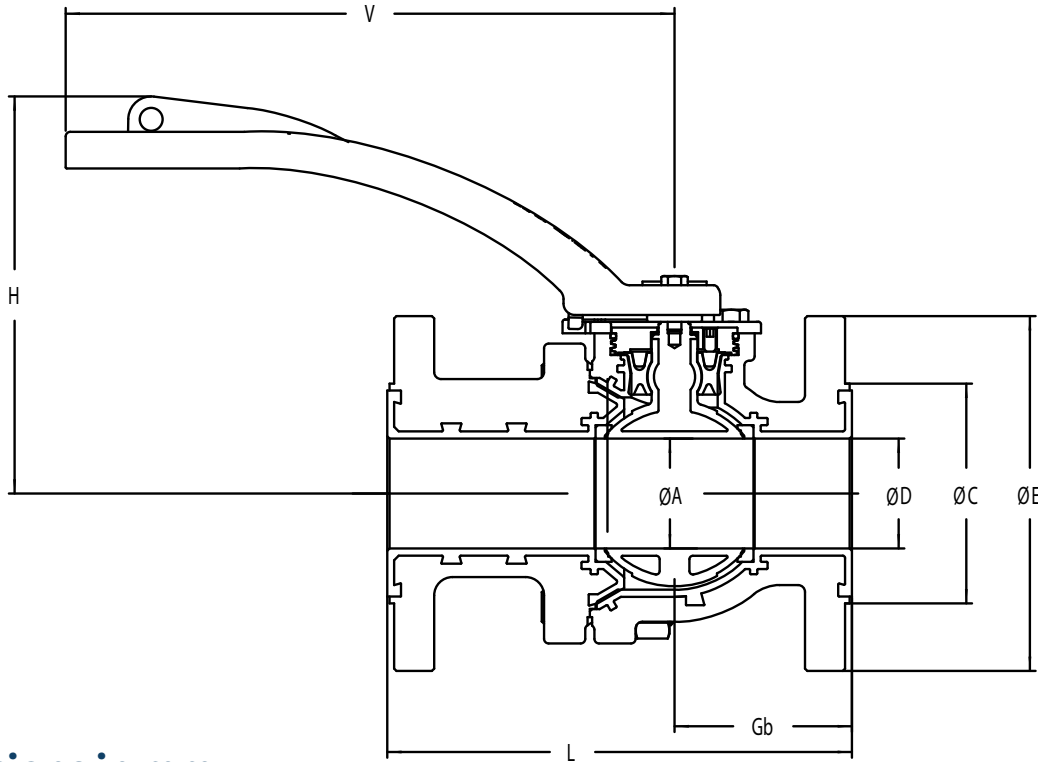
* DN 65 is reduced port valve

Flow coefficient									
DN	15	20	25	40	50	65 - 50	80	100	150
C _V [USgpm]	12.6	35	57	213	295	295	670	1650	4780
K _V [m ³ /h]	10.9	31	49	184	255	255	580	1427	4135

XLB Lined Ball Valve JIS Dimensions

XLB 35A

XOMOX Fully Lined Ball Valve Full Port
Flange Connection JIS B2210 for 10K
Face-to-Face Long Pattern (former R203)



Dimensions in mm

DN	A	C	D	E	L	Gb	H	V	Weight	ISO 5211
									kg	
15	23	51	23	65	130	52	143	170	4.3	F05
20	23	56	23	75	150	52	143	170	4.5	F05
25	23	67	23	85	160	51	143	170	6	F05
40	37	81	37	110	200	67	163	266	10.5	F07
50	47	96	47	125	203	75	171	266	12	F07
65/50	47	116	62	145	290	78	171	266	16	F07
80	78	126	75	160	310	86	230	350	27	F10
100	97	151	97	180	350	98	257	350	39	F10
150	145	216	145	240	356	118	286	350	68	F12

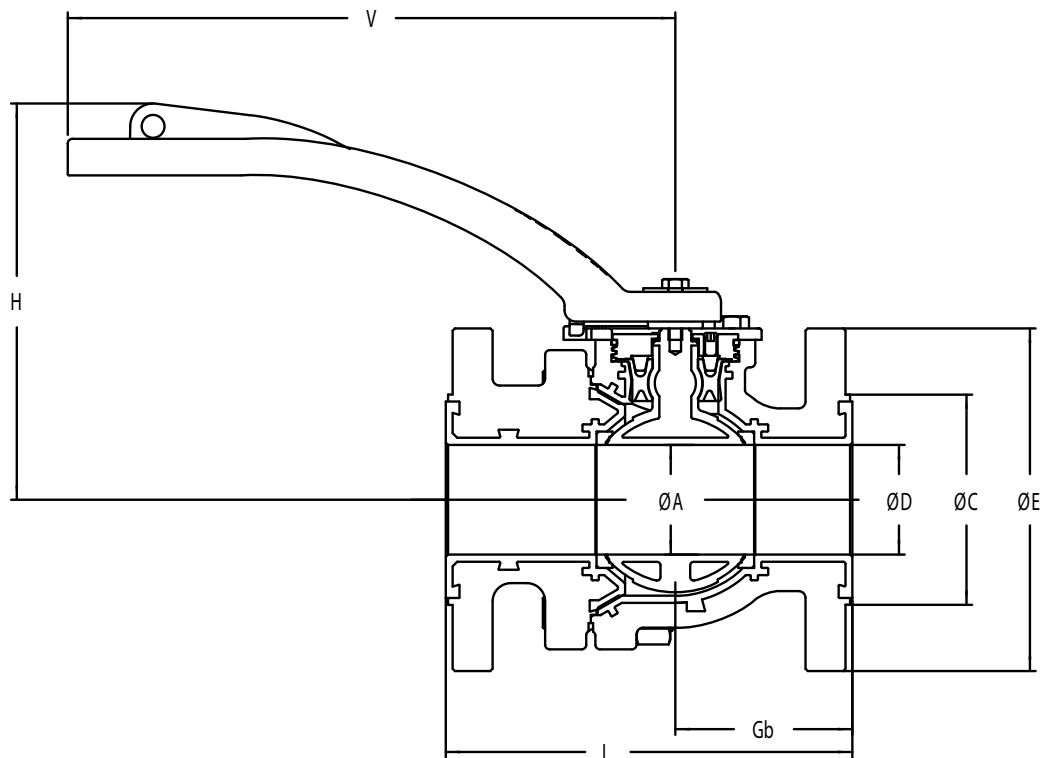
* DN 65 is reduced port valve

Flow coefficient									
DN	15	20	25	40	50	65 - 50	80	100	150
C _v [USgpm]	12.6	35	57	213	295	295	670	1650	4780
K _v [m ³ /h]	10.9	31	49	184	255	255	580	1427	4135

XLB Lined Ball Valve ASME Dimensions

XLB 12A

XOMOX Fully Lined Ball Valve Full Port
 Flange Connection ASME B16.5 - Class 150
 Face-to-Face Dimension ASME B16.10 (Former 911)



Dimensions in inches/mm

Size	A		C		D		E		L		Gb		H		V		Weight		ISO 5211
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg	
1/2"*	0.91	23	1.38	35	0.59	15	3.50	90	5.12	130	2.05	52	5.63	143	6.69	170	8.6	3.9	F05
3/4"*	0.91	23	1.69	43	0.79	20	3.88	100	5.91	150	2.05	52	5.63	143	6.69	170	9.5	4.3	F05
1"	0.91	23	2.01	51	0.91	23	4.25	110	5.00	127	2.01	51	5.63	143	6.69	170	10.3	4.7	F05
1 1/2"	1.46	37	2.87	73	1.46	37	5.00	125	6.50	165	2.64	67	6.42	163	10.47	266	20	9	F07
2"	1.85	47	3.62	92	1.85	47	6.00	150	7.00	178	2.95	75	6.73	171	10.47	266	26	11.6	F07
3"	3.07	78	5.00	127	2.95	75	7.50	190	8.00	203	3.39	86	9.06	230	13.78	350	51	23	F10
4"	3.82	97	6.18	157	3.82	97	9.00	230	9.00	229	3.86	98	10.12	257	13.78	350	81	37	F10
6"	5.71	145	8.50	216	5.71	145	11.00	280	10.50	267	4.65	118	11.26	286	13.78	350	130	59	F12

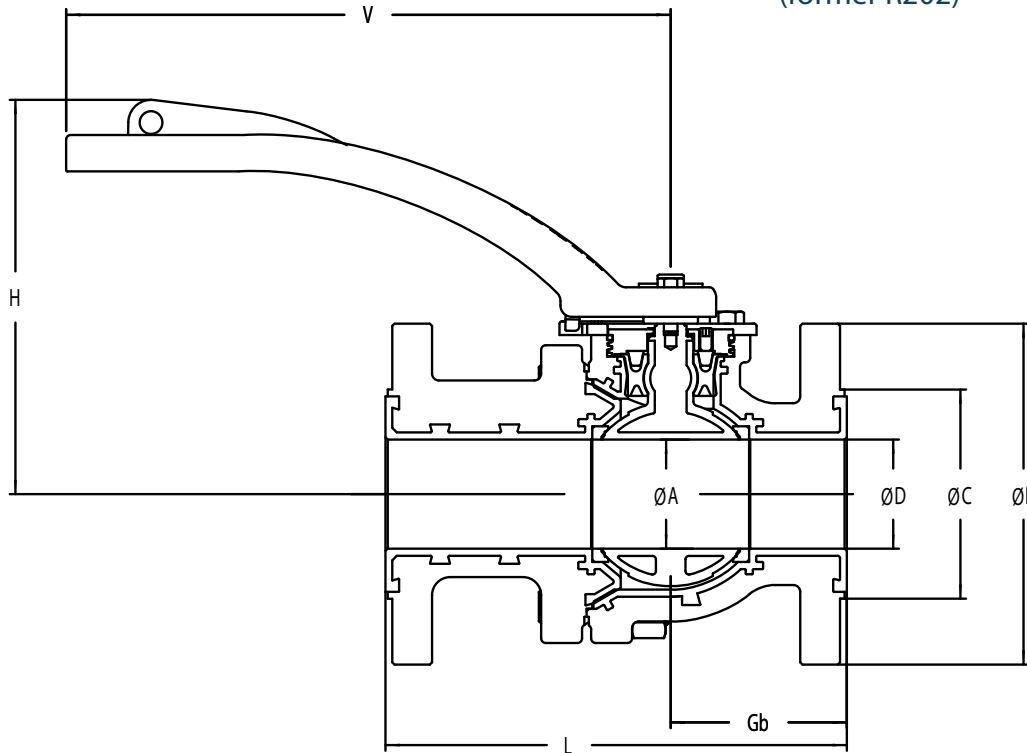
* 1/2" and 3/4" valves are XLB 13 Long Pattern Valve

Flow coefficient								
Size	1/2"	3/4"	1"	1 1/2"	2"	3"	4"	6"
Cv [USgpm]	12.6	35	57	213	295	670	1650	4780
Kv [m³/h]	10.9	31	49	184	255	580	1427	4135

XLB Lined Ball Valve ASME Dimensions

XLB 13A

XOMOX Fully Lined Ball Valve Full Port
Flange Connection ASME B16.5 - Class 150
Face-to-Face Dimension Long Pattern
(former R202)



Dimensions in inches/mm

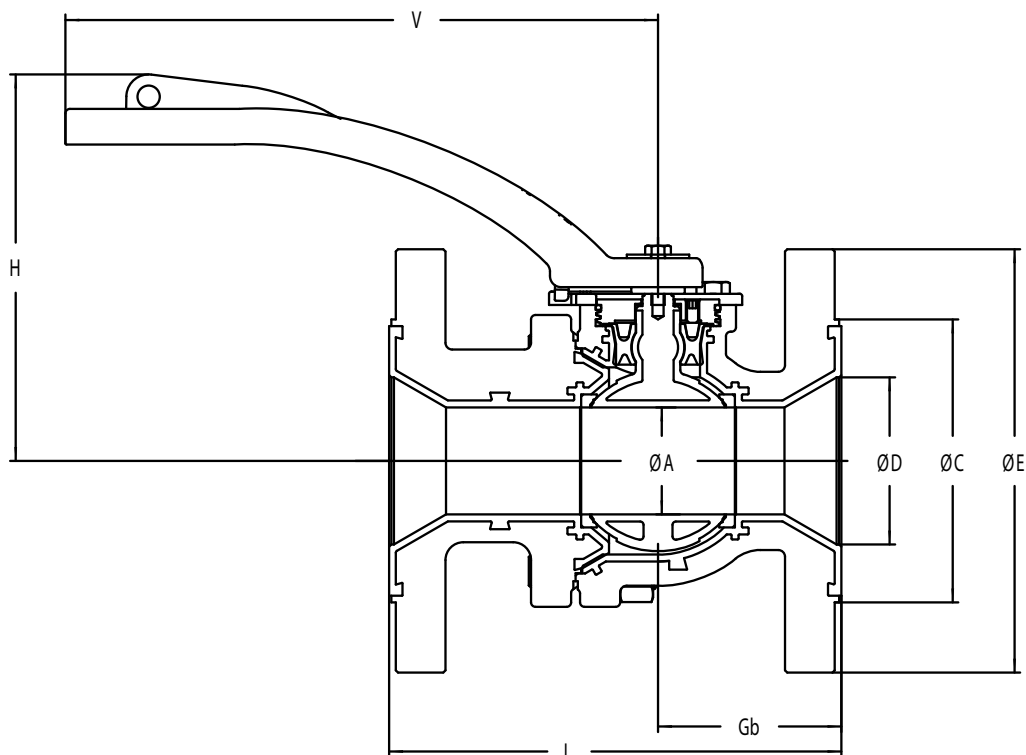
Size	A		C		D		E		L		Gb		H		V		Weight		ISO 5211
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg	
½"	0.91	23	1.38	35	0.59	15	3.50	90	5.12	130	2.05	52	5.63	143	6.69	170	8.6	3.9	F05
¾"	0.91	23	1.69	43	0.79	20	3.88	100	5.91	150	2.05	52	5.63	143	6.69	170	9.5	4.3	F05
1"	0.91	23	2.01	51	0.91	23	4.25	110	6.00	152.3	2.01	51	5.63	143	6.69	170	11	5	F05
1 ½"	1.46	37	2.87	73	1.46	37	5.00	125	7.01	178	2.64	67	6.42	163	10.47	266	20	9	F07
2"	1.85	47	3.62	92	1.85	47	6.00	150	7.99	203	2.95	75	6.73	171	10.47	266	26	12	F07
3"	3.07	78	5.00	127	2.95	75	7.50	190	9.49	241	3.39	86	9.06	230	10.47	266	55	25	F10
4"	3.82	97	6.18	157	3.82	97	9.00	230	11.50	292	3.86	98	10.12	257	13.78	350	86	39	F10
6"	5.71	145	8.50	216	5.71	145	11.00	280	14.02	356	4.65	118	11.26	286	13.78	350	147	67	F12

Flow coefficient									
Size	½"	¾"	1"	1 ½"	2"	3"	4"	6"	
Cv [USgpm]	12.6	35.0	57	213	295	670	1650	4780	
Kv [m³/h]	10.9	31.0	49	184	255	580	1427	4135	

XLB Lined Ball Valve ASME Dimensions

XLB 42A

XOMOX Fully Lined Ball Valve Standard Port
 Flange Connection ASME B16.5 - Class 150
 Face-to-Face Dimension acc. ASME B16.10 (former 944)



Dimensions in inches/mm

Size	A		C		D		E		L		Gb		H		V		Weight		ISO 5211
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg	
1"*	0.91	23	2.01	51	0.91	23	4.25	110	5.00	127	2.01	51	5.63	143	6.69	170	10.3	4.7	F05
1 1/2"	0.91	23	2.87	73	1.57	40	5.00	125	6.50	165	2.24	57	6.42	163	6.69	170	13	6	F05
2"	1.46	37	3.62	92	1.97	50	6.00	150	7.00	178	2.95	75	6.73	171	10.47	266	23	10.5	F07
3"	1.85	47	5.00	127	3.15	80	7.50	190	8.00	204	3.23	82	6.73	171	10.47	266	35	16	F07
4"	2.95	75	6.18	157	3.94	100	9.00	230	9.00	228	3.82	97	9.06	230	13.78	350	64	29	F10
6"	3.82	97	8.50	216	5.91	150	11.00	280	10.50	267	3.90	99	10.12	257	13.78	350	97	44	F10

* 1" valve is XLB 12 Full Port valve

Flow coefficient						
Size	1"	1 1/2"	2"	3"	4"	6"
Cv [USgpm]	57	213	295	670	1650	4780
Kv [m³/h]	49	184	255	580	1427	4135

XLB Lined Ball Valve Flow Characteristics

Flow Characteristics Full Port Valves $K_V [m^3/h] = f(DN, \text{Angle of aperture})$

 $C_V = 1.156K_V$

Angle of aperture		9°	18°	27°	36°	45°	54°	63°	72°	81°	90°
Angle of aperture %		10	20	30	40	50	60	70	80	90	100
DN	in										
15	½	0.05	0.14	0.29	0.45	0.83	1.2	2.1	3	6.2	11
20	¾	0.21	0.47	1	1.52	2.55	3.57	5.84	8.1	17.3	31
25	1	0.34	0.76	1.6	2.45	4.1	5.75	9.4	13	28	50
40	1 ½	1.12	2.45	5.28	8.11	13.8	19.4	35.2	51	104	184
50	2	1.32	2.87	6.17	9.46	16	22.6	44.3	66	142	255
80	3	2.86	7.61	15.7	23.8	38.15	52.5	100	149	321	578
100	4	7	17	36	55	87	121	244	367	791	1427
150	6	18	49	100	152	243	334	702	1068	2295	4135

$F_L, K_T, Z_V = f(\text{Angle of aperture})$

Angle of aperture	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°
Rated travel	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Recovery factor F_L	0.91	0.91	0.9	0.88	0.85	0.8	0.74	0.67	0.57	0.28
Valve characteristic Z_V	0.52	0.52	0.51	0.49	0.47	0.43	0.38	0.33	0.26	0.09
Pressure differential ratio K_T	0.7	0.7	0.68	0.65	0.61	0.54	0.46	0.38	0.27	0.07

Flow Characteristics Standard Port Valves $K_V [m^3/h] = f(DN, \text{Angle of aperture})$

 $C_V = 1.156K_V$

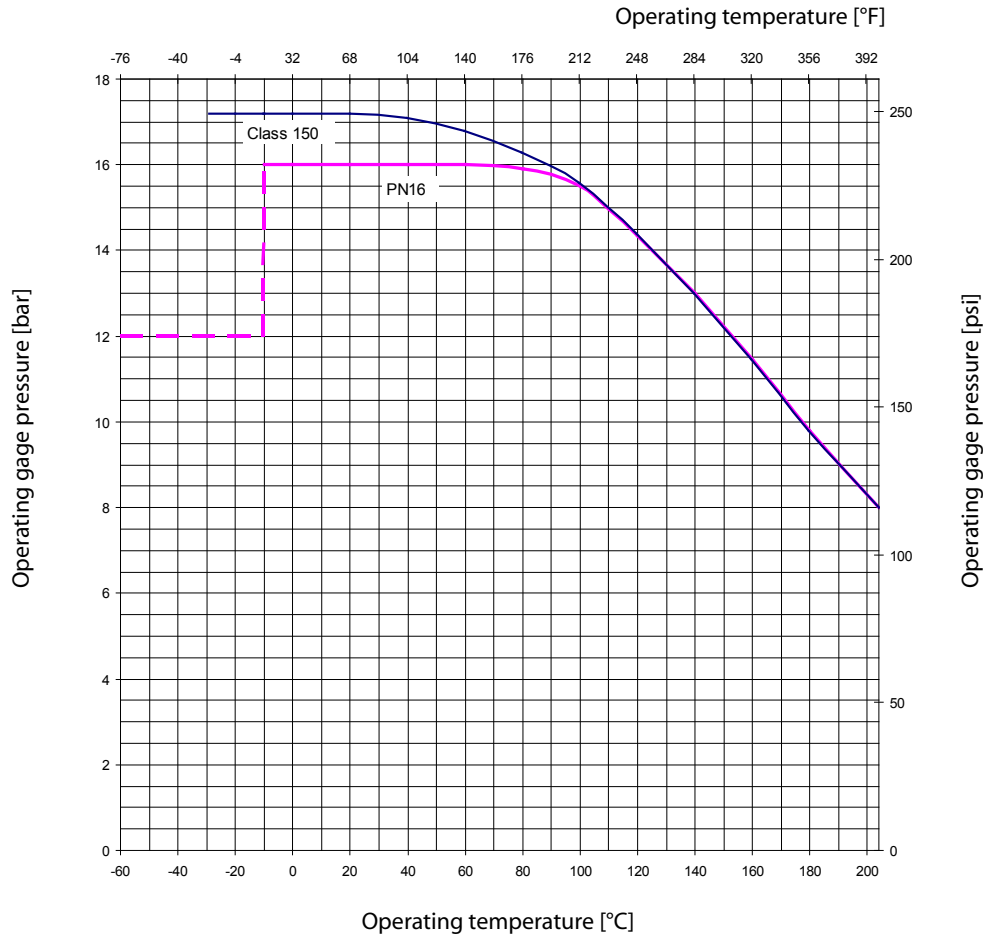
Angle of aperture		9°	18°	27°	36°	45°	54°	63°	72°	81°	90°
Angle of aperture %		10	20	30	40	50	60	70	80	90	100
DN	in										
40	1 ½	0.26	0.57	1.24	1.9	3.23	4.54	8.25	11.95	24.36	43.1
50	2	0.85	1.84	3.96	6.08	10.28	14.52	28.46	42.39	91.21	163.79
80	3	0.85	2.27	4.68	7.1	11.38	15.66	29.83	44.45	95.75	172.41
100	4	2.36	6.3	13.03	19.76	31.71	43.71	88.28	132.85	286.69	517.24
150	6	3.76	10.12	20.85	31.62	50.63	69.64	146.34	222.58	478.56	862.07

$F_L, K_T, Z_V = f(\text{Angle of aperture})$

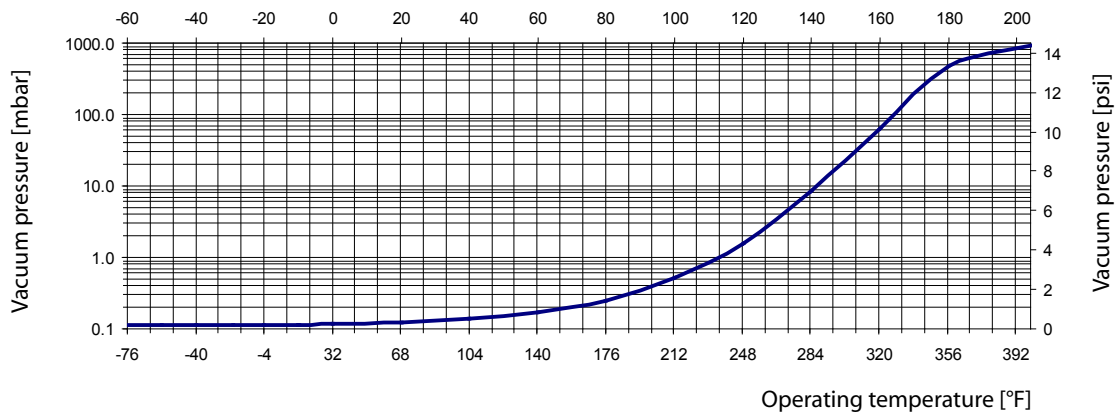
Angle of aperture	9°	18°	27°	36°	45°	54°	63°	72°	81°	90°
Rated travel	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Recovery factor F_L	---	0.95	0.94	0.92	0.89	0.87	0.85	0.8	0.7	0.65
Valve characteristic Z_V	---	0.51	0.49	0.47	0.43	0.38	0.33	0.26	0.09	0.05
Pressure differential ratio K_T	---	0.64	0.64	0.72	0.79	0.61	0.51	0.37	0.24	0.16

XLB Lined Ball Valve Pressure/Vacuum Temperature Rating

XLB Pressure/Temperature Diagram



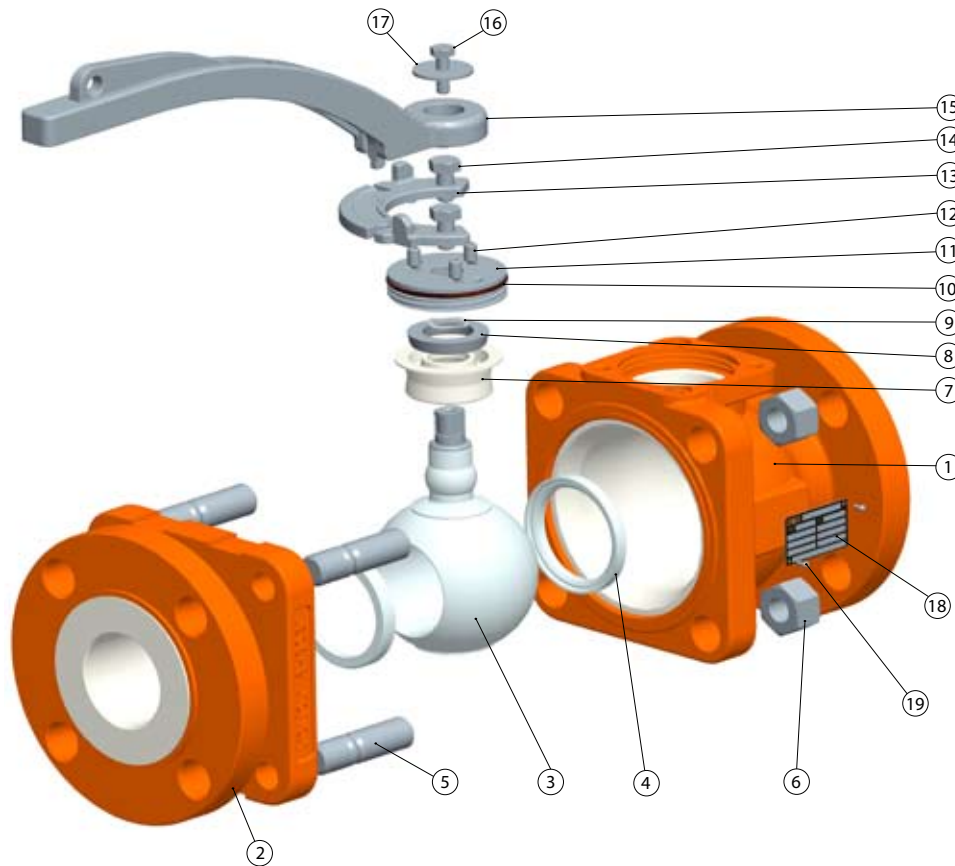
XLB Vacuum/Temperature Diagram



Notes

- 1) Body material (EN-JS 1049 / 60-40-18) meets the requirements of both EN 1563 and ASTM A395
- 2) Minimum temperature for ductile iron material (60-40-18) according to ASME B16.42 is -20° F (-29° C)
- 3) Minimum temperature for EN-JS 1049 is -10° C (-14° F).
- 4) Maximum cold working gage pressure for JIS 10Kg is 10 bar (145 psig) for EN PN16 is 16 bar (232 psig) and ASME Class 150 is 250 psig (17.2 bar).
- 5) Contact your Crane ChemPharma Flow Solutions sales office for applications outside the relevant pressure and temperature limits of the design code in question (dash line)

XLB Lined Ball Valve Materials of Construction

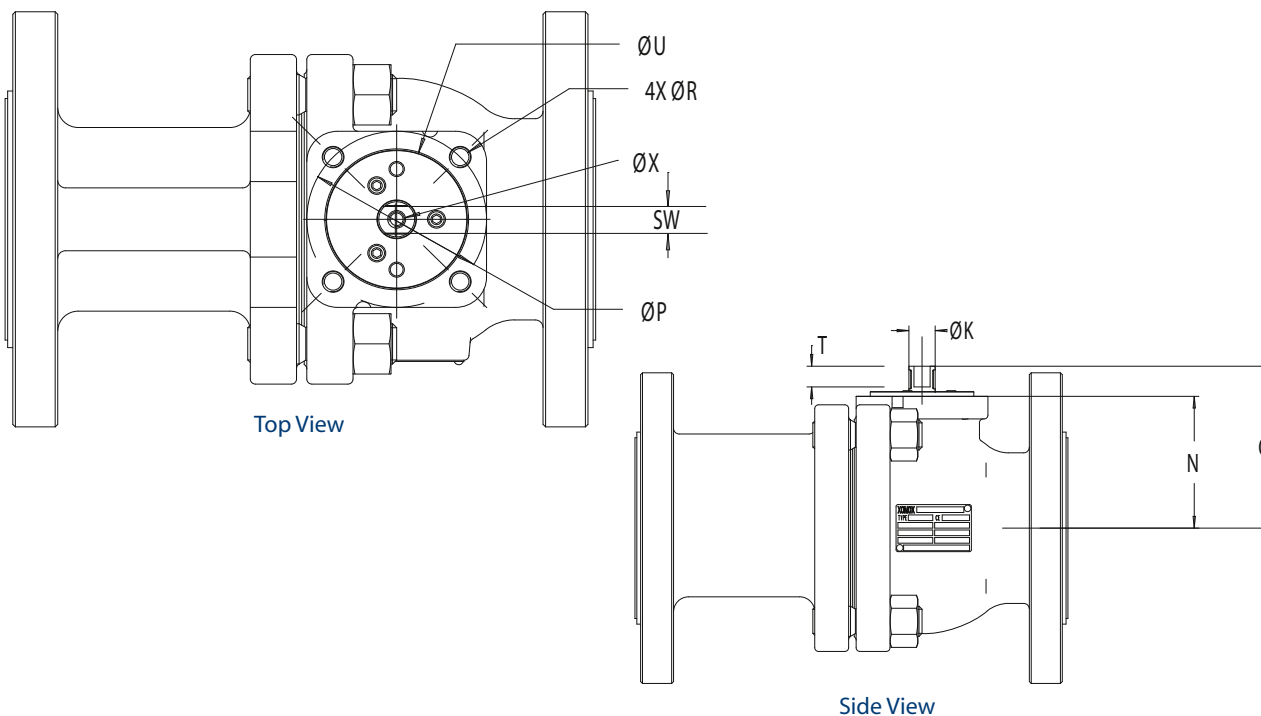


Item	Quantity	Part	Material
1	1	Body	Ductile Iron EN-JS 1049/60-40-18, ASTM A395, PFA Teflon® Lined
2	1	Flange	Ductile Iron EN-JS 1049/60-40-18 ASTM A395, PFA Teflon® Lined
3	1	Integral Ball/Stem	1.4470 / ASTM A995 gr 4A, PFA Teflon® lined
4	2	Seat	Chemically Modified PTFE (CMP)
5	4/8	Stud	EN and JIS Valves: A4-70, ASME Valves: A193 Grade B7
6	4/8	Nut	EN and JIS Valves: A4-70, ASME Valves: A194 Grade 2H
7	1	SX Seal	Chemically Modified PTFE (CMP)
8	1	Wedge Ring	1.4541 / AISI 321 St/Steel
9	1	Antistatic spring	17-7 PH Stainless Steel
10	1	Cover Seal	FKM
11	1	Cover	1.4541 / AISI 321 St/Steel
12	3	Set screw	1.4301 / AISI 304 St/Steel
13	1	Stop plate	Stainless Steel
14	2	Screw	Stainless Steel
15	1	Lever	Stainless Steel
16	1	Screw	Stainless Steel
17	1	Washer	Stainless Steel
18	1	Tag	Stainless Steel
19	2	Tag pin	Stainless Steel

XLB Lined Ball Valve Operating Torques

Operating torques (max. break-away torque)

Full Port Size		Standard Port Size		ΔP up to 5 bar	ΔP up to 70 psi	ΔP up to 10 bar	ΔP up to 145 psi	ΔP up to 17.6 bar	ΔP up to 250 psi
DN	in	DN	in	Nm at 20°C	in/lb at 70°F	Nm at 20°C	in/lb at 70°F	Nm at 20°C	in/lb at 70°F
15	1/2"	-	-	5.5	49	5.5	49	7	62
20	3/4"	-	-	5.5	49	5.5	49	7	62
25	1"	40	1 1/2"	5.5	49	5.5	49	7	62
40	1 1/2"	50	2"	12	106	13	115	20	177
50	2"	80	3"	19	168	20	177	25	221
50/65	2 1/2"	-	-	19	168	20	177	25	221
80	3"	100	4"	35	310	55	487	70	620
100	4"	150	6"	77	682	90	797	100	885
150	6"	-	-	154	1363	190	1682	260	2301



Actuator mounting dimensions

Full Port Size		Standard Port Size		ISO 5211	U	4XR	P	SW	T	K	X	N	Q
DN	in	DN	in										
15	1/2"	-	-	F05	35	M6	50	9	11	12	M6	48	62
20	3/4"	-	-	F05	35	M6	50	9	11	12	M6	48	62
25	1"	40	1 1/2"	F05	35	M6	50	9	11	12	M6	48	62
40	1 1/2"	50	2"	F07	55	M8	70	11	11	14	M6	62	78
50	2"	80	3"	F07	55	M8	70	11	11	14	M6	70	86
65	2 1/2"	-	-	F07	55	M8	70	11	11	14	M6	70	86
80	3"	100	4"	F10	70	M10	102	17	17	22	M8	100	122
100	4"	150	6"	F10	70	M10	102	17	17	22	M8	126	148
150	6"	-	-	F12	85	M12	125	22	22	28	M8	155	182

About CRANE ChemPharma Flow Solutions, XOMOX

Product Selection

Xomox offers a broad line of process valves, actuators, accessories, and related services including:

- XOMOX® Process Valves
- Matryx® Vane Actuators
- XOMOX XRP™ Actuators

Please refer to our website www.cranechempharma.com for technical documentation (pdf) and to access the worldwide network of XOMOX® Authorized Distributors.

About Crane ChemPharma Flow Solutions™

CRANE ChemPharma Flow Solutions designs and manufactures a variety of high performance products including: sleeved plug valves, lined valves, high performance butterfly valves, aseptic and industrial diaphragm valves, actuation, lined pipe, fittings and hoses, and air operated diaphragm and peristaltic pumps.

Our trusted brands Saunders®, XOMOX®, DEPA®, ELRO, Revo®, Resistoflex®, and ResistoPure® offer our customers complete and innovative fluid handling solutions designed for the most demanding corrosive, erosive and high purity applications within the chemical, bio-technology and pharmaceutical industries.

About XOMOX®

Crane ChemPharma Flow Solutions, Xomox is a manufacturer of engineered industrial products, including valves for processing industries.

All major Xomox facilities are certified under ISO-9000. Engineering design centers in Cincinnati and Lindau are certified under ISO-9001. Xomox valves meet ASME, JIS and EN standards for global applications.



Cincinnati, Ohio, USA



Lindau/Bodensee, Germany



Suzhou, PR China

Worldwide Capabilities

Our Manufacturing Facilities, Sales Offices and Service Centers are located in:

- Cincinnati, Ohio, USA (Corp. Hdqtrs)
- Lindau/Bodensee, Germany (European Hdqtrs)
- Äänekoski, Finland
- Busan, South Korea
- Chaoyang District, Beijing, PR China
- Chihuahua, Mexico
- Cwmbran Gwent, UK
- Dubai, UAE
- Düsseldorf, Germany
- Edmonton, Alberta, Canada
- Gonzales, LA, USA
- Grevenbroich/ Noithausen, Germany
- Houston TX, USA
- Kanagawa, Japan
- Kewdale, Australia
- Les Fonts - Terrassa (Barcelona), Spain
- Marion, NC, USA
- Mexico City, Mexico
- Montgomery, TX, USA
- Monza MI, Italy
- Moscow, Russia
- Mulhouse, France
- Norderstedt, Germany
- Pforzheim, Germany
- Pune, India
- Quebec, Canada
- Shanghai, PR China
- Singapore
- St. Mary's, Australia
- Suzhou, China
- SzékesFehérvár, Hungary
- Taipei, Taiwan
- Tiruchirapalli, India
- Tualatin, OR, USA
- Tullamarine, Australia
- Virginia, Australia
- Waalwijk, Netherlands
- Wavre, Belgium
- Wr. Neudorf, Austria

XOMOX®

CRANE ChemPharma Flow Solutions™

XOMOX Headquarters
4444 Cooper Road,
Cincinnati, OH 45030, U.S.A.
Tel.: (513) 745-6000
Fax: (513) 745-6086

XOMOX International GmbH & Co.
Von-Behring-Straße 15,
D-88131 Lindau/Bodensee
Tel.: (49) 8382-702-0
Fax. (49) 8382-702-144

CRANE

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CRANE ChemPharma Flow solutions Include: Pipe - Valves - Fitting - Actuators - Pumps

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revo®

XOMOX®

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