



Xomox® Tuflin®

CRYOGENIC BUTTERFLY VALVES

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CUSTOM DESIGN & MODIFICATIONS.

CRANE Cryogenics™ offers custom designs and modifications of high performance butterfly valves to handle virtually any process application.



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XOMOX® CRYOGENIC HPBV Features & Benefits

Cryogenic by design

Tufline Cryogenic Butterfly valves are specifically designed for sub-zero line temperature services. These valves handle cryogenic fluids efficiently and reliably with minimum maintenance requirements.

Application Flexibility

The stainless steel materials of construction provide for maximum service flexibility and media applications.

Designed for actuation and easy adjustment

Shaft and integrally welded bonnet extensions enable valve actuators to be mounted well above pipeline insulation and provides for easy adjustment of the stem packing gland.

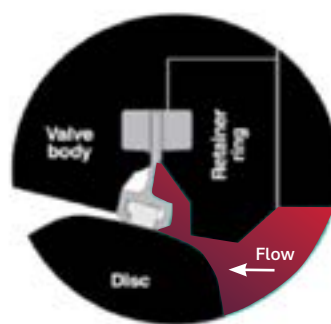
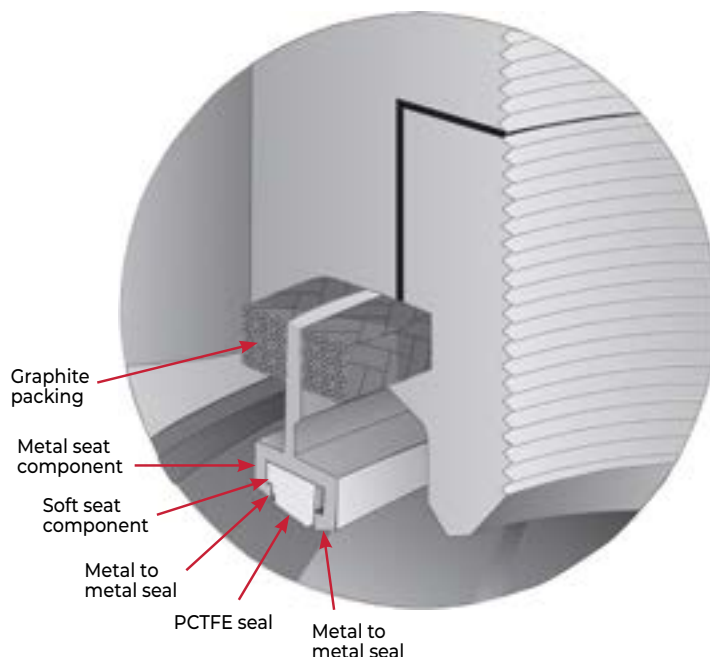
Compact for better temperature control

The compact size of the wafer and lug style valves permits minimum temperature stabilization times on either line heat-up or cool-down.

Fitted with Hybrid 316/PCTFE Seat for assured sealing

At cryogenic temperatures all plastic seats have a tendency to embrittle and crack. The Tufline cryogenic seat combines PCTFE and metal sealing elements and establishes both a PCTFE to metal and a dual metal to metal seal.

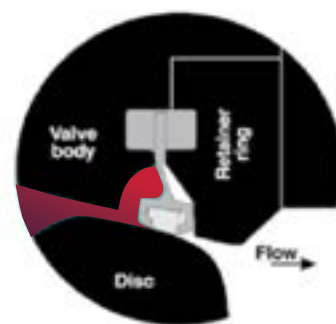
The metal carrier not only enhances the reliability of the seal but also provides additional support for the PCTFE component and fire safe capability.



Normal Operation (Right to Left flow)

This unique seat is designed for bi-directional flow control. As pressure increases, the seat shifts axially in the direction of the flow.

This tightens the seat contact with the disc for sure sealing.

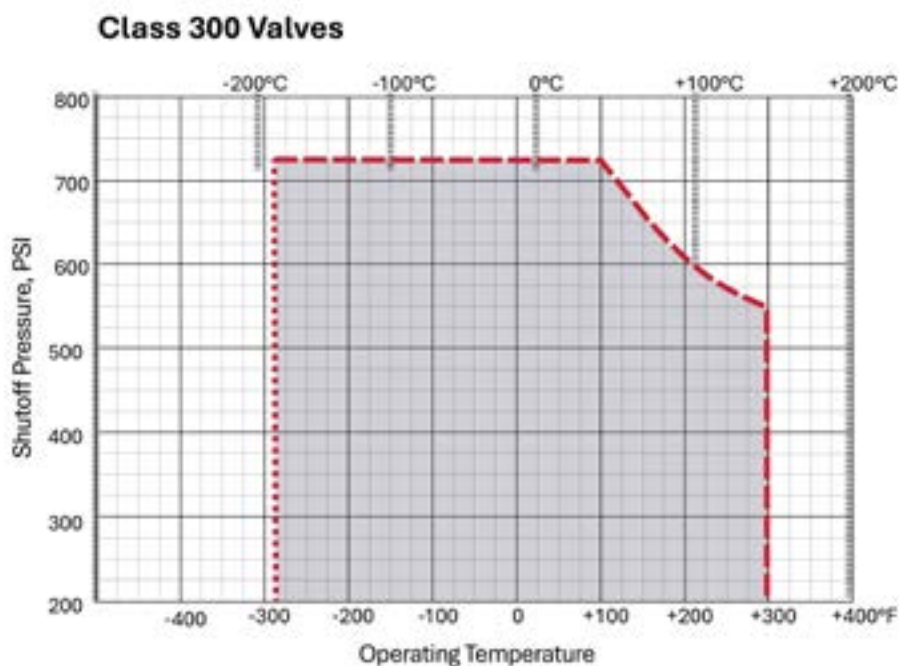
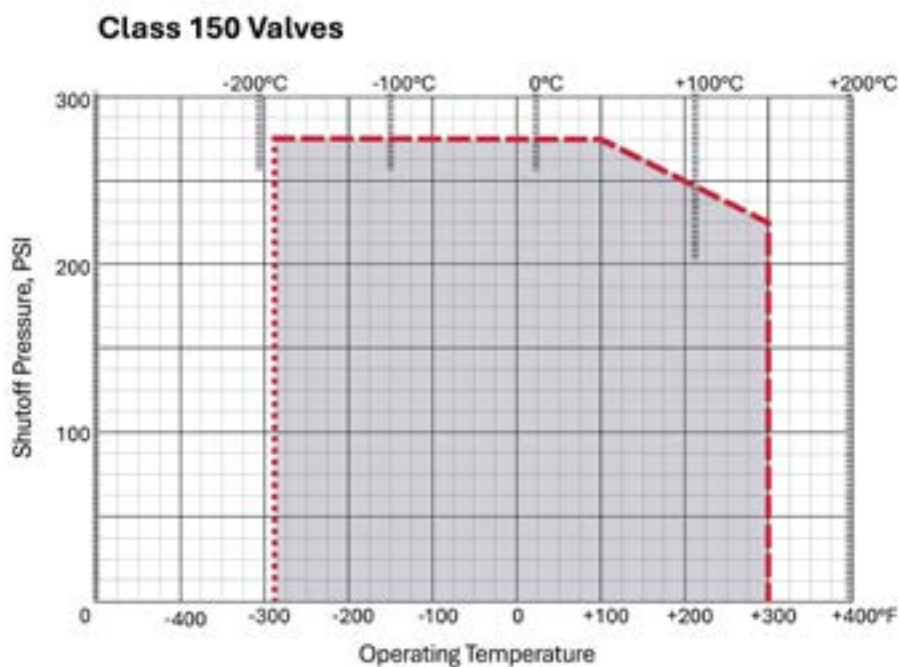


Normal Operation (Left to Right flow)

Both the metal seat and the PCTFE seat are in tight contact with the disc. As line pressure increases, the seal tightens, axially.

XOMOX® CRYOGENIC HPBV PT Ratings

Valve PT Rating (150# AND 300#)



XOMOX® CRYOGENIC HPBV Torque

Class 150 Torque for Seat 316/PCTFE [Nm]

DN	NPS	Differential Pressure [bar]			
		3.5	7	14	20
80	3	78	87	112	143
100 / 125	4 / 5	85	94	118	150
150	6	195	246	390	553
200	8	403	605	689	774
250	10	611	793	1060	1352
300	12	936	1216	1729	2314
350	14	1755	2139	2269	2379
400	16	2028	2470	2789	3003
450	18	3315	3660	3926	4186
500	20	4238	4687	5057	5434
600	24	6721	7443	8073	8515

Class 150 Torque for Seat 316/PCTFE [lb-ft]

DN	NPS	Differential Pressure [psi]			
		51	102	203	290
80	3	58	64	82	105
100 / 125	4 / 5	62	69	87	110
150	6	144	181	288	408
200	8	297	446	508	571
250	10	451	585	781	997
300	12	690	897	1275	1707
350	14	1294	1577	1673	1755
400	16	1496	1822	2057	2215
450	18	2445	2699	2896	3088
500	20	3126	3457	3730	4008
600	24	4957	5490	5955	6281

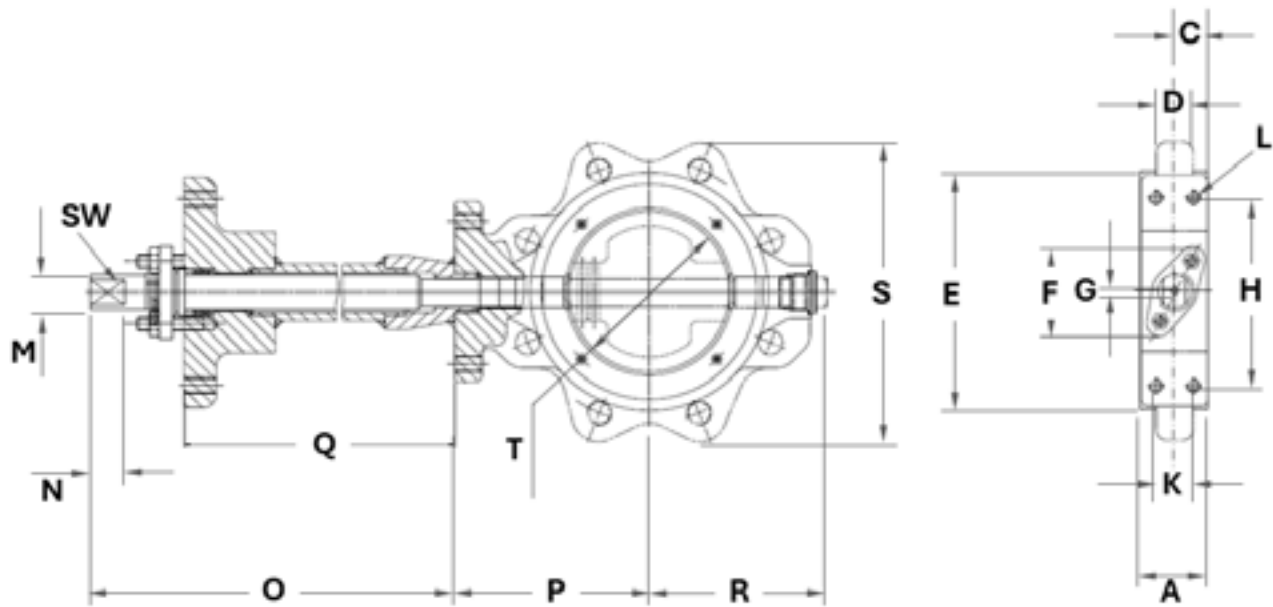
Class 300 Torque for Seat 316/PCTFE [Nm]

DN	NPS	Differential Pressure [bar]						
		3.5	7	14	20	28	41	51
80	3	78	87	112	143	152	176	191
100 / 125	4 / 5	85	94	118	150	169	218	257
150	6	195	246	390	553	589	664	728
200	8	403	605	689	774	885	1131	1352
250	10	611	793	1060	1352	1468	1687	1851
300	12	936	1216	1729	2314	2480	2757	2974
350	14	1872	2282	2622	2768	3582	4995	5987
400	16	2830	3452	3559	4520	5950	8437	10176
450	18	3576	3957	4900	5404	7140	10158	12272
500	20	4922	5446	6783	7522	10009	14335	17363
600	24	7856	8693	10446	11486	15322	22035	26647

Class 300 Torque for Seat 316/PCTFE [lb-ft]

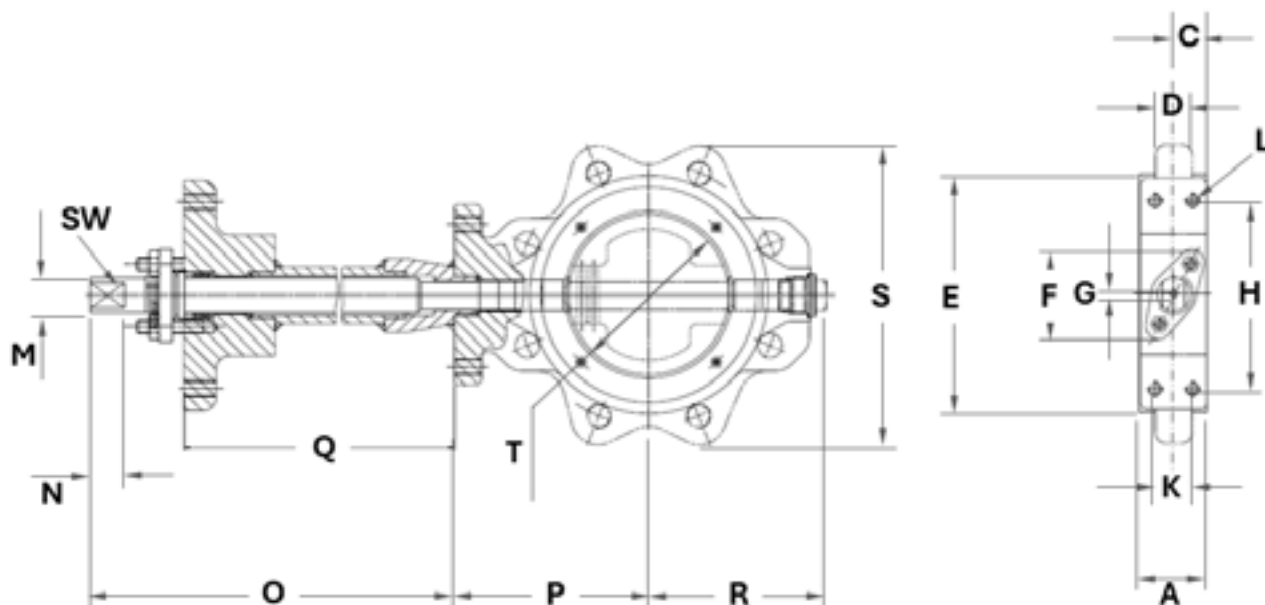
DN	NPS	Differential Pressure [psi]						
		51	102	203	290	406	595	740
80	3	58	64	82	105	112	129	141
100 / 125	4 / 5	62	69	87	110	125	161	190
150	6	144	181	288	408	434	490	537
200	8	297	446	508	571	653	834	997
250	10	451	585	781	997	1083	1245	1365
300	12	690	897	1275	1707	1830	2034	2194
350	14	1381	1683	1934	2041	2642	3684	4416
400	16	2087	2546	2625	3334	4389	6223	7506
450	18	2638	2919	3614	3986	5266	7493	9052
500	20	3630	4017	5003	5548	7382	10574	12807
600	24	5795	6412	7705	8472	11301	16253	19655

XOMOX® CRYOGENIC HPBV General Arrangement Drawing (mm)



DN	NPS	PN	A	C	D	E	F	G	H	K	L	M	N	O	P	Q	R	S	T	SW
80	3	150#	48	23	35	138	70	M6	127	25.4	M12	19.1	25.4	488.6	117	406	110	190	78.6	14.3
		300#																		
100	4	150#	54	26	50	162	70	M8	127	25.4	M12	25.4	25.4	488.6	146	406	133	225	102	17.5
		300#																		
125	5	150#	56	32	50	188	70	M8	127	25.4	M12	25.4	25.4	488.6	168	406	140	270	102	17.5
		300#																		
150	6	150#	57	30	64	218	82.6	M8	127	25.4	M12	31.8	25.4	488.6	178	406	165	300	146	20.6
		300#	59															310		
200	8	150#	64	33	57	270	98.4	M8	203	35	M16	38.1	38.1	494.9	210	406	200	340	190	25.4
		300#	73															380		
250	10	150#	71	39	62	324	101.5	M8	203	35	M16	44.5	38.1	494.9	229	406	215	424	235	28.6
		300#	83		64										254		263	431		
300	12	150#	81	45	58	378	139.7	M12	330.2	50.8	M24	50.8	50.8	552	280	406	287	480	281	38.1
		300#	92		70													520		
350	14	150#	92	41.8	73	438	101.5	M8	203	35	M16	44.5	38.1	494.9	305	406	287	530	331	28.6
		300#	117	55.4		450	152.4	M12	330.2	50.8	M24	63.5	63.5	552	346		320	580		
400	16	150#	102	46.2	64	489	139.7	M12	330.2	50.8	M24	50.8	50.8	552	337	406	317	595	373	38.1
		300#	133	65		505	160		381	76		76.2	63.5	552	375		360	660	366	
450	18	150#	114	50.6	73	533	139.7	M12	330.2	50.8	M24	50.8	50.8	552	365	406	326	640	419	38.1
		300#	149	17.4		560	160		381	76		76.2	63.5	552	400		383	710	413	
500	20	150#	127	55	70	590	152.4	M12	330.2	50.8	M24	63.5	63.5	552	395	406	370	715	469	44.5
		300#	159	76		615	190.5		381	76		88.9	63.5	552	432		407	775	461	
600	24	150#	154	66.5	80	692	160	M12	381	76	M24	76.2	63.5	552	451	406	436	840	559	50.8
		300#	181	87		720	200		381	101.6	M30	101.6	63.5	596.5	495		470	914	548	

XOMOX® CRYOGENIC HPBV General Arrangement Drawing (mm)



DN	NPS	PN	A	C	D	E	F	G	H	K	L	M	N	O	P	Q	R	S	T	SW
80	3	150#	1.89	0.91	1.38	5.43	2.76	M6	5.00	1.00	M12	0.75	1.00	19.24	4.61	15.98	4.33	7.48	3.09	0.56
		300#	2.13	1.02	1.97	6.38	2.76	M8	5.00	1.00	M12	1.00	1.00	19.24	5.75	15.98	5.24	8.86	4.02	0.69
100	4	150#	2.20	1.26	1.97	7.40	2.76	M8	5.00	1.00	M12	1.00	1.00	19.24	6.61	15.98	5.51	10.63	4.02	0.69
		300#	2.24	1.18	2.52	8.58	3.25	M8	5.00	1.00	M12	1.25	1.00	19.24	7.01	15.98	6.50	11.81	5.75	0.81
125	5	150#	2.32	1.30	2.24	10.63	3.87	M8	7.99	1.38	M16	1.50	1.50	19.48	8.27	15.98	7.87	13.39	7.48	1.00
		300#	2.52	1.54	2.44	12.76	4.00	M8	7.99	1.38	M16	1.75	1.50	19.48	9.02	15.98	8.46	14.96	9.25	1.13
200	8	150#	2.80	1.77	2.28	14.88	5.50	M12	13.00	2.00	M24	2.00	2.00	21.73	11.02	15.98	11.30	18.90	11.06	1.50
		300#	3.27	2.18	2.76	15.55	6.00	M12	13.00	2.00	M24	2.50	2.50	21.73	13.62	15.98	12.60	20.47	13.03	1.75
250	10	150#	3.62	2.18	2.87	17.24	6.00	M8	7.99	1.38	M16	1.75	1.50	19.48	12.01	15.98	11.30	20.87	13.03	1.13
		300#	4.61	2.56	3.25	19.88	6.30	M12	13.00	2.00	M24	2.50	2.50	21.73	13.62	15.98	12.60	22.83	13.03	1.75
300	12	150#	4.02	1.82	2.52	19.25	5.50	M12	13.00	2.00	M24	2.00	2.00	21.73	13.27	15.98	12.48	23.43	14.69	1.50
		300#	5.24	2.56	3.25	19.88	6.30	M12	15.00	2.99	M24	3.00	2.50	21.73	14.76	15.98	14.17	25.98	14.41	2.00
350	14	150#	4.49	1.99	2.87	20.98	5.50	M12	13.00	2.00	M24	2.00	2.00	21.73	14.37	15.98	12.83	25.20	16.50	1.50
		300#	5.87	0.69	3.25	22.05	6.30	M12	15.00	2.99	M24	3.00	2.50	21.73	15.75	15.98	15.08	27.95	16.26	2.00
400	16	150#	5.00	2.17	2.76	23.23	6.00	M12	13.00	2.00	M24	2.50	2.50	21.73	15.55	15.98	14.57	28.15	18.46	1.75
		300#	6.26	2.99	3.25	24.21	7.50	M12	15.00	2.99	M24	3.50	2.50	21.73	17.01	15.98	16.02	30.51	18.15	2.25
450	18	150#	6.06	2.62	3.15	27.24	6.30	M12	15.00	2.99	M24	3.00	63.5	21.73	17.76	15.98	17.17	33.07	22.01	2.00
		300#	7.13	3.43	3.25	28.35	7.87	M12	15.00	4.00	M30	4.00	63.5	21.73	19.49	15.98	18.50	35.98	21.57	2.74

XOMOX® CRYOGENIC HPBV Seat Leak Performance and CV

Seat Performance

Sate Type	Maximum Temperature	Minimum Temperature	Test Leak Rate (Ambient)	Test Leak Rate (Cryogenic Service)
PCTFE	+280°F	-425°F	Tight Shutoff	10% of Class IV

*Water test at nominal pressure rating in preferred flow direction

Cv Factors and Flow Data

DN	NPS	PN	K _v values at angular stroke (m ³ /h)						Free sect. area cm ²	ζ1
			10°	18°	36°	54°	72°	90°	at 90°	90°
80	3	PN 10, 16, 25 Cl. 150	5.1	13	37	79	144	222	26	1.33
100/125	4 / 5		9.4	24	66	144	264	406	47	0.97
150	6		26	64	178	376	689	1060	103	0.72
200	8		46	115	322	681	1247	1919	186	0.70
250	10		72	181	505	1068	1955	3006	292	0.70
300	12		104	262	732	1547	2833	4359	420	0.68
350	14		152	380	1063	2245	4111	6325	670	0.60
400	16		193	482	1350	2852	5222	8034	825	0.63
450	18		265	662	1852	3914	7167	11026	1065	0.54
500	20		330	826	2312	4865	8944	13760	1328	0.53
600	24		446	1164	3260	6888	12611	19402	1885	0.55
80	3	PN 40 Cl. 300	5.1	13	37	79	144	222	26	1.33
100/125	4 / 5		9.4	24	66	144	264	406	47	0.97
150	6		26	64	178	376	689	1060	103	0.72
200	8		46	115	322	681	1247	1919	186	0.70
250	10		72	181	505	1068	1955	3006	292	0.70
300	12		104	262	732	1547	2833	4359	420	0.68
350	14		122	309	864	1826	3345	5145	546	0.90
400	16		159	405	1135	2397	4390	6753	722	0.90
450	18		205	519	1454	3071	5624	8652	917	0.88
500	20		267	679	1900	4015	7352	11310	1175	0.78
600	24		376	955	2675	5653	10351	15924	1644	0.82
			k _{vr}	K _v values as per. VDI/VDE 2176			k _{vs}	K _{va}		

Flow data as per VDI/VDE 2176 and EN 60534

K_v = m³/h of water with a 1 bar pressure drop

C_v = 1.156 x K_v

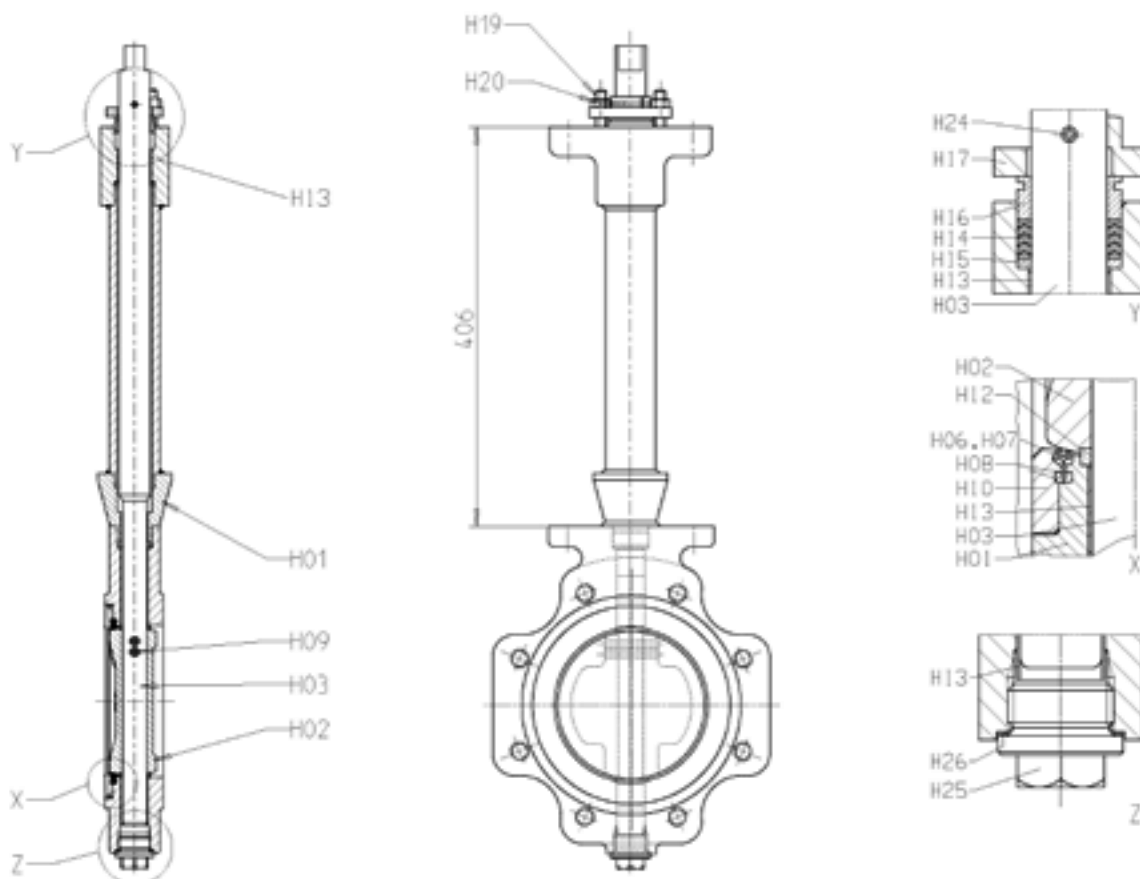
K_{vr} = smallest usable K_v value

K_{vs} = K_v value at nominal stroke angle (72°)

K_{va} = maximum possible K_v value for valve in open position (90°)

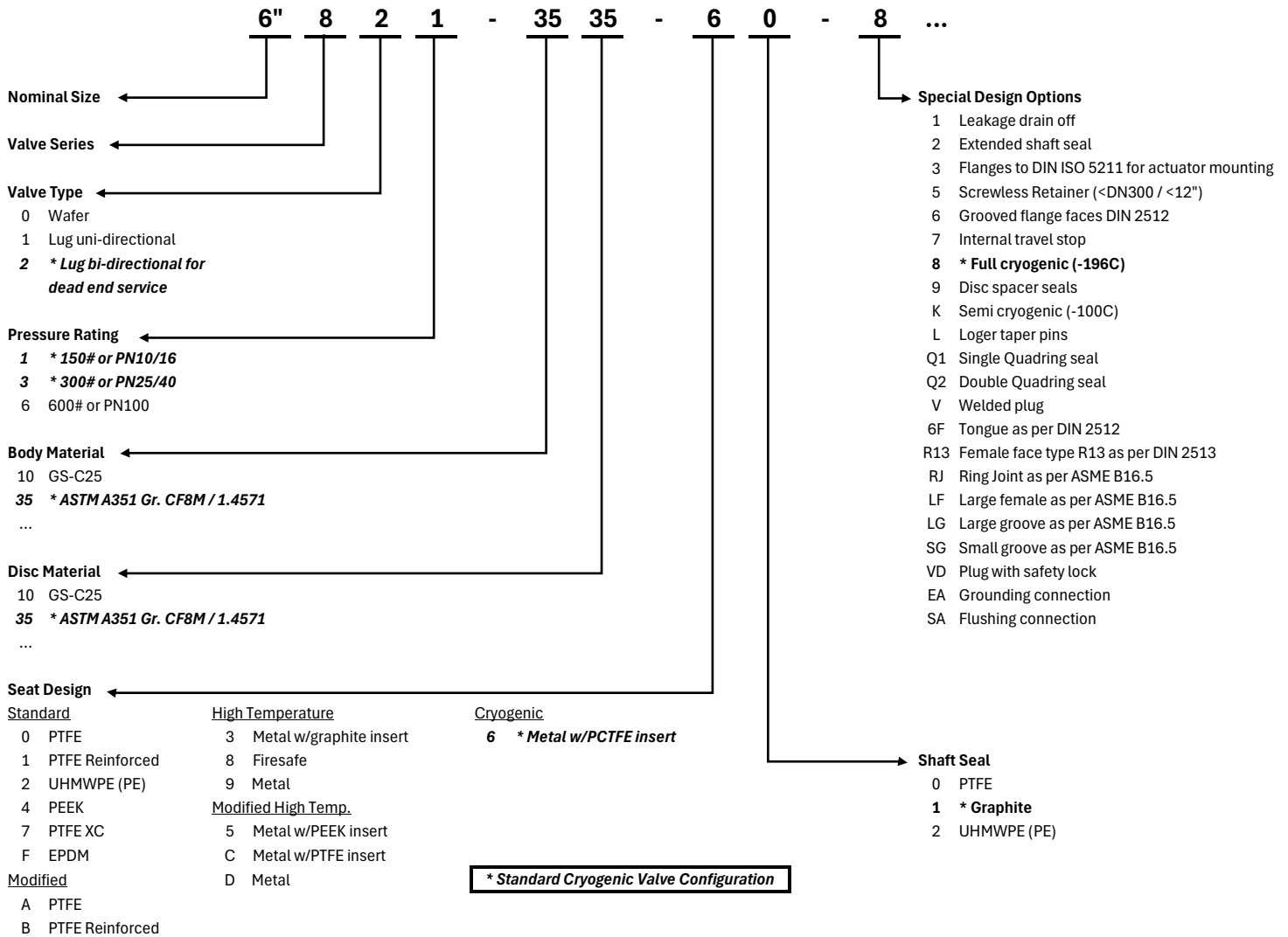
ζ1 = Resistance coefficient referring to pipe cross section

XOMOX® CRYOGENIC HPBV Bill Of Materials



POS	Qty.	Recommended Spare	Description	Material
H01	1		Body with extension and Bonnet	ASTM A351-CF8M / 1.4571
H02	1		Disc	ASTM A351-CF8M / GLEITMO
H03	1		Shaft	17-4PH Cond. H1150M
H06	1	Yes	Seat Assembly	1.4571 / PCTFE
H08	2	Yes	Seal	Graphite
H09	2		Tapered Pin	ASTM A564-630/H1150M
H10	1		Retainer Ring	1.4581
H12	2		Spacer	1.4571/S4N
H13	2		Bearing	1.4571 / Graphite
H14	1	Yes	Packing Set	Graphite
H15	1		Packing Backup Ring	1.4571
H16	1		Gland	1.4571
H17	1		Gland Follower	1.4408
H19	2		Packing Stud	ASTM A193-B8M
H20	2		Packing Nut	ASTM A4194-8M
H24	1		Spring Pin	1.0904 A2G
H25	1		Plug	A4-50
H26	1	Yes	Plug Gasket	Graphite

XOMOX® CRYOGENIC HPBV How To Order



OPTIONS

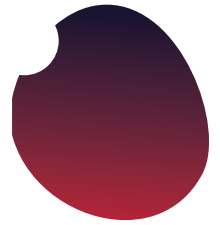
Contact a sales representative for custom offering information and availability

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INNOVATION DRIVEN BY YOUR NEEDS



Our businesses are known for proprietary and differentiated technology, quality and reliability, deep vertical expertise, and responsiveness to unique customer needs.

brands you trust.



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