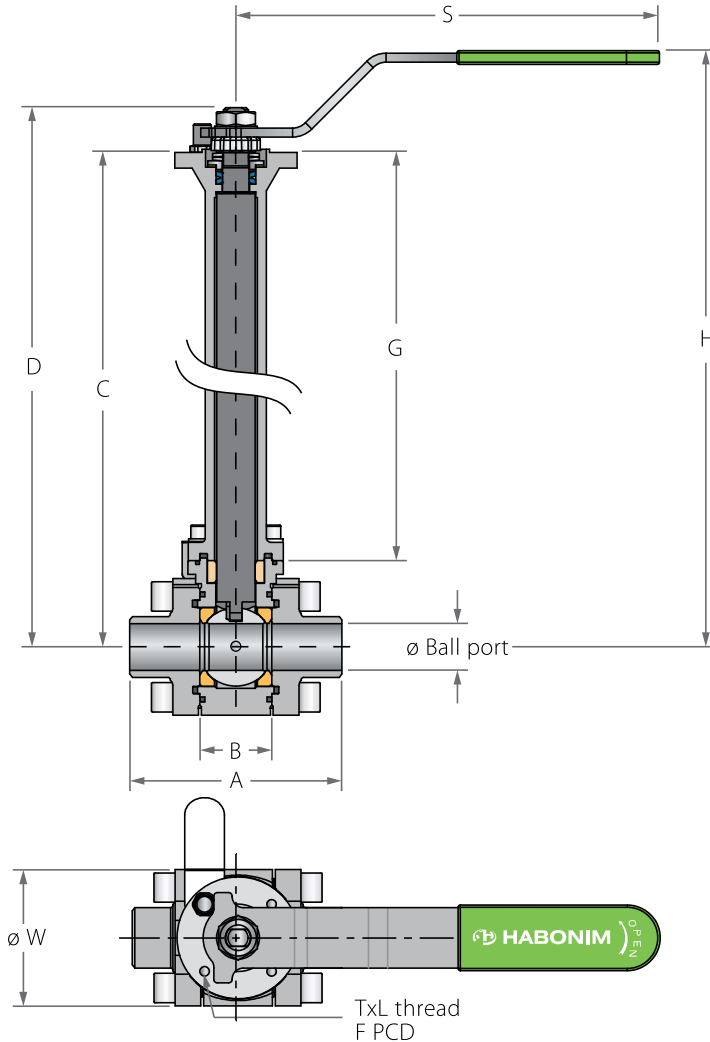


# Cryogenic Floating Ball 3 Piece; BD - Bidirectional

PATENT  
PENDING

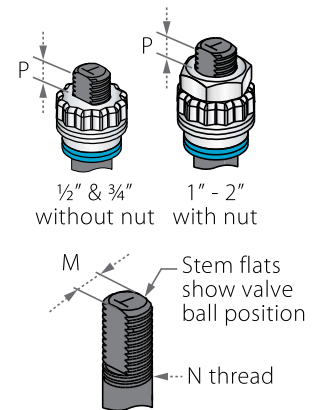
## Valve dimensions



## Bidirectional Cryogenic floating ball Valve

- Cryogenic floating ball valves with bidirectional sealing capability allows it to be used on a bidirectional loading and offloading single pipeline as well as a shutoff valve for a storage tank, developing back pressure to the downstream side while empty without upstream line pressure.
- This valves are equipped with all the benefits of the standard cryogenic ball valve on top of the simplicity and flow capabilities of a floating ball design.
- Full  $\Delta p$
- ASME Class 300
- Special "Piston Effect" at seat design to prevent pressure buildup in the cavity.

## Preparation for actuation



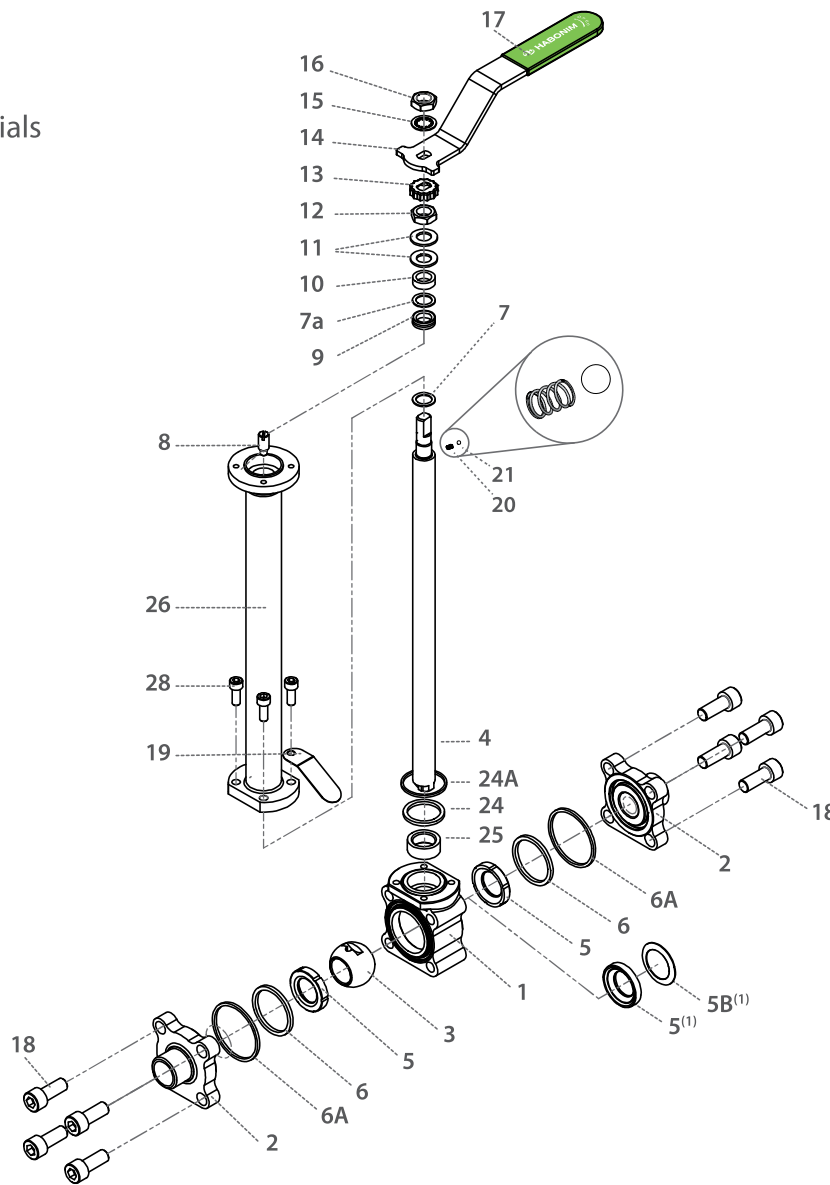
Valve Face To Face sizes are according to Habonim catalog data only, for Extended-weald/Flanged/Tri-clamp end see Face To Face sizes page.

Std. port	Full port	Unit	Ball port	A	B	Standard design				6.0" bonnet				S	W	M	N	P	F	TxL	Weight kg/lb			
						C	D	G	H	C	D	G	H								Std.	6.0"	Cv	
	DN8	mm	11.15	65.8	20.6	333	341.9	304	366	181.4	190.3	152.4	214.4	150.0	4.6	5.5	3/8"	7.20	(F03)	36.0	MSX7	1.60	1.28	2.6
	1/4"	inch	0.44	2.59	0.81	13.11	13.46	11.97	14.41	7.14	7.49	6.0	8.44	5.91	1.81	0.22	UNF	0.28		1.42		3.53	2.82	3.0
DN15	DN10	mm	11.15	65.8	20.6	333.0	341.9	304.0	366.0	181.4	190.3	152.4	214.4	150.0	46.0	5.5	3/8"	7.20	(F03)	36.0	MSX7	1.6	1.28	7
	1/2"	3/8"	inch	0.44	2.59	0.81	13.11	13.46	11.97	14.41	7.14	7.49	6.0	8.44	5.91	1.81	0.22	UNF	0.28			1.42	3.53	2.82
DN20	DN15	mm	14.3	70.55	24.55	335.4	344.3	304.0	368.0	183.8	192.7	152.4	216.4	150.0	52.0	5.5	3/8"	7.20	(F03)	36.0	MSX7	1.8	1.48	10
	3/4"	1/2"	inch	0.56	2.78	0.97	13.2	13.56	11.97	14.49	7.24	7.59	6.0	8.52	5.91	2.05	0.22	UNF	0.28			1.42	3.97	3.26
DN25	DN20	mm	20.6	93.65	31.75	342.15	359.65	304.0	383.0	190.55	208.05	152.4	231.4	187.0	60.5	7.54	7/16"	7.20	(F04)	42.0	MSX7	3.0	2.65	28
	1"	3/4"	inch	0.81	3.69	1.25	13.47	14.16	11.97	15.08	7.50	8.19	6.0	9.11	7.32	2.38	0.3	UNF	0.28			1.65	6.61	5.84
DN32	DN25	mm	25.4	108.25	41.25	346.65	364.15	304.0	388.0	195.05	212.55	152.4	236.4	187.0	69.0	7.54	7/16"	7.2	(F04)	42.0	MSX10	3.7	3.35	37
	1 1/4"	1"	inch	1.0	4.25	1.62	13.65	14.34	11.97	15.28	7.68	8.37	6.0	9.31	7.32	2.72	0.30	UNF	0.28			1.65	8.16	7.39
DN40	DN32	mm	31.8	115.45	48.25	347.55	377.05	304.0	400.0	195.95	225.45	152.40	248.40	237.0	79.20	8.71	9/16"	8.0	(F05)	50.0	M6X8	5.2	4.65	70
	1 1/2"	1 1/4"	inch	1.25	4.55	1.90	13.68	14.84	11.97	15.75	7.71	8.88	6.0	9.78	9.29	3.12	0.34	UNF	0.31			1.97	11.46	10.25
DN50	DN40	mm	38.1	127.10	56.3	352.25	381.75	304.0	405.0	200.65	230.15	152.4	253.4	237.0	90.7	8.71	9/16"	8.5	(F05)	50.0	M6X8	6.1	5.53	103
	2"	1 1/2"	inch	1.5	5.0	2.22	13.87	15.03	11.97	15.94	7.9	9.06	6.0	9.98	9.29	3.57	0.34	UNF	0.33			1.97	13.45	12.19



Components & materials

Note: for C47



Item	Description	Material specifications	Qty.
1	Body	Acc. Ordering Code	1
2	End	Acc. Ordering Code	2
3	Ball	Acc. Ordering Code	1
4	Stem	Acc. Ordering Code	1
5*	Seat	Acc. Ordering Code	2
5B	Upstream seat spring	Inconel 718	1
6*	Inner seal	TFM	2
6A*	Outer seal	Acc. Ordering Code	2
7*	Stem thrust seal	PCTFE	1
7a*	Anti-abrasion ring	PCTFE	1
8	Stop pin	S. Steel	1
9*	Stem seal	TFM	1
10	Follower	S. Steel	1
10A	Slide bearing	S. Steel	1
11	Disc spring	S. Steel	2
12	Stem nut	S. Steel	1
13	Locking clip	S. Steel	1

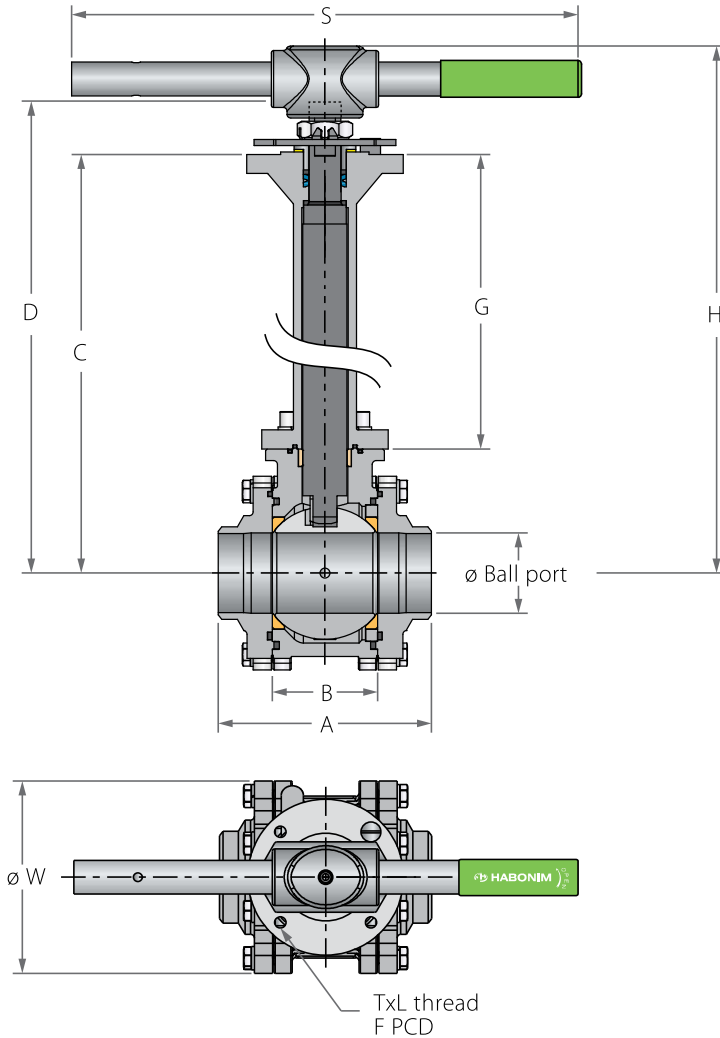
Item	Description	Material specifications	Qty.
14	Handle	S. Steel	1
15	Serrated washer	S. Steel	1
16	Handle nut	S. Steel	1
17	Sleeve	PVC	1
18	Body bolt	S. Steel	8
20	Anti-static spring	S. Steel	1
21	Anti-static plunger	S. Steel	1
22	Arrow flow	S. Steel	2
23	Tag (not shown)	S. Steel	1
24*	Bonnet inner seal	TFM	1
24A*	Bonnet outer seal	Acc. Ordering Code	1
25*	Stem bearing	PTFE	1
26	Bonnet	S. Steel	1
28	Bolt	S. Steel	4
30	Dog tag	S. Steel	1

\* Repair kit components

(1) Optional Dynamic seat design

## Cryogenic Floating Ball 3 Piece ; BD - Bidirectional

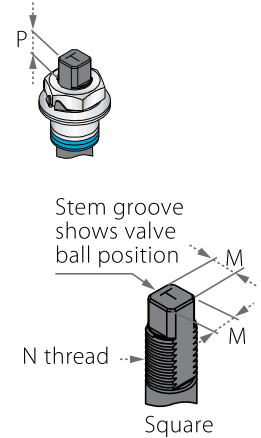
### Valve dimensions



### Bidirectional Cryogenic floating ball Valve

- Cryogenic floating ball valves with bidirectional full  $\Delta p$  sealing capability allows it to be used on a bidirectional loading and offloading single pipeline as well as a shutoff valve for a storage tank, developing back pressure to the downstream side while empty without upstream line pressure.
- This valves are equipped with all the benefits of the standard cryogenic ball valve on top of the simplicity and flow capabilities of a floating ball design.
- Full  $\Delta p$
- ASME Class 150
- Special "Piston Effect" at seat design to prevent pressure buildup in the cavity.

### Preparation for actuation



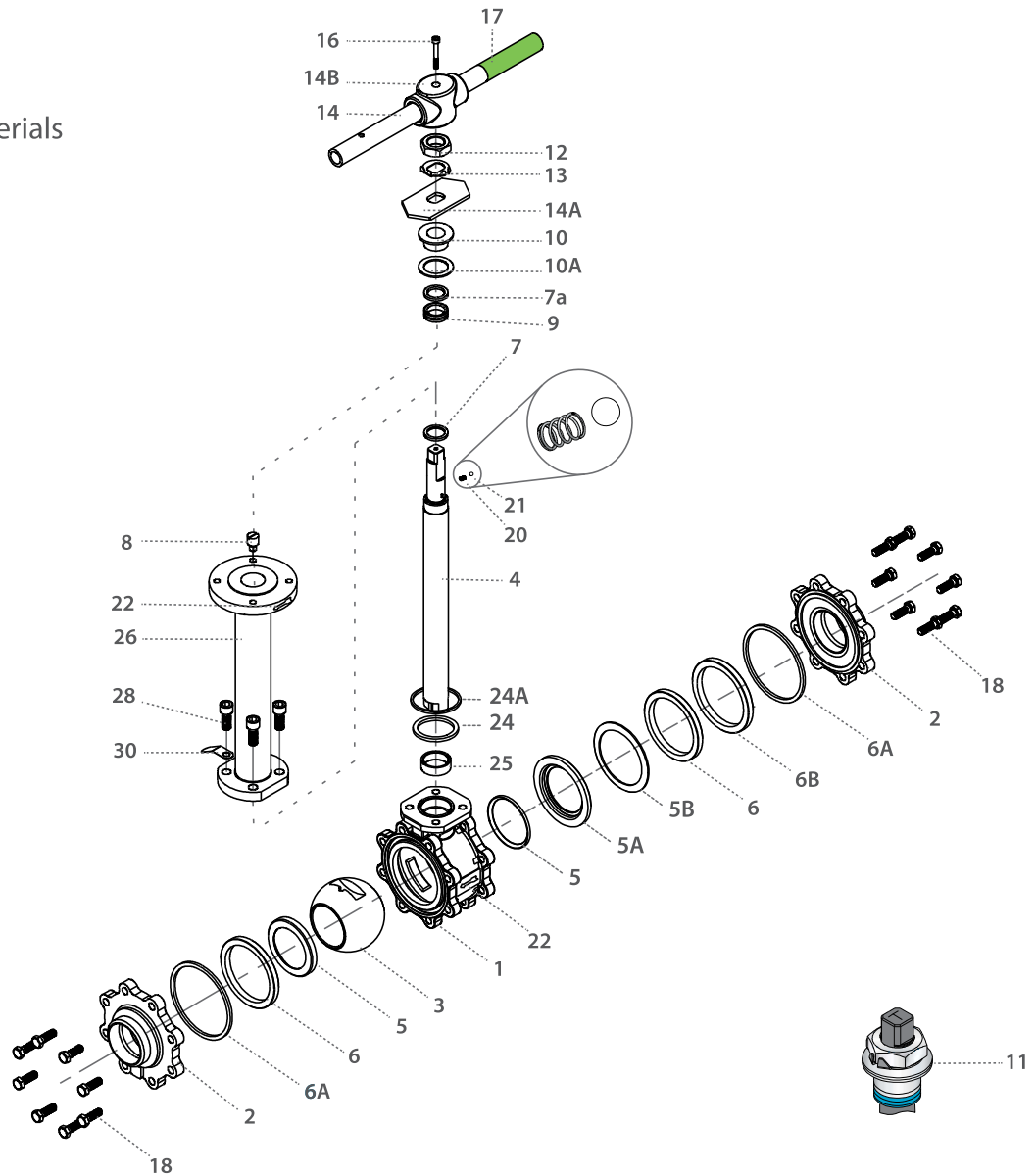
Valve Face To Face sizes are according to Habonim catalog data only, for Extended-weald/Flanged/Tri-clamp end see Face To Face sizes page.

Std. port	Full port	Unit	Ball port	A	B	Standard design				6.0" bonnet				S	W	M	MDD	N	P	F	TxL	Weight kg/lb		Kv
						C	D	G	H	C	D	G	H									Std.	6.0"	
DN65	DN50	mm	50.80	157.95	72.55	397.5	439.1	327.5	464	222.4	264	152.4	288.9	401	108	13.9	13.9	M20x2.5	13.15 (F07)	70	M8x8	12	10.6	205
2 1/2"	2"	inch	2	6.22	2.86	15.65	17.29	12.89	18.27	8.76	10.39	6	11.37	15.79	4.25	0.55	0.55		0.52	2.76		26.46	23.37	240
DN80	DN65	mm	63.5	169.35	83.25	441.8	488.4	343.5	528	250.7	297.3	152.4	336.9	401	153	18.9	15.9	1"-14	16.7 (F10)	102	M10x15	20	18.8	385
3"	2 1/2"	inch	2.5	6.67	3.28	17.39	19.23	13.52	20.79	9.87	11.7	6	13.26	15.79	6.02	0.74	0.63	UNS-2A	0.66	4.02		44.09	41.45	450
DN100	DN80	mm	82.6	213.6	108.8	457.6	504.2	343.5	544	266.5	313.1	152.4	352.9	610	191.5	18.9	15.9	1"-14	16.7 (F10)	102	M10x15	30.5	29.3	615
4"	3"	inch	3.25	8.41	4.28	18.02	19.85	13.52	21.42	10.49	12.33	6	13.89	24.02	7.54	0.74	0.63	UNS-2A	0.66	4.02		67.24	64.6	720
	DN100	mm	100	239	123	466.8	513.4	343.5	555	275.7	322.3	152.4	363.9	610	217	18.9	15.9	1"-14	16.7 (F10)	102	M10x15	37.3	36.1	744
	4"	inch	3.94	9.41	4.84	18.38	20.21	13.52	21.85	10.85	12.69	6	14.33	24.02	8.54	0.74	0.63	UNS-2A	0.66	4.02		82.23	79.59	870
DN150		mm	111.1	346.1	146.1	542.4	611.9	385	665	309.8	379.3	152.4	432.4	916	266	28.45	23.75	1 1/2"-12	26.2 (F12)	125	M12x15	75	71	872
6"		inch	4.37	13.63	5.75	21.35	24.09	15.16	26.18	12.2	14.93	6	17.02	36.06	10.47	1.12	0.94	UNS-1A	1.03	4.92		165.35	156.53	1020



Components & materials

Note: for C47



Item	Description	Material specifications	Qty.
1	Body	Acc. Ordering Code	1
2	End	Acc. Ordering Code	2
3	Ball	Acc. Ordering Code	1
4	Stem	Acc. Ordering Code	1
5*	Seat	Acc. Ordering Code	2
5A	Seat housing	S. Steel	1
5B	Upstream seat spring	Inconel 718	1
6*	Inner seal	TFM	2
6A*	Outer seal	Acc. Ordering Code	2
6B	Support ring	S. Steel	1
7*	Stem thrust seal	TFM, PCTFE	1
7a*	Anti-abrasion ring	TFM, PCTFE	1
8	Stop pin	S. Steel	1
9*	Stem seal	TFM, Graphite	1
10	Follower	S. Steel	1
10A	Slide bearing	S. Steel	1
11	Disc spring	S. Steel	2
12	Stem nut	S. Steel	1
13	Tab lock washer	S. Steel	1

Item	Description	Material specifications	Qty.
14	Handle	S. Steel	1
14A	Stop plate	S. Steel	1
14B	Wrench head	S. Steel	1
16	Wrench bolt	S. Steel	1
17	Sleeve	PVC	1
18	Body bolt	S. Steel	8
20	Anti-static spring	S. Steel	2
21	Anti-static plunger	S. Steel	2
22	Arrow flow	S. Steel	2
23	Tag (not shown)	S. Steel	1
24*	Bonnet inner seal	TFM	1
24A*	Bonnet outer seal	Acc. Ordering Code	1
25*	Stem bearing	PTFE	1
26	Bonnet	S. Steel	1
28	Bolt	S. Steel	4
30	Dog tag	S. Steel	1

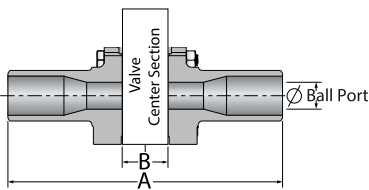
\* Repair kit components

## Face To Face Sizes

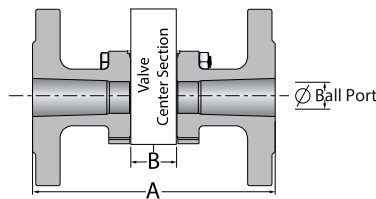
Valve Size	Unit	B		A-XBW		A-ETO	A-Flanged CLASS 150 FTF CLASS 300		A-Flanged CLASS 300 FTF CLASS 300		A-Flanged CLASS 600 FTF CLASS 600		A-Flanged DIN F1		A-TC
		Std. port	Full port	Std. port	Full port	Std. port	Std. port	Full port	Std. port	Full port	Std. port	Full port	Std. port	Full port	Full port
DN10	mm	20.6	20.6	140.6	143	108.6									
3/8"	inch	0.8	0.8	5.5	5.6	4.3									
DN15	mm	20.6	24.6	140.6	147	137	140	140	140	140	165	140*	130	130	88.8
1/2"	inch	0.8	1	5.5	5.8	5.4	5.5	5.5	5.5	5.5	6.5	5.5*	5.1	5.1	3.5
DN20	mm	24.6	31.7	147	168.7	147	152	152	152	152	152*	152*	150	150	101.6
3/4"	inch	1	1.2	5.8	6.6	5.8	6	6	6	6	6*	6*	5.9	5.9	4
DN25	mm	31.7	41.3	168.7	179.3	164.1	165.1	165.1	165.1	165.1	216	165.1*	160	160	114.3
1"	inch	1.2	1.6	6.6	7.1	6.5	6.5	6.5	6.5	6.5	8.5	6.5*	6.3	6.3	4.5
DN32	mm	41.3	48.4	179.3	189.4	179.3	178.1	178.1	178.1	178.1	178.1*	178.1*	180	180	
1 1/4"	inch	1.6	1.9	7.1	7.5	7.1	7	7	7	7	7*	7*	7.1	7.1	
DN40	mm	48.4	56.3	189.4	200.3	184	190	190	190	190	241	190*	200	200	139.8
1 1/2"	inch	1.9	2.2	7.5	7.9	7.2	7.5	7.5	7.5	7.5	9.5	7.5*	7.9	7.9	5.5
DN50	mm	56.3	72.6	200.3	232.6	193.5	216.1	216.1	216.1	216.1	292	216.1*	230	230	158.9
2"	inch	2.2	2.9	7.9	9.2	7.6	8.5	8.5	8.5	8.5	11.5	8.5*	9	9	6.3
DN65	mm	72.6	83.4	232.6	283.4	222.6	241	241	241	241	330	241*	290	290	213
2 1/2"	inch	2.9	3.3	9.2	11.2	8.8	9.5	9.5	9.5	9.5	13	9.5*	11.4	11.4	8.4
DN80	mm	83.4	108.8	283.4	348.8	250.4	282	282	282	282	356	282*	310	310	215.8
3"	inch	3.3	4.3	11.2	13.7	9.9	11.1	11.1	11.1	11.1	14	11.1*	12.2	12.2	8.5
DN100	mm	108.8	123	348.8	390	348.8	305	305	305	305	432	305*	350	350	245.4
4"	inch	4.3	4.8	13.7	15.4	13.7	12	12	12	12	17	12*	13.78	13.78	9.7
DN150	mm	146.1	180	444.1	180	444.1	403.1	403.1	403.1	403.1	559	403.1*	480	480	146.1
6"	inch	5.8	7.1	17.5	7.1	17.5	15.9	15.9	15.9	15.9	22	15.9*	18.9	18.9	5.8

\* Comply with class 300 FTF

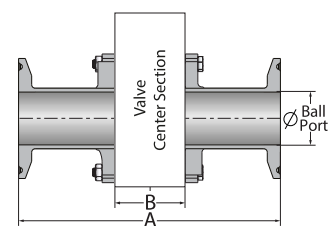
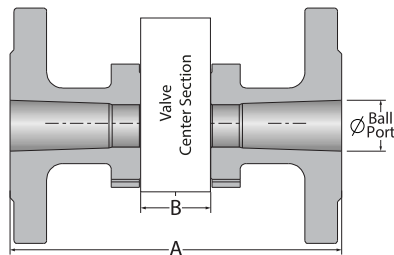
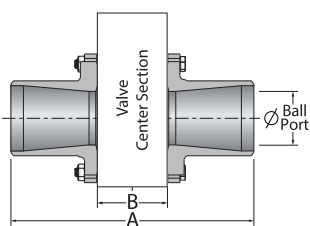
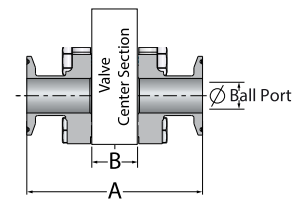
XBW / ETO



Flanged



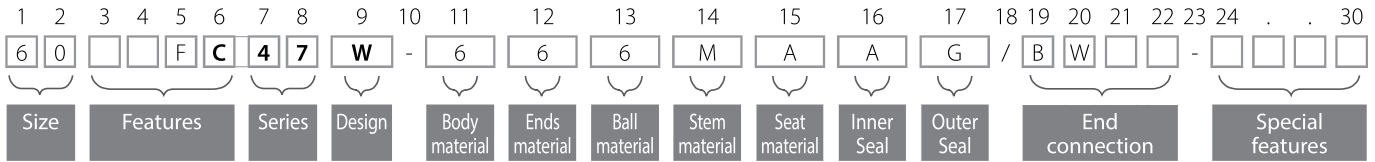
TC





# Cryogenic Floating Ball 3 Piece; BD - Bidirectional - Ordering Code System

"Mandatory option" options are marked with **green background** | "Standard offer" options are marked with **light green background**



Size (1-2)		
Code	inch	mm
02	¼"	8
03	⅜"	10
05	½"	15
07	¾"	20
10	1"	25
12	1¼"	32
15	1½"	40
20	2"	50
25	2½"	65
30	3"	80
40	4"	100
60	6"	150

Features (3-6)	
F	Fire safe
C	<b>Cryogenic design</b>
B	Full port
N	Control service

Series (7-8)	
47	<b>3 Piece Floating</b>

Design (9)	
W	<b>Total HermetiX Integrity package</b>

Body material (11)	
6	CF8M
1	Bronze
7	Monel

End material (12)	
6	CF3M
1	Bronze
7	Monel

Ball material (13)	
6	S. Steel
1	Bronze
7	monel

Stem material (14)	
M	High Strength S. Steel
6	S. Steel
Z	Inconel

Seat material (15)	
A	TFM
C	PCTFE
P	CF PTFE

Inner Seal Material (16)	
A	TFM
G	Expanded graphite

Outer Seal Material (17)	
G	Expanded graphite
A	TFM

End connections (19-22)	
Welded	
BW10	Buttweld schd. 10
BW	Buttweld schd. 40
XBW10	Extended buttweld schd. 10
XBW	Extended buttweld schd. 40
BW5	Buttweld schd. 5
BW80	Buttweld schd. 80
BWO *	Buttweld tube OD
BWD	Buttweld DIN 11860
BWI	buttweld ISO
SW	Socket weld
SWO *	Socket weld tube OD
XBW80	Extended Buttweal 80
XSW	Extended socket weld
ETO *	Extended tube OD
ETI	Extended buttweld ISO
ETD	Extended buttweld DIN
Threaded	
NPT	ASME B1.20.1 - National Pipe Taper thread
MNPT	Male NPT
BSPT	EN 10226 - Pipe Taper thread
MBSPT	Male BSPT
BSPP	ISO228-1, DIN3852 - Pipe parallel thread
DIN3852	DIN3852 - Pipe Parallel thread
AS5202	SAE internal straight thread
Flanged	
150	ASME B16.5 #150 RF
300	ASME B16.5 #300 RF
600	ASME B16.5 #600 RF
900	ASME B16.5 #900 RF
PN16	EN1092 PN16 RF
PN40	EN1092 PN40 RF
PN63	EN1092 PN63 RF
PN100	EN1092 PN100 RF
PN160	EN1092 PN160 RF
Clamp	
GR	Grayloc® compatible hub (Grayloc® is a registered trademark of Grayloc Products, L.L.C.)
TC *	Tri-Clamp
LL *	Compression fitting (Imperial) - <b>No</b> nuts & Ferrules
LM *	Compression fitting (metric) - <b>No</b> nuts & Ferrules
LL-NF *	Compression fitting (Imperial) - <b>with</b> nuts & Ferrules
LM-NF *	Compression fitting (metric) - <b>with</b> nuts & Ferrules

\* Std. port only

Special Features (24-30)	
SPR	<b>Spring loaded seat, valve 2½" Full port and up</b>
SPR	Spring loaded seat, up to 2½" std. port
6.0	Short bonnet
BD	Bi-Directional Design
RJT	Ring Type Joint
B	Body made from rolled bar
EP	Electropolished
Vxx	V port, xx=angle
G...	Internal surface finish (G24, G32)
VBxx	Characterized control ball, xx=angle
FF	Flat face