



# CRYOGENIC VALVE SOLUTIONS

- 2-WAY MANUAL AND AUTOMATED VALVES
- TEMPERATURES TO  $-320^{\circ}$  F
- PRESSURES TO 720 PSI CWP  
(ANSI 300# CLASS)
- MEETS OR EXCEEDS LEAKAGE  
PERFORMANCE PER MSS SP-134





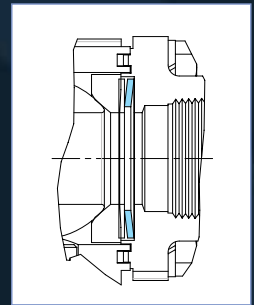
# PBM Cryogenic Ball Valves

## Specifically Designed for Cryogenic Applications

PBM cryogenic valves have a unique design that provides superior performance through cooling and heating cycles. The valves meet leakage criteria per MSS SP-134.

### What Makes It Work

An extended bonnet with an upper set of stem packings. Upstream seat and stem packings are **live loaded** - as metal shrinks, it keeps pressure on seals as temperature goes through cooling and heating cycles.



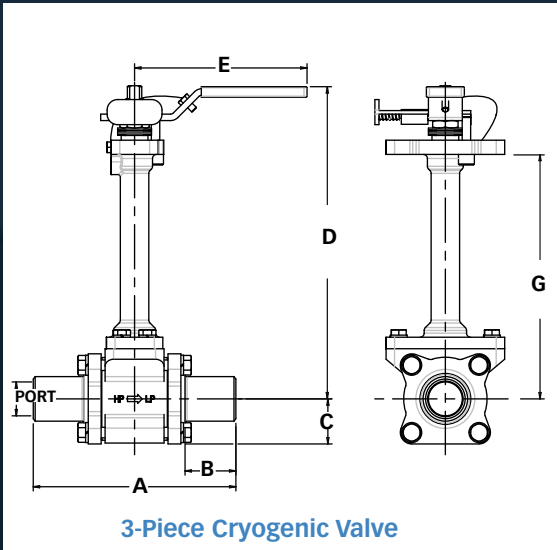
Cryogenic valves are optimally oriented with the stem 90° from the horizontal plane. PBM cryogenic valves are capable of operating with the stem oriented as low as 20° above the horizontal plane, if necessary.



### FEATURES

- Sizes 1/2" - 3" - Full port. Consult PBM for additional sizes.
- Temperatures from 400° F, 205° C down to -320° F, -200° C
- **Live-loaded** upstream seat and packing
- Materials of construction: stainless steel, bronze and other materials available – consult PBM for details
- Pressures to 720 psi CWP (ANSI 300# class)
- Cleaned for oxygen service
- Quarter turn operation
- Locking lever handle or optional oval locking handwheel
- Automation available
- TFM™ seats/TFM or graphite seals
- Internal and external grounding
- Uni-directional flow and vented ball
- Valve meets or exceeds leakage performance per MSS SP-134

## How To Order:



PRODUCT	MATERIAL	SIZE	SERIES	END HP	END LP	SEAT & SEAL	BONNET	OPERATOR	VALVE PREPARATION
CP	Uni-Directional	HL 316L Stainless Steel	C 1/2" 7 Series 7	B Ext. Butt weld Sch. 40 Pipe or ISO tube	B Ext. Butt weld Sch. 40 Pipe or ISO tube	G TFM™/ Graphite	Std. Bonnet Ext.	--04 Locking Lever Handle	-L Cleaned for O2 Service
Stainless Steel Construction. Other materials available upon request.				Q Female NPT	Q Female NPT	Z* TFM/TFM	V 12" Bonnet Ext.	--20 DA80 psig actr	
				J Extended Socket Weld	J Extended Socket Weld	*150# Class using TFM/TFM		--34 SR80 psig actr	
				Q1 Female BSPT	Q1 Female BSPT			--00 Stainless locking oval handle	
				F Ext. Butt weld for US Tube, DIN Tube	F Ext. Butt weld for US Tube, DIN Tube			--27 DA60 psig actr	
				X Tri-Clamp Tube	X Tri-Clamp Tube			--41 SR60 psig actr	
				D Ext. Butt weld Sch. 10S Pipe	Ext. Butt weld Sch. 10S Pipe				
				L 150# Flange	L 150# Flange				

\*See PBM Industrial Valve Brochure for Additional Operator Options

SIZE			UNIT	BALL PORT	BUTT WELD		FEMALE NPT/ BSPT	EXTENDED SOCKET WELD		TRI-CLAMP	C	D HANDLE HEIGHT STD. EXT. BONNET	E	G O. to BOTTOM OF BONNET	TORQUE			
US	DIN	ISO			A	B	A	A	Socket Depth	A					UNIT	at 70° F	at -320° F	ACT. SIZING
1/2"	8, 10, 15	8, 10	inches	0.37*	5.50	1.50	3.12	6.32	0.41	3.50	.92	9.16	4.15	7.31	IN-LBS	35	70	140
			mm	9.4	139.7	38.1	79.3	160.5	10.4	n/a	23.4	232.7	105.4	185.67	N-m	4	8	16
3/4"	20	15, 20	inches	0.75	5.50	1.50	3.44	6.56	0.53	4.00	1.00	9.31	4.15	7.46	IN-LBS	44	88	176
			mm	19.1	139.7	38.1	87.4	166.6	13.5	n/a	25.4	236.5	105.4	189.48	N-m	5	10	20
1"	25, 32	25	inches	1.00	6.00	1.50	4.25	7.06	0.53	5.37	1.33	9.21	5.09	7.22	IN-LBS	60	120	240
			mm	25.4	152.4	38.1	107.9	179.3	13.5	n/a	33.8	233.9	129.3	183.39	N-m	7	14	27
1-1/2"	40	32, 40	inches	1.50	7.50	1.50	5.50	8.56	0.53	5.50	1.78	12.64	8.03	10.18	IN-LBS	180	264	528
			mm	38.1	190.5	38.1	139.7	217.4	13.5	n/a	45.2	321.1	204.0	258.57	N-m	20	30	60
2"	50	50	inches	2.00	8.00	1.75	6.00	9.32	0.66	6.00	2.15	12.95	8.03	10.49	IN-LBS	204	420	840
			mm	50.8	203.2	44.4	152.4	236.7	16.8	n/a	54.6	328.9	204.0	266.45	N-m	23	48	95
3"	80	80	inches	3.00	13.50	6.75	9.00	14.88	0.69	9.00	3.14	16.17	12.06	12.83	IN-LBS	480	1080	2160
			mm	76.2	342.9	171.4	228.6	377.9	17.5	228.6	79.8	410.7	306.3	325.9	N-m	54	122	244

Note: Only Butt Weld ends apply to DIN and ISO valves

## TESTING AND DOCUMENTATION

- MTR (Material Test Reports)
- PMI (Positive Material Identification)
- LP (Liquid Penetrant)
- Radiographic Examination
- Magnetic Particle Examination
- Ultrasonic Examination

## WRITTEN SPECIFICATION

PBM CP (Series 7) two-way full port (see note 1 below) three-piece Class 300# cryogenic ball valve; body, ball stem and end fitting material shall be 316 / 316L stainless steel (or other materials as specified). Seats shall be TFM™ material, upstream seat and stem packings shall be live-loaded. Valve shall be uni-directional with body markings for flow direction and upstream vent hole in ball. End connections available include female NPT, 150# ANSI RF flanged, extended butt weld for Sch 40 pipe and extended socket weld ends. Extended ends do not require valve to be disassembled for welding. For manual valves, handle shall be 300 series stainless steel. Maximum working pressure to be 720 psig CWP and temperatures from ambient to -320°F (-200° C). Valve shall be cleaned for oxygen service and shall meet or exceed leakage performance per MSS SP-134.

Optional automation (Pneumatic or electric), mechanical and electro-polishing surfaces, sizes 1/2-inch through 3-inch Industrial Cryogenic: CP (material)-(size) 7 (end connection)-(seat/seal) (option codes)

Note 1: \*1/2" valve size is .37" port.



# "CN" Series Split-Body ANSI Flanged Cryogenic Valves



SIZE	UOM	PORT DA.	PRESSURE CLASS	A OVERALL LENGTH	B C TO END FACE	C HANDLE LENGTH	D HANDLE HEIGHT STD. EXT.	E C TO BOTTOM FLANGE	F FLANGE DA.	G C TO BOTTOM BONNET	TORQUE			
											UNIT	at 70° F	at -320° F	ACT. SIZING
1/2"	inches	.37	150#	4.29	1.85	4.15	9.25	1.62	3.50	7.31	IN·LBS	35.	70	140
	mm	9.4		109.0	47.0	105.4	235.0	41.1	88.9	185.	N·m	4	8	16
	inches	.37	300#	5.54	2.52	4.15	9.25	1.75	3.75	7.31	IN·LBS	35	70	140
	mm	9.4		140.7	64.0	105.4	235.0	44.4	95.3	185.7	N·m	4	8	16
3/4"	inches	.75	150#	4.66	2.12	4.15	9.25	1.80	3.88	7.46	IN·LBS	44	88	176
	mm	19.1		118.4	53.8	105.4	235.0	45.7	98.6		N·m	5	10	20
	inches	.75	300#	6.04	2.90	4.15	9.25	2.15	4.62	7.46	IN·LBS	44	88	176
	mm	19.1		153.4	73.7	105.4	235.0	54.6	117.3		N·m	5	10	20
1"	inches	1.00	150#	5.02	2.25	5.09	9.38	2.06	4.25	7.29	IN·LBS	60	120	240
	mm	25.4		127.5	57.2	129.3	238.3	52.3	108.0	185.2	N·m	7	14	27
	inches	1.00	300#	6.46	3.15	5.09	9.38	2.38	4.88	7.29	IN·LBS	60	120	240
	mm	25.4		164.1	80.0	129.3	238.3	60.5	124.0	185.2	N·m	7	14	27
1-1/2"	inches	2.00	150#	6.53	2.68	8.03	13.00	2.38	5.00	10.23	IN·LBS	180	264	528
	mm	50.8		165.9	68.1	204.0	330.2	60.5	127.0	259.8	N·m	20	30	60
	inches	2.00	300#	7.46	3.18	8.03	13.00	3.00	6.12	10.23	IN·LBS	180	264	528
	mm	50.8		189.5	80.8	204.0	330.2	76.2	155.4	259.8	N·m	20	30	60
2"	inches	2.00	150#	7.00	3.12	8.03	13.50	2.88	6.00	10.53	IN·LBS	204	420	840
	mm	50.8		177.8	79.2	204.0	342.9	73.2	152.4	267.5	N·m	23	47	95
	inches	2.00	300#	8.44	3.84	8.03	13.50	3.12	6.50	10.53	IN·LBS	204	420	840
	mm	50.8		214.4	97.5	204.0	342.9	79.2	165.1	267.5	N·m	23	47	95
3"	inches	3.00	150#	8.00	3.57	12.06	16.29	3.50	7.50	12.83	IN·LBS	480	1080	2160
	mm	76.2		203.2	90.7	306.3	413.8	88.9	190.5	325.9	N·m	54	122	244
	inches	3.00	300#	11.06	5.19	306.3	413.8	4.00	8.25	12.83	IN·LBS	480	1080	2160
	mm	76.2		280.9	131.8	306.3	413.8	101.6	209.6	325.9	N·m	54	122	244

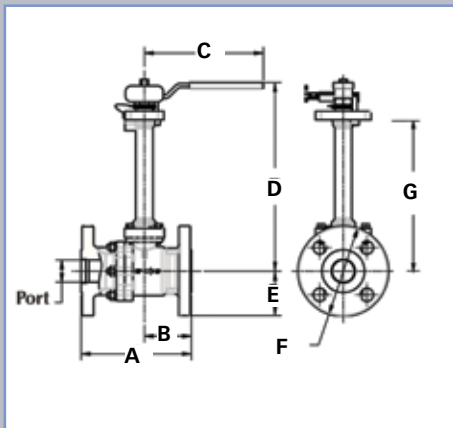
## How To Order:

PRODUCT	MATERIAL	SIZE	SERIES	END	SEAT & SEAL	BONNET	OPERATOR	VALVE PREPARATION	
CN	Uni-Directional	H-316L Stainless Steel	C 1/2"	5 Series 5	L-150#	G TFM™/Graphite	-- Std. Bonnet Ext.	---04 Locking Lever Handle	-L Cleaned for O2 Service
			D 3/4"		M-300#	Z TFM/TFM	V 12" Bonnet Ext.	---20 DA80 psig actr	
			E 1"					---34 SR80 psig actr	
			G 1-1/2"					---00 Stainless locking oval handle	
			H 2"					---27 DA60 psig actr	
			K 3"					---41 SR60 psig actr	

## WRITTEN SPECIFICATION

PBM CN (Series 5) two-way full port (see note 1 below) split body ANSI flanged cryogenic ball valve. Body, ball, stem, and end fitting material shall be 316/316L stainless steel (or other materials as specified). Seats shall be TFM™ material, upstream seat and stem packings shall be live-loaded. Valve shall be uni-directional with body markings for flow direction and upstream vent hole in ball. End connections available include either 150# or 300# ANSI Raised face flanged. Manual valves, handle shall be 300 series stainless steel. Maximum working pressure to be 720 psig CWP (using 300# flanges) and 275 psig CWP (using 150# flanges). Temperatures from ambient to -320° F (-200° C). Valve shall be cleaned for oxygen service and shall meet or exceed leakage performance per MSS SP-134. Optional automation (Pneumatic or electric), mechanical and electro-polishing surfaces, sizes 1/2-inch through 3-inch Industrial Cryogenic: CN (material)-(size) 5 (end connection)-(seat/seal) (option codes)

\*Note 1: 1/2" valve size is .37" port.



Scan this QR code with your smart phone QR code reader app. for additional information on PBM Cryogenic Valve Solutions



[www.PBMValve.com](http://www.PBMValve.com)

Visit [pbmvalve.com](http://pbmvalve.com) online to find the PBM domestic or international representative near you.

