

Series CLT 2D Flanged Direct Mount 2-Piece

Cryogenic Ball Valves

½" – 4" (DN15 - DN100)
Class 150

½" – 2" (DN15 - DN50)
PN16/PN40

3" – 4" (DN80 - DN100)
PN16



Cryo Test
BS6364



Uni-direction



Safety
Assurance



2014/68/EU

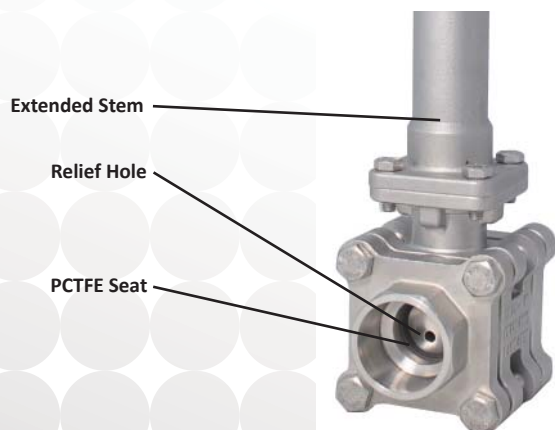
Absolute Control below freezing point

For cryogenic applications, PVS FLOW CONTROL offers Series CLT 2D ball valve to suite different low temperature conditions. PVS FLOW CONTROL Series CLT 2D ball valves are widely used in the following applications: Liquefied Natural Gas (LNG) storage and transportation systems, liquified gas (nitrogen, oxygen, helium, argon, etc.), food processing, rubber production, medical, solar panels production, electronic manufacturing and air separation industries. Series CLT 2D cryogenic ball valves have been fully tested to BS 6364:1984 standard by Yarmouth Lab in the United States. Compare with other cryogenic valves, CLT 2D offers large flow rate, bubble tight sealing, long operating life, and easy maintenance.

The long stem features the PVS FLOW CONTROL CLT 2D Cryogenic Ball Valves. The extended stem allows the liquified gas to evaporate inside the stem, and prevents damage to sealing rings and packing due to low temperature condition; thus, maintain the smooth operation of the ball valves and tight sealing. This design is different from conventional extended spindle: stem packings, stem washers, and o-rings are located on the top of the extension. This design avoids direct contact with the low temperature fluid, and ensures duly valve operation. Meantime, the design reduces the heat losses from the stem, and provides an insulation between the pipeline and the manual/automation operator.

Relief hole on the upstream side of the ball prevents overpressure of the body cavity from thermal expansion. When temperature rises, fluid inside the bore expands multiple times the original volume due to the phase change from liquid to gas. It becomes very dangerous and may result in explosion. Relief hole acts as a pressure reducing mechanism to relieve pressure back to the upstream. The valve is thus uni-directional with an arrow showing flow direction.

For ultra-low temperature conditions, PCTFE material is preferred than conventional PTFE material. Compare with PTFE, PCTFE has higher mechanical strength and hardness, offers superior performance in -196°C condition.



CE marking

The whole series of ball valves are approved according to European Directive 2014/68/EU.

Pressure Rating

Class 150 for ½" - 4" (DN15 - DN100)

PN40 for ½" - 2" (DN15 - DN50)

PN16 for 3" - 4" (DN80 - DN100)

Temperature Range

- -320°F ~ 400°F (-196°C ~ 204°C) with PCTFE seats

Size Range

½" ~ 4" (DN15 ~ DN100)

Body Material

- ASTM CF8M, CF8, WCB
- DIN 1.4408, 1.4308, 1.0619
- Low Temp Carbon Steel: ASTM A351 Gr. LCB

End Connection

Flanged End

Standards and Specifications

Class 150 Meets • ASME B16.34

- ASME B16.10

- ASME B16.5

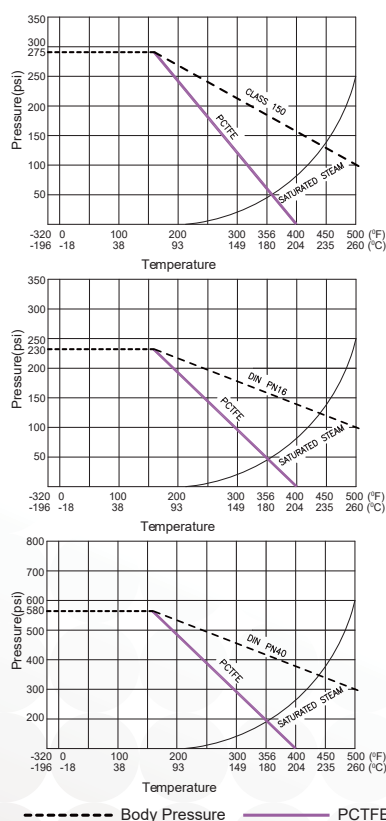
PN16/PN40

- DIN 3202 F4

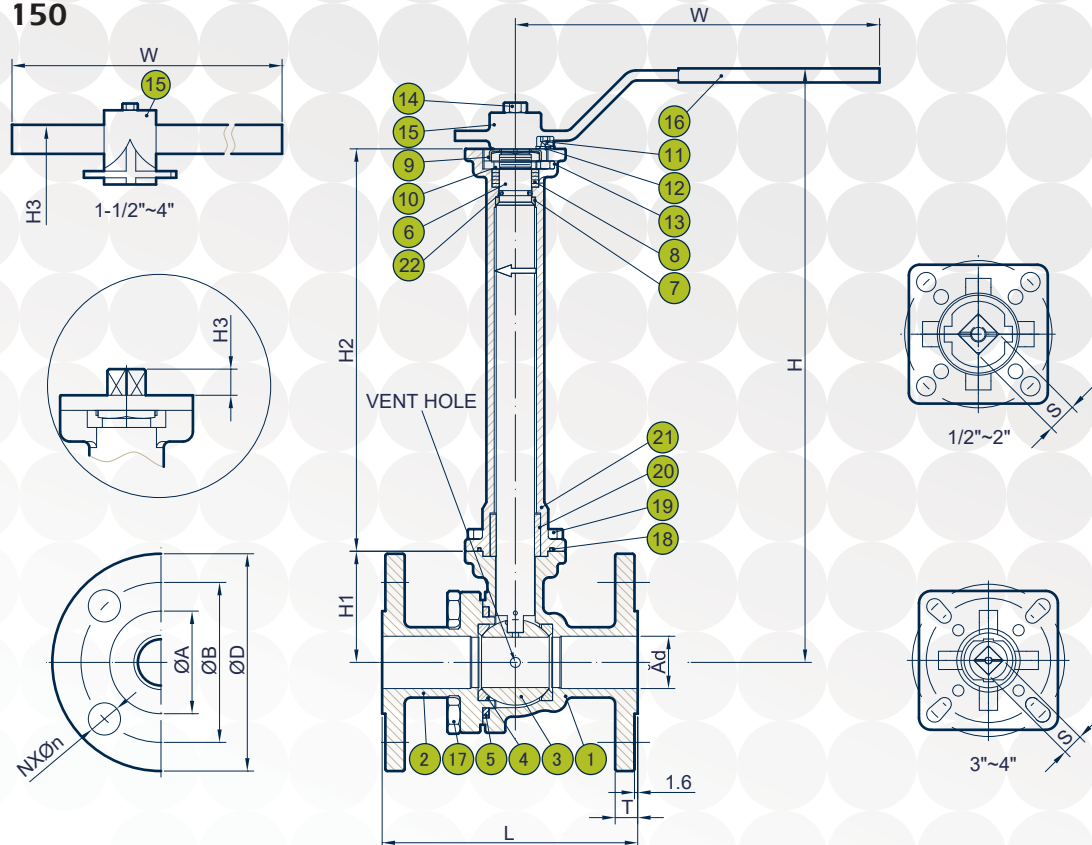
- DIN 2543, DIN 2545

Valve body and end cap connections are high quality investment casting. Body and end cap are designed based on ASME B16.34. All valves are factory tested to API 598 or EN12266-1 and MSS SP-72. Series CLT 2D ball valves have been tested and conform to BS 6364 Cryogenic Ball Valve standard.

Valve Body Rating with Seat Material Plot:



CLASS 150



NO	PART NAME	MATERIAL
1	BODY	CF8M
2	CAP	CF8M
3	BALL	CF8M
4	BALL SEAT	PCTFE(KEL-F)
5	BODY SEAL	316 SPIRALWOUND+GRAFOIL
6	STEM	17-4 PH SS
7	THRUST WASHER	PCTFE(KEL-F)
8	STEM PACKING	PCTFE(KEL-F)
9	LOCK SADDLE	SS304
10	STEM NUT	SS304
11	STOP PIN	SS304

NO	PART NAME	MATERIAL
12	STOP PIN WASHER	SS304
13	STOP PIN NUT	SS304
14	HANDLE BLOT	SS304
15	HANDLE	SS304
16	HANDLE SLEEVE	VINYL
17	BODY BOLT	SS304
18	EXTENSION GASKET	GRAFOIL
19	EXTENSION BOLT	SS304
20	THRUST BEARING	25%CARBON+75%PTFE
21	EXTENSION	CF8M
22	O-RING	VITON

CLASS 150 Dimensions inch/mm

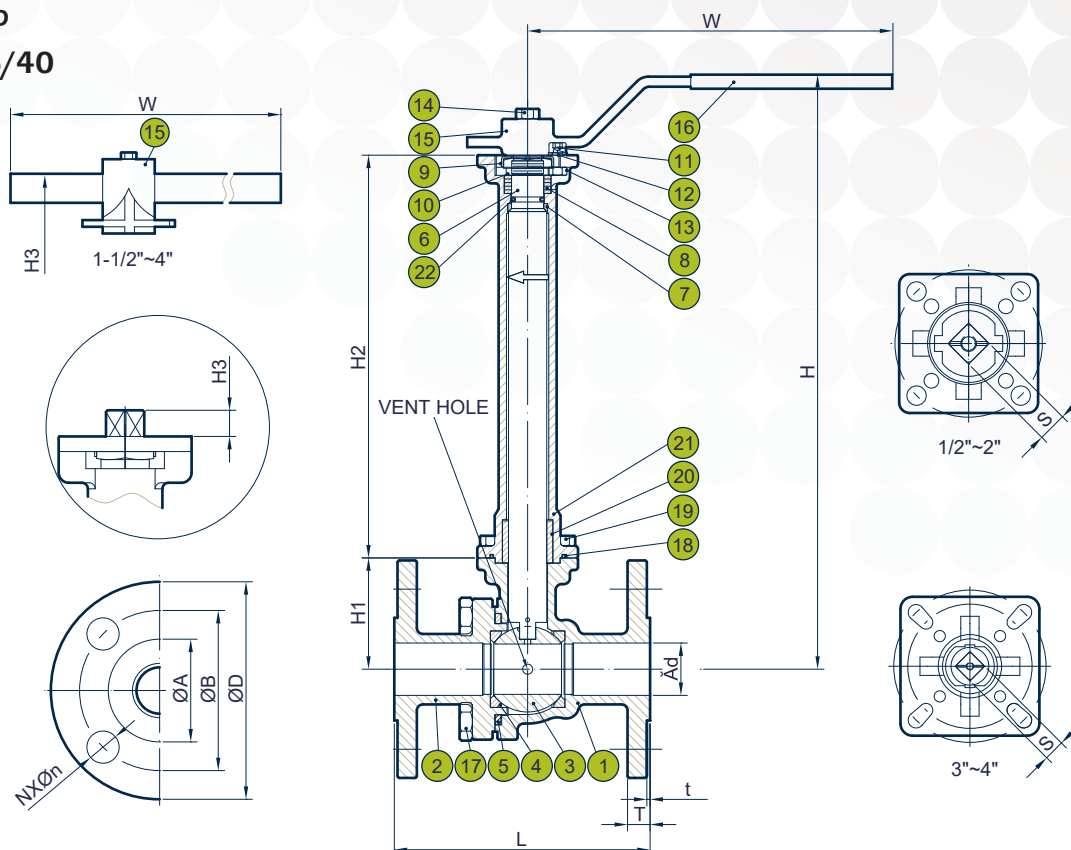
SIZE INCH DN	d	L	H	W	H1	H2	H3	S	D	B	A	T	Øn	N	Torque N.m lbs.in *	Torque N.m lbs.in **	ISO 5211
½" 15	0.59 15	4.25 108	11.10 282	6.14 156	1.89 48	7.87 200	0.31 8	0.35 9	3.50 89	2.38 60.5	1.38 35	0.41 10.5	0.63 16	4	17 150	34 300	F04/F05
¾" 20	0.79 20	4.65 118	11.30 287	6.14 156	2.09 53	7.87 200	0.31 8	0.35 9	3.88 98.6	2.76 70	1.69 43	0.41 10.5	0.63 16	4	25 220	50 440	F04/F05
1" 25	0.98 25	5.00 127	11.69 297	7.13 181	2.28 58	7.87 200	0.39 10	0.43 11	4.25 108	3.13 79.5	2.01 51	0.44 11.2	0.63 16	4	32.8 290	65.5 580	F05/F07
1½" 40	1.50 38	6.50 165	16.57 421	15.55 395	3.00 76.2	11.81 300	0.51 13	0.55 14	5.00 127	3.88 98.5	2.87 73	0.56 14.2	0.63 16	4	62 550	120 1050	F07/F10
2" 50	1.97 50	7.01 178	16.93 430	15.55 395	3.35 85.2	11.81 300	0.51 13	0.55 14	6.00 152.5	4.74 120.5	3.62 92	0.63 16	0.75 19	4	88 780	270 2400	F07/F10
3" 80	3.15 80	7.99 203	17.64 448	19.49 495	4.01 101.9	11.85 301	0.75 19	0.67 17	7.50 190.5	6.00 152.5	5.00 127	0.75 19.1	0.75 19	4	150 1350	435 3840	F07/ F10/F12
4" 100	3.94 100	9.02 229	18.46 469	25.59 650	4.86 123.5	11.85 301	0.83 21	0.87 22	9.02 229	7.50 190.5	6.18 157	0.94 23.9	0.75 19	8	226 2000	678 6000	F07/ F10/F12

Note: Torque measured with no loading; safety factor has not been included.

* Measured at ambient temperature.

** Measured at -196°C temperature.

PN10/16/40



NO	PART NAME	MATERIAL
1	BODY	CF8M
2	CAP	CF8M
3	BALL	CF8M
4	BALL SEAT	PCTFE(KEL-F)
5	BODY SEAL	316 SPIRALWOUND+GRAFOIL
6	STEM	17-4 PH SS
7	THRUST WASHER	PCTFE(KEL-F)
8	STEM PACKING	PCTFE(KEL-F)
9	LOCK SADDLE	SS304
10	STEM NUT	SS304
11	STOP PIN	SS304

NO	PART NAME	MATERIAL
12	STOP PIN WASHER	SS304
13	STOP PIN NUT	SS304
14	HANDLE BLOT	SS304
15	HANDLE	SS304
16	HANDLE SLEEVE	VINYL
17	BODY BOLT	SS304
18	EXTENSION GASKET	GRAFOIL
19	EXTENSION BOLT	SS304
20	THRUST BEARING	25%CARBON+75%PTFE
21	EXTENSION	CF8M
22	O-RING	VITON

PN10/16/40 Dimensions inch/mm

SIZE INCH DN	d	L	H	W	H1	H2	H3	S	D	B	A	T	t	Øn	N	Torque N.m lbs.in *	Torque N.m lbs.in **	ISO 5211
1/2" 15	0.59 15	4.53 115	11.10 282	6.14 156	1.89 48	7.87 200	0.31 8	0.35 9	3.74 95	2.56 65	1.77 45	0.63 16	0.08 2	0.55 14	4	17 150	34 300	F04/F05
3/4" 20	0.79 20	4.72 120	11.30 287	6.14 156	2.09 53	7.87 200	0.31 8	0.35 9	4.13 105	2.95 75	2.28 58	0.71 18	0.08 2	0.55 14	4	25 220	50 440	F04/F05
1" 25	0.98 25	4.92 125	11.69 297	7.13 181	2.28 58	7.87 200	0.39 10	0.43 11	4.53 115	3.35 85	2.68 68	0.71 18	0.08 2	0.55 14	4	32.8 290	65.5 580	F05/F07
1 1/2" 40	1.50 38	5.51 140	16.57 421	15.55 395	3.00 76.2	11.81 300	0.51 13	0.55 14	5.91 150	4.33 110	3.46 88	0.71 18	0.12 3	0.71 18	4	62 550	120 1050	F07/F10
2" 50	1.97 50	5.91 150	16.93 430	15.55 395	3.35 85.2	11.81 300	0.51 13	0.55 14	6.50 165	4.92 125	4.02 102	0.79 20	0.12 3	0.71 18	4	88 780	270 2400	F07/F10

PN10/16 Dimensions inch/mm

SIZE INCH DN	d	L	H	W	H1	H2	H3	S	D	B	A	T	t	Øn	N	Torque N.m lbs.in *	Torque N.m lbs.in **	ISO 5211
3" 80	3.15 80	7.09 180	17.64 448	19.49 495	4.01 101.9	11.85 301	0.75 19	0.67 17	7.87 200	6.30 160	5.43 138	0.79 20	0.12 3	0.71 18	8	150 1350	435 3840	F07/ F10/F12
4" 100	3.94 100	7.48 190	18.46 469	25.59 650	4.86 123.5	11.85 301	0.83 21	0.87 22	8.66 220	7.09 180	6.22 158	0.79 20	0.12 3	0.71 18	8	226 2000	678 6000	F07/ F10/F12

Note: Torque measured with no loading; safety factor has not been included.

* Measured at ambient temperature.

** Measured at -196°C temperature.

Accessories

Automation

PVS FLOW CONTROL CLT 2D Cryogenic Ball Valves are equipped with ISO 5211 direct mount design, easy for actuator installation without any brackets and spindles. Currently, PVS FLOW CONTROL provides pneumatic actuator and JS Series electric actuator for automation control purposes.

How to order

VALVE TYPE	PORT	BODY MATERIAL	SEAT	TRIM	TYPE OF CONNECTION	PRESSURE RATING	SPECIAL REQUEST	SIZE OF CONNECTION	OTHERS
A	B	C	D	E	F	G	H	I	J



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Due to continuous development of the products, PVS FLOW CONTROL reserves the right to alter the dimension and information contained in the document as required. For specific performance data and proper material selection, please consult with your PVS FLOW CONTROL representatives