



**AUSTRALIAN
PIPELINE VALVE®**
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Joint Venture

CRYOGENIC GATE GLOBE CHECK VALVES

WWW.FZVGROUP.COM



API 6D - 1473
API Q1 - 2345
API QR - 2470 (9001)
API 6A - 0842



FANGZHENG VALVE GROUP CO., LTD

Add: NO.1921, Binhai 1st Avenue, Economy & Technology Development Zone,
Wenzhou City, Zhejiang Province, China 325025
Tel: +86-577-6735 6515 Fax: +86-577-6735 8449

E-mail: fzvalve@fzvgroup.com

Fangzheng Valve Group reserves the right of final interpretation, and counterfeiting must be investigated.

INDUSTRIAL PIPELINE CONTROL EXPERT

FANGZHENG VALVE GROUP



We (FZV) commit ourselves to manufacturing excellent valves and achieving our customer satisfaction based on the principles of quality assurance and continual improvement.

We specialize in supplying a wide range of API 6D, API 609, API 600, API 594, API 6A, and API 16C products and wellhead equipment.

FZV was formally established in 1992, and so far, FZV has been approved by well-known international and domestic End-users and EPC companies.

FZV has set up three factories based in Shanghai and Wenzhou city with total area 76000 m² and maximum production capacity up to 32000 tons.

To enhance engineering designs and manufacture high-end products, FZV has in-house laboratory equipped with various facilities and test equipment to check and verify the product quality. The following tests are conducted in-house:

- Chemical analysis
- Mechanical test, Hardness, and impact test
- Non-destructive examination
- Salt spray test
- Fugitive emission test(ISO 15848-1 & 2)
- Design validation testing (DVT) as per SHELL(MESC SPE 77/300)
- High temperature (Up to 550°C) and Cryogenic test (Up to -196°C)

FZV is certified by ISO 9001, ISO 14001, OHSAS 18001, API6D, API600, API609, API594, API607, API6A, API6A-PR2, API Spec.Q1, ABS, CCS, DNV, ATEX, and CE/PED, etc.

FZV Main Products Range:

Product types: Ball Valve, Gate Valve, Globe Valve, Check Valve, Butterfly Valve, Slab Gate Valve, Pipe Fitting, Cryogenic Valve, API6A Valve, Wellhead Equipment, Manifold & Christmas tree, etc.

Implemented Standards: ISO, API, BS, etc.

Casting material: WCB, LCB, WC6, WC9, C5, C12, CF3, CF3M, CF8, CF8M, C95500, 4A, 5A, Monel 400/500, Inconel 825/625, Titanium Alloy, etc.

Forging material: A105, LF2, F11, F12, F304, F321, F347, F316, 304L, 316L, C61900, F51, F53, F55, Inconel, Titanium Alloy, etc.

Nominal diameter: NPS 1/2"-68"(DN 15-DN 1,700)

Nominal pressure: API600 & API6D: CLASS 150~CLASS 2,500 (PN16~PN420) API 6A: 2,000PSI~15,000PSI

Temperature range: -196°C-550°C

Applications: Onshore oil and gas exploitation and transportation, offshore oil and gas platform and FPSO / FLNG / FSRU, natural gas purification and liquefaction unit, LNG receiving station and vaporization unit, refining, chemical industry and chemistry, coal to gas (oil) and coal chemical industry, air separation, power station, aerospace, military industry and new energy (solar power generation, hydrogen energy, etc.) etc.

The Business purpose of FZV: Providing Complete Control Solutions For Industrial Pipelines.

Our Advantages:

1. Strict quality management system to ensure excellent product quality;
2. Excellent production management system to ensure the shortest delivery;
3. Competitive price;
4. Responsive after-sales service.



CHEVRON
APPROVED



BP APPROVED



SHELL TAT TAMAP
APPROVED



PETRONAS
APPROVED



PDO APPROVED



API 607 5th, 6th & 7th Ed.
ISO 10497 Firesafe Certified



ISO 15848-1 & API 641
Fugitive Emission Certified



API 6D - 1473
API Q1 - 2345
API QR - 2470 (9001)
API 6A - 0842



SIL 3



LLOYDS
FZV - CE/PED
2014/68/EU

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OVERVIEW OF CRYOGENIC VALVE

PRODUCT RANGE

Pressure rating: CL150~CL2500
Nominal size: NPS 1/2"~48"
Temperature range: -196℃ (-321°F) ~-29℃ (-20°F)
Type of connection: flange, weld

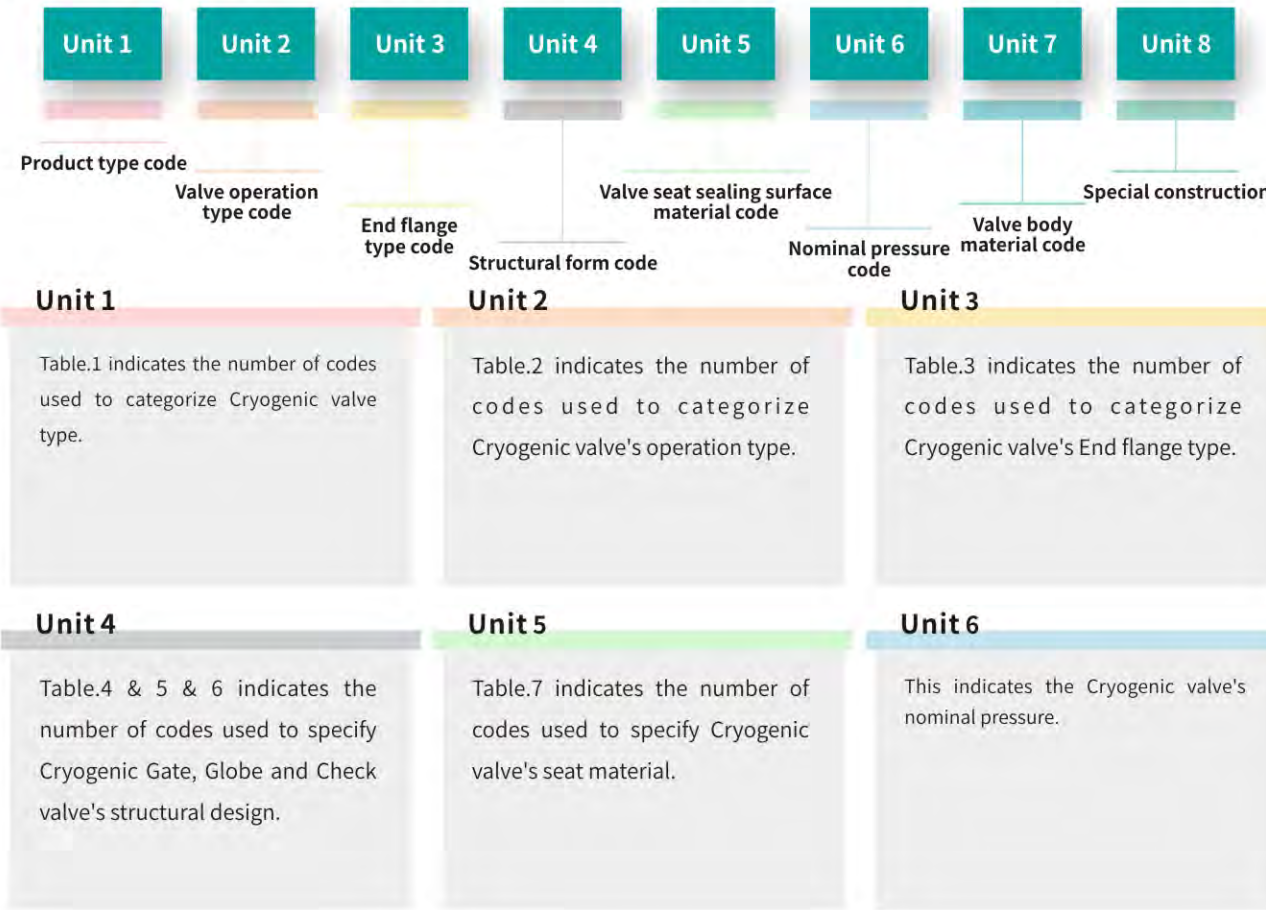
APPLICATION

Ethane: -89℃
Ethylene: -104℃
Methane: -162℃
LNG: -162℃
Oxygen: -183℃
Nitrogen: -196℃
Chemical, Marine, aviation, aerospace and other industries containing the above substances or similar substances liquefaction fractionation, transportation, transportation and storage processes require a large number of Cryogenic valves.

DESIGN AND MANUFACTURING STANDARDS

BS 6364	Valves for cryogenic service	SHELL SPE 77/306	Production Testing Of Valves In Low Temperature Services
API 622	Type Testing of Process Valve Packing for Fugitive Emissions	SHELL SPE 77/312	Fugitive Emission Production Testing
SHELL SPE 77/200	Valves In Low Temperature And Cryogenic Services	ISO 15848	Fugitive Emission Test

IDENTIFICATION NUMBERING SYSTEM FOR CRYOGENIC VALVE



Unit 7

Table.8 indicates the number of codes used to specify Cryogenic valve's body material.

Unit 8

The common special structure is described in parentheses, and multiple requirements in the description are separated by "/", as follows: (not lengthened), (Level A), (lengthened 450), etc

The structure represented by the contents in parentheses is explained as follows:
No extension: In low temperature environment, the customer proposes a structure that does not require a bonnet extension.
Class A: The product meets the requirements of low leakage sealing.
Extended 450: cryogenic valve cover/ bonnet extension 450mm.

VALVE TYPE CODE Table. 1		VALVE OPERATION TYPE CODE Table. 2					
VALVE CLASS	CODE	TRANSMISSION MODE	CODE	TRANSMISSION MODE	CODE	TRANSMISSION MODE	CODE
Cryogenic gate valve	DZ	Plain shaft	0	Spur gear operation	4	Hydraulic	7
Cryogenic global valve	DJ	Handle/Handwheel	N/A	Bevel gear operation	5	Gas-over Oil	8
Cryogenic check valve	DJ	Impact handwheel	2	Pneumatic	6	Electric	9

Note: (1) For pneumatic or hydraulic operation, normally open type is 6K, 7K, normally closed type is 6B, 7B.
(2) explosion-proof electrical use 9B.

END FLANGE TYPE CODE Table. 3							
TYPE OF CONNECTION	CODE	TYPE OF CONNECTION	CODE	TYPE OF CONNECTION	CODE	TYPE OF CONNECTION	CODE
Female thread (SD)	1	Raised face (RF)	4	Wafer (WR)	7	Flat face (FF)	0
Groove surface (G)	2	Ring Joint (RTJ)	5	Clamp sleeve (CP)	8		
Rearward face (FM)	3	Butt welding (BW)	6	Socket weld (SW)	9		

GATE VALVE STRUCTURE FORM CODE Table. 4		GLOBE VALVE STRUCTURE TYPE CODE Table. 5		CHECK VALVE STRUCTURE TYPE CODE Table. 6	
CODE	STRUCTURE	CODE	STRUCTURE	CODE	STRUCTURE
0	Outside screw and yoke flexiblewedge single gate	0	Pressure self-sealing	0	Swing type (pressure seal)
1	Outside screw and yoke solid wedge single gate	1	Straight through type	2	Piston type (lifting type)
7	Outside screw and yoke flexible wedge single, Pressure self-sealing bonnet	2	Body guide (Bolted Bonnet)	4	Swing type
9	Outside screw and yoke solid wedge single gate, Pressure self-sealing bonnet			8	Damping cylinder
				9	Heavy weight

VALVE SEAT SEALING SURFACE MATERIAL CODE Table. 7						VALVE BODY MATERIAL CODE Table. 8	
SEAT MATERIAL	CODE	SEAT MATERIAL	CODE	SEAT MATERIAL	CODE	BODY MATERIAL	CODE
Tin-base bearing alloy	B	Nylon	N	PFA LINED	J	Carbon steel	C
18-8 series stainless steel	R	Mo2Tistainless steel	R	Integral (integral seat)	W	18-8 series stainless steel	P
Fluoroplastics	F	Copper alloy	T	Multilevel Composition	HF	Chromium molybdenum steel	I
Cr13 series stainless steel/alloy steel	H	Rubber	X			Cr13 series stainless steel	H
Monel	M	Hard alloy	Y			Chromium nickel molybdenum stainless steel	R

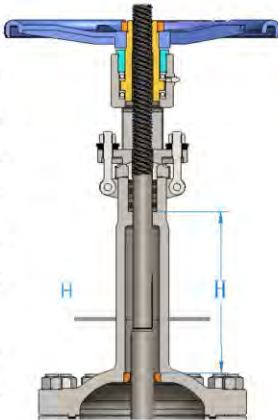
Note: (1) When the sealing surface material of the sealing pair is different, the material code with low hardness is indicated.

DESIGN FEATURE

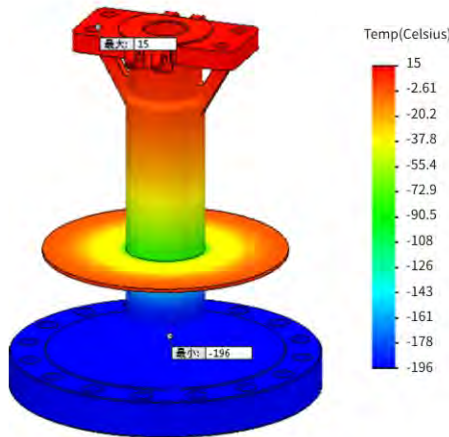
EXTENDED BONNET

When the medium temperature is lower than -50°C (-58°F), the gate valve and the globe valve cover are designed to be extended to ensure that the bottom of the packing material works in an environment above 0°C . It eliminates the possibility that the elasticity of the packing decreases gradually at low temperature and the anti-leakage performance decreases; And prevents the valve stem and packing for getting freezed, otherwise the valve stem surface is scratched during rotation, causing the valve leakage. valve stem and packing match ice, valve stem in the process of movement is scratched, resulting in valve leakage phenomenon.

The Valve Bonnet height (H) is designed as per the customers requirement. In case if the customer has no special requirement, appropriate height of the bonnet is designed and offered in accordance with International Standards, Theoretical Calculation, and Finite Element Analysis to ensure being suitable in Low-temperature service.

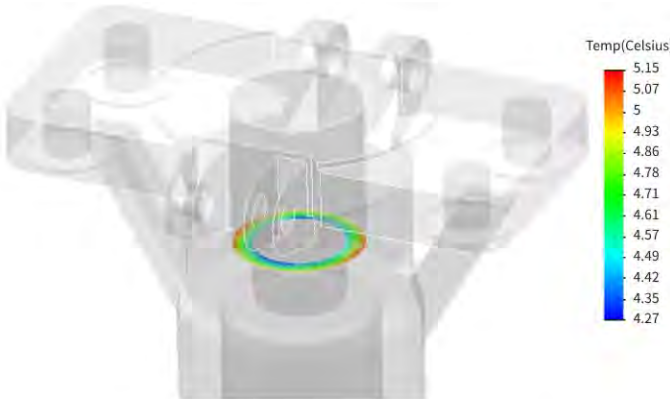


FINITE ELEMENT ANALYSIS OF VALVE BONNET



Temperature field distribution of Bonnet

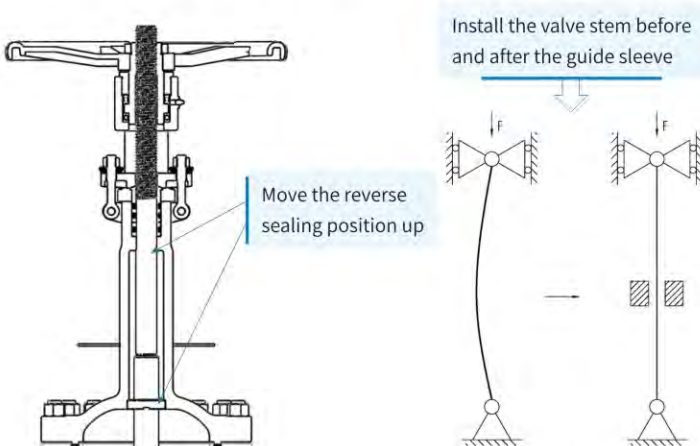
TEMPERATURE FIELD DISTRIBUTION OF VALVE BONNET



Temperature distribution at the bottom of the packing box, with a minimum value above 0°C

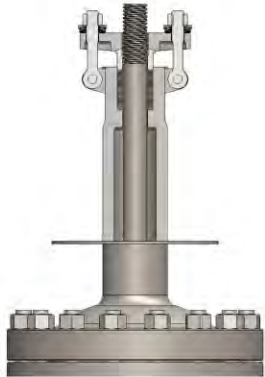
INVERTED SEAL UPWARD MOVEMENT AND GUIDE SLEEVE DESIGN FOR THE VALVE STEM

The reverse sealing position of the cryogenic gate valve and globe valve is moved up to the part above the guide sleeve. When the valve is fully opened, the medium intercepted by the extended part will vaporize upon contact with the pipe wall, causing the volume to rapidly expand and the pressure in this part to exceed the allowable pressure, resulting in the bonnet deformation or explosion. The bottom of the valve Bonnet of cryogenic gate valve and globe valve is equipped with a guide sleeve, which improves the rigidity and precise positioning of the valve stem positioning of the valve stem.



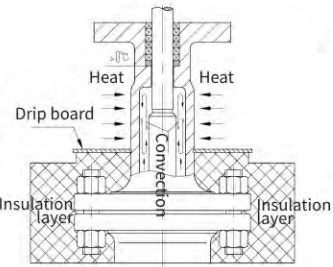
VALVE BONNET INTEGRAL CASTING

The extended bonnet of the cryogenic gate valve and globe valve is produced through integral casting which helps reducing external leakage points and ensuring sealing.



DRIP PLATE (INSULATION PLATE)

The cryogenic gate valve and Globe valve are provided with a drip plate. It can avoid condensing water vapor flowing into the heat insulation area, and at the same time, it can more effectively ensure the working environment of the packing, thus avoiding adverse effects.



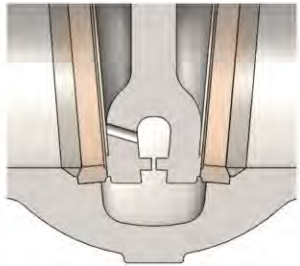
CRYOGENIC TREATMENT

Due to the permanent metallographic structure changes (irreversible) that occur in most metallic materials (or non-metallic materials) when cooled to below 0°C for the first time, their volume expands or shrinks. After cryogenic treatment, when the part is cooled below 0°C for the second time, the amount of permanent metallographic structure change produced is very small, and the amount of volume expansion or contraction is also very small. Cryogenic treatment can stabilize the size of parts and eliminate stress caused by structural changes.



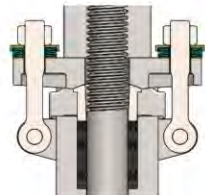
AUTOMATIC CAVITY-PRESSURE RELIEF FEATURE

A gate valve with a double sealed seat will leave some liquid in the valve cavity after the valve is closed. Over time, these residual liquids will gradually absorb ambient heat, return to room temperature, and vaporize again. After vaporization, its volume will rapidly expand, increasing by up to 600 times, resulting in high pressure in the middle chamber. It may cause deformation of the valve body and bonnet, and even pose a risk of explosion, so it is necessary to design a mechanism to prevent pressure the cavity doesn't become over pressured. To solve this issue, a pressure relief hole is designed on the wedge gate which connects to the valve cavity. When the cavity becomes over pressured, extra pressure will release through the pressure relief hole.



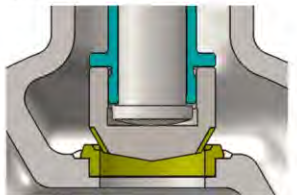
PACKING COMPRESSION DESIGN

Packing rings are compressed evenly by tightening the gland flange nuts along with spring washers which prevents the packing compression becomes loose after long working time.



SEAT RING AND DISC SEALING SURFACE

The sealing surface of low-temperature service valve is hard faced by double-sided cobalt base which improves the hardness of the sealing surface as well as the service life.



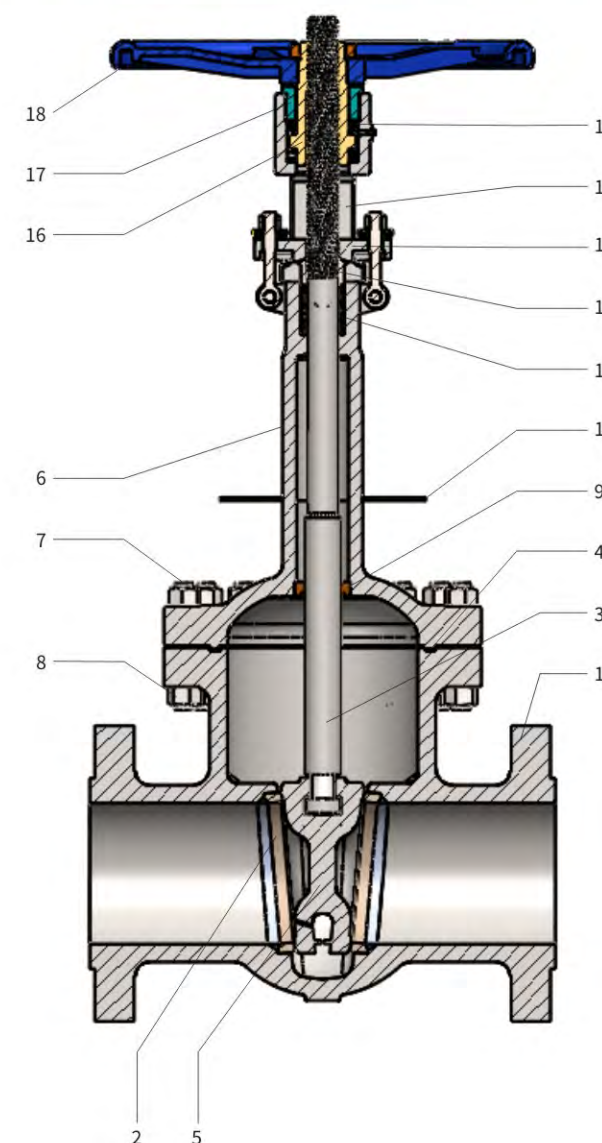
DESIGN PARAMETERS FOR CRYOGENIC VALVE

DESIGN PROJECT	EXECUTIVE STANDARD
General requirements	API 602, API600, BS1873, BS1868
Face to face	ASME B16.10 or customer requirements
Flange dimensions	ASME B16.5/B16.47
Weld end dimensions	ASME B16.25/B16.11
Pressure - temperature rating	ASME B16.34
Extended bonnet	BS6364, SHELL SPE 77/200

CRYOGENIC GATE VALVE

[illegible]

TYPICAL STRUCTURE AND MATERIAL CONFIGURATION AND DIMENSIONS



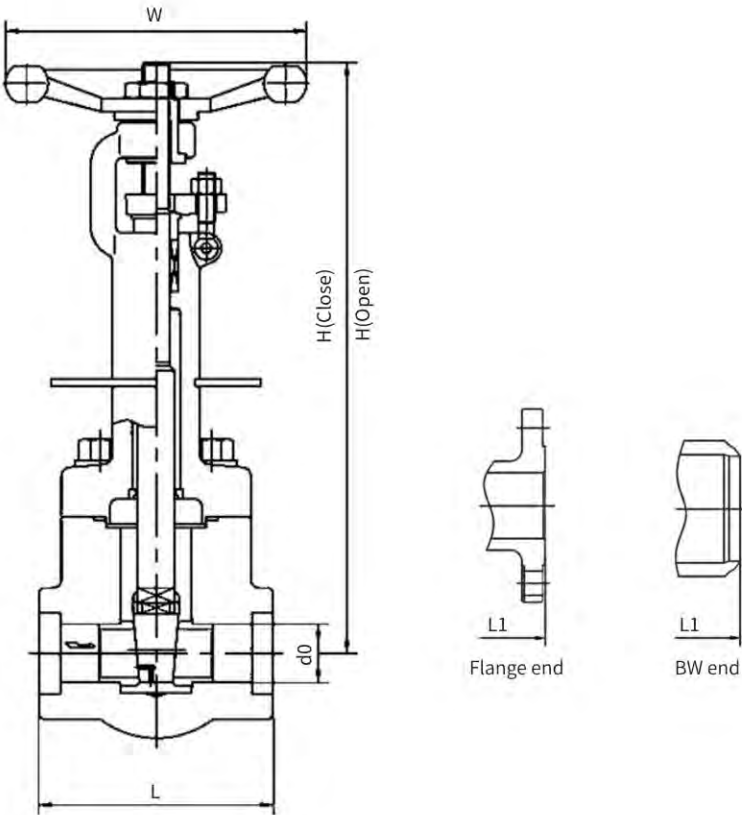
ITEM	NAME OF PARTS	1/2"~2"	2"~48"
1	Body	F316	CF8M
2	Seat	F316+STL6	
3	Stem	F316	
4	Gasket	SS316+Flexible graphite	
5	Wedge	F316+STL6	CF8M+STL6
6	Bonnet	CF8M	
7	Middle flange stud	B8M CL2	
8	Middle flange nut	8M	
9	Guide sleeve	SS316	
10	Drip plate	SS304	
11	Packing	Flexible graphite + Woven flexible graphite	
12	Gland ring	SS316	
13	Gland ring	Ss316	CF8M
14	Yoke	CF8M	
15	Bearing	N/A	Steel
16	Valve-stem nut	A439 D-2C or copper alloy	
17	Bearing cap	CS	
18	Hand wheel	Cast iron	

Note 1: Other commonly used body materials

SPECIFICATION NO	PLATE NUMBER	MINIMUM OPERATING TEMPERATURE (°C)
ASTM A352	LCB/LCC	-46
ASTM A351	CF3/CF8/CF3M	-196
ASTM A350	LF2/LF3	-46/-101
ASTM A182	F304L/F304/F316L	-196

FORGED GATE VALVE

The extended valve bonnet is designed according to international advanced standards. The extension length is 60~250mm, which is determined according to the working temperature. The H size in the chart exclude the extension part.

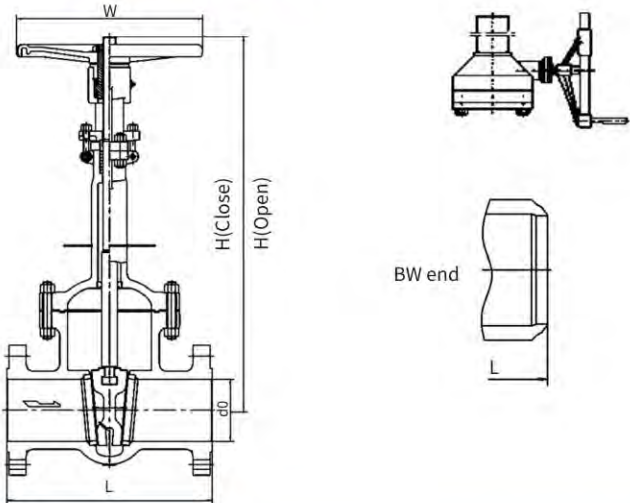


MAIN DIMENSIONS AND WEIGHT

NPS	ND	L		d0		H关		H开		W		L1 (法兰端)			
		≤CL800	CL1500	≤CL800	CL1500	≤CL800	CL1500	≤CL800	CL1500	≤CL800	CL1500	CL150	CL300	CL600	CL1500
in	mm														
1/2	15	73	102	12	12	119	180	132	198	64	89	108	140	165	216
3/4	20	83	127	17	15	150	184	173	201	89	89	117	152	190	229
1	25	89	152	22	22	162	221	188	244	89	127	127	165	216	254
1-1/4	32	127	178	28	26	193	231	236	269	127	152	140	178	229	279
1-1/2	40	127	178	35	34	193	231	236	269	127	152	165	190	241	305

CAST CARBON STEEL GATE VALVE

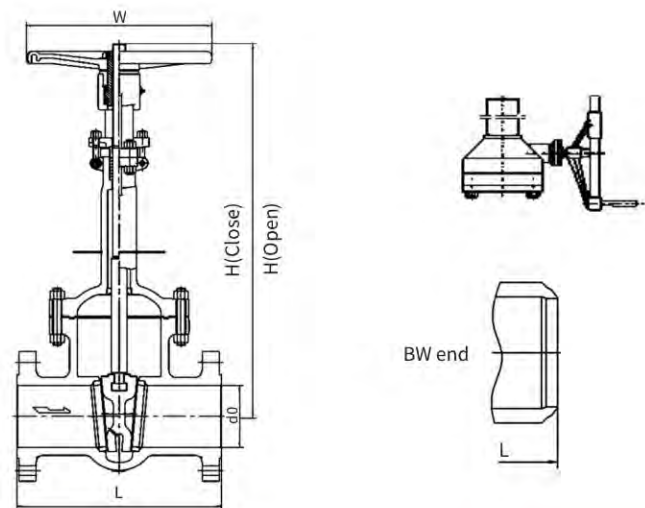
The extended valve bonnet is designed to -196 ° C according to the international MESC SPE 77/200 standard



MAIN DIMENSIONS AND WEIGHT

CLASS 150										CLASS 300						
SIZE		L		HANDWHEEL		GEAR		TRQ	WT(RF)	L	HANDWHEEL		GEAR		TRQ	WT(RF)
NPS inch	DN mm	RF mm	BW mm	W mm	H mm	W1 mm	H1 mm	N.m	Kg	RF(bw) mm	W mm	H mm	W1 mm	H1 mm	N.m	Kg
2	50	178	216	250	606			21	24	216	250	596	250	850	28	32
2-1/2	65	190	241	250	680			27	34	241	250	705	250	915	36	40
3	80	203	283	280	710			39	40	282	280	715	250	1153	54	55
4	100	229	305	300	763			64	82	305	300	700	310	1198	89	76
5	125	254	381	300	854			75	89	381	350	976	310	1412	92	102
6	150	267	403	350	955	310	960	87	93	403	400	990	310	1626	135	155
8	200	292	419	400	1120	310	1120	115	135	419	400	1118	440	1875	241	250
10	250	330	457	400	1276	310	1280	178	220	457	500	1332	440	2093	390	380
12	300	356	502	500	1442	310	1817	261	315	502	600	1540	520	2294	624	550
14	350	381	572	600	1580	310	2012	350	450	762	700	1726	520	2550	831	780
16	400	406	610	600	1750	440	2252	393	640	838	700	1848	520	2810	948	1145
18	450	432	660	600	1970	440	2524	550	800	914	800	2045	600	3115	1279	1406
20	500	457	711	680	2010	440	2712	725	910	991			600	3230	1588	1750
22	550	483	762			440	2900	893	1090	1092			600	3590	2183	2380
24	600	508	813			520	3085	1120	1280	1143			600	3648	2799	2790
26	650	559	864			520	3450	1458	1570	1245			600	3817	3720	3450
28	700	610	914			600	3645	1720	2150	1346			700	4094	4404	3685
30	750	610	914			600	3805	2231	2600	1397			700	4338	5053	3965
32	800	660	965			600	3892	2412	2750	1524			800	4562	6319	5400
34	850	686	1016			600	4280	2643	3400	1626			800	4625	7321	5996
36	900	711	1016			600	4468	2966	3600	1727			800	4783	8358	6943
38	950	762	1016			600	4625	3668	4226	1778			800	4935	10231	7350
40	1000	813	1016			700	4813	4261	4800	1829			800	5103	11780	8660
42	1050	813	1016			700	5004	4885	5340	1880			800	5267	13679	9713
44	1100	838	1067			700	5216	5904	6300	1930			800	5412	16199	10600
46	1150	838	1067			700	5485	6716	6850	1930			800	5550	18263	11350
48	1200	864	1168			700	5788	7612	8100	2032			1000	5800	21454	12630
50	1250	914				700	5900	8876	8400	2083			1000	5900	24954	13500
52	1300	965				700	6100	10090	8700	2134			1000	6100	28801	14300
54	1350	991				800	6500	11610	9850	2185			1000	6250	33358	15000
56	1400	1050				800	6850	13531	13250	2235			1000	6500	36758	17500
58	1450	1143				800	6900	14410	14300	2260					40394	19000
60	1500	1270				800	7000	15780	15900	2286					45352	20500

The extended valve bonnet is designed to -196 ° C according to the international MESC SPE 77/200 standard



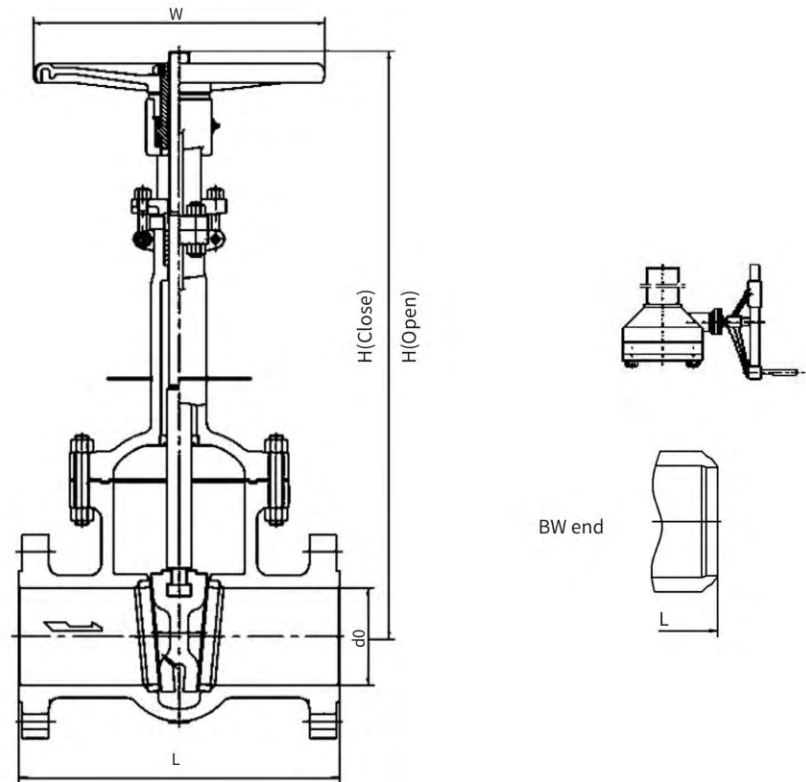
MAIN DIMENSIONS AND WEIGHT

CLASS 600									
SIZE		L		HANDWHEEL		GEAR		TRQ	WT(RF)
NPS inch	DN mm	RF(BW) mm	RTJ mm	W mm	H mm	W1 mm	H1 mm	N.m	Kg
2	50	292	295	250	630	250	721	39	42
2-1/2	65	330	333	250	705	250	843	57	52
3	80	356	359	300	785	250	886	74	91
4	100	432	435	350	867	310	1029	123	142
5	125	508	511	400	986	310	1236	182	193
6	150	559	562	500	1090	310	1290	314	285
8	200	660	664	600	1205	440	1521	518	450
10	250	787	791	600	1402	440	1740	935	678
12	300	838	841	700	1523	520	1937	1215	955
14	350	889	892	700	2136	520	2016	1486	1140
16	400	991	994			600	2404	2050	1860
18	450	1092	1095			600	2576	2727	2330
20	500	1194	1200			600	2746	3792	3062
22	550	1295	1305			700	3011	4854	3960
24	600	1397	1407			700	3205	5587	4675
26	650	1448	1461			700	3465	7374	4960
28	700	1549	1562			800	3576	9606	5386
30	750	1651	1664			800	3970	11930	7620
32	800	1778	1794			800	4062	14473	7963
34	850	1930	1946			800	4380	17513	10080
36	900	2083	2099			800	4545	21332	12200
38	950	2134				1000	4703	24835	12600
40	1000	2184				1000	4813	27976	14860
42	1050	2235				1000	5043	32888	17160
44	1100	2286				1000	5162	37938	19480
46	1150	2337				1000	5293	41960	21900
48	1200	2388				1000	5435	48563	23500
50	1250	2438				1000	5500	55499	
52	1300	2489				1000	5800	63344	
54	1350	2540				1000	5950	71892	
56	1400	2591				1000	6150	78188	

CLASS 900									
SIZE		L		HANDWHEEL		GEAR		TRQ	WT(RF)
NPS inch	DN mm	RF(BW) mm	RTJ mm	W mm	H mm	W1 mm	H1 mm	N.m	Kg
2	50	368	371	300	722			71	93
2-1/2	65	419	422	350	812			102	108
3	80	381	384	350	875	310	846	125	130
4	100	457	460	400	905	310	1083	198	197
5	125	559	562	450	1035	310	1250	295	308
6	150	610	613	600	1153	310	1343	447	410
8	200	737	740	600	1224	440	1465	812	668
10	250	838	841	650	1432	520	1734	1353	956
12	300	965	968	700	1543	520	1982	1980	1342
14	350	1029	1038			600	2130	2602	1630
16	400	1130	1140			600	2373	3820	2530
18	450	1219	1232			600	2575	5061	3168
20	500	1321	1334			700	2785	7123	3980
22	550	1422	1441			700	3000	9120	5150
24	600	1549	1568			800	3300	10851	6400
26	650	1664				800	3450	13363	7600
28	700	1778				800	3800	18177	8100
30	750	1892				800	4000	22230	10100
32	800	2004				1000	4650	26953	12400
34	850	2083				1000	4870	32459	13700
36	900	2232				1000	5050	38887	15800

CLASS 1500									
SIZE		L		HANDWHEEL		GEAR		TRQ	WT(RF)
NPS inch	DN mm	RF(BW) mm	RTJ mm	W mm	H mm	W1 mm	H1 mm	N.m	Kg
2	50	368	371	300	722	310	743	115	90
2-1/2	65	419	422	350	839	310	913	164	140
3	80	470	473	400	882	310	976	232	185
4	100	546	549	550	952	440	1152	370	324
5	125	673	676	600	1134	440	1365	589	538
6	150	705	711	680	1248	520	1495	819	685
8	200	832	842			600	1668	1538	1150
10	250	991	1001			600	1835	2655	1680
12	300	1130	1146			600	2086	3652	2205
14	350	1257	1276			600	2095	5194	3350
16	400	1384	1406			700	2429	6955	4006
18	450	1537	1559			700	2675	9121	5006
20	500	1664	1686			800	2840	13201	6890
24	600	1943	1971			1000	3176	21551	8950
26	650	2083				1000	3406	27632	11900
28	700	2223				1000	3596	33962	13500
30	750	2362				1000	3723	40795	16000

The extended valve bonnet is designed to -196 ° C according to the international MESG SPE 77/200 standard



MAIN DIMENSIONS AND WEIGHT

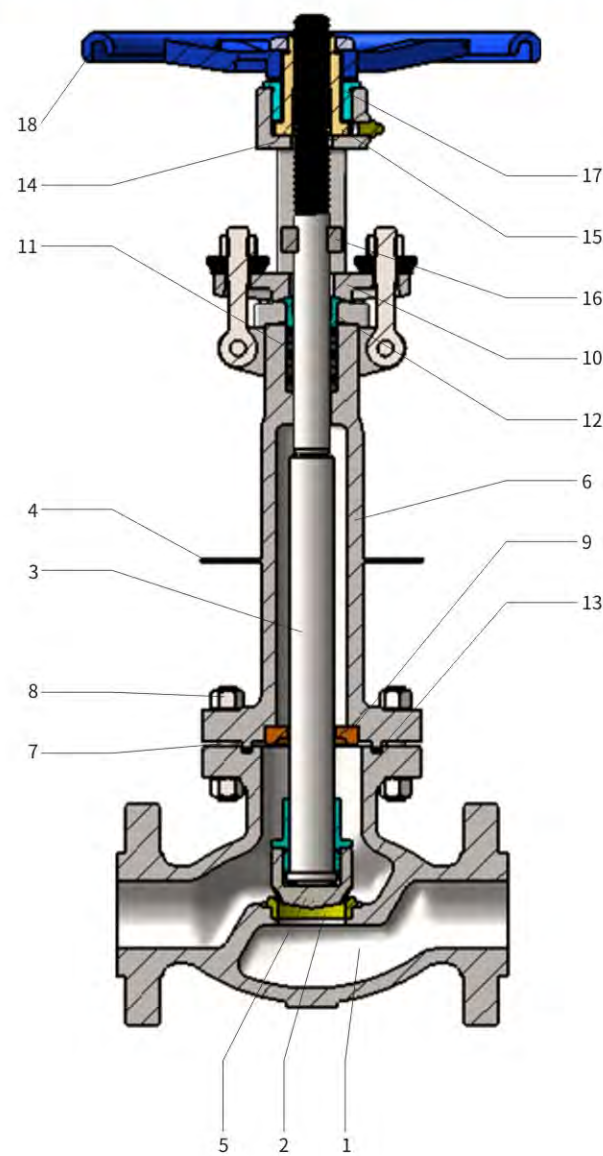
CLASS 2500									
SIZE		L		HANDWHEEL		GEAR		TRQ	WT(RF)
NPS inch	DN mm	RF(BW) mm	RTJ mm	W mm	H mm	W1 mm	H1 mm	N.m	Kg
2	50	451	454	350	565	310	679	175	150
2-1/2	65	508	514	350	610	310	770	295	230
3	80	578	584	400	707	310	862	333	280
4	100	673	683	550	755	440	988	518	490
5	125	794	807	600	785	440	1030	734	675
6	150	914	927	680	885	520	1170	1264	850
8	200	1022	1038			600	1285	2538	965
10	250	1270	1292			600	1568	4276	1580
12	300	1422	1444			700	1730	6998	2580
14	350	1549				700	1965	9343	2990
16	400	1676				800	2100	13464	4600
18	450	1829				800	2340	20409	7360
20	500	1956				1000	2530	23885	9650
24	600	2235				1000	2680	32261	12100

CRYOGENIC GLOBE VALVE

CRYOGENIC GLOBE VALVE SERIES



TYPICAL STRUCTURE AND MATERIAL CONFIGURATION AND DIMENSIONS



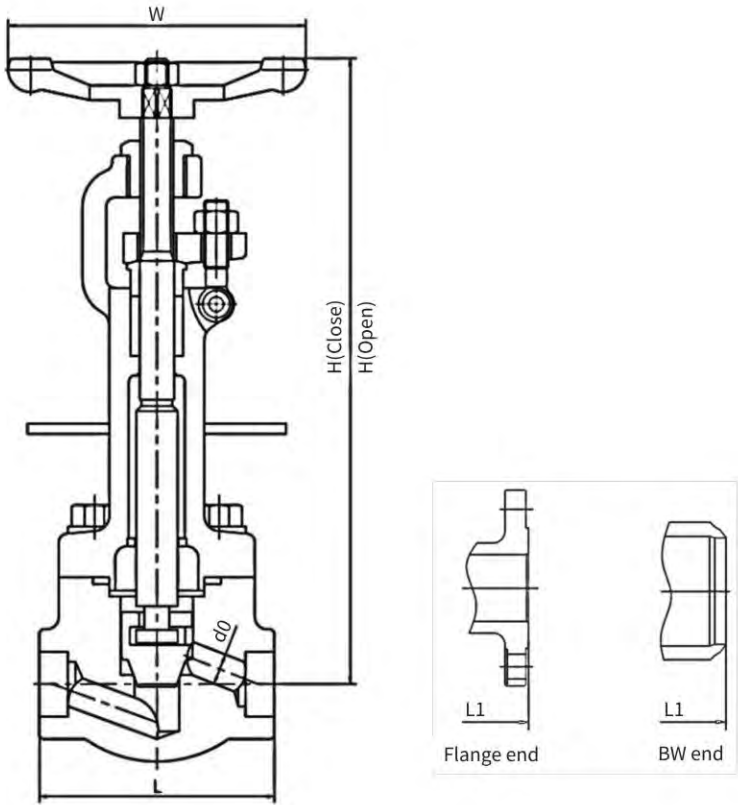
ITEM	NAME OF PARTS	1/2"~2"	2"~24"
1	Body	F316	CF8M
2	Seat	F316+STL6	
3	Stem	F316	
4	Drip plate	SS304	
5	Disc	F316+STL6	
6	Bonnet	CF8M	
7	Middle flange stud	B8M CL2	
8	Middle flange nut	8M	
9	Guide sleeve	SS316	
10	Gland flange	SS316	CF8M
11	Packing	Flexible graphite + Woven flexible graphite	
12	Gland ring	SS316	
13	Gasket	Ss316+ Flexible graphite	
14	Yoke	CF8M	
15	Valve-stem nut	A439 D-2C or copper alloy	
16	Guide plate	CS	
17	Bearing cap	CS	
18	Hand wheel	Cast iron	

Note 1: Other commonly used body materials

SPECIFICATION NO	PLATE NUMBER	MINIMUM OPERATING TEMPERATURE (°C)
ASTM A352	LCB/LCC	-46
ASTM A351	CF3/CF8/CF3M	-196
ASTM A350	LF2/LF3	-46/-101
ASTM A182	F304L/F304/F316L	-196

FORGED GLOBE VALVE

The extended valve bonnet is designed according to international advanced standards. The extension length is 60~250mm, which is determined according to the working temperature. The H size in the chart exclude the extension part.

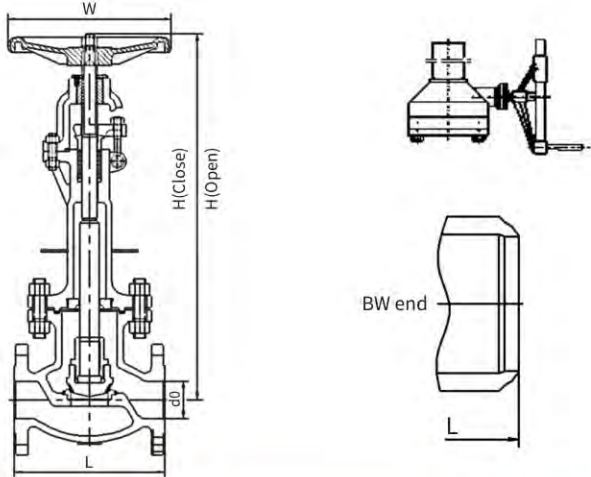


MAIN DIMENSIONS AND WEIGHT

NPS	ND	L		d0		H Close		H Open		W		L1 (FLANGE ENG)			
		≤CL800	CL1500	≤CL800	CL1500	≤CL800	CL1500	≤CL800	CL1500	≤CL800	CL1500	CL150	CL300	CL600	CL1500
1/2	15	73	102	12	9	114	188	122	201	64	152	108	152	165	216
3/4	20	83	127	17	14	168	196	180	206	102	152	117	178	190	229
1	25	89	152	22	19	170	239	185	259	102	203	127	203	215	254
1-1/4	32	127	178	28	25	206	262	221	279	152	203	140	216	229	279
1-1/2	40	127	178	35	26	206	262	221	279	152	203	165	229	241	305

CAST GLOBE VALVE

The extended valve bonnet is designed to -196 ° C according to the international MESG SPE 77/200 standard



CLASS 150									CLASS 300								
SIZE		L		W mm	H mm	W1 mm	H1 mm	TRQ N.m	WT(RF) Kg	L		W mm	H mm	W1 mm	H1 mm	TRQ N.m	WT(RF) Kg
NPS inch	DN mm	RF(BW) mm	mm							RF(BW) mm	mm						
2	50	203	220	589				42	26	267	220	600				72	48
2-1/2	65	216	250	610				68	40	292	250	625				90	55
3	80	241	280	676				80	53	318	280	707				168	83
4	100	292	320	746				130	77	356	320	755				300	100
5	125	356	320	810				200	115	400	350	825				450	165
6	150	406	400	878	310	1080	240	145	444	450	1029	440	1167	855	221		
8	200	495	450	1042	310	1175	490	235	559	500	1120	440	1205	1540	324		
10	250	622	560	1150	440	1284	922	323	622	560	1320	520	1477	2560	549		
12	300	698	560	1260	440	1344	1250	483	711	600	1450	600	1637	3510	803		
14	350	787			520	1350	1865	800	838			600	1700	4610	1310		
16	400	914			600	2010	2960	1102	914			700	2014	6174	1703		
18※	450	978			520	1670		1230	978			600	2050		2020		
20※	500	1067			520	1700		1420	1016			600	2120		2400		
24※	600	1295			520	1750		1950	1346			600	2200		3000		

CLASS 600									
SIZE		L		W mm	H mm	W1 mm	H1 mm	TRQ N.m	WT(RF) Kg
NPS inch	DN mm	RF(BW) mm	RTJ mm						
2	50	292	295	280	685			220	63
2-1/2	65	330	333	320	735			360	80
3	80	356	359	350	852			440	115
4	100	432	435	450	932	440	1004	602	231
6	150	559	562	560	1240	520	1379	1820	473
8	200	660	663	600	1280	600	1392	3875	713
10	250	787	790			600	1589	5395	1232
12	300	838	841			700	1749	9170	1531
14	350	889	892			700	1960	13245	2060
16※	400	991	994			520	1780		2150
18※	450	1092	1095			600	2050		2350
20※	500	1194	1200			600	2241		3250
24※	600	1397	1407			700	2280		4300

CLASS 900									
SIZE		L		W mm	H mm	W1 mm	H1 mm	TRQ N.m	WT(RF) Kg
NPS inch	DN mm	RF(BW) mm	RTJ mm						
2	50	368	371	350	770			285	134
2-1/2	65	419	422	400	870			360	165
3	80	381	384	350	1041	440	1075	530	187
4	100	457	460	500	1008	440	1097	1065	312
6	150	610	613	600	1280	520	1359	2071	569
8	200	737	740	700	1400	600	1398	3440	1083
10	250	838	841			700	1897	7632	1508
12※	300	965	968			600	1750		1720
14※	350	1029	1039			600	2000		2220
16※	400	1130	1140			700	2200		2580
18※	450	1219	1232			800	2410		3280
20※	500	1321	1334						
24※	600	1549	1568						

CLASS 1500									
SIZE		L		W mm	H mm	W1 mm	H1 mm	TRQ N.m	WT(RF) Kg
NPS inch	DN mm	RF(BW) mm	RTJ mm						
2	50	368	371	350	770	310	790	352	150
2-1/2	65	419	422	400	870	310	950	730	190
3	80	470	473	450	953	440	1080	930	237
4	100	546	549	560	1110	520	1130	1820	400
6	150	705	711			600	1457	3870	720
8	200	832	842			700	2000	7838	1200
10※	250	991	1001			600	1810		1720
12※	300	1130	1146			600	1990		2800
14※	350	1257	1276			600	2130		
16※	400	1384	1406			700	2250		
18※	450	1537	1559			700	2440		
20※	500	1664	1686			700	2520		
24※	600	1943	1971			800	2600		

CLASS 2500									
SIZE		L		W mm	H mm	W1 mm	H1 mm	TRQ N.m	WT(RF) Kg
NPS inch	DN mm	RF(BW) mm	RTJ mm						
2	50	451	454	450	1000	440	1079	502	250
2-1/2	65	508	514	500	1020	440	1100	810	350
3	80	578	584	560	1150	520	1117	960	460
4	100	673	683			520	1400	2100	720
6	150	914	927			600	1650	4300	1450
8※	200	1022	1038			520	1880		
10※	250	1270	1292			600	2020		
12※	300	1422	1444			700	2230		

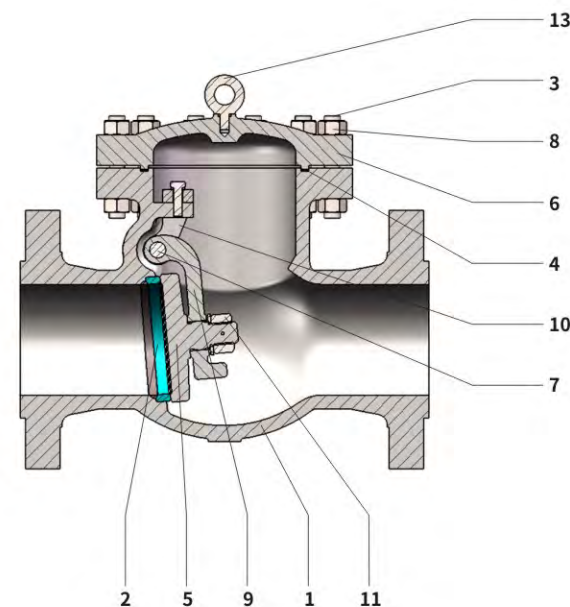
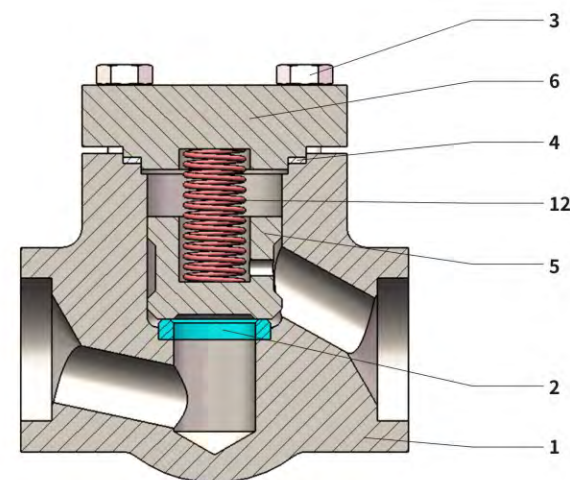
Backflow ("※" in data sheet)

CRYOGENIC CHECK VALVE

CRYOGENIC CHECK VALVE SERIES



TYPICAL STRUCTURE AND MATERIAL CONFIGURATION AND DIMENSIONS

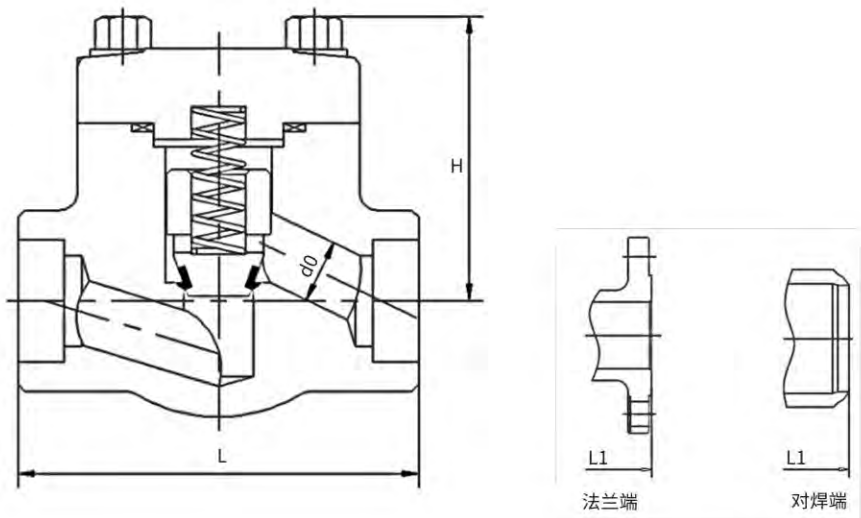


ITEM	NAME OF PARTS	1/2"~2"	2"~48"
1	Body	F316	CF8M
2	Seat	F316+STL6	
3	Bolt	N/AF316	
4	Gasket	Ss316+ Flexible graphite	
5	Gate	F316+STL6	
6	Bonnet	F316	CF8M
7	Hinge pin	B8M CL2	
8	Middle flange nut	8M	
9	Rocker	N/A	CF8M
10	Y-piece	N/A	CF8M
11	Disc Nut	N/A	SS316
12	Spring	X750	N/A
13	Lifting bolt	CS	

Note 1: Other commonly used body materials

SPECIFICATION NO	PLATE NUMBER	MINIMUM OPERATING TEMPERATURE (°C)
ASTM A352	LCB/LCC	-46
ASTM A351	CF3/CF8/CF3M	-196
ASTM A350	LF2/LF3	-46/-101
ASTM A182	F304L/F304/F316L	-196

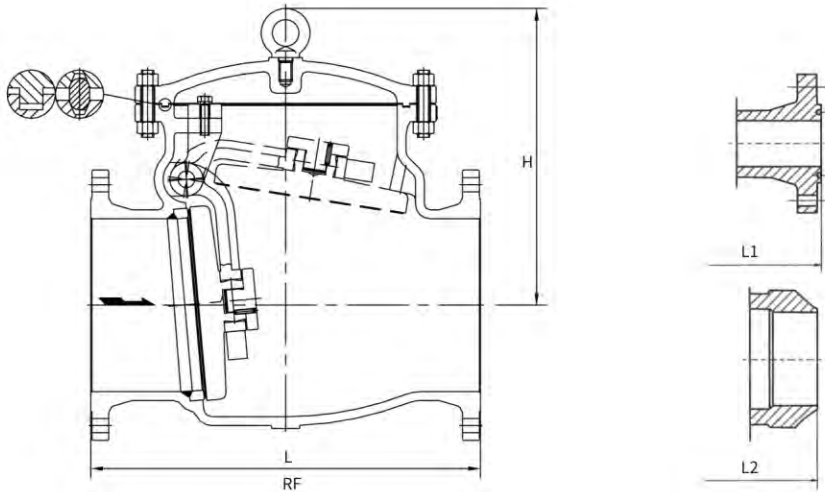
FORGED CHECK VALVE



MAIN DIMENSIONS AND WEIGHT

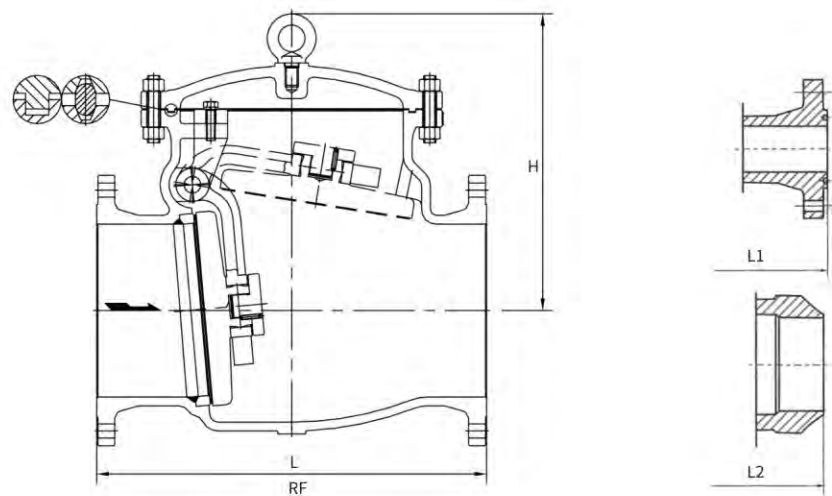
NPS	ND	L		d0		H		L1 (法兰端)			
		≤CL800	CL1500	≤CL800	CL1500	≤CL800	CL1500	CL150	CL300	CL600	CL1500
in	mm										
1/2	15	73	102	12	9	44	66	108	152	165	216
3/4	20	83	127	17	14	53	71	117	178	190	227
1	25	89	152	22	19	58	86	127	203	216	254
1-1/4	32	127	178	28	25	84	99	140	221	227	279
1-1/2	40	127	178	35	26	84	99	165	227	241	305

CAST CHECK VALVES



MAIN DIMENSIONS AND WEIGHT

CLASS 150					CLASS 300			CLASS 600			
SIZE		L	H	WT(RF)	L	H	WT(RF)	L		H	WT(RF)
NPS	DN	RF(BW)	mm	Kg	RF(BW)	mm	Kg	RF(BW)	RTJ	mm	Kg
2	50	203	189	16	267	201	21	292	295	207	27
2-1/2	65	216	198	20	292	215	37	330	333	227	32
3	80	241	226	25	318	249	46	356	359	251	49
4	100	292	275	40	356	297	71	432	435	320	86
5	125	330	280	67	400	305	100	508	511	310	165
6	150	356	312	93	445	321	130	559	562	339	185
8	200	495	417	134	533	429	202	660	664	468	365
10	250	622	459	199	622	477	296	787	791	524	557
12	300	699	532	305	711	553	458	838	841	589	670
14	350	787	550	370	838	570	583	889	892	622	944
16	400	864	667	542	864	696	754	991	994	746	1300
18	450	978	684	750	978	695	935	1092	1095	786	1760
20	500	978	750	900	1016	742	1155	1194	1200	874	2200
24	600	1295	871	1200	1346	922	1408	1397	1407	874	3350
26	650	1295	910	1276	1346	930	2375	1448	1461	1110	3740
28	700	1448	1047	1855	1499	1026	2800	1600	1613	1244	4630
30	750	1524	1095	2190	1594	1130	3680	1651	1664	1300	5560
32	800	1727	1150	2430	1727	1180	3880	1778	1794	1365	6750
36	900	1956	1182	3130	2083	1235	5030	2083	2099	1599	8200
40	1000	1981	1360	4200	2250	1385	6300	2286		1695	9000
42	1050	2032	1410	5100	2312	1460	7100	2438		1700	10000
48	1200	2083	1640	6700	2413	1810	9300	2540		2150	11200



MAIN DIMENSIONS AND WEIGHT

CLASS 900						CLASS 1500				CLASS 2500			
SIZE		L				L				L			
NPS in	DN mm	RF(BW) mm	RTJ mm	H mm	WT(RF) Kg	RF(BW) mm	RTJ mm	H mm	WT(RF) Kg	RF(BW) mm	RTJ mm	H mm	WT(RF) Kg
2	50	368	371	233	58	368	371	229	66	451	454	250	98
2-1/2	65	419	422	245	76	419	422	255	84	508	514	275	175
3	80	381	384	269	100	470	473	297	123	578	584	370	195
4	100	457	460	337	140	546	549	357	196	673	683	465	380
6	150	610	613	424	294	705	711	490	481	914	927	540	800
8	200	737	740	542	700	832	841	565	824	1022	1038	770	2000
10	250	838	841	559	744	991	1000	680	1252	1270	1292	850	3700
12	300	965	968	685	870	1130	1146	840	1440	1422	1445	950	4400
14	350	1029	1038	780	1254	1257	1276	935	1745	1575		1150	7450
16	400	1130	1140	825	1800	1384	1407	1025	2500	1727		1280	9100
18	450	1219	1232	911	2900	1537	1559	1150	5400	1877		1420	11100
20	500	1321	1334	935	3800	1664	1686	1280	6650	2029		1530	12300
24	600	1549	1568	1134	5500	1943	1972	1525	9800	2334		1650	13800
26	650	1651	1673	1220	6600	2083		1800	11500				
28	700	1753	1775	1365	7600	2223		2050	13500				
30	750	1854	1876	1560	8900	2362		2300	15500				
32	800	1956		1650	12100								
36	900	2156		1850	15280								
40	1000	2286		1995	17650								
42	1050	2438		2100	19960								
48	1200	2540		2380	29500								



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FANGZHENG VALVE GROUP CO., LTD

Add: NO.1921, Binhai 1st Avenue, Economy & Technology Development Zone,
Wenzhou City, Zhejiang Province, China 325025
Tel: +86-577-6735 6515 Fax: +86-577-673508449

E-mail: fzvalve@fzvgroup.com

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Version: CAT -CGGC-2024