



Forged steel cryogenic valves

Hawks cryogenic valves are available in two bonnet designs. The first design is the Bolted Bonnet, with male–female joint, spiral wound gasket, made in F304L/graphite. Ring joint gasket are also available on request. The second design is the welded bonnet, with a threaded and seal welded joint. On request a full penetration strength welded joint is available.

The cryogenic valves are available in gate and globe design configurations. Valves are designed with an extended bonnet for use in cold services to 196 degrees C (–320 degrees F).

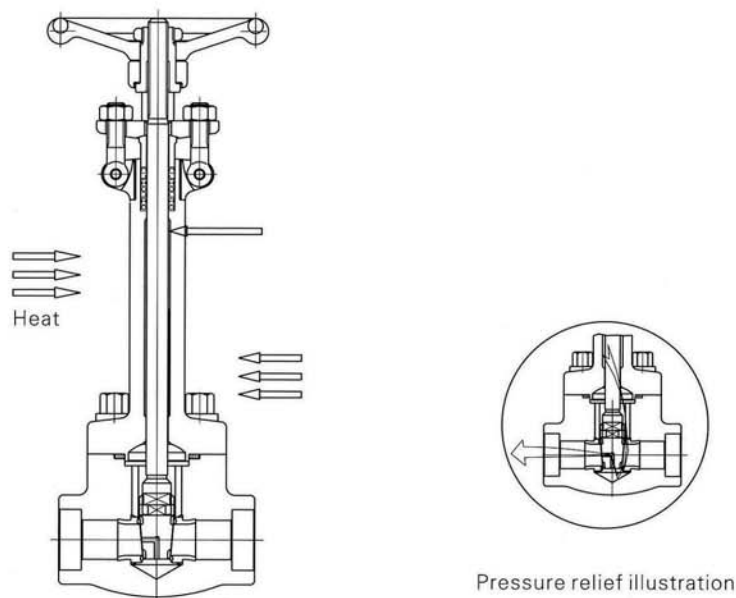


Construction is as follows

- ※ Full port or conventional port;
- ※ Outsied screw and yoke (OS&Y);
- ※ Extended bonnet;
- ※ Self–centering gland and flange;
- ※ Bolted bonnet with spiral–wound gasket sealing bonnet;
- ※ Threaded with full welding seal bonnet;
- ※ Integral backseat;
- ※ Socket welded ends to ASME B16.11;
- ※ Screwed ends(NPT) to ANSI/ASME B1.20.1.



Cryogenic gate valves



Product application

Hawks has many users in cryogenic valves. through more than 20-year continuous efforts, Hawks forged cryogenic gate, globe and check valves are specially designed to handle the technical problems that arise in the production, transport and storage of liquified gases such as oxygen, nitrogen, argon, natural gas, hydrogen or helium (down to $-425\text{ F}/-254\text{ C}$). BOTELI specially adapted extended bonnet forged valves offer safe and efficient service.

Design features

All basic design features of Hawks forged steel valves outlined in this catalog are adapted to special service conditions at cryogenic temperatures.

Extended bonnets with sufficient gas column length, usually specified by customer, are supplied for all valves to keep stem packing at sufficient distance away from the cold fluid to remain functional.

Pressure releasing Hole, designed in the wedge, warrants the pressure in body chamber to be balance, even if the pressure inside the body chamber is suddenly up.

High-hard-surfaced stem hardened with nitriding remains its perfect bruise and corrosion resistance at the extreme low temperature, so as to prevent the packing from being damaged.

Overlaid Stellite 6 closure members on 1/2~2" (150 mm) valves operate with no galling in cryogenic service.



Cryogenic test

Purpose: Demonstrating the perfect operating performances in model cryogenic conditions.

Environment: Inside a device full of liquefied Nitrogen, temperature smaller than 196°C .

Procedures: After being verified at room temperature, the valve is cleaned and dried, when the temperature reached the required one, it can begin to test.

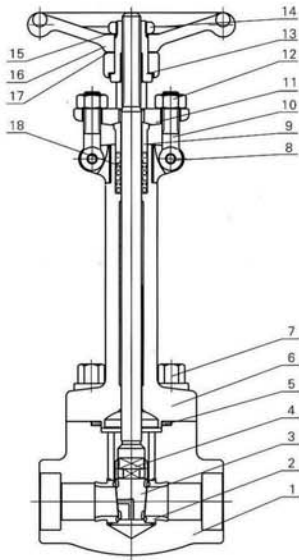
Operating performance test in cryogenic conditions.

Sealing performance tests for packing and gasket

Sealing performance test for backseat



Cryogenic gate valves



Application specifications

- 1、 Design and manufacture conform to API 602 BS5352 B16.34;
- 2、 Connection ends conform to:
 - 1)Socket welded ends conform to ANSI B16.11
 - 2)Screw ends conform to ANSI B1.20.1
 - 3)Butt-welded ends conform to ANSI B16.25
 - 4)Flanged ends conform to ANSI B16.5
- 3、 Test and inspection conform to: API 598
- 4、 Structure features:
 - Bolted bonnet, outside screw and yoke
 - Welded bonnet, outside screw and yoke
- 5、 Materials conform to ANSI/ASTM.
- 6、 Main materials: LF2; LF3; 304(L); 316(L); F347; F321; F51.

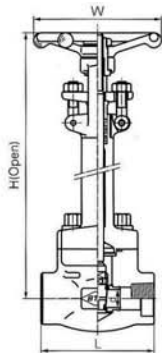
Carbon steel temperature–pressure rate

CL150–285 P.S.I @ 100° F
 CL300–740 P.S.I @ 100° F
 CL600–1480 P.S.I @ 100° F
 CL800–1975 P.S.I @ 100° F
 CL1500–3705 P.S.I @ 100° F

Main part materials list

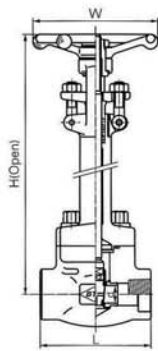
NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	LF3/304	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	–	–	LF2	LF3	F304(L)	F316(L)	F51
2	Seat ring	–	–	304	304	304(L)	316(L)	F51
3	Wedge disc	–	–	F304	F304	F304(L)	F316(L)	F51
4	Stem	–	–	304	F304	304(L)	316(L)	F51
5	Gasket	–	–	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
6	Bonnet	–	–	LF2	LF3	F304(L)	F316(L)	F51
7	Bolt	–	–	L7	L7	B8	B8	B8
8	Pin	–	–	410	410	304	304	304
9	Gland	–	–	304	304	304	316	F51
10	Gland eyebolt	–	–	L7	L7	B8(M)	B8(M)	B8M
11	Gland flange	–	–	LF2	LF3	F304	F304	F304
12	Hex nut	–	–	2H	2H	8(M)	8(M)	8M
13	Stem nut	–	–	410	410	410	410	410
14	Locking nut	–	–	35	35	35	35	35
15	Nameplate	–	–	AL	AL	AL	AL	AL
16	Handwheel	–	–	A197	A197	A197	A197	A197
17	Lubricating gasket	–	–	410	410	410	410	410
18	Packing	–	–	Graphite	Graphite	Graphite	Graphite	Graphite

Cryogenic gate valves



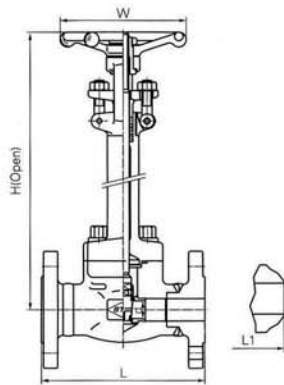
CL800 Bolted bonnet cryogenic extended bonnet full port & reduced port, OS&Y Threaded, butt-welded or socket welded ends; design to API 602

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
Face to face	L	79	79	92	111	120	120	140	178	180
Handwheel diameter	W	100	100	100	125	160	160	180	200	220
Height	H	-196	291	291	293	340	375	400	450	490
		-46	255	255	258	290	325	265	395	440
Height(angle dimension)	d	7.5	10.5	13.5	18	24	29	36.5	45	51
Weight(Kg)		3.5	3.5	4.3	6.7	10.9	12	14.8	28	36



CL1500 Bolted bonnet cryogenic extended bonnet full port & reduced port, OS&Y Threaded, butt-welded or socket welded ends; design to API 602

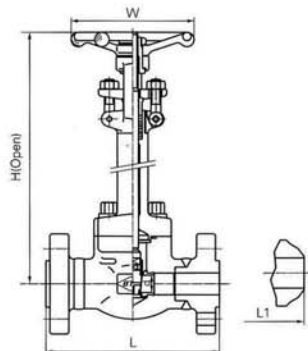
Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L	79	111	111	120	120	140	178	180
Handwheel diameter	W	100	125	125	160	160	180	200	220
Height	H	-196	321	321	322	359	399	446	480
		-46	285	285	287	309	343	396	420
Height(angle dimension)	d	7.5	10.5	13.5	18	24	29	36.5	45
Weight(Kg)		3.5	6.7	6.7	11	12.3	15.8	28	45



CL150-300-600 Bolted bonnet cryogenic extended bonnet, reduced port, OS&Y Flanged or butt welded ends; design to API 602

Specification(NPS)		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	CL150	-	-	108	118	127		165	178
	CL300	L(RF), L1(BW)	-	140	153	165		191	216
	CL600		-	165	191	216		241	292
Handwheel diameter	W	-	-	100	100	125	160	160	180
Height	-196	H	-	321	322	359	399	446	480
	-46		-	285	287	309	343	396	420
Height(angle dimension)	d	-	-	10.5	13.5	18	24	29	36.5
Weight (Kg)	CL R F	-	-	5.0	5.5	8.8	13.5	15	20.3
	150 BW	-	-	-	-	-	-	-	-
	CL R F	-	-	5.8	7.3	9.7	12.5	19.5	22.3
	300 BW	-	-	-	-	-	-	-	-
	CL R F	-	-	6.0	8	11.2	13.5	21.5	24.8
	600 BW	-	-	-	-	-	-	-	-

If you want to order one piece body, please contract with sale department



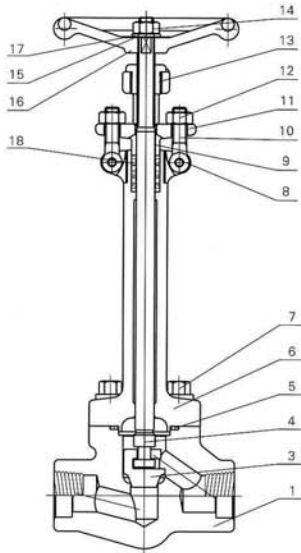
CL1500 Bolted bonnet cryogenic extended bonnet, full port, OS&Y Flanged or butt welded ends; design to API 602

Specification(NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2
Face to face	L		216	229	254	279	325	368
Handwheel diameter	W		125	125	160	160	180	200
Height	H	-196	321	322	359	399	446	480
		-46	285	287	309	343	396	420
Height(angle dimension)	d		10.5	13.5	18	24	29	36.5
Weight (Kg)			14	23	25.3	5.7	47	72

If you want to order one piece body, please contract with sale department



Cryogenic globe valves



Application specifications

- 1、 Design and manufacture conform to API 602 BS5352 B16.34;
- 2、 Connection ends conform to:
 - 1)Socket welded ends conform to ANSI B16.11
 - 2)Screw ends conform to ANSI B1.20.1
 - 3)Butt-welded ends conform to ANSI B16.25
 - 4)Flanged ends conform to ANSI B16.5
- 3、 Valve test and inspection conform to: API 598
- 4、 Structure features:
 - Bolted bonnet, outside screw and yoke
 - Welded bonnet, outside screw and yoke
- 5、 Materials conform to ANSI/ASTM.
- 6、 Main materials:
 - LF2; LF3; 304(L); 316(L); F347; F321; F51; Monel; 20 Alloy.

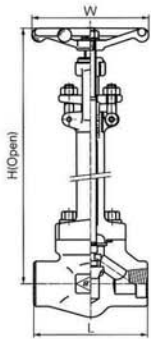
Carbon steel temperature–pressure rate

CL150–285 P.S.I @ 100° F
 CL300–740 P.S.I @ 100° F
 CL600–1480 P.S.I @ 100° F
 CL800–1975 P.S.I @ 100° F
 CL1500–3705 P.S.I @ 100° F

Main part materials list

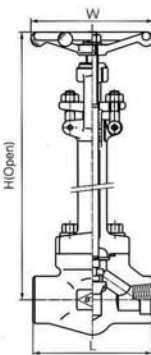
NO.	Part name	A105/F6a	A105/F6aHFS	LF2/304	LF3/304	F304(L)/304(L)	F316(L)/316(L)	F51/F51
1	Body	–	–	LF2	LF3	F304(L)	F316(L)	F51
2	Seat ring	–	–	304	304	304(L)	316(L)	F51
3	Wedge disc	–	–	F304	F304	F304(L)	F316(L)	F51
4	Stem	–	–	304	304	304(L)	316(L)	F51
5	Gasket	–	–	304+ Flexible graphite	304+ Flexible graphite	304+ Flexible graphite	316+ Flexible graphite	316+ Flexible graphite
6	Bonnet	–	–	LF2	LF3	F304(L)	F316(L)	F51
7	Bolt	–	–	L7	L7	B8	B8	B8
8	Pin	–	–	410	410	304	304	304
9	Gland	–	–	304	304	304	316	F51
10	Gland eyebolt	–	–	L7	L7	B8(M)	B8(M)	B8M
11	Gland flange	–	–	LF2	LF3	F304	F304	F304
12	Hex nut	–	–	2H	2H	8(M)	8(M)	8M
13	Stem nut	–	–	410	410	410	410	410
14	Locking nut	–	–	35	35	35	35	35
15	Nameplate	–	–	AL	AL	AL	AL	AL
16	Handwheel	–	–	A197	A197	A197	A197	A197
17	Lubricating gasket	–	–	410	410	410	410	410
18	Packing	–	–	Graphite	Graphite	Graphite	Graphite	Graphite

Cryogenic globe valves



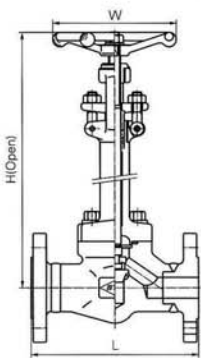
CL800 Bolted bonnet cryogenic extended bonnet full port & reduced port, OS&Y
Threaded or socket welded ends; design to BS5352

Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L	79	79	92	111	120	152	172	200	
Handwheel diameter	W	100	100	100	125	160	160	180	200	
Height(open)	H	-196°C	390	390	415	430	460	490	505	570
		-101°C	350	350	400	410	425	450	480	540
Flow port dimension	d	7.0	9.0	13	17.5	23	30	35	46	
Weight (Kg)		7.2	7.2	7.2	9.5	10.8	13.5	19.8	29	



CL1500 Bolted bonnet cryogenic extended bonnet full port & reduced port, OS&Y
Threaded or socket welded ends; design to BS5352

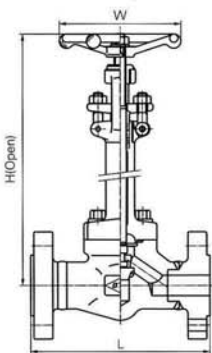
Specification (NPS)	R.P	-	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	
	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L	92	111	111	120	152	172	200	-	
Handwheel diameter	W	100	125	125	160	160	180	200	-	
Height(open)	H	-196°C	370	370	370	410	410	474	546	-
		-101°C	350	350	400	410	425	450	480	-
Flow port dimension	d	9	12	15	20	28	32	40	-	
Weight (Kg)		7.2	9.5	9.5	10.8	13.5	19.8	29	-	



CL150-300-600 Bolted bonnet cryogenic extended bonnet, reduced port, OS&Y
Flanged or butt welded ends; design to BS5352

Specification(NPS)	R.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L(RF)	-	-	108	118	127	-	165	203	
	L1(BW)	-	-	153	178	203	-	229	267	
		CL600	-	-	165	191	216	-	241	292
Handwheel diameter	W	-	-	100	100	125	-	160	180	
Height (open)	H	-196°C	-	-	390	415	430	-	490	505
		-101°C	-	-	350	400	410	-	450	480
Flow port dimension	d	-	-	9.0	13	17.5	-	30	35	
		CL150	-	-	5	5.8	8.6	-	13.8	24.3
		CL300	-	-	5.8	6.8	10.3	-	19.3	25.8
Weight (Kg)		CL600	-	-	6.3	7.3	10.6	-	20.3	26.8

If you want to order one piece body, please contract with our sale department



CL1500 Bolted bonnet cryogenic extended bonnet, full port, OS&Y
Flanged or butt welded ends; design to BS5352

Specification(NPS)	F.P	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	
Face to face	L(RF)	-	-	216	229	254	280	305	368	
Handwheel diameter	W	-	-	125	125	160	160	180	200	
Height (open)	H	-196°C	-	-	370	370	410	410	474	546
		-101°C	-	-	350	400	410	425	450	480
Flow port dimension	d	-	-	12	15	20	28	32	40	

If you want to order one piece body, please contract with our sale department