



Where quality meets service



# METALLUM

- Gate Valve -
- Globe Valve -
- Check Valve -



WHERE QUALITY MEETS SERVICE



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Gate Valve / Globe Valve / Check Valve

**YOU ORDER .....WE CREATE**

# METALLUM

Gate Valve / Globe Valve / Check Valve

Quality First,  
Customer Oriented.





# COMPANY INTRODUCTION

Metallum Valve Co.,Ltd located in Lishui city China. We are a professional valves manufacturer in China & Belgium. Our products can be used in oil & gas field pipeline, refinery, power plant, chemical plant that exported to European Market, Northern America, Middle East and Southern of Asia.

The Valves are manufactured according to ANSI, API, ASTM standard and thre customers' requirements, the pressure range is Class 150– Class 2500, the size

range is 1/2"– 40", the material range include Carbon Steel, Low Alloy Steel, High Alloy Steel, Stainless Steel, Duplex Stainless Steel, Super Duplex Stainless Steel, Cooper Alloy, Nickel Alloy soft and meke teated.

In order to satisfy the international quality management system, Metallum Valve Co.,Ltd got the approval of ISO9001, API-6D, CE, API 607 and API 6FA certifications. Also, we established a multi-functional phys-chemical lab to

control the quality each time by using spectrum analyzer, portable spectrograph (PMI), impact tester, hardness meter, tensile tester, thickness meter, magnetic particle tester, fugitive emission tester, and NDE testing.

Main Principle of Metallum Valve Co.,Ltd is to "Where quality meets service" .



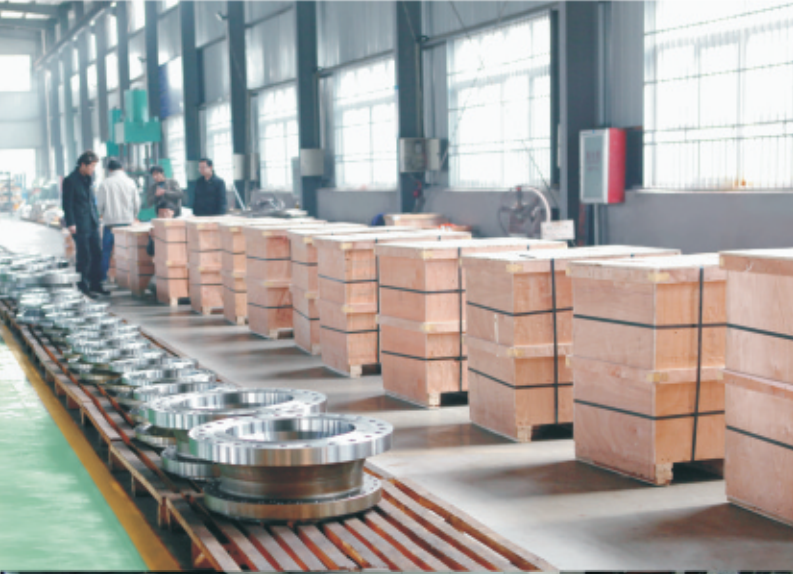


Pursuing excellence, Innovative thinking;  
Improve the quality, offer perfect service;  
Management creat benefit, System improve result;  
We would like to share our success with you for common development.

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## PROCESSING EQUIPMENT





01. Work shop  
 02. Work shop  
 03. Finished gate valve

04. Finished globe valve  
 05. Gate valve with Motorized actuator  
 06. Gate valve with Pneumatic operator ( Spring Return)

07. Fabricated workshop in Belgium

# METALLUM

Gate Valve / Globe Valve / Check Valve

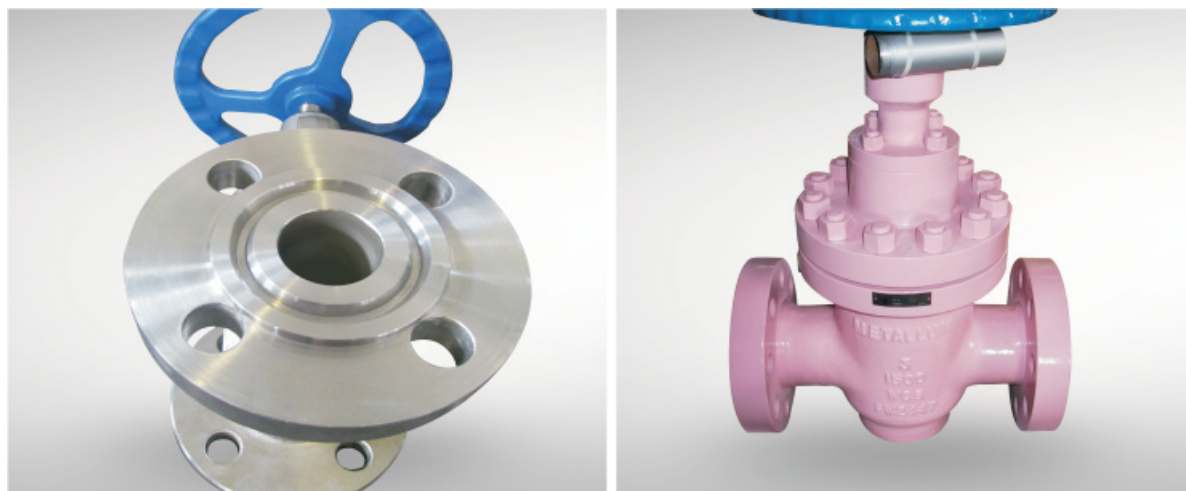




Product quality determinates the success of an enterprise. Since its establishment, Metallum Valve has been devoted to constantly improving product quality. By adhering to the quality policy of "good quality, high efficiency and continuous improvement" , and unceasingly upgrading and perfecting manufacturing equipment and technology, we ensure customers' reliance on our product quality.

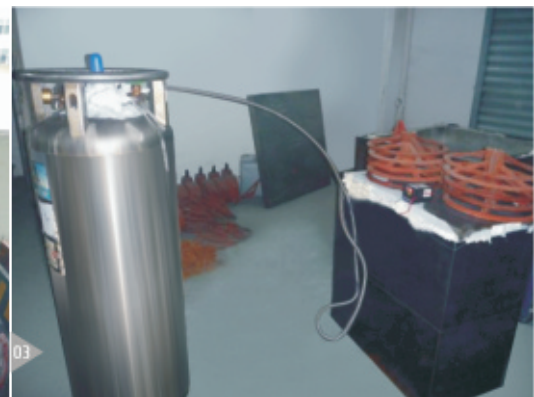
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## PRODUCT INTRODUCTION



# METALLUM

Gate Valve / Globe Valve / Check Valve



Scientific and advanced technological measures are adopted at every chain from the purchasing of raw materials till the delivery of products so as to strictly control manufacturing quality of products.

## PRODUCT & QUALITY CONTROL



01. Spectrograph (PMI)  
02. Fugitive emission Test  
03. Cold Test

04. Tensile Test  
05. Impact Test  
06. Material Analysis Room

07. Hydraulic test in Belgium  
08. Hydraulic test in Belgium



# CERTIFICATE



API 6D Certificate



ISO9001 Certificate



Fire Safety Certificate



Fire Safety Certificate



HSE



HSE



ATEX



ATEX





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# CONTENTS

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Figure Numbers	01-02
Cast Steel Gate Valve	03-06
Cast Steel Globe Valve	07-10
Cast Steel Swing Check Valve	11-14
Materials of Parts	15
Stem Data & Operation Torques	16
Materials	17-18

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# FIGURE NUMBERS

Example:

12	GA	9	R	CB	5	Ga	-B
1	2	3	4	5	6	7	8

i.e.

12" Gate Valve, BB, OS&Y, 900LB, Raised Face Flange End, ASTM A216 WCB Body/Bonnet, Trim # 5, Gear Operator with By Pass.

## - Valve Size

NPS	2"	2 1/2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	28"	30"	32"	36"
DN	50	65	80	100	150	200	250	300	350	400	450	500	600	700	750	800	900
Symbol	2	2.5	3	4	6	8	10	12	14	16	18	20	24	28	30	32	36

## - Valve Type

Type	Gate	Globe	Swing Check	Y-Strainer
Symbol	GA	GL	CH	ST

## - Nominal Pressure

Class	150	300	600	900	1500	2500
Symbol	1	3	6	9	15	25
PN	16	25/40	100	150/160	250	420
Symbol	16	25/40	100	150/160	250	420

## - End Type

Type	Raised Face Flange	Ring Joint Flange	Groove Face Flange	Butt Welding End	Socket Welding End	Screwed End
Symbol	R	J	G	B	S	N

## - Body/Bonnet Material

Material	WCB	WC1	WC6	WC9	C5	C12	LCB	LCC	LC2	LC3	CF8	CF8M	CF3	CF3M	CF8C	CN7M
Symbol	CB	C1	C6	C9	C5	C12	LB	LC	L2	L3	F8	8M	F3	3M	8C	7M
Symbol Temperature	°C	-29 to 427	-29 to 468	-29 to 593	-29 to 649	-29 to 649	-46 to 343	-73 to 343	-101 to 343	-254 to 649	-254 to 649	-254 to 427	-254 to 454	-254 to 649	-29 to 649	-29 to 316
	°F	-20 to 800	-20 to 875	-20 to 1100	-20 to 1200	-20 to 1200	-50 to 650	-100 to 650	-150 to 650	-425 to 1200	-425 to 1200	-425 to 800	-425 to 850	-425 to 1200	-20 to 1200	-20 to 600
ASTM	A216	A217				A352				A351						
Standard	150-600#	8	8				2,10,12				2,10,12					
Trim No.	900-2500#	5	5				16				16					

## - Trim Material

Trim Number	1	2	5	8	9	10	12	13	16	17	20
Symbol	1	2	5	8	9	10	12	13	16	17	20
Seat Surface	13Cr	304	HF	HF	Monel	316	HF	Alloy 20	HF	HF	Bronze
Disc Surface	13Cr	304	HF	13Cr	Monel	316	316	Alloy 20	HF	HF	Bronze
Stem	F6	F304	F6	F6	Monel	F316	F316	B473	F316	F347	Bronze
Back Seat Ring	410	304	410	410	Monel	316	316	B473	316	347	Bronze

Note:

1. Trim number 1 to 17 are same as API 600 table 3.
2. HF: Hardfaced with Stellite 6 (Co–Cr–W alloy) or equivalent.
3. B473 : ASTM B473 N08020.

## -Valve Actuator

Type	Handwheel	Spur Gear Type	Bevel Gear Type	Hydraulic Actuator	Electrical Actuator	Gas Over Oil	Pneumatic
Symbol	None	Gs	Gb	H	E	Go	P

## -Special Code

Description	Gate/Globe: OS&Y BB, Swing Check Type 1	Angel Type Globe	Swing Check Type2	Piston Check	Non Rising Stem	Pressure Seal
Symbol	None	A	T	I	N	P

Description	By Pass	Locking device	Stem Protection	Water Seal	Bellows Seal	Extended Bonnet	Reduce Bore	Other
Symbol	B	L	S	W	G	E	R	O

Note: If one valve has two or more special codes, the symbol shall sort by letter.

# CAST STEEL GATE VALVE

## Class 150

Metallum Gate Valve

### Features

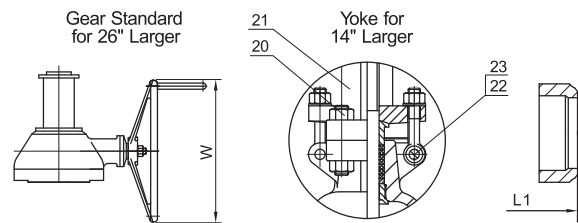
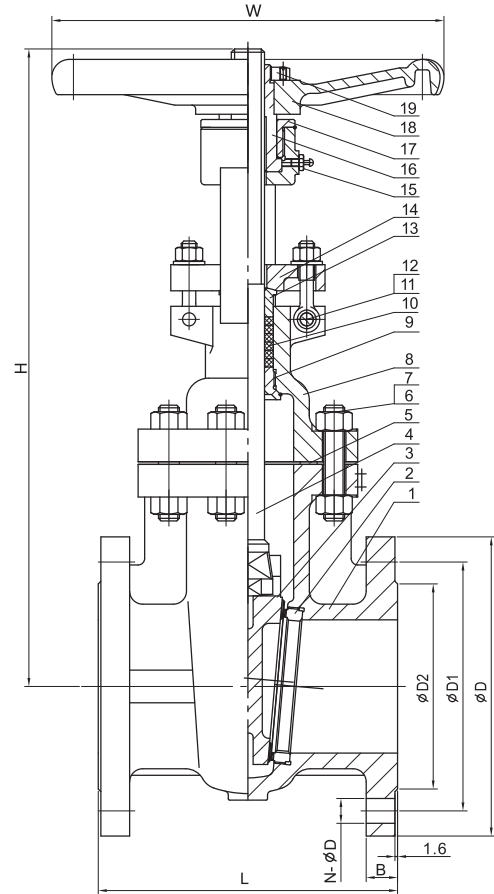
OS & Y, Rising Stem
Bolted Bonnet
Flexible Wedge (2" Solid)
Extended Bonnet for Cryogenic Services
By Pass On Request
Locking Device Optional

### Specifications

Design	ASME B16.34/API 600
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5/B16.47
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

### Standard Materials of Parts

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A105+Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Stem	ASTM A182 GR.F6
5	Gasket	Soft Iron+Graphite
6	Bonnet Bolts	ASTM A193 GR.B7
7	Bonnet Bolt Nuts	ASTM A194 GR.2H
8	Bonnet	ASTM A216 GR.WCB
9	Backseat Bushing	ASTM A276 Type 410
10	Stem Packing	Braided Graphite & Die formed Graphite Ring
11	Eye Bolt Pins	Carbon Steel
12	Gland Eye Bolts	ASTM A307 GR.B
13	Gland	ASTM A276 Type 410
14	Gland Flange	ASTM A216 GR.WCB
15	Grease Nipple	Carbon Steel
16	Stem Nut	ASTM A439 GR.D-2
17	Retaining Nut	Carbon Steel
18	Handwheel	Ductile Iron
19	Handwheel Nut	Carbon Steel
20	Screw	Carbon Steel
21	Yoke	ASTM A216 GR.WCB
22	Yoke Pan Bolt Nuts	ASTM A194 GR.2H
23	Yoke Pan Bolts	ASTM A193 GR.B7



### Dimensions and Weights

SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	26"	28"	30"	32"	36"	40"	42"	48"
L/L1	in	7.00	7.50	8.00	9.00	10.50	11.50	13.00	14.00	15.00	16.00	17.00	18.00	20.00	22.00	24.00	24.00	28.00	28.00	32.00	31.00	42.00
	mm	178	191	203	229	267	292	330	356	381	406	432	457	508	559	610	610	711	711	812.8	787	1067
H	in	13.39	14.37	16.14	19.09	23.43	29.72	35.24	40.94	45.08	52.48	55.91	64.37	73.31	105.51	113.78	122.44	129.13	143.31	165.35	175.39	197.64
	mm	340	365	410	485	595	755	895	1040	1145	1333	1420	1635	1862	2680	2890	3110	3280	3640	4200	4455	5020
W	in	8	8	10	11	12	14	16	18	20	20	24	28	32	21	21	24	24	24	40	32	40
	mm	200	200	250	280	300	360	400	450	500	500	600	700	800	530	530	600	600	600	1000	810	1000
Weight RF	kg	20	23	36	54	82	136	196	299	381	536	608	827	1202	1550	1880	2300	2550	3390	3042	4710	5520

# CAST STEEL GATE VALVE

## Class 300



### Features

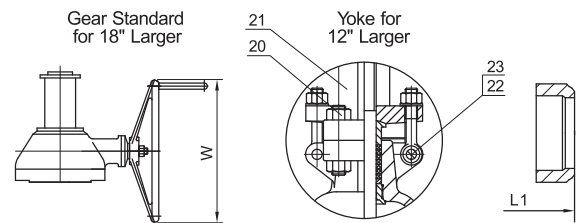
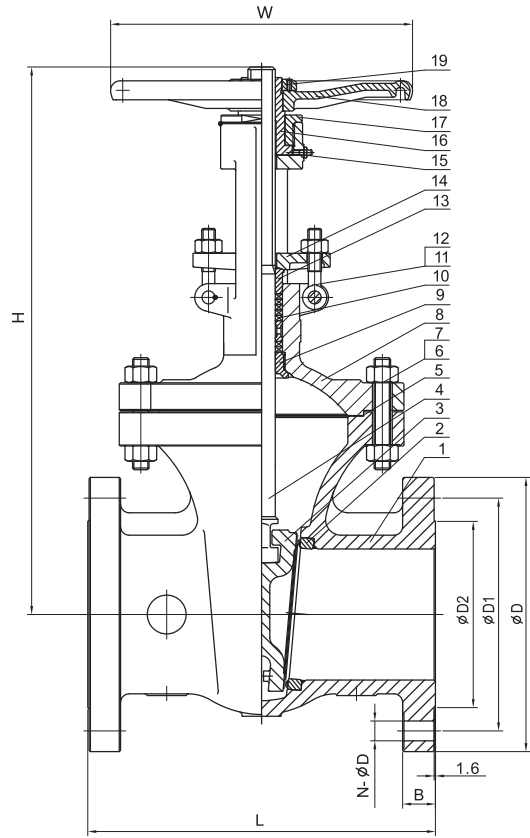
OS & Y, Rising Stem
Bolted Bonnet
Flexible Wedge (2" Solid)
Extended Bonnet for Cryogenic Services
By Pass On Request
Locking Device Optional

### Specifications

Design	ASME B16.34/API 600
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5/B16.47
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

### Standard Materials of Parts

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A105 + Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Stem	ASTM A182 GR.F6
5	Gasket	Soft Iron+Graphite
6	Bonnet Bolt Nuts	ASTM A194 GR.2H
7	Bonnet Bolts	ASTM A193 GR.B7
8	Bonnet	ASTM A216 GR.WCB
9	Backseat Bushing	ASTM A276 Type 410
10	Stem Packing	Braided Graphite & Die formed Graphite Ring
11	Eye Bolt Pins	Carbon Steel
12	Gland Eye Bolts	ASTM A307 GR.B
13	Gland	ASTM A276 Type 410
14	Gland Flange	ASTM A216 GR.WCB
15	Grease Nipple	Carbon Steel
16	Stem Nut	ASTM A439 GR.D-2
17	Retaining Nut	Carbon Steel
18	Handwheel	Ductile Iron
19	Handwheel Nut	Carbon Steel
20	Screw	Carbon Steel
21	Yoke	ASTM A216 GR.WCB
22	Yoke Pan Bolt Nuts	ASTM A194 GR.2H
23	Yoke Pan Bolts	ASTM A193 GR.B7



### Dimensions and Weights

SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	26"	28"	30"	32"	36"
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	650	700	750	800	900
LL1	in	8.50	9.50	11.12	12.00	15.88	16.50	18.00	19.75	30.00	33.00	36.00	39.00	45.00	49.00	53.00	55.00	60.00	68.00
	mm	216	241	283	305	403	419	457	502	762	838	914	991	1143	1245	1346	1397	1524	1727
H	in	14.33	15.16	18.11	21.26	25.55	31.42	37.01	44.45	47.05	52.76	78.74	85.63	103.15	112.20	121.26	125.20	129.92	148.03
	mm	364	385	460	540	649	798	940	1129	1195	1340	2000	2175	2620	2850	3080	3180	3300	3760
W	in	8	8	10	11	14	16	18	20	24	20	18	21	21	24	24	24	24	24
	mm	200	200	250	280	350	400	450	500	600	500	460	530	530	600	600	600	600	600
Weight RF	kg	26	36	55	67	147	228	332	512	715	850	1224	1400	2385	3000	3300	3550	4400	6050

# CAST STEEL GATE VALVE

## Class 600

Metallum Gate Valve

### Features

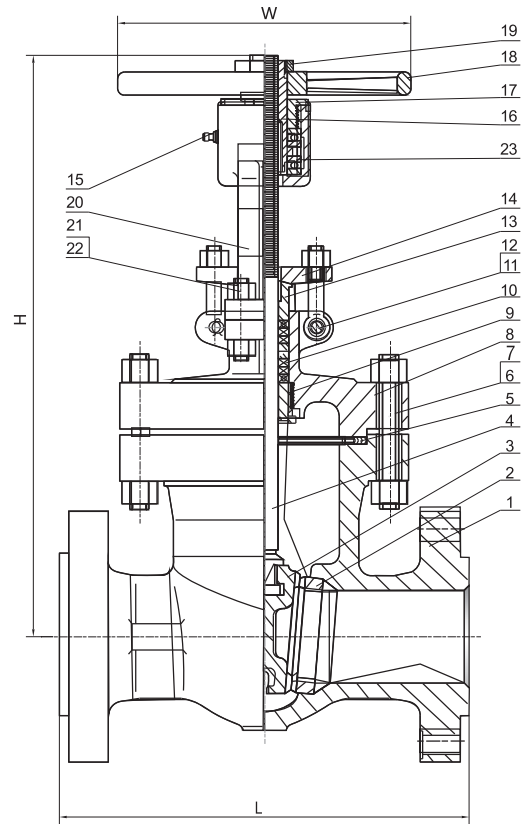
OS & Y, Rising Stem
Bolted Bonnet
Flexible Wedge (2" Solid)
Extended Bonnet for Cryogenic Services
By Pass On Request
Locking Device Optional

### Specifications

Design	ASME B16.34/API 600
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

### Standard Materials of Parts

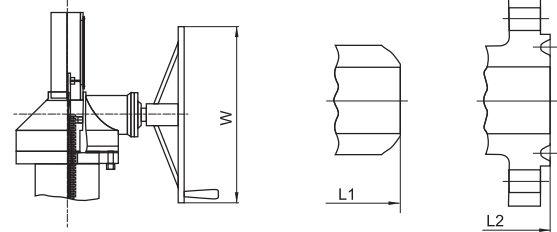
ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 GR.WCB
2	Seat Ring	ASTM A105 + Stellite Faced
3	Disc	ASTM A216 GR.WCB+13Cr Faced
4	Stem	ASTM A182 GR.F6
5	Gasket, Ring Joint	SS316+Graphite
6	Bonnet Bolts	ASTM A193 GR.B7
7	Bonnet Bolt Nuts	ASTM A194 GR.2H
8	Bonnet	ASTM A216 GR.WCB
9	Backseat Bushing	ASTM A276 Type 410
10	Stem Packing	Braided Graphite & Die formed Graphite Ring
11	Eye Bolt Pins	Carbon Steel
12	Gland Eye Bolts	ASTM A307 GR.B
13	Gland	ASTM A276 Type 410
14	Gland Flange	ASTM A216 GR.WCB
15	Grease Nipple	Carbon Steel
16	Stem Nut	ASTM A439 GR.D-2
17	Retaining Nut	Carbon Steel
18	Handwheel	Ductile Iron
19	Handwheel Nut	Carbon Steel
20	Yoke	ASTM A216 GR.WCB
21	Yoke Pan Bolt Nuts	ASTM A194 GR.2H
22	Yoke Pan Bolts	ASTM A193 GR.B7
23	Bearing	Steel



Gear operation for 10 and larger

BW End

RTJ End



### Dimensions and Weights

SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
LL1	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	55.00
	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397
L2	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38
	mm	295	333	359	435	562	663	791	841	892	994	1095	1200	1407
H	in	14.96	16.54	19.69	22.64	29.53	33.46	51.18	64.96	68.90	74.80	79.53	85.51	104.33
	mm	380	420	500	575	750	850	1300	1650	1750	1900	2020	2172	2650
W	in	8	10	11	12	18	20	18	18	21	21	24	24	24
	mm	200	250	280	300	450	500	460	460	530	530	600	600	600
Weight RF	kg	37	50	82	142	245	423	657	893	1318	1720	1980	2460	3650

# CAST STEEL GATE VALVE

## Class 900-2500



### Features

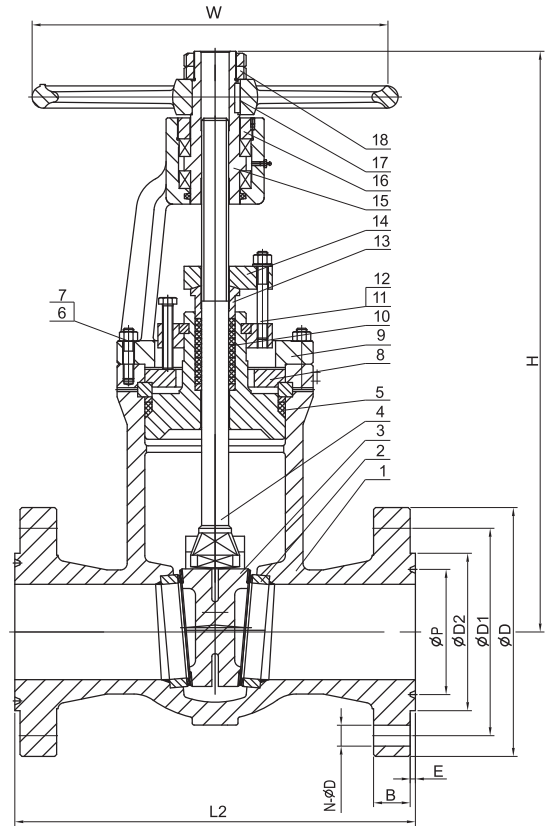
OS & Y, Rising Stem
Bolted Bonnet
Flexible Wedge (2" Solid)
Extended Bonnet for Cryogenic Services
By Pass On Request
Locking Device Optional

### Specifications

Design	ASME B16.34/API 600
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

### Standard Materials of Parts

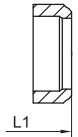
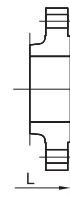
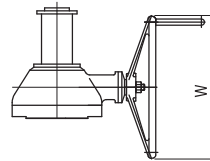
ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 WCB
2	Seat	ASTM A105+F6
3	Wedge	ASTM A216 WCB+F6
4	Stem	ASTM A182 F6
5	Gasket	ASTM A182 F304
6	Stud	ASTM A193 B7
7	Nut	ASTM A194 2H
8	Retained Ring	ASTM A105
9	Bonnet	ASTM A216 WCB
10	Packing	Flexible graphite
11	Eyelet bolt	ASTM A193 B7
12	Nut	ASTM A194 2H
13	Gland	ASTM A105
14	Gland Flange	ASTM A216 WCB
15	Stem nut	ASTM A439 GR.D2
16	Stem Nut Retainer	ASTM A105
17	Handwheel	Malleable Iron
18	Handwheel nut	ASTM A194 2H



Gear Standard for 8" Larger

RF End

BW End



Dimensions and Weights										CLASS 900
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	
	mm	50	65	80	100	150	200	250	300	
L/L1	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00	
	mm	368	419	381	457	610	737	838	965	
L2	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	
	mm	371	422	384	460	613	740	841	968	
H	in	20.00	18.00	20.00	22.64	31.30	40.00	44.49	60.00	
	mm	500	450	505	575	795	1000	1130	1520	
W	in	11	11	12	14	20	18	21	21	
	mm	280	280	300	350	500	460	530	530	
Weight RF	kg	70	110	140	178	358	627	1100	1310	

Dimensions and Weights										CLASS 1500
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	
	mm	50	65	80	100	150	200	250	300	
L/L1	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	
	mm	368	419	470	546	705	832	991	1130	
L2	in	14.62	16.62	18.62	21.62	28.00	33.13	39.38	45.12	
	mm	371	422	473	549	711	842	1000	1146	
H	in	16.93	19.29	21.26	25.59	32.87	46.46	60.04	63.78	
	mm	430	490	540	650	835	1180	1525	1620	
W	in	11	12	14	16	20	21	24	24	
	mm	280	300	350	400	500	530	600	600	
Weight RF	kg	70	110	175	270	520	915	1750	2120	

Dimensions and Weights										CLASS 2500
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	
	mm	50	65	80	100	150	200	250	300	
L/L1	in	17.75	20.00	22.75	26.50	36.00	40.25	50.00	56.00	
	mm	451	508	578	673	914	1022	1270	1422	
L2	in	17.87	20.25	23.00	26.88	36.50	40.87	50.88	56.88	
	mm	454	514	584	683	927	1038	1292	1445	
H	in	19.29	22.83	24.80	28.54	40.94	45.28	57.48	65.35	
	mm	490	580	630	725	1040	1150	1460	1660	
W	in	11	12	14	16	24	18	24	24	
	mm	280	300	350	400	600	460	600	600	
Weight RF	kg	100	150	245	390	780	1355	2565	3250	

# CAST STEEL GLOBE VALVE

## Class 150

Metallum Globe Valve

### Features

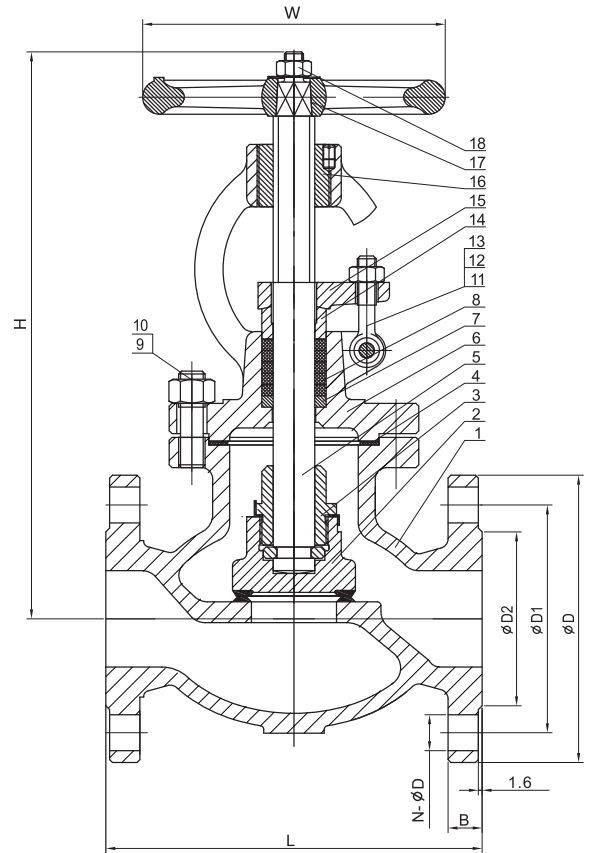
OS & Y, Rising Stem
Bolted Bonnet
Conic Disc
Extended Bonnet for Cryogenic Services
Impact Handwheel Optional
Gear Optional

### Specifications

Design	ASME B16.34/BS 1873
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

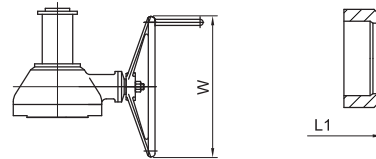
### Standard Materials of Parts

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 WCB+F6
2	Disc	ASTM A105+F6
3	Disc Nut	ASTM A182 F6
4	Gasket	S.S+Flexible Graphite
5	Stem	ASTM A182 F6
6	Bonnet	ASTM A216 WCB
7	Packing Washer	S.S 410
8	Packing	Flexible Graphite
9	Nut	ASTM A193 2H
10	Bolt	ASTM A194 B7
11	Eyelet bolt	ASTM A194 B7
12	Nut	ASTM A193 2H
13	Pin	ASTM A194 B7
14	Gland	ASTM A105
15	Gland Flange	ASTM A216 WCB
16	Stem nut	ASTM A439 GR.D2
17	Handwheel	Malleable Iron
18	Handwheel nut	ASTM A193 2H



Gear Standard for 16" Larger

BW End



### Dimensions and Weights

SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"
	mm	50	65	80	100	150	200	250	300	350	400	450
L/L1	in	8.00	8.50	9.50	11.50	16.00	19.50	24.50	27.50	31.00	36.00	38.50
	mm	203	216	241	292	406	495	622	698	787	914	978
H	in	12.91	14.17	14.69	15.75	20.79	26.77	30.51	34.65	38.58	47.05	51.18
	mm	328	360	373	400	528	680	775	880	980	1195	1300
W	in	8	10	11	12	14	16	18	20	25	24	24
	mm	200	250	280	300	350	400	450	500	640	610	610
Weight RF	kg	18	26	43	54	95	160	299	373	610	880	1150



# CAST STEEL GLOBE VALVE

## Class 300



### Features

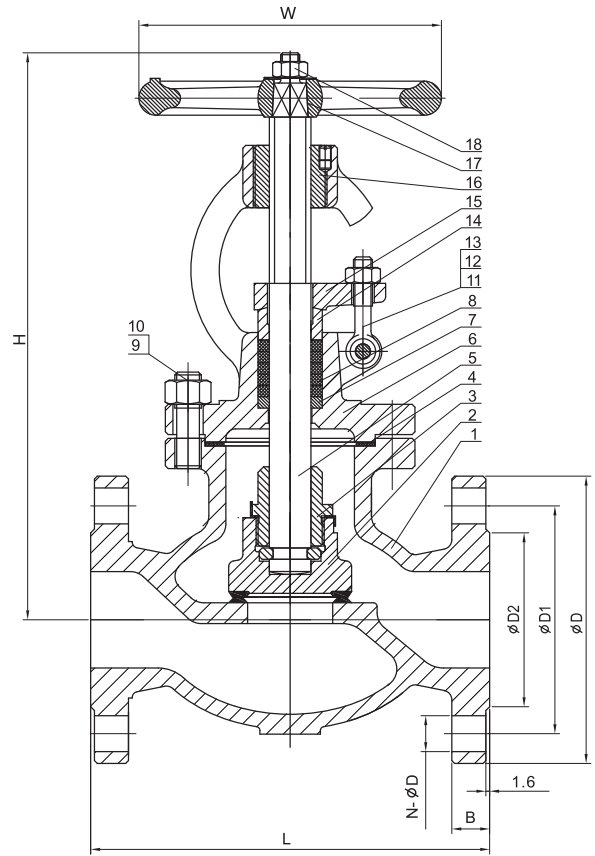
OS & Y, Rising Stem
Bolted Bonnet
Conic Disc
Extended Bonnet for Cryogenic Services
Impact Handwheel Optional
Gear Optional

### Specifications

Design	ASME B16.34/BS 1873
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

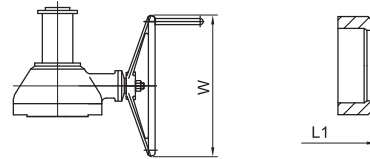
### Standard Materials of Parts

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 WCB+F6
2	Disc	ASTM A105+F6
3	Disc Nut	ASTM A182 F6
4	Gasket	S.S+Flexible Graphite
5	Stem	ASTM A182 F6
6	Bonnet	ASTM A216 WCB
7	Packing Washer	S.S 410
8	Packing	Flexible Graphite
9	Nut	ASTM A193 2H
10	Bolt	ASTM A194 B7
11	Eyelet bolt	ASTM A194 B7
12	Nut	ASTM A193 2H
13	Pin	ASTM A194 B7
14	Gland	ASTM A105
15	Gland Flange	ASTM A216 WCB
16	Stem nut	ASTM A439 GR.D2
17	Handwheel	Malleable Iron
18	Handwheel nut	ASTM A193 2H



Gear Standard for 14" Larger

BW End



Dimensions and Weights										
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"
	mm	50	65	80	100	150	200	250	300	350
L/L1	in	10.50	11.50	12.50	14.00	17.50	22.00	24.50	28.00	33.00
	mm	267	292	318	356	445	559	622	711	838
H	in	13.62	15.35	15.87	18.66	25.04	34.25	37.40	40.55	45.47
	mm	346	390	403	474	636	870	950	1030	1155
W	in	8	10	11	14	18	22	24	28	24
	mm	200	250	280	350	450	550	600	700	600
Weight RF	kg	29	44	59	87	162	281	355	575	880

# CAST STEEL GLOBE VALVE

## Class 600

Metallum Globe Valve

### Features

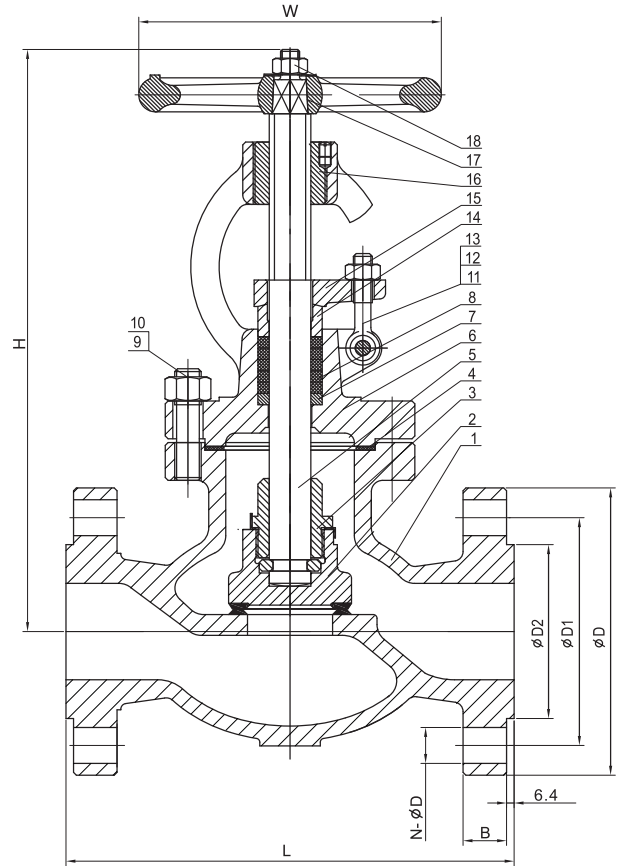
OS & Y, Rising Stem
Bolted Bonnet
Conic Disc
Extended Bonnet for Cryogenic Services
Impact Handwheel Optional
Gear Optional

### Specifications

Design	ASME B16.34/BS 1873
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

### Standard Materials of Parts

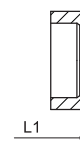
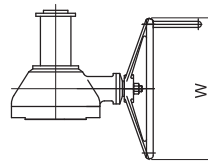
ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 WCB+F6
2	Disc	ASTM A105+F6
3	Disc Nut	ASTM A182 F6
4	Gasket	S.S+Flexible Graphite
5	Stem	ASTM A182 F6
6	Bonnet	ASTM A216 WCB
7	Packing Washer	SS410
8	Packing	Flexible Graphite
9	Nut	ASTM A193 2H
10	Bolt	ASTM A194 B7
11	Eyelet bolt	ASTM A194 B7
12	Nut	ASTM A193 2H
13	Pin	ASTM A194 B7
14	Gland	ASTM A105
15	Gland Flange	ASTM A216 WCB
16	Stem nut	ASTM A439 GR.D2
17	Handwheel	Malleable Iron
18	Handwheel nut	ASTM A193 2H



Gear Standard for 10" Larger

BW End

RTJ End



### Dimensions and Weights

SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"
	mm	50	65	80	100	150	200	250	300
L/L1	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00
	mm	292	330	356	432	559	660	787	838
L2	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12
	mm	295	333	359	435	562	663	791	841
H	in	14.17	16.14	18.31	21.46	30.91	36.61	47.99	61.81
	mm	360	410	465	545	785	930	1219	1570
W	in	10	11	11	12	22	26	24	24
	mm	250	280	280	400	550	650	600	600
Weight RF	kg	35	42	66	117	263	469	875	1280

# CAST STEEL GLOBE VALVE

## Class 900-2500



### Features

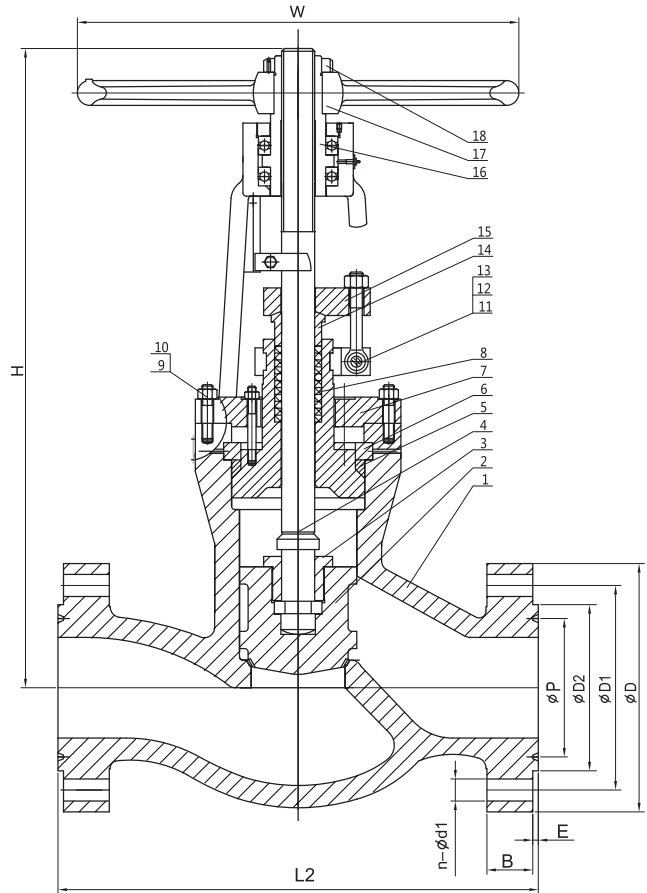
OS & Y, Rising Stem
Bolted Bonnet
Conic Disc
Extended Bonnet for Cryogenic Services
Impact Handwheel Optional
Gear Optional

### Specifications

Design	ASME B16.34/BS 1873
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

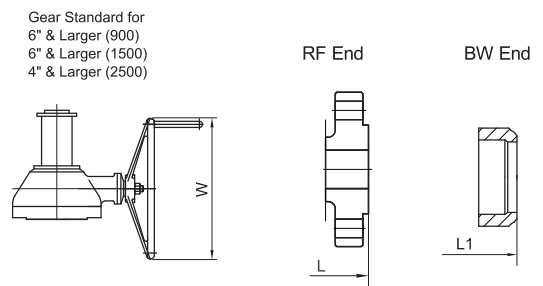
### Standard Materials of Parts

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 WCB+F6
2	Disc	ASTM A105+F6
3	Disc Nut	ASTM A182 F6
4	Stem	ASTM A182 F6
5	Gasket	ASTM A182 F304
6	Separate Ring	ASTM A105
7	Bonnet	ASTM A216 WCB
8	Packing	Flexible Graphite
9	Nut	ASTM A193 2H
10	Bolt	ASTM A194 B7
11	Eyelet bolt	C.SASTM A194 B7
12	Nut	ASTM A193 2H
13	Pin	ASTM A194 B7
14	Gland	ASTM A105
15	Gland Flange	ASTM A216 WCB
16	Stem nut	ASTM A439 GR.D2
17	Handwheel	Malleable Iron
18	Handwheel nut	ASTM A193 2H



Dimensions and Weights		CLASS 900					
SIZE	in	2"	2.5"	3"	4"	6"	8"
L/L1	in	14.50	16.50	15.00	18.00	24.00	29.00
	mm	368	419	381	457	610	737
L2	in	14.62	16.62	15.12	18.12	24.12	29.12
	mm	371	422	384	460	613	740
H	in	18.90	20.47	22.20	26.97	39.96	53.15
	mm	480	520	564	685	1015	1350
W	in	14	14	16	18	18	24
	mm	350	350	400	450	460	610
Weight RF	kg	62	68	113	179	480	948

Dimensions and Weights		CLASS 1500					
SIZE	in	2"	2.5"	3"	4"	6"	8"
L/L1	in	14.50	16.50	18.50	21.50	27.75	32.75
	mm	368	419	470	546	705	832
L2	in	14.62	16.62	18.62	21.62	28.00	33.13
	mm	371	422	473	549	711	842
H	in	19.88	21.65	24.80	31.81	40.16	48.43
	mm	505	550	630	808	1020	1230
W	in	14	16	18	18	21	21
	mm	350	400	450	460	530	530
Weight RF	kg	98	125	165	336	1035	1280



Dimensions and Weights		CLASS 2500					
SIZE	in	2"	2.5"	3"	4"	6"	8"
L/L1	in	17.75	20.00	22.75	26.50	36.00	40.25
	mm	451	508	578	673	914	1022
L2	in	17.87	20.25	23.00	26.88	36.50	40.87
	mm	454	514	584	683	927	1038
H	in	24.41	30.63	34.84	51.10	53.74	83.46
	mm	620	778	885	1298	1365	2120
W	in	16	20	22	24	24	24
	mm	400	500	560	610	610	610
Weight RF	kg	157	215	252	498	1565	2095

# CAST STEEL SWING CHECK VALVE

## Class 150

Metallum Check Valve

### Features

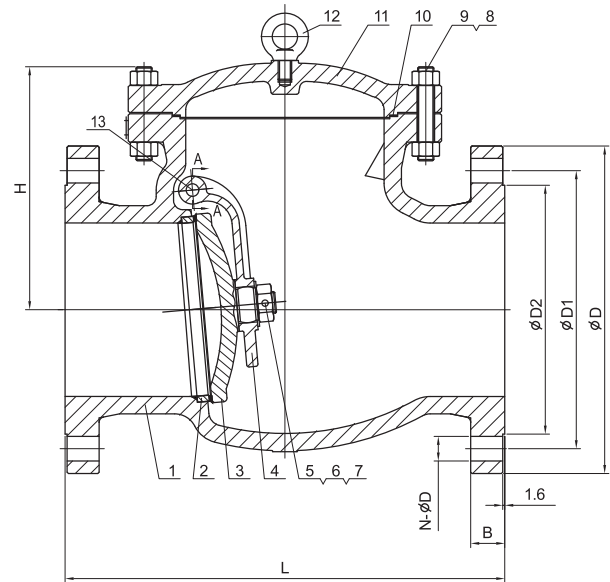
Bolted Cover
Swing Type Disc
Type 1 Standard 2"-10"
Type 2 Standard 12"-30"
6" & Larger With Eye Bolt
By Pass On Request
Lever & Weight Optional

### Specifications

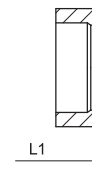
Design	ASME B16.34/BS 1868
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

### Standard Materials of Parts

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 WCB
2	Seat	ASTM A182 F6
3	Disc	ASTM A216 WCB+F6
4	Hinge	ASTM A216 WCB
5	Hinge pin	ASTM A182 F6
6	Disc Nut	ASTM A194 2H
7	Nut Gasket	ASTM A182 F6
8	Nut	ASTM A193 2H
9	Bolt	ASTM A193 B7
10	Gasket	Flexible graphite+SS
11	Bonnet	ASTM A216 WCB
12	Eyebolt	ASTM A193 B7
13	Pin	ASTM A182 F6



BW End



### Dimensions and Weights

SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600	750
L/L1	in	8.00	8.50	9.50	11.50	14.00	19.50	24.50	27.50	31.00	34.00	38.50	38.50	51.00	60.00
	mm	203	216	241	292	356	495	622	699	787	864	978	978	1295	1524
H	in	5.43	6.30	6.77	9.65	11.02	13.66	15.35	17.13	18.31	20.67	22.83	24.21	27.95	38.58
	mm	138	160	172	245	280	347	390	435	465	525	580	615	710	980
Weight RF	kg	14	19	24	43	72	124	196	330	417	503	630	791	960	1950

# CAST STEEL SWING CHECK VALVE

## Class 300



### Features

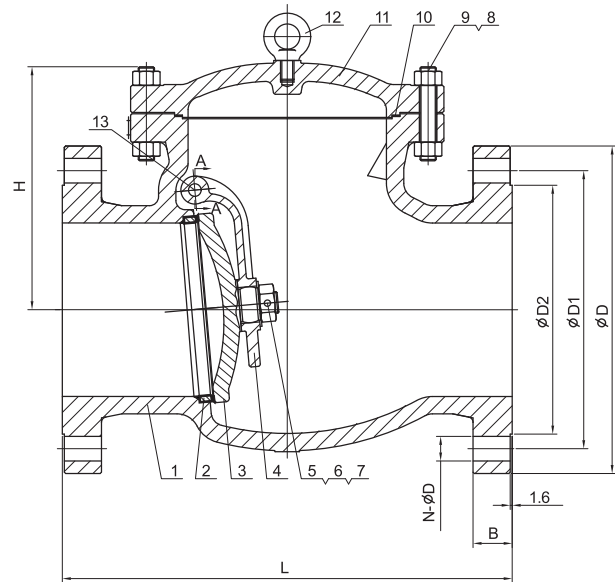
Bolted Cover
Swing Type Disc
Type 1 Standard 2"-8"
Type 2 Standard 10"-24"
3" & Larger With Eye Bolt
By Pass On Request
Lever & Weight Optional

### Specifications

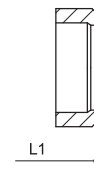
Design	ASME B16.34/BS 1868
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

### Standard Materials of Parts

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 WCB
2	Seat	ASTM A182 F6
3	Disc	ASTM A216 WCB+F6
4	Hinge	ASTM A216 WCB
5	Hinge pin	ASTM A182 F6
6	Disc Nut	ASTM A194 2H
7	Nut Gasket	ASTM A182 F6
8	Nut	ASTM A193 2H
9	Bolt	ASTM A193 B7
10	Gasket	Flexible graphite+SS
11	Bonnet	ASTM A216 WCB
12	Eyebolt	ASTM A193 B7
13	Pin	ASTM A182 F6



BW End



Dimensions and Weights														
SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L/L1	in	10.50	11.50	12.50	14.00	17.50	21.00	24.50	28.00	33.00	34.00	38.50	40.00	53.00
	mm	267	292	318	356	445	533	622	711	838	864	978	1016	1346
H	in	5.91	7.01	8.78	10.04	12.20	13.98	17.52	19.09	20.28	22.05	24.41	26.97	29.92
	mm	150	178	223	255	310	355	445	485	515	560	620	685	760
Weight RF	kg	22	35	44	57	120	194	290	450	587	761	1030	1191	1892

# CAST STEEL SWING CHECK VALVE

## Class 600

Metallum Check Valve

### Features

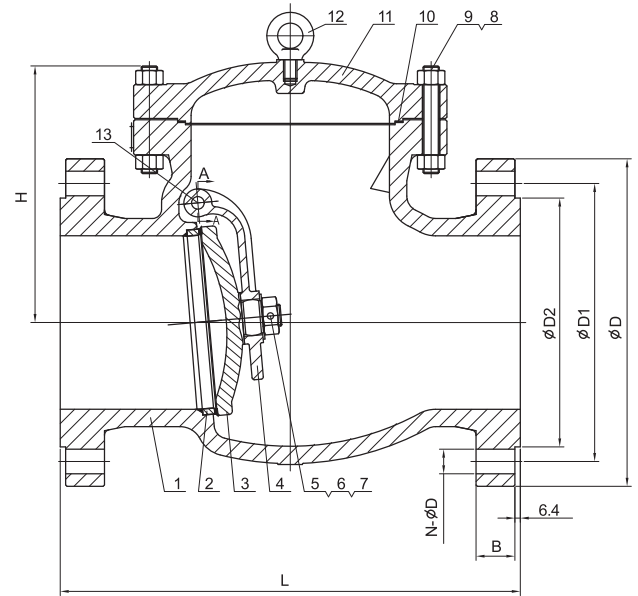
Bolted Cover
Swing Type Disc
Type 1 Standard 2"-6"
Type 2 Standard 8"-24"
With Eye Bolt
By Pass On Request
Lever & Weight Optional

### Specifications

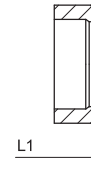
Design	ASME B16.34/BS 1868
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

### Standard Materials of Parts

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 WCB
2	Seat	ASTM A182 F6
3	Disc	ASTM A216 WCB+F6
4	Hinge	ASTM A216 WCB
5	Hinge pin	ASTM A182 F6
6	Disc Nut	ASTM A194 2H
7	Nut Gasket	ASTM A182 F6
8	Nut	ASTM A193 2H
9	Bolt	ASTM A193 B7
10	Gasket	Flexible graphite+SS
11	Bonnet	ASTM A216 WCB
12	Eyebolt	ASTM A193 B7
13	Pin	ASTM A182 F6



BW End



RTJ End



### Dimensions and Weights

SIZE	in	2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
	mm	50	65	80	100	150	200	250	300	350	400	450	500	600
L/L1	in	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	55.00
	mm	292	330	356	432	559	660	787	838	889	991	1092	1194	1397
L2	in	11.62	13.12	14.12	17.12	22.12	26.12	31.12	33.12	35.12	39.12	43.12	47.25	55.38
	mm	295	333	359	435	562	663	790	841	892	994	1095	1200	1407
H	in	6.69	7.01	8.86	10.83	15.16	17.52	19.69	22.44	23.23	25.59	30.63	38.19	43.31
	mm	170	178	225	275	385	445	500	570	590	650	778	970	1100
Weight RF	kg	26	35	59	99	208	357	561	752	889	1285	1800	2150	3200

# CAST STEEL SWING CHECK VALVE

## Class 900-2500



### Features

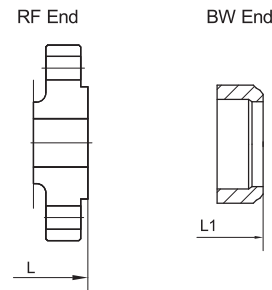
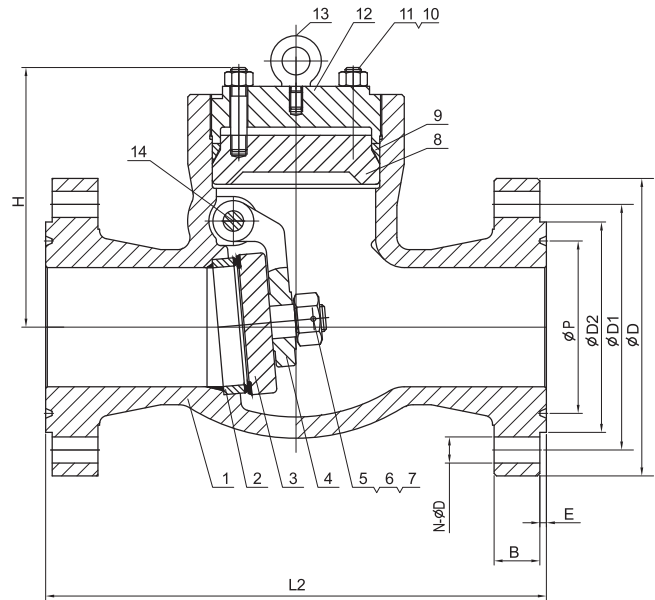
Bolted Cover
Swing Type Disc
Type 1 Optional
Type 2 Standard
With Eye Bolt
By Pass On Request
Lever & Weight Optional

### Specifications

Design	ASME B16.34/BS 1868
Face to Face	ASME B16.10
End to End	ASME B16.10
End Flange	ASME B16.5
BW End	ASME B16.25
Test	API 598
Special	NACE MR-01-75

### Standard Materials of Parts

ITEM	PART NAME	MATERIAL
1	Body	ASTM A216 WCB
2	Seat	ASTM A182 F6
3	Disc	ASTM A216 WCB+F6
4	Hinge	ASTM A216 WCB
5	Hinge pin	ASTM A182 F6
6	Disc Nut	ASTM A194 2H
7	Nut Gasket	ASTM A182 F6
8	Bonnet	ASTM A216 WCB
9	Gasket	ASTM A182 F304
10	Nut	ASTM A193 2H
11	Bolt	ASTM A193 B7
12	Cover	ASTM A216 WCB
13	Eyebolt	ASTM A193 B7
14	Pin	ASTM A182 F6



Dimensions and Weights		CLASS 900								
SIZE		2"	2.5"	3"	4"	6"	8"	10"	12"	
L/L1	in	14.50	16.50	15.00	18.00	24.00	29.00	33.00	38.00	
	mm	368	419	381	457	610	737	838	965	
L2	in	14.62	16.62	15.12	18.12	24.12	29.12	33.12	38.12	
	mm	371	422	384	460	613	740	841	968	
H	in	7.20	8.66	11.02	12.40	15.35	18.11	21.26	25.20	
	mm	183	220	280	315	390	460	540	640	
Weight RF	kg	61	75	102	134	354	514	754	818	

Dimensions and Weights		CLASS 1500								
SIZE		2"	2.5"	3"	4"	6"	8"	10"	12"	
L/L1	in	14.50	16.50	18.50	21.50	27.75	32.75	39.00	44.50	
	mm	368	419	470	546	705	832	991	1130	
L2	in	14.62	16.62	18.62	21.62	28.00	33.13	39.38	45.12	
	mm	371	422	473	549	711	841	1000	1146	
H	in	10.43	9.45	11.93	13.39	16.93	19.69	23.82	30.91	
	mm	265	240	303	340	430	500	605	785	
Weight RF	kg	67	78	188	210	473	634	1140	1680	

Dimensions and Weights		CLASS 2500								
SIZE		2"	2.5"	3"	4"	6"	8"	10"	12"	
L/L1	in	17.75	20.00	22.75	26.50	36.00	40.25	50.00	56.00	
	mm	451	508	578	673	914	1022	1270	1422	
L2	in	17.87	20.25	23.00	26.88	36.50	40.87	50.88	56.88	
	mm	454	514	584	683	927	1038	1292	1445	
H	in	11.22	12.01	13.78	16.14	21.26	24.41	27.76	33.66	
	mm	285	305	350	410	540	620	705	855	
Weight RF	kg	93	100	216	410	868	970	1600	1850	

# MATERIALS OF PARTS

## Cast Steel Gate Valve Standard Materials of Parts

ITEM	PART NAME	CARBON STEEL			ALLOY STEEL			STAINLESS STEEL					
1	Body	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
2	Seat Ring	A105	A350 LF2	A350 LF2	A182 F1	A182 F11	A182 F5	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321	
3	Disc	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
4	Stem	A182 F6	A182 F304	A182 F304	A182 F6	A182 F6	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321	
5	Gasket	CL150-300	Soft Iron +Graphite			304+Graphite			304+Graphite			316+Graphite	
		CL600-2500 Ring Joint	Soft Iron			304			304			316	
6	Bonnet	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
7	Bonnet Bolt Nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8					
8	Bonnet Bolts	A193 B7	A320 L7	A320 L7	A193 B7	A193 B16	A193 B16	A193 B8					
9	Backseat Bushing	A276 410	A276 304	A276 304	A276 410			A276 304	A276 316	A276 304L	A276 316L	A276 321	
10	Stem Packing	Braided Graphite & Die formed Graphite Ring			Braided Graphite & Die formed Graphite Ring			Braided Graphite & Die formed Graphite Ring					
11	Eye Bolt Pins	Carbon Steel			A276 410			Stainless Steel					
12	Gland Eye Bolts	A307 B	A320 L7	A320 L7	A193 B7	A193 B16	A193 B16	A193 B8					
13	Gland	A276 410	A276 304	A276 304	A276 410			A276 304	A276 316	A276 304L	A276 316L	A276 321	
14	Gland Flange	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
15	Eye Bolt Nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8	A194 8	A194 8	A194 8	A194 8	
16	Grease Nipple	Carbon Steel			Carbon Steel			Stainless Steel					
17	Stem Nut	A439 D-2			A439 D-2			A439 D-2					
18	Retaining Nut	Carbon Steel			Carbon Steel			Carbon Steel					
19	Handwheel	Ductile Iron			Ductile Iron			Ductile Iron					
20	Handwheel Nut	Carbon Steel			Carbon Steel			Stainless Steel					
21	Screw	Carbon Steel			Carbon Steel			Stainless Steel					
22	Yoke	A216 WCB	A352 LCB	A352 LCC	A216 WCB	A216 WCB	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
23	Yoke Pan Bolt Nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8					
24	Yoke Pan Bolts	A193 B7	A320 L7	A320 L7	A193 B7	A193 B16	A193 B16	A193 B8					
25	Bearing	Steel			Steel			Steel					
26	Lantern Ring On Request	A276 410	A276 304	A276 304	A276 410			A276 304	A276 316	A276 304L	A276 316L	A276 321	

Note: Seating surface and trim materials see P2

## Cast Steel Globe Valve Standard Materials of Parts

ITEM	PART NAME	CARBON STEEL			ALLOY STEEL			STAINLESS STEEL					
1	Body	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
2	Seat Ring	A105	A350 LF2	A350 LF2	A182 F1	A182 F11	A182 F5	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321	
3	Disc	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
4	Disc Thrust Plate	A276 420	A276 304	A276 304	A276 420			A276 304	A276 316	A276 304L	A276 316L	A276 321	
5	Disc Nut	A276 410	A276 304	A276 304	A276 410			A276 304	A276 316	A276 304L	A276 316L	A276 321	
6	Stem	A182 F6	A182 F304	A182 F304	A182 F6	A182 F6	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321	
7	Bonnet Bolt Nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8					
8	Bonnet Bolts	A193 B7	A320 L7	A320 L7	A193 B7	A193 B16	A193 B16	A193 B8					
9	Gasket	CL150-300	Soft Iron +Graphite			304+Graphite			304+Graphite			316+Graphite	
		CL600-2500 Ring Joint	Soft Iron			304			304			316	
10	Backseat Bushing	A276 410	A276 304	A276 304	A276 410			A276 304	A276 316	A276 304L	A276 316L	A276 321	
11	Stem Packing	Braided Graphite & Die formed Graphite Ring			Braided Graphite & Die formed Graphite Ring			Braided Graphite & Die formed Graphite Ring					
12	Bonnet	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
13	Eye Bolt Pins	A276 410	A276 304	A276 304	A276 410			Stainless Steel					
14	Gland	A276 410	A276 304	A276 304	A276 410			A276 304	A276 316	A276 304L	A276 316L	A276 321	
15	Gland Flange	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
16	Gland Eye Bolts	A307 B	A320 L7	A320 L7	A193 B7	A193 B16	A193 B16	A193 B8					
17	Eye Bolt Nuts	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8					
18	Yoke Bush	A439 D-2			A439 D-2			A439 D-2					
19	Screw	Carbon Steel			Carbon Steel			Stainless Steel					
20	Handwheel	Ductile Iron			Ductile Iron			Ductile Iron					
21	Handwheel Nut	A194 2H			A194 2H			Stainless Steel					
22	Washer	Carbon Steel			Carbon Steel			Stainless Steel					
23	Lantern Ring On Request	A276 410	A276 304	A276 304	A276 410			A276 304	A276 316	A276 304L	A276 316L	A276 321	

Note: Seating surface and trim materials see P2

## Cast Steel Swing Check Valve Standard Materials of Parts

ITEM	PART NAME	CARBON STEEL			ALLOY STEEL			STAINLESS STEEL					
1	Body	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
2	Seat Ring	A105	A350 LF2	A350 LF2	A182 F1	A182 F11	A182 F5	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321	
3	Disc	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
4	Disc Washer	A276 410	A276 304	A276 304	A276 410			A276 316					
5	Disc Nut Pin	Stainless Steel			Stainless Steel			316					
6	Disc Nut	Stainless Steel			Stainless Steel			316					
7	Hinge	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
8	Hinge Pin	A182 F6	A182 F304	A182 F304	A182 F6	A182 F6	A182 F6	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321	
9	Bearing Bracket	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
10	Spring Washer	Carbon Steel			Carbon Steel			Stainless Steel					
11	Hex, Bolt	A193 B7	A320 L7	A320 L7	A193 B7	A193 B16	A193 B16	A193 B8					
12	Gasket	CL150-300	Soft Iron +Graphite			304+Graphite			304+Graphite			316+Graphite	
		CL600-2500 Ring Joint	Soft Iron			304			304			316	
13	Cover Bolt	A193 B7	A320 L7	A320 L7	A193 B7	A193 B16	A193 B16	A193 B8					
14	Cover Bolt Nut	A194 2H	A194 4	A194 4	A194 2H	A194 4	A194 4	A194 8					
15	Cover	A216 WCB	A352 LCB	A352 LCC	A217 WC1	A217 WC6	A217 C5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M	A351 CF8C	
16	Eye Bolt	Carbon Steel			Stainless Steel			Stainless Steel					
17	Pulg	A105	A350 LF2	A350 LF2	A182 F1	A182 F11	A182 F5	A182 F304	A182 F316	A182 F304L	A182 F316L	A182 F321	

Note: Seating surface and trim materials see P2



# STEM DATA & OPERATION TORQUES



## -Gate Valve

CLASS	ITEM	VALVE SIZE																				
		2"	2.5"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	26"	28"	30"	32"	36"	40"	42"	48"
150	Stem Thread O.D.	3/4"	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 5/8"	1 3/4"	1 7/8"	2"	2 1/4"	2 3/8"	2 1/2"	2 3/4"	2 3/4"	3"	3 1/4"	3 3/8"	3 3/4"
	Thread Per Inch	6	6	5	5	5	4	4	4	3	3	3	3	3	3	3	3	3	2	2	2	2
	Pitch ( in )	0.167	0.167	0.5	0.2	0.2	0.25	0.25	0.25	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.5	0.5	0.5	0.5
	Turns to Open	16	19	18	24	34	36	44	52	44	53	58	64	75	81	88	94	99	74	84	88	98
	Touque (N.m)	16	18	24	38	76	111	182	269	325	435	565	748	1256	1411	1587	1935	2127	3239	4193	4802	6480
300	Stem Thread O.D.	3/4"	3/4"	7/8"	1"	1 1/4"	1 3/8"	1 1/2"	1 5/8"	1 3/4"	1 7/8"	2"	2 1/8"	2 1/2"	2 3/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"
	Thread Per Inch	6	6	5	5	4	4	4	3	3	3	3	3	3	3	2	2	2	2	2	2	2
	Pitch ( in )	0.167	0.167	0.2	0.2	0.25	0.25	0.25	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.5	0.5	0.5	0.5	0.5	0.5
	Turns to Open	17	19	18	24	26	36	44	40	45	53	58	64	76	80	88	64	68	76	84	88	98
	Touque (N.m)	23	26	35	55	159	291	458	661	810	1088	1430	1778	2823	3580	4115	5866	6620	8410			
600	Stem Thread O.D.	3/4"	7/8"	1"	1 1/8"	1 1/2"	1 5/8"	1 7/8"	2"	2 1/4"	2 3/8"	2 1/2"	2 3/4"	3"								
	Thread Per Inch	6	5	5	5	4	3	3	3	3	3	3	3	2								
	Pitch ( in )	0.167	0.2	0.2	0.2	0.25	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.5								
	Turns to Open	17	16	18	24	27	27	33	40	45	53	58	64	51								
	Touque (N.m)	35	47	70	122	406	641	1023	1508	2098	2816	3038	3981	6896								
900	Stem Thread O.D.	1"	1 1/8"	1 1/8"	1 1/4"	1 5/8"	1 7/8"	2 1/8"	2 1/4"	2 3/8"	2 1/2"											
	Thread Per Inch	5	5	5	4	3	3	3	3	3	3											
	Pitch ( in )	0.2	0.2	0.2	0.25	0.333	0.333	0.333	0.333	0.333	0.333											
	Turns to Open	14	16	18	21	22	28	34	40	41	47											
	Touque (N.m)	80	90	95	159	569	978	1728	2601	2997	4198											
1500	Stem Thread O.D.	1"	1 1/8"	1 1/4"	1 3/8"	1 3/4"	2 1/8"	2 1/2"	2 3/4"	3"	3"											
	Thread Per Inch	5	5	4	4	3	3	3	3	2	2											
	Pitch ( in )	0.2	0.2	0.25	0.25	0.333	0.333	0.333	0.333	0.5	0.5											
	Turns to Open	14	16	17	22	22	28	34	40	29	29											
	Touque (N.m)	117	172	224	349	1009	2025	3259	4437	6878	7069											
2500	Stem Thread O.D.	1"	1 1/8"	1 1/4"	1 3/8"	1 7/8"	2 3/8"	2 7/8"	3 1/4"													
	Thread Per Inch	5	5	4	4	3	3	2	2													
	Pitch ( in )	0.2	0.2	0.25	0.25	0.333	0.333	0.333	0.333													
	Turns to Open	15	17	17	22	22	28	34	40													
	Touque (N.m)	165	224	281	559	1407	2913	5748	8332													

## -Globe Valve

CLASS	ITEM	VALVE SIZE							
		2"	2.5"	3"	4"	6"	8"	10"	12"
150	Stem Thread O.D.	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 5/8"
	Thread Per Inch	5	5	5	5	4	4	4	3
	Pitch ( in )	0.2	0.2	0.2	0.2	0.25	0.25	0.25	0.333
	Turns to Open	4	7	5	8	7	9	10	7
	Touque (N.m)	40	56	71	133	203	277	527	1020
300	Stem Thread O.D.	3/4"	7/8"	1"	1 1/8"	1 3/8"	1 1/2"	1 5/8"	1 3/4"
	Thread Per Inch	5	5	5	5	4	4	3	3
	Pitch ( in )	0.2	0.2	0.2	0.2	0.25	0.25	0.333	0.333
	Turns to Open	4	8	7	8	7	9	9	9
	Touque (N.m)	53	73	100	185	620	1115	1835	2635
600	Stem Thread O.D.	7/8"	1"	1 1/8"	1 1/4"	1 5/8"	1 3/4"	2"	2 1/8"
	Thread Per Inch	5	5	5	4	3	3	3	3
	Pitch ( in )	0.2	0.2	0.2	0.25	0.333	0.333	0.333	0.333
	Turns to Open	8	8	8	8	9	9	9	9
	Touque (N.m)	121	210	269	512	1352	2365	3892	5285
900	Stem Thread O.D.	1 1/8"	1 1/4"	1 1/4"	1 3/8"	1 3/4"	2"		
	Thread Per Inch	5	4	4	4	3	3		
	Pitch ( in )	0.2	0.25	0.25	0.25	0.333	0.333		
	Turns to Open	8	7	7	8	9	9		
	Touque (N.m)	242	350	449	904	1523	2923		
1500	Stem Thread O.D.	1 1/8"	1 1/4"	1 3/8"	1 1/2"	2"	2 1/4"		
	Thread Per Inch	5	4	4	4	3	3		
	Pitch ( in )	0.2	0.25	0.25	0.25	0.333	0.333		
	Turns to Open	8	7	7	8	9	9		
	Touque (N.m)	299	656	745	1544	3288	4260		
2500	Stem Thread O.D.	1 1/4"	1 1/2"	1 5/8"	1 3/4"	2"	2 1/2"		
	Thread Per Inch	4	4	3	3	3	3		
	Pitch ( in )	0.25	0.25	0.333	0.333	0.333	0.333		
	Turns to Open	7	7	6	6	9	9		
	Touque (N.m)	427	700	815	1753	5551	8230		

# MATERIALS

Material	CHEMICAL COMPOSITIONS(%) max										MECHANICAL PROPERTIES				
	C	Mn	P	S	Si	Ni	Cr	Mo	Other	Tensile, min MPa(ksi)	Yield, min MPa(ksi)	Elongation min (%)	Reduction of Area min(%)	Hardness Brinell	
WCB	0.30	1.00	0.04	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V 0.03	485~655 (70~95)	250 (36)	22	35		
WC1	0.25	0.50~ 0.80	0.04	0.045	0.60	0.50	0.35	0.45~ 0.65	Cu 0.50 W 0.10	450~620 (65~90)	240 (35)	24	35		
WC6	0.05~ 0.20	0.50~ 0.80	0.04	0.045	0.60	0.50	1.00~ 1.50	0.45~ 0.65	Cu 0.50 W 0.10	485~655 (70~95)	275 (40)	20	35		
WC9	0.05~ 0.18	0.40~ 0.70	0.04	0.045	0.60	0.50	2.00~ 2.75	0.90~ 1.20	Cu 0.50 W 0.10	485~655 (70~95)	275 (40)	20	35		
C5	0.20	0.40~ 0.70	0.04	0.045	0.75	0.50	4.00~ 6.50	0.45~ 0.65	Cu 0.50 W 0.10	620~795 (90~115)	415 (60)	18	35		
C12	0.20	0.35~ 0.65	0.04	0.045	1.00	0.50	8.00~ 10.00	0.90~ 1.20	Cu 0.50 W 0.10	620~795 (90~115)	415 (60)	18	35		
CA15	0.15	1.00	0.04	0.040	1.50	1.00	11.50~ 14.00	0.50		620~795 (90~115)	450 (65)	18	30		
LCB	0.30	1.00	0.04	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V 0.03	450~650 (65~90)	240 (35)	24	35	J (lbf·ft) 18 (13)	
LCC	0.25	1.20	0.04	0.045	0.60	0.50	0.50	0.20	Cu 0.30 V 0.03	485~655 (70~95)	275 (40)	22	35	J (lbf·ft) 20 (15)	
LC2	0.25	0.50~ 0.80	0.04	0.045	0.60	2.0~ 3.0				485~655 (70~95)	275 (40)	24	35	J (lbf·ft) 20 (15)	
LC3	0.15	0.50~ 0.80	0.04	0.045	0.60	3.0~ 4.0				485~655 (70~95)	275 (40)	24	35	J (lbf·ft) 20 (15)	
CF8	0.08	1.50	0.040	0.040	2.00	8.0~ 11.0	18.0~ 21.0			485 (70)	205 (30)	35			
CF8M	0.08	1.50	0.040	0.040	1.50	9.0~ 12.0	18.0~ 21.0	2.0~ 3.0		485 (70)	205 (30)	30			
CF3	0.03	1.50	0.040	0.040	2.00	8.0~ 12.0	17.0~ 21.0	0.50		485 (70)	205 (30)	35			
CF3M	0.03	1.50	0.040	0.040	1.50	9.0~ 13.0	17.0~ 21.0	2.0~ 3.0		485 (70)	205 (30)	30			
CF8C	0.08	1.50	0.040	0.040	2.00	9.0~ 12.0	18.0~ 21.0	0.50	Nb ≥ 8xC ≤ 1	485 (70)	205 (30)	30			
CN7M	0.07	1.50	0.040	0.040	1.50	27.5~ 30.5	19.0~ 22.0	2.0~ 3.0	Cu 3.0~4.0	450 (62)	170 (25)	35			
A105	0.35	0.60~ 1.05	0.040	0.050	0.35	0.40	0.30	0.12	Cu 0.40 V 0.03 Nb 0.02	485 (70)	250 (36)	22	30	≤ 187	
F1	0.28	0.60~ 0.90	0.045	0.045	0.15~ 0.35			0.44~ 0.65		485 (70)	275 (40)	20	30	143~192	
F5	0.15	0.30~ 0.60	0.030	0.030	0.50	0.50	4.0~ 6.0	0.44~ 0.65		485 (70)	275 (40)	20	35	143~217	
F11-1	0.05~ 0.15	0.30~ 0.60	0.030	0.030	0.15~ 1.00		1.00~ 1.50	0.44~ 0.65		415 (60)	205 (30)	20	45	121~174	
F22-1	0.05~ 0.15	0.30~ 0.60	0.040	0.040	0.50		2.00~ 2.50	0.87~ 1.13		415 (60)	205 (30)	20	35	≤ 170	
LF2	0.30	0.60~ 1.35	0.035	0.040	0.15~ 0.30	0.40	0.30	0.12	Cu 0.40 V 0.02 Nb 0.02	485~655 (70~95)	250 (36)	22	30	J (lbf·ft) 20 (15)	
F6a	0.15	1.00	0.040	0.030	1.00	0.50	11.5~ 13.5			585 (85)	380 (55)	18	35	167~229	
F304	0.08	2.00	0.040	0.030	1.00	8.0~ 11.0	18.0~ 20.0			515 (75)	205 (30)	30	50		
F304L	0.03	2.00	0.040	0.030	1.00	8.0~ 13.0	18.0~ 20.0			485 (70)	170 (25)	30	50		

Material	CHEMICAL COMPOSITIONS(%) max									MECHANICAL PROPERTIES				
	C	Mn	P	S	Si	Ni	Cr	Mo	Other	Tensile, min MPa(ksi)	Yield, min MPa(ksi)	Elongation min (%)	Reduction of Area min(%)	Hardness Brinell
F316	0.08	2.0	0.04	0.03	1.0	10.0~ 14.0	16.0~ 18.0	2.00~ 3.00		515(75)	205(30)	30	50	
F316L	0.035	2.0	0.04	0.03	1.0	10.0~ 15.0	16.0~ 18.0	2.00~ 3.00		485(70)	170(25)	30	50	
F321	0.08	2.0	0.04	0.03	1.0	9.0~ 12.0	≥ 17		Ti ≥5xC ≤0.7	515(75)	205(30)	30	50	
F347	0.08	2.0	0.04	0.03	1.0	9.0~ 13.0	17.0~ 20.0		Nb+Ta ≥10xC ≤1.1	515(75)	205(30)	30	50	
410	0.15	1.0	0.04	0.03	1.0		11.5~ 13.5			480(70)	275(40)	20	45	
416	0.15	1.25	0.06	≥0.15	1.0		12.00~ 14.00							≤262
420	Over 0.15	1.0	0.04	0.03	1.0		12.00~ 14.00							≤241
D-2	3.0	0.7~ 1.25	0.08		1.5~ 3.0	18.00~ 22.00	1.75~ 2.75			400(58)	207(30)	8		139~202
B7	0.37~ 0.49	0.65~ 1.1	0.035	0.04	0.15~ 0.35		0.75~ 1.20	0.15~ 0.25		860(125)	720(105)	16	50	
B7M	0.37~ 0.49	0.65~ 1.1	0.035	0.04	0.15~ 0.35		0.75~ 1.20	0.15~ 0.25		690(100)	550(80)	18	50	≤ HB235 or HRB 99
B16	0.36~ 0.47	0.45~ 0.7	0.035	0.04	0.15~ 0.35		0.80~ 1.15	0.5~ 0.65	V0.25~ 0.35	860(125)	725(105)	18	50	
B8	0.08	2.0	0.045	0.03	1.0	8.00~ 10.50	18.00~ 20.00			515(75)	205(30)	30	50	≤ HB223 or HRB 96
B8M	0.08	2.0	0.045	0.03	1.0	10.00~ 14.00	16.00~ 18.00	2.00~ 3.00		515(75)	205(30)	30	50	≤ HB223 or HRB 96
L7	0.38~ 0.48	0.75~ 1.0	0.035	0.04	0.15~ 0.35		0.80~ 1.10	0.15~ 0.25		860(125)	725(105)	16	50	
L7M	0.38~ 0.48	0.75~ 1.0	0.035	0.04	0.15~ 0.35		0.80~ 1.10	0.15~ 0.25		690(100)	550(80)	18	50	≤ HB235 or HRB 99
B			0.04	0.05						415~690 (60~100)		18		HRB121~212 HRC69~95
2H	≥ 0.4	1.0	0.04	0.05	0.4									HB248~352 HRC24~38
2HM	≥ 0.4	1.0	0.04	0.05	0.4									HB159~237 HRC ≤ 22
4	0.4~ 0.5	0.7~ 0.9	0.035	0.04	0.15~ 0.35			0.20~ 0.30						HB248~352 HRC24~38
7	0.37~ 0.49	0.65~ 1.1	0.04	0.04	0.15~ 0.35		0.75~ 1.20	0.15~ 0.25						HB248~352 HRC24~38
7M	0.37~ 0.49	0.65~ 1.1	0.04	0.04	0.15~ 0.35		0.75~ 1.20	0.15~ 0.25						HB159~237 HRC ≤ 22
8	0.08	2.0	0.045	0.03	1.0	8.00~ 10.50	18.0~ 20.0							HB126~300 HRC60~105
8M	0.08	2.0	0.045	0.03	1.0	10.0~ 14.0	16.0~ 18.0	2.00~ 3.00						HB126~300 HRC60~105

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