LIMANNTECH

KAB-QC-18

WONKWANG VALVE

WONKWANG VALVE

CAST CARBON STEEL
GATE VALVES BOLTED BONNET
2″- 24″ I Class 150 - Class 1500

Gate valves serve as efficient on-off valves with flow in either direction. In such a design, a wedge slides cross a general passageway in order to control fluid flow (like a sliding gate - hence, the name). One of the most significant characteristics of this type of valves is its straight-through, unobstructed passageway when set in the "full open" position. This is made possible by the wedge lifting entirely out of the passageway. As a result, gate valves are characterized by a minimum of turbulence and pressure drop in operation.

While gate valves are good for applications requiring these two factors, they are not recommended for installations in which throttling would be a function. They are designed for on/off service.

CAST CARBON STEEL

- GATE VALVES CLASS 150
- GATE VALVES CLASS 300
- GATE VALVES CLASS 600
- GATE VALVES CLASS 900
- GATE VALVES CLASS 1500

HIGHLIGHTS

Body and Bonnet

Bodies and bonnets are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration.

The bodies of gate valves consist of a straight through port that guarantees minimal turbulence and resistance to flow. In both designs, bolted bonnet and pressure seal, the bodies consist of guide slots to accommodate the wedge during opening or closing of the valve.

Bonnets are made either of one piece only –the yoke then being an integral part of it– or have two pieces, depending on the size of the valve. This ensures the perfect alignment with the body what leads to an accurate opening and closing.

Backseat

Gate and globe valves have backseat threaded in the bonnet, or for the pressure seal valves, welded to the bonnet. Into pressure seal the hard facing is stellite 6 or equivalent.

Stem

The stems of gate valves are forged from one piece and TW threaded, then mechanized and finally provided with a smooth finishing in order to minimize friction.

In gate valves, the union of stem and wedge shall be in T form, designed to prevent the stem disengaging itself from the wedge while being in service. This design includes a conical raised surface that presses the seat against the bonnet backseat in the fully open position.

Body and Bonnet Gaskets

The design of the body-bonnet gaskets varies depending on the class of the valve.

Class 150 gate valves consist of a square joint in 2" and an oval one for all other sizes. Depending on the valve service it can be supplied flat-face gasket with graphite or PTFE.

Class 300 and 600 valves consist of a circular spiral wound gasket.

Class 900 and above gate valves consist of a ring type joint.

In pressure seal designs the sealing is achieved through a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high-purity graphite being located between the body and the body retainer ring.

Flexible Wedge

Gate valves 2" and above valves feature a flexible wedge unless otherwise specified by the customer. The flexible wedge shifts along the body of the valve during opening and closing, being held in position by a guide slot that minimizes the friction between body seat and wedge. This design is especially suited to compensate slight thermal deformations produced by the pipe or the valve itself safeguarding a better sealing between body and wedge seats.

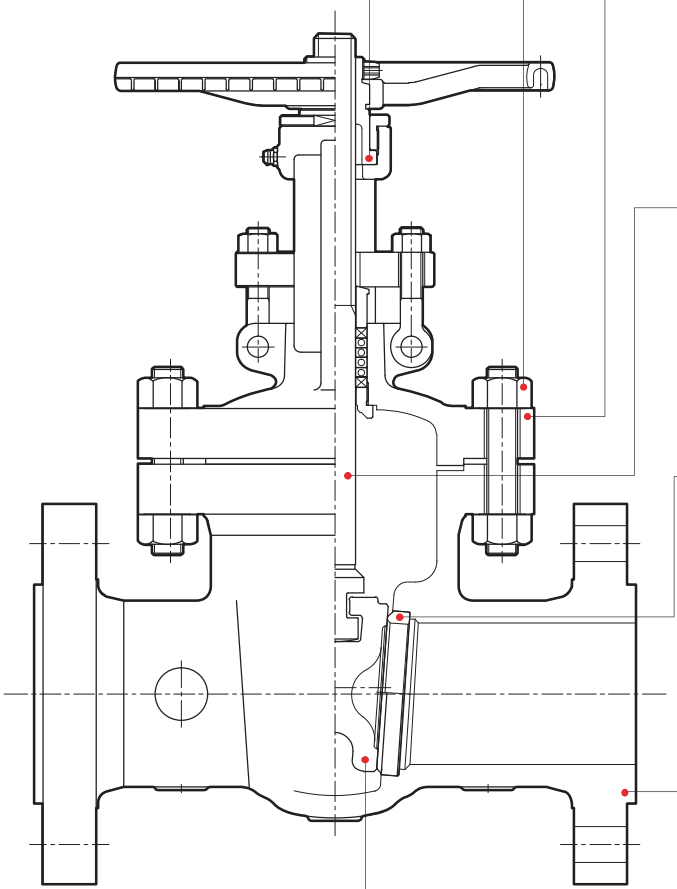
DESIGN STANDARDS

Bolted Bonnet Gate Valve	API 600/ISO 10434 & ASME B16.34
Pressure Seal Gate Valve (Long & Short pattern)	ASME B16.34
API 603 Gate Valve	API 603
Through Conduct Gate Valve	API 6D
Cryogenic Gate Valve	API 600 / BS 1873 & BS 6364
Face to Face / End to End Dimensions	ASME B16.10 / ISO 5752
End Flanged dimensions	ASME B16.5 / ISO 7005-1, ASME B16.47-A&B,MSS SP- 44 & API 605
Butt-weld End dimensions	ASME B16.25
Valve inspection & testing	API 600 / ISO 10434 & ISO 5208, EN 17266
Pressure - Temperature rating	ASME B16.34

TEST / INSPECTION METHODS & ACCEPTANCE CRITERIA

TEST / INSPECTION	METHOD	ACCEPTANCE CRITERIA
Visual Inspection		MSS SP-55
Marking		MSS SP-25 & ISO5208
Dimensional Inspection		Aplicable valve
Chemical Analysis	ASTM E350	Aplicable Standard
Mechanical Properties	ASTM A370	Aplicable Standard
Liquid Penetrant Inspection	ASTM A165	ASME B16.34
Magnetic Particle Inspection	ASTM E709	ASME B16.34
Radiographic Inspection	ASME B16.34	ASME B16.34
Ultrasonic Inspection	ASTM A388	ASME B16.34
Pressure Testing	API 598 / ISO 5208	API 598 / ISO 5208

CAST CARBON STEEL
GATE VALVES BOLTED BONNET



YOKE SLEEVE
The upper portion of the Yoke Sleeve is hexagonally tapered to fix hand wheel. The standard material of the Yoke Sleeve is Nodular Ni-resist D2 with over 1150°C(2100°F) dissolution point in accordance with API Std. specifications.

BOLTING
The body-bonnet bolts are manufactured in accordance with API Std. 600 specifications. The nuts also strictly conform with ANSI B 1.1 the stud nuts, hexagonal, rigid and got-forged, bear material notation as well as do the bolt nuts made according to ANSI B 18.2.2

BONNET
The bonnet and valve body have the same wall thickness.
The body-bonnet flange drilling is spot-faced to exactly meet stud-bolt nuts. The bonnet back seat bushing guarantees packing replacement even when the valve is fully opened. The stem packing dimensions of the stuffing box are in accordance with API specifications.

STEM
The machined forged stem comes with a T-shaped head, which connects the slot of the wedge. The Spherically shaped contacting. The stem dimensions are in accordance with API Std. 600 specifications.
The heat treated stem delivers adequate mechanical properties as well as excellent surface hardness. Further, opening/shuttling friction is minimlzed by accurate machining and lapping.

SEAT RING
Bottom seated type seat rings are welded or screwed into the body. The seating surface is finished by lapping. They are forging that have been heat treated to deliver the best mechanical properties and required hardness. The difference is hardness between seats and wedge is in accordance with API specifications.

BODY
The cast steel body is designed to insure a wall thickness, which is greater at any point than the minimum specified by API Std. 60000. Special care has been taken with the design of the Class 150 valve body so that the elliptically shaped center section is free from intensified stresses in the critical area. The body of above Class 300 are made circular in shape as much as possible to minimize distortion even under extreme operating conditions. Inlet and outlet port dimensions confrom with ANSI B 16.5 Pipe Fitting. The welded-in type seat ring is standard to insure interchangeabillity. Except for Class 150, the standard body-bonnet joint is male and female.

FLEXIBLE WEDGE
The standard disc of our valves is a one-piece flexible wedge.
Slots are machined in both sides of the wedge to allow it to travel correctly in the integrally cast body guides. The wedge seating surfaces have been accuately machined, grind and lapped to a mirror finsh to prevent leakage and eliminate galling.

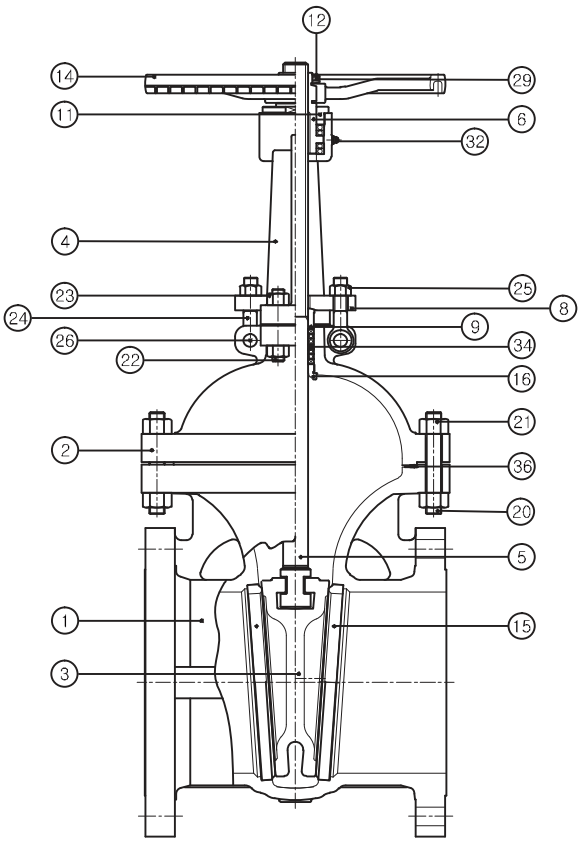
CAST STEEL

INDUSTRIAL VALVES
CAST CARBON STEEL

NO	NAME OF PART	ASTM SPECIFICATION				
		STANDARD	HIGH TEMP. SERVICE			LOW TEMP. SERVICE
1	BODY	A216-WCB	A217-WC6	A217-WC9	A217-C5	A352-LCB
2	BONNET	A216-WCB	A217-WC6	A217-WC9	A217-C5	A352-LCB
3	WEDGE	A217-CA15/+STL.	A217-WC6/+STL.	A217-WC9/+STL.	A217-C5/+STL.	A352-LCB/+STL.
4	YOKE	A216-WCB				
5	STEM	A479-410	A479-410	A479-410	A479-410	A479-304
6	YOKE SLEEVE	A439-D2C				
8	GLAND FLANGE	A105/A283-D				
9	PACKING GLAND	A479-410	A479-410	A479-410	A479-410	A479-304
15	BODY SEAT RING	A106+STL.	A182-F11+STL.	A182-F22+STL.	A182-C5+STL.	A350-LF2+STL.
16	BACK SEAT RING	A479-410	A479-410	A479-410	A479-410	A479-304
20	BONNET BOLT	A193-B7	A193-B16	A193-B16	A193-B16	A320-L7
21	BONNET NUT	A194-2H	A194-4	A194-4	A194-4	A194-4L
22	YOKE BOLT	A193-B7				
23	YOKE NUT	A194-2H				
24	HINGE BOLT	A307-B				
25	HINGE NUT	A563-A				
26	HINGE PIN	A576-1020				

* Note 1, In case of 12″ and larger size, we'll use trim material overlayed one on the same or equivalent material of the body.

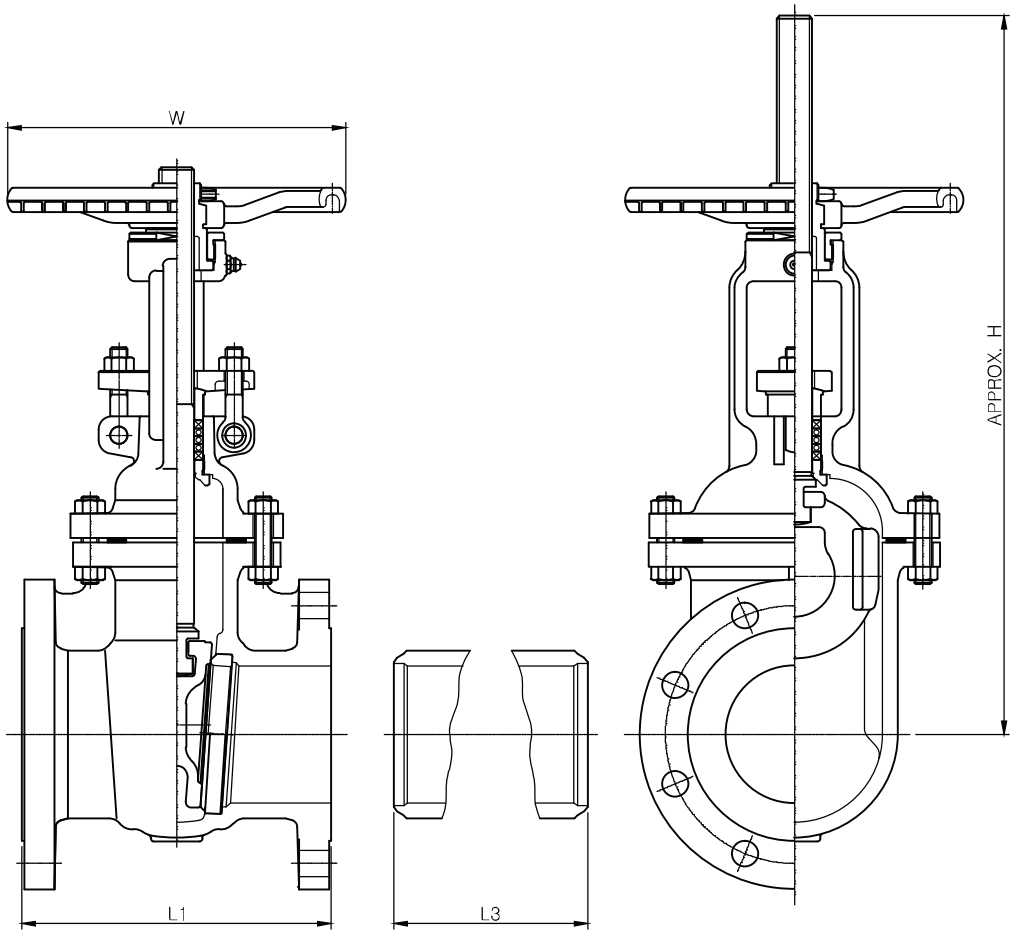
NO	NAME OF PART	ASTM SPECIFICATION
11	SLEEVE NUT	A576-1020
12	WHEEL NUT	A576-1020
14	HAND WHEEL	A536-60
29	SET SCREW	STEEL
32	GREASE NIPPLE	STEEL
34	PACKING	GRAPHITE
36	SPIRAL WOUND GASKET	GRAPHITE+304



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 150

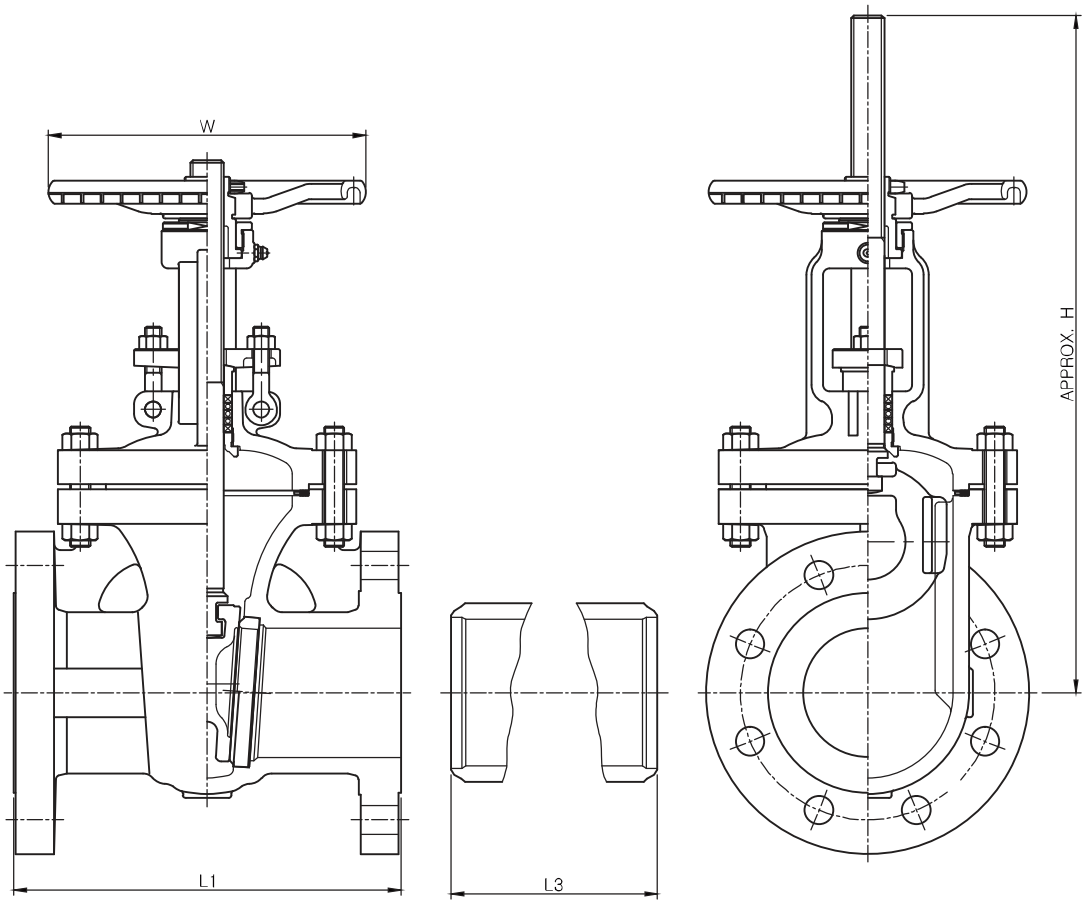
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1	inch	7,0	7,5	8,0	9,0	10,0	10,5	11,5	13,0	14,0	15,0	16,0	17,0	18,0	20,0
	mm	178	191	203	229	254	267	292	330	356	381	406	432	457	508
L3	inch		9,5	11,12	12,0	15,0	15,88	46,5	18,0	19,75	22,5	24,0	26,0	28,0	32,0
	mm	216	241	283	305	381	403	419	457	502	572	610	660	711	813
H	inch	14,0	15,6	17,7	20,9	25,6	29,7	37,4	44,5	52,5	60,2	68,7	76,8	84,2	99,2
	mm	356	395	449	531	651	755	950	1131	1334	1530	1745	1950	2140	2520
W	inch	7,9	7,9	8,8	9,8	11,0	12,4	14,0	15,7	17,7	19,7	22,0	24,8	29,5	29,5
	mm	200	200	224	250	280	315	355	400	450	500	560	630	750	750
WEIGHT	LB	44,1	55,1	66,2	97,0	132,3	154,4	233,7	368,2	526,9	760,7	1080,5	1274,5	1611,9	2280,0
	kg	20	25	30	44	60	70	106	167	239	345	490	578	731	1043



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 300

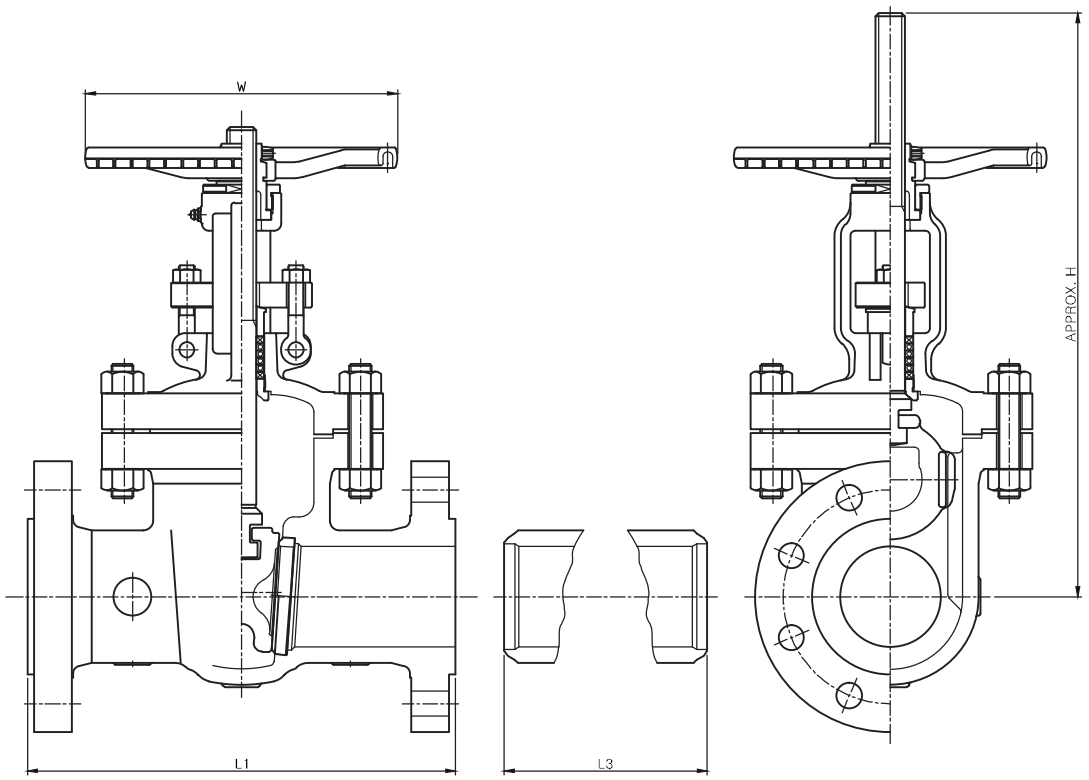
VALVE SIZE	inch	2	2½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	8,5	9,5	11,12	12,0	15,0	15,88	16,5	18,0	19,75	30,3	33,0	36,0	39,0	45,0
	mm	216	241	282	305	381	403	419	457	502	762	838	914	991	1143
H	inch	14,0	15,4	17,6	21,0	25,6	29,6	38,3	45,7	54,0	70,0	77,1	84,4	98,4	110,2
	mm	356	392	447	533	651	751	974	1161	1372	1780	1960	2145	2500	2800
W	inch	7,9	7,9	8,8	9,8	11,0	14,0	15,7	17,7	19,7	19,7	19,7	24,8	24,8	29,7
	mm	200	200	224	250	280	355	400	450	500	500	500	630	630	710
WEIGHT	LB	52,9	75,0	90,4	143,3	209,5	257,9	401,3	268,2	1060,6	1528,1	2094,8	2535,8	3307,5	4961,3
	kg	24	34	41	65	95	117	182	355	481	693	950	1150	1500	2250



CAST STEEL

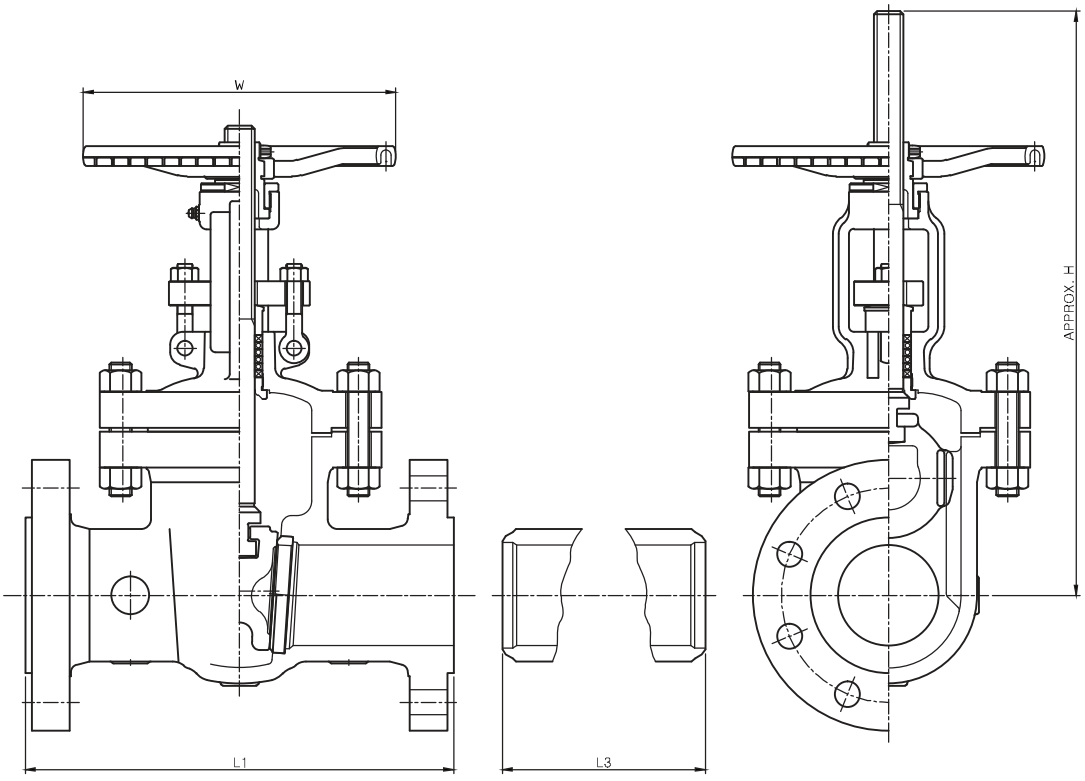
INDUSTRIAL VALVES
ASME CLASS 600

VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16
	mm	50	65	80	100	125	150	200	250	300	350	400
L1 & L3	inch	11,5	13,0	14,0	17,0	20,0	22,0	26,0	31,0	33,0	35,0	39,0
	mm	292	330	356	432	508	559	660	787	838	889	991
H	inch	14,2	16,5	18,6	23,0	27,2	31,5	40,2	55,1	63,0	68,9	78,7
	mm	362	420	472	583	690	800	1020	1400	1600	1750	2000
W	inch	7,9	7,9	9,8	12,4	15,7	19,7	19,7	19,7	24,8	24,8	27,9
	mm	200	200	250	315	400	500	500	500	630	630	710
WEIGHT	LB	79,4	127,9	154,4	269,0	441	551,2	893,0	1433,2	1896,3	2734,2	3109,1
	kg	36	58	70	122	200	250	405	650	860	1240	1410



INDUSTRIAL VALVES
ASME CLASS 900

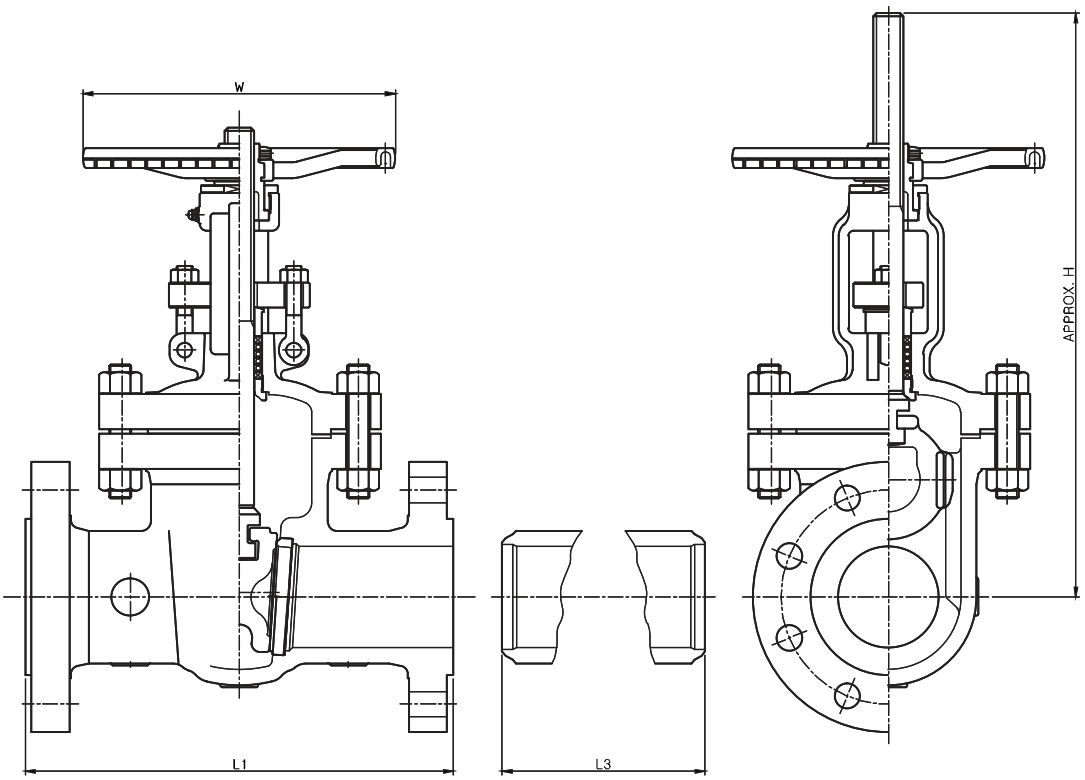
VALVE SIZE		2	2 ½	3	4	5	6	8	10	12
	mm	50	65	80	100	125	150	200	250	300
L1 & L3	inch	14,5	16,5	15,0	18,0	22,0	24,0	29,0	33,0	38,0
	mm	368	419	381	457	559	610	737	838	965
H	inch	17,7	18,5	21,6	25,2	31,1	34,6	41,3	53,1	61,0
	mm	450	470	550	640	790	880	1050	1350	1550
W	inch	11,0	11,0	12,4	14,0	15,7	19,7	24,8	24,8	24,8
	mm	280	280	315	355	400	500	630	630	630
WEIGHT	LB	181	341,8	364	384	661,5	999	1720	2752	3400
	kg	82	155	165	174	300	453	780	1248	1542



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 1500

VALVE SIZE	inch	2	2 1/2	3	4	5	6	8	10	12	14	16
	mm	50	65	80	100	125	150	200	250	300	350	400
L1 & L3	inch	14,5	16,5	18,5	21,5	26,5	27,75	32,75	39,0	44,5	49,5	54,5
	mm	368	419	470	546	673	705	832	991	1130	1257	1384
H	inch	17,3	18,5	27,5	33,4	39,4	43,4	51,2	66,4	74,8	85,3	97,9
	mm	440	470	700	850	1000	1100	1300	1688	1900	2167	2486
W	inch	11,0	11,0	14,0	19,7	24,8	24,8	27,9	27,9	27,9	30,0	30,0
	mm	280	280	355	500	630	630	710	710	710	760	760
WEIGHT	LB	181	341,8	401	573	926,1	1360	3175	4412	8417	9073,6	15324,8
	kg	82	155	182	260	420	617	1440	2001	3816	4115	6950



CAST CARBON STEEL
GLOBE VALVES BOLTED BONNET
2″- 24″ I Class 150 - Class 1500

All globe valves utilize the "port closure" concept of valves. By this it meant that fluid passes through a specific opening (rather than a general passageway, as in the case of gate valves), and the fluid is controlled by means of a stem-mounted disc or inserted plug in that area.

Despite of lacking the straight through, unobstructed passageway of the gate valve, these globe types are superior in two key aspects - throttling and service-ability under frequent use. They are better at the throttling function because they permit fluid to exit uniformly around the circumference of a seat, rather than "slicing" down to limit passage through a narrowly restricted area.

CAST CARBON STEEL

- GLOBE VALVES CLASS 150
- GLOBE VALVES CLASS 300
- GLOBE VALVES CLASS 600
- GLOBE VALVES CLASS 900
- GLOBE VALVES CLASS 1500

HIGHLIGHTS

Stem

The stems of globe valves are forged from one piece and TW threaded, then mechanized and finally provided with a smooth finishing in order to minimize friction.

Body and Bonnet Gasket

The design of the body-bonnet gasket varies depending on the class of the valve.

Class 150 to 600 globe valves consist of a circular male-female connection with a graphite or spiral wound gasket.

Class 900 and above globe valves consist of a ring type joint.

In pressure seal designs the sealing is achieved through a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high-purity graphite being located between the body and the body retainer ring.

Body and Bonnet

Bodies and bonnets are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration.

Bonnets are made either of one piece only –the yoke then being an integral part of it – or have two pieces, depending on the size of the valve. This ensures the perfect alignment with the body what leads to an accurate opening and closing.

Bodies of globe valves are designed considering the same characteristics as gate valves, which in this case means that the disc is guided in bigger valve sizes or high pressure service in order to avoid vibrations and better seat.

Backseat

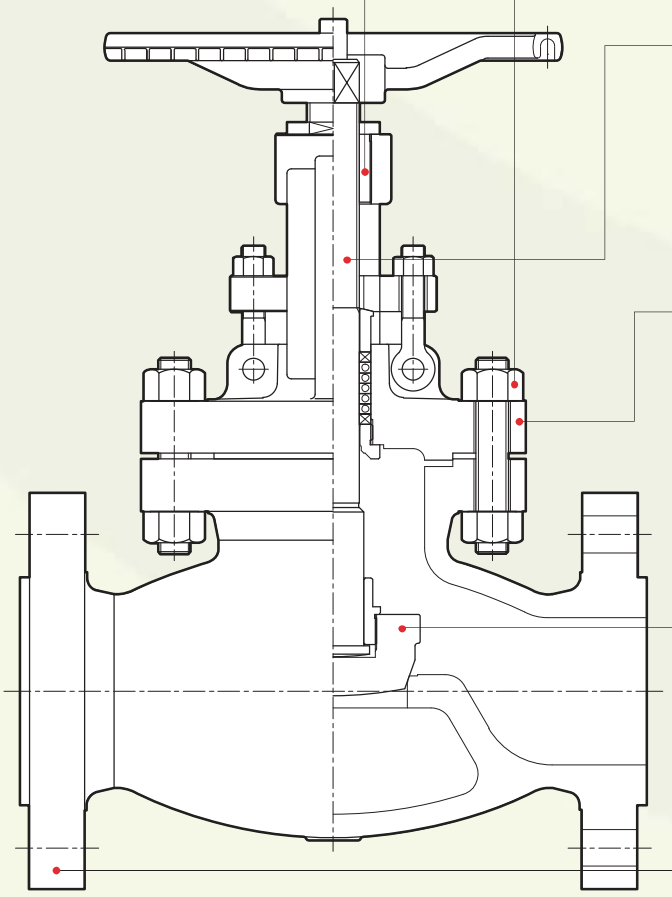
All gate and globe valves have backseat threaded in the bonnet, or for the pressure seal valves, welded to the bonnet.The hard facing is stellite 6 or equivalent.

DESIGN STANDARDS	
Bolted Bonnet Globe Valve	ASME B16.34
Bolted Bonnet Globe Valve	BS 1873 & ASME B16.34
Pressure Seal Globe Valve (Long & Short pattern)	ASME B16.34
Face to Face / End to End Dimensions	ASME B16.10 / ISO 5752
End Flanged dimensions	ASME B16.5 / ISO 7005-1, ASME B16.47-A&B MSS SP- 44 & API 605
Butt-weld End dimensions	ASME B16.25
Valve inspection & testing	BS1873, ISO 5208, BS 6755, EN 17266
Pressure - Temperature rating	ASME B16.34

TEST / INSPECTION METHODS & ACCEPTANCE CRITERIA		
TEST / INSPECTION	METHOD	ACCEPTANCE CRITERIA
Visual Inspection		MSS SP-55
Marking		MSS SP-25 & ISO5208
Dimensional Inspection		Aplicable valve
Chemical Analysis	ASTM E350	Aplicable Standard
Mechanical Properties	ASTM A370	Aplicable Standard
Liquid Penetrant Inspection	ASTM A165	ASME B16.34
Magnetic Particle Inspection	ASTM E709	ASME B16.34
Radiographic Inspection	ASME B16.34	ASME B16.34
Ultrasonic Inspection	ASTM A388	ASME B16.34
Pressure Testing	API 598 / ISO 5208	API 598 / ISO 5208

CAST CARBON STEEL

GLOBE VALVES BOLTED BONNET



YOKE BUSH

The standard material of the Yoke bush is Nodular Ni-resist D2 with over a 1150°C(2100°F) dissolution point in conformity with API Std. Specifications.

BOLTING

The body-bonnet bolts are manufactured in accordance with API Std. 600 specifications. The nuts also strictly conform with ANSI B 1.1
The stud bolt nuts, hexagonal, rigid and hot-forged, bear material notation as well as do the bolt nuts made according to ANSI B 18.2.2

STEM

The heat-treated stems of one-piece construction insure adequate mechanical properties and surface hardness. Friction at the time of opening and shutting is reduced to a minmum friction to accurate machining and lapping. The found finished surface of the stem head helps to achieve point contact with the inside of the disc housing to eliminate friction.

BONNET

The bonnet is integral or separate with yoke and is the same material as the body. The body-bonnet flange drilling is spot-faced to exactly meet stud bolt nuts. The back seat bushing in the bonnet guarantees that the packing can be replaced even when the valve is fully opened. The stem packing dimensions of the stuffing box are in accordance with API specifications.

DISC

The disc of our globe valve is a loose disc and can freely revolve around the stem. The prevents friction and galling with the seating surface when the valve is shot. The disc is finished with a conical seating surface that has been ground and lapped to a mirror finish.
It is of one-piece construction, and forged and heat-treated to deliver the required mechanical properties and hardness.

BODY

The cast steel body is designed to insure a wall thickness, which is greater at any point than the minimurn specified by API Std. 600. Port and seat passage dimensions conform to ANSI B 16.5 Pipe fitting.
The screw-in type seat ring is standard to allow interchangeability.
The standard body-bonnet joint is male-female, and the flange is round for all valves, accurate machining insures perfect coaxially of the valve ends and seat ring in addition to exact perpendicularity of the body-bonnet flange.

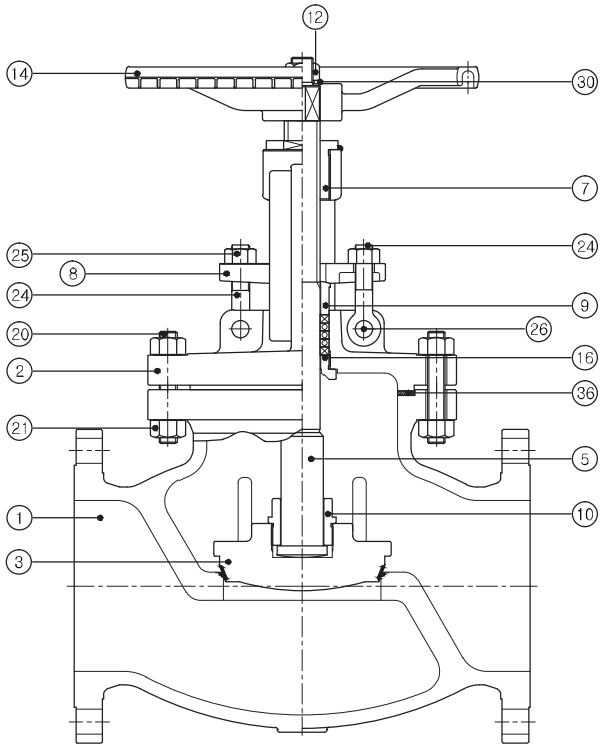
CAST STEEL

INDUSTRIAL VALVES
CAST CARBON STEEL

NO	NAME OF PART	ASTM SPECIFICATION				
		STANDARD	HIGH TEMP. SERVICE			LOW TEMP. SERVICE
1	BODY	A216-WCB+STL	A217-WC6+STL	A217-WC9+STL	A217-C5+STL	A352-LCB+STL
2	BONNET	A216-WCB	A216-WCB	A217-WC9	A217-C5	A352-LCB
3	DISC	A216-CA15/+STL	A217-WC6/+STL	A217-WC9/+STL	A217-C5/+STL	A352-LCB/+STL
5	STEM	A479-410	A479-410	A479-410	A479-410	A479-304
7	YOKE BUSH	A439-D2C				
8	GLAND FLANGE	A105/A283-D				
9	PACKING GLAND	A479-410	A479-410	A479-410	A479-410	A479-304
10	DISC NUT	A479-410	A479-410	A479-410	A479-410	A479-304
16	BACK SEAT RING	A479-410	A479-410	A479-410	A479-410	A479-304
20	BONNET BOLT	A193-B7	A193-B16	A193-B16	A193-B16	A320-L7
21	BONNET NUT	A194-2H	A194-4	A194-4	A194-4	A194-4L
24	HINGE BOLT	A307-B				
25	HINGE NUT	A563-A				
26	HINGE PIN	A576-1020				

* Note 1, In case of 12″ and larger size, we'll use trim material overlayed one on the same or equivalent material of the body.

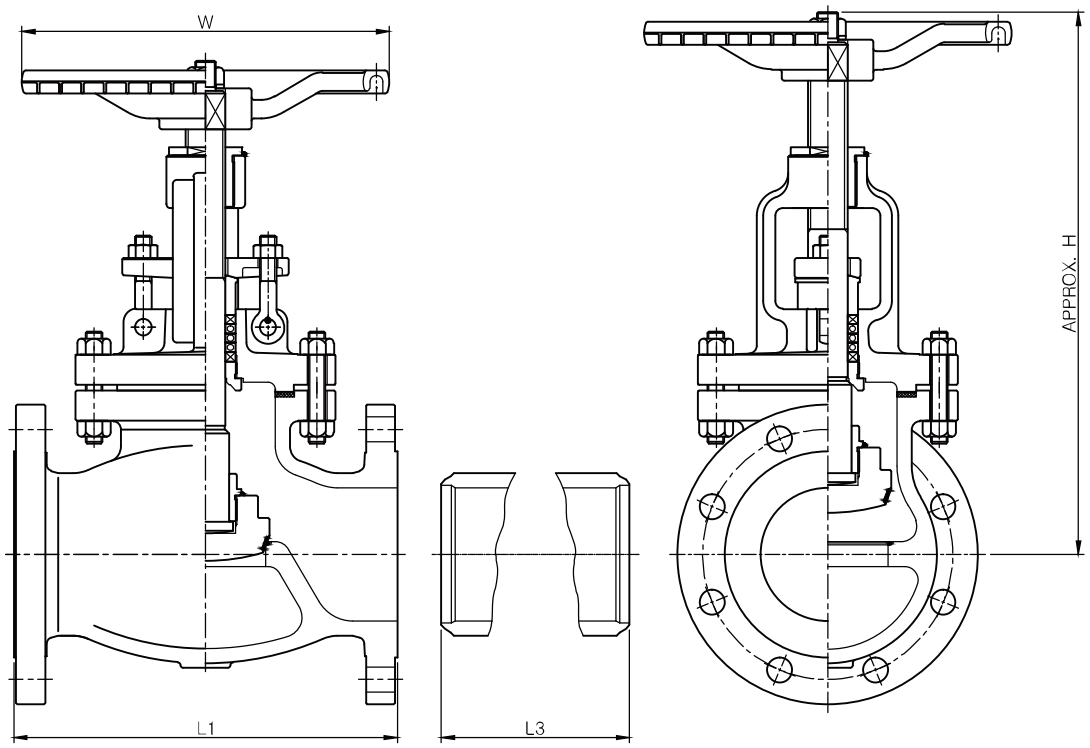
NO	NAME OF PART	ASTM SPECIFICATION
12	WHEEL NUT	A563-A
14	HAND WHEEL	A536-60
30	PLAIN WASHER	A283-D
34	PACKING	GRAPHITE
35	SPIRAL WOUND GASKET	GRAPHITE + 304



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 150

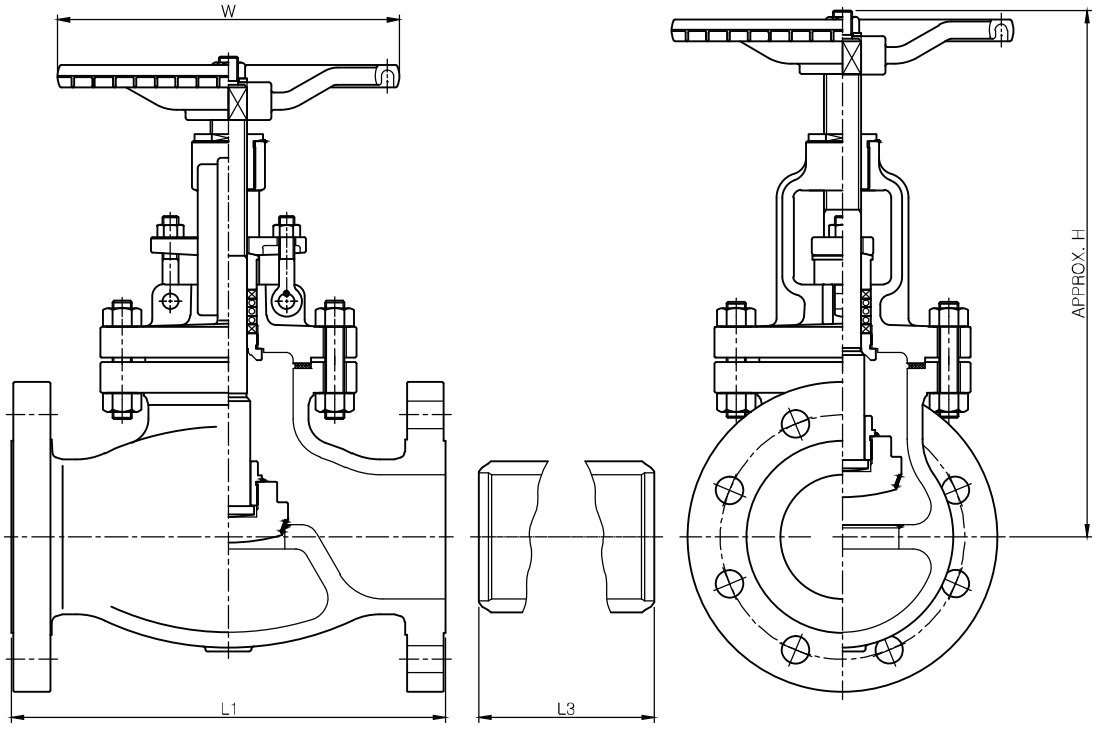
VALVE SIZE	inch	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	8,0	8,5	9,5	11,5	14,0	16,0	19,5	24,5	27,5	31,0	36,0	38,5	38,5	51,0
	mm	203	216	241	292	356	406	495	622	699	787	914	978	978	1295
H	inch	12,1	12,9	14,4	16,2	18,2	20,6	22,9	27,9	29,1	54,7	62,6	71,7	80,7	90,6
	mm	308	329	366	413	462	525	582	708	740	1390	1590	1820	2050	2300
W	inch	7,1	7,9	9,8	11,0	11,0	12,4	15,7	19,7	19,7	22,0	22,0	24,0	27,6	27,6
	mm	180	200	250	280	280	315	400	500	500	560	560	610	700	700
WEIGHT	LB	46,3	59	72,8	116,9	163,2	209,5	410,1	804,8	804,8	1364,9	1808,1	2154,3	2712,2	3472,9
	kg	21	27	33	53	74	95	186	365	365	619	820	977	1230	1575



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 300

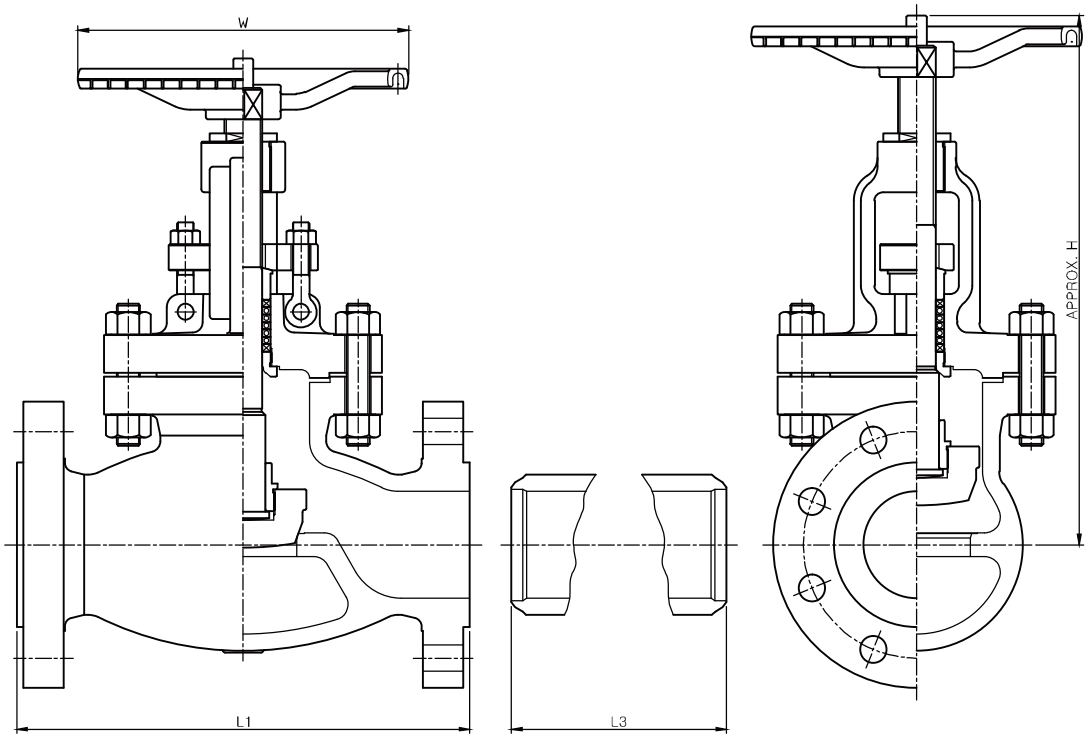
VALVE SIZE	inch	2	2½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	10,5	11,5	12,5	14,0	15,75	17,5	22,0	24,5	28,0	33,0	34	38,5	40	53
	mm	267	292	318	356	400	445	559	622	711	838	864	978	1016	1346
H	inch	12,6	13,4	14,8	16,9	19,3	22,4	26,8	30,7	41,7	44,5	47,2	55,5	63,0	70,8
	mm	320	340	376	430	490	570	680	780	1060	1130	1200	1410	1600	1800
W	inch	7,1	7,9	9,8	11,0	12,4	15,7	19,7	29,7	29,7	31,5	31,5	35,4	35,4	39,3
	mm	180	200	250	280	315	400	500	710	710	800	800	900	900	1000
WEIGHT	LB	61,7	86,0	99,2	189,6	253,6	330,8	621,8	809,2	1045,2	2529,1	2529,1	3014,2	3572,1	5159,7
	kg	28	39	45	86	115	150	282	367	474	1147	1147	1367	1620	2340



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 600

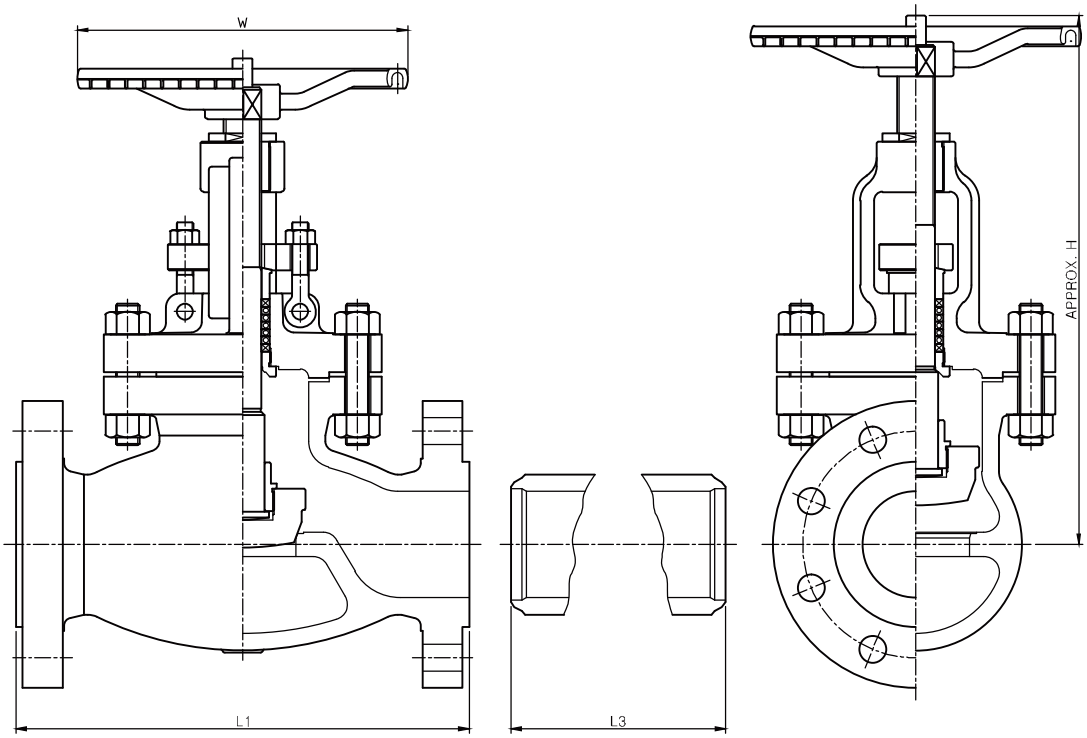
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16
	mm	50	65	80	100	125	150	200	250	300	350	400
L1 & L3	inch	11,5	13,0	14,0	17,0	20,0	22,0	26,0	310	33,0	35,0	39,0
	mm	292	330	356	432	508	559	660	787	838	889	991
H	inch	13,0	14,5	16,2	19,8	25,6	27,5	31,5	47,2	51,2	59,0	63,0
	mm	330	370	411	504	650	700	800	1200	1300	1500	1600
W	inch	7,9	8,8	11,0	12,4	15,7	15,7	23,6	23,6	24,8	24,8	27,9
	mm	200	224	280	315	400	400	600	600	630	630	710
WEIGHT	LB	114,5	141,1	187,4	330,8	511,3	714,4	1234,8	1741,9	2264,5	2932,7	3825,7
	kg	52	65	85	150	250	324	560	790	1027	1330	1735



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 900

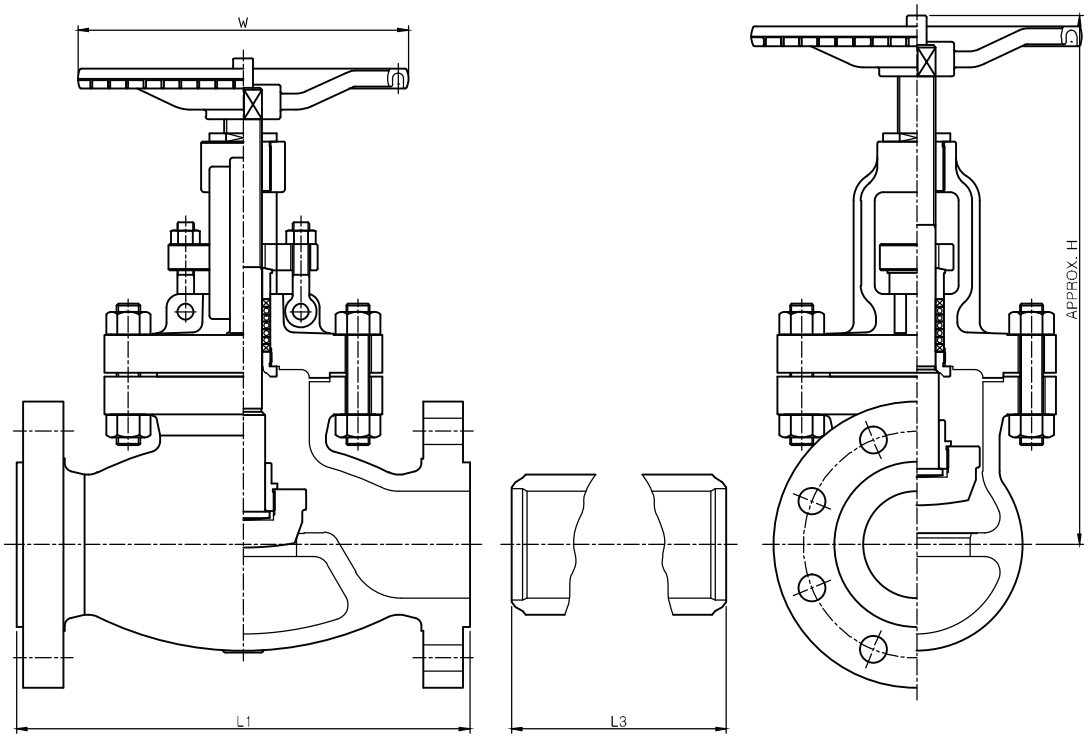
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14
	mm	50	65	80	100	125	150	200	250	300	350
L1 & L3	inch	14.5	16.5	15.0	18.0	22.0	24.0	29.0	33.0	38.0	40.5
	mm	368	419	381	457	559	610	737	838	965	1029
H	inch	18.5	19.3	21.6	23.6	25.6	33.4	47.2	57.9	65.0	87.0
	mm	470	490	550	600	650	850	1200	1470	1650	2210
W	inch	11.0	12.4	14.0	15.7	15.7	23.6	23.6	24.8	24.8	35.4
	mm	280	315	355	400	400	600	600	630	630	900
WEIGHT	LB	176.4	271.2	154	441	815.9	1101.5	2756.3	4520.3	5843.3	8048.3
	kg	80	123	161	200	370	500	1250	2050	2650	3650



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 1500

VALVE SIZE	inch	2	2½	3	4	5	6	8	10	12	14
	mm	50	65	80	100	125	150	200	250	300	350
L1 & L3	inch	14,5	16,5	18,5	21,5	26,5	27,75	32,75	39,0	44,5	49,5
	mm	368	419	470	546	673	705	832	991	1130	1257
H	inch	27,4	27,4	31,5	40,0	57,1	64,8	77,2	91,0	105,1	126,0
	mm	695	695	799	1015	1450	1645	1960	2310	2670	3200
W	inch	15,7	15,7	19,7	19,7	24,8	28,0	28,0	30,0	30,0	30,0
	mm	400	400	500	500	630	710	710	760	760	760
WEIGHT	LB	271,2	341,8	396,9	749,7	1124,6	1482	4630,5	7055,0	9702,0	11907,0
	kg	123	155	180	340	510	627	2100	3200	4400	5400



CAST CARBON STEEL
CHECK VALVES BOLTED COVER
SWING 2″- 24″ I Class 150 - Class 1500

While not a valve in the traditional sense, check valves serve an important application—namely to prevent flow in one direction while allowing it in the other. A check valve is self-actuated and designed to prevent fluid from flowing back into the system (prevent reverse flow). Real-life applications include preventing backflow into an injection line or into a pump. The fluid flow opens the valve by forcing a disk or ball in one direction. When the flow stops, the disk or ball is seated and closes the valve. They can be installed in horizontal or vertical upward flow piping.

CAST CARBON STEEL

- SWING CHECK VALVES CLASS 150
- SWING CHECK VALVES CLASS 300
- SWING CHECK VALVES CLASS 600
- SWING CHECK VALVES CLASS 900
- SWING CHECK VALVES CLASS 1500

HIGHLIGHTS

Body and Cover

Bodies and covers are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration.

The design characteristic of check valves is the unobstructed passageway, with a full-opening when required.

Body and Cover Gasket

The design of the body/cover gasket varies depending on the class of the valve.

Class 150 to 600 check valves consist of a male-female connection with a graphite or spiral wound gasket.

Class 900 and above check valves consist of a ring type joint.

In pressure seal designs the sealing is achieved through a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high purity graphite being located between the body and the body retainer ring.

DESIGN STANDARDS

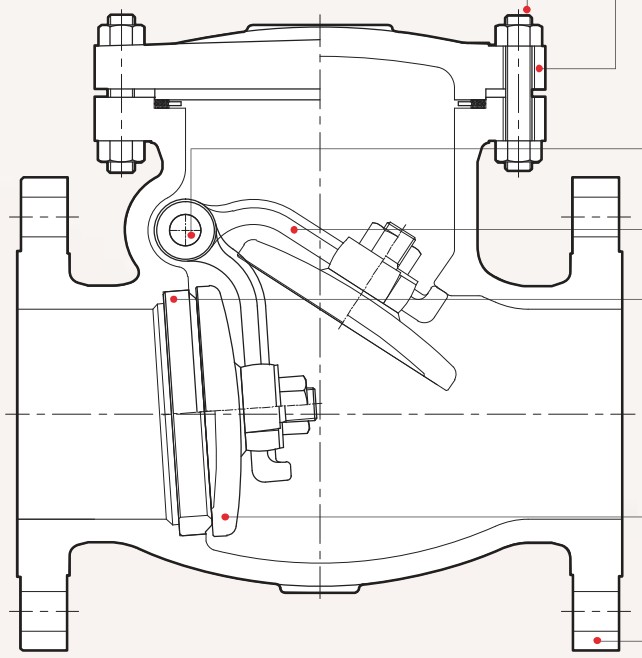
Bolted Bonnet Swing Check Valve	BS1868 & ASME B16.34 & API 6D
Pressure Seal Swing Check Valve (Long & Short pattern)	ASME B16.34
Face to Face / End to End Dimensions	ASME B16.10 / ISO 5752
End Flanged dimensions	ASME B16.5 / ISO 7005-1, ASME B16.47-A&B MSS SP- 44 & API 605
Butt-weld End dimensions	ASME B16.25
Valve inspection & testing	BS1868 & ISO 5208 & BS6755
Pressure - Temperature rating	ASME B16.34

TEST / INSPECTION METHODS & ACCEPTANCE CRITERIA

TEST / INSPECTION	METHOD	ACCEPTANCE CRITERIA
Visual Inspection		MSS SP-55
Marking		MSS SP-25 & ISO5208
Dimensional Inspection		Aplicable valve
Chemical Analysis	ASTM E350	Aplicable Standard
Mechanical Properties	ASTM A370	Aplicable Standard
Liquid Penetrant Inspection	ASTM A165	ASME B16.34
Magnetic Particle Inspection	ASTM E709	ASME B16.34
Radiographic Inspection	ASME B16.34	ASME B16.34
Ultrasonic Inspection	ASTM A388	ASME B16.34
Pressure Testing	API 598 / ISO 5208	API 598 / ISO 5208

CAST CARBON STEEL

SWING CHECK VALVES BOLTED COVER



BOLTING

The body-cover bolting conforms with ANSI B 1.1
The nuts are manufactured to conform ANSI B 18.2.2

COVER

The cover material is identical to the body.
Depending on the valve size and pressure class, either a casting or a forging is used.

ROD PIN

The rod pin is inserted into the valve and held in position by plug.
The large size valves are provided with bolted flanges instead of plugs.

ARM

The arm material is identical to the body.
Hinge bushing is provided in the large valve sizes to minimize friction and eliminate seizing.

SEAT RING

The bottom seated type seat ring is screwed into body.
The seating surface is finished by lapping. The forged seat ring is heat-treated to deliver the best mechanical properties and required hardness.

DISC

The disc has a sufficient seating surface area, which is ground and lapped to a mirror finish.
It is of one-piece construction and is heat-treated to deliver the required mechanical properties and hardness.

BODY

The cast steel body is designed with a wall thickness, which is greater at any point than the minimum requirement provided by API Std. 600 or API 6D. Port and seat passage dimensions conform to ANSI 16.5 Pipe Fitting.
The welded-in type seat ring is standard to allow interchangeabillity.
The standard body-bonnet joint is male-female, and the flange is round for all valves.

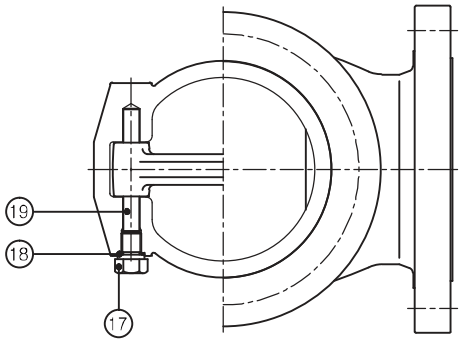
CAST STEEL

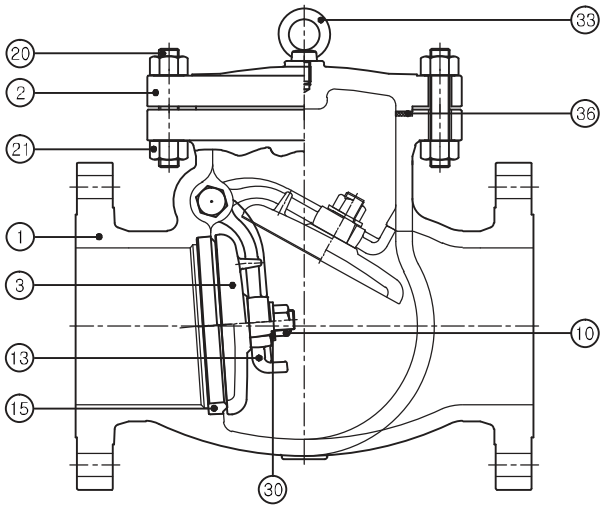
INDUSTRIAL VALVES
CAST CARBON STEEL

NO	NAME OF PART	ASTM SPECIFICATION				
		STANDARD	HIGH TEMP. SERVICE			LOW TEMP. SERVICE
1	BODY	A216-WCB	A217-WC6	A217-WC9	A217-C5	A352-LCB
2	COVER	A216-WCB	A217-WC6	A217-WC9	A217-C5	A352-LCB
3	DISC	A217-CA15/+STL	A217-WC6/+STL	A217-WC9/+STL	A217-C5/+STL	A352-LCB/+STL
10	DISC NUT	A194-8				
13	ARM	A216-WCB	A216-WC6	A216-WC9	A217-C5	A352-LCB
15	BODY SEAT RING	A106+STL	A182-F11+STL	A182-F22+STL	A182-F5+STL	A350-LF2+STL
17	PLUG BOLT	A307-B	A479-304	A479-304	A479-304	A479-304
18	PLUG GASKET	SOFT STEEL	A479-304	A479-304	A479-304	A479-304
19	ROD PIN	A479-410	A479-410	A479-410	A479-410	A479-304
20	COVER BOLT	A193-B7	A193-B16	A193-B16	A193-B16	A320-L7
21	COVER NUT	A194-2H	A194-4	A194-4	A194-4	A194-4L
30	PLAIN WASHER	A240-304				

* Note 1, In case of 12″ and larger size, we'll use trim material overlayed one on the same or equivalent material of the body.

NO	NAME OF PART	ASTM SPECIFICATION
33	EYE BOLT	A307-B
36	SPIRAL WOUND GASKET	GRAPHITE+304

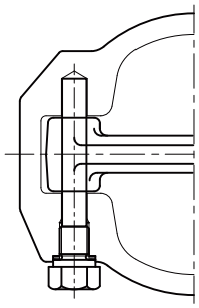


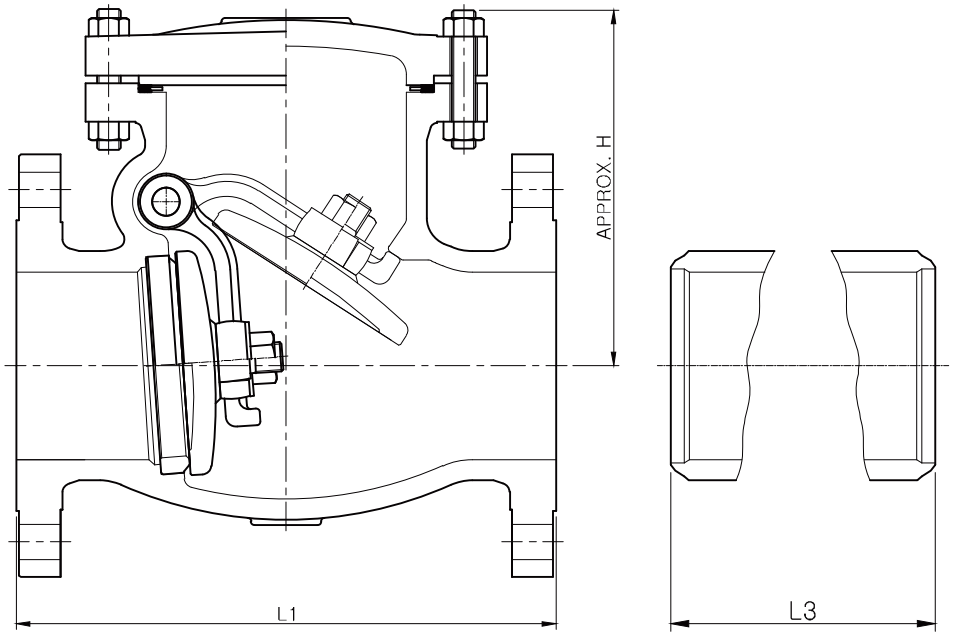


CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 150

VALVE SIZE	inch	2	2½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	8,0	8,5	9,5	11,5	13,0	14,0	19,5	24,5	27,5	31,0	34,0	38,5	38,5	51,0
	mm	203	216	241	292	330	356	495	622	699	787	864	978	978	1295
H	inch	5,5	6,3	6,6	7,6	8,9	11,4	13,8	15,5	17,0	18,5	19,7	26,8	27,2	31,5
	mm	140	160	168	193	225	290	352	395	432	470	500	680	690	800
WEIGHT	LB	33,1	48,5	59,5	90,4	143,4	176,4	313,1	390,3	639,5	862,2	1016,5	1411,2	1719,9	3285,5
	kg	15	22	27	41	65	80	142	177	290	391	461	640	780	1490

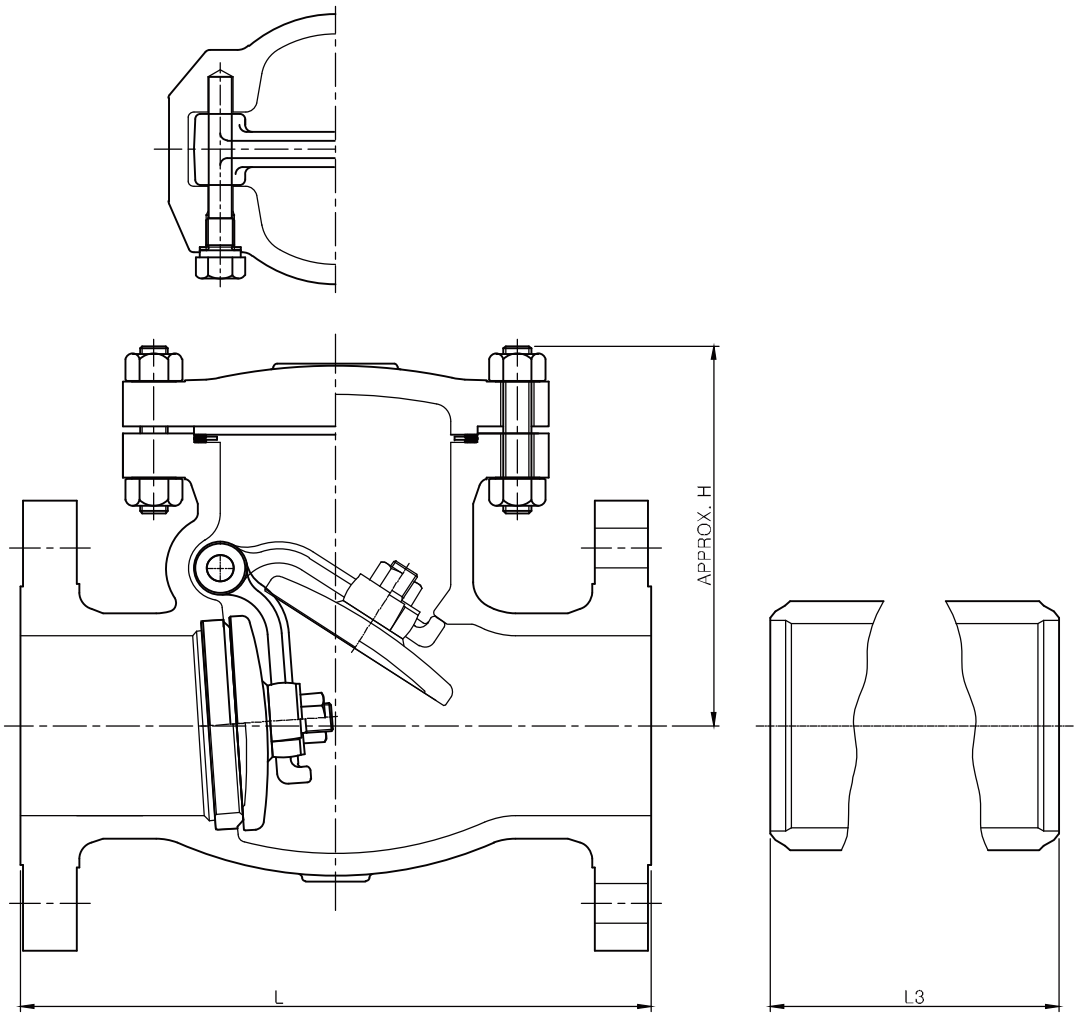




CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 300

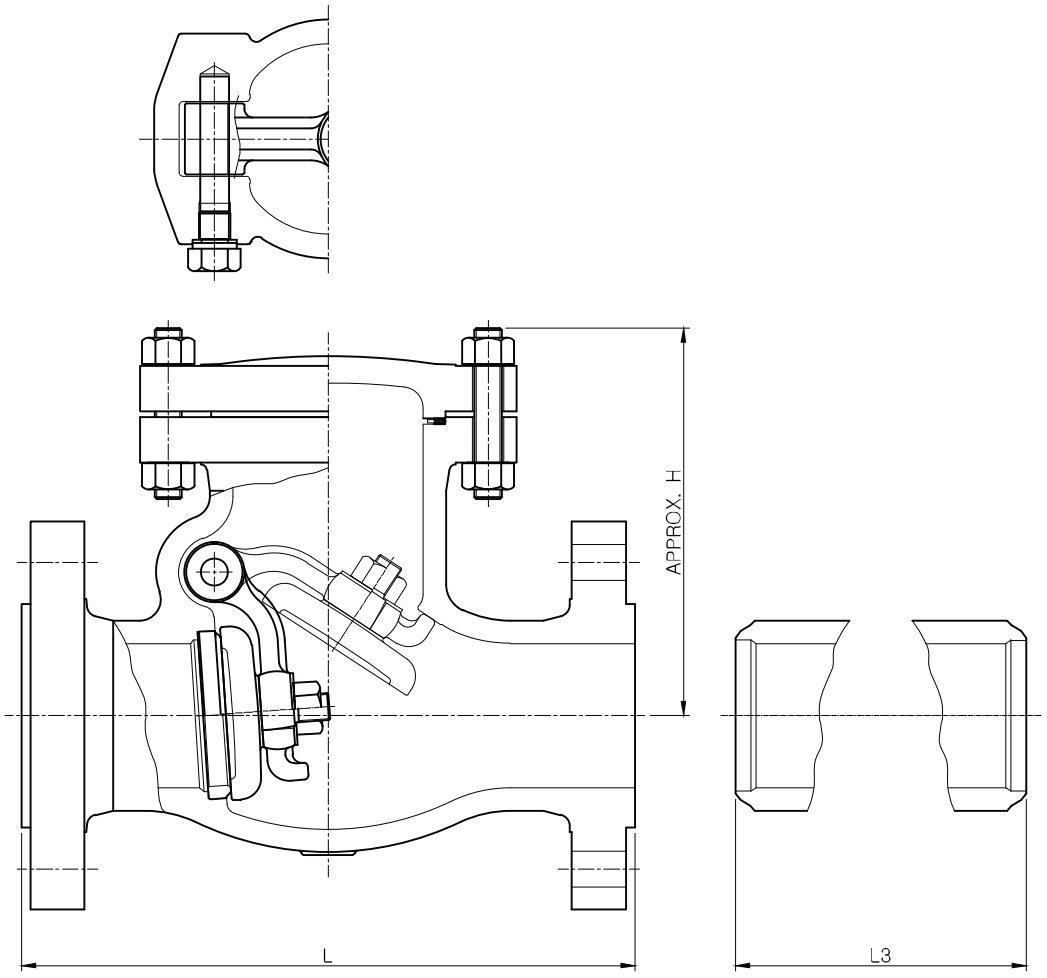
VALVE SIZE	inch	2	2½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	10.5	11.5	12.5	14.0	15.75	17.5	21.0	24.5	28.0	33.0	34.0	38.5	40.0	53.0
	mm	267	292	318	356	400	444	533	622	711	838	864	978	1016	1346
H	inch	5.8	6.9	7.0	8.5	9.6	12.1	14.8	16.2	17.5	18.5	20.0	21.4	23.6	27.1
	mm	147	175	177	215	245	308	377	413	445	470	510	545	600	690
WEIGHT	LB	41.9	66.2	77.2	119.1	198.5	282.4	463.1	590.9	915	1503.8	1647.1	2756.3	3307.5	4917.2
	kg	19	30	35	54	90	128	210	268	415	682	747	1250	1500	2230



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 600

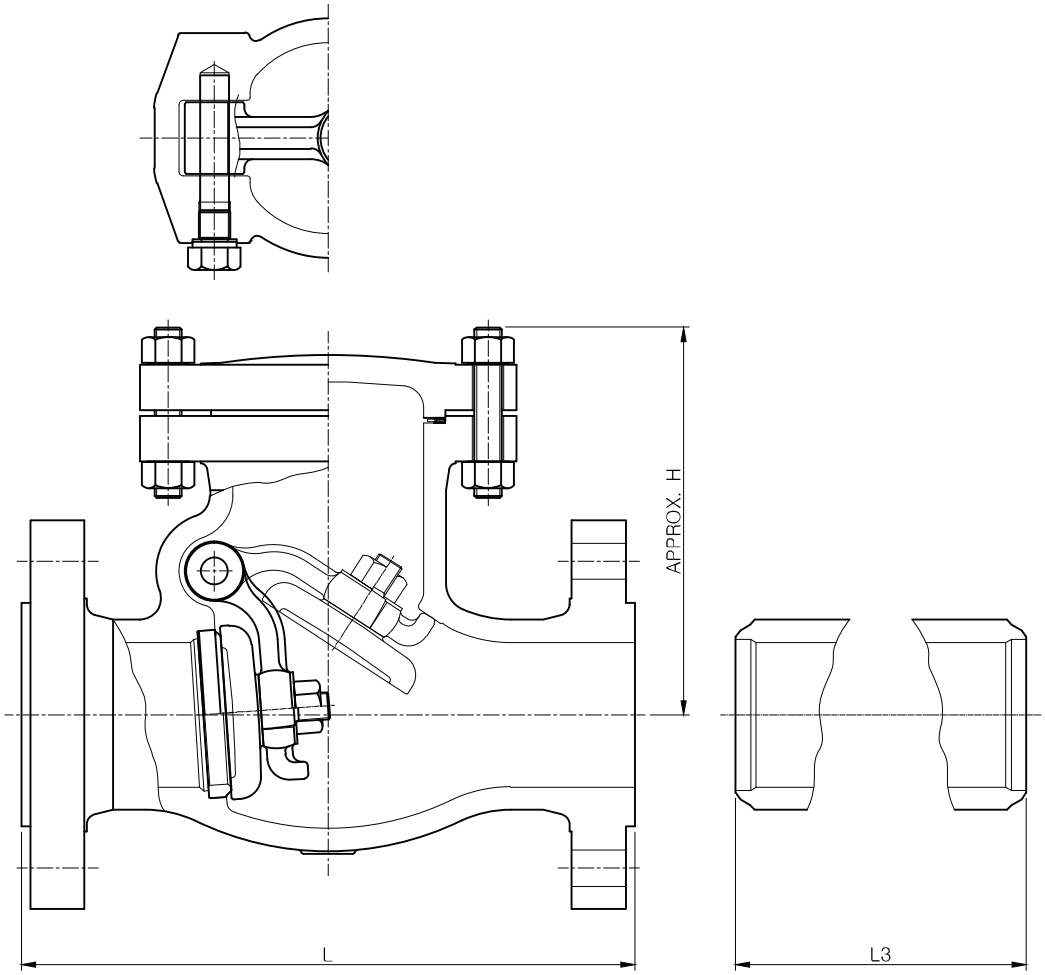
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	11,5	13,0	14,0	17,0	20,0	22,0	26,0	31,0	33,0	35,0	39,0	4300	47,0	55,0
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397
H	inch	7,5	7,9	9,2	10,7	11,4	12,6	15,0	17,5	18,5	21,6	26,4	27,5	29,5	31,5
	mm	190	200	235	273	290	320	380	445	470	550	670	700	750	800
WEIGHT	LB	77,2	119,1	141,1	229,3	330,8	449,8	793,8	1367,1	1775,0	2306,4	2976,8	4454,1	5269,9	7717,5
	kg	35	54	64	104	150	204	204	620	805	1045	1350	2020	2390	3500



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 900

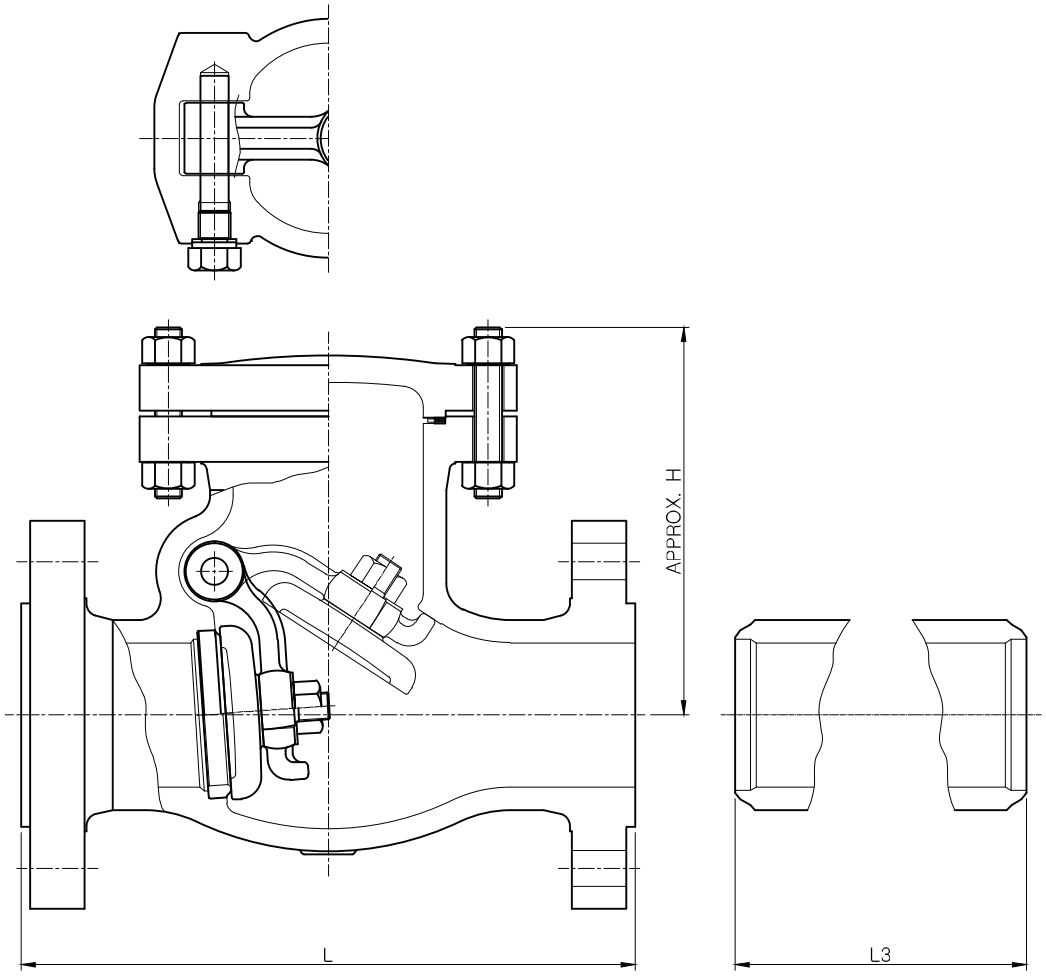
VALVE SIZE	inch	2	2 1/2	3	4	5	6	8	10	12	14	16
	mm	50	65	80	100	125	150	200	250	300	350	400
L1 & L3	inch	14,5	16,5	15,0	18,0	22,0	24,0	29,0	31,0	38,0	40,5	44,5
	mm	368	419	381	457	559	610	737	838	965	1029	1130
H	inch	13,1	13,7	12,6	16,7	17,4	18,9	22,2	28,3	30,7	31,8	33,0
	mm	333	349	321	423	441	479	565	721	781	807	838
WEIGHT	LB	154,4	242,6	242,6	471,4	735,6	837,9	1375,9	2535,3	3197,3	3858,8	5336,1
	kg	70	110	110	214	320	380	624	1150	1450	1750	2420



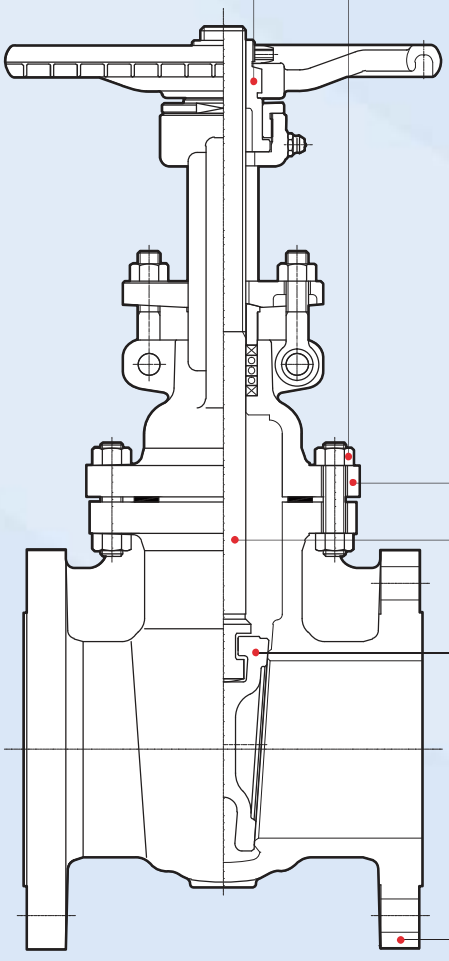
CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 1500

VALVE SIZE		2	2 ½	3	4	5	6	8	10	12	14
	mm	50	65	80	100	125	150	200	250	300	350
L1 & L3	inch	14.5	16.5	18.5	21.5	26.5	27.75	32.75	39.0	44.5	49.5
	mm	368	419	470	546	673	705	832	991	1130	1257
H	inch	13.1	13.7	15.3	16.5	18.9	23.1	26.8	29.8	39.7	40.8
	mm	333	349	389	419	479	587	680	756	1008	1035
WEIGHT	LB	154.4	242.6	374.9	661.5	1036.4	1532.5	2624.0	4079.3	7342.7	7938
	kg	70	110	170	300	470	695	1190	1850	3330	3600



CAST STAINLESS STEEL
GATE VALVES BOLTED BONNET



YOKE SLEEVE
The upper portion of the Yoke Sleeve is hexagonally tapered to fix hand-wheel. The standard material of the Yoke Sleeve is Nodular Ni-resist D2 with over 1150°C(2100°F) dissolution point in accordance with API std. specifications.

BOLTING
Bonnet studs and nuts are manufactured from alloy or stainess steel to the relevant ASTM standard.

BONNET
The bonnet is in stainless steel. It is machined to accept the yoke sleeve and incorporates a stuffing box dimension in accordance with the API standard.

STEM
The stem is part of the trim, A stem is provided with a T-head. A ground backseat is provided to endure perfecty tight seal to the stuffing box when the valve is fully open.
The stem is ground to minimize friction and prevent damage to gland packing. The threading is trapezoidal TW type dimensions comply with the applicable standard.

WEDGE
The wedge is part of the trim. It is normally suppiled as flexible. It is connected to the stem by means of a T-joint. The guides on each side of the wedge are casted for proper alignment with the body guides. Special attention is given to the seating surface, which are ground and lapped to insure a perfectly tight seal.

BODY
The body is in cast stainless steel and is carefuly designed in all its details.
The basic dimension, i.e. wall thickness, face to face and flanges comply with the relevant API and ANSI standard. The sealing surface for connection to the bonnet are flat finish in the 150lb Class, recessed in the 300lb Class or may be ring joint in the 150lb Class in the 600lb Class and above. Bosses may be provided for drain taps or by-pass piping.

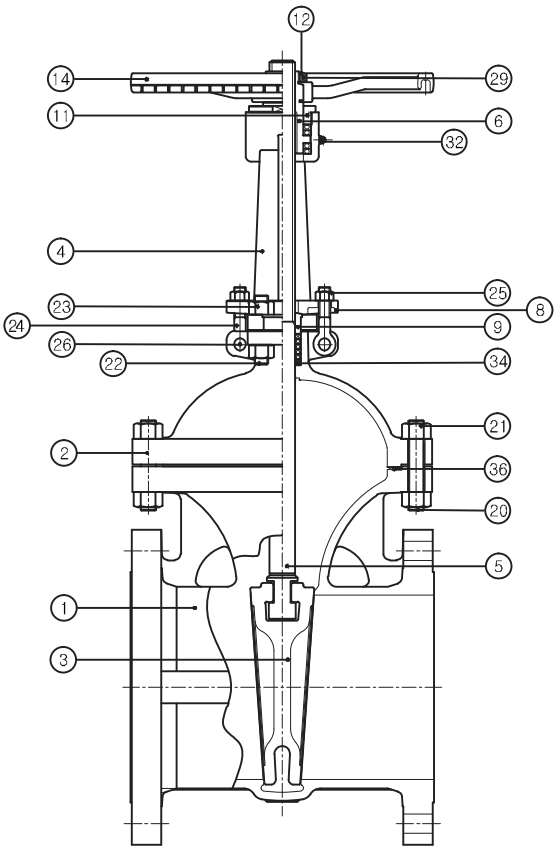
CAST STEEL

INDUSTRIAL VALVES
CAST STAINLESS STEEL

NO	NAME OF PART	ASTM SPECIFICATION				
		STANDARD	CORROSION SERVICE			
1	BODY	A351-CF8/+STL	A351-CF8M/+STL	A351-CF3/+STL	A351-CF3M/+STL	A351-CN7M/+STL
2	BONNET	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	A351-CN7M
3	WEDGE	A351-CF8/+STL	A351-CF8M/+STL	A351-CF3/+STL	A351-CF3M/+STL	A351-CN7M/+STL
4	YOKE	A351-CF8				
5	STEM	A479-304	A479-316	A479-304L	A479-316L	ALLOY 20
6	YOKE SLEEVE	A439-D2C				
8	GLAND FLANGE	A351-CF8/A240-304				
9	PACKING GLAND	A479-304	A479-316	A479-304L	A479-316L	ALLOY 20
20	BONNET BOLT	A193-B8				
21	BONNET NUT	A194-B				
22	YOKE BOLT	A193-B8				
23	YOKE NUT	A194-B				
24	HINGE BOLT	A193-B8				
25	HINGE NUT	A194-B				
26	HINGE PIN	A479-304				

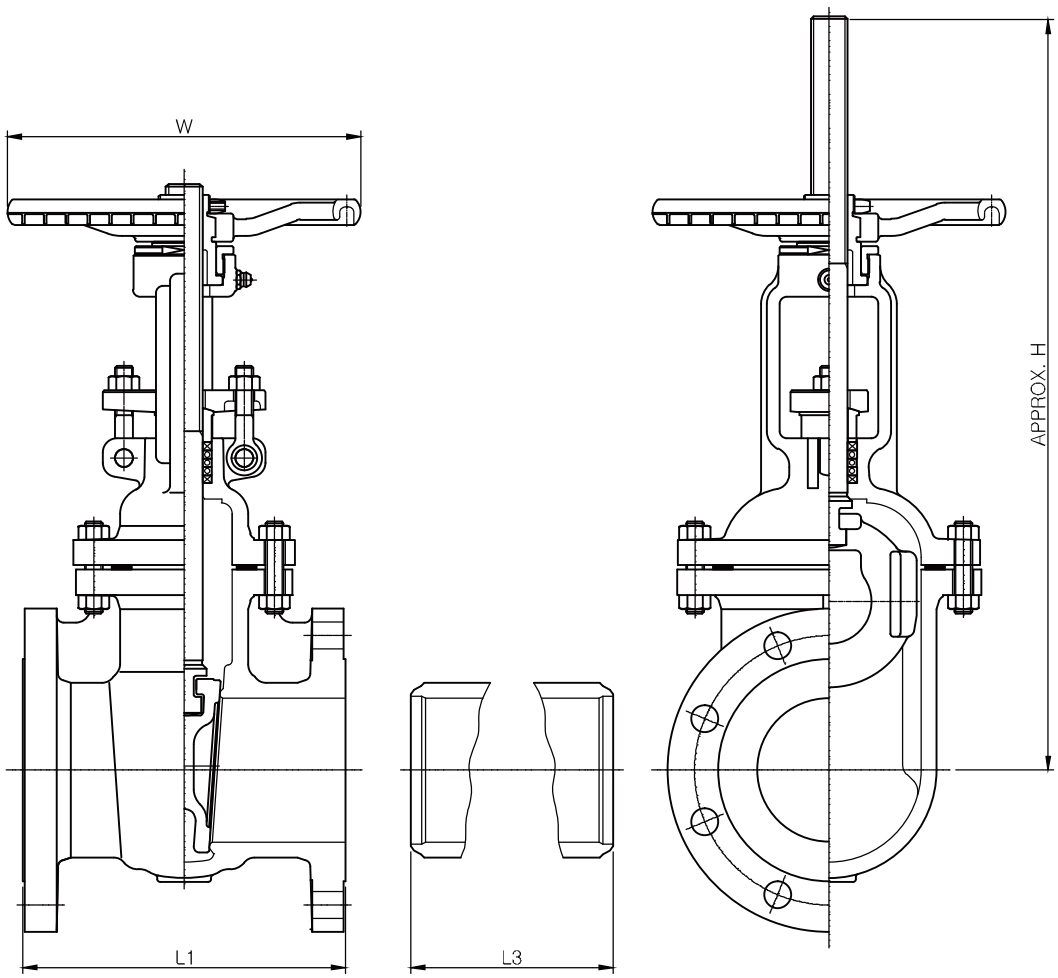
* Note 1, Packing & gasket material : customer's requirements.

NO	NAME OF PART	ASTM SPECIFICATION
11	SLEEVE NUT	A479-304
12	WHEEL NUT	A351-CF8
14	HAND WHEEL	A536-60
29	SET SCREW	304
32	GREASE NIPPLE	304
34	PACKING	GRAPHITE
36	SPIRAL WOUND GASKET	GRAPHITE+304



INDUSTRIAL VALVES
ASME CLASS 150

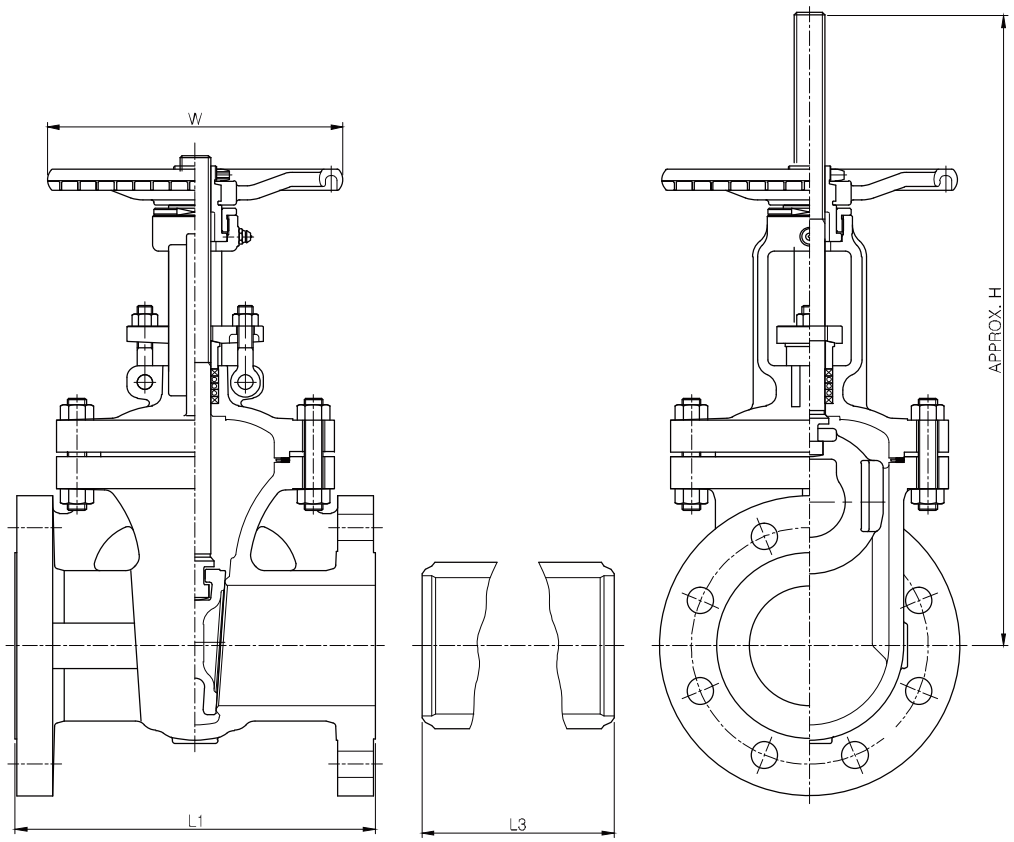
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1	inch	7,0	7,5	8,0	9,0	10,0	10,5	11,5	13,0	14,0	15,0	16,0	17,0	18,0	20,0
	mm	178	191	203	229	254	267	292	330	356	381	406	432	457	508
L3	inch		9,5	11,12	12,0	15,0	15,88	46,5	18,0	19,75	22,5	24,0	26,0	28,0	32,0
	mm	216	241	283	305	381	403	419	457	502	572	610	660	711	813
H	inch	14,0	15,2	16,8	20,9	25,2	28,5	37,2	43,9	52,0	55,9	59,0	78,7	86,6	102,3
	mm	356	386	426	531	641	724	945	1116	1321	1420	1500	2000	2200	2600
W	inch	7,1	7,1	7,9	8,8	9,8	9,8	12,4	14,0	15,7	17,7	19,7	19,7	24,8	24,8
	mm	180	180	200	224	250	250	315	355	400	450	500	500	630	630
WEIGHT	LB	44,1	55,1	66,2	97,0	132,3	154,4	233,7	368,2	526,9	760,7	1080,5	1274,5	1611,9	2280,0
	kg	20	25	30	44	60	70	106	167	239	345	490	578	731	1043



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 300

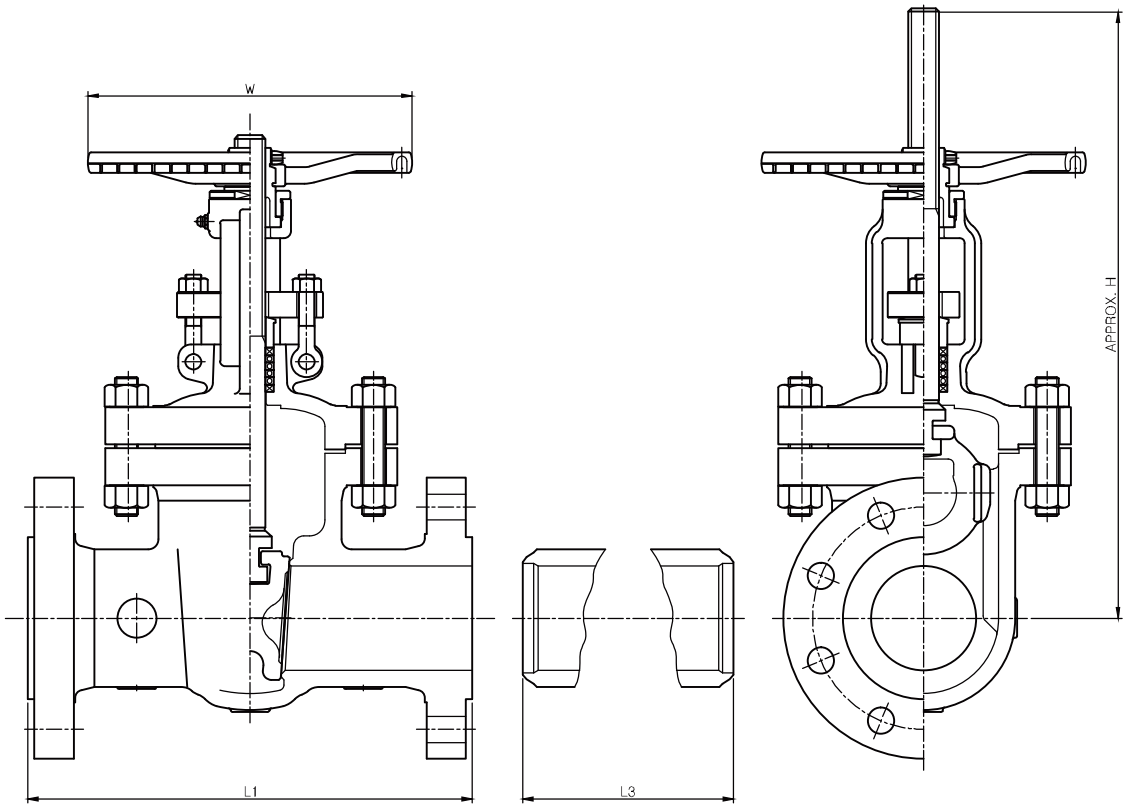
VALVE SIZE	inch	2	2½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	8,5	9,5	11,12	12,0	15,0	15,88	16,5	18,0	19,75	30,0	33,0	36,0	39,0	45,0
	mm	216	241	283	305	381	403	419	457	502	762	838	914	991	1143
H	inch	14,5	15,7	17,4	21,5	26,2	30,0	38,5	45,8	59,1	63,0	72,8	86,6	101,6	106,3
	mm	370	400	442	546	667	761	979	1163	1500	1600	1850	2200	2580	2700
W	inch	7,9	7,9	8,8	9,8	12,4	14,0	15,7	17,7	19,7	19,7	19,7	24,8	24,8	27,9
	mm	200	200	224	250	315	355	400	450	400	500	500	630	630	710
WEIGHT	LB	52,9	75,0	90,4	143,3	209,5	257,9	401,3	268,2	1060,6	1528,1	2094,8	2535,8	3307,5	4961,3
	kg	24	34	41	65	95	117	182	355	481	693	950	1150	1500	2250



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 600

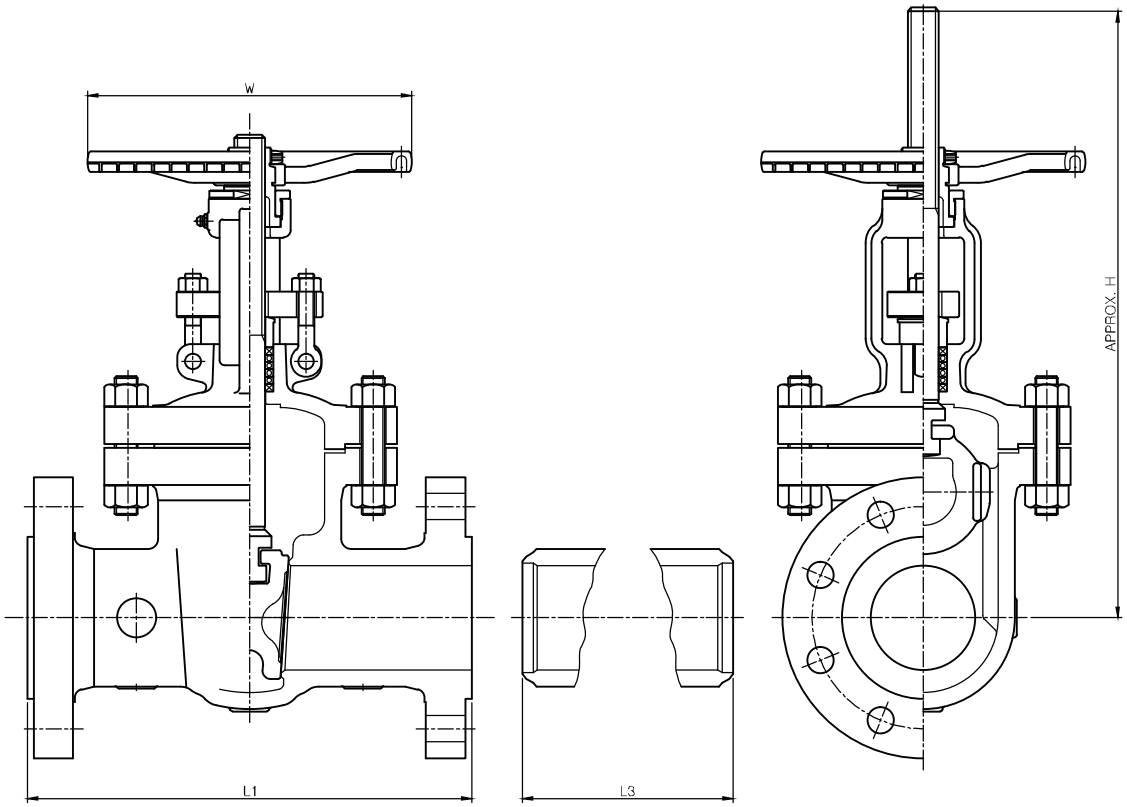
VALVE SIZE	inch	2	2½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	11.5	13.0	14.0	17.0	20.0	22.0	26.0	31.0	33.0	35.0	39.0	43.0	47.0	55.00
	mm	292	330	356	432	508	556	660	787	838	889	991	1092	1194	1397
H	inch	18.7	21.6	23.5	26.8	31.5	36.6	45.7	53.1	61.8	72.1	82.9	98.0	104.8	116.9
	mm	475	550	598	680	800	930	1160	1350	1570	1832	2106	2489	2662	2970
W	inch	7.7	7.7	9.4	11.8	14.0	17.7	17.7	19.7	22.0	22.0	27.9	27.9	31.5	35.4
	mm	195	195	240	300	355	450	450	500	560	560	710	710	800	900
WEIGHT	LB	79.4	127.9	154.4	269.0	441	551.2	893.0	1433.2	1896.3	2734.2	3109.1	4890.7	6198.3	8656.8
	kg	36	58	70	122	200	250	405	650	860	1240	1410	2218	2811	3926



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 900

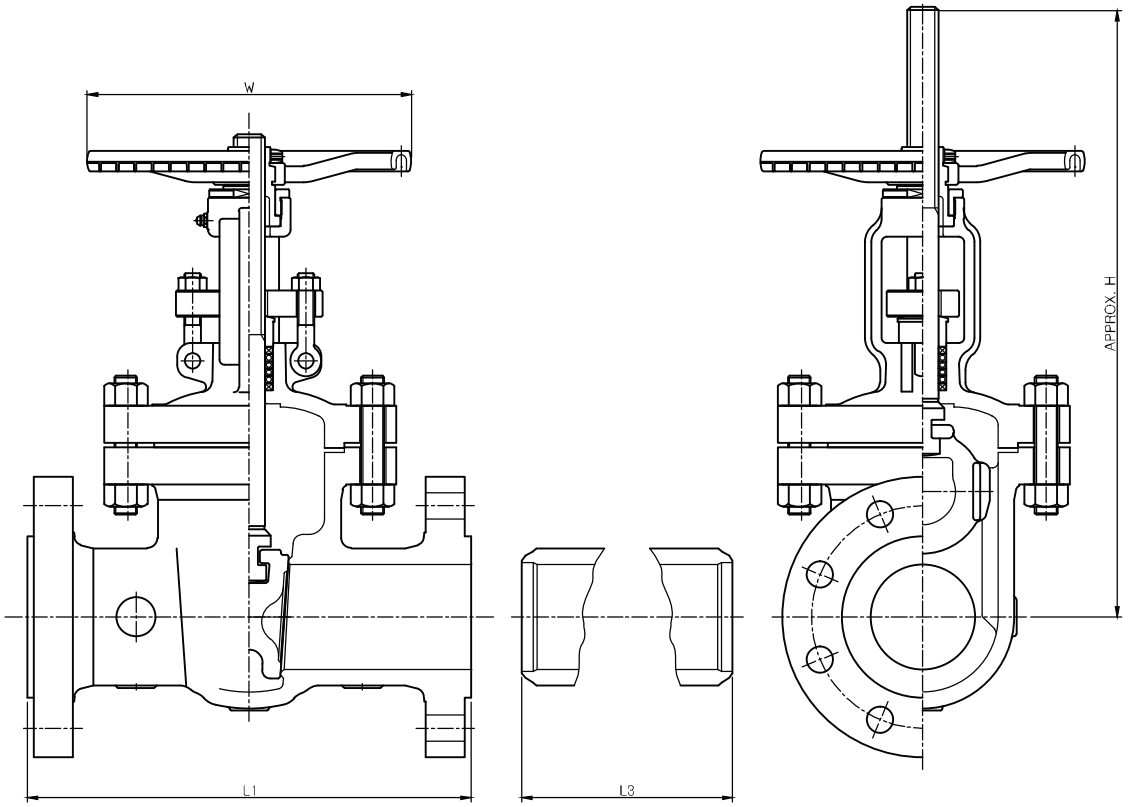
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	14,5	16,5	15,0	18,0	22,0	24,0	29,0	33,0	38,0	40,5	44,5	48,0	52,0	61,0
	mm	368	419	381	457	559	610	737	838	965	1029	1130	1219	1321	1549
H	inch	21,2	26,4	26,4	30,8	37,1	42,4	55,5	67,7	77,4	74,9	80,7	88,8	110,2	124,0
	mm	539	670	672	782	943	1076	1411	1720	1965	1902	2051	2256	2800	3150
W	inch	11,8	11,8	14,0	15,7	19,7	22,0	17,7	22,0	22,0	24,0	24,0	30,0	30,0	24,0
	mm	300	300	355	400	500	560	450	560	560	610	610	760	760	610
WEIGHT	LB	181	341,8	364	384	661,5	999	1720	2752	3400	4895,1	6615	8533,4	10716,3	16096,5
	kg	82	155	165	174	300	453	780	1248	1542	2220	3000	3870	4860	7300



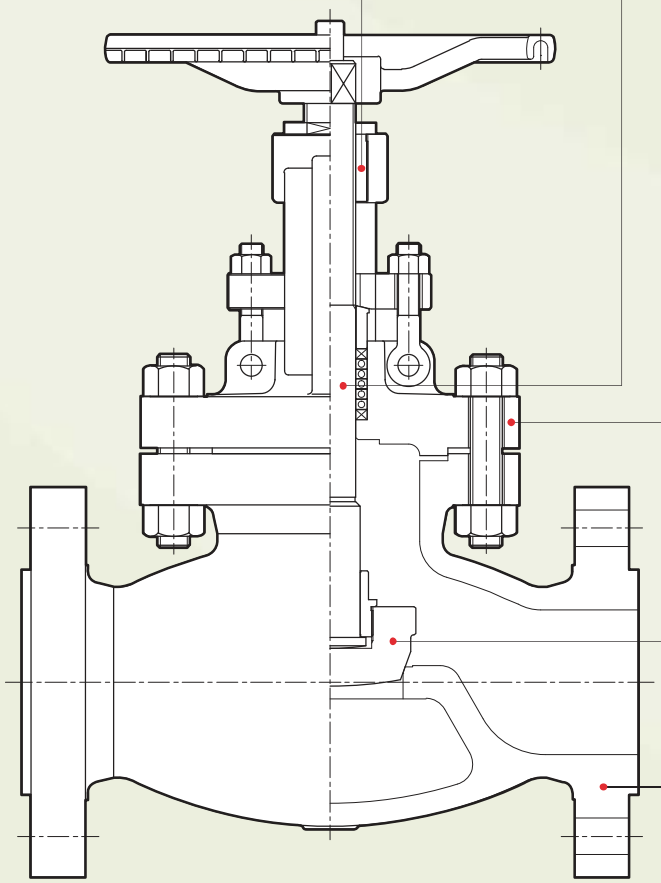
CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 1500

VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16
	mm	50	65	80	100	125	150	200	250	300	350	400
L1 & L3	inch	14,5	16,5	18,5	21,5	26,5	27,75	32,75	39,0	44,5	49,5	54,5
	mm	368	419	470	546	673	705	832	991	1130	1257	1384
H	inch	21,2	26,4	29,1	30,8	43,62	47,0	60,8	66,5	82,3	85,1	97,9
	mm	539	670	738	783	1108	1196	1546	1688	1090	2167	2486
W	inch	11,8	11,8	15,7	19,7	24,8	13,8	22,0	27,9	27,9	30,0	30,0
	mm	300	300	400	500	630	350	560	710	710	760	760
WEIGHT	LB	181	341,8	401	573	926,1	1360	3175	4412	8417	9073,6	15324,8
	kg	82	155	182	260	420	617	1440	2001	3816	4115	6950



CAST CARBON STEEL
GLOBE VALVES BOLTED BONNET



YOKE BUSH
The yoke bush is made from bronze, stainless steel of ductlie iron having high resistance to wear and a high melting point. It is screwed into the bonnet and properly sized to withstand the stresses, which develop when opening and closing the valve.

STEM
The stem is part of the trim. A ground backseat is provided to ensure perfectly tight seal to the stuffing box when the valve is fully open. The stem is attached to the disc by means of a threaded ring, which allows the disc to rotate. The stem is ground to minimlze friction and prevent damage to gland packing.

BONNET
The bonnet is in stainless steel. It is machined to accept the yoke sleeve and incorporates a stuffing box dimension in accordance with the BS standard.

DISC
The disc is part of the trim. It is normally supplied of the flat, tapered or plug type or, on request, of the parabolic regulating type, always free to rotate on the stem.
Special attention is given to the seat ring face which is ground and lapped for a perfectly tight seal.

BODY
The body is in stainless steel. The basic dimension, i.e.wall thickness, face to face and flanges comply with the relevant API and ASNI standards. The Body-to-bonnet flange is circular and the sealing surface for connections to the bonnet are recessed in the 150lb and 300lb class or may be ring joint in the higher classes.
The body may be threaded for renewable seats. Bosses may be provided for drain taps or by-pass piping.

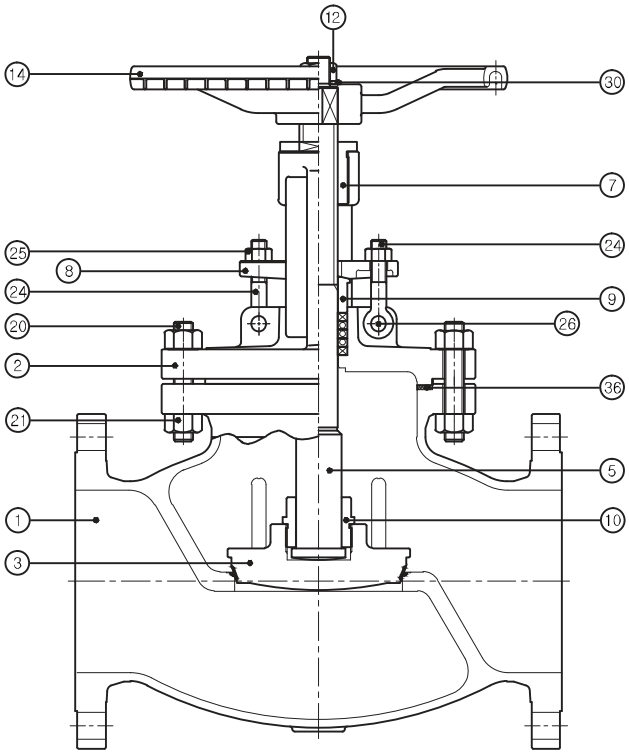
CAST STEEL

INDUSTRIAL VALVES
CAST STAINLESS STEEL

NO	NAME OF PART	ASTM SPECIFICATION				
		STANDARD	CORROSION SERVICE			
1	BODY	A351-CF8/+STL	A351-CF8M/+STL	A351-CF3/+STL	A351-CF3M/+STL	A351-CN7M/+STL
2	BONNET	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	A351-CN7M
3	DISC	A351-CF8/+STL	A351-CF8M/+STL	A351-CF3/+STL	A351-CF3M/+STL	A351-CN7M/+STL
5	STEM	A479-304	A479-316	A479-304L	A479-316L	ALLOY 20
7	YOKE BUSH	A439-D2C				
8	GLAND FLANGE	A351-CF8/A240-304				
9	PACKING GLAND	A479-304	A479-316	A479-304L	A479-316L	ALLOY 20
10	DISC NUT	A479-304	A479-316	A479-304L	A479-316L	ALLOY 20
20	BONNET BOLT	A193-B8				
21	BONNET NUT	A194-8				
24	HINGE BOLT	A193-B8				
25	HINGE NUT	A194-8				
26	HINGE PIN	A479-304				

* Note 1, In case of 8″ and larger : botton guide type
2, Packing & gasket material : customer's requirements.

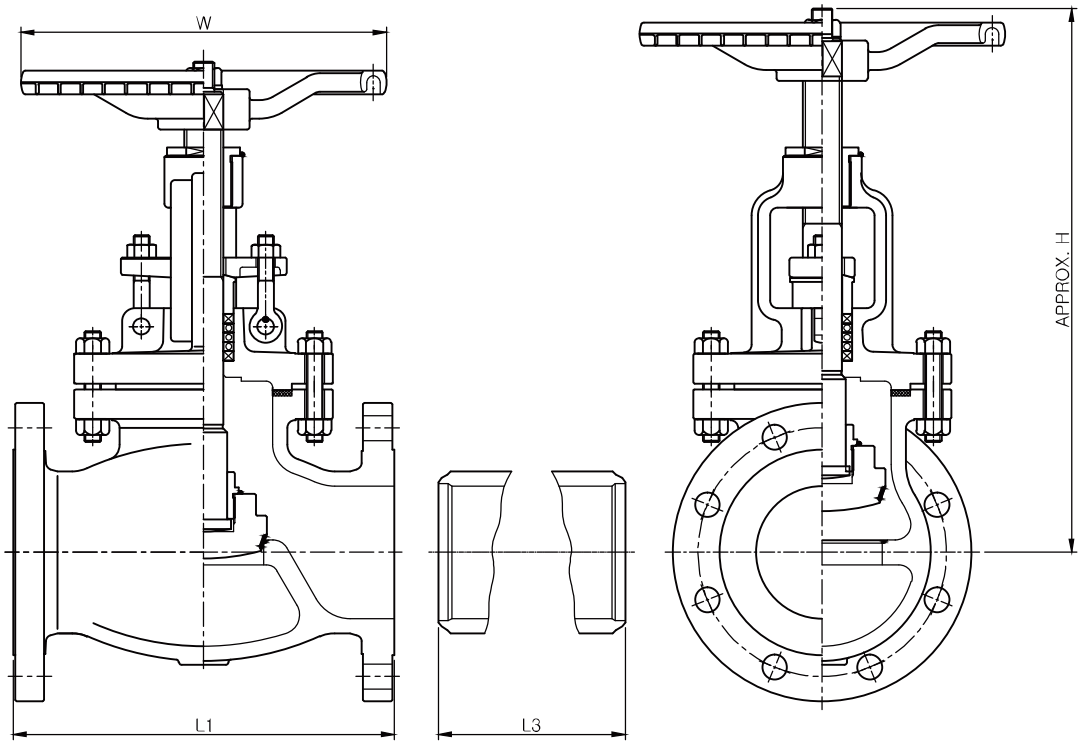
NO	NAME OF PART	ASTM SPECIFICATION
12	WHEEL NUT	A194-8
14	HAND WHEEL	A536-60
30	PLAIN WASHER	A240-304
34	PACKING	GRAPHITE
35	SPIRAL WOUND GASKET	GRAPHITE+304



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 150

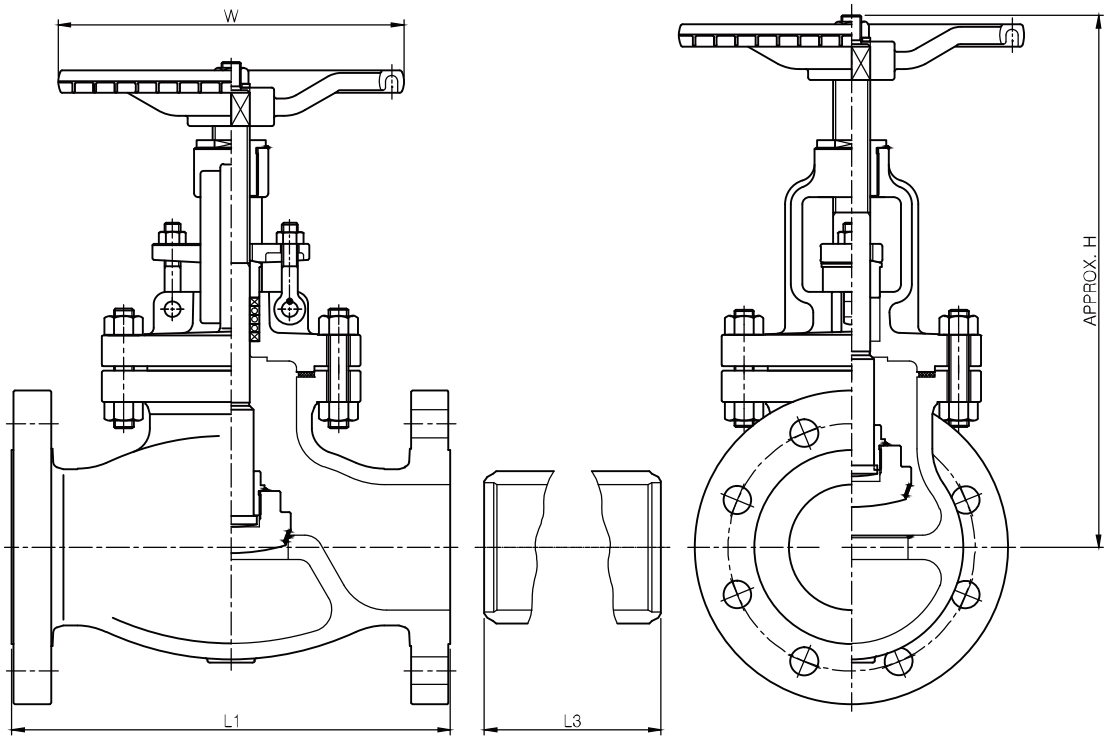
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L3	inch	8.0	8.5	9.5	11.5	14.0	16.0	19.5	24.5	27.5	31.0	36.0	38.5	38.5	51.0
	mm	203	216	241	292	356	406	495	622	699	787	914	978	978	1295
H	inch	12.2	12.6	14.3	16.0	17.6	19.4	22.4	27.0	31.5	40.9	62.6	71.7	80.7	90.6
	mm	311	320	363	406	448	492	570	685	800	1040	1590	1820	2050	2300
W	inch	7.1	7.9	9.8	11.0	11.0	12.4	15.7	19.7	23.6	23.6	23.6	24.0	27.6	27.6
	mm	180	200	250	280	280	315	400	500	600	600	600	600	700	700
WEIGHT	LB	46.3	59	72.8	116.9	163.2	209.5	410.1	804.8	804.8	1364.9	1808.1	2154.3	2712.2	3472.9
	kg	21	27	33	53	74	95	186	365	365	619	820	977	1230	1575



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 300

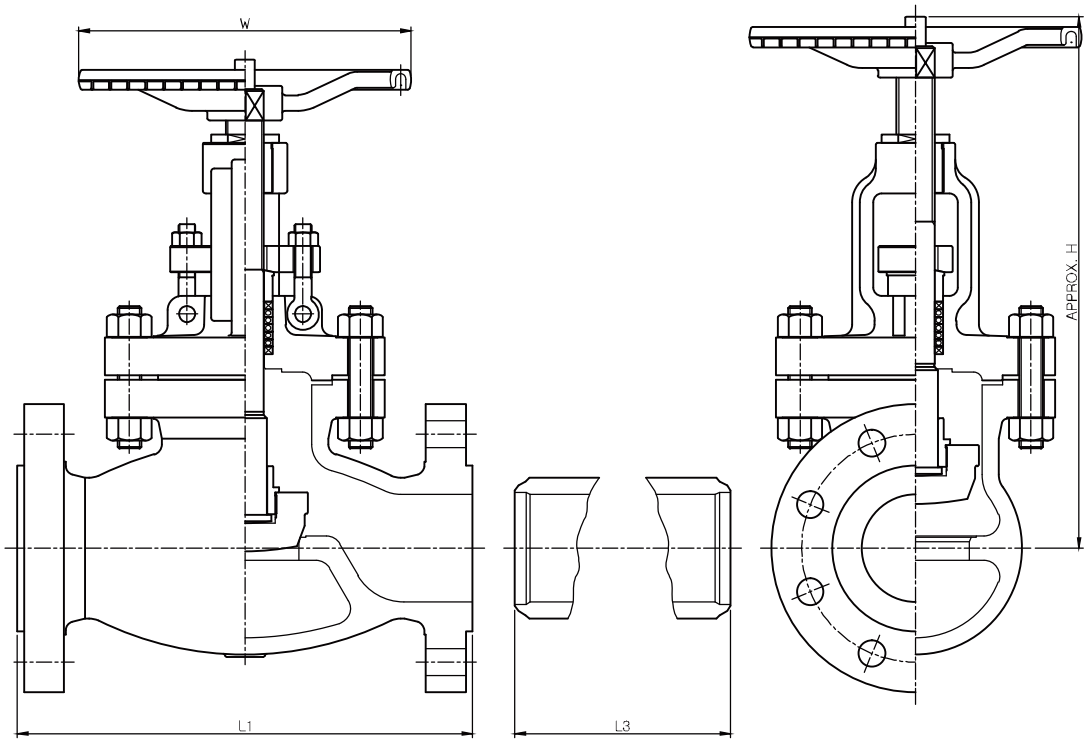
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16	18	20	24	32
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600	800
L1 & L3	inch	10,5	11,5	12,5	14,0	15,75	17,5	22,0	24,5	28,0	33,0	34	38,5	40	53	62,75
	mm	267	292	318	356	400	445	559	622	711	838	864	978	1016	1346	1594
H	inch	12,3	13,1	14,7	16,8	18,8	22,3	25,8	29,3	37,6	54,7	62,6	71,7	80,7	90,6	122,0
	mm	312	333	375	428	477	567	655	744	955	1390	1590	1820	2050	2300	3100
W	inch	7,7	7,9	9,8	11,0	12,4	14,0	15,7	15,7	15,7	22,0	27,6	27,6	27,6	31,5	31,5
	mm	180	200	250	280	315	400	500	500	500	560	700	700	700	800	800
WEIGHT	LB	61,7	86,0	99,2	189,6	253,6	330,8	621,8	809,2	1045,2	1907,3	2529,1	3014,2	3572,1	5159,7	7364,7
	kg	28	39	45	86	115	150	282	367	474	865	1147	1367	1620	2340	3340



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 600

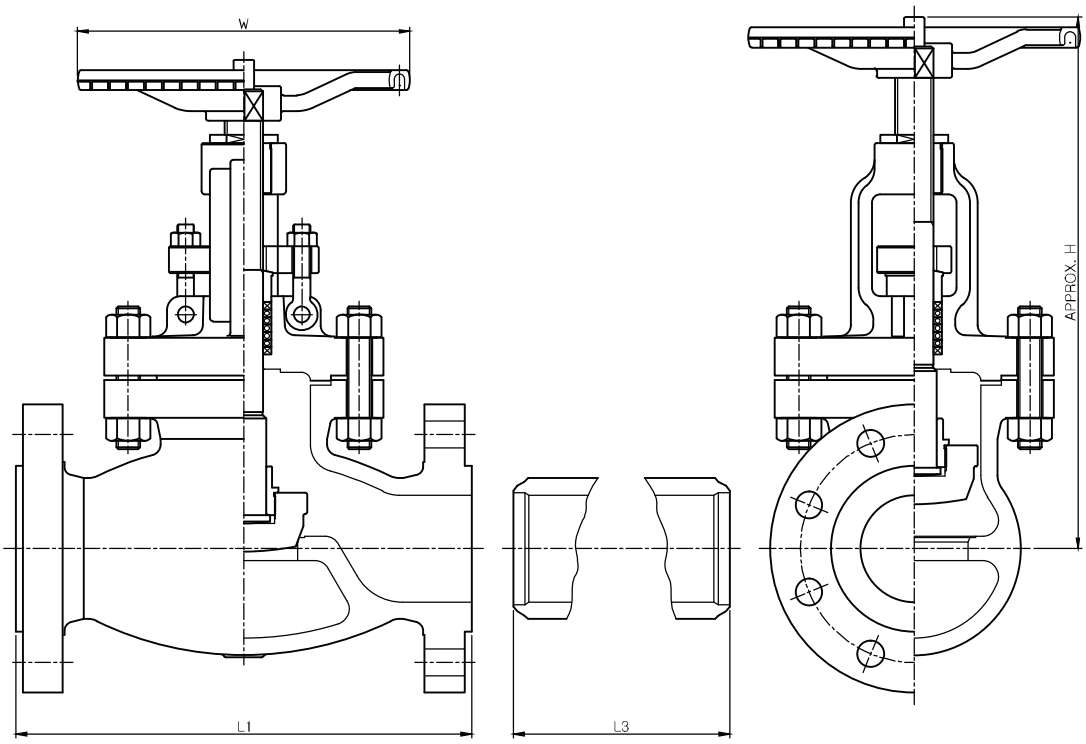
VALVE SIZE	inch	2	2 1/2	3	4	5	6	8	10	12	14	16
	mm	50	65	80	100	125	150	200	250	300	350	400
L1 & L3	inch	11,5	13,0	14,0	17,0	20,0	22,0	26,0	31,0	33,0	35,0	39,0
	mm	292	330	356	432	508	559	660	787	838	889	991
H	inch	16,0	19,8	19,9	22,4	31,8	37,8	51,8	59,5	96,9	70,9	76,0
	mm	407	502	505	568	807	959	1315	1511	1775	1800	1930
W	inch	7,7	8,5	10,6	11,8	14,0	15,7	28,0	31,5	35,4	35,4	35,4
	mm	195	215	270	300	355	400	710	800	900	900	900
WEIGHT	LB	114,5	141,1	187,4	330,8	511,3	714,4	1234,8	1741,9	2264,5	2932,7	3825,7
	kg	52	65	85	150	250	324	560	790	1027	1330	1735



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 900

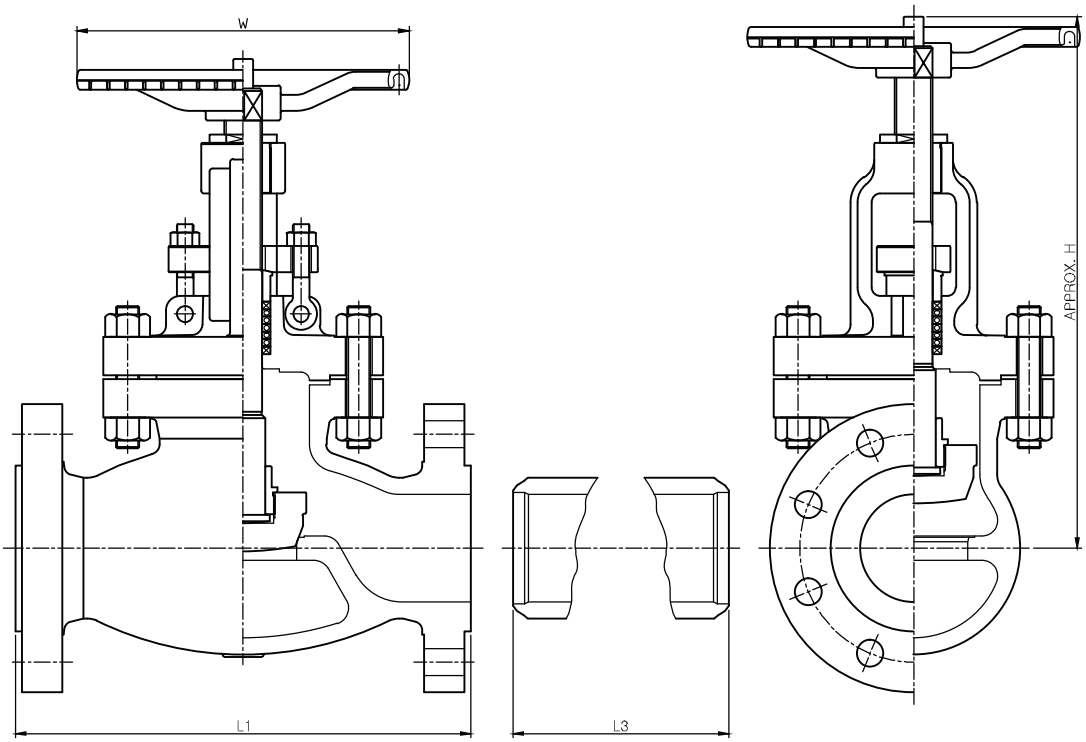
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14
	mm	50	65	80	100	125	150	200	250	300	350
L1 & L3	inch	14,5	16,5	15,0	18,0	22,0	24,0	29,0	33,0	38,0	40,5
	mm	368	419	381	457	559	610	737	838	965	1029
H	inch	27,4	27,4	30,5	33,7	53,1	58,6	65,69	63,0	67,1	87,0
	mm	695	695	775	855	1350	1488	1665	1600	1705	2210
W	inch	15,7	15,7	15,7	15,7	19,7	22,0	31,5	31,5	35,4	35,4
	mm	400	400	400	400	500	560	800	800	900	900
WEIGHT	LB	176,4	271,2	154	441	815,9	1101,5	2756,3	4520,3	5843,3	8048,3
	kg	80	123	161	200	370	500	1250	2050	2650	3650



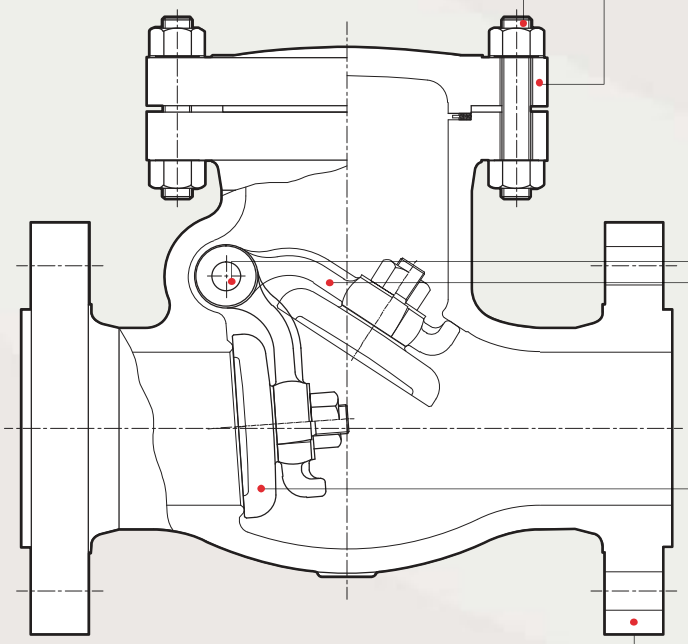
CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 1500

VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14
	mm	50	65	80	100	125	150	200	250	300	350
L1 & L3	inch	14.5	16.5	18.5	21.5	26.5	27.75	32.75	39.0	44.5	49.5
	mm	368	419	470	546	673	705	832	991	1130	1257
H	inch	27.4	27.4	31.5	40.0	57.1	64.8	77.2	91.0	105.1	126.0
	mm	695	695	799	1015	1450	1645	1960	2310	2670	3200
W	inch	15.7	15.7	19.7	19.7	24.8	28.0	28.0	30.0	30.0	30.0
	mm	400	400	500	500	630	710	710	760	760	760
WEIGHT	LB	271.2	341.8	396.9	749.7	1124.6	1482	4630.5	7055.0	9702.0	11907.0
	kg	123	155	180	340	510	627	2100	3200	4400	5400



CAST STAINLESS STEEL
SWING CHECK VALVES BOLTED COVER



BOLTING
The cover studs and nuts are manufactured from alloy or stainless steel to the relevant ASTM standard.

COVER
The cover is in stainless. The sealing surface for the connection to the body are recessed in the 150 and 300 class and ring joint in the higher classes.

ROD PIN
The rod pin is part of the trim. The hinge pin is retained in the body by one-threaded plugs and sealed by metallic or non-asbestos. The pin can be easily removed for maintenance of the valve.

ARM
The arm material is identical to the body.
Hinge bushing is provided in the larger valvs sizes to minimize friction and eliminate seizing.

DISC
The disc is part of the trim. The backside has a threaded stud for attachment to the hinge with a stainless steel nut and spilt pin to insure a strong connection. The seating face is ground and lapped for a perfectly tight seal.

BODY
The body is in stainless steel, carefuly designed to keep pressure drops to a minimum. A wide opening on top of the body permits easy inspection and maintenance. The basic dimension, i.e.wall thickness, face to face and flanges comply with the relevant API and ANSI standards. The body-to-cover flange is circular.
Threaded bosses are incorporated to ensued correct alignment of the hinge pin. Bosses may be provided for drain taps or by-pass piping.

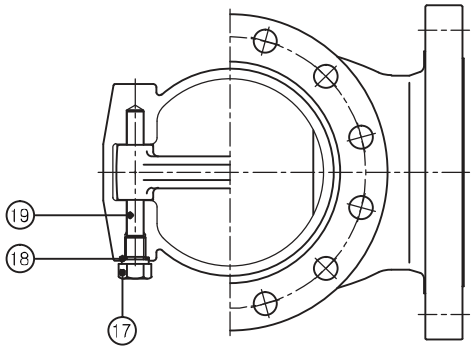
CAST STEEL

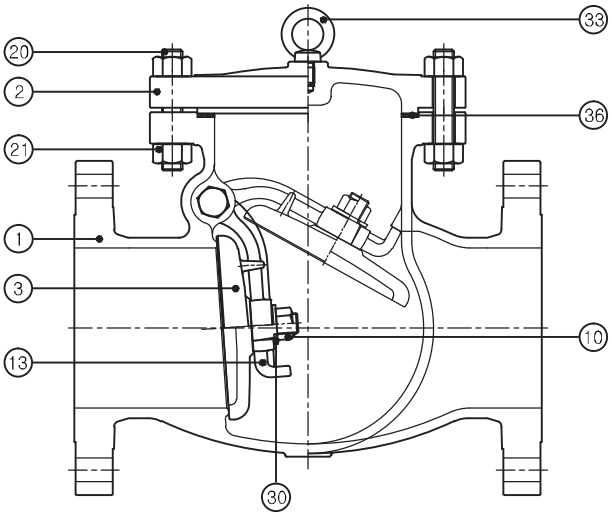
INDUSTRIAL VALVES
CAST STAINLESS STEEL

NO	NAME OF PART	ASTM SPECIFICATION				
		STANDARD	CORROSION SERVICE			
1	BODY	A351-CF8/+STL	A351-CF8M/+STL	A351-CF3/+STL	A351-CF3M/+STL	A351-CN7M/+STL
2	COVER	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	A351-CN7M
3	DISC	A351-CF8/+STL	A351-CF8M/+STL	A351-CF3/+STL	A351-CF3M/+STL	A351-CN7M/+STL
10	DISC NUT	A193-B8	A193-B8M	A193-B8	A193-B8M	ALLOY 20
13	ARM	A351-CF8	A351-CF8M	A351-CF3	A351-CF3M	A351-CN7M
17	PLUG BOLT	A479-304	A479-316	A479-304L	A479-316L	ALLOY 20
18	PLUG GASKET	A479-304	A479-316	A479-304L	A479-316L	ALLOY 20
19	ROD PIN	A479-304	A479-316	A479-304L	A479-316L	ALLOY 20
20	COVER BOLT	A240-304				
21	COVER NUT	A240-304				
30	PLAIN WASHER	A240-304	A240-316	A240-304L	A240-316L	ALLOY 20

* Note 1, Gasket material : customer's requirements.

NO	NAME OF PART	ASTM SPECIFICATION
33	EYE BOLT	A193-B8
36	SPIRAL WOUND GASKET	GRAPHITE+304

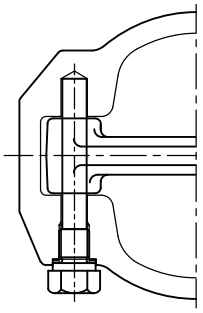


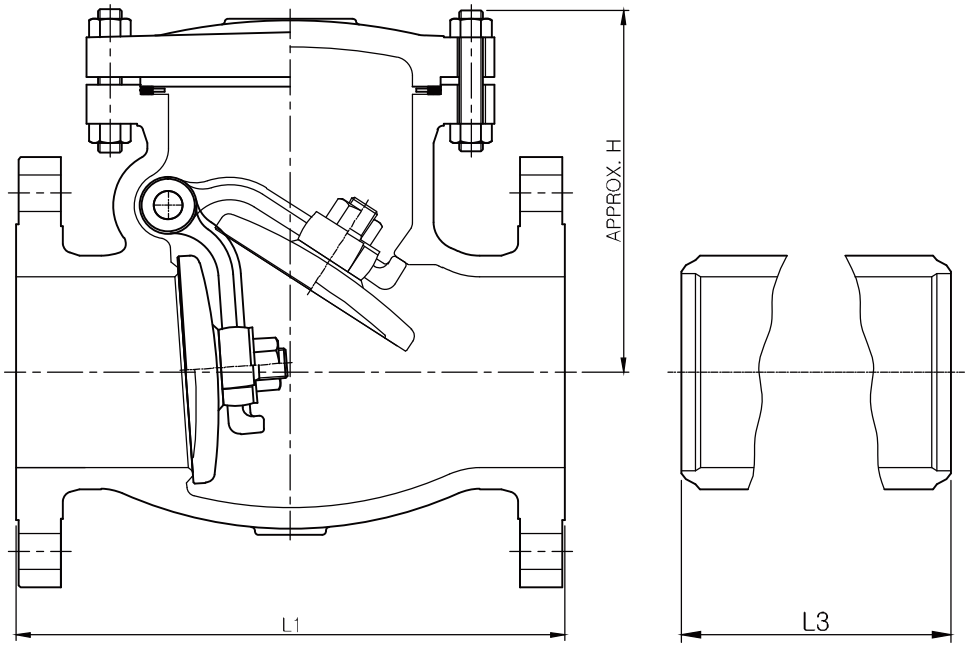


CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 150

VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L3	inch	8,0	8,5	9,5	11,5	13,0	14,0	19,5	24,5	27,5	31,0	34,0	38,5	38,5	51,0
	mm	203	216	241	292	330	356	495	622	699	787	864	978	978	1295
H	inch	5,3	6,3	6,5	7,4	8,5	11,2	13,8	15,6	16,5	18,9	20,5	24,0	26,0	35,4
	mm	135	160	165	189	216	285	352	396	420	480	520	610	660	900
WEIGHT	LB	33,1	48,5	59,5	90,4	143,3	176,4	313,1	390,3	639,5	862,2	1016,5	1411,2	1719,9	3285,5
	kg	15	22	27	41	65	80	142	177	290	391	461	461	780	1490

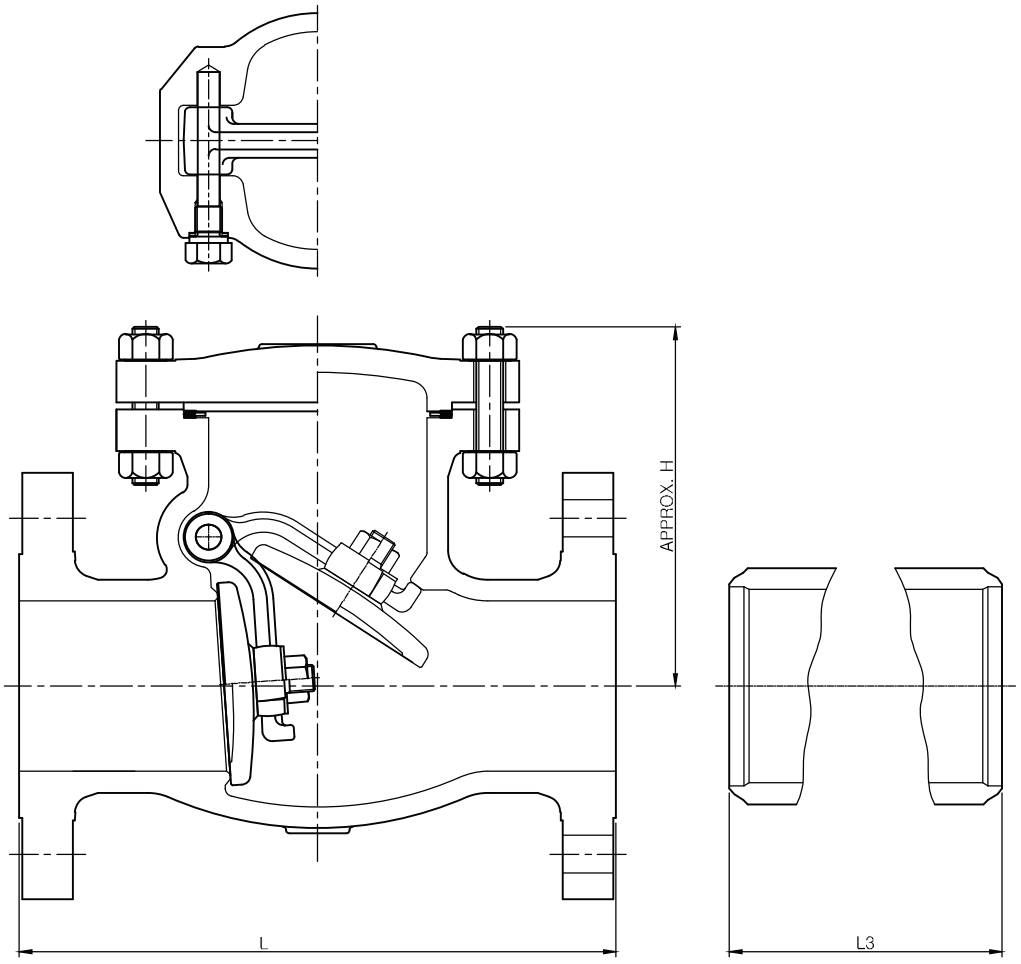




CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 300

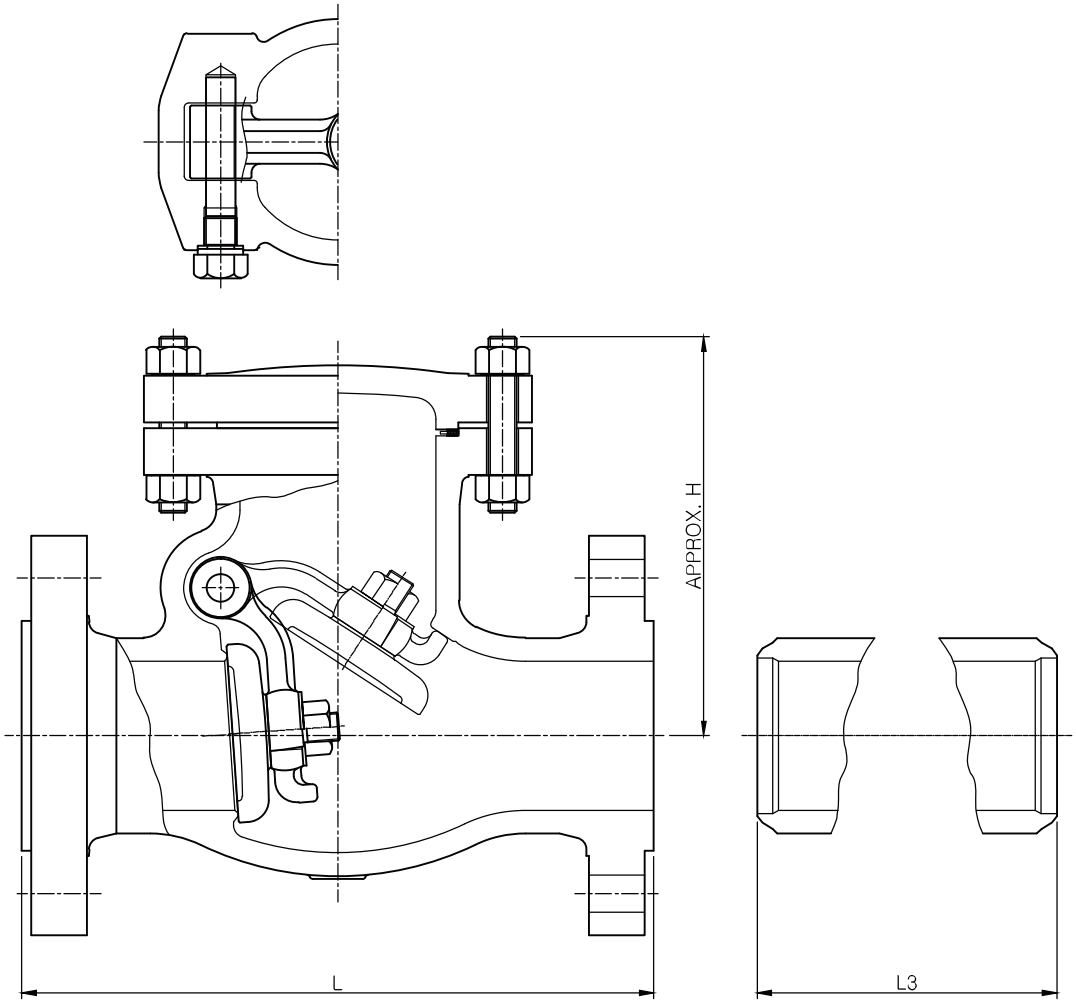
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	10,5	11,5	12,5	14,0	15,75	17,5	21,0	24,5	28,0	33,0	34,0	38,5	40,0	53,0
	mm	267	292	318	356	400	444	533	622	711	838	864	978	1016	1346
H	inch	5,8	6,5	7,0	8,4	10,6	12,0	14,8	16,2	18,1	19,7	22,4	24,8	27,6	31,5
	mm	147	165	177	215	270	304	376	413	460	500	570	630	700	800
WEIGHT	LB	41,9	86,2	77,2	119,1	198,5	282,4	463,1	590,9	915	1503,8	1647,1	2756,3	3307,5	4917,2
	kg	19	30	35	54	90	128	210	268	415	682	747	1250	1500	2230



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 600

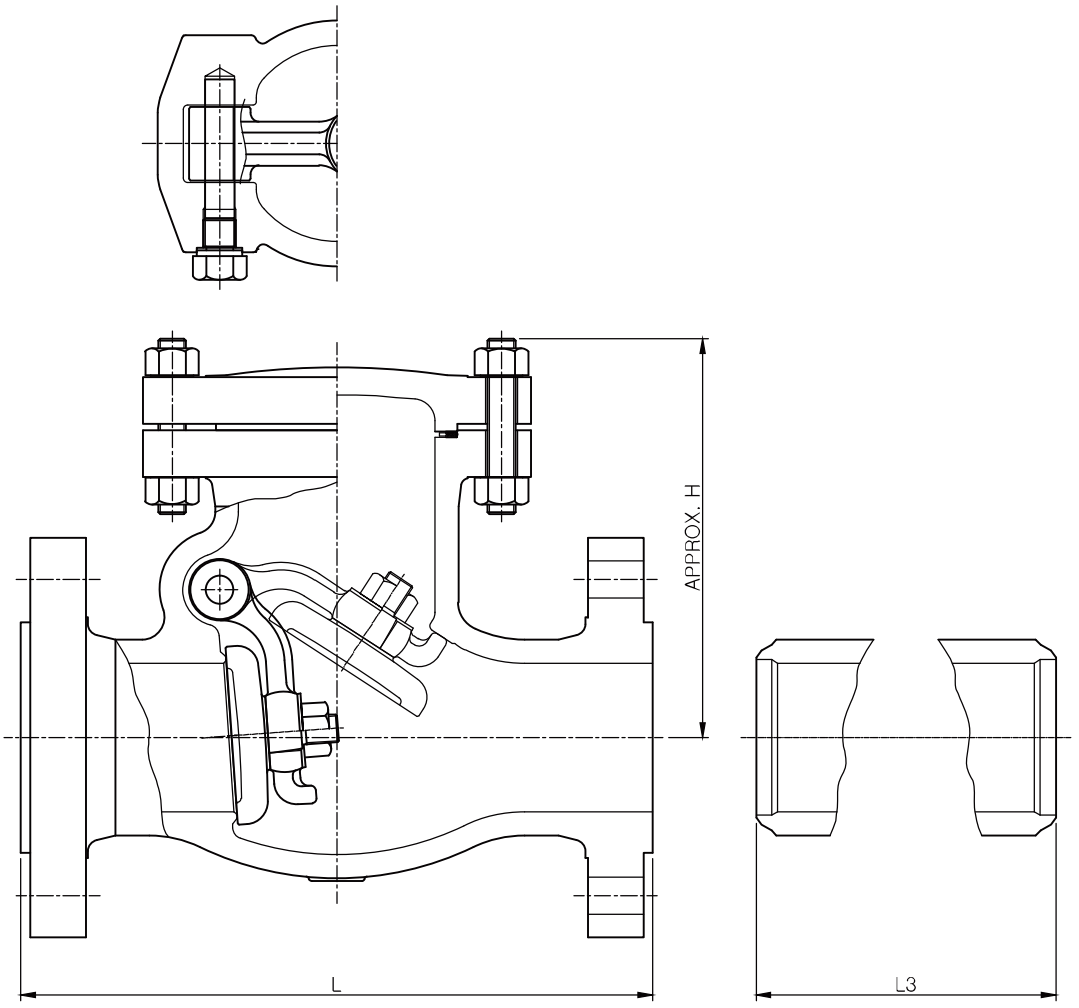
VALVE SIZE	inch	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1 & L3	inch	11,5	13,0	14,0	17,0	20,0	22,0	26,0	31,0	33,0	35,0	39,0	43,0	47,0	55,0
	mm	292	330	356	432	508	559	660	787	838	889	991	1092	1194	1397
H	inch	7,5	8,3	9,6	11,8	13,3	15,7	16,9	20,7	24,2	27,6	32,0	37,8	40,5	457,3
	mm	190	210	235	300	337	400	430	525	615	700	812	960	1029	1202
WEIGHT	LB	77,2	119,1	141,1	229,3	330,8	449,8	793,8	1367,1	1775,0	2306,4	2976,8	4454,1	5269,9	7717,5
	kg	35	54	64	104	150	204	360	620	805	1045	1350	2020	2390	3500



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 900

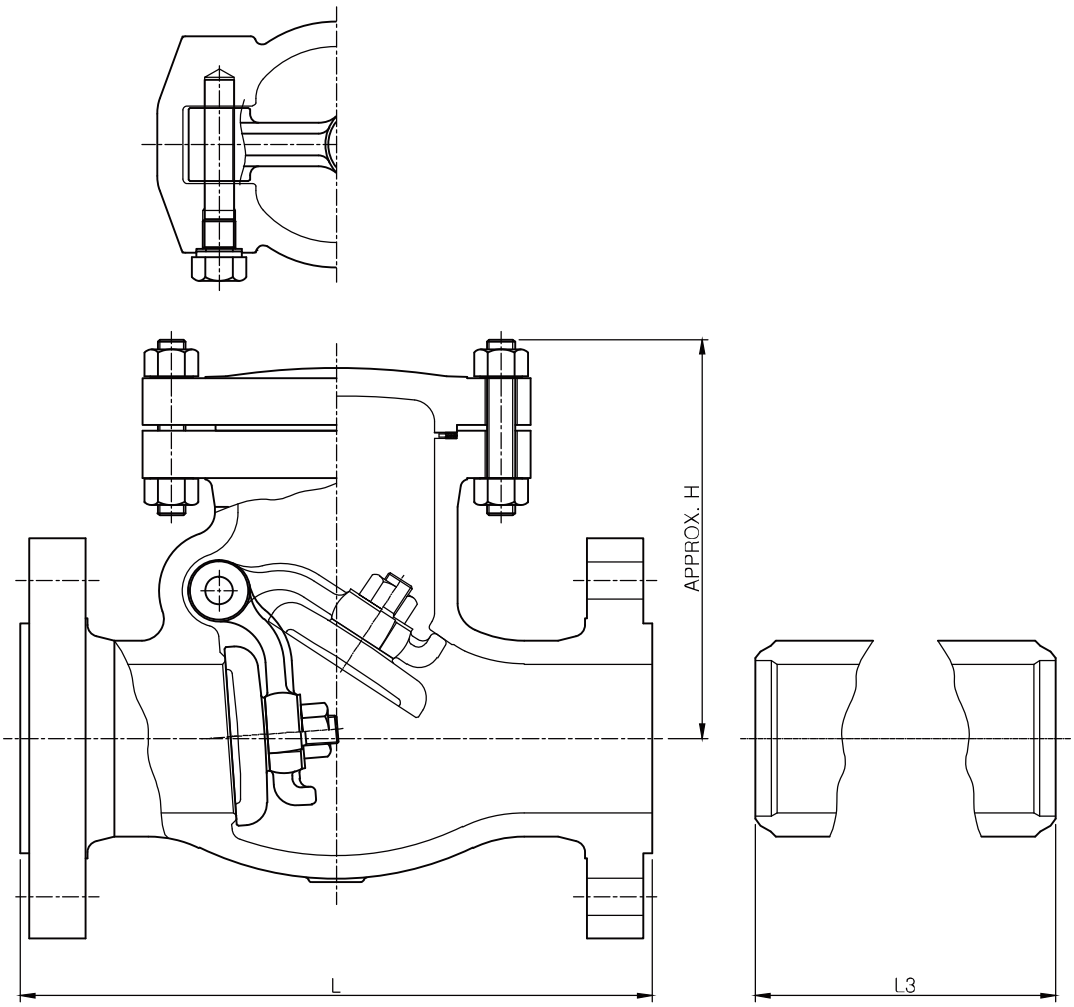
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16
	mm	50	65	80	100	125	150	200	250	300	350	400
L1 & L3	inch	14,5	16,5	15,0	18,0	22,0	24,0	29,0	33,0	38,0	40,5	44,5
	mm	368	419	381	457	559	610	737	838	965	1029	1130
H	inch	13,1	13,7	12,6	16,7	17,4	18,9	22,2	28,3	30,7	31,8	33,0
	mm	333	349	321	423	441	479	565	721	781	807	838
WEIGHT	LB	154,4	242,6	242,6	471,4	735,6	837,9	1375,9	2535,9	3197,3	3858,8	5336,1
	kg	70	110	110	214	320	380	624	1150	1450	1750	2420



CAST STEEL

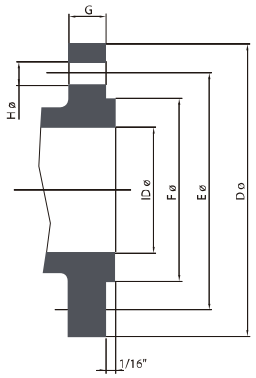
INDUSTRIAL VALVES
ASME CLASS 1500

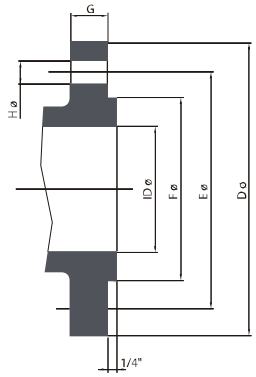
VALVE SIZE	inch	2	2 1/2	3	4	5	6	8	10	12	14
	mm	50	65	80	100	125	150	200	250	300	350
L1 & L3	inch	14,5	16,5	18,5	21,5	26,5	27,75	32,75	39,0	44,5	49,5
	mm	368	419	470	546	673	705	832	991	1130	1257
H	inch	13,1	13,7	15,3	16,5	18,9	23,1	26,8	29,8	39,7	40,8
	mm	333	349	389	419	479	587	680	756	1008	1035
WEIGHT	LB	154,4	242,6	374,9	661,5	1036,4	1532,5	2624,0	4079,3	7342,7	7938
	kg	70	110	170	300	470	695	1190	1850	3330	3600



END FLANGE DIMENSIONS (Raised Face)

CLASS 150, 300 & 600

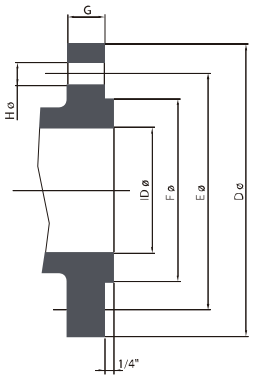




	SIZE	ID	D		E		F		G		H		N° of
	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	Holes
CLASS 150	2"	51	6	152,4	4,75	120,7	3,62	91,9	0,62	15,7	0,75	19,0	4
	3"	76	7,50	190,5	6	152,4	5	127,0	0,75	19,1	0,75	19,0	4
	4"	102	9	228,6	7,5	190,5	6,19	157,2	0,94	23,9	0,75	19,0	8
	6"	152	11	279,4	9,5	241,3	8,5	215,9	1	25,4	0,88	22,5	8
	8"	203	13,5	342,9	11,75	298,5	10,62	269,7	1,12	28,4	0,88	22,5	8
	10"	254	16	406,4	14,25	362,0	12,75	323,9	1,19	30,2	1	25,5	12
	12"	305	19	482,6	17	431,8	15	381,0	1,25	31,8	1	25,5	12
	14"	337	21	533,4	18,75	476,3	16,25	412,8	1,38	35,1	1,12		12
	16"	387	23,5	596,9	21,25	539,8	18,5	469,9	1,44	36,6	1,12	28,5	16
	18"	438	25	635,0	22,75	577,9	21	533,4	1,56	39,6	1,25	32,0	16
	20"	489	27,5	698,5	25	635,0	23	584,2	1,69	42,9	1,25	32,0	20
	24"	591	32	812,8	29,5	749,3	27,25	692,2	1,88	47,8	1,38	35,0	20
	30"	743	38,75	984,3	36	914,4	33,75	857,3	2,94	74,7	1,38	35,0	28
	36"	878	46	1168,4	42,75	1085,9	40,25	1022,4	3,56	90,4	1,62	41,5	32
	42"	1025	53	1346,2	49,5	1257,3	47	1193,8	3,81	96,8	1,62	41,5	36
	48"	1169	59,5	1511,3	56	1422,4	53,5	1358,9	4,25	108,0	1,62	41,5	44
	30"	743	34,94	887,5	33,31	846,1	32	812,8	1,75	44,5	0,88	22,5	44
	36"	878	41,62	1057,1	39,75	1009,7	38,25	971,6	2,06	52,3	1	25,5	44
	42"	1025	48,25	1225,6	46,12	1171,4	44,5	1130,3	2,31	58,7	1,12	28,5	48
	48"	1169	54,81	1392,2	52,56	1335,0	50,75	1289,1	2,56	65,0	1,25	32,0	44
CLASS 300	2"	51	6,5	165,1	5	127,0	3,62	91,9	0,88	22,4	0,75	19,0	8
	3"	76	8,25	209,6	6,62	168,1	5	127,0	1,12	28,4	0,88	22,5	8
	4"	102	10	254,0	7,88	200,2	6,19	157,2	1,25	31,8	0,88	22,5	8
	6"	152	12,5	317,5	10,62	269,7	8,5	215,9	1,44	36,6	0,88	22,5	12
	8"	203	15	381,0	13	330,2	10,62	269,7	1,62	41,1	1	25,5	12
	10"	254	17,5	444,5	15,25	387,4	12,75	323,9	1,88	47,8	1,12	28,5	16
	12"	305	20,5	520,7	17,75	450,9	15	381,0	2	50,8	1,25	32,0	16
	14"	337	23	584,2	20,25	514,4	16,25	412,8	2,12	53,8	1,25	32,0	20
	16"	387	25,5	647,7	22,5	571,5	18,5	469,9	2,25	57,2	1,38	35,0	20
	18"	432	28	711,2	24,75	628,7	21	533,4	2,38	60,5	1,38	35,0	24
	20"	483	30,5	774,7	27	685,8	23	584,2	2,5	63,5	1,38	35,0	24
	24"	584	36	914,4	32	812,8	27,25	692,2	2,75	69,9	1,62	41,5	24
	30"	737	43	1092,2	39,25	997,0	33,75	857,3	3,62	91,9	1,88	48,0	28
	36"	890	50	1270,0	46	1168,4	40,25	1022,4	4,12	104,6	2,12	54,0	32
	42"	1016	50,75	1289,1	47,5	1206,5	44,75	1136,7	4,69	119,1	1,75	44,5	32
	30"	737	39	990,6	36,25	920,8	33,25	844,6	3,69	93,7	1,5	38,5	36
	36"	890	46,12	1171,4	42,88	1089,2	39,75	1009,7	4,06	103,1	1,75	44,5	32
	42"	1016	52,5	1333,5	49	1244,6	46	1168,4	4,69	119,1	1,88	48,0	36
CLASS 600	2"	51	6,5	165,1	5	127,0	3,62	91,9	1	25,4	0,75	19,0	8
	3"	76	8,25	209,6	6,62	168,1	5	127,0	1,25	31,8	0,88	22,5	8
	4"	102	10,75	273,1	8,5	215,9	6,19	157,2	1,5	38,1	1	25,5	8
	6"	152	14	355,6	11,5	292,1	8,5	215,9	1,88	47,8	1,12	28,5	12
	8"	200	16,5	419,1	13,75	349,3	10,62	269,7	2,19	55,6	1,25	32,0	12
	10"	248	20	508,0	17	431,8	12,75	323,9	2,5	63,5	1,38	35,0	16
	12"	298	22	558,8	19,25	489,0	15	381,0	2,62	66,5	1,38	35,0	20
	14"	327	23,75	603,3	20,75	527,1	16,25	412,8	2,75	69,9	1,5	38,5	20
	16"	375	27	685,8	23,75	603,3	18,5	469,9	3	76,2	1,62	41,5	20
	18"	419	29,25	743,0	25,75	654,1	21	533,4	3,25	82,6	1,75	44,5	20
	20"	464	32	812,8	28,5	723,9	23	584,2	3,5	88,9	1,75	44,5	24
	24"	559	37	939,8	33	838,2	27,25	692,2	4	101,6	2	51,0	24
	30"	695	44,5	1130,3	40,25	1022,4	33,75	857,3	4,5	114,3	2,12	54,0	28
	36"	865	51,75	1314,5	47	1193,8	40,25	1022,4	4,88	124,0	2,62	66,5	28
	42"	992	55,25	1403,4	50,5	1282,7	46	1168,4	6,62	168,1	2,62	66,5	28
	30"	695	40,25	1022,4	36,5	927,1	33,12	841,2	4,94	125,5	2	51,0	28
	36"	865	47,75	1212,9	43,5	1104,9	39,75	1009,7	5,75	146,1	2,38	60,5	28
	42"	992	55,25	1403,4	50,5	1282,7	46	1168,4	6,62	168,1	2,62	66,5	28

END FLANGE DIMENSIONS (Raised Face)

CLASS 900, 1500 & 2500



	SIZE	ID	D		E		F		G		H		N° of
	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	Holes
CLASS 900	2"	48	8,5	215,9	6,5	165,1	3,62	91,9	1,5	38,1	1	25,5	8
	3"	73	9,5	241,3	7,5	190,5	5	127,0	1,5	38,1	1	25,5	8
	4"	99	11,5	292,1	9,25	235,0	6,19	157,2	1,75	44,5	1,25	32,0	8
	6"	146	15	381,0	12,5	317,5	8,5	215,9	2,19	55,6	1,25	32,0	12
	8"	191	18,5	469,9	15,5	393,7	10,62	269,7	2,5	63,5	1,5	38,5	12
	10"	238	21,5	546,1	18,5	469,9	12,75	323,9	2,75	69,9	1,5	38,5	16
	12"	283	24	609,6	21	533,4	15	381,0	3,12	79,2	1,5	38,5	20
	14"	311	25,25	641,4	22	558,8	16,25	412,8	3,38	85,9	1,62	41,5	20
	16"	356	27,75	704,9	24,25	616,0	18,5	469,9	3,5	88,9	1,75	44,5	20
	18"	400	31	787,4	27	685,8	21	533,4	4	101,6	2	51,0	20
	20"	445	33,75	857,3	29,5	749,3	23	584,2	4,25	108,0	2,12	54,0	20
CLASS 1500	2"	48	8,5	215,9	6,5	165,1	3,62	91,9	1,5	38,1	1	25,5	8
	3"	70	10,5	266,7	8	203,2	5	127,0	1,88	47,8	1,25	32,0	8
	4"	92	12,25	311,2	9,5	241,3	6,19	157,2	2,12	53,8	1,38	35,0	8
	6"	137	15,5	393,7	12,5	317,5	8,5	215,9	3,25	82,6	1,5	38,5	12
	8"	178	19	482,6	15,5	393,7	10,62	269,7	3,62	91,9	1,75	44,5	12
	10"	223	23	584,2	19	482,6	12,75	323,9	4,25	108,0	2	51,0	12
	12"	264	26,5	673,1	22,5	571,5	15	381,0	4,88	124,0	2,12	54,0	16
	14"	289	29,5	749,3	25	635,0	16,25	412,8	5,25	133,4	2,38	60,5	16
	16"	331	32,5	825,5	27,75	704,9	18,5	469,9	5,75	146,1	2,62	66,5	16
	18"	372	36	914,4	30,5	774,7	21	533,4	6,38	162,1	2,88	73,0	16
CLASS 2500	2"	38	9,25	235,0	6,75	171,5	3,62	91,9	2	50,8	1,12	28,5	8
	3"	57	12	304,8	9	228,6	5	127,0	2,62	66,5	1,38	35,0	8
	4"	73	14	355,6	10,75	273,1	6,19	157,2	3	76,2	1,62	41,5	8
	6"	111	19	482,6	14,5	368,3	8,5	215,9	4,25	108,0	2,12	54,0	8
	8"	146	21,75	552,5	17,25	438,2	10,62	269,7	5	127,0	2,12	54,0	12
	10"	184	26,5	673,1	21,25	539,8	12,75	323,9	6,5	165,1	2,62	66,5	12
	12"	219	30	762,0	24,38	619,3	15	381,0	7,25	184,2	2,88	73,0	12

FLANGE STANDARDS

According to ASME B16.5

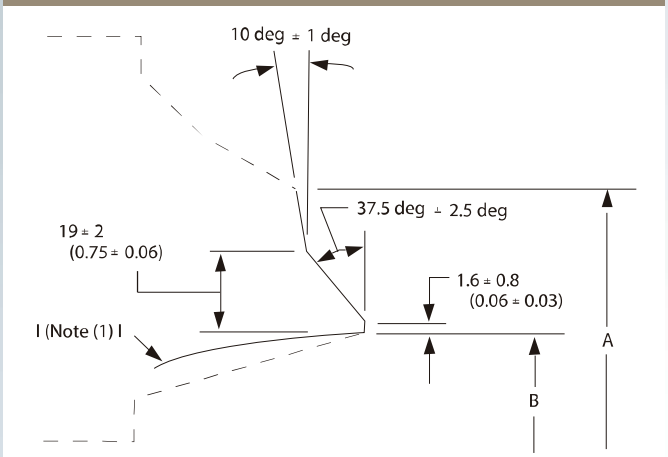
According to ASME B16.47
Series A (MSS SP-44)

According to ASME B16.47
Series B (API 605)

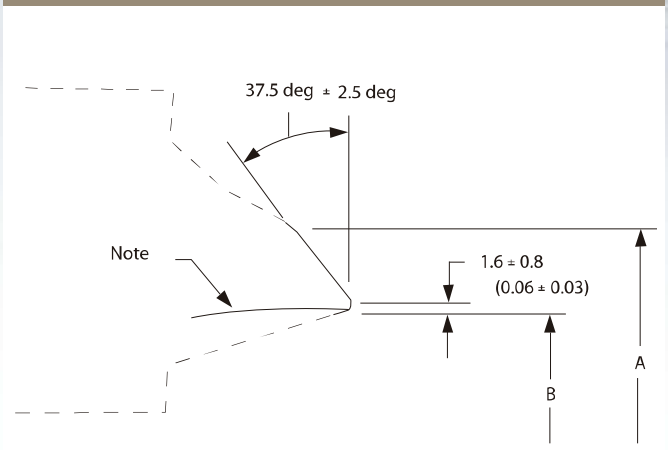
BUTTWELDING END DIMENSIONS ACCORDING TO ASME B16.25

Welding End Detail for Joint Without Backing Ring

WELD BEVEL DETAIL FOR WALL THICKNESS NOT OVER 22mm. (0,88in.)



WELD BEVEL DETAIL FOR WALL THICKNESS OVER 22mm. (0,88in.)



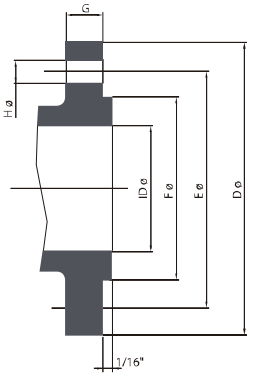
Note : Internal surface may be as-formed or machined for dimension B at root face. Contour within the envolope is manufacturer's option, unless otherwise specifically purchase order for.

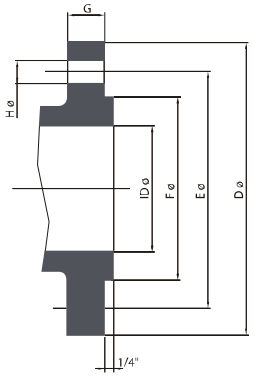
Nominal Pipe Size	A		B											
			10		20		30		STD		XS		40	
(NPS)	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.
3" (80)	3,59	91,2											3,068	77,9
4" (100)	4,62	117,3											4,026	102,3
6" (150)	6,78	172,2											6,065	154,1
8" (200)	8,78	223,0											7,981	202,7
10" (250)	10,94	277,9											10,020	254,5
12" (300)	12,97	329,4							12,000	304,8	11,750	298,5	11,938	303,2
14" (350)	14,25	362,0							13,250	336,6	13,000	330,2	13,124	333,3
16" (400)	16,25	412,8							15,250	387,4			15,000	381,0
18" (450)	18,28	464,3							17,250	438,2	17,000	431,8	16,876	428,7
20" (500)	20,31	515,9							19,250	489,0	19,000	482,6	18,812	477,8
24" (600)	24,38	619,3					22,876	581,1	23,250	590,6	23,000	584,2	22,624	574,6
30" (750)	30,38	771,7	29,376	746,2	29,000	736,6	28,750	730,3						
36" (900)	36,50	927,1	35,376	898,6	35,000	889,0	34,750	882,7					34,500	876,3

Nominal Pipe Size	B													
	60		80		100		120		140		160		XXS	
(NPS)	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.
3" (80)			2,900	73,7							2,624	66,6	2,300	58,4
4" (100)			3,826	97,2			3,624	92,0			3,438	87,3	3,152	80,1
6" (150)			5,761	146,3			5,501	139,7			5,187	131,7	4,897	124,4
8" (200)	7,813	198,5	7,625	193,7	7,437	188,9	7,187	182,5	7,001	177,8	6,813	173,1	6,875	174,6
10" (250)	9,750	247,7	9,562	242,9	9,312	236,5	9,062	230,2	8,750	222,3	8,500	215,9		
12" (300)	11,626	295,3	11,374	288,9	11,062	281,0	10,750	273,1	10,500	266,7	10,126	257,2		
14" (350)	12,812	325,4	12,500	317,5	12,124	307,9	11,812	300,0	11,500	292,1	11,188	284,2		
16" (400)	14,688	373,1	14,312	363,5	13,938	354,0	13,562	344,5	13,124	333,3	12,812	325,4		
18" (450)	16,500	419,1	16,124	409,5	15,688	398,5	15,250	387,4	14,876	377,9	14,438	366,7		
20" (500)	18,376	466,8	17,938	455,6	17,438	442,9	17,000	431,8	16,500	419,1	16,062	408,0		
24" (600)	22,062	560,4	21,562	547,7	20,938	531,8	20,376	517,6	19,876	504,9	19,312	490,5		

END FLANGE DIMENSIONS (Raised Face)

CLASS 150, 300 & 600





	SIZE	ID	D		E		F		G		H		N° of
	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	inch.	mm.	Holes
CLASS 150	2"	51	6	152,4	4,75	120,7	3,62	91,9	0,62	15,7	0,75	19,0	4
	3"	76	7,50	190,5	6	152,4	5	127,0	0,75	19,1	0,75	19,0	4
	4"	102	9	228,6	7,5	190,5	6,19	157,2	0,94	23,9	0,75	19,0	8
	6"	152	11	279,4	9,5	241,3	8,5	215,9	1	25,4	0,88	22,5	8
	8"	203	13,5	342,9	11,75	298,5	10,62	269,7	1,12	28,4	0,88	22,5	8
	10"	254	16	406,4	14,25	362,0	12,75	323,9	1,19	30,2	1	25,5	12
	12"	305	19	482,6	17	431,8	15	381,0	1,25	31,8	1	25,5	12
	14"	337	21	533,4	18,75	476,3	16,25	412,8	1,38	35,1	1,12		12
	16"	387	23,5	596,9	21,25	539,8	18,5	469,9	1,44	36,6	1,12	28,5	16
	18"	438	25	635,0	22,75	577,9	21	533,4	1,56	39,6	1,25	32,0	16
	20"	489	27,5	698,5	25	635,0	23	584,2	1,69	42,9	1,25	32,0	20
	24"	591	32	812,8	29,5	749,3	27,25	692,2	1,88	47,8	1,38	35,0	20
	30"	743	38,75	984,3	36	914,4	33,75	857,3	2,94	74,7	1,38	35,0	28
	36"	878	46	1168,4	42,75	1085,9	40,25	1022,4	3,56	90,4	1,62	41,5	32
	42"	1025	53	1346,2	49,5	1257,3	47	1193,8	3,81	96,8	1,62	41,5	36
	48"	1169	59,5	1511,3	56	1422,4	53,5	1358,9	4,25	108,0	1,62	41,5	44
	30"	743	34,94	887,5	33,31	846,1	32	812,8	1,75	44,5	0,88	22,5	44
	36"	878	41,62	1057,1	39,75	1009,7	38,25	971,6	2,06	52,3	1	25,5	44
	42"	1025	48,25	1225,6	46,12	1171,4	44,5	1130,3	2,31	58,7	1,12	28,5	48
	48"	1169	54,81	1392,2	52,56	1335,0	50,75	1289,1	2,56	65,0	1,25	32,0	44
CLASS 300	2"	51	6,5	165,1	5	127,0	3,62	91,9	0,88	22,4	0,75	19,0	8
	3"	76	8,25	209,6	6,62	168,1	5	127,0	1,12	28,4	0,88	22,5	8
	4"	102	10	254,0	7,88	200,2	6,19	157,2	1,25	31,8	0,88	22,5	8
	6"	152	12,5	317,5	10,62	269,7	8,5	215,9	1,44	36,6	0,88	22,5	12
	8"	203	15	381,0	13	330,2	10,62	269,7	1,62	41,1	1	25,5	12
	10"	254	17,5	444,5	15,25	387,4	12,75	323,9	1,88	47,8	1,12	28,5	16
	12"	305	20,5	520,7	17,75	450,9	15	381,0	2	50,8	1,25	32,0	16
	14"	337	23	584,2	20,25	514,4	16,25	412,8	2,12	53,8	1,25	32,0	20
	16"	387	25,5	647,7	22,5	571,5	18,5	469,9	2,25	57,2	1,38	35,0	20
	18"	432	28	711,2	24,75	628,7	21	533,4	2,38	60,5	1,38	35,0	24
	20"	483	30,5	774,7	27	685,8	23	584,2	2,5	63,5	1,38	35,0	24
	24"	584	36	914,4	32	812,8	27,25	692,2	2,75	69,9	1,62	41,5	24
	30"	737	43	1092,2	39,25	997,0	33,75	857,3	3,62	91,9	1,88	48,0	28
	36"	890	50	1270,0	46	1168,4	40,25	1022,4	4,12	104,6	2,12	54,0	32
	42"	1016	50,75	1289,1	47,5	1206,5	44,75	1136,7	4,69	119,1	1,75	44,5	32
	30"	737	39	990,6	36,25	920,8	33,25	844,6	3,69	93,7	1,5	38,5	36
	36"	890	46,12	1171,4	42,88	1089,2	39,75	1009,7	4,06	103,1	1,75	44,5	32
	42"	1016	52,5	1333,5	49	1244,6	46	1168,4	4,69	119,1	1,88	48,0	36
CLASS 600	2"	51	6,5	165,1	5	127,0	3,62	91,9	1	25,4	0,75	19,0	8
	3"	76	8,25	209,6	6,62	168,1	5	127,0	1,25	31,8	0,88	22,5	8
	4"	102	10,75	273,1	8,5	215,9	6,19	157,2	1,5	38,1	1	25,5	8
	6"	152	14	355,6	11,5	292,1	8,5	215,9	1,88	47,8	1,12	28,5	12
	8"	200	16,5	419,1	13,75	349,3	10,62	269,7	2,19	55,6	1,25	32,0	12
	10"	248	20	508,0	17	431,8	12,75	323,9	2,5	63,5	1,38	35,0	16
	12"	298	22	558,8	19,25	489,0	15	381,0	2,62	66,5	1,38	35,0	20
	14"	327	23,75	603,3	20,75	527,1	16,25	412,8	2,75	69,9	1,5	38,5	20
	16"	375	27	685,8	23,75	603,3	18,5	469,9	3	76,2	1,62	41,5	20
	18"	419	29,25	743,0	25,75	654,1	21	533,4	3,25	82,6	1,75	44,5	20
	20"	464	32	812,8	28,5	723,9	23	584,2	3,5	88,9	1,75	44,5	24
	24"	559	37	939,8	33	838,2	27,25	692,2	4	101,6	2	51,0	24
	30"	695	44,5	1130,3	40,25	1022,4	33,75	857,3	4,5	114,3	2,12	54,0	28
	36"	865	51,75	1314,5	47	1193,8	40,25	1022,4	4,88	124,0	2,62	66,5	28
	42"	992	55,25	1403,4	50,5	1282,7	46	1168,4	6,62	168,1	2,62	66,5	28
	30"	695	40,25	1022,4	36,5	927,1	33,12	841,2	4,94	125,5	2	51,0	28
	36"	865	47,75	1212,9	43,5	1104,9	39,75	1009,7	5,75	146,1	2,38	60,5	28
	42"	992	55,25	1403,4	50,5	1282,7	46	1168,4	6,62	168,1	2,62	66,5	28

PRESSURE TEMPERATURE RATINGS

PRESSURE TEMPERATURE RATINGS FOR ALLOY STEEL ASTM A217 C5 (According to ASME B16.34)

TEMPERATURE		WORKING PRESSURE - STANDARD CLASS VALVES																	
°F	°C	150	PN20		300	PN50		600	PN100		900	PN150		1500	PN250		2500	PN420	
		PSig	Kg/cm²	Bar	PSig	Kg/cm²	Bar	PSig	Kg/cm²	Bar	PSig	Kg/cm²	Bar	PSig	Kg/cm²	Bar	PSig	Kg/cm²	Bar
-20 to 100	-29 to 38	290	20,4	20,0	750	52,7	51,7	1500	105,5	103,4	2250	158,2	155,0	3750	263,6	258,4	6250	439,4	430,6
200	95	260	18,3	17,9	745	52,4	51,3	1490	104,7	102,7	2235	157,1	154,0	3725	261,9	256,7	6205	436,2	427,5
300	150	230	16,2	15,8	715	50,3	49,3	1430	100,5	98,5	2150	151,1	148,1	3580	251,7	246,7	5965	419,3	411,0
400	205	200	14,1	13,8	705	49,6	48,6	1410	99,1	97,1	2115	148,7	145,7	3530	248,2	243,2	5880	413,4	405,1
500	260	170	12,0	11,7	665	46,7	45,8	1330	93,5	91,6	1995	140,2	137,5	3325	233,7	229,1	5540	389,5	381,7
600	315	140	9,8	9,6	605	42,5	41,7	1210	85,1	83,4	1815	127,6	125,1	3025	212,7	208,4	5040	354,3	347,3
650	345	125	8,8	8,6	590	41,5	40,7	1175	82,6	81,0	1765	124,1	121,6	2940	206,7	202,6	4905	344,8	338,0
700	375	110	7,7	7,6	570	40,1	39,3	1135	79,8	78,2	1705	119,9	117,5	2840	199,7	195,7	4730	332,5	325,9
750	400	95	6,7	6,5	530	37,3	36,5	1055	74,2	72,7	1585	111,4	109,2	2640	185,6	181,9	4400	309,3	303,2
800	425	80	5,6	5,5	510	35,9	35,1	1015	71,4	69,9	1525	107,2	105,1	2540	178,6	175,0	4230	297,4	291,4
850	450	65	4,6	4,5	485	34,1	33,4	965	67,8	66,5	1450	101,9	99,9	2415	169,8	166,4	4030	283,3	277,7
900	485	50	3,5	3,4	370	26,0	25,5	740	52,0	51,0	1110	78,0	76,5	1850	130,1	127,5	3085	216,9	212,6
950	510	35	2,5	2,4	275	19,3	18,9	550	38,7	37,9	825	58,0	56,8	1370	96,3	94,4	2285	160,6	157,4
1000	540	20	1,4	1,4	200	14,1	13,8	400	28,1	27,6	595	41,8	41,0	995	69,9	68,6	1655	116,3	114,0
1050	565	20	1,4	1,4	145	10,2	10,0	290	20,4	20,0	430	30,2	29,6	720	50,6	49,6	1200	84,4	82,7
1100	595	20	1,4	1,4	100	7,0	6,9	200	14,1	13,8	300	21,1	20,7	495	34,8	34,1	830	58,3	57,2
1150	620	20	1,4	1,4	60	4,2	4,1	125	8,8	8,6	185	13,0	12,7	310	21,8	21,4	515	36,2	35,5
1200	650	20	1,4	1,4	35	2,5	2,4	70	4,9	4,8	105	7,4	7,2	170	12,0	11,7	285	20,0	19,6

TEMPERATURE		WORKING PRESSURE - SPECIAL CLASS VALVES																	
°F	°C	150	PN20		300	PN50		600	PN100		900	PN150		1500	PN250		2500	PN420	
		PSig	Kg/cm²	Bar	PSig	Kg/cm²	Bar	PSig	Kg/cm²	Bar	PSig	Kg/cm²	Bar	PSig	Kg/cm²	Bar	PSig	Kg/cm²	Bar
-20 to 100	-29 to 38	290	20,4	20,0	750	52,7	51,7	1500	105,5	103,4	2250	158,2	155,0	3750	263,6	258,4	6250	439,4	430,6
200	95	290	20,4	20,0	750	52,7	51,7	1500	105,5	103,4	2250	158,2	155,0	3750	263,6	258,4	6250	439,4	430,6
300	150	280	19,7	19,3	730	51,3	50,3	1455	102,3	100,2	2185	153,6	150,5	3645	256,2	251,1	6070	426,7	418,2
400	205	275	19,3	18,9	720	50,6	49,6	1440	101,2	99,2	2160	151,8	148,8	3600	253,1	248,0	6000	421,8	413,4
500	260	275	19,3	18,9	720	50,6	49,6	1440	101,2	99,2	2160	151,8	148,8	3600	253,1	248,0	6000	421,8	413,4
600	315	270	19,0	18,6	705	49,6	48,6	1415	99,5	97,5	2120	149,0	146,1	3535	248,5	243,6	5895	414,4	406,2
650	345	270	19,0	18,6	700	49,2	48,2	1395	98,1	96,1	2095	147,3	144,3	3495	245,7	240,8	5820	409,1	401,0
700	375	265	18,6	18,3	685	48,2	47,2	1370	96,3	94,4	2055	144,5	141,6	3430	241,1	236,3	5715	401,8	393,8
750	400	255	17,9	17,6	660	46,4	45,5	1320	92,8	90,9	1980	139,2	136,4	3300	232,0	227,4	5500	386,7	379,0
800	425	245	17,2	16,9	640	45,0	44,1	1275	89,6	87,8	1915	134,6	131,9	3195	224,6	220,1	5320	374,0	366,5
850	450	230	16,2	15,8	605	42,5	41,7	1210	85,1	83,4	1815	127,6	125,1	3020	212,3	208,1	5035	354,0	346,9
900	485	175	12,3	12,1	465	32,7	32,0	925	65,0	63,7	1390	97,7	95,8	2315	162,7	159,5	3855	271,0	265,6
950	510	130	9,1	9,0	345	24,3	23,8	685	48,2	47,2	1030	72,4	71,0	1715	120,6	118,2	2855	200,7	196,7
1000	540	95	6,7	6,5	250	17,6	17,2	495	34,8	34,1	745	52,4	51,3	1245	87,5	85,8	2070	145,5	142,6
1050	565	70	4,9	4,8	180	12,7	12,4	360	25,3	24,8	540	38,0	37,2	900	63,3	62,0	1500	105,5	103,4
1100	595	50	3,5	3,4	125	8,8	8,6	250	17,6	17,2	375	26,4	25,8	620	43,6	42,7	1035	72,8	71,3
1150	620	30	2,1	2,1	75	5,3	5,2	155	10,9	10,7	230	16,2	15,8	385	27,1	26,5	645	45,3	44,4
1200	650	15	1,1	1,0	45	3,2	3,1	85	6,0	5,9	130	9,1	9,0	215	15,1	14,8	355	25,0	24,5

For welding end valves only. Flanged end ratings terminate at 1000°F.

LIMANNTECH

VALVE EXPERTS GROUP

LIMANNTECH CO., LTD.
#204-106/107/206/207, 50, Yutongdanji-1Ro, Gangseo-Gu, Busan, Republic of Korea, 46721
Tel +82-51-989-0101 **Fax** +82-70-4850-8388 **eMail** sales@limanntech.com

http://limanntech.com