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.

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- 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

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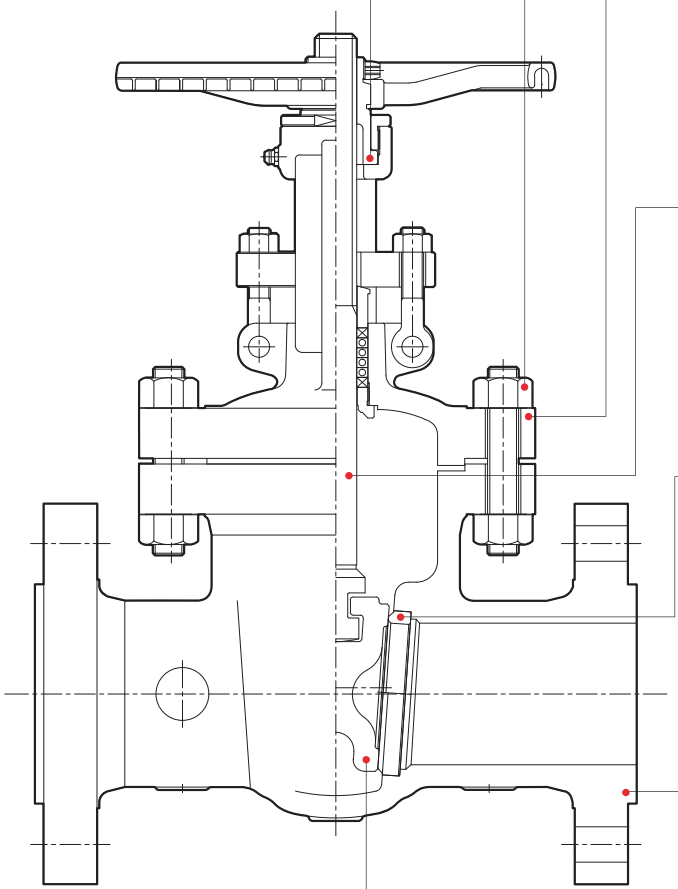


YOKE SLEEVE
The upper portion of the Yoke Sleeve is hexagonally tapered to fix hand wheel. The standard material of the Yoke Sleeve is Nodular Ni-resist D2 with over 1150°C(2100°F) dissolution point in accordance with API Std. specifications.

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 drlling 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.

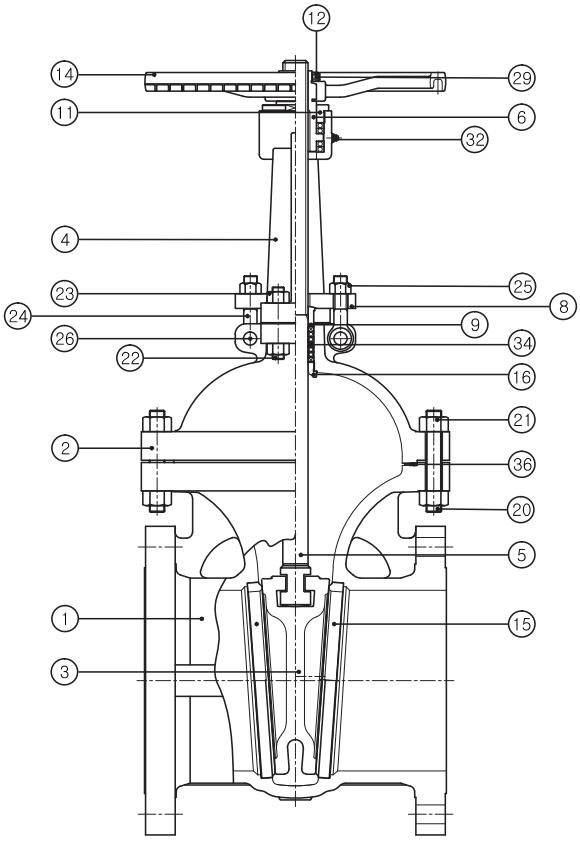
CAST STEEL

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.

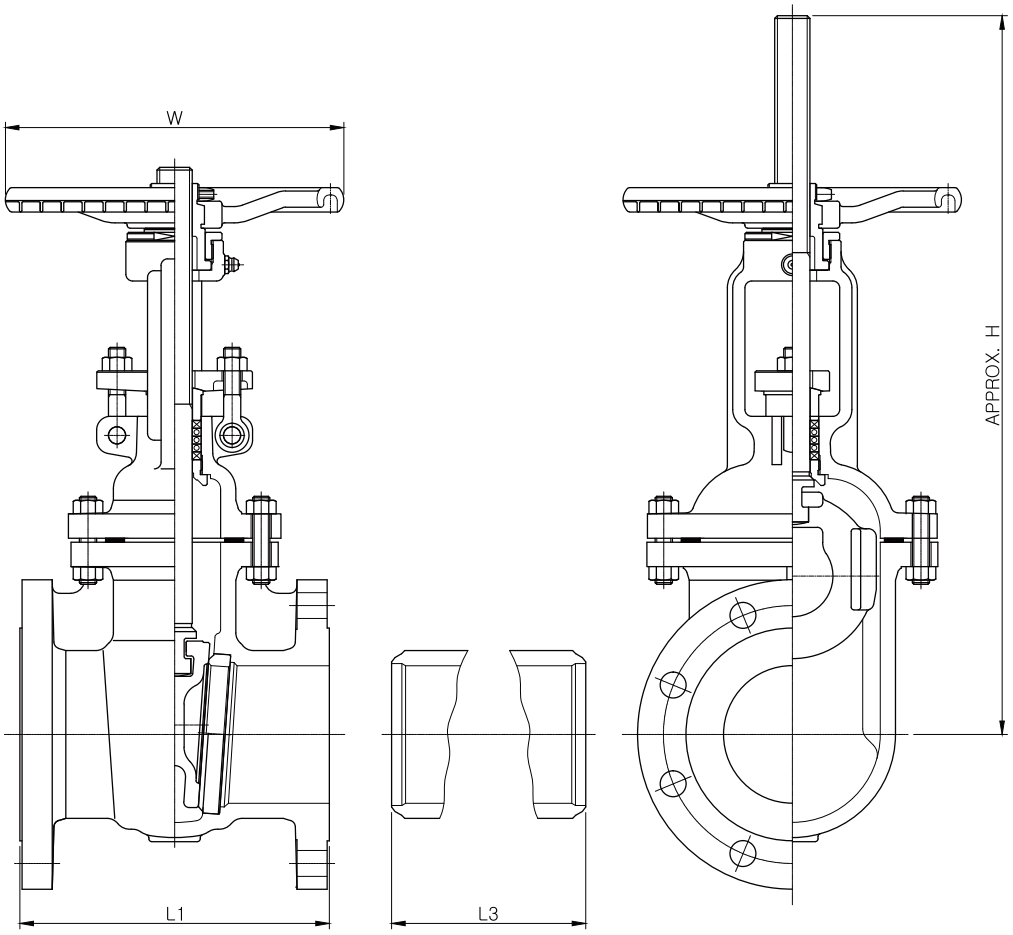
NO	NAME OF PART	ASTM SPECIFICATION
11	SLEEVE NUT	A576-1020
12	WHEEL NUT	A576-1020
14	HAND WHEEL	A536-60
29	SET SCREW	STEEL
32	GREASE NIPPLE	STEEL
34	PACKING	GRAPHITE
36	SPIRAL WOUND GASKET	GRAPHITE+304



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 150

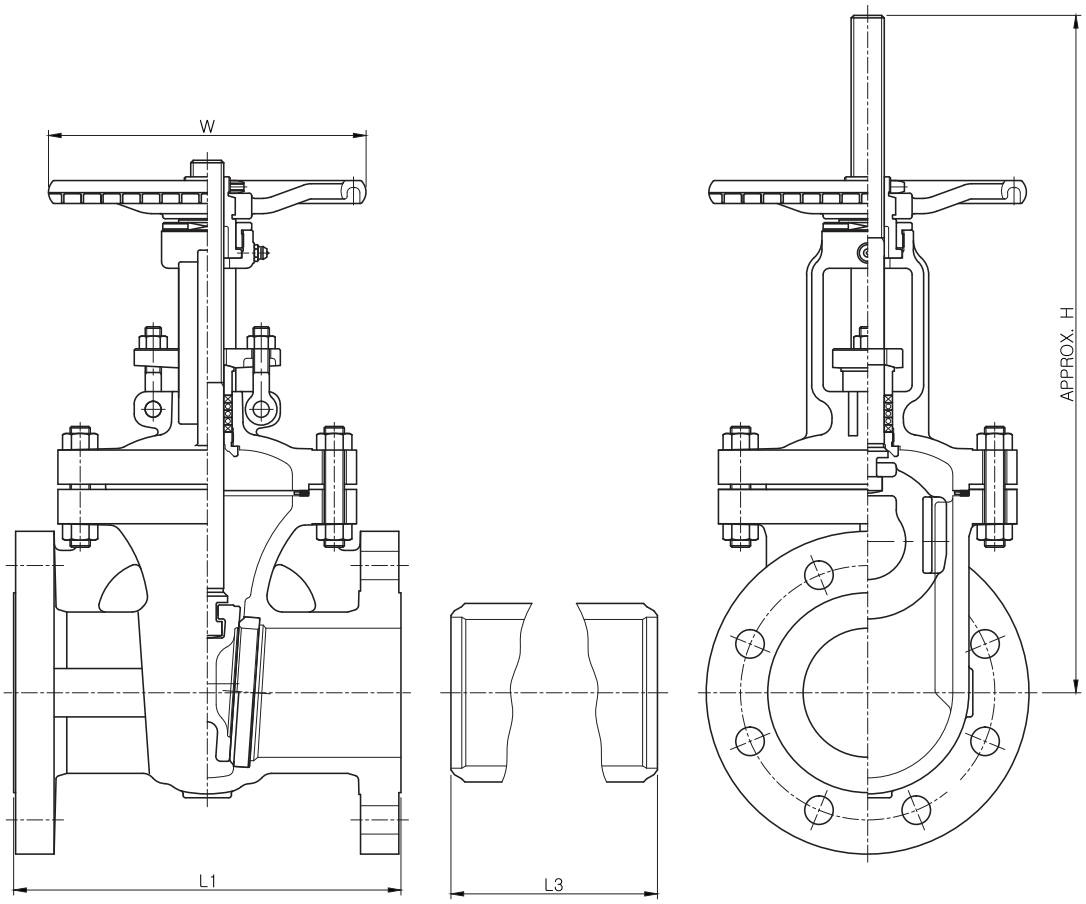
VALVE SIZE	inch	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
	mm	50	65	80	100	125	150	200	250	300	350	400	450	500	600
L1	inch	7,0	7,5	8,0	9,0	10,0	10,5	11,5	13,0	14,0	15,0	16,0	17,0	18,0	20,0
	mm	178	191	203	229	254	267	292	330	356	381	406	432	457	508
L3	inch		9,5	11,12	12,0	15,0	15,88	46,5	18,0	19,75	22,5	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

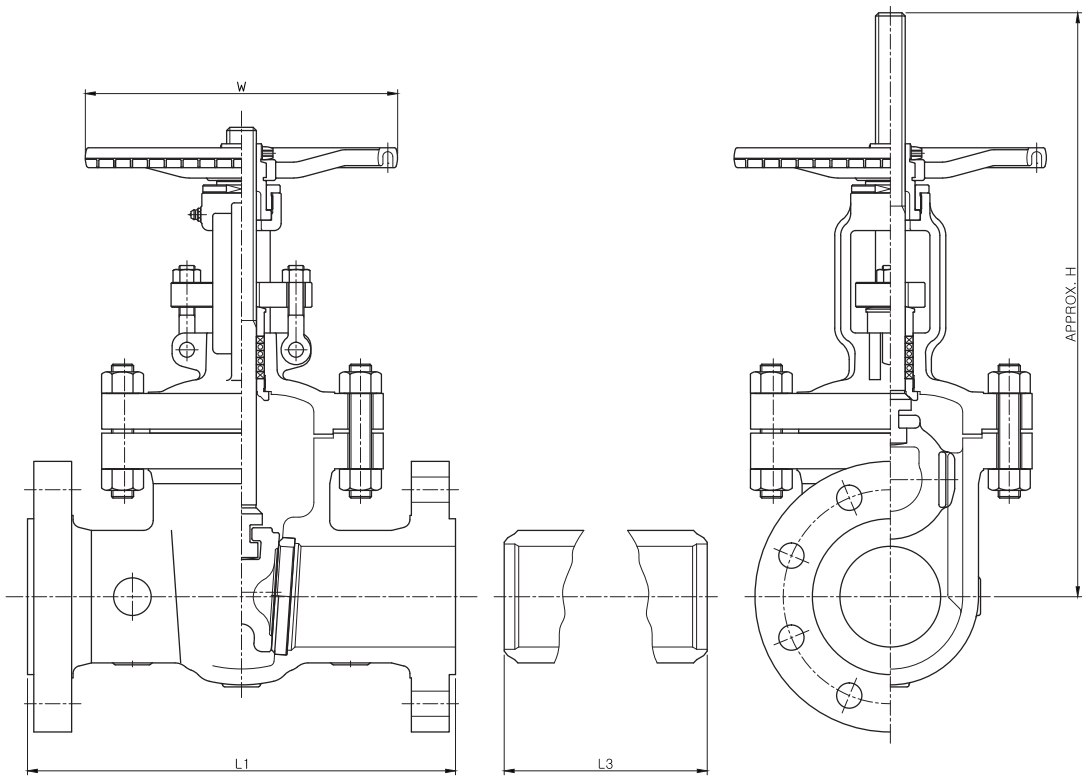
INDUSTRIAL VALVES
ASME CLASS 300

VALVE SIZE	inch	2	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	8,5	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



INDUSTRIAL VALVES
ASME CLASS 600

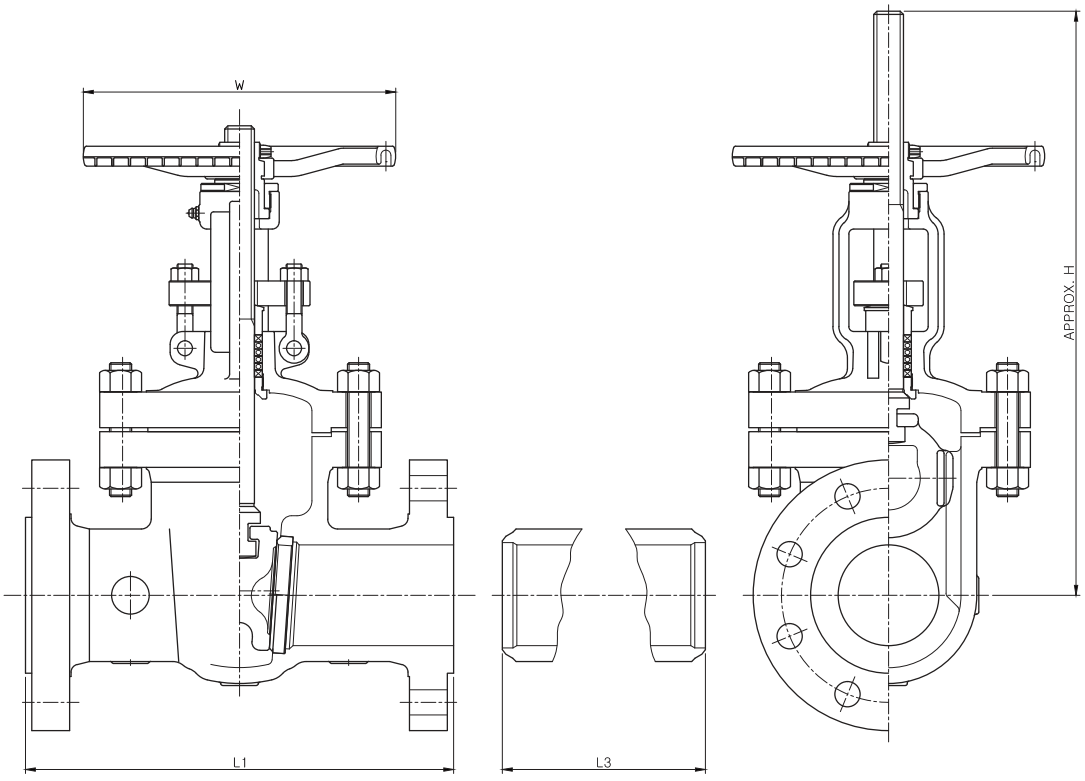
VALVE SIZE	inch	2	2 ½	3	4	5	6	8	10	12	14	16
	mm	50	65	80	100	125	150	200	250	300	350	400
L1 & L3	inch	11,5	13,0	14,0	17,0	20,0	22,0	26,0	31,0	33,0	35,0	39,0
	mm	292	330	356	432	508	559	660	787	838	889	991
H	inch	14,2	16,5	18,6	23,0	27,2	31,5	40,2	55,1	63,0	68,9	78,7
	mm	362	420	472	583	690	800	1020	1400	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



CAST STEEL

INDUSTRIAL VALVES
ASME CLASS 900

VALVE SIZE	inch	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 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	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