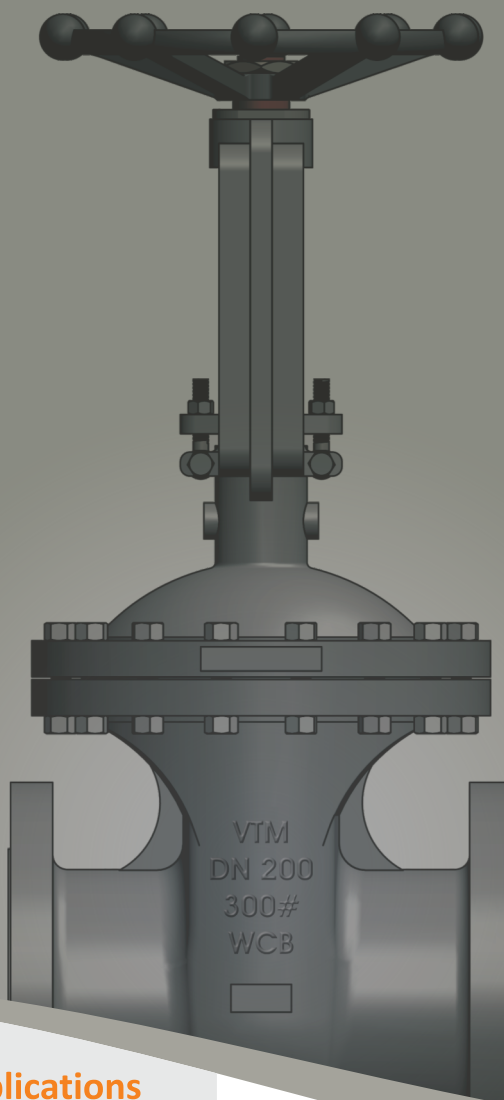




VTM®

INDUSTRIAL VALVES & CONTROLS



Typical Industries and Applications

- **Energy** -Power Generation, Oil & Gas, Refining, etc.
- **Processing** -Chemical Processing, Pulp and Paper, Food and Beverages, Petro Chemicals, etc.
- **Other Industries** -Marine, Effluent Treatment, Mining, OEM, etc.

VTM - Cast Steel Valves



Company Profile

V.A. Valves is one of India's Leading Manufacturer of Industrial Valves, Supplying Gate / Globe / Check / Ball / Butterfly Valves for critical applications in the Chemical, Petrochemical, Oil & Gas, Fossil and Nuclear Power, Co-Generation, Pulp and Paper, Pharmaceutical Industries and Cryogenic Applications.

Today, V.A. Valves has pioneered valve designs which are well proven in the most demanding applications. Our philosophy is to bring to the market new and innovative valve designs with special emphasis on Quality, Safety, Ease of Operation and Simple in-Line Maintenance. Thus our customers benefit from products which have Low Cost of Ownership due to long service life.



Cast Steel Valves Manufacturing Program

Valve Size & Class		1½"	2"	2½"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"
Gate Valves	150#	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	300#	•	•	•	•	•	•	•	•	•	•					
	600#	•	•	•	•	•		•	•	•	•					
Swing Type Check Valves	150#	•	•	•	•	•		•	•	•	•					
	300#	•	•	•	•	•		•	•	•						
	600#	•	•		•	•		•								
Dual Plate Check Valves	150#		•	•	•	•		•	•	•	•	•	•	•	•	•
	300#		•	•	•	•		•	•	•	•					
	600#		•		•	•		•	•	•	•					

Systems to Ensure Consistent Quality

1 DESIGN

All Valves are designed in accordance with the requirements of the ASME code, ASME B 16.34 and customer requirements, as applicable. These designs are constantly reviewed and updated to meet latest revisions of standards.

2 QUALITY ASSURANCE

V.A. Valves has developed Quality Manual incorporating processes and procedures in strict accordance with ISO 9001 and API Spec Q1. Every Step from procurement of raw materials through Production, Welding, Assembly and Testing, Packaging and Marking of the finished valves complies with the quality program of this Quality Manual. All orders are reviewed by the Engineering and Q.A. departments and all special requirements are incorporated in the Work Order issued for each order. The Q.A. department also maintains calibration and gauge control system and trains and qualifies skilled workers to achieve quality workmanship. Copy of these records can be provided on request.

3 QUALITY CONTROL

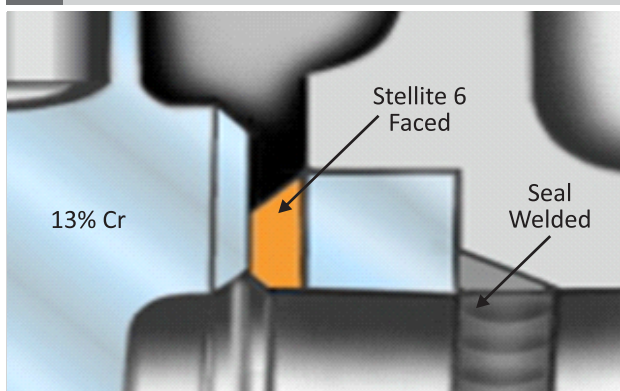
The Quality Control department is responsible for all the aspects of quality from receiving of Raw Materials to Control of Machining, Welding, Testing, Non Destructive Examination, Assembly, Pressure Testing, Cleaning, Painting, and Packaging.

4 PRESSURE TESTING

Each Valve is pressure tested in accordance with API 598 / ASME code or customer requirements as applicable.

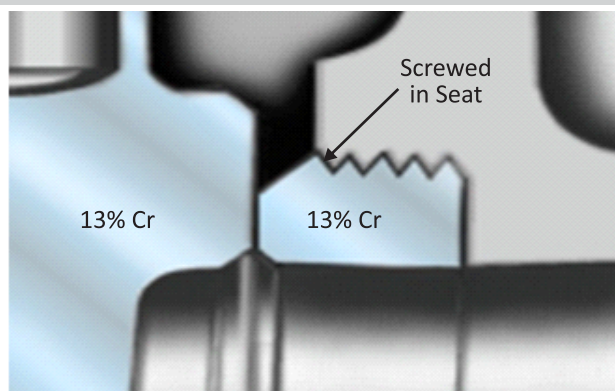
Gate Valves Features & Benefits

1 Seal Welded Seat Rings



VTM Seal Welded Seat Rings

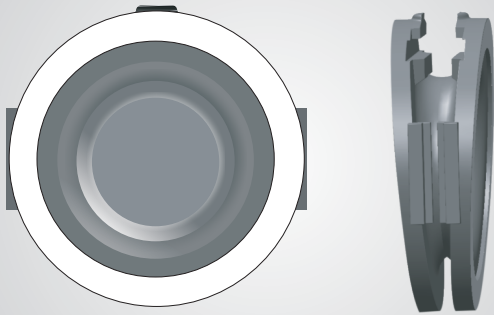
- Welded in Leak-Proof.
- Welding Quality 100% Tested.
- Stellite Seating Face for Long Service Life (on request).
- Seat faces are ground and lapped after weld-in.
- Standardized use for steam up to 538°C, Oil & Gas.
- Stellite face will wear less than 13% Cr Wedge, Which can easily be repaired or replaced.



Competing Screwed In Seat Rings

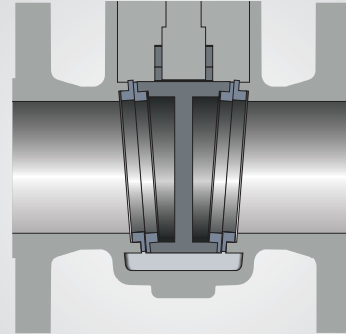
- Can loosen up due to corrosion and cause substantial leakage.
- Replacement is difficult if not impossible.
- Threads can corrode and cause leakage.
- Seat is unsecured from unscrewing.
- Seat can become loose due to temprature fluctuations, corrosion or vibration, can leak.
- 13 % Cr Seat is suitable for certain fluids only.

2 Flexible Wedge Vs Conventional Solid Wedge



Flexible Wedge As Standard in VTM Gate Valves

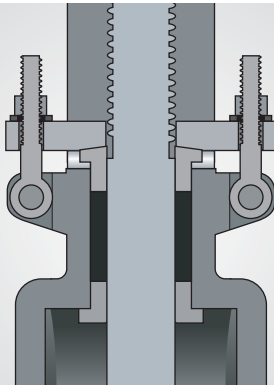
- Compensates for seat face distortions.
- Compensates for deformation of body due to pipe stresses.
- Universal use for temperature up to 538°C.
- Will not stick when valve is closed hot and allowed to cool.
- Ideal for Process with fluctuating Temperatures.
- Long Cycle Life.
- Assure Valve Tightness on Both Seats over Wide range of Pressures.



Solid Wedge On Competitive Designs

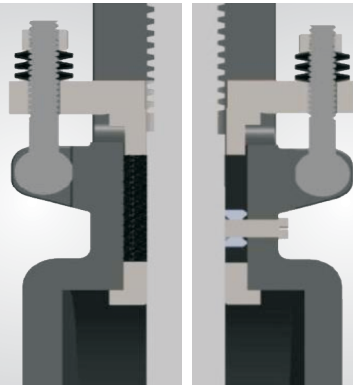
- Wedge May Cause Severe Jamming at Temperatures over 93°C.
- Suitable for small valves.
- Wedge will stick when valve is closed hot and allowed to cool.
- No-Compensation for deformation of body due to pressure – temperature or pipe stresses.
- Difficult to make valve tight on both seats due to seat face distortion.

3 Special Stem Seal Designs on VTM



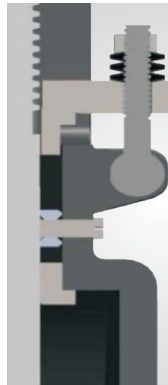
Standard Stem

- Leakage rate in conformity to latest standards.
- Gland Flange and Bush are designed for high compression loads on Gland Packing which forms a mass of low porosity.
- Small clearance between vital parts.
- Valve Stems & Packing chambers are machined with close tolerances on Straightness, Concentricity and fine finish.
- Short and narrow packing chambers improve sealing.
- Stems are finished to 0.8micron and Packing Chambers are finished to 4.5 micron or less to ensure emissions below permitted values.



Live-Loading

3-4 sets of Belleville Springs maintain a Permanent packing stress of 3000-4000 PSI. Live- Loading extends low emission service life especially in service with large pressure/temperature transients.

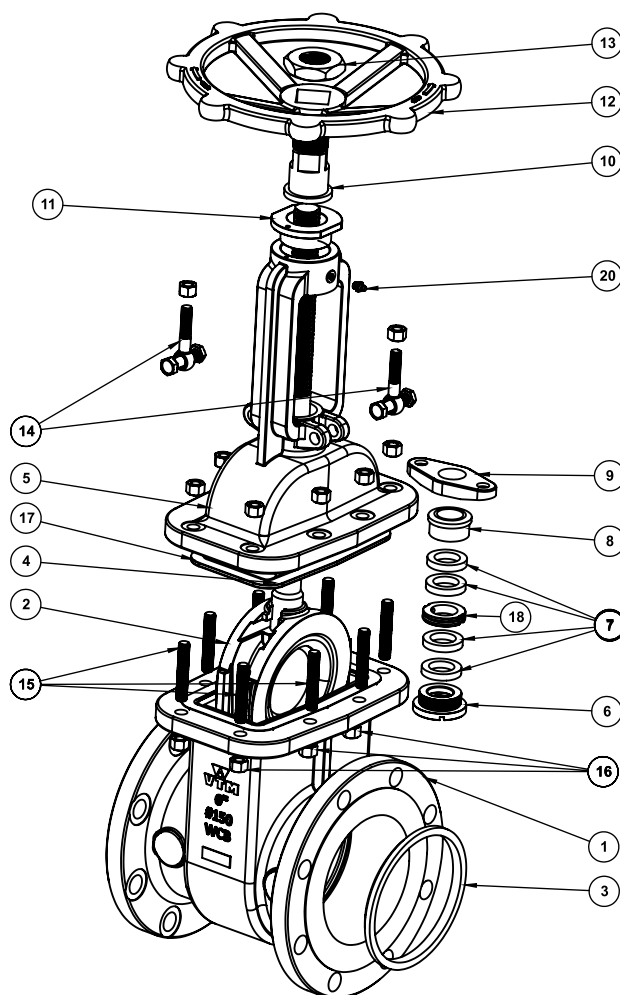


With Leak-Off

For Critical Service a lantern ring & Double packing can be provided with leak-off connection. The leak off is provided to allow collection of leakage from the lower packing set.

Typical VTM Bolted Bonnet Cast Steel Gate Valve Parts

S.No	Part Name	Specification
1.	Body	ASTM A 216 Gr. WCB
2.	Wedge	CA-15 or ASTM A 216 Gr. WCB + 13 % Cr.
3.	Body Seat Ring	AISI 410 13 % Cr.
4.	Stem	AISI 410 13 % Cr.
5.	Bonnet	ASTM A 216 Gr. WCB
6.	Back Seat	AISI 410 13 % Cr.
7.	Gland Packing	Graphite (Containing a Corrosion Inhibitor)
8.	Gland Follower	Steel
9.	Gland Flange	Steel
10.	Yoke Sleeve	BS: 1400 AB1C / AISI 416
11.	Yoke Retaining Nut	Mild Steel
12.	Hand Wheel	Ductile Iron
13.	Wheel Retaining Nut	Ductile Iron
14.	Gland Eye Bolts & Nuts	Carbon Steel
15.	Bonnet Studs	ASTM A193 Gr. B7
16.	Bonnet Nuts	ASTM A194Gr. 2H
17.	Body Bonnet Gasket	Class 150#- Corrugated Steel/Graphite Class 300-600#- Spiral Wound Stainless Steel/Graphite
18.	Lantern Ring	Carbon Steel/Stainless Steel
19.	Thrust Bearing	SKF /Equivalent in specification
20.	Lubricater	Mild Steel



Other Graded Material

Designation	ASTM Classification	Material Classification	Service Conditions
None	A216 WCB	Carbon Steel	For service up to 1000°F (538°C) where corrosion and oxidation are not a factor. ⁽¹⁾⁽⁴⁾⁽⁵⁾
WC6	A217 WC6	1 ¼ CR, ½ Mo	For service up to 1000°F (538°C). ⁽²⁾⁽³⁾⁽⁴⁾⁽⁵⁾
WC9	A217 WC9	2 ¼ CR, 1 Mo	For service up to 1000°F (538°C) where good creep strength is required. ⁽²⁾⁽³⁾⁽⁴⁾⁽⁵⁾
C5	A217 C5	5% CR, ½ Mo	For service up to 1200° F. Best corrosion and oxidation resistance plus high creep strength are required. ⁽²⁾
C12	A217 C12	9% CR, 1 Mo	For service up to 1200° F. Best corrosion and oxidation resistance than other grades.
LCC	A351 LCC	Low Carbon Steel	For service from -50° F to 650° F. This material must be quenched and tempered to obtain tensile and impact properties needed at sub- zero temperatures.

(1) Upon prolonged exposure to temperatures above 800° F, the carbide phase of carbon steel may be converted to graphite. Permissible, but not recommended for prolonged usage above 800°F.

(2) Valve regularly rated to 1000° F.

(3) Considerations should be given to the possibility of excessive oxidation (scaling) when used above 1050° F.

(4) Product used within the jurisdiction of Section 1 Power Boilers of the ASME Boiler and Pressure Vessel code is subject to the same temperature limitations as specified in that document.

(5) Product used within the jurisdiction of Power Piping, ASME Code for Pressure Piping B31.1, is subject to the same maximum temperature limitations placed upon the material in paragraph 124.2.

Nominal Trim Material

API Trim No.	Nominal Trim	Seating Surfaces	Stem Material	Temperature
1	F6 ⁽¹⁾	13 % Cr ASTM A217(CA-15)	S.S. 410. 13%Cr	1100°F
5	Hard faced ⁽²⁾	Cobalt base alloy/Stellite 6	S.S. 410. 13%Cr	1200°F
9	Monel ⁽⁴⁾	Ni-Cu Alloy	Ni-Cu Alloy	450°F
10	316 ⁽³⁾	S.S. 316	S.S. 316	850°F
8	F6 ⁽¹⁾ & Hard faced ⁽²⁾	13 % Cr ASTM A217(CA-15) Hard Faced	S.S. 410. 13%Cr	1100°F
11	Monel ⁽⁴⁾ & Hard faced ⁽²⁾	Ni-Cu Alloy Hard Faced	Ni-Cu Alloy	450°F
12	316 ⁽³⁾ & Hardfaced ⁽²⁾	S.S. 316 Hard Faced	S.S. 316	850°F


(1) 13% Chromium AISI Type 410 Stainless Steel category.

(2) Hard Facing is weld deposited Cobalt base alloy.

(3) Austenitic Stainless Steel is a Ni-Cr-Mo stainless steel in the AISI Type 316

(4) Ni-Cu Alloy.

Identification And Marking



API 600/ASME B16.34

FIG. CLASS

S.NO.

M.DATE

BODY

WEDGE

SEAT

@-29°C to 38°C

SIZE

STEM

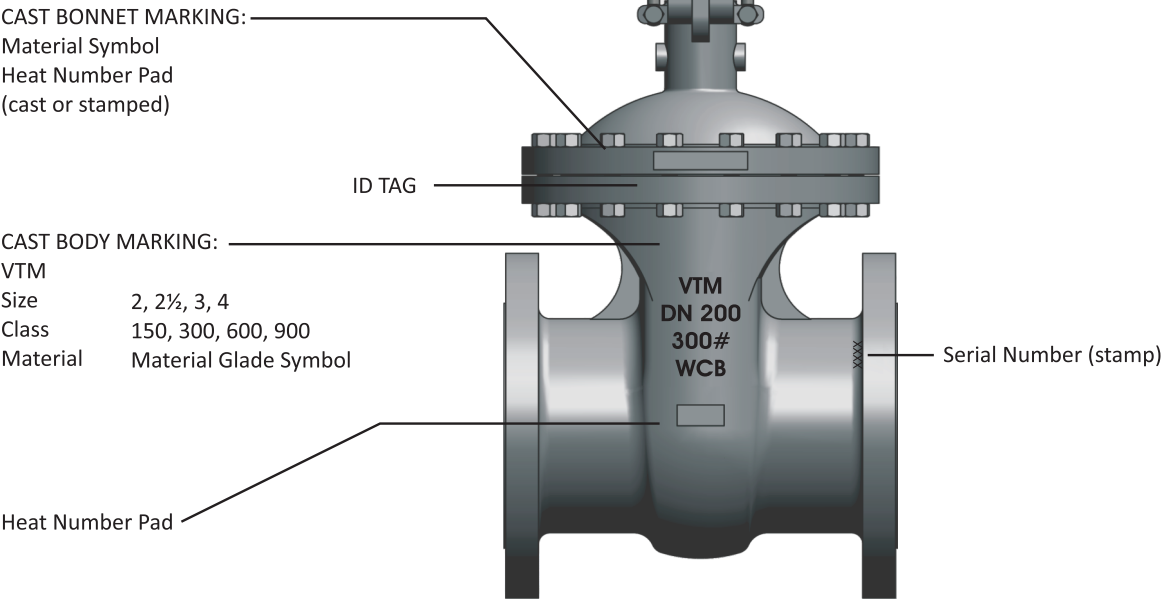
TRIM ID

BAR

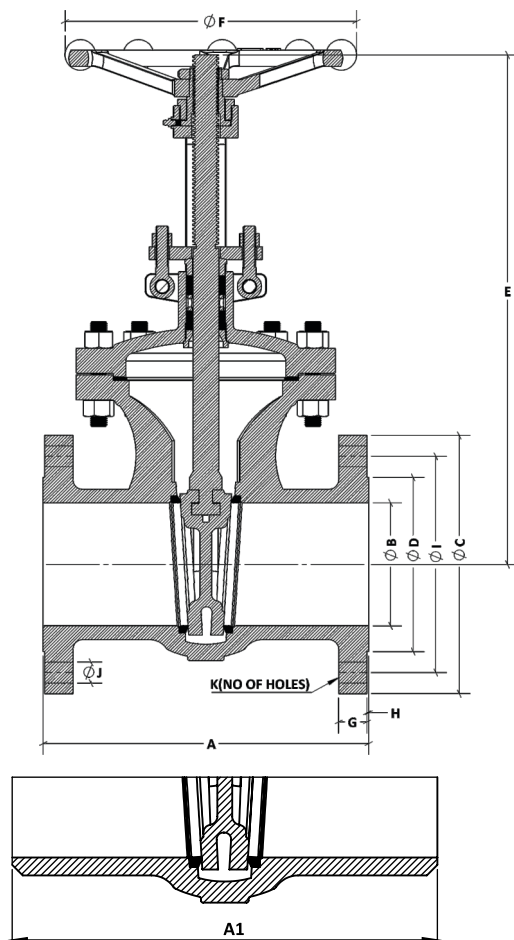
NPS

BAR @ °C(MAX)

Identification & Marking Information



VTM Cast Steel Gate Valve CL 150#, 300#, 600#



Technical Specification

Applicable Standard

Design Standard	API 600
Pressure Temperature Rating	ASME B 16.34
Flange Dimensions	ASME B 16.5
Face to Face Dimensions	ASME B 16.10
Testing Standard	API 598
Butt Weld Ends	ASME B 16.25

Dimensions Table#150

SIZE	A	A1	B	C	D	E	F	G	H	I	J	K
40	165	165	38.1	127	73.0	260	190	12.7	1.5	98.6	15.87	4
50	178	216	50.8	152	91.9	288	190	14.2	1.5	120.6	19.05	4
65	190	241	63.5	178	104.6	322	190	15.7	1.5	139.7	19.05	4
80	203	282	76.2	190	127.0	371	250	17.5	1.5	152.4	19.05	4
100	229	305	101.6	229	157.2	430	250	22.4	1.5	190.5	19.05	8
125	254	381	127.0	254	185.7	483	250	22.5	1.5	215.9	22.22	8
150	267	403	152.4	279	215.9	592	300	23.9	1.5	241.3	22.22	8
200	292	419	203.2	343	269.7	764	340	26.9	1.5	298.4	22.22	8
250	330	457	254.0	406	323.8	892	415	28.4	1.5	362.0	25.40	12
300	356	502	304.8	483	381.0	1035	415	30.4	1.5	431.8	25.40	12
350	381	572	336.0	533	412.8	1260	590	33.3	1.5	476.2	28.57	12
400	406	610	387.0	597	469.9	1350	590	35.1	1.5	539.8	28.57	16
450	432	660	438.0	635	533.4	1560	590	38.1	1.5	577.8	31.75	16
500	457	711	488.0	693	584.2	1708	670	41.1	1.5	635.0	31.75	20
600	508	813	590.0	813	692.2	2164	670	46.0	1.5	749.3	34.92	20

Dimensions Table #300

SIZE	A	A1	B	C	D	E	F	G	H	I	J	K
40	190	190	38.1	155	73.0	260	190	19.0	1.5	114.3	22.22	4
50	216	216	50.8	165	91.9	288	190	20.6	1.5	127.0	19.05	8
65	241	241	63.5	190	104.8	322	190	23.6	1.5	149.4	22.22	8
80	282	282	76.2	210	127.0	371	250	26.9	1.5	168.1	22.22	8
100	305	305	101.6	254	157.2	430	250	30.2	1.5	200.2	22.22	8
125	381	457	127.0	279	185.7	483	250	33.3	1.5	235.0	22.22	8
150	403	521	152.4	318	215.9	592	300	35.1	1.5	269.7	22.22	12
200	419	559	203.2	381	269.7	764	340	39.6	1.5	330.2	25.40	12
250	457	635	254.0	444	323.8	892	415	46.0	1.5	387.4	28.57	16
300	502	762	304.8	521	381.0	1035	415	49.3	1.5	450.8	31.75	16

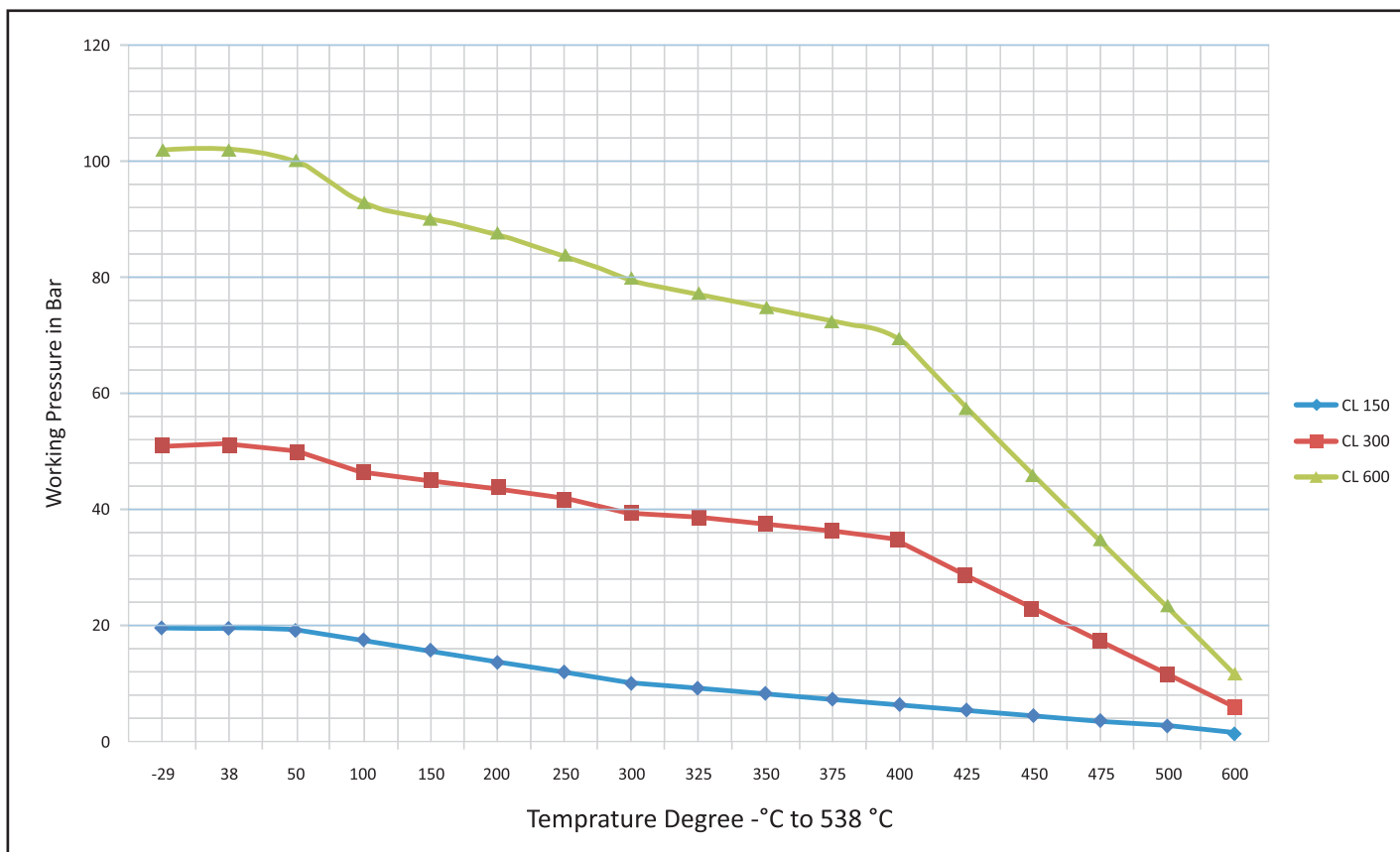
Dimensions Table#600

SIZE	A	A1	B	C	D	E	F	G	H	I	J	K
40	241	241	38.1	155	73.0	273	190	22.4	6.4	114.3	22.22	4
50	292	292	50.8	165	92.1	330	250	25.4	6.4	127.0	19.05	8
65	330	330	63.5	190	104.8	355	250	28.4	6.4	149.4	22.22	8
80	356	356	76.2	210	127.0	410	332	31.8	6.4	168.1	22.22	8
100	432	432	101.6	273	157.2	480	380	38.1	6.4	215.9	25.4	8
125	508	508	127.0	330	185.7	530	460	44.4	6.4	266.7	28.57	8
150	559	559	152.4	356	215.9	640	460	47.8	6.4	292.1	28.57	12
200	660	660	203.2	419	269.7	800	600	55.6	6.4	349.2	31.75	12
250	787	787	254.0	508	323.8	850	600	63.5	6.4	431.8	34.92	16
300	838	838	304.8	559	381.0	1090	710	66.5	6.4	489.0	34.92	20

Test Pressure

Class	Shell Test Pressure (Hydrostatic)	Seat Test	
		Hydrostatic	Pneumatic
150 #	29.5 BAR	21.6 BAR	7 BAR
300#	76.7 BAR	56.2 BAR	7 BAR
600#	153.2 BAR	112.3 BAR	7 BAR

Pressure-Temperature Rating to ASME/ANSI B 16.34 For ASTM A 216 Gr. WCB



NOTES:-

- The Above Chart is Based on Standard Values only.
- The Curve shown above is relate to valves provided with standard sizes & Class.

TEMPERATURE °C	Working Pressure, in Bar		
	CL 150	CL 300	CL 600
-29	19.6	51.1	102.1
38	19.6	51.1	102.1
50	19.2	50.1	100.2
100	17.7	46.6	93.2
150	15.8	45.1	90.2
200	13.8	43.8	87.6
250	12.1	41.9	83.9
300	10.2	39.8	79.6
325	9.3	38.7	77.4
350	8.4	37.6	75.1
375	7.4	36.4	72.7
400	6.5	34.7	69.4
425	5.5	28.8	57.5
450	4.6	23.0	46.0
475	3.7	17.4	34.9
500	2.8	11.8	23.5
538	1.4	5.9	11.8



V.A. VALVES

ISO 9001:2015 CERTIFIED

Regd. Office & Works : Udyog Nagar,

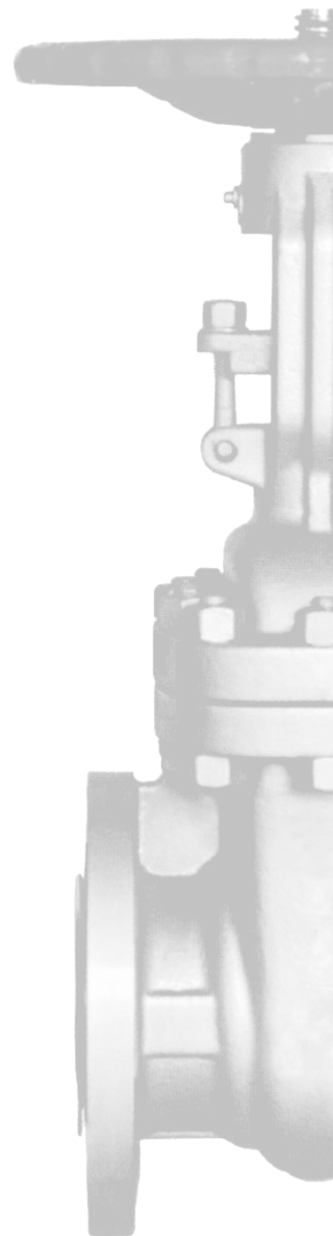
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