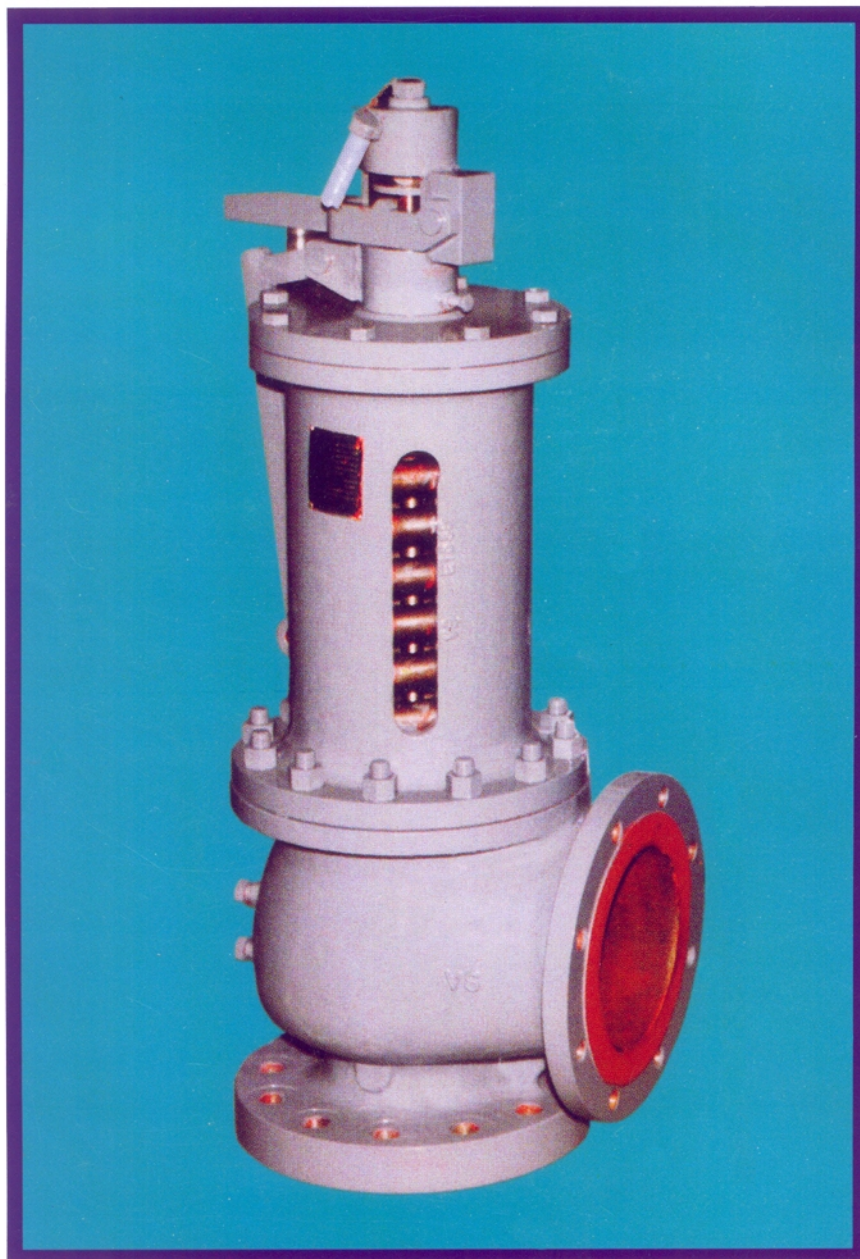




INSTRUMENTATION LTD.,
PALAKKAD



Safety Relief Valves



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FEATURES

MODEL : 2500 Series, 2500/F series and 2600 series valves

- ★ Fully meets ASME Section VIII requirements.
- ★ Manufactured in technical collaboration with NUOVO PIGNONE, Italy
- ★ Ideally suited for refineries, chemical & petrochemical plants, power stations, oil and gas pipe lines.
- ★ Total safety in performance with high discharge coefficients ($K=0.947$)
- ★ Full lift, full Nozzle, spring type for liquid, gas and vapour service designed in accordance with API 526.
- ★ Single blow down ring for easy maintenance and control of blow down.
- ★ High resistance to galling and seizing.
- ★ Higher guide ratio of 2.5:1 (Length :dia) for perfect guiding with minimum contact surface.
- ★ Unique spring design to obtain high accuracy in the calibration and consistency throughout the operation.
- ★ Seat leakage as per API - 527
- ★ Can be fitted with accessories like open/packed lever, gag etc.
- ★ Bellows available upto 'G' orifice in 2500 psi rated valves, upto 'L' orifice in 1500 psi rated valves, upto 'P' orifice in 900 psi rated valves, upto 'R' orifice 600 psi rated valves and upto 'T' orifice in 300 psi rated valves.



Definitions :

- 1) **Safety Relief Valve** : is an automatic, pressure relieving device, actuated both by pressure and dynamic action of fluid during discharge, suitable for use as either safety or relief valve, depending on application.
- 2) **Safety Valve** : is an automatic pressure relieving device actuated by the static pressure upstream of the valve and characterised by rapid full opening or pop action. It is used for steam, gas or vapour service. These are not suitable for vacuum service.
- 3) **Relief Valve** : is an automatic pressure relieving device actuated by the static pressure up-stream of the valve which opens in proportion to the increase in pressure over the opening pressure. It is used for liquid services.
- 4) **Working pressure** : is the pressure in which the vessel is subjected to during working condition.
- 5) **Set pressure** : is the inlet pressure at which the valve starts to discharge/pop.
Minimum set pressure shall be 0.5 kg/ cm² for all series of valves.
- 6) **Over pressure** : is the increase in pressure above the set pressure reached during discharge and is expressed as a percentage of set pressure.
- 7) **Blow down** : is the difference between the set pressure and the reseating pressure of the valve, expressed as a percentage of the set pressure
- 8) **Static / Constant back pressure** : Is the pressure existing in the discharge duct or manifold when the valve is closed and does not change appreciably under normal operation.
- 9) **Dynamic / Variable back pressure** : is the down stream of the fluid during discharge. Max. back pressure allowed is 10% without balancing bellows and above 10%, bellows are to be given. (For orifice F to T as standard). Bellows available for 'D' and 'E' Orifice also as non standard (For sizes confirm ILP).
- 10) **Cold differential set pressure** : is the pressure to which the valve is set in cold conditions. In case of standard valve, cold set pressure is the difference between the set pressure and back pressure. In bellows sealed valve cold set pressure is same as set pressure.

Cold setting of high temperature valves are as follows:

Cold setting of high temperature valves is often necessary. In this case the valves must be set at a pressure above the set pressure according to the percentages shown in the given table.

Working temperature °C	Percentage Increase over set pressure
from -268 to +100	—
from 101 to 230	+2%
from 231 to 480	+3%
from 481 to 540	+4%

Cold setting of valves for steam service :

When possible valves for steam services should be tested with steam. When these valves are set with air at ambient temperatures, the following percentage increases in the set pressure must be born in mind.

Set pressure Kg/cm ²	Percentage Increase over set pressure
from 0.5 to 7	+2%
from 7.1 to 21	+3%
from 21.1 to 70	+4%
from 70.1 to 210	+5%

SERIES 2500 FLANGED VALVE
Standard type / balanced bellows type

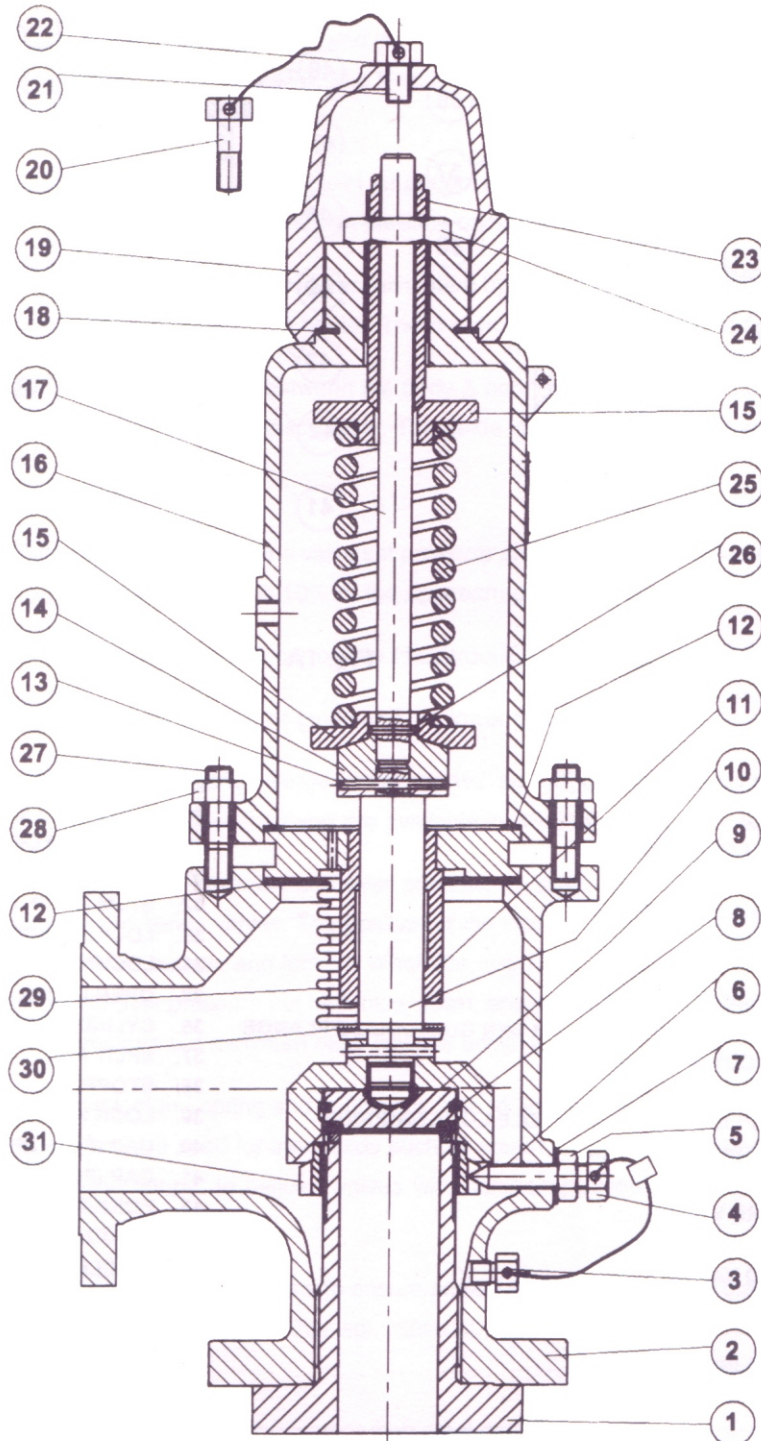


Fig. 1

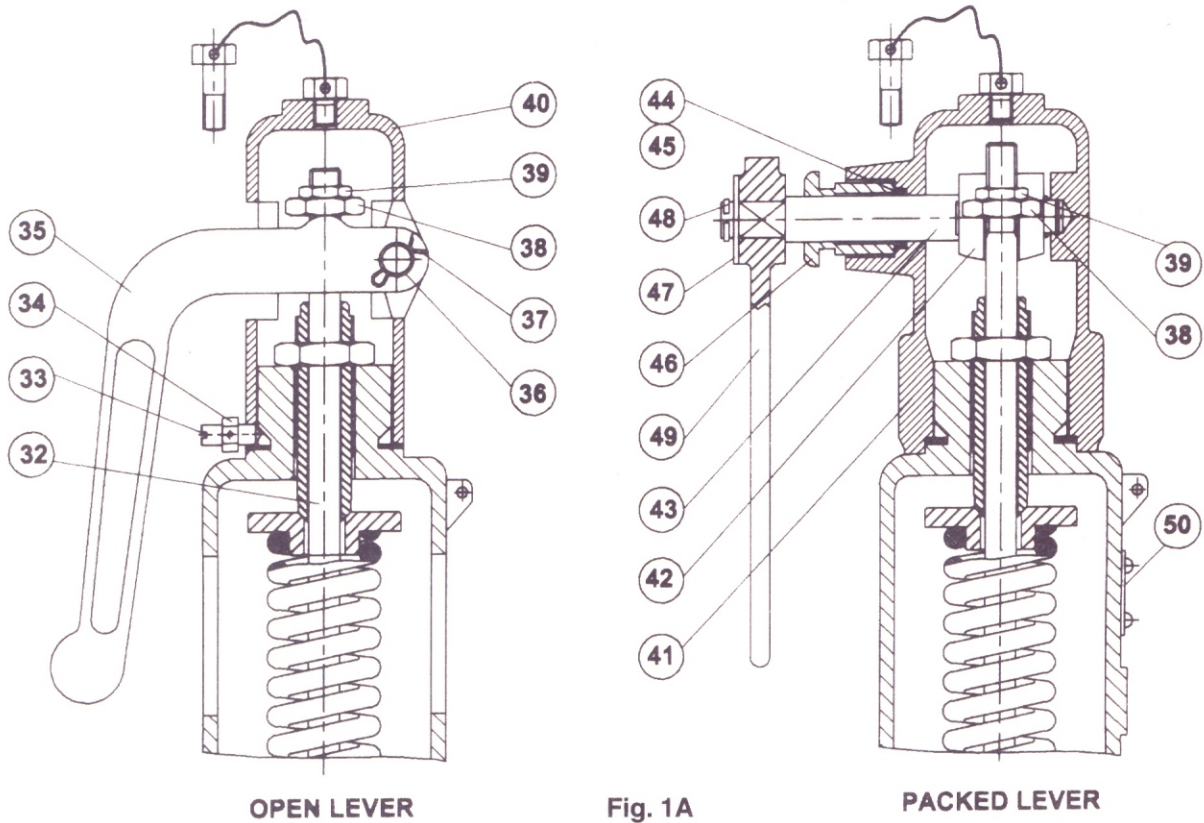


Fig. 1A

- | | |
|--|---------------------------------|
| 1. NOZZLE | 26. LOCKING PIN |
| 2. VALVE BODY | 27. STUD |
| 3. DRAIN PLUG | 28. HEX.NUT |
| 4. LOCKING SCREW | 29. BALANCED BELLOWS |
| 5. LOCK NUT (FOR LOCKING PIN) | 30. GASKET (FOR BELLOWS) |
| 6. LOCKING PIN | 31. BLOWDOWN RING |
| 7. GASKET (FOR LOCKING SCREW) | 32. STEM (OPEN & PACKED LEVER) |
| 8. DISC RING | 33. LOCKING SCREW (FOR CAP) |
| 9. DISC | 34. LOCKNUT (FOR LOCKING SCREW) |
| 10. DISC HOLDER/DISC HOLDER STEM | 35. OPEN LEVER |
| 11. DISC HOLDER GUIDE ASSY./DISC HOLDER GUIDE/GUIDE FLANGE | 36. CYLINDRICAL PIN |
| 12. GASKET (FOR BODY & BONNET) | 37. SPLIT PIN |
| 13. LOCKING PIN | 38. STOPPER |
| 14. COUPLING/COUPLING SPINDLE/SPINDLE/LOCATING RING | 39. LOCK NUT (FOR STOPPER) |
| 15. SPRING SEAT (LOWER & UPPER) | 40. CAP (FOR OPEN LEVER) |
| 16. BONNET | 41. CAP (FOR PACKED LEVER) |
| 17. STEM (STANDARD VALVE) | 42. FORK/DOG |
| 18. GASKET (FOR CAP) | 43. SHAFT/DOG SHAFT |
| 19. CAP (STANDARD VALVE) | 44. CIRCLIP/STOP WASHER |
| 20. GAG | 45. PACKING |
| 21. BLIND PLUG | 46. PACKING SCREW |
| 22. GASKET (FOR BLIND PLUG) | 47. WASHER |
| 23. SPRING ADJUSTING SCREW | 48. CIRCLIP |
| 24. LOCK NUT | 49. PACKED LEVER |
| 25. SPRING | 50. NAME PLATE WITH DRIVE SCREW |



CONSTRUCTIONAL DETAILS

Body : is made of high quality hydraulically tested casting and are available in ASTM A 216 WCB, A 217 WCB, A 351 CF8 etc. with ANSI B 16.5 flange dimensions. For flanges as per DIN / BS Std & for steam jacket bodies, please contact ILP.

Nozzle : The stainless steel nozzle is of full nozzle type and is made of SS 316 with stellite at seating area (A 182 - F 316 up to 4"x6" and A 351 CF8M for higher sizes) or 17-4PH. The Nozzle is screwed on to the valve body base and has a lapped surface for disc seating at top.

Disc : The disc is connected to the disc holder by a ball joint for perfect alignment with the nozzle and is secured with a disc ring. The disc is made of 17-4 PH St. Steel or SS 316 with stellite on seating area.

Disc holder : The top of the disc holder is connected to the valve stem by a spherical end or ball and the dynamic pressure of the fluid acts on the cone shaped base of the disc holder. The disc holder is made of stainless steel.

Guide : Guide is provided with a flange, clamped between the body & bonnet and the guide ratio of 2.5:1 (guide length to diameter) gives perfect guiding to the shaft of the disc holder. The guide is made of hardened and ground stainless steel.

Balancing Bellows : These are used

- 1) to nullify the effect of variable back pressure in the valve set pressure and valves with bellows are recommended for use when the max. variable back pressure exceeds 10% of the upstream pressure
- 2) to seal off the guide & spring from contact with corrosive / hazardous fluids or fluids which leave deposits / scales.

The upper part of bellows is coupled to the flange of guide and the lower part to disc holder.

Balancing bellows can be offered for 2500 series flange valves for 1½" size 'F' orifice onwards (D & E orifice valves with bellows can be provided in 1½" inlet x 2" outlet size) and are available in SS 316L or monel material.

Blowdown ring : is used to control the blowdown and over pressure to avoid hammering of disc against seat and is available both in flanged and screwed series valves. The position of the blow down ring (with a notched outside) screwed on to the nozzle can be adjusted from outside and locked. When the ring is in contact with the cone shaped part of disc holder, disc reaches full lift with little over pressure but high blow down, and with maximum distance between disc holder & ring, full lift with maximum over pressure but minimum blow down is achieved.

Bonnet : is used to contain and protect the spring and spring adjuster. In flanged valves, open bonnets are available with openings used to cool the spring and are used for inert fluids such as steam or air and closed bonnets communicate with the body through holes in the guide flange. In bellows valves with balancing bellows, bonnet is vented to atmosphere through a tapped hole.

Spring : The spring is located between two spring seats to ensure perfect centering of load on the disc and can be supplied in carbon steel, tungsten steel, stainless steel or other spl. material. A spring adjusting screw with locknut is used to compress the spring to desired set pressure.

Cap : All safety relief valves are supplied with a screwed carbon steel cap and can be optionally supplied with a gag.



CALCULATION OF ORIFICE AREA

1) Liquids as per API - RP 520

$$A = \frac{Q_L}{3.12 \sqrt{P_1} K_p K_g K_v K_1}$$

A - Orifice area in cm²

Q_L - Liquid flow rate in m³ / Hr.

P₁ - 1.25xset Pr. - max back pr. in kg/cm² (g).

K_p - Over pressure correction Coeff (Graph - 1)

K_g - Correction coeff for specific gravity (Graph - 2)

K_v - Viscosity correction coefficient (Graph 3 and Table-1)

K₁ - correction coefficient for variable back pressure (Valves with bellows) for liquids (Graph- 4)

2) Gases and Vapours as per ANCC Code

$$A = \frac{Q}{338 C_v K_2 K_3 P} \sqrt{\frac{TZ}{M}}$$

A- Orifice area in cm².

Q - Flow in kg/hr.

C_v - Expansion Coefficient

(Refer Table - 2, where K=cp/cv)

K₂ - Correction coeff for const. back pr. (Graph - 5)

For back pr. ≤ 55% of P, K₂ = 1

K₃ - Correction coeff for variable back pr.

(Valves with bellows) (Graph - 6)

P - Set pr. + Over pr. + Atm. pr. in Kg/cm² abs.

T - Absolute temperature at set pressure (0°C + 273)

Z- Coeff of compressibility at inlet conditions (PV/RT)

If not known use Z = 1

M-Molecular weight.

3) Steam as per IBR

$$A = \frac{E}{CP}$$

E-Flow in kg/hr.

C-Const 45

P-(Set pr. + over pr. + Atm. pr.) Kg/cm² abs.

4) Super Heated Steam as per IBR

$$A = \frac{E}{CP} \sqrt{1 + \left(\frac{2.7 ts}{1000} \right)}$$

ts - (super heated temp - saturation temperature corresponding to set pressure)

5) Sizing for gas Expansion due to External Fire

The discharge areas for safety and safety-relief valves on gas containing vessels exposed to open fires can be determined by the use of following formula.

$$A = \frac{F' A_3}{\sqrt{P_1}}$$

A - Effective discharge area of the valve in square inches.

F' - An operating factor determined from Graph - 7.

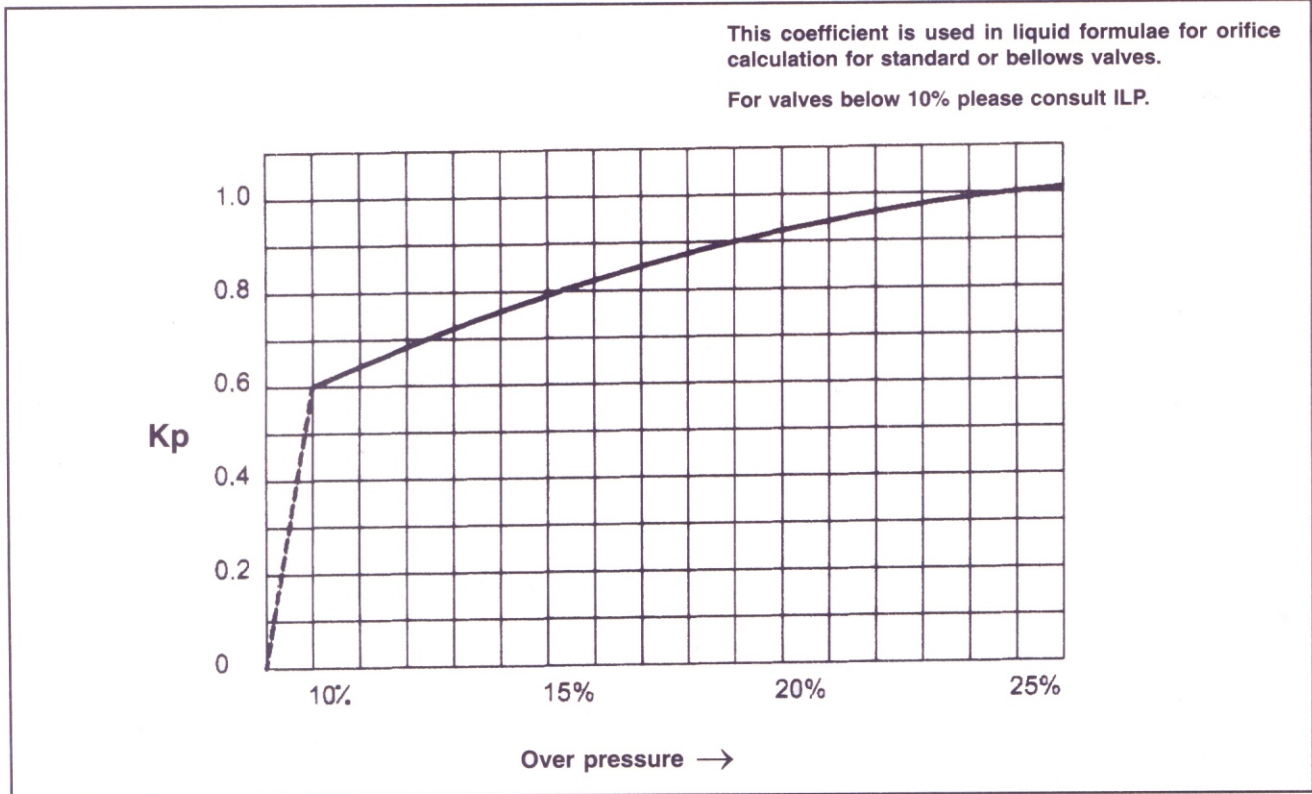
A₃ - Exposed surface area of vessel in square feet.

P₁ - Upstream relieving pressure in pounds per square inch absolute. This is the set pressure plus the allowable overpressure plus the atmospheric pressure in pounds per square inch absolute.



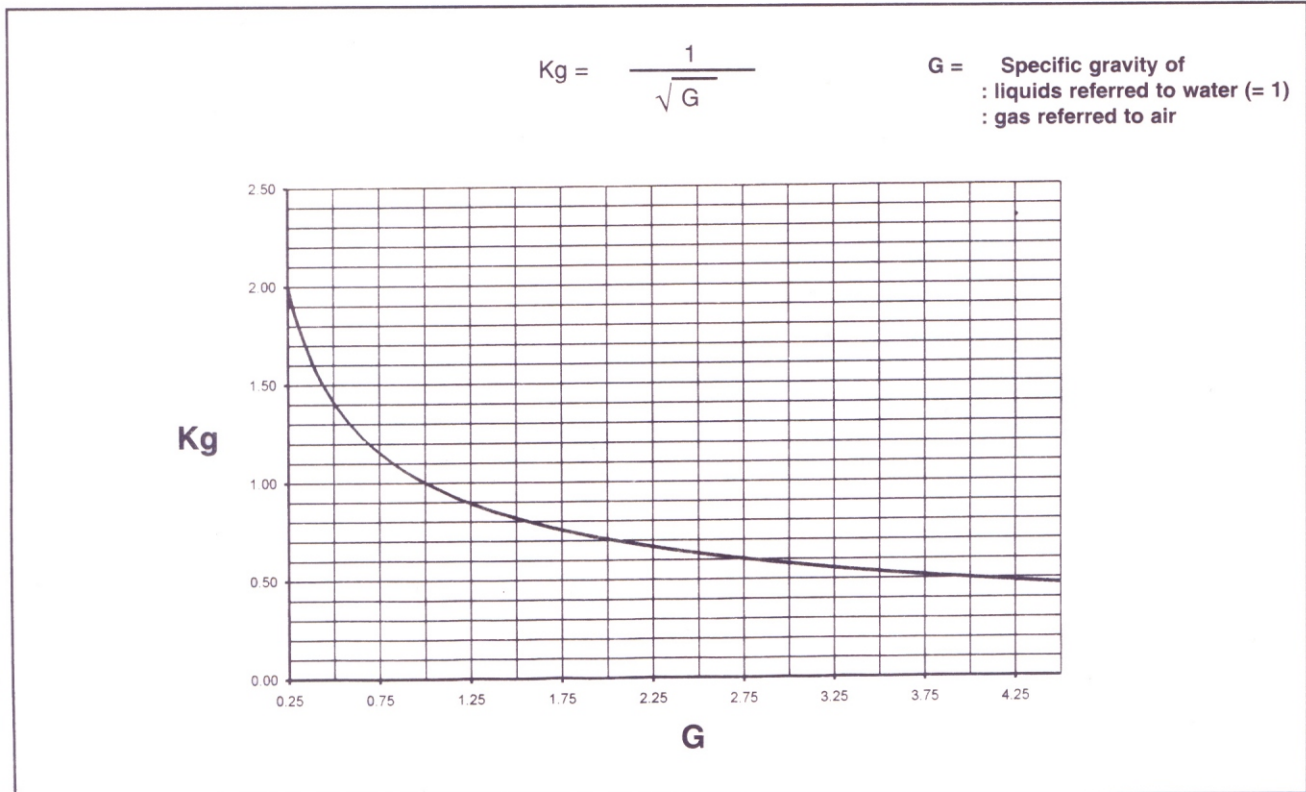
Overpressure correction coefficient (liquids) K_p

Graph 1



Correction coefficient for specific gravity (liquids and gases) K_g

Graph 2

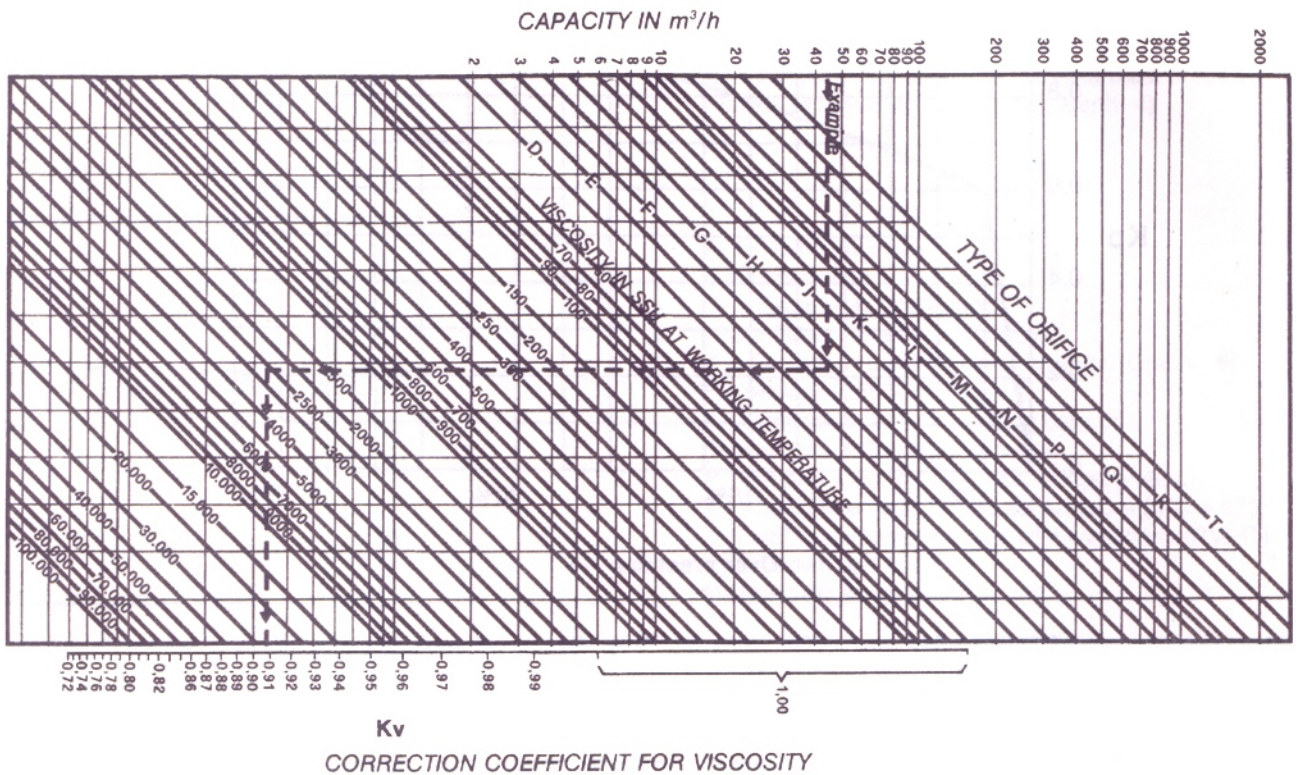




Correction Coefficient for viscosity K_v

Coefficient K_v is used in the liquid formula for calculating the orifice of standard or bellows valves.

Graph 3



Example : with a capacity of 200 US gpm (45 m^3/h), viscosity of 2500 SSU and orifice G, the corrective coefficient K_v is equal to 0.91.

Table 1

Comparison of Viscosity Measuring Units									
SSU	°E	cS	SSU	°E	cS	SSU	°E	cS	
70	2.1	12.8	800	23.3	175.8	9000	262.6	1980	
80	2.4	15.3	900	26.3	197.8	10000	291.7	2200	
90	2.7	17.8	1000	29.2	219.8	15000	437.6	3300	
100	3.0	20.2	1500	43.8	329.9	20000	583.5	4400	
150	4.4	31.8	2000	58.4	439.9	30000	875.3	6600	
200	5.8	43.1	2500	72.9	549.9	40000	1167.0	8800	
250	7.3	54.3	3000	87.5	659.9	50000	1450.0	11000	
300	8.8	65.4	4000	116.7	879.9	60000	1750.0	13200	
400	11.7	67.5	5000	145.8	1100.0	70000	2042.0	15400	
500	14.6	109.6	6000	175.0	1320.0	80000	2334.0	17600	
600	17.5	131.7	7000	204.2	1540.0	90000	2625.0	19800	
700	20.4	153.7	8000	233.4	1760.0	100000	2917.0	22000	

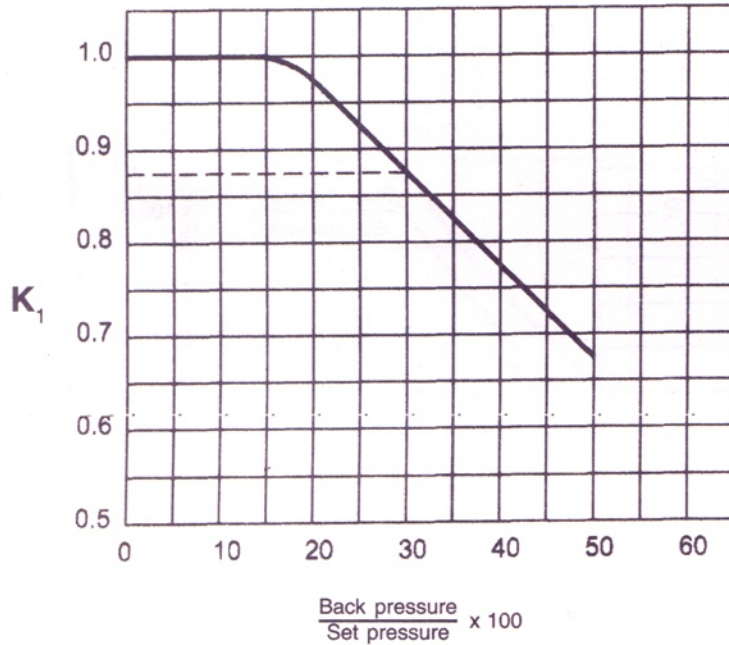
SSU = Saybolt Seconds Universal; °E = Engler; cS = Centistokes



Correction coefficient for variable back pressure (liquids) K_1

Graph 4

This coefficient is used in liquid formulae in orifice calculation for bellows valves and for 25% over-pressure.



Example :
 Set pressure = 200 psig
 Back pressure from 0 to 60 psig

$$\frac{\text{Back pressure}}{\text{Set pressure}} \times 100 =$$

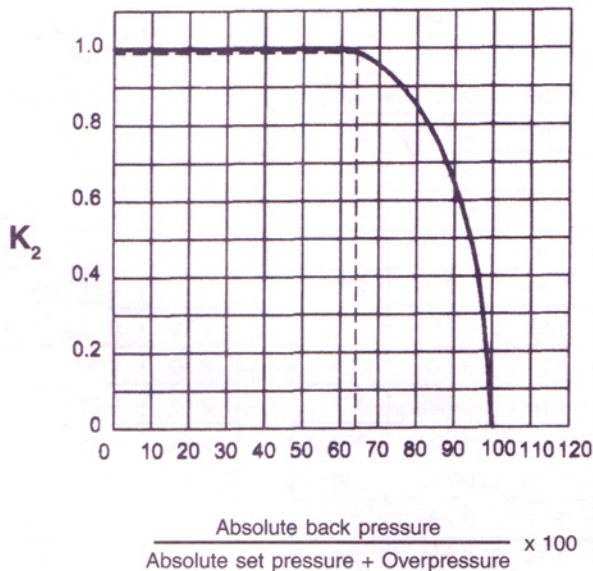
$$= \frac{60}{200} \times 100 = 30$$

$K_1 = 0,875$

Correction coefficient for constant back pressure (vapours and gases) K_2

Graph 5

This coefficient is used in vapour and gas formulae in orifice calculation for standard valves.



Example :
 Set pressure = 50 psig
 Back pressure = 30 psig
 Overpressure 10%

$$\frac{\text{Absolute back pressure}}{(\text{Absolute set pressure} + \text{Overpressure})} \times 100$$

$$\times 100 = \frac{30 + 14.7}{50 + 14.7 + 5} \times 100 = 64$$

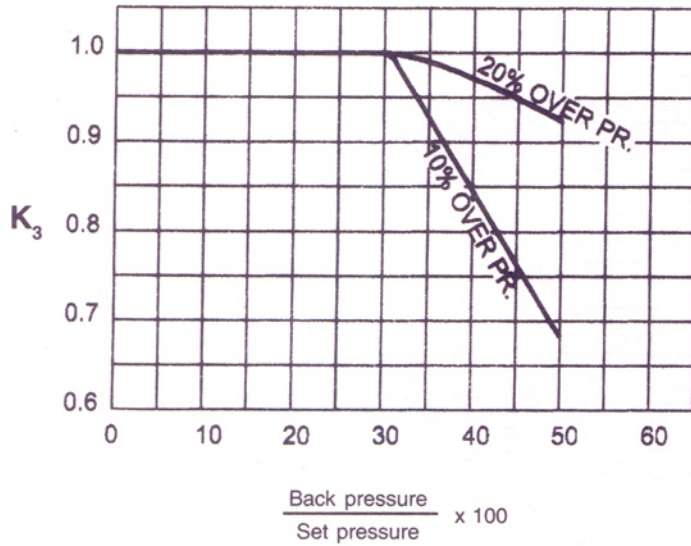
$K_2 = 0.98$



Correction coefficient for variable back pressure (vapours and gases) K_3

Graph 6

This coefficient is used in vapour and gas formulae in orifice calculation for bellows valves and for set pressures of 50 psig and above. For set pressures lower than 50 psig, refer to Factory.



Example :
Set pressure = 300 psig
Back pressure from 0 to 120 psig
Over pressure 10%

$$\frac{\text{Back pressure}}{\text{Set pressure}} \times 100 =$$

$$= \frac{120}{300} \times 100 = 40$$

$K_3 = 0,85$

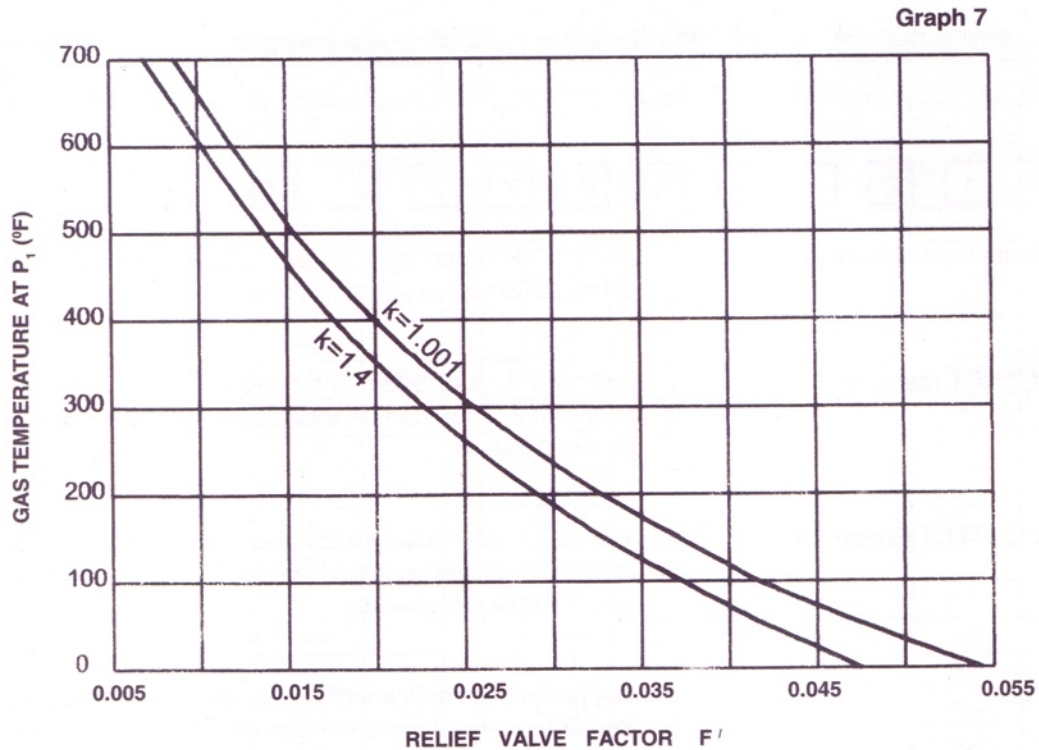
Table 2

Expansion Coefficient - (Cv) and Gas Constant (C) Inrelation to Specific Heat Ratio (K)														
K	Cv	C	K	Cv	C	K	Cv	C	K	Cv	C	K	Cv	C
0.40	0.417	217	1.01	0.609	317	1.40	0.685	356	1.82	0.747	388			
0.45	0.439	228	1.02	0.611	318	1.42	0.688	358	1.84	0.750	390			
0.50	0.459	239	1.04	0.615	320	1.44	0.691	359	1.86	0.752	391			
0.55	0.478	249	1.06	0.620	322	1.46	0.695	361	1.88	0.755	393			
0.60	0.496	258	1.08	0.624	324	1.48	0.698	363	1.90	0.758	394			
0.65	0.512	266	1.10	0.628	327	1.50	0.701	365	1.92	0.760	395			
0.70	0.528	275	1.12	0.633	329	1.52	0.704	366	1.94	0.763	397			
0.75	0.543	282	1.14	0.637	331	1.54	0.707	368	1.96	0.765	398			
0.80	0.557	290	1.16	0.641	333	1.56	0.710	369	1.98	0.767	399			
0.82	0.562	292	1.18	0.645	335	1.58	0.713	371	2.00	0.770	400			
0.84	0.567	295	1.20	0.649	337	1.60	0.716	372	2.10	0.781	406			
0.86	0.573	298	1.22	0.652	339	1.62	0.719	374	2.20	0.793	412			
0.88	0.578	300	1.24	0.656	341	1.64	0.722	375	2.30	0.803	418			
0.90	0.583	303	1.26	0.660	343	1.66	0.725	377	2.40	0.813	423			
0.92	0.588	306	1.28	0.664	345	1.68	0.728	379	2.50	0.823	428			
0.94	0.593	308	1.30	0.667	347	1.70	0.731	380	2.60	0.832	433			
0.96	0.597	310	1.32	0.671	349	1.72	0.734	382	2.70	0.841	437			
0.98	0.602	313	1.34	0.674	350	1.74	0.736	383	2.80	0.850	442			
0.99	0.604	314	1.36	0.678	353	1.78	0.742	386	2.90	0.858	446			
1.001	0.607	316	1.38	0.681	354	1.80	0.745	387	3.00	0.866	450			

If K is not given, assume as 1.4



Relief Valve Factor F'



These curves conform to the relationship $F' = \left(\frac{0.1406}{CK} \right) \left(\frac{\Delta T^{1.25}}{T_1^{0.6}} \right) : C - 6506$

Where :

C = coefficient which is determined by the ratio of the specific heats of the gas at standard conditions. This can be obtained from Table - 2.

K = coefficient of discharge, of which value is obtainable from the valve manufacturer. ($K=0.97$ for ILP valves).

T_1 = gas temperature, absolute, in degrees Fahrenheit + 460, at the upstream pressure, and is determined from the relationship :

$$T_1 = \left(\frac{P_1}{P_n} \right) T_n$$

T_n = normal operating gas temperature, in degrees Fahrenheit + 460.

P_n = normal operating gas pressure, in pounds per square inch absolute.

P_1 = upstream relieving pressure, in pounds per square inch absolute. This is the set pressure plus the allowable overpressure plus the atmospheric pressure in pounds per square inch absolute.

ΔT = $T_w - T_1$ (Difference between wall temperature and the temperature of the gas at P_1).

T_w = vessel wall temperature, in degrees Fahrenheit + 460.

The curves are drawn using 1,100 degrees Fahrenheit as the vessel wall temperature, which is the recommended maximum temperature for the usual carbon steel plate materials. Where vessels are fabricated from alloy materials, the value for T_w should be changed to a more proper recommended maximum.

It is recommended that the minimum value of $F' = 0.01$ (when it is unknown use 0.045).

Relief-Valve Factors for Noninsulated Vessels in Gas Service Exposed to Open Fires.



CODIFICATION OF MODEL NUMBERS

The ten digits number which identifies the type of valve complete with accessories.

1 2 3 4 5 6 7 8 9 10

(1 & 2 Digits indicates valve series)	25 for 2500 (flanged) & 2500/F (screwed) series valves 26 for 2600 (screwed) series valves
(3 rd Digit INLET rating ANSI)	1 for 150 # , 3 for 300 #, 5 for 600 # 6 for 900 #, 7 for 1500 #, 8 for 2500 # for flanged valves and '0' for screwed valves
(4 th Digit OUTLET Rating ANSI)	1 for 150 #, 2 for 300 # for flanged valves and '0' for 2600 series screwed valves, for 2500/F screwed valves the fourth digit indicates the orifice and the connection sizes.
(5 th Digit)	Represents the orifice for flanged valves, the orifice & connection sizes for 2600 screwed valves and letter 'F' for 2500/F screwed valves,

The first five digits of the model number are shown for each valve series in tables 3,4 & 5

(6 th Digit)	The sixth digit identifies the body bonnet & spring materials - refer tables 6, 7 & 8.
(7 th Digit)	The seventh digit indicates the type of construction 'N' for standard & 'B' - for balanced bellows valves.
(8 th Digit)	The eighth digit indicates whether the bonnet is open or closed '0' - for closed & '1' for open.
(9 th Digit)	The ninth digit identifies the lifting device '0' for none, 1 for open (plain) lever, 2- for packed lever.
(10 th Digit)	The tenth digit refers to the gag 0 - without gag, 1 with gag.



Table 3

Series 2500 Flanged Valves													
TYPE NUMBER (1 ST GROUP)	INLET (inches)	ORIFICE	OUTLET (inches)	RATINGS (ANSI)		TYPE NUMBER (1 ST GROUP)	INLET (inches)	ORIFICE	OUTLET (inches)	RATINGS (ANSI)			
				INLET	OUTLET					INLET	OUTLET		
2511-D	1	D	2	150	150	2511-K	3	K	4	150	150		
2531-D				300		2531-K				300			
2551-D				600		2551-K				600			
2562-D	1½		2½	900	300	2561-K	6		900				
2572-D				1500		2572-K			1500				
2582-D				2500		2511-L			3	4	150		
2511-E	1	E	2	150	150	*2531-L	4	L	6	300	150		
2531-E				300		2531-L				600			
2551-E				600		2551-L				900			
2562-E	1½		2½	900	300	2561-L	4		1500				
2572-E				1500		2571-L			1500				
2582-E				2500		2511-M			4	6	150		
2511-F	1½	F	2	150	150	2531-M	4	M	6	300	150		
2531-F				300		2551-M				600			
2551-F				600		2561-M				900			
2562-F			2½	300	900	300	2511-N		4	N	6	150	150
2572-F					1500		2531-N					300	
2582-F					2500		2551-N					600	
2511-G	1½	G	2½	150	150	2561-N	4	P	6		900	150	
2531-G				300		2511-P					150		
2551-G				600		2531-P					300		
2562-G	2		3	900	300	2551-P	4		600				
2572-G				1500		2561-P			900				
2582-G				2500		2511-Q			6	8	150		
2511-H	1½	H	3	150	150	2531-Q	6	Q	8	300	150		
* 2531-H				300		2551-Q				600			
2531-H				600		2511-R				6		8	150
2551-H	2		3	900	300	*2531-R	6		R	10	300	150	
2561-H				1500		2531-R					600		
2572-H				300		2551-R					10		600
2511-J	2	J	3	150	150	2511-T	8	T		10	150	150	
*2531-J				300		2531-T					300		
2531-J				2½		4					600		300
2551-J	900												
2561-J	1500												
2572-J	3												

*When ordering please indicate the valve size after the type number



Table 4

2500/F screwed valve Female and Female connections.			
TYPE NUMBER (1 ST GROUP)	ORIFICE AREA		VALVE SIZE
	sq. in.	cm ²	
2501/F	0.121	0.785	¼ x 1
2502/F	0.215	1.389	1 x 1½
2503/F	0.215	1.389	1½ x 2
2504/F	0.215	1.389	2 x 2
2505/F	0.442	2.851	1½ x 2
2506/F	0.442	2.851	2 x 2

Table 5

2600 screwed valves male-female connections.			
TYPE NUMBER	ORIFICE AREA		VALVE SIZE
	sq. in.	cm ²	
26001	0.04	0.258	½ x 1
26002	0.04	0.258	¾ x 1
26003	0.06	0.387	1 x 1

Table 6

2500 Flanged Valve		
SIXTH DIGIT	BODY AND BONNET	SPRING
S	A 351 CF8 stainless steel	Stainless steel
L	A 352 LC1 alloy steel	Stainless steel
C	A 216 WCB carbon steel	Carbon steel
T	A 216 WCB carbon steel	Tungsten steel
A	A 217 WC 6 alloy steel	Tungsten steel

Table 7

2500/F Screwed Valve			
SIXTH DIGIT	BODY NOZZLE	BONNET	SPRING
C	Carbon steel	Stainless steel	Carbon steel
T	Carbon steel	Stainless steel	Stainless steel
S	Stainless steel	Stainless steel	Stainless steel

Table 8

2600 Screwed Valve			
SIXTH DIGIT	BODY NOZZLE	BONNET	SPRING
S ₁	Stainless steel	Carbon steel	Carbon steel
S ₂	Stainless steel	Carbon steel	Stainless steel
S ₃	Stainless steel	Stainless steel	Stainless steel



STANDARD MATERIAL COMBINATION

2500 SERIES VALVES							
PARTS	25*** - S Valves	25*** - L Valves	25*** - C Valves	25*** - T Valves	25*** - A Valves		
	-268°C to -61°C -450°F to -76°F	-60°C to -30°C -75°F to -21°F	-29°C to +232°C -20°F to +450°F	+232°C to +426°C +450°F to +800°F	+426°C to +538°C +800°F to +1000°F		
Body	A 351 CF8	A 352 LC1	A 216 WCB	A 216 WCB	A 217 WC6		
Bonnet							
Cap		A 351 CF8	Carbon steel				
Disc*	Stainless steel	Stainless steel	17-4PH	17-4PH	17-4PH		
Nozzle*			Stainless steel	Stainless steel	Stainless steel		
Disc holder							
Blowdown ring							
Guide	Hardened Stainless steel						
Stem base	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel		
Stem base lock pin							
Spring			Carbon steel	Tungsten steel			
Spring seats			Carbon steel	Carbon steel	Stainless steel		
Adjusting screw			Hardened stainless steel				
Locknut			Stainless steel			Stainless steel	
Cap plug	Carbon steel	Carbon steel	Carbon steel	Carbon steel	Carbon steel		
Drain plug	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel		
Blowdown ring locking screw							
Stem							
Body-bonnet studs					A 193 B7	A 193 B7	A 193 B7
Nuts					A 194 2H	A 194 2H	A 194 2H
Bellows	Stainless steel - Type 316L						
Gaskets	Stainless steel						

* Disc & nozzle material are available in SS 304 / SS 304 St. (SS 316 / SS 316 St. optional).

2500 SERIES - FLANGED VALVES

Orifice "D" Pressure and Temperature limits as per API 526 & ANSI B 16.5 Effective area 0.785 cm² (0.121 sq. in)

TYPE NUMBER	MATERIALS		CONNECTIONS (INCHES)	RATING ANSI		MAXIMUM SET PRESSURE										MINIMUM SET PRESSURE		MAXIMUM BACK PRESSURE								
						IN LET (RF OR RJ)	OUT LET (RF)	-268° to -61°C -450° to -70° F	-60° to -30°C -75° to -21° F	-29° to +38°C -20° to +100° F	+232°C +450° F	+428°C +800° F	+538°C +1000° F	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi					
2511D-S	BODY BONNET	SPRING	INLET X OUTLET	150	150	19.3	275	-	-	-	-	-	-	-	-	-	-	-	0.4	STANDARD VALVE	kg/cm ²	psi				
2531D-S				300		43.2	615	-	-	-	-	-	-	-	-	-	-	-	-				-	0.4	16.1	230
2551D-S				600		86.8	1235	-	-	-	-	-	-	-	-	-	-	-	-				-	0.4		
2562D-S	A 351 CF8	Stainless Steel	1 1/2 x 2	900	300	130	1850	-	-	-	-	-	-	-	-	-	-	73	600	kg/cm ²	psi					
2572D-S	Stainless Steel		1500	217		3085	-	-	-	-	-	-	-	-	-	-	-	73								
2582D-S	Steel		2500	281		4000	-	-	-	-	-	-	-	-	-	-	-	-				190				
2511D-L	BODY BONNET	SPRING	INLET X OUTLET	150	150	-	-	19.3	275	-	-	-	-	-	-	-	-	-	0.4	230	kg/cm ²	psi				
2531D-L				300		-	-	50.6	720	-	-	-	-	-	-	-	-	-	-				0.4	16.1	230	
2551D-L				600		-	-	101	1440	-	-	-	-	-	-	-	-	-	-				-	0.4		
2562D-L	A352 LC1	Stainless Steel	1 1/2 x 2	900	300	-	-	152	2160	-	-	-	-	-	-	-	-	73	600	kg/cm ²	psi					
2572D-L	Alloy Steel		1500	-		-	253	3600	-	-	-	-	-	-	-	-	-	73								
2582D-L	Steel		2500	-		-	422	6000	-	-	-	-	-	-	-	-	-	-				190				
2511D-C	BODY BONNET	SPRING	INLET X OUTLET	150	150	-	-	19.3	275	11.6	165	-	-	-	-	-	-	0.4	230	kg/cm ²	psi					
2531D-C				300		-	-	50.6	720	45.7	650	-	-	-	-	-	-	-				-	0.4	16.1	230	
2551D-C				600		-	-	101	1440	91.7	1305	-	-	-	-	-	-	-				-	-	0.4		
2562D-C	A 216 WCB	Carbon Steel	1 1/2 x 2	900	300	-	-	152	2160	137	1955	-	-	-	-	-	-	73	600	kg/cm ²	psi					
2572D-C	Carbon Steel		1500	-		-	253	3600	229	3255	-	-	-	-	-	-	-	73								
2582D-C	Steel		2500	-		-	422	6000	382	5430	-	-	-	-	-	-	-	-				190				
2511D-T	BODY BONNET	SPRING	INLET X OUTLET	150	150	-	-	-	-	11.6	165	6.4	92	-	-	-	-	0.4	140	kg/cm ²	psi					
2531D-T				300		-	-	45.7	650	25.6	365	-	-	-	-	-	-	-				-	0.4	16.1	230	
2551D-T				600		-	-	91.7	1305	51.3	730	-	-	-	-	-	-	-				-	-	0.4		
2562D-T	A 216 WCB	Tungsten Steel	1 1/2 x 2	900	300	-	-	-	-	137	1955	77.3	1100	-	-	-	-	73	600	kg/cm ²	psi					
2572D-T	Carbon Steel		1500	-		-	229	3255	129	1830	-	-	-	-	-	-	-	73								
2582D-T	Steel		2500	-		-	382	5430	214	3050	-	-	-	-	-	-	-	-				190				
2531D-A	BODY BONNET	SPRING	INLET X OUTLET	300	150	-	-	-	-	28.8	410	15.1	215	-	-	-	-	0.4	230	kg/cm ²	psi					
2551D-A				600		-	-	57.3	815	30.2	430	-	-	-	-	-	-	-				-	0.4	16.1	230	
2562D-A				A 217 WC6		900	-	-	86.1	1225	45.3	645	-	-	-	-	-	-				-	-	73		
2572D-A	Alloy Steel	1500	1 1/2 x 2	300	300	-	-	-	-	143	2040	75.2	1070	-	-	-	73	600	kg/cm ²	psi						
2582D-A	Steel	2500	1 1/2 x 2 1/2	2500		-	-	-	-	239	3400	125	1785	-	-	-	190									

2500 SERIES - FLANGED VALVES

Orifice "F" Pressure and Temperature limits as per API 526 & ANSI B 16.5 Effective area 2.164 cm² (0.335 sq. in)

TYPE NUMBER	MATERIALS		CONNECTIONS (INCHES)	RATING ANSI		MAXIMUM SET PRESSURE												MINIMUM SET PRESSURE		MAXIMUM BACK PRESSURE																								
						INLET X OUTLET		IN (RF OR RJ)		OUT LET (RF)		-268° to -61°C -450° to -78° F		-60° to -30° C -75° to -21° F		-29° to +38° C -20° to +100° F		+23° C +45° F		+428° C +800° F		+538° C +1000° F		STANDARD VALVE		BELLWS VALVE																		
						kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi											
STANDARD VALVE OR WITH BELLWS	BODY BONNET	SPRING	INLET X OUTLET	IN (RF OR RJ)	OUT LET (RF)	-268° to -61°C -450° to -78° F	-60° to -30° C -75° to -21° F	-29° to +38° C -20° to +100° F	+23° C +45° F	+428° C +800° F	+538° C +1000° F	STANDARD VALVE	BELLWS VALVE	2511F-S	Steel	Carbon	1 1/2 x 2	150	150	19.3	275	-	-	-	-	-	-	-	-	-	-	0.4	0.4	16.1	230	16.1	230							
2531F-S	Steel	Carbon	1 1/2 x 2	300	150	43.2	615	-	-	-	-	-	-	-	-	-	-	-	43.2	615	-	-	-	-	-	-	-	-	0.4	0.4	16.1	230	16.1	230										
2551F-S	Steel	Carbon	1 1/2 x 2	600	150	86.8	1235	-	-	-	-	-	-	-	-	-	-	-	86.8	1235	-	-	-	-	-	-	-	-	41.5	41.5	16.1	230	16.1	230										
2562F-S	Steel	Carbon	1 1/2 x 2 1/2	900	300	130	1850	-	-	-	-	-	-	-	-	-	-	-	130	1850	-	-	-	-	-	-	-	-	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500						
2572F-S	Steel	Carbon	1 1/2 x 2 1/2	1500	300	155	2200	-	-	-	-	-	-	-	-	-	-	-	155	2200	-	-	-	-	-	-	-	-	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500						
2582F-S	Steel	Carbon	1 1/2 x 2 1/2	2500	300	239	3400	-	-	-	-	-	-	-	-	-	-	-	239	3400	-	-	-	-	-	-	-	-	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500						
2511F-L	Steel	Carbon	1 1/2 x 2	150	150	-	-	19.3	275	-	-	-	-	-	-	-	-	-	19.3	275	11.6	165	165	165	165	165	165	165	0.4	0.4	16.1	230	16.1	230	16.1	230								
2531F-L	Steel	Carbon	1 1/2 x 2	300	150	-	-	50.6	720	-	-	-	-	-	-	-	-	-	50.6	720	45.7	650	650	650	650	650	650	0.4	0.4	16.1	230	16.1	230	16.1	230	16.1	230							
2551F-L	Steel	Carbon	1 1/2 x 2 1/2	600	300	-	-	101	1440	-	-	-	-	-	-	-	-	-	101	1440	91.7	1305	1305	1305	1305	1305	1305	41.5	41.5	16.1	230	16.1	230	16.1	230	16.1	230							
2562F-L	Steel	Carbon	1 1/2 x 2 1/2	900	300	-	-	152	2160	-	-	-	-	-	-	-	-	-	152	2160	137	1955	1955	1955	1955	1955	1955	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500			
2572F-L	Steel	Carbon	1 1/2 x 2 1/2	1500	300	-	-	253	3600	-	-	-	-	-	-	-	-	-	253	3600	229	3255	3255	3255	3255	3255	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500				
2582F-L	Steel	Carbon	1 1/2 x 2 1/2	2500	300	-	-	351	5000	-	-	-	-	-	-	-	-	-	351	5000	351	5000	5000	5000	5000	5000	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500				
2511F-C	Steel	Carbon	1 1/2 x 2	150	150	-	-	19.3	275	-	-	-	-	-	-	-	-	-	19.3	275	11.6	165	165	165	165	165	165	0.4	0.4	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230					
2531F-C	Steel	Carbon	1 1/2 x 2	300	150	-	-	50.6	720	-	-	-	-	-	-	-	-	-	50.6	720	45.7	650	650	650	650	650	650	0.4	0.4	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230					
2551F-C	Steel	Carbon	1 1/2 x 2 1/2	600	300	-	-	101	1440	-	-	-	-	-	-	-	-	-	101	1440	91.7	1305	1305	1305	1305	1305	1305	41.5	41.5	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230					
2562F-C	Steel	Carbon	1 1/2 x 2 1/2	900	300	-	-	152	2160	-	-	-	-	-	-	-	-	-	152	2160	137	1955	1955	1955	1955	1955	1955	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500			
2572F-C	Steel	Carbon	1 1/2 x 2 1/2	1500	300	-	-	253	3600	-	-	-	-	-	-	-	-	-	253	3600	229	3255	3255	3255	3255	3255	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500				
2582F-C	Steel	Carbon	1 1/2 x 2 1/2	2500	300	-	-	351	5000	-	-	-	-	-	-	-	-	-	351	5000	351	5000	5000	5000	5000	5000	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500				
2511F-T	Steel	Tungsten	1 1/2 x 2	150	150	-	-	11.6	165	6.4	92	-	-	-	-	-	-	-	11.6	165	6.4	92	92	92	92	92	0.4	0.4	9.8	140	9.8	140	9.8	140	9.8	140	9.8	140	9.8	140				
2531F-T	Steel	Tungsten	1 1/2 x 2	300	150	-	-	45.7	650	25.6	365	-	-	-	-	-	-	-	45.7	650	25.6	365	365	365	365	365	0.4	0.4	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230				
2551F-T	Steel	Tungsten	1 1/2 x 2 1/2	600	300	-	-	91.7	1305	51.3	730	-	-	-	-	-	-	-	91.7	1305	51.3	730	730	730	730	730	41.5	41.5	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230				
2562F-T	Steel	Tungsten	1 1/2 x 2 1/2	900	300	-	-	137	1955	77.3	1100	-	-	-	-	-	-	-	137	1955	77.3	1100	1100	1100	1100	1100	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500
2572F-T	Steel	Tungsten	1 1/2 x 2 1/2	1500	300	-	-	229	3255	129	1830	-	-	-	-	-	-	-	229	3255	129	1830	1830	1830	1830	1830	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500
2582F-T	Steel	Tungsten	1 1/2 x 2 1/2	2500	300	-	-	351	5000	214	3050	-	-	-	-	-	-	-	351	5000	214	3050	3050	3050	3050	3050	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500
2531F-A	Steel	Tungsten	1 1/2 x 2	300	150	-	-	28.8	410	15.1	215	-	-	-	-	-	-	-	28.8	410	15.1	215	215	215	215	215	0.4	0.4	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230				
2551F-A	Steel	Tungsten	1 1/2 x 2	600	150	-	-	57.3	815	30.2	430	-	-	-	-	-	-	-	57.3	815	30.2	430	430	430	430	430	41.5	41.5	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230	16.1	230				
2562F-A	Steel	Tungsten	1 1/2 x 2 1/2	900	300	-	-	86.1	1225	45.3	645	-	-	-	-	-	-	-	86.1	1225	45.3	645	645	645	645	645	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500
2572F-A	Steel	Tungsten	1 1/2 x 2 1/2	1500	300	-	-	143	2040	75.2	1070	-	-	-	-	-	-	-	143	2040	75.2	1070	1070	1070	1070	1070	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500
2582F-A	Steel	Tungsten	1 1/2 x 2 1/2	2500	300	-	-	239	3400	125	1785	-	-	-	-	-	-	-	239	3400	125	1785	1785	1785	1785	1785	32.1	32.1	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500	42.2	600	35.1	500





2500 SERIES - FLANGED VALVES

Orifice "G" Pressure and Temperature limits as per API 526 & ANSI B 16.5 Effective area 3.53 cm² (0.547 sq. in)

TYPE NUMBER	MATERIALS		CONNECTIONS (INCHES)	RATING ANSI		MAXIMUM SET PRESSURE												MINIMUM SET PRESSURE		MAXIMUM BACK PRESSURE			
	BODY BONNET	SPRING		IN LET (RF OR RJ)	OUT LET (RF)	-268° to -61°C -450° to -78°F	-60° to -30°C -75° to -21°F	-29° to +38°C -20° to +100°F	+232°C +450°F	+428°C +800°F	+538°C +1000°F	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi		
2511G-S				150		19.3	275	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2531G-S			1 1/2 x 2 1/2	300	150	43.2	615	-	-	-	-	-	-	-	-	-	-	-	16.1	230	16.1	230	
2551G-S				600		86.8	1235	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2562G-S	A 351 CF8			900		112	1600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2572G-S	Stainless	Stainless	2 x 3	1500	300	172	2450	-	-	-	-	-	-	-	-	-	-	-	42.2	600	33	470	
2582G-S	Steel	Steel		2500		183	2600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2511G-L				150		-	-	19.3	275	-	-	-	-	-	-	-	-	-	-	-	-	-	
2531G-L			1 1/2 x 2 1/2	300	150	-	-	50.6	720	-	-	-	-	-	-	-	-	-	16.1	230	16.1	230	
2551G-L				600		-	-	101	1440	-	-	-	-	-	-	-	-	-	-	-	-	-	
2562G-L	A 352 LC1			900		-	-	152	2160	-	-	-	-	-	-	-	-	-	-	-	-	-	
2572G-L	Alloy	Stainless	2 x 3	1500	300	-	-	253	3600	-	-	-	-	-	-	-	-	-	42.2	600	33	470	
2582G-L	Steel	Steel		2500		-	-	253	3600	-	-	-	-	-	-	-	-	-	-	-	-	-	
2511G-C				150		-	-	-	-	19.3	275	11.6	165	-	-	-	-	-	-	-	-	-	-
2531G-C			1 1/2 x 2 1/2	300	150	-	-	-	-	50.6	720	45.7	650	-	-	-	-	-	16.1	230	16.1	230	
2551G-C				600		-	-	-	-	101	1440	91.7	1305	-	-	-	-	-	-	-	-	-	
2562G-C	A 216 WCB			900		-	-	-	-	152	2160	137	1955	-	-	-	-	-	-	-	-	-	
2572G-C	Carbon	Carbon	2 x 3	1500	300	-	-	-	-	253	3600	229	3255	-	-	-	-	-	42.2	600	33	470	
2582G-C	Steel	Steel		2500		-	-	-	-	253	3600	253	3600	-	-	-	-	-	-	-	-	-	
2511G-T				150		-	-	-	-	-	-	11.6	165	6.4	92	-	-	-	9.8	140	9.8	140	
2531G-T			1 1/2 x 2 1/2	300	150	-	-	-	-	-	-	45.7	650	25.6	365	-	-	-	16.1	230	16.1	230	
2551G-T				600		-	-	-	-	-	-	91.7	1305	51.3	730	-	-	-	-	-	-	-	
2562G-T	A 216 WCB			900		-	-	-	-	-	-	137	1955	77.3	1100	-	-	-	-	-	-	-	
2572G-T	Carbon	Tungsten	2 x 3	1500	300	-	-	-	-	-	-	229	3255	129	1830	-	-	-	42.2	600	33	470	
2582G-T	Steel	Steel		2500		-	-	-	-	-	-	253	3600	214	3050	-	-	-	-	-	-	-	
2531G-A				300	150	-	-	-	-	-	-	-	-	28.8	410	15.1	215	0.4	16.1	230	16.1	230	
2551G-A			1 1/2 x 2 1/2	600		-	-	-	-	-	-	-	-	57.3	815	30.2	430	40	-	-	-	-	
2562G-A	A 217 WC6			900		-	-	-	-	-	-	-	-	86.1	1225	45.3	645	87	-	-	-	-	
2572G-A	Alloy	Tungsten	2 x 3	1500	300	-	-	-	-	-	-	-	-	143	2040	75.2	1070	120	42.2	600	33	470	
2582G-A	Steel	Steel		2500		-	-	-	-	-	-	-	-	239	3400	125	1785	120	-	-	-	-	



2500 SERIES - FLANGED VALVES

Orifice "L" Pressure and Temperature limits as per API 526 & ANSI B 16.5 Effective area 20.109 cm² (3.115 sq. in)

TYPE NUMBER	MATERIALS		CONNECTIONS (INCHES)	RATING ANSI		MAXIMUM SET PRESSURE												MINIMUM SET PRESSURE		MAXIMUM BACK PRESSURE			
	BODY BONNET	SPRING		IN LET (RF OR R ₁)	OUT LET (RF)	-28° to -61°C -450° to -76° F	-60° to -30°C -75° to -21° F	-29° to +38°C -20° to +100° F	+232°C +450° F	+428°C +800° F	+538°C +1000° F	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi
2511L-S			3 x 4	150		19.3	275	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	7	100
2531L-S				300	150	19.3	275	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	16.1	230
2531L-S	A 351 CF8	Stainless Steel		600		37.6	535	-	-	-	-	-	-	-	-	-	0.5	-	-	-	-	11.9	170
2551L-S	Stainless Steel		4 x 6	900		37.6	535	-	-	-	-	-	-	-	-	-	43	-	-	-	-		
2561L-S				1500		49.2	700	-	-	-	-	-	-	-	-	-	43	-	-	-	-		
2511L-L			3 x 4	150		-	-	19.3	275	-	-	-	-	-	-	-	0.4	-	-	-	-	7	100
2531L-L				300	150	-	-	19.3	275	-	-	-	-	-	-	-	0.4	-	-	-	-	16.1	230
2531L-L	A 352 LC1	Stainless Steel		600		-	-	50.6	720	-	-	-	-	-	-	-	0.5	-	-	-	-		
2551L-L	Alloy Steel		4 x 6	900		-	-	70.3	1000	-	-	-	-	-	-	-	43	-	-	-	-	11.9	170
2561L-L				1500		-	-	105	1500	-	-	-	-	-	-	-	43	-	-	-	-		
2511L-C			3 x 4	150		-	-	19.3	275	11.6	165	-	-	-	-	-	0.4	-	-	-	-	7	100
2531L-C				300	150	-	-	19.3	275	19.3	275	-	-	-	-	-	0.4	-	-	-	-	16.1	230
2531L-C	A 216 WCB	Carbon Steel		600		-	-	50.6	720	45.7	650	-	-	-	-	-	0.5	-	-	-	-	11.9	170
2551L-C	Carbon Steel		4 x 6	900		-	-	70.3	1000	70.3	1000	-	-	-	-	-	43	-	-	-	-		
2561L-C				1500		-	-	105	1500	105	1500	-	-	-	-	-	43	-	-	-	-		
2511L-T			3 x 4	150		-	-	-	-	11.6	165	6.4	92	-	-	-	0.4	-	-	-	-	9.8	140
2531L-T				300	150	-	-	-	-	19.3	275	19.3	275	-	-	-	0.4	-	-	-	-	16.1	230
2531L-T	A 216 WCB	Carbon Steel		600		-	-	-	-	45.7	650	25.6	365	-	-	-	0.5	-	-	-	-		
2551L-T	Carbon Steel	Tungsten Steel	4 x 6	900		-	-	-	-	70.3	1000	51.3	730	-	-	-	43	-	-	-	-	11.9	170
2561L-T	Steel			1500		-	-	-	-	105	1500	77.3	1100	-	-	-	43	-	-	-	-		
2571L-T				1500		-	-	-	-	105	1500	105	1500	-	-	-	67	-	-	-	-		
2531L-A				300		-	-	-	-	28.8	410	15.1	215	-	-	-	0.5	-	-	-	-		
2551L-A	A 217 WC6	Tungsten Steel		600		-	-	-	-	57.3	815	30.2	430	-	-	-	43	-	-	-	-	16.1	230
2561L-A	Alloy Steel		4 x 6	900	150	-	-	-	-	86.1	1225	45.3	645	-	-	-	43	-	-	-	-		
2571L-A	Steel			1500		-	-	-	-	105	1500	75.2	1070	-	-	-	67	-	-	-	-	11.9	170



2500 SERIES - FLANGED VALVES

Orifice "M" Pressure and Temperature limits as per API 526 &
ANSI B 16.5 Effective area 25.339 cm² (3.927 sq. in)

TYPE NUMBER	MATERIALS		CONNECTIONS (INCHES)	RATING ANSI		MAXIMUM SET PRESSURE												MINIMUM SET PRESSURE		MAXIMUM BACK PRESSURE		
	BODY BONNET	SPRING		IN LET (RF OR RU)	OUT LET (RF)	-268° to -61°C -450° to -76°F	-60° to -30°C -75° to -21°F	-29° to +38°C -20° to +100°F	+232°C +450°F	+426°C +800°F	+538°C +1000°F	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	
2511M-S	A 351 CF8 Stainless Steel	Stainless Steel	4 x 6	150	OUT LET (RF)	19.3	275	-	-	-	-	-	-	-	-	-	0.5	-	5.6	80		
2531 M-S				300	150	36.9	525	-	-	-	-	-	-	-	-	-	-	11	16.1	230	-	
2551 M-S				600	600	42.1	600	-	-	-	-	-	-	-	-	-	-	-	11	-	11.2	160
2511M-L	A 352 LC1 Alloy Steel	Stainless Steel	4 x 6	150		-	-	19.3	275	-	-	-	-	-	-	-	0.5	-	5.6	80		
2531 M-L				300	150	-	-	50.6	720	-	-	-	-	-	-	-	-	11	16.1	230	-	
2551 M-L				600	600	-	-	77.3	1100	-	-	-	-	-	-	-	-	-	11	-	11.2	160
2511M-C	A 216 WCB Carbon Steel	Carbon Steel	4 x 6	150		-	-	-	-	19.3	275	11.6	165	-	-	-	0.5	-	5.6	80		
2531 M-C				300	150	-	-	50.6	720	45.7	650	-	-	-	-	-	-	11	16.1	230	-	
2551 M-C				600	600	-	-	77.3	1100	77.3	1100	-	-	-	-	-	-	-	11	-	11.2	160
2511M-T	A 216 WCB Carbon Steel	Tungsten Steel	4 x 6	150		-	-	-	-	-	11.6	165	6.4	92	-	-	0.5	9.8	140	5.6	80	
2531 M-T				300	150	-	-	-	-	45.7	650	25.6	365	-	-	-	-	11	-	-	-	
2551 M-T				600	600	-	-	-	-	77.3	1100	51.3	730	-	-	-	-	11	16.1	230	11.2	160
2561M-T				900	900	-	-	-	-	77.3	1100	77.3	1100	-	-	-	-	47	-	-	-	-
2531 M-A	A 217 WCB Alloy Steel	Tungsten Steel	4 x 6	300		-	-	-	-	-	-	-	28.8	410	15.1	215	11	-	-	-		
2551 M-A				600	150	-	-	-	-	-	-	57.3	815	30.2	430	11	16.1	230	11.2	160		
2561 M-A				900	900	-	-	-	-	-	-	77.3	1100	45.3	645	47	-	-	-	-	-	

2500 SERIES - FLANGED VALVES

Orifice "N" Pressure and Temperature limits as per API 526 & ANSI B 16.5 Effective area 30.581 cm² (4.730 sq. in)

TYPE NUMBER	MATERIALS		CONNECTIONS (INCHES)	RATING ANSI		MAXIMUM SET PRESSURE												MINIMUM SET PRESSURE		MAXIMUM BACK PRESSURE		
				IN LET (RF OR RJ)	OUT LET (RF)	-268° to -61°C -450° to -78°F	-60° to -30°C -75° to -21°F	-29° to +38°C -20° to +100°F	+232°C +450°F	+426°C +800°F	+538°C +1000°F	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	
2511N-S	A 351 CF8 Stainless Steel	SPRING	INLET X OUTLET	150		19.3	275	-	-	-	-	-	-	-	-	-	0.4		5.6	80		
2531 N-S				300	150	31.6	450	-	-	-	-	-	-	-	-	-	-	0.4	16.1	230		
2551 N-S				600		35.1	500	-	-	-	-	-	-	-	-	-	-	40		11.2	160	
2511N-L	A 352 LC1 Alloy Steel	SPRING	INLET X OUTLET	150		-	-	19.3	275	-	-	-	-	-	-	-	0.4		5.6	80		
2531 N-L				300	150	-	-	50.6	720	-	-	-	-	-	-	-	0.4	16.1	230			
2551 N-L				600		-	-	70.3	1000	-	-	-	-	-	-	-	40		11.2	160		
2511N-C	A 216 WCB Carbon Steel	SPRING	INLET X OUTLET	150		-	-	19.3	275	11.6	165	-	-	-	-	-	0.4		5.6	80		
2531 N-C				300	150	-	-	50.6	720	45.7	650	-	-	-	-	-	0.4	16.1	230			
2551 N-C				600		-	-	70.3	1000	70.3	1000	-	-	-	-	-	40		11.2	160		
2511N-T	A 216 WCB Carbon Steel	TUNGSTEN STEEL	INLET X OUTLET	150		-	-	-	-	11.6	165	6.4	92	-	-	-	0.4	9.8	140	5.6	80	
2531 N-T				300	150	-	-	-	-	45.7	650	25.6	365	-	-	-	0.4					
2551 N-T				600		-	-	-	-	70.3	1000	51.3	730	-	-	-	40	16.1	230	11.2	160	
2561N-T				900		-	-	-	-	70.3	1000	70.3	1000	-	-	-	40					
2531 N-A	A 217 WC6 Alloy Steel	TUNGSTEN STEEL	INLET X OUTLET	300		-	-	-	-	-	-	28.8	410	15.1	215	0.4						
2551 N-A				600	150	-	-	-	-	57.3	815	30.2	430	-	-	-	0.4	16.1	230	11.2	160	
2561 N-A				900		-	-	-	-	70.3	1000	70.3	1000	-	-	-	40					





2500 SERIES - FLANGED VALVES

Orifice "P" Pressure and Temperature limits as per API 526 & ANSI B 16.5 Effective area 45.007 cm² (6.970 sq. in)

TYPE NUMBER	MATERIALS		CONNECTIONS (INCHES)	RATING ANSI		MAXIMUM SET PRESSURE												MINIMUM SET PRESSURE		MAXIMUM BACK PRESSURE							
	BODY BONNET	SPRING		IN LET (RF OR R _L)	OUT LET (RF)	-268° to -61°C -450° to -78°F	-60° to -30°C -75° to -21°F	-29° to +38°C -20° to +100°F	+232°C +450°F	+428°C +800°F	+538°C +1000°F	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi						
2511P-S	A 351 CF8 Stainless Steel	Stainless Steel	4 x 6	150	150	12.3	175	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	5.6	80				
2531P-S				300		21	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	16.1	230		
2551P-S				600		33.7	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	10.5	150	
2511P-L	A 352 LC1 Alloy Steel	Stainless Steel	4 x 6	150	150	-	-	19.3	275	-	-	-	-	-	-	-	-	-	-	-	0.5	5.6	80				
2531P-L				300		-	-	36.9	525	-	-	-	-	-	-	-	-	-	-	-	-	11	16.1	230			
2551P-L				600		-	-	70.3	1000	-	-	-	-	-	-	-	-	-	-	-	-	-	24	10.5	150		
2511P-C	A 216 WCB Carbon Steel	Carbon Steel	4 x 6	150	150	-	-	19.3	275	11.6	165	-	-	-	-	-	-	-	-	-	0.5	5.6	80				
2531P-C				300		-	-	36.9	525	36.9	525	-	-	-	-	-	-	-	-	-	-	11	16.1	230			
2551P-C				600		-	-	70.3	1000	70.3	1000	70.3	1000	-	-	-	-	-	-	-	-	-	24	10.5	150		
2511P-T	A 216 WCB Carbon Steel	Tungsten Steel	4 x 6	150	150	-	-	-	-	11.6	165	6.4	92	-	-	-	-	-	-	-	0.5	9.8	140	5.6	80		
2531P-T				300		-	-	36.9	525	25.6	365	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	
2551P-T				600		-	-	70.3	1000	51.3	730	-	-	-	-	-	-	-	-	-	-	-	24	16.1	230	10.5	150
2561P-T				900		-	-	70.3	1000	70.3	1000	70.3	1000	-	-	-	-	-	-	-	-	-	24	-	-	-	-
2531 P-A	A 217 WC6 Alloy Steel	Tungsten Steel	4 x 6	300	150	-	-	-	-	-	-	28.8	410	15.1	215	-	-	-	-	-	11	-	-	-	-		
2551 P-A				600		-	-	-	-	57.3	815	30.2	430	-	-	-	-	-	-	-	-	24	16.1	230	10.5	150	
2561 P-A				900		-	-	-	-	-	-	-	-	-	70.3	1000	45.3	645	-	-	-	-	24	-	-	-	-



2500 SERIES - FLANGED VALVES

Orifice "Q" Pressure and Temperature limits as per API 526 & ANSI B 16.5 Effective area 77.913 cm² (12.060 sq. in)

TYPE NUMBER	MATERIALS		CONNECTIONS (INCHES)	RATING ANSI		MAXIMUM SET PRESSURE												MINIMUM SET PRESSURE			MAXIMUM BACK PRESSURE			
						IN LET (RF OR RJ)	OUT LET (RF)	-268° to -61°C -450° to -70° F	-60° to -30° C -75° to -21° F	-29° to +38° C -20° to +100° F	+232° C +450° F	+428° C +800° F	+538° C +1000° F	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	
2511Q-S	A 351 CFB Stainless Steel	Stainless Steel	6 x 8	150		11.6	165	-	-	-	-	-	-	-	-	-	-	0.4			4.9	70		
2531Q-S				300	150	17.5	250	-	-	-	-	-	-	-	-	-	-	-	0.4	8	115			
2551Q-S				600		21	300	-	-	-	-	-	-	-	-	-	-	-	-	15.6			8	115
2511Q-L	A 352 LC1 Alloy Steel	Stainless Steel	6 x 8	150		-	-	11.6	165	-	-	-	-	-	-	-	-	0.4			4.9	70		
2531Q-L				300	150	-	-	21	300	-	-	-	-	-	-	-	-	-	0.4	8	115			
2551Q-L				600		-	-	42.1	600	-	-	-	-	-	-	-	-	-	-	15.6			8	115
2511Q-C	A 216 WCB Carbon Steel	Carbon Steel	6 x 8	150		-	-	-	-	11.6	165	11.6	165	-	-	-	-	0.4			4.9	70		
2531Q-C				300	150	-	-	21	300	21	300	-	-	-	-	-	-	-	0.4	8	115			
2551Q-C				600		-	-	42.1	600	42.1	600	42.1	600	-	-	-	-	-	-	15.6			8	115
2511Q-T	A 216 WCB Carbon Steel	Tungsten Steel	6 x 8	150		-	-	-	-	11.6	165	6.4	92	-	-	-	-	0.4			4.9	70		
2531Q-T				300	150	-	-	21	300	21	300	21	300	-	-	-	-	-	0.4	8	115			
2551Q-T				600		-	-	42.1	600	42.1	600	42.1	600	42.1	600	-	-	-	-	15.6			8	115
2531 Q-A	A 217 WC6 Alloy Steel	Tungsten Steel	6 x 8	300		-	-	-	-	-	-	11.6	165	11.6	165	165	165	0.4			8	115		
2551 Q-A				600	150	-	-	42.1	600	42.1	600	42.1	600	42.1	600	30.2	430	430	15.6			8	115	



2500 SERIES - FLANGED VALVES

Orifice "T" Pressure and Temperature limits as per API 526 & ANSI B 16.5 Effective area 183.281 cm² (28.40 sq. in)

TYPE NUMBER	MATERIALS		CONNECTIONS (INCHES)	RATING ANSI		MAXIMUM SET PRESSURE										MINIMUM SET PRESSURE			MAXIMUM BACK PRESSURE											
	BODY BONNET	SPRING		IN LET (RF OR RJ)	OUT LET (RF)	-268° to -61°C -450° to -78°F	-60° to -30°C -75° to -21°F	-29° to +38°C -20° to +100°F	+232°C +450°F	+426°C +800°F	+538°C +1000°F	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi	kg/cm ²
2511T-S	A 351 CF8 Stainless Steel			150		3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	2.1	30	2.1	30	2.1	30	2.1	30
2531T-S	Stainless Steel	Stainless Steel	8 x 10	300	150	4.5	65	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	4.2	60	4.2	60	4.2	60	4.2	60	
2511T-L	A 352 LC 1 Alloy Steel	Stainless Steel		150	150	-	4.5	65	-	-	-	-	-	-	-	-	-	-	-	-	0.5	2.1	30	2.1	30	2.1	30	2.1	30	
2531T-L	Alloy Steel	Stainless Steel	8 x 10	300	150	-	8.4	120	-	-	-	-	-	-	-	-	-	-	-	-	0.5	4.2	60	4.2	60	4.2	60	4.2	60	
2511T-C	A 216 WCB Carbon Steel	Carbon Steel		150	150	-	-	4.5	65	65	65	65	65	65	65	65	65	65	65	65	0.5	2.1	30	2.1	30	2.1	30	2.1	30	
2531T-C	Carbon Steel	Carbon Steel	8 x 10	300	150	-	-	8.4	120	120	120	120	120	120	120	120	120	120	120	120	0.5	4.2	60	4.2	60	4.2	60	4.2	60	
2511T-T	A 216 WCB Carbon Steel	Tungsten Steel		150	150	-	-	-	4.5	65	65	65	65	65	65	65	65	65	65	65	0.5	2.1	30	2.1	30	2.1	30	2.1	30	
2531T-T	Carbon Steel	Tungsten Steel	8 x 10	300	150	-	-	-	8.4	120	120	120	120	120	120	120	120	120	120	120	0.5	4.2	60	4.2	60	4.2	60	4.2	60	
2531T-A	A 217 WC6 Alloy Steel	Tungsten Steel		300	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	4.2	60	4.2	60	4.2	60	4.2	60	

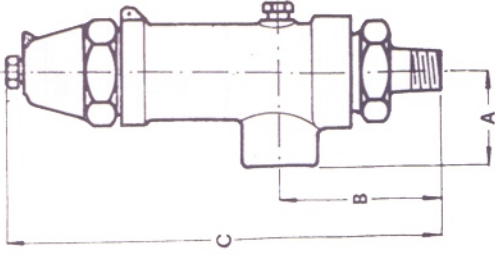


2600 SERIES				PRESSURE AND TEMPERATURE LIMITS						
TYPE NUMBER	ORIFICE AREA		INLET X OUTLET (inches)	TEMPERATURE	MINIMUM SET PRESSURE		MAXIMUM SET PRESSURE		MAXIMUM BACK PRESSURE	
	cm ²	sq. in.			kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi
26001-S ₁	0.258	0.04	½ X 1	-10°C to +200°C +14°F to +392°F	0.5	7	140	2000	28.1	400
26002-S ₁			¾ X 1							
26003-S ₁			1 X 1							
26001-S ₂	0.258	0.04	½ X 1	+200°C to +400°C +392°F to +752°F	0.5	7	140	2000	28.1	400
26002-S ₂			¾ X 1							
26003-S ₂			1 X 1							
26001-S ₃	0.258	0.04	½ X 1	-190°C to +538°C -310°F to +1000°F	0.5	7	140	2000	28.1	400
26002-S ₃			¾ X 1							
26003-S ₃			1 X 1							

2500/F SERIES				PRESSURE AND TEMPERATURE LIMITS						
TYPE NUMBER	ORIFICE AREA		INLET X OUTLET (inches)	TEMPERATURE	MINIMUM SET PRESSURE		MAXIMUM SET PRESSURE		MAXIMUM BACK PRESSURE	
	cm ²	sq. in.			kg/cm ²	psi	kg/cm ²	psi	kg/cm ²	psi
2501/F-C	0.785	0.121	¾ X 1	-10°C to +200°C +14°F to +392°F	0.5	7	351	5000	28.1	400
2502/F-C			1 X 1½							
2503/F-C			1½ X 2							
2504/F-C	1.389	0.215	2 X 2	+200°C to +400°C +392°F to +752°F	0.5	7	211	3000	28.1	400
2505/F-C			1½ X 2							
2506/F-C			2 X 2							
2501/F-T	0.785	0.121	¾ X 1	+200°C to +400°C +392°F to +752°F	0.5	7	351	5000	28.1	400
2502/F-T			1 X 1½							
2503/F-T			1½ X 2							
2504/F-T	1.389	0.215	2 X 2	-190°C to +538°C -310°F to +1000°F	0.5	7	211	3000	28.1	400
2505/F-T			1½ X 2							
2506/F-T			2 X 2							
2501/F-S	0.785	0.121	¾ X 1	-190°C to +538°C -310°F to +1000°F	0.5	7	351	5000	28.1	400
2502/F-S			1 X 1½							
2503/F-S			1½ X 2							
2504/F-S	1.389	0.215	2 X 2	-190°C to +538°C -310°F to +1000°F	0.5	7	211	3000	28.1	400
2505/F-S			1½ X 2							
2506/F-S			2 X 2							

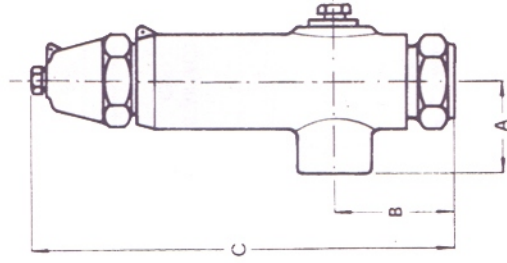
OVERALL DIMENSIONS AND WEIGHTS

Series 2600 screwed valves - Male-Female connections									
TYPE NUMBER	ORIFICE AREA		Inlet x Outlet (Inches)	OVERALL DIMENSIONS				Approximate Weights	
	cm ²	sq. in.		A	B	C			
				mm	mm	Standard Cap mm	Lever Cap mm	kg	lbs.
26001			½ x 1	45	83	245	271	3	6.6
26002	0.258	0.04	¾ x 1						
26003	0.387	0.06	1 x 1						



SERIES 2600

Series 2500/F screwed valve - Female-Female connections									
TYPE NUMBER	ORIFICE AREA		Inlet x Outlet (Inches)	OVERALL DIMENSIONS				Approximate Weights	
	cm ²	sq. in.		A	B	C			
				mm	mm	Standard Cap mm	Lever Cap mm	kg	lbs.
2501/F	0.785	0.121	¾ x 1	65	75	290	330	10	22
2502/F			1 x 1½	85	90	352	392	11	24
2503/F	1.389	0.215	1½ x 2						
2504/F			2 x 2						
2505/F	2.851	0.442	1½ x 2	80	100	365	405	15	33
2506/F			2 x 2					16	35

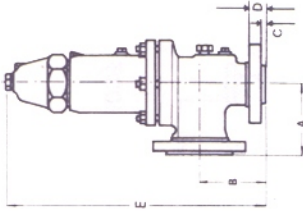


SERIES 2500/F



OVERALL DIMENSIONS AND WEIGHTS

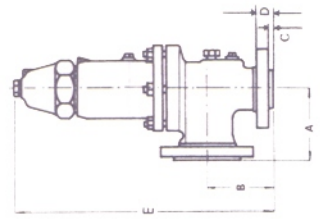
Series 2500 Flanged Valves



TYPE NUMBER (1ST GROUP)	INLET (Inches)	ORIFICE	OUTLET (Inches)	RATING (ANSI)		OVERALL DIMENSIONS						APPROXIMATE WEIGHTS	
				INLET	OUTLET	A	B	C	D	E (max.)		kg	lbs
										STANDARD CAP	LEVER CAP		
2511-D	1	D	2	150	150	114	104	12	30	395	460	18	40
2531-D				300		114	104	12	30	395	460	18	40
2551-D				600		114	104	12	30	395	460	18	40
2562-D	1½	D	2½	900	300	140	105	16	48	430	495	21	46
2572-D				1500		140	105	16	48	430	495	21	46
2582-D				2500		165	140	16	61	540	595	33	73
2511-E	1	E	2	150	150	114	104	12	30	395	460	18	40
2531-E				300		114	104	12	30	395	460	18	40
2551-E				600		114	104	12	30	395	460	18	40
2562-E	1½	E	2½	900	300	140	105	16	48	430	495	21	46
2572-E				1500		140	105	16	48	430	495	21	46
2582-E				2500		165	140	16	61	540	595	33	73
2511-F	1½	F	2	150	150	121	124	16	35	425	490	20	44
2531-F				300		121	124	16	35	425	490	20	44
2551-F				600		121	124	16	35	425	490	20	44
2562-F	1½	F	2½	900	300	152	140	16	48	525	580	27	59
2572-F				1500		152	140	16	48	525	580	27	59
2582-F				2500		165	140	16	61	540	595	33	73
2511-G	1½	G	2½	150	150	121	124	16	35	425	490	24	53
2531-G				300		121	124	16	35	425	490	24	53
2551-G				600		121	124	16	35	425	490	24	53
2562-G	2	G	3	900	300	152	156	16	48	525	580	27	59
2572-G				1500		152	156	16	48	525	580	27	59
2582-G				2500		172	156	16	67	590	640	34	75

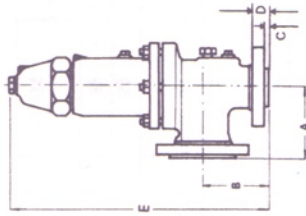


Series 2500 Flanged Valves



TYPE NUMBER (1ST GROUP)	INLET (Inches)	ORIFICE	OUTLET (Inches)	RATING (ANSI)		OVERALL DIMENSIONS					APPROXIMATE WEIGHTS		
				INLET	OUTLET	A	B	C	D	E (max.) ± 10 mm		kg	lbs
										STANDARD CAP	LEVER CAP		
2511-H				150		124	130	16	37	480	545	26	57
2531-H	1½	H	3	300	150			14		490	555	28	62
2551-H				600						570	620	32	70
2561-H	2			900		162	154		16	43			
2572-H				1500	300				54	595	655	34	75
2511-J				150		124	135		39	490	555	28	62
2531-J	2	J	3	300	150					550	605	35	77
2551-J				600		143	137		43				
2561-J	2½			900		172	156	17	46	595	650	50	110
2572-J	3		4	1500	300				65	730	810	72	159
2511-K				150		165	156		43	575	630	66	145
2531-K	3	K	4	300	150	164	184						
2551-K				600		181	184	16	48	625	680	70	154
2561-K	3			900									
2572-K			6	1500	300	216	197		64	755	835	85	187
2511-L	3	L	4	150	150	165	156	16	43	575	630	66	145
2531-L				300		164	179						
2551-L				600	150	181	197		52	640	690	88	194
2561-L	4		6	900		203	197	20	58	745	825	96	212
2572-L				1500		222	197		74	795	875	112	247

Series 2500 Flanged Valves



TYPE NUMBER (1ST GROUP)	INLET (inches)	ORIFICE	OUTLET (inches)	RATING (ANSI)		OVERALL DIMENSIONS						APPROXIMATE WEIGHTS		
				INLET	OUTLET	A	B	C	D	E (max.) ± 10 mm		kg	lbs	
										STANDARD CAP	LEVER CAP			
						mm	mm	mm	mm	mm	mm	mm		
2511-M	4	M	6	150	150	183	178.5	20	52	635	690	88	194	
2531-M				300		820				96	212			
2551-M				600		820								
2561-M				900		875				112	247			
2511-N	4	N	6	150	150	210	197	20	52	790	870	102	225	
2531-N				300		860								
2551-N				600										
2561-N				900										
2511-P	4	P	6	150	150	222	181	20	65	815	895	120	264	
2531-P				300		840				98	216			
2551-P				600		875				102	225			
2561-P				900										
2511-Q	6	Q	8	150	150	254	225	22	65	1040	1140	130	287	
2531-Q				300		975				180	397			
2551-Q				600										
2511-R				6		R				8	150	150	241	240
2531-R	300	1180	240		529									
2551-R	600													
2511-T	8	T	10		150		150	279	276		25		66	
2531-T				300										