PSVAL
Piston Valve (1/2", 3/4", 1", 1¼",1½")

Description
Forbes Marshall Piston Valves, PSVAL, provide perfect tightness and durable stability on different media such as steam, superheated steam, heat transfer fluid, water and compressed air.

Sizes and Pipe Connection
1/2", 3/4", 1", 1¼",1½"
BSPT / NPT, socket weld ends, flanged to class 150 / 300 / 600 available on special request)

Limiting Conditions

For 1/2", 3/4", 1", 1¼",1½" Socket weld ends	
Maximum operating pressure	1131 psig
Maximum operating temperature	797°F for 1/2", 3/4", 1" 450 °F for 1¼",1½"
Maximum hydraulic test pressure	2262 psig

For DN 1/2", 3/4", 1" Screwed ends	
Maximum operating pressure	1131 psig
Maximum operating temperature	797 °F
Maximum hydraulic test pressure	2262 psig

For 1¼", 1½" Screwed ends	
Maximum operating pressure	602 psig
Maximum operating temperature	797 °F
Maximum hydraulic test pressure	1204 psig

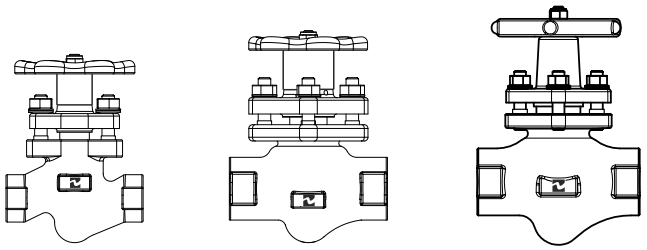
Body design conditions : 1/2", 3/4", 1", 1¼", 1½" Class 150 Flanged ends	
Maximum allowable pressure	284 psig at 100 °F
Maximum operating pressure	203 psig at 387 °F
Maximum operating temperature	797°F at 80 psig for 1/2"-1" 450 °F at 184 psig for 1¼"-1½"
Cold hydraulic test pressure	406 psig

Body design conditions : 1/2", 3/4", 1", 1¼", 1½"Class 300 Flanged ends	
Maximum allowable pressure	740 psig at 100 °F
Maximum operating pressure	602 psig at 488°F for 1/2"-1" 602 psig at 450°F 1¼"-1½"
Maximum operating temperature	797°F at 417.8 psig for 1/2"-1" 450 °F at 602 psig for 1¼"-1½"
Cold hydraulic test pressure	1204 psig

Body design conditions : 1/2", 3/4", 1", 1¼", 1½" Class 600 Flanged ends	
Maximum allowable pressure	1479 psig at 100°F
Maximum operating pressure	1131 psig at 563°F for 1/2"-1" 1131 psig at 450°F 1¼"-1½"
Maximum operating temperature	797°F at 80 psig for 1/2"-1" 450 °F at 1131 psig for 1¼"-1½"
Maximum hydraulic test pressure	2262 psig

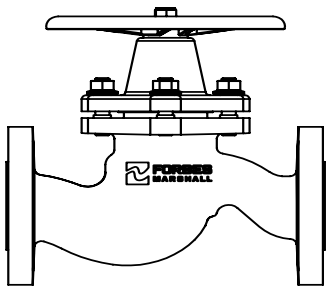
Note : For High Temperature please consult Forbes Marshall.

1/2"-1½" PSVAL (SCRD & SWE ENDS)



1/2",3/4", 1" 1¼", 1½"

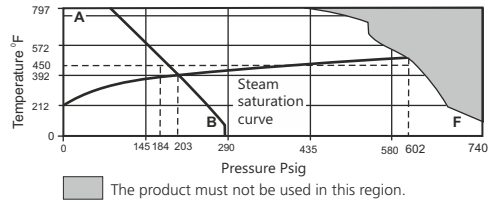
1/2"-1½" PSVAL (FLGD ENDS)



1/2"-1½"

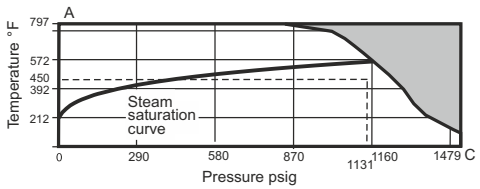
Operating Range

Class 150-300



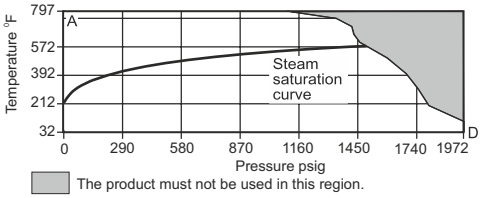
The product must not be used in this region.
A - B Flanged ANSI 150 A - F Flanged ANSI 300
* PMO- Maximum operating Pressure

Class 600



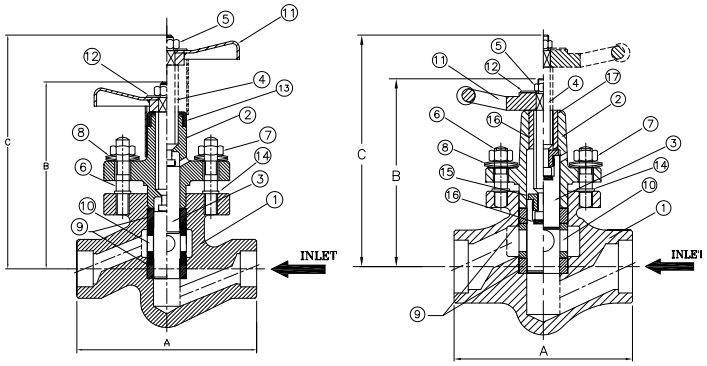
The product must not be used in this region.
A - C Flanged Class 600

Class 800 - Body design condition



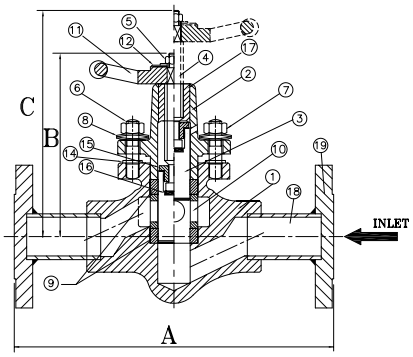
The product must not be used in this region.
A - D Screwed and socket weld

1/2"-1½" SCRD & SWE ENDS

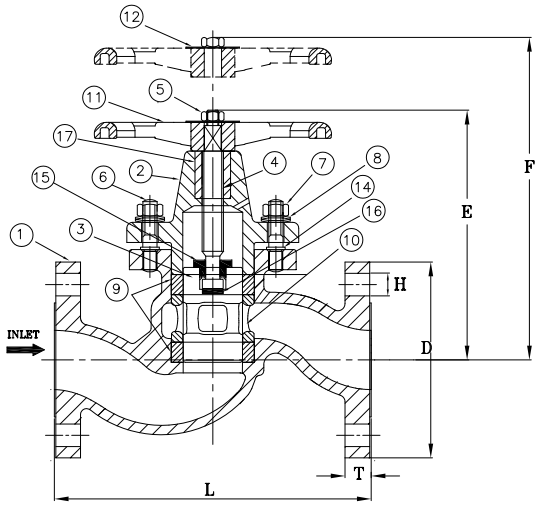


1/2", 3/4",1" 1¼",1½"

1/2"-1½" WELD ON FLANGES



1/2"-1½" AS CAST FLANGES



Size & Class	L	D	PCD	H	No. of Holes	T	E	F	Weight lbs
1/2"#150	4.3	3.5	2.4	0.6	4	0.37	4.7	5.8	8.8
1/2"#150	6	3.7	2.6	0.6	4	0.5	4.7	5.8	10.5
3/4"#150	4.6	4	2.7	0.6	4	0.44	4.7	5.8	10.1
3/4"#150	7	4.5	3.2	0.7	4	0.56	4.7	5.8	13.9
1"#150	5	4.3	3.1	0.6	4	0.5	5.2	6.5	11
1"#150	8	5	3.5	0.7	4	0.63	5.2	6.5	14.3
1¼"#300	8.5	5.3	3.9	0.7	4	0.69	7.1	8.7	23.8
1½"#150	6.5	5	3.9	0.6	4	0.63	7.1	8.7	20.4
1½"#300	9	6.1	4.5	0.9	4	0.75	7.1	8.7	26.9

For 1¼" only Class 300 is available in integral flange end.

Material: 1/2"-1½":

No.	Description	Material	Standard
1	Body	Forged Carbon Steel/Cast Steel	ASTM A105N/ASTM A216 WCB
2	Bonnet	Forged Carbon Steel	ASTM A105N
3	Piston	Stainless Steel	ASTM A 276 TYPE 304
4	Spindle	Stainless Steel	ASTM A 276 TYPE 410
5	Nyloc Nut	Carbon Steel	
6	Stud	Carbon Steel	ASTM A193 Gr. B7
7	Nut	Carbon Steel	ASTM A 194 Gr.2H
8	Belleville Washer	Spring Steel	51CrV4
9	Sealing stack	S.S. Reinforced Graphite	
10	Spacer	Stainless Steel	ASTM A 276 TYPE 410
11	*Handwheel	Sheet Metal / SG Iron	
12	Name Plate	Stainless Steel	ASTM A 240 TYPE 304
13	Grease Cap	Stainless Steel	SS 304
14	Gap ring	Stainless Steel	ASTM A 276 TYPE 410

***Note : For 1/2",1" Handwheel - Sheet Metal**
For 1¼",1½" Hand wheel-S.G. Iron

Additional material: 1¼"- 1½"

Sr.No.	Description	Material	Standard
15	Split Nut	Bronze	-
16	Thrust Plate	Stainless Steel	ASTM A 276TYPE 420
17	Bush	Bronze	-

Additional material: 1/2"-1½"Weld on Flanges

Sr.No.	Description	Material	Standard
18	Pipe	Carbon Steel	ASTM A106 GR B
19	Flange	Forged Carbon Steel	ASTM A 105

Dimensions (approx. in Inches)

Screwed & Socket weld ends

Size (inches)	A	B	C	Weight(lbs)
1/2	4.3	4.6	5.7	4.4
3/4	4.3	4.6	5.7	4.4
1	5.0	5.2	6.5	8.8
1¼	6.5	6.9	8.5	16.9
1½	6.5	6.9	8.5	17.6

Dimensions (approx. in Inches)

Weld on Flanges *Tol ±1/25"

Size (inches)	A*			B	C
	Class 150	Class 300	Class 600		
1/2	9.9	10.4	10.4	4.6	5.7
3/4	9.9	10.4	10.4	4.6	5.7
1	10.2	6.9	10.9	5.2	6.5
1¼	12	12.5	12.6	6.9	8.5
1½	12	12.5	12.6	6.9	8.5

Weights (approx. in lbs)

Weld on Flanges

Size (inches)	Class		
	Class 150	Class 300	Class 600
1/2	6.6	7.7	8.8
3/4	8.8	11	12.12
1	13.2	16.5	17.6
1¼	23.5	26.5	28.7
1½	24.2	29.8	40

How to Order
Example: 1/2" Piston Valve with socket weld ends.

Installation
The valve is designed for installation in a vertical or horizontal line with inlet as per the arrow direction. To open the valve turn hand wheel till it stops at the top and to close, turn hand wheel till it touches the bonnet. Do not use "F" key. If any leakage is observed during operation at the outlet, close valve fully and tighten opposite nuts equally half or one turn until leakage stops.

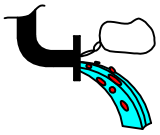
Ensure that water hammer is not present in the lines under any circumstances. This can be done by gradually charging the line and draining all the residual condensate through drain valves every time the line is charged with steam. Heavy water hammer may permanently damage the piston valve.

Safety Information
Pressure : Before attempting any maintenance of the valve, ensure that pressure is isolated and safely vented to atmosphere. Do not assume that the system is depressurized even when a pressure gauge indicates zero.

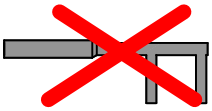
Maintenance
Use Molykote M30 oil for lubrication. For 1/2"-1½"sizes lubricate spindle regularly through bonnet hole and spindle threads.

Operate the valve once or twice after lubrication.

Piston Valve Operating Guidelines
1.Flush the line properly before taking the Piston Valve in operation



2.Do not use valve "F" key for opening & closing the valve



3.Please do oiling of valve as shown in below figure with Molykote M30 oil or high temperature lubricating oil to ensure smooth operation of valve

Available Spares
Refer Piston Valve user manual for available spares.

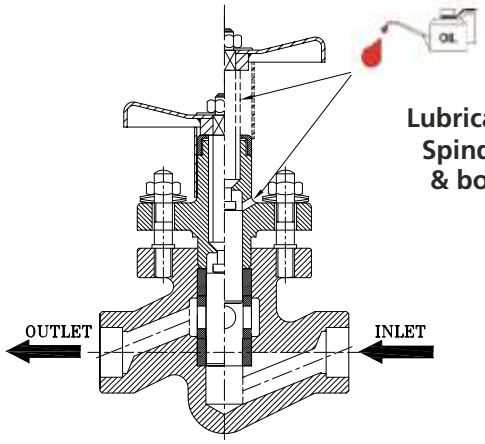
How to Order Spares
Order spares as per the code no. specified in the user manual.

Cv Values

Size	1/2"	3/4"	1"	1¼"	1½"
Cv	2.9	2.9	6.7	15	15

Recommended Tightening Torques
For Bonnet Nut

Sr. No.	Size	Torque (ft-lbsf)
1	1/2"	2.2-3.7
2	3/4"	
3	1"	3.7-5
4	1¼"	13-15
5	1½"	



Lubrication Point
Spindle threads & bonnet hole

Lubrication Details
1/2", 3/4", 1", 1¼",1½"

FORBES MARSHALL

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Forbes Solar
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