PSVAL
Piston Valve (2"-10")

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", 2½", 3", 4", 5", 6", 8", 10"
   Flanged to class 150 / 300
2. 2", 2½", 3", 4", 5", 6", 8", 10"
   Flanged to PN16 / PN25 / PN40

For higher sizes 10" and 12" contact Forbes Marshall

Body design conditions : 2"-10" Class 150 Flanged ends	
Maximum allowable pressure	285 psig at 100.4 ^{0}F
Maximum operating pressure	203 psig at 386.6 ^{0}F
Maximum operating temperature	450 ^{0}F at 184 psig
Cold hydraulic test pressure	406 psig

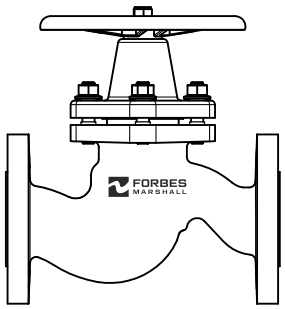
Body design conditions : 2"-10" Class 300 Flanged ends	
Maximum allowable pressure	740 psig at 100.4 ^{0}F
Maximum operating pressure	602 psig at 450 ^{0}F
Maximum operating temperature	450 ^{0}F at 602 psig
Cold hydraulic test pressure	1204 psig

Body design conditions : 2"-10" PN 16 Flanged End	
Maximum allowable pressure	232 psig at 100.4 ^{0}F
Maximum operating pressure	232 psig at 400 ^{0}F
Maximum operating temperature	450 ^{0}F at 232 psig
Cold hydraulic test pressure	348 psig

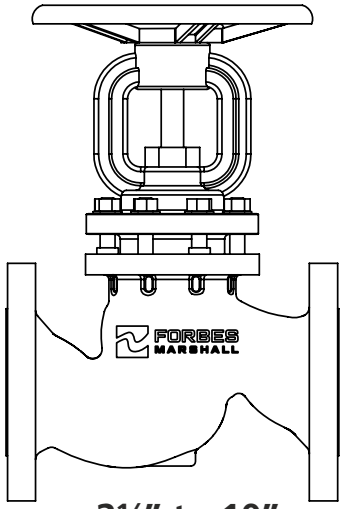
Body design conditions : 2"-6" PN 25 Flanged End	
Maximum allowable pressure	362.5 psig at 100.4 ^{0}F
Maximum operating pressure	362.5 psig at 226 ^{0}F
Maximum operating temperature	450 ^{0}F at 362.5 psig
Cold hydraulic test pressure	551 psig

Body design conditions : 2"-8" PN 40 Flanged End	
Maximum allowable pressure	580 psig at 100.4 ^{0}F
Maximum operating pressure	566 psig at 450^{0}F
Maximum operating temperature	450^0 F at 566 psig
Cold hydraulic test pressure	870 psig

Note : For High Temperature please consult Forbes Marshall.



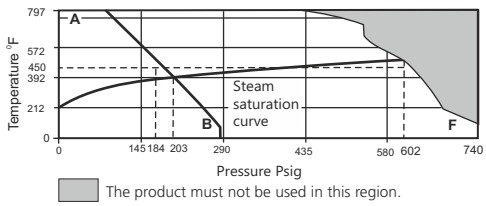
2"



2½" to 10"

Operating Range

Class 150-300

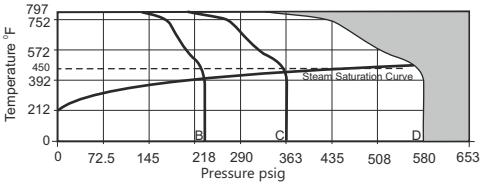


The product must not be used in this region.

A - B Flanged ANSI 150 A - F Flanged ANSI 300

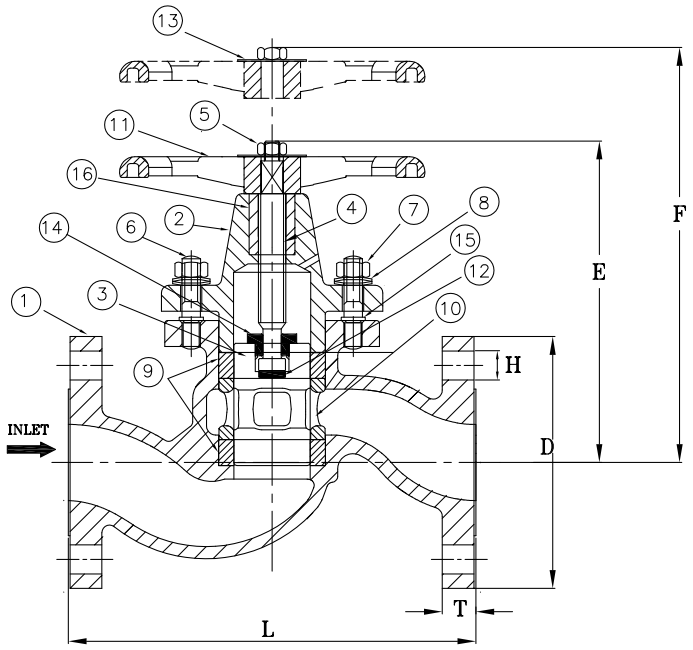
* PMO- Maximum operating Pressure

DIN PSVAL



The product must not be used in this region.

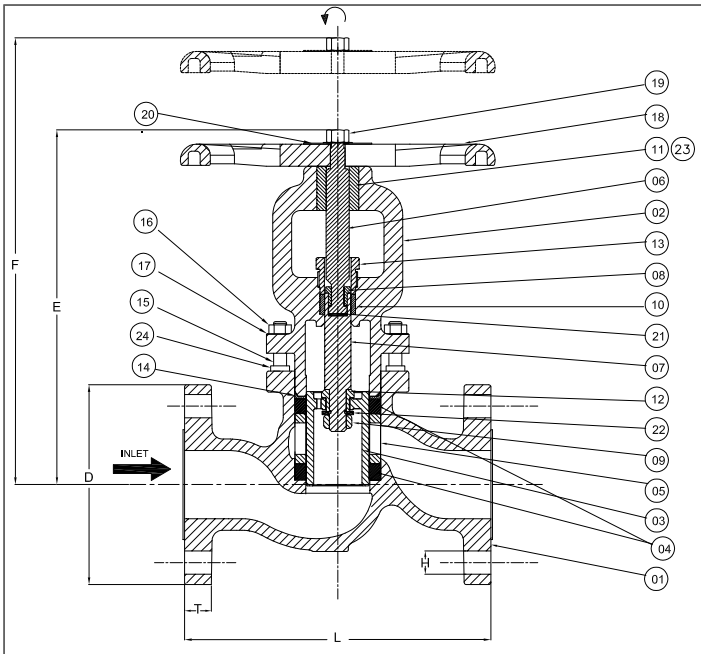
A - B Flanged PN 16 A - C Flanged PN 25 A - D Flanged PN 40



2" Piston valve : always open /close valve fully
do not use valve key

Dimensions (approx. in Inches) : Size 2"

ANSI Class	L	D	PCD	H	No. of Holes	T	E	F	Weight (lbs)
150	8	6	4.8	3/4	4	3/4	8.3	10.3	32
300	10.5	6.5	5	3/4	8	7/8	8.3	10.3	38.6
PN 16/25	9	6.5	5	3/4	4	3/4	8.3	10.3	32.0
PN 40	9	6.5	5	3/4	4	3/4	8.3	10.3	38.6



2½"- 10": always open / close valve fully
Do not use 'F' Key

Material: 2"

Sr.No.	Description	Material	Standard
1	Body	Cast Steel	ASTM A 216 Gr.WCB
2	Bonnet	Cast Steel	ASTM A 216 Gr.WCB
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 743 Gr.CA15
11	Handwheel	SG Iron	
12	Thrust Plate	Stainless Steel	ASTM A 276 TYPE 420
13	Name Plate	Stainless Steel	ASTM A 240 TYPE 304
14	Split Nut	Bronze	
15	Gap Rings	Stainless Steel	ASTM A 276 TYPE 410
16	Bush	Bronze	

Material: 2½"-10"

Sr.No.	Description	Material	Standard
1	Body	Cast Steel	ASTM A 216 Gr.WCB
2	Bonnet	Cast Steel	ASTM A 216 Gr.WCB
3	Piston	Stainless Steel	ASTM A 351 CF8
4	Body sealing stack	S/S Reinforced Graphite	
5	Spacer	Stainless Steel	ASTM A 743 CA 15
6	Spindle	Stainless Steel	ASTM A 276 Type 410
7	Stem	Stainless Steel	ASTM A 276 Type 304
8	Split Nut	Bronze	
9	LH Nut	Stainless Steel	ASTM A 276 Type 304
10	Gland Sealing Stack	S/S Reinforced Graphite	
11	Threaded Bush	Bronze	
12	Back Seat	Stainless Steel	ASTM A 276 Type 410
13	Hex.Gland Nut	Stainless Steel	ASTM A 276 Type 410
14	Bonnet Sealing Ring	Graphite	
15	Stud	Carbon Steel	ASTM A 193 Gr.B7
16	Nut	Carbon Steel	ASTM A 194 Gr.2H
17	Beleville Washer	Spring Steel	51CrV4
18	Handwheel	S.G. Iron	
19	Nyloc Nut	Carbon Steel	
20	Name Plate	Stainless Steel	ASTM A 240 TYPE 304
21	Thrust Plate	Stainless Steel	ASTM A 276 TYPE 420
22	Washer	Stainless Steel	ASTM A 240 TYPE 304
23	Grub Screw	Hardened Steel	I.S. 12.9
24	Gap Rings	Stainless Steel	ASMT A 276 TYPE 410

Dimensions (approx. in Inches): **Size 2½" to 10"**

Sizes	Pressure Class	L	D	PCD	H	NO. OF HOLES	T	E	F	Approx. Weight (lbs)
2½	CLASS 300	11.5	7.5	5.9	7/8	8	1	13.2	15.7	68.3
2½	CLASS 150	8.5	7	5.5	3/4	4	7/8	13.2	15.7	59.5
2½	PN 16 / 25	11.4	7.3	5.7	0.7	8	0.7	13.2	15.7	59.5
2½	PN40	11.4	7.3	5.7	0.7	8	7/8	13.2	15.7	68.3
3	CLASS 300	12.5	8.3	6.6	7/8	8	1.1	12.6	15.1	81.6
3	CLASS 150	9.5	7.5	6	3/4	4	1	12.6	15.1	68.3
3	PN 16 / 25	12.2	7.9	6.3	0.7	8	1	12.6	15.1	68.3
3	PN 40	12.2	7.9	6.6	0.7	8	0.8	12.6	15.1	81.6
4	CLASS 300	14	10	7.9	7/8	8	1¼	15.6	15.1	127.8
4	CLASS 150	11.5	9	7.5	3/4	8	1	15.6	18.9	103.6
4	PN 16 / 25	13.8	8.7	7.1	0.8	8	0.7	15.6	18.9	103.6
4	PN 40	13.8	9.3	7.5	1	8	7/8	15.6	18.9	127.8
5	CLASS 300	15.7	11	9.3	7/8	8	1.4	17.6	18.9	191.8
5	CLASS 150	14	10	8.5	7/8	8	1	17.6	21.3	154.3
5	PN 16 / 25	15.7	9.8	8.3	0.7	8	7/8	17.6	21.3	154.3
5	PN 40	15.7	10.6	8.7	1	8	1	17.6	21.3	191.8
6	CLASS 300	17.5	12.5	10.6	7/8	12	1.5	19.1	21.3	257.9
6	CLASS 150	16	11	9.5	7/8	8	1	19.1	23.5	198.4
6	PN 16 / 25	18.9	11.2	9.5	1	8	7/8	19.1	23.5	198.4
6	PN 40	18.9	11.8	9.8	1	8	1.1	19.1	23.5	257.9
8	CLASS 300	22	15	13	7/8	12	1.6	23.3	23.5	453.0
8	CLASS 150	19.5	13.5	11.7	7/8	8	1.1	23.3	28.7	361.6
8	PN 16	23.6	13.4	11.7	1.2	12	1	23.3	28.7	361.6
8	PN 40	23.6	14.8	12.6	1	12	1.3	23.3	28.7	453.0
10	CLASS 300	24.5	17.9	15	1	16	1.9	25.7	28.7	749.6
10	CLASS 150	24.5	15.9	14.3	1	12	1.2	25.7	32	661.6
10	PN 16	28.7	15.9	14	1	12	1	25.7	32	749.6
10	PN 40	28.7	17.7	15.1	1¼	12	1.5	25.7	32	815.7

*For 10" Class PN16 and PN40, please contact Forbes Marshall

How to Order
Example: 2" Piston Valve with Flanged to class 150

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 2" size lubricate spindle regularly through bonnet hole and spindle threads. For 2½" to 10" lubricate frequently through spindle threads, split nut and stem.

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.

Kv Values

Size	2½"	3"	4"	5"	6"	8"	10"	12"
Kv	59.1	89.3	152	225	256	508	783	

Recommended Tightening Torques

For Bonnet Nut

Sr. No.	Size	Torque (ft-lbsf)
1	2½"	37-44
2	3"	
3	4"	52-59
4	5"	
5	6"	59-66
6	8"	
7	10"	81-89
8	12"	

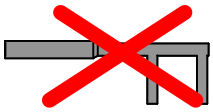
For Gland Nut

Sr. No.	Size	Torque (ft-lbsf)
1	2½"	26-33
2	3"	26-33
3	4"	55-63
4	5"	55-63
5	6"	63-70
6	8"	70-81
7	10"	74-85
8	12"	74-85

Piston Valve Operating Guidelines

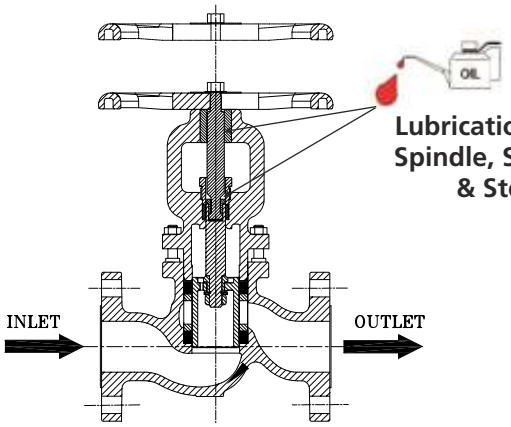
1.Flush the line properly before taking the Piston Valve in operation

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



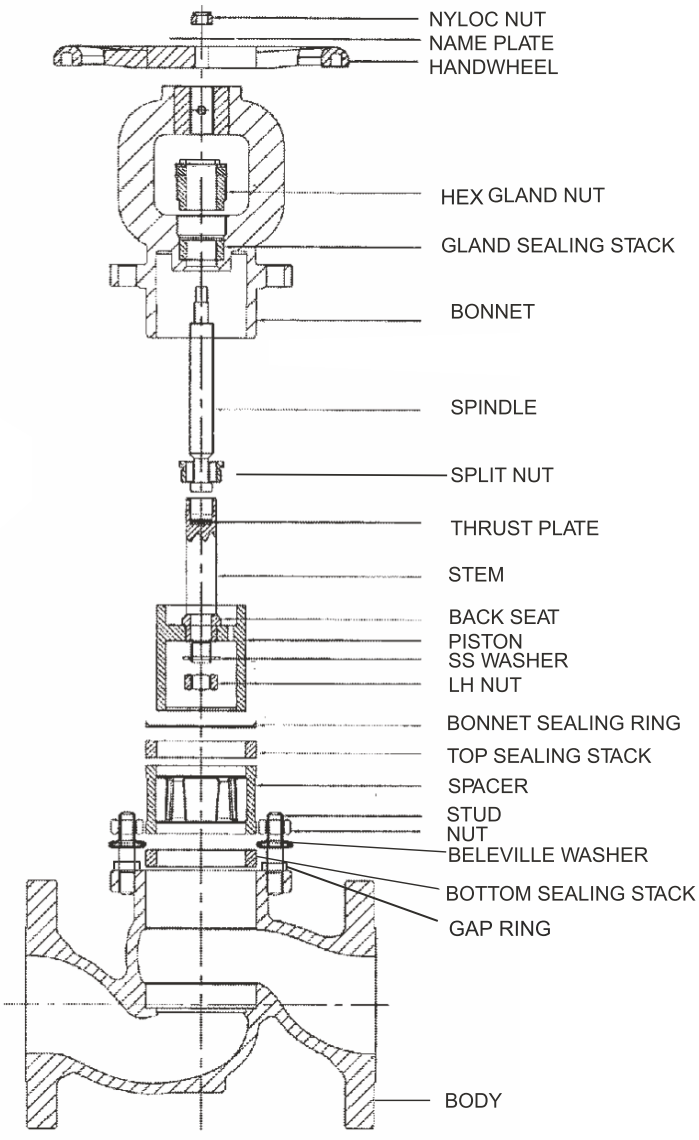
3.Please do oiling of valve as shown in below figure with Molykote M30 oil or high temperature lubricating oil to ensure smooth operation of valve

Lubrication Details (2½" to 10")



Lubrication Point Spindle, Split nut & Stem

Operate the valve once or twice after lubrication.



2½" to 10"

EXPLODED VIEW

FORBES MARSHALL

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Forbes Marshall Arca
Codel International
Forbes Solar
Forbes Vyncke
Forbes Marshall Steam Systems

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