

PPV

PISTON VALVE



DESCRIPTION:

The Pennant Piston Valve (PPV) is a linear movement valve in which a stainless steel piston travels between the upper and lower seal ring. These rings are separated by a lantern bushing, which supports the piston and creates a bubble tight seal. When the valve is in the open position, the upper seal ring in conjunction with the piston prevents leakage through the stem. In the closed position, the lower seal ring seals the valve - passage and provides a tight shutoff. Known for their extraordinary performance and long life, Piston Valves can handle a variety of media such as steam, thermal fluid, condensate and many other liquids and gasses. They can be used in on/off and throttling applications.

FEATURES:

- Bubble tight (ANSI leakage class VI) shutoff
- Can be used for throttling applications
- Robust and maintenance free
- Long service life
- Effective sealing area is large, as compared to the conventional linear movement valves
- Compensates for thermal expansions with reinforced Grafoil sealing rings and Belleville washers
- Can be easily serviced inline
- Easy to repair: The only wearing parts are sealing rings which are easily replaceable
- Low cost of ownership
- * (Cost of ownership includes maintenance, inventory cost in addition to the purchase cost)

SIZES AND CONNECTIONS:

MOC & END CONNECTION	Sizes									
	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"	8"
* Forged #800 (Screwed/Socket weld)	•	•	•	•						
Cast # 300 (Screwed/Socket weld)	•	•	•							
Cast #150 (FLANGED ENDS)	•	•	•	•	•		•	•	•	•
Cast #300 (FLANGED ENDS)	•	•	•	•	•	•	•	•	•	•
Cast PN40 (FLANGED ENDS)	•	•	•	•	•					

* Forged #800: 1/2", 3/4", 1" – Angle pattern; 1", 1 1/2" – Straight pattern. Welded-on flanged connections available.

Socket weld ends – as per ASME B16.11 Integral flanged ends - as per ASME B16.5 (#150, #300) - as per BS EN1092-1 PN40

INSTALLATION:

The valve should be installed in the direction of flow indicated on the body. The valve can be installed in any plane, provided it is accessible for operation.

MAINTENANCE:

In case any leakage is observed the bonnet nuts should be tightened with the valve in the fully closed position. Tightening the bonnet nuts may be repeated as and when required until the rings are worn out and no further adjustment or tightening is possible. At this stage the sealing rings need to be replaced.

No undue force should be used when tightening the nuts, as they should rotate easily with a standard spanner. Care should be taken while tightening the nuts to avoid tilting of the bonnet. Undue force should not be used to shut the valve as this may damage the spindle or the wheel.

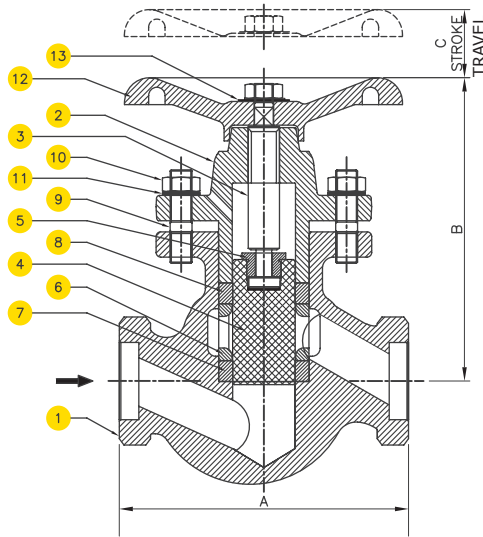
IMPORTANT:

Always use the recommended tightening torque. Avoid excessive tightening, as this may reduce the life of the sealing rings. Care should be taken while removing the old sealing rings for replacement.

LIMITING CONDITIONS:

Forged	Body design rating	#800 as per API 602
	PMA - Max. permissible pressure	1935 psig @ 100 °F
	PMO - Max. permissible operating pressure	1080 psig @ 800 °F
Cast - Screwed/SW	Body design rating	#300 as per ASME B16.34
	PMA - Max. permissible pressure	725 psig @ 100 °F
	PMO - Max. permissible operating pressure	398 psig @ 800 °F
Cast - Integral/ Flange #150	Body design rating	#150 as per ASME B16.34
	PMA - Max. permissible pressure	285 psig @ 100 °F
	PMO - Max. permissible operating pressure	78 psig @ 800 °F
Cast - Integral/ Flange #300	Body design rating	#300 as per ASME B16.34
	PMA - Max. permissible pressure	725 psig @ 100 °F
	PMO - Max. permissible operating pressure	398 psig @ 800 °F
Cast - Integral/ Flange #PN40	Body design rating	PN40 as per NBSE 1092-1
	PMA - Max. permissible pressure	570 psig @ 100 °F
	PMO - Max. permissible operating pressure	331 psig @ 100 °F
Hydrostatic Shell Test	1.5 times the max. rated pressure at 100 °F.	
Seat Leakage Test	85 psig	

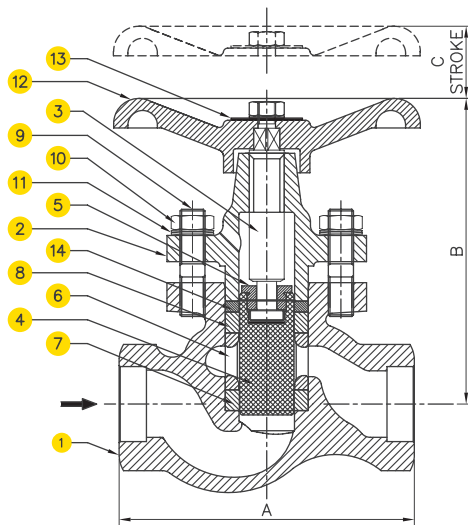
FORGED CONSTRUCTION - #800 Scr./SW:



MATERIAL:

NO.	PART	MATERIAL	QTY.
1.	BODY	ASTM A105	1
2.	BONNET	ASTM A105	1
3.	SPINDLE	AISI 410	1
4.	PISTON	AISI 304	1
5.	SPLIT NUT	BRASS	1
6.	LANTERN BUSH	AISI 304/ ASTM A743 CA15	1
7.	LOWER VALVE RING	GRAFOIL WITH SS REINFORCEMENT	1
8.	UPPER VALVE RING	REINFORCEMENT	1
9.	STUD	ASTM A193 Gr.B7	4
10.	NUT	ASTM A194 Gr.2H	4
11.	BELLEVILLE WASHER	50 Cr V4	8
12.	HANDWHEEL	CAST IRON	1
13.	LABEL	AISI 304	1

CAST CONSTRUCTION - #300 Scr./SW:



MATERIAL:

NO.	PART	MATERIAL	QTY.
1.	BODY	ASTM A216 Gr. WCB	1
2.	BONNET	ASTM A216 Gr. WCB	1
3.	SPINDLE	AISI 410	1
4.	PISTON	AISI 304	1
5.	SPLIT NUT	BRASS	1
6.	LANTERN BUSH	AISI 304/ ASTM A743 CA15	1
7.	LOWER VALVE RING	GRAFOIL WITH SS REINFORCEMENT	1
8.	UPPER VALVE RING	REINFORCEMENT	1
9.	STUD	ASTM A193 Gr. B7	*
10.	NUT	ASTM A194 Gr. 2H	*
11.	BELLEVILLE WASHER	50 Cr V4	**
12.	HANDWHEEL	CAST IRON	1
13.	LABEL	AISI 304	1
14.	SPACER	MS	1
*	1/2" : 2 NOS, 3/4" : 3NOS, 1" : 4 NOS		
**	1/2" : 4 NOS, 3/4" : 6NOS, 1" : 8 NOS		

DIMENSION TABLE:

SIZE	FORGED CONSTRUCTION - #800 SCR./ SW				CAST CONSTRUCTION - #300 SCR. / SW			
	A	B	C	APPROX. WT.	A	B	C	APPROX. WT.
1/2"	4	4.32	0.92	6.2	4.08	4.32	0.92	6.16
3/4"	4	5	1.12	6.6	4.8	5	1.12	6.6
1"	5.4	5.2	1.32	12	5.4	5.6	1.32	12
1 1/2"	7.4	7.64	1.76	18.8	-	-	-	-

CAST CONSTRUCTION - INTEGRAL FLGD.:

MATERIAL:

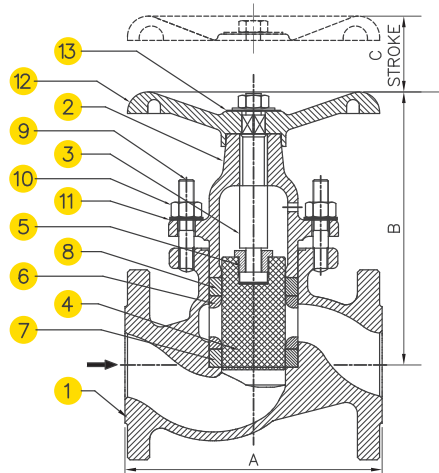


FIG. - 1/2" ~ 2"

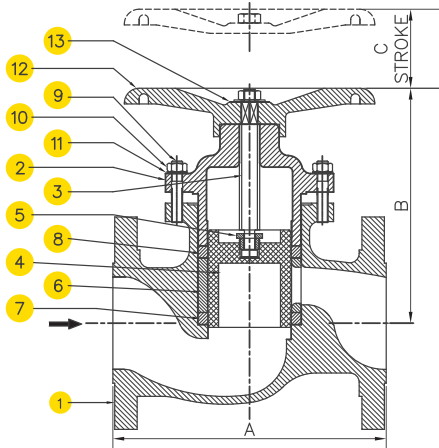


FIG. - 3" ~ 6" (UNBALANCED)

NO.	PART	MATERIAL	QTY.
1.	BODY	ASTM A216 Gr. WCB	1
2.	BONNET	ASTM A216 Gr. WCB	1
3.	SPINDLE	AISI 410	1
4.	PISTON	AISI 304	1
5.	SPLIT NUT	BRASS	1
6.	LANTERN BUSH	AISI 304/ ASTM A743 CA15	1
7.	LOWER VALVE RING	GRAFOIL WITH SS REINFORCEMENT	1
8.	UPPER VALVE RING		1
9.	STUD	ASTM A193 Gr. B7	*
10.	NUT	ASTM A194 Gr. 2H	*
11.	BELLEVILLE WASHER	50 Cr V4	**
12.	HANDWHEEL	CAST IRON	1
13.	LABEL	AISI 304	1
*	1/2" ~ 2": 4 nos., 3": 6 nos., 4" ~ 6": 8 nos.		
**	1/2" ~ 2": 8 nos., 3": 12 nos., 4" ~ 6": 16 nos.		

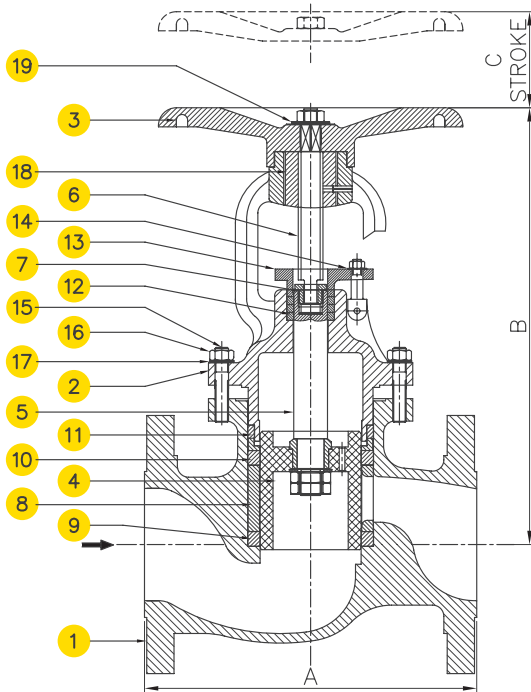
DIMENSION TABLE:

SIZE	Piston Valve - Integral Flgd Cast Construction					APPROX. WT.		
	A			B	C	#150	#300	PN40
	#150	#300	PN40					
1/2"	4.32	6.08	5.2	4.2	0.92	5.5	7.5	7
3/4"	4.68	7.12	6	4.96	1.12	6.5	12	10.56
1"	5.08	8.12	6.4	5.5	1.32	9.25	16.28	15.4
1 1/2"	6.6	9.16	8	7.56	1.76	18.7	32	28.16
2"	8.12	10.68	9.2	8.6	2.04	28.6	45	39.6
3"	9.64	-	-	9.2	2.32	53	-	-
4"	11.68	-	-	10.2	2.6	99	-	-
6"	16.24	-	-	13.4	3.8	189.2	-	-

BALANCED VALVE (2½" ~ 8"):

For higher size piston valves - NPS. 2½", 3", 4", 6", 8", higher torques will be required to operate (close/open) an unbalanced valve against inlet pressure. Balanced

piston valves overcome this higher torque requirement, by balancing the pressure above and below the piston.



MATERIAL:

NO.	PART	MATERIAL	QTY.
1.	BODY	ASTM A216 Gr. WCB	1
2.	BONNET	ASTM A216 Gr. WCB	1
3.	HANDWHEEL	CAST IRON	1
4.	PISTON	AISI 316/ ASTM A351 Gr. CF8M	1
5.	PISTON SHAFT	AISI 316	1
6.	SPINDLE	AISI 410	1
7.	SPLIT NUT	BRASS	1
8.	LANTERN BUSH	CAST IRON/AISI 304	1
9.	LOWER VALVE RING		1
10.	UPPER VALVE RING	GRAFOIL WITH SS REINFORCEMENT	1
11.	BONNET VALVE RING		1
12.	GLAND VALVE RING		3
13.	GLAND COVER	ASTM A216 Gr. WCB	1
14.	BELLEVILLE WASHER	50 Cr V4 (GLAND)	4
15.	STUD	ASTM A193 Gr. B7	*
16.	NUT	ASTM A194 Gr. 2H	*
17.	BELLEVILLE WASHER	50 Cr V4 (BONNET)	**
18.	THREADED BUSH	CAST IRON	1
19.	LABEL	AISI 304	1
*	2½": 4 Nos, 3": 6 Nos, 4"~6" : 8 Nos		
**	2½": 8 Nos, 3":12 Nos, 4"~6" :16 Nos		

DIMENSION TABLE:

Piston Valve - Balanced Design					Approx. Wt.			
SIZE	A			B	C	#150	#300	PN40
	#150	#300	PN40					
2½"	-	11.68	11.6	12.32	2	-	61.6	59.4
3"	9.64	12.72	12.4	13	2.32	68.2	85.8	83.6
4"	11.68	14.24	14	15.6	2.6	105.6	129.8	125.4
6"	16.24	17.8	-	18.8	-	206.8	259.6	-
8"	19.8	22.36	-	22.6	-	385	473	-

AVAILABLE SPARES:

½" ~ 2"

Sealing ring set
Piston
Spindle

2½" ~ 8"

Sealing ring set
Bonnet sealing ring
Gland sealing ring set
Piston
Spindle

HOW TO ORDER:

Example: PPV/FCS/1/2"/SW, Where

Product Code	Body MOC	Sizes Available	End Connections
PPV	FCS : FORGED CARBON STEEL (ASTM A105)	FORGED (SW/SCR): 1/2", 3/4", 1", 1 1/2"	SW: Socket Weld
			NPT: SCR NPT
			BSP:SCR BSP
			BSPT:SCR BSPT
			Welded Flange
	CCS : CAST CARBON STEEL (ASTM A 216 Gr. WCB)	CAST (SW/SCR): 1/2", 3/4", 1"	SW: Socket Weld
			NPT: SCR NPT
			BSP:SCR BSP
		BSPT:SCR BSPT	
		CAST (Flanged End): 1/2", 3/4", 1", 1 1/2", 2", 2 1/2", 3", 4", 6", 8"	F1: Flanged End #150
F3: Flanged End #300			
			PN40: Flanged End PN40

ORDERING INFORMATION:

1. Service Fluid
2. Maximum Operating Pressure
3. Maximum Operating Temperature
4. Size
5. End Connections