Lined Plug Valves



Plug Valves Specialists

www.3zvalve.com

Design Features

Online Maintenance:
Repair is possible on the line without disassembling from the pipeline, since it is top entry type.

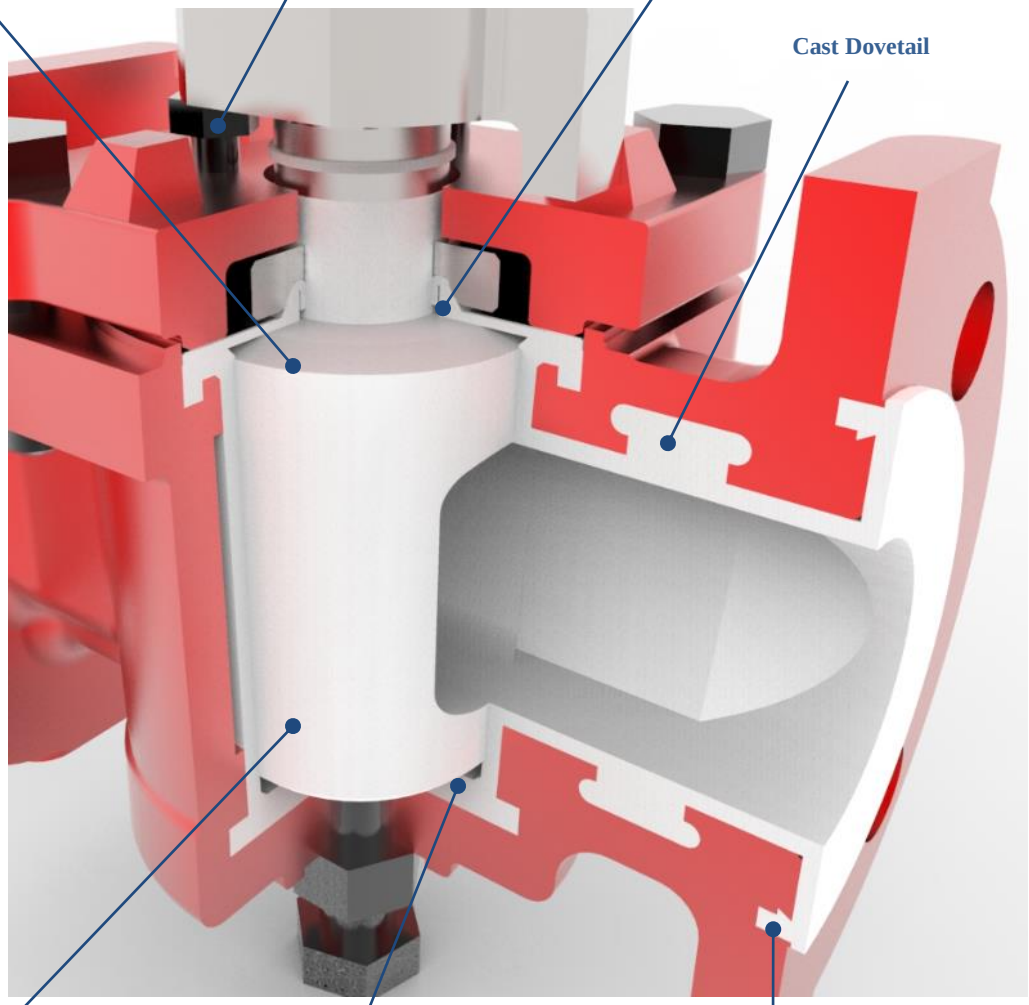
Zero Maintenance:
Adjustment bolts make the tight sealing as if it is a brand new.

External Leakage Prevention Design:
The zero leakage stem sealing is achieved by a threefold sealing system.

Cast Dovetail & Machined Grooves

The lining materials are firmly fixed into the cast dove tail recesses and machined grooves on internal surfaces of the body and plug.

This feature makes the valve stable be used in high vacuum, pressure and temperature condition.

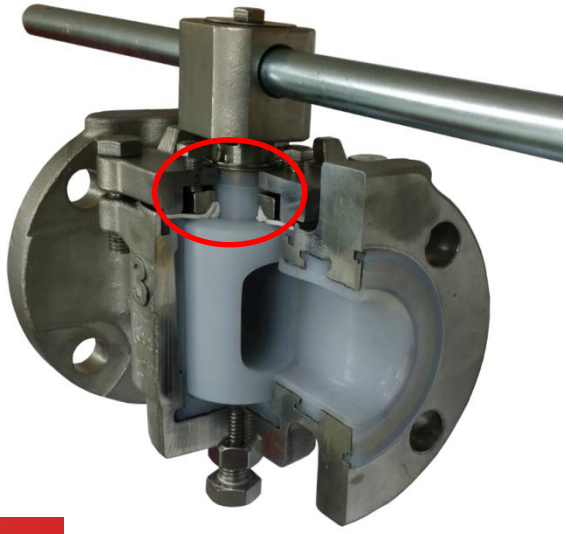


Zero Leakage :
Sealing is established by circumferential surface area of PFA fully molded seal.

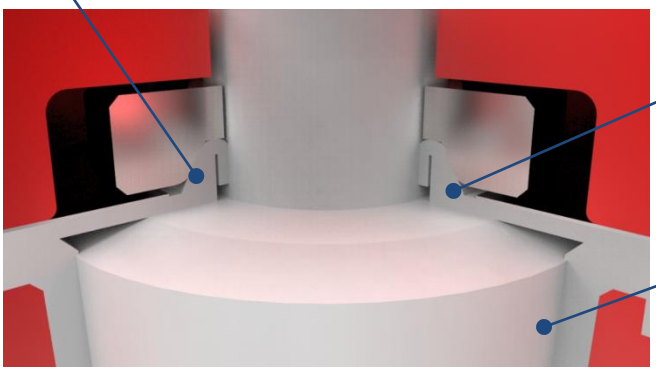
Zero dead space :
There are no unnecessary cavities in the body

Design Features / Multiport Valves

Threefold Sealing System: The zero leakage stem sealing is achieved by a threefold sealing system. The primary seal is provided by the PFA fully molded seal . The secondary and tertiary sealing (top seal package) are provided by Teflon delta ring and Reverse lip



Secondary Seal :
The secondary sealing is provided by Teflon delta ring

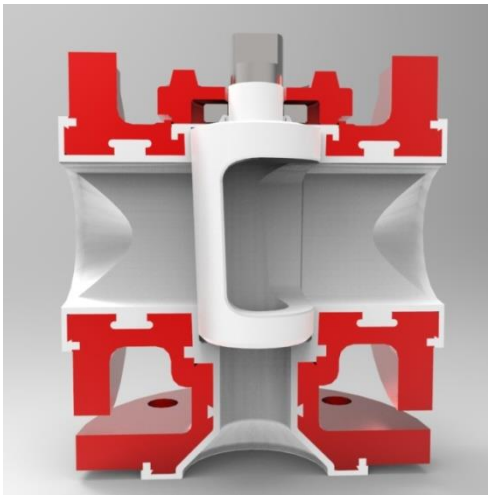


Tertiary Seal:
The tertiary sealing is provided by Teflon Reverse lip

Primary Seal :
The primary sealing is provided by the PFA fully molded seal.

Multiport valves: Multiport valves are used in purpose of blending, diverting and segregation. It is more economical to use only one piece of 3-way valve instead of three pieces of 2-way valves. Multiport valves make piping simple and minimal.





Teflon PFA and Transfer Molding

Teflon PFA is a premium performance resin with good melt processing characteristics and unique melt stability. It offers high temperature strength and stiffness; excellent stress crack resistance; anti-static properties to be classified for explosion proof applications. Its high temperature service rating is 204°C and it resists virtually all chemicals.



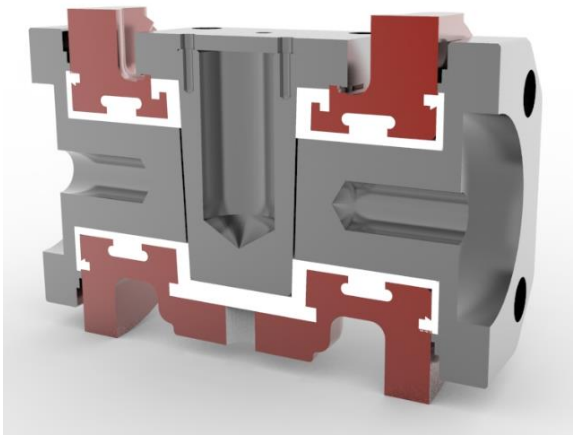
Teflon PFA

Melt-processable fluoropolymer: PFA is widely used in plastics melting process. The material is used extensiv ely by injection, compression, transfer molding and other molding techniques. 3Z lined valves are produced by **transfer molding** with advantages such as no stress cracks, lower permeability.

*** Molding Method Features**

Molding Method	Material	Advantages	Disadvantages
Injection	PFA ETFE PVDF	High productivity	Not suitable for large/medium size due to deformation and crack after molding
Transfer	PFA PVDF	No stress cracks Lower permeability One-shot seamless molding	Low productivity

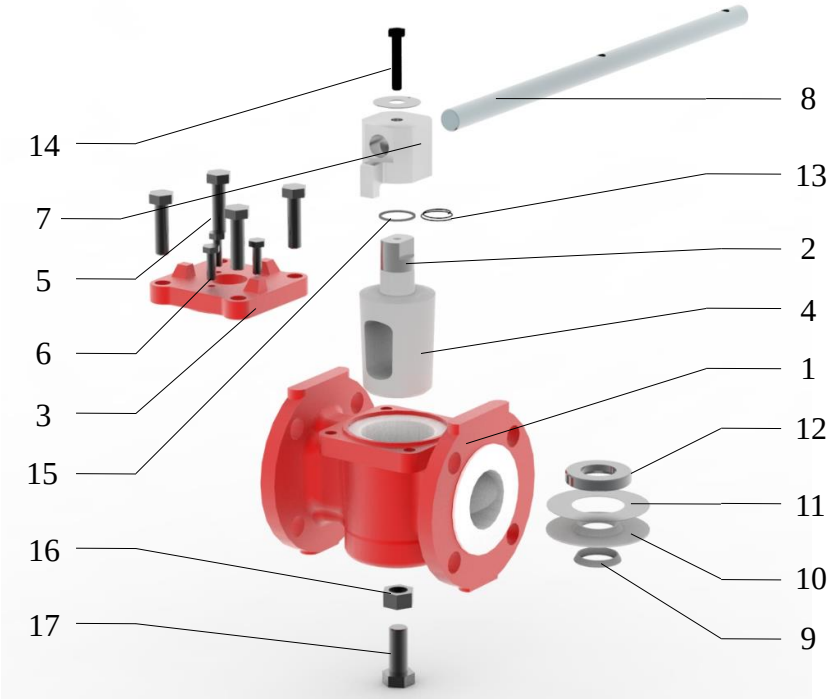




Parts and Materials

Construction Materials:

A variety of materials are available such as carbon steel, stainless steel, duplex stainless steel and special alloys. Materials are subject to change without notice .Other materials and combinations are also available.



Sample Construction of Material

Carbon Steel (PFA)

No	Parts	Specification
1	Body	ASTM A216 WCB
2	Plug	ASTM A216 WCB
3	Cover	ASTM A216 WCB
4	Lining	PFA
5	Cover Bolt	ASTM A193 B7
6	Adjusting Bolt	ASTM A193 B8
7	Hub	ASTM A351 CF8
8	Wrench	AISI 1045
9	Delta Ring	RTFE
10	Reverse Lip	RTFE
11	Metal Diaphragm	AISI 304
12	Thrust Collar	AISI 304
13	Anti-static Device	AISI 304
14	Hub Bolt	AISI 304
15	Snap Ring	Alloy Steel
16	BTM Adjusting Nut	AISI 304
17	BTM Adjusting Bolt	AISI 304

316 Stainless (PFA)

No	Specification
1	ASTM A351 CF8M
2	ASTM A351 CF8M
3	ASTM A351 CF8
4	PFA
5	ASTM A193 B8
6	ASTM A193 B8
7	ASTM A351 CF8
8	AISI 1045
9	RTFE
10	RTFE
11	AISI 304
12	AISI 304
13	AISI 304
14	AISI 304
15	Alloy Steel
16	AISI 304
17	AISI 304

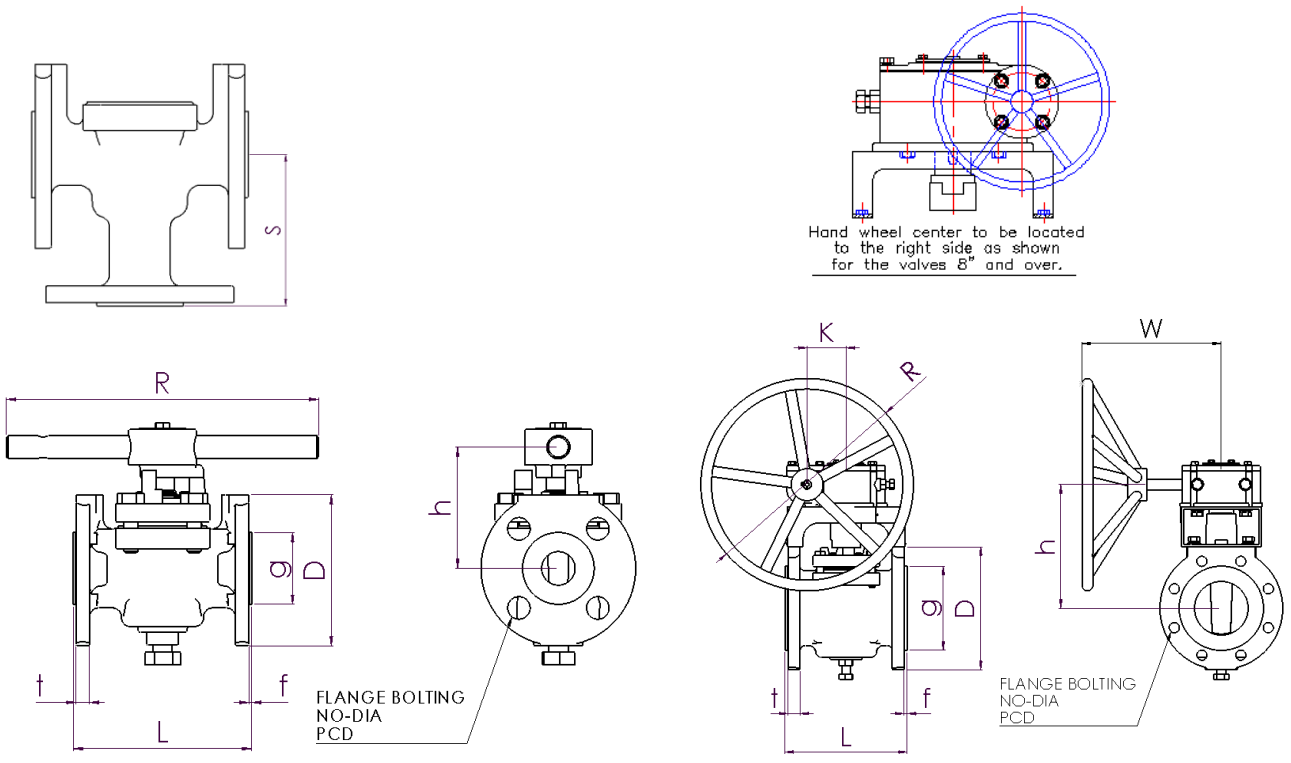
Hastelloy - C (PFA)

No	Specification
1	ASTM A494 CW-12MW
2	ASTM A494 CW-12MW
3	ASTM A494 CW-12MW
4	PFA
5	ASTM A193 B8
6	ASTM A193 B8
7	ASTM A351 CF8
8	AISI 1045
9	RTFE
10	RTFE
11	AISI 304
12	AISI 304
13	AISI 304
14	AISI 304
15	Alloy Steel
16	AISI 304
17	AISI 304

- If additional materials are required, please consult the factory when ordering.

Standard Type Dimensions – Class 150

Figure No. 121 - Class 150 / Size 0.5”- 12” / Raised Face Flange



Unit: mm

Size	L	D	PCD	NO	DIA	g	t	*f	h	R	K	W	S (3way)	Weight (kg)
0.5	108	89	60.5	4	16	*34.9	7.9	2.5	115	150	-	-	70	2
0.75	117	99	69.8	4	16	42.9	8.6	2.5	115	150	-	-	73.2	3
1	127	108	79.2	4	16	*50	9.7	2	90	222	-	-	90	5
1.5	165	127	98.6	4	16	*72	12.7	4.6	105	318	-	-	105	9
2	178	152	120.6	4	19	*92.1	14.2	2.8	110	458	-	-	114	14
3	203	190	152.4	4	19	*126	17.5	5.6	125	597	-	-	130	20
4	229	229	190.5	8	19	157.2	22.4	5.8	160	746	-	-	160	35
6	267	279	241.3	8	22	*215	23.9	3.6	290	400	75	280	191	73
**8	292	343	298.4	8	22	*269.9	26.9	5.9	330	500	95	320	229	133
***10	330	406	362	12	25	323.8	28.4	6.8	400	500	30	320	279	203
****12	356	483	431.8	12	25	381	30.2	4	440	560	45	370	330	287

- 0.5”~ 4”(Wrench Operated) / 6”~12”(Gear Operated)

* Manufacturing Standard

** 2 top holes in flanges are tapped for 3/4-10UNC (Stud Bolt Length 85mm)

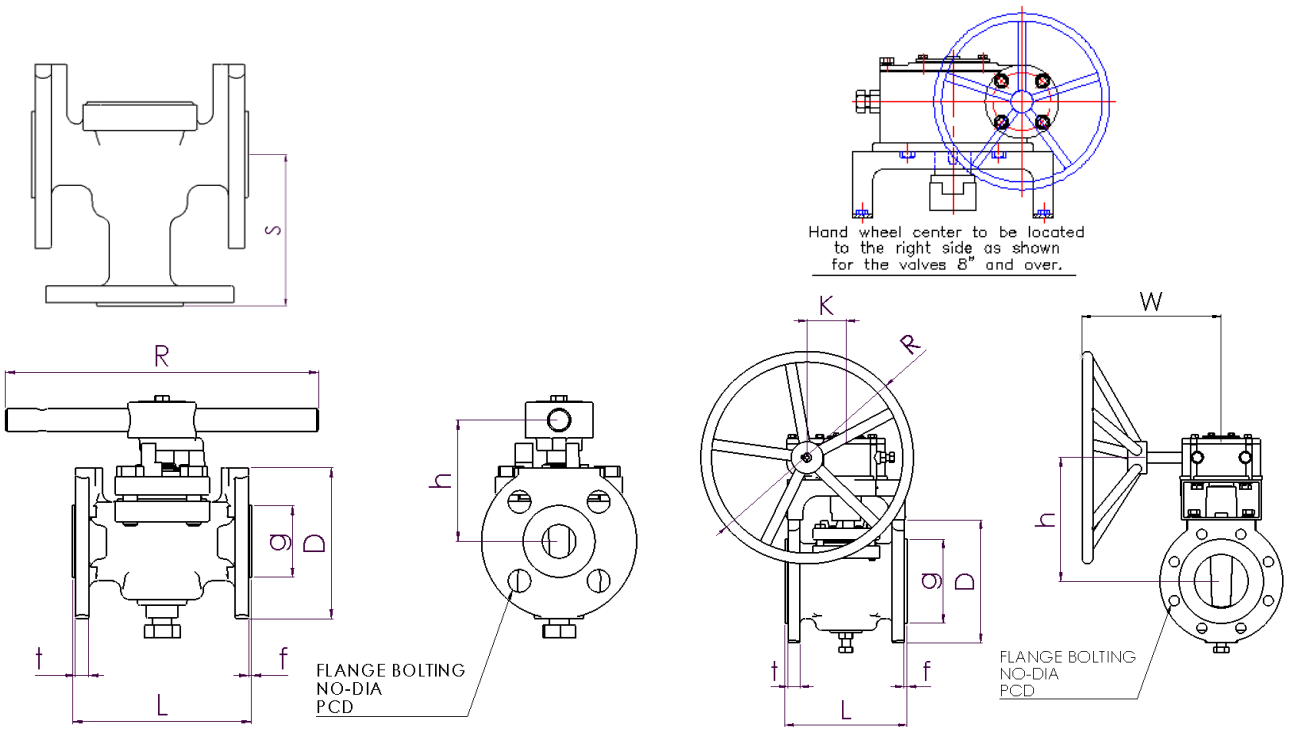
*** 2 top holes in flanges are tapped for 7/8-9UNC (Stud Bolt Length 105mm)

**** 2 top holes in flanges are tapped for 7/8-9UNC (Stud Bolt Length 110mm)

- If additional classes and sizes are required, please consult the factory when ordering.

Standard Type Dimensions – Class 300

Figure No. 321 - Class 300 / Size 0.5” - 8” / Raised Face Flange



Unit: mm

Size	L	D	PCD	NO	DIA	g	t	*f	h	R	K	W	S (3way)	Weight (kg)
0.5	140	95	66.5	4	16	*34.9	12.7	2.5	115	150	-	-	73	3
0.75	152	117	82.6	4	19	42.9	14.2	2.5	115	150	-	-	85	3
1	165	124	88.9	4	19	*50	15.7	2	90	222	-	-	95	8
1.5	190	155	114.3	4	22	*72	19.0	4.6	105	318	-	-	111	13
2	216	165	127	8	19	*92.1	20.6	2.8	110	458	-	-	121	17
3	282	210	168.1	8	22	*126	26.9	5	125	597	-	-	160	29
4	305	254	200.2	8	22	157.2	30.2	5.8	160	746	-	-	171	46
6	403	318	269.7	12	22	*215	35.1	5.8	290	400	75	280	216	104
8	419	381	330.2	12	25	*269.9	39.6	5.9	330	500	95	320	270	172

- 0.5”~ 4”(Wrench Operated) / 6”~8”(Gear Operated)

* Manufacturing Standard

- If additional classes and sizes are required, please consult the factory when ordering.

Lined Ball Check Valves

Fully Lined Ball Check Valves:

The valve body is fully lined with PFA Teflon material. An RTFE ball and PF A molded disc freely moves internally on the ball housing, and it makes valve open and close by flow direction. Back flow makes ball block the port.



3Z Figure No. 181

Lined Swing Check Valve

Wafer type corrosion-resistant check valve To be mounted horizontally or vertically with upward flow. Class 150, 2" – 12"



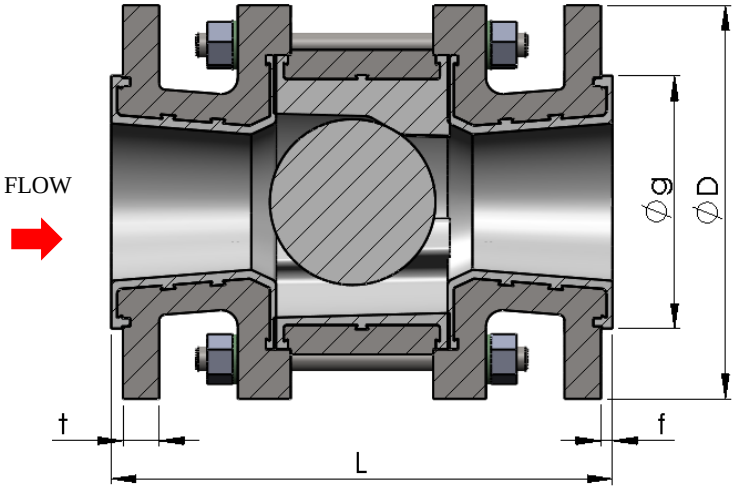


Figure No. 171 - Class 150 / Size 0.5" - 8" / Raised Face Flange

Unit: mm

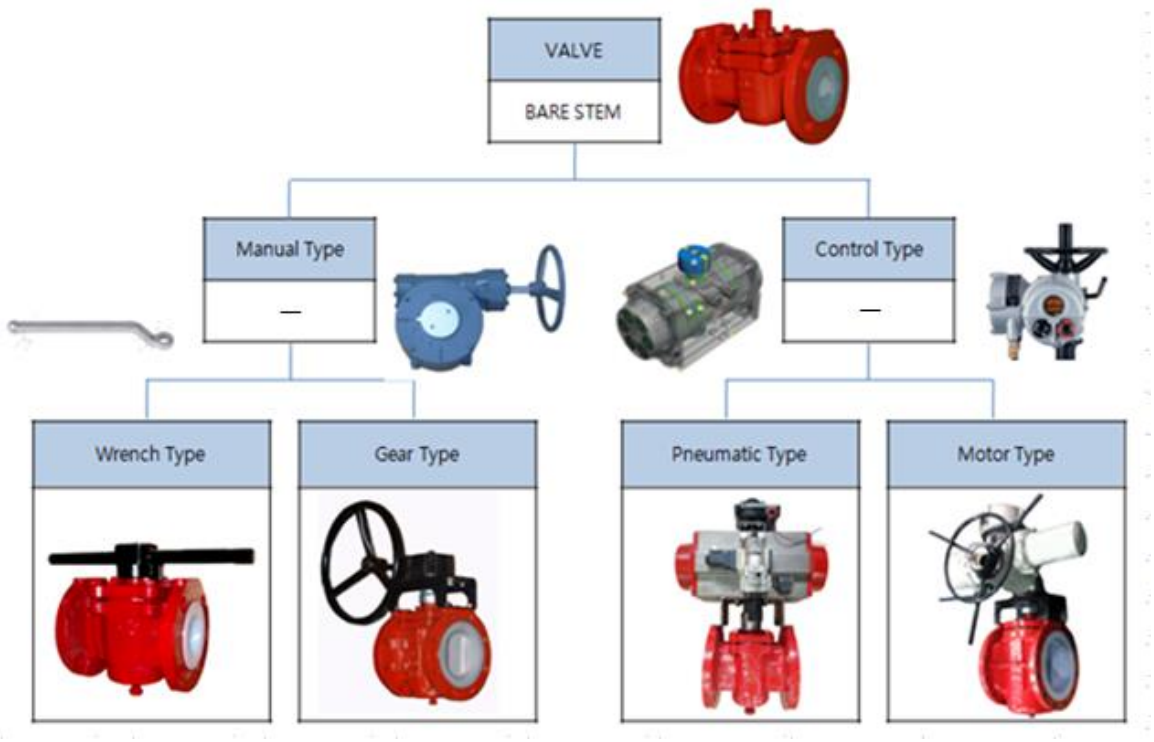
SIZE	*L	D	PCD	NO	DIA	g	t	*f	Opening Pressure Vertical Installation (psi)	Weight (kg)
0.5	152	89	60.5	4	16	*34.9	*11	2.5	0.28	2
0.75	152	99	69.8	4	16	42.9	*11	2.5	0.18	2
1	152	108	79.2	4	16	*50	*12	2	0.17	3
1.5	177.8	127	98.6	4	16	*72	*13	4.6	0.20	5
2	203	152	120.6	4	19	*92.1	14.3	2.8	0.29	9
3	242	190	152.4	4	19	*126	17.5	5.6	0.40	14.
4	292	229	190.5	8	19	157.2	22.3	5.8	0.47	20.
6	394	279	241.3	8	22	*215	23.9	3.6	0.54	35
8	482	343	298.4	8	22	*269.9	* 30.1	5.9	0.83	49

* Manufacturing Standard

- If additional classes and sizes are required, please consult the factory when ordering.

Operator & Technical Data

3Z Operation: 3Z lined plug valves are designed to operate by wrench, handle, gear or actuator. 3Z valves can supply variable operators as per customer`s requirements.



Operating Torque (N.M)
Class 150 & 300
2-way - Standard Type

Fig	Size	Break	Running	Seating
121/321	0.5	20	16	18
121/321	0.75	20	16	18
121/321	1	41	33	37
121/321	1.5	63	50	57
121/321	2	125	100	110
121/321	3	157	125	141
121/321	4	270	215	240
121/321	6	649	519	584
121/321	8	1,470	1,176	1,323
121	10	1,984	1,587	1,786
121	12	2,842	2,274	2,558

CV Factor
Class 150 & 300
2-way - Standard Type

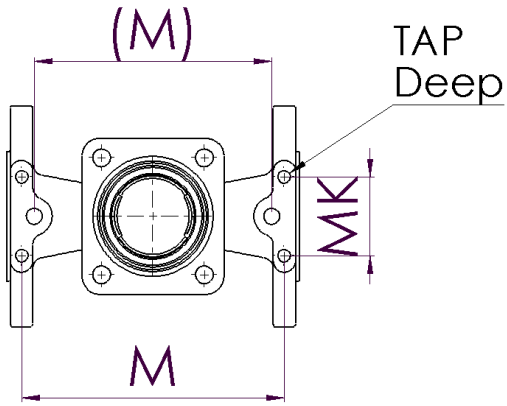
Fig	Size	CV Factor
121/321	0.5	10
121/321	0.75	10
121/321	1	30
121/321	1.5	50
121/321	2	130
121/321	3	220
121/321	4	320
121/321	6	690
121/321	8	1,300
121	10	1,750
121	12	2,400

Actuator Mounting Hole Configurations

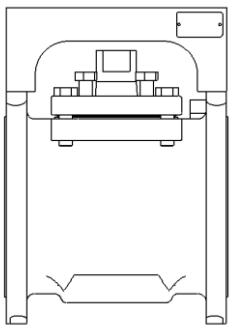
Mounting Hole Dimensions (mm)

Class 150 2-way - Standard

Fig	Size	M	MK	NO	TAP	Deep
121	0.5	88	-	2	M8	12
121	0.75	97.3	-	2	M8	12
121	1	106.5	44.5	4	M6	10
121	1.5	143	44.5	4	M8	12
121	2	157.2	57.2	4	M8	12
121	3	175	88.9	4	M10	14
121	4	200.2	101.6	4	M12	16
121	6	239.8	101.6	4	M12	16
121	8	258.8	152.4	4	M12	16
121	10	293.6	152.4	4	M12	16
121	12	318.3	152.4	4	M16	20



2 - 4 Hole Actuator Mounting

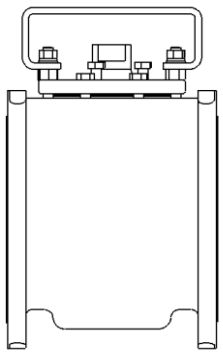


Flange Mounting Type

Mounting Hole Dimensions (mm)

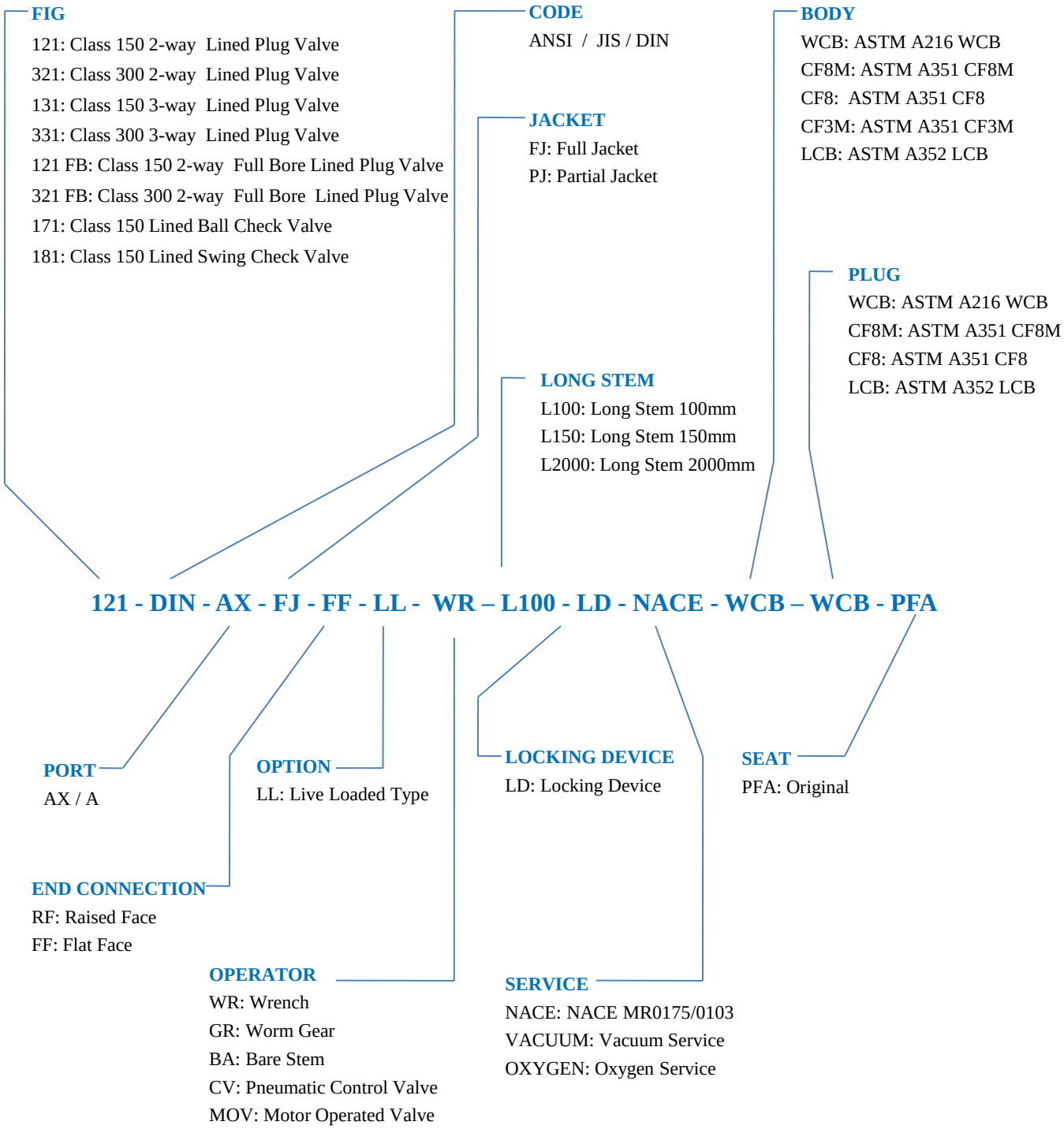
Class 300 2-way - Standard

Fig	Size	M	MK	NO	TAP	Deep
321	0.5	118	-	2	M8	12
321	0.75	128	-	2	M8	12
321	1	140.4	44.5	4	M8	12
321	1.5	162.4	44.5	4	M8	12
321	2	185.3	57.2	4	M8	12
321	3	249.0	88.9	4	M10	14
321	4	271.5	101.6	4	M12	16
321	6	355.6	101.6	4	M12	16
321	8	371.6	152.4	4	M12	16



Cover Mounting Type

How to Order



- If additional information is required, please consult the factory when ordering.



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