Sleeved Plug Valves



Plug Valves Specialists

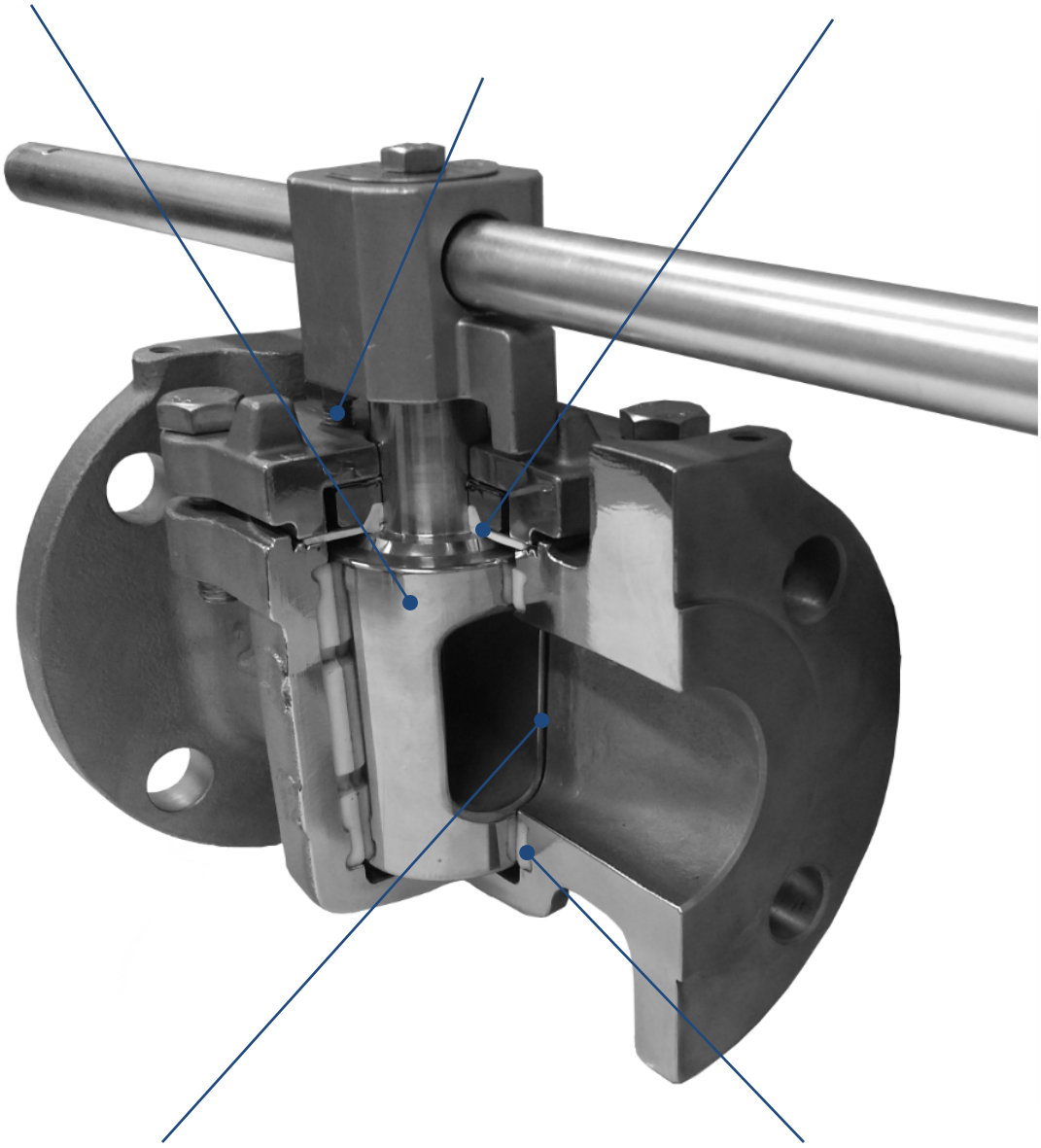
www.3zvalve.com

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 sleeve sealing as if it is a brand new.

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



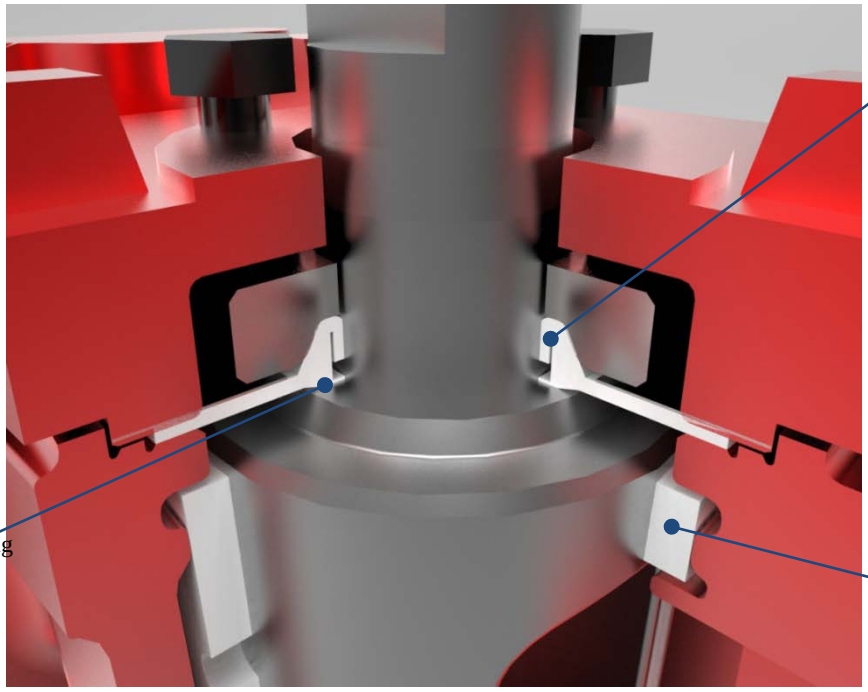
Zero Dead Space:
There are no unnecessary cavities in the body

Zero Leakage :
Sealing is established by circumferential surface area of Teflon sleeve & Pressure Ribs.

Design Features

Threefold Sealing System: The zero leakage stem sealing is achieved by a threefold sealing system.

The primary sealing is provided by the Teflon sleeve. The secondary and tertiary sealing (top seal package) are provided by Teflon delta ring and Reverse lip.

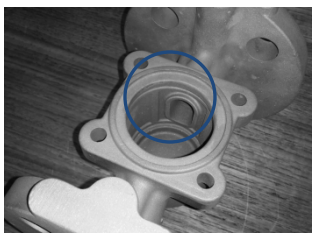


Tertiary Seal:
The tertiary sealing is provided by Teflon Reverse lip

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

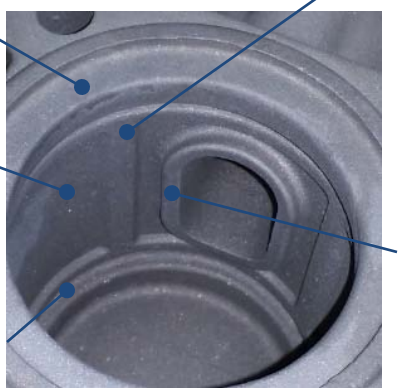
Primary Seal:
The primary sealing is provided by Teflon Sleeve

Sleeve Body Design : All plastics are subject to cold flow(volume increase) at higher temperature. And it tend to escape to the low pressure area and do not return to it`s original shape, even after temperature and pressure are removed. But, 3Z valve body is designed to confine sleeve mechanically, cold flow would not be occurred.



Top Retention of the Sleeve:
Prevents Teflon sleeve from cold flow

High Pressure Sealing Rib:
Provide tight primary sealing



Sleeve Relief Area:
Prevents Teflon sleeve from cold flow

Port Lips:
Protects Teflon sleeve from fluid flow

Bottom Retention of the Sleeve:
Prevents Teflon sleeve from cold flow

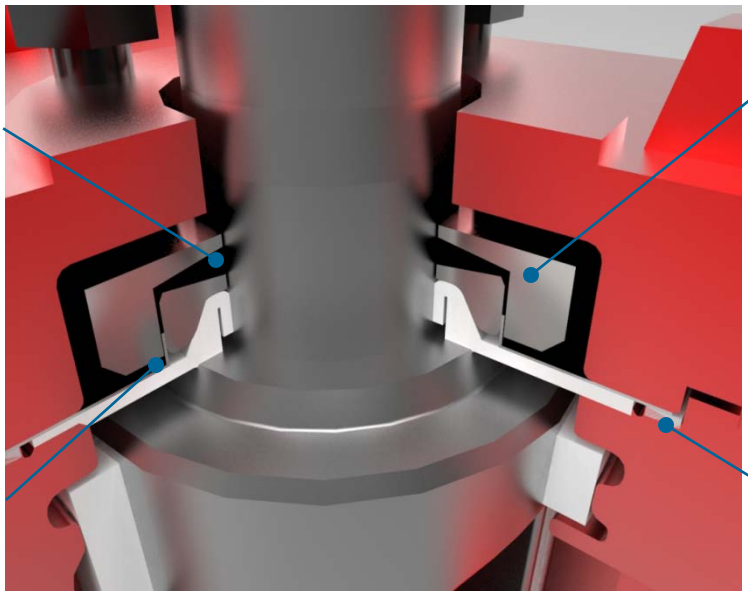
Fire Tested Valves



API 607 Standards:
Tested and approved as per API 607 standards. A external leakage is prevented even after the Teflon sealing parts are destroyed by fire.

Fire Safety Design Top Seal: Fire safety top seal is designed with the purpose of preventing external leakage. A graphite stem seal, flexible graphite cover seal and F.S metal diaphragm all prevent external leakage from fire.

Graphite stem seal:
Prevents stem leakage even if the Teflon delta ring and reverse lip are destroyed by fire.



Thrust collar:
Fire safety designed top seal parts are tightened by the thrust collar.

F.S metal diaphragm:
Prevents external leakage even if the Teflon reverse lip is destroyed by fire.

Graphite cover seal:
Prevents cover leakage even if the Teflon reverse lip is destroyed by fire.

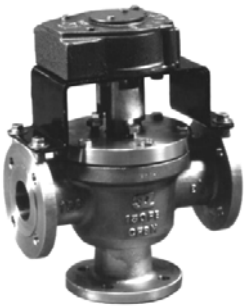
Multiport valves

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.

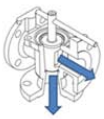
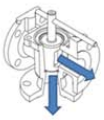
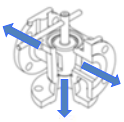
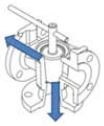
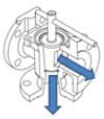
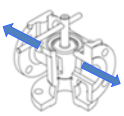
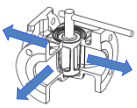
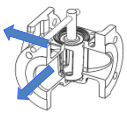
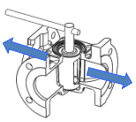
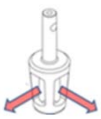
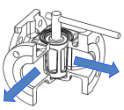
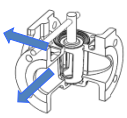


3-way Port Arrangement: The variety of flow arrangements make these valves ideal for many types of piping systems, which handling liquids, gases, slurries or other applications.







Type	Plug	0 Position	90 Position	180 Position
Type A				
Type AX				
Type C				
Type D				
Type T				
Type L				

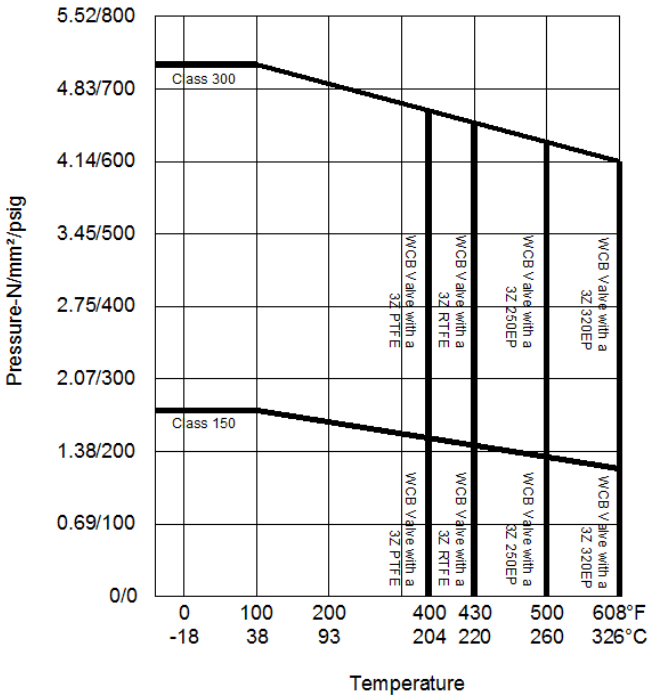
High Temperature Service

250EP/320EP

250EP/320EP greatly extends the temperature range of PTFE, even exceeds the operating range of glass-filled PTFE(RTFE).(see Fig.1). This is the result of improved thermo-mechanical properties, improved cold-flow properties, and improved toughness. Fig .1illustrates the pressure/temperature range of 3Z 250EP/320EP in a WCB body, also provides similar or greater pressure/temperature ranges in other body materials.



Fig. 1 Pressure/Temperature Ranges



Feature of 250EP/320EP

The 3Z 250EP/320EP has a much more dense and a more homogeneous micro-structure than PTFE (see Fig. 2).

In Fig.2, the photomicrographs on the right demonstrate the positive difference in porosity. PTFE is clearly more porous than The 3Z 250EP/320EP. Reduced porosity means greater resistance to permeation.

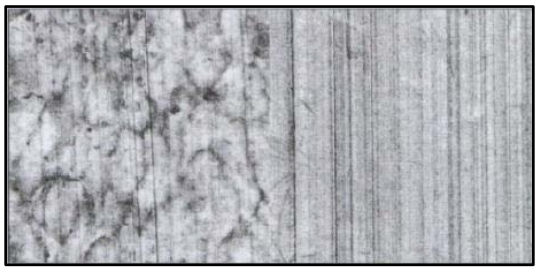
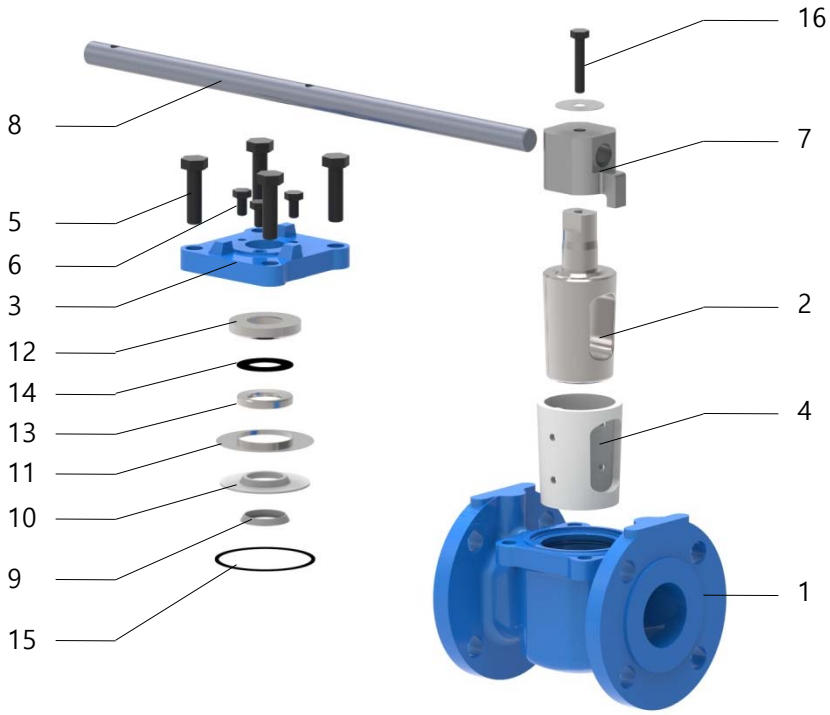


Fig. 2 Reduced Porosity
Left: PTFE(1st generation)
Right: 3Z 250EP/320EP; the boundaries of the secondary particles have disappeared.

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 (PTFE)

No	Parts	Specification
1	Body	ASTM A216 WCB
2	Plug	ASTM A351 CF8M
3	Cover	ASTM A216 WCB
4	Sleeve	PTFE
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 316L
12	Top Thrust Collar	AISI 304
13	BTM Thrust Collar	AISI 304
14	Grafoil Diaphragm	Graphite
15	Cover Seal	Graphite
16	Hub Bolt	AISI 304

316 Stainless (RTFE)

No	Specification
1	ASTM A351 CF8M
2	ASTM A351 CF8M
3	ASTM A351 CF8
4	RTFE
5	ASTM A193 B8
6	ASTM A193 B8
7	ASTM A351 CF8
8	AISI 1045
9	RTFE
10	RTFE
11	AISI 316L
12	AISI 304
13	AISI 304
14	Graphite
15	Graphite
16	AISI 304

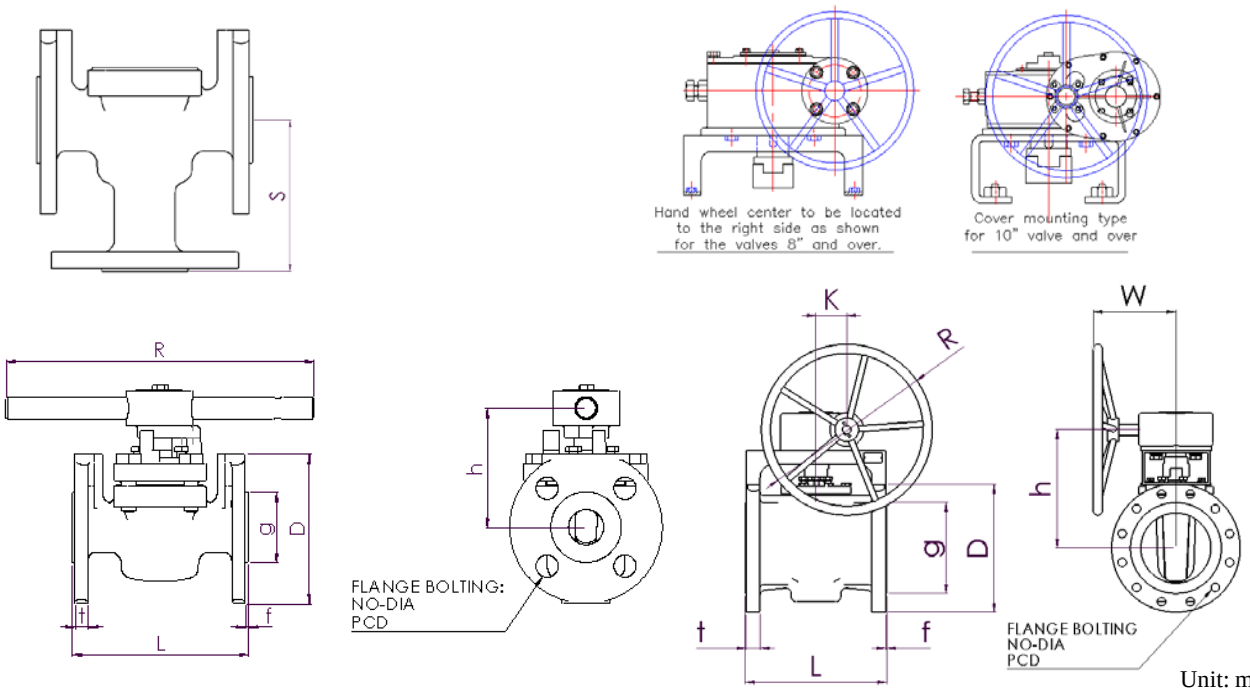
Hastelloy - C (320EP)

No	Specification
1	ASTM A494 CW-12MW
2	ASTM A494 CW-12MW
3	ASTM A494 CW-12MW
4	320EP
5	ASTM A193 B8
6	ASTM A193 B8
7	ASTM A351 CF8
8	AISI 1045
9	320EP
10	320EP
11	AISI 316L
12	AISI 304
13	AISI 304
14	Graphite
15	Graphite
16	AISI 304

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

Standard Type Dimensions – Class 150

Figure No. 120 & 130 - Class 150 / Size 0.5”~28” / 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	35.1	7.9	1.5	115	150	-	-	70	3
0.75	117	99	69.8	4	16	42.9	8.6	1.5	115	150	-	-	73	3
1	127	108	79.2	4	16	50.8	9.7	1.5	85	222	-	-	89	5
1.5	165	127	98.6	4	16	73	12.7	1.5	105	318	-	-	105	8
2	178	152	120.6	4	19	91.9	14.2	1.5	110	458	-	-	114	13
2.5	190	178	139.7	4	19	104.6	15.7	1.5	125	597	-	-	-	18
3	203	190	152.4	4	19	127	17.5	1.5	125	597	-	-	130	19
4	229	229	190.5	8	19	157.2	22.4	1.5	165	746	-	-	156	33
6	267	279	241.3	8	22	215.9	23.9	1.5	285	400	75	280	191	67
*8	292	343	298.4	8	22	269.7	26.9	1.5	335	500	95	320	229	110
**10	330	406	362	12	25	323.8	28.4	1.5	400	500	25	340	279	160
**12	356	483	431.8	12	25	381	30.2	1.5	440	560	45	370	330	240
***14	381	533	476.2	12	29	412.8	33.3	1.5	510	610	35	440	-	360
16	762	597	539.8	16	29	469.9	35.1	1.5	550	610	35	440	-	530
18	864	635	577.8	16	32	533.4	38.1	1.5	640	710	180	505	-	830
20	914	698	635	20	32	584.2	41.1	1.5	695	710	180	505	-	950
24	1,067	813	749.3	20	35	692.2	46.0	1.5	760	800	230	660	-	1,560
28	++1,100	837	795.3	40	22	762	42.9	1.5	920	900	830	840	-	2,060

0.5”~ 4”(Wrench Operated) / 6”~28”(Gear Operated)

++ Manufacturing Standard

* 2 top holes in flanges are tapped for 3/4-10UNC (Stud Bolt Length 100mm)

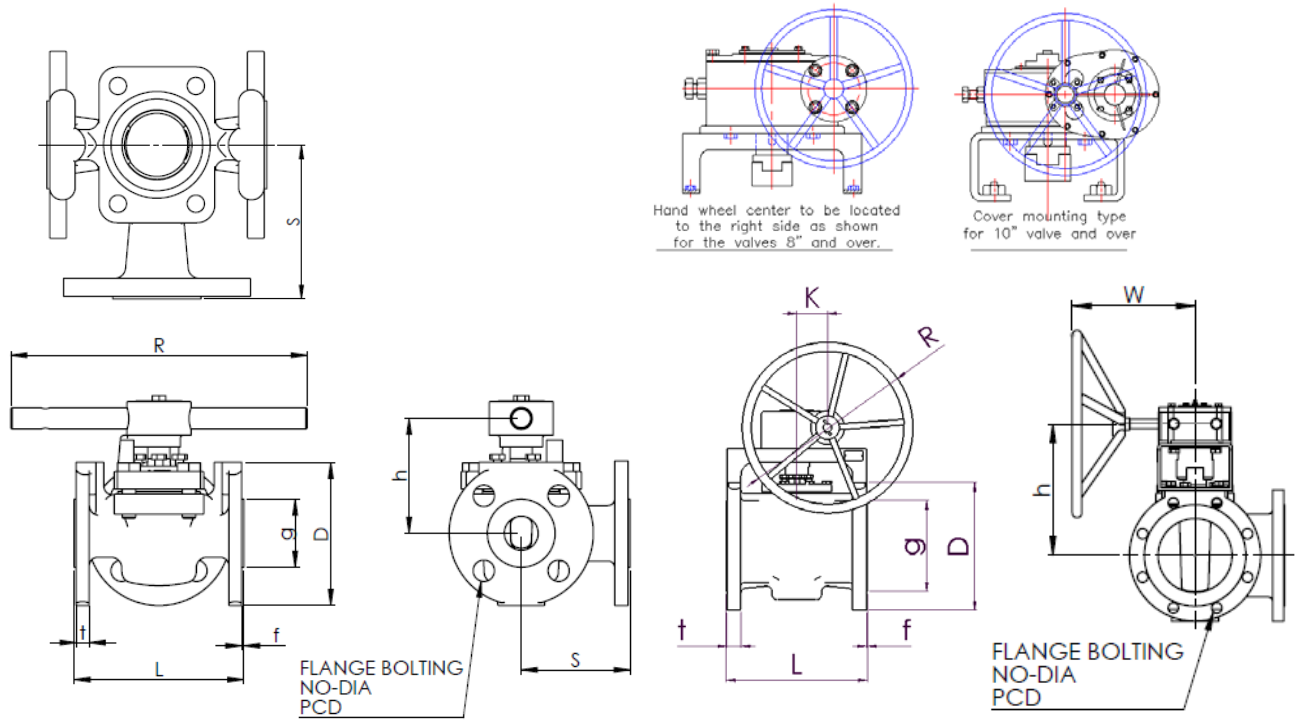
** 2 top holes in flanges are tapped for 7/8-9UNC (Stud Bolt Length 95mm & 105mm)

*** 2 top holes in flanges are tapped for 1-8UNC (Stud Bolt Length 110mm)

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

Standard Type Dimensions – Class 150

Figure No. 130 - Class 150 / Size 0.5”~18” / Raised Face Flange / 3-Way Port Arrangement Type T & L



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	35.1	7.9	1.5	115	150	-	-	70	3
0.75	117	99	69.8	4	16	42.9	8.6	1.5	115	150	-	-	73	4
1	127	108	79.2	4	16	50.8	9.7	1.5	85	222	-	-	89	6
1.5	165	127	98.6	4	16	73	12.7	1.5	105	318	-	-	105	10
2	178	152	120.6	4	19	91.9	14.2	1.5	110	458	-	-	114	16
3	203	190	152.4	4	19	127	17.5	1.5	125	597	-	-	155	23
4	229	229	190.5	8	19	157.2	22.4	1.5	165	746	-	-	175	40
6	267	279	241.3	8	22	215.9	23.9	1.5	285	400	75	280	202	78
*8	292	343	298.4	8	22	269.7	26.9	1.5	335	500	95	320	260	130
**10	330	406	362	12	25	323.8	28.4	1.5	400	500	25	340	286	200
**12	356	483	431.8	12	25	381	30.2	1.5	440	560	45	370	320	280
***14	381	533	476.2	12	29	412.8	33.3	1.5	510	610	35	440	360	420
16	762	597	539.8	16	29	469.9	35.1	1.5	550	610	35	440	400	630
18	864	635	577.8	16	32	533.4	38.1	1.5	640	710	180	505	442	970

0.5”~ 4”(Wrench Operated) / 6”~18”(Gear Operated)

++ Manufacturing Standard

* 2 top holes in flanges are tapped for 3/4-10UNC (Stud Bolt Length 100mm)

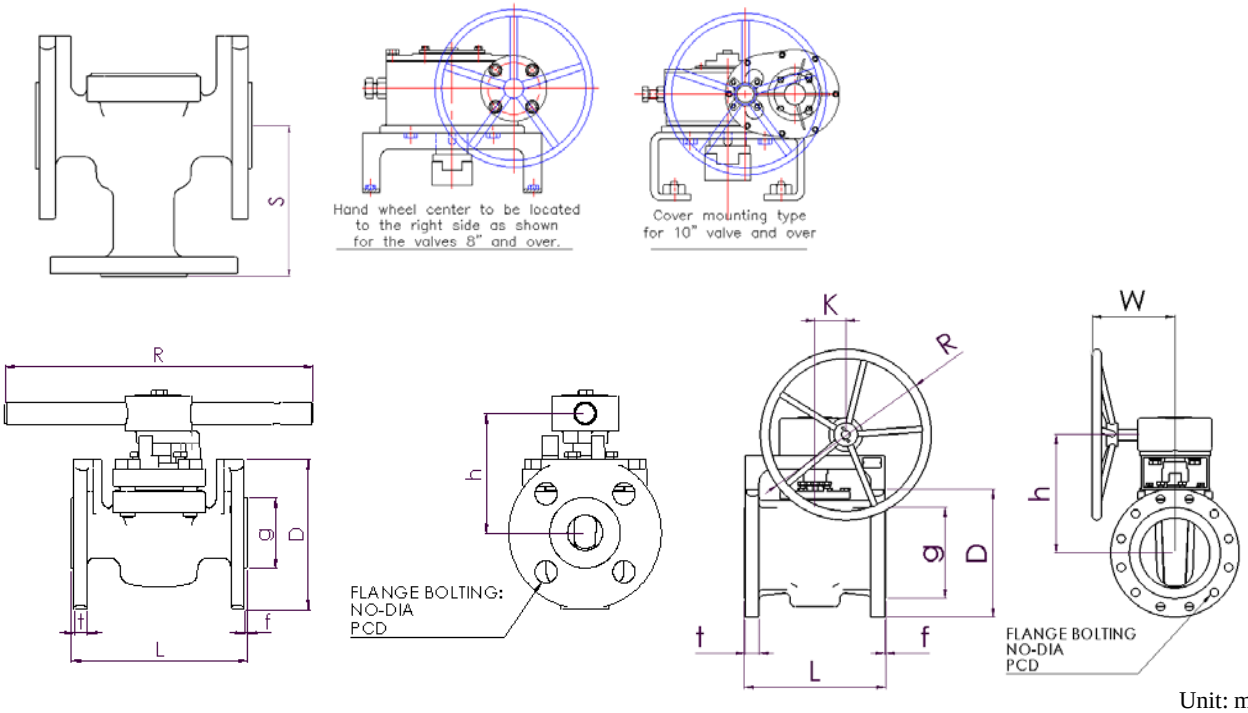
** 2 top holes in flanges are tapped for 7/8-9UNC (Stud Bolt Length 95mm & 105mm)

*** 2 top holes in flanges are tapped for 1-8UNC (Stud Bolt Length 110mm)

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

Standard Type Dimensions – Class 300

Figure No. 320 - Class 300 / Size 0.5” - 24” / 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	35.1	12.7	1.5	115	150	-	-	73	3
0.75	152	117	82.6	4	19	42.9	14.2	1.5	115	150	-	-	85	4
1	165	124	88.9	4	19	50.8	15.7	1.5	85	222	-	-	95	7
1.5	190	155	114.3	4	22	73	19.0	1.5	105	318	-	-	111	12
2	216	165	127	8	19	91.9	20.6	1.5	110	458	-	-	121	16
3	282	210	168.1	8	22	127	26.9	1.5	125	597	-	-	160	26
4	305	254	200.2	8	22	157.2	30.2	1.5	165	746	-	-	171	43
6	403	318	269.7	12	22	215.9	35.1	1.5	305	400	75	280	216	110
8	419	381	330.2	12	25	269.7	39.6	1.5	360	500	95	320	270	160
10	457	444	387.4	16	29	323.8	46.0	1.5	400	500	25	340	305	230
12	502	521	450.8	16	32	381	49.3	1.5	450	560	45	370	-	320
14	762	584	514.4	20	32	412.8	52.3	1.5	515	610	35	440	-	530
16	838	648	571.5	20	35	469.9	55.6	1.5	565	610	35	440	-	670
18	914	711	628.6	24	35	533.4	58.7	1.5	600	710	180	505	-	980
20	991	775	685.8	24	35	584.2	62.0	1.5	720	710	180	505	-	1,210
24	1143	914	812.8	24	41	692.2	68.3	1.5	745	800	230	660	-	1,910

- 0.5”~ 4”(Wrench Operated) / 6”~24”(Gear Operated)
- If additional classes and sizes are required, please consult the factory when ordering.

SW, BW, SC Type Dimensions

Figure No.

122S SW - Class 150 / Size 0.5” - 2” / Socket weld

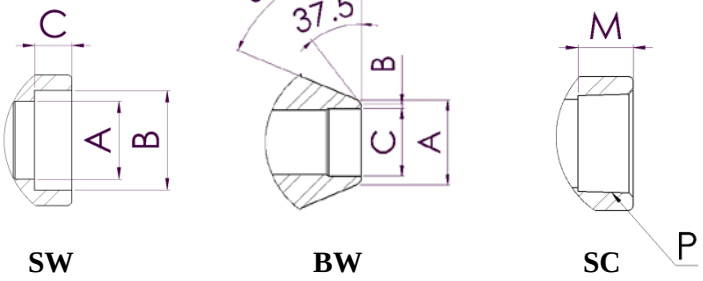
322S SW - Class 300 / Size 0.5” - 2” / Socket weld

122S SC - Class 150 / Size 0.5” - 2” / Screw type

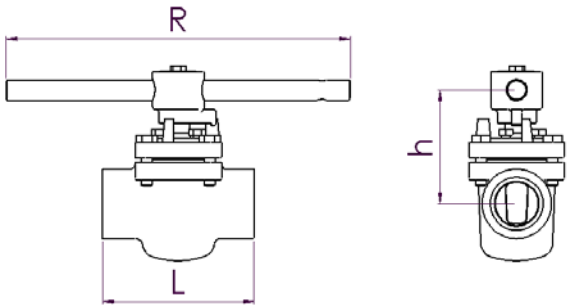
322S SC - Class 300 / Size 0.5” - 2” / Screw type

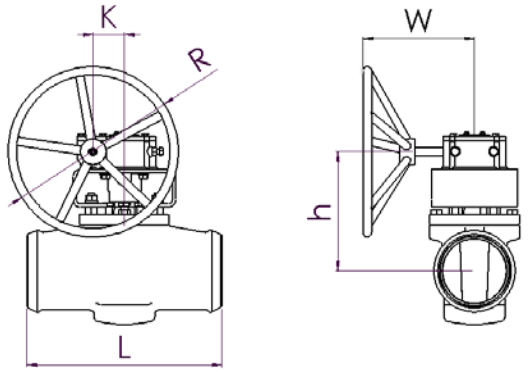
122 BW - Class 150 / Size 0.5” - 16” / Butt weld

322 BW - Class 300 / Size 0.5” - 16” / Butt weld



SW **BW** **SC**





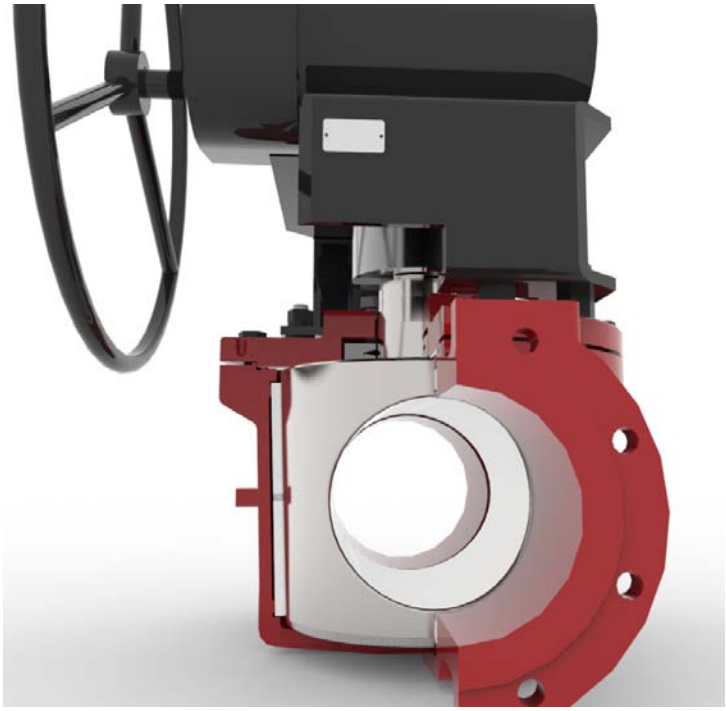
Unit: mm

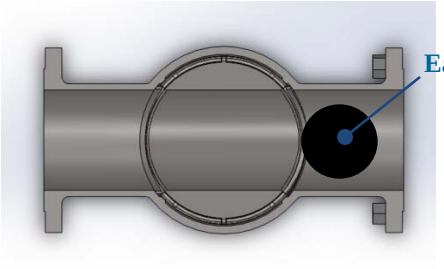
Type	Fig	Size	L	h	R	K	W	A	B	C	M	P	Weight (kg)
Socket Weld/ Screw	122S /322S	0.5	83	115	150	-	-	15.8	22	9.5	14.3	1/2 – 14 NPT	2.0
		0.75	83	115	150	-	-	21	27.4	12.5	14.3	3/4 – 14 NPT	2.0
		1	118	85	222	-	-	26.7	34.1	12.5	18.3	1-11.1/2 NPT	4.0
		1.5	140	105	318	-	-	40.9	49	12.5	20	1.1/2 – 11.1/2 NPT	6.5
		2	165	110	458	-	-	52.5	61.4	16	19.8	2-11.1/2 NPT	10
Butt Weld	122 /322	0.5	165	115	150	-	-	23	1.6	15.8	-	Standard : Schedule 40	2.5
		0.75	165	115	150	-	-	28	1.6	20.9	-		2.5
		1	165	85	222	-	-	35	1.6	26.6	-		4.5
		1.5	190	105	318	-	-	50	1.6	40.9	-		7.0
		2	267	110	458	-	-	62	1.6	52.5	-		10
		3	330	125	597	-	-	91	1.6	77.9	-		15
		4	356	165	746	-	-	117	1.6	102.3	-		26
		6G	457	285	400	75	280	172	1.6	154	-		61
		8G	521	335	500	95	320	223	1.6	203	-		105
		10G	559	400	500	25	340	278	1.6	254.5	-		135
		12G	635	440	560	45	370	329	1.6	303	-		245
		14G	762	510	610	35	440	362	1.6	333.5	-		350
		16G	838	550	610	35	440	413	1.6	381	-		430

- 0.5”~ 4”(Wrench Operated) / 6”~24”(Gear Operated)
- If additional classes and sizes are required, please consult the factory when ordering.

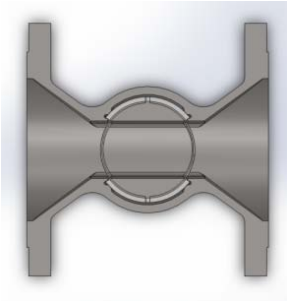
Full Port Valves

Feature: There is no diminished flow with the full bore port, and also easy to pigging. For application such as high viscosity condensable media, high efficiency is demonstrated with full bore port.





100% Full Bore

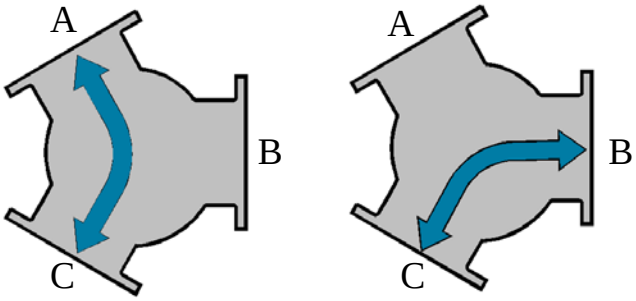


45~60% Reduced Bore

120° 3-way Full Port: **The** 3Z 120° Full port 3-way sleeve plug valve provides greater flow efficiency than the 90° 3-way valves and easy configuration for cleaning with a mechanical pig when requested



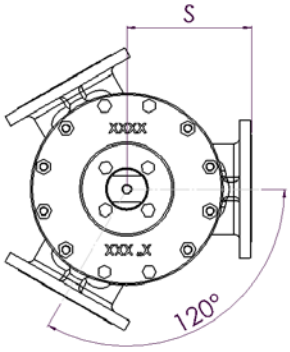
120° Operation



Position 1 (Full CW) Position 2 (Full CCW)

Full Port Type Dimensions – Class 150

Figure No. 120FB - Class 150 / Size 0.5” - 16” / Raised Face Flange

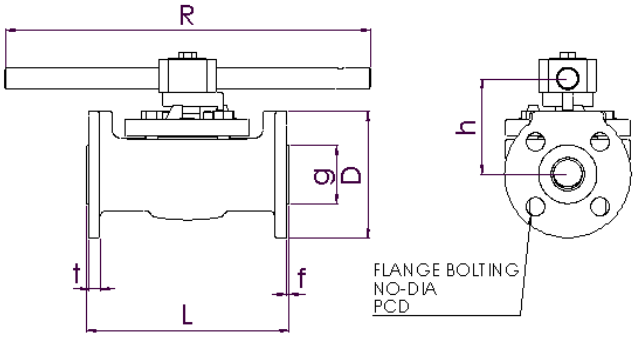


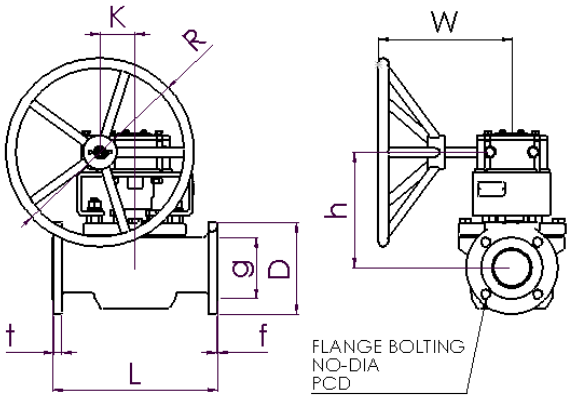


Size: 0.5” - 2”



Size: 3” - 16”





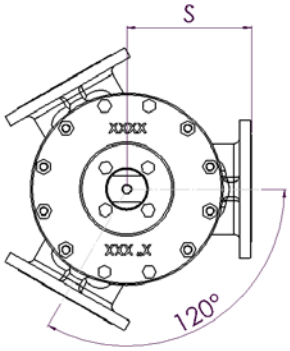
Unit: mm

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	35.1	7.9	1.5	115	150	-	-	-	3
0.75	152.4	99	69.8	4	16	42.9	8.6	1.5	100	222	-	-	-	5
1	176	108	79.2	4	16	50.8	9.7	1.5	90	318	-	-	88	8
1.5	222	127	98.6	4	16	73	12.7	1.5	100	458	-	-	111	13
2	267	152	120.6	4	19	91.9	14.2	1.5	140	746	-	-	134	26
3	343	190	152.4	4	19	127	17.5	1.5	250	400	75	280	172	65
4	432	229	190.5	8	19	157.2	22.4	1.5	270	500	95	320	216	110
6	546	279	241.3	8	22	215.9	23.9	1.5	360	560	45	370	273	220
8	622	343	298.4	8	22	269.7	26.9	1.5	470	610	160	480	311	420
10	660	406	362	12	25	323.8	28.4	1.5	530	710	180	510	330	670
12	762	483	431.8	12	25	381	30.2	1.5	630	800	230	605	381	1,040
14	870	533	476.2	12	29	412.8	33.3	1.5	680	900	280	660	435	1,600
16	960	597	539.8	16	29	469.9	35.1	1.5	730	900	280	660	480	1,850

- 0.5”~ 2”(Wrench Operated) / 3”~16”(Gear Operated)
- If additional classes and sizes are required, please consult the factory when ordering.

Full Port Type Dimensions – Class 300

Figure No. 320FB - Class 300 / Size 0.5” - 12” / Raised Face Flange

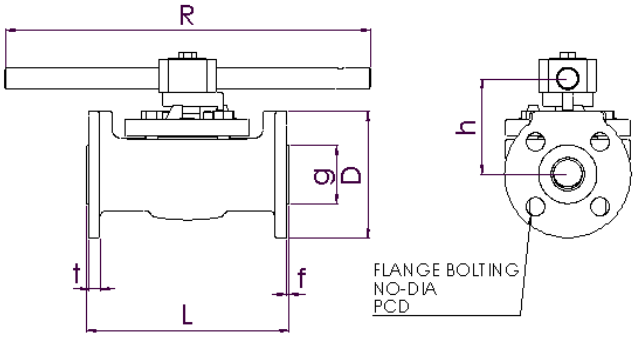


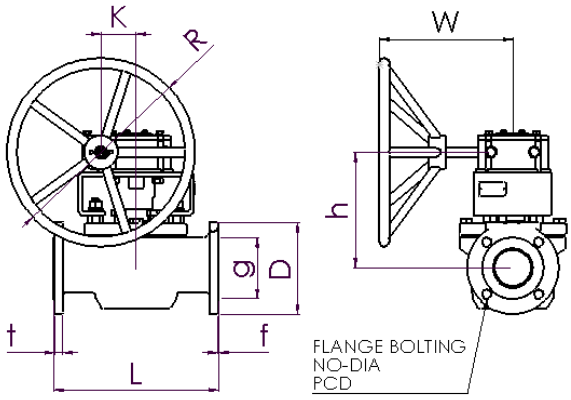


Size: 0.5” - 2”



Size: 3” - 12”





Unit: mm

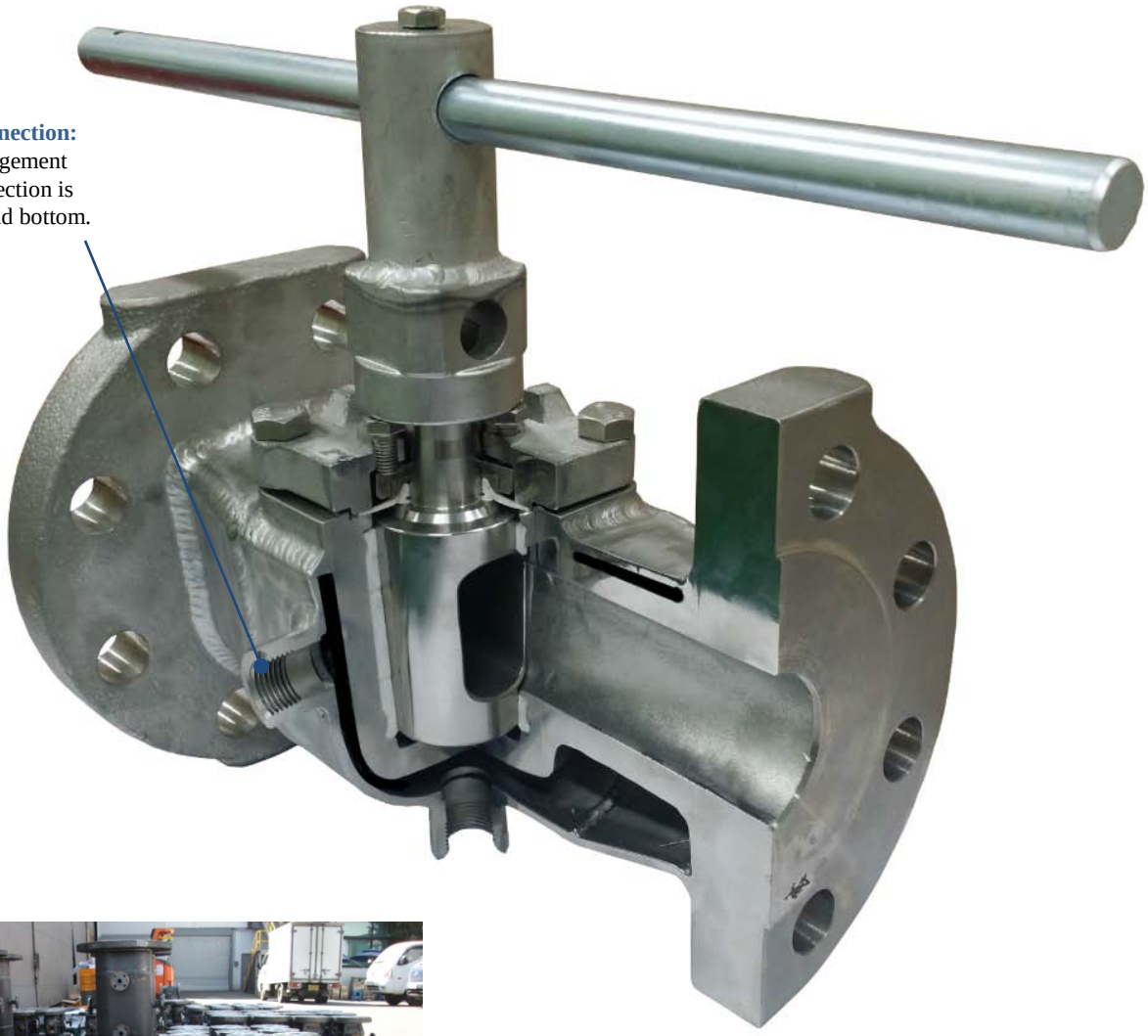
Size	L	D	PCD	NO	DIA	g	t	f	h	R	K	W	S (3way)	Weight (kg)
0.5	140	95	66.5	4	16	35.1	12.7	1.5	115	150	-	-	-	3
0.75	152.4	117	82.6	4	19	42.9	14.2	1.5	100	222	-	-	-	6
1	190	124	88.9	4	19	50.8	15.7	1.5	90	318	-	-	95	10
1.5	241	155	114.3	4	22	73	19.0	1.5	100	458	-	-	121	17
2	282	165	127	8	19	91.9	20.6	1.5	140	746	-	-	141	30
3	387	210	168.1	8	22	127	26.9	1.5	250	400	75	280	194	80
4	457	254	200.2	8	22	157.2	30.2	1.5	270	500	95	320	229	120
6	559	318	269.7	12	22	215.9	35.1	1.5	360	560	45	370	280	240
8	686	381	330.2	12	25	269.7	39.6	1.5	470	610	160	480	343	480
10	826	444	387.4	16	29	323.8	46.0	1.5	530	710	180	510	413	810
12	965	521	450.8	16	32	381	49.3	1.5	630	900	280	660	483	1,490

- 0.5”~ 2”(Wrench Operated) / 3”~12”(Gear Operated)
- If additional classes and sizes are required, please consult the factory when ordering.

Jacketed Valves

Jacketed Plug Valve: 3Z steam jacketed plug valves are designed to control special chemical service where media has to be required within a specified temperature range. The steam jacketed design prevents the media in the body from cooling down. If cool media become solid, the trim parts, plug and stem will be very hard to operate. The steam jacket keep maintaining required temperature of the valve.

Jacketed Connection:
Standard arrangement of jacket connection is located side and bottom.





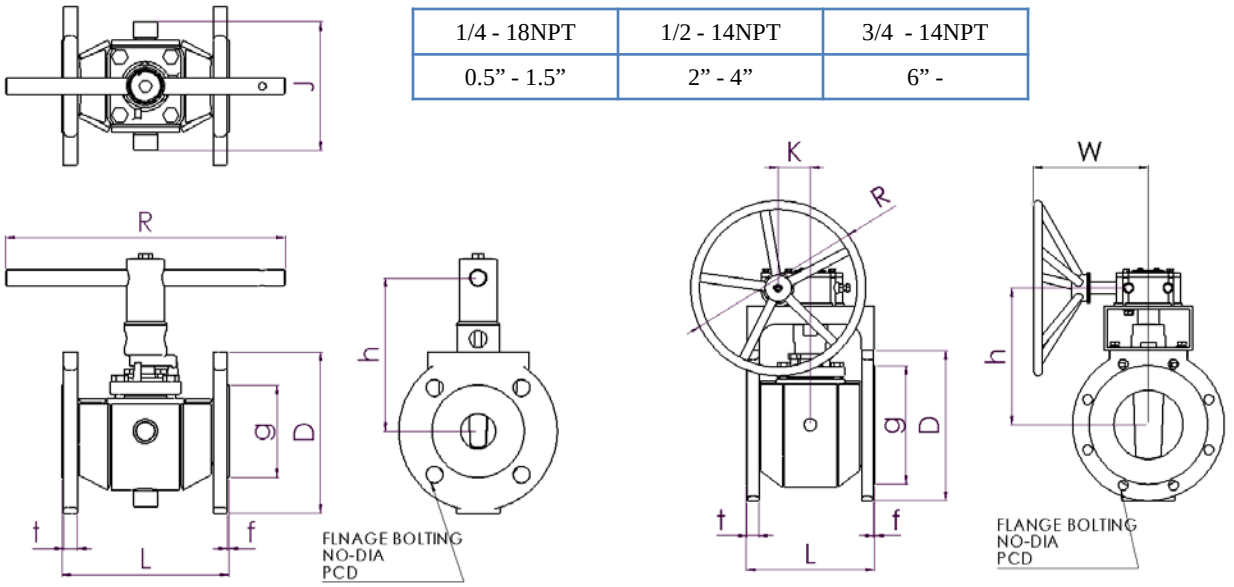
3Z steam jacketed plug valves supply the full jacket and partial type. Full jacket is covered body and flow passage by jacket and partial jacket is covered only body.

Jacketed Valve Dimensions – Class 150

Figure No. 120FJ - Class 150 / Size 0.5” - 24” / Raised Face Flange

* Jacket connection (screw standard)

1/4 - 18NPT	1/2 - 14NPT	3/4 - 14NPT
0.5” - 1.5”	2” - 4”	6” -



Unit: mm

Size flange x body	L	D	PCD	NO	DIA	g	t	f	h	R	K	W	J (SC)	J (FL)	Weight (kg)
1.5x0.5	165	127	98.6	4	16	73	12.7	1.5	145	180	-	-	120	240	6
1.5x0.75	165	127	98.6	4	16	73	12.7	1.5	145	180	-	-	120	240	6
2x1	178	152	120.6	4	19	91.9	14.2	1.5	165	222	-	-	135	250	10
2.5x1.5	190	178	139.7	4	19	104.6	15.7	1.5	175	318	-	-	135	255	16
3x1.5	203	190	152.4	4	19	127	17.5	1.5	175	318	-	-	135	250	17
3x2	203	190	152.4	4	19	127	17.5	1.5	180	458	-	-	165	265	21
4x3	229	229	190.5	8	19	157.2	22.4	1.5	195	597	-	-	165	280	31
6x3	267	279	241.3	8	22	215.9	23.9	1.5	195	597	-	-	170	280	41
6x4	267	279	241.3	8	22	215.9	23.9	1.5	215	746	-	-	185	300	50
8x6	292	343	298.4	8	22	269.7	26.9	1.5	315	400	75	280	235	330	97
10x8	330	406	362	12	25	323.8	28.4	1.5	370	500	95	320	310	405	150
*12x10	356	483	431.8	12	25	381	30.2	1.5	400	500	25	340	340	435	230
**14x12	381	533	476.2	12	29	412.8	33.3	1.5	440	560	45	370	360	455	300
16x14	762	597	539.8	16	29	469.9	35.1	1.5	510	610	35	440	440	535	570
18x14	864	635	577.8	16	32	533.4	38.1	1.5	510	610	35	440	440	535	580
18x16	864	635	577.8	16	32	533.4	38.1	1.5	550	610	35	440	500	595	670
20x16	914	698	635	20	32	584.2	41.1	1.5	550	610	35	440	515	595	780
24x20	1,067	813	749.3	20	35	692.2	46.0	1.5	650	710	180	505	700	755	1,230
30x24	1,295	984	914.4	28	35	857	73.2	1.5	760	800	230	660	750	845	1,930

- 0.5”~ 4”(Wrench Operated) / 6”~24”(Gear Operated)

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

** 2 top holes in flanges are tapped for 1-8UNC (Stud Bolt Length 120mm)

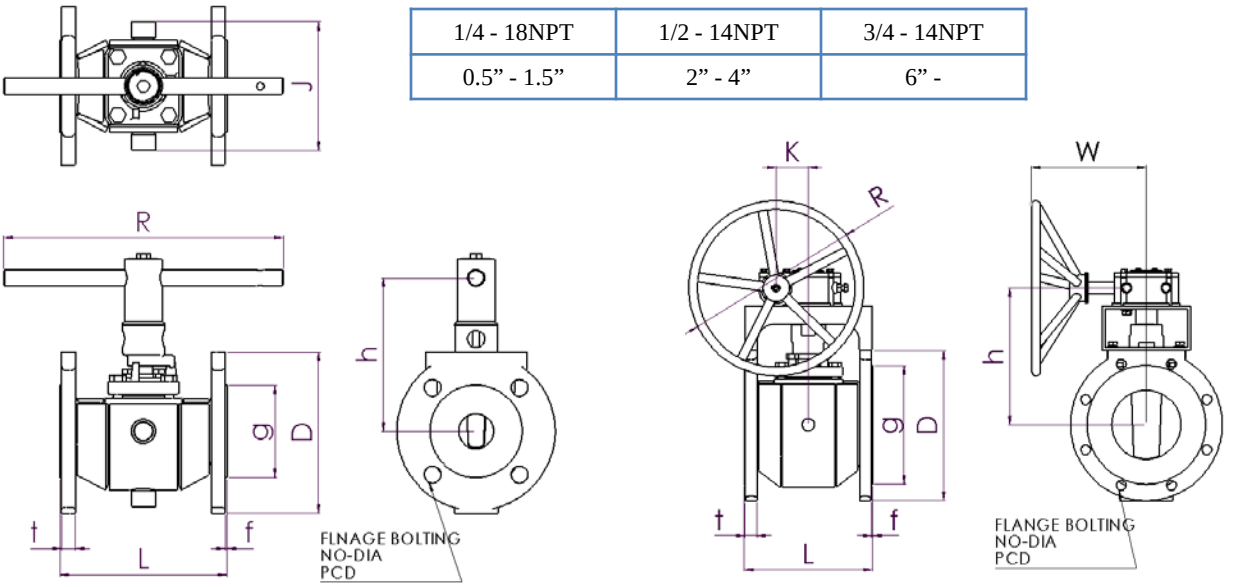
- If additional classes and sizes are required, please consult the factory when ordering.

Jacketed Valve Dimensions – Class 300

Figure No. 320FJ - Class 300 / Size 0.5” - 24” / Raised Face Flange

* Jacket connection (screw standard)

1/4 - 18NPT	1/2 - 14NPT	3/4 - 14NPT
0.5” - 1.5”	2” - 4”	6” -



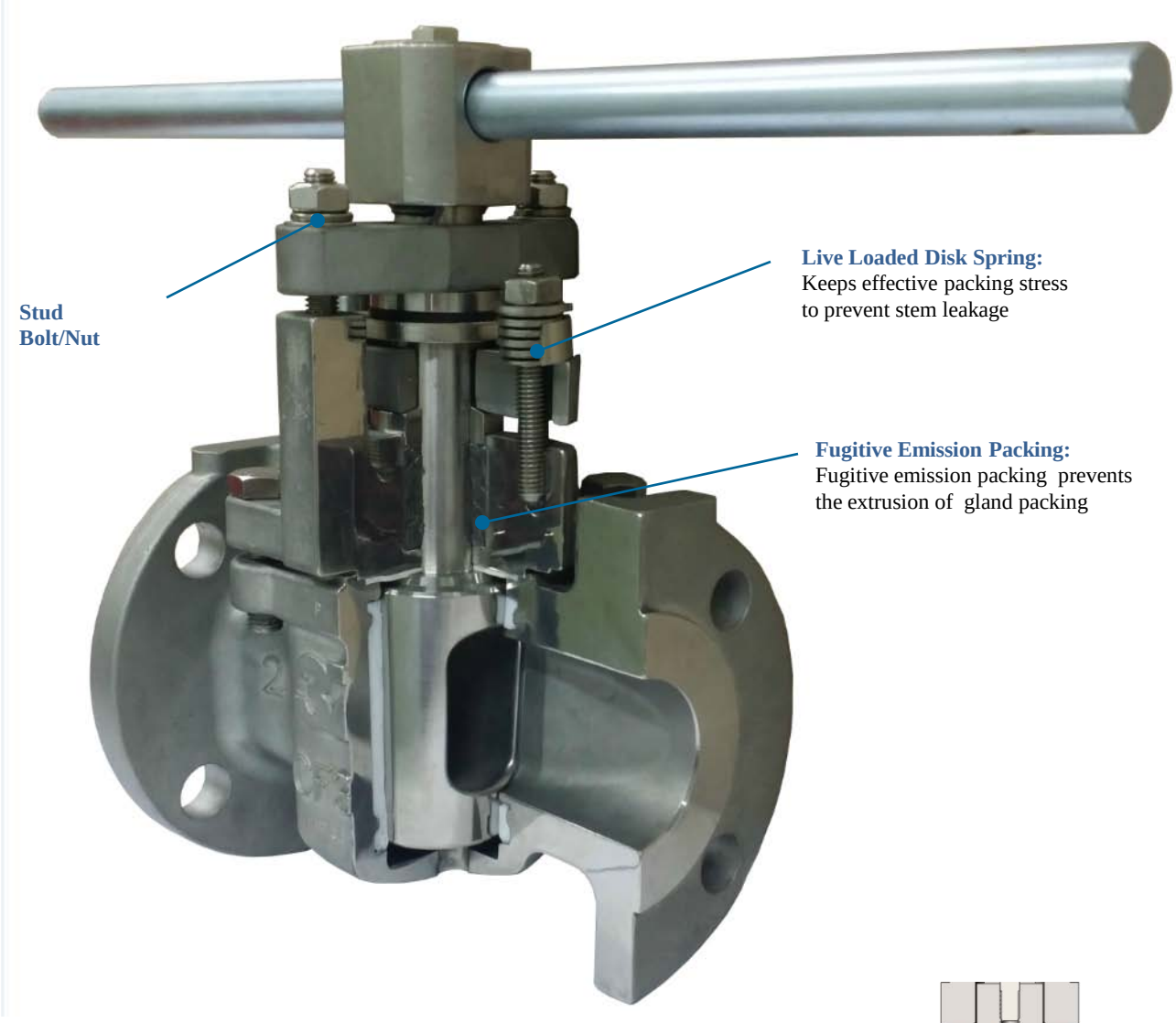
Unit: mm

Size flange x body	L	D	PCD	NO	DIA	g	t	f	h	R	K	W	J (SC)	J (FL)	Weight (kg)
1.5x0.5	190	155	114.3	4	22	73	19.0	1.5	145	180	-	-	120	240	10
1.5x0.75	190	155	114.3	4	22	73	19.0	1.5	165	180	-	-	120	240	10
2x1	216	165	127	8	19	91.9	20.6	1.5	165	222	-	-	140	255	15
3x1.5	282	210	168.1	8	22	127	26.9	1.5	175	318	-	-	140	250	25
3x2	282	210	168.1	8	22	127	26.9	1.5	180	458	-	-	175	275	30
4x3	305	254	200.2	8	22	157.2	30.2	1.5	195	597	-	-	175	275	43
6x4	403	318	269.7	12	22	215.9	35.1	1.5	215	746	-	-	190	295	75
8x6	419	381	330.2	12	25	269.7	39.6	1.5	330	400	75	280	275	370	150
10x8	457	444	387.4	16	29	323.8	46.0	1.5	390	500	95	320	310	405	210
12x10	502	521	450.8	16	32	381	49.3	1.5	400	500	25	340	340	435	300
16x12	838	648	571.5	20	35	469.9	55.6	1.5	450	560	45	370	390	485	550
16x14	838	648	571.5	20	35	469.9	55.6	1.5	515	610	35	440	420	535	600
18x16	914	711	628.6	24	35	533.4	58.7	1.5	565	610	35	440	490	595	780
24x20	991	914	812.8	24	41	692.2	68.3	1.5	720	710	180	505	700	800	1,500
30x24	1143	1,092	997.0	28	48	857	90.7	1.5	745	800	230	660	750	860	2,100

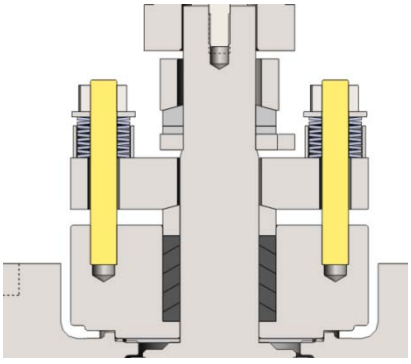
- 0.5”~ 4”(Wrench Operated) / 6”~24”(Gear Operated)
- If additional classes and sizes are required, please consult the factory when ordering.

Live Loaded Valves

Feature of Live loaded plug valves : Enhance stem sealing against external leakage by using live loaded disc spring and fugitive emission packing, and Live loaded plug valve is certified by ISO-15848(Industrial valves-Measurement, test and qualification procedures for fugitive Emissions)



Live loaded disc spring: If a valve is frequently cycled, the packing around the stem will be wore and the stress on the packing will be reduced and eventually stem leakage will be occurred. Normally, frequent retightening of the packing gland bolts is required to prevent stem leakage . 3Z live loaded plug valves with a disc spring provide an effective way to control the amount of stress in the packing set and eliminate the need of constant retightening.



Live Loaded Valve Dimensions – Class 150

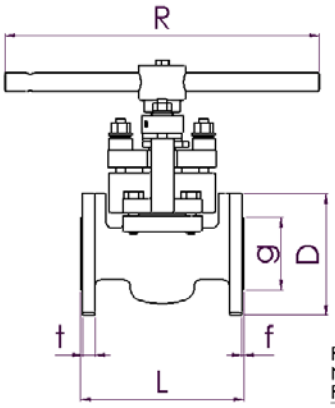
Figure No. 120LL - Class 150 / Size 0.5” - 18” / Raised Face Flange

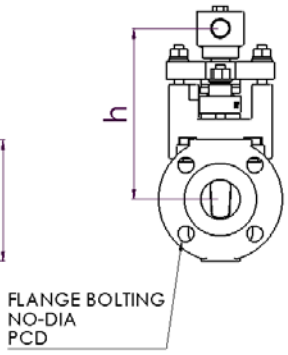
Size: 0.5’’ - 3’’

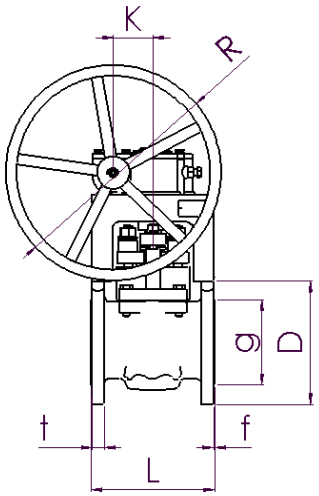


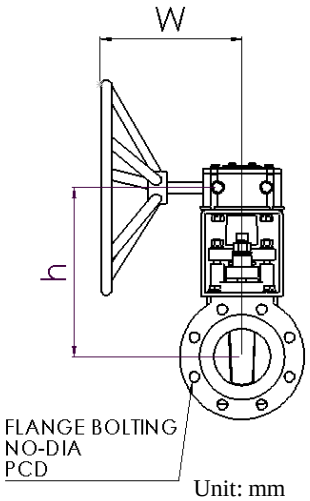
Size: 4’’ - 18’’











Unit: mm

Size	L	D	PCD	NO	DIA	g	t	f	h	R	K	W	Weight (kg)
0.5	108	89	60.5	4	16	35.1	7.9	1.5	175	150	-	-	6
0.75	117	99	69.8	4	16	42.9	8.6	1.5	175	150	-	-	6
1	127	108	79.2	4	16	50.8	9.7	1.5	165	318	-	-	10
1.5	165	127	98.6	4	16	73	12.7	1.5	175	318	-	-	13
2	178	152	120.6	4	19	91.9	14.2	1.5	185	458	-	-	20
3	203	190	152.4	4	19	127	17.5	1.5	200	597	-	-	25
4	229	229	190.5	8	19	157.2	22.4	1.5	320	400	75	280	57
6	267	279	241.3	8	22	215.9	23.9	1.5	380	400	75	280	83
*8	292	343	298.4	8	22	269.7	26.9	1.5	440	500	95	320	132
**10	330	406	362	12	25	323.8	28.4	1.5	510	560	45	370	200
**12	356	483	431.8	12	25	381	30.2	1.5	560	560	45	370	277
***14	381	533	476.2	12	29	412.8	33.3	1.5	650	610	35	440	400
16	762	597	539.8	16	29	469.9	35.1	1.5	715	610	160	480	600
18	864	635	577.8	16	32	533.4	38.1	1.5	835	710	180	505	960

- 0.5”~ 3”(Wrench Operated) / 4”~18”(Gear Operated)

* 2 top holes in flanges are tapped for 3/4-10UNC (Stud Bolt Length 100mm)

** 2 top holes in flanges are tapped for 7/8-9UNC (Stud Bolt Length 95mm & 105mm)

*** 2 top holes in flanges are tapped for 1-8UNC (Stud Bolt Length 110mm)

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

Live Loaded Valve Dimensions – Class 300

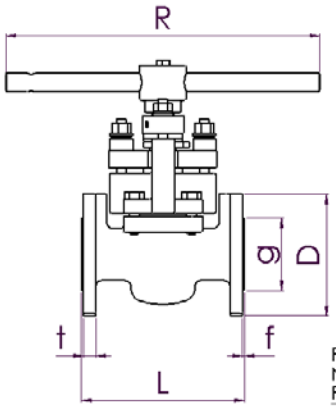
Figure No. 320LL - Class 300 / Size 0.5” - 14” / Raised Face Flange

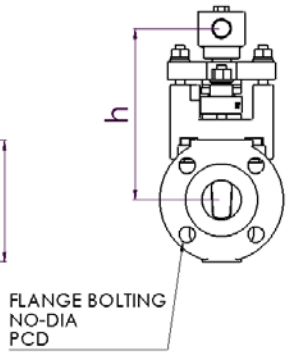
Size: 0.5’’ - 3’’

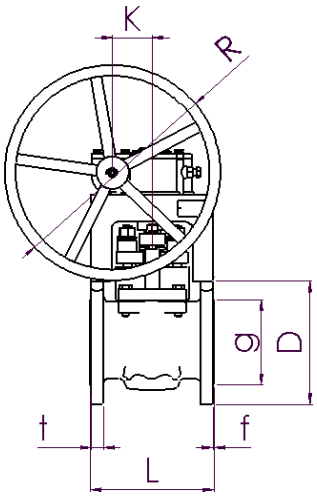


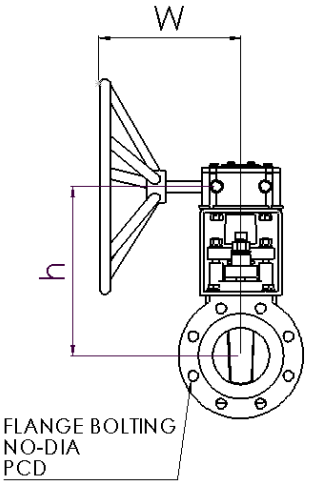
Size: 4’’ - 14’’











Unit: mm

Size	L	D	PCD	NO	DIA	g	t	f	h	R	K	W	Weight (kg)
0.5	140	95	66.5	4	16	35.1	12.7	1.5	175	150	-	-	6
0.75	152	117	82.6	4	19	42.9	14.2	1.5	175	150	-	-	7
1	165	124	88.9	4	19	50.8	15.7	1.5	165	318	-	-	12
1.5	190	155	114.3	4	22	73	19.0	1.5	175	318	-	-	16
2	216	165	127	8	19	91.9	20.6	1.5	185	458	-	-	22
3	283	210	168.1	8	22	127	26.9	1.5	200	597	-	-	33
4	305	254	200.2	8	22	157.2	30.2	1.5	320	400	75	280	68
6	403	318	269.7	12	22	215.9	35.1	1.5	380	400	75	280	113
8	419	381	330.2	12	25	269.7	39.6	1.5	440	500	95	320	172
10	457	444	387.4	16	29	323.8	46.0	1.5	510	560	45	370	259
12	502	521	450.8	16	32	381	49.3	1.5	560	560	45	370	351
14	762	584	514.4	20	32	412.8	52.3	1.5	650	610	35	440	559

- 0.5”~ 3”(Wrench Operated) / 4”~14”(Gear Operated)
- If additional classes and sizes are required, please consult the factory when ordering.

Class 600 High Pressure Plug Valves

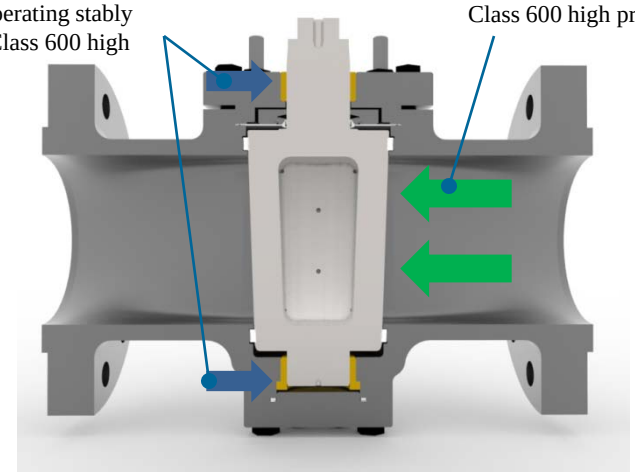
High Pressure Plug Valve:

3Z high pressure plug valves are designed for requirements of ASME B16.34 Class 600 and especially for 4” and over sized valves with top and bottom trunnion design. They securely operate against high differential pressure without excessive sleeve compression. 3Z high pressure plug valves are available in Reverse Osmosis (RO) Service.



Trunnion Stem:
Keeps operating stably against Class 600 high pressure

High Pressure:
Class 600 high pressure



High Pressure Valve Dimensions – Class 600

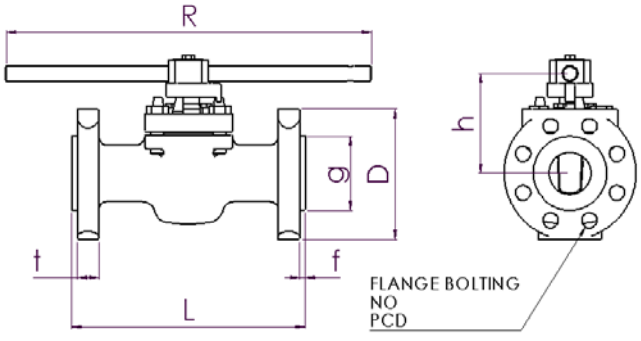
Figure No. 620 - Class 600 / Size 0.5” - 20” / Raised Face Flange

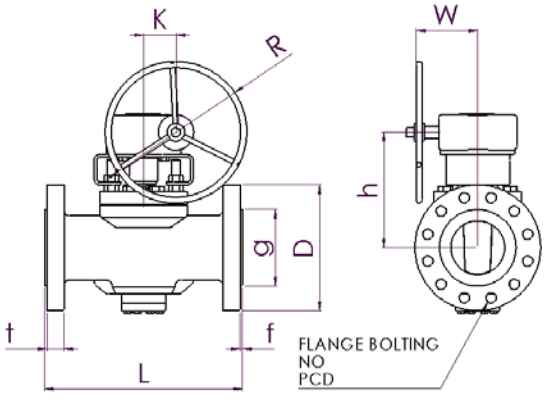
Size: 0.5’’ - 3’’



Size: 4’’ - 20’’







Unit: mm

Size	L	D	PCD	NO	DIA	g	t	f	h	R	K	W	Weight (kg)
0.5	165	95	66.5	4	16	35.1	14.2	6.4	125	150	-	-	4
0.75	190	117	82.6	4	19	42.9	15.7	6.4	125	150	-	-	6
1	216	124	88.9	4	19	50.8	17.5	6.4	100	222	-	-	9
1.5	241	155	114.3	4	22	73	22.4	6.4	110	318	-	-	14
2	292	165	127	8	19	91.9	25.4	6.4	125	458	-	-	20
3	356	210	168.1	8	22	127	31.8	6.4	145	597	-	-	40
4	432	273	215.9	8	25	157.2	38.1	6.4	270	400	75	280	100
6	559	356	292.1	12	29	215.9	47.8	6.4	330	500	23	335	190
8	660	419	349.2	12	32	269.7	55.6	6.4	405	560	45	370	310
10	787	508	431.8	16	35	323.8	63.5	6.4	450	610	160	460	540
12	838	559	489	20	35	381	66.5	6.4	520	610	160	460	690
14	889	603	527	20	38	412.8	69.8	6.4	580	610	180	490	960
16	991	686	603.2	20	41	469.9	76.2	6.4	650	800	230	590	1,310
20	1194	813	723.9	24	45	584.2	88.9	6.4	790	900	280	665	2,300

- 0.5”~ 3”(Wrench Operated) / 4”~20”(Gear Operated)
- If additional classes and sizes are required, please consult the factory when ordering.

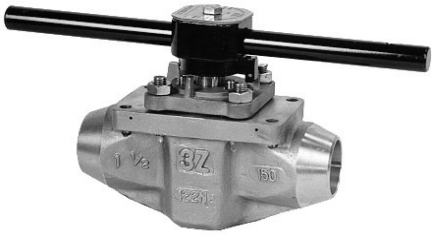
Nuclear Valves

Designed for nuclear power plant application.
Standard Sleeve material is “UHMWPE”

- Port: 2-3 way
- Class: 150/300/600
- Size: 0.5“ - 8”
- Temperature Range: **-29℃ ~ 100℃**



Nuclear Power Plant



3Z FIG 322N.BW
BUTT WELD END
NUCLEAR
PLUG VALVE

2-way
Class 150/300
0.5“ - 8 “



3Z FIG 322N.P
PUP WELDED
NUCLEAR
PLUG VALVE

2-way
Class 150/300
0.5“ – 8”
Pup Welded



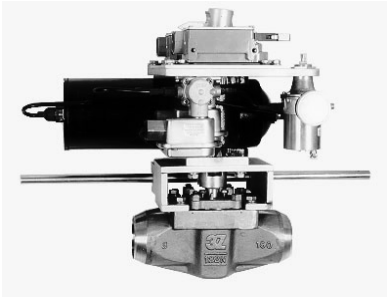
3Z FIG 322N.SW
SOCKET WELD END
NUCLEAR
PLUG VALVE

2-way
Class 150/300
0.5“ – 2”



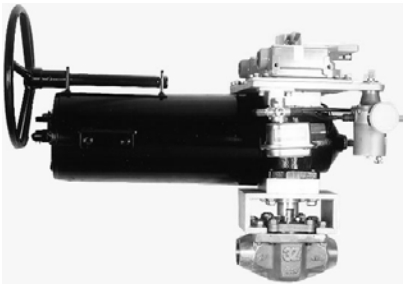
3Z FIG 332N
BUTT WELD END
NUCLEAR
PLUG VALVE

3-way
Class 150/300
0.5“ – 6”



3Z FIG 322N.CV
PNEUMATIC
NUCLEAR
CONTROL
PLUG VALVE

Double Acting Type
2-way
Class 150/300
0.5“ – 6”



3Z FIG 322N.CV
PNEUMATIC
NUCLEAR
CONTROL
PLUG VALVE

Spring Return Type
2-way
Class 150/300
0.5“ – 6”

Nuclear Valves Dimensions

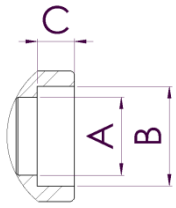
Figure No.

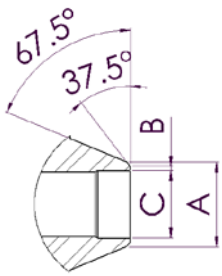
122N SW - Class 150 / Size 0.5“ - 2” / Socket weld

322N SW - Class 300 / Size 0.5“ - 2” / Socket weld

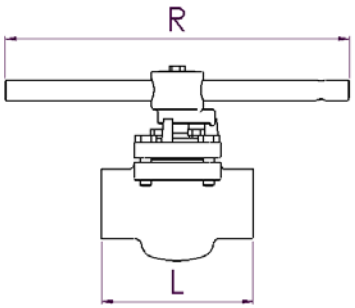
122N BW - Class 150 / Size 0.5“ - 8” / Butt weld

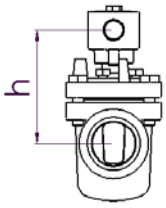
322N BW - Class 300 / Size 0.5“ – 8” / Butt weld

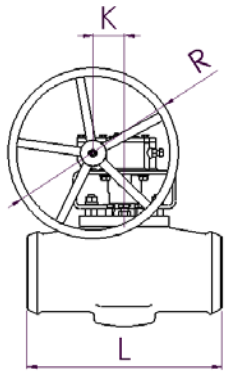


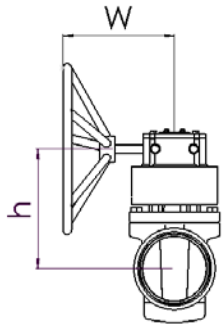


SW **BW**









Unit: mm

Class	End	Size	OP.	L	h	R	K	W	A	B	C	S (3way)	Weight (kg)
150 / 300	BW (SCH40)	0.5	W	165	115	150	-	-	21	1.6	15.8	99	3
		0.75	W	165	115	150	-	-	27	1.6	20.9	99	3
			G		135	200	41	161					7
		1	W	165	85	222	-	-	33	1.6	26.6	108	5
			G		155	200	41	161					10
		1.5	W	190	105	318	-	-	48	1.6	40.9	111	7
		2	W	267	110	458	-	-	60	1.6	52.5	121	13
			G		205	300	63	245.5					16
		2.5	W	305	125	597	-	-	75	1.6	62.5	121	15
			G		226	300	53	245.5					35
		3	W	330	125	597	-	-	91	1.6	78	152	19
			G		223	400	66.7	260					39
		4	W	356	165	746	-	-	117	1.6	102	190.5	32
			G		223	400	66.7	280					49
		6	G	457	310	500	91.5	285	172	1.6	154	254	75
		8	G	521	350	500	30	340	223	1.6	203	-	-
	SW (#3000)	0.5	W	165	115	150	-	-	15.8	22	12.5	99	3
		0.75	W	165	115	150	-	-	21	27.4	12.5	99	3
			G		135	200	41	161					7
		1	W	165	80	222	-	-	26.7	34.1	12.5	108	5
			G		155	200	41	161					10
		1.5	W	190	90	318	-	-	40.9	49.0	12.5	111	7
		2	W	267	110	458			52.5	61.4	16	121	14
			G		205	300	63	245.5					17

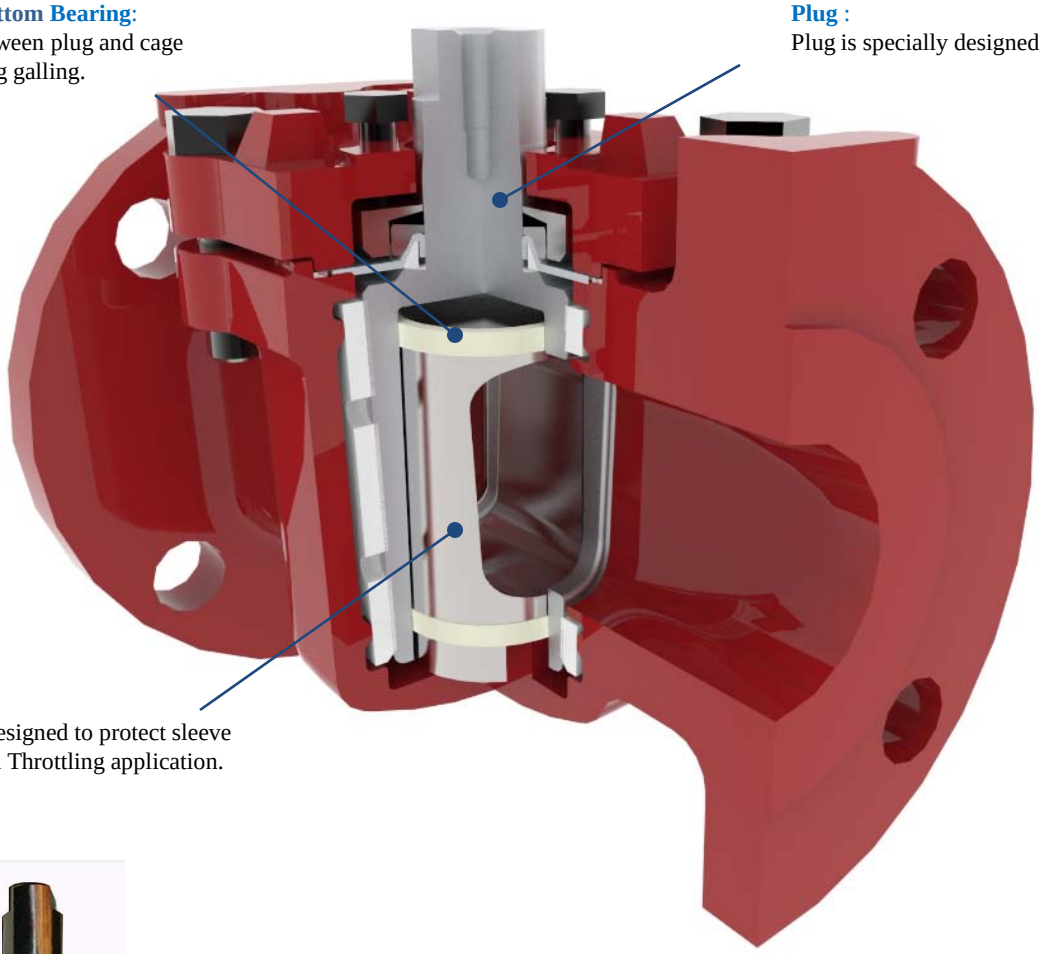
- OP. : W(Wrench) / G(Gear)
- If additional classes and sizes are required, please consult the factory when ordering.

Caged Plug Valves

Features and Benefits: 3Z caged plug valves are designed for the requirements in throttling application and high pressure drops service. The cage fixed in the body protects sleeve from erosion during valve operation from open to close.

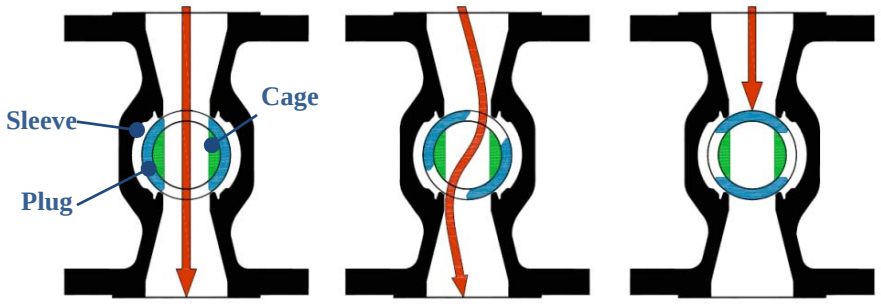
Top and Bottom Bearing:
Installed between plug and cage
Prevents plug galling.

Plug :
Plug is specially designed to install cage.



Cage:
Cage is designed to protect sleeve erosion in Throttling application.





Severe Service Valves

Features and Benefits: 3Z severe service plug valves are designed for maximum performance of external sealing . Especially the lantern ring between the top packing and the bottom packing provides an effective way to control the amount of stress in the packing set against packing wear and stem leakage.

Disk Spring:
Provides an effective way to control the amount of stress in the packing set and eliminates the need for constant retightening.

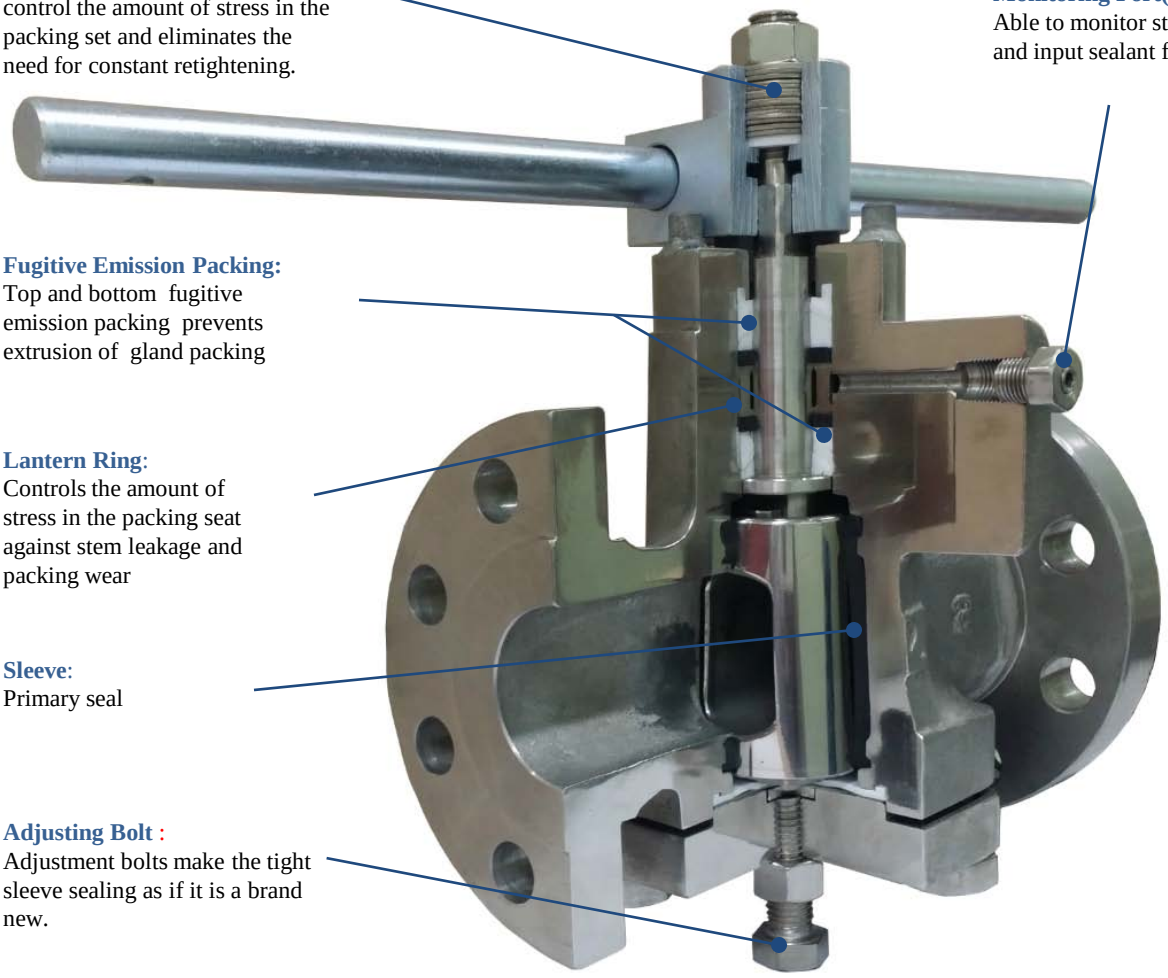
Monitoring Port(optional):
Able to monitor stem leakage and input sealant for sealing

Fugitive Emission Packing:
Top and bottom fugitive emission packing prevents extrusion of gland packing

Lantern Ring:
Controls the amount of stress in the packing seat against stem leakage and packing wear

Sleeve:
Primary seal

Adjusting Bolt :
Adjustment bolts make the tight sleeve sealing as if it is a brand new.





Size: 0.5’’ - 3’’



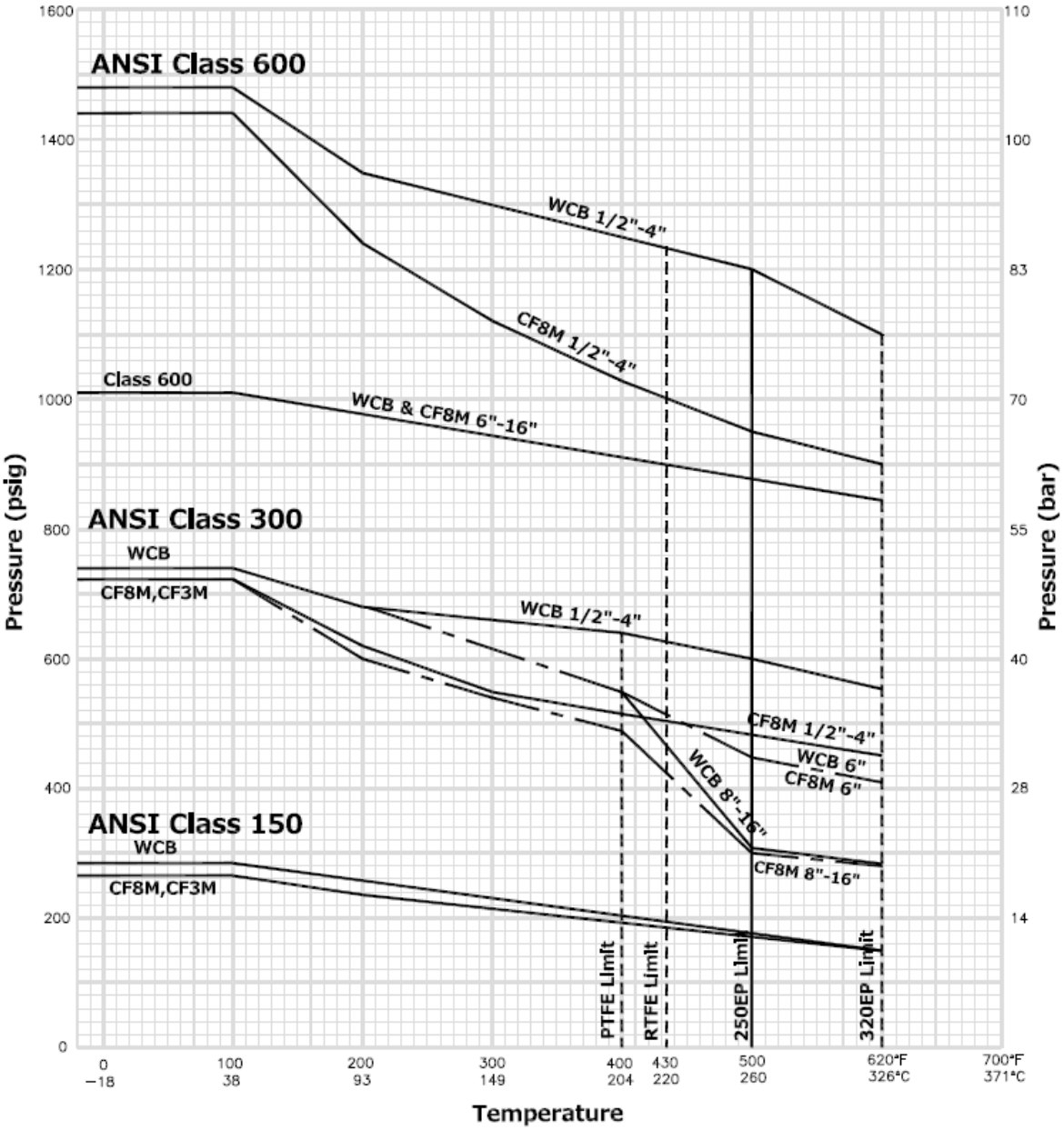
Size: 4’’ - 12’’

Pressure-temperature Ratings

Pressure –temperature Ratings : 3Z sleeved plug valves are in accordance with ASME B16.34 standards, which request pressure-temperature rating for shell material. And according to ASME B16.34 and API 599, seals parts, such as sleeves and diaphragms may be used in limited pressures and temperature range.

* Seal Parts Maximum High Temperature

PTFE	RTFE	250EP	320EP
-29℃ ~ 204℃	-29℃ ~ 220℃	-29℃ ~ 250℃	-29℃ ~ 326℃



Technical Data

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

Fig	Size	Break	Running	Seating
120/320	0.5	23	14	18
120/320	0.75	23	14	18
120/320	1	39	23	31
120/320	1.5	65	39	52
120/320	2	90	54	72
120/320	3	140	84	112
120/320	4	260	156	208
120/320	6	500	300	400
120/320	8	890	534	712
120/320	10	1,600	960	1,280
120/320	12	2,000	1,200	1,600
120	14	3,200	1,920	2,560
120	16	3,650	2,190	2,920
120	18	6,500	3,900	5,200
120	20	9,000	5,400	7,200
120	24	14,000	8,400	11,200
120	28	26,500	15,900	21,200
320	14	3,400	2,040	2,720
320	16	4,300	2,580	3,440
320	18	7,100	5,325	5,680
320	20	11,100	8,325	8,880
320	24	18,000	13,500	14,400

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

Fig	Size	CV Factor
120/320	0.5	15
120/320	0.75	15
120/320	1	40
120/320	1.5	70
120/320	2	140
120/320	3	230
120/320	4	400
120/320	6	890
120/320	8	1,500
120/320	10	2,300
120/320	12	2,950
120	14	4,050
120	16	5,500
120	18	6,300
120	20	8,090
120	24	11,850
120	28	16,050
320	14	4,050
320	16	5,600
320	18	6,350
320	20	8,160
320	24	11,940

Operating Torque (N.M)
Class 600 / RTFE Sleeve
2-way - Standard Type

Fig	Size	Break	Running	Seating
620	0.5	33	20	26
620	0.75	33	20	26
620	1	49	29	39
620	1.5	81	49	65
620	2	137	82	110
620	3	175	105	140
620	4	575	345	460
620	6	1,560	936	1,248
620	8	2,500	1,500	2,000
620	10	4,000	2,400	3,200
620	12	6,250	3,750	5,000

CV Factor
Class 600
2-way - Standard Type

Fig	Size	CV factor
620	0.5	15
620	0.75	15
620	1	40
620	1.5	70
620	2	150
620	3	230
620	4	410
620	6	940
620	8	1,590
620	10	2,430
620	12	3,130

Technical Data

Operating Torque (N.M)
Class 150 / PTFE Sleeve
2-way - Full Bore Type

Fig	Size	Break	Running	Seating
120FB	0.75	23	16	18
120FB	1	50	35	40
120FB	1.5	100	70	80
120FB	2	180	126	144
120FB	3	560	392	448
120FB	4	790	553	632
120FB	6	2,100	1,470	1,680
120FB	8	4,900	3,430	3,920
120FB	10	8,900	6,230	7,120
120FB	12	14,200	9,940	11,360
120FB	14	20,600	14,420	16,480
120FB	16	29,000	20,300	23,200

Operating Torque (N.M)
Class 300 / PTFE Sleeve
2-way - Full Bore Type

Fig	Size	Break	Running	Seating
320FB	0.75	23	16	18
320FB	1	50	35	40
320FB	1.5	100	70	80
320FB	2	180	126	144
320FB	3	560	392	448
320FB	4	790	553	632
320FB	6	2,100	1,470	1,680
320FB	8	4,900	3,430	3,920
320FB	10	10,500	7,350	8,400
320FB	12	16,800	11,760	13,440

CV Factor
Class 150 & 300
2-way - Full Bore Type

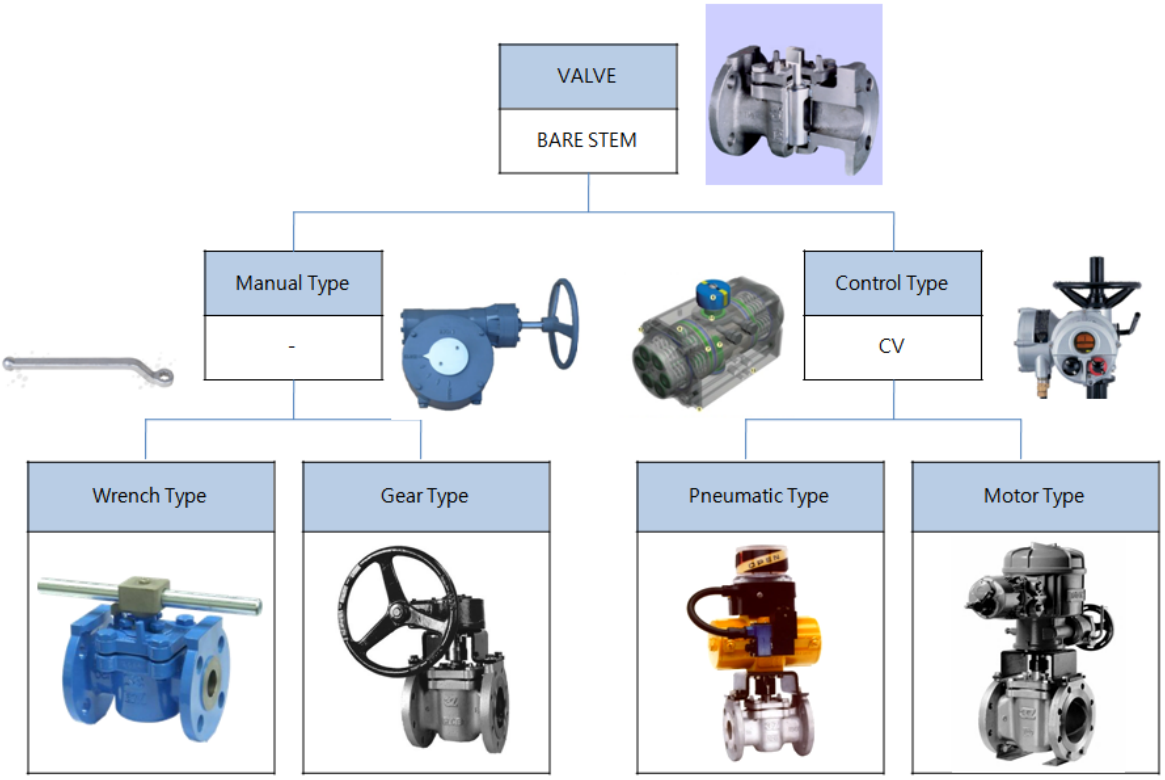
Fig	Size	CV factor
120FB/320FB	0.75	60
120FB/320FB	1	115
120FB/320FB	1.5	290
120FB/320FB	2	530
120FB/320FB	3	1,150
120FB/320FB	4	2,130
120FB/320FB	6	5,050
120FB/320FB	8	9,780
120FB/320FB	10	14,600
120FB/320FB	12	21,500
120FB/320FB	14	26,600
120FB/320FB	16	35,200

Operating Torque (N.M)
Class 150 / PTFE Sleeve
2-way - Live Loaded Type

Fig	Size	Break	Running	Seating
120 LL	0.5	36	27	30
120 LL	0.75	36	27	30
120 LL	1	65	47	55
120 LL	1.5	100	75	85
120 LL	2	130	100	110
120 LL	3	185	140	150
120 LL	4	420	320	340
120 LL	6	815	610	660
120 LL	8	1,210	890	980
120 LL	10	2,000	1,450	1,650
120 LL	12	2,750	2,030	2,250

Operators

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



Locking Device:
Locking device are available as per customer`s requirement.



Long Stem:
3Z special extended long stems are available as per customer`s requirement.

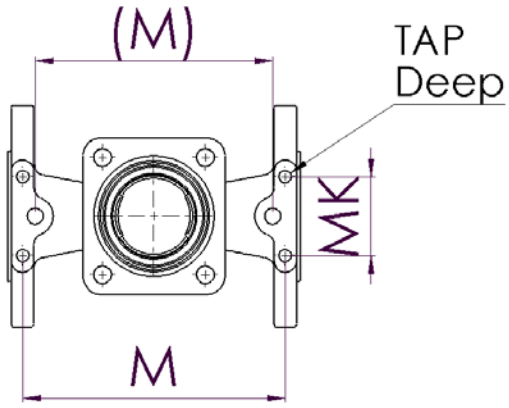


Actuator Mounting Hole Configurations

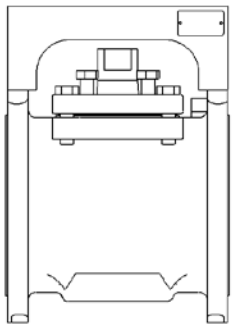
Mounting Hole Dimensions (mm)

Class 150 2-way - Standard

Fig	Size	M	MK	NO	TAP	Deep
120	0.5	92	-	2	M8	12
120	0.75	95.3	-	2	M8	12
120	1	106.5	44.5	4	M6	10
120	1.5	146	44.5	4	M8	12
120	2	160.3	57.2	4	M8	12
120	2.5	170.5	88.9	4	M10	14
120	3	181.1	88.9	4	M10	14
120	4	203.2	101.6	4	M12	16
120	6	239.8	101.6	4	M12	16
120	8	258.8	152.4	4	M12	16
120	10	293.6	152.4	4	M12	16
120	12	318.3	152.4	4	M16	20
120	14	340	170	4	M16	16



2 - 4 Hole Actuator Mounting

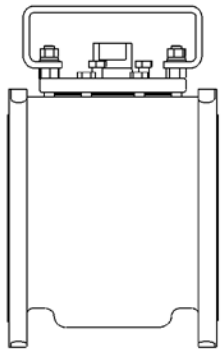


Flange Mounting Type

Mounting Hole Dimensions (mm)

Class 300 2-way - Standard

Fig	Size	M	MK	NO	TAP	Deep
320	0.5	118	-	2	M8	12
320	0.75	128	-	2	M8	12
320	1	146.1	44.5	4	M8	12
320	1.5	168.4	44.5	4	M8	12
320	2	192	57.2	4	M8	12
320	3	252.5	88.9	4	M10	14
320	4	271.5	101.6	4	M12	16
320	6	355.6	101.6	4	M12	16
320	8	371.6	152.4	4	M12	16
320	10	398.5	152.4	4	M12	16
320	12	441.5	152.4	4	M12	16



Cover Mounting Type

How to Order

FIG
120: Class 150 2-way Sleeved Plug Valve
320: Class 300 2-way Sleeved Plug Valve
620: Class 600 2-way Sleeved Plug Valve
130: Class 150 3-way Sleeved Plug Valve
330: Class 300 3-way Sleeved Plug Valve
120 FB: Class 150 2-way Full Bore Sleeved Plug Valve
320 FB: Class 300 2-way Full Bore Sleeved Plug Valve
620 FB: Class 600 2-way Full Bore Sleeved Plug Valve
122: Class 150 2-way SW/BW/SC Sleeved Plug Valve
322: Class 300 2-way SW/BW/SC Sleeved Plug Valve
622: Class 600 2-way SW/BW/SC Sleeved Plug Valve
122N: Class 150 2-way Nuclear Sleeved Plug Valve
322N: Class 300 2-way Nuclear Sleeved Plug Valve
622N: Class 600 2-way Nuclear Sleeved Plug Valve

CODE
ANSI / JIS / DIN

JACKET
FJ: Full Jacket
PJ: Partial Jacket

FIRE SAFETY
FS: Fire Safety

LONG STEM
L100: Long stem 100mm
L150: Long stem 150mm
L2000: Long stem 2000mm

BODY
WCB: ASTM A216 WCB
CF8M: ASTM A351 CF8M
CF8: ASTM A351 CF8
CF3M: ASTM A351 CF3M
LCB: ASTM A352 LCB
M35-1: ASTM A494 M35-1

PLUG
CF8M: ASTM A351 CF8M
CF8: ASTM A351 CF8
CN7M: ASTM A351 CN7M
M35-1: ASTM A494 M35-1

120 - DIN - AX - FJ - RTJ - LL - FS - WR – L100 - LD - NACE - WCB – CF8M - PTFE

PORT
AX / A / C / D

END CONNECTION
RF: Raised Face
RTJ: Ring Type Joint
FF: Flat Face
LTF: Large Tongue Face
LMF: Large Male Face
LFF: Large Female Face
BW: Butt Weld
SW: Socket Weld
SC: Screw

OPTION
LL: Live Loaded Type
SS: Severe Service Type
CG: Caged Plug Type
FM: Sampling Service Type

OPERATOR
WR: Wrench
GR: Worm Gear
BA: Bare Stem
CV: Pneumatic Control Valve
MOV: Motor Operated Valve

LOCKING DEVICE
LD: Locking Device

SERVICE
NACE: NACE MR0175/0103
VACUUM: Vacuum Service
OXYGEN: Oxygen Service

SEAT
PTFE: Original
RTFE: 15% grass fiber
250EP: 250 °C high temperature plastic
320EP: 326 °C high temperature plastic

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



#1 Plant (3Z Manufacturing & Assembly) :
254, Sihwa Venture-Ro, Siheung-City, Gyeonggi-Do, Korea

#2 Plant (3Z Foundry) :
117, Hwanggeum 2-ro, Yangchon-eup Gimpo-city in Gyeonggi-Do, Korea

Sales Office
Tel : +82.31.8084.1600
Fax : +82.31.499.9119
Homepage : www.3zvalve.com

3Z provides perfect products.

The copyrights of this catalog are owned by 3Z Corp.
Any and all alteration or reproduction of the contents in this catalogue is strictly prohibited.

2026 3Z Corporation / 3ZQB-01-E