

KOFLOW

PLUG VALVE

Figure Coding System for Plug Valves



① Nominal Diameter Symbols

A××in value is used to ASME, D××mm value is used to DIN, and G××mm value being for GB.

② Valve Type Symbols

X—Plug Valve

③ Symbol for Actuation Methods (For handle or lever drive, this code can be omitted.)

3—Manual Operator; 6—Pneumatic; 6S—Pneumatic Spring Return; 9—Electric

④ Valve Connection/Ends Symbol

RF—Raised Face Flange; FF—Fully Flat Face Flange; MFM—Male and Female Flange; TG—Tongued and Grooved Flange;
RJ—Ring Junction Flange; BW—Butt Welding; SW—Socket Welding; NPT—Threaded Connection

⑤ Structure Type Symbols

Stuffing Airproof:

3—straight way (flow bore); 4T—T Type 3-way; 4L—L Type 3-way; 5—4-way

Pressure balance type lubricated:

7—straight way (flow bore); 8T—T Type 3-way; 8L—L Type 3-way;

Other type:

7L—Lift type; 7E—Eccentric structure 7D—Double flush structure; 7c—Double isolation structure

⑥ Nominal Pressure Symbols

1—PN16 class150; 2—PN25; 3—class300; 4—PN40 class400; 6—PN64 class600
9—class900; 10—PN100; 15—class1500; 16—PN160; 20—PN200; 25—class2500;

⑦ Body Material Symbols

C—WCB; C5—C5; C6—WC6; C9—WC9; BL—LCB; CL—LCC
8—CF8; 8M—CF8M; 3—CF3; 3M—CF3M; ML—MONEL

⑧ Symbols of Sealing Surfaces and Lined Material

F—PTFE; F3—PCTFE; F46—FEP; PA—PFA;
H—Cr13 Series Stainless Steel; Y—Stellite; R—Austenitic Stainless Steel; M—MONEL alloy

Given demonstration: A8" X3RF31CF denotes API 8" x 150Lb sleeve type plug valves, worm gear actuated, RF, straight way with body material of WCB and lined material of F4.

Technical Specifications of Plug Valve

Technical Specifications	API Serials	GB Serials
Design Specifications	API6D, API599, BS5353	GB/T19672
Pressure and Temperature Class	ASME B16.34	GB/T9124
Face-to-face	ASME B16.10	GB/T12221、GB/T15188.1
Flange Type and Dimensions	ASME B16.5、ASME B16.47	GB/T9113、JB/T79
Butt-welding connection	ASME B16.25	GB/T12224
Socket-welded connection	ASME B16.11	/
Threaded-welding connection	ASME B16.1.20	/
Inspection and Test	API598、API6D	JB/T9092、GB/T13927

SUMMARIZATION OF PLUG VALVE

Summarization

Plug valve is a circumrotating valve with its closure part as a plug, which turns 90 ° with its through bore connecting to or apart from the same of the body to realize opening or closing. The figure of the valve plug can be made as column or taper.

Of the column plug valve, the flow bore gets rectangle in general, and that of the taper type plug valve, the flow bore is of trapezium. The figures mentioned have made the structure of plug valves legerity, however, certain loss is at the same time generated.

The plug valve is mostly suitable for cutting off, turning on and distributing the flow medium. Sometime it can also be used for throttling based upon suitable medium and the erosion resistance property of the sealing surfaces. Due to the friction action between the sealing surfaces of the plug valve, whereas contact with flow medium can be completely avoided as the valve is fully opened. In this respect, the plug valve can also be used for the medium with suspend grains.

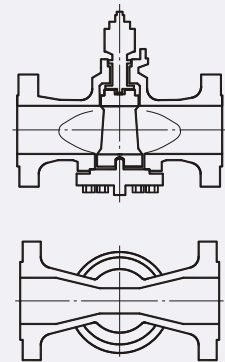
One of the important characteristics of the plug valve is that it is prone to fitting multi-center structure, so that one single plug valve can be designed with two, three, and even four different flow bores. In this way, the design of the pipeline system can be simplified, and both valve quantity and piping fittings can be reduced. The plug valves are widely used in the applications of oil field exploitation, transportation, and refinery facility, while being extensively used for such general industries as petrochemical, chemistry, gas, nature gas, liquefied oil gas, and warming & traffics.

Lined plug valves without lubricant are used for applications of petrochemical and chemistry industries, especially being used for the medium that is not allowed to be with lubricants.

Straight Way Flow Bore Patterns

The straight way flow bore of plug valves manufactured by Shanghai KOFLOW Machinery Co., Ltd. are of many patterns, there are venturi pattern, standard pattern with straight bore, short pattern, regular pattern and standard camber pattern with straight bore, among which the principal difference is the face-to-face dimensions, diameter and the plug figure.

VENTURI Pattern: The face-to-face dimensions of these valves are designed according to Britain and American standards to ensure inter-replacing of valves among different standards. The plug bore of these valves are of reduced bore area, however, the center line position of the plug valves does not change, which generates in the valve body a Venturi action to increase the loss of flow velocity with big percent. The result generated by this action is a corresponding low pressure drop. In this respect, the plug valves can be used in general pipelines, especially used for big sized pipelines to reduce application cost.

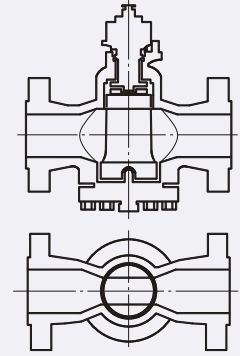


Venturi pattern

SUMMARIZATION OF PLUG VALVE

Straight Way Flow Bore Patterns

Standard Plug Valves with straight bore: The face-to-face dimensions of these valves are designed according to Britain and American standards to ensure farthest inter-replacing of valves among different types of valves. The figure of plug bore looks like a rectangle structure. There is an area echoing to the valve ends, which is with lowest pressure drop. The conversion from body end to the rectangle end-face is even, it will not appear the condition of sudden change of shape or part. Otherwise, the flow medium in the pipeline would generate sudden shake-up of flow velocity or direction.

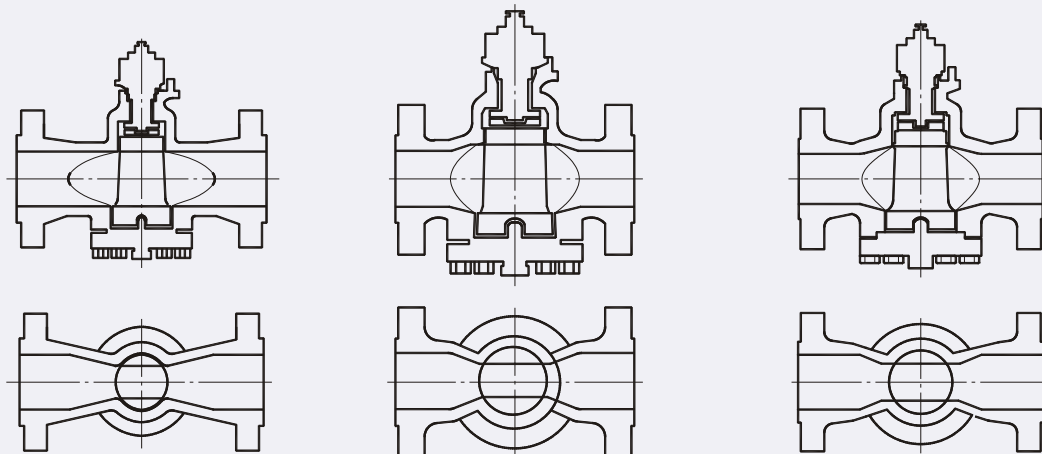


**Standard plug valves
With straight bore**

Short Pattern: The face-to-face dimensions of these plug valves equal to that of the gate valves designed according to ASME B16.10 CLASS125、150、250 and 300 Lb (NPS1 1/2~NPS12). In order to obtain correspondingly short face-to-face dimension, the diameter of the plug is reduced one with a small cone of rectangle.

Regular Pattern: These valves are designed according to Britain and American standards to ensure farthest inter-replacing of valves among different types of valves and different types of connection ends. There is a rectangle figure of the plug bore being with a tiny cone figure on its side face, where there is an area bigger than that of Venturi. The conversion from body end to the rectangle end-face is even, it will not appear the condition of sudden change of shape or part. Otherwise, the flow medium in the pipeline would generate sudden shake-up of flow velocity or direction. The flow bore area of the regular pattern plug valves is bigger than that of Venturi (reduced bore).

Standard Camber Plug Valves with Straight Bore: The diameter of these valves equals to the inside diameter of pipes. The design of the plug valve is mainly for the purpose that some scraping tools or other tools can get through the valve body, and that the valve can be used for some special occasions. The face-to-face dimensions of the plug valve are longer than that of standard pattern one, however, meeting the requirement of Britain and American standards. These plug valves are especially suitable for use in the slurry occasions of sewage disposal factory and for the branches of steam tubes.



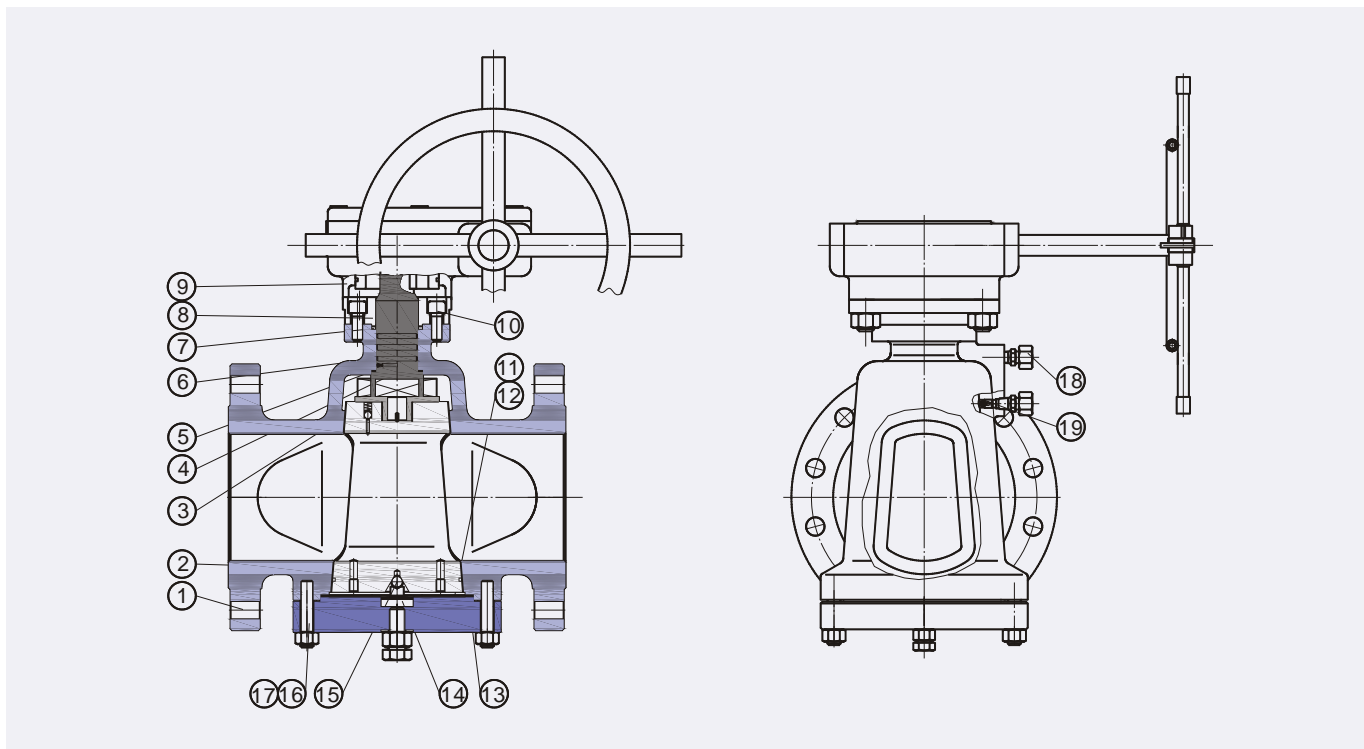
Regular Pattern

Short Pattern

**Standard Camber Plug Valves
with Straight Bore**

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

Structure Drawing



Materials list

No.	Part Name	Materials	Optional Materials
1	Body	Cast Steel	SS, Monel
2	Disc	SS	SS, Monel
3	Reach	Carbon Steel	SS, Monel
4	Stem	SS	316, Monel
5	Stop Gasket	Graphite	
6	" O " Ring	Viton	
7	Seal Ring	PTFE+SS	SS+ Graphite
8	Retainer Flange	Carbon Steel	SS, Monel
9	Gear driver	/	/
10	Bolt	/	SS
11	Graphite Plate	SS+ Graphite	
12	Sheet Metal	INCONEL	
13	Cover	Carbon Steel	SS, Monel
14	Cushion	SS	316, Monel
15	Ball	SS	
16	Bolt	/	SS
17	Nut	/	SS
18	Injection Valve	Carbon Steel	SS, Monel
19	Check Valve	Carbon Steel	SS, Monel

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

Description of Structure

The series of Inverted Pressure Balance Lubricated Plug Valves can be used as ideal cutting off valves in any working condition, including most critical environments, which feature very compact in design, requiring only less installation space. So, it can also be applicable in such occasions as quick action, without failure, and highly effect tightness, to be installed at any random position. The basic operation of this kind plug valve is quite convenient. The valve will open to the closing position as they turn at 90, and vise versa.

The taper degree of the plug is 1: 6, being completely assembled with valve body and of metal to metal seated structure of tightness, which is to say that the soft sealed tightness structure has not been adopted as it is easy to be damaged by the flowing medium.

The plug valve offers, as a second tightness structure, a lubricating system, i.e., as the valve operates, the special lubricant is allowed to be injected into the valve. One of the other purposes for the lubricant, except for sealing function, is to prevent trim parts from corrosion and abrasion, while reducing the operation torque of the plug valve.

The plug valve is designed based on the principle of “ pressure balance ” , which means that the plug provided is with a pressure balance hole to ensure the plug is always balanced along axis, which is used to avoid blocking of the plug. In addition, in order to reduce the operation torque of the valve, a protection layer of PTFE (or other protective measurement) is adopted in the surface of the plug. The plug and the stem are separated from each other, however, they are integrated by using a balancing ring that called general jointing flake. The stem can not be taken out at random, which can only be taken out from the bottom when the system stops for reassembly. The plug inside the valve body is adjustable by using the screw (14). The adjusting ball (15) is used to fix the plug position when the bottom screw (14) gets sealed. The whole adjustment of the plug position is realized by the soft character of two pieces of membranes.

There are bellowing sealed positions of inverted pressure balance lubricated plug valve, ① Stem top sealed, there is a sealing ring on the top of the stem, which (7) is the sealing ring made of special material, being with an embedded design. The sealing ring is renewable from outside, being used for ensuring the stem tightness under fire occasion. ② Stem sealed, the stem tightness is in general assured by the O ring of (6). ③ Bottom cover sealed, the bottom cover (13) is fixed on the valve body with bolt (16) and nut (17). Two pieces of soft board or membrane (11+12) lay at the groove place between valve body and cover. They feature mainly the function of metal to metal sealing, but the other function is to prevent the medium from leaking through the screw (14) by adjusting it.

As mentioned above, there is a lubricating system provided by the plug valve, which means that the special lubricant allowed gets into the plug valve through injection valve (18) and check valve (19). The lubricant is injected into the groove of the plug by a special lubricant spraying gun with high pressure. The said system can ensure that the whole sealing surface will get a lamellate of lubricant, which realizes the effective second class sealing.

The lever or hand wheel operation is available for the Inverted PressureBalance Lubricated Plug Valves. In addition, the necessary assembly flange and stem for fixing various kinds of actuators on the top of the valves are also available. If there has already been equipped with the assembly flange on the top of the plug valve, the lubricant injection system should be moved from the stem to the side of the valve body.

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

Structure Features

The Inverted Pressure Balance Lubricated Plug Valves are suitable for use in pipelines for various kinds of working conditions with nominal pressure of CLASS150~2500 and working temperature of -29~180°C in such industries as petroleum, chemistry, pharmacy, chemical fertilizer, and power plant etc. to turn on or cut off the flow medium of the pipelines.

The main characteristics are as below:

- 1.It is with reason in product structure, reliable in tightness, excellent in property, and beautiful in sculpt.
- 2.It is easy to operate the plug valve due to the structure of inverted pressure balance.
- 3.There has designed oil groove between valve body and sealing surface, through which the sealing lubricant can be injected into valve seat at any time by the grease injector to enhance the sealing function.
- 4.The parts material and the flange sizes can be selected in reason according to actual working conditions or customers' requirement to meet various engineering demands.

Operation

As for the simplest operation way for inverted pressure balance lubricated plug valves, it is lever operated. For the plug valve with straight bore, to rotate it by 90° can realize turning on and cutting off the plug valve. For the 3-way plug valve, it would be performed at different moving degrees among 90° -180° -270° -360° . The lever can be assembled on the valve at different 8 positions, as it can save as much as possible the assembly space. In addition. In general, the lever is relatively used for small sized plug valve, of which the details would be indicated in the drawings with outline sizes.

The gear box includes waterproof type of shell with a hand-wheel that is to be vertically assembled to the side of the plug valve. The worm and worm wheel are embedded in the bearing made of bronze, their load in axis is absorbed by the ball bearing. The bearing and the cam are lubricated in between by using concentrated molybdenum grease to prevent from generating high temperature. The gear box actuator can match other actuators as electric operator, pneumatic actuator, or hydro actuator.

Technical Performance Specification

Design Standard		GB/T19672				API599, API 6D, BS5353					
Pressure-Temperature Rating		GB/T12224				API609, ASME B16.34					
Face-Face		GB/T12221				API609, ISO5752, ASME B16.10, API 6D					
Flange Ends		GB/T9113、JB/T79				ASME B16.5\B16.47					
Inspection &Test		JB/T9092、GB/T13927、GB/T19672				API598, API 6D					
Norminal Pressure		PN				CLASS					
		1.6	2.5	4.0	6.3	150	300	600	900	1500	2500
Test Pressure	Shell Test	2.4	3.75	6.0	9.45	2.93	7.58	15.3	23.0	38.3	63.8
	High Pressure Seal Teat	1.76	2.75	4.4	6.93	2.07	5.52	11.03	16.8	28.0	46.8
	Low Pressure Seal Teat	0.6				0.6					
Applicable Temperature		Different raw material for different work temperatures									
Applicable Medium		Water、oil、gas and other causticity medium (Different raw materials for different medium)									

Note: Pressure testing value in the above listed will be determined based upon the pressure temperature rating for WCB.

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

Stem Torques (NM)of Plug Valve

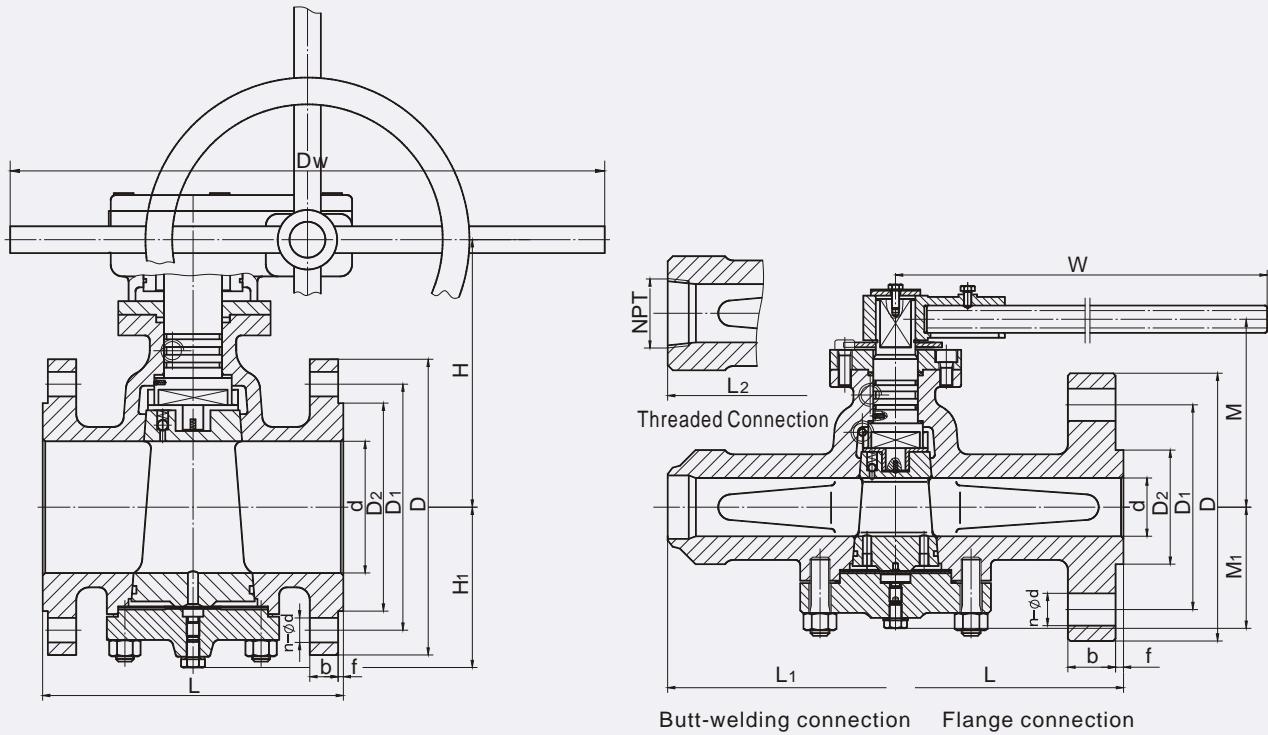
Product Range

Size	Class 150			Class 300			Class 600		Class 900		Class 1500		Class 2500	Size
	Short	Regular	Venturi	Short	Regular	Venturi	Regular	Venturi	Regular	Venturi	Regular	Venturi	Regular	
15	/	/	/	/	/	/	47	/	54	/	54	/	244	1/2
20	/	/	/	/	/	/	61	/	69	/	74	/	515	3/4
25	/	/	/	/	/	/	81	/	96	/	101	/	691	1
40	/	/	/	81	/	/	149	/	157	/	162	/	976	1 1/2
50	67	67	/	94	/	/	189	/	212	/	216	/	2400	2
80	162	162	/	230	/	/	366	/	474	/	542	/	6640	3
100	237	237	/	338	/	/	677	/	705	/	745	/	△	4
150	296	570	/	/	610	423	1080	677	1490	/	2400	1090	△	6
200	949	1360	/	/	1220	610	2030	1080	2710	/	/	3250	/	8
250	1360	1650	/	/	1900	1220	2580	2030	4730	/	/	△	/	10
300	1900	2510	/	/	2200	2440	4070	2980	△	4390	/	△	/	12
350	/	/	1900	/	/	3120	/	4070	/	△	/	△	/	14
400	/	/	2510	/	/	3800	/	5420	/	5400	/	△	/	16
450	/	/	2710	/	/	4610	/	6620	/	△	/	△	/	18
500	/	/	2850	/	/	5420	/	9450	/	8100	/	/	/	20
600	/	/	3660	/	/	6750	/	12150	/	△	/	/	/	24
650	/	/	/	/	/	/	/	△	/	/	/	/	/	26
750	/	/	△	/	/	△	/	△	/	/	/	/	/	30
900	/	/	△	/	/	△	/	△	/	/	/	/	/	36

Note: Safety factor should be taken into consideration when selecting actuators;
 △ means that customers can consult with interrelated department of our company;
 / Means that there is no answer.

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

CLASS150



Main Outline Sizes

Nominal Diameter		Standard Value									Reference Value					
DN (mm)	NPS (inch)	L	L ₁	L ₂	D	D ₁	D ₂	f	b	Z-d	W	M	Dw	H	W(kg)	
		CLASS150									Short Pattern				RF	Th
15	1/2	108	/	89	89	60.5	35	2	11	4-φ 15	400	180	/	/	10	2.5
20	3/4	117	/	133	98	70	43	2	11	4-φ 15	400	180	/	/	12	6.8
25	1	127	/	133	108	79.5	51	2	12	4-φ 15	500	185	/	/	14	6.8
32	1 1/4	140	/	/	120	89	64	2	13	4-φ 15	500	200	/	/	17	/
40	1 1/2	165	/	229	127	98.5	73	2	15	4-φ 15	600	210	/	/	19	22
50	2	178	267	229	152	120.5	92	2	16	4-φ 19	600	215	/	/	21	24.5
65	2 1/2	190	305	/	178	139.5	105	2	18	4-φ 19	820	250	/	/	29	/
80	3	203	330	/	190	152.5	127	2	19	4-φ 19	820	270	/	/	33	/
100	4	229	356	/	229	190.5	157	2	24	8-φ 19	/	/	300	300	48	/
125	5	254	/	/	255	216	186	2	24	8-φ 22	/	/	300	340	75	/
150	6	267	457	/	279	241.5	216	2	26	8-φ 22	/	/	320	365	98	/
200	8	292	521	/	345	298.5	270	2	29	8-φ 22	/	/	320	400	158	/
250	10	330	559	/	405	362	324	2	31	12-φ 25	/	/	350	450	171	/
300	12	356	635	/	485	432	381	2	32	12-φ 25	/	/	380	510	245	/
350	14	381	/	/	535	476	413	2	35	12-φ 29	/	/	380	590	370	/

Note: When NPS ≥ 4" , being for gear actuator sizes. Screw thread connection being regular pattern.

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

Nominal Diameter		Standard Value								Reference Value				
DN (mm)	NPS (inch)	L	L ₁	D	D ₁	D ₂	f	b	Z-d	W	M	Dw	H	W(kg)
		CLASS150 Regular Pattern										RF		
50	2	203	/	152	120.5	92	2	16	4-φ 19	600	215	/	/	22
80	3	241	/	190	152.5	127	2	19	4-φ 19	820	270	/	/	38
100	4	305	/	229	190.5	157	2	24	8-φ 19	1050	287	/	/	60
150	6	394	/	279	241.5	216	2	26	8-φ 22	/	/	350	495	92
200	8	457	/	345	298.5	270	2	29	8-φ 22	/	/	400	685	182
250	10	533	/	405	362	324	2	31	12-φ 25	/	/	450	685	282
300	12	610	/	485	432	381	2	32	12-φ 25	/	/	450	913	403

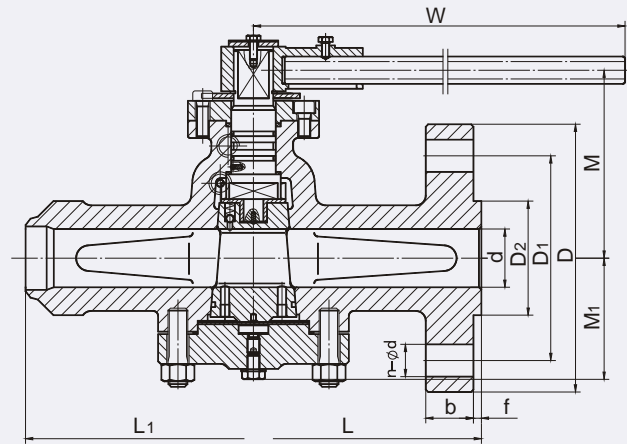
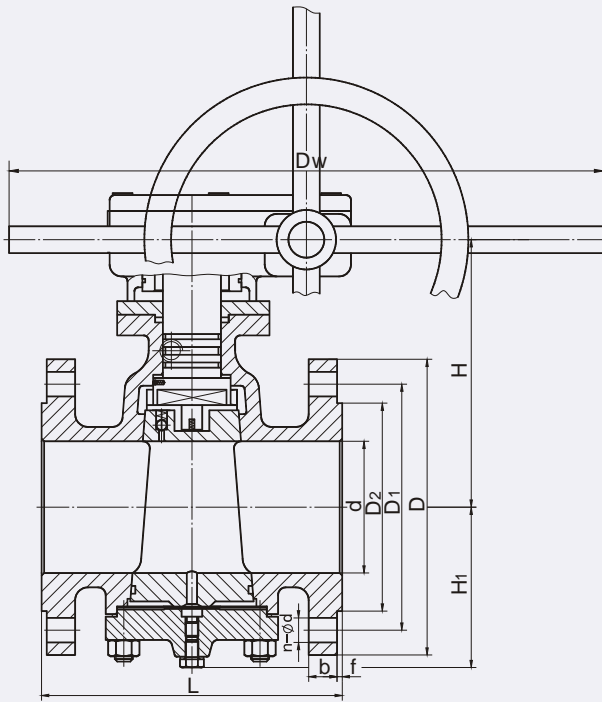
Note: When NPS>4" , being for gear actuator sizes.

Nominal Diameter		Standard Value									Reference Value		
DN (mm)	NPS (inch)	L	L ₁	LRJ	D	D ₁	D ₂	f	b	Z-d	Dw	H	W(kg)
		CLASS150 Venturi Pattern										RF	
250	10	533	533	546	405	362	324	2	31	12-φ 25	600	408	350
300	12	610	610	622	485	432	381	2	32	12-φ 25	800	457	475
350	14	686	686	699	535	476	413	2	35	12-φ 29	800	498	670
400	16	762	762	775	600	540	470	2	37	16-φ 29	800	525	785
450	18	864	864	876	635	578	533	2	40	16-φ 32	560	565	885
500	20	914	914	927	700	635	584	2	43	20-φ 32	560	590	966
600	24	1067	1067	1080	815	749.5	692	2	48	20-φ 35	560	635	1856
750	30	1295	1295	/	984	914.4	857	2	75	28-φ 35	800	/	/
900	36	1600	1600	/	1168	1086	1022	2	90	32-φ 41	800	/	/

Note: NPS>24" Flanges diameter and thickness comply with MSS SP-44.

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

CLASS300



Butt-welding connection Flange connection

Main Outline Sizes

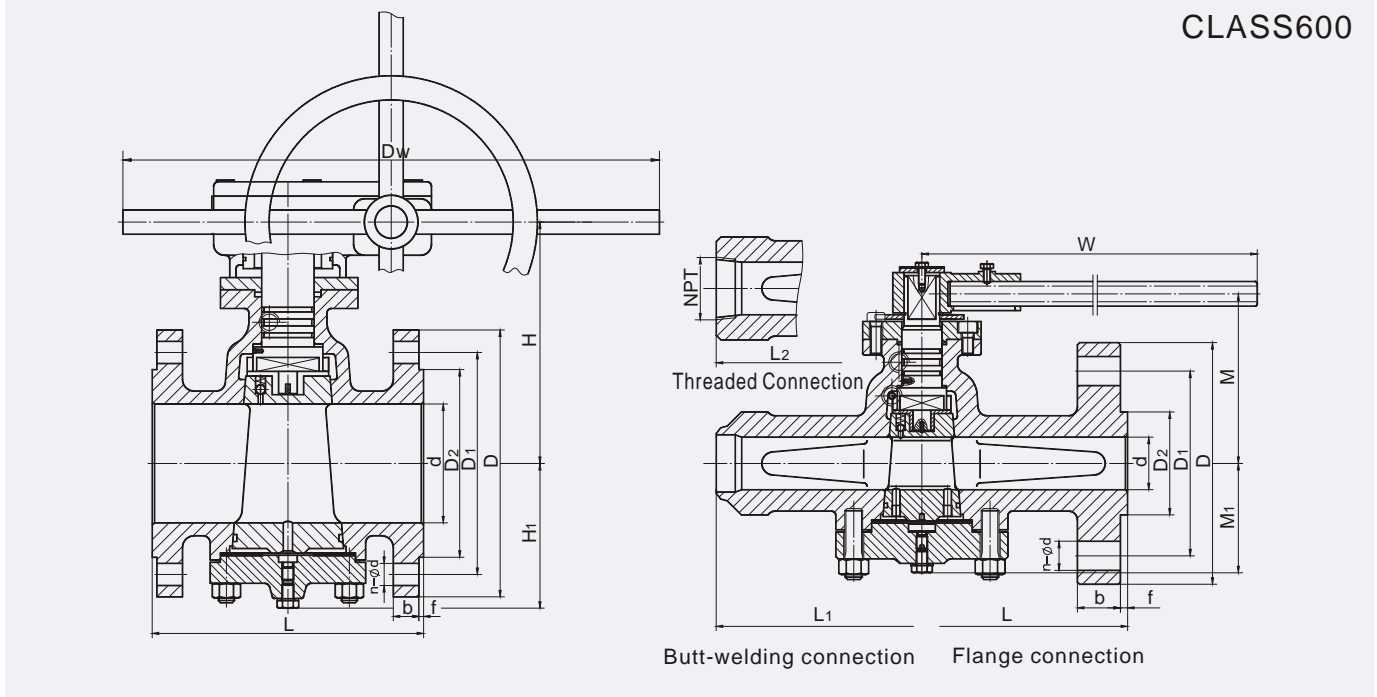
Nominal Diameter		Standard Value							Reference Value		
DN (mm)	NPS (inch)	L	D	D ₁	D ₂	f	b	Z-φ d	W	M	W(kg)
		CLASS300							Short Pattern		
40	1 1/2	190	156	114.5	73	2	21	4-φ 22	610	169	16
50	2	216	165	127	92	2	23	8-φ 19	610	178	21
80	3	283	210	168.5	127	2	29	8-φ 22	860	219	38
100	4	305	254	200	157	2	32	8-φ 22	940	235	60

Nominal Diameter		Standard Value							Reference Value		
DN (mm)	NPS (inch)	L	D	D ₁	D ₂	f	b	Z-φ d	Dw	H	W(kg)
		CLASS300							Short Pattern		
150	6	403	318	270	216	2	37	12-φ 22	560	578	178
200	8	502	381	330	270	2	42	12-φ 25	560	624	276
250	10	568	445	387.5	324	2	48	16-φ 29	610	738	356
300	12	711	521	451	381	2	51	16-φ 32	610	761	508

Nominal Diameter		Standard Value									Reference Value		
DN (mm)	NPS (inch)	L	L ₁	LRJ	D	D ₁	D ₂	f	b	Z-φ d	Dw	H	W(kg)
		CLASS300									Venturi Pattern		
150	6	403	457	457	318	270	216	2	37	12-φ 22	500	509	121
200	8	419	521	521	381	330	270	2	42	12-φ 25	500	579	192
250	10	457	559	559	445	387.5	324	2	48	16-φ 29	5000	614	281
300	12	502	635	635	521	451	381	2	51	16-φ 32	750	685	508
350	14	762	762	762	584	514.5	413	2	54	20-φ 32	750	720	796
400	16	838	838	838	650	571.5	470	2	58	20-φ 35	560	755	902
450	18	914	914	914	710	628.5	533	2	61	24-φ 35	560	765	1097
500	20	991	991	991	775	686	584	2	64	24-φ 35	800	940	1576
600	24	1143	1143	1143	915	813	692	2	70	24-φ 41	800	970	2060
750	30	1397	1397	1397	1092	997	857	2	92	28-φ 48	800	1080	/
900	36	1727	1727	1727	1270	1168.4	1022	2	105	32-φ 54	800	1270	/

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

CLASS600



Main Outline Sizes

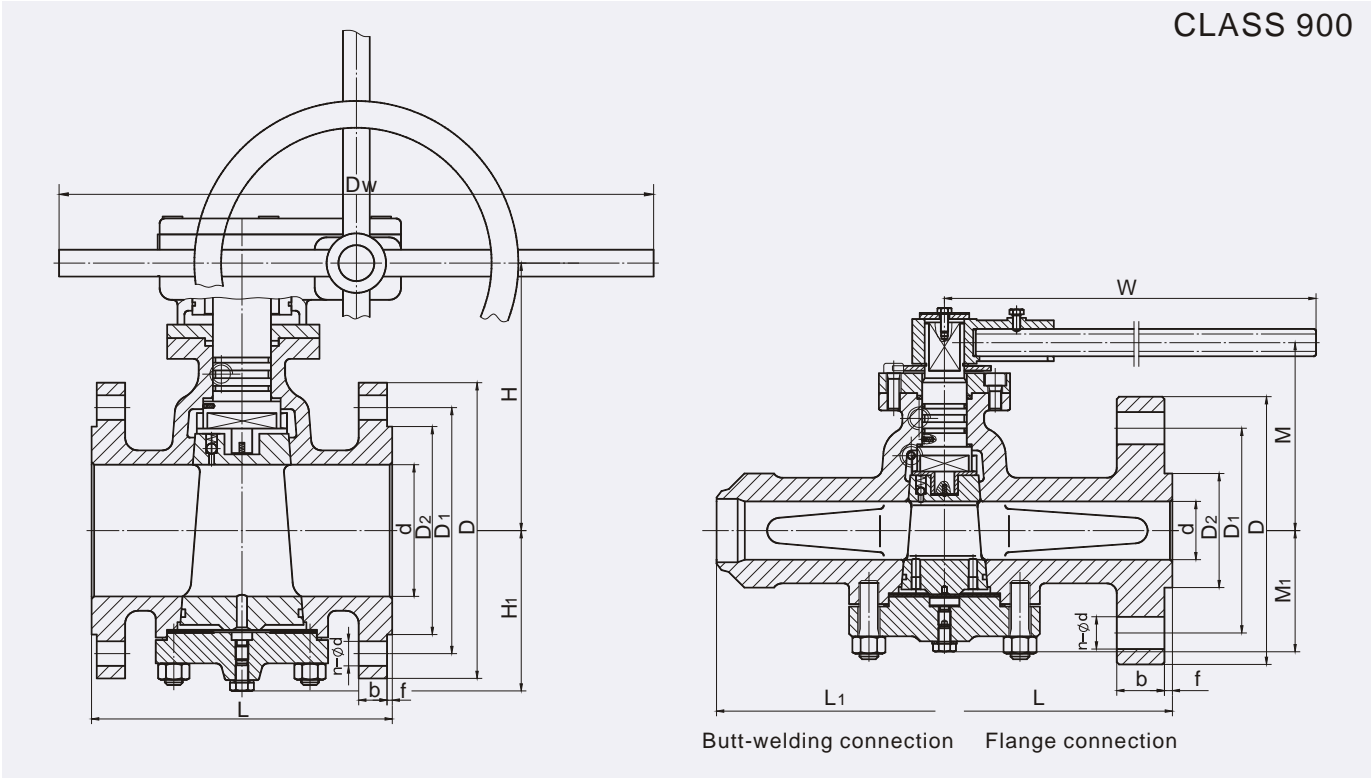
Nominal Diameter		Standard Value									Reference Value			
DN (mm)	NPS (inch)	L	L2	LRJ	D	D1	D2	f	b	Z-φ d	W	M	W(kg)	
CLASS600 Regular Pattern											RF	Th		
15	1/2	165	89	165	95	66.7	35	6.4	15	4-φ 16	400	104	5.3	2.5
20	3/4	190	133	190	120	82.5	43	6.4	16	4-φ 19	450	127	9	6.8
25	1	216	133	216	124	89	51	6.4	18	4-φ 19	500	127	10	6.8
40	1 1/2	241	229	241	156	114.5	73	6.4	23	4-φ 22	600	176	22	10
50	2	292	229	295	165	127	92	6.4	26	8-φ 19	600	196	24.5	21

Nominal Diameter		Standard Value									Reference Value					
DN (mm)	NPS (inch)	L	L1	LRJ	D	D1	D2	f	b	Z-φ d	W	M	Dw	H	W(kg)	
CLASS600 Regular Pattern											RF	BW				
50	2	292	292	295	165	127	92	6.4	26	8-φ 19	600	196	/	/	24.5	21
80	3	356	356	359	210	168	127	6.4	32	8-φ 22	800	217	/	/	46	41
100	4	432	432	435	273	216	157	6.4	38	8-φ 25	950	232	/	/	85	51
150	6	559	559	562	355	292	216	6.4	48	12-φ 29	/	/	560	568	254	168
200	8	660	660	664	420	349.2	270	6.4	56	12-φ 32	/	/	560	704	406	284
250	10	787	787	791	510	431.8	324	6.4	64	16-φ 35	/	/	650	745	584	412
300	12	838	838	841	560	489	381	6.4	67	20-φ 35	/	/	650	775	620	486

Nominal Diameter		Standard Value									Reference Value		
DN (mm)	NPS (inch)	L	L1	LRJ	D	D1	D2	f	b	Z-φ d	Dw	H	W(kg)
CLASS600 Venturi Pattern											RF		
150	6	559	559	562	355	292	216	6.4	48	12-φ 29	560	568	150
200	8	660	660	664	420	349.2	270	6.4	56	12-φ 32	560	704	304
250	10	787	787	791	510	431.8	324	6.4	64	16-φ 35	650	745	437
300	12	838	838	841	560	489	381	6.4	67	20-φ 35	650	775	616
350	14	889	889	892	605	527	413	6.4	70	20-φ 39	800	825	864
400	16	991	991	994	685	603.2	470	6.4	77	20-φ 42	800	845	1168
450	18	1092	1092	1095	745	654	533	6.4	83	20-φ 45	800	870	1653
500	20	1194	1194	1200	815	723.9	584	6.4	89	24-φ 45	800	900	1850
600	24	1397	1397	1407	940	838.2	692	6.4	102	24-φ 51	650	945	2161
650	26	1448	1448	1460	1016	914.4	749	6.4	108	28-φ 51	650	978	/
750	30	1651	1651	1664	1130	1022.4	857	6.4	114	28-φ 55	650	1022	/
900	36	2083	2083	2098	1314	1194	1022	6.4	124	28-φ 67	650	1055	/

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

CLASS 900



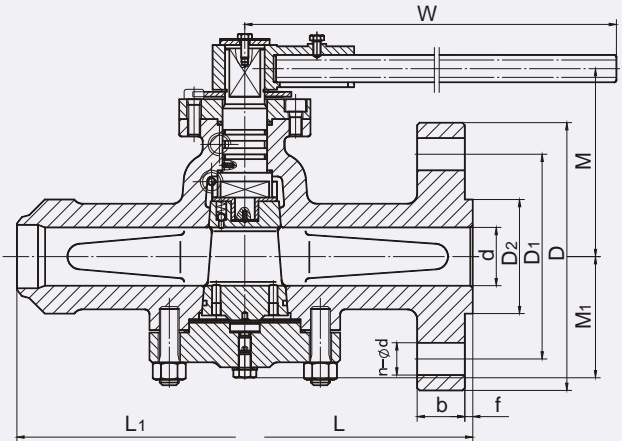
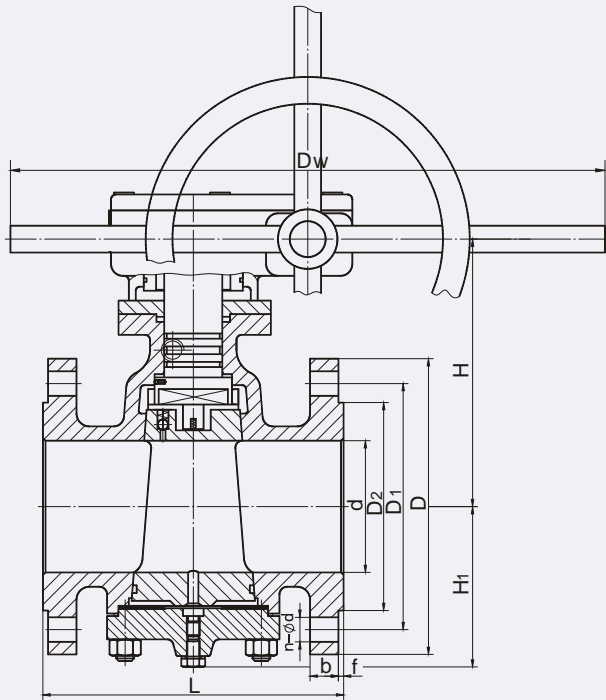
Main Outline Sizes

Nominal Diameter		Standard Value								Reference Value		
DN (mm)	NPS (inch)	L	LRJ	D	D1	D2	f	b	Z-φ d	Dw	H	W(kg)
CLASS900 Regular Pattern												RF
80	3	381	384	240	190.5	127	6.4	38.5	8-φ 26	650	217	114
100	4	457	460	290	235	157	6.4	44.5	8-φ 32	650	232	125
150	6	610	613	380	317.5	216	6.4	56	12-φ 32	800	595	264
200	8	737	740	470	393.7	270	6.4	63.5	12-φ 39	800	657	591
250	10	838	841	545	469.9	324	6.4	70	16-φ 39	800	725	662
300	12	965	968	610	533.4	381	6.4	79.5	20-φ 39	800	775	/

Nominal Diameter		Standard Value								Reference Value		
DN (mm)	NPS (inch)	L	LRJ	D	D1	D2	f	b	Z-φ d	Dw	H	W(kg)
CLASS900 Regular Pattern												RF
300	12	965	968	610	533.4	381	6.4	79.5	20-φ 39	650	775	/
350	14	1029	1038	640	558.8	413	6.4	86	20-φ 42	800	825	/
400	16	1130	1140	705	616	470	6.4	89	20-φ 45	800	845	/
450	18	1219	1232	785	685.8	533	6.4	102	20-φ 51	800	870	/
500	20	1321	1334	855	749.3	584	6.4	108	20-φ 55	800	900	/
600	24	1549	1568	1040	901.7	692	6.4	140	20-φ 68	650	945	/

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

CLASS 1500



Butt-welding connection Flange connection

Main Outline Sizes

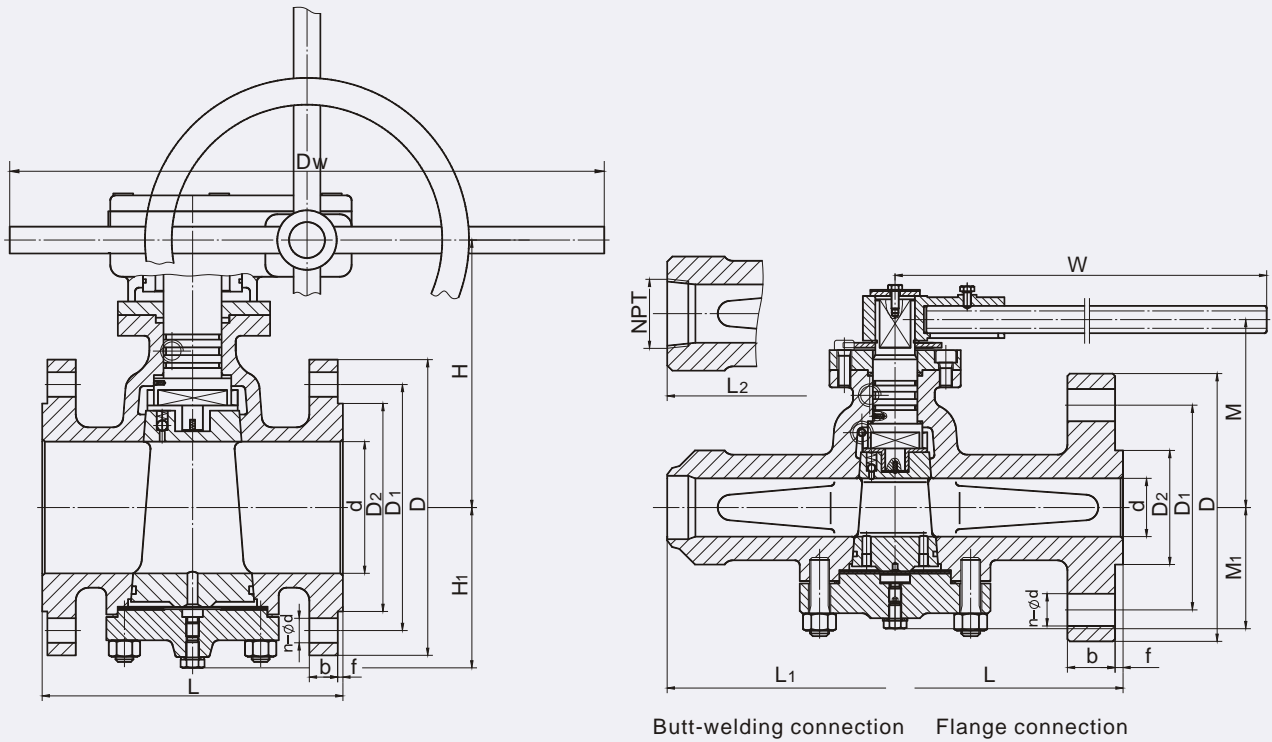
Nominal Diameter		Standard Value								Reference Value				
DN (mm)	NPS (inch)	L	LRJ	D	D ₁	D ₂	f	b	Z-φ d	W	M	Dw	H	W(kg)
CLASS1500 Regular Pattern														
15	1/2	216	216	120	82.6	35	6.4	22.5	4-φ 22	500	104	/	/	4.5
20	3/4	229	229	130	88.9	43	6.4	25.5	4-φ 22	500	127	/	/	8.5
25	1	254	254	150	101.6	51	6.4	29	4-φ 26	600	127	/	/	13.5
40	1 1/2	305	305	180	123.8	73	6.4	32	4-φ 29	600	164	/	/	16
50	2	368	372	215	165.1	92	6.4	38.5	8-φ 26	800	174	/	/	68
80	3	470	473	265	203.2	127	6.4	48	8-φ 32	800	212	/	/	118
100	4	546	549	310	241.3	157	6.4	54	8-φ 35	/	/	560	508	161
150	6	705	711	395	317.5	216	6.4	83	12-φ 39	/	/	560	556	/

Note: When NPS>4" , being for gear actuator sizes.

Nominal Diameter		Standard Value								Reference Value		
DN (mm)	NPS (inch)	L	LRJ	D	D ₁	D ₂	f	b	Z-φ d	Dw	H	W(kg)
CLASS1500 Venturi Pattern												
150	6	705	711	395	317.5	216	6.4	83	12-φ 39	650	653	257
200	8	832	841	485	393.7	270	6.4	92	12-φ 45	650	720	521
250	10	991	1000	585	482.6	324	6.4	108	12-φ 51	650	755	/
300	12	1130	1146	675	571.5	381	6.4	124	16-φ 55	800	775	/
350	14	1257	1276	750	635	413	6.4	133.5	16-φ 60	800	825	/
400	16	1384	1407	825	704.8	470	6.4	146.5	16-φ 68	800	845	/
450	18	1537	1559	915	774.7	533	6.4	162	16-φ 74	800	870	/

INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVE

CLASS 2500



Main Outline Sizes

Nominal Diameter		Standard Value									Reference Value				
DN (mm)	NPS (inch)	L	L ₂	LRJ	D	D ₁	D ₂	f	b	Z-φ d	W	M	Dw	H	W(kg)
CLASS2500 Regular Pattern															RF
15	1/2	264	89	264	135	88.9	35	6.4	30.5	4-φ 22	600	104	/	/	4.5
20	3/4	273	133	273	140	95.2	43	6.4	32	4-φ 22	600	127	/	/	8.5
25	1	308	133	308	160	108	51	6.4	35	4-φ 26	800	127	/	/	13.5
40	1 1/2	384	229	387	205	146	73	6.4	44.5	4-φ 32	800	187	/	/	16
50	2	451	229	454	235	171.4	92	6.4	51	8-φ 29	800	219	/	/	68
80	3	578	/	584	305	228.6	127	6.4	67	8-φ 35	1000	253	/	/	118
100	4	673	/	683	355	273	157	6.4	76.5	8-φ 42	/	/	800	508	161
150	6	914	/	927	485	368.3	216	6.4	108	8-φ 55	/	/	800	556	/
200	8	1022	/	1038	550	438.2	270	6.4	127	12-φ 55	/	/	800	605	/
250	10	1270	/	1292	675	593.8	324	6.4	165.5	12-φ 67	/	/	800	712	/
300	12	1422	/	1445	760	619.1	381	6.4	184.5	12-φ 74	/	/	800	836	/