

# Non-Lubricated TEFLON SLEEVED PLUG VALVES

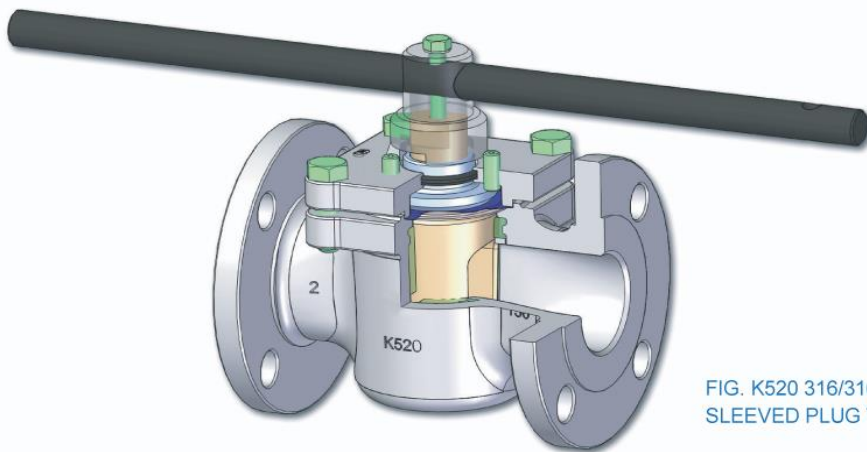


FIG. K520 316/316  
SLEEVED PLUG VALVES

## **TEFLON SLEEVED PLUG VALVE is characteristic**

### **1. Completely No Leakage.**

- ① As tapered Plug and Teflon Sleeve contact face to face gives absolutely no leakage.
- ② Steam Seal Structure has been designed to complement the controversial point of other plug valves.
- ③ As Steam Seal is not exposed externally it doesn't rust and able to increase life span. (Weather Proof Type)

### **2. No Dead Space**

No dead space in the fluid way can allow full control of open/close function and gives semi-permanent life span.

### **3. Few Maintenance and Repair needed**

- ① No dead space doesn't allow fluid to be clogged up.
- ② Re-adjusting of Seal Pressure by using Adjusting-Bolt After abrasion of Teflon Sleeve gives semi-permanent sealing function.
- ③ Metal lib around Port has Self-Cleaning function to control steamy and solid material liquid.
- ④ Top Entry type can allow to be repaired on line.

## **MATERIAL**

- BODY / PLUG : ASTM A216 WCB, WCC, ASTM A351 CF8M, CF3M, CF8, CF3, CN7M, CD4M  
: ASTM A352 LCB
- SLEEVE : PTFE, RTFE, TFM 4215

## **PRESSURE & SIZE RANGE**

- ANSI 150LB 1/2" ~ 24"
- ANSI 300LB 1/2" ~ 24"
- ANSI 600LB 1/2" ~ 12"
- JIS 10K, 20K, 40K
- DIN PN10, PN16, PN25, PN40

**Main Fluid** : Toxic, Flammable, Explosive Fluid Line and No-leakage required Line

# Non-Lubricated TEFLON SLEEVED PLUG VALVES



***Design more economical, flexible, and compact fluid handling systems.***

Bi-directional flow, simple actuation, lightweight, compact design, and multiport configurations all facilitate improved system design.

## ***Superior, Longer-lasting In-Line Sealing***

The inert PTFE sleeve completely surrounds the plug. The sleeve provides a large, circumferential sealing surface from port to port. Open, closed, or rotating, the sealing is assured. No ball or gate valve can match this sealing power.

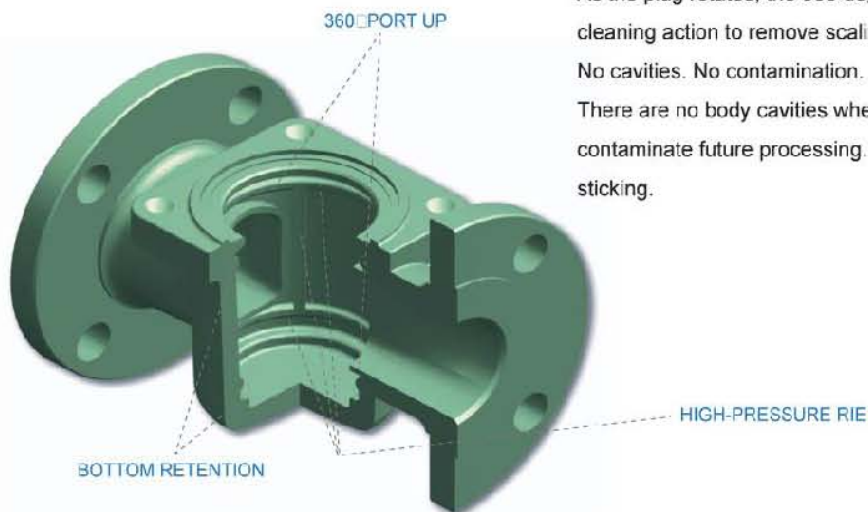


## ***Secure sealing with no cold-flow, deformation***

blow-out, or rotating of the sleeve  
The sleeve is securely nestled in the valve body. High-pressure ribs, top and bottom retention, and 360 degree port lips all assure sleeve containment.

## ***No seizing. No sticking***

As the plug rotates, the 360 degree lips provide a self cleaning action to remove scaling and adhering media. No cavities. No contamination. There are no body cavities where flow media can accumulate and contaminate future processing. The cavity-free design also prevents sticking.



## Non-Lubricated

# TOP SEAL STRUCTURE OF TEFLON SLEEVED PLUG VALVE

### WEATHER PROOF TYPE

WEATHER PROOF O-RING WILL PREVENT ANY PENETRATION OF RAIN OR FLUID FROM OUTSIDE OF VALVE AND IT OCCURS NO OXIDIZATION INSIDE OF VALVE..

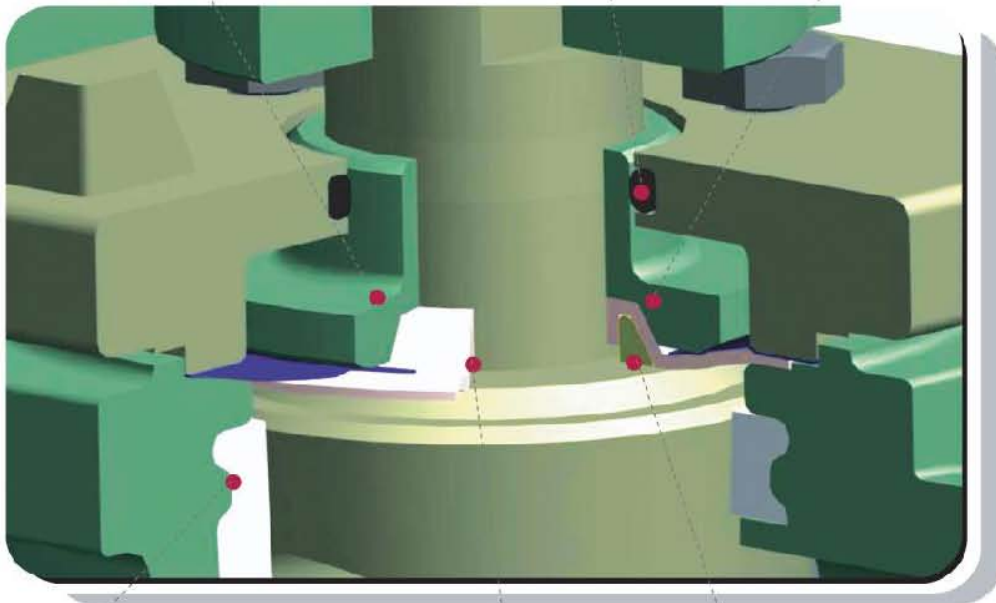
### THE ANTISTATIC THRUST COLLAR

3-POINT STANDED THRUST COLLAR HOLDS THE STEM TIGHTLY AND PUSHES THE DIAPHRAM WITH DEFINED PRESSURE.

HOLD THE STEM TIGHTLY AND EXTRACTS ANY STATIC ELECTRICITY WHICH PLACES INSIDE THE VALVE.

### THE FOURTHLY SEAL

SPECIALLY DESIGNED LIP STRUCTURE OF TEFLON DIAPHRAGM WILL PREVENT ANY LEAKAGE FROM THE TOP OF PLUG



### THE PRIMARY SEAL

THE TOUCHED FACE BETWEEN TEFLON SLEEVE AND PLUG WILL NOT ALLOW ANY LEAKAGE OF FLOW MEDIA.

### THE TERTIARY SEAL

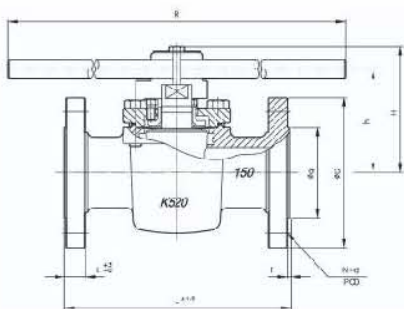
RTFE TEFLON WEDGE RING AND PLUG ARE TOUCHED TIGHTLY .

### THE SECONDARY SEAL

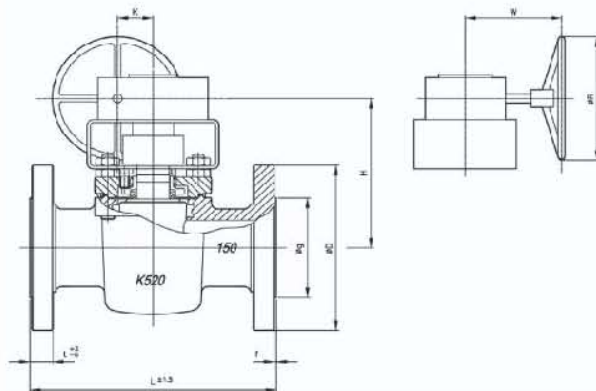
SPECIALLY DESIGNED LIP STRUCTURE OF TEFLON DIAPHRAGM WILL HOLD THE STEM MORE TIGHTLY WITH ANY LEAKED GAS OR FLUID FROM THE TOP OF PLUG.

# Teflon Sleeved Plug Valves

## K520 Flanged Ends ANSI 150# Dimension Chart



1/2" THRU 4"



4" & 6" OVER

DIMENSIONS

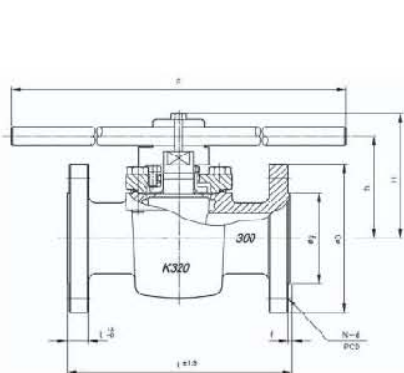
UNIT : MM

NOMINAL SIZE		L	END FLANGES							h	H	R	K	W	OPERATOR	REMARK
			D	g	t	f	BOLT HOLE									
IN	MM						PCD	N	d							
1/2	15	108	89	35	9.7	1.6	60.5	4	16	80	-	180	-	-	WITH WRENCH	
3/4	20	117	98	43	10.4	1.6	70.0	4	16	80	-	180	-	-		
1	25	127	108	51	11.2	1.6	79.5	4	16	75	96	222	-	-		
1.1/2	40	165	127	73	14.2	1.6	98.5	4	16	91	116	320	-	-		
2	50	178	152	92	15.8	1.6	120.5	4	19	106	130	460	-	-		
2.1/2	65	190	170	105	17.5	1.6	139.5	4	19	121	145	600	-	-		
3	80	203	190	127	19.1	1.6	152.5	4	19	121	145	800	-	-		
4	100	229	229	157	23.9	1.6	190.5	8	19	150	178	750	-	-		
4	100	229	229	157	23.9	1.6	190.5	8	19	-	233	250	53	177	WITH WORM GEAR	
6	150	267	279	216	25.4	1.6	241.5	8	22	-	260	300	62.5	228		
8	200	292	343	270	28.6	1.6	298.5	8	22	-	343	300	62.5	228		
10	250	330	406	324	30.2	1.6	352.0	12	25	-	374	500	91.5	297		
12	300	356	483	381	31.8	1.6	432.0	12	25	-	464	560	113	330		
14	350	381	533	413	35.1	1.6	476.0	12	29	-	575	630	153	370		
16	400	762	597	470	36.6	1.6	539.0	16	29	-	615	560	113	360		
18	450	864	635	533	39.7	1.6	578.0	16	32	-	725	630	153	420		
20	500	914	698	584	42.9	1.6	635.0	20	32	-	829	800	235	552		
24	600	1037	813	692	52.4	1.6	749.5	20	35	-	885	900	281	602		

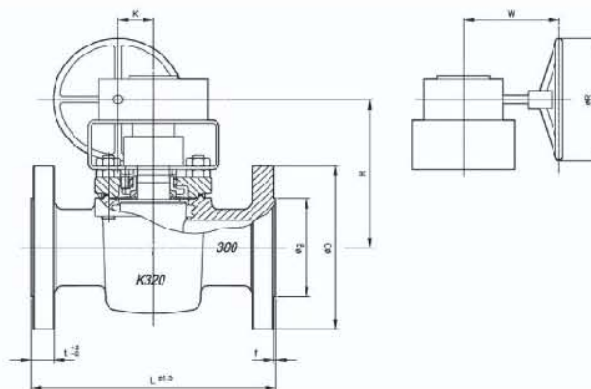


# Teflon Sleeved Plug Valves

## K320 Flanged Ends ANSI 300# Dimension Chart



1/2" THRU 4"



4" & 6" OVER

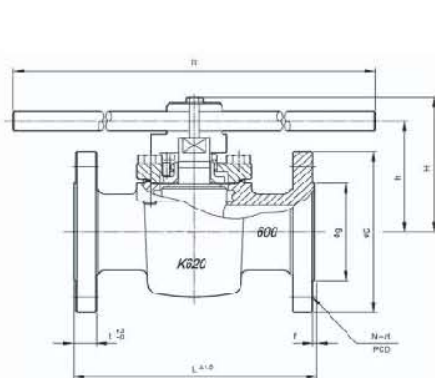
DIMENSIONS

UNIT : MM

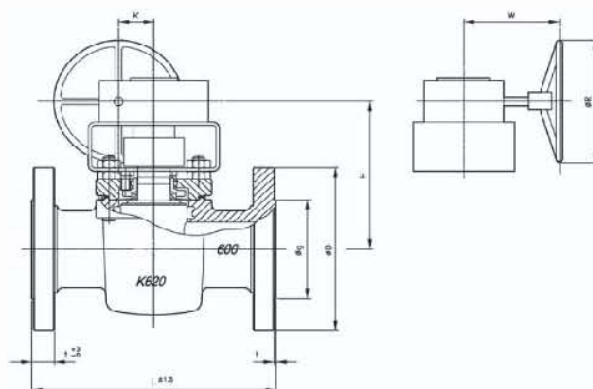
NOMINAL SIZE		L	END FLANGES							h	H	R	K	W	OPERATOR	REMARK
			D	g	t	f	BOLT HOLE									
IN	MM						PCD	N	d							
1/2	15	140	95	35	14.3	1.6	66.5	4	16	80	-	180	-	-	WITH WRENCH	
3/4	20	152	117	43	15.9	1.6	82.5	4	19	80	-	180	-	-		
1	25	165	124	51	17.5	1.6	89.0	4	19	75	96	222	-	-		
1.1/2	40	190	156	73	20.7	1.6	114.5	4	22	91	116	320	-	-		
2	50	216	165	92	22.3	1.6	127.0	8	19	105	130	460	-	-		
2.1/2	65	241	190	105	25.4	1.6	149.0	8	22	121	145	600	-	-		
3	80	283	210	127	28.6	1.6	168.0	8	22	121	145	600	-	-		
4	100	305	254	157	31.8	1.6	200.0	8	22	150	178	750	-	-		
4	100	305	254	157	31.8	1.6	200.0	8	22	-	233	250	53	177	WITH WORM GEAR	
6	150	403	318	216	36.6	1.6	270.0	12	22	-	260	300	62.5	228		
8	200	419	381	270	41.3	1.6	330.0	12	22	-	343	300	62.5	228		
10	250	457	444	324	47.7	1.6	387.5	16	29	-	374	500	91.5	297		
12	300	502	521	381	50.8	1.6	451.0	16	32	-	464	560	113	330		
14	350	562	584	413	54.0	1.6	514.5	20	32	-	575	630	153	370		
16	400	638	648	470	57.2	1.6	571.5	20	35	-	615	560	113	350		
18	450	714	711	533	60.4	1.6	628.5	24	35	-	725	630	153	420		
20	500	791	775	584	63.5	1.6	686.0	24	35	-	829	800	235	552		
24	600	1143	914	692	69.9	1.6	812.8	24	41	-	885	900	281	602		

# Teflon Sleeved Plug Valves

## K620 Flanged Ends ANSI 600# Dimension Chart



1/2" THRU 4"



4" & 6" OVER

### DIMENSIONS

UNIT : MM

NOMINAL SIZE		L	END FLANGES							h	H	R		K	W	OPERATOR	REMARK
			D	g	t	f	BOLT HOLE										
IN	MM						PCD	N	d								
1/2	15	165	95	35	20.7	6.4	66.5	4	18	80	-	180	-	-	WITH WRENCH		
3/4	20	190	117	43	22.3	6.4	82.5	4	19	80	-	180	-	-			
1	25	216	124	51	23.9	6.4	89.0	4	19	75	95	222	-	-			
1 1/2	40	241	156	73	28.7	6.4	114.5	4	22	91	116	320	-	-			
2	50	292	165	92	31.3	6.4	127.0	8	19	106	130	460	-	-			
2 1/2	65	330	190	105	35.0	6.4	149.0	8	22	121	145	600	-	-			
3	80	356	210	127	38.1	6.4	158.0	8	22	121	145	600	-	-			
4	100	432	273	157	44.5	6.4	216.0	8	25	150	178	750	-	-			
4	100	432	273	157	44.5	6.4	216.0	8	25	-	233	250	53	177	WITH WORM GEAR		
6	150	559	356	216	54.1	6.4	292.0	12	29	-	260	300	62.5	228			
8	200	660	419	270	62.0	6.4	349.0	12	32	-	343	300	62.5	228			
10	250	787	508	324	69.9	6.4	432.0	16	35	-	374	500	91.5	297			
12	300	838	559	381	73.1	6.4	439.0	20	35	-	464	560	113	330			

### NOTES

- Pressure 900# and above size 12 inch of 600# and above 900#, 1500#, 2500# should be made case by case.
- JIS standard table drawing will be released. Separately, when client required.

## Non-Lubricated

# TEFLON SLEEVED JACKETED PLUG VALVES

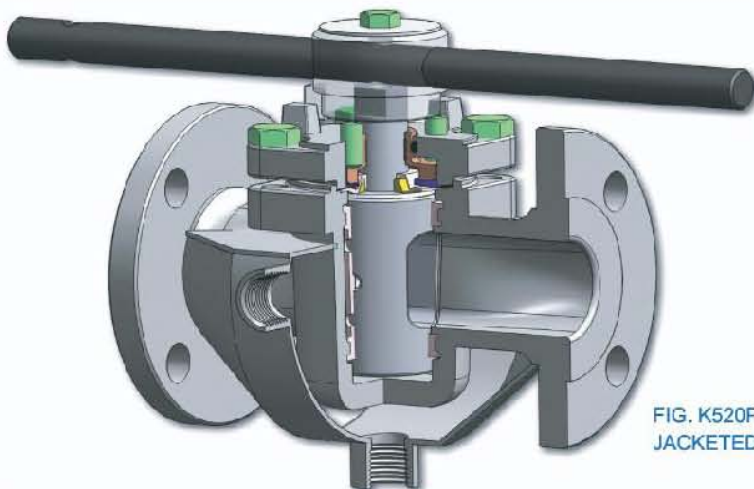


FIG. K520PJ 316/316/304  
JACKETED PLUG VALVES

1. PA, MNT, DNT, LACTAM, PET POLYMER of the line are used for the accurate control of the temperature of the flow.
2. Applicable for the heating or cooling flow in the Jacket. (MAX. 230°...~ MIN. -50°...)
3. Possible supply to valve contacts and Jacket contacts.
4. Complete body anti pressure test before the welding of the Jacket or after the welding for the guarantee of credibility.

### JACKETD PLUG VALVE is Characteristic and Merits

#### 1. Completely No Leakage.

- ① As tapered Plug and Teflon Sleeve contact face to face gives absolutely no leakage.
- ② Steam Seal Structure has been designed to complement the controversial point of other plug valves.
- ③ As Steam Seal is not exposed externally it doesn't rust and able to increase life span. (Weather Proof Type)

#### 2. No Dead Space

No dead space in the fluid way can allow full control of open/close function and gives semi-permanent life span.

#### 3. Few Maintenance and Repair needed

- ① No dead space doesn't allow fluid to be clogged up.
- ② Re-adjusting of Seal Pressure by using Adjusting-Bolt After abrasion of Teflon Sleeve gives semi-permanent sealing function.
- ③ Metal lib around Port has Self-Cleaning function to control steamy and solid material liquid.
- ④ Top Entry type can allow to be repaired on line.

### Non-Lubricated Type

**Jacket Type** : Partial Jacket, Full Jacket

### Material

- Body, Plug

WCB, LCB, 304, 304L, 316, 316L, A20, CD4M, HB, HC, MO, INCONEL, TI, ZR

**Jacket** : Carbon Steel, Stainless Steel

**Size** 1/2" ~ 24"

**Use Temperature** -50°C ~ 230°C

# Non-Lubricated MULTI PORT SLEEVED PLUG VALVES

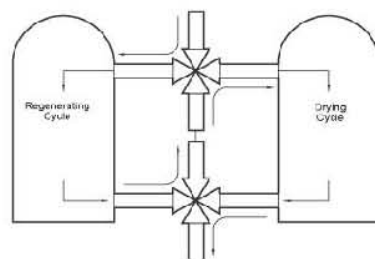
## ■ 3-Way Plug Valves



## ■ 4-Way Plug Valves



## ■ 5-Way Plug Valves



Application

FORMS	A	AX	D	C	I	T	L
FLOW							
POSITION 1 0°							
POSITION 2 90°							
POSITION 3 180°							
POSITION 4 270°							

Port Arrangement

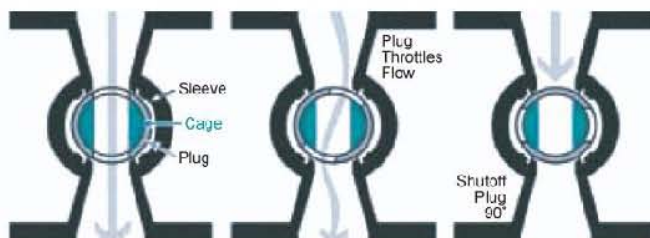


## Non-Lubricated

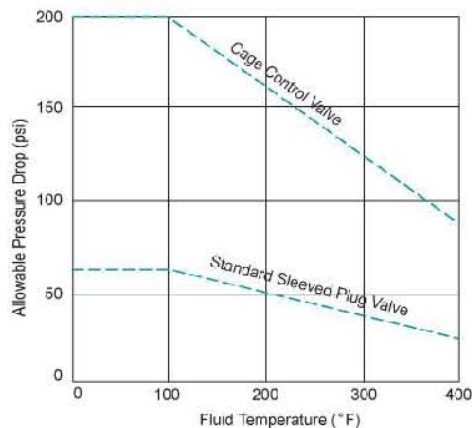
# TEFLON SLEEVED CAGE PLUG VALVES

### Features and Benefits.

1. Sleeved Plug Valves, can be furnished with caged plugs to provide soft seat protection in throttling applications and in services with high pressure drops through the valve.
2. The caged plug design allows metal-to-metal throttling while providing metal-to-soft seat shutoff for both automatic and manually controlled applications.
3. The design is simple and efficient.
4. The cage is located within the plug and is fixed in the valve body.
5. Bearings on the flow cage provide clearance between the plug and cage, allowing the plug to rotate freely.
6. The cage plug assembly protects the seat from erosion in throttling applications by shielding the soft seat from direct flow impingement at the valve ports.
7. The cage mechanism also serves to reduce turbulence and the cutting action of high velocity liquids, slurries and gaseous vapors by providing a more direct, contoured flow path through the valve.



### Cage Control Flow Characteristics Cv factors for sizing 2-way valves.



### Available Materials & Sizes

Cage Control Valves are available in sizes 1" through 12". Standard body material are WCB or CF8M while the standard plug and cage material are CD4MCU. Other sizes and materials are available upon request.

### Throttling Pressure Drop Limitations for Plug Control Valves

1. The chart above may be used for evaluating throttling pressure drop at any position for valves 4 inch and smaller. Consult the factory for 6" to 12" pressure drop information.  
(Note : In the closed position, valve can withstand full pressure drop)
2. Cage Control Valves have the same pressure-temperature rating as standard valves. Refer to the standard sleeved plug valve pressure-temperature chart for specific material rating.

# Non-Lubricated TEFLON SLEEVED CAGE PLUG VALVES

## Plug Valve Trim Options

- Reduced ports: 50%, 25%, 12-1/2%, 6-1/4%, and 3-1/8% of standard Cv
- V-ports
- Special port shapes for unusual processes are available upon request



100% Trim



50% Trim



12-1/2% Trim



Modified  
V-Ports

## ■ Typical Applications

Waste Sludge  
Raw River Water  
Alum  
Brine  
Sulfuric Acid with Zinc Powder  
45%-50% KOH in water  
Phosphoric Acid Slurry  
Borax One Supply

Trona Slurry  
Soda Ash  
Titanium Dioxide  
Scrubber Effluent  
Dilution Liquor  
Green Liquor  
Heavy Black Liquor  
Lime Mud

Digester Relief  
Caustic Soda  
Clay Slurry  
Starch Slurry  
Calcium Carbonate  
Fly Ash Slurry  
Tank Bottom Residues  
Sodium Chlorate Solution

# Non-Lubricated

## METAL SEATED PLUG VALVES

### METAL SEATED PLUG VALVES

- **Non-Lubricated Lift & Turn Type**

- **Type**

Standard Bore, Full Bore

- **Material**

Body, Plug : 304, 304L, 316, 316L, A20, CD4M, MONEL

- **Size**

1/2"~12"

- **Class**

ANSI #150, 300, 600

JIS 10K, 20K, 40K

- **Temperature**

below -50℃, 300℃ ~ 700℃

- **End Connection**

SCR(PT, NPT), BW, SW, FF, RF, LMF, T&G

- **Application for Main Fluid**

High and Low temperature like PA, RFCC, Heat Medium,

Tar, LPG or the place which needs

Zero Leakage, Zero Maintenance either

Fire Safe function required Process

- **Characteristic**

- Structure : Similar with Sleeve type Plug valves but like Lined Type

1) Operation with No Leakage

2) No Dead-Space

3) No Maintenance

- Non Lubricate type

This is Non-Lubricate type Metal seat type. Therefore it doesn't need Lubricant. Also it is able to prevent any contamination in Line which is available to manage line clearly.

Putting tapered metal plug in to Metal seat which was nestled in the body can achieve perfect sealing. Valve open is attained by lifting Tapered plug up slightly and quarter turn. Valve closure is done by reverse way with valve open which is operated by unique mechanism.

Thus operation doesn't need any force and makes open and closure available absolutely anytime.

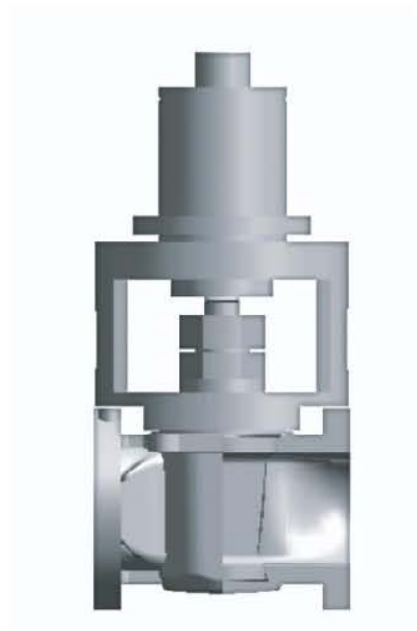


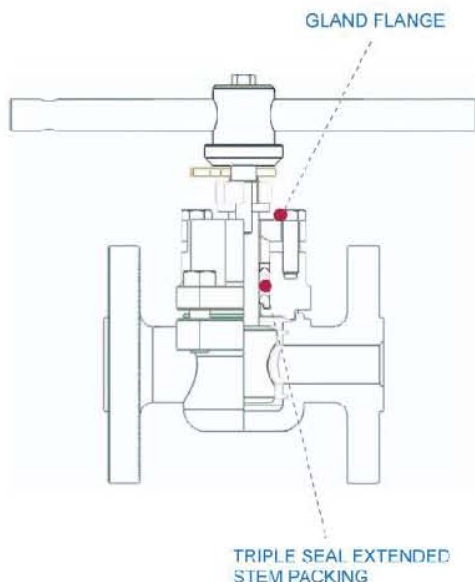
FIG. K520PJ 316/316/304  
JACKETED PLUG VALVES



# Non-Lubricated Extended Packing Plug Valves (VOC Packing Type)



FIG. K520EP WCB/316  
EXTENDED PACKING TYPE  
PLUG VALVES



## Feature

- Extended triple seal stem packing type. Easy to choose the kinds and material of packing. (Graphite, PTFE V-Packing, VOC packing etc.)
- No leakage semi-permanent structure through equally pressured Triple Seal Stem Packing by Gland flange.
- Various and steady Leaking Prevention by Steam Sealing.
- Able to be used as Live Loaded Extended Packing by using Plate Spring with an Option to use Gland Flange Bolt to do triple sealing against various temperature effectively.
- Able to prevent stern requirements for leaking prevention and control the requirements for sealing economically.

## Advantages

### 1. Completely No Leakage.

- ① As tapered Plug and Teflon Sleeve contact face to face gives absolutely no leakage.
- ② Steam Seal Structure has been designed to complement the controversial point of other plug valves.
- ③ As Steam Seal is not exposed externally it doesn't rust and able to increase life span. (Weather Proof Type)

### 2. No Dead Space

No dead space in the fluid way can allow full control of open/close function and gives semi-permanent life span.

### 3. Few Maintenance and Repair needed

- ① No dead space doesn't allow fluid to be clogged up.
- ② Re-adjusting of Seal Pressure by using Adjusting-Bolt After abrasion of Teflon Sleeve gives semi-permanent sealing function.
- ③ Metal lib around Port has Self-Cleaning function to control steamy and solid material liquid.
- ④ Top Entry type can allow to be repaired on line.



# PLUG VALVE for OPERATING TORQUE

## Teflon Sleeved Plug Valves

### 1. PURPOSE

The purpose of this procedure is to prescribe allowable Break torque, Running torque and Seating torque for On-Off operation by measuring of working rate of PTFE Sleeved Plug Valves.

### 2. SCOPE

This procedure is applicable to the Sleeved Plug Valve from 1/2" to 18 "

### 3. ALLOWABLE TORQUE

VALVE SIZE	BREAK TORQUE		RUNNING TORQUE		SEATING TORQUE		REMARKS
	IN • LBS	KG • M	IN • LBS	KG • M	IN • LBS	KG • M	
1/2"	140	1.6	70	0.8	80	0.9	
3/4"	140	1.6	70	0.8	80	0.9	
1"	400	4.6	200	2.3	250	2.9	
1.1/2"	800	9.2	400	4.6	500	5.8	
2"	1100	12.8	550	6.4	650	7.5	
3"	1200	13.8	600	6.9	700	8	
4"	2400	27.6	1200	13.8	1450	16.7	
6"	5000	57.6	2500	28.8	3000	34.5	
8"	7800	89.9	3900	44.9	4700	54.1	
10"	14400	165.8	7200	82.9	8600	98.9	
12"	21000	241.6	10500	120.8	12600	144.9	
14"	(32600)	(365.6)	(16300)	(181.3)	(19500)	(224.3)	
16"	(65300)	(725.2)	(32600)	(362.6)	(39000)	(448.9)	
18"	(130000)	(1450.1)	(65000)	(725.2)	(78000)	(879.0)	

# Non-Lubricated TEFLON LINED PLUG VALVES



FIG. K521 WCB+PFA/WCB+PFA  
TEFLON LINED PLUG VALVES

## **TEFLON SLEEVED PLUG VALVE is characteristic**

### **1. Completely No Leakage.**

- ① As tapered Plug and Teflon Sleeve contact face to face gives absolutely no leakage.
- ② Steam Seal Structure has been designed to complement the controversial point of other plug valves.
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### **3. Few Maintenance and Repair needed**

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- ② Re-adjusting of Seal Pressure by using Adjusting-Bolt After abrasion of Teflon Sleeve gives semi-permanent sealing function.
- ③ Metal lib around Port has Self-Cleaning function to control steamy and solid material liquid.
- ④ Top Entry type can allow to be repaired on line.

## **MATREAIL**

- BODY / PLUG : ASTM A216 WCB, WCC, ASTM A351 CF8M, CF3M, CF8, CF3
- LINING MAT'L : PFA

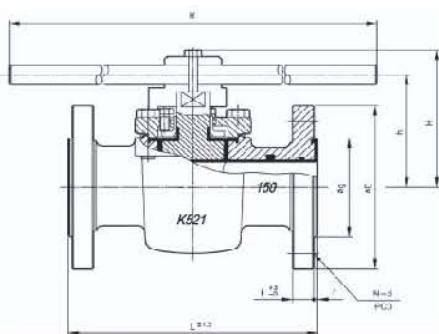
## **PRESSURE & SIZE RANGE**

- ANSI 150LB 1/2" ~ 12"
- ANSI 300LB 1/2" ~ 12"
- JIS 10K, 20K
- DIN PN10, PN16, PN25

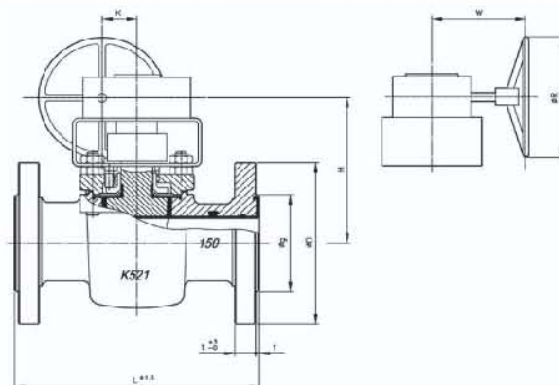
**Main Fluid** : Acidic or Alkalic Fluid Line specially required for No-Leakage.

# Teflon Lined Plug Valves

## K521 Flanged Ends ANSI 150# Dimension Chart



1/2" THRU 4"



4" & 6" OVER

DIMENSIONS

UNIT : MM

NOMINAL SIZE		L	END FLANGES							h	H	R	K	W	OPERATOR	REMARK
			D	g	t	f	BOLT HOLE									
IN	MM						PCD	N	d							
1/2	15	108	89	35	11.7	2.0	60.5	4	16	80	-	180	-	-	WITH WRENCH	
3/4	20	117	98	43	12.4	2.0	70.5	4	16	80	-	180	-	-		
1	25	127	108	51	14.2	3.0	79.5	4	16	75	96	222	-	-		
1.1/2	40	165	127	73	17.2	3.0	98.5	4	16	91	113	320	-	-		
2	50	178	152	92	18.8	3.0	120.5	4	19	100	130	460	-	-		
2.1/2	65	190	178	105	20.5	3.0	139.5	4	19	121	145	600	-	-		
3	80	203	190	127	22.1	3.0	152.5	4	19	121	145	600	-	-		
4	100	229	229	157	27.4	3.5	190.5	8	19	150	173	750	-	-		
4	100	229	229	157	27.4	3.5	190.5	8	19	-	233	250	53	177	WITH WORM GEAR	
6	150	267	279	216	28.9	3.5	241.5	8	22	-	260	300	62.5	228		
8	200	292	343	270	32.1	3.5	298.5	8	22	-	343	300	62.5	228		
10	250	330	406	324	34.2	4.0	362.0	12	25	-	374	500	91.5	297		
12	300	356	483	381	35.8	4.0	432.0	12	25	-	464	560	113	330		