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YOUFUMI

CONTROL VALVES

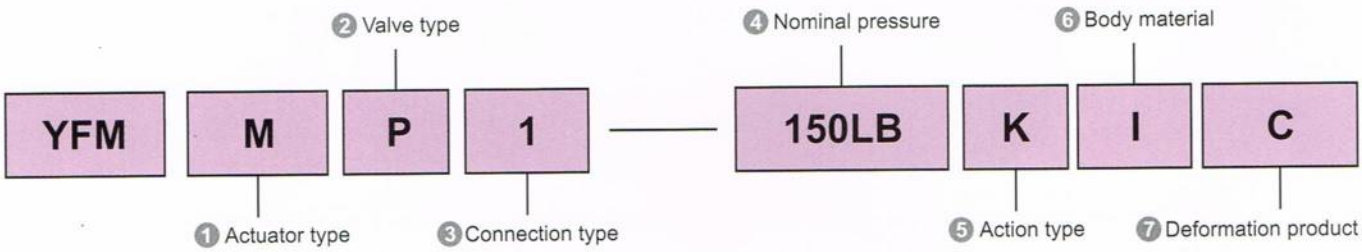
Ⓑ 071 - 104

Diaphragm Valve Butterfly Valve Ball Valve

The Empire Solutions
For Global Industrial Flow Control

Control Valve Numbering System

※Control Valve Numbering System



1 Actuator type

Actuator type		Code
Pneumatic actuator	Diaphragm actuator	M
	Diaphragm multi-spring actuator	H
	Deep bellows actuator	N
	Piston actuator	S
	Long-stroke actuator	SL
Electric actuator	Reversible motor type DKZ	AZ
	Reversible motor type DKJ	AJ
	DDZ-II type, DKZ	KZ
	DDZ-II type, DKJ	KJ
	Multi-transition	FD

2 Valve type

Valve Type		Code
Single seat valve		P
Single seat valve (small type)		JP
Double seat valve		N
Sleeve valve		M
Sleeve valve (small type)		JM
Eccentric rotary valve		Z
Angle valve		S
Butterfly valve	Wafer	W71
	Flange	W41
	Lug	TW
Ball valve		O
V type baiting ball valve		V
Diaphragm valve		T
Body separation valve		U
Shunting Tee valve		X
Interflow Tee valve		O
Middle-spilt O type ball valve		ZO
Middle-spilt V type ball valve		ZV

3 Connection type

Connection type	Code
Soft sealing	1
Wear-resistant alloy welding	2
High DP	3
PTFE lined	F4
PFA lined	PFA
FEP lined	F46
Heating jacket	B

4 Nominal pressure, showed in number, unit is MPa.

5 Action type

Action type	Code
Air to open/electricity to open	K
Air to close/electricity to close	B

6 Body material

Body material	Code	Body material	Code
Gray Iron	Z	Cr5Mo	I
Ductile Iron	Q	1Cr18Ni9Ti	P
Carbon Steel	C	Cr18Ni12Mo2Ti	R
		12Cr1MoV	V

7 Deformation product

Deformation product	Code
High-temperature type	C
Low-temperature type	D
Bellows sealing	W

Control Valve Numbering System

※Example for Numbering System for control valve

Example 1:
ZHPF46-16Kw means pneumatic diaphragm multi-spring actuator, with single seat valve, FEP lined, and nominal pressure is PN16, function way is air to open, bellows sealing type control valve:

Example 2:
ZAJVPFA-16K (B)means electric actuator (DKJ), with V type baiting ball valve, PFA lined, Nominal pressure is PN16, function way is air to open or close.

Example 3:
ZAJWF4-16k (B) means electric actuator (Reversible motor type DKJ), with butterfly valve, PTFE lined, nominal pressure is PN16; function way is air to open or close.

Example 4:
ZSWF46-10B means pneumatic piston actuator, which is positive force, with butterfly valve, FEP lined, and nominal pressure is PN10, function way is air to close:

※GB/T 4213 Leakage Standard

GB/T4213 is the leakage standard for control valve, to classify the leakage into six degree. The lowest degree is grade I, no specific requirement; the highest degree is VI, namely bubble grade; when the leakage is greater than 0.5% KV, it can be free of test.

Table 1

Leakage grade	Test medium	Test program	Leakage rate
I	Negotiated by customer and manufacturer		
II	L or G	1	5×10^{-3} x Valve rated capacity(l/h)
III	L or G	1	10^{-3} x Valve rated capacity(l/h)
IV	L	1 or 2	10^{-4} x Valve rated capacity(l/h)
	G	1	
IV-S1	L	1 or 2	5×10^{-4} x Valve rated capacity(l/h)
	G	1	
IV-S2	G	1	2×10^{-4} x △P x D(l/h)
V	L	2	1.8×10^{-7} x △P x D(l/h)
VI	G	1	3×10^{-3} x △P x (Leakage rate Table 2)

Note:
- ◆D is seat diameter, unit:mm
- ◆Compressible fluid volume flow: Test value under absolutely pressure of 101, 325Kpa and absolute temperature 273K.
- ◆Test program "1" stands for P=0.35MPa, medium is gas; Test program "2" stands the P equals working differential pressure, medium is water or gas.
- ◆The "valve rated capacity" value in above table, according to formula computing of table 3

Table 2

Seat Diamension (mm)	Leakage rate	
	ML/min	Bubble No. Per min
25	0.15	1
40	0.30	2
50	0.45	3
65	0.60	4
80	0.90	6
100	1.70	11
150	4.00	27
200	6.75	45
250	11.1	-
300	16.0	-
350	21.6	-
400	28.4	-

Note:
- ◆Number of bubbles per minute is tested with diameter 6 mm, wall thickness of 1 mm vertical tube immersed to 5-10 mm depth condition; Pipe surface should be smooth, without chamfering and burr;
- ◆If the actual valve seats diameter has more than 2mm difference with the data showed in table, the leakage coefficient can be calculated in the condition to assume the square of leakage rate and square of valve seat diameter is directly proportional.

Valve rated capacity according to below formula:

Table 1

Condition / Medium	△P<0.5P1	△P<0.5P1
Liquid	$Q1=0.1Kv\sqrt{\frac{\triangle P}{P/PO}}$	
Gas	$Qg=4.73Kv\sqrt{\frac{\triangle P \cdot Pm}{G(237+t)}}$	$Qg=\sqrt{\frac{2.9P1.Kv}{G(237+t)}}$

In table:
Q1-liquid flow
Qg- gas flow in standard state
Kv-rated flow rate coefficient
P1-absolute pressure Kpa before valve, P2-absolute pressure Kpa after valve.
△P-Differential pressure;
t-test medium temperature 20°C
G-Gas proportion, air=1
P/PO relative density (water within ruled temperature range P/PO=1)

Lined Control Valve

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Patent No.: ZL200920188414.6
ZL200610072149.6

※Product Description

- Pneumatic/electric lined single-seat control valve is the execution unit in automation instrument system; it consists of many spring film actuators/electric actuators and through-way fluorine-lined single-seat regulator. Installed on the medium pipeline and operated with other instrument to control parameters such as flow rate etc. Due to the wetted parts of valve are lined with fluorine plastic (PTFE, PFA, FEP), and the stem sealing adopts PTFE bellow and packing, it has better performance in corrosion resistance and sealing and its installation has better reliability. It's suitable for any corrosive medium except for "molten alkali metals and fluorine element". The lined control valves are widely used in petrochemical, electric power, metallurgy, pulp&paper and other industrial automation device.
- Operating method: electric, pneumatic, hydraulic
- Lining material: FEP, PFA, GXPO etc.

※Material Specification

NO.	Name	Material		
1	Round nut	A194 2H	A194 8	A194 8M
2	Nut	A194 2H	A194 8	A194 8M
3	Bolt	A193 B7	A320 B8	A193 B8M
4	Plate	SS304		
5	Packing	PTFE		
6	Nut	A93 2H	A194 8	A194 8M
7	Stud	A194 B7	A320 B8	A320 B8M
8	Up bonnet	A216 WCB+ Lining material	A351 CF8 CF8M +Lining material	A351 CF3 CF3M +Lining material
9	Locating sleeve	SS304		
10	Stem	SS304 SS316		
11	Gasket	SS304		
12	Bellows	PTFE		
13	Disc	Ss304+Lining material SS316+Lining material		
14	Joint	A216 WCB+ Lining material	A351 CF8 CF8M +Lining material	A351 CF3 CF3M +Lining material
15	Screw	A93 2H	A194 8	A194 8M
16	Stud	A194 B7	A320 B8	A193 B8M
17	Body	A216 WCB+ Lining material	A351 CF8 CF8M +Lining material	A351 CF3 CF3M +Lining material

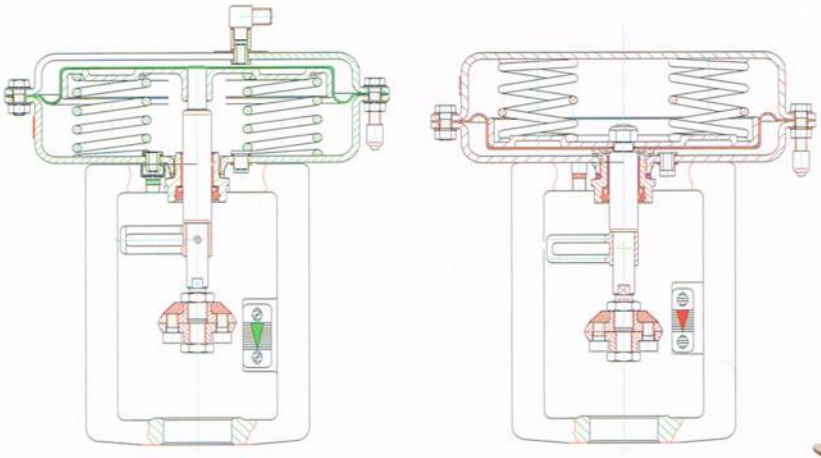
Lined Control Valve

※Structure and Operation Principle

- Pneumatic/electric fluorine-lined control valve is consists of lined control valve body and straight travel pneumatic spring diaphragm actuator or electric actuator.

- Pneumatic/electric actuator is an important part of automatic control system. Pneumatic actuators (figure 1) have both direct and indirect action. When air pressure increases, the push rod stretch out the membrane room, it is called direct action. When air pressure increases, the push rod back into membrane room, it is called indirect action, together with valve body to constitute the air-to-close. Figure 2 shows the working principle of positioned on electrical/pneumatic valve: when the pressure signal input into membrane room, generating pushing force to the diaphragm to compress the spring, making the push rod move to drive the stem, changing the flow area between the valve trim and seat, until the counteractive by spring keep balance with pushing force on diaphragm by signal pressure, so as to achieve the purpose of process parameters automatic adjustment.

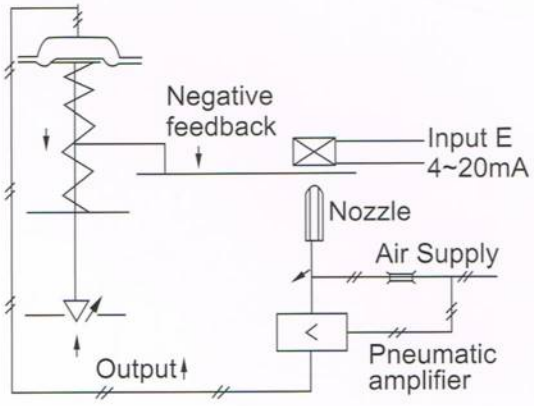
Single Seat Control Valve



A. air to close: direct action

B. air to open: in direct action

Pneumatic Mult-spring Diaphragm Actuator



Operation Drawing

PTFE Bellow Control Valve

Lined Control Valve

※Technical Specification

Nominal diameter DN	25		32		40		50		65		80		100		125		150	200	
Seat diameter (mm)	20	25	25	32	32	40	40	50	50	65	65	80	80	100	100	110	125	150	175
Rated Cv	5	10	10	16	16	24	24	44	44	68	68	125	125	165	165	195	330	360	460
Rated travel(mm)	16				25				38						50			60	
Actual pressure	Maxmum1.0 MPa (1.6 MPa customised)																		
Nominal pressure	PN1.0, 1.6MPa																		
Working temperature	-30°C ~ +180°C																		
Trim	Single seat plunger valve core																		
Flow characteristic	Linear, equal percentage																		
Adjustable range	50:1																		
Equipped with ZJHA/B Multi-springs Diaphragm Pneumatic Actuators																			
Model	ZJHA/B-22				ZJHA/B-23				ZJHA/B-34						ZJHA/B-45				
Action mode	ZJHA type actuator refer to "air-to-close" action; ZJHB actuator refer to "air-to-open" action																		
Pressure supply	According to the scope of spring: 0.02~0.10, 0.04~0.20, 0.08~0.24 Mpa, Respectly are 0.14, 0.25, 0.35 MPa																		
Air supply connection	Rc1/4																		
Basic error	Without positioner:±5%; With positioner:±1%;																		
Backlash	Without positioner: 3%; With positioner: 1%;																		
Dead zone	Without positioner: 3%; With positioner: 0.4%;																		
End point deviation	Without positioner: opening point±2.5%, terminal point±5%; closing point±5%, terminal point±2.5%. With positioner error from beginning to end is ±1%;																		
Travel deviation	±2.5%																		
Leakage rate	No more than 10^{-5} of rated CV																		
Optional accessories	positioner, air set, solenoid valve, limit switch etc. (according to the order)																		

◆**Figure 3 Flow characteristics curve of lined control valve**

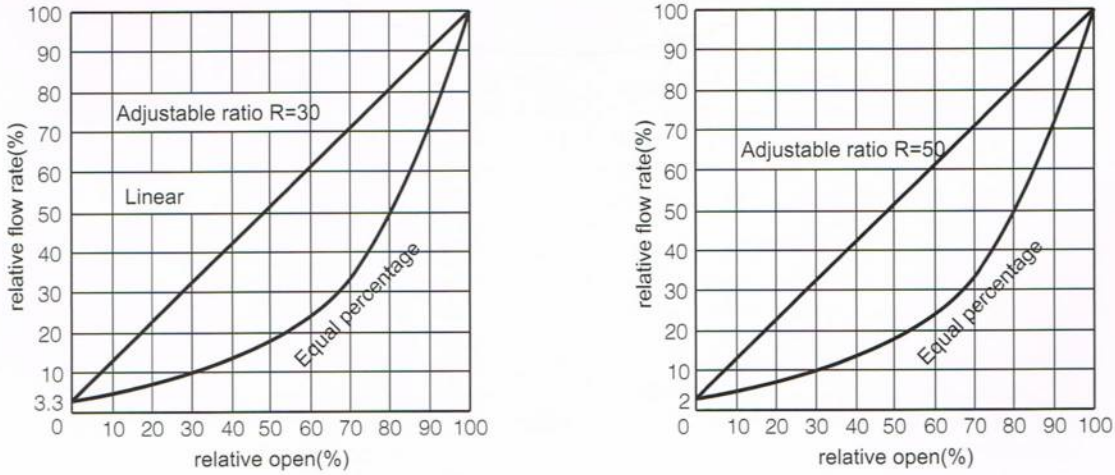


Fig3: Flow rate Curve

◆Actuator Technical Specification

Pneumatic Multi-spring Diaphragm Actuator

Action mode	Actuator model	Diahpragm area cm^2	Supply pressure MPa	Spring range MPa	Allowable DP 100KPa allowable DP 100KPa Seat diameter mm											
					20	25	32	40	50	65	80	100	110	125	150	175
Air-to-close	ZJHA-22/23	350	0.14	0.02~0.10	12	7.6	6.3	4.0	2.6	-	-	-	-	-	-	-
			0.28	0.04~0.20	16	16	14	12	7.6	-	-	-	-	-	-	-
			0.35	0.08~0.24	16	16	16	16	12	-	-	-	-	-	-	-
	ZJHA-34	560	0.14	0.02~0.10	16	10	7.5	6.6	4.2	2.4	1.6	1.0	-	-	-	-
			0.28	0.04~0.20	-	-	16	12	9.8	5.6	3.8	2.9	-	-	-	-
			0.35	0.08~0.24	-	-	16	16	16	13	8.6	5.5	-	-	-	-
	ZJHA-45	900	0.14	0.02~0.10	-	-	-	-	-	5.4	3.6	2.3	1.7	1.1	0.7	0.2
			0.28	0.04~0.20	-	-	-	-	-	9.3	6.1	3.9	2.5	1.7	1.1	0.7
			0.35	0.08~0.24	-	-	-	-	-	14	9.8	8.2	5.2	3.7	2.5	1.6
	ZJHA-56	1500	0.14	0.02~0.10	-	-	-	-	-	-	5.6	4.0	2.6	1.7	1.1	0.7
			0.28	0.04~0.20	-	-	-	-	-	-	-	-	9.1	5.8	3.5	2.5
			0.35	0.08~0.24	-	-	-	-	-	-	-	-	11	8.8	5.7	3.5
Air-to-open	ZJHB-22/23	350	0.14	0.02~0.10	10	7.6	4.6	2.6	1.3	-	-	-	-	-	-	-
			0.28	0.04~0.20	16	16	11	9.6	6.1	-	-	-	-	-	-	-
			0.35	0.08~0.24	16	16	16	16	10	-	-	-	-	-	-	-
	ZJHB-34	560	0.14	0.02~0.10	-	12	6.1	4.2	2.4	1.2	0.6	0.4	-	-	-	-
			0.28	0.04~0.20	-	-	16	12	8.2	5.6	3.8	2.4	-	-	-	-
			0.35	0.08~0.24	-	-	16	16	16	7.2	4.8	3.5	-	-	-	-
	ZJHB-45	900	0.14	0.02~0.10	-	-	-	-	-	2.4	1.6	1.1	0.7	0.4	0.2	0.1
			0.28	0.04~0.20	-	-	-	-	-	7.2	4.8	3.2	1.7	0.8	0.4	0.2
			0.35	0.08~0.24	-	-	-	-	-	9.8	8.2	5.2	3.7	2.5	1.7	0.7
	ZJHB-56	1500	0.14	0.02~0.10	-	-	-	-	-	-	4.0	2.6	1.7	1.1	0.7	0.2
			0.28	0.04~0.20	-	-	-	-	-	-	-	-	3.9	2.5	1.7	0.7
			0.35	0.08~0.24	-	-	-	-	-	-	-	-	8.4	5.4	3.7	1.6

Electric Actuators

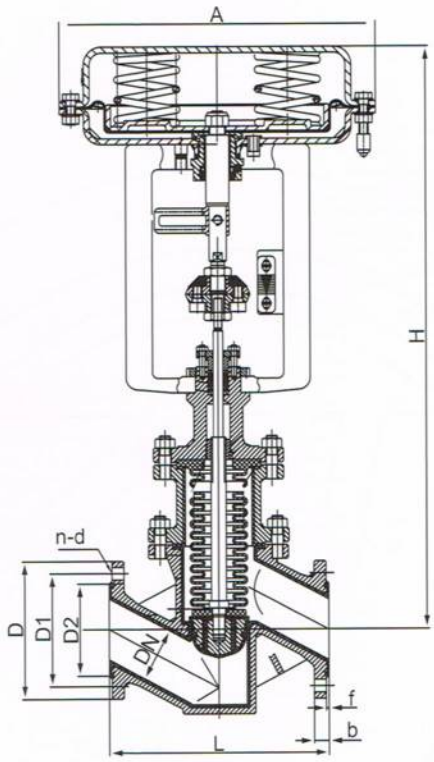
Actuator thrust N.M	Allowable DP 100KPa Seat diameter mm											
	20	25	32	40	50	65	80	100	110	125	150	175
800	16	16	6.9	4.5	–	–	–	–	–	–	–	–
1000	–	16	8.7	5.5	3.5	–	–	–	–	–	–	–
2000	–	–	16	11	7.1	4.2	–	–	–	–	–	–
3000	–	–	–	16	11	6.3	4.1	–	–	–	–	–
6500	–	–	–	–	–	13.7	9.0	5.7	–	–	–	–
9000	–	–	–	–	–	–	12.5	8.0	5.1	–	–	–
12000	–	–	–	–	–	–	–	11	6.8	4.7	–	–
16000	–	–	–	–	–	–	–	–	9.1	6.3	4.7	3.6

Note: this table for reference only. For more specific differential pressure, please consult Youfumi technical department.

Lined Control Valve

※Operation Principle

◆ **Lined Bellow Control Valve**, the valve components mainly include the valve body, bonnet, stem and pipe connector, PTFE bellow and disc etc. There is a corrugated pipe component on its cover, and the top of the valve core connect to bottom of the PTFE bellows, and top of PTFE bellow connect with top cover. Therefore the PTFE bellow makes the medium isolated to ensure the seal, and up-down movement of valve disc is flexible.



HG/T 20592 PN16

Unit:mm

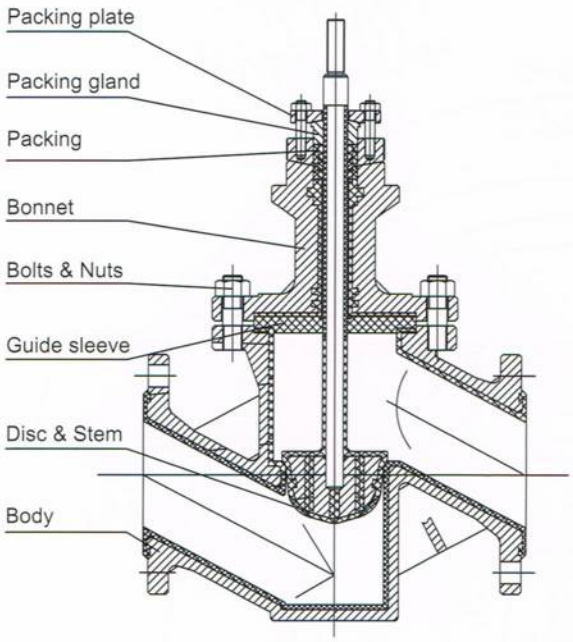
DN	L	D	D1	D2	b	f	n-d	Thread	H	A
20	160	105	75	56	15	2.5	4-14	–	480	285
25	160	115	85	65	16	3	4-14	–	480	285
32	180	135	100	78	16	3	4-18	–	490	285
40	200	150	110	85	16	3	4-18	–	525	285
50	230	165	125	100	16	3	4-18	–	525	285
65	290	180	145	120	18	3.5	4-18	–	710	360
80	310	200	160	135	20	3.5	8-18	2-M16	710	360
100	350	220	180	155	21	3.5	8-18	2-M16	710	360
125	400	250	210	185	23	4	8-18	2-M16	880	470
150	480	285	240	210	24	4	8-22	2-M20	890	470
200	600	340	295	265	26	4.5	12-22	2-M20	910	470

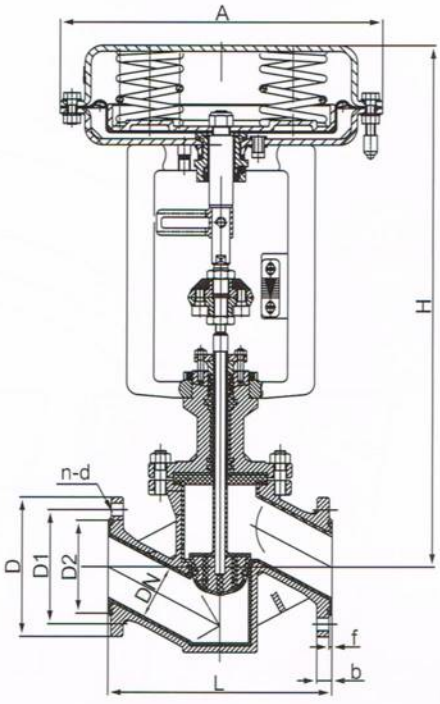
Note: ◆ No hole means the screw thread; n- d is divided hole numbers, the actual hole number should minus the threaded hole;
◆ For more size, please consult factory.

Lined Control Valve

※Operation Principle

◆**Lined Single-seat Control Valve,** the valve components mainly include the valve body, bonnet, stem and valve core, guide sleeve plate, etc. Integrated stem and valve core satisfy the stem design to proof blow-out. The stem cross-sectional area is greater than that of the traditional diaphragm valve stem, to prevent valve core from falling off and bending breakage.





HG/T 20592 PN16

Unit:mm

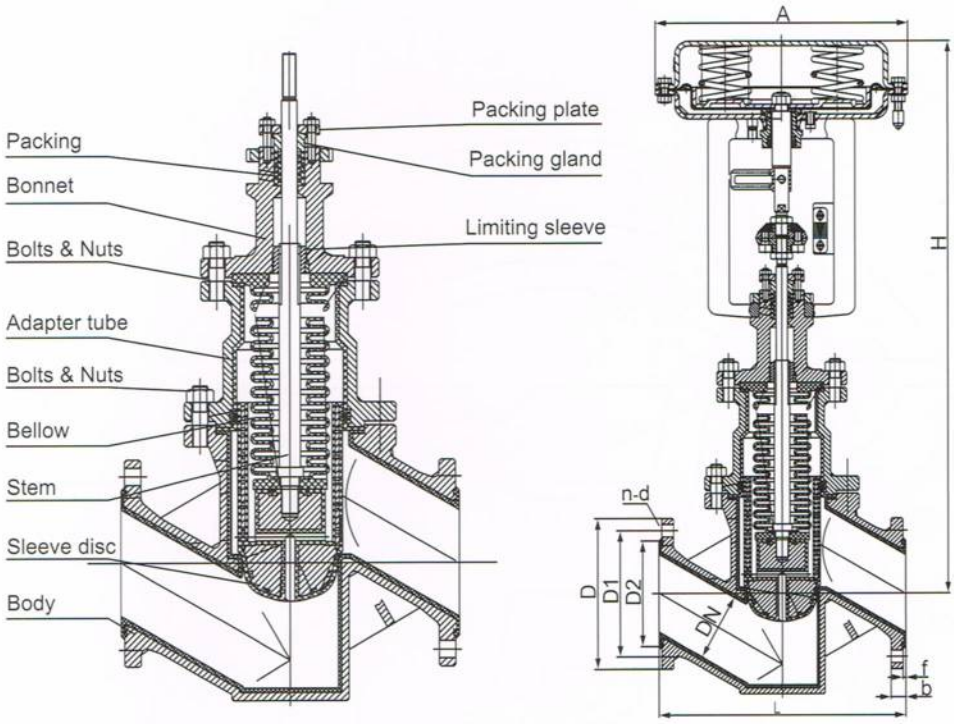
DN	L	D	D1	D2	b	f	n-d	Thread	H	A
20	160	105	75	56	15	2.5	4-14	-	440	285
25	160	115	85	65	16	3	4-14	-	440	285
32	180	135	100	78	16	3	4-18	-	466	285
40	200	150	110	85	16	3	4-18	-	495	285
50	230	165	125	100	16	3	4-18	-	495	285
65	290	180	145	120	18	3.5	4-18	-	615	360
80	310	200	160	135	20	3.5	8-18	2-M16	605	360
100	350	220	180	155	21	3.5	8-18	2-M16	630	360
125	400	250	210	185	23	4	8-18	2-M16	760	470
150	480	285	240	210	24	4	8-22	2-M20	775	470
200	600	340	295	265	26	4.5	12-22	2-M20	835	470

Lined Control Valve

YOUFUMI fluid system

※Operation Principle

◆ **Lined Bellow Control Valve**, the valve components mainly include the valve body, bonnet, stem and pipe connector, PTFE bellow and disc etc. There is a corrugated pipe component on its cover, and the top of the valve core connect to bottom of the PTFE bellows, and top of PTFE bellow connect with top cover. Therefore the PTFE bellow makes the medium isolated to ensure the seal, and up-down movement of valve disc is flexible.



HG/T 20592 PN16

Unit:mm

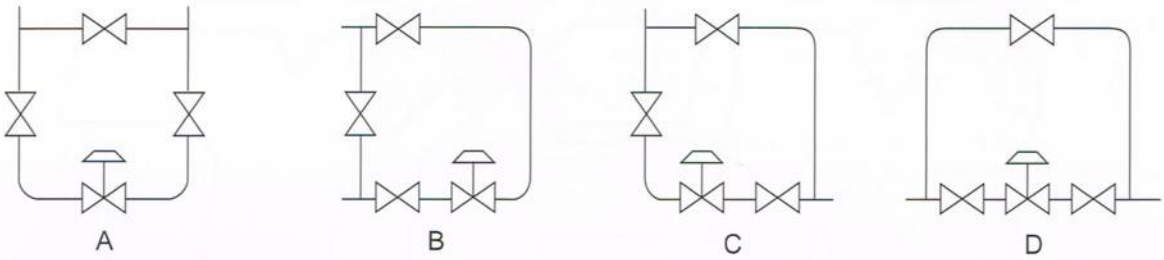
DN	L	D	D1	D2	b	f	n-d	Thread	H	A
32	180	135	100	78	16	3	4-18	-	466	285
40	200	150	110	85	16	3	4-18	-	495	285
50	230	165	125	100	16	3	4-18	-	495	285
65	290	180	145	120	18	3.5	4-18	-	615	360
80	310	200	160	135	20	3.5	8-18	2-M16	605	360
100	350	220	180	155	21	3.5	8-18	2-M16	630	360
125	400	250	210	185	23	4	8-18	2-M16	760	470
150	480	285	240	210	24	4	8-22	2-M20	775	470
200	600	340	295	265	26	4.5	12-22	2-M20	835	470

Note: ◆ No hole means the screw thread; n- d is divided hole numbers, the actual hole number should minus the threaded hole;
◆ For more size, please consult factory.

※Installation and Maintenance

◆Installation

- ◆Inspect the whole set of valve to see if damaged or loose connected, the valve should be conducted with sealing test, leakage test before installation.
- ◆Cleaning the pipeline before installation. There should be enough space in pipeline at the valve entrance, where should be equipped with strainer. The flange connection of valve and pipeline should pay attention to concentricity.
- ◆It should consider the safety of staff and equipment in installation site, where is easy for installation, disassembly and maintenance.
- ◆The valve should be vertically installed, conducting slanting installation if no choice. Avoid horizontal installation. Use a support bracket if valve is heavy or vibration.
- ◆The flow direction should conform to arrow on valve body. Air supply should be dry without oil; Valve should used under environmental temperature -20 to +55°C.
- ◆Set the bypass valve to make sure continuous production when self-controls system failures or valve repaired. The flow characteristic and travel of bypass valve should conform to former choice.
- ◆The packing of control valve is the second sealing for protection. Once the bellow broken, it cannot be used as packing to seal. It should immediately examine and repair or change the bellow, and then test the sealing.



◆Maintenance

- ◆Valve cleaning: clean the harmful medium, first should know its characteristic, then take relevant method.
- ◆Valve disassembly: protect precisions parts processing surface of seat, disc and stem when disassembly.
- ◆Disc, seat: sealing face has little abrasion, repair it with machining processing, and replace the new one if seriously damaged.
- ◆Stem: only can replace new one if surface damaged.
- ◆Damage of push rod, guide sleeve: for indirect action actuator, the push rod and guide sleeve have to replace a new one if damaged. For direct action actuator the push rod and guide sleeve can be used after repaired.
- ◆Compression spring: replace the new one if defects affecting the strength.
- ◆Quick-wear parts: packing, gasket and O-ring, replace the new ones in every inspection. The diaphragms have to be checked if any potential crack, ageing, or corrosion, to decide the replacement. General life time of diaphragm is 2-3year maximum.
- ◆Valve assembly should focus on center, tightening the bolt along the diagonal line, add lubricant to sliding parts. After assembly, the valves should test as the way in factory, and at the testing time it can accurately adjust packing compression force, disc closing location and positioner.

Lined Pneumatic Diaphragm Valve

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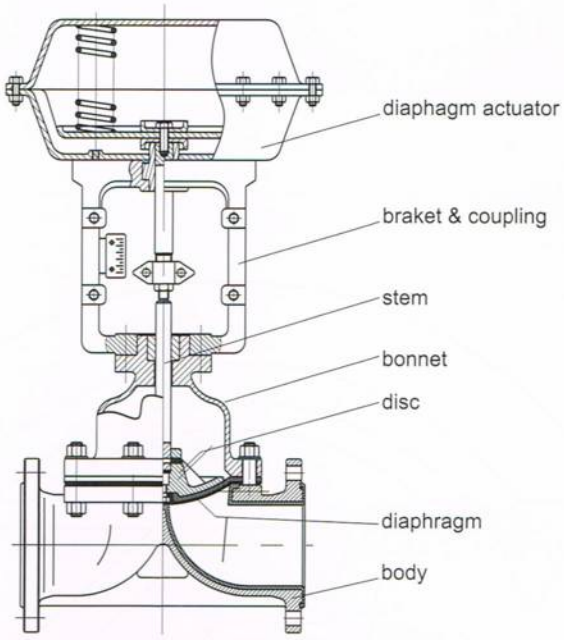
tel: 0815607905

※Product Description

- Lined pneumatic diaphragm valve consists of actuator and weir type diaphragm valve. The piston pneumatic actuator can be PTFE coated, with the advantage of high thrust and economic function due to the smooth face, strong sealing.
  The diaphragm valve cavity and diaphragm pad are lined by PTFE/PFA/FEP for realizing corrosion resistance performance. When the signal pressure input into diaphragm chamber (piston chamber), the pressure on the diaphragm (piston) generate the thrust, making the spring compressed, at the same time the valve stem, disc, diaphragm connected to push rod will move accordingly, until the thrust and the reaction force of the spring is balanced. At this time the push rod is not moving, and keep in a certain position, thus to realize the adjusting function. On the other hand, the pistons thrust will open or close the valve, also realize quick on-off valve function.
  This valve channel is simple, without packing gland and with the advantages of little resistance, large flow rate. It is popular applied in cutting and adjusting the medium of high poisonous-corrosive, strong viscosity, granule, fiber for automatic industry, such as petrochemical, power, metallurgy, paper etc.
- Operating method: electric, pneumatic, hydraulic
- Lining material: PFA, FEP, GXPO etc.

PFA Lined Diaphragm Control Valve

Lined Pneumatic Diaphragm Valve



Lined Diaphragm Valve

※ Installation and Maintenance

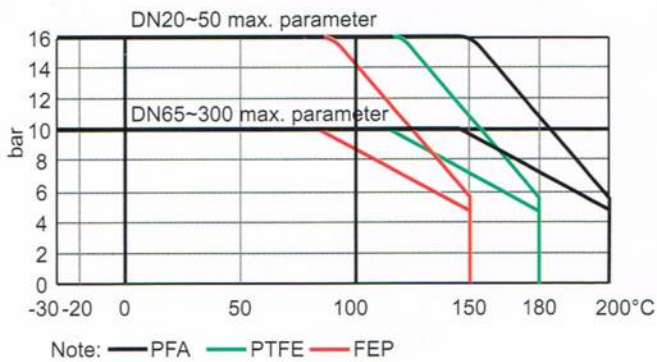
- ◆The applicable temperature for lined diaphragm control valve is -30°C to +70°C. Since the pneumatic diaphragm and piston are rubber parts, they are easily hardening and brittle under low temperature, and aging accelerates under high temperature.
- ◆This valve is better for vertical installation; if not allowed, consider adding the support bracket for slanting installation.
- ◆After hand wheel actuator used, the telescopic pipe should be returned to top end, or will affect automatic control.
- ◆On-off valve before installed to pipeline, should clean the impurities and dirt, to avoid the running parts stuck, or damage the important parts of seat and disc sealing face.
- ◆When the on-off valve installed, the direction of medium flow should be same as shown on control valve.

Lined Pneumatic Diaphragm Valve

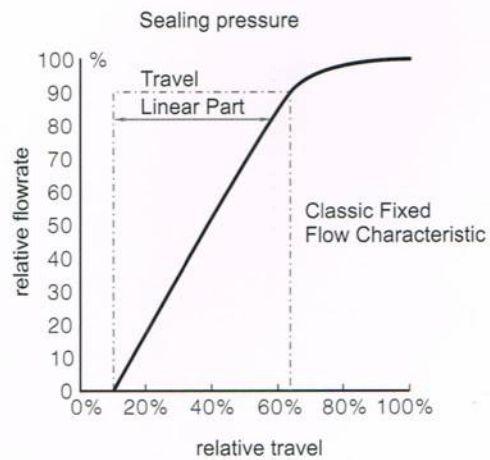
※Technical Specification

Nominal DN	20	25	32	40	50	65	80	100	125	150	200	250	300
Rated CV	9.1	19.8	26.8	45	59	83	148	269	362	505	1320	2000	3624
Rated travel (mm)	16			25		40			60			100	
Actual pressure	Maximum 1.0 MPa (1.6 MPa customised)												
Nominal pressure	PN0.6, 1.0, 1.6MPa												
Working temperature	–30°C ~+180°C												
Flange connection	HG/T20592-1997												
Cut off time	2~4 seconds at full open/close												
Flow characteristic	Quick open												
ZSA/B piston actuator													
Type	ZSA/B-22			ZS/B-23		ZSA/B-34			ZSA/B-45			ZSA/B-56	
Action mode	ZSA type actuator refer to “air to close” action; ZSB type actuator refer to “air to open “ action												
Pressure supply	According to the scope of spring: 0.08~0.24, 0.34~0.50, 0.08~0.24 Mpa; air supply pressure: 0. 5 MPa												
Air supply connection	Rc1/4												
Basic error	Without positioner: ±5%; with positioner: ±2%;												
Backlash	Without positioner: 3%; with positioner: 2%;												
Dead zone	Without positioner: 3%; with positioner: 0.8%;												
Travel deviation	±2.5%												
Leakage rate	No more than 10^{-5} of rated CV												
Optional accessories	positioner, air set, solenoid valve, limit switch etc. (according to the order)												

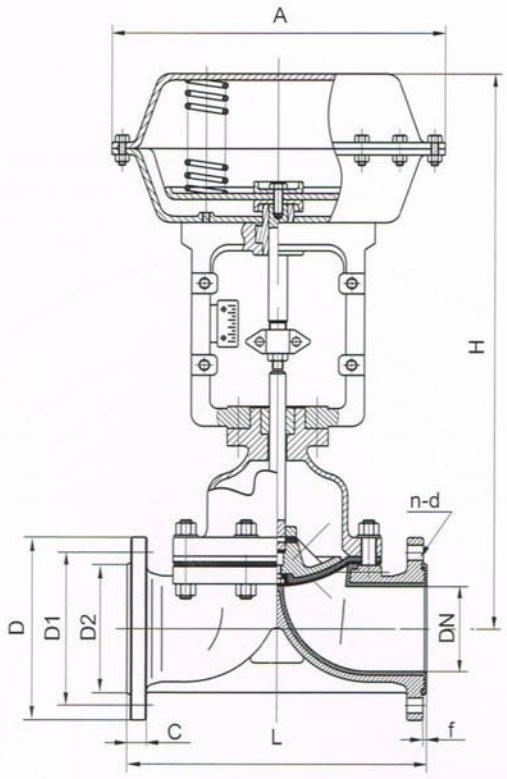
◆Temperature-Pressure Curve



◆Characteristic Curve



Lined Pneumatic Diaphragm Valve



HG/T 20592 PN10

Unit:mm

DN	L	A	H	D	D2	D1	f	c	n-d	Thread
20	135	250	410	105	75	55	2	14	4-14	M12
25	145	250	424	115	85	65	2	14	4-14	M12
32	160	250	430	140	100	78	2	16	4-18	M16
40	180	285	465	150	110	85	3	16	4-18	M16
50	210	285	475	165	125	100	3	16	4-18	M16
65	250	360	580	185	145	120	3	18	4-18	M16
80	300	360	603	200	160	135	3	20	8-18	M16
100	350	360	622	220	180	155	3	20	8-18	M16
125	400	470	759	250	210	185	3	22	8-18	M16
150	460	470	774	285	240	210	3	24	8-22	M20
200	570	470	814	340	295	265	3	26	8-22	M20
250	680	580	1112	395	350	320	3	30	12-22	M20
300	790	580	1174	445	400	368	4	30	12-22	M20

Lined Control Butterfly Valve

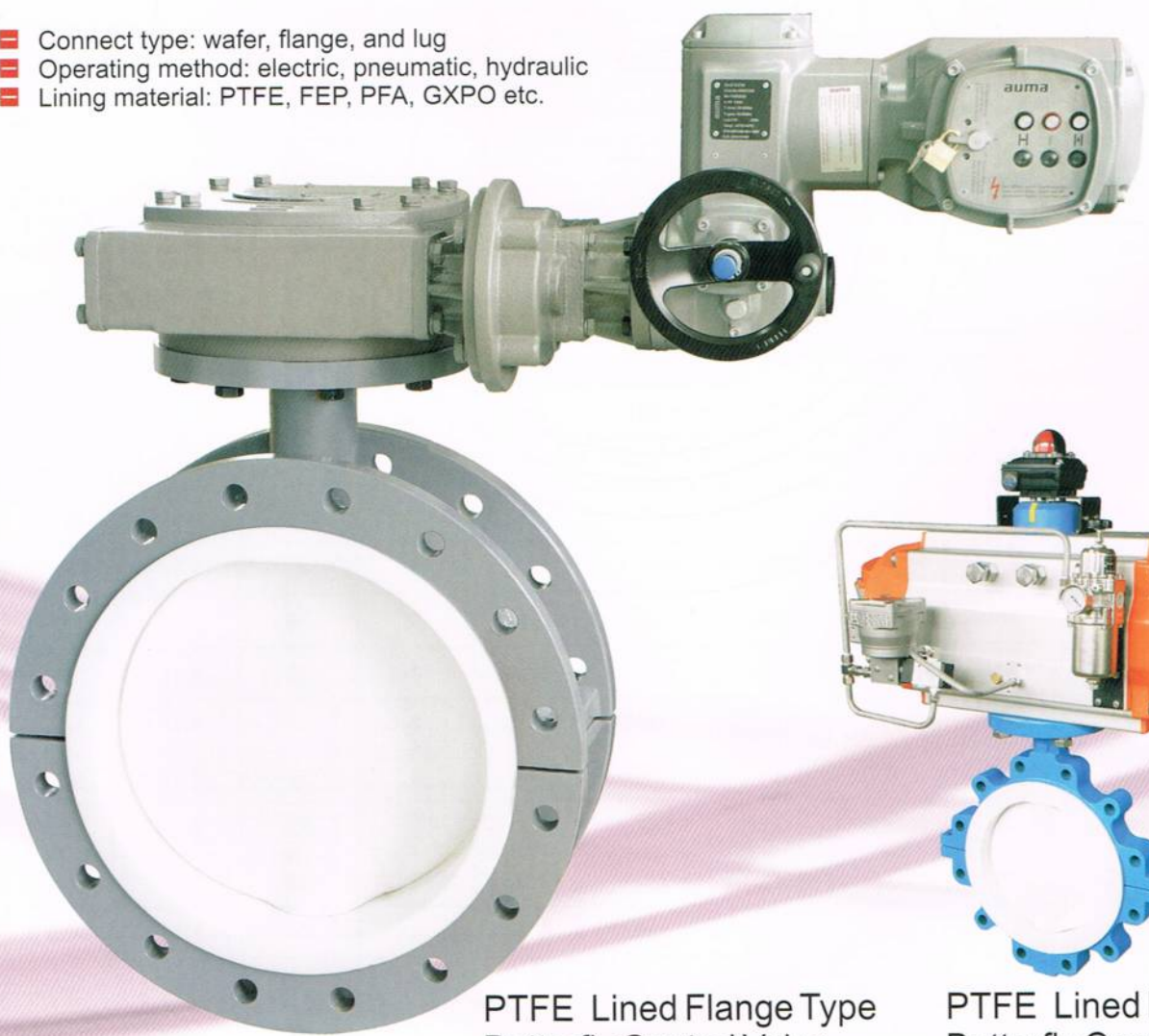
FLUID SYSTEM CO.,LTD.
website: www.fluidsystem.co.th
e-mail: sales@fluidsystem.co.th
tel: 0815607905

Patent No.:
ZL200610072149.6

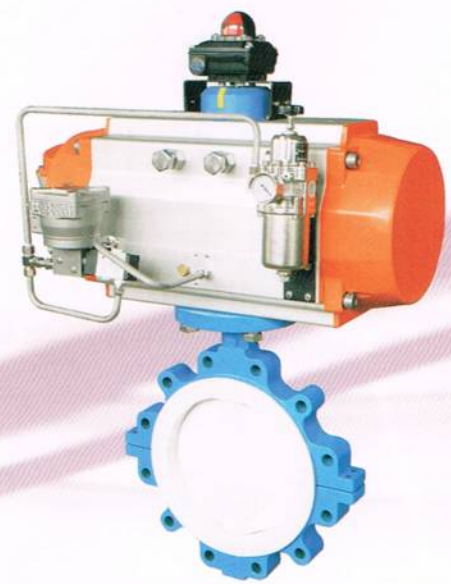
※Product Description

- Pneumatic actuator butterfly control valve is YFM patent product, which belong to D671 wafer and D641 flange type lined butterfly valve series, consist of pneumatic actuator and fluorine plastic lined butterfly valve. These valves are divided into fully lined butterfly valve and half lined butterfly valve according to different lining ways. Fully lined butterfly refers to the PTFE/PFA/FEP seat and disc lined with PTFE/PFA/FEP. There is silicon pad to adjust pre-tighten for keeping the best sealing.
  Valve body is split. The sealing of axis end is controlled by Viton which locate between disc and seat, so that the axis is out of touch medium to ensure the sealing without any leakage. This valve has the advantage of compact structure, reliable operation, perfect sealing, easy maintenance, fast installation and high adaptability etc.
  It is suitable for all of corrosive fluid except molten fluoride metal and fluorine, and is popularly supplied for concentrated check, remote control and local control industry, such as petrochemical, oil, pharmaceutical, food, metallurgy, pulp and paper, hydropower, environment etc.

- Connect type: wafer, flange, and lug
- Operating method: electric, pneumatic, hydraulic
- Lining material: PTFE, FEP, PFA, GXPO etc.



PTFE Lined Flange Type Butterfly Control Valve



PTFE Lined Lug Type Butterfly Control Valve

Lined Control Butterfly Valve

※ Operation Principle

Lined butterfly control valve consists of body, disc, seat, stem and actuator etc. The rotation of disc pivots on the shaft. Rotation angle of disc is drove by actuator, converting the input message of electricity and air into rotation of stem, rotating the disc in the body. It can realize full open or full close action.

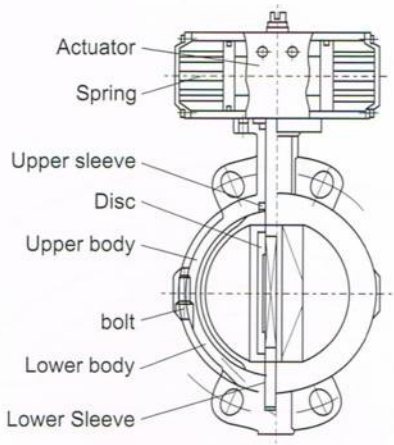
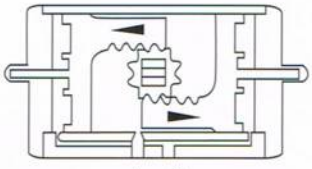


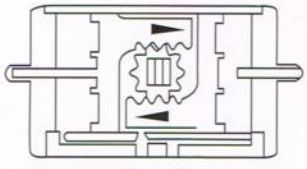
photo 1

Pneumatic lined butterfly control valve adopts new type ACT pneumatic actuator, and AW type pneumatic actuator for big size valve, with advantage of reasonable structure, output torque, with double acting and single acting (spring return).

Double acting pneumatic actuator (photo 2) operation principle: when compressed air comes from A port to cavity of two pistons, making the left and right piston move in the opposite direction and the output shaft rotate in counterclockwise direction, Then the air at the sides of two piston will be exhausted from B port. Conversely , the compressed air comes from B port, making the left and right piston move in the center and output shaft rotate in the clockwise direction, then the air will be exhausted from A port.



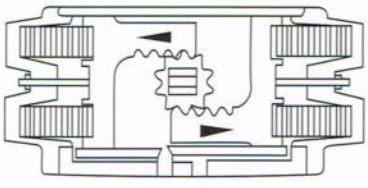
Rotation in the counterclockwise direction



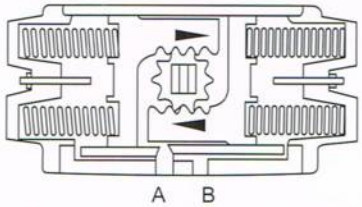
Rotation the clockwise direction

photo 2

Single acting pneumatic actuator operation principle (photo 3): when required the rotation in the counterclockwise direction, compressed air comes from A port to realize the left-right piston move in the opposite direction. When output axis rotates in the counterclockwise direction, the air at the sides of two pistons will be exhausted from B port. When out of air or electricity, the two pistons move to the center because of the action of the spring, and then the output axis rotates in the clockwise direction to output the air from A port.



Rotation in the counterclockwise direction



Rotation the clockwise direction

photo 3

Lined Control Butterfly Valve

※ Material Specification

Name	Material
Body, Disc	Cast steel+ lining material (WCB/CF8+PTFE/FEP/PFA)
Stem	2Cr13, SS410, SS420, 17-4PH
Seat	FEP, PFA, PTFE
Packing	PTFE
Pad	Silicon rubber
Cylinder	Pressing aluminum (oxidized)
Piston	cast aluminum (nickel plated)

※ KV Value

DN	50	65	80	100	125	150	200	250	300
KV	110	211	318	660	836	1244	2523	3064	4588
DN	350	400	450	500	600	700	800	900	1000
KV	6024	7300	9828	12148	17754	30887	39789	49778	54100

Note: For more sizes, please consult factory.

※ Technical Specification

Design & Manufacture Standard	HG/T3704, API 608
Face-to-face Dimension	HG/T3704, GB/T12221, ASME B16.10
Flange Connection	HG/T20592, GB/T9119, ASME/ANSI 16.5, JIS B2220
Inspection & Test Standard	GB/T4213, GB/T13927, GB/T26144, API598
Working Pressure	Maximum 1.0 MPa(1.6 MPa customized)
Nominal Pressure	PN0.6, 1.0, 1.6MPa; 150LB; JIS 10K
Working Temperature	–30°C ~+200°C
Full Travel Time	4~35 seconds when fully open or fully close
Flow Characteristic	Approximate equal percentage
Actuator	Equipped with ACT series or AW series piston actuator
Pressure Supply	Air pressure: 0.5 MPA
Air Supply Connection	Rc1/4
Basic Error	With positioned:±2%, backlash <1.5% ; dead zone: 0.8%; End point deviation: ±1.5%
Leakage Rate	No more than 5^{-10} of rated CV
Optional Accessories	positioner, air set, solenoid valve, limit switch etc. (according to the order)

Lined Control Butterfly Valve

YOUFUMI fluid system

◆Flow Characteristic Curve

Note: Flow characteristic curve defines the relation of the valve open degree and flow. Generally butterfly valve is good for flow control. However when the open degree is less than 30° it is not recommended to used butterfly valve to control flow rate.

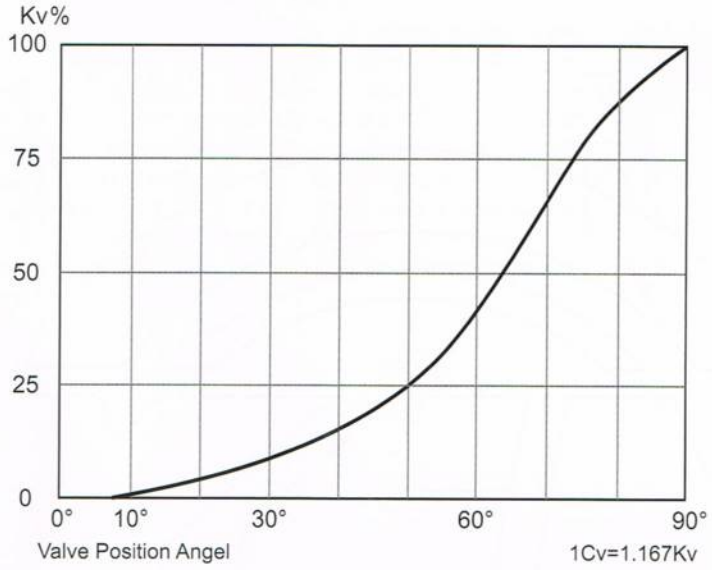


photo 4

KV definition: it is the parameter and notation of air flow characteristic

KV measurement: When the valve fully opened, two end of differential pressure △p=0.1MPa, flow density: ρ=1g/cm

Valve flow rate: qv （m/h, flow capacity (KV) :Kv=qv*[ρ*△p0/(ρ0*△p)]^0.5

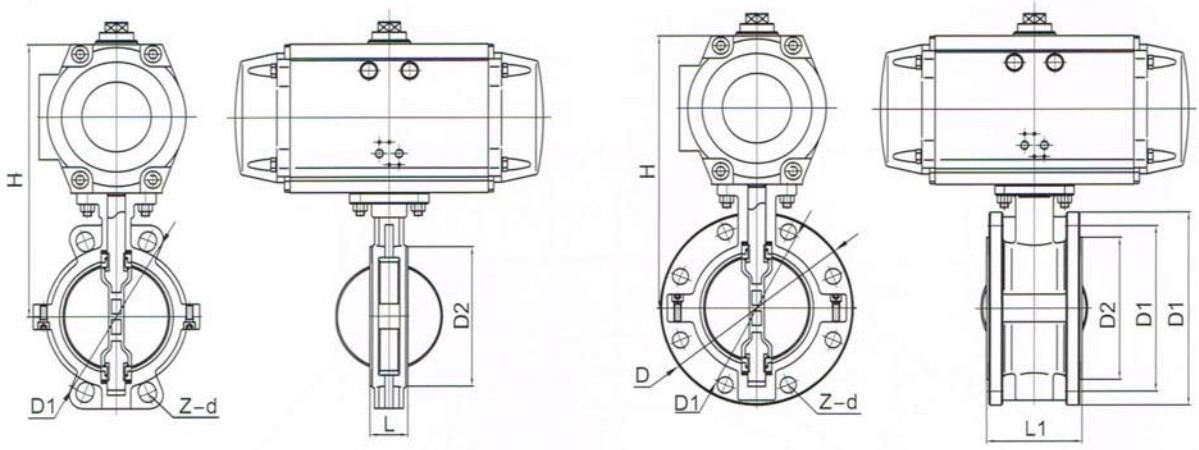
KV: flow capacity, m3/h; ρ: actual flow density, g/cm3, △p=p1-p2

CV=1.167KV

※ Installation and Maintenance

- ◆The applicable temperature for lined diaphragm control valve is -30°C to +70°C. Since the pneumatic diaphragm and piston are rubber parts, they are easily hardening and brittle under low temperature, and aging accelerates under high temperature.
- ◆This valve is better for vertical installation; if not allowed, consider adding the support bracket for slanting installation.
- ◆After hand wheel actuator used, the telescopic pipe should be returned to top end, or will affect automatic control.
- ◆It should clean the impurities and dirt on pipeline before the lined butterfly valve before installed, to avoid the running parts stuck, or damage the important parts of seat and disc sealing face.
- ◆When the lined butterfly valve installed and there is leakage, it should tighten the bolts between upper and lower bodies until no leakage.

Lined Control Butterfly Valve



HG/T 20592

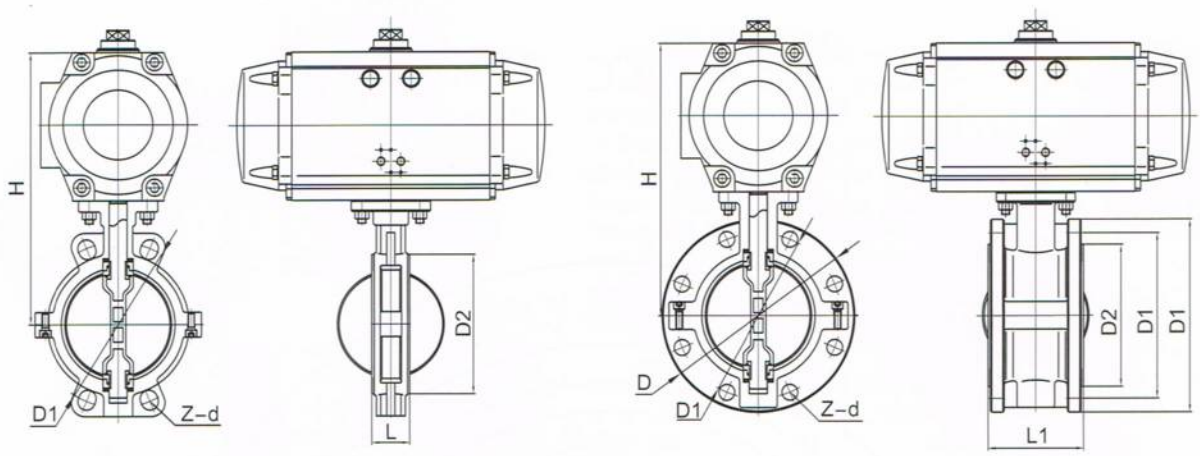
Unit:mm

DN	L	L1	PN10				PN16						
			D	D1	D2	Z-φd	D	D1	D2	Z-φd	Double acting	Single acting	Torque N·M
50	43	108	160	125	90	4-18	160	125	90	4-18	ACT75D	ACT75S	10
65	46	112	180	145	110	4-18	180	145	110	4-18	ACT75D	ACT90S	40
80	46	114	195	160	130	8-18	195	160	130	8-18	ACT90D	ACT100S	50
100	52	127	215	180	148	8-18	215	180	148	8-18	ACT115D	ACT115S	90
125	56	140	245	210	180	8-18	245	210	180	8-18	ACT125D	ACT145S	100
150	56	140	285	240	202	8-22	285	240	202	8-22	ACT145D	ACT160S	110
200	60	152	340	295	263	8-22	340	295	263	12-22	ACT160D	ACT190S	180
250	68	165	395	350	313	12-22	405	355	313	12-26	ACT160D	ACT190S	350
300	78	178	445	400	368	12-22	460	410	368	12-26	ACT190D	ACT210S	590
350	78	190	505	460	415	16-22	520	470	415	16-26	AW17	AW20S	900
400	102	216	565	515	484	16-26	580	525	484	16-30	AW17	AW20S	1645
450	114	222	615	565	519	20-26	640	585	519	20-30	AW20a	AW20S	2680
500	127	229	670	620	590	20-26	715	650	590	20-33	AW20	AW25S	3630
600	154	267	780	725	688	20-30	840	770	688	20-36	AW25	AW28S	5120

Note: For more sizes, please consult factory.

Lined Control Butterfly Valve

YOUFUMI fluid system



ASME B16.5 / JIS B2220

Unit:mm

DN	NPS	L	L1	ASME 150LB				JIS 10K						
				D	D1	D2	Z-φd	D	D1	D2	Z-φd	Double acting	Single acting	Torque N·M
50	2	43	108	152	120.5	90	4-19	155	120	90	4-19	ACT75D	ACT75S	10
65	2½	46	112	178	139.5	110	4-19	175	140	110	4-19	ACT75D	ACT90S	40
80	3	46	114	190	152.5	130	4-19	185	150	130	8-19	ACT90D	ACT100S	50
100	4	52	127	230	190.5	148	8-19	210	175	148	8-19	ACT115D	ACT115S	90
125	5	56	140	255	216.0	180	8-22	250	210	180	8-23	ACT125D	ACT145S	100
150	6	56	140	280	241.5	202	8-22	280	240	202	8-23	ACT145D	ACT160S	110
200	8	60	152	343	298.5	263	8-22	330	290	263	12-23	ACT160D	ACT190S	180
250	10	68	165	406	362.5	313	12-25	400	355	313	12-25	ACT160D	ACT190S	350
300	12	78	178	485	432.0	368	12-25	445	400	368	16-25	ACT190D	ACT210S	590
350	14	78	190	535	476.0	415	12-29	490	445	415	16-25	AW17	AW20S	900
400	16	102	216	597	539.5	484	16-29	560	510	484	16-27	AW17	AW20S	1645
450	18	114	222	635	578.0	519	16-32	620	565	519	20-27	AW20a	AW20S	2680
500	20	127	229	698	635.0	590	20-32	675	620	590	20-27	AW20	AW25S	3630
600	24	154	267	813	749.5	688	20-35	795	730	688	24-33	AW25	AW28S	5120

Lined Control Ball Valve

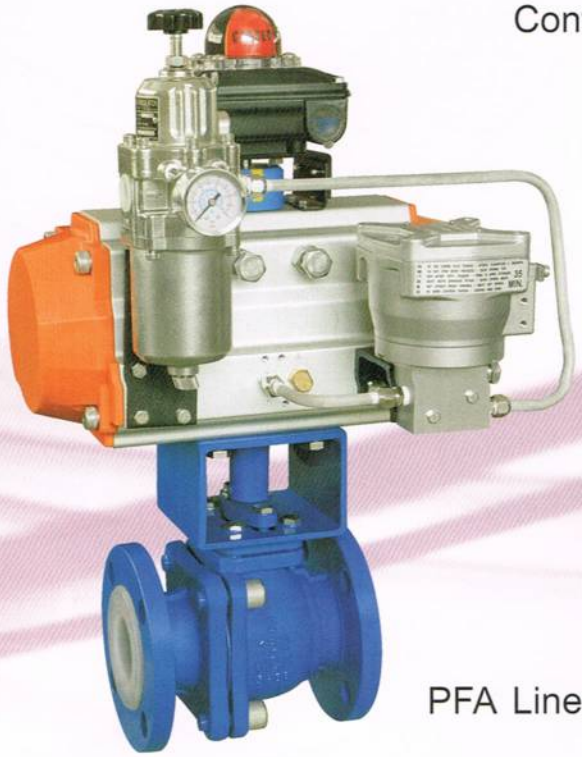
FLUID SYSTEM CO.,LTD.
website: www.fluidsystem.co.th
e-mail: sales@fluidsystem.co.th
tel: 0815607905

※Product Description

- Lined pneumatic actuator ball control valve belongs to Q641 lined floating ball valve, consist of pneumatic actuator and lined ball valve. Valve body equipped with pneumatic and electric actuator is composed of different types of ball valve. This valve is divided into full bore O-port ball valve and V-port ball valve according to the ball shape. It can be used as on-off or control valve. As the ball control valve, the ball can be made V-port to perform the ideal adjustable characteristic according to customer requirement or required flow curve.
  It has the advantages of low resistance, big flow coefficient and bi-directional, latest structure, and outstanding characteristic. The valve equipped with multi-spring gear rack pneumatic actuator, or the electric actuators, is now widely used in control systems. The valve body, bonnet, one piece of ball and stem, all wetted parts are lined by fluorine plastic, which enables it suitable for all of corrosive fluid except molten alkali metal and fluorine. It is popularly supplied for concentrated check, remote control and local control industry, such as petrochemical , oil, pharmaceutical, food, metallurgy, pulp and paper, hydropower, environmental protection etc .
- Operation method: electric, pneumatic, hydraulic
- Lining material: PFA, FEP, PO and etc.

PFA Lined Ball Control Valve

PFA Lined V-port Ball Valve



PFA Lined Ball Valve

Lined Control Ball Valve

※ Structure and working principle

Teflon lined ball valve consists of body, ball, jointing, sealing ring, bonnet, packing gland, bracket, axis actuator and etc. The integrated ball stem makes the ball rotation and the rotating angle is drove by the actuator. Then convert the electric and pneumatic input message into the rotation of stem, rotating the ball inside the body, namely the ball rotates to correspondent position of input message to realized full open and close action.

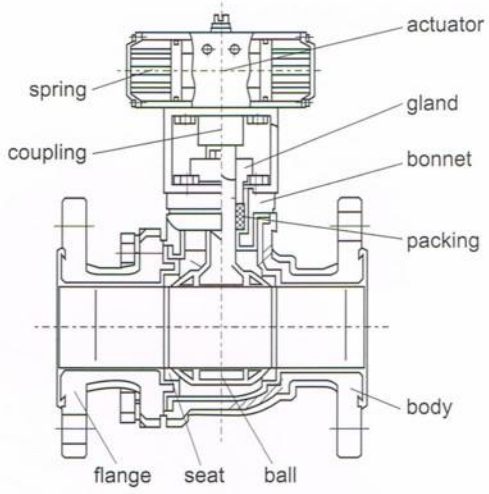
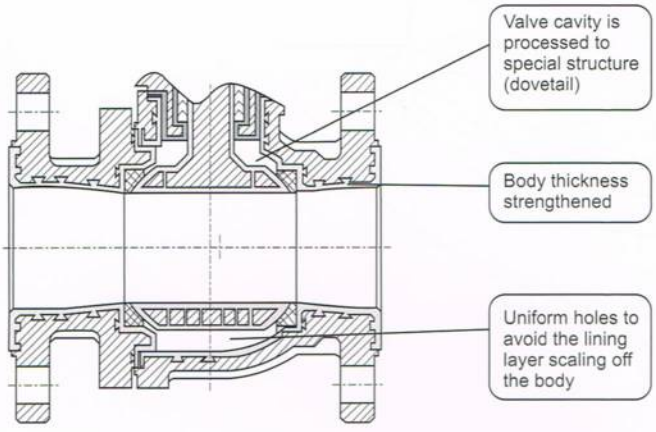


photo 1

◆Operation Principle

Lined ball valve consist of body, bonnet, ball, sealing ring, packing gland, bracket, actuator etc. The one piece integrated stem and ball drives the ball rotation and the rotating angle is drove by the actuator which is received the input signal of electricity and air.

In order to increase collision times between element and body, valve 's cavity and ball surface are machined to special structure (dovetail) to perform the perfect adhesion between the body and lining layer, to avoid the lining layer scaling off the body under the vacuum condition(-0.1Mpa).



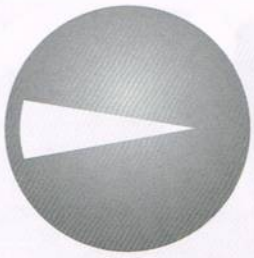
◆Self-control lined O-port on-off ball valve (ZSDOF)

Self-control lined O-port ball valve is a 360°quarter-turn senior on-off valve. All wetted part is lined by PFA/FEP by injection or transfer molding process. It has good seal performance, action quick, linear fluid channel, and big fluid capacity. Equipped with 5/2 way solenoid valve and control box, it can realize on-off control. It can be used in strong corrosive medium such acid, alkali and toxic, volatile, easy penetration medium.

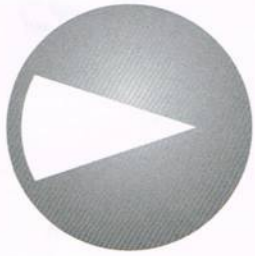
◆Lined V-port ball control valve (ZSCVF)

ZSCVF lined V-port ball valve is a 360°quarter-turn senior control valve. With the positioner, proportional control can be realized, and with the 5/2 way solenoid valve and control box, it can realize the on-off control. The V-port is designed according to required flow rate to achieve accurate flow characteristic and control ability. It characterized with large rated flow coefficient, large adjustable ratio, superior sealing performance, compact structure, and can be installed vertically. As there is no gap between valve core and valve seat, it has the shear function and self-cleaning, which is especially suitable for the fibrous medium or containing soft particle. All wetted part is lined by PFA/FEP by injection or transfer molding process. It can be used in strong corrosive medium such acid, alkali and toxic, volatile, easy penetration medium.

※V-port Options



15°V-port



30°V-port

60°V-port

90°V-port

Customised

Lined Control Ball Valve

※Technical Specification

Item	Without positioner	With positioner
Basic error(%)	±8	±1.5
Backlash(%)	-	1.5
Dead zone(%)	6	0.6
Leakage	±4	±2.5
Allowed leakage	VI grade (or no leakage)	10^{-5} x Valve rater volume
Rated flow rate coefficient KV diference(%)	±20	
Optional accessories	Electric positioner or electric/pneumatic transverter, air set, solenoid valve, hand wheel etc.	

※ Material Specification

Name	Material
Body, Bonnet, packing gland	Cast steel+ lining materials (WCB/CF8+FEP/PFA)
Ball & stem	Cast steel+ lining materials (WCB/CF8+FEP/PFA)
Seat, packing	PTFE
Cylinder	Pressing aluminum (oxidized)
Piston	Cast aluminum (nickel plated)

※ Installation and Maintenance

- ◆The applicable temperature for lined diaphragm control valve is -30°C to +70°C. Since the pneumatic diaphragm and piston are rubber parts, they are easily hardening and brittle under low temperature, and aging accelerates under high temperature.
- ◆This valve is better for vertical installation; if not allowed, consider adding the support bracket for slanting installation.
- ◆After hand wheel actuator used, the telescopic pipe should be returned to top end, or will affect automatic control.
- ◆It should clean the impurities and dirt on pipeline before the lined butterfly valve before installed, to avoid the running parts stuck, or damage the important parts of seat and disc sealing face.
- ◆When the lined butterfly valve installed and there is leakage, it should tighten the bolts between upper and lower bodies until no leakage.

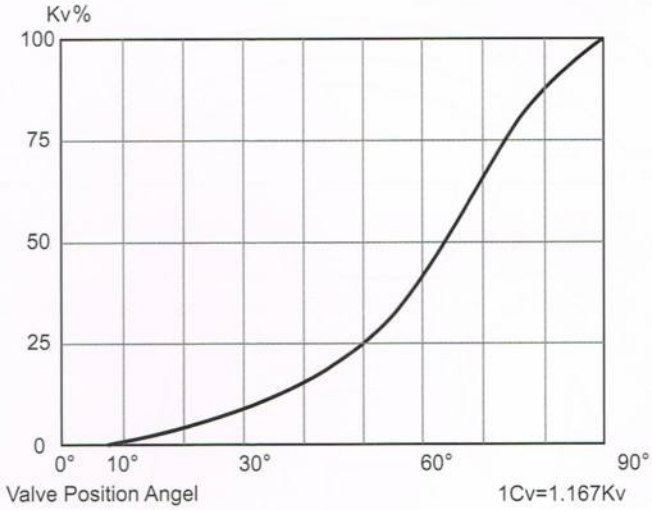
Lined Control Ball Valve

※ KV- Flow Rate Coefficient

DN		20	25	32	40	50	65	80	100	125	150	200	250	300
KV	O-port	38	50	112	170	255	384	512	940	1420	2220	3580	5120	7350
	V-port	11	25	36	63	100	184	280	400	580	940	1540	2500	3900

Note: For more sizes, please consult factory.

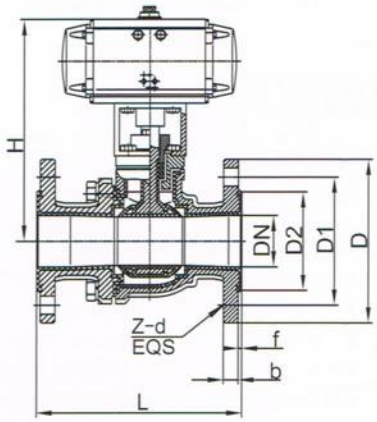
Flow characteristic curve
Flow characteristic for V-port ball valve is approximately equal percentage, shown as below:

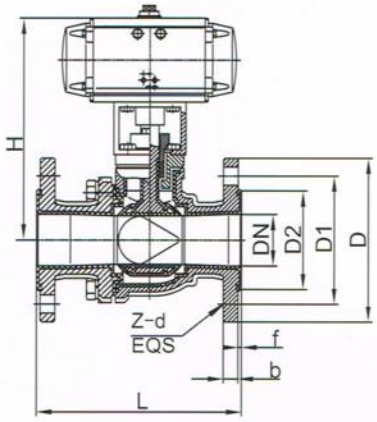


※ Technical Specificiation

Design & Manufacture Standard	HG/T3704, API 6D
Face-to-face Dimension	HG/T3704, GB/T12221, ASME B16.10
Flange Connection	HG/T20592, GB/T9119, ASME/ANSI 16.5, JIS B2220
Inspection & Test Standard	GB/T4213, GB/T13927, GB/T26144, API598
Actual Pressure	Maximum 1.0MPa (1.6MPa customised)
Nominal Pressure	PN0.6, 1.0, 1.6MPa; 150LB; JIS 10K
Working Temperature	–30°C ~+200°C
Full Travel Time	4~35 seconds when fully open or fully close
Flow Characteristic	Approximate equal percentage
Actuator	Equip with ACT series
Pressure Supply	Air pressure: 0.5Mpa
Air Supply Connection	Rc1/4
Basic Error	With positioned:±2%, backlash <1.5% ; dead zone: 0.8%; End point deviation: ±1.5%
Leakage Rate	No more than 10^{-5} of rated CV
Optional Accessories	positioner, air set, solenoid valve, limit switch etc. (according to the order)

Lined Control Ball Valve





HG/T 20592

Unit:mm

DN	L	PN10(1.0MPa)						PN16(1.6MPa)								
		D	D1	D2	b	f	Z-φd	D	D1	D2	b	f	Z-φd	Double acting	Single acting	Torque N·M
15	132	95	65	45	14	2.5	4-14	95	65	45	14	2.5	4-14	ACT75D	ACT75S	10
20	142	105	75	55	14	2.5	4-14	105	75	55	14	2.5	4-14	ACT75D	ACT90S	40
25	150	115	85	65	16	3	4-14	115	85	65	16	3	4-14	ACT90D	ACT100S	50
32	165	140	100	78	17	3.5	4-18	140	100	78	17	3.5	4-18	ACT115D	ACT115S	90
40	180	150	110	85	18	3.5	4-18	150	110	85	18	3.5	4-18	ACT125D	ACT145S	100
50	200	165	125	100	19	3.5	4-18	165	125	100	19	3.5	4-18	ACT145D	ACT160S	110
65	220	185	145	120	20	3.5	4-18	185	145	120	20	3.5	4-18	ACT16D	ACT190S	180
80	250	200	160	135	20	3.5	8-18	200	160	135	20	3.5	8-18	ACT160D	ACT190S	350
100	280	220	180	155	22	4	8-18	220	180	155	22	4	8-18	ACT190D	ACT20S	590
125	320	250	210	185	25	4	8-18	250	210	185	25	4	8-18	AW17	AW20S	900
150	360	285	240	210	27	4	8-22	285	240	210	27	4	8-22	AW17	AW20S	1645
200	400	340	295	265	28	4	8-22	340	295	265	28	4	12-22	AW20a	AW20S	2680
250	450	395	350	320	29	4	12-22	405	355	320	29	4	12-26	AW20	AW25S	3630
300	500	445	400	368	32	5	12-22	460	410	375	32	5	12-26	AW25	AW28S	5120

ASME B16.5/JIS B2220

DN	NPS	L	ASME 150LB								
			D	D1	D2	b	f	Z-φd	Double acting	Single acting	Torque N·M
15	1/2	110	89	60.5	35	14	3	4-15	ACT75D	ACT75S	10
20	3/4	117	98	70.0	43	15	3	4-15	ACT75D	ACT90S	40
25	1	127	108	79.5	51	16	3	4-15	ACT90D	ACT100S	50
32	11/4	140	117	89.0	64	17	3.5	4-15	ACT115D	ACT115S	90
40	11/2	165	127	98.5	73	18	3.5	4-15	ACT125D	ACT145S	100
50	2	178	152	120.5	92	19	3.5	4-19	ACT145D	ACT160S	110
65	21/2	190	178	139.5	105	20	3.5	4-19	ACT16D	ACT190S	180
80	3	203	190	152.5	127	20	3.5	4-19	ACT160D	ACT190S	350
100	4	229	230	190.5	157	22	4	8-19	ACT190D	ACT210S	590
125	5	254	255	216.0	186	25	4	8-22	AW17	AW20S	900
150	6	267	280	241.5	216	27	4	8-22	AW17	AW20S	1645
200	8	292	343	298.5	263	28	4	8-22	AW20a	AW20S	2680
250	10	330	406	362.5	324	29	4	12-25	AW20	AW25S	3630
300	12	356	485	432.0	381	32	5	12-25	Aw25	AW28S	5120

Note: For more sizes, please consult factory.

Pneumatic Diaphragm Control Valve

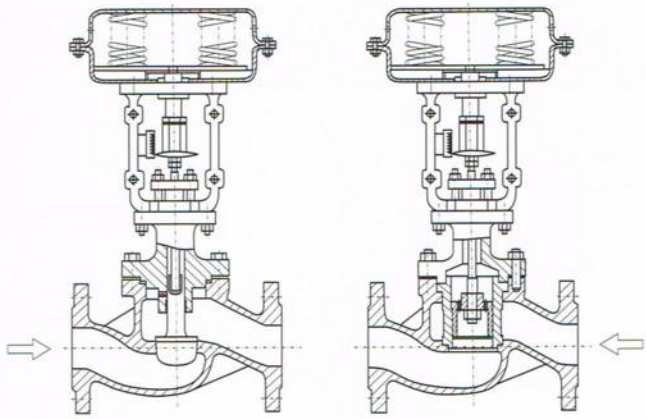
※Production Description

◆ ZHJP/ZHJM series diaphragm pneumatic control valves have features of good shock resistance, easy installation. It is widely used in chemical industry, petroleum, light industry, power station, metallurgy and other industrial production in the automatic control system.

※ Structure Principle

◆ It receives the signal pressure outputted by standard electrical signals from regulator (via electric-pneumatic positioner or electric-pneumatic converter), and controls the valve opening angle, so as to change the medium flow, making the parameter of flow, pressure, temperature and fluid level regulated to realize automatical production process.

◆ After pneumatic pressure signal from outside into diaphragm room, this pressure acting on diaphragm to generate thrust, and the thrust compress the spring set, making the push rod moving to drive the stem, leading the valve core open/closed, until the thrust is balanced with the force from compressed spring set and being stable in a certain position of the trip.



ZHJP Series　　ZHJM Series

※ Specification and Technical Parameter

Model		ZHJP series pneumatic single seat regulating valve ZHJM series pneumatic sleeve regulating valve															
Model according to CV3000		HLS small bore single seat regulating valve					HTS single seat regulating valve HCB cage type double seat regulating valve										
Nominal diameter DN(mm)		20				25	32	40	50	65	80	100	125	150	200	250	300
		10	12	15	20												
Rated CV	High precision flow characteristic valve disc	1.6	2.5	4.0	6.3	10	17	24	44	68	99	175	275	360	630	900	1440
	High volume flow characteristic valve disc	1.8	2.8	4.4	6.9	11	21	30	50	85	125	200	310	440	690	1000	1600
Rated journey (mm)		10				16		25		40			60			100	
Diaphragm effective area cm^2		280						400		630			1000			1600	
Rinherent adjustable ratio		50:1															
Nominal pressure MPa		1.6, 4.0, 6.4															
Working temperature		Ambient temp: -20~200, 40~250, 40~450															
Environment temperature		-30~+70															
Air source pressure KPa		0.14, 0.25, 1.40															
Spring range KPa		20~100, 40~200/80~240															
Joint screw		G1/4", M16X1.5															

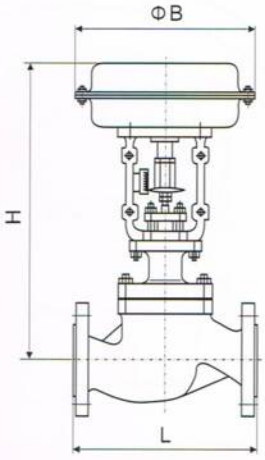
Pneumatic Diaphragm Control Valve

FLUID SYSTEM CO.,LTD.
website: www.fluidsystem.co.th
e-mail: sales@fluidsystem.co.th
tel: 0815607905

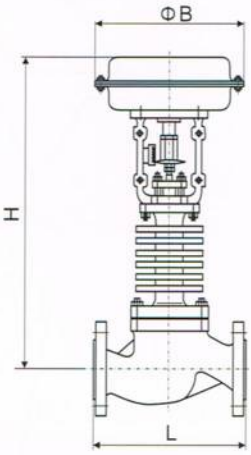
※Techniacal Specification

Test & inspection as per GB/T 4213

Item	Without positioner	With positioner
Basic error(%)	≤ ± 5%	≤ ± 1%
Backlash(%)	≤3%	≤1%
Dead zone(%)	≤3%	≤0.4%
Leakage	ZJHP: ≤ $1X10^{-4}$ valve rated CV ZJHM: ≤ $1X10^{-3}$ valve rated CV	
Rated CV	≤ ± 10%	
Flow characteristic	Slope ± 30%	



Normal type



Heat dissipation extened type

Unit:mm

DN	L			H		¢B
	PN16	PN40	PN64	Normal	Heat dissipation	
20	184	194	206	394	509	245
25	184	197	210	396	512	245
32	200	210	210	402	523	245
40	222	235	251	437	589	290
50	254	267	286	451	597	290
65	276	292	311	607	707	362
80	298	317	337	613	718	362
100	352	368	394	631	731	362
125	410	425	440	736	848	454
150	451	473	508	778	887	454
200	600	620	650	796	898	454
250	650	660	670	1063	1172	560
300	740	785	800	1083	1193	560

Pneumatic Diaphragm Control Valve

YOUFUMI fluid system

※ZHJP Allowable DP

Unit:MPa

Type	Actuator Model	Spring Range Kpa	Air Pressure Kpa	Accessories	DN(mm)													
					20				25	32	40	50	65	80	100	125	150	200
					10	12	15	20										
Air to Close	ZHA-2	20~100 20~100 40~200	140 250 400	P P P,R	6.4 6.4 6.4	6.4 6.4 6.4	5.5 6.4 6.4	3.1 6.4 6.4	1.9 6.4 6.4	1.2 4.7 6.3								
	ZHA-3	20~100 20~100 40~200	140 250 400	P P P,R							1.1 4.6 6.2	0.7 2.9 3.9						
	ZHA-4	20~100 20~100 40~200	140 250 400	P P P,R									0.66 2.75 3.70	0.43 1.8 2.44	0.28 1.16 1.56			
	ZHA-5	20~100 20~100 40~200	140 250 400	P P P,R												0.3 1.1 2.0	0.2 0.8 1.4	0.10. 0.46 0.79
Air to Open	ZHB-2	20~100 20~100 40~200	140 250 400	P P P,R	5.0 6.4 6.4	3.7 6.4 6.4	2.3 5.5 6.4	1.3 3.1 6.4	0.85 1.99 4.28	0.6 1.3 2.6								
	ZHB-3	20~100 20~100 40~200	140 250 400	P P P,R							0.47 1.1 2.3	0.30 0.71 1.50						
	ZHB-4	20~100 20~100 40~200	140 250 400	P P P,R									0.37 0.75 1.50	0.24 0.49 0.99	0.15 0.30 0.60			
	ZHB-5	20~100 20~100 40~200	140 250 400	P P P,R												0.15 0.32 0.64	0.11 0.22 0.44	0.06 0.12 0.25

※ZHJM Allowable DP

Unit:MPa

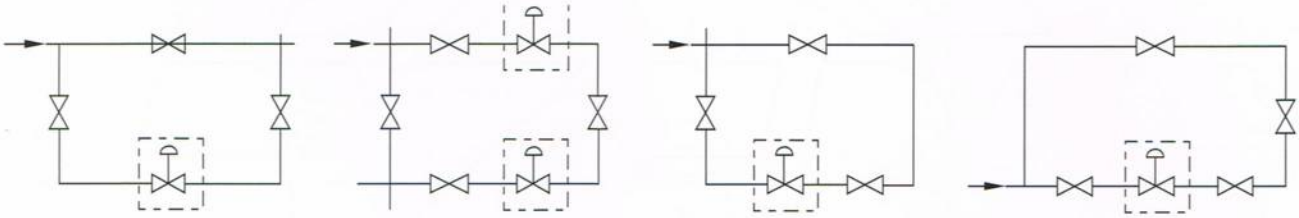
Type	Actuator Model	Spring Range KPa	Air Pressure KPa	Accessories	DN(mm)									
					25	32	40	50	65	80	100	125	150	200
Air to Close	ZHA-2	20~100 20~100 40~200	140 250 400	P P P,R	3.0 6.4 6.4	2.2 6.4 6.4								
	ZHA-3	20~100 20~100 40~200	140 250 400	P P P,R			2.3 6.4 6.4	2.0 6.4 6.4						
	ZHA-4	20~100 20~100 40~200	140 250 400	P P P,R					2.5 6.4 6.4	2.2 6.4 6.4	1.8 6.4 6.4			
	ZHA-5	20~100 20~100 40~200	140 250 400	P P P,R								1.8 6.4 6.4	1.5 6.4 6.4	1.2 6.4 6.4
Air to Open	ZHB-2	20~100 20~100 40~200	140 250 400	P P P,R	1.5 4.5 6.4									
	ZHB-3	20~100 20~100 40~200	140 250 400	P P P,R			1.25 3.45 6.40	1.1 3.1 6.4						
	ZHB-4	20~100 20~100 40~200	140 250 400	P P P,R					1.25 3.70 6.40	1.15 3.15 6.40	1.0 2.7 6.1			
	ZHB-5	20~100 20~100 40~200	140 250 400	P P P,R								1.2 2.1 5.3	1.1 2.0 5.1	0.80 1.80 4.20

Pneumatic Diaphragm Control Valve

Note: ◆ P-valve positioner R- Pressure relay
◆ Max. allowance DP> 1.0Mpa, disc and seat surfacing hard alloy overlaid

※Installation

◆The applicable temperature for lined diaphragm control valve is -30°C to +70°C. Since the pneumatic diaphragm and piston are rubber parts, they are easily hardening and brittle under low temperature, and aging accelerates under high temperature.
◆This valve is better for vertical installation; if not allowed, consider adding the support bracket for slanting installation.
◆After hand wheel actuator used, the telescopic pipe should be returned to top end, or will affect automatic control.
◆It should clean the impurities and dirt on pipeline before the lined butterfly valve before installed, to avoid the running parts stuck, or damage the important parts of seat and disc sealing face.
◆When the lined butterfly valve installed and there is leakage, it should tighten the bolts between upper and lower bodies until no leakage.

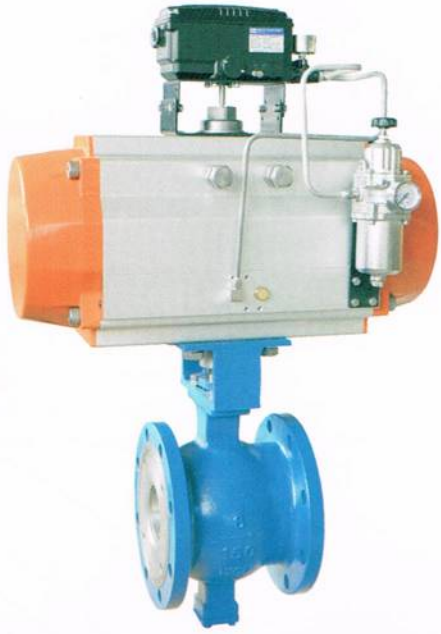


Control V-Port Ball Valve

FLUID SYSTEM CO.,LTD.
website: www.fluidsystem.co.th
e-mail: sales@fluidsystem.co.th
tel: 0815607905

YOUFUMI

※ Product Description



Pneumatic V-Type ball valve, with V-port ball, is able to realize linear regulation in a wide range. When the valve is closed, it occur wedge shearing action between V-notch and seat, with self-cleaning function to prevent ball from being stuck, particularly suitable for scaling and frozen occasion in pipeline; and applied for the control of the pulp, sewage, the solid fiber and particle suspension turbid medium powder and granular media. When it fully opens, the flow capacity is big and pressure loss is less and the medium will not deposit at the body. This valve has the function of accurate regulation and reliable positioning. The flow characteristic is approximately equal percentage.

This ball valve series can be divided in soft sealing and metal sealing by sealing performance. According to regulation mode, it can be divided into adjusting type and cutting type, also the cutting type can be divided into single acting mode and double acting mode. According to function mode and the adjusting type belong to double acting mode.

Unique advantage of single acting is that once the power supply fails, the ball will automatically locate in closed or open position according to the requirement of the control system.
Products are widely used in electric power, petroleum, chemical industry, paper

※ Technical Specification

Type	Through Way Ball Valve													
DN	25	32	40	50	65	80	100	125	150	200	250	300	350	400
Seat Diameter	20	26	33	40	53	66	86	104	128	170	212	255	300	340
Rated KV	25	36	63	100	184	280	400	600	950	1540	2500	3900	6150	9800
PN	PN1.6~6.4													
Leakage Rate	Soft Sealing: ≤1.8×10-7 × △P × DN.1/h (Test medium is liquid: △ p is for differential pressure) Metal Sealing: ≤10-4 ×Valve rated capacity. 1/h													
Air Pressure(Mpa)	0.4~0.6Mpa													
Connection Type	Wafer ,Flange, Pipeline Flange as per JB79-59													
Temperature	Soft Sealing -40°C~+180°C; Metal Sealing -40°C~+450°C													
Rated Angle	90°C													
Flow Characteristic	Approximate equal percentage													
Body Material	A105, F3215, F3165, WCB5, ZG1Cr18NiTi5, ZGOCr18Ni12Mo2Ti5, ZGOOCr17Ni14Mo2													
Ball Type	V-port													
The Seat Material	PTFE, SS316 Stellited faced seat													
Basic error	≤ 1.5%													
Backlash	≤ 1.5%													
Dead zone	≤ 0.8% of total travel (With the actuator)													
Rated flow rate coefficient KV difference	≤ ±10													

Control V-Port Ball Valve

※ Performance Specification

◆ **Test Pressure**

Nominal pressure PN	Max. working pressure in normal temperature (MPa)	Shell test (MPa)	Air sealing test pressure (MPa)	High pressure sealing test pressure (Mpa)
1.6	1.6	2.4	0.6	1.76
2.5	2.5	3.8	0.6	2.75
4.0	4.0	6.0	0.6	4.4
6.4	6.4	9.6	0.6	7.1
Class150	2.0	3.0	0.6	2.2
Class300	5.0	7.5	0.6	5.2

◆ **Application Range**

Body material	Seat material	Applicable temperature	Applicable medium
WCB	PTFE+ Stainless steel	≤150℃	Water, steam, oil and etc.
	Stainless steel	≤200℃	
Ci Ni STEEL P type	PTFE+ Stainless steel	≤150℃	nitrose
	Stainless steel	≤200℃	
Ci Ni Mo Ti Steel R type	PTFE+ Stainless steel	≤150℃	Acetic Acid
	Stainless steel	≤200℃	
Ci Ni Mo Ti Steel I type	hard alloy	≤550℃	Steam, smelt, energy

※ Material Specification

Body, Bonnet	GB	WCB		ZG1Cr18Ni9Ti		ZG0Cr18Ni12Mo2Ti		ZG15CrMo1V
	ASTM	WCB		CF8		CF8M		WC9
Ball	GB	ZG2Cr13		ZGCr18Ni9Ti/ special treatment on surface		ZG0Cr18Ni12Mo2Ti/ special treatment on surface		ZG15CrMo1V/ special treatment on surface
	ASTM	Ca15		CF8+HF		CF8M+HF		WC9+HF
Stem	GB	2Cr13		1Cr18Ni9Ti		0Cr18Ni12Mo2Ti		25Cr2Mo2V
	ASTM	420		304		316		F22a
Seat	GB	PTFE	2Cr13	PTFE	1Cr18Ni9Ti	PTFE	0Cr18Ni12Mo2Ti	D517
	ASTM	PTFE	420	PTFE	304	PTFE	316	HF
Packing	GB	PTFE	Flexible graphite	PTFE	Flexible graphite	PTFE	Flexible graphite	Flexible graphite
	ASTM	PTFE	Flexible graphite	PTFE	Flexible graphite	PTFE	Flexible graphite	Flexible graphite
Bolt	GB	35		0Cr18Ni9		0Cr18Ni9		15Cr1Mo1V
	ASTM	A193 B7		A320-B8		A320-B8		A193 B16
Nut	GB	45		0Cr18Ni9		0Cr18Ni9		20CrMo
	ASTM	A194 2H		A194-8		A194-8		A194-4

Control V-Port Ball Valve

HG/T 20592 PN16

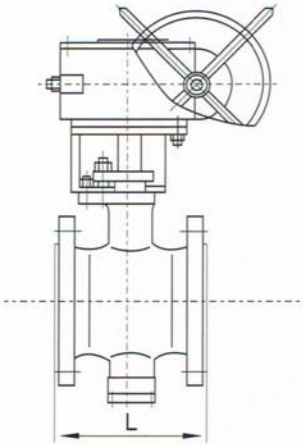
Unit:mm

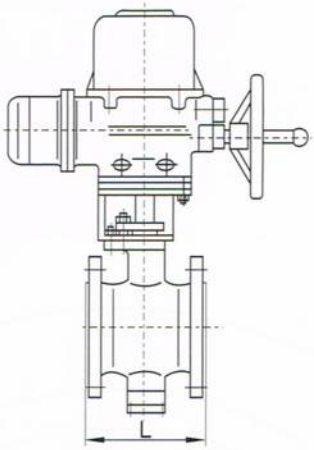
DN	L	D	D1	D2	f	B	H	L1	n-φ
25	102	115	85	65	2	14	150	260	4-14
32	102	135	100	78	2	16	165	260	4-18
40	114	145	110	85	3	16	170	260	4-18
50	124	160	125	100	3	16	190	260	4-18
65	145	180	145	120	3	18	208	260	8-18
80	165	195	160	135	3	20	250	260	8-18
100	194	215	180	155	3	20	265	262	8-18
125	213	245	210	185	3	22	290	262	8-18
150	229	280	240	210	3	24	330	370	8-23
200	243	335	295	265	3	26	390	370	12-23
250	297	405	355	320	3	30	450	370	12-25
300	380	460	410	375	4	30	480	370	12-25
350	410	520	470	435	4	34	540	370	16-25
400	445	580	525	548	4	36	540	370	16-30

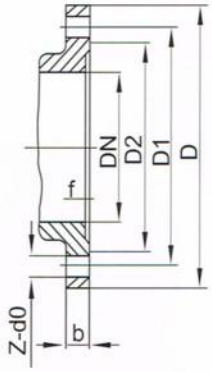
HG/T 20592 PN25

25	102	115	85	65	2	16	150	260	4-14
32	102	135	100	78	2	18	165	260	4-18
40	114	145	110	85	3	18	170	260	4-18
50	124	160	125	100	3	20	190	260	4-18
65	145	180	145	120	3	22	208	260	8-18
80	165	195	160	135	3	22	250	260	8-18
100	194	230	190	160	3	24	265	262	8-23
125	213	270	220	188	3	28	290	262	8-25
150	229	300	250	218	3	30	330	370	8-25
200	243	360	310	278	3	34	390	370	12-25
250	297	425	370	332	3	36	450	370	12-30
300	380	485	430	300	4	40	480	370	16-30
350	410	550	490	448	4	44	540	370	16-34
400	445	610	550	505	4	48	540	370	16-34

Control V-Port Ball Valve







HG/T 20592 PN40

Unit:mm

DN	L	D	D1	D2	f	B	H	L1	n–φ
25	102	115	85	25	2	16	150	56	4-14
32	102	135	100	32	2	18	165	66	4-18
40	114	145	110	40	2	18	170	76	4-18
50	124	160	125	50	3	20	225	225	4-18
65	143	180	145	65	3	22	235	235	8-18
80	165	195	160	80	3	22	260	260	8-18
100	194	230	190	100	3	24	270	270	8-23
125	213	270	220	125	3	28	320	320	12-23
150	229	300	250	150	3	30	350	340	12-25
200	243	375	320	200	3	38	390	390	12-30
250	297	445	385	250	3	42	420	420	12-34
300	380	510	450	300	4	46	510	510	16-34

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25	102	135	100	25	2	22	150	56	4-18
32	102	150	110	32	2	24	165	66	4-23
40	114	165	125	40	3	24	170	76	4-23
50	124	175	135	50	3	26	225	88	4-23
65	143	200	160	65	3	28	235	110	8-23
80	165	210	170	80	3	30	260	121	8-23
100	194	250	200	100	3	32	270	150	8-25
125	213	295	240	125	3	36	320	176	8-30
150	229	340	280	150	3	38	340	204	8-34
200	243	405	346	200	3	44	390	260	12-34
250	297	470	400	250	3	48	420	313	12-41
300	380	530	460	300	4	54	510	364	16-41