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%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 singleseat 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+Lini	ng material SS316+Lin	ing material				
14	Joint	A216 WCB+ Lining material	A351 CF8 CF8M +Lining material	A351 CF3 CF3M +Lining material				
15	Screw	A932H	A194 8	A194 8M				
16	Stud	A194 B7	A320 B8	A193 B8M				
17	Body	A216 WCB+ Lining mater/al	A351 CF8 CF8M +Lining material	A351 CF3 CF3M +Lining material				



Control Valve 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.



A. air to close: direct action

Pneumatic Mult-spring Diaphragm Actuator



Operation Drawing





Single Seat Control Valve



PTFE Bellow Control Valve



Control Valve Lined Control Valve

% Technical Specification

Nominal diameter DN	2	5	3	2	4	0	5	0	6	5	8	0	1(00	125		150	2	00
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)		1	6			25					3	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	Ĺ	ZJHA	/B-22			ZJHA	/B-23		ZJHA/B-34						ZJHA/B-45				
Action mode			ZJHA	type a	ctuato	r refe	r to "ai	r-to-clo	ose" a	ction:	ZJHE	8 actua	ator re	fer to '	ʻair-to-	open"	action	1	
Pressure supply	Ac	cordin	ng to th	e sco	pe of s	spring	0.02-	-0.10,	0.04~	0.20,0	0.08~0).24 M	pa, Re	espect	ly are	0.14,	0.25, 0	.35 M	Pa
Air supply connection										Rc1/4									
Basic error						٧	Vithou	t positi	oner:	:5%; V	Vith po	osition	er:±1%	6;					
Backlash						V	/ithout	positi	oner: 3	3%; W	ith po	sitione	er: 1%;	;					
Dead zone	1.1					V	/ithout	positi	oner: (3%; W	ith po	sitione	er: 0.49	%;					
End point deviation		Withou	ut posi	tioner:	openi V	ing po Vith p	int±2.	5%, te er erre	rminal or fron	point <u>:</u> begii	£5%; o nning	closing to end	point is ±1%	±5%, t %;	ermina	al poir	t±2.5%	6.	
Travel deviation										±2.5%	,								
Leakage rate								No m	ore that	an 10.⁵	of rat	ed CV							
Optional accessories				positi	oner,	air se	t, sole	noid v	alve, li	mit sw	vitch e	tc. (ac	cordin	g to th	e orde	er)			

• Figure 3 Flow characteristics curve of lined control valve



Fig3: Flow rate Curve

Control Valve Lined Control Valve

Actuator Technical Specification

Pneumatic Multi-spring Diaphragm Actuator

		Diahpragn	Supply	Spring	Allowable DP 100KPa allowable DP 100KPa											
Action	Actuator	area	pressure	range					Se	eat diar	neter m	nm				
mode	moder	cm	MPa	MPa	20	25	32	40	50	65	80	100	110	125	150	175
			0.14	0.02~0.10	12	7.6	6.3	4.0	2.6	-	-	-	-	-	-	-
	ZJHA- 22/23	350	0.28	0.04~0.20	16	16	14	12	7.6	-	-	-	-	-	-	-
			0.35	0.08~0.24	16	16	16	16	12	-	-	-	-	-	-	-
			0.14	0.02~0.10	16	10	7.5	6.6	4.2	2.4	1.6	1.0	-	-	-	-
	ZJHA- 34	560	0.28	0.04~0.20	-	-	16	12	9.8	5.6	3.8	2.9	-	-	-	-
Air-to-			0.35	0.08~0.24	-	-	16	16	16	13	8.6	5.5	-	-	-	-
close		ZJHA- 900	0.14	0.02~0.10	-	-	-	-	-	5.4	3.6	2.3	1.7	1.1	0.7	0.2
	ZJHA- 45		0.28	0.04~0.20		-	-	-	1 - C -	9.3	6.1	3.9	2.5	1.7	1.1	0.7
			0.35	0.08~0.24		-	- 1	-		14	9.8	8.2	5.2	3.7	2.5	1.6
			0.14	0.02~0.10	-	-	-	-	-	1	5.6	4.0	2.6	1.7	1.1	0.7
	ZJHA- 56	1500	0.28	0.04~0.20	- T	-	-	-	-	· •		·	9.1	5.8	3.5	2.5
			0.35	0.08~0.24	-	-	-		1 - 1	- (11	8.8	5.7	3.5
		350	0.14	0.02~0.10	10	7.6	4.6	2.6	1.3	-	-	1 - 1	-	-	-	-
	ZJHB- 22/23		0.28	0.04~0.20	16	16	11	9.6	6.1	-	- 1	-	-	-	-	-
			0.35	0.08~0.24	16	16	16	16	10	-	-	-	- 1	-	-	-
		ĵ	0.14	0.02~0.10	<u> </u>	12	6.1	4.2	2.4	1.2	0.6	0.4	-	-	-	-
	ZJHB- 34	560	0.28	0.04~0.20	J -	-	16	12	8.2	5.6	3.8	2.4	-	-	-	-
Air-to-			0.35	0.08~0.24	-	-	16	16	16	7.2	4.8	3.5	-	-	-	-
open			0.14	0.02~0.10	-	-	-	- 1	-	2.4	1.6	1.1	0.7	0.4	0.2	0.1
	ZJHB- 45	900	0.28	0.04~0.20	-	-	i F	-	-	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
			0.14	0.02~0.10	-	-		-	-	-	4.0	2.6	1.7	1.1	0.7	0.2
	ZJHB- 56	1500	0.28	0.04~0.20	-	-	-	-	-		-	-	3.9	2.5	1.7	0.7
			0.35	0.08~0.24	1.0	-		- 1	-		-	- 2	8.4	5.4	3.7	1.6

Electric Actuators

	Allowable DP 100KPa												
Actuator thrust N.M	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.







BControl Valve 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	н	А
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.

*****Operation Principle

• Lined Single-seat Control Valve, the valve components mainly include the valve body, bonnet, stem and valve core, guide sleeve plate, traditional diaphragm valve stem, to prevent valve core from falling off and bending breakage.



HG/T 20592 PN16

DN	L	D	D1	D2	b	f	n-d	Thread	Н	А
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



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

Unit:mm

Control Valve 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
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.

Control Valve Lined Control Valve

%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.
- 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.



• Cleaning the pipeline before installation. There should be enough space in pipeline at the valve entrance, where should be equipped with

