

Product Advantages

The P-series single-seat control valve is an upgraded product developed by our company with imported advanced foreign technology. Its valve seat features a quick-change threadless structure that allows for fast replacement without special tools. This design not only enhances the valve seat's strength and improves its leakage class, but also resolves the issue of valve seat replacement. The valve adopts a spherical valve body and a top-guided valve cage, and the entire series is designed with a modular concept, enabling arbitrary combination and interchange of different components.

Applicable Industries

1.1

According to operating conditions, the valve can be equipped with pneumatic or electric actuators. The complete unit delivers high output force, sensitive response, a wide adjustable range, and easy maintenance. It can be used to control fluids under various operating conditions and adapt to severe working environments. It is widely applied in industries such as petroleum, chemical, electric power, light textile, pharmaceutical, and papermaking, and is particularly suitable for working scenarios that require low allowable leakage and a small pressure difference between the valve inlet and outlet.

Valve Body

Type	Globe	Flow Characteristics	Equal percentage or Linear	Nominal Diameter	DN20~DN200 (3/4"~8")
Trim Type	Single Seat	Leakage	IV, V, VI	Connection	Flange, Thread, Welding
Nominal Pressure	PN16~PN100, Class 150~Class600			Applicable Temperature	-196~+60°C, -29~+250°C, -29~+560°C
Bonnet Type	Standard, Control and Cut-off, High-temperature, Low-temperature, Bellows Sealing				

Main Materials

Valve Body, Valve Bonnet

WCB, WC6, WC9, LCB,
CF8, CF8M, CF3, CF3M

Valve Plug, Valve Seat

304, 316, 304L, 316L

Above + PTFE

Above + Hard Alloy Hardening Treatment

Bellows

304, 316, 304L, 316L, 316Ti, HC

Packing

PTFE, Graphite

Gasket

Stainless Steel+Graphite

Diaphragm

Nylon Reinforced NBR, EPDM, Viton

Spring

60Si2Mn

Stem

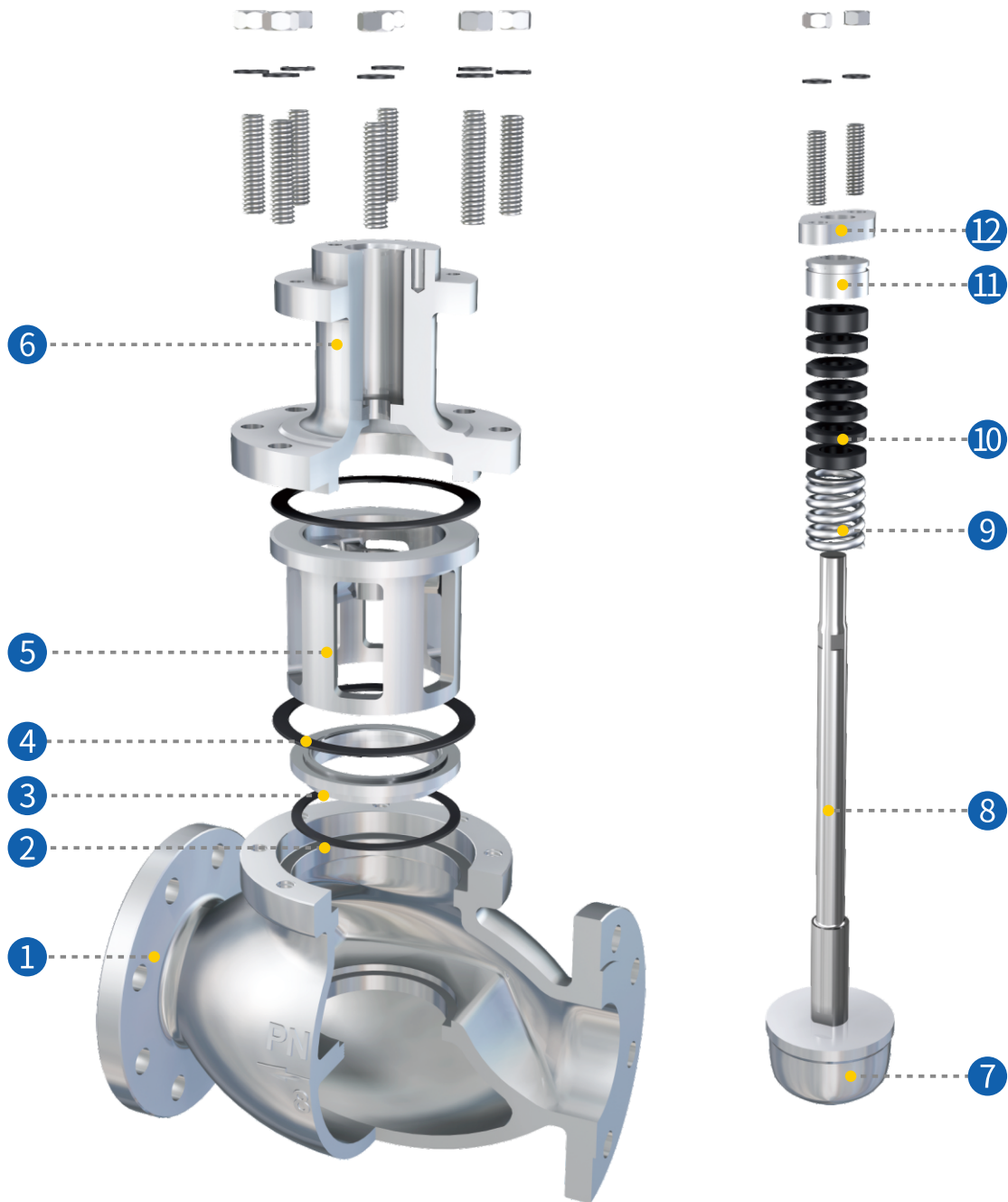
2Cr13, 3Cr13, 17-4PH, 660, XM-19

304, 316, 304L, 316L

Note: Other materials can be provided upon special request. The specific material models will be subject to the purchase order contract.

P Series Single Seat Control Valve

Product Structure



1.1

1	Valve Body	4	Gasket	7	Plug	10	Packing
2	Gasket	5	Cage	8	Stem	11	Packing Stud
3	Valve Seat	6	Bonnet	9	Packing Spring	12	Packing Gland

Bonnet Type

Standard Bonnet

Operating Temperature: $-29\sim+250^{\circ}\text{C}$, Leakage Class IV and V (Figure 1)

High-Temperature Bonnet

Valve Cover with Additional Fins: Suitable for medium temperatures of $-60\sim+560^{\circ}\text{C}$ (Figure 2)

Bellow Sealing

Long Neck Valve Cover with Bellows Seal Structure: Suitable for cryogenic conditions of -196°C (Figure 3)

Low-Temperature Bonnet

Complete Seal for Moving Valve Stem: Prevents fluid leakage (Figure 4)

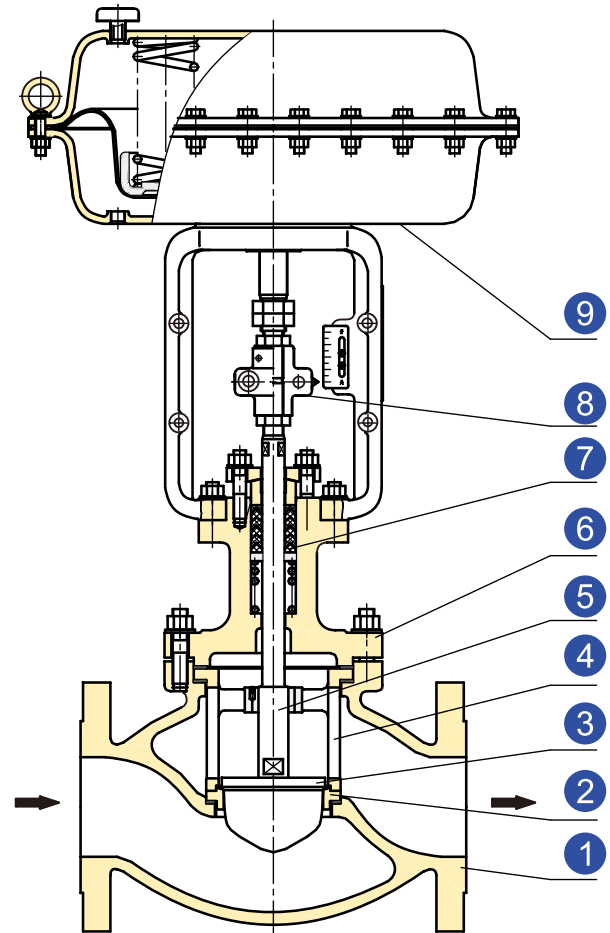
Jacketed Body

Equipped with a insulation jacket, it is suitable for occasions where fluids are prone to crystallization, solidification, or blockage after cooling (Figure 5)

Cut-off Valve Plug

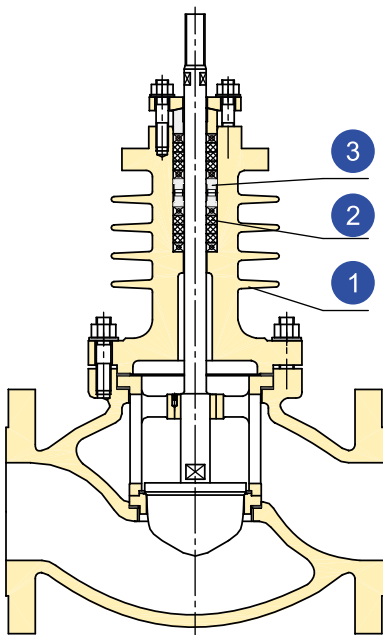
Soft Seal Structure: Valve leakage class can reach Class VI (micro-bubble level) (Figure 6)

1.1



- ① Body ② Seat ③ Plug ④ Cage
- ⑤ Stem ⑥ Bonnet ⑦ Packing
- ⑧ Clamping Block ⑨ Pneumatic Actuator

Fig. 1 Standard Bonnet (Pneumatic)



- ① Fin ② Packing ③ Isolation ring

Fig. 2 High-Temperature Bonnet

Pneumatic Actuated

Air to Close (FO)

When there is a gas supply failure, the actuator spring will open the valve.

Air to Open (FC)

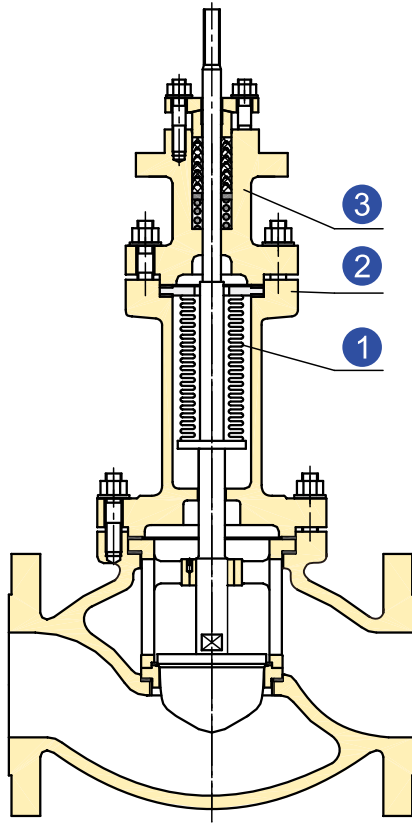
When there is a gas supply failure, the actuator spring will close the valve.

Electric Actuated

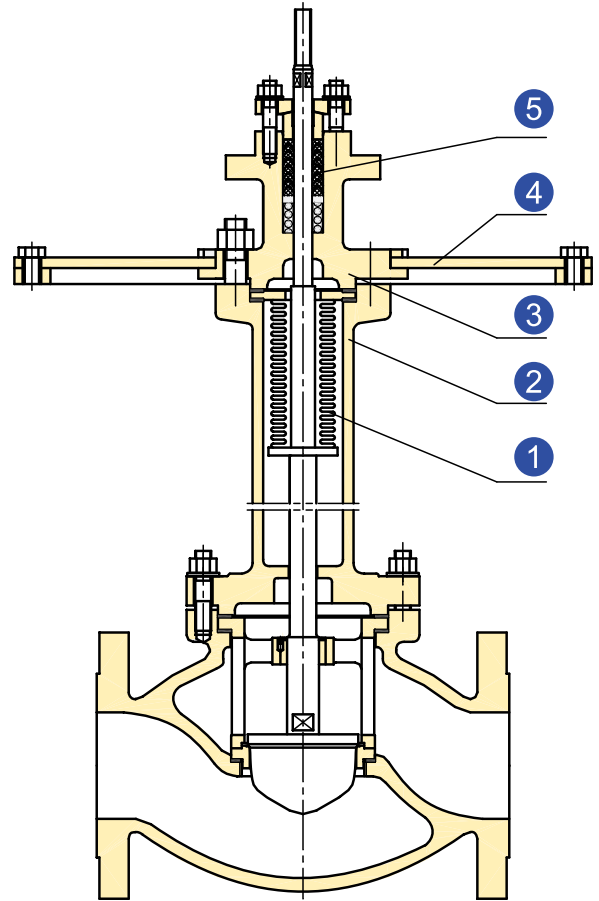
Close When Energized (FO)

Open When Energized (FC)

P Series Single Seat Control Valve



① Bellow ② Long-neck Bonnet ③ Bonnet
Fig. 3 Bellow Sealing



① Bellow ② Long-neck Bonnet ③ Bonnet
④ Cold box mounting flange ⑤ Packing
Fig. 4 Low-Temperature Bonnet

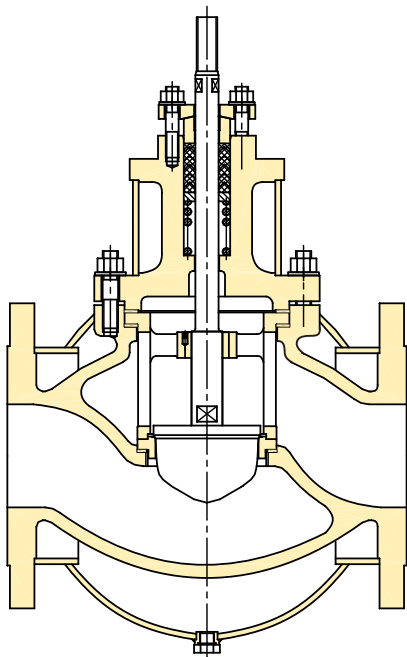


Fig. 5 Jacketed Body

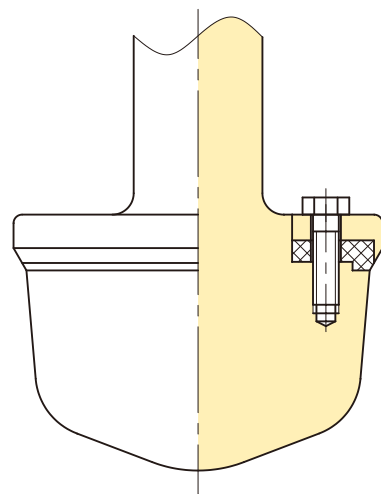


Fig. 6 Cut-off Valve Plug

1.1

Specifications

表1

Nominal Diameter/ mm		20	25	32	40	50	65	80	100	125	150	200
Flow Capacity Kv	Linear	6.9	11	17.6	27.5	44	69	110	176	275	440	690
	Equal %	6.3	10	16	25	40	63	100	160	250	400	630
Rated Stroke/ mm		16		25			40			60		
Nominal Pressure		PN16~PN100, Class 150~Class 300										
Flow Characteristic		Linear, Equal Percentage										
Adjustable Ratio R		50										
Pneumatic Actuator	Direct	PM280B		PM400B			PM600B			PM1000B		
	Reserve	PM280K		PM400K			PM600K			PM1000K		
Effective Area/ cm²		280		400			600			1000		
Spring Range/ KPa		20~100、40~200、80~240										
Supply Pressure/ MPa		0.14、0.25、0.28、0.40										
Electric Actuator	Model	360 Series, PSL Series, etc.										
	Power	220V.AC、380V.AC、24V										
Input Signal		4~20mA DC, 0~10mA DC and other control signals or the above signals for split-range control										

Note: The data in the table represents our company's standard configuration and can be customized according to user requirements.

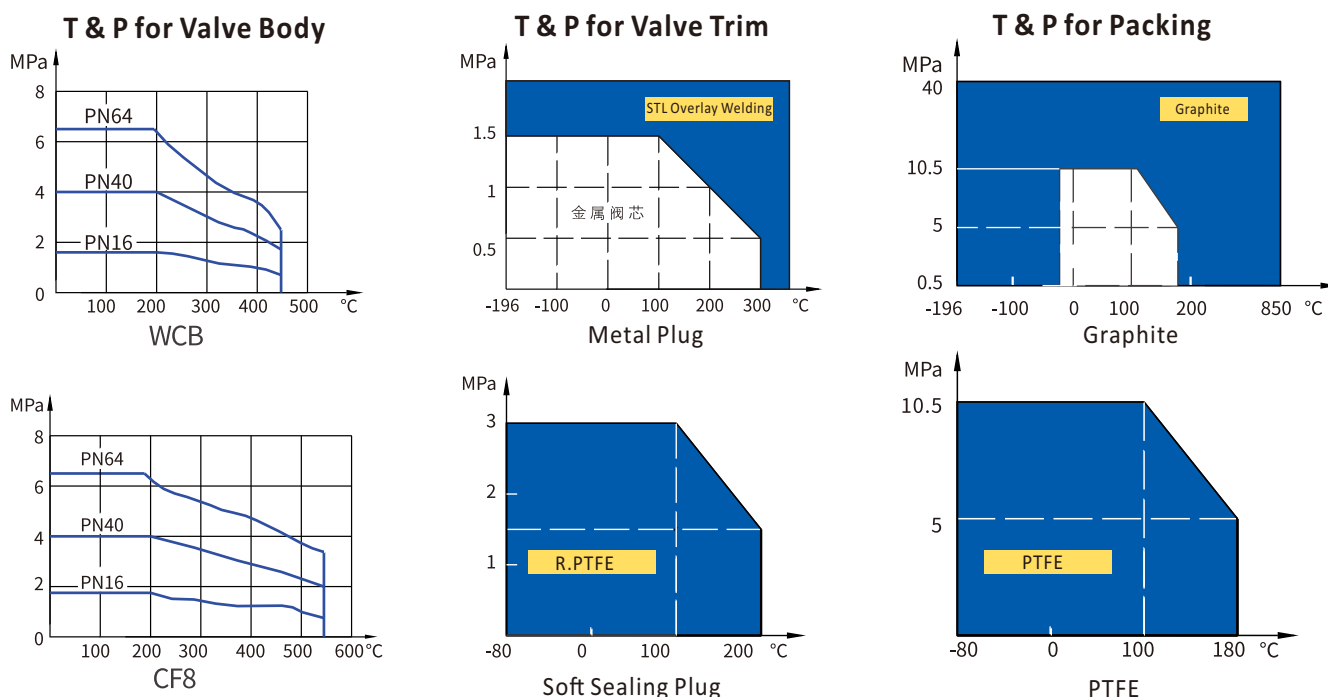
Main Preference

Table. 2

No.	Description	Pneumatic Control Valve		Electric Control Valve	
		Standard	High & Low-Temperature	Standard	High & Low-Temperature
1	Basic Error < (%)	±1.0	±2.5	±1.0	±2.0
2	Hysteresis < (%)	1.0	2.5	±1.0	2.0
3	Dead Band < (%)	0.4	1.0	1.0	2.0
4	Rated Travel Deviation < (%)	±1.0	±2.5	±1.0	±2.0
5	Starting and Ending Point Deviation < (%)	+2.5	+2.5	2.5	+2.5

P Series Single Seat Control Valve

Applicable Temperature and Pressure of Trim and Packing



1.1

Various Materials, Temperature Range and Leakage

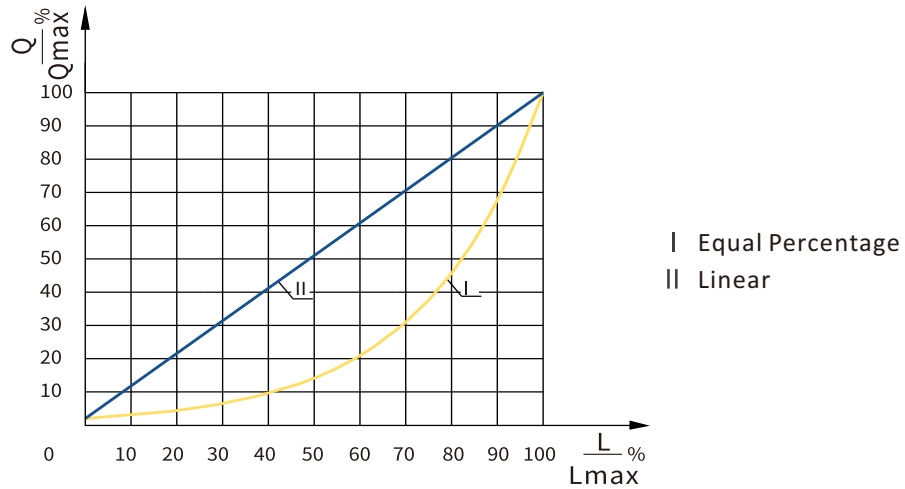
Table. 3

Nominal Diameter/ mm		20~200(3/4" ~ 8")	
Body Material		WCB、LCB、WC6、WC9	CF8、CF8M、CF3、CF3M
Temperature Range			
Bonnet	Standard Bonnet	-29 ~ +250 °C	-40 ~ +250 °C
	High-Temperature Bonnet	-29 ~ +425 °C	-60 ~ +560 °C
	Bellow Sealing	-29 ~ +425 °C	-100 ~ +560 °C
	Low-Temperature Bonnet	-46 ~ +160 °C	-196 ~ - 60 °C
Plug	Metal Sealing	-196 ~ +450 °C	
	Soft Sealing	-29 ~ +200 °C	
	STL Overlay Welding	-196 ~ +560 °C	
Packing	PTFE	-40 ~ +160 °C	
	PTFE+Graphite	-60 ~ -20 °C、 +140~+200 °C	
	Graphite	-196 ~ +560 °C	
Gasket	F4	-60 ~ +200 °C	
	PTFE+Graphite	-196 ~ +560 °C	
Leakage			
Plug	Metal Sealing	IV, V	
	Soft Sealing	V, VI	
	STL Overlay Welding	IV, V	

Note: 1, For the number of bubbles, see ASME B16.104. 2, The data in the table represents our company's standard configuration and can be customized according to user requirements.

P Series Single Seat Control Valve

Flow Characteristic Curve



1.1

Table. 4 Relative Flow Values for Various Inherent Flow Characteristics at Relative Travel (R50) Unit: %

Flow Chara.	L/L max	0	10	20	30	40	50	60	70	80	90	100
Linear	Q/Q max	2	11.8	21.6	31.4	41.2	51	60.8	70.6	80.4	90.2	100
Equal Percentage	Q/Q max	2	3	4.37	6.5	9.6	14.1	20.9	30.9	45.7	67.6	100

Maximum Differential Pressure

Table. 5 Air-to-Close Metal Sealing Type

Unit: MPa

Actuator Model	Spring Range Kpa	Air Supply MPa	Positioner	Nominal Diameter/ mm											
				20	25	32	40	50	65	80	100	125	150	200	
PM280B	20~100	0.14	—	1.03	0.66										
			✓	2.63	1.68										
	40~200	0.25	✓	3.42	2.19										
			✓	8.20	5.25										
PM400B	20~100	0.14	—			0.57	0.36	0.23							
			✓			1.44	0.92	0.59							
	40~200	0.25	✓			1.87	1.20	0.77							
			✓			4.48	2.87	1.84							
PM600B	20~100	0.14	—						0.22	0.14	0.09				
			✓						0.55	0.36	0.23				
	40~200	0.25	✓						0.71	0.47	0.30				
			✓						1.71	1.13	0.72				
PM1000B	20~100	0.14	—									0.09	0.06	0.04	
			✓									0.24	0.16	0.09	
	40~200	0.25	✓									0.31	0.21	0.12	
			✓									0.74	0.51	0.29	

P Series Single Seat Control Valve

Table. 6 Air-to-Open Metal Sealing Type

Unit: MPa

Actuator Model	Spring Range Kpa	Air Supply MPa	Positioner	Nominal Diameter/ mm											
				20	25	32	40	50	65	80	100	125	150	200	
PM280K	20~100	0.14	√, -	1.03	0.66										
	40~200	0.25	√	2.63	1.68										
	80~240	0.28	√	5.81	3.72										
PM400K	20~100	0.14	√, -			0.57	0.36	0.23							
	40~200	0.25	√			1.44	0.92	0.59							
	80~240	0.28	√			3.18	2.03	1.30							
PM600K	20~100	0.14	√, -						0.22	0.14	0.09				
	40~200	0.25	√						0.55	0.36	0.23				
	80~240	0.28	√						1.21	0.80	0.51				
PM1000K	20~100	0.14	√, -									0.09	0.06	0.04	
	40~200	0.25	√									0.24	0.16	0.09	
	80~240	0.28	√									0.52	0.36	0.20	

1.1

Table. 7 Air-to-Close Soft Sealing Type

Unit: MPa

Actuator Model	Spring Range Kpa	Air Supply MPa	Positioner	Nominal Diameter/ mm											
				20	25	32	40	50	65	80	100	125	150	200	
PM280B	20~100	0.14	—	1.27	0.81										
			√	2.86	1.83										
	40~200	0.25	√	3.00	2.34										
			√	3.00	3.00										
PM400B	20~100	0.14	—			0.70	0.45	0.29							
			√			1.57	1.00	0.64							
	40~200	0.25	√			2.00	1.28	0.82							
			√			3.00	2.95	1.89							
PM600B	20~100	0.14	—						0.27	0.18	0.11				
			√						0.60	0.39	0.25				
	40~200	0.25	√						0.76	0.50	0.32				
			√							1.76	1.16	0.74			
PM1000B	20~100	0.14	—									0.11	0.08	0.04	
			√									0.26	0.18	0.10	
	40~200	0.25	√									0.33	0.23	0.13	
			√									0.76	0.53	0.30	

P Series Single Seat Control Valve

Table. 8 Air-to-Open Soft Sealing Type

Unit: MPa

Actuator Model	Spring Range Kpa	Air Supply MPa	Positioner	Nominal Diameter/ mm											
				20	25	32	40	50	65	80	100	125	150	200	
PM280K	20~100	0.14	√, -	1.27	0.81										
	40~200	0.25	√	2.86	1.83										
	80~240	0.28	√	3.00	3.00										
PM400K	20~100	0.14	√, -			0.70	0.45	0.29							
	40~200	0.25	√			1.57	1.00	0.64							
	80~240	0.28	√			3.00	2.12	1.35							
PM600K	20~100	0.14	√, -						0.27	0.18	0.11				
	40~200	0.25	√						0.60	0.39	0.25				
	80~240	0.28	√						1.26	0.83	0.53				
PM1000K	20~100	0.14	√, -									0.11	0.08	0.04	
	40~200	0.25	√									0.26	0.18	0.10	
	80~240	0.28	√									0.54	0.38	0.21	

1.1

Table. 9 Electric Actuated Hard Sealing Type

Unit: MPa

DN(mm)	20	25	32	40	50	65	80	100	125	150	200
Force/ N											
800	1.78	1.14	0.70	0.45	0.29						
1000	2.23	1.43	0.87	0.56	0.36						
2000	4.46	2.85	1.74	1.11	0.71	0.42	0.28	0.18			
3000	6.68	4.28	2.61	1.67	1.07	0.63	0.42	0.27			
4000	8.91	5.70	3.48	2.23	1.43	0.84	0.56	0.36			
5000	10.0	7.13	4.35	2.79	1.78	1.05	0.70	0.45	0.29	0.20	0.11
6500			5.66	3.62	2.32	1.37	0.91	0.58	0.37	0.26	0.14
8000			6.96	4.46	2.85	1.69	1.11	0.71	0.46	0.32	0.18
10000			8.70	5.57	3.57	2.11	1.39	0.89	0.57	0.40	0.22
12000						2.53	1.67	1.07	0.68	0.48	0.27
16000									0.91	0.63	0.36
20000									1.14	0.79	0.45

P Series Single Seat Control Valve

Table. 10 Pneumatic Actuated Large Diameter Valve

Unit: MPa

DN(mm) 推力(N)	20	25	32	40	50	65	80	100	125	150	200
800	1.91	1.22	0.75	0.48	0.31						
1000	2.39	1.53	0.93	0.60	0.38						
2000	3.00	3.00	1.87	1.19	0.76	0.45	0.30	0.19			
3000			2.80	1.79	1.15	0.68	0.45	0.29			
4000			3.00	2.39	1.53	0.90	0.60	0.38			
5000				2.98	1.91	1.13	0.75	0.48	0.31	0.21	0.12
6500				3.00	2.48	1.47	0.97	0.62	0.40	0.28	0.16
8000					3.00	1.81	1.19	0.76	0.49	0.34	0.19
10000						2.26	1.49	0.95	0.61	0.42	0.24
12000						2.71	1.79	1.15	0.73	0.51	0.29
16000									0.98	0.68	0.38
20000									1.22	0.85	0.48

1.1

Notes for Permissible Differential Pressure Table:

Packing material is PTFE.

The flow direction of the medium is opposite to the closing direction of the valve core.

Values are limited by nominal pressure and the pressure-temperature chart: For bellows sealed type, when $P_2 \neq 0$, revalidation is required.

Metal sealing type leakage level is Class IV.

Special Requirements

Special Inspections,
Complete degreasing and dehydration treatment,
Copper-free treatment,
Special interfaces and piping,

Use under vacuum conditions,
Special media (e.g., oxygen),
Use of stainless steel fittings,
Specified coating color.

Connection and Standard

Connection Method: Flange Type

Flange Standard: PN16, 25, 40, 64, 100, 160 steel flanges according to GB/T9113 or other flange standard

Sealing Surface Type: PN16, 25: Raised Face (RF), PN40, 64, 100, 160: Male-Female Face, valve body is female

Face to face dimension: GB/T 12221 or ASME B16.10

*Connection method, valve body flange, and flange end face distance can be manufactured according to user-specified standards, such as HG, ANSI, DIN, JIS, etc.

Dimension and Weight/ Standard, High-Temperature, Bellow Sealing, Jacketed

1.1

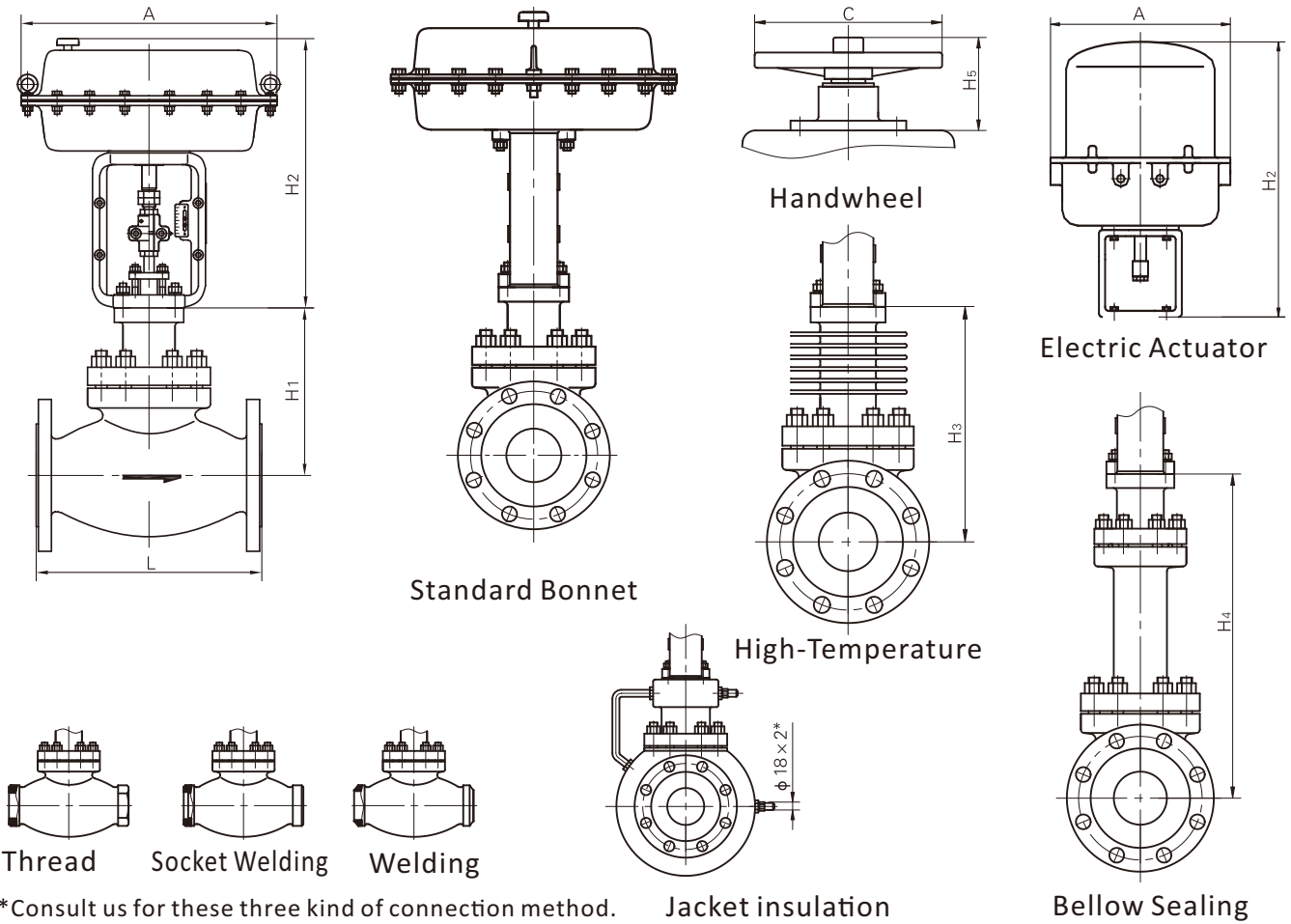


Table. 11

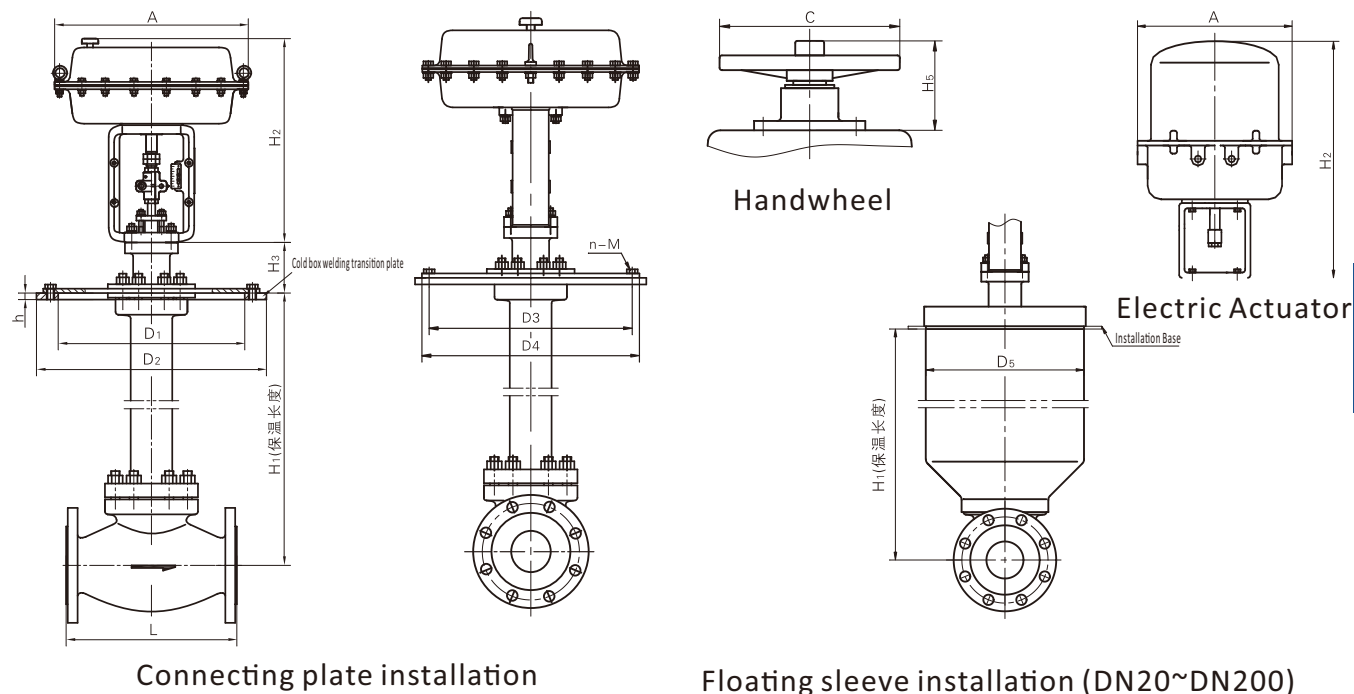
单位：mm

Nominal Diameter/ mm	20	25	32	40	50	65	80	100	125	150	200
L	PN16、40	150	160	180	200	230	290	310	350	400	600
	PN64、100	206	210	230	251	286	311	337	394	450	650
H₁	146	146	179	182	186	250	252	255	305	318	372
H	Pneumatic	Φ282×310		Φ308×396		Φ394×408		Φ504×495			
	Electric	Φ225×370		Φ255×500		Φ310×700		Φ310×750			
H₃	196	196	212	213	218	300	302	305	380	386	448
H₄	282	282	343	345	387	512	515	521	611	618	672
C×H₅	Φ220×207					Φ270×242		Φ320×313			
Jacket Flange Specifications DN2	40	50	50	80	80	100	125	150	200	200	250
Weight Kg	PN16	18	19	26	30	35	59	63	70	120	221
	PN64	21	22	38	46	57	78	88	97	172	318

Note: The weights in the table are for the standard pneumatic type without manual handwheel and other accessories. The electric actuator uses the 3610 series as an example.

P Series Single Seat Control Valve

Dimension and Weight/ Low-Temperature



1.1

Table. 12

Unit: mm

Nominal Diameter/ mm	20	25	32	40	50	65	80	100	125	150	200		
L、A x H ₂	见表11												
H ₁	700												
H ₃				92			96			115			
ΦD ₁	PN16、40	230	230	250	270	305	342	375	430	490	556	665	
	PN64、100	270	270	305	342	375	430	490	556	665	665	765	
ΦD ₂	PN16、40	310	310	335	355	390	430	465	520	585	660	770	
	PN64、100	355	355	390	430	465	520	585	600	770	770	890	
h				12			15			18			
ΦD ₃	PN16、40	260	260	285	305	340	370	405	460	525	590	700	
	PN64、100	305	305	340	370	405	460	525	590	700	700	805	
ΦD ₄	PN16、40	290	290	315	335	370	400	435	490	555	630	740	
	PN64、100	335	335	370	400	435	490	555	630	740	740	845	
D ₅						Φ285			Φ470				
n-M				8-M12		8-M14		10-M14	10-M14	12-M16	14-M16	16-M16	18-M16
C x H ₅						Φ220 x 207			Φ270 x 242			Φ320 x 313	
Weight/ Kg	23	24	33	38	47	69	72	74	169	177	338		

Note: The insulation length is taken as 700mm as an example. The weights in the table are for the PN16 standard pneumatic type without manual handwheel and other accessories.