



INTELLIGENT SINGLE SEAT CONTROL VALVE

General

The Intelligent Single-Seat Control Valve use modular design, with advantages of impact structure and wide varieties. The varieties combination of the trim components, make it applicable for high pressure difference, high precision, and low noise conditions to meet the different usage for customers' requirements. The modular design, double-sides valve seat and compressing tightly connection, all greatly enhance valve sealing grade and its service life, which make it easy to repair and greatly increase its general performance.

Working Principle

The equipped smart positioner will convert to valve required settings when receive normal signal of electricity or signal of computer. Then the pneumatic actuator linear displacement will change to angular displacement by valve special connections and tested by position transducer then feedback to microprocessor.

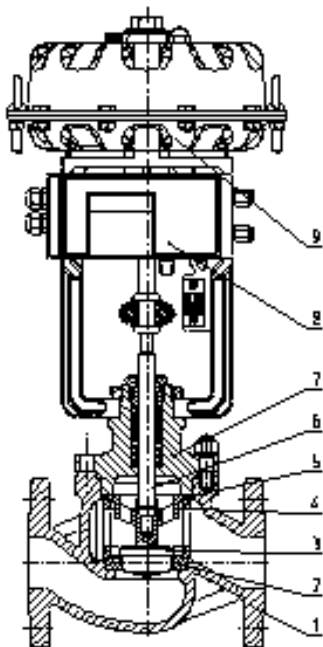
The microprocessor will compare the actual valve feedback with original settings and tested if there is any deviation. It will output pulse width modulation command (PWM) to piezoelectric valve according to the size and direction of deviation. The piezoelectric valve will regulate the input or exhaust gas under the control command.

Control Mode

Control mode apply PWM (Pulse Width Modulation) to drive:

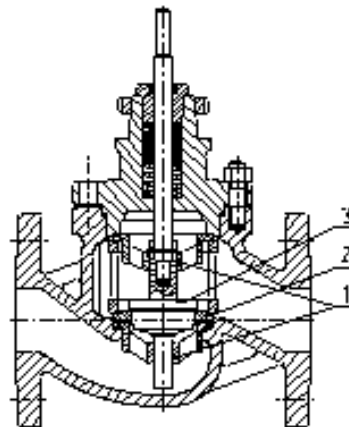
- Full speed: when control deviation is big, positioner output link signal.
- Mid-speed: when control deviation is normal, output impulse signal.
- Slow speed: when control deviation is small, output smaller impulse signal.
- Keep orientation: when control deviation is smaller than valve control precision range, no output command signal.

Structure Chart



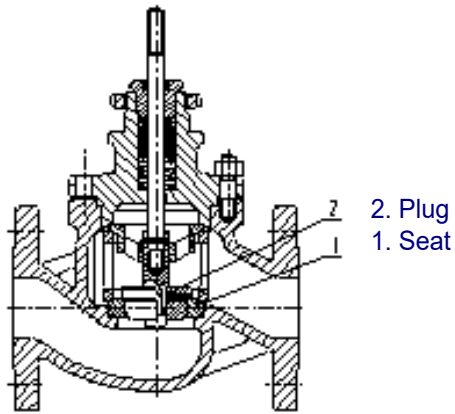
Standard Type

- 9. Actuator
- 8. Positioner
- 7. Bonnet
- 6. Stem
- 5. Guide Sleeve
- 4. Cage
- 3. Plug
- 2. Seat
- 1. Body

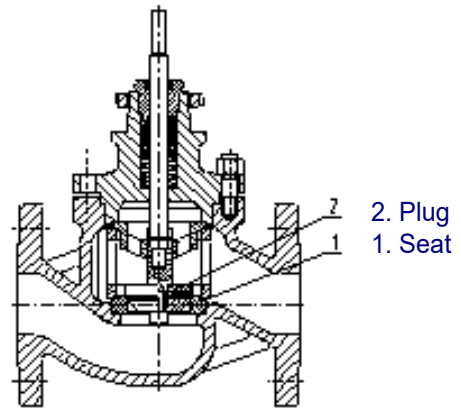


Double Guide Type

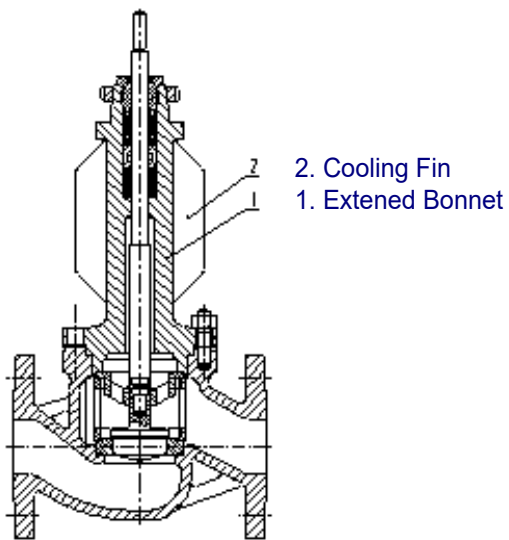
- 3. Plug
- 2. Seat
- 1. Guide Sleeve



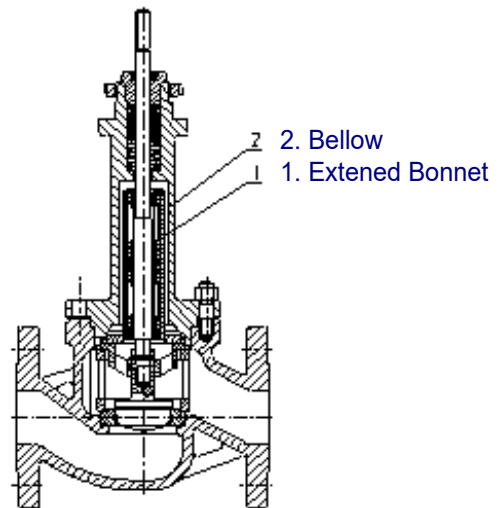
Control & Shut-off Type



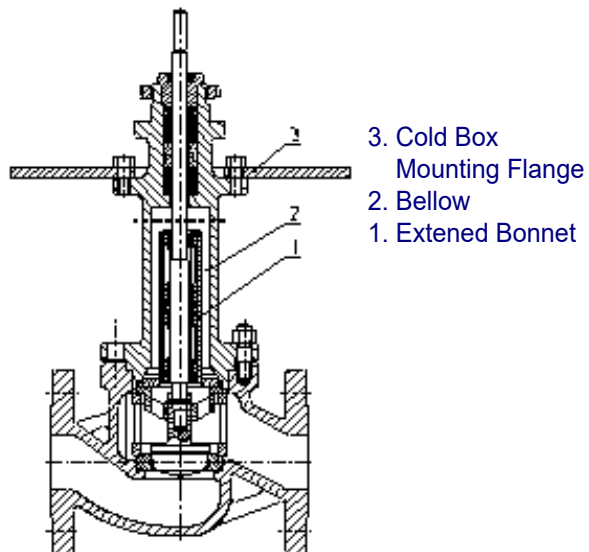
Shut-off Type



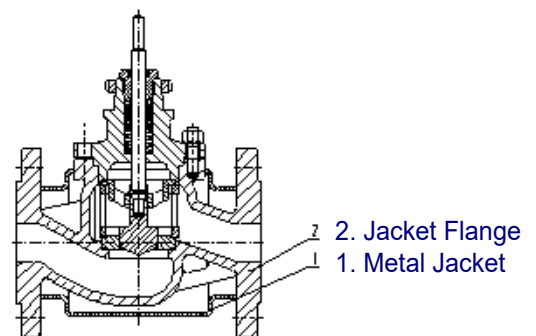
Cooling Fin Type



Bellow Sealing Type



Low-Temperature Type



Jacketed Type

Main Parts Materials

Pos.	Part Name	Material			
		WCB	WC6	CF8	CF8M
1	Body	WCB	WC6	CF8	CF8M
2	Seat	304, 316 / Partial Stellite			316 / Partial Stellite
3	Plug	Metal Sealing	304, 316 / Partial Stellite		316 / Partial Stellite
		Soft Sealing	304, 316+Reinforced Teflon		316 + Reinforced Teflon
4	Cage	304, 316			316
5	Guide Sleeve	304, 316			316
6	Stem	304, 316			316
7	Bonnet	WCB	WC6	CF8	CF8M

Above are the common materials, the specific grades take the contract as a standard.

Specifications and technical parameters

Type	Top Guide (Double Guide) Single Seat
Nominal Diameter	DN15 to DN400 (1/2" to 16")
Nominal Pressure	PN16, 25, 40, 64, 100 (150lb, 300lb, 600lb)
Flow Characteristic	Equal Percentage, Linear, Quick Open (for Shut-Off Valve)
Rangeability	50:1
Bonnet Form	Standard Type: Cast Steel (-20 to 250°C) / Cast Stainless Steel (-40 to 250°C)
	Fin-Extension Type: Cast Steel (-29 to 425°C) / Cast Stainless Steel (-40 to 450°C)
	Low-Temp. Type: Cast Stainless Steel (-60 to -100°C / -100 to -200°C / -200 to -250°C)
Seat Leakage	ANSI IV, V, VI (Soft Sealing)

Main Performance Index

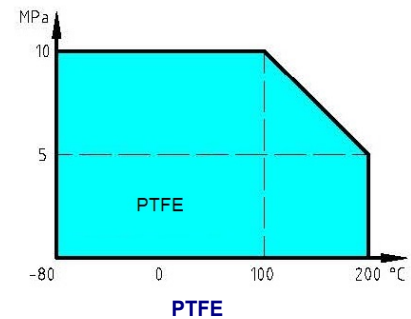
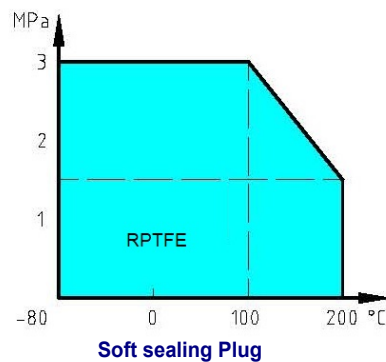
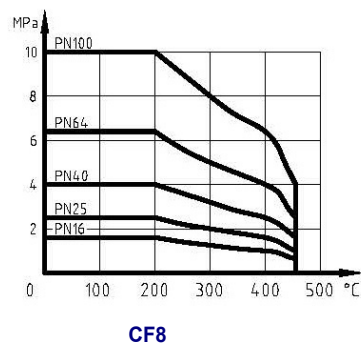
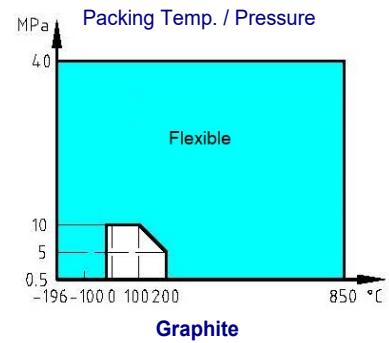
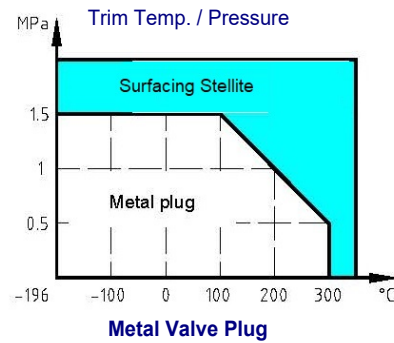
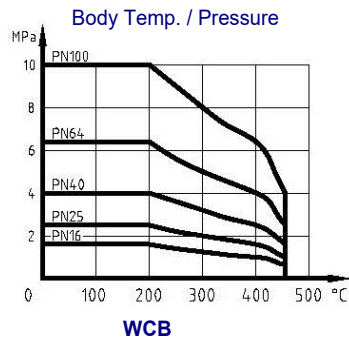
No.	Item	Standard Type	Fin-Extension Type, Low-Temperature Type
1	Basic Error < (%)	± 1	± 2.5
2	Hysteresis < (%)	1	2.5
3	Dead Band < (%)	0.4	1
4	Start & End Deviation < (%)	± 1	± 2.5
5	Rated Travel Deviation < (%)	+ 2.5	+ 2.5

Note: Performance index of this production is higher than ANSI/FCI70-2 or ASME B16.104.

Flow Characteristic

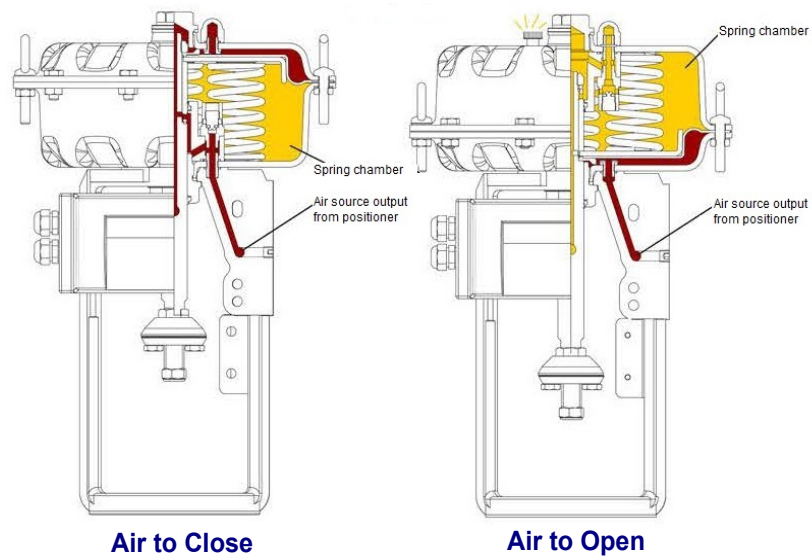
Seat Diameter DN (mm)		32	40	50	65	80	100	125	150	200	250	300	350	400
Rated Kv	Linear	17.6	27.5	44	69	110	176	275	440	690	990	1430	1980	2750
	EQ%	16	25	40	63	100	160	250	400	630	900	1300	1800	2500

Body, Trim, Packing Material Operating Temperature-Pressure Range



Actuator Specification:

BO10 series multi-springs pneumatic reinforce actuator, makes the valve realize the conversion of normal close and normal open on site easily, the spring can be effectively protected from the corrosion to prolong the service life of actuator and convenient for customers operation. The actuator and the intelligent valve positioner are connected pipe-less to strengthen the anti-seismic performance, stability, and precision adjustment, to meet to exactly control of the working conditions.



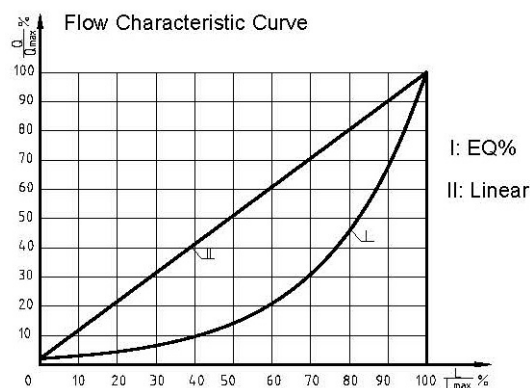
Air to Open (FC): when the air supply is failed, the actuator spring close the valve

Type	Diaphragm Area (cm ²)	Spring Quantity	Travel (mm)	Spring Range (KPa)	Thrust (KN)
BO10-1	210	3	20	75 to 150	1.6
		6		150 to 300	3.2
BO10-2	320	3	30	75 to 150	2.4
		6		150 to 300	4.8
BO10-3	720	3	60	75 to 150	5
		6		150 to 300	10
		9		180 to 370	13
		12		220 to 440	16
BO10-4	1510	3	120	75 to 150	11
		6		150 to 300	22
		9		180 to 370	27
		12		220 to 440	33

Air to Close (FO): when the air supply is failed, the actuator spring open the valve

Type	Diaphragm Area (cm ²)	Spring Quantity	Travel (mm)	Spring Range (KPa)	Thrust (KN)		Air Supply Pressure (MPa)		
					0.2	0.3	0.4	0.5	0.6
BO10-1	210	3	20	75 to 150	1.0	3.2	5.2	7.2	9.4
		6		150 to 300	-	-	2.1	4.2	6.3
BO10-2	320	3	30	75 to 150	1.6	4.8	8.0	11.2	14.4
		6		150 to 300	-	-	3.2	6.4	9.6
BO10-3	720	3	60	75 to 150	3.6	10.8	18.0	25.2	32.4
		6		150 to 300	-	-	7.2	14.4	21.6
BO10-4	1510	3	120	180 to 370	7.5	22.6	37.7	52.8	67.9
		6		220 to 440	-	-	15.1	30.2	45.3

Flow Characteristic



Relative Travel - Relative Flow Value R50

Unit: %

Char.	L/Lmax										
	0	10	20	30	40	50	60	70	80	90	100
Linear	2	11.8	21.6	31.4	41.2	51	60.8	70.6	80.4	90.2	100
EQ%	2	3	4.37	6.5	9.6	14.1	20.9	30.9	45.7	67.6	100

Pneumatic Control Valve Max. Allowable Differential Pressure (MPa)

Nominal Diameter	Travel	Actuator Size	Operated Form: Air to Open				Operated Form: Air to Close				
			Spring Quantity								
			3	6	9	12	3	3	3	6	6
			Min. Air Supply Pressure (MPa)								
DN (mm)	Mm	cm ²	0.2	0.35	0.42	0.49	0.3	0.45	0.6	0.45	0.6
15	20	BO10-1 210	6.4	10.0	—	—	10.0	—	—	10.0	—
20			5.0	10.0	—	—	10.0	—	—	10.0	—
25			3.2	6.4	—	—	6.4	10.0	—	6.4	10.0
32			1.95	3.9	—	—	3.9	7.8	10.0	3.9	7.8
40			1.9	3.8	—	—	3.8	7.6	10.0	3.8	7.6
50	30	BO10-2 320	1.2	2.4	—	—	2.4	4.8	7.2	2.4	4.8
65			0.72	1.4	—	—	1.4	2.88	4.32	1.4	2.88
80			0.47	0.94	—	—	0.94	1.88	2.82	0.94	1.88
100			0.3	0.61	—	—	0.61	1.22	1.83	0.61	1.22
125			0.44	0.88	1.0	1.2	0.88	1.76	2.64	0.88	1.76
150	60	BO10-3 720	0.3	0.61	0.73	0.89	0.61	1.22	1.83	0.61	1.22
200			0.17	0.34	0.41	0.5	0.34	0.68	1.02	0.34	0.68
250			0.11	0.22	0.26	0.32	0.22	0.44	0.66	0.22	0.44
300			0.16	0.32	0.38	0.47	0.32	0.64	0.96	0.32	0.64
350	120	BO10-4 1510	0.11	0.23	0.28	0.34	0.23	0.46	0.69	0.23	0.46
400			0.09	0.18	0.21	0.26	0.18	0.36	0.54	0.18	0.36

Electric Control Valve Max. Allowable Differential Pressure (MPa)

Nominal Diameter	Travel	Actuator Output Thrust (KN)									
		0.8	2	3	5	6.5	10	16	25	40	60
DN (mm)	mm										
15	20	3.22	7.82	10.0							
20		2.54	6.36	9.55	10.0						
25		1.63	4.07	6.11	10.0						
32		2.48	3.73	6.22	8.08	10.0					
40		1.59	2.38	3.98	5.17	7.96	10.0				
50	30	1.01	1.52	2.54	3.31	5.09	8.15	10.0			
65		0.90	1.50	1.95	3.01	4.82	7.53	10.0			
80		0.59	0.99	1.29	1.99	3.18	4.97	7.96	10.0		
100		0.38	0.63	0.82	1.27	2.03	3.18	5.09	7.64		
125		0.40	0.52	0.81	1.3	2.03	3.26	4.89			
150	60	0.28	0.36	0.56	0.90	1.41	2.26	3.39			
200		0.20	0.31	0.50	0.79	1.27	1.91				
250		0.20	0.32	0.50	0.81	1.22					
300		0.14	0.22	0.35	0.56	0.84					
350	120	0.16	0.25	0.41	0.62						
400		0.12	0.19	0.31	0.47						

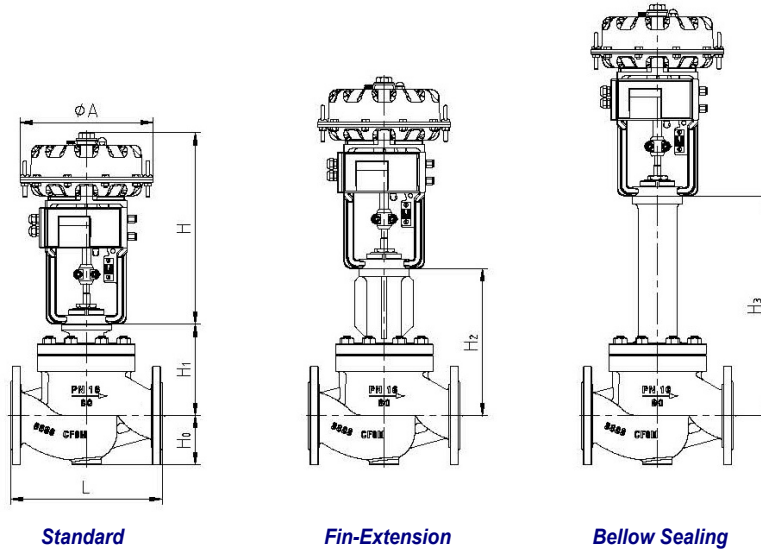
Remark: 1. Packing Material PTFE, 2. Value is limited by PN, Pressure-Temperature Sheet, 3. Flow direction is different with the Plug close direction, 4. Bellow sealing type P2≠0, it must be rechecked, 5. Metal sealing leakage is IV

Special Requirements:

- Special Test, Service Under Vacuum Conditions, Complete Degreasing, Water Treatment, Special Fluid (for Example O2), Forbidden Copper, with SS Connections, Special Connection, Specifies Coating Color

Outline Size & Weight

PN16, 40 Standard, Fin-Extension, Bellow Sealing - Outline Size & Weight



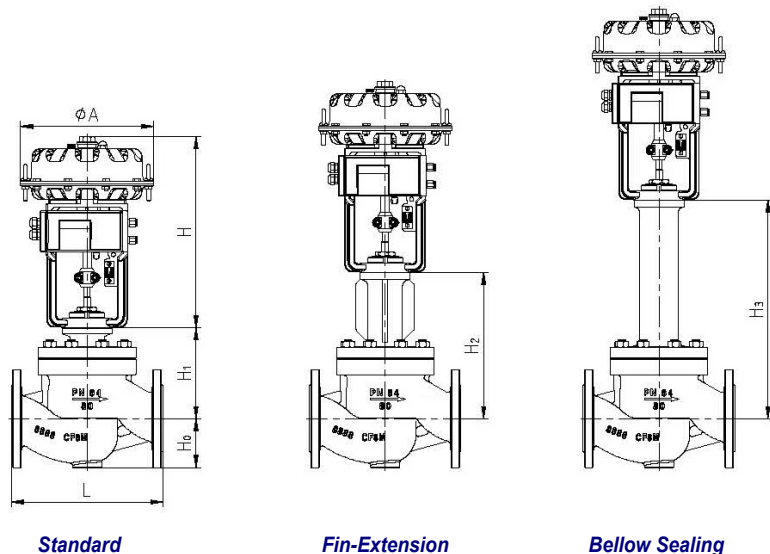
Unit: mm

DN	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400
L	160		180	200	230	290	310	350	400	480	600	730	850	980	1100
H ₀	53	57	70	75	83	93	100	110	136	143	181	203	230	260	290
H ₁	74		143			186			268		277	292	357	394	462
H ₂	215		295			335			420		430	445	510	545	615
H ₃	270		295			440			710		740	770	810	870	955
H	340		390						632				930		
A	228		272						400				610		
Weight (kg)	22	23	25	31	33	62	71	83	132	160	215	260	432	512	634

Remark:

1. They're common PN1.6 MPa standard size in the table (According to the specific parameters of electric actuator to replace H, A size)
2. The weight data is without any accessories in the table.

PN64,100 Standard, Fin-Extension, Bellow Sealing - Outline Size & Weight



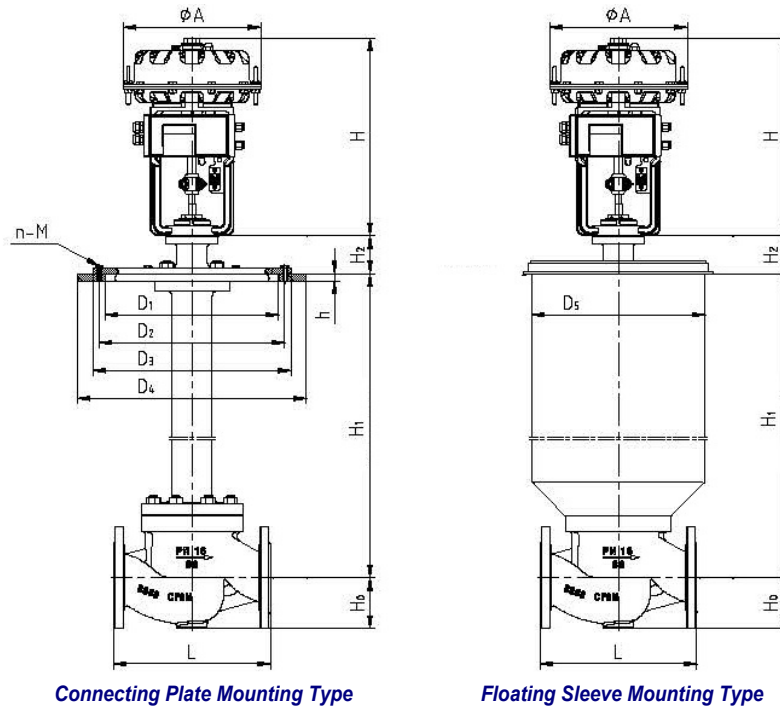
Unit: mm

DN	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	
L	190	230		260	300	340	380	430	500	550	650	775	900	1025	1150	
H ₀	65	70	78	85	90	103	108	125	148	173	207	235	265	300	335	
H ₁	80			160			200			280		290	300	370	410	480
H ₂	215			295			335			420		430	445	560	600	650
H ₃	270			295			440			710		760	790	840	920	985
H	340			390					632				930			
A	228			272					400				610			
Weight (kg)	24	27	35	48	58	73	84	107	167	190	285	387	548	657	838	

Remark:

1. They're common PN6.4 MPa standard size in the table (According to the specific parameters of electric actuator to replace H, A size)
2. The weight data is without any accessories in the table.

PN16,40 Low-Temperature Type - Outline Size & Weight



Connecting Plate Mounting Type

Floating Sleeve Mounting Type

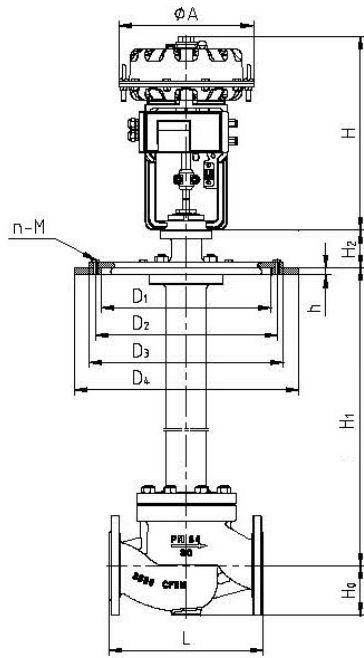
Unit: mm

DN	20	25	32	40	50	65	80	100	125	150	200	250
L	160		180	200	230	290	310	350	400	480	600	730
H₀	53	57	70	75	83	93	100	110	136	143	181	203
H₁	700											
H₂	95						110					
D₁	230		250	270	305	340	375	430	490	556	665	850
D₂	260		285	305	340	370	405	460	525	590	700	885
D₃	290		315	335	370	400	435	490	555	630	740	925
D₄	310		335	355	390	430	465	520	585	660	770	955
n-M	8-12			8-14		10-14		12-16	14-16	16-16	18-16	
D₅	285					470			—			
H	340			390					632			
A	228			272					400			
Weight (kg)	39	40	43	54	56	82	98	112	186	212	252	305

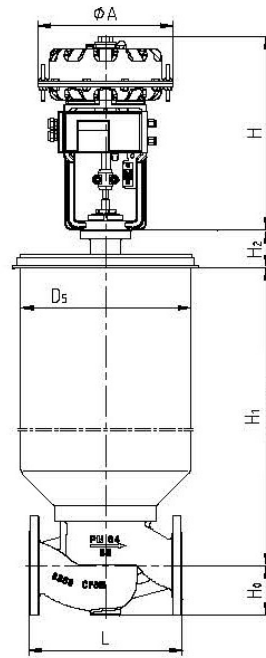
Remark:

1. The common PN1.6MPa insulation length is 700mm in the table (According to the specific parameters of electric actuator to replace H, A size)
2. The weight data is without any accessories in the table.

PN64,100 Low-Temperature Type - Outline Size & Weight



Connecting Plate Mounting Type



Floating Sleeve Mounting Type

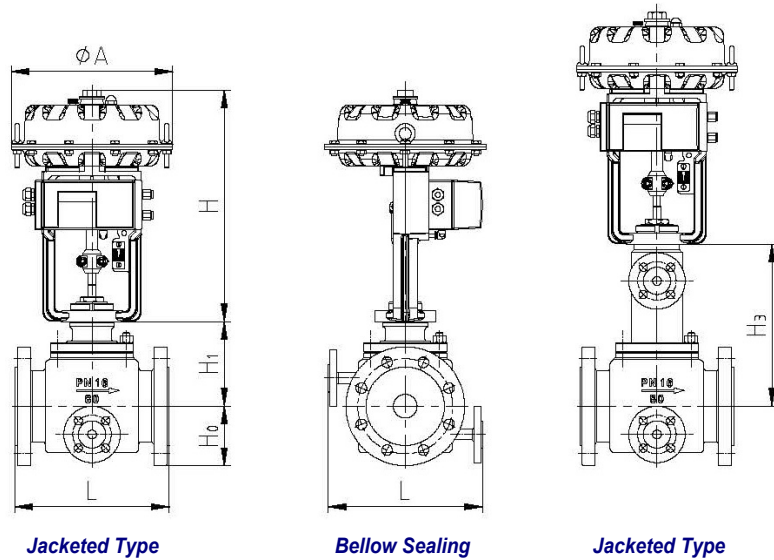
Unit: mm

DN	20	25	32	40	50	65	80	100	125	150	200	250	
L	190	230		260	300	340	380	430	500	550	650	775	
H ₀	65	70	78	85	90	103	108	125	148	173	207	235	
H ₁	700												
H ₂	95						110						
D ₁	270		305	340	375	430	490	555	665		765	910	
D ₂	305		340	370	405	460	525	590	700		805	950	
D ₃	335		370	400	435	490	555	630	740		845	990	
D ₄	355		390	430	465	520	585	660	770		890	1035	
n-M	8-12			8-14		10-14		12-16	14-16	16-16	18-16		
D ₅	285					470			—				
H	340			390						632			
A	228			272						400			
Weight (kg)	41	55	64	83	94	111	122	148	233	260	333	385	

Remark:

1. The common PN6.4 MPa insulation length is 700mm in the table (According to the specific parameters of electric actuator to replace H, A size)
2. The weight data is without any accessories in the table.

PN16, 40 Jacketed Type, Bellow Sealing Jacketed Type - Outline Size & Weight



Unit: mm

DN	20	25	32	40	50	65	80	100	125	150	200	250
Jacketed Flange Spec.	40	50		80		100	125	150	200		250	300
L	190	230		260	300	340	380	430	500	550	650	775
H₀	75	83		100		110	125	143	170		203	230
H₁	80			160		200			280		290	300
H₃	270			275		440			710		740	770
H	340			390					632			
A	228			272					400			
Weight (kg)	30	34	42	58	68	85	96	120	184	206	305	410

Remark:

1. PN16 standard size (According to the specific parameters of electric actuator to replace H, A size).
2. The weight data is without any accessories in the table.
3. Heat carrier connecting type PN10, DN15 Flange or made by user's requirements

The information and specifications contained in this literature are considered accurate. However, they are supplied for informative purposes and should not be considered certified. The products of BOMAF A Group are continually being improved and the specifications, dimensions and information contained in this catalogue are subject to change without notice. For additional information or confirmation, please consult your BOMAF A Group representative.

Quality Management System



ISO 9001-2015

Head Office:

BOMAF A Oil & Gas GmbH

Hohensteinstr. 52
44866 Bochum / Germany

Tel: +49 (0) 2327 992 - 0
Fax: +49 (0) 2327 314 - 43
Email: sales@bomafa.eu
Website: www.bomafa.eu

