



Flowtecal Group Introduction

Flowtecal Group, established since May 1997 in the United Kingdom (UK). Dedicates to the R&D and manufacturing of world-class automatics valves, manual valves, actuators and other flow control instruments. We provide high quality products and technical total solutions for flow control through our worldwide networks. "Flowtecal" is an international brand specialize in flow control.

The headquarter of Flowtecal Group in China is in Guangzhou, Guangdong province. And fully taking charge of the sales, technical supports and after-sale services of control valves, manual valves, actuators in greater China region, Asia, Africa and South America. The manufacturing base of Flowtecal in China is Flowtecal Control Valve (Heyuan) Co., Ltd. and manufacturing ball valves, butterfly valves, control valves and actuators under the brands "Flowtecal", "FT" and "孚罗泰", all of which are proprietary trademarks of Flowtecal Group.

Since 1997 till nowadays, Flowtecal has developed into a famous and highly competitive brand in valves and flow control industries, such as: Oil & Gas, Chemical and Refinery, Fine Chemical, Power and Power Station, Metallurgy & Mine, Food & Beverage, Pulp & Paper, Light Industry and general industry.

Flowtecal, with its outstanding and highly cost-effective product ranges, complete production quality management system, rapid and timely after-sales service system, reliable product quality, regular and reassuring tracking service, strong technical support capability, and accurate type selection under various operating conditions, has won approval and trust from our users, which also lays a solid foundation for 'Flowtecal's future development.



Our mission: :

Pursuing Excellent Flow Control
Creating Perfect Valve Products.

Our core values:

Lofty goals and an open mind,
Adhering to the honesty and trust,
Continuous innovation and high quality products,
Perfect services and outstanding reputation.

Our core strategies:

Focus on R&D, manufacturing, assembly of automatic actuating valves. And provide total solution for flow control systems of various industry. Be dedicated to developments the Flowtecal valve brands and provide our valve products to the world.

FLOWTECAL VALVE (GUANGZHOU) CO., LTD.





F410 Type Pneumatic diaphragm single-seat control valve



F440 Pneumatic diaphragm cage control valve



F420 Type pneumatic diaphragm double-seat control valve



F48P***-K Type self operated pressure control valve



F48C/F48V Self operated differential pressure control valve



F48VP Pilot self-operated control valve



F48W Self operated temperature control valve



F440 Electric control valve



F442 Electric control valve



001 Model Code System Flowtecal control valve

002 Single seat control valve

003-008 F410 Type Single seat control valve

009-014 F411 Series single seat control valve

015-019 F41A Series angle type single seat control valve

020-024 F412 Low noise single seat control valve

025-028 F420 Double seat control valve

029-030 Sleeve type control valve

031-035 F440 Sleeve control valve

036-039 F442 Sleeve control valve

040-044 F44A Angle sleeve control valve

045-048 F43C, F43D Three-way control valve

049-053 F45A, F46A High pressure angle type (single stage, multi stage) control valve

054-057 F41F Single seat lined control valve

058 Model No. of Flowtecal self-operated regulator

059 Self-operated regulating valve

060-064 F48* Self-operated pressure regulator

065-067 F48Z Pilot type self-operated pressure regulator

068-071 F48V Self-operated micro pressure regulator
F48C Self-operated differential pressure regulator

072-073 F48*-I Type self-operated pressure regulator (internal feedback)

074-076 F48W Self-operated temperature regulator

077-078 Temperature and pressure reduct

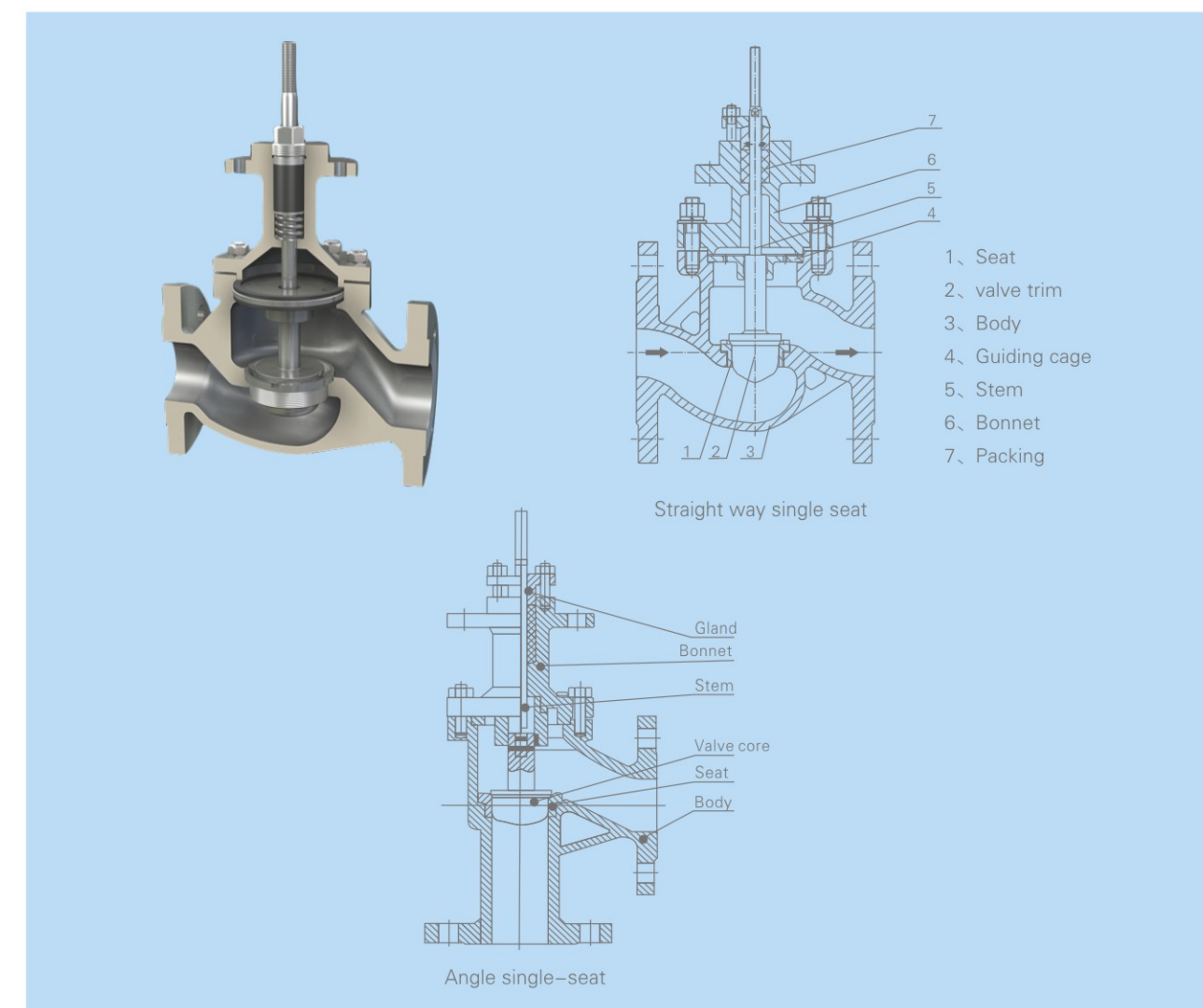


Flowtec Control Valve Model Code System

DN 50	F 41	0	01	-	W	O	S	M	-	H
▼	▼	▼	▼		▼	▼	▼	▼		▼
1	2	3	4		5	6	7	8		9

1 Nominal diameter DN 50 (Or 2")	4 Valve pressure rating 01 ANSI 150Lb 02 ANSI 300Lb 03 ANSI 600Lb 11 DIN PN10 12 DIN PN16 13 DIN PN25 14 DIN PN40 15 DIN PN64 16 DIN PN100 21 GB PN10 22 GB PN16 23 GB PN25 24 GB PN40 25 GB PN64 26 GB PN100	6 Trim material W A216-WCB 0 CF8 / 304SS 1 CF8M / 316SS 2 CF3M / 316L 3 2205 Duplex 4 2507 Duplex 5 Other material
2 Valve model F41 Single-seat control valve F42 Double seat control valve F43 Three way control valve F44 Cage control valve F45 Single stage Depressurization control valve F46 Multi stage Depressurization control valve		7 Stem material W A105 or 45#steel S 420 Or 2Cr13 H 17-4PH 0 304SS 1 316SS
3 Valve core structure 0 Standard valve core 1 Cage guiding valve core 2 Low noise valve core E Tiny flow valve core A Angle type control valve F Fluorine lining and corrosion resistance structure C Converging three-way D Diverging three-way	5 Body material W A216-WCB 0 CF8 / 304SS 1 CF8M / 316SS 2 CF3M / 316L 3 2205 Duplex 4 2507 Duplex 5 Other material	8 Sealing material M Body material hardening treatment 0 304SS 1 316SS S Stellite P PTFE
		9 Special valve structure code Standard valve code omit S Cutting off type L Low temperature type H High temperature heat radiating type J Jacketed type B Bellow sealed type R Heat radiating type

Single Seat Valve Structure



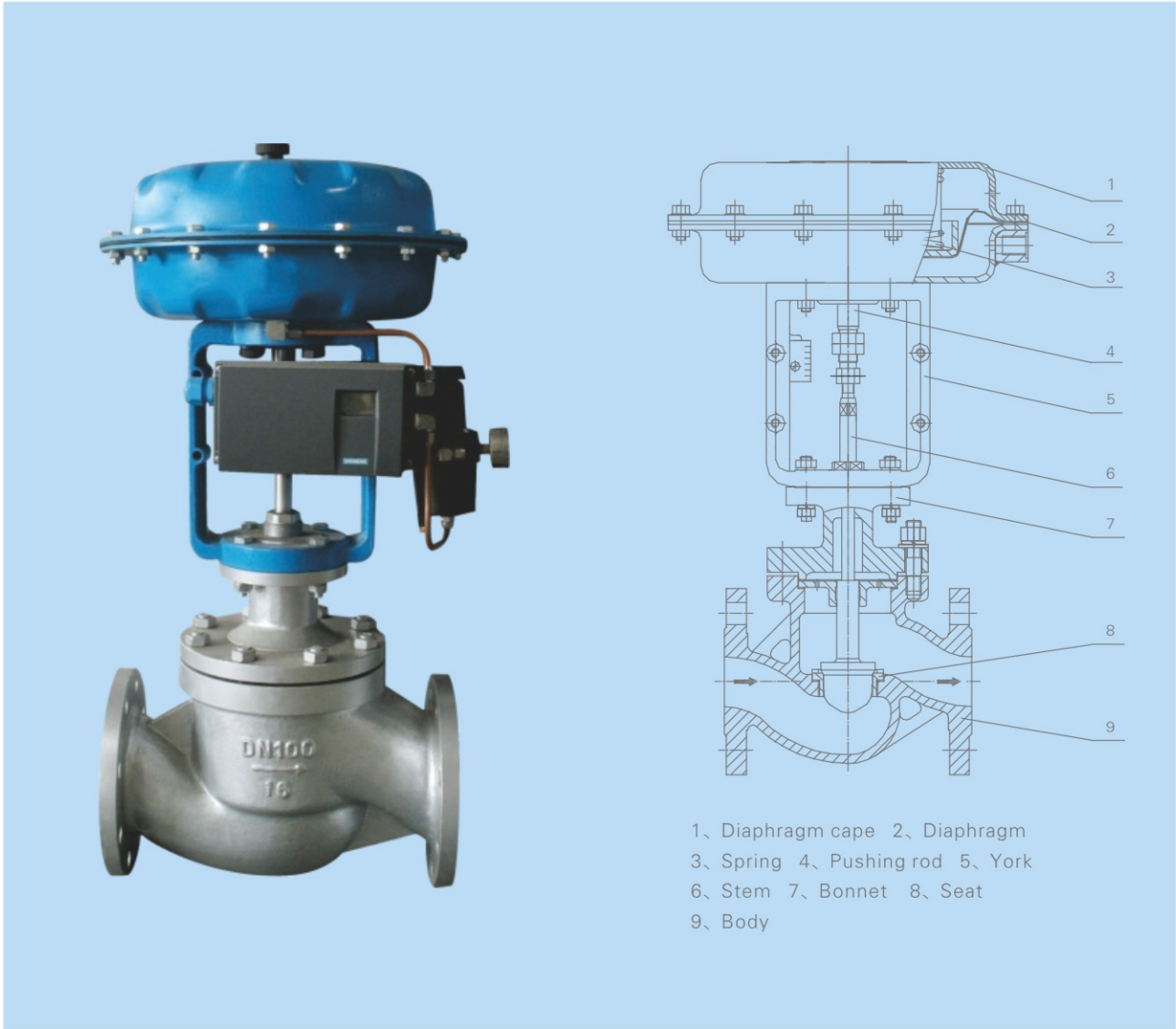
Types of Flowtec Single Seat Control Valve

- 1, F410 Type pneumatic diaphragm single seat control valve
 - 2, F41e type pneumatic diaphragm tiny flow single seat control valve
 - 3, F411 type pneumatic diaphragm cage guiding single seat control valve
 - 4, F41A type pneumatic diaphragm angle single seat control valve
 - 5, F41A L type pneumatic diaphragm low temperature angle type single seat control valve
 - 6, F410 Type electric motor operated single seat control valve (On/Off type: G60***)
 - 7, F41A type electric motor operated angle type single seat control valve (On/Off type: G60***)
- Single seat control valve is the most widely used valve in flow control pipeline, because of its simplest structure, it's most accurate flow characteristic and it's lightest weight. Single seat control valve has an advantage of minimal leakage and smaller pressure loss than sleeve type valve and the double seat valve. As long as the pressure difference allowed, choosing the single seat type at first instead of sleeve type or double seat type and others.

Notes:

- 1, Compared to other types of control valve, the unbalanced force of single seat valve during the process of closing is larger, so it requires the output force of the actuator should match with the valve output force, the single seat control valve should not be used if the pressure drop is not allowed.
- 2, To check the unbalanced force for the large size, because it requires for corresponding increase in the size of actuator when the unbalance force is large.
- 3, To use other types of control valve in case of the large flow (larger than the KV of single seat control valve on the same pipe).

The Structure of F410 Type Single Seat Control Valve



Product Introduction

Top guided structure designed, compact structure, light weight, quickly action, S type flow channel, less pressure drop, large capacity, precision flow characteristic, easily disassembly and maintenance, assembly with multi spring diaphragm actuator, Flowtec F410 series single seat control valve can be widely used in precise flow control of gas, liquid, steam and other mediums, while the process pressure, flow and temperature are maintained at a given value. Flowtec single seat control valve especially suitable for condition which allow small leakage and small pressure difference before and after valve.

There are various types ,such as standard type, cut-off regulation type, bellow seal type, jacket type , low temperature type, high temperature radiating type and others, with pressure of PN16,25,40,64 (63), 100, and size of DN15~250 . They are applicable for fluid temperature within -250℃~+550℃, with the leakage of class IV class and VI. The flow characteristics can be linear or equal percentage. The designer and the user can choose the valve type according to the specific service conditions.

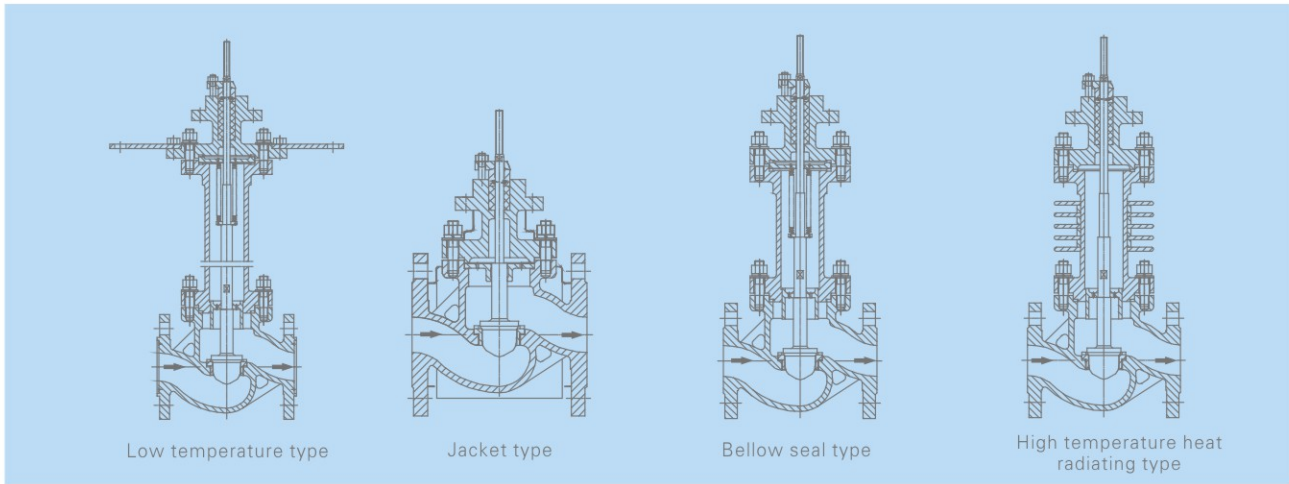
Technical Parameters

DN(mm)		20				25					32	40		50		
Seat diameter DN(mm)		10	12	15	20	10	12	15	20	25	32	32	40	32	40	50
Rated flow coefficient (Kv)	Line	1.8	2.8	4.4	6.9	1.8	2.8	4.4	6.9	11	17.6	17.6	27.5	17.6	27.5	44
	Percentage	1.6	2.5	4.0	6.3	1.6	2.5	4.0	6.3	10	16	16	25	16	25	40
Rated stroke L(mm)		16										25				
Effective diaphragm area Ae(cm²)		280										400				
DN(mm)		65	80		100			125	150		200		250			
Seat diameter DN(mm)		65	65	80	65	80	100	125	125	150	150	200	250			
Rated flow coefficient (Kv)	Line	69	69	110	69	110	176	275	275	440	440	690	1100			
	Percentage	63	63	100	63	100	160	250	250	400	400	630	900			
Rated stroke L(mm)		40						60					100			
Effective diaphragm area Ae(cm²)		600						1000					1600			
Nominal pressure PN		MPa		1.6, 2.5, 4.0, 6.4(6.3), 10.0												
		Bar		16, 25, 40, 64(63), 100												
		Lb		ANSI:Class150、Class300、Class600												
Inherent flow characteristi		Line , Percentage														
Inherent adjustable ratio(R)		30、50														
Spring (signal) Pr(KPa)		20~100、40~200、80~240														
Diaphragm air pressure Ps(MPa)		0.14/0.25/0.4														
Allowable leakage		Solid valve core； IV Grade(10-4 × Kv) Soft valve core： VI Grade See GB/T4213-92														
Working temperature t(°C)	Normal temperature type			-20~200、-40~250、-60~250												
	Heat radiating type	Code： R		-40~350、-60~350												
	High temperature type	Code： H		350~550 (High temperature material)												
	Low temperature type	Code： L		D0:-60~-100、D1:-100~-200、D2:-200~-250												
	Cut-off regulating type	Code： S		-40~150(Valve core with RPTFE)												

Note:1, Spring range: 40-200KPa and 80-240KPa for air failed to close type ; 20-100KPa and 40-200KPa for air failed to open type.

2, the working temperature is divided according to the pressure-temperature rating (GB9131-94) of body material , working conditions , sealing material and other comprehensive factors .

Bonnet Type



Parts and Materials

Part name	Material
Body, Bonnet	WCB、WCC、WC6 CF8(304)、CF8M(316)、CF3(304L)、CF3M (316L)
Valve trim、Seat	304,316,316+STL 17-4PH
Packing	PTFE、R.TFE、Flexible graphite
Sealing gasket	XB350(Asbestos rubber sheets)、PTFE、Flexible graphite metal
Diaphragm cap	A3(Painting or coating)、304
Diaphragm	NBR+Polyester fabric
Spring	60Si2Mn、50CrVA
Stem	304、316、316L、17-4PH

Note: Material of parts can be selected according to the working condition or user's request.



Allowable Differential Pressure

Unit: MPa

Operation way	Actuator model	Spring range (KPa)	Air pressure (MPa)	Positioner (Y/N)	Seat diameter DN(mm)										
					20	25	32	40	50	65	80	100	125	150	200
Air failed to open type (direct act)	FL280B	20~100	0.14	N	0.87	0.49									
				Y	2.57	1.58									
		40~200	0.25	Y	3.42	2.12									
		80~240	0.4	Y	10.0	8.11									
	FL400B	20~100	0.14	N			0.43	0.23	0.12						
				Y			1.34	0.82	0.49						
		40~200	0.25	Y			1.82	1.11	0.67						
		80~240	0.4	Y			6.80	4.31	2.73						
	FL600B	20~100	0.14	N						0.14	0.08	0.03			
				Y						0.50	0.31	0.18			
		40~200	0.25	Y						0.68	0.43	0.26			
		80~240	0.4	Y						2.65	1.73	1.09			
	FL1000B	20~100	0.14	N									0.05	0.03	0.005
				Y									0.20	0.13	0.07
		40~200	0.25	Y									0.28	0.19	0.10
		80~240	0.4	Y									1.13	0.78	0.43
Air failed to close (reverse act)	FL280K	20~100	0.14	Y/N	0.87	0.49									
		40~200	0.25	Y	2.57	1.58									
		80~240	0.28	Y	5.97	3.76									
	FL400K	20~100	0.14	Y/N			0.43	0.23	0.12						
		40~200	0.25	Y			1.34	0.82	0.49						
		80~240	0.28	Y			3.16	1.98	1.23						
	FL600K	20~100	0.14	Y/N						0.14	0.08	0.03			
		40~200	0.25	Y						0.50	0.31	0.18			
		80~240	0.28	Y						1.22	0.78	0.48			
	FL1000K	20~100	0.14	Y/N									0.05	0.03	0.005
		40~200	0.25	Y									0.20	0.13	0.07
		80~240	0.28	Y									0.51	0.35	0.18

Note:
1.For F410** - B type bellow seal single seat control valve, its Max. allowable differential pressures is 1.0 MPa, to use the value in above table while the data is smaller than 1.0 MPa, and use 1.0 MPa instead of the table value above while the data is larger than 1.0 MPa.
2.The allowable differential pressure in above table is for standard actuator's, and it can select other actuator according to the specific conditions to meet requirements.

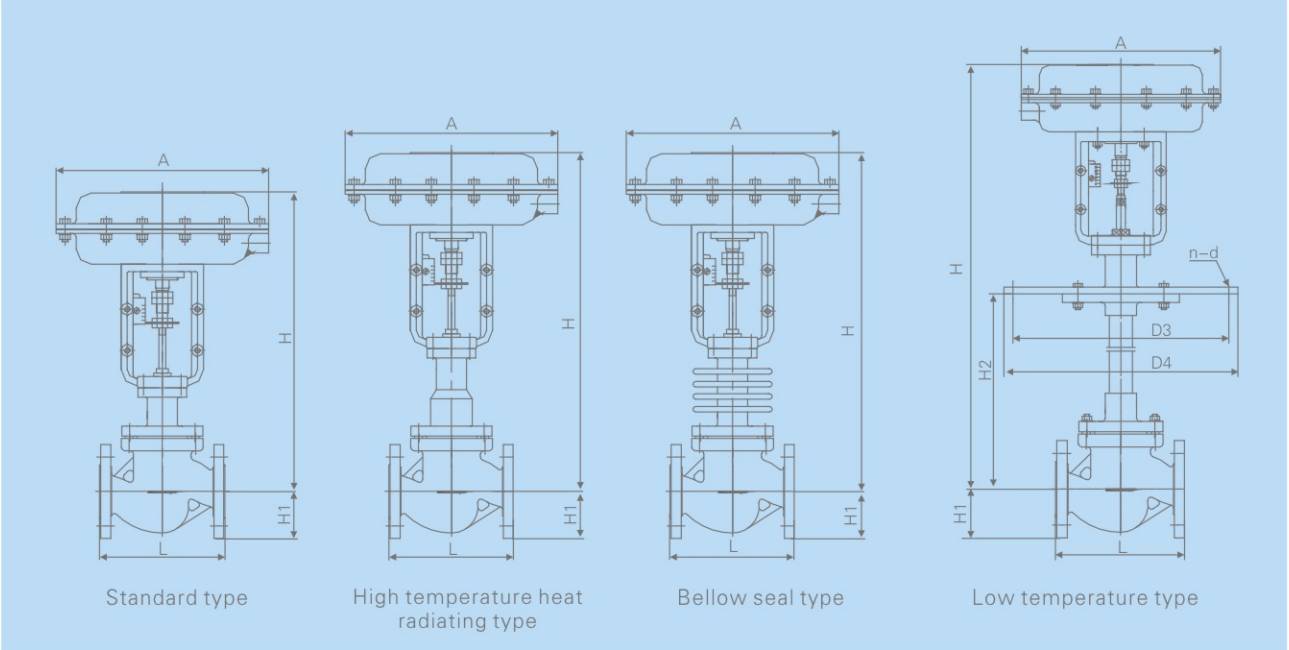
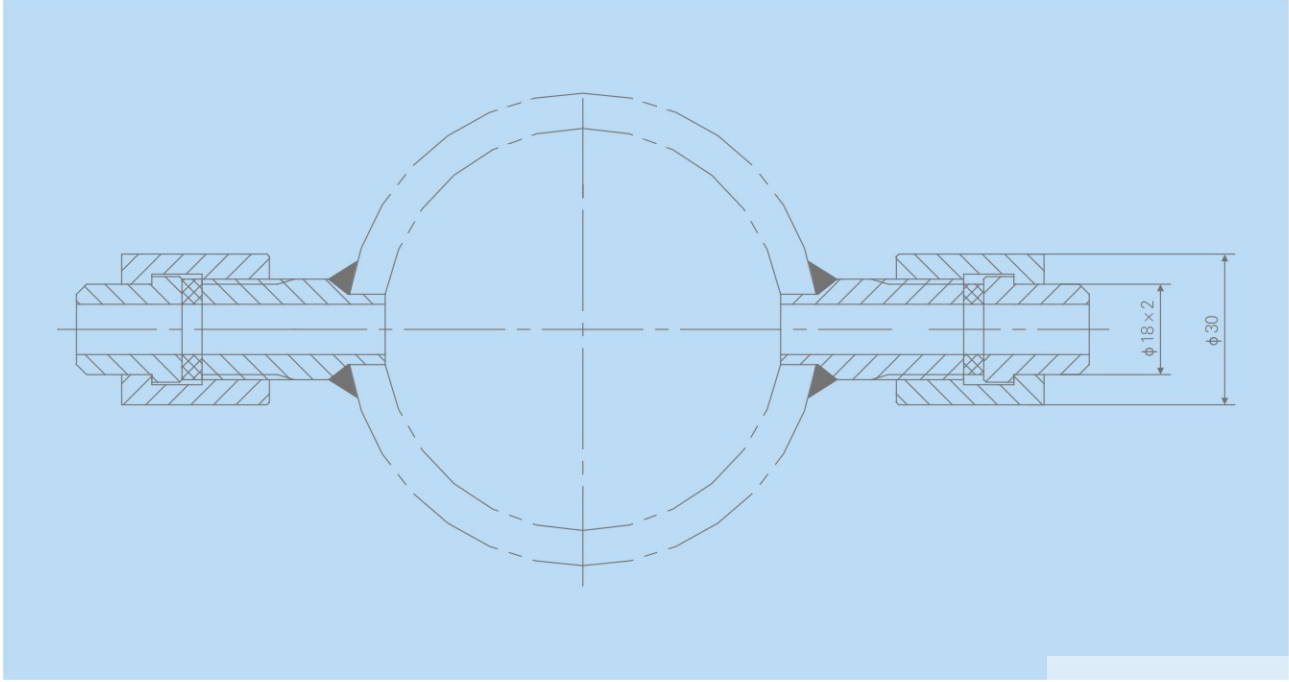
Control Valve Weight Table

Unit: Kg

DN(mm)		20	25	32	40	50	65	80	100	125	150	200
Standard type	PN16	17	18	23	26	29	52	62	95	115	152	235
	PN40	18	19	25	27	32	56	68	115	140	165	295
	PN64	25	27	35	41	45	69	78	155	190	255	355
High temperature radiating type		18	19	25	27	32	56	68	75	120	148	325
Bellow seal type		18	19	25	27	32	56	68	75	120	148	325
Low temperature type		25	27	30	33	39	59	68	85	150	210	335

Note:1, The weight excluded the pneumatic accessories.
2, Data of bellow seal type, high temperature heat radiating type, low temperature type are under PN16;
3, Flowtec reserves the right to change product designs and specifications without notice.

Note: The End Connection of Jacket Valve



Standard Type,Bellow Seal Type , High Temperature Radiating Type Dimensions

Unit: mm

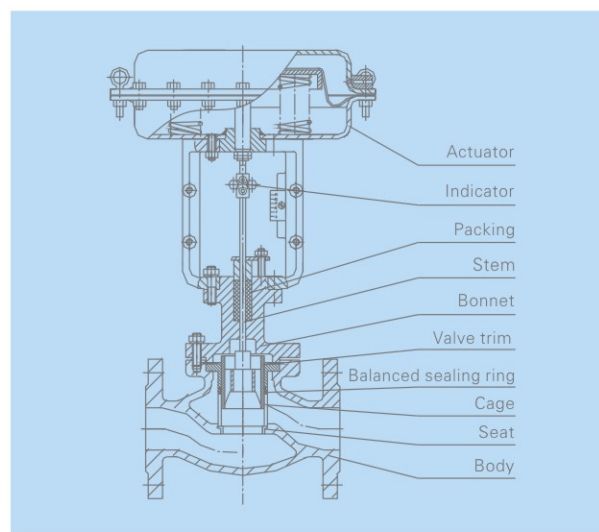
DN(mm)			20	25	32	40	50	65	80	100	125	150	200	250
φ A			280		308			395			500			620
L	PN 16, 20, 25, 40 ANSI 150Lb		150	160	180	200	230	290	310	350	400	480	600	730
	PN 64, 100 (110) ANSI 300Lb, 600Lb		206	210	222	251	286	311	337	394	440	508	610	752
H1	PN16		52.5	57. 5	70	75	82.5	92.5	100	110	125	142.5	170	202.5
	PN25		52.5	57. 5	70	75	82.5	92.5	100	115	135	150	180	212.5
	PN40		52.5	57. 5	70	75	82.5	92.5	100	117.5	135	150	187.5	225
	PN64 (63)		65	70	78	85	90	102.5	107.5	125	147.5	172.5	202.5	235
	ANSI 150Lb (PN20)		50	55	60	65	75	80	95	115	127.5	140	172.5	202.5
	ANSI 300Lb (PN50)		60	62. 5	67.5	77. 5	82.5	95	105	127.5	140	160	190	222.5
H	Standard type	PN16/25/40	400	400	440	450	460	570	570	570	670	700	740	970
		ANSI 150Lb (PN20)	400	400	440	450	460	570	570	570	670	700	740	970
		PN 64, 300Lb (PN50)	400	400	450	450	460	570	570	570	720	720	750	980
	Heat radiating,high temperature type ,bellow sealed type		480	480	530	530	530	640	640	640	800	810	840	1050

Note: The H dimension of the valve with top installed hand wheel should add 180 (DN20-50)、240 (DN65-100)、304 (DN125-200)、352(DN250).

Product Introduction

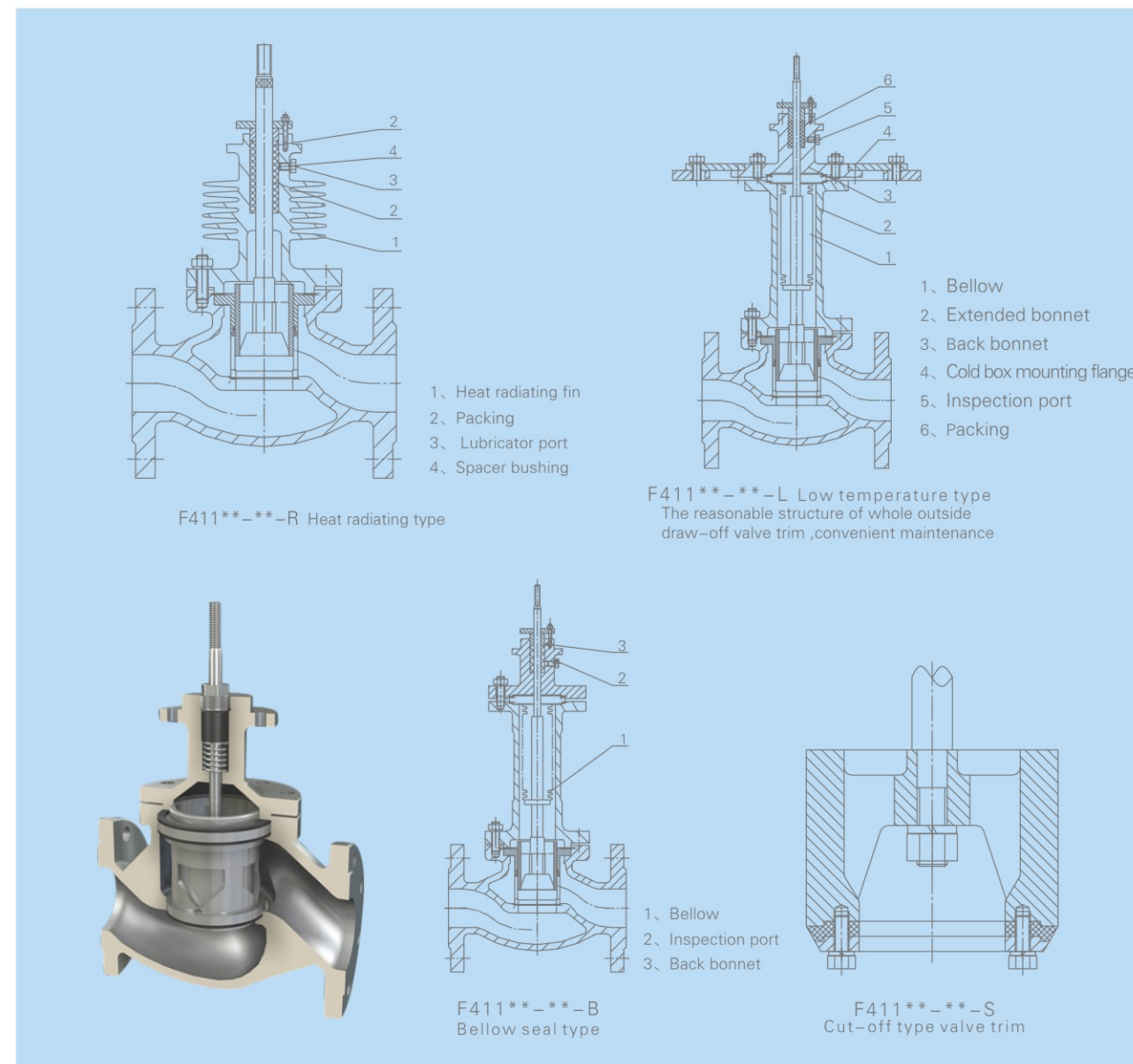
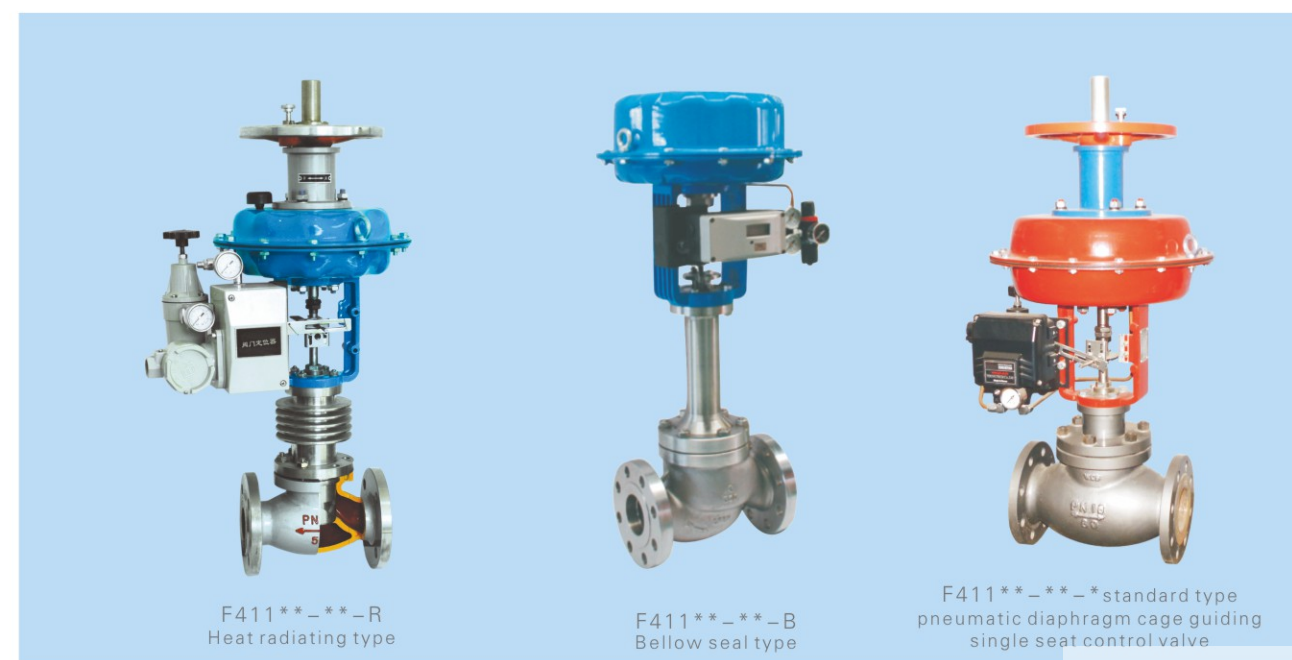
F411 type pneumatic diaphragm cage single seat valve is a pressure balance type control valve, designed with guiding cage, single seat sealing structure, equipped with multi spring actuator, S type flow channel and imported MA43 series of balanced sealing ring. These valve have the advantages of stable operation, allowing a large differential pressure, accurate flow characteristics, low noise characteristics and so on. They are especially suitable for service which allow small leakage and large differential pressure before and after the valve.

There are various types, such as standard type, heat radiating type, low temperature type, cut-off regulation type, bellow seal type and others, with pressure of PN16, 25, 40, 64 (63), 100, and size of DN15 ~ 250. They are applicable for fluid temperature within $-150^{\circ}\text{C} \sim +250^{\circ}\text{C}$, with the leakage of class IV, V and class VI. The flow characteristics can be linear or equal percentage.



Product Type

- 1, F411 Standard type working temperature $-20 \sim +200^{\circ}\text{C}$, leakage class IV;
- 2, F411**--R Heat radiating type, additional radiating fin is fixed on bonnet, used on the media temperature of $-60 \sim +250^{\circ}\text{C}$;
- 3, F411**--B Bellow seal type form a complete sealing on the working stem which can prevent the leakage of medium;
- 4, F411**--L Low temperature type can be applied in cryogenic service with the extended bonnet and bellow sealed structure;
- 5, F411**--s Designed with soft seat structure, cut-off regulating control valve's leakage rating is up to class VI.
- 6, Valve core, seat welded with STL, applied on high temperature or cryogenic and other severe service.



Parts and Materials

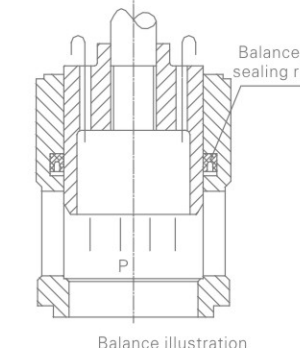
Body, Bonnet: WCB, 304SS, 316SS, 316L
Valve trim seat: 304SS+PTFE, 316SS+PTFE
304SS+Stellite, 316SS+Stellite
Balance sealing ring: 1.4310+D31
Packing: PTFE, Flexible graphite
Bellow: 304SS, 316SS, 316L
Gasket: Graphite spiral wound gasket(V6590), F4
Diaphragm cap: A3
corrugated diaphragm: With NBR+Reinforced Nylon
Packing: 60Si2Mn
Stem, Pushing rod: 420SS, 304SS, 316SS, 17-4PH
Note: This series of control valve are modular design, can be designed in different combinations, with a variety of accessories

Mode of Action

Air failed to open:
The spring of actuator will open the valve when the air supply failed

Air failed to close:
The spring of actuator will close the valve when the air supply failed

Principal of Balance



Technical Parameters

DN (mm)		20	25	32	40	50	65	80	100	125	150	200	250
Rated flow coefficient (Kv)	Line	6.9	11	17.6	27.5	44	69	110	176	275	440	690	1000
	Percentage	6.3	10	16	25	40	63	100	160	250	400	630	900
Actuator model	Direct act	FL280B		FL400B			FL600B			FL1000B			
	Reverse act	FL280K		FL400K			FL600K			FL1000K			
Rated stroke L(mm)		16		25			40			60			100
Effective diaphragm areaAe (cm ²)		280		400			600			1000			1600
Nominal pressure PN (MPa)		1.6 4.0 6.4 10.0											
Inherent flow characteristic		Coefficient, Line Equal percentage											
Inherent adjustable ratio(R)		30、50											
Spring (signal) Pr(KPa)		20 ~ 100、40 ~ 200、80 ~ 240											
Air supply pressure Ps (Mpa)		0.14/0.25/0.40											
Leakage rating		Standard type(metal seat) class IV or class V Soft seated class VI											

Main Performance

No.	Item			Standard type control valve		Heat radiating,low temperature control valve	
				Without positioner	C/W positioner	Without positioner	C/W positioner
1	Inaccuracy error<(%)			± 5	± 1	± 15	± 4
2	return difference<(%)			3	1	10	3
3	dead zone<(%)			3	0.4	8	1
4	Deviation on initial and end<(%)	Air failed to close	initial point	± 2.5	± 1	± 6	± 2.5
			end point	± 5		± 15	
		air failed to open	initial point	± 5		± 15	
			end point	± 2.5		± 6	
5	Rated stroke deviation<(%)			± 2.5	+2.5	+6	+2.5

Allowable differential pressure

Unit: MPa

Operation way	Actuator Model	Spring range (KPa)	Air supply pressure (MPa)	Positioner (Y/N)	Seat diameter DN(mm)										
					20	25	32	40	50	65	80	100	125	150	200
Air failed to open type (direct act)	PL280B	20 ~ 100	0.14	N	2.52	1.80									
				Y	7.80	6.07									
		40 ~ 200	0.25	Y	10.0	8.21									
		80 ~ 240	0.4	Y	10.0	10.0									
	PL400B	20 ~ 100	0.14	N			1.67	1.13	0.7						
				Y			5.31	4.04	3.03						
		40 ~ 200	0.25	Y			4.13	5.50	4.20						
		80 ~ 240	0.4	Y			10.0	10.0	10.0						
	PL600B	20 ~ 100	0.14	N						1.14	0.75	0.37			
				Y					4.04	3.11	2.22				
		40 ~ 200	0.25	Y					5.50	0.43	3.15				
		80 ~ 240	0.4	Y					10.0	10.0	8.86				
	PL1000B	20 ~ 100	0.14	N									0.83	0.48	0.07
				Y									3.29	2.47	1.06
		40 ~ 200	0.25	Y								4.52	3.47	1.56	
		80 ~ 240	0.4	Y								10.0	10.0	7.04	
Air failed to close type (reverse act)	PL280K	20 ~ 100	0.14	Y/N	2.52	1.80									
		40 ~ 200	0.25	Y	7.80	6.07									
		80 ~ 240	0.28	Y	10.0	10.0									
	PL400K	20 ~ 100	0.14	Y/N			1.67	1.13	0.7						
		40 ~ 200	0.25	Y			5.31	4.04	3.03						
		80 ~ 240	0.28	Y			10.0	9.87	7.70						
	PL600K	20 ~ 100	0.14	Y/N						1.14	0.75	0.37			
		40 ~ 200	0.25	Y						4.04	3.11	2.22			
		80 ~ 240	0.28	Y						9.84	7.84	5.93			
	PL1000K	20 ~ 100	0.14	Y/N									0.83	0.48	0.07
		40 ~ 200	0.25	Y									3.29	2.47	1.06
		80 ~ 240	0.28	Y									8.22	6.46	3.06

Note: 1.For F411** – B type bellow seal cage guiding single seat control valve, its Max. allowable differential pressures is 1.0 MPa, to use the value in above table while the data is smaller than 1.0 MPa, and use 1.0MPa instead of the table value above while the data is larger than 1.0 MPa.

Operating Temperature Range and Seat Leakage

WCB Body

Body	WCB/ZG230 ~ 450						
Valve trim	304SS	304SS+PTFE	304SS	304SS	304SS	304SS+STL	304SS+STL
seat	304SS	304SS	304SS	304SS	304SS	304SS	304SS+STL
Balance sealing ring	1.4310+D31						
Packing	PTFE	PTFE/Graphite+PTFE	Graphite+PTFE	Graphite+PTFE	Bellow+PTFE	Bellow+Graphite	Bellow+Graphite
Gasket	F4/V6590	F4/V6590	V6590②	V6590	F4/V6590	V6590	V6590
Bonnet type	Standard type	Standard type	Standard type	Heat radiating type	Bellow seal type	Bellow seal type	Heat radiating type
Leakage	Class IV	Class VI	Class IV	Class IV	Class IV	Class IV	V
Seat leakage volume (L/h)	$10^{-4} \times Kv$	Tiny bubble grade①	$10^{-4} \times Kv$	$10^{-4} \times Kv$	$10^{-4} \times Kv$	$10^{-4} \times Kv$	$1.8 \times 10^{-7} \times \Delta P \times D$
Temperature range(°C)	-20~160	-20 ~ 180	120 ~ 200	-20 ~ 250	-20 ~ 200	-20 ~ 250	-20 ~ 250

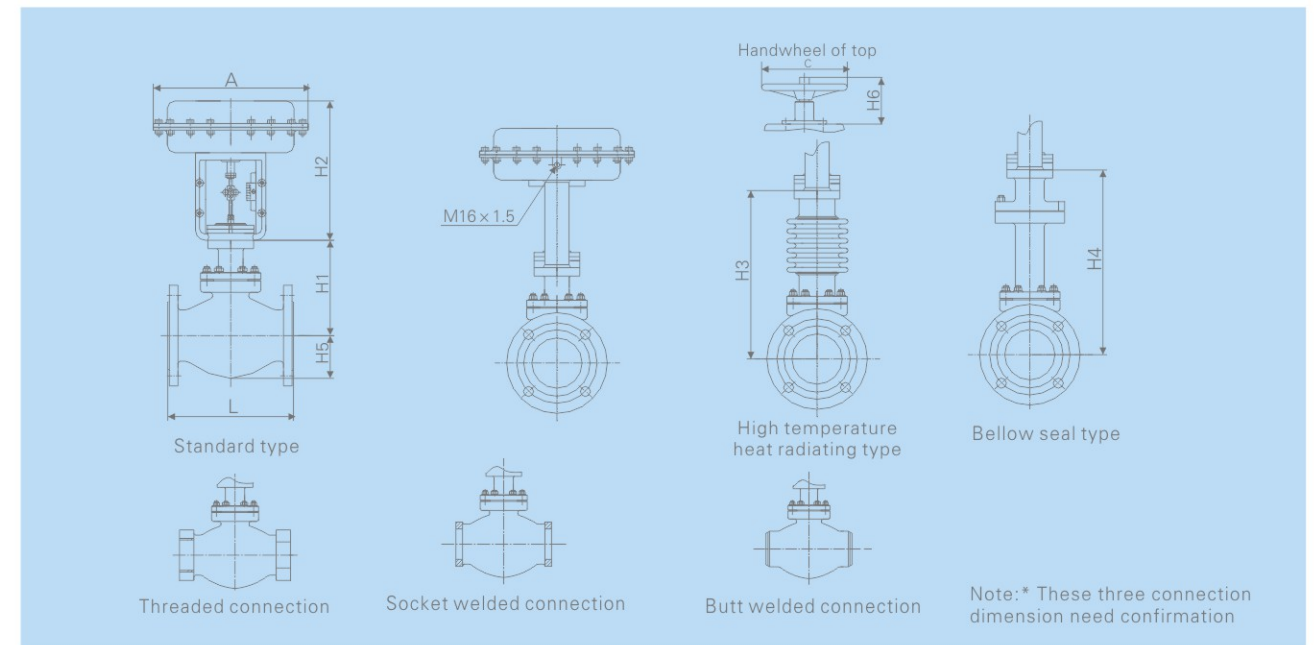
Stainless Steel Body

Body	304SS/316SS							304SS/316SS	
Valve trim	304SS	304SS+PTFE	316SS	316SS	304SS/316SS	304SS/316SS	304SS/316SS+STL	304SS/316SS	304SS/316SS+STL
seat	304SS	304SS	316SS	316SS	304SS/316SS	304SS/316SS	304SS/316SS+STL	304SS/316SS	304SS/316SS+STL
Balance sealing ring	1.4310+D31								
Packing	PTFE	PTFE/Graphite+PTFE	Graphite+PTFE	Graphite+PTFE	Bellow+PTFE	Bellow+Graphite	Bellow+Graphite	Bellow+Graphite	Bellow+Graphite
Gasket	F4/V6590	F4/V6590	V6590	V6590	F4/V6590	V6590	V6590	LF2	LF2
Bonnet type	Standard type	Standard type	Standard type	Heat radiating type	Bellow seal type	Bellow seal type	Heat radiating type	Low temperature type	Low temperature type
Leakage	Class IV	Class VI	Class IV	Class IV	Class IV	Class IV	Class V	Class IV	Class V
Seat leakage volume (L/h)	$10^{-4} \times Kv$	Tiny bubble grade①	$10^{-4} \times Kv$	$10^{-4} \times Kv$	$10^{-4} \times Kv$	$10^{-4} \times Kv$	$1.8 \times 10^{-7} \times \Delta P \times D$	$10^{-4} \times Kv$	$1.8 \times 10^{-7} \times \Delta P \times D$
Temperature range(°C)	-20~160	-20 ~ 180	-40 ~ 200	-60 ~ 250	-20 ~ 200	-60 ~ 250	-20 ~ 250	-150 ~ -60	-150 ~ -60

Note: 1、① is bubble quantity refer to GB/T4213.

2、 ΔP is valve pressure difference in KPa, D is seat diameter in mm.

3、② V6590 material: flexible graphite spiral wound stainless steel.



Dimensions and Weight(PN16/40MPa)

Unit: mm

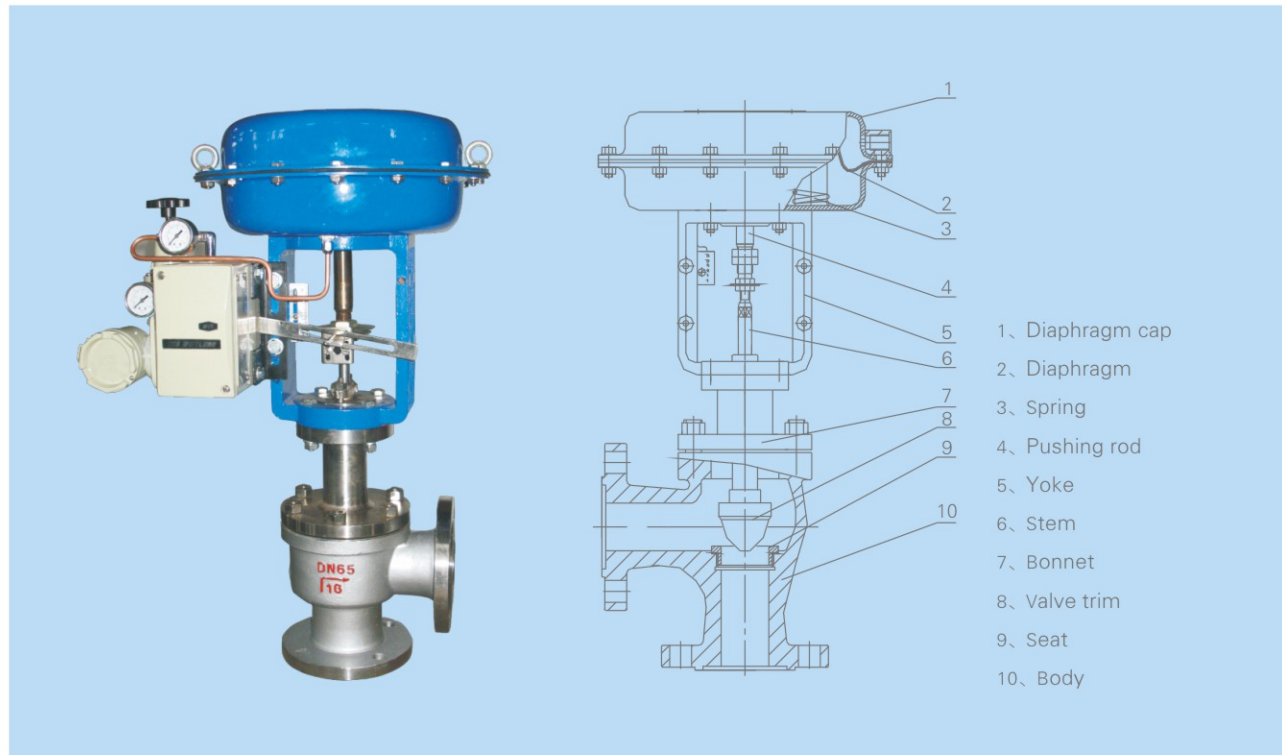
DN	20	25	32	40	50	65	80	100	125	150	200
L	150	160	180	200	230	290	310	350	400	480	600
A	280	280	308	308	308	395	395	395	500	500	500
H1	128	128	152	152	160	205	200	208	273	333	364
H2	258	258	280	280	280	360	360	360	435	435	435
H3	208	208	224	228	228	334	334	342	408	453	482
H4	338	338	402	402	405	627	628	635	698	702	728
H5	42	48	56	64	76	85	100	110	126	148	188
C	220	220	220	220	220	270	270	270	320	320	320
H6	180	180	180	180	180	236	236	236	310	310	310
WT(Kg)	21	22	24	32	38	62	67	83	132	160	245

Dimensions and Weight(PN64/100MPa)

Unit: mm

DN	20	25	32	40	50	65	80	100	125	150	200
L	206	210	222	251	286	311	337	394	440	508	610
A	280	280	308	308	308	395	395	395	500	500	500
H1	140	140	160	160	180	210	210	220	290	340	370
H2	258	258	280	280	280	360	360	360	435	435	435
H3	220	220	240	240	240	350	350	360	420	470	500
H4	338	338	402	402	405	627	628	635	698	702	728
H5	48	54	60	68	80	90	105	115	130	155	195
C	220	220	220	220	220	270	270	270	320	320	320
H6	180	180	180	180	180	236	236	236	310	310	310
WT(Kg)	24	25	30	42	52	78	82	102	170	190	285

Note: The weight is based on standard type without accessory

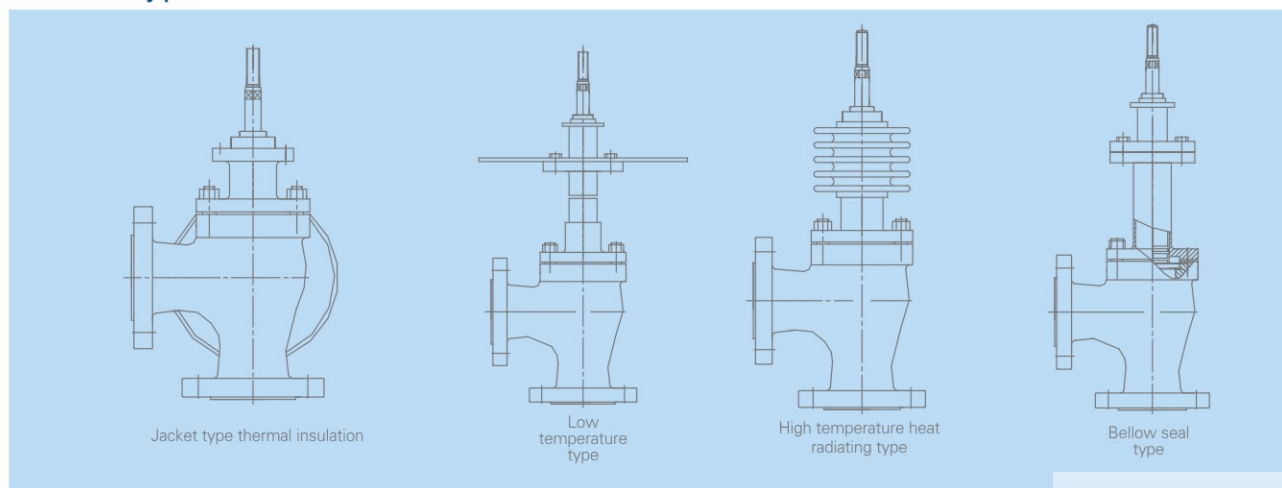


Product Introduction

Top guided structure designed, compact structure, light weight, quickly action, S type flow channel, less pressure drop, large capacity, precision flow characteristic, easily disassembly and maintenance, assembly with multi spring diaphragm actuator, Flowtec F41A series angle type single seat control valve can be widely used in precise flow control of gas, liquid, steam and other mediums, while the process pressure, flow and temperature are maintained at a given value. Angle type control valve is used in 90° bend connection pipe line, and use for medium with high viscosity, easy crystallization, or containing particles. The valve body have on dead zone and easy to flushing or leaning, angle valve is especially suitable for food industry.

There many types for this series products, such as standard type, cut-off regulating type, bellow seal type, jacket type, low temperature type, high temperature heat radiating type and so on.

Bonnet Type



Parts and Materials

Parts name	Material
Body, Bonnet	WCB、WCC、WC6 CF8 (304) CF8M (316) CF3 (304L) CF3M (316L)
Valve trim, seat	304、316、316L Welded with STL 17-4PH
Packing	PTFE、R.TFE、Flexible graphite
Sealing gasket	XB350(Asbestos rubber sheets)、PTFE、Flexible graphite
Stem	304、316、316L、17-4PH

Note: To choose the other material based on the service condition.

Allowed Differential pressure of failed open type Control Valve

Unit: MPa

Diaphragm effective area A_e (cm ²)			280			400			600			1000		
Spring range Pr (KPa)			20-200	20-100	40-200	20-100	20-100	40-200	20-100	20-100	40-200	20-100	40-100	40-200
Air supply pressure Ps (MPa)			0.14	0.14	0.25	0.14	0.14	0.25	0.14	0.14	0.25	0.14	0.14	0.25
Accessories required			-	P	P	-	P	P	-	P	P	-	P	P
Nominal diameter DN (mm) and seat diameter d (mm)	20	20	2.67	6.23	6.40									
	25	25	2.22	5.19	6.10									
	32	32				2.58	6.02	6.40						
	40	25				3.18	6.40	6.40						
		32				2.58	6.02	6.40						
		40				2.12	4.95	6.37						
	50	32				2.58	6.02	6.40						
		40				2.12	4.95	6.37						
		50				1.73	4.05	5.21						
	65	65							2.04	4.77	6.14			
	80	50							2.60	6.08	6.40			
		65							2.05	4.77	6.14			
		80							1.69	3.93	5.06			
	100	65							2.05	4.77	6.14			
		80							1.68	3.39	5.06			
		100							1.36	3.18	4.09			
	125	125										1.83	4.28	5.51
	150	100										2.27	5.30	6.40
		125										1.84	4.28	5.51
		150										1.54	3.59	4.62
	200	125										1.84	4.28	5.51
		150										1.54	3.59	4.62
		200										1.12	2.62	3.37

Note: 1. P: Valve positioner

2. For F41A**B type bellow seal angle type single seat control valve, its Max. allowable differential pressures is 1.0 MPa, to use the value in above table while the data is smaller than 1.0 MPa, and use 1.0 MPa instead of the table value above while the data is larger than 1.0 MPa.

3. The allowable differential pressure in above table is for standard actuator's, and it can select other actuator according to the specific conditions to meet requirements.

4. The allowed pressure difference of spring 80-240KPa and 40-200KPa are same (without positioner), so that it's better to use spring range of 40-200KPa or 20-100KPa for the air failed to open control valve.

5. All the above data is calculated when the valve is closed and pressure after valve $P_2=0$, it's allowed even large pressure difference during the regulating process.

Allowable Differential Pressure of Failed Close Type Control Valve

Unit: MPa

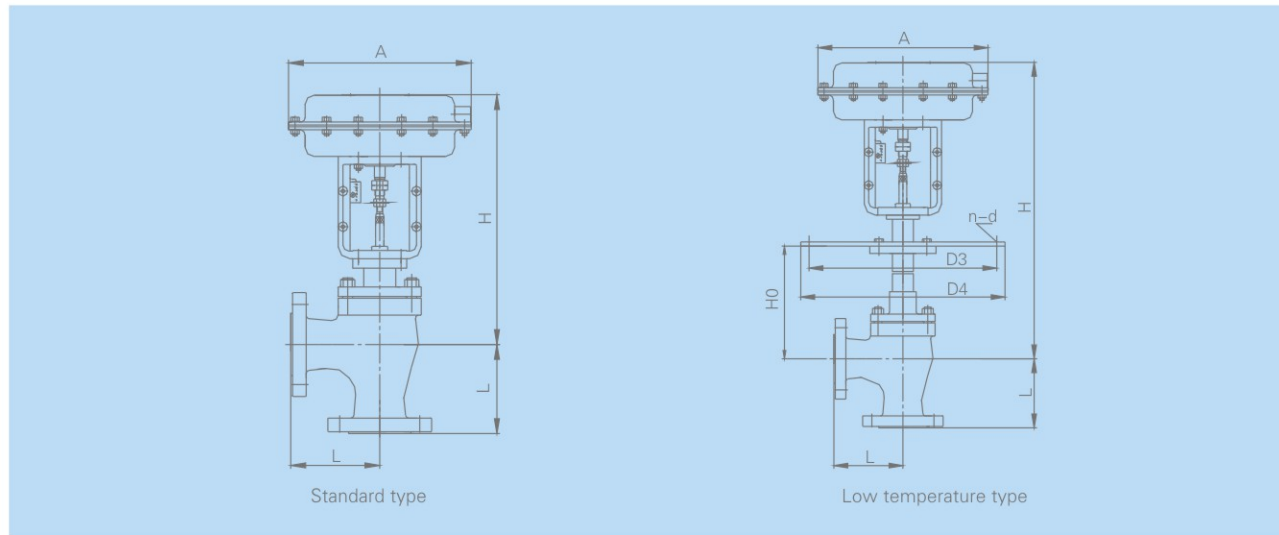
Diaphragm effective areaAe(cm²)			280		400		600		1000	
Spring range Pr(KPa)			20-100	40-200	20-100	40-200	20-100	40-200	20-100	40-200
Air supply pressurePs(MPa)			0.14	0.25	0.14	0.25	0.14	0.25	0.14	0.25
Accessories required			-	P	-	P	-	P	-	P
Nominal diameter DN(mm)and seat diameter d(mm)	20	20	2.67	6.23						
	25	25	2.22	5.19						
	32	32			2.58	6.02				
	40	25			3.18	6.40				
		32			2.58	6.02				
		40			2.12	4.95				
	50	32			2.58	6.02				
		40			2.12	4.95				
		50			1.73	4.05				
	65	65					2.04	4.77		
	80	50					2.60	6.08		
		65					2.05	4.77		
		80					1.68	3.93		
	100	65					2.05	4.77		
		80					1.69	3.39		
		100					1.36	3.18		
	125	125							1.83	4.28
	150	100							2.27	5.30
		125							1.84	4.28
		150							1.54	3.59
	200	125							1.84	4.28
		150							1.54	3.59
		200							1.12	2.62

Note:1. P: Valve positioner
2,1.For F41A**-B type bellow seal angle type single seat control valve, its Max. allowable differential pressures is 1.0 MPa, to use the value in above table while the data is smaller than 1.0 MPa, and use 1.0MPa instead of the table value above while the data is larger than 1.0 MPa.
3, The allowable differential pressure in above table is for standard actuator' s, and it can select other actuator according to the specific conditions to meet requirements.
4, The allowed pressure difference of spring 80-240KPa and 40-200KPa are same (without positioner), so we can conclude it' s better to use spring range of 40-200KPa or 20-100Kpa for the air failed to open control valve.
5, All the above data is calculated when the valve is closed and pressure after valve P2=0, it' s allowed even large pressure difference during the regulating process.

Technical Parameters

DN (mm)		20				25					32	40		50			
Seat diameter DN(mm)		10	12	15	20	10	12	15	20	25	32	32	40	32	40	50	
Rated flow coefficient (Kv)	Line	1.8	2.8	4.4	6.9	1.8	2.8	4.4	6.9	11	17.6	17.6	27.5	17.6	27.5	44	
	Percentage	1.6	2.5	4.0	6.3	1.6	2.5	4.0	6.3	10	16	16	25	16	25	40	
Rated stroke L(mm)		16										25					
Effective diaphragm area Ae(cm²)		280										400					
DN (mm)		65	80		100			125	150		200		250				
Seat diameter DN(mm)		65	65	80	65	80	100	125	125	150	150	200	250				
Rated flow coefficient (Kv)	Line	69	69	110	69	110	176	275	275	440	440	690	1100				
	Percentage	63	63	100	63	100	160	250	250	400	400	630	900				
Rated stroke L(mm)		40							60					100			
Effective diaphragm area Ae(cm²)		600							1000					1600			
Nominal pressure PN		MPa	1.6, 2.5, 4.0, 6.4 (6.3), 10.0														
		Bar	16, 25, 40, 64 (63), 100														
		Lb	ANSI: Class150, Class300, Class600														
Inherent flow characteristi		Line , Percentage															
Adjustable ratio(R)		30、 50															
Spring (signal) Pr(KPa)		20~100、 40~200、 80~240															
Range air pressure Ps(MPa)		0.14/0.25/0.4															
Allowable leakage		Solid valve core： IV Grade(10—4 × Kv) Soft valve core： VI Grade See GB/T4213—92															
Working temperature t(°C)	Normal temperature type				-20~200、 -40~250、 -60~250												
	Heat radiating type	Code： S			-40~350、 -60~350												
	High temperature type	Code： G			350~550 (High temperature material)												
	Low temperature type	Code： D			D0: -60~-100、 D1:—100~-200、 D2: -200~-250												
	Cut-off regulating type	Code： Q			-40~150(Valve core with RPTFE)												

Note: 1, spring range: 40-200KPa and 80-240KPa for Air failed to close type, 20-100KPa and 40-200KPa for air failed to open type.
2, The classification of working temperature is based on body material pressure-temperatureclassification (GB9131-94), working circumstance, sealing material and other factors, there is tiny difference between each country.

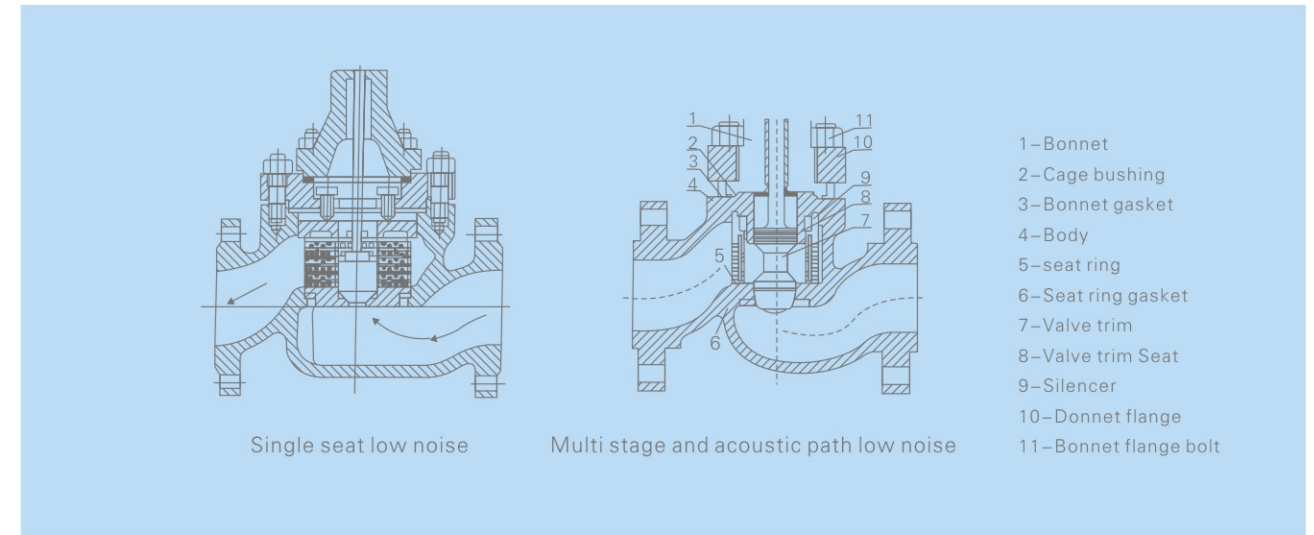


Dimensions

Unit: mm

DN(mm)			20	25	32	40	50	65	80	100	125	150	200	
A			280	280	308	308	308	395	395	395	500	500	500	
L	PN16/20/25		95	100	105	115	125	145	155	175	200	225	275	
	PN40		95	100	105	115	125	145	155	175	200	225	275	
	PN64 (63)/50		115	115	130	130	150	170	190	215	250	275	325	
H	Normal type	PN16/25	388	388	395	415	430	515	533	551	630	696	715	
		PN40	388	388	395	415	430	515	533	551	630	696	715	
		PN64(63)	395	395	415	435	465	535	572	580	680	730	762	
	High temperature type		440	440	458	478	493	594	628	646	750	846	915	
	Bellow type		440	440	458	450	493	594	628	646	750	846	804	
H0	-60~-100℃		500	500	500	500	500	600	600	600	700	700	700	
	-100~-200℃		700	700	700	700	700	800	800	800	900	900	900	
	-200~-250℃		900	900	900	900	900	1000	1000	1000	1100	1100	1100	
H	Low temperature type	-60 ~ -100℃	PN16、 20 25、 40	810	810	832	832	832	1026	1026	1026	1200	1198	1198
			PN50、 64	810	810	832	832	832	1026	1026	1026	1200	1198	1198
		-100~-200℃	PN16、 20 25、 40	1010	1010	1032	1032	1032	1226	1226	1226	1400	1398	1398
			PN50、 64	1010	1010	1032	1032	1032	1226	1226	1226	1400	1398	1398
		-200~-250℃	PN16、 20 25、 40	1210	1210	1232	1232	1232	1426	1426	1426	1600	1598	1598
			PN50、 64	1210	1210	1232	1232	1232	1426	1426	1426	1600	1598	1598
φ D3			260	260	285	305	340	370	405	460	525	590	700	
φ D4			290	290	315	335	370	400	435	490	555	630	740	
Bolt hole n (a) d (diameter n)			8-14	8-14	8-14	8-16	8-16	10-16	10-16	12-18	14-18	16-18	18-18	

Note: The H dimension of the valve with top installed hand wheel should add 180 (DN20-50)、240 (DN65-100)、304 (DN125-200).



Product Introduction

It is well known that noise pollution is harmful to human beings and environment. There are three way for the noise generated by control valve: mechanical noise, hydrodynamic noise, aerodynamic noise. Based on large pressure difference before and after valve, emptying after valve will cause a cavitations situation , which will have different levels of excessive noise generated , so the low noise control valve is necessary in case the noise exceed the standard level.

Parts and Materials

Parts name	Material
Body, Bonnet	WCB、WCC、WC6 CF8(304)、CF8M(316)、CF3(304L)、CF3M(316L)
Valve trim, seat	304、316、316L Welded with STL 17-4PH (Precipitation hardening stainless steel)
Packing	PTFE、R.TFE、Flexible graphite
Sealing gasket	XB350 (Asbestos rubber sheets)、PTFE、Flexible graphite metal
Diaphragm cap	A3 (Painting or coating)、304 (For special service use)
Diaphragm	NBR with Polyester fabric
Spring	60Si2Mn、50Cr VA
Stem	304、316、316L、17-4PH

Note: To choose the material based on the service condition.

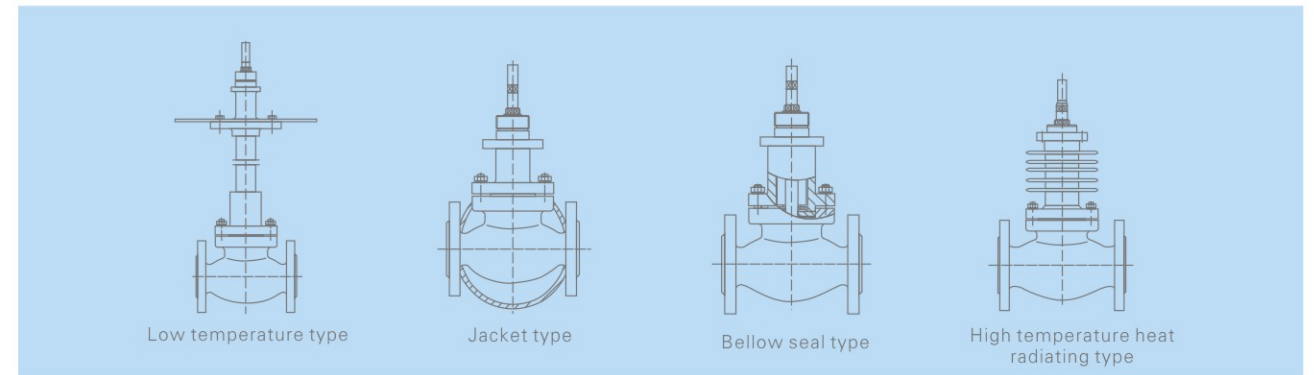
Notes:

- 1, Since the low noise valve is widely installed in the flow condition with high fluid speed, high pressure difference, the pressure after valve is relatively small (or even empty), the fluid flash cause cavitation situation ,so it requires large valve capacity and larger size pipeline install after the valve.
- 2, Due to the variety of internal parts in low noise valve (see the basic structure diagram), it is recommended that the valve diameter should be one size larger than the seat diameter.

Technical Parameters

DN(mm)		20				25					32	40		50		
Seat diameter DN(mm)		10	12	15	20	10	12	15	20	25	32	32	40	32	40	50
Rated flow coefficient (Kv)	Line	1.8	2.8	4.4	6.9	1.8	2.8	4.4	6.9	11	17.6	17.6	27.5	17.6	27.5	44
	Percentage	1.6	2.5	4.0	6.3	1.6	2.5	4.0	6.3	10	16	16	25	16	25	40
Rated stroke L(mm)		16									25					
Effective diaphragm area Ae(cm ²)		280									400					
DN(mm)		65	80		100			125	150		200		250			
Seat diameter DN(mm)		65	65	80	65	80	100	125	125	150	150	200	250			
Rated flow coefficient (Kv)	Line	69	69	110	69	110	176	275	275	440	440	690	1100			
	Percentage	63	63	100	63	100	160	250	250	400	400	630	900			
Rated stroke L(mm)		40						60						100		
Effective diaphragm area Ae(cm ²)		600						1000						1600		
Nominal pressure PN		Mpa	1.6, 2.5, 4.0, 6.4(6.3)/2.0, 5.0, 11.0													
		Bar	16, 25, 40, 64(63)/20, 50, 110													
		Lb	ANSI: Class150、Class300、Class600													
Inherent flow characteristi		Line , Percentage														
Adjustable radio(R)		50														
Spring (signal) Pr(KPa)		20~100、40~200、80~240、(20~60、60~100)														
Range air pressure Ps(MPa)		0.14/0.25/0.3														
Allowable leakage		Solid valve core； IV Grade(10-4×Kv) Soft valve core： VI Grade See GB/T4213-92														
Working temperature t(°C)	Normal temperature type				-20~200、-40~250、-60~250											
	Heat radiating type	Code: R			-40~350、-60~350											
	High temperature type	Code: H			350~550 (High temperature material)											
	Low temperature type	Code: L			D ₀ :-60~-100、D ₁ :100~-200、D ₂ :-200~-250											
	Cut-off regulating type	Code: S			-40~150(Valve core with RPTFE)											
Noise control		≤80dBA														

Bonnet Type

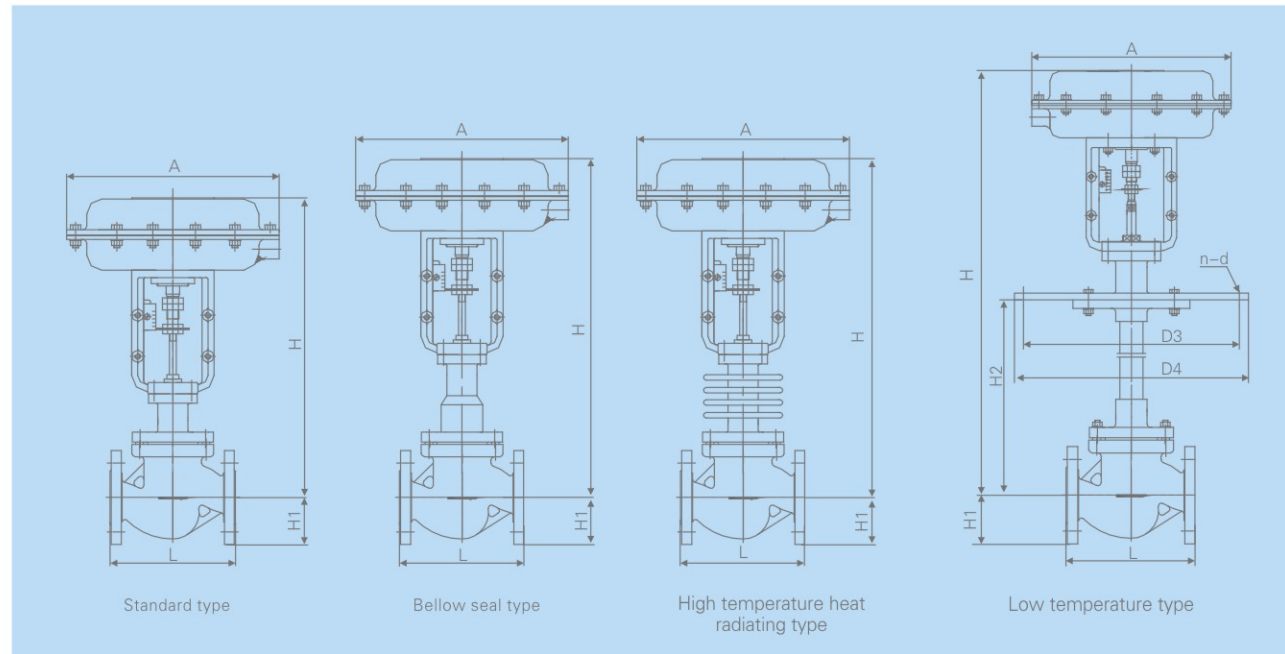


Allowable Pressure Drop

Unit: MPa

Switch way	Actuator Model	Spring range (KPa)	Air supply pressure (MPa)	Positioner (Y/N)	Seat diameter DN(mm)											
					20	25	32	40	50	65	80	100	125	150	200	
Air failed to open type (direct act)	FL280B	20~100	0.14	N	0.87	0.49										
				Y	2.57	1.58										
		40~200	0.25	Y	3.42	2.12										
				Y	10.0	8.11										
	FL400B	20~100	0.14	N			0.43	0.23	0.12							
				Y			1.34	0.82	0.49							
		40~200	0.25	Y			1.82	1.11	0.67							
				Y			6.80	4.31	2.73							
	FL600B	20~100	0.14	N						0.14	0.08	0.03				
				Y						0.50	0.31	0.18				
		40~200	0.25	Y						0.68	0.43	0.26				
				Y						2.65	1.73	1.09				
	FL1000B	20~100	0.14	N									0.05	0.03	0.005	
				Y									0.20	0.13	0.07	
		40~200	0.25	Y								0.28	0.19	0.10		
				Y								1.13	0.78	0.43		
Air failed to type (reverse act)	FL280K	20~100	0.14	Y/N	0.87	0.49										
		40~200	0.25	Y	2.57	1.58										
		80~240	0.28	Y	5.97	3.76										
	FL400K	20~100	0.14	Y/N			0.43	0.23	0.12							
		40~200	0.25	Y			1.34	0.82	0.49							
		80~240	0.28	Y			3.16	1.98	1.23							
	FL600K	20~100	0.14	Y/N						0.14	0.08	0.03				
		40~200	0.25	Y						0.50	0.31	0.18				
		80~240	0.28	Y						1.22	0.78	0.48				
	FL1000K	20~100	0.14	Y/N									0.05	0.03	0.005	
		40~200	0.25	Y									0.20	0.13	0.07	
		80~240	0.28	Y									0.51	0.35	0.18	

Note: 1. For F412** - B type bellows seal single seat control valve, its Max. allowable differential pressures is 1.0 MPa, to use the value in above table while the data is smaller than 1.0 MPa, and use 1.0 MPa instead of the table value above while the data is larger than 1.0 MPa. 2. The allowable pressure drop refers to the value configured by the standard actuator, also we can select other actuators according to the specific conditions to meet the requirements.

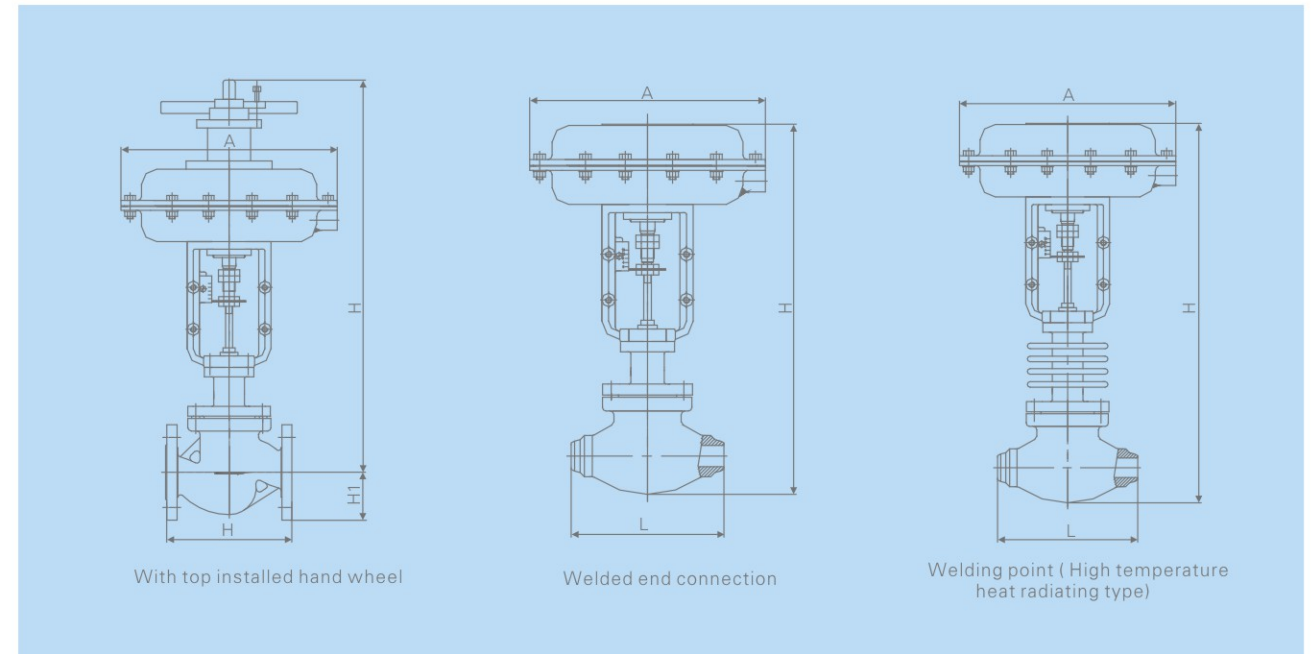


Dimensions of Standard Type,Bellow Seal Type, of High Temperature Type

Unit: mm

DN(mm)		20	25	32	40	50	65	80	100	125	150	200	250
φ A		280		308		395		500		620			
L	PN 16, 20, 25, 40 ANSI 150Lb	150	160	180	200	230	290	310	350	400	480	600	730
	PN 64, 100 (110) ANSI 300Lb, 600Lb	206	210	222	251	286	311	337	394	440	508	610	752
H1	PN16	52.5	57.5	70	75	82.5	92.5	100	110	125	142.5	170	202.5
	PN25	52.5	57.5	70	75	82.5	92.5	100	115	135	150	180	212.5
	PN40	52.5	57.5	70	75	82.5	92.5	100	117.5	135	150	187.5	225
	PN64 (63)	65	70	78	85	90	102.5	107.5	125	147.5	172.5	202.5	235
	ANSI 150Lb (PN20)	50	55	60	65	75	80	95	115	127.5	140	172.5	202.5
	ANSI 300Lb (PN50)	60	62.5	67.5	77.5	82.5	95	105	127.5	140	160	190	222.5
H	Standard type	PN16/25/40	400	400	440	450	460	570	570	570	670	700	740
		ANSI 150Lb (PN20)	400	400	440	450	460	570	570	570	670	700	740
		PN 64, 300Lb (PN50)	400	400	450	450	460	570	570	570	720	720	750
	Heat radiating type high temperature type bellow seal type		480	480	530	530	530	640	640	640	800	810	840

Note: The H dimaion of the valve with top installed hand wheel should add180 (DN20-50), 240 (DN65-100), 304 (DN125-200), 352 (DN250).

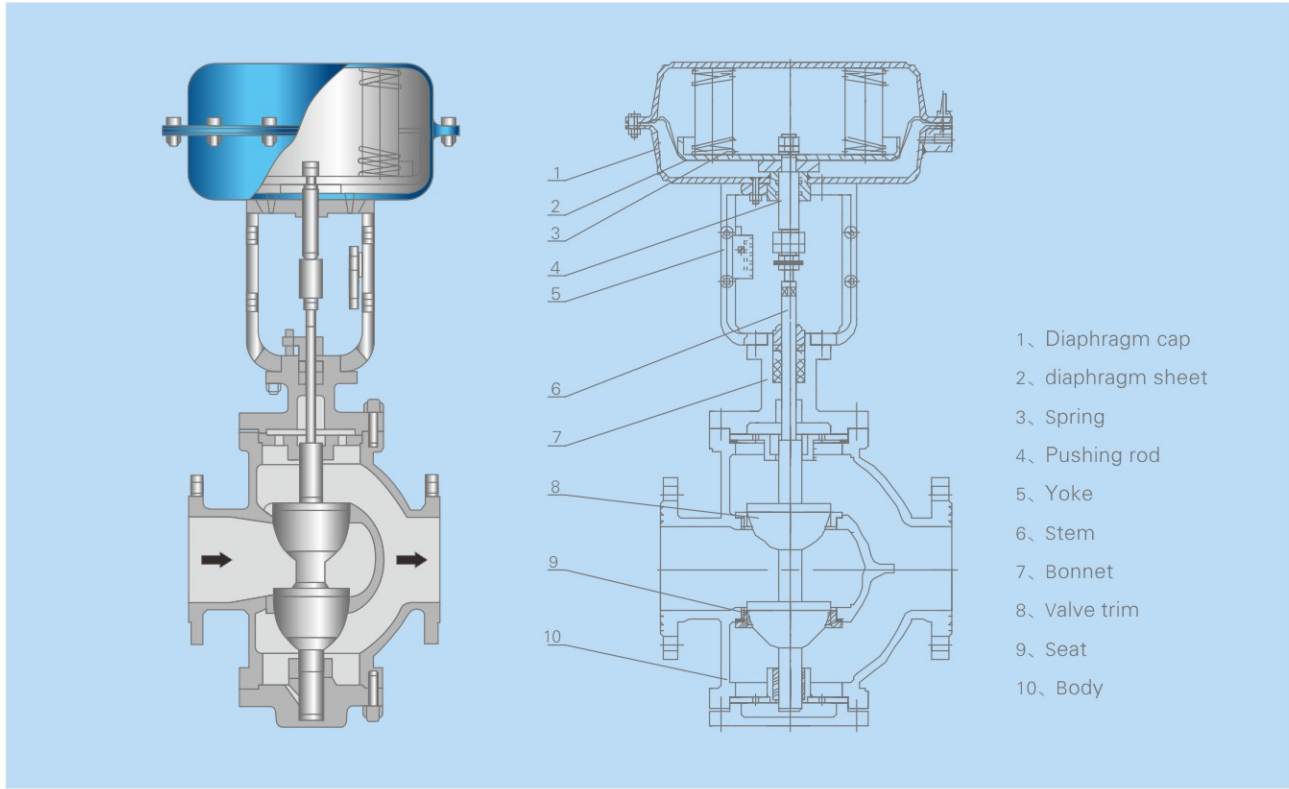


Dimensions of Low Temperature Type

Unit: mm

DN(mm)			20	25	32	40	50	65	80	100	125	150	200
φ A			280		308		395		500				
L	N16、20 (150Lb) 25、40		150	160	180	200	230	290	310	350	400	480	600
	PN50 (300Lb) 64 (63)		206	210	222	251	286	311	337	394	440	508	610
H2	-60~-100℃		500	500	500	500	500	600	600	600	700	700	700
	-100~-200℃		700	700	700	700	700	800	800	800	900	900	900
	-200~-250℃		900	900	900	900	900	1000	1000	1000	1100	1100	1100
H	-60 ~ -100℃	PN16、20 25、40	810	810	832	832	832	1026	1026	1026	1200	1198	1198
		PN50、64	810	810	832	832	832	1026	1026	1026	1200	1198	1198
	-100~ -200℃	PN16、20 25、40	1010	1010	1032	1032	1032	1226	1226	1226	1400	1398	1398
		PN50、64	1010	1010	1032	1032	1032	1226	1226	1226	1400	1398	1398
	-200~ -250℃	PN16、20 25、40	1210	1210	1232	1232	1232	1426	1426	1426	1600	1598	1598
		PN50、64	1210	1210	1232	1232	1232	1426	1426	1426	1600	1598	1598
φ D3			260	260	285	305	340	370	405	460	525	590	700
φ D4			290	290	315	335	370	400	435	490	555	630	740
Bolt hole n (a) d (diametern)			8-14	8-14	8-14	8-16	8-16	10-16	10-16	12-18	14-18	16-18	18-18

Note: 1, The H dimension of the valve with top installed hand wheel should add 180 (DN20-50), 240 (DN65-100), 304 (DN125-200)
2, Size H2 (Length of heat preservation) is recommended by general air separation industry, it can be designed according to the designer and user's request.



Product Introduction

Double core guided structure designed, compact structure, light weight, quickly action, large capacity, precision flow characteristic, easily disassembly and maintenance, assembly with multi spring diaphragm actuator, Flowtec F420 double seat control valve can be widely used in precise flow control of gas, liquid, steam and other mediums, while the process pressure, flow and temperature are maintained at a given value. Double seat control valve is suitable for service with large allowable differential pressure, larger leakage condition and none clean mediums. There are standard type, heat radiating type, low temperature type , cut-off regulation type, bellow seal type and others, with pressure range of PN16,25,40,64 (63), 100, and size range of DN15 ~ 250mm. They are applicable for fluid temperature within -150℃~+560℃, with the leakage of class II and class III, the leakage of soft seated is class VI, the flow characteristics can be linear or equal percentage.

Features

- 1, Top-bottom double guide double seat control valve, good stability.
- 2, There are two valve core and valve seat, using the "four way" valve body, which can be easily changed to a counter installation, air failed to close valve turn to air failed to open valve.
- 3, Designed according to fluid dynamics the valve cross section are low flow resistance and have bigger flow coefficient.
- 4, Small unbalance force, large allowable pressure difference.
- 5, Actuator is using multi spring structure , height reduced by 30%, weight reduced by 30%.
- 6, Large adjustable range, Inherent adjustable ratio 50:1.

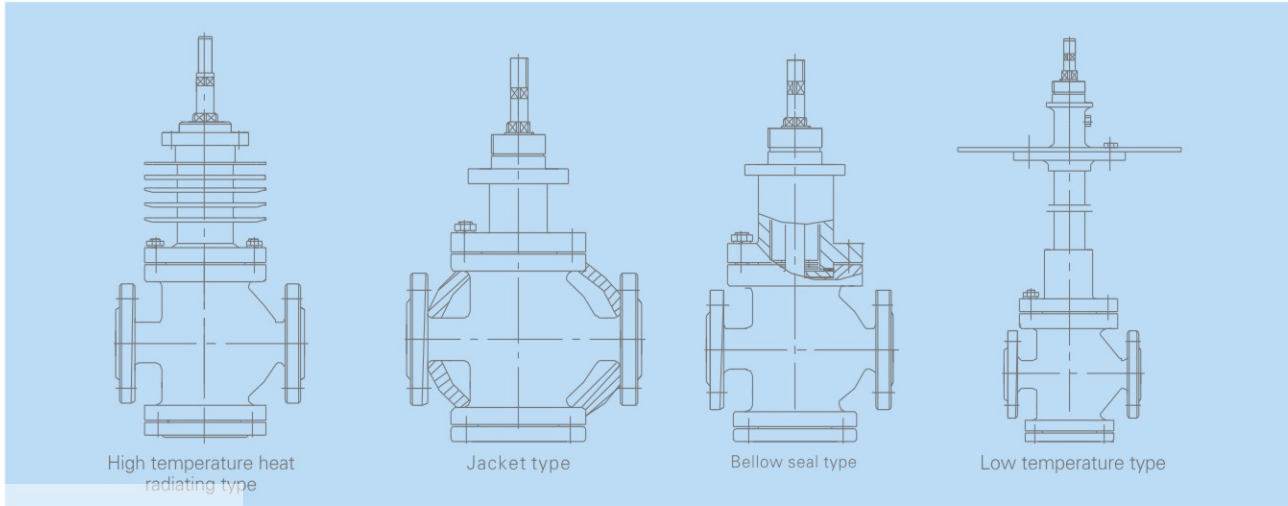
F420 Metal valve trim is suitable for various working condition
F420** - ** - S Type soft seat structure valve can achieve the VI class grade leakage.
F420** - ** - B Bellow seal type control valve, form a complete sealing of the working stem, to prevent the leakage of medium.
F420** - ** - J The regulating valve is provided with a thermal insulation jacket, is used on the condition easy to crystallize after the fluid cooled, and blocked.
F420** - ** - L Low temperature type is used on low temperature and cryogenic working condition.
F420** - ** - H High temperature type (-450 ~ 560℃).
F420** - ** - R Heat radiating type (-60 ~ 450℃).

Technical Parameters

DN (mm)		25	32	40	50	65	80	100	125	150	200
Rated flow coefficient (Kv)	Line	12.1	19.4	30.3	48.3	75.9	121	193.6	302.5	484	759
	Percentage	11	17.6	27.5	44	69	110	176	275	440	690
Rated stroke L(mm)		16	25			40			60		
Effective diaphragm area Ae(cm²)		280	400			600			1000		
DN(mm)		250		300		350			400		
Rated flow coefficient (Kv)	Line	1210		1936		2612			4400		
	Percentage	1100		1760		2160			4000		
Rated stroke L(mm)		100		100		100			100		
Effective diaphragm area Ae(cm²)		1600									
Nominal pressure PN/Class	MPa	1.6, 2.5, 4.0, 6.4 (6.3) , 10.0									
	Bar	16, 25, 40, 64(63), 100									
	Lb	ANSI: Class150、Class300、Class600									
Inherent flow characteristi		Line (as little as possible), percentage (priority)									
Inherent adjustable(R)		30、 50									
Spring (signal)Pr(KPa)		20~100 40~200 80~240									
Range air pressure Ps(MPa)		0.14/0.25/0.4									
Allowable leakage		II Grade(5 × 10-3 × Rated valve capacity)Metal hard seal									
Working temperature t(°C)	Normal temperature type	-20~200 -40~250 -60~250									
	Heat radiating type	-40~450 -60~450									
	High temperature type	(High temperature material) 450~650									
	Low temperature type	-60~-100 -100~-200 -200~-250									
	Cut-off type	-40 ~ 150(Valve core gripper PTFE), -60 ~ 200(Valve core gripper enhancement PTFE)									

Note: The product performance index should follow GB/T4213-92 standards.

Bonnet Type

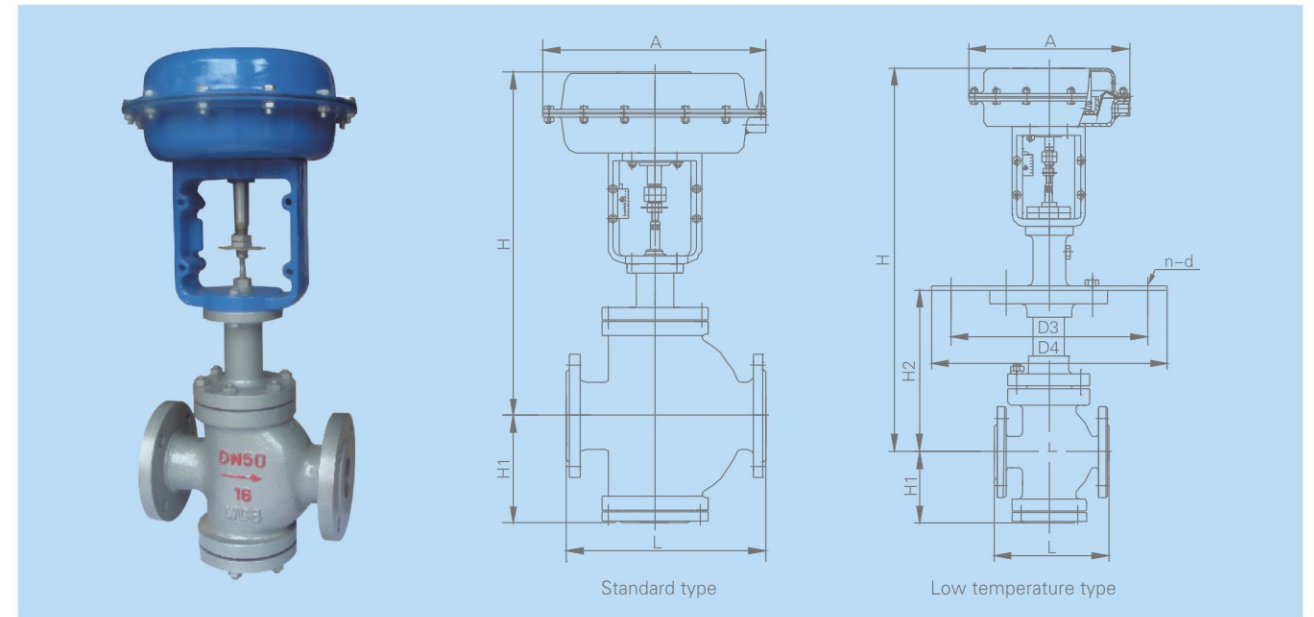


Allowable Differential pressure

Unit: MPa

Switch way	Actuator Model	Spring range (KPa)	Air supply pressure (MPa)	Positioner (Y/N)	Seat diameter DN(mm)										
					20	25	32	40	50	65	80	100	125	150	200
Air failed to open type (direct act)	FL280B	20~100	0.14	N	4.60	3.23									
				Y	10.0	10.0									
		40~200	0.25	Y	10.0	10.0									
															80~240
	FL400B	20~100	0.14	N			2.88	1.96	1.22						
				Y			8.94	6.77	5.05						
		40~200	0.25	Y			10.0	9.18	6.96						
	FL600B	20~100	0.14	N						1.61	1.05	0.56			
				Y						5.58	4.26	3.12			
		40~200	0.25	Y						5.57	5.86	4.40			
	FL1000B	20~100	0.14	N									0.83	0.52	0.14
				Y										3.30	2.57
		40~200	0.25	Y									4.53	3.60	2.43
Air failed to close type (reverse act)	FL280K	20~100	0.14	Y/N	4.60	3.23									
		40~200	0.25	Y	10.0	10.0									
		80~240	0.28	Y	10.0	10.0									
	FL400K	20~100	0.14	Y/N			2.88	1.96	1.22						
		40~200	0.25	Y			8.94	6.77	5.05						
		80~240	0.28	Y			10.0	10.0	10.0						
	FL600K	20~100	0.14	Y/N						1.61	1.05	0.56			
		40~200	0.25	Y						5.58	4.26	3.12			
		80~240	0.28	Y						10.0	10.0	8.24			
	FL1000K	20~100	0.14	Y/N									0.83	0.52	0.14
		40~200	0.25	Y									3.30	2.57	1.67
		80~240	0.28	Y									8.22	6.66	4.73

Note: 1. For F420** - B type bellow seal double seat control valve, its Max. allowable differential pressures is 1.0 MPa, to use the value in above table while the data is smaller than 1.0 MPa, and use 1.0 MPa instead of the table value above while the data is larger than 1.0 MPa.



Dimensions

Unit: mm

DN(mm)		25	32	40	50	65	80	100	125	150	200
φ A		280	308	308	308	395	395	500	500	500	500
L	PN16	160	180	200	230	290	310	350	400	480	600
	PN64	210	222	251	286	311	337	394	440	508	610
H1	PN16	91	108	118	135	150	185	202	225	303	340
	PN40	91	108	118	135	150	185	202	225	303	340
	PN64	120	132	137	159	179	205	253	266	288	376
H	Normal type	PN16	376	420	420	420	580	580	610	730	800
		PN40	376	420	420	420	580	580	610	730	800
		PN64	395	445	445	445	595	595	650	780	850
	High temperature type		476	510	510	510	710	710	710	870	960
	Bellow seal type		476	510	510	510	710	710	710	870	960
H2	Low temperature type		Normal height+ (700 ~ 1100)								
	-100℃		500			600			700		
	-200℃		700			800			900		
	-250℃		900			1000			1100		
WT (Kg)	Normal type	PN16	23	24	29	32	58	70	85	135	165
		PN40	23	24	29	32	58	70	87	138	172
		PN64	26	27	35	40	75	90	102	155	200
	High temperature type		26	26	30	34	62	75	90	145	175
	Bellow seal type		27	30	38	42	72	95	120	175	212
Low temperature type	Low temperature type		Normal type weight increased by(10 ~ 20)%								
	φ D3		260	285	305	340	370	405	460	525	590
	φ D4		290	315	335	370	400	435	490	555	630
	Bolt hole n-d		8-φ 14	8-φ 14	8-φ 16	8-φ 16	10-φ 16	10-φ 16	12-φ 18	14-φ 18	16-φ 18

Note: 1、DN250-450 is decided by our company' s design data. 2、The H dimension of the valve with top installed hand wheel should add 180 (DN20-50)、240 (DN65-100)、304 (DN125-200) . Modification on technical parameter will be carried without notice .

Product Introduction

With simple cage structure designed and accurate flow characteristics, the sleeve (or cage) type control valve is a secondary widely using control valve beside single seat control valve. And will be used for more than 60% of the control valve quantity in some project. The leakage level of metal seat sleeve type control valve can meet the requirements of class IV according to ANSI B16.104 or GB/T4213-92. Except for the service require strictly sealing, the cage type control valve is the priority choice beside the single seat control valve.

Sleeve control valve also known as cage valve, because there are two sealing surface, it is also known as cage type two seat control valve , code in M.

The types of sleeve control valve as below :

- | | |
|---|---|
| 1、F440Pneumatic diaphragm sleeve control valve | 5、F440**--**--E2Electronic mechanical sleeve control valve |
| 2、F442Pneumatic diaphragm low noise sleeve control valve | 6、F44A**--**--E1Electronic motor angle type sleeve control valve |
| 3、F44APneumatic diaphragm angle type sleeve control valve | 7、F44A**--**--E2Electronic mechanical angle type sleeve control valve |
| 4、F440**--**--E1Electronic motor sleeve control valve | |

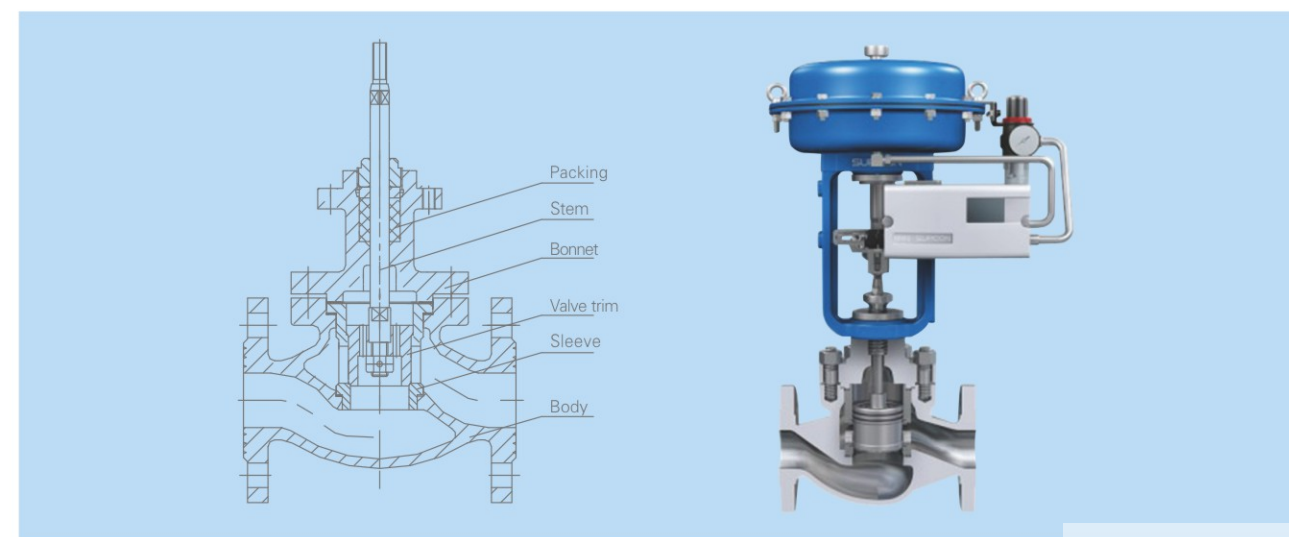
Features

- 1, Pressure balance type valve trim designed , withstand high pressure difference and require for small actuator.
- 2, Due to the structure of fluid pressure balance valve trim, stable valve working, not easy to shock.
- 3, The sleeve port is symmetrically located, and the kinetic energy of the fluid is concentrated in the center of the sleeve, so that the inner part of the valve is not easy to be damaged, the noise generated is relatively small, and the service life of the valve is long.
- 4, Sleeve port can be cut according to the needs of service into a variety of flow characteristics of the valve, so the same nominal diameter of the valve can be manufactured into a variety of required flow coefficient (flow capacity) of KV.

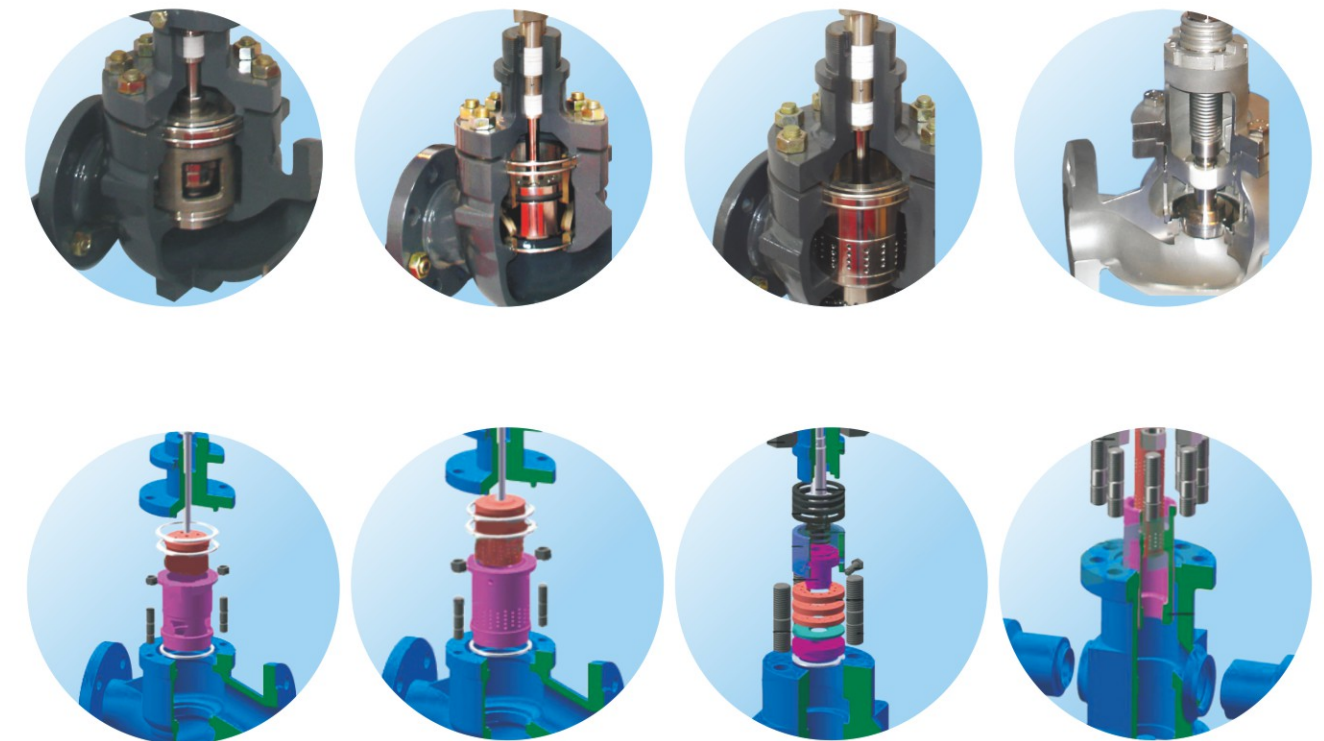
Notes:

- 1, Sleeve control valve is not applicable to medium containing particles or fibrous impurities or medium viscosity, V type ball valve should be the good choice.
- 2, Sleeve control valve is not applicable to easy crystallization medium (unless there is a long term insulation measurement).
- 3, Sleeve valve is not applicable on the circumstance which needs cut-off function and soft seated structure.
- 4, Sleeve valve has two sealing surface as double seat control valve, in the case of allowable situation, to choose the sleeve valve prior to double seat control valve.

The Basic Structure of A Sleeve Valve



Sleeve(Or Cage)



Design and Selection Consideration

Since a single-stage, multi-stage anti corrosion, high pressure drop, low noise sleeve valve internal parts require a large space inside the valve , so the valve body cavity is relatively large, while we would like to recommend to increase valve diameter one size larger than seat diameter .

Product Introduction

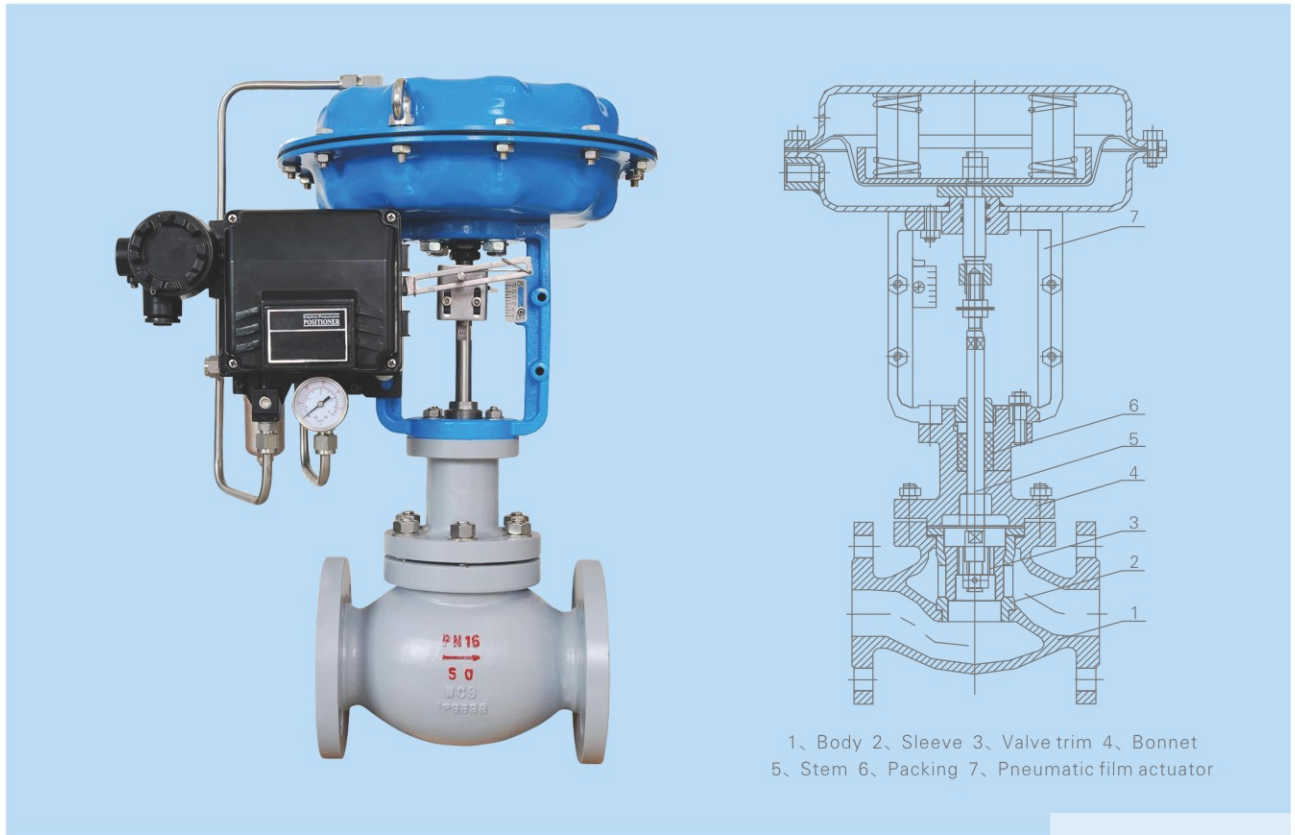
F44new series pneumatic diaphragm sleeve type control valve is a pressure balance control valve. Equipped with multi spring actuator, the overall structure is compact, light weight and good stability, the fluid channel is streamlined, small pressure drop loss, allowing big pressure difference, low noise and large flow capacity. Widely used in precise control of gas, liquid steam, medium parameters such as pressure, flow, temperature, liquid level ,all of them should be maintained at a given value. It is especially suitable for situation with large flow, big pressure difference and not strict leakage level demanding.

There are various types ,such as standard type , cut-off regulating type, bellows seal type, jacket type, low temperature and other types.

Features

- 1, Balanced valve trim structure, small axial force, allowing large pressure difference, good stability.
- 2, Interchangeable sleeve, easy disassembly, easy maintenance.
- 3, Full metal valve trim structure is suitable for a variety of working conditions, and achieve the IV level of leakage standards, F440**--**--S type soft sealing valve trim structure can achieve the VI level of leakage.
- 4, The valve is designed according to the principle of fluid dynamics on the equal cross section low flow resistance channel, Large adjustable range, Inherent adjustable ratio 50:1
- 5, The actuator is designed in multi spring structure , height reduced by 30%, weight reduced by 30%.
- 6、F440**--**--B Bellow seal type control valve ,form a complete sealing of the working stem ,to prevent the leakage of medium
- 7、F440**--**--J The regulating valve is provided with a thermal insulation jacket ,is used in the condition easy to crystallize and blocked after the fluid cooled.
- 8、F440**--**--L Low temperature type is applicable to low temperature and cryogenic situation
- 9、F440**--**--H High temperature type (450~560℃)
- 10、F440**--**--R Heat radiating type (–60~450℃)

Basic Structure of Sleeve Control Valve



Technical Parameters

DN (mm)		20	25	32	40	50	65	80	100	125	150	200		
Rated flow coefficient (Kv)	Line	6.9	11	17.6	27.5	44	69	110	176	275	440	690		
	Percentage	6.3	10	16	25	40	63	100	160	250	400	630		
Rated stroke L(mm)		16		25			40			60				
Effective diaphragm area Ae(cm²)		280		400			600			1000				
DN(mm)		250		300			350			DN 300 or Dn350 should be used as a dual or Angle stroke valve				
Rated flow coefficient (Kv)	Line	1000		1650			2160							
	Percentage	900		1500			2000							
Rated stroke L(mm)		100												
Effective diaphragm area Ae(cm²)		1600												
Spring (signal)Pr(KPa)		20~100、40~200、80~240(Can choose other spring range)												
Range air pressure Ps(MPa)		0.14、0.25、0.30												
Inherent flow characteristi		Line , Equal percentage												
Inherent adjustable(R)		50												
Allowable leakage		Solid valve core balancing type: III Level, IV level, Soft valve core : VI level												
Nominal pressure PN	MPa	1.6, 2.5, 4.0, 6.4(6.3)10.0,16.0/2.0, 5.0, 11.0, 15.0												
	Bar	16, 25, 40, 64(63), 100, 160/20, 50, 110, 150												
	Lb	ANSI: Class150, Class300, Class600, Class900												
Working temperature t(°C)	Normal temperature type	-20~200、-40~250、-60~250												
	Heat radiating type	-40~450、-60~450												
	High temperature type	(High temperature material) 450~650												
	Low temperature type	-60~-100、-100~200、-200~250												
	Cut-off type	-40 ~ 150(Valve core gripper PTFE), -60 ~ 200(Valve core gripper enhancement PTFE)												

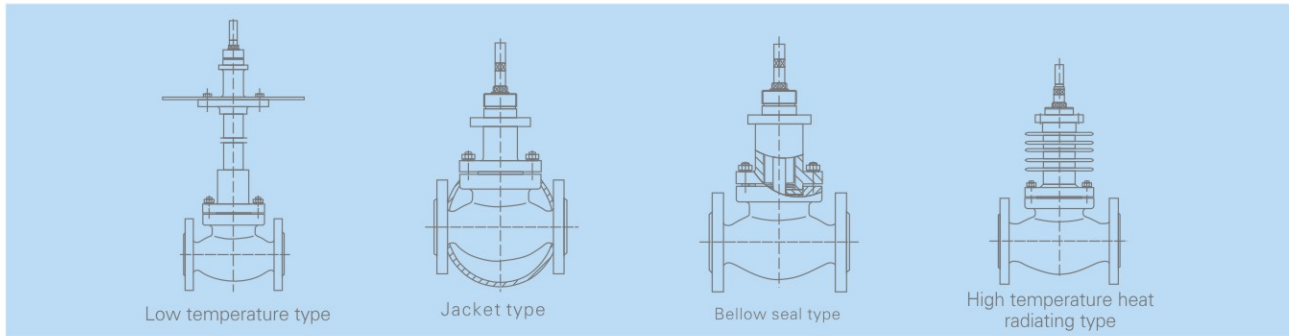
Note: The product performance index should follow GB/T4213-92 standards

Parts and Materials

Parts name	Material
Body,Bonnet	WCB、WCC、WC6 CF8 (304) CF8M (316) CF3 (304L) CF3M (316L)
Valve trim,sleeve	304、316、316LWelded with STL 17-4PH
Packing	PTFE、R.TFE、Flexible graphite
Sealing gasket	XB350(Asbestos rubber sheets)、PTFE、Graphite
Diaphragm cap	A3(Painting or coating)、304(For special service use)
Bellow Diaphragm	NBR with Polyester fabric
Stem	304、316、316L、17-4PH

Note: To choose the other material based on the service condition.

Bonnet Type



The Allowable Pressure Difference of FC Type Control Valve

Unit: MPa

Diaphragm effective areaAe(cm²)			280			400			600			1000		
signal range Pr(KPa)			20-200	20-100	40-200	20-100	20-100	40-200	20-100	20-100	40-200	20-100	40-100	40-200
Air supply pressurePs(MPa)			0.14	0.14	0.25	0.14	0.14	0.25	0.14	0.14	0.25	0.14	0.14	0.25
Accessories required			-	P	P	-	P	P	-	P	P	-	P	P
Nominal diameter DN(mm)and seat diameter d(mm)	20	20	2.67	6.23	6.40									
	25	25	2.22	5.19	6.40									
	32	32				2.58	6.02	6.40						
	40	25				3.18	6.40	6.40						
		32				2.58	6.02	6.40						
		40				2.12	4.95	6.37						
	50	32				2.58	6.02	6.40						
		40				2.12	4.95	6.37						
		50				1.73	4.05	5.21						
	65	65							2.04	4.77	6.14			
	80	50							2.60	6.08	6.40			
		65							2.05	4.77	6.14			
		80							1.69	3.93	5.06			
	100	65							2.05	4.77	6.14			
		80							1.68	3.39	5.06			
		100							1.36	3.18	4.09			
	125	125										1.83	4.28	5.51
	150	100										2.27	5.30	6.40
		125										1.84	4.28	5.51
		150										1.54	3.59	4.62
	200	125										1.84	4.28	5.51
		150										1.54	3.59	4.62
		200										1.12	2.62	3.37

- Note:1,P: Valve positioner
2, 1.For F440**~B type bellow seal sleeve control valve, its Max. allowable differential pressures is 1.0 MPa, to use the value in above table while the data is smaller than 1.0 MPa, and use 1.0MPa instead of the table value above while the data is larger than 1.0 MPa.
3, the allowable pressure difference refers to the value configured by the standard actuator, also we can select other actuator according to the specific conditions to meet the requirements.
4, The allowed pressure difference of spring 80-240KPa and 40-200KPa are same (without positioner), so we can conclude it' s better to use spring range of 40-200KPa or 20-100Kpa for the air failed to open control valve.
5, All the above data is calculated when the valve is closed and pressure after valve P2=0, it' s allowed even large pressure difference during the regulating process.

The Allowable Pressure Difference of FO Type Control Valve

Unit: MPa

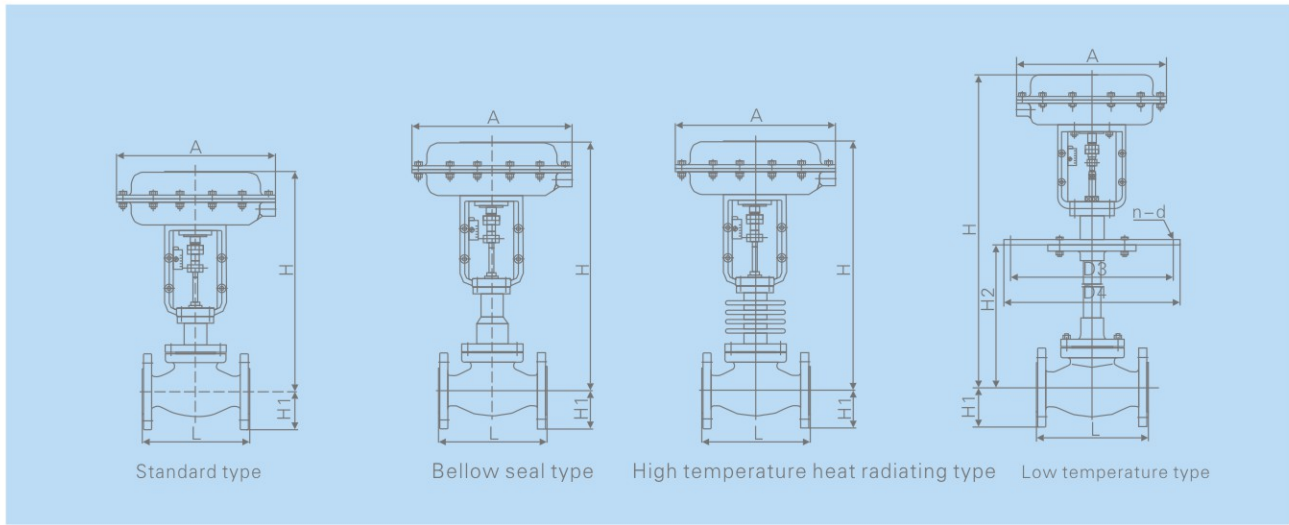
Diaphragm effective areaAe(cm²)			280		400		600		1000	
signal range Pr(KPa)			20-100	40-200	20-100	40-200	20-100	40-200	20-100	40-200
Air supply pressurePs(MPa)			0.14	0.25	0.14	0.25	0.14	0.25	0.14	0.25
Accessories required			-	P	-	P	-	P	-	P
Nominal diameter DN(mm)and seat diameter d(mm)	20	20	2.67	6.23						
	25	25	2.22	5.19						
	32	32			2.58	6.02				
	40	25			3.18	6.40				
		32			2.58	6.02				
		40			2.12	4.95				
	50	32			2.58	6.02				
		40			2.12	4.95				
		50			1.73	4.05				
	65	65					2.04	4.77		
	80	50					2.60	6.08		
		65					2.05	4.77		
		80					1.68	3.93		
	100	65					2.05	4.77		
		80					1.69	3.39		
		100					1.36	3.18		
	125	125							1.83	4.28
	150	100							2.27	5.30
		125							1.84	4.28
		150							1.54	3.59
	200	125							1.84	4.28
		150							1.54	3.59
		200							1.12	2.62

- Note:1,P: Valve positioner
2,.For F440**~B type bellow seal sleeve control valve, its Max. allowable differential pressures is 1.0 MPa, to use the value in above table while the data is smaller than 1.0 MPa, and use 1.0MPa instead of the table value above while the data is larger than 1.0 MPa.
3, the allowable pressure difference refers to the value configured by the standard actuator, also we can select other actuator according to the specific conditions to meet the requirements.
4, The allowed pressure difference of spring 80-240KPa and 40-200KPa are same (without positioner), so we can conclude it' s better to use spring range of 40-200KPa or 20-100Kpa for the air failed to open control valve.
5, All the above data is calculated when the valve is closed and pressure after valve P2=0, it' s allowed even large pressure difference during the regulating process.

Weights

DN		20	25	32	40	50	65	80	100	125	150	200
Standard type	PN 16	17	18	23	27	30	58	65	90	115	178	255
	PN 40	18	19	25	28	33	65	78	115	155	225	325
	PN 64	27	29	37	43	48	85	95	155	175	255	395
Radiating high temperature type		20	22	28	29	35	59	75	85	135	180	355
Bellow seal type		20	22	28	29	35	59	75	85	135	180	355
Low temperature type		25	27	30	35	42	63	72	88	155	235	385

Note: The data of heat dissipation high temperature, bellows seal type, low temperature type are weights of Pn16 valve’ s.

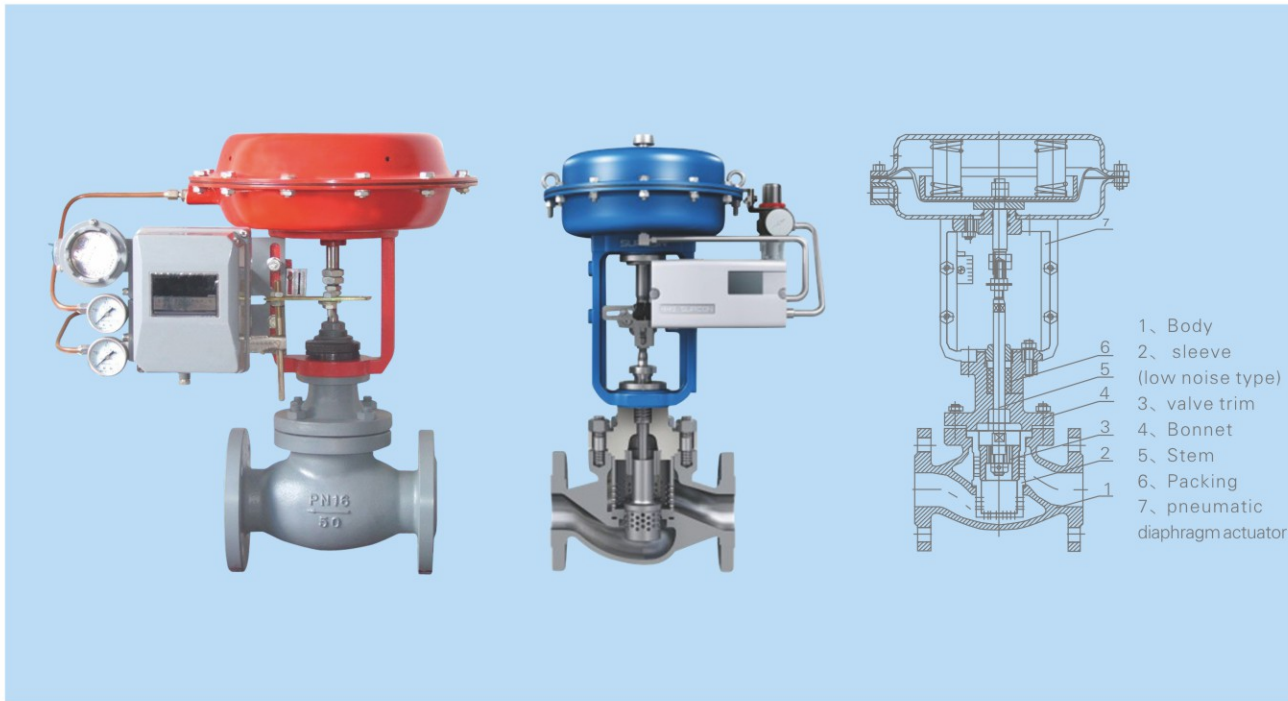


Dimensions of Standard Type 、 Bellow Seal Type、 High Temperature Heat Radiating Type

DN		20	25	32	40	50	65	80	100	125	150	200	250
φ A		282		308		395		498		620			
L	PN16, 20, 25, 40 ANSI 150Lb	150	160	180	200	230	290	310	350	400	480	600	730
	PN64, 100(110) ANSI 300Lb,600Lb	230	230	260	260	300	340	380	430	500	550	650	775
H1	PN16	52.5	57.5	70	75	82.5	92.5	100	110	125	142.5	170	202.5
	PN25	52.5	57.5	70	75	82.5	92.5	100	115	135	150	180	212.5
	PN40	52.5	57.5	70	75	82.5	92.5	100	117.5	135	150	187.5	225
	PN64(63)	65	70	78	85	90	102.5	107.5	125	147.5	172.5	202.5	235
	ANSI 150Lb(PN20)	50	55	60	65	75	80	95	115	127.5	140	172.5	202.5
H	ANSI 300Lb(PN50)	60	62.5	67.5	77.5	82.5	95	105	127.5	140	160	190	222.5
	standard type												
	PN16/25/40	400	400	440	450	460	570	570	570	670	700	740	970
	ANSI 150Lb(PN20)	400	400	440	450	460	570	570	570	670	700	740	970
	PN64,300Lb(PN50)	400	400	450	450	460	570	570	570	720	720	750	980
	Heat radiating type High temperature type Bellow seal type	480	480	530	530	530	640	640	640	800	810	840	1050

1.The height H should add 152 (dn20-50), 182 (dn65-100), 253 (dn125-200), 352 (DN250).for valve with handwheel.

Structure of Low Noise Sleeve Control Valve



Product Introduction

F442 Type pneumatic diaphragm low noise sleeve control valve is improved on the basis of F440 pneumatic diaphragm sleeve control valve, make a simple transformation or increase low noise parts according to the principle of multistage depressurization and cavitation prevention, to achieve the purpose of reducing noise ,to control the noise within the range of international and state standard.

Parts and Materials

Part name	Material
Body、 Bonnet	WCB 、 WCC、 WC6 (ZG15CrMo) CF8(304)、 CF8M(316)、 CF3 (304L)、 CF3M(316L)
Valve trim、 sleeve	304 、 316、 316L welded with STL 17-4PH
Packing	PTFE、 R.TFE、 Flexible graphite
Seling gasket	XB350(asbestos rubber sheet) 、 PTFE 、 Graphite
Diaphragm cap	A3(painting or coating) 304(Used for special situation)
membranes diaphragm	NBR clamp reinforced polyester fabric
Stem	304、 316、 316L、 17-4PH

Note: To select the other material based on the service situation

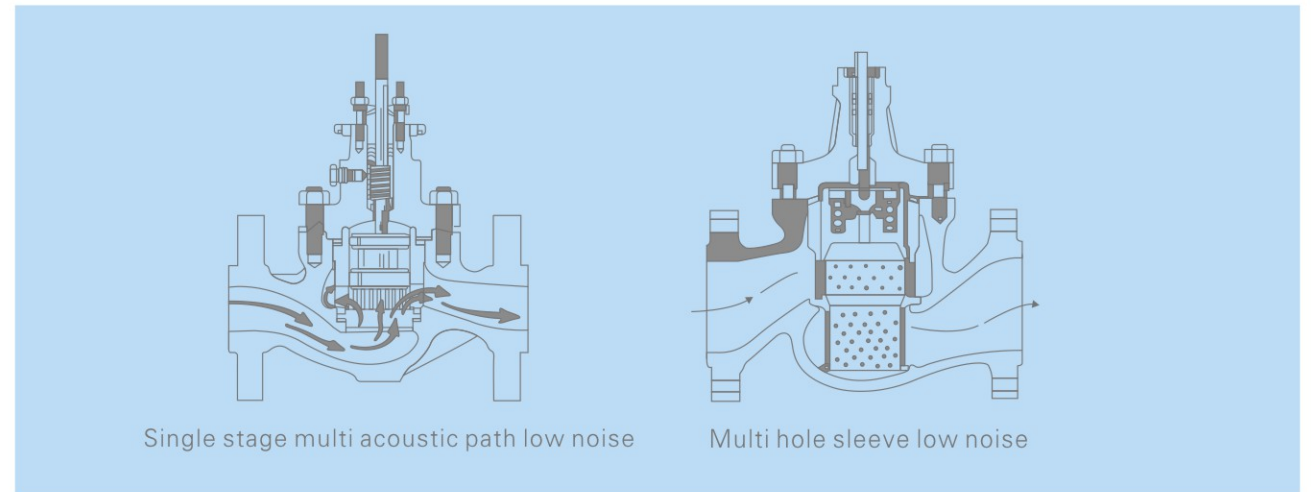


Technical Data

Unit: MPa

DN(mm)		25	32	40	50	65	80	100	125	150	200	250
DN(mm)		20	25	32	40	50	65	80	100	125	150	200
Rated flow coefficient(Kv)	Line	6.9	11	17.6	27.5	44	69	110	176	275	440	690
	Equal percentage	6.3	10	16	25	40	63	100	160	250	400	630
Rated strokeL (mm)		16		25			40			60		
Effective ragm areaAe (cm ²)		280		400			600			1000		
DN (mm)		300		350			20			DN300 or DN350 should use double seat type or angle type control valve		
DN(mm)		250		300			15					
Rated flow coefficient(Kv)	Line	1000		1650			4.4					
	Equal percentage	900		1500			4.0					
Rated strokeL(mm)		100					16					
Effective ragm areaAe (cm ²)		1600					280					
Spring coverage Pr (Kpa)		20~100、40~200、80~240(allow to use other spring range)										
air supply pressure PS (MPa)		0.14、0.25、0.30										
Inherent flow characteristic		Line、Equal percentage										
Inherent adjustable rate(R)		50										
Allowed leakage		Metal seat balance type: class III, IV seat: classVI										
PN	MPa	1.6、2.5、4.0、6.4(6.3),10.0,16.0/2.0、5.0、11.0、15. 0										
	Bar	16、25、40、64 (63)、100、160/20、50、110、150										
	Lb	ANSI: Class150, Class300, Class600, Class900										
Working temperature t(°C)	Normal temperature type	-20~200、-40~250、-60~250										
	Heat radiating type	-40~450、-60~450										
	High temperature type	450~560(High temperature material)										
	Low temperature type	-60~-100、-100~-200、-200~-250										
	Cut-off regulating type	-40~150(valve core with PTFE) -60~200(valve core with RPTFE)										

Note: F442 sleeve control valve have complex internal parts, so it requires a large space inside the valve , and the valve body cavity is relatively large, it is recommended that the valve diameter will increase one size larger than seat diameter .



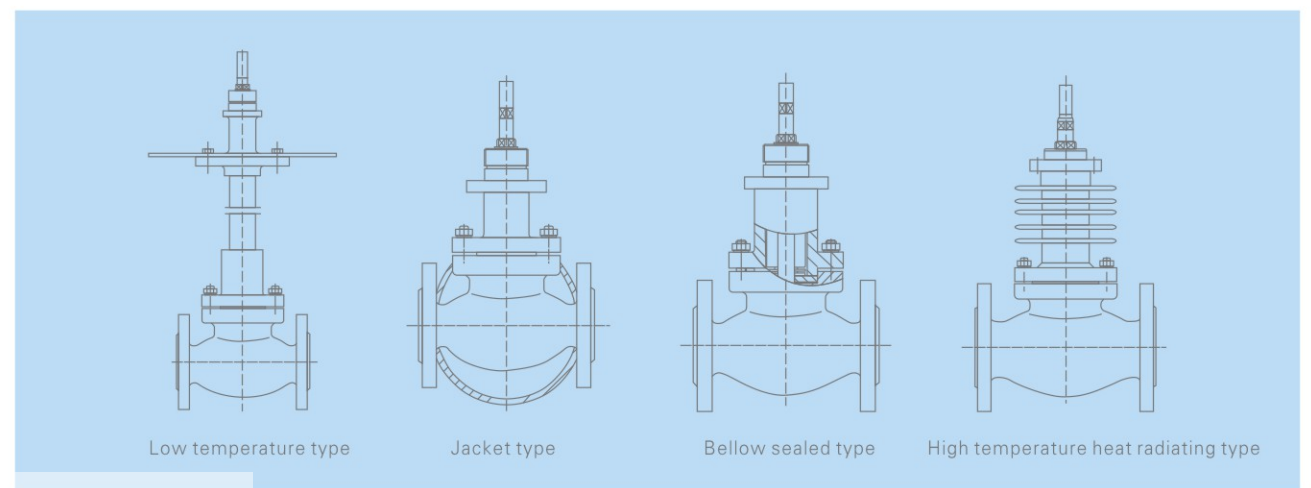
Weight

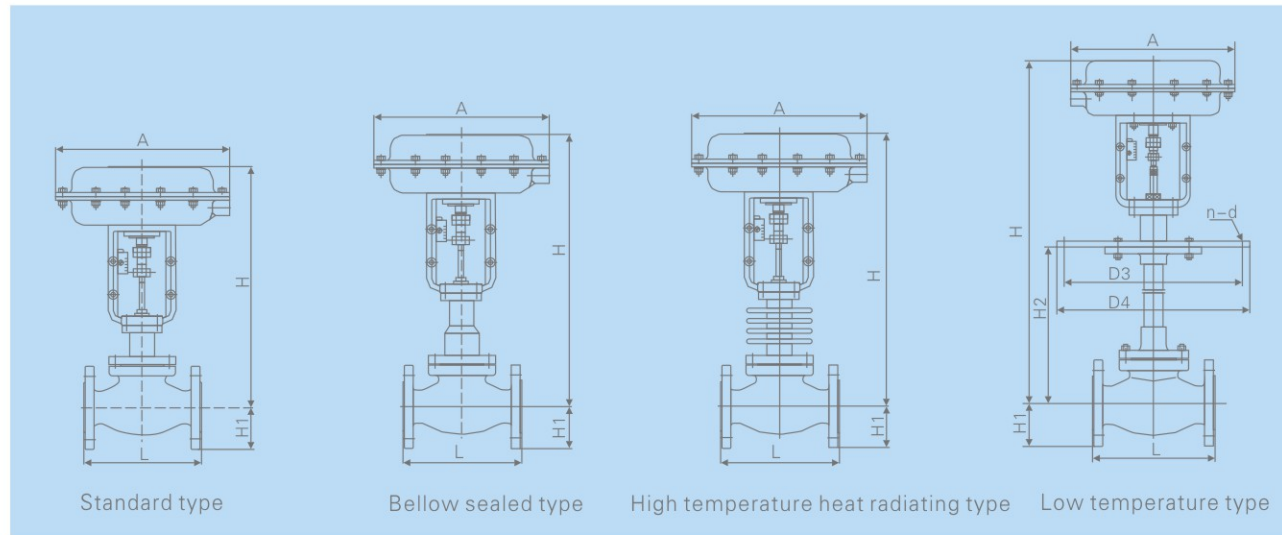
Kg

DN		20	25	32	40	50	65	80	100	125	150	200
Standard type	PN16	17	18	23	27	30	55	65	68	115	168	318
	PN40	18	19	25	28	33	57	75	85	135	185	335
	PN64	27	29	37	43	48	75	85	95	165	235	435
High temperature heat radiating type		20	22	28	29	35	59	75	85	135	180	355
Bellow sealed type		20	22	28	29	35	59	75	85	135	180	355
Low temperature type		25	27	30	35	42	63	72	88	155	235	345

Note: The data of heat dissipation high temperature, bellows seal type, low temperature type are weight of Pn16 valve' s.

Bonnet Type





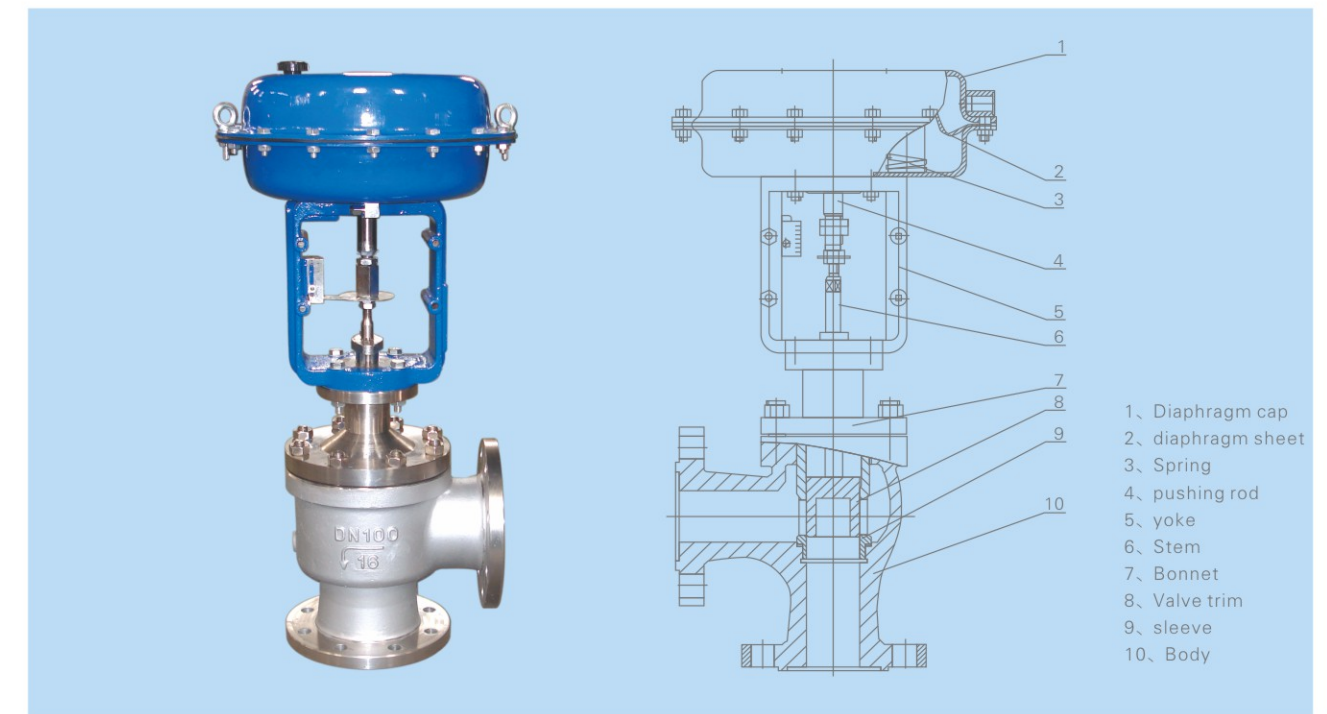
Dimensions of Standard Type 、Bellow Seal Type、
High Temperature Heat Radiating Type

Unit: mm

DN			20	25	32	40	50	65	80	100	125	150	200	250
φ A			282		308			395			498			620
L	PN16, 20, 25, 40 ANSI 150Lb		150	160	180	200	230	290	310	350	400	480	600	730
	PN64, 100(110) ANSI 300Lb,600Lb		230	230	260	260	300	340	380	430	500	550	650	775
H1	PN16		52.5	57.5	70	75	82.5	92.5	100	110	125	142.5	170	202.5
	PN25		52.5	57.5	70	75	82.5	92.5	100	115	135	150	180	212.5
	PN40		52.5	57.5	70	75	82.5	92.5	100	117.5	135	150	187.5	225
	PN64(63)		65	70	78	85	90	102.5	107.5	125	147.5	172.5	202.5	235
	ANSI 150Lb(PN20)		50	55	60	65	75	80	95	115	127.5	140	172.5	202.5
	ANSI 300Lb(PN50)		60	62.5	67.5	77.5	82.5	95	105	127.5	140	160	190	222.5
H	standard type	PN16/25/40	400	400	440	450	460	570	570	570	670	700	740	970
		ANSI 150Lb(PN20)	400	400	440	450	460	570	570	570	670	700	740	970
		PN64,300Lb(PN50)	400	400	450	450	460	570	570	570	720	720	750	980
	Heat radiating type High temperature type Bellow seal type		480	480	530	530	530	640	640	640	800	810	840	1050

Note: the height H should be add 152 (dn20-50), 182 (dn65-100), 253 (dn125-200), 352 (DN250).for valve with handwheel.

Structure



Product Introduction

F44A Series angle sleeve control valve differ in trim compared with F41A type pneumatic diaphragm angle single seat control valve, differ in body compared with the pneumatic diaphragm sleeve control valve .F44A is used in 90 degrees bend point in high pressure difference pipeline instead of F41A .

Parts and Materials

Part name	Material
Body、Bonnet	WCB、WCC、WC6 CF8(304)、CF8M(316)、CF3(304L)、CF3M(316L)
Valve trim、sleeve	304、316、316L welded with STL 17-4PH
Packing	PTFE、R.TFE、Flexible graphite
Seling gasket	XB350(asbestos rubber sheet) 、PTFE 、Flexible graphite
Diaphragm cap	A3(painting or coating) 304(Used for special situation)
membranes diaphragm	NBR clamp reinforced polyester fabric
Stem	304、316、316L、17-4PH

Note: To select the other material based on the service situation



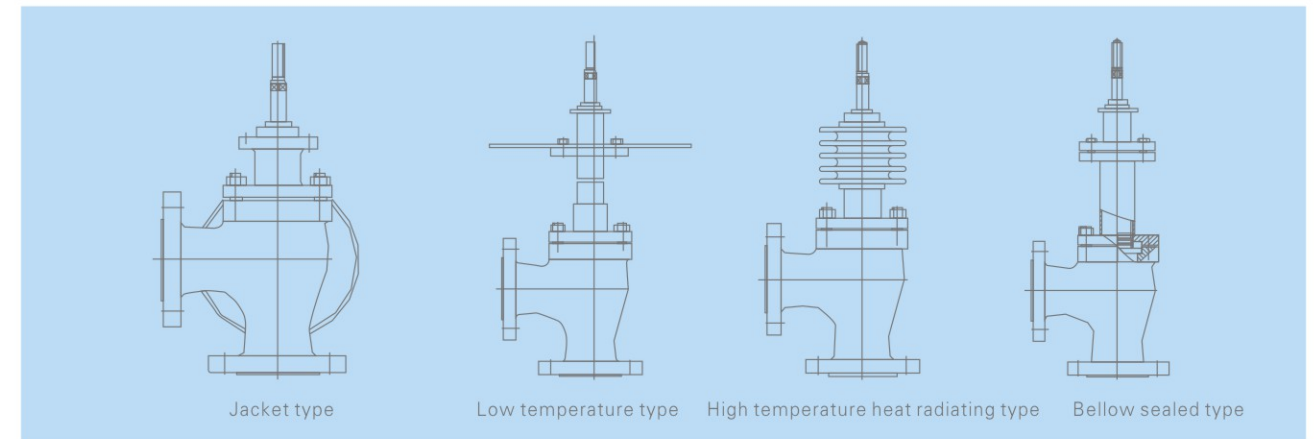
Technical Data

DN(mm)		20	25	32	40	50	65	80	100	125	150	200
Rated flow coefficient(Kv)	Line	6.9	11	17.6	27.5	44	69	110	176	275	440	690
	Equal percentage	6.3	10	16	25	40	63	100	160	250	400	630
Rated strokeL (mm)		16		25			40			60		
Effective ragm areaAe (cm²)		280		400			600			1000		
DN (mm)		250		300			350					
Rated flow coefficient(Kv)	Line	1000		1650			2160					
	Equal percentage	900		1500			2000					
Rated strokeL (mm)		100										
Effective ragm areaAe (cm²)		1600										
Spring coverage Pr (Kpa)		20~100、40~200、80~240										
air supply pressure PS (MPa)		0.14、0.25、0.30										
Inherent flow characteristic		Line、Equal percentage										
Inherent adjustable rate(R)		50:1										
Allowed leakage		Metal seat balance type: class III, IV soft seat class VI										
PN	MPa	1.6、2.5、4.0、6.4(6.3)、10.0、16.0/2.0、5.0、11.0、15.0										
	Bar	16、25、40、64(63)、100、160/20、50、110、150										
	Lb	ANSI: Class150, Class300, Class600, Class900										
Working temperature t(°C)	Normal temperature type	-20~200、-40~250、-60~250										
	Heat radiating type	-40~450、-60~450										
	High temperature type	450~560(High temperature material)										
	Low temperature type	-60~-100、-100~200、-200~-250										
	Cut-off regulating type	-40~150(valve core with PTFE) -60~200(valve core with RPTFE)										

Note: 1.Spring range: 40~200KPa and 80~240KPa for Air failed to close type , 20~100KPa and 40~200KPa for air open To close type
2.Working temperature is divided according to the pressure and temperature of the body material level (GB9131~94), the working condition , the valve seal material.



Bonnet Type



Allowable Pressure Difference of FO Type Control Valve

Unit: MPa

Effective ragm area Ae(cm ²)		280			400			600			1000		
Signal range Pr(KPa)		20~200	20~100	40~200	20~100	20~100	40~200	20~100	20~100	40~200	20~100	40~100	40~200
air supply pressure Ps(MPa)		0.14	0.14	0.25	0.14	0.14	0.25	0.14	0.14	0.25	0.14	0.14	0.25
Need to accessories		-	P	P	-	P	P	-	P	P	-	P	P
DN(mm)	20	20	2.67	6.23	6.40								
	25	25	2.22	5.19	6.40								
	32	32				2.58	6.02	6.40					
	40	25				3.18	6.40	6.40					
		32				2.58	6.02	6.40					
		40				2.12	4.95	6.37					
	50	32				2.58	6.02	6.40					
		40				2.12	4.95	6.37					
		50				1.73	4.05	5.21					
	65	65							2.04	4.77	6.14		
		50							2.60	6.08	6.40		
		80							2.05	4.77	6.14		
d(mm)	80	65							1.69	3.93	5.06		
		80							2.05	4.77	6.14		
		100							1.68	3.39	5.06		
	100	80							1.36	3.18	4.09		
		100											
		125										1.83	4.28
	125	125										2.27	5.30
		100										1.84	4.28
		150										1.54	3.59
	150	125										1.84	4.28
		150										1.54	3.59
		200										1.12	2.62

Note:1.P: Valve positioner
2.1.For F44A**~B type bellow seal angle type sleeve control valve, its Max. allowable differential pressures is 1.0 MPa, to use the value in above table while the data is smaller than 1.0 MPa, and use 1.0MPa instead of the table value above while the data is larger than 1.0 MPa.
3. The allowable pressure difference refers to the value configured by the standard actuator, also we can select other actuator according to the specific conditions to meet the requirements.
4. The allowed pressure difference of spring 80~240KPa and 40~200KPa are same (without positioner), so we can conclude it' s better to use spring range of 40~200KPa or 20~100Kpa for the air failed to open control valve.
5. All the above data is calculated when the valve is closed and pressure after valve P2=0, it allow even large pressure difference during the regulating process.

Allowable Pressure Difference of FC Type Control Valve

Unit: MPa

Effective ragm area Ae(cm ²)			280		400		600		1000	
Signal range Pr(KPa)			20-100	40-200	20-100	40-200	20-100	40-200	20-100	40-200
air supply pressure Ps(MPa)			0.14	0.25	0.14	0.25	0.14	0.25	0.14	0.25
Need to accessories			-	P	-	P	-	P	-	P
DN(mm)	20	20	2.67	6.23						
		25	2.22	5.19						
	32	32			2.58	6.02				
	40	25			3.18	6.40				
		32			2.58	6.02				
	40	40			2.12	4.95				
	50	32			2.58	6.02				
		40			2.12	4.95				
		50			1.73	4.05				
	65	65					2.04	4.77		
d(mm)	80	50					2.60	6.08		
		65					2.05	4.77		
	80	80					1.68	3.93		
	100	65					2.05	4.77		
		80					1.69	3.39		
		100					1.36	3.18		
	125	125							1.83	4.28
	150	100							2.27	5.30
		125							1.84	4.28
		150							1.54	3.59
200	200	125							1.84	4.28
		150							1.54	3.59
		200							1.12	2.62

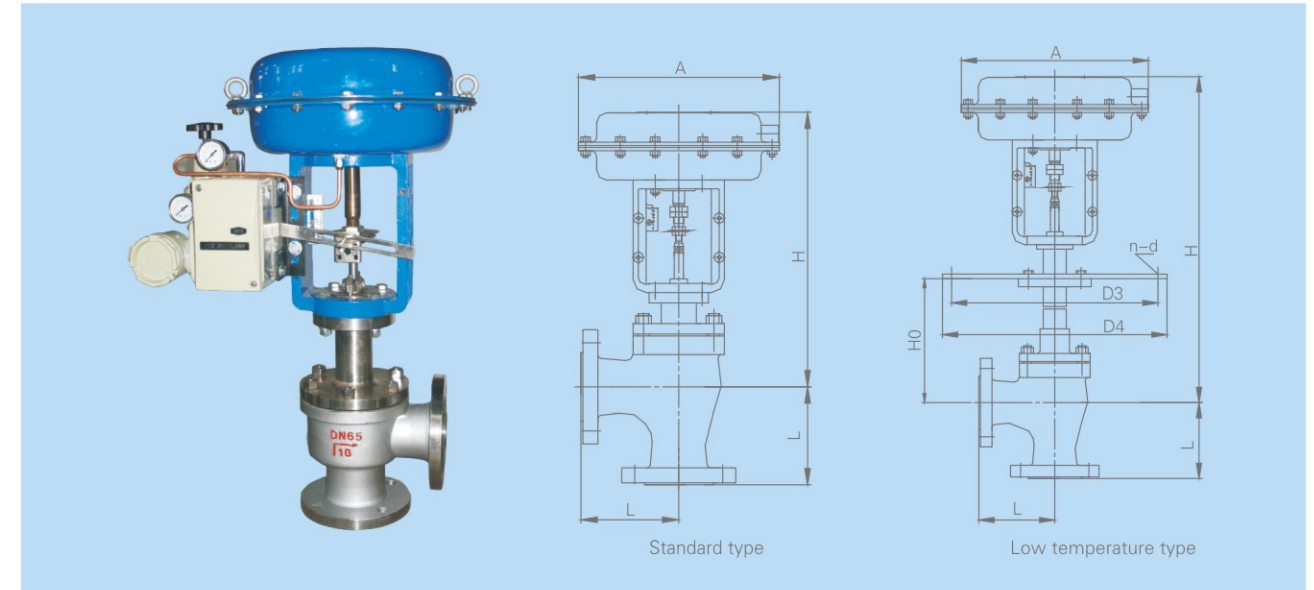
Note: 1.P: Valve positioner

2. For F44A** -B type bellow seal angle type sleeve control valve, its Max. allowable differential pressures is 1.0 MPa, to use the value in above table while the data is smaller than 1.0 MPa, and use 1.0MPa instead of the table value above while the data is larger than 1.0 MPa.

3. The allowable pressure difference refers to the value configured by the standard actuator, also we can select other actuator according to the specific conditions to meet the requirements.

4. The allowed pressure difference of spring 80-240KPa is double times of 40-200KPa, so we can conclude it' s better to use spring range of 40-200KPa or 20-100Kpa for the air failed to open control valve.

5. All the above parameters are calculated when the valve is closed and pressure after valve P2=0, it allow even large pressure difference during the regulating process.



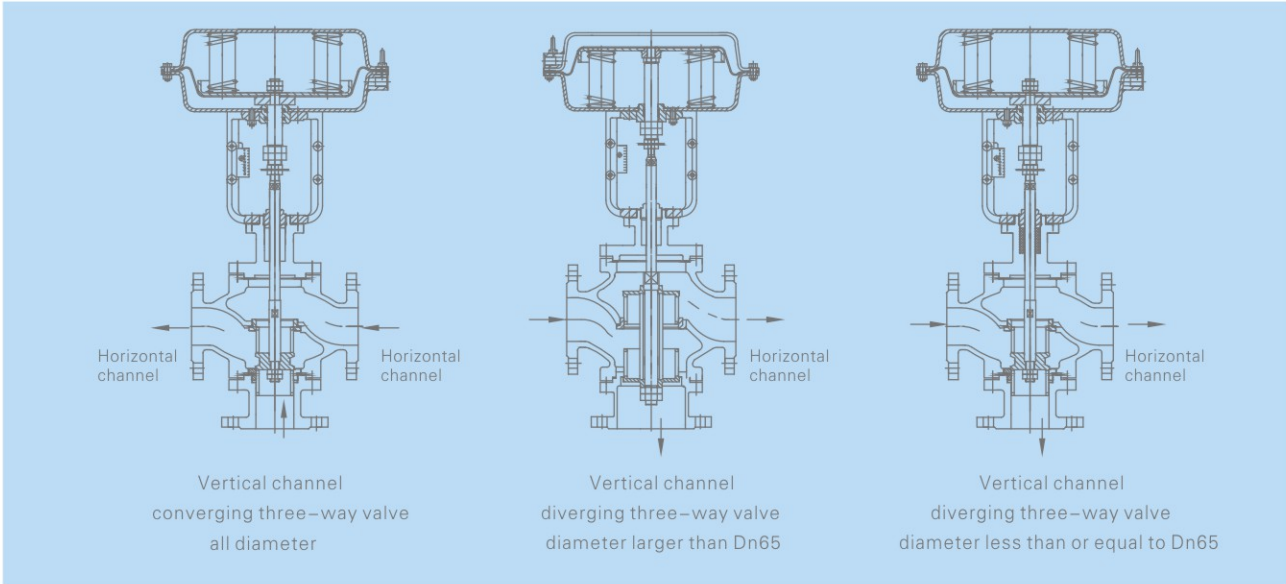
Dimensions

Unit: mm

DN(mm)			20	25	32	40	50	65	80	100	125	150	200
A			280	280	308	308	308	395	395	395	500	500	500
L	PN16/20/25		95	100	105	115	125	145	155	175	200	225	275
	PN40		95	100	105	115	125	145	155	175	200	225	275
	PN64 (63)/50		115	115	130	130	150	170	190	215	250	275	325
H	coventional type	PN16/25	388	388	395	415	430	515	533	551	630	696	715
		PN40	388	388	395	415	430	515	533	551	630	696	715
		PN64(63)	395	395	415	435	465	535	572	580	680	730	762
	Heat radiating type		440	440	458	478	493	594	628	646	750	846	915
	Bellow sealed type		440	440	458	450	493	594	628	646	750	846	804
H0	-60~-100℃		500	500	500	500	500	600	600	600	700	700	700
	-100~-200℃		700	700	700	700	700	800	800	800	900	900	900
	-200~-250℃		900	900	900	900	900	1000	1000	1000	1100	1100	1100
H Low temperature type	-60 ~ -100℃	PN16、20 25、40	810	810	832	832	832	1026	1026	1026	1200	1198	1198
		PN50、64	810	810	832	832	832	1026	1026	1026	1200	1198	1198
	-100~ -200℃	PN16、20 25、40	1010	1010	1032	1032	1032	1226	1226	1226	1400	1398	1398
		PN50、64	1010	1010	1032	1032	1032	1226	1226	1226	1400	1398	1398
	-200~ -250℃	PN16、20 25、40	1210	1210	1232	1232	1232	1426	1426	1426	1600	1598	1598
		PN50、64	1210	1210	1232	1232	1232	1426	1426	1426	1600	1598	1598
φ D3			260	260	285	305	340	370	405	460	525	590	700
φ D4			290	290	315	335	370	400	435	490	555	630	740
Bolt hole n (d)			8-14	8-14	8-14	8-16	8-16	10-16	10-16	12-18	14-18	16-18	18-18

Note: The valve height H should be add 180 (DN20 ~ 50), 240 (DN65 ~ 100), 304 (DN125 ~ 200). for valve with handwheel.

Structure of Three-Way Valve

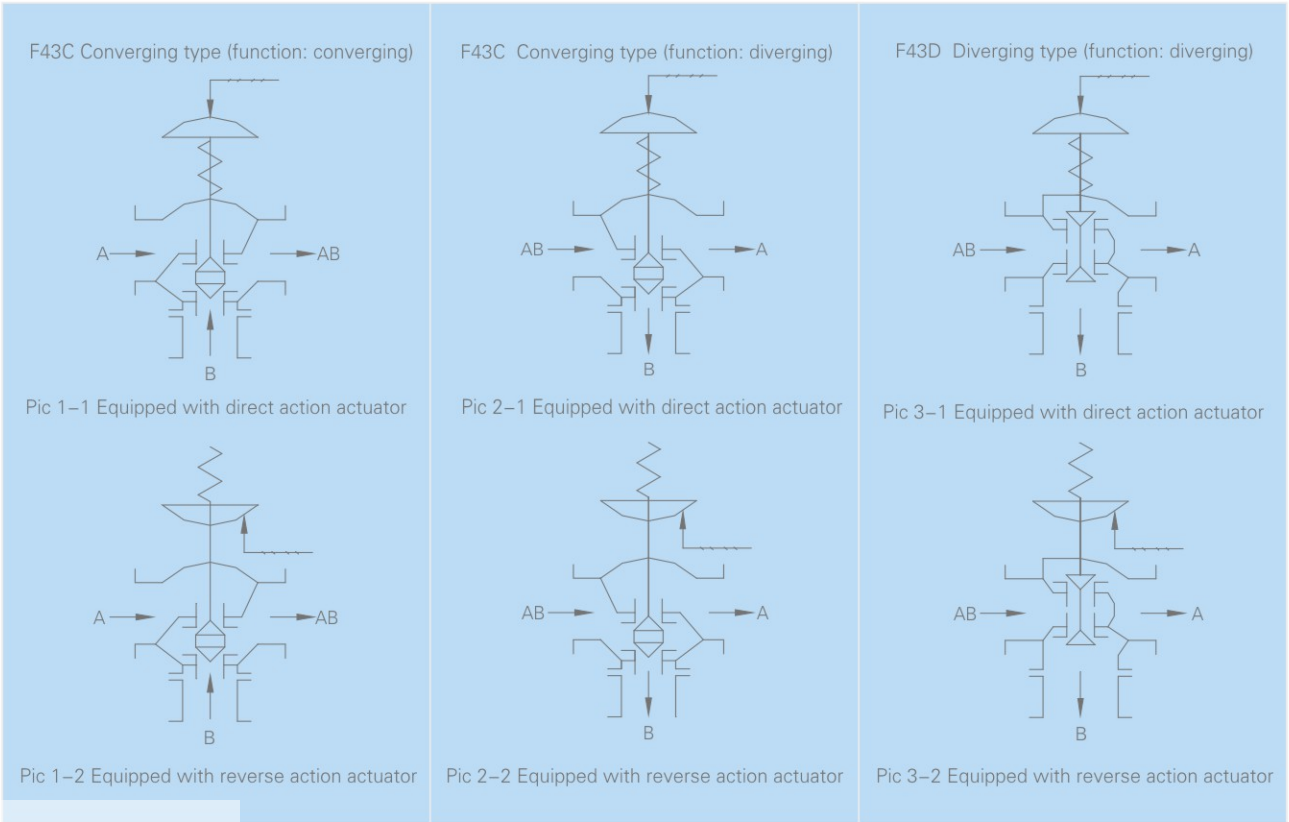


Valve Action And Direction of Flow

Valve structure	Application	Actuator	Valve action	Direction of flow
F43C (Converging type)	Converging	Direct action type	Pic 1-1	B→AB
		Reverse action type	Pic 1-2	A→AB
	Diverging	Direct action type	Pic 2-1	AB→B
		Reverse action type	Pic 2-2	AB→A
F43D (Diverging type)	Diverging	Direct action type	Pic3-1	AB→A
		Reverse action type	Pic 3-2	AB→B

Note: The flow direction is the direction of zero air supply

Valve Action and Flow Direction Diagram



Product Introduction

F43C (Converging), F43D (Diverging) type three-way control valve using thin wall cylindrical window valve trim designed instead of plug type window valve trim designed, with features of simple structure, light weight, small valve body size, easy disassembly and maintenance, equipped with multi spring actuator. Which is widely used in precise converging control or diverging control of gas, liquid, steam and other mediums, while the process pressure, flow and temperature are maintained at a given value.

Three way control valve are divided to converging type and diverging type, with nominal pressure of 1.6, 2.5, 4.0, 6.4 MPa and body diameter range of DN25 ~ 200 for fluid temperature from -60°C to 450°C. The leakage level is class IV. There flow characteristics, are equal percentage and linear type.

Operating Way of Three-Way Valve

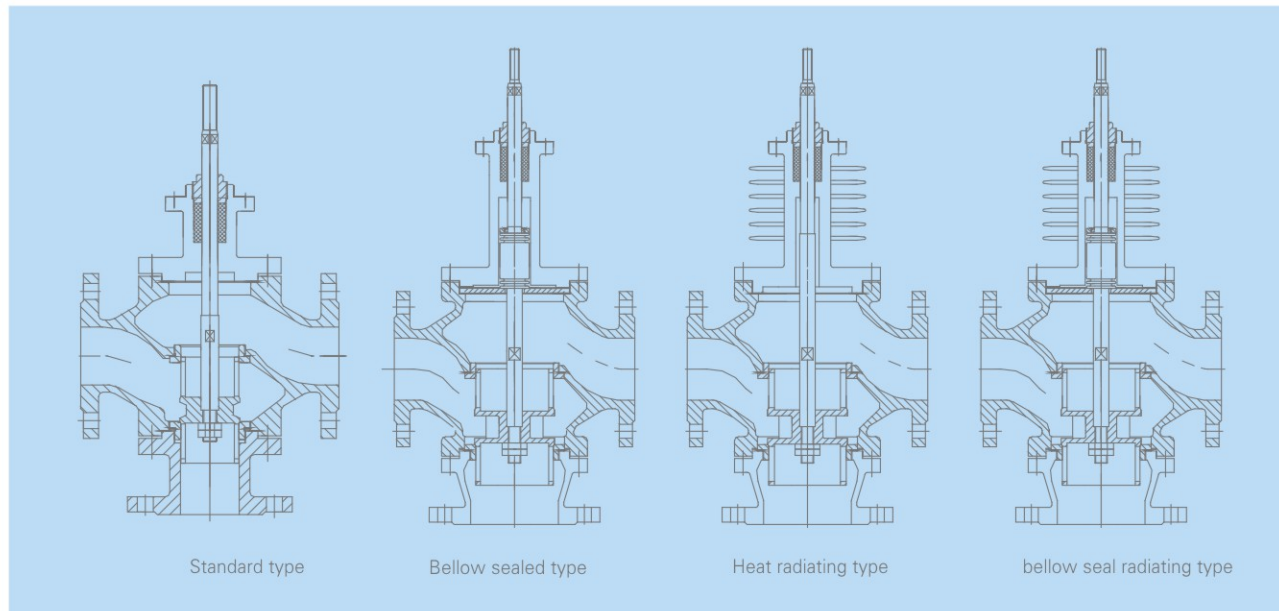
The three-way valve has two channels, one channel opened while another channel closed, so we cannot figure it in FO or FC on working way to design or purchase the three-way valve, it must be specified when the chamber pressure increases, the main channel flow increases or decreases, or to check whether the main channel is closed or opened while the actuator air failed, otherwise it is difficult for manufacturer to configure the right actuator. We will figure the FO and FC according to condition while Signal (or air pressure) increases, the main channel opened, this is air failed to close (FC); on the other hand is air failed to close (FO) (horizontal channel is the main channel)

Features

1. The fluid working on valve trim is always in flow state, so the valve can work stably.
2. In addition to the sleeve guiding on valve cover, the side of valve core and the valve seat surface also has a guiding function, large oriented area, reliable work.
3. The actuator equipped with multi spring structure, compared with the traditional valve, the height reduced by 30%, weight reduced by 30%.



Bonnet Type

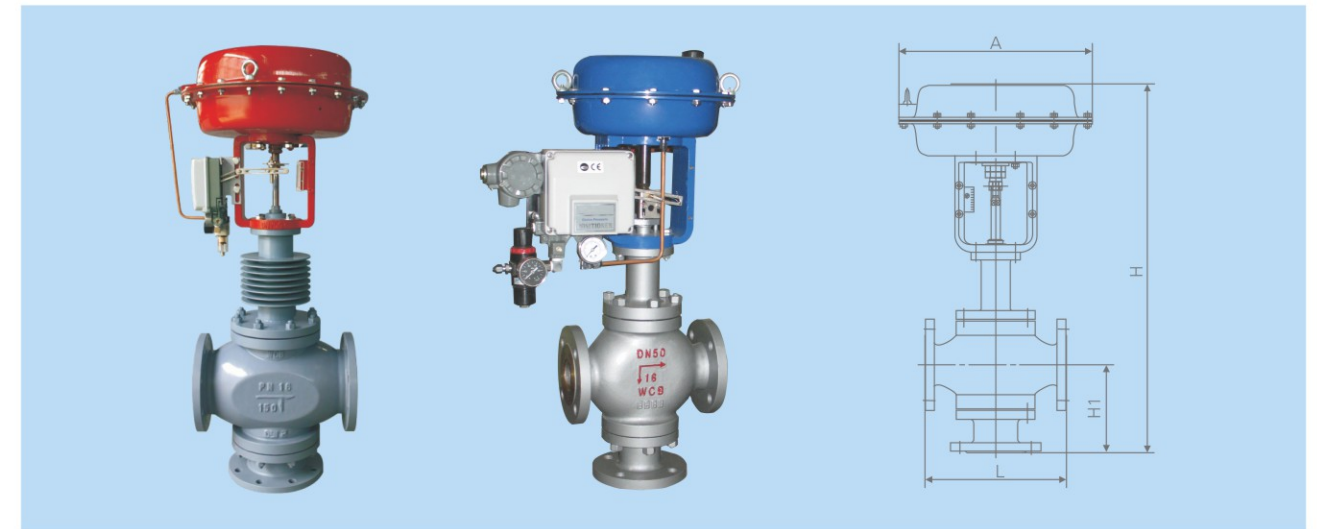


Technical Data

DN (mm)		25	32	40	50	65	80	100	125	150	200
Rated flowcoefficient (Kv)	Converging	8.5	13	21	34	53	85	135	210	340	535
	Diverging	8.5	13	21	34	53	85	135	210	340	535
		With the replacement of converging structure									
Rated stroke L (mm)		16	25			40			60		
Effective ragm area Ae (cm ²)		280	400			600			1000		
PN (MPa)		1.6、2.5、4.0、6.4									
Inherent flow characteristic		linear parabolic curve									
Inherent adjustable rate(R)		30									
Operating Temp t(°C)		Ordinary type：cast iron -20~200、cast steel-40~250、stainless steel-60~250 Heat radiating type：cast steel-30~450、stainless steel-60~450 Heat radiating type：450~560，-60~560									
Temperature difference between two medium t(°C)		cast iron ≤150、cast steel≤200									
Signal range Pr (Kpa)		20~100、40~200、80~240									
Air supply pressure Ps (MPa)		0.14/0.25/0.4									
Allowed leakage (L/h)		10-4×rated valve capacity									
Allowable pressure difference△P (MPa) (20-100KPa)		0.86	0.75	0.48	0.31	0.27	0.18	0.11	0.12	0.09	0.05
Allowable pressure difference△P (MPa) (40-200KPa)		1.7	1.35	0.90	0.58	0.50	0.30	0.20	0.22	0.15	0.09

Note: 1. The product performance should follow GB/T4213-92 standards

2. The allowable pressure drop refers to the value configured by the standard actuator, also we can select other actuator according to the specific conditions to meet the requirements.



Parts and Materials

Part name	Material
Body、Bonnet	WCB、WCC、WC6 CF8(304)、CF8M(316)、CF3(304L)、CF3M(316L)
Valve trim 、sleeve	304、316、316L STL17-4PH
Packing	PTFE、R.TFE、Flexible graphite
Seling gasket	XB350(asbestos rubber sheet)、PTFE、Flexible graphite
Stem	304、316、316L、17-4PH

Dimensions and Weight

DN(mm)			25	32	40	50	65	80	100	125	150	200
A			280	308	308	308	395	395	395	500	500	500
H1	PN16		134	133	154	154	190	210	220	280	280	320
	PN40		134	133	154	154	190	210	220	280	280	320
	PN64		160	170	180	200	230	250	282	310	430	480
H	Normal type	PN16/40	490	480	540	580	710	730	750	895	1005	1045
		PN64	560	561	596	630	760	798	876	892	1200	1260
	Heat radiating type		600	615	650	670	850	870	900	1040	1330	1370
	Bellow sealed type		600	615	650	670	850	870	900	1040	1330	1370
Weight (Kg)	Normal type	PN16/40	21	23	33	36	64	72	92	155	193	286
		PN64	25	28	40	45	74	85	112	180	243	336
	Heat radiating type		weight increased by (5-10)%									
L		PN16/40	160	180	200	230	290	310	350	400	450	550
		PN64	210	222	251	286	311	337	394	440	508	610

Note: 1. The height and weight of heat radiating type is in according to PN16,

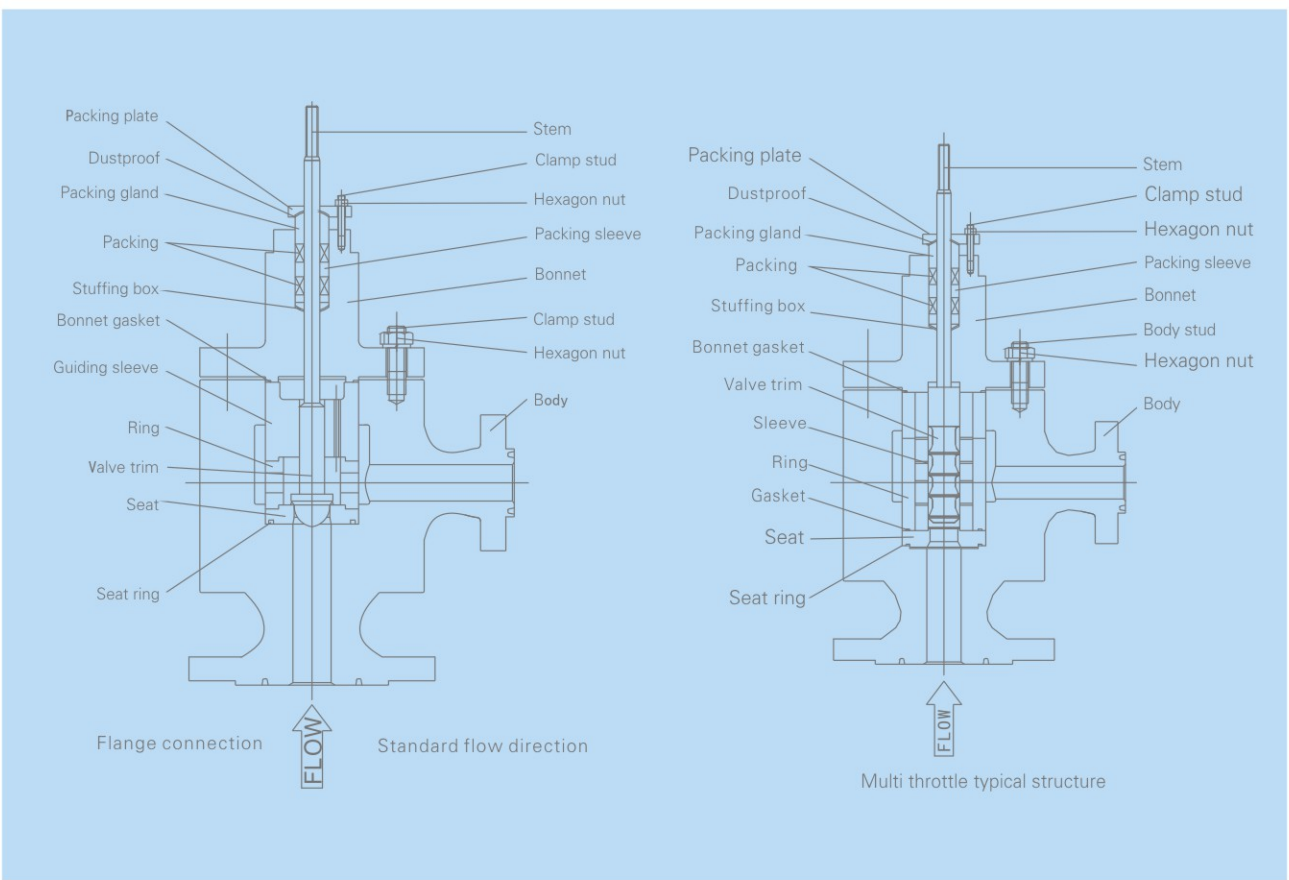
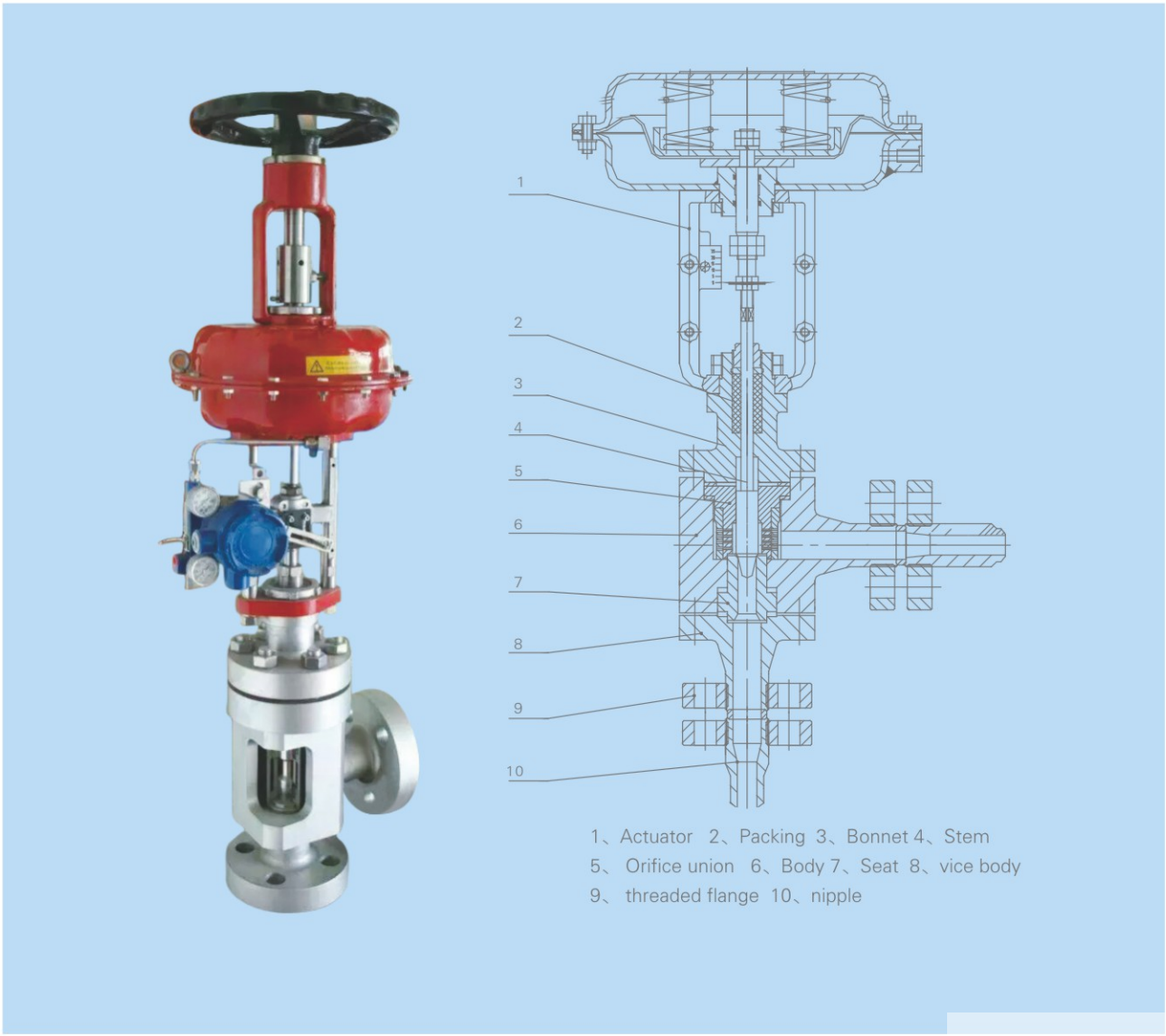
2. The increase of height for top hand wheel actuator is 180 (DN20 ~ 50)、240 (DN65 ~ 100) 304 (DN125 ~ 200),

Product Introduction

F45A, F46A series high pressure control valve is made by high pressure and high temperature resistance body material, anti-corrosion and anti-cavitation trim materials, it can control the medium flow and pressure change of liquid, gas, gas-liquid mixture and steam. According to the service condition or user ' s specification to selecting single stage or multi-stage depressurization trim, to reduce the noise and medium flushing. Featured with complicated structure, stable performance, reliable working, low noise, tight closure, larger allowable pressure difference, which is widely used in local or remote control service of petroleum, petro-chemical, power plant and metallurgy industry.

Structure and Working Principle

Pneumatic diaphragm angle type high pressure regulating valve is composed of pneumatic diaphragm actuator and angle type high pressure regulating mechanism.



Parts and Materials

Part name	Material	
Body (forged)	20 30 35 40 35CrMo 35CrMoA 304SS 316SS	
Valve trim、 Stem Seat	304SS 316SS welding Stellite alloy 17-4PH SUS440C	
Bolt/Nut	35CrMoA	40Cr
Gasket	Flexible graphite , reinforcedPTFE, 0Cr18Ni9, copper	
Packing	PTFE, reinforced PTFE, Flexible graphite	

1. To make sure no welding slag, oil, sand and other impurities left in pipeline before installation. Otherwise the filter is necessary to install before valve if we can not guarantee the medium is clean.
2. The globe valve should be installed in front of valve, the bypass valve should be installed if necessary.
3. If the valve is fixed with hand wheel, to ensure that the hand wheel in automatic position when in the automatic adjustment
4. If found over standard inner leakage after long-term service, grinding processing should be carry on the valve core and seat surface.
5. If there is visible outside leakage after long time service, then replace the packing or gasket.

Technical Data

DN(mm)	Single stage	15, 20, 25, 32, 40, 50, 65, 80, 100, 125			
	Multi stage	15, 20, 25, 32, 40, 50, 65, 80			
PN MPa	16.0 22.0 (25. 0) 32.0 42.0 (JB2766-92)				
PN	CLASS 600 900 1500 2500				
Working temperature℃	-40 ~ 550				
Inherent flow characteristic	Linear,equal percentage				
Connection	Welding type: with threaded flange JB2769-9 Flange type: in accordance with user' s required standard				
Bonnet type	Normal type(-40~250℃)			Heat radiating type(250~550℃)	
leakage grade GB/T4213-92	Single stage	Single seater: class VI sleeve: class IV			
	Multi stage	Class IV			
Driving pressure of actuator (MPa)	Air failed to close	0.25 0.30			
	Air failed to open	0.14 0.25 0.30			
Available accessory	Positioner of electric pneumatic actuator,eletrical pneumatic convertor,air filter & pressure reducer, Valve position transmitter,Lock up valve,solenoid valve,hand wheel				
Standard	1. GB/T4213-92 2. JB2766-92 3. JB/T2768-2778 4. JB/T6323		Pneumatic control valve Forged high pressure valve Parts of high pressure valve Manufacturing technical condition of power station valve		

Technical Data

DN(mm)	15										20	25										32	40	50	65	80	100	125			
Stroke L(mm)	10															16										25	40				60
Seat diameter (mm)	3	4	5	6	7	8	10	12	15	20	multi stage throttle						sleeve type				40	multi stage throttle		50	70	90	110	130			
											4	5	6	7	10	20															
Inherent flow characteristic (Kv)	0.08	0.12	0.20	0.32	0.5	0.8	1.2	2.0	3.2	5.0	0.08 0.12	0.2	0.32	0.5	0.63 0.80 1.20	1.6 2.5 3.2 4.0	2	3	5	8	10	16	6.3	10	40	63	100	100	250		
The pressure in front of valve during testing (MPa)	Air failed to close	32	32	22	15	11	8.7	5.6	3.9	2.5	1.5	6.4				3	6.4				5	6.4				1					
				32	32	24	18.8	6.4	6.4	5.3	3																				
Medium temperature range(℃)	-40 ~ 550℃																														
Flow characteristic	Line						Line Equal percentage				Line						Equal percentage		Line		Equal percentage		Line		Equal percentage						
The input pressure to diaphragm during testing (MPa)	air failed to open valveP=0										air failed to close valveP=180																				

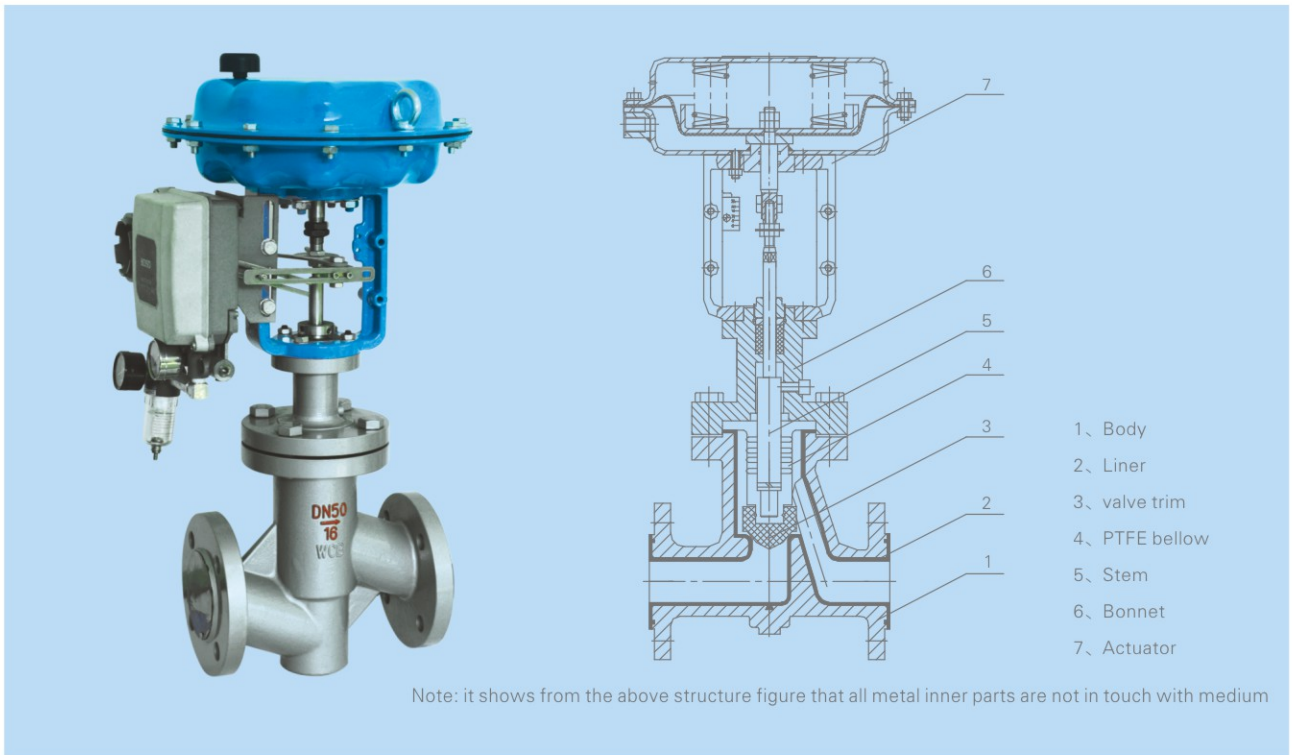
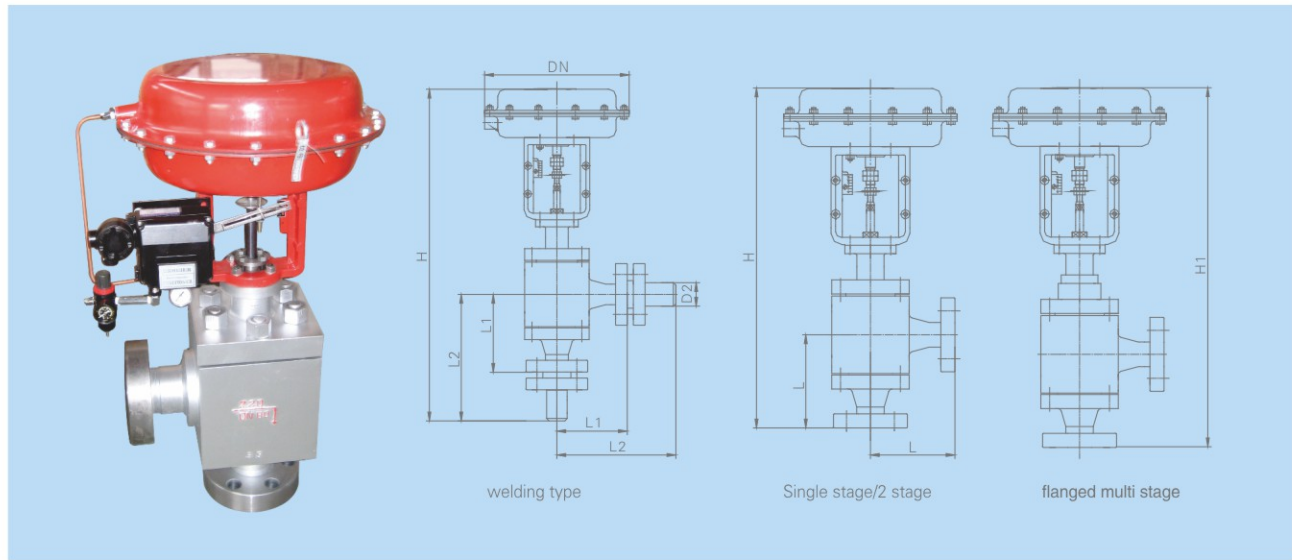
Note: 1, Unite operation : air failed to open type , air failed to close type
2, To use O Ring balanced type for temperature -20~80℃
3, leakage: single seat: class VI complete sealing type: zero leakage, sleeve type: class IV

Allowable Pressure Difference

Unit: MPa

OD of diaphragm head mm	Valve seat diameter (mm)	15				20				25		32	40	50	65	80	100	125
		3 ~ 8	10	12	15	10	12	15	20	4 ~ 10	20							
φ 280	Air failed to close									32								
	Air failed to open									15								
φ 308	Air failed to close	32	28	19.4	12.4	28	19.4	12.4	7.5		15	32	32	25.7				
	Air failed to open	32	32	32	26.7	32	32	26.7	15		15	32	32	25.7				
φ 395	Air failed to close														32			
	Air failed to open														32			
φ 500	Air failed to close															32	32	10
	Air failed to open															32	32	10
Spring range KPa	Air failed to close	40 ~ 200								80 ~ 240								
	Air failed to open	20 ~ 100																

Note: Pressure of standard signal: Air failed to open: 20~100KPa air failed to close: 40~200KPa or 80~240KPa



Dimensions(Welding Type)

Unit: mm

DN	L1	L2	H				Dn
			Single stage	single stage heat radiating type	multi stage	multi stage heat radiating type	
10	90	165	400	500	550	650	φ 308
15	105	175	400	500	550	650	φ 308
20	120	210	400	500	550	650	φ 308
25	120	210	400	500	550	650	φ 308
32	155	225	450	560	630	750	φ 395
40	190	295	480	590	710	830	φ 395
50	230	325	550	630	780	900	φ 395
80	300	455	750	850	980	1125	φ 500
100	400	565	855	985	1155	1355	φ 500
125	450	655	965	1255	1435	1655	φ 500

Dimensions(Welding Type)

Unit: mm

DN	L	H1				Dn
		Single stage	single stage heat radiating type	multi stage	multi stage heat radiating type	
10	125	400	500	550	650	φ 308
15	125	400	500	550	650	φ 308
20	150	400	500	550	650	φ 308
25	150	400	500	550	650	φ 308
32	175	450	560	630	750	φ 395
40	190	480	590	710	830	φ 395
50	230	550	630	780	900	φ 395
80	300	750	850	980	1125	φ 500
100	400	855	985	1155	1355	φ 500
125	450	965	1255	1435	1655	φ 500

Note: Flowtec reserves the right to change product designs and specification without notice.

Product Introduction

All inner surface contact with medium are lined with FPA (or F46), and using PTFE bellow for stem sealing, The F41F series lined single seat control valve can be used in corrosion medium such as hydrochloric acid, sulfuric acid, nitric acid, hydrofluoric acid, caustic soda, alkali and other strong corrosive mediums, and is widely used in applications of chemical, petroleum, metallurgy, pharmaceuticals, power plant.

Features

- 1, Corrosion resistance: all body cavity, valve seat and valve stem are lined with 2.5 ~ 3mm thickness of PFA or F46, which can resist the strong corrosion of acid, alkali;
- 2, Good sealing performance : Double sealing of packing and PTFE bellow ,to ensure good sealing;
- 3, Low leakage: since the valve trim and valve seat are soft sealing, the leakage can achieve class VI in standard GB/T4213-92, even zero leakage;
- 4,Light and small multi spring actuator ,small size, light weight, high accuracy of regulation..

Parts and Materials

Part name	Material	Part name	Material
Body	WCB	Liner	F46、PFA
Bellow	PTFE	valve trim	PTFE
Bonnet	WCB	Stem	304

Technical Data

DN(mm)		G3/4"						20				25	32	40	50	65	80	100	150	200	
DN(mm)		3	4	5	6	7	8	10	12	15	20	26	32	40	50	65	80	100	150	200	
Rated flowcoefficient (Kv)	Equal percentage											8	12	20	32	50	70	100	240	400	
	Line	0.08	0.12	0.20	0.32	0.50	0.80	1.2	2	3.2	5	10	16	25	38	63	80	120	300	—	
PN(MPa)		1.0 1.6 2.5																			
Actuator	model	FL280K/B						FL280K/B				FL400K/B				FL600K/B				FL1000K/B	
	Effective ramg area Ae (cm²)	280						280				400				600				1000	
	trip L(mm)	10						10,16				25				40				60	
Spring range KPa		20~100 optional40~200 80~240																			
Work way		Air failed to close OR air failed to open																			
Operating Temp		-20~+150℃																			
Inherent adjustable rate(R)		30: 1																			

Notes:

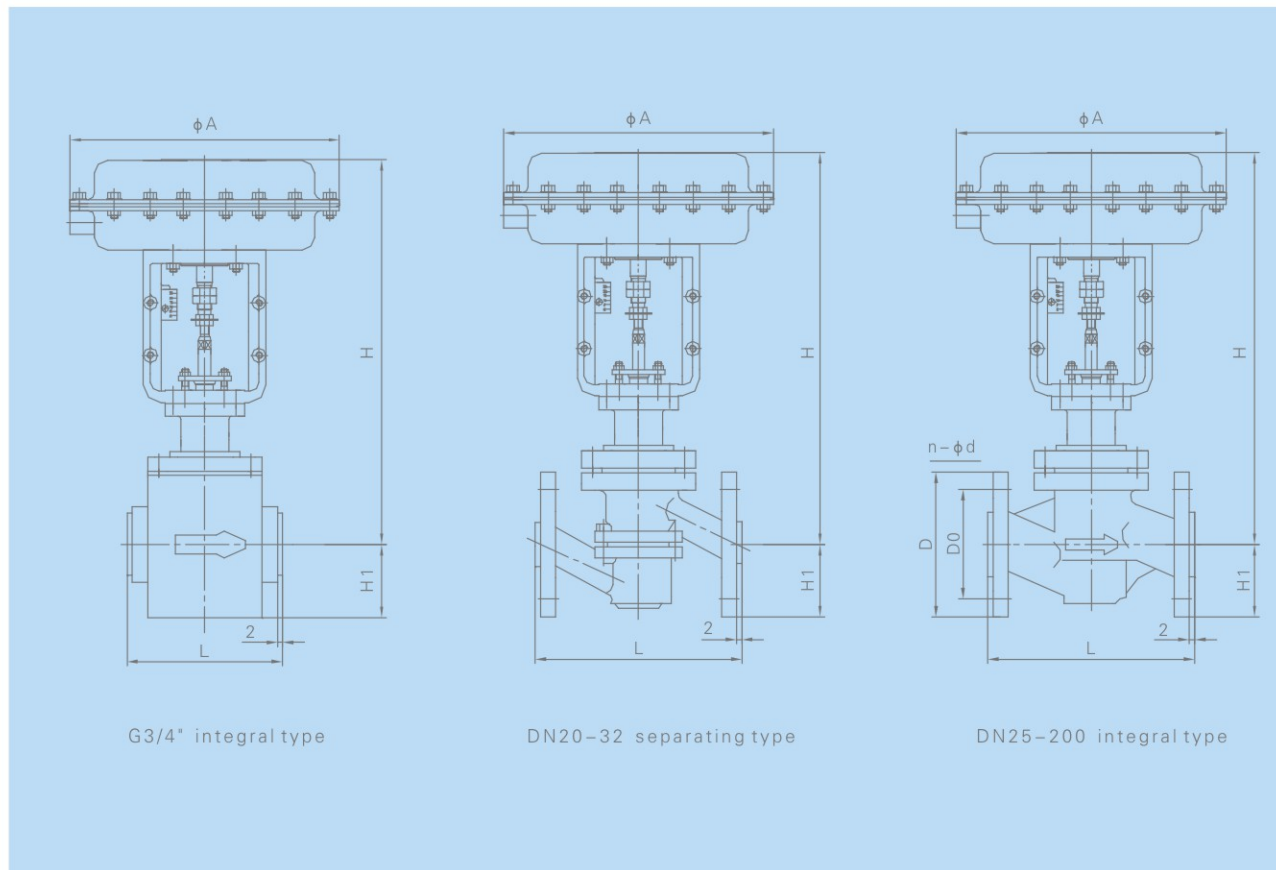
1. To selecting the F41F lined control valve instead of duplex steel or hastelloy valve for strong corrosive medium, except for medium with particles or easy to crystallization.
2. To use F41F lined control valve instead of diaphragm valve for service need frequently actions, because the diaphragm is damaged easily in frequently action.
3. To use lined control valve instead of lined ball valve, if the flow capacity of lined valve can meet the process request. Because the lined layer service life of lined control valve is longer than the lined layer service life of lined ball valve.
4. Do not use lined control valve in vacuum environment, because the vacuum will cause the lined layer break off and damaged.

Allowable Pressure Differential

Unit: MPa

On-Off mode	Actuator type code	Spring range (Kpa)	Air supply pressure (MPa)	Positioner (yes/no)	DN(mm)															
					20	25	32	40	50	65	80	100	125	150	200					
Air failed to open (positive effect)	FL280B	20~100	0.14	no	0.87	0.49														
				yes	2.57	1.58														
		40~200	0.25	yes	3.42	2.12														
	FL400B	80~240	0.4	yes	10.0	8.11														
		20~100	0.14	no			0.43	0.23	0.12											
				yes			1.34	0.82	0.49											
	FL600B	40~200	0.25	yes			1.82	1.11	0.67											
		80~240	0.4	yes			6.80	4.31	2.73											
	FL1000B	20~100	0.14	no						0.14	0.08	0.03								
				yes						0.50	0.31	0.18								
		40~200	0.25	yes						0.68	0.43	0.26								
Air failed to close (reaction)	FL280K	80~240	0.4	yes						2.65	1.73	1.09								
	FL400K	20~100	0.14	no									0.05	0.03	0.005					
				yes									0.20	0.13	0.07					
	FL600K	40~200	0.25	yes									0.28	0.19	0.10					
		80~240	0.4	yes									1.13	0.78	0.43					
	FL1000K	20~100	0.14	yes、no																
				yes																
		40~200	0.25	yes																
	FL280B	80~240	0.28	yes																
		20~100	0.14	yes、no						0.14	0.08	0.03								
				yes						0.50	0.31	0.18								
Air failed to open (positive effect)	FL280K	80~240	0.28	yes						1.22	0.78	0.48								
	FL400K	20~100	0.14	yes、no									0.05	0.03	0.005					
				yes									0.20	0.13	0.07					
	FL600K	40~200	0.25	yes																
		80~240	0.28	yes																
	FL1000K	20~100	0.14	yes、no																
				yes																
		40~200	0.25	yes																
	FL280B	80~240	0.28	yes																
		20~100	0.14	yes、no																
				yes																
	FL400K	80~240	0.28	yes																
		20~100	0.14	yes、no																
				yes																

- 1,F41F****single seat bellows seal control valve, the maximum allowable pressure drop is 1.0Mpa, to use the indicating value if it is smaller than 1.0Mpa, to use 1.0Mpa if the value on table is larger than 1.0Mpa.
- 2, the allowable pressure drop refers to the value configured by the standard actuator, also we can select other actuator according to the specific conditions to meet the requirements.



Dimensions

DN(mm)	3/4"	20	25	32	40	50	65	80	100	150
L	150	180	185	200	220	250	275	300	350	480
A	280	280	280	304	304	304	394	394	394	498
H	401	45	485	495	523	523	697	699	699	817
H1	50	65	70	80	71	88	102	140	170	190
weight(Kg)	17	17	19	21	28	31.5	54	64	80	120

Note: Flange connection refer to GB9113-2000, also can refer to HG20592 ~ 20635-97 and ANSI, JIS, JPI standard require by user.

F48 Series Self-operated Regulator Model

DN50	F48	0	01	-	W	O	S	M	-	W	B
1	2	3	4		5	6	7	8		9	10

1 Nominal diameter

DN50 (or 2")

2 Valve model

F48 Self-operated pressure regulator
F48C Self-operated differential pressure regulator
F48V Self-operated micro differential pressure regulator
F48W Self-operated temperature regulator

3 Valve code

P Single seat regulator
M Sleeve control valve
N Double seat control valve
Z Self-operated with pilot

4 Valve pressure level

01 ANSI 150Lb
02 ANSI 300Lb
03 ANSI 600Lb
11 DIN PN10
12 DIN PN16
13 DIN PN25
14 DIN PN40
15 DIN PN64
16 DIN PN100
21 GB PN10
22 GB PN16
23 GB PN25
24 GB PN40
25 GB PN64
26 GB PN100

5 Body material

W A216-WCB
0 CF8 / 304SS
1 CF8M / 316SS
2 CF3M / 316L
3 2205 duplex
4 2507 duplex
5 Other materials

6 Trim material

W A216-WCB
0 CF8 / 304SS
1 CF8M / 316SS
2 CF3M / 316L
3 2205 Duplex
4 2507 Duplex
5 Other materials

7 Stem material

W 45# Steel
S 420SS or 2Cr13
H 17-4PH SS
0 304SS
1 316SS

8 Seat material

M Body material hardening treatment
0 304SS
1 316SS
S Stellite
P PTFE

9 Special structure code

Code of standard valve omit
S Cut-off type
L Low temperature type
H High temperature heat radiating type
J Jacket type
B Bellow seal type

10 Pressure control before and after valve

D Control downstream pressure, close the valve in case of pressure rising
U Control upstream pressure, open the valve in case of pressure rising
DI Control downstream pressure (internal feedback structure)
UI Control upstream pressure (internal feedback structure)



Product Introduction

Self operated regulating valve combine the function of detection, transmission, control and implementation into one unit, which is much different from control valve.

Except for self-operated temperature regulator, Self-operated regulator is driving by the energy of the medium in pipeline, and do not need any other extra energy.

There are two categories for the self-operated valve produced by flowtec:

1. Self-operated pressure regulator
2. Self-operated temperate regulator

The self-operated pressure regulating valve has various types which is showed as following:

F48** Pressure regulator, F48V micro pressure valve, F48C differential pressure valve, F48Z pilot-operated pressure regulator (Nitrogen sealing device)

F48* type self-operated pressure regulating valve does not need any external energy, it use medium's own energy to get automatically adjusting. it can be use in situation without power supply and compress air supply, which saving energy. The pressure setting can be freely adjusted in a certain range. F48* type self operated pressure regulator is divided to three types based on the needs of a variety situation: F48P (single seat self-operated pressure regulator; (F48M) sleeve self-operated pressure regulator; (F48N) double seat self-operated pressure regulator. The user can make selection according to the conditions (pressure, temperature, medium status) and leakage requirements. F48* type pressure regulating valve is designed with three bonnet type according to the needs of various process occasions: ordinary type (general occasions), long neck type (large pressure adjustment range), heat radiating type (temperature 350 ~ 550 °C). F48* self-operated pressure regulating valve have three actuator types according to needs of various situations: diaphragm sheet (common diaphragm and reinforced diaphragm), piston, metal diaphragm (304SS) type. F48* self-operated pressure regulating valve is featured with quick opening flow characteristics, quick action, high regulating accuracy (error rate ≤10%); require for small space (compared to the hammer type valve), easy to adjust, so it is widely used in petroleum, chemical, electric power, metallurgy, food, textile, machinery manufacturing, civil construction and other equipment of gas, liquid and steam, with the function of pressure regulator (for after and before valve adjustment).



Structure and Principle

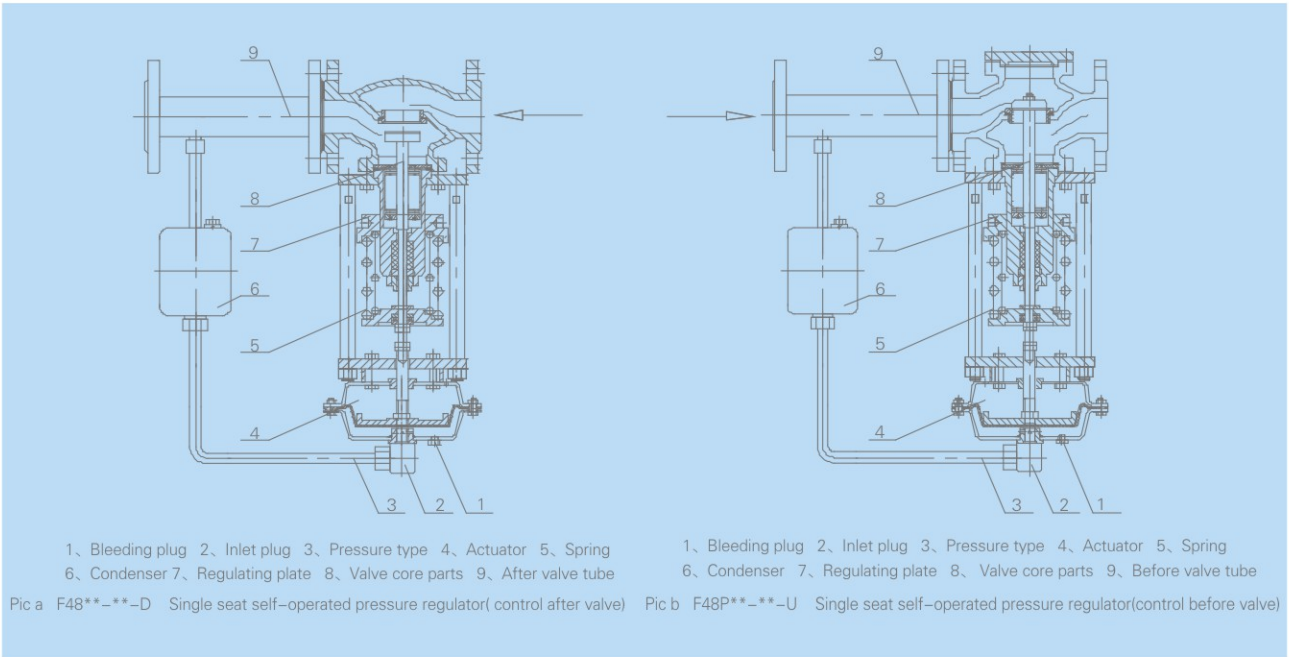
F48* type self-operated pressure regulating valve is composed with actuator, valve body, the pressure tube and nipple before (after) valve. The structure shown as below:

Pic a, downstream pressure regulating valve is closed while the pressure rising. its action principle shown as follow:

Medium enter the body by the direction of the arrow, through the valve seat, throttled by valve core and then output. The other path through the pressure tube (steam medium need condenser) run into the actuator working on the diaphragm, make the valve trim moving correspondingly, to reducing or stabilizing the downstream pressure. If the pressure after valve increases, then effect force on the diaphragm increase, compresses spring, drive on valve trim, decrease the valve opening degree, until the pressure after valve drop to the set value. Similarly, if after valve pressure reduced, the effect force on the membrane reduced, the spring, drive the valve trim to, increase the valve opening degree, until the downstream pressure rise to the set value

Pic b, upstream pressure regulating valve is opened while the pressure rising. its action principle shown as follow:

Medium enter the body by the direction of the arrow, through the valve seat, throttled by valve core and then output. The other path through the pressure tube (steam medium need condenser) run into the actuator working on the diaphragm, make the valve trim moving correspondingly, to reducing or stabilizing the upstream pressure. If the pressure before valve increases, then effect force on the diaphragm increase, compresses spring, drive on valve trim to increase the valve opening degree, until the pressure before valve drop to the set value. Similarly, if before valve pressure reduced, the effect force on the membrane reduced, the spring driving the valve trim to decrease the valve opening degree, until the before valve pressure rise to the set value.



Parts and Materials

Part name	Material
Body	WCB, 304SS, 316SS
Valve core	304SS, 316SS (welding Stellite) PTFE
Seat	304SS, 316SS (welding Stellite)
Stem	304SS, 316SS
Rubber diaphragm	NBR, EPDM, FKM
Diaphragm cap	WCB, WCB coating PTFE
Packing	PTFE Flexible graphite

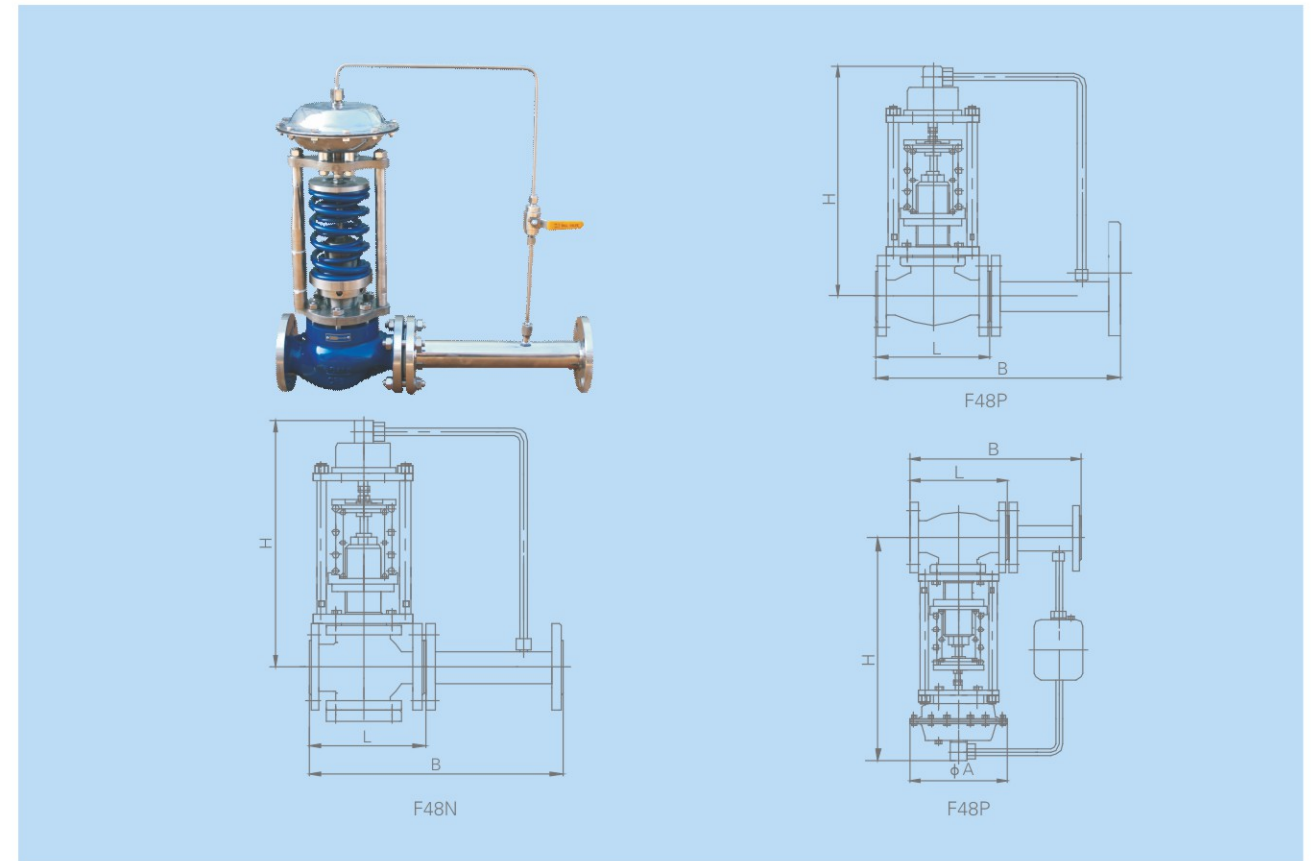


Technical Data

DN (mm)		20	25	32	40	50	65	80	100	125	150	200	250	300
Rated flow coefficient (Kv)	Soft	5	8	12.5	20	32	50	80	125	160	320	450	630	900
	Hard	7	11	20	30	48	75	120	190	300	480	760	1100	1750
Rated stroke L(mm)		8		10		12	15	18	20	30	40	45	60	65
DN (mm)		20(OR G3/4")												
Seat diameter DN (mm)		2	3	4	5	6	7		8	9	10	12	15	20
Rated flow coefficient (KV)		0.02	0.08	0.12	0.20	0.32	0.5		0.80	1.20	1.80	2.80	4.0	5
PN		MPa		1.6, 2.5, 4.0, 6.4 (6.3) /2.0, 5.0, 11.0										
		Bar		16, 25, 40, 64(63)/20, 50, 110										
		Lb		ANSI : Class150、Class300、Class600										
Pressure range Kpa		15~50、40~80、60~100、80~140、120~180、160~220、200~260、240~300、280~350、330~400、380~450、430~500、480~560、540~620、600~700、680~800、780~900、880~1000、900~1200、1000~1500、1200~1600、1300~1800、1500~2100、(other special range design)												
Flow coefficient		quick open												
Regulating accuracy		± 5—10(%)												
Working temperature		-60~350(℃) (special design for situation below -60) 350~550(℃)												
Allowable leakage		Class IV (metal sealing) Class VI (soft sealing) (GB/T4213-92)												
Pressure reduction ratio (before valve pressure/ after valve pressure)		1.25~10 (the special design over the range)												

Note:

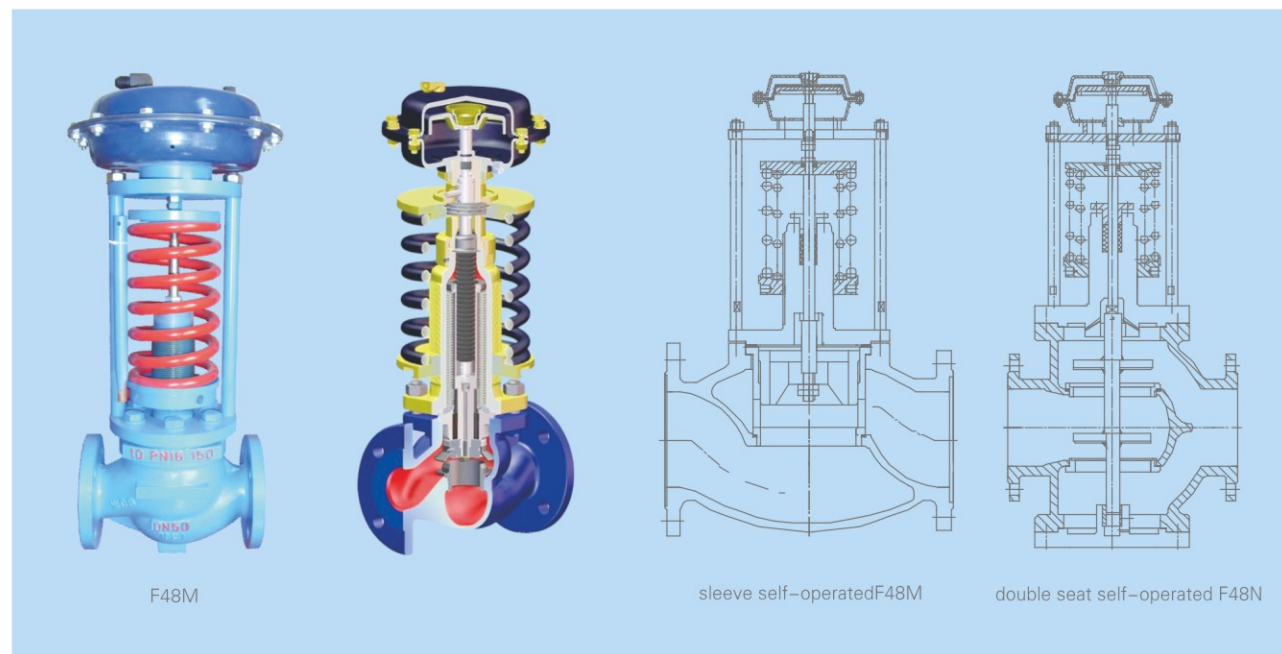
1. To determine the pressure regulating range: pressure regulating range can be determined by the above table, the control pressure should be selected near the middle stage, the smaller set pressure range, the higher in accuracy, so don't expand the set pressure range artificially.
2. For the after valve self-operated control valve, if the rate of pressure difference before and after valve exceed the range of 10, it is recommend multistage depressurization valve or two self operated valve independent series (except for the before valve pressure less than 0.8MPa, for example pilot operating type).
3. If the nominal pressure is more than 6.4MPa, the valve shall be specially designed.
4. 1 kgf/cm² = 100KPa.



Dimensions and Weight

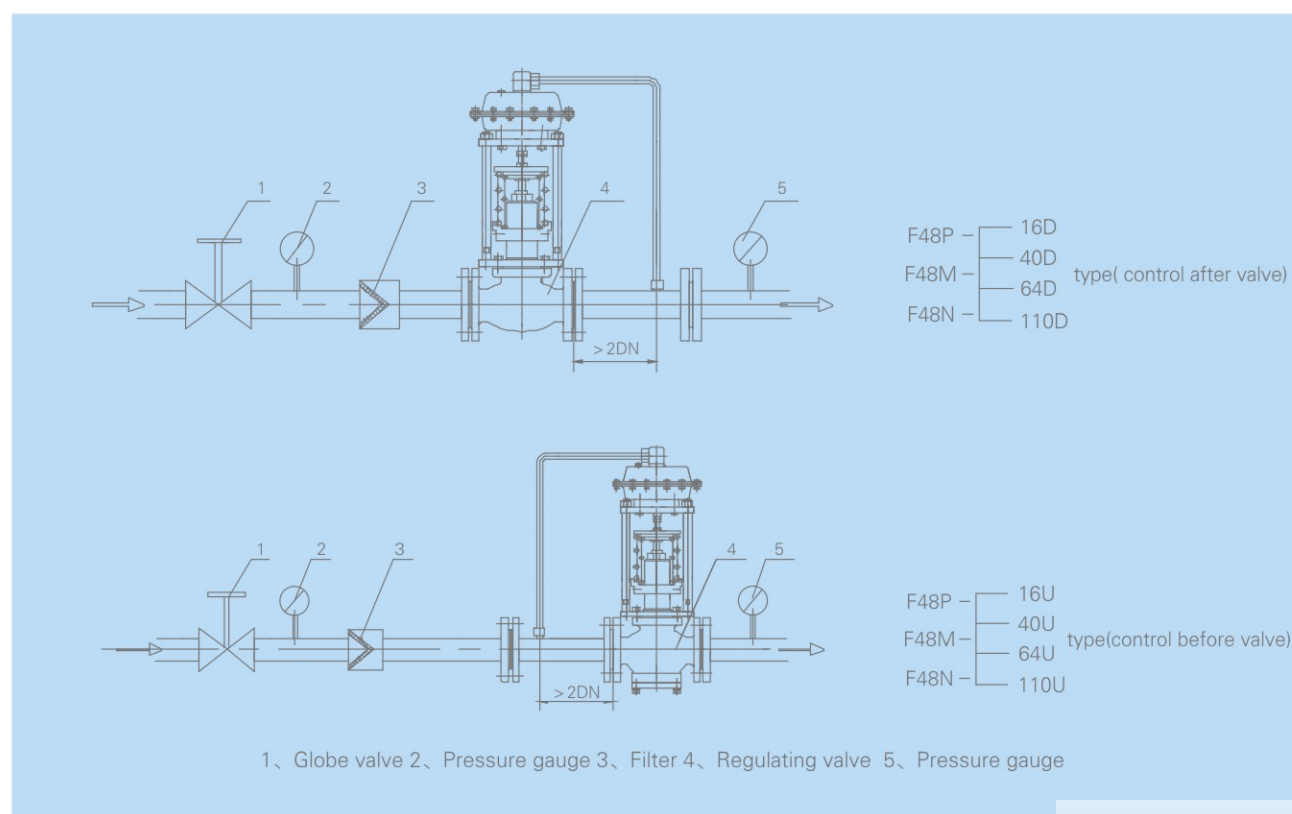
Unit: mm

DN(mm)			20	25	32	40	50	65	80	100	125	150	200	250	300
Tube length(B)			383		512		603	862		1023	1380		1800	2000	2200
Face to face length L (PN 16、25、40)			150	160	180	200	230	290	310	350	400	480	600	730	850
Face to face length L (PN 64)			206	210	222	251	286	311	337	394	440	508	610	752	819
Pressure adjustment range Kpa	15 ~ 140	H	475		520		540	710		780	840		880	940	950
		A	280		308										
	120 ~ 300	H	455		500		520	690		760	800		870	900	950
		A	230												
	280 ~ 500	H	450		490		510	680		750	790		860	890	940
		A	176						194		280				
	480 ~ 1000	H	445		480			670	740	780	780		850	880	930
		A	176						194			280			
Weight(Kg) for example of PN16			26		37		42	72	90	112	130	169	285	495	675

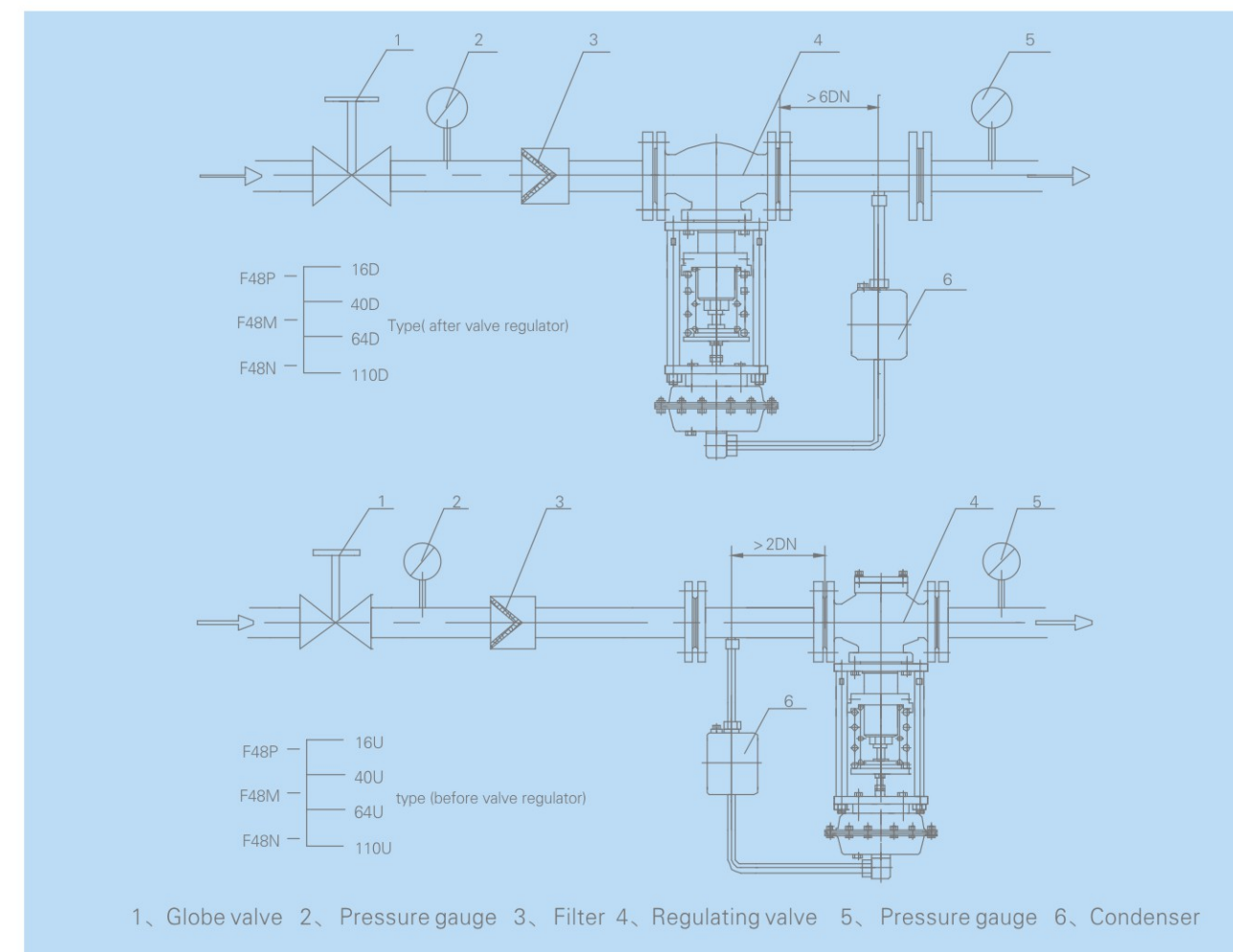


Installation

1、When used in gas or low viscosity liquid medium, F48* type pressure regulating valve should be vertically installed in the horizontal pipe, flip or oblique installation is only used when the location space does not allow for vertically installation. (when the medium is very clean, 3 components is not necessary)



When used in steam or high viscosity liquid medium, F48* type pressure regulating valve should be inverted installed on the horizontal pipe.



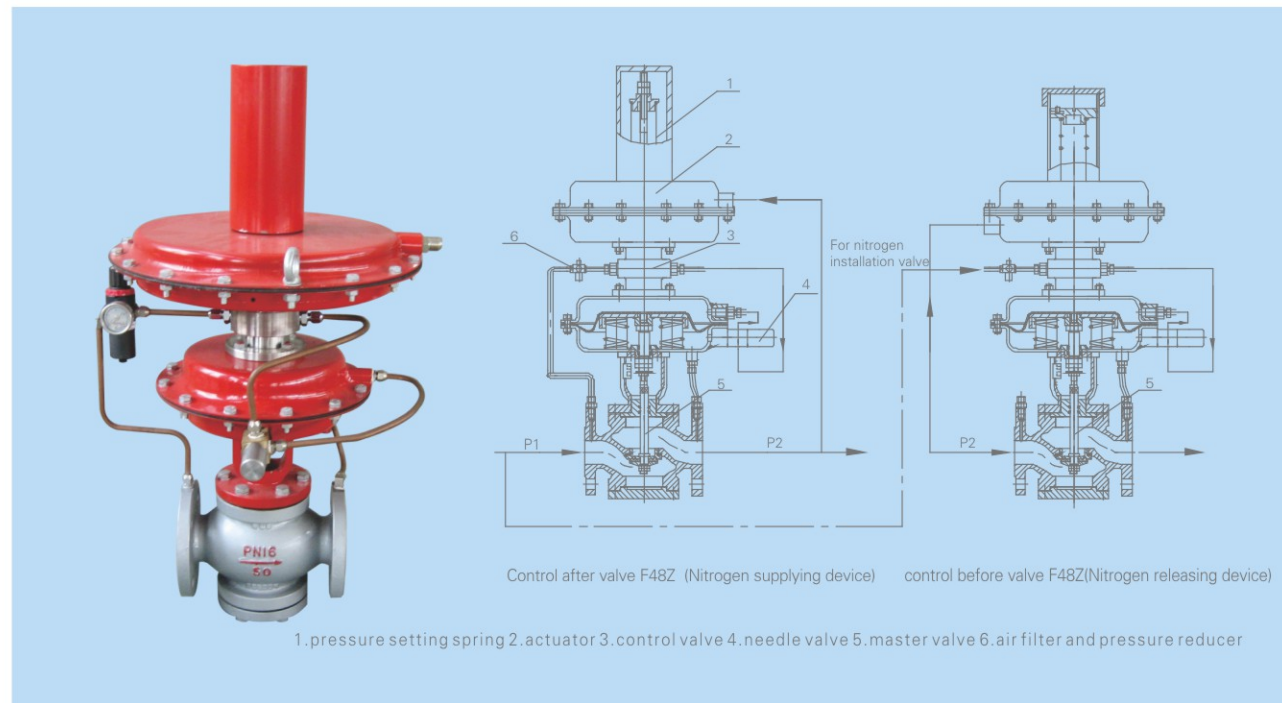
Note: Attention during installation:

- (1) The condenser should be installed higher than the actuator and lower than the tube before and after valve. It should be filled with cold water before using, with the irrigation time of every 3 months.
- (2) Tube pressure points should take the appropriate position on pipe before or after the regulating valve, the tube point before valve should be 2 times greater than the pipe diameter, the tube point after valve should be more than 6 times of the pipe diameter.
- (3) The installation of pressure regulating valve should left enough space around for maintenance and operation, it should fixed with globe valve and manual bypass valve before and after the self-operated regulator.
- (4) There should be a fixed yoke in case of too large diameter of regulator (DN = 100)
- (5) When the medium is very clean, it's no necessary to install components 3.
- (6) Self operated valve can be smaller than the pipe diameter, but the filter and the cut-off valve are not allowed

Pressure Adjustment Method

See Figure 1 (a, b)

Self pressure regulating valve has been adjusted according to the set value before dispatching, but if the user wants to change the set value, or for some reason the actual value deviates from the set value, then rotate part 7 (adjusting plate) by adjusting rod, clockwise to reduce set pressure, anti clockwise to increase set pressure.



Product Introduction

F48Z**--**--D valve can be replaced with 1 pcs F48P self-operated valve and 1 pcs of F48V micro pressure valve

F48Z valve can be replaced with 1 pcs F48V micro pressure valve

Type F48Z pilot-operated pressure regulator (pressure in short) is in no need of external energy, the energy of the medium itself is transferred as a power source, enter the pilot of pressure valve to control the valve core position, so it change the medium flow, to keep the valve downstream pressure (type D) or upstream pressure (type U) in constant.

F48Z is mainly used on the situation which have high before valve pressure (0.2–0.8MPa) and low after valve pressure (0.5–100KPa), for example 50mmH₂O (water column) situation

1. Air pressure reducing: before valve pressure 0.2–0.8MPa (need pressure reducer before valve when the pressure above 0.8MPa), after valve pressure 0.5–100KPa.

2. Nitrogen sealing device: nitrogen supply and nitrogen discharge device

Parts and Materials

Part name	Material
Body	WCB、CF8(304SS)、CF8M(316SS)
Valve trim	304SS、316SS(built-up welding Stellite) PTFE
Seat	304SS、316SS(built-up welding Stellite)
Stem	304SS、316SS
Rubber diaphragm	NBR+Polyester fabric
Diaphragm cap	WCB、WCB coating PTFE
O ring	NBR,FKM,PTFE



Technical Data

DN (mm)	20			25	32	40	50	65	80	100	125	150
Seat diameter DN (mm)	6	15	20	25	32	40	50	65	80	100	125	150
Rated flow coefficient(Kv)	0.32	4	5	8	12.5	20	32	50	80	125	160	320
Pressure adjustment range KPa	0.5–100Range selection											
PN (MPa)	1.0 1.6											
Medium temperature(°C)	–40~80											
Flow characteristics	Quick open											
Adjustment error (%)	≤5											
Allowable pressure drop(MPa)	1.6			1.6		1.1	0.4		0.6			
Effective diaphragm area of actuator allowable leakage(cm²)	200			280			400					
Allowable leakage	Metal seat:classIV(10–4 x Kv) IV grade (10–4 × Kv) SoftSET:CLASS VI(GB/T4213–92) zero leakage											

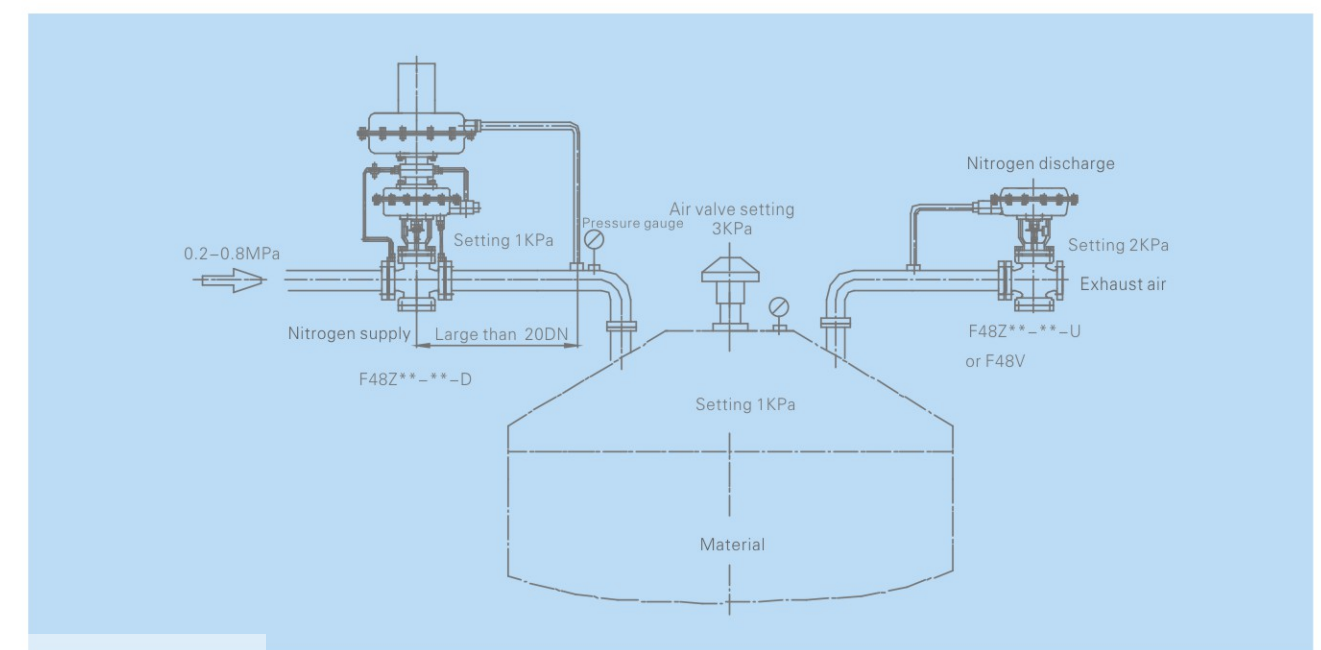
Application Example

For example of 1KPa tank

1, F48Z**--**--D should take the pressure position which is near to tank(or buffer tank)

2, The pressure gauge should be placed not far away from the pressure point, in order to avoid unnecessary disputes.

3, F48Z**--**--D after valve pipe should not be too small (generally larger than the pipe before valve).



Application Example

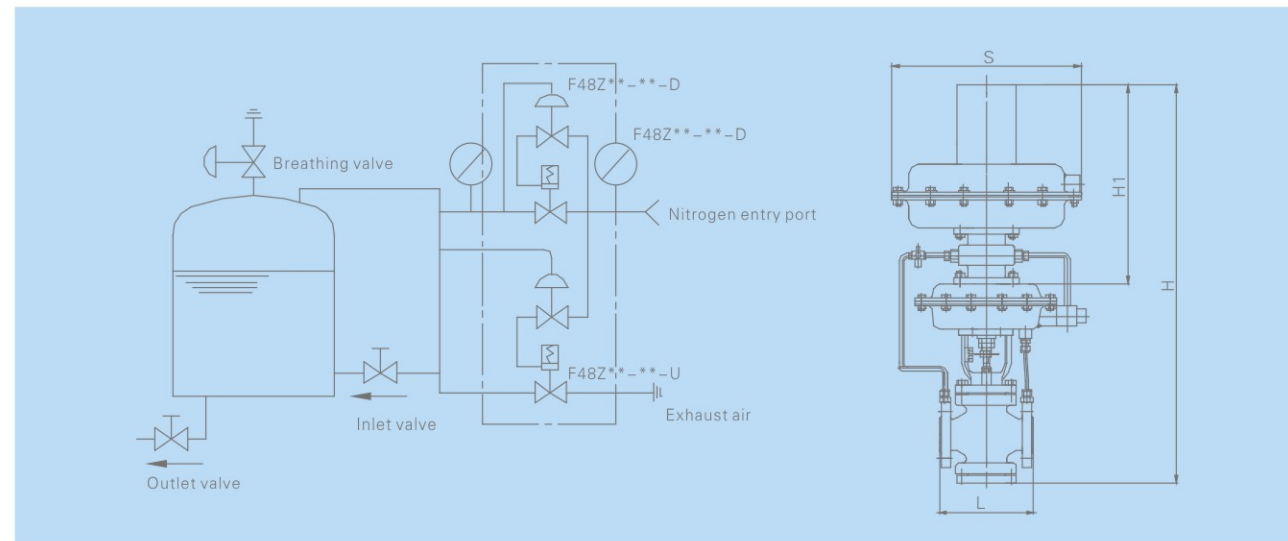
1、Replacement of F48V micro pressure valve

F48V type micro pressure valve general require the before valve medium pressure is less than 0.1MPa, and F48Z type pilot operated self pressure regulating valve is not restricted by this term.

2、Used for Nitrogen sealing device

The oil is covered with nitrogen and kept in the tank with nitrogen sealing device, the pressure is about 100mmH₂O, controlled by the nitrogen protective device. When the liquid outlet valve is opened, the liquid level in the tank is decreased, at the same time, F48Z**-*-D nitrogen supply valve increase the opening degree to add nitrogen inside the tank to increase the pressure to the set value. The liquid level rises when liquid inlet valve opens and enter the oil, air part volume decreases, nitrogen pressure increased, F48Z**-*-D nitrogen supply valve closed, and F48Z**-*-U nitrogen discharging valve is opened, discharge nitrogen to decrease the pressure to set value. In order to ensure the safety of storage tank, breathing valve is necessary to set on the top of tank. Nitrogen supply pressure adjustment: to select a set value such as 1KPa (100mm.W.C) for F48Z**-*-D pressure regulator, then adjust the main spring 1 pre compression to get this value, nitrogen discharging pressure adjustment: to adjust the spring precompression in the main controller part of the F48Z**-*-U relief valve, generally in order to avoid the frequent open and close nitrogen sealing device, the discharge of nitrogen settings value should be away from the nitrogen supply pressure setting value, such as 2KPa (200mm.W.C).

The breathing valve set value adjustments: after the adjustment of the above two set value, in order to avoid breathing valve frequently open and close, the breathing valve set value should be greater than the set value of discharging pressure. The two setting value should not be too close. The breathing valve type: ZFQ-1. F48Z**-*-D pressure set value code in Pc, F48Z**-*-U set value code in P1, the Pc and P1 can not get too close to avoid frequently working, breathing valve discharge pressure P2 should be larger than P1, P2 and P1 value should not be too near. The relationship between the three value are: $P_c < P_1 < P_2$.



Dimensions

Unit: mm

DN	L	S	H1	H
20	150	308	390	715
25	160	308	390	715
32	180	308	390	735
40	200	395	435	755
50	230	395	435	755
65	290	395	435	795
80	310	395	435	795
100	350	395	435	825
150	480	500	565	1105

Note: 1、All above are based PN16 2、Flowtec reserves the right to change product designs and specification without notice.



Figure 1 outside view of micro pressure regulator

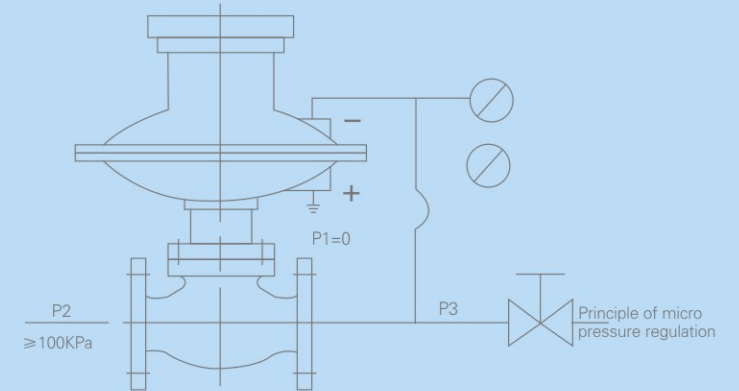
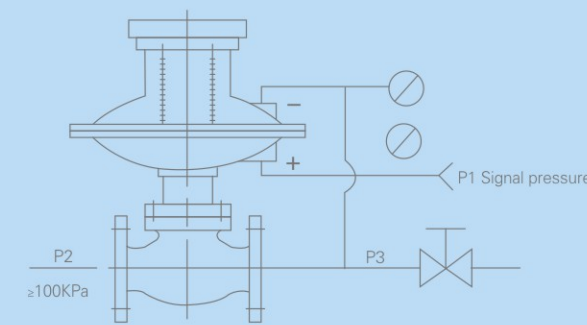
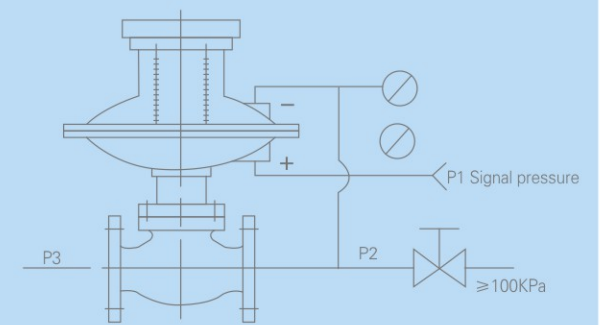


Figure 2 Micro pressure regulator system



After valve pressure adjustment
 $\Delta P = P_1 - P_3$



After valve pressure adjustment
 $\Delta P = P_2 - P_1$

Figure 2 principle of differential pressure adjustment

Product Introduction

F48C type differential pressure valve can automatically adjust one or two kinds of medium pressure without external energy and, to maintain the pressure differential at a constant value, for example used in a gas furnace combustion system, to control the flow rate of the mixture of two kinds of fuel, to achieve the ideal combustion conditions, save fuel and investment, also can be used in decompression, pressure, differential pressure regulating system in coal gas, natural gas, liquefied petroleum gas, ammonia, nitrogen, oxygen and other industrial. The utility model can also be used for the sealing oil system of the hydrogen cooling generator and to control the pressure difference between the seal oil and the hydrogen gas to ensure the reliable seal.

The Micro pressure valve to control before valve can replace F48Z self operated pressure regulator valve with pilot.

When the low-pressure end of differential pressure regulator get through the atmosphere, then it will be a micro pressure regulator (see Figure two) the main characteristics F48C differential pressure regulating valve and F48V type self operated micro pressure regulating valve :

- 1、For a micro (differential) pressure valve, if the before valve pressure is greater than or equal to 100KPa, to install the F48P type self-operated valve to reduce the pressure to less than 100KPa, so it can be used to small pressure occasions (such as 0.5KPa)
- 2、Actuator components are extremely sensitive, extremely small pressure changes will be detected
- 3、Pressure adjustment is very convenient, adjustment on set value can be carried out without suspending the production .

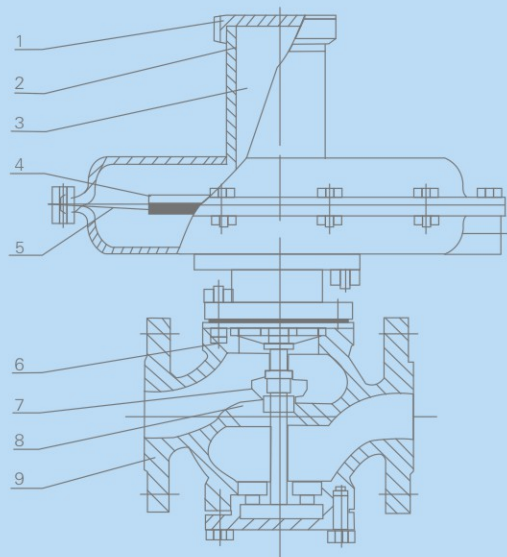


Figure 3 F48CP Self-operated differential micro pressure regulator

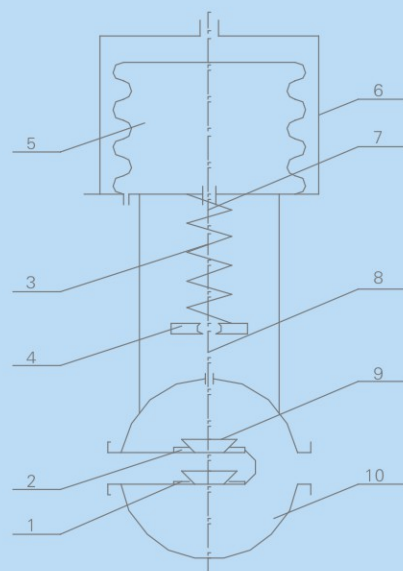


Figure 4 F48CN self-operated differential micro pressure regulator

Parts and Materials

No.	Name	Material
1	Cover	420SS
2	Spring seat	45
3	Spring	60Si2Mn
4	Pallet	304SS、316SS
5	Diaphragm sheet	NBR
6	Small diaphragm sheet	NBR
7	Valve	PTFE
8	Seat	304SS、316SS
9	Body	WCB、304SS、316SS
No.	Name	Material
1	Upper seat	304SS、316SS
2	Bottom seat	304SS、316SS
3	Adjustment plate	420SS
4	Spring seat	45
5	Bellow	304SS、316SS
6	Actuator external cavity	WCB
7	Pushing rod	420SS
8	Stem	304SS、316SS
9	Valve	304SS、316SS
10	Body	WCB、304SS、316SS

Technical Data (Sheet1)

DN (mm)		20	25	32	40	50	65	80	100
Rated flow coefficient(Kv)	F48CP/F48VP	5	8	12.5	20	32	50	80	125
	F48CN					53	83		
Rated stroke L(mm)		5	6		10		15		20
Nominal pressure PN (Mpa)		0.10 1.0							
Differential pressure adjustment scope(KPa)		0.5~5.5 5~10 9~14 13~19 18~24 22~28 26~33 31~38 36~44 42~51 49~58 56~66 64~78 76~90 88~100							
Medium temperature(°C)		≤80							
Adjusting accuracy(%)		≤10							
Allowable leakage (L/h)	F48CP/F48VP	Hard seal 10 ⁻⁴ × Rated valve capacity (IV)(GB/T4213-92) Soft seat: IV grade							
	F48CN	5 × 10 ⁻⁴ × rated valve capacity (III) (GB/T421 3-92)							

Note: 1、F48CP/F48VP Nominal pressure 1.0MPa, F48CN is 1.6MPa.
2、F48CN differential pressure adjustment range: 36~44, 42~51, 49~58, 56~66, 64~78, 76~90, 88~100KPa.

Determination of adjustment range of differential (micro) pressure valve

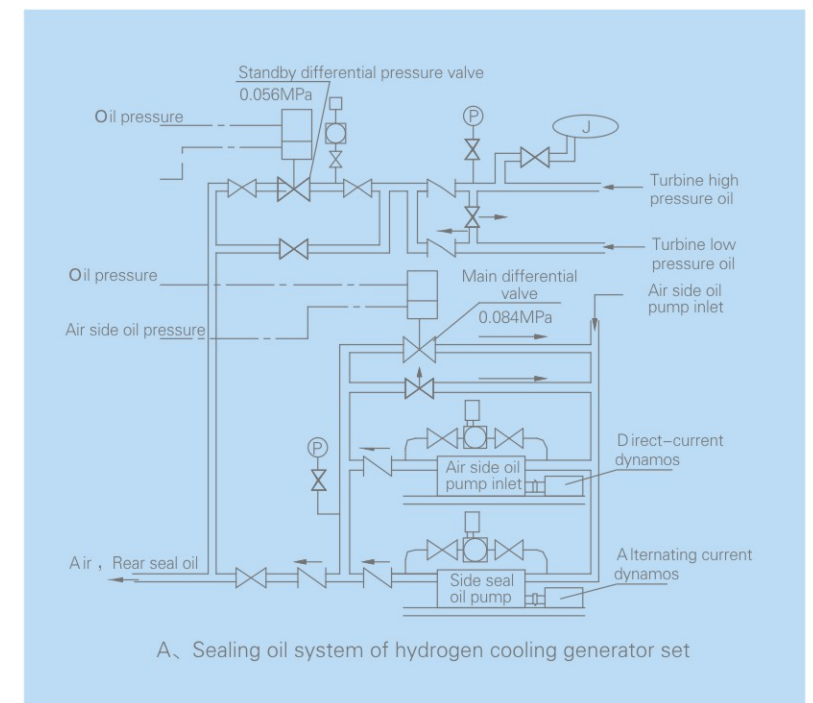
Paragraph of differential (micro) pressure valve adjustment range, see table 1
The control area (set valve) should be selected near the center value.

Type of Differential(Micro) Pressure Regulator

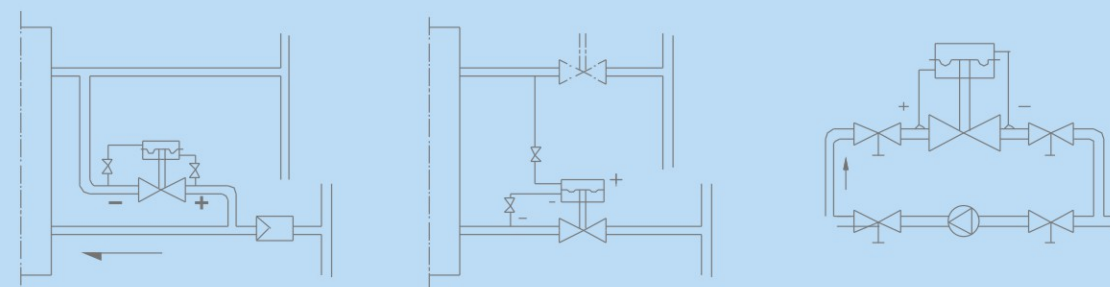
Differential (micro) pressure regulator has two types: D type and U type. D type valve core initial position is usually opened, differential (micro) pressure increases when the valve opening degree will decrease or even close, the initial position of the U type valve core normally closed, differential (micro) pressure increases while the valve opening degree increases.

Application Example

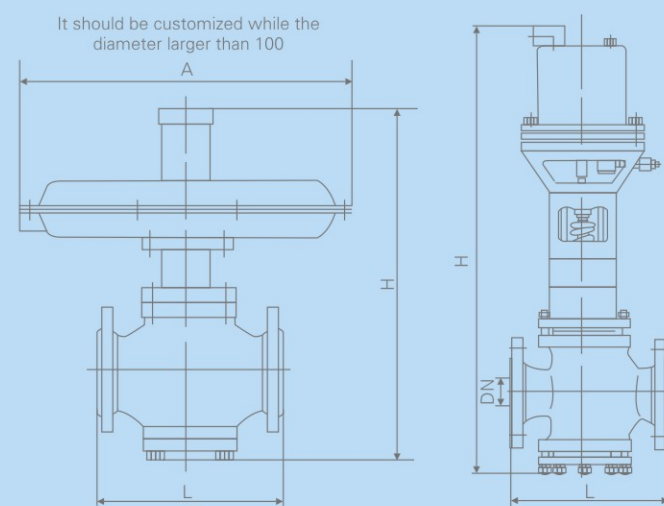
- A. Sealing oil system of hydrogen cooling generator set
- B. circulating air control on fan heating system
- C. flow ratio control of two kinds of air
- D. Pump bypass regulation



A. Sealing oil system of hydrogen cooling generator set



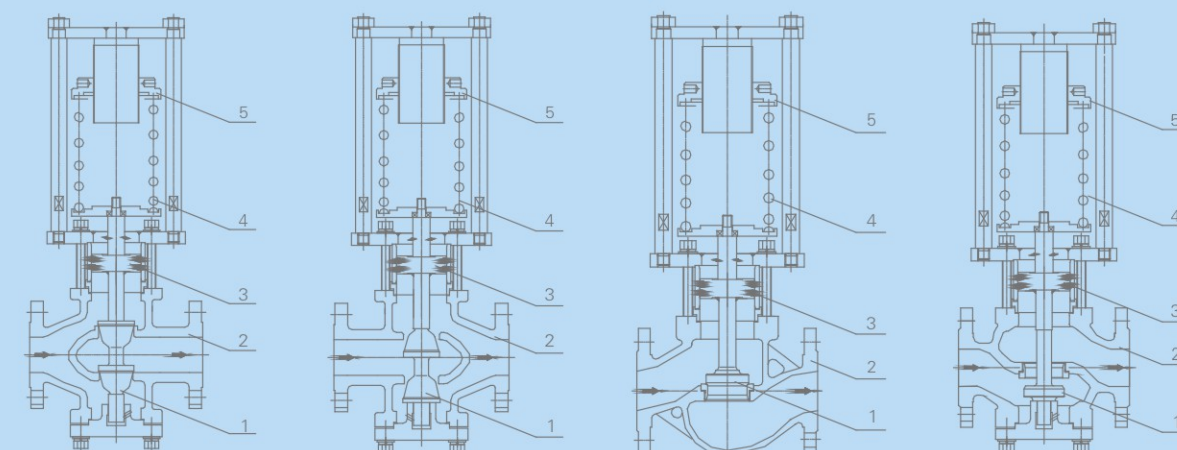
Note: The Micro pressure valve used to control before valve can replace F48Z self operated pressure regulator valve with pilot.



Dimensions

Unit: mm

DN	20	25	32	40	50	65	80	100
A	395	395	395	395	395	395	395	395
H	F48CP/F48VP	376	465	365	445	445	490	510
	F48CN				536	536		
L	F48CP/F48VP	150	160	180	200	230	290	350
	F48VN				222	222		
WT(Kg)	12	18	25	32	45	58	68	76
Connecting pipe screwed end	M16 × 1.5							



1、 Valve core 2、 Body 3、 Piston

4、 Spring 5、 Adjustment plate

F48N**--UI double seat before valve type

1、 Valve core 2、 Body 3、 Piston

4、 Spring 5、 Adjustment plate

F48N**--DI double seat after valve type

1、 Valve core 2、 Body 3、 Piston

4、 Spring 5、 Adjustment plate

F48P**--UI single seat before valve type

1、 Valve core 2、 Body 3、 Piston

4、 Spring 5、 Adjustment plate

F48P**--DI single seat after valve type

Product Introduction

F48*-I type self-operated pressure regulating valve is an energy-saving pressure regulating valve which do not need of external energy, and only rely on pressure changes of the regulated medium itself to get automatically adjusting and stabilize the before valve pressure(or after valve pressure) in a constant value .

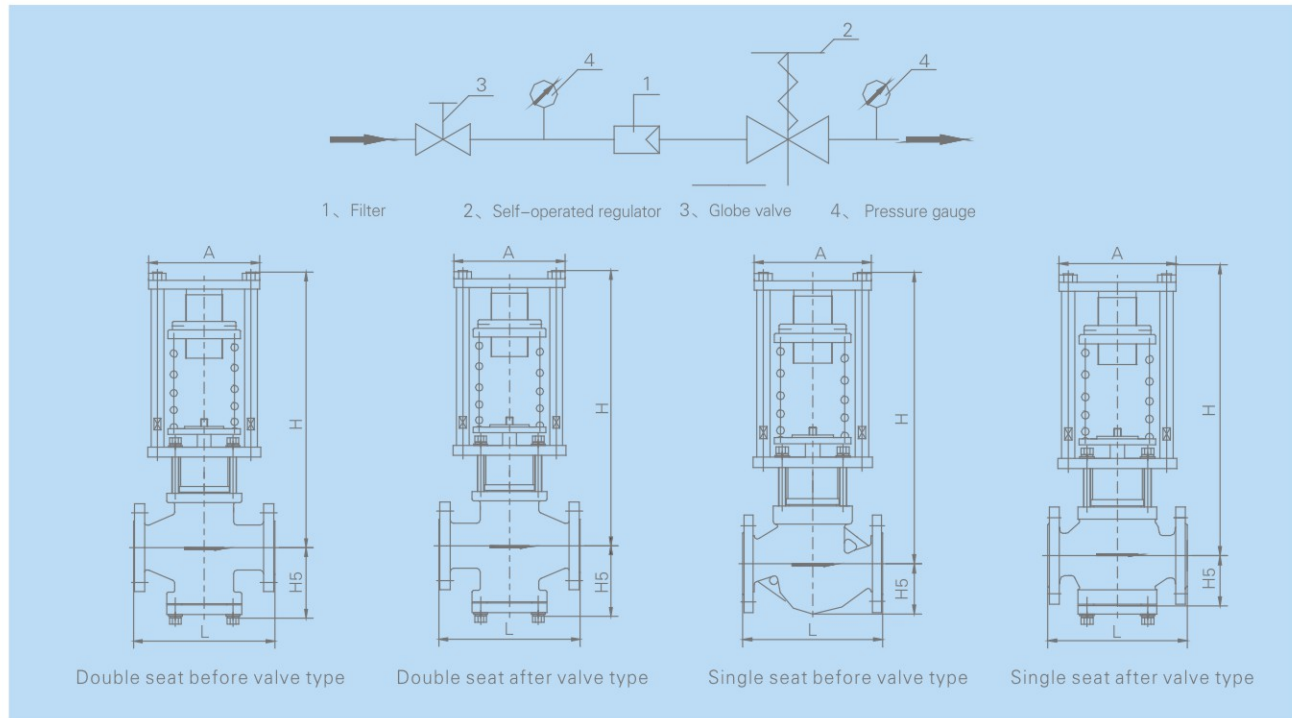
The valve is an ideal energy-saving products, it is widely used in Pressure maintaining and stability on the medium of high viscosity liquid containing suspended particles, saving the external tube, using the piston as an effective pressure detection area, to prevent the coking, solidification, clogging phenomenon generated by the external pressure guide structure. This valve is also suitable for the automatic control of pressure relief (before valve)and the pressure regulator (after valve) on the steam pressure, the non corrosive gas, the low viscosity liquid medium.

Parts and Materials

Parts name	Material
Body	WCB、CF8(304SS)、CF*M(316SS)
Valve trim	304SS、316SS(Welding Stellite)PTFE
Seat	304SS、316SS(Welding Stellite)
Stem	420SS、304SS、316SS
Spring	60Si2Mn
Piston	45、304SS、Bellow
O-ring	FKM,NBR

Technical Data

DN(mm)	20	25	32	40	50	65	80	100	125	150	200	250	300
Rated flow coefficient (Kv)	7	11	20	30	48	75	120	190	300	480	760	1100	1750
Rated stroke L(mm)	8	8	10	12	12	20	20	25	40	40	50	60	70
Pressure regulating range KPa	280 ~ 350,330 ~ 400,380 ~ 450,430 ~ 500,480 ~ 560,540 ~ 620,600 ~ 700,680 ~ 800												
	780 ~ 900,880 ~ 1000,950 ~ 1100,1080 ~ 1250,1230 ~ 1400,1380 ~ 1550,1530 ~ 1800												
	1780 ~ 2000,1980 ~ 2300,2280 ~ 2500												



Application Example

Self-operated pressure regulator (U type) is regulating the pressure before valve, the initial position of the valve core is in closed position, the valve will start opening in case the pressure before valve rise gradually and exceed the set value, until the before valve pressure fixed in the required setting value. The pressure setting value P1 can be set by continuously adjusting the pressure regulating plate to change the spring pre-tightening force, and the pressure regulating disc rotates counter clockwise to compress the spring, and the pressure setting value P1 increases, otherwise decreases.

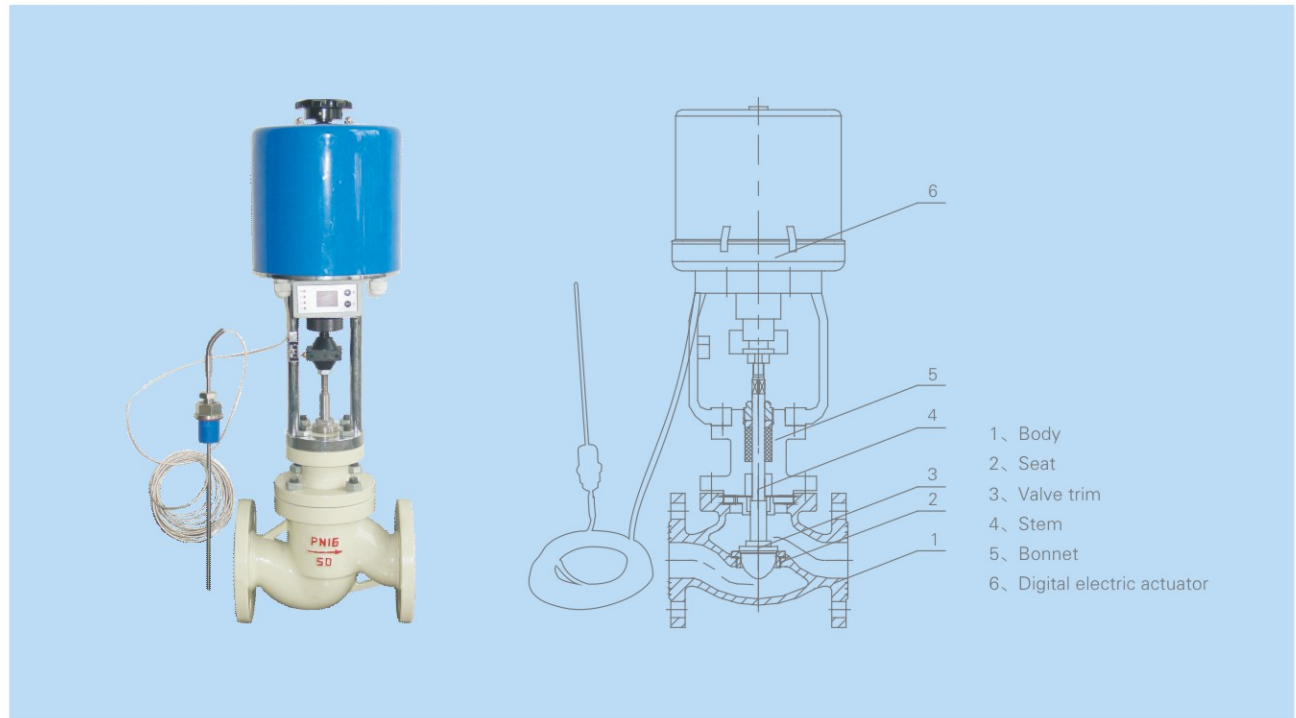
Self-operated pressure regulator (D type) is regulating the pressure after valve, the initial position of the valve core is in opened position, the valve will start closing in case the pressure after valve rise gradually and exceed the set value, until the after valve pressure fixed in the required setting value. The pressure setting value P1 can be set by continuously adjusting the pressure regulating plate to change the spring pre-tightening force, and the pressure regulating disc rotates counter clockwise to compress the spring, and the pressure setting value P1 increases, otherwise decreases.

Dimensions and Weight

Unit: mm

DN(mm)		25	32	40	50	65	80	100	125	150	200	250	300
L	PN16/40		180	200	255	290	310	350	400	480	600	730	850
	PN64	210	222	251	286	311	337	394	440	508	610	752	819
A		196							250				
H5		110	130	135	145	175	195	210	265	280	345	425	485
H		435	445	450	470	530	545	555	620	625	680	755	830
WT (kg)	PN16/40	33	43	46	52	82	98	120	134	152	180	200	250
	PN64	40	50	54	62	96	118	158	180	206	265	283	340

Note: The body flange and the face to face length can be manufactured according to the user specified standards, such as: ANSI, JIS, DIN, etc..



Product Introduction

F48W Self operated temperature control valve is composed of 3610LSA (B)/SI digital display temperature control electric actuator, valve and thermal resistance. The whole valve is easy to install and effective working.

Thermal resistance act as the test temperature sensor, which is divided into two categories of platinum resistance and copper resistance, and usually work together with display instruments, recorders and electronic control. It can directly measure surface temperature from -200 DEG C to +420 of liquid, steam and gas solids in various production processes with, large temperature adjustment range, high applicability, superior performance . It is mainly used for heating or cooling in various occasions, such as the steam heating container or the room, the control of the mixing temperature of the cold and hot media, etc..

Parts and Materials

Parts name	Material
Body, Bonnet	WCB、WCC、WC6 CF8(304)、CF8M(316)、CF3(304L)、CF3M(316L)
Valve trim, seat	304、316、316L Welded with STL 17-4PH
Packing	PTFE、R.TFE、Flexible graphite
Sealing gasket	XB350(Asbestos rubber sheets)、PTFE、Flexible graphite
Stem	304、316、316L、17-4PH

Note: To choose the material based on the service condition.

Technical Data

DN(mm)		20				25				32	40		50			
Seat diameter DN(mm)		10	12	15	20	10	12	15	20	25	32	32	40	32	40	50
Rated flow coefficient (Kv)	Line	1.8	2.8	4.4	6.9	1.8	2.8	4.4	6.9	11	17.6	17.6	27.5	17.6	27.5	44
	Equal Percentage	1.6	2.5	4.0	6.3	1.6	2.5	4.0	6.3	10	16	16	25	16	25	40
Rated stroke L(mm)		16									25					
Actuator model		3610LSA/SI-08/20									3610LSB/SI-30/50					
DN (mm)		65	80		100			125	150		200					
Seat diameter DN(mm)		65	65	80	65	80	100	125	125	150	150		200			
Rated flow coefficient (Kv)	Line	69	69	110	69	110	176	275	275	440	440		690			
	Equal Percentage	63	63	100	63	100	160	250	250	400	400		630			
Rated stroke L(mm)		40						60								
Actuator model		3610LSB/SI-50/SC/SI-65						3610LSC/SI-99/160								
Nominal pressure PN/Class		MPa	1.6, 2.5, 4.0, 6.4 (6.3), 10.0													
		Bar	16, 25, 40, 64 (63), 100													
		Lb	ANSI : Class150、Class300、Class600													
Inherent flow characteristi		Line , Equal Percentage														
Inherent adjustable(R)		30、50														
Signal		Input signal: 4-20mA (input 1-5v) : feedback: 4-20mA														
Allowable leakage		Metal seat:class IV($10^{-4} \times Kv$ See GB/T4213-92) Soft seat:class VI														
Working temperature t(℃)	Normal temperature type				-20~200、-40~250、-60~250											
	Heat radiating type	Cdoe : R			-40~350、-60~350											
	High temperature type	Cdoe : H			350~595 (High temperature material)											
	Cut-off regulating type	Cdoe : S			-40~150(Valve core with RPTFE)											

Intelligent Digital Display Temperature Control Electric Actuator Adjustment

1、 Connection mode

Open the cover of the actuator, a black 6 core terminal plate is located near the joint hole, which is connected to the sensor and the AC220V/50Hz power supply from the top right.

2、 Temperature setting method

Connect to AC220V power supply, the intelligent digital temperature control table (shown at right) located at the bottom of actuator (yoke flange), start to work, In the digital display meter, the "current" LED is bright, and the indicating value is the ambient temperature value of the platinum thermal resistance.

A、 Temperature setting

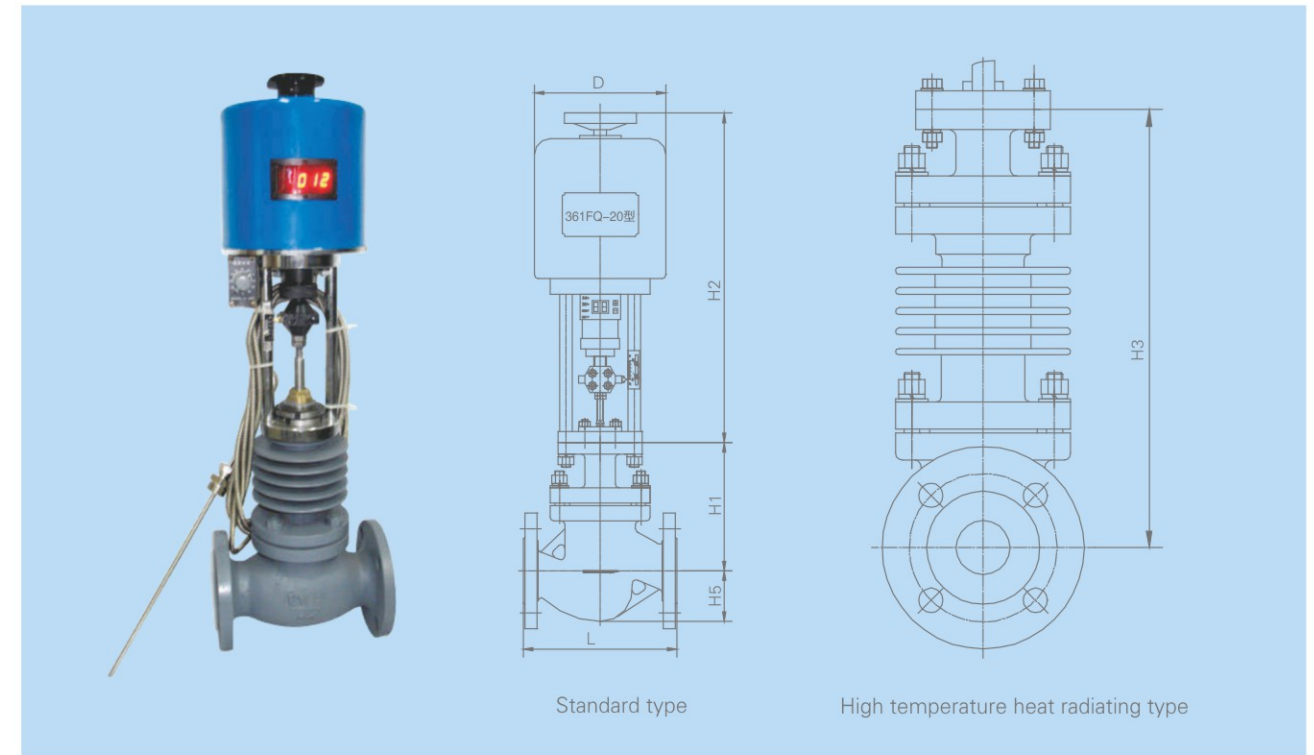
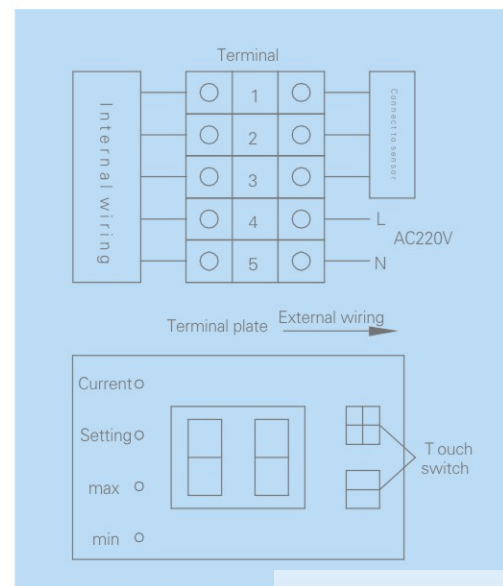
At the same time, as shown in the figure + - touch switch, the "set" LED light in figure, the indicating value of digital display meter is the setting temperature value which user needs. If you want to improve the setting temperature ,to press the right side + touch switch; if you need to reduce the setting temperature, press the right side and touch switch to set the temperature indicating value to the required value.

B、 Allowable max (maximum) and min(minimum)

To press the + - touch switch at the same time, the "max" LED light, the indicating value on digital display table is allowable maximum setting value, the same to press + or - touch switch to increase or decrease the indicating value. Min (minimum) can be adjusted in the same way. Generally Tmax-T=T-Tmin, the difference can choose 5 degrees or 10 degrees C.

C、 Enter "current" working status

To press the + touch switch at the same time, "the current" is bright, the digital display shows the current platinum resistance of the medium temperature.



Dimensions

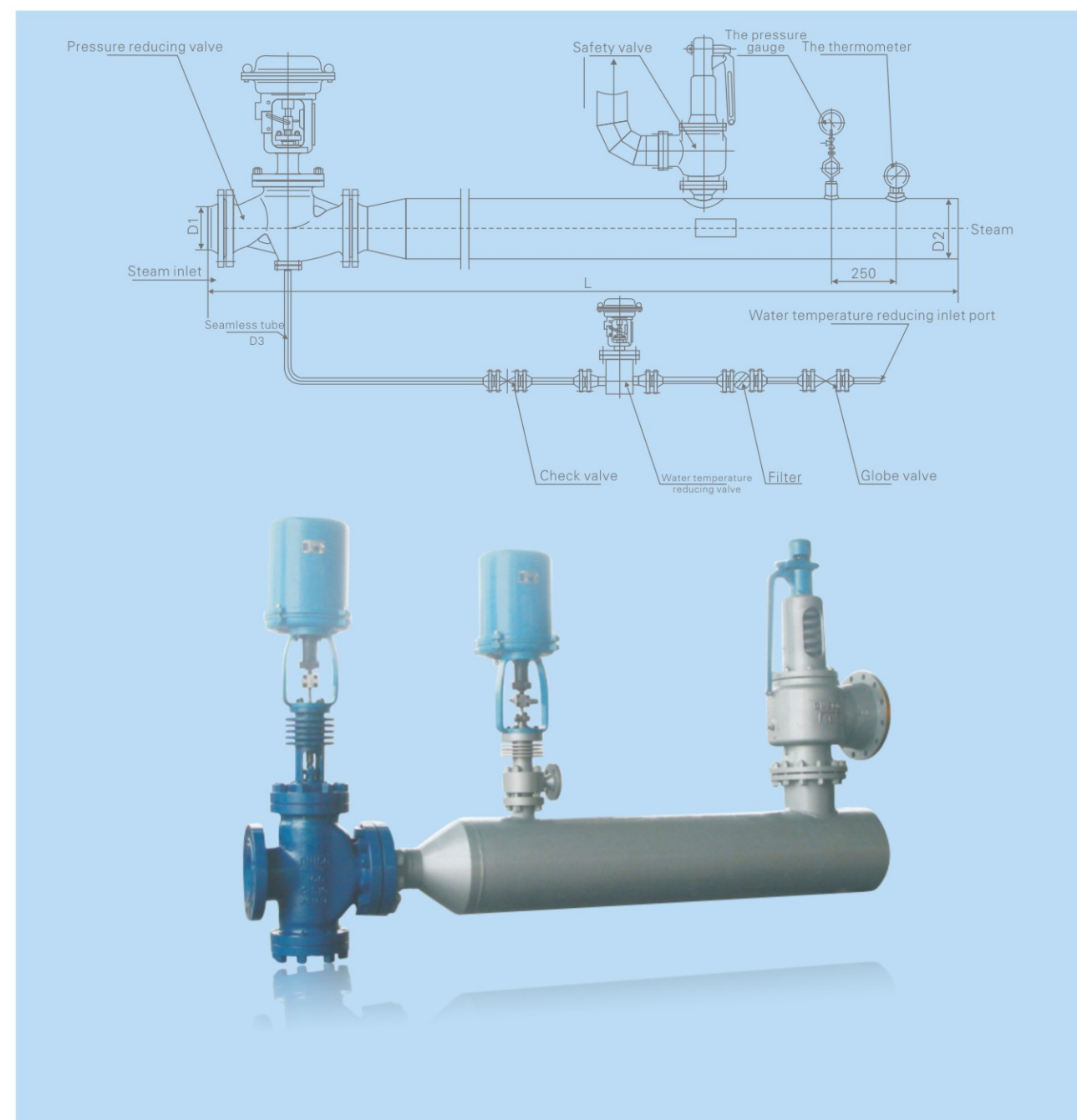
DN(mm)		20	25	32	40	50	65	80	100	125	150	200
L	PN16/40	150	160	180	200	255	290	310	350	400	480	600
	PN63	206	210	222	251	286	311	337	394	440	508	610
D		179		200		200/310		310				
H1	PN16/40	126	126	134	157	167	199	214	229	263	293	358
	PN63/100	138	138	142	165	187	204	219	240	280	300	364
H2		377		532		532/730		730				
H3	PN16/40	286	286	302	325	335	437	452	467	524	554	619
	PN63/100	298	298	310	333	345	442	457	478	541	561	625
H5	PN16/40	43	48	57	66	80	92	100	120	134	156	199
	PN63/100	49	54	61	70	84	97	105	125	138	163	206
WT (kg)	PN16/40	10	12	15	17	18	34	46	54	76	79	100
	PN63/100	13	16	19	26	27	43	69	85	120	125	150

Note: The body flange and the face to face length can be manufactured according to the user specified standards, such as: ANSI, JIS, DIN, etc..



Pneumatic Temperature and Pressure Reducer

The device is driving by pneumatic actuator to reduces the pressure and temperature of the new steam to the parameters needed by the user. The utility is especially suitable for the working environment with strict fire prevention. The system composition and working principle is same as the electronic controlled temperature and pressure reducer, but the control of the temperature and pressure reducing valve and the water supply regulating valve is a pneumatic diaphragm actuator. The actuator is equipped with a valve positioner, convert the output electrical signal of the regulator into the gas signal to drive the valve action, driven valve trim moved corresponding with input signal.feature with fast action, high sensitivity.



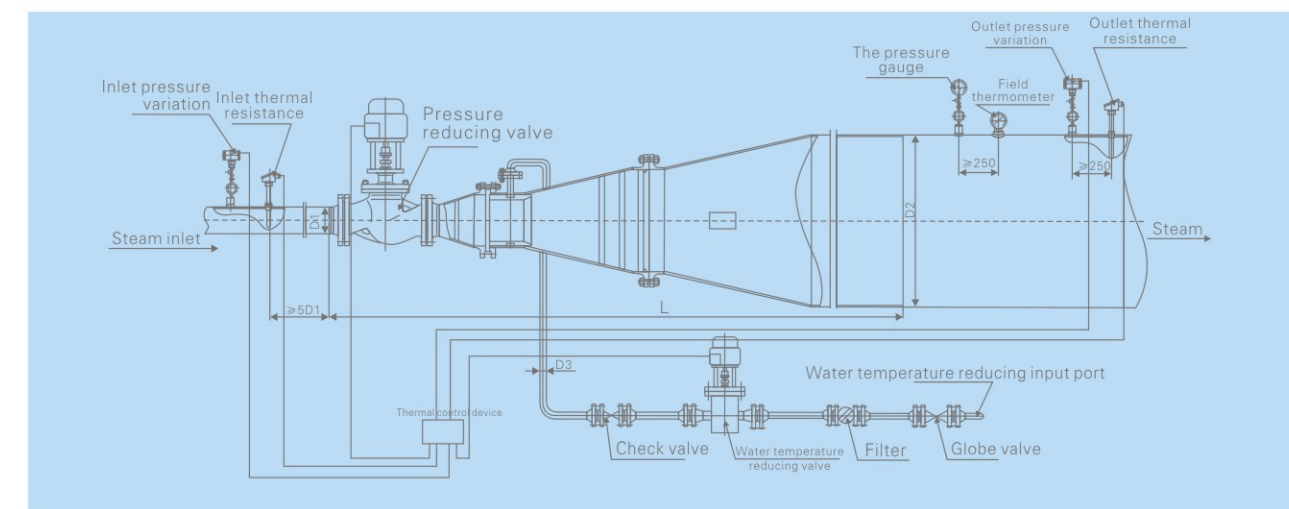
Pneumatic actuator: multi spring diaphragm actuator (user can customize)
Valve positioner: Electric pneumatic valve positioner
Input signal: 4~20mA

Input impedance: 250Ω
Air supply pressure: 0.4~0.7MPa
Ambient temperature: -20~60℃



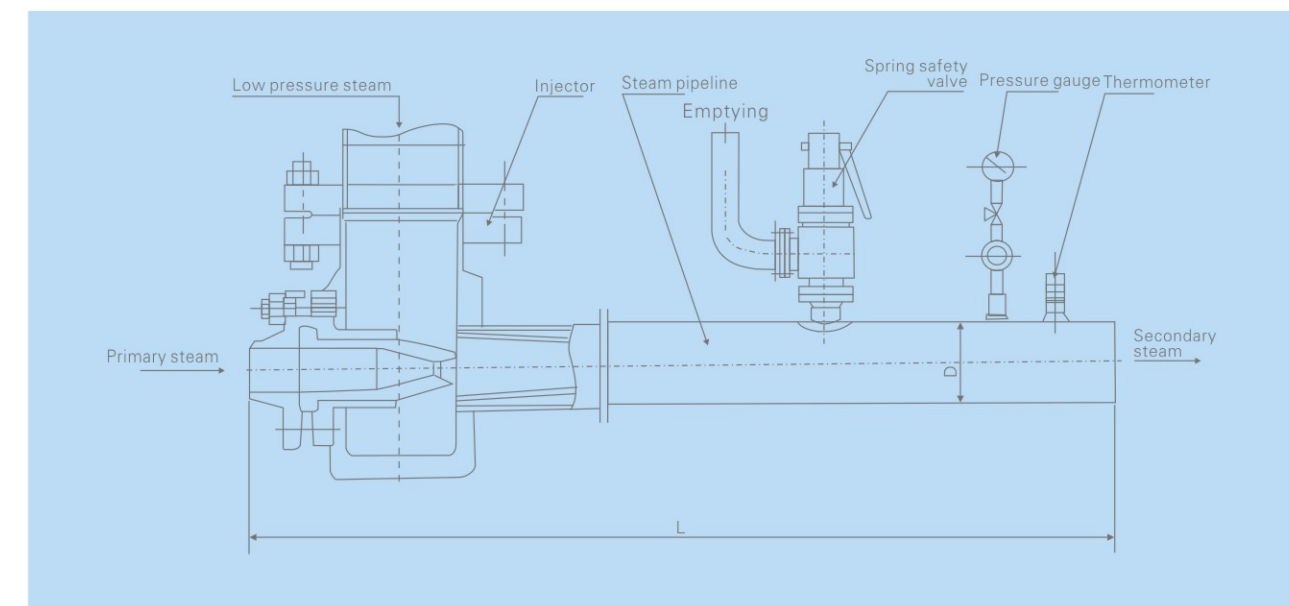
Negative Pressure Temperature and Pressure Reducing Device

This device can reduce the positive pressure value of the primary steam to the negative pressure value after the temperature reduction and depressurization, and is especially suitable for the steam supply for the low vacuum equipment. The device can be directly connected with the DCS control system through the intelligent positioner, and can also be matched with the automatic control cabinet which is produced by the company to realize the local control regulation and operation, and has the advantages of high adjusting precision, quick response and high sensitivity.



Thermal Commutation type Temperature and Pressure Reducing Device

The device is used for mixing the high speed steam generated by the primary steam at a high pressure drop through the nozzle and the steam which is lower than the outlet parameters, to get the required pressure and temperature after the boost of the diffuser. This device is energy-saving products, using waste steam of low temperature and low pressure instead of water supply system and pump for ordinary pressure relief device, the equipment is greatly simplified, reducing the space occupied and investment; it's better to fix flow regulating valve on the inlet of primary steam and low pressure steam.



Note: this device is a new product developed by our company, and has achieved a satisfactory effect after the user's application, and has achieved good economic benefits, your visit will be highly appreciated, our company accept to design and manufacture according to the customized parameters and requirements.