ZZYP TYPE AUTOMATIC PRESSURE REGULATING CONTROLL VALVE

OPERATION INSTRUCTION

Catalogue

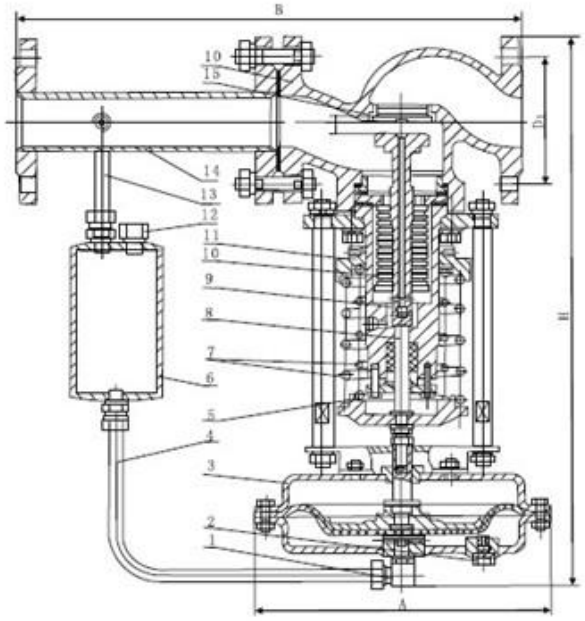
1. Application and feature

ZZYP type pressure regulating valve is a self-regulating actuator product that reply on the medium's energy to realize regulation fucntion without any extra energy . The most important feature of the product is that it can work without electricity and gas power which is very saving energy . And we can adjust the pressure value when it is working . This valve is widely used in oil, chemical, electricity, metallurgy, food, light textile, machinery and residents buildings and etc industries to control the gas, liquid and steam to reduce pressure, inlet pressure regulation, or relief pressure , outlet pressure regulation. This valve is performing fast and with very good seal.

2. Structure and working principle

The control valve is consisted of detecting actuator , regulating control valve, condenser and outlet pipe . (the structure as drawing 1).

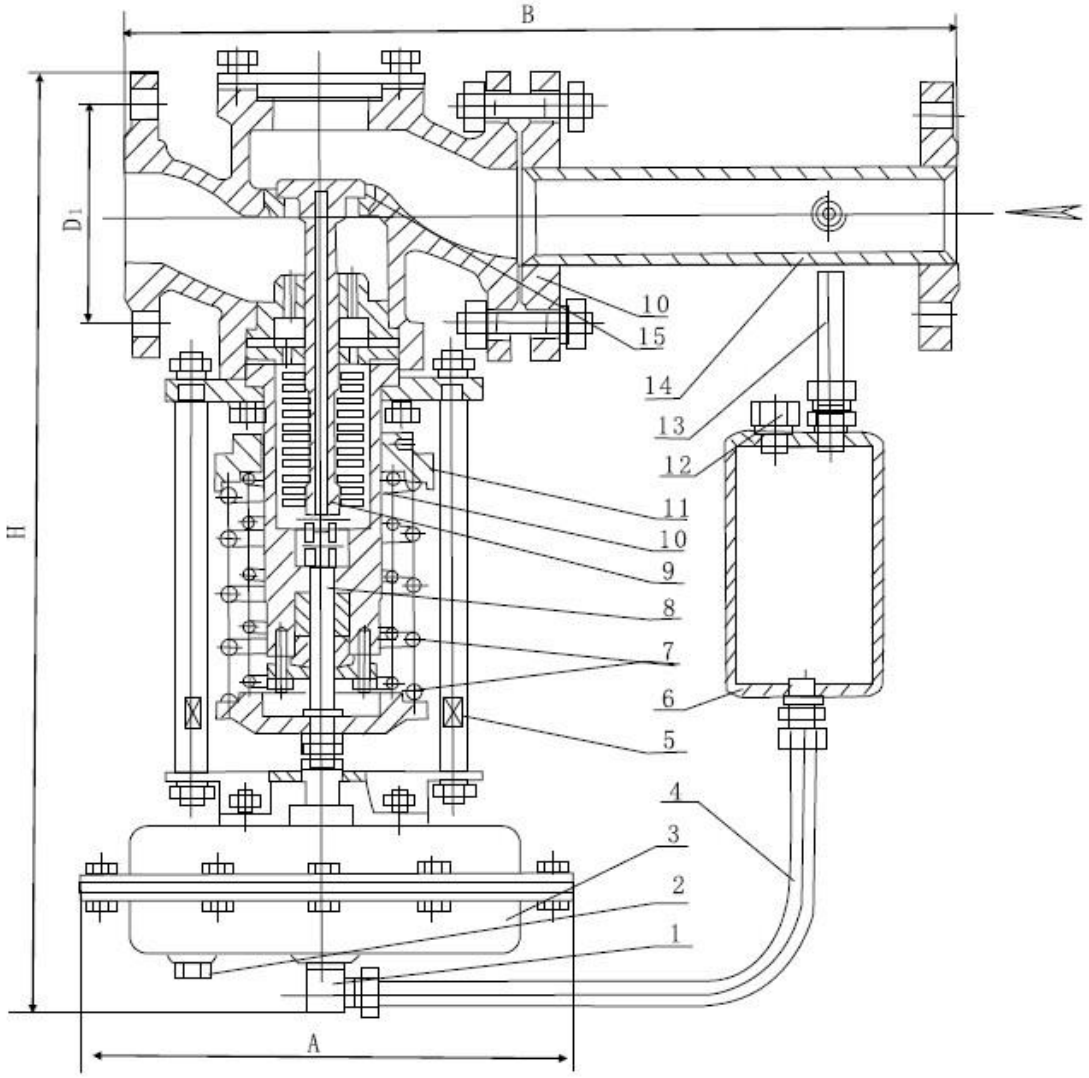
Drawing-1a is pressure regulating valve used for controlling outlet pressure . Mode of action is pressure closed . The working principle is : medium flow into the valve body, then into valve core, and then throttling by valve seat then flow out . The other way is used when the medium is steam, the medium go through condenser and goes into the actuator and act on the diaphragm, at the same time the valve core's place is also changed, in this case the valves realize to reduce pressure and steady pressure . If outlet pressure is increased, the power acting on diaphragm is increasing accordingly, then the spring is compressed and drive valve core , than the opening channel is becoming smaller and smaller until the outlet pressure reduced the set value . The same principle , if outlet pressure is decreased ,the power that act on diaphragm is decreasing , because of compress spring's Reacting force it can drive the valve core , than the opening channel is becoming bigger and bigger until the outlet pressure increased the set value.



1. inlet ferrule
2. Exhaust plug
3. detection actuator
4. inlet pipe
5. Gland screw
6. condenser
7. spring
8. valve rod
9. valve core
10. bellows
11. regulate pressure plate
12. screws
13. take prssure pipe
14. outlet pipe
15. valve seat
16. valve body

Drawing-1a ZZYP-16B pressure regulating valve

Drawing-b. is pressure regulating valve used for controlling inlet pressure . Mode of action is pressure open type .The working principle is : medium flow into the valve body as the direction of arrow, The other way is used when the medium is steam , the medium go through condenser and goes into the actuator and act on the diaphragm, at the same time the valve core's place is also changed, in this case the valves realize to reduce pressure and steady pressure . If inlet pressure is increased, the power acting on diaphragm is increasing accordingly, then the spring is compressed and drive valve core , than the opening channel is becoming bigger and bigger until the inlet pressure reduced the set value . The same principle , if inlet pressure is decreased ,the power that act on diaphragm is decreasing , because of compress spring's Reacting force it can drive the valve core , than the opening channel is becoming smaller and smaller until the outlet pressure increased the set value.



Drawing-1b ZZYP-16B pressure regulating valve

1.inlet ferrule 2.Exhaust plug 3.detection actuator 4.inlet pipe 5.Gland screw 6.condenser 7.spring 8.valve rod 9.valve core 10.bellows 11.regulate pressure plate 12.screws 13.take pressure pipe 14.outlet pipe 15.valve seat 16.valve body

3.Main technical data and property index ,material

1)Main technical data and property index Form 1

size DN (mm)		20	25	32	40	50	65	80	100	125	150	200	250	300
flow coefficient(Kv)		7	11	20	30	48	75	120	190	300	480	760	1100	1750
Flow (mm)		8		10		14	20		25	40		50	60	70
Pressure PN (MPa)		1.6、4.0、6.4												
Pressure regulate rage (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 600~1500 1000~2500												
Flow feater		Quick opten												
Regulate precision(%)		±5												
Temperature (℃)		≤350												
Allowed leak quantity	Hard seal (l/h)	Single seat $\leq 10^{-4}$ Valve's nominal capacity (Ⅳ级) ; Double seat : $\leq 5\times10^{-4}$ Valve's nominal capacity (Ⅱ级)												
	Soft seal (ml/h)	0.15		0.30		0.45	0.60	0.90	1.7	4.0		6.75	11.10	11.60
Pressure reducing ratio	Max	10												
	Min	1.25												

2) Pressure regulating rang

Pressure regulating rang has several stages, details please see the form of Main technical parameters and property index. It is better to choose the middle value of the pressure range. (refer form1).

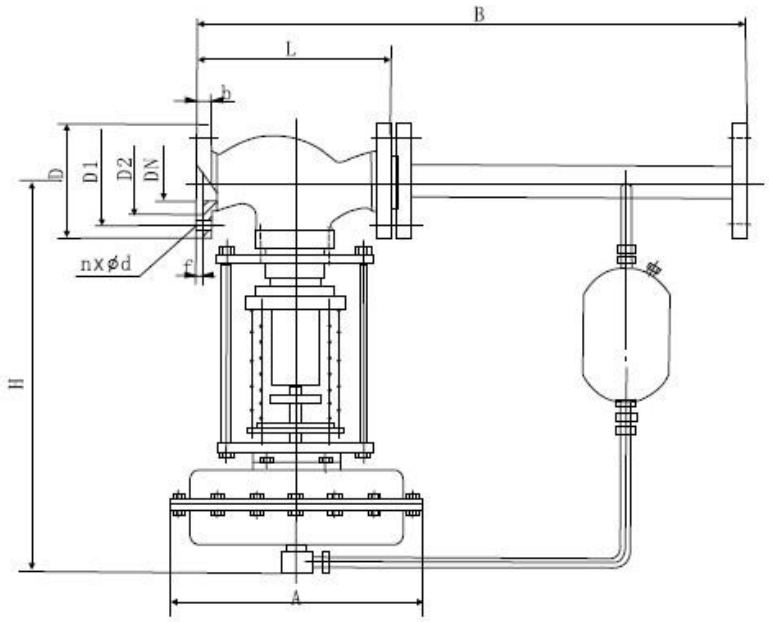
3) Outlet pressure regulating valve and relation between inlet pressure and out pressure.

Automatic regulating valve is a regulating system and there is some requirements for reducing pressure . For B type outlet pressure regulating valve , in order to guarantee the outlet pressure in a proper range , the inlet pressure must achieve a proper number . Requirement please see Form 2.

Form2

Inlet pressure KPa	30	50	100	150	200	250	300	350	400	450	500	550	600
Outlet pressure KPa	15~24	15~40	15~80	15~120	20~160	25~200	30~240	35~280	40~320	45~360	50~400	55~440	60~480
Inlet pressure KPa	650	700	750	800	850	900	950	1000	1250	1500	2000	2500	3000
Outlet pressure KPa	65~520	170~560	75~600	80~640	85~680	90~720	95~760	100~800	125~1000	150~1200	200~1600	250~2000	300~2400

Sharp dimension drawing



4)Sharp dimension and weight Unit :mm Form 3

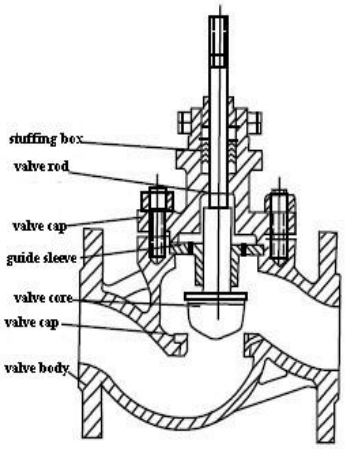
Size DN			20	25	32	40	50	65	80	100	125	150	200	250	300
Flange's adapter size B			383		512		603	862		1023	1380		1800	2000	2200
Flange face to face dimension L			150	160	180	200	230	290	310	350	400	480	600	730	850
Pressure regulate range KPa	15-140	H	475		520		540	710		780	840	880	915	940	1000
		A	280		308										
	130-300	H	455		500		520	690		760	800	870	880	900	950
		A	230												
	280-500	H	450		490		510	680		750	790	860	870	890	940
		A	176					194			280				
	480-1000	H	445		480			670		740	780	850	860	880	930
		A	176					194			280				
	600-1500	H	445		570		600	820		890	950		1000	1100	1200
		A	85		96										
	1000-2500	H	445		570		600	820		890	950		1000	1100	1200
		A	85		96										
Weight kg			26		37		42	72	90	114	130	144	180	200	250
Adaper's screw			M16□1.5												

5)Main parts' material (Form 4)

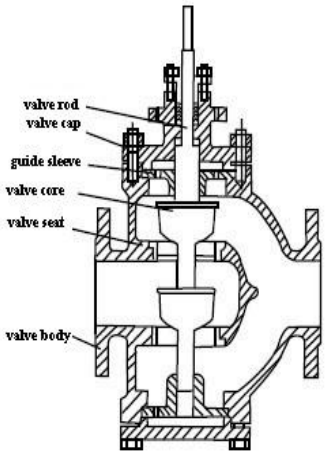
Form 4

Parts' name	Metarial
Valve body	ZG230-450、ZGlCr18Ni9Ti、ZGCr18Ni12Mo2Ti
Valve core	lCr18Ni9Ti、Cr18Ni12Mo2Ti
Valve seat	lCr18Ni9Ti、Cr18Ni12Mo2Ti
Valve rod	lCr18Ni9Ti、Cr18Ni12Mo2Ti
Rubber diaphragm	Chemigum, EPR, FKM, Oil resistant rubber
Diaphragm cap	A3、A4 Steel coated TFE
Filter	PTFE, soft graphite

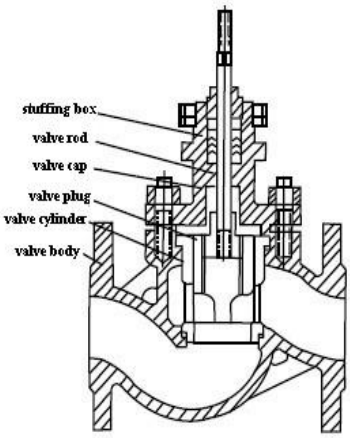
Valve core structure types



Single-seat regulating valve

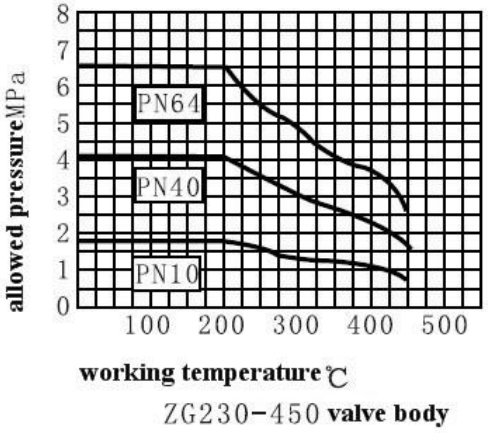


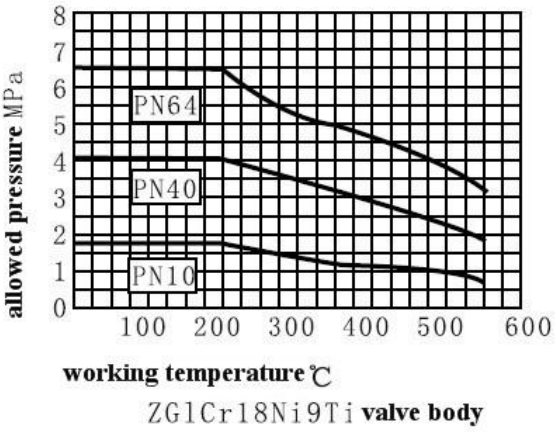
double-seat regulating valve



sleeve regulating valve

Valve body working temperature and allowed pressure

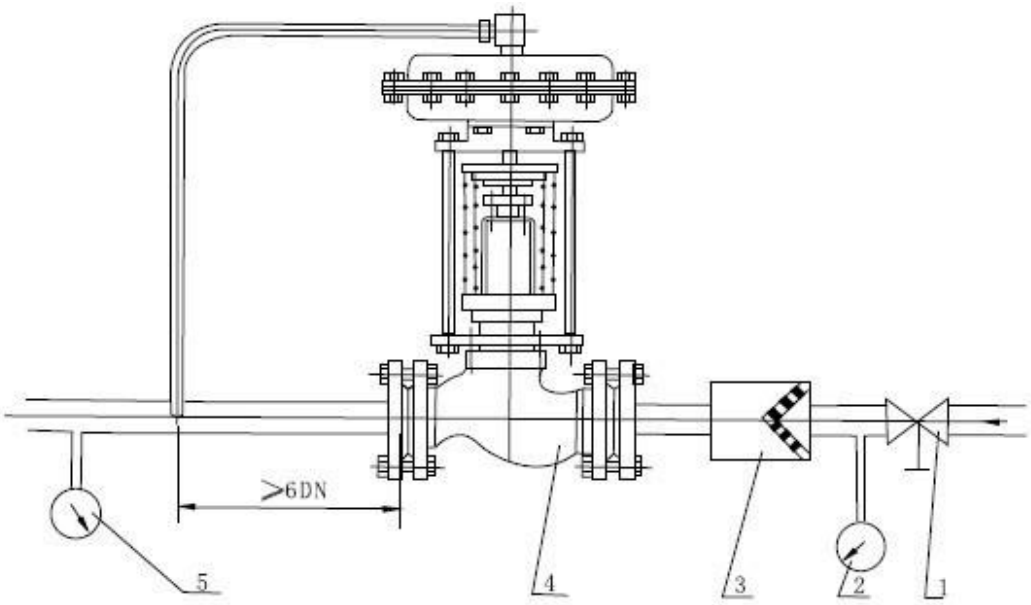




4. Installation ,use and maintenance

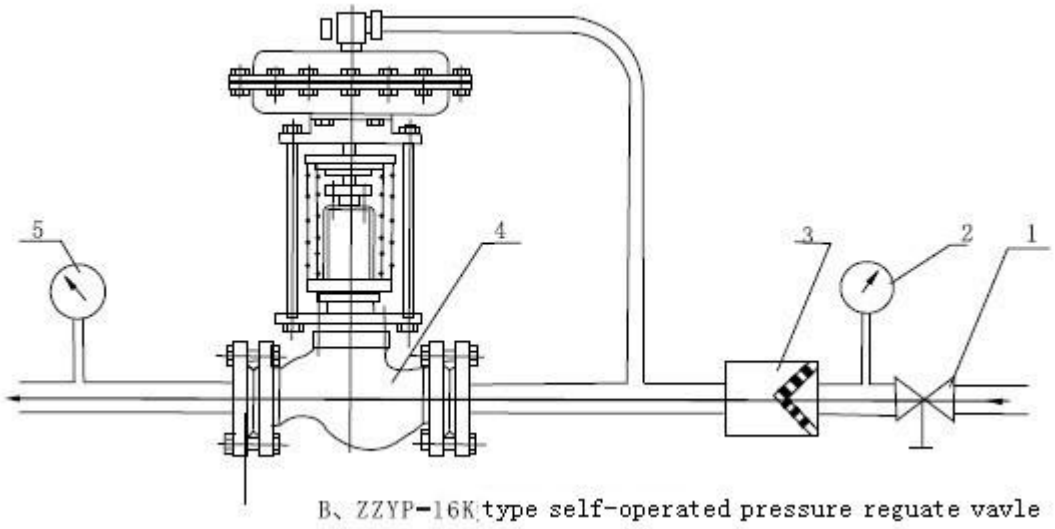
1)Installation

When the valve is working in gas or other low viscous liquid medium (normal temperature (≤80C) , the valve is installed on horizontal direction in upright direction like pneumatic diaphragm regulating valve. Details as drawing 3 .



A、ZZYP-16B type self-operated pressure valve

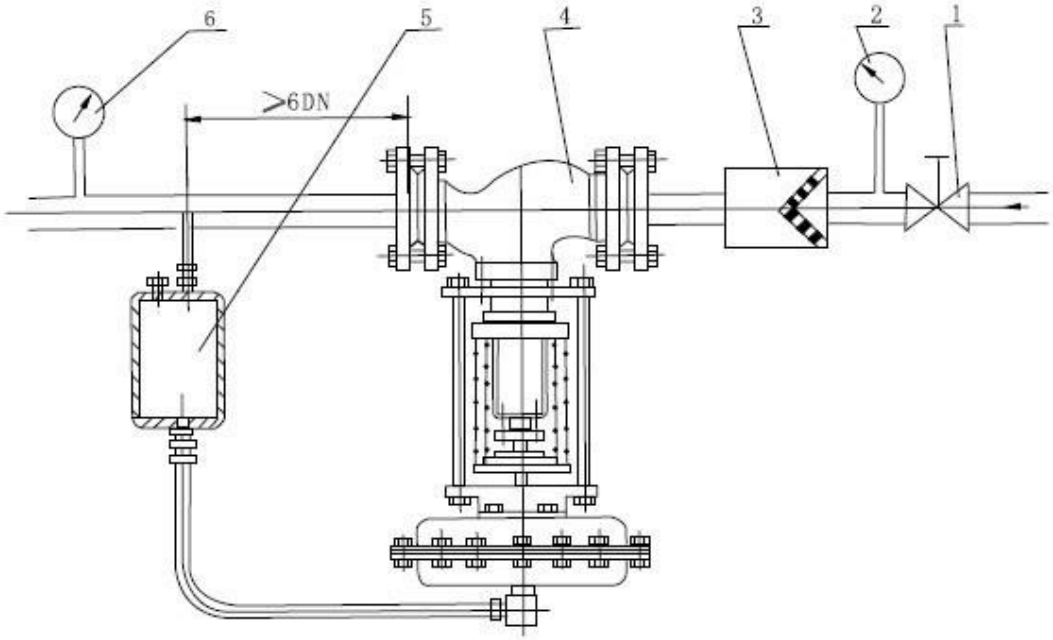
1. globe valve 2.pressure gauge 3.filter 4.self-operated pressure regulating valve 5.pressure gauge



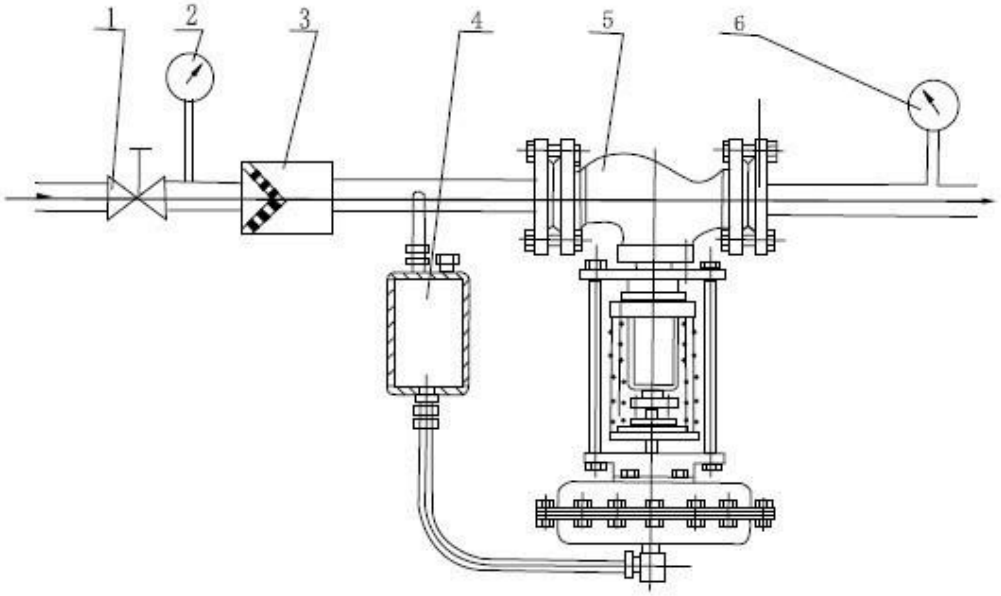
B、ZZYP-16K type self-operated pressure reguate vavle

Drawing 3 Installation : The medium is gas or other low viscous liquid

If the medium is steam , the regulating valve must be installed on horizontal pipe in inverted direction . As drawing 4 .



A、ZZYP-16B type regulate valve



B、ZZYP-16K type regulate valve

1.globe valve 2.6. pressure gauge 3.filter 4.condenser 5.regulating valve

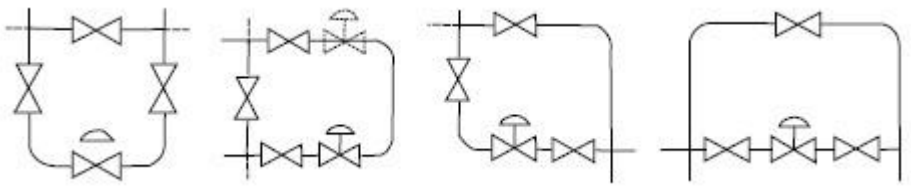
Drawing 4 Installation : the medium is steam

When you install the valve pleas note these points:

A)Condenser must be higher than valve's actuator but lower than outlet's connecting pipe (for outlet regulating valve) or inlet's connecting pipe (for inlet regulating valve) , to guarantee the condenser is filled with condenser liquid .

B)Pressure measuring point should take a suitable place , inlet pressure valve should be further than 2 times of the pipe diameter , outlet regulating valve should be further than 6 times of pipe diameter.

C)In order to convenient for maintenance and operation ,there is be leaving some space for the regulating valve. Before and after the valve, there should be installing globe valve and bypass manual valve. Details as drawing 5



Drawing 5 installation plans

Note: The dotted line' meaning : another proper direction for inlet and outlet .

D)If the regulating valve size is too large (DN≥100), should install bracket .

E)Medium flow's direction should be the same as the arrow on the valve body . Inlet and outlet pipe center , regulating valve's flanges center must be in line to avoid valve body bearing too heavy stress .

F) Before the regulating valve, we should set a filter to avoid blocked by impurities in the medium .

G)Regulating valve should be installed in proper environment that the temperature is -25℃~~55℃ .

2. Usage

Operational program for gas or low viscosity at normal temperature . See drawing 3.

A).

B)Loosen exhaust plug until the gas or liquid flow out from actuator.

C)Than tightened exhaust plug , the regulating valve can working now . The pressure can be adjusted by pressure regulate plate . Pay attention to the pressure value , action should be slow , don't let valve rod moving with .

Operational program for steam. See drawing 4.

A)remove the entrance screws from condenser .

B)Loosen exhaust plug

C)Use drain head to add water through entrance mouth until water flow out from vent .

D)Tighten exhaust plug, continue adding water until it flow out entrance .

E)Tighten screws of entrance.

F) Open the globe valve before and after the regulating valve slowly

G)Adjusted pressure regulate plate, and pay attention to the pressure number until achieve the requirement .

3. Maintenance

After the regulating valve is running normally, generally maintain workload is very small, only need to observe the pressure value is whether at the proper rang that suit for your application . And observe whether the stuffing box and actuator is leaking . If it is leaking, please tighten or replace padding and diaphragm.

Form 5

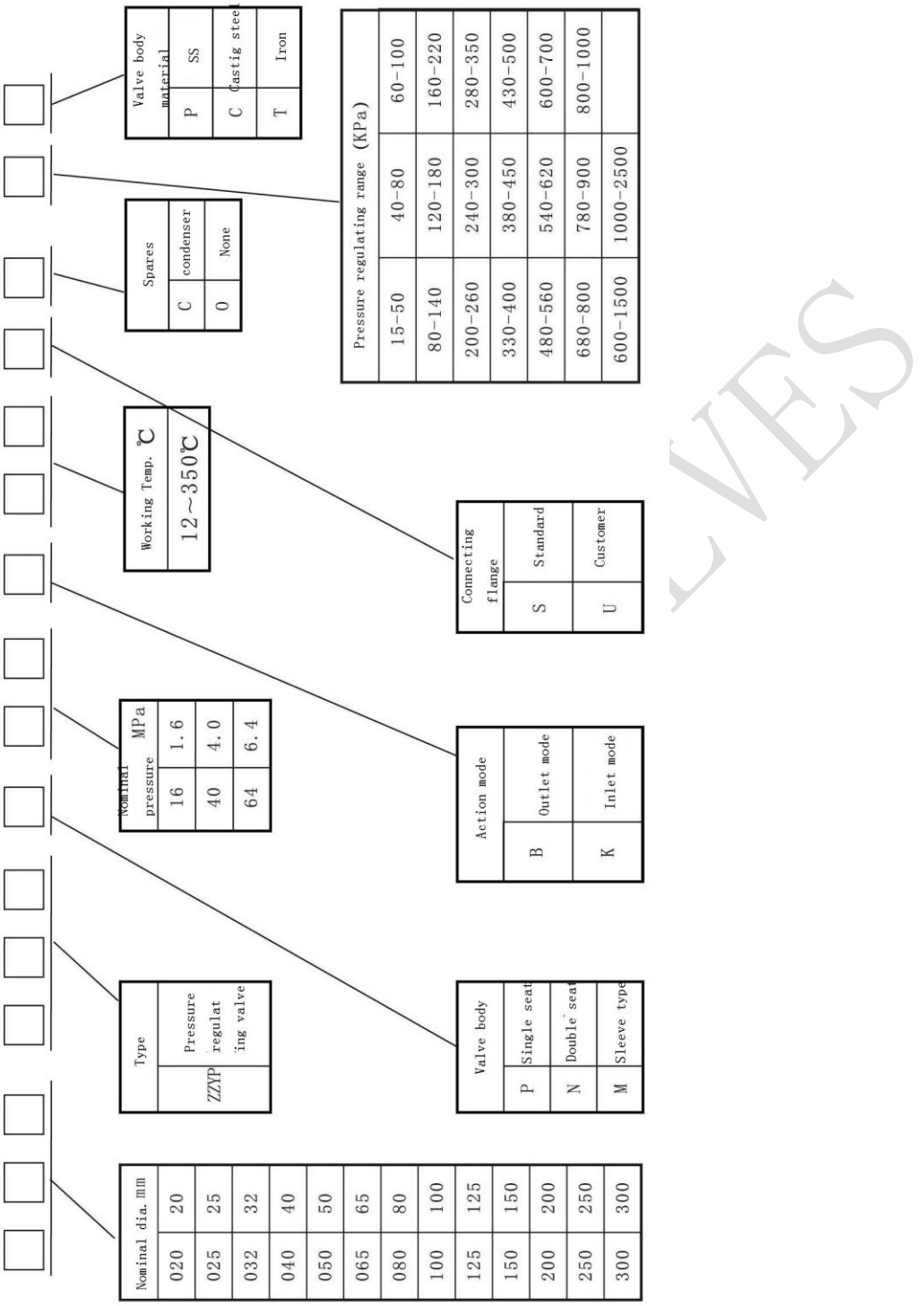
Fault phenomenon	Reason	Method
Outlet pressure is changing when inlet pressure changes	1.valve core get stuck 2.Valve rod, plush rod get stuck 3.Entrance pipe locked.	1.disassemble and reassemble again 2.Adjusted again 3.Dredge
Outlet pressure can't decrease, staying higher than requirement value	1.set spring stiffness too large 2.Valve dia. too big 3.Inlet pressure too high, pressure reducing ratio too large	1.replace spring 2.Use less size diam. valve 3.Inlet pressure: if outlet pressure >10:1 , should be decrease two stage's pressure
Outlet pressure can't increase , staying lower than requirement value	1.set spring stiffness too light 2.Valve dia too small 3. pressure reducing ratio too small.	1.replace spring 2.Use large size diam. 3.Inlet pressure:if outlet pressure <1:25 , should be increase inlet pressure
Inlet pressure can't increase , staying lower than requirement value	1.spring stiffness too light 2.Valve core locked 3.Valve rod, plush rod locked 4.valve cord, valve seat is damaged, leaked too heavy 5.valve's dia too large	1.replace spring 2.dismounting again 3.adjust again 4.grinding again or replace 6.lessen diam
inlet pressure can't decrease , staying higher than requirement value	1. stiffness too big 2.Valve dia too small 3.valve core , valve rod, plush rod are locked	1.replace spring 2.Use large size diam 3.Solve locked and adjust again
Outlet pressure or inlet pressure changes too often	1.valve dia too large 2.Actuator's capacity is too less	1.choose proper size diam 2.Add damper at entrance pipe

H How to order

When ordering please offer these information:

Type		Name	
Nominal Size		Nominal pressure	
Signal Range		Action mode	
Medium data		Working temp.	
Rated flow rate		Set flow feature	
Max inlet pressure Min inlet pressure Normal inlet pressure		Max outlet pressure Min outlet pressure Normal outlet pressure	
Max flow Min flow Normal flow		Liquid viscosity Liquid severe Gas severe	
Material : valve core Valve body Parts inside Padding		Remarks	
pipe size		Other requirements like collision resistant	
Regulating pressure range Regulating temperature range Pressure difference range Micro pressure difference range			

I. ZZYP regulating valve model



Example

050ZZYP10B12S0280-350P means the valve diameter is 50mm, valve seat pressure is 1.0MPA,the valve is outlet pressure regulating valve, the flanges is standard type, without condenser, pressure regulating range is 280-350KPA, the valve material is stainless steel.