

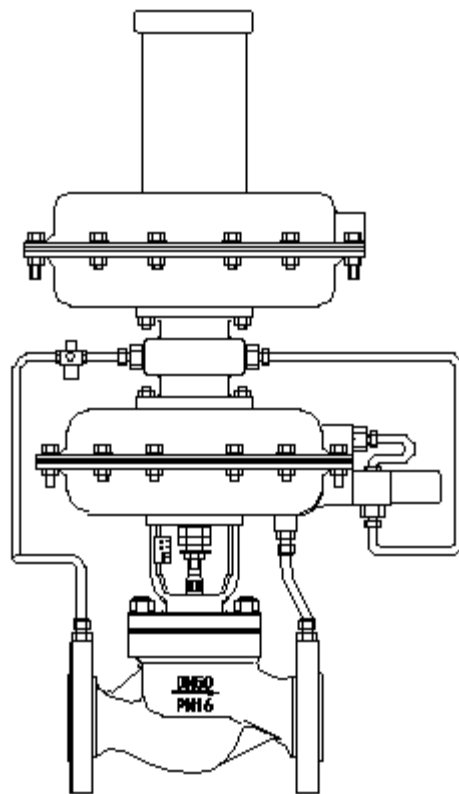
STANDARD SPECIFICATION

CHUANHU

指挥器操作式自力式压力调节阀

Pilot regulator operation type self-operated

Pressure regulator



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概述

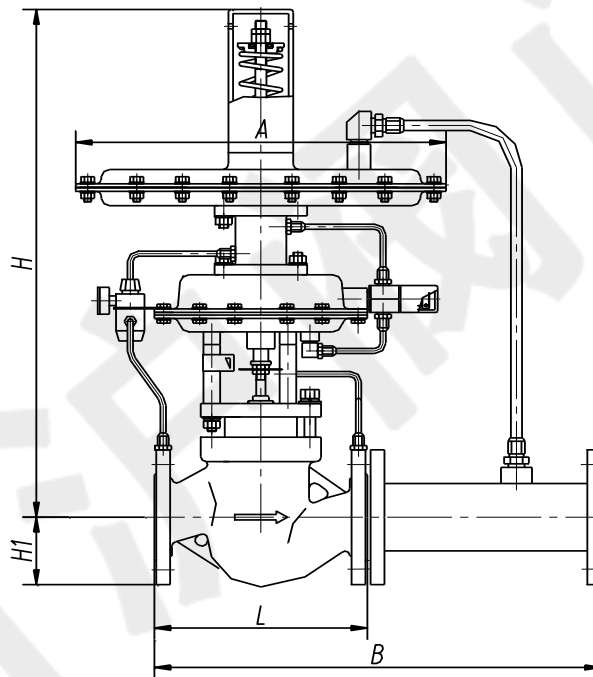
指挥器操作自力式压力调节阀（氮封阀），是一种无须外来能源，利用被调介质自身的压力变化达到自动调节和稳定阀后压力为设定值的节能型压力调节阀。

该阀压力设定在指挥器上实现，方便、快捷，压力设定值在运行中也可随意调整；控制精度高，可比一般 ZZY 型直接操作自力式压力调节阀高一倍，适合于控制精度要求高的场合。它广泛应用于化工、石油、冶金、电力、轻纺等工业部门中用作生产过程的自动调节。

GENERAL

Pilot operated self pressure regulating valve (nitrogen valve closure), is a kind of valve without external energy, by adjusting pressure medium itself to adjust and stabilize the downstream pressure for energy saving type pressure regulating valve.

In the command and control on the valve pressure setting, convenient, fast, pressure set value in operation can be optionally adjusted; high control accuracy, than the general ZZY direct operation of self pressure regulating valve twice as high, suitable for high requirement of control accuracy. It is widely used for automatic adjustment of the production process in chemical industry, petroleum, metallurgy, electric power, textile and other industrial sectors.



图一 指挥器操作型自力式微压调节阀

Figure 1 Pilot regulator operation type self-operated pressure regulator

结构与原理 STRUCTURE AND THEORY

指挥器操作自力式压力调节阀是由指挥器、调节阀、执行机构和阀后接管四部分组成。（见图一）

Pilot operated self pressure regulating valve is composed of a command, regulating valve, actuator and downstream pipe four parts. (see figure 1)

工作原理：介质以所示箭头方向进入阀体，一路经过滤减压后减压后的压力被引入指挥器；另一路通过阀芯、阀座，节流后的压力流向阀后，并通过导压管引入指挥器执行机构。当阀后压力高于设定压力时，其压力作用在指挥器薄膜有效面上产生一个推力带动指挥器阀芯关闭，切断引入主阀执行机构膜室中的压力，使主阀阀芯关闭，阀后压力随之降低。当阀后压力低于设定值时，由于指挥器主弹簧的反作用力打开指挥器阀芯，阀前压力又被引入主阀执行机构膜室产生推力，使主阀阀芯打开，阀后压力随之升高。如此往复，保持阀后压力为设定值。

Principle of work: the medium in the direction of the arrow shown into the body, through the filter reducer pressure, the pressure is introduced into the command; another way through the valve plug, seat, the pressure to the valve after the pressure guiding pipe, and through the introduction of control actuator. When the downstream pressure is higher than the set pressure, the pressure to produce a thrust in the command and control films surface to command and control spool off, cut into the main valve actuator membrane chamber pressure, the main valve closed, the downstream pressure decrease. When the downstream pressure is lower than the set value, the valve plug force open command main spring command device, the upstream pressure was introduced the main valve actuator membrane chamber to produce thrust, the main valve plug open, the pressure increasing valve. To keep the downstream pressure setting.

主要参数、性能指标与材料

MAIN PARAMETERS、PERFORMANC、MATERIAL

1、主要参数及主要性能指标见表一

表一

1. Main parameters and performance see table 1

table 1

公称通径 DN (mm) Body size	20		25	40	50	80	100	150					
阀座直径 (mm) Seat size	6	15	20	25	32	40	50	65	80	100	125	150	
额定流量系数 Kv Rated flow KV	0.32	5	8	11	20	30	48	75	120	190	300	480	
压力调节范围 KPa Pressure regulating range	0.1~0.5、0.4~5.0、4.0~12.0、												
公称压力 PN (MPa) Body ratings	1.6												
被调介质温度 (°C) Regulating medium tem	-5~+100												
流量特性 Flow characteristics	快开 Quick open												
调节精度 (%) Regulation accuracy	≤±5												
执行机构有效面积 (cm ²) Actuator effective area	100				200			280		400			
信号接口 Signal interface	内螺纹 M10×1 Internal thread M10×1										M16X1		

2、压力调节范围见表二

表二

Pressure regulating range see table 2

table 2

压力调节范围 (KPa) Pressure regulating range	指挥器膜室 有效面积 (cm ²) Pilot valve membrane effective area	执行机构膜室 有效面积 (cm ²) Actuator membrane effective area	使用阀门口径 (mm) Valve size
0.1~0.5	1200	100	20~32
0.4~5.0	600		
4.0~12.0	400		
0.1~0.5	1200	200	40~50
0.4~5.0	600		
4.0~12.0	400		
0.1~0.5	1200	400	65~100
0.4~5.0	600		
4.0~12.0	400		
0.1~0.5	1200	600	125~150
0.4~5.0	600		
4.0~12.0	400		

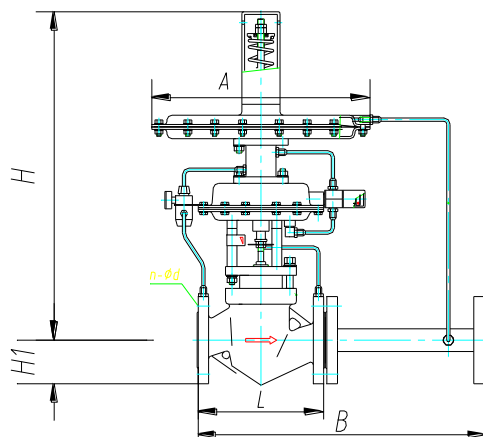
3、主要零件材料见表三

表三

Main material see table 3

table 3

零件名称 Name	材 料 Material
气动活塞式执行机构, 指挥器 Pneumatic piston actuator, director	组合件 Assembly
阀体, 阀盖 Valve body, valve cover	ZG230-450, ZG0Cr18Ni9Ti, ZG0Cr18Ni12Mo2Ti
推杆, 阀杆 Push rod, stem	2Cr13, 1Cr18Ni9
阀座 seat	1Cr18Ni9Ti
阀芯 (软密封) / 填料 Plug (soft seal) / Packing	聚四氟乙烯 PTFE
波纹膜片 Corrugated diaphragm	丁腈橡胶夹增强涤纶织物 Nitrile rubber reinforcing polyester fabric
弹簧 Spring	1Cr18Ni9Ti、60Si2Mn



图二 外形图 Figure 2 Outside drawing

4、外形尺寸见表四、图二

表四 单位: mm

Dimensions shown in table 4, figure 2

Table 4 Unit: mm

公称通径 Body size	L	B	H1	H		
				A=1200 cm ²	A=600 cm ²	A=400 cm ²
				压力调节范围 (KPa) Pressure regulating range (KPa)		
				0.1~0.5	0.4~5.0	0.5~7
20	150	383	53	605	554	554
25	160		58	605	554	554
32	180	512	70	615	564	564
40	200		75	640	589	589
50	230	603	83	655	604	604
65	290	862	93	722	671	671
80	310		100	738	687	687
100	350	1023	110	755	704	704
125	400	1380	125	918	867	867
150	480		143	1.25	974	974

注: 1)标准法兰连接形式PN16为凸面,连接尺寸铸铁法兰按GB4216.5-84,铸钢法兰按GB9113-2000、JB/T-94,阀体法兰及法兰端面距也可按用户指定标准制造,如:ANSI, JIS, DIN等标准。

2)接管根据用户需要配置

Note: 1) The standard flange connection form of PN16 is a RF, connecting dimensions of GB4216.5-84 cast iron flanges, steel flanges GB9113-2000, JB/T-94, body flange and flange face away from the user can also be specified standards for manufacturing, such as: ANSI, JIS, DIN and other standards.

2) Pipe according to the needs of the user configuration

5、产品重量见表五

表五 单位: Kg

The weight of the products see table 5

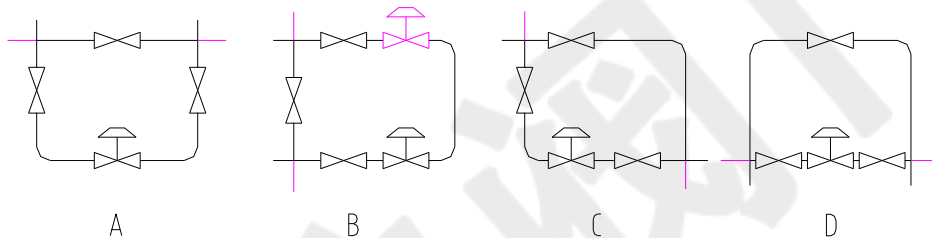
Table 5 Unit: Kg

公称通径 (mm) Body size	20	25	32	40	50	65	80	100	125	150
A=400cm ²	18	18	25	27	40	55	80	108	130	150
A=600 cm ²	20	20	27	30	45	60	86	115	140	160
A=1200 cm ²	22	22	30	34	50	66	92	120	150	170

安装、维护与调试

1、安装（见图三）

- 1) 检查整机零件是否缺损与松动，对使用有害人体健康的介质，必须进行强度、密封、泄漏与精度测试。
- 2) 在安装前，对管道进行清洗（否则由于焊渣等管道垃圾，损坏阀芯密封面，导致阀门不能正常工作），阀门入口处要有足够的直管段，并配有过滤器。阀体与管道的法兰连接，要注意同轴度。
- 3) 安装场地应考虑到人员与设备的安全，即便于操作，又有利于拆装与维修。
- 4) 阀门应正立垂直安装在水平管道上，导压管必须安装在距离阀出口至少六倍于公称通径的阀后管道上。阀自重较大与有振动的场合，要用支撑架，尽量避免水平安装。
- 5) 介质流动方向应与阀体上的箭头指向一致。因微压阀属于精密仪表，其中指挥器膜片直接承受介质压力，若阀门反装或管道有反冲压力，则指挥器膜片由于受压过高导致膜片损坏，阀门不能工作。阀门应在环境温度 $-25\sim+55^{\circ}\text{C}$ 场所使用。
- 6) 为使自控系统失灵或检修阀门时，仍能连续生产，应设置旁路阀（见图三）。



图三 阀组安装方案

注：图中虚线表示管道出入口的另一种允许方向

维护：

- 1) 清洗阀门：对清洗一般介质，只要用水洗净就可以。但对清洗有害健康的介质，首先要了解其性质，在选用相应的清洗办法。
- 2) 阀门的拆卸：将外露表面生锈的零件先除锈，但在除锈前，要保护好阀座、阀芯、阀杆与推杆等精密零件的加工表面。拆装阀座时应使用专用工具。
- 3) 阀芯、阀座：二密封面有较小的锈斑与磨损，可用机械加工的方法进行修理，如损坏严重必须换新。但不管修理或更换后的硬密封面，都必须进行研磨。
- 4) 阀杆：表面损坏，必须换新。
- 5) 压缩弹簧：如有裂纹等影响强度的缺陷，必须换新。
- 6) 易损零件：填料、密封垫片与 O 型圈，每次检修时，全部换新。膜片必须检查是否有预示将来可能发生裂纹、老化与腐蚀等痕迹，根据检验结果，决定是否更换，但膜片使用期一般最多 2~3 年。
- 7) 阀门组装要注意对中，螺栓要在对角线上拧紧，滑动部分要加润滑油。组装后应按产品出厂测试项目与方法调试，并在这期间，可更准确地调整填料压紧力与阀芯关闭位置。

调试

所需要压力值是通过对手指挥器顶部的调节螺母的操作而得到调整，打开顶部的防尘盖，用扳手调整调节螺母。顺时针方向旋转使压力增大，逆时针旋转则压力减小。安装在压力调节阀后的压力表，可使工作人员借以观察调整后的压力给定值。

INSTALLATION, MAINTENANCE AND DEBUGGING

Installation (see Figure 3)

1) To check whether the defect and loose machine parts, harmful to human health and the use of the media, must be strength, sealing, leakage and accuracy test.

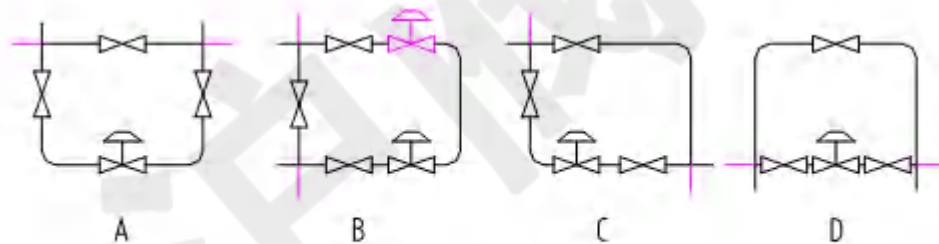
2) Before installation, the pipe cleaning (otherwise the pipe due to welding slag waste, damage to the sealing surface of the valve, causing the valve does not work), the valve inlet have enough straight pipe, and with a filter. Flanged valve and pipeline connections, pay attention to concentricity.

3) Installation site should take into account the safety of personnel and equipment, even in operation, but also conducive to disassembly and repair.

4) Valve should be installed vertically upright on a horizontal pipe, pressure pipe guide must be installed on at least six times the distance of the valve outlet to the nominal diameter of the valve after the pipe. Large and heavy vibration valve occasions, use cage, try to avoid horizontal mounting.

5) Medium flow direction arrow on the body should be pointing the same. Due to micro-pressure valves are precision instruments, including the pilot diaphragm directly under media pressure, if the anti-loaded valves or pipes have recoil pressure, the pilot diaphragm damage due to pressure caused by excessive diaphragm valve is not working. The valve should be at an ambient temperature $-25 \sim +55\text{ }^{\circ}\text{C}$ places.

6) To make the automatic control system malfunction or repair valves, still continuous production, should set the bypass valve (see Figure 3).



图三 阀组安装方案

注：图中虚线表示管道出入口的另一种允许方向

Maintenance:

1) Cleaning Valves: For cleaning general media, as long as it can be washed with water. But for the cleaning media is harmful to health, we must first understand its nature, in the selection of the appropriate cleaning solution.

2) The dismantling of valve: the exposed surface of rusty parts to rust, but before the rust, to protect the seat, the valve stem and machining precision parts, such as putting surface. Removable seat should be used with special tools.

3) Plug, valve seat: two smaller sealing surface rust and wear, machining methods are available for repairs, such as serious damage must be replaced. But regardless of hard sealing surface after repair or replacement, must be polished.

4) Stem: surface damage, must be replaced.

5) Compression spring: If defects such as cracks affect the strength must be replaced.

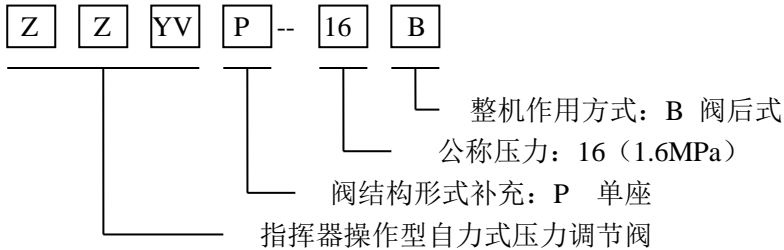
6) Quick-wear parts: packing, gaskets and O-rings, overhaul, all the new ones each time. Diaphragm must check indicates possible future cracks, corrosion, and other signs of aging and, according to test results, decide whether to replace, but the use of the diaphragm is generally up to 2 to 3 years.

7) To pay attention to the valve assembly, the bolt to be tightened on the diagonal, the sliding part to add oil. Shall be factory assembled and tested method of project commissioning, and during which more accurately adjust the filler valve in the closed position and the clamping force.

Debugging

The required pressure value is through the top of the pilot operation of the adjusting nut is adjusted, open the dust cover at the top of the adjusting nut with a wrench to adjust. Clockwise the pressure increases, the counterclockwise rotation, the pressure decreases. After the pressure gauge installed in the pressure regulating valve, in order to allow observation of the adjusted pressure setpoint staff.

型号编制说明 MODEL COMPILATION



订货须知 ORDERING INFORMATION

订货时请注明下列内容

- 1) 阀门型号
- 2) 通径×阀座尺寸 Kv 值
- 3) 阀体压力及连接形式
- 4) 阀体和阀内组件的材料
- 5) 阀特性及阀芯的形式
- 6) 上阀盖形式
- 7) 执行机构形式, 是否带手轮机构及供气压力
- 8) 气关式或气开式
- 9) 附件 (带过滤器减压阀等)
- 10) 特殊要求 (禁水处理, 禁铜等)
- 11) 介质名称
- 12) 正常流量及最大流量
- 13) 介质压力, 阀全开和全闭时阀进口和出口压力
- 14) 介质温度和比重
- 15) 介质粘度, 是否含有悬浊液, 是否有闪蒸现象。

When ordering, please indicate the following contents

- 1) Valve type
- 2) Body size * seat size and Kv value
- 3) Valve pressure and connection type
- 4) Assembly valve body and material
- 5) Valve characteristics and plug
- 6) Valve cover
- 7) Actuator, with the hand wheel and air pressure
- 8) Air to close or open
- 9) With filter valve etc.
- 10) Special requirements (no water, no copper)
- 11) Medium name
- 12) Normal flow and maximum flow
- 13) The media pressure, the valve fully open and fully closed valve inlet and outlet pressure
- 14) Medium temperature and density
- 15) Medium viscosity, whether it contains suspension, whether there is a flash phenomenon.



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