

### 1. introduction of the product

This type of product is good to be used in the industry factory, high building, water system, it can take the place of the water tank in the building where require to reduce the static pressure and the dynamic pressure, expand the usage room. Valve adopts whole pipeline steamline design, to achieve the small resistance and big flow. In transmission, it adopts waterpower handling, that is automatically handle the move of the main valve plate by the water pressure in the pipeline, control the opening degree of the valve, adjust the downriver pressure to maintain the designed figure. When the downriver pressure exceeds the designed pressure figure, the reduce valve will close automatically. No matter what the inlet pressure P1 changes, it can supply the stable outlet pressure P2. No matter what the downriver pressure changes, it can supply the outlet pressure P2 in the designed figure of lead valve. The scope of the outlet pressure is from 10% to 80% of the pressure before valve by the adjusting the lead valve. The valve works stable without water hammer impact.

### 2. structure

The valve is combined by the main valve, lead valve, needle valve, ball valve, mini strainer and gauges etc. As lead valve,needle valve and gauges are connected with main valve by the pipe, we called them the pipe control system. According to the different demand on the diameter of the pipe,the valves are divided into two types: spacer type and piston type, as below drawing:

spacer type structure

piston type structure

### 3. Main parts and material

No	part name	Material	No.	part name	Material
1	Valve body	Cast iron , cast steel, stainless steel	8	Press plate for spacer	Brass, stainless steel
2	Valve seat	Brass,stainless steel	9	Lead valve	brass
3	Seal seat	Strengthen rubber	11.17	Gauge	
4	Press plate	Brass, stainless steel	12	Compresss spring	Stainless steel
5	Valve plate	Brass,stainless steel	13	Valve pole	Stainless steel
6.10.16	Ball valve	Brass	14	Valve cover	Cast iron, cast steel, stainless steel
7	spacer	Strengthen rubber	15	Needle valve	Brass

#### 4.working principle

Inlet pressure P1 enter the control room of the main valve through the pipe and needle valve 15, then give the down pressure P3. Outlet pressure P2 under spacer(or the piston ) resist the spring of the lead valve through the pipe also. When the down pressure exceed the designed pressure of the lead valve, the lead valve will close to make the excretive water in the control room to be 0 , changeable pressure P3 reach the maximum figure ,then the main valve plate presses the valve seat tightly and the reduce valve closes. Once the downriver pressure P2 goes down to the designed figure, the lead valve will open, the water in the control room will excrete to the downriver throught the lead valve 9 and ball valve 6. As the needle valve's opening degree is small and the diameter of inlet pipe is smaller than that of the outlet pipe, the excreting speed is faster that the incoming speed of water by the inlet pressure, which makes the pressure P3 in the control room lower. The inlet pressure P1 which make up pressure on the main valve plate lift the main valve plate up, then the reduce valve open. In the moving adjusting condition, when the excreting flow is equal to the incoming flow, the opening degree of the main valve does not change and the downflow pressure is stable.(This is the working principle for both the spacer type valve and piston type valve)

#### 5.Main technical function

Nominal pressure PN	1.0Mpa	1.6Mpa	2.5Mpa
Testing pressure of cover	1.5Mpa	2.4Mpa	3.75Mpa
Testing pressure of seal	1.1Mpa	1.76Mpa	2.75Mpa
Maximum inlet pressure	1.0Mpa	1.6Mpa	2.5Mpa
Adjustable scope of outlet pressure	0.09-0.8Mpa	0.10-1.2Mpa	0.15-1.6Mpa
applicable temperature	0C-80C		
applicable medium	water		

#### 6. shape dimension

spacer type

## **7. Install and adjust**

- a. It is better to install the main valve horizontal with upturned valve's cover. Other install way also works.
- b. Clean up the pipe system and remove the impurity before water comes through the valve.
- c. Should install the Y strainer before the valve and clean the valve once per half year(or one year)
- d. It is better to install the main valve horizontal with upturned valve's cover. If install the valve vertically, the usage life of the valve will be shorter.
- e. When the proportion of reduced pressure is more than 4:1, it is suggested to install two valves to reduce pressure so can reduce the air rust and extend the usage life.
- f. Bypass pipe isolated valve should be closed tightly, it is suggested to use the good quality stop valve or butterfly valve.

## **8. adjusting procedure**

lead valve 9 and the pipe control system are assembled and adjusted before being sold. You can also adjust the pressure if the designed pressure of lead valve 9 is not applicable to the actual usage.

- a. First release safty cover of the lead valve 9, turn the adjusting screw of the lead valve 9 to the top position (relative outlet lowest pressure ).
- b. Turn clockwise the adjusting screw of the lead valve 9 until the outlet pressure is up to the pressure you need. Then mount the safty cover of the lead valve.
- c. Adjust the opening degree of the needle valve 15 until the flow through the needle valve 15 and the flow through the lead valve 9 balance, by the time the downriver pressure is more stable. (turn clockwise the handle of the needle valve 15 is to reduce the opening degree, turn anti-clockwise the handle is to increase the opening degree.)
- d. If the pressure just adjusted is more than what you need, you need to adjust from first step as you can only adjust from low pressure to high pressure.

## **9. Main valve maintenance**

Reduce valve is one kind of water lubricating valve, do not need extra lubricating oil. If the parts inside of the valve are damaged, PLS follow below instruction to dismount the valve.(remark: the easily damaged parts are the seal gasket and the spacer, other metal parts are not easily damaged)

- a. close the front gate valve and back gate valve.
- b. Loosen all the screws on the assemble pipe connection of the main valve cover so that the pressure inside of the valve released.
- c. Take off all the screws including some brass pipes and the nut in the control pipe system.
- d. Take off the valve cover and spring
- e. Take the shaft, spacer (piston)etc, make sure not damage the spacer.
- f. Check all the parts you take especially the spacer and the seal gasket to see if any of them are damaged. If not, PLS dismount other inside parts.

- g. If you found that the spacer or the seal gasket are damaged, PLS release the screw on the shaft, take slowly the spacer or the seal gasket out, mount the new spacer or the seal gasket.
- h. check carefully if the inner valve seat or the shaft in the main valve are good, remove the impurity inside if there is.
- i. assemble all the parts in reversed turn. Install the main valve properly, make sure no block..
- j. PLS use the valve according to the instruction manual.

### **Install drawing**

ZY200X reduce valve

ZC500X  
Releasing Pressure valve

To puddle

Bypass pipe (should be closed tightly)

(The size of the reduce valve is not necessary to the same as the size of the pipe,  
It is decided by the flow.)