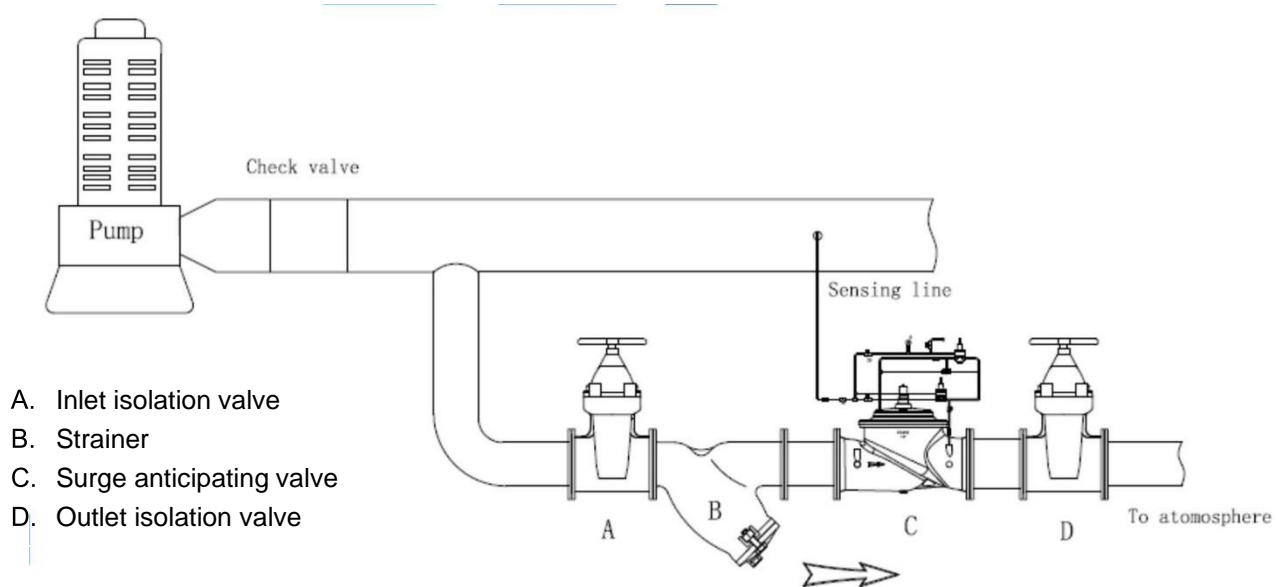


INSTALLATION / OPERATION / MAINTENANCE

550 Surge anticipating valve

Installation

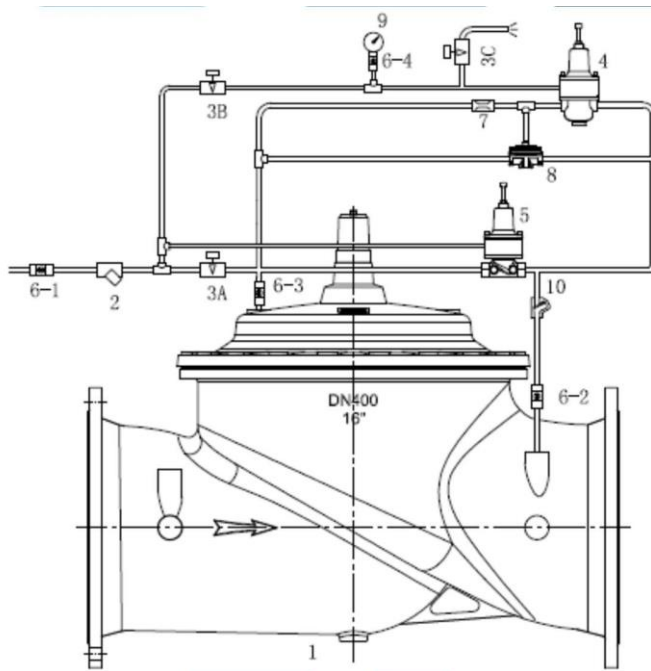
1. Confirm the flow direction of pipe line must meet the arrow of Surge anticipating valve
2. Enough space for adjustments and disassembly.
3. Install the Isolation valves in both inlet and outlet of Surge anticipating valve.
4. Install the Strainer before Surge anticipating valve
5. The valve must be installed horizontally.



Operation

1. Confirm the discharge line is full, open fully the downstream isolating valve and turn off the pump. Make sure that the line remains full.
2. Loose the top plug of main valve, release the air in the surge valve, till water comes out. Tight the plug again.
3. Check the needle valve #3A, Fully close the needle valve, then open the needle valve just 1/2 turn.
4. Close the ball valve #6-2
5. Loose the Adjust bolt of LP#4 and Tight the adjust bolt of HP#5
6. Fully close the inlet gate valve, Record the pressure from gauge (The data is basic pressure. Example 5 bar)
7. Loose the Nut behind PONX ON/OFF Pilot
8. Slowly open the needle valve #3C, till the pressure (from pressure gauge) close to the setting of LP #4 (70%-80% of basic pressure. if the basic pressure is 5 bar, the LP is 3.5-4.0 Bar)
9. Tight the adjust bolt of LP#4, till the water leak from the Nut LP&PONX ON/OFF Pilot. Lock the jam nut of adjust bolt.
10. Open the inlet gate valve.

11. Loosen the adjust bolt of HP #5, till the water leak from the nut behind HP #5. Continue to Tighten the adjust bolt 1 to 1.5 Turn. Lock the jam nut of adjust bolt.
12. Lock the behind LP&PONX ON/OFF Pilot



1. Main valve
2. Strainer
3. Needle valve
4. P20C Low surge pressure pilot
5. P500 High surge pressure pilot
6. Ball valve
7. Restriction
8. PONX ON/OFF pilot
9. Pressure gauge
10. Check valve

Maintenance

1. It need to check the valve and pipe line periodically every months, no matter leakage of pilot systems cause of crash or loosen.
2. It's easy to handle leakage outside, just tight the fitting.
3. If the valve doesn't work, there may be possible reasons, analyze the problem, and solve the problem. See Table1 Trouble shooting:

Inspection or maintenance can be accomplished without removing the valve from the line. Repair kits with new diaphragm and disc are recommended to be on hand before work begins.

WARNING: Maintenance personnel can be injured and equipment damaged if disassembly is attempted with pressure in the valve.

Disassembly

1. Close upstream and downstream isolation valves and independent operating pressure when used to shut off all pressure to the valve.
2. Loosen tube fittings in the pilot system to remove pressure from valve body and cover chamber. After pressure has been released from the valve, remove the controls and tubing. Note and sketch position of tubing and controls for re-assembly.
3. Remove cover bolts and remove cover. Pull cover straight up to keep from damaging the integral seat bearing and stem.
4. Remove the diaphragm and disc assembly from the valve body. With smaller valves this can be accomplished by hand by pulling straight up on the stem. On large valves, an eye bolt of proper size can

be installed in the stem and the diaphragm assembly can be then lifted with some tooling on spot. Take care not to damage the stem or bearings.

5. The next item to remove is the stem nut. Examine the stem threads above the nut for signs of mineral deposits or corrosion. If the threads are not clean, use a wire brush to remove as much of the residue as possible. Attach a good fitting wrench to the nut and give it a sharp “rap” rather than a steady pull. Usually several blows are sufficient to loosen the nut for further removal. On the smaller valves, the entire diaphragm assembly can be held by the stem in a vise equipped with soft brass jaws before removing the stem nut.

The use of a pipe wrench or a vise without soft brass jaws scars the fine finish on the stem.

6. After the stem nut has been removed, the diaphragm assembly breaks down into its component parts. Removal of the seal from the disc holder can be a problem if the valve has been in service for a long time. Using two screwdrivers inserted along the outside edge of the disc usually will accomplish its removal.

7. The only part left in the valve body is the seat which ordinarily does not require removal. Careful cleaning and polishing of inside and outside surfaces with sandpaper. If, however, it is badly worn and replacement is necessary, it can be easily removed.

Reassembly

1. Reassembly is the reverse of the disassembly procedure. When the diaphragm assembly has been tightened to a point where the diaphragm cannot be twisted, the seal should be compressed very slightly by the disc guide. Excessive compression should be avoided.

2. **MAKE SURE THE STEM NUT IS VERY TIGHT.** Attach a good fitting wrench to the nut and give it a sharp “rap” rather than a steady pull. Usually several blows are sufficient to tighten the stem nut for final tightening. Failure to do so could allow the diaphragm to pull loose and tear when subjected to pressure.

3. Carefully install the diaphragm assembly. Take care not to damage the stem or bearing.

4. Put spring in place and replace cover. Make sure diaphragm is lying smooth under the cover.

5. Tighten cover bolts firmly.

6. Test Valve before re-installing pilot valve system. Due to the weight of the diaphragm assembly this procedure is not possible on valves 8” and larger. On these valves, the same determination can be made by carefully introducing a low pressure into the valve body with the cover vented. Looking in cover center hole see the diaphragm assembly lift easily without hesitation, and then settle back easily when the pressure is removed.

2. To check the valve for drip-tight closure, a line should be connected from the inlet to the cover, and pressure applied at the inlet of the valve. If properly assembled, the valve should hold tight with a low pressure.

3. With the line connected from the inlet to the cover, apply full working pressure to the inlet. Check all around the cover for any leaks. Re-tighten cover nuts if necessary to stop leaks past the diaphragm.

4. Remove pressure, then re-install the pilot system and tubing exactly as it was prior to removal. Bleed air from all high points.

Trouble shooting:

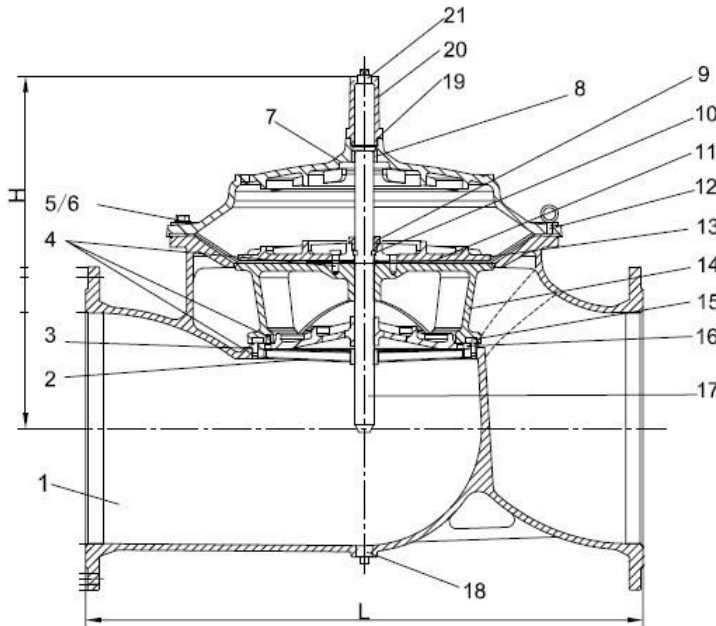
The following troubleshooting information deals strictly with the Main Valve. This assumes that all other components of the pilot control system have been checked out and are in proper working condition.

All trouble shooting is possible without removing the valve from the line or removing the cover.

1. Main valve

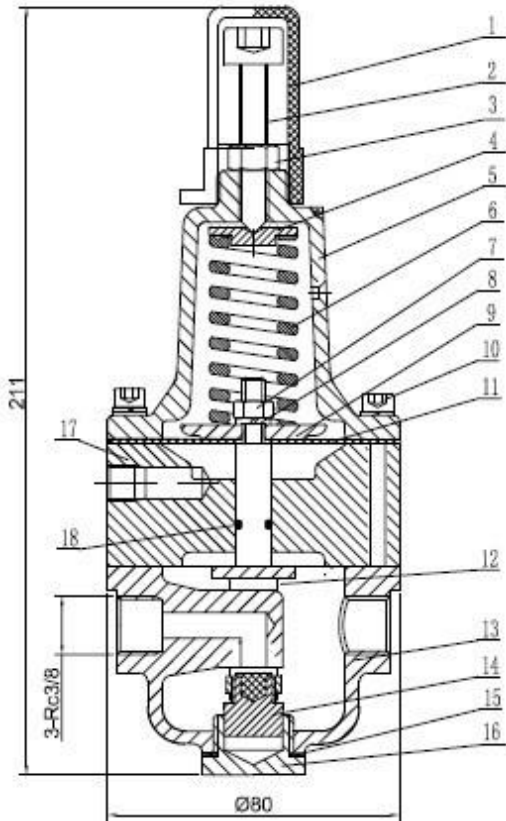
SYMPTOM	NO.	PROBABLE CAUSE	SOLUTION
Main valve fails to open	1	No pressure at valve inlet	Check inlet pressure
	2	Main valve diaphragm assembly inoperative	Disassemble, clean stem, replace defective parts
	3	Pilot not opening: disc blocked	Disassemble, clean
	4	Ball valve in pilot system closed	Open it
	5	Spring guide not in place	Assemble properly
Main valve fails to close	1	Foreign matter between disc and seat, worn disc. Scale on stem or worn diaphragm	Disassemble main valve, remove matter, clean parts and replace defective parts
	2	Needle valve closed	Open it properly
	2	Pilot not opening: disc blocked	Disassemble and remove obstruction
	3	Worn disc	Disassemble and replace
	5	Worn Diaphragm	Disassemble and replace

Main valve dimension and material list



NO.	Part Name	Material
1	Body	Ductile Iron
2	Seat	Brass
3	O-Ring	Rubber
4	Screw	Stainless Steel
5	Washer	Stainless Steel
6	Bolt	Stainless Steel
7	Bonnet	Ductile Iron
8	Bush	Brass
9	Stem Nut	Stainless Steel
10	Fix Washer	Stainless Steel
11	Diaphragm	Rubber+Nylon
12	Eye bolts	Carbon steel
13	Fixing holder	Ductile Iron
14	Disc Holder	Ductile Iron
15	Seal	Rubber
16	Seal Retainer	Ductile Iron
17	Stem	Stainless Steel
18	Plug	Stainless Steel
19	O-Ring	Rubber
20	Cap	Stainless Steel
21	Plug	Stainless Steel

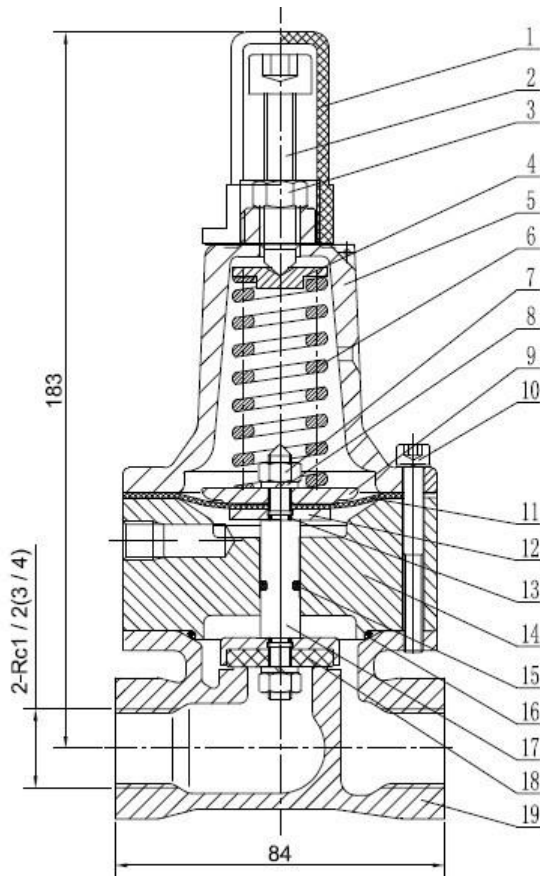
2. P20C Low surge pressure pilot



NO.	Part Name	Material
1	Cap	Plastic
2	Adjusting Screw	Stainless Steel
3	Jam Nut	Stainless Steel
4	Spring guide	Stainless Steel
5	Bonnet	Stainless Steel
6	Spring	Cr-VA
7	Nut	Stainless Steel
8	Washer	Stainless Steel
9	Fixing Holder	Stainless Steel
10	Screw	Stainless Steel
11	Diaphragm	Rubber+Nylon
12	Yoke	Stainless Steel
13	Body	Stainless Steel
14	Disc	Stainless Steel+Rubber
15	O-Ring	Rubber
16	Plug	Stainless Steel
17	Internal Body	Stainless Steel
18	O-Ring	Rubber

SYMPTOM	PROBABLE CAUSE	REMEDY
Fails to open when pressure lowers	No spring compression	Tighten adjusting screw
	Mineral buildup on yoke extension	Disassemble and clean part
	Damaged spring	Disassemble and replace.
	Spring guide is not in place	Disassemble and place guide on top of spring
	Yoke dragging on inlet nozzle	Disassembled and reassemble
Fails to close when delivery pressure rises	Spring compressed	Back off adjusting screw
	Mineral buildup on yoke extension	Disassemble and clean part
	Mechanical obstruction	Disassemble and remove obstruction
	Worn disc	Disassemble and replace
Leakage from bonnet vent hole	Damaged diaphragm	Disassemble and replace
	Loose diaphragm nut	Remove cover and tighten nut

3. P500 High surge pressure pilot



NO.	Part Name	Material
1	Cap	Plastic
2	Adjusting Screw	Stainless Steel
3	Jam Nut	Stainless Steel
4	Spring guide	Stainless Steel
5	Bonnet	Stainless Steel
6	Spring	Alloy steel
7	Nut	Stainless Steel
8	Washer	Stainless Steel
9	Fixing Holder	Stainless Steel
10	Screw	Stainless Steel
11	Diaphragm	Rubber+Nylon
12	Gasket	Stainless Steel
13	O-Ring	Rubber
14	Internal Body	Stainless Steel
15	O-Ring	Rubber
16	O-Ring	Rubber
17	Stem	Stainless Steel
18	Disc	Stainless Steel
19	Body	Stainless Steel

SYMPTOM	PROBABLE CAUSE	REMEDY
Fails to open	Controlling pressure too low	Back off adjusting screw until valve opens
Fails to open with spring compressed.	Mechanical obstruction, corrosion, scale build-up on stem.	Disassemble, locate, and remove obstruction, scale.
Leakage from cover vent hole when controlling pressure is applied.	Diaphragm Damage	Disassembly and replace damaged diaphragm.
	Loose diaphragm assembly.	Tighten upper diaphragm nut.
Fails to close.	No spring compression	Reset pressure adjustment.
Fails to close with spring compressed	Mechanical obstruction	Disassemble, locate and remove obstruction