ALPINE ACV SERIES

Alpine Rate Of Flow Control Valve IOM Manual

Rate Of Flow
Pilot P400

Installation, Operating and Maintenance Manual – BT114 Rate of Flow Control Valve

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ULTRA /ALPINE SERIES

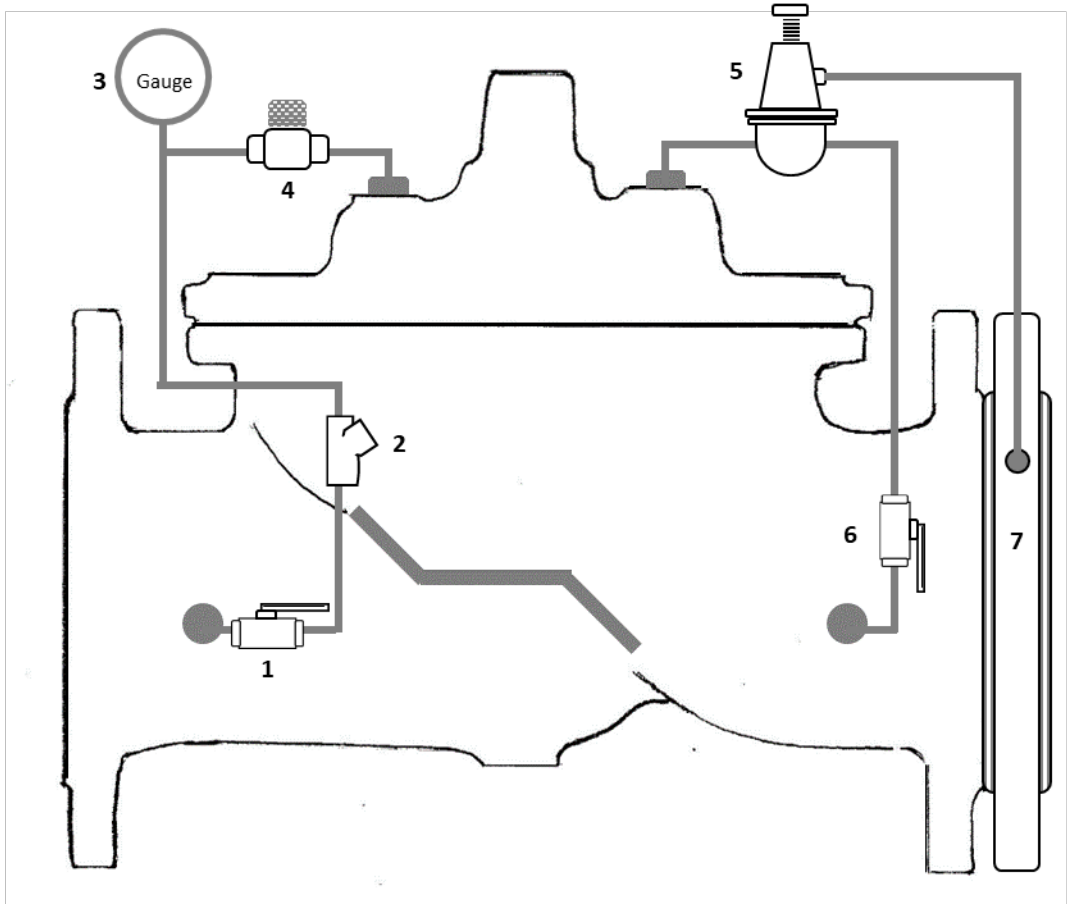
BT114 Rate of Flow valve

LEGEND

1 Upstream Ball Valve
2 Y- Strainer
3 Upstream pressure gauge
4 Flow controller
5 Rate of Flow pilot P400
6 Downstream ball valve
7 Orifice Plate

Note U.C.V. may have an added feature of a bonnet ball valve which when in the closed position freezes the valve in its set position. Enabling work to be done on the control loop without closing the pipe line. <u>This must remain open during normal operations</u>

Control Loop



FUNCTION :

Maintains a constant flow rate regardless fluctuations in the system pressure.
The P400 Rate of flow pilot is adjustable and senses the pressure differential across an orifice plate mounted downstream of the main valve.
Whenever the system's upstream pressure fluctuates, the P400 Rate of flow pilot responds and modulates the main valve to maintain the required flow rate.

CONSIDERATIONS :

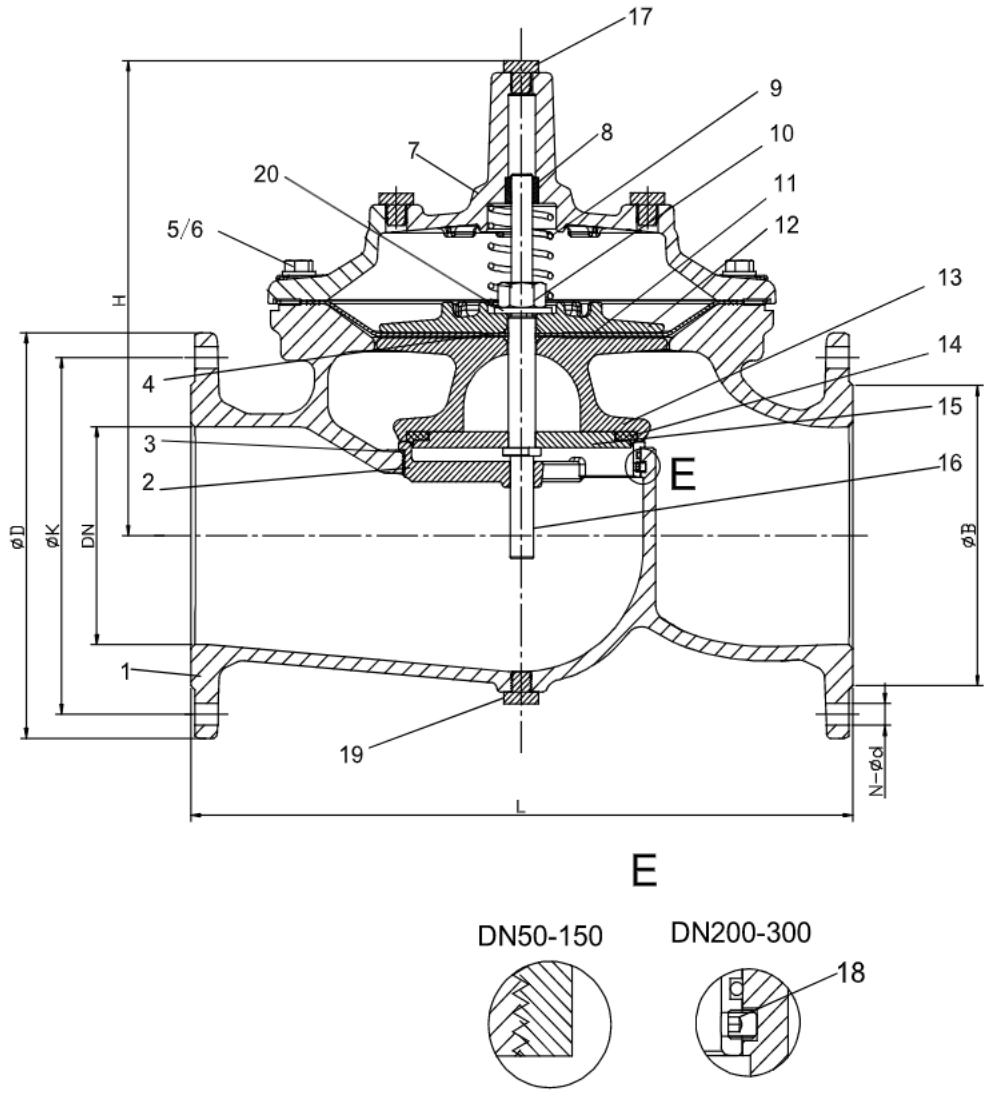
- When ordering the BT114 Rate of flow valve, the required flowrate will be needed by U.C.V. to calculate the nominal bore of the orifice plate, to bring it within the range of the P400 pilot.
- Space in the pipeline will be needed downstream of the valve for the installation of the orifice plate holder, it is a complete assembly on its own.
- Install the flow meter as close to the valve as possible downstream of the orifice plate.

COMMISSIONING : Refer to drawing No 1

- Close the mainline isolating valves Upstream and downstream on either side of the control valve
- Set the flow controller (No 4) to the halfway position (Clockwise closing)
- Open the Upstream ball valve (No 1)
- Close the downstream ball valve (No 6)
- Slowly open the upstream mainline isolating valve, allow the valve to fill
- Bleed off all the accumulated air trapped inside the bonnet of the valve by loosening one of the gland nuts at the highest point on the valve
- Turn the adjustment screw of the P400 Rate of flow pilot (No 5) all the way out (anti clockwise)
- Open the downstream mainline isolating valve. The valve should remain in the closed position
- Open the downstream ball valve (no 6) on the control loop
- While monitoring the flow meter turn the P400 R.O.F. Pilot valve (No 5) slowly in (clockwise) the valve should open and the flowrate increase
- The flowrate should increase at a steady rate, If the increase is too rapid close the flow controller (No 4) until the flowrate settles down
- Increase or decrease the flowrate to the required flow by turning the P400 (No 5) adjustment screw **in** (increase flowrate) / **out** (decrease flowrate)

- A point to remember about control valves is, the higher the pressure inside the bonnet the more the valve will want to close, because of the area of pressure difference between the top of the diaphragm and the bottom of the diaphragm. Equal pressure will close the valve
  Closing the upstream ball valve on the control loop will open the valve
  Closing the downstream ball valve on the control loop will close the valve

Drawing No 2



PARTS LIST - SPECIFICATIONS

No	Description	Material	Standard
1	Body	Ductile Iron	GJS 500 – 7
2	Seat	Stainless Steel	AISI 304 / 316
3	O-ring	Rubber	NBR
4	O-ring	Rubber	NBR
5	Bolt	Stainless Steel	A2 / A4
6	Washer	Stainless Steel	A2 / A4
7	Bonnet	Ductile Iron	GJS 500 – 7
8	Bush	Bronze	C61900
9	Spring	Stainless Steel	AISI 304 / 316
10	Caulking Nut	Stainless Steel	A4
11	Diaphragm	Nylon Reinforced Rubber	EPDM + Nylon Fabric
12	Fixing Holder	Ductile Iron	GJS 500 – 7
13	Disc Holder	Ductile Iron	GJS 500 – 7
14	Seal	Rubber	EPDM
15	Seal Retainer	Stainless Steel	AISI 304 / 316
16	Stem	Stainless Steel	AISI 304 / 316
17	Plug	Stainless Steel	AISI 304 / 316
18	Screw	Stainless Steel	A2 / A4
19	Plug	Stainless Steel	A2 / A4
20	Washer	Stainless Steel	A2 / A4

MAINTENANCE (Refer Drawing No 2)

The Ultra Rate of Flow needs periodic maintenance of six months:
N.B. Make sure there is no pressure In or directly upstream of the valve - Use the mainline isolating valves to ensure personnel safety

- Check the tightness of the Control Loop fittings
- Check the flanges for leaks
- Remove the bonnet and check the diaphragm (11) for Rips or damage
- Lift the diaphragm assembly out
- Check the O Rings (3 & 4) and seal (14)
- Check the Disc Holder (13) for cavitation wear

TROUBLE SHOOTING GUIDE

Valve refuses to open

- Stem Jammed or blockage on top of stem
- Blockage on the downstream Control Loop
- Leak on the upstream Control Loop
- Diaphragm torn
- Downstream ball valve closed
- P400 Rate of flow Pilot blocked or damaged
- Low upstream pressure

Valve Refuses to close

* Debris underneath the stem
- Blockage on the upstream Control Loop
- Leak on the downstream Control Loop
- Torn Diaphragm
- Upstream ball valve closed