ALPINE ACV SERIES

AFC Surge Anticipating Control Valve IOM Manual

Anticipator Pilot P20A

Relief Pilot P500

Installation, Operating and Maintenance Manual – BT116-52 Surge Anticipating Valve

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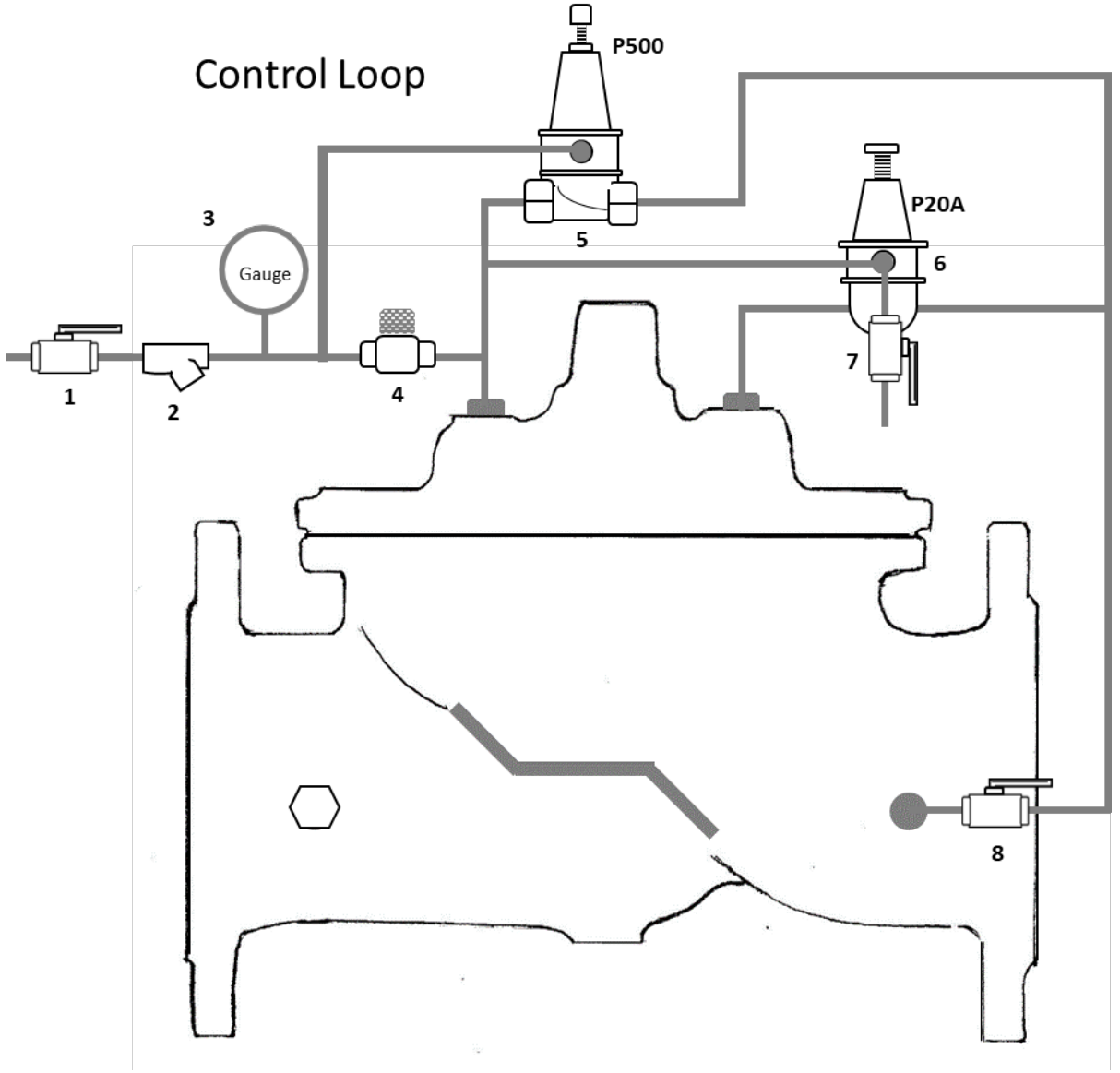
ULTRA/ALPINE SERIES

BT116-52 Surge Anticipating Valve



LEGEND

1 Upstream sense line ball valve
2 Upstream sense line strainer
3 Upstream sense line gauge
4 Upstream sense line Flow controller
5 Relief pilot valve P500
6 Anticipator pilot P20A
7 Test ball valve
8 Downstream ball valve

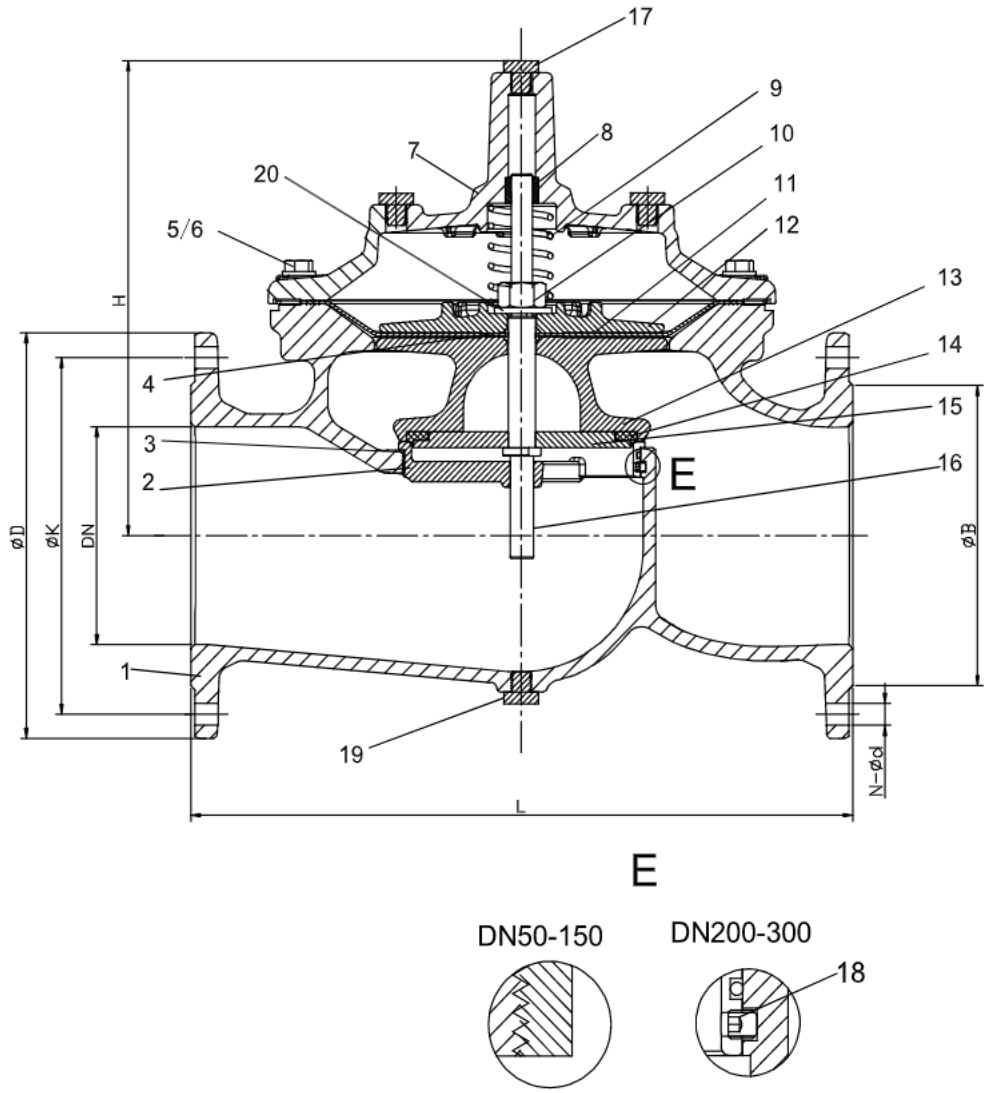
FUNCTION : To prevent water hammer and the resulting pressure surge on pump trip. When a pump trips the column continues to move, creating an area of low pressure behind it, then returns as a high pressure wave which can cause severe water hammer resulting in damage to piping, fittings and pumps.

CONSIDERATIONS : A surge anticipating valve can release a fair amount of water when it is operating. To save water a discharge line should be added downstream into a tank
With a upstream and downstream isolating valve on either side of the surge anticipating valve

COMMISSIONING :

- Close the mainline upstream and downstream isolating valves on either side of the control valve
- Set the flow controller (No 4) to the halfway position (Clockwise closing). This valve controls the closing speed of the control valve (the further closed the slower the response]
- Close the downstream ball valve (no 8)
- Slowly open the upstream mainline isolating valve.
- Bleed of all accumulated air trapped inside the valve bonnet by loosening one of the gland nuts at the highest point on the valve.
- Turn the adjustment screw of the high pressure pilot P500 (No 5) all the way in (clockwise).
- Turn the adjustment screw of the low pressure pilot P20A (No 6) all the way out (anti-clockwise).
- Open the mainline downstream isolating valve – The control valve should remain closed.
- Open the downstream ball valve (No 8) – The control valve should still remain closed.
- With the line in the static state (Pumps stopped) Close the upstream sense line ball valve (No 1)
- Using the test ball valve (No 7 } Lower the pressure on the upstream sense line gauge (No 3) by 2 Bar
- Keeping (No 1) ball valve closed, turn the adjustment screw of the low pressure pilot P20A (No 6) in clockwise until the control valve starts opening, then stop turning.
- Allow the valve to open, then slowly open the sense line ball valve (no 1), the valve should close – The P20A pilot will now sense a 2 Bar Pressure drop in the mainline and open
- With the line in the dynamic state (Pumps running) Turn the adjustment screw of the high pressure pilot P500 (No 5) out anti-clockwise until the control valve starts opening
- Then turn the adjustment screw of the P500 in clockwise one full turn the control valve will close – The P500 will now keep the control valve open until the high pressure wave dissipates, then close the control 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 Surge anticipating valve needs periodic maintenance of 1 – 2 years. Depending on the severity of operation
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
- Pilot valves 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