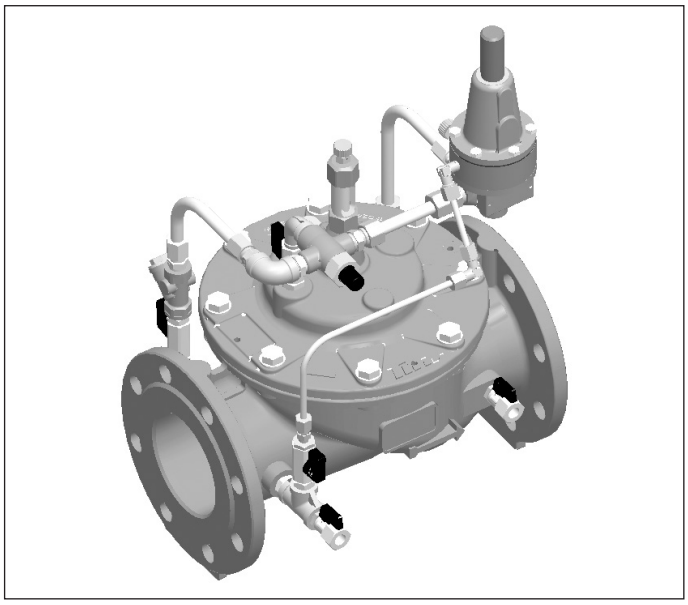
HYDROSTAB PRESSURE RELIEF / SUSTAINING VALVE
DN 50 to 600 XG AND DN 150 to 700 LG

Setting instruction and maintenance
WXA 05 013
Series K1 20

A - GENERALS

FUNCTIONS

Automatically maintains a constant upstream pressure by either sustaining or relieving an excess pressure to a lower pressure downstream network, a reservoir or a discharge whenever the upstream pressure is higher than the presetting, regardless of outlet pressure and flow variations.
It can be used as a "on-off" valve with manual operation.



APPLICATIONS

Upstream pressure sustaining (in line).
Upstream pressure relief (in derivation).

MAIN CHARACTERISTICS

- PFA 25.
- Flanges drilling: ISO PN10, 16 or 25.
- Max. working temperature: 65 °C.
- Fluid: potable or raw water (max. mesh size: 2 mm).
- Main valve: diaphragm type.
- Pilot valve - 3/8'' for DN 50 to 300XG and 150 to 400LG
  - 3/4'' for DN 400 to 600XG and 500 to 700LG

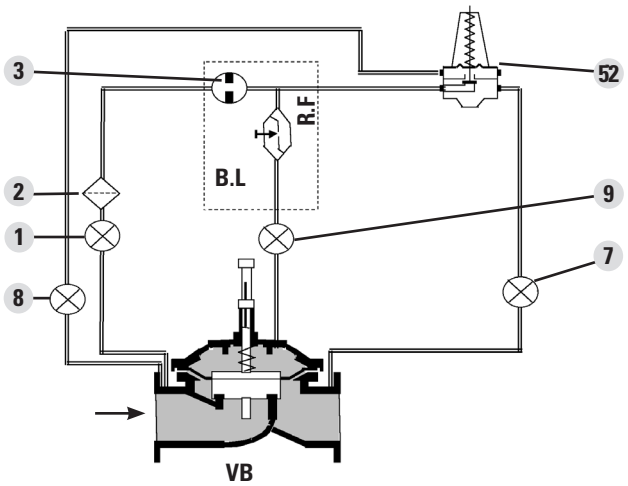


Fig. I

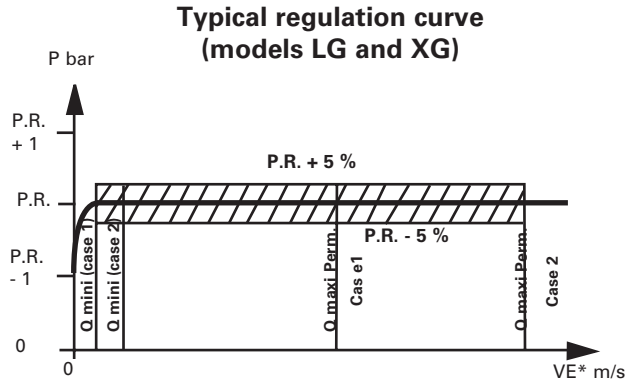


Fig. II

DESCRIPTION AND OPERATION

The Hydrostab pressure relief / sustaining valve consists of (fig. I):
- an Hydrobloc main valve (globe or angle (VB)),
- a pilot circuit including :
  - on its upstream branch (A): a filter (2), a restrictor (3) and an isolating cock (1),
  - on its downstream branch (B): a pressure sustaining / relief pilot valve (52) and an isolating cock (7),
  - a linking block to upper chamber (BL) and a chamber isolating cock (9).
  - a static upstream pressure sensing line,

If upstream pressure decreases and goes below the setting value, the pilot valve partially closes which operates partial closing of the valve. The upstream pressure is maintained.
If this pressure increases, the pilot valve tends to open, which operates opening of the main valve.
The control valve regulates the transferred flow rate according to variations of the upstream pressure.
The main valve copies the movements of the pilot valve.

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PERFORMANCES AND RECOMMENDED FLOWRATES

- The operating principle guarantees a very accurate control of the upstream pressure (fig. II): generally ± 5 % of the set value (PR) within the recommended flow range (see table III below).
- With clean water, the valve is leakproof at zero flow for an upstream pressure approx. 1 bar lower than the set value.
- The indicated performances are independant from downstream pressure variations, providing that the capacity of the network is larger than the total transferred flowrate.

Table III - RECOMMENDED FLOWRATES (l/s) - **Case 1** : Δp available ≤ 1 bar ; **Case 2** : Δp available > 1 bar

		VE*/ DN	50	65	80	100	125	150	200	250	300	350	400	500	600	700	800	900	1000
Case 1	Q min.	**0,2**	-	-	-	-	-	3,5	6,3	9,8	14	19	25	39	57	77	-	127	157
Model LG	Q maxi permanent	**2**	-	-	-	-	-	35	63	98	141	192	251	393	565	770	-	1272	1571
Case 2	Q min.	**0,4**	-	-	-	-	-	7,1	13	20	28	38	50	79	113	154	-	254	314
	Q maxi permanent	**4**	-	-	-	-	-	71	126	196	283	385	503	785	1131	1539	-	2545	3142
Case 1	Q min.	**0,2**	0,4	0,7	1	1,6	2,5	3,5	6,3	9,8	14	-	25	-	57	-	101	-	-
Model XG	Q maxi permanent	**2,5**	4,9	8,3	13	20	31	44	79	123	177	-	314	-	707	-	1257	-	-
Case 2	Q mini	**0,4**	0,8	1,3	2	3,1	4,9	7,1	13	20	28	-	50	-	113	-	201	-	-
	Q maxi permanent	**5**	9,8	17	25	39	61	88	157	245	353	-	628	-	1414	-	2513	-	-

* VE (m/s) : equivalent flow velocity: average velocity in DN section

B - INSTALLATION AND COMMISSIONING

INSTALLATION

Please refer to general notice WXA 05011.

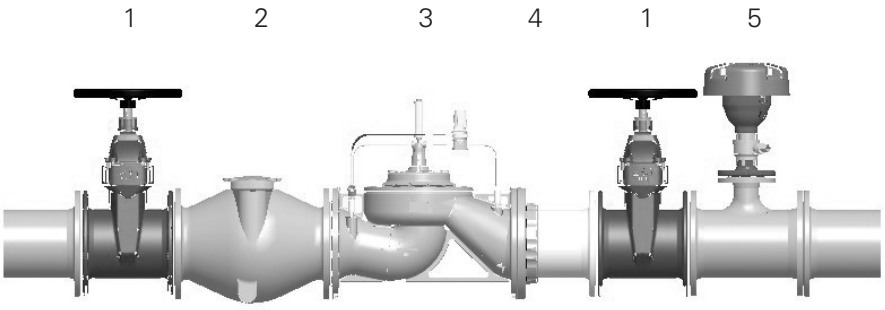


Fig. IV

1 - Isolating gate valve
2 - Strainer box F3 10/F3 20
3 - Hydrostab Pressure relief/sustaining valve K1 20
4 - Dismantling coupling MAJOR C1 10/C1 15
5 - Double orifice Air Valve VANNAIR F1 20

(Upstream the Hydrostab if pipe is horizontal or going upwards and downstream side of the Hydrostab if pipe is going downwards).

COMMISSIONING

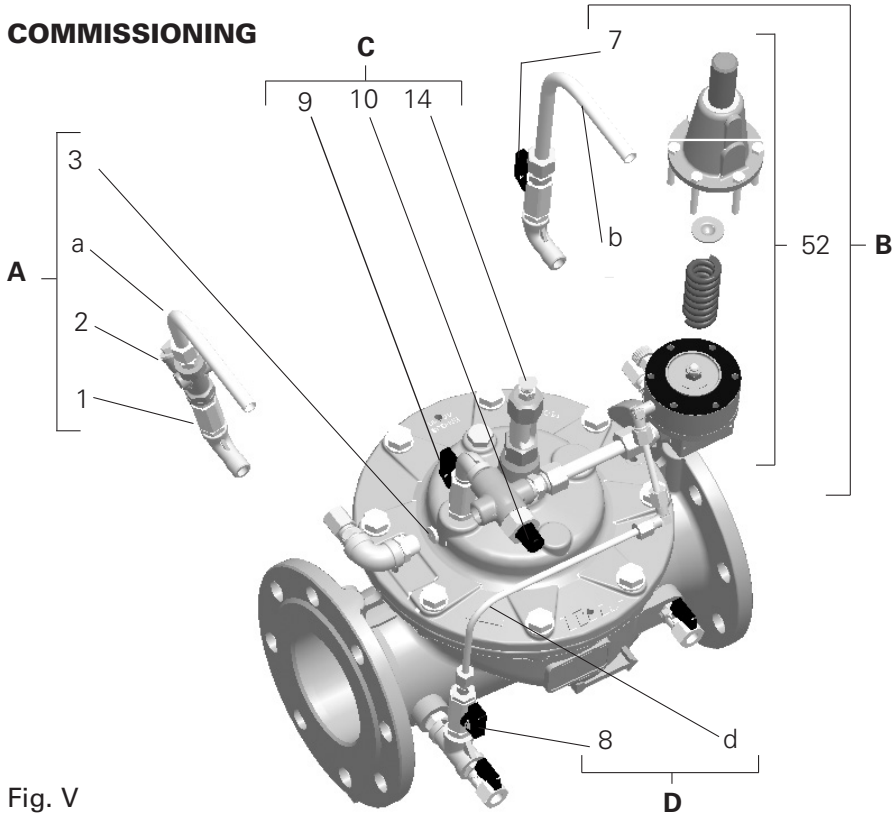


Fig. V

Upstream Branch A
Isolating cock 1/4 turn 1
Filter.....2
Restrictor.....3
Tubing 10/12 (pilot 3/8")....a
Tubing 13/15 (pilot 3/4")....a

Linking block upper chamber C
Chamber isolating cock.....9
Opening speed control 10
Visual position indicator + air trap 14

Downstream Branch B
Pressure relief/sustaining pilot valve 52
Isolating cock 1/4 turn 7
Tubing 10/12 (pilot 3/8")....b
Tubing 13/15 (pilot 3/4")....b

Upstream pressure sensing line D
Isolating cock 1/4 turn 8
Tubing 4x6 (pressure taping) .....d

PRELIMINARY SETTING

The upstream network must be filled, pressurized and free of air ; upstream and downstream isolating gate valves must be closed.
Commissioning in 3 steps.

1 - Filling and bleeding the Hydrostab (Fig. V)

- Open the upstream pressure gauge.
- Check that stop cocks (1), (9) and (8) are fully opened.
- Close downstream stop cock (7).
- Open slightly the upstream gate valve (2 turns around).
- Open slightly the air bleeder on top of visual indicator (14), wait until the air is fully exhausted and close it. Main valve remains closed.
- Drain the pressure sustaining/relief pilot valve with the air bleeder (18).
- Open completely the upstream gate valve. Main valve must keep closed. If necessary, open slightly the downstream isolating valve to help full closing of main valve.

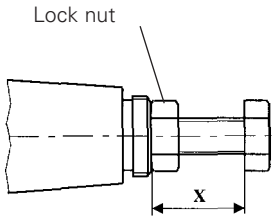
2 - Provisionally set the upstream pressure

This presetting is carried out using the curves shown opposite.

- Set the pilot valve to reach desired value.
- Take off the protection cap (11) and unscrew the locking nut (12). To increase the upstream pressure setting value, turn the adjusting screw into the direction of the (+) arrow. To decrease into the (-) direction.
- Screw down the locking nut (12).

3 - Fill the downstream network

- Open the downstream stop cock (7).
- Slowly open the downstream isolating valve to fully open position. Take the usual precautions: slow filling velocity (1.5 km / hour, use of air valves...).



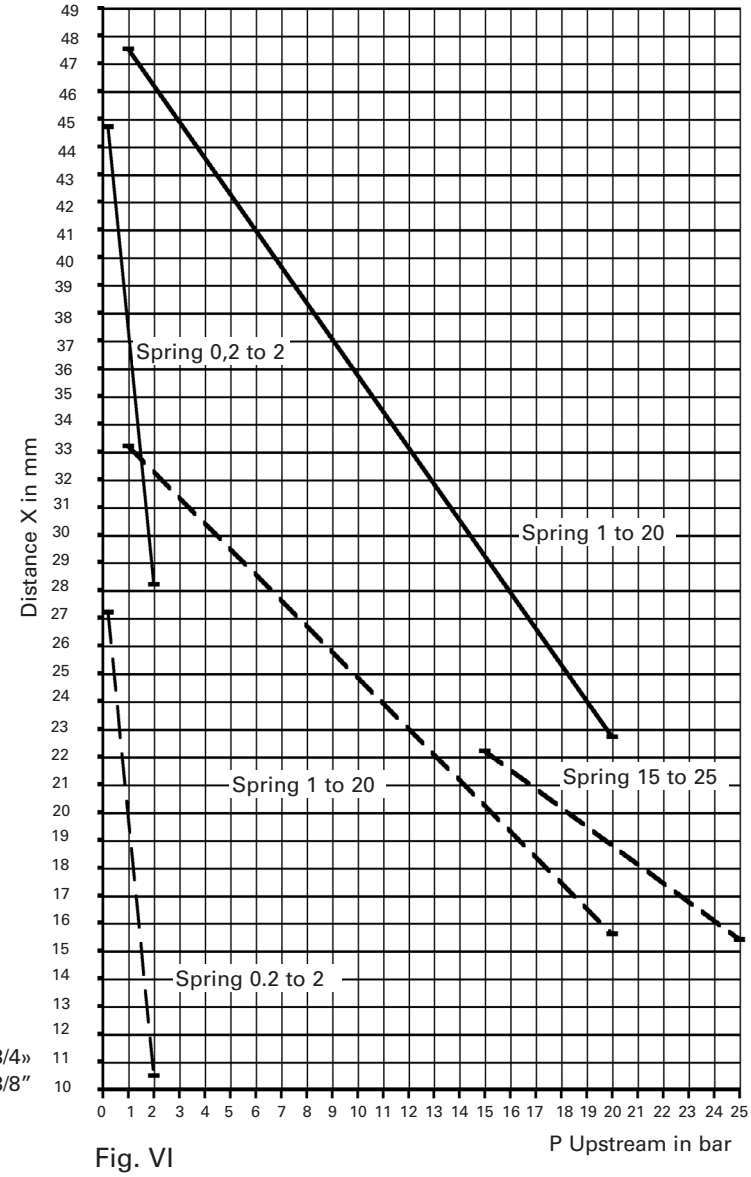


Fig. VI

SETTING WHILE IN USE

Setting the pilot valve

Important: *This operation can only be done if:*

1- Inlet pressure is higher than desired set pressure.

2- Outlet pressure is lower than desired set pressure - 1 bar. To achieve this condition, open a flush out valve or an hydrant on the downstream network. If it is not sufficient, partially close the upstream isolating valve in order to decrease the outlet pressure.

- Open the pressure gauges.
- Set the pilot valve as described previously until reaching the desired value (value read on the upstream pressure gauge).

Using the Hydrostab as an on/off valve

Close downstream isolating cock (7) to fully close the main valve (upstream isolating cock (1) must be in open position).

Reopen downstream isolating cock (7) to put back the Hydrostab into regulating function.

Caution: Closing the upstream isolating cock (1) can provoke the full opening of the valve (ie: upstream pressure = downstream pressure).

Adjusting the closing speed control (RF)

This device allows to adjust the closing speed of the Hydrostab without influencing the opening speed. It guarantees a better protection of the network especially when the demand fluctuates rapidly and frequently. This device is self cleaning.

- Take off the protection cap and unscrew the locking nut. Fully screw down the adjusting screw. Then reopen (unscrew) according to the desired number of turns:
  - for a maximal closing speed slow down: 2 to 4 turns,
  - normal setting: 5 turns,
  - minimal slow down: 8 turns.

- For some specific applications the closing speed control (RF) can be replaced by a opening speed control (RO) or a closing and opening speed control (RFO). Please contact us.

C - OPERATION AND MAINTENANCE

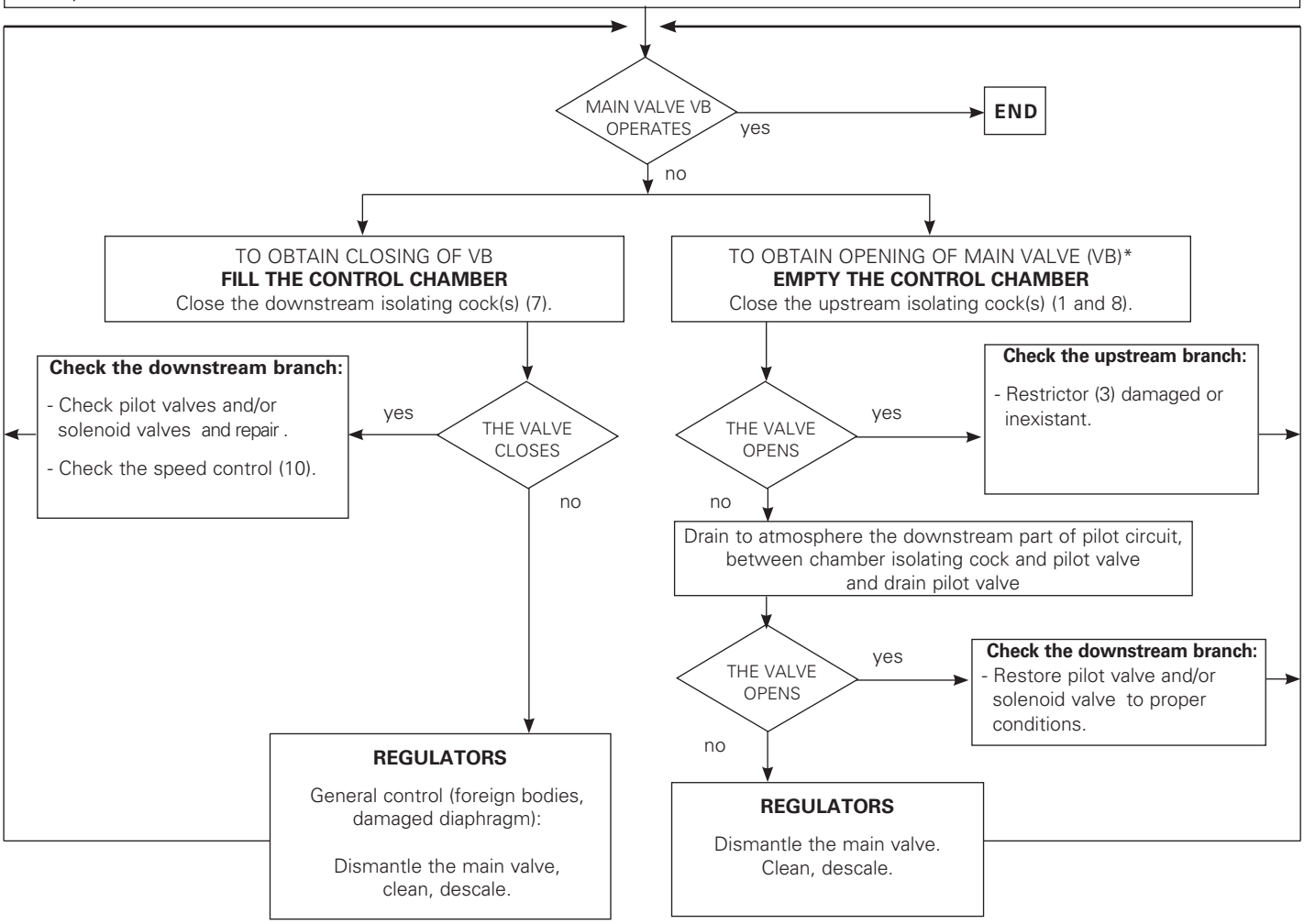
MAINTENANCE

Please refer to general notice WXA 05011.

PROCEDURE IN CASE OF INCIDENTS

Preliminary checks:

- Installed the right way round, no leaks to the outside,
- Downstream pipe network with sufficient flow rate capacity,
- Upstream pressure higher than downstream and setting pressure,
- No air in the network,
- Spring range compatible with desired value of setting,
- Main valve operating chamber (14) and pilot bleeding (18) done,
- Filter cleaned (pilot circuit),
- Strainer box cleaned (2),
- Speed control opened (2 turns mini) (10),
- All isolating cocks opened (1, 7, 9,8),
- Pilot valves correctly set and bled.
- Solenoid valves connecting and operating(1).



Valve fitted with solenoid valve.

** In this case, upstream pressure is transmitted to downstream.*

NOISY VALVE

Noise can be due to too high pressure differential and/or too low downstream pressure. As a result, cavitation occurs.

One solution consists in increasing the downstream pressure (installation of an orifice plate). Another possibility is to install another valve in serie in order to scale the Δp (check the working conditions and cavitation diagrams).

A simultaneous record of inlet and outlet pressures is useful for the understanding of any misfunction.

In order to avoid the wear of materials, when cavitation may occur, use by the anti-cavitation kit for mobile assembly.In case of problem, please consult us.

PRESSURE FLUCTUATIONS

Pressure fluctuations in the network are often due to air pockets in the pipes. Be sure that air valves have been installed at high points, dead ends or at any drastic change of pipe profile.

If the air pockets are not possible to locate, fluctuations can be reduced by adjusting the closing speed control (10).