


**P.A. – S.p.A. – EQUIPAGGIAMENTI TECNICI DEL LAVAGGIO**

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 ART. 2497 – BIS C.C. DIREZIONE E COORDINAMENTO BENETTI srl R.I. TRIB. DI RE 01480690351  
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## VB 3 Unloader Valve (discharging)

**Technical manual: E 245**

Pressure regulating unloader valve

At gun shut off, the water flow is bypassed at reduced pressure.

**DN10**


- **60.1900.00** VB 3 Gc 3/8 M
- **60.1900.05** VB 3 3/8NPT M

- Sturdy steel and brass construction
- Adjustable locknut to control the max pressure
- Easy maintenance
- Hexagonal shaped check valve to avoid jamming.
- Possibility to fit a venturi injector, on delivery, for chemicals.
- Nylon cap, on request

### Technical specifications

Max. flow rate: 25 l/min.

Max temperature: 90°C (1)

Part Number	Rated pressure bar - MPa	Permissible pressure bar - MPa	Minimum adjustable pressure bar - MPa	(2)Trapped pressure at circuit closure %	(3)Pressure drop to reset bypass %	Inlet	Weight g
60.1900.00	220 - 22	250 - 25	22 – 2.2	8.5	19	Gc3/8 M	400
60.1900.05	220 - 22	250 - 25	22 – 2.2	8.5	19	3/8NPT M	400

(1)The valve has been designed for a continuous use at a water temperature of 60°C. It can resist for short periods at a maximum temperature of 90°C.

(2) This is the maximum pressure increase implemented in the circuit for the intervention of the valve and to bring all the fluid in bypass (percentage figures of the pressure set up)

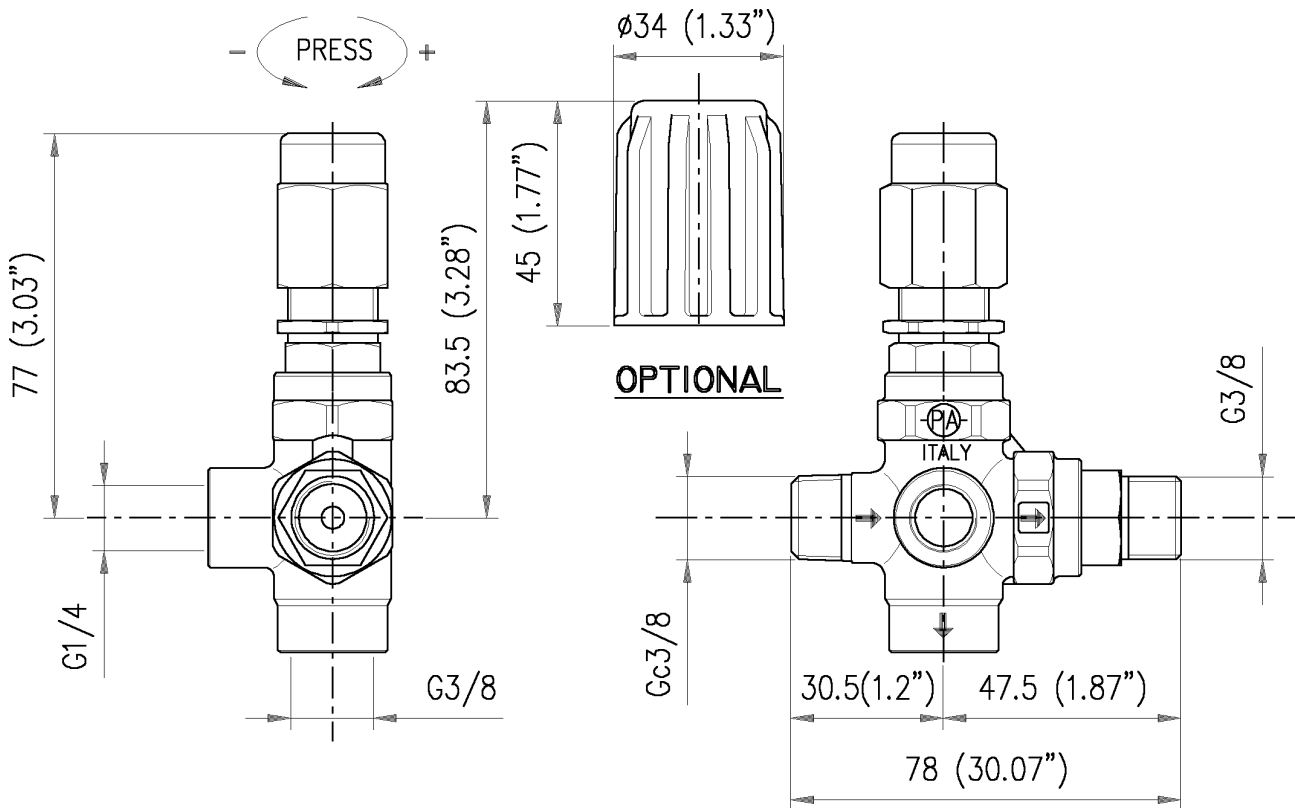
(3) This is the pressure reduction necessary in comparison to the set up, in order that the valve brings back pressure in the circuit. (percentage figures of the pressure set up)

**Instruction manual, maintenance, installation, spare parts.**

For a correct utilization, follow the directions of this manual

**Re-print them on the Use and Maintenance booklet of the machine.**

n. 12.9245.00

**DIMENSIONAL DRAWING****INSTRUCTIONS****SELECTION**

This product is to be utilized with clean fresh water, even slightly additivated with normal detergents. For use involving different or corrosive liquids, contact the PA Technical department. Appropriate filtration should be installed when using unclean liquids. Choose the valve in line with the data of nominal running (system rated pressure, max flow and max temperature). In any case, the pressure of the machine should not exceed the permissible pressure rate imprinted on the valve.

**INSTALLATION**

This accessory, on a system that produces hot water, must be fitted in **front of the heat generator**. This product is bound to be incorporated on a finished machine. On a system that generates hot water, anticipate the fitting of accessories that limit the accidental increase of fluid temperature.

**Always install a safety valve that protects the pressurized inlet channel.**

Choose a correct nozzle size, which allows a regular discharge on bypass, at least 5% of the total flow of the system in order to achieve a constant pressure value and avoid troublesome pressure spikes at closure. If the nozzle wears out, the pressure drops.

On installation of a new nozzle, re-adjust the system to the original pressure setting

**OPERATIONS**

The valve regulates the max pressure of the system through a piston, which acts on a ball correctly positioned, that closes the bypass opening. A check valve cuts out the delivery section, the pressure of which controls the drive of the piston.

Each regulation should be made when the system is operational and the nozzle open.

**ATTENTION: The nut POS 16 must never be removed otherwise a mechanical safety feature that limits the max pressure will lack, avoiding serious damage to persons and machine.**

**DISCHARGE SYSTEM AND WATER ADDUCTION**

The bypass line should be returned into a tank with deflectors. By using a direct pump recycle, with elevated pressure intake, it is necessary to install a pressure reducer in order to have an even flow supply and to protect the circuit intake.

When the system is opened and closed frequently, it is recommended to install a thermal protector valve (VT3 or VT6) in order to eliminate excessive temperature build-up. It is possible to connect the feeding directly to the manifold up to a flow rate of 19 l/min.

## PROBLEMS AND SOLUTIONS

PROBLEMS	PROBABLE CAUSES	SOLUTIONS
Frequent unloader recycles	Damaged check valve O ring Leaking connections Restricted bypass	Replace Check and renew Clean or adapt
Unloader does not reach pressure	Unloader not properly sized Piston O rings worn out Material matter between seat and shutter Worn out nozzle	Change spring or type of valve Replace Clean the seat Replace
Pressure peaks	There is not a min of 5% of total flow in bypass Excessive flow in bypass Spring totally compressed	Reset Change type of valve or adjust passages Loosen knob and change nozzle
Unloader does not bypass at low pressure	Jammed check valve Check valve O ring worn out Material matter on check valve	Clean or replace Replace Clean

## REGULATIONS : *see norm manual*

For a correct utilization, follow the directions described in this manual and re-print them on the Use and maintenance manual of the machine.

Make sure that you are given **the Original Conformity Declaration** for the accessory chosen. The present manual is valid for all unloader valves named **VB 3**.

## MAINTENANCE

Maintenance has to be carried out by **Specialized Technicians**.

**STANDARD:** every 400 working hours (circa 10,000 cycles), check and lubricate the seals with water resistant grease.

**SPECIAL:** every 800 working hours (circa 20,000 cycles), control the wear of the seals and internal parts and if necessary, replace with original PA parts taking care during installation and to lubricate with water resistant grease.

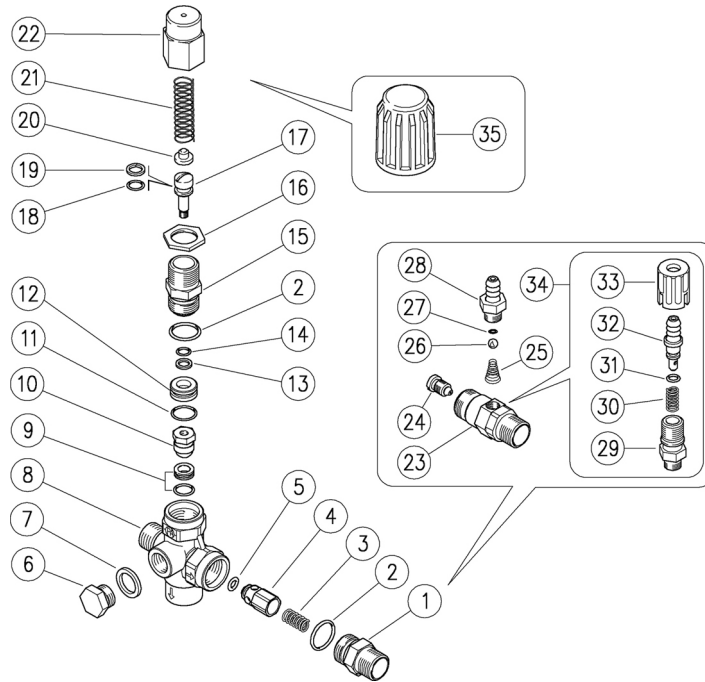
**ATTENTION:** reassemble the valve in the correct manner paying special attention to the Nut (pos 16) which must always be in place.

**The manufacturer is not to be considered responsible for damage as a result from incorrect fitting and maintenance**

Technical data, descriptions and illustrations are indicative and liable to modification without notice

60.1900.00 VB3 unload. 3/8M Bsp-3/8M Bsp-3/8F Bsp

60.1900.05 VB3 unload. 3/8M Npt byp:3/8F



Pos.	P/N	Description	Q.ty	K1	K2	K3	K4	
1	60.1902.31R	Shutter coupl., 3/8M Bsp brass	1					10
1	60.1904.31R	Shutter coupl., 3/8M Npt brass (1)	1					10
2	10.3066.00R	O-ring, 1,78x15,6 mm	2	•				10
3	60.0867.51R	Spring, 0,5x6,5x22 mm Sst.	1					10
4	60.0859.99R	Shutter pin, brass+or 2,5x4 mm N	1					10
5	10.3125.00R	O-ring, 2,5x4 mm	1	•				10
6	28.0013.31R	Plug, brass 1/4 Bsp (2) **	1					25
6	60.0026.31R	Grub screw, brass 1/4M Npt (1) **	1					1
7	14.3911.00R	Washer, 13,5x19x1,5 mm Cu (2) **	1					10
8	60.1901.35R	Valve housing -VB3, 3/8M Bsp brass	1					5
8	60.1903.35R	Valve housing -VB3, 3/8M Npt brass (1)	1					5
9	60.0872.20R	Seat, 7,5mm +O-ring, 1mm NBR	1	•				10
10	60.0871.21R	Rest, M5 brass +ball, 11/32" Sst.	1	•				10
11	10.3060.00R	O-ring, 1,78x12,42 mm	1	•				10
12	60.0863.31R	Spacer ring, 6,2x16x6 mm brass	1					10
13	10.4006.00R	Back-up ring, 8,6x6x1,2 mm	1	•				10
14	10.3051.01R	O-ring, 1,78x6,07 mm	1	•				10
15	60.0303.31R	Piston holder, brass	1					10
16	60.0317.31R	Locknut, M18x1 brass	1					10

Pos.	P/N	Description	Q.ty	K1	K2	K3	K4	
17	60.0331.99R	Piston, M5 Sst.+or+p/back	1					10
18	10.3055.00R	O-ring, 1,78x7,66 mm	1	•				10
19	10.4008.00R	Back-up ring, opn. 8x11x1,2 mm	1	•				10
20	60.0310.61R	Spring guide, z.pl.	1					10
21	60.0862.61R	Spring, 3,3x12,6x41 mm z.pl.	1					10
22	60.0304.31R	Valve regulating knob, brass	1					5
23	21.0053.31R	Inject.housing, M18x1-3/8MM Npt	1					2
24	21.0054.51R	Nozzle, M6x1 - 2,1 mm Sst.	1					10
25	21.0160.51R	Tapered spring, Sst. -inject.	1					10
26	14.7420.01R	Ball, 7/32" Sst. Aisi 316	1					10
27	10.3049.00R	O-ring, 1,78x5,28 mm Vi 70	1					10
28	21.0003.31R	Hose barb, 8 - M12x1 mm brass	1					10
29	21.0173.31R	Coupling, M12x1-1/4M Bsp brass	1					10
30	21.0158.51R	Spring, 0,8x7x15 mm Sst.	1					10
31	10.3043.01R	O-ring, 1,78x4,48 mm Vi 70	1					10
32	21.0155.99R	Hose barb, d.8 mm brass+o-ring	1					5
33	21.0171.84R	Inject.knob, 1/4F Bsp black	1					10
34	21.0100.00R	Regul.+h.barb 8-M12mm brs. inje.	1					50
35	60.0315.841	Valve regul. knob, black 50pcs. **	1					1

\*\* On request

Kit	P/N	Description	
K1	60.1906.24	Spares kit -VB3, 9x1pcs.	1

(1) 60.1900.05 (2) 60.1900.00