



P.A. - S.p.A. - EQUIPAGGIAMENTI TECNICI DEL LAVAGGIO

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VRP 450-200/300 – Pressure Regulating Valve

Technical Handbook: E 257

It stabilizes fluid bypass with a minimized pressure variation.

DN 32



- **60.4220.00** VRP450-200 C€ 1"1/4 Bsp FF
- **60.4230.00** VRP450-300 1"1/4 Bsp FF

- Intended for use with high flow rates
- Special steel spring with superior mechanical features, to maintain calibration settings for longer
- Check valve specifically designed to prevent jammings
- Screw/Locknut adjustment to set maximum pressure level
- Dynamic seals with O-ring and sliding gasket
- Fixing screw slots

TECHNICAL DATA

Max. Flow Rate 450 l/min - Max. Temperature 90°C (1)

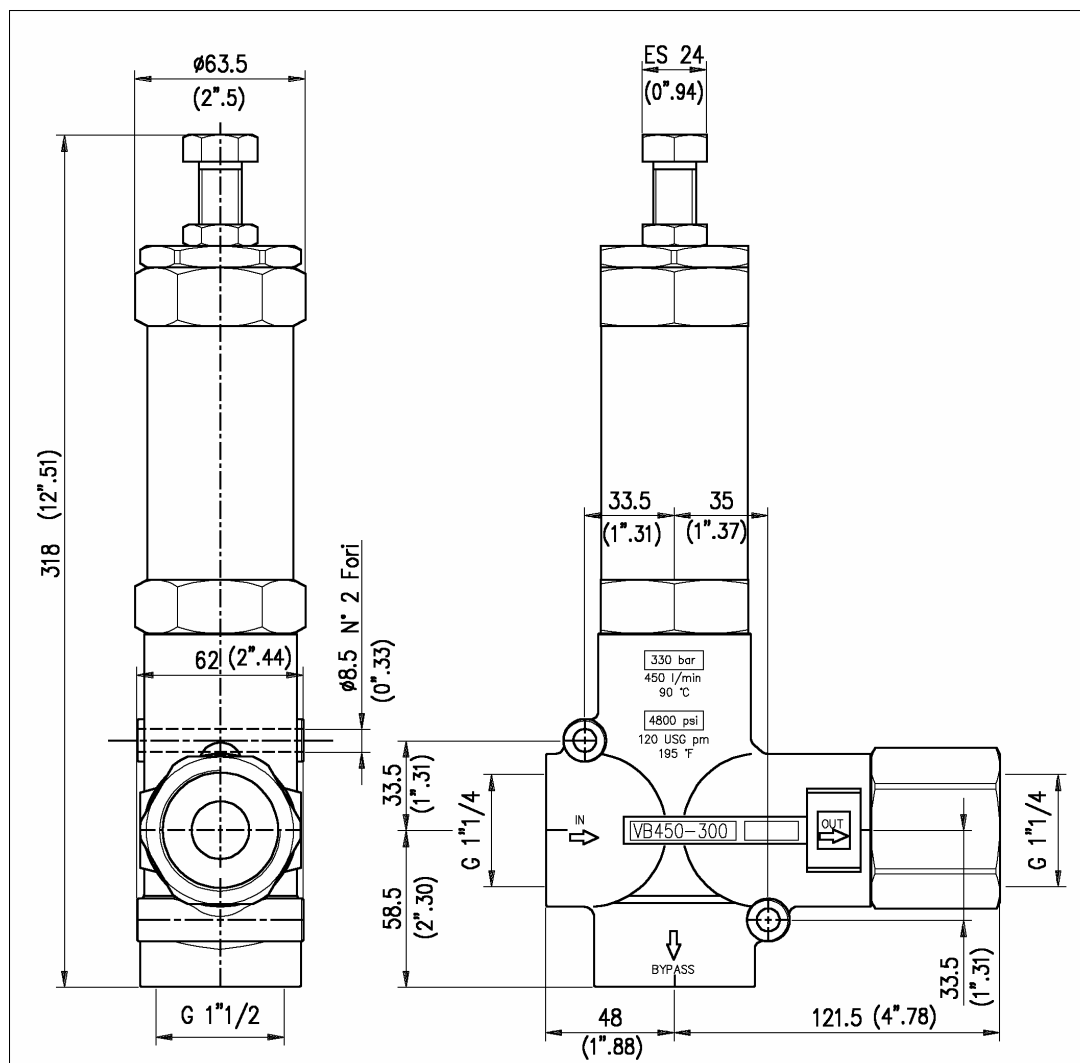
P/N	RATED PRESSURE RP bar - Mpa	PERMISSIBLE PRESSURE bar - MPa	MIN. ADJUSTABLE PRESSURE bar - MPa	(2) PRESSURE INCREASE	INLET OUTLET	BYPASS	WEIGHT g
60.4220.00	200 - 20	220 - 22	20 - 2	4 - 7 % of RP	G 1"1/4 F	G 1"1/2 F	5895
60.4230.00	300 - 30	330 - 33	30 - 3	3 - 6 % of RP	G 1"1/4 F	G 1"1/2 F	5895

(1) The valve is especially designed for a constant use at a water temperature of 60°C. It can withstand up to a max. temperature of 90°C for short intervals only.

(2) The max. pressure increase inside the valve occurs when the max. flow rate is discharged at max. calibration pressure.

The pressure increase indicated is only to be considered a therorically calculated data, which can vary according to system configuration.

DIMENSIONAL DRAWING



INSTRUCTIONS

SELECTION

This product is to be used with clean, fresh water, or water slightly additivated with ordinary detergents. For use involving harsh or even corrosive fluids, always ask PA Technical Department first. Appropriate filtration should be installed when using unclean fluids. To select the right valve, always take in consideration rated running data of the system (rated pressure, max. flow rate and max. temperature). In no case shall the system pressure exceed the **permissible pressure** marked on the valve.

Select a nozzle that will grant a bypass flow of at least 5% of total flow. Remember that a worn out nozzle causes pressure losses. When the regulator is installed following these instructions, it prevents pressure spikes while the system is operating.

INSTALLATION

On a hot water machine, fit the valve **upstream the heat generator**. The valve keeps system pressure steady even when flow rate changes. **Always** install in combination with a suitable Safety Valve.

OPERATION

The valve regulates the max. system pressure through a piston, which acts on a cone that, normally positioned, closes the bypass opening.

DISCHARGE SYSTEM AND WATER ADDUCTION

The bypass conduct shall discharge outside of the machine or into a tank, but never directly into intake conduct. In case, it is advisable to install a baffled tank.

PRESSURE SETTING/CALIBRATION

Adjustments must be carried out when the system is in pressure and the gun is operating. This operation will be easier to perform if the right nozzle was selected. Pressure is increased by rotating the adjustment knob. In case pressure does not increase despite turning of the knob, **do not force**, but check that the nozzle flow rate/pressure ratio is correct. When reaching the desired pressure level, tighten the nut (pos. 25) and secure it with a paint drop, in order to display possible loosening or tampering.

IMPORTANT: The nut (pos.25) must never be removed, as it is a mechanical safety device that limits the max pressure and prevents serious damage to persons and things.

PROBLEM HANDLING: CAUSES AND SOLUTIONS

PROBLEMS	PROBABLE CAUSES	SOLUTIONS
Valve pulses	<ul style="list-style-type: none"> - Presence of air in the system - Seals worn out - Circuit blocked 	<ul style="list-style-type: none"> - Bleed - Replace - Clean or widen up passages
Valve does not reach desired pressure level	<ul style="list-style-type: none"> - Wrong nozzle size - Ball seat and/or shutter worn out - Nozzle worn out - Presence of material matter 	<ul style="list-style-type: none"> - Change - Replace - Replace - Clean
Pressure drops	<ul style="list-style-type: none"> - Nozzle worn out - Pump seals worn out - Valve seat worn out - Presence of air in the system 	<ul style="list-style-type: none"> - Replace - Replace - Replace - Bleed
Pressure spikes	<ul style="list-style-type: none"> - Nozzle clogged 	<ul style="list-style-type: none"> - Clean - Repeat calibration procedure and replace nozzle
Water leaking out of discharge port Valve chatters	<ul style="list-style-type: none"> - Seat O-ring worn out - Seat worn out - Presence of material matter - Pump valves worn out 	<ul style="list-style-type: none"> - Replace - Replace - Clean - Replace

REGULATIONS : **See Standard Manual.**

The equipment hereby described bears the CE marking in accordance with the Rules and Directives referred to in the **Declaration of Conformity.**

For a correct use, follow the instructions given in this booklet and re-print them on the Use and Maintenance Booklet of the machine.

Make sure that you are given **the original Declaration of Conformity** for the chosen item. This booklet is **applicable for all valves type VRP 450-200/300**

MAINTENANCE

All maintenance operations must be carried out by qualified personnel only.

ROUTINE: every 400 hours of operation (around 10000 cycles), check and lubricate seals with waterproof grease.

EXTRAORDINARY: every 800 hours of operation (around 20000 cycles), check conditions of seals and other internal components. If required, replace them with original PA spare parts. When installing the spares, lubricate them with waterproof grease.

IMPORTANT: in case of replacement, assemble the valve correctly, resetting all conditions to starting levels and carefully repeat all operations described in paragraph pressure setting/calibration. Make sure to fix the nut pos.25 with thread locking liquid.

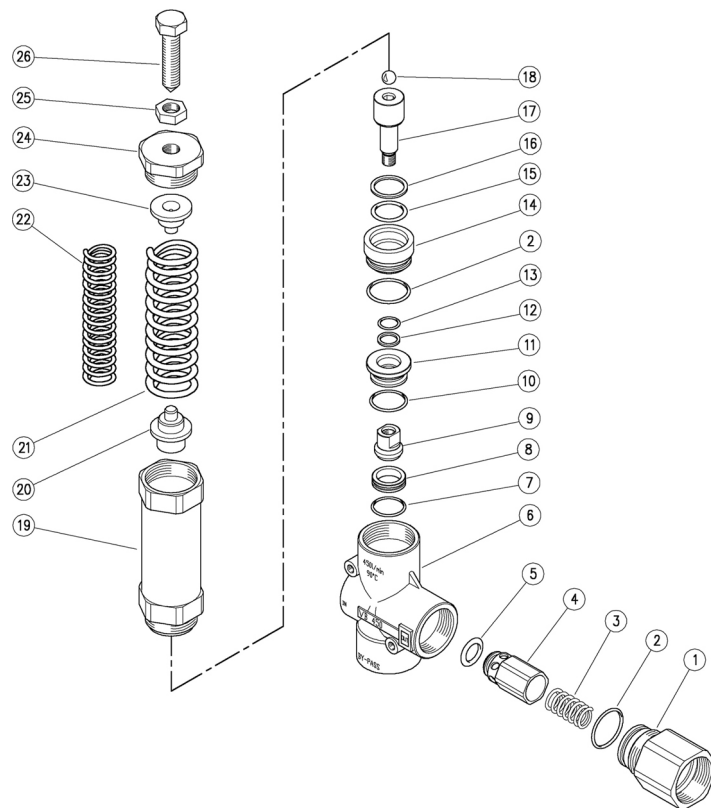
The manufacturer is not liable for damages resulted from incorrect fitting and maintenance.

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

Instruction, Maintenance, Installation, Spare Parts Booklet. <u>For a correct use of the item, please follow the instructions.</u> <u>Please copy all relevant information on the use and maintenance booklet of the machine.</u>	n. 12.9257.00

60.4020.00 VB450/200 unload. 1"1/4 Bsp F
60.4030.00 VB450/300 unload. 1"1/4 Bsp F

60.4220.00 VRP 450/200 reg.valv 1"1/4 Bsp F
60.4230.00 VRP 450/300 reg.valv.1"1/4 Bsp F



Pos.	P/N	Description	Q.ty	K1	K2	K3	K4	
1	60.4014.31	Piston holder, 1"1/4 Bsp F	1					3
2	10.3208.28	O-ring, 2,62x36,17 mm Ni85	2	•	•			5
3	60.4013.51	Spring, 1,6x23,1x44mm (1,2)	1					3
4	60.4012.31	Check valve (1,2)	1					3
5	10.3350.00	O-ring, 6x18 mm (1,2)	1	•				10
6	60.4001.35	Housing -VB450, 1"1/4Bsp F, brass	1					1
7	10.3077.08	O-ring, 1,78x28,3 mm Ni 85	1	•	•			10
8	60.4002.51	Seat	1	•	•			3
9	60.4003.51	Shutter, M 12	1	•	•			3
10	10.3206.08	O-ring, 2,62x28,25 mm Ni85	1	•	•			10
11	60.4005.31	Bushing	1					3
12	10.4084.00	Back-up ring, 16x20,5x2mm	1	•	•			5
13	10.3181.20	O-ring, 2,62x15,88 mm	1	•	•			10

Pos.	P/N	Description	Q.ty	K1	K2	K3	K4	
14	60.4007.31	Bushing	1					3
15	10.3246.05	O-ring 3,53x28,17 mm	1	•	•			5
16	10.4096.00	Back-up ring, 28x34x2mm	1	•	•			5
17	60.4004.51	Piston, M 12	1					3
18	14.7465.00	Ball, 1/2" Sst.	1					5
19	60.4009.31	Piston holder	1					1
20	60.4010.31	Ball holder	1					3
21	60.4006.61	Spring, 9x33x110mm	1					2
22	60.4015.61	Spring (2,3)	1					2
23	60.4016.31	Spring holder	1					3
24	60.4008.31	Screw plug M 48	1					3
25	11.4845.00	Nut, M16x1,5 Sst.	1					5
26	60.4011.51	Screw, M16x54mm Sst.	1					3

Kit	P/N	Description	
K1	60.4022.24	Spares kit -VB 450/200-300, 10x1pcs.	1
K2	60.4222.24	Spares kit -VRP 450/200-300, 9x1pcs.	1

(1) 60.4020.00 (2) 60.4030.00 (3) 60.4230.00