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# VRP280 – Pressure regulating valve

**Technical Booklet: E 255**

Compensated pressure regulating valve.
Regulates fluid bypass minimising pressure variations

DN 10


- **60.0542.00** VRP280 3/8 Bsp MF 280 bar – 28 MPa

- Sturdy construction of steel and brass
- Return action of the piston by means of a powerful spring, for a safe and reliable pressure adjustment.
- High balancing to guarantee slight variations of calibration pressure when flow rate in bypass varies.
- Possibility to use the valve with several lances at the same time

**TECHNICAL SPECIFICATIONS**

Max.flow rate 40 l/min - Max. temperature 90°C (1)

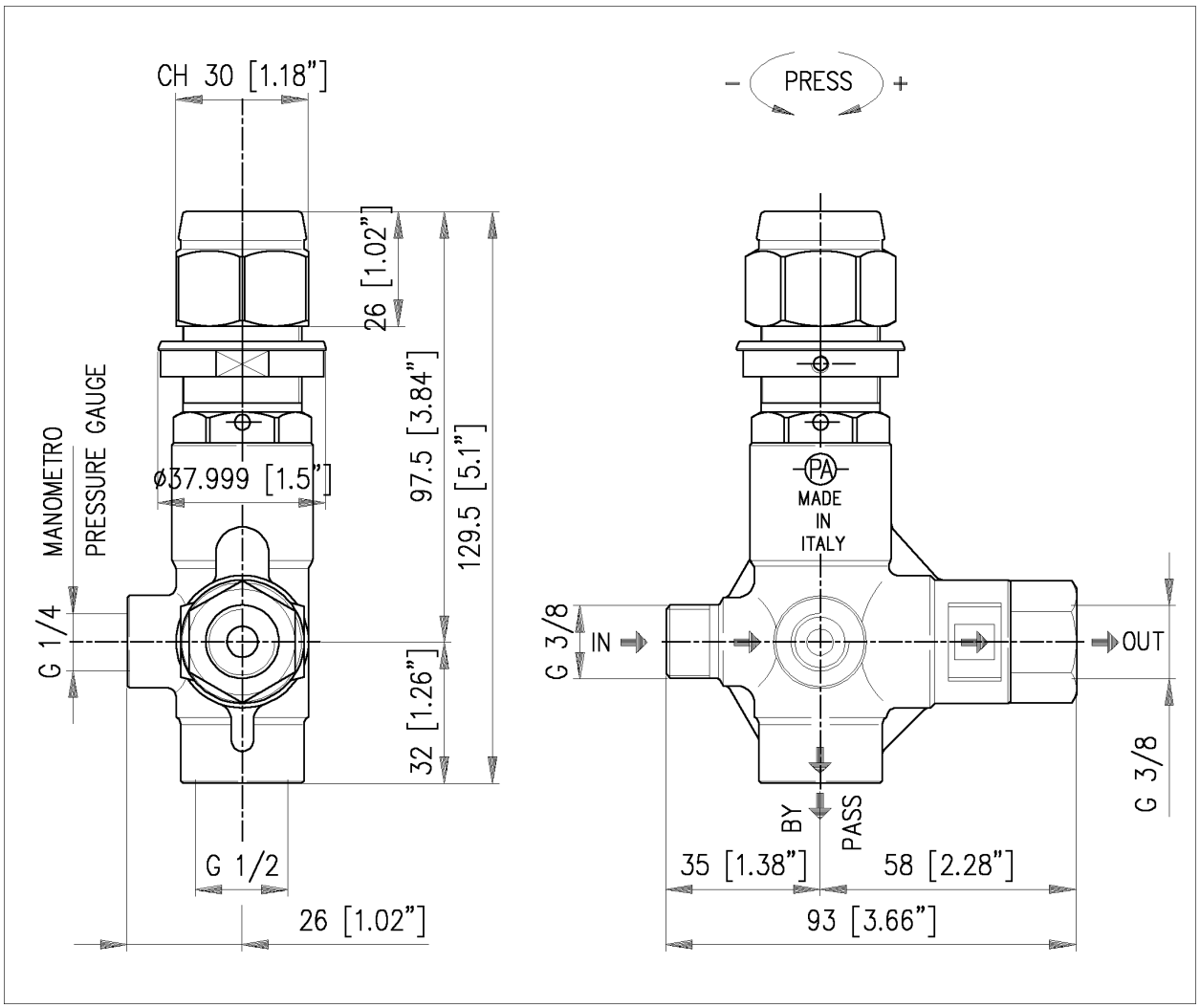
| Part number | Rated pressure bar - MPa | Permissible pressure bar - MPa | Minimum adjustable pressure bar - MPa | (2) Pressure increase bar - MPa | Inlet Outlet | Bypass | Weight g |
|---|---|---|---|---|---|---|---|
| **60.0542.00** | 280 - 28 | 310 - 31 | 28-2.8 | 18 – 1.8 | 3/8 Bsp MF | 1/2 Bsp F | 823 |

**(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 o nly.

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

| | |
|---|---|
| **Instruction, maintenance, installation, spare parts booklet.**<br>For a correct use of the item, please follow the instructions.<br>**Re-print them on the use and maintenance booklet of the machine.** | n. 12.9255.00 |

## DIMENSIONAL DRAWING.




## INSTRUCTIONS

**SELECTION**

This product is designed 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.

When using this valve as a pressure regulator, select a nozzle that will grant a discharge 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 water heating machine, fit the valve before **the heat generator.** As a pressure regulating valve, it keeps system pressure steady when flow rate varies. **Always** install in combination with a suitable Safety Valve.

**The tank discharge has to be made with a hose of internal diameter 19mm (low pressure hose- max 20 bar – 2 MPa) and hose-barb ½ on the valve by-pass (see fig.1)**

**OPERATIONS**

The discharge flow should be returned to a baffled tank. If, on the contrary, the pump is fed directly from the water mains, it is advisable to install a pressure reducing valve before the pump, in order to avoid dangerous pressure spikes which could badly damage manifolds and suction valves. In case of extended conditions of bypass directed to the suction side of the pump, it is recommended to install a thermal valve (i.e. VT6) to prevent high water temperature increase.

**PRESSURE ADJUSTMENT/SETTING**

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. Should the knob stop before the desired pressure level is reached, **do not force**, but check that the nozzle flow rate/pressure ratio is correct. When reaching the desired pressure level, tighten the nut (pos. 12)with the dowel (pos.11) and secure it with a paint drop, in order to display any possible loosening or tampering.

**IMPORTANT: The nut (pos.12) 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 cycles | - Air inside the system<br>- Seals worn out<br>- Circuit clogged | - Bleed out<br>- Replace<br>- Clean or widen passages |
| The valve does not reach pressure | - Nozzle size unfit<br>- Seat/shutter/ball worn out<br>- Nozzle worn out<br>- Presence of material matter | - Change<br>- Replace<br>- Replace<br>- Clean |
| Pressure drop | - Nozzle worn out<br>- Pump gaskets worn out<br>- Valve seat worn out<br>- Air inside the system | - Replace<br>- Replace<br>- Replace<br>- Bleed out |
| Pressure spikes | - There is not a min.5% of total flow in bypass<br>- Nozzle clogged<br>- Adjustment carried out with completely compressed spring | - Re-adjust<br>- Clean<br>- Re-adjust and replace nozzle |
| Water leaking from bypass<br>Valve chatters | - O-ring seat damaged<br>- Seat worn out<br>- Presence of material matter or pump valves worn out | - Replace<br>- Replace<br>- Clean |
| The valve causes vibrations to the hydraulic system | By-pass orifice unfit<br>By-pass hose dimensions unfit<br>By-pass clogged or narrowed | Follow the fitting instructions shown in **fig.1** with by-pass through pump.<br>Widen diamenter<br>Clean or change |

## REGULATIONS : *see Standard Manual*

For a correct use, follow the instructions given in this booklet and re-print them on the Use and maintenace booklet of the machine.
Make sure that you are given **the Original Declaration of Conformity** for the chosen item. This bookletl is valid for all unloader valves named **VRP 280.**

## MAINTENANCE

Maintenance has to be carried out by **Specialized Technicians.**
ROUTINE: every 400 working hours (around 10,000 cycles), check and lubricate the seals with water resistant grease.
EXTRAORDINARY: every 800 working hours( around 20,000 cycles), control the wear of the seals and internal parts and if necessary, replace with original PA parts taking care during installation to lubricate with water resistant grease.
**ATTENTION: assemble the valve correctly, resetting all conditions to starting levels and carefully repeat all operations described in paragraph pressure setting/calibration.**
**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

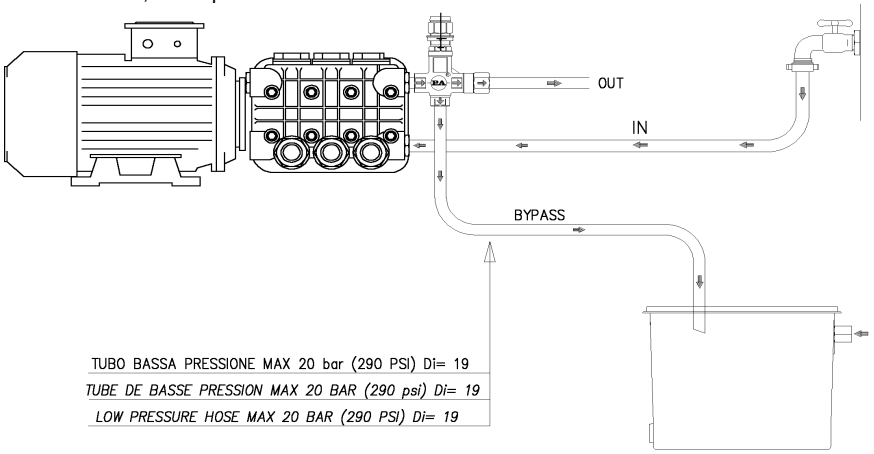
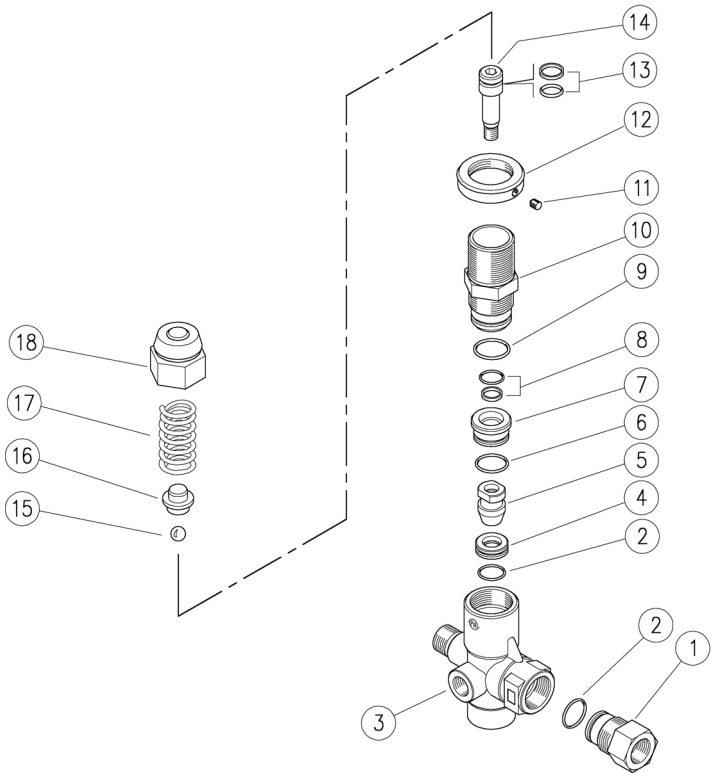



**Fig. 1**

## 60.0542.00 VRP280 Pressure Regul. Valve,3/8 Bsp F




| Pos. | P/N | Description | Q.ty | K1 | K2 | K3 | K4 | |
|---|---|---|---|---|---|---|---|---|
| 1 | 60.1811.31R | Shutter coupl., 3/8F Bsp brass | 1 | | | | | 5 |
| 2 | 10.3066.01R | O-ring, 1,78x15,6 mm Ni 85 | 2 | | | | | 10 |
| 3 | 60.1725.35R | Hous.-V280-350/4,3/8M c/snk+1/4F Bsp brs | 1 | | | | | 3 |
| 4 | 60.1809.51R | Seat, 11,6x19x6 mm Sst. | 1 | | | | | 5 |
| 5 | 60.1808.51R | Shutter pin, M8 Sst. | 1 | | | | | 3 |
| 6 | 10.3068.01R | O-ring, 1,78x17,17 mm Ni 85 | 1 | | | | | 10 |
| 7 | 60.1810.31R | Spacer ring, 10,3x23,4x12,5 mm brass | 1 | | | | | 10 |
| 8 | 60.0979.24 | Stem seal, 10x14,9x2,2 mm+O-ring | 1 | | | | | 5 |
| 9 | 10.3072.01R | O-ring, 1,78x20,35 mm Ni 85 | 1 | | | | | 10 |
| 10 | 60.0973.31R | Piston holder, brass | 1 | | | | | 3 |
| 11 | 16.2100.00R | Set screw, DIN914 M4x4 mm | 1 | | | | | 10 |
| 12 | 60.1728.31R | Ring nut, M27x1 brass | 1 | | | | | 10 |
| 13 | 60.0978.24 | Piston seal, 9x14x2,2 mm+O-ring | 1 | | | | | 5 |
| 14 | 60.1806.51R | Piston, M8 Sst. | 1 | | | | | 3 |
| 15 | 14.7443.10R | Ball, 11/32" Sst. | 1 | | | | | 10 |
| 16 | 60.1813.31R | Spring rest pin, brass | 1 | | | | | 5 |
| 17 | 60.0975.61R | Spring, 4,2x19,7x42 mm z.pl. | 1 | | | | | 10 |
| 18 | 60.1727.31R | Valve regulating knob, brass | 1 | | | | | 5 |