PA®

ONE hundred percent made in ITALY

ZERO range

Pressure under control

ZERO pressure valves the future of cleaning at high pressure proceeds from here

A normal by-pass valve, as we all know, is used to recycle the water in the pump internally when the gun is closed or in any case when the exit flow of water is interrupted. The pressure spike which is created in the delivery line between valve and gun, when the latter is closed, permits the by-pass aperture and the consequent water recycle in the pump. Up to the moment of the gun reopening this pressure spike, equal to circa 10% more of the working pressure, remains “trapped” in the delivery line and cannot be discharged. Over the years, from a refined viewpoint of Technology applied to this type of product, we have pursued to design valves which could allow at least a partial reduction of pressure values between valve and gun at closure. Important results in this sense have been reached and the VB10 was created, a valve capable to reduce “trapped” pressure in the delivery line up to a value circa equal 30% of the working pressure.

Zero setting of pressure in the delivery line to gun closure.

ADVANTAGES:

- Increased safety for the operator
- Easy manoeuvrability of the delivery tube at gun closure
- Gun opening force well reduced
- At gun reopening, work pressure is reached gradually, making the operators job easier and simplifying the start up of a heat engine if used
- Improved maintenance of all accessories that make up the machine & pump

The new “Zero” range by PA has achieved more than this: these particular and refined valves are described as such because they have the capacity to discharge completely the trapped pressure on the inside of the delivery line to the gun when closed. This distinctive feature not only makes the gun become extremely easy to handle softly at aperture but allows also a longer lifespan to all the parts that form the machine and pump itself. At gun closure the pressure is in fact decreased throughout the circuit and therefore downstream to the valve, which would normally remain at high pressure, resulting in less strain and stress. At gun aperture the working pressure is also gradually reached, avoiding abrupt load variations on the pump. Another important advantage brought by these valves is respective to the end users safety. Using a normal by-pass valve the pressure that remains on the inside of the delivery line at gun closure could represent danger: in this circumstance the system remains “loaded” and at the moment of going back to use, the water jet under pressure could become quite difficult to control if an end user is off guard or accidentally touches the gun lever. With the “Zero” valves this problem does not exist. The PA “Zero” range depicts a new generation of valves that develop a new concept of design completely different than all other products currently on the market and therefore covered by patent.The applied technology to these valves has allowed to exceed all problems of reliability and performance, hereby intended for the pressure loss control, clearly present on the market with similar valves. The PA “Zero” valve range is distinguished for easy assembly, setting and maintenance, ensuring control of expenditure.

Main aspects of performance between a normal by-pass valve and a ZERO pressure valve

NORMAL Valve

In a system where a normal by-pass valve is fitted, at gun closure, a pressure spike occurs which allows the by-pass aperture. In this circumstance the section of the system found between valve and gun remains isolated and the water under pressure is "trapped" internally until the aperture of the gun.

GUN
OPEN

Pressure to the nozzle:
approx. **200 bar**
Pump pressure:
approx. **200 bar**

GUN
CLOSED

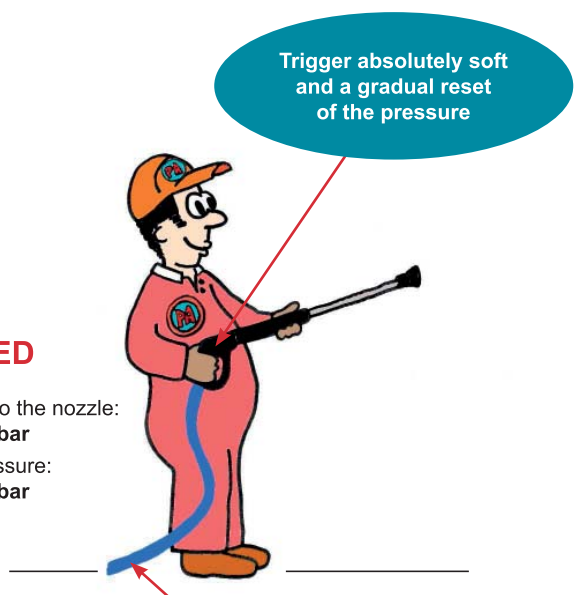
Pressure to the nozzle:
approx. **200 bar**
Pump pressure:
approx. **5 bar**

ZERO Valve

In a system where a Zero valve is fitted, at gun closure, the section of the system between valve and gun remains always connected with the by-pass which allows to discharge the pressure completely. The hose results flexible and easy to handle while the gun trigger, at opening, will be absolutely tender because will not have to overcome any pressure. The difference of features between pump pressure and nozzle pressure indicates the pressure loss necessary for the function of the valve: it's value is very limited in the case of the PA Zero valves.

GUN
OPEN

Pressure to the nozzle:
approx. **195 bar**
Pump pressure:
approx. **200 bar**



GUN
CLOSED

Pressure to the nozzle:
approx. **0 bar**
Pump pressure:
approx. **0 bar**

ZERO range,
a spectrum vast and varied

The PA “Zero” range is a line of valves designed around the same technology but very distinct from each other.

The assortment of the “Zero” range begun with the intent to provide,the client a specifical product for every type of application; whoever purchases a “Zero” valve can optimize the characteristics of the product and, just as important, the cost.

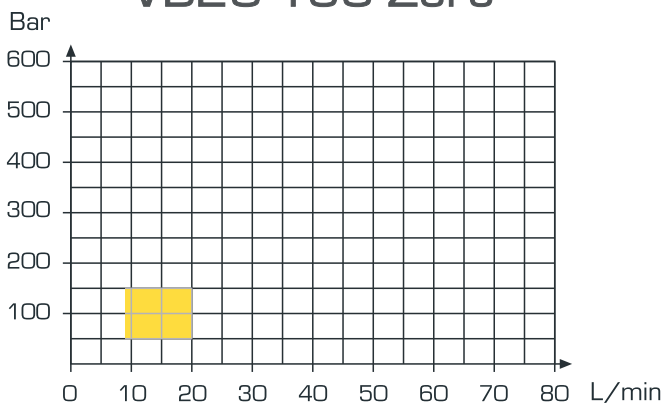
We begin with a small and light valve like the VB20-160 Zero, a valve designed to work at flows up to 20 l/min and 160 bar, up to a valve like the VB60/600 built completely in Sst 303 and capable to function with 60 l/min and 600 bar.

The range is completed by the Pulsar Zero and the VB80/280 Zero.

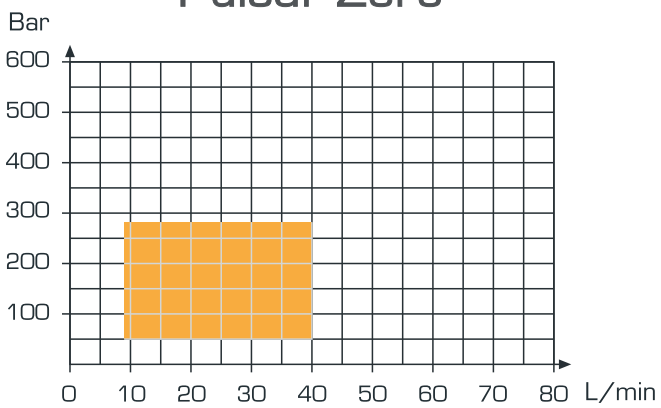
The first of these is the valve that represents the initiator of the range, a very versatile valve that can work with flows from 9 to 40 l/min and 280 bar; the second instead is a bigger and heavier valve studied to work at high flows: 80 l/min and 280 bar.

Chart for choice of correct valve in line with flow & pressure

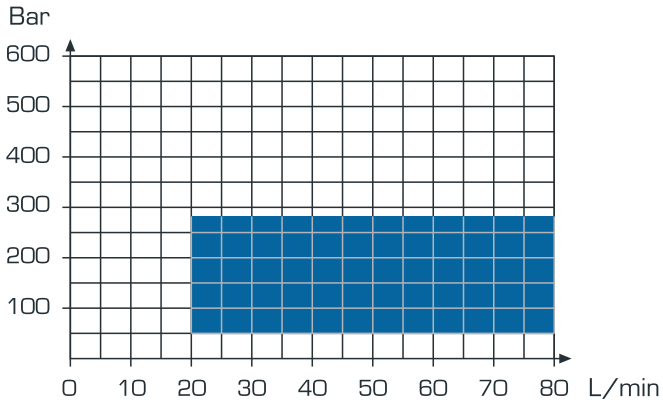
VB20-160 Zero



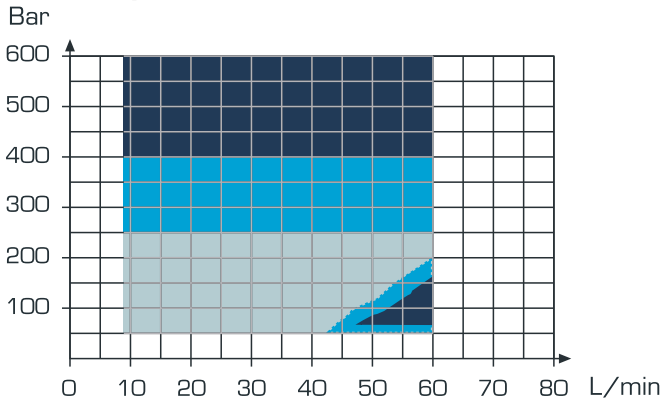
Pulsar Zero



VB80-280 Zero



VB60/600-400-250 Zero



VB60/250Zero

VB60/400Zero

VB60/600Zero

Note:

VB60/250:
Minimum pressure 50 bar/725 psi

VB60/400:
Minimum pressure 50 bar/725 psi

VB60/600:
Minimum pressure 70 bar/1015 psi

When and where to use the ZERO valves

The Zero valves could be defined as “special by-pass valves” from the moment that their function is the same even though carried out with important aspects of performance.
Let’s see in which applications it is particularly recommended to use a Zero valve.

RECOMMENDED USE OF ZERO VALVES

High pressure cleaning
The more the pressure & flow is higher, the more the system can benefit of the advantages brought by the Zero valves, either by means of safety or maintenance due to the exclusion of pressure spikes and abrupt strokes.

Self- service applications
In all the installations that foresee inexperienced operators using pressure cleaners it is strictly advisable to use Zero valves: the gradual increase of pressure at gun opening reduces considerably the risks linked to the powerful water jet.

Machines with petrol engines
Reaching gradually the working pressure permitted by the Zero valves resolves all the starting problems of the machines with petrol engines.
By fitting a Zero valve it is not necessary to use an accessory like the easy starter.

Heated applications
With machines or systems that work with hot water and in case of a stopage failure in the heater at gun closure, the risk of overheated water could provoke an ulterior increase of pressure in the delivery resulting very dangerous for the complete system. By using a Zero valve the risk of pressure increase would be avoided from the moment that the overheated water would be diverted only to by-pass.

FURTHER INFORMATION

The PA Sales & Technical Office are at your complete disposal and pleased to answer any doubts, requests or further information concerning the new “ZERO” range and naturally, all other PA products. **Do not hesitate to contact us!**

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VB20/160 Zero

P/N	Inlet	Outlet	Bypass	Weight gr	Weight oz	
60.2500.00	3/8Bsp F	3/8Bsp F	3/8Bsp F	662,3	23,4	15

Permissible Pressure	160 bar - 16 MPa	2300 psi
Max. flow rate	20 l/min	5.3 USGpm
Min. flow rate	8 l/min	2.1 USGpm
Rated Temperature	60°C	140°F
Max. Temperature	90°C	195°F
Material		Brass

Patent No: MO2008A000043-/-US-2009-02057 16-A1-/-EP 2 093 643 A2

VB20/160 Zero
with micro-switch

P/N	Inlet	Outlet	Bypass	Weight gr	Weight oz	
60.2550.00	3/8Bsp F	3/8Bsp F	3/8Bsp F	772,8	27,2	12

Permissible Pressure	160 bar - 16 MPa	2300 psi
Max. flow rate	20 l/min	5.3 USGpm
Min. flow rate	8 l/min	2.1 USGpm
Rated Temperature	60°C	140°F
Max. Temperature	90°C	195°F
Max. Curr. Strength		6 (2) A
Max. Voltage		250 V

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Pulsar Zero

P/N	Inlet	Outlet	Bypass	Weight gr	Weight oz		
60.2400.00	3/8Bsp F	3/8Bsp F	2x3/8Bsp F	1135	40,04	12	✓
60.2400.50	3/8 Npt F	3/8 Npt F	2x3/8 Npt F	1135	40,04	12	✓

Permissible Pressure	280 bar - 28 MPa	4050 psi
Max. flow rate	40 l/min	10.5 USGpm
Min. flow rate	9 l/min	2.4 USGpm
Rated Temperature	60°C	140°F
Max. Temperature	90°C	195°F
Material		Brass

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Pulsar Zero
with knob and micro-switch

P/N	Inlet	Outlet	Bypass	Weight gr	Weight oz		
60.2450.00	3/8Bsp F	3/8Bsp F	2x3/8Bsp F	1250	40,04	12	✓
60.2450.50	3/8 Npt F	3/8 Npt F	2x3/8 Npt F	1250	44,09	12	

Permissible Pressure	280 bar - 28 MPa	4050 psi
Max. flow rate	40 l/min	10.5 USGpm
Min. flow rate	9 l/min	2.4 USGpm
Rated Temperature	60°C	140°F
Max. Temperature	90°C	195°F
Max. Curr. Strength		6 (2) A
Max. Voltage		250 V

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VB80/280 Zero

P/N	Inlet	Outlet	Bypass	Weight gr	Weight oz		
60.2800.00	1/2Bsp F	1/2Bsp F	1/2Bsp F	1711	60,3	4	

Permissible Pressure	280 bar - 28 MPa	4050 psi
Max. flow rate	80 l/min	21 USGpm
Min. flow rate	20 l/min	5.3 USGpm
Rated Temperature	60°C	140°F
Max. Temperature	90°C	195°F
Material		Brass

Patent No: MO2008A000043-/-US-2009-02057 16-A1-/-EP 2 093 643 A2

VB80/280 Zero

with knob and micro-switch

P/N	Inlet	Outlet	Bypass	Weight gr	Weight oz		
60.2850.00	1/2Bsp F	1/2Bsp F	1/2Bsp F	1825,2	64,4	1	

Permissible Pressure	280 bar - 28 MPa	4050 psi
Max. flow rate	80 l/min	21 USGpm
Min. flow rate	20 l/min	5.3 USGpm
Rated Temperature	60°C	140°F
Max. Temperature	90°C	195°F
Max. Curr. Strength		6 (2) A
Max. Voltage		250 V

Patent No: MO2008A000043-/-US-2009-02057 16-A1-/-EP 2 093 643 A2

VB60/600-400-250 Zero

P/N	Type	Permiss.press. bar-MPa	Permiss.press. psi	Inlet	Outlet	Bypass	Weight gr	Weight oz		
60.2600.00	A	600-60	8700	1/2Bsp F	1/2Bsp F	1/2Bsp F	2130	75,1	1	✓
60.2600.40	B	400-40	5800	1/2Bsp F	1/2Bsp F	1/2Bsp F	2125	75	1	
60.2600.25	C	250-25	3600	1/2Bsp F	1/2Bsp F	1/2Bsp F	2090	73,8	1	

Max. flow rate	60 l/min	16 USGpm
Min. flow rate	9 l/min	2.4 USGpm
Rated Temperature	60°C	140°F
Max. Temperature	90°C	195°F
Material		Stainless steel 303

Patent No: MO2008A000043-/-US-2009-02057 16-A1-/-EP 2 093 643 A2

VB60/600

con microinterruttore

P/N	Inlet	Outlet	Bypass	Weight gr	Weight oz		
60.2650.00	1/2Bsp F	1/2Bsp F	1/2Bsp F	2250	74,9	1	

Permissible Pressure	600 bar - 60 MPa	8700 psi
Max. flow rate	60 l/min	16 USGpm
Min. flow rate	9 l/min	2.4 USGpm
Rated Temperature	60°C	140°F
Max. Temperature	90°C	195°F
Max. Curr. Strength		Stainless steel 303
Max. Voltage		6 (2) A
		250 V

Patent No: MO2008A000043-/-US-2009-02057 16-A1-/-EP 2 093 643 A2

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