

**LUCIFER®**

# **Electropneumatic pressure regulator EPP4 Series**

**Connection G 1/4**

*Catalogue 8683/UK*



## The **ECONOMIC** solution which meets the market requirements

**Compact design and lightweight for ease of installation and low inertia on moving robots.**

**High responsiveness and low Hysteresis (0.5%) for accurate and fast adjustment of the controlled pressure.**

**Low power consumption (2.2W), energy savings compatible with environment protection.**

### **The product**

An electropneumatic pressure regulators G 1/4 which, by means of an integrated electronic control system and pulse width modulated solenoid valves, controls the output pressure proportionally to an analogue electrical signal. A high precision is achieved by means of an internal feedback through an integrated pressure sensor.

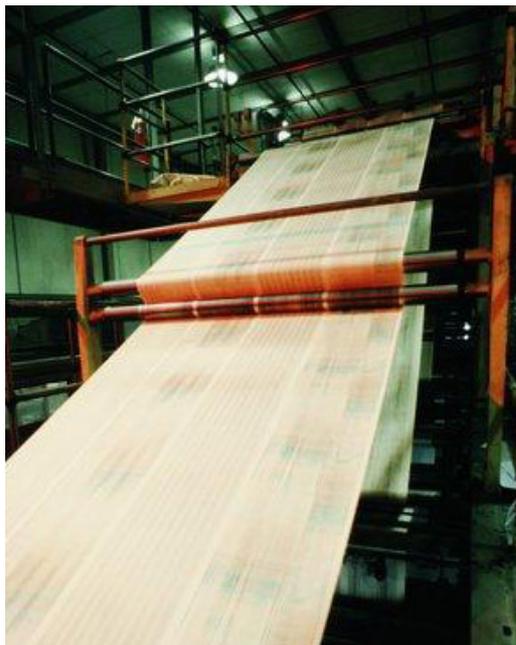
### **Applications**

Pressure control independent of flow in electropneumatic control systems, in particular in the following industries:

- Robotics: welding, painting lines
- Paper and printing: tension regulations, speed-and brake control for rolls
- Machine tools: plastic moulding, laser welding, presses, polishing
- Trucks and Trains: control of adaptive suspensions.

### **Benefits**

- Simplification of control systems by reducing the number of components and permitting more flexibility of the controls with non negligible increase of the productivity (performances, quality, reliability)
- Very fast response times
- Excellent linearity and hysteresis
- No air consumption in rest position
- Direct interface to programmable controllers.



*Welding robot*

*Printing machine*

**TECHNICAL DATA**

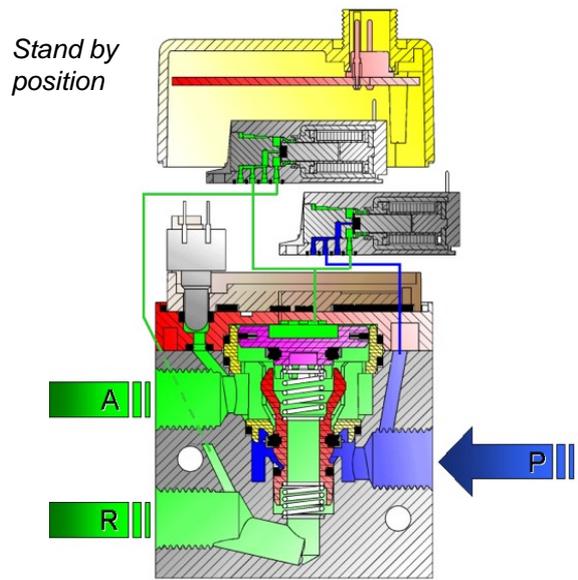
<b>Fluid:</b>	Lubricated or non lubricated air and neutral gases. Recommended filtration: 50 µm
<b>Temperature range:</b>	Ambient: 0 to +50 °C. Fluid: 0 to +50 °C.
<b>Inlet pressure range:</b>	1 to 12 bar (the inlet pressure must always be at least 1 bar above the regulated pressure)
<b>Outlet pressure range:</b>	0.05 to 10 bar
<b>Hysteresis:</b>	50 mbar (factory set up).
<b>Air consumption at constant control signal:</b>	0
<b>Supply voltage:</b>	24 V DC ± 15 % (Max. ripple 1 V)
<b>Power consumption:</b>	Max. 2.2 W with 24 V DC and constant changes of the control signal < 0.5 W without change of control signal
<b>Control signal:</b>	Analog 0 - 10 V Analog 4 - 20 mA
<b>Indicative reponse time:</b>	With a volume of 330 cm <sup>3</sup> at the outlet of the regulator. Filling: 2 to 4 bar - 2 to 8 bar Step response: ~ 50 ms - ~ 100 ms Emptying: 4 to 2 bar - 8 to 2 bar Step response: ~ 70 ms - ~ 130 ms
<b>Safety position:</b>	In case of control signal failure or if it is less than 50mV, the regulated pressure drops automatically to 0 bar (atmospheric pressure). In case of voltage supply failure, the regulated pressure will be kept constant
<b>Electrical connection:</b>	M12 – 4 pin ; 4x 0.34mm <sup>2</sup>
<b>Life expectancy:</b>	> 50 Mio changes of control signal steps.
<b>Mounting position:</b>	Indifferent (recommended position: upright; electronic part on top).
<b>Resistance to vibrations:</b>	30 g in all directions.
<b>Outlet signal:</b>	No outlet signal.
<b>Degree of protection:</b>	IP 65.
<b>Assembly:</b>	Silicone free
<b>Electromagnetic compatibility:</b>	In accordance with EN 61000-6-1:2001 EN 61000-6-2:2001 EN 61000-6-3:2001 EN 61000-6-4:2001
<b>Installation and setting instructions:</b>	See our 12 pages “Bulletin 408014” and appendix supplied with the product.

Note: Parker Lucifer reserves the right to change specifications without notification.

**Description of operation**

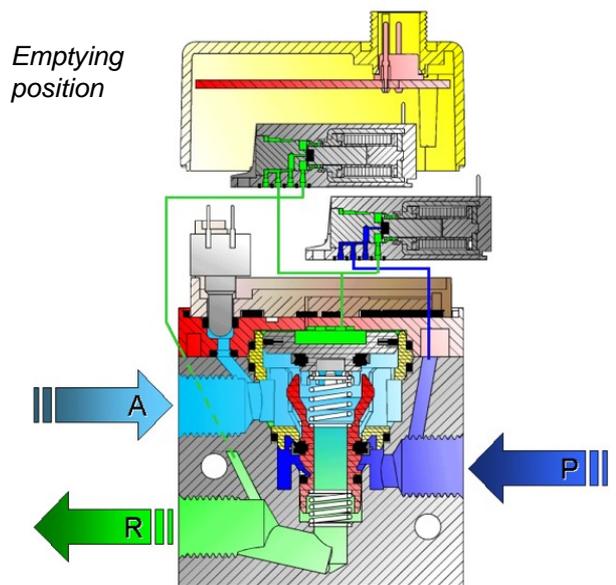
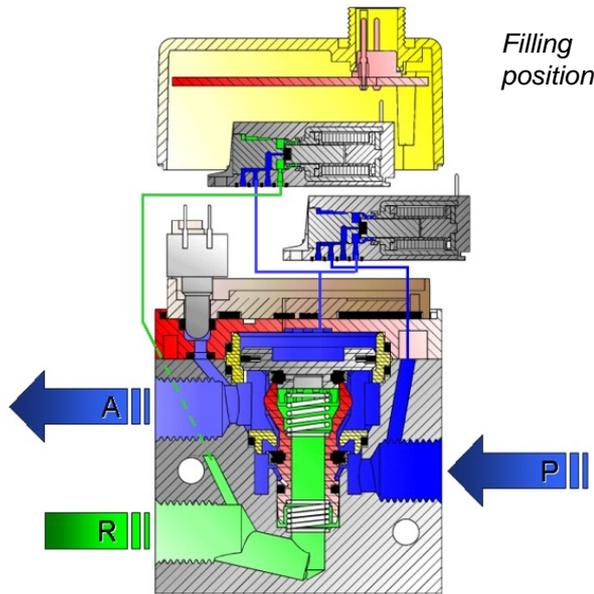
The EPP4 Series is a family of electrically remote-controlled pneumatic pressure regulators with closed loop integrated electronic control. It allows regulating the outlet pressure proportionally to an electrical control signal. The EPP4 regulator comprises a traditional servo-operated pneumatic pressure regulator, where the pilot chamber is fed by one or the other of two pulse width modulated 2-way solenoid valves.

The pressure sensor measures the outlet pressure of the regulator and provides a feedback signal to the controller. Any difference between the control signal and the feedback signal is converted to a digital signal to energise the coil of one or the other 2-way valves to correct the position of the regulator.



The control signal can be a voltage (0-10 V) or a current (4-20 mA). The inlet of the "filling valve" is connected directly to the main inlet P of the regulator; when energised this valve will fill the servo-chamber for increasing the pressure at the outlet A of the regulator.

When the other "exhaust valve" is energised (reduction of pressure at the outlet A of the regulator), the pressure of the servo-chamber will be exhausted through a discharge orifice located between the cover and the body and directly fed to the atmosphere without silencer.



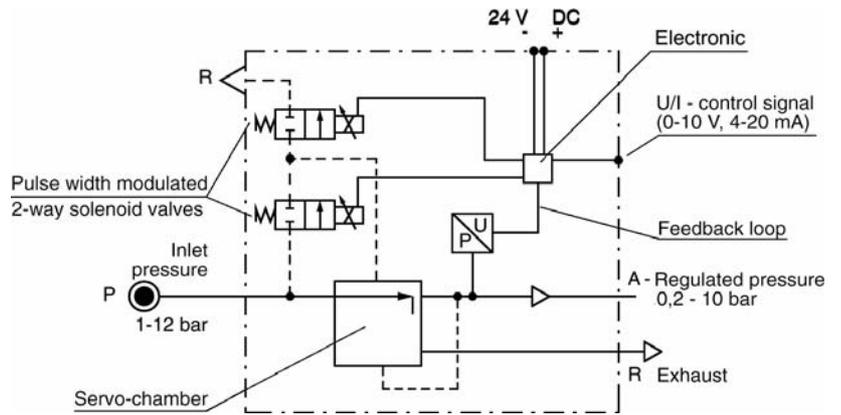
An option exists to collect the exhaust via the quick exhaust R (Upon request). The exhaust of the main regulated pressure will be made through the quick exhaust R. The use of a conventional silencer is recommended.

Both solenoid valves assure the filling or emptying of the servo-chamber in order to increase or decrease the pressure at the outlet of the regulator. In rest position of the valves all ports are blocked.

**Block diagram**

The controller receives both the control signal (set pressure) and the feedback signal from the sensor (outlet pressure).

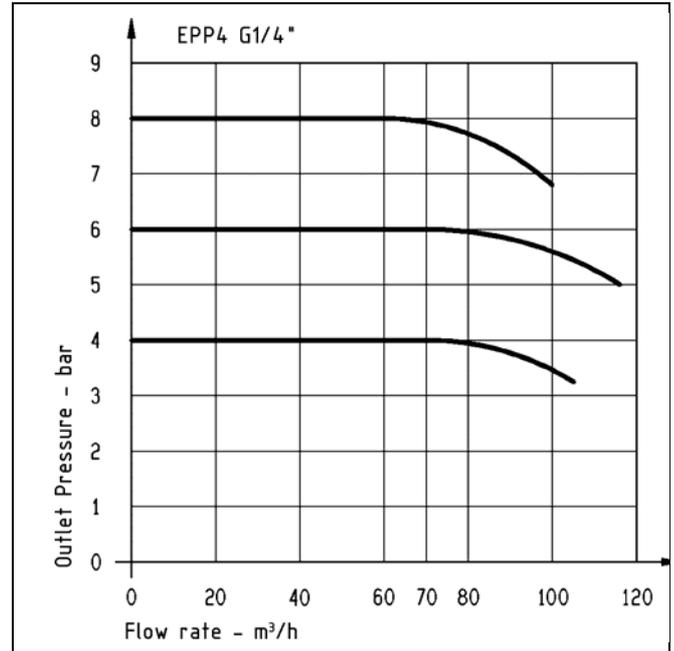
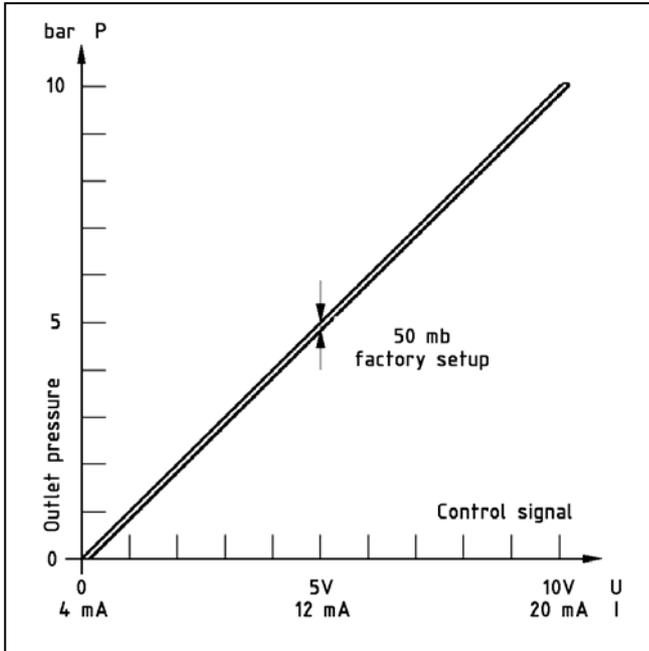
Any difference between the two amplifier inputs results in a corresponding output which drives the appropriate 2-way pulse width modulated solenoid valve so that the pilot piston moves to correct the pressure.



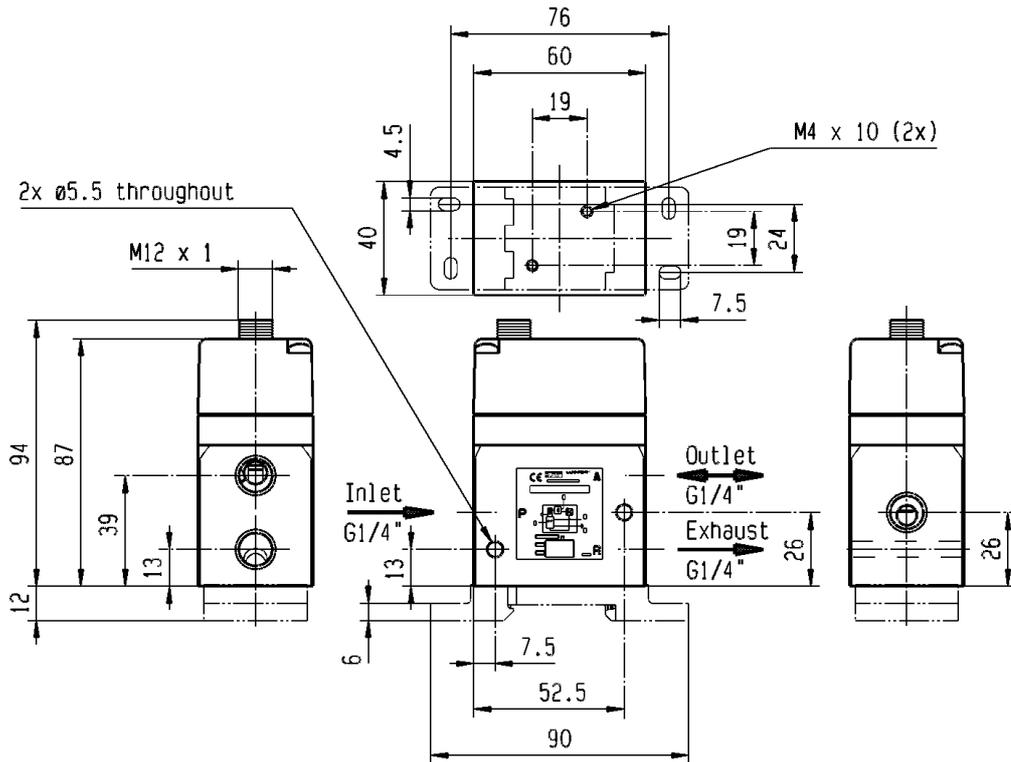
**Hysteresis Curve**

**Flow Curve**

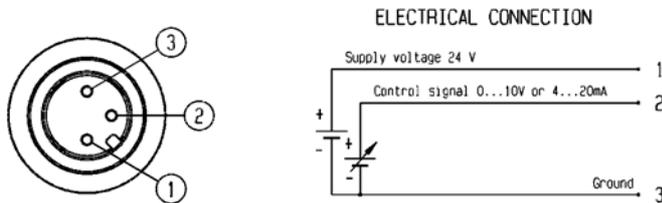
Outlet pressure in function of flow at constant control signal (P1 = 10 bar)



**Dimensions**



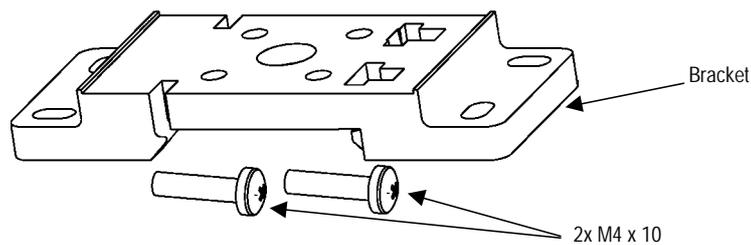
The male connector adopted on the EPP4 is a standard 4 pole-M12, without the pin number 4:



The female connector to mount is the 4 pole M12 connector (IEC 61076-2-101 model LF) where the pin number 4 is not connected.

**Accessories**

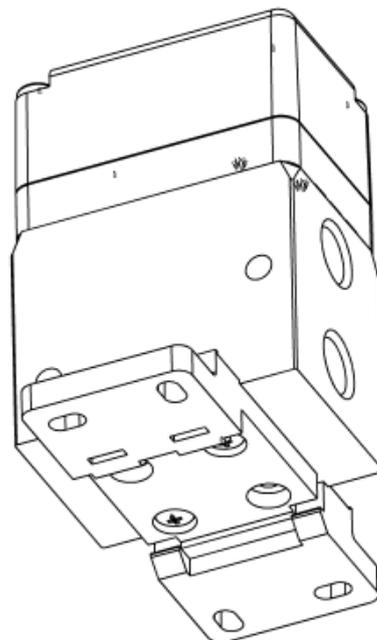
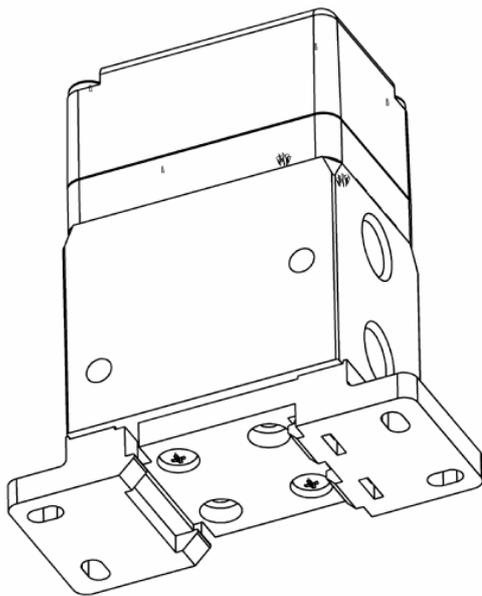
Mounting bracket (automatically supplied with each EPP4)



**How to order:**

<b>Reference</b>	<b>Control signal</b>	<b>Outlet pressure</b>
P4BG2001A002	0 – 10 V	0 – 10 bar
P4BG2001A003	4 – 20 mA	0 – 10 bar
P4BG2001A004	0 – 10 V	0 – 6 bar
P4BG2001A005	4 – 20 mA	0 – 6 bar
P4BG2001A006	0 – 10 V	0 – 5 bar
P4BG2001A007	4 – 20 mA	0 – 5 bar
P4BG2001A008	0 – 10 V	0 – 7 bar
P4BG2001A009	4 – 20 mA	0 – 7 bar

Ask your agent for any specific calibration.  
 Ask your agent for the NPT version.  
 Cable + connector not included.





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8683/UK  
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