

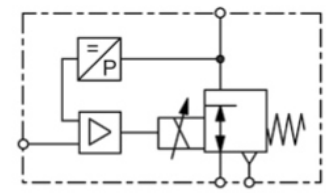
BP1 - Convertisseur I/P, commande proportionnelle de pression couplée à un amplificateur de débit, booster

What are volume booster / proportional valve combinations used for?

Combinations of volume boosters and proportional valves lend themselves for electronically regulating high volume flows. On the one hand common proportional valves are not available with connection sizes big enough, on the other hand combinations are in most cases more economic. There are two ways of regulating: Single loop systems are suitable for standard applications without high requirements for accuracy and without consideration of pressure drop at high flow. Double loop regulations on the contrary are much more accurate and also qualified for dynamic processes.

General operational description:

The volume booster and proportional valve are fed by the supply pressure. When no command signal is applied the outlet pressure behind the booster is zero. When the command signal is increased the outlet pressure rises in proportion to it. Since the transmission ratio is not exactly 1:1, a slight pressure difference occurs between the outlet pressure of the proportional valve and the booster's outlet on single loop systems. This can be balanced by a feedback signal (double loop), though.



**G_{1/4} up to G₃
compressed air or liquids**

Single loop

At single loop combinations the pressure difference between command signal and outlet pressure is being ignored because the proportional valve only refers to its own outlet pressure within the pilot chamber. The outlet pressure performance is dependent of the volume booster's accuracy.

Double loop

Combinations with a second feedback have the possibility to balance pressure differences. For this a pressure transducer is installed in the outlet line of the booster. The electrical signal of the transducer is applied as a feedback signal onto the proportional valve. The valve detects any pressure differences and compensates them automatically. In high flow applications a pressure drop at the outlet of the pilot regulator is thus minimised.

General features

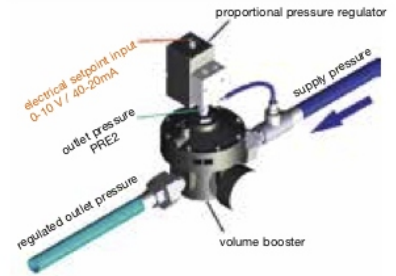
Construction type	The volume booster / proportional valve combinations are delivered completely assembled and calibrated.
Mounting position	preferred horizontal (see figure)
Protection class	IP 54 with ordinary coupling socket as standard, optionally IP 65 for some devices (see according product information sheets)
Temperature range	0 °C to 50 °C / 32 °F to 122 °F for all proportional valves, for booster ranges refer to according product sheets

Pneumatic features

Command signal	The proportional valves may only be fed with dry and 5 µm filtered compressed air. The pneumatic command signal must always be air!
Media	Preferred dry, 5 µm filtered compressed air for supply of the proportional valves. The volume boosters can operate with air or non-corrosive gases, model R120 even with liquids. The respective air consumption and the relieving function strongly have to be regarded.
Inlet pressure	dependent of the according combination (see according product information sheets)
Pressure supply	The proportional valve has to be separately supplied with compressed air with regard to the valve's maximum inlet pressure.
Exhaust	The proportional valve exhausts only the booster's pilot chamber. The booster, if in relieving version, exhausts the volume of the supply pressure line. The relief capacity is subject to the differential pressure.
Volume flow	see specifications of the according volume booster

Electrical features

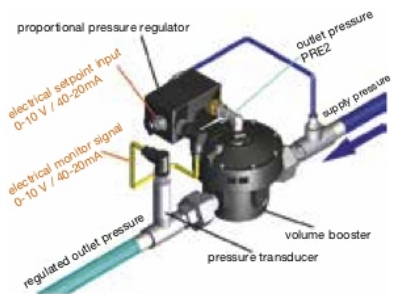
Supply voltage	All valves have to be supplied with 24 V DC.
Power consumption	see according product information sheets
Setpoint input	0-10 V as standard, optionally 4-20 mA for all valves
Monitor signal	A feedback signal is not reasonable for the single loop version because here only the pressure of the booster's pilot chamber is monitored. That value does not give any information about the outlet pressure behind the booster.



PRE2, R450 with single loop



PRA, R119 with single loop



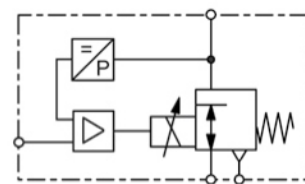
PQ2, R450 with double loop

Bp1 - Convertisseur I/P, commande proportionnelle de pression couplée à un amplificateur de débit, booster

General operational description:

The volume booster and proportional valve are fed by the supply pressure. When no command signal is applied the outlet pressure behind the booster is zero. When the command signal is increased the outlet pressure rises in proportion to it. Since the transmission ratio is not exactly 1:1, a slight pressure difference occurs between the outlet pressure of the proportional valve and the booster's outlet on single loop systems. This can be balanced by a feedback signal (double loop), though.

At single loop combinations the pressure difference between command signal and outlet pressure is being ignored because the proportional valve only refers to its own outlet pressure within the pilot chamber. The outlet pressure performance is dependent of the volume booster's accuracy.



G¹/₄ up to G3
compressed air or liquids

Single loop combination examples

Flow rate l/min	Connection thread G	Outlet pressure bar	Part number Booster	Part number Prop.valve	Order number of combination
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R750 with PRE1, for compressed air or non-corrosive gases setpoint 0-10 V, P₁ max. 17 bar

1000	G ¹ / ₄	0... 8	R750-02I	PRE1-U08	BP1U750-02
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R450 with PRE1, for compressed air or non-corrosive gases setpoint 0-10 V, P₁ max. 17 bar

4000	G ¹ / ₂	0... 8	R450-04I	PRE1-U08	BP1U450-04
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R119 with PPA, for compressed air or non-corrosive gases setpoint 0-10 V, P₁ max. 21 bar

5600	G ¹ / ₂	0... 10	R119-04J	PPA00-1000	BP1U119-04
9000	G ³ / ₄	0... 10	R119-06J	PPA00-1000	BP1U119-06
10000	G1	0... 10	R119-08J	PPA00-1000	BP1U119-08
12000	G ¹ / ₂	0... 10	R119-12J	PPA00-1000	BP1U119-12
42000	G2	0... 10	R119-16J	PPA00-1000	BP1U119-16
44000	G ² / ₂	0... 10	R119-20J	PPA00-1000	BP1U119-20
110000	G3	0... 10	R119-24J	PPA00-1000	BP1U119-24

RGB4 with PRE1-.A2, for compressed air or gases setpoint 0-10 V, P₁ max. 4 bar

700	G ¹ / ₂	0...0,2	RGB4-04J	PRE1-UA2	BP1UGB4-04
2800	G1	0...0,2	RGB4-08J	PRE1-UA2	BP1UGB4-08
5600	G ¹ / ₂	0...0,2	RGB4-12J	PRE1-UA2	BP1UGB4-12

RZ1 with PRE1-.01/02, for compressed air or gases setpoint 0-10 V, P₁ max. 16 bar

2900	G1	0... 1	RZ3-08J	PRE1-U02	BP1UZ-08
5700	G ¹ / ₂	0... 1	RZ3-12J	PRE1-U02	BP1UZ-12
21000	G2	0... 1	RZ2-16J	PRE1-U02	BP1UZ-16

R120 with PPA, for compressed air, gases or liquids setpoint 0-10 V, P₁ max. 50 bar

1200	G ¹ / ₂	0... 15	R120-04J2	PPA00-1600	BP1U120-04
4200	G ³ / ₄	0... 15	R120-06J2	PPA00-1600	BP1U120-06
5000	G1	0... 15	R120-08J2	PPA00-1600	BP1U120-08
1200	G ¹ / ₂	0... 50	R120-04J5	PP000-5000	BP1U120-04J5
4200	G ³ / ₄	0... 50	R120-06J5	PP000-5000	BP1U120-06J5
5000	G1	0... 50	R120-08J5	PP000-5000	BP1U120-08J5
14000	G ¹ / ₂	0... 50	R120-12J5	PP000-5000	BP1U120-12J5
15000	G2	0... 50	R120-16J5	PP000-5000	BP1U120-16J5

Special options, add the appropriate letter

4-20 mA	input signal	BP1I...-....
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BP1U450-04



BP1U119-16



BP1UZ-08



BP1U120-08J5