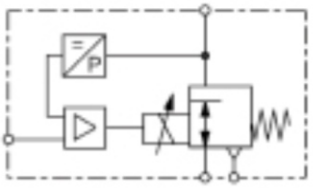
BP1 - Convertisseur I/P, commande proportionnelle de pression couplée à un amplificateur de débit, booster

What are volume booster / proportional pressure regulator combinations used for?
Combinations of volume boosters and proportional pressure regulator lend themselves for electronically regulating high volume flows. On the one hand common proportional pressure regulator 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.

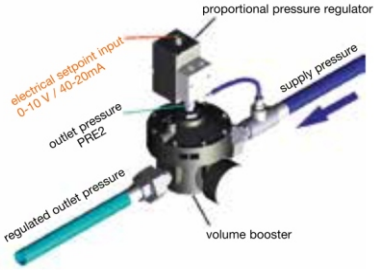
General operational description:
The volume booster and proportional pressure regulator are fed by the supply pressure. When no command signal is applied the outlet pressure behind the booster is zero. When the command signal is increased the outlet pressure rises in proportion to it. Since the transmission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



G¼ up to G3
compressed air or liquids

Single loop

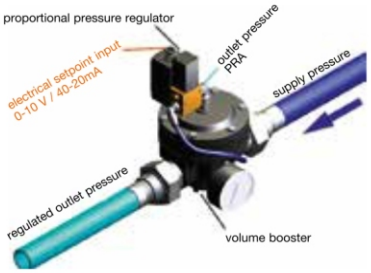
At single loop combinations the pressure difference between command signal and outlet pressure is being ignored because the proportional pressure regulator only refers to its own outlet pressure within the pilot chamber. The outlet pressure performance is dependent of the volume booster's accuracy.



PRE2, R450 with single loop

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 pressure regulator. The proportional pressure regulator 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.



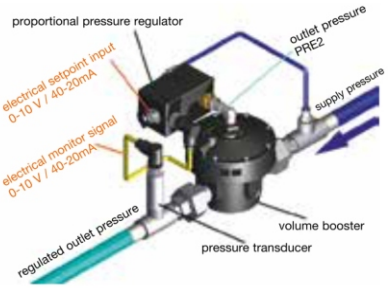
PRA, R119 with single loop

General features

Construction type	The volume booster / proportional pressure regulator 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 pressure regulator, for booster ranges refer to according product sheets

Pneumatic features

Command signal	The proportional pressure regulator 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 pressure regulator. 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 pressure regulator has to be separately supplied with compressed air with regard to the valve's maximum inlet pressure.
Exhaust	The proportional pressure regulator 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



PQ2, R450 with double loop

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.

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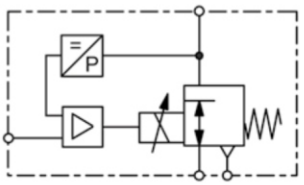

G¼ up to G3
compressed air or liquids

Single loop combination examples

Flow rate l/min	Connection thread G	Outlet pressure bar	Part number Booster	Part number Prop.press.regl.	Order number of combination
R750 with PRE1, for compressed air or non-corrosive gases					setpoint 0-10 V, P_1 max. 17 bar
1 000	G¼	0... 8	R750-02I	PRE1-U08	**BP1U750-02**
R450 with PRE1, for compressed air or non-corrosive gases					setpoint 0-10 V, P_1 max. 17 bar
4 000	G½	0... 8	R450-04I	PRE1-U08	**BP1U450-04**
R119 with PPA, for compressed air or non-corrosive gases					setpoint 0-10 V, P_1 max. 21 bar
5 600	G½	0... 10	R119-04J	PPA00-1000	**BP1U119-04**
9 000	G¾	0... 10	R119-06J	PPA00-1000	**BP1U119-06**
10 000	G1	0... 10	R119-08J	PPA00-1000	**BP1U119-08**
12 000	G1½	0... 10	R119-12J	PPA00-1000	**BP1U119-12**
42 000	G2	0... 10	R119-16J	PPA00-1000	**BP1U119-16**
44 000	G2½	0... 10	R119-20J	PPA00-1000	**BP1U119-20**
110 000	G3	0... 10	R119-24J	PPA00-1000	**BP1U119-24**
RGB4 with PRE1-.A2, for compressed air or gases					setpoint 0-10 V, P_1 max. 4 bar
700	G½	0...0,2	RGB4-04J	PRE1-UA2	**BP1UGB4-04**
2 800	G1	0...0,2	RGB4-08J	PRE1-UA2	**BP1UGB4-08**
5 600	G1½	0...0,2	RGB4-12J	PRE1-UA2	**BP1UGB4-12**
RZ1 with PRE1-.01/02, for compressed air or gases					setpoint 0-10 V, P_1 max. 16 bar
2 900	G1	0... 1	RZ3-08J	PRE1-U02	**BP1UZ-08**
5 700	G1½	0... 1	RZ3-12J	PRE1-U02	**BP1UZ-12**
21 000	G2	0... 1	RZ2-16J	PRE1-U02	**BP1UZ-16**
R120 with PPA, for compressed air, gases or liquids					setpoint 0-10 V, P_1 max. 50 bar
1 200	G½	0... 15	R120-04J2	PPA00-1600	**BP1U120-04**
4 200	G¾	0... 15	R120-06J2	PPA00-1600	**BP1U120-06**
5 000	G1	0... 15	R120-08J2	PPA00-1600	**BP1U120-08**
1 200	G½	0... 50	R120-04J5	PP000-5000	**BP1U120-04J5**
4 200	G¾	0... 50	R120-06J5	PP000-5000	**BP1U120-06J5**
5 000	G1	0... 50	R120-08J5	PP000-5000	**BP1U120-08J5**
14 000	G1½	0... 50	R120-12J5	PP000-5000	**BP1U120-12J5**
15 000	G2	0... 50	R120-16J5	PP000-5000	**BP1U120-16J5**

Special options, add the appropriate letter

4-20 mA	input signal	BP1**I**...-....

BP1U750-02

BP1U119-16

BP1UZ-08

BP1U120-08J5

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