PRESSURE BOOSTER
SERIES BPA

News

Sizes: 40, 63, 100



- Easy and flexible installation
- Focused pressure increase
- Optimisation of the pneumatic circuit
- Energy efficient

This pressure booster has a pressure ratio of 2:1 that increases outlet pressure by up to 20 bar.
It operates automatically when needed to generate a constant pressure increase while its mechanical design guarantees quick and easy installation, minimises heat generation and improves machine safety.
Two versions are available, with or without an integrated regulator that allows to adjust the desired outlet pressure and enables the efficient management of energy consumption.

It offers a compact, functional design with rapid filling times that makes the Series BPA ideal for applications where high pressure is only needed at specific points in the pneumatic circuit such as woodworking, marble and glass processing or with testing and assembly machines.

General Data

Sizes	40	63	100
Multiplication Ratio (Pout:Pin)	2:1	2:1	2:1
Inlet pressure	2-10 bar	2-8 bar	2-8 bar
Operating temperature	0-50 °C	0-50 °C	0-50 °C
Mounting position	Any position	Any position	Any position
Flow rate (p.in = p.out = 5 bar)	250 l/min ANR	700 l/min ANR	1200 l/min ANR
Pneumatic connection	G1/4"	G3/8"	G1/2"
Weight (standard version)	0,85 Kg	3,00 Kg	5,90 Kg
Weight (version with regulator)	1,06 Kg	3.21 Kg	6,11 Kg
Materials	Body and barrels: Aluminium - Rod: steel - Seals NBR	Body and end caps: Aluminium - Barrels: extruded aluminium - Rod: steel - Seals: NBR	Body and end caps: Aluminium - Barrels: extruded aluminium - Rod: steel - Seals NBR

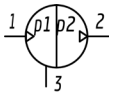
Coding Examples

BPA	-	040	-	R1

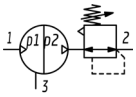
BPA	SERIES
040	SIZES 40 63 100
R1	REGULATOR = Without regulator - MP01 R1 = With regulator (P.IN 2-8bar - P.OUT 0-10bar) - MP02 R2 = With regulator (P.IN 2-10bar - P.OUT 0-16bar) - MP02

Pneumatic symbols

MP01



MP02



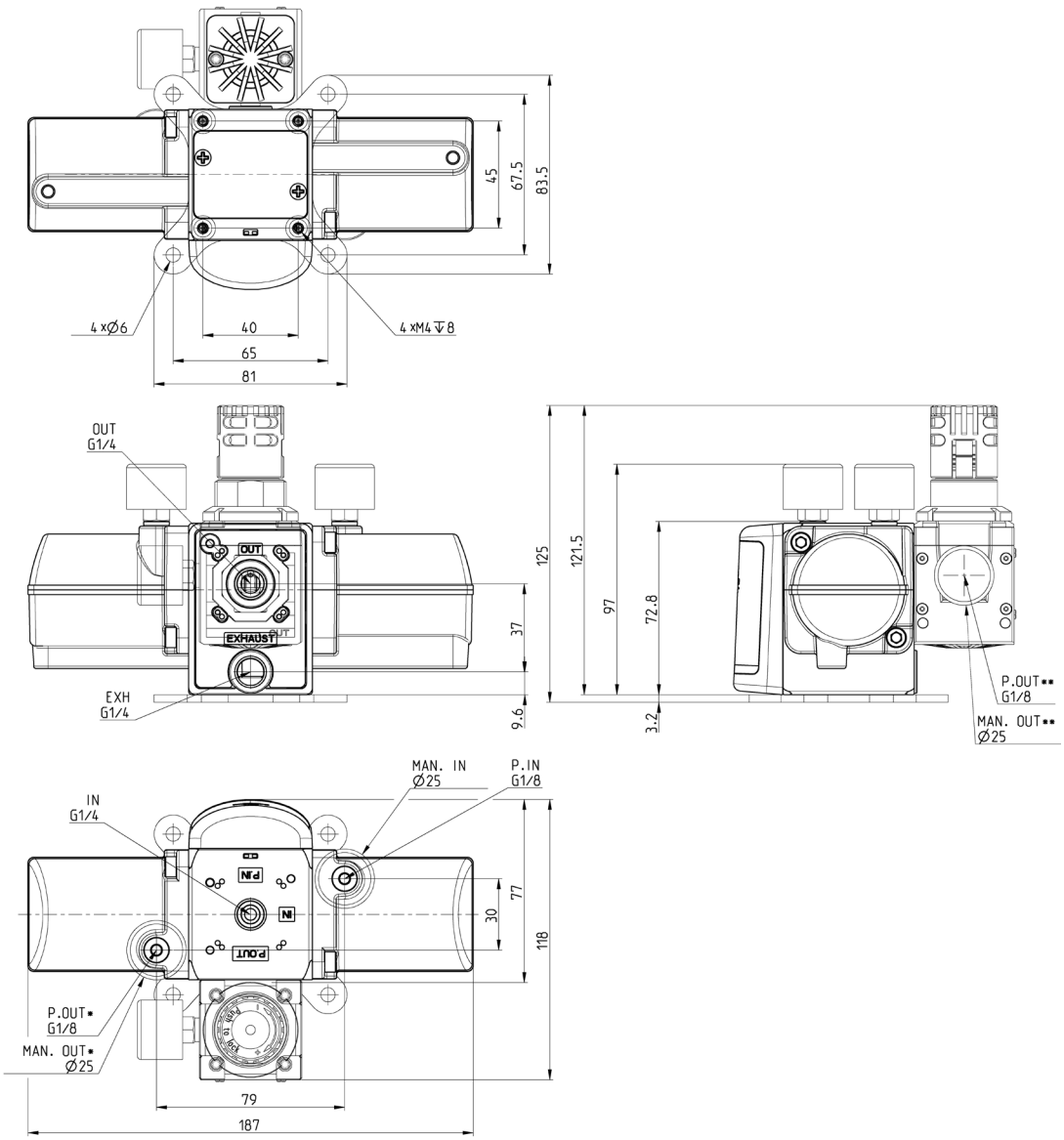
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PRESSURE BOOSTER
SERIES BPA - DIMENSIONS

BPA multiplier - Size 40

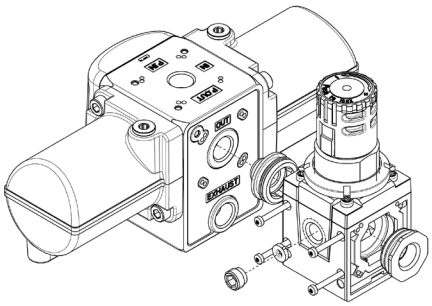
News

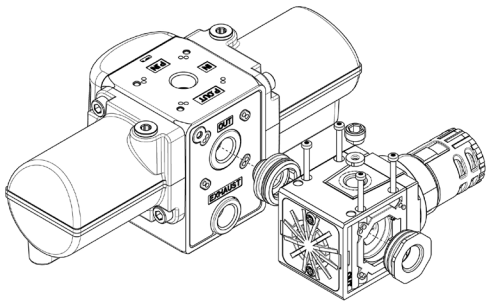




* = port of pressure gauge, version without regulator
** = port of pressure gauge, version with R1, R2 regulator

Examples of mounting

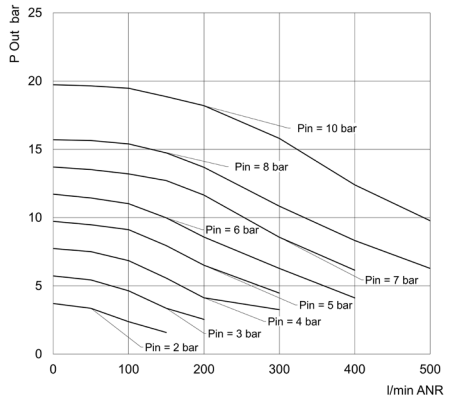




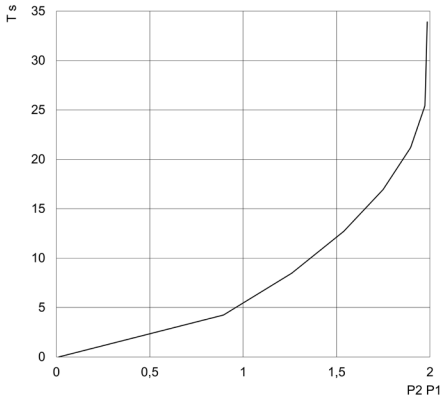
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Size 40 - Booster flow rate without regulator

Booster flow rate without regulator

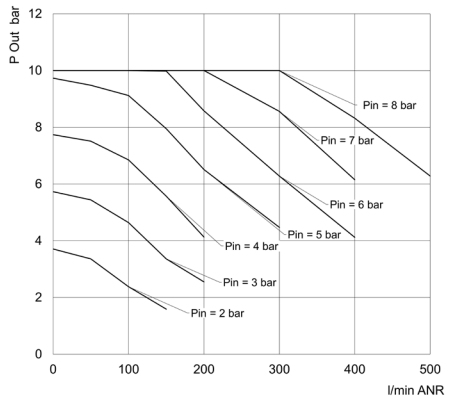


Tank's filling time (10 l)



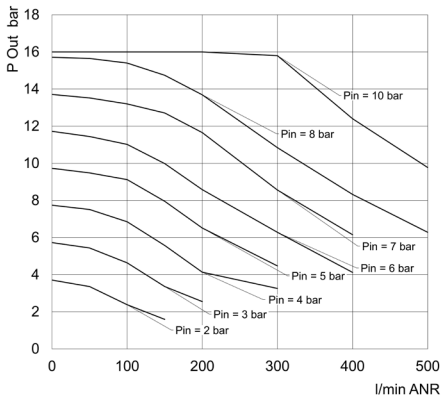
Size 40 - Booster flow rate with regulator

BPA-040-R1



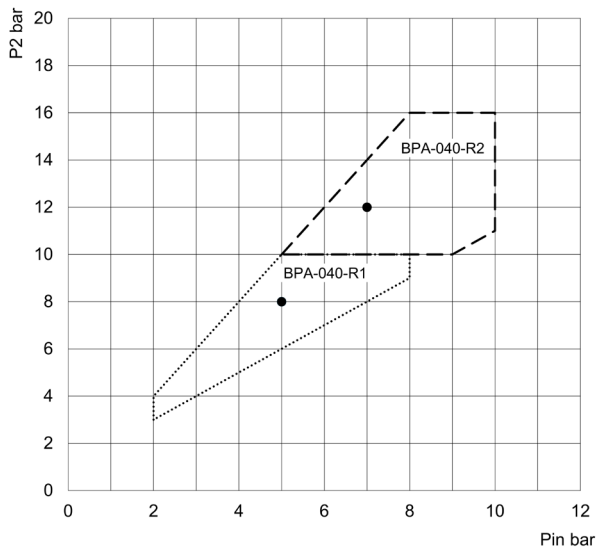
P.IN MAX = 8 bar
P.OUT MAX = 10 bar

BPA-040-R2



P.IN MAX = 10 bar
P.OUT MAX = 16 bar

Size 40 - Optimal range of use for booster with regulator



The graph shows the optimal range of use for the two booster models with regulator.

For example:
- Booster inlet pressure Pin = 5 bar, regulated outlet pressure Pout = 8 bar, you choose BPA-040-R1

- Booster inlet pressure Pin = 7 bar, regulated outlet pressure Pout = 12 bar, you choose BPA-040-R2

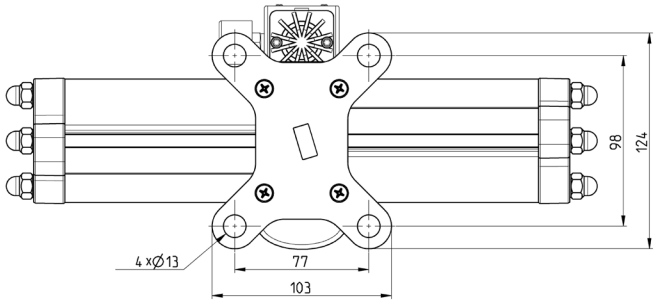
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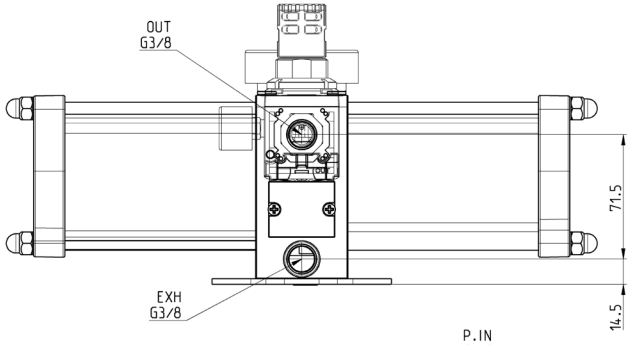
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SERIES BPA - DIMENSIONS

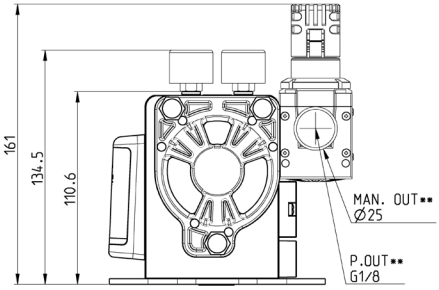
BPA multiplier - Size 63

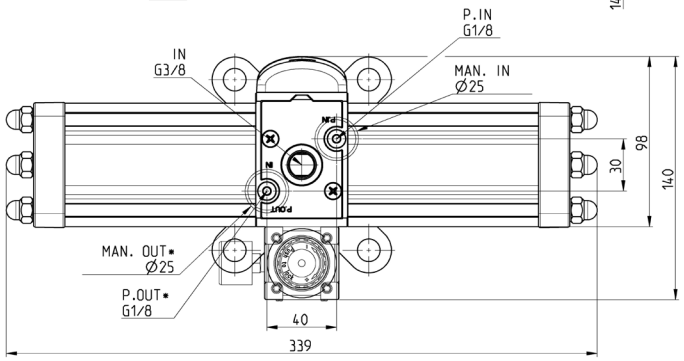
News





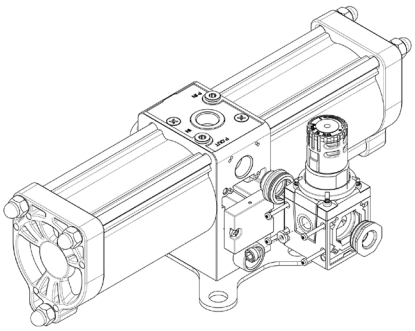


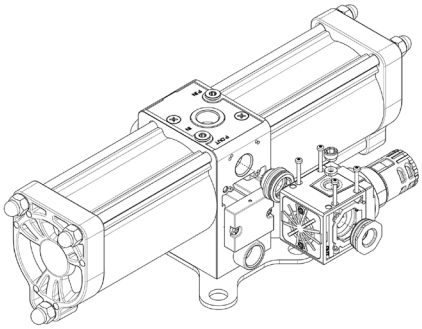




* = version without regulator
** = version with R1, R2 regulator

Examples of mounting

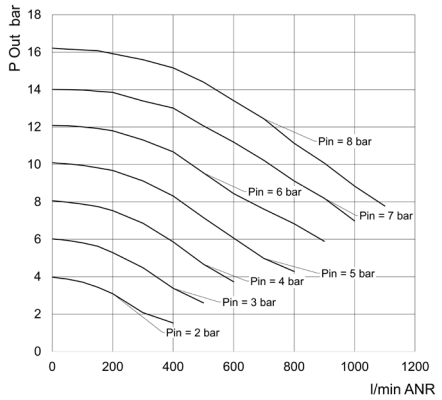




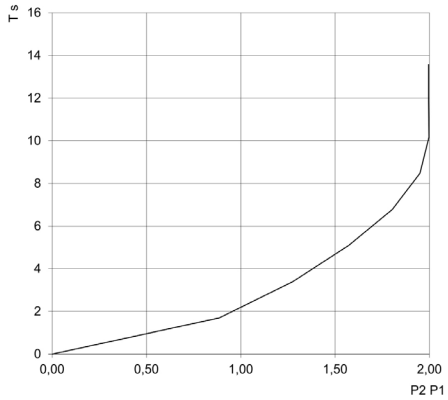
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Size 63 - Booster flow rate without regulator

Booster flow rate without regulator

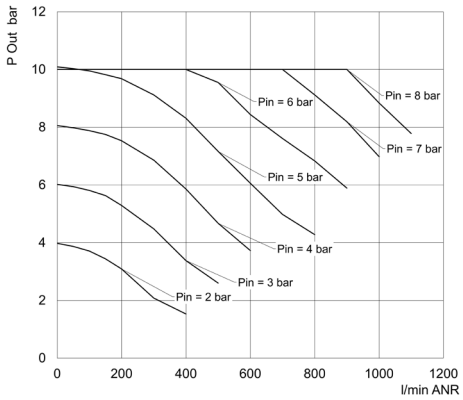


Tank's filling time (10 l)



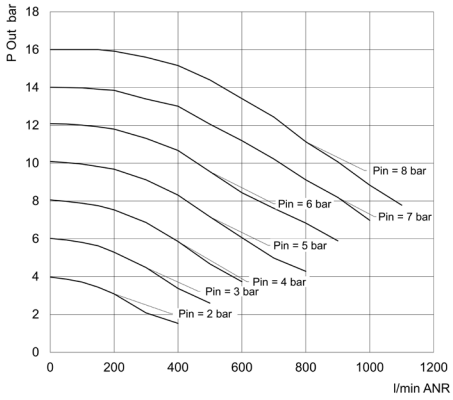
Size 63 - Booster flow rate with regulator

BPA-063-R1



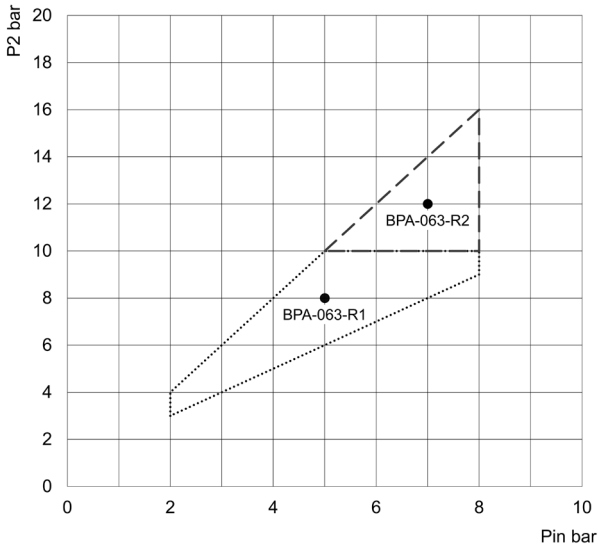
P.IN MAX = 8 bar
P.OUT MAX = 10 bar

BPA-063-R2



P.IN MAX = 8 bar
P.OUT MAX = 16 bar

Size 63 - Optimal range of use for booster with regulator



The graph shows the optimal range of use for the two booster models with regulator.

For example:
- Booster inlet pressure Pin = 5 bar, regulated outlet pressure Pout = 8 bar, you choose BPA-063-R1

- Booster inlet pressure Pin = 7 bar, regulated outlet pressure Pout = 12 bar, you choose BPA-063-R2

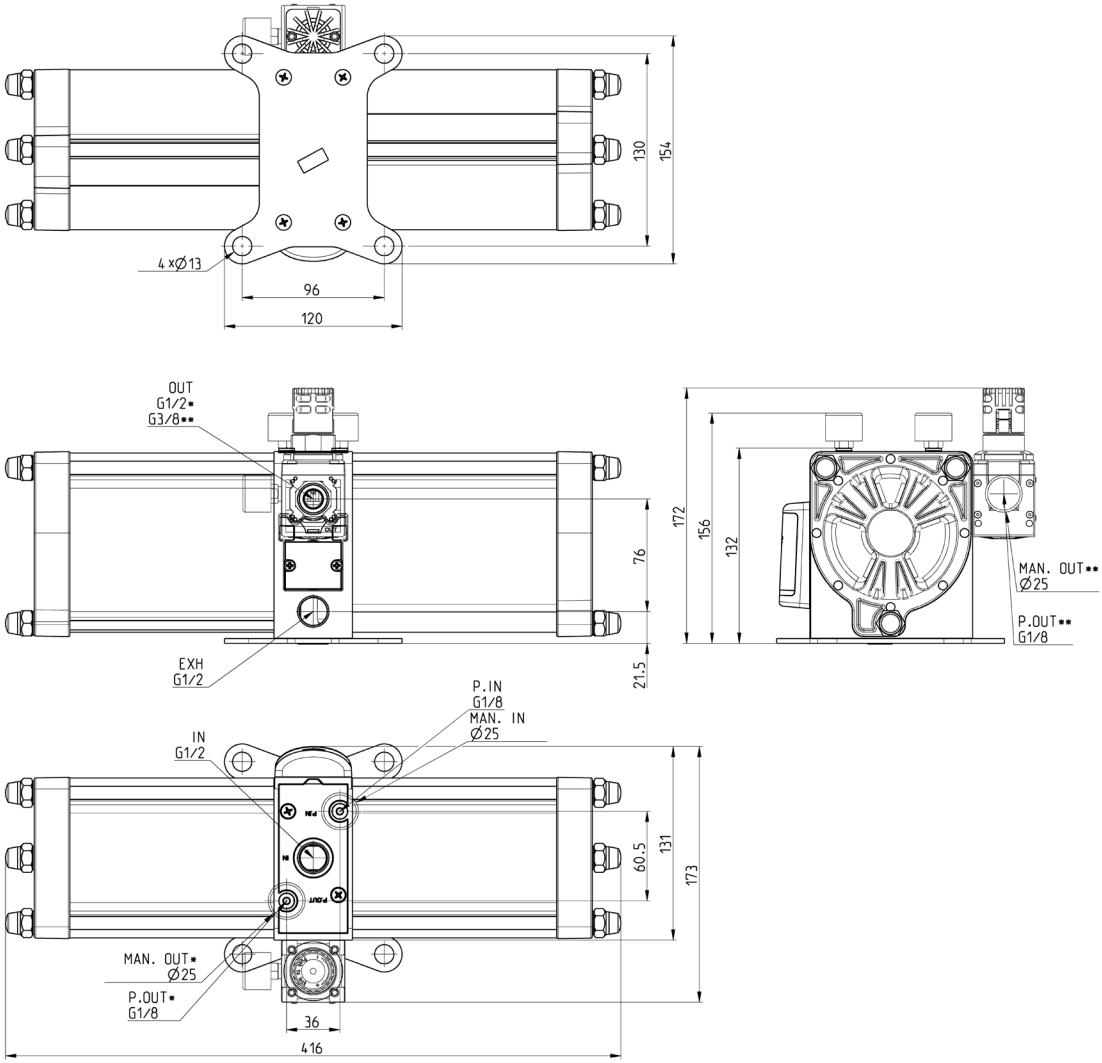
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PRESSURE BOOSTER
SERIES BPA - DIMENSIONS

BPA multiplier - Size 100

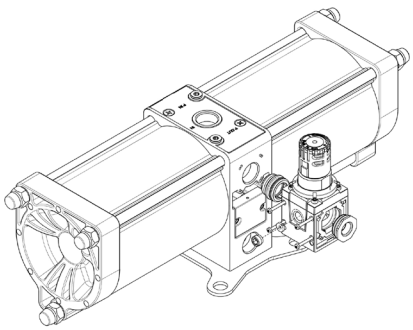
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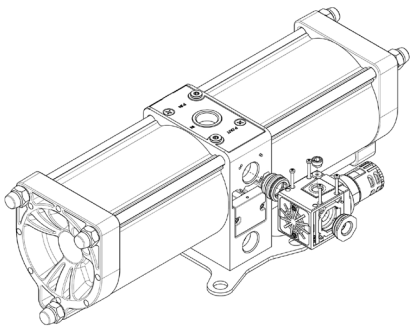




* = version without regulator
** = version with R1, R2 regulator

Examples of mounting

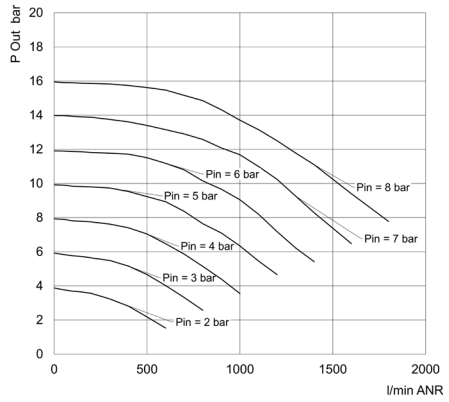




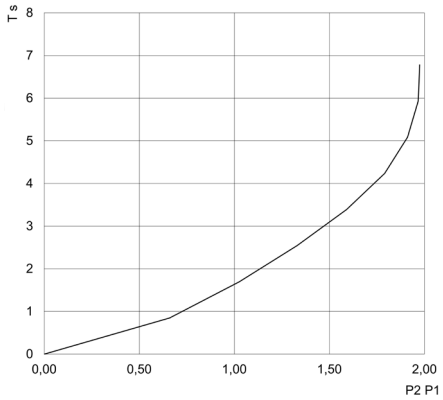
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Size 100 - Booster flow rate without regulator

Booster flow rate without regulator

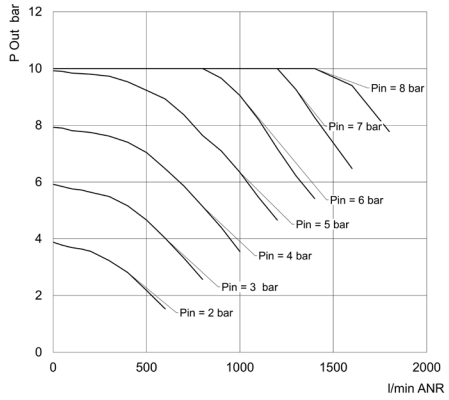


Tank's filling time (10 l)



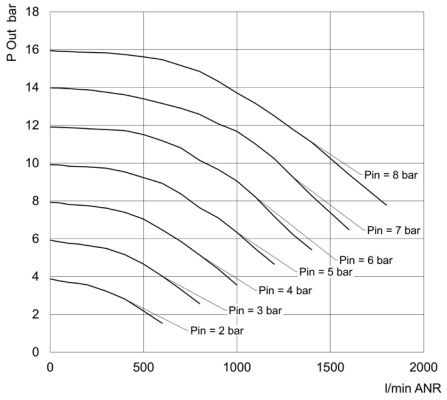
Size 100 - Booster flow rate with regulator

BPA-100-R1



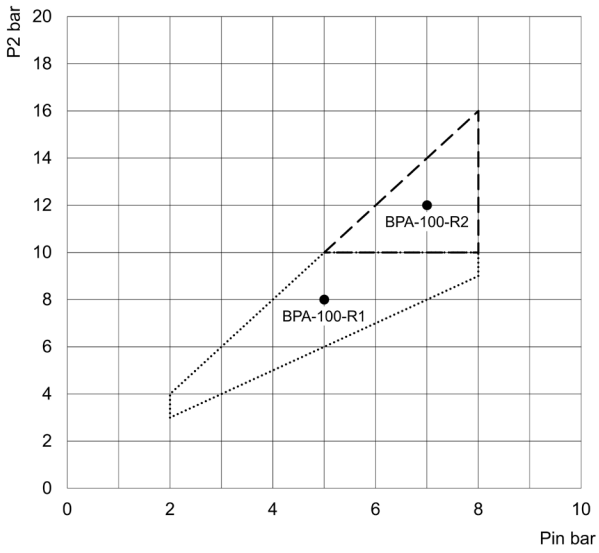
P.IN MAX = 8 bar
P.OUT MAX = 10 bar

BPA-100-R2



P.IN MAX = 8 bar
P.OUT MAX = 16 bar

Size 100 - Optimal range of use for booster with regulator



The graph shows the optimal range of use for the two booster models with regulator.

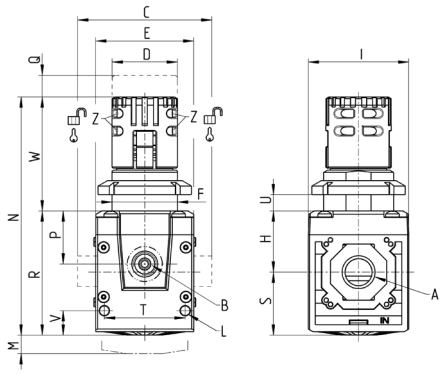
For example:
- Booster inlet pressure Pin = 5 bar, regulated outlet pressure Pout = 8 bar, you choose BPA-100-R1

- Booster inlet pressure Pin = 7 bar, regulated outlet pressure Pout = 12 bar, you choose BPA-100-R2

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Pressure regulators for BPA- ...R1

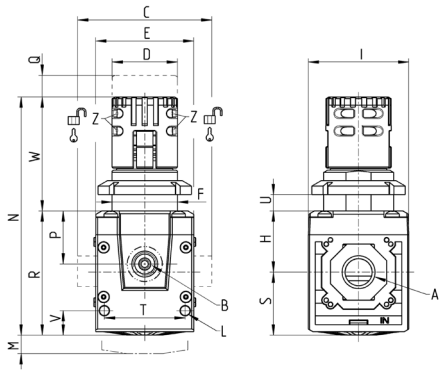




Mod.	A	B	C	D	E	F	H	I	L	M	N	P	Q	R	S	T	U	V	W	Weight [g]
MD1-R000	-	G1/8	42	Ø28	42	M28x1,5	26,2	43	Ø4	16	102	22,7	4	53,2	27	34,6	0 ÷ 11	10,5	48,8	0,2

Pressure regulators for BPA- ...R2

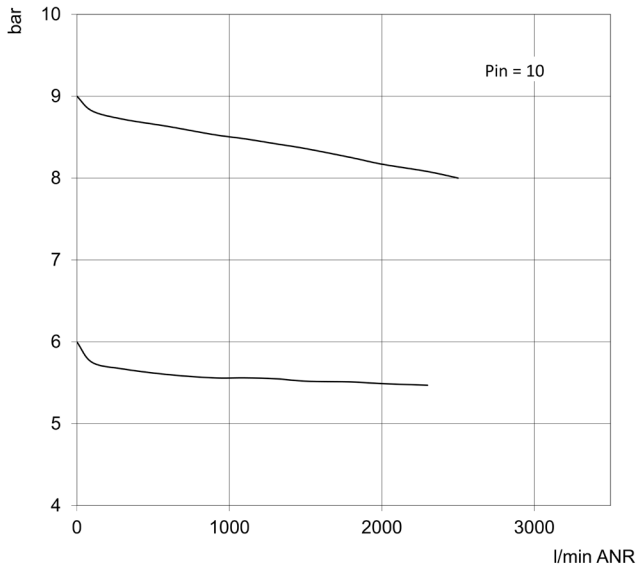




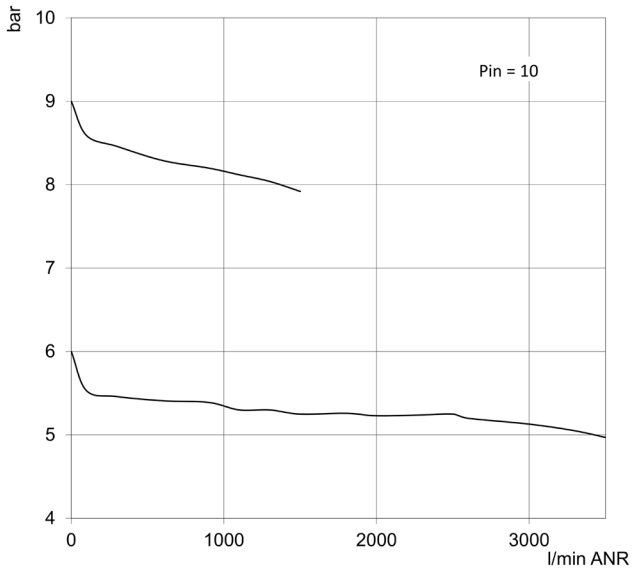
Mod.	A	B	C	D	E	F	H	I	L	M	N	P	Q	R	S	T	U	V	W	Weight [g]
MD1-R900	-	G1/8	42	Ø28	42	M28x1,5	26,2	43	Ø4	16	102	22,7	4	53,2	27	34,6	0 ÷ 11	10,5	48,8	0,2

Regulator flow rate diagrams of the regulator

MD1-R000



MD1-R900

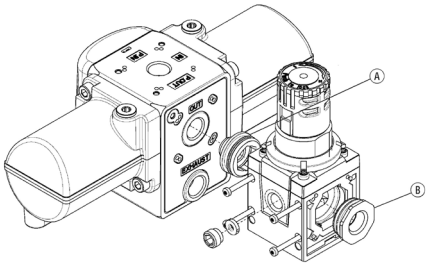


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BPA fixing kit with MD Series



Supplied with:
2x bushing with OR
4x special Ø4.5x34 white zinc-plated screws
1x plug with seal



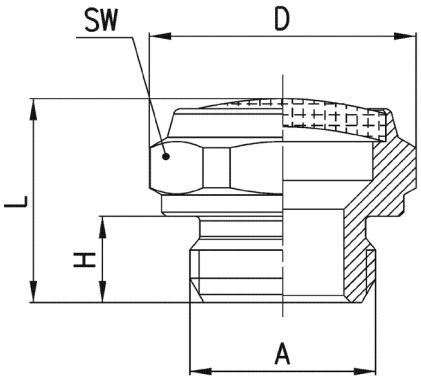
Mod.	A	B
BPA-1/4-C	G1/4	G1/4
BPA-3/8-C	G3/8	G3/8
BPA-1/2-C	G1/2	G3/8

Silencers Series 2901





SIL1



Mod.		A	D	H	L	SW	Max. operating pressure [bar]	Flow rate [Nl/min]	Noise db (A)
2901 M5	*	M5	9	4	8,5	8	10	150	66
2901 1/8		G1/8	15,3	5	12	14	10	700	76
2901 1/4-17		G1/4	18,5	6	14	17	10	1000	78
2901 1/4-22		G1/4	23,5	6	15	22	10	1600	80
2901 3/8		G3/8	23,5	7	16	22	10	1500	76
2901 1/2		G1/2	29,5	8	17,5	27	10	3400	86
2901 3/4		G3/4	34	9	20	32	6	4100	87
2901 1		G1	43	11	24,5	40	6	7600	88

* Sintered bronze silencer element.

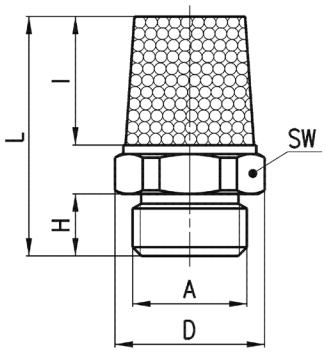
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Silencers Series 2931





SIL1



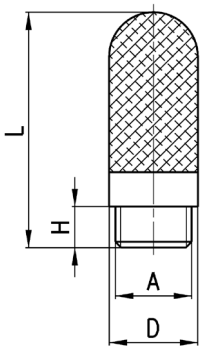
Mod.	A	D	H	I	L	SW	Max. oper. pressure	Flow rate [Nl/min]	Noise db (A)
2931 1/4	G1/4	16,2	6	16,5	27	15	10	3200	86
2931 3/8	G3/8	20	7	23	35,5	19	10	4560	81
2931 1/2	G1/2	24,5	8	28	42	23	10	6800	87

Silencers Series 2928





SIL1



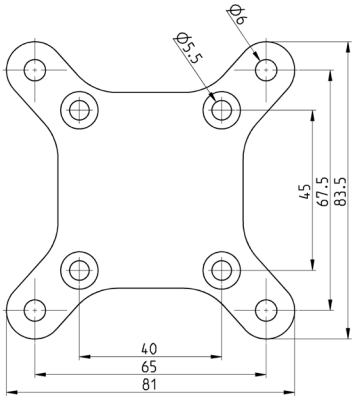
Operating temperature: - 40 / + 80 °C

Mod.	A	D	H	L	Max. oper. pressure	Flow rate [Nl/min]	Noise db (A)
2928 1/4	G1/4	16,6	7	42,5	10	2730	72
2928 3/8	G3/8	18,8	11,5	67,5	10	6450	74
2928 1/2	G1/2	24,8	10,5	79,5	10	8350	87

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Size 40 - Fixing plate



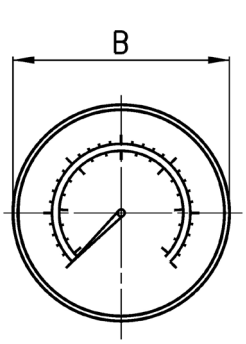


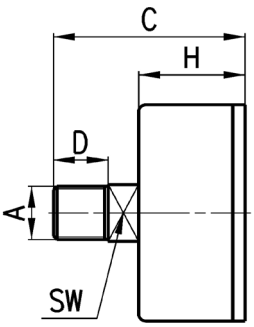
Mod.
BPA-040-ST

Pressure gauge with rear connection, reinforced mechanism and throttle screw



Precision class CL 4,0





Mod.	A	B	C	D	H	SW	Range
M025-P10	G1/8	Ø25	28,5	7	15	11	0÷10 bar
M025-P20	G1/8	Ø25	28,5	7	15	11	0÷16 bar

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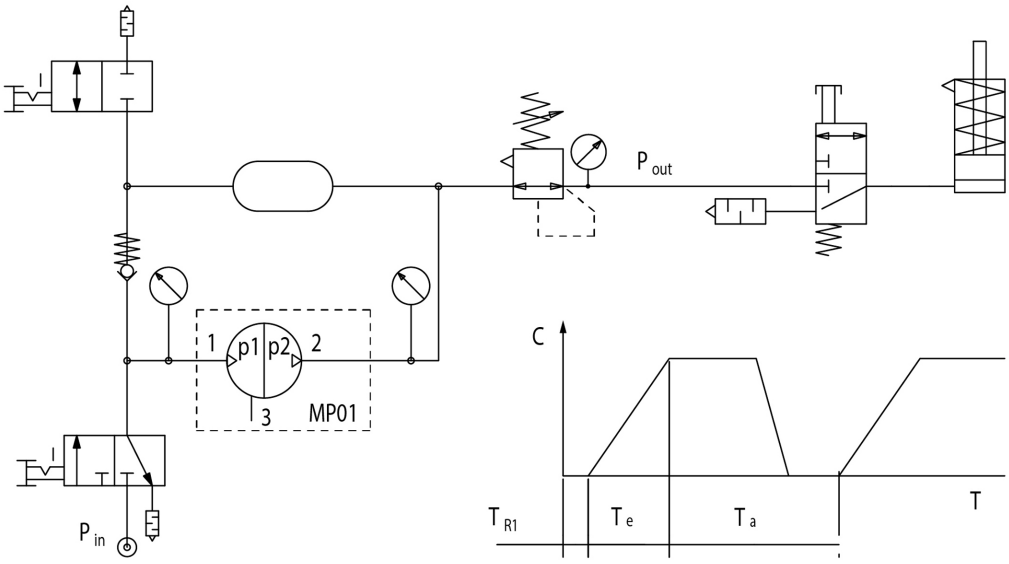
Application example

Input data necessary for circuit dimensioning:

- Mains pressure (Booster inlet): *P*in = 7,5 bar
- Pressure needed by the cylinder to perform the task required: *P*out = 12 bar
- Multiplication ratio: R2 = 2
- Load pressure of the tank: *P*2 = *P*in · R2 = 15 bar
- Time in which the cylinder should perform the task: *Te* = 2 sec
- Waiting time between subsequent manoeuvres: *Ta* = 30 sec
- Cylinder diameter: *D* = 63 mm
- Cylinder stroke: *C* = 200 mm
- Booster size: 40

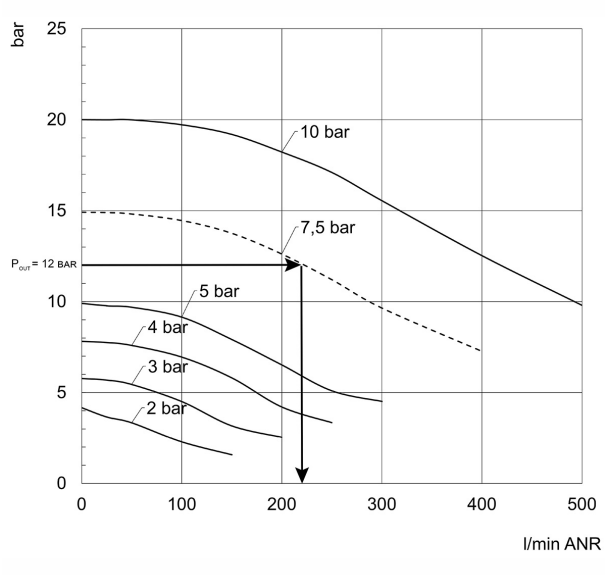
Calculation of the air quantity required by the cylinder during the work phase:

$$Q_{cil} = \left(\frac{D^2 \cdot \pi}{4}\right) \cdot C \cdot \frac{(P_{out} + 1.013)}{T_e} = 0{,}3115 \cdot 2 \cdot 6{,}5 = 4{,}05 \frac{L}{sec} = 243 \frac{L}{min}$$



Calculation of the Booster's flow rate

Flow rate of a size 40 Booster without regulator



The air flow rate that can be provided by a size 40 Booster, with a P_{in} of 7,5 bar and a P_2 of 15 bar (ratio 2:1) can be found through the flow rate graph on the catalogue:

At a required Pout of 12 bar, the air flow rate that can be provided by the Booster is *Q*Booster = 217 *L*/min

As previously calculated, the quantity of air required by the cylinder to perform the task within the desired time $Q_{cil} = 243 \frac{L}{min}$ .The flow rate of a size 40 Booster is lower than the flow rate required by the cylinder, it is necessary to use a bigger Booster or to insert a buffer tank.

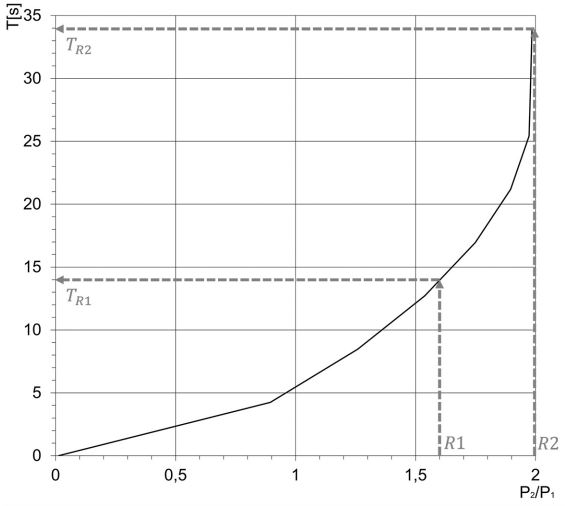
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Dimensioning of buffer tank

1. Calculate the initial multiplication ratio: $R1 = \frac{P_{out}}{P_{in}} = \frac{12}{7,5} = 1.6$
2. Through the graph you can find the filling time of a tank with a volume of 10 litres at a pressure of 12 bar.
   2.1. Find the time relating to multiplication ratio R1: $T_{R1} = 14\ sec$
   2.2. Find the time relating to multiplication ratio R2: $T_{R2} = 34\ sec$
3. Calculate the normalised filling time, in seconds per litre of the tank: $t = \frac{T_{R2} - T_{R1}}{10L} = \frac{34 - 14}{10} = 2\frac{sec}{L}$
4. To avoid that the pressure of the tank falls below the necessary pressure of the system downstream, it will be necessary to use a tank with a volume of:

$$V = \frac{0.5 \cdot \left(Q_{cil} - \frac{Q_{booster}}{2}\right) \cdot T_e}{1.22} \cdot \frac{P_{in}}{(P_2 - P_{out})} = \frac{0.5 \cdot \left(243 - \frac{217}{2}\right) \cdot 2}{1.22} \cdot \frac{7,5}{(15 - 12)} = 4,6\ L$$

   4.1. Calculate the tank's filling time: $T = t \cdot V = 2 \cdot 4,6 \cong 9\ s$
   4.2. Verify that the filling time of the tank is less than the waiting time between two subsequent manoeuvres: $< T \leq T_a \rightarrow 9\ sec < 30\ sec$ →*VERIFIED*
5. If this condition is not verified, go to the next size up of the booster or use more boosters in parallel.



Dimensioning of the supply line

For a correct dimensioning, the air flow rate required by the device must be less than the air provided by the Booster, with a correction factor K = 2,2
In the end you must verify that the supply line has a minimum capacity of: $Q_{in} = K \cdot \min\left(\frac{Q_{booster}}{Q_{cil}}\right) = 2,2 \cdot \min\binom{217}{243} = 2,2 \cdot 217 = 477\frac{L}{min}$

To obtain maximum efficiency and flow rate of the device, the maximum air requirement is shown in the following table:

BPA-040	BPA-063	BPA-100
$1000\frac{L}{min}ANR$	$2000\frac{L}{min}ANR$	$3000\frac{L}{min}ANR$

You therefore need to choose the right size for the 3/2-way NC valve to supply the circuit in order to have a higher flow rate than the value required by the system. For example, supposing to use a valve Series VMS, the right choice will be the 1/4" size:

VMS 1/4	VMS 3/8	VMS 1/2
$1200\frac{L}{min}ANR$	$2100\frac{L}{min}ANR$	$3350\frac{L}{min}ANR$

This calculation example is not valid if the version includes a regulator.

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