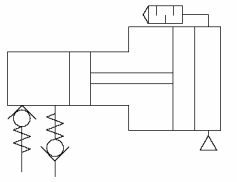
AIR-AIR PRESSURE MULTIPLIER (BOOSTER) – SERIES 08

The air-air pressure multiplier, or booster, is an automatic device that compresses air to give an outlet pressure that is two or four times greater than the inlet pressure. It is normally used to locally intensify the input pressure of one or more actuators. As it is entirely pneumatic, it can be used when electric devices are not recommended.

The novelty is that the booster has built-in non-return valves that maintain the outlet pressure even when the supply of compressed air is cut off. This means it is necessary to interrupt the supply and relieve the circuit before doing anything to the device. It is advisable to install a tank after the booster to prevent fluctuations in outlet pressure.

APPLICATIONS

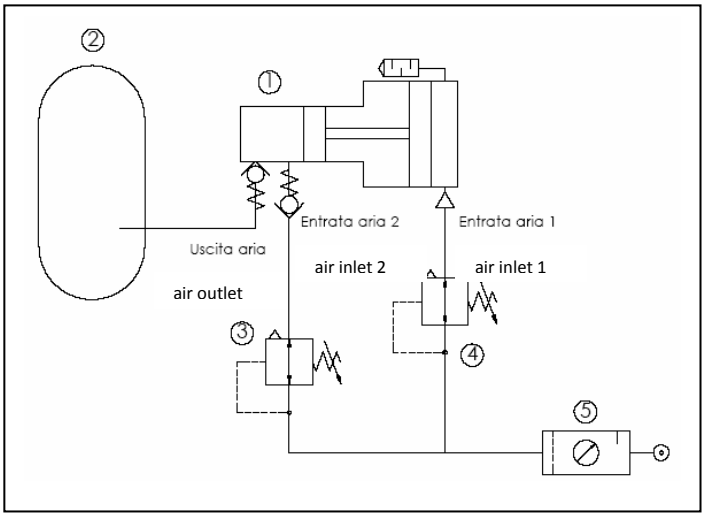
Air-air boosters are used for instance in seal or burst tests, or to increase power in cylinders to avoid having to replace them with ones with a larger diameter.



RECOMMENDED CIRCUIT

1 Air-air booster
2 Tank
3 Pressure regulator
4 Pressure regulator
5 FRL unit

To achieve the correct booster pressure ratio, regulators 3 and 4 must have the same pressure.



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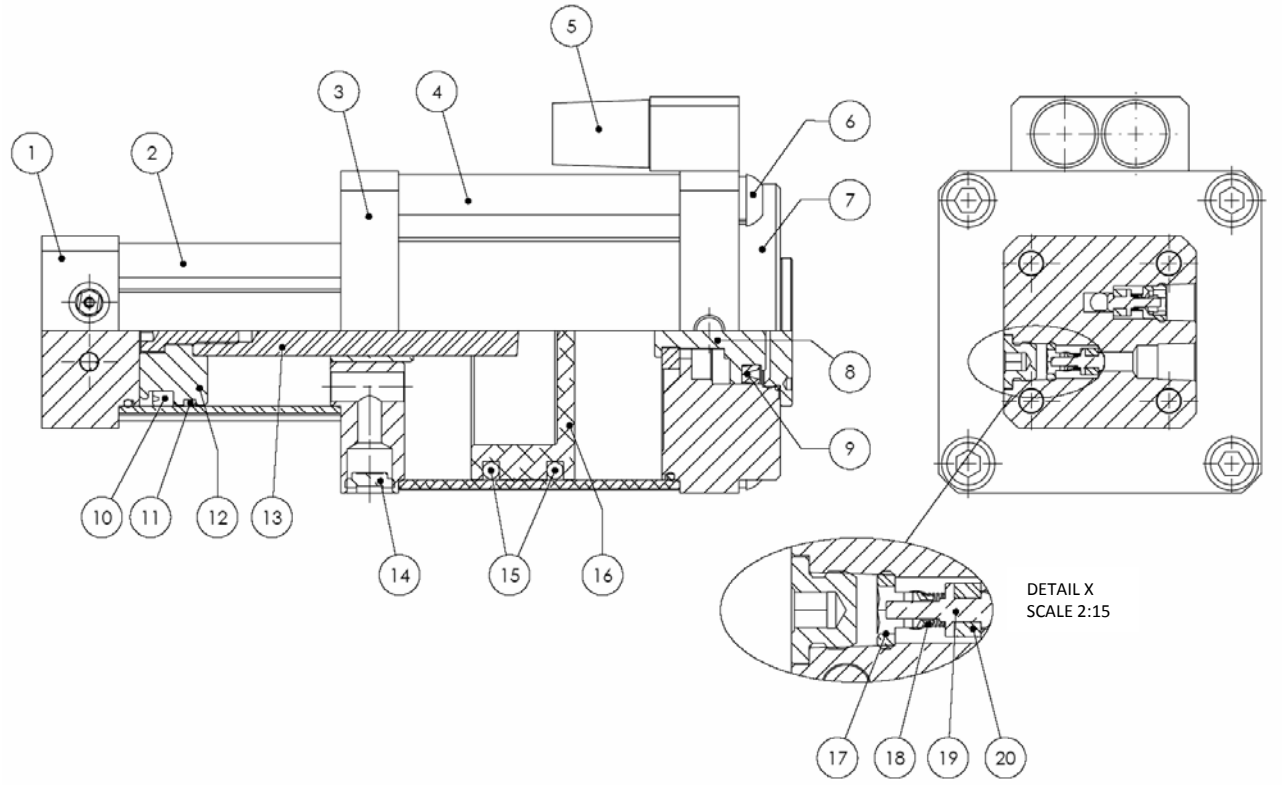
COMPONENTS



1. FRONT CYLINDER HEAD: 2011 neutral anodised aluminium
2. FRONT LINING: Ø50/Ø63 profiled anodised aluminium
3. INTERMEDIATE CYLINDER HEAD: 2011 neutral anodised aluminium
4. REAR LINING: Ø100 profiled anodised aluminium
5. SILENCER: nickel-plated brass
6. BOLT: white galvanised steel
7. REAR CYLINDER HEAD: 2011 neutral anodised aluminium
8. EXCHANGER PISTON: brass
9. EXCHANGER GASKET: NBR rubber
10. PISTON GASKET: NBR rubber
11. GUIDE BANDS: phenolic resin
12. PISTON Ø50/Ø63: 2011 aluminium
13. PISTON ROD Ø16: C45 ground chrome steel
14. FILTER: sintered bronze
15. PISTON GASKET Ø100: NBR OR compound and plastoferrite band
16. PISTON Ø100: 2011 aluminium
17. VNR RING NUT: nickel-plated brass
18. VNR SPRING: stainless steel
19. VNR PISTON: brass
20. VNR SOLID GASKET: CSC polyurethane

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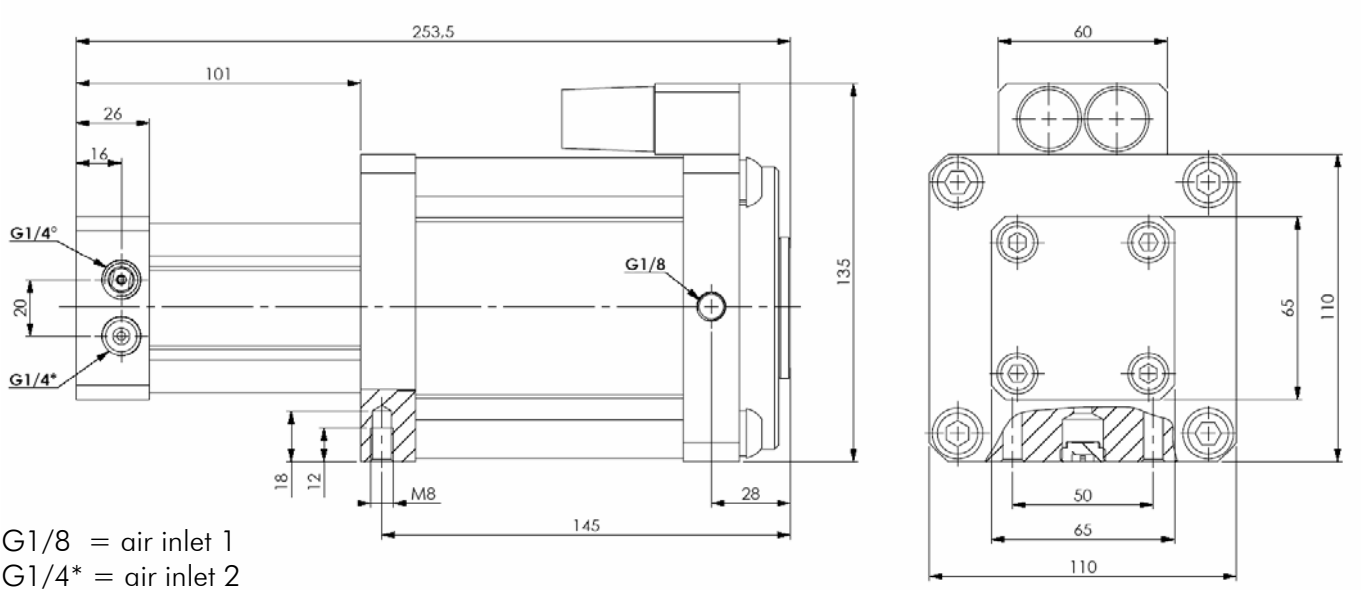
DIMENSIONS

Z5208100500400



G1/8 = air inlet 1
G1/4* = air inlet 2
G1/4° = Boosted air outlet

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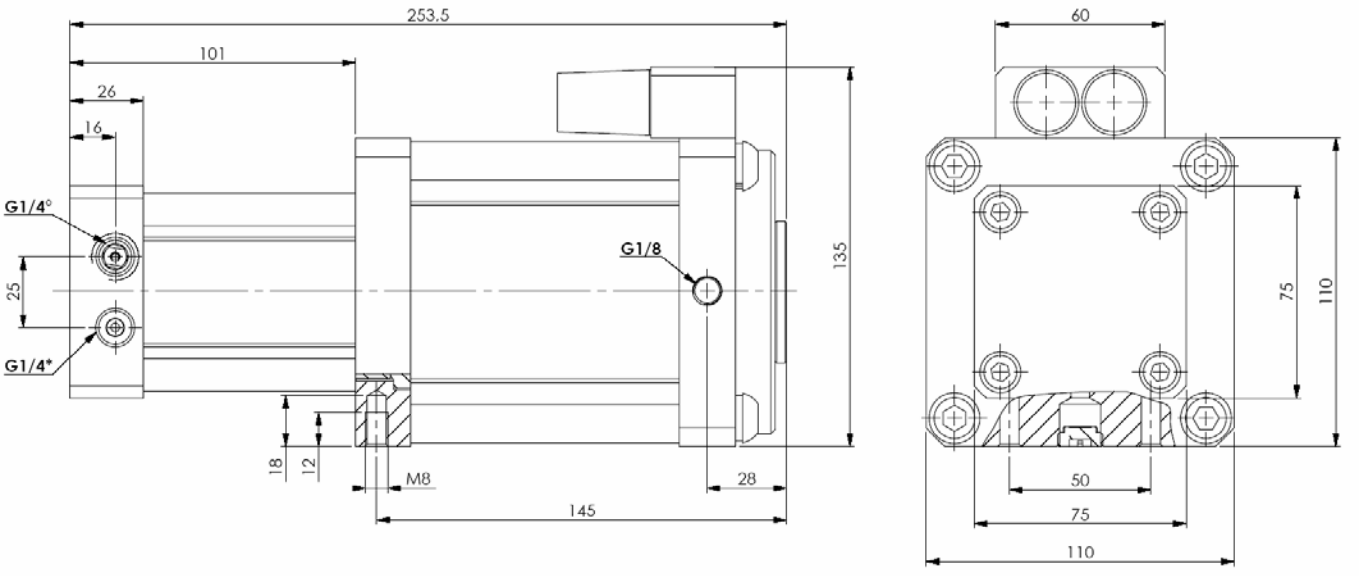

G1/8 = air inlet 1
G1/4* = air inlet 2
G1/4° = boosted air outlet

AIR-AIR PRESSURE MULTIPLIER (BOOSTER) – SERIES 08

TECHNICAL DATA

		Z5208100500400	Z5208100630400
Chamber 1 bore	mm	100	100
Chamber 2 bore		50	63
Compression ratio		4:1	2.5:1
Inlet pressure	Bar	2-8	2-8
Noise level	dB	90	89
Operating temperature	°C	-10° to +60°	-10° to +60°
Fluid		Filtered lubricated or unlubricated air Lubrication, if used, must be continuous	

KEY TO CODING

Z52	08	100	50	04	01
	SERIES	CHAMBER 1 BORE	CHAMBER 2 BORE	STROKE (CM)	RETURN
	08	100	50 63	04	00 STANDARD 01 WITH REGUL. 02 WITH 2 REGUL.

The difference between the pneumatic chamber 1 and pneumatic chamber 2 determines the booster multiplication ratio.

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CHARACTERISTICS

TANK FILLING CURVES

The graphs below refer to the filling of a 10-litre tank and show the pressure increase ratio P2:P1 as a function of time (sec).
When calculating the tank filling time, the ratio P2:P1 must have 2 values. The first value is the ratio of the initial tank pressure "Pi" to the booster supply pressure "Pa"; the second value is the ratio of the final tank pressure "Pf" to the supply pressure "Pa".

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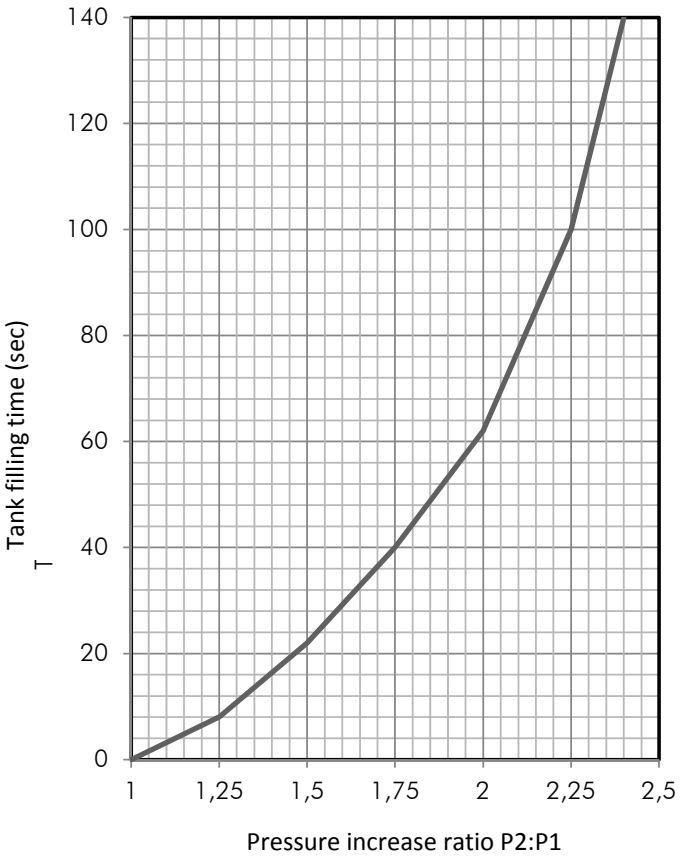

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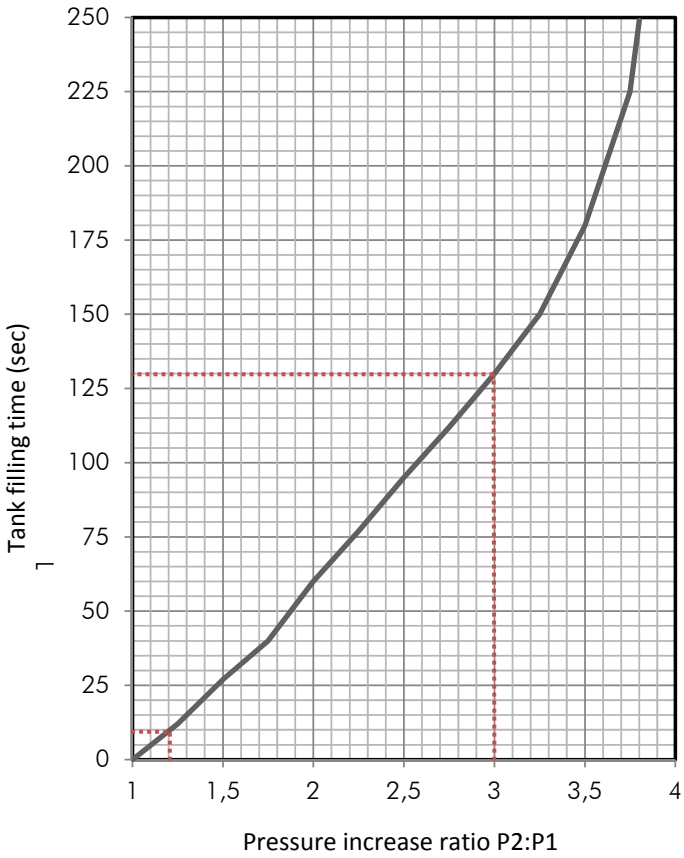

The data required to calculate the tank filling time are thus:

- Pa = air-air booster supply pressure
- Pi = Initial pressure in the tank
- Pf = Final pressure in the tank
- V = Volume of the tank

EXAMPLE OF CALCULATION

Let us assume we need to fill a 50-litre tank with our booster ratio 4:1 (Z5208100500400) at a pressure of 5 bar.
The tank has an initial pressure of 6 bar, which needs to be increased to 15 bar.
In short,

Pa = 5 bar
Pi = 6 bar
Pf = 15 bar
V = 50 litres

Now let us calculate the initial and final ratios P2:P1.

P2:P1(i) = Pi:Pa = 6/5 = 1.2

P2:P1(f) = Pf:Pa = 15/5 = 3

Now let us go to the relevant booster graph and e read the time value in relation to the pressure ratios we have just calculated.

With P2:P1(i), time Ti = 15 sec.
With P2:P1(f), time Tf = 130 sec.

The difference between the final time and the initial time gives the value T to be inserted in the final formula:

T = Tf - Ti = 130 – 15 = 115 sec.

The filling time Tr for a 50-litre tank will be:

Tr = T * V / 10 = 115 * 50 / 10 = 575 sec.

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FLOW RATE CHARTS

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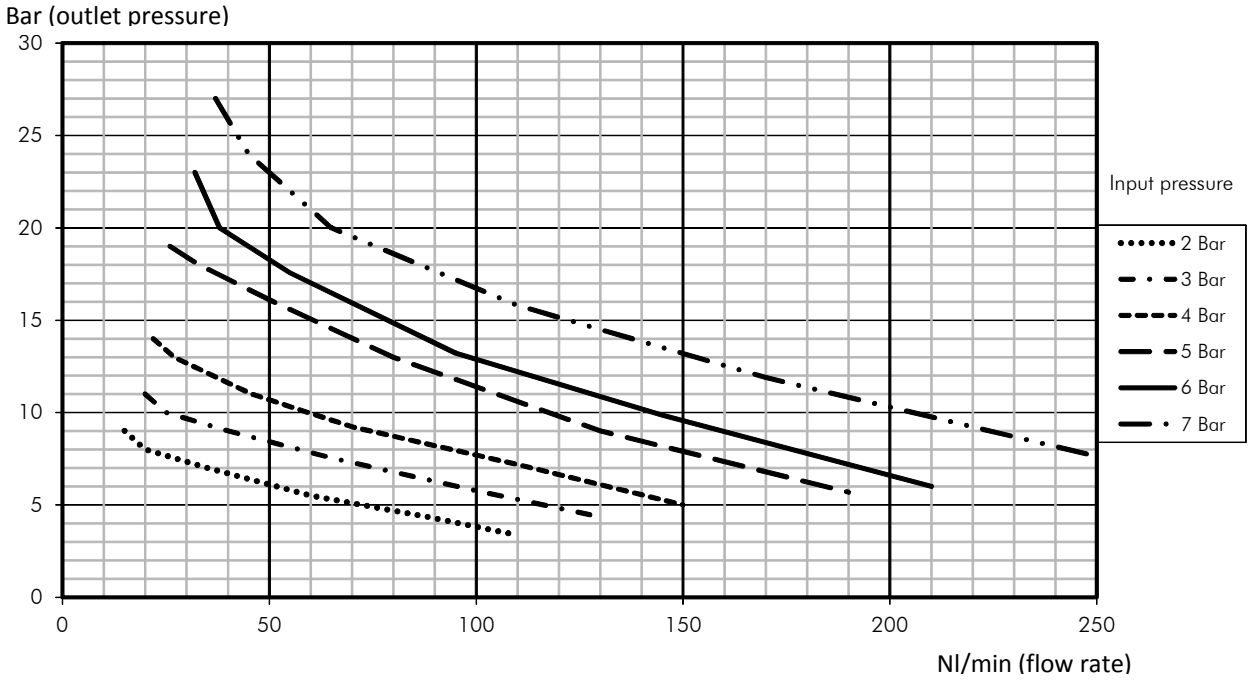

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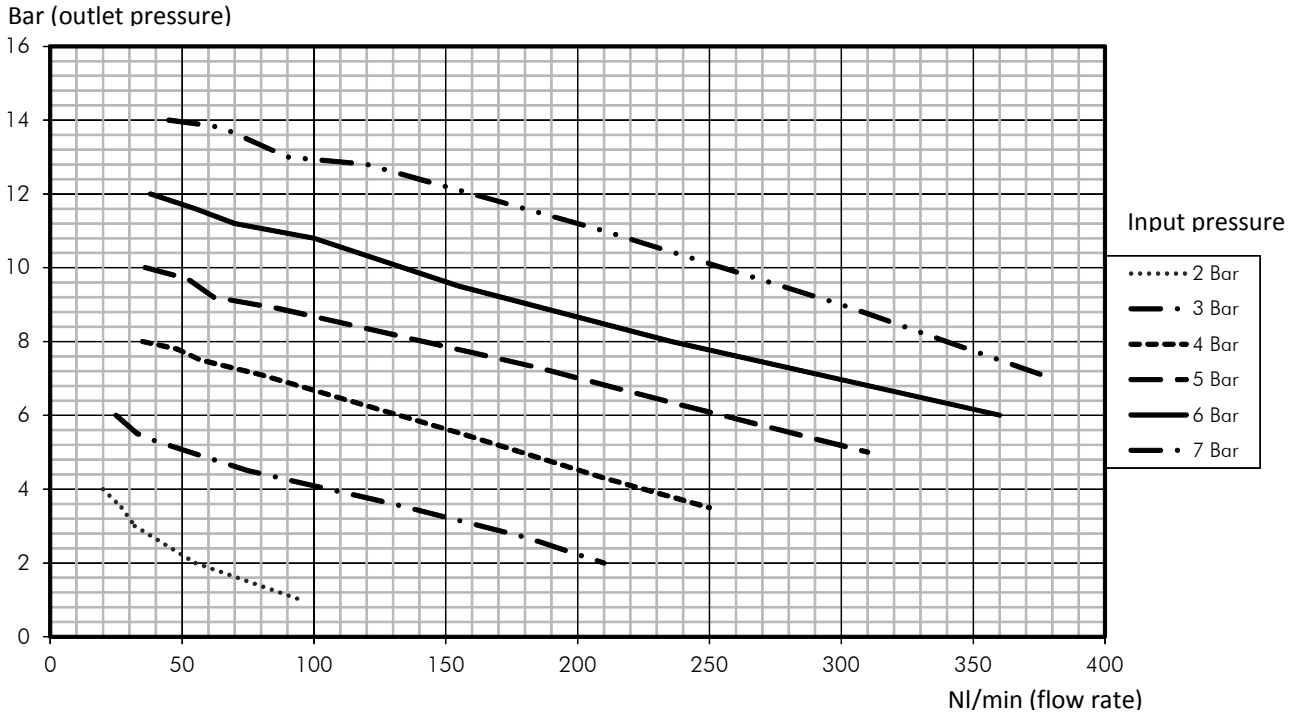

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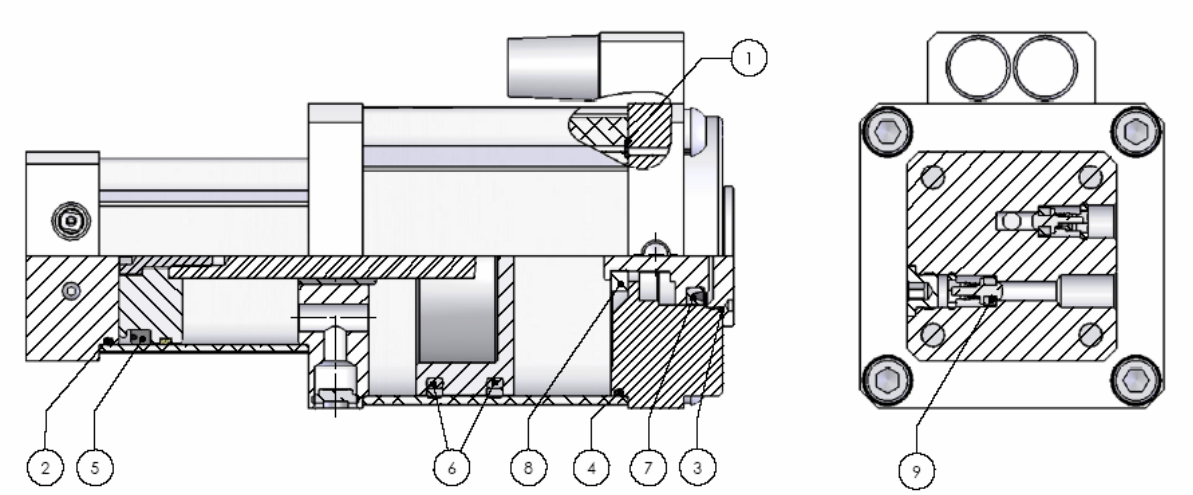
SET OF SPARE GASKETS



No.	Z5208K50100	Z5208K63100	Material	Q.ty
1	C1011300	C1011300	NBR	1
2	C1016200	C1019300	NBR	1
3	C1021100	C1021100	NBR	1
4	C1023300	C1023300	NBR	1
5	C1069705	C1069706	NBR	1
6	C1099891	C1099891	NBR + Plastof.	2
7	C1099952	C1099952	NBR	1
8	CAT50060009	CAT50060009	Polyurethane	1
9	CAT54540003	CAT54540003	Polyurethane	2

ACCESSORIES

The air-air booster is available with 1 or 2 regulators, complete with G1/8 or G1/4 male-male fittings, pressure gauge and 12 bar bit.

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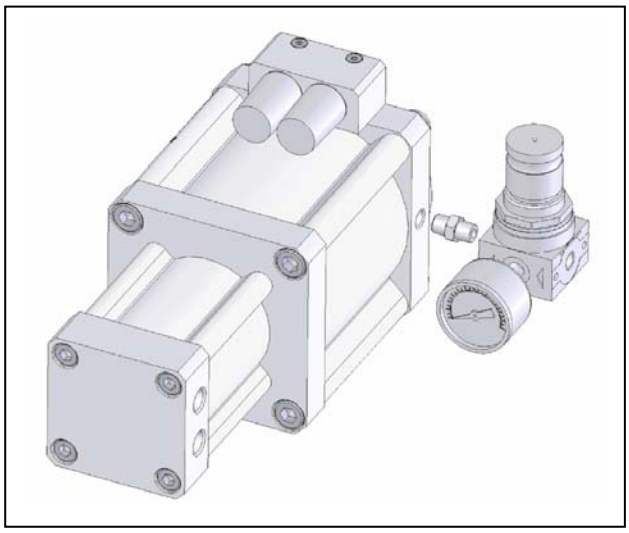

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