



PNEUMAX



VOLUME BOOSTER **SERIES FLOWPLUS**

MAXIMUM FLOW RATE, PRECISION AND STABILITY

Volume Booster Series Flowplus

The Flowplus series volume booster is available as a standard inline version or with an **integrated filter**. They are highly resistant to corrosion and ideal for applications in harsh environments.





Pneumax Process Automation

A wide range of standard components and customised solutions

Pneumax S.p.A. offers a wide range of engineered solutions and components for the process automation industry. These have been designed to meet the latest industry standards and customer specifications. Long term performance and reliability are never compromised at Pneumax, a trustworthy partner to achieve full customer satisfaction for severe service and harsh environmental applications.

Pneumax products are designed and engineered in compliance with the latest international standards, following sophisticated and reliable prototyping as well as rigorous testing procedures to provide efficient and cost effective solutions. The combination of the latest technology and manufacturing experience allow Pneumax to add more products to their extensive portfolio with a wide range of components and services.



STANDARD PRODUCTS

Stainless steel and aluminium components

CUSTOMISED SOLUTIONS

Manifold and integrated systems





Application sectors

- Petrochemical
- Oil & gas
- Power generation
- Water treatment





Series Flowplus



General

The **Pneumax** Flowplus range of high-capacity volume boosters are available in both Aluminium or Stainless Steel with the option of a standard version or a version with a built in filter (stainless steel). The Flowplus range has been designed to meet the needs of those more demanding applications within the Oil & Gas industry, applications which require high performance in tough environment conditions. With a high flow exhaust ratio, the **Pneumax** Flowplus volume boosters offer high performance and reliability for process and industrial automation applications..

Both stainless steel and aluminum versions are corrosion and wear resistant, due to the same stainless steel trim type selection, with a wide range of sealing materials for extended operating temperature applications (to extreme low temperature up to high temperature application).

The **Pneumax** booster operates with a 1:1 signal to output relay, capable to provide fast response, delivering high air volume for fast actuator movement and increased stroking speed for both control and on/off valves actuators.

As a standard, an adjustable integrated by-pass valve device is available, to reduce or avoid (thru fully closed position in case of on-off application) excessive actuator overshoot or over-damping.

In addition, in order to precisely adjust actuator travel speed, the **Pneumax** booster can be supplied with integral flow regulators, controlling the air supply, exhaust or both. The stainless steel version is also available with a built in filter (5, 20 & 50 μm) with either HDPE or stainless steel filter element. These filter elements can be regenerated by cleaning with a suitable detergent.

Operating principle

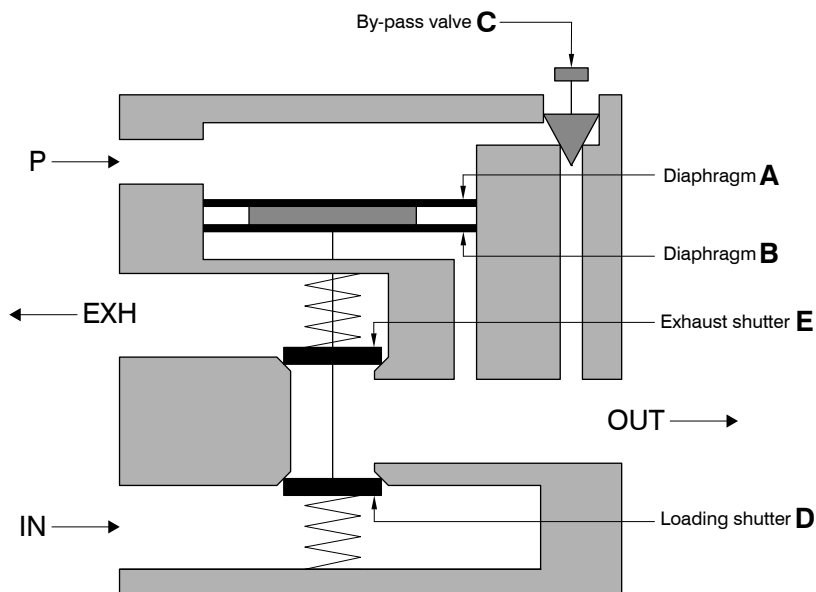
The device is pneumatic operated thru inlet port. When a pressure signal from 2 to 8 bar is applied to the pilot port **P**, the main valve assembly opens the loading shutter **D** to allow the passage of a high volumetric flow from the inlet port to the outlet port. When the system detects that the outlet pressure is equal to the pilot signal pressure, and consequently the forces acting on the membranes **A** and **B** are equivalent, the main valve moves to the de-energized position, i.e. with the shutters **D** and **E** closed.

This condition is maintained until there is a change in signal pressure or a change in outlet pressure value. If the outlet pressure figure is higher than the pilot signal pressure, the main valve group opens the shutter of drain **E** to exhaust. If the system detects an outlet pressure lower than the pilot signal, the main valve opens to restore the outlet at correct pressure.

The signal input and output ports are connected by an integrated and adjustable by-pass valve **C**.

The adjustment, in addition to control the sensitivity of the system to changes in the pilot signal, ensures the exact equalization between the input signal and the supply occurs output.

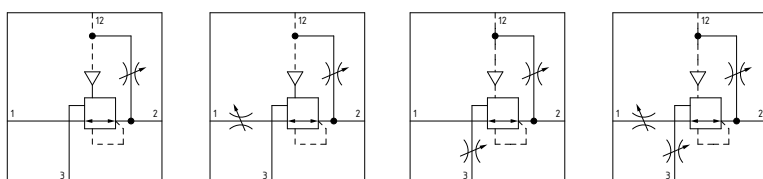
This allows that low volume signal provide a output high volume with a signal to output pressure ratio of 1:1.



Volume booster



- ▶ Available in 2 sizes with connections from 1/4" NPT to 1" NPT
- ▶ Available in aluminium with epoxy coating paint or in stainless steel AISI 316L
- ▶ Stainless steel AISI 316L versions according to NACE MR0175 - ISO15156/1
- ▶ Compact and linear design
- ▶ Robust and reliable construction
- ▶ Double hysteresis rolling membrane system
- ▶ High stability and repeatability
- ▶ High flow rate performances
- ▶ Wide temperature range application
- ▶ 1:1 ratio between pilot pressure and outlet pressure
- ▶ Integrated by-pass valve for reliable adjustment of the system sensitivity
- ▶ Uni and bi-directional flow regulators available
- ▶ Atex certification II 2GD, SIL3 and CU-TR 012



Technical characteristics	Size	
	Size 3	Size 4
Version	Aluminium with epoxy coating paint Stainless steel AISI 316L	
IN / OUT / EXH connections	1/4" NPT - 1/2" NPT	3/4" NPT - 1" NPT
Pilot connection	1/4" NPT	

Operational characteristics	Size	
	Size 3	Size 4
Fluid	Dry and clean air Inert gas Natural gas	
Maximum working pressure	13 bar	
Minimum working pressure	2 bar	
Maximum signal pressure	8 bar	
Minimum signal pressure	2 bar	
Working temperature and seals	-30°C ... +80°C - NBR seals (Standard version) -50°C ... +80°C - NBR LT seals (L version) -60°C ... +80°C - PUR - SILICONE seals (Z version) -5°C ... +150°C - FPM - HNBR seals (H version) -40°C ... +100°C - EPDM-FDA seals (EF version)	
Signal pressure / outlet pressure ratio	1:1 ± 5%	
Assembly configuration	Stand alone With fixing bracket	
Assembly positions	Indifferent	

Flow capacity Cv table	Size			
	Size 3		Size 4	
	1/4" NPT	1/2" NPT	3/4" NPT	1" NPT
Output	2,5	4,2	7	9,4
Exhaust	2,5	4,2	7	9,4

Weights	Size			
	Size 3		Size 4	
	1/4" NPT	1/2" NPT	3/4" NPT	1" NPT
Aluminium version without flow regulators	2040 g	2010 g	4470 g	4380 g
Aluminium version with uni-directional flow control regulator	2098 g	2070 g	4478 g	4394 g
Aluminium version with bi-directional flow control regulators	2122 g	2094 g	4515 g	4433 g
Stainless steel AISI 316L version without flow regulators	5460 g	5344 g	11532 g	11308 g
Stainless steel AISI 316L with uni-directional flow control regulator	5476 g	5360 g	11560 g	11336 g
Stainless steel AISI 316L with bi-directional flow control regulators	5491 g	5375 g	11574 g	11350 g

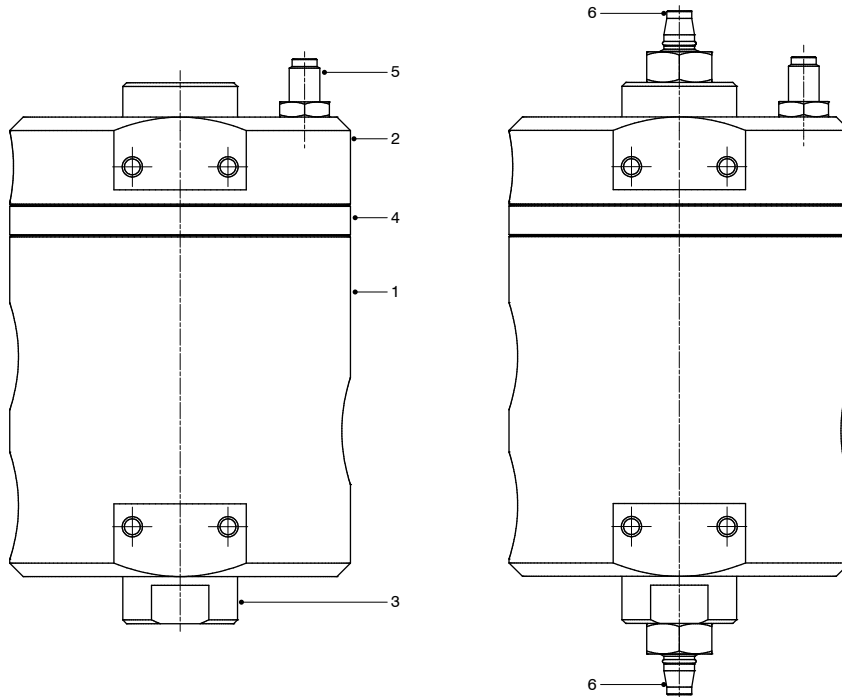
AIR TREATMENT



Materials

The Pneumax volume booster is manufactured in two versions, one being aluminium, which is epoxy coated and the other being AISI 316L stainless steel. Both are highly resistant to corrosion and wear. The integral components which come into contact with the media are manufactured in 316L stainless steel.

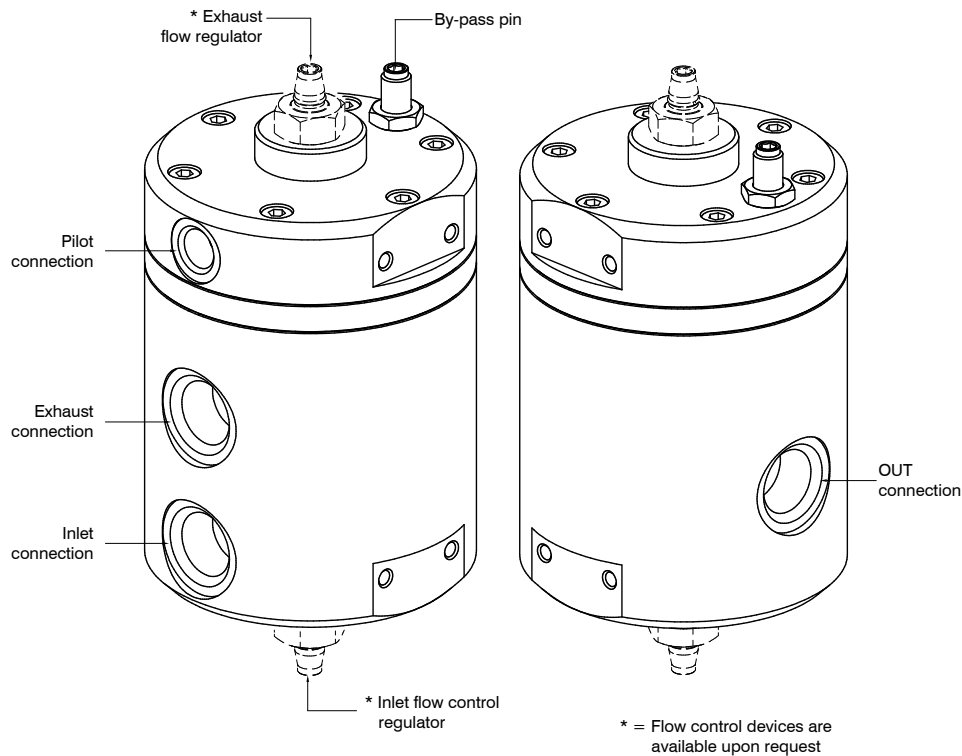
AIR TREATMENT



Volume booster		
1	Body	Aluminium with epoxy coating paint Stainless steel AISI 316L
2	Piloting operator	Aluminium with epoxy coating paint Stainless steel AISI 316L
3	Rear end cap	Aluminium with epoxy coating paint Stainless steel AISI 316L
4	Intermediate body	Aluminium with epoxy coating paint Stainless steel AISI 316L
5	By-pass valve	Stainless steel AISI 316L
6	Adjusting pins	Stainless steel AISI 316L
7	Springs	Stainless steel AISI 316
8	Fixing screws and nuts	Stainless steel A4-70
9	Diaphragm and seals	NBR NBR-LT HNBR FPM SILICONE

Design

The Pneumax volume booster is fitted with a by-pass valve as standard and can be supplied with or without a flow regulator. The flow regulator can be either Uni-directional or Bi-directional.



Order codes

Version	
SA	Aluminium with epoxy coating paint
SS	Stainless steel AISI 316L

Size and connections	
3A	Size 3 - 1/4" NPT
3B	Size 3 - 1/2" NPT
4A	Size 4 - 3/4" NPT
4B	Size 4 - 1" NPT

Flow regulators options	
	without flow regulators
RS	with exhaust flow regulator
RM	with inlet flow control regulator
R2	with bi-directional flow control regulators

Temperature options	
	Standard (-30°C ... +80°C)
L	Low temperature (-50°C ... +80°C)
Z	Low temperature (-60°C ... +80°C)
H	High temperature (-5°C ... +150°C)
EF	EPDM-FDA (-40°C ... +100°C)

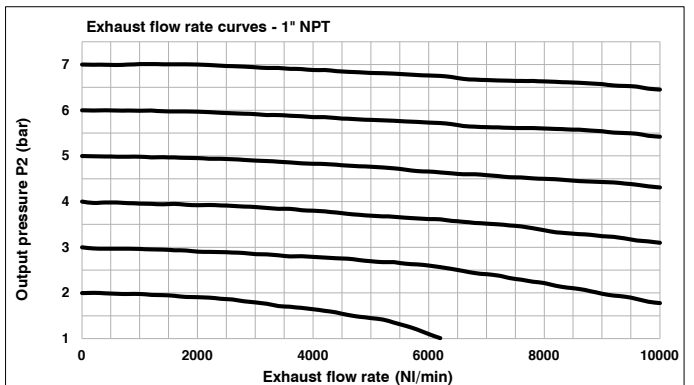
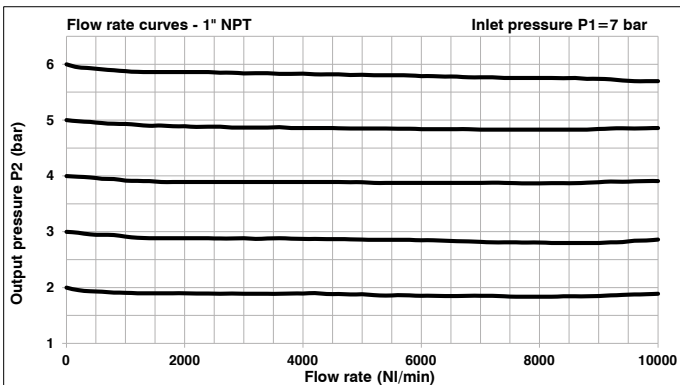
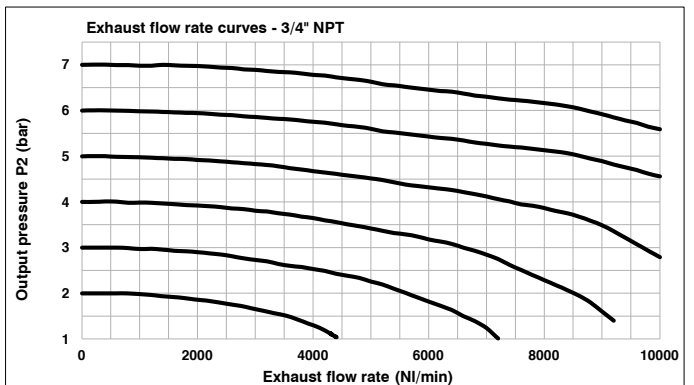
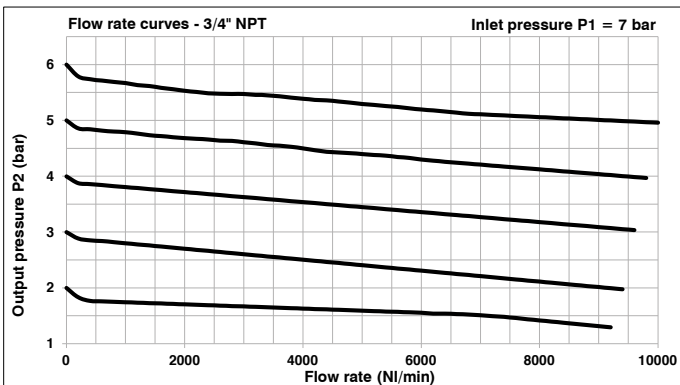
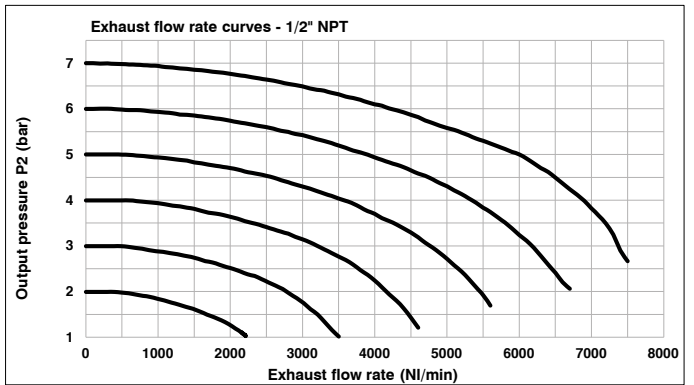
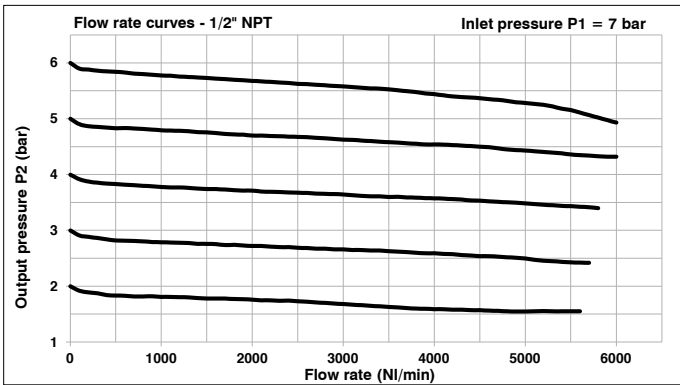
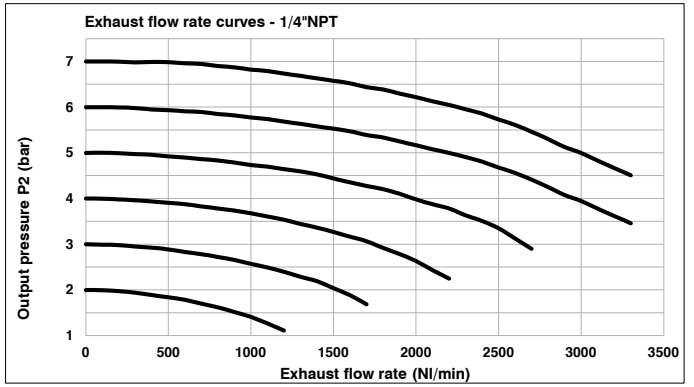
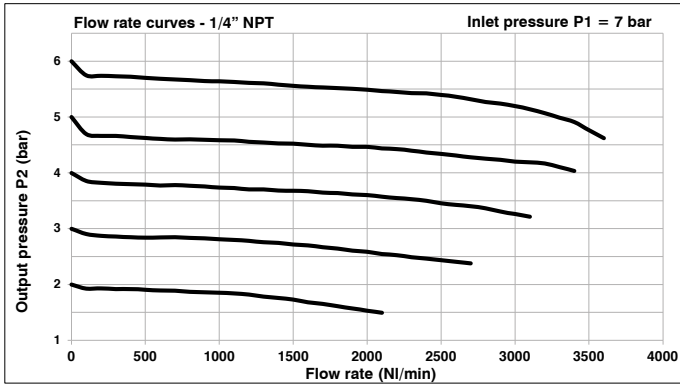
SA 17 3B VB R2 L

Example : SA173BVB R2 L : Size 3 Volume booster, 1/2"NPT ports, Bi-directional flow control regulator, suitable for low temperature.

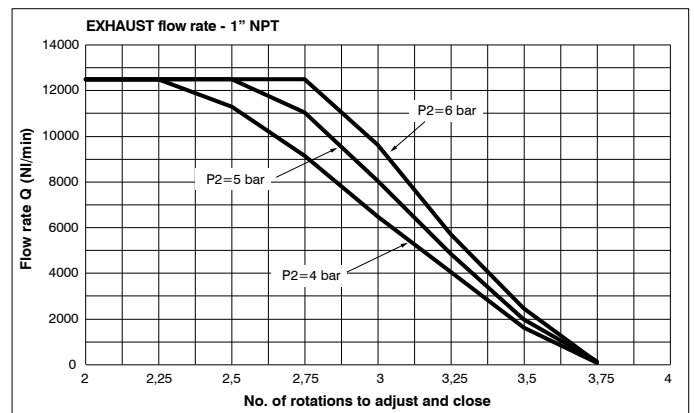
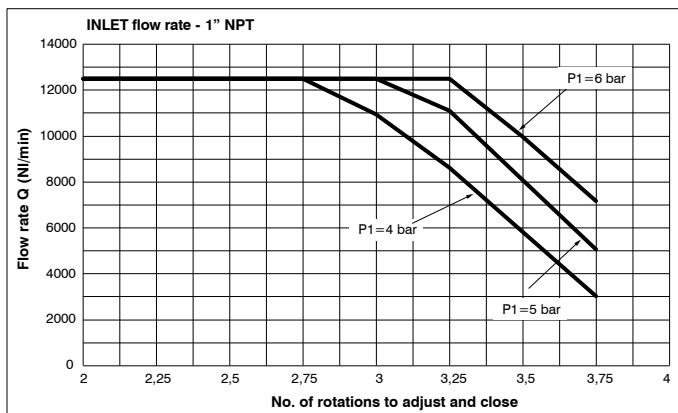
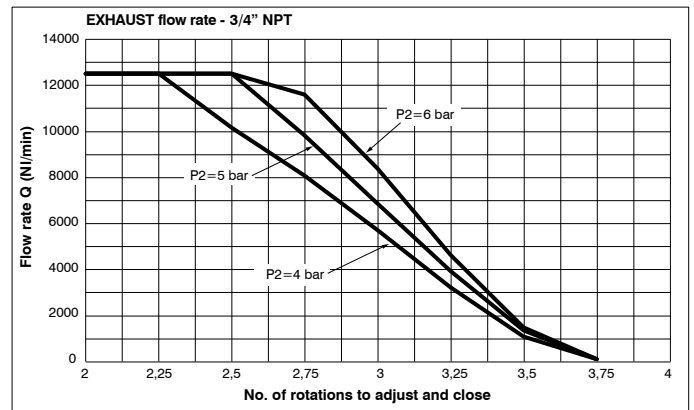
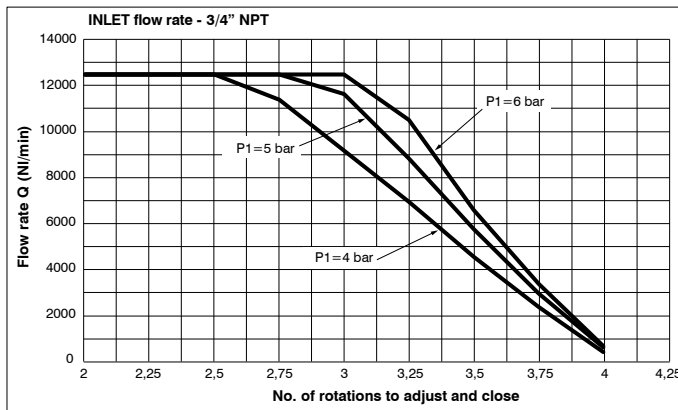
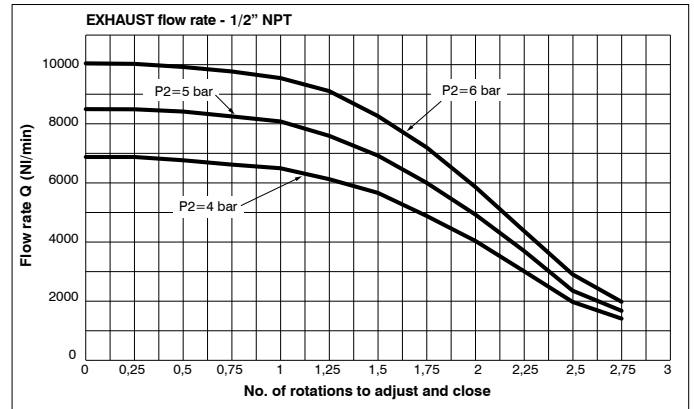
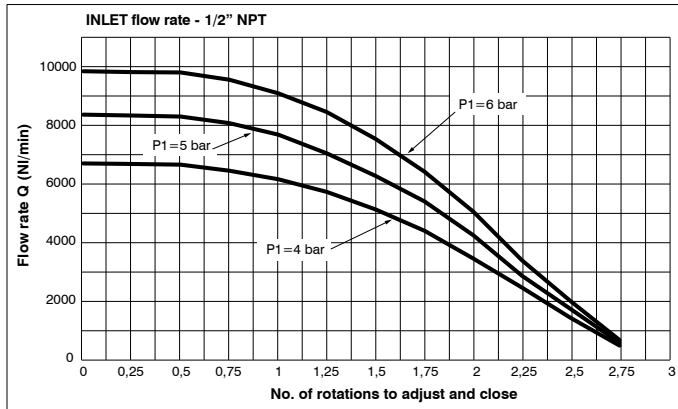
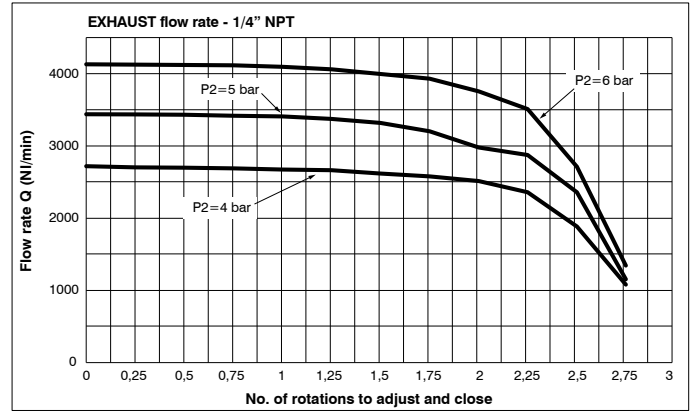
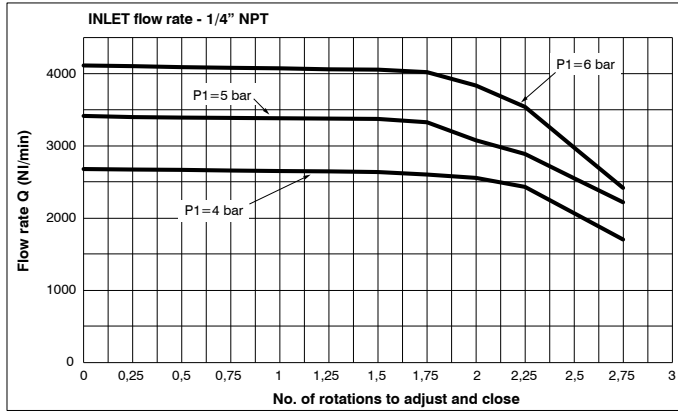


Characteristic curves (without flow regulators)

AIR TREATMENT



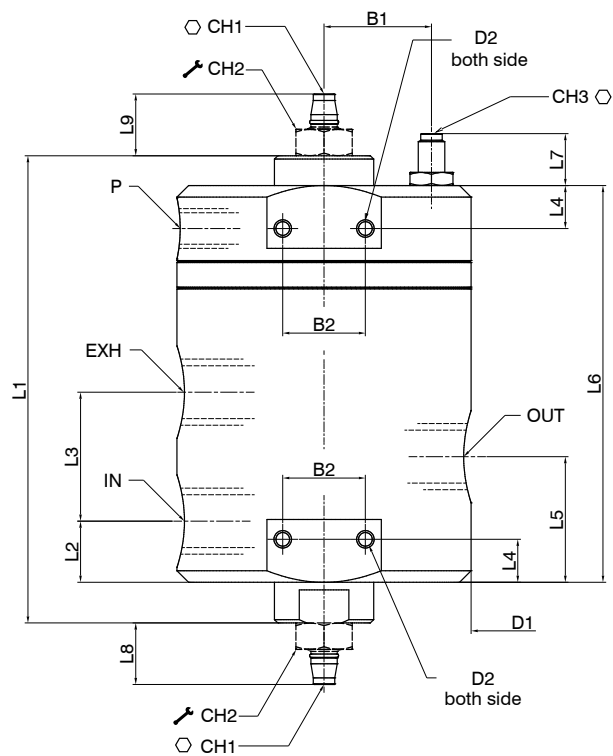
Characteristic curves (with flow regulators)





Dimensions

AIR TREATMENT

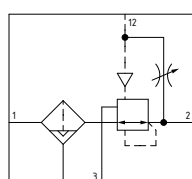
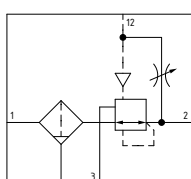


Model	B1	B2	D1	D2 (both side)	L1	L2	L3	L4	L5	L6	L7	L8	L9	IN - OUT - EXH	P	CH1 ○	CH2 ⌘	CH3 ○
SA173...	32,5	25	89	M5	141,5	18,5	39	13	38	120	15,5	/	/	1/4" NPT 1/2" NPT	1/4" NPT	4	17	4
SS173...	33,5																	
SA173...R#	32,5																	
SS173...R#	33,5																	
SA174...	41	22	109	M6	205	27,5	63,5	14	59,5	175	15,5	/	/	3/4" NPT 1" NPT	1/4" NPT	4	19	4
SS174...	43																	
SA174...R#	41																	
SS174...R#	43																	

Volume filter booster



- ▶ Available in 2 sizes with connections from 1/4" NPT to 1" NPT
- ▶ Available in stainless steel AISI 316
- ▶ In compliance with NACE standard MR0175 - ISO15156/1
- ▶ Compact and linear design
- ▶ Robust and reliable construction
- ▶ Double hysteresis rolling membrane system
- ▶ High stability and repeatability
- ▶ High flow rate performances
- ▶ Wide temperature range application
- ▶ 1:1 ratio between pilot pressure and outlet pressure
- ▶ Integrated by-pass valve for reliable adjustment of the system sensitivity
- ▶ 5 - 20 - 50 μm filter cartridge available in AISI 316 stainless steel or HDPE
- ▶ Manual or automatic drain
- ▶ Atex certification II 2GD, SIL3 and CU-TR 012



Technical characteristics	Size	
	Size 3	Size 4
Version	Stainless steel AISI 316L	
IN / OUT / EXH connections	1/4" NPT - 1/2" NPT	3/4" NPT - 1" NPT
Pilot connection	1/4" NPT	

Operational characteristics	Size	
	Size 3	Size 4
Fluid	Compressed air Inert gases Natural gases	
Maximum working pressure	13 bar	
Minimum working pressure	2 bar	
Maximum pressure range	8 bar	
Minimum pressure range	2 bar	
Operating temperature and seals	-30°C ... +80°C - Seals NBR (Standard Version) -50°C ... +80°C - Seals NBR LT (L Version) -60°C ... +80°C - Seals PUR - SILICONE (Z Version) -5°C ... +150°C - Seals FPM - HNBR (H Version) -5°C ... +70°C Automatic drain (S Version) -40°C ... +100°C - EPDM-FDA seals (EF Version)	
Signal pressure / outlet pressure ratio	1:1 ± 5%	
Assembly configuration	Stand alone With fixing bracket	
Assembly positions	Vertical ± 5°	
Filter pore size	5 μm Stainless steel AISI 316 or HDPE (High density polyethylene) 20 μm Stainless steel AISI 316 or HDPE (High density polyethylene) 50 μm Stainless steel AISI 316 or HDPE (High density polyethylene)	
Max. bowl capacity	25 cm ³	78 cm ³
Condensation drain	Manual Automatic	

Flow capacity Cv table	Filter pore size	Size			
		Size 3		Size 4	
		1/4" NPT	1/2" NPT	3/4" NPT	1" NPT
Output	5 μm	2,12	3,6	5,9	8
	20 μm	2,18	3,75	6,15	8,3
	50 μm	2,25	3,83	6,3	8,5
Exhaust	5 μm	2,5	4,2	7	9,4
	20 μm				
	50 μm				

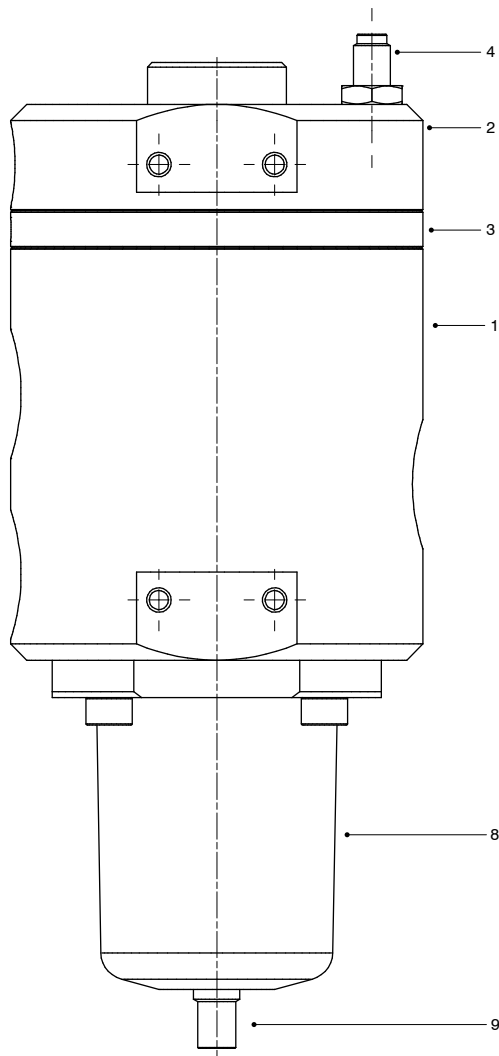
Weights	Size			
	Size 3		Size 4	
	1/4" NPT	1/2" NPT	3/4" NPT	1" NPT
AISI 316L stainless steel version without flow regulators	6460 g	6344 g	12532 g	12308 g



Materials

The Volume filter booster is only available in 316L stainless steel. The integral components which come into contact with the media are manufactured in 316L stainless steel. The filter elements are available in both HDPE and 316 stainless steel.

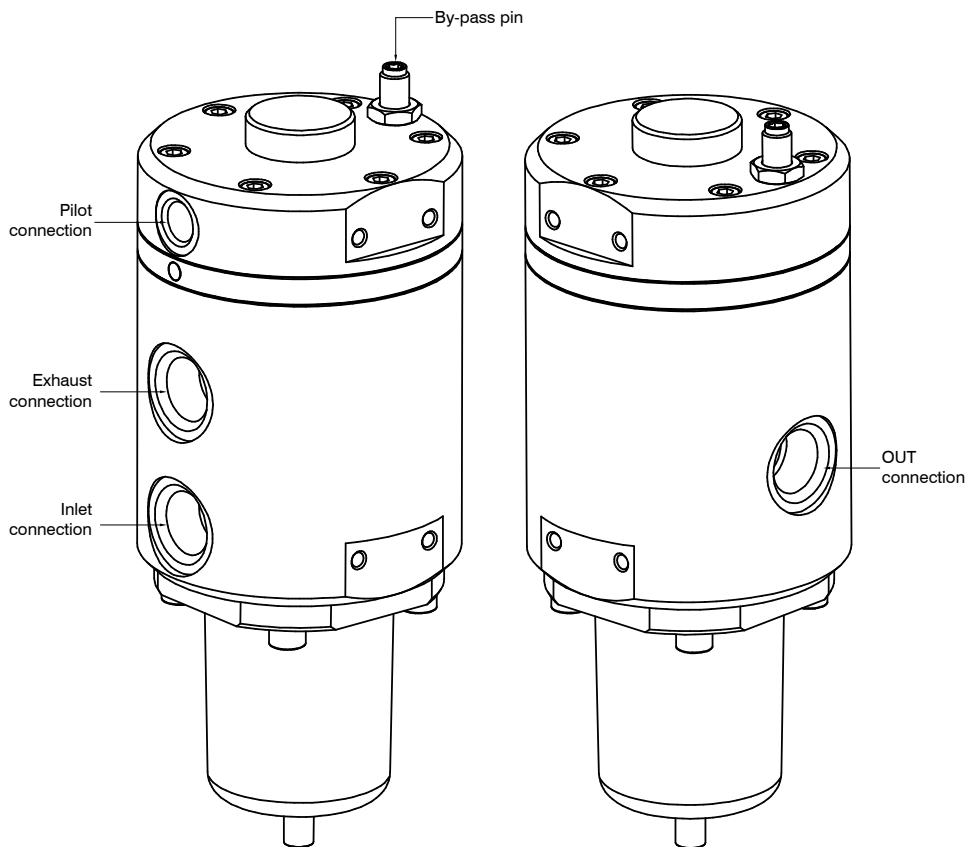
AIR TREATMENT



Volume filter booster		
1	Body	Stainless steel AISI 316L
2	Piloting operator	Stainless steel AISI 316L
3	Intermediate body	Stainless steel AISI 316L
4	By-pass valve	Stainless steel AISI 316L
5	Springs	Stainless steel AISI 316
6	Fixing screws and nuts	Stainless steel A4-70
7	Diaphragm and seals	NBR NBR-LT HNBR FPM SILICONE
8	Bowl	Stainless steel AISI 316L
9	Manual drain	Stainless steel AISI 316L
	Automatic drain	POM NBR Brass Stainless steel AISI 316L

Design

The Volume filter booster is fitted with the by-pass valve as standard. Flow regulators are not available.



Order codes

SS 17 3B VFB A L

Version	
SS	Stainless steel AISI 316L

Size and connections	
3A	Size 3 - 1/4" NPT
3B	Size 3 - 1/2" NPT
4A	Size 4 - 3/4" NPT
4B	Size 4 - 1" NPT

Filter pore size	
A	5 μ m - Stainless steel AISI 316
B	20 μ m - Stainless steel AISI 316
C	50 μ m - Stainless steel AISI 316
D	5 μ m - HDPE
E	20 μ m - HDPE
F	50 μ m - HDPE

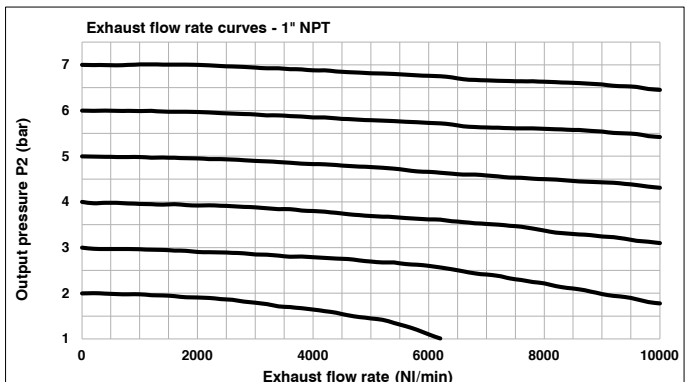
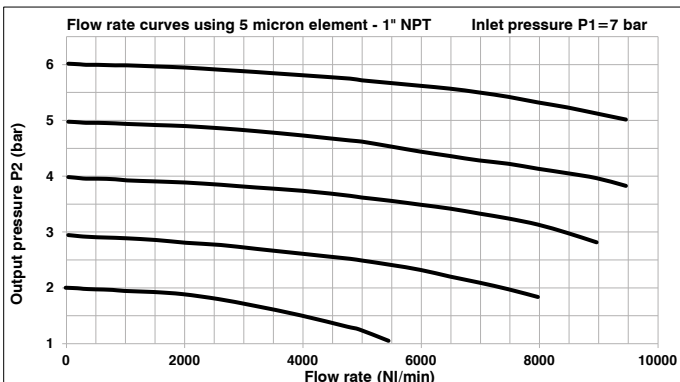
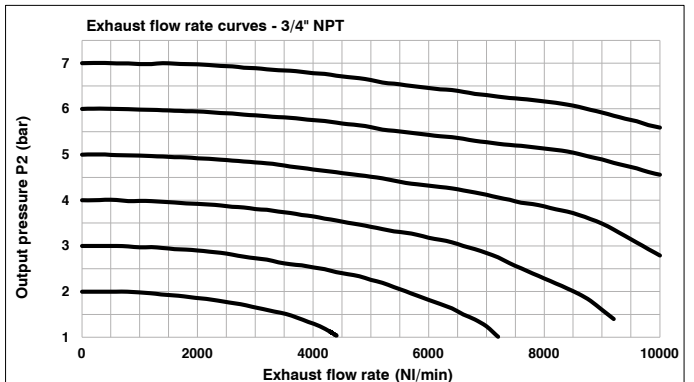
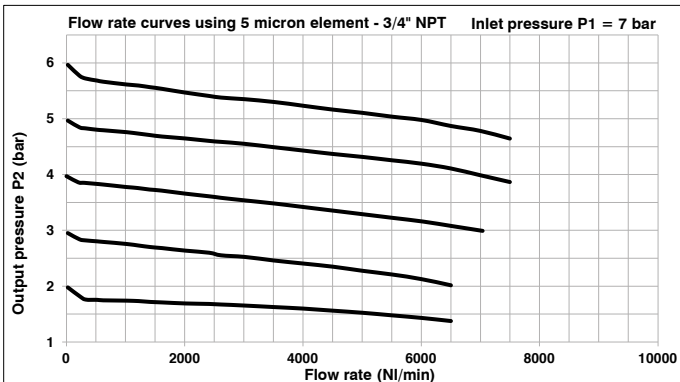
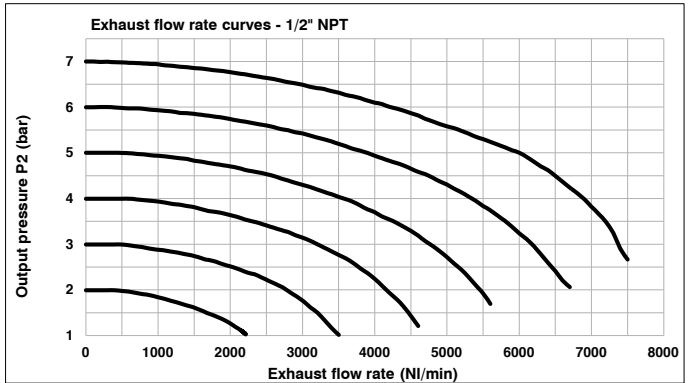
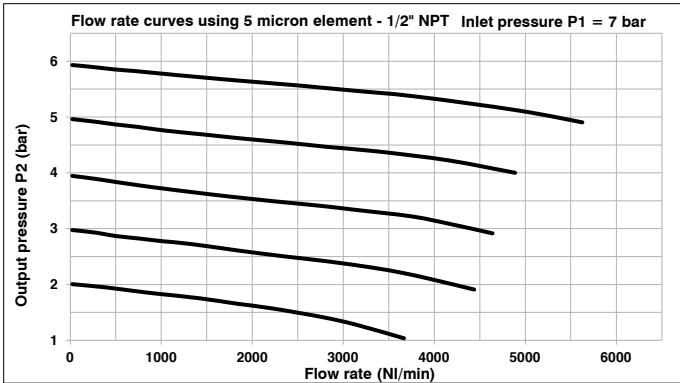
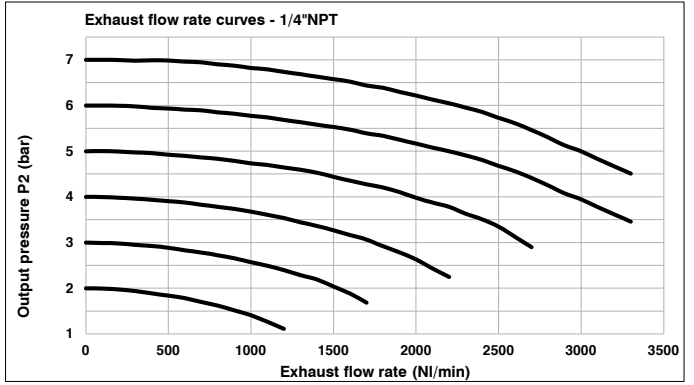
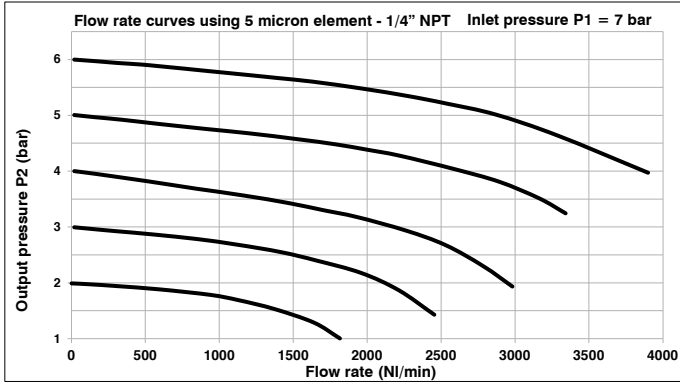
Temperature options	
	Standard (-30°C ... +80°C)
L	Low temperature (-50°C ... +80°C)
Z	Low temperature (-60°C ... +80°C)
H	Low temperature (-5°C ... +150°C)
S	Automatic drain (-5°C ... +70°C)
EF	EPDM-FDA (-40°C ... +100°C)

Example : SS173BVFBAL : Size 3 Volume filter booster, 1/2" NPT, 5 μ m element, low temperature and manual drain.

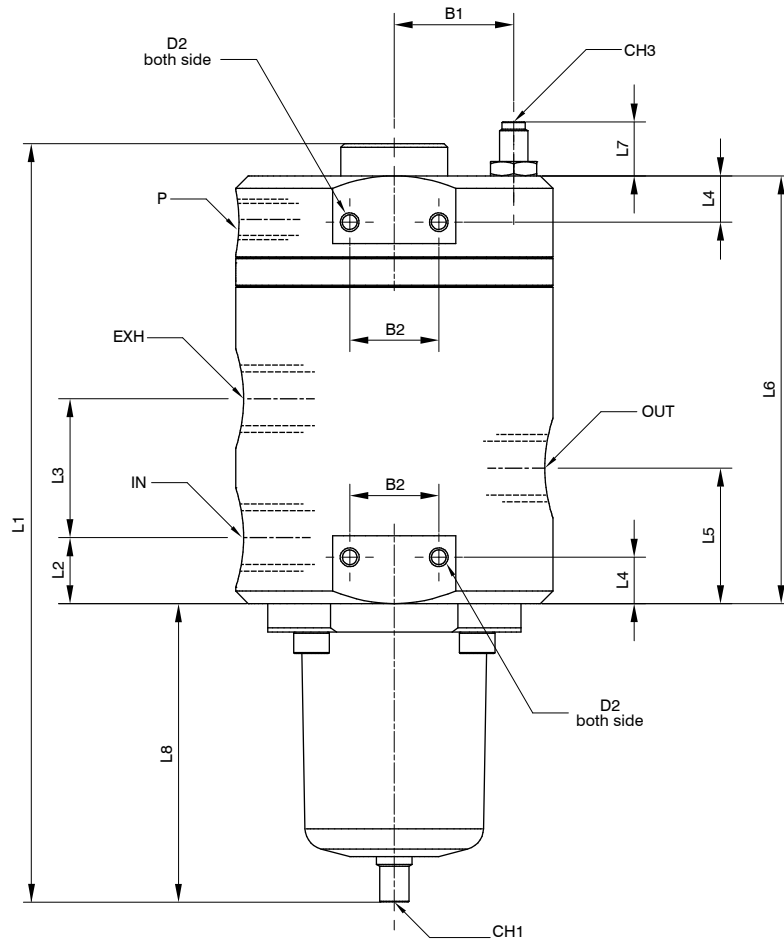


Characteristic curves (without flow regulators)

AIR TREATMENT



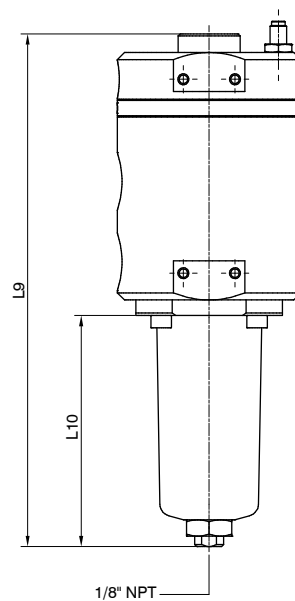
Dimensions



AIR TREATMENT

Model	B1	B2	D1	D2 (both side)	L1	L2	L3	L4	L5	L6	L7	L8	IN - OUT - EXH	P	CH1	CH3
SS173...	33,5	25	89	M5	213	18,5	39	13	38	120	15,5	84	1/4" NPT 1/2" NPT	1/4" NPT	5	4
SS174...	43	22	109	M6	323,5	27,5	63,5	14	59,5	175	15,5	133,5	3/4" NPT 1" NPT		8	4

Automatic drain version (A.D.)

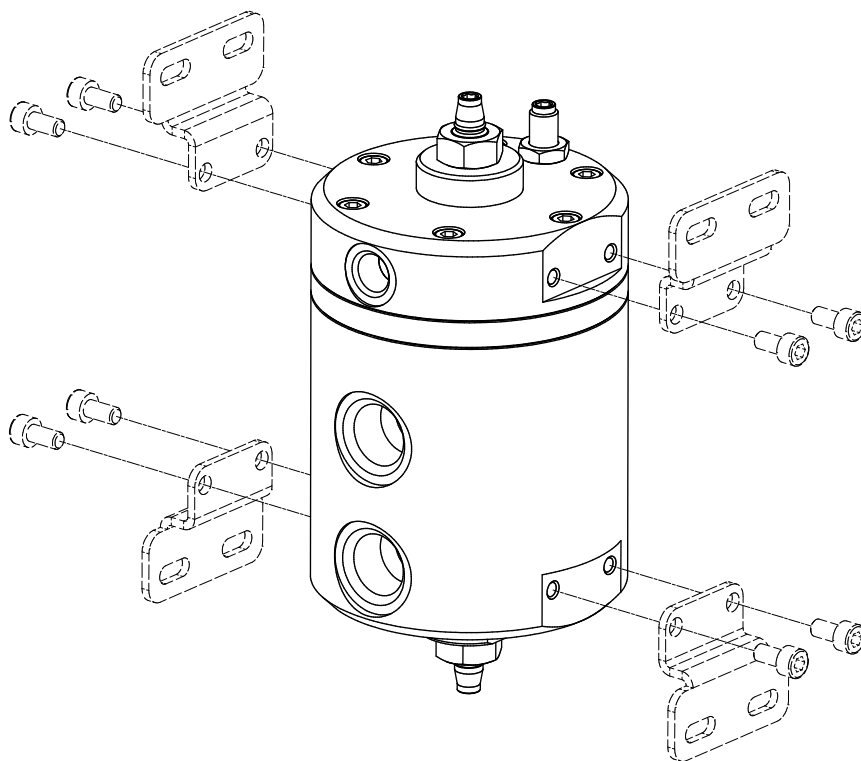


Model	L9	L10
SS173...	248,5	119,5
SS174...	332,5	142,5

Accessories and fixing

Special fixing brackets made of AISI 316L stainless steel are provided upon request. Fixing position for every need is confirmed by using one or two brackets.

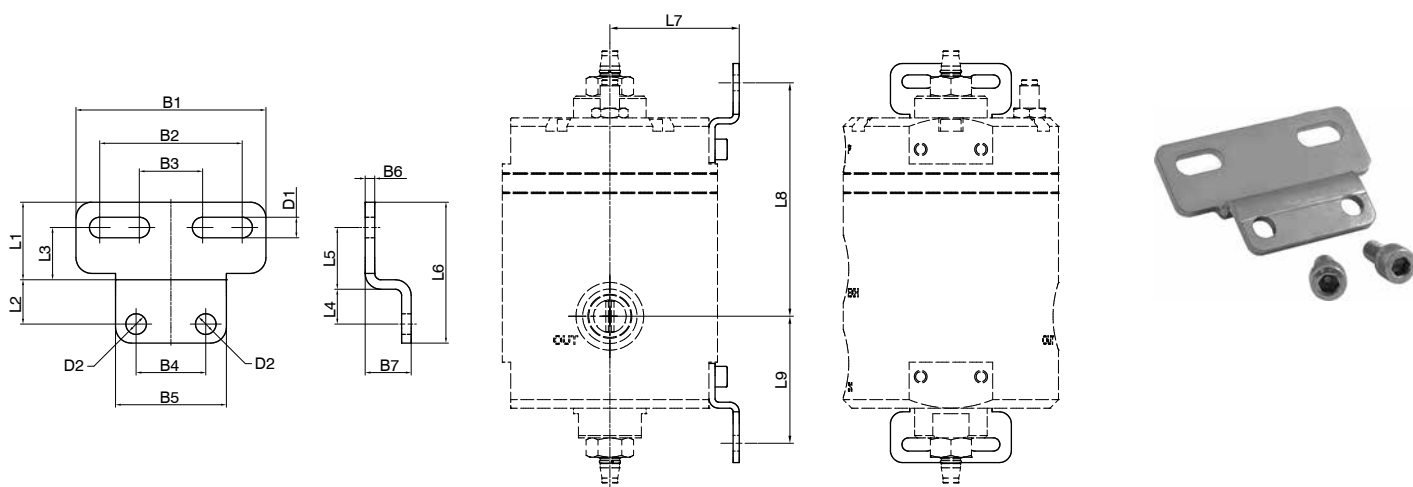
AIR TREATMENT



Fixing bracket

SS17250

Model	
SS17250	applicable to model SS173... and SA173...
SS17350	applicable to model SS174... and SA174...



Model	L1	L2	L3	L4	L5	L6	L7	L8	L9	B1	B2	B3	B4	B5	B6	B7	D1	D2	Weight (g)
SS17250	22,5	13	15	10,5	17,5	41	53,5	96,5	52,5	50	35	20	25	34	2,5	12,5	5,5	5,5	39
SS17350	24,5	14	16,5	11	19,5	44,5	65,5	132	76	60	45	20	22	35	3	14,5	6,5	6,5	57



PNEUMAX

PNEUMAX S.p.A.

Via Cascina Barbellina, 10
24050 Lurano (BG) - Italy
P. +39 035 41 92 777
info@pneumaxspa.com