

## Volume booster series Flowplus



### General

**Pneumax** high flow capacity air volume booster - stainless steel SS and aluminium SA series - has been engineered and developed to specifically approach the Oil & Gas industry and more widely for all the severe service applications that require excellent performances due to chemical and/or harsh environmental conditions.

Moreover, **Pneumax** booster represent performing and reliable choice in case of high flow exhaust ratio, for the whole process and industrial automation applications in general.

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).

**Pneumax** volume booster is 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, **Pneumax** booster can be equipped with integral flow regulators for air delivery and exhaust.

### Operating principle

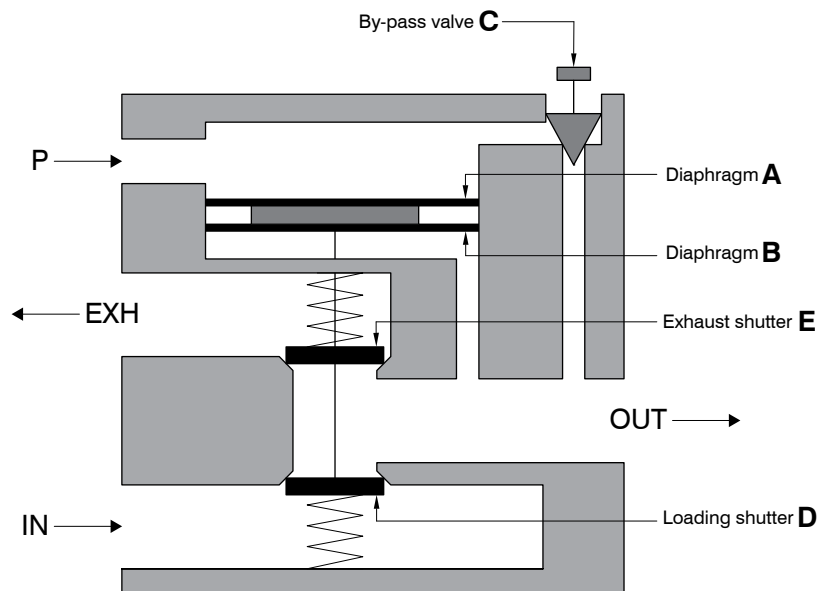
The device is pneumatic operated thru inlet port. When a pressure signal from 2,5 to 8 bar is applied to the pilot port **P**, the main valve assembly opens the loading shutter **D** to allow the passage of a high volumetric flow from the inlet port to the outlet port. When the system detects that the 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 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.

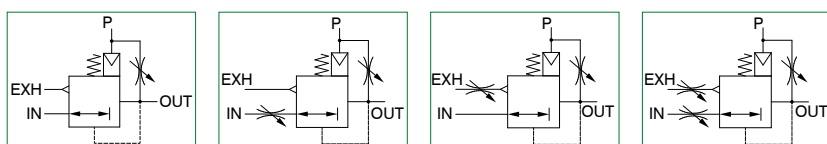
This allows that low volume signal provide a output high volume with a signal to output pressure ratio of 1: 1.



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	
Assembly configuration	Stand alone With fixing bracket	
Assembly positions	Indifferent	

Operational characteristics

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

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

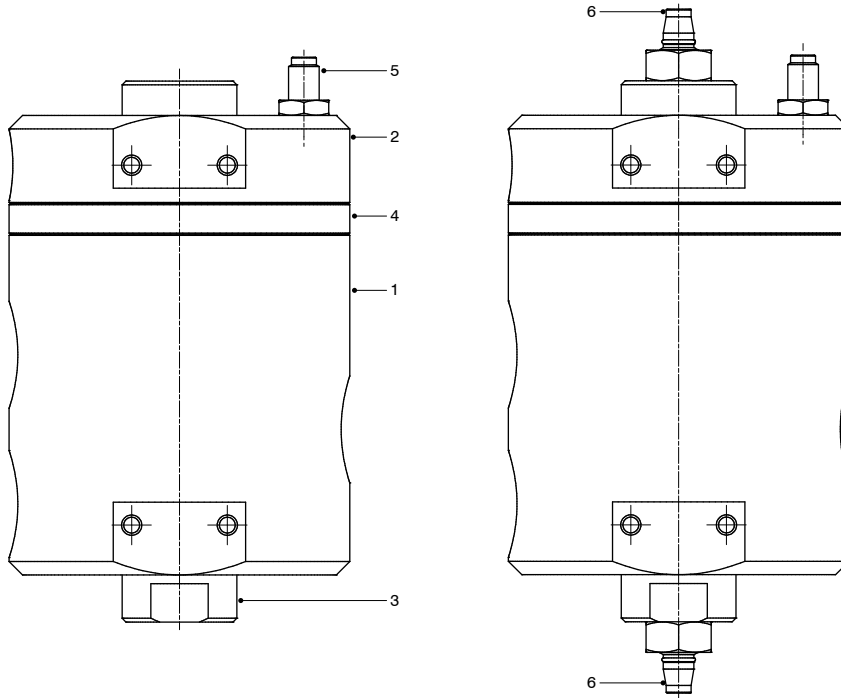
Weights

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

**Materials**

Pneumax volume booster is manufactured in two versions, one aluminum epoxy painted and one in AISI 316L stainless steel, both highly resistant to corrosion and wear.

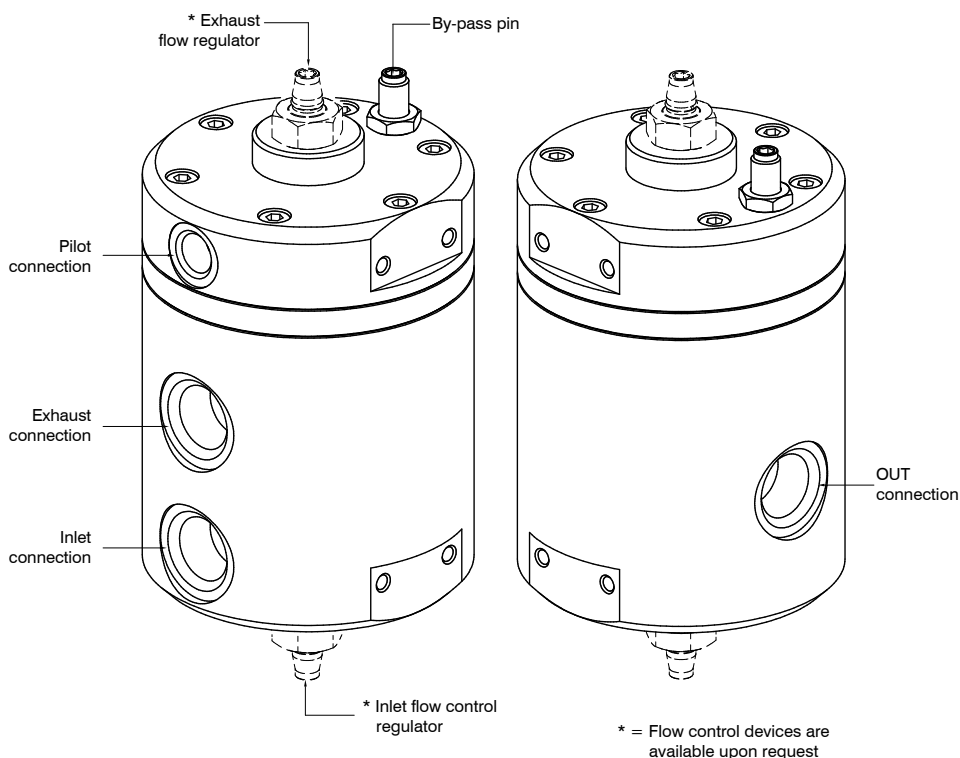
Nuts, screws, pins and adjusting pins, as well as all the internal parts in contact with the fluid are made of AISI 316L stainless steel.



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 316L
8	Fixing screws and nuts	Stainless steel A4-70
9	Diaphragm and seals	NBR NBR-LT HNBR FPM SILICONE

## Design

Pneumax volume booster is equipped with a by-pass valve as standard, and can be supplied with no flow regulator device or complete with uni-directional or bi-directional flow regulators.



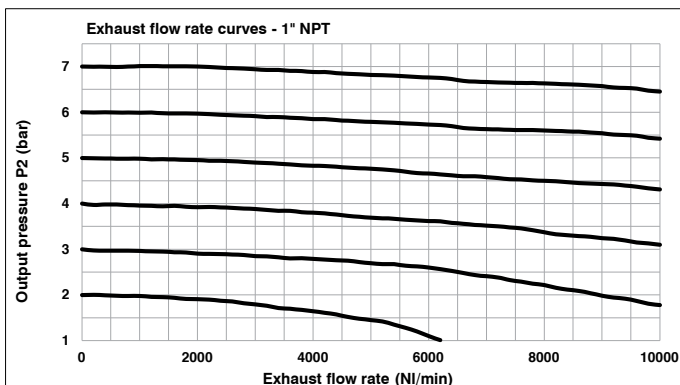
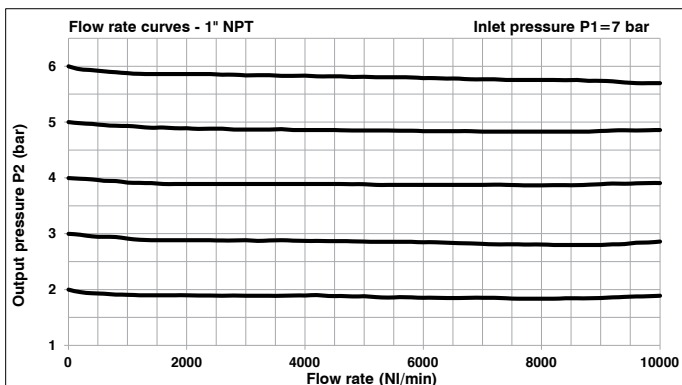
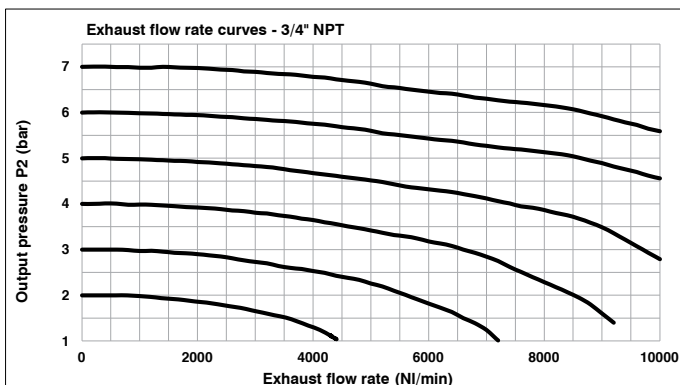
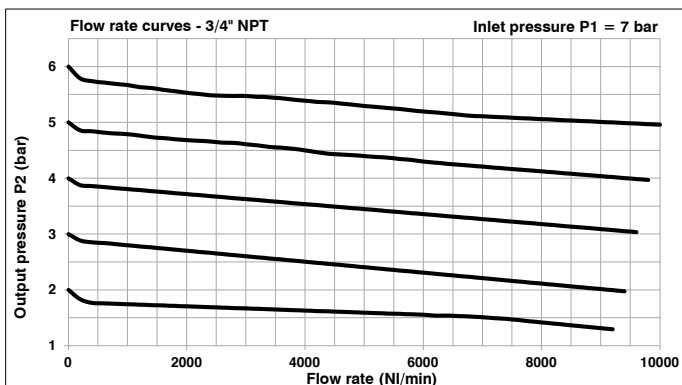
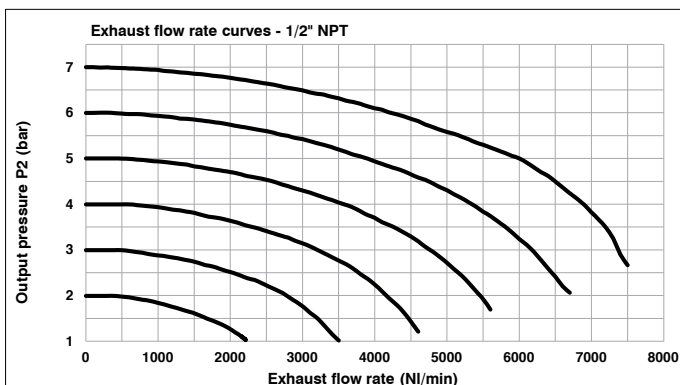
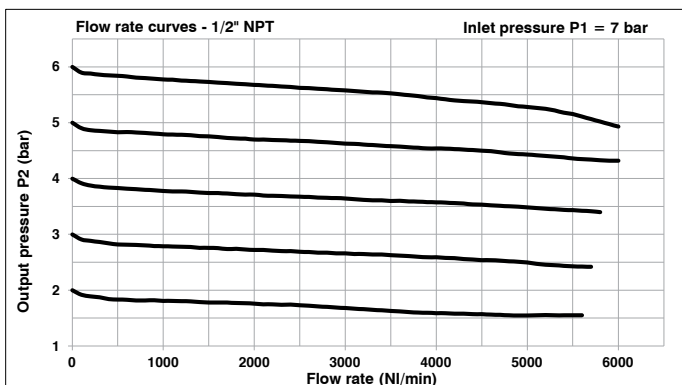
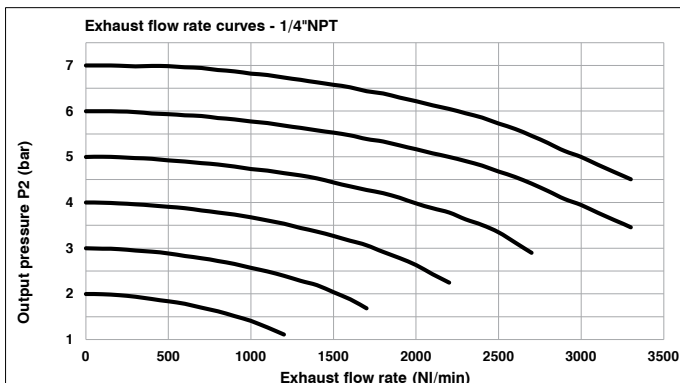
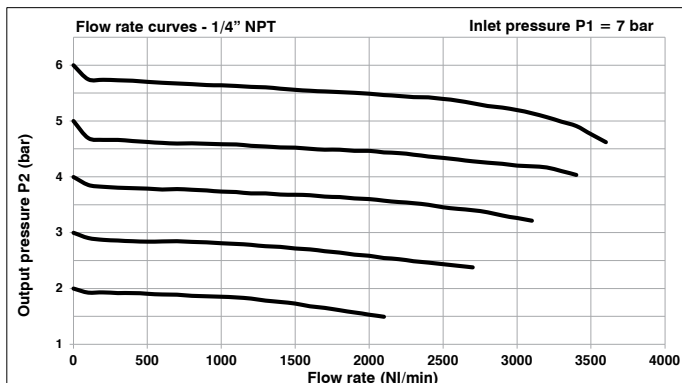
## Order codes

	SA	17	3B	VB	R2	L
<b>Version</b>						
SA : Aluminium with epoxy coating paint						
SS : Stainless steel AISI 316L						
<b>Size and connections</b>						
3A : Size 3 - 1/4" NPT						
3B : Size 3 - 1/2" NPT						
4A : Size 4 - 3/4" NPT						
4B : Size 4 - 1" NPT						
<b>Flow regulators options</b>						
: without flow regulators						
RS : with exhaust flow regulator						
RM : with inlet flow control regulator						
R2 : with bi-directional flow control regulators						
<b>Temperature options</b>						
: 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)						

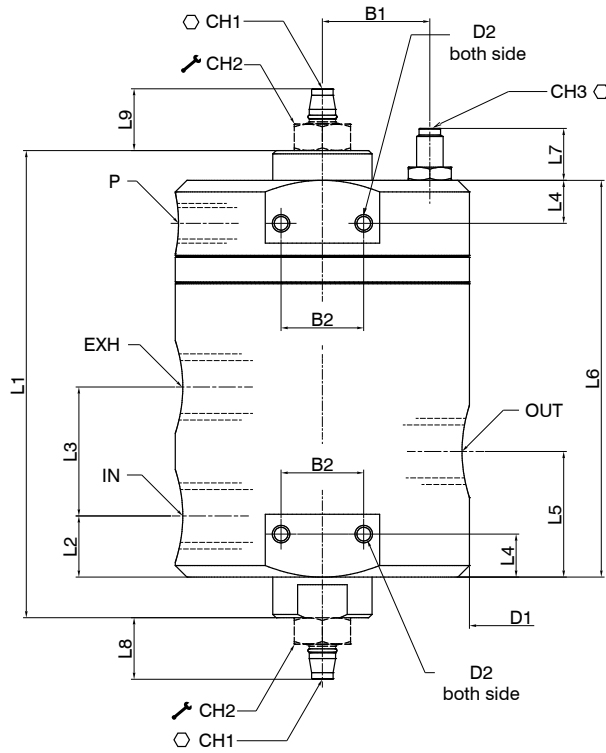
**Example : SA173BVBR2L** : Size 3 Volume booster, 1/2" NPT, with bi-directional flow control regulators, low temperature

Flow charts

PROCESS AUTOMATION TECHNOLOGY



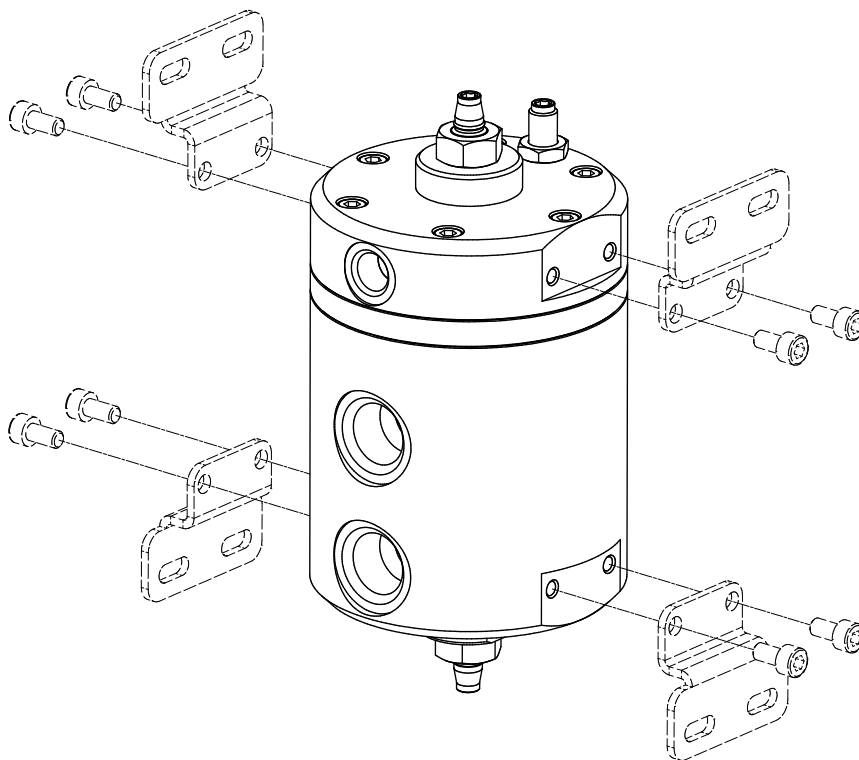
Dimensions



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	ES.4	17	ES.4
SS173...	33,5																	
SA173...R#	32,5											19	19					
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	ES.4	19	ES.4
SS174...	43																	
SA174...R#	41											24,5	26,5					
SS174...R#	43																	

### 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.

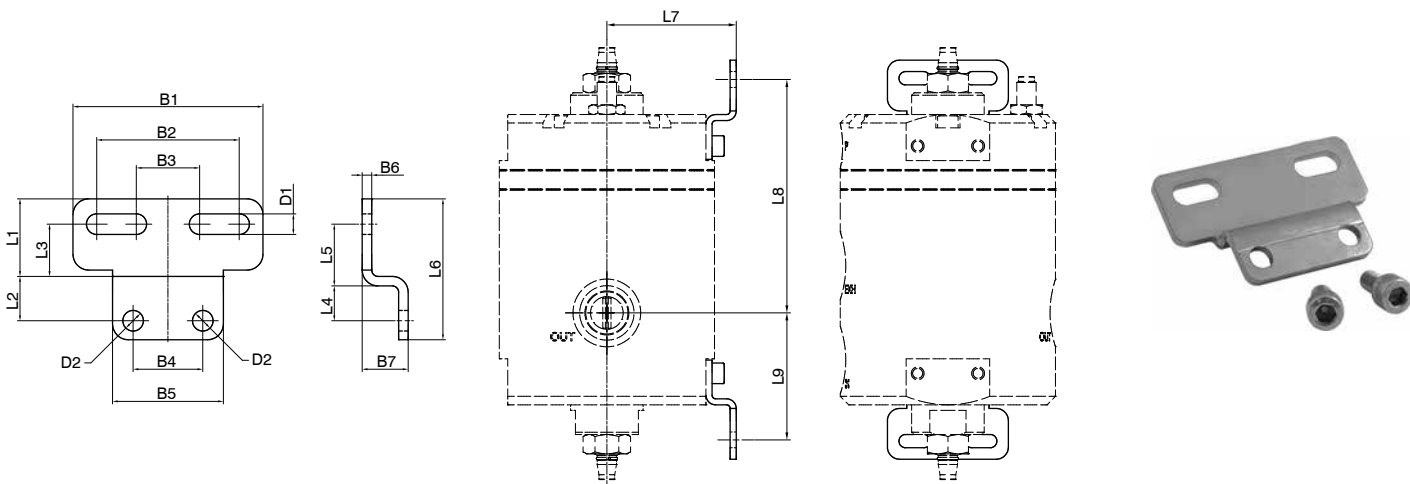


PROCESS AUTOMATION TECHNOLOGY

### 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