

- Multi stage nozzle ejector ensuring high vacuum level of  $-27.8$  inHg ( $-94$ kPa).
- High suction flow of Max.  $39.2$ cfm ( $1,110$ ℓ)/ min[ANR] with multi layer structure.

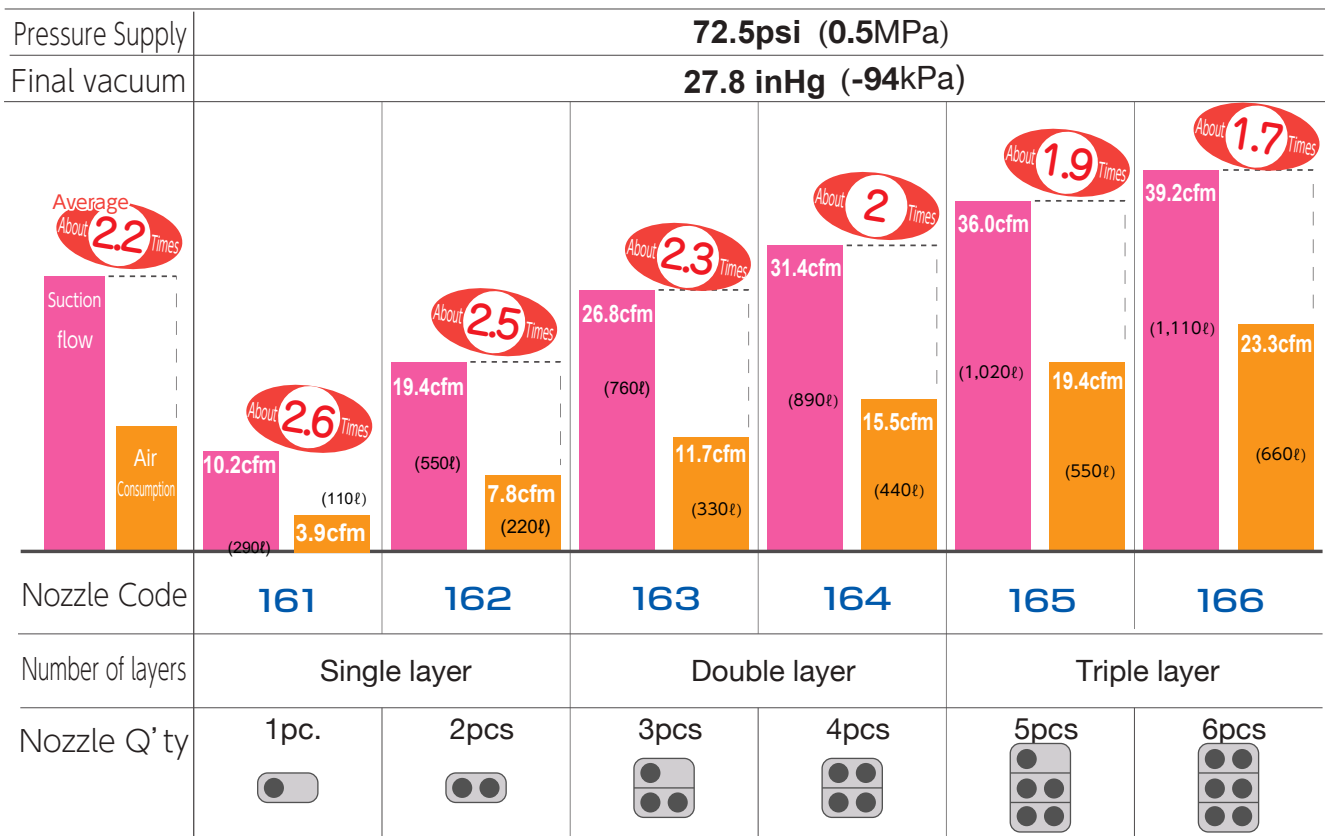
## High Flow and High Vacuum Level Vacuum Generator



## Characteristics

# Securing **high** flow and **high** vacuum level

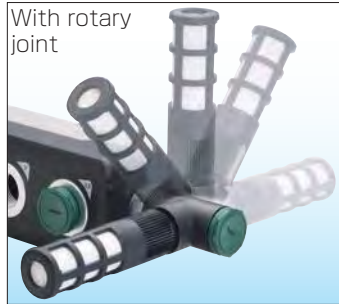
- By adoption of multi-stage nozzle and multi layer structure, suction flow can be secured approx. **2.2**times (on average) larger than air consumption.



■ Excellent in ozone **resistance** ▶ **FKM** for all sealing rubber.

■ Silencer installing direction is **selectable**.

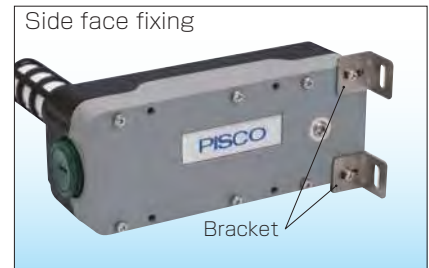
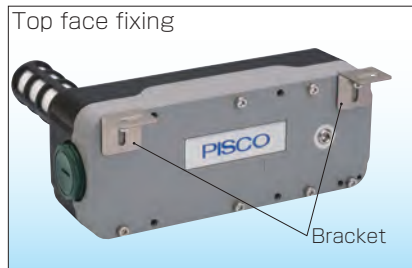
▶ Selectable from **Three** directions; Side, Front(\*1) and With rotary joint, depending on the installation space.



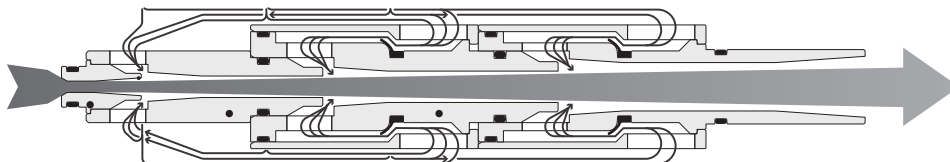
\*1. Front installation is only for single layer type: 161, 162.

\*2. Vacuum characteristic changes by silencer Q'ty and its installing direction.

■ Body can be fixed freely with **two** brackets.



■ Basic Venturi Principle of multi-stage nozzles

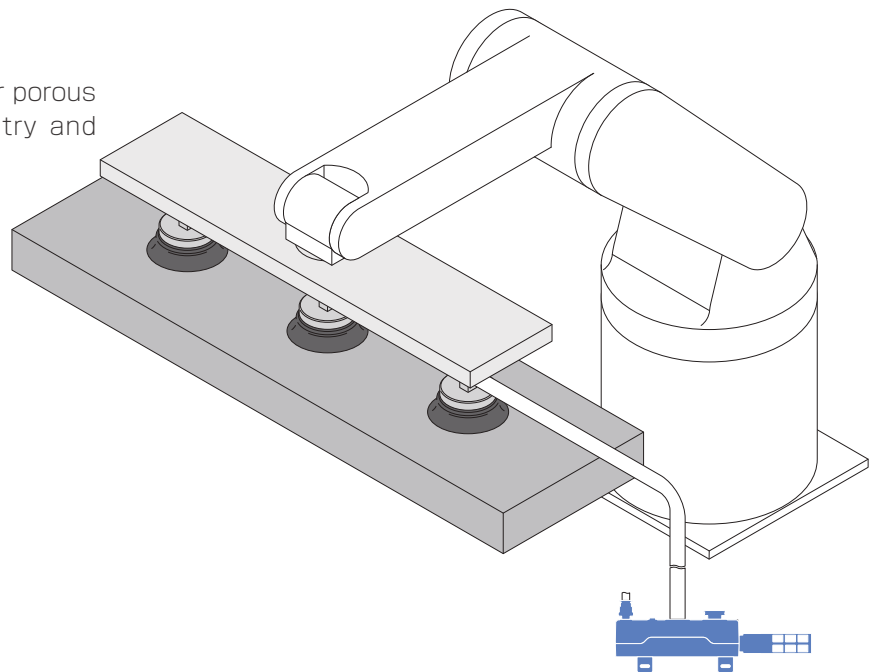


■ **Suitable** for applications in various industrial fields.

▶ Best suited for a various range of industries, as well as automobile, semiconductor, food and medicine industries.

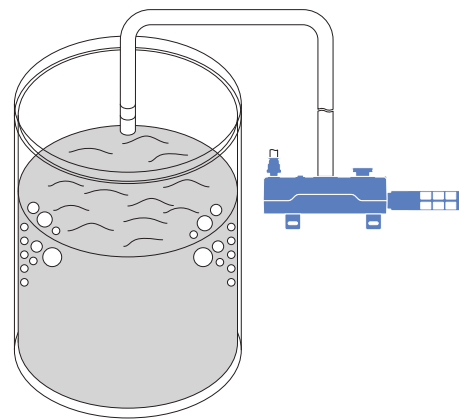
**Suction Conveyance**

Best suited for large and heavy or porous work-piece in automobile industry and packaging industry, etc.



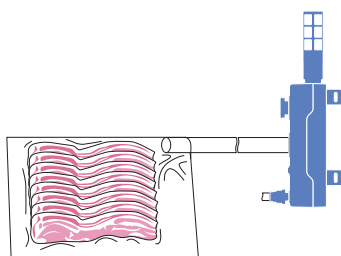
**Defoaming · Deaeration**

Bubble and air contained in adhesive, cosmetics (cream) and distilled water can be removed.



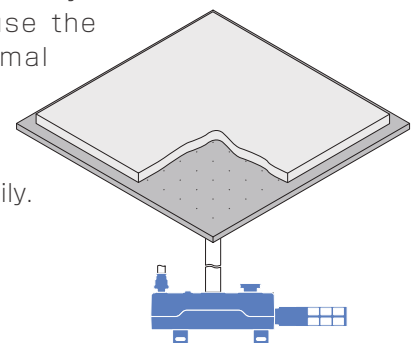
**Vacuum packing**

Can be used for vacuum packing of food or the like, removing air from the package.



**Vacuum Holding**

The processing accuracy can be stabilized because the distortion and thermal deformation of the work-piece hardly occurs. Also, the work-piece can be fixed easily.












# High Flow and High Vacuum Level Generator VLM

## Model Designation (Example)

**VLM** **H** **161** - **06** **02** - **S1**

③.Exhaust port( Connection type : Taper pipe female thread, Size : Rc3/4)

Code	161, 162 (Single layer)	163, 164 (Double layer)	165, 166 (Triple layer)
No Code	 No silencer, End cap 1pc.	 No silencer, End cap 1pc.	 No silencer, End cap 1pc.
S1	 Silencer 1pc, End cap 1pc.	 Silencer 2pcs, End cap 1pc.	 Silencer 3pcs, End cap 1pc.
S2	 Silencer 1pc, Rotate joint 1pc, End cap 2pcs	 Silencer 2pcs, Rotate joint 2pcs, End cap 3pcs	 Silencer 3pcs, Rotate joint 3pcs, End cap 4pcs







※.All type contain 2pcs of bracket for VLM installation and plug for pressure gauge port.

Air supply port size ▶ **02** : Rc1/4(Taper pipe female thread)

②.Vacuum port size

Code	06	08
Taper pipe female thread	Rc3/4	Rc1

①.Nozzle specification

Code	161	162	163	164	165	166
Layer	Single layer		Double layer		Triple layer	
Nozzle quantity	1 pc.	2 pcs	3 pcs	4 pcs	5 pcs	6 pcs
						
Suction /min[ANR]	10.2cf. (290 ℓ)	19.4cf. (550 ℓ)	26.8cf. (760 ℓ)	31.4cf. (890 ℓ)	36.0cfm (1,020 ℓ)	39.2cfm (1,110 ℓ)
Consumption/min[ANR]	3.9cf. (110 ℓ)	7.8cf. (220 ℓ)	11.7cf. (330 ℓ)	15.5cfm (440 ℓ)	19.4cfm (550 ℓ)	23.3cfm (660 ℓ)

Vacuum characteristic ▶ **H** : High-vacuum large flow (Rated supply pressure : 72.5psi (0.5MPa), Final vacuum : -27.8 inHg ( -94kPa))

Large Flow Vacuum Generator VLM

## Model Designation of Attachment parts (Example)

**VLM** - **R**

①.Parts name

Code	R	E	B	D
	Rotate joint Rc3/4	End cap R3/4	Bracket (2pcs/set)	Dummy plug (2pcs/set)※
				
	R3/4	R3/4		

※.Dummy plug is needed to plug unnecessary nozzles.

Large Flow Vacuum Generator VLM

**VVVSRO6**

R3/4



Silencer

(For direct mounting to body or attaching to rotate joint)

**PF06-04**

Rc1/2



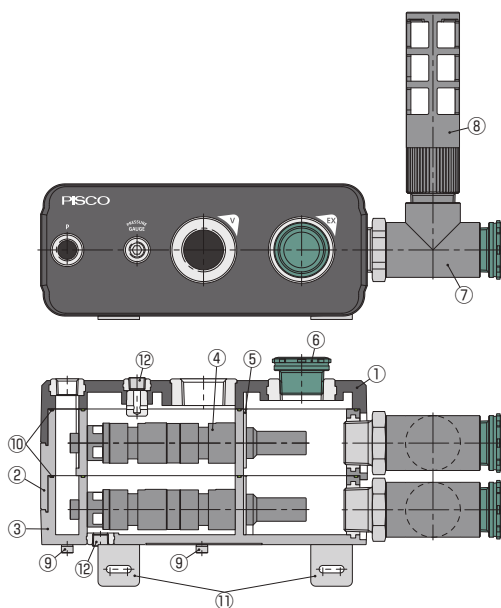
Bush

(For connecting Push-in fitting (Thread size : R1/2) to vacuum port (Rc3/4))

## Specifications

Nozzle type	161	162	163	164	165	166
Layers	Single layer		Double layer		Triple layer	
Nozzle quantity	1 pc.	2 pcs	3 pcs	4 pcs	5 pcs	6 pcs
Suction flow rate (/min ANR)	10.2cf. (290L)	19.4cf. (550L)	26.8cf. (760L)	31.4cf. (890L)	36.0cf. (1,020L)	39.2cf. (1,110L)
Air consumption (/min ANR)	3.9cf. (110L)	7.8cf. (220L)	11.7cf. (330L)	15.5cf. (440L)	19.4cf. (550L)	23.3cf. (660L)
Fluid medium	Air					
Operating pressure range	43.5 ~ 101.5 psi (0.3 ~ 0.7 Mpa)					
Rated supply pressure	72.5 psi (0.5 Mpa)					
Operating temp. range	41~ 122°F (5 ~ 50°C)					
Nozzle diameter (mm)	ø1.6					

## Construction (VLMH163 or 164)



No.	Parts	Material
①	Top case	Brass, PA, Aluminum
②	Middle case	PA, Aluminum
③	Bottom case	PA, Aluminum
④	Nozzle Ass'y	PA, FKM
⑤	Nozzle clip	Iron (Electroless nickel plated)
⑥	End cap	PBT
⑦	Rotate joint	Aluminum,PBT
⑧	Silencer	PBT, PVF
⑨	Hexagon socket head bolt	Iron (Electroless nickel plated)
⑩	Case packing	FKM
⑪	Bracket	Iron (Electroless nickel plated)
⑫	Plug for pressure gauge port	Iron (Electroless nickel plated)

## Safety instruction manual

### ⚠ Warnings

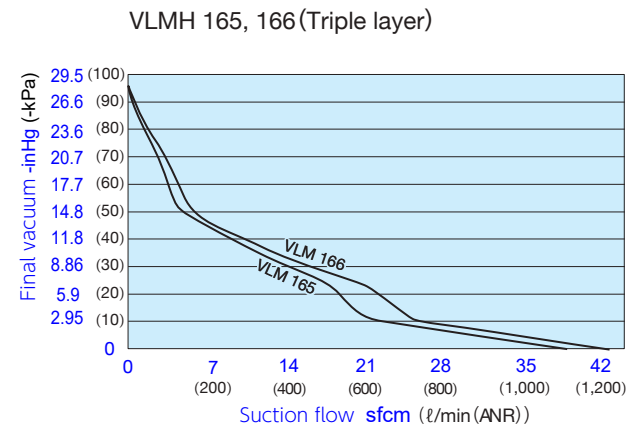
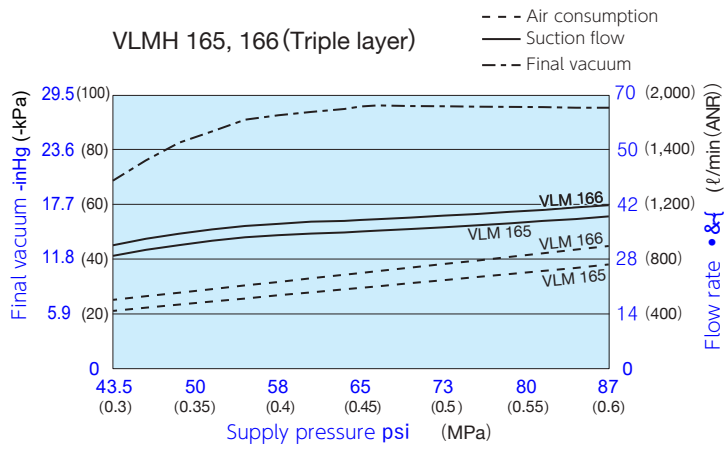
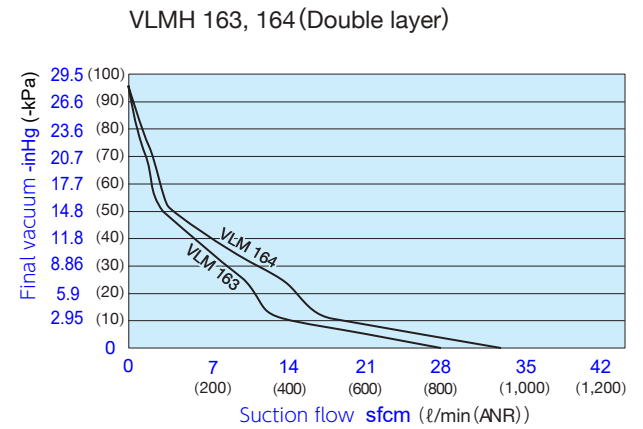
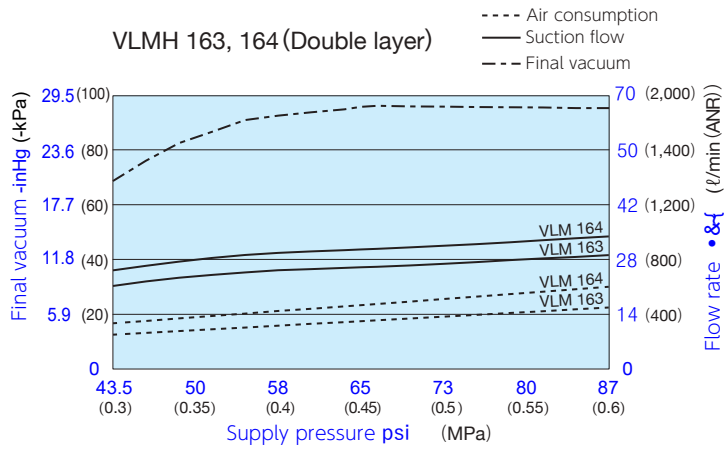
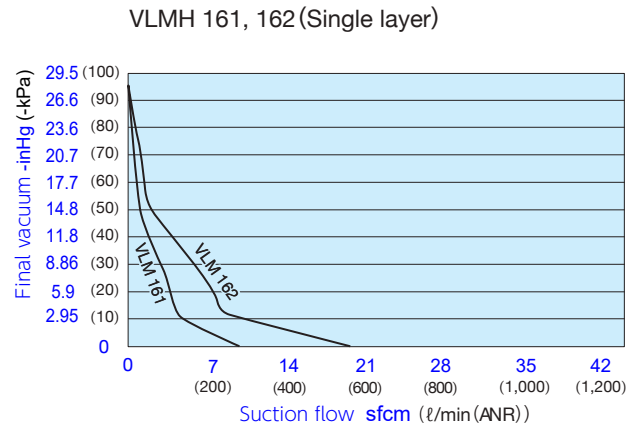
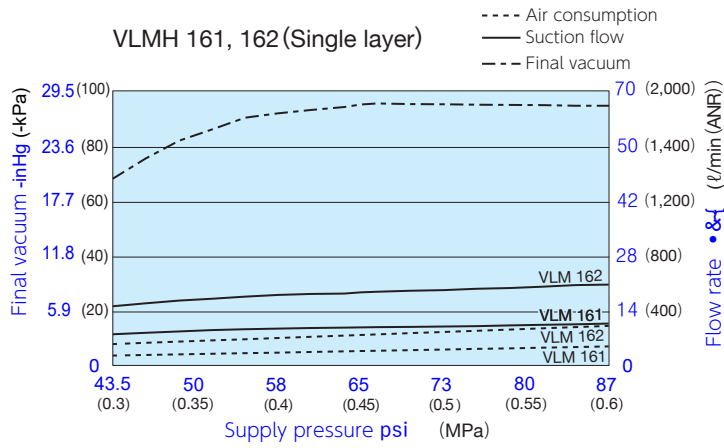
1. Maintenance of Large Flow Vacuum Generator VLM Series should be conducted by a person with the understanding about the construction of this product and enough knowledge about pneumatic equipment.

### ⚠ Cautions

1. When selecting an exhaust piping, or use without silencer with dust existing in air or pipe, dust may enter from the exhaust port by back-flow at operation stop, and it may cause malfunction and performance drop.
2. Vacuum characteristics may be changed upon plumbing conditions and other variants.
3. Do not use the generator in corrosive gas, flammable gas, chemicals, sea water, water or steam. As the generator may be damaged and lead to leakage.
4. Do not use the generator in places where they can be exposed to water drops, oil drops, duct, etc. The generator is neither drip-proof nor dust-proof, so that trouble may result.
5. Diameter of tube connected to vacuum port to be as large as possible and length as long as possible, to ensure the generator performance.
6. Falling or shock may cause damage or leakage to the generator.
7. Install silencer to every layer of the generator, otherwise performance may be deteriorated.
8. Do not supply positive pressure more than 0.3MPa such as blow-off air to vacuum circuit. It causes check packing damage.
9. Use of vacuum filter is recommended to prevent possible entering of foreign substances from vacuum port (V).

# High Flow and High Vacuum Level Generator VLM

## Characteristics





## Appearance drawing

Model code : **VLM H161-  02-  3**  
**VLM H162-  02-  3**

Single layer, nozzle 1pc.  
 Single layer, nozzle 2pcs

No silencer ⇒   : No code

Silencer: Side installation ⇒   : S1

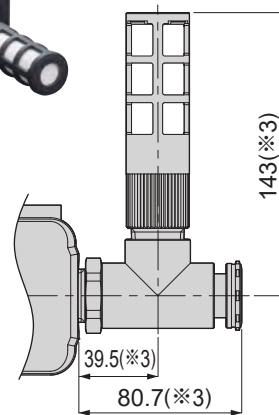
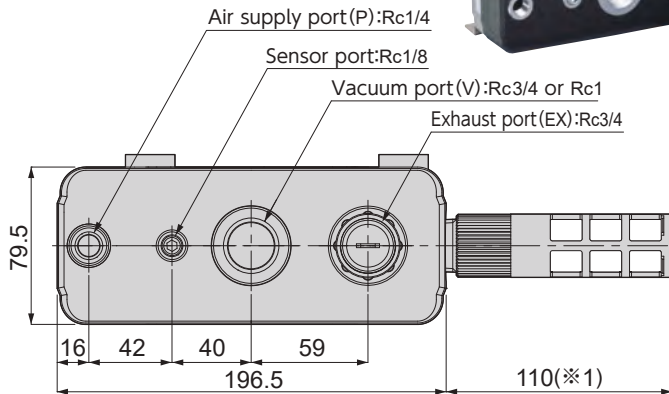
Silencer with rotate joint ⇒   : S2



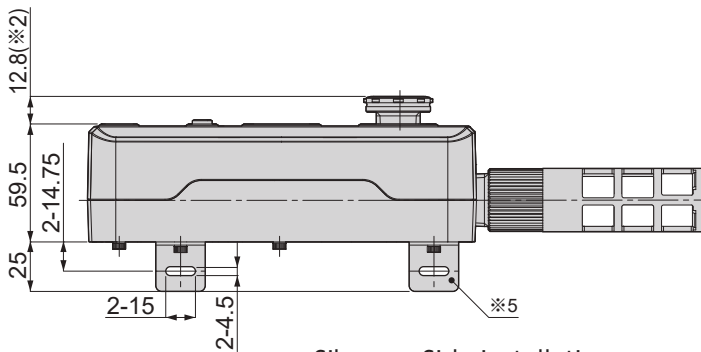
Silencer: Front installation ⇒   : S1



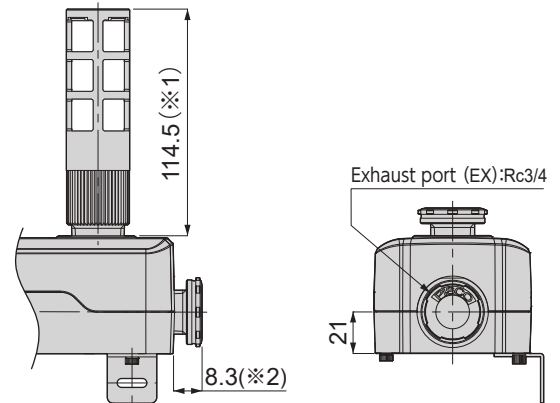
Unit : mm



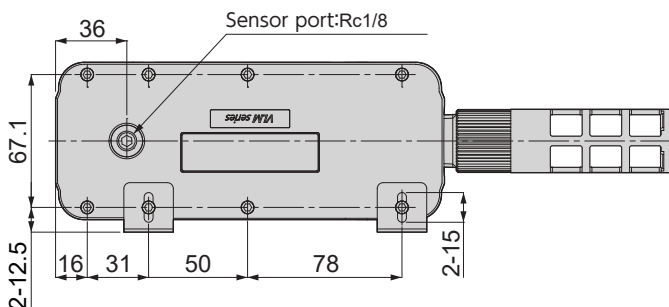
Silencer with rotate joint



Silencer: Side installation



Silencer: Front installation



Model code	weight (g)
VLM H161- <span style="border: 1px solid black; padding: 0 2px;">  </span> 02	848
VLM H162- <span style="border: 1px solid black; padding: 0 2px;">  </span> 02	909
VLM H161- <span style="border: 1px solid black; padding: 0 2px;">  </span> 02-S1	882
VLM H162- <span style="border: 1px solid black; padding: 0 2px;">  </span> 02-S1	943
VLM H161- <span style="border: 1px solid black; padding: 0 2px;">  </span> 02-S2	952
VLM H162- <span style="border: 1px solid black; padding: 0 2px;">  </span> 02-S2	1,013

※1) Reference dimension when silencer installed. ※2) Reference dimension when end cap installed.

※3) Reference dimension when silencer and rotate joint installed.

※4)    Replaced with vacuum port size code from the model designation (example) in page 4.

※5) The installation method of bracket in this dimensional drawing is only one example. Refer page 2 for other bracket installation method.



# High Flow and High Vacuum Level Generator VLM

Model code : **VLM H163-□02-□**  
**VLM H164-□02-□**

Double layer, nozzle 3pcs  
 Double layer, nozzle 4pcs

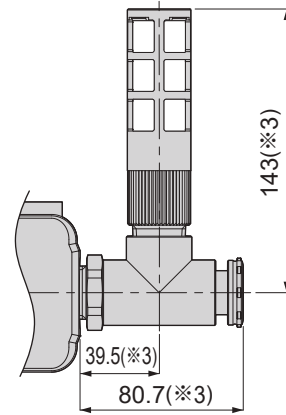
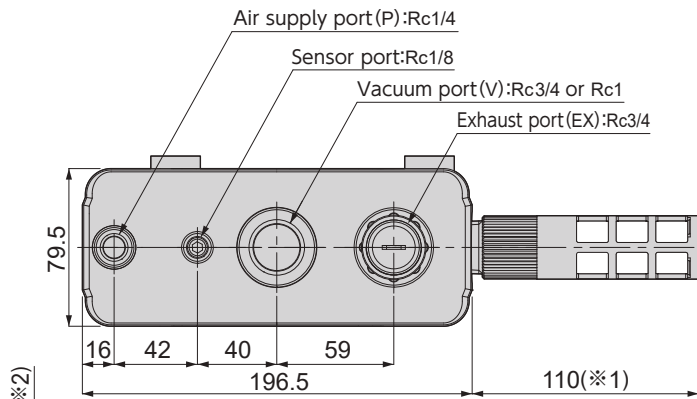
No silencer ⇒□: No code

Silencer: Side installation ⇒□: S1

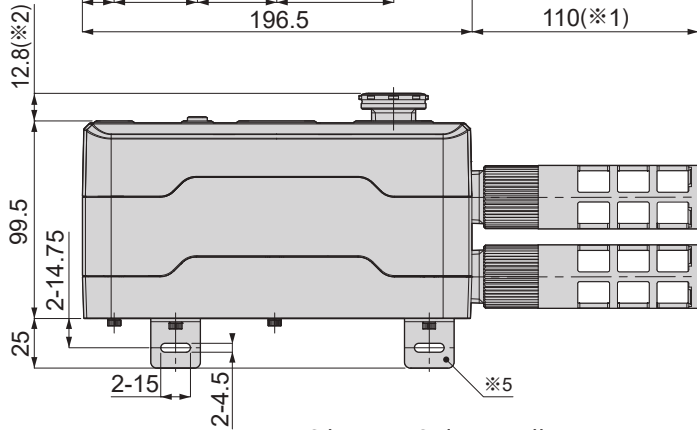
Silencer with rotate joint ⇒□: S2



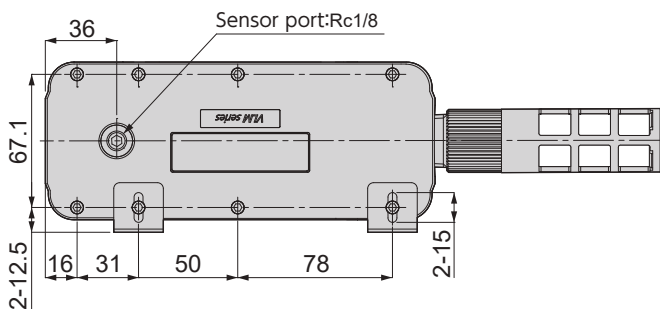
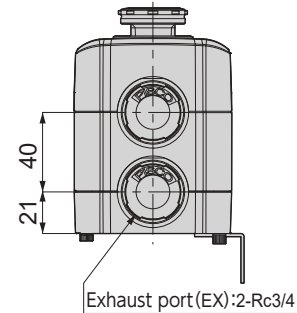
Unit : mm



Silencer with rotate joint



Silencer: Side installation



Model code	weight (g)
VLM H163-□02	1,358
VLM H164-□02	1,393
VLM H163-□02-S1	1,426
VLM H164-□02-S1	1,461
VLM H163-□02-S2	1,566
VLM H164-□02-S2	1,601

※1) Reference dimension when silencer installed. ※2) Reference dimension when end cap installed.  
 ※3) Reference dimension when silencer and rotate joint installed.  
 ※4) □ Replaced with vacuum port size code from the model designation (example) in page 4.  
 ※5) The installation method of bracket in this dimensional drawing is only one example. Refer page 2 for other bracket installation method.

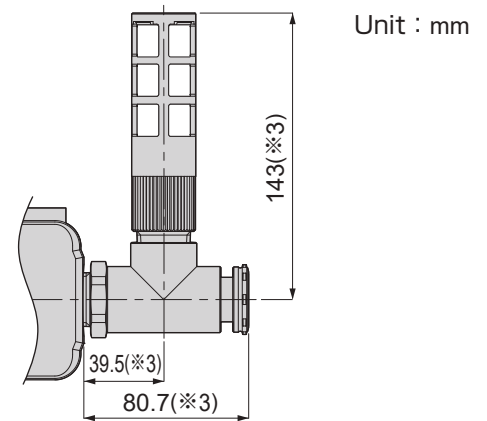
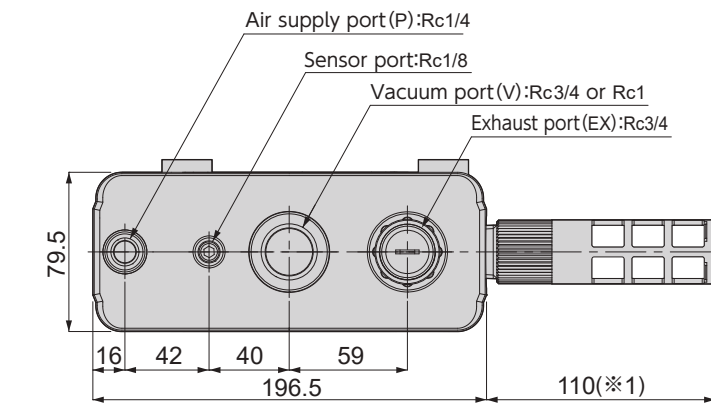
Model code : **VLM H165-□02-□**  
**VLM H166-□02-□**

Triple layer, nozzle 5pcs  
 Triple layer, nozzle 6pcs

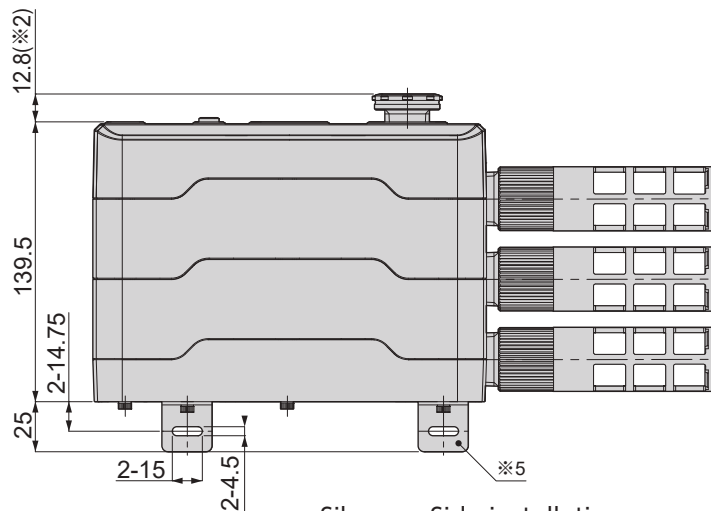
No silencer ⇒ □ : No code

Silencer: Side installation ⇒ □ : S1

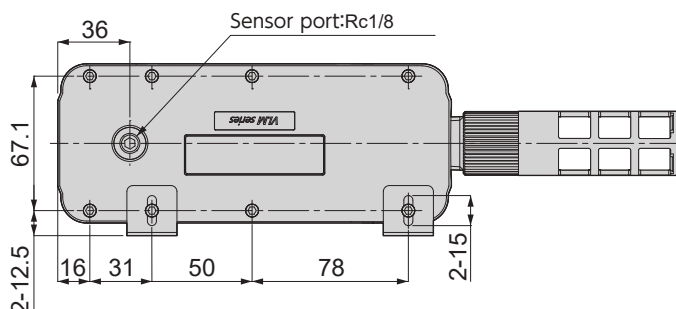
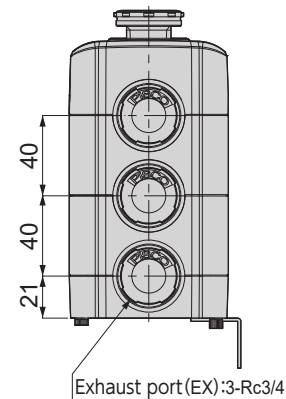
Silencer with rotate joint ⇒ □ : S2



Silencer with rotate joint



Silencer: Side installation



Model code	weight (g)
VLM H165-□02	1,828
VLM H166-□02	1,848
VLM H165-□02-S1	1,930
VLM H166-□02-S1	1,950
VLM H165-□02-S2	2,140
VLM H166-□02-S2	2,160

※1) Reference dimension when silencer installed. ※2) Reference dimension when end cap installed.

※3) Reference dimension when silencer and rotate joint installed.

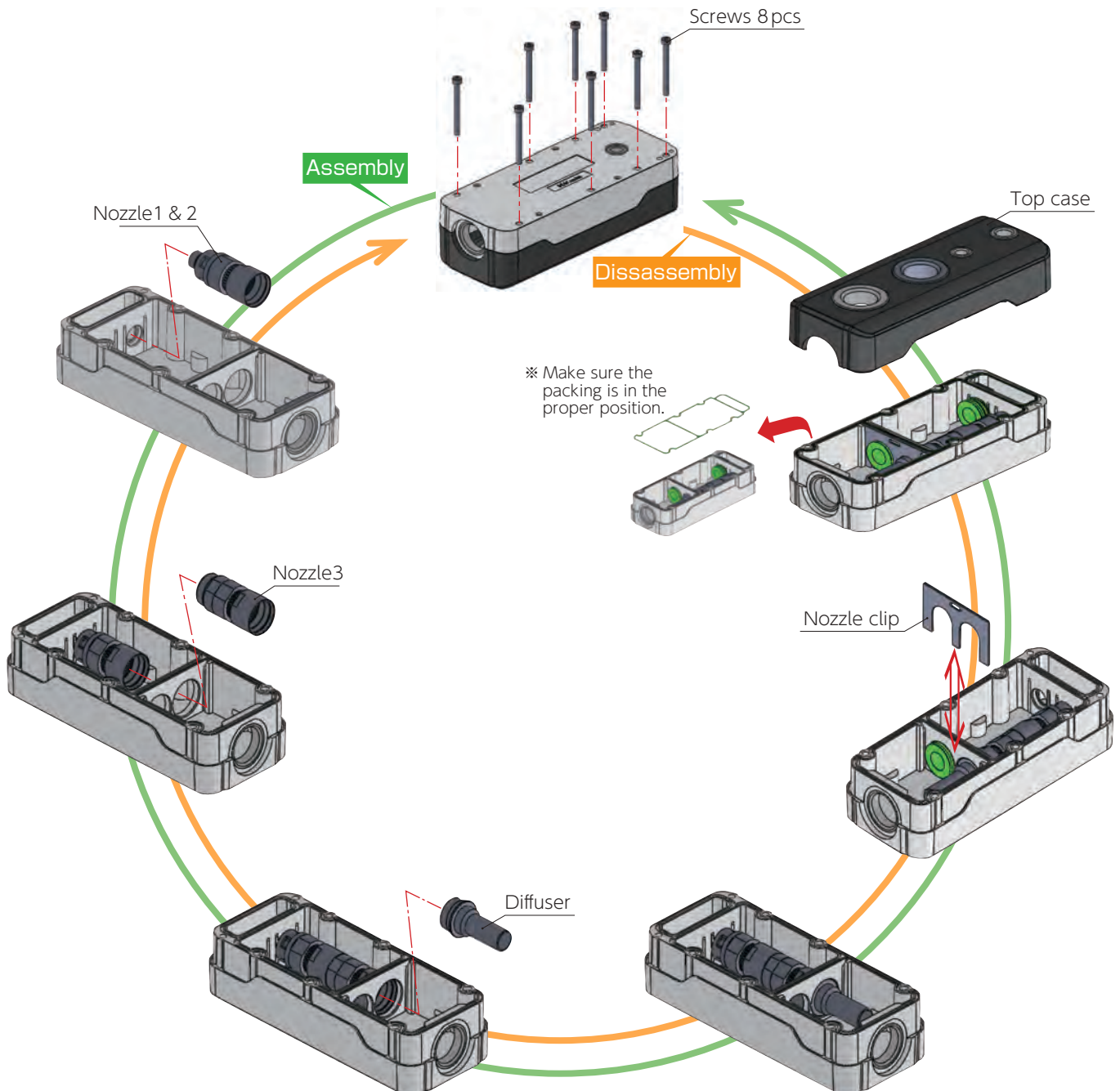
※4) □ Replaced with vacuum port size code from the model designation (example) in page 4.

※5) The installation method of bracket in this dimensional drawing is only one example. Refer page 2 for other bracket installation method.

## Maintenance

■ Follow below procedures for cleaning the nozzle and the diffuser

- ① Loosen all screws on the bottom of generator and remove top case and nozzle clip.
- ② Remove diffuser from the generator body.
- ③ Remove nozzle 3 and nozzle 1 & 2 ass'y in this order. ( Do not disassemble nozzle 1 & 2 ass'y.)
- ④ Remove deposits by air blow or wiping with soft cloth from the diffuser, nozzle, packing and seal.
- ⑤ Assemble the body with the nozzle 1 & 2, nozzle 3 and the diffuser in reverse order of disassembling and install the nozzle clip. Fasten the screws with the tightening torque  $1\text{N}\cdot\text{m}\sim 1.2\text{N}\cdot\text{m}$ . Make sure the packing is in the proper position.



## Parts

Bracket



Model code
VLM-B

Rotate joint  
Rc3/4



Model code
VLM-R

End cap  
R3/4



Model code
VLM-E

Dummy plug  
R3/4



Model code
VLM-D

Silencer  
(without elbow block)  
R3/4



Model code
VVVS06

Bush  
Rc1/2  
R3/4



Model code
PF06-04

## Related products

### Push-in fittings for air supply port

※ Air supply port size : Rc1/4. Tubing OD: 3/8", 1/2", 10, 12

PC Straight



Model code PCøD-R
PC3/8-02, PC10-02
PC1/2-02, PC12-02

PL Elbow



Model code PLøD-R
PL3/8-02, PL10-02
PL1/2-02, PL12-02

### Push-in fittings for vacuum port

※ These push-in fittings can be used only when the vacuum port size is Rc3/4 and installing a bush listed above (PF06-04).  
Tubing OD: 3/8", 1/2", 5/8", 10, 12, 16

PC Straight



Model code PCøD-R
PC3/8-04, PC10-04
PC1/2-04, PC12-04
PC5/8-04, PC16-04

PL Elbow



Model code PLøD-R
PL3/8-04, PL10-04
PL1/2-04, PL12-04
PL5/8-04, PL16-04

PX Union Y  
R(R1/2)  
2-øD



Model code PXøD-R
PX3/8-04, PX10-04
PX1/2-04, PX12-04
PX5/8-04, PX16-04

### Large digital pressure sensor (vacuum switch)

VUS-32 Compound pressure type

● Rated pressure range: -100~100kPa



Model code

VUS-32R-NV-01  
VUS-32R-N2-01  
VUS-32R-PV-01  
VUS-32R-P2-01

- Easily viewable LCD dual displays. High level visibility with 3-color display
- Improved wiring workability and maintenance by lead wire with connector.
- Copy function enables to copy various settings to slave-side sensor.

### Digital pressure gauge

GPD-V Negative pressure type

● Rated pressure range: -101~0kPa



Model code

GPD-V-01

- Pressure is clearly digital displayed by a single push of a button.
- Display with only 1 battery, no need of wiring.
- A power saving mode is adapted. Battery life is about 3 years (at 5times indication/ day).

### Air Tank

ATS

● Tank capacity : 0.4 ~20ℓ



Model code

ATS-0.4  
ATS-0.75  
ATS-2  
ATS-5  
ATS-10  
ATS-20

- Reducing the vacuum pressure fluctuations and pulsations.
- Tank capacity is selectable from 6 variations.
- Tank is made of stainless steel.

■ For more detail information on those products, please check our web site (<http://en.pisco.co.jp/>).