

Realizing high-cycle lightweight compact vacuums

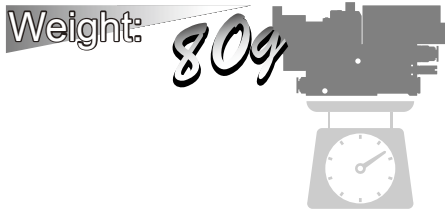
VSX Series

- Nozzle diameter: $\varnothing 0.5$, $\varnothing 0.7$, $\varnothing 1.0$



Features

- This lightweight compact vacuum answers market needs.
- Normally closed and power-saving vacuum generator valves are available. Both valves have responsiveness enabling high-cycle vacuums to be structured.
- The vacuum unit VSX is installed two ways. Direct installation fixes the component with screws, etc., from the side, and DIN rail installation installs the unit on DIN rails. Select the installation to match the application.
- A vacuum switch with highly visible LED display and an inexpensive analog output vacuum sensor are available. The 2-point switch output or analog output vacuum sensor with LED display is selected to match different applications and budgets. Connector wiring facilitates wiring layout.
- Three nozzle diameters are available: 05 ($\varnothing 0.5$), 07 ($\varnothing 0.7$) and 10 ($\varnothing 1.0$).



Note: The above weight includes the vacuum ejector, common exhaust, and vacuum switch with a LED display.

- Up to ten stations are used with the manifold piping specifications.

Applications for ejector system type

Vacuum break valve

- This solenoid valve accurately separates the workpiece. (The vacuum break air is generated when energized.)

Vacuum generator valve

- This solenoid valve generates the vacuum.

Vacuum switch (with LED display)

- An LED display makes it easy to set the vacuum degree. A 2-point switch output and analog output are available. A vacuum switch only for the inexpensive analog output is also available.

Filter section

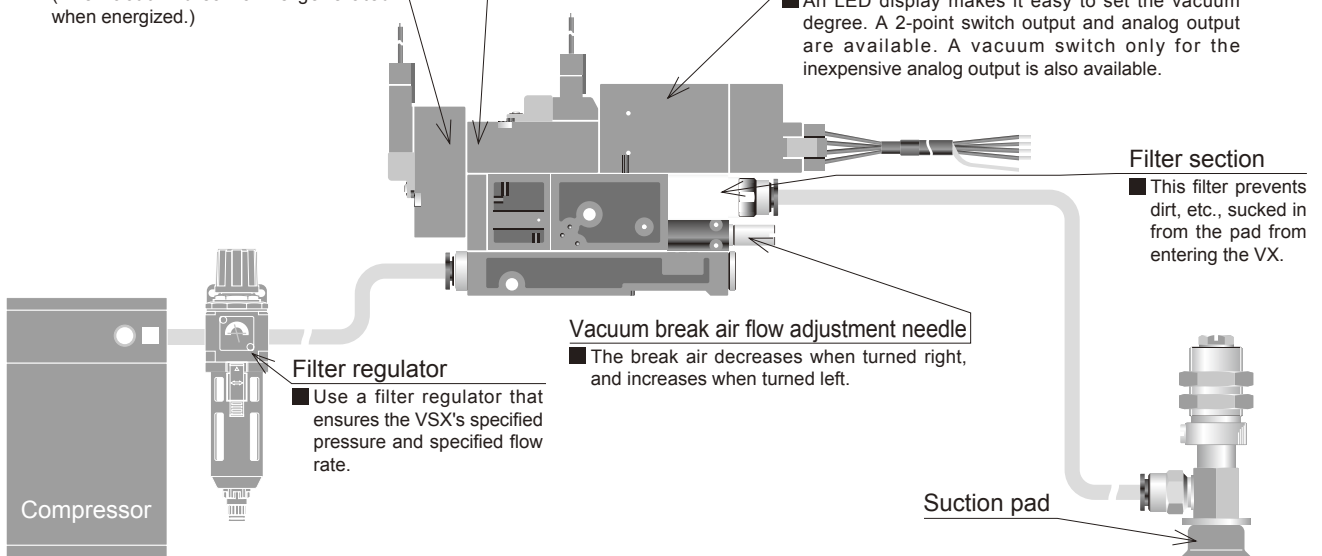
- This filter prevents dirt, etc., sucked in from the pad from entering the VX.

Vacuum break air flow adjustment needle

- The break air decreases when turned right, and increases when turned left.

Filter regulator

- Use a filter regulator that ensures the VSX's specified pressure and specified flow rate.



Specifications

Descriptions	VSX
Working fluid	Compressed air
Working pressure MPa	0.3 to 0.7
Ambient temperature °C	5 to 50

Ejector characteristics

Model no.		Nozzle diameter (mm)	Supply pressure (MPa)	Ultimate vacuum (-kPa)	Suction flow (ℓ/min. (ANR))	Air consumption flow (ℓ/min. (ANR))			
VSX-H05...	Atmospheric release	0.5	0.5	90.4	7	11.5	Ejector system		
	Common exhaust								
VSX-L05...	Atmospheric release		0.35	90.4	3			8	
	Common exhaust								
VSX-H07...	Atmospheric release		0.7	0.5	93.1			13	23
	Common exhaust								
VSX-L07... S	Atmospheric release	66.5		24	22				
VSX-L07... J	Common exhaust								
VSX-E07...	Atmospheric release	0.35		90.4	10.5	17	VSY		
	Common exhaust								
VSX-H10... S	Atmospheric release	1.0	0.5	93.1	24	46			
VSX-H10... J	Common exhaust				20				
VSX-L10... S	Atmospheric release		66.5	26	20		34		
VSX-E10... S	Atmospheric release								
VSX-E10... J	Common exhaust		90.4	19					

Solenoid valve specifications

● Pilot valve

Descriptions	Vacuum generator valve		Vacuum break valve		
Actuation	Direct operation				VSK VSKM
Valve structure	Rubber sealant, poppet valve				
Rated voltage	24 VDC	100 VAC	24 VDC	100 VAC	VSJ VSJM
Tolerable voltage fluctuation range	24 VDC ±10%	100 VAC ±10%	24 VDC ±10%	100 VAC ±10%	
Surge protective circuit	Surge absorber	Bridge diode	Surge absorber	Bridge diode	VSX VSXM
Power consumption	1.2W (with LED)	1.5VA (with LED)	1.2W (with LED)	1.5VA (with LED)	
Manual operation	Push type non-locking type				
Operating display	Energized coil exciting: Red LED ON				
Electric connection	Connector (cable long: 500 mm)				VSQ
	Red: 24 VDC Black: COM	Blue	Red: 24 VDC Black: COM	Blue	

● Main valve

Descriptions	Vacuum generator valve	
Actuation	Pneumatics operation using pilot valve	VSZM
Valve structure	Rubber sealant, poppet valve	
Pressure resistance	1.05MPa	
Valve type	Normally closed	
Lubrication	Not required	
Effective sectional area	Air supply port size ø4: 3.5mm ²	
	Air supply port size ø6: 4.5mm ²	

Vacuum switch specifications

Descriptions	LED with display type		Without display type
	With 2 point switch output (-DW)	With analog output (-DA)	Only analog output (-A0)
Setting when shipping	-50kPa (SW1), -10kPa (SW2)	-50kPa	-
Current consumption	40mA or less		15mA or less
Pressure detection method	Carrier diffusion type semiconductor pressure switch		
Working pressure range	-100 to 0kPa		
Set pressure range	-99 to 0kPa		-
Withstanding pressure	0.2MPa		
Storage temperature range	-20 to 80°C (atmospheric pressure, humidity 60%RH or less)		
Working temperature range	0 to 50°C (no freezing)		
Working humidity range	35 to 85%RH (no dew condensation)		
Power voltage	12 to 24 VDC±10% ripple (P-P) 10% or less		
Protective structure	IEC standards IP40 or equivalent		
Number of pressure setting points	2	1	-
Operation precision	±3%F.S. max. (at Ta = 25°C)		-
Hysteresis	Fixed (2%F.S. or less)	Variable (Approx. 0 to 15% F.S.)	-
Switch output	NPN open collector output 30V 80mA or less Residual voltage 0.8V or less		-
Analog output	Output voltage	1 to 5V	
	Zero point voltage	1±0.1 V	
	Span voltage	4±0.1 V	
	Output current	1mA or less (load resistance 5kΩ or more)	
	LIN/HYS	±0.5%F.S.max.	±0.5%F.S.max.
Display	0 to -99kPa (2-digit red LED display)		-
Number of displays	Approx. 4 times/1 sec.		-
Display accuracy	±3%F.S. ±2digit		-
Resolution	1digit		-
Operating display	SW1: Red LED turns ON when above set pressure	Red LED turns ON when above set pressure	
	SW2: Green LED turns ON when above set pressure		
Function	1. MODE switching switch (ME or S1 or S2)	1. MODE switching switch (ME or SW)	
	2. S1 setting trimmer (2/3 rotation trimmer)	2. SW setting trimmer (2/3 rotation trimmer)	
	3. S2 setting trimmer (2/3 rotation trimmer)	3. HYS setting trimmer (Approx. 0 to 15% F.S.)	

Vacuum break specifications

Valve type	Vacuum break air flow rate
Normally closed	0 to 7.5 ℓ/min. (ANR)
Self hold	0.2 to 2 ℓ/min. (ANR)

Note 1: These values apply when the supply pressure is 0.5 MPa.

Note 2: When using the self-hold type, valve responsiveness may not satisfy specifications if the above flow rate setting range is not observed.

Note 3: The air break flow rate varies based on the vacuum piping diameter and length (piping resistance, etc.).

Vacuum filter specifications

Descriptions	Vacuum filter
Element material	PVF (poly-vinyl formal)
Filtration	10μm
Filter area	502mm ²
Replacement filter element model no.	VSX-E

Weight

● Discrete type

Model no.	Unit descriptions	Weight (g)
VSX-**-**S*-D*	Vacuum ejector unit (atmospheric release, with vacuum switch with LED display)	81
VSX-**-**J*-D*	Vacuum ejector unit (common exhaust, with vacuum switch with LED display)	84
VSX-**-**S*-A0	Vacuum ejector unit (atmospheric release, with analog output vacuum switch)	78
VSX-**-**J*-A0	Vacuum ejector unit (common exhaust, with analog output vacuum switch)	81
VSX-**-**S*-*	Vacuum ejector unit (atmospheric release, vacuum switch)	71
VSX-**-**J*-*	Vacuum ejector unit (common exhaust, vacuum switch)	74

Note 1: The DIN rail installed is about 5g heavier than the weight indicated above.

● Manifold type

Model no.	Incorporated manifold unit descriptions	Weight (g)
VSXM-**-**S**-D*-2	Vacuum ejector unit atmospheric release unit, with vacuum switch with LED display, 2-station manifold	310
VSXM-**-**J**-D*-2	Vacuum ejector unit common exhaust unit, with vacuum switch with LED display, 2-station manifold	330

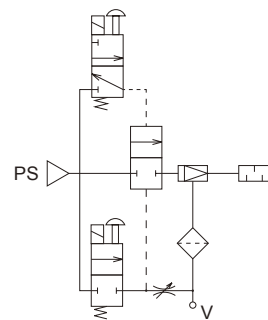
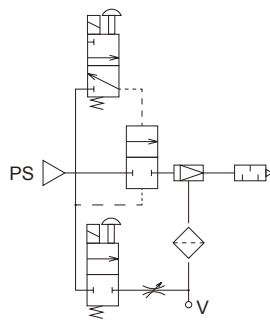
Note 1: The weight increases by 90g with each additional station.

Note 2: The above weights are for the type with vacuum switch with LED display. The type with analog output vacuum switch is 3 g/station lighter than the above weights. The type with no sensor is 10 g/station lighter than the above weights.

Circuit diagram

● Normally closed type

● Self hold type



Ejector system

VSX

VSH • VSU
VSB • VSC

VSG

VSK
VSKM

VSJ
VSJM

VSX
VSXM

VSQ

VSZM

How to order (discrete type)

● 10.5mm width universal type discrete vacuum ejector unit

VSX - **H** **07** **D** - **6** **6** **J** - **3** - **DW** - **D**

A Vacuum characteristics

B Nozzle diameter

C Valve type

D Vacuum port (V)

E Air supply port (PS)

F Exhaust port (EX)

G Solenoid valve voltage

H Vacuum switch specifications

I How to install the product

Symbol	Descriptions
A Vacuum characteristics Note 1	
H	High vacuum/medium flow type
L	Medium vacuum/large flow rate type
E	High vacuum/small flow rate type
B Nozzle diameter Note 1	
05	ø0.5
07	ø0.7
10	ø1.0
C Valve type	
B	Normally closed type
D	Self hold type
D Vacuum port (V)	
4	ø4 push-in joint
6	ø6 push-in joint
E Air supply port (PS)	
4	ø4 push-in joint
6	ø6 push-in joint
F Exhaust port (EX) Note 1	
S	Atmospheric release with silencer
J	ø6 push-in joint common exhaust
G Solenoid valve voltage	
1	100 VAC
3	24 VDC
H Vacuum switch specifications	
Blank	Without vacuum switch
DW	2-point NPN output with LED display
DA	1-point NPN output + analog output with LED display
AO	Analog output
I How to install the product	
D	DIN rail installation type
Blank	Direct mount type

⚠ Note on model no. selection

Note 1: For "L10" in a combination of **A** and **B**,

F "J" can not be selected.

How to order (manifold type)

- 10.5mm width integrated type manifold type vacuum ejector unit

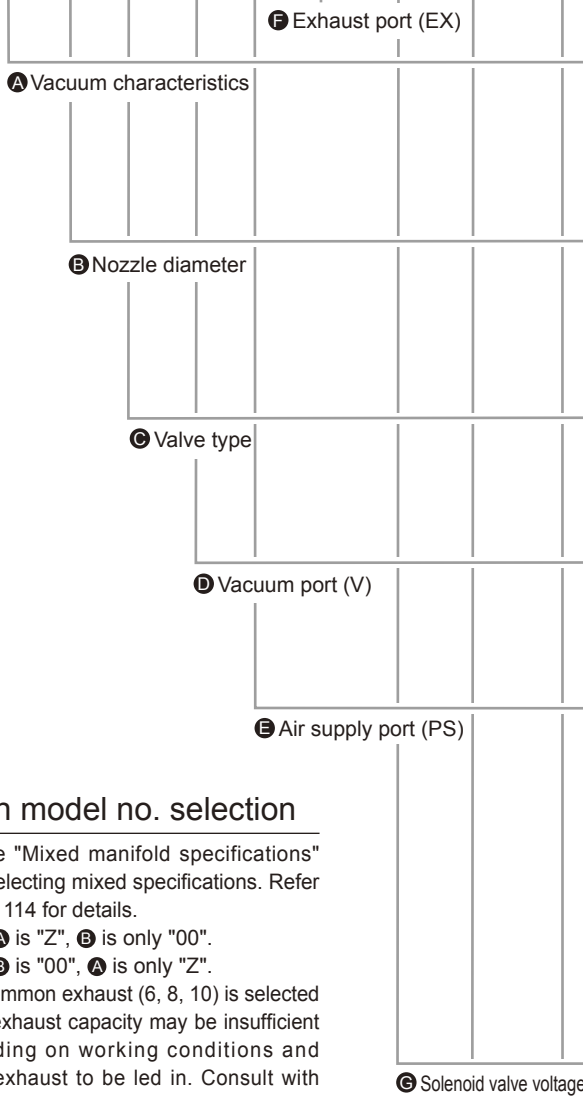
VSXM - H 07 D - 6 10 10 - 3 - 10 - DW

- Discrete for 10.5 mm width general type vacuum ejector unit manifold type manifold

VSXM - H 07 D - 6 ————— 3 ————— DW

- Only 10.5 mm width general type vacuum ejector unit manifold type manifold

VSXM ————— 10 10 ————— 10



Type		
Manifold	Discrete for manifold	Only manifold

Symbol	Descriptions	Manifold	Discrete for manifold	Only manifold
A Vacuum characteristics Note 1, Note 2				
H	High vacuum/medium flow type	●	●	
L	Medium vacuum/large flow rate type	●	●	
E	High vacuum/small flow rate type	●	●	
Z	For mixed specifications (Indicate details in specification sheet.)	●		
B Nozzle diameter Note 1, Note 2				
05	ø0.5	●	●	
07	ø0.7	●	●	
10	ø1.0	●	●	
00	For mixed specifications (Indicate details in specification sheet.)	●		
C Valve type Note 1				
B	Normally closed type	●	●	
D	Self hold type	●	●	
Z	For mixed specifications (Indicate details in specification sheet.)	●		
D Vacuum port (V) Note 1				
4	ø4 push-in joint	●	●	
6	ø6 push-in joint	●	●	
CX	For mixed joint (Indicate details in specification sheet.)	●		
E Air supply port (PS)				
4	ø4 push-in joint	●		●
6	ø6 push-in joint	●		●
8	ø8 push-in joint	●		●
10	ø10 push-in joint	●		●
F Exhaust port (EX) Note 3				
S	Atmospheric release with silencer	●		●
6	ø6 push-in joint common exhaust	●		●
8	ø8 push-in joint common exhaust	●		●
10	ø10 push-in joint common exhaust	●		●
G Solenoid valve voltage				
1	100 VAC	●	●	
3	24 VDC	●	●	
H Number of manifold stations Note 4				
2	2 stations	●		●
to	to			
10	10 stations			
I Vacuum switch specifications Note 1				
Blank	Without vacuum switch	●	●	
DW	2-point NPN output with LED display	●	●	
DA	1-point NPN output + analog output with LED display	●	●	
AO	Analog output	●	●	
Z	For mixed specifications (Indicate details in specification sheet.)	●		

⚠ Note on model no. selection

Note 1: Indicate "Mixed manifold specifications" when selecting mixed specifications. Refer to page 114 for details.

Note 2: When **A** is "Z", **B** is only "00".
When **B** is "00", **A** is only "Z".

Note 3: If the common exhaust (6, 8, 10) is selected for **F**, exhaust capacity may be insufficient depending on working conditions and cause exhaust to be led in. Consult with CKD for details.

Note 4: The number of stations operated simultaneously differs with nozzle diameter and port size combination. Consult with CKD for details.

● Model no.

- Filter element

VSX-E

- Silencer element

VSX-SE

- Silencer element F

VSX-EF

- Silencer element D

VSX-ED

- Silencer element for manifold

VSXPM-SE

Ejector system

VSX

VSH·VSU
USB·VSC

VSG

VSK
VSKM

VSJ
VSJM

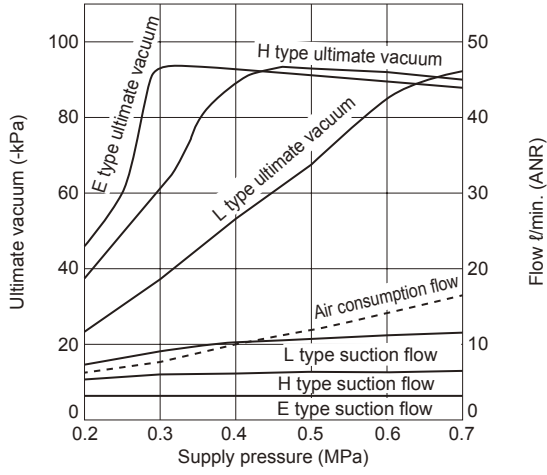
VSX
VSXM

VSQ

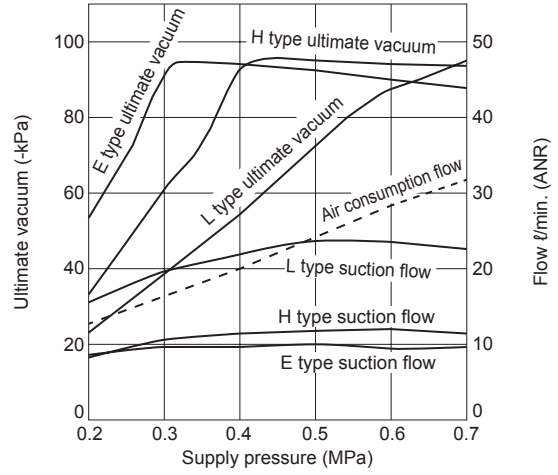
VSZM

Vacuum characteristics

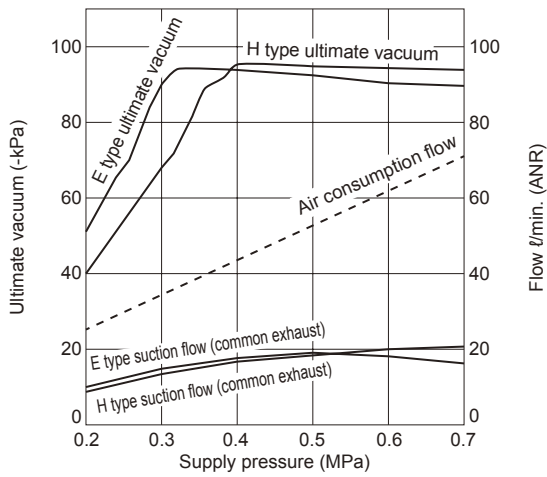
● VSX-H05, VSX-L05, VSX-E05



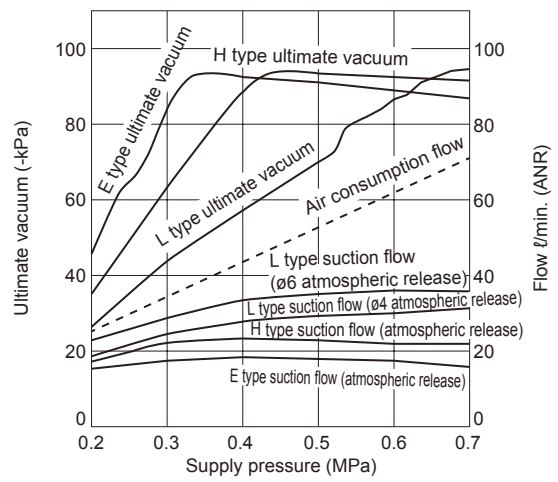
● VSX-H07, VSX-L07, VSX-E07



● VSX-H10***J, VSX-L10***J, VSX-E10***J



● VSX-H10***S, VSX-L10***S, VSX-E10***S



Ejector system

VSY

VSH·VSU
VSB·VSC

VSG

VSK
VSKM

VSJ
VSJM

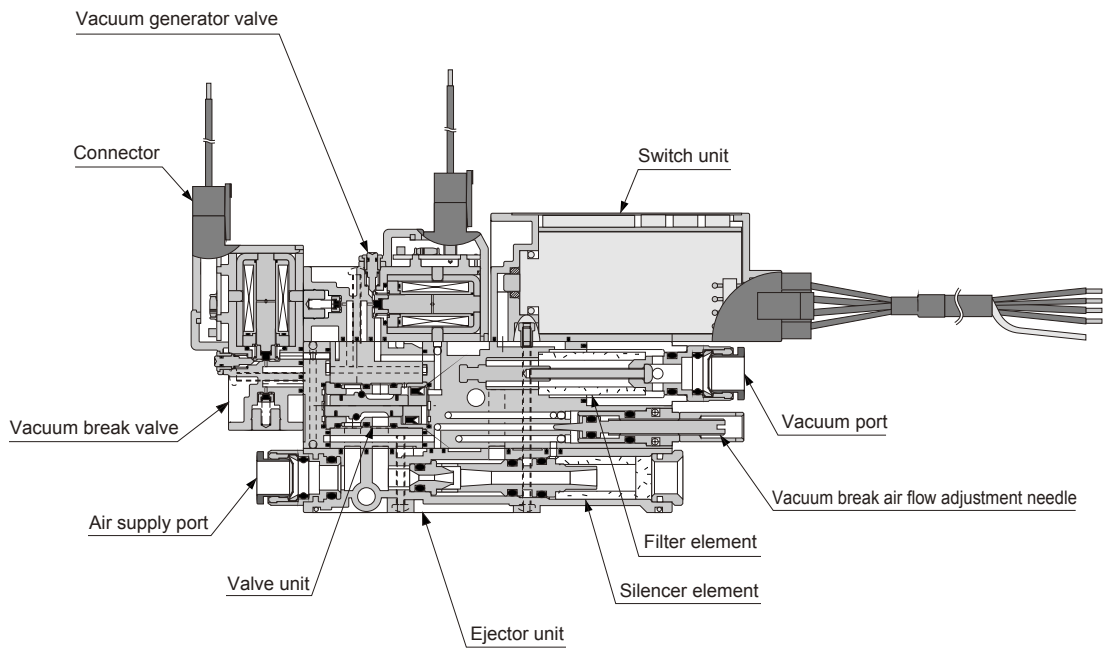
VSX
VSXM

VSQ

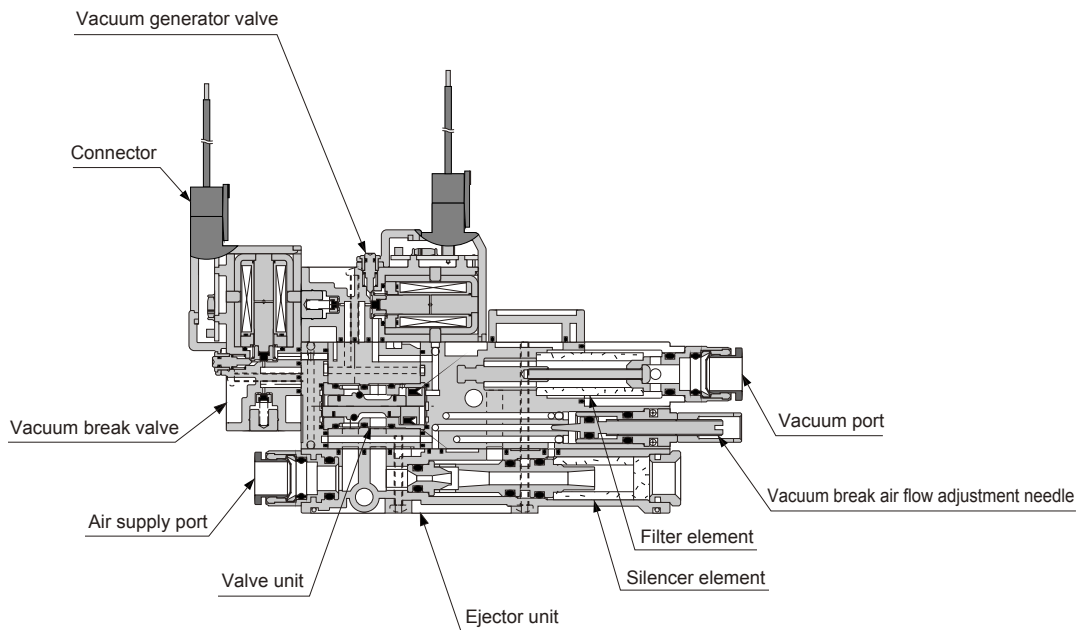
VSZM

Internal structure drawing (discrete type)

Example) VSX-***-**S-*
With vacuum switch



Example) VSX-***-**S-*
Without vacuum switch



Ejector system

VSY

VSH·VSU
VSB·VSC

VSG

VSK
VSKM

VSJ
VSJM

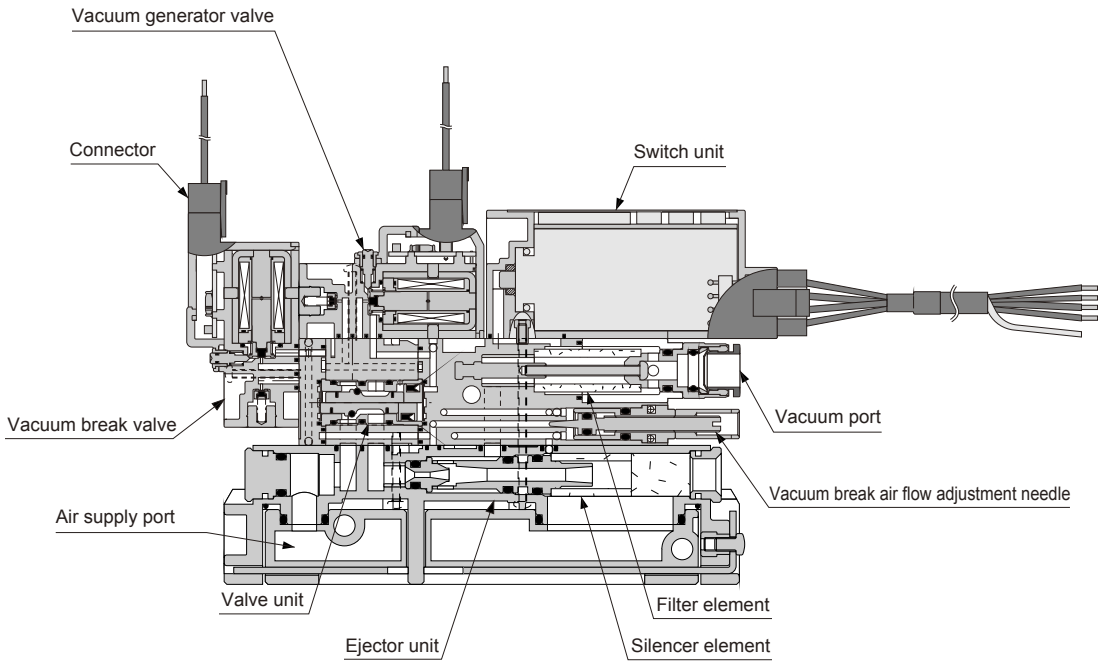
**VSX
VSXM**

VSQ

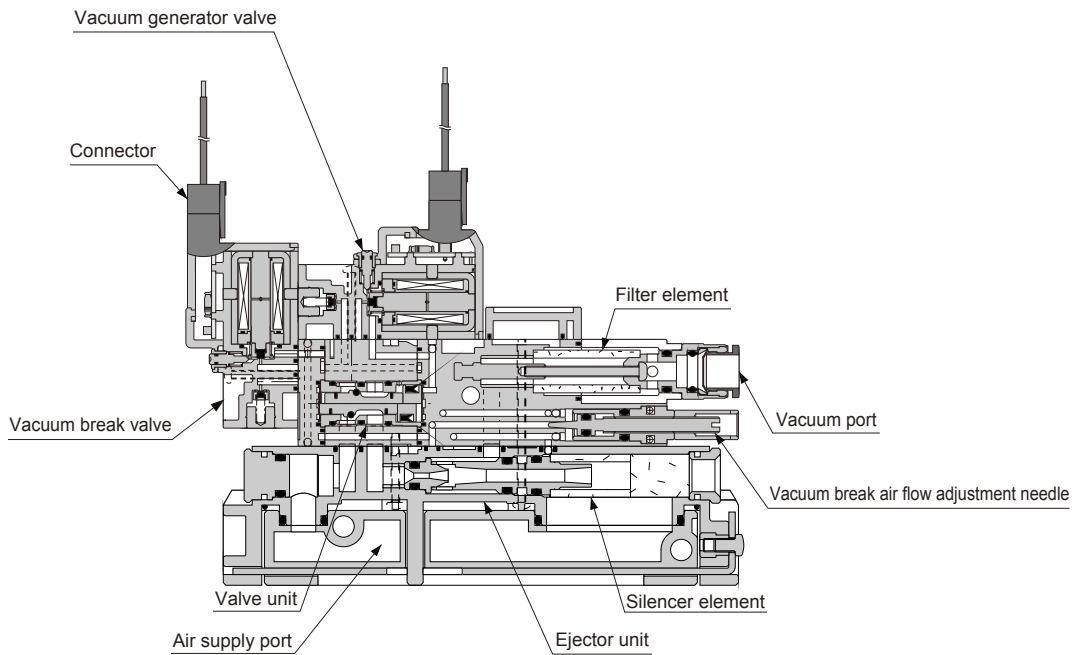
VSZM

Internal structure drawing (manifold type)

Example) VSXM-***-**S-**-**
With vacuum switch

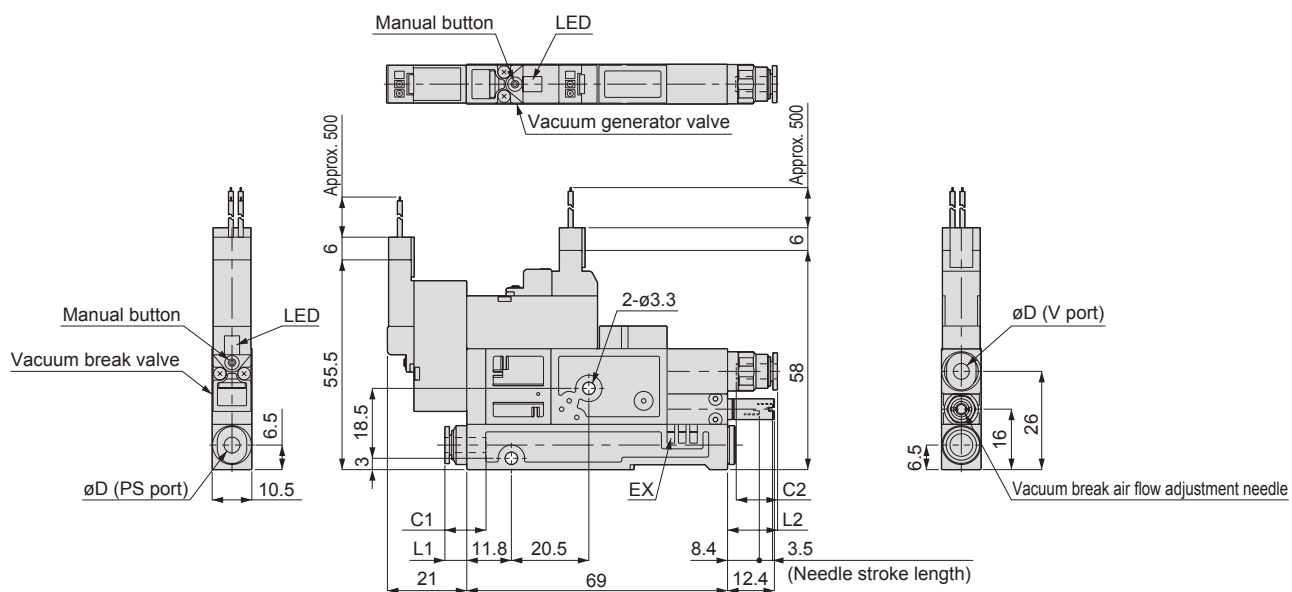


Example) VSXM-***-**S-**-**
Without vacuum switch



Dimensions (discrete type, atmospheric release, without vacuum switch)

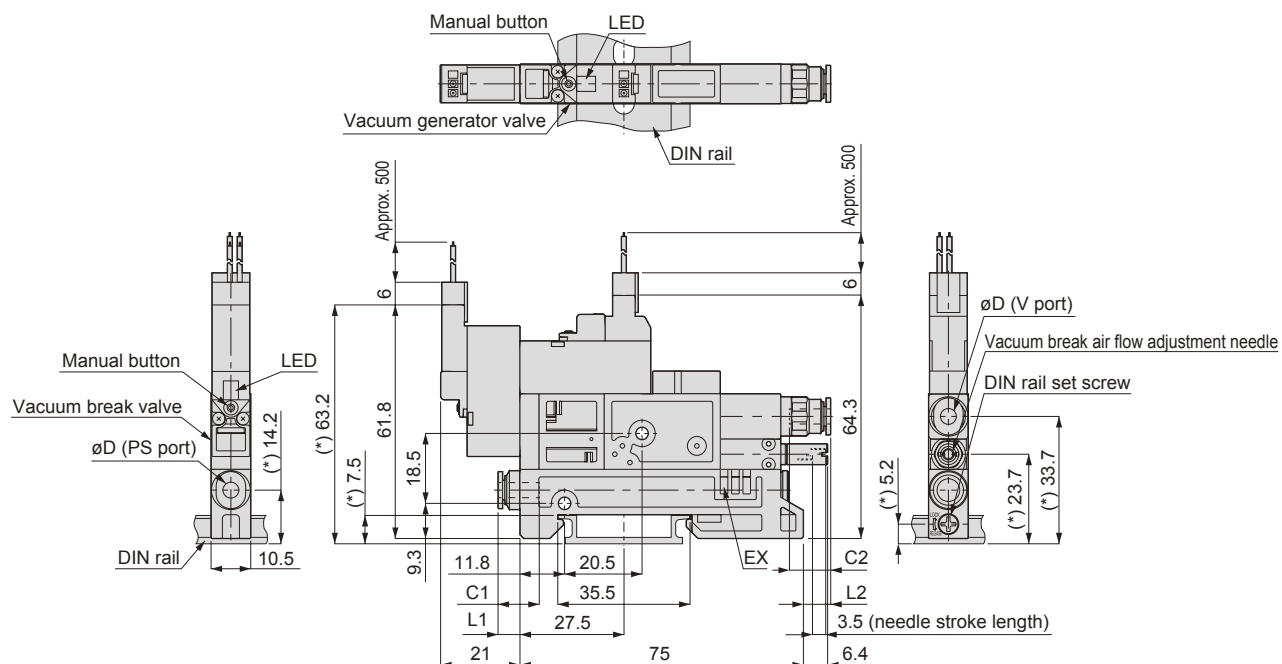
● Direct mount type



Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**S-*	4	11.2	11.2	6.1	13.5
	6	11.9	11.9	8.9	13.7

● DIN rail installation type



Note) The dimensions marked with an asterisk (*) apply for the 7.5mm DIN rail height.

Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**S-*-D	4	11.2	11.2	6.1	7.5
	6	11.9	11.9	8.9	7.7

Ejector system

VSX

VSH-VSU
VSB-VSC

VSG

VSK
VSKM

VSJ
VSJM

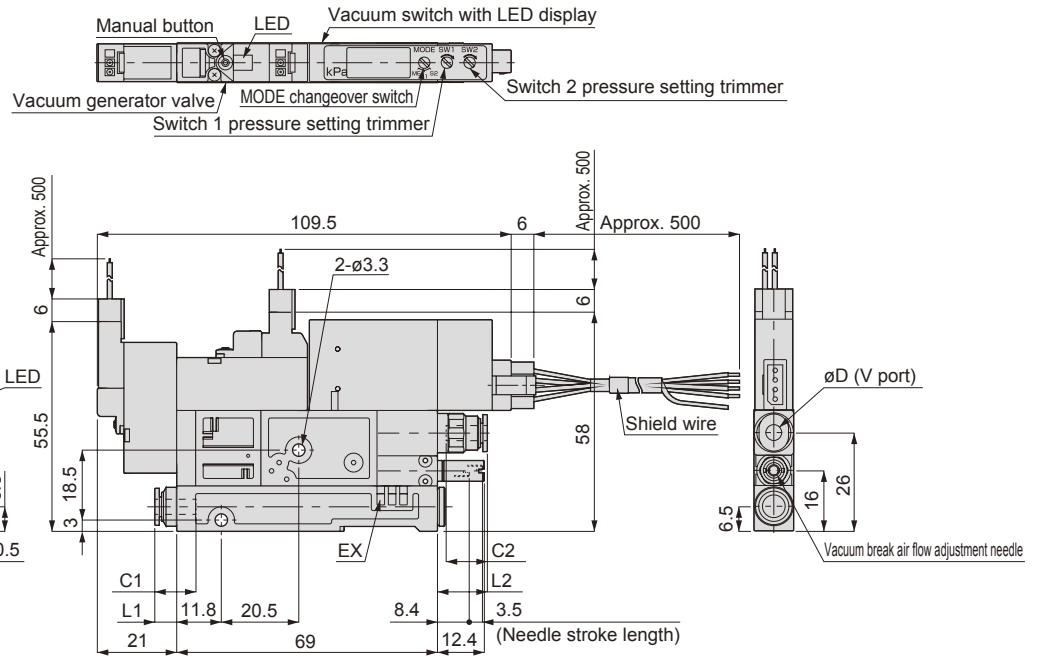
VSX
VSXM

VSQ

VSZM

Dimensions (discrete type, atmospheric release, with vacuum switch with 2-point switch output/LED display)

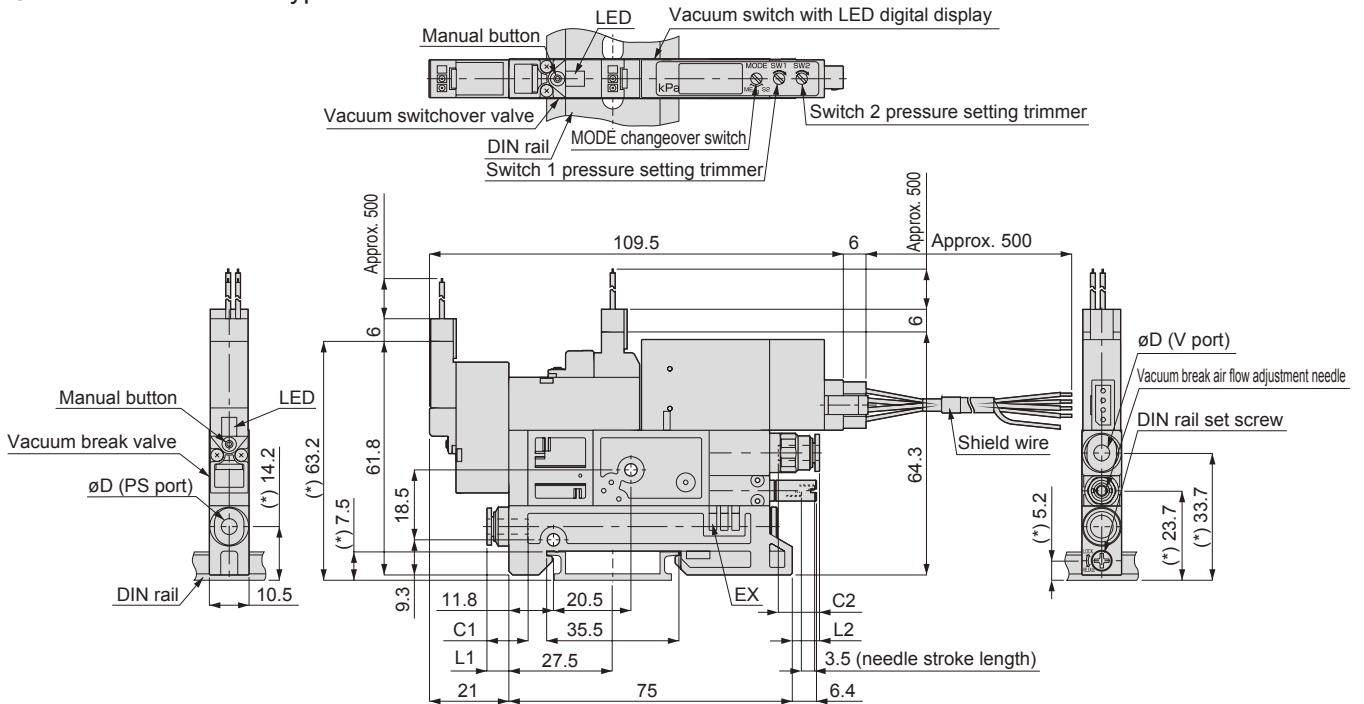
● Direct mount type



Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**S-*-DW	4	11.2	11.2	6.1	13.5
	6	11.9	11.9	8.9	13.7

● DIN rail installation type



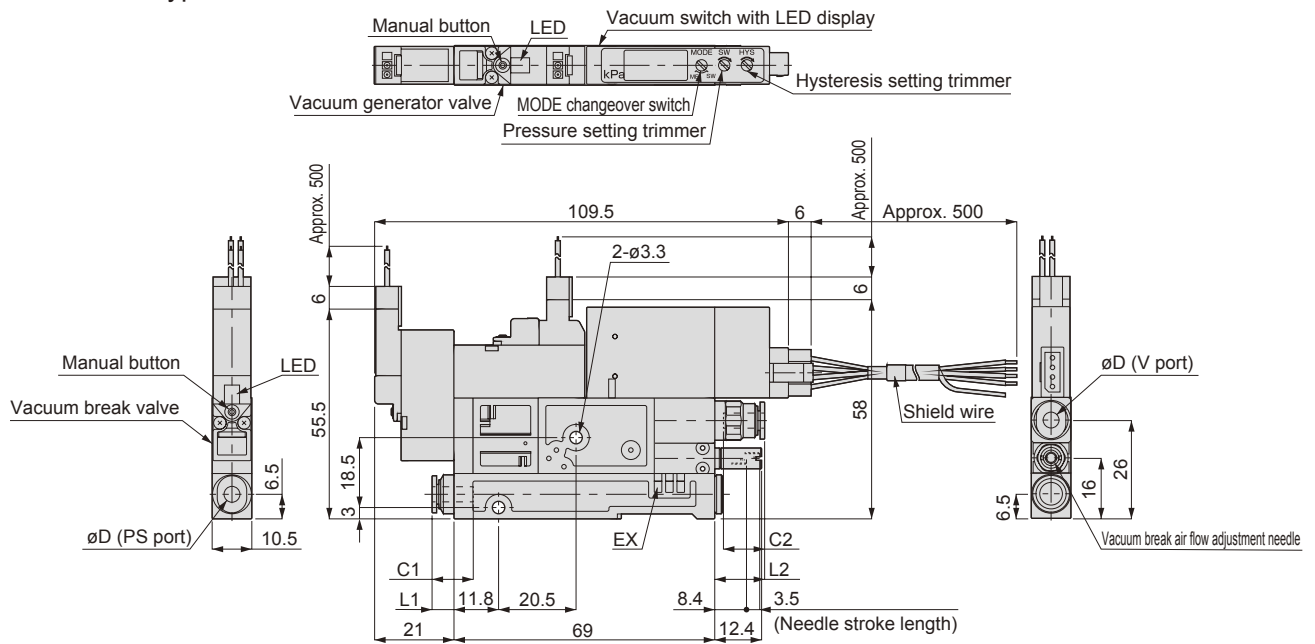
Note) The dimensions marked with an asterisk (*) apply for the 7.5mm DIN rail height.

Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**S-*-DW-D	4	11.2	11.2	6.1	7.5
	6	11.9	11.9	8.9	7.7

Dimensions (discrete type, atmospheric release, analog output with LED display, vacuum switch with switch output)

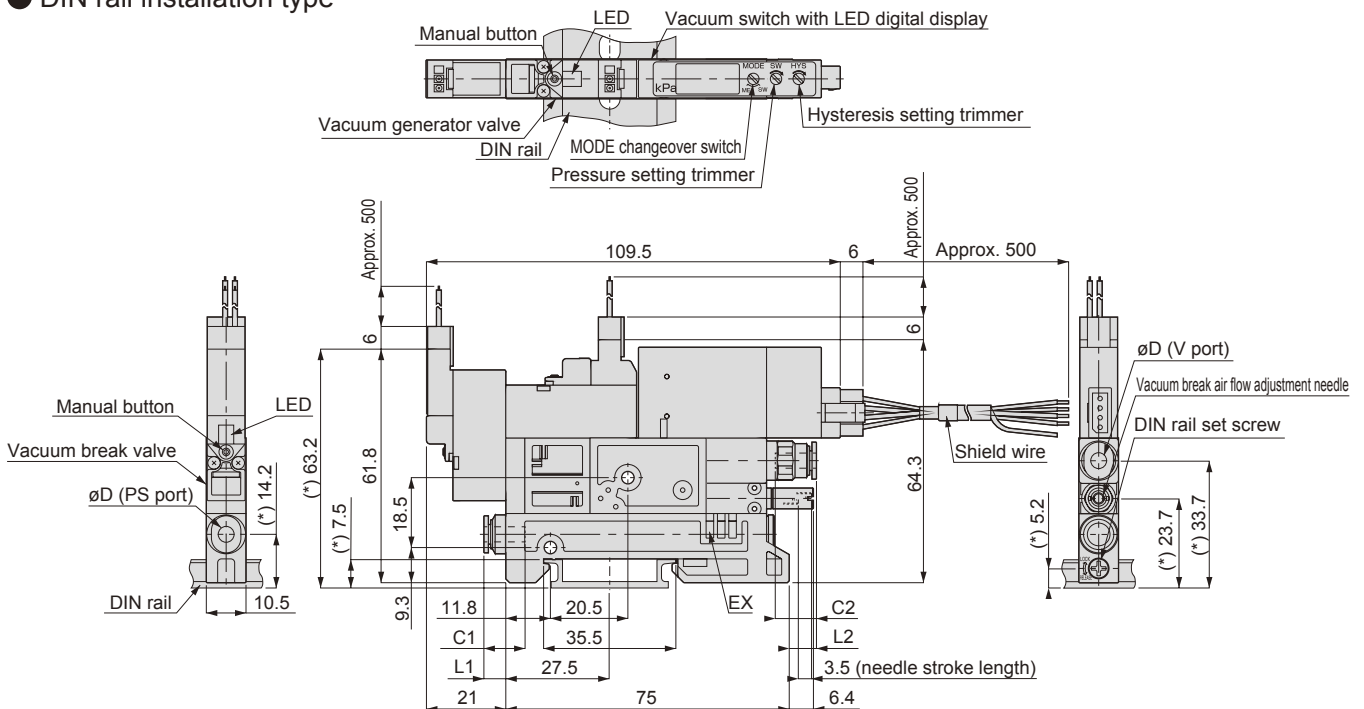
● Direct mount type



Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**S*-DA	4	11.2	11.2	6.1	13.5
	6	11.9	11.9	8.9	13.7

● DIN rail installation type



Note) The dimensions marked with an asterisk (*) apply for the 7.5mm DIN rail height.

Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**S*-DA-D	4	11.2	11.2	6.1	7.5
	6	11.9	11.9	8.9	7.7

Ejector system

VSX

VSH·VSU
VSB·VSC

VSG

VSK
VSKM

VSJ
VSJM

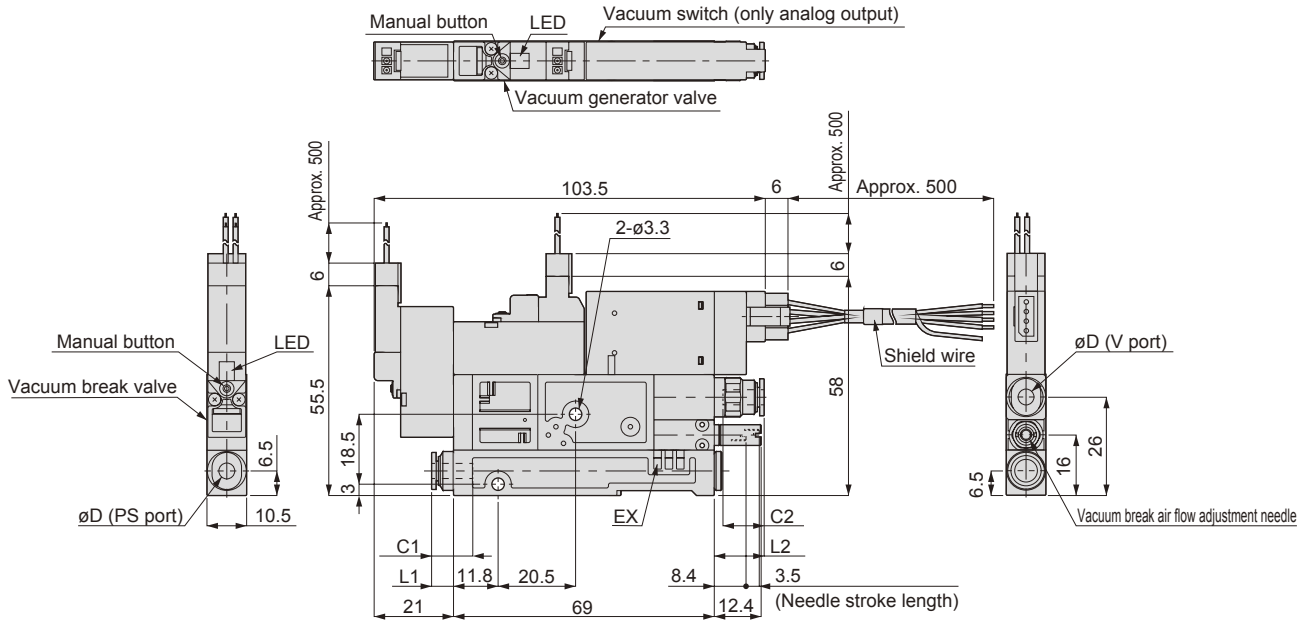
VSX
VSXM

VSQ

VSZM

Dimensions (discrete type, atmospheric release, with analog output vacuum switch)

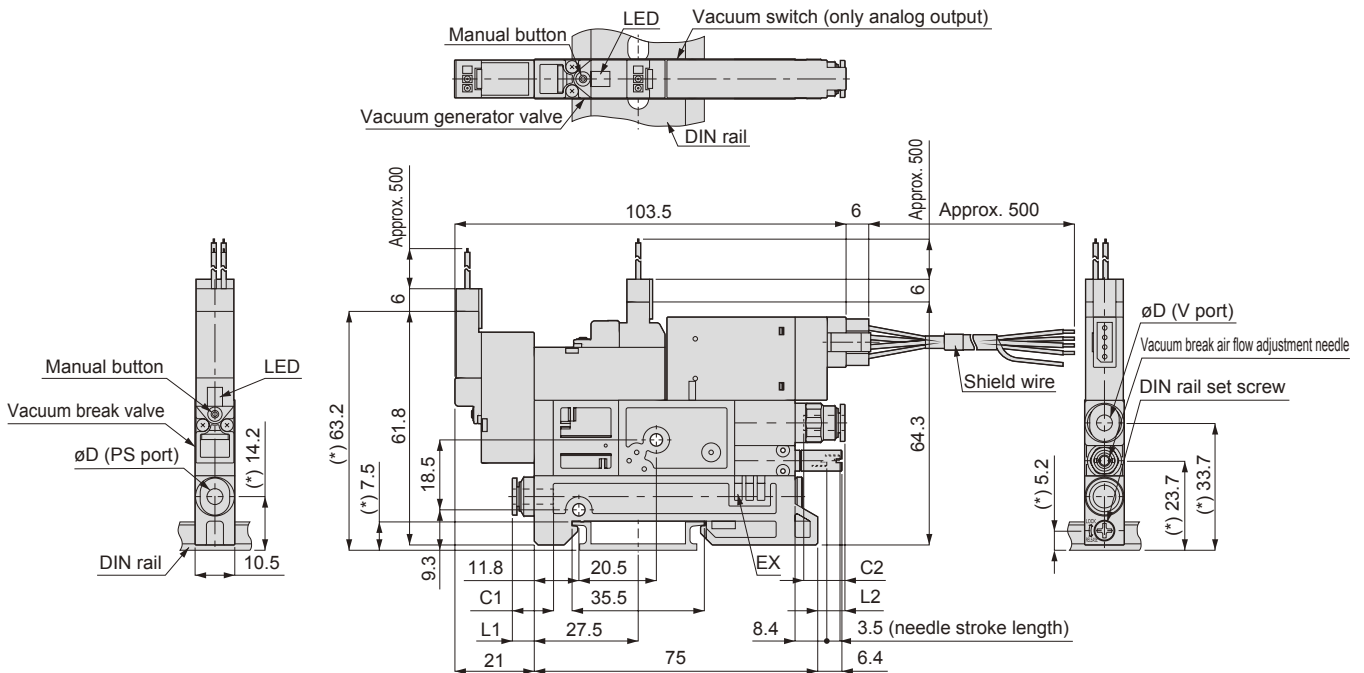
● Direct mount type



Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**S*-A0	4	11.2	11.2	6.1	13.5
	6	11.9	11.9	8.9	13.7

● DIN rail installation type



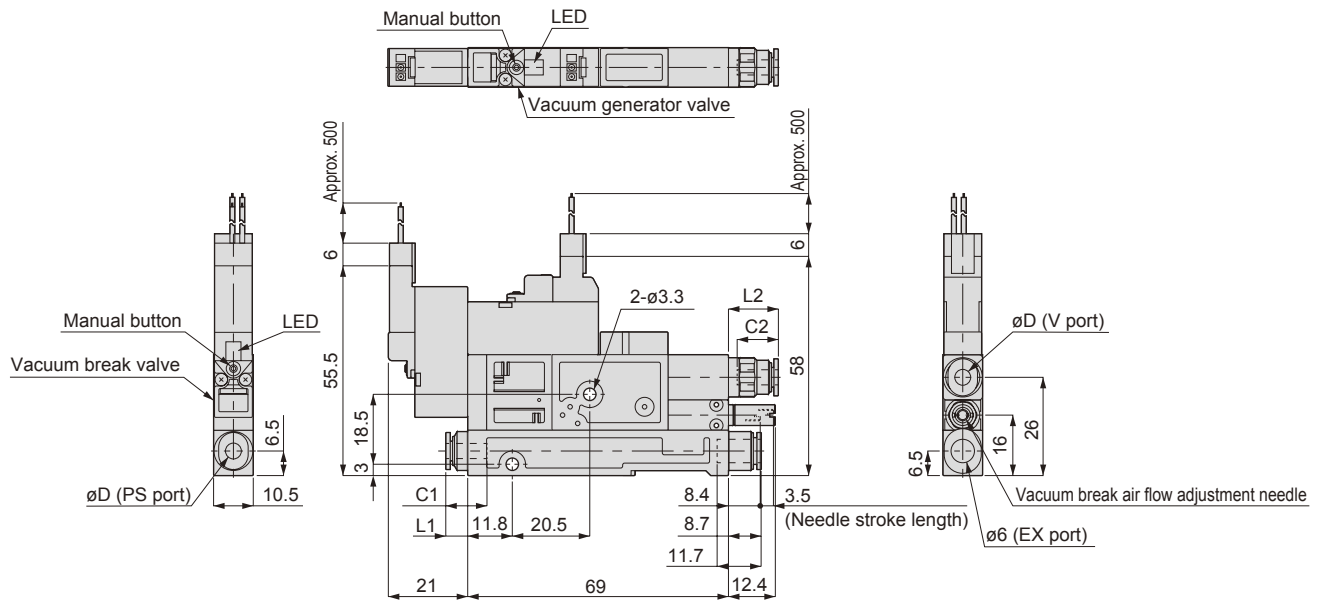
Note) The dimensions marked with an asterisk (*) apply for the 7.5mm DIN rail height.

Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**S*-A0-D	4	11.2	11.2	6.1	7.5
	6	11.9	11.9	8.9	7.7

Dimensions (discrete type, common exhaust type, without vacuum switch)

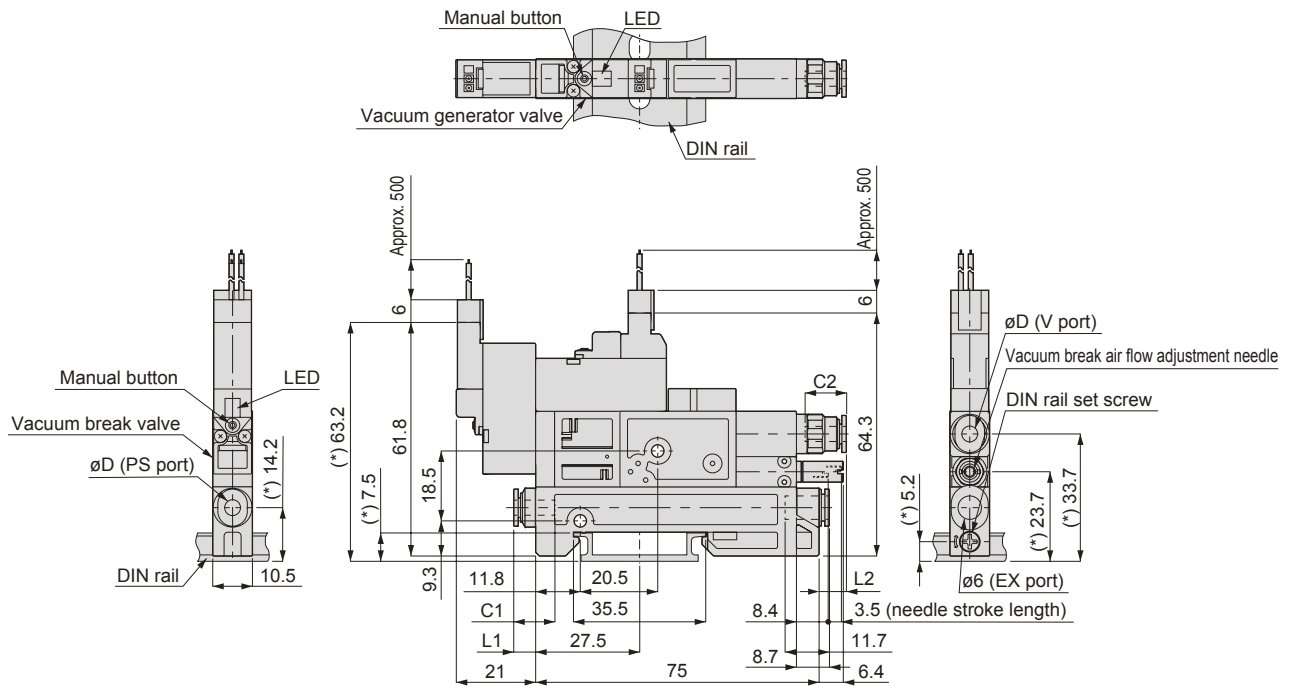
● Direct mount type



Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**J-*	4	11.2	11.2	6.1	13.5
	6	11.9	11.9	8.9	13.7

● DIN rail installation type



Note) The dimensions marked with an asterisk (*) apply for the 7.5mm DIN rail height.

Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**J-*-D	4	11.2	11.2	6.1	7.5
	6	11.9	11.9	8.9	7.7

Ejector system

VSY

VSH•VSU
VSB•VSC

VSG

VSK
VSKM

VSJ
VSJM

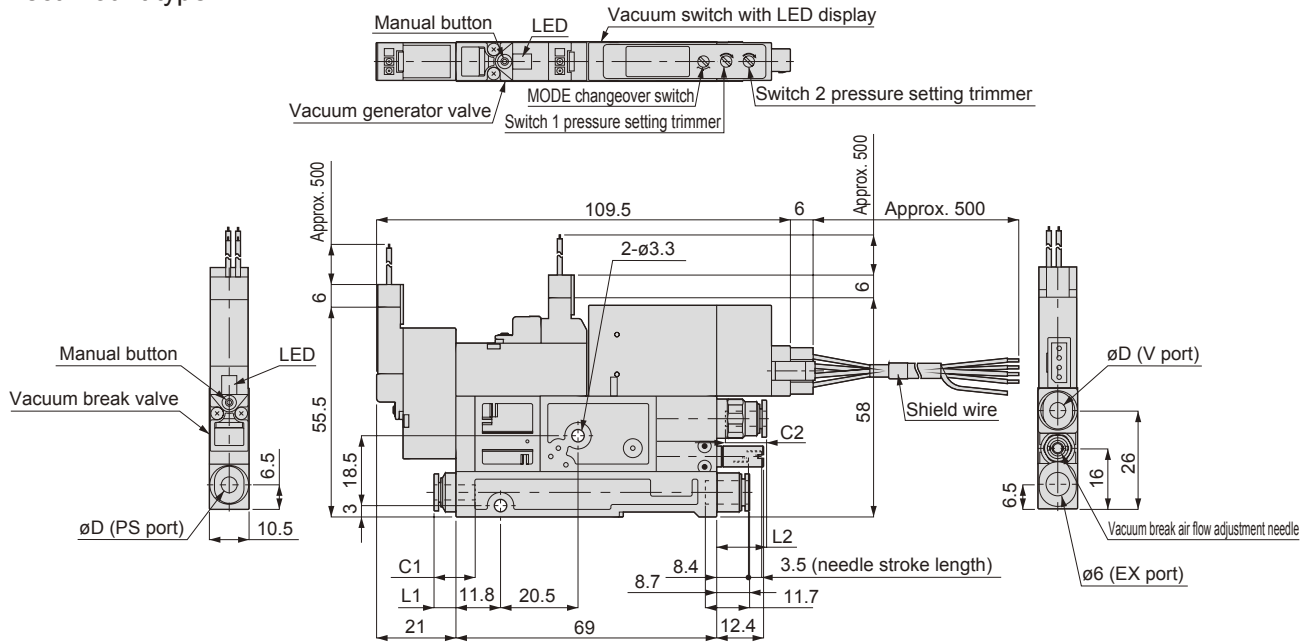
VSX
VSXM

VSQ

VSZM

Dimensions (discrete type, common exhaust type, with vacuum switch with 2-point switch output/LED display)

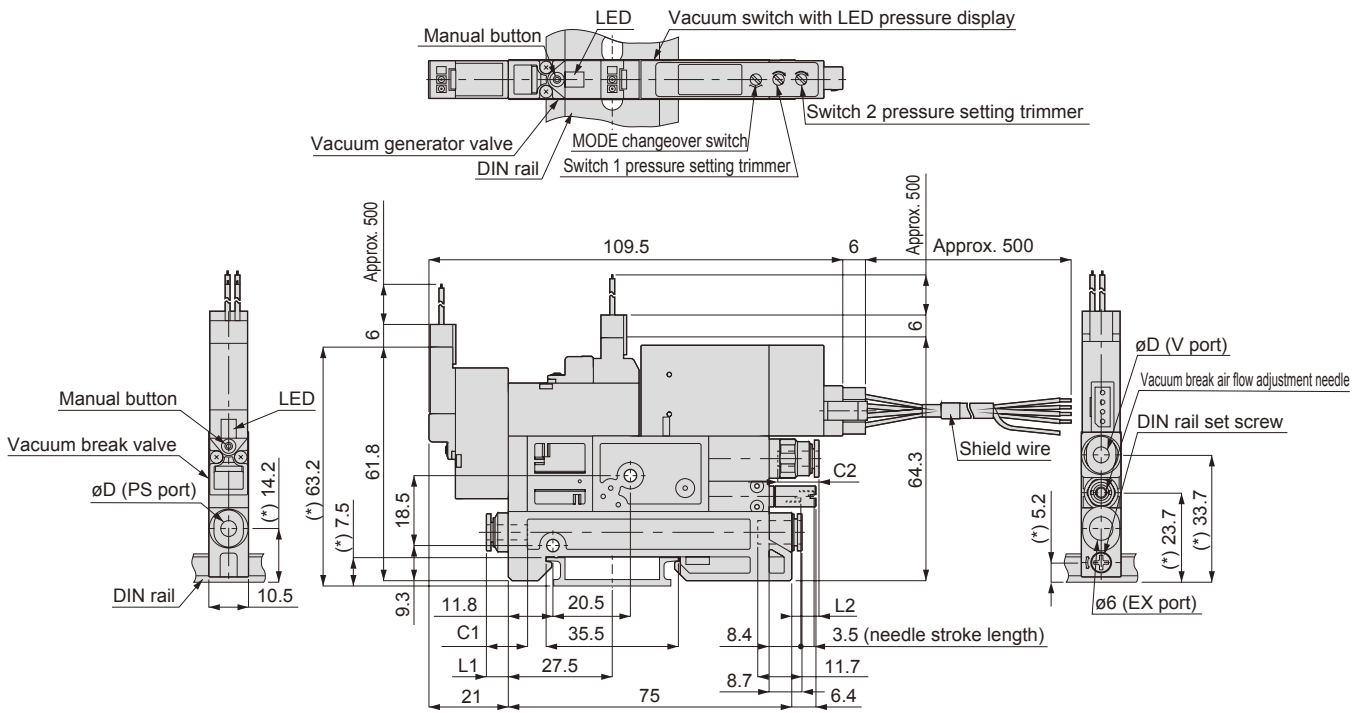
● Direct mount type



Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**J*-DW	4	11.2	11.2	6.1	13.5
	6	11.9	11.9	8.9	13.7

● DIN rail installation type



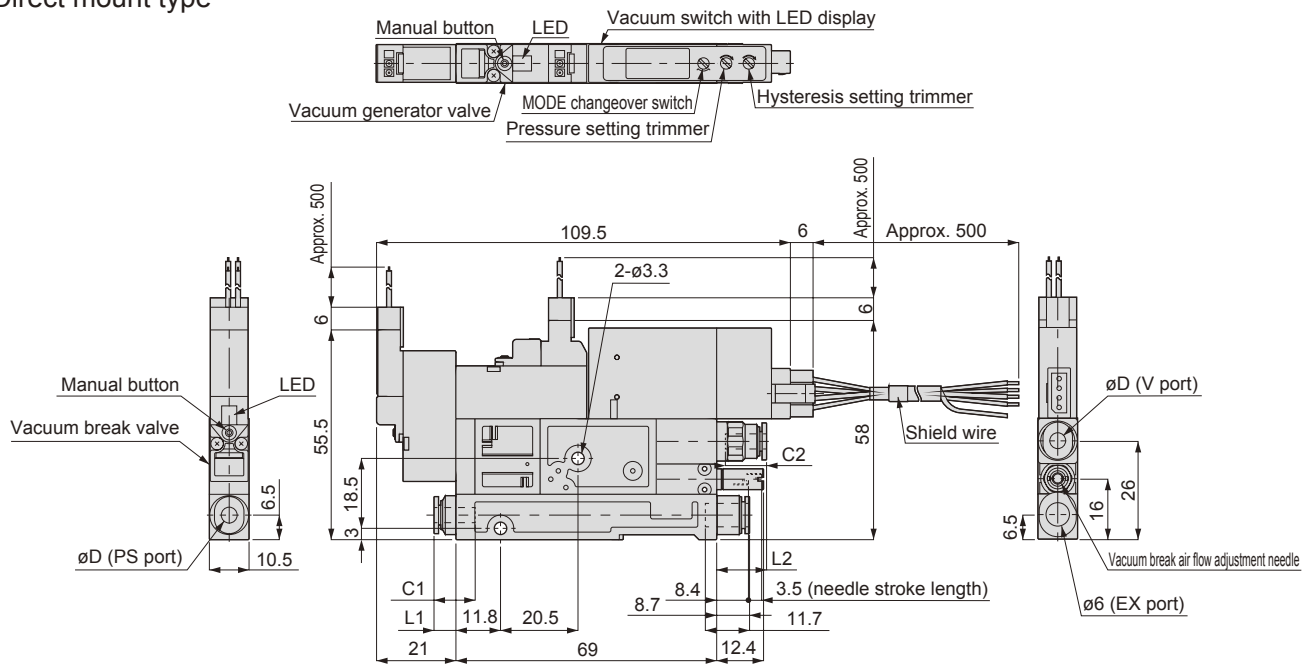
Note) The dimensions marked with an asterisk (*) apply for the 7.5mm DIN rail height.

Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**J*-DW-D	4	11.2	11.2	6.1	7.5
	6	11.9	11.9	8.9	7.7

Dimensions (discrete type, common exhaust type, analog output with LED display, vacuum switch with switch output)

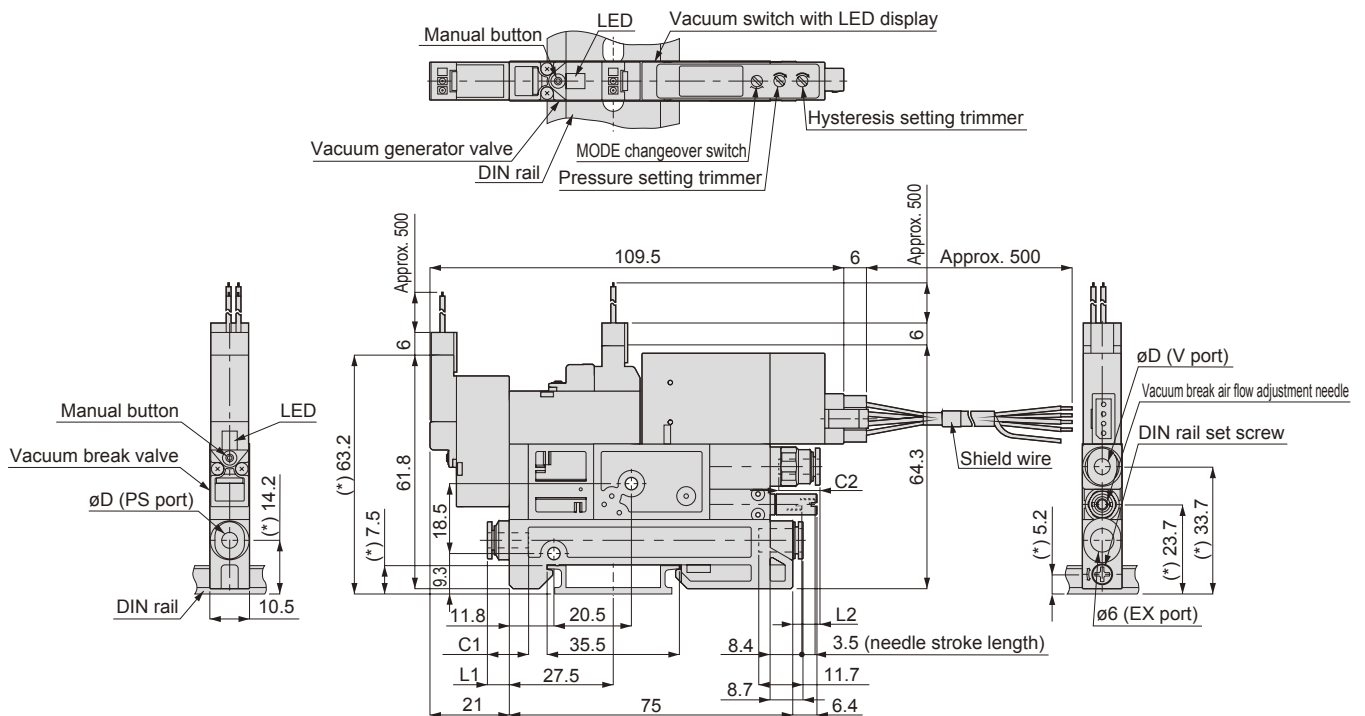
● Direct mount type



Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**J*-DA	4	11.2	11.2	6.1	13.5
	6	11.9	11.9	8.9	13.7

● DIN rail installation type



Note) The dimensions marked with an asterisk (*) apply for the 7.5mm DIN rail height.

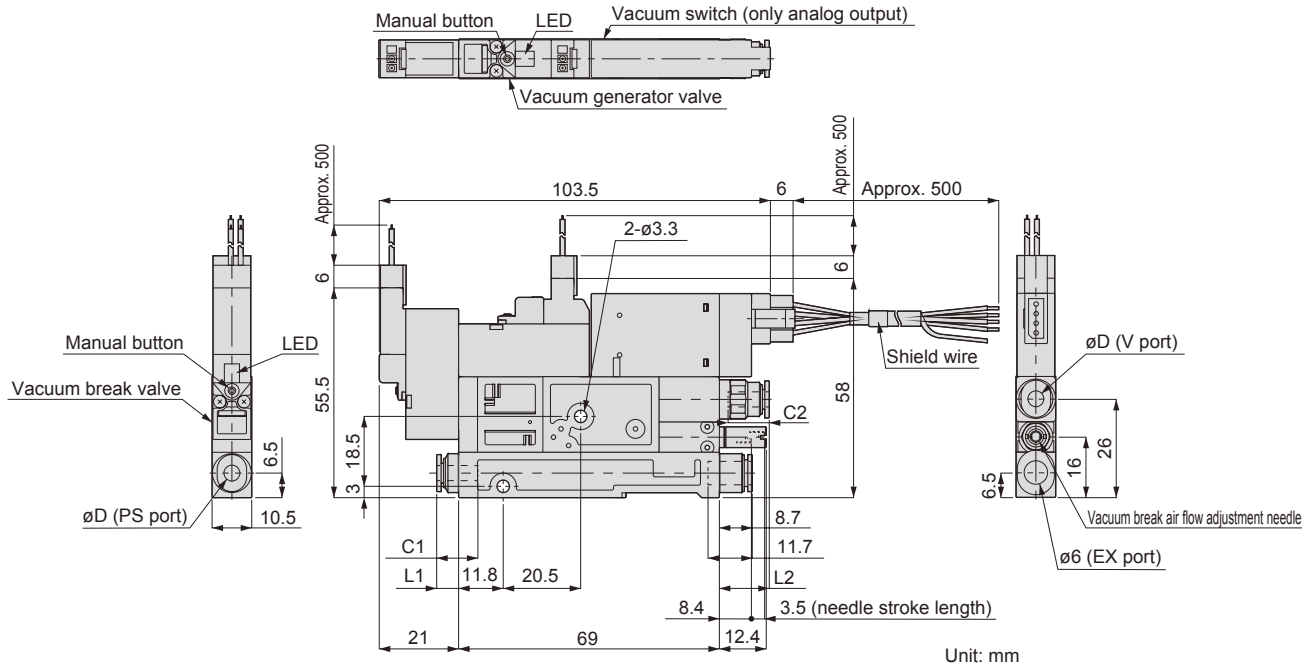
Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**J*-DA-D	4	11.2	11.2	6.1	7.5
	6	11.9	11.9	8.9	7.7

Ejector system
VSJ
VSJM
VSX
VSXM
VSQ
VSZM

Dimensions (discrete type, common exhaust type, analog output vacuum switch)

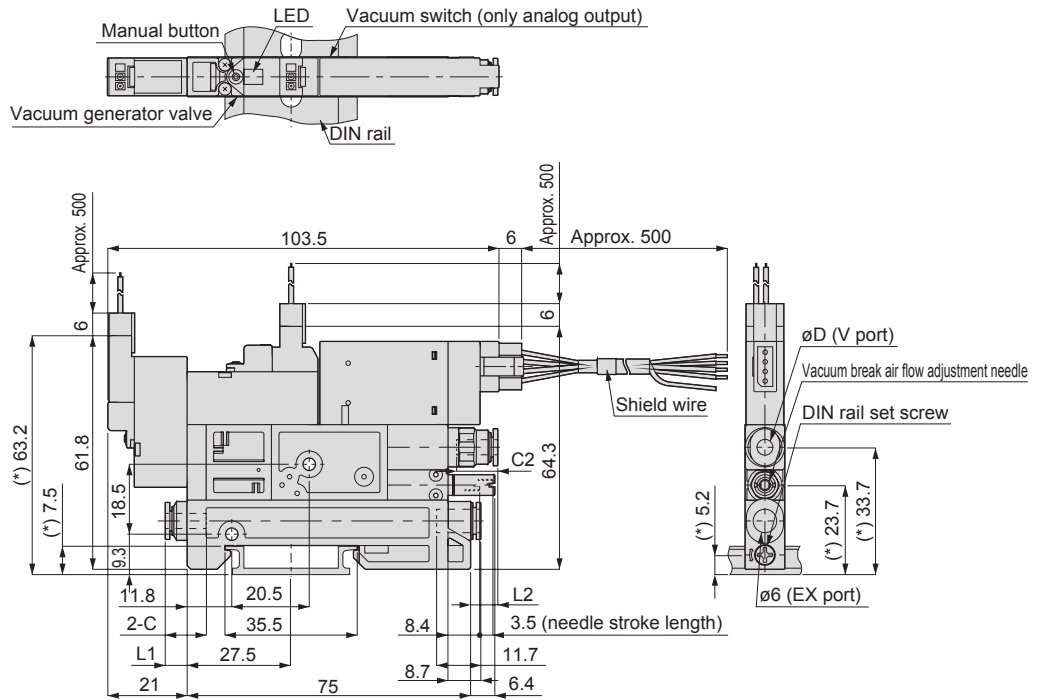
● Direct mount type



Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**J*-A0	4	11.2	11.2	6.1	13.5
	6	11.9	11.9	8.9	13.7

● DIN rail installation type



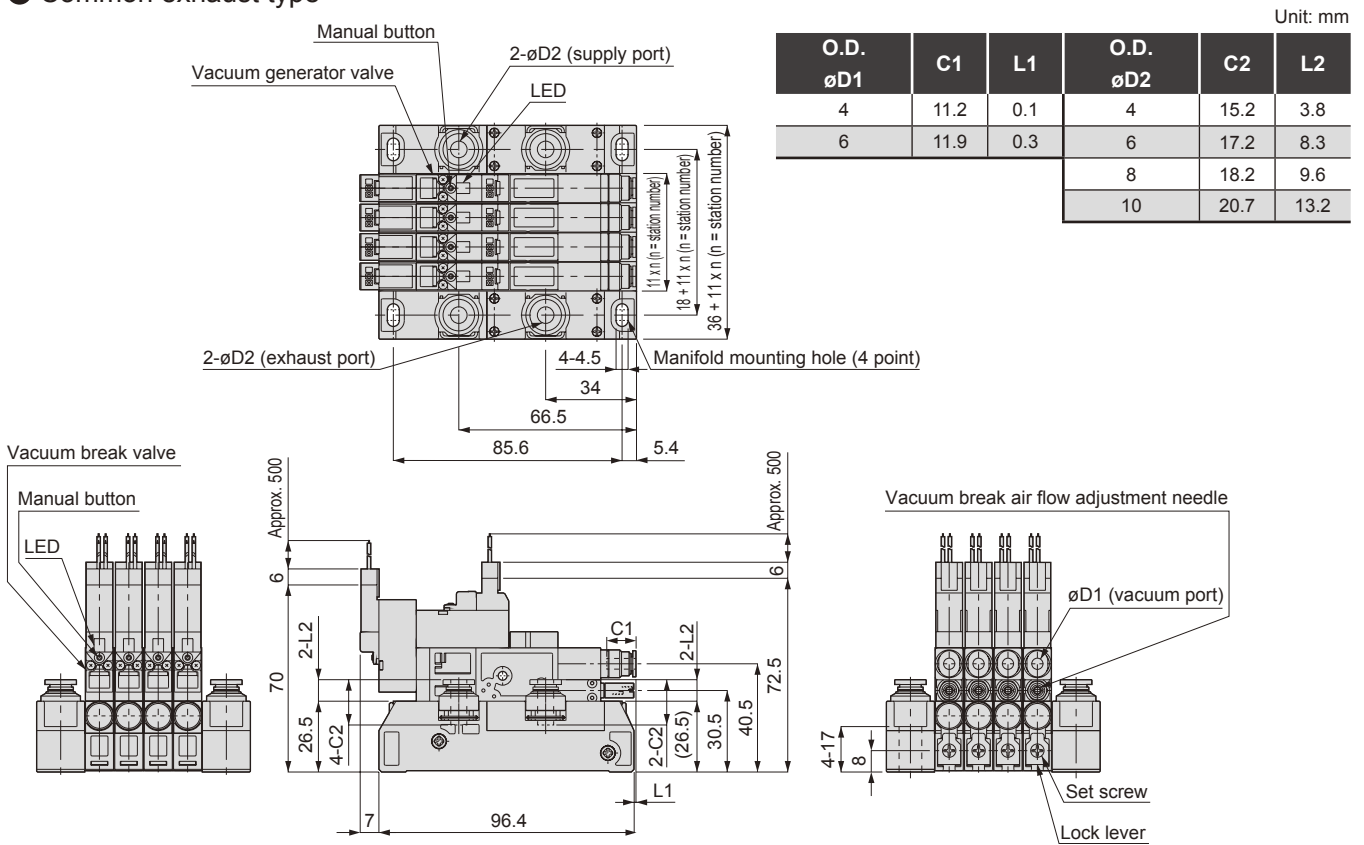
Note) The dimensions marked with an asterisk (*) apply for the 7.5mm DIN rail height.

Unit: mm

Model no.	Applicable tube outer diameter (øD)	C1	C2	L1	L2
VSX-***-**J*-A0-D	4	11.2	11.2	6.1	7.5
	6	11.9	11.9	8.9	7.7

Dimensions (manifold type, VSXM, without vacuum switch)

● Common exhaust type



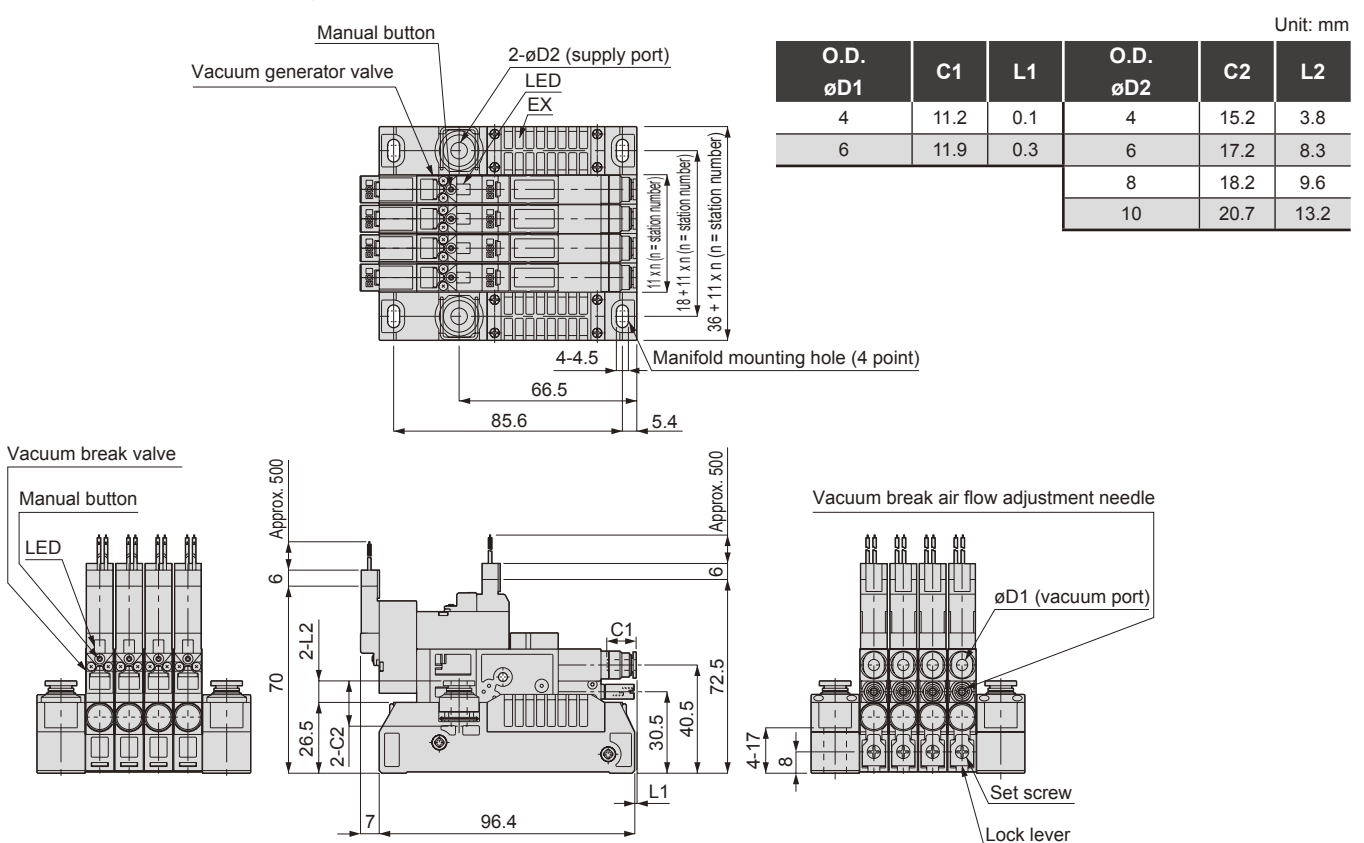
Ejector system

VSY

VSH·VSU
VSB·VSC

VSG

● Atmospheric release type



VSK
VSKM

VSJ
VSJM

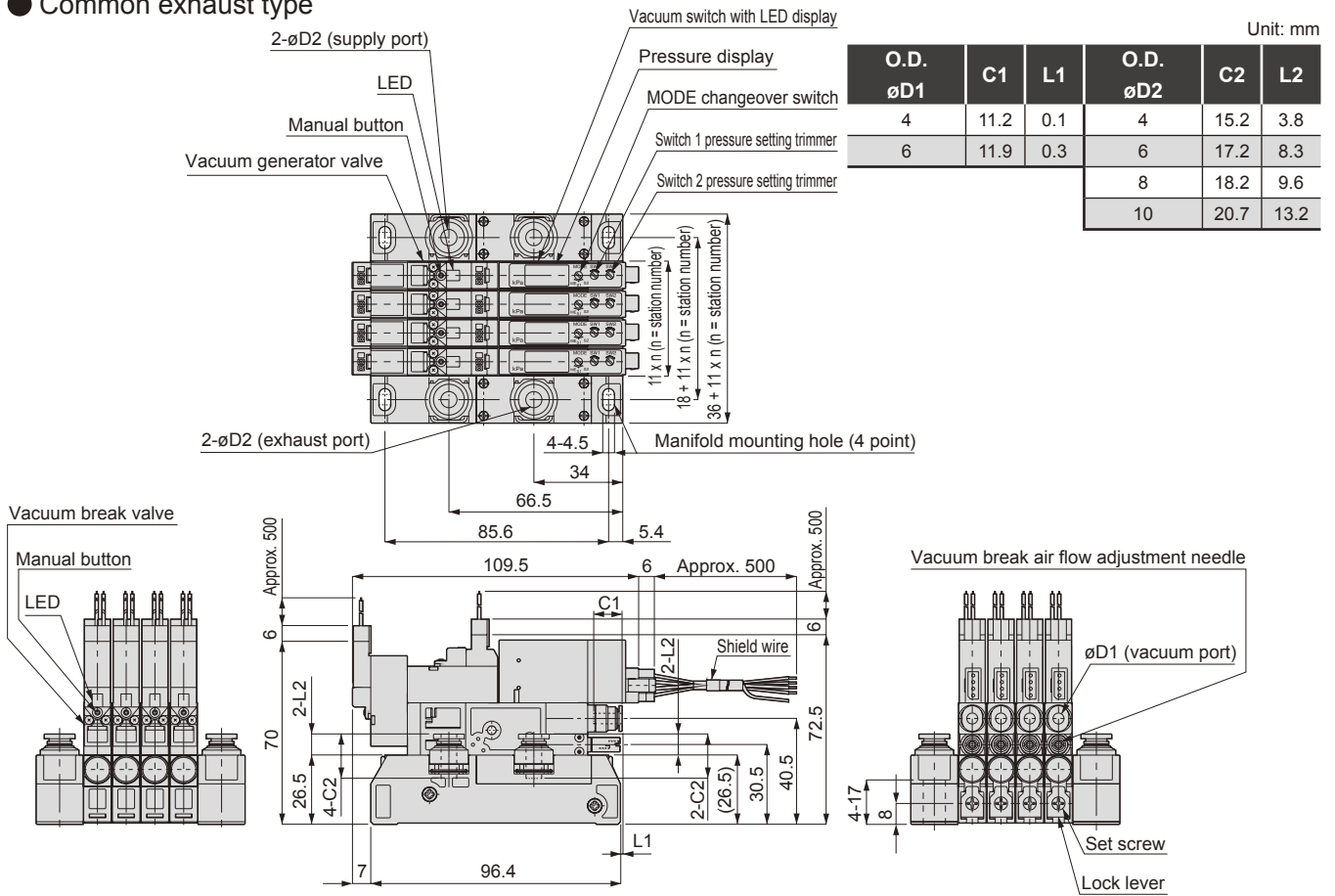
VSX
VSXM

VSQ

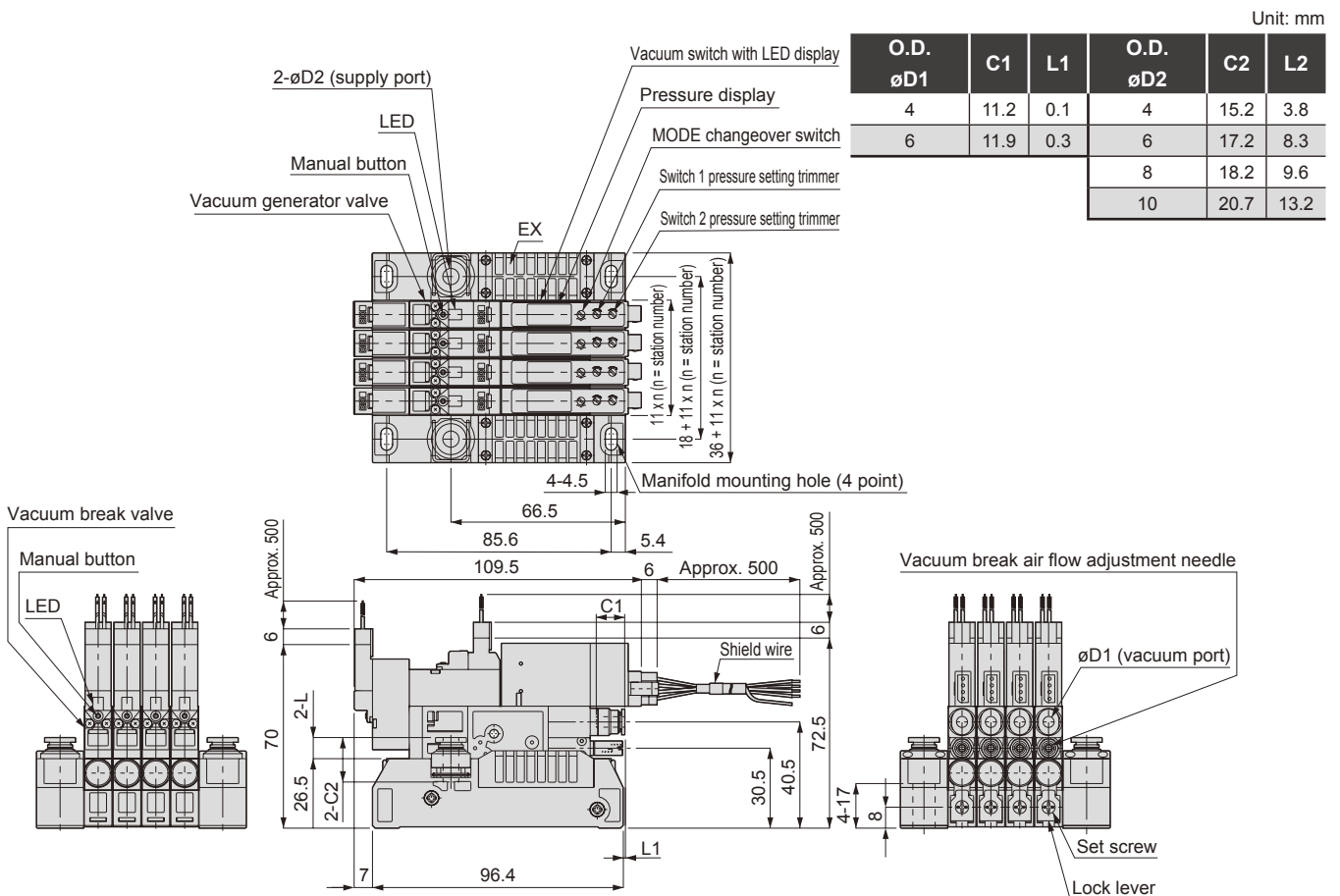
VSZM

Dimensions (manifold type VSXM, with vacuum switch with 2-point switch output/LED display)

● Common exhaust type

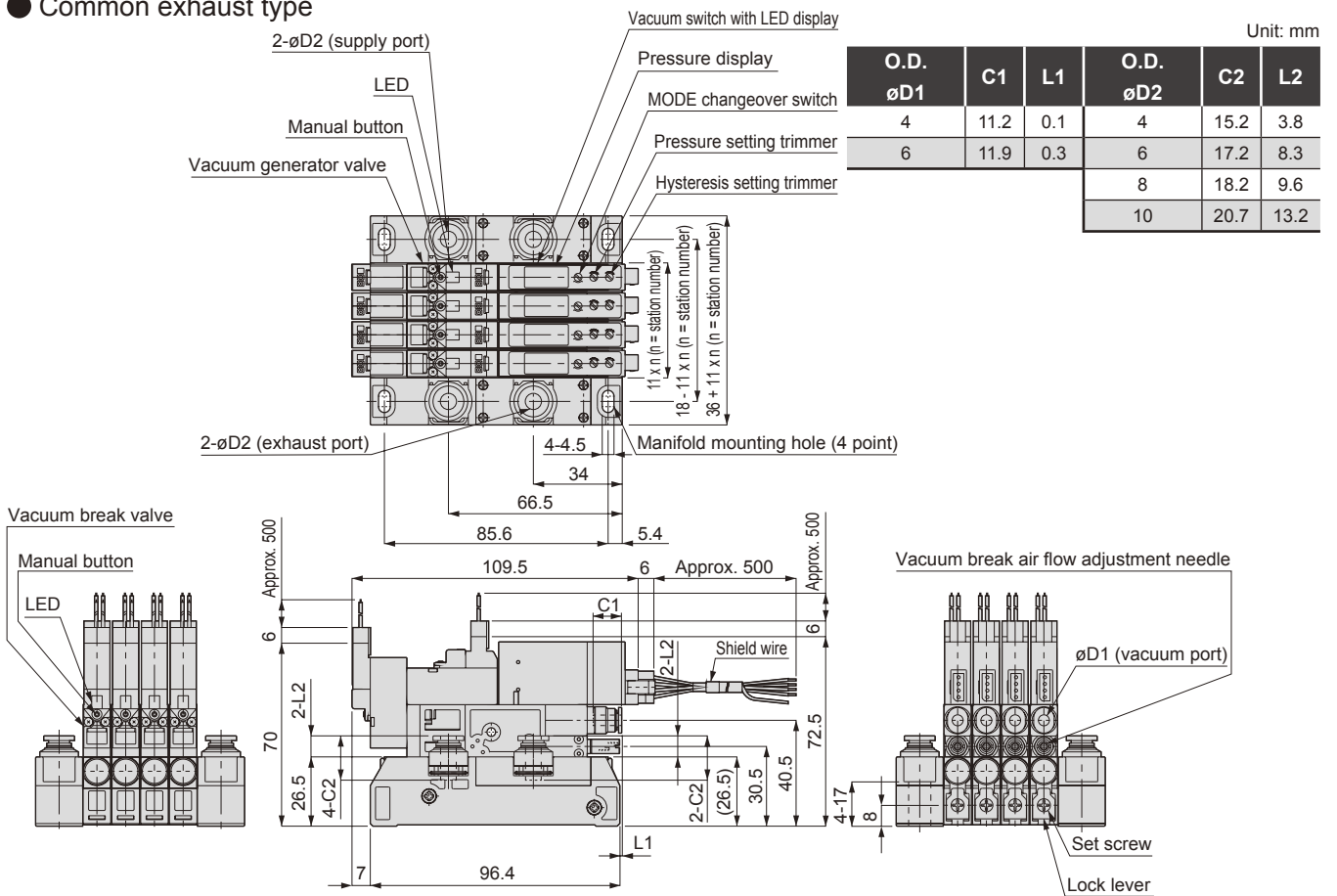


● Atmospheric release type

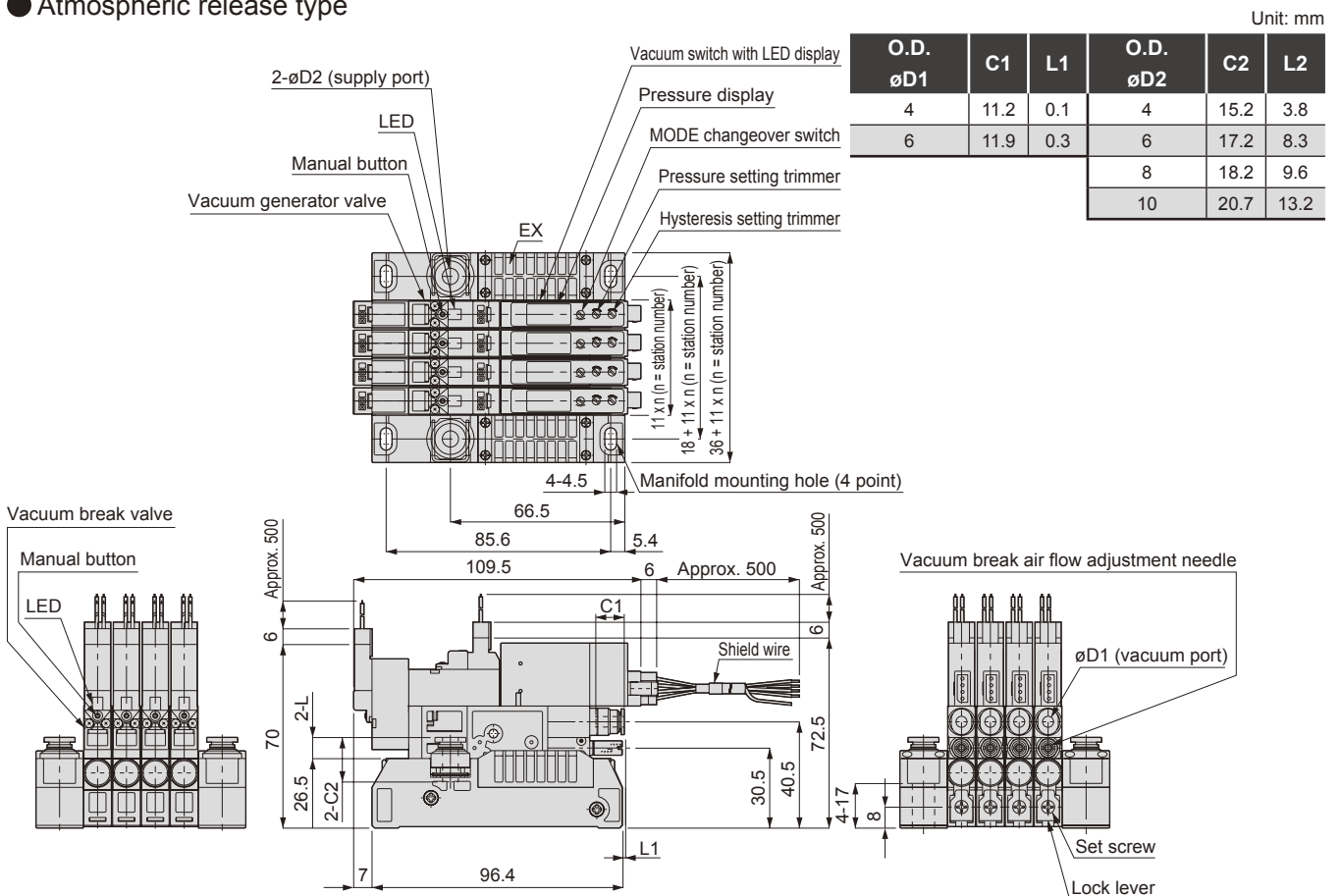


Dimensions (manifold type VSXM, analog output with LED display, vacuum switch with switch output)

Common exhaust type



Atmospheric release type



Ejector system

VSX

VSH·VSU
VSB·VSC

VSG

VSK
VSKM

VSJ
VSJM

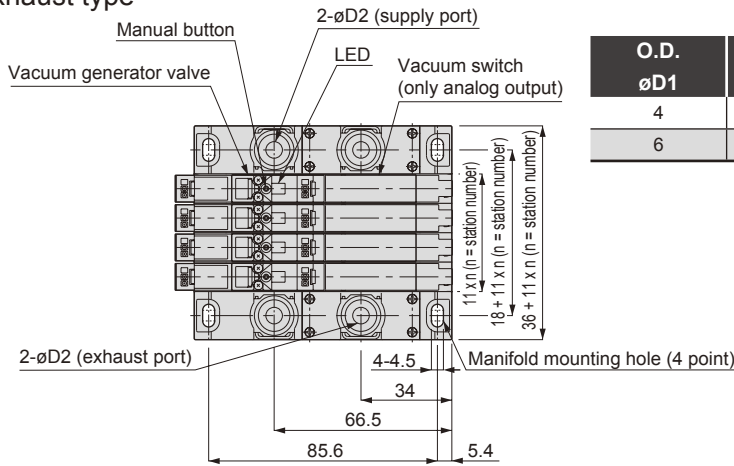
VSX
VSXM

VSQ

VSZM

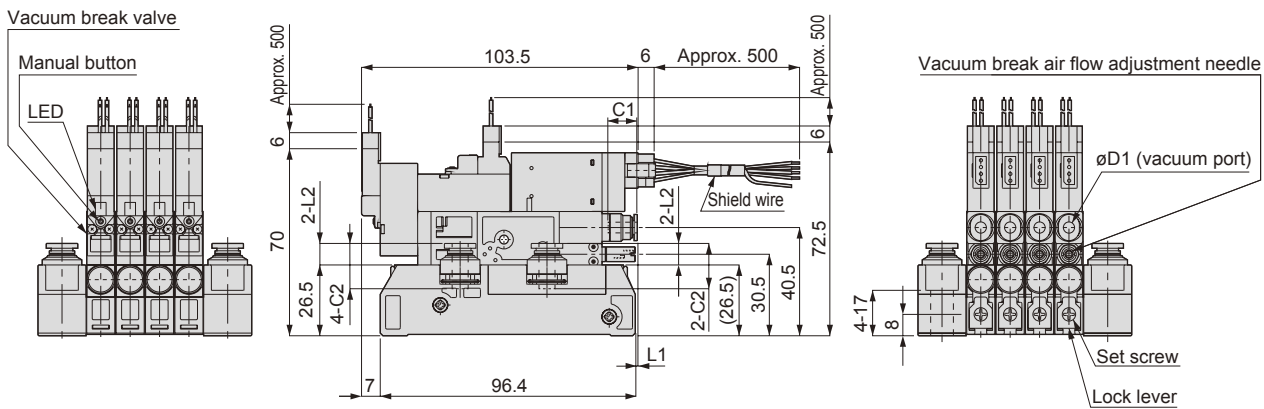
Dimensions (manifold type VSXM, with analog output vacuum switch)

Common exhaust type

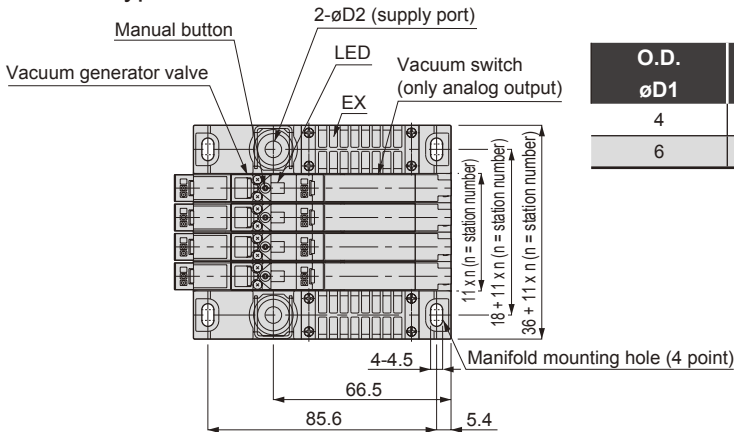


Unit: mm

O.D. øD1	C1	L1	O.D. øD2	C2	L2
4	11.2	0.1	4	17.2	15.2
6	11.9	0.3	6	17.2	8.3
			8	18.2	9.6
			10	20.7	13.2

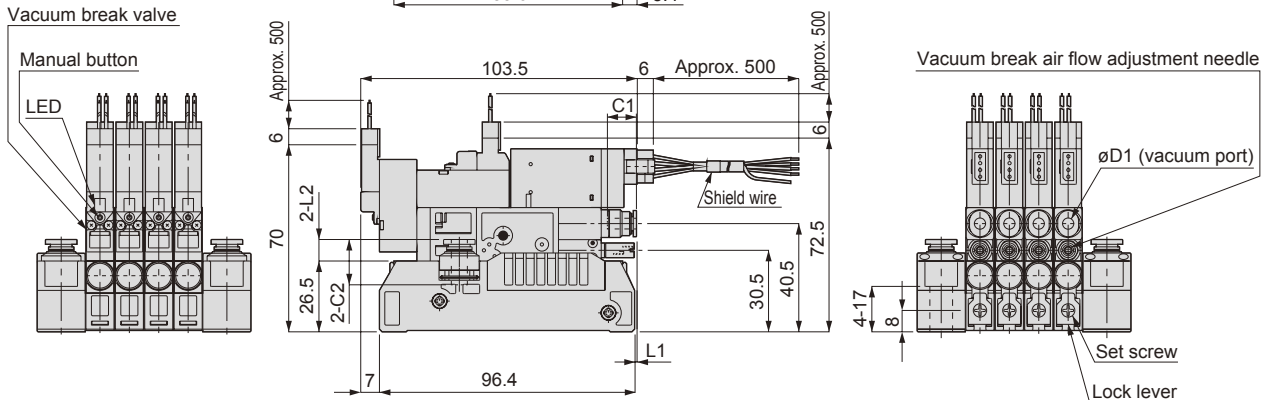


Atmospheric release type



Unit: mm

O.D. øD1	C1	L1	O.D. øD2	C2	L2
4	11.2	0.1	4	15.2	3.8
6	11.9	0.3	6	17.2	8.3
			8	18.2	9.6
			10	20.7	13.2



Safety precautions

Refer to Intro 13 for general precautions of the pneumatic system components.

 **WARNING**

- Confirm that leakage current is 1mA or less when operating the valve. Malfunctions could result from the leakage current and cause accidents.
- When continuously energizing the pilot valve for a long time, heat generated from the coil could cause burns or adversely affect peripheral devices. Contact CKD when energizing the pilot valve for a long time.
- When using a self-holding type (VSX-**D-...), the switching valve location is neutral when the pilot air supply is stopped and then restarted, including when first used after delivery. When restarting the pilot supply, issue a signal to the pilot valve or switch the valve manually.
- When using the DIN rail, if vibration or impact could affect the product, attach commercially available DIN rail brackets on the product, and securely fix it.
- Stop the supplied air and release the residual pressure before attaching or removing the unit from the manifold.
- When installing the unit on the manifold, insert the lock lever into the back and securely fix it with a screw. Vibration could cause the lock lever to dislocate and the unit to pop out.

Ejector system

VSY

VSH•VSU
VSB•VSC

 **CAUTION**

- Do not apply excessive tension or bending to the pilot valve or vacuum switch leads. Wires or connectors may break.
- Compressed air contains large amount of drainage (water, oxidized oil, tar, foreign matter, etc.) that may adversely affect performance. Dehumidify air with an after cooler or dryer and improve air quality.
- Do not use a lubricator.
- Rust in piping may result in operation faults. Install a 5µm or smaller filter preceding the supply port. Flush pipes before use and at an appropriate cycle.
- Avoid using this vacuum ejector in environments with corrosive or flammable gas. Do not use this unit for fluids.
- When replacing the cartridge joint at the supply (PS, PV) port, remove all foreign matter from the seal, and securely insert the set pin.
- When replacing the vacuum (V) port cartridge joint, confirm that window packing has not dropped off. Wipe off all foreign matter from the seal, and securely tighten the set screw with the specified tightening torque.
- When installing the unit on the manifold, check that the air supply (vacuum supply) and exhaust (air supply) port's O-rings have not fallen off and are not protruding.
- Select the piping (Supply port) diameter, piping length, and other components for the vacuum port so that a sufficient effective sectional area is ensured.
- When manifold type is selected, methods not moving all units simultaneously will cause the ejector exhaust in the moving ejector to flow into the unit's vacuum port. This can cause problems with exhaust, so contact CKD.

VSG

VSK
VSKM

VSJ
VSJM

VSX
VSXM

VSQ

VSZM

Precautions for using the manifold

■ Increasing the number of manifold stations may adversely affect performance or cause problems due to the causes below. Consult with CKD for details.

1. Drop in vacuum performance due to insufficient air supply.

Countermeasures: ① Check the air supply capacity, etc.

② Keep piping as short as possible.

③ Increase joint size.

④ If using single-end supply, supply from both ends of the manifold.

2. Drop in exhaust port capacity causing vacuum performance to drop or exhaust air to be discharged from another station's vacuum port. →The number of manifold stations depends on nozzle size and vacuum performance, etc. Check with a CKD sales Office.

Cause When using a silencer (open air), insufficient silencer capacity causes exhaust resistance to increase and performance to drop.

Countermeasures: ① Provide separate exhaust for each station. (Custom made)

② Avoid exhaust at walls.

③ Reduce the number of stations.

Cause When using a common exhaust, performance drops when piping resistance is large.

Countermeasures: ① Keep piping as short as possible.

② Increase exhaust joint size.

③ Provide separate exhaust for each station. (Custom made)

④ Reduce the number of stations.

How to use

1. Handling vacuum switch

(1) How to set pressure

① Energizing (check wiring and supply DC power.)

② Set the MODE changeover switch to the pressure setting mode (ME → S1 or S2, SW).

② -2, (only vacuum switch for analog output vacuum)

Turn the hysteresis setting trimmer (HYS) fully in the CCW direction to set hysteresis to a minimum.

③ Turn the pressure setting trimmer (S1 or S2, SW) with a small screwdriver, setting it to the required setting.

④ Set the MODE changeover switch to the pressure display mode (ME), apply pressure and confirm that the sensor actually operates.

• For vacuum switch with 2-point switch output:

Switch output 1 (S1): The operation (LED red) turns on when set pressure is exceeded.

Switch output 2 (S2): The operation (LED green) turns on when set pressure is exceeded.

• For vacuum switch for analog output vacuum:

Switch output (SW): The operation (LED red) turns on when set pressure is exceeded.

(2) Setting hysteresis

① The hysteresis is adjusted with the hysteresis setting trimmer (HYS).

② The hysteresis adjusting range is approximate 0 to 15% F.S. Hysteresis increases when the trimmer is turned to CW.

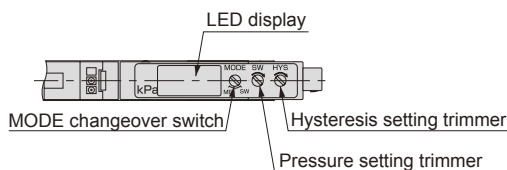
③ Checking hysteresis

Set the MODE switching switch to the pressure display mode (ME), and gradually increase and decrease the pressure near the set pressure. Read the values at which the operation indicator turns ON and OFF. The difference in displayed values is hysteresis.

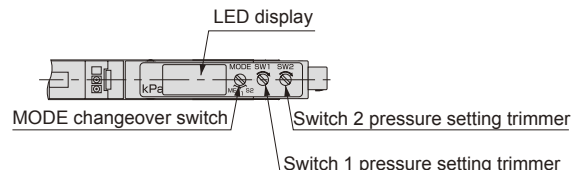
[Example of hysteresis adjustment]

• If pressure has a pulse and output is thin and intermittent, use large hysteresis.

• To set the tolerable range for pressure drops.



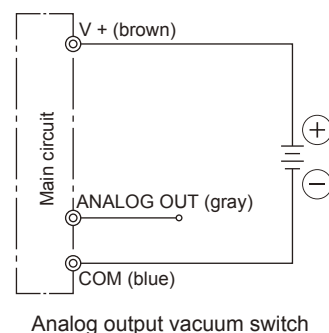
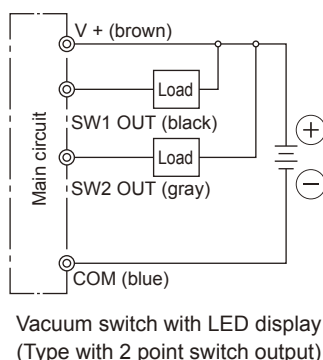
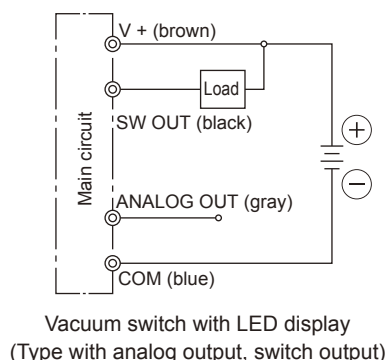
Vacuum switch with LED display
(Type with analog output, switch output)



Vacuum switch with LED display
(Type with 2 point switch output)

How to use

(3) Connection method



Ejector system

2. Cautions on vacuum switch

- ① Do not use this vacuum switch in fluids or in an atmosphere with corrosive substances. The switch could be damaged.
- ② Do not use wiring or applications that may cause noise (surge), etc., to be applied. The switch could be damaged.
- ③ Do not use this vacuum switch in an atmosphere containing fluids or flammable or explosive gasses. This device is not explosion-proof, so faults may occur.
- ④ Do not use this vacuum switch where it may be exposed to water, oil, or dust. This device is not drip-proof, so faults may occur.
- ⑤ Do not use this vacuum switch for applications that generate heat exceeding the working temperature range. The switch could be damaged.
- ⑥ Turn power off before wiring. Check the lead wire color during wiring, and check that the output terminal, power terminal, and COM terminal are not short-circuited. The switch may fail if these terminals are short-circuited.
- ⑦ Do not apply excessive tension or bend the connector cable excessively. Wires and connector section may break.
- ⑧ The performance will not change if a pressure of about 0.5 MPa is applied momentarily, but check that a pressure of 0.2 MPa or more is not constantly applied during vacuum break. Constant application of this pressure may damage the switch.
- ⑨ When setting pressure or hysteresis, use a small screwdriver, and gently turn the trimmer within its rotation range. Do not force it. The trimmer or PCB may be damaged if excessive force is applied during adjustment.
- ⑩ Use stabilized DC power.
- ⑪ Insert a surge voltage absorption circuit in the relay or solenoid valve, etc., connected to the output terminal or power terminal. Avoid uses in which current exceeds 80 mA.
- ⑫ Ground the FG terminal when using unit power, such as switching power.
- ⑬ Do not short-circuit the output terminal (black or gray lead) with other terminals.
- ⑭ Do not apply excessive external impact or force to the switch.

VSJ

VSH·VSU
VSB·VSC

VSG

VSK
VSKM

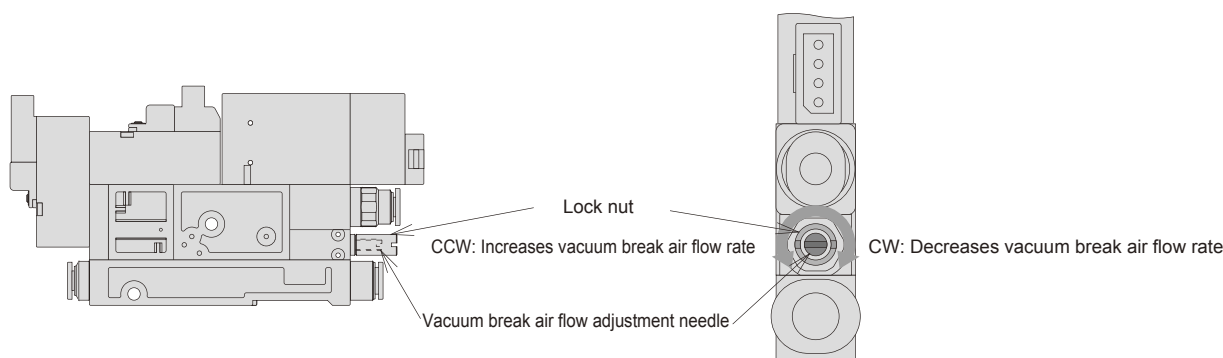
VSJ
VSJM

VSX
VSXM

3. Adjustment method with vacuum break air flow

- When the vacuum break air flow rate adjusting needle is turned right (CW), the flow rate will decrease, and when turned left (CCW), the flow rate will increase. After adjusting, securely tighten the lock nut with a tightening torque of 0.1 to 0.3 N·m.

* Use a flat-tip screwdriver when adjusting the vacuum break air flow rate.



VSQ

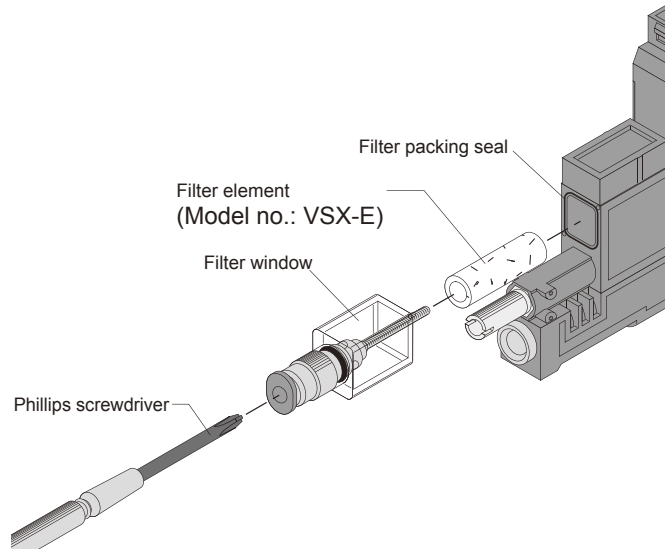
VSZM

How to use

4. Replacing the filter element

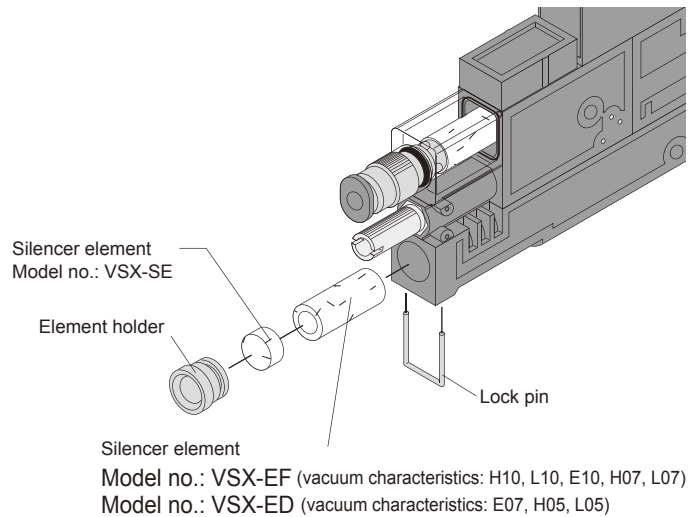
■ To replace the filter element, first remove the vacuum port piping. Loosen the screw in the joint (at the back of the tube insertion port) with a 2.5 mm diameter or smaller Phillips screwdriver (Note), and remove the vacuum port. Replace the filter element, confirm that the filter packing is attached, and install the filter element and filter window on the vacuum port. Securely tighten the vacuum port on the component with a tightening torque of 0.3 to 0.5N·m.

(Note) Check that the screwdriver does not interfere with the lock jaw. The tube tensile strength will drop if the lock jaw is scratched or deformed.

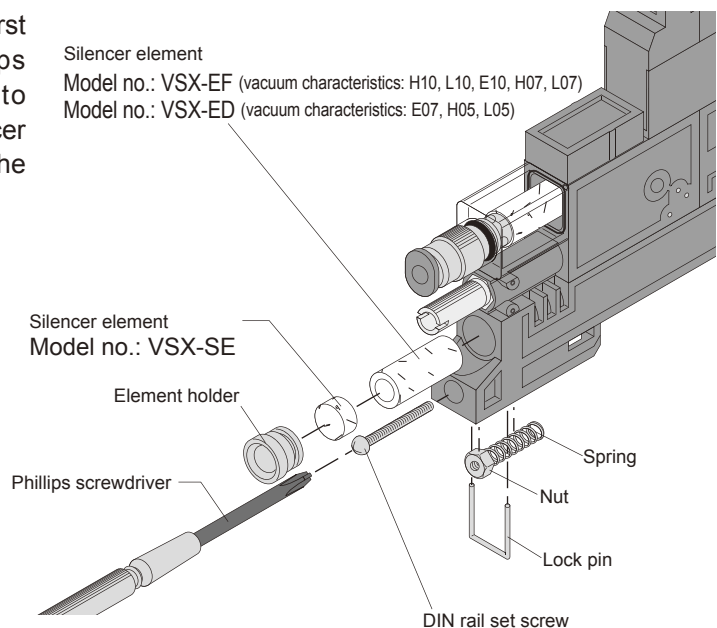


5. Replacing silencer element

■ To replace the directly installed silencer element, first remove the set pin with a flat-tip screwdriver. After removing and replacing the silencer element, securely insert the set pin.



■ To replace the DIN rail installed silencer element, first remove the DIN rail fixing screw with a Phillips screwdriver. Next, use a flat-tip screwdriver to remove the set pin. Remove and replace the silencer element, securely insert the set pin, and screw in the DIN rail fixing screw.



Ejector system

VSX

VSH·VSU
VSB·VSC

VSG

VSK
VSKM

VSJ
VSJM

VSX
VSXM

VSQ

VSZM

How to use

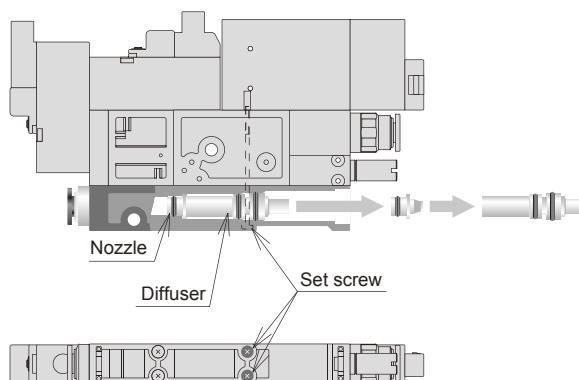
6. Removing and cleaning the nozzle and diffuser

- Remove the silencer element and fixing screws (see drawing below), and pull out the diffuser with a pair of radio pliers, etc. To prevent the nozzle from popping out, cover the exhaust port with a piece of cushioning material (i.e., sponge), and supply the vacuum generating air (Note 5). The air will force the nozzle out, so remove the cushioning material and remove the nozzle.

Remove all matter on the inner of the nozzle and diffuser and the seal with compressed air or by wiping it off (Note 6). Assemble the nozzle on the diffuser, and carefully set it on the component so that the nozzle does not drop off. Press the diffuser in so that the diffuser groove (see drawing below) and fixing screw holes are aligned, and tighten the fixing screws with a tightening torque of 0.25 to 0.35 N·m. See "Replacing the silencer element" for details on installing the silencer element.

(Note 5) <Warning> Do not face the nozzle outlet toward personnel while air is supplied to the product. The nozzle could pop out and cause injury.

(Note 6) Do not scratch the inner nozzle and diffuser or the seal. Performance could decrease.



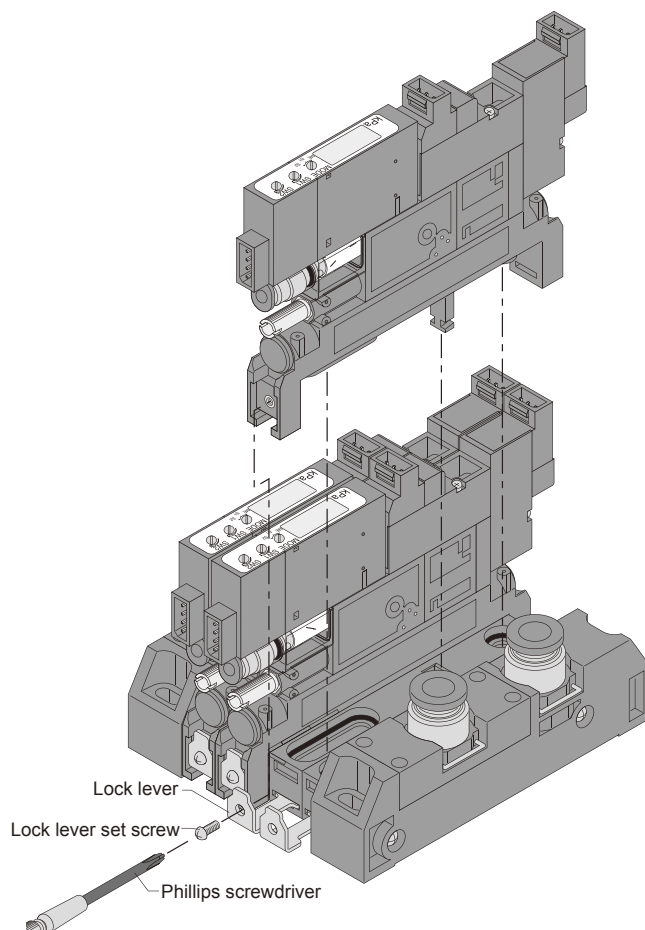
7. Replacing the unit with manifold

■ Removing the unit

- Stop the air supply, and exhaust any residual pressure.
- Turn the power OFF and disconnect the wiring.
- Remove the fixing screws with a Phillips screwdriver.
- Using a flat-tip screwdriver, pull the lock lever fully and remove the unit.

■ Installing the unit

- Check that the O-rings are attached to the supply port and exhaust port.
- Pull the lock lever fully toward the front, and install the unit.
- Press down on the unit from above, and securely fix the lock lever with the lock lever fixing screw.



Ejector system

VSY

VSH·VSU
VSB·VSC

VSG

VSK
VSKM

VSJ
VSJM

VSX
VSXM

VSQ

VSZM

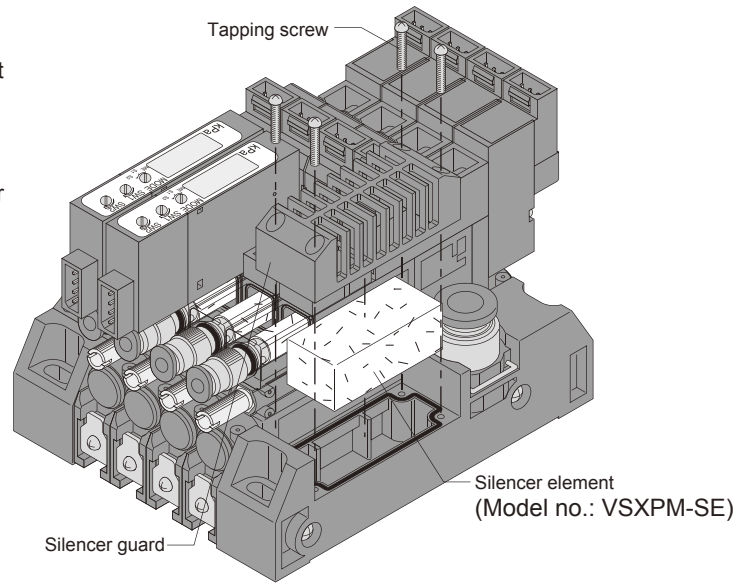
8. Replacing the silencer element for manifold

■ Removing the silencer element

- Remove the four tapping screws with a Phillips screwdriver.
- Remove the element cover, and replace the silencer element (type: VSXPM-SE).

■ Installing the silencer element

- Tighten the four tapping screws with a Phillips screwdriver (tightening torque: 0.4 to 0.5 N·m).



Ejector system

VSX

VSH·VSU
VSB·VSC

VSG

VSK
VSKM

VSJ
VSJM

VSX
VSXM

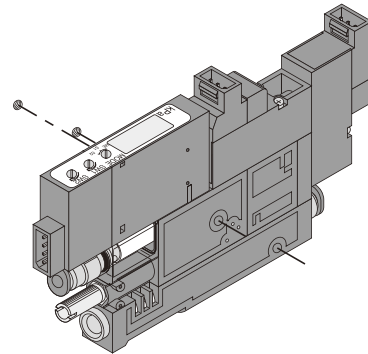
VSQ

VSZM

Fixing method

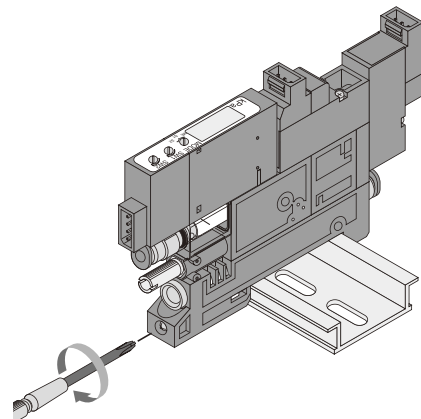
① Direct mount type

Fix with M3 screws using the fixing holes (2 holes) on the resin body. (Refer to dimensions for a pitch of a installation hole.)



② DIN rail installation type

Fit the product onto the DIN rail and tighten DIN rail fixing screws with a Phillips screwdriver. If vibration or impact could affect the product, attach commercially available DIN rail brackets on the product, and securely fix it.



Preparing the VSXM mixed manifold specification sheet

● Mixed manifold model No. (Example)

VSXM - ^AZ - ^B00 - ^CZ - ^DCX - ^E6 - ^F5 - ^G3 - ^H5 - ^IB

● Mixed manifold specifications (Example)

Ejector system	Vacuum ejector model no.					Layout position										Quantity
	A	B	C	D	I	1	2	3	4	5	6	7	8	9	10	
VSXM -	H	07	B	4	DW	○	○									2
VSXM -	E	07	B	6	DW			○		○						2
VSXM -	E	07	A	6	DA				○							1
VSXM -																
VSXM -																

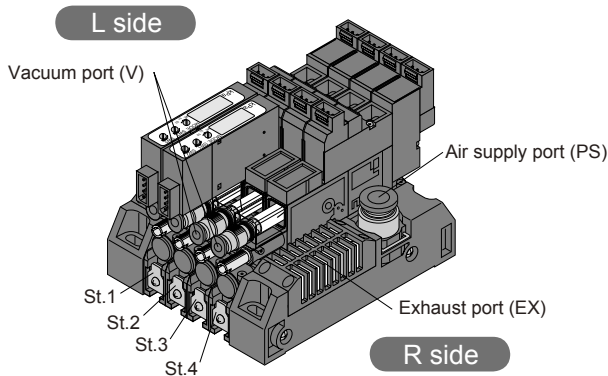
(Specifications when only output port size joints are mixed)

● Mixed manifold model No. (Example)

VSXM - ^AH - ^B07 - ^CB - ^DCX - ^E4 - ^F4 - ^G3 - ^H5 - ^IDW

● Mixed manifold specifications (Example)

VSG VSK VSJ VSX	Vacuum ejector model no.					Layout position										Quantity
	A	B	C	D	I	1	2	3	4	5	6	7	8	9	10	
VSXM -	H	07	B	4	DW	○	○									2
VSXM -	H	07	B	6	DW			○	○	○						3
VSXM -																
VSXM -																
VSXM -																



<Completing the form>

- Piping locations start from the vacuum port, and are set in order from the left.
- Indicate the total number of designated product models required at the far right in the table.

VSXM mix manifold specifications

Issue / /

Customer name

Contact.

Order No.

Contact _____ Quantity _____ Sets _____ Delivery / /

Slip No. _____ Order No. _____

Mixed manifold model No.

VSXM - ^A ^B ^C - ^D ^E ^F - ^G - ^H - ^I

A Vacuum characteristics Note 1, 2	
H	High vacuum/medium flow type
L	Medium vacuum/large flow rate type
E	High vacuum/small flow rate type
Z	For mixed specifications (Indicate details in specification sheet.)

B Nozzle diameter Note 1, 2	
05	ø0.5
07	ø0.7
10	ø1.0
00	For mixed specifications (Indicate details in specification sheet.)

C Valve type	
B	Normally closed type
D	Self hold type
Z	For mixed specifications (Indicate details in specification sheet.)

D Vacuum port (V)	
4	ø4 push-in joint
6	ø6 push-in joint
CX	For mixed joint (Indicate details in specification sheet.)

E Air supply port (PS)	
4	ø4 push-in joint
6	ø6 push-in joint
8	ø8 push-in joint
10	ø10 push-in joint

F Exhaust port (EX)	
S	Atmospheric release with silencer
6	ø6 push-in joint common exhaust
8	ø8 push-in joint common exhaust
10	ø10 push-in joint common exhaust

G Solenoid valve voltage	
1	100 VAC
3	24 VDC

H Station no.	
2 to 10	2 stations to 10 stations

I Vacuum switch specifications	
Blank	Without vacuum switch
DW	2-point NPN output with LED display
DA	NPN output 1 point + analog output with LED display
AO	Analog output
Z	For mixed specifications (Indicate details in specification sheet.)

⚠ Note on model no. selection

Note 1: A E and B 05 combination can not be selected.

Note 2: For A Z, only B 00 can be selected.
For B 00. Only A Z can be selected.

Mixed manifold specification sheet

Vacuum ejector model no. A B C D I	Layout position										Quantity
	1	2	3	4	5	6	7	8	9	10	
VSXM - ^A ^B ^C - ^D ^I											
VSXM - ^A ^B ^C - ^D ^I											
VSXM - ^A ^B ^C - ^D ^I											
VSXM - ^A ^B ^C - ^D ^I											
VSXM - ^A ^B ^C - ^D ^I											

Ejector system

VSX

VSH•VSU
VSB•VSC

VSG

VSK
VSKM

VSJ
VSJM

VSX
VSXM

VSQ

VSZM