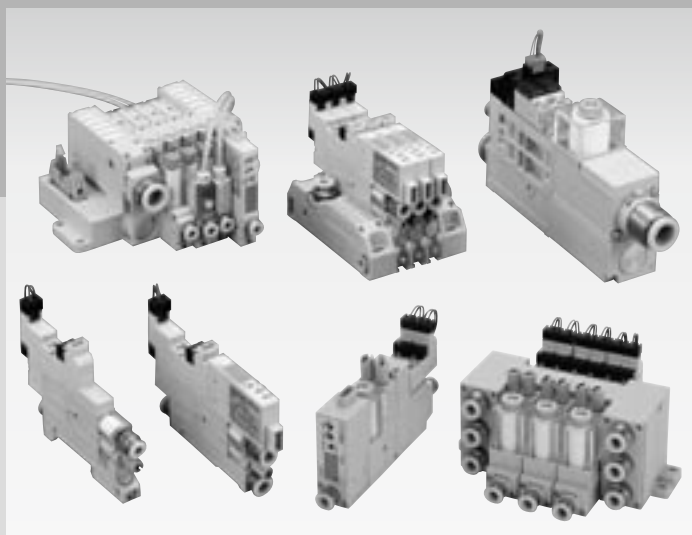


# Vacuum pump system type VS\*P

■ Vacuum component



## CONTENTS

Series variation	166
● 20 mm width universal type (VSJP/VSJPM)	168
● 10.5 mm width universal type (VSXP/VXPM)	184
● 31.5 mm width discrete type (VSQP)	214
● 11 mm pitch manifold dedicated type (VSZPM)	226

Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM

●: Provided as standard ○: Option

Model	Series	Model no.	Piping method			Components						Nozzle diameter $\phi$ (1/10mm)						Page
			Discrete	Manifold		Vacuum control valve	Valve for break	Vacuum switch	Vacuum filter	Silencer	Check valve	05	07	10	12	15	20	
				Individual wiring	Reduced wiring													
Vacuum pump system type Vacuum changeover unit	<b>VSJP/VSJPM Series</b> 20 mm width universal type unit • Enable to control air flow and pressure for vacuum break. • The vacuum break time can be shortened with the vacuum break circuit relief function. • Self hold type is standard for vacuum solenoid valve.	VSJP	●			●	●	○	●								Vacuum valve effective area 3.5mm <sup>2</sup> ( $\phi$ 4), 5mm <sup>2</sup> ( $\phi$ 6)	168
		VSJPM		●		●	●	○	●									
	<b>VSXP/VSXPM Series</b> 10.5 mm width universal type unit • Compact and slim vacuum unit. • Either direct fixing or DIN rail installation is possible. • High cycles are possible with 3-way vacuum valves (optional).	VSXP	●			●	●	○	●								Vacuum valve effective area 2 way valve specifications: 3.5mm <sup>2</sup> ( $\phi$ 4), 4.5mm <sup>2</sup> ( $\phi$ 6) 3 way valve specifications: 3.0mm <sup>2</sup> ( $\phi$ 4), 3.6mm <sup>2</sup> ( $\phi$ 6)	184
		VSXPM		●		●	●	○	●									
	<b>VSQP Series</b> 31.5 mm width dedicated unit • Large vacuum units are optimum to control high flow. • Normal open and normal close are used as standards for vacuum solenoid valve.	VSQP	●			●	●	○	●								Vacuum valve effective area 16.5mm <sup>2</sup>	214
<b>VSZPM Series</b> 11 mm pitch manifold dedicated unit • Wire-saving vacuum unit for manifold. • Air consumption is reduced by suppressing valve energy consumption to 0.55 W. • Compatible with a wide range of applications and broad vacuum sensor variations.	VSZPM			●	●	●	○	●								Vacuum valve effective area 4.5mm <sup>2</sup>	226	

Vacuum pump system

Vacuum pump system

VSJP  
VSJPM

VSJP  
VSJPM

VSXP  
VSXPM

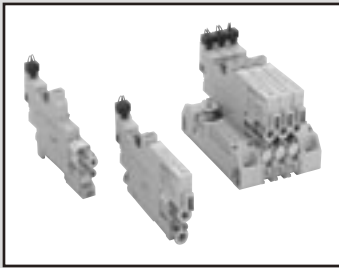
VSXP  
VSXPM

VSQP

VSQP

VSZPM

VSZPM



Realizing high-cycle lightweight compact vacuum changeover unit

# VSXP Series



## Features

Vacuum pump system

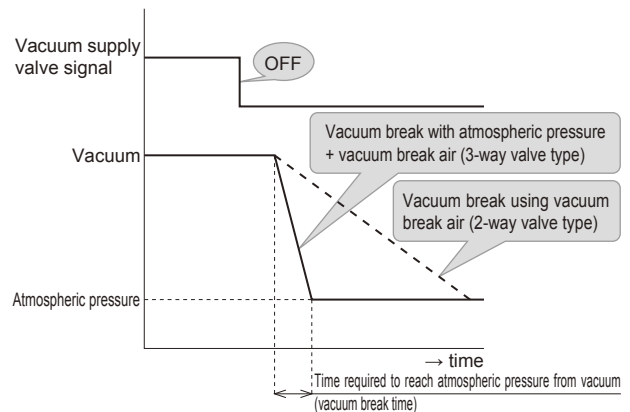
VSJP  
VSJPM

VSXP  
VSXPM

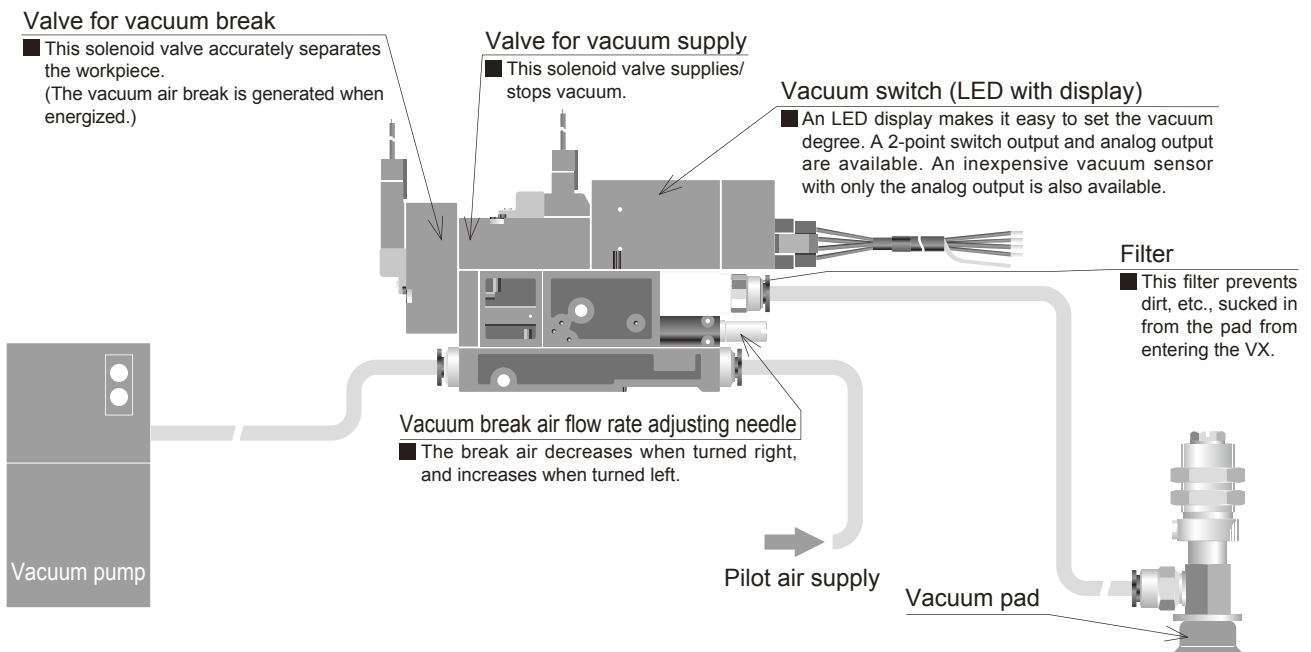
VSQP

VSZPM

- 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.
- Vacuum switch with highly visible LED display and inexpensive analog output vacuum switch are available. 2 types vacuum switch are available; with 2-point switch output, with analog output. Appropriate LED display is selected to various applications or budgets. Connector wiring facilitates wiring layout.
- The vacuum pump's compatible 3-way valve specifications use a 3-way valve for the main vacuum supply valve. This greatly reduces the time required to reach atmosphere from a vacuum state (vacuum break time). The 2-way valve (VSXP-D) maintains the vacuum immediately after the main valve is turned OFF, so vacuum break is done only with the vacuum air break. The 3-way valve specifications (VSXP-T) send air into the vacuum circuit when the main valve turns OFF, so the vacuum is broken with atmospheric pressure and vacuum air break.)
- Up to ten stations are used with the manifold piping specifications.



### Example of using ejectors compatible



### Specifications

Descriptions	VSXP
Working fluid	Air
Working pressure range MPa	0.3 to 0.7
Ambient temperature range °C	5 to 50
Working vacuum pressure range kPa	0 to -101

### Solenoid valve specifications

#### ● Pilot valve

Descriptions	Valve for vacuum supply		Valve for vacuum break	
	Actuation	Direct operation		
Valve structure	Rubber sealant, poppet valve			
Rated voltage	24 VDC	100 VAC	24 VDC	100 VAC
Allowable 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
Power consumption	1.2W (with LED)	1.5VA (with LED)	1.2W (with LED)	1.5VA (with LED)
Manual override	Push type non-locking type			
Operating indication	During coil exciting: Red LED ON			
Electric connection	Connector (cable long: 500 mm)			
	Red: 24 VDC Black: COM	Blue	Red: 24 VDC Black: COM	Blue

Vacuum pump system

VSJP  
VSJPM

#### ● Switching valve 2 way valve specifications VSXP-D

Descriptions	Valve for vacuum supply
Actuation	Air pressure operation using pilot valve
Valve structure	Rubber sealant, poppet valve
Withstanding pressure	1.05MPa
Valve type	Normally closed
Lubrication	Not required
Effective sectional area	Air supply port size ø4: 3.5mm <sup>2</sup>
	Air supply port size ø6: 4.5mm <sup>2</sup>

#### ● Switching valve 3 way valve specifications VSXP-T

Descriptions	Vacuum generator valve
Actuation	Air pressure operation using pilot valve
Valve structure	Rubber sealant, poppet valve
Withstanding pressure	1.05MPa
Valve type	Normally closed
Lubrication	Not required
Effective sectional area	Vacuum supply port size ø4: 3.0mm <sup>2</sup>
	Vacuum supply port size ø6: 3.6mm <sup>2</sup>

VSXP  
VSXPM

VSQP

VSZPM

## Vacuum switch specifications

Descriptions	Vacuum switch with LED display		Vacuum switch
	With 2 point switch output (-DW)	With analog output (-DA)	Only analog output (-A0)
Default set value	-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)		
Operating temperature range	0 to 50°C (no freezing)		
Operation 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		
Pressure setting point	2	1	-
Operation precision	±3%F.S. max. (at Ta = 25°C)		-
Hysteresis	Fixing (2% F.S. or less)	Variable (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 and over)	
	LIN/HYS	±0.5% F.S. max.	±0.5% F.S. max.
Indicator	0 to -99kPa (2 digit red LED display)		-
Number of displays	Approx. 4 times/sec.		-
Display precision	±3%F.S. ±2digit		-
Resolution	1digit		-
Operating indication	SW1: red LED lighting if setting pressure or more	Red LED lighting if setting pressure or more	-
	SW2: green LED lighting if setting pressure or more		
Function	1. MODE switchover switch (ME, S1 or S2)	1. MODE switchover 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 (0 to 15% F.S.)	-

## Vacuum break specifications

### ● 2 way valve specifications VSXP-D

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

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

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

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

### ● 3 way valve specifications VSXP-T

Valve type	Break air flow
Normally closed	0 to 3.5ℓ/min. (ANR)

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

Note 2: The break air 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 <sup>2</sup>
Replacement filter element model no.	VSX-E

### Weight

● Discrete type

Model no.	Unit descriptions	Weight (g)
VSXP-D***-D*	Vacuum switching unit 2 way valve specifications (vacuum pressure switch with LED display)	85
VSXP-D***-A0	Vacuum switching unit 2 way valve specifications (analog output vacuum pressure switch)	82
VSXP-D***-	Vacuum switching unit 2 way valve specifications (without vacuum pressure switch)	75
VSXP-T***-D*	Vacuum switching unit 3 way valve specifications (vacuum pressure switch with LED display)	88
VSXP-T***-A0	Vacuum switching unit 3 way valve specifications (analog output vacuum pressure switch)	85
VSXP-T***-	Vacuum switching unit 3 way valve specifications (without vacuum pressure switch)	78

Note 1: DIN rail mounting type is heavier of approximately 5kg than the weight above.

● Manifold type

Model no.	Incorporated manifold unit descriptions	Weight (g)
VSXPM-D***-D*-2	Vacuum switching unit 2 way valve specifications vacuum switch with LED display 2 station manifold	340
VSXPM-T***-D*-2	Vacuum switching unit 3 way valve specifications vacuum switch with LED display 2 station manifold	350

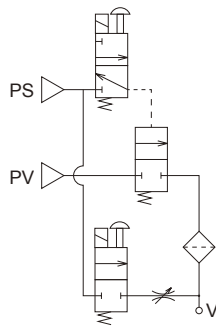
Note 1: The weight increases by 95g with each additional station.

Note 1: The weight increases by 100g with each additional station.

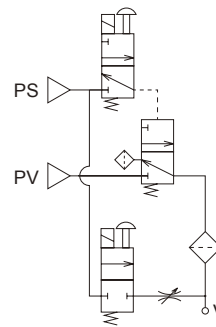
Note 2: The above weights are for the with vacuum switch with LED display. The type with analog output vacuum switch (vacuum switch with no display) is 3g/station lighter than the above weights.

### Circuit diagram

● Normally closed type 2 way valve specifications



● Normally closed type 3 way valve specifications



Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM

## How to order (discrete type)

● 10.5mm width universal type discrete vacuum changeover unit

**VSXP - D 6 6 6 - 4 - DW - D**

**A** Valve type

**B** Vacuum port (V)

**C** Air supply port (PS)

**D** Vacuum supply port (PV)

**E** Solenoid valve voltage

**F** Vacuum switch specifications

**G** How to install the product

Symbol	Descriptions
<b>A Valve type</b>	
<b>D</b>	2 way valve specifications
<b>T</b>	3 way valve specifications
<b>B Vacuum port (V)</b>	
<b>4</b>	ø4 push-in joint
<b>6</b>	ø6 push-in joint
<b>C Air supply port (PS)</b>	
<b>4</b>	ø4 push-in joint
<b>6</b>	ø6 push-in joint
<b>D Vacuum supply port (PV)</b>	
<b>4</b>	ø4 push-in joint
<b>6</b>	ø6 push-in joint
<b>E Solenoid valve voltage</b>	
<b>1</b>	100 VAC
<b>3</b>	24 VDC
<b>F Vacuum switch specifications</b>	
<b>Blank</b>	Without vacuum switch
<b>DW</b>	2-point NPN output with LED display
<b>DA</b>	1-point NPN output + analog output with LED display
<b>AO</b>	Analog output
<b>G How to install the product</b>	
<b>D</b>	DIN rail installation type
<b>Blank</b>	Direct mount type

Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM

## How to order (manifold type)

- 10.5mm width universal type changeover unit manifold type

**VSXPM - T 6 10 10 - 3 - 10 - DW**

- 10.5mm width universal type changeover unit manifold type, discrete for manifold

**VSXPM - T 6 ————— 3 ————— DW**

- 10.5mm width universal type changeover unit manifold type, manifold only

**VSXPM ————— 10 10 ————— 10**

Ⓐ Valve type

Ⓑ Vacuum port (V)

Ⓒ Air supply port (PS)

Ⓓ Vacuum supply port (PV)

Ⓔ Solenoid valve voltage

Ⓕ Number of manifold stations

Ⓖ Vacuum switch specifications

Type		
Manifold	Discrete for manifold	Only manifold
●	●	
●	●	
●		●

Symbol	Descriptions	Manifold	Discrete for manifold	Only manifold
<b>Ⓐ Valve type Note 1</b>				
D	2 way valve specifications	●	●	
T	3 way valve specifications	●	●	
Z	For mix specifications (indicate details in specification sheet)	●		
<b>Ⓑ Vacuum port (V) Note 1</b>				
4	ø4 push-in joint	●	●	
6	ø6 push-in joint	●	●	
CX	For mix joint (indicate details in specification sheet)	●		
<b>Ⓒ Air supply port (PS)</b>				
4	ø4 push-in joint	●		●
6	ø6 push-in joint	●		●
8	ø8 push-in joint	●		●
10	ø10 push-in joint	●		●
<b>Ⓓ Vacuum supply port (PV)</b>				
4	ø4 push-in joint	●		●
6	ø6 push-in joint	●		●
8	ø8 push-in joint	●		●
10	ø10 push-in joint	●		●
<b>Ⓔ Solenoid valve voltage</b>				
1	100 VAC	●	●	
3	24 VDC	●	●	
<b>Ⓕ Number of manifold stations</b>				
2	2 stations	●		●
to	to			
10	10 stations			
<b>Ⓖ Vacuum switch specifications Note 1</b>				
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 mix specifications (indicate details in specification sheet)	●		

Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM

### ⚠ Note on model no. selection

Note 1: Indicate "Mixed manifold specifications" when selecting mixed specifications. Refer to page 212 for details.

- Model no.

· Filter element

**VSX-E**

· Filter element for valve

**VSXP-E**

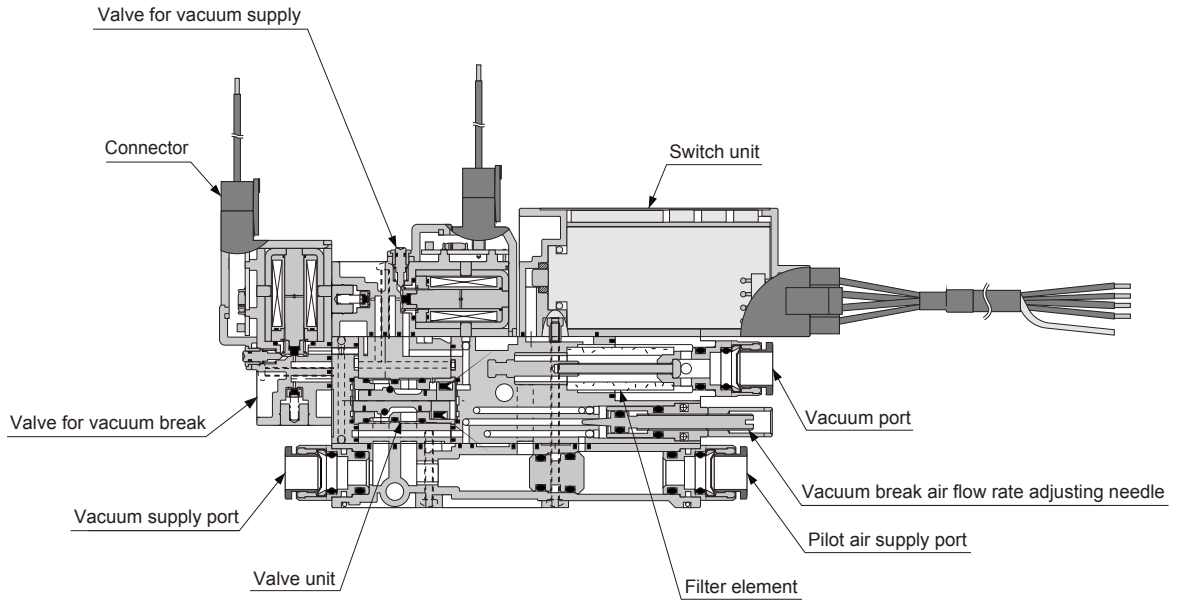


## Internal structure drawing (discrete type)

### ● 2 way valve specifications VSXP-D

Example) VSXP-D\*\*\*-\*

Type with vacuum switch



Vacuum pump system

VSJP  
VSJPM

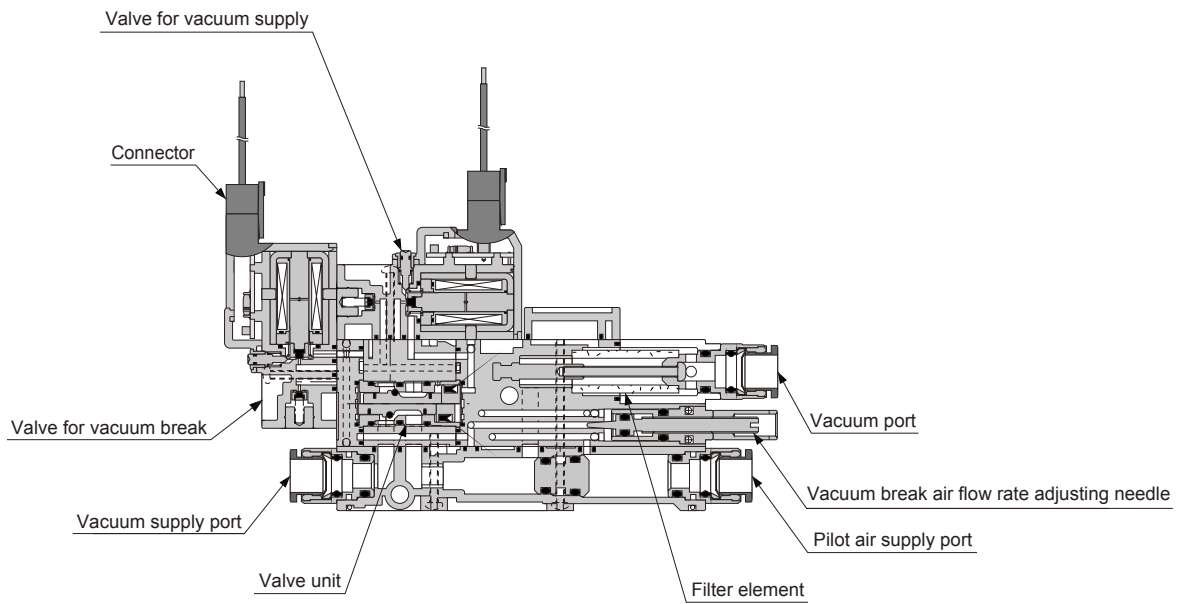
VSXP  
VSXPM

VSQP

VSZPM

Example) VSXP-D\*\*\*-\*

Type without vacuum switch

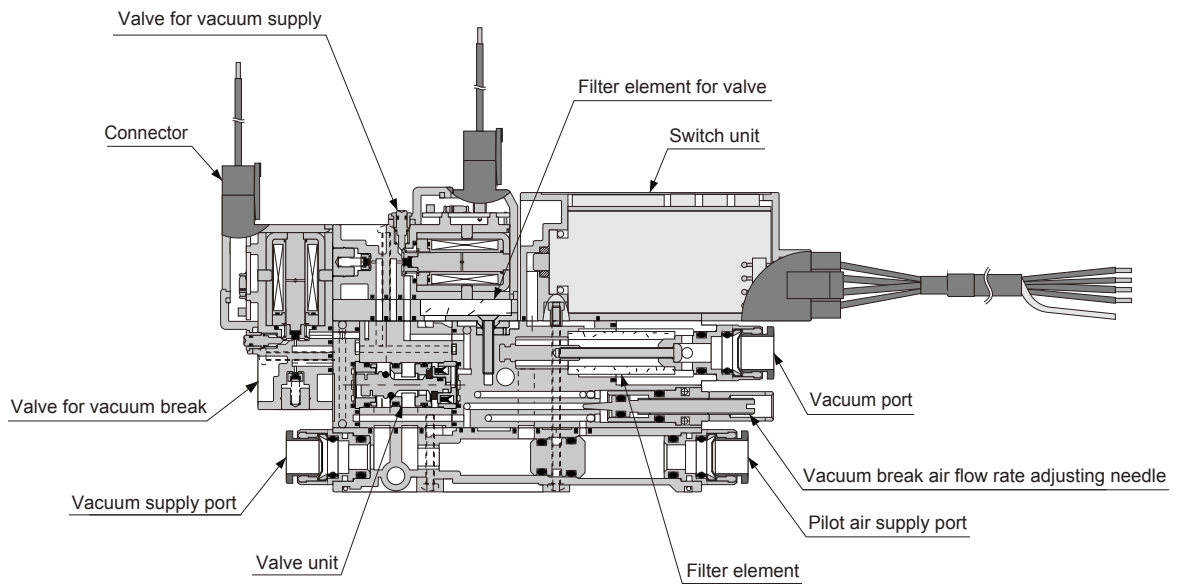


Internal structure drawing (discrete type)

● 3 way valve specifications VSXP-T

Example) VSXP-T\*\*\*\_\*\_\*

Type with vacuum switch



Vacuum pump system

VSJP  
VSJPM

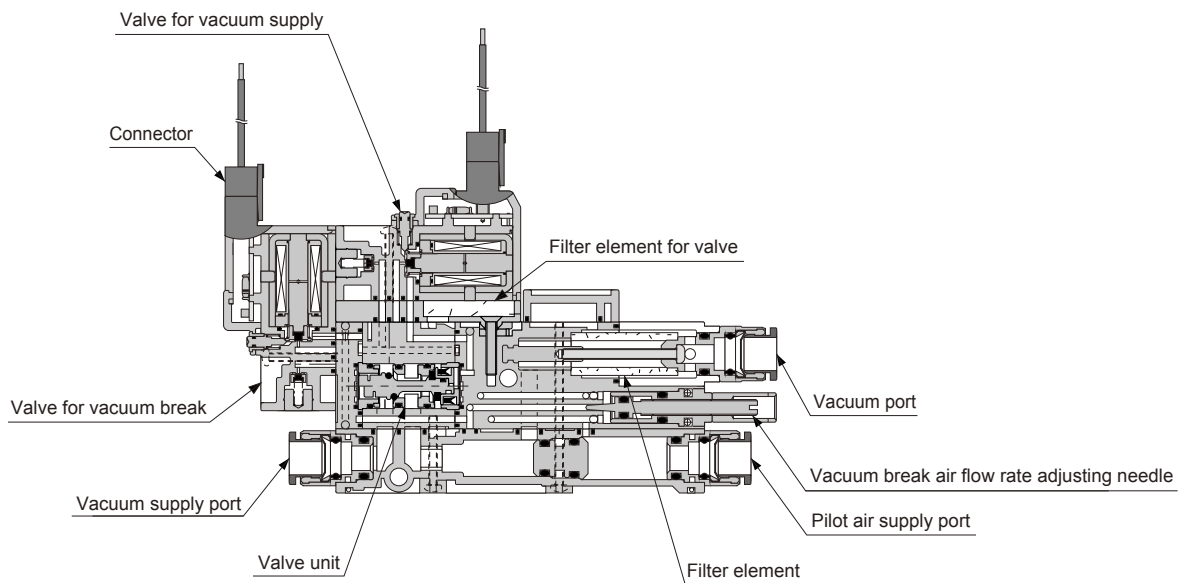
VSXP  
VSXPM

VSQP

VSZPM

Example) VSXP-T\*\*\*\_\*\_\*

Type without vacuum switch

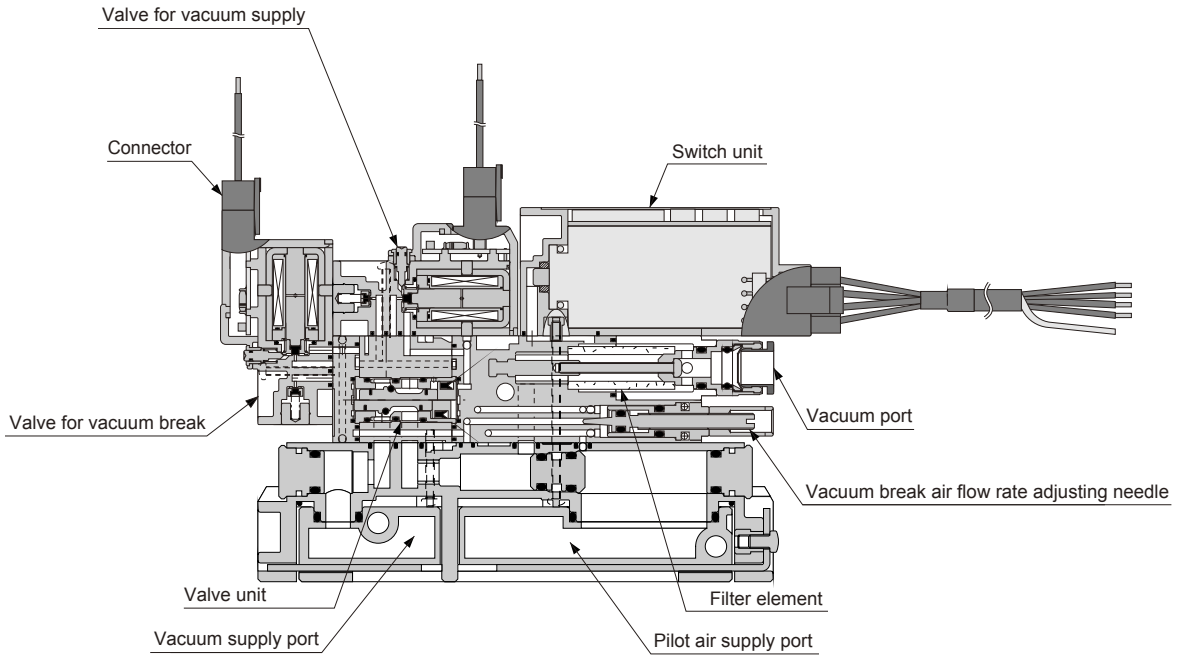


## Internal structure drawing (manifold type)

### ● 2 way valve specifications VSXPM-D

Example) VSXPM-D\*\*\*\_\*\_\*\_\*

Type with vacuum switch



Vacuum pump system

VSJP  
VSJPM

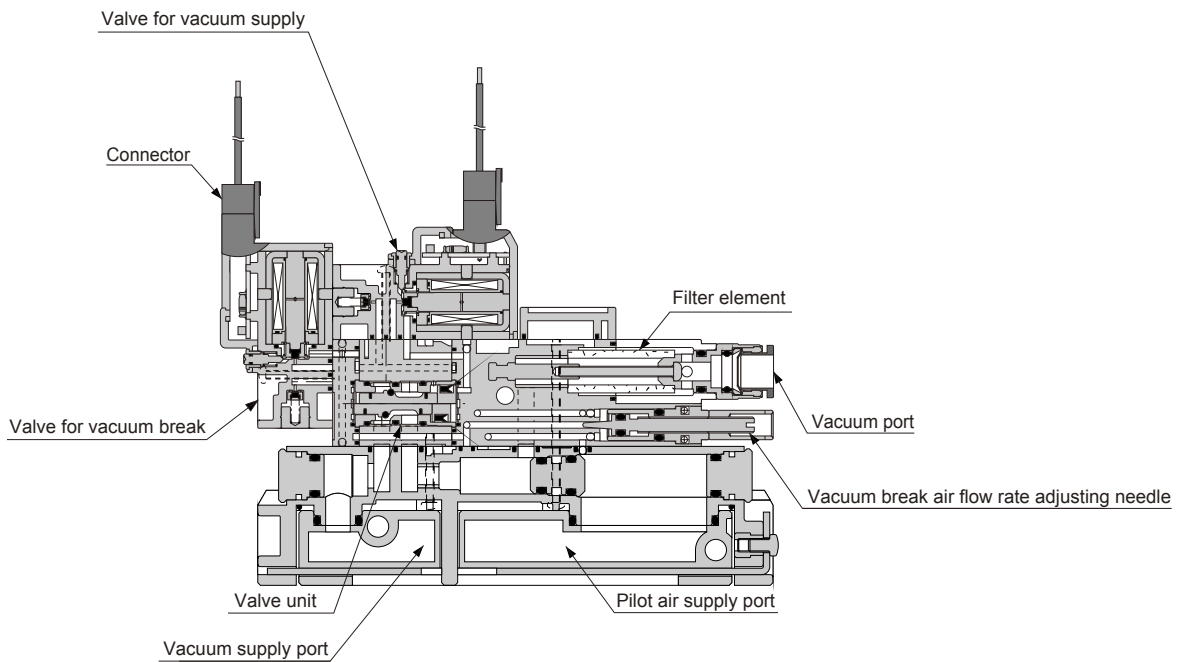
VSXP  
VSXPM

VSQP

VSZPM

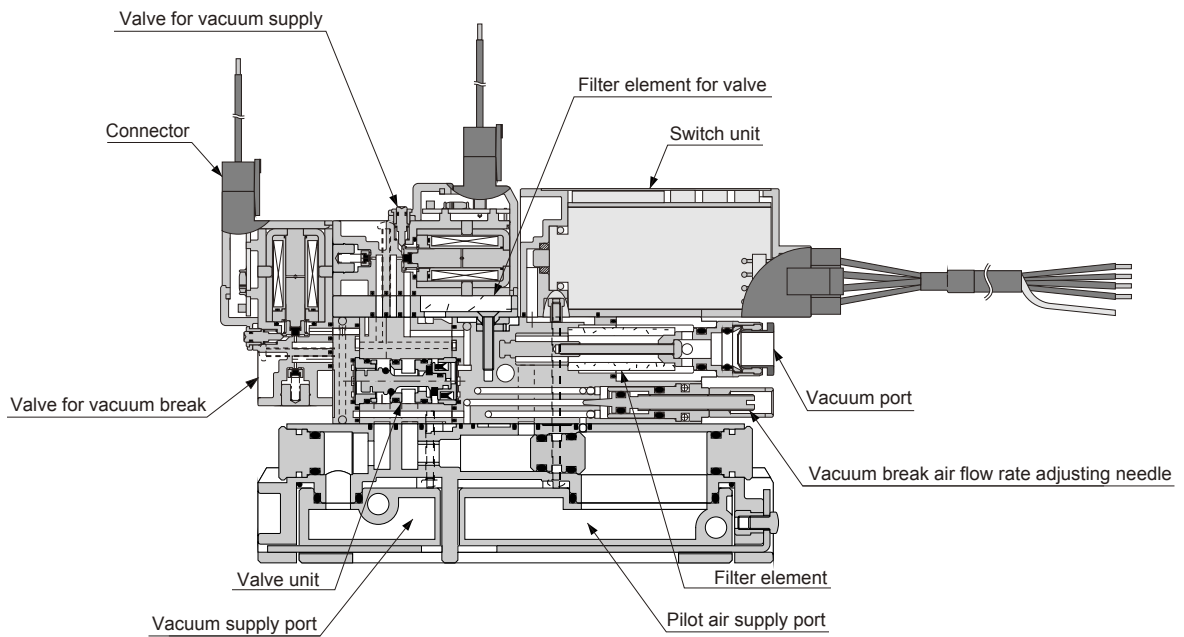
Example) VSXPM-D\*\*\*\_\*\_\*\_\*

Type without vacuum switch



Internal structure drawing (manifold type)

- 3 way valve specifications VSXPM-T  
Example) VSXPM-T\*\*\*\_\*\_\*\_\*  
Type with vacuum switch



Vacuum pump system

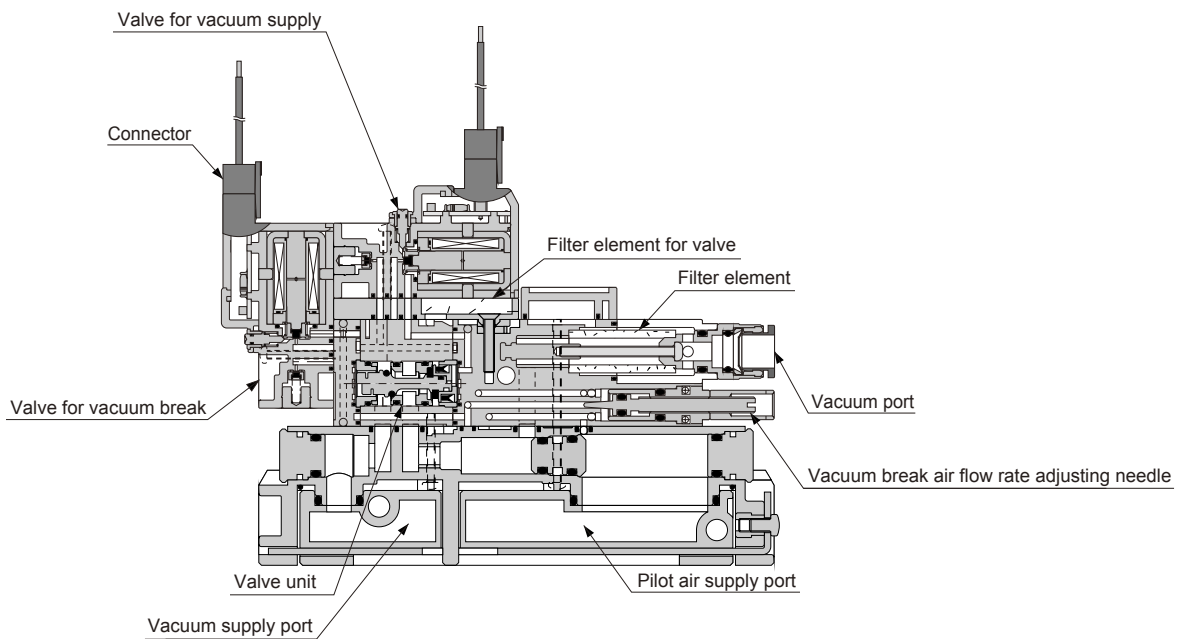
VSJP  
VSJPM

VSXP  
VSXPM

VSQP

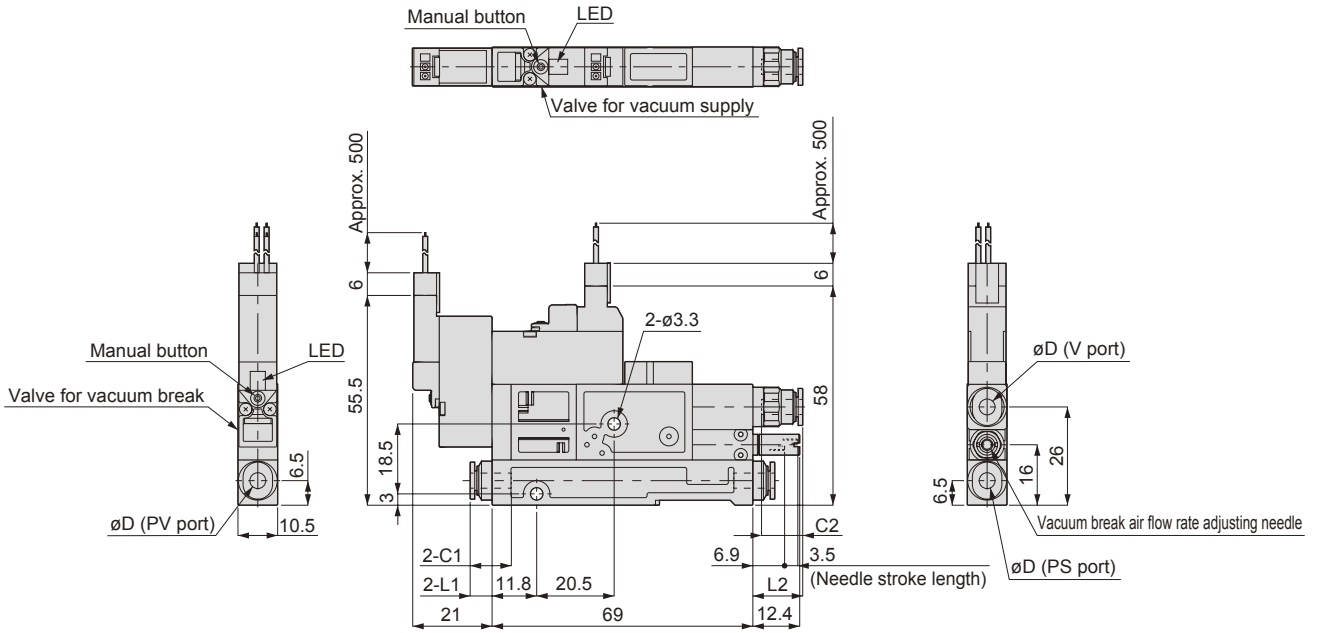
VSZPM

- Example) VSXPM-T\*\*\*\_\*\_\*\_\*  
Type without vacuum switch



## Dimensions (discrete type, 2 way valve specifications, without vacuum switch)

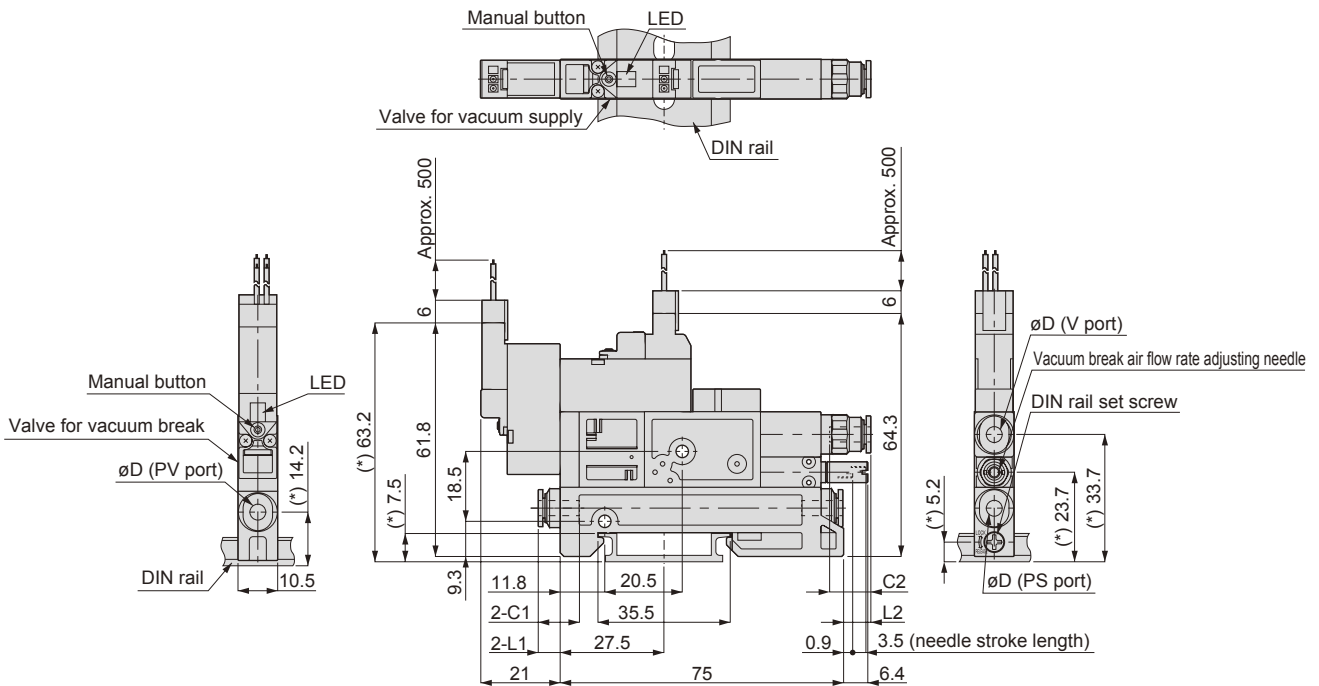
### ● Direct mount type



Unit: mm

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

### ● DIN rail installation type



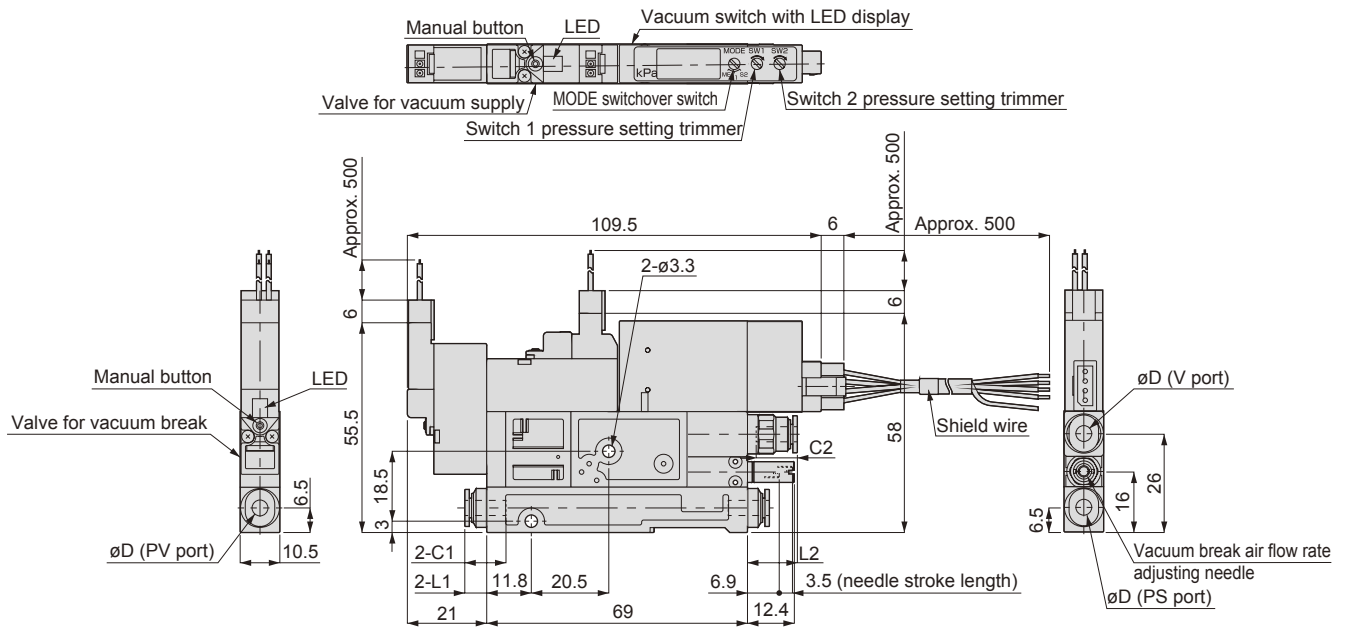
Note) The dimensions marked with an asterisk (\*) apply for the 7.5mm DIN rail height.

Unit: mm

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

Dimensions (discrete type, 2 way valve specifications, with vacuum switch with LED display/2 point switch output)

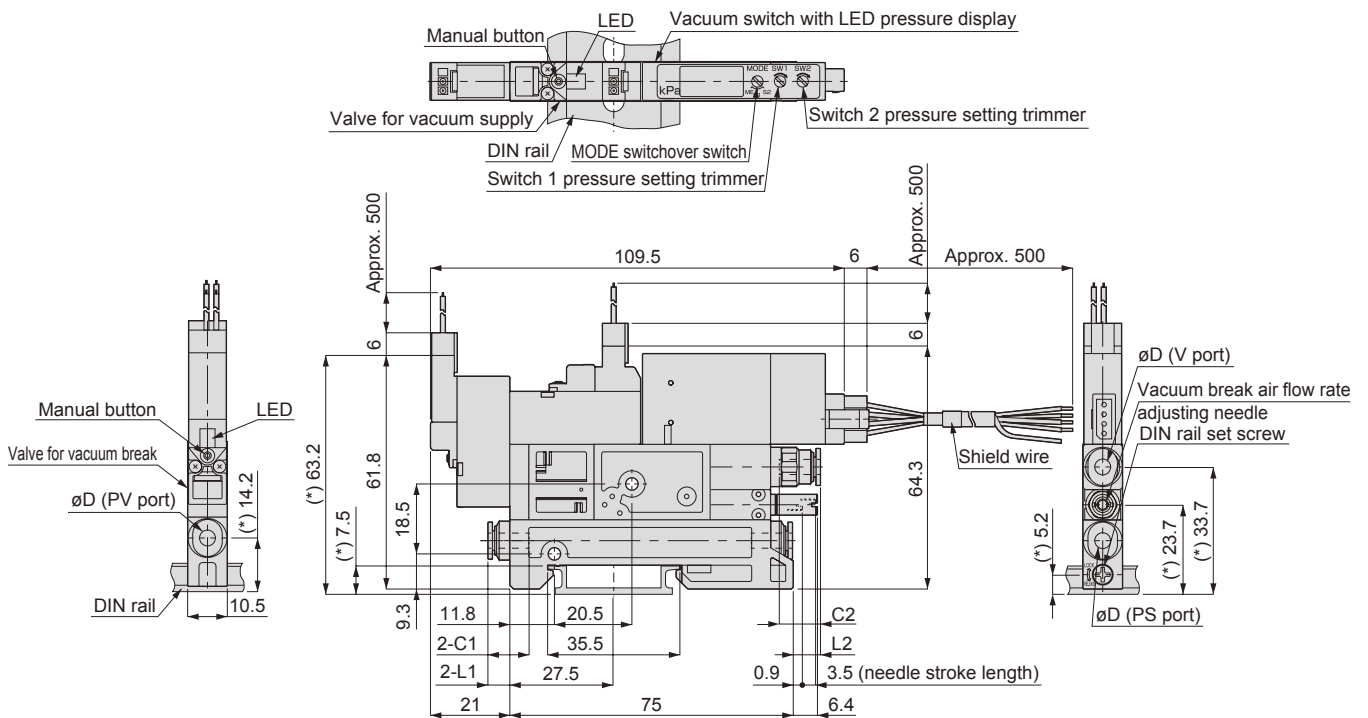
### ● Direct mount type



Unit: mm

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

Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM

## Dimensions (discrete type, 2 way valve specifications, with vacuum switch/switch output, analog output with LED display)

### ● Direct mount type

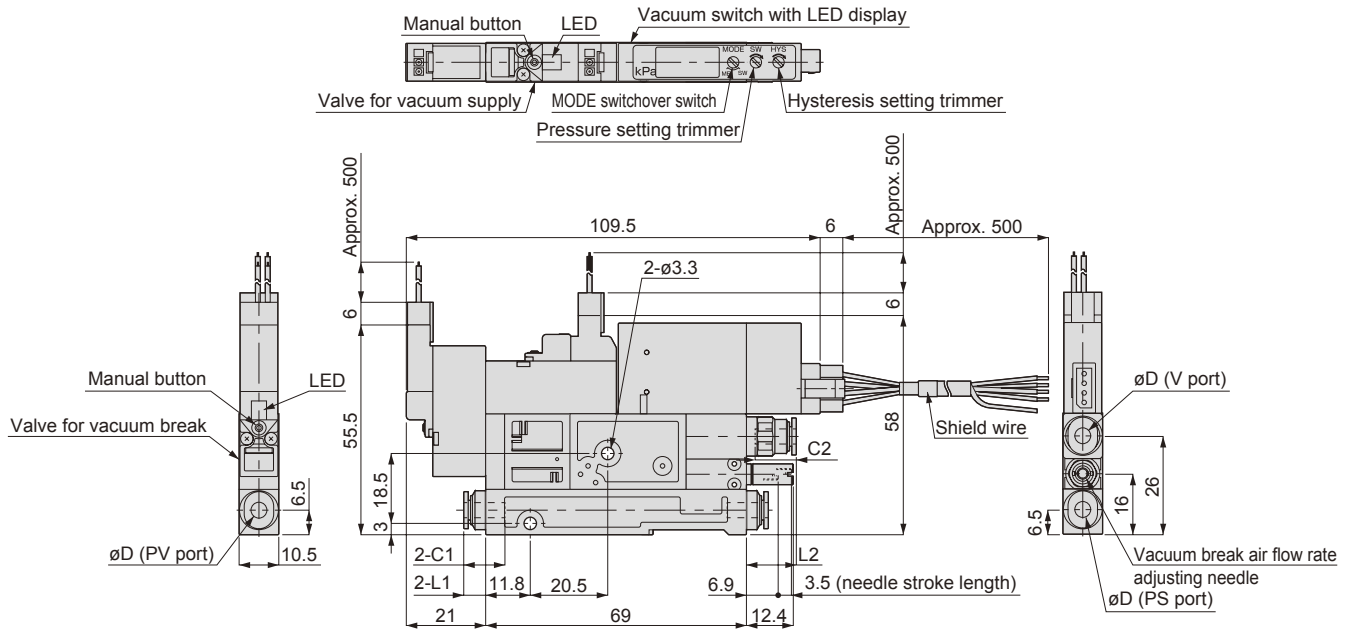
Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

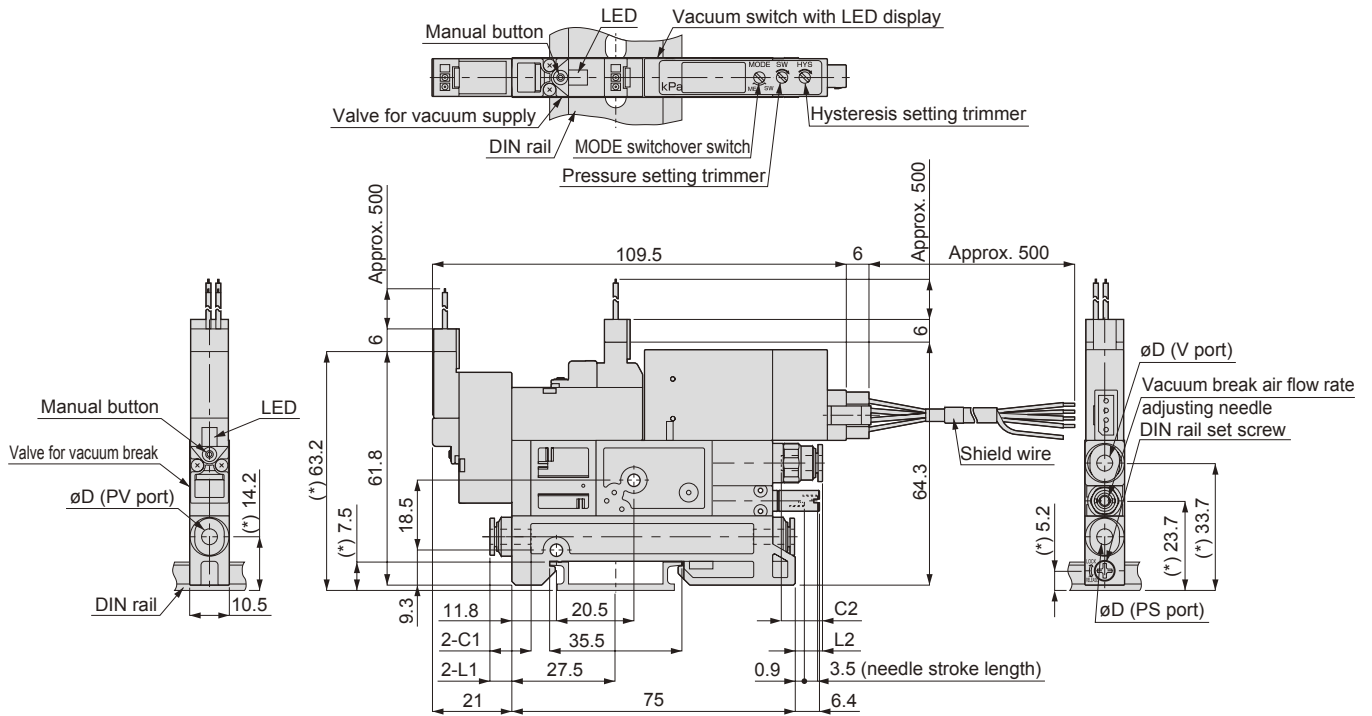
VSZPM



Unit: mm

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

### ● DIN rail installation type



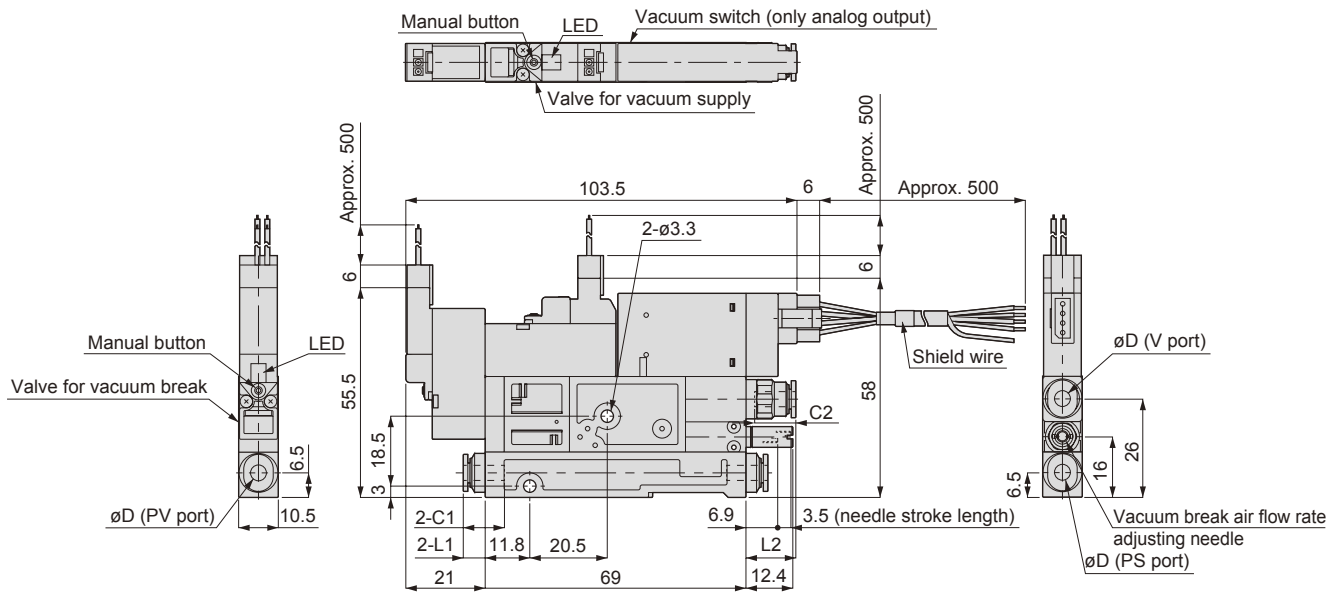
Note) The dimensions marked with an asterisk (\*) apply for the 7.5mm DIN rail height.

Unit: mm

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

## Dimensions (discrete type, 2 way valve specifications, with analog output vacuum witch)

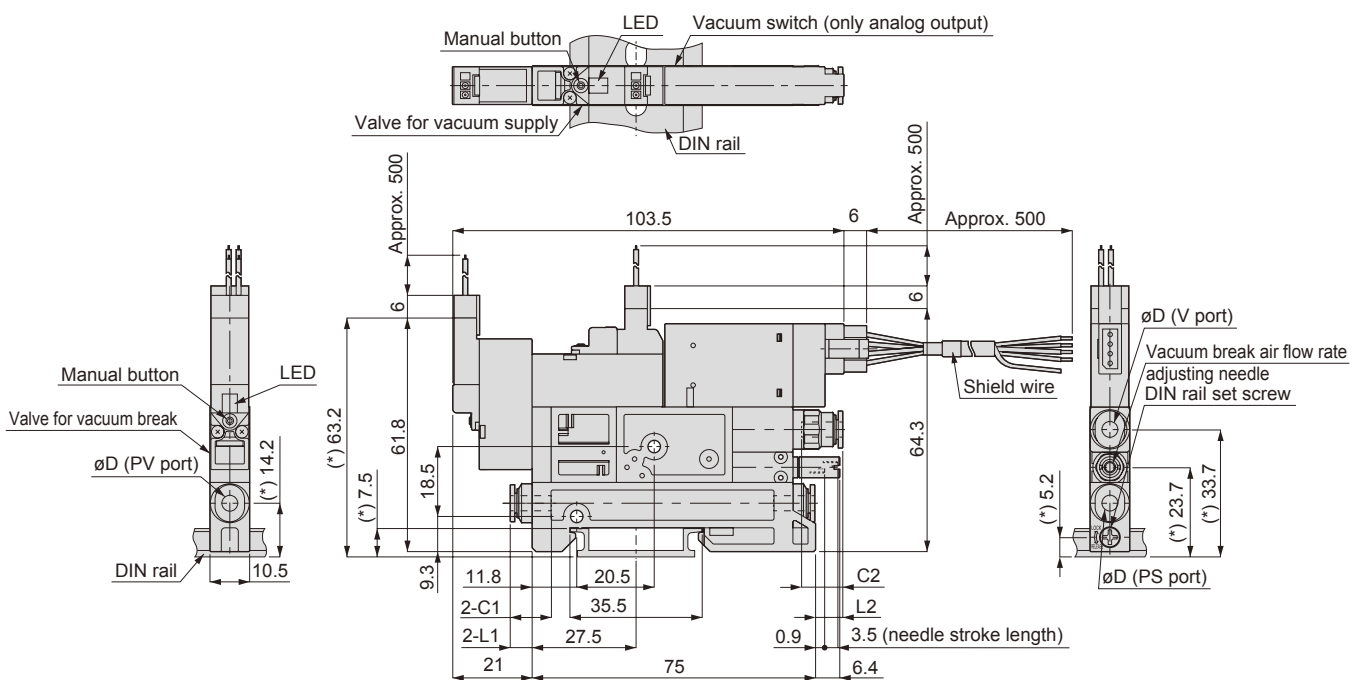
### ● Direct mount type



Unit: mm

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

Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

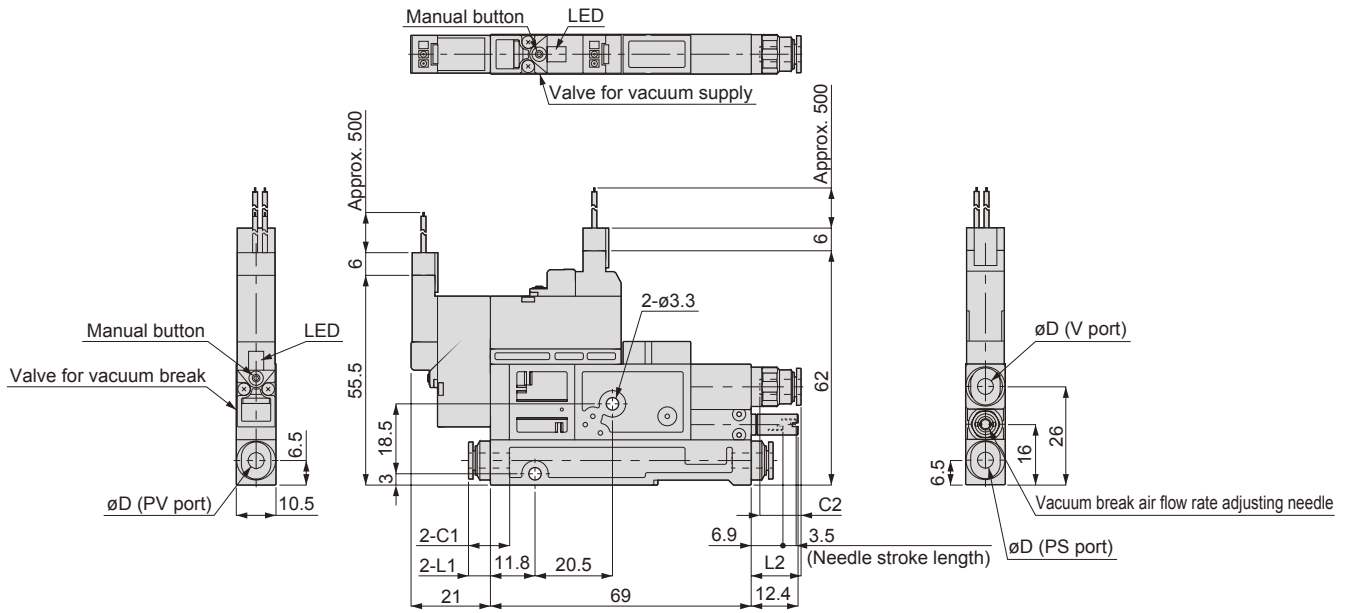
VSQP

VSZPM



## Dimensions (discrete type, 3 way valve specifications, without vacuum switch)

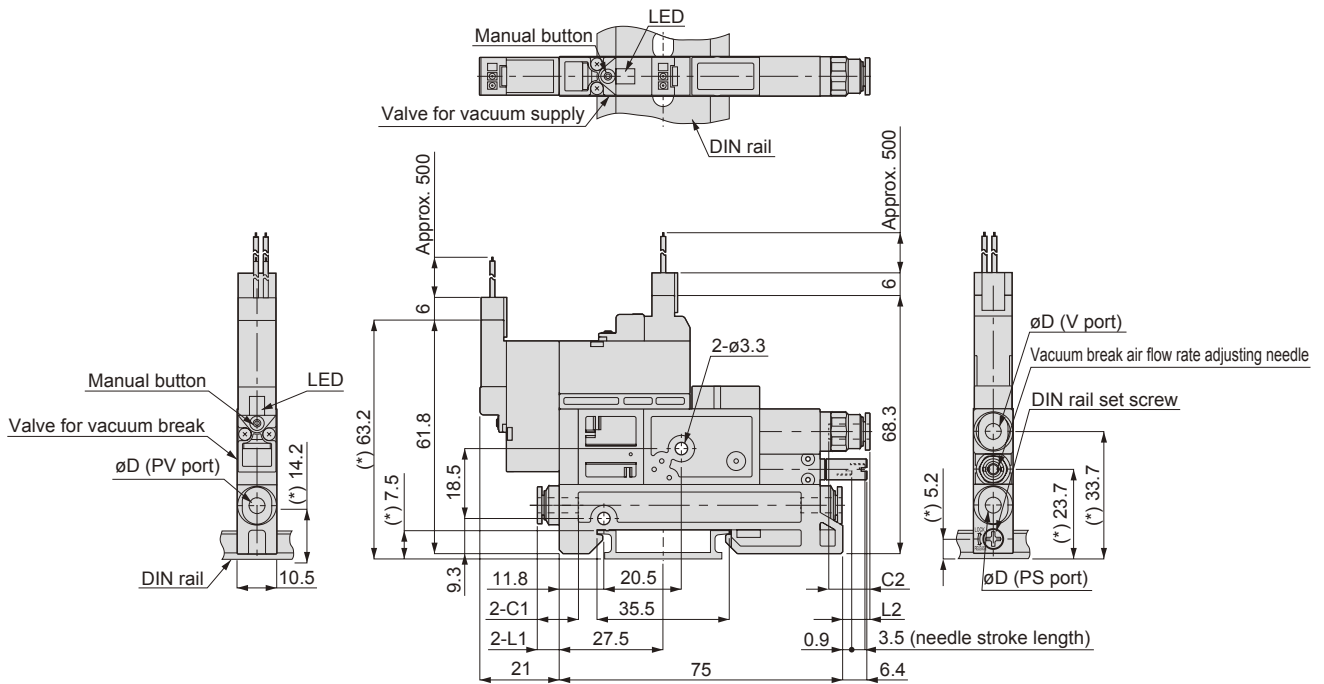
### ● Direct mount type



Unit: mm

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

### ● DIN rail installation type



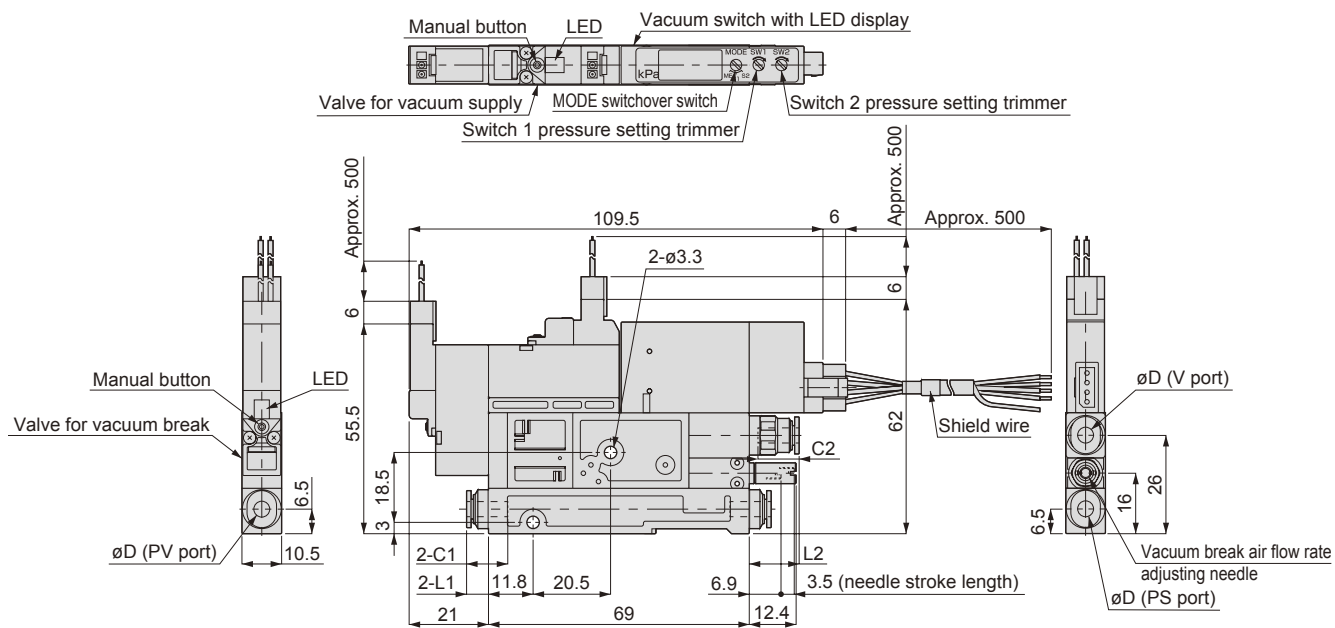
Note) The dimensions marked with an asterisk (\*) apply for the 7.5mm DIN rail height.

Unit: mm

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

### Dimensions (discrete type, 3 way valve specifications, 2 point switch output vacuum switch with LED display)

#### ● Direct mount type



Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

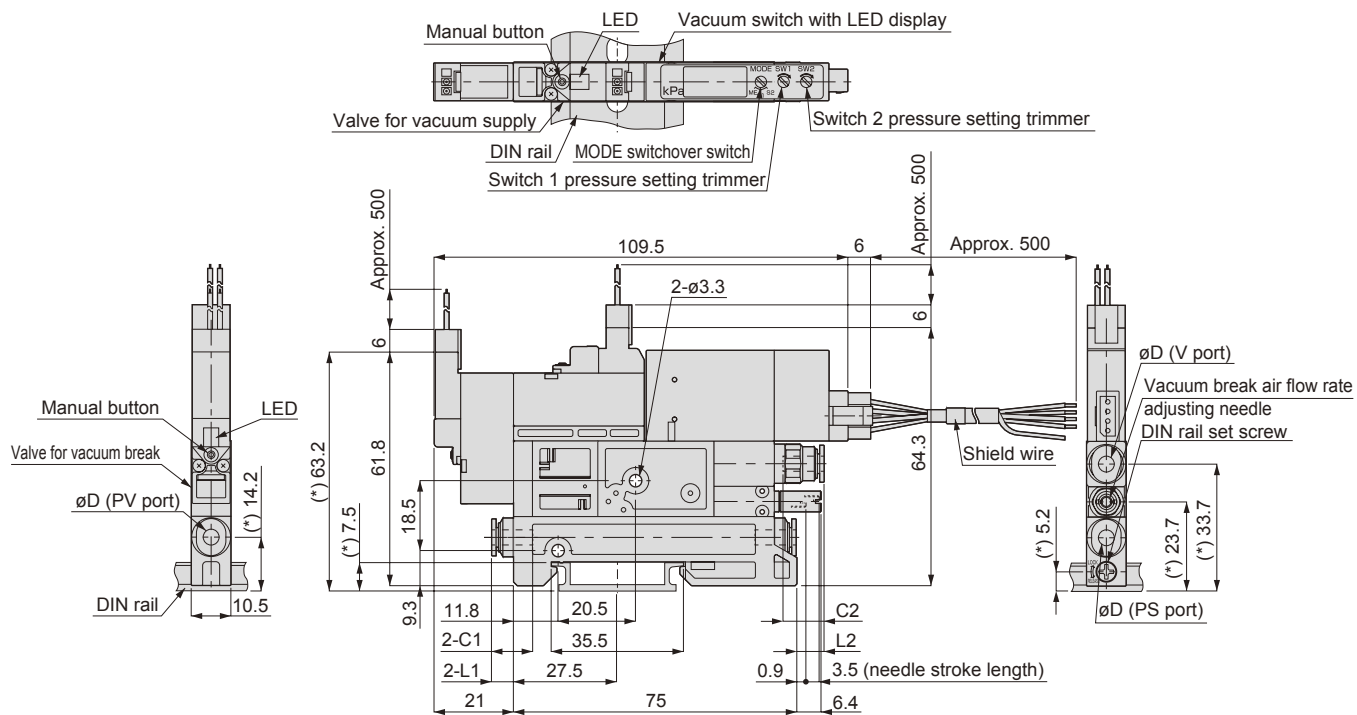
VSQP

VSZPM

Unit: mm

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

Dimensions (discrete type, 3 way valve specifications, with analog output, switch output vacuum switch with LED display)

● Direct mount type

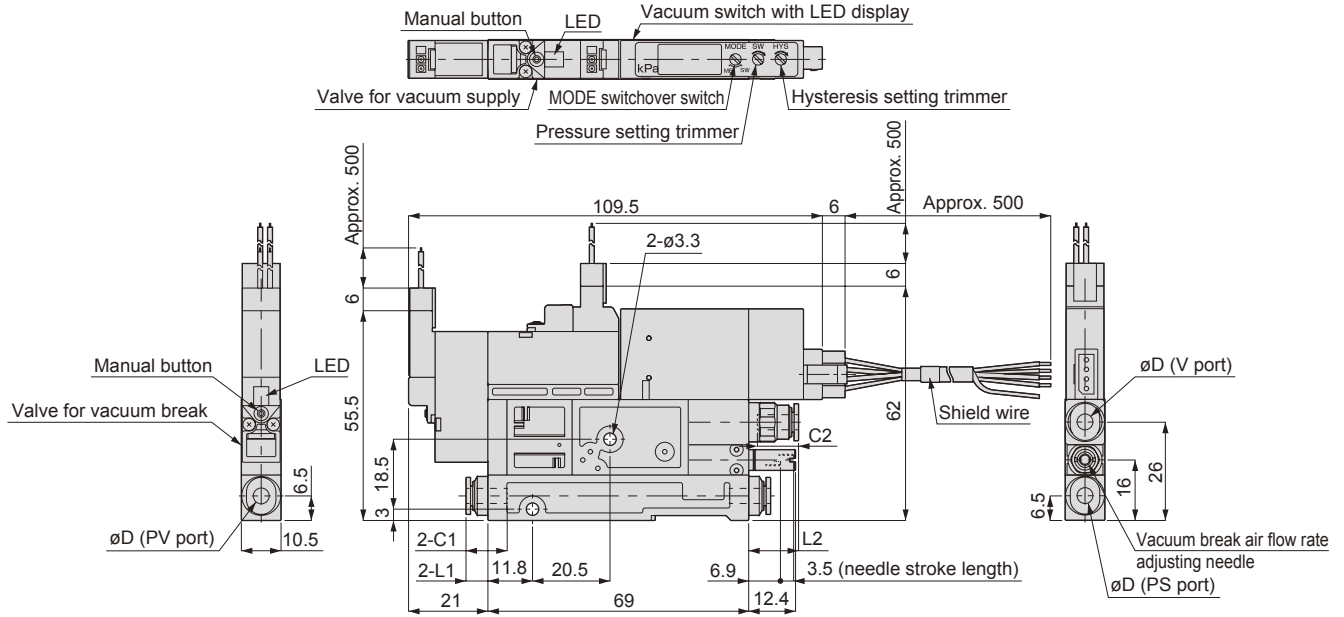
Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

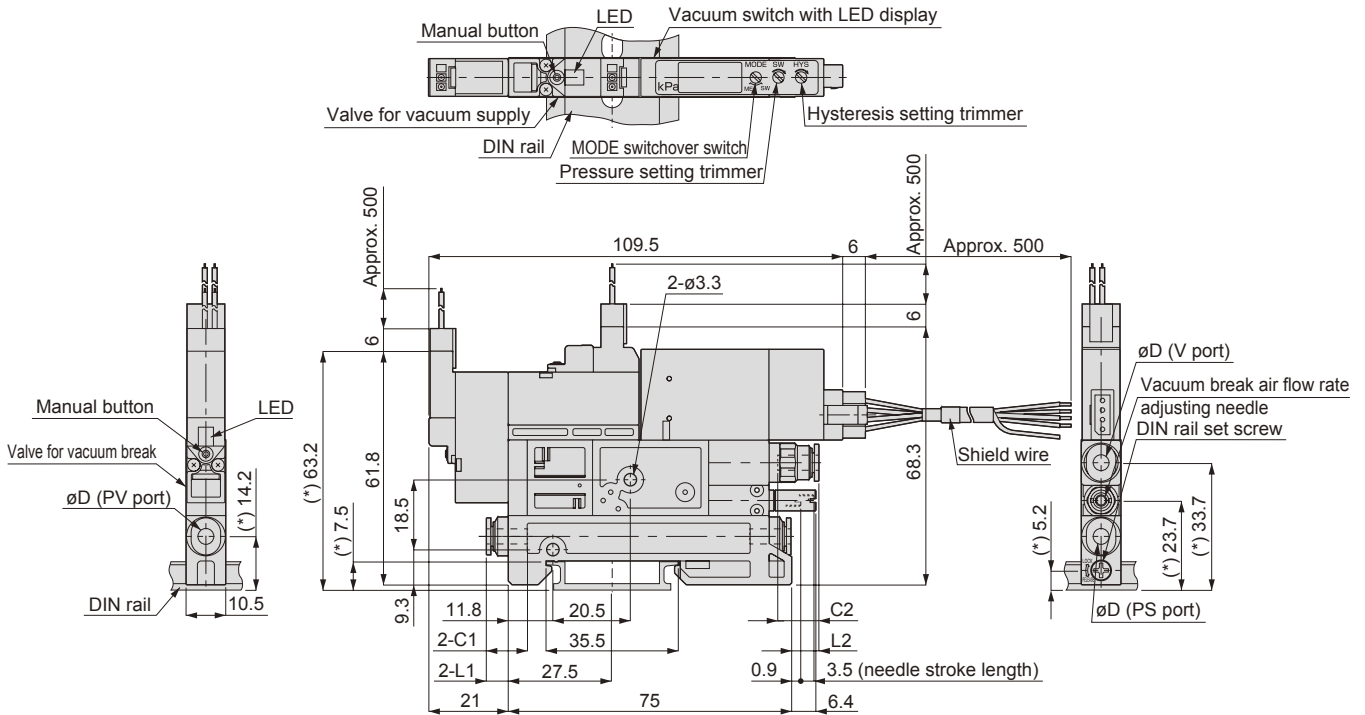
VSZPM



Unit: mm

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

● DIN rail installation type



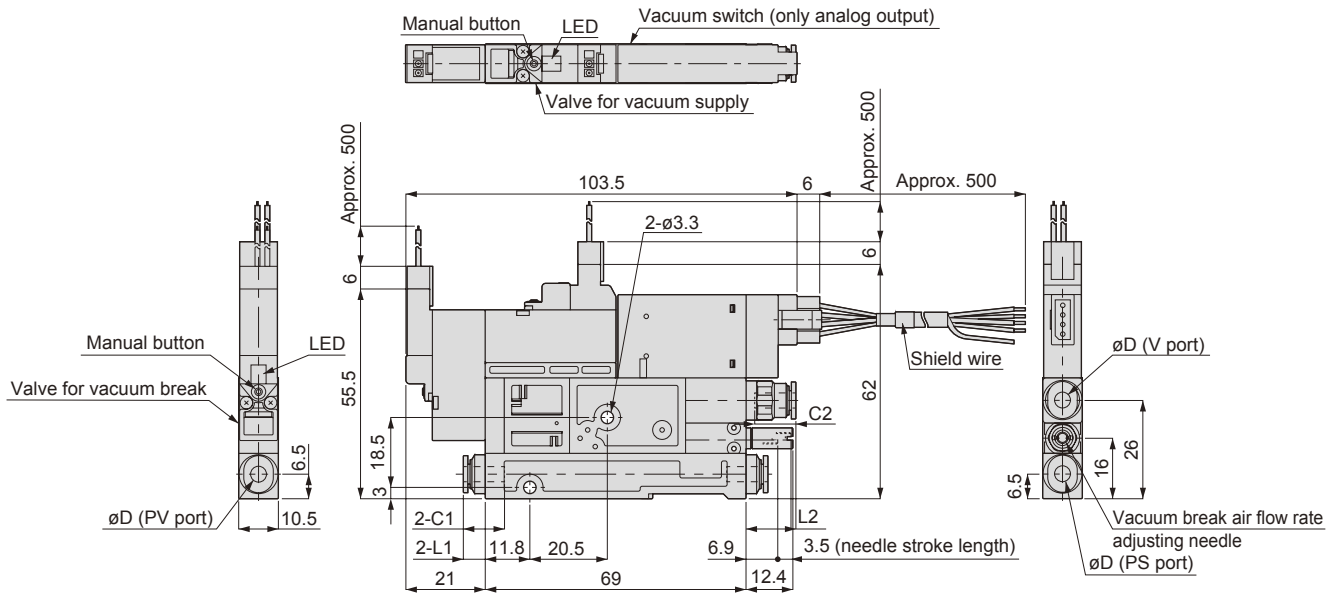
Note) The dimensions marked with an asterisk (\*) apply for the 7.5mm DIN rail height.

Unit: mm

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

## Dimensions (discrete type, 3 way valve specifications, with analog output vacuum switch)

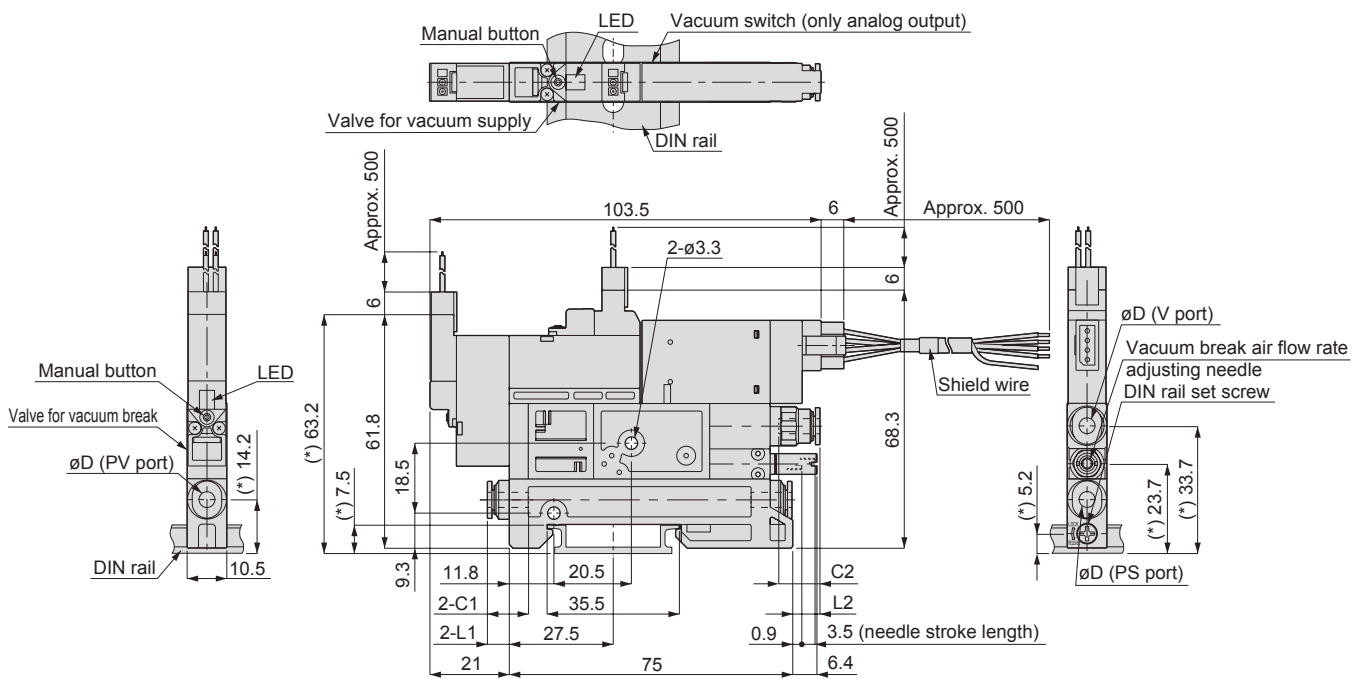
### ● Direct mount type



Unit: mm

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

Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM

## Dimensions (manifold type, 2 way valve specifications VSXPM-D)

### ● Without vacuum switch

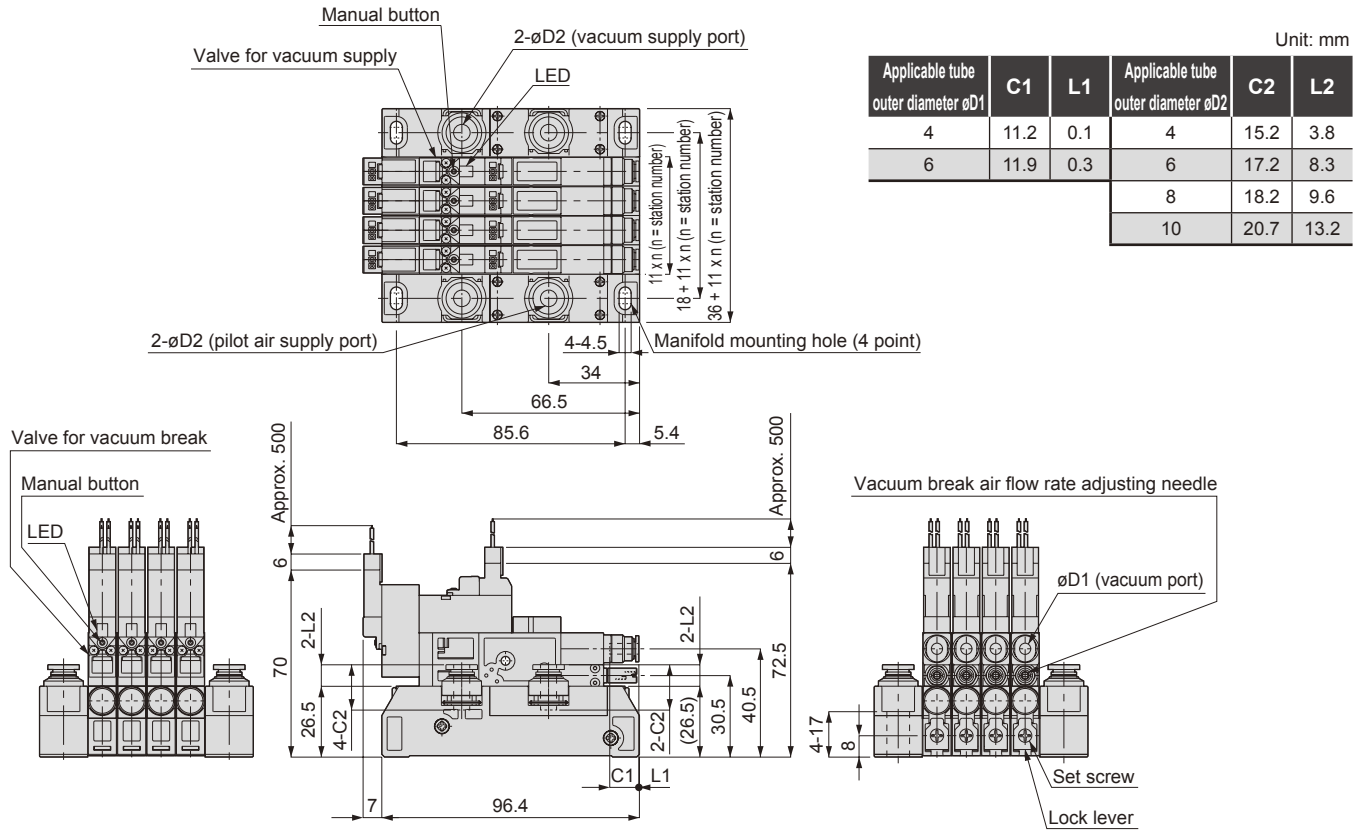
Vacuum pump system

VSJP  
VSJPM

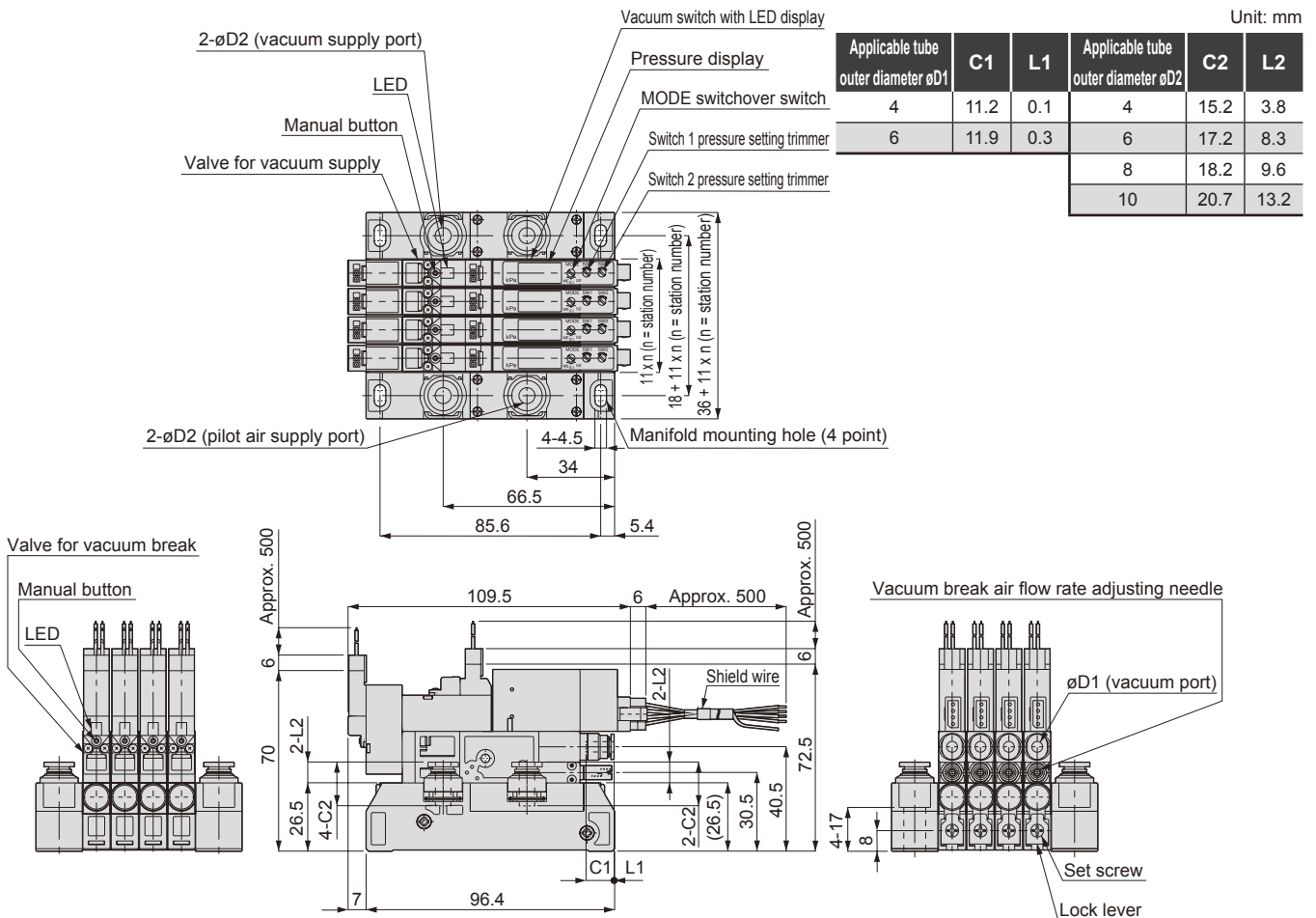
VSXP  
VSXPM

VSQP

VSZPM



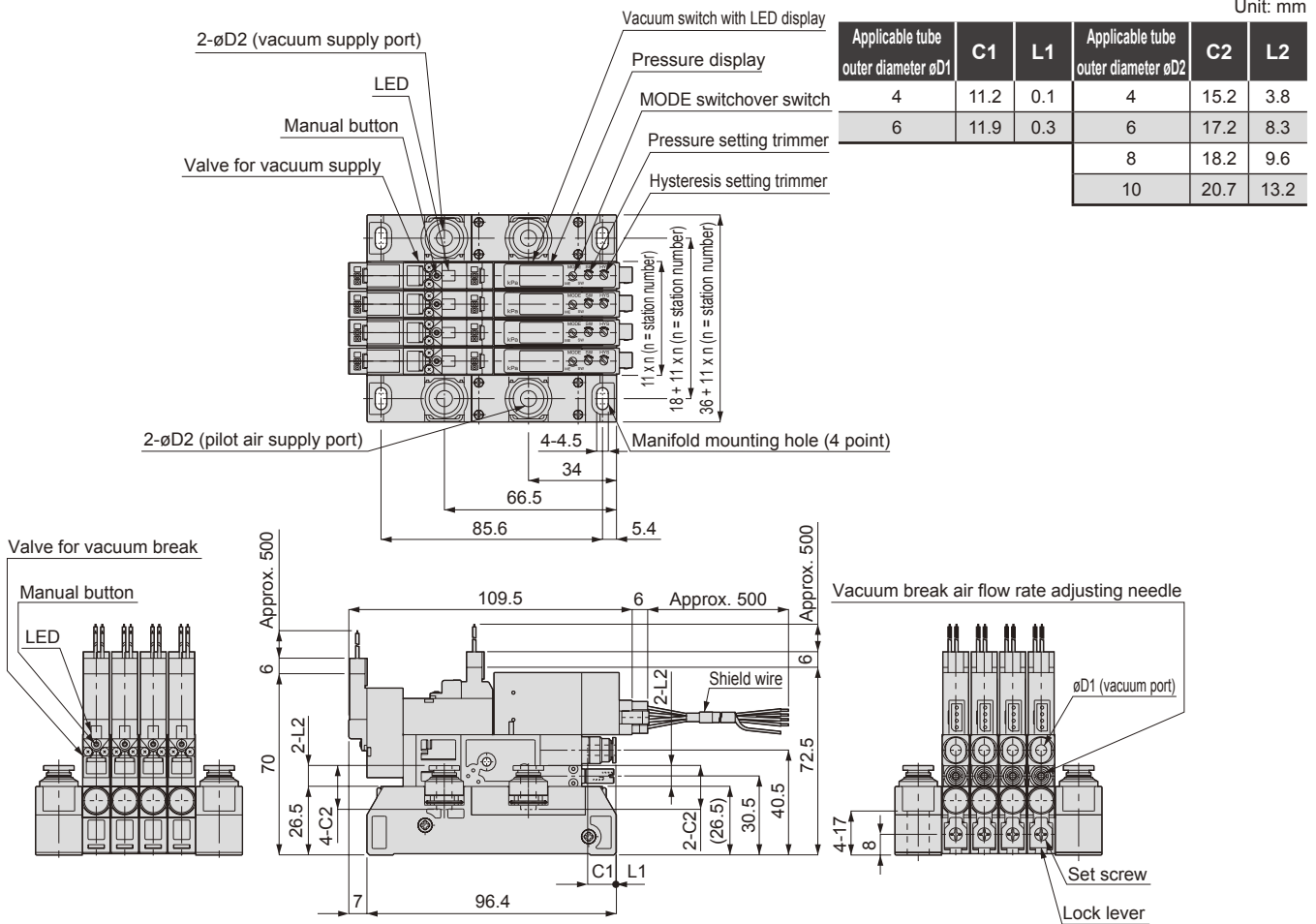
### ● 2 point switch output vacuum switch with LED display



## Dimensions (manifold type, 2 way valve specifications VSXPM-D)

### ● Analog/switch output vacuum switch with LED display

Unit: mm



Vacuum pump system

VSJP  
VSJPM

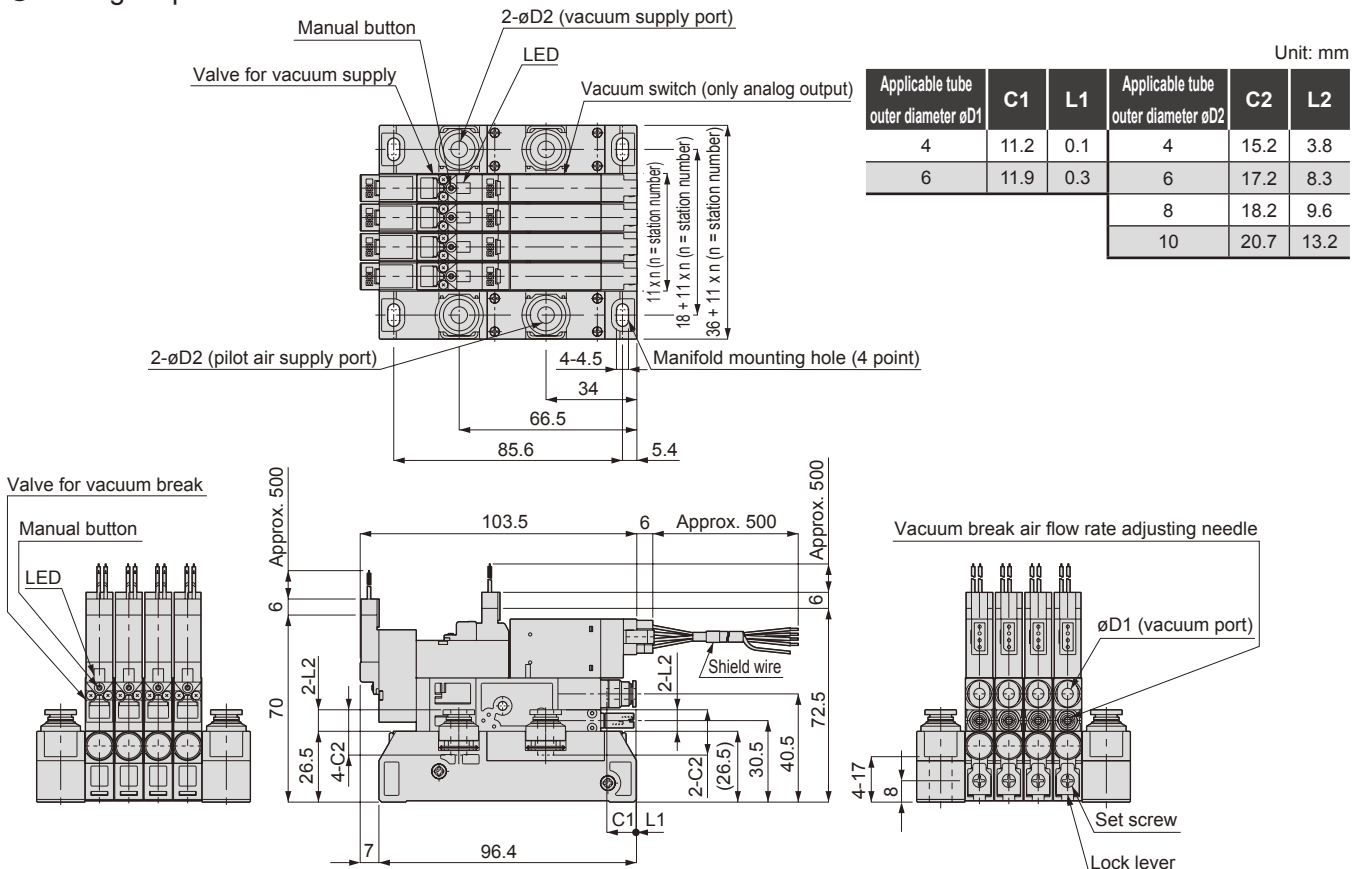
VSXP  
VSXPM

VSQP

VSZPM

### ● Analog output vacuum switch

Unit: mm



## Dimensions (manifold type, 3 way valve specifications VSXPM-T)

### ● Without vacuum switch

Unit: mm

Applicable tube outer diameter $\phi D1$	C1	L1	Applicable tube outer diameter $\phi D2$	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

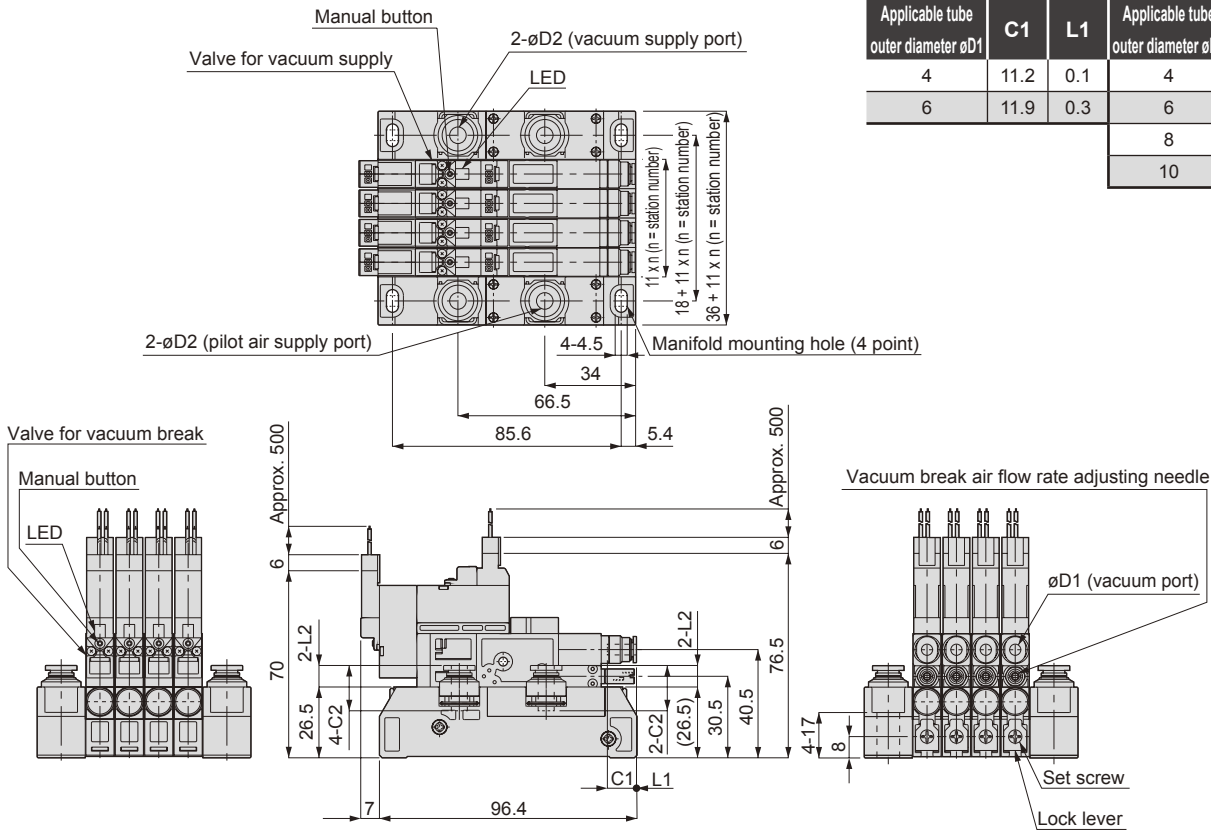
Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

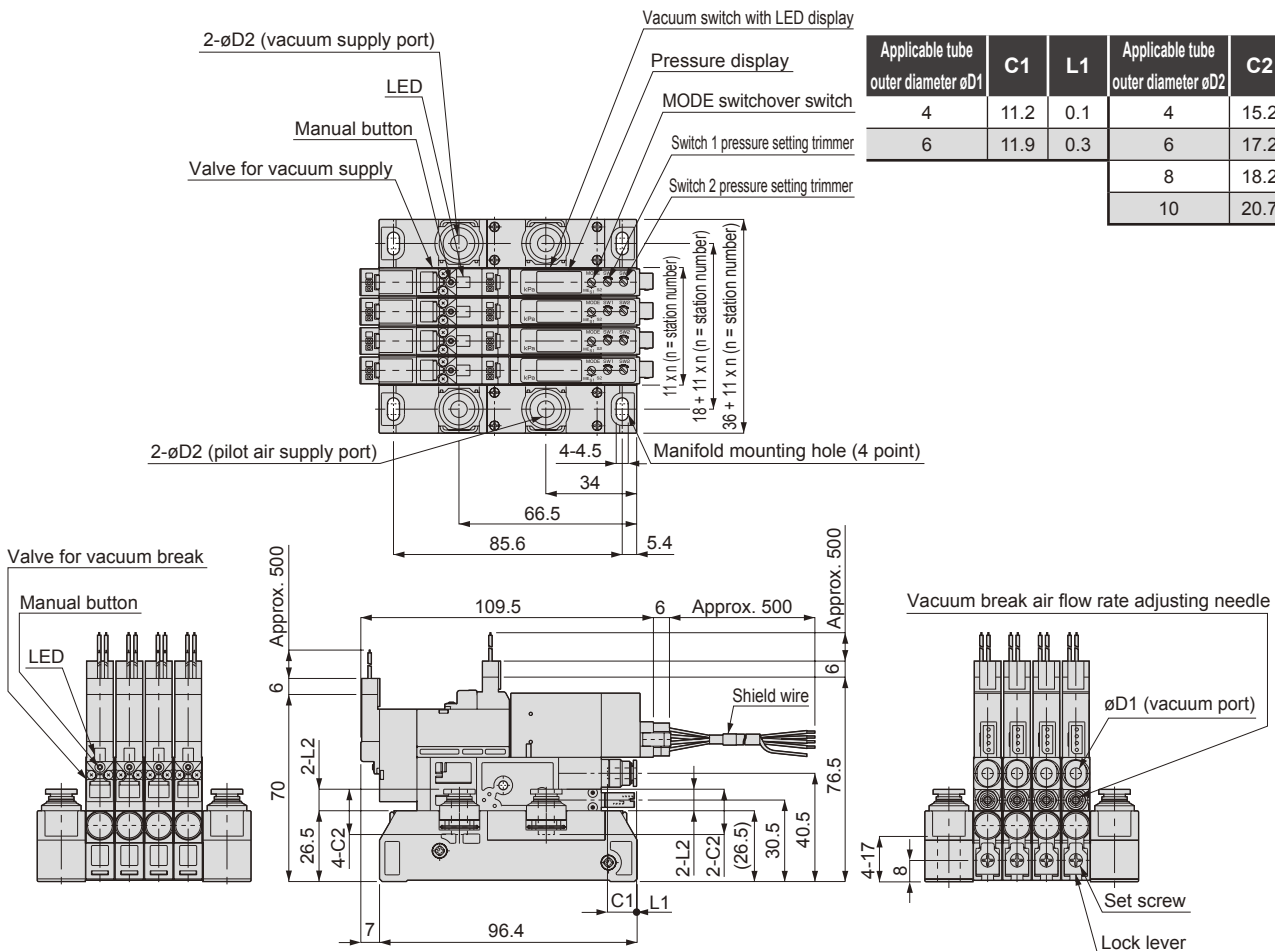
VSZPM



### ● 2 point switch output vacuum switch with LED display

Unit: mm

Applicable tube outer diameter $\phi D1$	C1	L1	Applicable tube outer diameter $\phi D2$	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

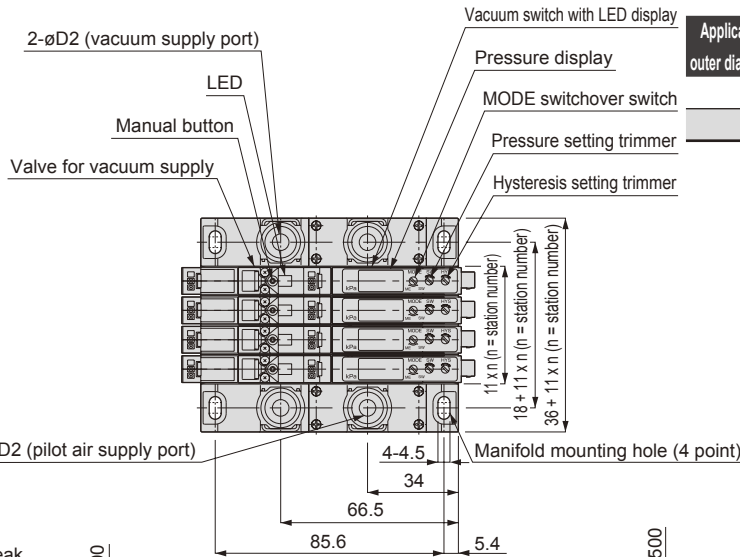




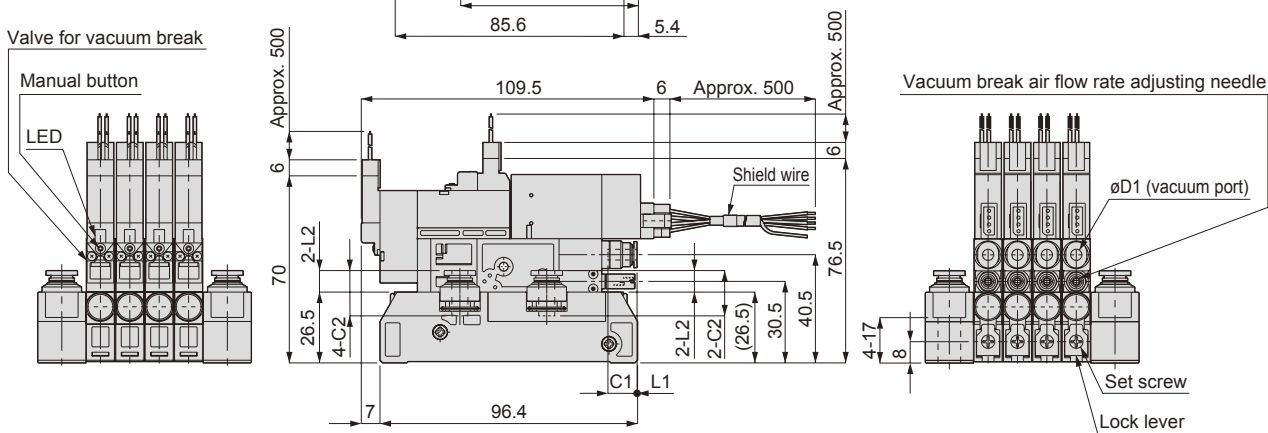
## Dimensions (manifold type, 3 way valve specifications VSXPM-T)

### ● Analog/switch output vacuum switch with LED display

Unit: mm

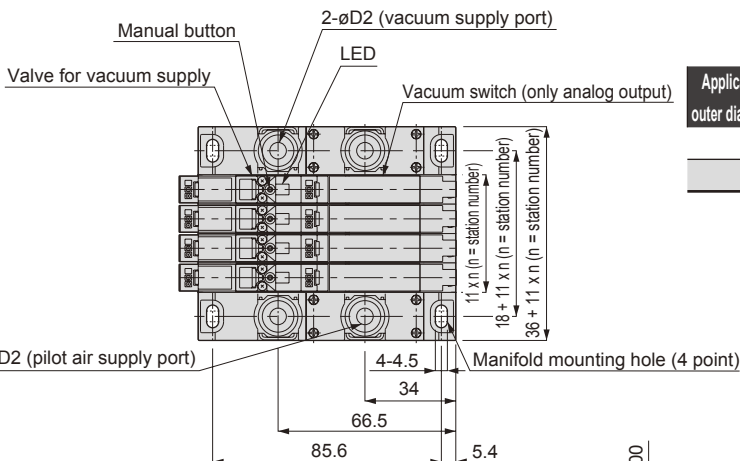


Applicable tube outer diameter øD1	C1	L1	Applicable tube outer diameter øD2	C2	L2
4	11.2	0.1	4	15.2	3.8
6	11.9	0.3	6	17.2	8.3
			8	18.2	9.6
			10	20.7	13.2

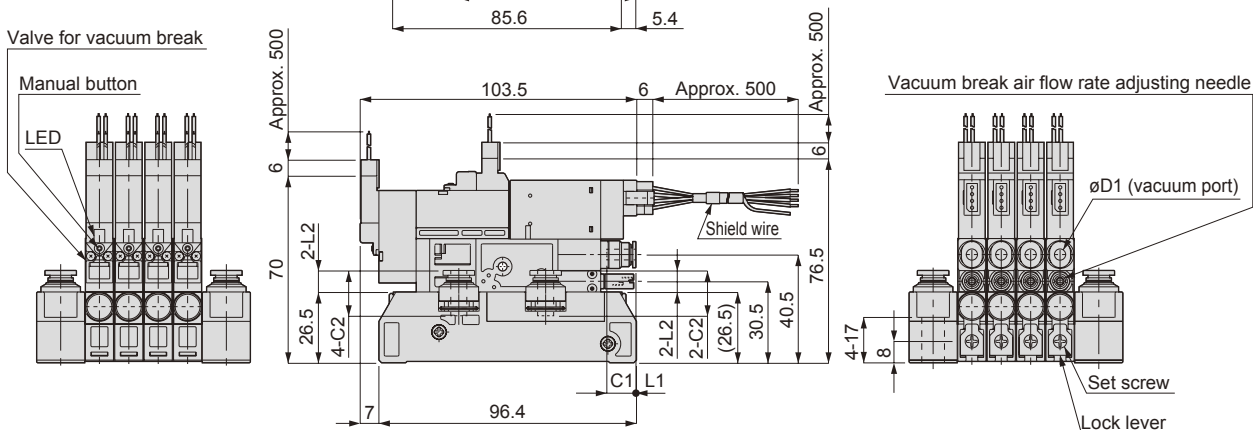


### ● Analog output vacuum switch

Unit: mm



Applicable tube outer diameter øD1	C1	L1	Applicable tube outer diameter 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



Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM



## Safety precautions

Refer to Intro 13 for general precautions of vacuum system components.

### WARNING

- Check that the leakage current is 1mA or less when operating valves. Malfunctions may result from the leakage current and cause problems.
- The 2 way valve specifications compatible with vacuum pumps (VSXP-D) has a vacuum holding function that tolerates a leak. Thus, if the vacuum must be maintained for a long time, provide separate safety measures. Self-holding function is not available for 3 way valve specification (VSXP - T type).
- 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 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.

### CAUTIONS

- Do not apply excessive tension or bending to the pilot valve or vacuum switch leads. Wires or connectors may break.
- Compressed air contains large amounts of drainage (water, oxidized oil, tar, foreign matter, etc.). The drainage may adversely affect performance. Dehumidify air with an after cooler and dryer and improve air quality.
- Do not use the lubricator.
- Rust etc. in the pipe may result in operation faults. Install a 5 µm or smaller filter preceding the supply port. Flush pipes before use and at appropriate cycle.
- Avoid using this vacuum changeover unit in environments with corrosive or flammable gas. Do not use this unit for fluids.
- When replacing the supply (PS/PV) port's cartridge joint, remove all matter on the seal, and insert the lock pin securely.
- 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.
- With the vacuum pump-compatible 3-way valve specifications, the vacuum is broken with atmospheric pressure. If large amounts of dust or dirt adhere to the valve filter element, filter element pressure loss increases, and could result in a delayed vacuum break time. Regularly clean and replace the valve filter element.
- 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.

## How to use

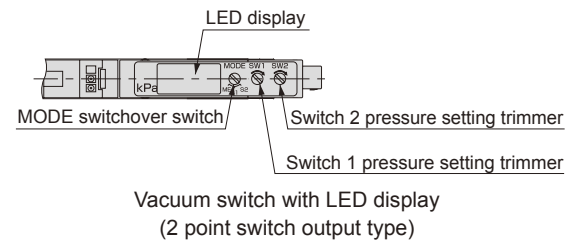
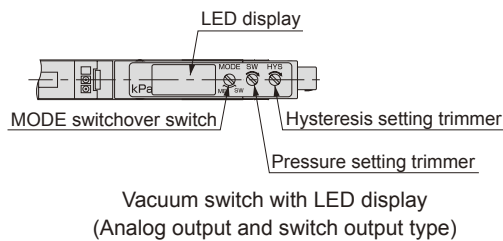
### 1. Handling the vacuum switch

#### (1) Pressure setting procedures

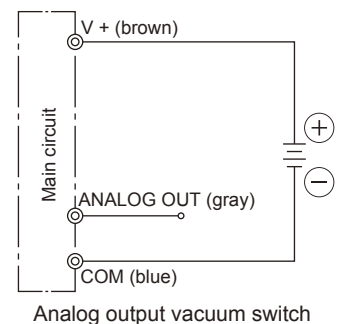
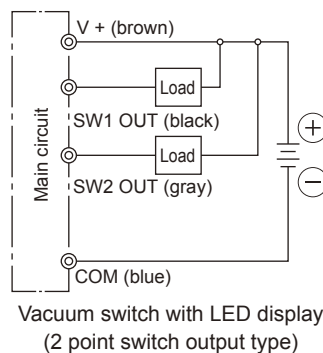
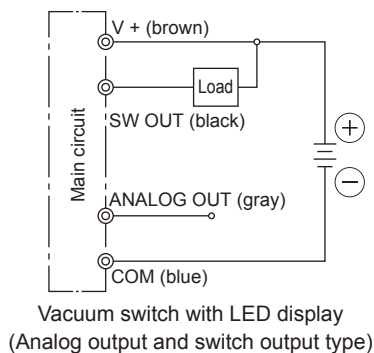
- ① Energizing (checking wiring and supplying DC power.)
- ② Set the MODE switching switch to the pressure setting mode (ME → S1 or S2, SW).
- ② -2. (Only for analog output vacuum sensors)  
Turn the hysteresis setting trimmer (HYS) fully in the CCW direction to set hysteresis to a minimum.
- ③ Turn the pressure setting trimmer (S1 or S2, SW) with a small screwdriver, setting it to the required setting.
- ④ Set the MODE switching 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 (red) turns on when set pressure is exceeded.
  - For analog output vacuum switch:  
Switch output (SW): The operation LED (red) turns on when set pressure is exceeded.

#### (2) Setting hysteresis

- ① Hysteresis is adjusted using the hysteresis setting trimmer (HYS).
- ② Hysteresis is adjusted from 0 to 15% of the setting. Hysteresis increases when the trimmer is turned to CW.
- ③ Checking hysteresis  
Set the MODE switchover 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 of the pressure drop:



#### (3) Connection method



Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM

## How to use

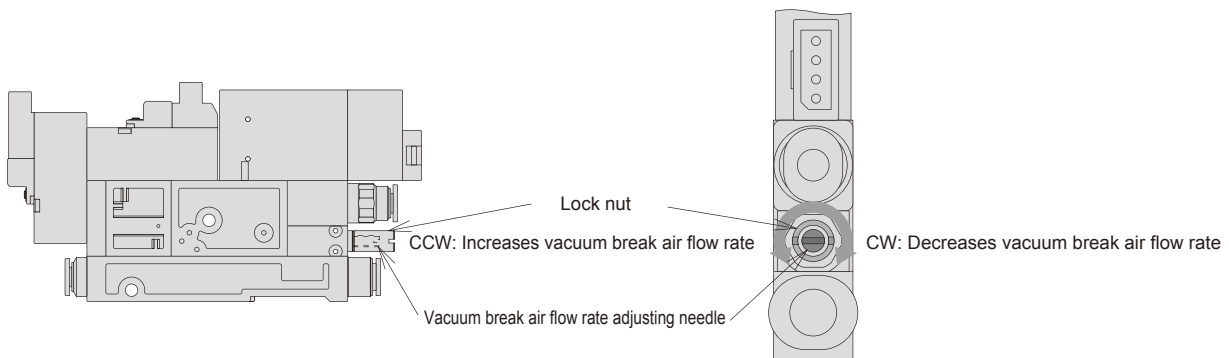
### 2. Precautions related to vacuum switch

- ① Do not use this vacuum switch in fluids or in an atmosphere with corrosive substances. The switch may fail.
- ② Do not use wiring or applications that may cause noise (surge), etc., to be applied. The switch may fail.
- ③ Do not use this vacuum switch in an atmosphere containing fluids or flammable or explosive gases. This product does not have an explosion proof structure, so there is a risk of fires and explosions.
- 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 may fail.
- 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 or 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 sensor.
- 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.

### 3. Adjusting the vacuum break air flow rate

- 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.



Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

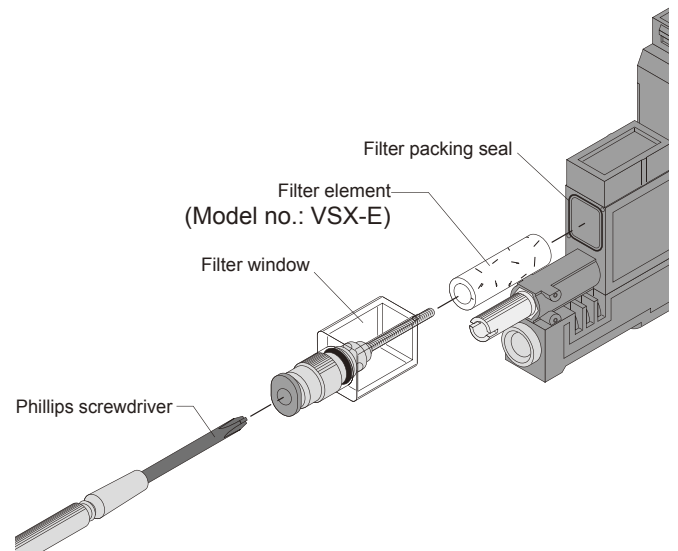
VSZPM

## 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.

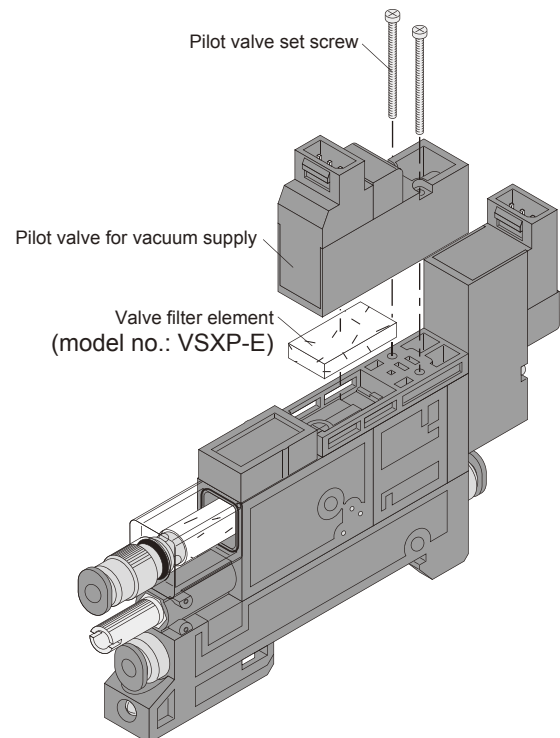
(Note) Check that the screwdriver does not interfere with the lock jaw. The tube tensile strength will drop if the lock jaw is scratched or deformed.



Vacuum pump system

### 5. Replacing the Valve filter element

■ To replace the Valve filter element, first remove the pilot valve for vacuum supply. After removing and replacing the valve filter element, confirm that the pilot packing for the vacuum supply pilot valve is attached, and securely tighten the mounting screws with a tightening torque of 0.3 to 0.35 N·m.



VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM

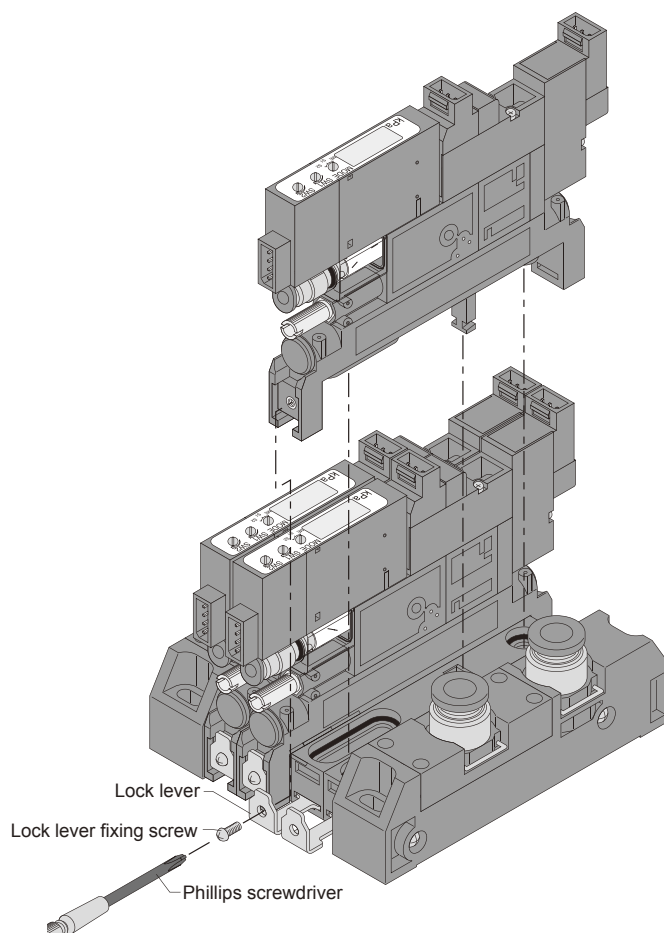
### 6. Replacing the unit with manifold

#### ■ 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.



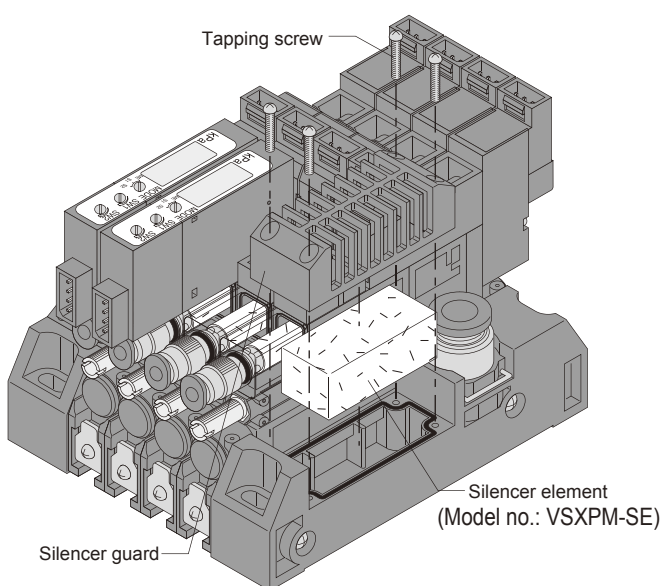
### 7. Replacing the manifold silencer element

#### ■ 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).

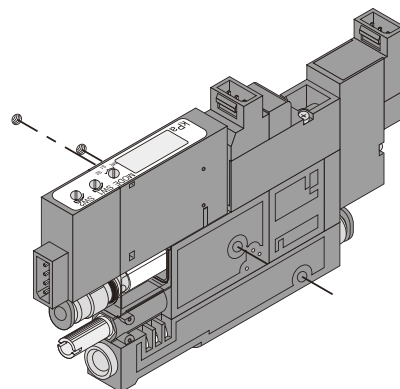


## How to use

### 8. Fixing method

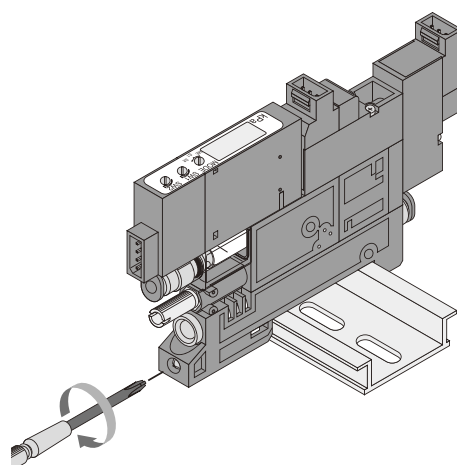
#### ① Direct mount type

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.



Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM

## Preparing the VSXPM mixed manifold specifications

- Mix manifold model no. (example)

VSXPM - <sup>A</sup>Z - <sup>B</sup>CX - <sup>C</sup>6 - <sup>D</sup>8 - <sup>E</sup>3 - <sup>F</sup>5 - <sup>G</sup>Z

- Mix manifold specifications (example)

Vacuum pump system	Vacuum changeover unit model no.			Layout										Quantity
	A	B	G	1	2	3	4	5	6	7	8	9	10	
VSXPM -	D	4	DW	○	○	○								3
VSXPM -	D	4	DA				○							1
VSXPM -	T	6	DW					○						1
VSXPM -														
VSXPM -														

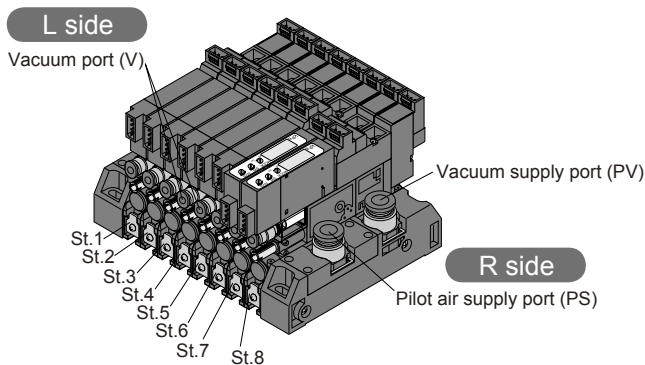
<Specifications when only output port size joints are mixed>

- Mix manifold model no. (example)

VSXPM - <sup>A</sup>D - <sup>B</sup>CX - <sup>C</sup>6 - <sup>D</sup>6 - <sup>E</sup>3 - <sup>F</sup>5 - <sup>G</sup>DW

- Mix manifold specifications (example)

VSJP VSJPM	Vacuum changeover unit model no.			Layout										Quantity
	A	B	G	1	2	3	4	5	6	7	8	9	10	
VSXP VSXPM	D	4	DW	○	○	○								3
VSQP	D	6	DW				○							1
VSZPM								○						1



<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.

## VSXPM mix manifold specifications

Issue / /

Your company name

Contact.

Purchase order No.

Contact \_\_\_\_\_ Quantity \_\_\_\_\_ Set \_\_\_\_\_ Request date / /

Slip No. \_\_\_\_\_ Order No. \_\_\_\_\_

● Mix manifold model no.

VSXPM -     -  -  -

A Valve type	
D	2 way valve specifications
T	3 way valve specifications
Z	For mix specifications (indicate details in specification sheet)

B Vacuum port (V)	
4	ø4 push-in joint
6	ø6 push-in joint
CX	For mix joint (indicate details in specification sheet)

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

D Vacuum supply port (PV)	
4	ø4 push-in joint
6	ø6 push-in joint
8	ø8 push-in joint
10	ø10 push-in joint

E Solenoid valve voltage	
1	100 VAC
3	24 VDC

F Station no.	
2 to 10	2 to 12 stations

G 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
Z	For mix specifications (indicate details in specification sheet)

Vacuum pump system

VSJP  
VSJPM

VSXP  
VSXPM

VSQP

VSZPM

● Mix manifold specifications

Vacuum changeover unit model no. A B C	Layout										Quantity
	1	2	3	4	5	6	7	8	9	10	
VSXPM - <input type="text"/> <input type="text"/> - <input type="text"/>											
VSXPM - <input type="text"/> <input type="text"/> - <input type="text"/>											
VSXPM - <input type="text"/> <input type="text"/> - <input type="text"/>											
VSXPM - <input type="text"/> <input type="text"/> - <input type="text"/>											
VSXPM - <input type="text"/> <input type="text"/> - <input type="text"/>											