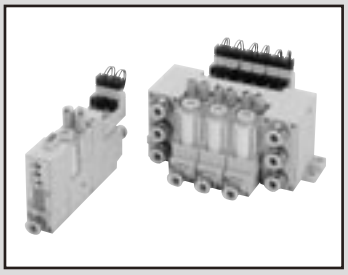


Universal type vacuum ejector unit with break air flow and relief pressure adjusting needle

VSJ Series

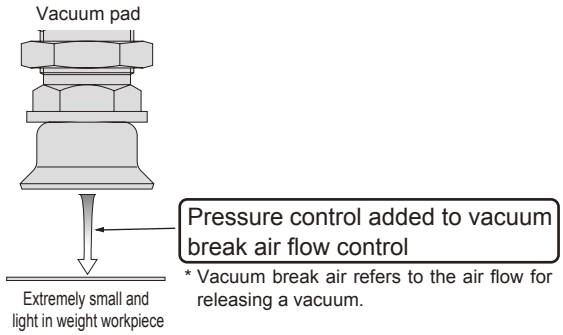
● Nozzle diameter: ø0.5, ø0.7, ø1.0, ø1.2

RoHS

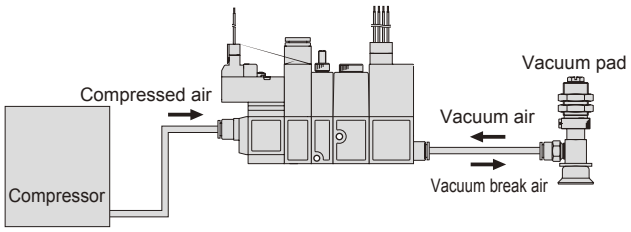
Features

■ Pressure control has been added to the conventional vacuum air flow control to prevent the work piece from being blown away.

■ A relief function (function to release excessive pressure) has been incorporated in the vacuum break circuit to shorten vacuum break time.



■ The ejector-correspondence model with a built-in ejector provides a compact vacuum system.



■ A manifold model also enables piping to be reduced. The piping direction is selectable from front or back to match the installation site.

■ Three types of vacuum generating valves are available -- self hold type, normally closed, and normally open. The power-saving self hold type is suitable for special applications where vacuum must be generated for a long time.

■ LEDs with enhanced visibility are used for the vacuum switch display. Vacuum sensors with 2-point switch output and with analog output are available to match your application. Connector wiring is used to facilitate wiring layout.

■ Standard nozzle diameters are 05, 07, 10 and 12.

Specifications

Descriptions	VSJ
Working fluid	Compressed air
Working pressure range MPa	0.3 to 0.7
Ambient temperature range ℃	5 to 50

Ejector characteristics

Model no.	Nozzle diameter (mm)	Ultimate vacuum (-kPa)	Suction flow (ℓ/min. (ANR))	Air consumption flow (ℓ/min. (ANR))
VSJ-H05···	0.5	90.4	7	11.5
VSJ-L05···		66.5	11	11.5
VSJ-H07···	0.7	93.1	13	23
VSJ-L07···		66.5	26	23
VSJ-E07···		90.4	10.5	17
VSJ-H10···	1.0	93.1	27	46
VSJ-L10···		66.5	40	46
VSJ-E10···		90.4	21	34
VSJ-H12···	1.2	93.1	38	70
VSJ-E12···		90.4	27	47

Note: Ensure the above supply pressure when the vacuum ejector operates. (Consider the pressure drop.)

Valve (for vacuum generation, vacuum break) specifications

● Pilot solenoid valve

Descriptions	Vacuum generator valve		Vacuum break valve	
Actuation	Direct operation			
Valve structure	Rubber sealant, poppet valve			
Rated voltage	24 VDC	100 VAC	24 VDC	100 VAC
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
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 type (cable long: 500 mm)			
	Red: 24 VDC Black: COM	Blue	Red: 24 VDC Black: COM	Blue

● Main valve

Descriptions	Vacuum generator valve		Vacuum break valve
Actuation	Pneumatics operation using pilot solenoid valve		
Valve structure	Rubber sealant, poppet valve		
Pressure resistance	1.05MPa		
Valve type	Self hold, normally closed, normally open		Normally closed
Minimum excitation time	50msec (self hold type)		-
Lubrication	Not required		
Effective sectional area	Air supply (PS) port size	ø4: 3.5mm^2	1mm^2
		ø6: 5mm^2	

Vacuum switch with LED display

Descriptions		With 2 point switch output (-W)	With analog output (-A)
Set point when shipping		-50kPa (SW1), -10kPa (SW2)	-50kPa
Current consumption		40mA or less	
Pressure detection method		Carrier diffusion type semiconductor pressure switch	
Working pressure range		0 to -100kPa	
Set pressure range		0 to -99kPa	
Withstanding pressure		0.2MPa	
Storage temperature range		-20 to 80℃ (atmospheric pressure, humidity 60%RH or less)	
Working temperature range		0 to 50℃ (no freezing)	
Working humidity range		35 to 85%RH (no freezing)	
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℃)	
Hysteresis		Fixed (2% F. S. max.)	Variable (set point 0 to 15% of setting value)
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.
Responsiveness		2msec max.	
Display		0 to -99kPa (2-digit red LED display)	
Number of displays		Approx. 4 times/1 sec.	
Display accuracy		±3% F. S. ±2 digit	
Resolution		1 digit	
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 (0 to 15% of setting value)

Vacuum break specifications

Descriptions	Vacuum break
Vacuum break air flow rate	0 to 50 ℓ/min (ANR) (at supply pressure: 0.5 MPa)
Break air relief valve structure	Rubber sealant, poppet valve
Relief pressure setting range	0.005 to 0.05MPa

Vacuum filter specifications

Descriptions		Vacuum filter
Element material		PVF (poly-vinyl formal)
Filtration		10μm
Filter area		1130mm^2
Replacement filter element model no.	Vacuum	VSG-E
	Break	VSJ-PE

Weight

① Discrete unit

VSJ		Weight (g)	Remarks
Atmospheric release,	VSJ-***-**S-**-*	164.5	Vacuum port: ø4, ø6
w/sensor	VSJ-***-*8S-**-*	171.0	Vacuum port: ø8
Atmospheric release,	VSJ-***-**S-**	156.0	Vacuum port: ø4, ø6
w/o sensor	VSJ-***-8*S-**	162.5	Vacuum port: ø8
Common exhaust,	VSJ-***-**8-**-*	169.0	Vacuum port: ø4, ø6
w/sensor	VSJ-***-8*8-**-*	175.5	Vacuum port: ø8
Common exhaust,	VSJ-***-**8-**	160.5	Vacuum port: ø4, ø6
w/o sensor	VSJ-***-8*8-**	167.0	Vacuum port: ø8

② manifold intermediate block

	Weight (g)	Remarks
Manifold intermediate block	18.5	1 station

③ Manifold side block

VSJ	Weight (g)	Remarks
Vacuum ejector unit (atmospheric release)	118.0	Cartridge quantity: 2 pcs. (PS port) Plug are attached to PV and EX ports.
Vacuum ejector unit (common exhaust)	112.0	Cartridge quantity: 4 pcs. (PS, EX ports) Plug is attached to the PV port.

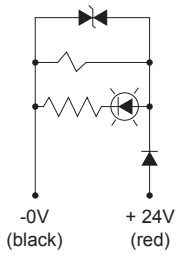
④ cartridge (supply/exhaust port)

	Weight (g)	Remarks
Push-in joint for ø6	11.5	
Push-in joint for ø8	10.0	
Push-in joint for ø10	13.0	

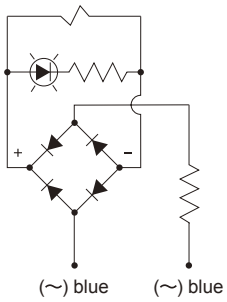
■ Calculate the manifold type weight, using the following formula.
Manifold weight = (① Discrete VSJ unit + ② Manifold intermediate block) × No. of stations + ③ Manifold side block + ④ Cartridge × No. used

Electric circuit (solenoid valve)

● 24 VDC specifications vacuum generating/break valve

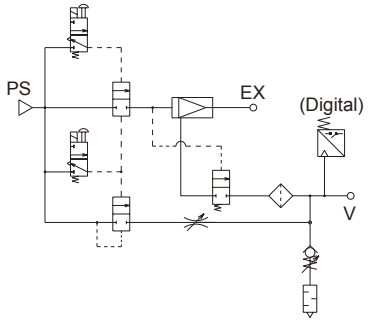


● 100 VAC specifications vacuum generating/break valve

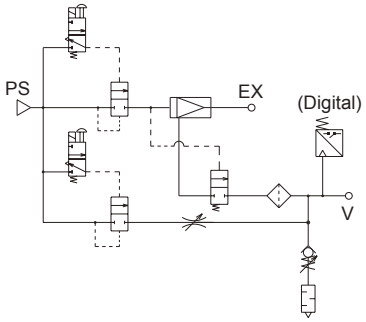


Circuit diagram

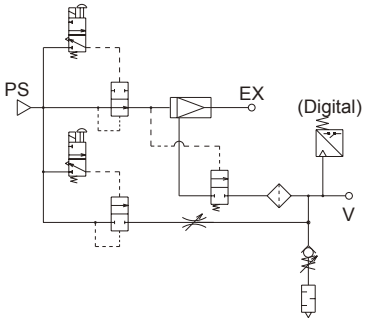
● Self hold type



● Normally closed type



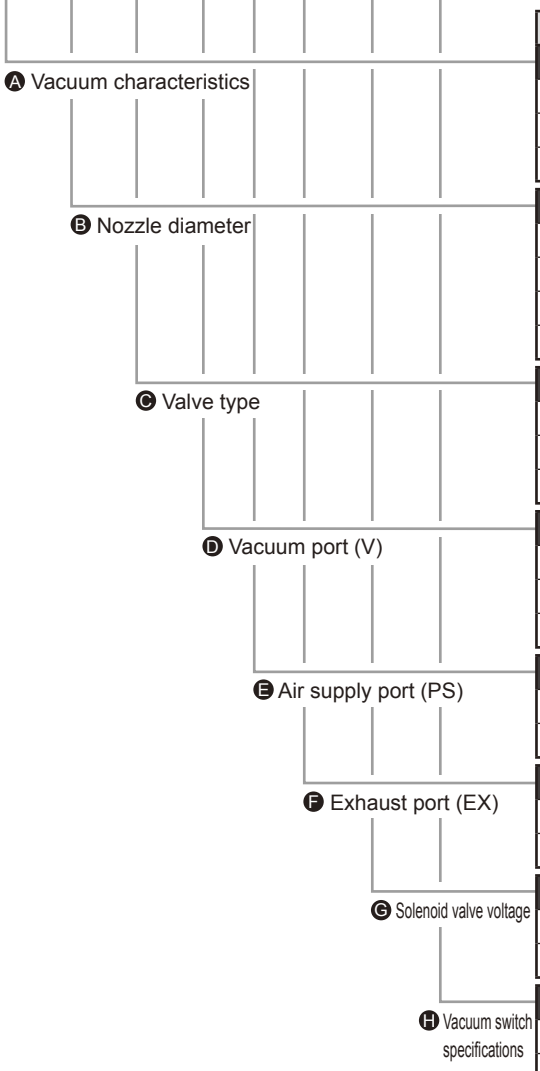
● Normally open type



How to order (discrete type)

● 20mm wide universal type discrete vacuum ejector unit

VSJ - H 07 A - 6 6 8 - 3 - W



Symbol	Descriptions
Ⓐ Vacuum characteristics	**Note 1**
H	High vacuum/medium flow type
L	Medium vacuum/large flow rate type
E	High vacuum/small flow rate type
Ⓑ Nozzle diameter	**Note 1**
05	ø0.5
07	ø0.7
10	ø1.0
12	ø1.2
Ⓒ Valve type	
A	Normally open type
B	Normally closed type
D	Self hold type
Ⓓ Vacuum port (V)	
4	ø4 push-in joint
6	ø6 push-in joint
8	ø8 push-in joint
Ⓔ Air supply port (PS)	
4	ø4 push-in joint
6	ø6 push-in joint
Ⓕ Exhaust port (EX)	
S	Atmospheric release with silencer
8	ø8 push-in joint common exhaust
Ⓖ Solenoid valve voltage	
1	100 VAC
3	24 VDC
Ⓗ Vacuum switch specifications	
Blank	Without vacuum switch
W	2-point NPN output with LED display
A	NPN output 1 point + analog output with LED display

⚠ Note on model no. selection

Note 1: "E05" or "L12" can not be selected with the combination of Ⓐ and Ⓑ.

How to order (manifold type)

● 20mm wide integrated type manifold type vacuum ejector unit

VSJM - H 07 A - 8 8 10 - 3 - 10 A - W

Symbol	Descriptions
Ⓐ Vacuum characteristics	**Note 1, Note 2, Note 3**
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.)
Ⓑ Nozzle diameter	**Note 1, Note 2, Note 3**
05	ø0.5
07	ø0.7
10	ø1.0
12	ø1.2
00	For mixed specifications (Indicate details in specification sheet.)
Ⓒ Valve type	**Note 3**
A	Normally open type
B	Normally closed type
D	Self hold type
Z	For mixed specifications (Indicate details in specification sheet.)
Ⓓ Vacuum port (V)	**Note 3**
4	ø4 push-in joint
6	ø6 push-in joint
8	ø8 push-in joint
CX	For mixed joint (Indicate details in specification sheet.)
Ⓔ Air supply port (PS)	
6	ø6 push-in joint
8	ø8 push-in joint
10	ø10 push-in joint
Ⓕ Exhaust port (EX)	
S	Atmospheric release with silencer
8	ø8 push-in joint common exhaust
10	ø10 push-in joint common exhaust
Ⓖ Solenoid valve voltage	
1	100 VAC
3	24 VDC
Ⓗ Number of manifold stations	**Note 4**
2	2 station
to	to
10	10 station
Ⓘ Common piping outlet direction	
A	Vacuum port side
B	Supply port side
Ⓙ Vacuum switch specifications	**Note 3**
Blank	Without vacuum switch
W	2-point NPN output with LED display
A	NPN output 1 point + analog output with LED display
Z	For mixed specifications (Indicate details in specification sheet.)

⚠ Note on model no. selection

Note 1: "E05" or "L12" can not be selected with the combination of Ⓐ and Ⓑ.
Note 2: When Ⓐ is "Z", Ⓑ is only "00".
When Ⓑ is " 00 ", Ⓐ is only "Z".
Note 3: Refer to "Mixed manifold specifications" when selecting mixed specifications. Refer to pages 84, 85 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 for vacuum side
VSG-E

・Filter element for destruction side
VSJ-PE

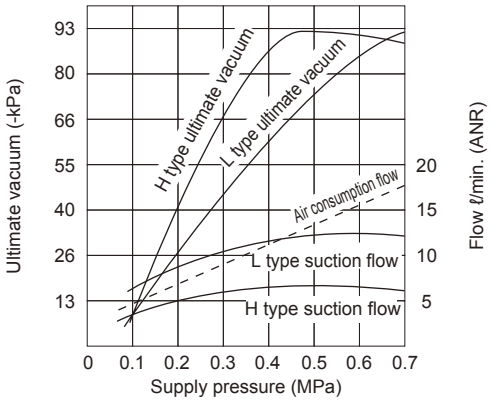
・Silencer element A
VSB-EA

・Silencer element C
VSJ-EC

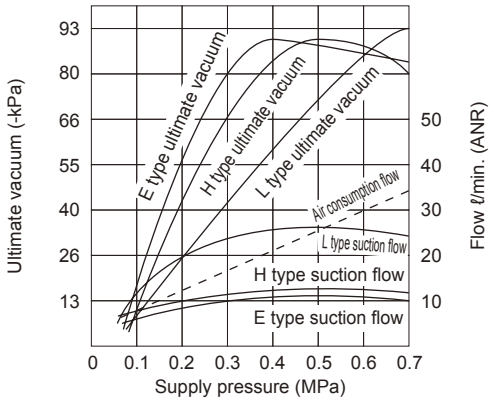
Vacuum characteristics

Supply pressure - ultimate vacuum, suction flow, air consumption flow

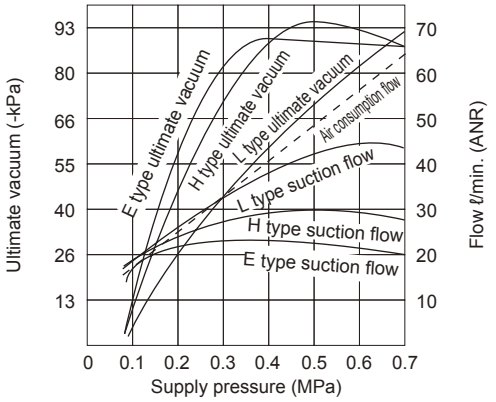
● VSJ-H 05, VSJ-L 05



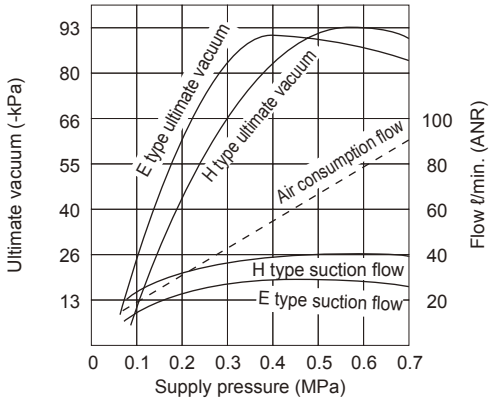
● VSJ-H 07, VSJ-L 07, VSJ-E 07



● VSJ-H 10, VSJ-L 10, VSJ-E 10



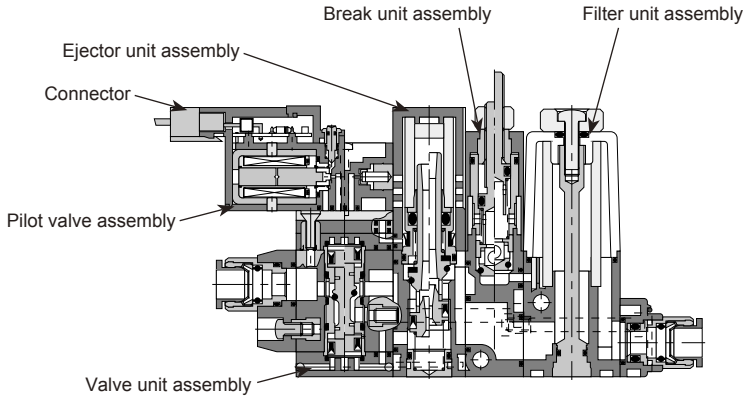
● VSJ-H 12, VSJ-E 12



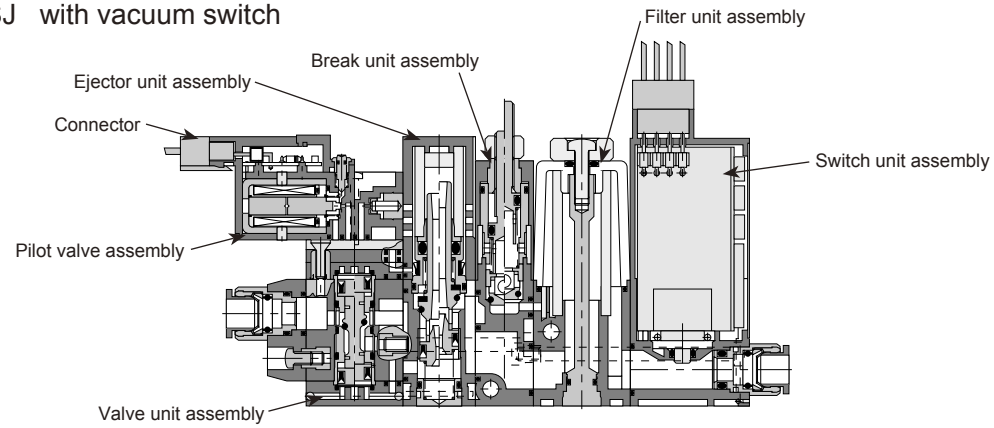
1. The supply pressure above applies at vacuum generation.
2. An abnormal popping may sound at the supply pressure (H type: 0.4 to 0.45 MPa, E type: 0.29 to 0.32 MPa) just before the ultimate vacuum peaks. This abnormal noise is because characteristics are unstable and increases with instability. This may adversely affect the sensor, etc. Reset supply pressure.
   (e.g. 1. When the H vacuum ejector operates with a base pressure of 0.5 MPa, an abnormal noise sounds when supply pressure drops to 0.43 MPa due to a pressure drop. → Reset the supply pressure to 0.5 MPa when the vacuum ejector operates.)
3. Select piping and components using a sectional area 3 times larger than the nozzle diameter. Satisfactory vacuum cannot be attained if a sufficient air flow cannot be ensured.
   (Popping occurs at the set pressure if the intake flow is insufficient, the ultimate vacuum cannot be attained, etc.)
   (e.g. 2. An abnormal noise sounds even when using the H vacuum ejector at a working pressure of 0.5MPa. → The air flow is insufficient. (The air flow is restricted preceding the vacuum ejector due to piping resistance, etc., keeping satisfactory air flow from being attained. → Select piping components that provide the required effective section.))
   (e.g. 3. When using the vacuum ejector with a 1.0mm nozzle diameter, cross-sectional area is $0.5^2 \times \pi = 0.785$ mm^2. Select piping and devices that ensure an effective section of 2.3 mm^2 or more.)

Internal structure drawing

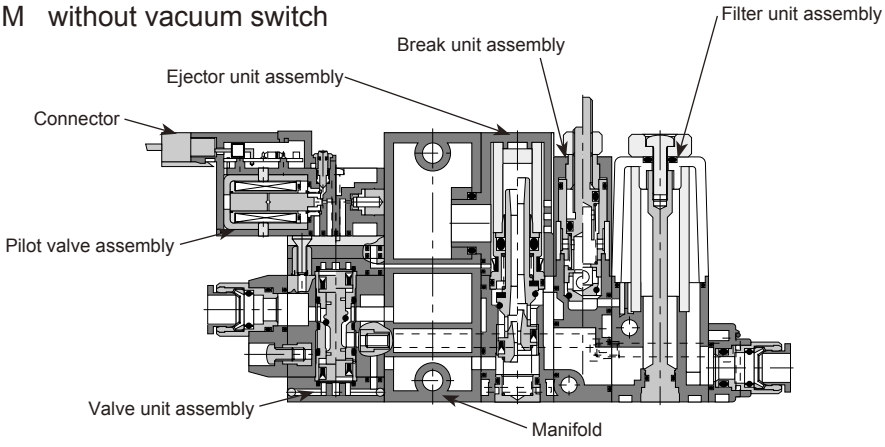
● Discrete type VSJ without vacuum switch



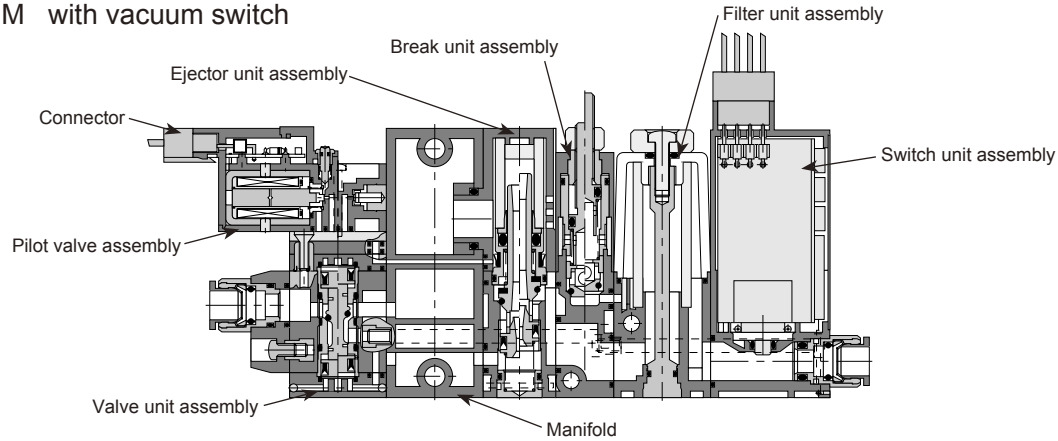
● Discrete type VSJ with vacuum switch



● Manifold type VSJM without vacuum switch

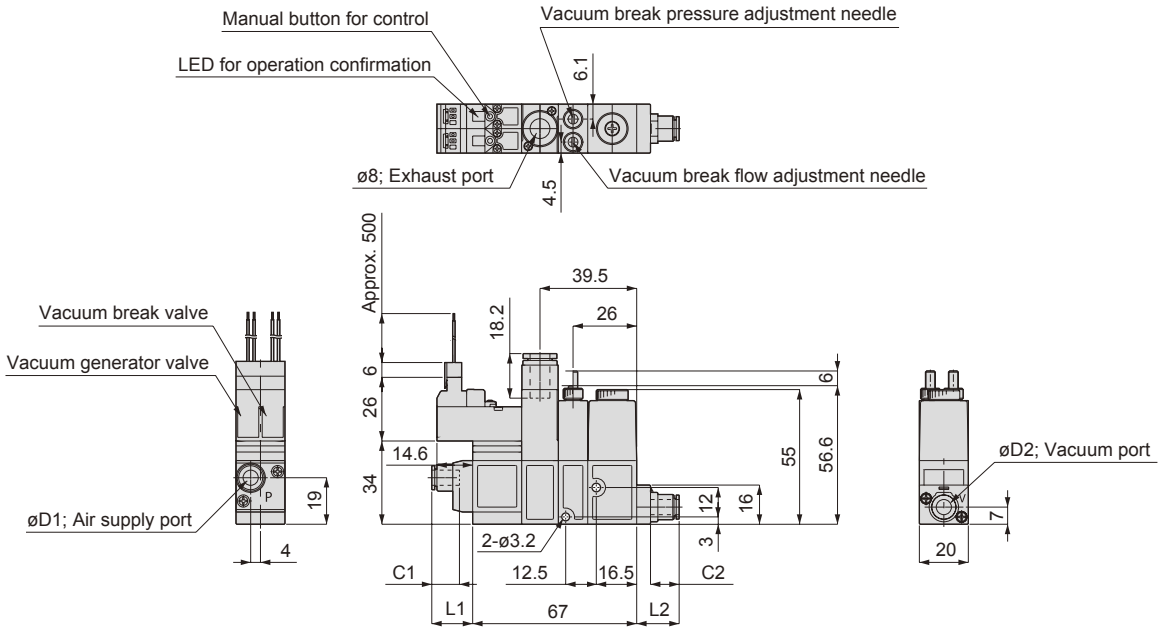


● Manifold type VSJM with vacuum switch



Dimensions (discrete type VSJ)

● Common exhaust without vacuum switch



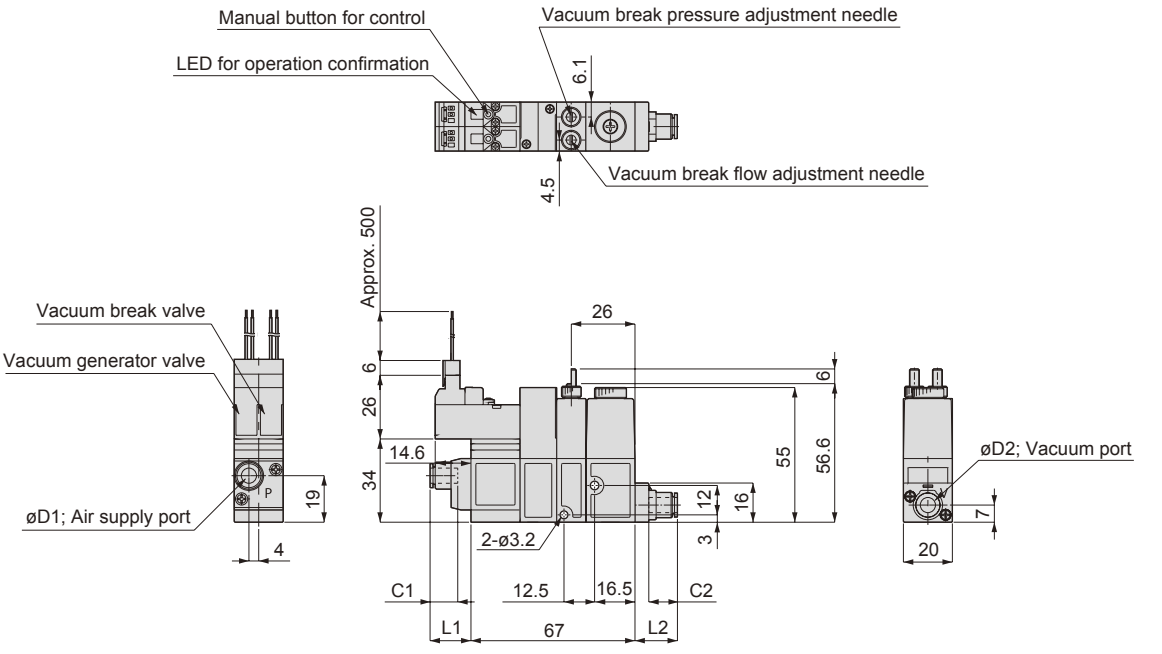
Unit: mm

Air supply port Tube outer diameter øD1	C1	L1
4	11.5	14.9
6	11.9	17.3

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	14.6
6	11.9	17.4
8	18.2	25.8

● Atmospheric release without vacuum switch



Unit: mm

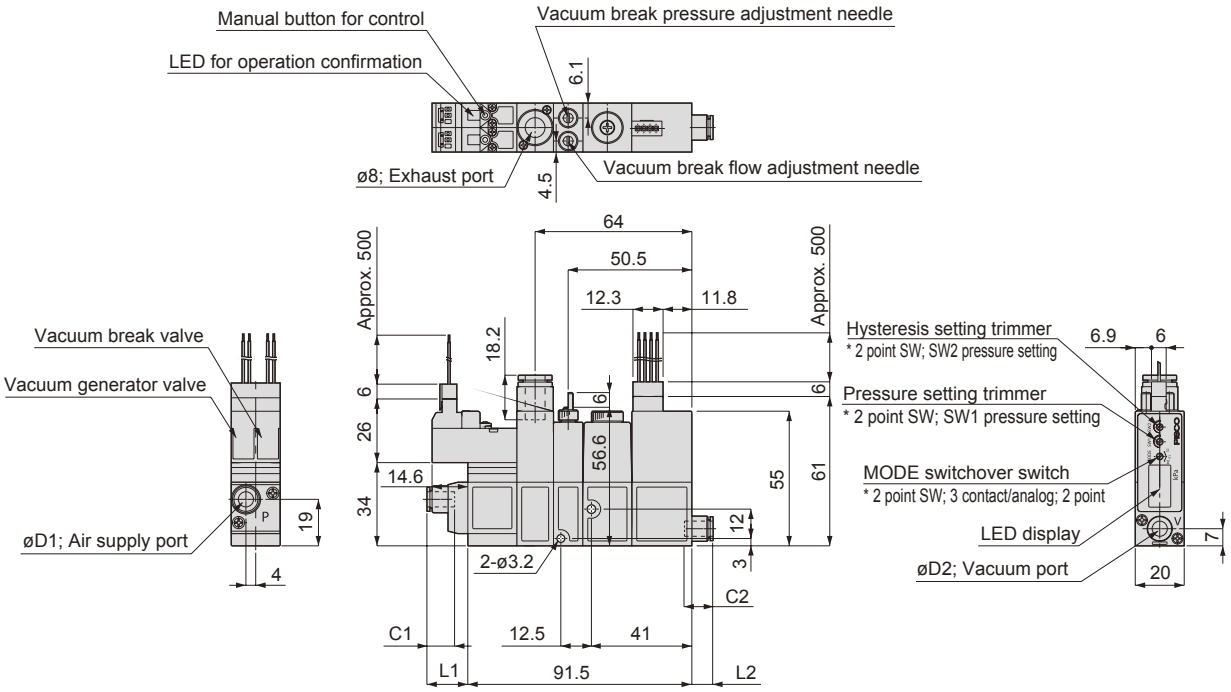
Air supply port Tube outer diameter øD1	C1	L1
4	11.5	14.9
6	11.9	17.3

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	14.6
6	11.9	17.4
8	18.2	25.8

Dimensions (discrete type VSJ)

● Common exhaust with vacuum switch



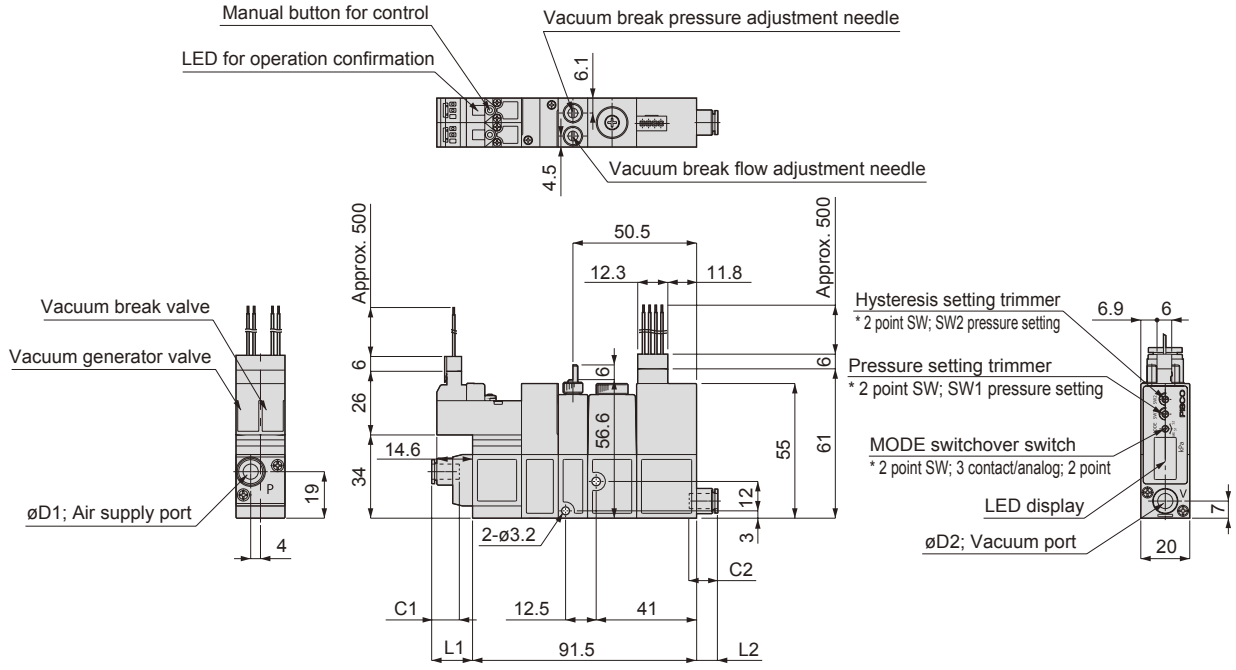
Unit: mm

Air supply port Tube outer diameter øD1	C1	L1
4	11.5	14.9
6	11.9	17.3

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	6.1
6	11.9	8.9
8	18.2	17.3

● Atmospheric release with vacuum switch



Unit: mm

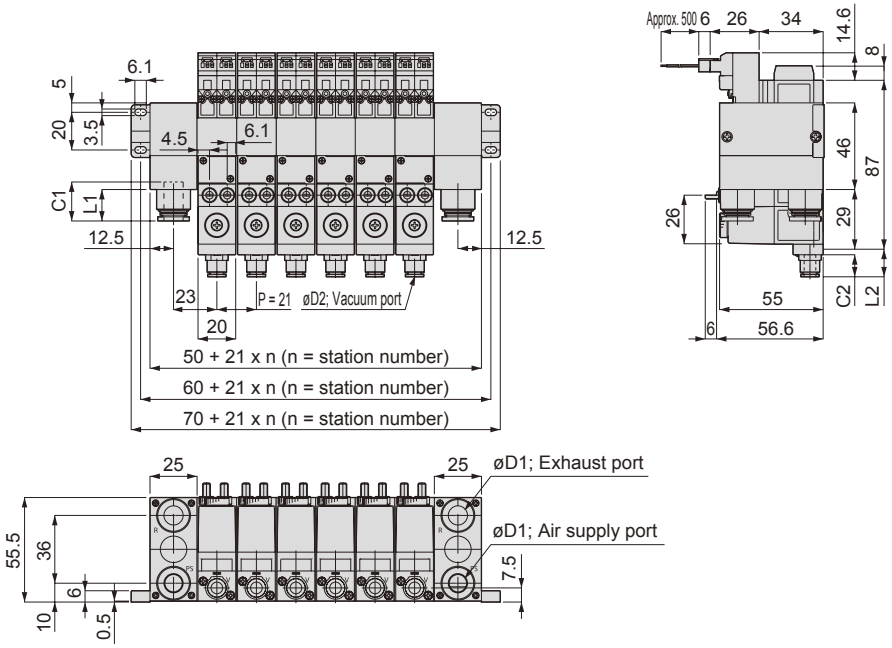
Air supply port Tube outer diameter øD1	C1	L1
4	11.5	14.9
6	11.9	17.3

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	6.1
6	11.9	8.9
8	18.2	17.3

Dimensions (manifold type VSJM)

● Common exhaust, vacuum port side common piping outlet direction, without vacuum switch



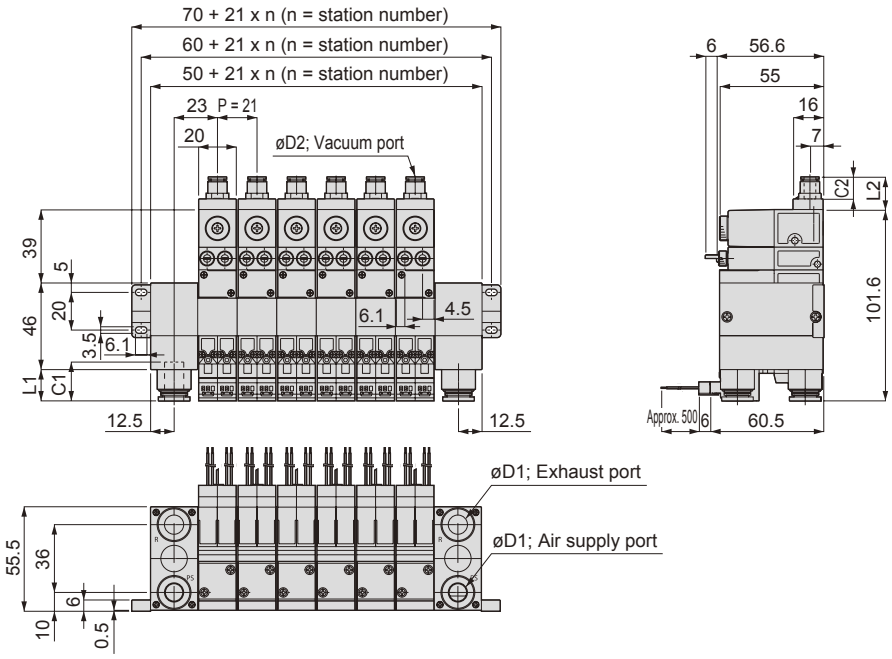
Unit: mm

Air supply port Tube outer diameter øD1	C1	L1
6	17	11.6
8	18.2	13.1
10	20.7	16.7

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	14.6
6	11.9	17.4
8	18.2	23.0

● Common exhaust, supply port side common piping outlet direction, without vacuum switch



Unit: mm

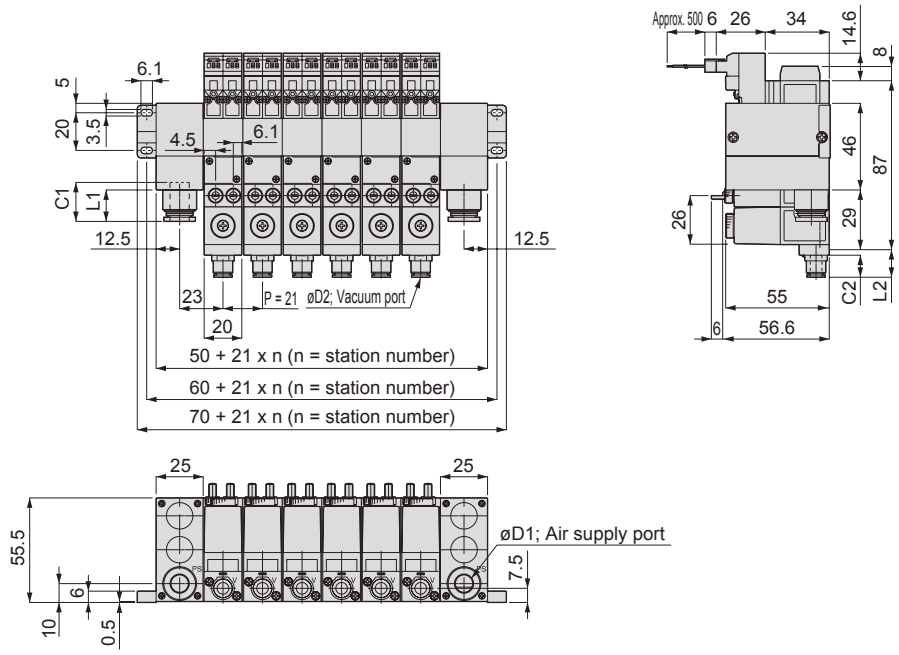
Air supply port Tube outer diameter øD1	C1	L1
6	17	11.6
8	18.2	13.1
10	20.7	16.7

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	14.6
6	11.9	17.4
8	18.2	23.0

Dimensions (manifold type VSJM)

● Atmospheric release, vacuum port side common piping outlet direction, without vacuum switch



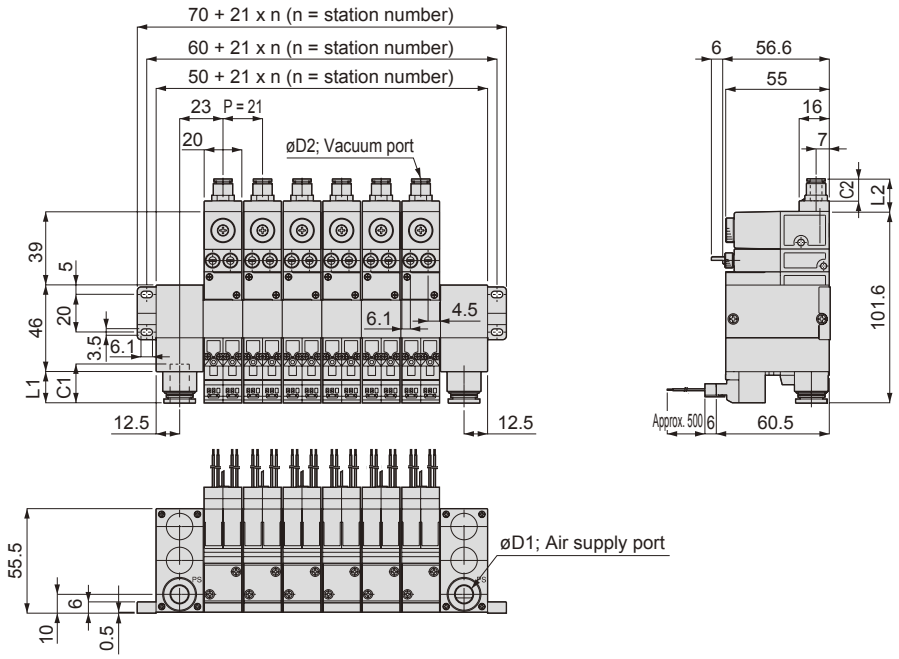
Unit: mm

Air supply port Tube outer diameter øD1	C1	L1
6	17	11.6
8	18.2	13.1
10	20.7	16.7

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	14.6
6	11.9	17.4
8	18.2	23.0

● Atmospheric release, supply port side common piping outlet direction, without vacuum switch



Unit: mm

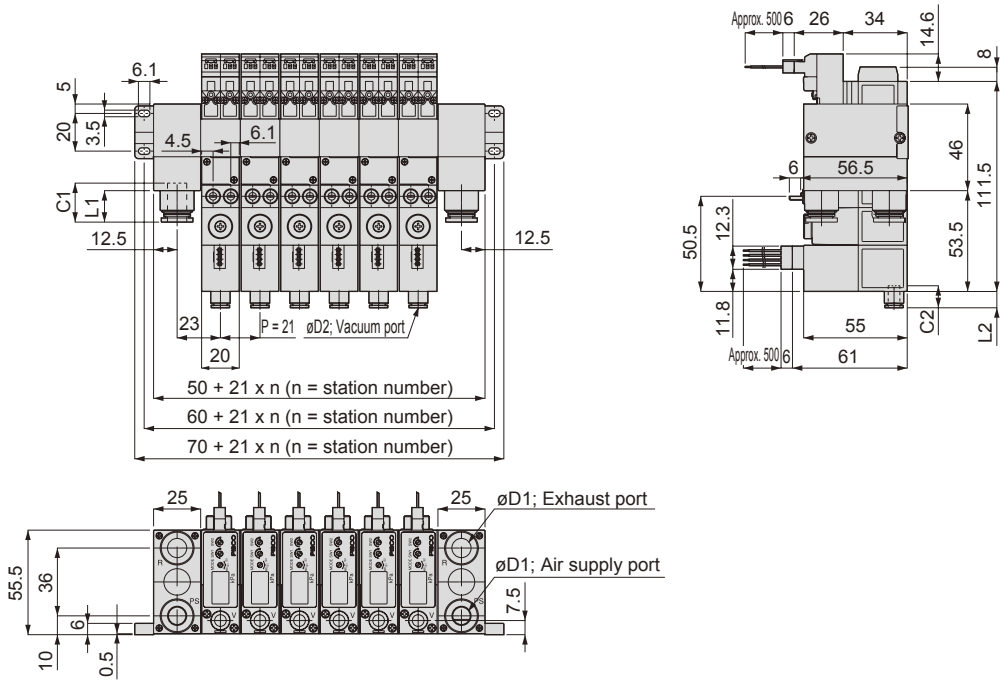
Air supply port Tube outer diameter øD1	C1	L1
6	17	11.6
8	18.2	13.1
10	20.7	16.7

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	14.6
6	11.9	17.4
8	18.2	23.0

Dimensions (manifold type VSJM)

● Common exhaust, vacuum port side common piping outlet direction, with vacuum switch



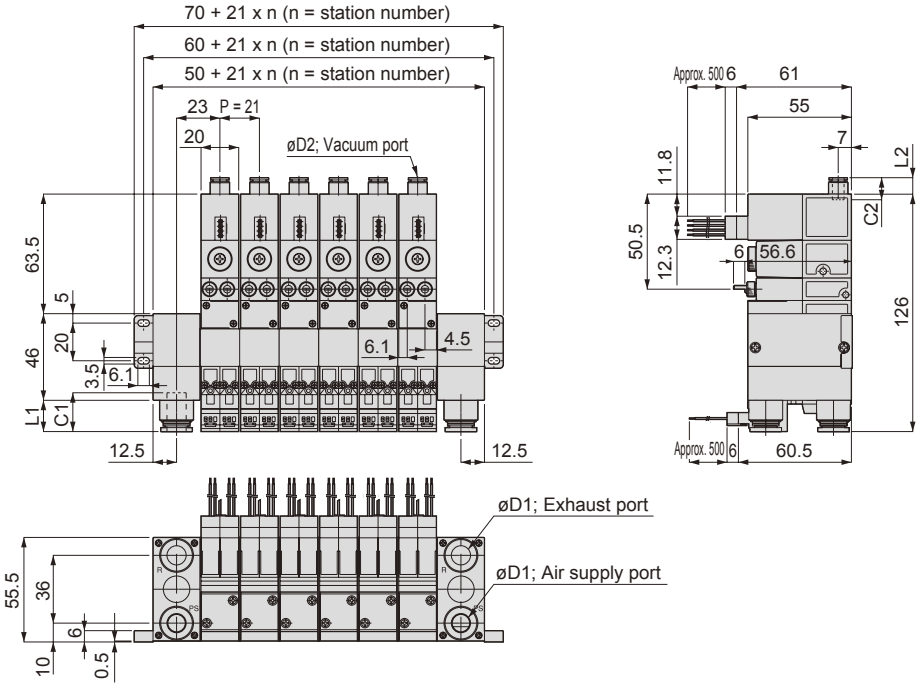
Unit: mm

Air supply port Tube outer diameter øD1	C1	L1
6	17	11.6
8	18.2	13.1
10	20.7	16.7

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	6.1
6	11.9	8.9
8	18.2	17.3

● Common exhaust, supply port side common piping outlet direction, with vacuum switch



Unit: mm

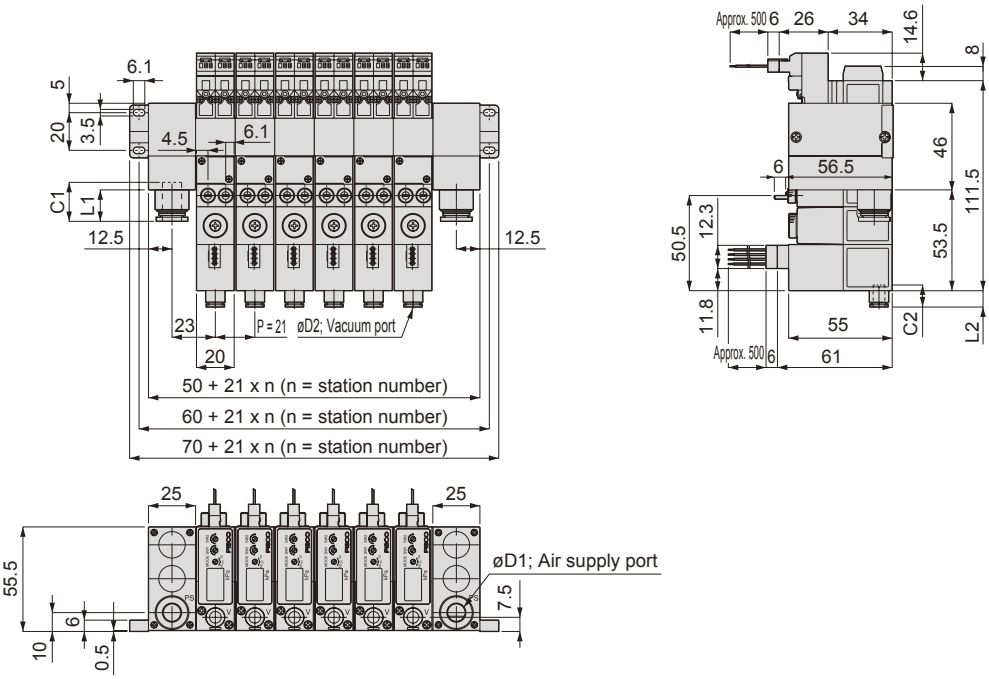
Air supply port Tube outer diameter øD1	C1	L1
6	17	11.6
8	18.2	13.1
10	20.7	16.7

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	6.1
6	11.9	8.9
8	18.2	17.3

Dimensions (manifold type VSJM)

● Atmospheric release, vacuum port side common piping outlet direction, with vacuum switch



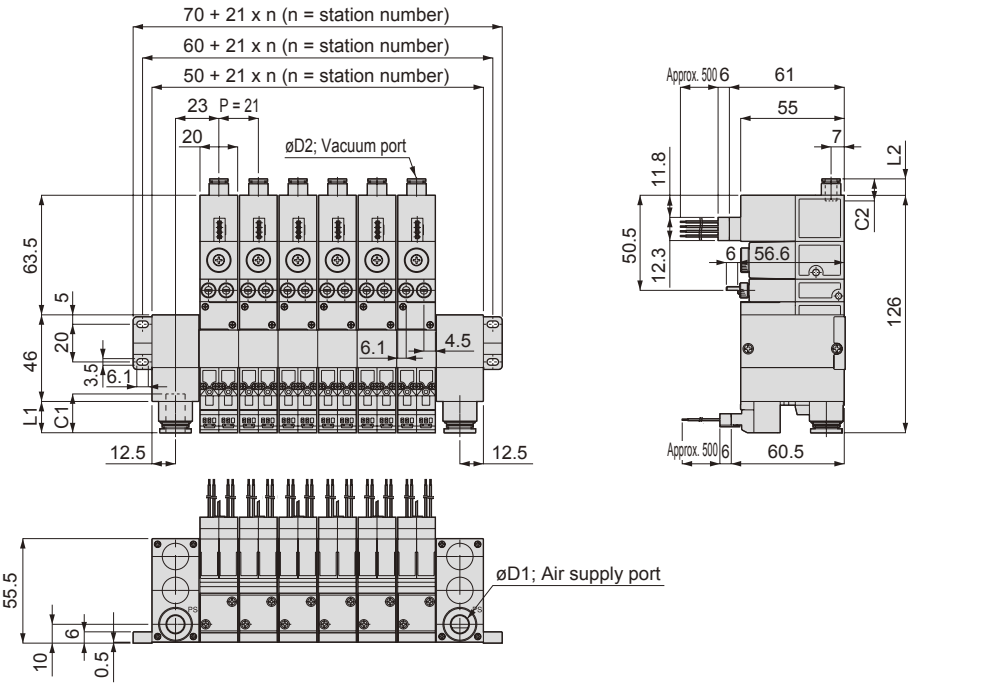
Unit: mm

Air supply port Tube outer diameter øD1	C1	L1
6	17	11.6
8	18.2	13.1
10	20.7	16.7

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	6.1
6	11.9	8.9
8	18.2	17.3

● Atmospheric release, supply port side common piping outlet direction, with vacuum switch



Unit: mm

Air supply port Tube outer diameter øD1	C1	L1
6	17	11.6
8	18.2	13.1
10	20.7	16.7

Unit: mm

Vacuum port Tube outer diameter øD2	C2	L2
4	11.2	6.1
6	11.9	8.9
8	18.2	17.3

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.
- Vacuum leaks are tolerated with models with vacuum holding. Provide separate safety precautions if vacuum must be held for a long time.
- 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 (VSJ-**A···), 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.

⚠ CAUTION

- Do not apply excessive tension or bending to the pilot valve or vacuum switch leads. Wires or connectors may break.
- When using manifold specifications, the number of manifold or combination of installed devices may adversely affect performance or other station vacuum ports. Consult with CKD if you have questions.
- 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.
- Avoid using this vacuum ejector in environments with corrosive or flammable gas. Do not use this unit for fluids.
- Do not operate the vacuum break valve while generating vacuum.
- When replacing the vacuum port's cartridge joint, wipe away all dirt and foreign matter and insert the set pin securely.
- When replacing the supply port joint block, check that packing has not dropped off. Wipe away all dirt and foreign matter and tighten the set screw securely to the specified tightening torque.

Precautions for using the manifold

- When the number of manifold stations increases, problems such as a drop in vacuum performance due to insufficient air supply, a drop in vacuum performance due to insufficient exhaust port capacity, or entry of exhaust into the vacuum port could occur. The number of stations that can be operated simultaneously differs according to the nozzle size and vacuum performance etc. Contact CKD for details.

How to use

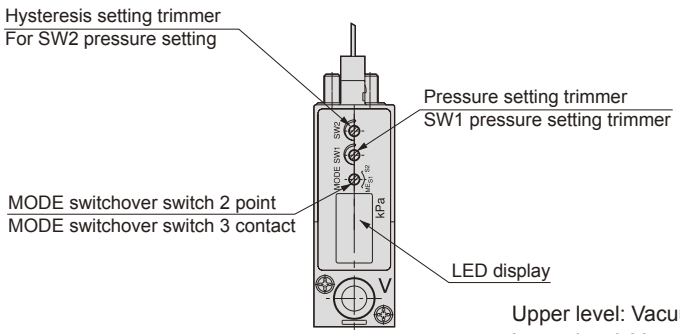
1. Vacuum switch

(1) How to set pressure

① Energizing (check wiring and supply DC power.)
② Set the display change switch to pressure setting mode. (ME→S1 or S2, SW)
② -2 (only vacuum switch with analog output)
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 display change switch to ME, apply pressure, and check that the sensor operates practically.
(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.
(vacuum switch with analog output)
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 display change switch to pressure display mode (ME) and gradually increase and decrease pressure near the set pressure. Read values at which the operation indicator turned on and off. The difference in displayed values is hysteresis.
④ Example of hysteresis adjustment
・If pressure has a pulse and output is thin and intermittent, use large hysteresis.



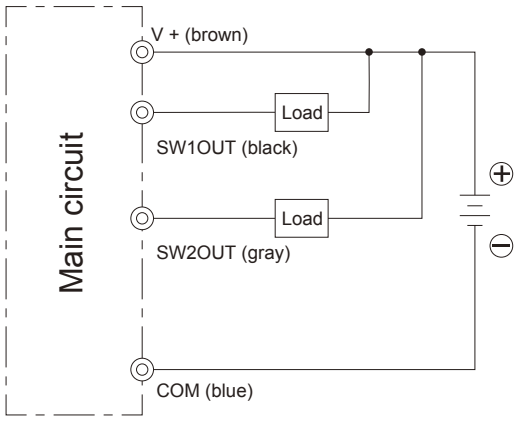
Upper level: Vacuum switch with analog output
Lower level: Vacuum switch with 2-point switch output

⚠ Cautions

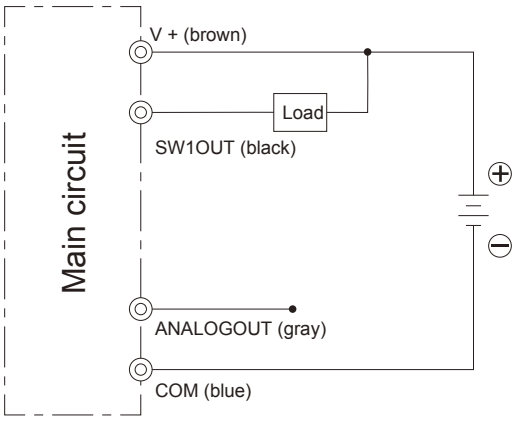
① Do not use this vacuum switch in fluids or in an atmosphere with corrosive substances. The switch could be damaged.
② Do not use wiring or applications that may cause noise (surge), etc., to be applied. The switch could be damaged.
③ Do not use this vacuum switch in an atmosphere containing fluids 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 Check that pressure exceeding 0.2 MPa is not constantly applied during a vacuum release. 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 80mA.
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 force to the sensor.

How to use

(4) Connection method



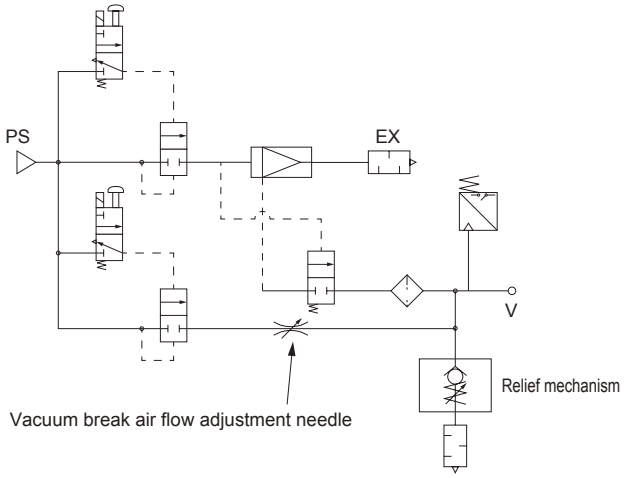
Vacuum sensor with 2 point switch output



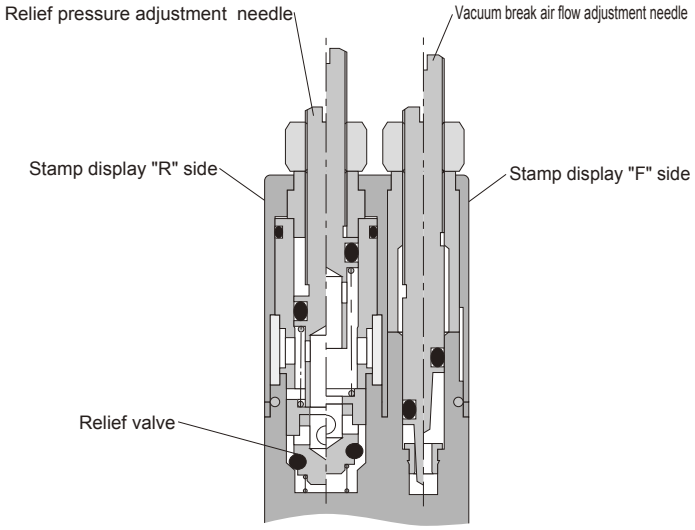
Vacuum sensor with analog output

2. Relief valve adjustment method

(1) Circuit diagram and structural drawing



Circuit diagram (VSJ-**B normally closed type)



Vacuum break unit section structural drawing

(2) See the relief needle opening limit in Table 1, and adjust the relief needle to set the relief pressure.

Table 1 Relief needle open degree limit

Vacuum characteristics	H: (high vacuum medium flow type)				L: (medium vacuum large flow rate type)			E: (high vacuum small flow rate type)		
Nozzle diameter (mm)	0.5	0.7	1.0	1.2	0.5	0.7	1.0	0.7	1.0	1.2
Max. open degree (rotation)	6.5	7.5	8.5	9.0	7.5	8.0	9.0	7.5	8.0	8.5

* Values in Table 1 apply to rated air pressure. The relief needle opening limit differs based on the supplied air pressure, vacuum properties, and vacuum piping (capacity), etc., so use values in Table 1 as references.

(3) After setting the relief needle, confirm that the vacuum properties and vacuum startup time are correct.

* If the relief needle opening limit in Table 1 is exceeded, the vacuum startup time could be delayed, or the correct vacuum degree may not be attained. (Refer to page 83 for " (5) Others ".)

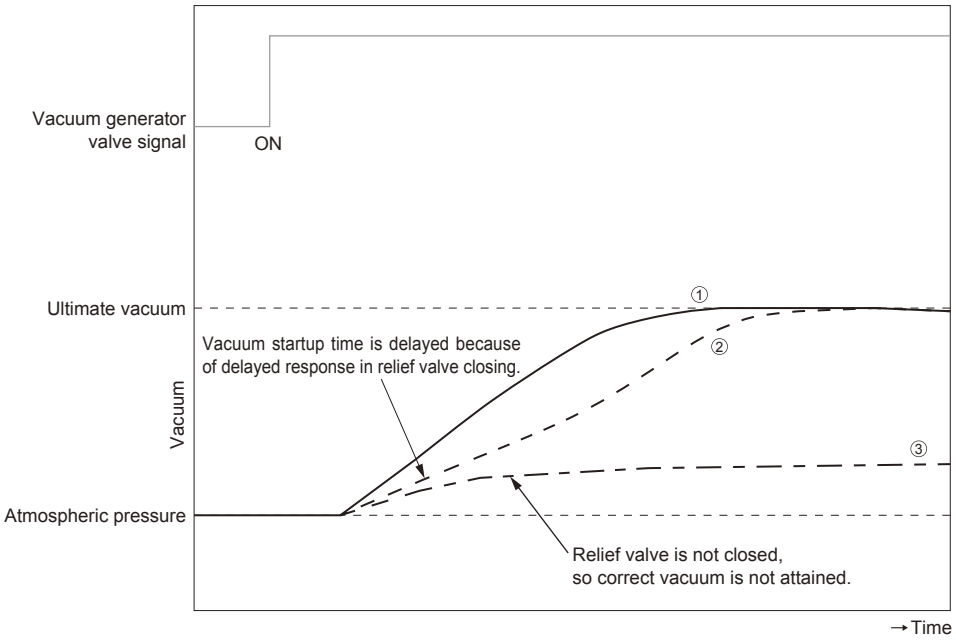
(4) Set the required vacuum break flow rate with the vacuum break flow rate adjustment needle.

* To shorten the vacuum break time, increase the vacuum air break flow rate.
* If the workpiece is blown, etc., reduce the vacuum air break flow rate.

How to use

(5) Other

1) If the relief needle opening is within the range, vacuum startup with ① in the graph below is attained.
2) If the relief needle limit is exceeded, the vacuum startup state with ② in the graph below is attained and the vacuum startup time is delayed.
3) If the relief needle is further opened, the state with ③ in the graph below is attained, and the correct vacuum degree is not attained.



Preparing the VSJM mixed manifold specifications

● Mixed manifold model No. (Example)

	Ⓐ	Ⓑ	Ⓒ		Ⓓ	Ⓔ	Ⓕ		Ⓖ		Ⓗ	Ⓘ		Ⓙ
VSJM -	Z	00	Z	-	CX	8	8	-	3	-	5	B	-	Z

● Mixed manifold specifications (Example)

Vacuum ejector model no. Ⓐ Ⓑ Ⓒ Ⓓ Ⓙ	Layout position 1	2	3	4	5	6	7	8	9	10	Quantity
VSJM - H 07 B - 4 - W	○	○									2
VSJM - H 07 A - 4 - W			○	○							2
VSJM - E 10 B - 6 - A					○						1
VSJM -											
VSJM -											

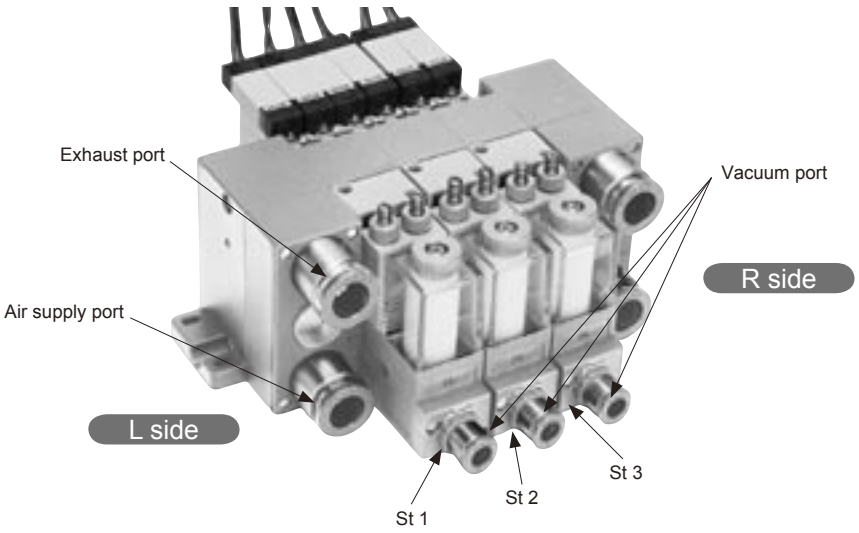
(Specifications when only output port size joints are mixed)

● Mixed manifold model No. (Example)

	Ⓐ	Ⓑ	Ⓒ		Ⓓ	Ⓔ	Ⓕ		Ⓖ		Ⓗ	Ⓘ		Ⓙ
VSJM -	H	07	B	-	CX	8	5	-	3	-	5	B	-	W

● Mixed manifold specifications (Example)

Vacuum ejector model no. Ⓐ Ⓑ Ⓒ Ⓓ Ⓙ	Layout position 1	2	3	4	5	6	7	8	9	10	Quantity
VSJM - H 07 B - 4 - W	○	○									2
VSJM - H 07 B - 6 - W			○	○							2
VSJM - H 07 B - 8 - W					○						1
VSJM -											
VSJM -											



* The stations numbers are assigned as St. 1, St. 2 to St. 10 from the L side looking at the vacuum port from the front.

<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.

VSJM mix manifold specifications

Contact | Quantity Sets | Delivery / /

Issue / /

Customer name

Slip No. | Order No.

Person in charge

Order No.

● Mixed manifold model No.

VSJM - Ⓐ Ⓑ Ⓒ - Ⓓ Ⓔ Ⓕ - Ⓖ - Ⓗ Ⓘ - Ⓙ

Ⓐ Vacuum characteristics Note 1, 2, 3	
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.)

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

Ⓒ Valve type	
A	Normally open type
B	Normally closed type
D	Double solenoid type
Z	For mixed specifications (Indicate details in specification sheet.)

Ⓓ Vacuum port (V)	
4	ø4 push-in joint
6	ø6 push-in joint
8	ø8 push-in joint
CX	For mixed joint (Indicate details in specification sheet.)

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

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

Ⓖ Solenoid valve voltage	
1	100 VAC
3	24 VDC

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

Ⓘ Common piping outlet direction	
A	Vacuum port side
B	Supply port side

Ⓙ Vacuum switch specifications	
Blank	Without vacuum switch
W	2-point NPN output with LED display
A	NPN output 1 point + analog output with LED display
Z	For mixed specifications (Indicate details in specification sheet.)

⚠ Note on model no. selection

Note 1: Ⓐ E and Ⓑ 05 and Ⓐ L and Ⓐ B 12 combination can not be selected.

Note 3: For Ⓐ Z. Only Ⓑ 00 can be selected.
For Ⓑ 00. Only Ⓐ Z can be selected.

● Mixed manifold specification sheet

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