



Even if the workpiece comes off, vacuum is maintained for workpieces in other circuits.
Position locking valve

VSECV Series

● Port size: M3, M4, M5, M6, M10, R1/8



Features

- When two or more pads are used, pads that suction normally reduce the vacuum pressure decline even if other pads are not suctioning. Thus, preventing the workpiece from falling.

Specifications

Descriptions		VSECV
Working fluid		Air
Working pressure	Positive pressure MPa	0 to 0.7
	Negative pressure kPa	-100 to 0
Operating ambient temperature °C		0 to 60

Vacuum-related products

VSECV

VSRVV

VSLF

VSB/VSFU
VSFJ

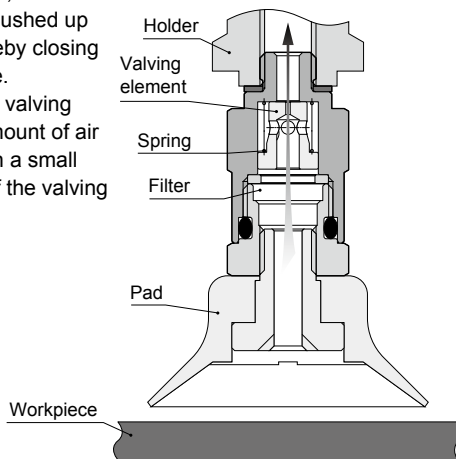
FSL

VSUS

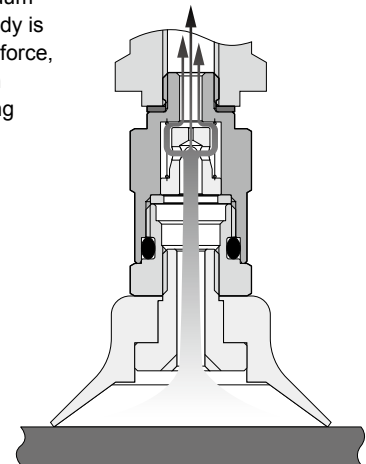
VST

Position locking valve operational explanation

- Position locking valve operational status
If the workpiece is detached from the suction pad, the valving element is pushed up by the air flow, thereby closing the suction passage. When operating the valving element, a small amount of air is suctioned through a small hole at the center of the valving element.

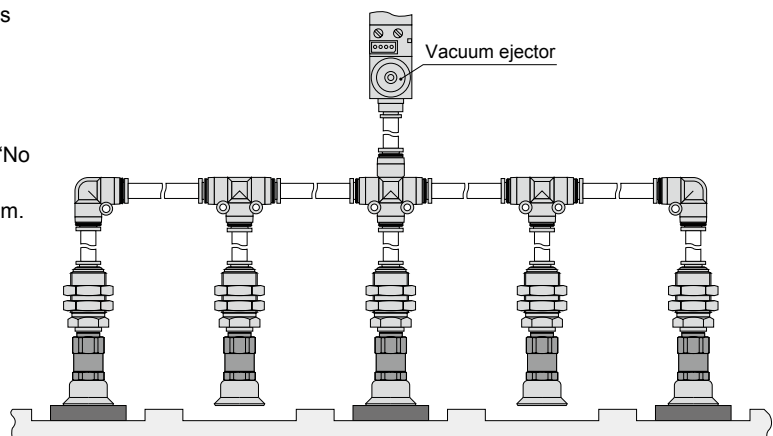


- Workpiece suction status
When the workpiece comes into close contact with the suction pad, the suction flow rate of vacuum decreases and the valve body is pushed down by the spring force, thereby opening the suction passage between the valving element and the main body.



Piping example

- When using multiple vacuum pads with a single vacuum ejector or vacuum pump, if pads separate from the workpiece but the minimum graspable quantity of pads are still adhering to the workpiece, the suction at the separated pads are automatically reduced, whereby lowering the vacuum loss of the entire system. Thus, stoppages of handling workpieces and other problems can be prevented. When adopting this system, be sure to be aware of the minimum number of pads required for the conveyance of workpieces. Also, if the minimum number of pads are not met, an NG "No Good" judgment of the situation needs to be realized and appropriate safety measures need to be put into the system.



How to order

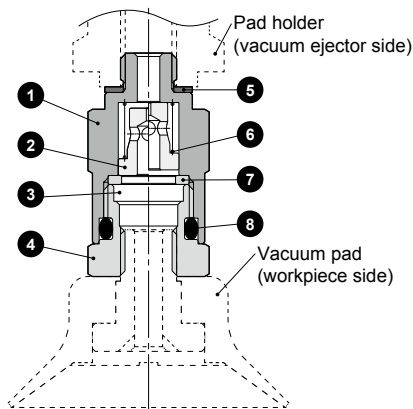
● Position locking valve

VSECV - M4

Ⓐ Port thread size

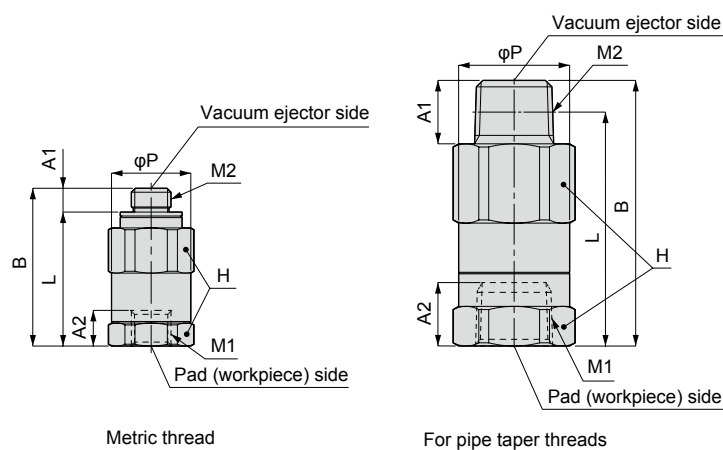
Code	Content
Ⓐ Port thread size	
M3	M3×0.5
M4	M4×0.7
M5	M5×0.8
M6	M6×1
M10	M10×1.5
6A	R1/8

Internal structure



No.	Part name	Material				
		VSECV-M3	VSECV-M4	VSECV-M5	VSECV-M6	VSECV-M10 VSECV-6A
1	Metal body A	Stainless steel		Copper alloy, electroless nickel		Aluminum, electroless nickel
2	Valving element	Aluminum				
3	Filter	PVF				
4	Metal body B	Copper alloy, electroless nickel			Aluminum, electroless nickel	
5	Gasket	SUS304+NBR				
6	Spring	SUS304				
7	Stopper	Copper alloy, electroless nickel				
8	O-ring	NBR				

Dimensions



Model No.	M1	M2	A1	A2	B	L	φP	Opposite side H	Valving element min. working intake flow rate (ℓ/min (ANR))	Effective cross-sectional area (mm ²)		Weight (g)
										Free flow	Controlled flow	
VSECV-M3	M3×0.5	M3×0.5	2.5	4.5	18.4	15.9	8	8	2	0.7	0.09	4.9
VSECV-M4	M4×0.7	M4×0.7	2.9	4.5	19.9	16.9	10	10	5	1.6	0.09	7.9
VSECV-M5	M5×0.8	M5×0.8	3	4.5	19.9	16.9	10	10	5	1.6	0.09	6.6
VSECV-M6	M6×1	M6×1	4	4.9	28.1	24.1	12	12	13	4.0	0.09	13
VSECV-M10	M10×1.5	M10×1.5	10	7.5	40	32.5	14	14	13	4.8	0.1	11
VSECV-6A	Rc1/8	R1/8	8	8	33.5	29.5	14	14	13	4.8	0.1	10

Target suction pad list

Model No.	Pad shape	Pad size (mm)	Holder shape (including long stroke length)					
			VSP-A	VSP-B	VSP-C	VSP-D	VSP-E	VSP-F
			VSP-MA	VSP-MB	VSP-MC	VSP-MD	VSP-ME	-
VSECV-M3	Standard	φ1.5, φ2, φ3, φ4					○	-
VSECV-M4	Standard	φ10, φ15		○			-	○
	Bellows	φ10, φ15		○			-	○
	Multi-stage bellows	φ10		○			-	○
	Soft	φ4, φ6, φ8, φ10, φ15		○			-	○
	Soft bellows	φ6, φ8, φ10, φ15		○			-	○
	Anti-slip	φ10		○			-	○
	Flat	φ10, φ15		○			-	○
	Suction mark prevention	φ10		○			-	○
VSECV-M5	Standard	φ6, φ8		-			○	-
	Bellows	φ6, φ8		-			○	-
	Thin object	φ8, φ10, φ15, φ20		-			○	-
VSECV-M6	Standard	φ20, φ25, φ30, φ40, φ50		○			-	○
	Sponge	φ10, φ15, φ20, φ25, φ30, φ35, φ50		○			-	○
	Bellows	φ20, φ25, φ30, φ40, φ50		○			-	○
	Multi-stage bellows	φ20, φ30, φ40, φ50		○			-	○
	Oval	2×4 to 8×30		○			-	○
	Soft	φ20, φ30, φ40		○			-	○
	Soft bellows	φ20		○			-	○
	Anti-slip	φ20, φ30, φ40, φ50		○			-	○
	Flat	φ20, φ25, φ30		○			-	○
	Suction mark prevention	φ20, φ30		○			-	○
VSECV-M10	Standard	φ60, φ80, φ100		○			-	-
	Bellows	φ70, φ100		○			-	-
	Thin object	φ80		○			-	-

[How to order]

[Example] Holder shape: B/pad size: φ30 mm/pad shape: bellows/pad material: position locking valve mounted on nitrile rubber.

VSP - B 30 B N - 6A - V

Code V : With position locking valve

⚠ Precautions for model No. selection (Items common to all models)

*1 : When selecting free holder (code F1, F2), position locking valve (code V) cannot be selected.

*2 : The suction pad shape/pad size and holder shape to which this option selection applies will be within the range of "Target suction pad list" in the above table.

Safety precautions

⚠ WARNING

- Since it is not a check valve, vacuum is not held unless there is a hold function on the vacuum source side. Do not use for vacuum holding.
- The design allows multiple suction pads to be mounted on a single ejector, but before using the product, confirm the performance with the actual device.
- When using a sponge pad, if the valving element is operated under conditions where leakage exceeding the valving element operating intake flow rate occurs, the workpiece may fall.

⚠ CAUTION

- Precautions for body mounting and removal
 - (1) Use an appropriate tool to mount/remove the product.
 - (2) When mounting, refer to the recommended tightening torque of each thread size (see the following table).

Table. Recommended tightening torque

Thread size	Tightening torque
M3×0.5	0.5 N·m
M4×0.7	0.9 to 1.0 N·m
M5×0.8	1.0 to 1.5 N·m
M6×1	1.5 to 2.0 N·m
M6×0.75	0.8 to 1.0 N·m
M8×0.75	1.0 to 2.0 N·m
M10×1	3.0 to 4.0 N·m
R1/8	7.0 to 9.0 N·m

- Precautions for body screw tightening position
 - (1)When attaching the male thread side of the position locking valve to the device or holder, tighten using the opposite side hexagon of the male thread side and confirm that there is no looseness. Refer to the recommended tightening torque in the table above for tightening.
 - (2)When attaching the female thread side of the position locking valve to the device or pad, tighten using the opposite side hexagon of the female thread side and confirm that there is no looseness. Refer to the recommended tightening torque in the table above for tightening.
 - (3)Refer to the recommended tightening torque in the table above for tightening the body screws during element replacement.
- Since the pressure drop of this product is very small even when the workpiece is not being suctioned, when checking suction in a pressure sensor, etc., be sure to check thoroughly with the actual device before use. If the filter element clogs, the pressure fall when the workpiece is not suctioned becomes even smaller so take additional care when setting the pressure sensor, etc.
- Check the structure diagram of the product when replacing the element. Also, be careful not to lose the position locking valve components during replacement.

Vacuum-related products

Selection method

Based on the valving element operating minimum intake flow rate in the table below and the sample graph, find how many position locking valves can be installed in one vacuum generator.

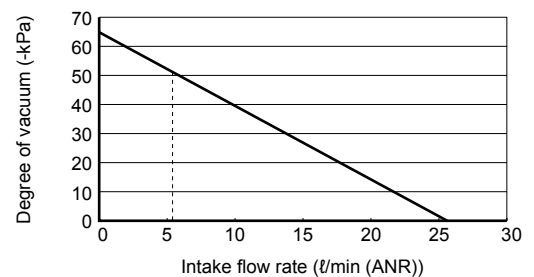
Descriptions	VSECV-M3	VSECV-M4	VSECV-M5	VSECV-M6	VSECV-M10	VSECV-6A
Valving element working minimum intake flow rate ℓ/min(ANR)	2.0	5.0	5.0	13.0	13.0	13.0
Vacuum drop rate when not suctioned kPa	2.0	2.0	2.0	2.0	2.0	2.0

VSECV
VSRVV

Example 1. VSJ-L07...
(catalog data)

Achieved vacuum level (-kPa)	Intake flow rate (ℓ/min(ANR))
66.5	26

Based on the catalog data, with reference to the completed figure on the right and the valving element working minimum intake flow rate table above, the type and maximum quantity of the operable position locking valves than can be used is calculated.



VSLF
VSFB/VSFU
VSFJ

■ When using at vacuum degree of -50 kPa

Since the intake flow rate is about 6 ℓ/min (ANR), operable position locking valve model No.: VSECV-M3, VSECV-M4, VSECV-M5 can be obtained.

No. of valves used and non-suctioned locations for VSECV-M3: 3,

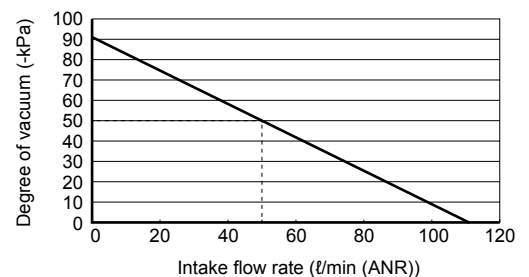
No. of valves used and non-suctioned locations for VSECV-M4, VSECV-M5: to allow up to 1 valve.

FSL
VSUS

Example 2 VSQ-H2O...
(catalog data)

Achieved vacuum level (-kPa)	Intake flow rate (ℓ/min(ANR))
93	110

Based on the catalog data, with reference to the completed figure on the right and the valving element working minimum intake flow rate table above, the type and maximum use quantity of the operable position locking valves can be obtained.



VST

■ When using at vacuum degree of -50 kPa

Since the intake flow rate is about 52 ℓ/min (ANR), operable position locking valve model No.: VSECV-M3, VSECV-M4, VSECV-M5, VSECV-M6, VSECV-M10, VSECV-6A can be obtained.

No. of valves used and non-suctioned locations for VSECV-M3: 21 (*1),

for VSECV-M4, VSECV-M5: 10,

for VSECV-M6, VSECV-M10, VSECV-6A: to allow up to 4 valves.

*1 : VSECV-M3 can theoretically support up to 25 valves upon calculation by suction flow alone, but since the reduction in degree of vacuum per valve is -2 kPa as described above, with all 25 valves in the suctioning state, the degree of vacuum: $-93 + (2 \times 25) = -43$ kPa. Therefore, when used at -50 kPa: $-93 + (2 \times x) \leq -50 \Rightarrow x \leq 21.5$ ∴ Max. non-suctioned locations: 21 valves.