

All-in-One Unit

Vacuum generation valve

Blow-off flow adjustment needle

Pressure sensor

Blow-off valve

Filter

Silencer

Height 96.5 mm

Length 98.5 mm

Width 10 mm

※ Silencer/MPS-10 sensor mounted

Compact/Light weight

- Weight 87g (Single unit, without sensor)
- 10mm width body
- Resin body

※ The photograph is with MPS-10

Air consumption reduced

- Air consumption is only 10L/min(ANR) by special X nozzle.
50% reduced ※Compared with MC22 series
- When using the energy-saving pressure sensor

Air consumption **can be reduced up to 60%!**
(※ According to our measurement condition)

Electricity rate **can be saved by 28,224 yen per year!**
(※ The work piece without air permeability)

Energy-saving MPS-10
(With solenoid valve control function)



Detail of the sensor → P.567

Comparison of calculation example of annual electricity rate (mounted with energy-saving sensor MPS-10)

Condition

The number of CONVUM : 20 pcs
Running time : 20 days/month
8 hours/day
50% of the running time is
vacuum adsorption time
 $20 \times 8 \times 0.5 = 80$ hours
 $= 4,800$ minutes
Electricity rate is calculated
by the compressor
 $1\text{m}^3 = 1.4$ yen $1\text{kWh} = 16$ yen

MC22-07HS type

Air consumption : $4,800\text{min} \times 22.5\text{L} \times 20 \text{ pcs} = 2,160,000\text{L} = 2,160\text{m}^3$
Electricity rate : $2,160\text{m}^3 \times 1.4 \text{ yen} \times 12 \text{ months} =$ **36,288 yen**

SC1X type

Air consumption : $4,800\text{min} \times 10\text{L} \times 20 \text{ pcs} = 960,000\text{L} = 960\text{m}^3$
Electricity rate : $960\text{m}^3 \times 1.4 \text{ yen} \times 12 \text{ months} = 16,128 \text{ yen}$

In addition, the consumption reduction rate is 50% when using the MPS-10 pressure sensor.

Electricity rate : $16,128 \text{ yen} \times 0.5 =$ **8,064 yen**

Low noise

Owing to the improvement
of silencer structure

**Reduced noise level
significantly
(Up to 12% reduced)**

Reduced **8.7dB(A)**
on average

Nozzle type	Closed the vacuum port			Opened the vacuum port		
	New type	Old type	Reduction value	New type	Old type	Reduction value
X	52.6	61.2	8.6	61.9	70.2	8.3
5S	62.2	70.4	8.2	66.5	75.2	8.7
7S	69.7	78.5	8.8	72.8	81.4	8.6
1S	74.6	83.4	8.8	75.9	84.6	8.7
5R	59.3	68.3	9.0	65.0	73.8	8.8
7R	68.5	78.0	9.5	72.0	80.7	8.7
1R	75.1	84.5	9.4	77.2	85.9	8.7

※Background noise: 40dB(A), measurement distance: 1m時

unit: dB(A)

In addition to silencer exhaust, concentrated exhaust can be selected

Exhaust the air to outdoor together → Can be used in the clean room, etc.

SC1 Compact Energy-saving CONVUM



How to Order

SC1 **M** **X** **V9** **C** **S** **S** **3** **1** **2** **L**

In case of manifold

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

① Body Type

S	Single unit
	
M	Manifold unit
	

② Nozzle Type

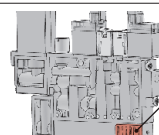
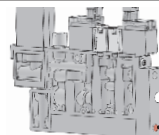
Symbol	Nozzle size [mm]	Rated pressure [MPa]	Maximum vacuum pressure [kPa]	Suction flow [L/min (ANR)]	Air consumption [L/min (ANR)]
X	-	0.5	-90	8.5	
5S	0.5	0.5	-87	5.5	
7S	0.7			11	22.5
1S	1.0			20	50
5R	0.5	0.35	-87	4	10
7R	0.7			9	22.5
1R	1.0			15	55

⑤ Vacuum Generation Valve Type

S	Normally closed
W	Self-holding ^{Note1}

Note1) The energy-saving function for the sensor doesn't work if the self-holding valve is selected.

⑥ Exhaust Type

S	Silencer exhaust		Silencer
C	concentrated exhaust ^{Note1.2}		Exhaust port

Note1) Please select check valve (select C in ④) when concentrated exhaust is selected for manifold type. And then it can prevent the air from warp rounding to the vacuum port.

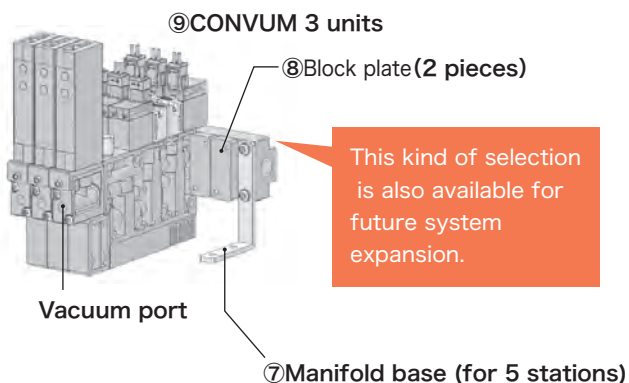
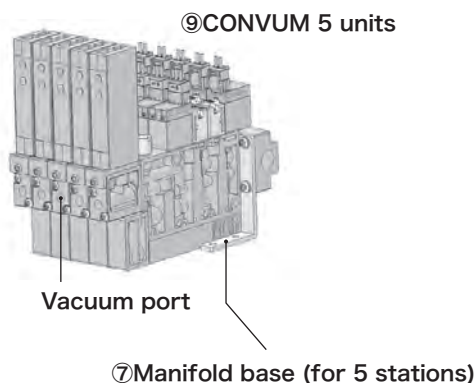
Note2) Concentrated exhaust cannot be selected when 1S or 1R nozzle is selected for single unit.

image of manifold selection

Number of ⑦ = Number of ⑧ + Number of ⑨

SC1M##505 Manifold base: 5 stations, CONVUM: 5 Units

SC1M##523L Manifold base: 5 stations, CONVUM: 3 units, block plate: 2 pieces



This kind of selection is also available for future system expansion.

Turn the vacuum port towards your side, placed the CONVUM to the left. (L type for ⑩)

③ Pressure Sensor

Symbol	Sensor type	Pressure range [kPa]	Display	Switch output	Analog output	Input specifications
V8	MPS-V81	-100 ~ 0	N/A	N/A	DC1 ~ 5 V	N/A
V9	MPS-V9	-101.3 ~ 0	Digital	NPN1 output	DC1 ~ 5 V	N/A
10	MPS-10 ^{Note1,2}	-101 ~ 500	Digital	NPN1 output	DC1 ~ 5 V	Sink
ZZ	Without sensor					

Note1)Energy-saving pressure sensor (solenoid valve control function mode)

Note2)Please select check valve (select C in ④) in case of using energy-saving function.

※Please consult with us for PNP output type.

④ Check Valve

Symbol	Check valve
C	With
N	N/A

⑦ Manifold Base

Symbol	No. of stations	Symbol	No. of stations
1	1 station	4	4 stations
2	2 stations	5	5 stations
3	3 stations	6	6 stations

⑧ No. of Block Plates

Symbol	No. of block plates	Symbol	No. of block plates
0	N/A	3	3 pieces
1	1 piece	4	4 pieces
2	2 pieces	5	5 pieces

⑨ No. of CONVUM

Symbol	No. of CONVUM	Symbol	No. of CONVUM
1	1 unit	4	4 units
2	2 units	5	5 units
3	3 units	6	6 units

⑩ Position of CONVUM

Blank	Figure of ⑦ and ⑨ are same
R	Placed to the right
L	Placed to the left

※Please turn the vacuum port towards your side, the CONVUM you faced cloud be either left or right upon chosen.



Recommend

These model number below satisfy general needs and functions with product advantages.

※Please feel free to contact us.

Product code	Model number	Specifications				
		Nozzle size (mm)	Pressure sensor	Check valve	Vacuum generation valve type	
203900074	SC1S5SV9CSS	0.5	Digital	With	Silencer	Normally closed
203900035	SC1S1SV9CSS	1.0	Digital	With	Silencer	Normally closed
203900079	SC1S5S10CSS	0.5	Digital, energy-saving	With	Silencer	Normally closed
203900011	SC1S1S10CSS	1.0	Digital, energy-saving	With	Silencer	Normally closed

Maintenance Parts

Single Unit

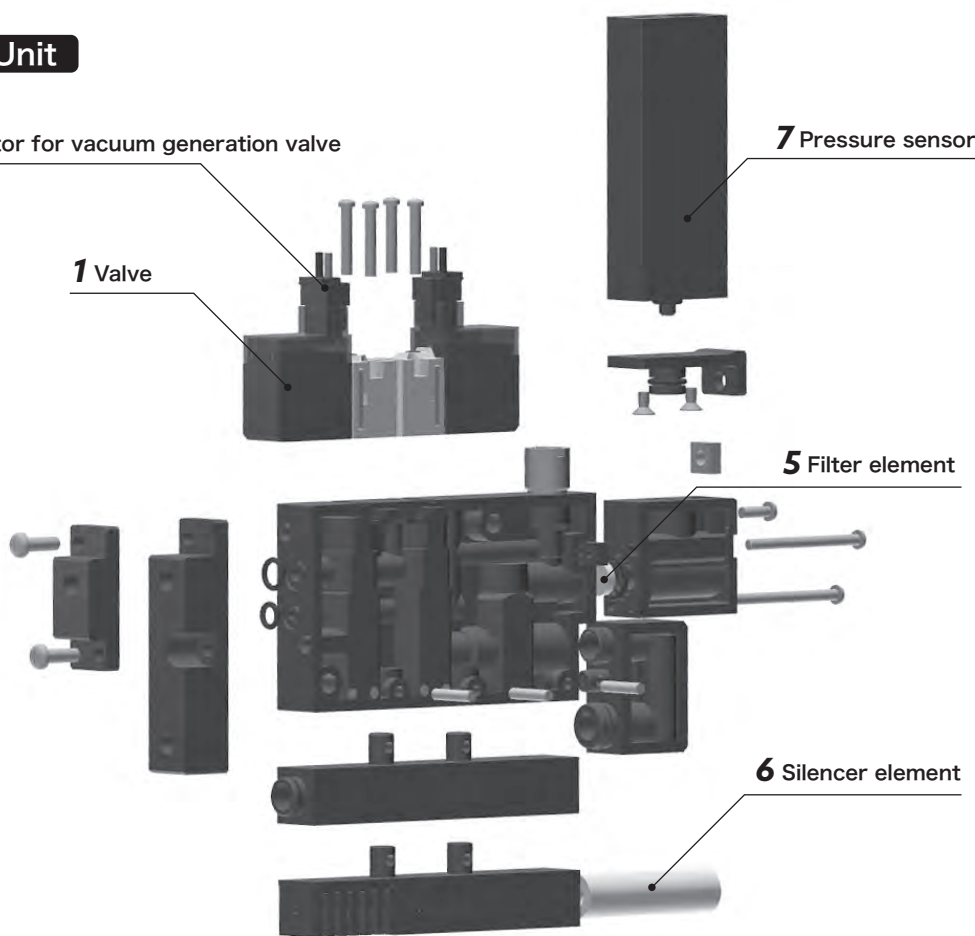
2 Connector for vacuum generation valve

7 Pressure sensor

1 Valve

5 Filter element

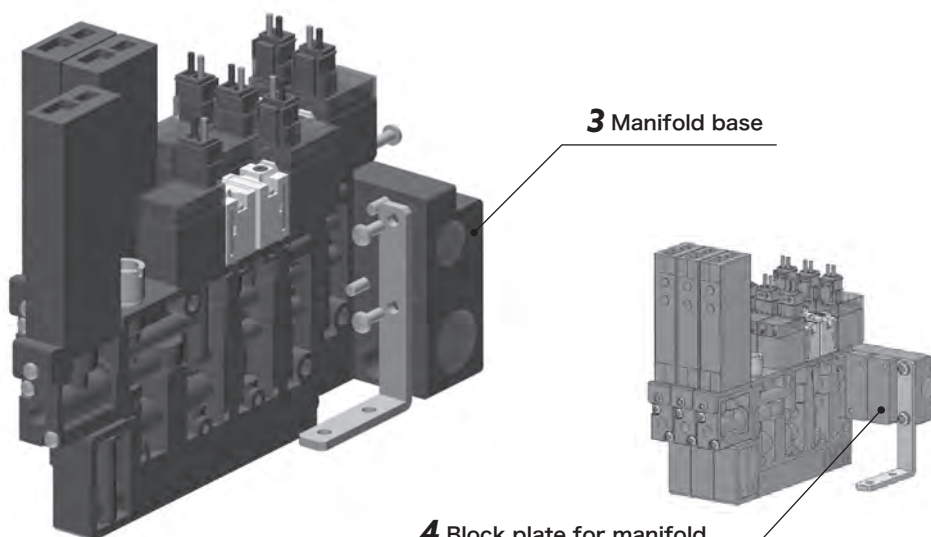
6 Silencer element





Manifold Unit

3 Manifold base

4 Block plate for manifold



1 Valve

<p>CKV010-4E Common for vacuum generation and blow-off</p> <p>※ Lead wire length 300mm ※ Gasket and mounting screw are included</p>	
<p>LV290-4E Self-holding type</p> <p>※ Lead wire length 300mm ※ Gasket and mounting screw are included</p>	

2 Connector for Vacuum Generation Valve
※With lead wire

CA **2** - V4 - **6**


Applicable valve

2	CKV010-4E
3	LV290-4E

Lead wire length (mm)

Blank	300
6	600
10	1000
20	2000 ^{Note1}
30	3000 ^{Note2}

Note1, 2) CKV010-4E only.



3 Manifold Base

SC1 - **MB** **1**

Exhaust type

MB	Individual exhaust
ME	Concentrated exhaust

No. of stations

1	1 station	4	4 stations
2	2 stations	5	5 stations
3	3 stations	6	6 stations

4 Block Plate for Manifold


SC1 - BP **B**

B	Individual exhaust
E	Concentrated exhaust

※For preventing air leak when reducing the body number of the manifold.

5 Filter Element

SC1 - **E** (5 pcs in 1 set)



6 Silencer Element ※Single unit only

SC1 - **SF**



7 Pressure Sensor
※O-ring and mounting screw are included

Model number	Specifications
MPS-V81-SC1	No display, analog output
MPS-V9-SC1	Digital display
MPS-10-SC-B	Energy-saving, digital display (normally closed, sink input)
MPS-10-SC-W	Wire-saving, digital display (self-holding, sink input)

8 Connector Cable for MPS-10 Sensor and Valve

MPS - 10 - VC - SC1 - **W**

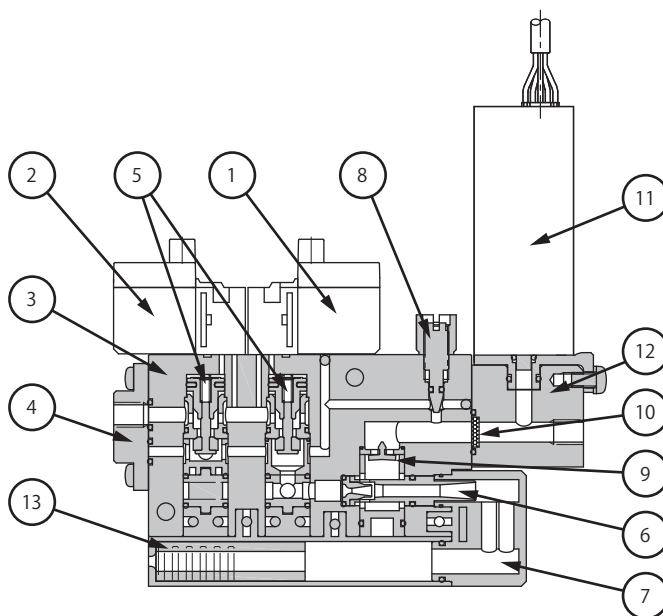
Blank	Normally closed
W	Self-holding

9 Vacuum Port Plate for Single Unit

SC1 - **M5**

※This parts required when changing from with sensor type unit to without sensor type unit.

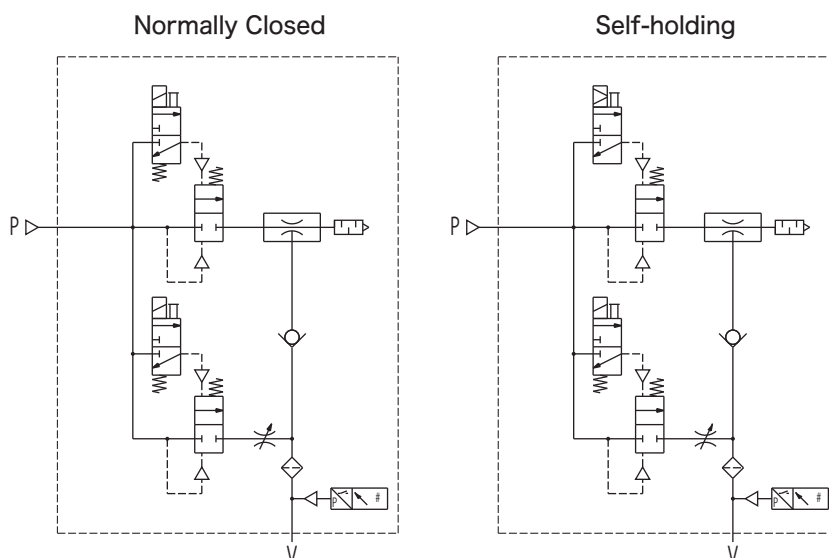
Construction



Component Parts

No.	Parts name	Material
1	Vacuum generation valve	-
2	Blow-off valve	-
3	Body	PA
4	Air supply base	Aluminum
5	Poppet valve	Aluminum, SUS, FKM, NBR
6	Nozzle kit	Aluminum, NBR
7	Silencer	PA
8	Blow-off flow adjustment needle	SUS, NBR
9	Check valve	PA, FKM
10	Filter element	PVF
11	Pressure sensor	-
12	Sensor base	PA
13	Silencer element	PVF

Symbol



CONVUM Specifications

Description \ Model number	Unit	X	5S	7S	1S	5R	7R	1R	
Nozzle size	mm	-	0.5	0.7	1.0	0.5	0.7	1.0	
Fluid	Non-lubricated compressed air								
Ambient temperature	°C	0~55 (No Freezing)							
Operating pressure range	MPa	0.1~0.55							
Vacuum generation valve type	Normally closed (S)/self-holding (W)								
Filter element filtration	μm	350							
Filter Filtration area	mm ²	13.8							
Rated pressure	MPa	0.5	0.5			0.35			
Maximum vacuum pressure	kPa	-90	-87						
Suction flow	L/min (ANR)	8.5	5.5	11	20	4	9	15	
Blow-off flow (supply pressure · MPa)	L/min (ANR)	40 (0.5)	40 (0.5)			30 (0.35)			
Air consumption	L/min (ANR)	10	22.5	50	10	22.5	55		

Valve Specifications

Description \ Model number		Unit	CKV010-4E	LV290-4E
Valve structures			3 port, direct operated poppet valve	
Rated voltage		V	DC24	
Allowable voltage fluctuation		%	±10	
Power consumption (current value)	Vacuum generation	W (mA)	1 (42)	1.3 (54)
	Vacuum suspension			1.5 (63)
Minimum energization time		ms	-	30
Insulation type			Class B	
Manual override operation			Non-lock	N/A
Display/surge killer			LED/diode	
Lead wire			Lead wire with connector (300mm)	
Weight (with lead wire)		g	15.3	19.5

Pressure Sensor Specifications

Description \ Model number		Unit	MPS-V81-SC1	MPS-V9-SC1	MPS-10-SC-B/W
Fluid		Air (vacuum), non-corrosive gas, non-flammable gas			
Diaphragm		Silicon diaphragm			
Rated pressure range		kPa	-100~0	-101.3~0	-101~500
Setting pressure range		kPa	-100~0	-101.3~10	-101~500
Withstand pressure		MPa	0.5	0.3	0.8
Ambient temperature range		°C	0~60 (No freezing)	0~50 (No freezing)	
Ambient humidity range		%RH	35~85 (No condensation)		
Power supply voltage		V	DC12~24±10%, ripple (Vp-p) 5% or less		DC24±10%, ripple (Vp-p) 5% or less
Current consumption		mA	20	40	50 (not include the driven current for valve)
Switch output	Type		NPN open collector 1 output		
	Maximum load current	mA	125		
Analog output			DC1~5 (±0.08) linearity 0.5% F.S. output impedance several Ω		DC1~5V (±0.1) linearity 1% F.S. output impedance 1kΩ
Digital input (suction/blow off command)			-	-	Non-contact 1 input: 0V or 24V (more than 1msec)
Repeatability		%	-	±0.2 F.S. 1 digit or less	±0.3 F.S. 1 digit or less
Temperature characteristic		%	Less than ±1 F.S. (At standard temperature 25°C, range 0~60°C)		Less than ±2 F.S. (At standard temperature 25°C, range 0~50°C)
Response time		ms	2 or less		1.5 or less
Hysteresis			Variable		
Display	Digital		4-digital, 7-segment, red color LED		
	Operation		OUT: red color LED (ON lighting)		Output ON/OFF: red color LED Vacuum generation valve ON/OFF: green color LED
Display/set resolution		kPa	-	0.1	1
Protection	Reverse-current protection		With		
	Overvoltage protection		With		
	Output short circuit protection		-	With	
IP class			IP40		
Vibration resistance			10~55Hz, total amplitude 1.5mm, 50m/s ² 2 hours each direction of XYZ		
Shock resistance		m/s ²	980, 3 times each direction of XYZ	980, 3 times each direction of XYZ	100, 3 times each direction of XYZ
Electrical connection			Grommet		Connector
Cable			φ2.6 3 lead wires 0.82mm ² 2m		5 lead wires, 24AWG, UL AWM 20276, 1000mm ^{Note1}
Connector			Maker: JST model: GHR-05V-S		

Note1) The white wire in cable of MPS-9 is not connected.

Weight (g)

Specifications			Weight
Single unit	Vacuum generation valve type	Sensor	
Single/Single for manifold	Normally closed	N/A	87
		With MPS-V81	112
		With MPS-V9	120
	Self-holding	With MPS-10	122
		N/A	90
		With MPS-V81	115
With MPS-V9	123		
With MPS-10	125		

Manifold Base

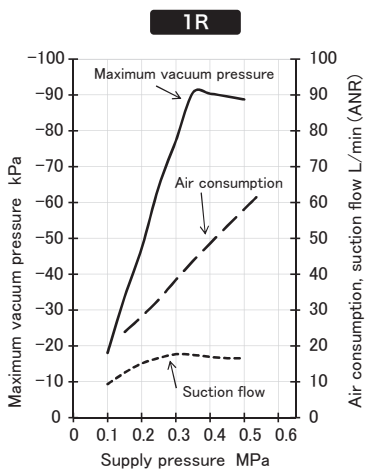
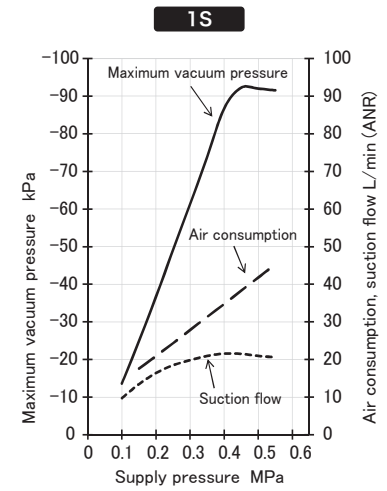
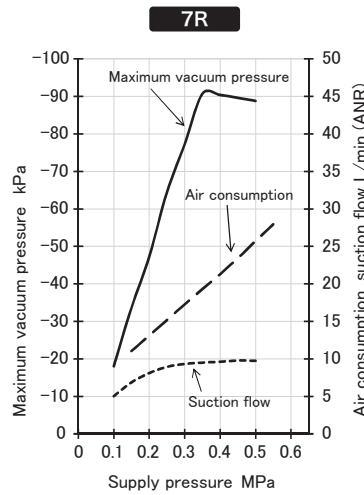
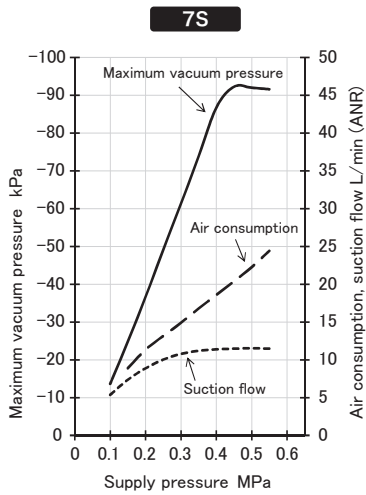
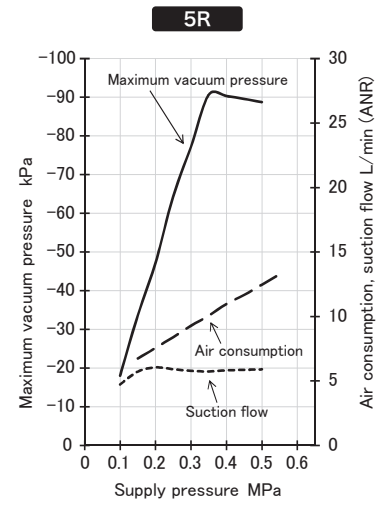
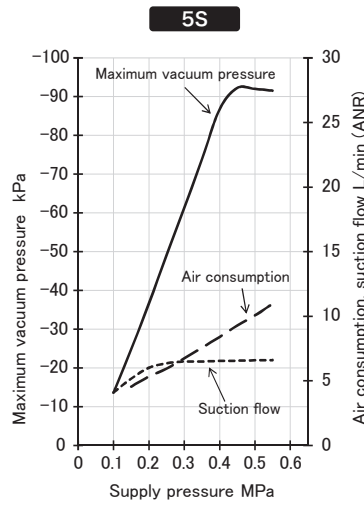
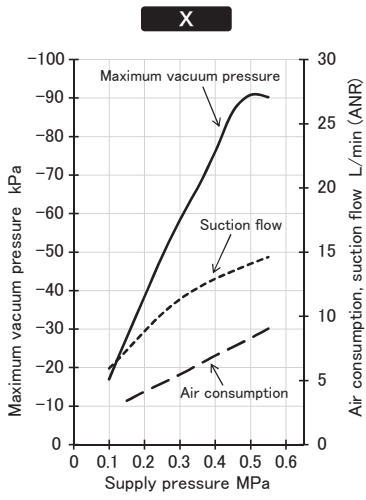
Specifications	Stations					
	1	2	3	4	5	6
Individual exhaust	18	25	32	40	47	54
Concentrated exhaust	57	74	90	106	122	138

Calculation of Weight for Manifold Type

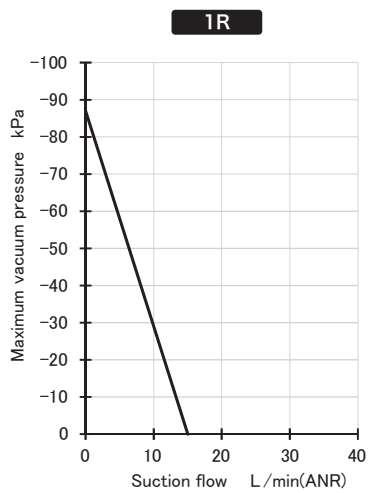
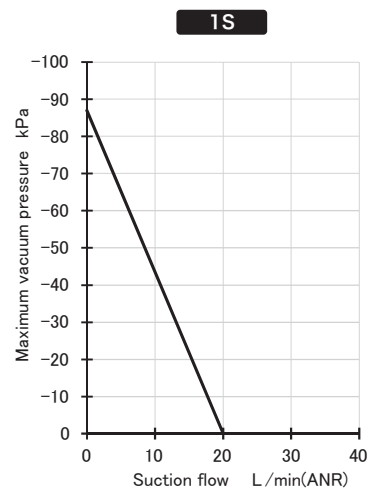
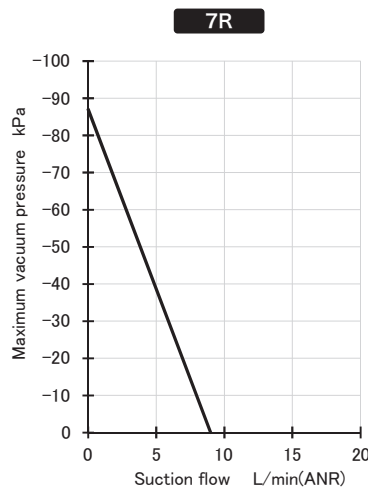
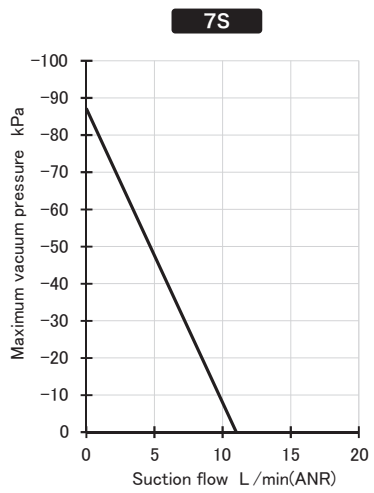
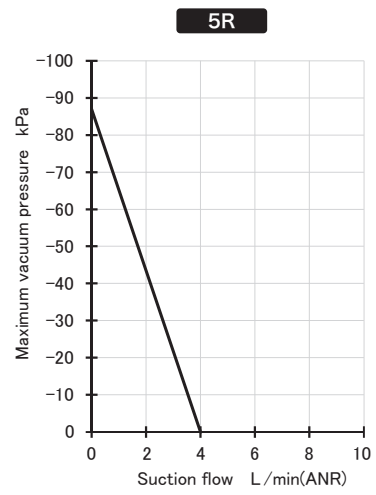
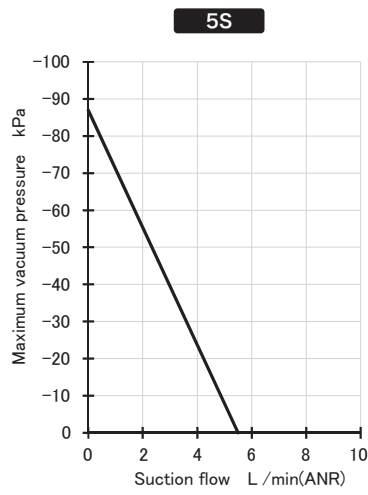
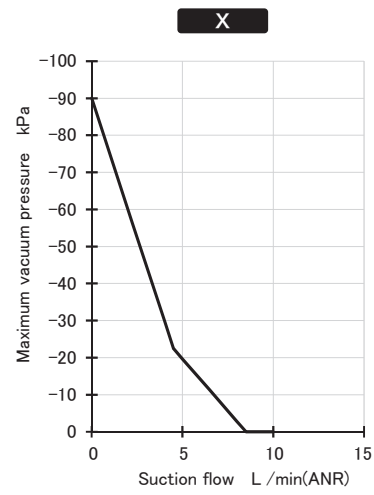
Single unit weight × No. of stations + manifold base
 Example 1) 5 stations manifold with MPS-9 sensor, self-holding valve and concentrated exhaust
 $123 \times 5 + 122 = 737\text{g}$

Example 2) 4 stations manifold without sensor, with normally closed valve and individual exhaust
 $87 \times 4 + 40 = 388\text{g}$

Performance Charts



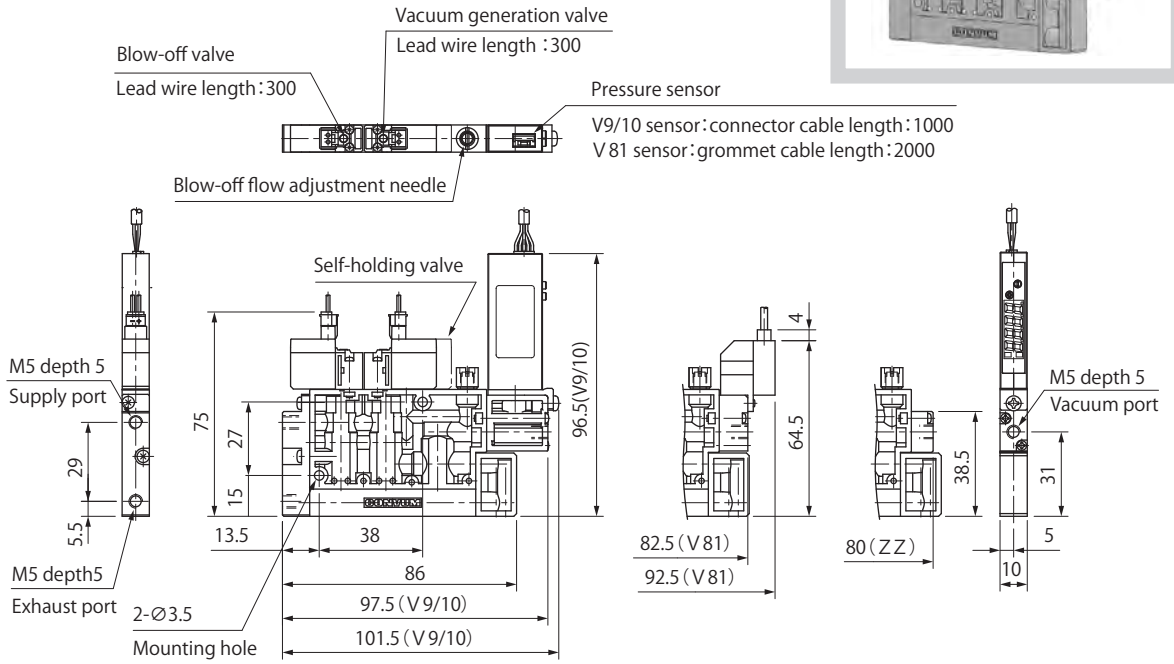
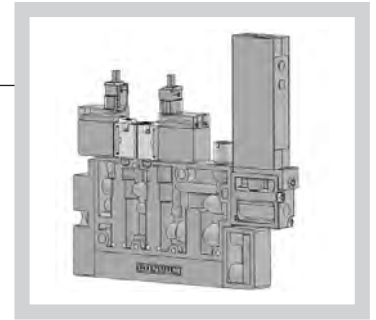
Suction Flow / Vacuum Pressure Characteristics



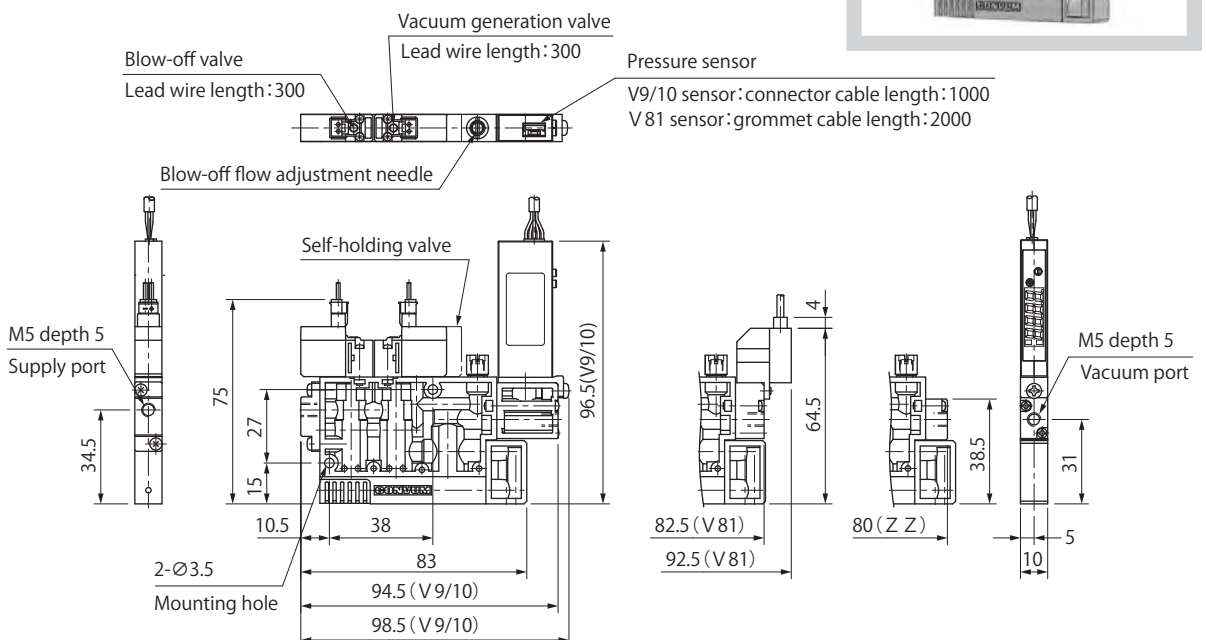
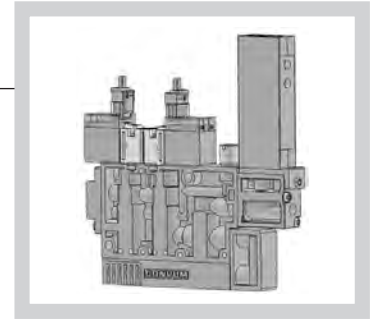
Dimensions

(mm)

Single Unit (concentrated exhaust)



Single Unit (silencer exhaust)

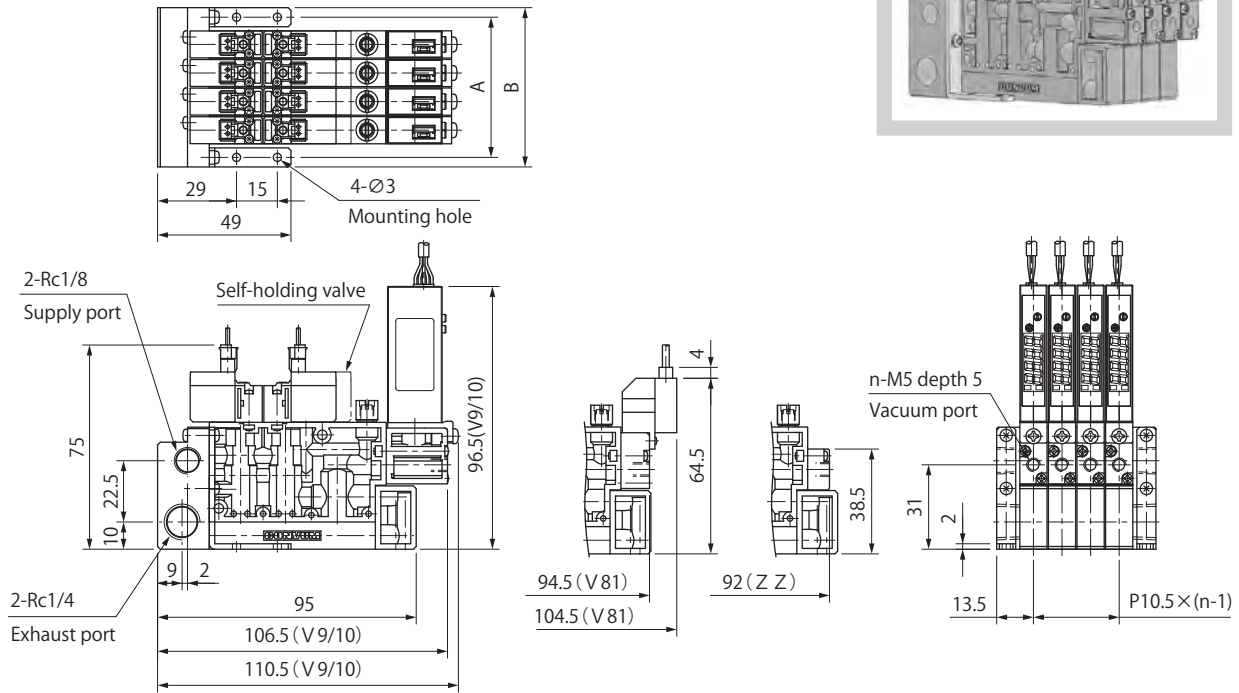
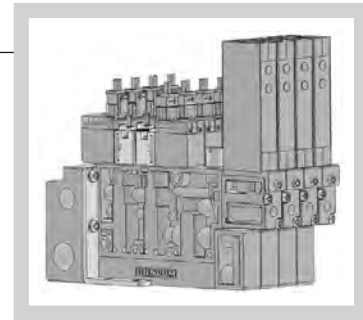


Dimensions

(mm)

Manifold Unit (concentrated exhaust)

n (No. of units)	1	2	3	4	5	6
A	20	30.5	41	51.5	62	72.5
B	27	37.5	48	58.5	69	79.5



Manifold Unit (silencer exhaust)

n (No. of units)	1	2	3	4	5	6
A	20	30.5	41	51.5	62	72.5
B	27	37.5	48	58.5	69	79.5

