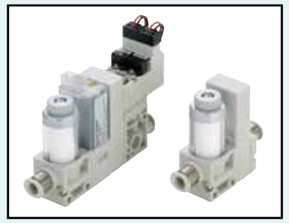


Ejector System/20 mm Width Integrated Type Vacuum Ejector Unit

VSG Series

RoHS

Integrated type vacuum ejector unit emphasizing basic performance, with unitized basic functions allowing selection according to the purpose of use.

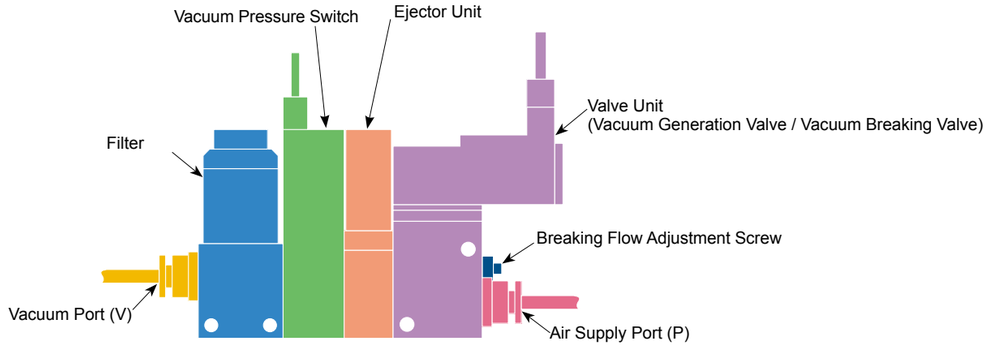
Vacuum Characteristic Variations

Nozzle Diameter \ Vacuum Characteristics	Suction Flow Rate (L/min (ANR))			Air Consumption(L/min (ANR))			Ultimate Vacuum Pressure (-kPa)		
	H	L	E	H	L	E	H	L	E
0.5 mm	7	12		11.5			90	66	
0.7 mm	13	26	10.5	23		17	93	66	90
1.0 mm	27	40	21	46		34	93	66	92

* Rated supply pressure; H, L⇒0.5 MPa, E⇒0.35 MPa

Pressure switch, valves (for vacuum generation, for vacuum breaking), etc., are unitized.Selection of type according to the purpose of use is possible.

3 types of pressure switches available.



Model No. Notation

●20 mm width single dedicated vacuum ejector unit

VSG - H 07 F - 6 6 - 3 - NW

- VSG: Model No.
- H: ❶ Vacuum Characteristics
- 07: ❷ Nozzle Diameter
- F: ❸ Unit Combination
- 6: ❹ Vacuum Port (V)
- 6: ❺ Air Supply Port (P)
- 3: ❻ Solenoid Valve Voltage
- NW: ❼ Vacuum Pressure Switch Specifications

❶ Vacuum Characteristics

Code	Content
H	High Vacuum/Medium Flow Type
L	Medium Vacuum/High Flow Type
E	High Vacuum/Low Flow Type

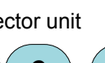
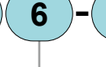
Note) The combination 'E05' for items ❶ and ❷ cannot be selected.

❷ Nozzle Diameter

Code	Content
05	ø0.5
07	ø0.7
10	ø1.0

Note1) : The combination 'E05' for items ❶ and ❷ cannot be selected.
Note2) : When ❷ is '05', only '44' can be selected for ❹ Vacuum Port (V) and ❺ Air Supply Port (P).
Note3) : When ❷ is '07' or '10', only '66' can be selected for ❹ Vacuum Port (V) and ❺ Air Supply Port (P).

❸ Unit Combination

Filter	Vacuum Pressure Switch with LED Display	Vacuum Generation Valve	Vacuum Breaking Valve	Code	
●				A	
●	●			B	
●		●	●	E	
●	●	●	●	F	

Note1) : When ❸ is 'A' or 'B', Solenoid Valve Voltage ❻ cannot be selected.
Note2) : When ❸ is 'A' or 'E', Vacuum Pressure Switch Specification ❼ cannot be selected.

❹ Vacuum Port (V)
❺ Air Supply Port (P)

Code	Content
44	ø4 Push-in fitting
66	ø6 Push-in fitting

Note1): When Nozzle Diameter ❷ is '05', only '44' can be selected for items ❹ and ❺.
Note2): When Nozzle Diameter ❷ is '07' or '10', only '66' can be selected for items ❹ and ❺.

❻ Solenoid Valve Voltage

Code	Content
1	100 VAC
3	24 VDC

Note) When Unit Combination ❸ is 'A' or 'B', item ❻ cannot be selected.

❼ Vacuum Pressure Switch Specifications

Code	Content
NW	NPN Output 2 points
NA	NPN Output 2 points + Analog Output
A	Analog Output

Note) When Unit Combination ❸ is 'A' or 'E', item ❼ cannot be selected.

Maintenance Part Model No. * For details on the maintenance parts, P. 166.

●Filter Element

VSG - E
- VSG: Model No.
- E

●Silencer Element

VSB - EA
VSB - EB
- VSB: Model No.
- EA / EB

* Silencer element for VSG is a common part with VSB.

Specifications

Item		VSG
Operating Fluid		Air
Operating Pressure	MPa	0.25 to 0.7
Ambient Temperature/Fluid Temperature	°C	5 to 50
Lubrication		Not required

Supply Valve Specifications

Item		Supply Valve	
Valve-type and Operation Method		Pilot operated poppet valve	
Rated Voltage	V	DC 24 ±10%	AC 100 ±10%
Surge Suppressor		Varistor (24 VDC)	Bridge Diode (100 VAC)
Power Consumption		1.2 W (with LED)	1.5 VA (with LED)
Effective Area	mm²	5	
Manual Override		Non-locking push-type	

Vacuum Breaking Valve Specifications

Item		Vacuum Breaking Valve	
Valve-type and Operation Method		Direct acting poppet valve	
Rated Voltage	V	DC 24 ±10%	AC 100 ±10%
Surge Suppressor		Varistor (24 VDC)	Bridge Diode (100 VAC)
Power Consumption		1.2 W (with LED)	1.5 VA (with LED)
Effective Area	mm²	0.3	
Manual Override		Non-locking push-type	

Vacuum Filter Specifications

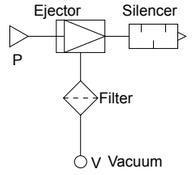
Item		Vacuum Filter
Element Material		Polyvinyl formal
Filtration Rating	μm	10

Vacuum Pressure Switch Specifications

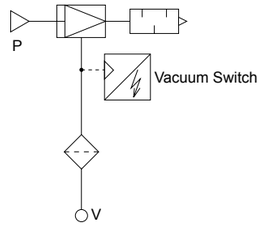
Item			Vacuum Pressure Switch		
Model No.			VSG... -NA	VSG... -NW	VSG... -A
Output Specification			Switch Output 1 point	Switch Output 2 points	-
			Analog Output 1 point	-	Analog Output 1 point
Power Supply Voltage		V	DC 12 to 24 ±10% Ripple content ≤ 10%(P-P)		
Power Consumption (at 24 VDC supply)			≤ 17 mA (when 1 switch point is ON)	≤ 25 mA (when 2 switch points are ON)	≤ 15 mA (at output current 0 mA)
Operating Fluid			Air, Inert gas		
Working pressure		kPa	-100 to 0		
Proof pressure		kPa	200		
Operating Temperature		°C	0 to 50		
Operating Humidity			35 to 85% RH (No condensation)		
Switch Output	Number of Output Points		1	2	-
	Output Format		NPN Transistor Open Collector		-
	Set Pressure	kPa	0 to -100		-
	Repeatability		±3% F.S.(at 25°C)		-
	Differential		Approx. 1 to 15% of set value	≤ 2% F.S.	-
	Switch Rating		≤ 30 VDC 80 mA		-
	Residual Voltage	V	≤ 0.8		-
Analog Output	Output Voltage	V	1 to 5	-	1 to 5
	Zero Point Voltage	V	1±0.1	-	1±0.1
	Span Voltage	V	4±0.1	-	4±0.1
	Output Current	mA	≤ 1	-	≤ 1
	Linearity/Hysteresis		≤ ±0.5% F.S.	-	≤ ±0.5% F.S.

Circuit Diagram

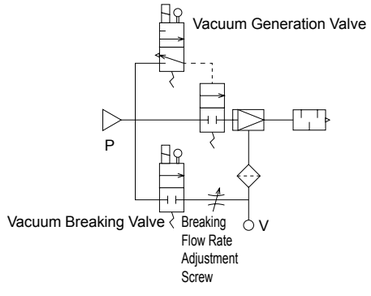
●VSG-øA-□(Unit combination: A)



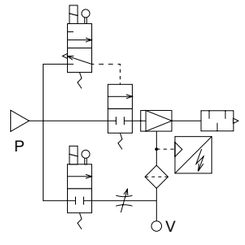
●VSG-øB-□(Unit combination: B)



●VSG-□E -□(Unit combination: E)



●VSG -□F -□(Unit combination: F)

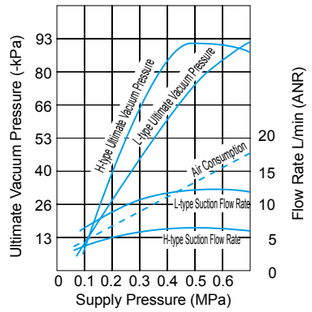


Vacuum Components
Ejector System
VSY
VSH
VSU
VSB
VSC
VSG
VSK/ VSKM
VSJ/ VSJM
VSN/ VSNM
VSX/ VSXM
VSQ
VSZM
Ending

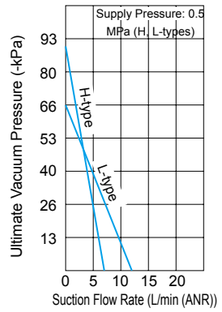
Vacuum Characteristics, Flow Characteristics

●VSG-□05

Vacuum Characteristics

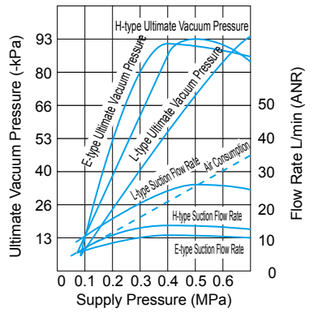


Flow Characteristics

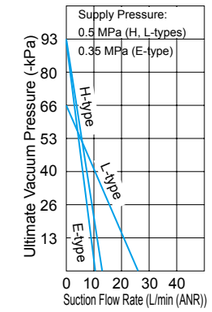


●VSG-□07

Vacuum Characteristics



Flow Characteristics



●VSG-□10

Vacuum Characteristics

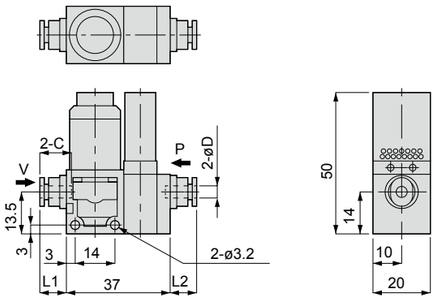
Flow Characteristics

1. The supply pressure in the characteristics above is during vacuum generation.
2. Abnormal noise (gurgling sound) may occur at a supply pressure slightly below the peak ultimate vacuum pressure in the characteristics above. In this state with abnormal noise, characteristics are unstable and noise level increases. Also, it may affect sensors, etc., causing trouble, so reset the supply pressure.
   (Ex. 1: For an H-type vacuum ejector with source pressure 0.5 MPa, during ejector operation, the supply pressure drops to 0.43 MPa due to pressure drop, causing abnormal noise.) → Reset the supply pressure during ejector operation to 0.5 MPa.)
3. Select piping or equipment using an effective cross-sectional area approximately 3 times the nozzle diameter cross-sectional area as a guideline. If sufficient supply air flow rate is not secured, satisfactory vacuum characteristics cannot be obtained.
   (Gurgling sound occurs even at the set pressure. Insufficient suction flow rate, failure to reach ultimate vacuum pressure, etc.)
   (Ex. 2: For an H-type vacuum ejector, abnormal noise occurs even though the pressure during ejector operation is 0.5 MPa.) → Insufficient supply air flow rate. (Supply air flow rate is restricted before the vacuum ejector due to piping resistance, etc., preventing the supply air flow rate required for satisfactory characteristics from being obtained.) → Select a pipe components that can secure the required effective cross-sectional area.))
   (Ex. 3: For a vacuum ejector with a 1.0 mm nozzle diameter, cross-sectional area $0.5^2 \times \pi = 0.785\ mm^2 \times 3 = 2.35\ mm^2$. Therefore, select piping and equipment to secure an effective cross-sectional area of 2.3 mm² or more.)

MEMO

External Dimension Drawings

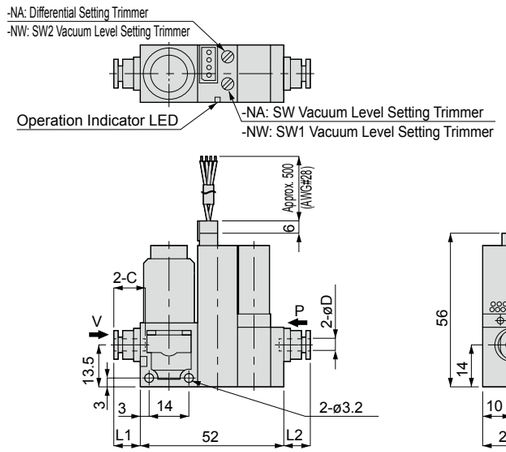
● VSG -□A -□(Unit combination: A)



Unit: mm

Model No.	Bore size øD	L1	L2	C	Nozzle Diameter (mm)	Ultimate Vacuum Pressure (-kPa)	Suction Flow Rate (L/min (ANR))	Air Consumption (L/min (ANR))	Weight (g)
VSG-H 05A-44	4	9.9	9.4	11.2	0.5	90	7	11.5	47
VSG-H 07A-66	6	12.3	11.8	11.9	0.7	93	13	23	49
VSG-H 10A-66					1		27	46	48
VSG-L 05A-44	4	9.9	9.4	11.2	0.5	66	12	11.5	46
VSG-L 07A-66	6	12.3	11.8	11.9	0.7		26	23	48
VSG-L 10A-66					1		40	46	47
VSG-E 07A-66	6	12.3	11.8	11.9	0.7	90	10.5	17	48
VSG-E 10A-66					1	92	21	34	

● VSG -□B -□(Unit combination: B)



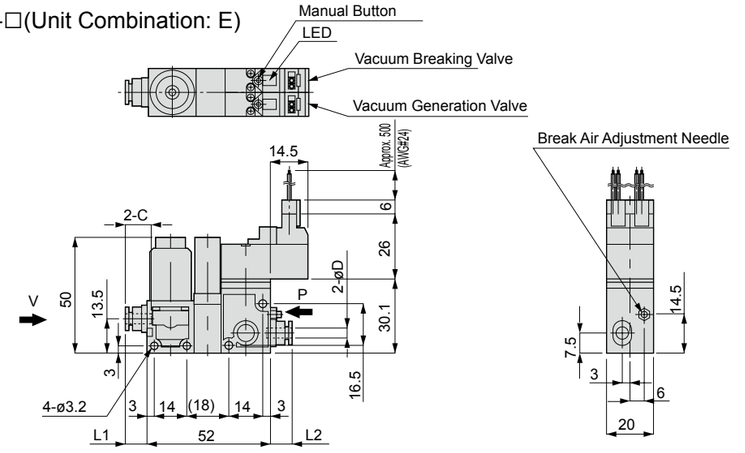
Note) For analog output type (-A), operation indicator LED and vacuum level setting trimmer are not installed.

Unit: mm

Model No.	Bore size øD	L1	L2	C	Nozzle Diameter (mm)	Ultimate Vacuum Pressure (-kPa)	Suction Flow Rate (L/min (ANR))	Air Consumption (L/min (ANR))	Weight (g)
VSG-H 05B-44-□	4	9.9	9.4	11.2	0.5	90	7	11.5	74
VSG-H 07B-66-□	6	12.3	11.8	11.9	0.7	93	13	23	75
VSG-H 10B-66-□					1		27	46	
VSG-L 05B-44-□	4	9.9	9.4	11.2	0.5	66	12	11.5	73
VSG-L 07B-66-□	6	12.3	11.8	11.9	0.7		26	23	75
VSG-L 10B-66-□					1		40	46	74
VSG-E 07B-66-□	6	12.3	11.8	11.9	0.7	90	10.5	17	75
VSG-E 10B-66-□					1	92	21	34	74

External Dimension Drawings

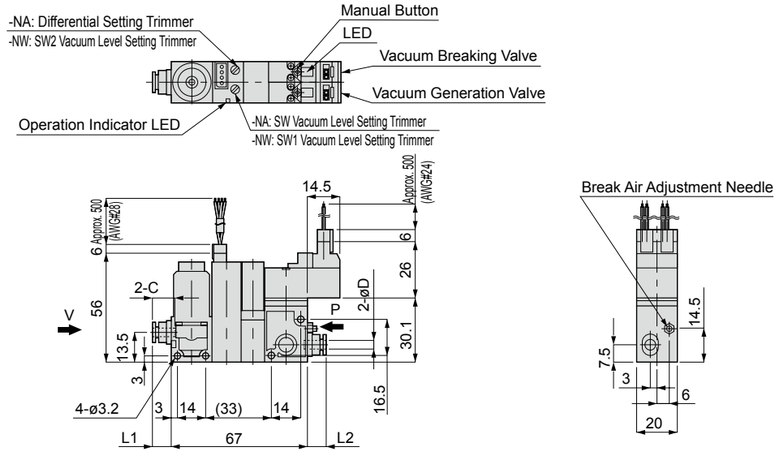
● VSG-□E -□(Unit Combination: E)



Unit: mm

Model No.	Bore size øD	L1	L2	C	Nozzle Diameter (mm)	Ultimate Vacuum Pressure (-kPa)	Suction Flow Rate (L/min (ANR))	Air Consumption (L/min (ANR))	Weight (g)
VSG-H 05E-44-□	4	9.9	7.9	11.2	0.5	90	7	11.5	99
VSG-H 07E-66-□	6	12.3	10.3	11.9	0.7	93	13	23	100
VSG-H 10E-66-□					1		27	46	101
VSG-L 05E-44-□	4	9.9	7.9	11.2	0.5	66	12	11.5	99
VSG-L 07E-66-□	6	12.3	10.3	11.9	0.7		26	23	101
VSG-L 10E-66-□					1		40	46	100
VSG-E 07E-66-□	6	12.3	10.3	11.9	0.7	90	10.5	17	101
VSG-E 10E-66-□					1	92	21	34	100

● VSG -□F -□(Unit combination: F)

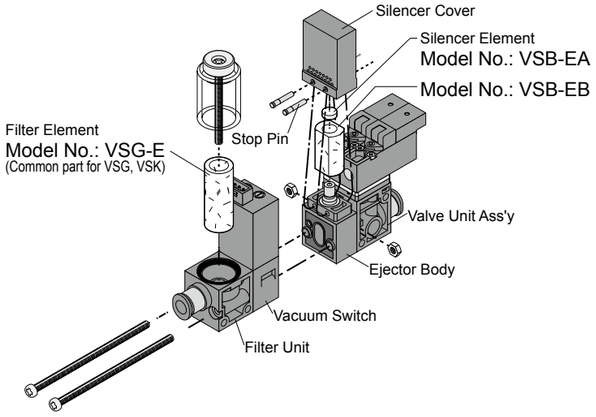


Note) For analog output type (-A), operation indicator LED and vacuum level setting trimmer are not installed.

Unit: mm

Model No.	Bore size øD	L1	L2	C	Nozzle Diameter (mm)	Ultimate Vacuum Pressure (-kPa)	Suction Flow Rate (L/min (ANR))	Air Consumption (L/min (ANR))	Weight (g)
VSG-H 05F-44-□-□	4	9.9	7.9	11.2	0.5	90	7	11.5	125
VSG-H 07F-66-□-□	6	12.3	10.3	11.9	0.7	93	13	23	128
VSG-H 10F-66-□-□					1		27	46	127
VSG-L 05F-44-□-□	4	9.9	7.9	11.2	0.5	66	12	11.5	127
VSG-L 07F-66-□-□	6	12.3	10.3	11.9	0.7		26	23	
VSG-L 10F-66-□-□					1		40	46	
VSG-E 07F-66-□-□	6	12.3	10.3	11.9	0.7	90	10.5	17	128
VSG-E 10F-66-□-□					1	92	21	34	

Maintenance Parts



MEMO

Vacuum Components
Ejector System
VSY
VSH
VSU
VSB
VSC
VSG
VSK/ VSKM
VSJ/ VSJM
VSN/ VSNM
VSX/ VSXM
VSQ
VSZM
Ending