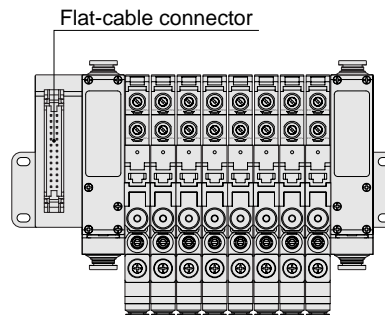
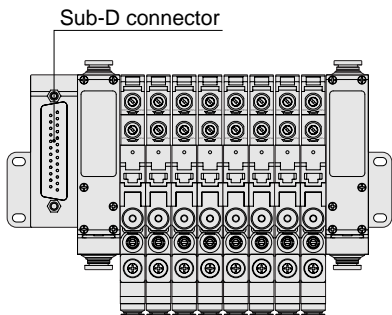


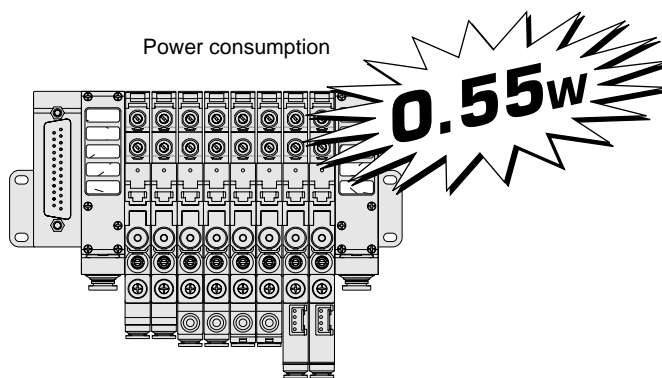
# Vacuum Generator VZ Type

Package: 1 pc. in a bag

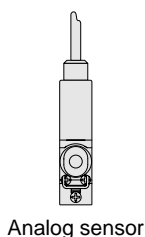
- Small in size and lightweight. Designed for dedicated use in combination with manifold, these VZ type vacuum generators are compatible with both ejector and vacuum pump systems.
- Featuring a built-in air pressure release valve, the VZ type vacuum generator is not only capable of releasing large quantities of air, but it can also substantially reduce vacuum release time.
- Wiring for the supply valve and air release valve is effectively concentrated in one bundle, which contributes to time saving.



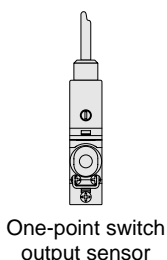
- The supply valve is offered in both single- and double-solenoid types allowing you to choose the type that suits your needs.
- Valve power consumption is held down to 0.55W, making substantial power savings a reality.



- A rich variety of vacuum sensors is offered to meet the needs of a wide range of applications.



Analog sensor



One-point switch output sensor



Sensor with separated display



One-point switch output sensor with LED display



Two-point switch output sensor with LED display

- Since the number of manifold can be increased as required, it is possible to quickly respond to any change in specifications.
- Maintenance has been made easier than ever, thanks to a specially designed construction.
- One-touch fitting and female screw are standard for all piping, allowing you to flexibly meet your piping requirements.
- The nozzle diameter comes in three different dimensions:  $\phi 0.5\text{mm}$ ,  $\phi 0.7\text{mm}$  and  $\phi 1.0\text{mm}$ .

## Specifications

### Common to all units

Unit	Ejector system-compatible unit	Vacuum pump system-compatible unit
Fluid admitted	Air	
Service pressure range	44 ~ 102psi (0.3 ~ 0.7MPa)	
Service temperature range	41 ~ 122°F (5 ~ 50°C)	
Working vacuum range	—	0 ~ -29.5in. Hg (-100 ~ 0kPa)

### Ejector characteristics

Model	Nozzle dia. (in./mm)	Pressure supply (psi/MPa)	Final vacuum (in. Hg/-kPa)	Suction flow (SCFM/min)(ANR)	Air consumption (SCFM/min)(ANR)
VZH05	0.02/0.5	72.5/0.5	-26.7/90.4	0.25/7	0.41/11.5
VZL05			-19.6/66.5	0.42/12	
VZH07	0.03/0.7	72.5/0.5	-27.5/93.1	0.46/13	0.81/23
VZL07			-19.6/66.5	0.85/24	
VZE07	0.04/1.0	50.8/0.35	-26.7/90.4	0.37/10.5	0.60/17
VZH10		72.5/0.5	-27.5/93.1	0.85/24	1.62/46
VZE10		50.8/0.35	-26.7/90.4	0.71/20	1.20/34

### Solenoid valve specifications (Pilot valve)

Item	Vacuum making & supply solenoid valve	Vacuum release solenoid valve
Operating system	Direct operation	
Valve construction	Elastic seal, poppet valve	
Voltage rating	DC24V	
Allowable voltage range	DC21.6 ~ 26.4V	
Surge limiting circuit	Surge absorber	
Power consumption	0.55W (with LED)	
Operational indication	Red LED lighting up when coil excitation is in operation.	The LED lamp appears yellowish green when the coil is excited.
Manual operation	Push & Lock type	
Wiring method	Sub-D connector, Flat cable connector	

### Solenoid valve specifications (Changing valve)

Item	Vacuum making & supply solenoid valve	Vacuum release solenoid valve
Operating system	Pilot valve-activated indirect action	
Valve construction	Elastic seal, poppet valve	
Voltage rating	Single	Double
Valve function	Normally closed	
Proof pressure	152psi (1.05MPa)	
Lubrication	Not required	
Effective sectional area (Cv factor)	4.5mm <sup>2</sup> (0.24)	3.5mm <sup>2</sup> (0.19)
Response time	OFF → ON	10msec
	ON → OFF	15msec

### Vacuum sensor

Item	Fitted with an LED display		No display	Separated type	Analog
	2-point switch output	1-point switch output	1-point switch output	Switch-fitted pressure indicator	
Current consumption	40mA	20mA	50mA	20mA	
Pressure detection	Diffused semiconduction pressure switch				(*1)
Service pressure range	0 ~ -29.5in. Hg (-100 ~ 0kPa)				
Pressure setting range	0 ~ -29.2in. Hg (-99 ~ 0kPa)				
Proof pressure	29psi (0.2MPa)				29psi (0.2MPa)
Strong temperature range	-4 ~ 176°F (-20 ~ 80°C)		4 ~ 158°F (20 ~ 70°C)		
Operating temperature range	32 ~ 122°F (0 ~ 50°C)		14 ~ 140°F (-10 ~ 60°C)	14 ~ 122°F (-10 ~ 50°C)	14 ~ 140°F (-10 ~ 60°C)
Operating humidity range	35 ~ 85%RH				
Supply voltage	DC12 ~ 24V ±10% Ripple (P-P) 10% max.		DC10.8 ~ 30V (ripple voltage included)		
Protective structure	IEC standard IP40 equiv.				
Number of switch output points	2	1	1	2	
Switching action accuracy	±0.3%F.S. max. (at Ta=25°C/77°F)				
Differential accuracy	Fixed	Variable	Fixed	Variable	
Switch output	NPN Open collector output				
Analog output	Output voltage	1 ~ 5V		1 ~ 5V	
	Zero-point voltage	1 ±0.1V		1 ±0.1V	
	Span voltage	4 ±0.1V		4 ±0.1V	
	Output current	1mA max.		0.5mA max.	1mA max.
	LINE/HYS	±0.5%F.S. max.		±0.5%F.S. max.	
Indication	0 ~ 29.2in. Hg (0 ~ 99kPa) (2-digit Red LED display)			3-digit red LED display	
No. of indications	About 4 times/sec			About 4 times/sec	
Indication accuracy	±3%F.S. ±2digit			±1%F.S.	
Resolution	1digit			1digit	
Operational indication	SW1: Red LED lighting up when pressure is above setting.			SW1: (*2)	
	SW2: (*3)			SW2: (*4)	

(\*1) Diffused semiconduction pressure switch

(\*2) SW1: Green LED lighting up when pressure is above setting.

(\*3) SW2: Green LED lighting up when pressure is above setting.

(\*4) SW2: Red LED lighting up when pressure is above setting.

### Vacuum release function

Item	Vacuum release valve (ejector system, vacuum pump system)	
Vacuum release air flow	Air supply pressure is 72.5psi (0.5MPa)	
Air pressure release valve (*1)	Operating system	Air pressure-activated indirect action
	Valve construction	Elastic seal, poppet valve
	Valve type	Normally open
	Lubrication	Not required
	Orifice dia.	0.14in. (3.5mm)

(\*1) The air pressure release valve is only available for Ejector system-compatible unit.

### Vacuum filter

Element material	PVF (Polyvinyl formal)
Filtering capacity	10µm
Element surface area	660mm <sup>2</sup>
Replacement element Model Designation	VZ010B66

Vacuum Actuator Tube Diaphragm Diaphragm

# Vacuum Generator VZ Type

## Model Designation of ejector system-compatible unit (Example)

VZ **H** **05** **D** - **4** **1** **1** - D24 - **V1** - M **08** - **F** **26**

### ①. Vacuum characteristics

- H**: High-vacuum Middle-flow type
- L**: Middle-vacuum Large-flow type
- E**: High-vacuum Small-flow type
- K**: When fitted with a combination of different vacuum generator types (details are given in the specification order form)

### ②. Nozzle diameter

- 05**: Nozzle diameter: 0.02in. (0.5mm)
- 07**: Nozzle diameter: 0.03in. (0.7mm)
- 10**: Nozzle diameter: 0.04in. (1.0mm)
- 00**: When fitted with a combination of different vacuum generator types (details are given in the specification order form)

### ③. Valve type

- No code**: Normally closed type
- D**: Double solenoid type (retention type)
- K**: When fitted with a combination of different vacuum generator types (details are given in the specification order form)

### ④. Vacuum port (V)

- 4**:  $\phi$ 4mm tube fitting
- 6**:  $\phi$ 6mm tube fitting
- 5**: M5  $\times$  0.8 female screw
- 0**: When fitted with a combination of different vacuum generator types (details are given in the specification order form)

### ⑤. Air supply port (PV)

- 4**:  $\phi$ 4mm tube fitting
- 6**:  $\phi$ 6mm tube fitting
- 8**:  $\phi$ 8mm tube fitting
- 1**:  $\phi$ 10mm tube fitting

### ⑥. Exhaust port (R)

- S**: Open to air type
- 6**: Tube fitting concentrated exhaust type (diameter: 6mm)
- 8**: Tube fitting concentrated exhaust type (diameter: 8mm)
- 1**: Tube fitting concentrated exhaust type (diameter: 10mm)

### ⑦. Vacuum switch (NPN Open collector)

- No code**: Without vacuum switch
- DW**: Pressure sensor with LED display (two-point switch output)
- DA**: Pressure sensor with LED display (analog and 1-point switch output)
- S**: No-display 1-point switch output sensor
- V1**: Negative pressure analog sensor
- V2**: Separated type LED pressure display + negative pressure analog sensor
- R1**: Compound pressure analog sensor
- R2**: Separated type LED pressure display + compound pressure analog sensor
- K**: When fitted with a combination of different vacuum generator types (details are given in the specification order form)

### ⑧. No. of manifold

Code	02	03	04	05	06	07	08	09	10	11	12
No. of manifold	2	3	4	5	6	7	8	9	10	11	12

### ⑨. Wiring type

- F**: Flat cable connector
- D**: Sub-D connector

### ⑩. Designation of the number of connector pins

- No code**: No. of station; 2~4, 10-pin flat cable connectors
- No. of station; 5~9, 20-pin flat cable connectors
- No. of station; 10~12, 26-pin flat cable connectors
- No. of station; 2~4, 9-pin Sub-D connectors
- No. of station; 5~12, 25-pin Sub-D connectors
- 20**: 20-pin flat cable connectors (Maximum no. of station; 9)
- 26**: 26-pin flat cable connectors (Maximum no. of station; 12)
- 25**: 25-pin Sub-D connectors (Maximum no. of station; 12)

Model Designation of vacuum pump system-compatible unit (Example)

VZP - 4  
① 6  
② 1  
③ - D24 - DW  
④ - M 05  
⑤ - D  
⑥ 25  
⑦

①. Vacuum port (V)

**4:** ø4mm tube fitting

**6:** ø6mm tube fitting

**5:** M5×0.8 female screw

**0:** When fitted with a combination of different vacuum generator types (details are given in the specification order form)

②. Air supply port (PS)

**4:** ø4mm tube fitting

**6:** ø6mm tube fitting

**8:** ø8mm tube fitting

③. Vacuum supply port (PV)

**4:** ø4mm tube fitting

**6:** ø6mm tube fitting

**8:** ø8mm tube fitting

**1:** ø10mm tube fitting

④. Vacuum switch (NPN Open collector)

**No code:** Without vacuum switch

**DW:** Pressure sensor with LED display (two-point switch output)

**DA:** Pressure sensor with LED display (analog and 1-point switch output)

**S:** No-display 1-point switch output sensor

**V1:** Negative pressure analog sensor

**V2:** Separated type LED pressure display + negative pressure analog sensor

**R1:** Compound pressure analog sensor

**R2:** Separated type LED pressure display + compound pressure analog sensor

**K:** When fitted with a combination of different vacuum generator types (details are given in the specification order form)

⑤. No. of manifold

Code	02	03	04	05	06	07	08	09	10	11	12
No. of manifold	2	3	4	5	6	7	8	9	10	11	12

⑥. Wiring type

**F:** Flat cable connector

**D:** Sub-D connector

⑦. Designation of the number of connector pins

**No code:** No. of station; 2~4, 10-pin flat cable connectors

No. of station; 5~9, 20-pin flat cable connectors

No. of station; 10~12, 26-pin flat cable connectors

No. of station; 2~4, 9-pin Sub-D connectors

No. of station; 5~12, 25-pin Sub-D connectors

**20:** 20-pin flat cable connectors (Maximum no. of station; 9)

**26:** 26-pin flat cable connectors (Maximum no. of station; 12)

**25:** 25-pin Sub-D connectors (Maximum no. of station; 12)

# Vacuum Generator VZ Type

## Model Designation of ejector system-compatible manifold alone (Example)

VZM - 8S - 04 - F 20

①. Air supply port (PV)

- 4:  $\phi$ 4mm tube fitting
- 6:  $\phi$ 6mm tube fitting
- 8:  $\phi$ 8mm tube fitting
- 1:  $\phi$ 10mm tube fitting

②. Exhaust port (R)

- S: Open to air type
- 6: Tube fitting concentrated exhaust type (diameter: 6mm)
- 8: Tube fitting concentrated exhaust type (diameter: 8mm)
- 1: Tube fitting concentrated exhaust type (diameter: 10mm)

③. No. of manifold

Code	02	03	04	05	06	07	08	09	10	11	12
No. of manifold	2	3	4	5	6	7	8	9	10	11	12

④. Wiring type

- F: Flat cable connector
- D: Sub-D connector

⑤. Designation of the number of connector pins

- No code:** No. of station; 2~4, 10-pin flat cable connectors  
No. of station; 5~9, 20-pin flat cable connectors  
No. of station; 10~12, 26-pin flat cable connectors
- No. of station; 2~4, 9-pin Sub-D connectors  
No. of station; 5~12, 25-pin Sub-D connectors
- 20:** 20-pin flat cable connectors (Maximum no. of station; 9)
- 26:** 26-pin flat cable connectors (Maximum no. of station; 12)
- 25:** 25-pin Sub-D connectors (Maximum no. of station; 12)

## Model Designation of vacuum pump system-compatible manifold alone (Example)

VZPM - 86 - 08 - F 26

①. Air supply port (PS)

- 4:  $\phi$ 4mm tube fitting
- 6:  $\phi$ 6mm tube fitting
- 8:  $\phi$ 8mm tube fitting

②. Vacuum supply port (PV)

- 4:  $\phi$ 4mm tube fitting
- 6:  $\phi$ 6mm tube fitting
- 8:  $\phi$ 8mm tube fitting
- 1:  $\phi$ 10mm tube fitting

③. No. of manifold

Code	02	03	04	05	06	07	08	09	10	11	12
No. of manifold	2	3	4	5	6	7	8	9	10	11	12

④. Wiring type

- F: Flat cable connector
- D: Sub-D connector

⑤. Designation of the number of connector pins

- No code:** No. of station; 2~4, 10-pin flat cable connectors  
No. of station; 5~9, 20-pin flat cable connectors  
No. of station; 10~12, 26-pin flat cable connectors
- No. of station; 2~4, 9-pin Sub-D connectors  
No. of station; 5~12, 25-pin Sub-D connectors
- 20:** 20-pin flat cable connectors (Maximum no. of station; 9)
- 26:** 26-pin flat cable connectors (Maximum no. of station; 12)
- 25:** 25-pin Sub-D connectors (Maximum no. of station; 12)

## Model Designation of ejector system-compatible mounting valve unit (Example)

VZV D - D24

①. Valve type

- No code:** Normally closed type
- D: Double solenoid type (retention type)

## Model Designation of vacuum pump system-compatible mounting valve unit (Example)

VZPV - D24

## Model Designation of ejector system-compatible mounting unit (Example)

VZ L 07 - 6 - R1

①. Vacuum characteristics

- H: High-vacuum Middle-flow type
- L: Middle-vacuum Large-flow type
- E: High-vacuum Small-flow type

②. Nozzle diameter

- 05: Nozzle diameter: 0.02in. (0.5mm)
- 07: Nozzle diameter: 0.03in. (0.7mm)
- 10: Nozzle diameter: 0.04in. (1.0mm)

③. Vacuum port (V)

- 4:  $\phi$ 4mm tube fitting
- 6:  $\phi$ 6mm tube fitting
- 5: M5  $\times$  0.8 female screw

④. Vacuum switch (NPN Open collector)

- No code:** Without vacuum switch
- DW: Pressure sensor with LED display (two-point switch output)
- DA: Pressure sensor with LED display (analog and 1-point switch output)
- S: No-display 1-point switch output sensor
- V1: Negative pressure analog sensor
- V2: Separated type LED pressure display + negative pressure analog sensor
- R1: Compound pressure analog sensor
- R2: Separated type LED pressure display + compound pressure analog sensor
- K: When fitted with a combination of different vacuum generator types (details are given in the specification order form)

**Model Designation of vacuum pump system-compatible mounting unit (Example)**

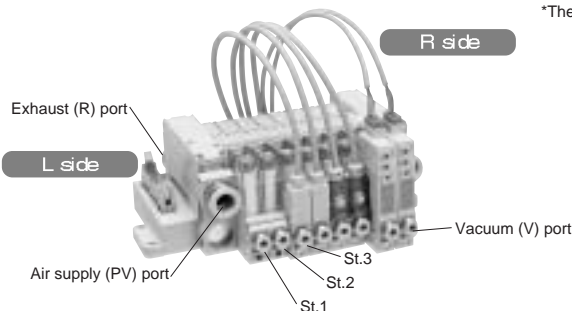
**VZP - 5 - DW**

- ①. Vacuum port (V)  
**4:** ø4mm tube fitting  
**6:** ø6mm tube fitting  
**5:** M5×0.8 female screw
- ②. Vacuum switch (NPN Open collector)  
**No code:** Without vacuum switch  
**DW:** Pressure sensor with LED display (two-point switch output)  
**DA:** Pressure sensor with LED display (analog and 1-point switch output)  
**S:** No-display 1-point switch output sensor  
**V1:** Negative pressure analog sensor  
**V2:** Separated type LED pressure display + negative pressure analog sensor  
**R1:** Compound pressure analog sensor  
**R2:** Separated type LED pressure display + compound pressure analog sensor

**Specification order form (Example)**

Ejector system-compatible unit type		Vacuum characteristics	Nozzle diameter	Valve type	Vacuum port (V)	Air supply port (PV)	Exhaust port (R)	Voltage (V)	Vacuum switch specification	No. of manifold	Connector specification	Number of connector pins
		①	②	③	④	⑤	⑥		⑦	⑧	⑨	⑩
<b>VZ</b>		K	00	K	0	1	1	<b>D24</b>	K	08	F	20
Vacuum pump system-compatible unit type					Vacuum port (V)	Air supply port (PS)	Vacuum supply port (PV)	Voltage (V)	Vacuum switch specification	No. of manifold	Connector specification	Number of connector pins
					①	②	③		④	⑤	⑥	⑦
<b>VZP</b>								<b>D24</b>				
Station No.	L side	St. 1	H	05	4							
		St. 2	H	05	4							
		St. 3	H	05	4				V1			
		St. 4	L	07	D	4			V1			
		St. 5	L	07	D	4			S			
		St. 6	L	07	D	4			S			
		St. 7	E	10		4			DA			
		St. 8	E	10		4			DA			
		St. 9										
		St. 10										
		St. 11										
	R side	St. 12										

\*The station No. is in the order of St.1, St.2, St.3...St.12 from L side with the vacuum port in foreground.



Vacuum Actuator Tube Diaphragm Valve

## Detailed Safety Instructions

Before using the PISCO device, be sure to read the "Safety Instructions", "Common Safety Instructions for Products Listed in This Manual" on page 15 to 17 and "Common Safety Instructions for Vacuum" on page 139 to 140.

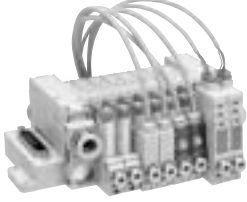
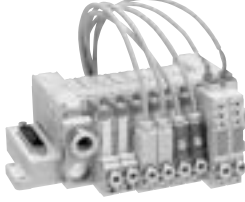
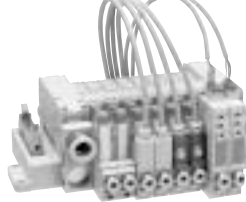
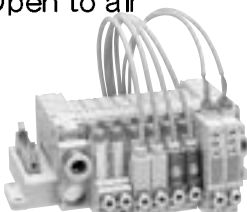
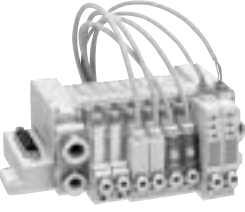
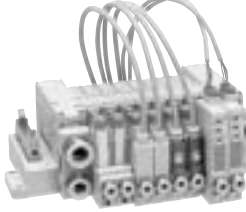
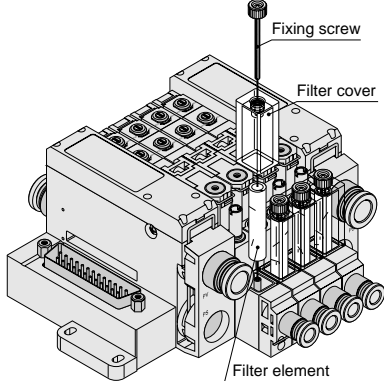
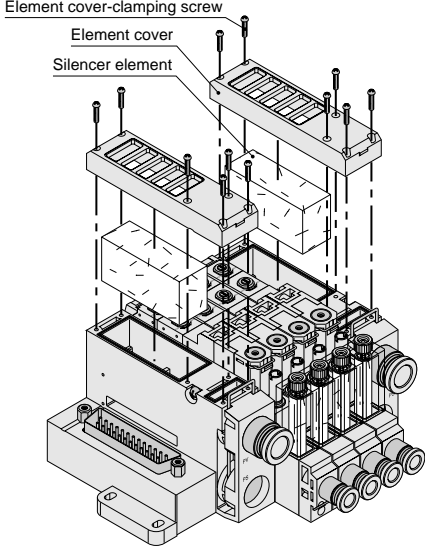
### ⚠ Warning

1. When activating solenoid valves, be sure to confirm that leak currents are 1mA or less. Leak currents may lead to errors.
2. Vacuum pump system-compatible units (VZP) are designed to tolerate some leaks. We therefore recommend that additional appropriate safety measures be taken when the state of vacuum is to be retained for a prolonged period of time.
3. Heat will be generated in the coil when electricity is supplied continuously to the pilot valve for an extended period of time. As this can cause burns and possibly have adverse impacts to peripheral equipment, we recommend that the user consult the nearest PISCO sales office in cases when electricity must be supplied to the pilot valve for a prolonged period of time.
4. With the double-solenoid type (VZ□D...), the switch-over valve (main valve) is placed in neutral after the supply of pilot air has been suspended (the same is true when the valve is being operated for the first time after shipment). When resuming the supply of pilot air, be sure to send a signal to the pilot valve, or conduct switch-over operations manually as required.
5. When mounting/removing units onto/from a manifold, be sure to turn off the air supply and discharge residual air pressure completely.
6. Do not use solenoid valves in vibration-prone working conditions. Using them in such conditions can lead to errors and/or malfunctions. (Be sure to use solenoid valves in places where vibrations occur at an acceleration of 49m/s<sup>2</sup> or less.)
7. When using the double-solenoid type valve (VZ□D...) in vibration-prone conditions, install the valve so that the direction of vibration is at a right angle to the switch-over valve (main valve).

### ⚠ Caution

1. Do not pull or bend valve and vacuum switch lead wires excessively. Doing so may result in lead wires being snapped off and connector components broken.
2. Compressed air contains various drains (water, oxidized oils, tar and other foreign matter). Because these drains considerably lower product quality, we recommend that the quality of compressed air be improved by dehumidifying it via a cooler or dryer.
3. Do not use lubricators.
4. Rust, dirt and other foreign matter left in the pipes can cause malfunctions. We therefore recommend that a filter of 5µm or less be placed in front of and close to the supply port. Flushing the interior of the piping prior to operation and/or at regular intervals is also recommended.
5. Do not use the solenoid valves in corrosive and/or flammable gases. Do not use this equipment for the handling of fluids.
6. When mounting a cartridge joint or ejector top plug, be sure to remove extraneous matter from the seal and fix the fastening pin firmly in place. Before conducting this operation, please carefully read the explanation given herein so that you understand all procedural cautions.
7. The performance capability of silencer-fitted manifold may deteriorate due to foreign matter trapped in the elements. We therefore recommend that inspections and maintenance be carried out at regular intervals.
8. When mounting each unit onto a manifold, be sure to remove extraneous matter from the seal, and fix each unit firmly in place using appropriate screws. Before using the manifold, please carefully read the explanation given herein so that you understand all procedural cautions.
9. When wiring Sub-D connectors and flat cable connectors, please carefully study the wiring diagram so that you completely understand the wiring details.
10. The vacuum producing capacity of a manifold-fitted solenoid valve may be reduced due to operational conditions. Please read the operating instructions carefully before using said manifold.

# Vacuum Generator VZ Type

Ejector system-compatible unit		
Sub-D connector specifications		Flat cable connector specifications
<b>VZ</b> Concentrated exhaust	<b>VZ</b> Open to air	<b>VZ</b> Concentrated exhaust
		
Model	Model	Model
VZ□□-□□□-D24-□-M□-D□	VZ□□-□□S-D24-□-M□-D□	VZ□□-□□□-D24-□-M□-F□
Ejector system-compatible unit		Vacuum pump system-compatible unit
Flat cable connector specifications	Sub-D connector specifications	Flat cable connector specifications
<b>VZ</b> Open to air	<b>VZP</b>	<b>VZP</b>
		
Model	Model	Model
VZ□□-□□S-D24-□-M□-F□	VZP-□□□-D24-□-M□-D□	VZP-□□□-D24-□-M□-F□
Filter element for replacement		Silencer element for replacement (ejector system-compatible unit)
		
Model		Model
VZ010B66		VZ010B67 *2 pcs./set