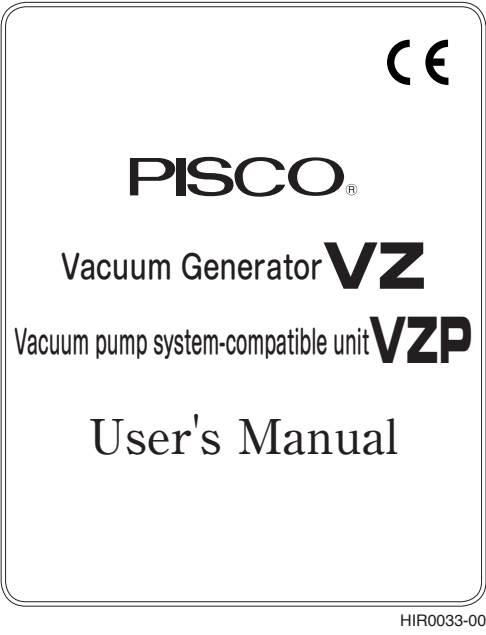


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Thank you for purchasing PISCO product. Please be sure to read this User's Manual before using this item in order to make sure the safety. Please keep this manual handy with care, so that you can refer to it whenever necessary. Please refer to the enclosed User's manual for the handling of sensor. PISCO products catalogues include Common Safety Instructions for PISCO products and Vacuum equipment. Please confirm the Safety Instructions as well before using this item.

Note) We do not indicate CE marking on the manifold unit.

## ⚠ Safety Instructions

### ● Warnings

- Mishandling of compressed air is dangerous. Conduct assembly and maintenance of devises with pneumatic equipment by persons with enough knowledge and experience.
- Carry out maintenance and checks of equipment only after turning power off, shutting air off and making certain that the pressure in the piping has dropped to zero. When installing and detaching units from the manifold, shut air off and make sure the pressure in the piping has dropped to zero.
- Since this item is not of explosion-proof structure, do not use it in surroundings containing flammable and/or explosive gases and/or fluids. Avoid use where there are constant pressures of 0.1MPa(14.5psi) or above in the vacuum circuit.
- 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 supplied to the pilot valve for a prolonged period of time.

### ● Cautions

- Do not use the equipment other than the operating pressure range. Operating it other than the operating pressure range may cause damage or deformation.
- With double-solenoid types (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.
- Increasing the station number of the manifold (ejector type) may make it impossible to obtain satisfactory results, or cause trouble, for the reasons such as insufficient supply air, decreases in vacuum performance due to the air exhaust port's insufficient volume. Depending on the nozzle size, vacuum characteristics and port sizes, etc., certain station numbers must be maintained so as to preserve the performance capabilities. For information concerning these respects, please make inquiries to our sales office.
- Exhausting air, while operation, of the manifold (ejector type) flows out of vacuum port of the standing stations. In case the circulation of exhaust air may cause troubles, please make inquiries to our sales office.
- Increasing the station number of the manifold (vacuum pump system-compatible type) may cause insufficient vacuum supply and decrease vacuum level from vacuum port. Depending on the condition used, certain station numbers must be maintained so as to preserve the performance capabilities. For information concerning model designations, please make inquiries to our sales office.

## Specifications

Type	Ejector system-compatible unit	Vacuum pump system-compatible unit
Fluid admitted	Air	
Service pressure range	0.3 ~ 0.7MPa	
Service temperature range	5 ~ 50°C	
Working vacuum range	—	0 ~ -100kPa
Protective structure	IEC standard IP40 equivalent	

## Ejector characteristics

Model	Nozzle diameter (mm)	Supply Pressure (MPa)	Final vacuum (-kPa)	Suction flow (ℓ/min(ANR))	Air consumption (ℓ/min(ANR))
VZH05	0.5	0.5	90.4	7	11.5
VZL05			66.5	12	
VZH07			93.1	13	
VZL07	0.7	0.5	66.5	24	23
VZE07			90.4	10	
VZH10	1.0	0.5	93.1	24	46
VZE10		0.35	90.4	20	34

## Solenoid valve specifications

### ■ Pilot valve

Item	Vacuum making solenoid valve	Vacuum release solenoid valve
Operating system	Direct operation	
Valve construction	Elastic seal, poppet valve	
Voltage rating	DC24V	
Allowable voltage range	DC21.6V ~ DC26.4V	
Surge limiting circuit	Surge absorber	
Power consumption	0.55W (with LED)	
Operating indication	Red LED lighting up when coil excitation	Yellowish green LED lighting up when coil excitation
Manual operation	Push and lock type	
Wiring method	Sub-D connector, Flat cable connector	

### ■ Change valve

Item	Vacuum making (supply) solenoid valve		Vacuum release solenoid valve
Operating system	Pneumatic operation by pilot valve		
Valve construction	Elastic seal, poppet valve		
Valve function	Single	Double	Single
Valve type	N.C. (Normally closed)		
Proof pressure	1.05MPa (152.3 psi)		
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	10msec
	ON → OFF	15msec	15msec

\* "Response time" is the time elapsed before detecting pressure change at the vacuum port, under the rated pressure and at the rated voltage. Time required for making / releasing a vacuum at the pipe tip (work) varies according to ejector characteristics, pipe volume(length), flow rate for vacuum release etc.

## Filter specifications

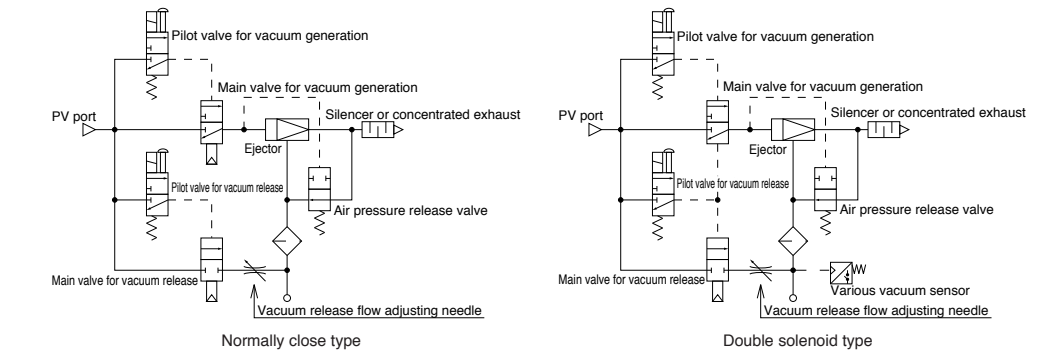
Element material	PVF (polyvinyl formal)
Filtering capacity	10μm
Filter surface area	660mm <sup>2</sup>
Replacement element Model Designation	VZ010B66

## Vacuum release function

Item	Vacuum release valve	
Vacuum release air flow *1	0 ~ 50 ℓ/min(ANR) (0 ~ 1.75SCFM) (at 0.5MPa)	
Air pressure release valve *2	Operating system	Air pressure-activated indirect action
	Valve construction	Elastic seal, poppet valve
	Valve type	N.O. (Normally open)
	Lubrication	Not required
	Orifice dia.	3.5mm (0.14in.)

\*1. The vacuum release air flow depends on factors such as the diameter and length of the vacuum side piping (piping resistance).

\*2. The air pressure release valve is only available for Ejector system-compatible unit. (The air pressure release valve is normally open type (contact with atmosphere). The valve closes by indirect operation at vacuum generating condition and maintains vacuum supply. Therefore, it enables to release large quantity of air from the exhaust port and contributes to reduce vacuum release time substantially (please refer to following circuits)).

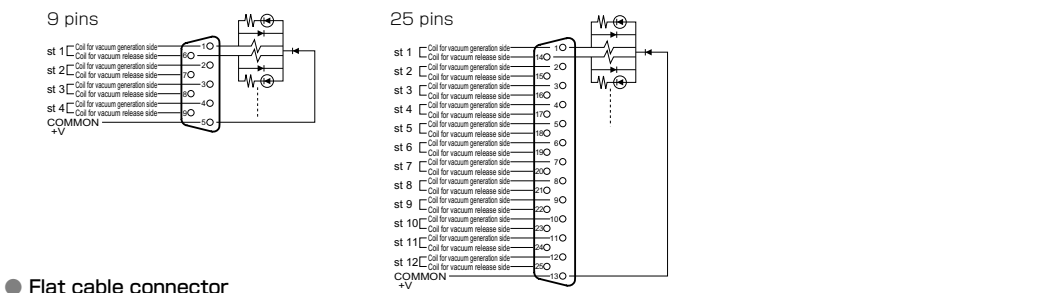


## Circuit diagram (Solenoid valve)

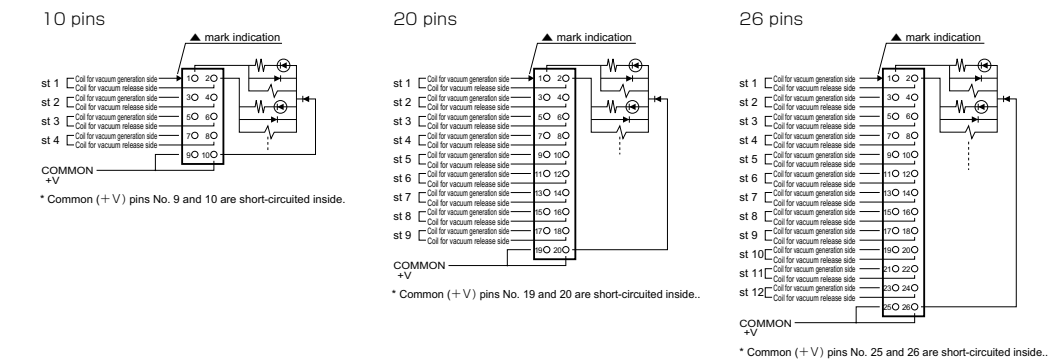
### ● Caution

- Do not pull or bend the connector cable with excessive force and also avoid repeat action on the cable. Doing so may result in the products broken and the cables being snapped off.

### ● Sub-D connector



### ● Flat cable connector



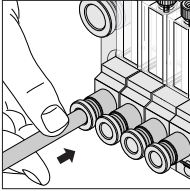
## How to fit and release Tubing

### ● Warning

- When removing tubing from the unit, be sure to turn off the air supply and discharge residual air pressure completely.
- Install the piping by checking the supply port, vacuum port and exhaust port in the catalogue.

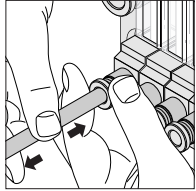
#### (1).Tube insertion

Simply insert a tubing to the tube end of Vacuum Generator VZ. The lock claws automatically fix the tubing, and elastic sleeve seals the tube surrounding. Please refer to "2. Cautions on the fitting of tube" in Common Safety Instructions for Quick-Fitting in PISCO PRODUCTS catalogue.



#### (2).Tube Release

In case of releasing the tube, push the release ring. The lock claws open and the tube can be released. Before releasing the tube, make certain that the pressure inside the tube is zero pressure.

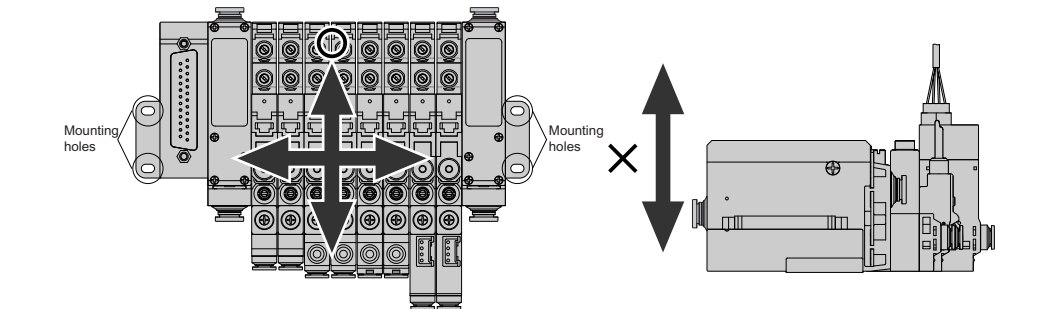


## How to fix the Vacuum Generator

### ● Caution

- Do not apply excessive vibration to the unit. Using it in such condition can lead to malfunctions and/or errors.

Use M3 screws to fix the valve with four mounting holes (Please refer to the appearance dimension for hole pitch). In the event the installation site is subject to vibration, install vacuum generators so that the direction of vibration is at a right angle to the switch-over valve.

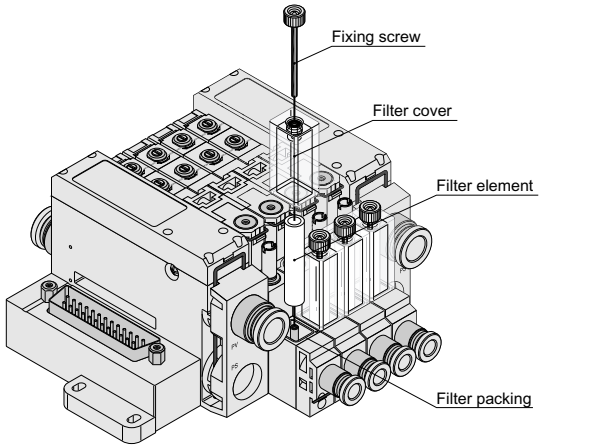


## How to replace the filter element

### ● Caution

- Tighten the fixing screw firmly at a clamping torque of 0.3 ~ 0.5N · m.

When replacing the filter element, remove the fixing screw. After replacing the filter element, make sure that the filter packing has not been detached and fasten the screw firmly at a clamping torque of 0.3 ~ 0.5N · m.



## How to replace the manifold silencer elements

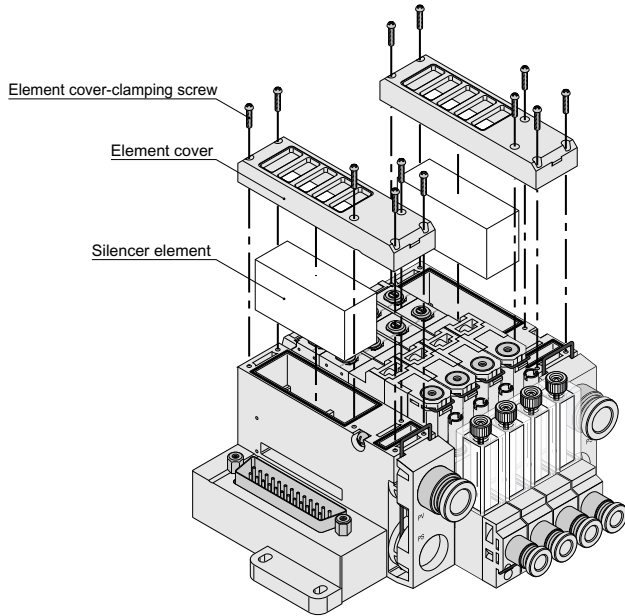
### ● Caution

- Tighten the silencer cover firmly with the fixing screw at a clamping torque of 0.4 ~ 0.5N · m.

### ■ How to replace the silencer element

- Remove six element cover-clamping screws.
- Remove the silencer elements.
- Insert new silencer elements, put a new element cover in place and fix it firmly at a clamping torque of 0.4 ~ 0.5N · m.

(Note) Since tapping screws for resins are used for clamping, it is necessary to confirm that the screws are properly engaged at the initial stage. Use a precision screwdriver to clamp the screws.

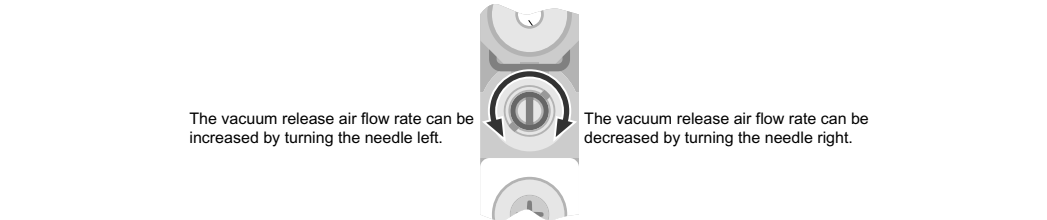


## How to adjust vacuum release flow

### ● Caution

- Please use a flat-tip screwdriver for adjusting vacuum release flow and tightening lock nut.
- After the flow has been adjusted, be sure to fix the lock nut firmly at a clamping torque of 0.1 ~ 0.3N · m.

Turning the air flow adjustment needle clockwise decreases the flow rate of air, while turning the needle counterclockwise increases the flow.



## How to install, remove and clean the nozzle and diffuser

### ● Warning

- When supplying air to the unit, do not direct the nozzle outlet at human body. The nozzle may jump out, causing injury.

### ● Caution

- Do not damage the nozzle, diffuser interior or seal and the seal of main body. Otherwise, the unit performance may deteriorate.

Please conduct replacement and cleaning of nozzle and diffuser as follows :

- Pull out the ejector's top plug clamping pin using a flat-tip screwdriver or other appropriate tool.
- Pull out the top plug, the nozzle and the diffuser.
- Remove extraneous matter from the interior diameter sections of the nozzle, diffuser and the seal section by using an air blower, then clean said sections with a cloth.

(Note) Take care not to mar the interior diameter sections of the nozzle and diffuser.

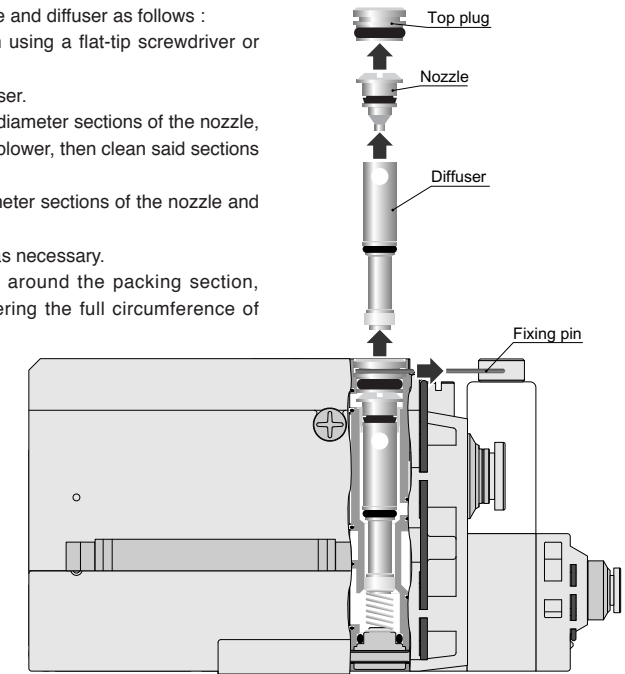
- Apply grease to the nozzle's piston packing as necessary.

(Note 1) When grease is found scattered around the packing section, apply a thin layer of grease covering the full circumference of the packing. Use grease that will not damage rubber and resins. (We recommend NOK-made ISOFLEX TOPAS NB52)

(Note 2) Take care when applying grease since it will cause dust and/or fluff to adhere to the packing section.

- Insert the diffuser, the nozzle and the top plug into the vacuum generator in this order.

- Insert the top plug clamping pin.



## How to replace the manifold-mounted unit

### ● Warning

When removing the unit, shut off the supply air and evacuate the remaining pressure.

### ● Caution

- When mounting or removing the unit on/from a manifold, make sure that the O-rings for air supply (vacuum supply) and the exhaust (air supply) port are not missing or sticking out.
- Clamp the two screws alternately and gradually.
- Install the unit with clamping torque of 0.4 ~ 0.5N · m.

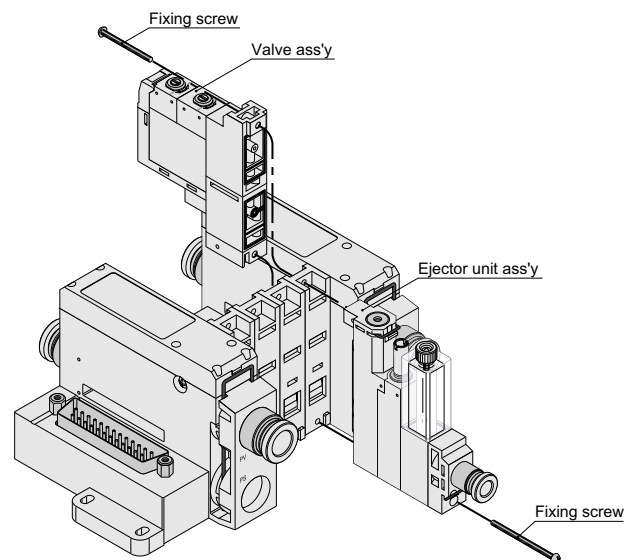
### ■ How to remove the unit

Please conduct removing and mounting of valve unit as follows :

- Stop the supply air and purge residual pressure from the piping.
- Remove the two clamping screws using appropriate tool.
- Remove each valve unit from the manifold.

### ■ How to mount the unit

- Confirm that the packing has not fallen off and that no extraneous matter is adhering to the valve.
- Install each solenoid valve from above the manifold.
- Confirm that each valve is properly clamped in place.
- Clamp the two screws using the appropriate tool.



\* Please make inquiry about other details to the following.

## NIHON PISCO CO.,Ltd.

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