

⚠ Safety Instructions

- Warnings
1. Mishandling of compressed air is dangerous. Assembly and maintenance of devises with pneumatic equipment should be conducted by persons with sufficient knowledge and experience.
 2. 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.
 3. Since this item is not of explosion-proof design, do not use it in surroundings containing flammable and/or explosive gases and/or fluids. Avoid using it where constant pressure of 0.1MPa(14.5psi) or above is on the vacuum circuit.
 4. The coil generates heat when the solenoid valve is energized under the following ① to ③ conditions. The heat may possibly lead to shorter operating life or system failure of the product. There are also possibilities for bad influence to peripherals or burn injury by heat.
If the product is energized under the following conditions, please consult with Pisco.
① Continuous energizing for about 2 hours or more.
② High cycle energizing.
③ The total energizing time of a day exceeds the total non-energizing time even if it is intermittent energizing.

- Cautions
1. Do not operate the device out of the specified pressure range. Operating it beyond the specified pressure range may cause damage or deformation.
 2. As for ejector manifold type devices, increasing number of manifold may cause troubles such as a shortage of air supply, a deteriorated vacuum performance due to the capacity shortage in exhaust port. The number of manifold series which can be operated simultaneously depends on the nozzle size, the vacuum performance and the size of each port. Contact PISCO sales office for detail.
 3. As for ejector manifold type devices, the exhaust air is exhausted from the inactive station vacuum port. If there is any problem with a wraparound of air, consult with Pisco.
 4. The leakage current of valve controlling unit should be Max. 1mA, otherwise there may be a possibility for malfunction due to the leakage current.

Specifications	
Fluid admitted	Air
Service pressure range	0.25 ~ 0.7MPa
Service temperature range	5 ~ 50°C
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])	Replacing nozzle set
VK□H05...	0.5	0.5	91	7	11.5	VK HN05
		0.35	73		9	
		0.5	67	11	11.5	
VK□L05...		0.5	93	13	23	VK HN07
		0.35	73		17	
		0.5	67	26	23	
VK□L07...		0.35	91	10.5	17	VK EN07
		0.5	93		46	
		0.35	73	27	34	
VK□H10...		0.5	67	40	46	VK LN10
		0.35	91	21	34	
		0.5	93	38	70	
VK□L10...		0.35	73	36	47	VK HN12
		0.5	67	50	70	
		0.35	91	27	47	
VK□E10...		0.5	67	50	70	VK LN12
		0.35	91	27	47	
		0.5	67	50	70	

※1) Retain the above air supply pressure while generating vacuum by considering the pressure drop.
※2) The values written in the table are representing values. The suction flow is different depending on the piping condition (vacuum port size and tube length.)
※3) The value with back color is the characteristic obtainable at the time of rated air supply pressure.

Solenoid valve specifications

Pilot valve				
Item	Suction solenoid valve		Blow-off solenoid valve	
Operating system	Direct operation			
Valve construction	Elastic seal, poppet valve			
Voltage rating	24VDC	100VAC	24VDC	100VAC
Allowable voltage range	24VDC ±10%	100VAC ±10%	24VDC ±10%	100VAC ±10%
Surge limiting circuit	Surge absorber	Bridge diode	Surge absorber	Bridge diode
Power consumption	0.8W	1VA	0.8W	1VA
Manual operation	Push-button system of lock type			
Operating indication	Red LED lighting up when coil excitation is in operation.			
Wiring method	Connector type (cable length : 500mm (19.7inch))			
	Red: 24VDC Black: COM	Blue	Red: 24VDC Black: COM	Blue

Switch-over valve	
Item	Suction valve
Operating system	Pneumatic operation by pilot valve
Valve construction	Elastic seal, poppet valve
Proof pressure	1.05MPa (152.3 psi)
Valve type	Normally closed / Normally open
Lubrication	Not required
Effective sectional area	3.5mm²

Blow-off function

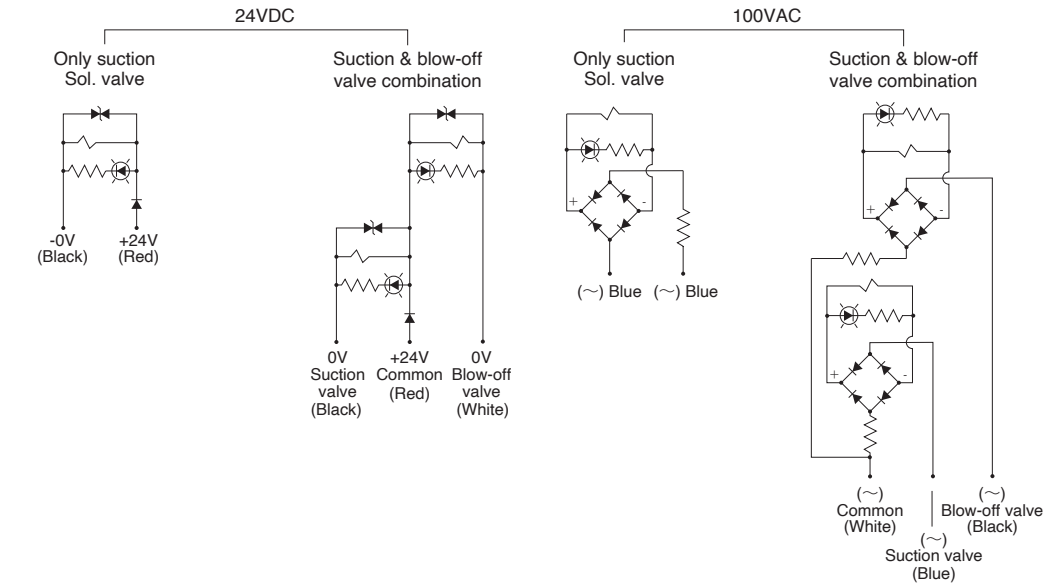
Blow-off air flow	0 ~ 40ℓ/min[ANR] (at 0.5MPa of supply pressure) (valve type: normally close)
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Air timer-type blow-off valve	
Structure	Delay by timer air cylinder, poppet valve type, two-way valve
Release time	Approx. 0.3 to 3sec after closing of suction solenoid
Release air flow	0 to 40ℓ/min[ANR] (for pressure supply: 0.5MPa)
Time setting method	Control by the speed controller of timer air cylinder

Filter specifications	
Element material	PVF (polyvinyl formal)
Filtering capacity	10μm
Filter surface area	1,130mm²
Replacement element type	VGFE10

Mechanical-type vacuum switch Specifications	
Pressure detection	Diaphragm-microswitch
Fluid admitted	Air
Service temperature range	5 ~ 50°C
Microswitch rating	7A 250VAC
Pressure setting range	-20 ~ -80kPa
Accuracy	±4kPa
Differential response	16kPa max.
Set pressure at delivery	Approx. -50kPa

- Circuit diagram (Solenoid valve)
- Caution
1. 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.



How to fit and release tubing

- Warning
1. Before removing tubing from the unit, be sure to turn off the air supply and discharge residual air pressure completely.
 2. 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 the fitting built-in Vacuum Generator VK. 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 to open the lock-claws, and the tube can be released. Before releasing the tube, make certain that the pressure inside the tube is zero pressure.

How to fix Vacuum Generator VK

- Caution
1. Do not apply excessive vibration to the unit. Using it in such condition can lead to malfunctions and/or errors.
- Fix the generator by M3 thread with the tightening torque of 0.4 ~ 0.5N·m using 2 installation holes on the resin body. Please look up an appearance drawing of the product catalog for the positions of installation holes.

How to adjust blow-off flow

- Caution
1. Use appropriate needle-nose pliers when adjusting the blow-off flow and tightening the lock nut.
 2. Tighten the lock nut after adjusting the blow-off flow. Carefully read the following.
 - ① Retorque the lock nut, using a proper tool at rotation of less than 10 degrees from the hand-tightening position.
 - ② Over-tightening may cause damage to the internal thread or the knurling.

- Turn the blow-off flow adjustment needle clockwise to decrease the flow rate of air, or turn it counterclockwise to increase the flow.



Blow-off time adjustment of air timer type blow-off valve

- Turn the blow-off time adjusting needle clockwise to make the blow-off duration longer or turn it counterclockwise to make the blow-off duration shorter.



How to set a pressure of mechanical vacuum switch

- Pry off the cover by tools like screwdriver, then adjust the pressure by turning the adjusting nut. Turn the adjusting nut clockwise to make vacuum level high. Since the adjusting nut is fixed in place by lock nut, loosen the lock nut before making adjustment. Re-tighten the lock nut while holding the adjusting nut by finger or etc. after adjustment. When prying off the cover, dab with finger in order not to flick it off.
※) Request Pisco for repair if the cover or switch is broken.

How to replace the filter element

- Loosen the fixing screw of filter cover, then replace the filter element. After replacing the filter element, confirming that the filter packing is in place, put the filter cover back on and tighten the fixing screw with 0.12 to 0.15N·m of torque.



How to replace the silencer elements

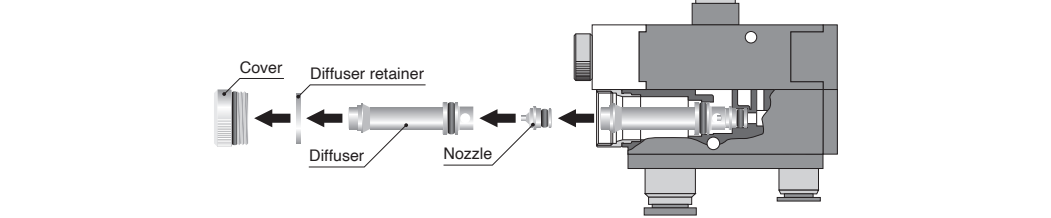
- Caution
1. Please make sure that the lock pin is inserted correctly after replacing the silencer element.
- Loosen the lock pin by a flat-tip screwdriver, then replace the silencer element. After replacing the silencer element, insert the lock pin firmly. The lock pin is bent for fall-proof. Therefore, insert the pin in the direction that the bending direction of pin faces inward (filter side) as shown in the picture.



How to install, remove and wash the nozzle and diffuser

- Warning
1. When supplying air to the unit, do not aim the nozzle outlet at human body. The nozzle may jump out, causing injury.
- Caution
1. Do not damage the nozzle, diffuser interior or seal and the seal of main body. Otherwise, the unit performance may deteriorate.

The diffuser can be pulled out by using needle-nose pliers or equivalent tool after removing the cover and the diffuser retainer. To prevent the nozzle from jumping out, fill the cushioning material such as sponge and supply air from air supply (P) port. The nozzle is jumped out by air pressure. Take the nozzle out from the cushioning material. Remove any foreign matter attached to the interior of nozzle, diffuser and sealing by air blow, wiping or etc. Attach the nozzle to the diffuser and install back to the generator, paying attention not to drop the nozzle. Push the diffuser back in place and tighten the cover with 0.2 to 0.25N·m torque.



How to replace the manifold-mounted unit

- Warning
- Before removing the unit, shut off the supply air and evacuate the residual pressure.
- Caution
1. When mounting or removing the unit on/from the manifold, make sure that O-rings for the air supply (vacuum supply) port and the exhaust (air supply) port are not missing or run off the edge.
 2. When mounting the unit on the manifold, fix the unit with the fixing screw with a tightening torque of 0.3 to 0.32N·m. Otherwise, the unit may come off and jump out by vibration.

- How to remove the unit
- Shut off air supply and evacuate the residual pressure.
 - Turn off the power supply and remove the wiring.
 - Using an appropriate Phillips screwdriver, remove the fixing screws then remove the unit.
- How to mount the unit
- Make sure that the O-rings for the supply port and exhaust port are in place and not missing.
 - While pressing the unit downward from above, fix the unit firmly by tightening the fixing screws with a tightening torque of 0.3 to 0.32N·m.

How to replace manifold silencer element

- Caution
1. Fix the silencer cover firmly with the tightening torque of 0.17 ~ 0.23N·m.

- How to remove the silencer element
- Using an appropriate Phillips screwdriver, remove the 4 tapping screws.
 - Remove the silencer cover and replace the silencer element (type: VKM-SET(1)).
- How to mount the silencer element
- Using the Phillips screwdriver, securely tighten the 4 tapping screws with a tightening torque of 0.17 to 0.23N·m.
 - (1) Silencer element is sold as a set of 2 pieces of VKM-SE1 and 1 piece of VKM-SE2.



※) Please make inquiry about other details to the following.