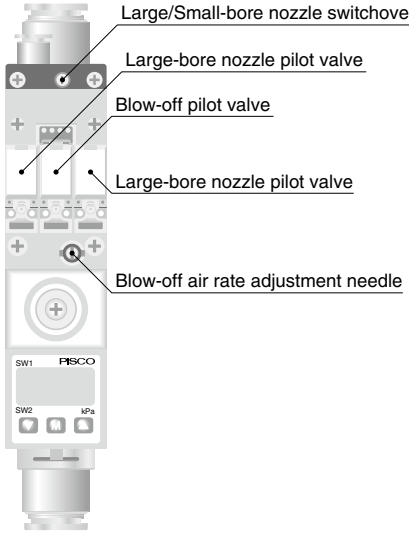
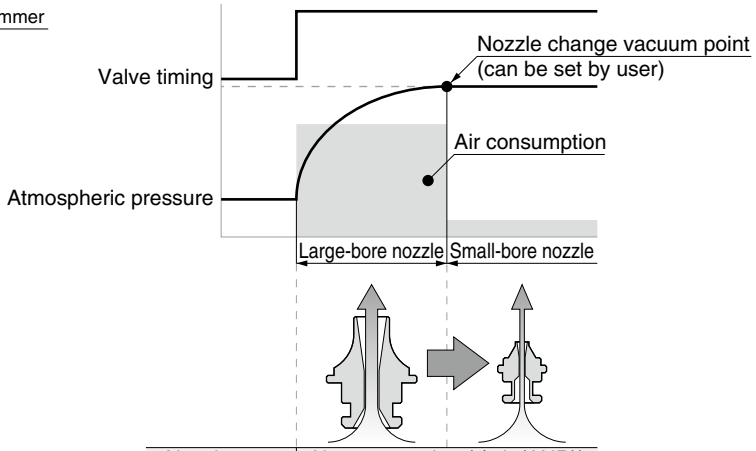
Vacuum Generator **VQ** Series

Characteristics

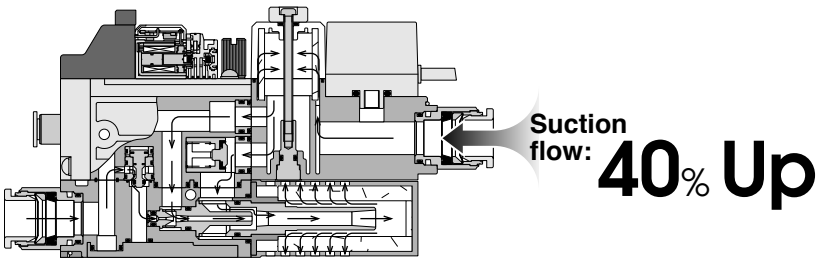
- 31.5-mm wide vacuum unit is designed to optimize the control of large vacuum flows.
- Three different types of vacuum generator are available: single-nozzle type (nozzle bore: 1.5mm, 2.0mm), two-stage nozzle type (nozzle bore: 0.7mm, 1.0mm, 1.2mm) and twin-nozzle type.
- The twin-nozzle type, the most durable unit for applications with longer suctioning or transporting time, is controlled by means of both large and small diameter nozzle. The large nozzle controls vacuum generation from start up to a prescribed reference preset pressure level, after which the small nozzle takes over for maintaining a vacuum level. This combination makes possible substantial reductions in Air consumption (patent pending).





Nozzle type	Air consumption (ℓ/min(ANR))	
T15	100	23
T20	200	46

- The two-stage nozzle type's vacuum suction rate has been increased by approximately 40% compared to conventional types (PISCO Vacuum Generator complex type with single nozzle).



- The single-nozzle type is an orthodox, complex vacuum generator designed to produce large vacuum flows.
- A wide variety of valve type is standardized:
  · Single-nozzle type: Normally open, Normally closed, Double solenoid (vacuum retention) type
  · Two-stage nozzle type: Normally open, Normally closed type
  · Twin-nozzle type: Normally closed type
  · External vacuum controller: Normally open, Normally closed type
- Visibility improvement by vacuum pressure sensor with 31mm size LED display.

Specifications

Fluid medium		**Air** (JIS B 8392-1 : Compliant with [Class 1.2.1~2.4.3])
Operating pressure range		**43.5 ~ 102**psi (**0.3 ~ 0.7**MPa)
Operating temp. range		**41 ~ 122**°F (**5 ~ 50**°C) (No freezing)
Operating humidity range		**35 ~ 85**%RH (No dew condensation)
Vibration resistance / shock resistance		Less than **50**m/s² / Less than **150**m/s²
Protective structure		IEC standard **IP40** equiv.
Lubrication		**No required**
Proof pressure	Air supply circuit	**152**psi (**1.05**MPa)
	Vacuum circuit	**29**psi (**0.2**MPa)

*Proof pressure shows the level of pressure at which the product would not be damaged. It is different from the operating pressure range, in which the product operates properly.

Solenoid Valve Specifications

Rated voltage	**24**VDC ± **10**%	**100**VAC ± **10**%
Power consumption	**0.55**W (with LED)	**1.0**VA (with LED)
Surge protection	**Varistor**	**Bridge diode**
Operation indicator	**Current application : Red LED ON**	
Manual operation	**Push-lock button**	

Suction Valve Specifications

■ Single nozzle type

Operation type		Pilot valve		
Valve type		**Normally closed**	**Normally open**	**Double solenoid** (*1)
Response time (*2)	OFF → ON	**24**VDC: **15** msec	**24**VDC: **15** msec	**24**VDC: **10** msec
		100VAC: **15** msec	**100**VAC: **15** msec	**100**VAC: **12** msec
	ON → OFF	**24**VDC: **18** msec	**24**VDC: **10** msec	-
		100VAC: **24** msec	**100**VAC: **16** msec	-

(*1) Excitation time of the solenoid must be 50msec or more.
(*2) The value at supply air: 0.5MPa with rated voltage (100%)

■ Two-stage nozzle type

Operation type		Pilot valve	
Valve type		**Normally closed**	**Normally open**
Response time (*1)	OFF → ON	**24**VDC: **10** msec	**24**VDC: **18** msec
		100VAC: **10** msec	**100**VAC: **18** msec
	ON → OFF	**24**VDC: **10** msec	**24**VDC: **10** msec
		100VAC: **16** msec	**100**VAC: **16** msec

(*1) The value at supply air: 0.5MPa with rated voltage (100%)

■ Twin nozzle type

Operation type		Pilot valve
Valve type		**Normally closed**
Response time (*1)	OFF → ON	**24**VDC: **15** msec

(*1) The value at supply air: 0.5MPa with rated voltage (100%)

Pressure sensor Specifications

		-S (2 switch outputs with 31.5mm LED display)
Power requirement		**12 ~ 24**VDC**±10**%, Ripple (P-P) **10**% max.
Current consumption		**40**mA max.
Pressure detection		**Diffused semiconduction pressure switch**
Proof pressure		**147.7**in. Hg (**0.5**MPa)
Switch output	Switch output	NPN Open collector output : **30**V **100**mA max. Residual voltage **1.2**V max.
	No. of pressure setting	**2**
	Operating pressure range	**-29.5 ~ 29.5**in. Hg (**-100 ~ 100**kPa)
	Operating accuracy	**±1**%F.S. max. (at Ta=**77**°F/**25**°C)
	Differential response	Variable (**0 ~ 30**digits)
	Operation indication	**Red LED turns ON, when the switch output is ON.**
Pressure indication	Indication	**-29.5 ~ 29.5**in. Hg (**-100 ~ 100**kPa) (2-1/2digit Red LED display)
	Display frequency	About **4**times/sec
	Indication accuracy	**±1**%F.S.
	Sensor resolution	**1**digit

* Allowable range of the variation of "Zero point voltage" and "Pressure setting value" caused by repeated voltage application is ±3%F.S.

Filter Specifications

Element material	**PVF** (Polyvinyl formal)
Filtering capacity	**5**μm (Trapping efficiency: **95**%)
Element surface area	**1,507**mm² (**2.36**in.²)
Element model code	**VQ030B61**

Blow-off function

Blow-off air rate	**0 ~ 1.77**SCFM (**0 ~ 50**ℓ/min(ANR))

Model Designation (Example)

VQ **T15** (1) **C** (2) - **O** (3) **O** (4) **S** (5) - **D24** (6) - **S** (7)

(1) Vacuum characteristics & Nozzle bore

Code	Vacuum characteristic		Nozzle bore (in.) (mm)	Supply pressure (psi) (MPa)	Vacuum level (in. Hg) (kPa)	Suction flow (SCFM) (ℓ/min(ANR))	Air consumption (SCFM) (ℓ/min(ANR))
H15	Single nozzle type	High-vacuum type	0.06 1.5	72.5	-27.5 -93	2.21[2.21] 63[63]	3.50
L15		Large-flow type	0.06 1.5	0.5	-28.3 -96	3.33[3.33] 95[95]	100
E15		High-vacuum at low air supply pressure type	0.06 1.5	50.8 0.35	-27.7 -92	1.47[1.47] 42[42]	2.45 70
H20		High-vacuum type	0.08 2.0	72.5	-27.5 -93	3.36[3.41] 96[97.5]	7.00
L20		Large-flow type	0.08 2.0	0.5	-28.3 -96	5.01[5.60] 143[160]	200
E20		High-vacuum at low air supply pressure type	0.08 2.0	50.8 0.35	-27.7 -92	2.45[2.45] 70[70]	5.25 150
T15	Twin nozzle type		0.03 0.7	72.5 0.5	-27.5 -93	0.84[0.84] 20[24]	0.81 23
			0.06 1.5			1.40[1.40] 40[40]	3.50 100
T20			0.04 1.0			1.26[1.26] 36[36]	1.61 46
			0.08 2.0			2.45[2.45] 70[70]	7.00 200
D07	Two-stage nozzle type		0.03 0.7	72.5 0.5	-27.5 -93	1.82[1.82] 52[52]	0.81 23
D10			0.04 1.0			2.63[2.63] 75[75]	1.61 46
D12			0.05 1.2			2.96[2.96] 85[85]	2.45 70

* Suction flow values in left: vacuum port dia. of ø8mm, and in [ ]: ø10mm
* The flow rate in SCFM is a reference value converted by multiplying ℓ/min(ANR) by 0.035.

(2) Vacuum generator valve type

C: Normally closed type
O: Normally open type
D: Double solenoid type (Vacuum retention type)

*1. "Normally-close (code: C)" only when a twin-nozzle type is selected in (1).
*2. "Normally-close (code: C)" or "normally-open (code: O)" only when a 2-stage nozzle type is selected in (1).

* Exhaust port of pilot valve : ø6mm Push-in fitting

(3) Vacuum (V) port size (Tube O.D.)

	mm size (mm)	
Code	**8**	**0**
Dia.	ø8 Push-in fitting	ø10 Push-in fitting

(4) Air supply (PS) port size (Tube O.D.)

	mm size (mm)		
Code	**6**	**8**	**0**
Dia.	ø6 Push-in fitting	ø8 Push-in fitting	ø10 Push-in fitting

* ø6 tube fitting is only selectable when 2-stage nozzle type is selected in (1).

(5) Exhaust (EX) port

	Silencer vent	Tube exhaust type
Code	**S**	**J**
Exhaust method	–	Tube exhaust (ø12mm Push-in fitting)

(6) Pilot valve voltage

Code	**D24**	**A100**
Voltage	24VDC	100VAC

* For twin-nozzle type, only 24VDC type is available.

(7) Pressure sensor (NPN Open collector)

Code	Specifications for Pressure sensor
S	2 switch outputs with □31mm LED display
No code	Without Pressure sensor

Detailed Safety Instructions

Before using the PISCO products, be sure to read the "Safety Instructions", "Common Safety Instructions for Products in This Catalog on page 13 to 16, "Common Safety Instructions for Vacuum Series on page 18, and "Common Safety Instructions for Vacuum Generator Complex Types on page 31.

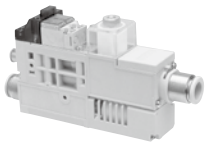
⚠Warning : 1. Regarding double-solenoid type, the switchover valve (main valve) is placed in neutral after the supply of pilot air has been suspended (the same is true when the valve is being operated for the first time after shipment). When resuming the supply of pilot air, be sure to send a signal to the pilot valve, or conduct switchover operations manually as required.
2. Tighten threads with proper tightening torque. Improper tightening may cause an air leakage, a drop of the product or a damage to components.

⚠Caution : 1. Use the shortest pipes as much as possible when piping vacuum components (concentrated exhaust, pilot air exhaust and supply units). Using long pipes can prevent vacuum units from performing properly.
2. In case of using twin-nozzle type, set pressure allowance between the vacuum level at work suction time and the setting value of Large/Small nozzle switchover pressure sensor. If these values are similar, the Large/Small nozzle pilot valve might actuate simultaneously.

RoHS The products listed in this page are ECO-friendly products.
* Please refer to page 4 for the details of ECO-friendly products.

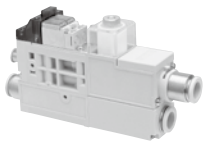
Single nozzle type

VQ Silencer Vent



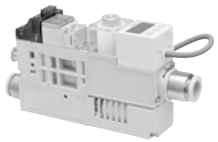
Model code
VQ 1 2 - 3 4 S- 6

VQ Tube Exh.



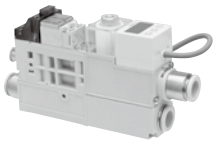
Model code
VQ 1 2 - 3 4 J- 6

VQ Pressure sensor, Silencer Vent



Model code
VQ 1 2 - 3 4 S- 6 -S

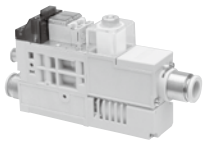
VQ Pressure sensor, Tube Exh.



Model code
VQ 1 2 - 3 4 J- 6 -S

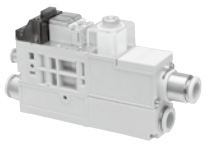
2-stage nozzle type

VQD Silencer Vent



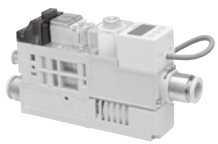
Model code
VQD 1 2 - 3 4 S- 6

VQD Tube Exh.



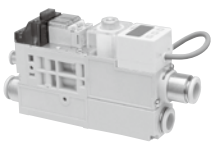
Model code
VQD 1 2 - 3 4 J- 6

VQD Pressure sensor, Silencer Vent



Model code
VQD 1 2 - 3 4 S- 6 -S

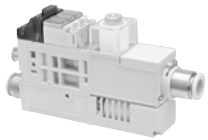
VQD Pressure sensor, Tube Exh.



Model code
VQD 1 2 - 3 4 J- 6 -S

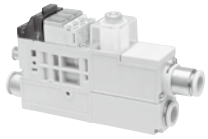
Twin-nozzle type

VQT Silencer Vent



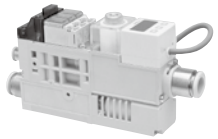
Model code
VQT 1 C- 3 4 S- 6

VQT Tube Exh.



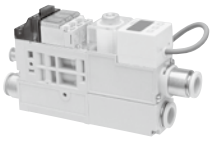
Model code
VQT 1 C- 3 4 J- 6

VQT Pressure sensor, Silencer Vent



Model code
VQT 1 C- 3 4 S- 6 -S

VQT Pressure sensor, Tube Exh.

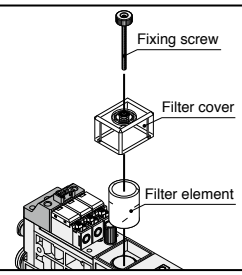


Model code
VQT 1 C- 3 4 J- 6 -S

Caution
* 1 : Replaced with vacuum characteristic code.
* 2 : Replaced with vacuum generator valve type code.
* 3 : Replaced with vacuum port size code.
* 4 : Replaced with air supply port size code.
* 6 : Replaced with pilot valve voltage code.
* Make-to-order production

Package specification
1 pc. in a bag

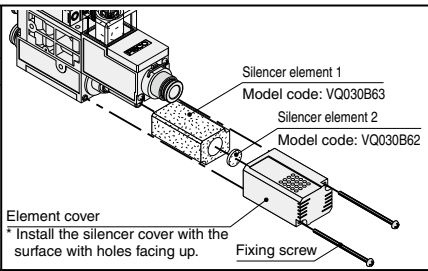
Replacement Filter Element



Model code
VQ030B61

Package specification
10 pcs. in a bag

Replacement Silencer Element



Model code	Note
SED2212	Before design change
VQ030B63	After design change
VQ030B62	

Package specification
SED2212 : 10pcs in a bag
VQ030B63, VQ030B62: 1pc. in a bag