Vacuum Generator Complex type VZ

PISCO®

>>> https://www.pisco.co.jp/en/

Vacuum generator complex type suitable for application requiring large blow-off air rate and high cycle. (Manifold type)

⚠ Safety instructions for this product

Safety instructions, Common safety instructions for each product category and Detailed safety instructions for each product are in the end of this catalog and our website.

Model Designation (Example)

VZ	H	05	D	–	4	1	1	– D24 –	R1	– M	08	–	F	26
(1)	(2)	(3)	(4)		(5)	(6)	(7)		(8)		(9)		(10)	(11)

(1) Vacuum Generator Complex type VZ

(2) Vacuum characteristics

Code	H	L	E	K
Characteristics	High-vacuum type (Rated supply pressure: 0.5 MPa)	Large-flow type (Rated supply pressure: 0.5 MPa)	High-vacuum at Low air supply pressure type (Rated supply pressure: 0.35 MPa)	Mixed configurations on a manifold (Fill out Specification Order Form.)

* Please secure supply pressure of 0.5 MPa when H or L type and E type are mounted on a manifold together. Vacuum performance indicated in the spec. can not be obtained by applying 0.35MPa to H or L type unit.

(3) Nozzle bore

Code	Nozzle bore (mm)	H type			L type			E type		
		Vacuum level (kPa)	Suction flow (ℓ/min [ANR])	Air consumption (ℓ/min [ANR])	Vacuum level (kPa)	Suction flow (ℓ/min [ANR])	Air consumption (ℓ/min [ANR])	Vacuum level (kPa)	Suction flow (ℓ/min [ANR])	Air consumption (ℓ/min [ANR])
05	0.5	-90.4	7〔7〕〈7〉	11.5	-66.5	12〔12〕〈12〉	11.5	-90.4	3〔3〕〈3〉	8
07	0.7	-93.1	13〔13〕〈13〉	23	-66.5	23〔24〕〈24〉	23	-90.4	10.5〔10.5〕〈10.5〉	17
10	1.0	-93.1	24〔24〕〈24〉	46	–	–	–	-90.4	20〔20〕〈20〉	34
00	Mixed configurations on a manifold (Fill out Specification Order Form.)									

*1. Values are when rated pressure is applied. (H and L type: 0.5 MPa, E type: 0.35 MPa.)
*2. Suction flow values on the left represent those of vacuum port size of M5 x 0.8 (female thread), those in [ ] are of vacuum port dia. of 4 mm, and those in < > are of vacuum port dia. of 6 mm.
*3. The values in the table are representative values. Suction flow can vary by vacuum port dia. and tube length.

(4) Valve type

Code	No code	D	K
Valve type	Normally closed type (N.C.)	Double-piloted (Self-holding function)	Mixed configurations on a manifold (Fill out Specification Order Form.)

(5) Vacuum port size (V)

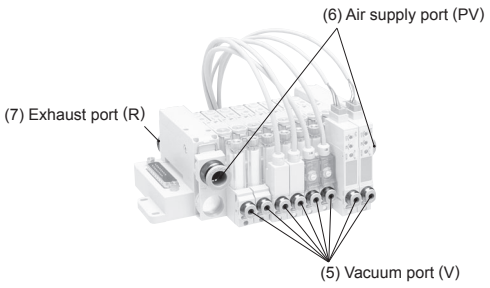
	Tube O.D. (mm)		Metric thread	
Code	4	6	5	0
Size	ø4	ø6	M5×0.8	Mixed configurations on a manifold (Fill out Specification Order Form.)

(6) Air supply port size (PV)

Code	4	6	8	1
Tube O.D. (mm)	ø4	ø6	ø8	ø10

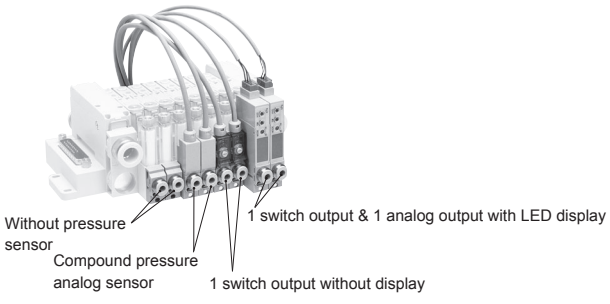
(7) Exhaust port (EX)

	Silencer	Tube O.D. (mm)		
Code	S	6	8	1
Size	Silencer vent	ø6	ø8	ø10



(8) Pressure sensor

Code	Specifications
No code	Without pressure sensors
DW	2 switch outputs with LED display
DA	1 switch output & 1 analog output with LED display
S	1 switch output without display
V1	Analog output sensor for negative pressure
V2	Separate LED display + analog sensor for negative pressure
R1	Analog sensor for compound pressure
R2	Separate LED display + analog sensor for compound pressure
K	Different sensor configurations on a manifold (Fill out Specification Order Form)



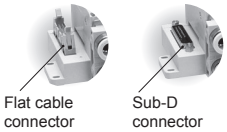
(9) No. of stations

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

* Allowable No. of stations for simultaneous operation varies depending on the combination of nozzle bore and port size. Contact your nearest sales office for details.

(10) Wiring type

Code	F	D
Specifications	Flat cable connector	Sub-D connector



(11)No. of connector pins

Code	Specifications
No code	Connector with the optimal number of pins selected by PISCO (*)
20	20 -pin flat cable connector (Max. 9 stations)
26	26 -pin flat cable connector (Max. 12 stations)
25	25 -pin Sub-D connector (Max. 12 stations)

* For flat cable connector
2 to 4 stations: 10 -pin flat cable connector
5 to 9 stations: 20 -pin flat cable connector
10 to 12 stations: 26 -pin flat cable connector
For sub-D connector
2 to 4 stations: 9 -pin Sub-D connector
5 to 12 stations: 25 -pin Sub-D connector

Model Designation of Manifold-base alone (Example)

VZ (1) M (2) – 8 (3) S (4) – 05 (5) – D (6) 25 (7)

(1) Vacuum Generator Complex type VZ

(2) Manifold-base

(3) Air supply port size (PV)

Code	4	6	8	1
Tube O.D. (mm)	ø4	ø6	ø8	ø10

(4) Exhaust port (EX)

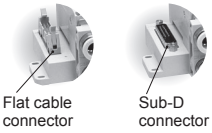
	Silencer	Tube O.D. (mm)		
Code	S	6	8	1
Size	Silencer vent	ø6	ø8	ø10

(5) No. of stations

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

(6) Wiring type

Code	F	D
Specifications	Flat cable connector	Sub-D connector



(7) No. of connector pins

Code	Specifications
No code	Connector with the optimal number of pins selected by PISCO (*)
20	20 -pin flat cable connector (Max. 9 stations)
26	26 -pin flat cable connector (Max. 12 stations)
25	25 -pin Sub-D connector (Max. 12 stations)

* For flat cable connector
2 to 4 stations: 10 -pin flat cable connector
5 to 9 stations: 20 -pin flat cable connector
10 to 12 stations: 26 -pin flat cable connector
For sub-D connector
2 to 4 stations: 9 -pin Sub-D connector
5 to 12 stations: 25 -pin Sub-D connecto

Model Designation of Manifold Installation Top-Mounting Unit alone (Example)

VZ (1) L (2) 07 (3) – 6 (4) – S (5)

(1) Vacuum Generator Complex type VZ

(2) Vacuum characteristics

Code	H	L	E
Characteristics	High-vacuum type (Rated supply pressure: 0.5 MPa)	Large-flow type (Rated supply pressure: 0.5 MPa)	High-vacuum at Low air pressure supply type (Rated air supply pressure: 0.35 MPa)

(3) Nozzle bore

Code	Nozzle bore (mm)	H type			L type			E type		
		Vacuum level (kPa)	Suction flow (ℓ/min [ANR])	Air consumption (ℓ/min [ANR])	Vacuum level (kPa)	Suction flow (ℓ/min [ANR])	Air consumption (ℓ/min [ANR])	Vacuum level (kPa)	Suction flow (ℓ/min [ANR])	Air consumption (ℓ/min [ANR])
05	0.5	-90.4	7 〔7〕 〈7〉	11.5	-66.5	12〔12〕〈12〉	11.5	-90.4	3 〔3〕 〈3〉	8
07	0.7	-93.1	13〔13〕〈13〉	23	-66.5	23〔24〕〈24〉	23	-90.4	10.5〔10.5〕〈10.5〉	17
10	1.0	-93.1	24〔24〕〈24〉	46	–	–	–	-90.4	20〔20〕〈20〉	34

*1. Values are when rated pressure is applied. (H and L type: 0.5 MPa, E type: 0.35 MPa.)
*2. Suction flow values on the left represent those of vacuum port size of M5 x 0.8 (female thread), those in [ ] are of vacuum port dia. of 4mm, and those in <> are of vacuum port dia. of 6mm.
*3. The values in the table are representative values. Suction flow can vary by vacuum port dia. and tube length.

(4) Vacuum port size (V)

	Tube O.D. (mm)		Metric thread
Code	4	6	5
Size	ø4	ø6	M5×0.8

(5) Pressure sensor

Code	Specifications
No code	Without pressure sensor
DW	2 switch outputs with LED display
DA	1 switch output & 1 analog output with LED display
S	1 switch output without display
V1	Analog output sensor for negative pressure
V2	Separate LED display + analog sensor for negative pressure
R1	Analog sensor for compound pressure
R2	Separate LED display + analog sensor for compound pressure

Model Designation of mounting valve unit (Example)

VZ (1) V (2) D (3) – D24

(1) Vacuum Generator Complex type VZ

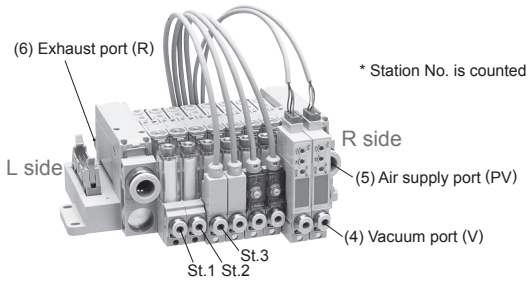
(2) Mounting valve unit

(3) Valve type

Code	No code	D
Valve type	Normally closed (N.C.)	Double-piloted (Self-holding function)

Specification order form example

			Type (1)	Vacuum characteristics (2)	Nozzle bore (3)	Valve type (4)		Vacuum port (5)	Air supply port (6)	Exhaust port (EX) (7)		Voltage		Pressure sensor (8)		No. of stations (9)	Wiring type (10)	No. of connector pins (11)
Manifold model code			VZ	K	00	K	–	4	1	1	–	D24	–	K	–	08	F	20
Mounting unit model code	L side	St.1		H	05		–				–		–					
	⬆	St.2		H	05		–				–		–					
	Station No.	St.3		H	05		–				–		–	R1				
		St.4		L	07	D	–				–		–	R1				
		St.5		L	07	D	–				–		–	S				
		St.6		L	07	D	–				–		–	S				
		St.7		E	10		–				–		–	DA				
		St.8		E	10		–				–		–	DA				
		St.9					–				–		–					
		St.10					–				–		–					
	⬇	St.11					–				–		–					
	R side	St.12					–				–		–					



* Station No. is counted as St.1, St.2, ···St.12 from L side when the vacuum port is facing the front as shown in the figure.

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Vacuum Generator VZ Series Specification Order Form

Name

To: NIHON PISCO CO., Ltd.

Distributor address TEL

Delivery address TEL

Customer name and address TEL

Requested EX-W PISCO Date: Order quantity: pcs.

			Type (1)	Vacuum characteristics (2)	Nozzle bore (3)	Valve type (4)		Vacuum port (5)	Air supply port (6)	Exhaust port (EX) (7)		Voltage		Pressure sensor (8)		No. of stations (9)	Wiring type (10)	No. of connector pins (11)
Manifold model code			VZ				–				–	D24	–		–			
Mounting unit model code	L side	St.1					–				–		–					
	⬆	St.2					–				–		–					
	Station No.	St.3					–				–		–					
		St.4					–				–		–					
		St.5					–				–		–					
		St.6					–				–		–					
		St.7					–				–		–					
		St.8					–				–		–					
		St.9					–				–		–					
		St.10					–				–		–					
	⬇	St.11					–				–		–					
	R side	St.12					–				–		–					

*1. Refer to the above example to fill in the form.
*2. Make photocopies of this page and fill in.
*3. When the combination of mounting unit spec. is different, a new Specification Order Form is required.

Vacuum Generator Complex type VZ

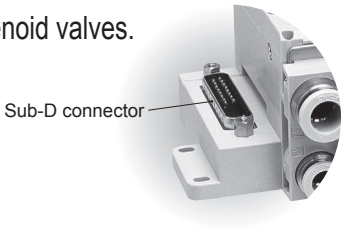
Characteristics

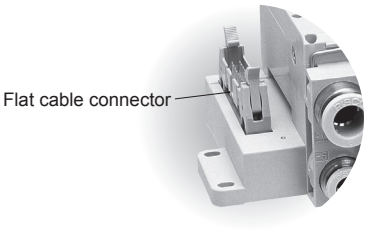
Compact and light body. Vacuum generator dedicated to Manifold mount.

Large volume of blow-off air by the incorporated air pressure release valve reduces blow-off time largely.

Bundled wiring of the suction and blow-off solenoid valves.

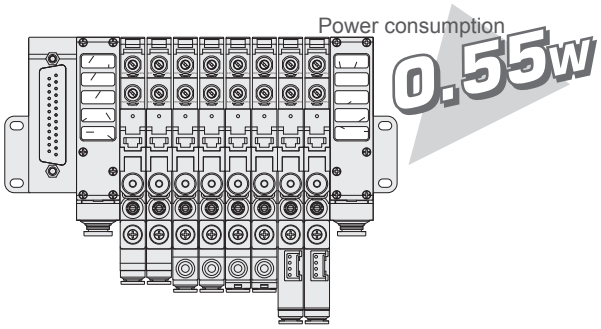
Centralized wiring can save wiring time.



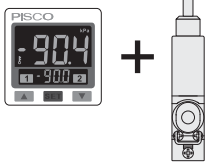


2 types of suction valves; Single solenoid and Double-piloted types.

Energy saving. Power consumption of valve is 0.55 W.



Various kinds of vacuum sensors for wide range of applications.

Without display		With separate display	With LED display	
Analog output	1 switch output	Pressure display + Analog output	1 switch output	2 switch outputs
				

Easy maintenance with user-friendly design.

The modular design makes it possible to replace only necessary parts.

Push-in fitting or female thread is selectable according to piping requirements.

The nozzle bore comes in three different sizes: dia. 0.5 mm, 0.7 mm and 1.0 mm.

Specifications

Fluid medium		Air (JIS B 8392 - 1 : Compliant with [Class 1.2.1 to 2.4.3])
Operating press. range		0.3 to 0.7 MPa
Operating temp. range		5 to 50°C (No freezing)
Operating humid. range		35 to 85%RH (No dew condensation)
Vibration resist. /Shock resist.		50 m/s^2 max. / 150 m/s^2 max.
Protective structure		IEC standard IP 40 equiv.
Lubrication		Not required
Proof pressure	Air spply. circuit	1.05 MPa
	Vac. circuit	0.2 MPa

* Proof pressure is the level of pressure at which the product would not be damaged. It does not mean the pressure where the product works normally.

Solenoid valve specifications

Rated voltage	24 VDC ±10%
Power consumption	0.55 W (with LED)
Surge protection	Varistor
Operation indicator	Current application to the suction / vacuum supply valve: Red LED ON Current application to the blow-off valve: Green LED ON
Manual override	Push-turn locking

Suction main valve specifications

Operation type		Indirect operation by pilot valve	
Valve type		Normally closed	Double-piloted (*1)
Response time	OFF→ON	10 msec	10 msec
	ON→OFF	15 msec	10 msec

*1. Excitation time of the solenoid must be 50 msec or more.
*2. The above response time at supply air: 0.5 MPa with rated voltage (100%).
*3. The above response time is when the nozzle dia. is 0.7 mm.

Blow-off main valve specifications

Operation type		Indirect operation by pilot valve
Valve type		Normally closed
Response time	OFF→ON	10 msec
	ON→OFF	15 msec

* The above response time at supply air: 0.5 MPa with rated voltage (100%).

Vacuum filter specifications

Element material	PVFM (Polyvinyl formal)
Filtering accuracy (*)	5 µm
Filter area	660 mm^2

* Based on PISCO measuring condition.

Blow-off function

Blow-off air rate		0 to 50 ℓ/min [ANR] (Supply pressure: 0.5 MPa)
Air pressure release valve	Operation type	Pilot valve-activated indirect operation
	Valve type	Normally open (During vacuum generation: closed)
	Lubrication	Not required

* Blow-off air rate varies according to the vacuum port dia. and tube length (piping resistance and others) on vacuum side.

Specifications of Pressure sensor with LED display

Specifications		–DW (2 switch outputs with LED display)	–DA (1 switch output & 1 analog output with LED display)
Current consumption		40 mA	
Pressure detection		Diffused metaloxide semiconductive pressure switch	
Operating press. range		-100 to 0 kPa	
Pressure setting range		-99 to 0 kPa	
Proof pressure		0.2 MPa	
Power requirements		12 to 24 VDC ±10% Ripple (P-P) 10% max.	
No. of pressure setting		2	1
Operating accuracy		±3% F.S. max. (Standard temp. at 25°C)	
Hysteresis		Fixed (2% F.S. max.)	Variable (about 0 to 15% F.S. max.)
Switch output		NPN open collector output: 30 V 80 mA max. Residual voltage 0.8 V max.	
Analog output	Output voltage		1 to 5 V
	Zero-point voltage		1 ±0.1 V
	Span voltage		4 ±0.1 V
	Output current		1 mA max. (Load resistance min.5kΩ)
	LIN/ HYS		±0.5%F.Smax. (Standard temp. at 25°C)
Response		About 2 msec or less	
Indication		0 to - 99 kPa (2 -digit red LED display)	
Display frequency		About 4 times/sec	
Indication accuracy		±3%F.S. ±2 digit max	
Sensor resolution		1 digit	
Operation indicator	SW 1: Red LED turns on when pressure is above setting	Red LED turns on when pressure is above setting	
	SW 2: Green LED turns on when pressure is above setting		

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

Pressure sensor (without pressure display) specifications

		-S (1 switch output)	-V1 (1 analog output for negative pressure)	-R1 (1 analog output for compound pressure)
Power requirements		10.8 to 30 VDC (Ripple voltage included)		
Current consumption		20 mA		
Pressure detection		Diffused metaloxide semiconductive pressure sensor		
Proof pressure		0.2 MPa		0.6 MPa
Switch output	Switch output	NPN open collector output: 30 V 80 mA max. Residual voltage 0.8 V max.		
	No. of pressure setting	1		
	Pressure setting range	-100 to 0 kPa		
	Operating accuracy	±3% F.S. max. (Standard temp. at 25°C)		
	Hysteresis	Fixed (2% F.S. max.)		
	Operation indicator	Red LED turns on when the switch output is on.		
Analog output	Pressure detecting range		-100 to 0 kPa	-100 to 300 kPa
	Output voltage		1 to 5V	
	Zero-point voltage		1 ±0.1V	
	Span voltage		4 ±0.1V	
	Output current		1 mA max	
	Temp. characteristics		±2% F.S. max. (Standard temp. at 25°C)	
	Linearity		±0.5%F.S. max	

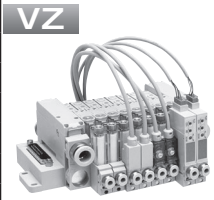
* Allowable range of the variation of “Zero point voltage”, "Span voltage" and “Pressure setting value” caused by repeated voltage application is ±3% F.S.

Vacuum Generator Complex type VZ

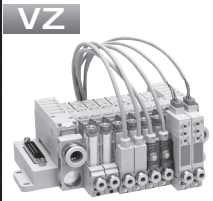
RoHS2 (2011/65/EU+EU2015/863) compliant CE

Sub-D connector

Type	Model code
Tube exhaust	VZ[2][3][4]-[5][6][7]-D24-[8]-M[9]-D[11]

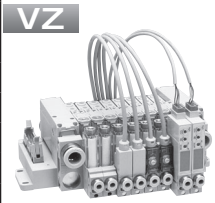


Type	Model code
Silencer vent	VZ[2][3][4]-[5][6]S-D24-[8]-M[9]-D[11]

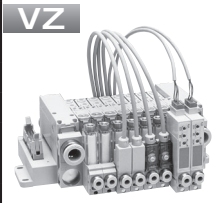


Flat cable connector

Type	Model code
Tube exhaust	VZ[2][3][4]-[5][6][7]-D24-[8]-M[9]-F[11]

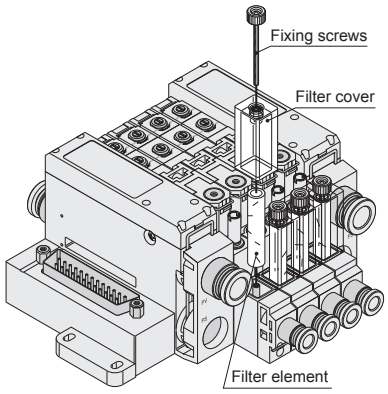


Type	Model code
Silencer vent	VZ[2][3][4]-[5][6]S-D24-[8]-M[9]-F[11]



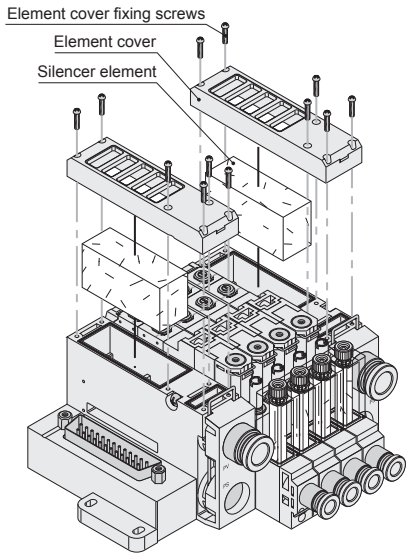
Replacement element

Filter element



Filter element Model code
VZ010B66

Silencer element



Silencer element Model code
VZ010B67

Notes

*Please select each code referring to the example of model designation. [2]: Code of vacuum characteristics, [3]:Nozzle bore code, [4]: Valve type code, [5]: Vacuum port size code, [6]: Air supply port size code, [7]:Exhaust port code, [8]: Pressure sensor code, [9]: No. of stations code and [11] : No. of connector pins code.

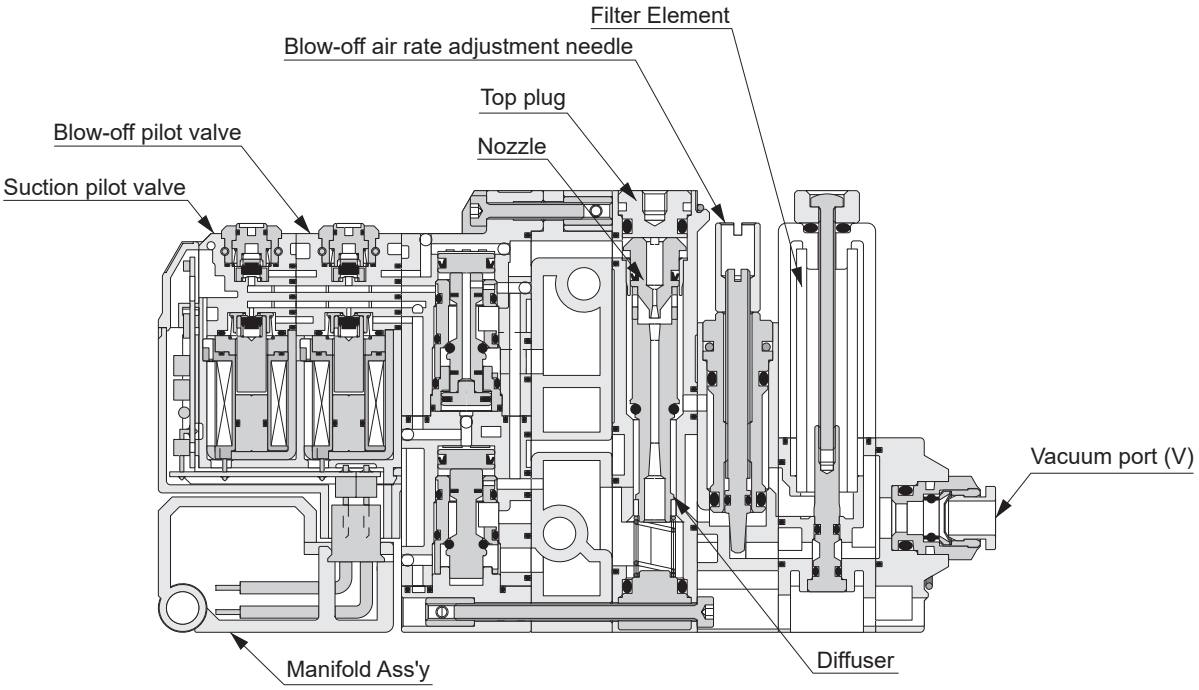
Packaging specifications

1 pc. /bag: Vacuum generator, Filter element

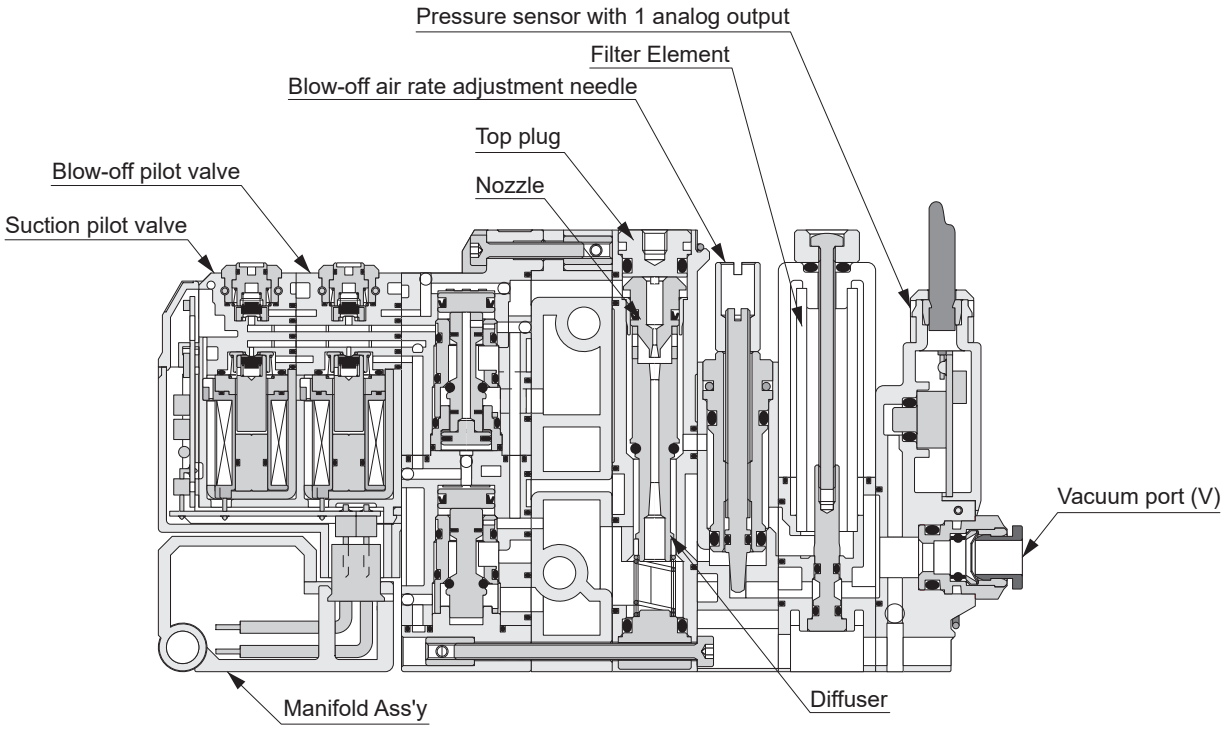
2 pcs. /set: Silencer element

Sectional Drawings

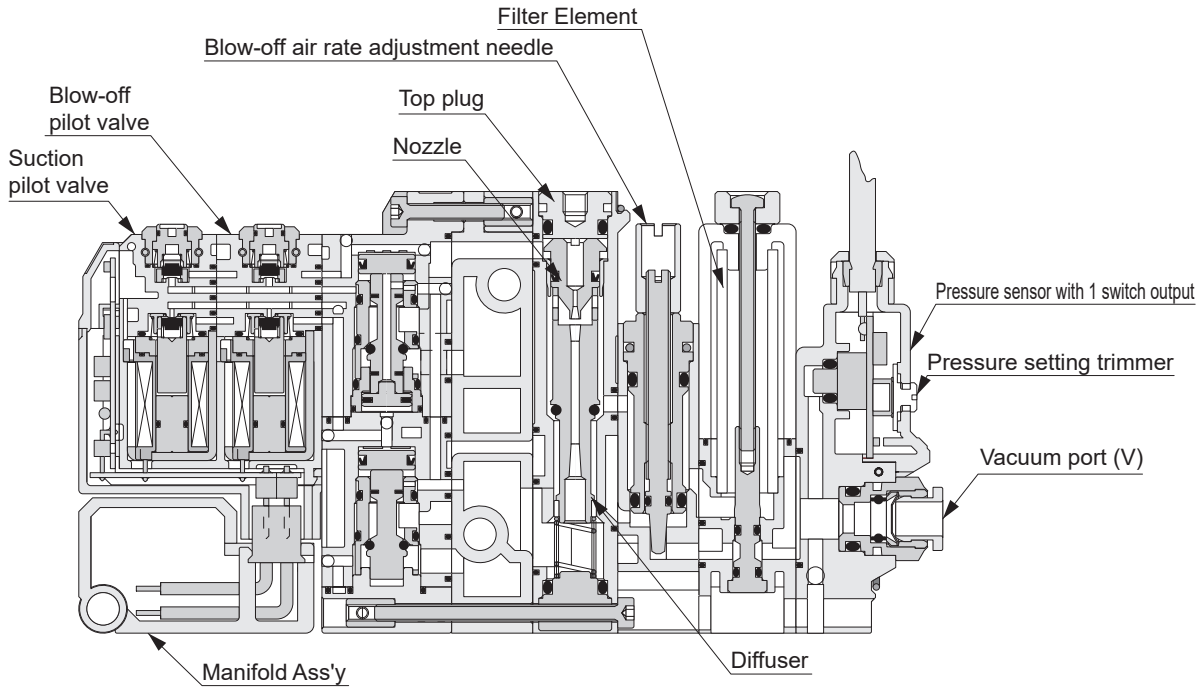
Without Pressure sensor



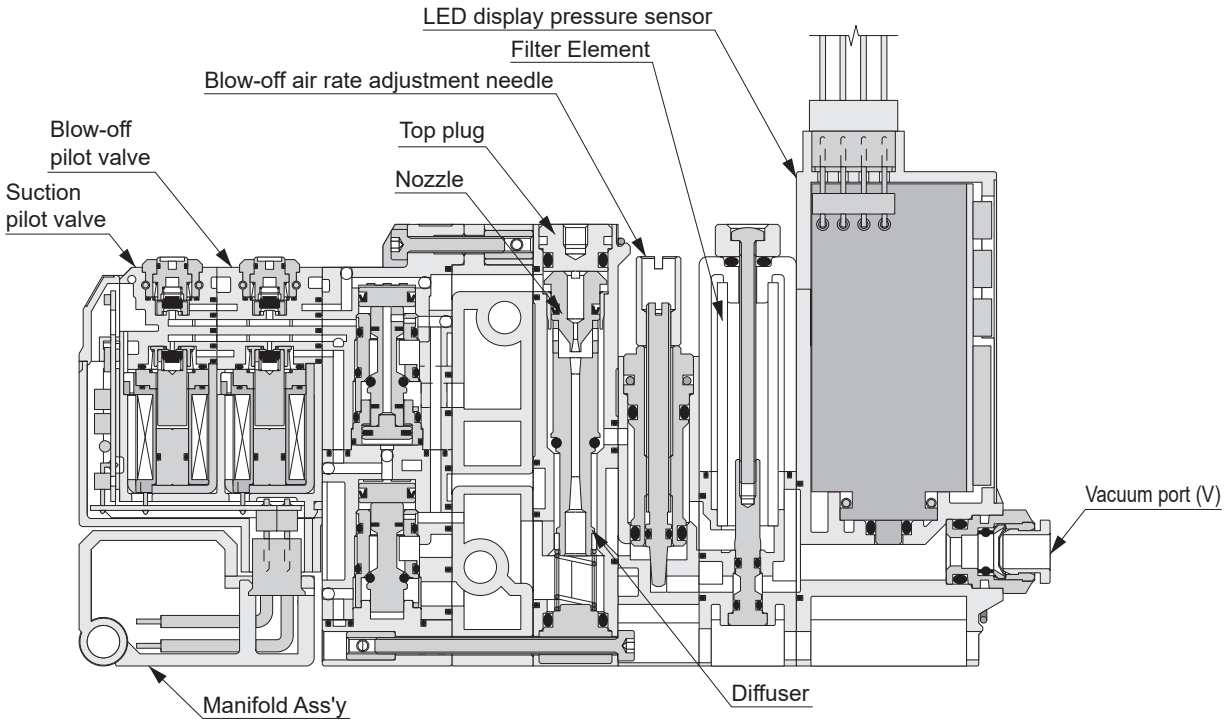
With Pressure sensor (1 analog output)



●With Pressure sensor (1 switch output and no display)



●With LED display pressure sensor



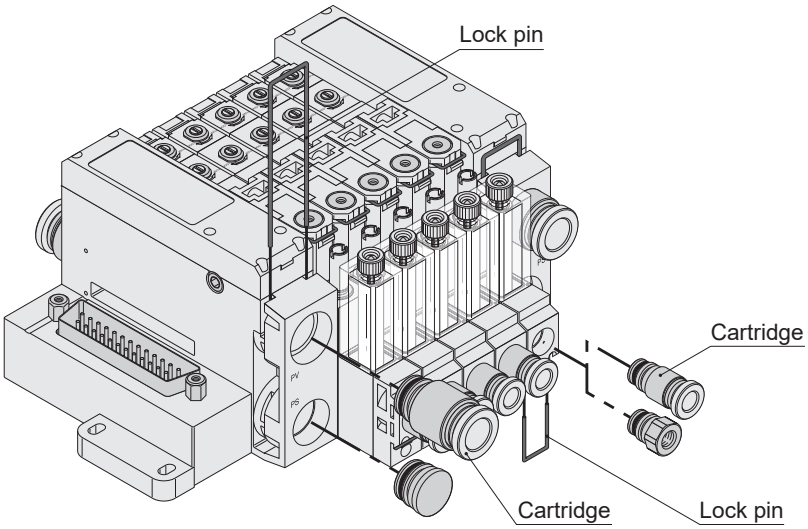
How to replace Cartridge Fitting

● Replace Cartridge Fitting following the instructions below.

(1) Pull out the lock pin with a flat head screwdriver or similar tool.

(2) Pull out the cartridge and replace it.

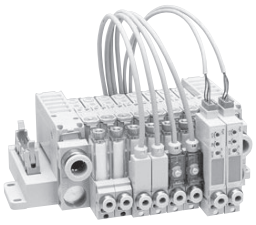
(3) After removing dust adhered to the seal part, properly insert the lock pin.



Dimensional Drawings

VZ Silencer vent, Flat cable connector

Model code: VZ□□□-□□S-D24□-M□-F□



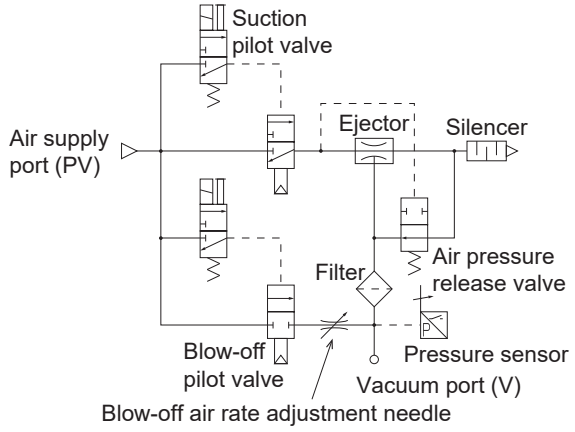
Unit: mm

	Tube O.D. øD1	L1	Tube end C1
Air supply port	4	2	14.9
	6	6.6	17
	8	8.1	18.2
	10	11.7	20.7

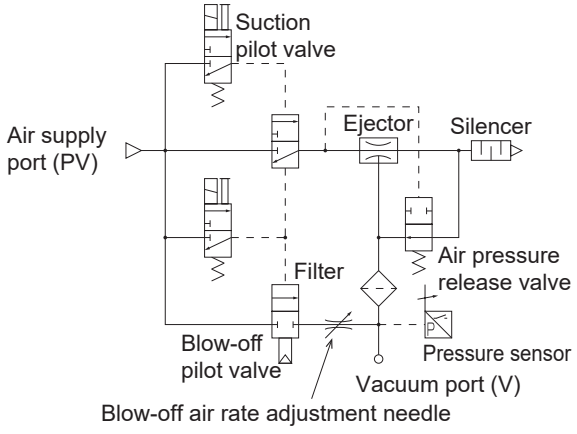
	Tube O.D. øD2	L2	L3	L4	Tube end C2
Vacuum port	4	5.8	5.1	1.6	10.9
	6	8.7	8	4.5	8.8
	FM5	4	3.3	-0.2	-

Circuit diagram

Normally closed

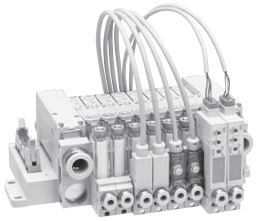


Double-piloted



VZ Tube exhaust, Flat cable connector

Model code: VZ□□□-□□□-D24□-M□-F□



Unit: mm

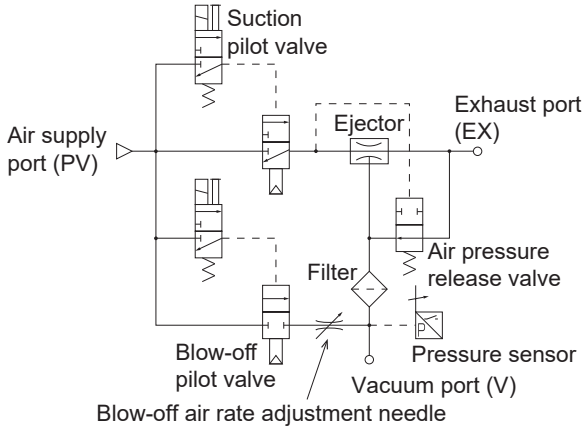
	Tube O.D. øD1	L1	Tube end C1
Air supply port	4	2	14.9
	6	6.6	17
	8	8.1	18.2
	10	11.7	20.7

	Tube O.D. øD2	L2	L3	L4	Tube end C2
Vacuum port	4	5.8	5.1	1.6	10.9
	6	8.7	8	4.5	8.8
	FM5	4	3.3	-0.2	-

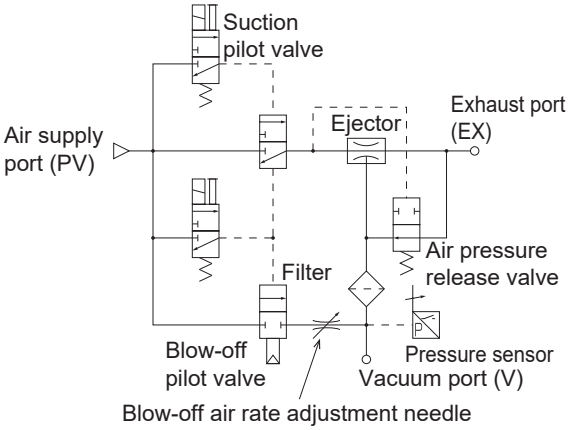
	Tube O.D. øD3	L5	Tube end C3
Exhaust port	6	6.1	17
	8	7.6	18.2
	10	11.2	20.7

Circuit diagram

Normally closed

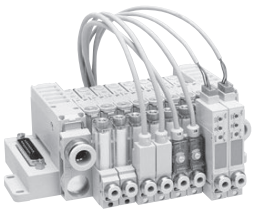


Double-piloted



VZ Silencer vent, Sub-D connector

Model code: VZ□□□-□□S-D24□-M□-D□



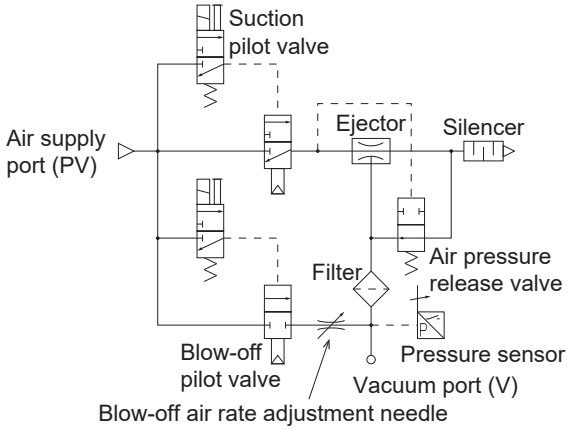
Unit: mm

	Tube O.D. øD1	L1	Tube end C1
Air supply port	4	2	14.9
	6	6.6	17
	8	8.1	18.2
	10	11.7	20.7

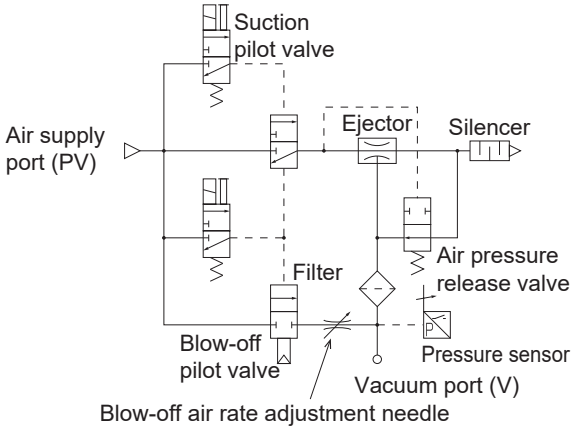
	Tube O.D. øD2	L2	L3	L4	Tube end C2
Vacuum port	4	5.8	5.1	1.6	10.9
	6	8.7	8	4.5	8.8
	FM5	4	3.3	-0.2	-

Circuit diagram

Normally closed

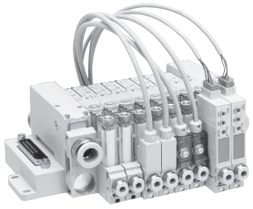


Double-piloted



VZ Tube exhaust, Sub-D connector

Model code: VZ□□□-□□□-D24□-M□-D□



Unit: mm

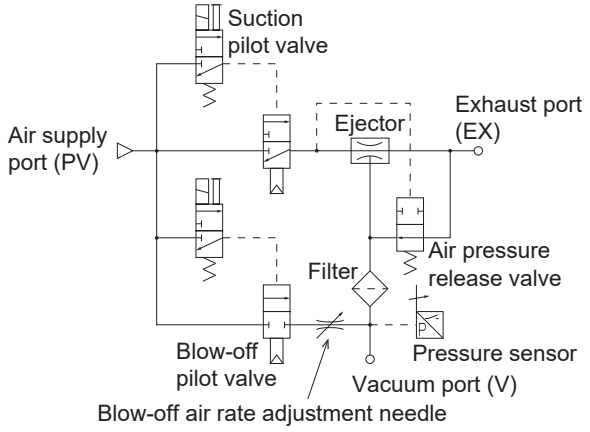
	Tube O.D. øD1	L1	Tube end C1
Air supply port	4	2	14.9
	6	6.6	17
	8	8.1	18.2
	10	11.7	20.7

	Tube O.D. øD2	L2	L3	L4	Tube end C2
Vacuum port	4	5.8	5.1	1.6	10.9
	6	8.7	8	4.5	8.8
	M5 (Female thread)	4	3.3	-0.2	-

	Tube O.D. øD3	L5	Tube end C3
Exhaust port	6	6.1	17
	8	7.6	18.2
	10	11.2	20.7

Circuit diagram

Normally closed



Double-piloted