

# Vacuum Module

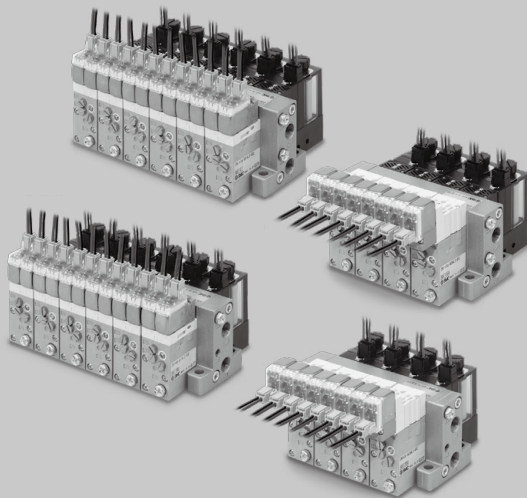
## Series ZX

### Ejector System/Vacuum Pump System



■ For electronic components and precision components up to 100 g

■ Modular design  
Customized application function through selection of module components.



## INDEX

Characteristics/Application Examples .....	P.864
Modular Components Introduction .....	P.865

### Ejector System

How to Order .....	P.866
Combination of supply valve and release valve .....	P.868
Construction .....	P.869
Ejector unit .....	P.870
Valve unit .....	P.872
Suction filter unit .....	P.874
Vacuum pressure switch unit .....	P.875
Dimensions/Without valve unit .....	P.881
Dimensions/Combination of supply valve and release valve Type K1, K3, K8, J1, J2 .....	P.882 to 893
Manifold specifications .....	P.894
Dimensions .....	P.896 to 901

### Vacuum Pump System

How to Order .....	P.902
Combination of supply valve and release valve .....	P.904
Construction .....	P.905
Valve unit .....	P.906
Suction filter unit/Vacuum pressure switch unit .....	P.907
Dimensions/Combination of supply valve and release valve Type K1, K3, K6, K8 .....	P.908 to 915
Manifold specifications .....	P.916
Dimensions .....	P.918 to 923

### Unit Construction

Ejector system/Single, Manifold .....	P.924
Vacuum pump system/Single, Manifold .....	P.926
Manifold assembly from individual unit .....	P.928

### Made to Order

1 2 Combinations of supply valve and release valve .....	P.930
3 High Noise Reduction Silencer Assembly .....	P.934

ZA
<b>ZX</b>
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP

Related  
Equipment

# Series ZX

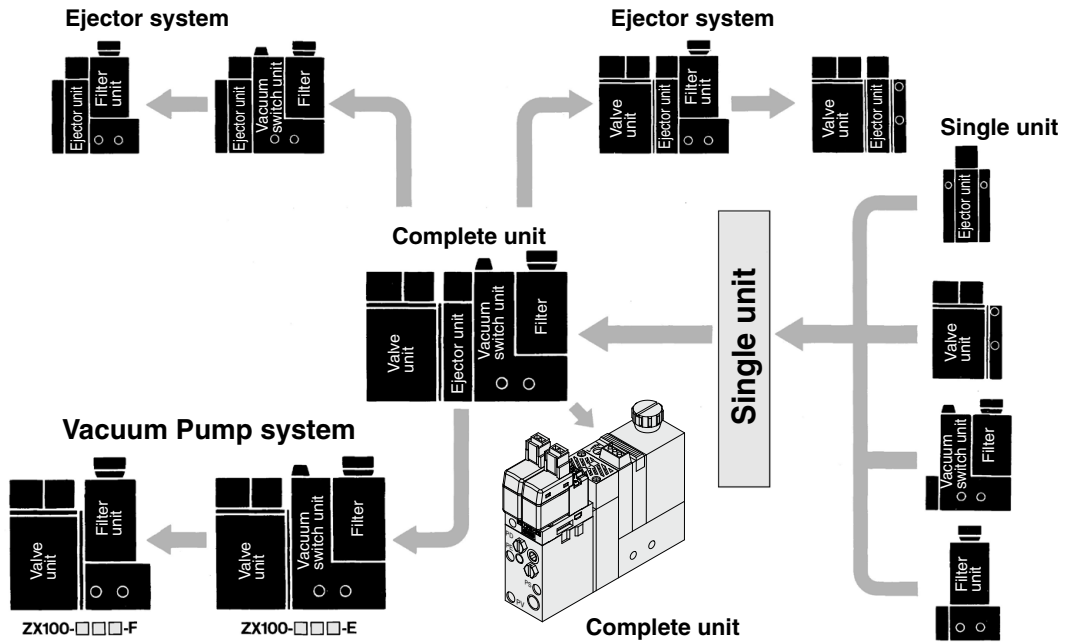
For electronic components and precision components up to 100 g

## Modular design

Customized application function through selection of module components.

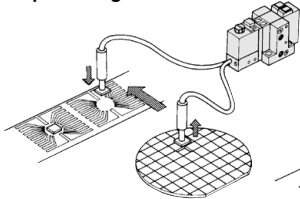
Compact size and lightweight (120 g with complete unit);  
well suitable for actuator mounting

Ejector nozzle size:  $\varnothing 0.5$  to  $\varnothing 1.0$  (Suction flow: 5 to 22 L/min (ANR))

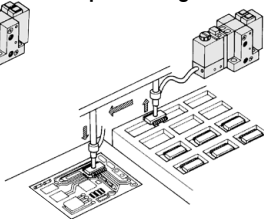


## Application Example

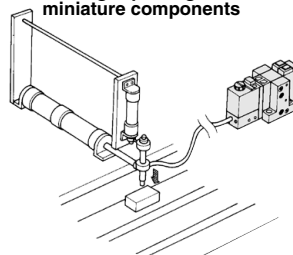
Chip bonding



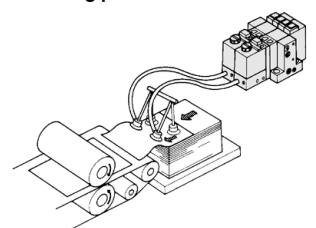
Chip mounting




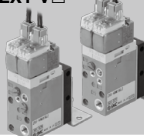
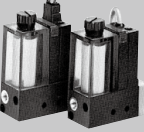

Picking & placing  
miniature components



Escorting printed matter



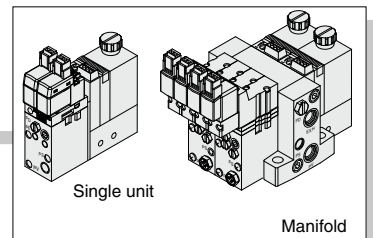
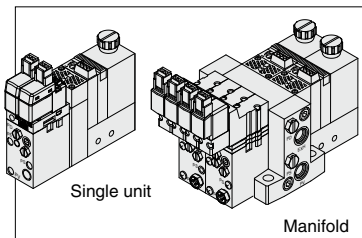
Modular Components Introduction

System		Ejector System	Vacuum Pump System
Component equipment	Characteristics	P.866 to 901	P.902 to 929
<b>Ejector unit</b> Series ZX1 	Nozzle diameter (mm)	0.5    0.7    1.0	_____
	Suction flow (L/min(ANR))	5    10    22	
	Air consumption (L/min(ANR))	13    23    46	
	Maximum vacuum pressure	-84 kPa	
	Exhaust release	Built-in silencer/Manifold exhaust Individual exhaust port: (Rc 1/8, 1/8-NPTF)	
<b>Valve unit</b> ZX1-V□ 	Component equipment	Supply valve/Release valve	
	Function	N.C., N.O.	
	Operation	Solenoid valve/Air operated valve	
	Power supply voltage	3, 5, 6, 12, 24 VDC, 100, 110 VAC (50/60 Hz)	
<b>Vacuum pressure switch unit</b> Series ZS 	Series	Vacuum switch	Vacuum switch
	Set pressure range	0 to -101 kPa	0 to -101 kPa
	Hysteresis	3% or less	0.5 kPa
	Applicable pad diameter (mm)	2 to 25	2 to 25
	Supply voltage	24 VDC	24 VDC
<b>Suction filter unit</b> ZX1-F 	Operating pressure range	Vacuum to 0.5 MPa	
	Filtration	30 μm	
<b>Common specifications</b>	Unit	Air supply port size	M5 (Standard)/M6 (Semi-standard)
		Vacuum pad connection port size	M5 (Standard)/M6 (Semi-standard)
	Manifold	Air supply port size	Rc 1/8
		Exhaust port size	Rc 1/8
		External pilot port size	M5
		Stations	Max. 8 units

- ZA
- ZX**
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP

Related Equipment

- Refer to pages 870 to 880 for detailed specifications for each unit.
- Refer to pages 866 and 867 for ejector system unit.
- Refer to page 894 for ejector system manifold.
- Refer to pages 902 and 903 for external vacuum supply system unit.



**Made to Order**  
(Refer to pages 930 to 934 for details.)

- Refer to page 916 for external vacuum supply system manifold.
- Refer to pages 924 to 927 for units for replacement.

# Vacuum Module: Ejector System Series ZX

Note) Refer to "How to Order"  
for CE-compliant products.



## How to Order

### Components

Ejector unit	Valve unit N.C. type	Vacuum switch unit	ZX1 10 1
Ejector unit	Valve unit N.O. type	Vacuum switch unit	ZX1 10 1
Ejector unit		Vacuum switch unit	ZX1 10 1
Ejector unit		Filter unit	ZX1 10 1

Ejector unit nozzle dia.

05	0.5 mm
07	0.7 mm
10	1.0 mm

Ejector exhaust

1	With silencer
2 <sup>(1)</sup>	Port exhaust Rc1/8
2T <sup>(1)</sup>	Port exhaust 1/8-NPTF
3 <sup>(2)</sup>	Common exhaust (Manifold only)

Note 1) When port exhaust is applied to the manifold, pilot exhaust is done by common exhaust. Thus, the exhaust port on the manifold base should be open while operating.  
Note 2) When the product is used for the manifold specification and common exhaust, the exhaust air of the operating ejector releases may enter the vacuum (V) port of the non-operating ejector and be released if there are an operating and non-operating ejector. Select either the built-in silencer or port exhaust for the ejector exhaust method.

Valve unit/Combination of supply valve and release valve  
Refer to "Table (1)" on page 867.

Solenoid valve rated voltage

1 <sup>*</sup> (Note)	100 VAC 50/60 Hz	—
3 <sup>*</sup> (Note)	110 VAC 50/60 Hz	—
5	24 VDC	●
6	12 VDC	●
V	6 VDC	●
S	5 VDC	●
R	3 VDC	●
Nil	Air operated (K6, K8, J3, J4, D3, D4)	—

Note) CE-compliant products are not available for "1" and "3".  
<sup>\*</sup> Applicable to plug connector only. When replacing a product that uses a connector assembly with rectifier, replace the connector assembly as well. (Table (2) on page 867)

Electrical entry

L	L plug connector type	Lead wire length 0.3 m Without lead wire (Applicable to DC only)
LN	L plug connector type	Without lead wire (Applicable to DC only)
LO	L plug connector type	Without connector
M	M plug connector type	Lead wire length 0.3 m Without lead wire (Applicable to DC only)
MN	M plug connector type	Without lead wire (Applicable to DC only)
MO	M plug connector type	Without connector
G	Grommet type	Lead wire length 0.3 m (Applicable to DC only)
H	Grommet type	Lead wire length 0.6 m (Applicable to DC only)
Nil		Air operated

Note) In the case of "K1" or "J1" (combination of supply and release valves), M type plug connector can not be selected.

Labels: Ejector unit nozzle dia., Ejector exhaust, Combination of supply valve and release valve, Solenoid valve rated voltage, Electrical entry, Light/Surge voltage suppressor, Manual operation, Vacuum switch unit, Vacuum switch Filter unit, Vacuum switch Electrical entry, PV/V port size, Release flow rate adjusting needle/Bracket A

CE-compliant

Nil	—
Q	CE-compliant *

\* Only for the model with solenoid valve or pressure switch

PV/V port size

Nil	M5 x 0.8
Y	M6 x 1 (Semi-standard)

\* When the units are shipped as a manifold, the PV port is M5 x 0.8 with a plug.

Release flow rate adjusting needle/Bracket A

Nil	Lock nut	Bracket A
L	×	●
M	●	×
N	×	×

\* Attached (Bracket A is shipped together.) ×: None  
Note) • In the case where there is no release valve, a lock nut is not available.  
• A bracket is applicable only when the product is to be shipped on its own. When a manifold is to be shipped, a bracket is not included with any of the models.

Vacuum switch electrical entry

Nil	Grommet type	Lead wire length 0.6 m
L	Grommet type	Lead wire length 3 m
C	Connector type	Lead wire length 0.6 m
CL	Connector type	Lead wire length 3 m
CN	Connector type	Without connector (Without lead wire)

\* Refer to "Table (3)" on page 867 for part number of lead wire with connector.

Vacuum switch unit/Filter unit

Nil	None	CE-compliant
E	Vacuum switch (For general purpose)(ZSE2)(NPN)	With suction filter
E55	Vacuum switch (For general purpose)(ZSE2)(PNP)	With suction filter
F	Only suction filter	—

Vacuum digital pressure switch unit (ZSE3)

D	21	2 outputs/without analog output
D	22	2 outputs/with analog output
D	23	1 output (with trouble detection)/without analog output
D	24	1 output (with trouble detection)/with analog output

Note) Analog output is available only on grommet type.

Manual operation

Nil	Non-locking push type
B	Locking slotted type

Light/Surge voltage suppressor

Nil	None
Z	With light/surge voltage suppressor
S*	With surge voltage suppressor

\* S is not available for AC.  
DC voltage (with surge voltage suppressor)  
If the polarity is incorrect at DC (surge voltage suppressor), diode or switching element may be damaged.

The filter mounted on the product is a simplified one. When used in an environment with a lot of dust, the filter is likely to be clogged quickly. The use with the series ZFA, ZFB and ZFC is recommended.

Refer to "Table (2)" on page 867 for part number of lead wire with connector.  
Refer to page 894 for ordering the manifold.  
Refer to pages 924 and 925 for ordering a unit for replacement.

### Caution

<For DC>  
Grommet, L and M Plug Connector

With surge voltage suppressor

With light/surge voltage suppressor

Match the polarity of the connectors according to the ⊕ and ⊖ marks on the connectors. Do not interchange the polarities to prevent the diodes or the switching elements from becoming burned.  
If lead wires are pre-connected, the red wire is ⊕ and the black wire is ⊖.

<For AC>  
L and M Plug Connector

With light (□Z)



**Table (1) Valve Unit/Combination of Supply Valve and Release Valve** (Refer to page 868 for detailed specifications.)

Components		Symbol	Supply valve					Release valve					Weight (g)
Supply valve	Release valve		Solenoid valve		Air operated			Solenoid valve		Air operated	External release		
			N.C. (V114)	N.O. (SYJ324)	N.C. (ZX1A)	N.O. (SYJA324)	None	N.C. (V114)	N.C. (SYJ314)	N.C. (SYJA314)	ZX1A	None	
Solenoid (N.C.)	Solenoid (N.C.)	K1	●	—	—	—	—	●	—	—	—	—	79
Solenoid (N.O.)	Solenoid (N.C.)	K3	—	●	—	—	—	—	●	—	—	—	112
Air operated (N.C.)	External release	K6	—	—	●	—	—	—	—	—	●	—	53
Air operated (N.O.)	Air operated (N.C.)	K8	—	—	—	●	—	—	—	●	—	—	83
Solenoid (N.C.)	None	J1	●	—	—	—	—	—	—	—	—	●	64
Solenoid (N.O.)	None	J2	—	●	—	—	—	—	—	—	—	●	84
—		Nil	Without valve module										

- Air operated valve: Controlled by external 3 port valve.
- External release: Directly released by external 2 port valve.

**Table (2) Valve Unit/Valve Plug Connector Assembly**

For DC:  
**SY100-30-4A** - □  
For 100 VAC:  
**SY100-30-1A** - □  
For 110 VAC:  
**SY100-30-3A** - □  
Without lead wire:  
(with connector and 2 sockets only)  
**SY100-30-A**

Lead wire length	
Nil	0.3 m
6	0.6 m
10	1 m
15	1.5 m
20	2 m
25	2.5 m
30	3 m
50	5 m

**How to order**  
If ordering vacuum module with 600 mm or the longer lead wire, specify both vacuum module and connector assembly part numbers.  
Ordering example)  
ZX1051-K15LOZ-EC(-Q) ... 1 pc.  
\*SY100-30-4A-6 ..... 2 pcs.  
↳ The asterisk (\*) denotes the symbol for assembly.

**Warning**

When replacing a product that uses a connector assembly with rectifier, replace the connector assembly as well.

**Table (3) Vacuum Switch/Lead Wire with Connector**

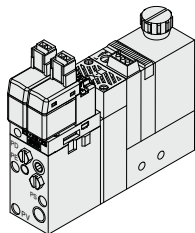
For ZSE2 **ZS-10-5A** - □  
For ZSE3 **ZS-20-5A** - □

Note) If ordering a vacuum switch with 3 m lead wire, specify both the vacuum unit switch and the 3 m lead wire with connector part numbers.  
Ordering example)  
ZX1051-K15LO-ECN(-Q) ... 1 pc.  
\*SY100-30-4A-6 ..... 2 pcs.  
\*ZS-10-5A-50 ..... 1 pc.  
↳ The asterisk (\*) denotes the symbol for assembly.

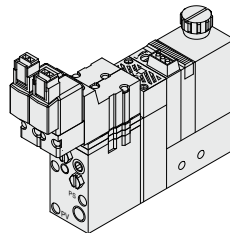
Lead wire length	
Nil	0.6 m
30	3 m
50	5 m

**Ejector System/Recommended Model** (The models below will have shorter deliveries.)

Nozzle diameter (mm)	Model	Ejector unit exhaust type	Combination		Solenoid valve rated voltage	Lead wire electrical entry	Light/Surge voltage suppressor	Vacuum switch unit	Vacuum switch electrical entry
			Supply valve (Pilot valve)	Release valve (Direct operated)					
0.5	ZX1051-K15LZ-EC	With silencer	N.C. (V114)	N.C. (V114)	24 VDC	Plug connector type	With light/surge voltage suppressor	General vacuum switch (ZSE2)	Connector type
	ZX1051-K35MZ-EC		N.O. (SYJ324M)	N.C. (SYJ314)					
0.7	ZX1071-K15LZ-EC		N.C. (V114)	N.C. (V114)					
	ZX1071-K35MZ-EC		N.O. (SYJ324M)	N.C. (SYJ314)					
1.0	ZX1101-K15LZ-EC		N.C. (V114)	N.C. (V114)					
	ZX1101-K35MZ-EC		N.O. (SYJ324M)	N.C. (SYJ314)					



ZX1000-K15LZ-E0



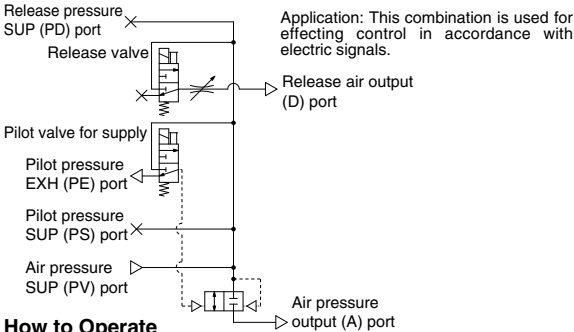
ZX1000-K35MZ-E0

ZA  
ZX  
ZR  
ZM  
ZMA  
ZQ  
ZH  
ZU  
ZL  
ZY□  
ZF□  
ZP□  
SP  
ZCUK  
AMJ  
AMV  
AEP  
HEP

Related Equipment

## Ejector System/Combination of Supply Valve and Release Valve

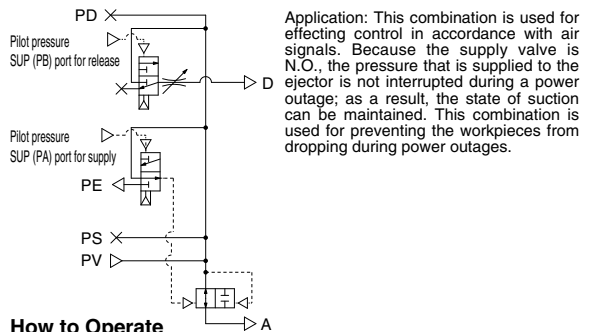
### Combination Symbol: K1



#### How to Operate

Condition	Valve	Supply valve (N.C.)	Release valve (N.C.)
		Solenoid valve	Solenoid valve
1. Work adsorption		ON	OFF
2. Vacuum release		OFF	ON
3. Operation stop		OFF	OFF

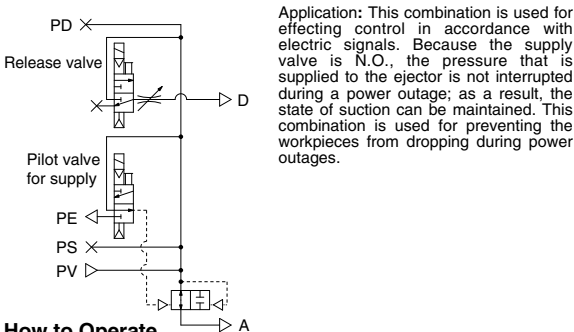
### Combination Symbol: K8



#### How to Operate

Condition	Valve	Supply valve (N.O.)	Release valve (N.C.)
		Air operated valve	Air operated valve
1. Work adsorption		OFF	OFF
2. Vacuum release		ON	ON
3. Operation stop		ON	OFF

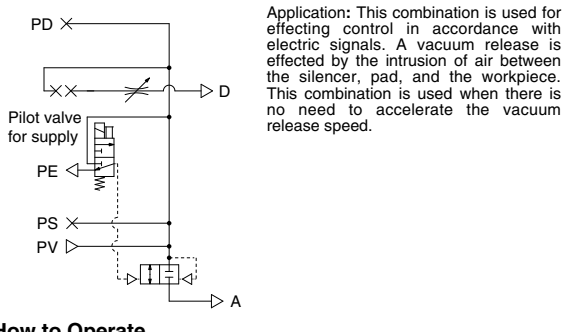
### Combination Symbol: K3



#### How to Operate

Condition	Valve	Supply valve (N.O.)	Release valve (N.C.)
		Solenoid valve	Solenoid valve
1. Work adsorption		OFF	OFF
2. Vacuum release		ON	ON
3. Operation stop		ON	OFF

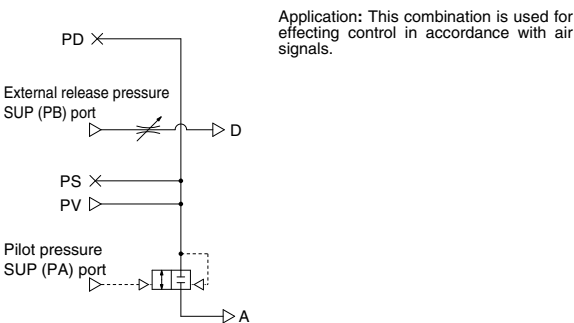
### Combination Symbol: J1



#### How to Operate

Condition	Valve	Supply valve (N.C.)	Release valve
		Solenoid valve	None
1. Work adsorption		ON	—
2. Vacuum release		OFF	—
3. Operation stop		OFF	—

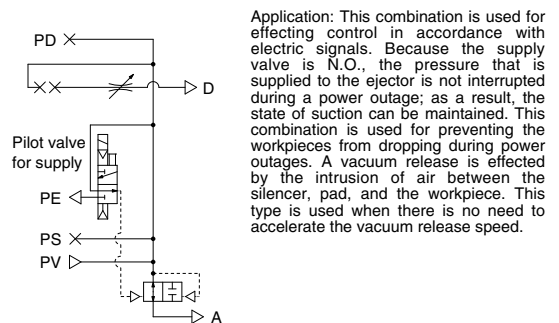
### Combination Symbol: K6



#### How to Operate

Condition	Valve	Supply valve	Release valve
		External 3 port valve	External 2 port valve
1. Work adsorption		ON	OFF
2. Vacuum release		OFF	ON
3. Operation stop		OFF	OFF

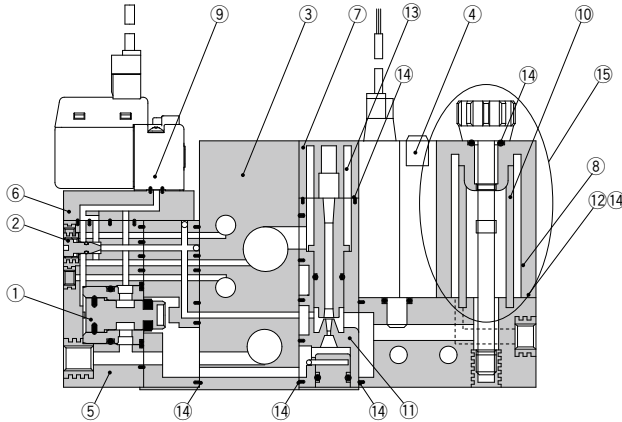
### Combination Symbol: J2



#### How to Operate

Condition	Valve	Supply valve (N.O.)	Release valve
		Solenoid valve	None
1. Work adsorption		OFF	—
2. Vacuum release		ON	—
3. Operation stop		OFF	—

## Ejector System/Construction



### Component Parts

No.	Description	Material	Note
1	<b>Poppet valve assembly</b>	—	ZX1-PV-0
2	<b>Release flow rate adjusting needle</b>	Stainless steel	ZX1-NA
3	<b>Manifold base</b>	Aluminum	
4	<b>Vacuum switch</b>	—	ZSE2, ZSE3
5	<b>Valve unit</b>	—	ZX1-VA□□□□□□-D-□
6	<b>Interface plate</b>	—	(PV↔PS↔PD)
7	<b>Silencer case</b>	—	
8 <sup>Note)</sup>	<b>Filter case</b>	Polycarbonate	

### Replacement Parts

No.	Description	Material	Part no.
9	<b>Pilot valve</b> <b>Air operated</b>	—	☉ Refer to "Table (1)", "(2)", "(3)".
10	<b>Filter element</b>	PVA	ZX1-FE
11	<b>Ejector assembly</b>	—	☉ Refer to "Table (4)".
12	<b>Gasket</b>	—	ZX1-FG
13	<b>Silencer element</b>	—	ZX1-SAE
14	<b>Seal set</b>	—	ZX1-PK
(7,13)	<b>Silencer assembly</b>	—	ZX1-HS2-□ (□: Nozzle diameter)
15	<b>Filter case assembly</b>	—	ZX1-FK-PC*

\* Component parts  
Filter case, filter element, tension bolt (including O-rings)  
(Gasket 12 is not included.)

Note) Caution when handling filter case

- The case is made of polycarbonate. Therefore, do not use with or expose it to the following chemicals: paint thinner, carbon tetrachloride, chloroform, acetic ester, aniline, cyclohexane, trichloroethylene, sulfuric acid, lactic acid, watersoluble cutting oil (alkalinic), etc.
- Do not expose it to direct sunlight.

### Table (1) How to Order Pilot Valves

No.	Components		Model	Combination of supply and release valve
	Supply valve	Release valve		
①	Solenoid valve N.C. (V114)	Solenoid valve N.C. (V114)	Z1-V114-□□□□	K1, J1
②	Solenoid valve N.O. (SYJ324M)	Solenoid valve N.C. (SYJ314)	ZX1-SYJ3 $\frac{1}{2}$ 4□-□□□□	K3, J2
③	Air operated N.O. (SYJA324)	Air operated N.C. (SYJA314)	ZX1-SYJA3 $\frac{1}{2}$ 4	K8
④	Air operated N.C. (ZX1A)		ZX1A-□	K6

### Table (2) How to Order Solenoid Valves

#### ● Supply valve (N.C.): K1, J1

Z1 - V114 - **5** **L** **Z** □

Manual override

<b>Nil</b>	Non-locking push type
<b>B</b>	Locking slotted type

#### ● Supply valve (N.O.): K3, J2

ZX1 - SYJ324M - **5** **L** **Z** □

Supply valve (N.O.)

Release valve (N.C.)

ZX1 - SYJ314 - **5** **L** **Z** □

Rated voltage

<b>1<sup>☆</sup></b>	100 VAC
<b>3<sup>☆</sup></b>	110 VAC
<b>5</b>	24 VDC
<b>6</b>	12 VDC
<b>V</b>	6 VDC
<b>S</b>	5 VDC
<b>R</b>	3 VDC

\* Applicable to plug connector only.

Electrical entry

<b>L</b>	Connector (0.3 m)
<b>LN</b>	Connector (without lead wire)
<b>LO</b>	Without connector
<b>M<sup>☆</sup></b>	Connector (0.3 m)
<b>MN<sup>☆</sup></b>	Connector (without lead wire)
<b>MO<sup>☆</sup></b>	Without connector
<b>G</b>	Grommet (0.3 m)
<b>H</b>	Grommet (0.6 m)

\* In the case of Z1-V114, M, MN and MO cannot be selected.

Manual override

<b>Nil</b>	Non-locking push type
<b>D</b>	Locking slotted type

Light/Surge voltage suppressor

<b>Nil</b>	Without light/surge voltage suppressor
<b>S<sup>☆</sup></b>	With surge voltage suppressor
<b>Z</b>	With light/surge voltage suppressor

\* S is not available for AC.

### Table (3) How to Order Air Operated Valves

#### ZX1A - M5

Port size

<b>M5</b>	M5 x 0.8	Pilot port/ External release port
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### Table (4) How to Order Ejector Assembly

#### ZX1-W D 05 1

Assembly no.

Ejector unit nozzle dia.

<b>05</b>	0.5 mm
<b>07</b>	0.7 mm
<b>10</b>	1.0 mm

Ejector type

(Exhaust type)

<b>1</b>	With silencer
<b>2</b>	Port exhaust Rc1/8
<b>2T</b>	Port exhaust 1/8-NPTF
<b>3</b>	Common exhaust

\* An adapter should be attached to the assembly to be used as a unit. PV port and V port can be connected.

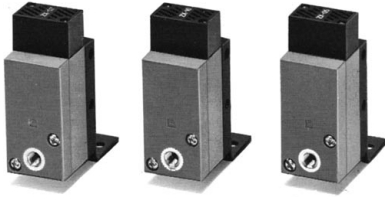
Ejector assembly □ • Combination/ ZX1-WD □  
□ • Used as a unit by attaching an adapter/ ZX1-W □

### ⚠ Caution

Turning the vacuum release flow rate adjusting needle clockwise reduces the vacuum release flow volume; the needle valve is fully closed when the needle stops turning. Turning the needle 2 full turns counterclockwise from the fully closed position renders the needle valve fully open. The needle will fall out if it is turned more than 4 full turns.

In order to prevent the needle from loosening and falling out, the release flow rate adjusting needle with lock nut (ZX1-ND-L) is also available.

## Ejector Unit

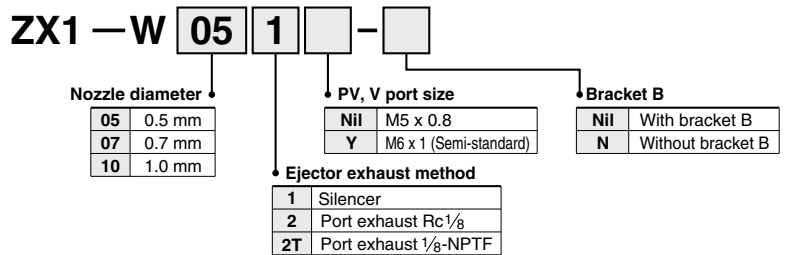


### Specifications

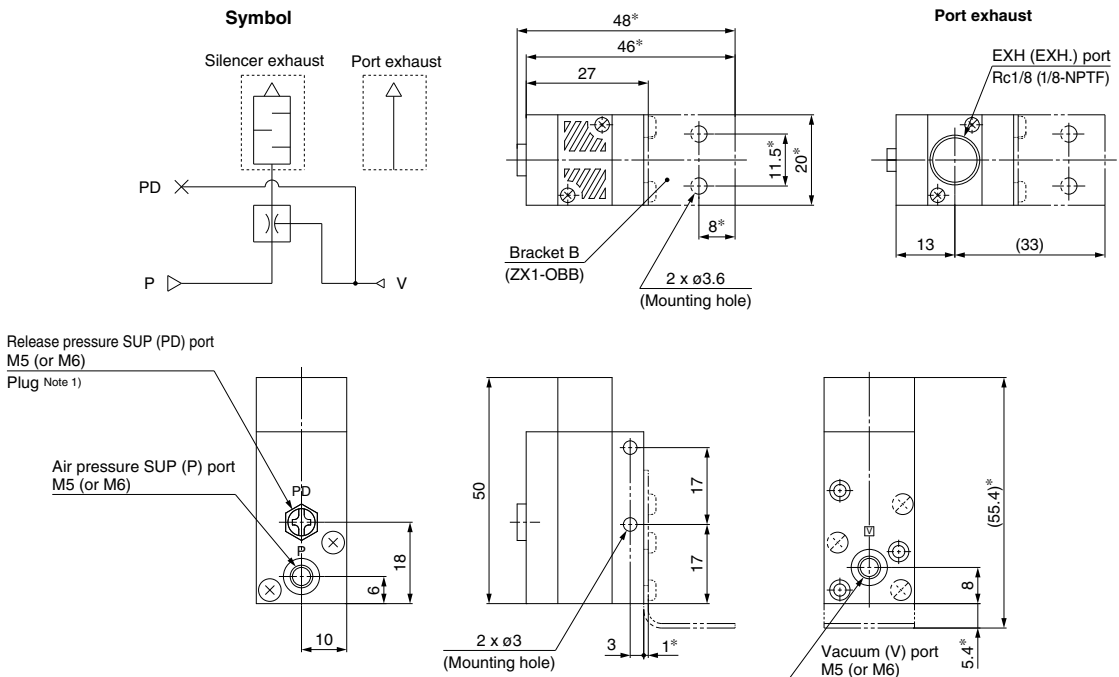
Unit no.	ZX1-W05 <sup>1</sup> <sub>2(T)</sub>	ZX1-W07 <sup>1</sup> <sub>2(T)</sub>	ZX1-W10 <sup>1</sup> <sub>2(T)</sub>
Nozzle dia. (mm)	0.5	0.7	1.0
Suction flow (L/min (ANR))	5	10	22
Air consumption (L/min (ANR))	13	23	46
Vacuum pressure reached	-84 kPa		
Maximum operating pressure	0.7 MPa		
Supply pressure range	0.2 MPa to 0.55 MPa		
Standard supply pressure	0.45 MPa		
Operating temperature range	5 to 50°C		
Ejector exhaust type *	Code ①	Built-in silencer..... For single unit and manifold	
	Code ②	Port exhaust..... For single unit and manifold	
Weight	33 g	ZX1-W□1□ (With bracket)	
	25 g	ZX1-W□1□-N (Without bracket)	
	37 g	ZX1-W□2□ (With bracket)	
	29 g	ZX1-W□2□-N (Without bracket)	
		Built-in silencer	
		Port exhaust	

\* Codes ① and ② are corresponding to the suffixes in "How to Order" to indicate the ejector exhaust method.

### How to Order



### Dimensions: ZX1-W□□<sup>1</sup><sub>2</sub>



Note 1) Remove the plug at external release. Note 2) Dimensions \*: For mounting bracket B.

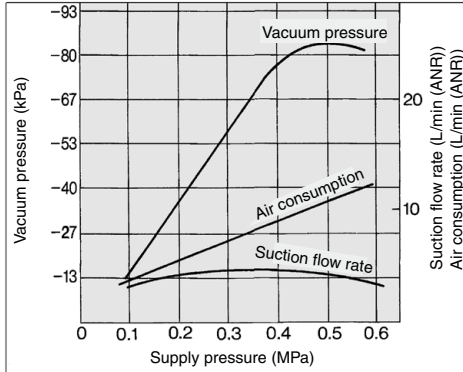


**Flow Rate Characteristics/Exhaust Characteristics**

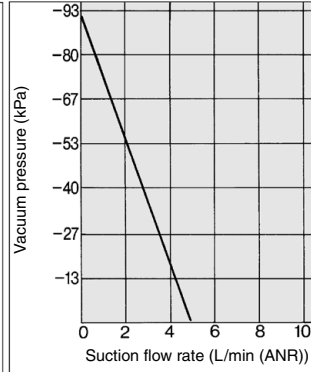
[At 0.45 MPa]

**ZX1-W05**

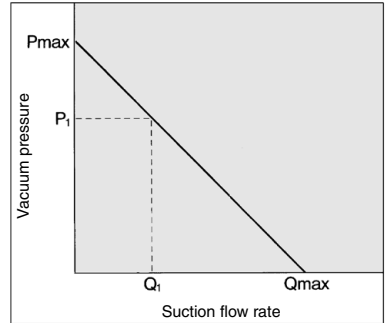
**Exhaust Characteristics**



**Flow Rate Characteristics**



**How to Read Flow Rate Characteristics Graph**



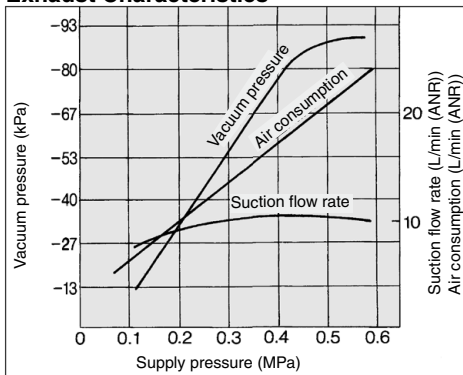
Flow Rate characteristics are expressed in ejector vacuum pressure and suction flow. If suction flow rate changes, a change in vacuum pressure will also be expressed. Normally this relationship is expressed in ejector standard use.

In graph, Pmax. is max. vacuum pressure and Qmax is max. suction flow. The valves are specified according to catalog use. Changes in vacuum pressure are expressed in the below order.

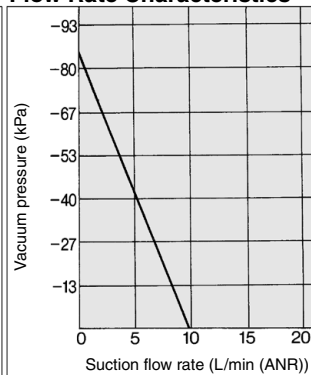
1. When ejector suction port is covered and made airtight, suction flow becomes 0 and vacuum pressure is at maximum value (Pmax).
2. When suction port is opened gradually, air can flow through, (air leakage), suction flow increases, but vacuum pressure decreases. (condition P<sub>1</sub> and Q<sub>1</sub>)
3. When suction port is opened further, suction flow moves to maximum value (Qmax), but vacuum pressure is near 0. (atmospheric pressure).  
When vacuum port (vacuum piping) has no leakage, vacuum pressure becomes maximum, and vacuum pressure decreases as leakage increases. When leakage value is the same as max. suction flow, vacuum pressure is near 0.  
When ventirative or leaky work must be adsorbed, please note that vacuum pressure will not be high.

**ZX1-W07**

**Exhaust Characteristics**

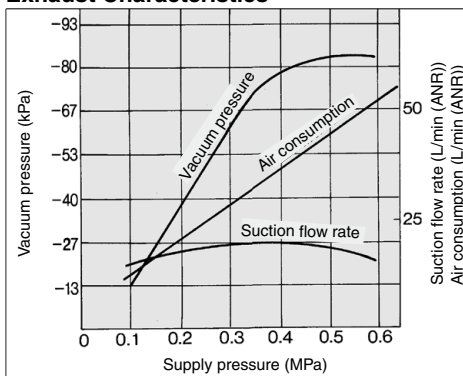


**Flow Rate Characteristics**

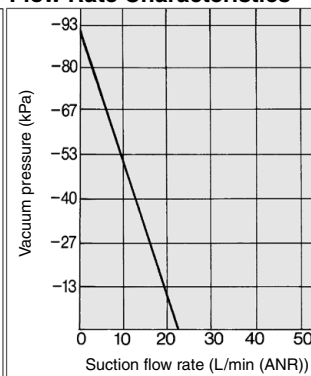


**ZX1-W10**

**Exhaust Characteristics**



**Flow Rate Characteristics**



**⚠ Precautions**

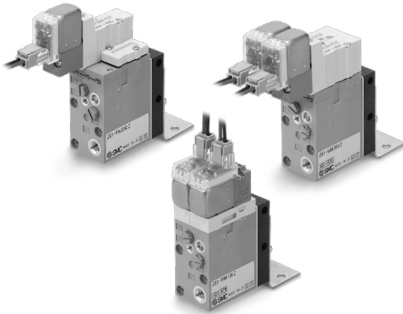
Be sure to read before handling. Refer to front matters 38 and 39 for Safety Instructions and pages 844 to 846 for Vacuum Equipment Precautions.

**⚠ Caution**

Refer to the vacuum equipment model selection on pages 825 to 843 for the selection and sizing of Series ZX.

ZA  
**ZX**  
 ZR  
 ZM  
 ZMA  
 ZQ  
 ZH  
 ZU  
 ZL  
 ZY □  
 ZF □  
 ZP □  
 SP  
 ZCUK  
 AMJ  
 AMV  
 AEP  
 HEP  
 Related Equipment

## Valve Unit: ZX1-VA



### Model/Specifications

Unit no.	ZX1-VA□□□□□□□□(-Q)							
Components	Supply valve				Release valve			
	Pilot operated				Direct operated			
Operation	Solenoid valve		Air operated		Solenoid valve		Air operated	
	N.C. (V114)	N.O. (SYJ324M)	N.C. (ZX1A)	N.O. (SYJA324)	N.C. (SYJ314)	N.C. (V114)	External release (ZX1A)	N.C. (SYJA314)
Cv factor	0.17 Main valve				0.08	0.008	—	
Supply pressure range of air pressure SUP (PV) port	0.3 to 0.6 MPa							
Supply pressure range of pilot pressure SUP (PA, PB) ports for supply and release <sup>(Note)</sup>	PV port pressure to 0.6 MPa							
Max. operating frequency	5 Hz							
Operating temperature range	5 to 50°C							
Interface plate symbol	PV↔PS↔PD							

Note) Combination of supply valve and release valve: K4, K5, K6, K7, K8, J3, J4, D4

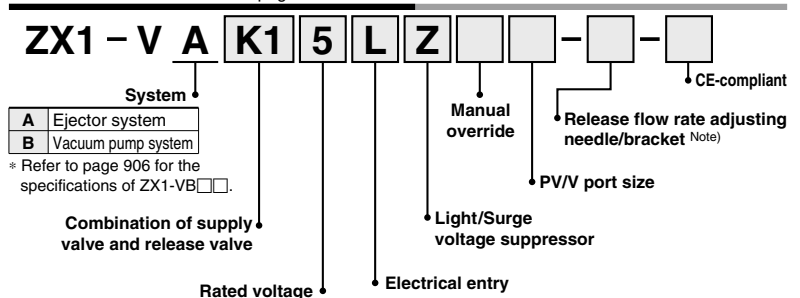
The supply and release valves of this product have a structure which uses the pressure of the air pressure SUP (PV) port to operate them. Be sure to supply a pressure that is the pressure of the air pressure SUP (PV) port or more and 0.6 MPa or less to the pilot pressure SUP (PA, PB) ports for supply and release.

### Solenoid Valve Specifications

	V114	SYJ314, SYJ324M
Rated voltage	24, 12, 6, 5, 3 VDC/100, 110 VAC* (50/60 Hz)	
Electrical entry	L plug connector, grommet   L plug connector, M plug connector, grommet	
Light/Surge voltage suppressor	With or Without	
Manual operation	Non-locking push type/Locking slotted type	

\* Applicable to plug connector only.

### How to Order / Refer to page 866 for details.

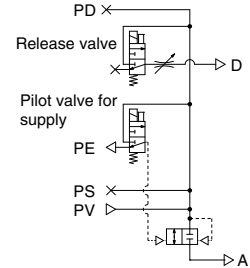
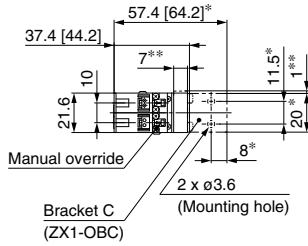
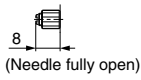
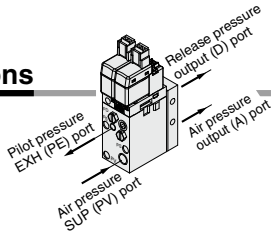


Note) For ZX1-VA (Valve unit): Bracket C  
For ZX1-VB (Valve unit): Bracket B

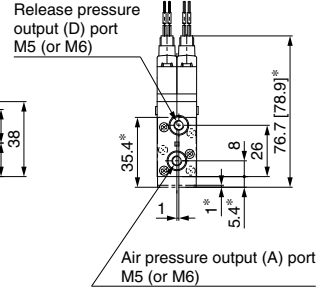
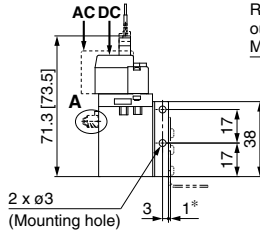
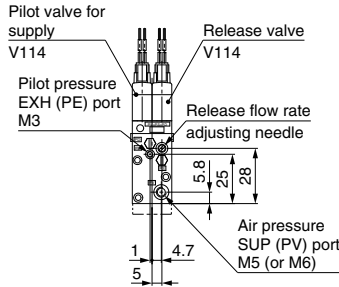
## Dimensions

### Normally closed

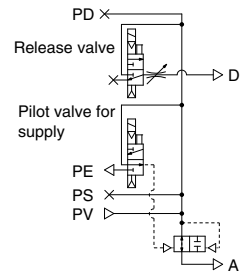
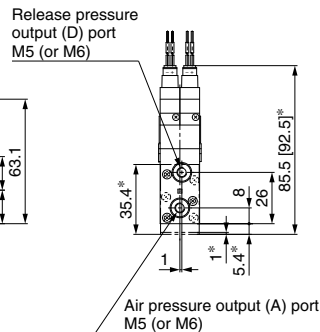
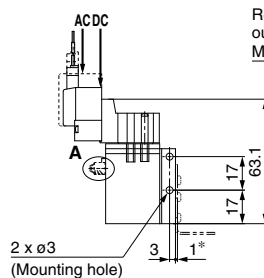
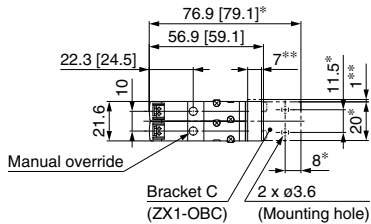
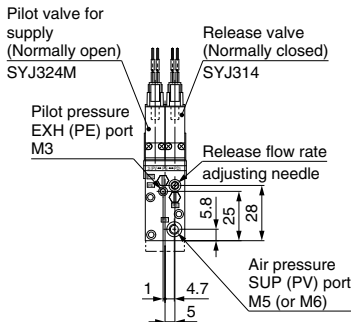
#### A: Release flow rate adjusting needle with lock nut



Circuit diagram



### Normally open



Circuit diagram

Note) Dimensions \*: For mounting bracket C, \*\*: For mounting spacer.

ZA
<b>ZX</b>
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP
Related Equipment

## Suction Filter Unit: ZX1-F



### Specifications

Unit no.		ZX1-F
Operating pressure range		—100 to 500 kPa
Operating temperature range		5 to 50°C
Filtration efficiency		30 μm
Element		PVA
Weight	37 g	ZX1-F-□ (With bracket A)
	29 g	ZX1-F-□-N (Without bracket A)

Note) If not operated within the specified range of pressure and temperature, trouble may result.

### How to Order

ZX1 - F - □ - □

PV, V port size

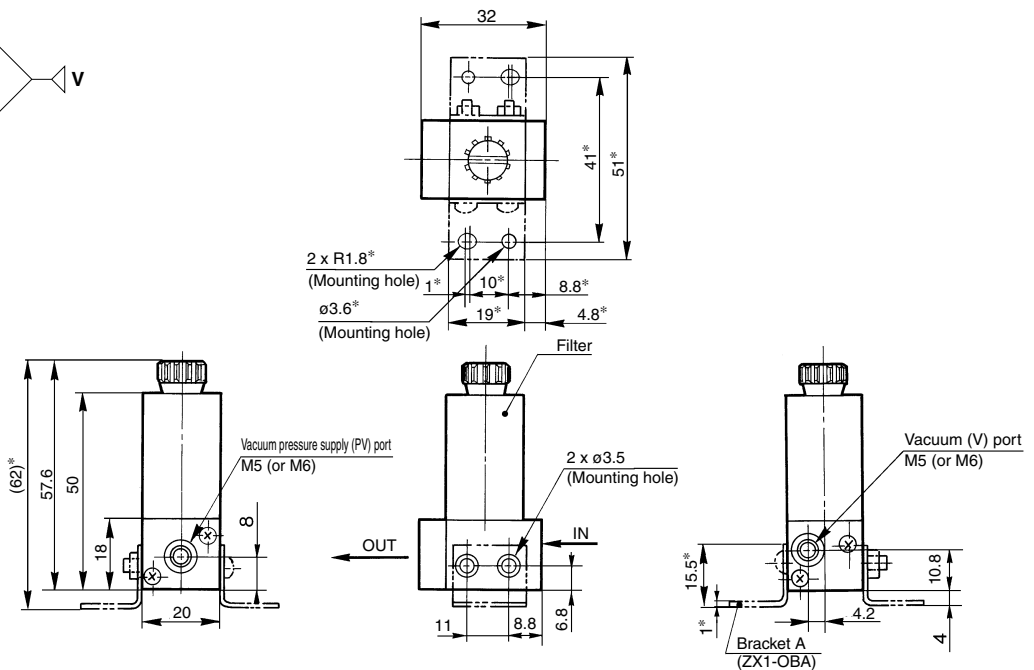
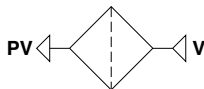
Nil	M5 x 0.8
Y	M6 x 1 (Semi-standard)

Bracket

Nil	With bracket A
N	Without bracket A

### Dimensions

Symbol



Note) Dimensions \*: For A mounting bracket.

### Filter case

#### ⚠ Caution

- The case is made of polycarbonate. Therefore, do not use it with or expose it to the following chemicals: paint thinner, carbon tetrachloride, chloroform, acetic ester, aniline, cyclohexane, trichloroethylene, sulfuric acid, lactic acid, water-soluble cutting oil (alkalinic), etc.

- Do not expose it to direct sunlight.

### About this product

The filter mounted on the product is a simplified one. When used in an environment with a lot of dust, the filter is likely to be clogged quickly. Select a large-volume filter such as Series ZFA, ZFB, ZFC.

## Vacuum Pressure Switch Unit/Vacuum Pressure Switch: ZSE2-0X

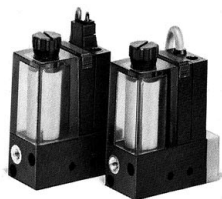
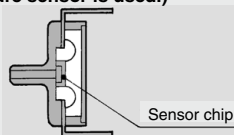
Quick response: 10 ms

Compact size: 39H x 20W x 15D  
(except the connecting portion  
of the standard type)

Improved wiring: connector type

Uses a carrier diffusion  
semiconductor pressure sensor

**Pressure detector**  
(A carrier diffusion semiconductor  
pressure sensor is used.)



• **Filter case**

**Caution**

1. The case is made of polycarbonate.

Therefore, do not use it with or expose it to the following chemicals: paint thinner, carbon tetrachloride, chloroform, acetic ester, aniline, cyclohexane, trichloroethylene, sulfuric acid, lactic acid, water-soluble cutting oil (alkalinic), etc.

2. Do not expose it to direct sunlight.

• **Vacuum pressure setting**

**Caution**

Observe the following precautions when setting the vacuum pressure.

Lightly turn the screwdriver with your fingertips.

To prevent damage to the trimmer groove, do not use a screwdriver that has a large grip or a tip that does not fit in the trimmer groove.

The filter mounted on the product is a simplified one. When used in an environment with a lot of dust, the filter on the unit is likely to be clogged quickly. Use with the ZFA, ZFB and ZFC series is recommended.

Refer to the pressure switch ZSE2 Series catalog for the detailed specifications of pressure switches.

### Vacuum Pressure Switch

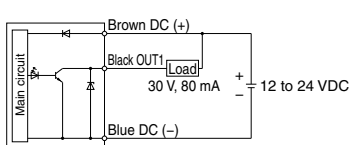
Unit no.	ZSE2-0X
Fluid	Air
Set pressure range	0 to -101 kPa
Hysteresis	3% Full span or less
Repeatability	±1% Full span or less
Temperature characteristics	±3% Full span or less
Voltage	12 to 24 VDC (Ripple ±10% or less)
Port size	M5 x 0.8, M6 x 1 (Semi-standard)
Output	Open collector 30 V, 80 mA
Indicator light	Light at ON state
Current consumption	17 mA or less (24 VDC, at ON state)
Operating temperature range	0 to 60°C
Max. operating pressure	0.5 MPa *

\* When using ejector system, instantaneous pressure up to 0.5 MPa will not damage the switch.  
Note) If not operated within the specified range of pressure of temperature, trouble may result.

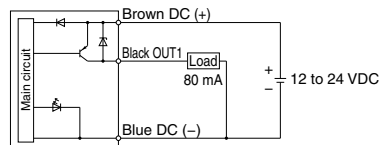
### Wiring

#### ZSE2 connection

##### -15NPN Open collector



##### -55PNP Open collector



### How to Order

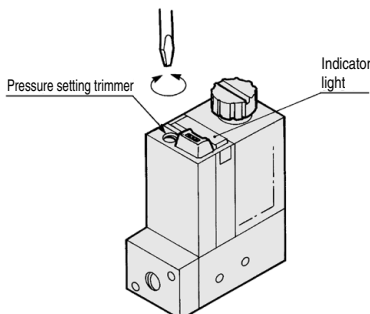
ZSE2 - 0X [ ] - 15 [ ] [ ]

PV, V port size		Electrical entry	
Nil	M5 x 0.8	Nil	Grommet (0.6 m) [40]
Y	M6 x 1 (Semi-standard)	L	Grommet (3 m) [95]
Output specifications		C	Connector (0.6 m) [35]
		CL	Connector (3 m) [75]
15	NPN Open collector 30 V 80 mA	CN	Without connector [30]
55	PNP Open collector 30 V 80 mA	[ ]: Weight (g)	

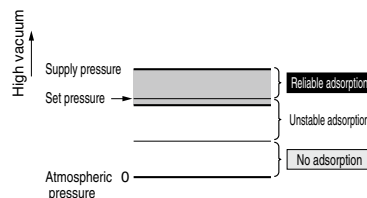
### How to Set Vacuum Pressure

#### ZSE2

- Pressure setting trimmer selects the ON pressure. Clockwise rotation increases high vacuum set point.



- When using the switch to confirm correct adsorption, the set pressure should be as low as possible. If setting the pressure lower than that, switch becomes ON in case when adsorption is not complete. If setting the pressure higher than that, switch does not become ON though it is absorbing workpieces properly.

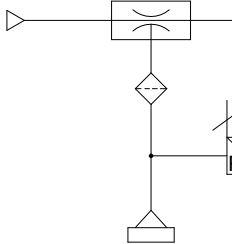


## Vacuum Pressure Switch Unit/Vacuum Pressure Switch: ZSE2-0X

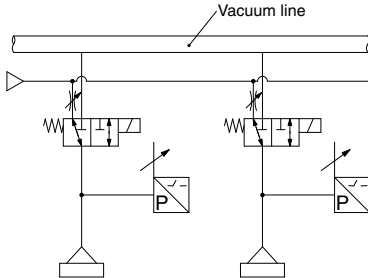
### Guidelines for Use of Vacuum Pressure Switch Unit

#### System circuit for work adsorption

Ejector style



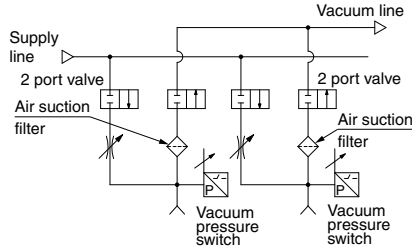
Vacuum pump style



#### Set pressure

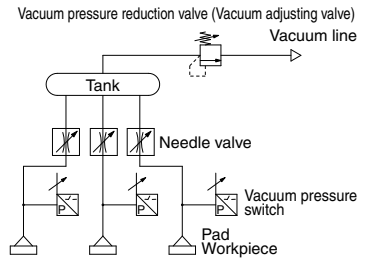
To use for picking verification, set a vacuum pressure that can pick the workpiece without fail.

#### Vacuum pump system



#### Using multiple pressure switches with a single vacuum source

If a single vacuum source is divided so that vacuum switches can be used on individual lines, the vacuum pressure might not come within the values set with the switches because the pressure of the vacuum source fluctuates depending on the number of picks and non-picks. Especially, because pressure fluctuation exerts a great influence when picking with a small diameter nozzle, the countermeasures described below must be provided.

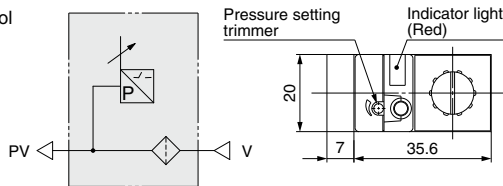


- Adjust the needle valve to reduce the pressure fluctuation between picking and non-picking.
- Stabilize the source pressure by providing a tank and a vacuum regulator.
- Provide a vacuum switch valve to individual lines. Thus, in case of an error, each valve can be turned OFF to minimize the influences on other pads.

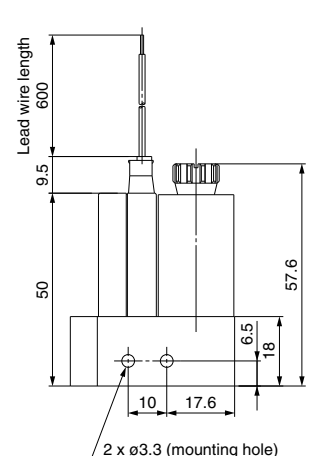
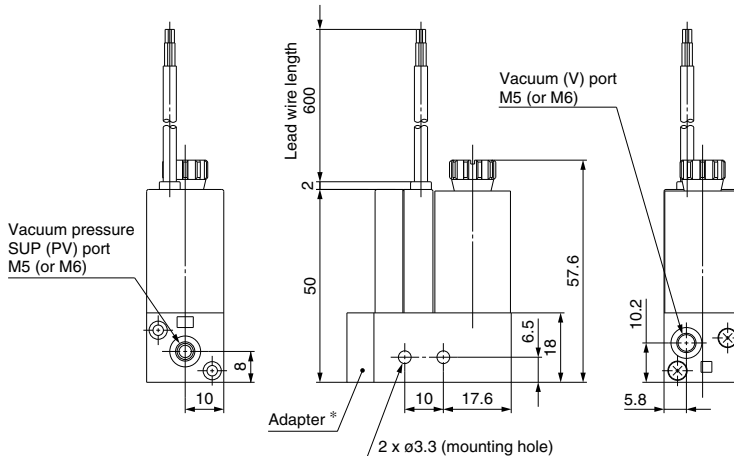
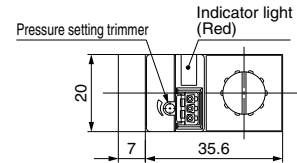
### Dimensions

#### Grommet: ZSE2-0X-15<sub>55</sub>

Symbol



#### Connector: ZSE2-0X-15<sub>55</sub>C



## Vacuum Pressure Switch Unit/Vacuum Pressure Switch: ZSE3-0X

### Built-in failure prediction output function

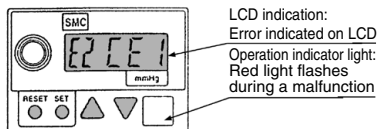
If the attainable amount of vacuum reduces due to a decrease in performance caused by clogging of the silencer of the vacuum system (ejectors), cracked pads, or the leakage of the vacuum pipes, this function quickly detects the abnormal condition and outputs a signal to halt the system.

### Two independent pressure settings are possible

This feature is well suited for applications that require 2 separate pressure outputs due to a change in the vacuum suction pad diameters, or for applications that require 2 pressure verifications to effect line changes in the positive pressure line.

### Comprehensive self diagnosis function

- Overcurrent detection function
- Overvoltage detection function
- Data error



### Data saving function

Even if the power is cut off, the settings are stored for 100,000 hours (approximately 11 years) in the exclusive IC (EEPROM).

### • Filter case

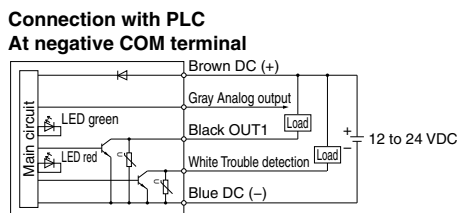
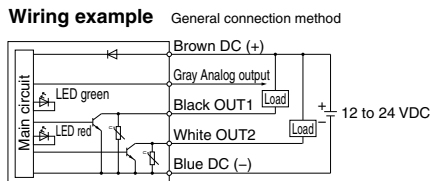
#### ⚠ Caution

1. The case is made of polycarbonate. Therefore, do not use it with or expose it to the following chemicals: paint thinner, carbon tetrachloride, chloroform, acetic ester, aniline, cyclohexane, trichloroethylene, sulfuric acid, lactic acid, water-soluble cutting oil (alkalinic), etc.
2. Do not expose it to direct sunlight.

### Vacuum Pressure Switch

Unit no.		ZSE3-0X
<b>Fluid</b>		Air
<b>Set pressure range</b>		0 to -101 kPa
<b>Hysteresis</b>	<b>Hysteresis mode</b>	Variable (Can be changed from 0)
	<b>Window comparator mode</b>	Fixed (3 digits)
<b>Accuracy</b>		±1% Full span or less
<b>Operating voltage</b>		12 to 24 VDC (Ripple ±10% or less)
<b>Port size</b>		M5 x 0.8, M6 x 1 (Semi-standard)
<b>Indicator light</b>		Light at ON state
<b>Current consumption</b>		25 mA or less
<b>Operating temperature range</b>		0 to 60°C
<b>Max. operating pressure</b>		0.5 MPa

### Wiring



### How to Order

**ZSE3 - 0X**    - **21**   

PV, V port size

<b>N11</b>	M5 x 0.8
<b>Y</b>	M6 x 1 (Semi-standard)

Output specifications

<b>21</b>	NPN open collector, double output Without analog output
<b>22</b>	NPN open collector, double output With analog output
<b>23</b>	NPN open collector 1 output/Trouble detection/ Without analog output
<b>24</b>	NPN open collector 1 output/Trouble detection/ With analog output

Wiring specifications

<b>N11</b>	Grommet (0.6 m) [75]
<b>L</b>	Grommet (3 m) [140]
<b>C</b>	Connector (0.6 m) [75]
<b>CL</b>	Connector (3 m) [140]
<b>CN</b>	Without connector [70]

Note) Analog output is available only for grommet type.  
[ ]: Weight (g)

### How to Set Vacuum Pressure

Refer to Best Pneumatics No. 6.

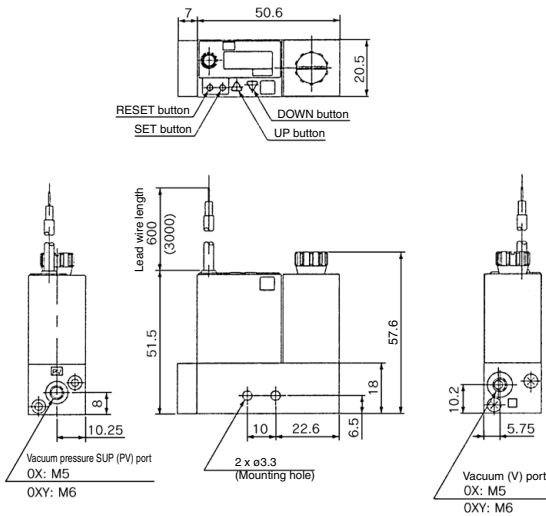
### Guidelines for Use of Vacuum Pressure Switch Unit

Refer to page 876.

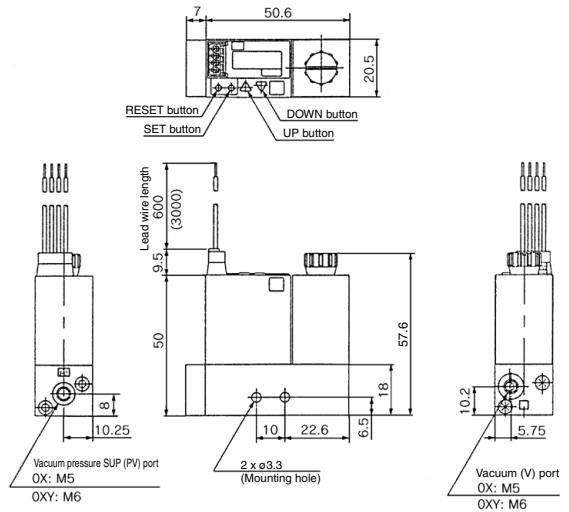
## Vacuum Pressure Switch Unit/Vacuum Pressure Switch: ZSE3-0X

### Dimensions

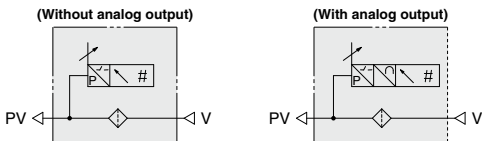
#### Grommet: ZSE3-0X□-□



#### Connector: ZSE3-0X□-□C



### Symbol





**ZA**

**ZX**

**ZR**

**ZM**

**ZMA**

**ZQ**

**ZH**

**ZU**

**ZL**

**ZY□**

**ZF□**

**ZP□**

**SP**

**ZCUK**

**AMJ**

**AMV**

**AEP**

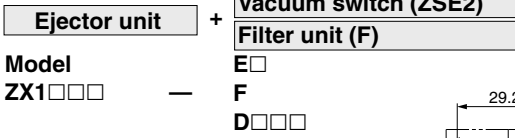
**HEP**

Related  
Equipment



**Without Valve Unit**

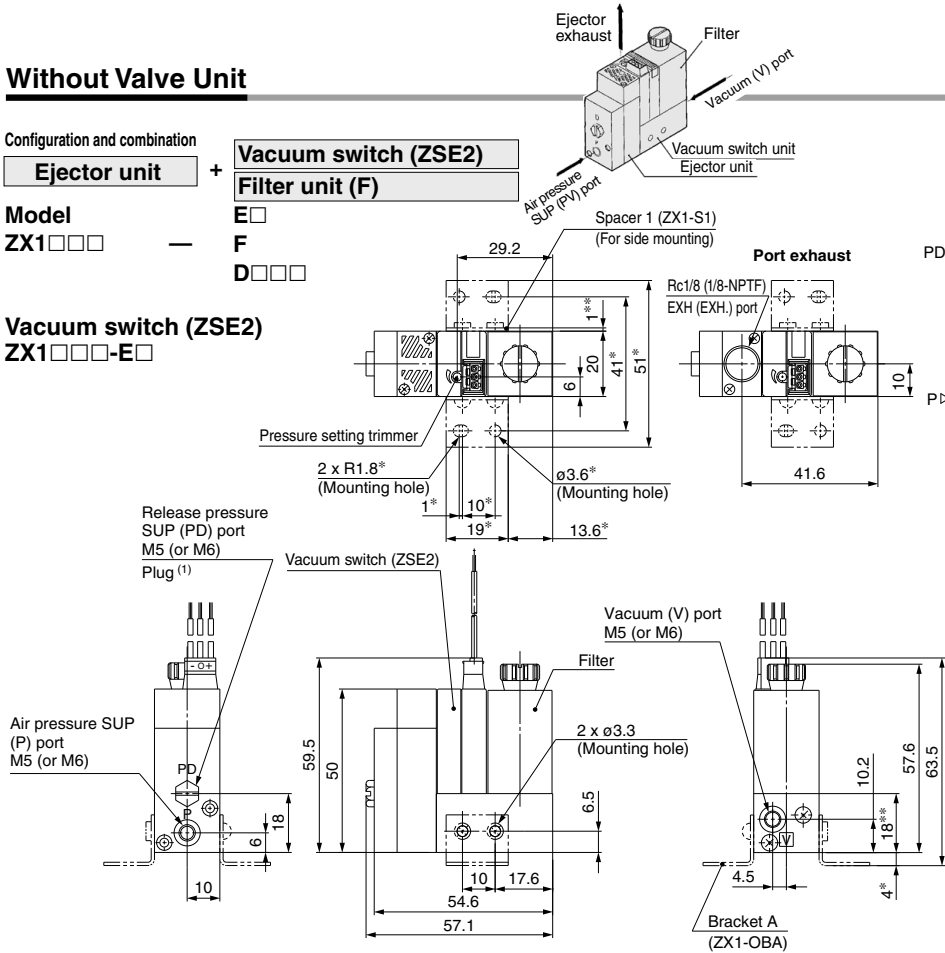
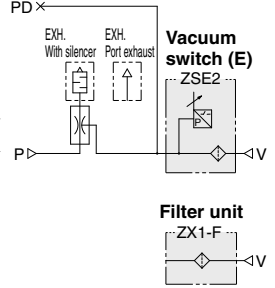
Configuration and combination



**Vacuum switch (ZSE2)**  
 ZX1□□□-E□

**Circuit diagram**

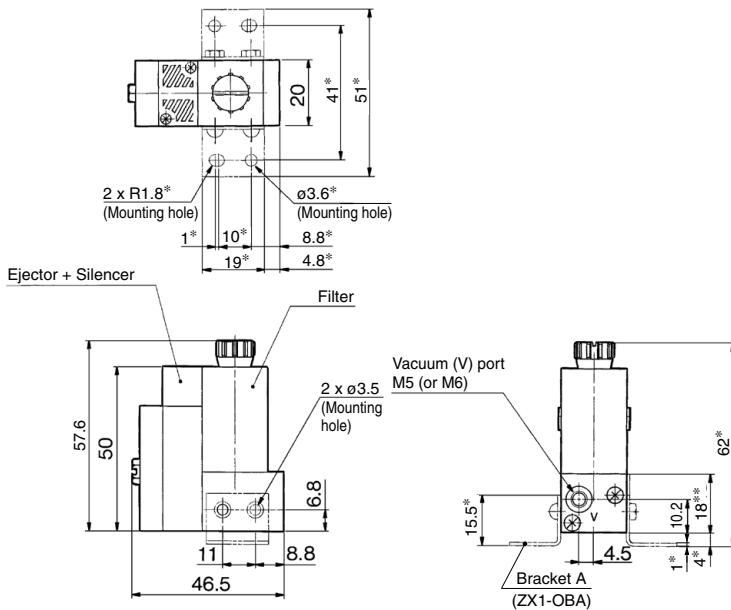
(Circuits other than those with vacuum switch are shown as below.)



Note 1) Remove the plug at external release.

Note 2) Dimensions \*: For mounting bracket A \*\*: For mounting spacer 1.

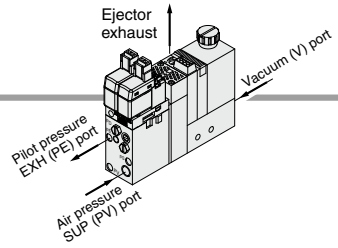
**Filter unit (F)**  
 ZX1□□□-F



ZA
<b>ZX</b>
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP
Related Equipment

# Series ZX

## Valve Unit: Type K1



### Configuration and combination

Ejector unit + Valve unit (K1) +

- Vacuum switch (ZSE2)
- Vacuum switch (ZSE3)
- Filter unit (F)
- Without switch and filter

### Model

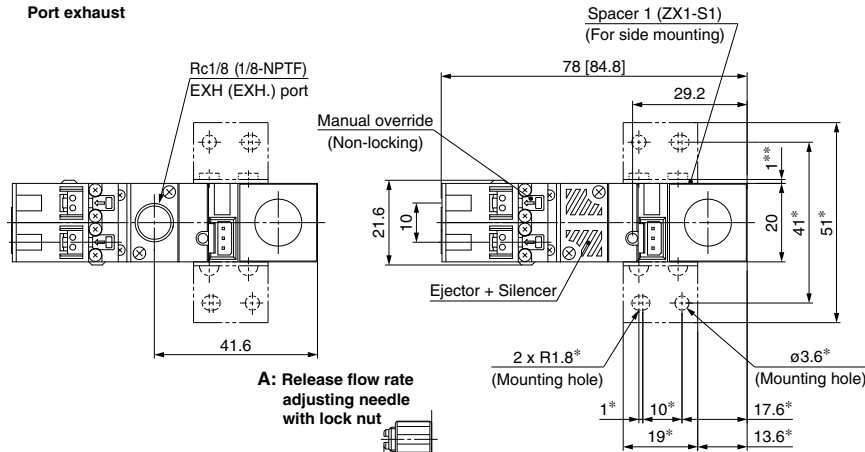
ZX1□□□ — K1□□□□ —

- E□
- D□□□
- F□
- Nil

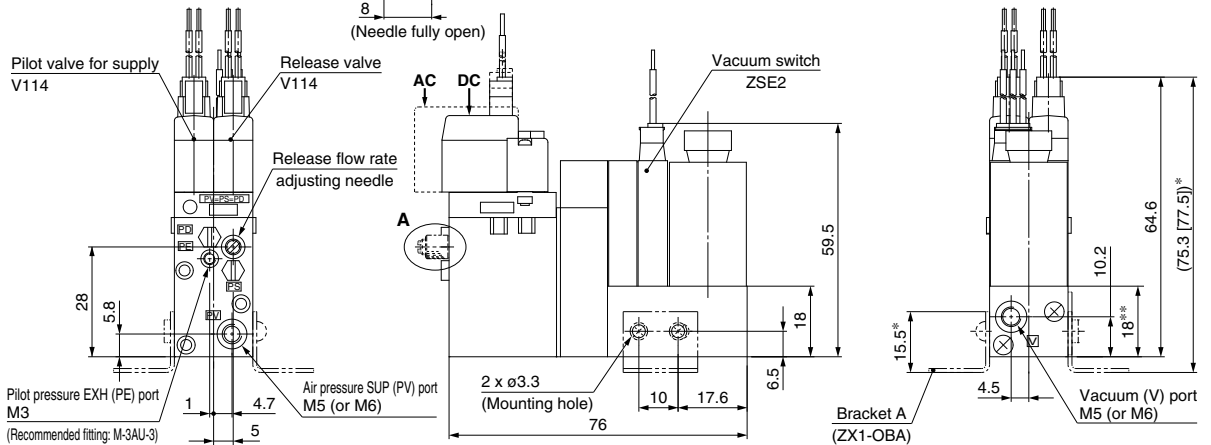
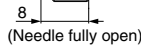
### Vacuum switch (ZSE2)

ZX1□□□-K1□□□□-E□

### Port exhaust



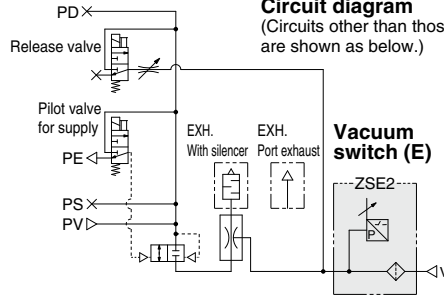
A: Release flow rate adjusting needle with lock nut



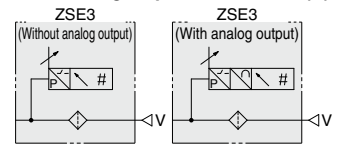
Note) Dimensions \*: For mounting bracket A \*\*: For mounting spacer 1.

### Circuit diagram

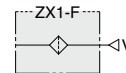
(Circuits other than those with vacuum switch are shown as below.)



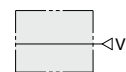
### Vacuum digital pressure switch (D)



### Filter unit

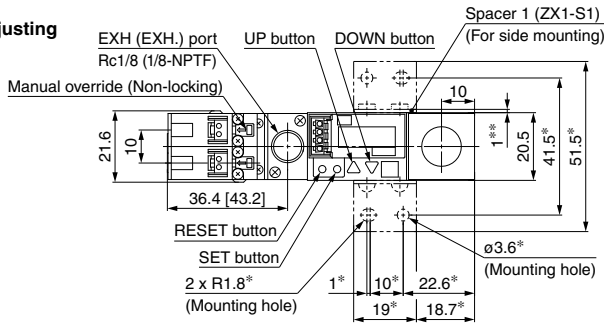
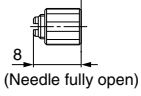


### Without switch and filter

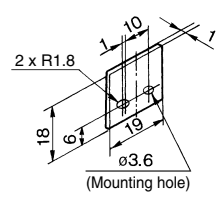


**Vacuum switch (ZSE3)**  
ZX1□□□-K1□□□-D□□□

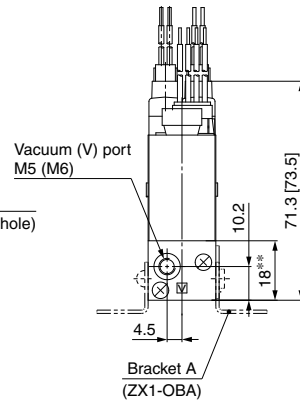
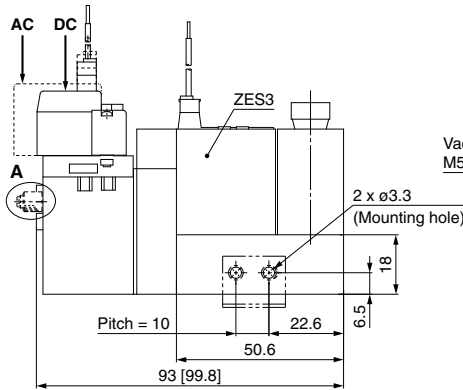
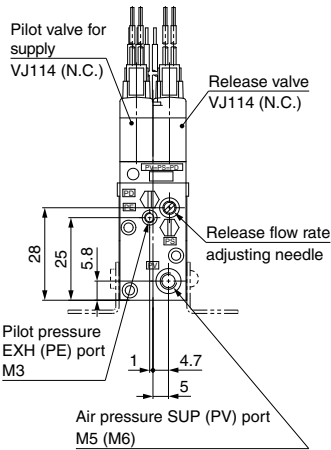
**A: Release flow rate adjusting needle with lock nut**



**Spacer 1: ZX1-S1**

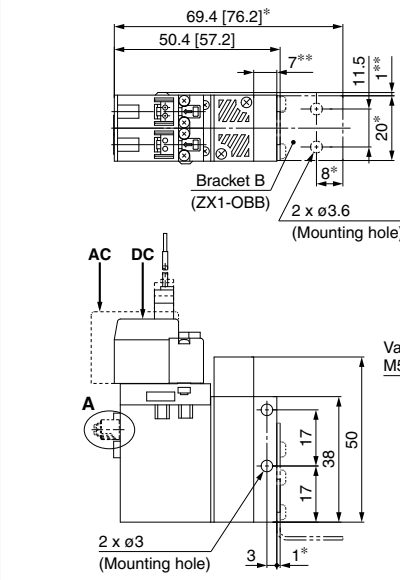
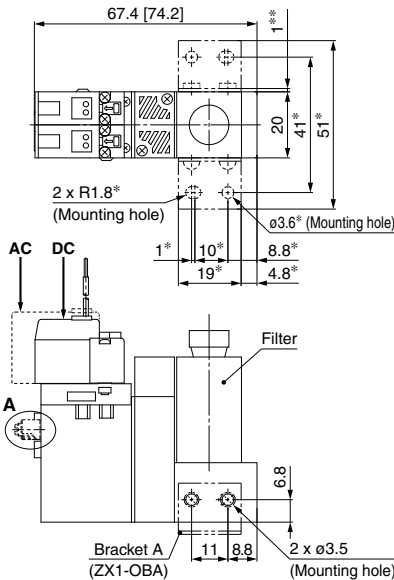


This is inserted between a wall and a switch when the switch is mounted on the wall.



**Filter unit**  
ZX1□□□-K1□□□□-F

**Without switch and filter**  
ZX1□□□-K1□□□□

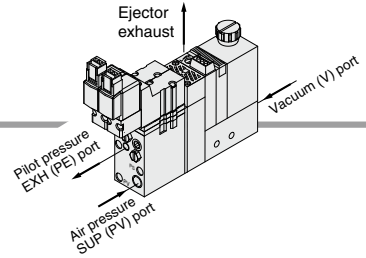


- ZA
- ZX**
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP

Related Equipment

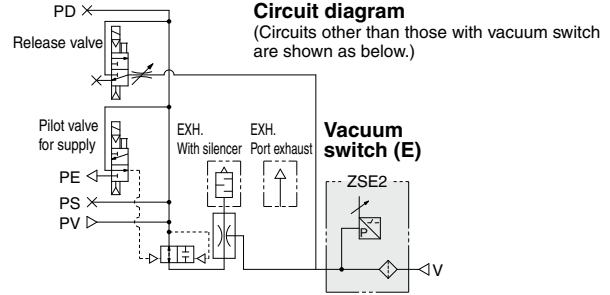
# Series ZX

## Valve Unit: Type K3



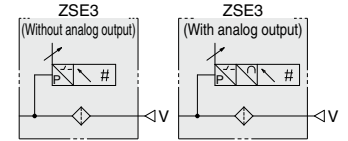
Configuration and combination Ejector unit + Valve unit (K3) +	Vacuum switch (ZSE2)
	Vacuum switch (ZSE3)
	Filter unit (F)
	Without switch and filter

**Model**  
 ZX1□□□□ — K3□□□□ —  
 E□  
 F□□□  
 D□□□  
 Nil

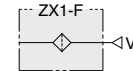


**Vacuum switch (ZSE2)**  
 ZX1□□□□-K3□□□□-E□

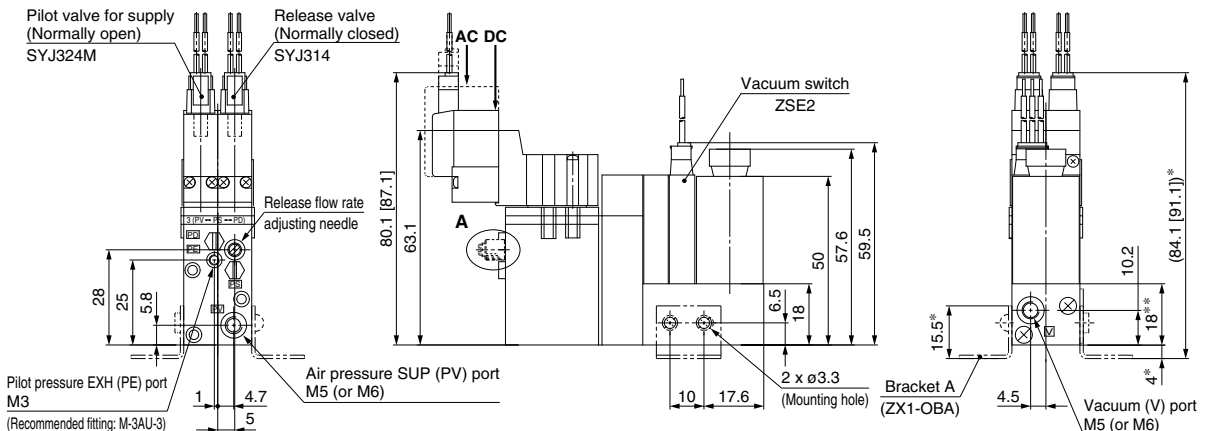
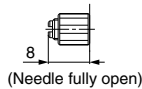
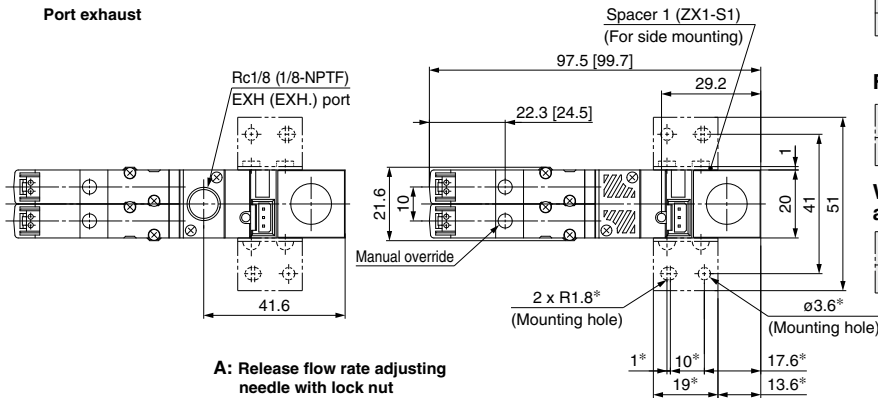
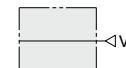
**Vacuum digital pressure switch (D)**



**Filter unit**



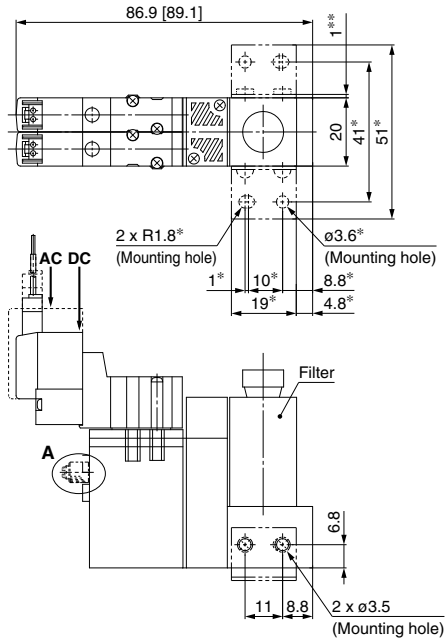
**Without switch and filter**



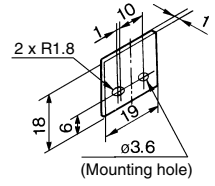
Note) Dimensions \*: For mounting bracket A \*\*: For mounting spacer 1.

[ ]: AC

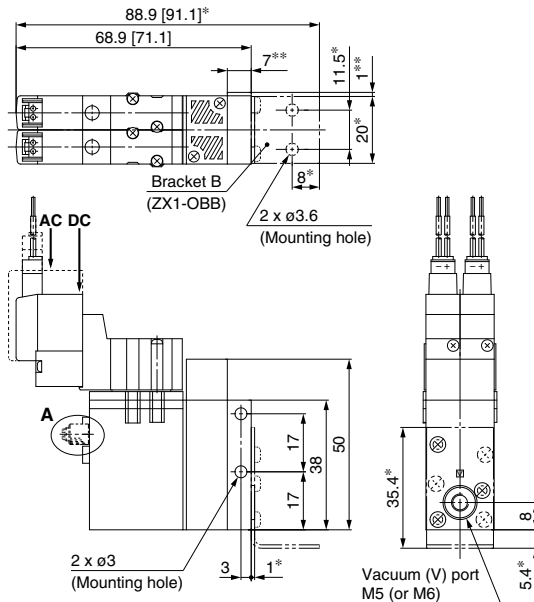
**Filter unit (F)**  
**ZX□□□-K3□□□□-F**



**Spacer 1: ZX1-S1**



**Without switch and filter**  
**ZX1□□□-K3□□□□**



- ZA
- ZX**
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP
- Related Equipment

## Valve Unit: Type K6

### Configuration and combination

Ejector unit + Valve unit (K6) +

Vacuum switch (ZSE2)
Vacuum switch (ZSE3)
Filter unit (F)
Without switch and filter

### Model

ZX1□□□□ — K6 —

E□

F

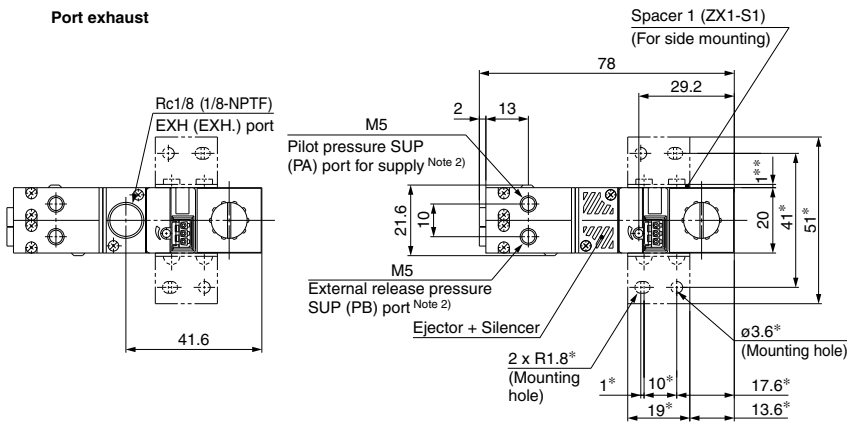
D□□□

Nil

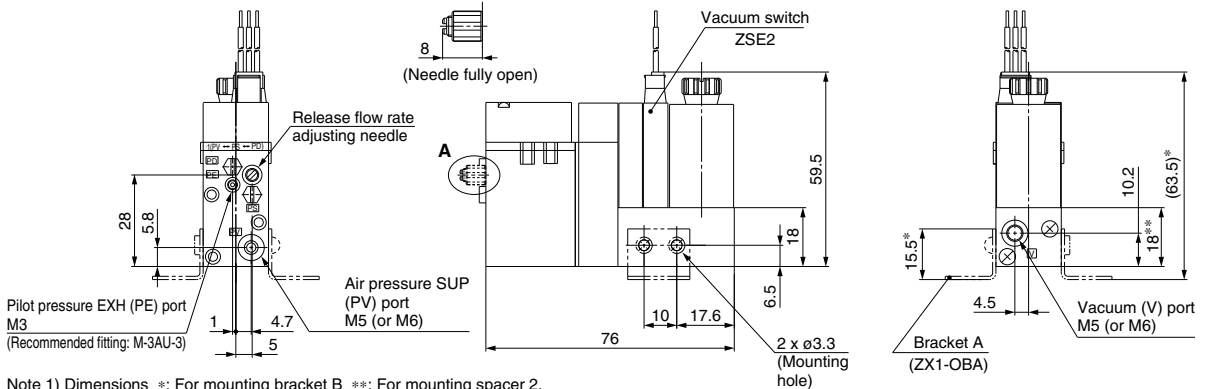
### Vacuum switch (ZSE2)

ZX1□□□□ - K6-E□

### Port exhaust



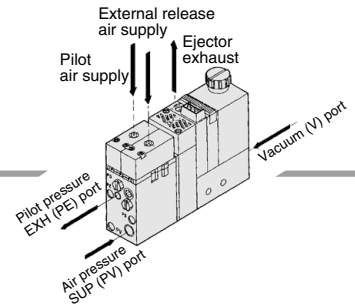
### A: Release flow rate adjusting needle with lock nut



Note 1) Dimensions \*: For mounting bracket B \*\*: For mounting spacer 2.

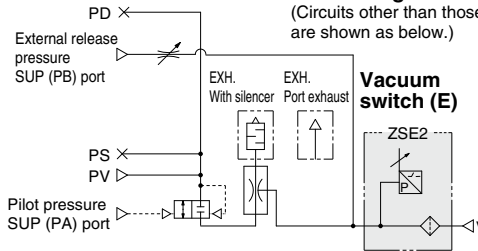
Note 2) Combination of supply valve and release valve: K5, K6, J3

The supply and release valves of this product have a structure which uses the pressure of the air pressure SUP (PV) port to operate them. Be sure to supply a pressure that is the pressure of the air pressure SUP (PV) port or more and 0.6 MPa or less to the pilot pressure SUP (PA, PB) ports for supply and release.

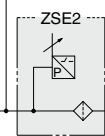


### Circuit diagram

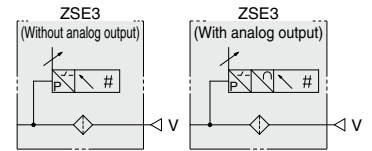
(Circuits other than those with vacuum switch are shown as below.)



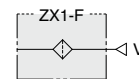
### Vacuum switch (E)



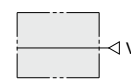
### Vacuum digital pressure switch (D)



### Filter unit

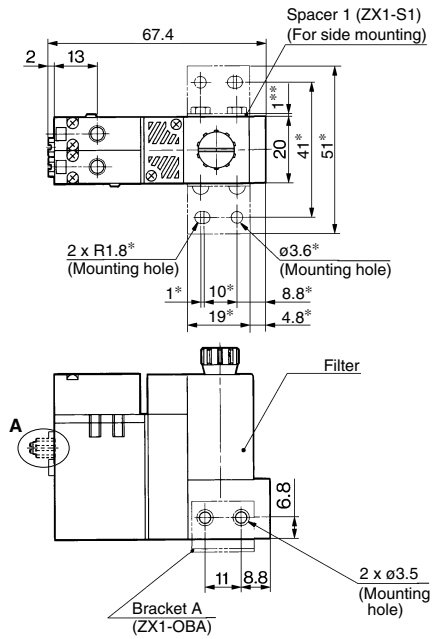


### Without switch and filter

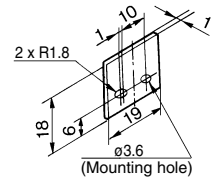




**Filter unit (F)**  
ZX1□□□-K6-F



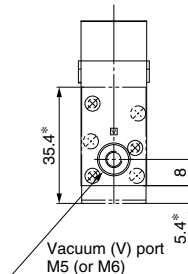
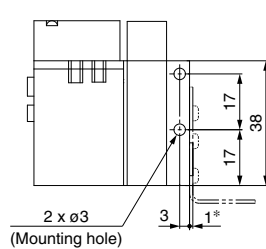
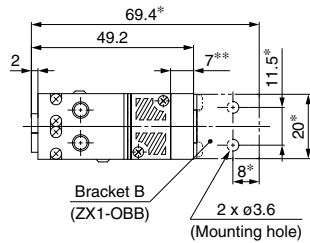
**Spacer 1: ZX1-S1**



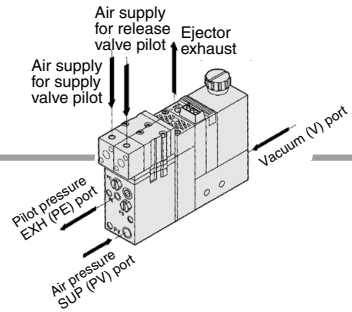
- ZA
- ZX**
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP

Related Equipment

**Without switch and filter**  
ZX1□□□-K6



## Valve Unit: Type K8



Configuration and combination	Vacuum switch (ZSE2)
Ejector unit + Valve unit (K8) +	Vacuum switch (ZSE3)
	Filter unit (F)
	Without switch and filter

### Model

ZX1□□□ — K8 —

E□

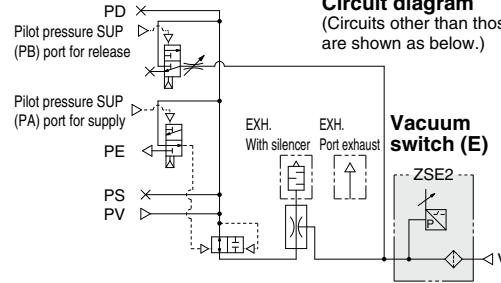
F

D□□□

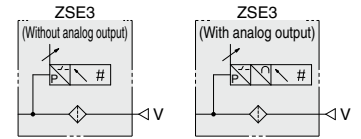
Nil

### Circuit diagram

(Circuits other than those with vacuum switch are shown as below.)



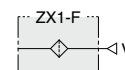
### Vacuum digital pressure switch (D)



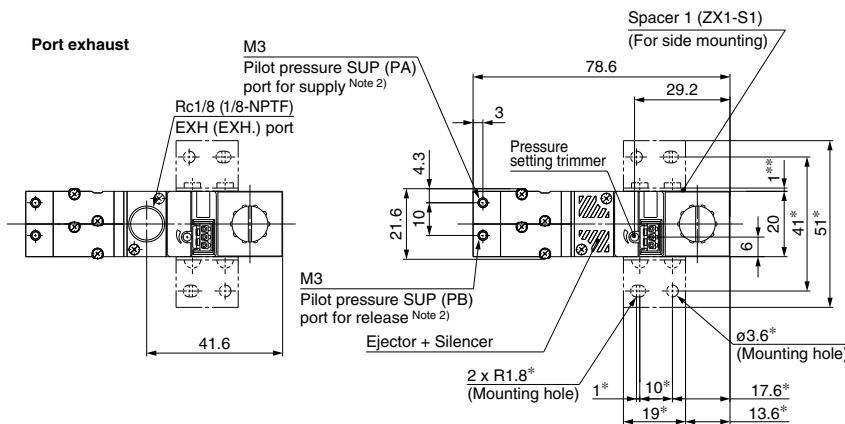
### Vacuum switch (ZSE2)

ZX1□□□-K8-E□

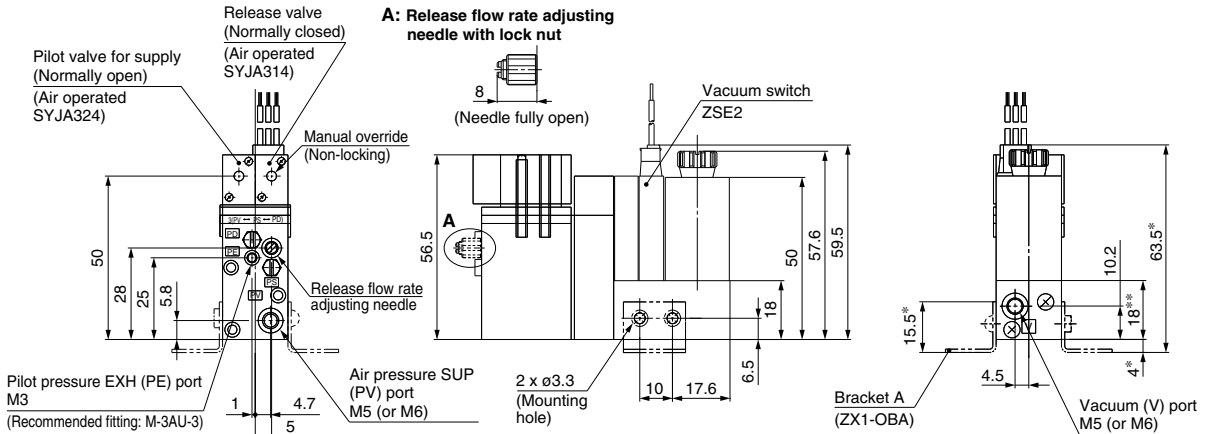
### Filter unit



### Without switch and filter



### A: Release flow rate adjusting needle with lock nut

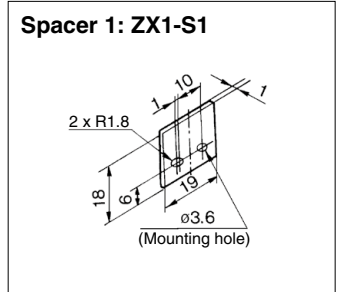
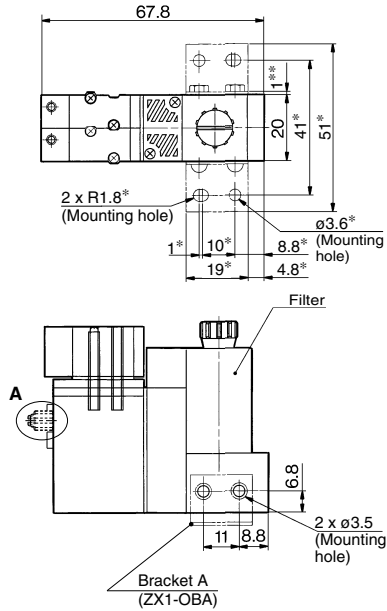


Note 1) Dimensions \*: For mounting bracket A \*\*: For mounting spacer 1.

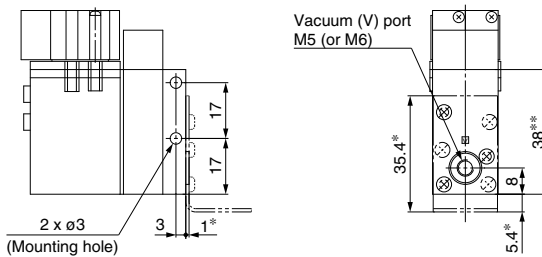
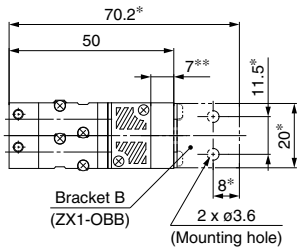
Note 2) Combination of supply valve and release valve: K4, K7, K8, J4, D4.

The supply and release valves of this product have a structure which uses the pressure of the air pressure SUP (PV) port to operate them. Be sure to supply a pressure that is the pressure of the air pressure SUP (PV) port or more and 0.6 MPa or less to the pilot pressure SUP (PA, PB) ports for supply and release.

**Filter unit (F)**  
**ZX1□□□-K8-F**



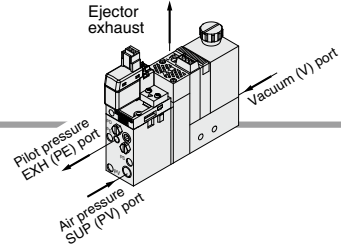
**Without switch and filter**  
**ZX1□□□-K8**



- ZA
- ZX**
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP
- Related Equipment

# Series ZX

## Valve Unit: Type J1



Configuration and combination

Ejector unit + Valve unit (J1) +

- Vacuum switch (ZSE2)
- Vacuum switch (ZSE3)
- Filter unit (F)
- Without switch and filter

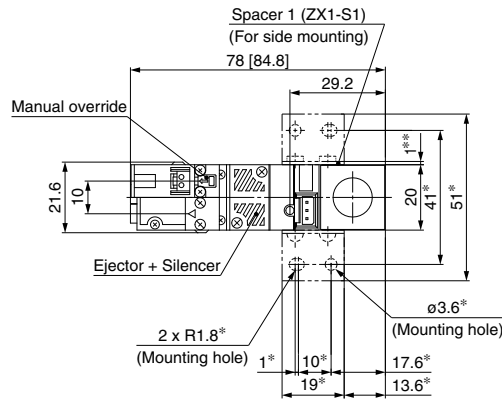
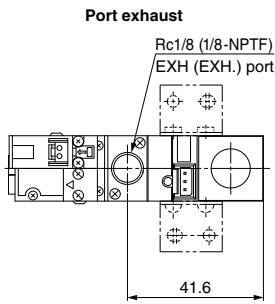
Model

ZX1□□□ — J1□□□□ —

- E□
- F
- D□□□
- Nil

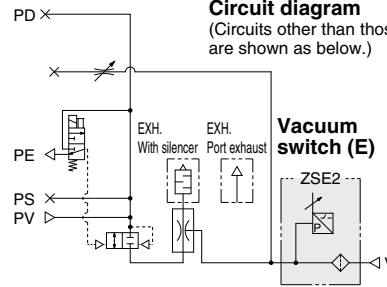
### Vacuum switch (ZSE2)

ZX1□□□-J1□□□□-E□

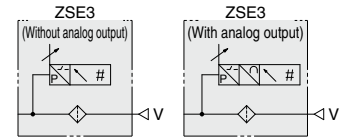


### Circuit diagram

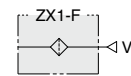
(Circuits other than those with vacuum switch are shown as below.)



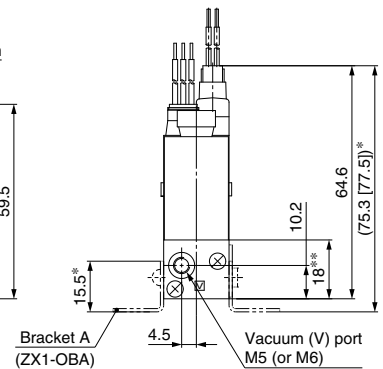
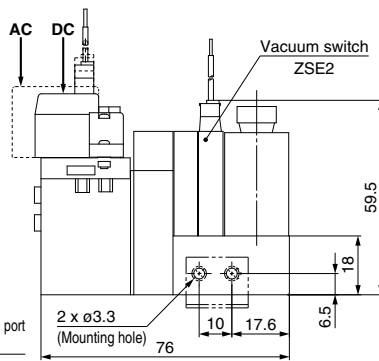
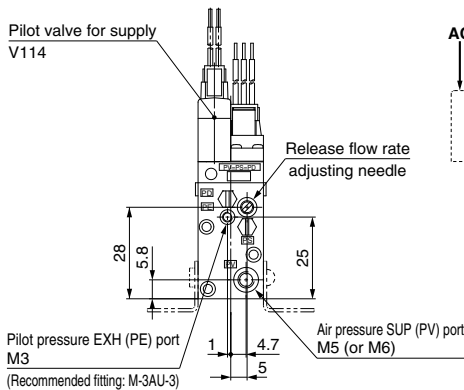
### Vacuum digital pressure switch (D)



### Filter unit



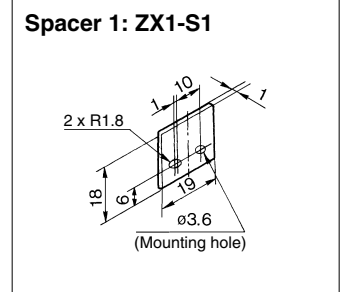
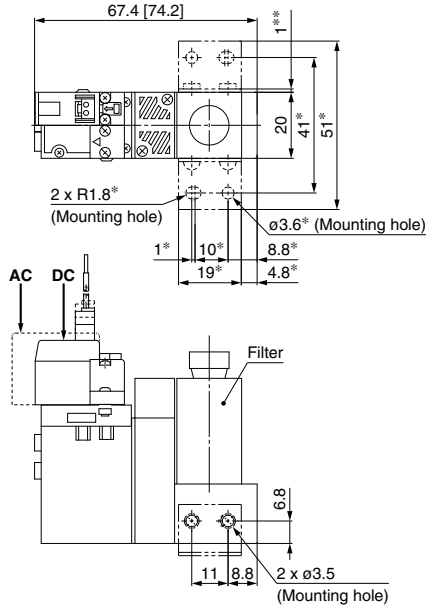
### Without switch and filter



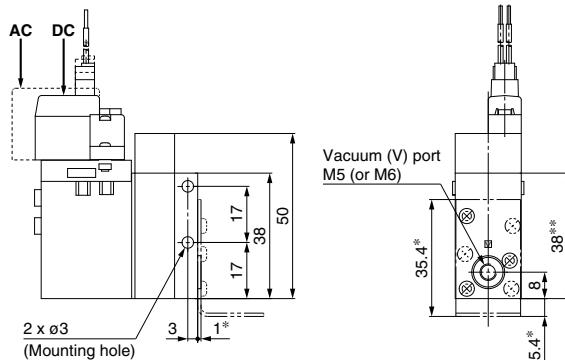
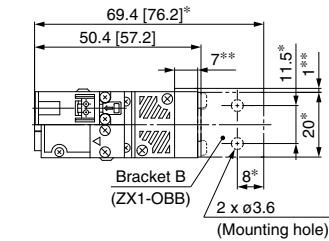
Note) Dimensions \*: For mounting bracket A \*\*: For mounting spacer 1.

[ ] : AC

**Filter unit (F)**  
**ZX1□□□-J1□□□□-F**



**Without switch and filter**  
**ZX1□□□-J1□□□□**

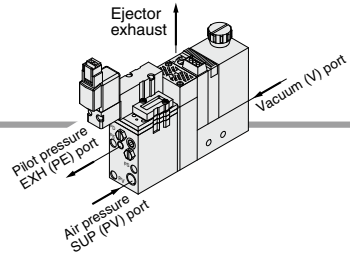


ZA
<b>ZX</b>
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP

Related Equipment

# Series ZX

## Valve Unit: Type J2



Configuration and combination

Ejector unit	+	Valve unit (J2)	+	Vacuum switch (ZSE2)
				Vacuum switch (ZSE3)
				Filter unit (F)
				Without switch and filter

### Model

ZX1□□□ — J2□□□□ —

□

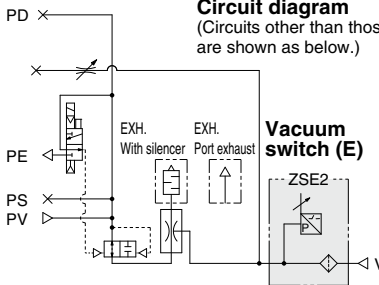
F

D□□□

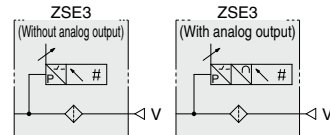
Nil

### Circuit diagram

(Circuits other than those with vacuum switch are shown as below.)



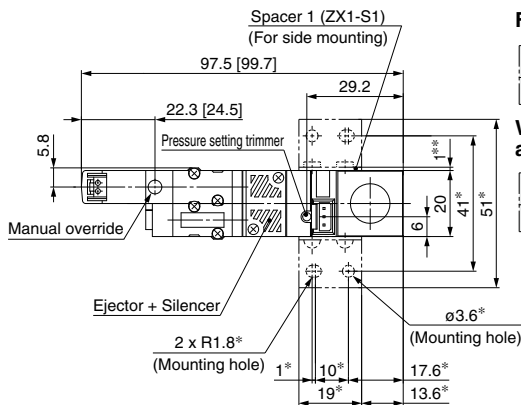
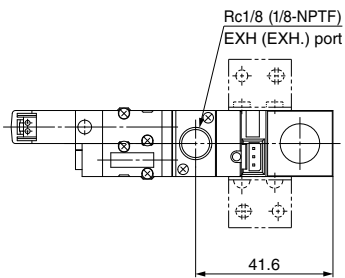
### Vacuum digital pressure switch (D)



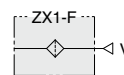
### Vacuum switch (ZSE2)

ZX1□□□-J2□□□□-E□

#### Port exhaust



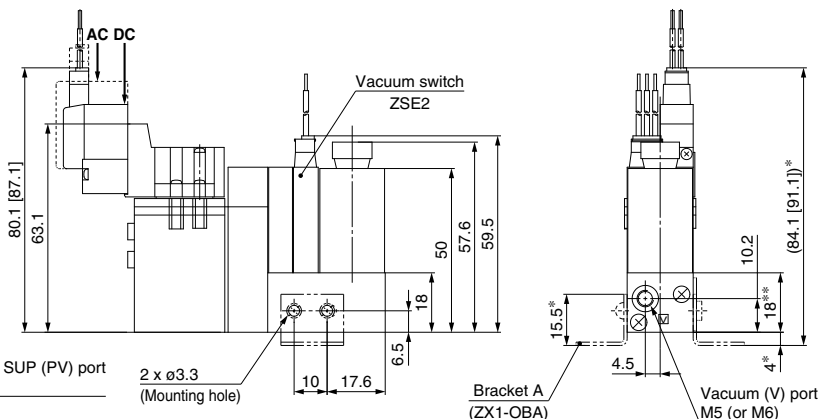
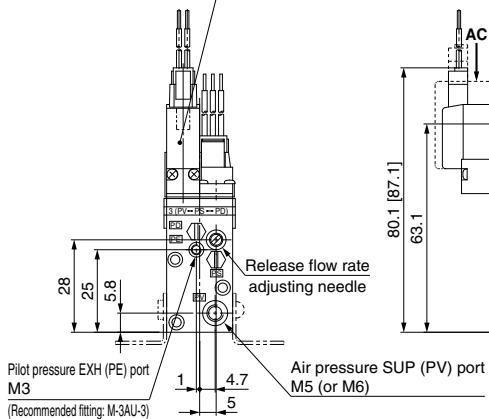
#### Filter unit



#### Without switch and filter



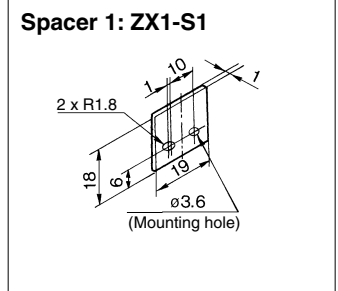
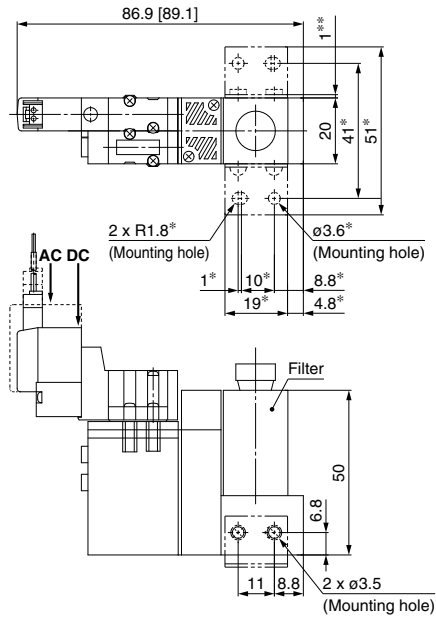
#### Pilot valve for supply (Normally open) SYJ324M



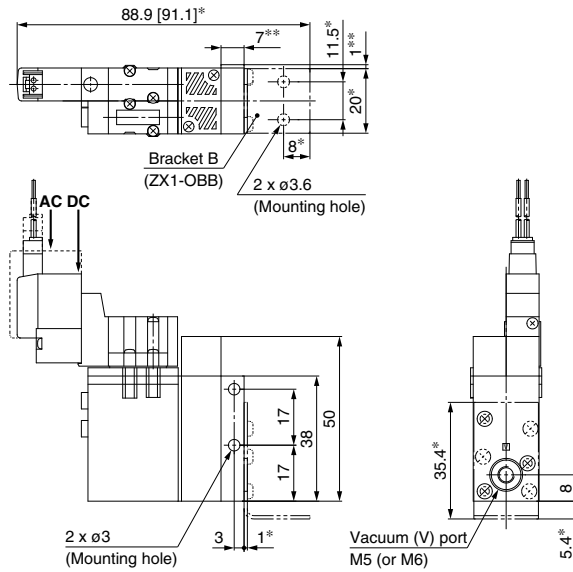
Note) Dimensions \*: For mounting bracket A \*\*: For mounting spacer 1.



**Filter unit (F)**  
**ZX1□□□-J2□□□□-F**

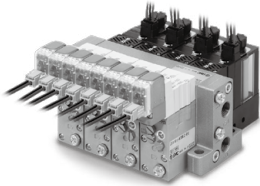
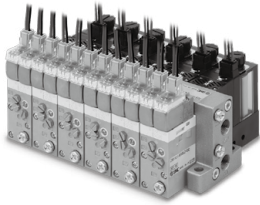


**Without switch and filter**  
**ZX1□□□-J2□□□□**



- ZA
- ZX**
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP
- Related Equipment

## Ejector System/Manifold Specifications



### Specifications

<b>Max. number of units</b>		Max. 8 units
<b>Port size</b>	<b>Supply port [PV]</b>	1/8 (Rc, NPT, G)
	<b>Exhaust port [EXH]</b>	1/8 (Rc, NPT, G)
<b>Weight</b>		1 station: 114 g (45 g per additional station)

Note 1) PD port: Blank

Note 2) Exhaust air from both sides for 4 or more stations of ZX1103 manifold.

### Air Supply

Supply port location	Manifold		Left side		Right side	
	Port		PV	PS	PV	PS
<b>L</b> (Left)			○	●	●	●
<b>R</b> (Right)			●	●	○	●
<b>B</b> (Both sides)			○	●	○	●

○ : Supply ● : Plugged (EXH port is released to atmospheric pressure.)

Note) Blank plugs are attached to all ports of each valve unit.

## How to Order Manifold

### <Manifold base>

**ZZX1 06 - [ ] R**

Stations	
01	1
02	2
⋮	⋮
08	8

#### Supply port location \*1)

<b>R</b>	Right side (PV port on the right side)
<b>L</b>	Left side (PV port on the left side)
<b>B</b>	Both sides (PV port on both sides)

\*1 Viewed from the front side of valve unit, confirm the port location on the right and/or left side.

\*2 EXH ports are released to atmospheric pressure in both sides. Plugs are always attached to PD ports and all ports of the valve unit.

#### Thread of supply and exhaust port

<b>Nll</b>	Rc
<b>F</b>	G (Note)
<b>T</b>	NPTF

Note) G thread  
The thread ridge shape is compatible with the G thread standard (JIS B 0202), but other shapes are not conforming to ISO16030 and ISO1179.

(Ordering example)

**ZZX106-R**.....1 pc. (Manifold base)

\*ZX1101-K15LZ-EC(-Q).....5 pcs. (Vacuum single unit)

\*ZX1-BM1-....1 pc. (Blank plate)

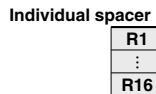
### ⚠ Caution when ordering manifold

The asterisk denotes the symbol for assembly.  
Prefix it to the ejector part numbers to be mounted. When it is not added, the manifold base and ejector are shipped separately.

### <Individual spacer>

Use the individual spacer when separating the supply and pilot pressure exhaust ports of the manifold ejector.

**ZX1 - R1 - 1**



\*Refer to the individual spacer.

(Ordering example)

If installed on station 1 and station 3:

**ZZX106-R** .....1 pc.

\*ZX1101-K15LZ-EL(-Q)

.....6 pcs.

\*ZX1-R1-1

\*ZX1-R1-3

\*ZX1-R16 (Dummy spacer)

.....4 pcs.

#### Arrangement

(First station from the right end of the valve side is station 1.)

<b>Nll</b>	All stations
<b>1</b>	Station 1 only
⋮	⋮
<b>8</b>	Station 8 only

\*When spacers are mounted alternately, specify them together.

\*When retrofitting, 3 pcs. of M2.5 x 32 (for ZX) are necessary. A dummy spacer (ZX1-R16) must be mounted on the stations on which individual spacers are not mounted.

### About individual spacers

Manifold supply or valve unit supply can be selectable for each port. In the table below, ports with the symbol † mean that they are manifold supply, while others are individual supply from the valve unit.

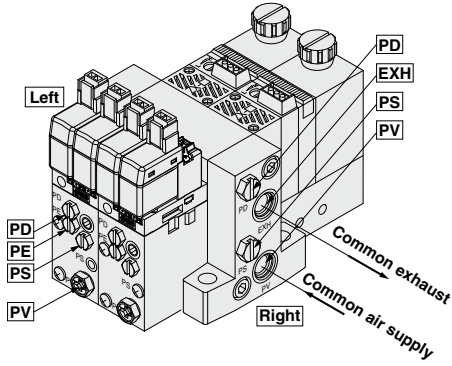
Symbols in the table below are printed on the surface of individual spacers.

No.	Symbol	No.	Symbol
<b>ZX1-R1</b>	R1	<b>ZX1-R 9</b>	R 9 †PV
<b>R2</b>	R2 †PE	<b>R10</b>	R10 †PV †PE
<b>R3</b>	R3 †PD	<b>R11</b>	R11 †PV †PD
<b>R4</b>	R4 †PD †PE	<b>R12</b>	R12 †PV †PD †PE
<b>R5</b>	R5 †PS	<b>R13</b>	R13 †PV †PS
<b>R6</b>	R6 †PS †PE	<b>R14</b>	R14 †PV †PS †PE
<b>R7</b>	R7 †PS †PD	<b>R15</b>	R15 †PV †PS †PD
<b>R8</b>	R8 †PS †PD †PE	<b>R16</b>	R16 †PV †PS †PD †PE



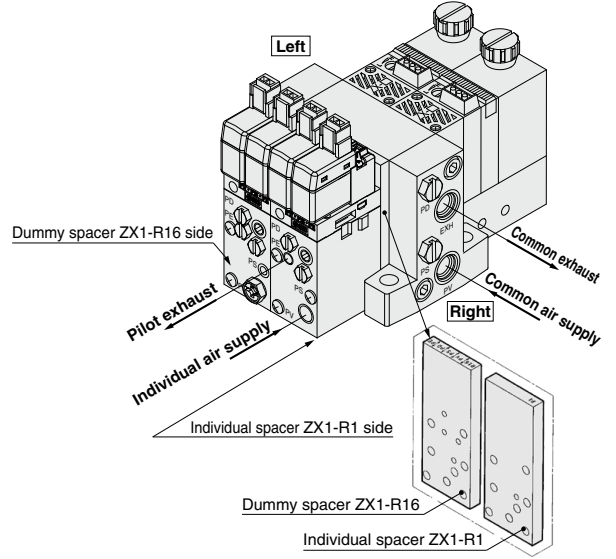
**Manifold/System Circuit Example**

When not using individual spacer

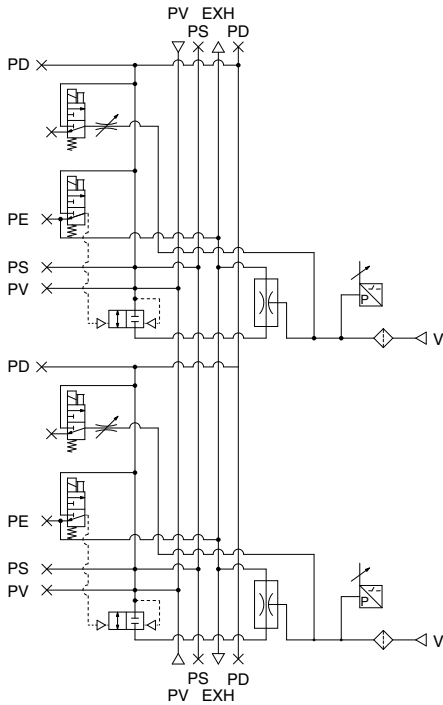


PV: Air pressure SUP port  
PS: Pilot pressure SUP port  
PD: Release pressure SUP port  
PE: Pilot pressure EXH port  
EXH: Common EXH port

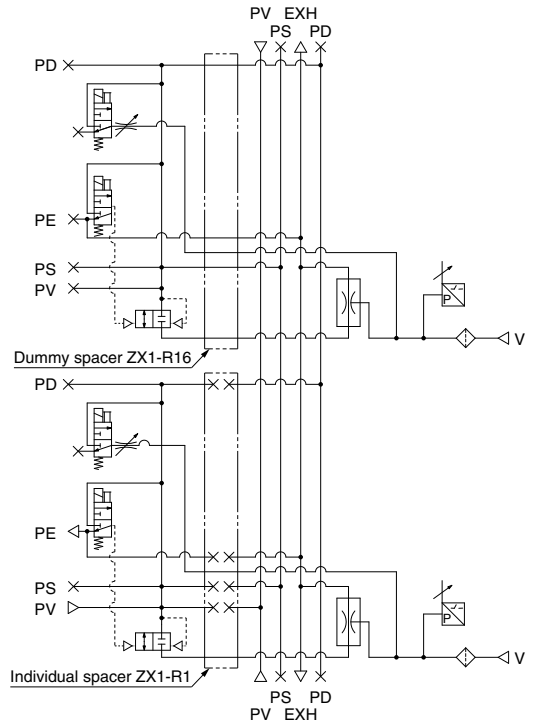
When using individual spacer  
(When using ZX1-R1)



<System circuit example>



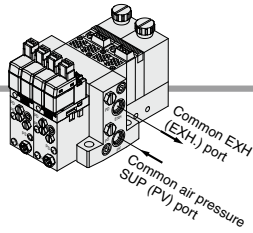
<System circuit example>



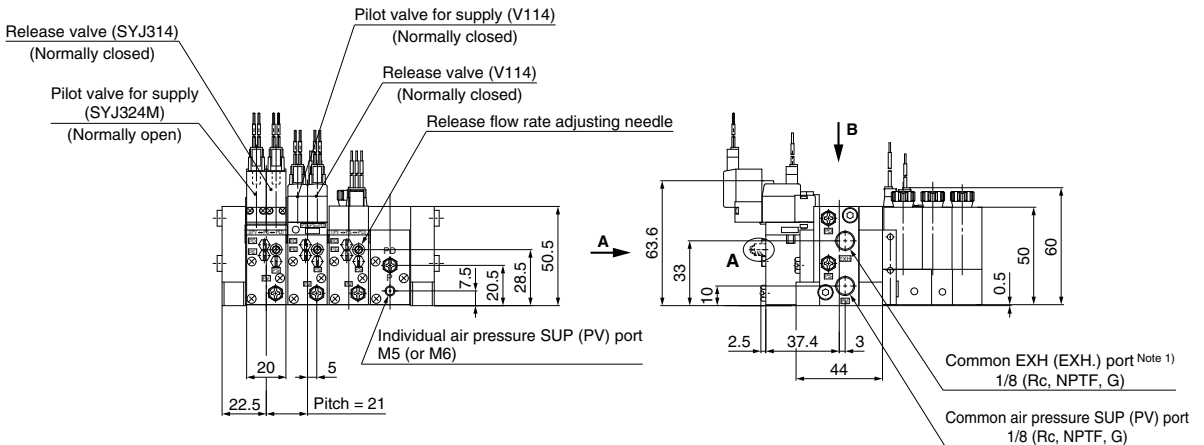
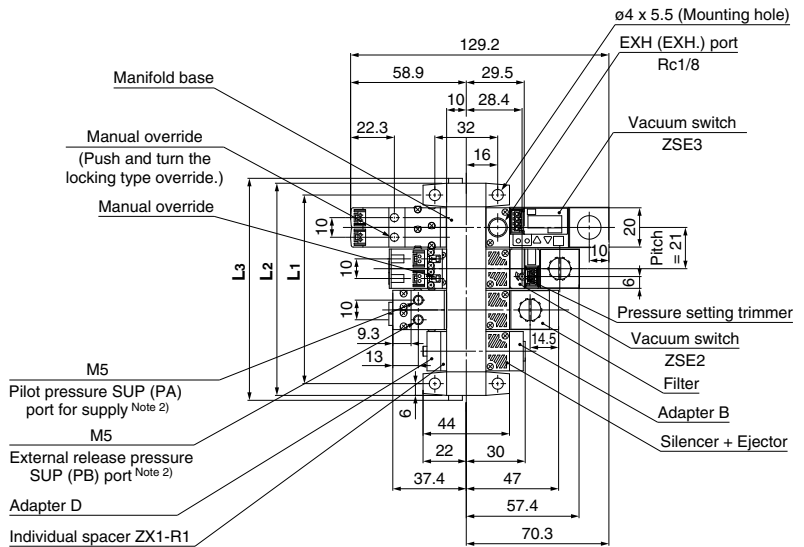
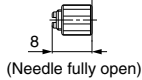
ZA
<b>ZX</b>
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP

Related Equipment

## Ejector System Manifold



### A: Release flow rate adjusting needle with lock nut



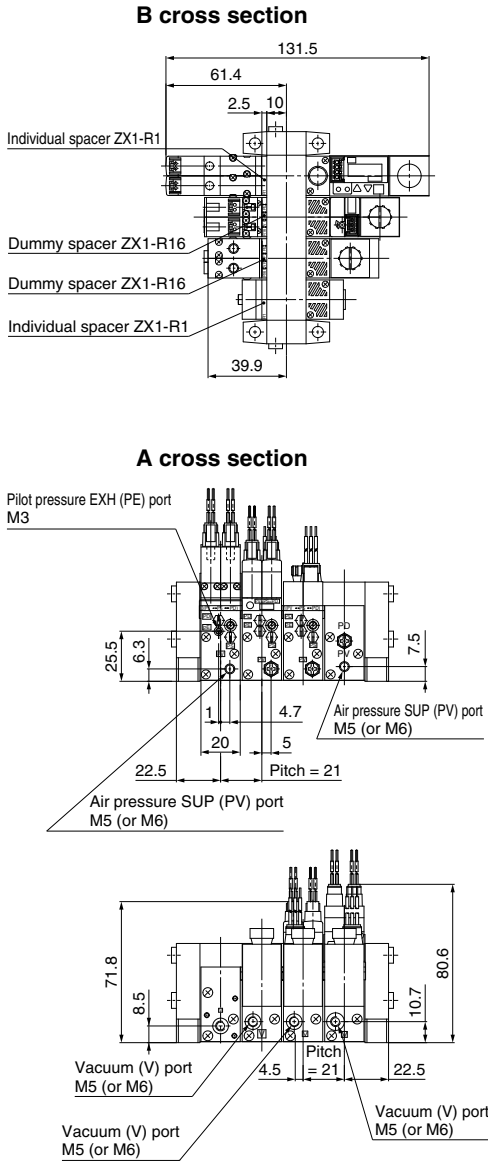
*Note 1*) The common exhaust port (EXH.) is also used as the pilot pressure exhaust (PE) port of pilot valve. Use while the port is open to the atmosphere.

*Note 2*) Combination of supply valve and release valve: K4, K5, K6, K7, K8, J3, J4, D4

The supply and release valves of this product have a structure which uses the pressure of the air pressure SUP (PV) port to operate them. Be sure to supply a pressure that is the pressure of the air pressure SUP (PV) port or more and 0.6 MPa or less to the pilot pressure SUP (PA, PB) ports for supply and release.

		(mm)							
Symbol	Stations	1	2	3	4	5	6	7	8
L1		33	54	75	96	117	138	159	180
L2		45	66	87	108	129	150	171	192
L3		50	71	92	113	134	155	176	197

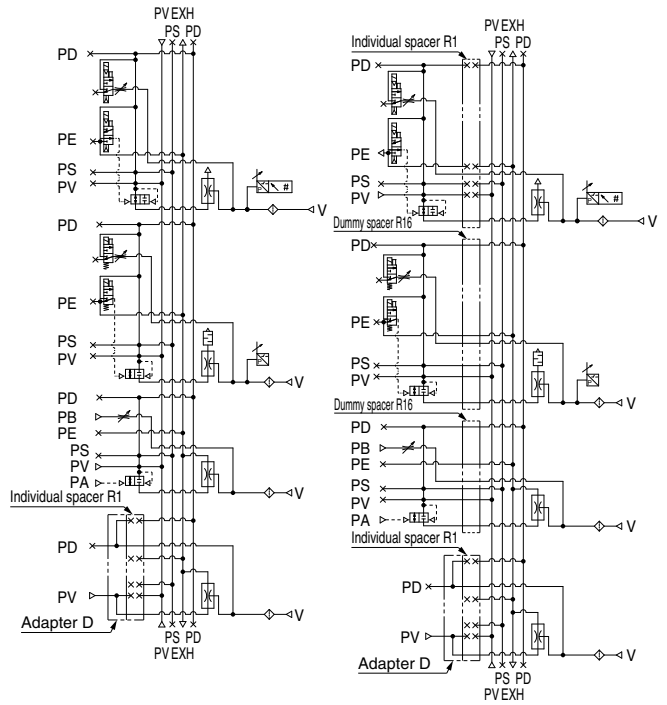
(In the case of individual spacer)



System circuit example

(Standard)

(Semi-standard)  
(In the case of individual spacer)



ZA

ZX

ZR

ZM

ZMA

ZQ

ZH

ZU

ZL

ZY □

ZF □

ZP □

SP

ZCUK

AMJ

AMV

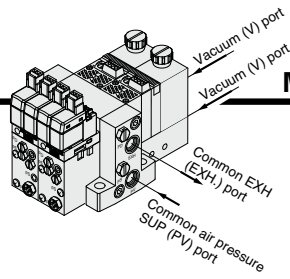
AEP

HEP

Related  
Equipment

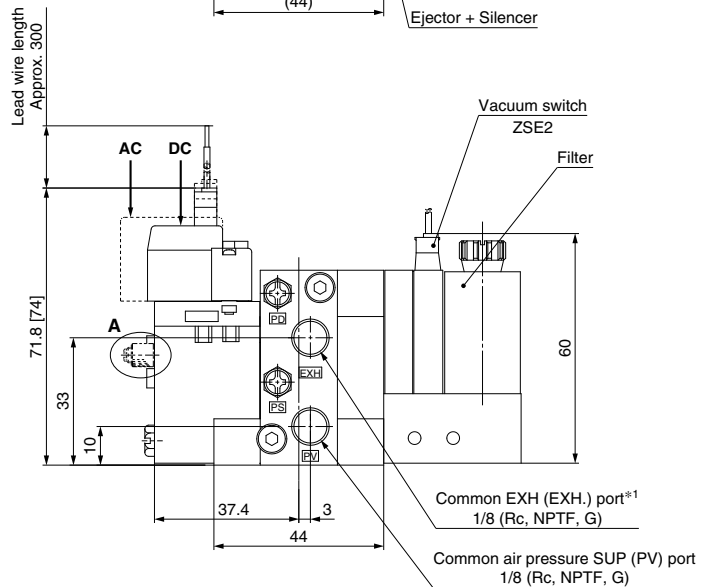
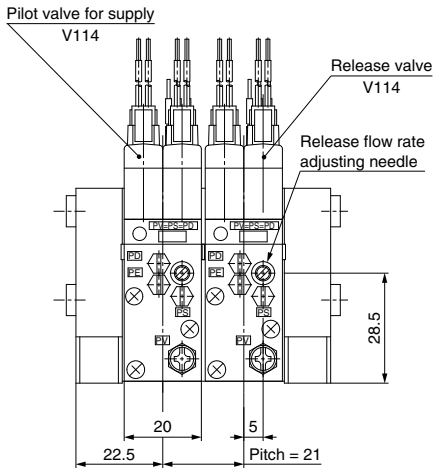
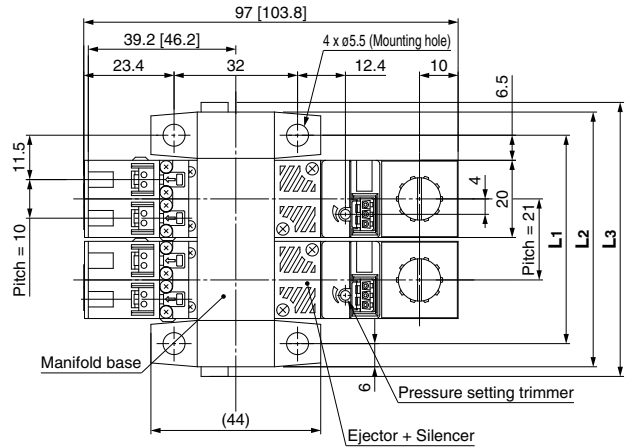
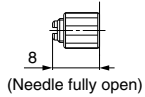
# Series ZX

## Ejector System



## Manifold: Type K1

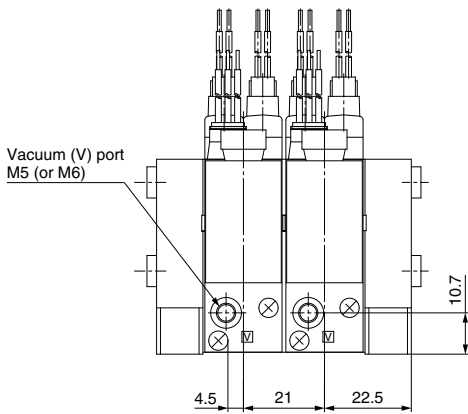
**A:** Release flow rate adjusting needle with lock nut



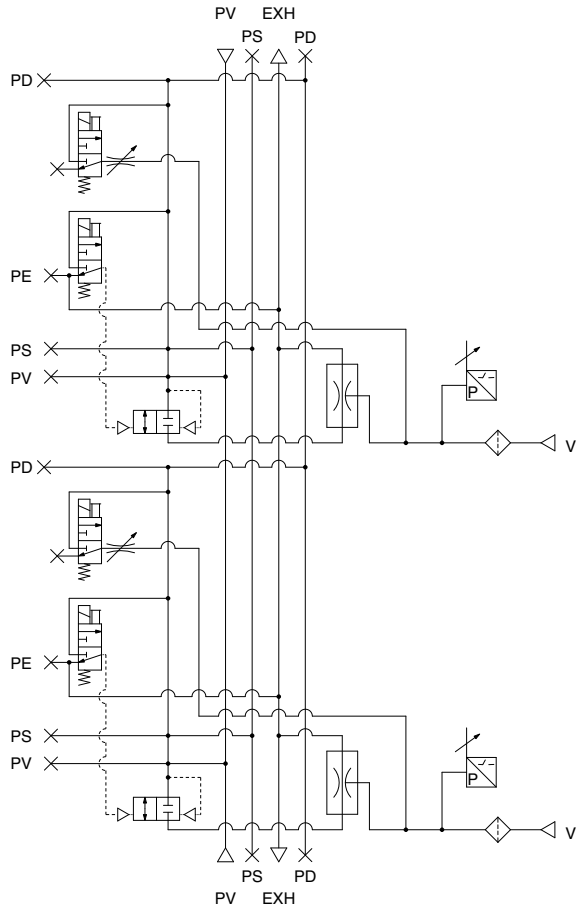
\*1 The common exhaust port (EXH.) is also used as the pilot pressure exhaust (PE) port of pilot valve. Use while the port is open to the atmosphere.

		(mm)							
Symbol	Stations	1	2	3	4	5	6	7	8
<b>L1</b>		33	54	75	96	117	138	159	180
<b>L2</b>		45	66	87	108	129	150	171	192
<b>L3</b>		50	71	92	113	134	155	176	197

[ ]: AC



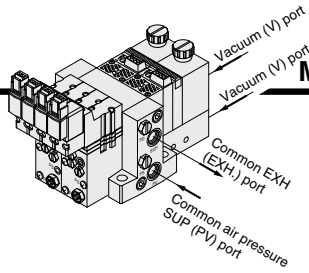
**Circuit diagram**



<b>ZA</b>
<b>ZX</b>
<b>ZR</b>
<b>ZM</b>
<b>ZMA</b>
<b>ZQ</b>
<b>ZH</b>
<b>ZU</b>
<b>ZL</b>
<b>ZY</b>
<b>ZF</b>
<b>ZP</b>
<b>SP</b>
<b>ZCUK</b>
<b>AMJ</b>
<b>AMV</b>
<b>AEP</b>
<b>HEP</b>
Related Equipment

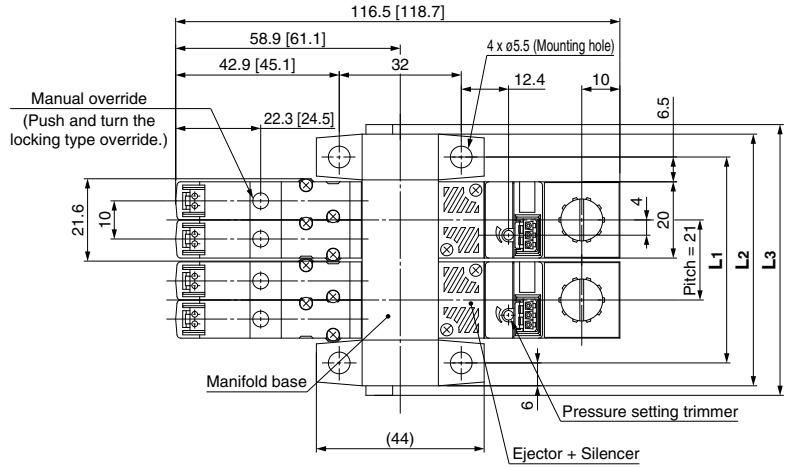
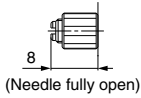
# Series ZX

## Ejector System

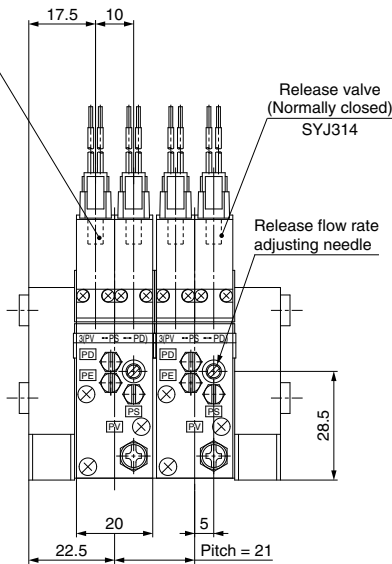


## Manifold: Type K3

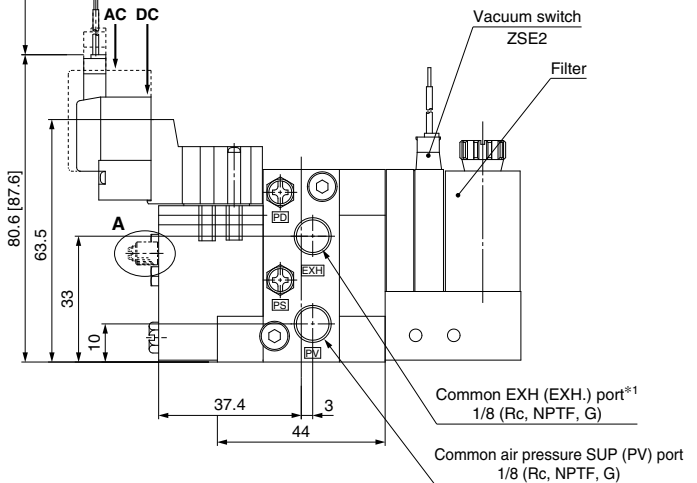
### A: Release flow rate adjusting needle with lock nut



Pilot valve for supply  
(Normally open)  
SYJ324M



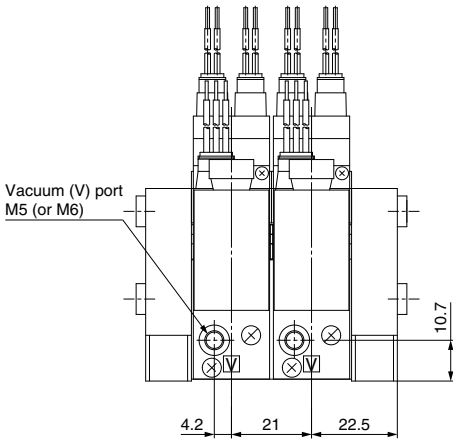
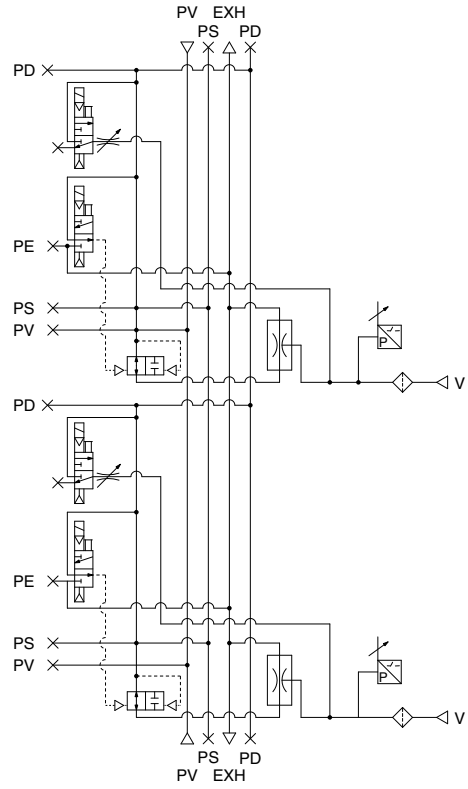
Lead wire length  
Approx. 300



\*1 The common exhaust port (EXH.) is also used as the pilot pressure exhaust (PE) port of pilot valve. Use while the port is open to the atmosphere.

		(mm)							
Symbol	Stations	1	2	3	4	5	6	7	8
L1		33	54	75	96	117	138	159	180
L2		45	66	87	108	129	150	171	192
L3		50	71	92	113	134	155	176	197

Circuit diagram



ZA
<b>ZX</b>
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP
Related Equipment

# Vacuum Module: Vacuum Pump System Series ZX

Note) Refer to "How to Order"  
for CE-compliant products. [Option]



## How to Order

### Components

Valve unit N.C. type	Vacuum switch unit	ZX100	K1	5	L	Z		E	C				
Valve unit N.O. type	Vacuum switch unit	ZX100	K3	5	L	Z		E	C				
Valve unit N.C. type	Filter unit	ZX100	K1	5	L	Z			F				

Valve unit/Combination of supply valve and release valve  
Refer to "Table (1)" on page 903.

### Solenoid valve rated voltage

		CE-compliant
1* Note)	100 VAC 50/60 Hz	—
3* Note)	110 VAC 50/60 Hz	—
5	24 VDC	●
6	12 VDC	●
V	6 VDC	●
S	5 VDC	●
R	3 VDC	●
Nil	Air operated (K6, K8, J3, J4, D3, D4)	—

Note) CE-compliant products are not available for "1" and "3".

\* Applicable to plug connector only. When replacing a product that uses a connector assembly with rectifier, replace the connector assembly as well. (Table (2) on page 903)

### Electrical entry

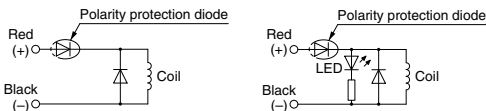
L	L plug connector	Lead wire length 0.3 m
LN	connector	Without lead wire (Applicable to DC only)
LO	type	Without connector
M	M plug connector	Lead wire length 0.3 m
MN	connector	Without lead wire (Applicable to DC only)
MO	type	Without connector
G	Grommet	Lead wire length 0.3 m (Applicable to DC only)
H	type	Lead wire length 0.6 m (Applicable to DC only)
Nil		Air operated

Note) In the case of "K1" (combination of supply and release valves), M type plug connector can not be used.

## ⚠ Caution

### <For DC> Grommet, L and M Plug Connector

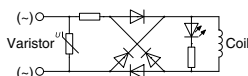
With surge voltage suppressor      With light/surge voltage suppressor



Match the polarity of the connectors according to the ⊕ and ⊖ marks on the connectors. Do not interchange the polarities to prevent the diodes or the switching elements from becoming burned.  
If lead wires are pre-connected, the red wire is ⊕ and the black wire is ⊖.

### <For AC> L and M Plug Connector

With light (□Z)



Combination of supply valve and release valve  
Solenoid valve rated voltage  
Electrical entry  
Light/Surge voltage suppressor  
Manual operation  
Vacuum switch unit  
Filter unit  
Vacuum switch  
Electrical entry  
PV, V port size  
Release flow rate adjusting needle/Bracket A

### CE-compliant

Nil	—
Q	CE-compliant *

\* Only for the model with solenoid valve or pressure switch

### Release flow rate adjusting needle/Bracket A

	Lock nut	Bracket A
Nil	×	●
L	●	●
M	●	×
N	×	×

### PV/V port size

	M5 x 0.8
Nil	(Semi-standard)
Y	

\* When the units are shipped as a manifold, the PV port is M5 x 0.8 with a plug.

●: Attached (Bracket A is shipped together.) ×: None  
Note) A bracket is applicable only when the product is to be shipped on its own. When a manifold is to be shipped, a bracket is not included with any of the models.

### Vacuum switch electrical entry

Nil	Grommet	Lead wire length 0.6 m
L	type	Lead wire length 3 m
C		Lead wire length 0.6 m
CL	Connector	Lead wire length 3 m
CN	type	Without lead wire assembly with connector

\* Refer to "Table (3)" on page 903 for part number of lead wire with connector.

### Vacuum switch unit/Filter unit

		CE-compliant
E	Vacuum switch (For general purpose)(ZSE2)(NPN)	With suction filter ●
E55	Vacuum switch (For general purpose)(ZSE2)(PNP)	filter ●
F	Only suction filter	—

### Vacuum digital pressure switch unit (ZSE3)

21		2 outputs/without analog output
22		2 outputs/with analog output
23	1 output (with trouble detection)/without analog output	
24	1 output (with trouble detection)/with analog output	

Note) Analog output is available only on grommet type.

### Manual operation

Nil	Non-locking push type
B	Locking slotted type

The filter mounted on the product is a simplified one. When used in an environment with a lot of dust, the filter is likely to be clogged quickly. The use with the series ZFA, ZFB and ZFC is recommended.

### Light/Surge voltage suppressor

Nil	None
Z	With light/surge voltage suppressor
S*	With surge voltage suppressor

S is not available for AC.

If the polarity is incorrect at DC voltage (surge voltage suppressor), diode or switching element may be damaged.

- Refer to "Table (2)" on page 903 for part number of lead wire with connector.
- Refer to page 916 for ordering the manifold.
- Refer to pages 926 and 927 for ordering a unit for replacement.






**Table (1) Valve Unit/Combination of Supply Valve and Release Valve**

(Refer to page 904 for detailed specifications.)

Components		Symbol	Supply valve					Release valve					Weight (g)
Supply valve	Release valve		Solenoid valve		Air operated		None	Solenoid valve		Air operated	External release	None	
			N.C. (V114)	N.O. (SYJ324)	N.C. (ZX1A)	N.O. (SYJA324)		N.C. (V114)	N.C. (SYJ314)	N.C. (SYJA314)	ZX1A		
Solenoid (N.C.)	Solenoid (N.C.)	<b>K1</b>	●	—	—	—	—	●	—	—	—	—	79
Solenoid (N.O.)	Solenoid (N.C.)	<b>K3</b>	—	●	—	—	—	—	●	—	—	—	112
Air operated (N.C.)	External release	<b>K6</b>	—	—	●	—	—	—	—	—	●	—	53
Air operated (N.O.)	Air operated (N.C.)	<b>K8</b>	—	—	—	●	—	—	—	●	—	—	83
—		<b>Nil</b>	Without valve module										

**Table (2) Valve Unit/Valve Plug Connector Assembly**

For DC:  
**SY100-30-4A** -   
For 100 VAC:  
**SY100-30-1A** -   
For 110 VAC:  
**SY100-30-3A** -   
Without lead wire:  
(with connector and 2 sockets only)  
**SY100-30-A**

Lead wire length

Nil	0.3 m
6	0.6 m
10	1 m
15	1.5 m
20	2 m
25	2.5 m
30	3 m
50	5 m

**How to order**  
If ordering vacuum module with 600 mm or the longer lead wire, specify both vacuum module and connector assembly part numbers.



(Ordering example)  
ZX100-K15LOZ-EC(-Q) ..... 1 pc.  
\*SY100-30-4A-6 ..... 2 pcs.

↳ The asterisk (\*) denotes the symbol for assembly.

**Warning**

When replacing a product that uses a connector assembly with rectifier, replace the connector assembly as well.

**Table (3) Vacuum Switch/Plug Connector Assembly**

For ZSE2 **ZS-10-5A** -   
For ZSE3 **ZS-20-5A** - 

Lead wire length

Nil	0.6 m
30	3 m
50	5 m

Note) If ordering switch with 5 m lead wire, specify both switch and lead wire connector part numbers.

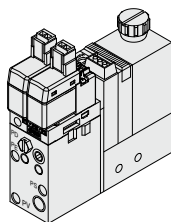
Ordering example)  
ZX100-K150Z-ECN(-Q) ..... 1 pc.  
\*SY100-30-4A-6 ..... 2 pcs.  
\*ZS-10-5A-50 ..... 1 pc.

↳ The asterisk (\*) denotes the symbol for assembly.

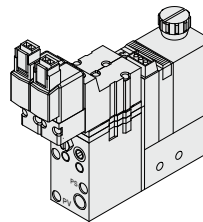
**Ejector System/Recommended Model** (The models below are for express delivery.)

Model	Combination		Solenoid valve rated voltage	Lead wire electrical entry	Light/Surge voltage suppressor	Vacuum switch unit /Filter unit	Vacuum switch electrical entry
	Supply valve (Pilot valve)	Release valve (Direct operated)				Suction filter (ZX1-F)	Connector type
<b>ZX100-K15LZ-F</b>	N.C. (V114)	N.C. (V114)	24 VDC	Plug connector type	With light/surge voltage suppressor	Suction filter (ZX1-F)	Connector type
<b>ZX100-K15LZ-EC</b>	N.C. (V114)	N.C. (V114)				Vacuum switch (ZSE2)	
<b>ZX100-K35MZ-EC</b>	N.O. (SYJ324M)	N.C. (SYJ314)					

\*The above models are for express delivery.



**ZX100-K15LZ-E** □



**ZX100-K35MZ-E** □

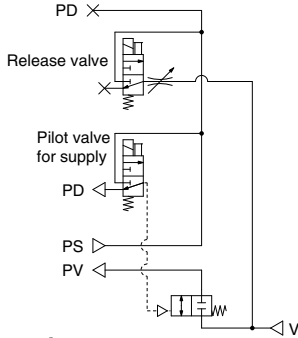
- ZA
- ZX**
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY □
- ZF □
- ZP □
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP

Related Equipment

## Vacuum Pump System/Combination of Supply Valve and Release Valve

### Combination Symbol: K1

Application: This combination is used for effecting control in accordance with electric signals.

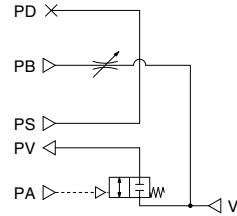


#### How to Operate

Condition	Valve	
	Supply valve Solenoid valve	Release valve Solenoid valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

### Combination Symbol: K6

Application: This combination is used for effecting control in accordance with air signals.

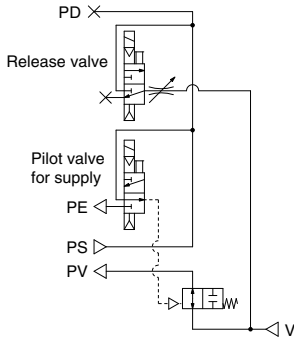


#### How to Operate

Condition	Valve	
	Supply valve External 3 port valve	Release valve External 2 port valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

### Combination Symbol: K3

Application: This combination is used for effecting control in accordance with electric signals. Because the supply valve is N.O., the pressure that is supplied to the ejector is not interrupted during a power outage; as a result, the state of suction can be maintained. This combination is used for preventing the workpieces from dropping during power outages.

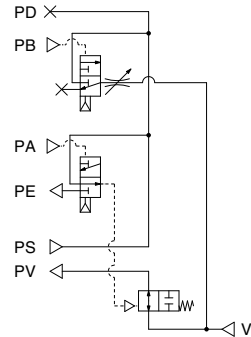


#### How to Operate

Condition	Valve	
	Supply valve Solenoid valve	Release valve Solenoid valve
1. Work adsorption	OFF	OFF
2. Vacuum release	ON	ON
3. Operation stop	ON	OFF

### Combination Symbol: K8

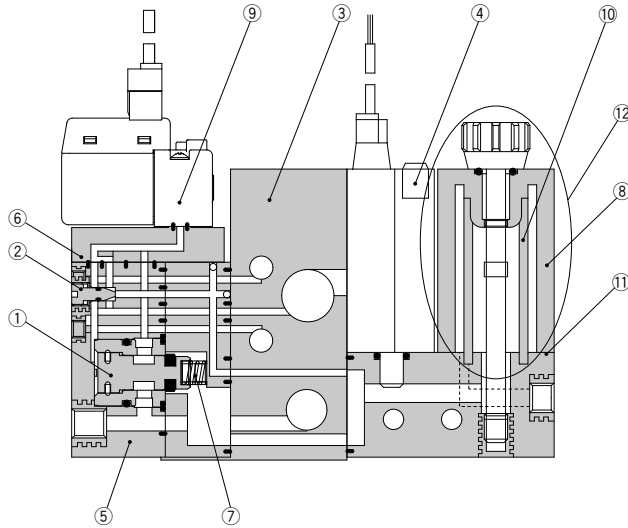
Application: This combination is used for effecting control in accordance with air signals. Because the supply valve is N.O., the pressure that is supplied to the ejector is not interrupted during a power outage; as a result, the state of suction can be maintained. This type is used for preventing the workpieces from dropping during power outages.



#### How to Operate

Condition	Valve	
	Supply valve Air operated valve	Release valve Air operated valve
1. Work adsorption	OFF	OFF
2. Vacuum release	ON	ON
3. Operation stop	ON	OFF

**Vacuum Pump System/Construction**



**Component Parts**

No.	Description	Material	Note
1	Poppet valve assembly	—	ZX1-PV-0
2	Release flow rate adjusting needle	Stainless steel	ZX1-NA
3	Manifold base	Aluminum	
4	Vacuum switch	—	ZSE2, ZSE3
5	Valve unit	—	ZX1-VB□□□□□□-D-□
6	Interface plate	—	(PV)/(PS↔PD)
7	Return spring	Stainless steel	
8 <sup>Note)</sup>	Filter case	Polycarbonate	

**Replacement Parts**

No.	Description	Material	Part no.
9	Pilot valve	—	Refer to "Table (2)", "(3)".
10	Filter element	PVA	ZX1-FE
11	Gasket	—	ZX1-FG
12	Filter case assembly	—	ZX1-FK-PC*

\* Component parts  
Filter case, filter element, tension bolt (including O-rings)  
(Gasket ⑪ is not included.)

Note) Caution when handling filter case

- The case is made of polycarbonate. Therefore, do not use it with or expose it to the following chemicals: paint thinner, carbon tetrachloride, chloroform, acetic ester, aniline, cyclohexane, trichloroethylene, sulfuric acid, lactic acid, watersoluble cutting oil (alkalinic), etc.
- Do not expose it to direct sunlight.

**Table (1) How to Order Pilot Valves**

No.	Component equipment		Model	Combination of supply and release valve
	Supply valve	Release valve		
1	Solenoid valve N.C. (V114)	Solenoid valve N.C. (V114)	Z1-V114-□□□□	K1
2	Solenoid valve N.O. (SYJ324M)	Solenoid valve N.C. (SYJ314)	ZX1-SYJ3 <sup>1</sup> / <sub>2</sub> 4□-□□□□	K3
3	Air operated N.O. (SYJA324)	Air operated N.C. (SYJA314)	ZX1-SYJA3 <sup>1</sup> / <sub>2</sub> 4	K6
4	Solenoid valve Air operated	Air operated Solenoid valve	No. 2 and 3 models only are applicable. Indicate each part number.	

**Table (3) How to Order Air Operated Valves**

**ZX1A-M5**

Port size

M5	M5 x 0.8	Pilot port/ External release port
----	----------	--------------------------------------

**⚠ Caution**

Turning the vacuum release flow volume adjusting needle clockwise reduces the vacuum release flow volume; the needle valve is fully closed when the needle stops turning. Turning the needle 2 full turns counterclockwise from the fully closed position renders the needle valve fully open. The needle will fall out if it is turned more than 4 full turns. In order to prevent the needle from loosening and falling out, the release flow rate adjusting needle with lock nut (ZX1-ND-L) is also available.

**Table (2) How to Order Solenoid Valves**

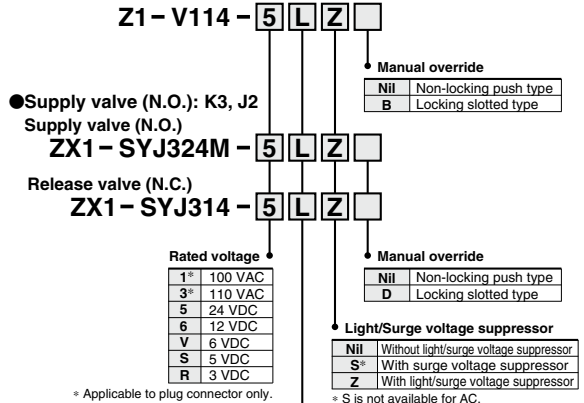
●Supply valve (N.C.): K1, J1

Z1 - V114 - 5 L Z □

●Supply valve (N.O.): K3, J2

Supply valve (N.O.)  
ZX1 - SYJ324M - 5 L Z □

Release valve (N.C.)  
ZX1 - SYJ314 - 5 L Z □



\* Applicable to plug connector only.

\* S is not available for AC.

**Electrical entry**

L	Connector (0.3 m)
LN	Connector (without lead wire)
LO	Without connector
M*	Connector (0.3 m)
MN*	Connector (without lead wire)
MO*	Without connector
G	Grommet (0.3 m)
H	Grommet (0.6 m)

\* In the case of Z1-V114, M, MN and MO cannot be selected.

- ZA
- ZX**
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP

Related Equipment

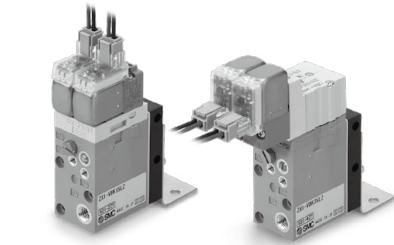
## Valve Unit: ZX1-VB

Refer to page 872 for details.

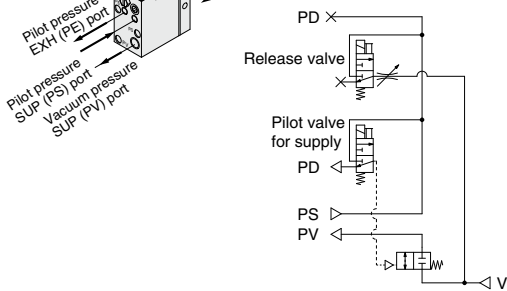
### Model/Specifications

Unit no.	ZX1-VB□□□□□□					
<b>Components</b>	Supply valve			Release valve		
	Pilot type			Direct operated type		
<b>Operation</b>	Solenoid valve		Air operated		Solenoid valve	External release
	N.C. (V114)	N.O. (SYJ324)	N.C. (ZX1A)	N.O. (SYJA324)	N.C. (V114)	N.C. (SYJ314)
<b>Cv factor</b>	0.17			0.008	0.08	—
<b>Supply pressure range of vacuum pressure SUP (PV) port</b>	-0.1 to 0 MPa					
<b>Supply pressure range of pilot pressure SUP (PS) port</b>	0.3 to 0.6 MPa					
<b>Supply pressure range of pilot pressure SUP (PA, PB) ports for supply and release<sup>Note)</sup></b>	PS port pressure to 0.6 MPa					
<b>Max. operating frequency</b>	5 Hz					
<b>Operating temperature range</b>	5 to 50°C					
<b>Interface plate symbol</b>	(PV)•(PS↔PD)					
<b>Standard accessory</b>	Bracket B (ZX1-OBB)					

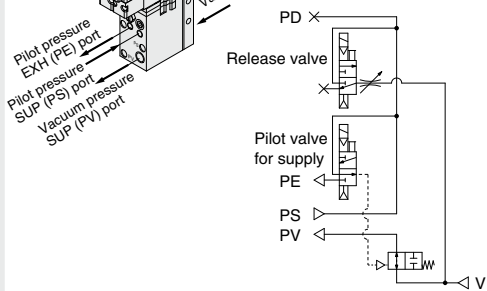
Note) The supply and release valves of this product have a structure which uses the pressure of the pilot pressure SUP (PS) port to operate them. Be sure to supply a pressure that is the pressure of the pilot pressure SUP (PS) port or more and 0.6 MPa or less to the pilot pressure SUP (PA, PB) ports for supply and release.



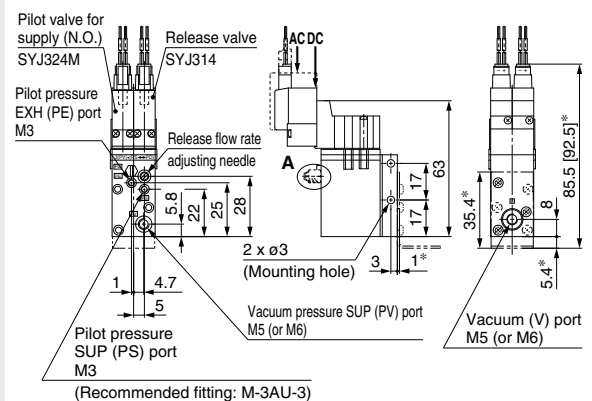
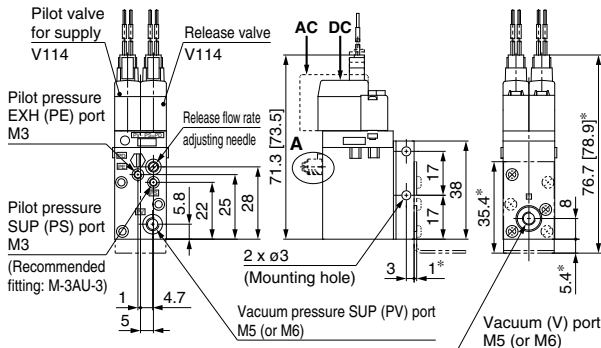
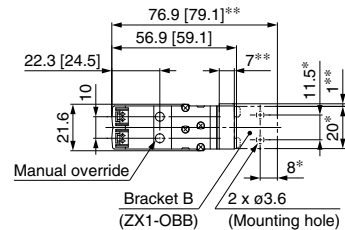
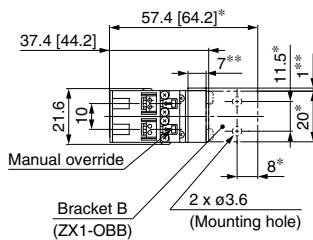
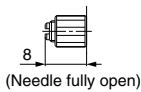
### K1 (Normally closed)



### K3 (Normally open)



#### A: Release flow rate adjusting needle with lock nut

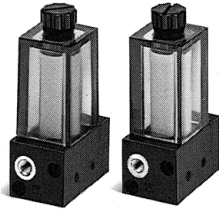


Note) Dimensions \*: For mounting bracket B \*\*: For mounting spacer

[ ]: AC

## Suction Filter Unit: ZX1-F

Refer to page 874 for details.



### Specifications

Unit no.		<b>ZX1-F</b>
Operating pressure range		-100 to 500 kPa
Operating temperature range		5 to 50°C
Filtration efficiency		30 μm
Filter media		PVA
Weight	37 g	ZX1-F-□ (With bracket A)
	29 g	ZX1-F-□-N (Without bracket A)

Note) If not operated within the specified range of pressure and temperature, trouble may be caused.

### How to Order

ZX1 - F - □ - □

PV, V port size

Nil	M5 x 0.8
Y	M6 x 1 (Semi-standard)

Bracket

Nil	With bracket A
N	Without bracket A

## Vacuum Pressure Switch Unit/ZSE2, ZSE3

Refer to pages 875 to 880 for details.

### Vacuum Pressure Switch

High speed response/10 ms  
Uses a carrier diffusion  
semiconductor pressure  
sensor



### Vacuum Pressure Switch Specifications

Refer to Best Pneumatics No. 6 for details.

Unit no.	<b>ZSE2-0X</b>	<b>ZSE3-0X</b>
Fluid	Air	
Set pressure range	0 to -101 kPa	
Hysteresis	3% Full span or less	
Repeatability	±1% Full span or less	
Temperature characteristics	±3% Full span or less	
Voltage	12 to 24 VDC (Ripple ±10% or less)	
Port size	M5 x 0.8, M6 x 1 (Semi-standard)	

Note) If not operated within the specified range of pressure and temperature, trouble may be caused.

#### • Filter case

#### ⚠ Caution

- The case is made of polycarbonate. Therefore, do not use it with or expose it to the following chemicals: paint thinner, carbon tetrachloride, chloroform, acetic ester, aniline, cyclohexane, trichloroethylene, sulfuric acid, lactic acid, water-soluble cutting oil (alkalinic), etc.
- Do not expose it to direct sunlight.

ZA

ZX

ZR

ZM

ZMA

ZQ

ZH

ZU

ZL

ZY□

ZF□

ZP□

SP

ZCUK

AMJ

AMV

AEP

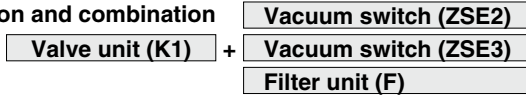
HEP

Related  
Equipment

# Series ZX

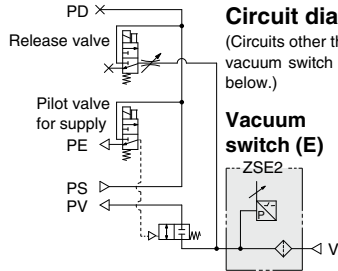
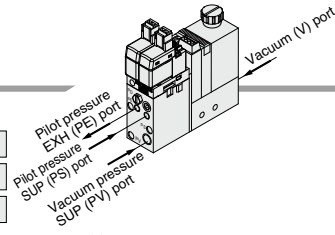
## Valve Unit: Type K1

Configuration and combination



Model

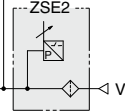
ZX100 — K1□□□□ — D□□□  
F



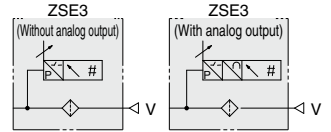
### Circuit diagram

(Circuits other than those with vacuum switch are shown as below.)

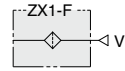
### Vacuum switch (E)



### Vacuum digital pressure switch (D)



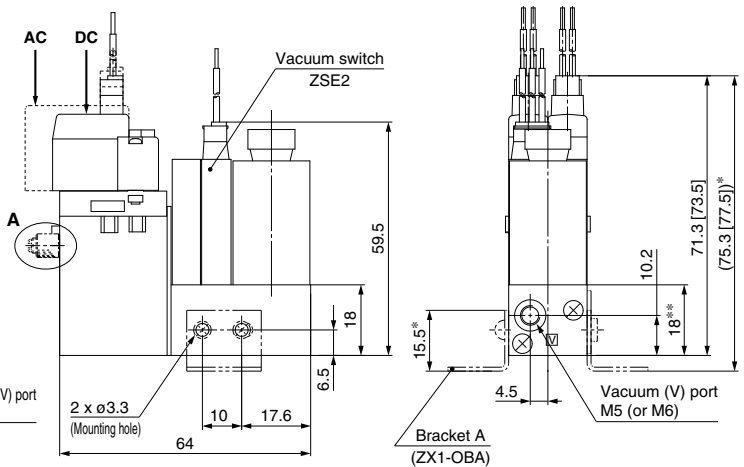
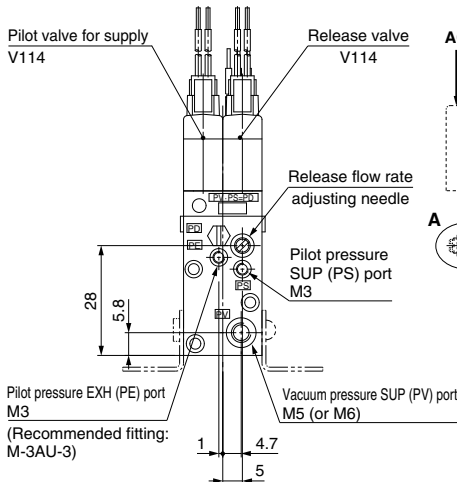
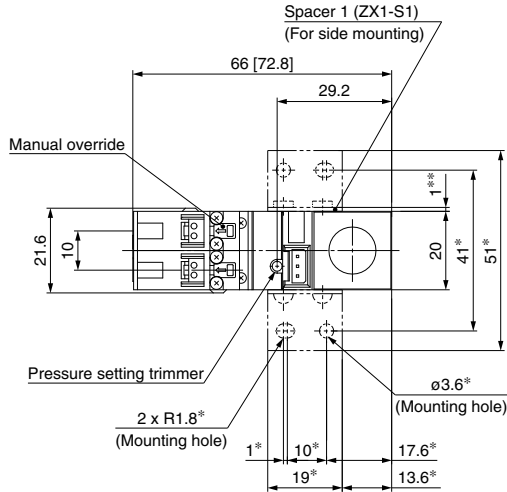
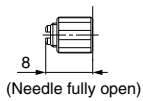
### Filter unit



### Vacuum switch (ZSE2)

ZX100-K1□□□□-E□

A: Release flow rate adjusting needle with lock nut

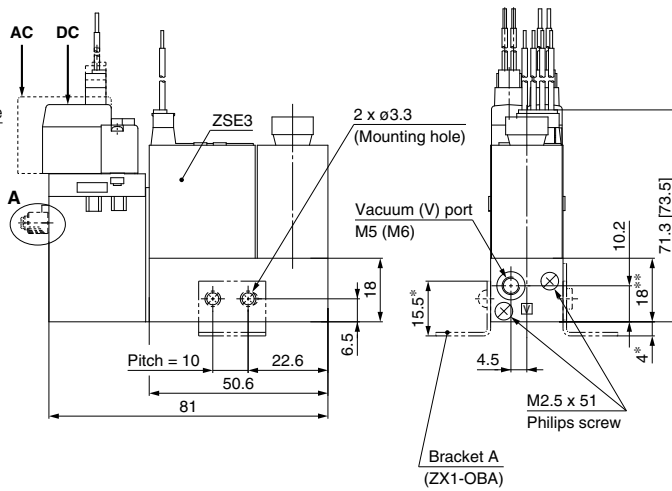
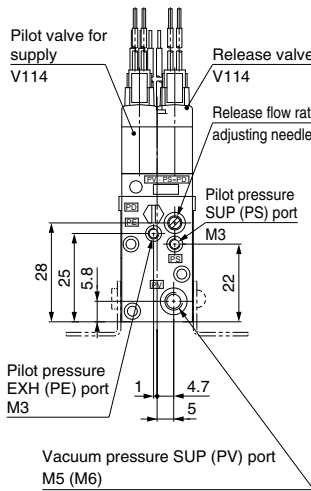
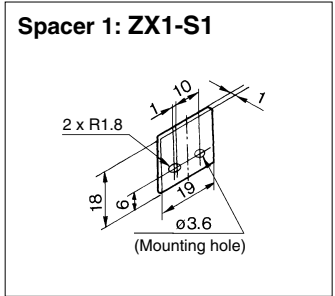
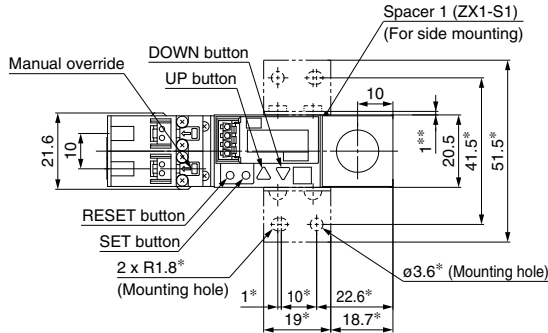
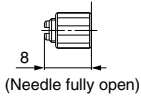


Note) Dimensions \*: For mounting bracket A \*\*: For mounting spacer 1.

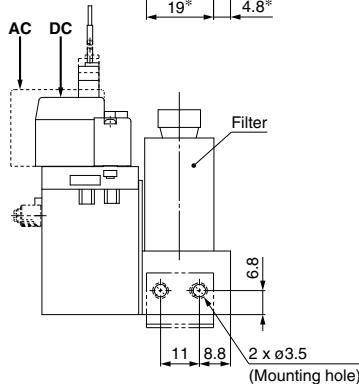
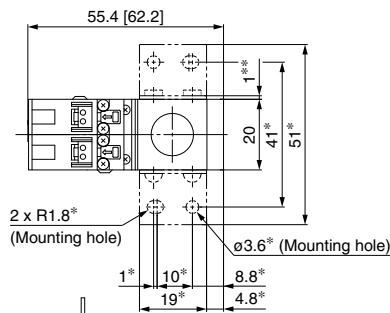
[ ]: AC

**Vacuum switch (ZSE3)**  
**ZX100-K1□□□□-D□□**

**A: Release flow rate adjusting needle with lock nut**



**Filter unit (F)**  
**ZX100-K1□□□□-F**



Note) At the pilot pressure SUP (PS) port, use a One-touch fitting or a barb fitting of one of the following sizes.  
If the lock nut for release flow rate adjusting needle is:

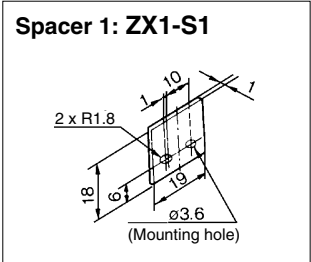
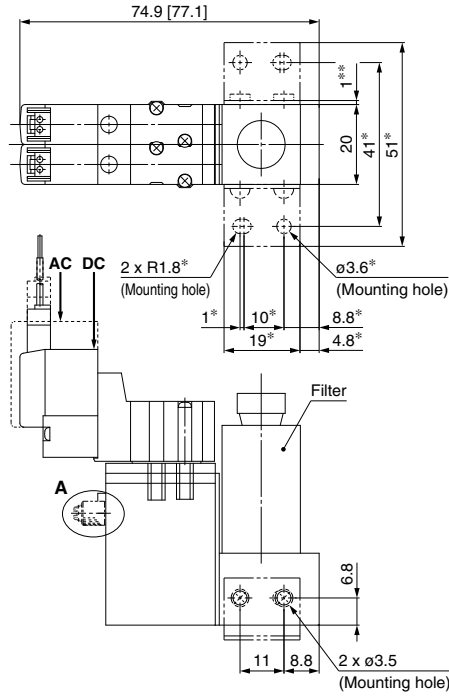
- Not attached:  
ø8 or smaller (e.g. KQ2S04-M3G)
- Attached:  
ø6 or smaller (e.g. M-3AU-3)

ZA
<b>ZX</b>
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP
Related Equipment





**Filter unit (F)**  
**ZX100-K3□□□□-F**

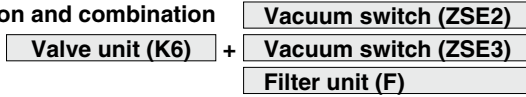


- ZA
- ZX**
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP
- Related Equipment

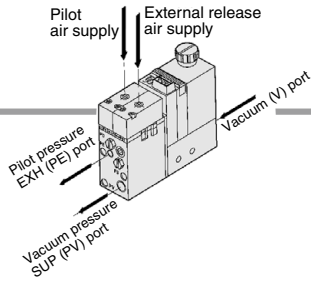
# Series ZX

## Valve Unit: Type K6

Configuration and combination

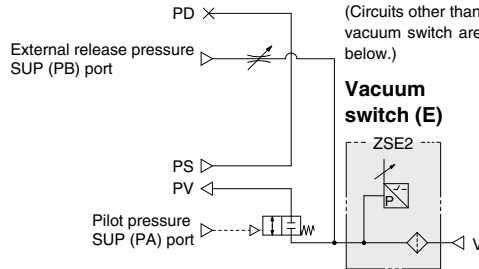


Model  E  
 ZX100 — K6 — F  
 D



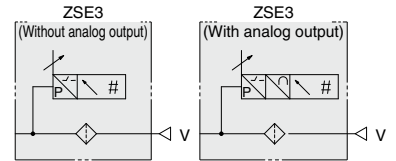
### Circuit diagram

(Circuits other than those with vacuum switch are shown as below.)

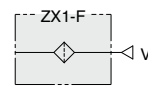


### Vacuum switch (E)

### Vacuum digital pressure switch (D)



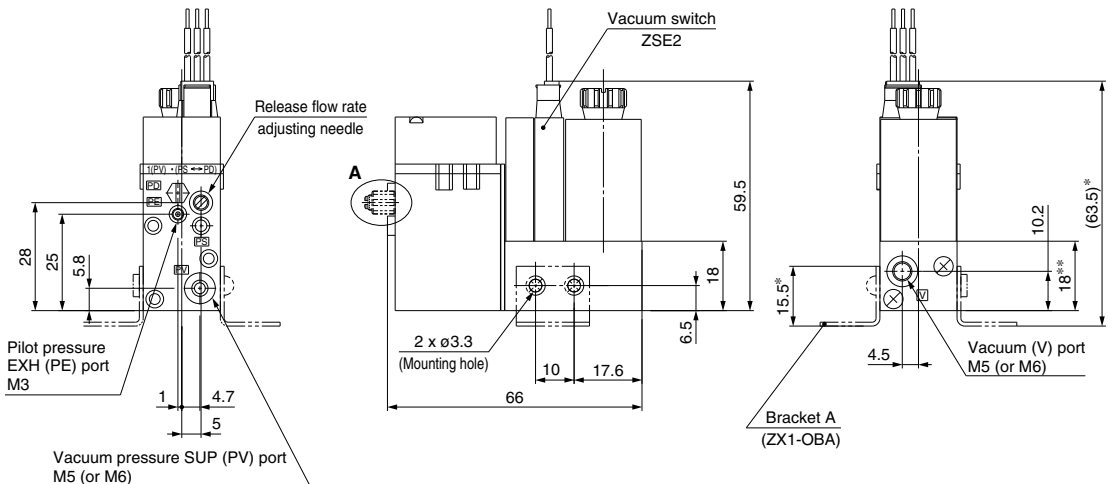
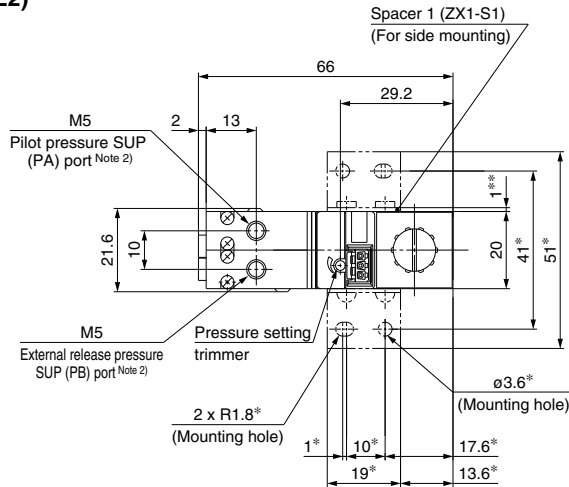
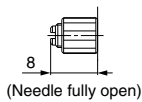
### Filter unit



### Vacuum switch (ZSE2)

ZX100-K6-E

A: Release flow rate adjusting needle with lock nut



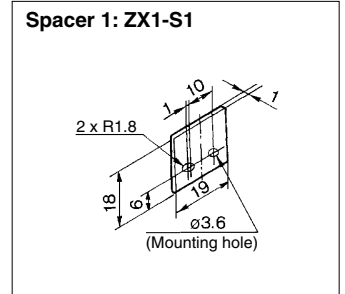
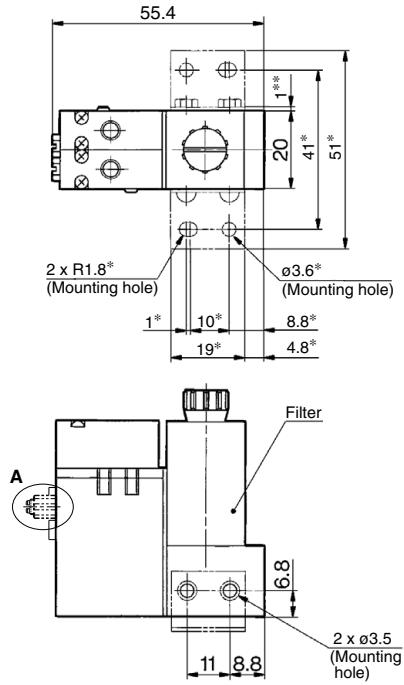
Note 1) Dimensions \*: For mounting bracket A \*\*: For mounting spacer 1.

Note 2) Combination of supply valve and release valve: K5, K6, J3

The supply and release valves of this product have a structure which uses the pressure of the pilot pressure SUP (PS) port to operate them. Be sure to supply a pressure that is the pressure of the pilot pressure SUP (PS) port or more and 0.6 MPa or less to the pilot pressure SUP (PA, PB) ports for supply and release.

[ ]: AC

**Filter unit (F)**  
**ZX100-K6-F**



**ZA**

**ZX**

**ZR**

**ZM**

**ZMA**

**ZQ**

**ZH**

**ZU**

**ZL**

**ZY** □

**ZF** □

**ZP** □

**SP**

**ZCUK**

**AMJ**

**AMV**

**AEP**

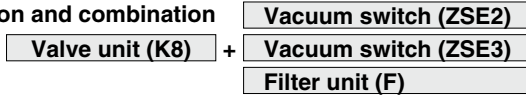
**HEP**

Related  
Equipment

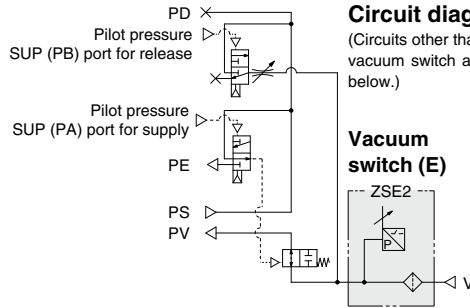
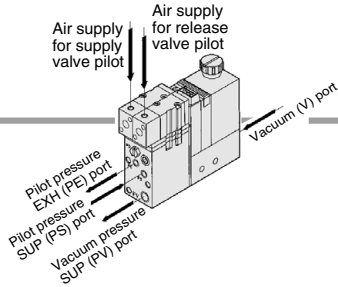
# Series ZX

## Valve Unit: Type K8

### Configuration and combination



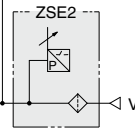
**Model**                    **E**   
**ZX100** — **K8** — **F**  
                                  **D**



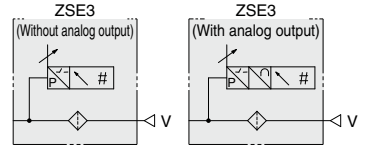
### Circuit diagram

(Circuits other than those with vacuum switch are shown as below.)

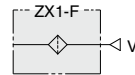
### Vacuum switch (E)



### Vacuum digital pressure switch (D)

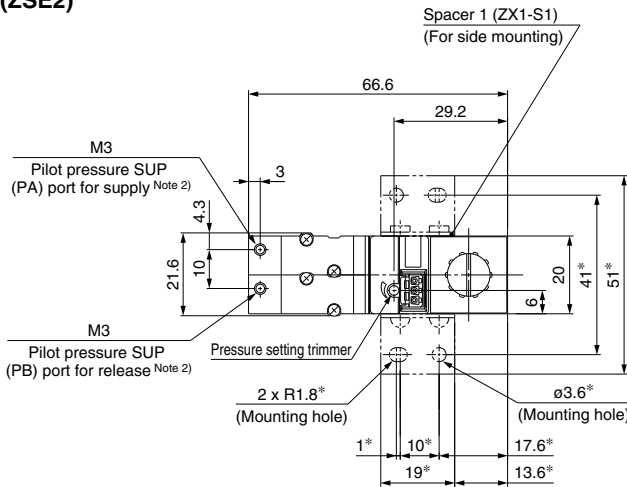


### Filter unit

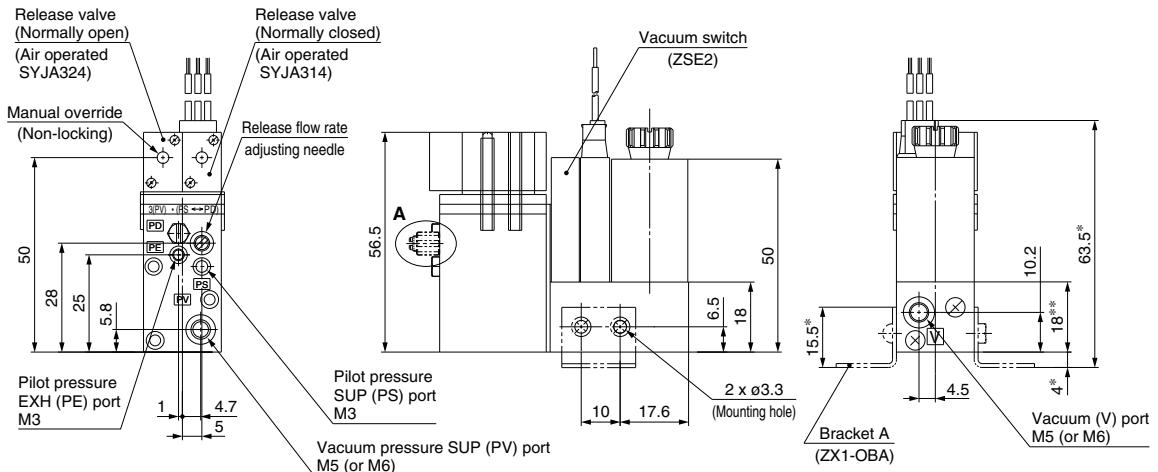
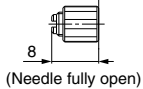


### Vacuum switch (ZSE2)

ZX100-K8-E



### A: Release flow rate adjusting needle with lock nut

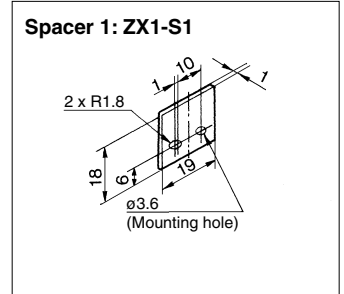
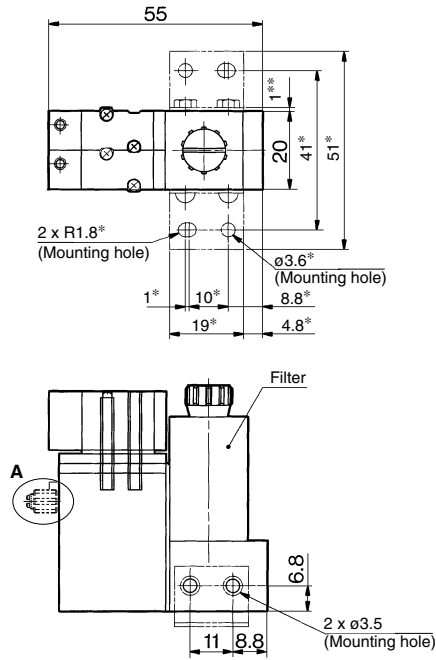


Note 1) Dimensions \*: For mounting bracket A \*\*: For mounting spacer 1.

Note 2) Combination of supply valve and release valve: K4, K7, K8, J4, D4

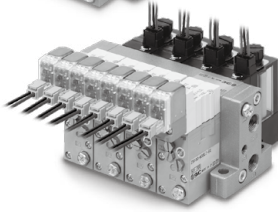
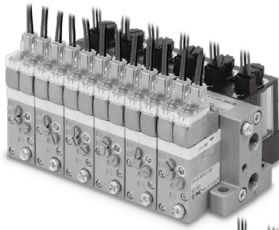
The supply and release valves of this product have a structure which uses the pressure of the pilot pressure SUP (PS) port to operate them. Be sure to supply a pressure that is the pressure of the pilot pressure SUP (PS) port or more and 0.6 MPa or less to the pilot pressure SUP (PA, PB) ports for supply and release.

**Filter unit (F)**  
**ZX100-K8-F**



ZA
<b>ZX</b>
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP
Related Equipment

## Vacuum Pump System/Manifold Specifications



### Specifications

<b>Max. number of units</b>		Max. 8 units
<b>Port size</b>	<b>Supply port [PV]</b>	1/8 (Rc, NPTF, G)
	<b>Exhaust port [EXH]</b>	1/8 (Rc, NPTF, G)
<b>Weight</b>		1 station: 110 g (45 g per additional station)

Note 1) PD port: Blank

Note 2) Vacuum from both sides of PV port for 6 or more stations of ZX100 external vacuum pump manifold.

### Air Supply

Supply port location	Manifold Port		Right side	
	Left side	Right side	PV	PS
<b>L (Left)</b>	○	○	●	●
<b>R (Right)</b>	●	●	○	○
<b>B (Both sides)</b>	○	○	○	○

○ : Vacuum supply from PV port    ○ : Air supply from PS port

● : Plugged

Note) All ports for each valve unit are provided with plugs.

## How to Order Manifold

### <Manifold base>

**ZZX1 06 - [ ] R**

#### Stations

01	1
02	2
⋮	⋮
08	8

#### Thread of supply and exhaust valve

Nil	Rc
F	G (Note)
T	NPTF

Note) G thread

The thread ridge shape is compatible with the G thread standard (JIS B 0202), but other shapes are not conforming to ISO16030 and ISO1179.

#### Supply port location

Symbol	Supply port location *1	Air Supply	
		Vacuum supply	Air supply
<b>R</b>	Right side	PV port on the right side	PS port on the right side
<b>L</b>	Left side	PV port on the left side	PS port on the left side
<b>B</b>	Both sides	PV port on both sides	PS port on both sides

- \* 1 Viewed from the front side of valve unit, confirm the port location on the right and/or left side.
- \* 2 EXH ports are released to atmospheric pressure in both sides. Plugs are always attached to PD ports and all ports of the valve unit.

(Ordering example)

**ZZX106-R** .....1 pc. (Manifold base)

\*ZX100-K15LZ-EC(-Q)

.....5 pcs. (Vacuum single unit)

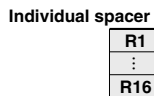
\*ZX1-BM1

.....1 pc. (Blank plate)

### <Individual spacer>

Use the individual spacer when separating the supply and pilot pressure exhaust ports of the manifold ejector.

**ZX1 - R1 - 1**



\*Refer to the individual spacer.

(Ordering example)  
If installed on station 1 and station 3:  
**ZZX106-R** .....1 pc.

\*ZX100-K15LZ-EC(-Q)  
.....6 pcs.

\*ZX1-R1-1

\*ZX1-R1-3

\*ZX1-R16 (Dummy spacer)

.....4 pcs.

#### Arrangement

(First station from the right end of the valve side is station 1.)

Nil	All stations
1	Station 1 only
⋮	⋮
8	Station 8 only

\*When spacers are mounted alternately, specify them together.

\*When retrofitting, 3 pcs. of M2.5 x 32 (for ZX) are necessary. A dummy spacer (ZX1-R16) must be mounted on the stations on which individual spacers are not mounted.

### About individual spacers

- Manifold supply or valve unit supply can be selectable for each port. In the table below, ports with the symbol † mean that they are manifold supply, while others are individual supply from the valve unit.
- Symbols in the table below are printed on the surface of individual spacers.

Part no.	Symbol	Part no.	Symbol
<b>ZX1-R1</b>	R1	<b>ZX1-R 9</b>	R 9 † PV
<b>R2</b>	R2 † PE	<b>R10</b>	R10 † PV † PE
<b>R3</b>	R3 † PD	<b>R11</b>	R11 † PV † PD
<b>R4</b>	R4 † PD † PE	<b>R12</b>	R12 † PV † PD † PE
<b>R5</b>	R5 † PS	<b>R13</b>	R13 † PV † PS
<b>R6</b>	R6 † PS † PE	<b>R14</b>	R14 † PV † PS † PE
<b>R7</b>	R7 † PS † PD	<b>R15</b>	R15 † PV † PS † PD
<b>R8</b>	R8 † PS † PD † PE	<b>R16</b>	R16 † PV † PS † PD † PE

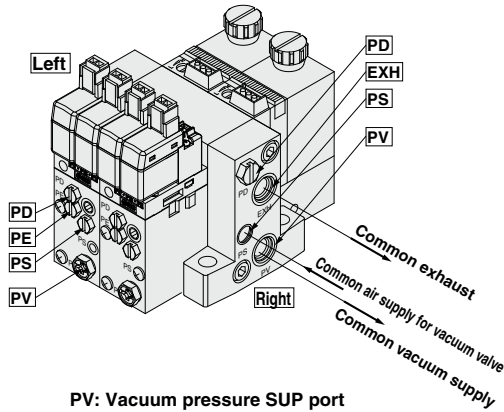
### ⚠ Caution when ordering manifold

The asterisk denotes the symbol for assembly.

Prefix it to the ejector part numbers to be mounted. When it is not added, the manifold base and ejector are shipped separately.

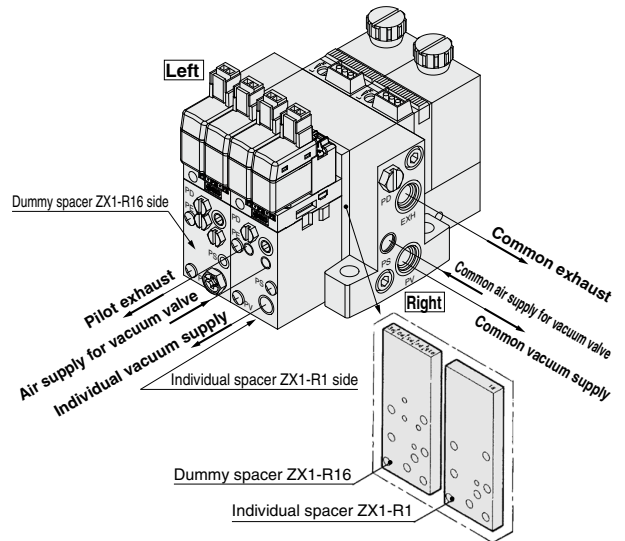
### Manifold/System Circuit Example

When not using individual spacer

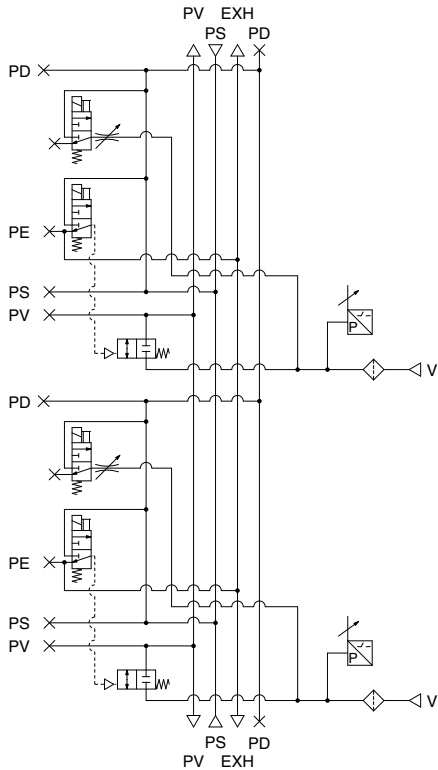


PV: Vacuum pressure SUP port  
PS: Pilot pressure SUP port  
PD: Release pressure SUP port  
PE: Pilot pressure EXH port  
EXH: Common EXH port

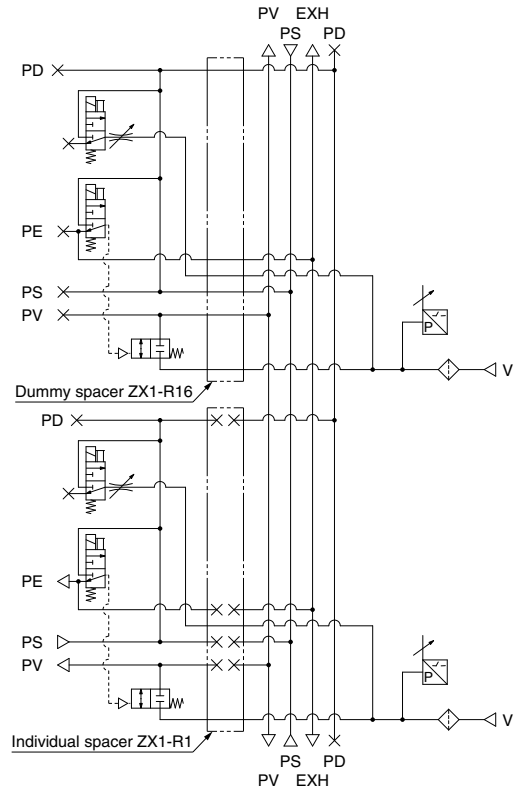
When using individual spacer  
(When using ZX1-R1)



<System circuit example>



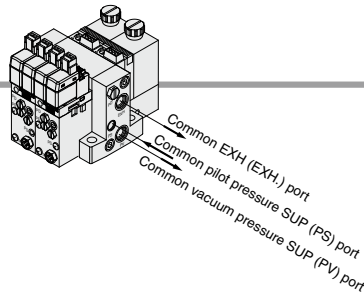
<System circuit example>



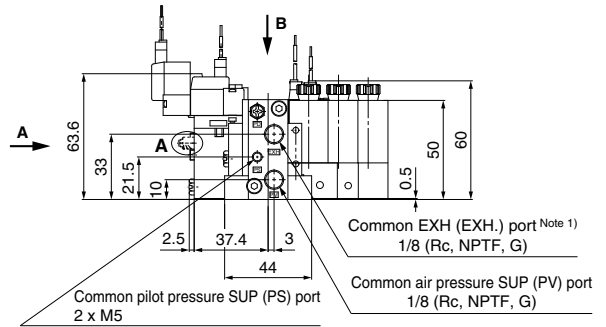
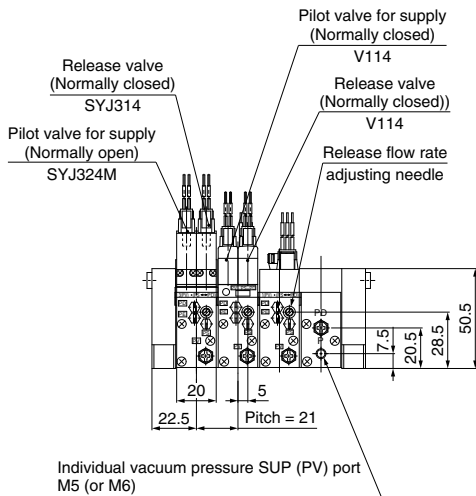
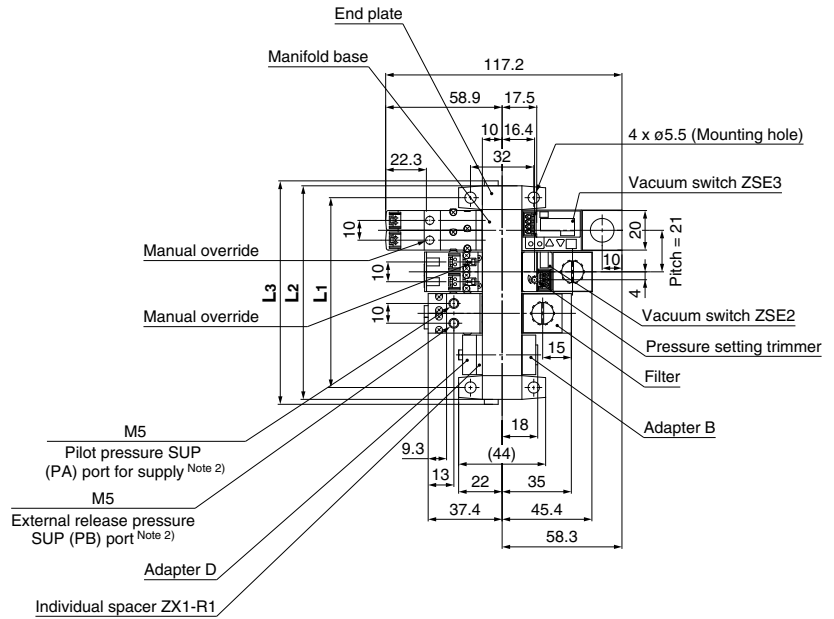
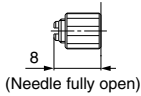
ZA
<b>ZX</b>
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP

Related Equipment

## Vacuum Pump System Manifold



**A:** Release flow rate adjusting needle with lock nut



Note 1) The common exhaust port (EXH.) is also used as the pilot pressure exhaust (PE) port of pilot valve. Use while the port is open to the atmosphere.

Note 2) Combination of supply valve and release valve: K4, K5, K6, K7, K8, J3, J4, D4

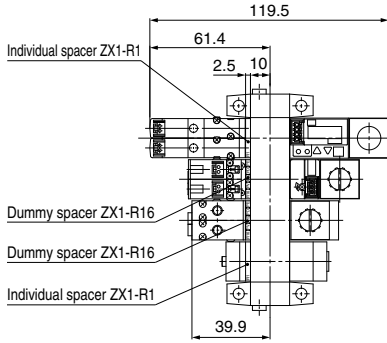
The supply and release valves of this product have a structure which uses the pressure of the pilot pressure SUP (PS) port to operate them. Be sure to supply a pressure that is the pressure of the pilot pressure SUP (PS) port or more and 0.6 MPa or less to the pilot pressure SUP (PA, PB) ports for supply and release.

		(mm)							
Symbol	Stations	1	2	3	4	5	6	7	8
L1		33	54	75	96	117	138	159	180
L2		45	66	87	108	129	150	171	192
L3		50	71	92	113	134	155	176	197

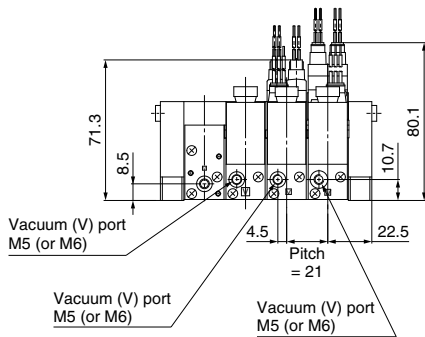
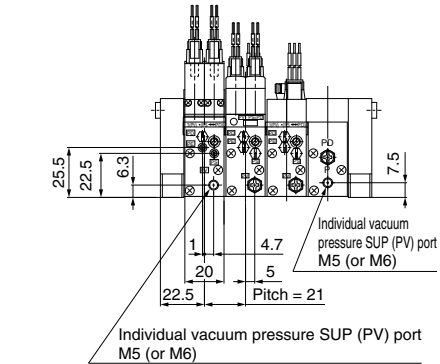


(In the case of individual spacer)

**B cross section**

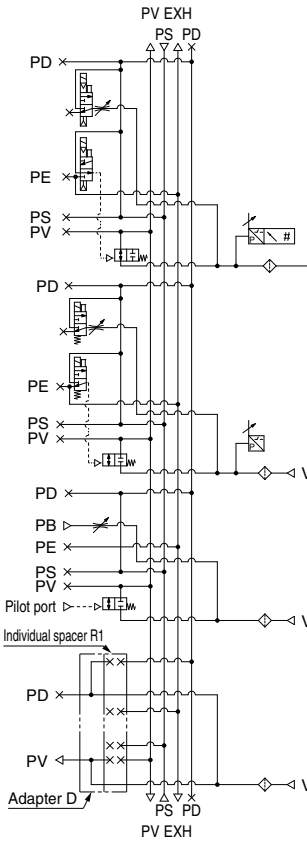


**A cross section**

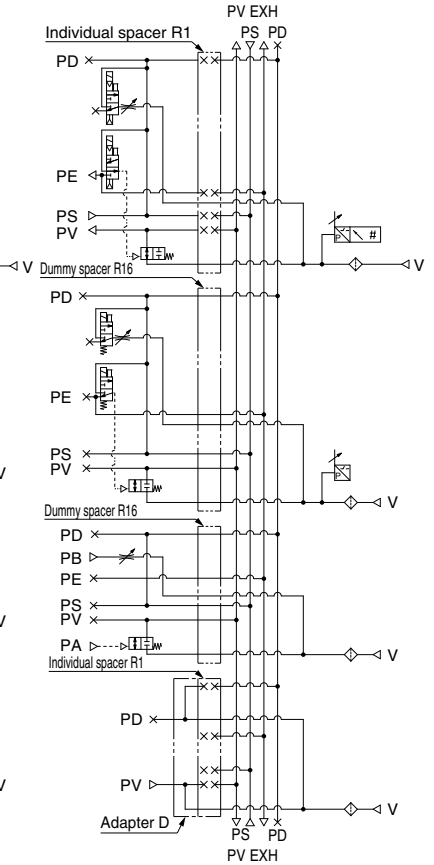


System circuit example

(Standard)



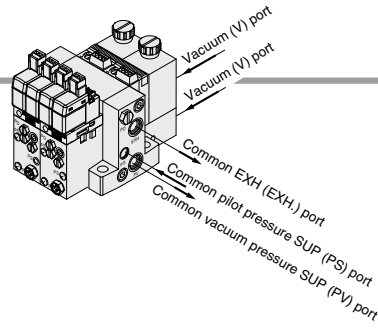
(Semi-standard)  
(In the case of individual spacer)



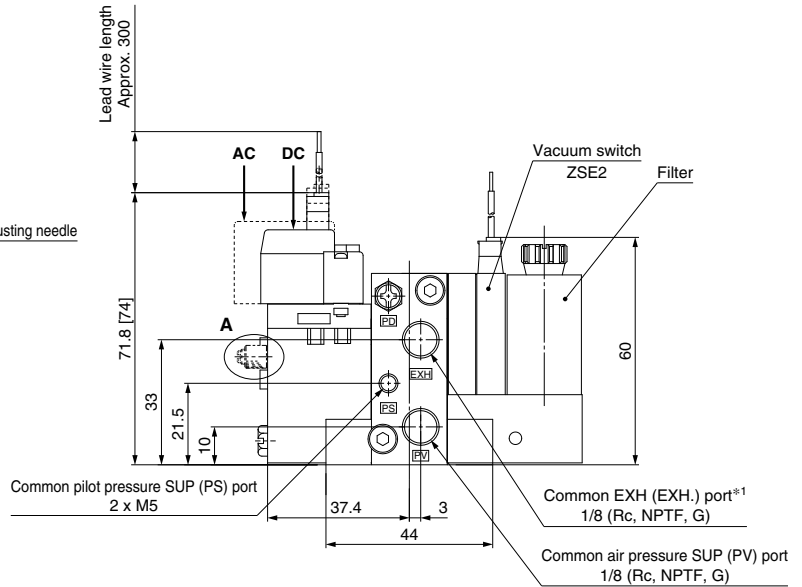
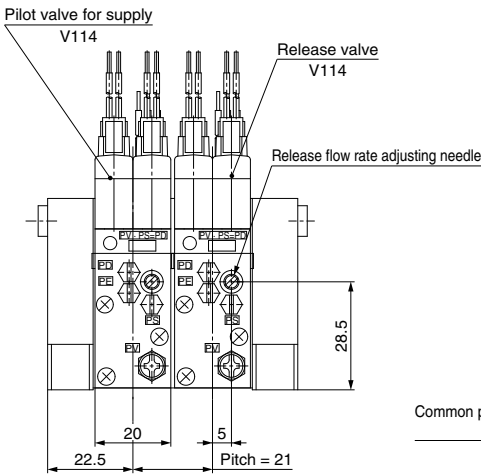
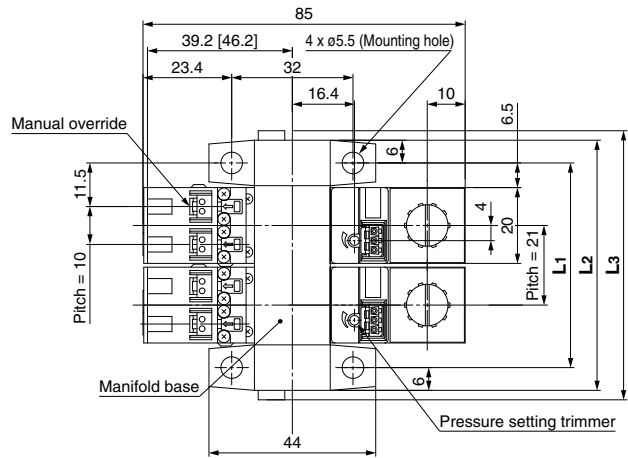
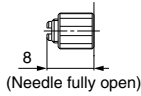
ZA
<b>ZX</b>
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ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP
Related Equipment

# Series ZX

## Vacuum Pump System Manifold: Type K1

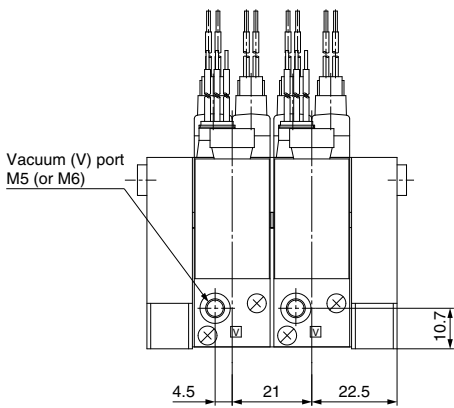


**A: Release flow rate adjusting needle with lock nut with lock nut**

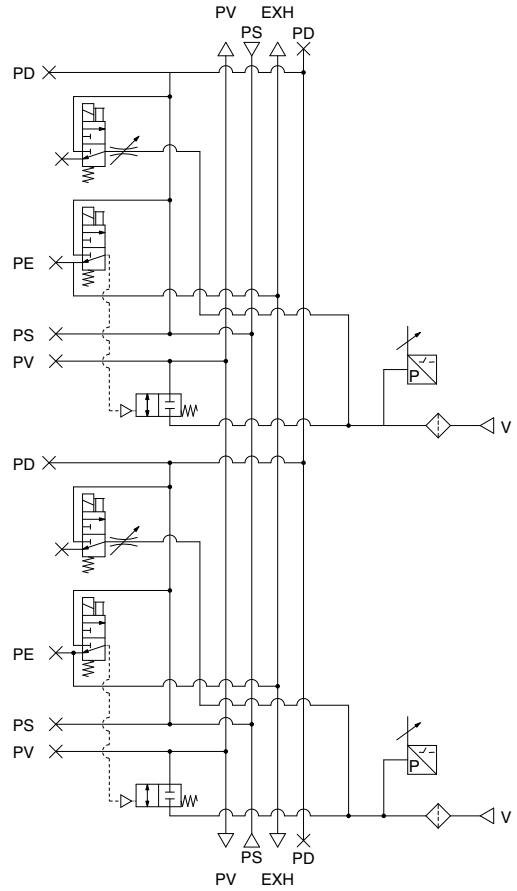


\*1 The common exhaust port (EXH.) is also used as the pilot pressure exhaust (PE) port of pilot valve. Use while the port is open to the atmosphere.

		(mm)							
Symbol	Stations	1	2	3	4	5	6	7	8
<b>L1</b>		33	54	75	96	117	138	159	180
<b>L2</b>		45	66	87	108	129	150	171	192
<b>L3</b>		50	71	92	113	134	155	176	197



**Circuit diagram**



**ZA**

**ZX**

**ZR**

**ZM**

**ZMA**

**ZQ**

**ZH**

**ZU**

**ZL**

**ZY□**

**ZF□**

**ZP□**

**SP**

**ZCUK**

**AMJ**

**AMV**

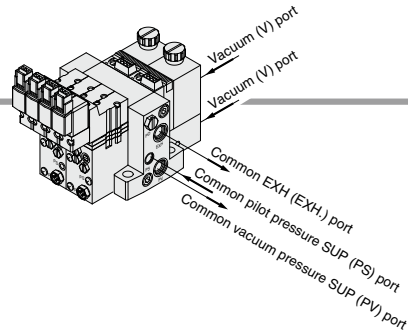
**AEP**

**HEP**

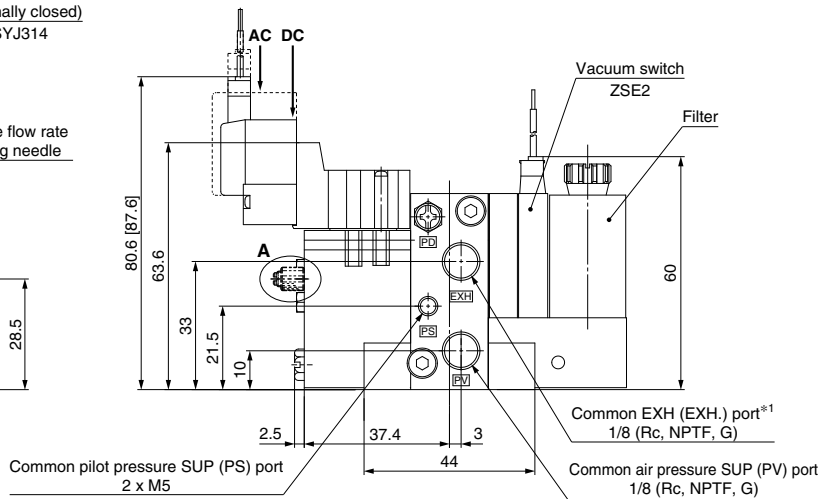
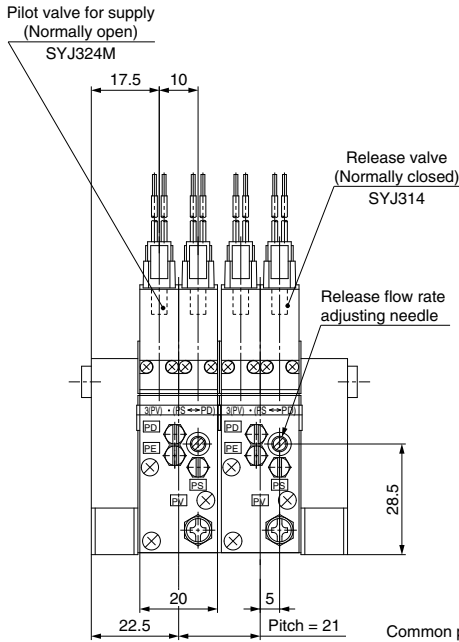
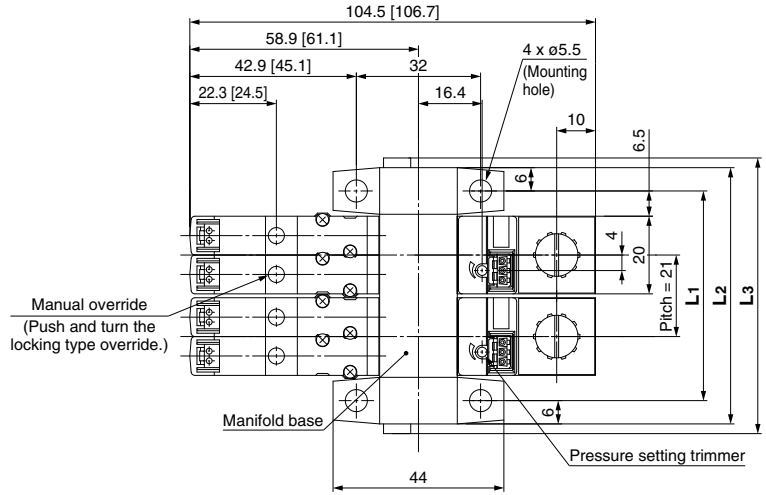
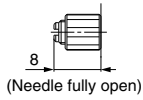
Related  
Equipment

# Series ZX

## Vacuum Pump System Manifold: Type K3



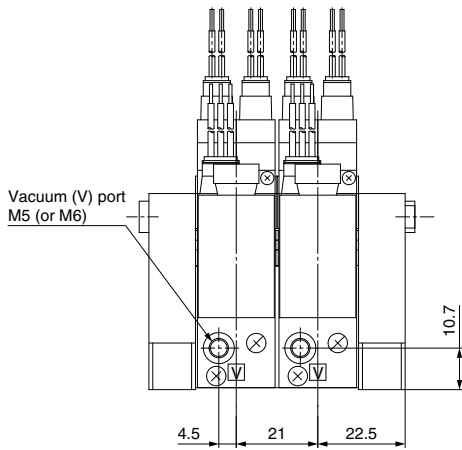
**A:** Release flow rate adjusting needle with lock nut



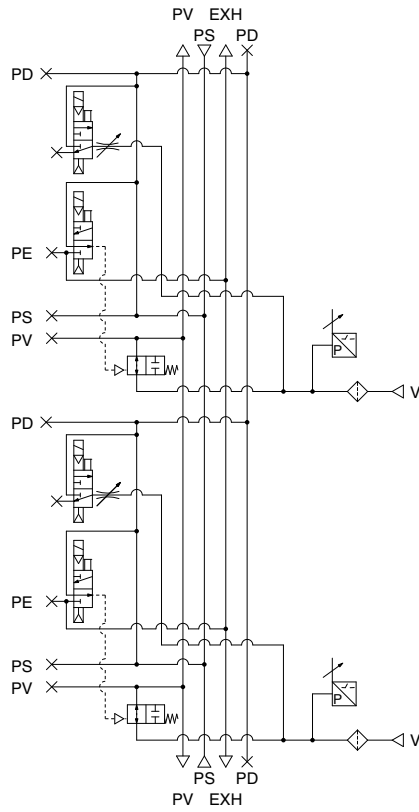
\*1 The common exhaust port (EXH.) is also used as the pilot pressure exhaust (PE) port of pilot valve. Use while the port is open to the atmosphere.

[ ]: AC

		(mm)							
Symbol	Stations	1	2	3	4	5	6	7	8
L1		33	54	75	96	117	138	159	180
L2		45	66	87	108	129	150	171	192
L3		50	71	92	113	134	155	176	197



Circuit diagram



**ZA**

**ZX**

**ZR**

**ZM**

**ZMA**

**ZQ**

**ZH**

**ZU**

**ZL**

**ZY** □

**ZF** □

**ZP** □

**SP**

**ZCUK**

**AMJ**

**AMV**

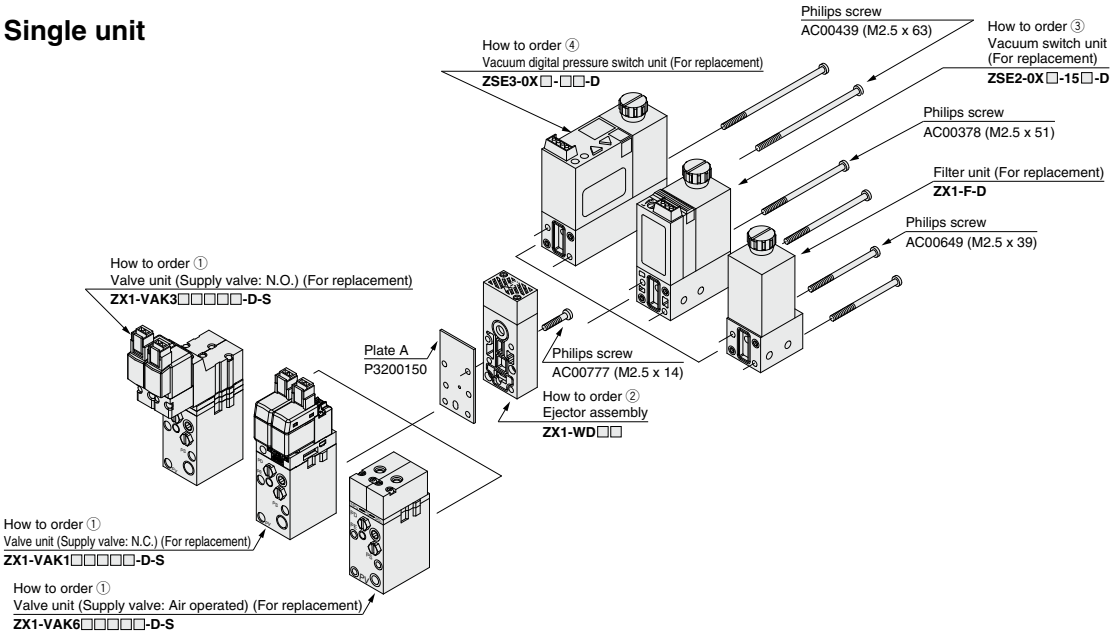
**AEP**

**HEP**

Related  
Equipment

## Ejector System/Unit Construction (Refer to below for unit replacement.)

### Single unit



### How to Order Unit for Replacement

#### ① Valve unit

**ZX1-V A K1 5 L Z B - L - D - S -**

For ejector system

Combination of supply valve and release valve (Refer to page 867 for details.)

Solenoid valve rated voltage

		CE-compliant
1*	100 VAC 50/60 Hz	—
3*	110 VAC 50/60 Hz	—
5	24 VDC	●
6	12 VDC	●
V	6 VDC	●
S	5 VDC	●
R	3 VDC	●

\* Applicable to plug connector only. When replacing a product that uses a connector assembly with rectifier, replace the connector assembly as well. (Table (2) on page 867)

Unit for replacement	Release flow rate adjusting needle
Nil	Without lock nut
L	With lock nut

Unit for replacement	PV port size
Nil	M5 x 0.8
Y	M6 x 1 (Semi-standard)

Unit for replacement	Manual operation
Nil	Non-locking push type
B	Locking slotted type

Unit for replacement	Light/Surge voltage suppressor
Nil	None
Z	With light/surge voltage suppressor

Unit for replacement	Electrical entry
L	L plug connector

#### ③ Vacuum switch unit

**ZSE2-0X - 15 C - D**

Unit for replacement	PV, V port size
Nil	M5 x 0.8
Y	M6 x 1 (Semi-standard)

Unit for replacement	Output specifications
15	NPN open collector
55	PNP open collector

Unit for replacement	Piping specifications
Nil	Grommet (0.6 m)
L	Grommet (3 m)
C	Connector (0.6 m)
CL	Connector (3 m)
CN	Without connector

#### ④ Vacuum digital pressure switch unit

**ZSE3-0X - 21 C - D**

Unit for replacement	PV, V port size
Nil	M5 x 0.8
Y	M6 x 1 (Semi-standard)

Unit for replacement	Output specifications
21	2 outputs/without analog output
22	2 outputs/with analog output
23	1 output (with trouble detection)/without analog output
24	1 output (with trouble detection)/with analog output

Unit for replacement	Piping specifications
Nil	Grommet (0.6 m)
L	Grommet (3 m)
C	Connector (0.6 m)
CL	Connector (3 m)
CN	Without connector

Note) Analog output is available only on grommet type.

#### ② Ejector assembly

**ZX1-W D 05 1**

Unit for replacement

Unit for replacement	Nozzle diameter
05	0.5 mm
07	0.7 mm
10	1.0 mm

Ejector exhaust

Unit for replacement	Ejector exhaust
1	Built-in silencer
2	Port exhaust Rc 1/8
2T	Port exhaust 1/8-NPTF

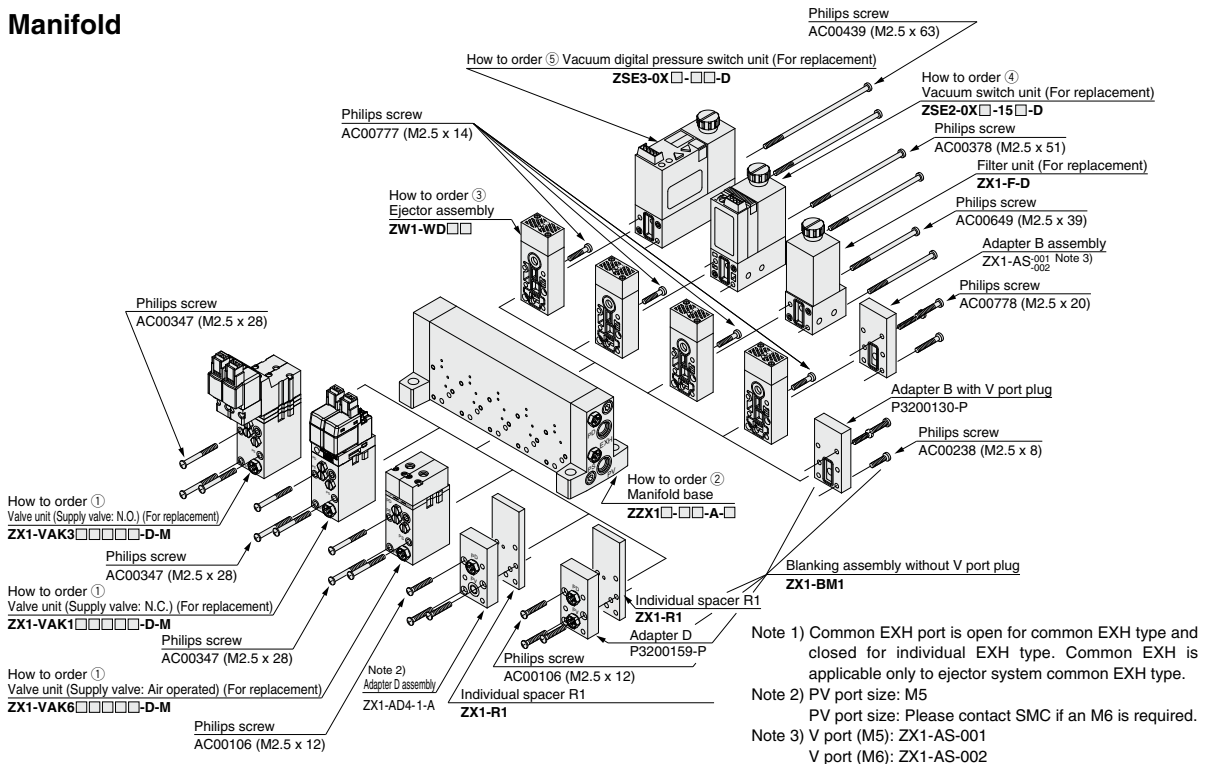
D: Unit for replacement

Ex.) If a filter unit is replaced for a vacuum switch on ZX1071-K15LZ-F, indicate as ZSE2-0X-15C-D. In this case, mounting screws AC00378 (M2.5 x 51) (2 pcs.) are required.

If the unit is used on its own, not combined with others, "D" is not required. (Valve unit, ejector assembly and switch unit)

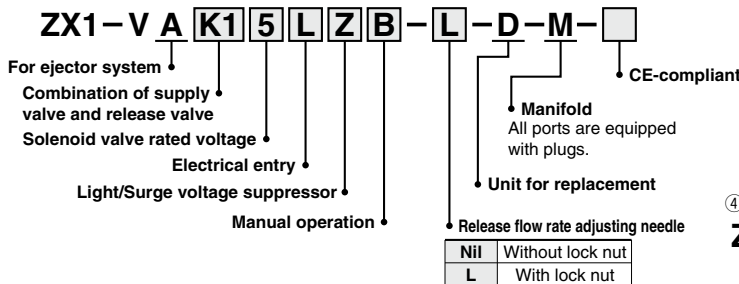
Ex.) ZSE2-0X-15C, ZX1-VAK15LZ, ZX1-W051

**Manifold**

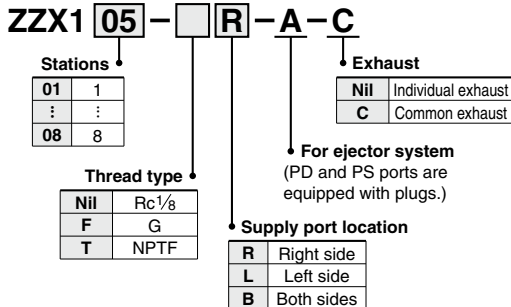


**How to Order Unit for Replacement**

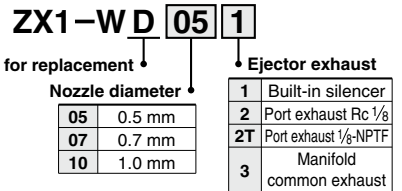
① Valve unit \* Refer to page 872 for details.



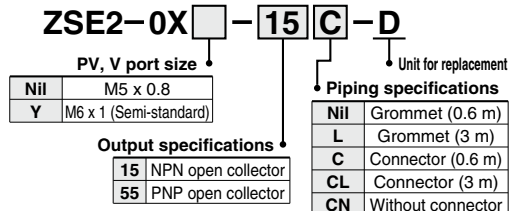
② Manifold base



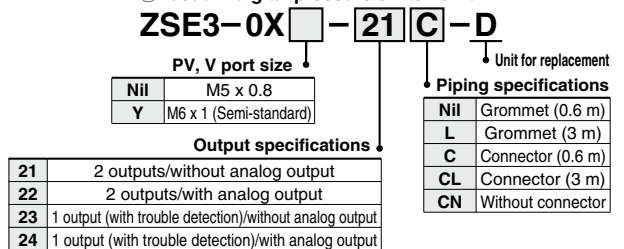
③ Ejector assembly



④ Vacuum switch unit



⑤ Vacuum digital pressure switch unit



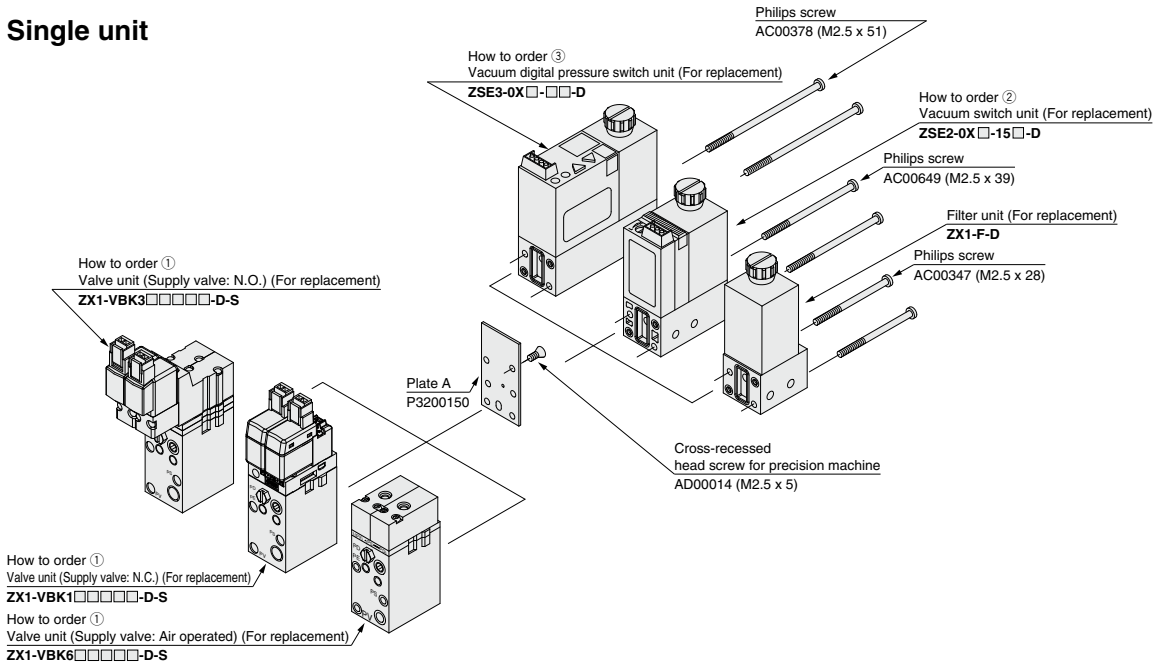
Note) Analog output is available only on grommet type.

- ZA
- ZX**
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP

Related Equipment

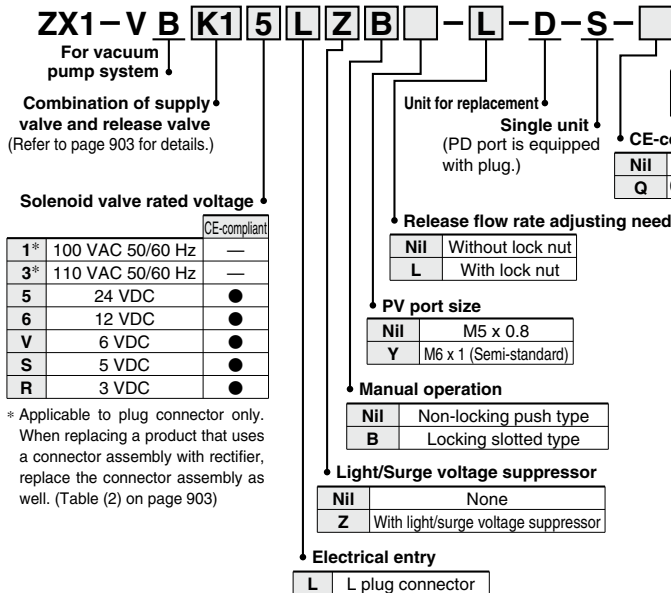
## Vacuum Pump System/Unit Construction (Refer to below for unit replacement.)

### Single unit

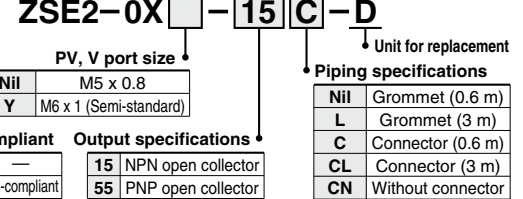


### How to Order Unit for Replacement

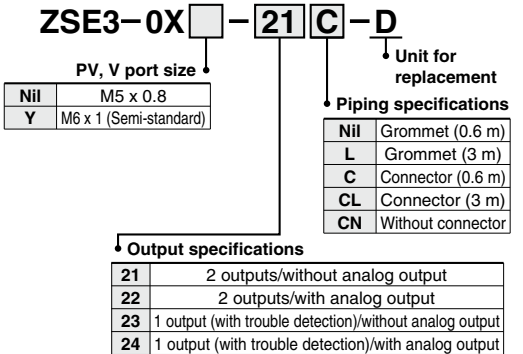
#### ① Valve unit



#### ② Vacuum switch unit



#### ③ Vacuum digital pressure switch unit



Note) Analog output is available only on grommet type.

D: Unit for replacement

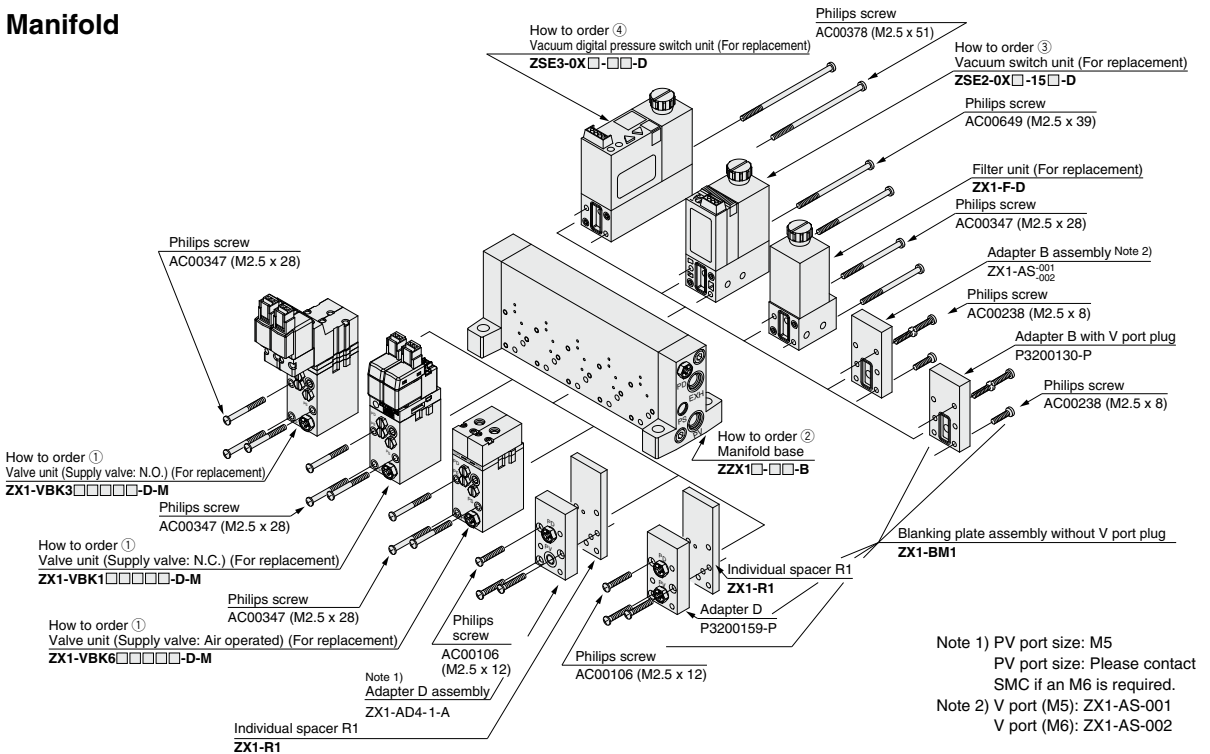
Ex.) If a filter unit is replaced for a vacuum switch on ZX100-K15LZ-F, indicate as ZSE2-0X-15C-D. In this case, mounting screws AC00796 (M2.5 x 39) (2 pcs.) are required.

If the unit is used on its own, not combined with others, "D" is not required.

Ex.) ZSE2-0X-15C, ZX1-VBK15LZ

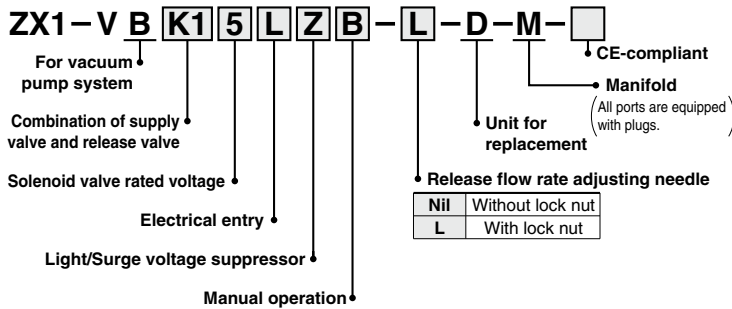


## Manifold

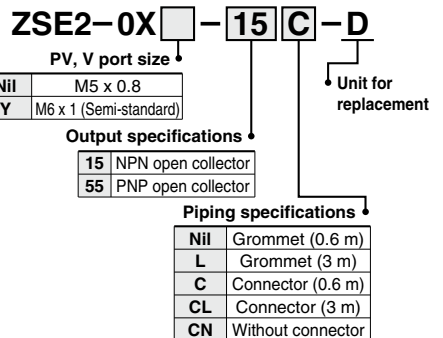


## How to Order Unit for Replacement

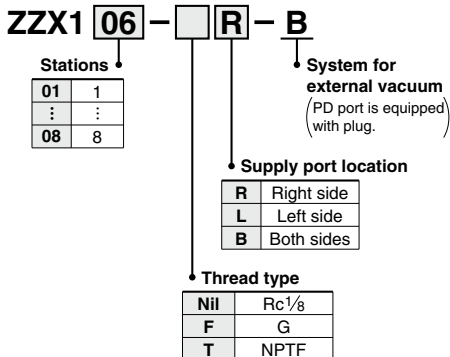
① Valve unit \* Refer to page 906 for details.



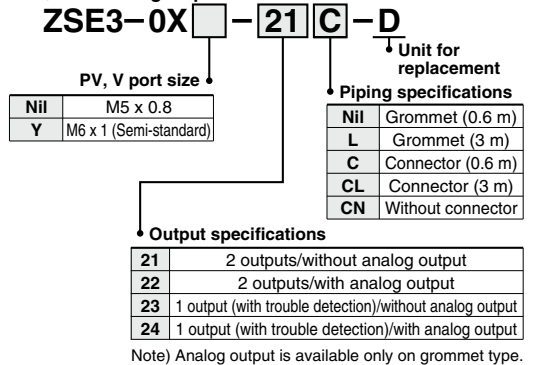
③ Vacuum switch unit



② Manifold base \* Refer to page 916 for details.



④ Vacuum digital pressure switch unit



ZA  
**ZX**  
 ZR  
 ZM  
 ZMA  
 ZQ  
 ZH  
 ZU  
 ZL  
 ZY□  
 ZF□  
 ZP□  
 SP  
 ZCUK  
 AMJ  
 AMV  
 AEP  
 HEP

Related Equipment

## Vacuum Pump System/Manifold Assembly from Individual Unit

### Manifold Assembly from individual unit

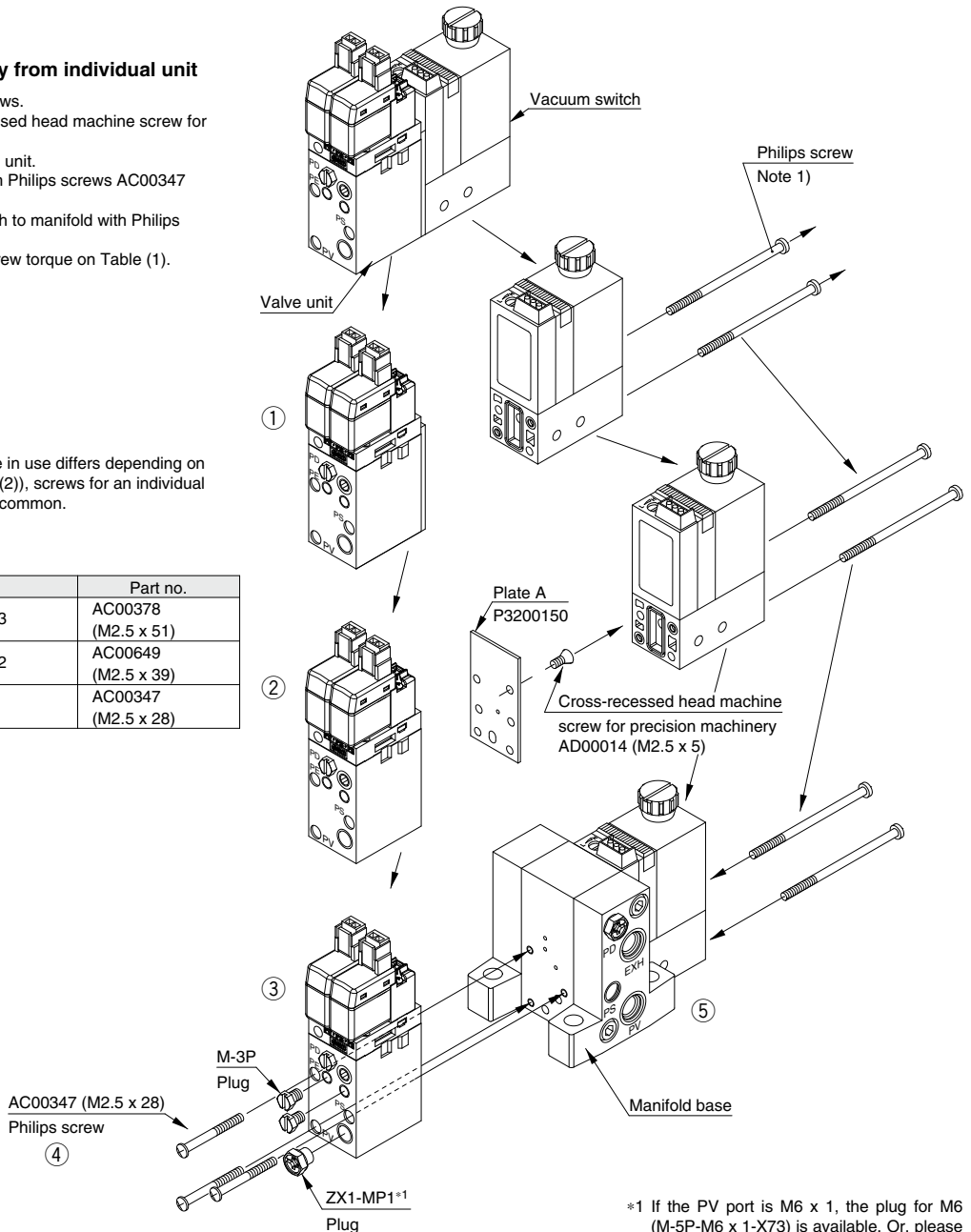
1. Remove Philips screws.
2. Remove cross-recessed head machine screw for precision machinery.
3. Mount plugs to valve unit.
4. Mount valve unit with Philips screws AC00347 (M2.5 x 28) 3 pcs.
5. Mount vacuum switch to manifold with Philips screws 2 pcs.  
Follow tightening screw torque on Table (1).

#### Note 1)

Even though screw type in use differs depending on the combination (Table (2)), screws for an individual unit and a manifold are common.

**Table (2)**

Combination	Part no.
Vacuum switch ZSE3	AC00378 (M2.5 x 51)
Vacuum switch ZSE2	AC00649 (M2.5 x 39)
Filter unit ZX1-F	AC00347 (M2.5 x 28)



\*1 If the PV port is M6 x 1, the plug for M6 (M-5P-M6 x 1-X73) is available. Or, please consider replacing the valve unit with a valve unit for manifold (① on page 927).

**Table (1)**

Part no.	Description	Quantity	Recommended tightening screw torque	In the case of manifold	Single unit
Note 1)	Philips screw	2	0.28 ± 0.1 (N·m)	Necessary	Necessary
P3200150	Plate A	1		Not necessary	Necessary
AD00014 (M2.5 x 5)	Cross-recessed head machine screw for precision machinery	1	0.28 ± 0.1 (N·m)	Not necessary	Necessary
M-3P	Plug	2	0.46 ± 0.05 (N·m)	Necessary	Not necessary
ZX1-MP1*1	Plug	1	1.6 ± 0.15 (N·m)	Necessary	Not necessary
AC00347* (M2.5 x 28)	Philips screw	3	0.28 ± 0.1 (N·m)	Necessary	Not necessary

\* Use AC00018 (M2.5 x 32) when individual spacers are used.

## Ejector System/Manifold Assembly from Individual Unit

### Manifold Assembly from individual unit

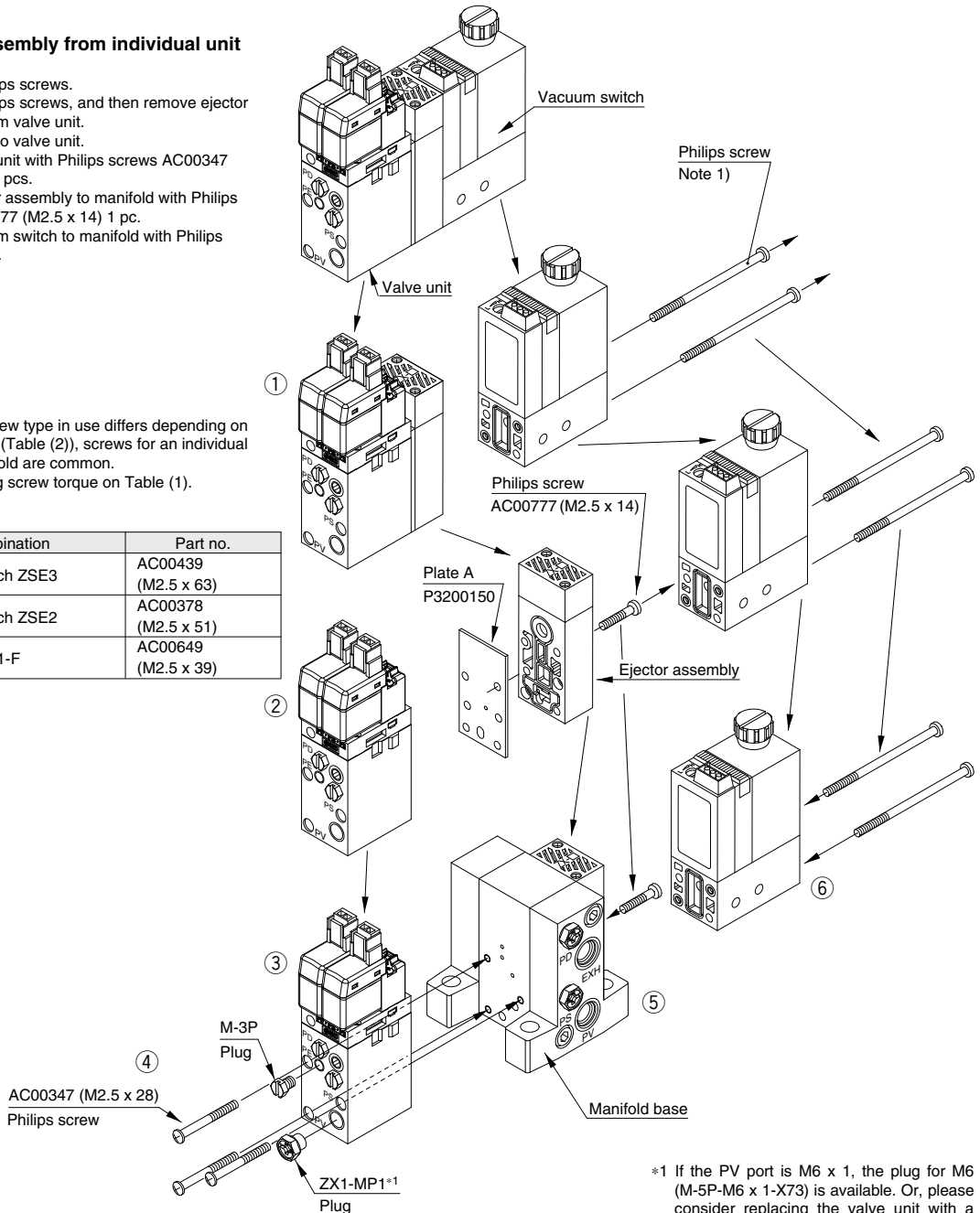
1. Remove Philips screws.
2. Remove Philips screws, and then remove ejector assembly from valve unit.
3. Mount plugs to valve unit.
4. Mount valve unit with Philips screws AC00347 (M2.5 x 28) 3 pcs.
5. Mount ejector assembly to manifold with Philips screw AC00777 (M2.5 x 14) 1 pc.
6. Mount vacuum switch to manifold with Philips screws 2 pcs.

**Note 1)**

Even though screw type in use differs depending on the combination (Table (2)), screws for an individual unit and a manifold are common.  
Follow tightening screw torque on Table (1).

**Table (2)**

Combination	Part no.
Vacuum switch ZSE3	AC00439 (M2.5 x 63)
Vacuum switch ZSE2	AC00378 (M2.5 x 51)
Filter unit ZX1-F	AC00649 (M2.5 x 39)



\*1 If the PV port is M6 x 1, the plug for M6 (M-5P-M6 x 1-X73) is available. Or, please consider replacing the valve unit with a valve unit for manifold (① on page 925).

**Table (1)**

Part no.	Description	Quantity	Recommended tightening screw torque	In the case of manifold	Single unit
Note 1)	Philips screw	2	0.28 ± 0.1 (N·m)	Necessary	Necessary
P3200150	Plate A	1		Not necessary	Necessary
AC00777 (M2.5 x 14)	Philips screw	1	0.28 ± 0.1 (N·m)	Necessary	Necessary
M-3P	Plug	1	0.46 ± 0.05 (N·m)	Necessary	Not necessary
ZX1-MP1 *1	Plug	1	1.6 ± 0.15 (N·m)	Necessary	Not necessary
AC00347 * (M2.5 x 28)	Philips screw	3	0.28 ± 0.1 (N·m)	Necessary	Not necessary

\* Use AC00018 (M2.5 x 32) when individual spacers are used.



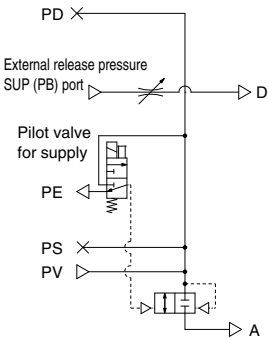
Please consult with SMC for detailed size, specifications and delivery.

## 1 Valve Unit/Other Combinations of Supply Valve and Release Valve (Ejector unit)

### Ejector Unit

If those other than the standard combination of supply valves and release valves (Refer to page 867.) are required, select from the following combinations. (Refer to page 866 for "How to Order".)

#### Combination Symbol: K2

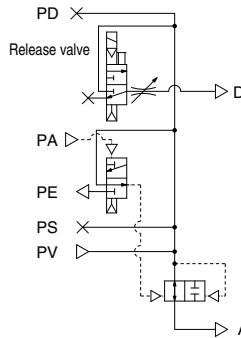


Application: The supply pressure is controlled by electric signals and a vacuum release is effected by external air.

#### How to Operate

Valve Condition	Supply valve	Release valve
	Solenoid valve	External 2 port valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

#### Combination Symbol: K7

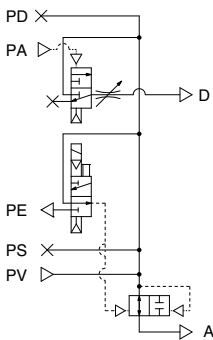


Application: The supply pressure is controlled by external air signals and a vacuum release is effected by the solenoid valve. Because the supply valve is N.O., the pressure that is supplied to the ejector is not interrupted during a power outage; as a result, the state of suction can be maintained. This combination is used for preventing the workpieces from dropping during power outages.

#### How to Operate

Valve Condition	Supply valve	Release valve
	Air operated valve	Solenoid valve
1. Work adsorption	OFF	OFF
2. Vacuum release	ON	ON
3. Operation stop	ON	OFF

#### Combination Symbol: K4

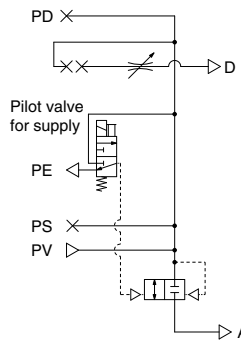


Application: The supply pressure is restricted by electric signals and a vacuum release is effected by air signals. Because the supply valve is N.O., the pressure that is supplied to the ejector is not interrupted during a power outage; as a result, the state of suction can be maintained. This combination is used for preventing the workpieces from dropping during power outages.

#### How to Operate

Valve Condition	Supply valve	Release valve
	Solenoid valve	Air operated valve
1. Work adsorption	OFF	OFF
2. Vacuum release	ON	ON
3. Operation stop	ON	OFF

#### Combination Symbol: J1

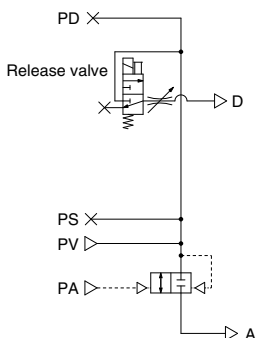


Application: This combination is used for effecting control in accordance with electric signals. A vacuum release is effected by the intrusion of air between the silencer, pad, and the workpiece. This combination is used when there is no need to accelerate the vacuum release speed.

#### How to Operate

Valve Condition	Supply valve	Release valve
	Solenoid valve	—
1. Work adsorption	ON	—
2. Vacuum release	OFF	—
3. Operation stop	OFF	—

#### Combination Symbol: K5

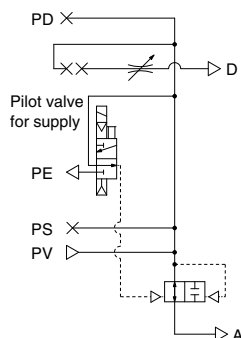


Application: The supply pressure is controlled by external air signals and a vacuum release is effected by the solenoid valve.

#### How to Operate

Valve Condition	Supply valve	Release valve
	External 3 port valve	Solenoid valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

#### Combination Symbol: J2

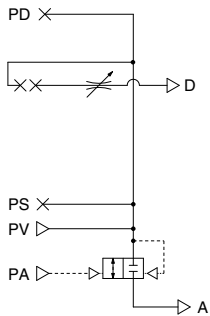


Application: It is used for controlling the supply pressure through electric signals. Because the supply valve is N.O., the pressure that is supplied to the ejector is not interrupted during a power outage; as a result, the state of suction can be maintained. This is used for preventing the workpieces from dropping during power outages. A vacuum release is effected by the intrusion of air between the silencer, pad, and the workpiece. This combination is used when there is no need to accelerate the vacuum release speed.

#### How to Operate

Valve Condition	Supply valve	Release valve
	Solenoid valve	—
1. Work adsorption	OFF	—
2. Vacuum release	ON	—
3. Operation stop	ON	—

## Combination Symbol: J3

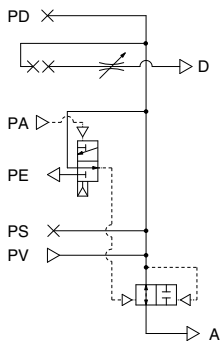


Application: The supply pressure is controlled by external air signals. A vacuum release is effected by the intrusion of air between the silencer, pad, and the workpiece. This is used when there is no need to accelerate the vacuum release speed.

### How to Operate

Valve	Supply valve	Release valve
Condition	External 3 port valve	—
1. Work adsorption	ON	—
2. Vacuum release	OFF	—
3. Operation stop	OFF	—

## Combination Symbol: J4

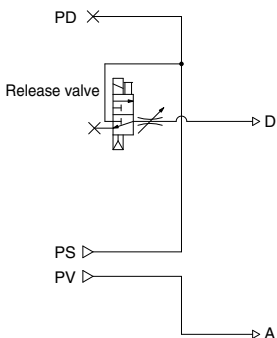


Application: The supply pressure is controlled by external air signals. Because the supply valve is N.O., the pressure that is supplied to the ejector is not interrupted during a power outage; as a result, the state of suction can be maintained. This is used for preventing the workpieces from dropping during power outages. A vacuum release is effected by the intrusion of air between the silencer, pad, and the workpiece. This type is used when there is no need to accelerate the vacuum release speed.

### How to Operate

Valve	Supply valve	Release valve
Condition	Air operated valve	—
1. Work adsorption	OFF	—
2. Vacuum release	ON	—
3. Operation stop	OFF	—

## Combination Symbol: D1

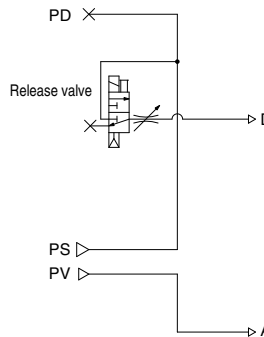


Application: The supply pressure is controlled by the external valve and a vacuum release is effected by the solenoid valve.

### How to Operate

Valve	Supply valve	Release valve
Condition	External valve	Solenoid valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

## Combination Symbol: D2

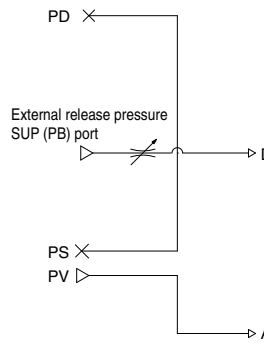


Application: The supply pressure is controlled by the external valve and a vacuum release is effected by the solenoid valve.

### How to Operate

Valve	Supply valve	Release valve
Condition	External valve	Solenoid valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

## Combination Symbol: D3

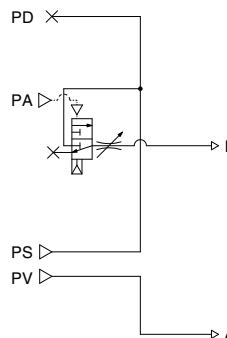


Application: The supply pressure is controlled by the external valve and a vacuum release is effected by the external 2 port valve (vacuum valve).

### How to Operate

Valve	Supply valve	Release valve
Condition	External valve	Solenoid valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

## Combination Symbol: D4



Application: The supply pressure is controlled by the external valve and a vacuum release is effected by external air signals.

### How to Operate

Valve	Supply valve	Release valve
Condition	External valve	Air operated valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

ZA

ZX

ZR

ZM

ZMA

ZQ

ZH

ZU

ZL

ZY□

ZF□

ZP□

SP

ZCUK

AMJ

AMV

AEP

HEP

Related Equipment



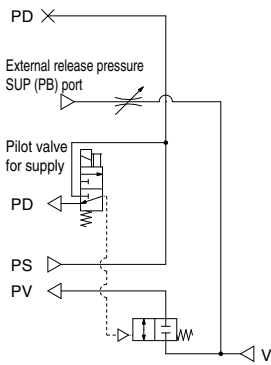
Please consult with SMC for detailed size, specifications and delivery.

## 2 Valve Unit/Other Combinations of Supply Valve and Release Valve (Vacuum pump system)

### Vacuum Pump System

If those other than the standard combination of supply valves (Refer to page 903.) and release valves are required, select from the following combinations. (Refer to page 902 for "How to Order".)

#### Combination Symbol: K2

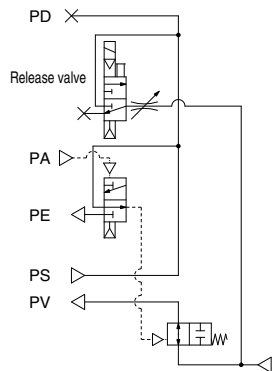


Application: The supply pressure is controlled by electric signals and a vacuum release is effected by external air.

#### How to Operate

Condition	Valve	Supply valve	Release valve
		Solenoid valve	External 2 port valve
1. Work adsorption		ON	OFF
2. Vacuum release		OFF	ON
3. Operation stop		OFF	OFF

#### Combination Symbol: K7

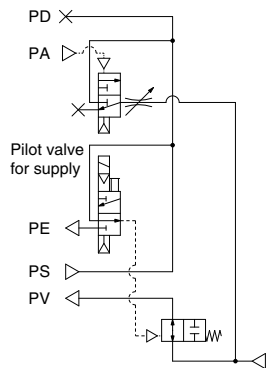


Application: The supply pressure is controlled by external air signals and a vacuum release is effected by the solenoid valve. Because the supply valve is the N.O., the pressure that is supplied to the ejector is not interrupted during a power outage; as a result, the state of suction can be maintained. This combination is used for preventing the workpieces from dropping during power outages.

#### How to Operate

Condition	Valve	Supply valve	Release valve
		Air operated valve	Solenoid valve
1. Work adsorption		OFF	OFF
2. Vacuum release		ON	ON
3. Operation stop		ON	OFF

#### Combination Symbol: K4

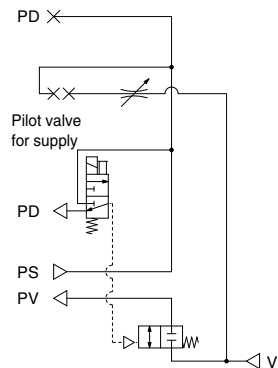


Application: The supply pressure is controlled by electric signals and a vacuum release is effected by air signals. Because the supply valve is N.O., the pressure that is supplied to the ejector is not interrupted during a power outage; as a result, the state of suction can be maintained. This combination is used for preventing the workpieces from dropping during power outages.

#### How to Operate

Condition	Valve	Supply valve	Release valve
		Solenoid valve	Solenoid valve
1. Work adsorption		OFF	OFF
2. Vacuum release		ON	ON
3. Operation stop		ON	ON

#### Combination Symbol: J1

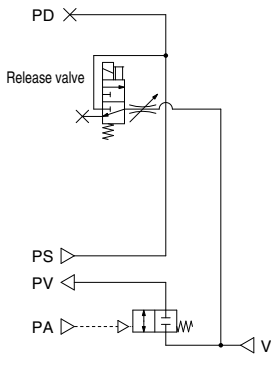


Application: This combination is used for controlling the pressure by electric signals. Normally, the workpiece is released due to the air leakage that occurs between the pad and the workpiece. However, if there is no air leakage, the workpiece will not become detached because the vacuum state is maintained even when the supply valve is turned OFF. To effect releasing, an external 2 port valve (vacuum valve) must be provided.

#### How to Operate

Condition	Valve	Supply valve	Release valve
		Solenoid valve	————
1. Work adsorption		ON	————
2. Vacuum release		OFF	————
3. Operation stop		OFF	————

#### Combination Symbol: K5

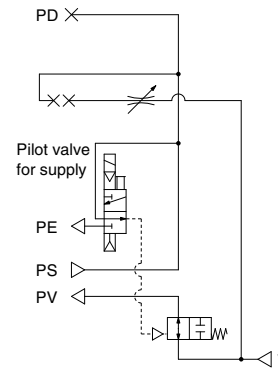


Application: The supply pressure is controlled by external air signals and a vacuum release is effected by the solenoid valve.

#### How to Operate

Condition	Valve	Supply valve	Release valve
		External 3 port valve	Solenoid valve
1. Work adsorption		ON	OFF
2. Vacuum release		OFF	ON
3. Operation stop		OFF	OFF

#### Combination Symbol: J2

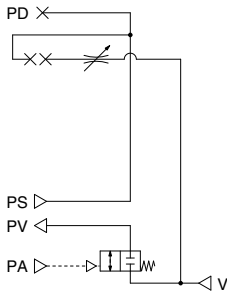


Application: Used for controlling with electric signals. Because the supply N.O., the pressure is not interrupted during a power outage. This prevents the workpieces from dropping. Normally, the workpiece is released due to leakage. However, if no air leakage, the workpiece will not detach because the vacuum state is maintained even when the supply valve is turned ON. To release, an external 2 port valve (vacuum valve) must be used.

#### How to Operate

Condition	Valve	Supply valve	Release valve
		Solenoid valve	————
1. Work adsorption		OFF	————
2. Vacuum release		ON	————
3. Operation stop		ON	————

## Combination Symbol: J3

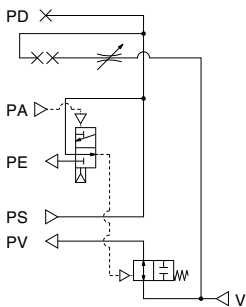


Application: The supply pressure is controlled by external air signals. Normally, the workpiece is released due to the air leakage that occurs between the pad and the workpiece. However, if there is no air leakage, the workpiece will not become detached because the vacuum state is maintained even when the supply valve is turned OFF. To effect releasing, an external 2 port valve (vacuum valve) must be provided.

### How to Operate

Valve	Supply valve	Release valve
Condition	External 3 port valve	—
1. Work adsorption	ON	—
2. Vacuum release	OFF	—
3. Operation stop	OFF	—

## Combination Symbol: J4

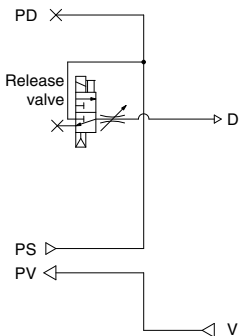


Application: Supply is controlled by external air signals. Because the valve is N.O., the pressure is not interrupted during a power outage. This prevents the workpieces from dropping. Normally, the workpiece is released due to leakage. However, if no leakage, the workpiece will not detach because the vacuum state is maintained even when the valve is turned ON. To release, an external 2 port valve (vacuum valve) must be provided.

### How to Operate

Valve	Supply valve	Release valve
Condition	Air operated valve	—
1. Work adsorption	OFF	—
2. Vacuum release	ON	—
3. Operation stop	ON	—

## Combination Symbol: D1

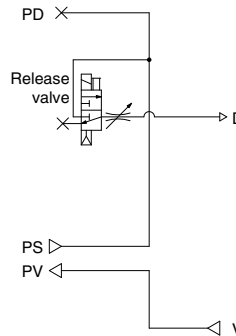


Application: The supply pressure is controlled by an external 2 port valve (vacuum valve) and a vacuum release is effected by the solenoid.

### How to Operate

Valve	Supply valve	Release valve
Condition	External 2 port valve	Solenoid valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

## Combination Symbol: D2

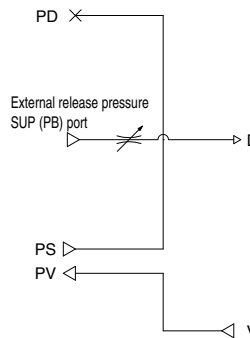


Application: The supply pressure is controlled by an external 2 port valve (vacuum valve) and a vacuum release is effected by the solenoid.

### How to Operate

Valve	Supply valve	Release valve
Condition	External 2 port valve	Solenoid valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

## Combination Symbol: D3

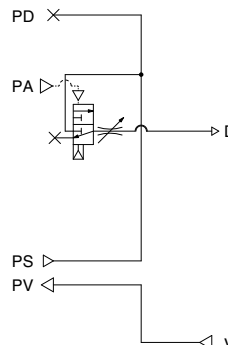


Application: The supply pressure is controlled by the external 2 port valve (vacuum valve) and releasing is also effected by the external 2 port valve.

### How to Operate

Valve	Supply valve	Release valve
Condition	External 2 port valve	Solenoid valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

## Combination Symbol: D4



Application: The supply pressure is controlled by the external 2 port valve (vacuum valve) and vacuum release is effected by external air signals.

### How to Operate

Valve	Supply valve	Release valve
Condition	External 2 port valve	Solenoid valve
1. Work adsorption	ON	OFF
2. Vacuum release	OFF	ON
3. Operation stop	OFF	OFF

ZA

ZX

ZR

ZM

ZMA

ZQ

ZH

ZU

ZL

ZY□

ZF□

ZP□

SP

ZCUK

AMJ

AMV

AEP

HEP

Related

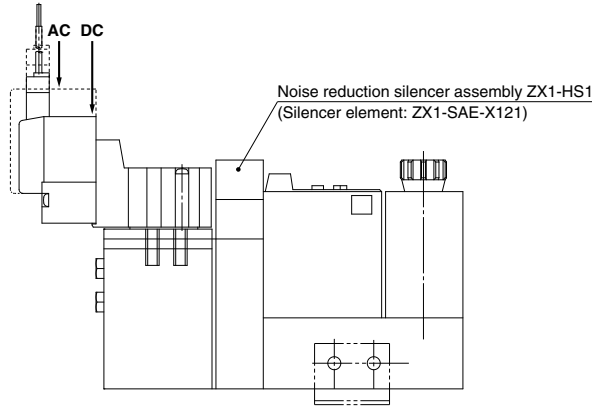
Equipment

### 3 High Noise Reduction Silencer Assembly

ZX1 Nozzle diameter Exhaust style — Valve Voltage Electrical entry X121 — CE-compliant

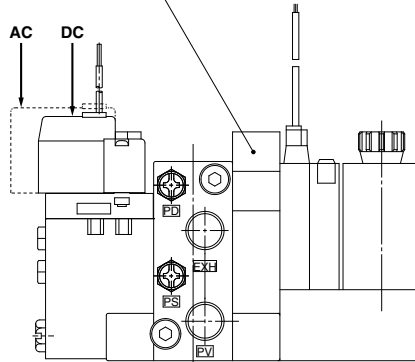
High noise reduction silencer assembly

**Reduction in the exhaust noise from the ejector (Silencing effect 8 dB (A) Standard silencer assembly comparison)**



Ordering example  
ZX1101-K35LZ-D23C-X121

Noise reduction silencer assembly ZX1-HS1  
(Silencer element: ZX1-SAE-X121)



Ordering example  
ZZX102-R 1 pc.  
\* ZX1101-K15LZ-EC-X121 2 pcs.