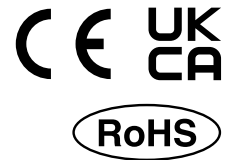


Vacuum Unit



Ejector System Vacuum Pump System

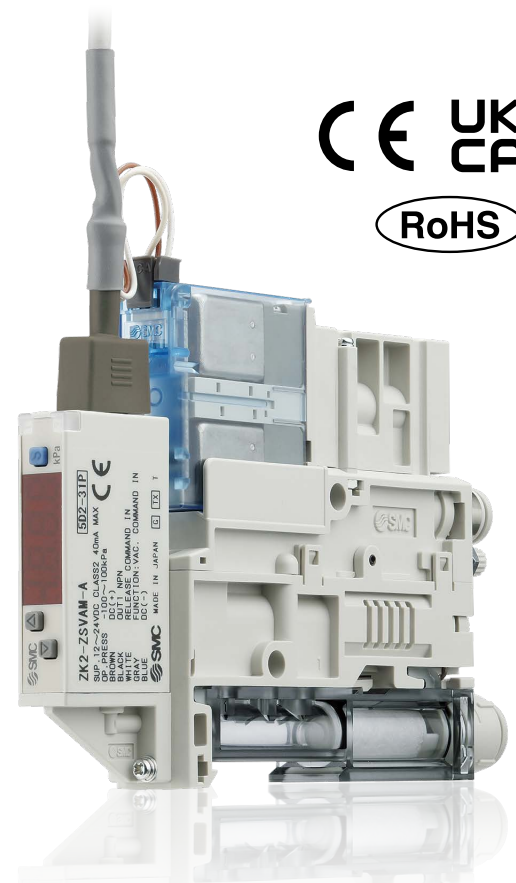
Air supply is cut-off when vacuum is reached.

Energy saving ejector

Air consumption

93% reduction

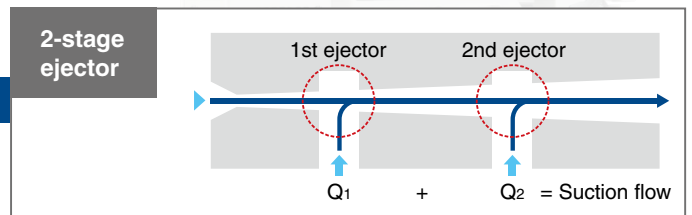
Reduced by the pressure switch for vacuum with energy saving function and efficient ejectors (Under SMC's measurement conditions)



More efficient ejector

Suction flow (Compared to other SMC 1-stage ejectors)

50% increase



Wiring variations

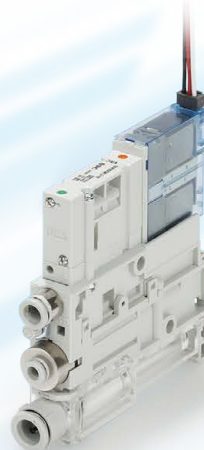
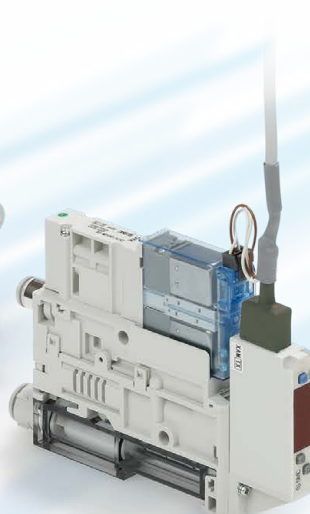
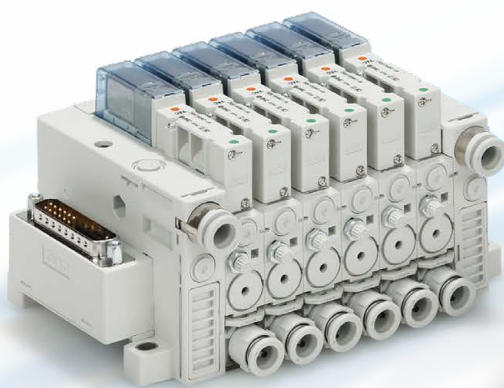
D-sub connector



Flat ribbon cable connector



Individual wiring



Air-operated specification

p. 7-1



ZK2□A Series



CAT.ES100-129B ©

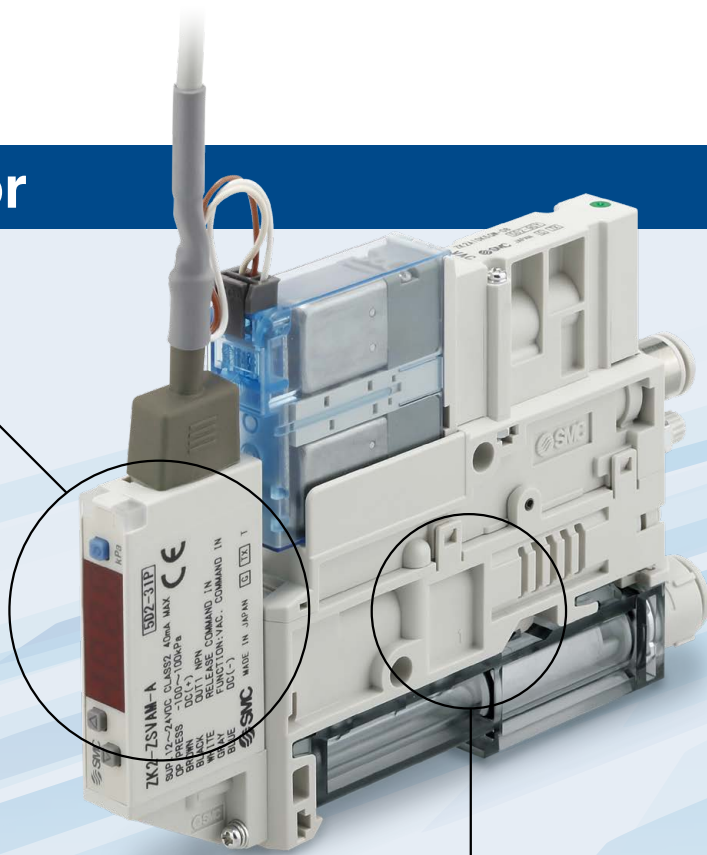
Energy Saving Ejector

Digital pressure switch with energy saving function

reduces air consumption by **90%**.^{*1}

^{*1} Under SMC's measurement conditions

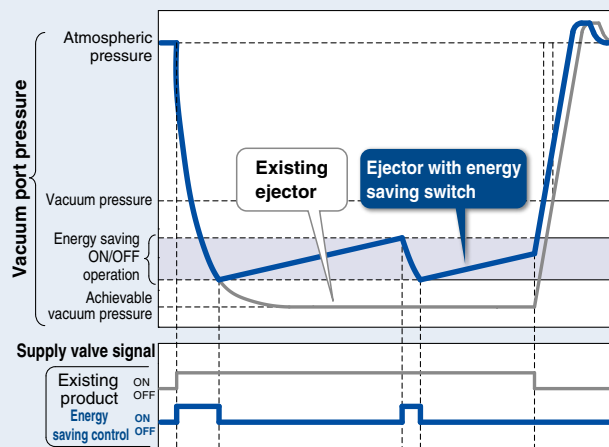
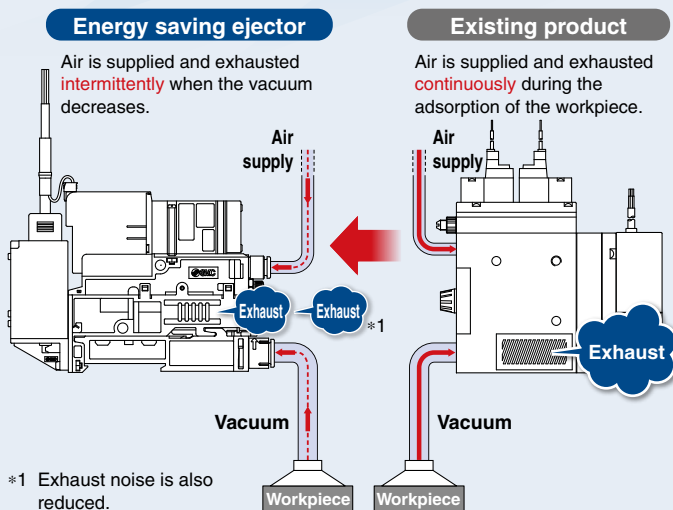
While the suction signal is ON, the ON/OFF operation of the supply valve is also performed automatically within the set value.



More efficient ejector

Air consumption **30% reduction**

(Compared to other SMC 1-stage ejectors)



Energy saving efficiency: **93%** reduction

Power consumption cost per year reduced by **13,070 JPY/year**^{*1}

The energy saving function shortens the exhaust time, which reduces the annual power consumption cost.

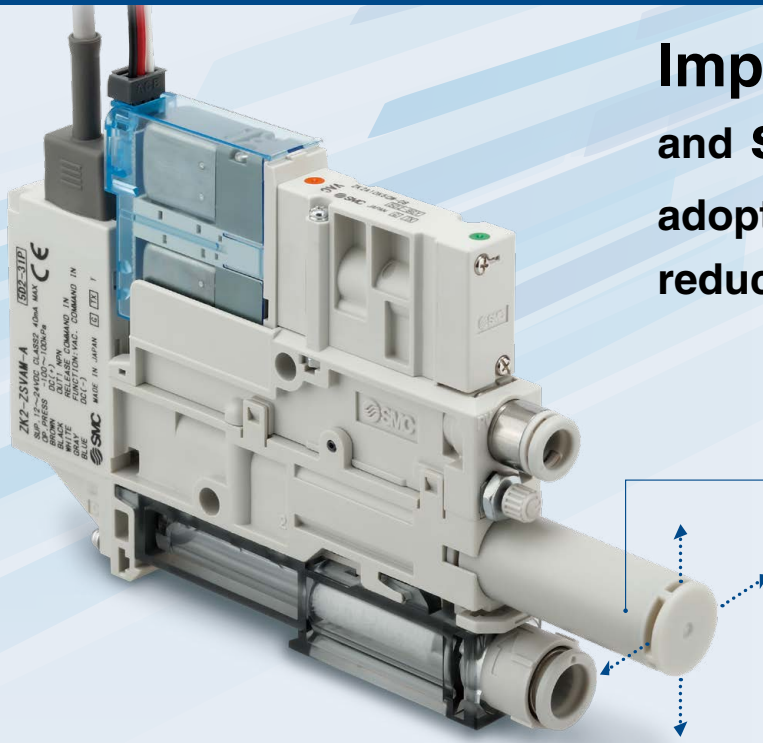
With energy saving function
More efficient ejector

| | Power consumption cost per year | Annual air consumption | Exhaust time | Air consumption |
|---------------------------------|---------------------------------|----------------------------|--------------|-----------------|
| ZK2/With energy saving function | 957 JPY/year | 638 m ³ /year | 0.6 s | 58 L/min (ANR) |
| Existing product | 14,025 JPY/year | 9,350 m ³ /year | 6 s | 85 L/min (ANR) |

^{*1} **Cost conditions** · Air unit 1.5 JPY/m³ (ANR), Annual operating cycles: 1100000 (Operating hours: 10 hours/day, Operating days: 250 days/year, 450 cycles/h, when 1 unit is used)

High-noise Reduction Silencer

Improved low noise and suction flow by adoption of a high-noise reduction silencer



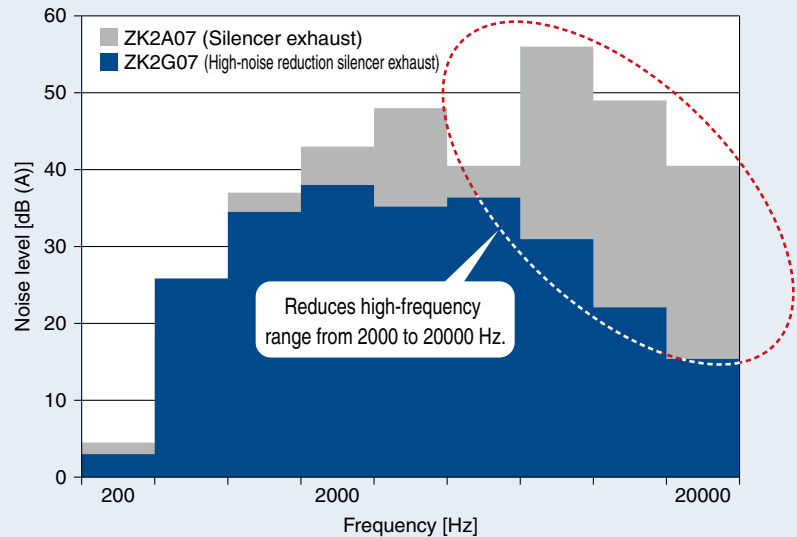
High-noise reduction silencer

Unpleasant frequencies are removed while maximizing vacuum performance by using a dedicated silencer with better silencing effect.

Low noise

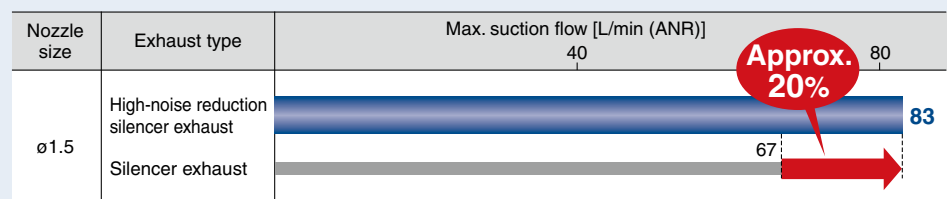
46 dB (A)^{*1}

*1 Nozzle size: $\phi 0.7$ (Under SMC's measurement conditions)



Suction flow

Improved by up to approx. **20%**



All in One Piping Wiring Installation time reduced!!

Dual 2-port valve (Supply valve/Release valve)

Supply valve: Self-holding*1

Even if there is a power cut, the vacuum is maintained as long as there is supply air.

- ① The vacuum is maintained during power failure as long as air is supplied.
This can prevent the workpiece from being dropped.
- ② The unit turns on by instantaneous energizing (minimum 20 ms.). Continuous energizing is not necessary.
This can reduce the power consumption.

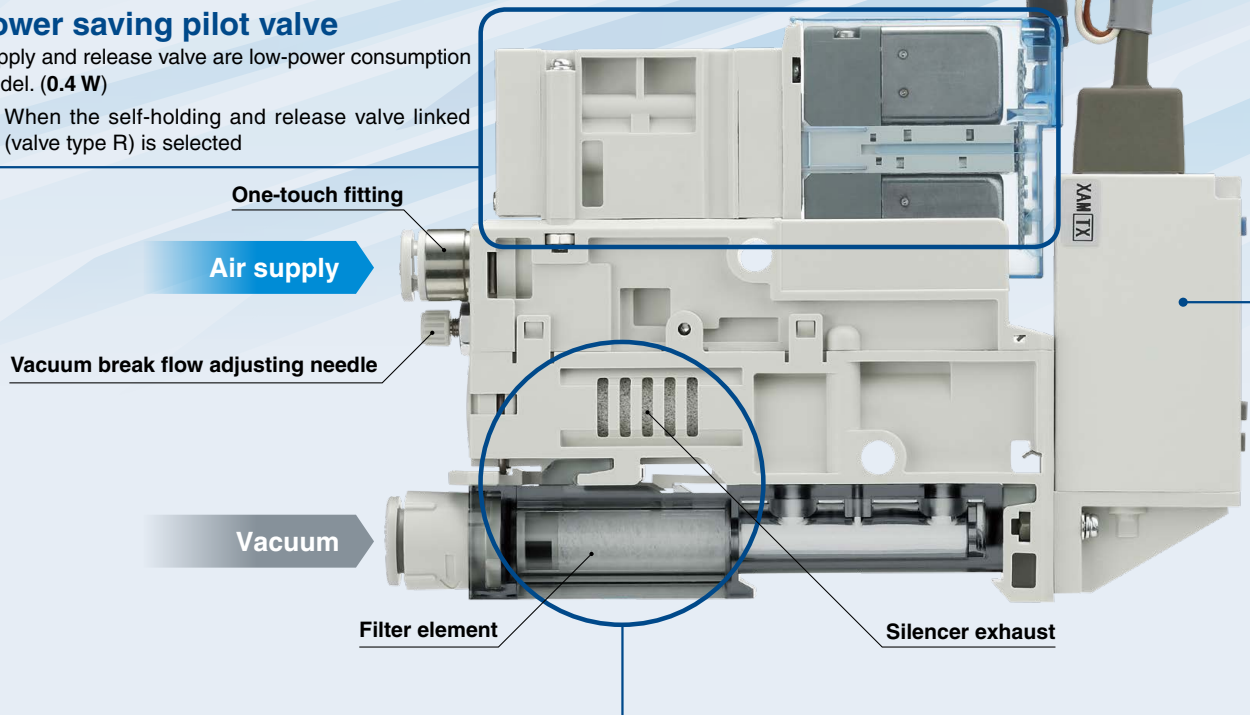
Linked supply and release valves operation*1

The self-holding type supply valve will be turned off by turning on the release valve. It is not necessary to send a signal to stop the vacuum, which simplifies the wiring and programming. (Existing double solenoid and latching type require a signal to stop the vacuum.)

Power saving pilot valve

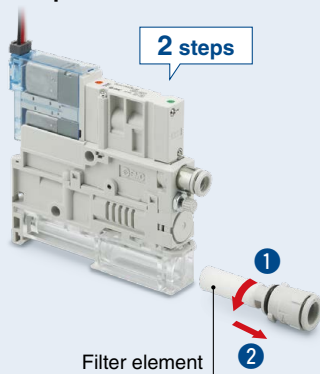
Supply and release valve are low-power consumption model. (0.4 W)

*1 When the self-holding and release valve linked (valve type R) is selected



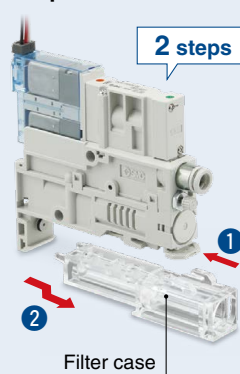
Easier maintenance No tools are required for replacement.

Replacement of filter element



Filter element

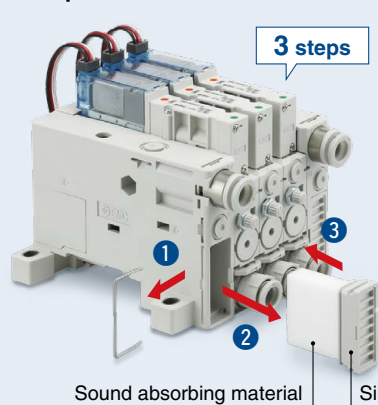
Replacement of filter case



Filter case

Transparent filter case allows visual check of the contamination. If there is dirt inside the case, it is possible to remove the case and clean it.

Replacement of sound absorbing material

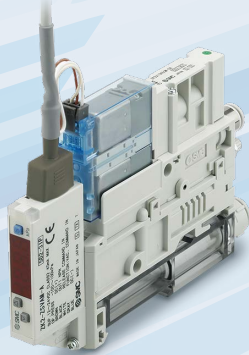


Sound absorbing material

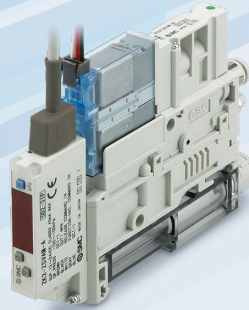
Silencer cover

The sound absorbing material can be installed/removed without using screws.

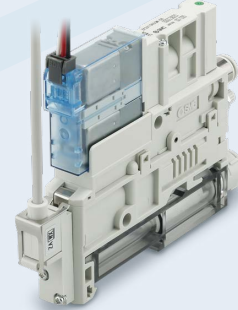
Pressure Sensor/Switch Variations



■ Pressure switch for vacuum with energy saving function



■ Pressure switch for vacuum

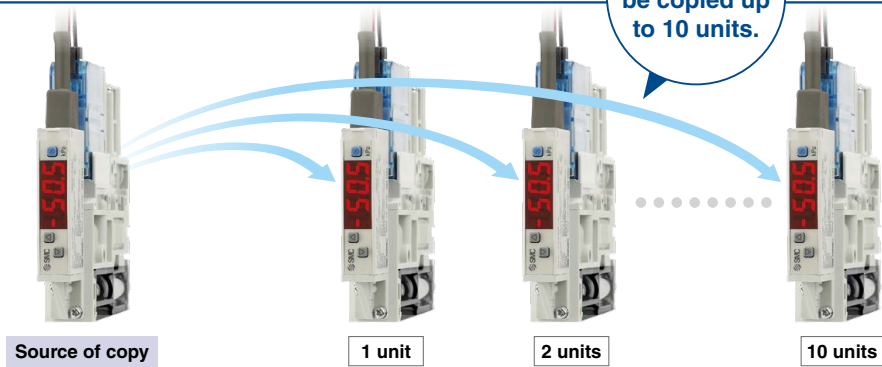


■ Pressure sensor

Pressure switch for vacuum Set value copy function*1

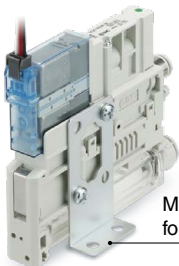
Reduction in setting work/Prevention of mistakes in setting

*1 Copy function is not available for switches with the pressure switch for vacuum with energy saving function.



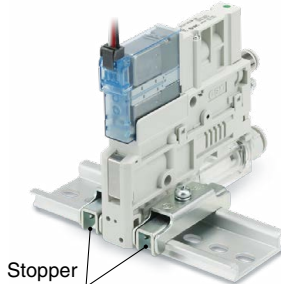
Mounting (Options)

■ Single unit bracket mounting



Mounting bracket for single unit

■ Single unit DIN rail mounting



Stopper

■ Manifold DIN rail mounting



DIN rail mounting bracket

Vacuum Unit Variations

Single Unit Variations

Ejector System

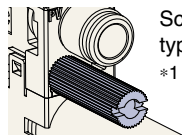
Nozzle size

ø0.7, ø1.0, ø1.2, ø1.5

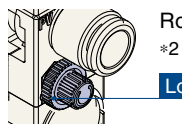
Air pressure supply (PV) port

ø6, ø1/4" One-touch fittings

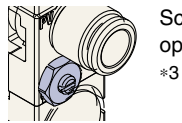
Vacuum break flow adjusting needle



Screwdriver operation type long lock nut*1
*1 Option



Round lock nut*2
*2 Option
Lock nut



Screwdriver operation type*3
*3 Option

Vacuum (V) port

ø6, ø8 One-touch fittings
ø1/4", ø5/16" One-touch fittings

Supply valve/Release valve: Rated voltage

12, 24 VDC

Vacuum switch

- Pressure sensor
- Pressure switch for vacuum
- Pressure switch for vacuum with energy saving function

Without vacuum switch



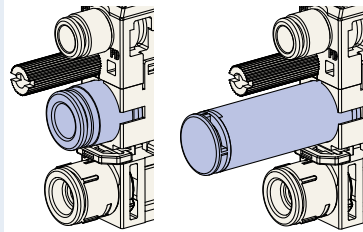
Combination of supply valve and release valve

| Supply valve | Release valve |
|-----------------------------------|---------------|
| N.C | N.C |
| N.C | None |
| Self-holding release valve linked | N.C |
| None | None |

Silencer exhaust

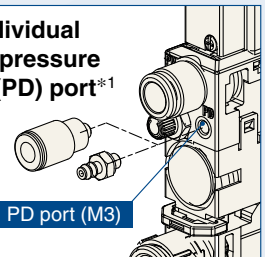
Exhaust (EXH) port

Port exhaust High-noise reduction silencer exhaust



With individual release pressure supply (PD) port*1

*1 Option



PD port (M3)

Vacuum Pump System

Vacuum pressure supply (PV) port

ø6, ø1/4" One-touch fittings

Pilot pressure supply (PS) port

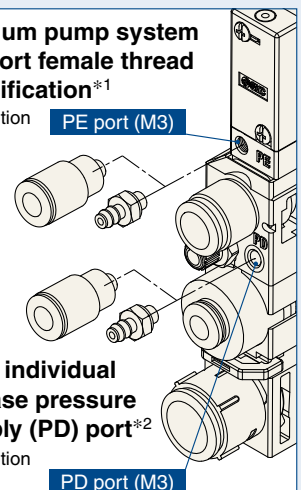
ø4, ø5/16" One-touch fittings

Vacuum (V) port

ø6, ø8 One-touch fittings
ø1/4", ø5/16" One-touch fittings

Vacuum pump system PE port female thread specification*1

*1 Option



PE port (M3)

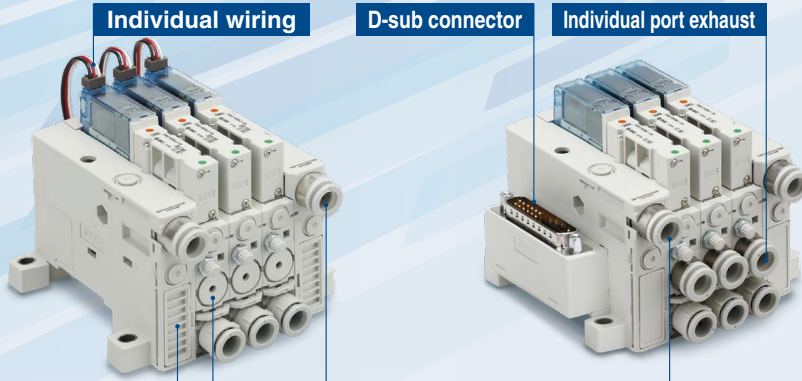
With individual release pressure supply (PD) port*2

*2 Option

PD port (M3)

Manifold Variations

Ejector System



Complex exhaust*1

*1 The complex exhaust is a combined exhaust method of the common exhaust from the end plate and the direct exhaust from each station.

Common air pressure supply (PV) port



Individual air pressure supply (PV) port*2

*2 Option

High-noise reduction silencer exhaust

Manifold stations

1 to 10 stations

Wiring type

- D-sub connector
- Flat ribbon cable connector
- Individual wiring

Exhaust type*3

- Complex exhaust*1
- Port exhaust
- High-noise reduction silencer exhaust

*3 When the ejector system is selected

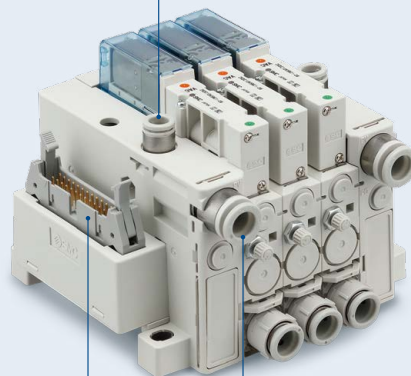
**Air pressure supply (PV) port
ø8, ø5/16"**

- Common supply
- Individual supply*4

*4 Option

Vacuum Pump System

Common pilot pressure supply (PS) port



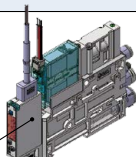
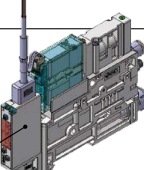
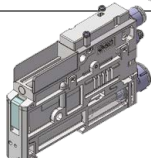
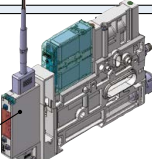
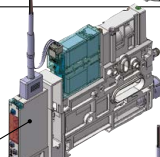
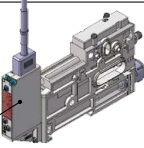
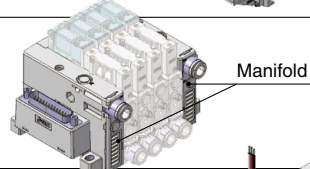
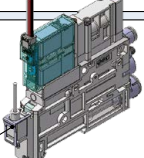
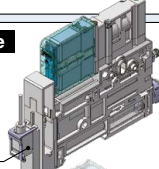
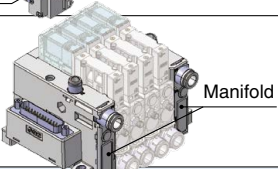
Flat ribbon cable connector

Common vacuum pressure supply (PV) port

**Vacuum pressure (PV) port
ø8, ø5/16"**

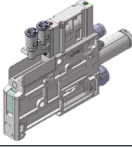
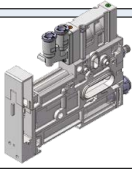
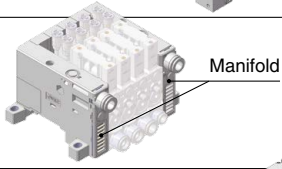
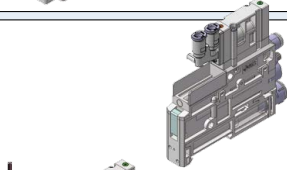
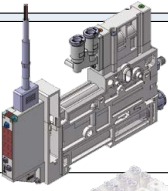
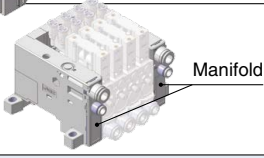
- Common supply

Model Selection Guide for the Vacuum Unit ZK2□A Series

| | | Valve | | | Switch and Sensor | | How to order | |
|--------------------|---|--|---------------|---------|--|---|--------------|-------|
| | | Supply valve | Release valve | Without | Without energy saving function Pressure sensor/Pressure switch for vacuum | With energy saving function Pressure switch for vacuum | | |
| Ejector System | Single Unit | With valve  Pressure switch for vacuum | ● | ● | — | ● | — | p. 9 |
| | | | ● | — | — | ● | — | |
| | | | ● | ● | — | — | — | |
| | Single Unit | With valve  Pressure switch for vacuum with energy saving function | ● | ● | — | — | ● | p. 10 |
| | | | — | — | — | — | — | |
| | | | — | — | — | — | — | |
| | Single Unit | Without valve  | — | — | ● | ● | — | p. 13 |
| | | | — | — | ● | — | — | |
| | | | — | — | — | — | — | |
| Ejector System | For Manifold | With valve  Pressure switch for vacuum | ● | ● | — | ● | — | p. 11 |
| | | | ● | — | — | ● | — | |
| | | | ● | ● | — | — | — | |
| | For Manifold | With valve  Pressure switch for vacuum with energy saving function | ● | ● | — | — | ● | p. 12 |
| | | | — | — | — | — | — | |
| | | | — | — | — | — | — | |
| For Manifold | Without valve  Pressure switch for vacuum | — | — | ● | ● | — | p. 13 | |
| | | — | — | ● | — | — | | |
| | | — | — | — | — | — | | |
| Manifold |  Manifold | — | — | — | — | — | p. 14 | |
| | | — | — | — | — | — | | |
| | | — | — | — | — | — | | |
| Vacuum Pump System | Single Unit | With valve  Pressure sensor | ● | ● | — | ● | — | p. 15 |
| | | | ● | — | — | ● | — | |
| | | | ● | ● | — | — | — | |
| | For Manifold | With valve  Pressure sensor | ● | ● | — | ● | — | p. 16 |
| | | | ● | — | — | ● | — | |
| | | | ● | ● | — | — | — | |
| For Manifold |  Manifold | — | — | — | — | — | p. 17 | |
| | | — | — | — | — | — | | |
| | | — | — | — | — | — | | |

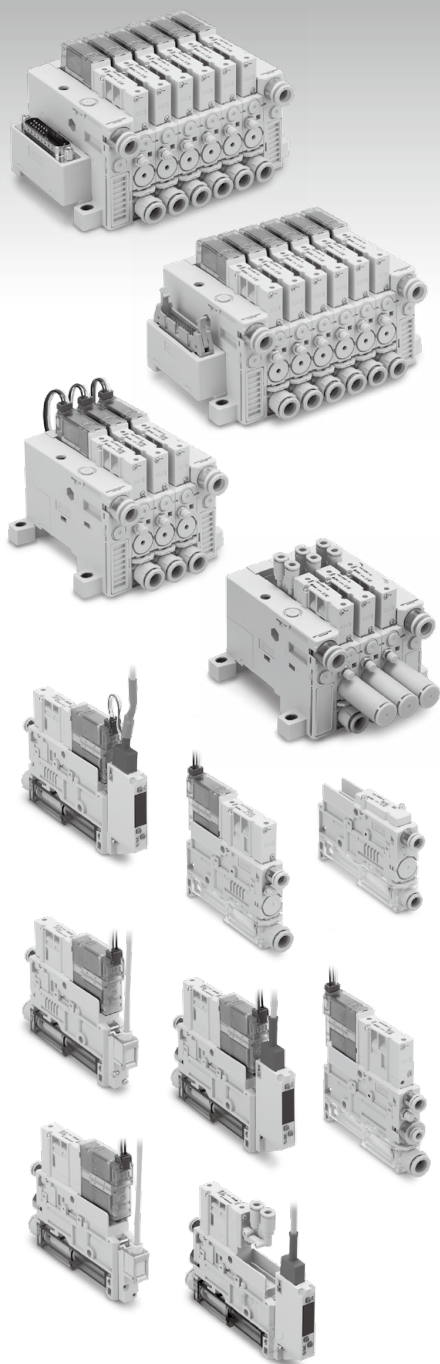
Vacuum Unit Model Selection Guide for the Vacuum Unit ZK2□A Series

Air Operated Specification

| | | Supply valve | Release valve | Switch and Sensor (Without energy saving function) | How to order | |
|---------------------------|--|---|---------------|--|-----------------|---------|
| Ejector System | Single Unit |  | ● | ● | ● | p. 43-1 |
| | | | ● | ● | — | |
| | For Manifold |  | ● | ● | ● | p. 43-2 |
| Manifold |  Manifold | — | — | — | | |
| Vacuum Pump System | Single Unit |  | ● | ● | ● | p. 43-3 |
| | | | ● | ● | — | |
| | For Manifold |  | ● | ● | ● | p. 43-4 |
| Manifold |  Manifold | — | — | — | | |

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Vacuum Unit ZK2□A Series



● Ejector System

| | |
|---|-------|
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| Single Unit Ejector + With Valve + With Energy Saving Function | p. 10 |
| For Manifold Ejector + With Valve + Without Energy Saving Function | p. 11 |
| For Manifold Ejector + With Valve + With Energy Saving Function | p. 12 |
| Single Unit For Manifold Ejector + Without Valve + Without Energy Saving Function | p. 13 |
| Manifold | p. 14 |

● Vacuum Pump System

| | |
|---|-------|
| Single Unit Vacuum Pump System + With Valve + Without Energy Saving Function | p. 15 |
| For Manifold Vacuum Pump System + With Valve + Without Energy Saving Function | p. 16 |
| Manifold | p. 17 |

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| Ejector Exhaust Characteristics/Flow Rate Characteristics | p. 19 |
| Vacuum Pump System Flow Rate Characteristics, Vacuum Release Flow Rate Characteristics, How to Read the Flow Rate Characteristics Graph | p. 21 |
| Pressure Sensor/Pressure Switch for Vacuum Specifications, Description (Pressure Switch for Vacuum) | p. 22 |
| Pressure Switch for Vacuum with Energy Saving Function Specifications, Internal Circuit and Wiring Example | p. 23 |
| Port Layout | |
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| Construction | p. 31 |
| Replacement Parts for Single Unit / How to Order | p. 32 |
| Exploded View of Manifold | p. 33 |
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| Electrical Wiring Specifications, Optional Specifications/Functions/Applications | p. 42 |

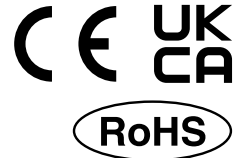
● Air Operated Specification

| | |
|---------------------------------|---------|
| Single Unit Ejector System | p. 43-1 |
| For Manifold Ejector System | p. 43-2 |
| Single Unit Vacuum Pump System | p. 43-3 |
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| | |
|------------------------------|-------|
| Specific Product Precautions | p. 44 |
| Quality of Supply Air | p. 51 |

Ejector System Vacuum Unit

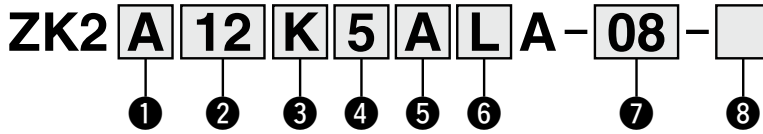


ZK2□A Series

Single Unit Ejector + With Valve + Without Energy Saving Function

Refer to pages 24, 25, 27, and 28 for the port layouts (including circuit examples) and pages 35 to 37 for the dimensions.

How to Order



1 Body/Exhaust type

| Symbol | Body | Exhaust type |
|--------|-------------|---|
| A | Single unit | Silencer exhaust*1 |
| | | Port exhaust |
| B | Single unit | High-noise reduction silencer exhaust |
| G | Single unit | High-noise reduction silencer exhaust |

*1 With exhaust port when 2 is 12 or 15

4 Rated voltage (Supply valve/Release valve)

| Symbol | Voltage |
|--------|---------|
| 5 | 24 VDC |
| 6 | 12 VDC |

5 Pressure switch for vacuum/Pressure sensor

| Symbol | Type | Pressure range [kPa] | Specifications | | |
|--------|--|----------------------|------------------------|---------------------|--------------------------------|
| | | | NPN | PNP | With unit selection function*3 |
| A | Pressure switch for vacuum | 0 to -101 | ● | — | ● |
| B | | | ● | — | None (SI unit only) |
| C | | | — | ● | ● |
| D | | — | ● | None (SI unit only) | |
| E | | -100 to 100 | ● | — | ● |
| F | | | ● | — | None (SI unit only) |
| H | — | | ● | ● | |
| J | — | — | ● | None (SI unit only) | |
| P | Pressure sensor | 0 to -101 | Analog output 1 to 5 V | | |
| T | | -100 to 100 | | | |
| N | Without pressure switch for vacuum/pressure sensor | | | | |

*3 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

7 Vacuum (V) port

| Symbol | Vacuum (V) port |
|--------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

2 Nominal nozzle size

| Symbol | Nominal nozzle size |
|--------|---------------------|
| 07 | ø0.7 |
| 10 | ø1.0 |
| 12 | ø1.2 |
| 15 | ø1.5 |

* Refer to page 18 for the standard supply pressure per nozzle diameter.

3 Combination of supply valve and release valve

| Symbol | Supply valve | | Release valve |
|--------|--------------|--------------|---------------|
| | N.C. | Self-holding | N.C. |
| K | ● | — | ● |
| J | ● | — | — |
| R | — | ●*2 | ● |

*2 Supply valve maintains vacuum by energization (20 ms or more). Stopping the vacuum turns on the release valve.

6 Connector (Supply valve/Release valve/Pressure switch for vacuum)

| Symbol | For supply valve/ release valve: 300 mm (Connector assembly)*4 | For pressure switch for vacuum: 2 m (Lead wire with connector) | Pressure sensor assembly: 3 m (With lead wire) | Note |
|--------|--|--|--|-------------------------------------|
| L | ● | — | ● | Cannot be selected when 5 is N |
| L1 | None | — | ● | |
| L2 | ● | — | None | Cannot be selected when 5 is P or T |
| L3 | None | — | None | |

*4 For the connector length other than 300 mm, order the connector assembly on page 32 separately.

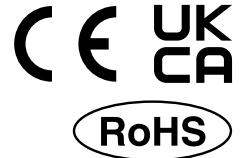
8 Option*5 (For details on the Function/Application, refer to page 42.)

| Symbol | Type | Note |
|--------|--|---|
| Nil | Without option | — |
| B | Mounting bracket for single unit (nuts and bolts are included) | — |
| D | With individual release pressure supply (PD) port (M3)*6 | Cannot be selected when 3 is J |
| E | Vacuum break flow adjusting needle Screwdriver operation type long lock nut | Cannot be selected when 3 is J |
| J | Round lock nut Lock nut | |
| K | Vacuum break flow adjusting needle Screwdriver operation type | Can be selected only for the combination of J and K |
| W | With exhaust interference prevention valve | When J is selected for 8, install the release valve or vacuum breaker in the middle of the vacuum piping. |

*5 When more than one option is selected, list the option symbols in alphabetical order. (Example -BJ)

*6 Use a One-touch fitting or barb fitting (M-3AU-4) for piping. (O.D.: Within ø6.2)

Ejector System Vacuum Unit

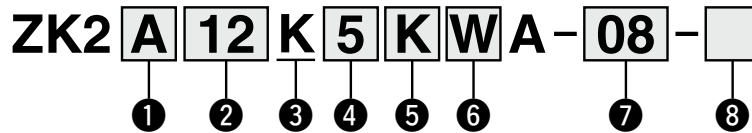


ZK2□A Series

Single Unit Ejector + With Valve + With Energy Saving Function

Refer to page 25 for the port layout (including a circuit example) and page 38 for the dimensions.

How to Order



1 Body/Exhaust type

| Symbol | Body | Exhaust type |
|--------|-------------|---|
| A | Single unit | Silencer exhaust*1 |
| | | Port exhaust |
| G | Single unit | High-noise reduction silencer exhaust |

*1 With exhaust port when 2 is 12 or 15

2 Nominal nozzle size

| Symbol | Nominal nozzle size |
|--------|---------------------|
| 07 | ø0.7 |
| 10 | ø1.0 |
| 12 | ø1.2 |
| 15 | ø1.5 |

* Refer to page 18 for the standard supply pressure per nozzle diameter.

3 Combination of supply valve and release valve

| Symbol | Supply valve | Release valve |
|--------|--------------|---------------|
| | N.C. | N.C. |
| K | ● | ● |

4 Rated voltage (Supply valve/Release valve)

| Symbol | Voltage |
|--------|---------|
| 5 | 24 VDC |
| 6 | 12 VDC |

5 Pressure switch for vacuum with energy saving function

| Symbol | Pressure range [kPa] | Specifications | | |
|--------|----------------------|----------------|-----|--------------------------------|
| | | NPN | PNP | With unit selection function*2 |
| K | -100 to 100 | ● | — | ● |
| Q | | ● | — | None (SI unit only) |
| R | | — | ● | ● |
| S | | — | ● | None (SI unit only) |

*2 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

6 Connector

| Symbol | For pressure switch for vacuum with energy saving function: 2 m (Lead wire with connector) |
|--------|--|
| W | ● |
| L3 | None |

7 Vacuum (V) port

| Symbol | Vacuum (V) port |
|--------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

8 Option*3 (For details on the Function/Application, refer to page 42.)

| Symbol | Type | Note |
|--------|--|---|
| Nil | Without option | — |
| B | Mounting bracket for single unit (nuts and bolts are included) | — |
| D | With individual release pressure supply (PD) port (M3)*4 | — |
| E | Screwdriver operation type long lock nut | Can be selected only for the combination of J and K |
| J | Round lock nut | |
| K | Screwdriver operation type | |

*3 When more than one option is selected, list the option symbols in alphabetical order. (Example -BJ)

*4 Use a One-touch fitting or barb fitting (M-3AU-4) for piping. (O.D.: Within ø6.2)

Ejector System Vacuum Unit

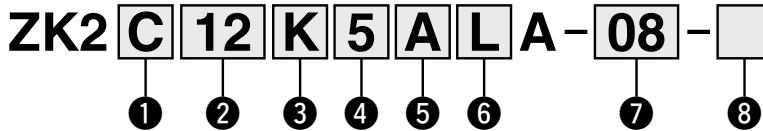


ZK2□A Series

For Manifold Ejector + With Valve + Without Energy Saving Function

Refer to page 14 for How to Order Manifold, pages 25, 26, 28, and 29 for the port layouts (including circuit examples), and pages 39 to 41 for the dimensions.

How to Order



1 Body/Exhaust type

| Symbol | Body | Exhaust type |
|--------|--|--|
| C | For Manifold | Complex exhaust*1 <ul style="list-style-type: none"> Direct exhaust End plate exhaust |
| | | Individual port exhaust <ul style="list-style-type: none"> Individual port exhaust |
| H | High-noise reduction silencer exhaust <ul style="list-style-type: none"> High-noise reduction silencer exhaust | |

*1 Combination of direct exhaust and end plate exhaust from each station

4 Rated voltage (Supply valve/Release valve)

| Symbol | Voltage |
|--------|---------|
| 5 | 24 VDC |
| 6 | 12 VDC |

5 Pressure switch for vacuum/Pressure sensor

| Symbol | Type | Pressure range [kPa] | Specifications | | |
|--------|--|----------------------|------------------------|---------------------|--------------------------------|
| | | | NPN 2 outputs | PNP | With unit selection function*3 |
| A | Pressure switch for vacuum | 0 to -101 | ● | — | ● |
| B | | | ● | — | None (SI unit only) |
| C | | | — | ● | ● |
| D | | — | ● | None (SI unit only) | |
| E | | -100 to 100 | ● | — | ● |
| F | | | ● | — | None (SI unit only) |
| H | — | | ● | ● | |
| J | — | — | ● | None (SI unit only) | |
| P | Pressure sensor | 0 to -101 | Analog output 1 to 5 V | | |
| T | | -100 to 100 | | | |
| N | Without pressure switch for vacuum/pressure sensor | | | | |

*3 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

7 Vacuum (V) port

| Symbol | Vacuum (V) port |
|--------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

2 Nominal nozzle size

| Symbol | Nominal nozzle size |
|--------|---------------------|
| 07 | ø0.7 |
| 10 | ø1.0 |
| 12 | ø1.2 |
| 15 | ø1.5 |

* Refer to page 18 for the standard supply pressure per nozzle diameter.

3 Combination of supply valve and release valve

| Symbol | Supply valve | | Release valve |
|--------|--------------|--------------|---------------|
| | N.C. | Self-holding | N.C. |
| K | ● | — | ● |
| J | ● | — | — |
| R | — | ●*2 | ● |

*2 Supply valve maintains vacuum by energization (20 ms or more). Stopping the vacuum turns on the release valve.

6 Connector (Supply valve/Release valve/Pressure switch for vacuum)

| Symbol | For supply valve/release valve Centralized wiring specification (Plug-in) | For pressure switch for vacuum: 2 m (Lead wire with connector) | Pressure sensor assembly: 3 m (With lead wire) | Note |
|--------|--|--|--|-------------------------------------|
| C | ● | None | ● | Cannot be selected when 5 is N |
| C1 | ● | None | None | Cannot be selected when 5 is P or T |
| L | None | ● | ● | Cannot be selected when 5 is N |
| L1 | None | None | ● | Cannot be selected when 5 is N |
| L2 | None | ● | None | Cannot be selected when 5 is P or T |
| L3 | None | None | None | Cannot be selected when 5 is P or T |

*4 For the connector length other than 300 mm, order the connector assembly on page 32 separately.

8 Option*5 (For details on the Function/Application, refer to page 42.)

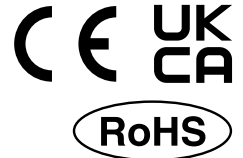
| Symbol | Type | Note | |
|--------|--|---|------------------------------------|
| Nil | Without option | — | |
| E | Screwdriver operation type long lock nut | Cannot be selected when 3 is J | |
| | | | Lock nut |
| | | | Vacuum break flow adjusting needle |
| J | Round lock nut | Can be selected only for the combination of J and K | |
| K | Screwdriver operation type | | |
| L | Manifold individual supply specification*6 | Individual supply port | |
| P | With manifold common release pressure supply (PD) port | Cannot be selected when 3 is J | |
| W | With exhaust interference prevention valve | Exhaust interference prevention valve | |

*5 When more than one option is selected, list the option symbols in alphabetical order. (Example -EL)

*6 When F or H is selected for 1 and L is selected for the option, the space for adjusting the needle is reduced. Products which can be operated more easily can be specified by option E or K.

Ejector System Vacuum Unit

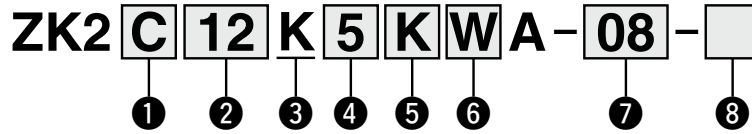
ZK2□A Series



For Manifold Ejector + With Valve + With Energy Saving Function

Refer to page 14 for How to Order Manifold, pages 26 and 30 for the port layouts (including circuit examples).

How to Order



1 Body/Exhaust type

| Symbol | Body | Exhaust type |
|--------|--|--|
| C | For Manifold | Complex exhaust*1 <ul style="list-style-type: none"> Direct exhaust End plate exhaust |
| | | Individual port exhaust <ul style="list-style-type: none"> Individual port exhaust |
| H | High-noise reduction silencer exhaust <ul style="list-style-type: none"> High-noise reduction silencer exhaust | |

*1 Combination of direct exhaust and end plate exhaust from each station

2 Nominal nozzle size

| Symbol | Nominal nozzle size |
|--------|---------------------|
| 07 | ø0.7 |
| 10 | ø1.0 |
| 12 | ø1.2 |
| 15 | ø1.5 |

* Refer to page 18 for the standard supply pressure per nozzle diameter.

3 Combination of supply valve and release valve

| Symbol | Supply valve | Release valve |
|--------|--------------|---------------|
| | N.C. | N.C. |
| K | ● | ● |

4 Rated voltage (Supply valve/Release valve)

| Symbol | Voltage |
|--------|---------|
| 5 | 24 VDC |
| 6 | 12 VDC |

5 Pressure switch for vacuum with energy saving function

| Symbol | Pressure range [kPa] | Specifications | | |
|--------|----------------------|----------------|-----|--------------------------------|
| | | NPN | PNP | With unit selection function*2 |
| K | -100 to 100 | ● | — | ● |
| Q | | ● | — | None (SI unit only) |
| R | | — | ● | ● |
| S | | — | ● | None (SI unit only) |

*2 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

6 Connector

| Symbol | For pressure switch for vacuum with energy saving function: 2 m (Lead wire with connector) |
|--------|--|
| W | ● |
| L3 | None |

7 Vacuum (V) port

| Symbol | Vacuum (V) port |
|--------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

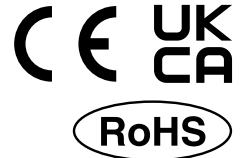
8 Option*3 (For details on the Function/Application, refer to page 42.)

| Symbol | Type | Note | |
|--------|--|---|--|
| Nil | Without option | — | |
| E | Vacuum break flow adjusting needle <ul style="list-style-type: none"> Screwdriver operation type long lock nut | Can be selected only for the combination of J and K | |
| J | | | Round lock nut <ul style="list-style-type: none"> Lock nut |
| K | | | Screwdriver operation type <ul style="list-style-type: none"> Vacuum break flow adjusting needle |
| L | Manifold individual supply specification*4 <ul style="list-style-type: none"> Individual supply port | — | |
| P | With manifold common release pressure supply (PD) port | Cannot be selected when ③ is J | |

*3 When more than one option is selected, list the option symbols in alphabetical order. (Example -EL)

*4 When F or H is selected for ① and L is selected for the option, the space for adjusting the needle is reduced. Products which can be operated more easily can be specified by option E or K.

Ejector System Vacuum Unit

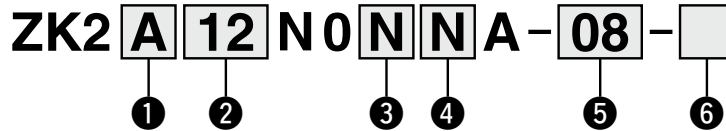


ZK2□A Series

Single Unit For Manifold Ejector + Without Valve + Without Energy Saving Function

Refer to page 14 for How to Order Manifold.

How to Order



1 Body/Exhaust type

| Symbol | Body | Exhaust type |
|--------|--------------|---------------------------------------|
| A | Single unit | Silencer exhaust*1 |
| | | Port exhaust |
| | | High-noise reduction silencer exhaust |
| C | For Manifold | Complex exhaust*2 |
| | | Individual port exhaust |
| H | For Manifold | High-noise reduction silencer exhaust |
| | | High-noise reduction silencer exhaust |

*1 With exhaust port when 2 is 12 or 15

*2 Combination of direct exhaust and end plate exhaust from each station

2 Nominal nozzle size

| Symbol | Nominal nozzle size |
|--------|---------------------|
| 07 | ø0.7 |
| 10 | ø1.0 |
| 12 | ø1.2 |
| 15 | ø1.5 |

* Refer to page 18 for the standard supply pressure per nozzle diameter.

4 Connector

| Symbol | For pressure switch for vacuum: 2 m (Lead wire with connector) | Pressure sensor assembly: 3 m (With lead wire) | Note |
|--------|--|--|---|
| Y | ● | | Cannot be selected when 3 is N |
| Y1 | None | | Cannot be selected when 3 is P, T, or N |
| N | None | | When "N" is selected for 3 |

3 Pressure switch for vacuum/Pressure sensor

| Symbol | Type | Pressure range [kPa] | Specifications | | | |
|--------|--|----------------------|----------------|------------------------|--------------------------------|--|
| | | | NPN 2 outputs | PNP | With unit selection function*3 | |
| A | Pressure switch for vacuum | 0 to -101 | ● | — | ● | |
| B | | | ● | — | None (SI unit only) | |
| C | | | — | ● | ● | |
| D | | | — | ● | None (SI unit only) | |
| E | | | ● | — | ● | |
| F | | -100 to 100 | ● | — | None (SI unit only) | |
| H | | | — | ● | ● | |
| J | | | — | ● | None (SI unit only) | |
| P | | | 0 to -101 | Analog output 1 to 5 V | | |
| T | | | -100 to 100 | Analog output 1 to 5 V | | |
| N | Without pressure switch for vacuum/pressure sensor | | | | | |

*3 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

5 Vacuum (V) port

| Symbol | Vacuum (V) port |
|--------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

6 Option*4 (For details on the Function/Application, refer to page 42.)

| Symbol | Type | Note |
|--------|--|---|
| Nil | Without option | — |
| B | Mounting bracket for single unit (nuts and bolts are included) | Cannot be selected when 1 is C, F, or H |
| L | Manifold individual supply specification*5 | Cannot be selected when 1 is A, B, or G |
| W | With exhaust interference prevention valve | Install the release valve or vacuum breaker in the middle of the vacuum piping. |

*4 When more than one option is selected, list the option symbols in alphabetical order. (Example -BW)

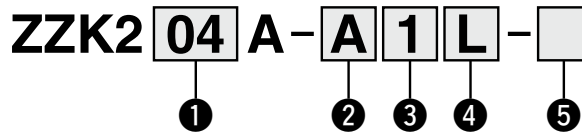
*5 When F or H is selected for 1 and L is selected for the option, the space for adjusting the needle is reduced. Products which can be operated more easily can be specified by option E or K.

ZK2□A Series

Manifold

Refer to pages 11 to 13 for the ejector installed to the manifold, pages 25, 26, 28 to 30 for the port layouts (including circuit examples), and pages 39 to 41 for the dimensions.

How to Order Manifold



If the manifold parts (set of end plates for both ends and tension bolts) are shipped unassembled, please refer to page 33.

1 Stations

| Symbol | Stations |
|--------|-------------|
| 01 | 1 station |
| 02 | 2 stations |
| ⋮ | ⋮ |
| 10 | 10 stations |

* For adequate performance, the number of stations that can be operated simultaneously depends on the nozzle diameter. Refer to the Max. Number of Manifold Stations that can be Operated Simultaneously in page 18.

2 System/Port

| Symbol | System | Port |
|--------|----------------|--------------------|
| A | Ejector system | ø8 (Common PV) |
| AN | | ø5/16" (Common PV) |

3 Exhaust

| Symbol | Exhaust | Selectable single unit number |
|--------|--------------------|-------------------------------|
| 1 | Complex exhaust*1 | ZK2C |
| 2 | Individual exhaust | ZK2F, ZK2H |

*1 Combination of direct exhaust and end plate exhaust from each station

4 Supply valve and release valve wiring*2

| Symbol | Wiring | Selectable wiring for manifold (Refer to 6 on pages 11 and 12, and 4 on page 13.) | | | | | | | | | |
|--------|-----------------------------|--|----|---|----|----|----|---|---|----|---|
| | | C | C1 | L | L1 | L2 | L3 | W | Y | Y1 | N |
| L | Individual wiring | — | — | ● | ● | ● | ● | ● | — | — | — |
| F | D-sub connector | ● | ● | — | — | — | — | — | — | — | — |
| P | Flat ribbon cable connector | ● | ● | — | — | — | — | — | — | — | — |
| N | No wiring (No valve) | — | — | — | — | — | — | — | ● | ● | ● |

*2 Common wiring F/P is available only for solenoid valve wiring. Individual wiring is specified for vacuum switches and sensors.

5 Option*3 (For details on the Function/Application, refer to page 42.)

| Symbol | Type | Selectable option for manifold (Refer to 8 on pages 11 and 12, and 6 on page 13.) | | | | | | Note |
|--------|--|--|---|---|-----|-----|---|--------------------------------|
| | | E | J | K | L | P | W | |
| Nil | Without option | ● | ● | ● | — | — | ● | — |
| B | With DIN rail mounting bracket*4 | ● | ● | ● | ● | ● | ● | — |
| D | With common release pressure supply (PD) port | ● | ● | ● | — | ⊙*5 | ● | Cannot be selected when 0 is N |
| L | Manifold individual supply specification Individual supply port | ● | ● | ● | ⊙*5 | — | ● | — |

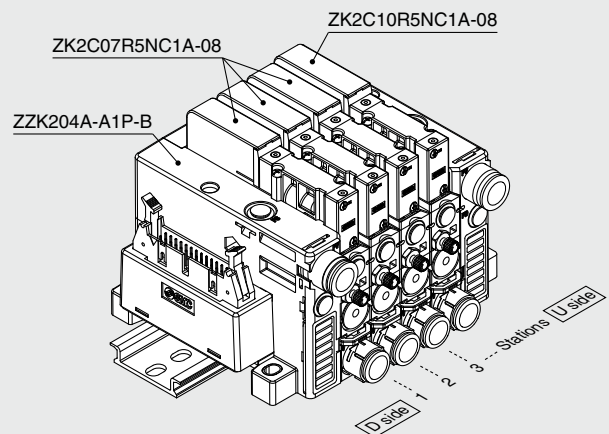
*3 When more than one option is selected, list the option symbols in alphabetical order. (Example -BD)

*4 The DIN rail should be ordered separately. (Refer to page 33.)

*5 When the option D is selected, select P for single unit for manifold. When the option L is selected, select L for single unit for manifold. (⊙ must be selected.)

How to Order Valve Manifold Assembly

Example

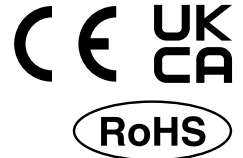


ZK204A-A1P-B 1 set (Manifold part number)
 * ZK2C07R5NC1A-08 3 sets
 * ZK2C10R5NC1A-08 1 set
 ↳ The asterisk denotes the symbol for the assembly.
 * Prefix to the single unit part number.

- When the manifold is viewed from V port, the first station starts from the left (D side).
- After the manifold part number, specify the installed single unit from the first station.
- Complex exhaust and individual port exhaust cannot be mixed in the ejector system manifold.
- The DIN rail should be ordered separately. (Refer to page 33.)

Vacuum Pump System Vacuum Unit

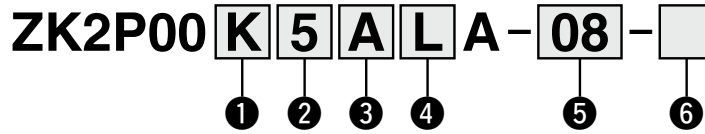
ZK2□A Series



Single Unit Vacuum Pump System + **With** Valve + **Without** Energy Saving Function

Refer to pages 24 and 26 for the port layouts (including circuit examples) and page 35 for the dimensions.

How to Order



1 Combination of supply valve and release valve

| Symbol | Supply valve | | Release valve |
|----------|--------------|--------------|---------------|
| | N.C. | Self-holding | N.C. |
| K | ● | — | ● |
| J | ●*1 | — | — |
| R | — | ●*2 | ● |

- *1 Install the release valve or vacuum breaker in the middle of the vacuum piping.
- *2 Supply valve maintains vacuum by energization (20 ms or more). Stopping the vacuum turns on the release valve. Refer to the precaution on page 44.

2 Rated voltage (Supply valve/Release valve)

| Symbol | Voltage |
|----------|---------|
| 5 | 24 VDC |
| 6 | 12 VDC |

3 Pressure switch for vacuum/Pressure sensor

| Symbol | Type | Pressure range [kPa] | Specifications | | |
|----------|--|----------------------|------------------------|---------------------|--------------------------------|
| | | | NPN | PNP | With unit selection function*3 |
| A | Pressure switch for vacuum | 0 to -101 | ● | — | ● |
| B | | | ● | — | None (SI unit only) |
| C | | | — | ● | ● |
| D | | | — | ● | None (SI unit only) |
| E | | | ● | — | ● |
| F | -100 to 100 | ● | — | None (SI unit only) | |
| H | | — | ● | ● | |
| J | | — | ● | None (SI unit only) | |
| P | Pressure sensor | 0 to -101 | Analog output 1 to 5 V | | |
| T | | -100 to 100 | | | |
| N | Without pressure switch for vacuum/pressure sensor | | | | |

- *3 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

4 Connector (Supply valve/Release valve/Pressure switch for vacuum)

| Symbol | For supply valve/release valve: 300 mm (Connector assembly)*4 | For pressure switch for vacuum: 2 m (Lead wire with connector) | Pressure sensor assembly: 3 m (With lead wire) | Note |
|-----------|---|--|--|-------------------------------------|
| L | ● | — | ● | Cannot be selected when 3 is N |
| L1 | None | — | ● | |
| L2 | ● | — | None | Cannot be selected when 3 is P or T |
| L3 | None | — | None | |

- *4 For the connector length other than 300 mm, order the connector assembly on page 32 separately.

5 Vacuum (V) port

| Symbol | Vacuum (V) port |
|-----------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

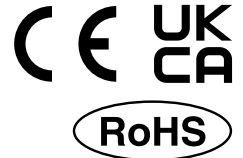
6 Option*5 (For details on the Function/Application, refer to page 42.)

| Symbol | Type | Note |
|------------|--|--|
| Nil | Without option | — |
| B | Mounting bracket for single unit (nuts and bolts are included) | Bracket |
| C | Vacuum pump system PE port female thread specification (M3) | PE port |
| D | With individual release pressure supply (PD) port (M3)*6 | PD port |
| E | Screwdriver operation type long lock nut | Screwdriver operation type long lock nut |
| J | Round lock nut | Lock nut |
| K | Screwdriver operation type | Vacuum break flow adjusting needle |

- *5 When more than one option is selected, list the option symbols in alphabetical order. (Example -BJ)
- *6 Use a One-touch fitting or barb fitting (M-3AU-4) for piping. (O.D.: Within ø6.2)

Vacuum Pump System Vacuum Unit

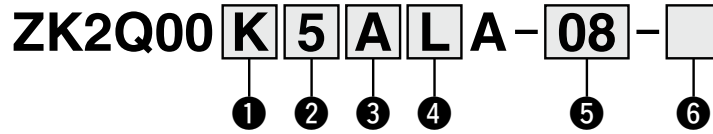
ZK2□A Series



For Manifold Vacuum Pump System + **With** Valve + **Without** Energy Saving Function

Refer to page 17 for How to Order Manifold, pages 24 and 27 for the port layouts (including circuit examples), and pages 39 to 41 for the dimensions.

How to Order



① Combination of supply valve and release valve

| Symbol | Supply valve | | Release valve |
|----------|--------------|--------------|---------------|
| | N.C. | Self-holding | N.C. |
| K | ● | — | ● |
| J | ●*1 | — | — |
| R | — | ●*2 | ● |

- *1 Install the release valve or vacuum breaker in the middle of the vacuum piping.
- *2 Supply valve maintains vacuum by energization (20 ms or more). Stopping the vacuum turns on the release valve. Refer to the precaution on page 44.

② Rated voltage (Supply valve/Release valve)

| Symbol | Voltage |
|----------|---------|
| 5 | 24 VDC |
| 6 | 12 VDC |

③ Pressure switch for vacuum/Pressure sensor

| Symbol | Type | Pressure range [kPa] | Specifications | | |
|----------|--|----------------------|------------------------|-----|--------------------------------|
| | | | NPN | PNP | With unit selection function*3 |
| A | Pressure switch for vacuum | 0 to -101 | ● | — | ● |
| B | | | ● | — | None (SI unit only) |
| C | | | — | ● | ● |
| D | | -100 to 100 | ● | — | ● |
| E | | | ● | — | None (SI unit only) |
| F | | | — | ● | ● |
| H | Pressure sensor | 0 to -101 | Analog output 1 to 5 V | | |
| T | | -100 to 100 | Analog output 1 to 5 V | | |
| N | Without pressure switch for vacuum/pressure sensor | | | | |

- *3 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

④ Connector (Supply valve/Release valve/Pressure switch for vacuum)

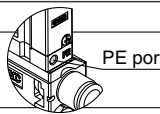
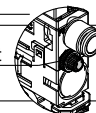
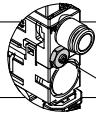
| Symbol | For supply valve/release valve | | For pressure switch for vacuum: 2 m (Lead wire with connector) | Pressure sensor assembly: 3 m (With lead wire) | Note |
|-----------|--|--|--|--|-------------------------------------|
| | Centralized wiring specification (Plug-in) | Individual wiring specification: 300 mm (Connector assembly)*4 | | | |
| C | ● | None | ● | — | Cannot be selected when ③ is N |
| C1 | ● | None | None | — | Cannot be selected when ③ is P or T |
| L | None | ● | ● | — | Cannot be selected when ③ is N |
| L1 | None | None | ● | — | |
| L2 | None | ● | None | — | |
| L3 | None | None | None | — | Cannot be selected when ③ is P or T |

- *4 For the connector length other than 300 mm, order the connector assembly on page 32 separately.

⑤ Vacuum (V) port

| Symbol | Vacuum (V) port |
|-----------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

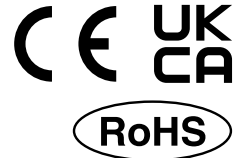
⑥ Option*5 (For details on the Function/Application, refer to page 42.)

| Symbol | Type | Note |
|------------|---|--|
| Nil | Without option | — |
| C | Vacuum pump system PE port female thread specification (M3) |  PE port When R is selected for ①, P needs to be selected. |
| E | Screwdriver operation type long lock nut |  Lock nut Cannot be selected when ① is J Can be selected only for the combination of J and K |
| J | Round lock nut | |
| K | Screwdriver operation type | |
| P | With manifold common release pressure supply (PD) port |  Vacuum break flow adjusting needle Cannot be selected when ① is J |

- *5 When more than one option is selected, list the option symbols in alphabetical order. (Example -EP)

Vacuum Pump System Vacuum Unit

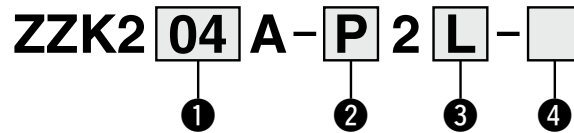
ZK2□A Series



Manifold

Refer to page 16 for the vacuum pump system installed to the manifold, pages 24 and 27 for the port layouts (including circuit examples), and pages 39 to 41 for the dimensions.

How to Order Manifold



If the manifold parts (set of end plates for both ends and tension bolts) are shipped unassembled, please refer to page 33.

① Stations

| Symbol | Stations |
|--------|-------------|
| 01 | 1 station |
| 02 | 2 stations |
| ⋮ | ⋮ |
| 10 | 10 stations |

② System/Port

| Symbol | System | Port |
|--------|--------------------|---|
| P | Vacuum pump system | ø8 (Common PV) ø6 (Common PS) |
| PN | | ø5/16" (Common PV) ø1/4" (Common PS) |

③ Supply valve and release valve wiring*1

| Symbol | Wiring | Selectable wiring for manifold ④ (Refer to page 16.) | | | | | |
|--------|-----------------------------|---|----|---|----|----|----|
| | | C | C1 | L | L1 | L2 | L3 |
| L | Individual wiring | — | — | ● | ● | ● | ● |
| F | D-sub connector | ● | ● | — | — | — | — |
| P | Flat ribbon cable connector | ● | ● | — | — | — | — |

*1 Common wiring F/P is available only for solenoid valve wiring. Individual wiring is specified for vacuum switches and sensors.

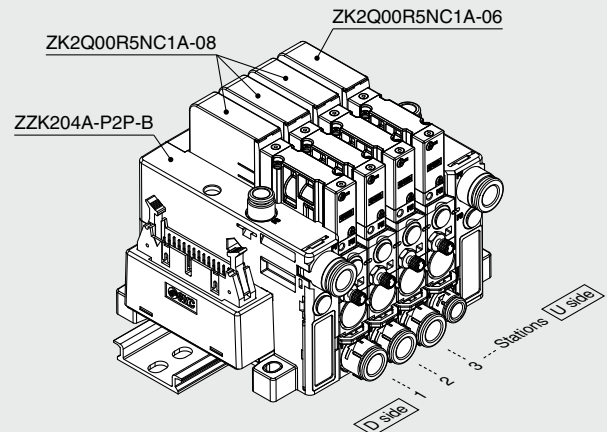
④ Option*2 (For details on the Function/Application, refer to page 42.)

| Symbol | Type | Selectable option for manifold ④ (Refer to page 16.) | | | | |
|--------|---|---|---|---|---|-----|
| | | C | E | J | K | P |
| Nil | Without option | ● | ● | ● | ● | — |
| B | With DIN rail mounting bracket*3 | ● | ● | ● | ● | ● |
| D | With common release pressure supply (PD) port | ● | ● | ● | ● | ◎*4 |

- *2 When more than one option is selected, list the option symbols in alphabetical order. (Example -BD)
- *3 The DIN rail should be ordered separately. (Refer to page 33.)
- *4 When D is selected for manifold option, select P for single unit option. (◎ must be selected.)

How to Order Valve Manifold Assembly

Example



ZZK204A-P2P-B 1 set (Manifold part number)
 * ZK2Q00R5NC1A-08 3 sets
 * ZK2Q00R5NC1A-06 1 set

↳ * The asterisk denotes the symbol for the assembly.
 * Prefix to the single unit part number.

- When the manifold is viewed from V port, the first station starts from the left (D side).
- After the manifold part number, specify the installed single unit from the first station.
- The DIN rail should be ordered separately. (Refer to page 33.)

Specifications

General Specifications

| | | |
|--|-----------------------|--|
| Operating temperature range (No condensation) | -5 to 50°C | Without pressure sensor/switch With pressure sensor With pressure switch with energy saving function |
| | 0 to 50°C | With pressure sensor |
| Fluid | Air | |
| Vibration resistance*1 | 30 m/s ² | Without pressure sensor/switch With pressure sensor |
| | 20 m/s ² | With pressure switch |
| Impact*2, *3 resistance | 150 m/s ² | Without pressure sensor/switch With pressure sensor |
| | 100 m/s ² | With pressure switch |
| Standards | CE/UKCA marking, RoHS | |

- *1 The characteristics are satisfied when tested for 2 hours in each of the X, Y and Z directions at 10 to 500 Hz without energization. (Initial value)
 *2 The characteristics are satisfied when tested one time in each of the X, Y and Z directions without energization. (Initial value)
 *3 For valve type R (Self-holding release valve linked), impact resistance is 50 m/s².

Valve Common Specifications

| Model*4 | ZK2-VA□K | ZK2-VA□R | ZK2-VA□J |
|--------------------------|--|--|---|
| Type of actuation*5 | Supply valve: N.C. Release valve: N.C. | Self-holding release valve linked Release valve: N.C. | Supply valve: N.C. Release valve: None |
| Valve configuration*6 | Pilot operated dual 2-port | | Pilot operated 2-port |
| Operating pressure range | 0.3 to 0.6 MPa | | |
| Valve construction | Poppet seal | | |
| Manual override | Push type | | |
| Rated voltage | 24 VDC, 12 VDC | | |
| Power consumption | 0.4 W | | |
| Lead wire (ZK2-LV**A) | Cross section: 0.2 mm ² (AWG24) | | |
| | Insulator O.D.: 1.4 mm | | |

- *4 Refer to the Valve assembly on page 32 for the valve model number.
 *5 ZK2-VA□R: After instantaneous energization of the supply valve (20 ms or more), ON state is maintained without energization. Supply valve turns off simultaneously when the release valve turns on.
 ZK2-VA□K: Supply valve turns off when is not energized. Select this type when energy saving switch is used.
 *6 The V100 series is used as the pilot valve. For details on the V100 series, refer to the **V100 series** in the **Web Catalog** and the **3/4/5-port solenoid valve precautions**.

Ejector Specifications

| Item | Model | ZK2□07 | ZK2□10 | ZK2□12 | ZK2□15 | |
|----------------------------|---------------------------------------|-------------------------|--------|------------|--------|----|
| Nozzle diameter | [mm] | 0.7 | 1.0 | 1.2 | 1.5 | |
| Max. suction flow*7 | Port exhaust | [L/min (ANR)] | 34 | 56 | 74 | 89 |
| | Silencer exhaust/ Complex exhaust | [L/min (ANR)] | 29 | 44 | 61 | 67 |
| | High-noise reduction silencer exhaust | [L/min (ANR)] | 34 | 56 | 72 | 83 |
| Air consumption*7 | [L/min (ANR)] | 24 | 40 | 58 | 90 | |
| Max. vacuum pressure*7 | [kPa] | -91 | | | | |
| Supply pressure range*8 | [MPa] | 0.3 to 0.6 (0.1 to 0.6) | | | | |
| Standard supply pressure*9 | [MPa] | 0.35 | | 0.4 (0.37) | | |

- *7 Values at the standard supply pressure. Values are based on standard of SMC measurements. They depend on atmospheric pressure (weather, altitude, etc.) and measurement method.
 *8 The value in () is for without valve.
 *9 The value in () is for without valve. For nozzle size 07 to 12, the value is common to the ejectors with valve and without valve.

Max. Number of Manifold Stations that Can Operate Simultaneously*10

| Item | Model (Nozzle size) | ZK2□07 | ZK2□10 | ZK2□12 | ZK2□15 | |
|---|--|------------------------|--------|--------|--------|---|
| Air pressure supply (PV) port ø8, ø5/16" | Complex exhaust | Supply from one side | 8 | 5 | 4 | 3 |
| | | Supply from both sides | 10 | 7 | 5 | 5 |
| | Individual port exhaust, High-noise reduction silencer exhaust | Supply from one side | 8 | 6 | 6 | 3 |
| | | Supply from both sides | 10 | 9 | 9 | 6 |

- *10 As long as the number of stations operated simultaneously is the value on the table or less, then the manifold is available up to 10 stations.

Noise Level (Reference values)

| Item | Model | ZK2□07 | ZK2□10 | ZK2□12 | ZK2□15 |
|----------------------|--|--------|--------|--------|--------|
| Noise level [dB (A)] | ZK2G (High-noise reduction silencer exhaust) | 46 | 55 | 63 | 69 |
| | ZK2A (Silencer exhaust) | 59 | 66 | 75 | 76 |

Actual values under SMC's measurement conditions (Not guaranteed values)

Weight

Single Unit

| Single unit model | Weight [g] |
|--|------------|
| ZK2P00K□N□A (Vacuum pump system, Single unit, Without pressure sensor/switch) | 110 |
| ZK2A□K□N□A (Ejector system, Single unit, Without pressure sensor/switch) | 95 |
| ZK2A□N0NN (Ejector system, Single unit, Without valve) | 54 |
| ZK2 (One station for manifold, Without pressure sensor/switch) | 99 |

Pressure Sensor/Pressure Switch for Vacuum

| Pressure sensor/Pressure switch for vacuum model | Weight [g] |
|--|------------|
| ZK2-PS□-A (Except cable portion) | 5 |
| ZK2-ZS□-A (Except lead wire with connector) | 14 |

Manifold Base

| | 1 station | 2 stations | 3 stations | 4 stations | 5 stations | 6 stations | 7 stations | 8 stations | 9 stations | 10 stations |
|------------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| Weight [g] | 129 | 132 | 135 | 138 | 141 | 144 | 147 | 149 | 152 | 155 |

● Calculation of Weight for the Manifold Type

(Single unit weight x Number of stations) + (Pressure sensor/Pressure switch for vacuum weight x Number of stations) + Manifold base

Example) 5-station manifold with pressure sensors

$$99 \text{ g} \times 5 \text{ pcs.} + 5 \text{ g} \times 5 \text{ pcs.} + 141 \text{ g} = \mathbf{661 \text{ g}}$$

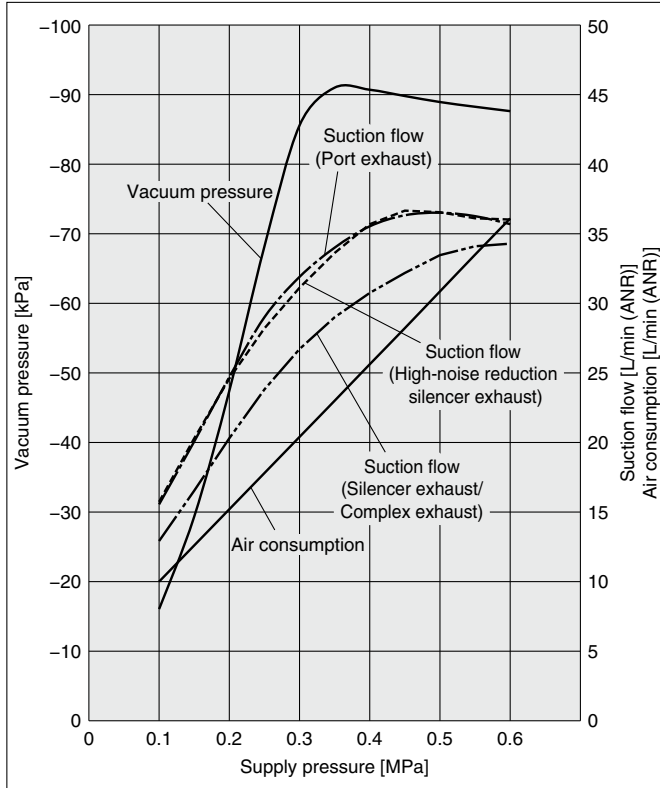
ZK2□A Series

Ejector Exhaust Characteristics/Flow Rate Characteristics (Representative value)

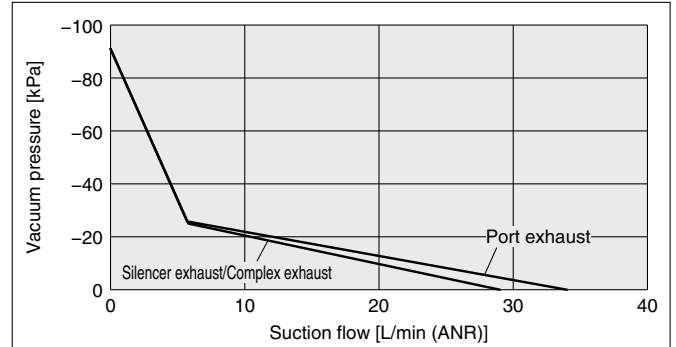
* The flow rate characteristics correspond to the standard supply pressure.

ZK2□07

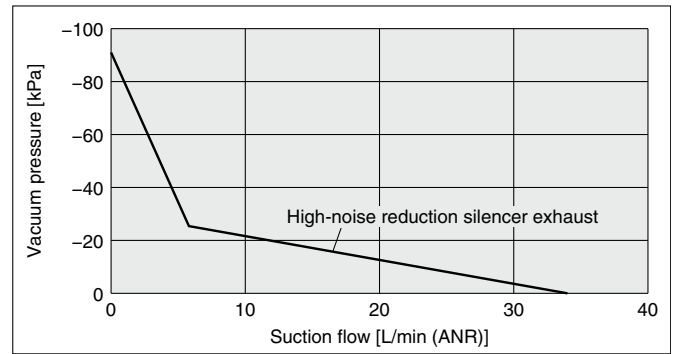
Exhaust Characteristics



Flow Rate Characteristics

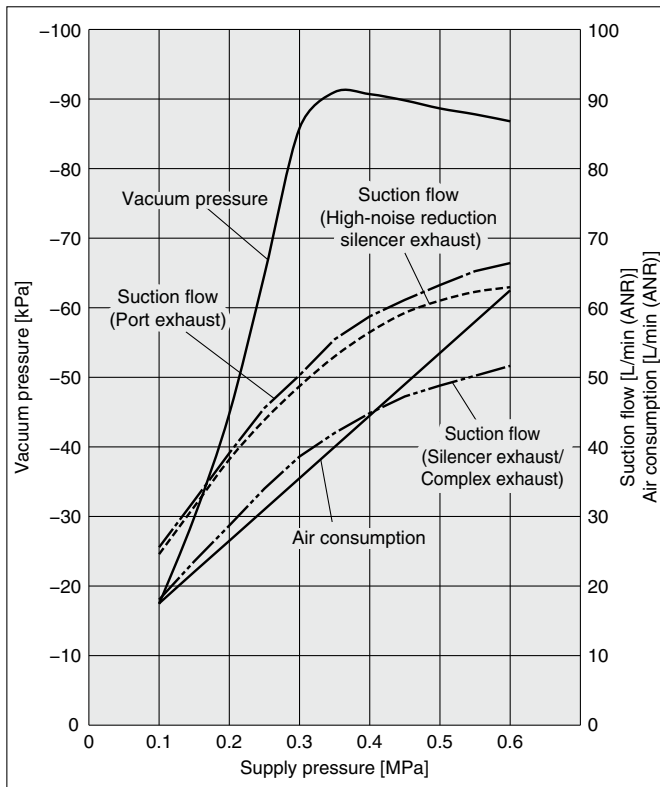


Flow Rate Characteristics

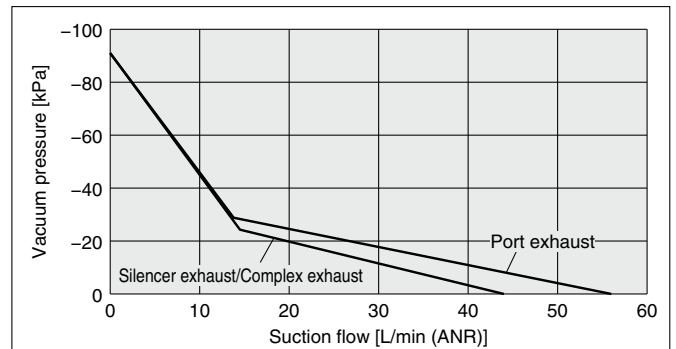


ZK2□10

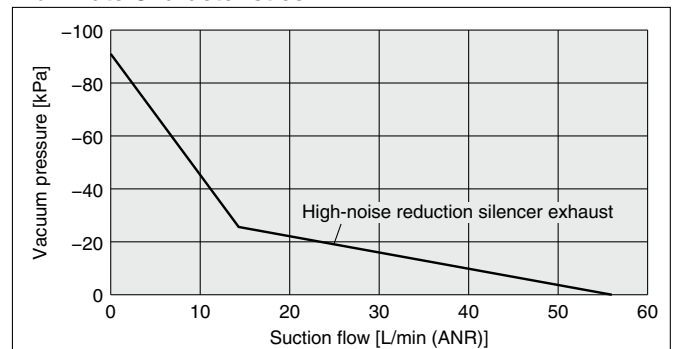
Exhaust Characteristics



Flow Rate Characteristics



Flow Rate Characteristics

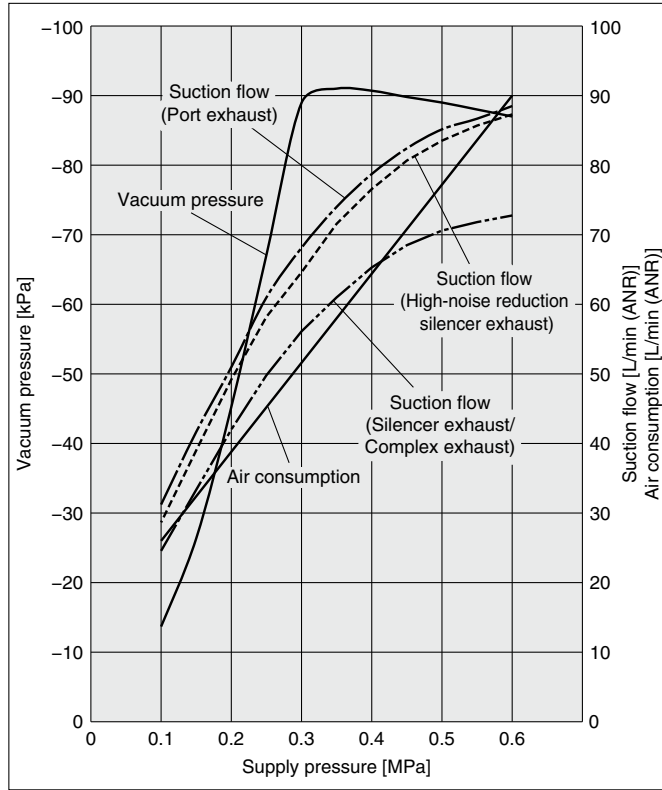


Ejector Exhaust Characteristics/Flow Rate Characteristics (Representative value)

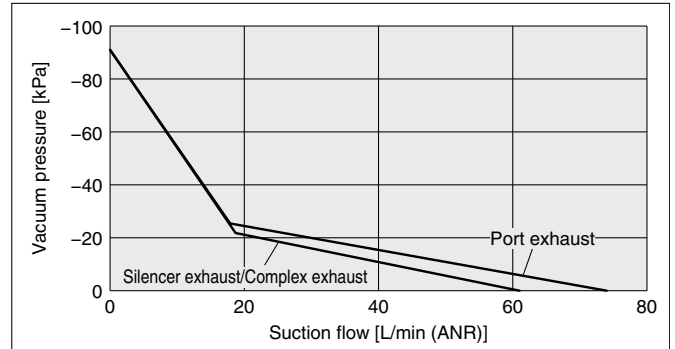
* The flow rate characteristics correspond to the standard supply pressure.

ZK2□12

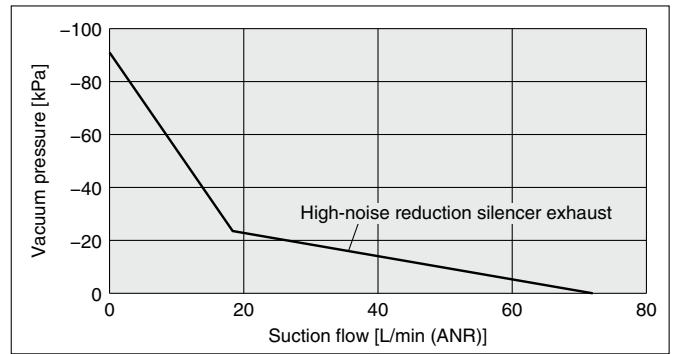
Exhaust Characteristics



Flow Rate Characteristics

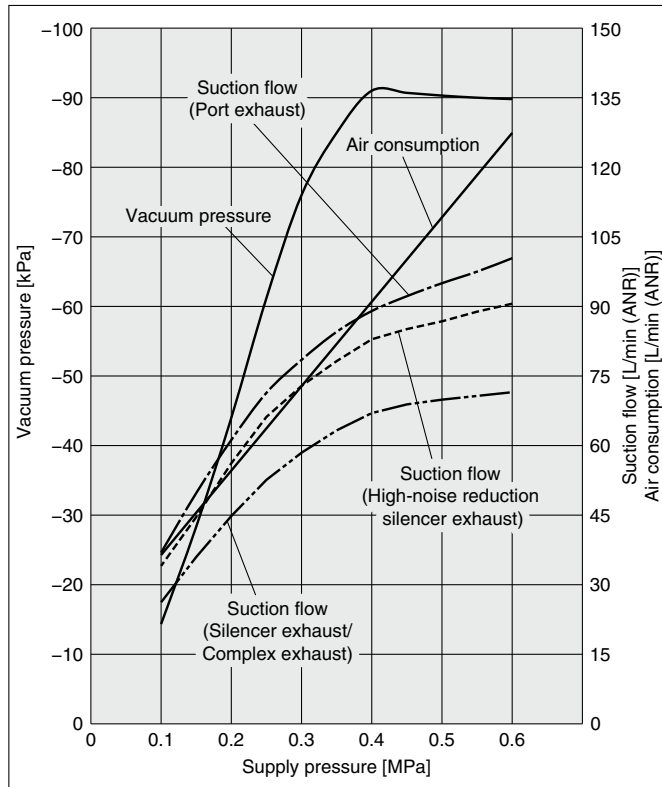


Flow Rate Characteristics

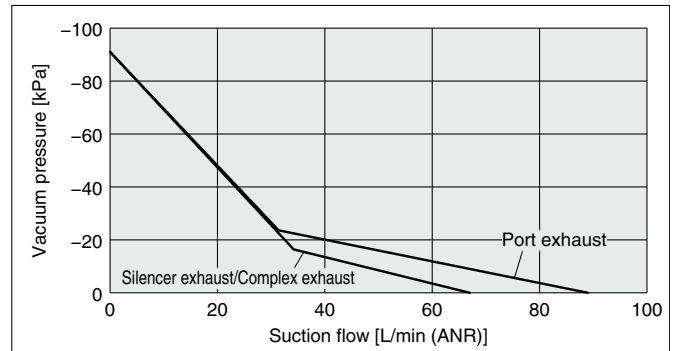


ZK2□15 * The following graphs show the characteristics of the ejector with valve. (Please contact SMC for models without valve.)

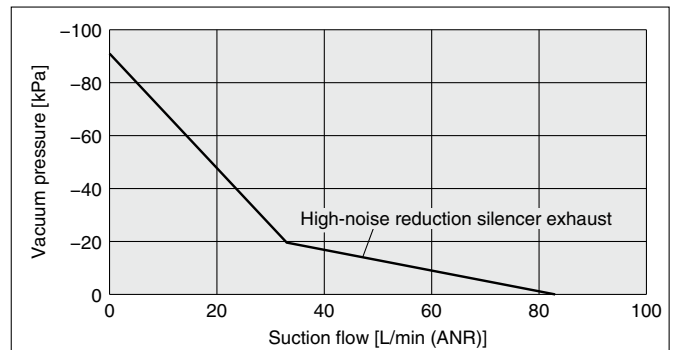
Exhaust Characteristics



Flow Rate Characteristics



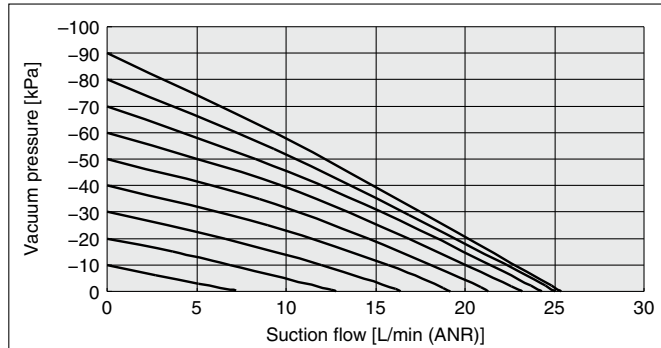
Flow Rate Characteristics



ZK2□□A Series

Vacuum Pump System Flow Rate Characteristics/ZK2P00

The graph shows the suction flow rate characteristics of the vacuum pump system at different vacuum pressures.

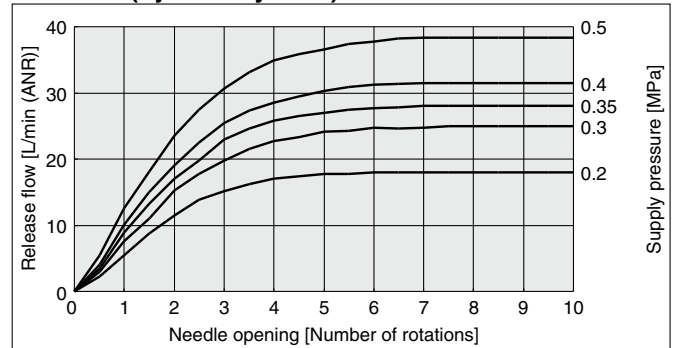


The actual suction flow at the point of suction varies depending on the piping conditions to the vacuum port. (The above graph shows the value when V port is ø8.)

Vacuum Release Flow Rate Characteristics

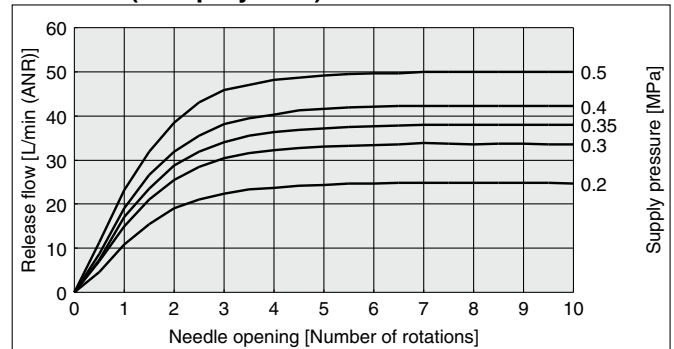
The graph shows the flow rate characteristics at different supply pressures when the vacuum break flow adjusting needle is open from the fully closed state.

ZK2□□□(Ejector System)



The actual suction flow at the point of suction varies depending on the piping conditions to the vacuum port. (The above graph shows the value of the ZK2B07.)

ZK2□□□(Pump System)



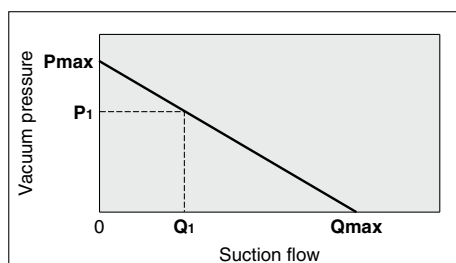
The actual suction flow at the point of suction varies depending on the piping conditions to the vacuum port.

Vacuum Pump System Flow Rate Characteristics of Flow Path and Vacuum Release

| Port size | | Flow rate characteristics of V → PV (Vacuum side) | | | Flow rate characteristics of PS → V (Vacuum release side)*1 | | |
|-----------|--------|---|------|------|---|------|------|
| PV port | V port | C[dm ³ /(s·bar)] | b | Cv | C[dm ³ /(s·bar)] | b | Cv |
| ø6 | ø8 | 0.39 | 0.14 | 0.09 | 0.20 | 0.06 | 0.04 |

*1 When needle is fully open

How to Read the Flow Rate Characteristics Graph

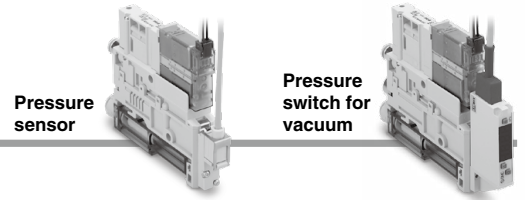


The flow rate characteristics indicate the relationship between the vacuum pressure and the suction flow of the ejector. They also show that when the suction flow changes, the vacuum pressure also changes. In general, this indicates the relationship at the ejector's standard operating pressure.

In the graph, **Pmax** indicates the max. vacuum pressure, and **Qmax** indicates the max. suction flow. These are the values that are published as specifications in catalogs, etc. Changes in vacuum pressure are explained in the order below.

1. If the ejector's suction port is closed and sealed tight, the suction flow becomes "0," and the vacuum pressure increases to the max. (**Pmax**).
2. If the suction port is opened gradually and air is allowed to flow (the air leaks), the suction flow increases, and the vacuum pressure decreases. (The condition of **P1** and **Q1**)
3. If the suction port is opened completely, the suction flow increases to the max. (**Qmax**), while the vacuum pressure then drops almost to "0" (atmospheric pressure).

As described above, the vacuum pressure changes when the suction flow changes. In other words, when there is no leakage from the vacuum (V) port, the vacuum pressure can reach its maximum, but as the amount of leakage increases, the vacuum pressure decreases. When the amount of leakage and the maximum suction flow become equal, the vacuum pressure becomes almost zero. When adsorbing workpieces which are permeable, subject to leakage, etc., caution is required as the vacuum pressure will not be very high.



Pressure Sensor/Pressure Switch for Vacuum Specifications

Pressure Sensor (For details, refer to the PSE series in the **Web Catalog**, and the Operation Manual.)

| Model (Sensor unit: Standard model number) | | ZK2-PS1-A (PSE541) | ZK2-PS3-A (PSE543) |
|--|--------------------------|---|--------------------|
| Rated pressure range | | 0 to -101 kPa | -100 to 100 kPa |
| Proof pressure | | 500 kPa | |
| Output voltage | | 1 to 5 VDC | |
| Output impedance | | Approx. 1 kΩ | |
| Power supply voltage | | 12 to 24 VDC ±10%, Ripple (p-p) 10% or less | |
| Current consumption | | 15 mA or less | |
| Accuracy | | ±2% F.S. (Ambient temperature at 25°C) | |
| Linearity | | ±0.4% F.S. | |
| Repeatability | | ±0.2% F.S. | |
| Effect of power supply voltage | | ±0.8% F.S. | |
| Environmental resistance | Temperature range | Stored: -20 to 70°C (No condensation or freezing) | |
| | Humidity range | Operating/Stored: 35 to 85% RH (No condensation) | |
| Temperature characteristics | | ±2% F.S. or less (Ambient temperature: 25°C reference) | |
| Material | Case | Resin case: PBT | |
| | Pressure sensing section | Sensor pressure receiving area: Silicon, O-ring: HNBR | |
| Lead wire | | Oil-resistant vinyl cable (elliptic) 3 cores, 2.7 x 3.2 mm, 3 m Cross section: 0.15 mm ² Insulator O.D.: 0.9 mm | |

Pressure Switch for Vacuum (For details, refer to the ZSE/ISE10 series in the **Web Catalog**, and the Operation Manual.)

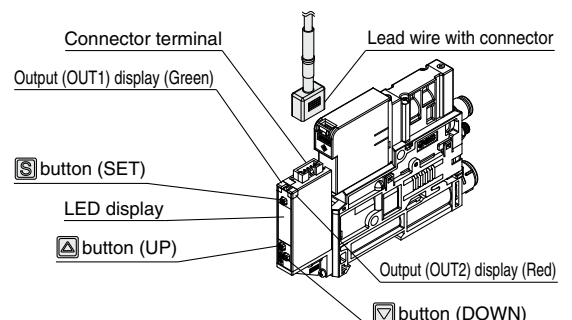
| Model (Switch unit: Standard model number) | | ZK2-ZSE□□□-A (ZSE10) | ZK2-ZSF□□□-A (ZSE10F) |
|--|--------------------------|---|-----------------------|
| Rated pressure range | | 0 to -101 kPa | -100 to 100 kPa |
| Set pressure range/Pressure display range | | 10 to -105 kPa | -105 to 105 kPa |
| Proof pressure | | 500 kPa | |
| Smallest settable increment | | 0.1 kPa | |
| Power supply voltage | | 12 to 24 VDC ±10%, Ripple (p-p) 10% or less (Protected against reverse connection) | |
| Current consumption | | 40 mA or less | |
| Switch output | Output type | NPN or PNP open collector 2 outputs (selectable) | |
| | Max. load current | 80 mA | |
| | Max. applied voltage | 28 V (with NPN output) | |
| | Residual voltage | 2 V or less (at load current of 80 mA) | |
| | Response time | 2.5 ms or less (with anti-chattering function: 20, 100, 500, 1000, 2000 ms) | |
| | Short circuit protection | Yes | |
| Repeatability | ±0.2% F.S. ±1 digit | | |
| Hysteresis | Hysteresis mode | Variable from 0*1 | |
| | Window comparator mode | | |
| Display type | | 3 1/2 digit, 7-segment LED, 1-color display (Red) | |
| Display accuracy | | ±2% F.S. ±1 digit (Ambient temperature at 25 ±3°C) | |
| Indicator light | | Lights up when output is turned ON. OUT1: Green, OUT2: Red | |
| Environmental resistance | Enclosure | IP40 | |
| | Temperature range | Stored: -10 to 60°C (No condensation or freezing) | |
| | Humidity range | Operating/Stored: 35 to 85% RH (No condensation) | |
| | Withstand voltage | 1000 VAC for 1 minute between terminals and housing | |
| | Insulation resistance | 50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing | |
| Temperature characteristics | | ±2% F.S. (Ambient temperature: based on 25°C) | |
| Lead wire | | Oilproof heavy-duty vinyl cable 5 cores ø3.5, 2 m Cross section: 0.15 mm ² (AWG26) Insulator O.D.: 1.0 mm | |

*1 If the applied pressure fluctuates around the set value, the hysteresis must be set to a value more than the fluctuating width. Otherwise, chattering will occur.

Description (Pressure Switch for Vacuum)

| | |
|-------------------------------|--|
| Output (OUT1) display (Green) | Lights up when OUT1 is turned ON. |
| Output (OUT2) display (Red) | Lights up when OUT2 is turned ON. Pressure switch for vacuum with energy saving function: LED (Red) is ON when the pilot valve for supply valve is energized. |
| LED display | Displays the current pressure, set mode and error code. |
| ▲ button (UP) | Selects the mode or increases the ON/OFF set value. Use for switching to the peak display mode. |
| ▼ button (DOWN) | Selects the mode or decreases the ON/OFF set value. Use for switching to the bottom display mode. |
| Ⓢ button (SET) | Use for changing the mode or setting the set value. |

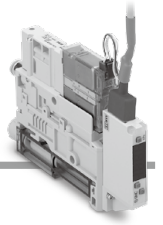
* Refer to the Operation Manual for details on each setting and operation methods.



ZK2□A Series

Pressure Switch for Vacuum with Energy Saving Function Specifications

Pressure switch for vacuum with energy saving function



Pressure Switch for Vacuum with Energy Saving Function

(For details, refer to the Operation Manual for the ZK2-ZSV□□□-A on the SMC website.)

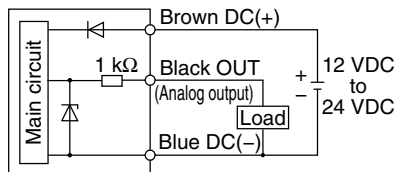
| Model | | ZK2-ZSV□□□-A |
|-----------------------------|-----------------------------|---|
| Rated pressure range | | -100 to 100 kPa |
| Set pressure range | | -105 to 105 kPa |
| Proof pressure | | 500 kPa |
| Smallest settable increment | | 0.1 kPa |
| Power supply voltage | | 12 to 24 VDC ±10%, Ripple (p-p) 10% or less (Protected against reverse connection) |
| Current consumption | | 40 mA or less |
| Switch output | Output type | NPN or PNP open collector OUT1: General purpose, OUT2: Valve control |
| | Max. load current | 80 mA |
| | Max. applied voltage | 26.4 VDC |
| | Residual voltage | 2 V or less (at load current of 80 mA) |
| | Response time | 2.5 ms or less (with anti-chattering function: 20, 100, 500, 1000, 2000 ms) |
| | Short circuit protection | Yes |
| Repeatability | | ±0.2% F.S. ±1 digit |
| Hysteresis | Hysteresis mode | Variable from 0*1 |
| Display type | | 3 1/2 digit, 7-segment LED, Color display (Red) |
| Display accuracy | | ±2% F.S. ±1 digit (Ambient temperature at 25 ±3°C) |
| Indicator light | | Lights up when output is turned ON. OUT1: Green, OUT2: Red |
| Environmental resistance | Enclosure | IP40 |
| | Operating temperature range | -5 to 50°C |
| | Withstand voltage | 1000 VAC for 1 minute between terminals and housing |
| Insulation resistance | | 50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing |
| Temperature characteristics | | ±2% F.S. (at 25°C in an operating temperature range of -5 and 50°C) |
| Lead wire | | Cable: 5 cores ø3.5, 2 m Cross section: 0.15 mm ² (AWG26) Insulator O.D.: 1.0 mm |

*1 If the applied pressure fluctuates around the set value, the hysteresis must be set to a value more than the fluctuating width. Otherwise, chattering will occur.

Internal Circuit and Wiring Example

Pressure Sensor

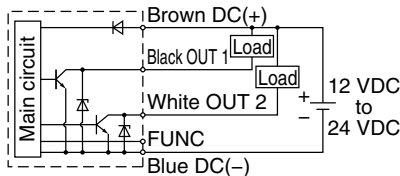
ZK2-PS□-A



Voltage output type: 1 to 5 V
Output impedance: Approx. 1 kΩ

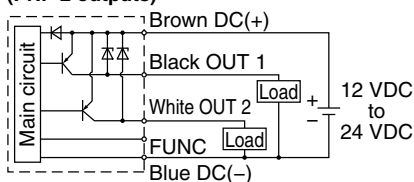
Pressure Switch for Vacuum

ZK2-ZS□A□□-A (NPN 2 outputs)



Max. 28 V, 80 mA
Residual voltage: 2 V or less

ZK2-ZS□B□□-A (PNP 2 outputs)

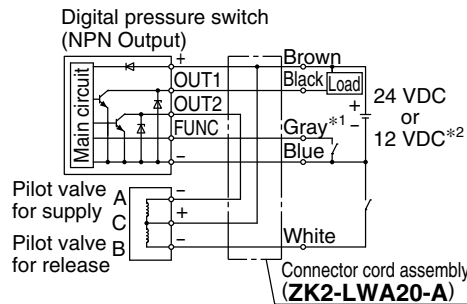


Max. 80 mA
Residual voltage: 2 V or less

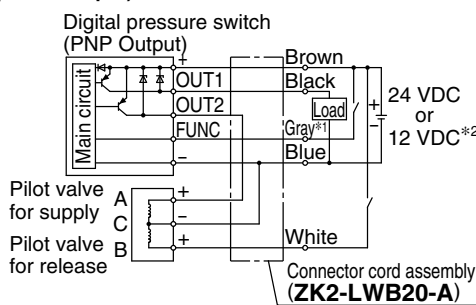
* The FUNC terminal is connected when using the copy function.
(For details, refer to the Operation Manual for the ZSE10/ISE10 on the SMC website.)

Pressure Switch for Vacuum with Energy Saving Function

ZK2-ZSVA□□-A (NPN 1 output)



ZK2-ZSVB□□-A (PNP 1 output)

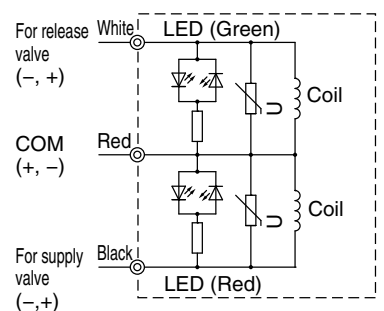


*1 The gray wire (FUNC) is connected when operating the supply valve by energy saving control (for workpiece adsorption). (For details, refer to the Operation Manual for the ZK2-ZSV□□□-A on the SMC website.)

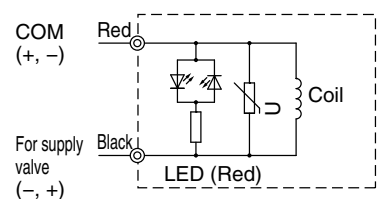
*2 When the valve's rated voltage is 12 VDC, be sure to apply 12 VDC.

Supply Valve/Release Valve

Valve type K/R (With supply valve/release valve)



Valve type J (With supply valve/Without release valve)



- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PS: Pilot pressure supply port
 - PD: Release pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
 - PE: Pilot pressure exhaust port
- For details ⇒ Page 30

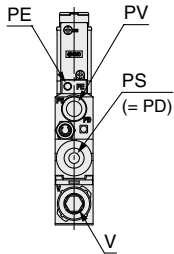
Port Layout

* System depends on vacuum source (vacuum pump/ejector).

Standard Products

Port layout No. **1**

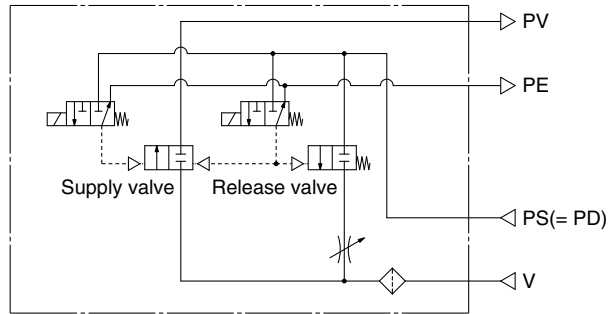
Single unit: ZK2P00R□N□A-□



| | | |
|-------------------------|------------------|---------------------|
| System | Vacuum pump | |
| Body type | Single unit | |
| Exhaust type | Without silencer | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | — |
| | Release pressure | Same pressure as PS |

Port combination: PV ≠ PS = PD

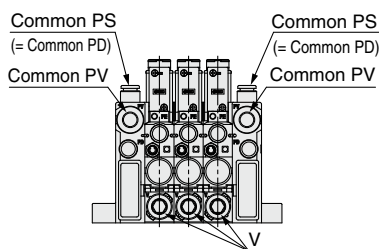
Circuit example



Supply valve: Self-holding type Release valve: N.C. (R type)

Port layout No. **2**

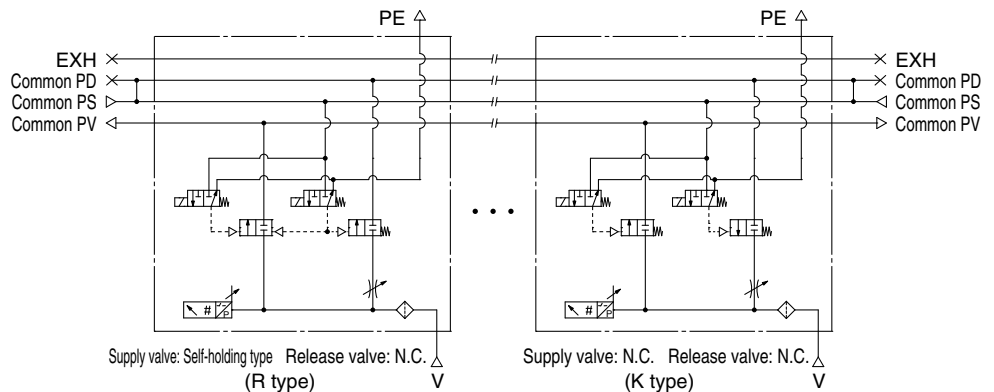
Single unit: ZK2Q00R□A□A-□
Manifold: ZZK2□A-P2□



| | | |
|-------------------------|------------------|----------------------------|
| System | Vacuum pump | |
| Body type | Manifold | |
| Exhaust type | Without silencer | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | — |
| | Release pressure | Same pressure as common PS |

Port combination: Common PV ≠ Common PS = Common PD

Circuit example

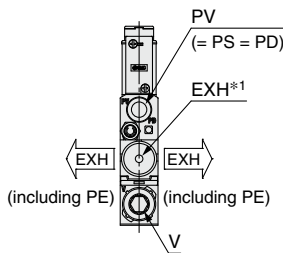


Supply valve: Self-holding type Release valve: N.C. (R type)

Supply valve: N.C. Release valve: N.C. (K type)

Port layout No. **3**

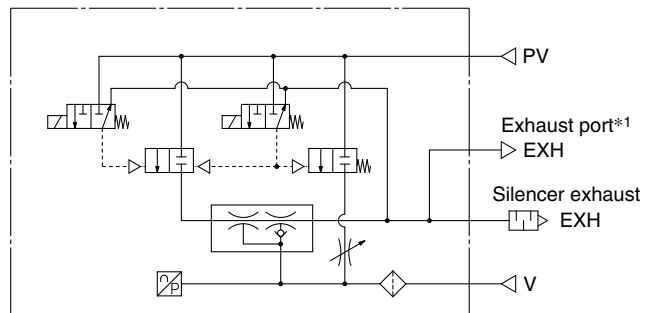
Single unit: ZK2A□R□P□A-□



| | | |
|-------------------------|------------------|-----------------------------------|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | Silencer exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | Released in operating environment |
| | Release pressure | Same pressure as PV |

Port combination: PV = PS = PD

Circuit example



Supply valve: Self-holding type Release valve: N.C. (R type)

*1 Nozzle size: 12, 15

Refer to page 30 for the purpose of port and the operating pressure range.

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PS: Pilot pressure supply port
 - PD: Release pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
 - PE: Pilot pressure exhaust port
- For details ⇒ Page 30

Port Layout

* System depends on vacuum source (vacuum pump/ejector).

Standard Products

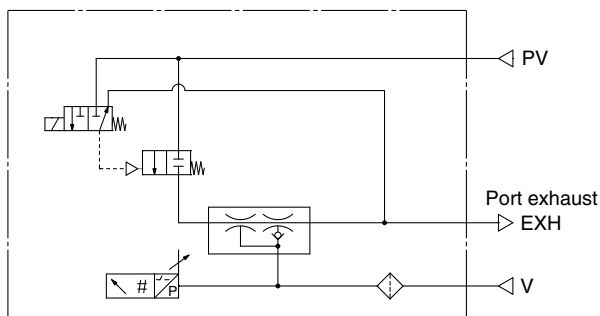
Port layout No. 4

Single unit: ZK2B□J□^A□^g□A-□

| | | |
|-------------------------|------------------|--|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | Port exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | After piping, individual exhaust is necessary. |
| | Release pressure | — |

Port combination: PV = PS

Circuit example



Supply valve: N.C. Release valve: Without release valve (J type)

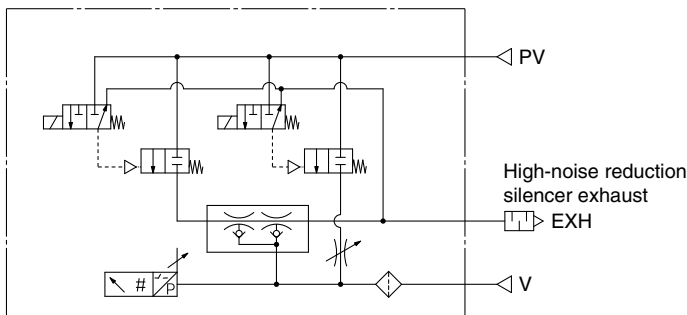
Port layout No. 5

Single unit: ZK2G□K□^k□^g□A-□

| | | |
|-------------------------|---------------------------------------|-----------------------------------|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | High-noise reduction silencer exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | Released in operating environment |
| | Release pressure | Same pressure as PV |

Port combination: PV = PS = PD

Circuit example



Supply valve: N.C. Release valve: N.C. (K type)

Port layout No. 6

Single unit: ZK2C□^p□^r□A-□

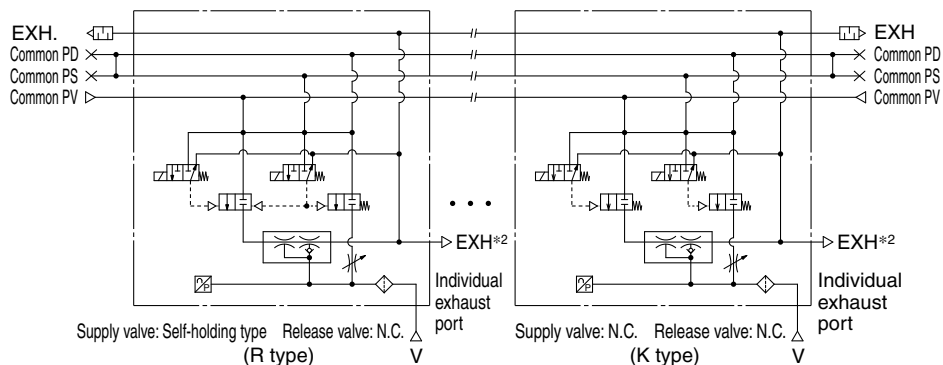
Manifold: ZZK2□A-A1□

*1 The complex exhaust is a combined exhaust method of the common exhaust from the end plate and the direct exhaust from each station.

| | | |
|-------------------------|-------------------|-----------------------------------|
| System | Ejector | |
| Body type | Manifold | |
| Exhaust type | Complex exhaust*1 | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | Released in operating environment |
| | Release pressure | Same pressure as common PV |

Port combination: Common PV = Common PS = Common PD

Circuit example



*2 For complex exhaust type, individual exhaust port is provided to each station.

Refer to page 30 for the purpose of port and the operating pressure range.

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PS: Pilot pressure supply port
 - PD: Release pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
 - PE: Pilot pressure exhaust port
- For details ⇒ Page 30

Port Layout

* System depends on vacuum source (vacuum pump/ejector).

Standard Products

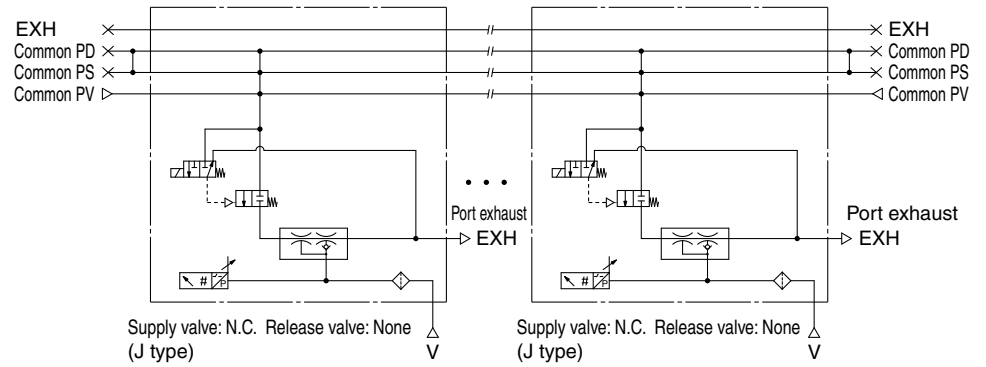
Port layout No. 7

Single unit: ZK2F□J□^A□□A-□
 Manifold: ZZK2□A-A2□

| System | Ejector | |
|-------------------------|-------------------------|--|
| Body type | Manifold | |
| Exhaust type | Individual port exhaust | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | After piping, individual exhaust is necessary. |
| | Release pressure | — |

Port combination: Common PV = Common PS

Circuit example



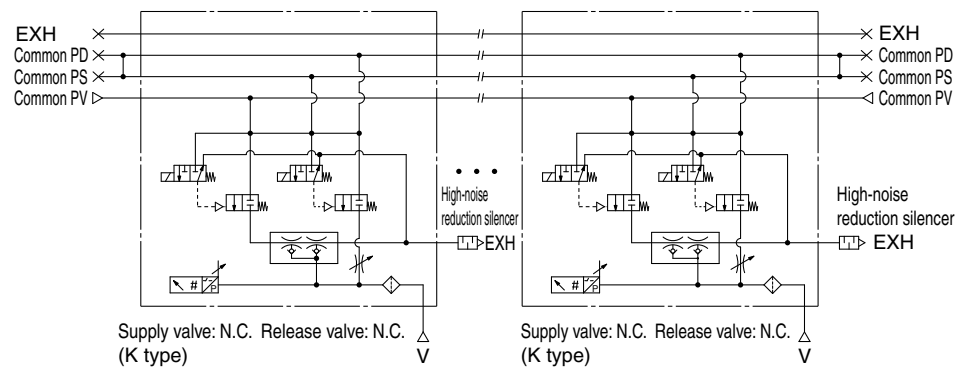
Port layout No. 8

Single unit: ZK2H□K□^K□□A-□
 Manifold: ZZK2□A-A2□

| System | Ejector | |
|-------------------------|---------------------------------------|-----------------------------------|
| Body type | Manifold | |
| Exhaust type | High-noise reduction silencer exhaust | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | Released in operating environment |
| | Release pressure | Same pressure as common PV |

Port combination: Common PV = Common PS = Common PD

Circuit example



Option -D

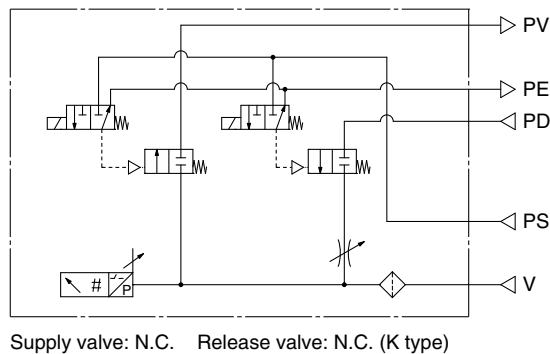
Port layout No. 9

Single unit: ZK2P00K□^A□□A-□-D

| System | Vacuum pump | |
|-------------------------|------------------|--|
| Body type | Single unit | |
| Exhaust type | Without silencer | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | — |
| | Release pressure | PD pressure has to be supplied with PS pressure. |

Port combination: PV ≠ PS ≠ PD

Circuit example



Refer to page 30 for the purpose of port and the operating pressure range.

ZK2□A Series

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PS: Pilot pressure supply port
 - PD: Release pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
 - PE: Pilot pressure exhaust port
- For details ⇒ Page 30

Port Layout

* System depends on vacuum source (vacuum pump/ejector).

Option -D

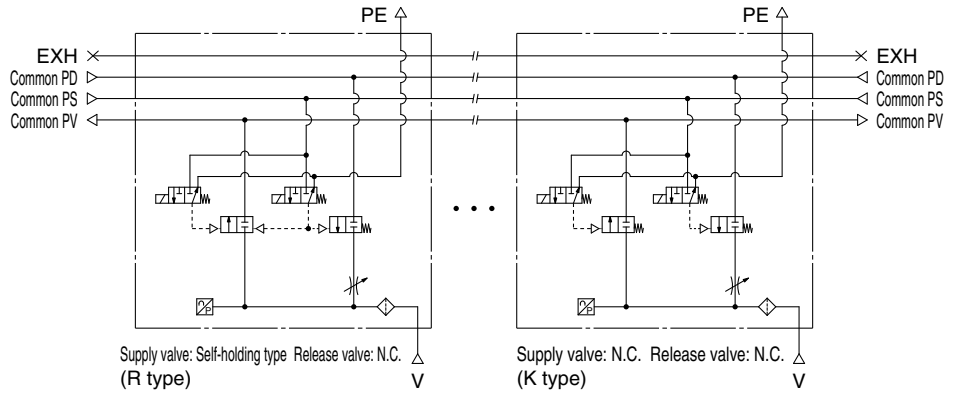
Port layout No. 10

Single unit: ZK2Q00□□□A-□-P
Manifold: ZZK2□A-P2□-D

| | |
|-------------------------|---|
| System | Vacuum pump |
| Body type | Manifold |
| Exhaust type | Without silencer |
| Application and purpose | Vacuum pressure: Common for each station |
| | Exhaust: — |
| | Release pressure: Common PD pressure has to be supplied with common PS. |

Port combination: Common PV ≠ Common PS ≠ Common PD

Circuit example



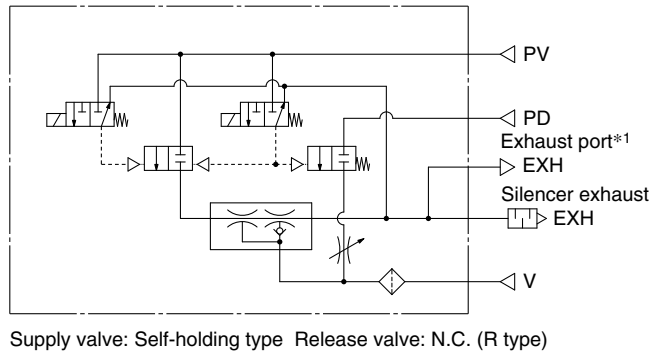
Port layout No. 11

Single unit: ZK2A□R□N□A-□-D

| | |
|-------------------------|--|
| System | Ejector |
| Body type | Single unit |
| Exhaust type | Silencer exhaust |
| Application and purpose | Vacuum pressure: — |
| | Exhaust: Released in operating environment |
| | Release pressure: PD pressure has to be supplied with PV pressure. |

Port combination: PV = PS ≠ PD

Circuit example



*1 Nozzle size: 12, 15

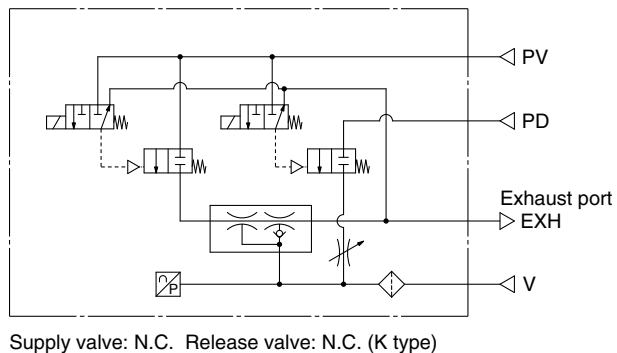
Port layout No. 12

Single unit: ZK2B□K□□A-□-D

| | |
|-------------------------|--|
| System | Ejector |
| Body type | Single unit |
| Exhaust type | Port exhaust |
| Application and purpose | Vacuum pressure: — |
| | Exhaust: After piping, individual exhaust is necessary. |
| | Release pressure: PD pressure has to be supplied with PV pressure. |

Port combination: PV = PS ≠ PD

Circuit example



Refer to page 30 for the purpose of port and the operating pressure range.

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PS: Pilot pressure supply port
 - PD: Release pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
 - PE: Pilot pressure exhaust port
- For details ⇒ Page 30

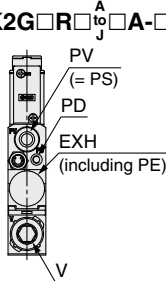
Port Layout

* System depends on vacuum source (vacuum pump/ejector).

Option -D

Port layout No. **13**

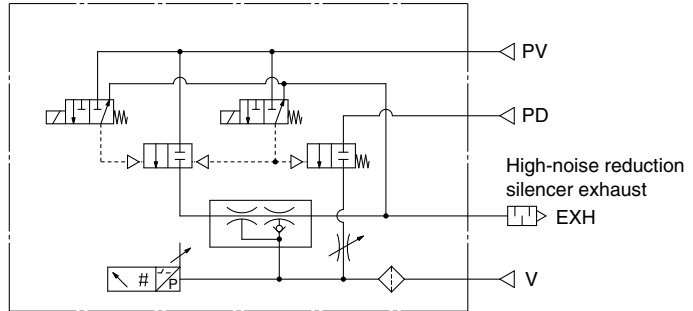
Single unit: ZK2G□R□□A-□-D



| | |
|-------------------------|---|
| System | Ejector |
| Body type | Single unit |
| Exhaust type | High-noise reduction silencer exhaust |
| Vacuum pressure | — |
| Application and purpose | Exhaust |
| Release pressure | Released in operating environment PD pressure has to be supplied with PV pressure. |

Port combination: PV = PS ≠ PD

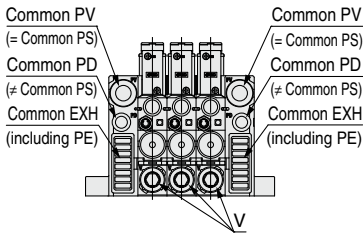
Circuit example



Supply valve: Self-holding type Release valve: N.C. (R type)

Port layout No. **14**

Single unit: ZK2C□□R□□N□A-□-P
Manifold: ZK2□A-A1□-D

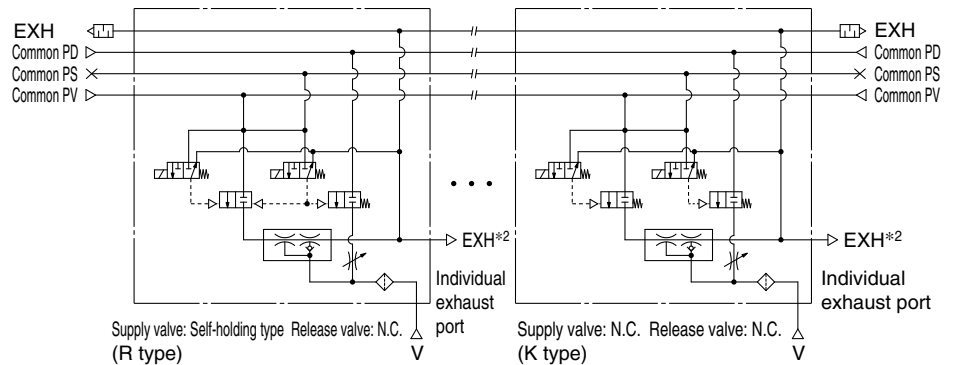


*1 The complex exhaust is a combined exhaust method of the common exhaust from the end plate and the direct exhaust from each station.

| | |
|-------------------------|--|
| System | Ejector |
| Body type | Manifold |
| Exhaust type | Complex exhaust*1 |
| Vacuum pressure | Common for each station |
| Application and purpose | Exhaust |
| Release pressure | Released in operating environment Common PD pressure has to be supplied with common PV. |

Port combination: Common PV = Common PS ≠ Common PD

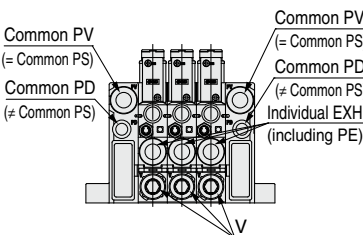
Circuit example



*2 For complex exhaust type, individual exhaust port is provided to each station.

Port layout No. **15**

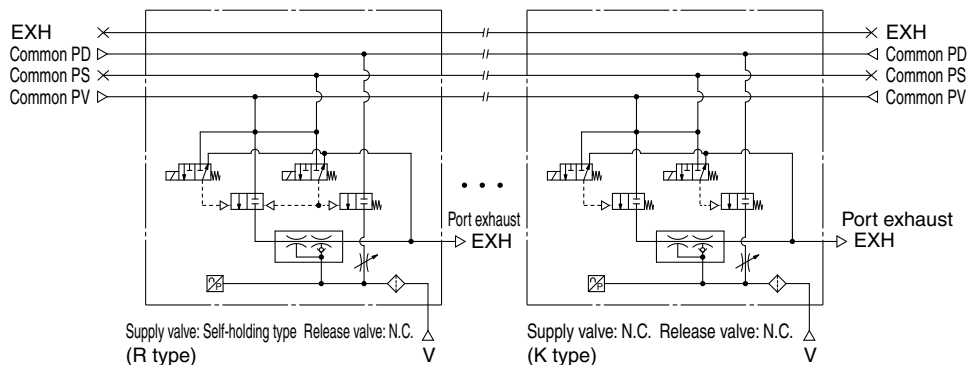
Single unit: ZK2F□□R□□P□A-□-P
Manifold: ZK2□A-A2□-D



| | |
|-------------------------|---|
| System | Ejector |
| Body type | Manifold |
| Exhaust type | Individual port exhaust |
| Vacuum pressure | Common for each station |
| Application and purpose | Exhaust |
| Release pressure | After piping, individual exhaust is necessary. Common PD pressure has to be supplied with common PV. |

Port combination: Common PV = Common PS ≠ Common PD

Circuit example



Refer to page 30 for the purpose of port and the operating pressure range.

ZK2□A Series

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PS: Pilot pressure supply port
 - PD: Release pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
 - PE: Pilot pressure exhaust port
- For details ⇒ Page 30

Port Layout

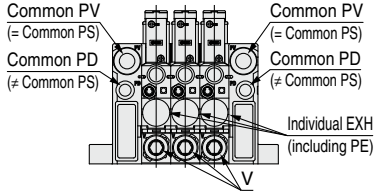
* System depends on vacuum source (vacuum pump/ejector).

Option -D

Port layout No. **16**

Single unit: ZK2H□^R□^A□^J□A-□-P

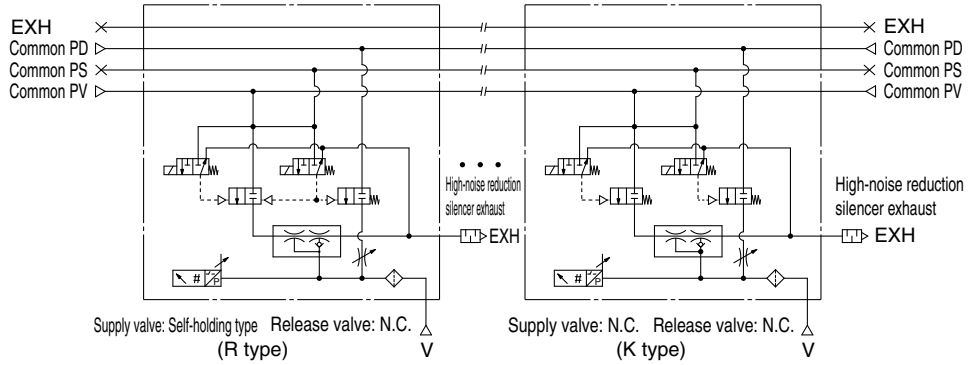
Manifold: ZK2□A-A2□-D



| System | Ejector | |
|-------------------------|---------------------------------------|--|
| Body type | Manifold | |
| Exhaust type | High-noise reduction silencer exhaust | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | Released in operating environment |
| | Release pressure | PD pressure has to be supplied with PV pressure. |

Port combination: Common PV = Common PS ≠ Common PD

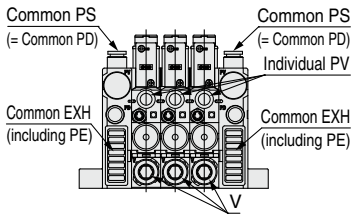
Circuit example



Port layout No. **17**

Single unit: ZK2C□^R□^P□A-□-L

Manifold: ZK2□A-A1□-L

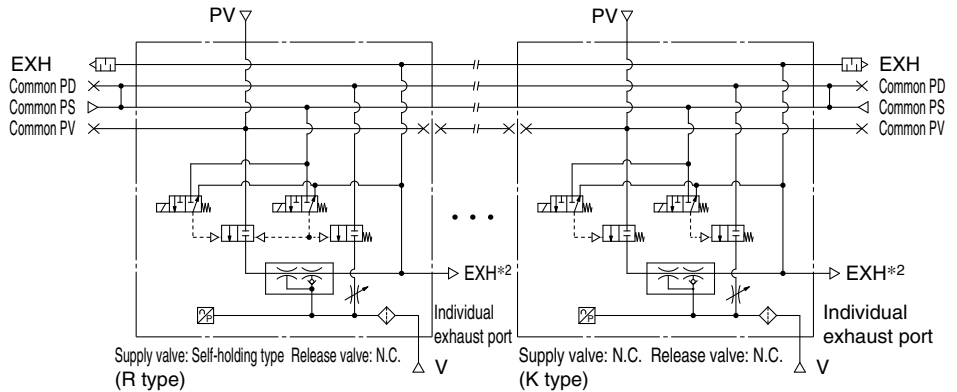


*1 The complex exhaust is a combined exhaust method of the common exhaust from the end plate and the direct exhaust from each station.

| System | Ejector | |
|-------------------------|-------------------|---|
| Body type | Manifold | |
| Exhaust type | Complex exhaust*1 | |
| Application and purpose | Vacuum pressure | PV pressure can be changed per station. |
| | Exhaust | Released in operating environment |
| | Release pressure | Same pressure for common PS and common PD |

Port combination: Individual PV ≠ Common PS = Common PD

Circuit example

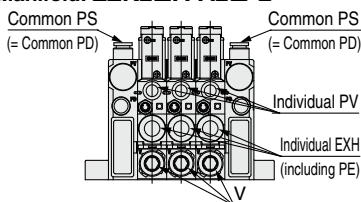


*2 For complex exhaust type, individual exhaust port is provided to each station

Port layout No. **18**

Single unit: ZK2F□^R□^A□A-□-L

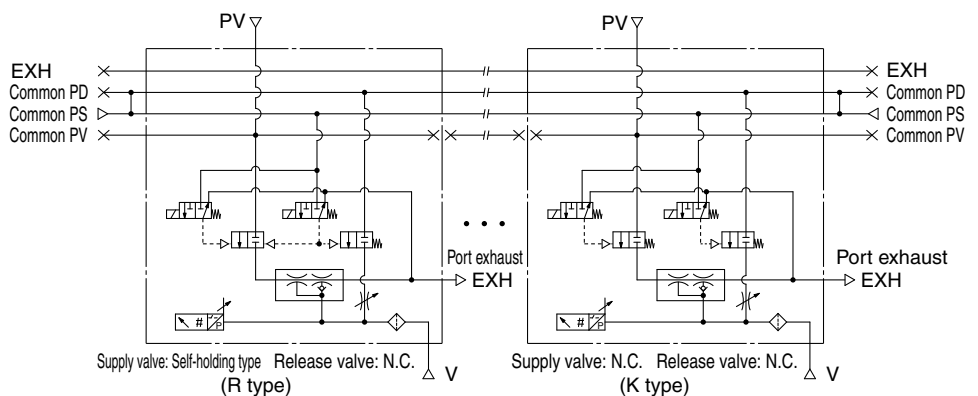
Manifold: ZK2□A-A2□-L



| System | Ejector | |
|-------------------------|-------------------------|--|
| Body type | Manifold | |
| Exhaust type | Individual port exhaust | |
| Application and purpose | Vacuum pressure | PV pressure can be changed per station. |
| | Exhaust | After piping, individual exhaust is necessary. |
| | Release pressure | Same pressure for common PS and common PD |

Port combination: Individual PV ≠ Common PS = Common PD

Circuit example



Refer to page 30 for the purpose of port and the operating pressure range.

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PS: Pilot pressure supply port
 - PD: Release pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
 - PE: Pilot pressure exhaust port
- Refer to the table below for details.

Port Layout

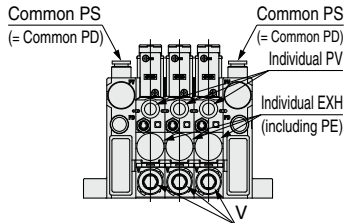
* System depends on vacuum source (vacuum pump/ejector).

Option -L

Port layout No. **19**

Single unit: ZK2H□K□^K□^S□A-□-L

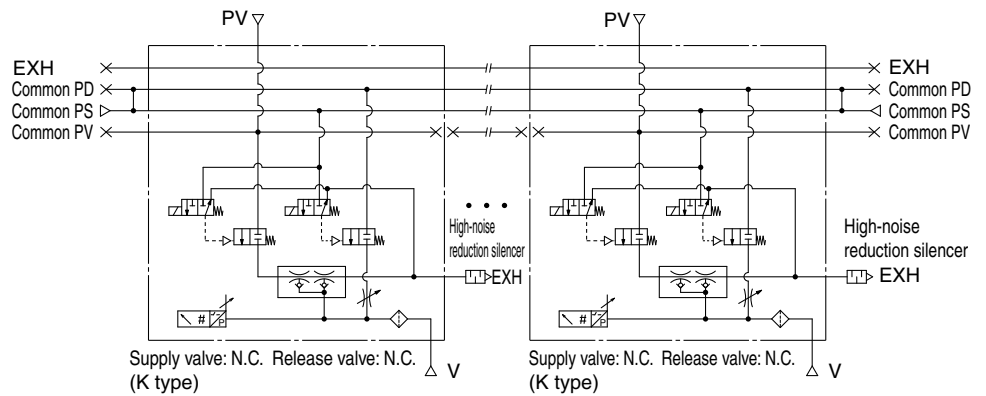
Manifold: ZZK2□A-A2□-L



| System | Ejector | |
|-------------------------|---------------------------------------|---|
| Body type | Manifold | |
| Exhaust type | High-noise reduction silencer exhaust | |
| Application and purpose | Vacuum pressure | PV pressure can be changed per station. |
| | Exhaust | Released in operating environment |
| | Release pressure | Same pressure for common PS and common PD |

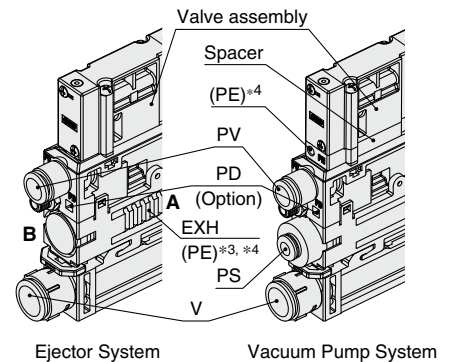
Port combination: Individual PV ≠ Common PS = Common PD

Circuit example



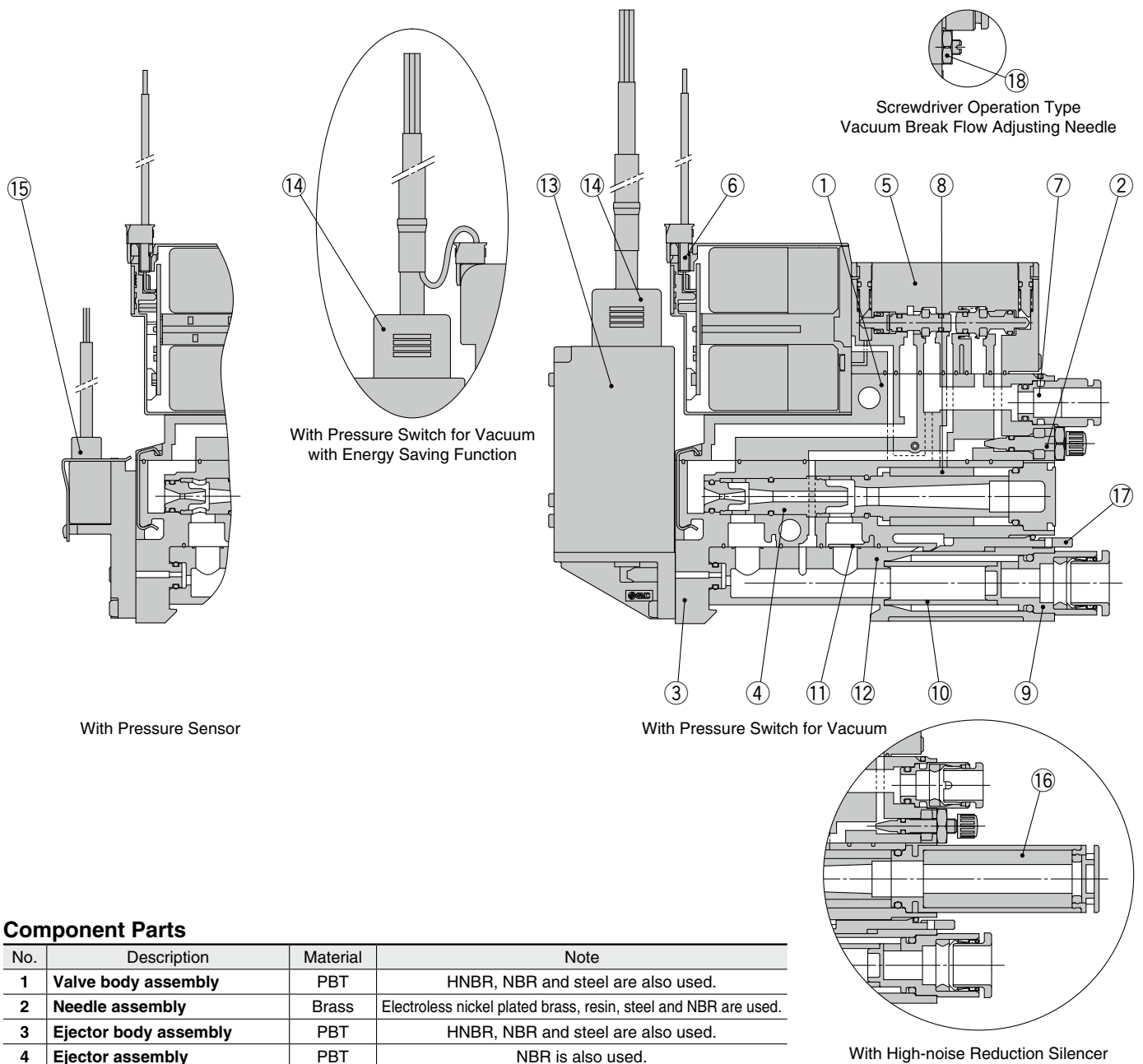
Application and Operating Pressure Range of Each Port

| Port | Description | Ejector system | Vacuum pump system |
|------|---|--|---|
| PV | Air pressure supply port (Operating pressure range) | Compressed air supply for operating ejector 0.3 to 0.6 MPa*1, *2 | — |
| | Vacuum pressure supply port (Operating pressure range) | — | Vacuum source (Vacuum pump) 0 to -100 kPa |
| PS | Pilot pressure supply port (Operating pressure range) | — | Compressed air supply for pilot valve 0.3 to 0.6 MPa |
| PD | Individual release pressure supply port (Operating pressure range) | Release pressure Compressed air supply for individual setting (Option) 0 to 0.6 MPa (PD ≤ PV) | 0 to 0.6 MPa (PD ≤ PS) |
| V | Vacuum port | For connecting adsorption equipment including pad | |
| EXH | Exhaust port | Exhaust when ejector operates*3 | — |
| PE | Pilot pressure exhaust port | Exhaust when valve operates*4 | |



- *1 For models without valve, pressure can be 0.3 MPa or less. (Ejector system)
 - *2 Manifold can be used at 0.3 MPa or less when the manifold is for individual SUP. For 0.2 MPa or less, select K or J for the valve type. Set pressure as PV ≤ PS.
 - *3 For ejectors with silencer, air exhausts from A (slit on both sides). For port exhaust type, air exhausts from B.
 - *4 Pilot pressure for ejectors is exhausted from the ejector and the common exhaust. Vacuum pump system exhausts air from PE port on the spacer. Female thread type (M3) is available by option [C] for PE port of the vacuum pump system. When option [C] is selected for valve type R, operating conditions below apply.
 - Select the type with release pressure supply port (PD) as an option.
 - Single unit/Manifold: Option [D]
 - For Manifold: Option [P]
 - Vacuum pressure for PV port: -60 to -100 kPa
 - The energization time of the release valve: 200 ms or longer when the PD port is released to the atmosphere
500 ms or longer when the 0.1 MPa is supplied to the PD port
- If the product is used out of this operating condition, please contact your local sales office.
- *5 For vacuum pump systems, if vacuum is released when the piping on the V port side is restricted, the V port internal pressure will rise, which may result in the filter case gasket coming off. Therefore, when the internal pressure rises during vacuum release, try to keep the pressure at 0.1 MPa or less. Depending on the V port piping conditions and the shape of the adsorption part, if there are concerns regarding the internal pressure rise, select the option with a release pressure supply (PD) port, and adjust the PD port supply pressure to 0.1 MPa or less.

Construction



Component Parts

| No. | Description | Material | Note |
|-----|-----------------------|----------|---|
| 1 | Valve body assembly | PBT | HNBR, NBR and steel are also used. |
| 2 | Needle assembly | Brass | Electroless nickel plated brass, resin, steel and NBR are used. |
| 3 | Ejector body assembly | PBT | HNBR, NBR and steel are also used. |
| 4 | Ejector assembly | PBT | NBR is also used. |

Replacement Parts

| No. | Description | Note |
|-----|--|--|
| 5 | Valve assembly | — |
| 6 | Connector assembly | Connector for solenoid valve 3 wire (For valve type K/R), 2 wire (For valve type J) |
| 7 | One-touch fitting assembly | Metric size: $\phi 6$, Inch size: $\phi 1/4$ " |
| 8 | Sound absorbing material | 10 pcs. per set |
| 9 | Vacuum port adapter assembly | With One-touch fitting and filter element |
| 10 | Filter element | Nominal filtration rating: $30 \mu\text{m}$, 10 pcs. per set |
| 11 | Body gasket | Gasket integrated with the exhaust interference prevention valve, 10 pcs. per set |
| 12 | Filter case | Case body: Polycarbonate (Refer to the Specific Product Precautions on page 47.) Clear filter case: without a port for the pressure switch or sensor, Opaque filter case: with a port for the pressure switch or sensor |
| 13 | Vacuum pressure switch assembly | With 2 screws and 1 gasket |
| 14 | Lead wire with connector | — |
| 15 | Pressure sensor assembly | With 2 screws and 1 gasket |
| 16 | High-noise reduction silencer assembly | With sound absorbing material (High-noise reduction silencer) |
| 17 | Release lever | 10 pcs. per set |
| 18 | Lock nut | 10 pcs. per set |

Replacement Parts for Single Unit / How to Order

Valve assembly

ZK2 - VA **A** **K** **5** **L** **A** - □ - A

① ② ③ ④ ⑤

▶ p. 31 Construction ⑤

① Applicable system

| | |
|----------|--------------------|
| A | Ejector system |
| P | Vacuum pump system |

② Valve type

| | |
|----------|--|
| K | Supply valve: N.C., Release valve: N.C. |
| R | Supply valve: Self-holding release valve linked, Release valve: N.C. |
| J | Supply valve: N.C., Release valve: None |

③ Rated voltage

| | |
|----------|--------|
| 5 | 24 VDC |
| 6 | 12 VDC |

④ Wiring

| | |
|-----------|---|
| C | Manifold common wiring |
| L | Individual wiring: With connector assembly (Lead wire length: 300 mm) |
| LO | Individual wiring: Without connector assembly |

⑤ Other specifications

| | |
|------------|---|
| C | Vacuum pump system (Valve type R) PE port female thread specification (M3) |
| Nil | Specifications other than that listed above |

Select the ZK2-VA□□LOA-A for a switch with energy saving function.

Connector assembly

ZK2 - LV **W** □ - A

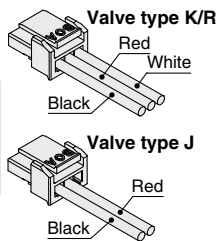
▶ p. 31 Construction ⑥

Applicable valve type

| | |
|----------|----------------|
| W | Valve type K/R |
| S | Valve type J |

Lead wire length

| | |
|------------|---------|
| Nil | 300 mm |
| 6 | 600 mm |
| 10 | 1000 mm |
| 20 | 2000 mm |
| 30 | 3000 mm |



One-touch fitting assembly (Purchasing order is available in units of 10 pieces.)

KJH **06** - C2

▶ p. 31 Construction ⑦

Port size

| | | |
|-----------|------------------------------------|-------------|
| 06 | ø6 One-touch fitting (Straight) | Metric size |
| 07 | ø1/4" One-touch fitting (Straight) | Inch size |

Sound absorbing material (10 pcs. per set)

ZK2 - SE1 - **1** - A

▶ p. 31 Construction ⑧

Sound absorbing material hole diameter

| | |
|----------|--------|
| 1 | 300 μm |
|----------|--------|

Vacuum port adapter assembly (Purchasing order is available in units of 1 piece.)

ZK2 - VA1S **8** - A

▶ p. 31 Construction ⑨

One-touch fitting size

| | | |
|----------|--------------------------|-------------|
| 6 | ø6 One-touch fitting | Metric size |
| 8 | ø8 One-touch fitting | size |
| 7 | ø1/4" One-touch fitting | Inch size |
| 9 | ø5/16" One-touch fitting | size |

Filter element (10 pcs. per set)

ZK2 - FE1 - **3** - A

▶ p. 31 Construction ⑩

Nominal filtration rating

| | |
|----------|-------|
| 3 | 30 μm |
|----------|-------|

Body gasket*¹ (10 pcs. per set)

ZK2 - BG5 - **1** - A

▶ p. 31 Construction ⑪

Applicable type

| | |
|----------|---|
| 1 | One check valve type (All specifications other than vacuum switch with energy saving function and exhaust interference prevention valve) |
| 2 | Two check valve type (Vacuum switch with energy saving function and exhaust interference prevention valve) |

*1 When ZK2-BG5-2-A is mounted, the workpiece cannot be removed until vacuum is released.

Filter case*¹

ZK2 - FC □ - A

▶ p. 31 Construction ⑫

Port for the pressure switch or sensor

| Symbol | Port for the pressure switch or sensor | Filter case color |
|----------|---|-------------------|
| P | With port (type with pressure switch or sensor) | Smoke |
| T | Without port (type without pressure switch or sensor) | Clear |

*1 Vacuum port adapter assembly is not included.

Pressure switch for vacuum assembly (With 2 mounting screws)

ZK2 - ZS **E** **A** **M** **G** □ - A

▶ p. 31 Construction ⑬

① ② ③ ④ ⑤

① Rated pressure range and function

| | | | |
|----------|-----------------|--|--------------------------|
| E | 0 to -101 kPa | Pressure switch for vacuum | Open collector 2 outputs |
| F | -100 to 100 kPa | Pressure switch for vacuum with energy saving function | Open collector 1 output |
| V | -100 to 100 kPa | | |

② Output

| | |
|----------|-----|
| A | NPN |
| B | PNP |

③ Unit

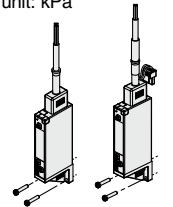
| | |
|------------|---------------------------------------|
| Nil | Unit selection function* ¹ |
| M | SI unit only* ² |

*1 The unit selection function is not available in Japan due to the New Measurement Law.

*2 Fixed unit: kPa

④ Lead wire with connector

| | | |
|------------|----------------|---|
| Nil | None | |
| G | With lead wire | When ① is E or F...For pressure switch for vacuum, Lead wire with connector (Length 2 m) |
| | | When ① is V...For pressure switch for vacuum with energy saving function, Lead wire with connector (Length 2 m) |



⑤ Mounting*³

| | |
|------------|----------------------------|
| Nil | Mounted to the single unit |
| L | Mounted to the manifold |

The length of the mounting screw ejector included in the package is different.

*3 When ordering an ejector without valve, select Nil for mounting.

Lead wire with connector

(When individual lead wire is necessary, order with the port number below.)

▶ p. 31 Construction ⑭

- Lead wire with connector for pressure switch for vacuum **ZS - 39 - 5G**
- Lead wire with connector for pressure switch for vacuum with energy saving function **ZK2 - LW **A** 20 - A**

Output

| | |
|----------|--------------------|
| A | NPN open collector |
| B | PNP open collector |

Pressure sensor assembly (With 2 mounting screws)

ZK2 - PS **1** □ - A

▶ p. 31 Construction ⑮

Rated pressure range

| | |
|----------|--|
| 1 | 0 to -101 kPa, Output: 1 to 5 V, Accuracy: ± 2% F.S. |
| 3 | -100 to 100 kPa, Output: 1 to 5 V, Accuracy: ± 2% F.S. |

Mounting*⁴

| | |
|------------|----------------------------|
| Nil | Mounted to the single unit |
| L | Mounted to the manifold |

The length of the mounting screw ejector included in the package is different.

*4 When ordering an ejector without valve, select Nil for mounting.

High-noise reduction silencer assembly

ZK2 - SC3 - **4** - A

▶ p. 31 Construction ⑯

Applicable nozzle size

| | |
|----------|------------------------|
| 4 | For nozzle size 07, 10 |
| 6 | For nozzle size 12, 15 |

Sound absorbing material for high-noise reduction silencer (5 pcs. per set)

ZK2 - SE4 - **6** - A

Release lever (10 pcs. per set)

ZK2 - RL1 - A

▶ p. 31 Construction ⑰

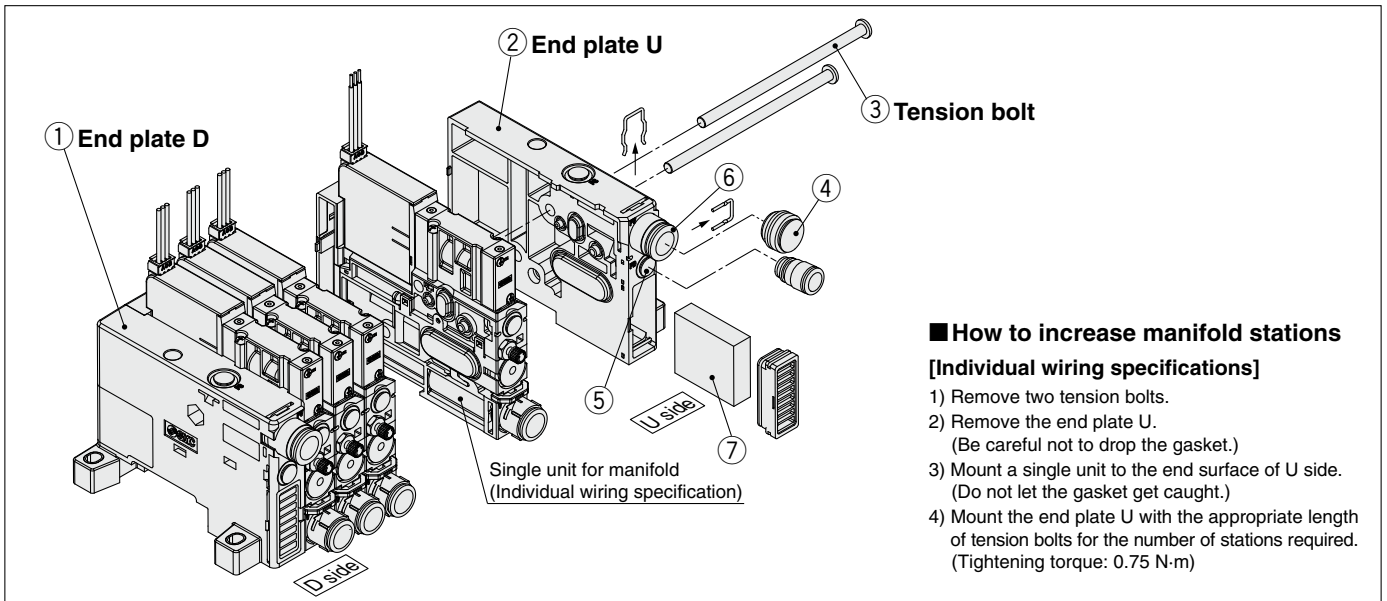
Lock nut (10 pcs. per set)

ZK2 - LN1 - A

▶ p. 31 Construction ⑱

Vacuum Unit/ZK2□A Series

Exploded View of Manifold



How to increase manifold stations

[Individual wiring specifications]

- 1) Remove two tension bolts.
- 2) Remove the end plate U.
(Be careful not to drop the gasket.)
- 3) Mount a single unit to the end surface of U side.
(Do not let the gasket get caught.)
- 4) Mount the end plate U with the appropriate length of tension bolts for the number of stations required.
(Tightening torque: 0.75 N·m)

Component Parts

| No. | Description | Material | Note |
|-----|----------------------|----------|---|
| 1 | End plate D assembly | Resin | HNBR, NBR and steel are also used. |
| 2 | End plate U assembly | Resin | Electroless nickel plated brass, resin, steel and NBR are used. |

Replacement Parts

| No. | Description | Note |
|-----|----------------------------|--|
| 3 | Tension bolt assembly | 2 pcs. per set |
| 4 | Port plug assembly | Plug for changing PV port to single side supply type (Common for mm and inch type) |
| 5 | Port plug assembly | Plug for changing PS or PD port to single side supply type (Common for mm and inch type) |
| 6 | One-touch fitting assembly | Metric size: $\phi 8$, Inch size: $\phi 5/16$ " |
| 7 | Sound absorbing material | 2 pcs. per set - Material: Non-woven cloth (Silencer cover is not included.) |
| 8 | DIN rail | Refer to Dimensions (Refer to pages 39 to 41) for the recommended length for each number of manifolds stations. |
| 9 | Connector housing assembly | Available connector is even number only. (If you need a connector for odd number, specify the connector of the number you need + 1 station.) |

Replacement Parts for Manifold / How to Order

Manifold end plate assembly

► Exploded View ①, ②, ③

Assembly number including ①End plate D, ②End plate U and ③Tension bolt assembly (Used for the maintenance of the end plate)

ZK2 - A

● Manifold end plate assembly

Refer to pages 14, 17, 43-2, and 43-4 for the manifold part number.

Tension bolt assembly (2 pcs. per set)

► Exploded View ③

ZK2 - TB1 - 05 - A

● Applicable stations

| | |
|----|--------------------------|
| 01 | For 1 station manifold |
| ⋮ | ⋮ |
| 10 | For 10 stations manifold |

Port plug assembly

► Exploded View ④

(Purchasing order is available in units of 1 piece.)

VVQZ2000 - CP

Port plug assembly

► Exploded View ⑤

(Purchasing order is available in units of 1 piece.)

ZK2 - MP1C6 - A

One-touch fitting assembly (Purchasing order is available in units of 10 pieces.)

VVQ1000 - 51A - C8

► Exploded View ⑥

● Port size

| | |
|----|---------------------------------|
| C8 | $\phi 8$ One-touch fitting |
| N9 | $\phi 5/16$ " One-touch fitting |

Sound absorbing material (2 pcs. per set)

► Exploded View ⑦

ZK2 - SE2 - 1 - A

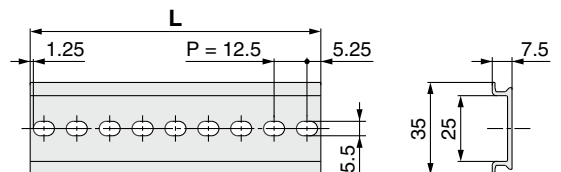
DIN rail

AXT100 - DR - 5

Length symbol

1 to 40
L = 23 to L = 510.5

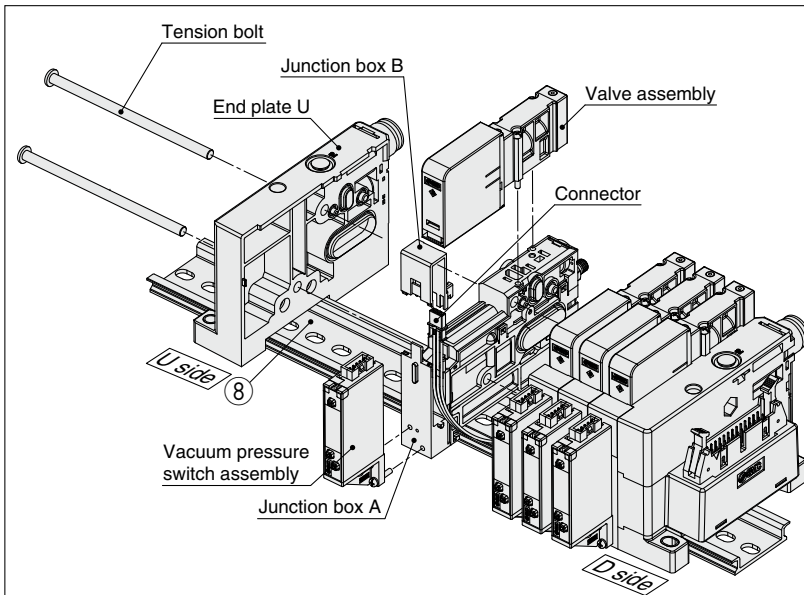
[L = 12.5 x + 10.5]
■: Length symbol 1 to 40



* When selecting the number, refer to "L6" in dimension table on pages 39 to 41.

L Dimensions

| | | | | | | | | | | |
|-------------|-----|-------|-----|-------|-----|-------|-----|-------|-----|-------|
| No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| L Dimension | 23 | 35.5 | 48 | 60.5 | 73 | 85.5 | 98 | 110.5 | 123 | 135.5 |
| No. | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| L Dimension | 148 | 160.5 | 173 | 185.5 | 198 | 210.5 | 223 | 235.5 | 248 | 260.5 |
| No. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| L Dimension | 273 | 285.5 | 298 | 310.5 | 323 | 335.5 | 348 | 360.5 | 373 | 385.5 |
| No. | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| L Dimension | 398 | 410.5 | 423 | 435.5 | 448 | 460.5 | 473 | 485.5 | 498 | 510.5 |



■ How to increase manifold stations

[To increase the number of stations from odd number (1, 3, 5, 7, 9) in common wiring type to even number (2, 4, 6, 8, 10)]

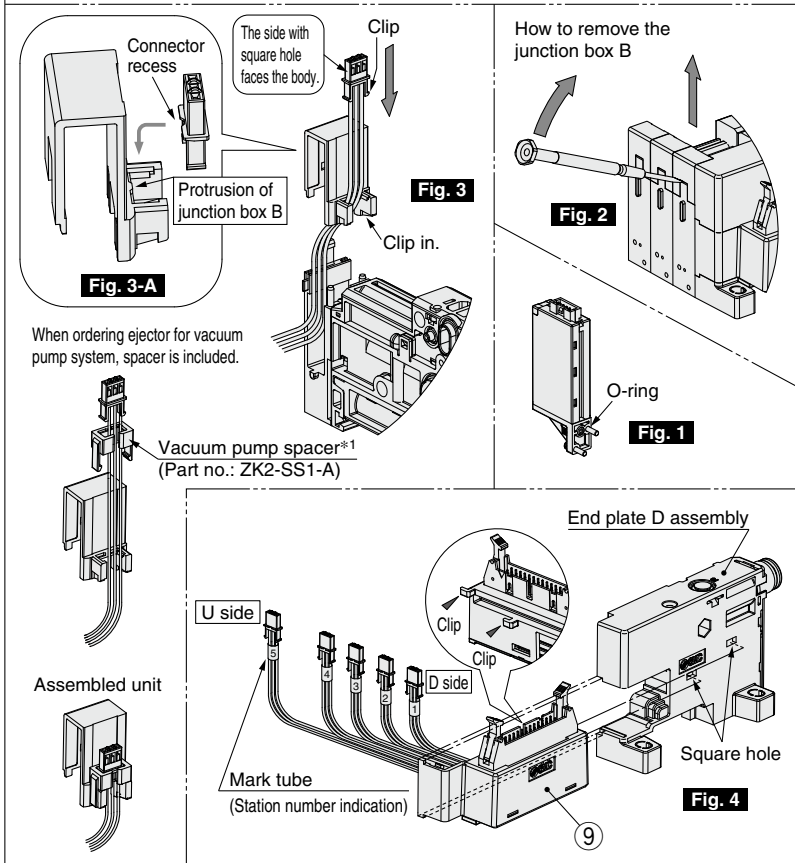
(Common wiring of odd number station has a vacant connector for one station. Easy to add a station.)

- 1) Remove the tension bolt.
- 2) Remove the end plate U.
- 3) Remove the valve assembly of a single unit for extra station(s) for manifold.
- 4) Remove the switch assembly if it is present. (Be careful not to drop the O-ring. Refer to **Fig.1**)
- 5) Remove the junction box B (top) using a precision screwdriver. (Refer to **Fig.2**)
- 6) Mount the extra connector to the junction box B. (Refer to **Fig.3**) (Engage the recess of the connector and the protrusion of the junction box B. (Refer to **Fig.3-A**))
- 7) Mount a single unit for extra station(s) for manifold to the end surface of U side. (Do not let the gasket or lead wire get caught.)
- 8) Mount the end plate U with the appropriate length of tension bolts for the number of stations required. (Tightening torque: 0.75 N·m.)
- 9) Mount the junction box B to the junction box A.
- 10) Assemble the valve assembly. (Tightening torque: 0.15 N·m)
- 11) For products with a switch, mount the switch assembly. (Be careful not to drop the O-ring. Tightening torque: 0.08 to 0.10 N·m)

[To increase the number of stations from even number to odd number, or increase two stations or more]

- 1) Remove the valve assembly for all stations. (Single unit for extra station is also removed.)
- 2) Remove the switch assembly if it is present. (Be careful not to drop the O-ring. Refer to **Fig.1**)
- 3) Remove the junction box B (top) for all stations using a precision screwdriver. (Refer to **Fig.2**) (Remove the junction box B from D side.)
- 4) Remove all connectors mounted to the junction box B. (Be careful not to break the connector clip.)
- 5) Remove the tension bolt.
- 6) Remove the end plate D assembly.
- 7) Remove the connector housing assembly from the end plate D assembly. (Refer to **Fig.4**)
- 8) Mount the connector housing assembly for extra station(s) to the end plate D assembly. (Refer to **Fig.4**) (Insert two clips of the housing mounting surface to the square holes of the end plate, and slide the connector housing assembly.)
- 9) Remove the end plate U. (Be careful not to drop the gasket.)
- 10) Mount a single unit for extra station(s) for manifold to the end surface of U side. Do not let the gasket get caught.
- 11) Mount the end plate U and D with the appropriate length of tension bolts for the number of stations required. (Tightening torque: 0.75 N·m.)
- 12) Mount the connector for all stations to the junction box B. (Refer to **Fig.3**) (Engage the recess of the connector and the protrusion of the junction box B. (Refer to **Fig.3-A**))
- 13) Mount the junction box B to the junction box A. Push the wires down the side and mount the junction box B to the junction box A following a decreasing mark tube numbers from U side. (Do not let the lead wire get caught.)
- 14) Assemble the valve assembly. (Tightening torque: 0.15 N·m)
- 15) For products with a switch, mount the switch assembly. (Be careful not to drop the O-ring. Tightening torque: 0.08 to 0.10 N·m)

*1 When adding a vacuum pump system, the vacuum pump spacer for extra station is required separately.



Connector housing assembly **Exploded View** ⑨

ZK2-CH 2 04-A

● Applicable stations

| | |
|----|--------------------------|
| 02 | For 2 stations manifold |
| 04 | For 4 stations manifold |
| 06 | For 6 stations manifold |
| 08 | For 8 stations manifold |
| 10 | For 10 stations manifold |

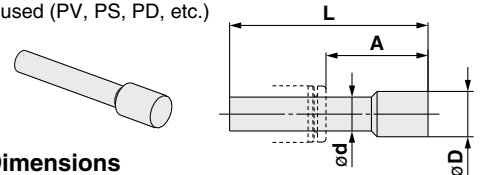
● Connector type

| | |
|---|---------------------------------------|
| 1 | D sub-connector (25 pins) |
| 2 | Flat ribbon cable connector (26 pins) |

■ Plug (For One-touch fitting) (Purchasing order is available in units of 10 pieces.)

Mounted onto ports which are not used (PV, PS, PD, etc.)

KQ2P-06



● Models and Dimensions

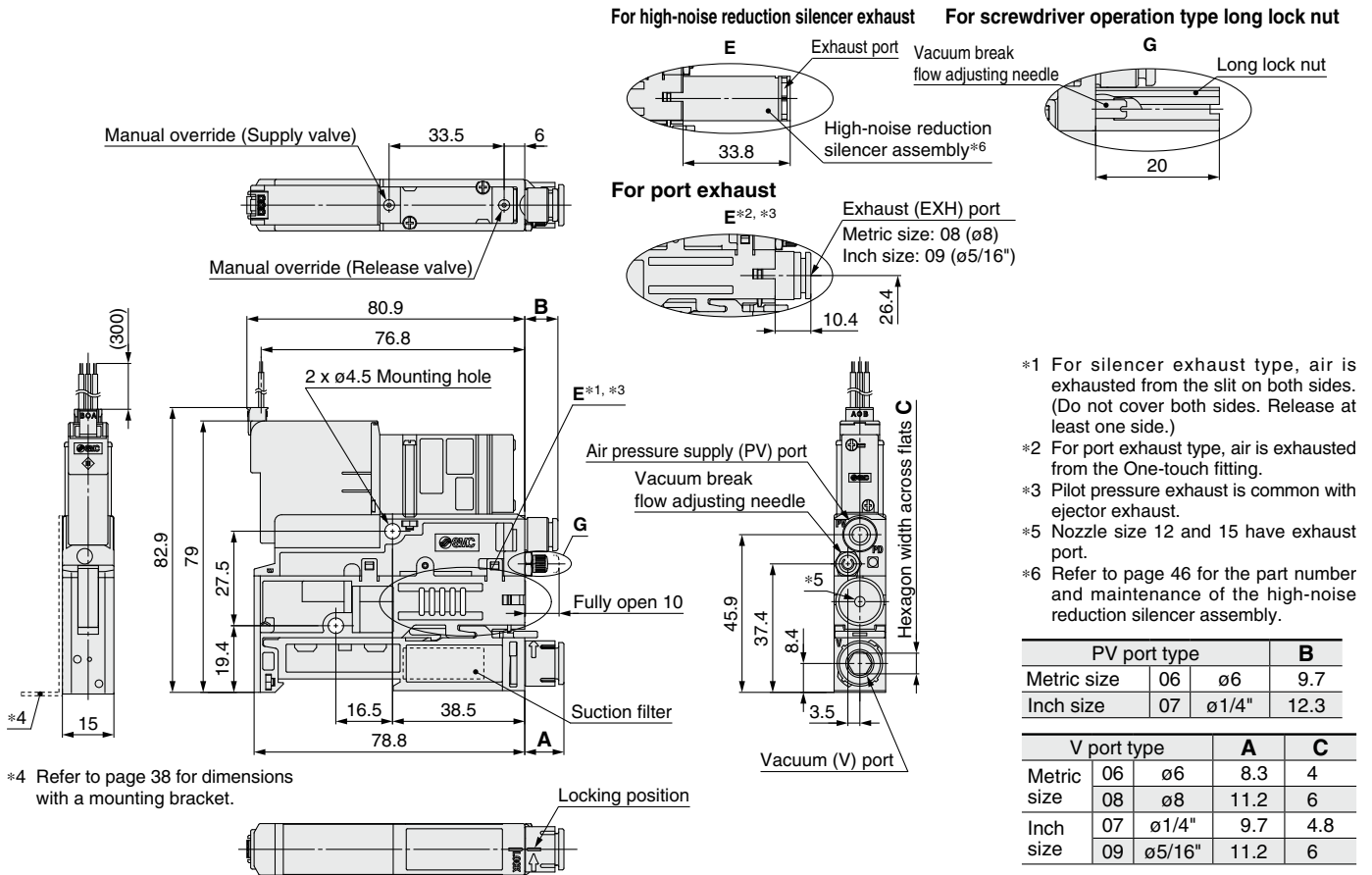
| Symbol | Applicable size ød | A | L | øD | Weight [g] | Note |
|--------|-----------------------|------|----|-----|---------------|--------|
| 06 | ø6 | 18 | 35 | 8 | 1 | White |
| 08 | ø8 | 20.5 | 39 | 10 | 2 | White |
| 07 | ø1/4" | 18 | 35 | 8.5 | 1 | Orange |
| 09 | ø5/16" | 20.5 | 39 | 10 | 2 | Orange |

ZK2□A Series

Dimensions: Single Unit

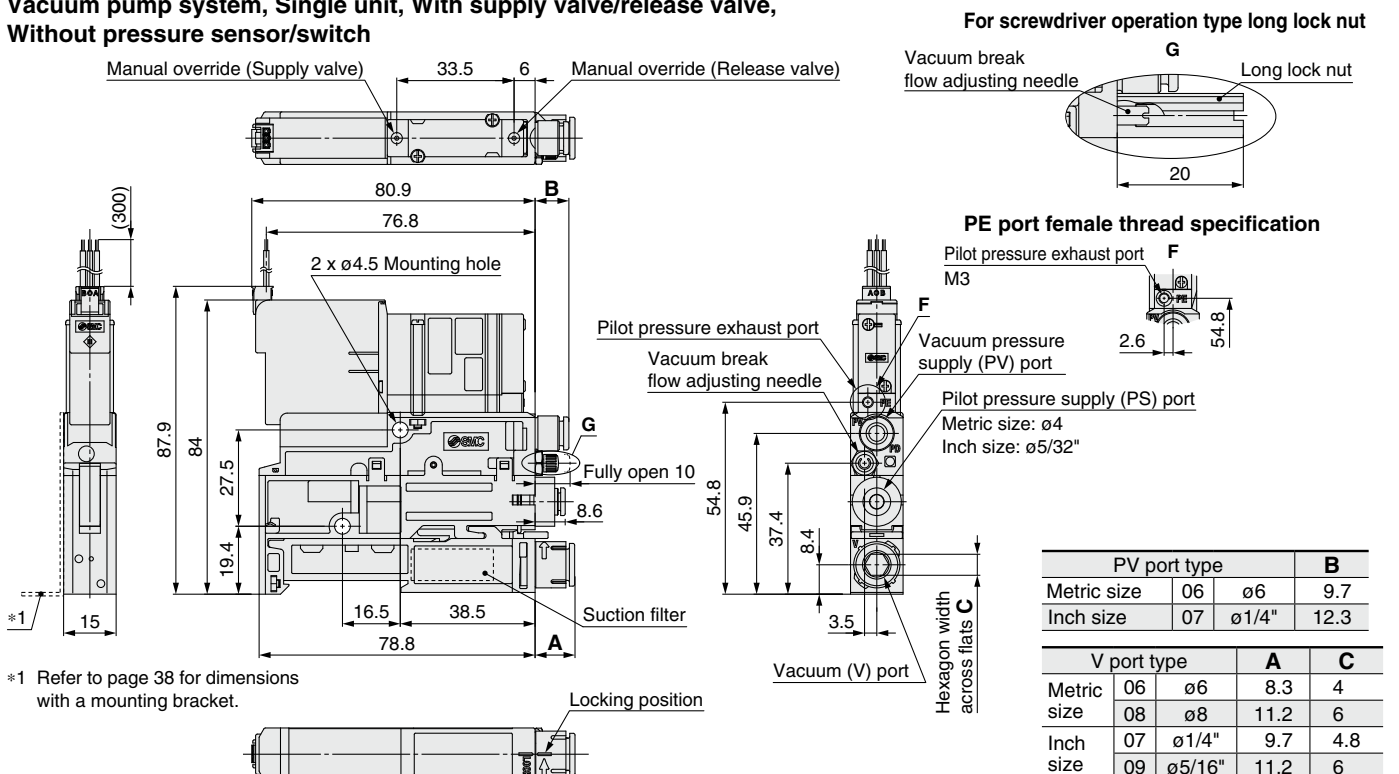
ZK2^A_B□_R□NL2A-□

Ejector system, Single unit, With supply valve/release valve, Without pressure sensor/switch



ZK2P00^K_R□NL2A-□

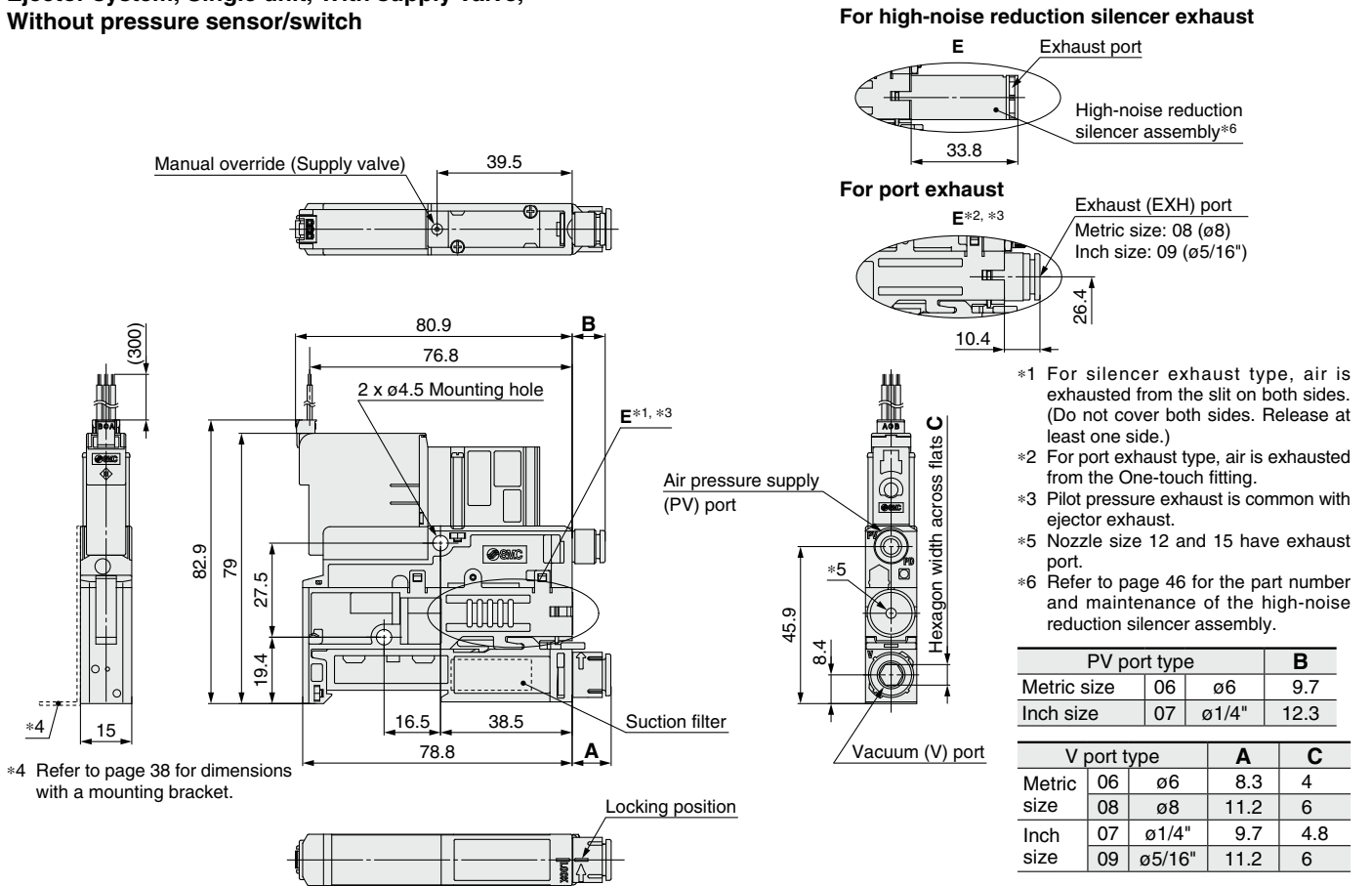
Vacuum pump system, Single unit, With supply valve/release valve, Without pressure sensor/switch



Dimensions: Single Unit

ZK2^A_B□J□NL2A-□

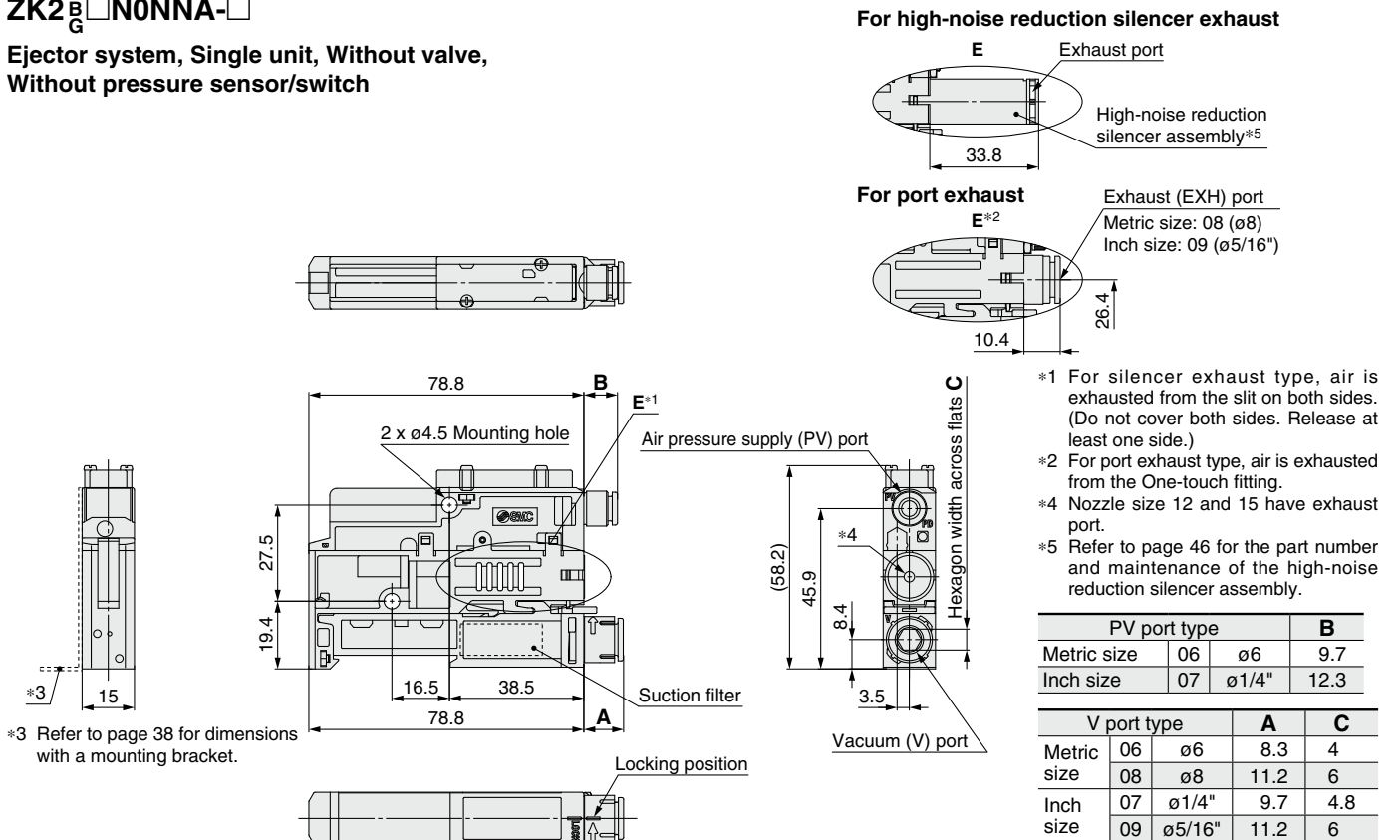
Ejector system, Single unit, With supply valve,
Without pressure sensor/switch



*4 Refer to page 38 for dimensions with a mounting bracket.

ZK2^A_B□NONNA-□

Ejector system, Single unit, Without valve,
Without pressure sensor/switch



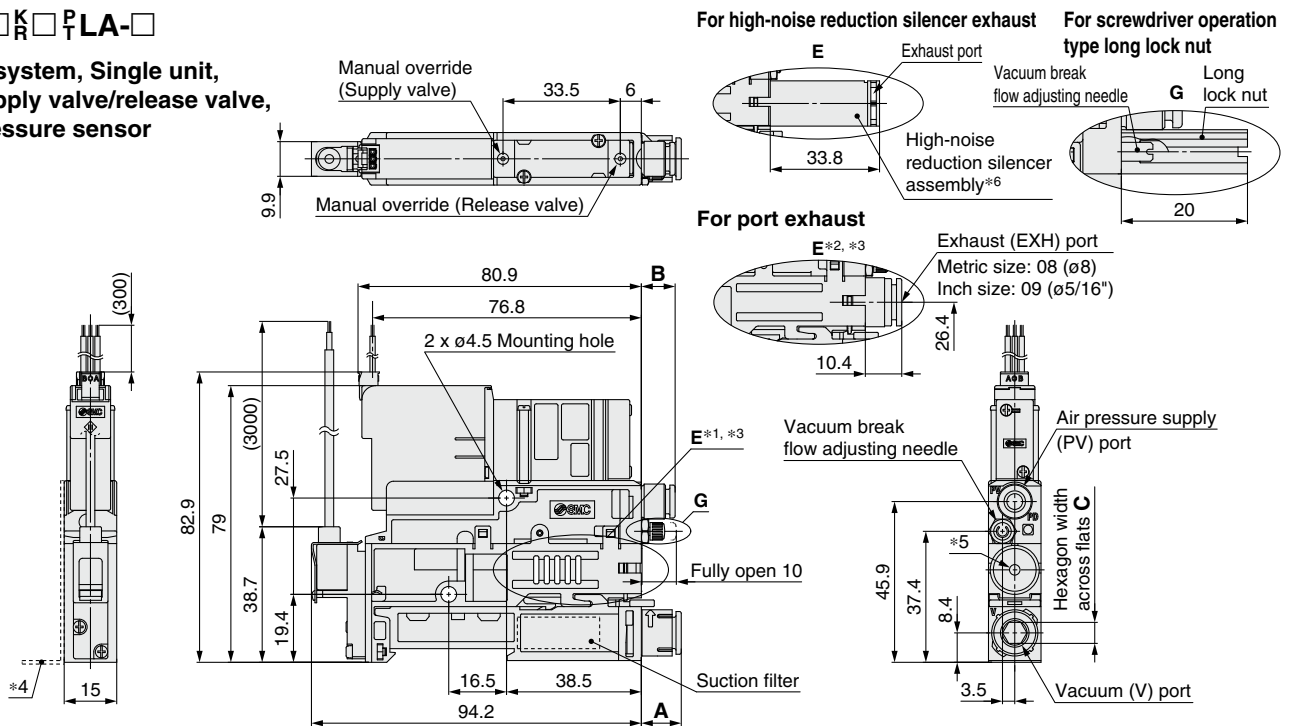
*3 Refer to page 38 for dimensions with a mounting bracket.

ZK2□A Series

Dimensions: Single Unit

ZK2^A_B□_R□_PLA-□

Ejector system, Single unit,
With supply valve/release valve,
With pressure sensor



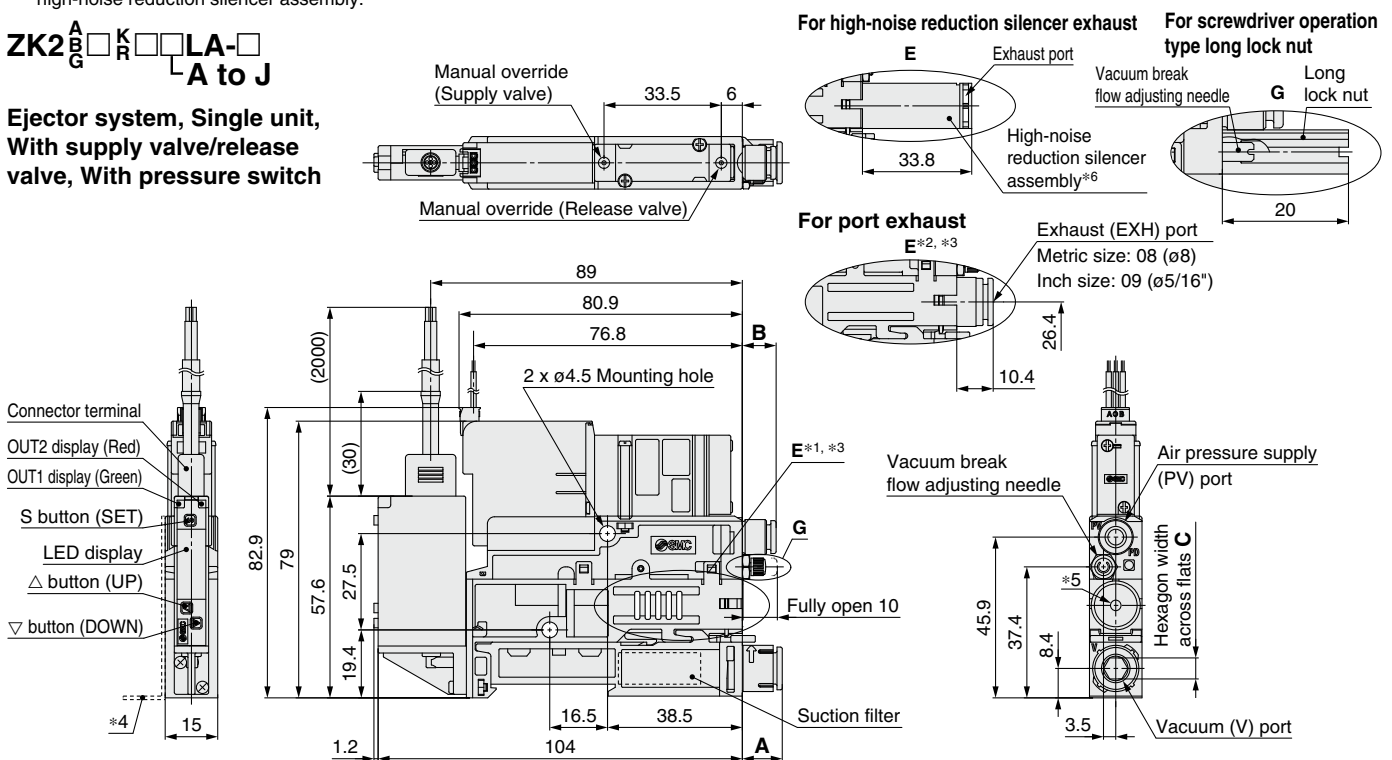
- *1 For silencer exhaust type, air is exhausted from the slit on both sides. (Do not cover both sides. Release at least one side.)
- *2 For port exhaust type, air is exhausted from the One-touch fitting.
- *3 Pilot pressure exhaust is common with ejector exhaust.
- *4 Refer to page 38 for dimensions with a mounting bracket.
- *5 Nozzle size 12 and 15 have exhaust port.
- *6 Refer to page 46 for the part number and maintenance of the high-noise reduction silencer assembly.

| V port type | | A | C |
|-------------|----|--------|------|
| Metric size | 06 | ø6 | 8.3 |
| | 08 | ø8 | 11.2 |
| Inch size | 07 | ø1/4" | 9.7 |
| | 09 | ø5/16" | 11.2 |

| PV port type | | | B |
|--------------|----|-------|------|
| Metric size | 06 | ø6 | 9.7 |
| Inch size | 07 | ø1/4" | 12.3 |

ZK2^A_B□_R□□LA-□
A to J

Ejector system, Single unit,
With supply valve/release valve,
With pressure switch



- *1 For silencer exhaust type, air is exhausted from the slit on both sides. (Do not cover both sides. Release at least one side.)
- *2 For port exhaust type, air is exhausted from the One-touch fitting.
- *3 Pilot pressure exhaust is common with ejector exhaust.
- *4 Refer to page 38 for dimensions with a mounting bracket.
- *5 Nozzle size 12 and 15 have exhaust port.
- *6 Refer to page 46 for the part number and maintenance of the high-noise reduction silencer assembly.

| V port type | | A | C |
|-------------|----|--------|------|
| Metric size | 06 | ø6 | 8.3 |
| | 08 | ø8 | 11.2 |
| Inch size | 07 | ø1/4" | 9.7 |
| | 09 | ø5/16" | 11.2 |

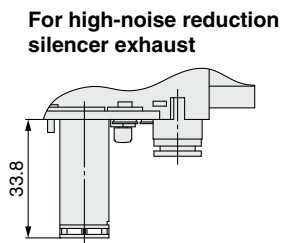
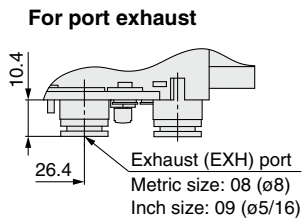
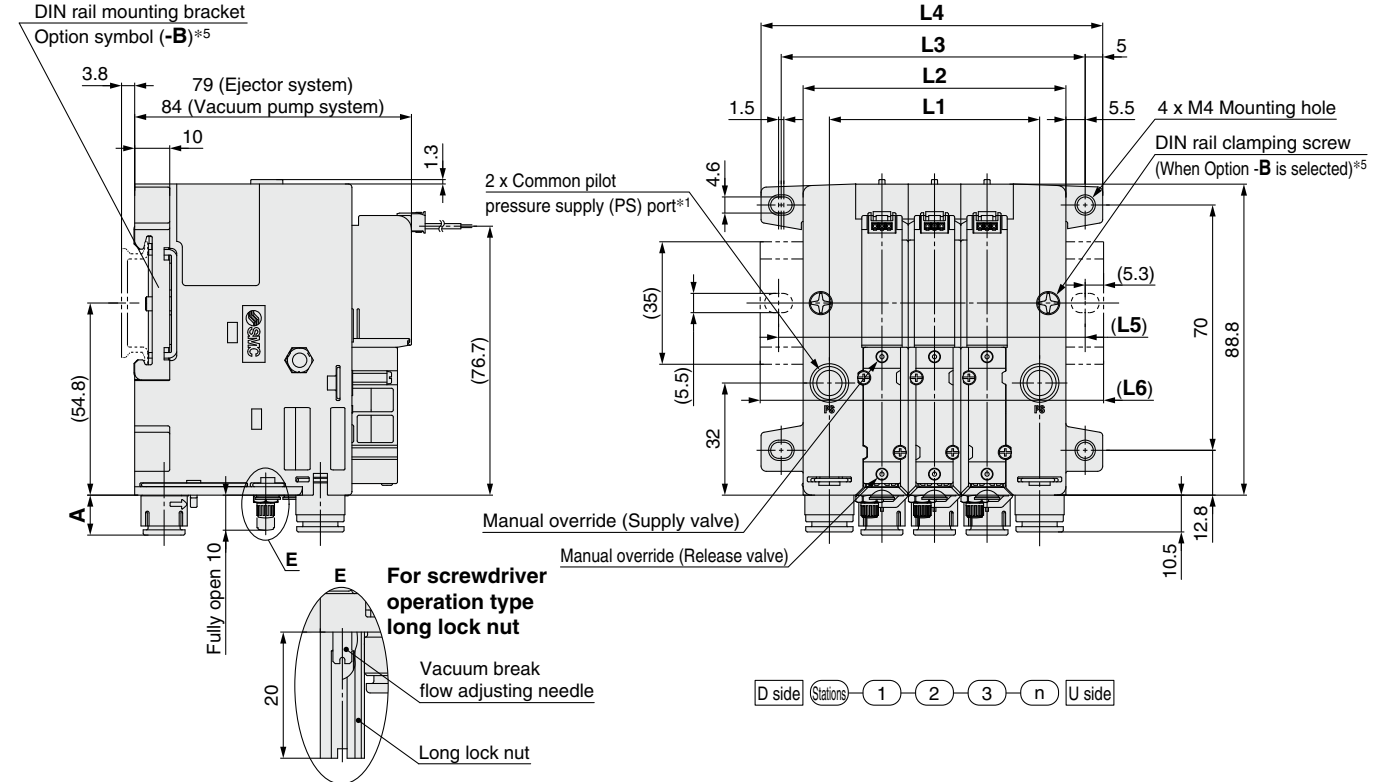
| PV port type | | | B |
|--------------|----|-------|------|
| Metric size | 06 | ø6 | 9.7 |
| Inch size | 07 | ø1/4" | 12.3 |

ZK2□A Series

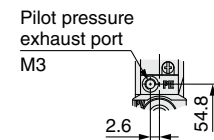
Dimensions: Manifold Individual Wiring

ZZK2□A- P□L

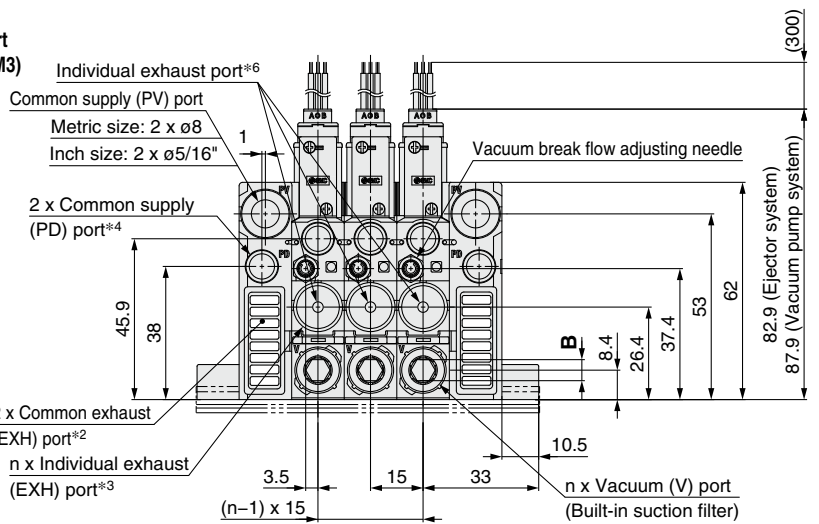
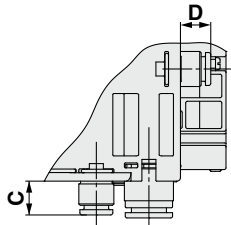
Ejector system, Vacuum pump system, Individual wiring manifold, With supply valve/release valve, Without pressure sensor/switch



Vacuum pump system PE port female thread specification (M3)



PS and PD port dimensions*1, *4



| Port type | A | Hexagon width across flats B | C | D |
|----------------|------|------------------------------|------|------|
| Metric size 06 | 8.3 | 4 | 9.7 | 8.7 |
| Metric size 08 | 11.2 | 6 | — | — |
| Inch size 07 | 9.7 | 4.8 | 12.3 | 11.3 |
| Inch size 09 | 11.2 | 6 | — | — |

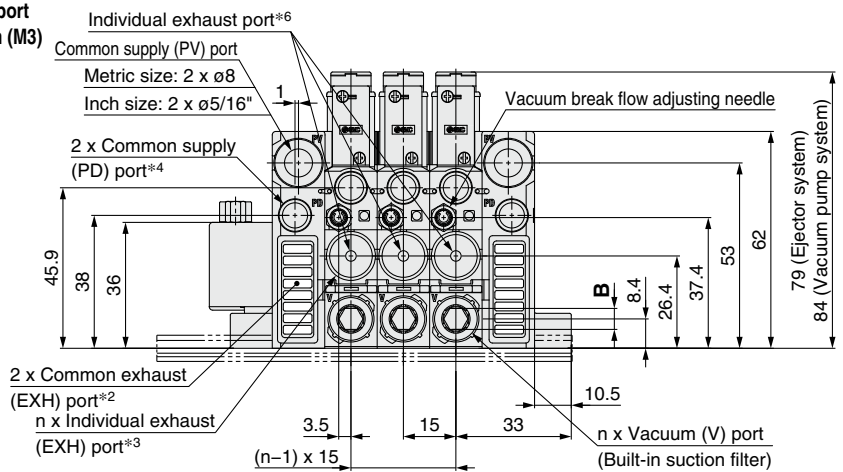
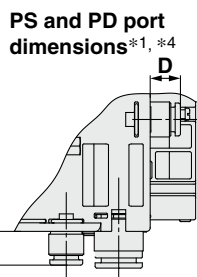
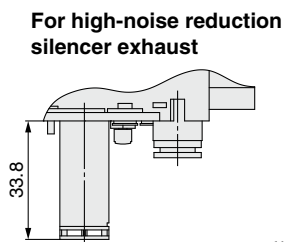
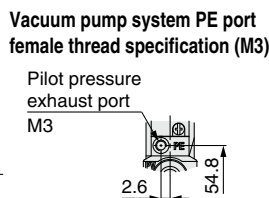
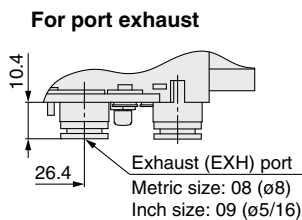
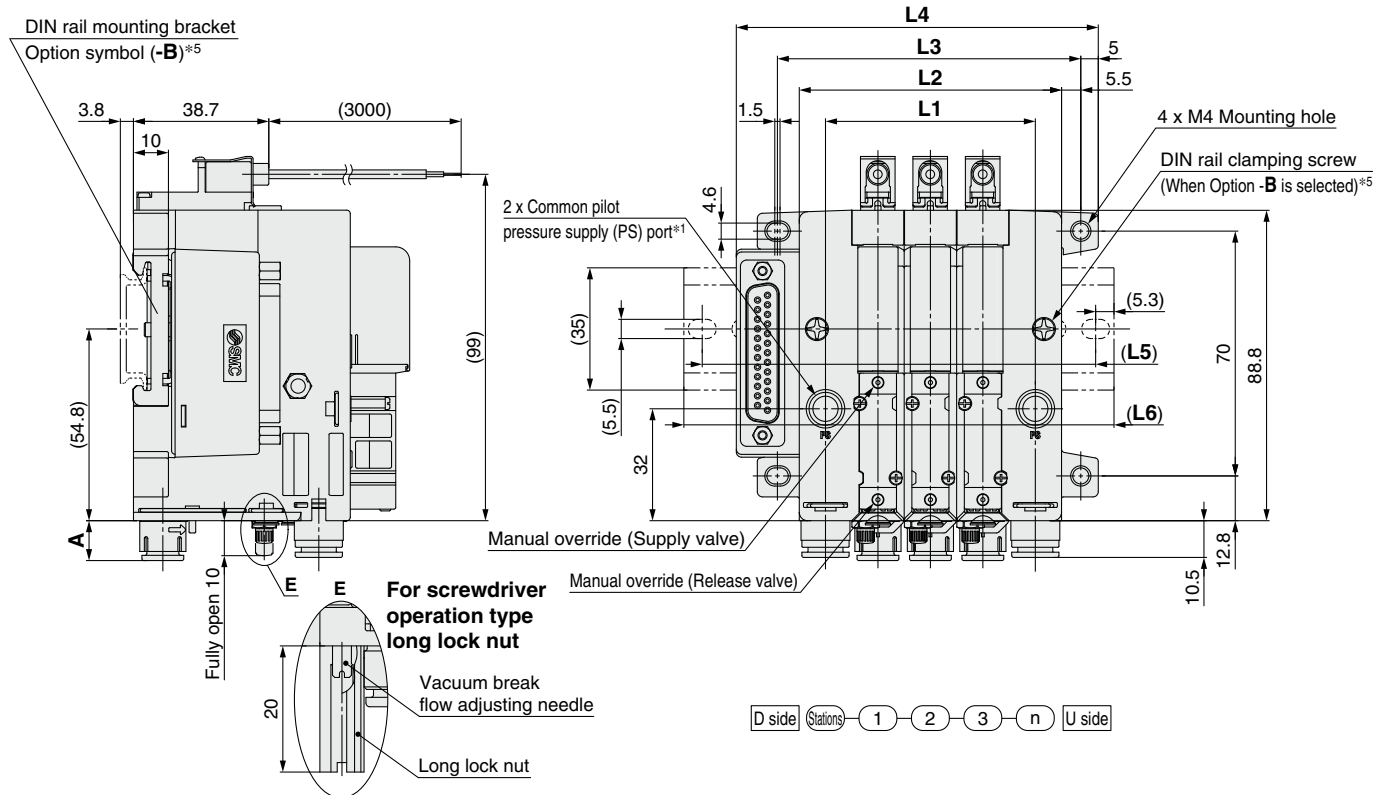
| Stations (n) | [mm] | | | | | | | | | |
|--------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| L1 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 |
| L2 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| L3 | 56.8 | 71.8 | 86.8 | 101.8 | 116.8 | 131.8 | 146.8 | 161.8 | 176.8 | 191.8 |
| L4 | 67.5 | 82.5 | 97.5 | 112.5 | 127.5 | 142.5 | 157.5 | 172.5 | 187.5 | 202.5 |
| L5 | 62.5 | 75 | 87.5 | 112.5 | 125 | 137.5 | 150 | 162.5 | 187.5 | 200 |
| L6 | 73 | 85.5 | 98 | 123 | 135.5 | 148 | 160.5 | 173 | 198 | 210.5 |

- *1 Common pilot pressure supply (PS) port is available for vacuum pump system or option L (Manifold individual supply specification). (mm: ø6 inch: ø1/4")
- *2 Vacuum pump system with individual exhaust port type does not have exhaust port.
- *3 When individual exhaust port type is selected (Body type: F)
- *4 Only when common PD port type option (Symbol: -D) is selected (mm: ø6 inch: ø1/4")
- *5 To fix the manifold to DIN rail, select an option for the manifold model number.
- *6 For complex exhaust type, air is also exhausted from the individual exhaust port of each station in addition to the common exhaust. (Ejector system)

Dimensions: Manifold D-sub Connector

ZZK2□A-_A□_F

Ejector system, Vacuum pump system, Common wiring manifold, With supply valve/release valve, With pressure sensor



| Port type | A | Hexagon width across flats B | C | D |
|-------------|----|------------------------------|-----|------|
| Metric size | 06 | 8.3 | 4 | 9.7 |
| | 08 | 11.2 | 6 | — |
| Inch size | 07 | 9.7 | 4.8 | 12.3 |
| | 09 | 11.2 | 6 | — |

| Stations (n) | [mm] | | | | | | | | | |
|--------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| L1 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 |
| L2 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| L3 | 56.8 | 71.8 | 86.8 | 101.8 | 116.8 | 131.8 | 146.8 | 161.8 | 176.8 | 191.8 |
| L4 | 73.5 | 88.5 | 103.5 | 118.5 | 133.5 | 148.5 | 163.5 | 178.5 | 193.5 | 208.5 |
| L5 | 75 | 100 | 112.5 | 125 | 137.5 | 150 | 175 | 187.5 | 200 | 212.5 |
| L6 | 85.5 | 110.5 | 123 | 135.5 | 148 | 160.5 | 185.5 | 198 | 210.5 | 223 |

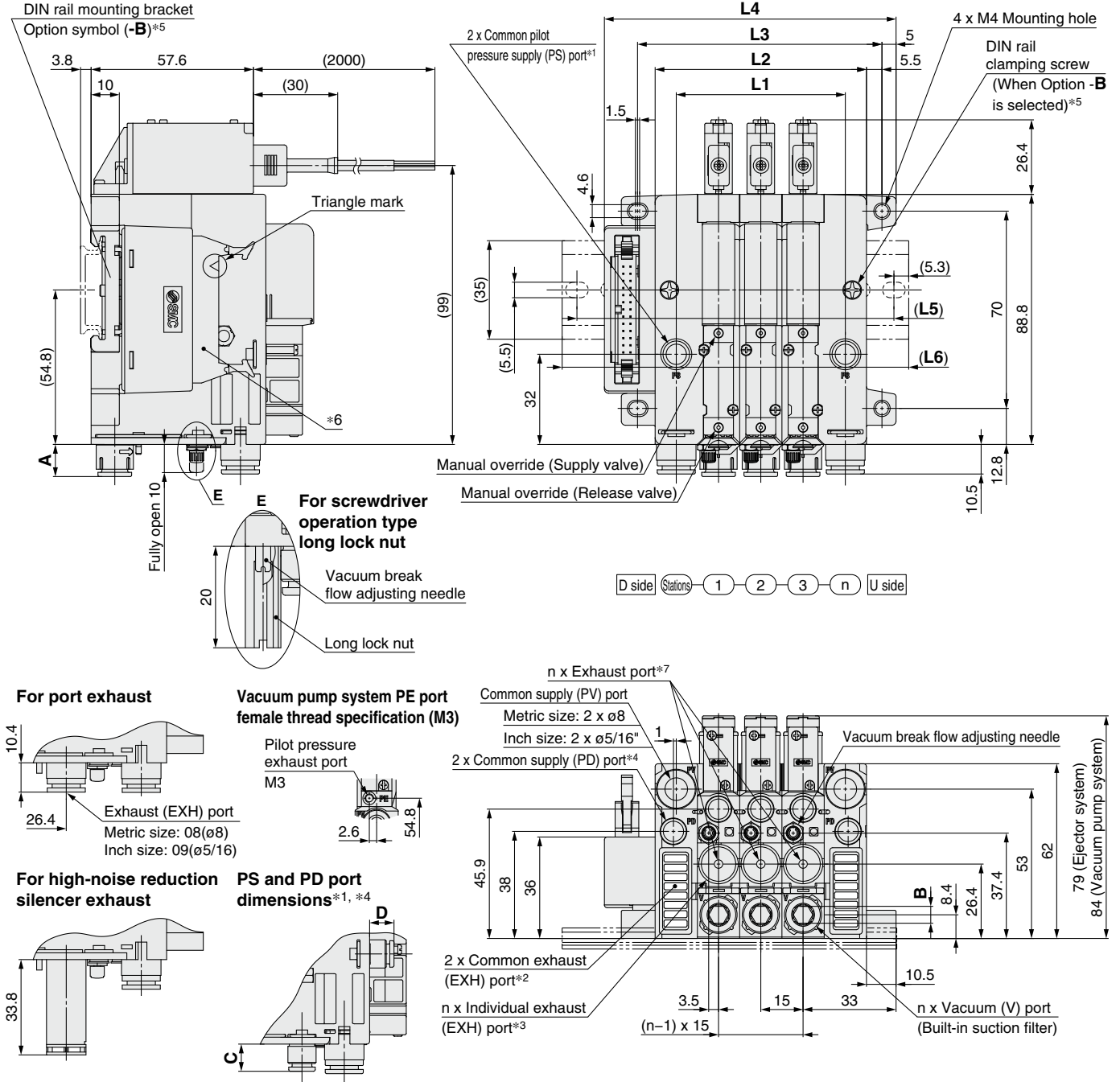
- *1 Common pilot pressure supply (PS) port is available for vacuum pump system or option L (Manifold individual supply specification). (mm: ø6 inch: ø1/4")
- *2 Vacuum pump system with individual exhaust port type does not have exhaust port.
- *3 When individual exhaust port type is selected (Body type: F)
- *4 Only when common PD port type option (Symbol: -D) is selected (mm: ø6 inch: ø1/4")
- *5 To fix the manifold to DIN rail, select an option for the manifold model number.
- *6 For complex exhaust type, air is also exhausted from the individual exhaust port of each station in addition to the common exhaust. (Ejector system)

ZK2□A Series

Dimensions: Manifold Flat Ribbon Cable

ZZK2□A-_A□P

Ejector system, Common wiring manifold, With supply valve/release valve, With pressure switch



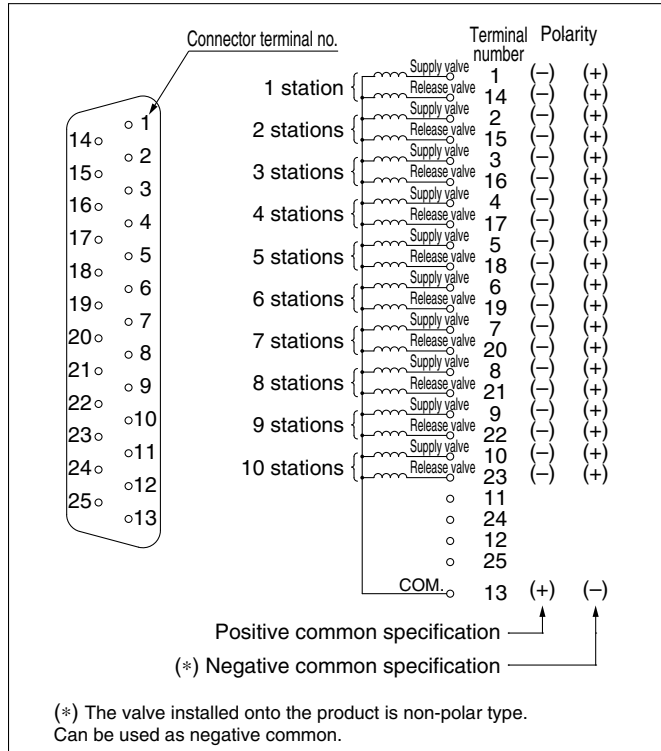
| Port type | A | Hexagon width across flats B | C | D |
|----------------|------|------------------------------|------|------|
| Metric size 06 | 8.3 | 4 | 9.7 | 8.7 |
| 08 | 11.2 | 6 | — | — |
| Inch size 07 | 9.7 | 4.8 | 12.3 | 11.3 |
| 09 | 11.2 | 6 | — | — |

| Stations (n) | [mm] | | | | | | | | | |
|--------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| L1 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 |
| L2 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| L3 | 56.8 | 71.8 | 86.8 | 101.8 | 116.8 | 131.8 | 146.8 | 161.8 | 176.8 | 191.8 |
| L4 | 73.5 | 88.5 | 103.5 | 118.5 | 133.5 | 148.5 | 163.5 | 178.5 | 193.5 | 208.5 |
| L5 | 75 | 100 | 112.5 | 125 | 137.5 | 150 | 175 | 187.5 | 200 | 212.5 |
| L6 | 85.5 | 110.5 | 123 | 135.5 | 148 | 160.5 | 185.5 | 198 | 210.5 | 223 |

- *1 Common pilot pressure supply (PS) port is available for vacuum pump system or option L (Manifold individual supply specification). (mm: ø6 inch: ø1/4")
- *2 Vacuum pump system with individual exhaust port type does not have exhaust port.
- *3 When individual exhaust port type is selected (Body type: F)
- *4 Only when common PD port type option (Symbol: -D) is selected (mm: ø6 inch: ø1/4")
- *5 To fix the manifold to DIN rail, select an option for the manifold model number.
- *6 Applicable connector: Connector for flat ribbon cable (26P)(MIL-C-83503 compliant)
- *7 For complex exhaust type, air is also exhausted from the individual exhaust port of each station in addition to the common exhaust. (Ejector system)

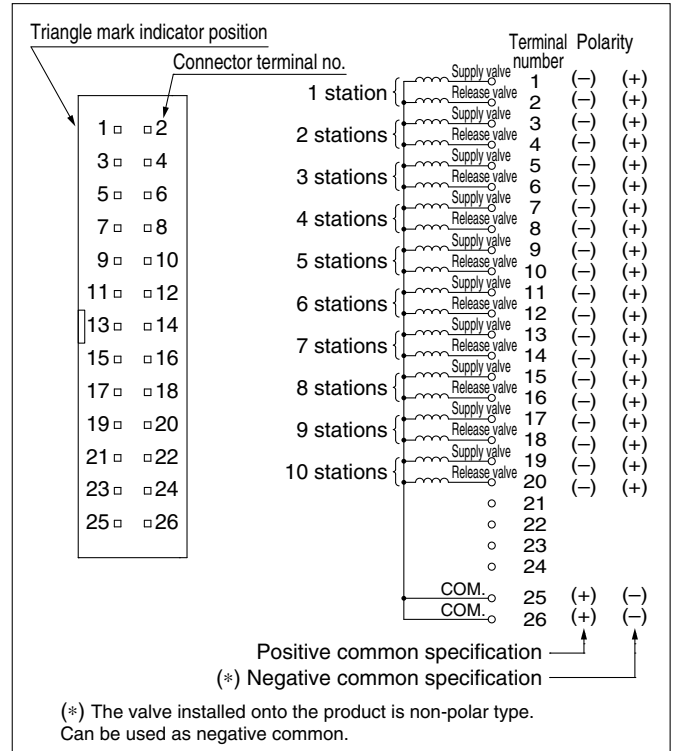
Electrical Wiring Specifications

D-sub Connector



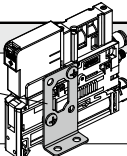
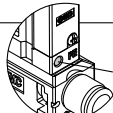
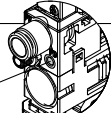
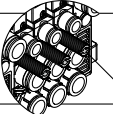
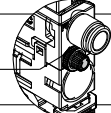
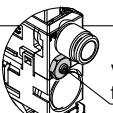
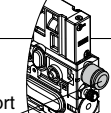
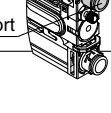
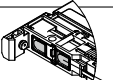
A D-sub connector (25P) conforming to MIL standards is used.

Flat Ribbon Cable Connector



A flat ribbon cable connector (26P) conforming to MIL standards is used.

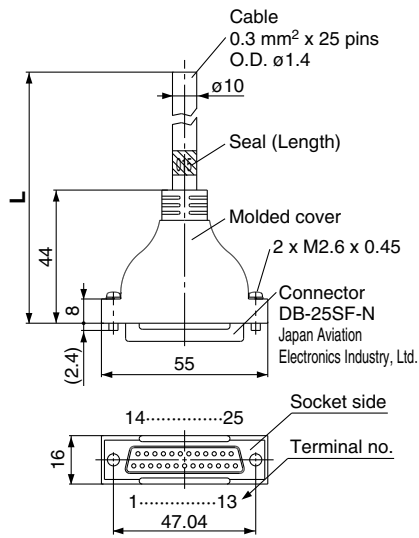
Optional Specifications/Functions/Applications

| Symbol | Type | Image | Function/Application |
|----------|--|---|--|
| B | Mounting bracket for single unit (nuts and bolts are included) |  | · Use when a single unit is mounted to the floor in an upright position is requested. (When ordering only bracket, refer to page 38.) |
| C | Vacuum pump system PE port female thread specification (M3) |  | · Use for pilot pressure exhaust piping (Standard vacuum pump system is released to the atmosphere.) |
| D | With individual release pressure supply (PD) port (M3) |  | · Use when supply pressure for vacuum release is individually requested. |
| E | Screwdriver operation type long lock nut |  | · Used when the port position is close to the manifold individual supply and the needle adjustment operation is difficult |
| J | Vacuum break flow adjusting needle |  | · Thicker than standard hexagon type. More suitable for hand tightening. · Round lock nut improves operability when manifold, vacuum pump system, or exhaust port type is used. |
| K | Screwdriver operation type |  | · Slotted type improves fine adjustment performance when manifold, vacuum pump system, or exhaust port type is used. |
| L | Manifold individual supply specification |  | · Adjust the supply pressure individually for manifold in order to adjust the vacuum pressure reached by each ejector. |
| P | With manifold common release pressure supply (PD) port |  | · When selecting "D" (with common release pressure supply (PD) port) for manifold option, supplying a pressure which is different from for common PV to common PD is requested. |
| W | With exhaust interference prevention valve |  | · When ejectors are operated individually, exhausted air may flow backward from the V port of ejectors that are turned off. Exhaust interference prevention valve prevents backflow. |

Cable Assembly

D-sub Connector

015
AXT100-DS25-030
050



D-sub connector cable assembly Wire Color by Terminal Number

| Terminal number | Lead wire color | Dot marking |
|-----------------|-----------------|-------------|
| 1 | Black | None |
| 2 | Brown | None |
| 3 | Red | None |
| 4 | Orange | None |
| 5 | Yellow | None |
| 6 | Pink | None |
| 7 | Blue | None |
| 8 | Purple | White |
| 9 | Gray | Black |
| 10 | White | Black |
| 11 | White | Red |
| 12 | Yellow | Red |
| 13 | Orange | Red |
| 14 | Yellow | Black |
| 15 | Pink | Black |
| 16 | Blue | White |
| 17 | Purple | None |
| 18 | Gray | None |
| 19 | Orange | Black |
| 20 | Red | White |
| 21 | Brown | White |
| 22 | Pink | Red |
| 23 | Gray | Red |
| 24 | Black | White |
| 25 | White | None |

D-sub Connector Cable Assembly (Option)

| Cable length (L) | Assembly part number | Note |
|------------------|----------------------|--------------------------|
| 1.5 m | AXT100-DS25-015 | Cable 0.3 mm² x 25 cores |
| 3 m | AXT100-DS25-030 | |
| 5 m | AXT100-DS25-050 | |

- * For other commercial connectors, use a 25-pin type with female connector conforming to MIL-C-24308.
- * Cannot be used for movable wiring

Electrical Characteristics

| Item | Property |
|--------------------------------------|------------|
| Conductor resistance Ω/km, 20°C | 65 or less |
| Voltage limit V, 1 min, AC | 1000 |
| Insulation resistance MΩ/km, 20°C | 5 or more |

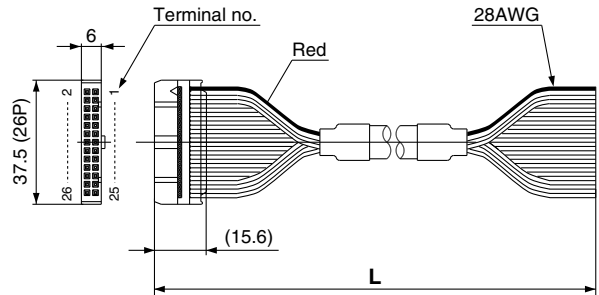
- * The minimum bending inner radius of D-sub connector cable is 20 mm.

Connector manufacturer's example

- Fujitsu Limited
- Japan Aviation Electronics Industry, Ltd.
- J.S.T. Mfg. Co., Ltd.
- HIROSE ELECTRIC CO., LTD.

Flat Ribbon Cable Connector

1
AXT100-FC26-2
3



Flat Ribbon Cable Connector Assembly (Option)

| Cable length (L) | Assembly part number |
|------------------|----------------------|
| | 26P |
| 1.5 m | AXT100-FC26-1 |
| 3 m | AXT100-FC26-2 |
| 5 m | AXT100-FC26-3 |

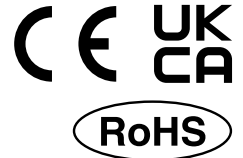
- * For other commercial connectors, use a 26-pin type with strain relief conforming to MIL-C-83503.
- * Cannot be used for movable wiring

Connector manufacturer's example

- HIROSE ELECTRIC CO., LTD.
- Japan Aviation Electronics Industry, Ltd.
- 3M Japan Limited
- J.S.T. Mfg. Co., Ltd.
- Fujitsu Limited
- Oki Electric Cable Co., Ltd.

Air Operated Specification Vacuum Unit

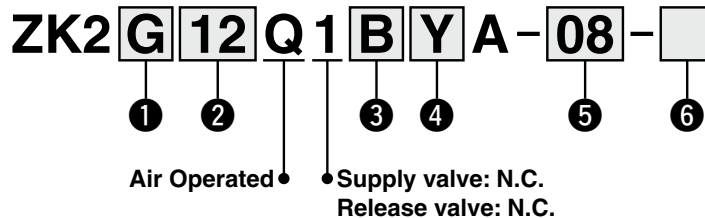
ZK2□A Series



Single Unit Ejector System

Refer to pages 43-6 to 43-9 for the port layouts (including circuit examples) and page 43-14 for the dimensions.

How to Order



1 Body/Exhaust type

| Symbol | Body | Exhaust type |
|--------|-------------|---------------------------------------|
| A | Single unit | Silencer exhaust*1 |
| | | Silencer exhaust |
| B | Single unit | Port exhaust |
| G | Single unit | High-noise reduction silencer exhaust |

*1 With exhaust port when 2 is 12 or 15

2 Nominal nozzle size

| Symbol | Nominal nozzle size |
|--------|---------------------|
| 07 | ø0.7 |
| 10 | ø1.0 |
| 12 | ø1.2 |
| 15 | ø1.5 |

* Refer to page 43-5 for the standard supply pressure per nozzle diameter.

3 Pressure switch for vacuum/Pressure sensor

| Symbol | Type | Pressure range [kPa] | Specifications | | |
|--------|--|----------------------|------------------------|---------------------|--------------------------------|
| | | | NPN | PNP | With unit selection function*2 |
| A | Pressure switch for vacuum | 0 to -101 | ● | — | ● |
| B | | | ● | — | None (SI unit only) |
| C | | | — | ● | ● |
| D | | -100 to 100 | — | ● | None (SI unit only) |
| E | | | ● | — | ● |
| F | | | ● | — | None (SI unit only) |
| H | — | ● | ● | | |
| J | — | ● | ● | None (SI unit only) | |
| P | Pressure sensor | 0 to -101 | Analog output 1 to 5 V | | |
| T | | -100 to 100 | | | |
| N | Without pressure switch for vacuum/pressure sensor | | | | |

*2 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

4 Connector (Pressure switch for vacuum)

| Symbol | For pressure switch for vacuum: 2 m (Lead wire with connector) | Pressure sensor assembly: 3 m (With lead wire) | Note |
|--------|--|--|---|
| Y | ● | | Cannot be selected when 3 is N |
| Y1 | | None | Cannot be selected when 3 is P, T, or N |
| N | | None | When "N" is selected for 3 |

5 Vacuum (V) port

| Symbol | Vacuum (V) port |
|--------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

6 Option*3

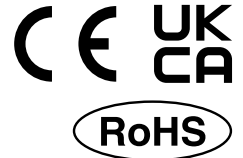
| Symbol | Type | Note | |
|--------|--|---|--|
| Nil | Without option | — | |
| B | Mounting bracket for single unit (nuts and bolts are included) | — | |
| D | With individual release pressure supply (PD) port (M3)*4 | — | |
| E | Vacuum break flow adjusting needle | Can be selected only for the combination of J and K | |
| J | | | Screwdriver operation type long lock nut |
| K | | | Round lock nut |
| K | Screwdriver operation type | | |
| W | With exhaust interference prevention valve | — | |

*3 When more than one option is selected, list the option symbols in alphabetical order. (Example -BJ)

*4 Use a One-touch fitting or barb fitting (M-3AU-4) for piping. (O.D.: Within ø6.2)

Air Operated Specification Vacuum Unit

ZK2□A Series



For Manifold Ejector System

How to Order

Refer to pages 43-7 to 43-11 for the port layouts (including circuit examples) and page 43-16 for the dimensions.

Single unit for manifold part number

ZK2 **H** **12** **Q** **1** **B** **Y** **A** - **08** - □

① Air Operated • • Supply valve: N.C./Release valve: N.C.

① Body/Exhaust type

| Symbol | Body | Exhaust type |
|--------|--------------|--|
| C | For Manifold | Complex exhaust*1 Direct exhaust End plate exhaust |
| | | Individual port exhaust Individual port exhaust |
| H | | High-noise reduction silencer exhaust High-noise reduction silencer exhaust |

*1 Combination of direct exhaust and end plate exhaust from each station

② Nominal nozzle size

| Symbol | Nominal nozzle size |
|--------|---------------------|
| 07 | ø0.7 |
| 10 | ø1.0 |
| 12 | ø1.2 |
| 15 | ø1.5 |

* Refer to page 43-5 for the standard supply pressure per nozzle diameter.

③ Pressure switch for vacuum/Pressure sensor

| Symbol | Type | Pressure range [kPa] | Specifications | | |
|--------|--|----------------------|------------------------|-----|--------------------------------|
| | | | NPN 2 outputs | PNP | With unit selection function*2 |
| A | Pressure switch for vacuum | 0 to -101 | ● | — | ● |
| B | | | ● | — | None (SI unit only) |
| C | | | — | — | — |
| D | | | — | ● | None (SI unit only) |
| E | | | — | — | ● |
| F | —100 to 100 | —100 to 100 | ● | — | None (SI unit only) |
| H | | | — | ● | ● |
| J | | | — | ● | None (SI unit only) |
| P | Pressure sensor | 0 to -101 | Analog output 1 to 5 V | | |
| T | — | -100 to 100 | — | | |
| N | Without pressure switch for vacuum/pressure sensor | | | | |

*2 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

④ Connector (Pressure switch for vacuum)

| Symbol | For pressure switch for vacuum: 2 m (Lead wire with connector) | Pressure sensor assembly: 3 m (With lead wire) | Note |
|--------|--|--|---|
| Y | ● | — | Cannot be selected when ③ is N |
| Y1 | None | — | Cannot be selected when ③ is P, T, or N |
| N | None | — | When "N" is selected for ③ |

⑥ Option*3

| Symbol | Type | Note |
|--------|--|--|
| Nil | Without option | — |
| E | Vacuum break flow adjusting needle | Screwdriver operation type long lock nut Screwdriver operation type long lock nut Lock nut |
| J | Round lock nut | Lock nut |
| K | Screwdriver operation type | Vacuum break flow adjusting needle |
| M | Manifold individual supply specification*4 | Individual supply port |
| P | With manifold common release pressure supply (PD) port | — |
| W | With exhaust interference prevention valve | Exhaust interference prevention valve |

*3 When more than one option is selected, list the option symbols in alphabetical order. (Example -EM)
*4 When F or H is selected for ① and M is selected for the option, the space for adjusting the needle is reduced. Products which can be operated more easily can be specified by option E.

⑤ Vacuum (V) port

| Symbol | Vacuum (V) port |
|--------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

How to Order Manifold

ZZK2 **04** **A** - **A** **2** **L** - □

If the manifold parts (set of end plates for both ends and tension bolts) are shipped unassembled, please refer to page 33.

⑦ Stations

| Symbol | Stations |
|--------|-------------|
| 01 | 1 station |
| 02 | 2 stations |
| ⋮ | ⋮ |
| 10 | 10 stations |

* For adequate performance, the number of stations that can be operated simultaneously depends on the nozzle diameter. Refer to the Max. Number of Manifold Stations that can be Operated Simultaneously in page 43-5.

⑧ System/Port

| Symbol | System | Port |
|--------|----------------|--------------------|
| A | Ejector system | ø8 (Common PV) |
| AN | Ejector system | ø5/16" (Common PV) |

⑨ Exhaust

| Symbol | Exhaust | Note |
|--------|--------------------|---|
| 1 | Complex exhaust*5 | Select this option when "C" is selected for ① Body/Exhaust type. |
| 2 | Individual exhaust | Select this option when "H" or "F" is selected for ① Body/Exhaust type. |

*5 Combination of direct exhaust and end plate exhaust from each station

⑩ Option*6

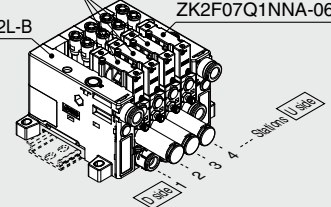
| Symbol | Type | Note |
|--------|---|---|
| Nil | Without option | — |
| B | With DIN rail mounting bracket | The DIN rail should be ordered separately. |
| D | With common release pressure supply (PD) port | Select this option when "P" is selected for ③ Option. |
| M | Manifold individual supply specification | Select this option when "M" is selected for ③ Option. |

*6 When more than one option is selected, list the option symbols in alphabetical order. (Example -BD)

How to Order Valve Manifold Assembly

Example

ZK2H12Q1NNA-08
ZZK204A-A2L-B
ZK2F07Q1NNA-06



[1] When shipped, the single unit for manifold is already built into the manifold:

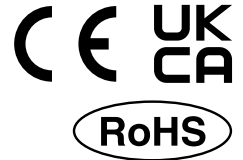
After the manifold part number, specify the single unit for manifold part number from the first station. In addition, prefix an asterisk to the single unit for manifold part number to indicate that it is to be built into the manifold.
Ex.) ZZK204A-A2L-B1 (Manifold 4 stations)
* ZK2H12Q1NNA-083 (Single unit for manifold: Stations 1 to 3)
* ZK2F07Q1NNA-061 (Single unit for manifold: Stations 4)

[2] When only ordering the single unit for manifold: Order using the single unit for manifold part number. Ex.) ZK2H12Q1NNA-08

- When the manifold is viewed from V port, the first station starts from the left (D side).
- Complex exhaust and individual port exhaust (High-noise reduction silencer exhaust) cannot be mixed in the ejector system manifold.
- The DIN rail should be ordered separately. (Refer to page 33.)

Air Operated Specification Vacuum Unit

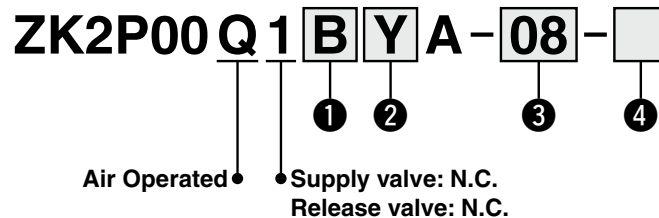
ZK2□A Series



Single Unit Vacuum Pump System

Refer to page 43-6 for the port layout (including a circuit example) and page 43-15 for the dimensions.

How to Order



① Pressure switch for vacuum/Pressure sensor

| Symbol | Type | Pressure range [kPa] | Specifications | | |
|----------|--|----------------------|------------------------|---------------------|--------------------------------|
| | | | NPN | PNP | With unit selection function*1 |
| A | Pressure switch for vacuum | 0 to -101 | ● | — | ● |
| B | | | ● | — | None (SI unit only) |
| C | | | — | ● | ● |
| D | | | — | ● | None (SI unit only) |
| E | | -100 to 100 | ● | — | ● |
| F | | | ● | — | None (SI unit only) |
| H | | | — | ● | ● |
| J | — | ● | ● | None (SI unit only) | |
| P | Pressure sensor | 0 to -101 | Analog output 1 to 5 V | | |
| T | | -100 to 100 | | | |
| N | Without pressure switch for vacuum/pressure sensor | | | | |

*1 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

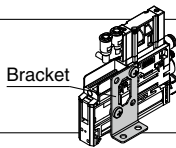

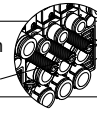
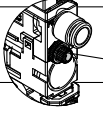
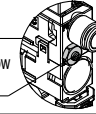
② Connector (Pressure switch for vacuum)

| Symbol | For pressure switch for vacuum: 2 m (Lead wire with connector) | Pressure sensor assembly: 3 m (With lead wire) | Note |
|-----------|--|--|---|
| Y | ● | — | Cannot be selected when ① is N |
| Y1 | None | — | Cannot be selected when ① is P, T, or N |
| N | None | — | When "N" is selected for ① |

③ Vacuum (V) port

| Symbol | Vacuum (V) port |
|-----------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

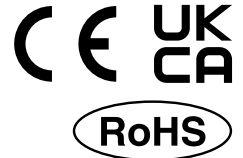
④ Option*2

| Symbol | Type | Note | |
|------------|---|--|---|
| Nil | Without option | — | |
| B | Mounting bracket for single unit (nuts and bolts are included) |  Bracket | — |
| C | Vacuum pump system breathing (PE) port female thread specification (M3) |  PE port | — |
| E | Screwdriver operation type long lock nut |  Screwdriver operation type long lock nut | Can be selected only for the combination of J and K |
| J | Round lock nut |  Lock nut | |
| K | Screwdriver operation type |  Vacuum break flow adjusting needle | |

*2 When more than one option is selected, list the option symbols in alphabetical order. (Example -BJ)

Air Operated Specification Vacuum Unit

ZK2□A Series



For Manifold Vacuum Pump System

Refer to page 43-6 for the port layout (including a circuit example) and page 43-16 for the dimensions.

How to Order

Single unit for manifold part number

ZK2Q00 Q 1 B Y A - 08 - □

① Air Operated • • Supply valve: N.C./Release valve: N.C.

① Pressure switch for vacuum/Pressure sensor

| Symbol | Type | Pressure range [kPa] | Specifications | | |
|--------|--|----------------------|------------------------|---------------------|--------------------------------|
| | | | NPN 2 outputs | PNP | With unit selection function*1 |
| A | Pressure switch for vacuum | 0 to -101 | ● | — | ● |
| B | | | ● | — | None (SI unit only) |
| C | | | — | ● | ● |
| D | | — | ● | None (SI unit only) | |
| E | | -100 to 100 | ● | — | ● |
| F | | | ● | — | None (SI unit only) |
| H | — | | ● | ● | |
| J | — | — | ● | None (SI unit only) | |
| P | Pressure sensor | 0 to -101 | Analog output 1 to 5 V | | |
| T | | -100 to 100 | | | |
| N | Without pressure switch for vacuum/pressure sensor | | | | |

*1 The unit selection function is not available in Japan due to the New Measurement Law. The unit for the type without the unit selection function is fixed as kPa.

② Connector (Pressure switch for vacuum)

| Symbol | For pressure switch for vacuum: 2 m (Lead wire with connector) | Pressure sensor assembly: 3 m (With lead wire) | Note |
|--------|--|--|---|
| Y | ● | — | Cannot be selected when ③ is N |
| Y1 | None | — | Cannot be selected when ③ is P, T, or N |
| N | None | — | When "N" is selected for ③ |

③ Vacuum (V) port

| Symbol | Vacuum (V) port |
|--------|-----------------|
| 06 | ø6 |
| 08 | ø8 |
| 07 | ø1/4" |
| 09 | ø5/16" |

④ Option*2

| Symbol | Type | Note |
|--------|---|---|
| Nil | Without option | — |
| C | Vacuum pump system breathing (PE) port female thread specification (M3) | — |
| E | Vacuum break | Can be selected only for the combination of J and K |
| J | flow adjusting | |
| K | needle | |
| | Screwdriver operation type long lock nut | |
| | Round lock nut | |
| | Screwdriver operation type | |

*2 When more than one option is selected, list the option symbols in alphabetical order. (Example -CJ)

Manifold part number

ZK2 04 A - Q 2 L - □

⑤ ⑥ ⑦

If the manifold parts (set of end plates for both ends and tension bolts) are shipped unassembled, please refer to page 33.

⑤ Stations

| Symbol | Stations |
|--------|-------------|
| 01 | 1 station |
| 02 | 2 stations |
| ⋮ | ⋮ |
| 10 | 10 stations |

⑥ System/Port

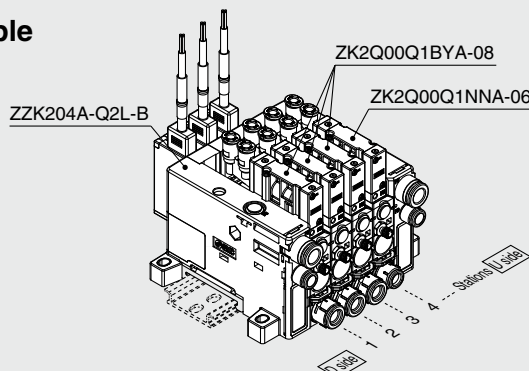
| Symbol | System | Port |
|--------|--------------------|--------------------------------|
| Q | Vacuum pump system | ø8 (Common PV) |
| QN | | ø6 (Common release pressure) |
| | | ø5/16" (Common PV) |
| | | ø1/4 (Common release pressure) |

⑦ Option

| Symbol | Type | Note |
|--------|--------------------------------|--|
| Nil | Without option | — |
| B | With DIN rail mounting bracket | The DIN rail should be ordered separately. |

How to Order Valve Manifold Assembly

Example



[1] When shipped, the single unit for manifold is already built into the manifold:

After the manifold part number, specify the single unit for manifold part number from the first station.

In addition, prefix an asterisk to the single unit for manifold part number to indicate that it is to be built into the manifold.

Ex.) ZK204A-Q2L-B.....1 (Manifold 4 stations)

* ZK2Q00Q1BYA-08.....3 (Single unit for manifold: Stations 1 to 3)

* ZK2Q00Q1NNA-06.....1 (Single unit for manifold: Stations 4)

[2] When only ordering the single unit for manifold:

Order using the single unit for manifold part number.

Ex.) ZK2Q00Q1BYA-08

· When the manifold is viewed from V port, the first station starts from the left (D side).
· The DIN rail should be ordered separately. (Refer to page 33.)

Specifications

General Specifications

| | | |
|--|-----------------------|--|
| Operating temperature range (No condensation) | -5 to 50°C | Without pressure sensor/switch With pressure sensor |
| | 0 to 50°C | With pressure sensor |
| Fluid | Air | |
| Vibration resistance*1 | 30 m/s ² | Without pressure sensor/switch With pressure sensor |
| | 20 m/s ² | With pressure switch |
| Impact*2 resistance | 150 m/s ² | Without pressure sensor/switch With pressure sensor |
| | 100 m/s ² | With pressure switch |
| Standards | CE/UKCA marking, RoHS | |

*1 The characteristics are satisfied when tested for 2 hours in each of the X, Y and Z directions at 10 to 500 Hz without energization. (Initial value)

*2 The characteristics are satisfied when tested one time in each of the X, Y and Z directions without energization. (Initial value)

Valve Common Specifications

| Model*3 | ZK2-VA□Q |
|--------------------------|---|
| Type of actuation | Supply valve: N.C. Release valve: N.C. |
| Valve configuration | Air operated dual 2-port |
| Operating pressure range | 0.3 to 0.6 MPa |
| Valve construction | Poppet seal |
| Manual override | Push type |

*3 Refer to the Valve assembly on page 32 for the valve model number.

Ejector Specifications

| Item | Model | ZK2□07 | ZK2□10 | ZK2□12 | ZK2□15 | |
|--------------------------|---------------------------------------|---------------|--------|--------|--------|----|
| Nozzle diameter | [mm] | 0.7 | 1.0 | 1.2 | 1.5 | |
| Max. suction flow*4 | High-noise reduction silencer exhaust | [L/min (ANR)] | 34 | 56 | 72 | 83 |
| | Port exhaust | [L/min (ANR)] | 34 | 56 | 74 | 89 |
| | Silencer exhaust/ Complex exhaust | [L/min (ANR)] | 29 | 44 | 61 | 67 |
| Air consumption*4 | [L/min (ANR)] | 24 | 40 | 58 | 90 | |
| Max. vacuum pressure*4 | [kPa] | -91 | | | | |
| Supply pressure range | [MPa] | 0.3 to 0.6 | | | | |
| Standard supply pressure | [MPa] | 0.35 | | 0.4 | | |

*4 Values at the standard supply pressure. Values are based on standard of SMC measurements. They depend on atmospheric pressure (weather, altitude, etc.) and measurement method.

Suction Filter

| | |
|---------------------------|---------------------|
| Nominal filtration rating | 30 μm |
| Filtration area | 510 mm ² |

Max. Number of Manifold Stations that Can Operate Simultaneously*5

| Item | Model (Nozzle size) | ZK2□07 | ZK2□10 | ZK2□12 | ZK2□15 | |
|---|---|------------------------|--------|--------|--------|---|
| Air pressure supply (PV) port ø8, ø5/16" | High-noise reduction silencer exhaust, Individual port exhaust | Supply from one side | 8 | 6 | 6 | 3 |
| | Complex exhaust | Supply from both sides | 10 | 9 | 9 | 6 |
| | | Supply from one side | 8 | 5 | 4 | 3 |
| | | Supply from both sides | 10 | 7 | 5 | 5 |

*5 As long as the number of stations operated simultaneously is the value on the table or less, then the manifold is available up to 10 stations.

Noise Level (Reference values)

| Item | Model | ZK2□07 | ZK2□10 | ZK2□12 | ZK2□15 |
|-------------------------|--|--------|--------|--------|--------|
| Noise level [dB (A)] | ZK2G (High-noise reduction silencer exhaust) | 46 | 55 | 63 | 69 |
| | ZK2A (Silencer exhaust) | 59 | 66 | 75 | 76 |

Actual values under SMC's measurement conditions (Not guaranteed values)

Weight

Single Unit

| Single unit model | Weight [g] |
|--|------------|
| ZK2P00Q1NNA (Vacuum pump system, Single unit, Without pressure sensor/switch) | 81 |
| ZK2A□Q1NNA (Ejector system, Single unit, Without pressure sensor/switch) | 66 |
| ZK2 (One station for manifold, Without pressure sensor/switch) | 70 |

Pressure Sensor/Pressure Switch for Vacuum

| Pressure sensor/Pressure switch for vacuum model | Weight [g] |
|--|------------|
| ZK2-PS□-A (Except cable portion) | 5 |
| ZK2-ZS□-A (Except lead wire with connector) | 14 |

Manifold Base

| | 1 station | 2 stations | 3 stations | 4 stations | 5 stations | 6 stations | 7 stations | 8 stations | 9 stations | 10 stations |
|------------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| Weight [g] | 129 | 132 | 135 | 138 | 141 | 144 | 147 | 149 | 152 | 155 |

● Calculation of Weight for the Manifold Type

(Single unit weight x Number of stations) + (Pressure sensor/Pressure switch for vacuum weight x Number of stations) + Manifold base

Example) 5-station manifold with pressure sensors

$$70 \text{ g} \times 5 \text{ pcs.} + 5 \text{ g} \times 5 \text{ pcs.} + 141 \text{ g} = 516 \text{ g}$$

* The ejector exhaust characteristics/flow rate characteristics are the same as those of the model with a valve. Refer to page 19 and on for details.

ZK2□A Series

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PA: Supply valve pilot pressure supply port
 - V: Vacuum port
 - PD: Release pressure supply port
 - PB: Release valve pilot pressure supply port
 - EXH: Exhaust port
- For details ⇒ Page 43-11

Port Layout

* System depends on vacuum source (vacuum pump/ejector).

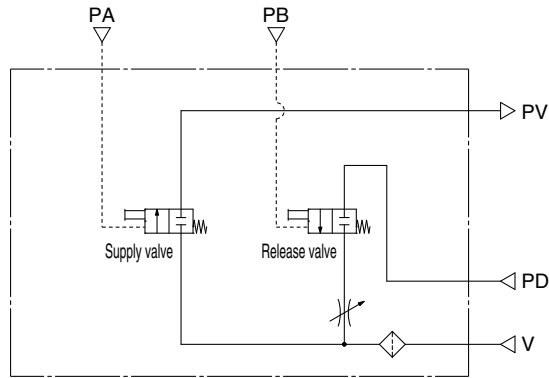
Standard Products

Port layout No. 1

Single unit: ZK2P00Q1□□A-□

| | | |
|-------------------------|------------------|---------------------------|
| System | Vacuum pump | |
| Body type | Single unit | |
| Exhaust type | — | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | — |
| | Release pressure | Supplied from the PD port |

Port combination: PV ≠ PD **Circuit example**

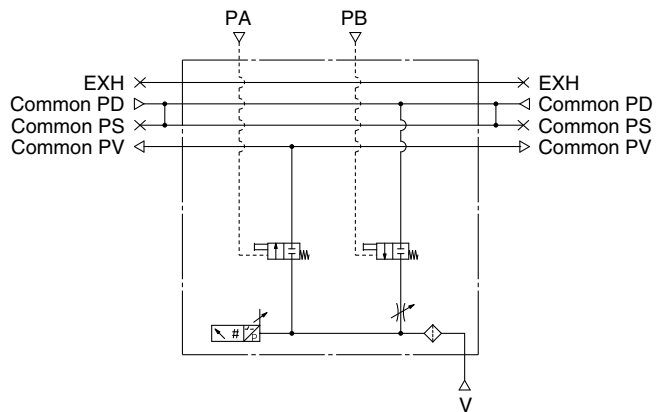


Port layout No. 2

Single unit: ZK2Q00Q1□□A-□
Manifold: ZZK2□A-Q2L

| | | |
|-------------------------|------------------|-------------------------|
| System | Vacuum pump | |
| Body type | Manifold | |
| Exhaust type | — | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | — |
| | Release pressure | Common for each station |

Port combination: Common PV ≠ Common PD **Circuit example**

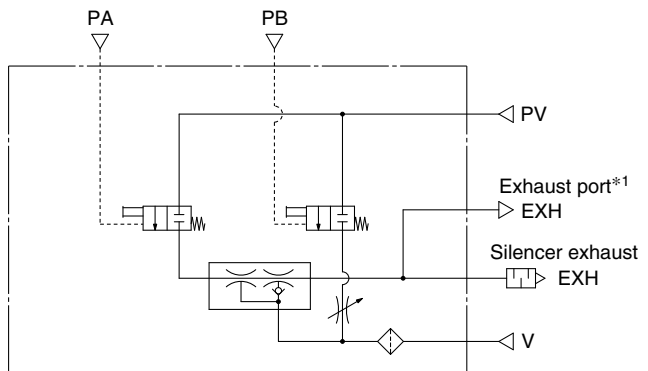


Port layout No. 3

Single unit: ZK2A□Q1□□A-□

| | | |
|-------------------------|------------------|-----------------------------------|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | Silencer exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | Released in operating environment |
| | Release pressure | Same pressure as PV |

Port combination: PV = PD **Circuit example**



*1 Nozzle size: 12, 15

Refer to page 43-11 for the purpose of port and the operating pressure range.

Vacuum Unit **ZK2□A Series**

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PA: Supply valve pilot pressure supply port
 - V: Vacuum port
 - PD: Release pressure supply port
 - PB: Release valve pilot pressure supply port
 - EXH: Exhaust port
- For details ⇒ Page 43-11

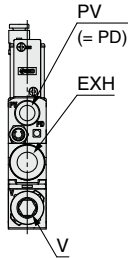
Port Layout

* System depends on vacuum source (vacuum pump/ejector).

Standard Products

Port layout No. **4**

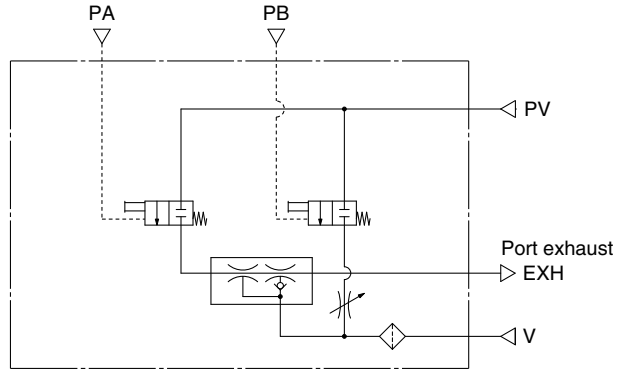
Single unit: **ZK2B□Q1□□A-□**



| | | |
|-------------------------|------------------|--|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | Port exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | After piping, individual exhaust is necessary. |
| | Release pressure | Same pressure as PV |

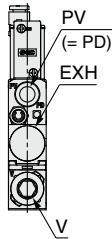
Port combination: PV = PD

Circuit example



Port layout No. **5**

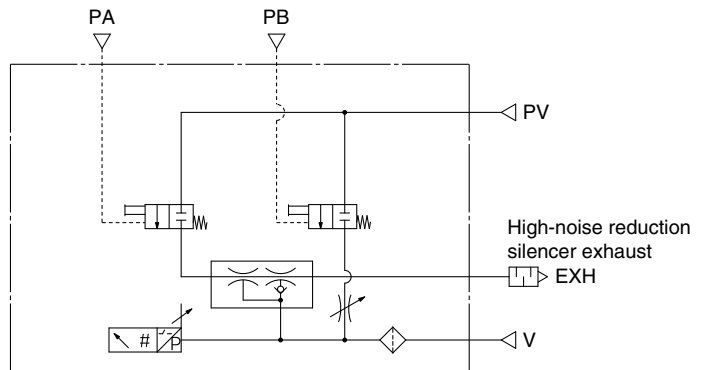
Single unit: **ZK2G□Q1□□A-□**



| | | |
|-------------------------|---------------------------------------|-----------------------------------|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | High-noise reduction silencer exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | Released in operating environment |
| | Release pressure | Same pressure as PV |

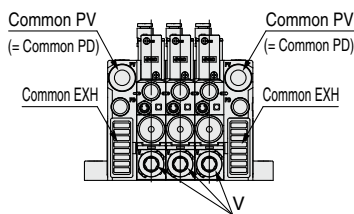
Port combination: PV (= PD)

Circuit example



Port layout No. **6**

Single unit: **ZK2C□Q1□□A-□**
 Manifold: **ZZK2□A-A1L**

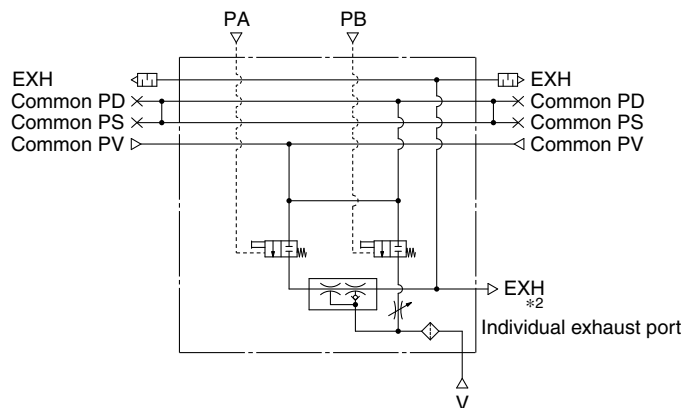


*1 The complex exhaust is a combined exhaust method of the common exhaust from the end plate and the direct exhaust from each station.

| | | |
|-------------------------|-------------------|-----------------------------------|
| System | Ejector | |
| Body type | Manifold | |
| Exhaust type | Complex exhaust*1 | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | Released in operating environment |
| | Release pressure | Same pressure as common PV |

Port combination: Common PV = Common PD

Circuit example



*2 For complex exhaust type, individual exhaust port is provided to each station.

Refer to page 43-11 for the purpose of port and the operating pressure range.

ZK2□A Series

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PD: Release pressure supply port
 - PA: Supply valve pilot pressure supply port
 - PB: Release valve pilot pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
- For details ⇒ Page 43-11

Port Layout

* System depends on vacuum source (vacuum pump/ejector).

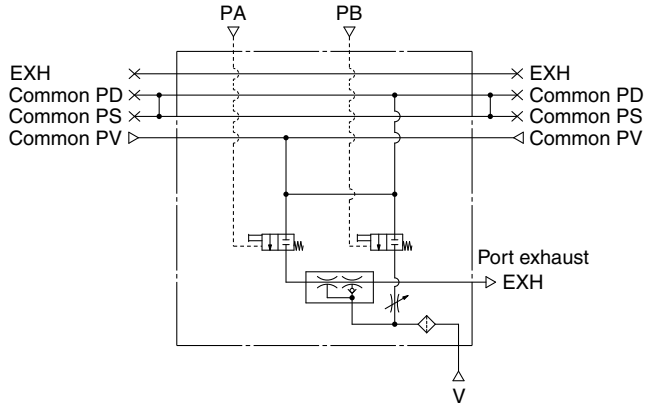
Standard Products

Port layout No. 7

Single unit: ZK2F□Q1□□A-□
Manifold: ZZK2□A-A2L

| | | |
|-------------------------|-------------------------|--|
| System | Ejector | |
| Body type | Manifold | |
| Exhaust type | Individual port exhaust | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | After piping, individual exhaust is necessary. |
| | Release pressure | Same pressure as common PV |

Port combination: Common PV = Common PD **Circuit example**

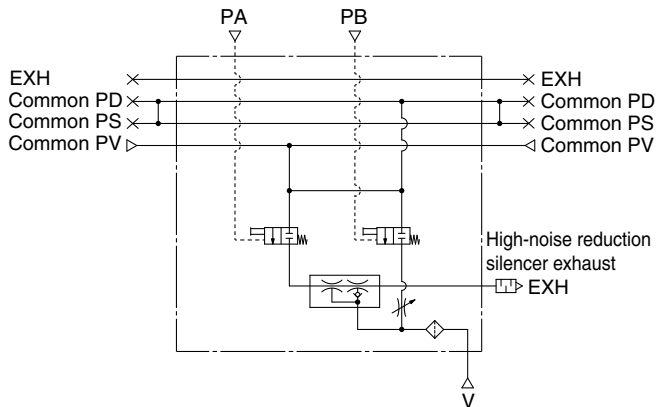


Port layout No. 8

Single unit: ZK2H□Q1□□A-□
Manifold: ZZK2□A-A2L

| | | |
|-------------------------|---------------------------------------|-----------------------------------|
| System | Ejector | |
| Body type | Manifold | |
| Exhaust type | High-noise reduction silencer exhaust | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | Released in operating environment |
| | Release pressure | Same pressure as common PV |

Port combination: Common PV = Common PD **Circuit example**



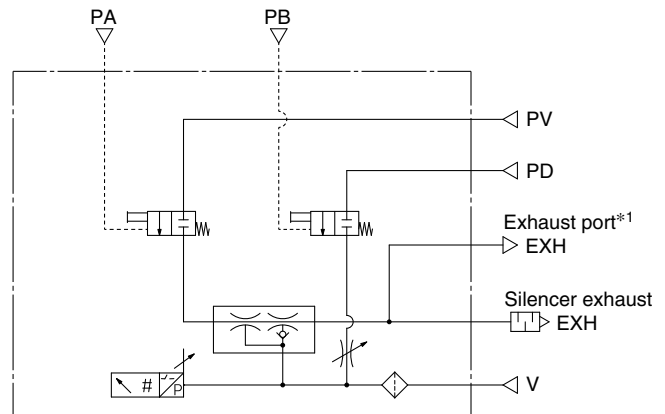
Option -D

Port layout No. 9

Single unit: ZK2A□Q1□□A-□-D

| | | |
|-------------------------|------------------|--|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | Silencer exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | Released in operating environment |
| | Release pressure | PD pressure has to be supplied with PS pressure. |

Port combination: PV ≠ PD **Circuit example**



*1 Nozzle size: 12, 15

Refer to page 43-11 for the purpose of port and the operating pressure range.

Vacuum Unit **ZK2□A Series**

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PD: Release pressure supply port
 - PA: Supply valve pilot pressure supply port
 - PB: Release valve pilot pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
- For details ⇒ Page 43-11

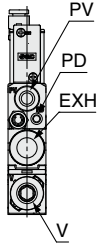
Port Layout

* System depends on vacuum source (vacuum pump/ejector).

Option -D

Port layout No. **10**

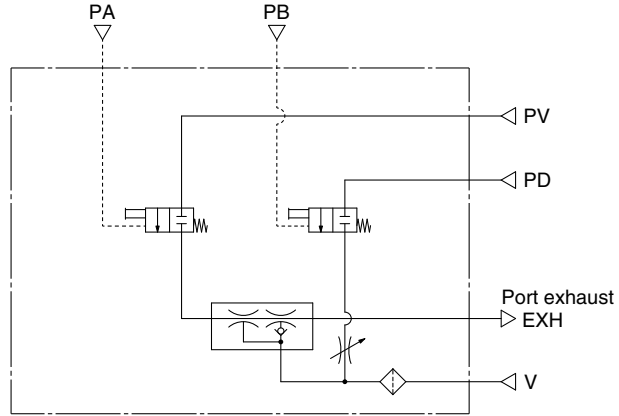
Single unit: ZK2B□Q1□□A-□-D



| | | |
|-------------------------|------------------|--|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | Port exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | After piping, individual exhaust is necessary. |
| | Release pressure | PD pressure has to be supplied with PV pressure. |

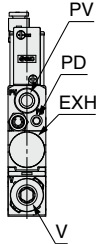
Port combination: PV ≠ PD

Circuit example



Port layout No. **11**

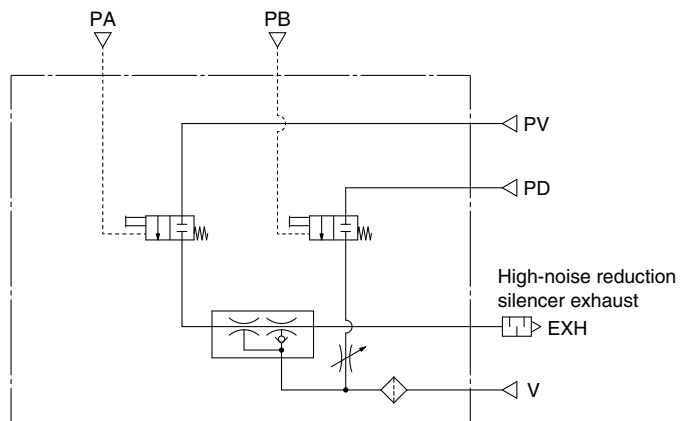
Single unit: ZK2G□Q1□□A-□-D



| | | |
|-------------------------|---------------------------------------|--|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | High-noise reduction silencer exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | Released in operating environment |
| | Release pressure | PD pressure has to be supplied with PV pressure. |

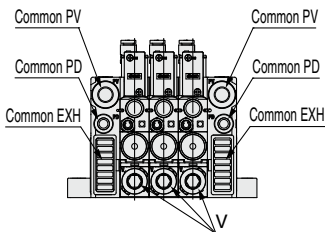
Port combination: PV ≠ PD

Circuit example



Port layout No. **12**

Single unit: ZK2C□Q1□□A-□-P
Manifold: ZZK2□A-A1L-D

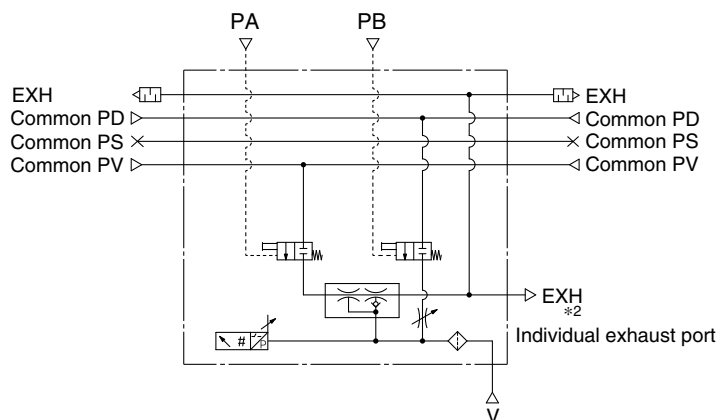


*1 The complex exhaust is a combined exhaust method of the common exhaust from the end plate and the direct exhaust from each station.

| | | |
|-------------------------|-------------------|---|
| System | Ejector | |
| Body type | Manifold | |
| Exhaust type | Complex exhaust*1 | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | Released in operating environment |
| | Release pressure | Common PD pressure has to be supplied with common PV. |

Port combination: Common PV ≠ Common PD

Circuit example



*2 For complex exhaust type, individual exhaust port is provided to each station

Refer to page 43-11 for the purpose of port and the operating pressure range.

ZK2□A Series

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PD: Release pressure supply port
 - PA: Supply valve pilot pressure supply port
 - PB: Release valve pilot pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
- For details ⇒ Page 43-11

Port Layout

* System depends on vacuum source (vacuum pump/ejector).

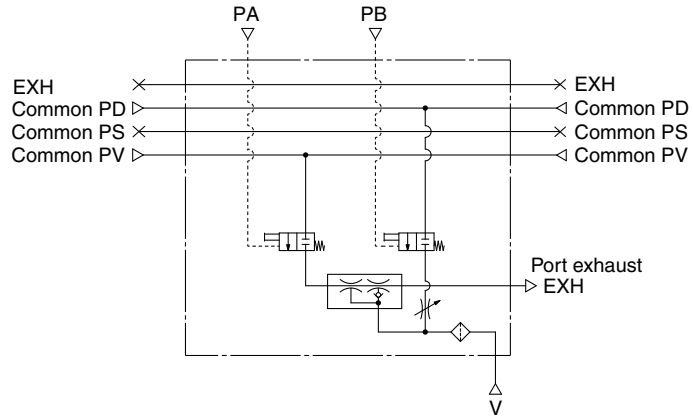
Option -D

Port layout No. 13

Single unit: ZK2F□Q1□□A-□-P
Manifold: ZZK2□A-A2L-D

| | | |
|-------------------------|-------------------------|---|
| System | Ejector | |
| Body type | Manifold | |
| Exhaust type | Individual port exhaust | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | After piping, individual exhaust is necessary. |
| | Release pressure | Common PD pressure has to be supplied with common PV. |

Port combination: Common PV ≠ Common PD **Circuit example**

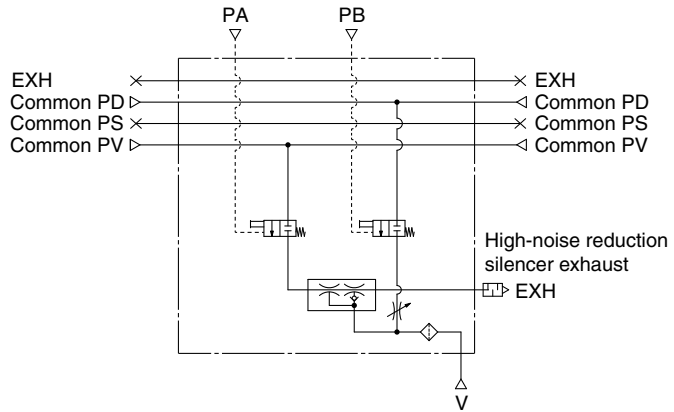


Port layout No. 14

Single unit: ZK2H□Q1□□A-□-P
Manifold: ZZK2□A-A2L-D

| | | |
|-------------------------|---------------------------------------|--|
| System | Ejector | |
| Body type | Manifold | |
| Exhaust type | High-noise reduction silencer exhaust | |
| Application and purpose | Vacuum pressure | Common for each station |
| | Exhaust | Released in operating environment |
| | Release pressure | PD pressure has to be supplied with PV pressure. |

Port combination: Common PV ≠ Common PD **Circuit example**



Option -M

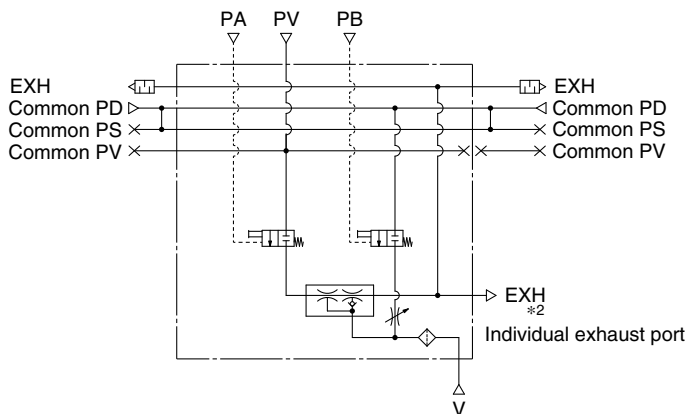
Port layout No. 15

Single unit: ZK2C□Q1□□A-□-M
Manifold: ZZK2□A-A1L-M

※1 The complex exhaust is a combined exhaust method of the common exhaust from the end plate and the direct exhaust from each station.

| | | |
|-------------------------|-------------------|---|
| System | Ejector | |
| Body type | Manifold | |
| Exhaust type | Complex exhaust*1 | |
| Application and purpose | Vacuum pressure | PV pressure can be changed per station. |
| | Exhaust | Released in operating environment |
| | Release pressure | Common for each station |

Port combination: Individual PV ≠ Common PS = Common PD **Circuit example**



*2 For complex exhaust type, individual exhaust port is provided to each station.

Refer to page 43-11 for the purpose of port and the operating pressure range.

Vacuum Unit **ZK2□A Series**

- PV: Air pressure supply port/Port for vacuum source (Vacuum pump)
 - PD: Release pressure supply port
 - PA: Supply valve pilot pressure supply port
 - PB: Release valve pilot pressure supply port
 - V: Vacuum port
 - EXH: Exhaust port
- Refer to the table below for details.

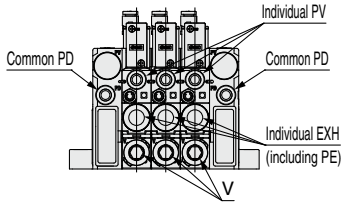
Port Layout

* System depends on vacuum source (vacuum pump/ejector).

Option -M

Port layout No. **16**

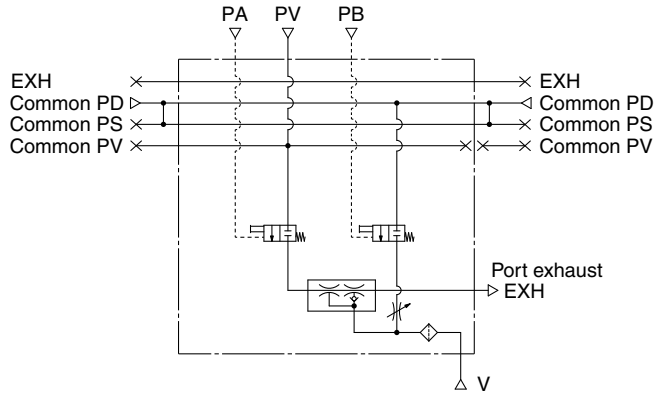
Single unit: **ZK2F□Q1□□A-□-M**
 Manifold: **ZZK2□A-A2L-M**



| | | |
|-------------------------|-------------------------|--|
| System | Ejector | |
| Body type | Manifold | |
| Exhaust type | Individual port exhaust | |
| Application and purpose | Vacuum pressure | PV pressure can be changed per station. |
| | Exhaust | After piping, individual exhaust is necessary. |
| | Release pressure | Common for each station. |

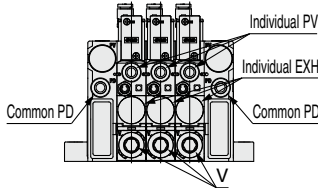
Port combination: Individual PV ≠ Common PS = Common PD

Circuit example



Port layout No. **17**

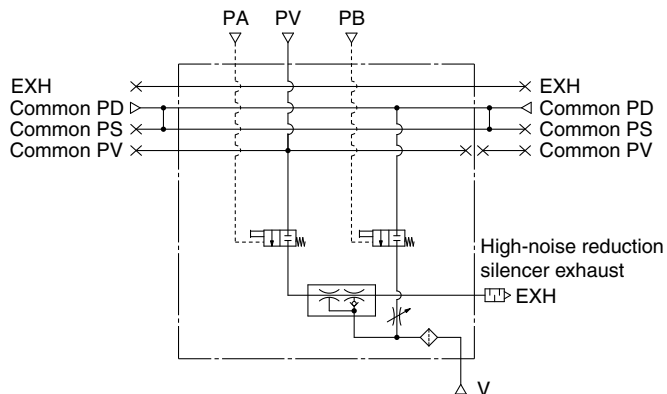
Single unit: **ZK2H□Q1□□A-□-M**
 Manifold: **ZZK2□A-A2L-M**



| | | |
|-------------------------|---------------------------------------|---|
| System | Ejector | |
| Body type | Manifold | |
| Exhaust type | High-noise reduction silencer exhaust | |
| Application and purpose | Vacuum pressure | PV pressure can be changed per station. |
| | Exhaust | Released in operating environment. |
| | Release pressure | Common for each station. |

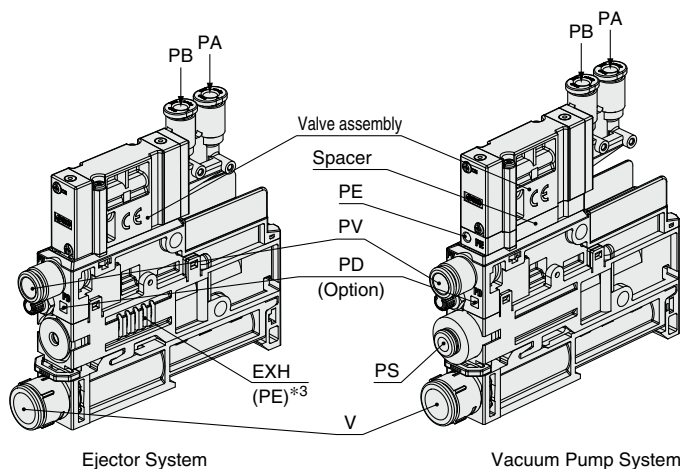
Port combination: Individual PV ≠ Common PS = Common PD

Circuit example



Application and Operating Pressure Range of Each Port

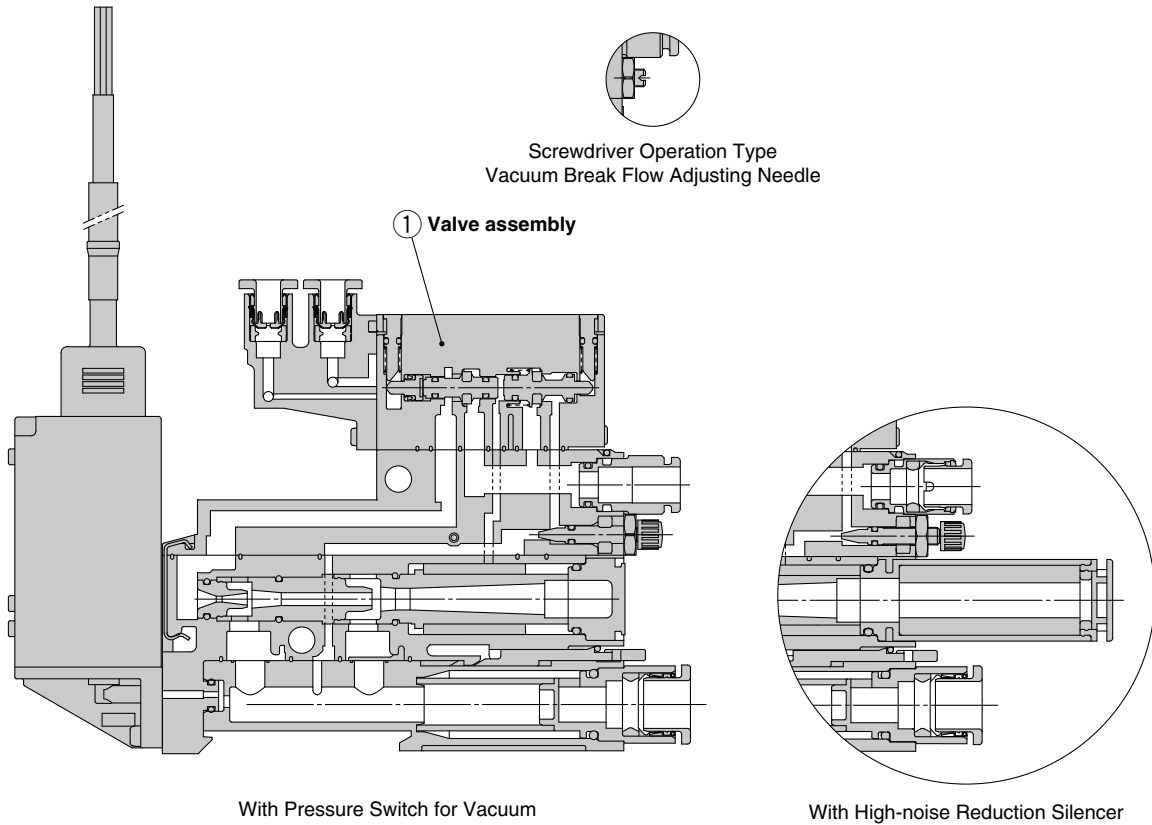
| Port | Description | Ejector system | Vacuum pump system |
|------|--|---|--|
| PV | Air pressure supply port (Operating pressure range) | Compressed air supply for operating ejector 0.3 to 0.6 MPa*1 | — |
| | Vacuum pressure supply port (Operating pressure range) | — | Vacuum source (Vacuum pump) 0 to -100 kPa |
| PA | Supply valve pilot pressure supply port (Operating pressure range) | Compressed air supply for operating supply valve 0.3 to 0.6 MPa | — |
| PB | Release valve pilot pressure supply port (Operating pressure range) | Compressed air supply for operating release valve 0.3 to 0.6 MPa | — |
| PD | Release pressure supply port (Operating pressure range) | Release pressure Compressed air supply for individual setting (Option) 0 to 0.6 MPa (PD ≤ PA/PB) | — |
| V | Vacuum port | For connecting adsorption equipment including pad | |
| EXH | Exhaust port | Exhaust when ejector operates*2 | — |
| PE | Breathing port | Exhaust when main valve operates*3 | — |



- *1 The manifold individual supply specification can be operated at a PV pressure of 0.3 MPa or less.
- *2 For ejectors with silencer, air exhausts from A (slit on both sides). For port exhaust type, air exhausts from B.
- *3 Female thread type (M3) is available by option [C] for breathing (PE) port of the vacuum pump system.

ZK2□A Series

Construction



With Pressure Switch for Vacuum

With High-noise Reduction Silencer

* For details on replacement parts, refer to page 33.

Replacement Parts for Single Unit / How to Order

Valve assembly

Construction ①

ZK2-VA **A** **Q** 1 **4** **A**-**A**

① ②

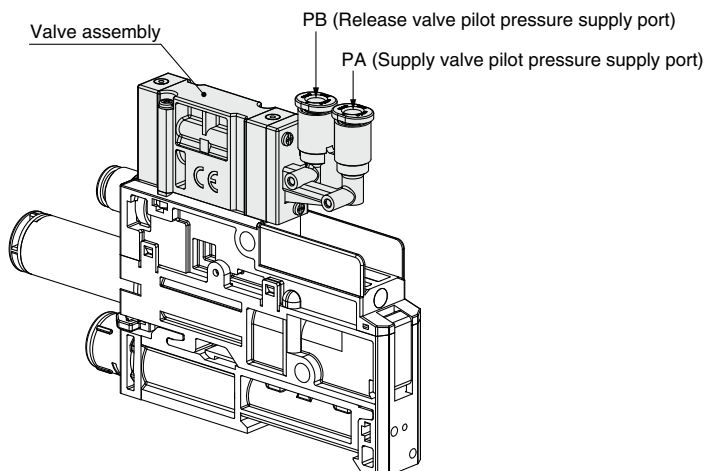
Air Operated • Supply valve: N.C.
Release valve: N.C.

① Applicable system

| | |
|----------|--------------------|
| A | Ejector system |
| P | Vacuum pump system |

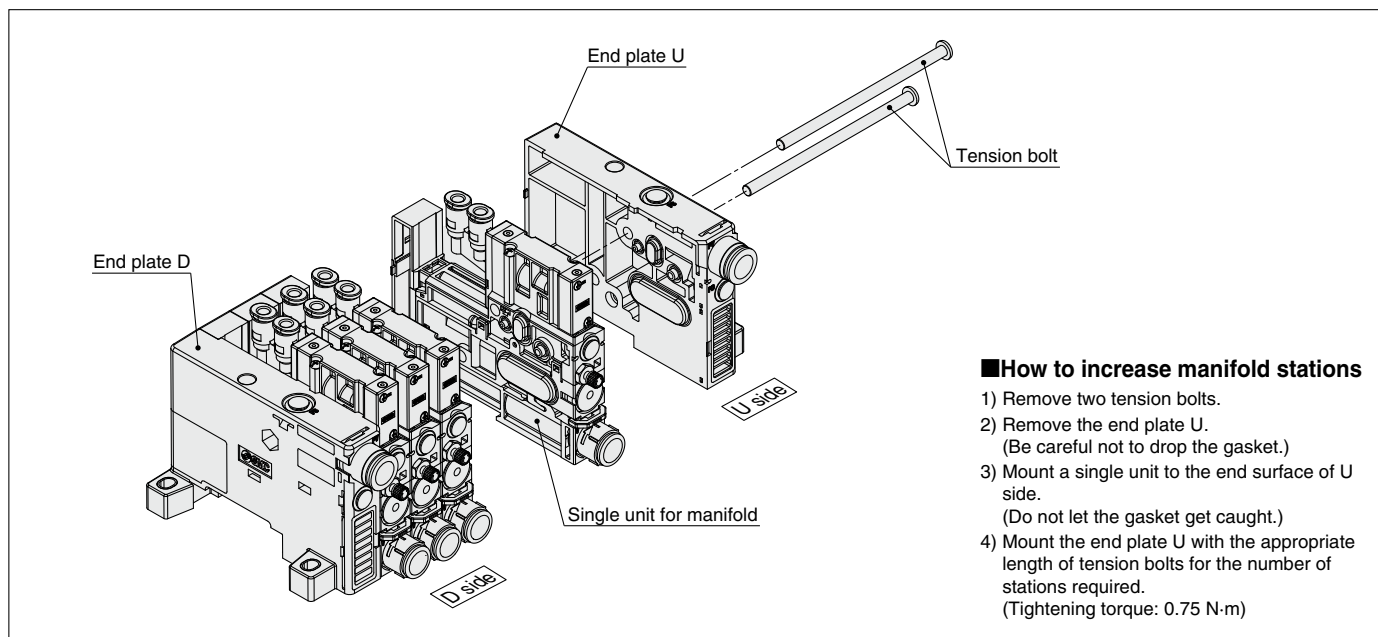
② Pilot pressure supply port size

| | | |
|----------|--------|-------------|
| 4 | ø4 | Metric size |
| 3 | ø5/32" | Inch size |



Vacuum Unit/ZK2□A Series

Exploded View of Manifold



■How to increase manifold stations

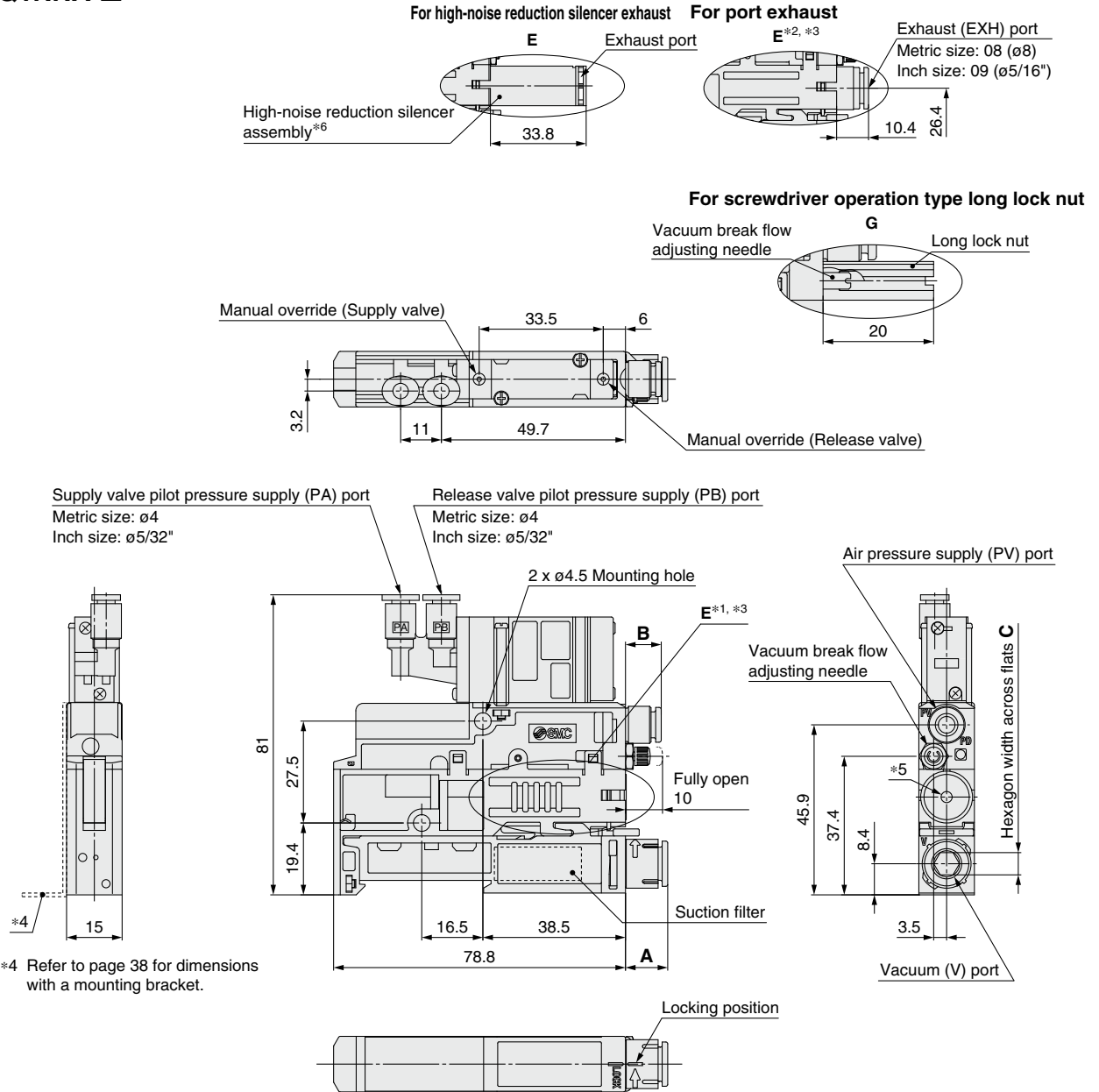
- 1) Remove two tension bolts.
- 2) Remove the end plate U.
(Be careful not to drop the gasket.)
- 3) Mount a single unit to the end surface of U side.
(Do not let the gasket get caught.)
- 4) Mount the end plate U with the appropriate length of tension bolts for the number of stations required.
(Tightening torque: 0.75 N·m)

* For details on replacement parts, refer to page 33.

ZK2□A Series

Dimensions: Single Unit

ZK2^A_B□ Q1NNA-□



*4 Refer to page 38 for dimensions with a mounting bracket.

| PV port type | | | B |
|--------------|----|-------|------|
| Metric size | 06 | ø6 | 9.7 |
| Inch size | 07 | ø1/4" | 12.3 |

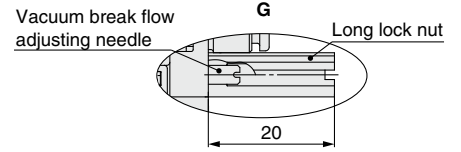
| V port type | | A | C | |
|-------------|----|--------|------|-----|
| Metric size | 06 | ø6 | 8.3 | 4 |
| | 08 | ø8 | 11.2 | 6 |
| Inch size | 07 | ø1/4" | 9.7 | 4.8 |
| | 09 | ø5/16" | 11.2 | 6 |

- *1 For silencer exhaust type, air is exhausted from the slit on both sides. (Do not cover both sides. Release at least one side.)
- *2 For port exhaust type, air is exhausted from the One-touch fitting.
- *3 The breathing air is connected to the ejector exhaust unit.
- *5 Nozzle size 12 and 15 have exhaust port.
- *6 Refer to page 46 for the part number and maintenance of the high-noise reduction silencer case assembly.

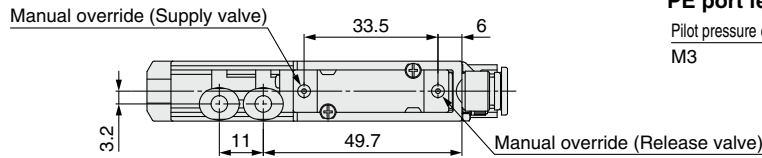
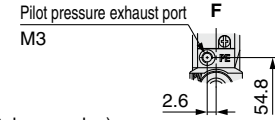
Dimensions: Single Unit

ZK2P00Q1NNA-□

For screwdriver operation type long lock nut

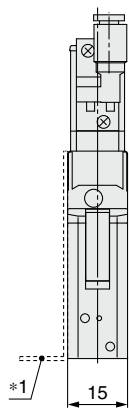


PE port female thread specification

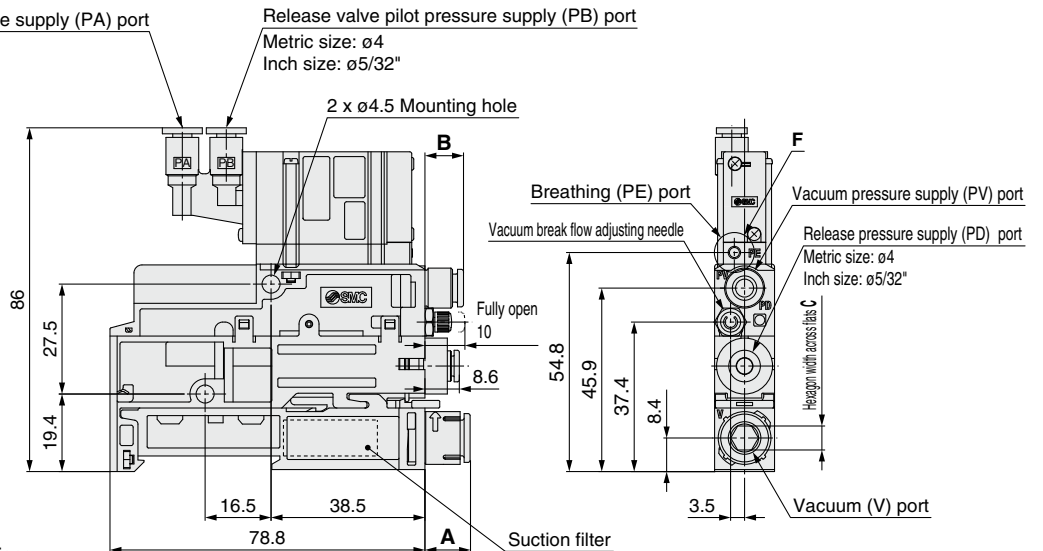


Supply valve pilot pressure supply (PA) port
Metric size: $\phi 4$
Inch size: $\phi 5/32$ "

Release valve pilot pressure supply (PB) port
Metric size: $\phi 4$
Inch size: $\phi 5/32$ "



*1 Refer to page 38 for dimensions with a mounting bracket.



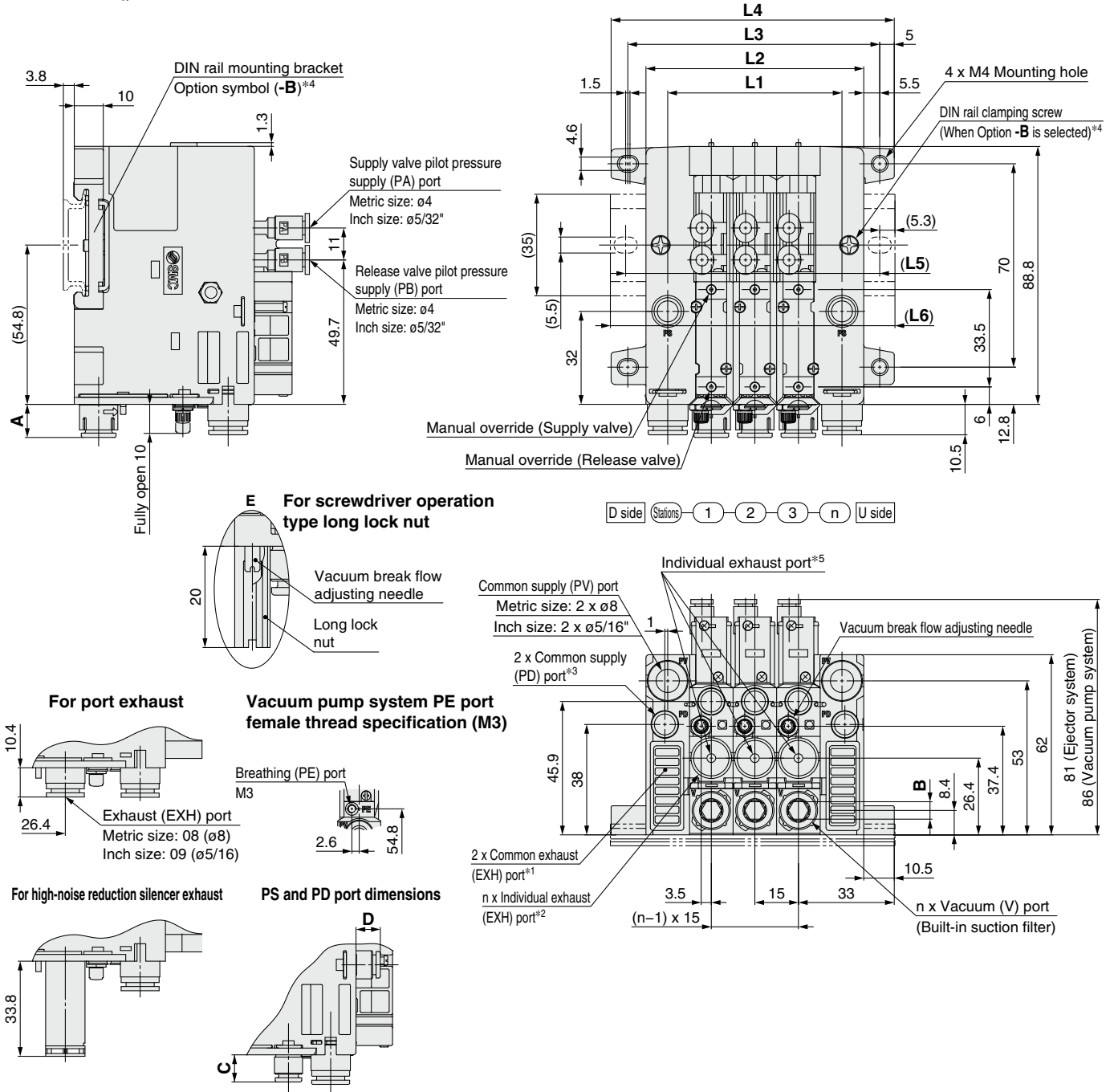
| PV port type | | | B |
|--------------|----|--------------|------|
| Metric size | 06 | $\phi 6$ | 9.7 |
| Inch size | 07 | $\phi 1/4$ " | 12.3 |

| V port type | | | A | C |
|-------------|----|---------------|------|-----|
| Metric size | 06 | $\phi 6$ | 8.3 | 4 |
| | 08 | $\phi 8$ | 11.2 | 6 |
| Inch size | 07 | $\phi 1/4$ " | 9.7 | 4.8 |
| | 09 | $\phi 5/16$ " | 11.2 | 6 |

ZK2□A Series

Dimensions: Manifold

ZK2□A- A1□L



| Port type | A | Hexagon width across flats B | C | D |
|----------------|------|------------------------------|------|------|
| Metric size 06 | 8.3 | 4 | 9.7 | 8.7 |
| 08 | 11.2 | 6 | — | — |
| Inch size 07 | 9.7 | 4.8 | 12.3 | 11.3 |
| 09 | 11.2 | 6 | — | — |

| Stations (n) | [mm] | | | | | | | | | |
|--------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| L1 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 |
| L2 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| L3 | 56.8 | 71.8 | 86.8 | 101.8 | 116.8 | 131.8 | 146.8 | 161.8 | 176.8 | 191.8 |
| L4 | 67.5 | 82.5 | 97.5 | 112.5 | 127.5 | 142.5 | 157.5 | 172.5 | 187.5 | 202.5 |
| L5 | 62.5 | 75 | 87.5 | 112.5 | 125 | 137.5 | 150 | 162.5 | 187.5 | 200 |
| L6 | 73 | 85.5 | 98 | 123 | 135.5 | 148 | 160.5 | 173 | 198 | 210.5 |

*1 Vacuum pump system with individual exhaust port type does not have exhaust port.
 *2 When individual exhaust port type is selected (Body type: F)
 *3 Common pilot pressure supply (PD) port is available for vacuum pump system or option D (With manifold common release pressure supply (PD) port). (mm: ø6 inch: ø1/4")
 *4 To fix the manifold to DIN rail, select an option for the manifold model number.
 *5 For complex exhaust type, air is also exhausted from the individual exhaust port of each station in addition to the common exhaust. (Ejector system)



ZK2□A Series Specific Product Precautions 1

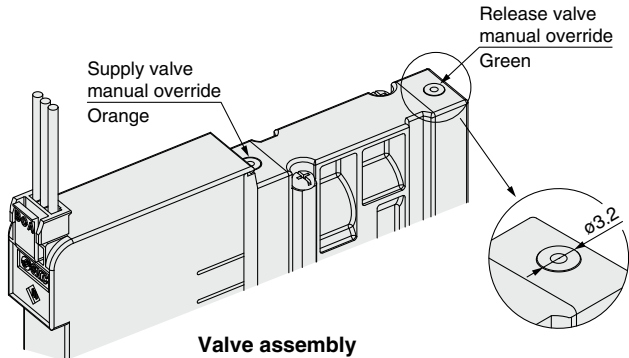
Be sure to read this before handling the products. Refer to the back cover for safety instructions. For vacuum equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Supply Valve / Release Valve

Warning

1. Manual override operation

- Manual override is non-locking push type. Push the manual override with a screwdriver of a diameter smaller than indicated in the diagram until it reaches the end.

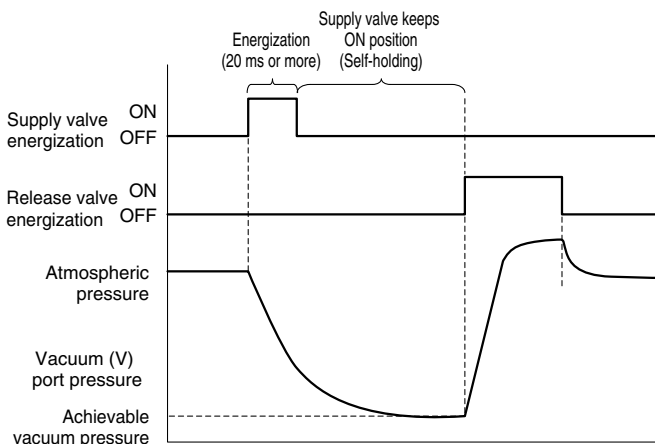


- Confirm that the product operates safely before the manual override is operated.
- When the valve type R is selected, the supply valve can hold the position and will not switch off even if the supply valve manual override operation is finished unless the release valve manual override is pressed.

2. Self-holding function of supply valve (Valve type R)

When the supply valve is energized (20 ms or more), the supply valve keep ON position even after energization is stopped. When release valve is energized, the supply valve is turned off in conjunction with the operation of the release valve.

- Main valve in the valve assembly is made of elastic seal. Self-holding is performed by friction resistance of the seal. Do not apply impact resistance in the direction of the main valve shaft during the installation to moving parts. When impact is applied, use valve type K. (For vibration and impact, refer to the General Specifications on page 18.)
- In a vacuum pump system, the workpiece may not be released when the vacuum break flow adjusting needle is closed during the use. In addition, the OFF operation of the supply valve may become unstable. Open the vacuum break flow adjusting needle during use. If the vacuum break flow adjusting needle is expected to close during use due to a light workpiece, please select PD port type (single unit: manifold option [D] (for manifold: option [P])). Release the PD port to the atmosphere and open the vacuum break flow adjusting needle.
- Valve type R cannot use a pressure switch for vacuum with energy saving function. Use valve type K.

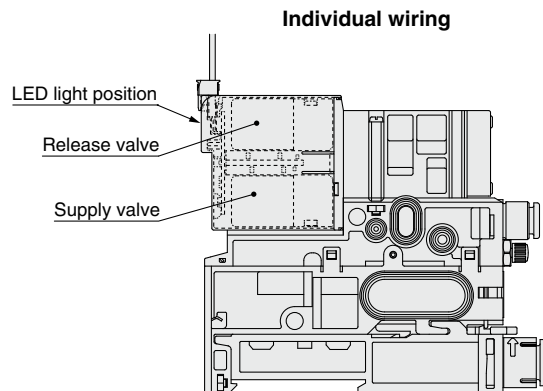
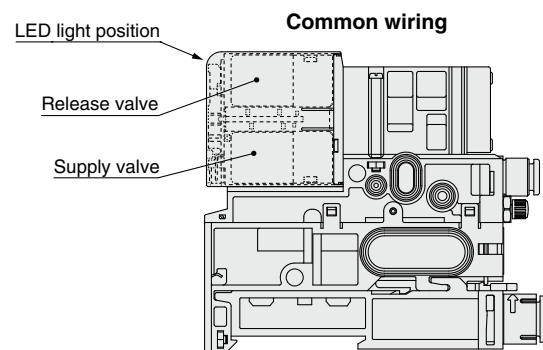


3. Default setting (Valve type R)

When the valve assembly is delivered, the supply valve is on the OFF position, but it may be on the ON position due to the vibration or impact during transportation or device installation. Turn to the OFF position manually or by energizing before use.

4. LED indication

Red LED turns on when supply valve is energized. Green LED turns on when release valve is energized.



5. Continuous duty

If a supply valve is energized continuously for a long time, the rise in temperature due to heat-up of the coil may cause a decline in solenoid valve performance, reduce service life, or have adverse effects on peripheral equipment. Therefore, if the valve is to be energized for periods of longer than 30 minutes at a time or if during the hours of operation the energized period per day is longer than the de-energized period, use the self-holding function of valve type “R.” (The energization time should be 20 ms or more and should be kept as short as possible.)

6. Air leakage

Zero air leakage is not guaranteed for the supply valve or release valve.

Be aware that because there is a chance of air and vacuum leakage, the pressure may change if the V port side is tightly sealed.



ZK2□A Series Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For vacuum equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Surge Voltage Intrusion

⚠ Caution

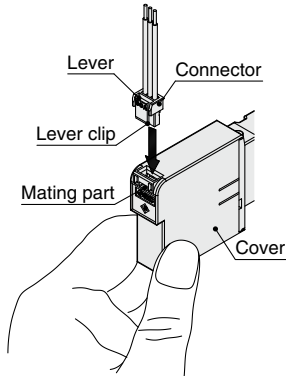
The surge voltage created when the power supply is cut off could apply to the de-energized load equipment through the output circuit. In cases where the energized load equipment has a larger capacity (power consumption) and is connected to the same power supply as the product, the surge voltage could malfunction and/or damage the internal circuit element of the product and the internal device of the output equipment. To avoid this situation, place a diode which can suppress the surge voltage between the COM lines of the load equipment and output equipment.

Wiring

⚠ Caution

1. Individual wiring

- To install the connector, hold the cover and insert the connector straight pushing the connector lever with your finger. Ensure that the connector lever clip is properly inserted onto mating part.
- To remove the connector, hold the cover and pull out the connector straight pushing the connector lever clip.

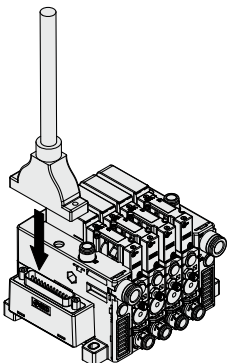


* Do not pull the lead wire with a force of 25 N or more, as this may damage the connector or cover.

2. Common wiring

- Align the socket connector of the cable and the plug connector of the manifold. Insert the socket connector of the cable into the plug connector of the manifold vertically. If the connector is pushed forcibly, the pin will bend and the connector cannot be joined.

Example) D-sub connector

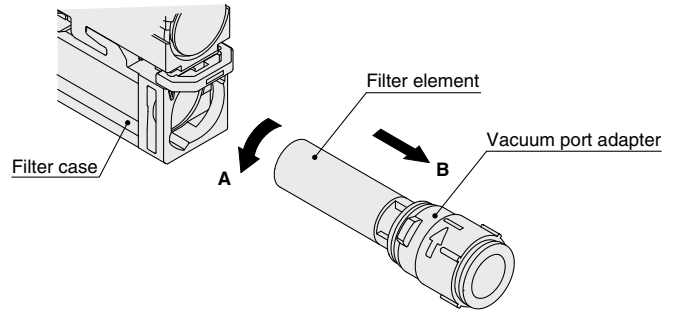


Replacement Procedure

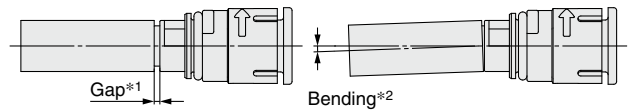
⚠ Caution

1. Replacement Procedure for Filter Element

- 1) To pull out the vacuum port adapter, rotate the adapter by about 90 degrees in direction A and pull in direction B. The adapter can be removed with the suction filter from the filter case.
- 2) Remove the suction filter from the vacuum port adapter and replace it with a new suction filter.

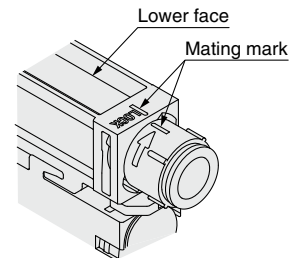


- 3) When installing the filter, insert the filter to the end so that there is no gap*1 or bending*2 between the filter and the vacuum port adapter. The gap or bending will cause the element to deform inside the case.

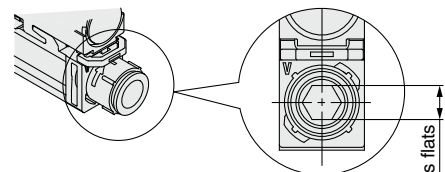


- 4) Put the filter back into the filter case following this procedure in reverse.

- To mount the vacuum port adapter into the filter case, turn the adapter so that the mating mark of the adapter and the case are aligned. (Rotation stops there.)



- If it is difficult to remove the vacuum port adapter, you can remove the adapter with a hexagon wrench using the hexagonal hole in V port. The table shows the port size and the width across flats.



| V port size | Width across flats |
|-------------|--------------------|
| ø6 | 4 |
| ø8, ø5/16" | 6 |
| ø1/4" | 4.76 |

Width across flats



ZK2□A Series Specific Product Precautions 3

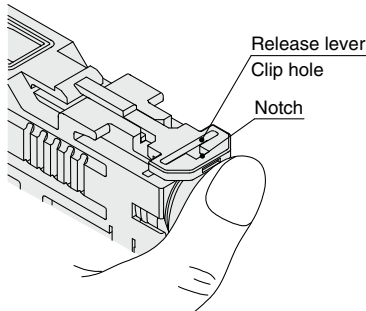
Be sure to read this before handling the products. Refer to the back cover for safety instructions. For vacuum equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Replacement Procedure

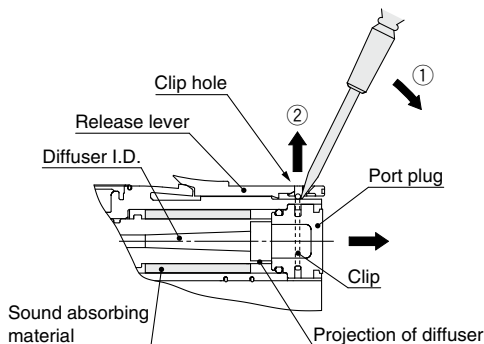
Caution

2. Replacement Procedure for Sound Absorbing Material (for Silencer Exhaust)

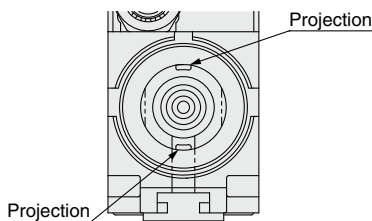
- 1) Remove the filter case following ⑤ the procedure of filter case maintenance (page 47).
- 2) Flip the ejector, push the release lever again with a finger or precision screwdriver until the release lever stops.



- 3) To remove the clip that holds the port plug, insert a precision screwdriver from the release lever notch. Move the screwdriver in direction ① to pull out the clip in direction ②.



- 4) Remove the port plug.
- 5) Remove the sound absorbing material from the slit (hole) at the side of the body by using a precision screwdriver.
- 6) Insert the new sound absorbing material. Be careful not to scratch the material with the projection of the diffuser assembly.



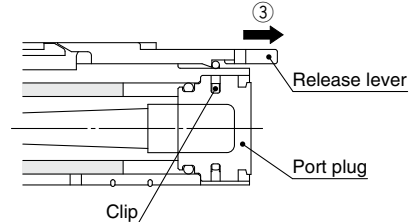
Diffuser hole viewed from the port plug

(Procedure to put parts back together)

- 7) Insert the port plug and insert the clip into the groove using the lever hole. (Push completely to the end.)

* Do not pull or bend the two projections at the end surface of the diffuser. These are spacers to prevent the displacement of the diffuser and they may break if force is applied.

- 8) Return the release lever in direction of ③ until it stops.



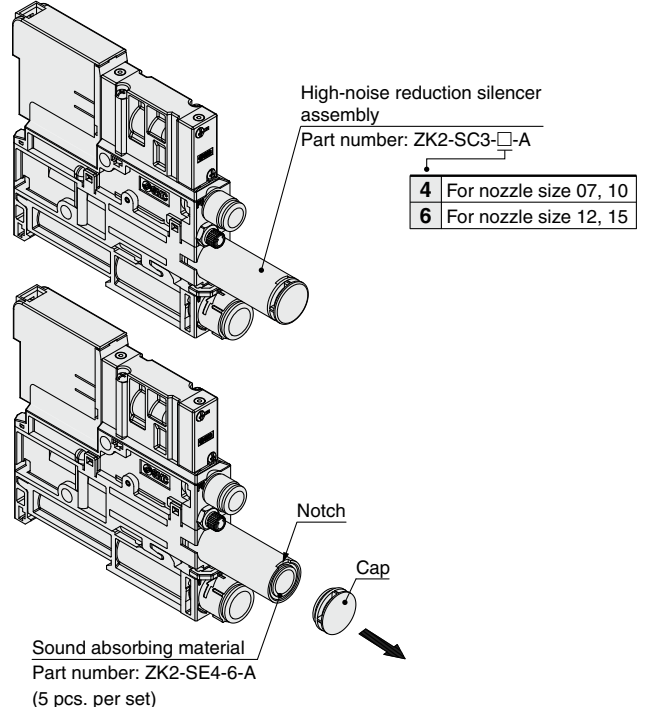
3. Replacement Procedure for High-noise Reduction Silencer Assembly

Refer to the replacement procedure of the sound absorbing material (silencer exhaust) to replace the assembly.

* When a high-noise reduction silencer assembly is attached to body type “A” (silencer exhaust), the silencing effect cannot be acquired.

When only replacing the sound absorbing material (for high-noise reduction silencer exhaust)

- 1) Use the notch to remove the cap.
- 2) Use a precision screwdriver to remove the sound absorbing material.
- 3) Insert the new sound absorbing material, and return the cap.



4. Replacement Procedure for Manifold Sound Absorbing Material

Replacement Procedure

- 1) Insert a precision screwdriver to notch A of the end plate and remove a clip L ①.
- 2) Insert a precision screwdriver to notch B and remove the silencer cover ②.
- 3) Pull out the sound absorbing material from the silencer cover ③.
- 4) Mounting of a new sound absorbing material should be performed by following the removal procedure in reverse.



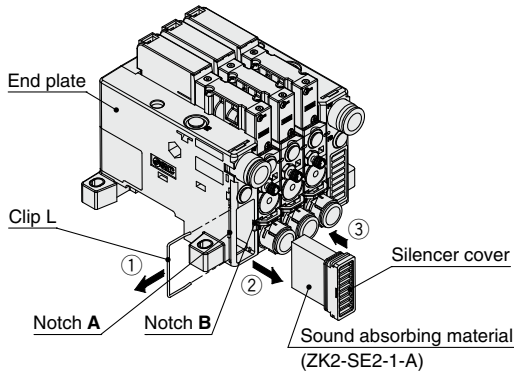
ZK2□A Series

Specific Product Precautions 4

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For vacuum equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Replacement Procedure

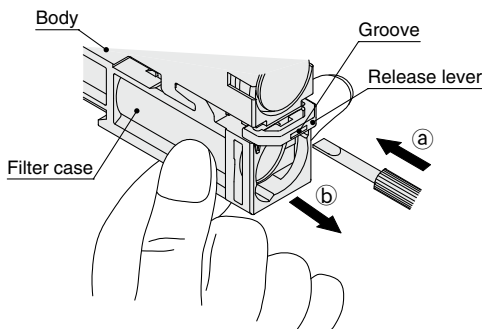
⚠ Caution



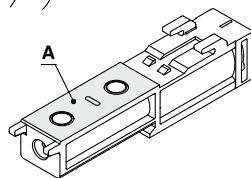
- Ejector system manifold common exhaust type has a sound absorbing material in the end plate. If the sound absorbing material is clogged, ejector performance is deteriorated, leading to suction failure or response delay. Regular replacement of the sound absorbing material is recommended.

5. Filter case maintenance

- 1) When the filter case is dirty, it can be removed and cleaned. To remove the filter case, insert a precision screwdriver into the groove of the release lever and push in direction (a), and slide the filter case in direction (b).



- * Surface A of the filter case is the sealing surface when vacuum is generated. Handle with care so that the surface is not scratched or damaged.



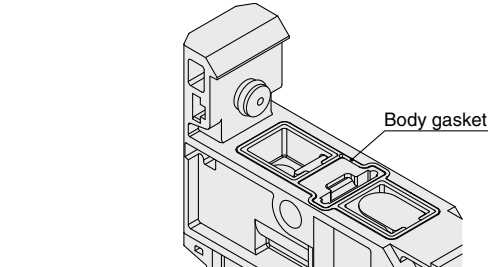
- * Filter case is made of polycarbonate. Avoid chemicals such as thinner, carbon tetrachloride, chloroform, acetic ester, aniline, cyclohexane, trichloroethylene, sulfuric acid, lactic acid, water base cutting fluid (alkaline).
- * Do not expose the filter case to direct sunlight for a long period of time.

(Procedure to put parts back together)

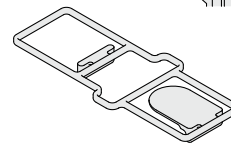
- 2) Make sure that the body gasket that matches the product specifications is installed correctly onto the ejector. If they are out of the place, vacuum leakage may occur.

Replacement Procedure

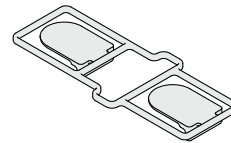
⚠ Caution



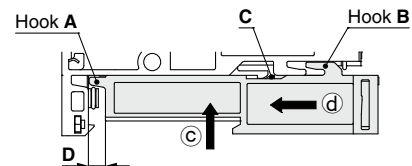
One check valve type
(All specifications other than switch with energy saving function and exhaust interference prevention valve)



Two check valve type
(Switch with energy saving function and exhaust interference prevention valve)



- 3) Push the filter case in direction (c). Be careful the filter case hook (A) and hook (B) do not touch the body of the ejector.
- 4) Slide the filter case in direction (d) while pushing the filter case gently in contact with the ejector. Make sure that the clip (C) is locked and there is no gap in part (D).



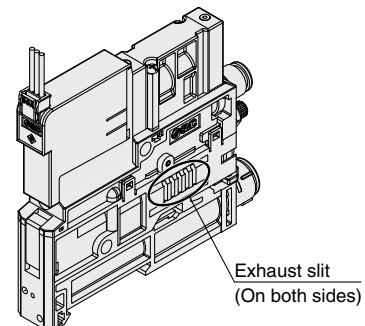
- * If excess force is applied to the filter case, hook A and B may break. Handle with care.

Ejector Exhaust / Exhaust Noise

⚠ Caution

■ Ejector Exhaust

- The exhaust resistance should be as small as possible to obtain the full ejector performance. There should be no shield around the exhaust slit for silencer exhaust type. When the product is installed, one of the exhaust slits should be open to atmosphere.





ZK2□A Series

Specific Product Precautions 5

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For vacuum equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Ejector Exhaust / Exhaust Noise

⚠ Caution

For the port exhaust specification, back pressure may increase and vacuum pressure may decrease depending on the size and length of the piping connected to the exhaust (EXH) port *1). Ensure that the back pressure does not exceed 0.005 MPa (5 kPa). Do not operate the ejector or apply pressure to the exhaust port with the exhaust port closed. This increases the pressure in the product and can damage the vacuum ejector.

*1 For the nozzle products with a nozzle diameter for a large amount of exhaust air (air consumption + suction flow), such as $\phi 1.5$ (ZK2□15), precaution should be taken on vacuum pressure decrease. Figure A below shows the relation between the exhaust piping (piping diameter and length) and vacuum pressure. When connecting pipes on port exhaust types with an outer diameter of $\phi 8$ or more, connect them so that the joints do not interfere with each other (Fig. B).

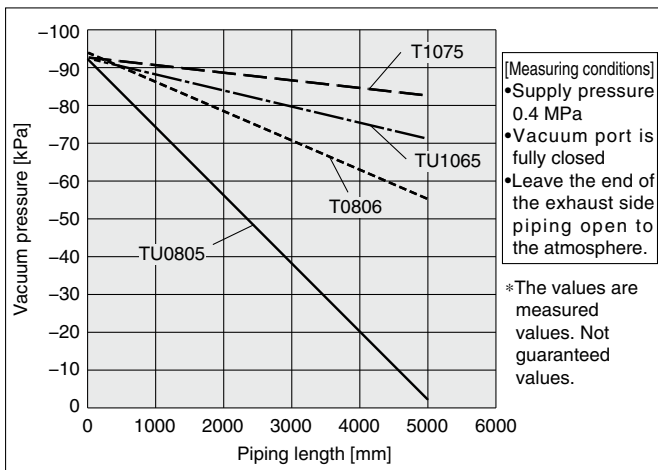


Fig. A. Vacuum pressure for piping (ZK2□15)

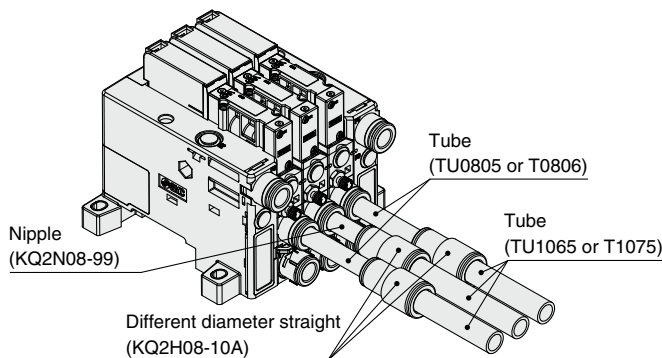


Fig. B Example of piping

- If the sound absorbing material is clogged, it will cause a reduction in the ejector performance.

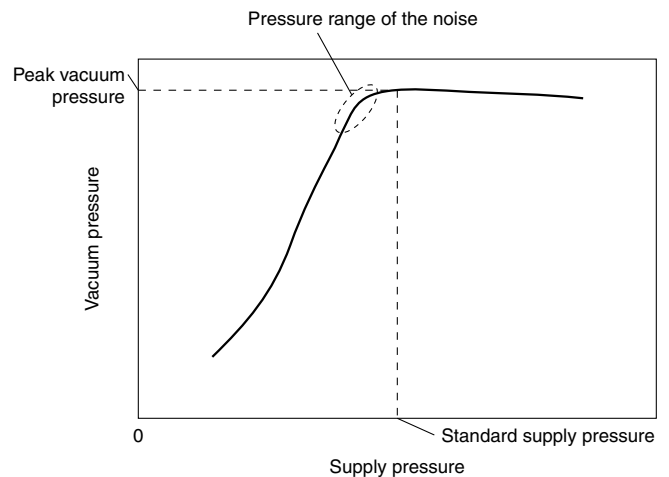
Sometimes, if the operating environment contains a lot of particles or mist, the replacement of the filter element only is not enough to recover vacuum performance - as the sound absorbing material may be clogged. Replace the sound absorbing material. (Regular replacement of the filter element and the sound absorbing material is recommended.)

Ejector Exhaust / Exhaust Noise

⚠ Caution

■ Exhaust Noise

- When vacuum ejector generates vacuum, noise can be heard from the exhaust port when the standard supply pressure is close to the pressure that generates peak vacuum pressure making vacuum pressure unstable. If the vacuum pressure range is adequate for adsorption, there should not be a problem. If the noise causes a problem or affects the setting of the pressure switch, change the supply pressure slightly to avoid the pressure range of the noise.



Operating Supply Pressure

⚠ Caution

- Use the product within the specified supply pressure range. Operation over the max. operating pressure can cause damage to the product.

The parts around the vacuum port of this product are designed to be used with vacuum pressure. With the vacuum pump system, since air is not released to the atmosphere from a silencer, the applied air for vacuum release increases the internal pressure of the vacuum port. Select the vacuum pad which shape allows smooth exhaust of release air to the atmosphere and avoid clogging. (When the internal pressure rises, try to keep the pressure at 0.1 MPa or less.)



ZK2□A Series Specific Product Precautions 6

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For vacuum equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

Port Size

Caution

Single Unit

- The sizes of the each port are as follows. (Refer to the Application and Operating Pressure Range of Each Port on page 30.)

| Port | Size | | | |
|-----------------------|----------------|---------------|----------------------------|---------------|
| | Ejector system | | Vacuum pump system | |
| | Metric | Inch | Metric | Inch |
| PV | ø6 | ø1/4" | ø6 | ø1/4" |
| V | ø6, ø8 | ø1/4", ø5/16" | ø6, ø8 | ø1/4", ø5/16" |
| EXH (Port exhaust) | ø8 | ø5/16" | — | — |
| PE | EXH Common | | Port open to atmosphere *1 | |
| PS | — | — | ø4 | ø5/32" |
| PD *2 | M3 | — | M3 | — |

—: Not applicable

*1 Air is also exhausted from the pilot valve when the valve type is R. Piping for PE port is available as an option (M3). (Refer to pages 15 and 16.)

*2 A model with PD port is available as an option. (Refer to pages 9, 10, and 15.)

Manifold

- Manifold ports are common at the end plate. Port description and application are the same as the single unit. (Refer to the Application and Operating Pressure Range of Each Port on page 30.)
- Refer to page 18 for the number of stations that can operate simultaneously for each ejector size.
- If one side is not used for air supply, plug the unused port or change to the dedicated port plug assembly as shown below.

| | Standard | Port plug assembly |
|----------------|----------------------|--------------------|
| Common PV port | ø8 One-touch fitting | VVQZ2000-CP |
| Common PS port | ø6 One-touch fitting | ZK2-MP1C6-A |
| Common PD port | | |

* There are 4 types of port combination due to the manifold port specification.

| | Common EXH port | Common PS/PD ports | Application |
|-----------------------------|-----------------|--------------------|--|
| ZK2□A-A□1□ | Yes | PS = PD | Ejector common exhaust PV = PS = PD |
| ZK2□A-A□1□-D | Yes | PS ≠ PD | Ejector common exhaust PV = PS ≠ PD |
| ZK2□A-A□2□ ZK2□A-P2□ | None | PS = PD | Ejector individual exhaust PV = PS = PD Vacuum pump system PV ≠ PS = PD |
| ZK2□A-A□2□-D ZK2□A-P2□-D | None | PS ≠ PD | Ejector individual exhaust PV = PS ≠ PD Vacuum pump system PV ≠ PS ≠ PD |

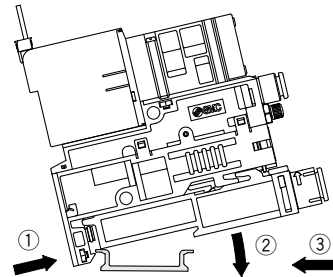
- When PS = PD, the common PS/PD ports on the end plate are used, PS port is equipped with One-touch fitting and PD port is plugged at the time of shipment from the factory. Since the PS and PD are connected inside the end plate, common supply location can be changed by exchanging the One-touch fitting and the plug.
- When PS ≠ PD, PS and PD are not connected inside the end plate. (It is necessary to supply each port individually.)

How to Mount a Single Unit

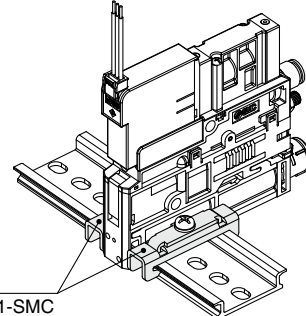
Caution

1. Single unit can be mounted to DIN rail or wall using the holes in the body (2 x ø4.5).

- When mounting the ejector to DIN rail, unlock the filter case assembly beforehand. (Refer to the maintenance procedure on page 47.)
- Hook the ejector onto the DIN rail from direction (1).
- Mount the ejector onto the DIN rail by pushing it down in direction (2).
- Push the filter case assembly in direction (3) until it is locked.



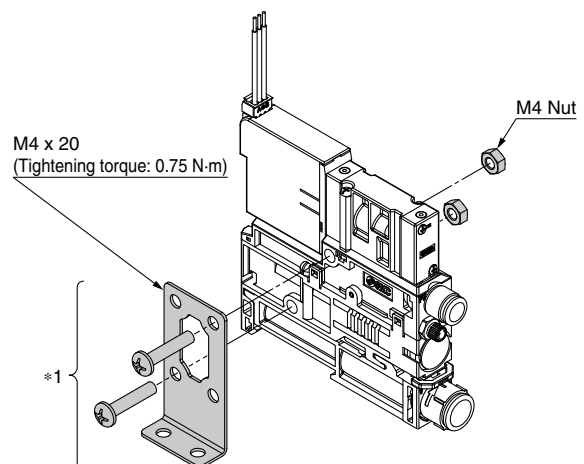
- To hold the ejector onto the DIN rail, hold it from both sides using the stopper brackets.



Stopper bracket
Part number: TXE1-SMC

* Purchasing order is available in units of 1 piece. If using the stopper brackets on both sides of the body, order 2.

2. To mount a single unit onto the floor, use the optional bracket.



*1 Mounting bracket for single unit (Option), [Nuts and bolts are included.]
Part number: ZK2-BK1-A



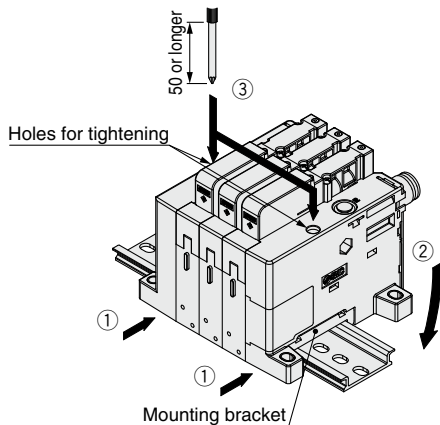
ZK2□A Series Specific Product Precautions 7

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For vacuum equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

How to Mount a Manifold

⚠ Caution

- Manifolds can be mounted onto the floor using M4 holes on the end plate.
- It is possible to mount the manifold onto the DIN rail by manifold option.
 - Hook the mounting bracket of the end plate to DIN rail from direction (①).
 - Mount the ejector onto the DIN rail by pushing it down in direction (②).
 - Use a 50 mm or longer Phillips screwdriver to tighten the mounting bracket (③). (Tightening torque: 0.9 ± 0.1 N·m)
 - Removal should be performed by following the mounting procedure in reverse.



Vacuum Break Flow Adjusting Needle

⚠ Caution

- The flow rate characteristics show the representative values of the product itself.**
They may change depending on piping, circuit and pressure conditions, etc. The flow rate characteristics and the number of needle rotations vary due to the range of the specifications of the product.
- The needle has a retaining mechanism, so it will not turn further when it reaches the rotation stop position.**
Turning the needle too far may cause damage.
- Do not tighten the knob with tools such as nippers.**
This can result in breakage due to idle turning.
- Do not over tighten the lock nut.**
It is possible to tighten the standard lock nut (hexagon) manually. When tightening further with tools, tighten by approximately 15° to 30° . Over tightening may cause breakage.
- When vacuum break flow adjusting needle screwdriver operation type (-K) is selected as option, make sure the lock nut is not loose to prevent the nut from coming off due to vibration.**

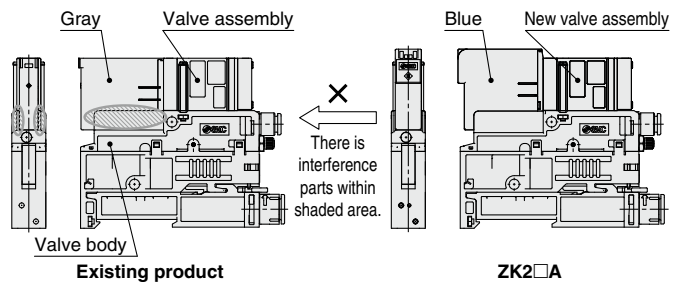
Interchangeability with Existing Product

⚠ Caution

When existing product is used, please be careful with the interchangeability between existing product in the table below and ZK2□A.

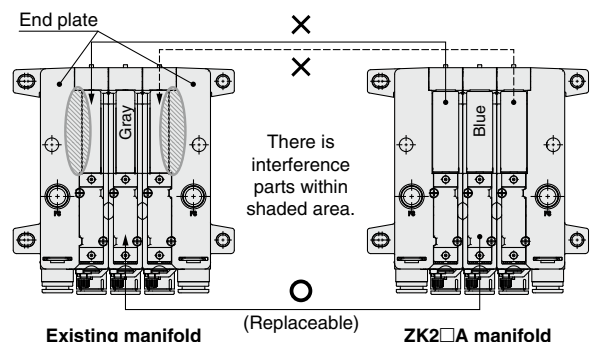
○ Single Unit

- New valve assembly of ZK2□A cannot be assembled with the existing products. (Pilot valve dimension and valve body dimension are different.)



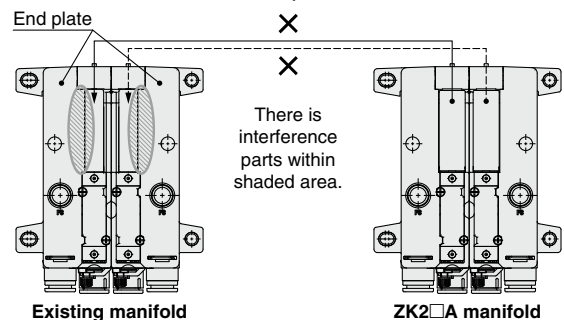
○ Manifold of 3 stations or more

- Single unit of ZK2□A for manifold cannot be assembled with the existing manifold. (Pilot valve dimension and end plate dimension are different.)
By replacing the manifold end plate assembly with the manifold end plate for ZK2□A, a single unit of ZK2□A for manifold can be assembled. Manifold end plate assembly number (Refer to page 33.)



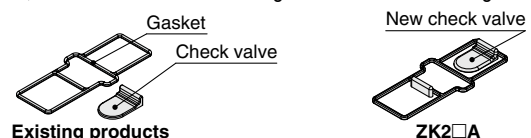
○ Manifold of 1 or 2 stations

- A single unit ZK2□A for manifold cannot be assembled with the existing manifold. (Pilot valve dimension and end plate dimension are different.)



○ Replacement of the check valve

- The check valve and the gasket are separate parts for the conventional product, but ZK2□A is not interchangeable because it is integrated.



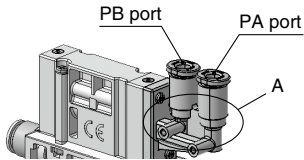
ZK2□A Series**Specific Product Precautions 1**

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For vacuum equipment precautions, refer to the “Handling Precautions for SMC Products” and the “Operation Manual” on the SMC website: <https://www.smcworld.com>

| |
|---------------|
| Piping |
|---------------|

⚠ Caution

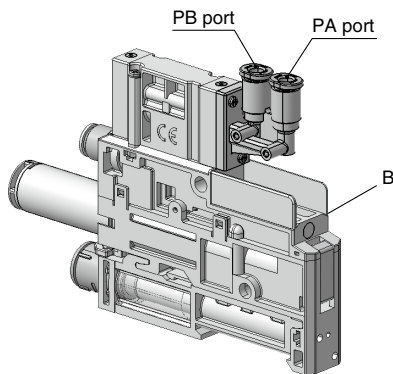
1. Install a 3-port valve, etc., on the inlet side of pilot pressure supply ports “PA” and “PB,” and be sure that the product’s inlet side residual pressure can be released when the valves are turned OFF. If residual pressure remains, there will be problems switching between the supply valve and the release valve.
2. When piping a tube to pilot pressure supply ports “PA” and “PB,” hold the A portion of the product with your hands to prevent damage to the product.



| |
|-----------------|
| Mounting |
|-----------------|

⚠ Caution

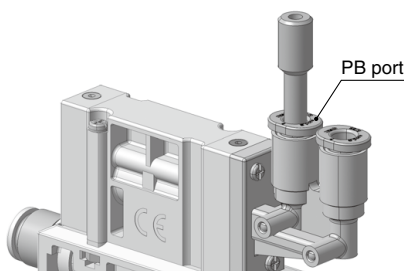
As the release buttons of pilot pressure supply ports “PA” and “PB” are oval shaped, when wall mounting on the B surface side, be sure to adjust the release button directions before mounting.



| |
|--------------|
| Other |
|--------------|

⚠ Caution

If a release valve is not to be used, plug the release valve pilot pressure supply port “PB.”



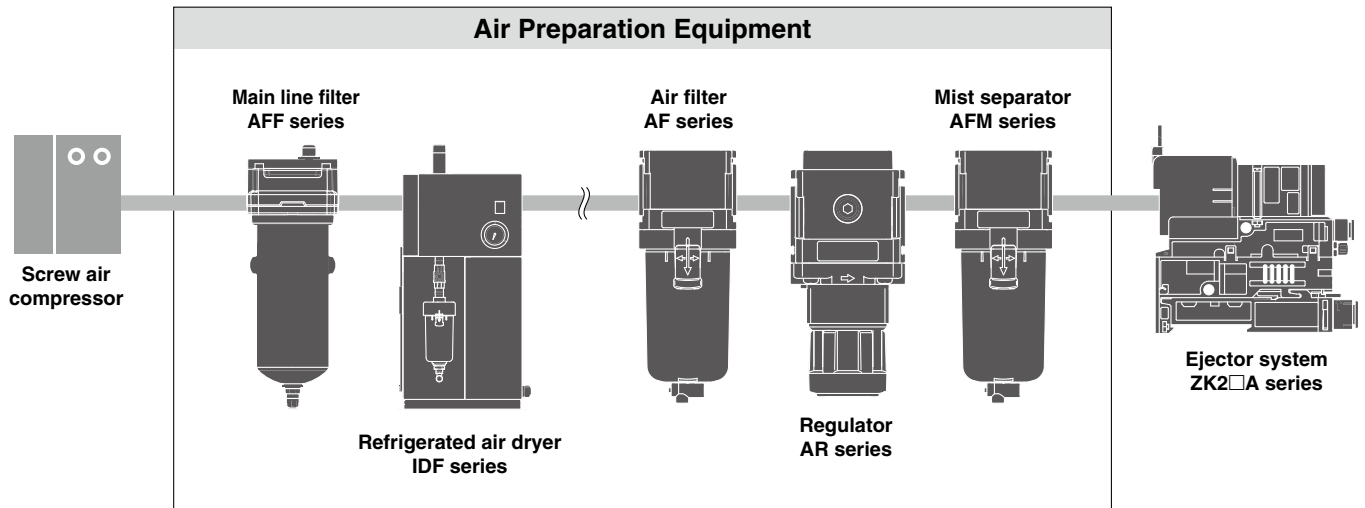


ZK2□A Series

Quality of Supply Air


Quality of Supply Air


Supply air containing foreign matter, water, oil, condensate, etc., can cause malfunction of the supply valve and release valve. So, install air preparation equipment on the upstream side of the product (refer to the piping example below) and perform maintenance periodically to control the supply air properly.




Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

 **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

 **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

 **Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots – Safety.
etc.

Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Safety Instructions

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.

Vacuum Ejector

ZK2□A-X188 : Single Unit **ZK2□A-X211** : For Manifold



**Supply valve:
N.O. specification**

Can hold vacuum*1 even when the power goes out or is turned off

Prevents the sudden dropping of workpieces*1

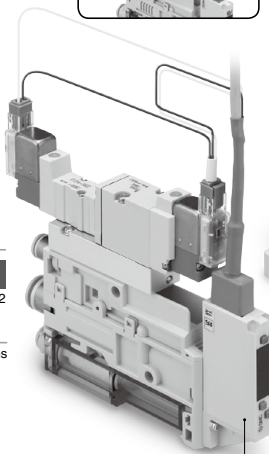
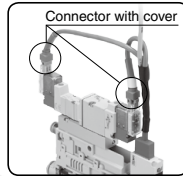
*1 Supposing the supply pressure is being maintained

Vacuum ejector with energy-saving function

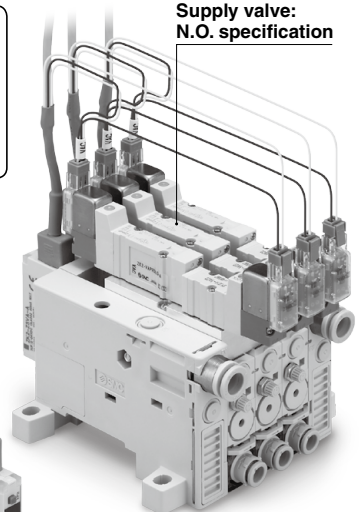
93% reduction Air consumption *2

*2 Based on SMC's measuring conditions

Reduced by the pressure switch for vacuum with energy-saving function and efficient ejectors



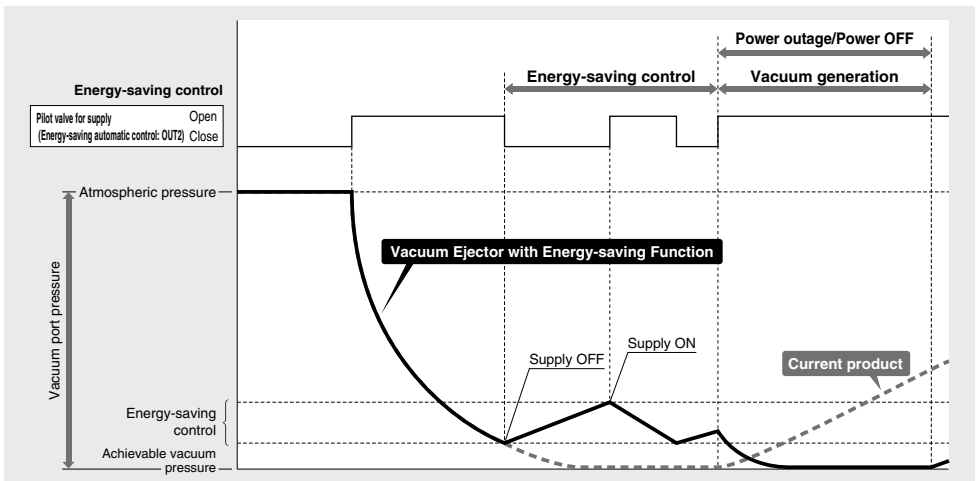
Single unit: -X188



For manifold: -X211

Pressure switch for vacuum with energy-saving function

● Typical Operation Pattern



Vacuum Ejector with Energy-saving Function **ZK2□A-X188/ZK2□A-X211**

Refer to page 522 for the ejector installed to the manifold.

How to Order Manifold

ZK2 **04** **A** - **1** **L** - **□** - **□** - **X211**



Individual wiring specification

1 Stations

| Symbol | Stations |
|-----------|-------------|
| 01 | 1 station |
| : | : |
| 10 | 10 stations |

* For adequate performance, the number of stations that can be operated simultaneously depends on the nozzle diameter. Refer to the Max. Number of Manifold Stations that can be Operated Simultaneously of the ZK2□A series.

2 System/Port

| Symbol | System | Port |
|-----------|---------|--------------------|
| A | Ejector | ø8 (Common PV) |
| AN | system | ø5/16" (Common PV) |

3 Exhaust

| Symbol | Exhaust | Selectable single unit number |
|----------|--------------------|-------------------------------|
| 1 | Complex exhaust*1 | ZK2C |
| 2 | Individual exhaust | ZK2F, ZK2H |

*1 Combination of direct exhaust and end plate exhaust from each station

4 Option*2

| Symbol | Type |
|------------|--|
| Nil | Without option |
| B | With DIN rail mounting bracket*3 |
| L | Manifold individual supply specification*4 |

*2 When more than one option is selected, list the option symbols in alphabetical order. (EX.: -BD)
Refer to the ZK2□A series for further details on functions and applications.

*3 The DIN rail should be ordered separately.

*4 Be sure to select Option "L" if the Option "L" was selected for the optional specifications (for manifold) on page 522.

5 Manifold Assembly (Delivery condition)

| Symbol | Type |
|------------|--|
| Nil | Individual units assembled delivered as a manifold |
| A | Delivered as individual parts (not assembled)*5 |

*5 Kit consists of end plates for both ends and tension bolts.

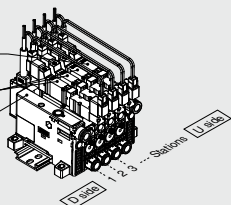
How to Order Valve Manifold Assembly

Example

ZK2C12A5MOZQWA-08-X211

ZK2C10A5MOZQWA-08-X211

ZK204A-A1L-B-X211



ZK204A-A1L-B-X211..... 1 set (Manifold part number)
 * ZK2C10A5MOZQWA-08-X211 3 sets (Nominal nozzle size: ø1.0)
 * ZK2C12A5MOZQWA-08-X211 1 set (Nominal nozzle size: ø1.2)
 ↳ The asterisk denotes the symbol for the assembly.
 Prefix to the single unit part number.

- When the manifold is viewed from the V port, the first station starts from the left (D side).
- After the manifold part number, specify the installed single unit from the first station.
- Complex exhaust and individual port exhaust cannot be mixed.
- The DIN rail should be ordered separately. (Refer to the ZK2□A series.)

Valve Specifications

| | Supply valve | | Release valve |
|---------------------------------|---------------------|--------------|---------------|
| | ZK2□A-X188 | ZK2□A-X211 | |
| Solenoid valve model *6 | SYJ524-5MOZ-Q | SY325-5MOZ-Q | SYJ314-5MOZ-Q |
| Type of actuation | N.O. | | N.C. |
| Operating pressure range | 0.15 MPa to 0.6 MPa | | |
| Rated voltage | 24 VDC | | |
| Power consumption | 0.4 W | | |

*6 For details, refer to the Web Catalog of each model (For the SYJ series, [click here](#)./ For the SY series, [click here](#).) and the "3/4/5-Port Solenoid Valve Precautions."

Ejector Specifications

| Item | Model | ZK2□07-X188 | ZK2□10-X188 | ZK2□12-X188 | ZK2□15-X188 | |
|-----------------------------------|---------------------------------------|---------------|-------------|-------------|-----------------------------------|----|
| | | ZK2□07-X211 | ZK2□10-X211 | ZK2□12-X211 | ZK2□15-X211 | |
| Nozzle diameter | [mm] | 0.7 | 1.0 | 1.2 | 1.5 | |
| Max. suction flow *7 | Port exhaust | [L/min (ANR)] | 34 | 56 | 74 | 89 |
| | Silencer exhaust/Complex exhaust | [L/min (ANR)] | 29 | 44 | 61 | 67 |
| | High-noise reduction silencer exhaust | [L/min (ANR)] | 34 | 56 | 72 | 83 |
| Air consumption *7 | [L/min (ANR)] | 24 | 40 | 58 | 90 | |
| Maximum vacuum pressure *7 | [kPa] | -91 | | | | |
| Supply pressure range | [MPa] | 0.15 to 0.6 | | | | |
| Standard supply pressure | [MPa] | 0.35 | | | 0.4 (For X188) 0.45 (For X211) | |

*7 Values are based on SMC's measurement standards. They depend on atmospheric pressure (weather, altitude, etc.) and the measurement method.

Manifold Weight

| | 1 station | 2 stations | 3 stations | 4 stations | 5 stations | 6 stations | 7 stations | 8 stations | 9 stations | 10 stations |
|------------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| Weight [g] | 345 | 560 | 780 | 1000 | 1215 | 1435 | 1650 | 1875 | 2100 | 2320 |

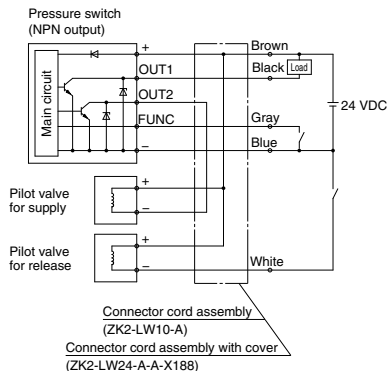
Single unit weight: 200 g (With vacuum pressure switch)

Specifications not listed are the same as those of the standard product. For details, refer to the [Web Catalog](#).

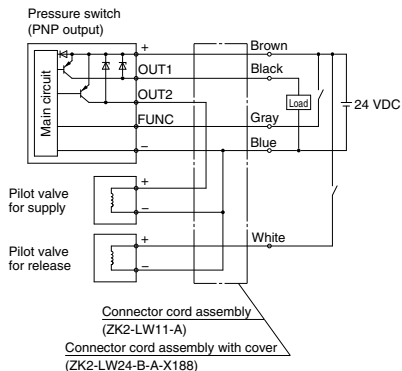
ZK2□A-X188/ZK2□A-X211

Wiring Examples

For pressure switch for vacuum with energy-saving function:
K, Q (NPN specification)
(ZK2-ZSVA□□□A-X188)

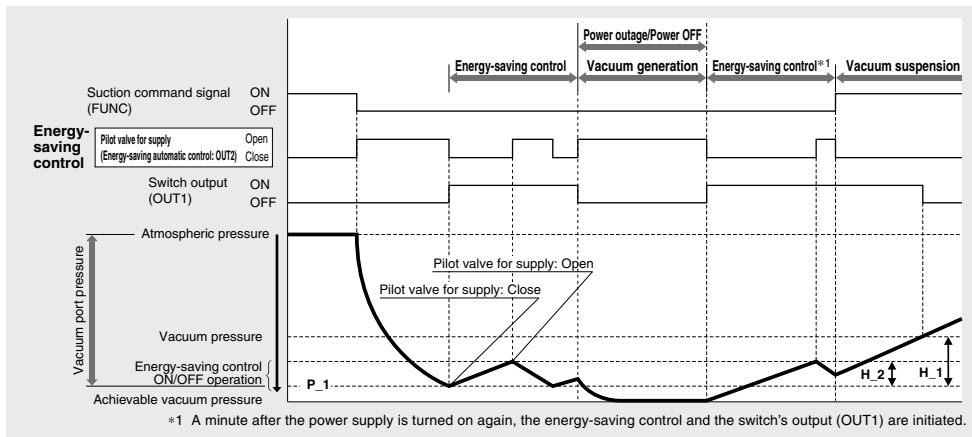


For pressure switch for vacuum with energy-saving function:
R, S (PNP specification)
(ZK2-ZSVB□□□A-X188)



* The pressure switch for vacuum with energy-saving function and the connector cord assembly with cover are the same for both the ZK2□A-X188 and the ZK2□A-X211.

Timing Chart (Typical operation pattern)



* For further details on the pressure switch for vacuum with energy-saving function, refer to the ZK2-ZSV□□□A-X188 operation manual on the SMC website.

Port Layout

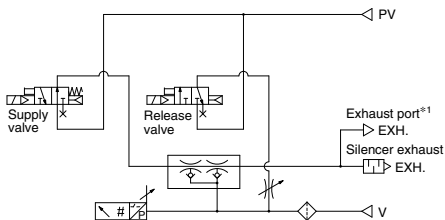
-X188

Port layout no. 1

Single unit: ZK2□A5MOZ□□A-□□-X188

| | | |
|-------------------------|------------------|---|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | Silencer exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | Released within the operating environment |
| | Release pressure | Same pressure as PV |

Port combination: PV = PD Circuit example

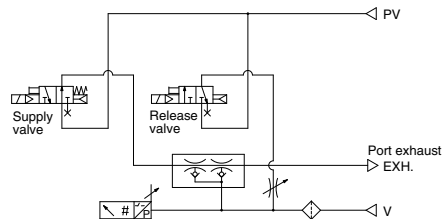


Port layout no. 2

Single unit: ZK2B□A5MOZ□□A-□□-X188

| | | |
|-------------------------|------------------|---|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | Port exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | Released within the operating environment |
| | Release pressure | Same pressure as PV |

Port combination: PV = PD Circuit example

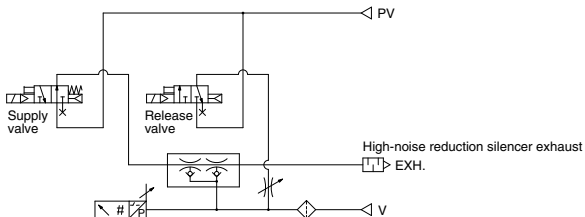


Port layout no. 3

Single unit: ZK2G□A5MOZ□□A-□□-X188

| | | |
|-------------------------|---------------------------------------|---|
| System | Ejector | |
| Body type | Single unit | |
| Exhaust type | High-noise reduction silencer exhaust | |
| Application and purpose | Vacuum pressure | — |
| | Exhaust | Released within the operating environment |
| | Release pressure | Same pressure as PV |

Port combination: PV = PD Circuit example



ZK2□A-X188/ZK2□A-X211

Port Layout

-X211

Port layout no. 4

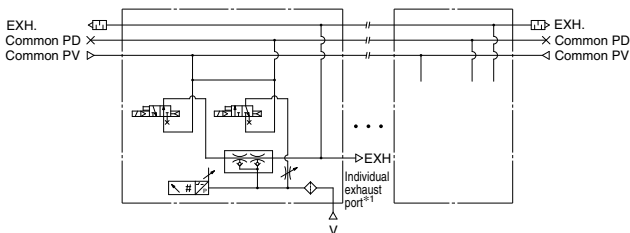
Single unit: ZK2□A5MOZ□□A-□□-X211
Manifold: ZK2□□A-A□1L-□-X211

*1 The complex exhaust method combines the common exhaust from the end plate and the direct exhaust from each station.

| | |
|-------------------------|---|
| System | Ejector |
| Body type | Manifold |
| Exhaust type | Complex exhaust*1 |
| Application and purpose | Common for each station |
| Exhaust | Released within the operating environment |
| Release pressure | Same pressure as common PV |

Port combination: Common PV = Common PD

Circuit example



*1 For the complex exhaust type, an individual exhaust port is provided to each station.

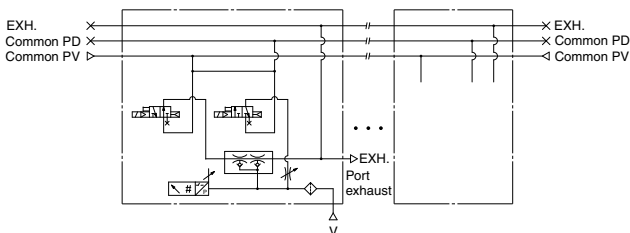
Port layout no. 5

Single unit: ZK2F□A5MOZ□□A-□□-X211
Manifold: ZK2□□A-A□2L-□-X211

| | |
|-------------------------|--|
| System | Ejector |
| Body type | Manifold |
| Exhaust type | Individual port exhaust |
| Application and purpose | Common for each station |
| Exhaust | After piping, individual exhaust is necessary. |
| Release pressure | Same pressure as common PV |

Port combination: Common PV = Common PD

Circuit example



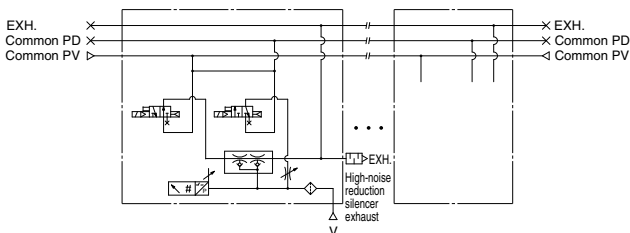
Port layout no. 6

Single unit: ZK2H□A5MOZ□□A-□□-X211
Manifold: ZK2□□A-A□2L-□-X211

| | |
|-------------------------|---|
| System | Ejector |
| Body type | Manifold |
| Exhaust type | High-noise reduction silencer exhaust |
| Application and purpose | Common for each station |
| Exhaust | Released within the operating environment |
| Release pressure | Same pressure as common PV |

Port combination: Common PV = Common PD

Circuit example



Vacuum Ejector with Energy-saving Function ZK2□A-X188/ZK2□A-X211

Port Layout

Option -L

Port layout no. 7

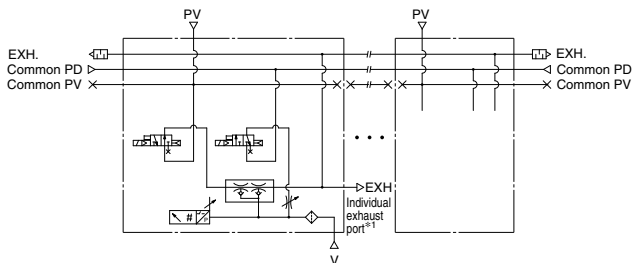
Single unit: ZK2□A5M0Z□□A-□□L-X211
 Manifold: ZK2□□A-A□1L-□L-X211

*1 The complex exhaust method combines the common exhaust from the end plate and the direct exhaust from each station.

| | |
|-------------------------|---|
| System | Ejector |
| Body type | Manifold |
| Exhaust type | Complex exhaust*1 |
| Application and purpose | Vacuum pressure PV pressure can be changed per station. Exhaust Released within the operating environment Release pressure Common PD pressure has to be supplied with individual PV |

Port combination: Individual PV ≠ Common PD

Circuit example



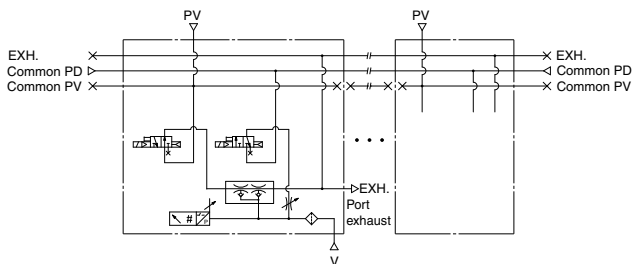
Port layout no. 8

Single unit: ZK2F□A5M0Z□□A-□□L-X211
 Manifold: ZK2□□A-A□2L-□L-X211

| | |
|-------------------------|--|
| System | Ejector |
| Body type | Manifold |
| Exhaust type | Individual port exhaust |
| Application and purpose | Vacuum pressure PV pressure can be changed per station. Exhaust After piping, individual exhaust is necessary. Release pressure Common PD pressure has to be supplied with individual PV |

Port combination: Individual PV ≠ Common PD

Circuit example



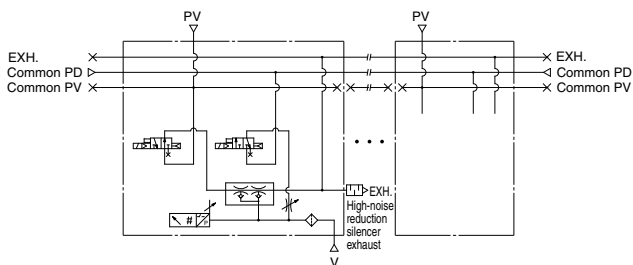
Port layout no. 9

Single unit: ZK2H□A5M0Z□□A-□□L-X211
 Manifold: ZK2□□A-A□2L-□L-X211

| | |
|-------------------------|---|
| System | Ejector |
| Body type | Manifold |
| Exhaust type | High-noise reduction silencer exhaust |
| Application and purpose | Vacuum pressure PV pressure can be changed per station. Exhaust Released within the operating environment Release pressure Common PD pressure has to be supplied with individual PV |

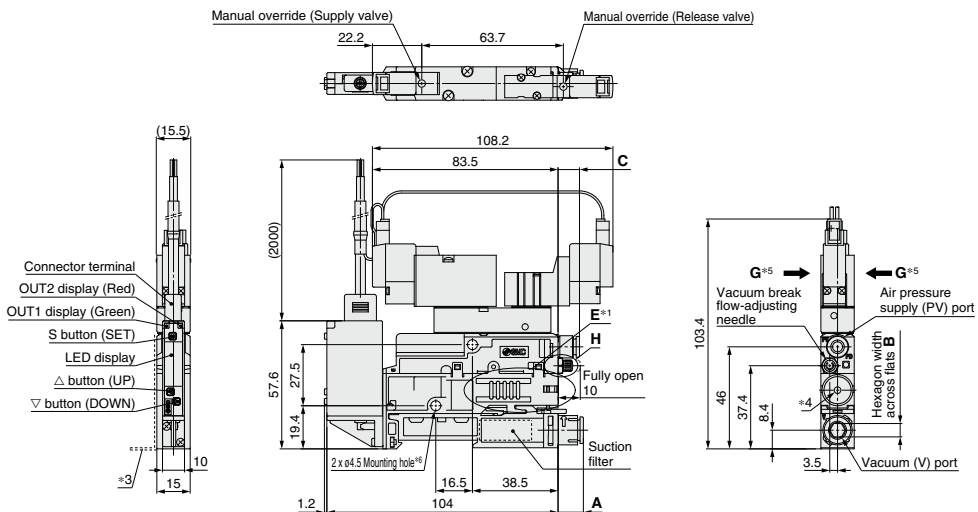
Port combination: Individual PV ≠ Common PD

Circuit example

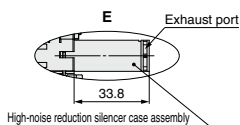


ZK2□A-X188/ZK2□A-X211

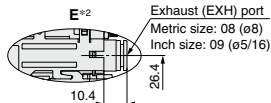
Dimensions: Single Unit



For high-noise reduction silencer exhaust
(Body type: G)

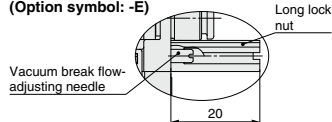


For port exhaust
(Body type: B)



H (2 : 1)

For screwdriver operation type long lock nut
(Option symbol: -E)



Port Dimensions

| V port type | A | B | C |
|----------------|------|-----|------|
| Metric size 06 | 8.3 | 4 | 9.7 |
| 08 | 11.2 | 6 | |
| Inch size 07 | 10.8 | 4.8 | 12.3 |
| 09 | 11.2 | 6 | |

*1 For the silencer exhaust type, air is exhausted from the slit on both sides. (Do not cover both sides. Allow release from at least one side.)

*2 For the port exhaust type, air is exhausted from the One-touch fitting.

*3 Refer to the ZK2□A series for dimensions with a mounting bracket.

*4 Nozzle sizes 12 and 15 have an exhaust port.

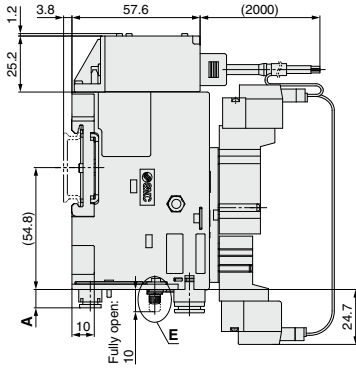
*5 Do not apply any external force in the directions of the arrows shown beside G.

*6 When the product is mounted by using a 2 x ø4.5 mounting hole, it is recommended that the M4 screw be tightened with a tightening torque of 0.73 to 0.75 N·m.

* These figures show the ZK2□A5MOZ□WA-08-□-X188.

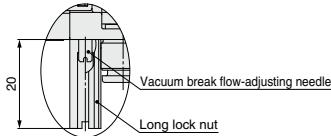
Vacuum Ejector with Energy-saving Function **ZK2□A-X188/ZK2□A-X211**

Dimensions: Manifold

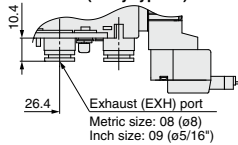


E (2 : 1)

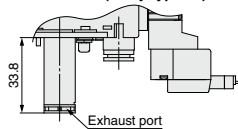
For screwdriver operation type long lock nut
(Option symbol: -E)



For individual port exhaust
(Body type: F)

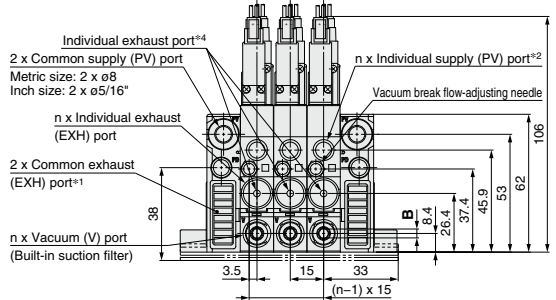
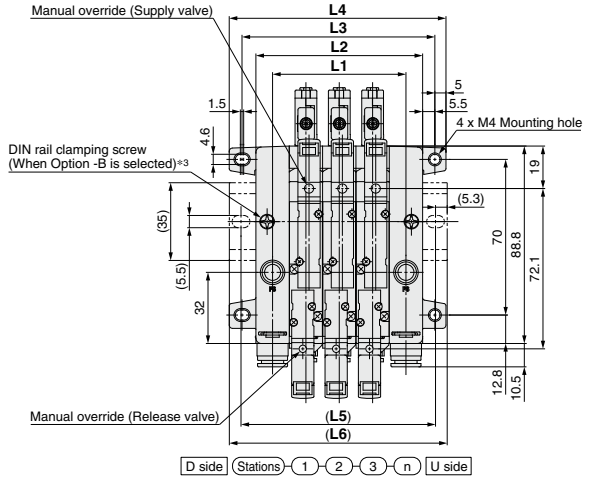


For high-noise reduction silencer exhaust
(Body type: H)

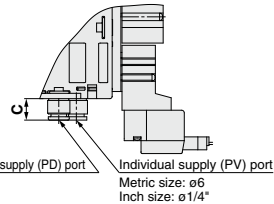


Port Dimensions

| V port type | A | B (Hexagon width across flats) | C |
|----------------|------|-----------------------------------|------|
| Metric size 06 | 8.3 | 4 | 9.7 |
| 08 | 11.2 | 6 | |
| Inch size 07 | 10.8 | 4.8 | 12.3 |
| 09 | 11.2 | 6 | |



Individual SUP port dimensions
(Option symbol: -L)*2



Manifold Dimensions

| Stations(n) | [mm] | | | | | | | | | |
|-------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| L1 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 |
| L2 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150 | 165 | 180 |
| L3 | 56.8 | 71.8 | 86.8 | 101.8 | 116.8 | 131.8 | 146.8 | 161.8 | 176.8 | 191.8 |
| L4 | 67.5 | 82.5 | 97.5 | 112.5 | 127.5 | 142.5 | 157.5 | 172.5 | 187.5 | 202.5 |
| L5 | 62.5 | 75 | 87.5 | 100 | 112.5 | 125 | 137.5 | 150 | 162.5 | 175 |
| L6 | 73 | 85.5 | 98 | 110.5 | 123 | 135.5 | 148 | 160.5 | 173 | 185.5 |

*1 The individual port exhaust type and high-noise reduction silencer exhaust type do not have exhaust ports.

*2 Only when the individual supply specification (Symbol: -L) is selected

*3 To secure the manifold to the DIN rail, select an option for the manifold model number.

*4 For the complex exhaust type, air is also exhausted from the individual exhaust port of each station in addition to the common exhaust port.