Vacuum Module: Vacuum Pump System
Series ZX

How to Order

Components

Valve unit N.C. type	Vacuum switch unit
Valve unit N.O. type	Vacuum switch unit
Valve unit N.C. type	Filter unit

	Combination of supply valve and release valve	Pilot valve	Voltage	Electrical entry	Light/Surge voltage suppressor	Manual operation	Vacuum switch unit Filter unit	Vacuum switch Electrical entry	PV/V port size
ZX100	K1		5	L	Z		E	C	
ZX100	K3		5	L	Z		E	C	
ZX100	K1		5	L	Z		F		

Valve unit/Combination of supply valve and release valve
Refer to "Table (1)" on page 13-2-41.

Pilot valve

Nil	DC: 1 W (With indicator light: 1.05 W)
	AC
Y *	DC: 0.45 W (With indicator light: 0.5 W)

* 24 VDC and 12 VDC are applicable to 0.45 W.

Voltage

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

* Applicable to plug connector. (Connector assembly with rectifier is attached.)

Electrical entry

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

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

• Refer to "Table (2)" on page 13-2-41 for part number of lead wire with connector.

Light/Surge voltage suppressor

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

* In the case of AC, "S" is not available.

Manual operation

Nil	Non-locking push type
B	Locking slotted type

Vacuum switch unit/Filter unit

E	Vacuum switch (For general purpose)		With suction filter
PS	Adsorption confirmation switch	Nozzle dia. (ø0.3 to 0.7)	
PB		Nozzle dia. (ø0.5 to 1.2)	
F	Only suction filter		

Vacuum digital pressure switch unit

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

Note) Analog output is available on grommet type only.

Vacuum switch electrical entry

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

• Refer to "Table (3)" on page 13-2-41 for part number of lead wire with connector.

PV/V port size

Nil	M5 x 0.8
Y	M6 x 1 (Option)

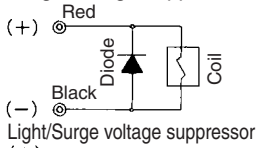
⚠Caution

When using the AC type, the DC solenoids are operated via a rectifier. Therefore, when using this type, make sure to combine the connector assembly equipped with a rectifier with the exclusive solenoids. Using other combinations could lead to burned coils or other types of malfunctions.

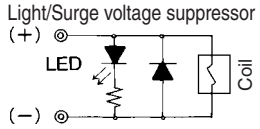
• Refer to page 13-2-54 for ordering the manifold.
• Refer to page 13-2-64 to 65 for ordering a unit for replacement.

⚠Caution

Surge voltage suppressor



Light/Surge voltage suppressor



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

Using the AC type:
The AC type is not equipped with a surge voltage suppressor because the rectifier assembly prevents the generation of surge voltage.

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

(Refer to page 13-2-42 for details specifications.)

Components		Symbol	Supply valve					Release valve				
			Solenoid valve		Air operated		None	Solenoid valve		Air operated	External release	None
Supply valve	Release valve		N.C. (VJ114)	N.O. (VJ324)	N.C. (ZX1A)	N.O. (VJA324)		N.C. (VJ114)	N.C. (VJ314)	N.C. (VJA314)	ZX1A	
Solenoid (N.C.)	Solenoid (N.C.)	**K1**	●	—	—	—	—	●	—	—	—	—
Solenoid (N.O.)	Solenoid (N.C.)	**K3**	—	●	—	—	—	—	●	—	—	—
Air operated (N.O.)	External release	**K6**	—	—	●	—	—	—	—	—	●	—
Air operated (N.O.)	Air operated (N.C.)	**K8**	—	—	—	●	—	—	—	●	—	—
—		**Nil**	Without valve module									

Table (2) Valve Unit/Valve Plug Connector Assembly

Connector assemby part no.

(For DC)
VJ10-20-4A-6

(For 100 VAC)
VJ10-36-1A-6

(For 110 VAC)
VJ10-36-3A-6

Lead wire length

Nil	0.3 m (Standard)
6	0.6 m
10	1 m
15	1.5 m
20	2 m
25	2.5 m
30	3 m

How to order
If ordering vacuum module with 600 m or the longer lead wire, specify both vacuum module and connector assemby part numbers.
Ordering example)
ZX100-K15LOZ-EC·····1 pc.
∗**VJ10-20-4A-6····· 2 pcs.**

Table (3) Vacuum Switch/Plug Connector Assembly

ZS-10-5A-□

Lead wire length

Nil	0.6 m
30	3 m
50	5 m

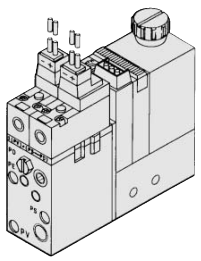
Note) If ordering switch with 5 m lead wire, specify both switch and lead wire with connector part numbers.

Ordering example)
ZX100-K150Z-ECN·····1 pc.
∗**VJ10-20-4A-6····· 2 pcs.**
∗**ZS-10-5A-50····· 1 pc.**

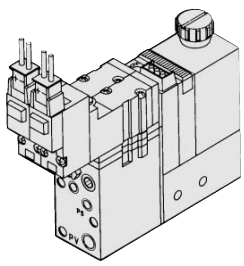
Vacuum Pump System/Recommended Model (The models below will have faster delivery.)

Model	Combination		Solenoid valve rated voltage	Lead wire electrical entry	Light/Surge voltage suppressor	Vacuum switch unit /Filter unit	Vacuum switch electrical entry
	Supply valve (Pilot valve)	Release valve (Direct operated)					
ZX100-K15LZ-F	N.C. (VJ114)	N.C. (VJ114)	24 VDC	Plug connector type	With light/surge voltage suppressor	Suction filter (ZX1-F)	Connector type
ZX100-K15LZ-EC	N.C. (VJ114)	N.C. (VJ114)				Vacuum switch (ZSE)	
ZX100-K35MZ-EC	N.O. (VJ324)	N.C. (VJ314)					

∗The above models are for short delivery.



ZX100-K15LZ-E□



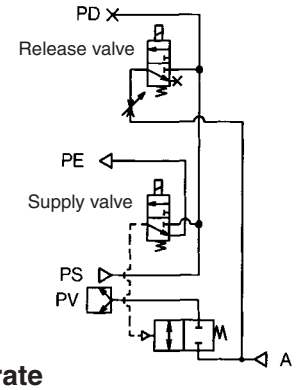
ZX100-K35MZ-E□

Vacuum Pump System/Combination of Supply Valve and Release Valve

Combination Symbol: K1

An N.C. solenoid valve is used for the supply valve. Also, an N.C. solenoid valve is used for the vacuum release valve.

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



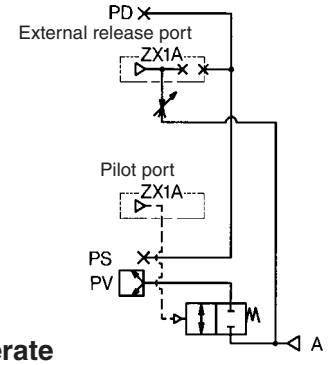
How to Operate

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

Combination Symbol: K6

An external 3 port valve must be provided to serve as the supply valve. Also, an external 2 port valve (vacuum valve) must be provided to serve as the vacuum release valve.

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



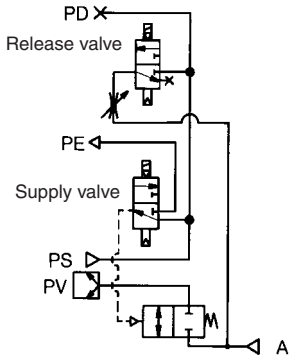
How to Operate

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

Combination Symbol: K3

An N.O. solenoid valve is used for the supply valve. Also, an N.C. solenoid valve is used for the vacuum release valve.

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



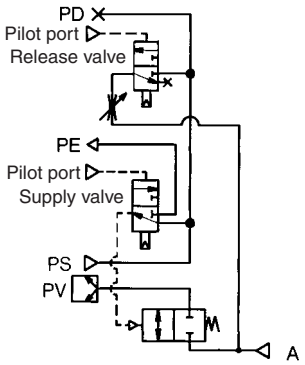
How to Operate

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

Combination Symbol: K8

An air operated N.O. valve is used as the supply valve. An air operated N.C. valve is used for the vacuum release valve.

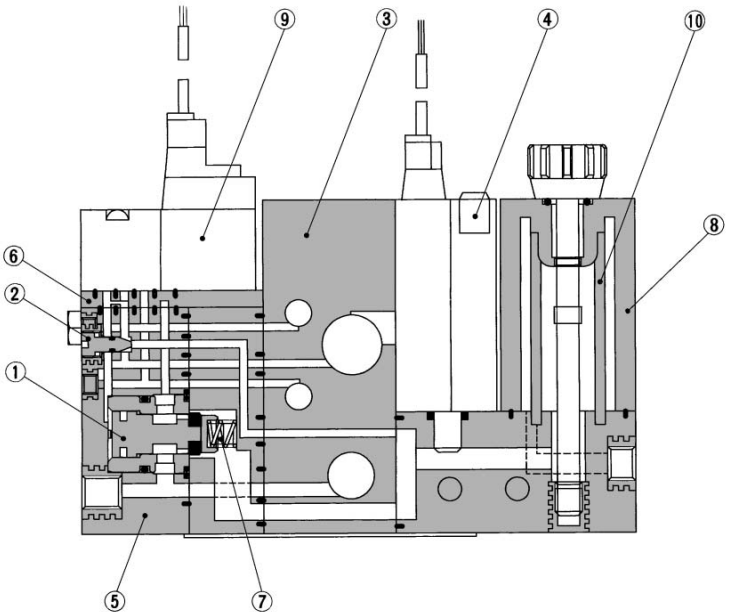
Application: This combination is used for effecting control in accordance with electric signals. Because the supply valve is N.O., the pressure that is supplied to the ejector is not interrupted during a power outage; as a result, the state of suction can be maintained. This type is used for preventing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



How to Operate

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

Vacuum Pump System/Construction



Component Parts

No.	Description	Material	Note
①	Poppet valve assembly	—	ZX1-PV-O
②	Release flow rate adjusting needle	Stainless steel	
③	Manifold base	Aluminum	
④	Vacuum switch	—	ZSE2, ZSP1
⑤	Valve unit	—	ZX1-VB□□□□□□-D-□
⑥	Interface plate	—	(PV)/(PS↔PD)
⑦	Return spring	Stainless steel	
⑧(Note)	Filter case	Polycarbonate	

Replacement Parts

No.	Description	Material	Part no.
⑨	Pilot valve	—	Refer to “Table (2)”, “(3)”.
⑩	Filter element	PVF	ZX1-FE

Note) Caution when handling filter case

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

Table (1) How to Order Pilot Valves

No.	Component equipment		Model	Combination of supply and release valve
	Supply valve	Release valve		
1	Solenoid valve N.C. (VJ114)	Solenoid valve N.C. (VJ114)	**ZX1-VJ114-□□□□**	K1, J1
2	Solenoid valve N.O. (VJ324)	Solenoid valve N.C. (VJ314)	**ZX1-VJ3$^{1}_{2}$4□-□□□□**	K3, J2
3	Air operated N.O. (VJA324)	Air operated N.C. (VJA314)	**ZX1-VJA3$^{1}_{2}$4**	K6
4	Solenoid valve	Air operated	No. 2 and 3 models only are applicable. Indicate each part number.	
	Air operated	Solenoid valve		

Table (2) How to Order Solenoid Valves

ZX1-VJ114— □ – 5 L Z □

ZX1-VJ3 2 4 □ □ – 5 L Z □

Type of actuation

1	N.C. (Normally closed)
2	N.O. (Normally open)

Body option

Nil	Pilot valve Individual exhaust
M	Common exhaust for main and pilot valves

Note) In the case of N.C. type, indicate no symbol. (Individual exhaust for Pilot valve)

Pilot valve

Nil	DC: 1 W (With indicator light: 1.05 W)
	AC
Y *	DC: 0.45 W (With indicator light: 0.5 W)

∗ 24 VDC and 12 VDC are applicable to 0.45 W.

Note) Screw length of VJ100 and VJ300 for series ZX is different from that of the standard model.
<Screw length> VJ100–M1.7 x 15

Rated voltage

1 *	100 VAC
3 *	110 VAC
5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC

∗ Applicable to plug connector

Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor

Manual override

Nil	Non-locking push type
B	Locking slotted type

Electrical entry

L	Connector (0.3 m)
LN	Connector (W/o lead wire)
LO	Without connector
M	Connector (0.3 m)
MN	Connector (W/o lead wire)
MO	Without connector
G	Grommet (0.3 m)
H	Grommet (0.6 m)

Note) In the case of ZX1-VJ114, M, MN and MO cannot be used.

Table (3) How to Order Air Operated Valves

ZX1A–M3

Port size

M3	M3 x 0.5	Pilot port/External release port
M5	M5 x 0.8	

⚠Caution

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

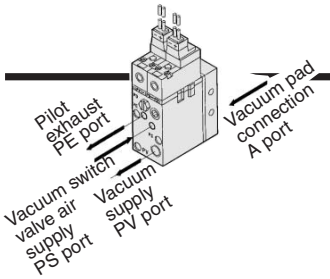
Valve Unit: ZX1-VB

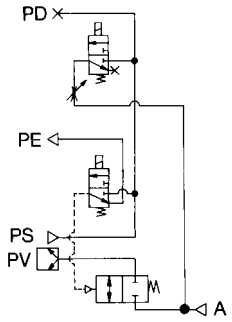
Refer to page 13-2-10 for details.

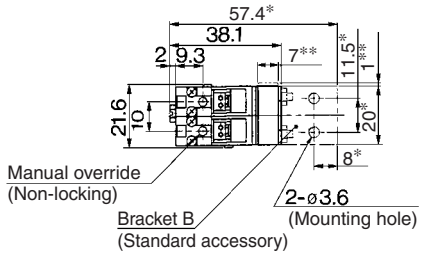
Specifications

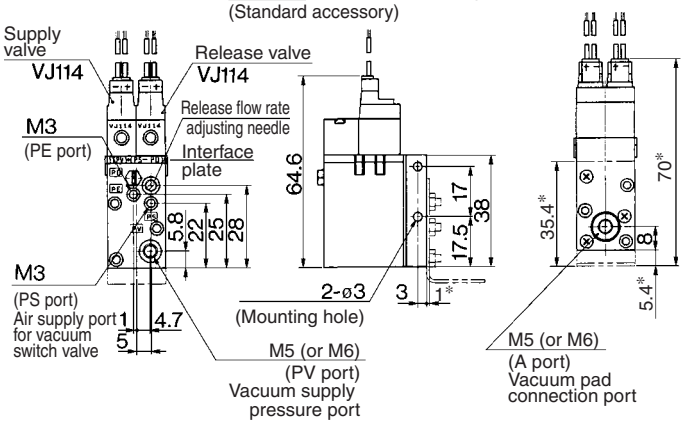
Unit no.	ZX1-VB□□□□□							
Components	Vacuum switch valve				Vacuum release valve			
Operation	Pilot type				Direct operated type			
	Solenoid valve		Air operated		Solenoid valve		External release (ZX1A)	Air operated (VJA314)
	N.C. (VJ114)	N.O. (VJ324)	N.C. (ZX1A)	N.O. (VJA324)	N.C. (VJ114)	N.C. (VJ314)		
Effective area (mm²) (Cv factor)	3 (0.17) Main valve				0.07 0.004	0.45 0.025	—	
Operating pressure range	0.3 to 0.6 MPa							
Max. operating frequency	5 Hz							
Operating temperature range	5 to 50°C							
Interface plate symbol	(PV) / (PS ◂▸ PD)							
Standard accessory	Bracket B/Spacer 2							

K1 (Normally closed)

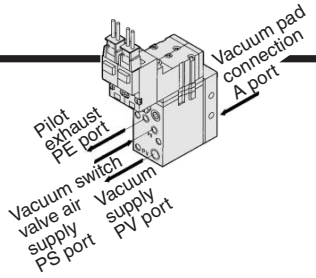


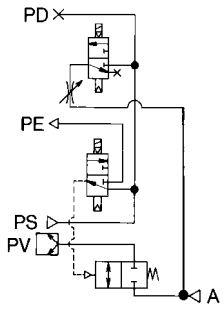


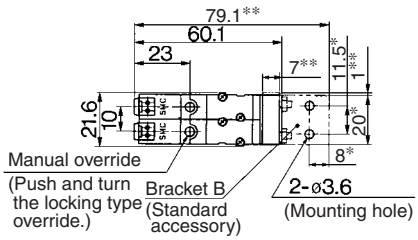


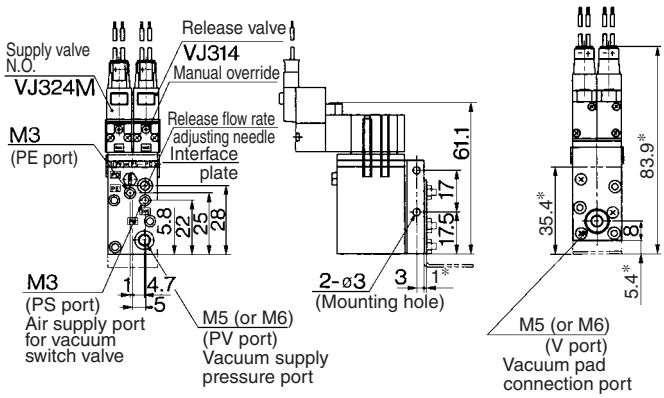


K3 (Normally open)









Note) Dimensions ∗: For mounting bracket B ∗∗: For mounting spacer

Suction Filter Unit: ZX1-F

Refer to page 13-2-12 for details.

Specifications

Unit no.	ZX1-F
Operating pressure range	Vacuum to 0.5 MPa
Operating temperature range	5 to 50°C
Filtration efficiency	30 μm
Element	PVF
Weight	35 g

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

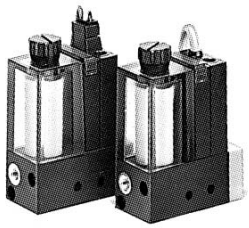
Vacuum Pressure Switch Unit/ZSE2, ZSE3, ZSP1

Refer to page 13-2-13 to 13-2-18 for details.

Vacuum Pressure Switch

High speed response/10 ms

Uses a carrier diffusion semiconductor pressure sensor



Vacuum Pressure Switch Specifications

Refer to Best Pneumatics Vol.16 for details.

Unit no.	ZSE2-0X	ZSE3-0X
Fluid	Air	
Set pressure range	0 to –101 kPa	
Hysteresis	3% Full span or less	
Accuracy	±3% Full span (5 to 40°C) ±5% Full span (0 to 60°C)	±1% Full span
Voltage	12 to 24 VDC (Ripple ±10% or less)	
Port size	M5 x 0.8	

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

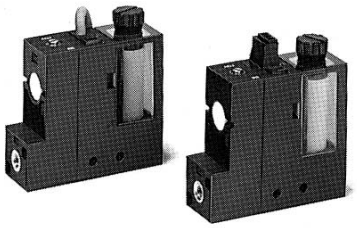
Adsorption Confirmation Switch

Suitable for small size adsorption nozzle/ø0.3 to ø1.2

With suction filter

Improved wiring: connector type

Uses a carrier diffusion semiconductor pressure sensor



Adsorption Confirmation Switch Specifications

Unit no.	ZSP1-S	ZSP1-B
Fluid	Air	
Operating pressure range	–20 to –101 kPa	
Applicable adsorption nozzle dia.	ø0.3 to ø0.7	ø0.5 to ø1.2
Hysteresis	0.5 kPa	
Internal orifice	ø0.5	ø0.8

• Filter case

⚠Caution

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

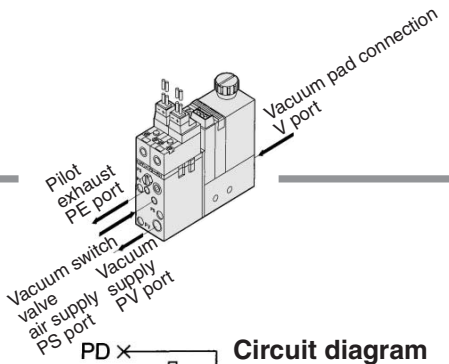
2. Do not expose it to direct sunlight.

• Other caution

⚠Caution

It might not be possible to successfully pick a workpiece if a picking nozzle or a picking pad that is out of the applicable range is used.

Valve Unit: Type K1



Configuration and combination

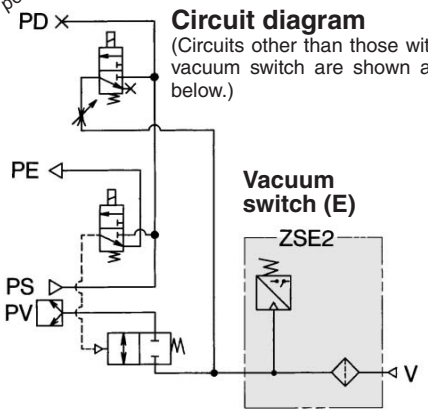
Valve unit (K1) +
- Vacuum switch (ZSE2)
- Vacuum switch (ZSE3)
- Adsorption confirmation switch (ZSP1)
- Filter unit (F)

Model

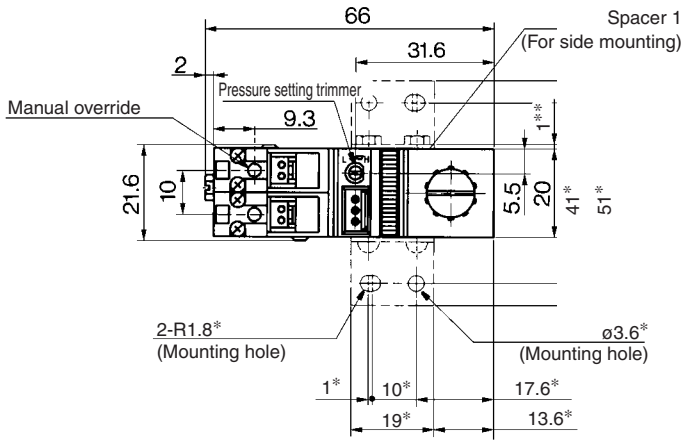
ZX100 — K1□□□□ —
- E□
- D□
- P□□
- F

Circuit diagram

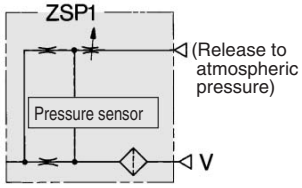
(Circuits other than those with vacuum switch are shown as below.)



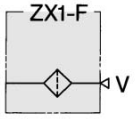
Vacuum switch (ZSE2)
ZX100-K1□□□-E□

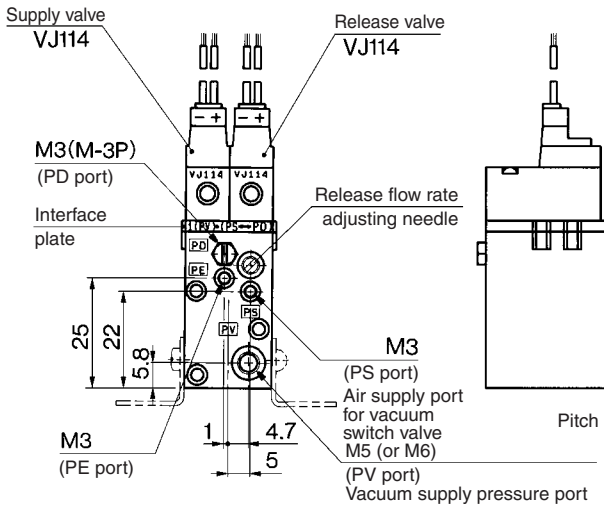


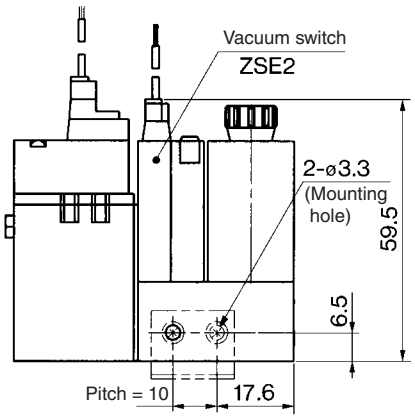
Adsorption confirmation switch (P)

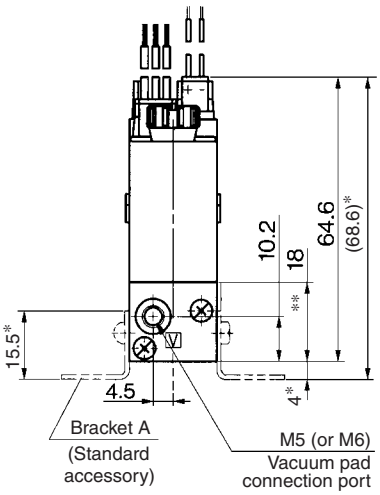


Filter unit (F)



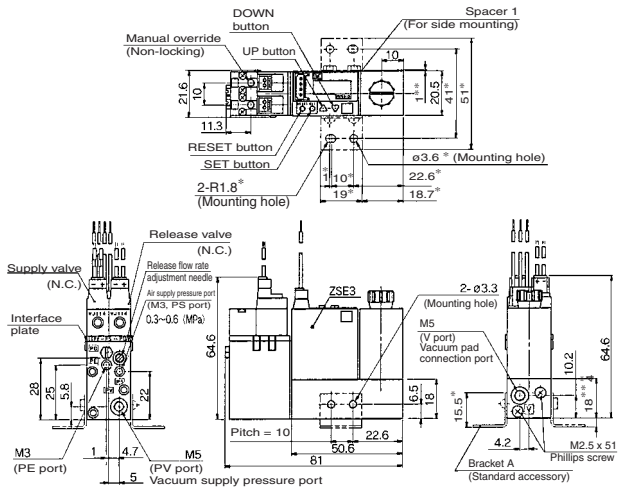




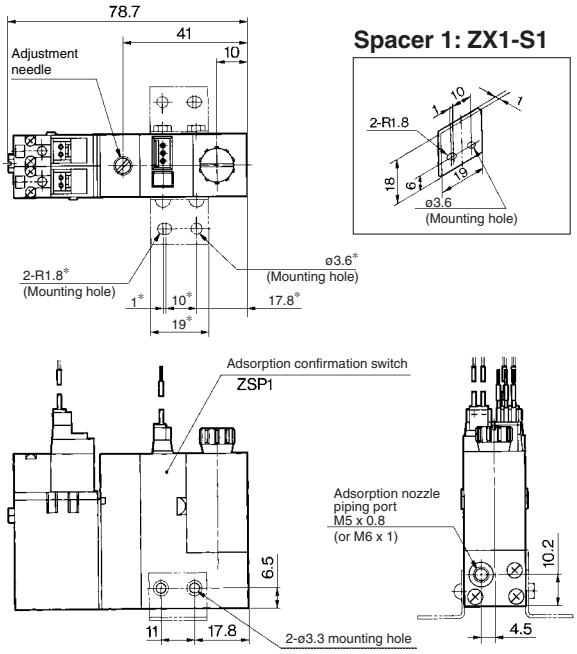


Note) Dimensions ∗: For mounting bracket A ∗∗: For mounting spacer 1.

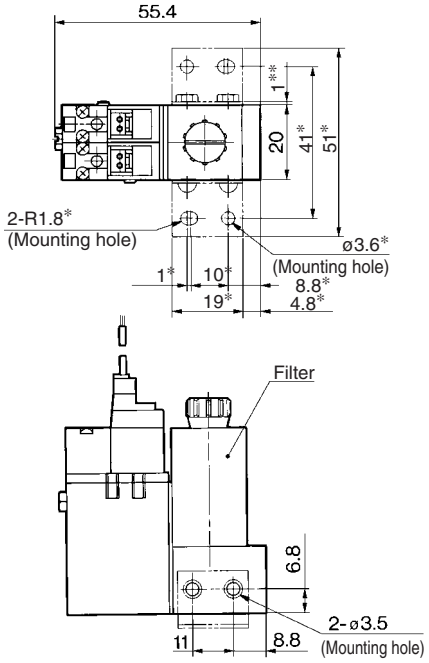
Vacuum switch (ZSE3)
ZX100-K1□□□□-D□□



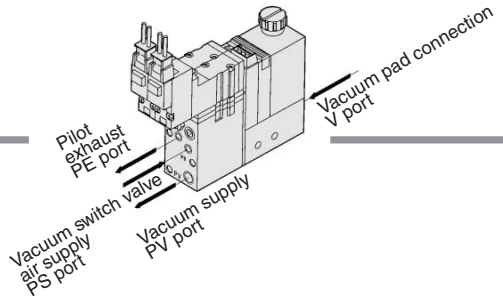
Adsorption confirmation switch (ZSP1)
ZX100-K1□□□□-P□□



Filter unit (F)
ZX100-K1□□□□-F



Valve Unit: Type K3

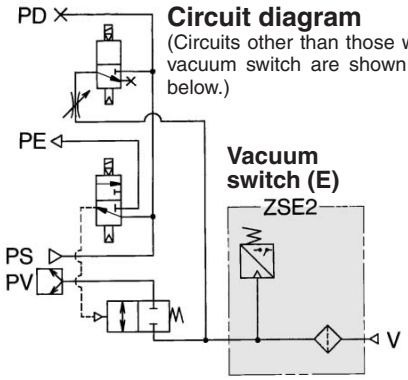


Configuration and combination

Valve unit (K3) + **Vacuum switch (ZSE2)** / **Adsorption confirmation switch (ZSP1)** / **Filter unit (F)**

Model

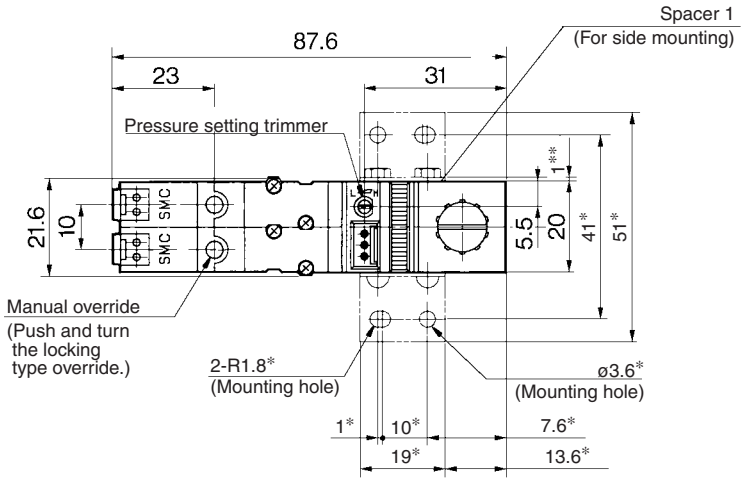
ZX100 — **K3□□□□** — **E□** / **P□□** / **F**



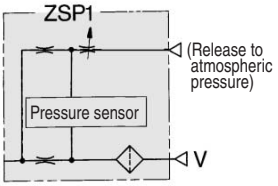
Circuit diagram
(Circuits other than those with vacuum switch are shown as below.)

Vacuum switch (E)

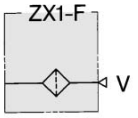
Vacuum switch (ZSE2)
ZX100-K3□□□-E□

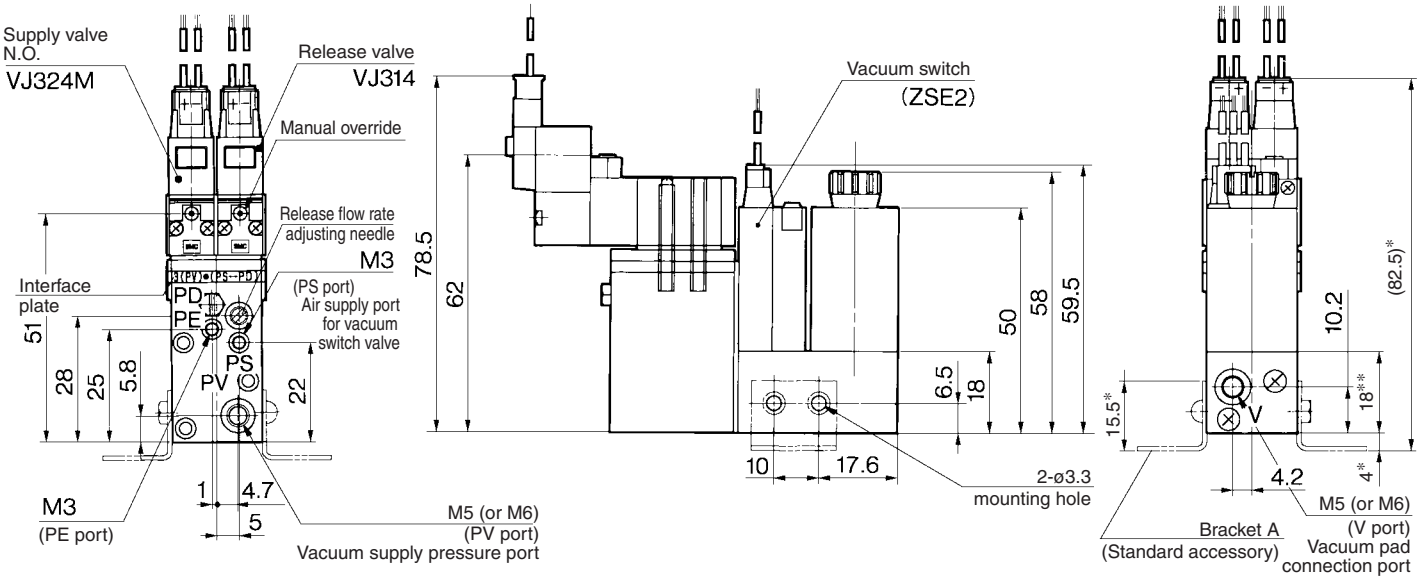


Adsorption confirmation switch (P)



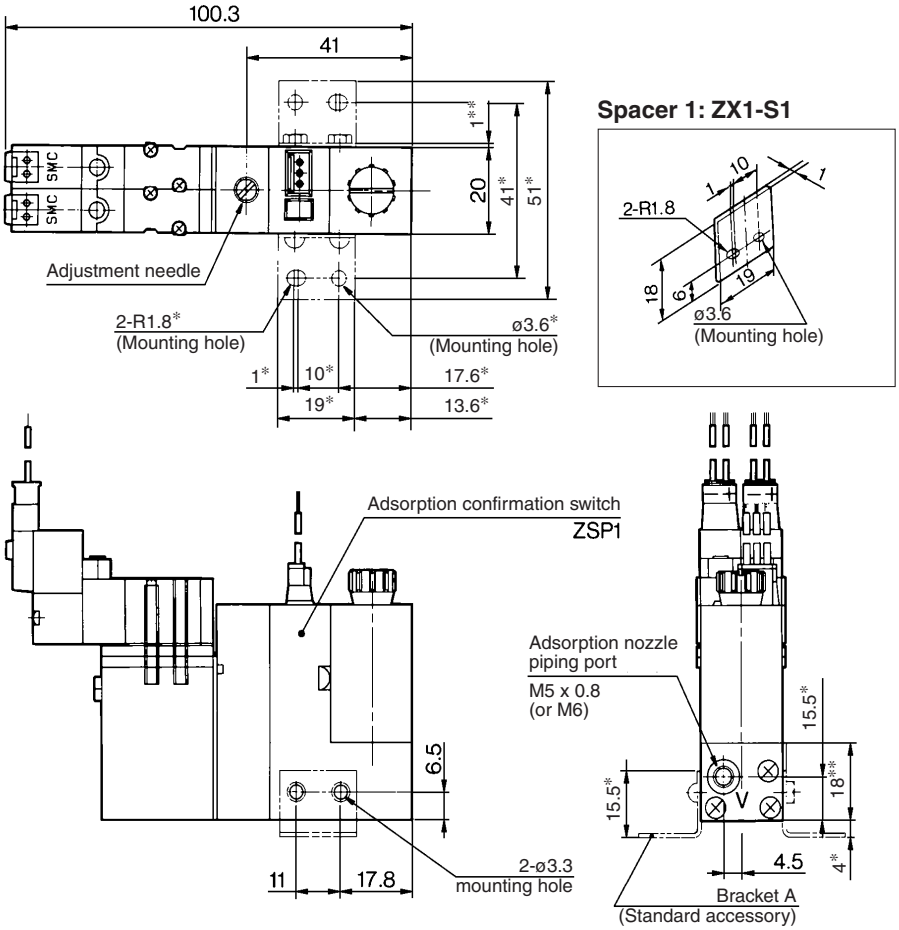
Filter unit (F)



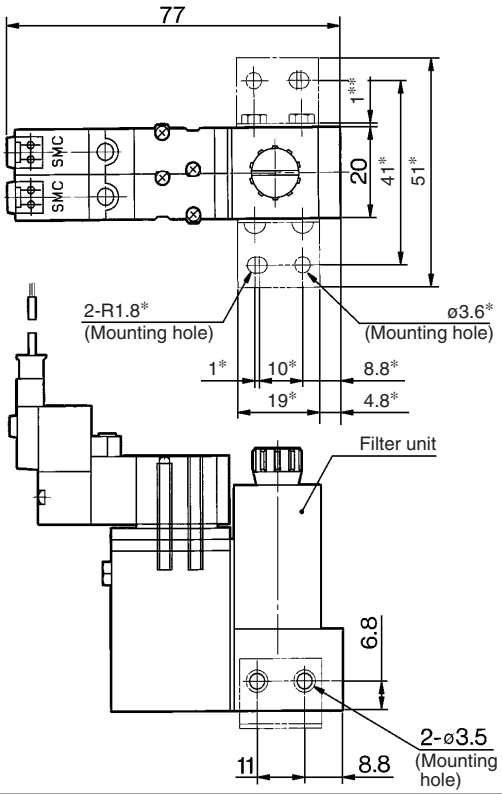


Note) Dimensions ∗: For mounting bracket A ∗∗: For mounting spacer 1.

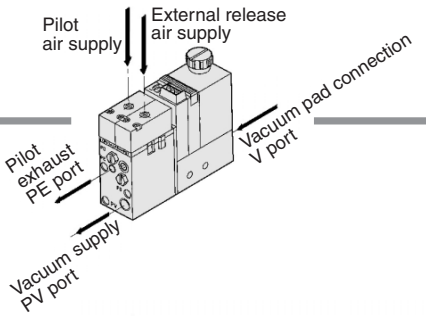
Adsorption confirmation switch (ZSP1)
ZX100-K3□□□□-P□□



Filter unit (F)
ZX100-K3□□□□-F



Valve Unit: Type K6

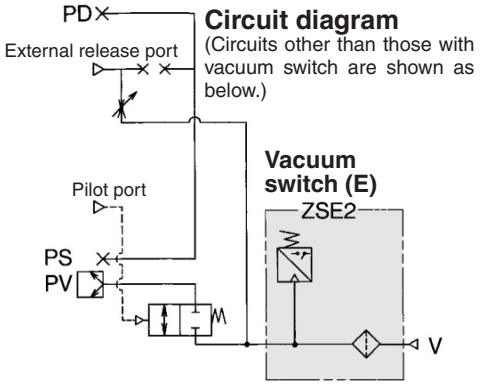


Configuration and combination

Valve unit (K6)	+	Vacuum switch (ZSE2)
		Adsorption confirmation switch (ZSP1)
		Filter unit (F)

Model
ZX100 —— **K6** ——

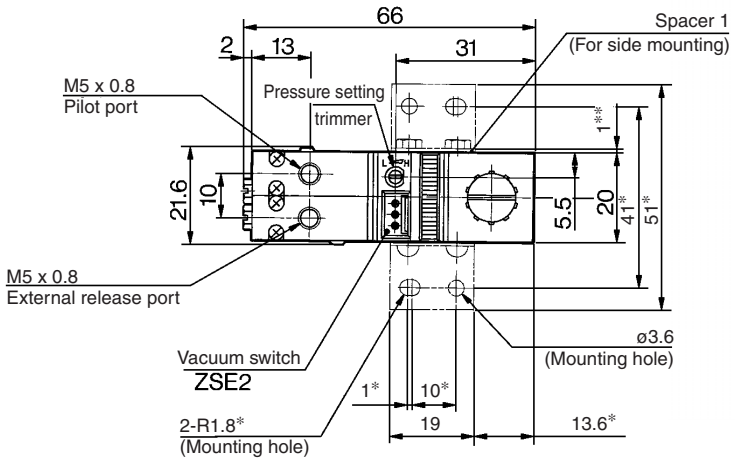
- **E□**
- **P□□**
- **F**



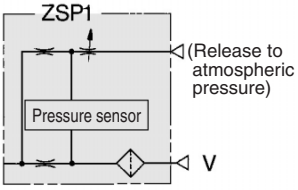
Circuit diagram
(Circuits other than those with vacuum switch are shown as below.)

Vacuum switch (E)

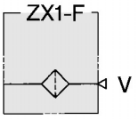
Vacuum switch (ZSE2)
ZX100-K6-E□

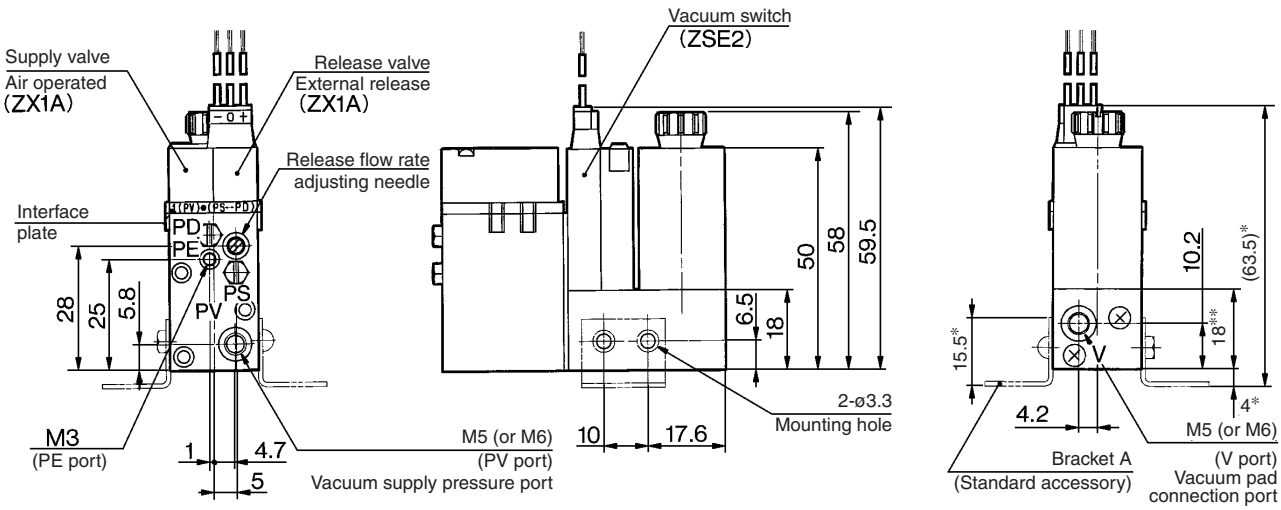


Adsorption confirmation switch (P)



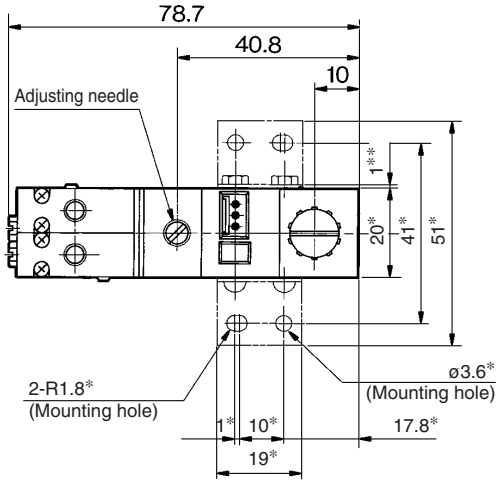
Filter unit (F)



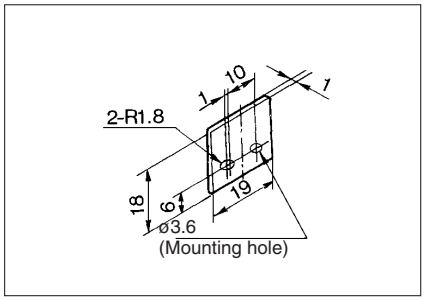


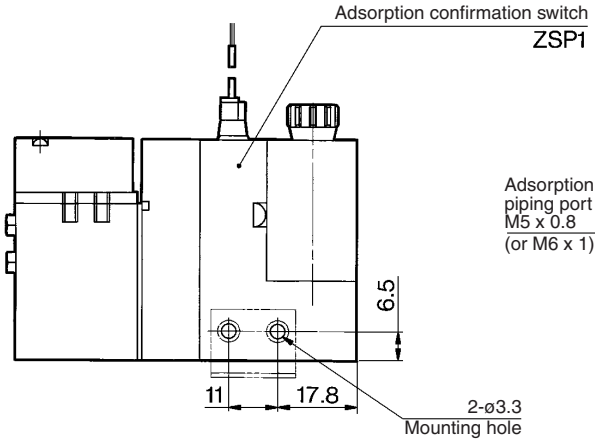
Note) Dimensions ∗: For mounting bracket A ∗∗: For mounting spacer 1.

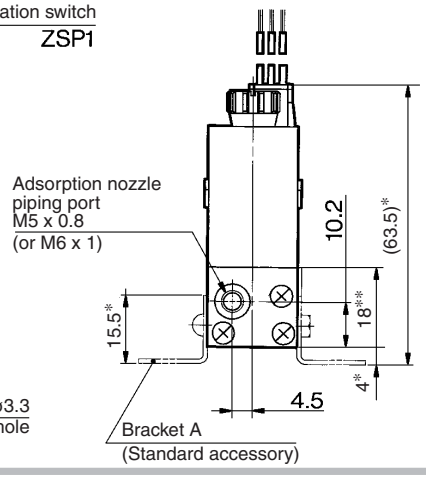
Adsorption confirmation switch (ZSP1)
ZX100-K6-P□□



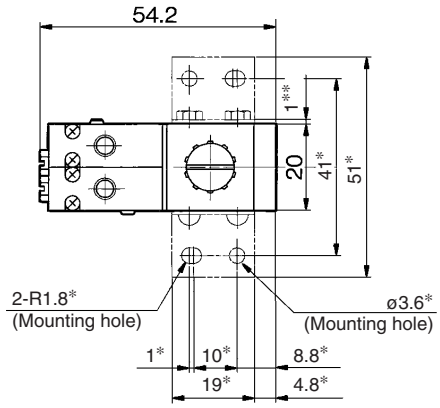
Spacer 1: ZX1-S1

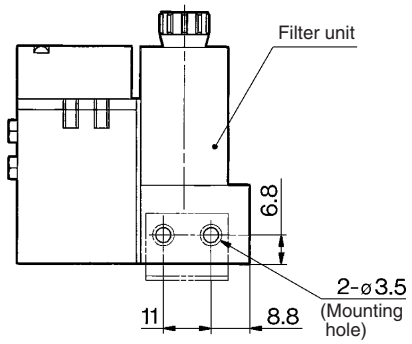






Filter unit (F)
ZX100-K6-F

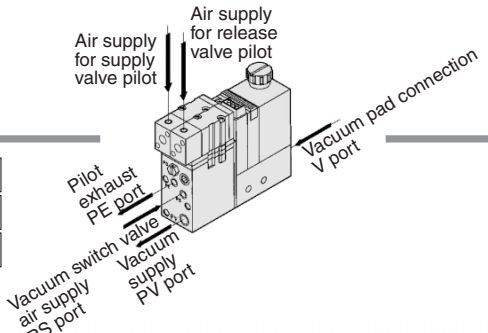




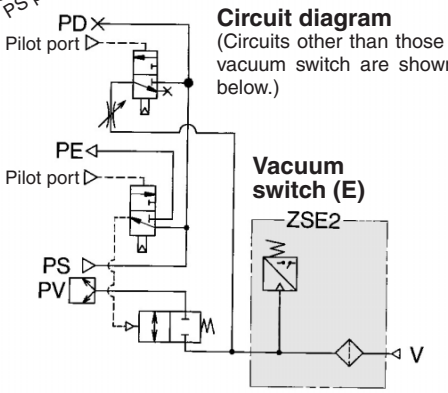
Valve Unit: Type K8

Configuration and combination

Valve unit (K8)	+	Vacuum switch (ZSE2)
		Adsorption confirmation switch (ZSP1)
		Filter unit (F)



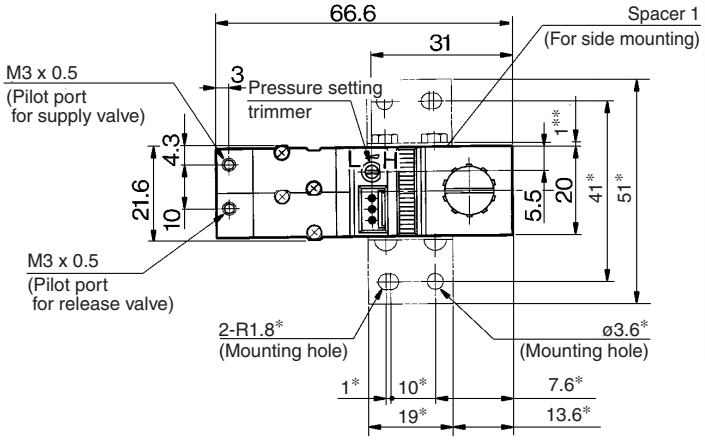
Model
ZX100 ——— K8 ———
E□
P□□
F



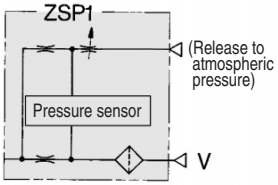
Circuit diagram
(Circuits other than those with vacuum switch are shown as below.)

Vacuum switch (E)

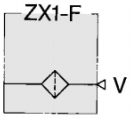
Vacuum switch (ZSE2)
ZX100-K8-E□

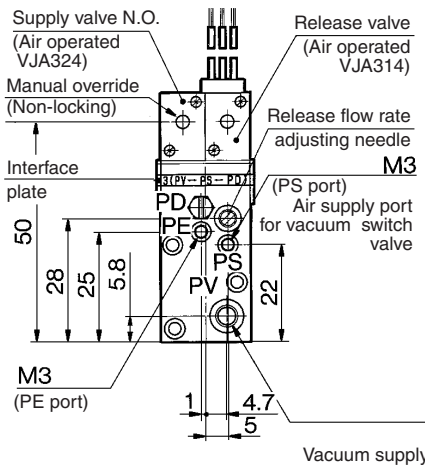


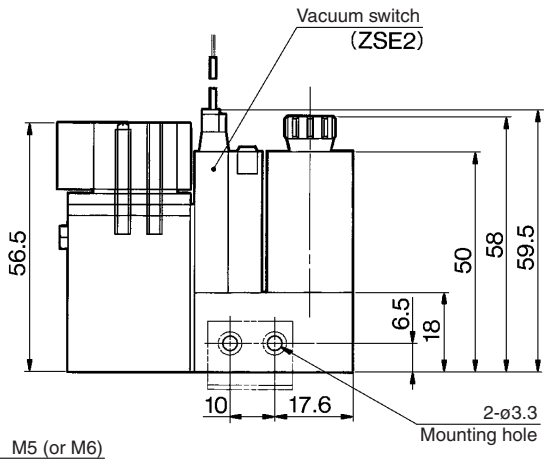
Adsorption confirmation switch (P)

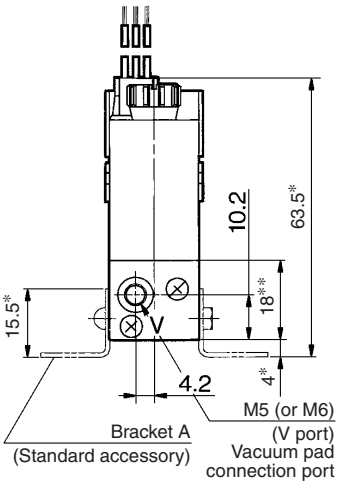


Filter unit (F)



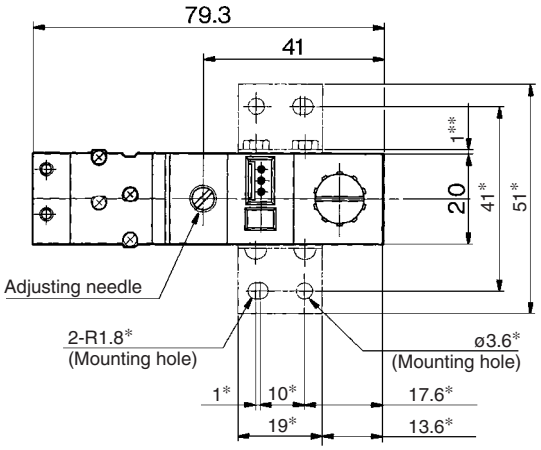




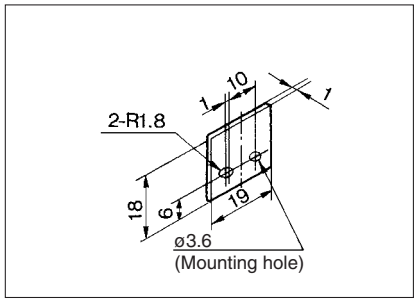


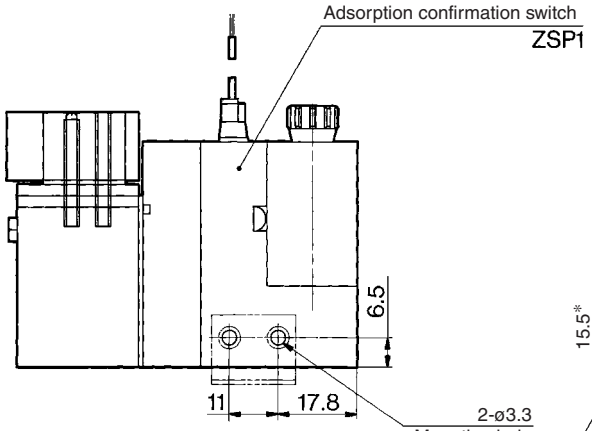
Note) Dimensions *: For mounting bracket A **: For mounting spacer 1.

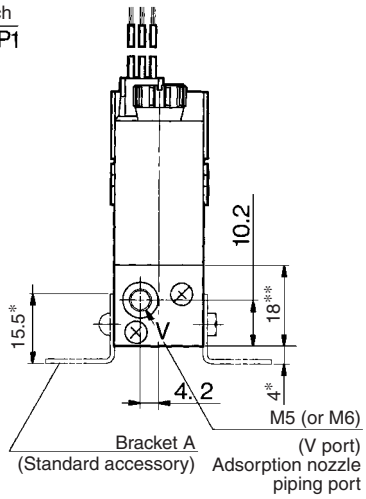
Adsorption confirmation switch (ZSP1)
ZX100-K8-P□□



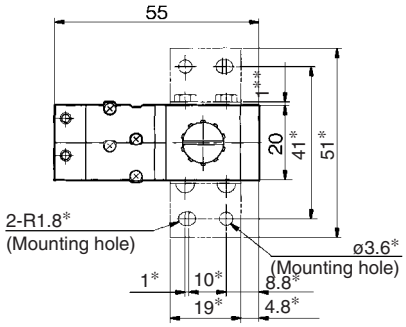
Spacer 1: ZX1-S1

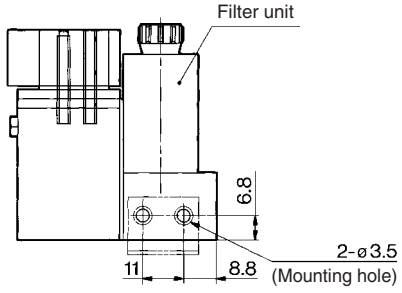






Filter unit (F)
ZX100-K8-F





Made to Order Specifications:

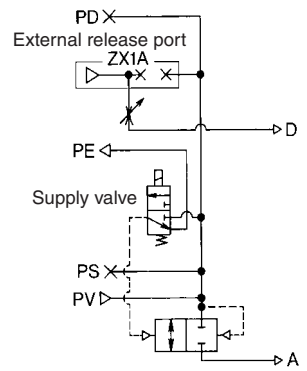
Please consult with SMC for detailed specifications, size and delivery.

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

Ejector Unit

If those other than the standard combination of supply valves and release valves (Refer to page 13-2-5.) are required, select from the following combinations. (Refer to page 13-2-4 for "How to Order".)

Combination Symbol: K2



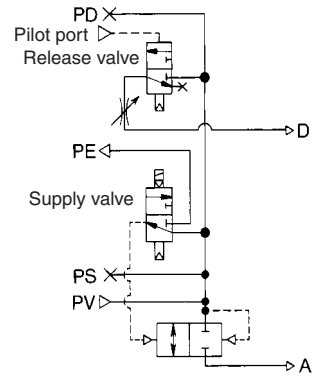
An N.C. solenoid valve is used as the supply valve. Also, an external 2 port valve (vacuum valve) must be provided to serve as the vacuum release valve.

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

How to Operate

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

Combination Symbol: K4



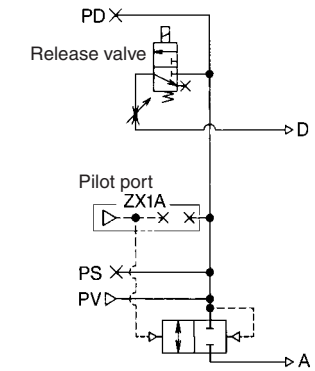
An N.O. solenoid valve is used as the supply valve. An air operated N.C. valve is used for the vacuum release valve.

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

How to Operate

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

Combination Symbol: K5



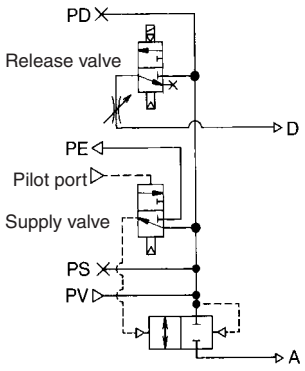
An external 3 port valve must be provided to serve as the supply valve. Also, an N.C. solenoid valve is used for the vacuum release valve.

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

How to Operate

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

Combination Symbol: K7



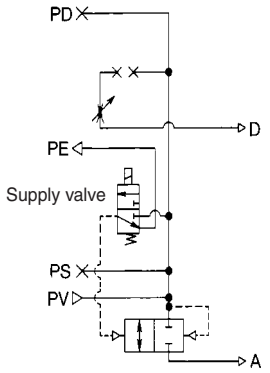
An air operated N.O. valve is used as the supply valve. An N.C. solenoid valve is used for the vacuum release valve.

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

How to Operate

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

Combination Symbol: J1



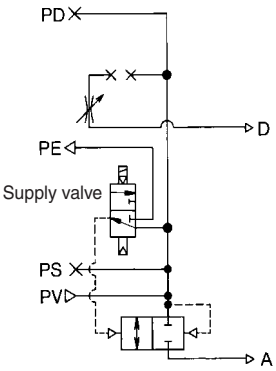
An N.C. solenoid valve is used as the supply valve. A vacuum release valve is not used.

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

How to Operate

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

Combination Symbol: J2



An N.O. solenoid valve is used as the supply valve. A vacuum release valve is not used.

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

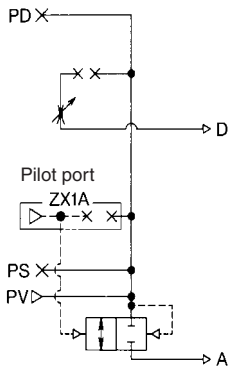
How to Operate

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

Made to Order Specifications:

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

Combination Symbol: J3



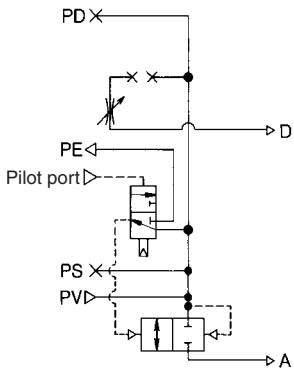
An N.C. solenoid valve is used as the supply valve. A vacuum release valve is not used.

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

How to Operate

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

Combination Symbol: J4



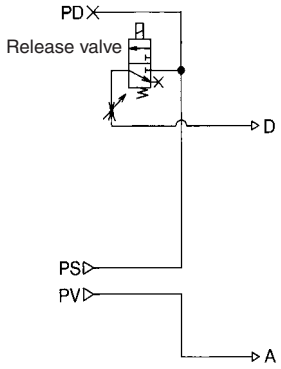
An air operated N.O. valve is used as the supply valve. A vacuum release valve is not used.

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

How to Operate

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

Combination Symbol: D1



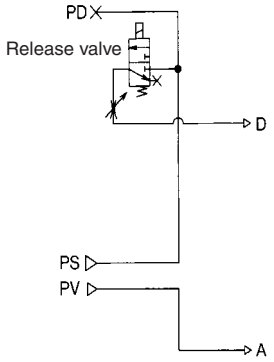
An N.C. solenoid valve is used for the vacuum release valve. An external supply valve must be provided.

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

How to Operate

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

Combination Symbol: D2



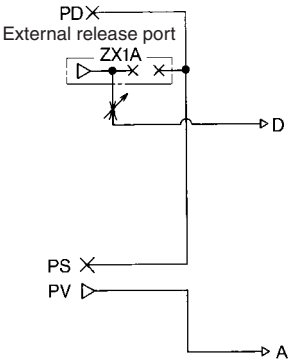
An N.C. solenoid valve is used for the vacuum release valve. An external supply valve must be provided.

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

How to Operate

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

Combination Symbol: D3



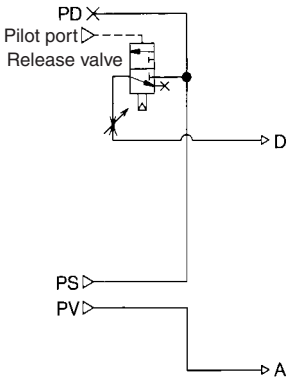
An external valve must be provided to serve as the supply valve. Also, an external 2 port valve (vacuum valve) must be provided to serve as the vacuum release valve.

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

How to Operate

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

Combination Symbol: D4



An external valve must be provided to serve as the supply valve. An air operated N.C. valve is used for the vacuum release valve.

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

How to Operate

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

Made to Order Specifications:

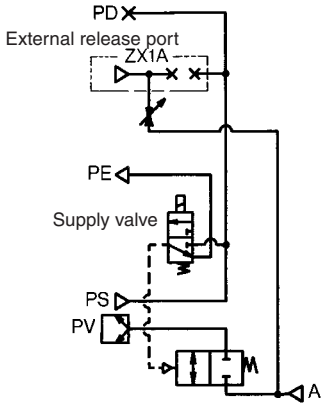
Please consult with SMC for detailed specifications, size and delivery.

1. Valve Unit/Other Combinations of Supply Valve and Release Valve (Vacuum pump system)

Vacuum Pump System

If those other than the standard combination of supply valves (Refer to page 13-2-41.) and release valves are required, select from the following combinations. (Refer to page 13-2-40 for "How to Order".)

Combination Symbol: K2



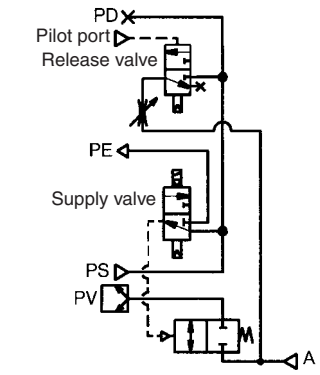
An N.C. solenoid valve is used as the supply valve. Also, an external 2 port valve (vacuum valve) must be provided to serve as the vacuum release valve.

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

How to Operate

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

Combination Symbol: K4



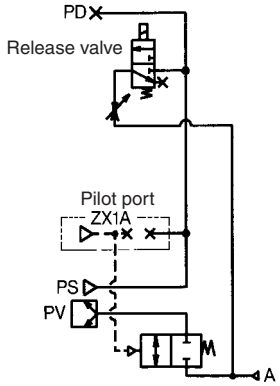
An N.O. solenoid valve is used as the supply valve. An air operated N.C. valve is used for the vacuum release valve.

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

How to Operate

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

Combination Symbol: K5



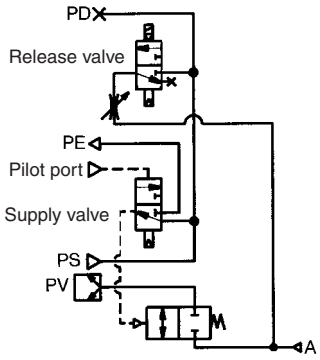
An external 3 port valve must be provided to serve as the supply valve. Also, an N.C. solenoid valve is used for the vacuum release valve.

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

How to Operate

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

Combination Symbol: K7



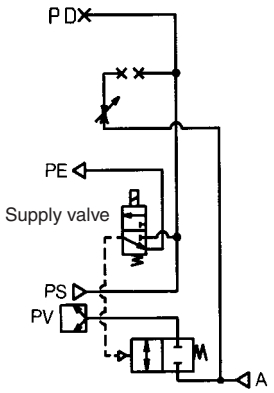
An air operated N.O. valve is used as the supply valve. An N.C. solenoid valve is used for the vacuum release valve.

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

How to Operate

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

Combination Symbol: J1



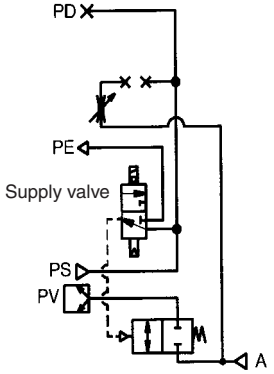
An N.C. solenoid valve is used as the supply valve. A vacuum release valve is not used.

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

How to Operate

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

Combination Symbol: J2



An N.O. solenoid valve is used as the supply valve. A vacuum release valve is not used.

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

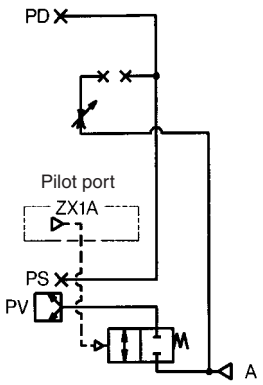
How to Operate

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

Made to Order Specifications:

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

Combination Symbol: J3



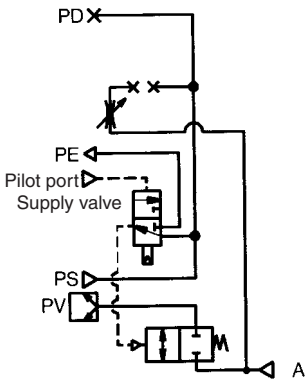
An N.C. solenoid valve is used as the supply valve. A vacuum release valve is not used.

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

How to Operate

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

Combination Symbol: J4



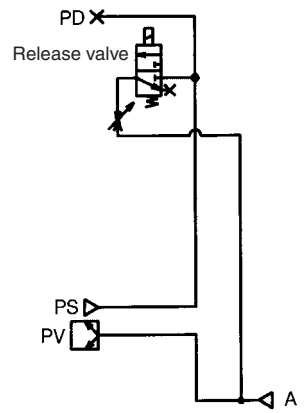
An air operated N.O. valve is used as the supply valve. A vacuum release valve is not used.

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

How to Operate

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

Combination Symbol: D1



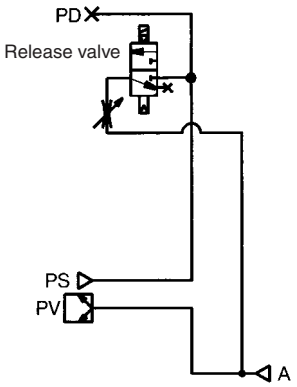
An N.C. solenoid valve is used as the vacuum release valve. A supply valve is not used.

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

How to Operate

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

Combination Symbol: D2



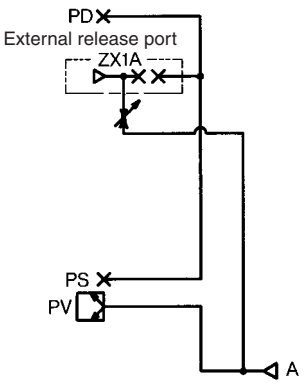
An N.C. solenoid valve is used as the vacuum release valve. A supply valve is not used.

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

How to Operate

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

Combination Symbol: D3



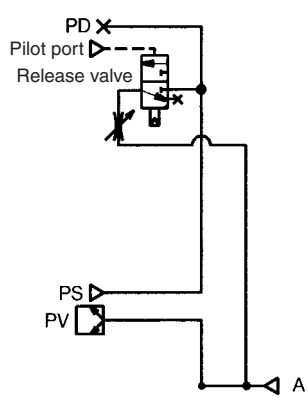
An external 2 port valve (vacuum valve) must be provided to serve as the supply valve and the vacuum release valve.

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

How to Operate

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

Combination Symbol: D4



An external 2 port valve (vacuum valve) must be provided to serve as the supply valve. An air operated N.C. valve is used for the vacuum release valve.

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

How to Operate

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

Made to Order Specifications:

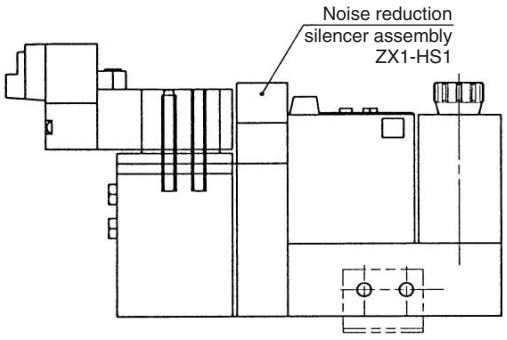
Please consult SMC for detailed specifications, size and delivery.

1. Noise Reduction Silencer Assembly/The ejector exhaust style is applicable to the silencer equipped specifications.

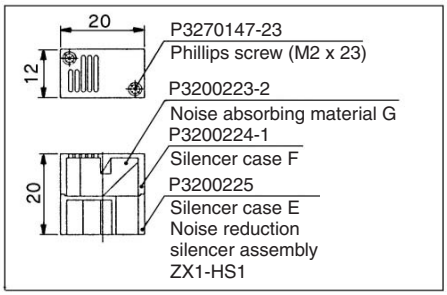
ZX1	Nozzle diameter	Exhaust style	—	Valve	Voltage	Electrical entry	–X121

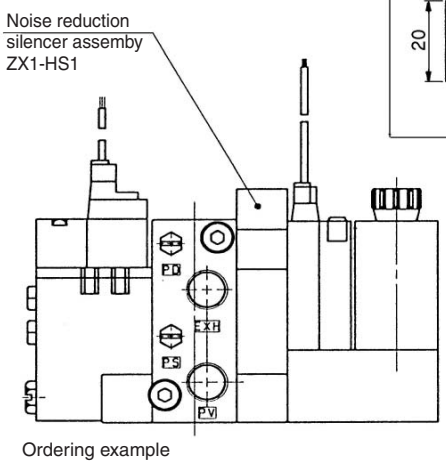
Noise reduction silencer assembly

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



Ordering example
ZX1101-K35LZ-D23C-X121





Ordering example

* ZZX102-R		1 pc.
ZX1101-K35LZ-EC-X121		2 pcs.