Large Size Vacuum Module: Vacuum Pump System

ZR Series

[Option]
Note) CE/UKCA-compliant: For DC only.

How to Order

Note for model selection

Take function plates into consideration. (Refer to page 667.)

Components

Valve unit – Pressure switch for vacuum – Suction filter

ZR100 – K1 5 M Z – D

Combination of supply switch valve and release valve Refer to "Table (1)" / Solenoid valve rated voltage / Electrical entry / Light/Surge voltage suppressor / Manual override / Combination of switch/filter / Output specifications / Unit specifications / Lead wire specifications / Option

CE/UKCA-compliant

Nil	—
Q	CE/UKCA-compliant (DC only)

Combination of vacuum valve and release valve

Refer to "Table (1)" in page 665 for details.

Solenoid valve rated voltage

		CE/UKCA-compliant
Nil Note)	Air operated	—
5	24 VDC	●
6	12 VDC	●
V	6 VDC	●
S	5 VDC	●
R	3 VDC	●
D1 Note)	100 VAC (50/60Hz)	—
D2 Note)	110 VAC (50/60Hz)	—

Note) Air operated, 100 VAC, and 110 VAC type are not CE/UKCA-compliant.

Option/Shipped separately

	Release flow adjusting needle with lock nut	Bracket (Included)
Nil	None	●
L	●	●
M	●	None
N	None	None

Shipped with the manifold assembly

	Release flow adjusting needle with lock nut
Nil	None
L	●

Note) Brackets are not shipped together with the manifold assembly.

Electrical entry

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

• Refer to "Table (2)" on page 665 for part no. of lead wire with connector.

Lead wire specifications

Digital pressure switch for vacuum (ZSE30A) specifications (D)

Nil	Without lead wire
L	Lead wire with connector (Length 2 m)

Refer to "Table (4)" on page 665 for part no. of lead wire with connector.

Pressure switch for vacuum (ZSE2) specifications (E)

Nil	Grommet/Lead wire (Length 0.6 m)
L	Grommet/Lead wire (Length 3 m)
C	Lead wire with connector (Length 0.6 m)
CL	Lead wire with connector (Length 3 m)
CN	With connector/Without lead wire

Refer to "Table (3)" on page 665 for part no. of lead wire with connector.

Filter specifications (F)

Nil	No setting

Light/Surge voltage suppressor

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

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

Manual override

Nil	Non-locking push type
B	Slotted locking type

Combination of switch/filter

D	Digital pressure switch for vacuum (ZSE30A) + Filter
E	Pressure switch for vacuum (ZSE2) + Filter
F	Filter

Unit specifications

Digital pressure switch for vacuum (ZSE30A) specifications (D)

Nil	With unit switching function
M	SI unit only
P	With unit switching function (Initial value psi)

Note 1) This is no longer sold for use in Japan due to the Weight and Measure Act (implemented October, 1999).
Note 2) Fixed unit: kPa

Pressure switch for vacuum (ZSE2) specifications (E)

Nil	No setting

Filter specifications (F)

Nil	No setting

Output specifications

Digital pressure switch for vacuum (ZSE30A) specifications (D)

N	NPN open collector 1 output
P	PNP open collector 1 output
A	NPN open collector 2 outputs
B	PNP open collector 2 outputs
C	NPN open collector 1 output + Analog voltage output
D	NPN open collector 1 output + Analog current output
E	PNP open collector 1 output + Analog voltage output
F	PNP open collector 1 output + Analog current output

Pressure switch for vacuum (ZSE2) specifications (E)

Nil	NPN open collector 1 output
55	PNP open collector 1 output

Filter specifications (F)

Nil	No setting

Table (1) Valve Unit/Combination of Vacuum Switch Valve and Release Valve

Valve unit function			Valve unit components	
Operation stop	Vacuum adsorption	Vacuum release	Supply valve	Release valve
◎	◎	○	Double SOL. (SYJ3233-X126)	N.C. (SYJ3133)
○	○	○	N.C. (SYJ3133)	N.C. (SYJ3133)
○	○	○	Air operated (SYJA3130)	Air operated (SYJA3130)
×	○	○	N.C. (SYJ3133)	
×	○	○	Air operated (SYJA3130)	
×	○	○	N.O. (SYJ3133)	
◎: Possible ○: Possible with limitations (without self-holding function) ×: Not possible			—	

Symbol	Supply valve			Release valve	
	Solenoid valve		Air operated	Solenoid valve	Air operated
	Double SOL. (SYJ3233-X126)	N.C (SYJ3133)	(SYJA3130)	N.C (SYJ3133)	(SYJA3130)
K1	●	—	—	●	—
K2	—	●	—	●	—
K3	—	—	●	—	●
C1	—	●	—	(Common with supply valve)	—
C2	—	—	●	—	(Common with supply valve)
C3	—	●	—	(Common with supply valve)	—

Table (2) How to Order Valve Plug Connector Assembly

DC **SY100− 30 − 4A −** □

For 100 VAC: **SY100− 30 − 1A −** □

For 110 VAC: **SY100− 30 − 3A −** □

Lead wire length

Nil	300 mm (Standard)
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

How to order

When requiring a vacuum unit equipped with valves with lead wires of 600 mm or more, specify the vacuum module valves without the standard connectors and order the required connector ass'ys separately.

Example) ZR100-K15MOZ-EC (-Q) ····· 1 pc.
＊ SY100-30-4A-6 ····· 3 pcs.

Table (3) Pressure Switch for Vacuum/ Lead Wire with Connector

ZS − 10 − 5A − □

Lead wire length

Nil	0.6 m
30	3 m
50	5 m

How to order

When requiring a vacuum switch with a lead wire of 5 m, indicate the part numbers of the vacuum unit switch without a lead wire with connector and the 5 m lead wire connector separately.

Example) ZR100-□□□□□-□CN (-Q) ····· 1 pc.
＊ ZS-10-5A-50 ····· 1 pc.

Table (4) Digital Pressure Switch for Vacuum/ Lead Wire with Connector

ZS − 38 − 3 L

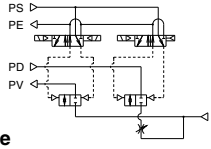
Lead wire core

3	3 cores, 1 output, 2 m (Output specifications: N, P)
4	4 cores, 2 outputs, 2 m (Output specifications: A, B, C, D, E, F)

Vacuum Pump System/Combination of supply valve and release valve

Combination Symbol : K1

Feature : Double solenoid vacuum valve allows for self-holding.

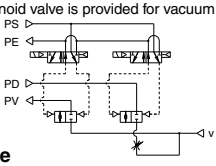


How to Operate

Operation \ Pilot valve operation	Supply valve		Release valve	Note
	Pilot valve for supply	Pilot valve for supply stop	Pilot valve for release	
1. Adsorption	ON	OFF	OFF	When power supply is cut off while the supply valve is ON, the operational state is held.
2. Vacuum release	OFF	ON	ON	
3. Operation stop	OFF	ON	OFF	

Combination Symbol : K2

Feature: Single solenoid valve is provided for vacuum valve.

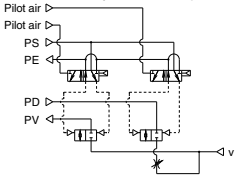


How to Operate

Operation \ Pilot valve operation	Supply valve	Release valve	Note
	Pilot valve for supply	Pilot valve for release	
1. Adsorption	ON	OFF	When power supply is stopped, all operations will be stopped.
2. Vacuum release	OFF	ON	
3. Operation stop	OFF	OFF	

Combination Symbol : K3

Feature: Operation can be controlled by an external pilot valve.

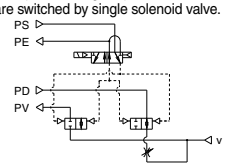


How to Operate

Operation \ Pilot valve operation	Supply valve	Release valve	Note
	Air operated a	Air operated b	
1. Adsorption	ON	OFF	The product is used under the environment in which solenoid valves cannot be used or when the centralized control is applied using external pilot air.
2. Vacuum release	OFF	ON	
3. Operation stop	OFF	OFF	

Combination Symbol : C1

Feature: Adsorption of workpieces (when energized) and release of vacuum (when de-energized) are switched by single solenoid valve.

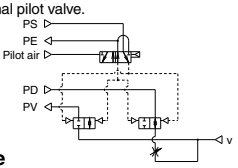


How to Operate

Operation \ Pilot valve operation	Supply valve/Release valve	Note
	Pilot valve for supply/release	
1. Adsorption	ON	Be careful for blowing off of workpieces or displacement of adsorption position in case of small and/or lightweight workpieces.
2. Vacuum release	OFF	

Combination Symbol : C2

Feature: Adsorption of workpieces and release of vacuum are switched by an external pilot valve.

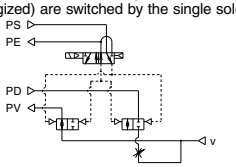


How to Operate

Operation \ Pilot valve operation	Supply valve/Release valve	Note
	Air operated a	
1. Adsorption	ON	Be careful for blowing off of workpieces or displacement of adsorption position in case of small and/or lightweight workpieces.
2. Vacuum release	OFF	

Combination Symbol : C3

Feature: Adsorption of workpieces (when de-energized) and release of vacuum (when energized) are switched by the single solenoid valve.



How to Operate

Operation \ Pilot valve operation	Supply valve/Release valve	Note
	Pilot valve for supply/release	
1. Adsorption	OFF	Be careful for blowing off of workpieces or displacement of adsorption position in case of small and/or lightweight workpieces.
2. Vacuum release	ON	

⚠ Caution

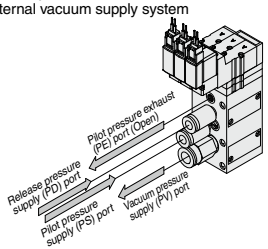
When pipe connection is made to two port connections (PV) port, (PD) port only, use a function plate (ZR1-RV3). Refer to page 667 for further information.

Function Plate : ZR1-RV3

A function plate is used when each connecting port for the valve unit is common. If a function plate is not used (standard), make individual pipe connections to PV, PS, and PD ports respectively.

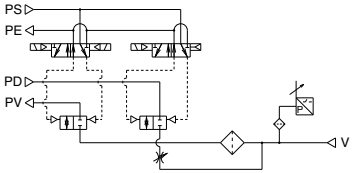
Without Function Plate (Standard)

Applicable system: Ejector system
External vacuum supply system



Pipe connection

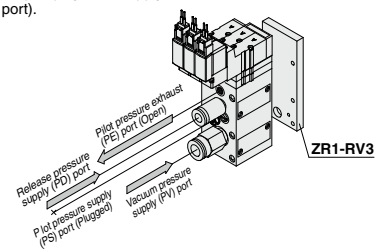
Example of circuit diagram



With Function Plate/Applicable to Vacuum Pump System Only

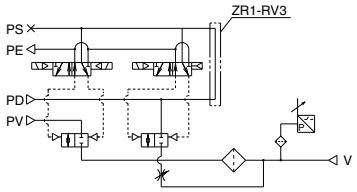
When ZR1-RV3 (PV/PS⇔PD) is Selected

Since compressed air is necessary to operate pilot valve in vacuum pump system, supply air to PD port (or PS port).



Pipe connection

Example of circuit diagram



How to Order Function Plate Unit (For Pump System)

ZR1 − RV 3

Piping specifications

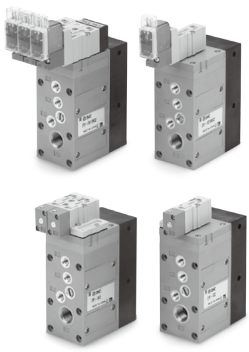
Symbol	Symbol	PV port	PS/PD port
3	PV/PS ←→ PD	Individual	Common

How to order
Indicate the model numbers of the vacuum module and the function plate.
Example) ZR100-K15MZ-E ····· 1
＊ZR1-RV3 ····· 1

⚠Caution

Length of assembling mounting threads varies when adding function plate later.
Order from the mounting thread parts list for unit combination on page 679.
Order a plug (ZX1-MP1) separately in order to plug the PD and PS ports that are no longer used due to the addition of function plate.

Valve Unit : ZR1-V□□□□□-□-□



Specifications

Valve unit part no.	ZR1-V□□□□□-□-□	
Components	Supply valve	Release valve
Operating method	Pilot operated	Pilot operated
Combination of supply valve and release valve	Refer to the combination of supply valve and release valve below.	
Supply pressure range of air pressure/vacuum pressure supply (PV) port	–0.1 to 0.6 MPa (PS port pressure or less)	
Supply pressure range of release pressure supply (PD) port	0.05 to 0.6 MPa (PS port pressure or less)	
Supply pressure range of pilot pressure supply (PS) port	0.25 to 0.6 MPa	
Supply pressure range of pilot pressure supply (PA, PB) ports for supply and release Note)	PS port pressure to 0.6 MPa	
Main valve effective area (mm^2)	8.2	0.96
Main valve effective area (Cv)	0.45	0.053
Maximum operating frequency	5 Hz	
Operating temperature range	5 to 50°C	
Standard	Bracket B (ZR1-OBB)	

Note) Combination of supply valve and release valve: K3, C2
The supply and release valves of this product have a structure which uses the pressure of the pilot pressure supply (PS) port to operate them. Be sure to supply a pressure that is the pressure of the pilot pressure supply (PS) port or more and 0.6 MPa or less to the pilot pressure supply (PA, PB) ports for supply and release.

Solenoid Valve/Specifications

Solenoid valve			SYJ3133-□□□□, SYJ3233-□□□□-X126
Rated voltage V	DC		24, 12, 6, 5, 3
	AC 50/60 Hz		100, 110
Allowable voltage range			Rated voltage ±10%
Power consumption W	DC		0.35 (With indicator light: 0.4)
Apparent power VA	AC	100 V	0.78 (With indicator light: 0.81)
		110 V	0.86 (With indicator light: 0.89)
Electrical entry			L/M plug connector, Grommet
Light/Surge voltage suppressor			Available, Not available (at grommet)
Manual operation			Non-locking push type, Locking slotted type

Combination of Supply Valve and Release Valve

Combination symbol	Vacuum switch valve	Release valve	Weight (kg)
K1	Double SOL. (SYJ3233-X126)	N.C. (SYJ3133)	0.34
K2	N.C. (SYJ3133)	N.C. (SYJ3133)	0.27
K3	Air operated (SYJA3130)	Air operated (SYJA3130)	0.194
C1	N.C. (SYJ3133)		0.22
C2	Air operated (SYJA3130)		0.174
C3	N.C. (SYJ3133)		0.21

∗ Weight includes Bracket B. (Solenoid valve: 24 VDC, M plug connector type)

How to Order

Refer to page 664 for further part no. information.

ZR1 – V | K1 | 5 | M | Z | | – | L | – | |

- K1: Combination of vacuum valve and release valve
- 5: Solenoid valve rated voltage
- M: Electrical entry
- Z: With light/surge voltage suppressor
- (blank): Manual override
- L: Release flow rate adjusting needle/Bracket B
- (blank): CE/UKCA-compliant

Vacuum Pressure Switch Unit/Digital Pressure Switch for Vacuum : ZR1-ZSE30A-00-□-□□

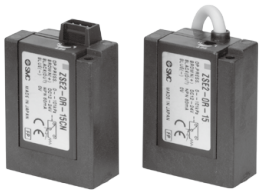
Specifications

Rated pressure range	0.0 to –101.0 kPa
Set pressure range	10.0 to –105.0 kPa
Withstand pressure	500 kPa
Applicable fluid	Air
Power supply voltage	12 to 24 VDC ±10% (with power supply polarity protection)
Current consumption	40 mA (at no load)
Switch output	NPN or PNP open collector 1 output NPN or PNP open collector 2 outputs (selectable)
Hysteresis: Hysteresis mode / Window comparator mode	Variable (0 to variable)
Display	4-digit, 7-segment, 2-color LCD (Red/Green) Sampling cycle: 5 times/sec.
Display accuracy	±2% F.S. ±1 digit (Ambient temperature of 25°C)
Environment resistance: Enclosure	IP40
Environment resistance: Operating temperature range	Operating: 0 to 50°C, Stored: –10 to 60°C (No freezing or condensation)
Environment resistance: Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation)
Environment resistance: Withstand voltage	1000 VAC for 1 minute between terminals and housing
Temperature characteristics	±2% F.S. (Based on 25°C)

Note 1) When analog voltage output is selected, analog current output cannot be used together.
Note 2) When analog current output is selected, analog voltage output cannot be used together.
Note 3) 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.

Refer to page 648 for further specifications.

Vacuum Pressure Switch : ZSE2-0R-□□



Specifications

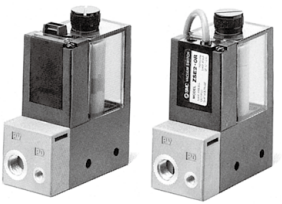
Pressure switch for vacuum part no.	ZSE2-0R-15□	ZSE2-0R-55□
Fluid	Air	
Rated pressure range/Set pressure range	0 to -101 kPa	
Proof pressure	500 kPa	
Hysteresis	3% F.S. or less (Fixed)	
Temperature characteristics (Based on 25°C)	± 3% F.S. or less	
Operating voltage	12 to 24 VDC (Ripple ±10% or less)	
Output	NPN Open collector 30 V, 80 mA	PNP Open collector 80 mA
Indicator light	Lights up when ON	
Current consumption	17 mA or less (when 24 VDC is ON)	
Proof pressure (Max. operating pressure)	0.5 MPa*	
Operating temperature range	5 to 50°C	

* When using the ejector system, instantaneous pressure up to 0.5 MPa will not damage the switch.

Note) Operation outside of the maximum operating pressure and operatingtemperature range may cause a serious accident or damage.

Refer to page 645 for further specifications.

Pressure Switch for Vacuum/Suction Filter Unit : ZR1-F□□□□-□



Specifications

Unit no.		ZR1-F□□□□-□
Suction filter	Rated pressure range/Set pressure range	-100 to 0.5 MPa
	Operating temperature range	5 to 50°C
	Filtration degree	30 μm
Filtration material		PVA sponge
Pressure switch for vacuum		Refer to pages 645 and 648 regarding pressure switch for vacuum.

Note) Operation outside of the operating pressure and operating temperature rangemay cause a serious accident or damage.

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, watersoluble cutting oil (alkalinic), etc.

② Do not expose it to direct sunlight.

Refer to page 649 for further specifications.

Suction Filter : ZR1-FX-□

Specifications

Model	ZR1-FX-□
Operating pressure range	-0.1 to 0.5 MPa
Operating temperature range	5 to 50°C
Filtration efficiency	30 μm
Filter media	PVA sponge
Weight (with bracket)	0.1 kg

Note) Operation outside of the operating pressure and operating temperature rangemay cause a serious accident or damage.

Filter case

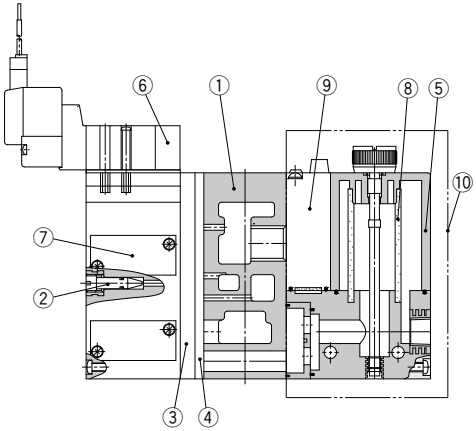
⚠ Caution

① The case is made of polycarbonate. Therefore, do not contact it 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.

Refer to page 651 for further specifications.

Construction



Components Parts

No.	Description	Material	Part model
①	**Manifold base**	Aluminum alloy	
②	**Release flow rate adjusting needle**	Stainless steel	Refer to ZR1-NA[Note 2)]
③	**Function plate**	PBT	Refer to page 674.
④	**Individual spacer**	PBT	Refer to page 674.
⑤[(1)]	**Filter case**	Polycarbonate	Refer to page 649.
⑥	**Pilot valve assembly**	—	Refer to Table (1)
⑦	**Valve body assembly**	—	Refer to Table (2)
⑧	**Filter element**	PVA sponge	ZR1-FZ (30 μm)
⑨	**Pressure switch for vacuum**	—	ZSE2-OR-$^{15}_{55}$-□
⑩	**Filter switch unit for replacement**	—	ZR1-F□□□□-D

Note 1) Precautions on handling the filter case
1. The case is made of polycarbonate. Therefore, do not contact it 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.

Note 2) Turning the release flow rate adjusting needle 2 full turns from the fully closed position renders the needle valve fully open. Do not turn more than two times since turning excessively may cause the needle fall off. In order to prevent the needle from loosening and falling out, a release flow rate adjusting needle (ZR1-ND-L) with lock nut is available.

Table (1) How to Order Pilot Valves

Symbol	Components		Model
	Supply valve	Release valve	
K1	Double solenoid valve N.C. (SYJ3233)	Single solenoid valve N.C. (SYJ3133)	Refer to "How to Order" below. Supply:ZR1-SYJ3233-□□□□-X126 Release:ZR1-SYJ3133-□□□□
K3	Air operated N.C. (SYJA3130)	Air operated N.C. (SYJA3130)	SYJA3130

Table (2) How to Order Valve Body Assembly

ZR1−VD **K1** □ **5** **M** **Z** □ − **L** − □

- Combination of supply valve and release valve: K1
- Pilot valve: 5
- Solenoid valve rated voltage: M
- Electrical entry: Z
- With light/surge voltage suppressor: □
- Manual override: L
- Release flow rate adjusting needle: □
- CE/UKCA-compliant: □

Nil	Without lock nut
L	With lock nut

Refer to page 664 for further symbol specifications.
Bracket is not included.

Table (3) Pressure Switch for Vacuum + Suction Filter Unit

ZR1− F □ □ □ □ − D

- Option (Connector/lead wire specifications): D
- Unit specifications: □
- Output specifications: □
- Combination of switch/filter: □

Refer to page 649 for further symbol specifications.
Bracket is not included.

How to Order Solenoid Valves/Air Operated Valves

Air operated

SYJA3130

Solenoid valve

ZR1−SYJ3233− □ □ □ □ −X126− □

SYJ3133− □ □ □ □ − □

rated voltage

5	24 VDC
6	12 VDC
V	6 VDC
S	5 VDC
R	3 VDC
1	100 VAC (50/60Hz)
3	110 VAC (50/60Hz)

Electrical entry

L	L plug connector type	Lead wire: 0.3 m
LN		Without lead wires
LO		Without connector
M	M plug connector type	Lead wire: 0.3 m
MN		Without lead wires
MO		Without connector
G	Grommet type	Lead wire: 0.3 m
H		Lead wire: 0.6 m

Light/Surge voltage suppressor

Nil	None
Z	With light and surge voltage suppressor
S	With surge voltage suppressor (DC only)

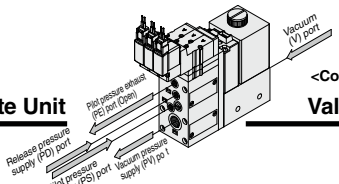
CE/UKCA-compliant

Nil	Standard
Q	CE/UKCA-compliant (DC only)

Manual override

Nil	Non-locking push type
D	Slotted locking type

Note) Mounting screw and pilot valve gasket are included.



<Components>

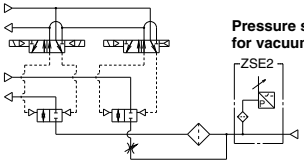
Complete Unit

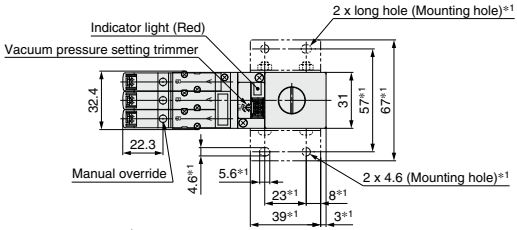
Valve + Pressure Switch for Vacuum + Filter Unit

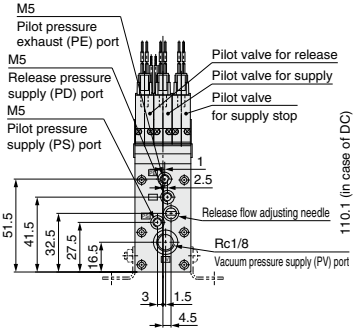
Type K1
Vacuum valve: Double SOL.
Release valve: Single SOL. (N.C.)

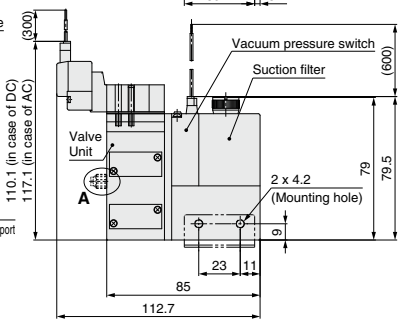
ZR100-K1□M□□-E□□-□-□

Circuit diagram

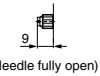


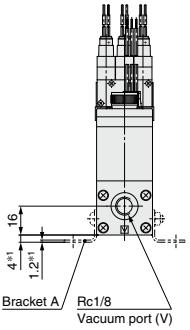






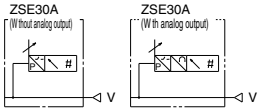
A: Release flow adjusting needle with lock nut

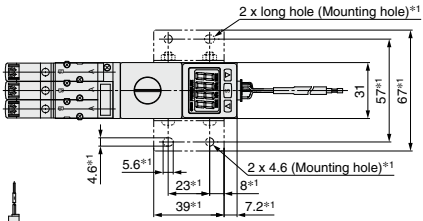




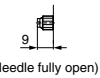
ZR100-K1□M□□-D□□□-□-□

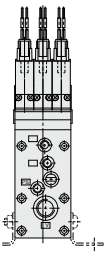
Digital pressure switch for vacuum (D)

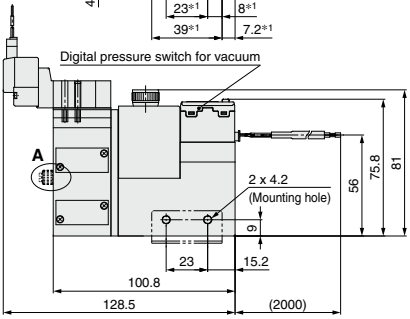


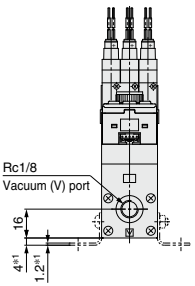


A: Release flow adjusting needle with lock nut

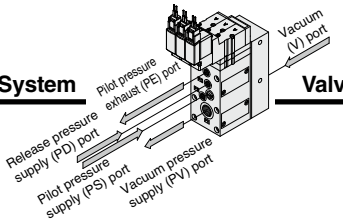








Note) Dimensions marked with "*1" are those after the bracket A is mounted.
Bracket A part no.: ZR1-OBA



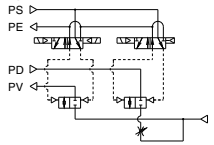
Vacuum Pump System

Valve Unit

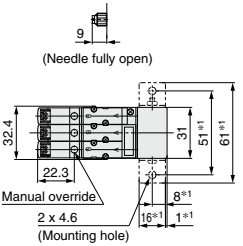
Type K1

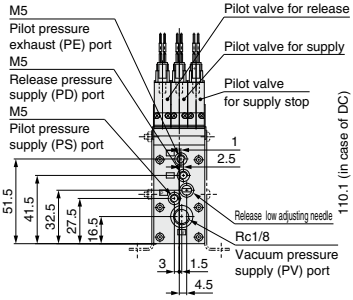
ZR1-VK1□M□□-□-□

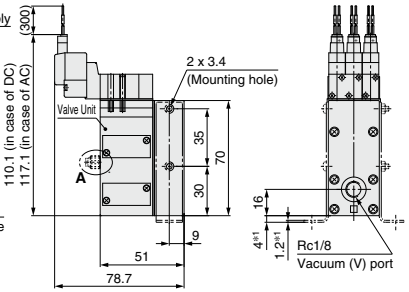
Circuit diagram



A: Release flow adjusting needle with lock nut



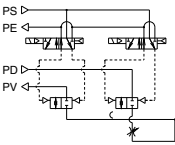


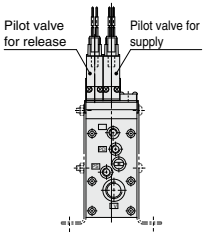


Type K2

ZR1-VK2□M□□-□-□

Circuit diagram



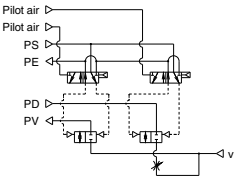


Note) Dimensions marked with "*1" are those after the bracket B is mounted.
Bracket B part no.: ZR1-OBB

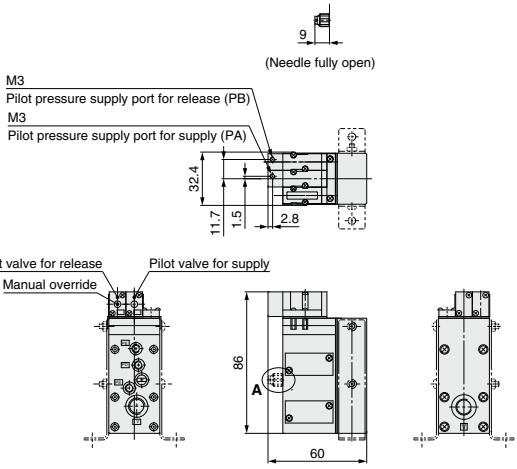
Type K3

ZR1-VK3-□

Circuit diagram

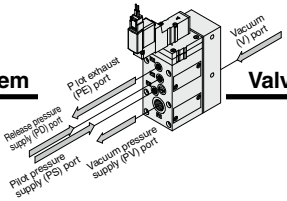


A: Release flow adjusting needle with lock nut



★ Dimensions not indicated are identical to type K2.

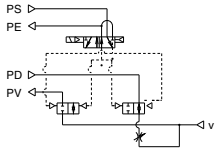
Vacuum Pump System



Valve Unit

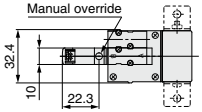
Type C1
ZR1-VC1□M□□-□-□

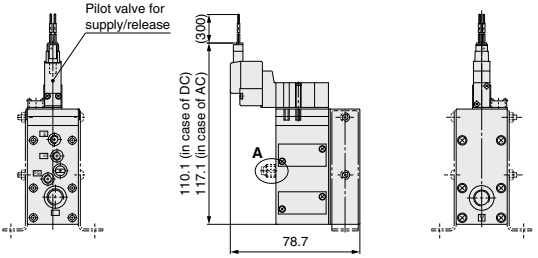
Circuit diagram



A: Release flow adjusting needle with lock nut

(Needle fully open)

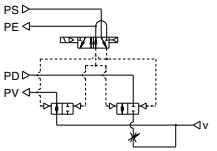


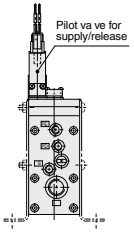


Note) Dimensions marked with "∗1" are those after the bracket B is mounted.
Bracket B part no.: ZR1-OBB

Type C3
ZR1-VC3□M□□-□-□

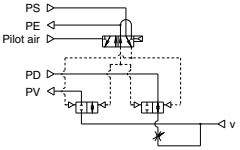
Circuit diagram





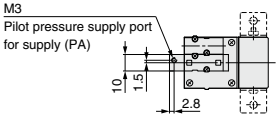
Type C2
ZR1-VC2-□

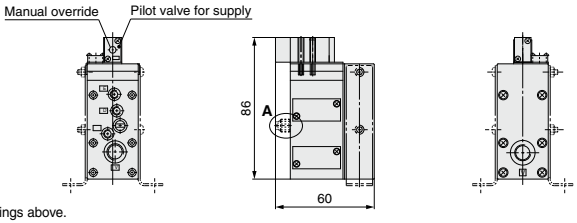
Circuit diagram



A: Release flow adjusting needle with lock nut

(Needle fully open)





★ Dimensions not indicated are identical to the drawings above.

Manifold Specifications/Vacuum Pump System

Specifications

Max. number of units	6 stations
Port	**Port size**
Common vacuum pressure supply (PV) port	1/8 (Rc, NPTF, G)
Common pilot pressure supply (PS) port	M5
Common release pressure supply (PD) port	M5
Common exhaust (EXH) port	1/2 (Rc, NPTF, G)
Weight (Manifold bases only)	Basic mass for one station is 0.28kg. Additional mass per one station is 0.12 kg.

Note) When using 3 or more stations with ZR100 manifold, utilize PV port as suction on both sides.

Manifold Vacuum/Air Supply

Supply port location \ Manifold Port	Left			Right		
	PV	PS	PD	PV	PS	PD
L (Left side)	◎	○	○	●	●	●
R (Right side)	●	●	●	◎	○	○
B (Both sides)	◎	○	○	◎	○	○

Vacuum supply to ◎ PV port.
Air supply to ○ port.
BLANK plug attached to ● port.
Note) BLANK plug is attached on all ports of valve unit.

Individual Spacer

Part no.	Port	Function
ZR1-R1 to R16	PV	Possible to set the external vacuum pressure individually
	PS	Possible to set the pilot valve air supply pressure individually
	PD	Possible to set the release valve supply pressure individually
	PE	Possible to set the pilot valve exhaust individually

Individual spacer is used when the connecting port of each unit is not common for the manifold connecting port. Mixed specifications of common and individual unit connecting ports for each unit is possible on manifolds with this individual spacer.

How to Order Manifold

<Manifold base>

ZZR1 [06] – [ ] [ ]

Stations

01	1
⋮	⋮
06	6

Port location

R	Right side
L	Left side
B	Both sides

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

Thread type

Nil	Rc
F	G Note)
T	NPTF

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

Example 1)
ZZR106-R ····· 1 pc. (Manifold base only)
∗ZR100-K15MZ-EC ····· 5 pcs. (Unit)
∗ZR1-BM1 ····· 1 pc. (Blank plate)
∗ZR1-R1-3 ····· 1 pc. (Individual spacer)
● With reference from valve side, the third station from right side

<Function plate>

ZR1 – RV3 – [1]

Arrangement
(Right valve station which is looked from valve side is first station.)

1	1 station only
⋮	⋮
6	6 stations only
A	All stations

∗ When the spacers are attached to the specified locations, specify all spacers.

Example 2) Attached to the first and third stations
∗ZR1-RV3-1
∗ZR1-RV3-3

Example 3) Attached to all stations.
∗ZR1-RV3-A···2
↑
Fill the number

<Individual spacer>

ZR1 – R1 – [1]
⋮
R16

Refer to
(About individual spacer.)

Arrangement
(Right valve station which is looked from valve side is first station.)

1	1 station only
⋮	⋮
6	6 stations only
A	All stations

∗ When the spacers are attached to the specified locations, specify all spacers.
∗ When shipping only spacers, specify nothing.

Example 4) Attached to the first and third stations
∗ZR1-R1-1
∗ZR1-R1-3

<Blanking plate>

ZR1 – BM1

Refer to Example 1).

⚠ Caution when ordering manifold

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

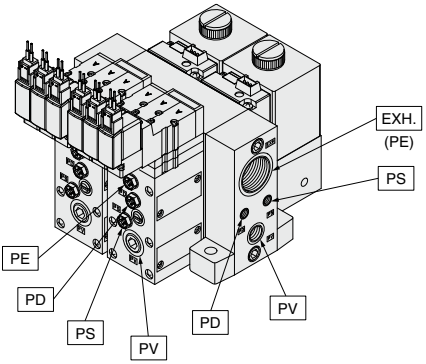
About individual spacers

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

Part no.	Symbol	Part no.	Symbol
ZR1-R1	R1	**ZR1-R9**	R9 ↕PV
-R2	R2 ↕PE	**-R10**	R10 ↕PV ↕PE
-R3	R3 ↕PD	**-R11**	R11 ↕PV ↕PD
-R4	R4 ↕PD ↕PE	**-R12**	R12 ↕PV ↕PD ↕PE
-R5	R5 ↕PS	**-R13**	R13 ↕PV ↕PS
-R6	R6 ↕PS ↕PE	**-R14**	R14 ↕PV ↕PS ↕PE
-R7	R7 ↕PS ↕PD	**-R15**	R15 ↕PV ↕PS ↕PD
-R8	R8 ↕PS ↕PD ↕PE	**-R16**	R16 ↕PV ↕PS ↕PD ↕PE

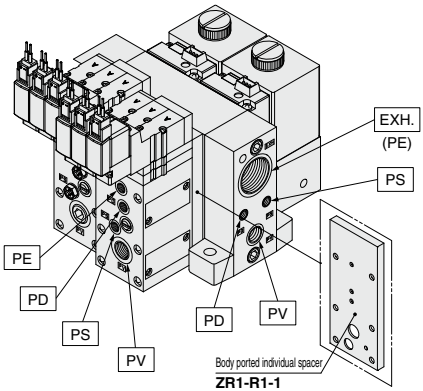
Manifold/System Circuit Example

When not using individual spacer



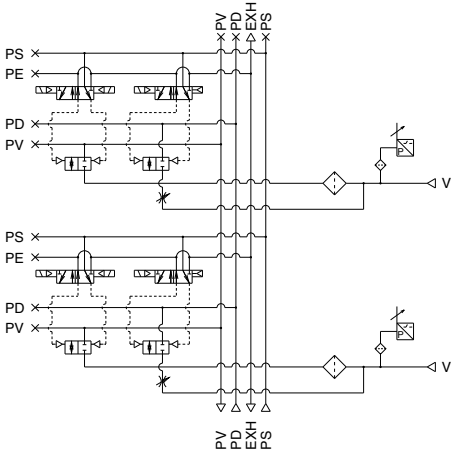
PV: Vacuum pressure supply port
PS: Pilot pressure supply port
PD: Release pressure supply port
PE: Pilot pressure exhaust port
EXH.: Common exhaust port
V: Vacuum Port

When using individual spacer

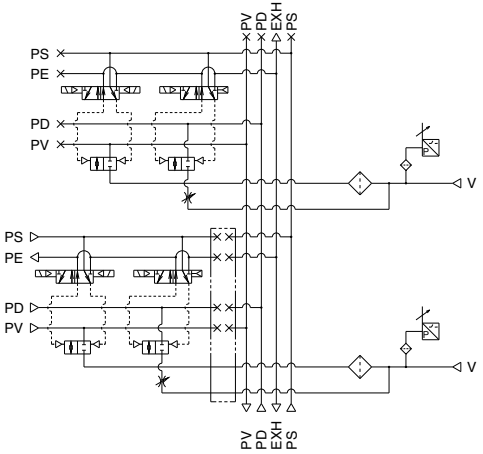


PV: Vacuum pressure supply port
PS: Pilot pressure supply port
PD: Release pressure supply port
PE: Pilot pressure exhaust port
EXH.: Common exhaust port
V: Vacuum Port

<System circuit example>

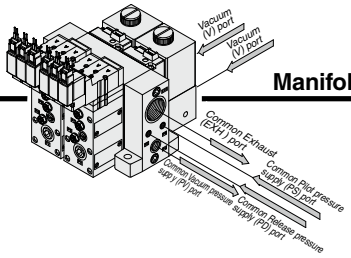


<System circuit example>

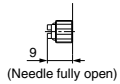


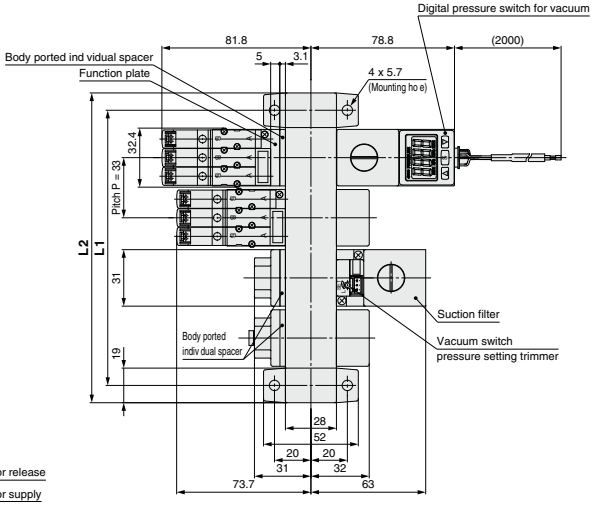
∗ The pilot exhaust air from the pilot valve is exhausted from the common exhaust (EXH.) port. Use with the port open to the atmosphere.

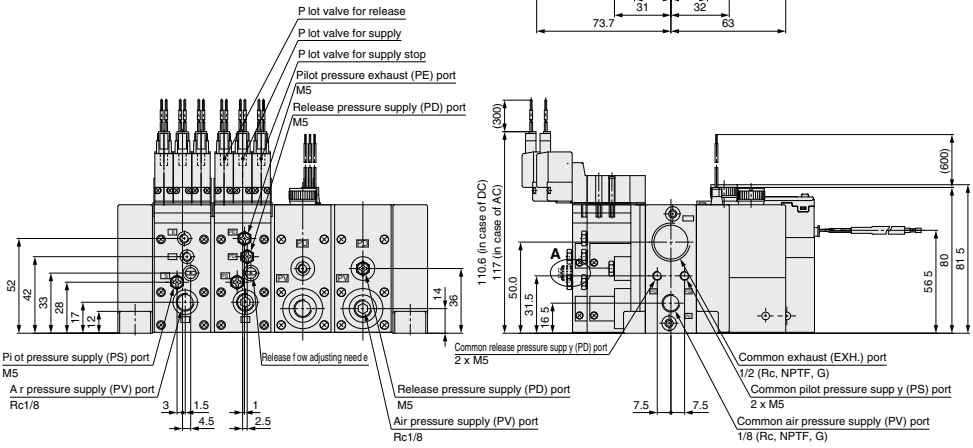
Vacuum Pump System — Manifold



A: Release flow adjusting needle with lock nut





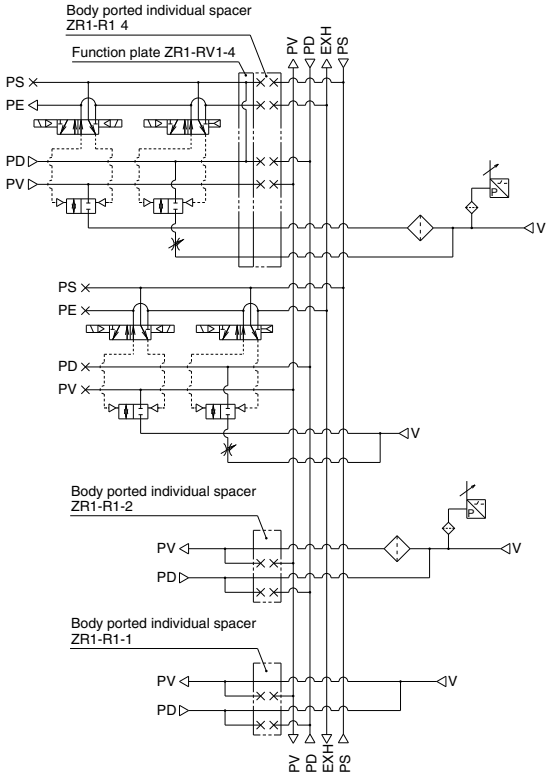


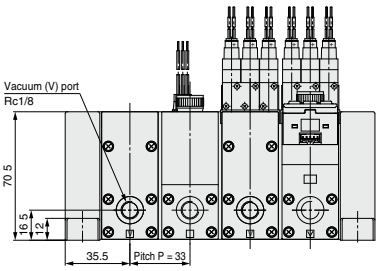
∗ The pilot exhaust air from the pilot valve is exhausted from the common exhaust (EXH.) port. Use with the port open to the atmosphere.

(mm)

Symbol \ Stations	1	2	3	4	5	6
L1	52	85	118	151	184	217
L2	71	104	137	170	203	236

Circuit diagram



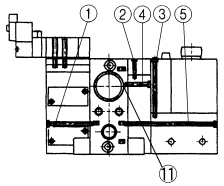


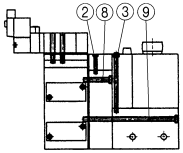
PV : Vacuum pressure supply port
PS : Common pilot pressure supply port
PD : Common release pressure supply port
PE : Pilot valve exhaust port
EXH : Common exhaust port
V : Vacuum Port

Ejector System

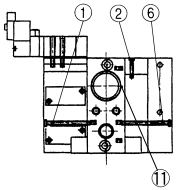
Mounting Thread Parts List for Unit Combination

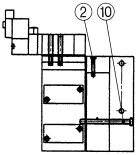
Manifold Specifications	Without Manifold
Components	Valve unit + Ejector unit + Pressure switch for vacuum/Filter unit



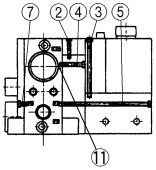


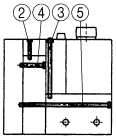
Components	Valve unit + Ejector unit



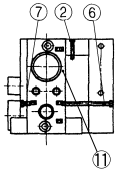


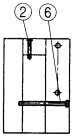
Components	Ejector unit + Pressure switch for vacuum/Filter unit

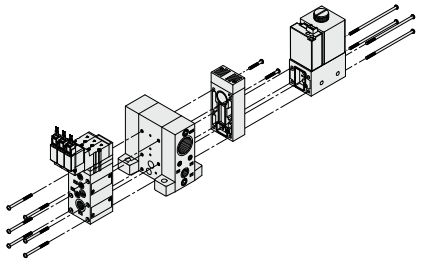




Components	Ejector unit







Mounting Thread Parts List for Unit Combination

No.	Combination specifications	Assembly part numer
1	**Standard (without options)**	ZR1-SR2-33-A(a set of six threads)
	With individual spacer	ZR1-SR2-37-A(a set of six threads)
	With function plate	ZR1-SR2-39-A(a set of six threads)
	With individual spacer + with function plate	ZR1-SR2-41-A(a set of six threads)
2	**Individual, common and port exhaust type for nozzle size 10, 13**	ZR1-SR1-13-A(a set of two threads)
	Common and port exhaust type for nozzle size 15	
	Individual exhaust type for nozzle size 15	ZR1-SR1-23-A(a set of two threads)
	Common and port exhaust type for nozzle size 18, 20	ZR1-SR1-48-A(a set of two threads)
	Individual exhaust type for nozzle size 18, 20	ZR1-SR1-53-A(a set of two threads)
3	**For vacuum switch and adapter A**	ZR1-SR2-41-1A(a set of two threads)
4	**For nozzle size 10, 13, 15**	ZR1-SR2-17-A(a set of two threads)
	For nozzle size 18, 20	ZR1-SR2-21-A(a set of two threads)
5	**For nozzle size 10, 13, 15**	ZR1-SR2-66-A(a set of four threads)
	For nozzle size 18, 20	ZR1-SR2-70-A(a set of four threads)
	For nozzle size 10, 13, 15 [For ZSE30A spec.]	ZR1-SR2-82-A(a set of four threads)
	For nozzle size 18, 20 [For ZSE30A spec.]	ZR1-SR2-86-A(a set of four threads)
6	**For nozzle size 10, 13, 15**	ZR1-SR2-35-A(a set of six threads)
	For nozzle size 18, 20	ZR1-SR2-39-A(a set of six threads)
7	**Standard (without options)**	ZR1-SR2-5-A(a set of six threads)
	With individual spacer	ZR1-SR2-8-A(a set of six threads)
8	**For nozzle size 10, 13, 15**	ZR1-SR3-19-1A(a set of two threads)
	For nozzle size 18, 20	ZR1-SR3-23-A(a set of two threads)
	For nozzle size 10, 13, 15 + with function plate	ZR1-SR3-24-1A(a set of two threads)
	For nozzle size 18, 20 + with function plate	ZR1-SR3-28-A(a set of two threads)
9	**For nozzle size 10, 13, 15**	ZR1-SR3-68-A(a set of four threads)
	For nozzle size 18, 20	ZR1-SR3-72-A(a set of four threads)
	For nozzle size 10, 13, 15 + with function plate	ZR1-SR3-73-A(a set of four threads)
	For nozzle size 18, 20 + with function plate	ZR1-SR3-77-A(a set of four threads)
	For nozzle size 10, 13, 15 [For ZSE30A spec.]	ZR1-SR3-84-A(a set of four threads)
	For nozzle size 18, 20 [For ZSE30A spec.]	ZR1-SR3-88-A(a set of four threads)
	For nozzle size 10, 13, 15 + with function plate [For ZSE30A spec]	ZR1-SR3-89-A(a set of four threads)
	For nozzle size 18, 20 + with function plate [For ZSE30A spec]	ZR1-SR3-93-A(a set of four threads)
10	**For nozzle size 10, 13, 15**	ZR1-SR3-37-A(a set of six threads)
	For nozzle size 18, 20	ZR1-SR3-41-A(a set of six threads)
	For nozzle size 10, 13, 15 + with function plate	ZR1-SR3-42-A(a set of six threads)
	For nozzle size 18, 20 + with function plate	ZR1-SR3-46-A(a set of six threads)
No e 1) 11	**When the ejector is compatible with silencer exhaust or port exhaust**	BA00601(M12 x 12)
	When the ejector is compatible with common exhaust	Unnecessary

Note 1) • BA00601 (M12 x 12 screws/Hexagon socket head set screws) in until the head aligns with the manifold base surface.
• The manifold base not assembled with the unit does not include BA00601. Please order them separately.

Note 2) When the valve unit is assembled from a single unit function to a manifold function, 3 pcs. of ZX1-MP1 for PS, PD, PE ports and 1 pc. of TB00148 for PV port are required.

⚠ Precautions

Be sure to read this before handling the products. Refer to page 33 for safety instructions and pages 34 to 36 for vacuum equipment precautions.

⚠ Caution

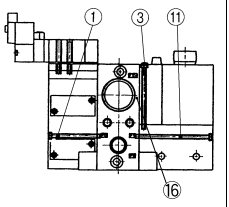
Refer to the Vacuum Equipment Model Selection on page 11 for precautions on matching with vacuum circuit.

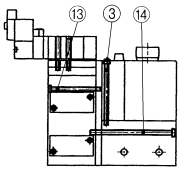
Vacuum Pump System

Mounting Thread Parts List for Unit Combination

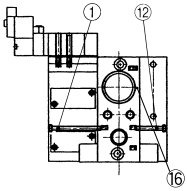
Manifold Specifications	Without Manifold

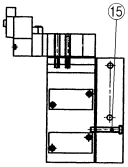
Components	Valve unit + Pressure switch for vacuum / Filter unit



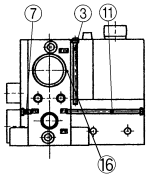


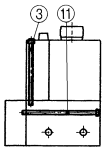
Components	Valve unit

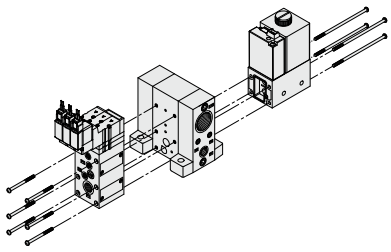




Components	Pressure switch for vacuum / Filter unit







Mounting Thread Parts List for Unit Combination

No.	Combination specifications	Assembly part numer
1	**Standard (Without options)**	ZR1-SR2-33-A(a set of six threads)
	With individual spacer	ZR1-SR2-37-A(a set of six threads)
	With function plate	ZR1-SR2-39-A(a set of six threads)
	With individual spacer + with function plate	ZR1-SR2-41-A(a set of six threads)
3	**For vacuum switch and adapter A**	ZR1-SR2-41-1A(a set of two threads)
7	**Standard (Without options)**	ZR1-SR2-5-A(a set of six threads)
	With individual spacer	ZR1-SR2-8-A(a set of six threads)
11	**Standard (Without options)**	ZR1-SR2-49-A(a set of four threads)
	Standard (Without options) [For ZSE30A spec.]	ZR1-SR2-66-A(a set of four threads)
12	**Standard (Without options)**	ZR1-SR2-18-A(a set of six threads)
13	**Standard (Without options)**	ZR1-SR2-33-1A(a set of two threads)
	With function plate	ZR1-SR2-39-1A(a set of two threads)
14	**Standard (Without options)**	ZR1-SR3-54-A(a set of four threads)
	With function plate	ZR1-SR3-59-A(a set of four threads)
	Standard (Without options) [For ZSE30A spec.]	ZR1-SR3-70-A(a set of four threads)
	With function plate [For ZSE30A spec.]	ZR1-SR3-75-A(a set of four threads)
15	**Standard (Without options)**	ZR1-SR3-19-A(a set of six threads)
	With function plate	ZR1-SR3-24-A(a set of six threads)
16 Note 1)	**Standard**	BA00601(M12 x 12)

Note 1) • BA00601 (M12 x 12 screws/Hexagon socket head set screws) in until the head aligns with the manifold base surface.
• The manifold base not assembled with the unit does not include BA00601. Please order them separately.

Note 2) When the valve unit is assembled from a single unit function to a manifold function, 3 pcs. of ZX1-MP1 for PS, PD, PE ports and 1 pc. of TB00148 for PV port are required.