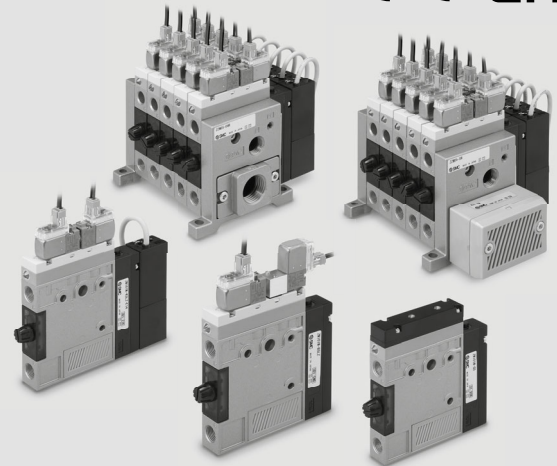


Vacuum Ejector

Series ZM



All in One!

- Built-in suction filter and silencer
- Air supply valve for generating a vacuum
- Vacuum release valve (equipped with a flow volume adjustment valve)
- Vacuum pressure switch (solid state, diaphragm)

Adaptable for a manifold application

All tubing, wiring, indicators, and adjustment functions have been eliminated from the side surfaces, thus enabling assembly and maintenance while linked to a manifold.

- EXH system -- Common
- SUP system -- Common, Individual

Maximum air suction volume increased by 40% Maximum vacuum pressure – 84 kPa

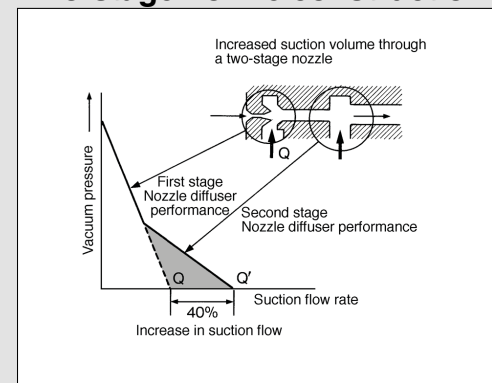
The suction volume has been increased by 40% through the adoption of a two-stage nozzle construction.

Compact and lightweight

15.5 mm width, 400 g (full system)

Air operated type

Two-stage nozzle construction

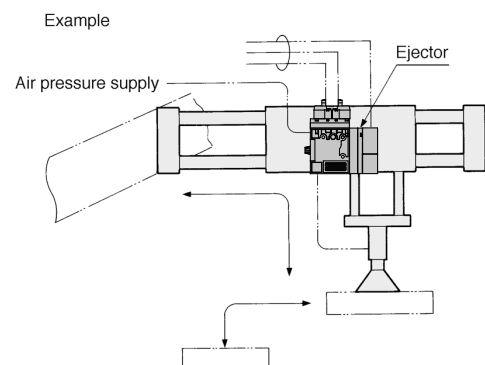


Series ZM Applications

Fields: Semiconductor and electrical, automobile assembly, food and medical equipment, and various types of manufacturing and assembly equipment

Machines: Robotic hand/material handling, automotive assembling machines, automatic transfer equipment, pick and place, printing machinery

Functions: Vacuum adsorption transfer, vacuum adsorption retention, vacuum generated air flow



Series ZM

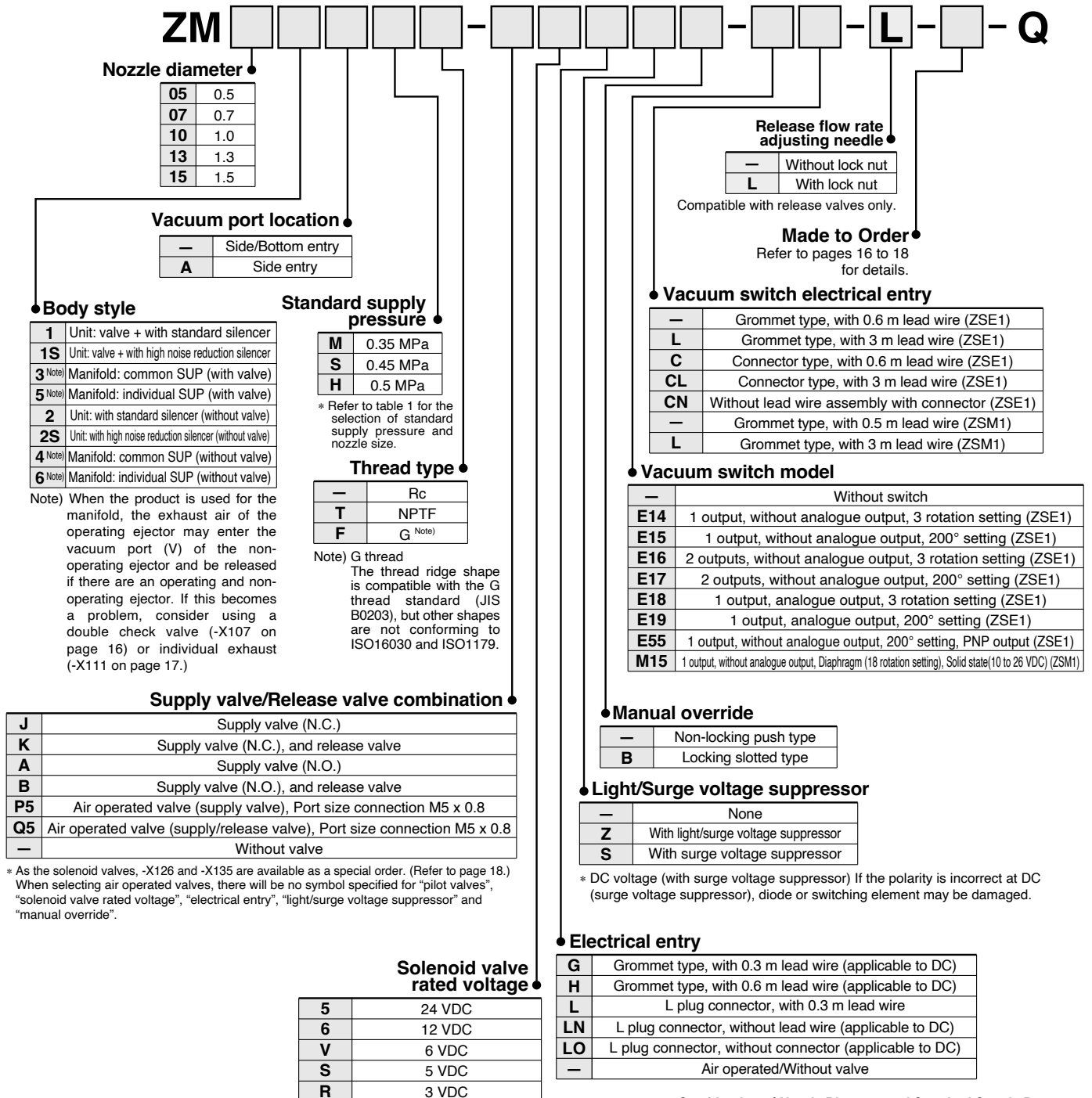


EMC-ZM-01A-UK

Vacuum Ejector With Valve and Switch Series ZM




How to Order




Combination of Nozzle Diameter and Standard Supply Pressure

Nozzle diameter	Standard supply pressure MPa		
	M (0.35)	S (0.45)	H (0.5)
0.5	-	-	○
0.7	○	-	○
1.0	○	-	○
1.3	○	○	○
1.5	-	○	-

Table (1) How to Order Connector for Solid State Switch

- Without lead wire (A connector and 4 sockets) **ZS-20-A**
- With lead wire **ZS-20-5A-** 

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

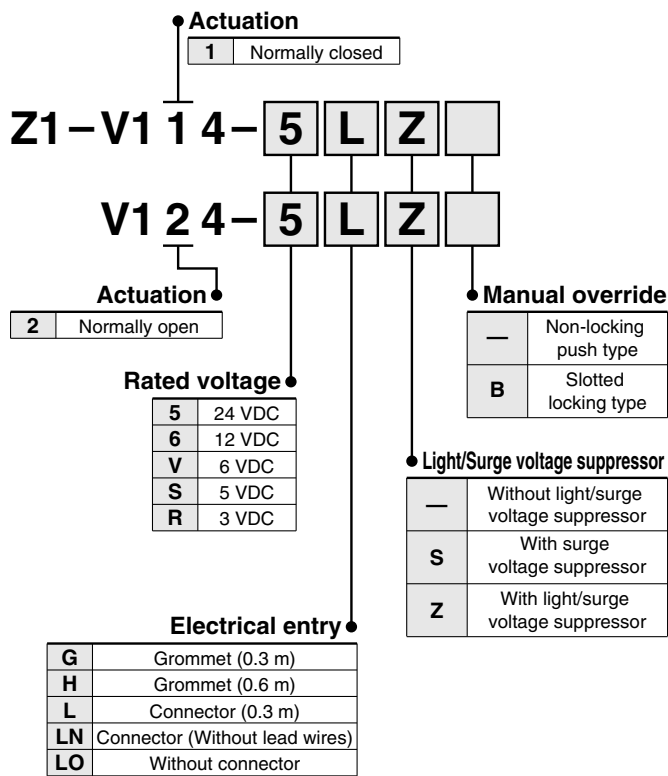
Ex.) ZM -E15CN 1 pc.
* ZS-20-5A-50 1 pc.


Lead wire length ●

—	0.6 m
30	3 m
50	5 m


Table (2) How to Order for Supply Valve and Vacuum Release Valve

- How to Order Solenoid Valves (Refer to the table (3))
- How to order connector assembly



DC: **SY100-30-4A-** 

Without lead wire : **SY100-30-A**
(With connector and 2 pcs. of socket)

Note) If ordering a valve with 600 mm or longer lead wire, indicate the valve without connector and connector assembly.
Ex.) Lead wire length: 1000 mm
ZM -K1L0-Q 1 pc.
*SY100-30-1A-10 2 pcs.

Lead wire length ●

—	300 mm
6	600 mm
10	1000 mm
15	1500 mm
20	2000 mm
25	2500 mm
30	3000 mm
50	5000 mm

⚠ Warning
The pilot valve should be changed. When replacing the current model (black color) in which "1" or "3" is used for the solenoid valve rated voltage, replace the lead wire assembly with connector together.

⚠ Caution
The type of actuation cannot be changed just by changing the solenoid valve.

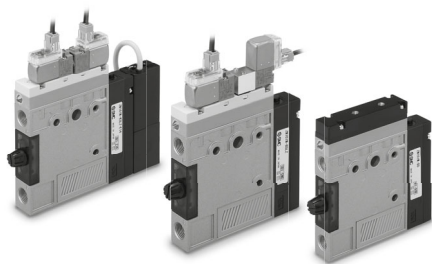
Table (3) Solenoid Valve Model

Supply valve N.C. Release valve (N.C.)	Z1-V114-□□□□
Supply valve N.O.	V124-□□□□

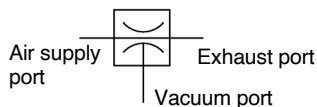
Quick Delivery/Model

<Without valve/Single unit>	<With valve/Single unit>	
● ZM052H	● ZM051H-K5LZ-Q	● ZM131H-K5LZ-Q
● ZM072H	● ZM051H-K5LZ-E15-Q	● ZM131H-K5LZ-E15-Q
● ZM102H	● ZM071H-K5LZ-Q	● ZM131M-K5LZ-Q
● ZM132H	● ZM071H-K5LZ-E15-Q	● ZM131M-K5LZ-E15-Q
	● ZM101H-K5LZ-Q	
	● ZM101H-K5LZ-E15-Q	

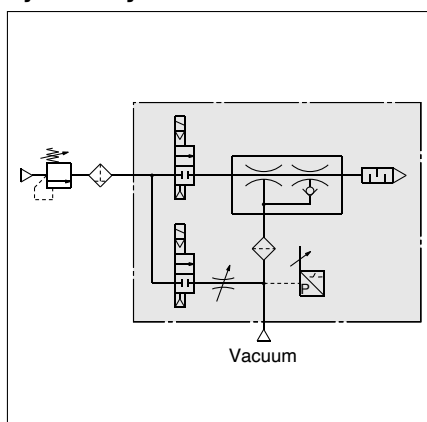
Series ZM



Symbol



Ejector System Circuit



Made to Order

(Refer to pages 19 to 21 for details.)

Symbol	Specifications
X107	Double check valve/For manifold
X111	With individual exhaust spacer
X126	Double solenoid supply valve (With release valve)
X135	Double solenoid supply valve (Without release valve)

Model

Nozzle dia. ø (mm)	Model	Standard supply pressure			Maximum suction flow rate (l/min (ANR))	Air consumption (l/min (ANR))	Diffuser construction
		H	M	S			
0.5	ZM05□H	0.5 MPa	—	—	15	17	Double diffuser
0.7	ZM07□H				30	30	
1.0	ZM10□H				50	60	
1.3	ZM13□H				66	90	
0.7	ZM07□M	—	0.35 MPa	—	23	33	
1.0	ZM10□M				38	60	
1.3	ZM13□M				44	85	
1.3	ZM13□S	—	—	0.45 MPa	37	88	Single diffuser
1.5	ZM15□S				45	110	

Vacuum Ejector Specifications

Fluid	Air	
Maximum operating pressure	0.7 MPa	
Maximum vacuum pressure	- 84 kPa	
Supply pressure range	Air pressure supply (P) port (Without valve)	0.2 to 0.55 MPa
	Air pressure supply (P) port (With valve)	0.25 to 0.55 MPa
	Pilot pressure supply (PA, PB) ^{Note)}	P port pressure to 0.55 MPa
Operating temperature range	Without valve	5 to 60 °C
	With valve	5 to 50 °C
Air supply valve	Main valve	Poppet
Vacuum release valve	Pilot valve	V114, V124
Vacuum pressure switch	Electronic	ZSE1-00-□□□
	Diaphragm	ZSM1-0□□□
Suction filter	Filtration degree: 30 μm, Material: PE (Polyethylene)	

Note) Combination of supply valve and release valve: P5, Q5

The supply and release valves of this product have a structure which uses the pressure of the air pressure supply (P) port to operate them. Be sure to supply a pressure that is the pressure of the air pressure supply (P) port or more and 0.55 MPa or less to the pilot pressure supply (PA, PB) ports for supply and release.

Valve Specifications

How to operate	Pilot type
Main valve	NBR poppet
Effective area	3 mm ²
Cv factor	0.17
Operating pressure range	0.25 to 0.7 MPa
Electrical entry	Plug connector, Grommet (available on DC)
Max. operating frequency	5 Hz
Voltage	24/12/6/5/3 VDC, 100/110 VAC (50/60 Hz)
Power consumption	DC: 0.35 W (With light: 0.4 W)
Apparent power	100 VAC: 0.78 VA (With light: 0.81 VA)
	110 VAC: 0.86 VA (With light: 0.89 VA)

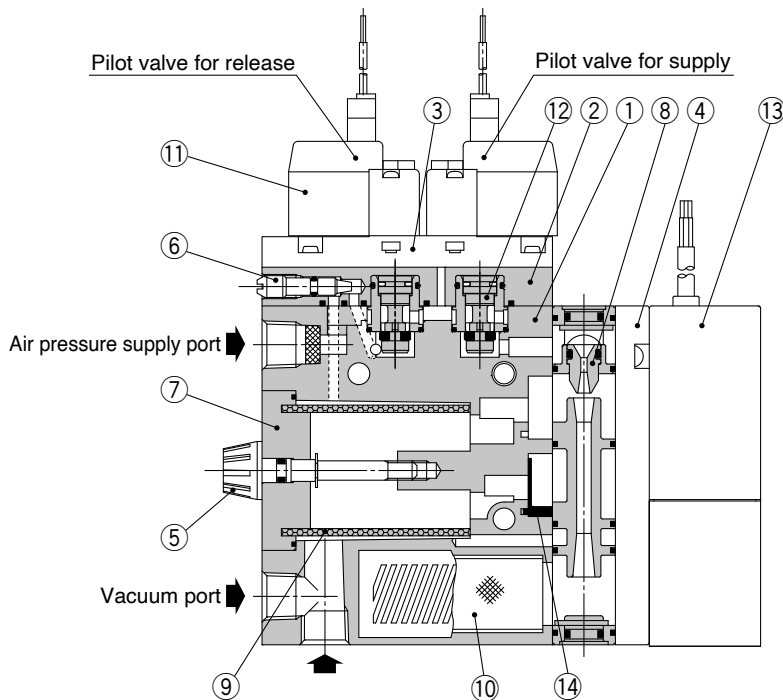
Weight

Model	Without switch	-E□□	-E□□L	-M□□	-M□□L	(kg)	
ZM□□2□	0.13	0.17	0.22	0.25	0.29		
ZM□□4□							
ZM□□6□							
ZM□□1□-J□□	0.16	0.2	0.25	0.28	0.33		
ZM□□3□-J□□							
ZM□□5□-J□□							
ZM□□1□-K□□	0.18	0.22	0.27	0.29	0.34		
ZM□□3□-K□□							
ZM□□5□-K□□							
ZM□□1□-A□□	0.17	0.2	0.25	0.27	0.32		
ZM□□3□-A□□							
ZM□□5□-A□□							
ZM□□1□-B□□	0.18	0.21	0.26	0.29	0.34		
ZM□□3□-B□□							
ZM□□5□-B□□							
ZM□□□□-Q□□	0.17	0.2	0.25	0.27	0.32		
Stations	-04R/L	-04B	-06R/L	-06B	-SR/L	-SB	(kg)
1	0.209	0.219	0.219	0.229	0.239	0.269	
2	0.214	0.224	0.224	0.234	0.244	0.274	
3	0.219	0.229	0.229	0.239	0.249	0.279	
4	0.224	0.234	0.234	0.244	0.254	0.284	
5	0.229	0.239	0.239	0.249	0.259	0.289	
6	0.234	0.244	0.244	0.254	0.264	0.294	
7	0.239	0.249	0.249	0.259	0.269	0.299	
8	0.244	0.254	0.254	0.264	0.274	0.304	
9	0.249	0.259	0.259	0.269	0.279	0.309	
10	0.254	0.264	0.264	0.274	0.284	0.314	

Construction: ZM□1□-K□L-E□

⚠ Precautions

Be sure to read before handling.



⚠ Caution

Operation of an ejector equipped with a valve

When the air supply pilot valve is turned ON, air flows to the diffuser assembly, and a vacuum is created. When the pilot valve for releasing the vacuum is turned ON, air flows to the vacuum port side, immediately causing a release in the vacuum. The release speed can be adjusted by regulating the flow volume adjustment screw. When the supply valve is turned OFF, the atmospheric pressure causes the air to flow back from the silencer, thus releasing the vacuum. However, in order to properly release a vacuum, a vacuum release valve must be used.

Operating environment

Because the filter cover is made of polycarbonate, do not use it with or expose it to following chemicals: paint thinner, carbon tetrachloride, chloroform, acetic ester, aniline, cyclohexane, trichloroethylene, sulfuric acid, lactic acid, water-soluble cutting oil (alkalinal), etc. Also, do not expose it to direct sunlight. Furthermore, avoid use in direct sunlight.

Release flow rate adjusting screw

Turning the vacuum release flow rate adjusting screw 4 full turns from the fully closed position renders the valve fully open. Do not turn more than four times since turning excessively may cause the screw fall off. In order to prevent the screw from loosening and falling out, the release flow rate adjusting needle with lock nut is also available.

Component Parts

No.	Description	Material	Note
1	Body	Aluminium die-casted	
2	Valve cover	Resin	
3	Adapter plate	Resin	
4	Cover	Zinc die-casted	Without switch: ZM-HCA, With switch: ZM-HCB
5	Tension bolt	Stainless steel/Polyacetal	

Replacement Parts

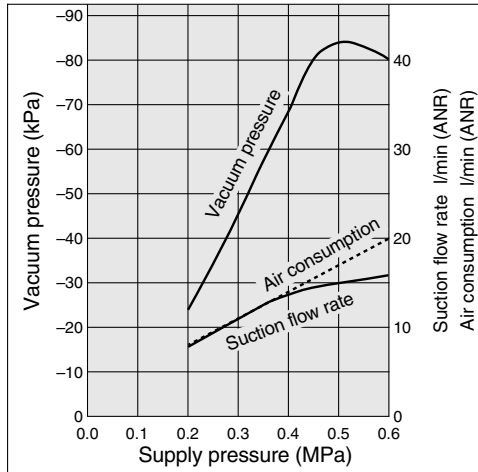
No.	Description	Material	Part no.
6	Release flow rate adjusting needle	Brass/Electroless nickel plating	ZM-NA (With lock nut: ZM-ND-L)
7	Filter cover assembly	—	ZM-FCB-0
8	Diffuser assembly	—	ZM□□0□-0 (Refer to page 1) Nozzle diameter □ □ Standard supply pressure □ □
9	Suction filter	Polyethylene	ZM-SF
10	Silencer assembly	—	ZM-SA (High noise reduction: ZM-SA-D)
11	Pilot valve	—	Z1-V114-□□□□ (Refer to page 2) V124-□□□□
12	Poppet valve assembly	—	ZMA-PV2-0
13	Vacuum pressure switch	—	ZSE1-00-□□ ZSM1-015 ZSM1-021
14	Check valve	NBR	ZM-CV

Series ZM

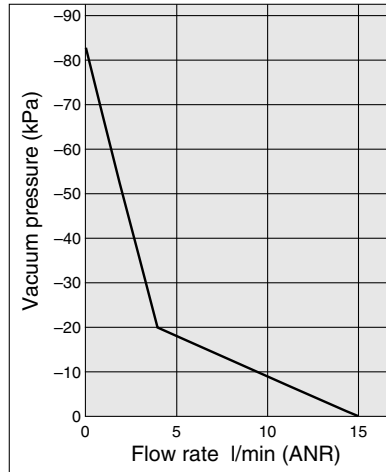
Exhaust Characteristics/Flow Characteristics, Standard Supply Pressure: H ... 0.5 MPa

ZM05□H

Exhaust Characteristics

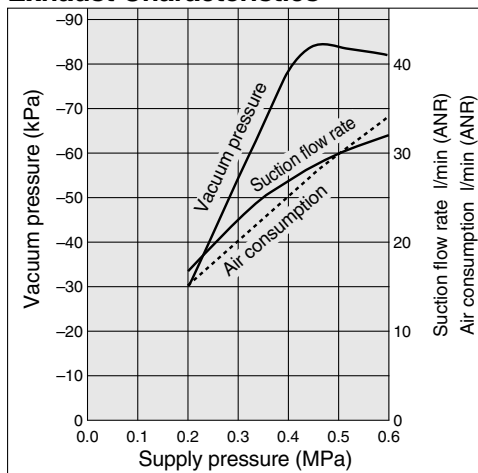


Flow Characteristics

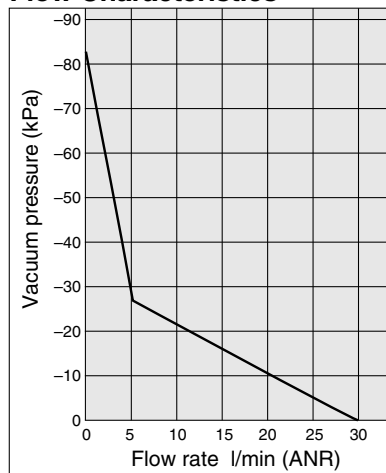


ZM07□H

Exhaust Characteristics

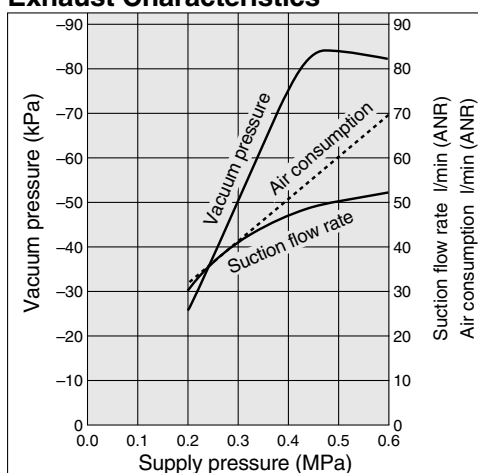


Flow Characteristics

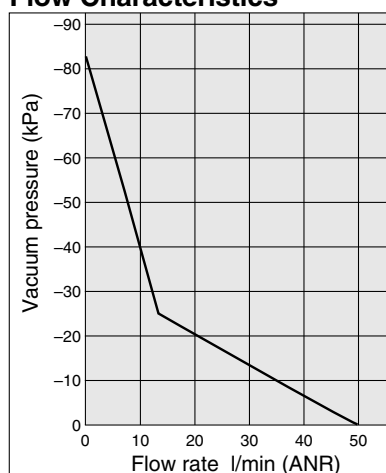


ZM10□H

Exhaust Characteristics



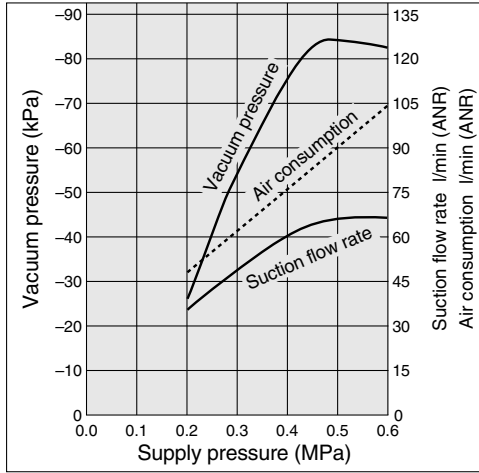
Flow Characteristics



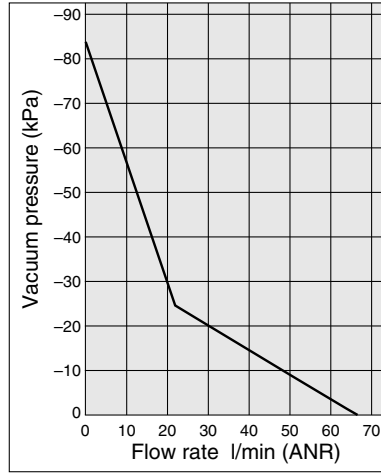
Exhaust Characteristics/Flow Characteristics, Standard Supply Pressure: H ... 0.5 MPa

ZM13□H

Exhaust Characteristics



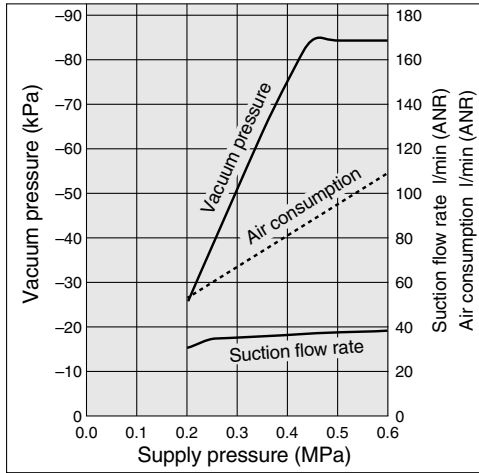
Flow Characteristics



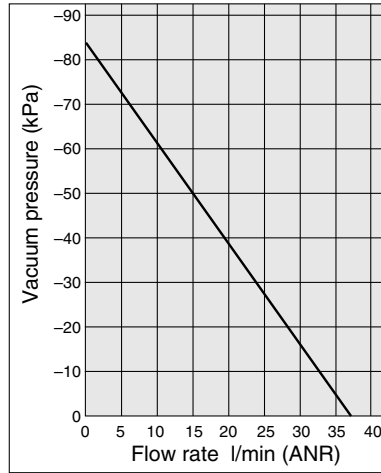
Exhaust Characteristics/Flow Characteristics, Standard Supply Pressure: S ... 0.45 MPa

ZM13□S

Exhaust Characteristics

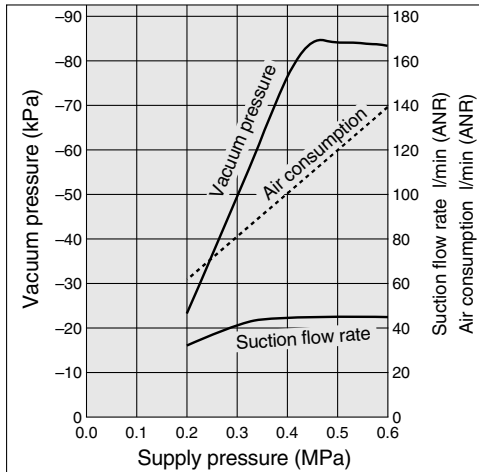


Flow Characteristics

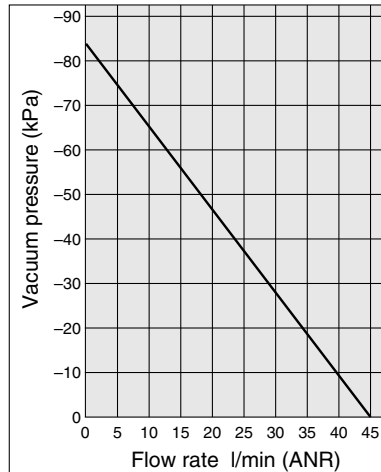


ZM15□S

Exhaust Characteristics



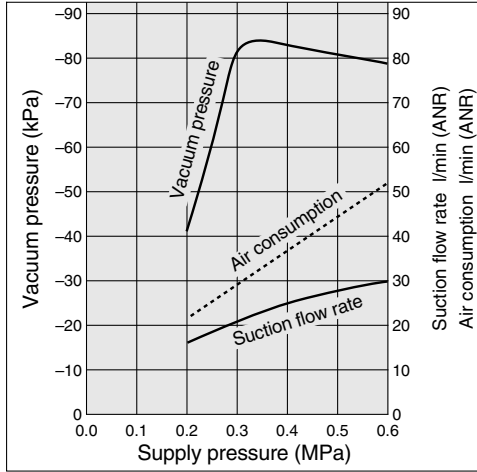
Flow Characteristics



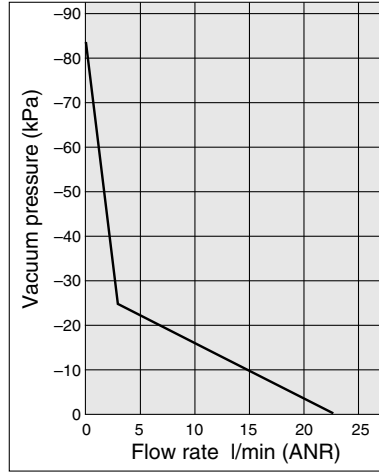
Exhaust Characteristics/Flow Characteristics, Standard Supply Pressure: M ... 0.35 MPa

ZM07□M

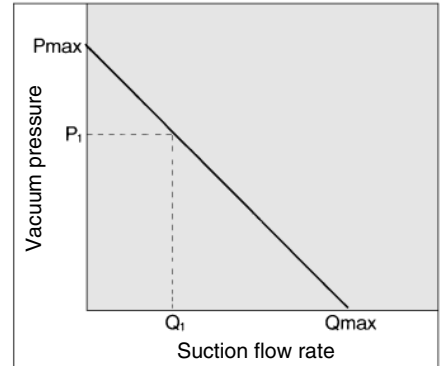
Exhaust Characteristics



Flow Characteristics



How to Read Flow Characteristics Graph



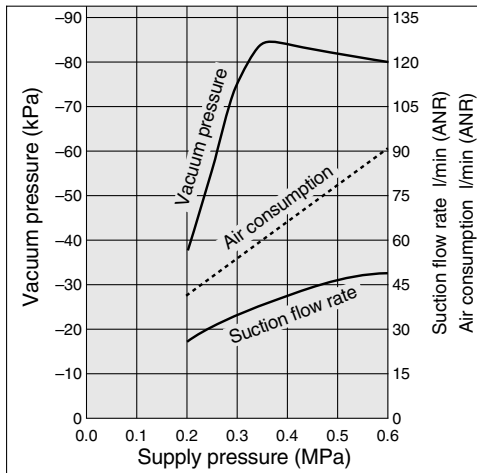
Flow characteristics are expressed in ejector vacuum pressure and suction flow. If suction flow rate changes, a change in vacuum pressure will also be expressed. Normally this relationship is expressed in ejector standard supply pressure. In graph, Pmax is max. vacuum pressure and Qmax is max. suction flow. The values are specified according to catalog use.

Changes in vacuum pressure are expressed in the order below.

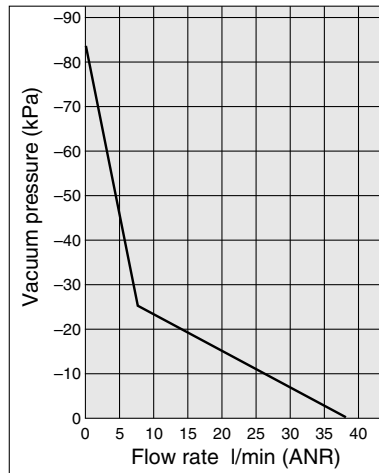
1. When ejector suction port is covered and made airtight, suction flow is 0 and vacuum pressure is at maximum value (Pmax).
2. When suction port is opened gradually, air can flow through (air leakage), suction flow increases, but vacuum pressure decreases (condition P₁ and Q₁).
3. When suction port is opened further, suction flow moves to maximum value (Qmax), but vacuum pressure is near 0 (atmospheric pressure).
When vacuum port (vacuum piping) has no leakage, vacuum pressure becomes maximum, and vacuum pressure decreases as leakage increases. When leakage value is the same as max. suction flow, vacuum pressure is near 0.
When ventilative or leaky work must be adsorbed, please note that vacuum pressure will not be high.

ZM10□M

Exhaust Characteristics

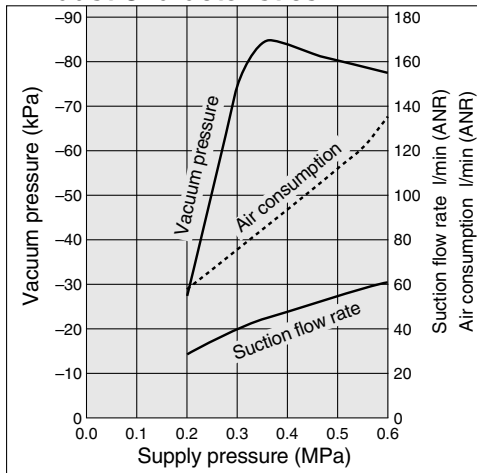


Flow Characteristics

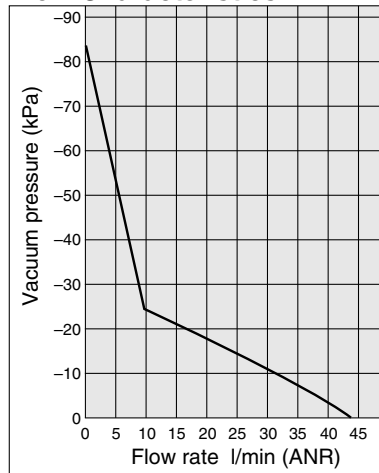


ZM13□M

Exhaust Characteristics



Flow Characteristics



Vacuum Pressure Switch/Solid State Switch (ZSE), Diaphragm Switch (ZSM)

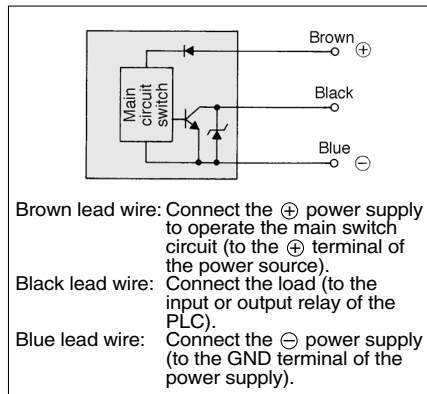
Vacuum Switch

Model	ZSE1-00-14	ZSE1-00-15	ZSE1-00-16	ZSE1-00-17	ZSE1-00-18	ZSE1-00-19	ZSE1-00-55	ZSM1-015	ZSM1-021
Sensor type	Solid state							Diaphragm	
Switch	Electronic circuit							Solid state	Reed
Set pressure range	0 to -101 kPa							-27 to -80 kPa	
Hysteresis	1 to 10% of the set pressure (Changeable)		3% full span or less (Fixed)		1 to 10% of the set pressure (Changeable)			Max. 15 kPa	Max. 20 kPa
Repeatability	±1% full span or less							±10% or less	
Temperature characteristics	±3% full span or less							±5% full span	
Operating voltage	12 to 24 VDC (Ripple ±10% or less)							4.5 to 28 VDC	AC/DC 100 V
ON-OFF output	NPN open collector 30 V, Max. 80 mA					PNP open collector 80 mA		Open collector 28 V, Max. 40 mA	—
Setting points	1 point		2 points			1 point		1 point	
Operation indicator light	Lights up when ON		Lights ON (Output 1: Red, Output 2: Green)			Lights up when ON		Lights up when ON (Red)	
Setting trimmer	3 rotations	200 degrees	3 rotations	200 degrees	3 rotations	200 degrees		18 rotations	
Current consumption	17 mA or less (When 24 VDC is ON)		25 mA or less (When 24 VDC is ON)		17 mA or less (When 24 VDC is ON)			10 mA or less (24 VDC)	—
Max. current	—							—	24 V or less: 50 mA 48 V: 40 mA, 100 V: 20 mA
Max. operating pressure	0.2 MPa							0.5 MPa	

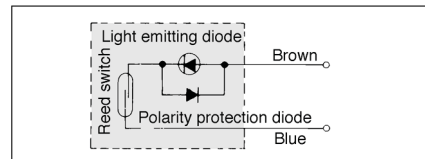
* When using ejector system, instantaneous pressure up to 0.5 MPa will not damage the switch.

Diaphragm Switch (ZSM)

Solid State Switch: ZSM1-015

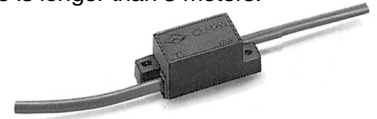


Reed Switch: ZSM1-021

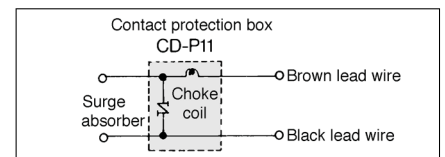


Contact protection box

The switch does not have a built-in contact protection circuit. Use this box if an induction load is applied or if the lead wire is longer than 5 meters.



Internal Circuit of Contact Protection Box

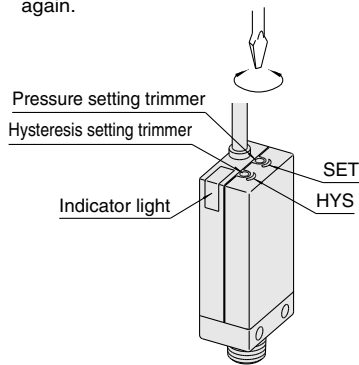


How to Set the Pressure

- The ON pressure is set with the pressure setting trimmer. The high pressure/high vacuum pressure can be set turning it clockwise.
- When setting, use a flat head screw driver which fits the groove in the trimmer, and turn it gently with your fingertips.

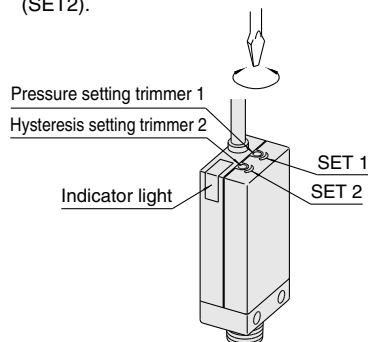
ZSE1(L)-□□-14/-15/-18/-19

- Hysteresis can be set using the hysteresis setting trimmer. The setting is increased by turning it clockwise, and the range is 1 to 10% of the set pressure range.
- When the hysteresis setting trimmer is moved after setting the ON pressure, it must be set again.

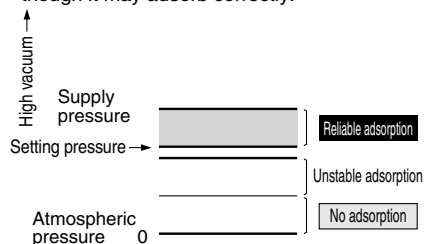


ZSE1(L)-□□-16/-17

- OUT1 (black lead wire, red LED) can be set with the pressure setting trimmer 1 (SET1).
- OUT2 (white lead wire, green LED) can be set with the pressure setting trimmer 2 (SET2).



- When using the switch to confirm correct adsorption, the vacuum pressure is set to the minimum value to reliably adsorb. If the value is set below the minimum, the switch will be turned ON even when adsorption has failed or is insufficient. If the pressure is set too high, the switch may not turn ON even though it may adsorb correctly.

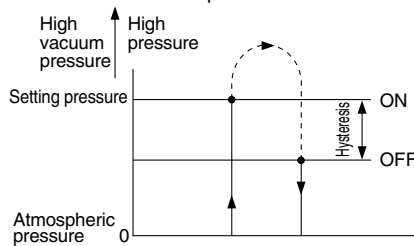


⚠ Caution

Observe the following precautions for setting the vacuum pressure: Use your fingertips to gently turn the screwdriver. Do not use a screwdriver with a large grip or with a tip that does not fit into the trimmer groove because this could damage the groove.

Hysteresis

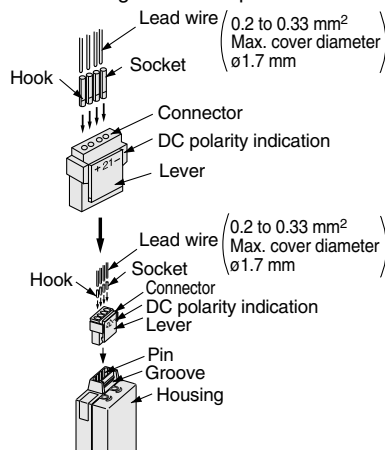
Hysteresis is the difference in pressure when the output signal is ON and OFF. The pressure to be set is the ON pressure. It turns ON at the set pressure.



How to Use Connector

1. Attaching and detaching connectors

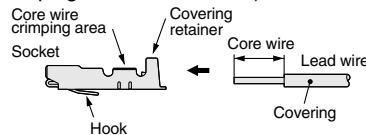
- When assembling the connector to the switch housing, push the connector straight onto the pins until the level locks into the housing slot.
- When removing the connector from the switch housing, push the lever down to unlock it from the slot and then withdraw the connector straight off of the pins.



2. Crimping of lead wires and sockets

Strip 3.2 to 3.7 mm of the lead wire ends, insert each stripped wire into a socket and crimp contact it using special crimping tool. Be careful that the outer insulation of the lead wires does not interfere with the socket contact part.

(Crimping tool: DXT170-75-1)



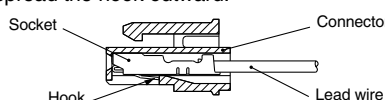
3. Attaching and detaching of socket to connector with lead wire

• Attaching

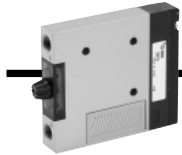
Insert the sockets into the square holes of the connector (with +, 1, 2, - indication), and continue to push the sockets all the way in until they lock by hooking into the seats in the connector. (When they are pushed in their hooks open and they are locked automatically.) Then confirm that they are locked by pulling lightly on the lead wires.

• Detaching

To detach a socket from a connector, pull out the lead wire while pressing the socket's hook with a stick having a thin tip (about 1 mm). If the socket will be used again, first spread the hook outward.

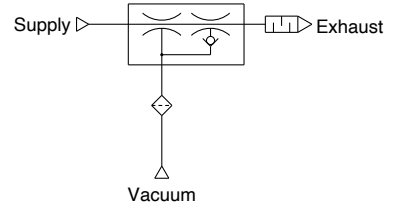


Series ZM

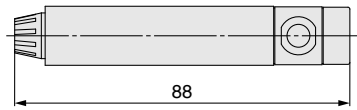
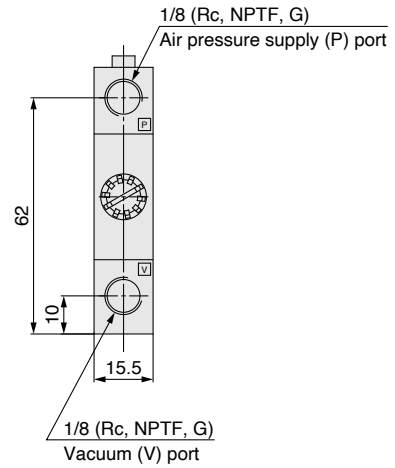
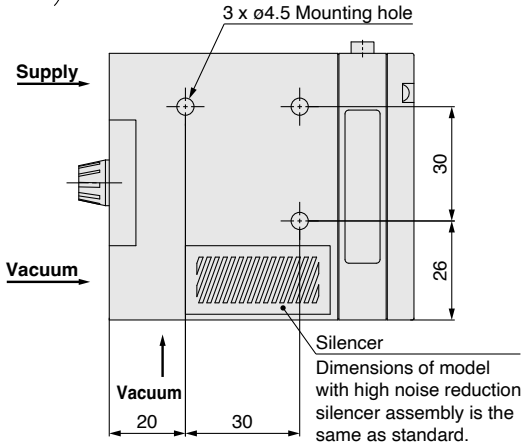
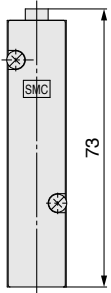
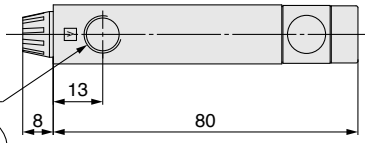


For Single Unit/Without Valve Basic Type

ZM□2□□^H_M□_S



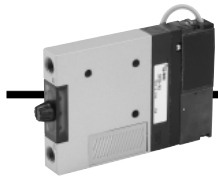
1/8 (Rc, NPTF, G)
Vacuum (V) port
(Side entry style is equipped with plugs.)



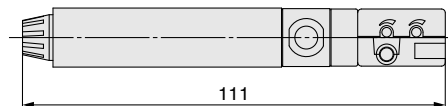
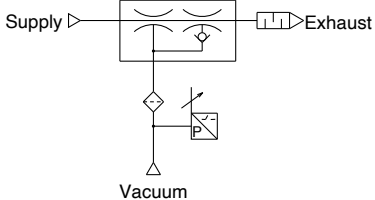
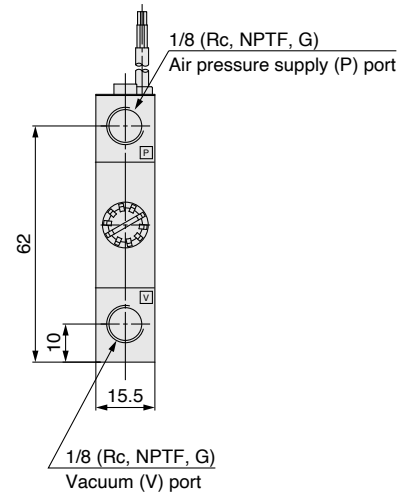
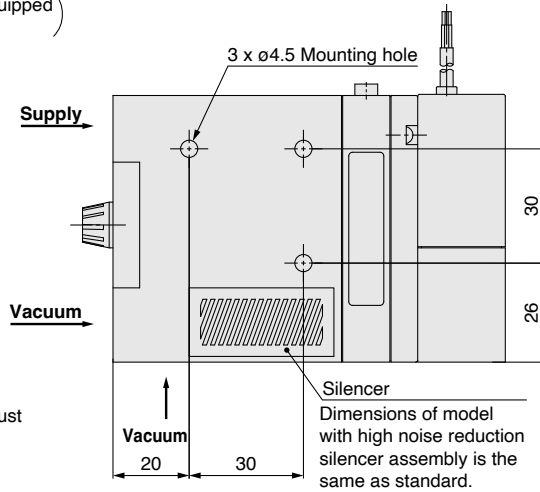
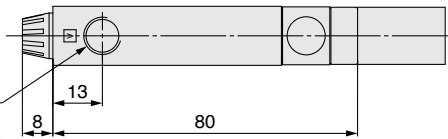
<Components>

For Single Unit/Without Valve Basic Type with Switch

ZM□2□□^H_M□ - □□

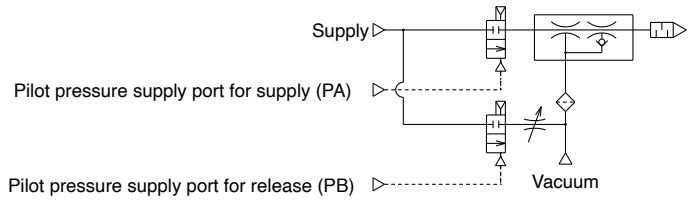


1/8 (Rc, NPTF, G)
Vacuum (V) port
(Side entry style is equipped with plugs.)

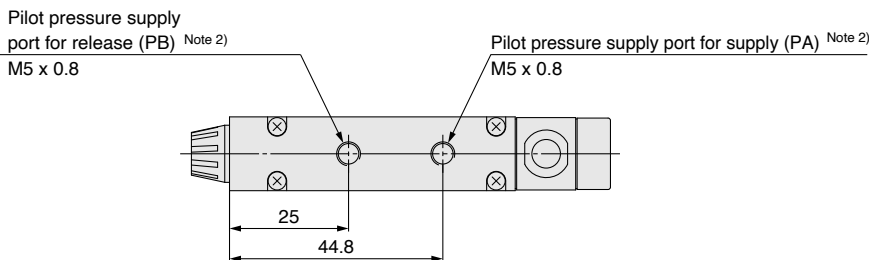
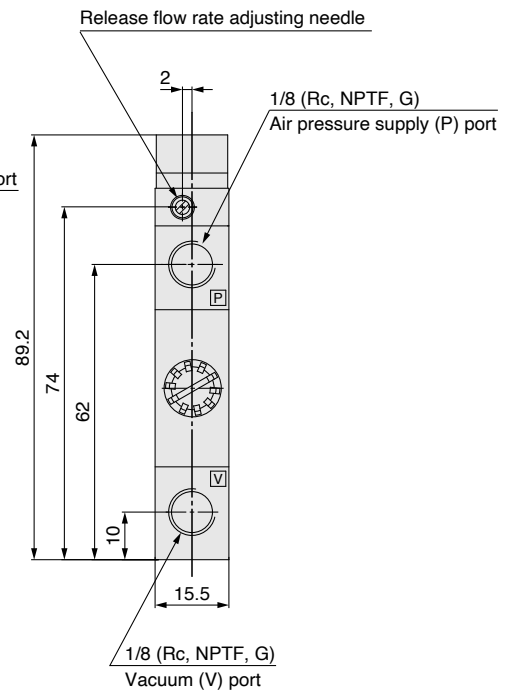
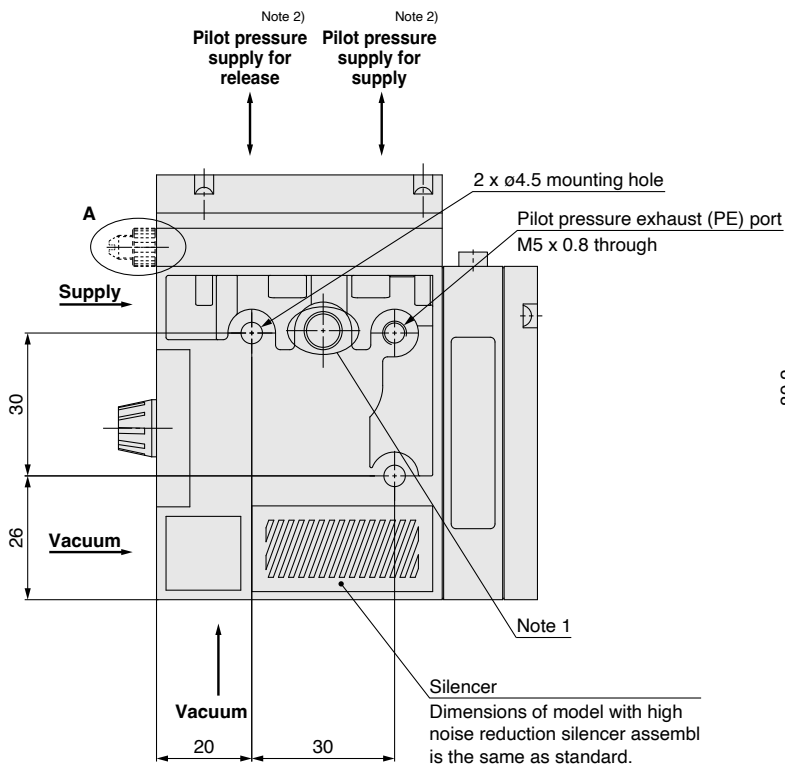
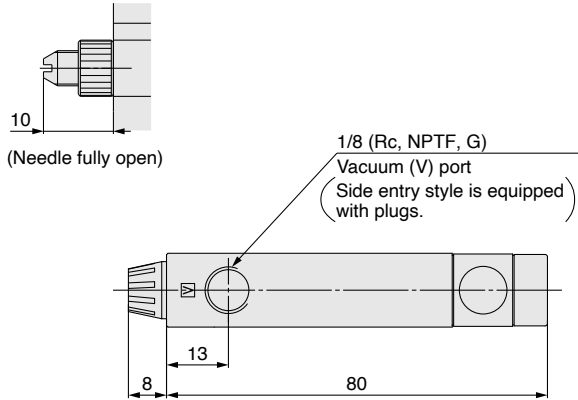


Air Operated Type

ZM□1□□^H□□^S-Q5



A: Release flow rate adjusting needle with lock nut



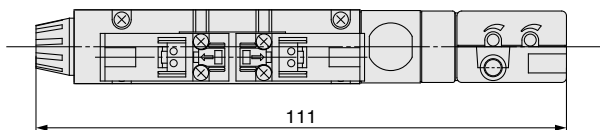
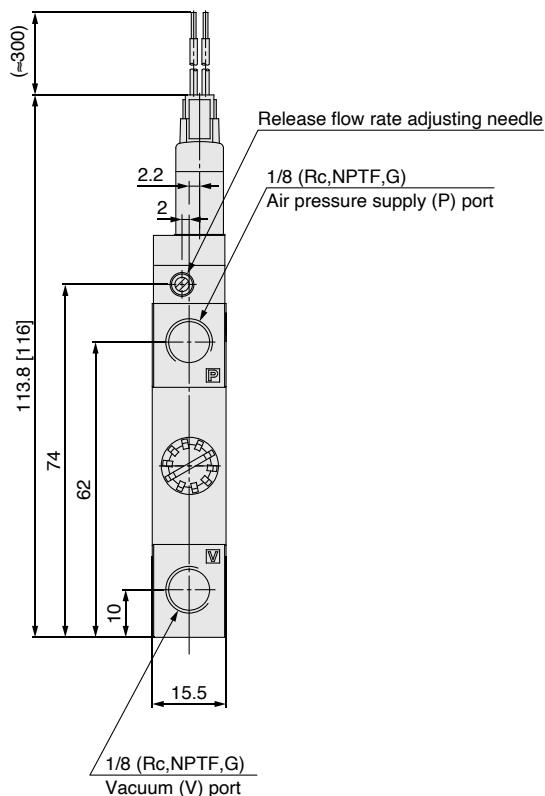
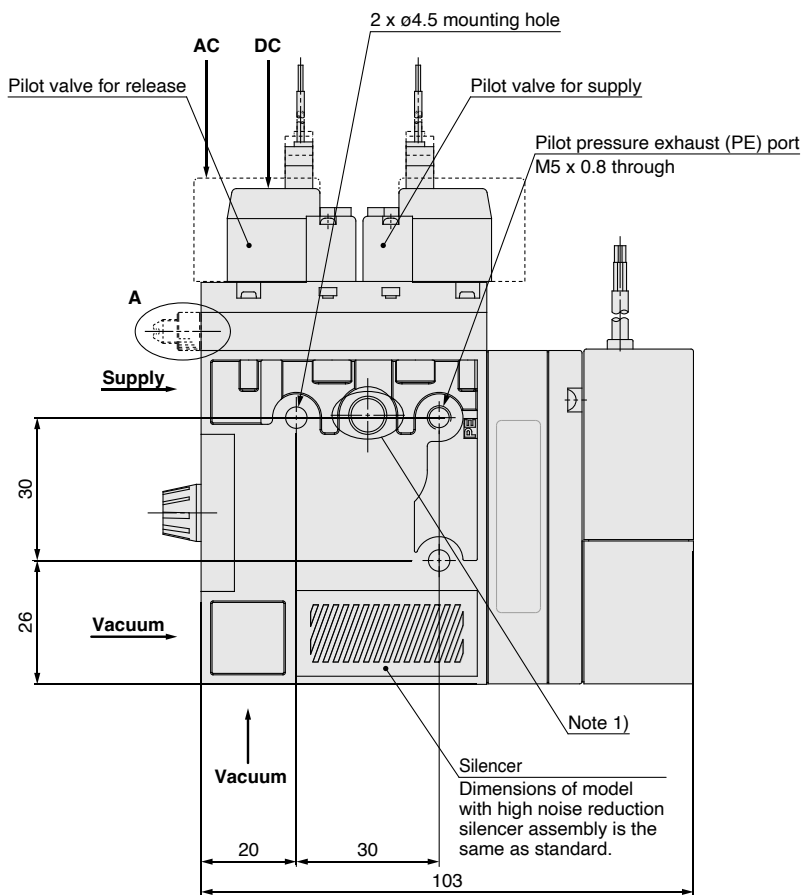
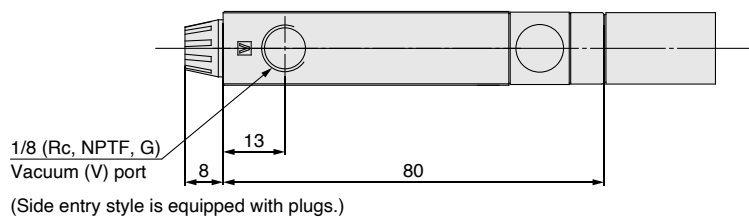
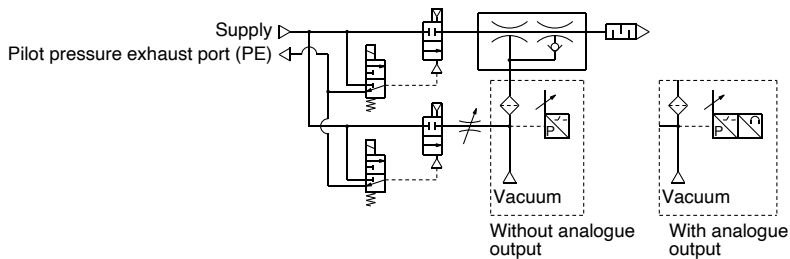
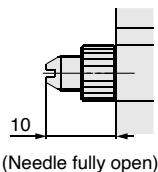
Note 1) This is a hole for using the manifold and single unit bodies in common, and it is not used for the single unit.
 Note 2) The supply and release valves of this product have a structure which uses the pressure of the air pressure supply (P) port to operate them. Be sure to supply a pressure that is the pressure of the air pressure supply (P) port or more and 0.55 MPa or less to the pilot pressure supply (PA, PB) ports for supply and release.

<Components>

For Single Unit/With Valve Basic Type with Switch and Valve

ZM□1□□^H□^M□-K□□□□-E□
S

A: Release flow rate adjusting needle with lock nut



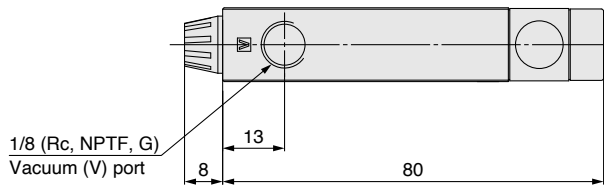
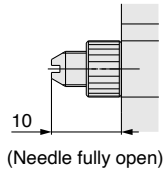
Note 1) This is a hole for using the manifold and single unit bodies in common, and it is not used for the single unit.

Note 2) [] : AC

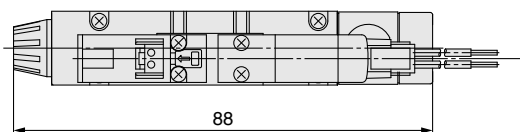
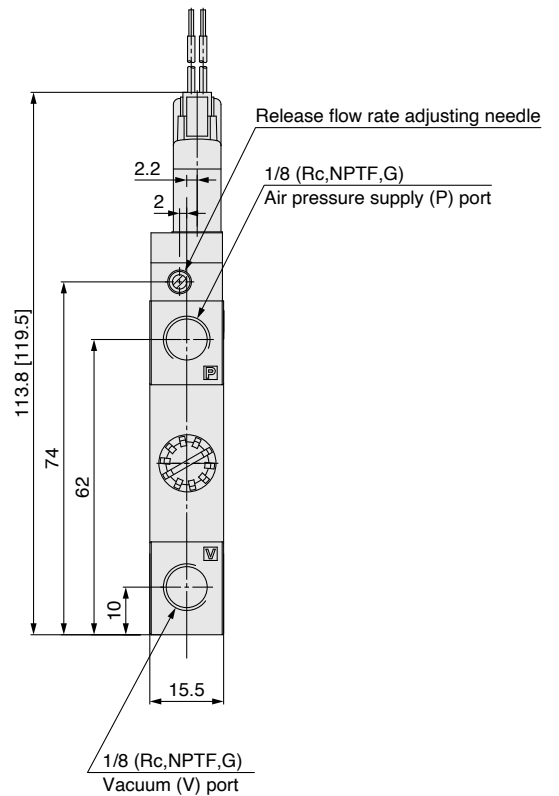
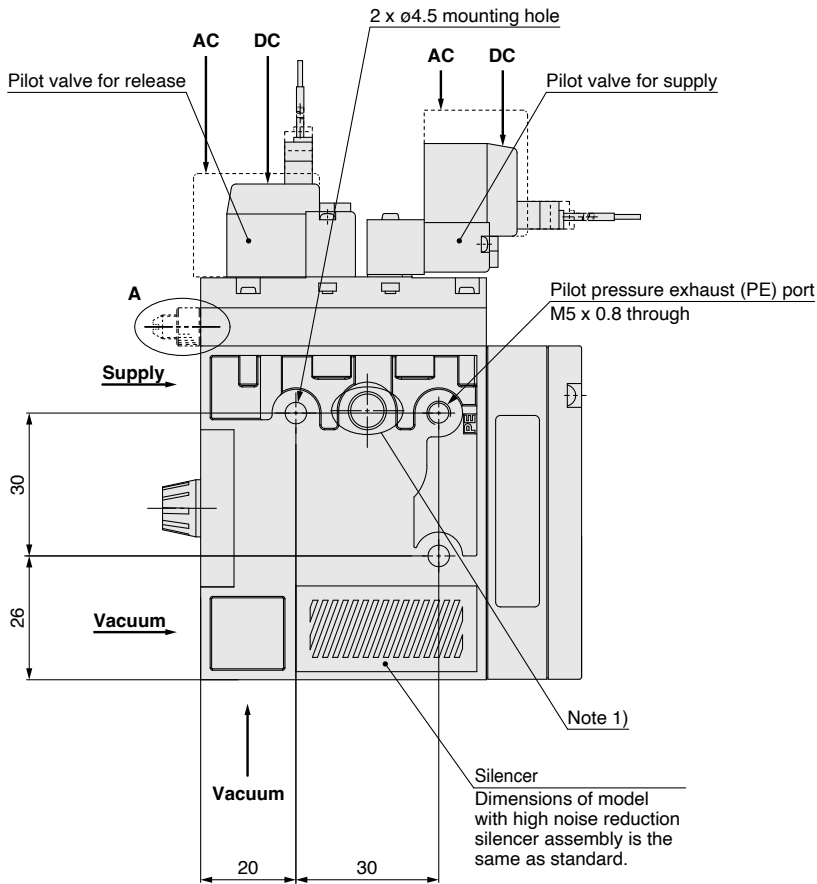
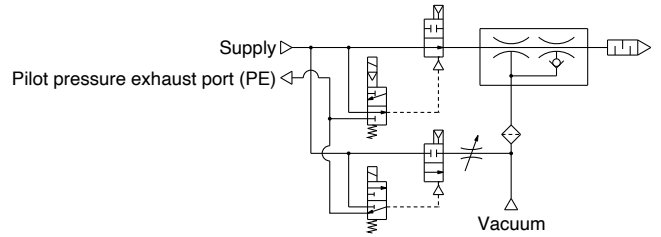
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Single/With Air Supply Valve (N.O.) and Vacuum Release Valve Basic Type with Valve

ZM□1□□^H□□^M□□-B□□□□_S

A: Release flow rate adjusting needle with lock nut



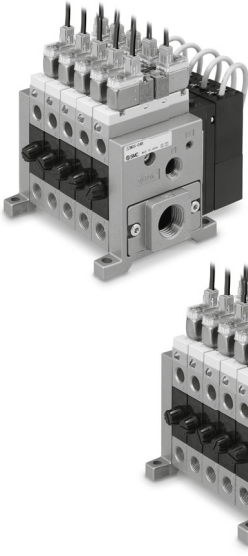
(Side entry style is equipped with plugs.)



Note 1) This is a hole for using the manifold and single unit bodies in common, and it is not used for the single unit.

Note 2) []: AC

Manifold Specifications: Series ZM



Manifold Specifications

Manifold style	Stacking
Common air pressure supply port (P)*	1/4 (Rc, NPTF, G)
Individual air pressure supply port (P)*	1/8 (Rc, NPTF, G)
Common exhaust port (EXH)	1/2, 3/4 (Rc, NPTF, G)
Common exhaust port (EXH) location	Right side/Left side/Both sides**
Max. number of stations	Max. 10 stations
Silencer	ZZM-SA (With bolts)

* The common air pressure supply port (P) and individual air pressure supply port (P) can be mounted together.

** Right and left sides are viewed from the front side of vacuum port (V).

Maximum Ejector Stations (Max. operable nos. simultaneously)

Manifold model	Ejector model				
	ZM053 ZM054	ZM073 ZM074	ZM103 ZM104	ZM133 ZM134	ZM153 ZM154
ZZM [Stations] - □ R L	10	8	5	4	3
ZZM [Stations] - □ B	10	10	8	6	5

* Effective area of external silencer is 160 mm².

How to Order Ejector Manifold

ZZM 06 - □ 06 R - R

● **Multi-ejector**
Series ZM
Manifold

● **Number of stations**

01	1 station
⋮	⋮
05	5 stations
⋮	⋮
10	10 stations (Max.)

* By viewing the front side of vacuum (V) port, stations are counted starting from station 1 on the left side.

● **Thread type**

Nil	Rc
T	NPTF
F	G (Note)

Note) G thread

The thread ridge shape is compatible with the G thread standard (JIS B0203), but other shapes are not conforming to ISO16030 and ISO 1179.

● **Common air pressure supply (P) port location****

-	Both sides
R	Right side
L	Left side

** Right and left sides are viewed from the front side of vacuum port (V).

● **Common exhaust port (EXH) and silencer location****

Nil	None (When the common exhaust (EXH) port size is "00")
R	Right side
L	Left side
B	Both sides

** Right and left sides are viewed from the front side of vacuum port (V).

● **Common exhaust (EXH) port size**

04	1/2
06	3/4
S	Silencer for ZZM (ZZM-SA)

The asterisk (*) indicates the ejector model no. below the manifold base no. Prefix it to the vacuum ejector part numbers to be mounted. When it is not added, products are shipped separately.

Example)

ZZM06-06R 1 pc.

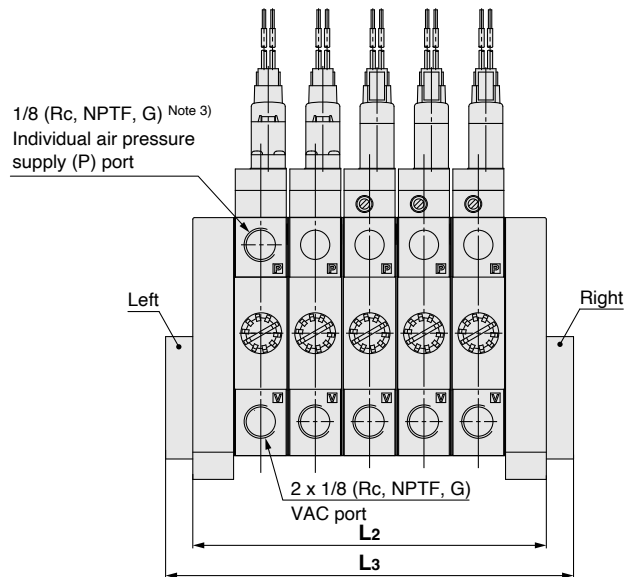
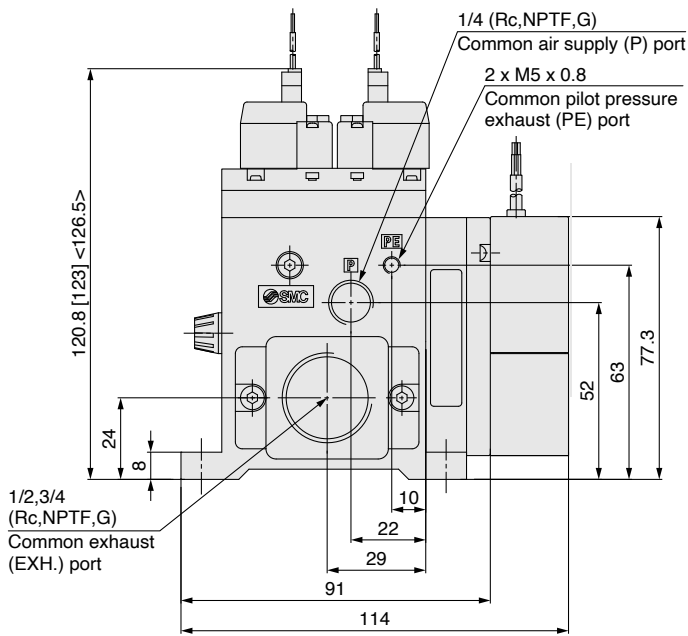
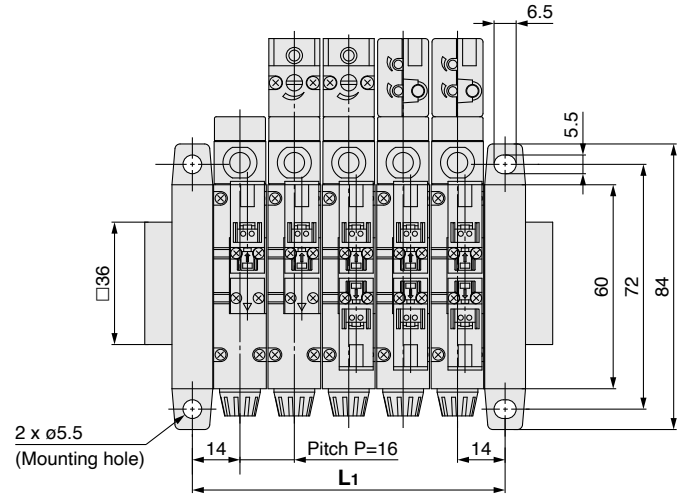
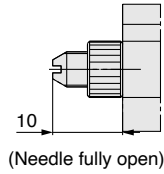
* ZM103H-J5LZ-Q 3 pcs.

* ZM133H-J5LZ-Q 3 pcs.

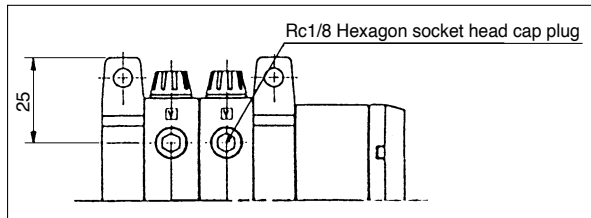
Manifold

ZZM [Number of ejectors] - [Common EXH port] [Port location]

A: Release flow rate adjusting needle with lock nut



Vacuum port electrical entry (In the case of side entry/With plug at the bottom)



Note 1) [] for N.C., AC type
 Note 2) < > for N.O., AC type
 Note 3) For individual supply specifications

L		Stations	1	2	3	4	5	6	7	8	9	10
L1			28±1.5	44±1.5	60±1.5	76±1.5	92±1.5	108±2.0	124±2.0	140±2.0	156±2.0	172±2.0
L2			40±1.5	56±1.5	72±1.5	88±1.5	104±1.5	120±2.0	136±2.0	152±2.0	168±2.0	184±2.0
L3	ZZM□□-□SB-□		104±1.5	120±1.5	136±1.5	152±1.5	168±1.5	184±2.0	200±2.0	216±2.0	232±2.0	248±2.0
	ZZM□□-□S□-□		72±1.5	88±1.5	104±1.5	120±1.5	136±1.5	152±2.0	168±2.0	184±2.0	200±2.0	216±2.0
	ZZM□□-□04B-□		52±1.5	68±1.5	84±1.5	100±1.5	116±1.5	132±2.0	148±2.0	164±2.0	180±2.0	196±2.0
	ZZM□□-□04□-□		46±1.5	62±1.5	78±1.5	94±1.5	110±1.5	126±2.0	142±2.0	158±2.0	174±2.0	190±2.0
	ZZM□□-□06B-□		56±1.5	72±1.5	88±1.5	104±1.5	120±1.5	136±2.0	152±2.0	168±2.0	184±2.0	200±2.0
	ZZM□□-□06□-□		48±1.5	64±1.5	80±1.5	96±1.5	112±1.5	128±2.0	144±2.0	160±2.0	176±2.0	192±2.0

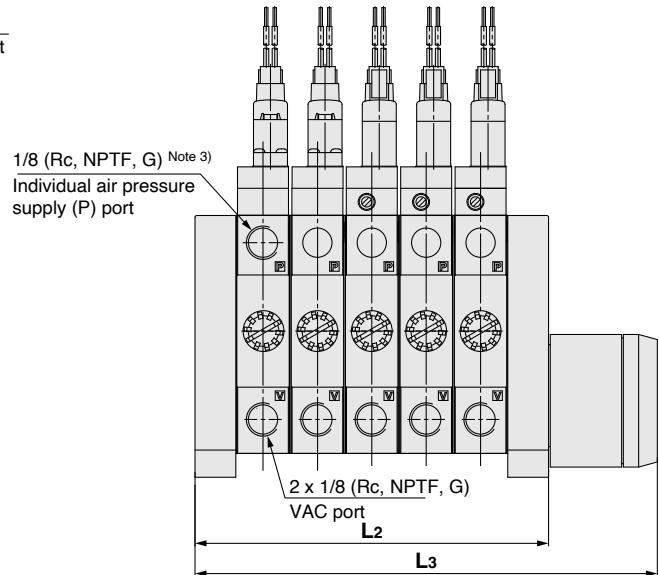
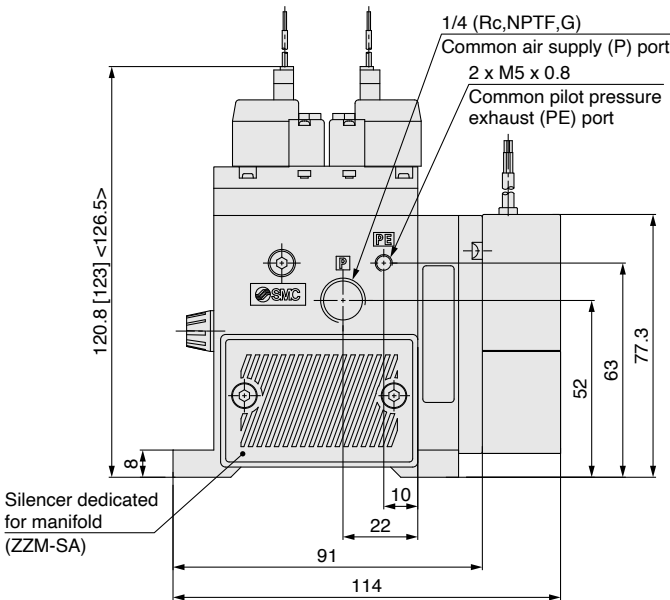
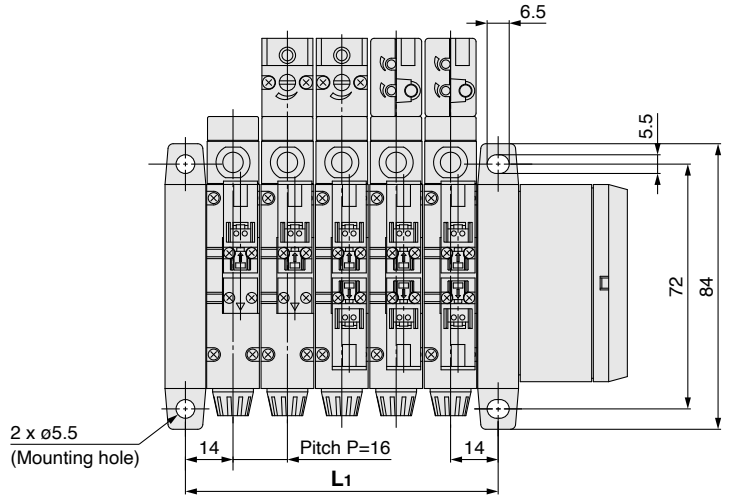
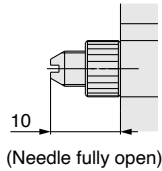
Series ZM

<Components>

Manifold/With Silencer **Manifold with Silencer Dedicated for Manifold**

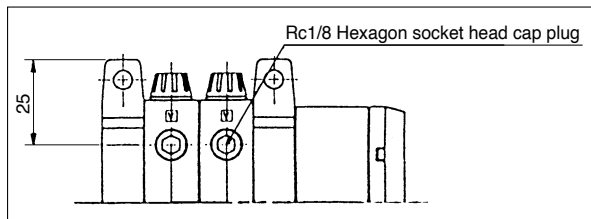
ZZM [Number of ejectors] – S [Silencer location]

A: Release flow rate adjusting needle with lock nut



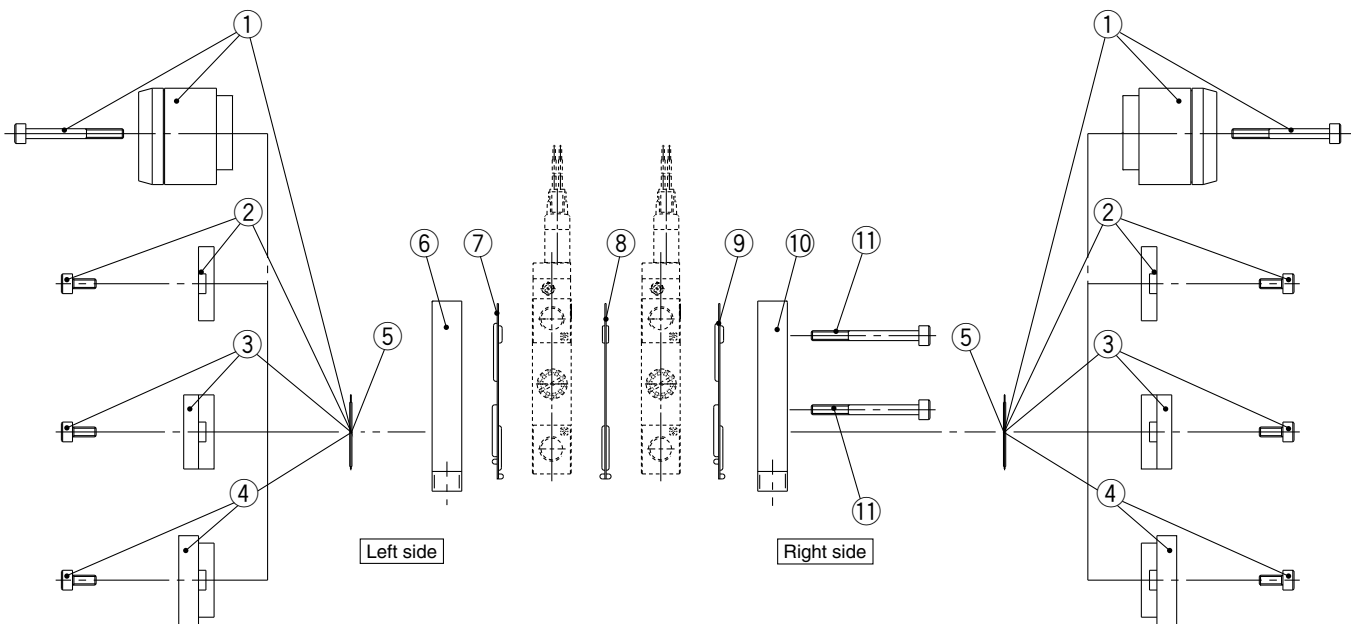
Note 1) [] for N.C., AC type
 Note 2) < > for N.O., AC type
 Note 3) For individual supply specifications

Vacuum port electrical entry (In the case of side entry/With plug at the bottom)



		(mm)									
L	Stations	1	2	3	4	5	6	7	8	9	10
	L1	28±1.5	44±1.5	60±1.5	76±1.5	92±1.5	108±2.0	124±2.0	140±2.0	156±2.0	172±2.0
	L2	40±1.5	56±1.5	72±1.5	88±1.5	104±1.5	120±2.0	136±2.0	152±2.0	168±2.0	184±2.0
L3	ZZM□□-□SB-□	104±1.5	120±1.5	136±1.5	152±1.5	168±1.5	184±2.0	200±2.0	216±2.0	232±2.0	248±2.0
	ZZM□□-□S□-□	72±1.5	88±1.5	104±1.5	120±1.5	136±1.5	152±2.0	168±2.0	184±2.0	200±2.0	216±2.0
	ZZM□□-□04B-□	52±1.5	68±1.5	84±1.5	100±1.5	116±1.5	132±2.0	148±2.0	164±2.0	180±2.0	196±2.0
	ZZM□□-□04□-□	46±1.5	62±1.5	78±1.5	94±1.5	110±1.5	126±2.0	142±2.0	158±2.0	174±2.0	190±2.0
	ZZM□□-□06B-□	56±1.5	72±1.5	88±1.5	104±1.5	120±1.5	136±2.0	152±2.0	168±2.0	184±2.0	200±2.0
	ZZM□□-□06□-□	48±1.5	64±1.5	80±1.5	96±1.5	112±1.5	128±2.0	144±2.0	160±2.0	176±2.0	192±2.0

Component Parts for Manifold



(1)

Stations	Manifold part no.	Clamp rod part no.
1	ZZM01-□□□-□	ZZM-CR-01
2	ZZM02-□□□-□	ZZM-CR-02
3	ZZM03-□□□-□	ZZM-CR-03
4	ZZM04-□□□-□	ZZM-CR-04
5	ZZM05-□□□-□	ZZM-CR-05
6	ZZM06-□□□-□	ZZM-CR-06
7	ZZM07-□□□-□	ZZM-CR-07
8	ZZM08-□□□-□	ZZM-CR-08
9	ZZM09-□□□-□	ZZM-CR-09
10	ZZM10-□□□-□	ZZM-CR-10

(2)

Manifold part no.	Adapter A		Adapter B		Silencer		Blanking plate	
	Left	Right	Left	Right	Left	Right	Left	Right
ZZM□□-□04R-□		○					○	
ZZM□□-□04L-□	○							○
ZZM□□-□04B-□	○	○						
ZZM□□-□06R-□				○			○	
ZZM□□-□06L-□			○					○
ZZM□□-□06B-□			○	○				
ZZM□□-□SR-□						○	○	
ZZM□□-□SL-□					○			○
ZZM□□-□SB-□					○	○		
ZZM□□-□00							○	○

(3)

No.	Model	Description	Quantity	Note
1	ZZM-SA	Silencer assembly	*	
2	ZZM-BP	Blanking plate assembly	*	
3	ZZM-ADA-□	Adapter A assembly	*	Common exhaust (EXH.) port Size: 04 ^{Note 1)}
4	ZZM-ADB-□	Adapter B assembly	*	Common exhaust (EXH.) port Size: 06 ^{Note 1)}
5	ZZM-GE	Gasket E	2	
6	ZZM-EPL-□	End plate L	1	Note 1)
7	ZZM-GBL	Gasket BL	1	
8	ZZM-GBB	Gasket BB	Station: 1	
9	ZZM-GBR	Gasket BR	1	
10	ZZM-EPR-□	End plate R	1	
11	ZZM-CR-□□	Clamp rod	1	Refer to Table (1). ^{Note 2)}

* The used quantity varies depending on the part number.

Note 1) □: Symbol corresponding to the port thread type.

Note 2) Clamp rods consist of a set of 2 pcs.

Series **ZM**

Made to Order Specifications 1

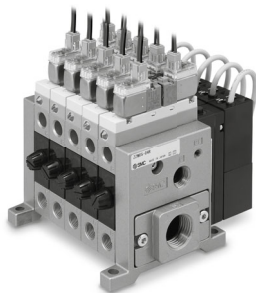
Please contact SMC for detailed specifications, dimensions, and delivery.



1 Double Check Valve/For Manifold

Single: ZM Nozzle diameter Body Supply pressure — Valve voltage Electrical entry — X107
↓ Double check valve

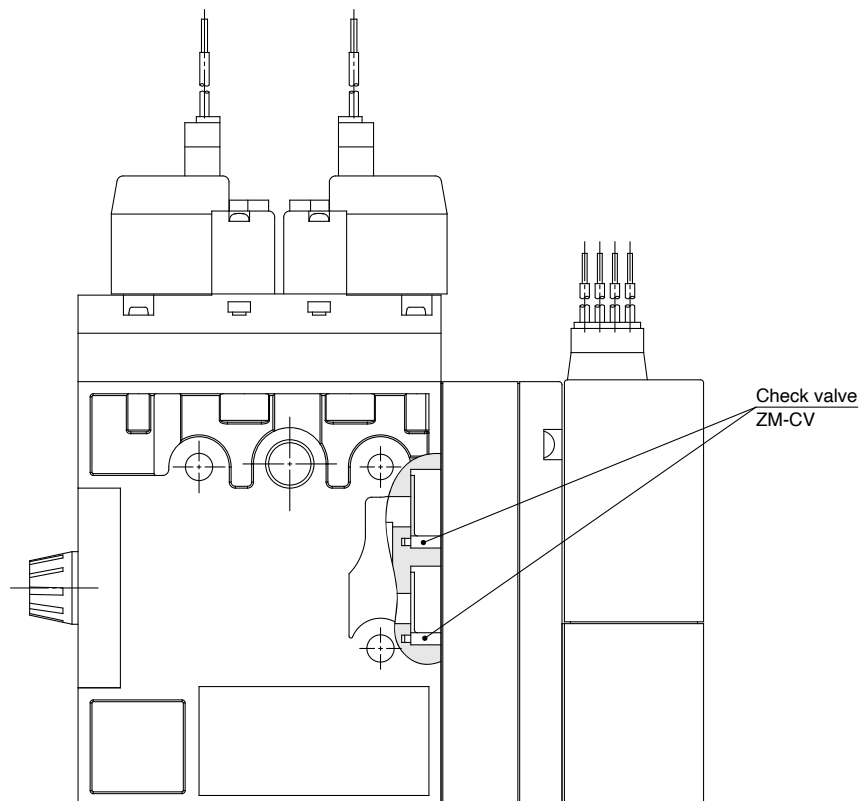
When a manifold is used, the exhaust that is discharged to the silencer could flow out to the vacuum (V) port side. To reduce this, a check valve is used.



Warning

1. It cannot be used for maintaining a vacuum.
2. Use a vacuum release valve. (Compatible with valve K, B and Q types only.) (The workpiece cannot be released without a vacuum release valve.)
3. Compatible with the manifold specifications only.

Construction



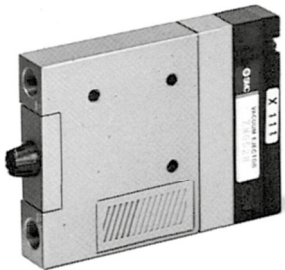


2 With Individual Exhaust Spacer

Single: ZM Nozzle diameter Body Supply pressure — **X111** — Q
 ↓ Individual exhaust spacer

When using an individual ejector in a clean room, the exhaust can be discharged outside of the clean room by attaching an individual exhaust spacer. (The spacer can also be installed when using a manifold. Please contact SMC for mounting dimensions.)

* It is possible to manufacture it with a valve and a switch.



⚠ Caution

To connect a pipe to the exhaust port, do not use an elbow joint because it creates resistance and prevents the system from attaining a sufficient vacuum.

When the product is used to prevent the manifold exhaust intrusion, exhaust intrusion may occur if exhaust pipes are put together.

When this special product is used for all manifold stations, the following part number can be used.

ZZM — 00 —
 ↓ Stations ↓ Without exhaust ports on both sides ↓ Common air pressure supply (P) port location*

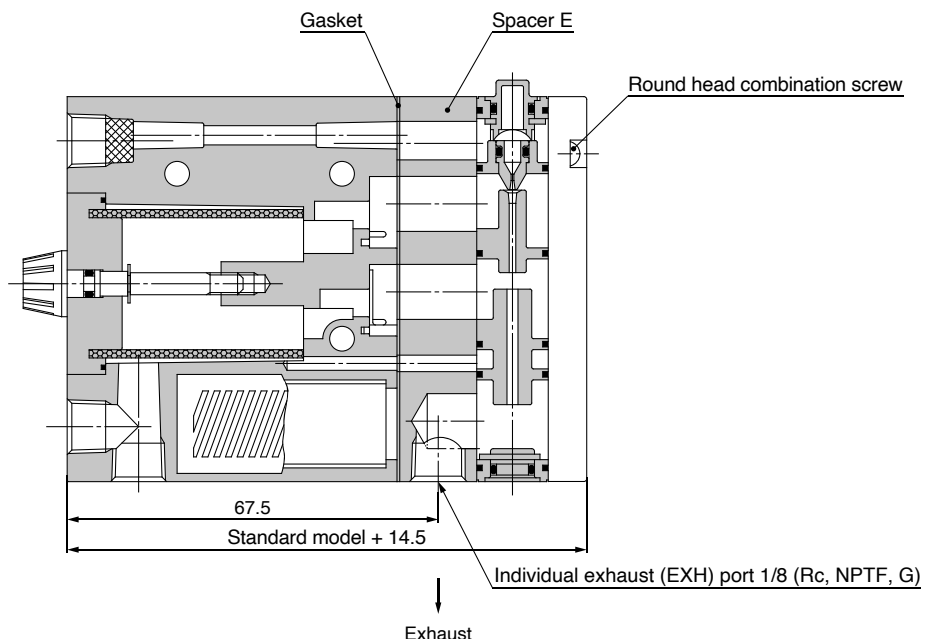
Nil	Both sides
R	Right side
L	Left side

* To the left or right when the vacuum (V) port is viewed from the front

Exhaust spacer assembly: ZM — SP —

Thread Type	
—	Rc
T	NPTF
F	G

Construction



3 Double Solenoid Supply Valve

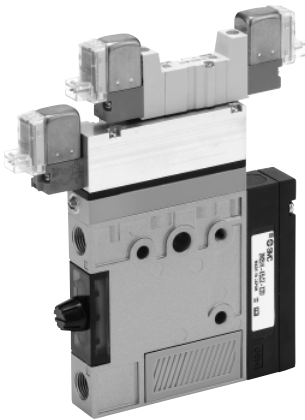
Single: ZM Nozzle diameter Body Supply pressure Valve voltage Electrical entry X126

• Double solenoid supply valve

-X126	With release valve (Valve K type only)
-X135	Without release valve (Valve J type only)

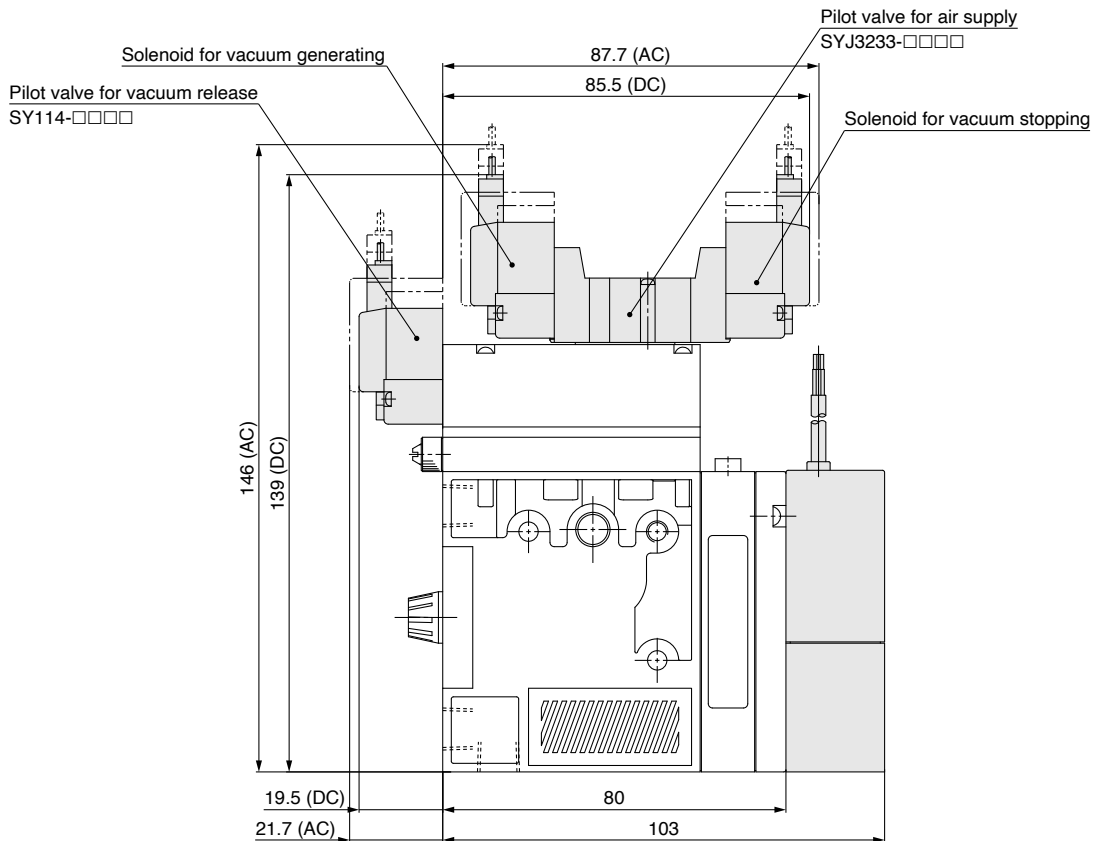
This is an air supply pilot valve that is made with double solenoids.

* It is possible to manufacture it with a switch.






* When the valve voltage is 100 or 110 VAC, only the M plug connector can be selected as the electrical entry method.

Construction



Safety Instructions

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

-  **Danger:** **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
-  **Warning:** **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
-  **Caution:** **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

- 1) ISO 4414: Pneumatic fluid power – General rules and safety requirements for systems and their components.
ISO 4413: Hydraulic fluid power – General rules and safety requirements for systems and their components.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots.
etc.

Warning

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

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

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

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

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

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

4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogues and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

Caution

We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries. Use in non-manufacturing industries is not covered.

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”. Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first. ²⁾ Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
 2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
 3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular products.
- 2) Vacuum pads are excluded from this 1 year warranty.
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

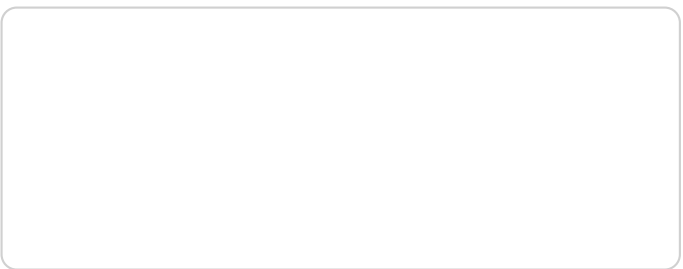
1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries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

Safety Instructions

Be sure to read “Handling Precautions for SMC Products” (M-E03-3) before using.

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