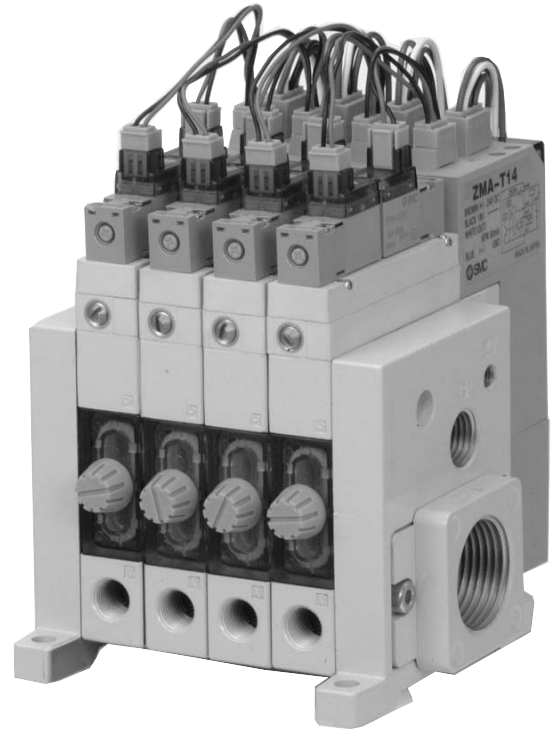
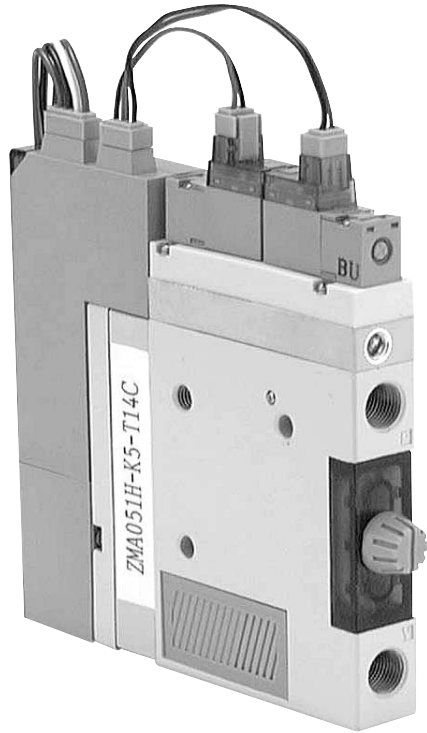


Vacuum Ejector With Solid State Timer *Series ZMA*



ZX

ZR

ZM

ZH

ZU

ZL

ZY

ZQ

ZF

ZP

ZCU

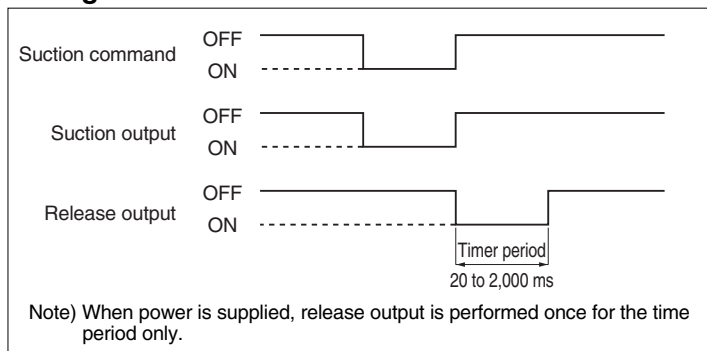
AMJ

Misc.

**Incorporates solid state timer
function for release valve control
(Timer setting with PLC is unnecessary)**

**Allows sharing of switch/valve
power supply, and single line for
suction signal
(Valve wiring is unnecessary)**

Timing Chart



**Timer can be easily adjusted
without programming
(Reduction of the load of PLC)**

Precautions

Be sure to read before handling. Refer to pages 13-15-3 to 13-15-4 for Safety Instructions and Common Precautions on the products mentioned in this catalog, and refer to page 13-1-5 for Precautions on every series.

Mounting

Warning

1. Do not drop or bump.
Do not drop, bump or apply excessive impact (1,000 m/s²) when handling. Even if the switch body is not damaged, the switch may suffer internal damage that will lead to malfunction.
2. Hold the product from the body side when handling.
The tensile strength of the power cord is 49 N, and pulling it with a greater force can cause failure.
3. When handling the product, never move or loosen the switch assembly or the switch assembly mounting screws.

Wiring

Warning

1. Do not allow repeated bending or stretching forces to be applied to lead wires.
Wiring arrangements in which repeated bending stress or stretching force is applied to the lead wires can cause broken wires.

Pressure Source

Warning

1. Vacuum pressure switches
There will be no change in performance if a pressure of approximately 0.5 MPa is applied momentarily (when releasing vacuum), but care should be taken that pressures of 0.2 MPa or more are not applied on a regular basis.

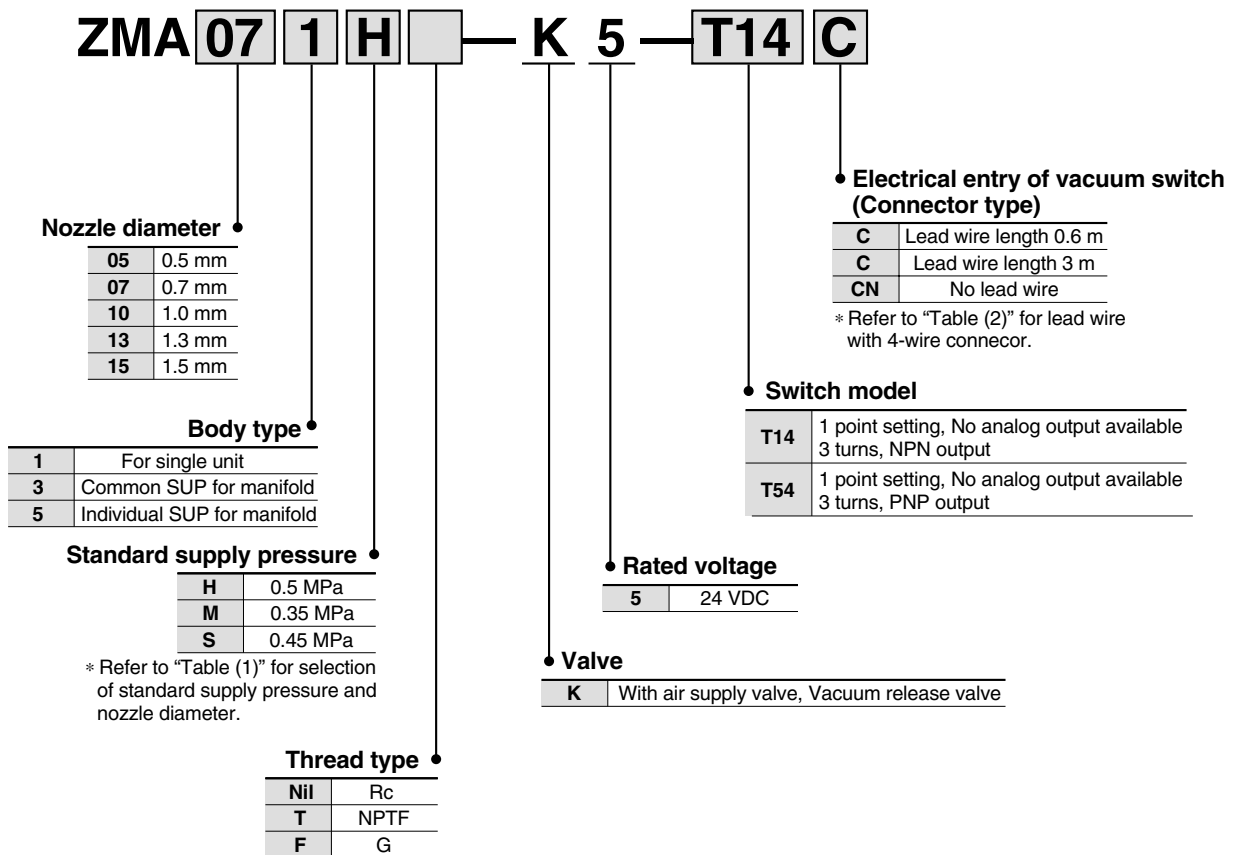
Operating Environment

Warning

1. The product cannot be used in a strong magnetic field.

Vacuum Ejector With Solid State Timer Series ZMA

How to Order



ZX

ZR

ZM

ZH

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Misc.

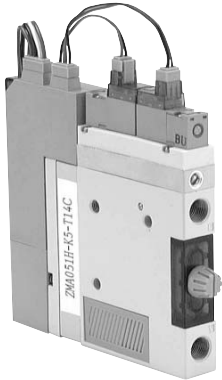
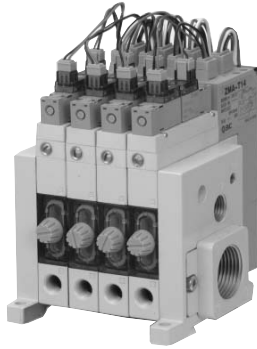
**Table (1)
Combination of Nozzle Diameter and Standard Supply Pressure**

Nozzle diameter	Standard supply pressure (MPa)		
	M (0.35)	S (0.45)	H (0.5)
ø0.5	—	—	●
ø0.7	●	—	●
ø1.0	●	—	●
ø1.3	●	●	●
ø1.5	—	●	—

Table (2)

Lead wire with 4-wire connector	P5022-6-1 (0.6 m)
	P5022-6-2 (3 m)

Series ZMA



Model

Nozzle diameter (mm)	Model	Standard supply pressure			Maximum suction flow rate (ℓ/min (ANR))	Air consumption (ℓ/min (ANR))	Diffuser construction
		H	M	S			
0.5	ZMA05□H	0.5 MPa	—	—	18	12	2nd stage diffuser
0.7	ZMA07□H				24	23	
1.0	ZMA10□H				36	46	
1.3	ZMA13□H				40	95	
0.7	ZMA07□M	—	0.35 MPa	—	20	16	
1.0	ZMA10□M				26	32	
1.3	ZMA13□M				36	70	
1.3	ZMA13□S	—	—	0.45 MPa	38	75	1st stage diffuser
1.5	ZMA15□S				45	90	

Vacuum Ejector Specifications

Fluid	Air
Max. operating pressure	0.7 MPa
Max. vacuum pressure	-84 kPa
Supply pressure range	0.25 to 0.55 MPa
Operating temperature range	5 to 50°C
Suction filter	Polyethylene sintered metal (30 μm)

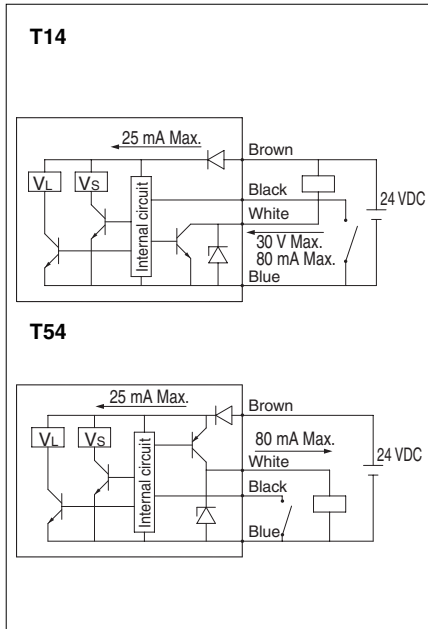
Valve Specifications

How to operate	Pilot type
Main valve	Poppet
Effective area (Cv factor)	3 mm ² (0.17)
Operating pressure range	0.25 to 0.6 MPa
Electrical entry	Plug connector
Max. operating frequency	5 Hz
Voltage	24 VDC

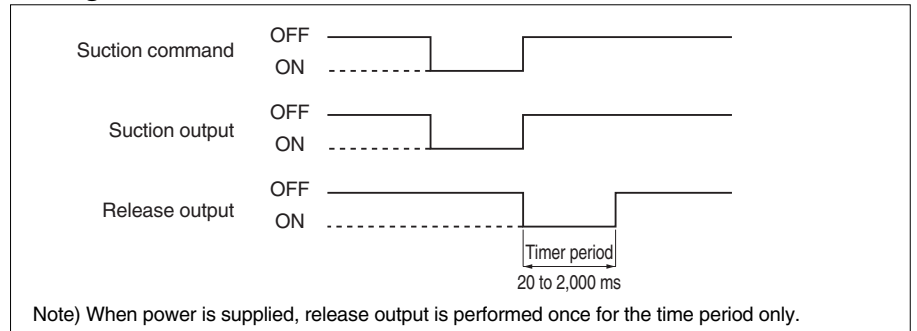
Vacuum Switch with Timer Specifications (for controlling solenoid valve)

Power source	Operating voltage	24 VDC ± 10%
	Consumption current per one unit	1.1 W (at switch output OFF)
Sensor switch output	Number of output	1
	Output	NPN/PNP open collector
	Setting trimmer	3 turns
	Operation indicator light	Red LED lighting
	Temperature characteristics	±3% FS or less
Part of timer	Hysteresis	3% FS or less (fixed)
	Timer period	20 to 2,000 ms
	Setting trimmer	3 turns
	Temperature characteristics	±3% FS or less

Connection Example



Timing Chart



Wiring

Brown	DC (+)
Black	Suction command
White	Switch output
Blue	DC (-)

Construction: ZMA□1□-K□L-E□

Pilot valve for air supply

Pilot valve for vacuum release

Air supply port

Vacuum port

- ZX
- ZR
- ZM**
- ZH
- ZU
- ZL
- ZY
- ZQ
- ZF
- ZP
- ZCU
- AMJ
- Misc.

Component Parts

No.	Description	Material	Note
①	Body	Aluminum die-casted	
②	Valve cover	Zinc die-casted	
③	Adapter plate	Zinc die-casted	
④	Cover	Zinc die-casted	ZMA-HCB
⑤	Tension bolt	Stainless steel/Polyacetal	
⑥	Flow adjustment screw	Brass	Electroless nickel plated

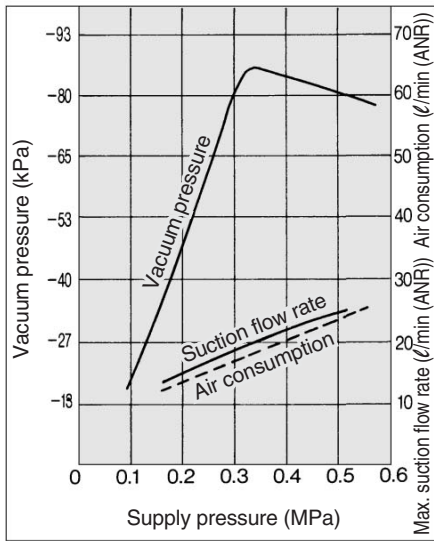
Replacement Parts

No.	Description	Material	Part no.
⑦	Filter cover assembly	—	ZMA-FCB-0
⑧	Diffuser assembly	—	ZMA□□0□-0
⑨	Suction filter	Polyethylene	ZM-SF
⑩	Silencer assembly	—	ZM-SA
⑪	Pilot valve	—	SY114-5LOZ
⑫	Poppet valve assembly	—	ZM-PV-0
⑬	Vacuum switch with timer	—	ZMA-T14CN (NPN) ZMA-T54CN (PNP)
⑭	Check valve	NBR	ZM-CV
⑮	Connector assembly	—	ZMA-VC-1A

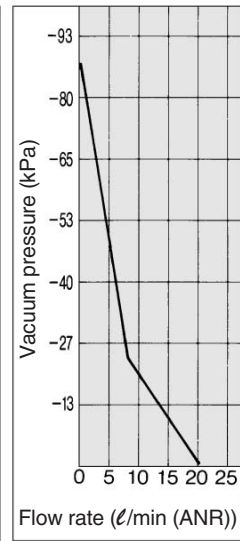
Exhaust Characteristics/Flow Characteristics, Standard Supply Pressure: M...0.35 MPa

ZM07□M

Exhaust Characteristics

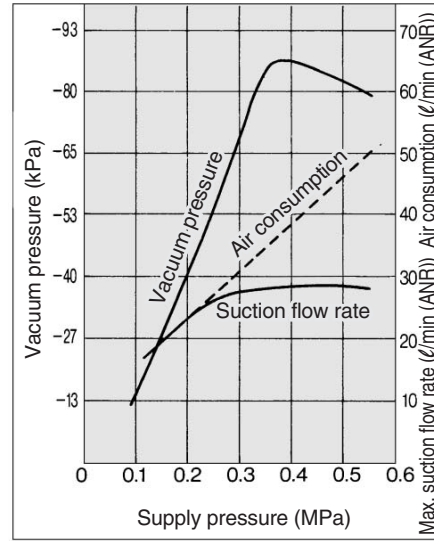


Flow Characteristics

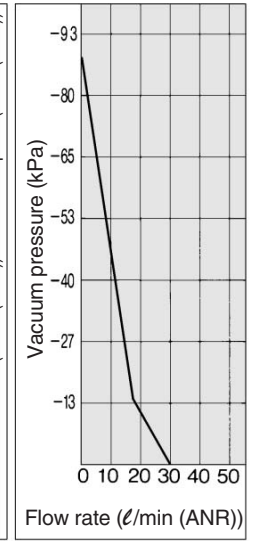


ZM10□M

Exhaust Characteristics

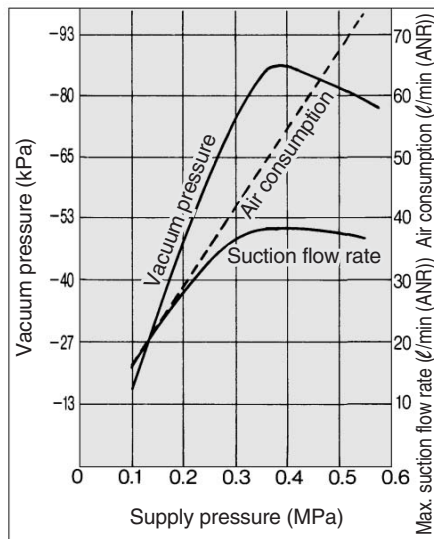


Flow Characteristics

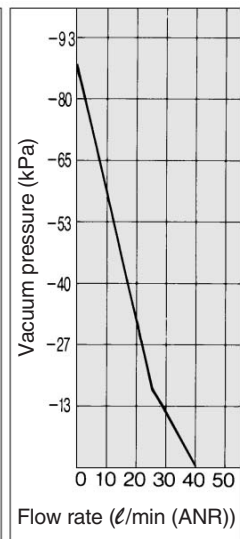


ZM13□M

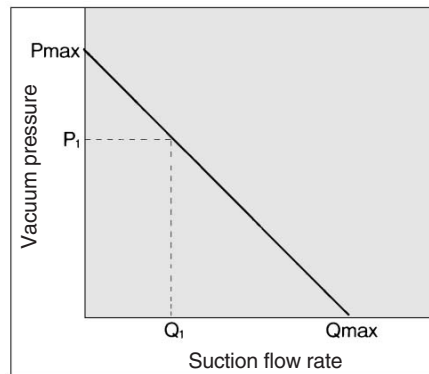
Exhaust Characteristics



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 use.

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

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 (P_{max}).
2. When suction port is opened gradually, air can flow through, (air leakage), suction flow increases, but vacuum pressure decreases. (condition P_1 and Q_1)
3. When suction port is opened further, suction flow moves to maximum value (Q_{max}), but vacuum pressure is near 0. (atmospheric pressure).

When vacuum port (vacuum piping) has no leakage, vacuum pressure becomes maximum, and vacuum pressure decreases as leakage increases. When leakage value is the same as max. suction flow, vacuum pressure is near 0. When ventirative or leaky work must be ad-sorbed, please note that vacuum pressure will not be high.

ZX

ZR

ZM

ZH

ZU

ZL

ZY

ZQ

ZF

ZP

ZCU

AMJ

Misc.

Series ZMA

Dimensions

