



Multistage Ejector

# (N)ZL Series



(N)ZL112 with Valve and (N)ZL212 Large Flow Type

Prohibited

- 3 Stage Construction
- Optional Supply & Release Valves
- Optional Pressure Sensors



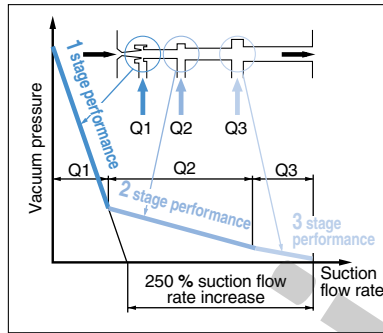
**ORDER  
ONLINE**

# Series (N)ZL

## Multistage Ejector

Energy saving, high flow, 3 stage diffuser construction

Suction flow rate increased 250% and air consumption reduced 20% with 3 stage diffuser construction  
(Versus  $\varnothing 1.3$ , single stage model)

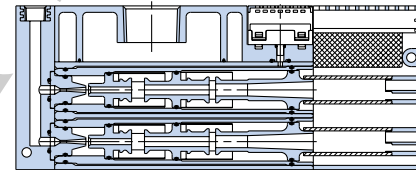


	Maximum suction flow rate $\ell/\text{min}$ (ANR)(SCFM)	Air consumption $\ell/\text{min}$ (ANR) (SCFM)
(N)ZL112	100 (3.5)	63 (2.2)
(N)ZL212	200 (7.0)	126 (4.4)

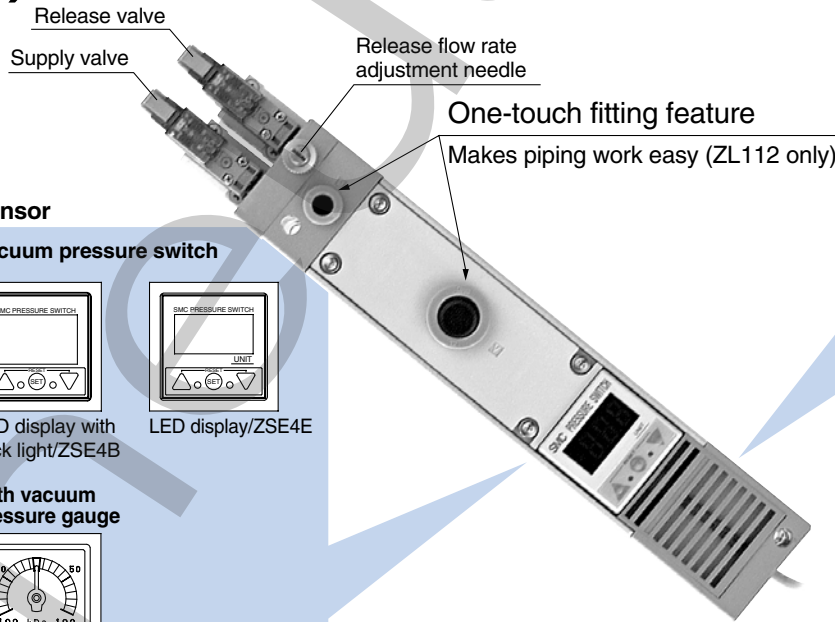
NEW

## Series (N)ZL212

Two Parallel 3 Stage Diffusers Integrated for Compact size and large flow rate  
(twice the flow rate of the (N)ZL112)



## Series (N)ZL112 valve option now available ((N)ZL112 only)



### Exhaust port options

Built-in silencer

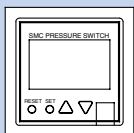


Ported exhaust

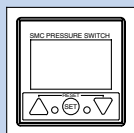


### Vacuum pressure sensor

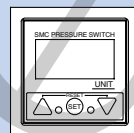
With digital vacuum pressure switch



LCD display/ZSE4

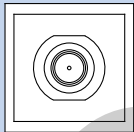


LCD display with back light/ZSE4B

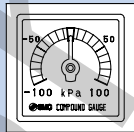


LED display/ZSE4E

With vacuum adapter



With vacuum pressure gauge



### Series variations

### Vacuum pressure sensor options

Series	Maximum suction flow rate $\ell/\text{min}$ (ANR) (SCFM)	Air consumption $\ell/\text{min}$ (ANR) (SCFM)	Exhaust port		With valve		Digital vacuum pressure switch			Vacuum pressure gauge	Vacuum adapter
			Built-in silencer	Port exhaust	With supply valve/ release valve	With supply valve	ZSE4E	ZSE4B	ZSE4		
(N)ZL112	100 (3.5)	63 (2.2)	●	●	●	●	●	●	●	●	●
(N)ZL212	200 (7.0)	126 (4.4)	●	●	●	●	●	●	●	●	●

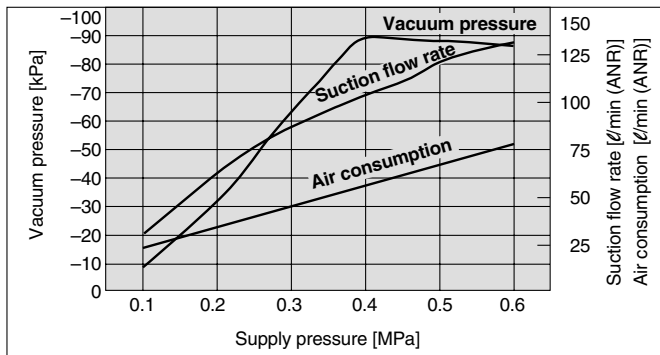
Multistage Ejector

Series (N)ZL

Selection

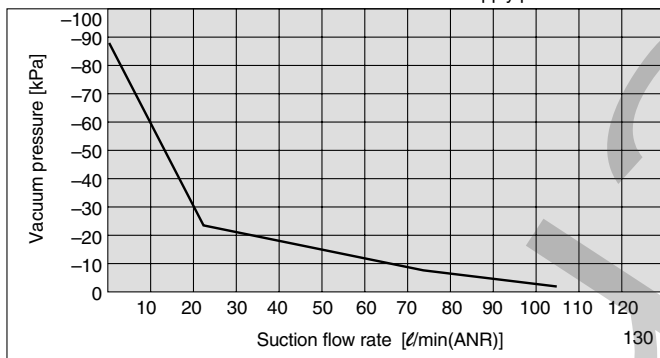
ZL112

Exhaust characteristics



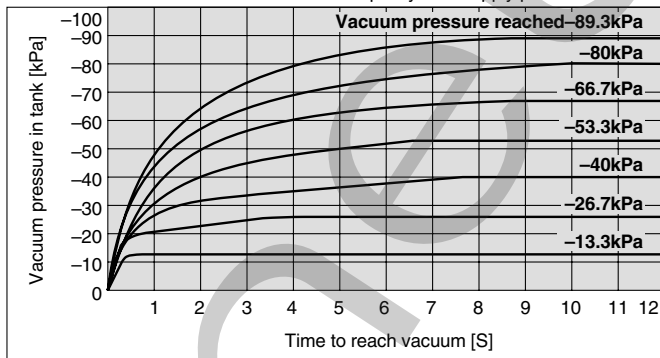
Flow rate Characteristics

Supply pressure: 0.4MPa



Time to reach vacuum

Measurement conditions/Tank capacity: 1ℓ Supply pressure: 0.4MPa



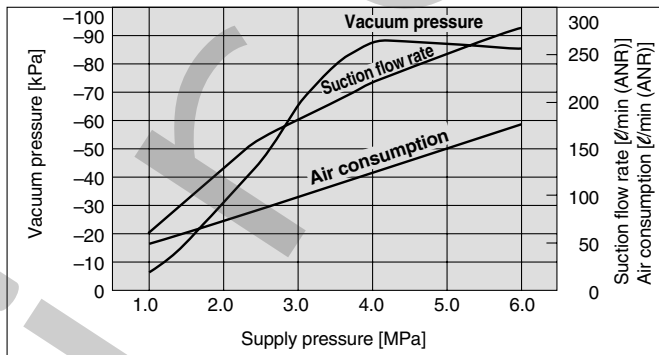
Viewing the graphs

The graphics indicate the time required to reach a vacuum pressure determined by adsorption conditions for work pieces, etc., starting from atmospheric pressure in a 1ℓ sealed tank. Approximately 8.8 seconds are necessary to attain a vacuum pressure of -89.3kPa.

1ℓ/min = 0.035 SCFM  
1MPa = 145 psi  
1kPa = 0.145 psi

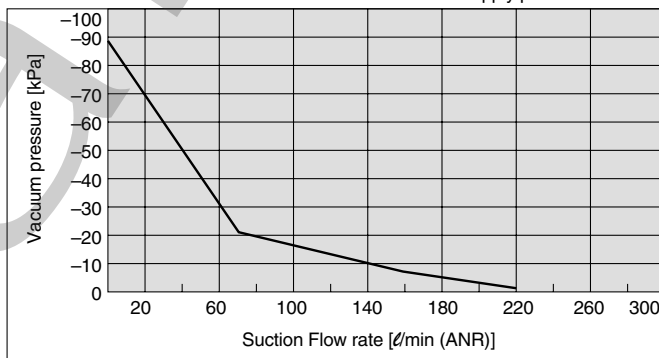
ZL212

Exhaust characteristics



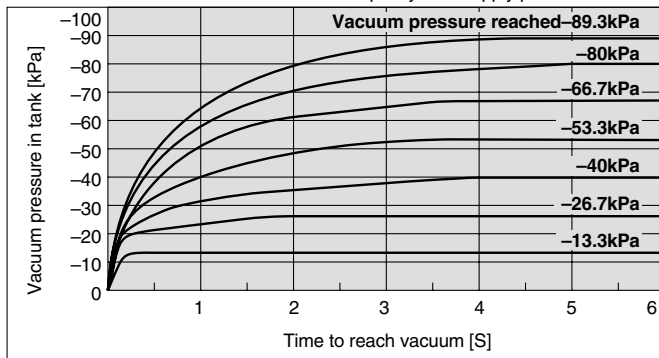
Flow rate characteristics

Supply pressure: 0.4MPa



Time to reach vacuum

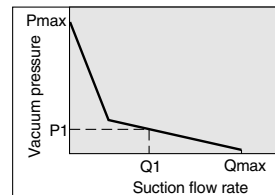
Measurement conditions/Tank capacity: 1ℓ Supply pressure: 0.4MPa



Viewing the graphs

The flow rate characteristics indicate the relationship between the vacuum pressure and the suction flow rate of the ejector, and show that when the suction flow rate changes the vacuum pressure also changes. In general, this indicates the relationship at the ejector's standard operating pressure. In the graph, Pmax indicates the maximum vacuum pressure, and Qmax indicates the maximum suction flow rate. These are the values that are published as specifications in catalogs, etc. Changes in vacuum pressure are explained below.

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



When adsorbing work pieces which are permeable or subject to leakage, etc., caution is required as the vacuum pressure will not be very high.

# Series (N)ZL

# Multistage Ejector

## How to Order

Without valve **N ZL1 12** [ ] [ ]

With valve **N ZL1 12** [ ] [ ] **K1 5 M Z** [ ] **E 25** [ ]

### Fitting Size

	Air Supply Port	Vacuum Port
Nil	ø6	ø12
N	1/4"	1/2"

### Nozzle diameter

12	ø1.2mm
----	--------

### Exhaust specifications

Nil	Built-in silencer
P	Port exhaust

### Exhaust port thread specification (port exhaust only)

Nil	Rc1/2
F	G1/2
N	1/2-14NPT
T	1/2-14NPTF

### Supply valve/Release valve combination

K1	With supply and release valves
K2	With supply valve

### Rated voltage

DC specifications	
5	24VDC
6	12VDC
V	6VDC
S	5VDC
R	3VDC
AC specifications (50/60Hz)	
1	100VAC
2	200VAC
3	110VAC [115V]
4	220VAC [230V]

### Electrical entry

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

### Lead wire length

Nil	0.5m
L	2.9m

### Digital vacuum pressure switch specifications

For E (ZSE4) EB (ZSE4B)		
25	NPN output	Lead wire length 0.5 (2.9)m
26	Analog output	Lead wire length 0.5 (2.9)m
65	PNP output	Lead wire length 0.5 (2.9)m
For EE (ZSE4E)		
27	NPN output	Lead wire length 0.5 (2.9)m
26	Analog output	Lead wire length 0.5 (2.9)m
67	PNP output	Lead wire length 0.5 (2.9)m

\* Not required for nil, vacuum adapter (GN) and vacuum pressure gauge (G).

### Vacuum pressure sensor

Nil	None
GN	Vacuum adapter Rc1/8
G	With vacuum pressure gauge
E	With digital vacuum pressure switch ZSE4
EB	With digital vacuum pressure switch ZSE4B
EE	With digital vacuum pressure switch ZSE4E

### Manual override

Nil	Non-locking push type
D	Slotted locking type

### Light/Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
U	With light/surge voltage suppressor (non-polar type)

Note 1) Type U is 24 or 12VDC only.

Note 2) Since surge voltage is prevented by a rectifier in the case of AC, there is no "S" type.

## Multistage Ejector

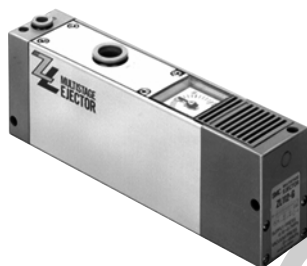
### Standard



### With valve



### With vacuum pressure gauge



### Adapter



### Port exhaust



## Ejector Specifications

Model	(N)ZL112
Nozzle diameter	ø1.2mm
Maximum suction flow rate	100ℓ/min (ANR) (3.5 SCFM)
Air consumption	63ℓ/min (ANR) (2.2 SCFM)
Maximum vacuum pressure	-84kPa (24.9 inHg)
Maximum operating pressure	0.7MPa (101 psi)
Supply pressure range	0.2 to 0.5MPa (29 to 72 psi)
Standard supply pressure	0.4MPa (58 psi)
Operating temperature range	5 to 50°C (41 to 122°F)

## Supply/Release Valve Specifications

Part Number	SYJ514-□□□
Type of valve actuation	N.C.
Fluid	Air
Operating pressure range	0.2 to 0.5MPa (29 to 72 psi)
Internal pilot type	
Ambient and fluid temperature	5 to 50°C (41 to 122°F)
Response time (for 0.5MPa) <sup>Note 1)</sup>	25ms or less
Maximum operating frequency	5Hz
Manual operation	Non-locking push type, Slotted locking type
Pilot exhaust type	Pilot valve individual exhaust type, Main valve/Pilot valve common exhaust
Lubrication	Not required
Mounting position	Unrestricted
Impact/Vibration resistance <sup>Note 2)</sup>	150/30m/s <sup>2</sup>
Enclosure	Dust proof

Note 1) Based on JIS B8374-1981 dynamic performance test. (coil temperature 20°C (68°F), at rated voltage, without surge voltage suppressor)

Note 2) Impact resistance: No malfunction when tested with a drop tester in the axial direction and at a right angle to the main valve and armature, one time each in both energized and deenergized states. (initial value)

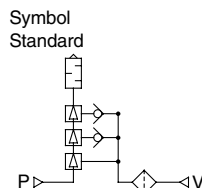
Vibration resistance: No malfunction when tested with one sweep of 8.3 to 2000Hz in the axial direction and at a right angle to the main valve and armature, one time each in both energized and deenergized states. (initial value)

Note 3) Refer to CAT. N220 "SYJ300/500/700" for details on valves.

## Option Specifications

### Vacuum pressure gauge specifications

Part number	GZ30S
Fluid	Air
Pressure range	-100 to 100kPa (-14 to 14 psi)
Scale range (angular)	230°
Accuracy	± 3% F.S. (full span)
Class	Class 3
Operating temperature range	0 to 50°C (32 to 122°F)
Material	Housing: Polycarbonate/ABS resin



# Series (N)ZL

# Multistage Ejector

## Option Specifications

With digital vacuum pressure switch (ZSE4)



### Digital vacuum pressure switch specifications

Part number	ZSE4-00-□□-X105	ZSE4B-00-□□-X105	ZSE4E-00-□□-X105
Display	LCD	LCD with back light	LED
Pressure setting range	-101 to 10KPa { -760 to 75mmHg } (-29.9 to 3inHg)		
Maximum operating pressure	200KPa (29 psi)		
Operation indicator light (lights up when ON)	Green		OUT1: Green OUT2: Red
Response frequency	200Hz (5ms)		
Hysteresis	Hysteresis mode	Variable (3 digits or more)	
	Window comparator mode	Fixed (3 digits)	
Fluid	Air, Non-corrosive gas		
Temperature characteristics	±3% F.S. or less		
Repeatability	±1% F.S. or less		
Operating voltage	12 to 24VDC (ripple ±10% or less )		
Current consumption	25mA or less	45mA or less	-26, -27: 50mA or less -67: 60mA or less
Pressure indication	3 1/2 digits (character height 8mm)		
Self diagnostic function	(Over current <sup>Note 1)</sup> , Over pressure, Data error, Presence of pressure at 0 clear		
Operating temperature range	0 to 50°C (32° to 122°F) (with no condensation)		
Noise resistance	500Vp-p, Pulse width: 1µS, Start up: 1nS		
Withstand voltage	Between external terminal batch and case: 1000VAC 50/60Hz for 1 min.		
Insulation resistance	Between external terminal batch and case: 2MΩ (at 500VDC)		
Vibration resistance	2hrs. each in X, Y, Z directions at smaller of 10 to 500Hz with amplitude 1.5mm, or acceleration 10G		
Impact resistance	100G in X, Y, Z directions, 3 times each		

Note 1) Not available on analog output type.

\* Refer to CAT.E824-A "Pressure Switch" for details on switches.

### Output specifications

ZSE4 ZSE4B	-25 (L)	1 output NPN open collector 30V, 80mA or less
	-26 (L)	Analog output (1 to 5V)
	-67 (L)	1 output PNP open collector 80mA or less
ZSE4E	-26 (L)	Analog output (1 to 5V)
	-27 (L)	2 outputs NPN open collector 30V, 80mA or less
	-67 (L)	2 outputs PNP open collector 80mA or less

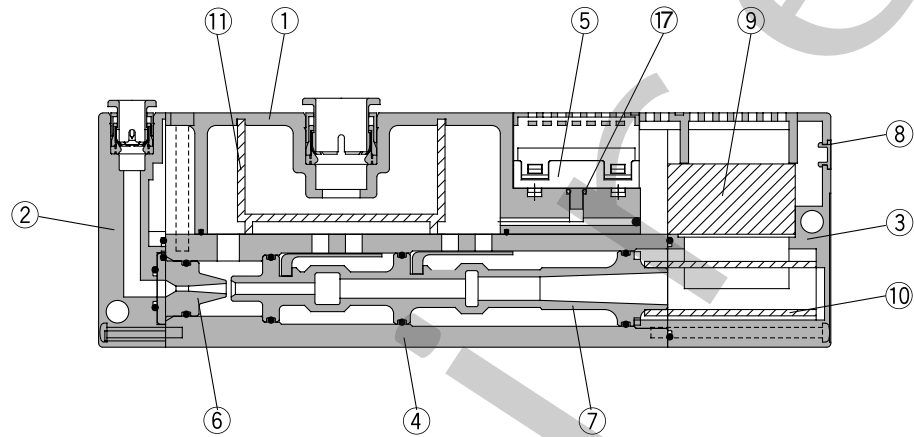
\* Refer to CAT.E824-A "Pressure Switch" for details on switches.

# Multistage Ejector

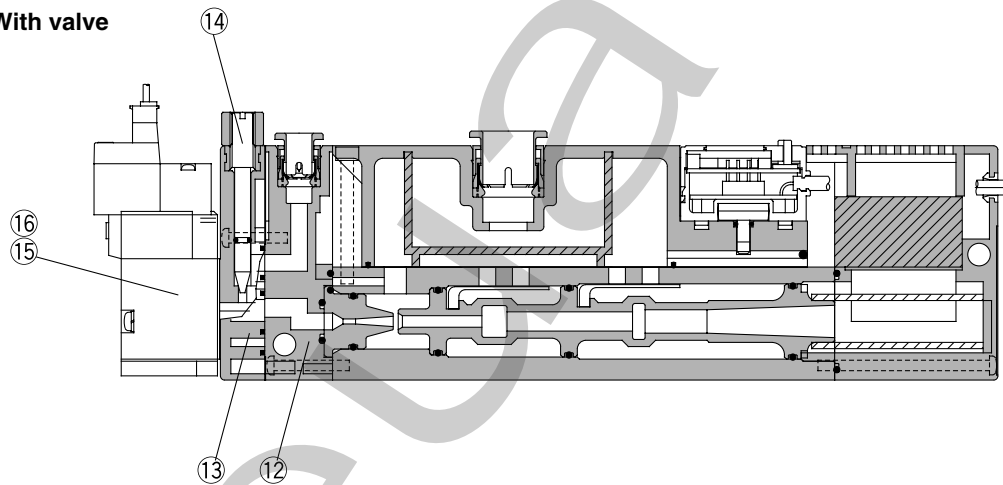
# Series (N)ZL

## Construction

Without valve



With valve



### Parts list

No.	Description	Part No.	Note
1	Suction cover		
2	Front cover		Without valve
3	End cover		
4	Body		
5	Vacuum sensor unit		
6	Nozzle		
7	Diffuser		
8	Detent plug	P397110	Other than vacuum switch
	Lead wire cover	P397176	Vacuum switch specifications
12	Front cover B		With valve
13	Valve plate		With valve
14	Needle		With valve
15	Supply valve (N.C.)	SYJ514	With valve
16	Release valve (N.C.)	SYJ514	With valve
17	O-ring	2.79x1.02(NZL)	NBR

### Replacement parts

No.	Description	Material	Part No.
9	Sound absorbing material B	PVF	ZL112-SP01 (set no. for 9, 10 & 11)
10	Sound absorbing material A	PVF	
11	Suction filter	PE	

\* When ordering a vacuum pressure gauge or a digital vacuum pressure switch separately, use the part numbers shown in the option specifications on pages 5 & 6.

# Series (N)ZL

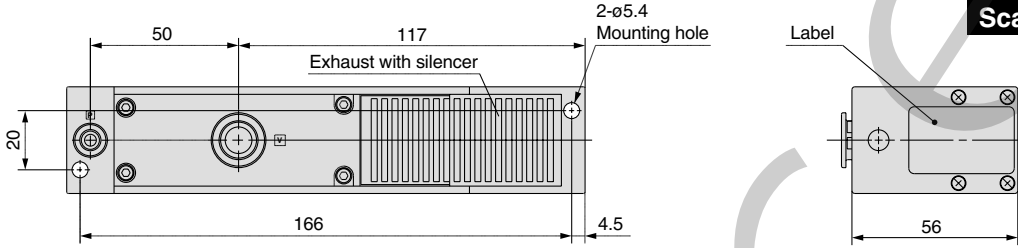
# Multistage Ejector

## Dimensions (mm) / Series (N)ZL112 (without Valve)

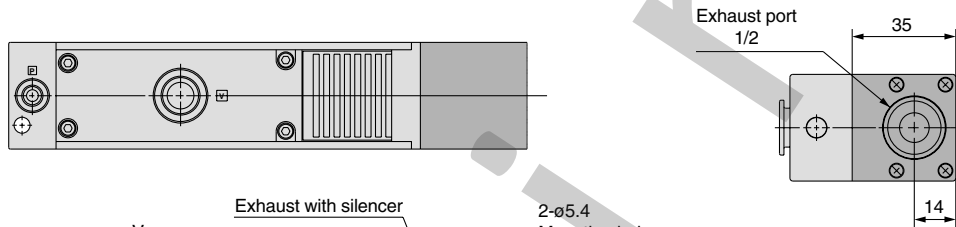
1in = 25.4mm

Scale: 40%

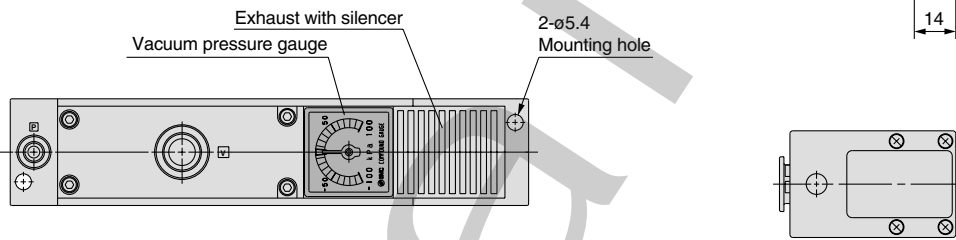
**Standard  
(N)ZL112**



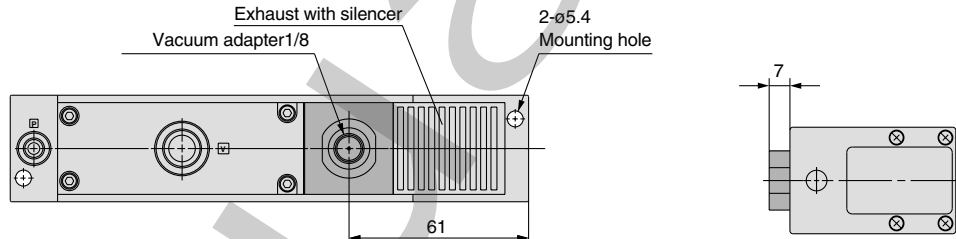
**Port exhaust  
(N)ZL112P**



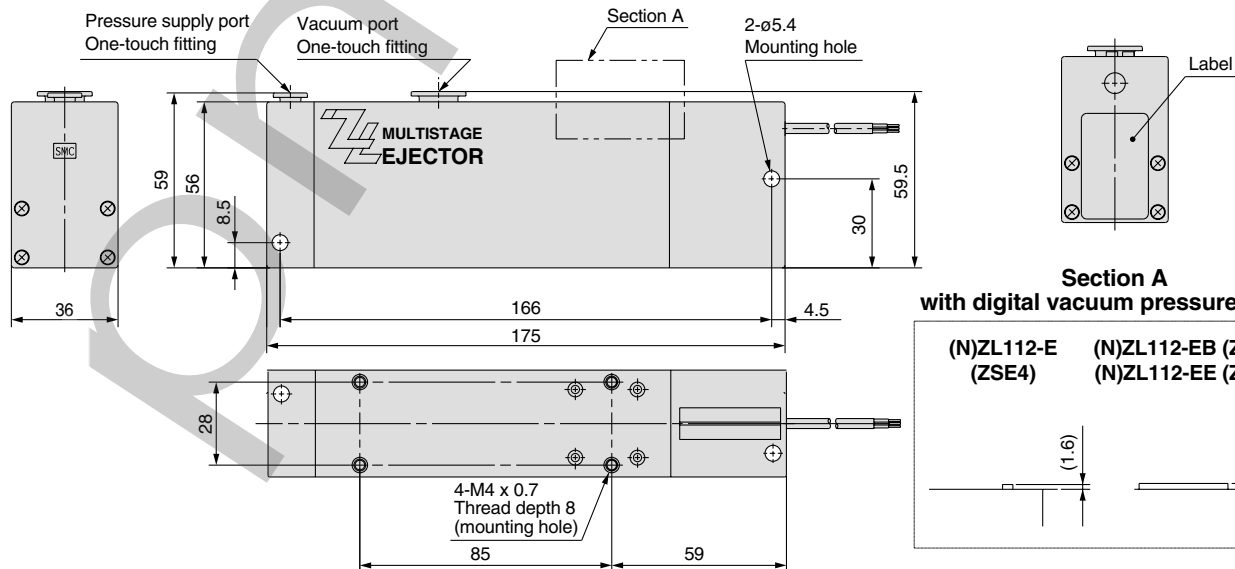
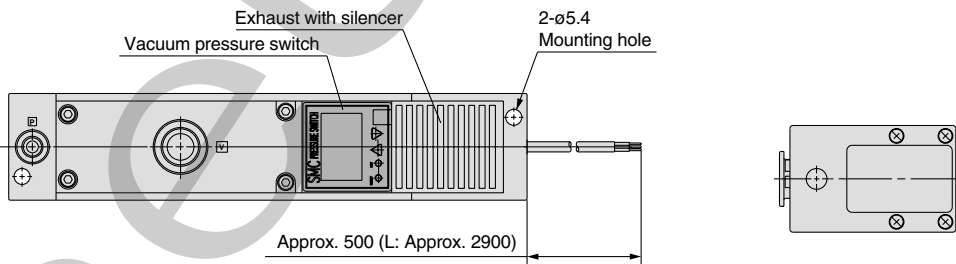
**With vacuum  
pressure gauge  
(N)ZL112-G**



**With vacuum adapter  
(N)ZL112-GN**

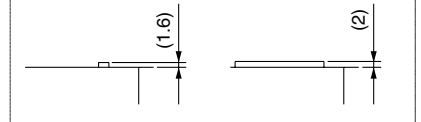


**With digital vacuum  
pressure switch  
(N)ZL112-E**



**Section A  
with digital vacuum pressure switch**

(N)ZL112-E (ZSE4) (N)ZL112-EB (ZSE4B) (N)ZL112-EE (ZSE4E)





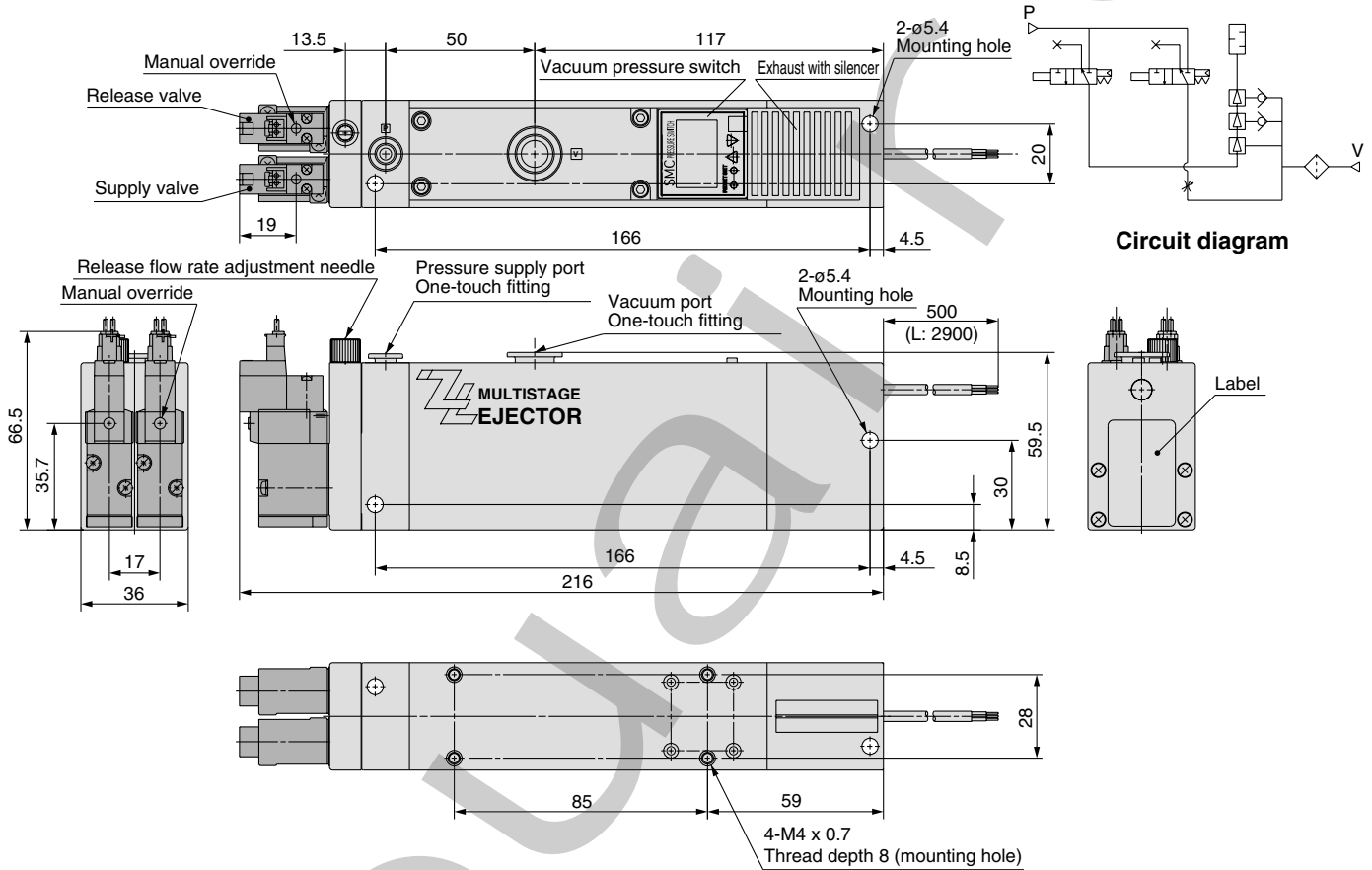
Multistage Ejector

Dimensions (mm) / Series (N)ZL112 (with Valve)

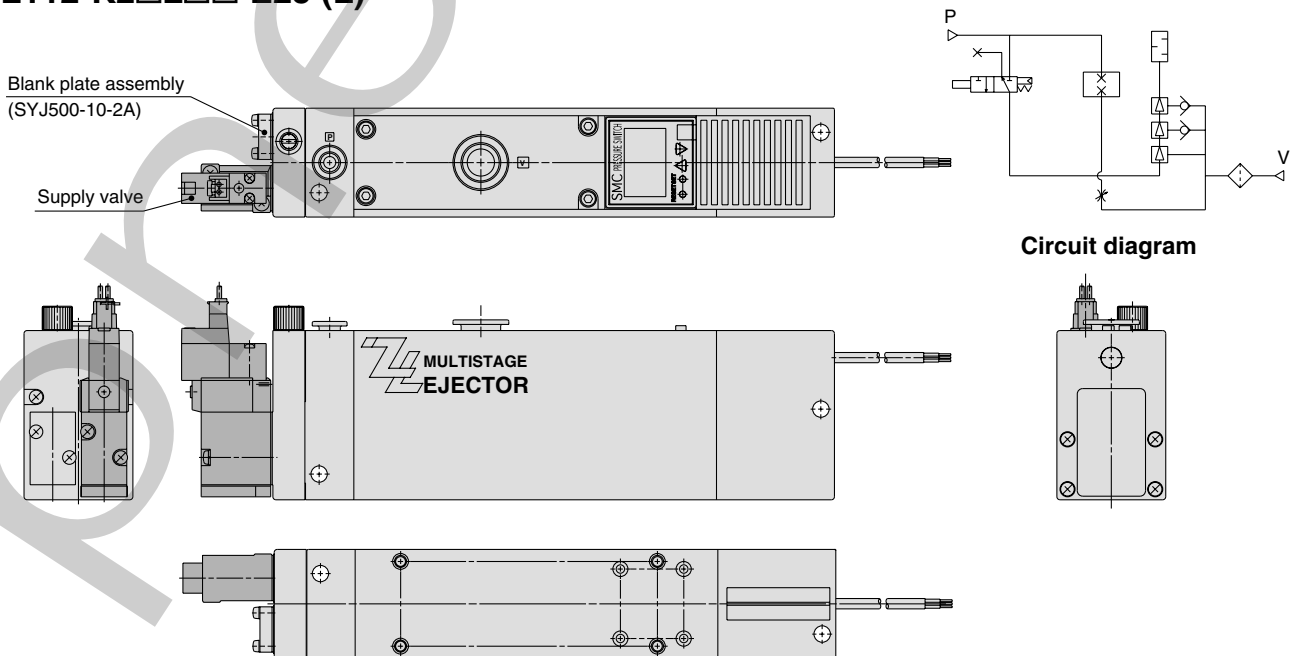
1in = 25.4mm

Scale: 40%

With supply valve and release valve  
(N)ZL112-K1□L□□-E25 (L)



With supply valve  
(N)ZL112-K2□L□□-E25 (L)



# Series (N)ZL

Standard



With vacuum pressure gauge



With digital vacuum pressure switch



With adaptor



Port exhaust



# Multistage Ejector

## How to Order

**N ZL2 12** [ ] [ ] [ ] [ ]

**Port Size**

	Air Supply Port	Vacuum Port
Nil	1/8 PT	3/4 PT
N	1/8 NPT	3/4 NPT

**Nozzle diameter**

12  $\varnothing$ 1.2mm

**Exhaust specifications**

Nil	Built-in silencer
P	Port exhaust

**Vacuum pressure sensor**

Nil	None
GN	Adaptor Rc1/8
G	With vacuum pressure gauge
E	With digital vacuum pressure switch ZSE4
EB	With digital vacuum pressure switch ZSE4B
EE	With digital vacuum pressure switch ZSE4E

**Lead wire length**

Nil	0.5m
L	2.9m

**Digital vacuum pressure switch specifications**

For E (ZSE4) EB (ZSE4B)		
25	NPN output	Lead wire length 0.6 (3.0)m
26	Analog output	Lead wire length 0.6 (3.0)m
65	PNP output	Lead wire length 0.6 (3.0)m
For EE (ZSE4E)		
27	NPN output	Lead wire length 0.6 (3.0)m
26	Analog output	Lead wire length 0.6 (3.0)m
67	PNP output	Lead wire length 0.6 (3.0)m

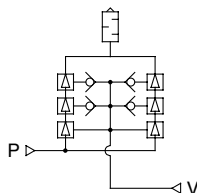
\* Not required for nil, vacuum adaptor (GN) and vacuum pressure gauge (G).

## Ejector Specifications

Model	(N)ZL212
Nozzle diameter	$\varnothing$ 1.2mm x 2
Maximum suction flow rate	200ℓ/min (ANR) (7 SCFM)
Air consumption	126ℓ/min (ANR) (44 SCFM)
Maximum vacuum pressure	-84kPa (24.9 inHg)
Maximum operating pressure	0.7MPa (101 psi)
Supply pressure range	0.2 to 0.5MPa (29 to 72 psi)
Standard supply pressure	0.4MPa (58 psi)
Operating temperature range	5 to 50°C (41° to 122°F)

\* Refer to pages 5 and 6 for vacuum pressure gauge and digital vacuum pressure switch specifications.

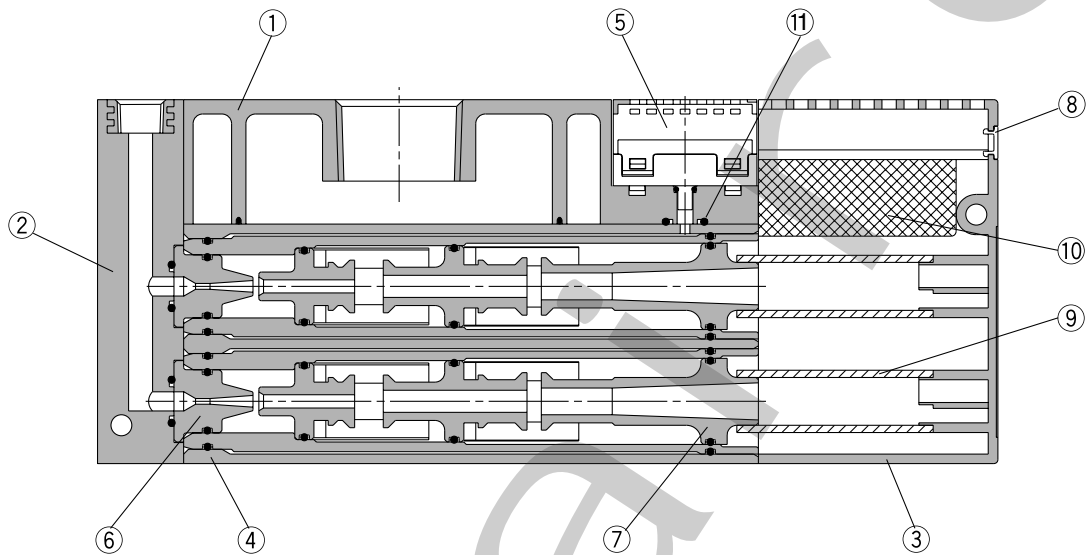
Symbol  
Standard



# Multistage Ejector

# Series (N)ZL

## Construction



### Parts list

No.	Description	Part No.	Note
1	Suction cover		
2	Front cover A		
3	End plate		
4	Body		
5	Vacuum sensor unit		
6	Nozzle		
7	Diffuser		
8	Detent plug	P397110	Other than vacuum switch
	Lead wire cover	P397176	Vacuum switch specifications

### Replacement parts

No.	Description	Material	Part No.
9	Sound absorbing material A	PVF	P397114
10	Sound absorbing material	PVF	P397230
11	O-ring	NBR	2.79 x 1.02 (NZL)

\* When ordering a vacuum pressure gauge or a digital vacuum pressure switch separately, use the part numbers shown in the option specifications on pages 5 & 6.

# Series (N)ZL

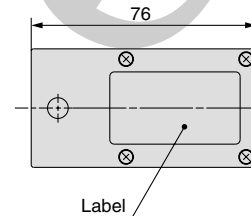
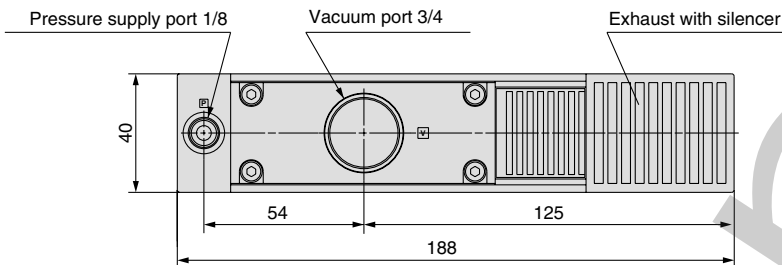
# Multistage Ejector

## Dimensions (mm) / Series (N)ZL212

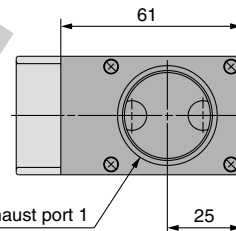
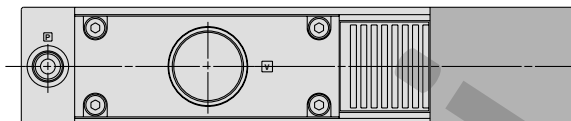
1 in = 25.4mm

Scale: 40%

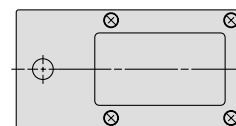
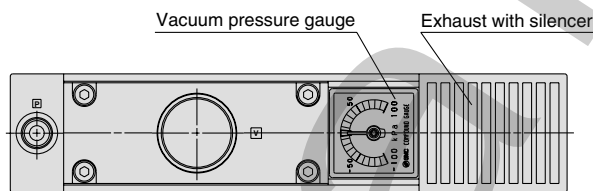
**Standard  
(N)ZL212**



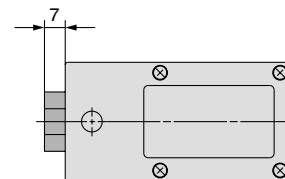
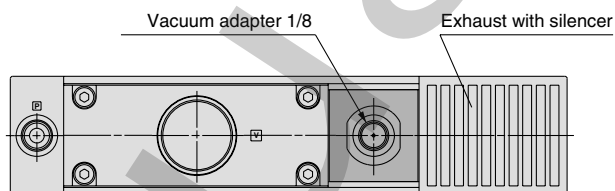
**Port exhaust  
(N)ZL212P**



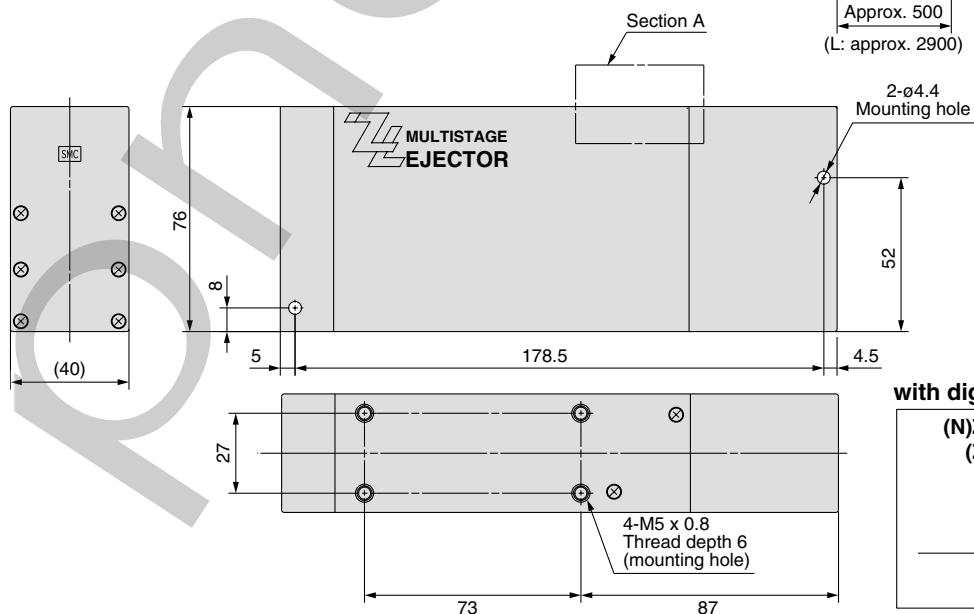
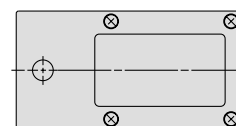
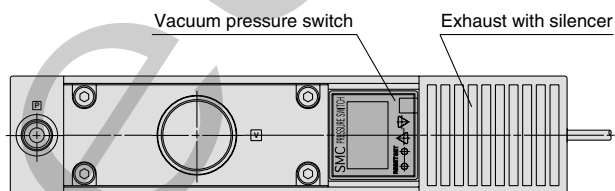
**With vacuum  
pressure gauge  
(N)ZL212-G**



**With vacuum adapter  
(N)ZL212-GN**



**With digital vacuum  
pressure switch  
(N)ZL212-E**



**Section A  
with digital vacuum pressure switch**

