

# Multistage Ejector

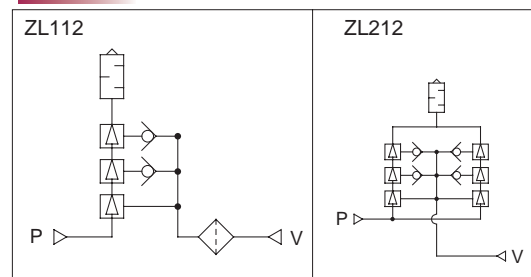
## Series **ZL**

### Features

- ➔ Multistage vacuum ejector.
- ➔ Three stage diffuser for greater efficiency.
- ➔ Single body or dual body available.
- ➔ Suction flows up to 200 l/min.
- ➔ Optional integrated pressure gauge or digital vacuum switch.
- ➔ Supply air control and release valves can be specified.
- ➔ Integrated silencer or ported exhaust.



### Symbol



### How to order

Single body without valve

ZL1 12

Dual body without valve

ZL2 12

Single body with valve

ZL1 12 K1 5 L Z E 25

Nozzle diameter  
12 1.2 mm

Exhaust type  
Nil Built-in silencer  
PF Ported exhaust

Supply valve/Release valve combination  
K1 With supply and release valves  
K2 With supply valve

Rated voltage

DC specifications	
5	24 V
6	12 V
V	6 V
S	5 V
R	3 V

Electrical entry

L L plug connector Lead wire length 0.3 m

Light/Surge voltage suppressor

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

Vacuum pressure sensor

Nil	None
G	With vacuum pressure gauge
E	With digital vacuum pressure switch ZSE4
EB	With digital vacuum pressure switch ZSE4B

Lead wire length  
Nil 0.5 m  
L 2.9 m

Digital vacuum pressure switch specifications

For E (ZSE4) EB (ZSE4B)	
25	NPN output Lead wire length 0.5 (2.9) m
26	Analogue output Lead wire length 0.5 (2.9) m
65	PNP output Lead wire length 0.5 (2.9) m

Vacuum



### Ejector Specifications

Model	ZL112	ZL212
Nozzle diameter	ø1.2 mm	ø1.2 mm x 2
Maximum suction flow rate	100 l/min (ANR)	200 l/min (ANR)
Air consumption	63 l/min (ANR)	126 l/min (ANR)
Maximum vacuum pressure	-84 kPa	-84 kPa
Maximum operating pressure	0.7 MPa	0.7 MPa
Supply pressure range	0.2 to 0.5 MPa	0.2 to 0.5 MPa
Standard supply pressure	0.4 MPa	0.4 MPa
Operating temperature range	5 to 50°C	5 to 50°C

### Supply/Release Valve Specifications (ZL112 only)

Part no.	SYJ514-□□□
Type of valve actuation	N.C.
Fluid	Air
Operating pressure range   Internal pilot type	0.2 to 0.5 MPa
Ambient and fluid temperature	5 to 50°C
Response time (For 0.5 MPa)	25 ms or less
Maximum operating frequency <sup>(1)</sup>	5 Hz
Manual override	Non-locking push type/Locking slotted type
Pilot exhaust type	Pilot valve individual exhaust, Main valve/Pilot valve common exhaust
Lubrication	Not required
Mounting position	Unrestricted
Enclosure <sup>(2)</sup>	Dust proof

### Option Specifications

#### Digital Vacuum Pressure Switch Specifications

Part no.	ZSE4-00-□□□-X105	ZSE4B-00-□□□-X105
Display	LCD	LCD with backlight
Pressure setting range	-101 to 0 kPa	-101 to 10 kPa
Maximum operating pressure	200 kPa	
Operation indicator light (Lights up when ON)	Green	
Response frequency	200 Hz (5 ms)	
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 24 VDC (Ripple ±10% or less)	
Current consumption	25 mA or less	45 mA or less
Pressure indication	3 1/2 digits (Letter height 8 mm)	
Self-diagnostic function	Over current <sup>(note)</sup> , Over pressure, Data error, Presence of pressure at 0 clear	
Operating temperature range	0 to 50°C (With no condensation)	
Noise resistance	500 V <sub>pp</sub> , Pulse width: 1 mS, Start up: 1 nS	
Withstand voltage	Between external terminal batch and case: 1000 VAC 50/60 Hz for 1 min.	
Insulation resistance	Between external terminal batch and case: 2 MΩ (at 500 VDC)	
ZSE4 ZSE4B	-25(L)	1 output NPN open collector 30 V, 80 mA or less
	-26(L)	Analogue output (1 to 5 V)
	-65(L)	1 output PNP open collector 80 mA or less

ZL112 Standard



ZL112 with valve



ZL112 with vacuum pressure gauge



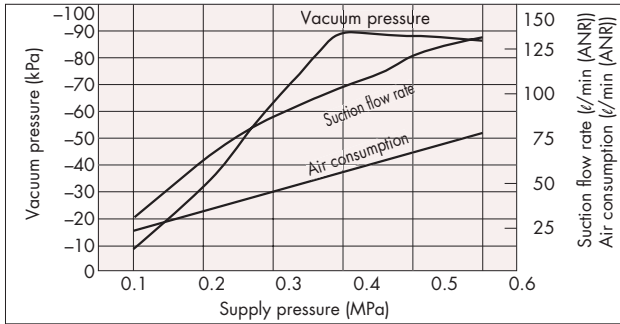
ZL212 with vacuum pressure gauge



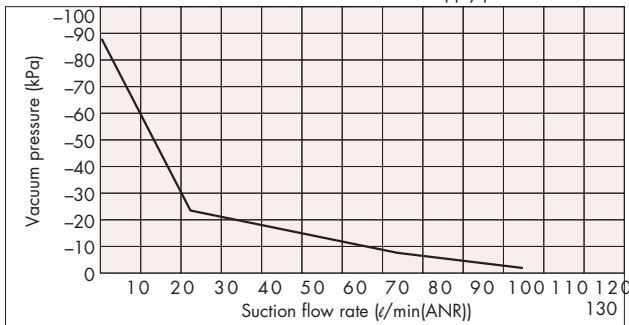
### Vacuum Pressure Gauge Specifications

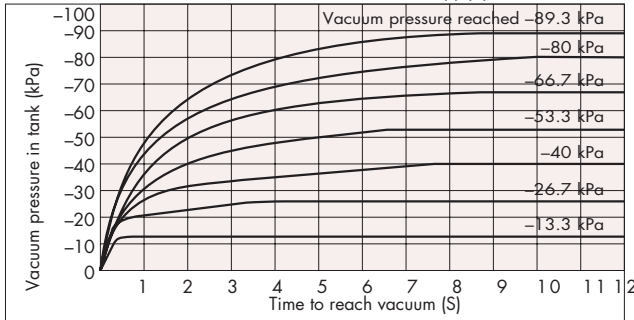
Part no.	GZ30S
Fluid	Air
Pressure range	-100 to 100 kPa
Scale range (Angular)	230°
Accuracy	3% F.S. (Full span)
Class	Class 3
Operating temperature range	±0 to 50°C
Material	Housing: Polycarbonate /ABS resin

Vacuum

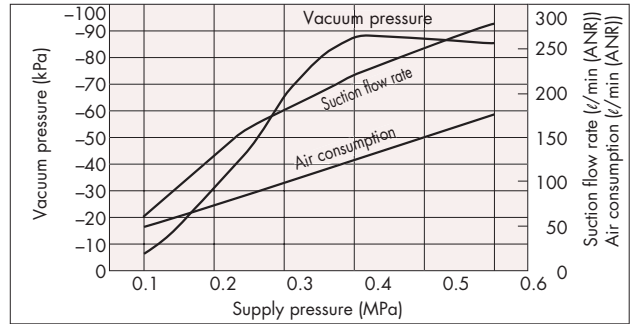
**ZL Flow Rate Charts**
**ZL112**
**Exhaust Characteristics**

**Flow Characteristics**

Supply pressure: 0.4 MPa

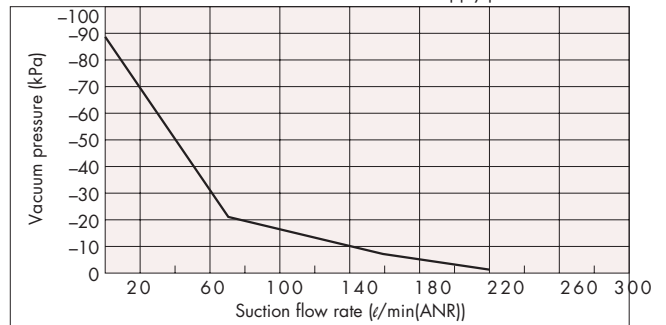

**Time to Reach Vacuum**

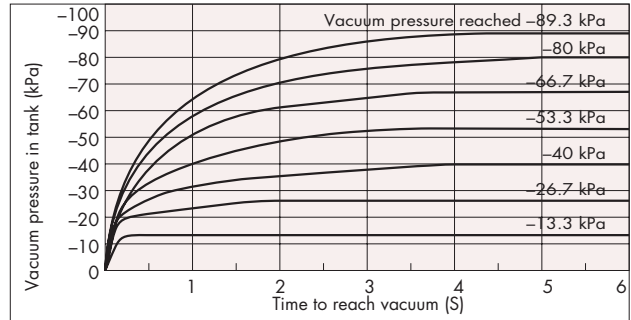
 Tank capacity: 1ℓ  
Supply pressure: 0.4 MPa

**<How to Read the Graph>**

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

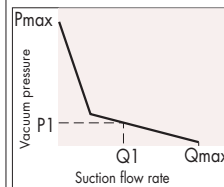
**ZL212**
**Exhaust Characteristics**

**Flow Characteristics**

Supply pressure: 0.4 MPa


**Time to Reach Vacuum**

 Tank capacity: 1ℓ  
Supply pressure: 0.4 MPa

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The flow 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.

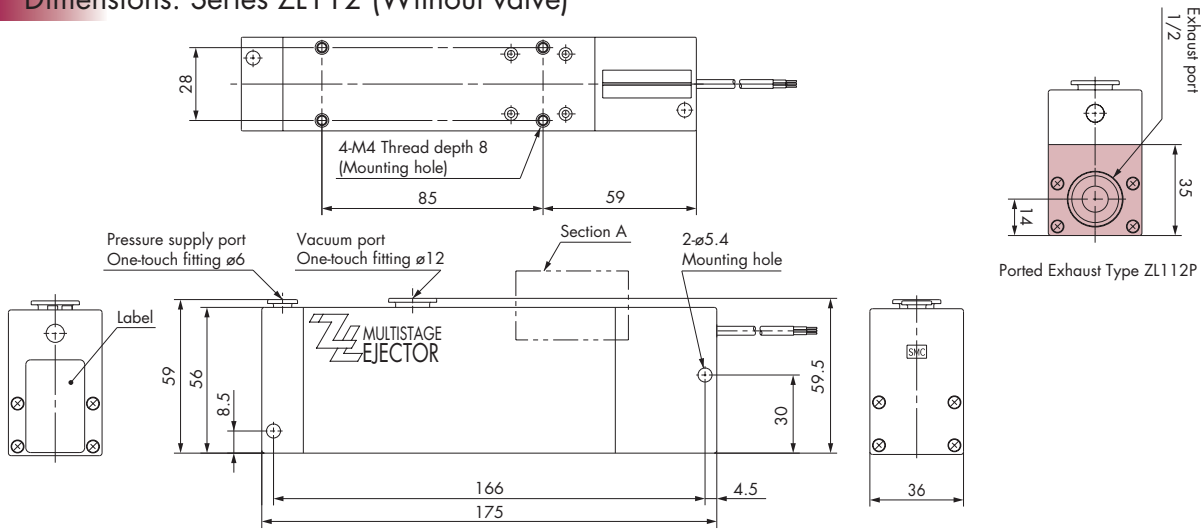


1. If the ejector's suction port is closed and sealed tight, the suction flow rate becomes "0" and the vacuum pressure increases to the maximum (Pmax).
2. If the suction port is opened and air is allowed to flow (the air leaks), the suction flow rate increases and the vacuum pressure decreases. (the 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.

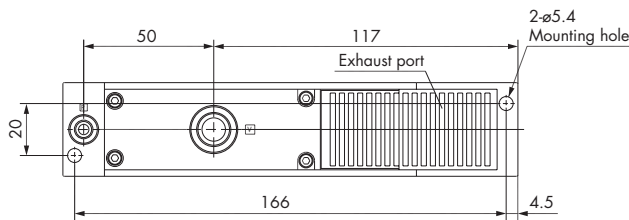


Vacuum

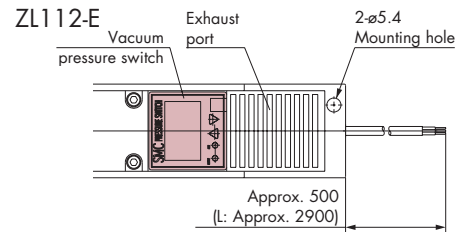
Dimensions: Series ZL112 (Without valve)



Standard ZL112

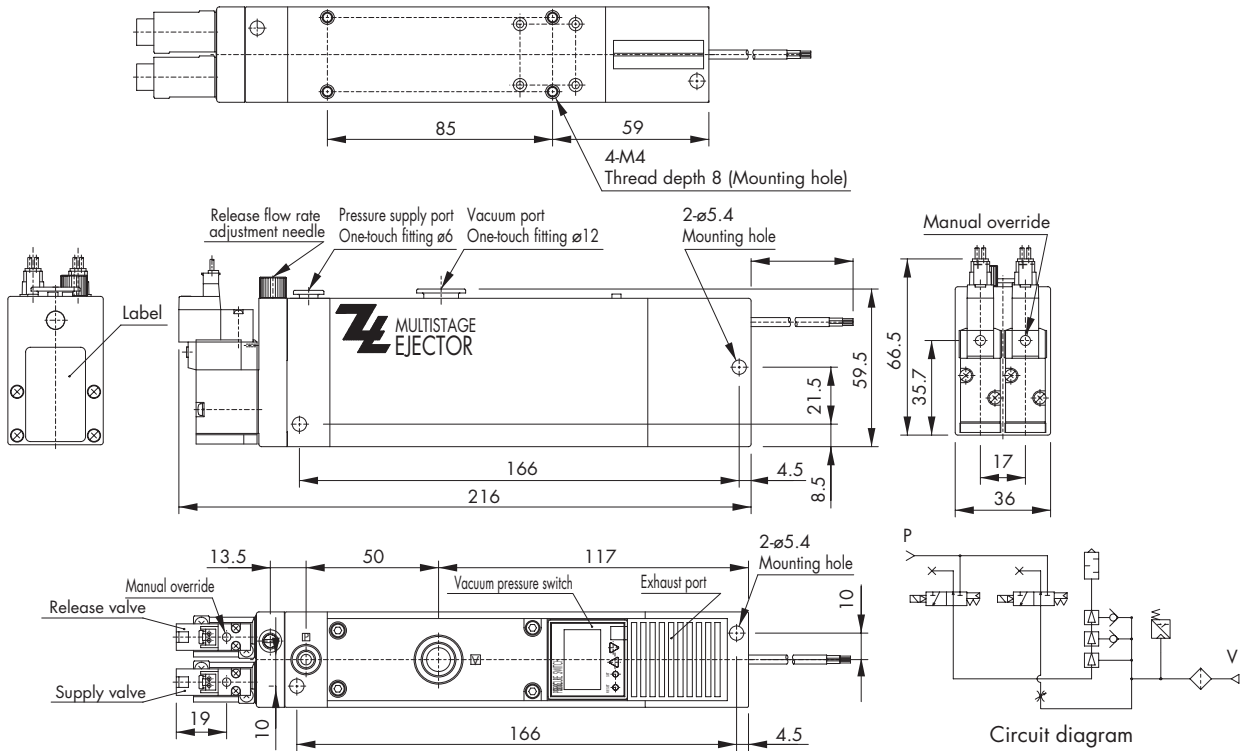


With digital vacuum pressure switch

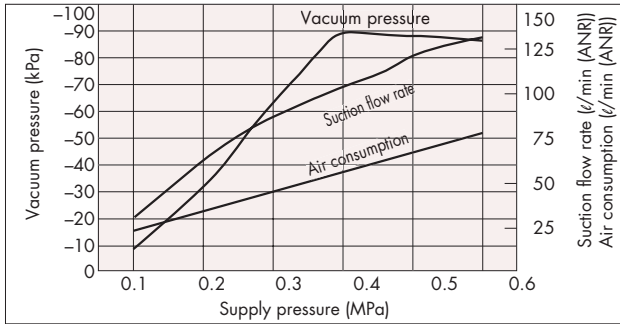


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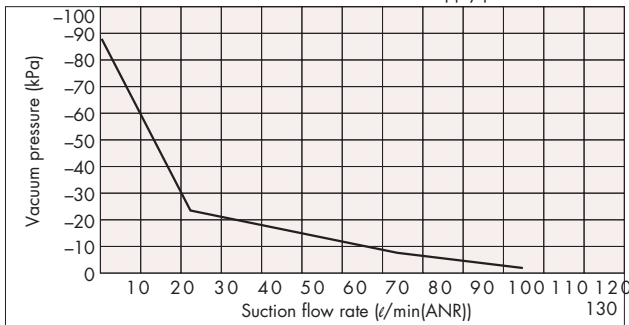
With supply valve and release valve ZL112-K1□□□-E25(L)-M

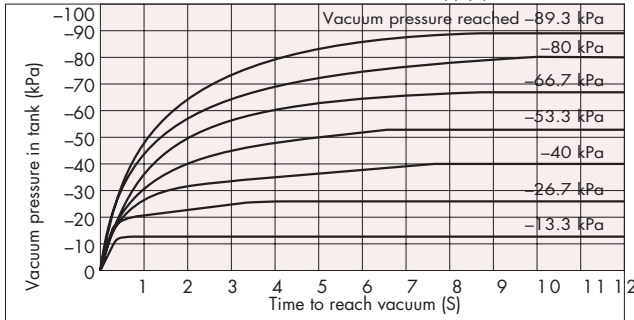


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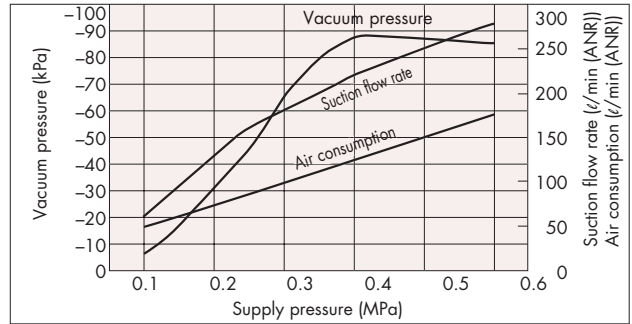
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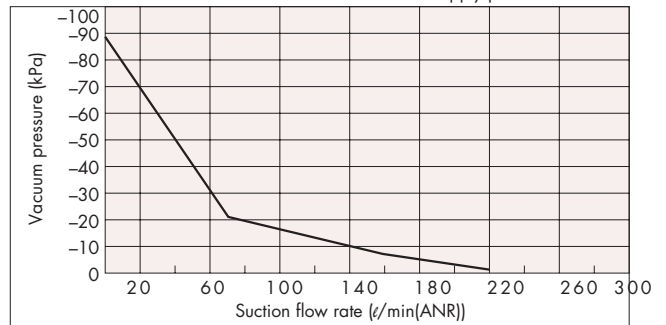

**Time to Reach Vacuum**

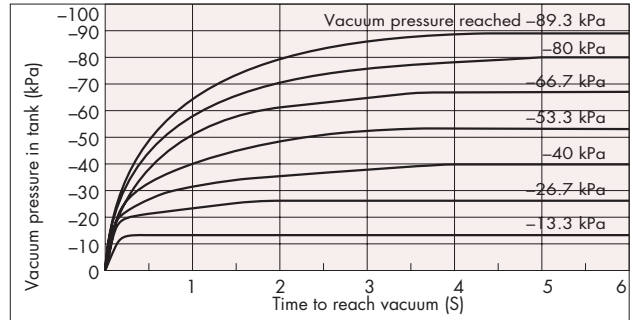
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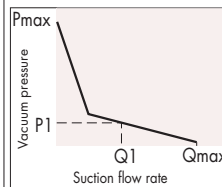
**ZL212**
**Exhaust Characteristics**

**Flow Characteristics**

Supply pressure: 0.4 MPa


**Time to Reach Vacuum**

 Tank capacity: 1ℓ  
Supply pressure: 0.4 MPa

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Vacuum