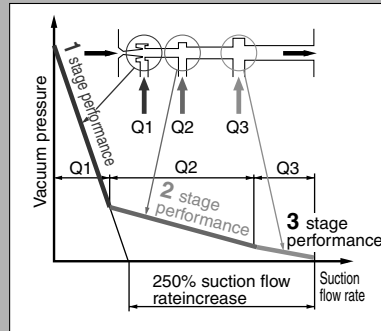


Multistage Ejector

Series ZL112-212

Energy-saving, large flow rate, 3 stage diffuser construction

Suction flow rate increased 250% and air consumption reduced 20% with 3 stage diffuser construction (Versus ø1.3, one stage model)

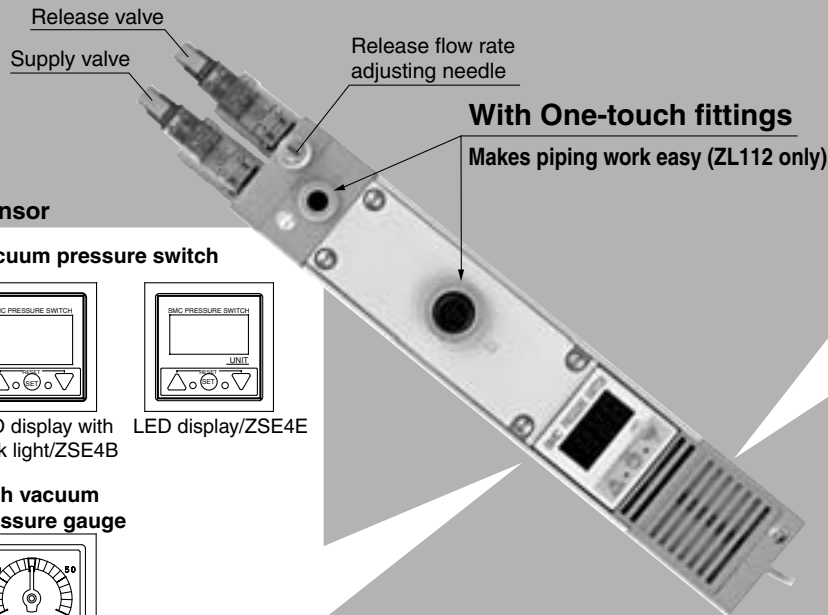
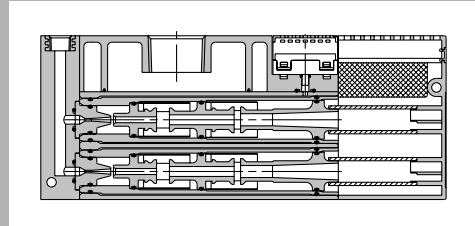


Design Award Winner 2000

	Suction flow rate (ℓ/min (ANR))	Air consumption (ℓ/min (ANR))
ZL112	100	63
ZL212	200	126

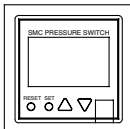
Series ZL212

Diffusers stacked and integrated
Compact size and large flow rate
(Twice the flow rate of the ZL112)

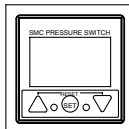


Vacuum pressure sensor

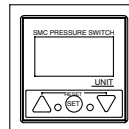
With digital vacuum pressure switch



LCD display/ZSE4

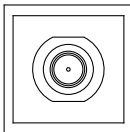


LCD display with back light/ZSE4B

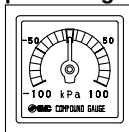


LED display/ZSE4E

With adaptor for vacuum



With vacuum pressure gauge



Exhaust port

Built-in silencer



Port exhaust



Series Variations

Series	Maximum suction flow rate (ℓ/min (ANR))	Air consumption (ℓ/min (ANR))	Vacuum pressure sensor option								
			Exhaust port		With valve		With digital vacuum pressure switch			Vacuum pressure gauge	Vacuum adaptor
			Built-in silencer	Port exhaust	With supply and release valves	With supply valve	ZSE4E	ZSE4B	ZSE4		
ZL112	100	63	●	●	●	●	●	●	●	●	●
ZL212	200	126	●	●	●	●	●	●	●	●	●

- ZA
- ZX
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL**
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP

Related Equipment

Multistage Ejector

Series ZL112



How to Order

Without valve ZL1 12 [] []

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

Nozzle diameter

12	1.2 mm
----	--------

Exhaust type

Nil	Built-in silencer
P	Port exhaust

Exhaust port (EXH) thread type
(Port exhaust only)

Nil	Rc1/2
F	G1/2 ⁽³⁾
N	1/2-14 NPT
T	1/2-14 NPTF

Note 3) The thread ridge shape is conforming to G thread standard (JIS B0203), but other shapes are not conforming to ISO16030 and ISO1179.

Supply valve/Release valve combination

K1	With supply and release valves
K2	With supply valve

Rated voltage

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

Electrical entry

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

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)

* Type U is 24 or 12 VDC only.
* Since surge voltage is prevented by a rectifier in the case of AC, there is no type "S".

Manual override

Nil	Non-locking push type
D	Locking slotted type

Lead wire length

Nil	0.5 m
L	2.9 m

Unit specifications

Nil	With unit switching function ⁽¹⁾
M	SI unit only ⁽²⁾

Note 1) W/ unit switching function is not permitted to sell for the domestic use in Japan, because the new Weight and Measure Act has been implemented since October '99.
Note 2) Fixed unit: kPa

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 Rc 1/8
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

Ejector Specifications

Standard



With valve



With vacuum pressure gauge



Adapter



Port exhaust



Model	ZL112
Nozzle diameter	1.2 mm
Maximum suction flow rate	100ℓ/min (ANR)
Air consumption	63ℓ/min (ANR)
Maximum vacuum pressure	-84 kPa
Maximum operating pressure	0.7 MPa
Supply pressure range	0.2 to 0.5 MPa
Standard supply pressure	0.4 MPa
Operating temperature range	5 to 50°C

Supply/Release Valve Specifications

Part no.	SYJ514-□□□-S
Type of valve actuation	N.C.
Fluid	Air
Operating pressure range	0.2 to 0.5 MPa
Internal pilot type	
Ambient and fluid temperature	5 to 50°C
Response time (For 0.5 MPa) ⁽¹⁾	25 ms or less
Maximum operating frequency	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
Impact/Vibration resistance ⁽²⁾	150/30 m/s ²
Enclosure	Dust proof

Note 1) Based on JIS B 8374-1981 dynamic performance test. (coil temperature 20°C, 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 45 to 2000 Hz 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 "Best Pneumatics No. 1" for details on valves.

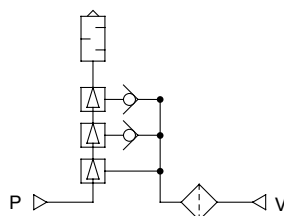
Option Specifications

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

JIS Symbol

Standard



Mass

ZL112 (Basic)	450g
Port exhaust	+110g
Pressure switch	+110g
Valve (per 1 pc.)	+45g

ZA

ZX

ZR

ZM

ZMA

ZQ

ZH

ZU

ZL

ZY□

ZF□

ZP□

SP

ZCUK

AMJ

AMV

AEP

HEP

Related Equipment

Series ZL112

With digital vacuum pressure switch (ZSE4)



Option Specifications

Option Specifications

Part no.	ZSE4-00-□□-□-□-X105	ZSE4B-00-□□-□-□-X105	ZSE4E-00-□□-□-□-X105
Display	LCD	LCD with backlight	LED
Pressure setting range	-101 to 0 kPa	-101 to 10 kPa	
Maximum operating pressure	200 kPa		
Operation indicator light (Lights up when ON)	Green		OUT1: Green OUT2: Red
Response frequency	200 Hz (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 24 VDC (Ripple ±10% or less)		
Current consumption	25 mA or less	45 mA or less	-26, -27: 50 mA or less -67: 60 mA or less
Pressure indication	3 1/2 digits (Letter height 8 mm)		
Self-diagnostic function	Over current ^(note) , Over pressure, Data error, Presence of pressure at 0 clear		
Operating temperature range	0 to 50°C (With no condensation)		
Noise resistance	500 Vp-p, 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)		
Vibration resistance	2 hrs. each in X, Y, Z directions at smaller of 10 to 500 Hz with amplitude 1.5 mm, or acceleration 10 G		
Impact resistance	100 G in X, Y, Z directions, 3 times each		

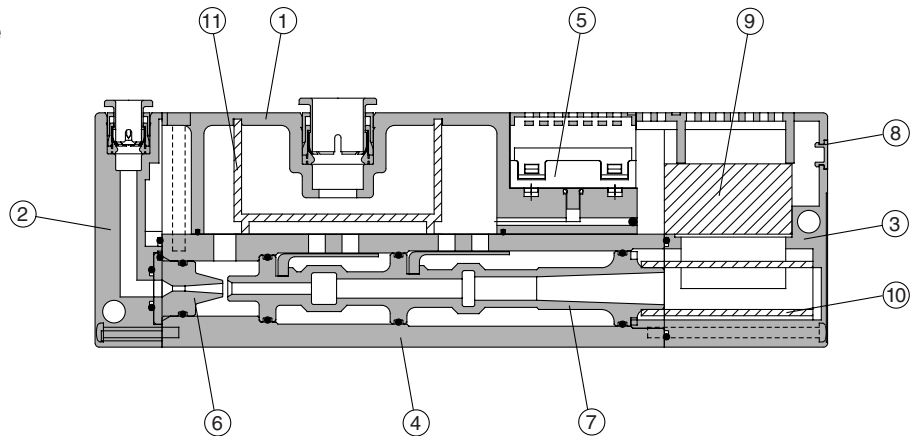
Note) Not available on analog output type.

Output Specifications

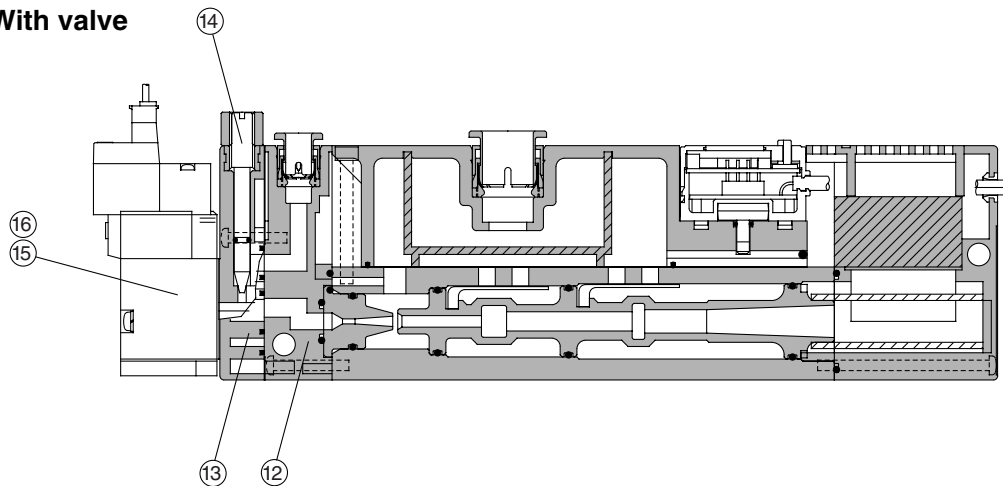
ZSE4 ZSE4B	-25(L)	1 output NPN open collector 30 V, 80 mA or less
	-26(L)	Analog output (1 to 5 V)
	-65(L)	1 output PNP open collector 80 mA or less
ZSE4E	-26(L)	Analog output (1 to 5 V)
	-27(L)	2 outputs NPN open collector 30 V, 80 mA or less
	-67(L)	2 outputs PNP open collector 80 mA or less

Construction

Without valve



With valve



Component Parts

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		Other than vacuum switch
	Lead wire cover		Vacuum switch specifications
12	Front cover B		With valve
13	Valve plate		With valve
14	Needle		With valve
15	Supply valve (N.C.)	SYJ514-□□□-S	With valve
16	Release valve (N.C.)	SYJ514-□□□-S	With valve

Replacement Parts

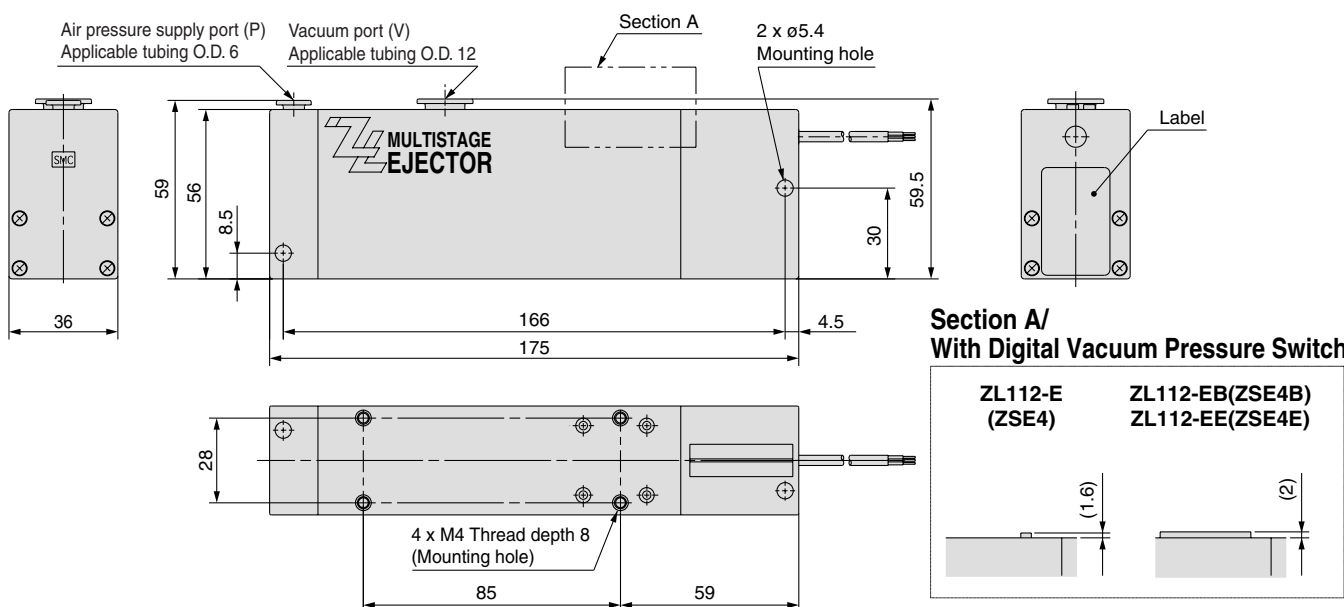
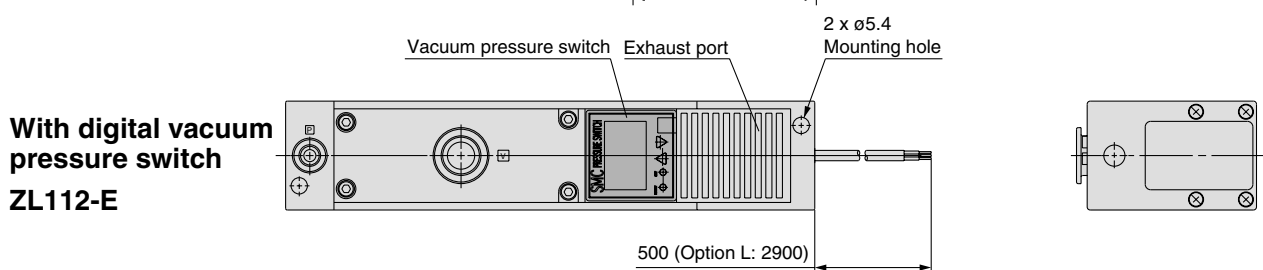
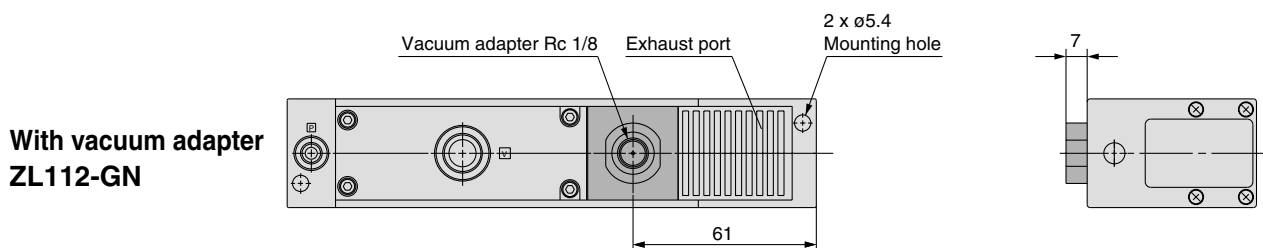
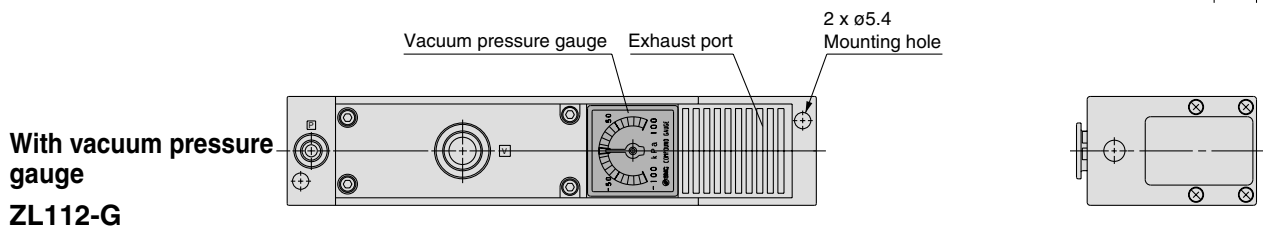
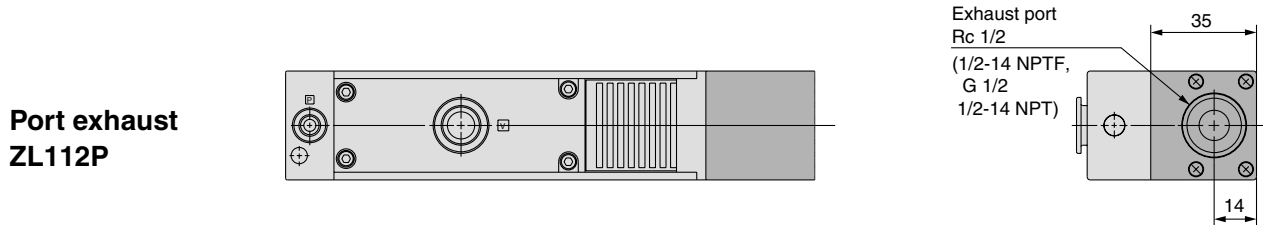
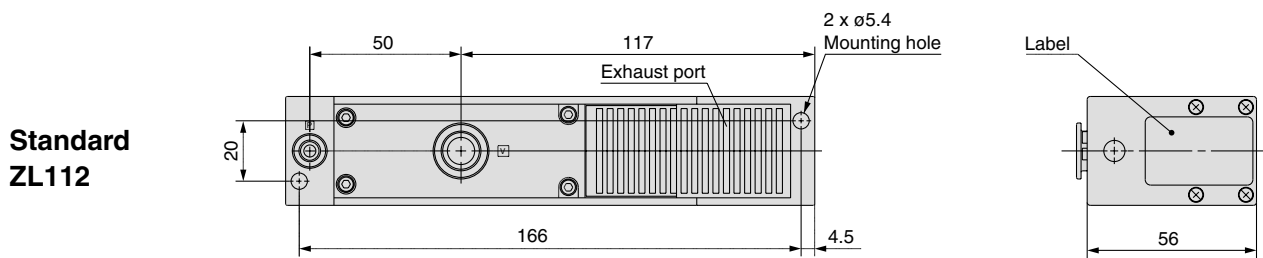
No.	Description	Material	Part no.
9	Sound absorbing material B	PVF	ZL112-SP01 (Set no. for 9, 10 & 11)
10	Sound absorbing material A	PVF	
11	Suction filter	PE	

ZA
ZX
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP

Related
Equipment

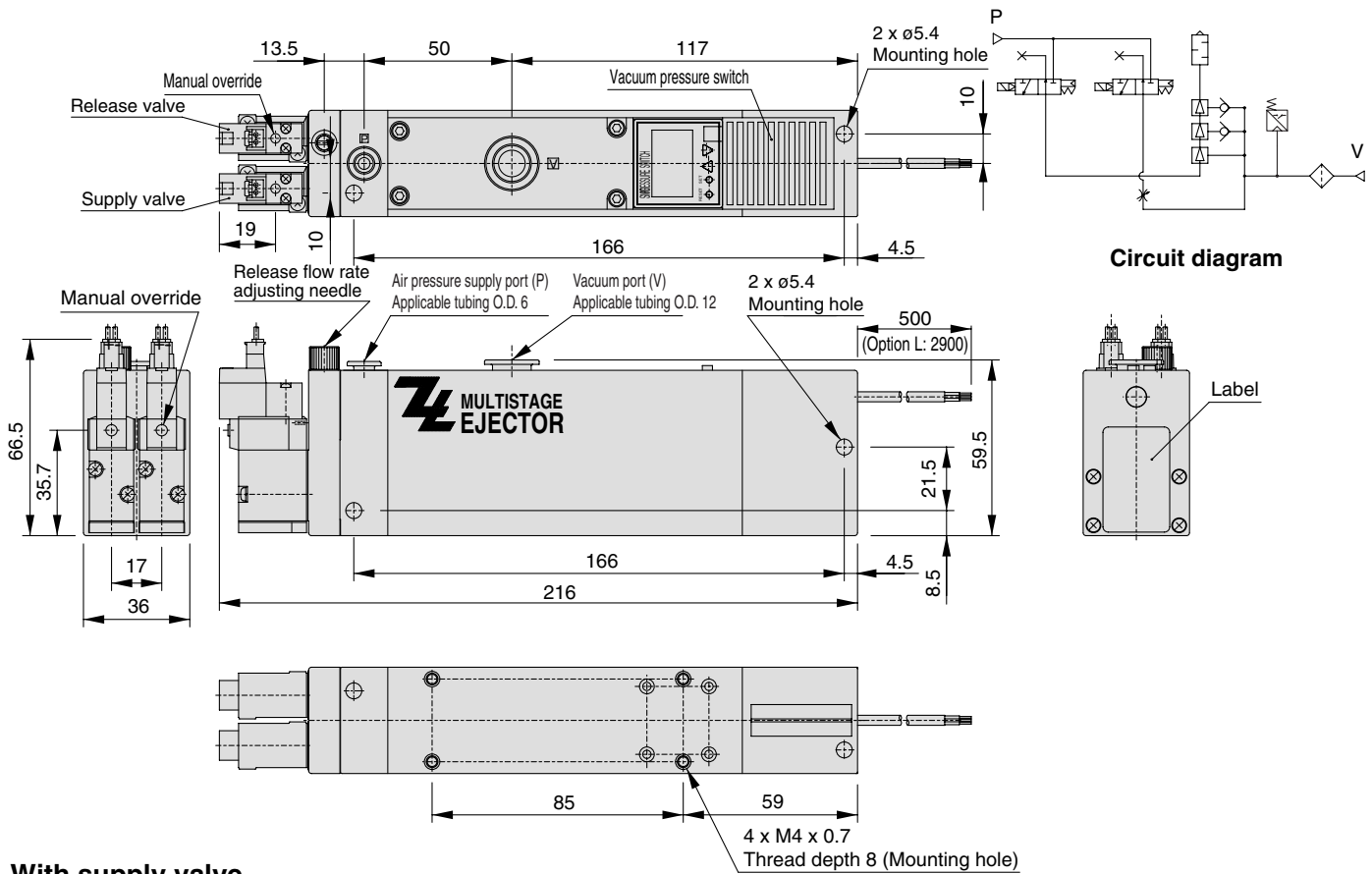
Series ZL112

Dimensions: Series ZL112 (Without valve)

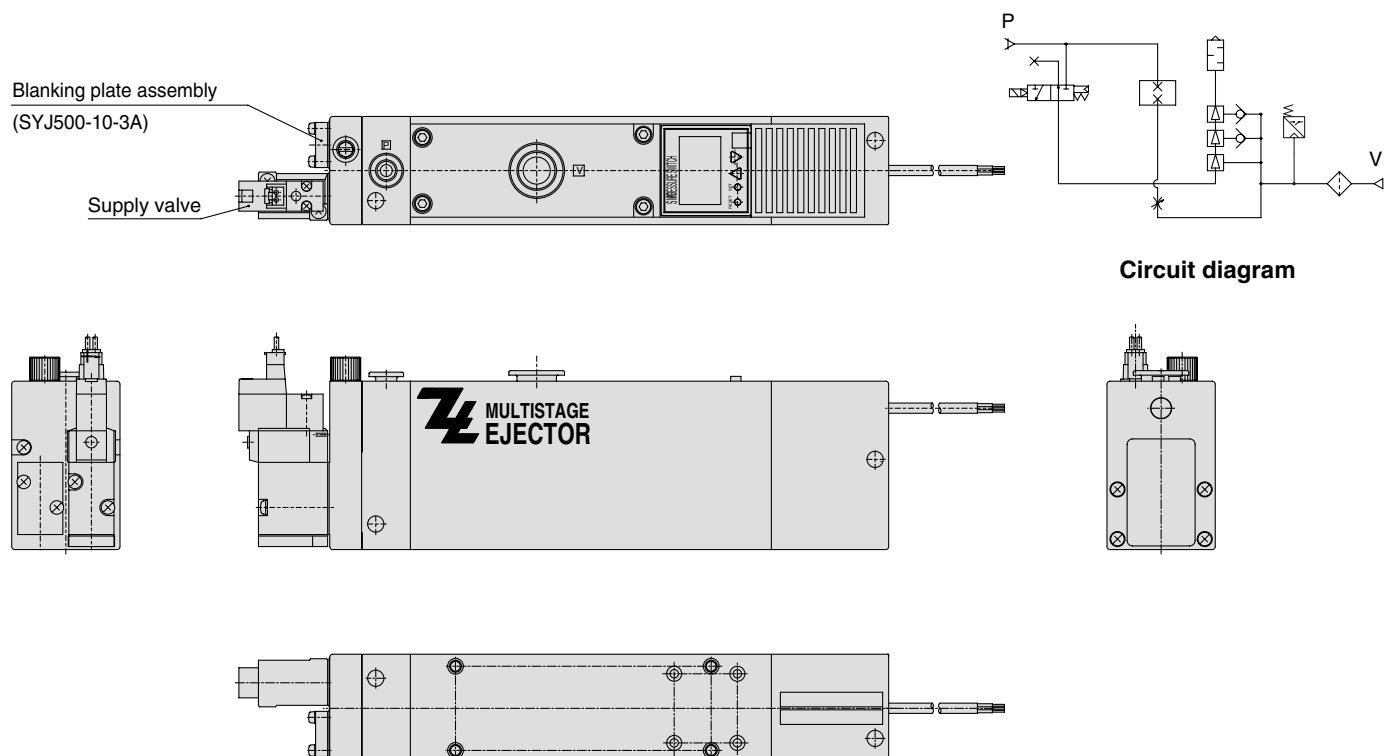


Dimensions: Series ZL112 (With Valve)

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



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



ZA
ZX
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP
Related Equipment

Multistage Ejector Series ZL212

Standard



With vacuum pressure gauge



With digital vacuum pressure switch



With adaptor



Port exhaust



How to Order

ZL2 12 □ - □ □ □ - □

Nozzle diameter

12	1.2 mm
----	--------

Exhaust specifications

Nil	Built-in silencer
P	Port exhaust

Vacuum pressure sensor

Nil	None
GN	Adaptor Rc 1/8
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	0.5 m
L	2.9 m

Unit specifications

Nil	With unit switching function ⁽¹⁾
M	SI unit only ⁽²⁾

Note 1) W/ unit switching function is not permitted to sell for the domestic use in Japan, because the new Weight and Measure Act has been implemented since October '99.

Note 2) Fixed unit: kPa

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

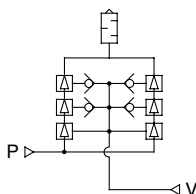
* Not required for Nil, vacuum adaptor ("GN") and vacuum pressure gauge ("G").

Ejector Specifications

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

JIS Symbol

Standard



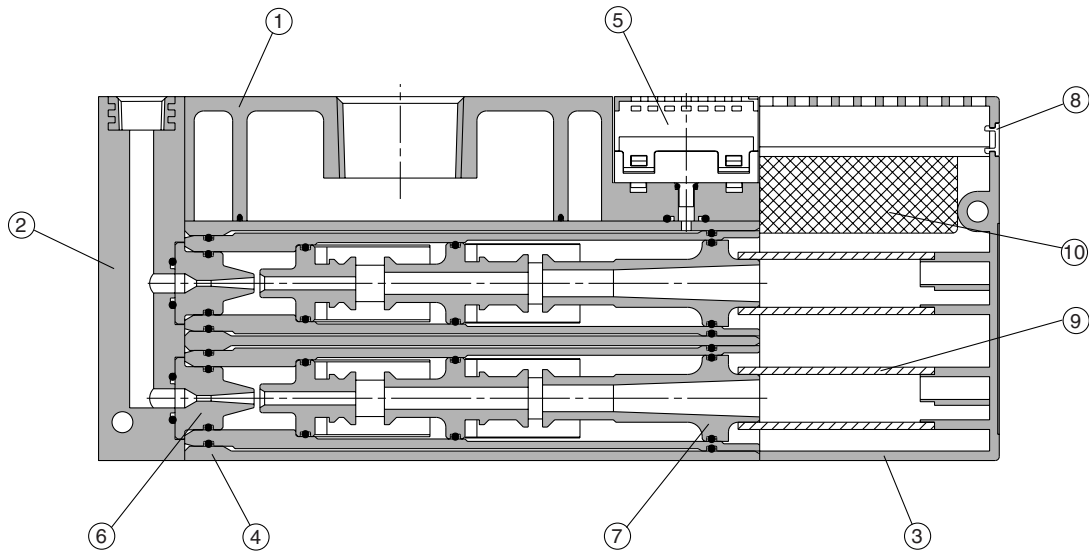
Mass

ZL212	700 g
Port exhaust	+300 g
Pressure switch	+110 g
Valve (per 1 pc.)	+45 g



Made to Order
(Refer to page 1077 for details.)

Construction



Component Parts

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

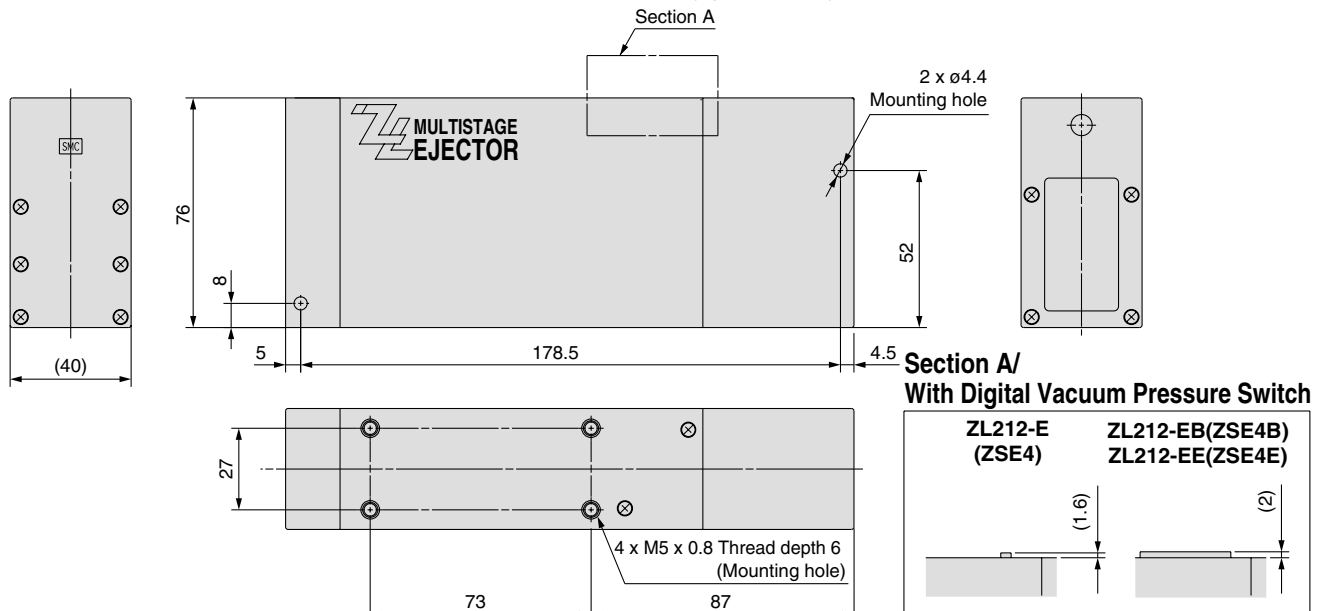
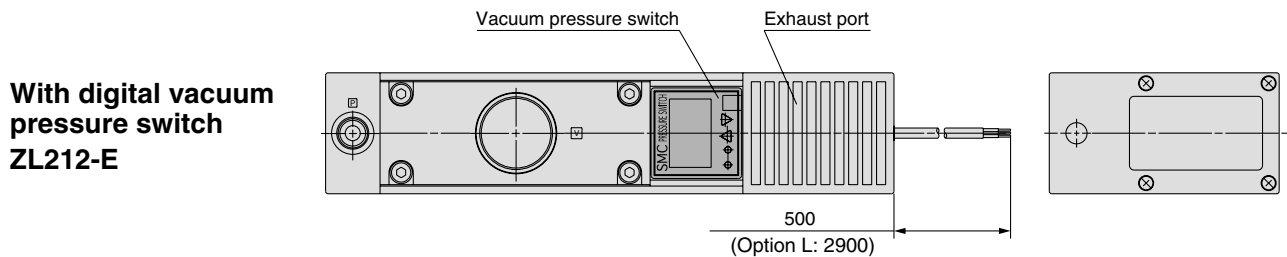
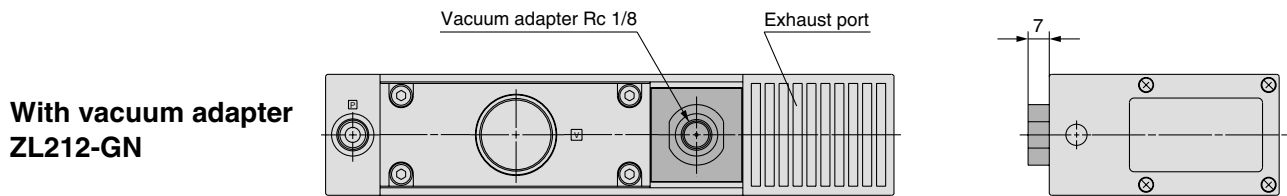
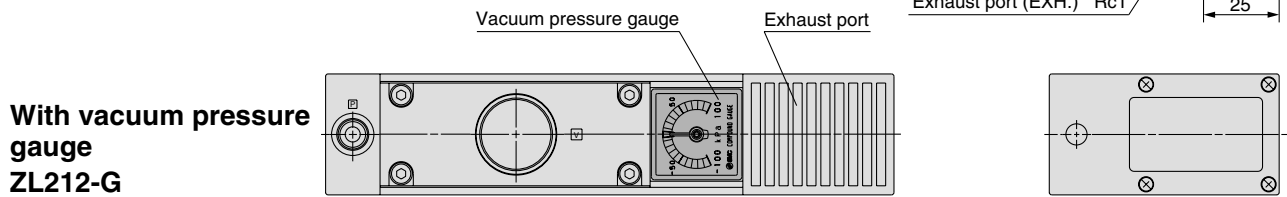
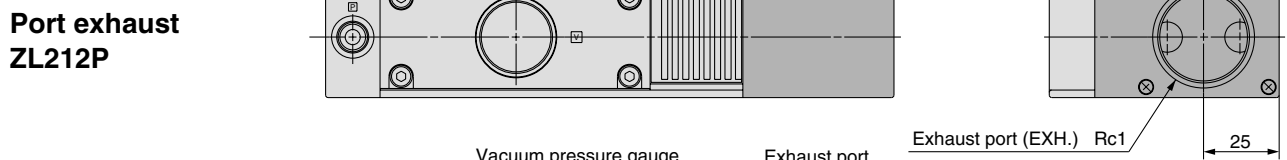
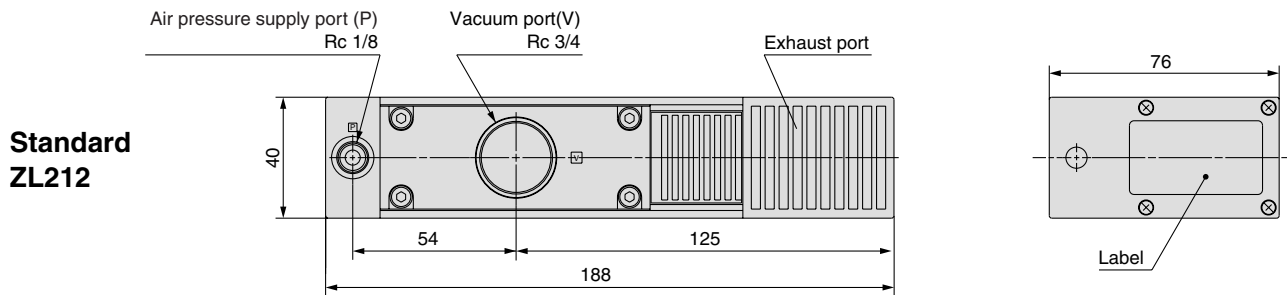
Replacement Parts

No.	Description	Material	Part no.
9	Sound absorbing material A	PVF	P397114
10	Sound absorbing material	PVF	P397230

- ZA
- ZX
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL**
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP
- Related Equipment

Series ZL212

Dimensions: Series ZL212



Please contact SMC for detailed specifications, dimensions and delivery.

1 With Supply and Release Valves

ZL212 Valve Voltage Electrical entry — Vacuum pressure switch Electrical entry — X132

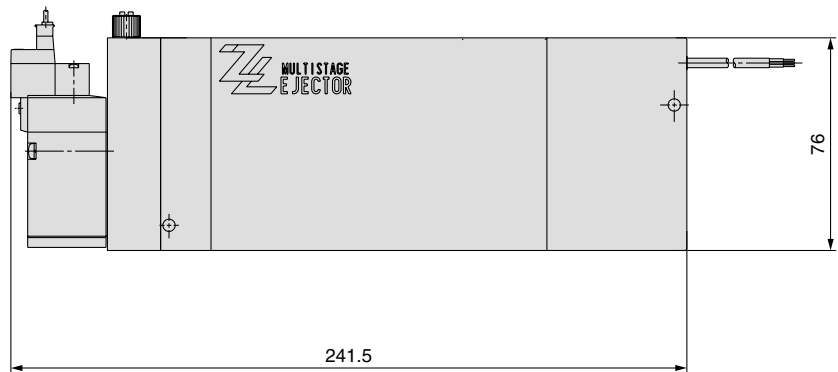
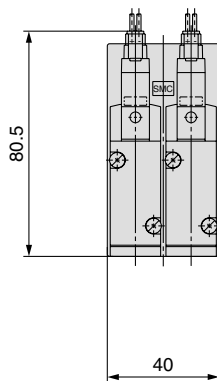
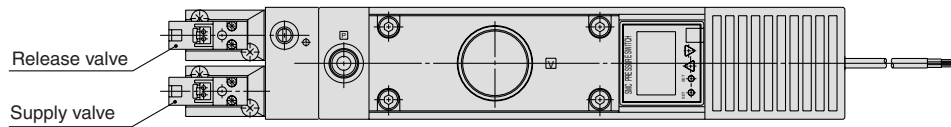
With supply and release valves

ZL212 type with supply and release valves



- ZA
- ZX
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL**
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP

Dimensions



Related Equipment



Series ZL

Specific Product Precautions 1

Be sure to read before handling.

Refer to front matters 38 and 39 for Safety Instructions and pages 844 to 846 for Vacuum Equipment Precautions.

Operation of Ejector Valves

Caution

1. When the air supply is turned ON, vacuum is generated by the flow of compressed air from the nozzle to the diffuser. When the vacuum release is turned ON, the vacuum is quickly released as air passes through the release flow adjustment needle and flows to the vacuum port.

Operating Environment

Caution

1. Avoid use exposed to direct sunlight.

Solenoid Valves (Series ZL112)

Caution

1. For specific product precautions on solenoid valves, refer to the solenoid valve (Series SYJ500) catalog.



Series ZL Specific Product Precautions 2

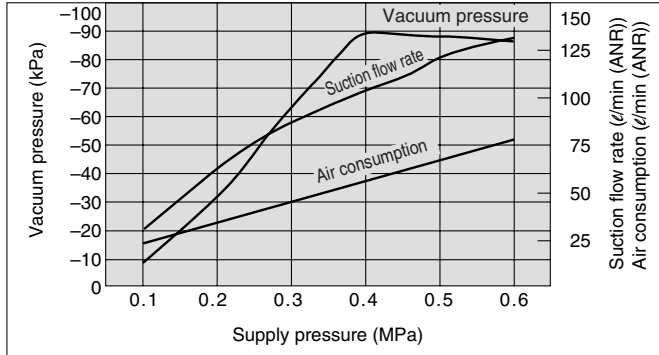
Be sure to read before handling.

Refer to front matters 38 and 39 for Safety Instructions and pages 844 to 846 for Vacuum Equipment Precautions.

Selection

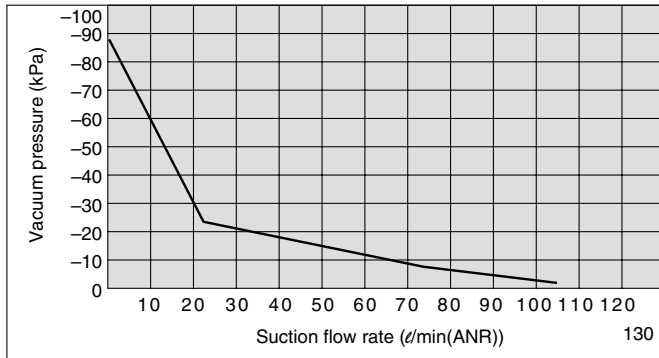
ZL112

Exhaust Characteristics



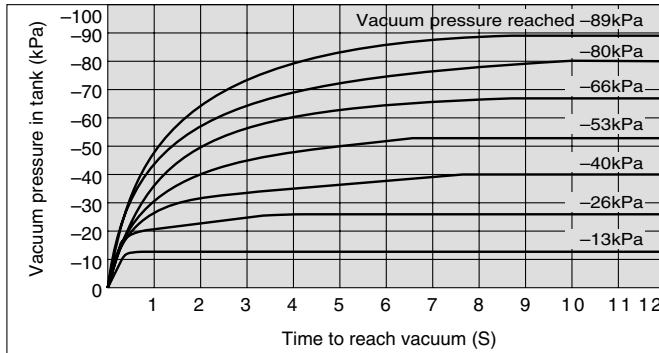
Flow Characteristics

Supply pressure: 0.4 MPa



Time to Reach Vacuum

Tank capacity: 1ℓ
Supply pressure: 0.4 MPa

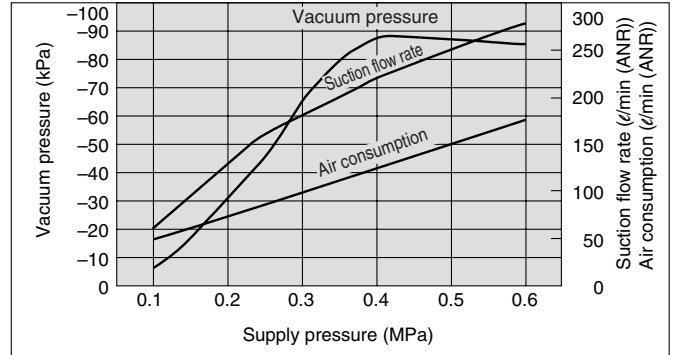


<How to Read the Graph>

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 kPa.

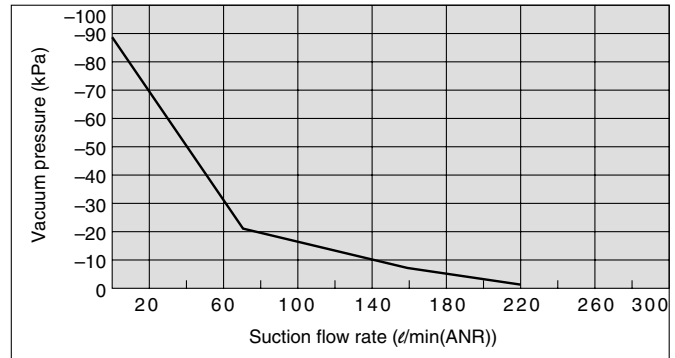
ZL212

Exhaust Characteristics



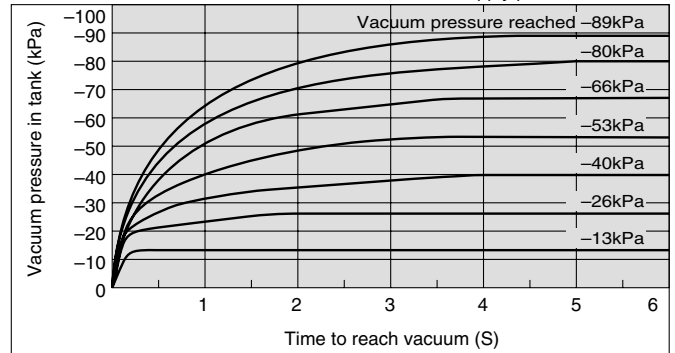
Flow Characteristics

Supply pressure: 0.4 MPa



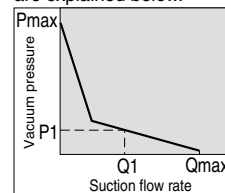
Time to Reach Vacuum

Tank capacity: 1ℓ
Supply pressure: 0.4 MPa



<How to Read the Graph>

The 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.

- ZA
- ZX
- ZR
- ZM
- ZMA
- ZQ
- ZH
- ZU
- ZL
- ZY□
- ZF□
- ZP□
- SP
- ZCUK
- AMJ
- AMV
- AEP
- HEP

Related Equipment