**Multistage Ejector**

**Energy saving**
Air consumption **10% reduction**

![Peak vacuum pressure graph](peak_pressure_graph.jpg)

Current model (ZL112)

New ZL112A

**Air consumption** [L/min (ANR)]

**Vacuum pressure** [kPa]

**Standard supply pressure** [MPa]

**ZL112A Series**

**Weight**

Max. **60% reduction**

*1 New ZL112A: 180 g ← Current model (ZL112): 450 g

**Table:**

<table>
<thead>
<tr>
<th>Series</th>
<th>Nozzle diameter [mm]</th>
<th>Standard supply pressure [MPa]</th>
<th>Vacuum pressure [kPa]</th>
<th>Max. suction flow rate [L/min (ANR)]</th>
<th>Air consumption [L/min (ANR)]</th>
<th>Port size</th>
<th>With or without valve</th>
<th>Exhaust type</th>
<th>Vacuum pressure sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZL112A</td>
<td>1.2</td>
<td>0.33 (Without valve)</td>
<td>−84</td>
<td>100</td>
<td>57</td>
<td>Supply (P) port</td>
<td>Vacuum (V) port</td>
<td>With digital vacuum pressure switch</td>
<td>With vacuum pressure gauge</td>
</tr>
</tbody>
</table>

**New RoHS** [DC type only]
3 stage diffuser construction

Suction flow rate increased by 250%
(Versus ø1.3, one stage model)

Suction flow rate: 100 L/min (ANR)

3 types of vacuum pressure sensors

1. With digital vacuum pressure switch

- 3-step setting
  1. Push
  2. Push
  3. Push
  Use the or button to adjust to the set value.
  Setting complete

- Output specifications
  - NPN or PNP open collector 1 output/2 outputs
  - NPN or PNP open collector 1 output + Analog output (1 to 5 V or 4 to 20 mA)

- Power-saving mode
  Power consumption is reduced by turning off the monitor. (Power consumption reduced by 20% at max.)

- Can copy to up to 10 units simultaneously
  The settings of the master sensor can be copied to the slave sensors.
  - Reduced setting time
  - Minimized risk of setting mistakes

2. With vacuum pressure gauge

- Pressure range:
  -100 kPa to 100 kPa (When the fittings are mm spec.)
  -30 inHg to 14 psi (When the fittings are inch spec.)

3. With vacuum port adapter

- Port size:
  Rc1/8

Without vacuum pressure sensor
No tools are required! Maintenance labor can be reduced.

**Filter element**

**STEP 1** Press the levers.

**STEP 2** Remove the suction cover.

**STEP 3** Replace the filter element.

**Sound absorbing material**

**STEP 1** Press the PUSH button.

**STEP 2** Remove the silencer cover.

**STEP 3** Replace the sound absorbing material.

**Supply valve/release valve and exhaust type**

**Vacuum break flow adjusting needle**

**Release valve**

**Supply valve**

<table>
<thead>
<tr>
<th>Combinations</th>
<th>Supply valve</th>
<th>Release valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern 1</td>
<td>N.C.</td>
<td>N.C.</td>
</tr>
<tr>
<td>Pattern 2</td>
<td>N.C.</td>
<td>—</td>
</tr>
<tr>
<td>Pattern 3</td>
<td>N.O.</td>
<td>N.C.</td>
</tr>
<tr>
<td>Pattern 4</td>
<td>N.O.</td>
<td>—</td>
</tr>
</tbody>
</table>

**Exhaust type**

- Silencer exhaust
- Port exhaust

**Option**

Bottom mounting with existing ZL112 is compatible by using specified adapter assembly. + Mounting holes at the top and on the side are compatible without optional parts.
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Exhaust Characteristics/Flow Rate Characteristics/Time to Reach Vacuum (Representative value) ....................... p. 8
Vacuum Break Flow Rate Characteristics (Representative value) ......................................................... p. 8
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**Multistage Ejector**

**ZL112A Series**

**How to Order**

### Without valve

**ZL112A**

### With valve

**ZL112A**

1. **Supply (P), Vacuum (V) port/One-touch fitting connection size**

| Symbol | Supply (P) port | Vacuum (V) port | Vacuum pressure gauge unit specifications
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>ø6</td>
<td>ø12</td>
<td>kPa</td>
</tr>
<tr>
<td>N</td>
<td>ø1/4&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* When the vacuum pressure gauge (Symbol: G) is selected for 3, these are the unit specification options. Under the New Measurement Act, products with inHg·psi unit specifications are not permitted for use in Japan.

2. **Exhaust type**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Silencer exhaust</td>
</tr>
<tr>
<td>P</td>
<td>R1/2 port exhaust</td>
</tr>
<tr>
<td>PF</td>
<td>1/2-14NPT port exhaust</td>
</tr>
</tbody>
</table>

* The thread ridge shape is conforming to G thread standard (JIS B 0202), but other shapes are not conforming to ISO 1603 and ISO 1179.

3. **Supply valve/Release valve combination**

| K1 | Supply valve (N.C.), Release valve (N.O.) |
| K2 | Supply valve (N.O.), Release valve (N.C.) |
| B1 | Supply valve (N.C.), Release valve (N.C.) |
| B2 | Supply valve (N.O.) |

4. **Rated voltage**

<table>
<thead>
<tr>
<th>DC (50/60 Hz)</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>24 VDC</td>
</tr>
<tr>
<td>6</td>
<td>12 VDC</td>
</tr>
<tr>
<td>V</td>
<td>6 VDC</td>
</tr>
<tr>
<td>S</td>
<td>5 VDC</td>
</tr>
<tr>
<td>R</td>
<td>3 VDC</td>
</tr>
</tbody>
</table>

**AC (50/60 Hz)**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>110 VAC</td>
</tr>
<tr>
<td>2</td>
<td>200 VAC</td>
</tr>
<tr>
<td>3</td>
<td>110 VAC [115 VAC]</td>
</tr>
<tr>
<td>4</td>
<td>220 VAC [230 VAC]</td>
</tr>
</tbody>
</table>

* CE-compliant: For DC only

5. **Electrical entry**

| G | Lead wire length 300 mm |
| L | Lead wire length 300 mm |
| M | Lead wire length 300 mm |
| N | Lead wire length 600 mm |
| O | Without connector |
| P | Without connector |

**H** Lead wire length 600 mm

**LN, MN type:** With 2 sockets per valve

**LO:** Without connector

**MO:** Without connector

* Refer to page 5 for the lead wire length of L and M plug connectors.

6. **Output specifications**

(Applicable only when the vacuum pressure sensor specification is “D” for digital vacuum pressure switch)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>NPN open collector 1 output</td>
</tr>
<tr>
<td>P</td>
<td>PNP open collector 1 output</td>
</tr>
<tr>
<td>A</td>
<td>NPN open collector 2 outputs</td>
</tr>
<tr>
<td>B</td>
<td>PNP open collector 2 outputs</td>
</tr>
<tr>
<td>C</td>
<td>NPN open collector 1 output + Analog voltage output</td>
</tr>
<tr>
<td>D</td>
<td>NPN open collector 1 output + Analog current output</td>
</tr>
<tr>
<td>E</td>
<td>PNP open collector 1 output + Analog voltage output</td>
</tr>
<tr>
<td>F</td>
<td>PNP open collector 1 output + Analog current output</td>
</tr>
</tbody>
</table>

7. **Manual override**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Non-locking push type</td>
</tr>
<tr>
<td>D</td>
<td>Push-turn locking slotted type</td>
</tr>
</tbody>
</table>

8. **Vacuum pressure sensor**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>None</td>
</tr>
<tr>
<td>G</td>
<td>Vacuum port adapter Rc1/8</td>
</tr>
<tr>
<td>D</td>
<td>Digital vacuum pressure switch</td>
</tr>
</tbody>
</table>

* In 8, the units for mm spec fittings are in kPa. The units for inch spec fittings are in inHg·psi. (Under the New Measurement Act, products with these unit specifications are not permitted for use in Japan.)

9. **Unit specifications**

(Applicable only when the vacuum pressure sensor specification is “D” for digital vacuum pressure switch)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>With unit switching function</td>
</tr>
<tr>
<td>M</td>
<td>Si unit only (kPa)</td>
</tr>
<tr>
<td>P</td>
<td>With unit switching function (Initial value psi)</td>
</tr>
</tbody>
</table>

* Under the New Measurement Act, switches with the unit switching function are not permitted for use in Japan.

10. **Lead wire specifications**

(Applicable only when the vacuum pressure sensor specification is “D” for digital vacuum pressure switch)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>Without lead wire</td>
</tr>
<tr>
<td>L</td>
<td>Lead wire with connector (2 m)</td>
</tr>
</tbody>
</table>

* Output type N and P: 3 core lead wire is included. For other output options, 4 core lead wire is included.

11. **Option (Included)**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>None</td>
</tr>
<tr>
<td>B</td>
<td>Adapter assembly for bottom mounting (ZL112A-AD1-A)</td>
</tr>
</tbody>
</table>

* Bottom mounting screw pitch = 28 mm (Interchangeable with the current model ZL112)

* 2 pcs./set, with 4 bolts

* Mounting holes at the top and on the side are compatible without optional parts.
ZL112A Series

Ejector Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>ZL112A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nozzle diameter</td>
<td>1.2 mm</td>
</tr>
<tr>
<td>Standard supply pressure</td>
<td>Without valve: 0.33 MPa</td>
</tr>
<tr>
<td>Maximum vacuum pressure(^1)</td>
<td>~84 kPa</td>
</tr>
<tr>
<td>Air consumption(^1)</td>
<td>57 L/min (ANR)</td>
</tr>
<tr>
<td>Maximum suction flow rate(^1)</td>
<td>100 L/min (ANR)</td>
</tr>
<tr>
<td>Supply pressure range</td>
<td>0.2 to 0.5 MPa</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>5 to 50°C (No condensation)</td>
</tr>
<tr>
<td>Fluid</td>
<td>Air</td>
</tr>
<tr>
<td>Vibration resistance(^2)</td>
<td>30 m/s² (Without pressure switch), 20 m/s² (With pressure switch)</td>
</tr>
<tr>
<td>Impact resistance(^3)</td>
<td>150 m/s² (Without pressure switch), 100 m/s² (With pressure switch)</td>
</tr>
</tbody>
</table>

Supply Valve/Release Valve Specifications

<table>
<thead>
<tr>
<th>SYJ5</th>
<th>1</th>
<th>4</th>
<th>5</th>
<th>M</th>
<th>Z</th>
<th>Q</th>
</tr>
</thead>
</table>

- **Rated voltage**
  - DC
    - 5: 24 VDC
    - 6: 12 VDC
    - V: 6 VDC
    - S: 5 VDC
    - R: 3 VDC

- **AC (50/60 Hz)**
  - 1: 100 VAC
  - 2: 200 VAC
  - 3: 110 VAC [115 VAC]
  - 4: 220 VAC [230 VAC]

- **CE-compliant**
  - Nil — (For AC)
  - Q CE-compliant (For DC)

- **Manual override**
  - Nil: Non-locking push type
  - D: Push-turn locking slotted type

- **Light/Surge voltage suppressor**
  - (Electrical entry: G, H, L, or M)
    - 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)

- **Electrical entry**
  - 24, 12, 6, 5, 3 VDC/100, 110, 200, 220 VAC
  - G: Lead wire length 300 mm
  - L: With lead wire (300 mm)
  - M: With lead wire (300 mm)
  - MN: Without lead wire
  - H: Lead wire length 600 mm
  - LN: Without lead wire
  - LO: Without connector
  - MO: Without connector

- **Response time (at 0.5 MPa)**\(^1\) | 25 ms or less
- **Maximum operating frequency** | 5 Hz
- **Manual override**
  - Non-locking push type, Push-turn locking slotted type

- **Weight**
  - ZL112A (Basic) | 180 g
  - Port exhaust | +70 g
  - Digital vacuum pressure switch (Excluding lead wire) | +25 g
  - Digital vacuum pressure switch (Including 3 cores lead wire) | +56 g
  - Digital vacuum pressure switch (Including 4 cores lead wire) | +60 g
  - With supply valve and release valve | +105 g
  - With supply valve and without release valve | +65 g

---

\(^1\) Values are at the standard supply pressure and based on SMC’s measurement standards.
\(^2\) They depend on atmospheric pressure (weather, altitude, etc.) and the measurement method.
\(^3\) 10 to 500 Hz for 2 hours in each direction of X, Y, and Z (De-energized, Initial value)
\(^4\) 3 times in each direction of X, Y, and Z (De-energized, Initial value)
Digital Vacuum Pressure Switch Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated pressure range</td>
<td>0.0 to –101.0 kPa</td>
</tr>
<tr>
<td>Set pressure range</td>
<td>10.0 to –105.0 kPa</td>
</tr>
<tr>
<td>Withstand pressure</td>
<td>500 kPa</td>
</tr>
<tr>
<td>Smallest settable increment</td>
<td>0.1 kPa</td>
</tr>
<tr>
<td>Applicable fluid</td>
<td>Air, Non-corrosive gas, Non-flammable gas</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>12 to 24 VDC ±10% (with power supply polarity protection)</td>
</tr>
<tr>
<td>Current consumption</td>
<td>40 mA (at no load)</td>
</tr>
<tr>
<td>Switch output</td>
<td>NPN or PNP open collector 1 output</td>
</tr>
<tr>
<td>Maximum load current</td>
<td>80 mA</td>
</tr>
<tr>
<td>Maximum applied voltage</td>
<td>28 V (at NPN output)</td>
</tr>
<tr>
<td>Residual voltage</td>
<td>1 V or less (with load current of 80 mA)</td>
</tr>
<tr>
<td>Response time</td>
<td>2.5 ms or less (with anti-chattering function: 20, 100, 500, 1000, 2000 ms)</td>
</tr>
</tbody>
</table>

**Switch Output:**
- NPN or PNP open collector 1 output
- NPN or PNP open collector 2 outputs (selectable)

**Environmental Resistance:**
- Enclosure: IP40
- Operating temperature range: 0 to 50°C
- Operating humidity range: 35 to 85% RH (No condensation)
- Withstand voltage: 1000 VAC for 1 minute between terminals and housing
- Insulation resistance: 50 MΩ or more (500 VDC measured via megohmmeter)

**Display:**
- 4-digit, 7-segment, 2-color LCD (Red/Green)
- Sampling cycle: 5 times/s
- Display accuracy: ±0.2% F.S. ±1 digit (Ambient temperature of 25°C)

**Indicator light:**
- Lights up when switch output is turned ON. (OUT1: Green, OUT2: Red)

**Standards:**
- CE, RoHS compliant

**How to Order:**

**ZS – ZSE30A – 00 – A – M – L**

- **Number of cores:**
  - 3 cores, 1 output
  - 4 cores, 2 outputs

- **Output specifications:**
  - N: NPN open collector 1 output
  - P: PNP open collector 1 output
  - A: NPN open collector 2 outputs
  - B: PNP open collector 2 outputs
  - C: NPN open collector 1 output + Analog voltage output
  - D: NPN open collector 1 output + Analog current output
  - E: PNP open collector 1 output + Analog voltage output
  - F: PNP open collector 1 output + Analog current output

- **Connector/Lead wire specifications:**
  - N: Without lead wire
  - L: Lead wire with connector (Length: 2 m)

- **Unit specifications:**
  - M: SI unit only
  - P: With unit switching function (Initial value psi)

**Vacuum Pressure Gauge Specifications**

<table>
<thead>
<tr>
<th>Part no.</th>
<th>GZ30S</th>
<th>NGZ30S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluid</td>
<td>Air</td>
<td>Air</td>
</tr>
<tr>
<td>Pressure range</td>
<td>–100 kPa to 100 kPa</td>
<td>–30 inHg to 14 psi</td>
</tr>
<tr>
<td>Scale range (Angular)</td>
<td>230°</td>
<td>230°</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±3% F.S. (Full span)</td>
<td>±3% F.S. (Full span)</td>
</tr>
<tr>
<td>Class</td>
<td>Class 3</td>
<td>Class 3</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>0 to 50°C</td>
<td>0 to 50°C</td>
</tr>
<tr>
<td>Material</td>
<td>Polycarbonate/ABS resin</td>
<td>Polycarbonate/ABS resin</td>
</tr>
</tbody>
</table>
Internal Circuits and Wiring Examples

**Output specification “N”**
NPN (1 output)

- Brown DC (+)
- Black OUT
- FUNC
- Blue DC (−)

**Output specification “C”**
NPN (1 output) + Analog voltage output

- Brown DC (+)
- Black OUT1
- White OUT2 Analog output
- FUNC
- Blue DC (−)

**Output specification “E”**
PNP (1 output) + Analog voltage output

- Brown DC (+)
- Black OUT1
- White OUT2 Analog output
- FUNC
- Blue DC (−)

**Output specification “P”**
PNP (1 output)

- Brown DC (+)
- Black OUT
- Func
- Blue DC (−)

**Output specification “D”**
NPN (1 output) + Analog current output

- Brown DC (+)
- Black OUT1
- White OUT2 Analog output
- FUNC
- Blue DC (−)

**Output specification “F”**
PNP (1 output) + Analog current output

- Brown DC (+)
- Black OUT1
- White OUT2 Analog output
- Func
- Blue DC (−)

* Refer to the Web Catalog for details on pressure switches.
How to Read the Flow Rate Characteristics

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

How to Read the Time to Reach Vacuum

The graph indicate the time required to reach a vacuum pressure determined by adsorption conditions for workpieces, etc., starting from atmospheric pressure in a 1 L sealed tank. For the ZL112A, approximately 7.0 seconds are necessary to attain a vacuum pressure of –80 kPa.
### Construction

#### Without valve and pressure switch

![Diagram of ZL112A Series without valve and pressure switch]

#### With valve and pressure switch

![Diagram of ZL112A Series with valve and pressure switch]

### Component/Replacement Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Part number</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body assembly</td>
<td>—</td>
<td>Resin, NBR, Steel</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Suction cover assembly (Filter element included)</td>
<td>ZL112A-FC1-A</td>
<td>Resin, NBR, Steel, Non-woven fabric</td>
<td>□ Vacuum port size Nil: ø12, N: ø1/2&quot;</td>
</tr>
<tr>
<td>3</td>
<td>Silencer case assembly</td>
<td>ZL112A-SC1-A</td>
<td>Resin, Steel</td>
<td>For silencer exhaust</td>
</tr>
<tr>
<td>4</td>
<td>Port block assembly (Clip included)</td>
<td>ZL112A-EP1-A</td>
<td>Aluminum alloy, NBR, Steel</td>
<td>For port exhaust Nil: Rc1/2, G: G1/2, N: 1/2-14NPT</td>
</tr>
<tr>
<td>5</td>
<td>Ejector assembly</td>
<td>ZL112A-EJ1-A</td>
<td>Resin, NBR, Fluororubber</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Vacuum break flow adjusting needle</td>
<td>—</td>
<td>Brass (Electroless nickel plating), Resin, NBR, Steel</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Filter element</td>
<td>ZL112A-FE1-A</td>
<td>Non-woven fabric</td>
<td>1 pc.</td>
</tr>
<tr>
<td>8</td>
<td>Sound absorbing material</td>
<td>ZL112A-SE1-A</td>
<td>Resin</td>
<td>1 pc. of each/set: Sound absorbing material 1 and 2 (page 15)</td>
</tr>
<tr>
<td>9</td>
<td>Supply valve, Release valve</td>
<td>SYJ5□□□□□□□</td>
<td>—</td>
<td>Refer to how to order the supply valve and release valve. (page 5)††</td>
</tr>
<tr>
<td>10</td>
<td>Digital vacuum pressure switch</td>
<td>ZL-ZSE30A-00-□□□</td>
<td>—</td>
<td>Vacuum pressure sensor: Digital vacuum pressure switch Refer to how to order the digital vacuum pressure switch. (page 6)</td>
</tr>
<tr>
<td>11</td>
<td>Vacuum port adapter assembly</td>
<td>ZL112A-AD2-A</td>
<td>Resin, Aluminum alloy, NBR, Steel</td>
<td>Vacuum pressure sensor: Vacuum port adapter</td>
</tr>
<tr>
<td></td>
<td>Pressure gauge assembly</td>
<td>ZL112A-PG1-A</td>
<td>—</td>
<td>Vacuum pressure sensor: Vacuum pressure gauge □ Units for pressure 1 = kPa, 2 = inHg·psi†††</td>
</tr>
<tr>
<td>12</td>
<td>O-ring</td>
<td>ZL112A-OR1-A</td>
<td>NBR</td>
<td>5 pcs./set</td>
</tr>
</tbody>
</table>

*1 It is not possible to switch between models without valves and with valves.  
*2 Under the New Measurement Act, products with inHg·psi unit specifications are not permitted for use in Japan.
Dimensions

ZL112A (N) (-B) (Without valve)

Port Size

<table>
<thead>
<tr>
<th>Port Size</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZL112A</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>ZL112AN</td>
<td>1/4&quot;</td>
<td>1/2&quot;</td>
</tr>
</tbody>
</table>

Release Button

<table>
<thead>
<tr>
<th></th>
<th>P port</th>
<th>V port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Type</td>
<td>Color</td>
<td>Type</td>
</tr>
<tr>
<td>ZL112A</td>
<td>Light gray</td>
<td>Oval</td>
</tr>
<tr>
<td>ZL112AN</td>
<td>Orange</td>
<td>Round</td>
</tr>
</tbody>
</table>

ZL112A(N)-B (With adapter assembly for bottom mounting)

* Tighten to the recommended torque to mount the body. Tightening with excessive force may damage the product.
ZL112A Series

Dimensions

ZL112AP□ (Port exhaust)

Circuit diagram

Exhaust (EXH) port
Rc1/2, G1/2,
1/2-14NPT

Recommended tightening torque: 1.2 to 1.5 N·m

+ Hold the exhaust block when connecting a piping to the exhaust port. (Recommended tightening torque: 20 to 25 N·m)

ZL112A-D□□ (With digital vacuum pressure switch)

Circuit diagram

Digital vacuum pressure switch
(With analog output)

Digital vacuum pressure switch
(Without analog output)

Recommended tightening torque: 1.2 to 1.5 N·m

* Tighten to the recommended torque to mount the body. Tightening with excessive force may damage the product.
Dimensions

ZL112A-GN (With vacuum port adapter)

Vacuum pressure detection port*1
Rc1/8

18
54

ZL112A-G (With vacuum pressure gauge)

Vacuum pressure detection port

*1 Hold across the flats (18) when mounting a fitting to the vacuum pressure detection port. (Recommended tightening torque: 3 to 5 N·m)

* Tighten to the recommended torque in page 10 and 11 to mount the body. Tightening with excessive force may damage the product.
ZL112A Series

Dimensions

ZL112A-K1 □□□ (With supply valve and release valve)

Circuit diagram

Supply valve
N.O.

Supply valve
N.C.

Release valve

Vacuum break flow adjusting needle

Lock nut

Manual override

35

7.7

7.7

ZL112A-K2 □□□ (With supply valve)

Circuit diagram

Supply valve
N.O.

Supply valve
N.C.

Manual override

35

67 [9.3]\*

214 [221]\*

\*1 [ ] for AC

* Tighten to the recommended torque in page 10 and 11 to mount the body. Tightening with excessive force may damage the product.
Caution

1. Do not drop, hit or apply excessive shock to the product when handling it.
Even if the body looks undamaged, the internal components may be damaged, leading to a malfunction.

2. Use the product within the specified supply pressure range.
Operation over the specified supply pressure range can cause damage to the product.

3. Avoid energizing the solenoid valve for long periods of time.
If a solenoid valve is continuously energized for an extended period of time, the heat generated by the coil assembly may reduce performance and life of the valve or have adverse effects on peripheral equipment.
Therefore, when it is continuously energized for an extended period of time or when the energized period per day is longer than the de-energized period, use N.O. (normally open) type product.
When the valve is mounted onto a control panel, take measures to radiate heat in order to keep the product temperature within the specified range.

4. Tensile force of the solenoid valve and pressure switch lead wire is 30 N. Exceeding this value can cause breakdown. Hold the body when handling the product.

5. Avoid repeatedly bending or stretching the lead wire of the solenoid valve or of the pressure switch.
Lead wires will break if bending stresses or tensile forces are applied to the lead wires repeatedly.
If the lead wire can move, fix it near the body of the product. The recommended bending radius is 40 mm or more. Please contact SMC for details.

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

7. For specific product precautions on pressure switches, refer to the pressure switch (ZSE30A series) catalog.

8. Load to the ejector body
The body material is resin, therefore do not apply load to the port after mounting. Prevent the operation which generates moment, as it may cause performance reduction or damage to the body.

Caution

1. The suction cover can be attached or detached at a touch.
Suction cover can be removed by pushing the suction cover levers (2 pcs.) on the side. (It can be removed from the opposite side as well.)
Replace the filter element assembled in the filter case.
Check that the gasket is correctly fit in the groove before mounting the suction cover.
Check that the lever hook is locked in the correct position when mounting the suction cover. If the hook or the lever is damaged or deformed, replace the suction cover assembly.

Ejector Exhaust

Caution

1. The exhaust resistance should be as small as possible to obtain the full ejector performance.
There should be no shield around the exhaust port for the silencer exhaust specification. For the port exhaust specification, the back pressure should be 5 kPa or less, as exhaust resistance is generated with some piping bore sizes and piping lengths.
DO NOT block the exhaust port. The product will fracture or break.
2. If the sound absorbing material is clogged, it will cause a reduction in the ejector performance. In particular, if it is used in a dusty environment, not only the filter element, but also the sound absorbing material can be clogged. It is recommended to replace the sound absorbing material periodically.

3. Air is exhausted from the connecting part between the silencer case and silencer cover. This does not affect the performance of the product.

4. The sound absorbing material can be replaced with a simple operation.
   Push the area where the word “PUSH” is printed on the silencer cover in the direction shown in Fig. 1. The silencer cover will come out. (See Fig. 2) Remove the sound absorbing material 1 and 2 and replace with the new ones. (See Fig. 3) After replacing the sound absorbing material, place the end surface of the sound absorbing material 1 to the end surface of the diffuser while engaging the hooks to the hook holes and push the silencer cover back into the place. (See Fig. 4)

Caution

1. Incorrect wiring can damage the switch and cause failure or malfunction. Connections should only be made when the power supply is turned off.
2. Do not attempt to insert or pull out the connector while the power is on. Otherwise, it may cause malfunction.
**Connection of the Solenoid Valve or Pressure Switch**

**Caution**

3. Malfunctions stemming from noise may occur if the wire is installed in the same route as that of power or high-voltage cable. Wire the switch independently.

4. Be sure to ground the frame ground (FG) terminal when using a commercially available switching power supply. (Pressure switch)

**Environment**

**Warning**

1. The solenoid valve and pressure switch are not designed to be explosion proof, dust proof or drip proof. Never use in an atmosphere of flammable gas or explosive gas.

**Caution**

1. The pressure switch and CE marked solenoid valve are CE compliant, but not immune to lightning strikes. Take measures against lightning strikes in your system.

2. Do not use the product in a place where static electricity is a problem. It may result in system failure or malfunction.

**Removal/Mounting of the Solenoid Valve or Pressure Switch Connector**

**Caution**

1. Do not attempt to insert or pull out the connector while the power is on. Otherwise, it may cause switch output malfunction.

2. Before removal or mounting of the pressure switch connector, it is necessary to remove the silencer assembly (exhaust block assembly). Remove the silencer assembly (exhaust block assembly) following the procedure below in order to remove or to mount the pressure switch connector.

Remove the clip using flat blade screwdriver from the bottom of the product. Remove the silencer assembly (exhaust block assembly) from the body. Remove or mount the pressure switch connector.

**Piping to the Vacuum Port Adapter**

**Caution**

1. When mounting or removing the fitting, etc. to or from the vacuum port adapter, hold the vacuum port adapter with a wrench (across the flats 19). Recommended tightening torque: 3 to 5 N·m

   The product may break, if it is held by hand.

**Piping to the Exhaust Port**

**Caution**

1. When mounting or removing the piping to or from the exhaust port, hold the exhaust block with a wrench (across the flats 36). Recommended tightening torque: 20 to 25 N·m

   The product may break, if it is held by hand.

**Other Tubing Brands**

**Caution**

1. When using tubing from a manufacturer other than SMC, be careful of the tolerance of the tubing O.D.

   1) Nylon tubing: Within ±0.1 mm
   2) Soft nylon tubing: Within ±0.1 mm
   3) Polyurethane tubing: Within ±0.15 mm, within –0.2 mm

   Do not use tubing which does not satisfy the specified tubing O.D. accuracy. It may cause difficulty in connecting the tubing, air leakage after connection, or disconnection of the tubing.
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.

**Safety Instructions**

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 catalog 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. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, military, medical treatment, combusion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

**Caution**

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

**Warning**

1. The product is provided for use in manufacturing industries.
   The product herein described is basically provided for peaceful use in manufacturing industries. If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary. If anything is unclear, contact 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 catalog for the particular products.

   - A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, 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.

**Limited warranty and Disclaimer**

- **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.

**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 the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.