High-Power Pneumatic Hole Clamp

Model SWE

By expansion of gripper, pulls and clamps in workpiece hole. High clamping force which replaces hydraulics.

By expansion of gripper, pull and clamp in workpiece hole

Clamping Force 2 kN
Supply Pneumatic Pressure 0.45 MPa

SWE2000
Advantages

● To Workpiece
  - Zero interference with 5 faces except clamping face.
  - Possible to use standard length tool which provides for better precision.
  - Possible to enhance cutting parameters which leads to shorter cycle times.
  - Elimination of multiple setups provides better machining process and zero setup time.

● To Machining Equipment
  - No hydraulic equipment required by using high-power pneumatic hole clamp.
  - Fixture could be extremely downsized.
  - Turn-table could be downsized.
  - The movement of tool could be shorten.
  - For saving weight of fixture.
  - Machining equipment could be more simple.
  - Good design for easy flow of chips and reduction in coolant usage.

● To Machining Line
  - 5-face machining makes it possible to put process together.
  - Machining line is kept small and simple.
  - Possible to enhance cutting parameters which leads to shorter cycle times.

<Before> Clamping around the Workpiece
<After> Using the Hole Clamps

<Before> Large Machining Centers and Long Machining Lines
<After> Smaller Machining Centers and Shorter Machining Lines
● Variable Mounting Dimensions to Suit the Equipment
Able to design thinner plate since all pipes are set in flange.

● Seating Surface Height Suitable to Workpiece
Level the height in 5mm increments according to the phase of workpiece seating surface.
Hole Diameter to Suit a Variety of Workpieces

In order to suit different hole diameters and tolerances, hole diameters can be specified in 0.5mm increments.

![Workpiece Hole Diameter](image)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Workpiece Hole Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWE1000</td>
<td>6, 7, 8, 9, 10, 11, 12, 13</td>
</tr>
<tr>
<td>SWE2000</td>
<td>6.5, 7.5, 8.5, 9.5, 10.5, 11.5, 12.5, 13</td>
</tr>
<tr>
<td></td>
<td>Body size — Type 1</td>
</tr>
<tr>
<td></td>
<td>Body size — Type 2</td>
</tr>
</tbody>
</table>

More Powerful Clamping Force with Mechanical Lock

By mechanical lock system clamping force has extremely increased compared to our previous model SWH. SWE is useful for the machining that used to require hydraulic clamping systems.

![Clamping Force Graph](image)

- **375% up** at 0.4MPa 1.8kN
- **250% up** at 0.4MPa 0.48kN
- **Current Model SWH2**
  - Max.: 1.5kN
- **SWE2000**
  - Max.: 2.2kN
- **SWE1000**
  - Max.: 1.5kN

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**High-Power Series**
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- Hydraulic Series
- Valve / Coupler
- Hydraulic Unit
- Manual Operation
- Accessories
- Cautions / Others
- High-Power Hydraulic Swing Clamp
  - LHE
- High-Power Hydraulic Link Clamp
  - LKE
- High-Power Pneumatic Swing Clamp
  - WHE
- High-Power Pneumatic Link Clamp
  - WCE
- High-Power Pneumatic Risk Support
  - WNC
- Rodless Hollow Pneumatic Risk Support
  - WNA
- High-Power Pneumatic Pallet Clamp
  - WVS

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Features

- Various Kinds of Protection by Cap Structure
  
  ※ SWE1000 has no cap structure.

  ▶ Minimum clearance between cap and gripper prevents cutting chips from entering inside.

  ▶ Small clearance leads to effective purging. Even with a little air flow it prevents coolant from entering inside.

  ▶ Workpiece does not have contact with gripper. It makes loading-unloading smooth.

  ▶ Not necessary to have rough guide on fixture.
  
  ※ It differs according to the loading speed.
● Pursuing Good Design for Cutting Chips

Having smaller seating surface and wide sweep area on the flange enables easy flow of chips and reduction in coolant usage.

※ part is inclined surface.

● Secure Clamp Action Out of Sight

Spring for lifting grips a workpiece strongly and pulls it in. Even when air pressure is at zero, self-lock function by spring for locking ensures safety.

※ This is a simplified drawing. Actual components are different.
Action Confirmation of Clamping

Lift-up function allows to check the movement of pulling and lifting off the workpiece. It can be used in automated line.

Abnormality Detection for Unpredictable Troubles

Error detection for unpredictable troubles when processing or transferring. It can be used in automated line.
1. Action Description
   ※ This is a simplified drawing. Actual components are different.

   ![Diagram]

   **Released State**
   ① Air pressure is supplied to the release port.
   ↓
   ② The rod is lifted up and the gripper retracts.
   (For workpiece lifting option, there is a gap between workpiece bottom surface and seating surface.)

   ![Table]

   **Locked State**
   ① Air pressure is supplied to the lock port.
   ↓
   ② The rod descends and the gripper expands along the taper plane. (Since the gripper is lifted by spring force, it does not pull down.)
   ↓
   ③ When pulling force exceeds the spring force for lift up, pulling force works after the gripper digs into workpiece. Then, it presses workpiece onto seating surface.
   (Clamping force = Pressing force onto seating surface.)

   ![Table]

   **Abnormality Detected State** (Clamping without Workpiece)
   The built-in check valve function and seating confirmation air pressure detect abnormal condition as follows.

   - When clamping workpiece which has larger workpiece hole diameter or clamping without workpiece (In this state the gripper expands but the lifting spring does not have pulling force so the workpiece lifting surface does not descend.)
   - When rod or gripper is broken.
   - If the piston is fully stroked when it has to stop at the bottom.
   - In the case workpiece is floated more than 1mm when setting it.
**Model No. Indication**

**SWE 1000 – A – 115 – **

1. **Body Size**  
   ※ Please refer to specifications, performance curve and external dimensions for details.
   1. Available in diameters between φ6 and φ9mm (No cap)  
   2. Available in diameters between φ9 and φ13mm (With cap)

2. **Design No.**  
   0 : Revision Number

3. **Workpiece Lifting Option**
   A : With Lift Function (Lift Function Option)  
   N : With No Lift Function

   Note:
   1. When using it with expansion locating pin (model VWM, VWK, VFL, VFM, VFJ, VFK, VX), please choose N : With no lift function.

4. **Workpiece Hole Diameter (Workpiece Hole Code)**
   **Workpiece Hole Code** : Workpiece Hole Diameter φd = 0.7
   ※ Workpiece hole diameter should be specified in 0.5mm increments from the allowable range in the table below.

<table>
<thead>
<tr>
<th>Workpiece Hole Code</th>
<th>060</th>
<th>065</th>
<th>070</th>
<th>075</th>
<th>080</th>
<th>085</th>
<th>090</th>
<th>095</th>
<th>100</th>
<th>105</th>
<th>110</th>
<th>115</th>
<th>120</th>
<th>125</th>
<th>130</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Cap</td>
<td>6</td>
<td>6.5</td>
<td>7</td>
<td>7.5</td>
<td>8</td>
<td>8.5</td>
<td>9</td>
<td>9.5</td>
<td>10</td>
<td>10.5</td>
<td>11</td>
<td>11.5</td>
<td>12</td>
<td>12.5</td>
<td>13</td>
</tr>
<tr>
<td>With Cap</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. **Seating Height Dimension**

   **Blank** : Standard Height (30mm)
   **H Seating Height** : Specifying Seating Height (In 5mm increments)

<table>
<thead>
<tr>
<th>Model</th>
<th>Seating Height H (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td>SWE1000</td>
<td>30</td>
</tr>
<tr>
<td>SWE2000</td>
<td>30</td>
</tr>
</tbody>
</table>

   ※ ★ part is standard height, and seating height dimension code is "Blank".
   ※ Entry example when specifying non-standard seating height.  
   Seating Height 50mm : H50

6. **Shape of Gripper (Workpiece Hole)**

   **Blank** : With Serration  
   **F** : Without Serration  
   **T** : Taper Hole (With Serration) ※ Contact us.
## Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>SWE1000</th>
<th>SWE2000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workpiece Hole Code</strong></td>
<td>060 ~ 065</td>
<td>070 ~ 075</td>
</tr>
</tbody>
</table>

### Machine Part

<table>
<thead>
<tr>
<th>Workpiece Hole Diameter</th>
<th>6.0 ~ 6.3 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness</td>
<td>Less than HB250</td>
</tr>
</tbody>
</table>

| Allowable Offset (Floating Clearance of Expanding Area) | 0.1 mm |
| Full Stroke | 4.2 mm |
| Workpiece Pulling Stroke | 1.0 mm |
| Workpiece Lifting Stroke | 0.2 mm |
| Workpiece Lifting Force | 0.09 kN |
| Cylinder Capacity Release Side | 18.6 cm³ |
| (Empty Action) Lock Side | 17.6 cm³ |
| Maximum Operating Pressure | 0.5 MPa |
| Minimum Operating Pressure | 0.2 MPa |
| Withstanding Pressure | 0.75 MPa |
| Recommended Air Blow Pressure | 0.4 ~ 0.5 MPa |
| Operating Temperature | 0 ~ 70 °C |
| Usable Fluid | Dry Air |
| Mass | kg |

Please refer to External Dimensions for Mass

### Notes:

1. The clamping part is an adjusting structure and the clamping operation is done by locating the workpiece hole. The numerical value in the table shows the amount of tolerance value of single clamp. Please consider the center distance accuracy of each clamping installation part and each workpiece hole when used with another location clamp / location cylinder, or when using more than two of these products.

2. Workpiece lifting stroke and workpiece lifting force are functions only for lifting option.

## Clamping Force Curve

<table>
<thead>
<tr>
<th>Model No.</th>
<th>SWE1000-T</th>
<th>SWE2000-T</th>
<th>SWE1000-F</th>
<th>SWE2000-F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workpiece Hole Code</strong></td>
<td>060 ~ 090</td>
<td>090 ~ 130</td>
<td>060 ~ 090</td>
<td>090 ~ 130</td>
</tr>
</tbody>
</table>

### Clamping Force (kN)

<table>
<thead>
<tr>
<th>Air Pressure</th>
<th>0.5 MPa</th>
<th>1.5</th>
<th>2.2</th>
<th>0.43</th>
<th>0.60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Pressure</td>
<td>0.4 MPa</td>
<td>1.2</td>
<td>1.8</td>
<td>0.35</td>
<td>0.50</td>
</tr>
<tr>
<td>Air Pressure</td>
<td>0.3 MPa</td>
<td>1.0</td>
<td>1.4</td>
<td>0.27</td>
<td>0.40</td>
</tr>
<tr>
<td>Air Pressure</td>
<td>0.2 MPa</td>
<td>0.70</td>
<td>1.0</td>
<td>0.20</td>
<td>0.30</td>
</tr>
<tr>
<td>Air Pressure</td>
<td>0.0 MPa</td>
<td>0.15</td>
<td>0.25</td>
<td>0.04</td>
<td>0.07</td>
</tr>
</tbody>
</table>

### Clamping Force Calculation Formula

\[ F = 2.76 \times P + 0.15 \]

### Maximum Operating Pressure (MPa)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>0.5</th>
</tr>
</thead>
</table>

### Notes:

1. This graph shows the relationship between clamping force (kN) and supply air pressure (MPa).
2. Clamping force shows pressing force against the seating surface.
3. Thin wall around the workpiece hole could be deformed by expanding action, and expanding force will not fill the specification.
4. Clamping force of F : Without Serration shows the calculated value when the friction coefficient of workpiece and gripper is \( \mu = 0.1 \).

\[ F = 3.92 \times P + 0.25 \]

\[ F = 0.78 \times P + 0.04 \]

\[ F = 1.1 \times P + 0.07 \]

\[ F : \text{Clamping Force (kN)}, P : \text{Supply Air Pressure (MPa)} \]
**External Dimensions**

- This drawing shows the released state of SWE1000-A.

![Diagram of External Dimensions](image)

**Expanding Area Detail**

**Workpiece Lifting Stroke**

(Clearance from seating surface when releasing)

(Workpiece Lift Surface)

**Clamp Diameter**

- Released State

- At Full Stroke (Empty Action)

**Specifying Seating Height**

- Notes:
  1. The workpiece must be resting on all seating surfaces when clamping. If this is not done, the workpiece can be deformed by the clamping force.
  2. The port name is marked on the product surface.
  3. The numerical value is only for the workpiece lifting option.
  4. Please refer to "Seating Height: Standard" for dimensions that is not shown.

**Workpiece (Pallet) Hole Dimensions**

- **Notes**:
  1. Thin wall around the workpiece hole could be deformed by clamping action, and clamping force will not fill the specification.
  2. Please make sure to test the clamping function before using and adjust to the appropriate supply of pressure.
  3. When the clamp head is sticking above the Y surface of the workpiece, please make sure there is no interference with the clamp cylinders during machining.

- **Contact us for details.**
Machining Dimensions of Mounting Area

4-MS × 0.8 Thread Depth 9 or more

Air Blow Port φ 3 1/4

Seat Confirmation Air Port φ 3 1/4

Air Lock Port φ 3 1/4

Air Release Port φ 3 1/4

Through Hole

Blind Hole

Model No. Indication

SWE 100 0 - A N - 080 - Blank H - Blank T

External Dimensions and Machining Dimensions for Mounting (mm)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Workpiece Hole Code</th>
<th>060</th>
<th>065</th>
<th>070</th>
<th>075</th>
<th>080</th>
<th>085</th>
<th>090</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workpiece Hole Diameter φ d</td>
<td>Released State</td>
<td>5.5</td>
<td>6.0</td>
<td>6.5</td>
<td>7.0</td>
<td>7.5</td>
<td>8.0</td>
<td>8.5</td>
</tr>
<tr>
<td></td>
<td>Empty Condition</td>
<td>7.2</td>
<td>7.7</td>
<td>8.2</td>
<td>8.7</td>
<td>9.2</td>
<td>9.7</td>
<td>10.2</td>
</tr>
<tr>
<td>Clamp Diameter</td>
<td>Allowable Offset (Floating Clearance of Expanding Area) 7</td>
<td>± 0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Full Stroke</td>
<td>4.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Workpiece Pulling Stroke</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Workpiece Lifting Stroke 8</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td>5.5</td>
<td>5.5</td>
<td>5.5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>U</td>
<td>5.55</td>
<td>6.05</td>
<td>6.55</td>
<td>7.05</td>
<td>7.55</td>
<td>8.05</td>
<td>8.55</td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>8.5</td>
<td>9</td>
<td>9.5</td>
<td>10</td>
<td>10.5</td>
<td>11</td>
<td>11.5</td>
</tr>
<tr>
<td></td>
<td>W</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td>14</td>
<td>14</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

Notes:

7. The clamping part is an adjusting structure and the clamping operation is done by locating the workpiece hole. The numerical value in the table shows the amount of tolerance value of one clamp. Please consider the center distance accuracy of each clamping installation part and each workpiece hole when used with another location clamp / location cylinder, or when using more than two of these products.

8. Workpiece lifting stroke is the function only for lifting option.

<table>
<thead>
<tr>
<th>Seating Height Dimension</th>
<th>Standard Height</th>
<th>Specifying Seating Height</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Blank</td>
<td>H35</td>
</tr>
<tr>
<td>H</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>AA</td>
<td>-</td>
<td>5.5</td>
</tr>
<tr>
<td>Mass [kg]</td>
<td>0.8</td>
<td>0.8</td>
</tr>
</tbody>
</table>
### External Dimensions

This drawing shows the released state of SWE2000-A-□.  

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-R1/8 Thread Plug</td>
<td>Max. 1.5</td>
</tr>
<tr>
<td>Seating Surface Outer Diameter ( \phi \times )</td>
<td>45</td>
</tr>
<tr>
<td>Seating Surface Inside Diameter ( \phi \times )</td>
<td>45</td>
</tr>
<tr>
<td>Air Blow-Out Hole for Seat Check ( \phi \times )</td>
<td>1</td>
</tr>
<tr>
<td>Gripper (3 Grippers 120° Distance) ( \phi \times )</td>
<td>16.9</td>
</tr>
<tr>
<td>4-O-ring (Included) ( \phi \times )</td>
<td>8.5</td>
</tr>
<tr>
<td>4-Mounting Bolt (Included) ( MS \times 0.8 \times 20 )</td>
<td>8.5</td>
</tr>
<tr>
<td>4-Mounting Bolt (Included) ( 1BPS )</td>
<td>8.5</td>
</tr>
<tr>
<td>Seating Height: Standard ( \phi \times )</td>
<td>53.8</td>
</tr>
</tbody>
</table>

### Workpiece (Pallet) Hole Dimensions

- **Workpiece Hole Diameter \( \phi \times \)**
  - G or more: C0.5 or less
  - S or more: C0.5 or less
- **Workpiece Hole Diameter \( \phi \times \)**
  - G or more: C0.5 or less
  - S or more: C0.5 or less
- **Y Surface**
  - S or more: C0.5 or less
- **Slope Angle (3° or less)**

Notes:

1. Thin wall around the workpiece hole could be deformed by clamping action, and clamping force will not fill the specification. Please make sure to test the clamping function before using and adjust to the appropriate supply of pressure.
2. When the clamp head is sticking above the Y surface of the workpiece, please make sure there is no interference with the clamp cylinders during machining.
Machining Dimensions of Mounting Area

Through Hole

- Air Blow Port φ 3.6
- Air Lock Port φ 3.6
- Seat Confirmation Air Port φ 3.6
- Air Release Port φ 3.6

Blind Hole

5.4 + 0.046

Notes:
1. There should be no burrs at the hole contact surface.
2. It is not required to machine each port if removing SWE R1/8 thread plug (4 plugs) and setting air fitting and air hose directly.

Model No. Indication

SWE 2000 - A N - 115 - Blank H - Blank T

External Dimensions and Machining Dimensions for Mounting (mm)

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Workpiece Hole Code</th>
<th>SWE2000-</th>
<th>—</th>
<th>—</th>
<th>—</th>
<th>—</th>
<th>—</th>
<th>—</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workpiece Hole Diameter φ D</td>
<td>090</td>
<td>095</td>
<td>100</td>
<td>105</td>
<td>110</td>
<td>115</td>
<td>120</td>
<td>125</td>
</tr>
<tr>
<td>Clamp Diameter Released State</td>
<td>9.5</td>
<td>0.07</td>
<td>0.07</td>
<td>0.10</td>
<td>0.07</td>
<td>0.10</td>
<td>0.10</td>
<td>0.11</td>
</tr>
<tr>
<td>Empty Action</td>
<td>9.5</td>
<td>0.07</td>
<td>0.07</td>
<td>0.10</td>
<td>0.07</td>
<td>0.10</td>
<td>0.10</td>
<td>0.11</td>
</tr>
<tr>
<td>Allowable Offset (Floating Clearance of Expanding Area)</td>
<td>±0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Stroke</td>
<td>4.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workpiece Pulling Stroke</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workpiece Lifting Stroke *8</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: 7. The clamping part is an adjusting structure and the clamping operation is done by locating the workpiece hole. The numerical value in the table shows the amount of tolerance value of one clamp. Please consider the center distance accuracy of each clamping installation part and each workpiece hole when used with another location clamp / location cylinder, or when using more than two of these products.

*8. Workpiece lifting stroke is the function only for lifting option.

Seating Height Dimension

<table>
<thead>
<tr>
<th>Seating Height Dimension</th>
<th>Standard Height</th>
<th>Specifying Seating Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Blank</td>
<td>H35</td>
</tr>
<tr>
<td>H</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>AA</td>
<td>Blank</td>
<td>5.5</td>
</tr>
<tr>
<td>Mass kg</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>
 memiliki teks berikut:

**Layout Sample**

*This drawing shows a combination mounting reference of SWE-N (Hole Clamp) and VWM (Expansion Locating Pin).*

**Notes:**
1. When detaching a workpiece, in order to prevent the clamping part from damage, please set up rough guide of 2 or more. Please refer to the above drawing about the length of rough guide and the diameter gap. (Use of rough guides depends on the loading / unloading condition of the workpiece.)
2. When using a combination of VWM (Expansion Locating Pin) and SWE-N (Hole Clamp), please choose N: non-lift function.
Pneumatic Circuit Reference

*This drawing shows a combination circuit reference of SWE-N (Hole Clamp) and VWM (Expansion Locating Pin).

When controlled with one solenoid valve

---

When controlled with two solenoid valves

---

Condition for Operation Confirmation of Hole Clamp (Reference) ON: Pressure Increasing, OFF: Pressure Decreasing

<table>
<thead>
<tr>
<th>Pressure Switch</th>
<th>Release Confirmation</th>
<th>When Released</th>
<th>When Workpiece is set</th>
<th>When Clamped</th>
<th>When Clamped abnormally</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Sensor for Seating Confirmation</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

1. Please use solenoid valve to make a sequence operation that SWE (Hole Clamp) starts working after VWM (Expansion Locating Pin) completes the movement. When unable to use solenoid valve, please prepare flow control valve with check valve at ★ (1 piece) to adjust sequencing speed. If SWE operates before VWM, there is a possibility for the product to be damaged due to a thrust load on SWE.

2. To reach required accuracy in setting air sensor, please install air sensor for individual clamp.

3. With lift function it shows "OFF" since there is clearance between seating surface and workpiece. Without lift function, it shows "ON" depending on set pressure of the air sensor.
Cautions

1) Check Specifications
- Please use each product according to the specifications.
- This product is air double action model which locks with air pressure / spring force and releases with air pressure. Even when air is not supplied to either lock port or release port, built-in spring maintains locked condition (clamp diameter is expanded):
  1. Maintains clamping force even when air pressure is at 0MPa. (Refer to Clamping force curve: clamping force at supply air pressure 0MPa on P.88).
  2. When loading/unloading workpiece release air should be supplied. If release air is not supplied, workpiece contacts with gripper and it leads to breakage of clamps.

2) Working Reference Plate (Seating Surface) Z axis.
- The upper surface of the flange of this product is the seating surface of workpiece and locates in Z direction.

3) Seat Confirmation Mechanism
- It will be detected when workpiece is pressed against the seating surface by lock (clamp) action.

4) Clamp Installation
- The clamping part of this product has floating structure (±0.5mm). Please consider the center distance accuracy of each clamping installation part and each workpiece hole when used with another location clamp / location cylinder, or when using more than two of these products.

5) Clamping Force
- Clamping force shows pressing force against the seating surface. Make sure to conduct test clamping and adjust supply pressure accordingly. Insufficient clamping force leads to workpiece detachment.

6) Workpiece hole size, slope angle and workpiece hardness should be within the range of the specification.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>When workpiece hole diameter is larger than specification.</td>
<td>Expansion stroke is insufficient and the clamping force will not fill the specifications.</td>
</tr>
<tr>
<td>When using it with insufficient clamping force.</td>
<td>Leads to falling of the workpiece.</td>
</tr>
<tr>
<td>When workpiece hole diameter is smaller than specification.</td>
<td>Difficult to attach/detach the workpiece leading to damage.</td>
</tr>
<tr>
<td>When workpiece hole depth is shallow.</td>
<td>Could lead to abnormal seating and damage.</td>
</tr>
<tr>
<td>When workpiece hole taper slope angle is larger than specification.</td>
<td>The load concentrates on the gripper point when clamping and could lead to damage.</td>
</tr>
<tr>
<td>When workpiece hole is harder than specified.</td>
<td>Gripper does not dig into the workpiece enough and it cannot clamp securely.</td>
</tr>
</tbody>
</table>

7) Wall Thickness around Workpiece Hole
- Thin wall around the workpiece hole could be deformed by clamping action, and clamping force does not fill the specification. Make sure to conduct test clamping and adjust supply pressure accordingly. Insufficient clamping force leads to workpiece detachment.

8) Air Blow Port and Seating Confirmation Port
- Continuously supply air pressure to the air blow port and the seating confirmation port. If air supply is shut off during operation, contaminants enter into the clamp leading to malfunctions.

When clamping, make sure all seating surfaces touch workpiece. When the workpiece is not touching the seating surface area, please refer to external dimension chart and calculate contacting pressure with clamping force and seating area not to deform the workpiece.

With lifting function, when workpiece is set (before supplying the lock air pressure), the workpiece is lifted up by built-in spring, and there will be a clearance of 0.2mm between workpiece bottom surface and seating surface.
9) Release Action
- When releasing, it lifts up the workpiece which is normal. When using in a horizontal application, it is recommended to install a fall prevention of workpiece for temporal tacking.

10) Horizontal Locating
- When a workpiece is set, please make sure there is no lifting or slope of the workpiece. If the clamping operation is done with lifting or slope of the workpiece, it will lead to possible damage of a clamp and deformation of the workpiece hole.

11) Please detach a workpiece with all clamps fully released.
- When a workpiece is detached during lock or release operation, it will lead to damage of clamp or fall of workpiece.

12) Please set up rough guides.
- When detaching a workpiece with slope it may cause the damage of clamp or fall of workpiece.

When using the product with other location clamps / cylinders, please set rough guides considering the center distance accuracy of each mounting hole and workpiece hole of location clamp / cylinders.

- Installation Notes
  1) Check the fluid to use.
  - Make sure to supply filtered clean dry air.
  - Oil supply with a lubricator etc. is unnecessary.
  2) Procedure before Piping
  - The pipeline, piping connector and fixture circuits should be cleaned by thorough flushing. The dust and cutting chips in the circuit may lead to fluid leakage and malfunction.
  - There is no filter provided with this product to prevent foreign materials and contaminants from getting into the air circuit.
  3) Applying Sealing Tape
  - Wrap with tape 1 to 2 times following the screwing direction.
  - Pieces of the sealing tape may lead to air leaks and malfunction.
  - In order to prevent a foreign substance from going into the product during the piping work, it should be carefully cleaned before working.
  4) Mounting Hole Clamp
  - When mounting the product use all hexagon socket bolts (with tensile strength of 12.9) and tighten them with the torque shown in the chart below.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Thread Size</th>
<th>Tightening Torque(N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWE</td>
<td>M5×0.8</td>
<td>6.3</td>
</tr>
</tbody>
</table>

5) Port Position of the Hole Clamp
- The port name is marked on the product surface. Be careful of installation direction. (LOCK : Air Lock Port, RELEASE : Air Release Port, FC : Seating Confirmation Port, BLOW : Air Blow Port)

6) Use air piping with outer diameter ¥6 (inner diameter ¥4) or larger for air blow.
- In order to conduct an effective air blow, it is recommended to use air piping with outer diameter ¥6 (inner diameter ¥4) or larger.

※ Please refer to P.1239 for common cautions.
Cautions

Notes on Handling

1) It should be handled by qualified personnel.

2) Do not handle or remove the product unless the safety protocols are ensured.
   a) The machine and equipment can only be inspected or prepared when it is confirmed that the preventive devices are in place.
   b) Before the product is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
   c) After stopping the product, do not remove until the temperature cools down.
   d) Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.

3) Do not touch workpieces (pallets) or clamps while they are working. Otherwise, your hands may be injured due to clinching.

4) Do not disassemble or modify.
   a) If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.
   b) Powerful spring is built in inside which is very dangerous.

Maintenance and Inspection

1) Please refer to P.1239 for general maintenance.

2) Regularly clean the clamping part and seating surface.

3) Continuous use will result in wear of the gripper and impairing clamping force. Whenever the wear is found the gripper should be replaced. The replacement time varies according to operating pressure, workpiece material and hole shape etc. Please call us.

4) Please contact us for overhaul and repairs. Powerful spring is built in inside which is very dangerous.

※ Please refer to P.1239 for common cautions.
### High Power Series

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<th>Features</th>
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<th>Layout Sample Circuit Reference</th>
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<td>Hydraulic Series</td>
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<tr>
<td>Cautions / Others</td>
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</tr>
</tbody>
</table>

#### High-Power Hydraulic

- Swing Clamp
  - LHE
- Link Clamp
  - LKE

#### High-Power Pneumatic

- Pallet Clamp
  - SWE
  - High-Power Pneumatic Swing Clamp
    - WHE
  - Link Clamp
    - WCE
  - High-Power Pneumatic Pallet Clamp
    - WNC
    - Rodless Hollow Pneumatic Pallet Clamp
      - WNA
  - WVS

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© MEMO
Cautions

- Notes on Handling

1) It should be handled by qualified personnel.
   - The hydraulic machine and air compressor should be handled and maintained by qualified personnel.
2) Do not handle or remove the machine unless the safety protocols are ensured.
   - The machine and equipment can only be inspected or prepared when it is confirmed that the preventive devices are in place.
3) Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
4) After stopping the machine, do not remove until the temperature cools down.
5) Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.
6) Do not touch clamp (cylinder) while clamp (cylinder) is working. Otherwise, your hands may be injured due to clinching.

- Maintenance and Inspection

1) Removal of the Machine and Shut-off of Pressure Source
   - Before the machine is removed, make sure that the above-mentioned safety measures are in place. Shut off the air of hydraulic source and make sure no pressure exists in the hydraulic and air circuit.
   - Make sure there is no abnormality in the bolts and respective parts before restarting.

2) Regularly clean the area around the piston rod and plunger.
   - If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning, fluid leakage and air leaks.

3) Please clean out the reference surface regularly (taper reference surface and seating surface) of locating machine. (VS/VT/VFL/VFM/VFJ/VFK/VVS/VWS/VWK/VX/VXF)
   - Location products, except VX/XVF model, can remove contaminants with cleaning functions. When installing pallets makes sure there is no thick sludge like substances on pallets.
   - Continuous use with dirt on components will lead to locating functions not work properly, leaking and malfunction.

4) If disconnecting by couplers on a regular basis, air bleeding should be carried out daily to avoid air mixed in the circuit.

5) Regularly tighten nuts, bolts, pins, cylinders and pipe line to ensure proper use.

6) Make sure the hydraulic fluid has not deteriorated.

7) Make sure there is smooth action and no abnormal noise.
   - Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.

8) The products should be stored in the cool and dark place without direct sunshine or moisture.

9) Please contact us for overhaul and repair.
● Warranty

1) Warranty Period
- The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.

2) Warranty Scope
- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.
- Defects or failures caused by the following are not covered:
  ① If the stipulated maintenance and inspection are not carried out.
  ② If the product is used while it is not suitable for use based on the operator’s judgment, resulting in defect.
  ③ If it is used or handled in inappropriate way by the operator.
     (Including damage caused by the misconduct of the third party.)
  ④ If the defect is caused by reasons other than our responsibility.
  ⑤ If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
  ⑥ Other caused by natural disasters or calamities not attributable to our company.
  ⑦ Parts or replacement expenses due to parts consumption and deterioration.
     (Such as rubber, plastic, seal material and some electric components.)

- Damages excluding from direct result of a product defect shall be excluded from the warranty.
## Sales Offices

### Sales Offices across the World

<table>
<thead>
<tr>
<th>Country</th>
<th>Office Name</th>
<th>Telephone</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>KOSMEK LTD.</td>
<td>+81-78-991-5162</td>
<td>+81-78-991-8787</td>
</tr>
<tr>
<td>USA</td>
<td>KOSMEK (USA) LTD.</td>
<td>+1-630-620-7650</td>
<td>+1-630-620-9015</td>
</tr>
<tr>
<td>Mexico</td>
<td>KOSMEK USA Mexico Office</td>
<td>+52-442-161-2347</td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>KOSMEK EUROPE GmbH</td>
<td>+43-463-287587</td>
<td>+43-463-287587-20</td>
</tr>
<tr>
<td>China</td>
<td>KOSMEK (CHINA) LTD.</td>
<td>+86-21-54253000</td>
<td>+86-21-54253709</td>
</tr>
<tr>
<td>India</td>
<td>KOSMEK LTD. - INDIA</td>
<td>+91-9880561695</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>TEL. +66-2-300-5132</td>
<td>FAX. +66-2-300-5133</td>
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<tr>
<td>Taiwan</td>
<td>TEL. +886-2-82261860</td>
<td>FAX. +886-2-82261890</td>
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<tr>
<td>Philippines</td>
<td>TEL. +63-2-310-7286</td>
<td>FAX. +63-2-310-7286</td>
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<tr>
<td>Indonesia</td>
<td>TEL. +62-21-5818632</td>
<td>FAX. +62-21-5814857</td>
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<tr>
<td>G.E.T. Inc., Phil.</td>
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<tr>
<td>P.T. PANDU HYDRO PNEUMATICS</td>
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</table>

### Sales Offices in Japan

<table>
<thead>
<tr>
<th>Office Name</th>
<th>Telephone</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Office</td>
<td>TEL.078-991-5115</td>
<td>FAX.078-991-8787</td>
</tr>
<tr>
<td>Osaka Sales Office</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overseas Sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tokyo Sales Office</td>
<td>TEL.048-652-8839</td>
<td>FAX.048-652-8828</td>
</tr>
<tr>
<td>Nagoya Sales Office</td>
<td>TEL.0566-74-8778</td>
<td>FAX.0566-74-8808</td>
</tr>
<tr>
<td>Fukuoka Sales Office</td>
<td>TEL.092-433-0424</td>
<td>FAX.092-433-0426</td>
</tr>
</tbody>
</table>

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