New

Lifting Hole Clamp

Three Functions in One Cylinder
Lifting, Locating and Clamping

Model SWJ

Retract  ➔  Lifting Up / Locating / Clamping
Lifting Hole Clamp

Model SWJ

Lift Cylinder + Locating Pin + Hole Clamp

Lifts and locates the pallet, then clamps by expanding inside a hole of the pallet.
Advantages of Lifting Hole Clamp

**BEFORE**

- Locating Pin
- Round Pin
- Pallet Loading
- Diamond Pin
- Pallet
- Linear Guide
- Lift Cylinder

**AFTER**

- Released
- Pallet Loading
- Retracted
- Lift-up
- Lifting
- Expanded
- Pulls down
- Locating Clamping

**Arranging the lift cylinders / linear guides / locating pins in one fixture**

- Takes time to design a complex fixture
- Increases the number of parts
- Increases the number of maintenance parts
- Requires large space
- Increases parts tolerance

**Lifting Hole Clamp** with the functions of the lift cylinders / linear guides / locating pins allows for

- Simple Design
- Minimal number of parts
- Reduced number of maintenance parts
- Minimal Space
- Minimal parts tolerance
Auto Switch

This product is able to detect the lifting action by using an auto switch (prepared by customer).

[Applicable Auto Switch]  (When using an auto switch not made by Kosmek, check specifications of each manufacturer.)

<table>
<thead>
<tr>
<th>Auto Switch Model No.</th>
<th>JEP0000-A2</th>
<th>JEP0000-A2L</th>
<th>JEP0000-B2</th>
<th>JEP0000-B2L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Type</td>
<td>Reed Auto Switch</td>
<td>Solid State Auto Switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wiring Method</td>
<td>2-Wire</td>
<td>3-Wire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable Length</td>
<td>1m</td>
<td>3m</td>
<td>1m</td>
<td>3m</td>
</tr>
</tbody>
</table>

External Dimensions:
- M2.5 × 0.45 Mounting Bolt
- Tightening Torque 0.25N・m
- Brown Cable (+)
- Blue Cable (−)
- LED Indicator

For detailed specifications, refer to the Auto Switch product pages on FA • Industrial Robot Related Products (CATALOG No.FA00200-01-00-GB) or contact us.
Model No. Indication

SWJ 2000 - S10

1. Body Size
   200 : 200

2. Design No.
   0 : Revision Number

3. Tip Shape
   S10 : For φ10 Hole

Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>SWJ2000-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workpiece Hole Diameter</td>
<td>mm</td>
</tr>
<tr>
<td>Clamping Diameter</td>
<td>at Release</td>
</tr>
<tr>
<td></td>
<td>at Lock (w/o Workpiece)</td>
</tr>
<tr>
<td>Repeatability</td>
<td>mm</td>
</tr>
<tr>
<td>Pallet Pulling Stroke</td>
<td>mm</td>
</tr>
<tr>
<td>Lifting Stroke</td>
<td>mm</td>
</tr>
<tr>
<td>Lifting Force (at Extend)</td>
<td>N</td>
</tr>
<tr>
<td>Lifting Force (at 0.5MPa after operation)</td>
<td>N</td>
</tr>
<tr>
<td>Cylinder Capacity</td>
<td>Release Side</td>
</tr>
<tr>
<td></td>
<td>Lock Side</td>
</tr>
<tr>
<td>Maximum Operating Pressure</td>
<td>MPa</td>
</tr>
<tr>
<td>Minimum Releasing Pressure</td>
<td>MPa</td>
</tr>
<tr>
<td>Withstanding Pressure</td>
<td>MPa</td>
</tr>
<tr>
<td>Usable Fluid</td>
<td>Dry Air</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>°C</td>
</tr>
</tbody>
</table>

Notes:

※1. Repeatability under the same condition (no load).
2. This product locks and releases with air pressure.
   - Release Action: Goes down with the gripper retracted.
   - Lock Action: Extends 16mm and clamps the workpiece hole.

Performance Curve

Notes:

1. The gripping force shows the expanding force that holds the workpiece hole acting perpendicular to the clamp's center axis. The clamping force shows the pressing force against the seating surface.
2. The performance curve (of Gripping Force and Clamping Force) shows the calculated value.
3. Each gripping force and clamping force varies according to workpiece material and roughness/lubricated condition of workpiece hole. Make sure to conduct test clamping and adjust supply pressure accordingly.
Lifting Hole Clamp

External Dimensions: SWJ2000-S10

This drawing shows SWJ2000-S10.

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Notes:
1. This drawing shows the dimensions when the mounting plate is 15mm.
2. Do not disassemble or modify. Contains a powerful spring which is dangerous.
3. Adjust the operating speed so that no impact applies on the pallet when lifting up.

※1. ※1 shows the seating height from the product mounting surface when locked (lifted up).
<table>
<thead>
<tr>
<th>Features</th>
<th>Action Description</th>
<th>Auto Switch</th>
<th>Model No.</th>
<th>Indication</th>
<th>Specifications</th>
<th>Performance Curve</th>
<th>External Dimensions</th>
<th>Cautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEMO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Cautions

1) Check Specifications
   (Specifications for custom made model may be different.)
   • Maximum operating pressure is 0.5MPa. Minimum releasing pressure is 0.25MPa.
   • This product locks and releases with air pressure. (Air double action)
   • Release Action : Goes down with the gripper retracted.
     Lock Action : Lifts the pallet up and clamps the workpiece hole.

2) Reference Surface (Seating Surface) towards Z-axis
   • This product has the seating surface for workpiece and locates in Z direction after lifting up (Refer to P.2).

3) Thickness around Workpiece Hole
   • Workpiece hole that is extremely thin or made of soft material could be deformed by clamping action, and repeatability, gripping force and clamping force does not fill the specification.
   • Make sure to conduct test clamping and adjust supply air pressure accordingly.
   • Insufficient gripping force and clamping force lead to locating failure and/or workpiece detachment.

4) Clamp Installation
   • When using more than two of these products, the center distance accuracy of each clamp installation and each workpiece hole should be better than ±0.02mm.

5) Gripping Force and Clamping Force
   • Gripping force is the expanding force that holds the workpiece hole acting perpendicular to the clamp’s center axis.
     Clamping force is the pressing force against the seating surface.
   • Each gripping force and clamping force varies according to workpiece material and roughness/lubricated condition of workpiece hole. Make sure to conduct test clamping and adjust supply pressure accordingly.
   • Insufficient gripping force and clamping force lead to locating failure and/or workpiece detachment.

6) Speed Adjustment
   • Adjust the operating speed so that no impact applies on the pallet when lifting up.

7) Pallet Holding Position
   • Variance of holding position while pallet loading should be less than the allowable misalignment shown below.

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(See ‘External Dimensions’ for the guide tip diameter.)

8) Do not apply excessive load or impact on the product when lifted.
   • Otherwise, it will cause malfunction, accuracy failure and/or damage on the internal parts.

9) Workpiece hole size should be within the range of the specification.

<table>
<thead>
<tr>
<th>When workpiece hole diameter is larger than specification.</th>
<th>Expansion stroke is insufficient and the repeatability, gripping force and clamping force will not fill the specifications.</th>
</tr>
</thead>
<tbody>
<tr>
<td>When using it with insufficient gripping (clamping) force.</td>
<td>Leads to falling of the pallet.</td>
</tr>
<tr>
<td>When workpiece hole diameter is smaller than specification.</td>
<td>Difficult to attach/detach the pallet leading to damage.</td>
</tr>
<tr>
<td>When workpiece hole depth is shallow.</td>
<td>Could lead to abnormal seating and damage.</td>
</tr>
</tbody>
</table>

10) All clamps must be fully released before loading and unloading a pallet.
    • When a pallet is loaded and unloaded during lock or release operation, it will lead to damage of clamp or fall of pallet.

11) For Use of Auto Switch
    • This product is able to detect the lifting up/down action by installing an auto switch to the installation slots.
    • When using an auto switch not made by Kosmek, check specifications of each manufacturer.

    Applicable Auto Switch
    • JEP Series (Kosmek)
      Refer to the instruction manual of JEP for detailed specifications.
    • Magnetic Field Resistant Model : D-P3DWA (SMC Corporation)

    The detection part (magnet) of the auto switch of SWJ operates according to the internal piston movement, so it does not detect the gripper movement directly.

12) Fall Prevention Measures
    • In case of accident such as detachment of a pallet, please prepare fall prevention measures for safety.
13) Operating Environment

- This product has no function that prevents foreign substances. Do not use under environment with coolant and cutting chips.

**Cautions**

**Installation Notes**

1) Usable Fluid

- Please supply filtered clean dry compressed air.
- Install the drain removing device such as an aftercooler and air dryer, etc.
- Since the initial lubricant is applied, oil supply with a lubricator etc. is unnecessary. If oil is supplied with a lubricator, the product ability decreases and the operation may be unstable due to the loss of the initial lubricant.

2) Procedure before Piping

- The pipeline, piping connector and fixture circuits should be cleaned and flushed thoroughly.
- Cutting chips in the circuit may lead to fluid leakage and malfunction. (There is no filter provided with this product for prevention of contaminants in the air circuit.)

3) Applying Sealing Tape

- When using sealing tape, wrap it 1 to 2 times following the screwing direction.
- When piping, be careful that contaminant such as sealing tape does not enter in products. Pieces of the sealing tape can cause air leaks and malfunction.

4) Product Installation

- Please use four hexagon socket bolts (with tensile strength of A2-70 or greater), and tighten the product with the tightening torque shown below.
- Tightening with greater torque than recommended can damage the screw, depress the seating surface and/or seize the bolt.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Bolt Size</th>
<th>Tightening Torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWJ2000</td>
<td>M4 × 0.7</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>M5 × 0.8</td>
<td>5.0</td>
</tr>
</tbody>
</table>

5) Port Position

- The name of each port is marked on the flange surface. Be careful with the mounting direction of piping.
- (LOCK : Air Lock Port, RELEASE : Air Release Port)
**Cautions**

- **Notes on Handling**

1) It should be handled by qualified personnel.
   - The hydraulic and pneumatic equipment should be handled and maintained by qualified personnel.

2) Do not handle or remove the product unless safety protocols are ensured.
   ① The machine and equipment can only be inspected or prepared when it is confirmed that the preventive devices are in place.
   ② 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.
   ③ After stopping the product, do not remove until the equipment cools down.
   ④ Make sure there is no abnormality in the bolts and respective parts before restarting the machine or equipment.

3) In order to avoid injury, please do not touch the pallet or clamp while they are operating.

![Diagram of hand touching pallet](image)

4) During pallet transfer, make sure the safety of environment in case of a pallet detachment.

5) Do not disassemble or modify.
   - If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.
   - Built-in spring is very strong and can be dangerous.
**Cautions**

- **Maintenance and Inspection**
  1) Removal of the Product and Shut-off of Pressure Source
     - 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.
     - Make sure there is no abnormality in the bolts and respective parts before restarting.
  2) Clean the clamping part and seating surface regularly.
     - Using the product contaminated with dirt may lead to damage of the product or detachment of a workpiece due to lack of gripping force/clamping force, malfunctioning, accuracy failure and air leaks, etc.

![](image)

If there is malfunction even after cleaning the product from outside, there may be contaminants or damage within internal parts. In this case, overhaul is required. Please call us for overhaul. (If overhauled by unauthorized personnel, the warranty will be void even the period is still active.)

3) Regularly tighten pipings, mounting bolts, etc. to ensure proper use.

4) Expansion stroke and/or clamping force will be decreased due to friction of a gripper surface caused by repeated operation.
   - Replacement period differs depending on operating air pressure, pallet material, and shape of hole.
   - When you find friction on gripper surface, the gripper needs to be required. Please contact us for replacement.

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

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

7) Please contact us for overhaul and repair.

*Built-in spring is very strong and can be dangerous.*

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**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.
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