Parallel Gripper with Auto-Grip Changer

Model WPW-C

Changing grippers (levers) enables to handle a wider variety of workpieces only with one robotic hand.

- Gripper Change allows for multi-size workpieces.
• Grippers can be changed in sequence by air control of each port.

Locating Repeatability of Gripper : ±0.05mm

- Release Port for Gripper Change
- Gripper Installation Confirmation Port
- Lock Port for Gripper Change
- Each port on the opposite side.
- Locating Pin Connecting Hole
- Pull Bolt Connecting Hole

Pull bolt connecting part is equipped with self-locking spring

Self-locking spring enables to hold the gripper (lever) even when air is accidentally cut off.
※ Make sure to supply lock air when operating the parallel gripper.

• High Versatility : Design Multi-Hand by each customer.

Equipped with extra ports and mounting holes that can be freely used by customer. You can install a vacuum pad or another actuator to expand the usage of WPW handling various jobs with one hand.

• High Accuracy and Rigidity

The linear guide function allows for high rigidity and high accuracy opening/closing function.
Repeatability : ±0.01mm

• Auto Switch Capability

Easy to install and adjust auto switches for gripper detection.
Model No. Indication (Parallel Gripper with Auto-Grip Changer)

**WPW** 050 0 - C

1 Cylinder Inner Diameter

- 050 : φ 50 mm
- 060 : φ 60 mm

2 Design No.

- 0 : Revision Number

3 Gripping Direction

- C : Closing Only

### Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>WPW0500-C</th>
<th>WPW0600-C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder Inner Diameter</td>
<td>mm</td>
<td>50</td>
</tr>
<tr>
<td>Gripping Force (Air Pressure: At 0.5MPa)</td>
<td>mm</td>
<td>829</td>
</tr>
<tr>
<td>Full Stroke</td>
<td>mm</td>
<td>26</td>
</tr>
<tr>
<td>Repeatability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel Gripper Part</td>
<td>mm</td>
<td>±0.01</td>
</tr>
<tr>
<td>Gripper Change Part</td>
<td>mm</td>
<td>±0.05</td>
</tr>
<tr>
<td>Stroke Error</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>Allowable Gripper Length L (Air Pressure: at 0.5MPa)</td>
<td>mm</td>
<td>60</td>
</tr>
<tr>
<td>Allowable Gripper Offset Distance H (Air Pressure: at 0.5MPa)</td>
<td>mm</td>
<td>15</td>
</tr>
<tr>
<td>Maximum Cycle / min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Operating Pressure</td>
<td>MPa</td>
<td></td>
</tr>
<tr>
<td>Minimum Operating Pressure</td>
<td>MPa</td>
<td></td>
</tr>
<tr>
<td>Withstanding Pressure</td>
<td>MPa</td>
<td></td>
</tr>
<tr>
<td>Air Pressure for Gripper Installation Confirmation</td>
<td>MPa</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Usable Fluid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Notes:

1. Gripping force cannot be calculated from the cylinder inner diameter. Please refer to the gripping force curve.
2. Gripping force indicates the calculated value based on the gripper length (L).
3. Repeatability under the same condition (no load).
4. L : Allowable Gripper Length (mm), H : Allowable Gripper Offset Distance (mm). (Air Pressure: at 0.5MPa)
5. Air pressure supplied to the lock port and release port for gripper change must be equal to or greater than air pressure supplied to the open port and close port for chucking.
Gripping Force Performance Curve : Closing Side

F : Gripping Force (N)
L : Gripper Length (mm)

Notes:
1. This table and graph show the relationship among F:Gripping Force (N), L:Gripper Length (mm) and P:Air Pressure (MPa).
2. WPW-C is the robotic hand for closing side only. Opening side has no gripping force to hold workpieces.

WPW0500-C

<table>
<thead>
<tr>
<th>Air Pressure (MPa)</th>
<th>Gripping Force (N)</th>
<th>Max. Gripper Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>753 691 638 592 553 518</td>
<td></td>
</tr>
<tr>
<td>0.4</td>
<td>603 553 510 474 442 414</td>
<td></td>
</tr>
<tr>
<td>0.3</td>
<td>452 414 383 355 332 311</td>
<td></td>
</tr>
</tbody>
</table>

WPW0600-C

<table>
<thead>
<tr>
<th>Air Pressure (MPa)</th>
<th>Gripping Force (N)</th>
<th>Max. Gripper Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>1136 1063 999 943 892 847 806 769</td>
<td></td>
</tr>
<tr>
<td>0.4</td>
<td>909 851 800 754 714 678 645 615</td>
<td></td>
</tr>
<tr>
<td>0.3</td>
<td>681 638 600 566 535 508 484 461</td>
<td></td>
</tr>
</tbody>
</table>

Model No. Indication (Pull Bolt • Locating Pin)

WPWZ 50 0 - P1

1. Corresponding WPW
   - Parallel Gripper with Auto-Grip Changer
   - Model No.
     - 50 : For WPW0500-C
     - 60 : For WPW0600-C

2. Design No.
   - 0 : Revision Number

3. Function
   - P1 : Pull Bolt
   - P2 : Locating Pin
External Dimensions: WPW0500-C

* The drawing shows the opened state of WPW0500-C.

---

**Open for Chucking**
- M5 × 0.8
- 2-Φ 8.5 Through Hole
- Spot Facing Φ 14

**Close for Chucking**
- M5 × 0.8
- When Opened: 71.0 / 69.5
- When Closed: 45.0 / 43.0

**Gripper Auto-Change**
- WPWZ500-P1
  - Tightening Torque: 2.3N・m
- WPWZ500-P2
  - Tightening Torque: 2.3N・m

**M8 × 1.25 Thread**
- Release Port for Gripper Change
- M3 × 0.5
- Lock Port for Gripper Change
- M3 × 0.5
- Gripper Installation Confirmation Port
- M3 × 0.5

**Each port for gripper change on both sides are common.**

**4-Φ 6.8 Through Hole**
- Spot Facing Φ 11
- (M8 × 1.25 Thread from the Back)

**2-Φ 6 × 20° Depth 8**

**Air Blow-out Hole for Gripper Installation Confirmation**
### External Dimensions: WPWZ500-P1/P2

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Mounting Bolt Nominal × Pitch</th>
<th>Number of Bolts</th>
<th>Tightening Torque (N • m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPW0500-C</td>
<td>M6 × 1</td>
<td>4</td>
<td>7.9</td>
</tr>
<tr>
<td></td>
<td>M8 × 1.25</td>
<td>4</td>
<td>15.4</td>
</tr>
<tr>
<td></td>
<td>M8 × 1.25</td>
<td>2</td>
<td>15.4</td>
</tr>
</tbody>
</table>
**External Dimensions : WPW0600-C**

※ The drawing shows the opened state of WPW0600-C.
**External Dimensions : WPWZ600-P1/P2**

![Pull Bolt WPWZ600-P1](image1)

![Locating Pin WPWZ600-P2](image2)

**Machining Dimensions of Mounting**

WPWZ600-P1/P2 Common

![Machining Diagram](image3)

**Installation Method and Tightening Torque**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Mounting Direction</th>
<th>Mounting Bolt Nominal × Pitch</th>
<th>Number of Bolts</th>
<th>Tightening Torque (N • m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPW0600-C</td>
<td>Bolt Up Mounting</td>
<td>M6 × 1</td>
<td>4</td>
<td>7.9</td>
</tr>
<tr>
<td></td>
<td>Bolt Down Mounting</td>
<td>M8 × 1.25</td>
<td>4</td>
<td>15.4</td>
</tr>
<tr>
<td></td>
<td>Side Mounting</td>
<td>M8 × 1.25</td>
<td>2</td>
<td>15.4</td>
</tr>
</tbody>
</table>
Gripper Length/Workpiece Weight Graph

- Inertial Force • Friction Coefficient • Safety Factor Selection List

<table>
<thead>
<tr>
<th>Inertial Force</th>
<th>Friction Coefficient</th>
<th>Safety Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stops after 0.1 sec at the speed of 0~100mm/sec.</td>
<td>Large</td>
<td>5 times</td>
</tr>
<tr>
<td></td>
<td>Small</td>
<td>10 times</td>
</tr>
<tr>
<td>Middle Speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stops after 0.1 sec at the speed of 100~300mm/sec.</td>
<td>Large</td>
<td>10 times</td>
</tr>
<tr>
<td></td>
<td>Small</td>
<td>15 times</td>
</tr>
<tr>
<td>Stops after 0.1 sec at the speed of 300~500mm/sec.</td>
<td>Large</td>
<td>15 times</td>
</tr>
<tr>
<td></td>
<td>Small</td>
<td>20 times</td>
</tr>
<tr>
<td>High Speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stops after 0.1 sec at the speed of 500~1000mm/sec.</td>
<td>-</td>
<td>30 times</td>
</tr>
</tbody>
</table>

Note:

1. Indicates the friction coefficient of contact surface of workpiece and gripper. 
Refer to the condition below.
Friction Coefficient : Small (Approximately $\mu = 0.1$) … When contact surface is flat.
Friction Coefficient : Large (More than $\mu = 0.15$) … When contact surface is serration or spike shape.

- How to Read Gripper Length/Workpiece Weight Graph

The selection method is a reference. It is recommended to consider the actual conditions (environment) when selecting the product. The graph shows when air pressure is 0.5MPa.

[Ex. 1]
When using WPW0600-C with 10kg workpiece and 30mm gripper, the safety factor should be 10 times. When using it with lower speed which is indicated in Inertial Force • Friction Coefficient • Safety Factor Selection List, the friction coefficient of contact surface can be small. When using it with middle speed (stops after 0.1 sec at the speed of 100~300mm/sec), contact surface should be serration or spike shape to secure larger friction coefficient.

[Ex. 2]
When using it with middle speed (stops after 0.1 sec at the speed of 300~500mm/sec) and when friction coefficient is small due to flat contact surface, the safety factor should be 20 times. When using WPW0600-C with 20 times safety factor and 20mm gripper, the maximum workpiece weight is 5.4kg.

- Relationship between Workpiece Weight and Robotic Hand Gripping Force

The safety factor of robotic hand gripping force to workpiece weight should be approximately 16 times for each robot manufacturer, but it differs according to the conditions. Refer to the following contents when selecting the product.

1. Workpiece Gravity Center and Gripping Position
It is recommended to design the gripper so that it grips the workpiece gravity center with the center of robotic hand.

2. Gripper Length
The load applied on the robotic hand body depends on the gripper length. It is recommended to design the gripper so that the workpiece gravity center is as close as possible to the robotic hand.
WPW-C: Gripping Side

Air Pressure 0.5 MPa

L: Gripper Length (mm)

W: Workpiece Weight (kg)

WPW0500-C

WPW0600-C
Cautions

Notes for Design

1) Check Specifications
- model WPW: Maximum operating air pressure is 0.5 MPa. Minimum operating air pressure is 0.3 MPa.
  However, the maximum operating pressure and gripping force may change depending on the gripper length. Please provide appropriate air pressure in order to avoid deformation, galling or air leakage caused by overload applied to the robotic hand.
- model WPW is a parallel gripper with auto grip changer for closing-side use only.

2) Clamping a workpiece in the center of Parallel Gripper
- When rigidity of right and left grippers are different in an offset position, locating repeatability is unstable. If it is necessary to clamp in an offset position, please consider lever rigidity when designing.

3) Do not apply an impact on the gripper (prepared by customer).
- Otherwise, it may result in breakage of the product.

4) Locating of the Body
- The Parallel Gripper can be located by using its pin holes. Please consider pin position dimension tolerance and pin hole tolerance when using a locating pin.
- Locating pin is not included.

5) Notes for Circuit Design
- Please design the air circuit properly and review the circuit design in advance in order to avoid malfunction or breakage of the device.
- Parallel Gripper and Auto-Grip Changer must be controlled by different circuits. Air pressure of Auto-Grip Changer must be equal to or greater than that of Parallel Gripper. When using Parallel Gripper, continuously supply air pressure to the lock side of Auto-Grip Changer.

6) Please supply filtered clean dry air.
- Oil supply with a lubricator etc. is unnecessary.

7) Adjustment of Operating Speed
- If the operating speed of the robotic hand is very fast, it leads to wear-out or malfunction of the parts. Please prepare a speed controller to adjust speed in order not to exceed the appropriate opening and closing time.

8) Operating Environment
- WPW has no function that prevents contaminants.
- Do not use under environment with coolant and cutting chips.

9) Protective Cover Installation
- If the moving parts of the robot or robotic hand may endanger human life, please install a protection cover.

10) Fall Prevention Measures
- In case of accident such as detachment of a workpiece, please prepare fall prevention measures for safety.

11) Gripper Installation Confirmation
- Gripper installation confirmation is available by using a gap sensor. Supply air to the air sensor must be clean dry air that is filtered through the filter of 5 μm or less. Make sure the gripper securely seals the air blow-out hole for gripper installation confirmation.

   [Recommended Sensors]
   - SMC Corporation: Air Catch Sensor Series ISA3-F, ISA3-G, ISA2-G
   - CKD Corporation: Air Catch Sensor Series GPS2-05-15
   - Recommended Air Pressure: 0.1 ~ 0.2 MPa

12) Auto-Grip Changer: Mounting of Air Supply Fittings
- Be careful with the distance between the air supply ports when selecting fittings.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Port Thread Size</th>
<th>Port Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPW0500</td>
<td>M3 × 0.5</td>
<td>About 6.7 mm</td>
</tr>
<tr>
<td>WPW0600</td>
<td>M5 × 0.8</td>
<td>About 9.8 mm</td>
</tr>
</tbody>
</table>

*Recommended Fitting: Nihon Pisco Co., Ltd. Tube Fitting Mini Series Fitting, etc.

※1. When operating the right and the left Auto-Grip Changer individually, please install the valve and the sensor (as shown with ※1) to each side.
Installation Notes

1) Check the Fluid to Use
- Please supply filtered clean dry air. (Install a drain removing device.)
- Oil supply with a lubricator etc. is unnecessary. Oil supply with a lubricator may cause loss of the initial lubricant. The operation under low pressure and low speed may be unstable. (When using secondary lubricant, please supply lubricant continuously. Otherwise, the initial grease applied from KOSMEK will be removed from the secondary lubricant.)

2) Preparation for Piping
- The pipeline, piping connector and fixture circuits should be cleaned and flushed thoroughly. The dust and 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
- Wrap with tape 1 to 2 times following the screwing direction. Pieces of the sealing tape can lead to air leaks and malfunction. When piping, be careful that contaminant such as sealing tape does not enter the products.

4) Installation of the Product
- Please use hexagonal socket bolts (with tensile strength of A2-70 or greater), and tighten the product with the tightening torque listed on P.330 and P.332.
- The tightening torque for the pull bolt and the locating pin is shown below.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Bolt Size</th>
<th>Tightening Torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPWZ500-P</td>
<td>M4 x 0.7</td>
<td>2.3</td>
</tr>
<tr>
<td>WPWZ600-P</td>
<td>M5 x 0.8</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Installation failure causes air leakage, deformation and damage of the robotic hand.

5) Trial Operation Method
- Avoid supplying large air flow right after the installation. The operating time will be very fast and the robotic hand may be seriously damaged. Please install the speed controller near the air source and gradually supply air pressure.

6) Adjustment of Operating Speed
- If the operating speed of the robotic hand is very fast, it leads to wear-out or malfunction of the parts. Please prepare a speed controller to adjust speed in order not to exceed the appropriate opening and closing time.

7) Allowable Offset during Gripper Change
- For gripper change, the gap between the seating surfaces of hand and gripper should be 0.2mm or less.

8) For Use of Auto Switch
- The detection part (magnet) of the auto switch of WPW operates according to the internal piston movement, so it does not detect the gripper (lever) movement directly.
**Cautions**

- **Notes on Handling**
  1. It should be operated by qualified personnel.
     - The hydraulic machine and air compressor should be operated and maintained by qualified personnel.
  2. Do not operate 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 safety devices are in place.
     2. Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air circuits.
     3. After stopping the product, do not remove until the temperature drops.
     4. Make sure there is no trouble/issue in the bolts and respective parts before restarting the machine or equipment.
  3. Do not touch the robotic hand or the robot while it is working. Otherwise, your hands may be injured.

  4. When the robot is in operation, make sure the safety of environment in case of a workpiece 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.

- **Maintenance and Inspection**
  1. Removal of the Product and Shut-off of Air Source
     - Before removing the product, make sure that safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
     - Make sure there is no trouble/issue in the bolts and respective parts before restarting.
  2. Regularly clean the product.
     - Using the product contaminated with dirt may lead to damage of the product or detachment of a workpiece due to lack of gripping force and malfunctioning, etc.
  3. Regularly tighten pipe, mounting bolt and others to ensure proper use.
  4. Make sure there is a smooth action without an irregular noise.
     - Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.
  5. The products should be stored in the cool and dark place without direct sunshine or moisture.
  6. Please contact us for overhaul and repair.

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

※ Please refer to P.716 for common cautions.  

- Warranty
Auto Switch

Able to detect the closing and opening actions of Parallel Gripper with an auto switch (prepared by customer).

![Installation Sample 1](image1.png)

![Installation Sample 2](image2.png)

Note:
1. The detection part (magnet) of the auto switch of WPW operates according to the internal piston movement, so it does not detect the hand (gripper • lever) movement directly.

**[Applicable Auto Switch]**
Refer to P.405-P.414 for detailed specifications.
When using an auto switch not made by Kosmek, check specifications of each manufacture.

<table>
<thead>
<tr>
<th>Auto Switch Model No.</th>
<th>Switch Type</th>
<th>Wiring Method</th>
<th>Cable Length</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>JEP0000-A2</td>
<td>Reed Auto Switch</td>
<td>2-Wire</td>
<td>1m</td>
<td>Refer to P.406</td>
</tr>
<tr>
<td>JEP0000-A2L</td>
<td></td>
<td></td>
<td>3m</td>
<td></td>
</tr>
<tr>
<td>JEP0000-B2</td>
<td>Solid State Auto Switch</td>
<td>3-Wire</td>
<td>1m</td>
<td>Refer to P.407</td>
</tr>
<tr>
<td>JEP0000-B2L</td>
<td></td>
<td></td>
<td>3m</td>
<td></td>
</tr>
</tbody>
</table>

**External Dimensions**

![External Dimensions](image3.png)

**Auto Switch Model No.**

<table>
<thead>
<tr>
<th>JEP0000-A2V</th>
<th>JEP0000-A2VL</th>
<th>JEP0000-B3</th>
<th>JEP0000-B3L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Type</td>
<td>Reed Auto Switch</td>
<td>Solid State Auto Switch</td>
<td></td>
</tr>
<tr>
<td>Wiring Method</td>
<td>2-Wire</td>
<td>3-Wire</td>
<td></td>
</tr>
<tr>
<td>Cable Length</td>
<td>1m</td>
<td>3m</td>
<td>1m</td>
</tr>
</tbody>
</table>

**Specifications**
- Electric Circuit Diagram

Refer to P.406

Refer to P.408
Model No. Indication

<table>
<thead>
<tr>
<th>Design No.</th>
<th>Switch Type</th>
<th>Electric Cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Revision Number</td>
<td>1m</td>
</tr>
<tr>
<td>1</td>
<td>2-Wire Reed Auto Switch</td>
<td>3m</td>
</tr>
<tr>
<td>2</td>
<td>2-Wire L-Shaped Reed Auto Switch</td>
<td>3m</td>
</tr>
<tr>
<td>3</td>
<td>3-Wire Solid State Auto Switch</td>
<td>3m</td>
</tr>
<tr>
<td>P</td>
<td>3-Wire Proximity Switch for Gripping Detection (Length 32mm)</td>
<td>3m</td>
</tr>
<tr>
<td>P2</td>
<td>3-Wire Proximity Switch for Gripping Detection (Length 16mm)</td>
<td>3m</td>
</tr>
</tbody>
</table>

Note:
- Electric Cable Length is chosen by A/B model Switch Type.
- For P: Proximity Switch for Gripping Detection, electric cable length is all 2m.

Application Table

<table>
<thead>
<tr>
<th>Switch Type</th>
<th>2-Wire Reed Auto Switch</th>
<th>3-Wire Solid State Auto Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.</td>
<td>JEP0000-A1</td>
<td>JEP0000-A2</td>
</tr>
<tr>
<td>SWJ2000</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>SWP100</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WKH2000</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPA0120</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPA0160</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPA0200</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPA0250</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPH0100</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPH0160</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPH0200</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPS0160-C</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPS0200-C</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPW0500-C</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WPW0600-C</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switch Type</th>
<th>3-Wire Proximity Switch for Gripping Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model No.</td>
<td>JEP0000-P</td>
</tr>
<tr>
<td>WPP0300</td>
<td>●</td>
</tr>
<tr>
<td>WPP0400</td>
<td>●</td>
</tr>
<tr>
<td>WPP0500</td>
<td>●</td>
</tr>
<tr>
<td>WPP0600</td>
<td>●</td>
</tr>
<tr>
<td>WPP0800</td>
<td>●</td>
</tr>
<tr>
<td>WPP1000</td>
<td>●</td>
</tr>
<tr>
<td>WPP1250</td>
<td>●</td>
</tr>
<tr>
<td>WPP0200</td>
<td>●</td>
</tr>
<tr>
<td>WPP0250</td>
<td>●</td>
</tr>
<tr>
<td>WPQ0300</td>
<td>●</td>
</tr>
<tr>
<td>WPQ0400</td>
<td>●</td>
</tr>
<tr>
<td>WPQ0500</td>
<td>●</td>
</tr>
<tr>
<td>WPQ0600</td>
<td>●</td>
</tr>
<tr>
<td>WPQ0800</td>
<td>●</td>
</tr>
<tr>
<td>WPQ1000</td>
<td>●</td>
</tr>
</tbody>
</table>
**JEP0000-A \[\square\]** (2-Wire Reed Auto Switch)

### Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>JEP0000-A1</th>
<th>JEP0000-A1L</th>
<th>JEP0000-A2</th>
<th>JEP0000-A2L</th>
<th>JEP0000-A2V</th>
<th>JEP0000-A2VL</th>
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<tbody>
<tr>
<td>Name</td>
<td>Reed Auto Switch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wiring Type</td>
<td>2-Wire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable Load</td>
<td>Relay, Programmable Logic Controller (PLC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load Voltage / Load Current</td>
<td>Less than DC24V / 40mA</td>
<td>Less than AC100V / 20mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Voltage Drop</td>
<td>Less than 3V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Time</td>
<td>1ms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-10 ~ 70°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withstand Voltage</td>
<td>AC1500V (There should be no abnormalities in 1 min. application.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leakage Current</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>30G</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection Circuit</td>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection Grade</td>
<td>IP67 (IEC Standard)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicator Light</td>
<td>Red LED illuminates when turned ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric Cable Length</td>
<td>1m</td>
<td>3m</td>
<td>1m</td>
<td>3m</td>
<td>1m</td>
<td>3m</td>
</tr>
</tbody>
</table>

### Electric Circuit Diagram

Note:
1. Auto switch will instantly break due to over loading current if turning on the auto switches without connecting the load. (Refer to Notes on Wiring 4) and 5) on P.413.

### External Dimensions : JEP0000-A1

![Diagram](image1)

### External Dimensions : JEP0000-A2

![Diagram](image2)

### External Dimensions : JEP0000-A2V

![Diagram](image3)
**JEP0000-B□□ (3-Wire Solid State Auto Switch)**

### Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>JEP0000-B1</th>
<th>JEP0000-B1L</th>
<th>JEP0000-B2</th>
<th>JEP0000-B2L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Solid State Auto Switch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wiring Type</td>
<td>3-Wire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable Load</td>
<td>Relay, Programmable Logic Controller (PLC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output Type</td>
<td>NPN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load Voltage / Load Current</td>
<td>Less than DC10 ~ 24V / 100mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Voltage Drop</td>
<td>Less than 0.7V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Time</td>
<td>1ms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-10 ~ 70℃</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withstand Voltage</td>
<td>AC2000V (There should be no abnormalities in 1 min. application.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leakage Current</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>30G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection Grade</td>
<td>IP67 (IEC Standard)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicator Light</td>
<td>Red LED illuminates when turned ON</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric Cable Length</td>
<td>1m</td>
<td>3m</td>
<td>1m</td>
<td>3m</td>
</tr>
</tbody>
</table>

### Electric Circuit Diagram

![Electric Circuit Diagram](image)

### External Dimensions : JEP0000-B1□

![External Dimensions: JEP0000-B1□](image)

### External Dimensions : JEP0000-B2□

![External Dimensions: JEP0000-B2□](image)
Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>JEP0000-B3</th>
<th>JEP0000-B3L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Solid State Auto Switch</td>
<td></td>
</tr>
<tr>
<td>Wiring Type</td>
<td>3-Wire</td>
<td></td>
</tr>
<tr>
<td>Applicable Load</td>
<td>Relay, Programmable Logic Controller (PLC)</td>
<td></td>
</tr>
<tr>
<td>Output Type</td>
<td>NPN</td>
<td></td>
</tr>
<tr>
<td>Load Voltage / Load Current</td>
<td>Less than DC5 ~ 28V / 0.1 ~ 40mA</td>
<td></td>
</tr>
<tr>
<td>Internal Voltage Drop</td>
<td>Max. 0.5V</td>
<td></td>
</tr>
<tr>
<td>Leakage Current</td>
<td>Max. 50 μA (DC24V)</td>
<td></td>
</tr>
<tr>
<td>Current Consumption</td>
<td>Max. 10 mA</td>
<td></td>
</tr>
<tr>
<td>Response Time</td>
<td>Max. 1 ms</td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>0 ~ 60°C</td>
<td></td>
</tr>
<tr>
<td>Withstand Voltage</td>
<td>AC1500V (There should be no abnormalities in 1 min. application.)</td>
<td></td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>More than 100MΩ / DC500V (Between the Case and Signal Cable)</td>
<td></td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>30G</td>
<td></td>
</tr>
<tr>
<td>Protection Grade</td>
<td>IP67 (IEC Standard)</td>
<td></td>
</tr>
<tr>
<td>Indicator Light</td>
<td>Red LED illuminates when turned ON</td>
<td></td>
</tr>
<tr>
<td>Electric Cable Length</td>
<td>1m</td>
<td>3m</td>
</tr>
</tbody>
</table>

Electric Circuit Diagram

External Dimensions : JEP0000-B3
Auto Switch / Proximity Switch for Gripping Detection

**Specifications**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>JEP0000-P</th>
<th>JEP0000-P2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Proximity Switch for Gripping Detection</td>
<td></td>
</tr>
<tr>
<td>Wiring Type</td>
<td>3-Wire</td>
<td></td>
</tr>
<tr>
<td>Output Type</td>
<td>NPN</td>
<td></td>
</tr>
<tr>
<td>Moving Distance</td>
<td>1.5 ± 0.15mm</td>
<td></td>
</tr>
<tr>
<td>Voltage Range</td>
<td>DC10 ~ 30V</td>
<td></td>
</tr>
<tr>
<td>Opening / Closing Voltage</td>
<td>Less than 200mA</td>
<td></td>
</tr>
<tr>
<td>Current Consumption</td>
<td>Less than 10mA</td>
<td></td>
</tr>
<tr>
<td>Response Frequency</td>
<td>800Hz</td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-25 ~ 70°C</td>
<td></td>
</tr>
<tr>
<td>Withstand Voltage</td>
<td>AC2000V (There should be no abnormalities in 1 min. application.)</td>
<td></td>
</tr>
<tr>
<td>Protection Grade</td>
<td>IP67 (IEC Standard)</td>
<td></td>
</tr>
<tr>
<td>Indicator Light</td>
<td>Red LED illuminates when turned ON</td>
<td></td>
</tr>
<tr>
<td>Electric Cable Length</td>
<td>2m</td>
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</tr>
</tbody>
</table>

**Electric Circuit Diagram**

![Electric Circuit Diagram](image)

**External Dimensions : JEP0000-P**

![External Dimensions : JEP0000-P](image)

**External Dimensions : JEP0000-P2**

![External Dimensions : JEP0000-P2](image)
Cautions

Notes for Design

1) Check the Specifications
   - Please use each product according to the specifications. The product may be damaged or malfunction if used outside the range of load or specifications.

2) Notes on Use in the Interlock Circuit
   - When the auto switch is used for an interlock signal that requires high reliability, please use a double interlock system by providing a mechanical protection function. Or by using another switch (sensor) together with the auto switch. Also, please perform periodic maintenance and confirm proper operation.

3) Wiring should be prepared as short as possible.
   - For the reed auto switch, if the wiring length to the load is longer, inrush current to the auto switch increases and the life span will be shortened. (Remains ON)
   - If the wiring length of the solid state auto switch is long, we recommend installing the ferrite core on both ends of the electric cable for noise control.

4) Please avoid using loads that generate surge voltage.
   - If driving loads that generate surge voltage such as relay, please use the auto switch equipped with junction protective circuit or install protective box.
   - If surge voltage is repeatedly applied to the auto switch even with the Zener Diode for surge protection, it may damage the contact. When directly driving loads generating surge voltage, such as solenoid valves, use the auto switch equipped with surge absorption element.
   - The magnet switch is equipped with surge absorption element. However, please provide an absorption element, such as varistor, if there is large surge-generating equipment. Example: Motors or welding machines.

5) Leakage Current
   - In case of 2-wire solid state auto switch, the leakage current that activates internal circuit of the auto switch may flow even in OFF state. If the load operating current (the controller is in OFF state) does not satisfy the specified leakage current, it may result in restoration defect (remains ON state).
   - If it does not satisfy the specifications, please use 3-wire auto switch. Also, n parallel connections will multiply leakage current flowing to the load by n times.

6) Internal Voltage Drop of the Auto Switch
   - Due to voltage drop (refer to internal voltage drop on the specifications) caused by internal resistance of LED, voltage drop of n auto switches connected in series will be multiplied by n times.
   - As a result, in some cases the load will not activate even if the auto switch drives properly.

7) When wiring is disconnected, or when forcibly activating the auto switch for action confirmation, carefully design the circuit to avoid reverse current.
   - The auto switch may malfunction or be damaged when reverse current occurs.

8) When multiple cylinders or robotic hands are placed close together.
   - Please provide enough space when using multiple actuators such as cylinders or robotic hands equipped with auto switches. (If allowable distance of each actuator is specified please follow specified instructions.) If they are too close, auto switches may malfunction due to magnetic interference.

9) Secure space for maintenance and inspection
   - Please secure space for maintenance and inspection of auto switches when setting actuators such as cylinders and robotic hands equipped with auto switches.
Notes on Operating Environment

1) Never use the product in an atmosphere with explosive gases.
   - Auto switches are not designed to prevent explosion. Do not use the product in an atmosphere with explosive gases since it may cause serious explosions.

2) Do not use the product in an area where a magnetic field is generated.
   - Auto switches may malfunction, or internal magnet actuators, such as cylinders or robotic hands, equipped with auto switches will be demagnetized.

3) Do not use the product in an environment where the auto switches are continuously exposed to water or coolant.
   - Although IEC standard IP67 structure is satisfied, please avoid using auto switches in an environment where continuously exposed to water or coolant. This may cause insulation failure or malfunction.

4) Do not use the product in an environment with oil or chemicals.
   - If auto switches are used in an environment with coolant or cleaning solvent, even in a short time, they may be adversely affected by improper insulation, malfunction due to swelling of potting resin and/or hardening of electric cable.

5) Do not use the product in an environment subject to large temperature cycle.
   - Heat cycles other than ordinary changes in temperature may adversely affect the internal structure of auto switches.

6) Avoid accumulation of steel dust and close connection of magnetic materials.
   - An amount of steel chips or steel dusts, such as spatters of welding accumulate around an actuator. Cylinders, robotic hand equipped with auto switches and or magnetic materials (those attracted by magnet) are gathered closely to the actuator. These can weaken internal magnet actuators.

7) Do not use the product in an environment with excessive impact.
   - Under the condition of the excessive impact of more than 30G, the contact of the reed auto switch will malfunction and the indicator light may signal or may be disconnected.

Installation Notes

1) Do not drop or bump.
   - Do not drop, bump or apply excessive impact on auto switches. The auto switches may be damaged and cause malfunction.

2) Tighten auto switches with appropriate tightening torque.
   - Please follow the tightening torque below. Excessive tightening torque may damage the mounting screw, fitting or main body of the auto switch. Also, mounting position may be shifted due to insufficient tightening torque.

<table>
<thead>
<tr>
<th>Mounting Screw Size</th>
<th>Tightening Torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2 × 0.4</td>
<td>0.1</td>
</tr>
<tr>
<td>M2.5 × 0.45</td>
<td>0.25</td>
</tr>
<tr>
<td>M3 × 0.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>

3) Do not carry cylinders or robotic hands by holding the electric cable of the auto switch.
   - It may break the electric cable or damage the internal element.

4) Do not fix auto switches with the mounting screws other than attached in main body of the auto switches.
   - Using non-designated screws may damage auto switches.

5) Install the auto switches at the center of the operating area.
   - Installation position of auto switches should be adjusted so that a detected object (piston etc.) stops at the center of operating range. (Installation position shown in the catalog shows the most suitable fixed position of stroke end.) Please refer to P.345 for WPS, P.355 for WPA, P.363 for WPH, P.375 for WPP and P.391 for WPQ. If the auto switches are installed at the edge of operating range (near the boundary of ON and OFF), output movement may be unstable.

6) Installation position of the auto switches should be adjusted by checking actual operating state.
   - Depending on the installation environment, actuators such as cylinders and robotic hands may not operate properly even if they are installed to the appropriate position. Make sure to check the operating condition even when mounting them at the middle of the stroke.
Cautions

Notes on Wiring

1) Check the insulation of wiring.
   • Insulation failure (interference with other circuit, ground fault, and insulation failure between terminals) may send excessive voltage or current to the auto switches causing damage.

2) Do not place wires and auto switch cables close to other cables and high voltage cables.
   • Otherwise, surge voltages will be induced creating noise and leading to malfunctions.

3) Repeated bending stress or stretching force should be avoided on electric cables.
   • Wiring with bending stress or stretching force repeatedly applied on electric cables will prematurely breakdown.
   Bending stress or stretching force applied on the connecting area of electric cables and main body of the auto switches will damage the electric cables.
   Auto switches or wires should not be moving especially near the connecting areas.

4) Make sure to check the load state (connection and current value) before turning on the power.
   • For 2-Wire Type
     Auto switches will instantly break due to over loading current if turning on the auto switches without connecting the load (Shorted Load Circuit). The above statement is also applied to the condition when the brown cable (+, output) of 2-wire type is directly connected to the (+) power terminal of a fixture and etc.

5) Avoid shorted load circuit.
   • Reed Auto Switch
     Auto switches will instantly break due to over loading current if turning on the auto switch in load short circuit condition.
   • Solid State Auto Switch
     Be aware of auto switch breakages when products with PNP output is not equipped with short-circuit protection.

6) Avoid wrong wiring
   • Reed Auto Switch
     The electric circuit has polarities. The brown cable is "+", and the blue cable is "-". The reed switch can operate even with reversed connection, but LED light will not illuminate. Also, flowing excessive current will damage LED and it will not operate properly.
   • Solid State Auto Switch
     In case of 2-wire type, even if connected reversely, the auto switch will not be damaged due to protection circuit, but it is always ON. If reversely connected under short circuit condition, the auto switch will be damaged.
     In case of 3-wire type, even if the connections are reversed (power supply line "+" and "-"), the auto switch will be protected by a protection circuit.
     However, if connecting the power supply "+" to the blue cable and "-" to the black cable, the auto switch will be damaged.

Notes on Handling

1) It should be operated by qualified personnel.
   • Machines and devices with hydraulic and pneumatic equipment should be operated and maintained by qualified personnel.

2) Do not operate or remove the product unless the safety protocols are ensured.
   ① The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
   ② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
   ③ After stopping the product, do not remove until the temperature drops.
   ④ Make sure there is no trouble/issue in the bolts and respective parts before restarting the machine or equipment.

3) Do not disassemble or modify.
   • If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.
• Maintenance • Inspection

Conduct the below maintenances and inspections periodically in order to avoid unintended malfunctions and to ensure the safety.

1) Removal of the Product and Shut-off of Pressure Source
lie make sure that safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
lie make sure there is no trouble/issue in the bolts and respective parts before restarting.

2) Never touch terminals while the power is on.
lie will cause electric shock, malfunction and damage to the auto switches.

3) Retightening of Mounting Screws
lie tighten the screws after adjusting the mounting position when the mounting position of the auto switches is shifted due to the looseness of the mounting screws.

4) Check if the electric cable is damaged or not.
ile damaged cables may cause insulation failure. Exchange the auto switch or repair the reed if there is damage on the electric cable.

5) Check the setting position of the detector.
lie confirm the set position is stopped at the center of the detecting range (the area that red LED illuminates).

6) Cleaning Auto Switches
lie the auto switch should be clean. Do not use benzene, paint thinner or alcohol for cleaning. Doing so will cause scratches on the product and indications may be erased. If it is hard to remove stains from the product, wipe it out with a cloth soaked in a neutral detergent diluted with water. Wipe with a dry cloth to remove wet residue.

7) Product Storage
lie keep the product out of direct sunlight in a cool area where it is protected from water and humidity.

8) Please contact us for auto switch replacements.

※ Please refer to P.716 for common cautions.
Cautions

● Notes on Handling

1) It should be operated by qualified personnel.
   ● The hydraulic machine and air compressor should be operated and maintained by qualified personnel.

2) Do not operate or remove the product unless the safety protocols are ensured.
   ① The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
   ② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
   ③ After stopping the product, do not remove until the temperature drops.
   ④ Make sure there is no trouble/issue in the bolts and respective parts before restarting the machine or equipment.

3) Do not touch a clamp (cylinder) while it is working. Otherwise, your hands may be injured.

4) Do not disassemble or modify.
   ● If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

● Maintenance and Inspection

1) Removal of the Machine and Shut-off of Pressure Source
   ● Before removing the product, make sure that the safety devices are in place. Shut off the pressure and power source and make sure no pressure exists in the air and hydraulic circuits.
   ● Make sure there is no trouble/issue 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.

3) Regularly clean the reference surfaces (taper reference surface and seating surface) of locating products (SWT/SWQ/SWP/VRA/VRC/VX/VXE/XXF/WVS/WV/WWM/WWK).
   ● Locating products (except VRA/VRC/VX/VXE/XXF and SWR without air blow port) can remove contaminants with the cleaning function. When installing a workpiece or a pallet, make sure there are no contaminants such as thick sludge.
   ● Continuous use with dirt on components will lead to locating failure, fluid leakage and malfunction.

4) Regularly tighten pipe, mounting bolt, nut, snap ring, cylinder and others to ensure proper use.

5) Make sure the hydraulic fluid has not deteriorated.

6) Make sure there is a smooth action without an irregular noise.
   ● Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.

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

8) 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. Failure caused by the use of the non-confirming state at the user's discretion.
  3. If it is used or operated in an 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

JAPAN
HEAD OFFICE
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Global Network

Asia Detailed Map

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