Lifting Hole Clamp

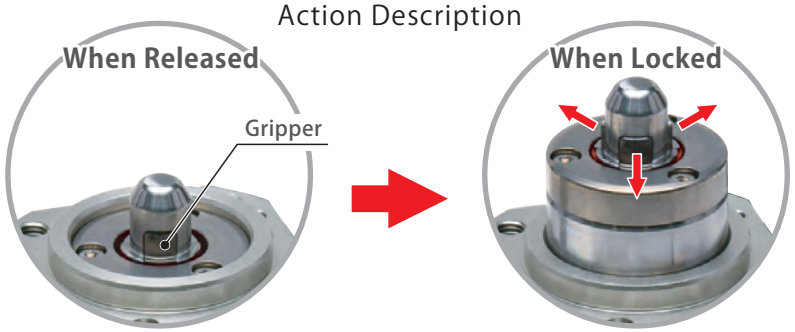
Model SWJ

Lift Cylinder + Locating Pin + Hole Clamp

Lifts and locates the pallet, then clamps by expanding inside a hole of the pallet.

PAT.P.

Action Description



The gripper is retracted and lifted down.

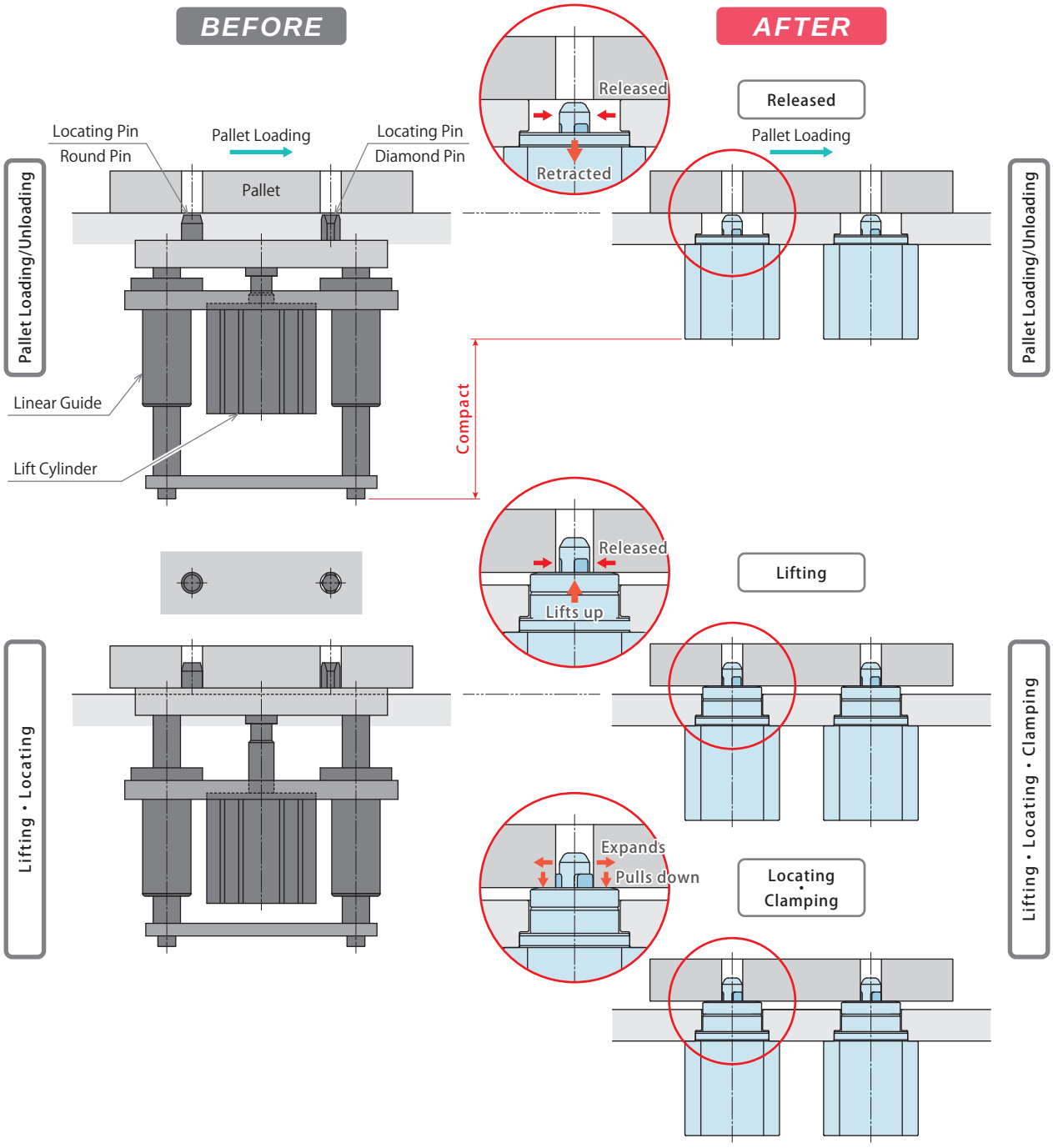
After lifting up, the gripper expands to locate and clamp a workpiece.

Lifting Hole Clamp Model **SWJ**

Three Functions in One Cylinder

Lift Cylinder • Locating Pin • Hole Clamp

Advantages of Lifting Hole Clamp



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

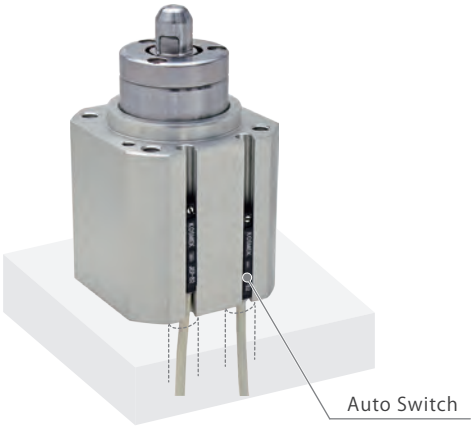
Lifting Hole Clamp with the functions of the lift cylinders / linear guides / locating pins allows for

- ● 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).

Installation Sample 1



Installation Sample 2

【Applicable Auto Switch / High-Accuracy Sensor for Air Cylinder】

Switch Type	Model No.	Output Method	Wiring Method	Cable Length	Shape	Protection Grade
Auto Switch	**JEP0000-B2**	Non-Contact : NPN Output	3-Wire	1m	Straight 	IP67
	JEP0000-B2L			3m		
	JEP0000-B3C			1m	L Shaped 	
	JEP0000-B3CL			3m		
	JEP0000-B3B	Non-Contact	2-Wire	1m	L Shaped 	
	JEP0000-B3BL			3m		
High-Accuracy Sensor for Air Cylinder ※1	**JES0000-02GN**	Non-Contact : NPN Output N-Pole Sensor※2	3-Wire	1m	Straight 	IP67
	JES0000-02GS	Non-Contact : NPN Output S-Pole Sensor※2				
	JES0000-02GPN	Non-Contact : PNP Output N-Pole Sensor※2				
	JES0000-02GPS	Non-Contact : PNP Output S-Pole Sensor※2				
	JES0000-02LGN	Non-Contact : NPN Output N-Pole Sensor※2			L Shaped 	
	JES0000-02LGS	Non-Contact : NPN Output S-Pole Sensor※2				
	JES0000-02LGPN	Non-Contact : PNP Output N-Pole Sensor※2				
	JES0000-02LGPS	Non-Contact : PNP Output S-Pole Sensor※2				

Notes :

1. For further information, please refer to the following product pages.
   Auto Switch (JEP)：P.405-P.414, High-Accuracy Sensor for Air Cylinder (JES)：P.287-P.290
   When using an auto switch not made by Kosmek, check specifications of each manufacturer.
2. Auto Switch / High-Accuracy Sensor for Air Cylinder may be stuck out of the clamp depending on the installation position and direction.

※1. The detection range of High-Accuracy Sensor for Air Cylinder (JES) is different from Auto Switch (JEP), and even small stroke can be securely detected by JES. Refer to "Performance Curve" on the JES catalog for further information.

※2. When detecting both lock and release actions with High-Accuracy Sensor for Air Cylinder (JES), both N-pole sensor and S-pole sensor are required.

Model No. Indication

SWJ 200 0 - S10

1 2 3

1 Body Size

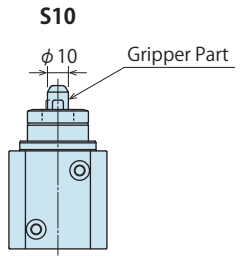
200 : 200

2 Design No.

0 : Revision Number

3 Tip Shape

S10 : For ϕ10 Hole



Specifications

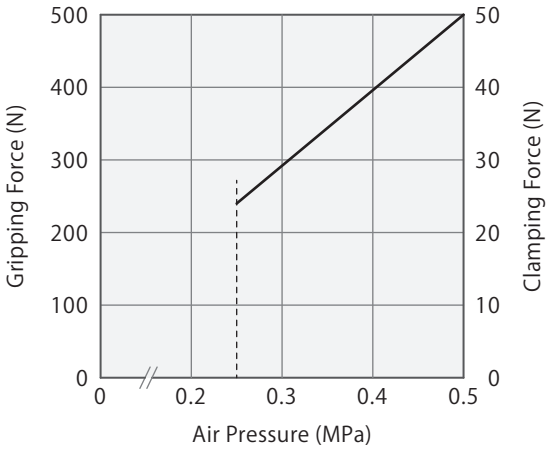
Model No.			SWJ2000-□
Workpiece Hole Diameter		mm	ϕ10$^{\pm 0.2}$
Clamping Diameter	at Release	mm	ϕ9.5
	at Lock (w/o Workpiece)	mm	ϕ10.6
Repeatability ※1		mm	0.10
Pallet Pulling Stroke		mm	0.25
Lifting Stroke		mm	16
Lifting Force (at Extend)		N	30
Lifting Force (at 0.5MPa after operation)		N	400
Cylinder Capacity (Clamping w/o Workpiece)	Release Side	cm^3	6.4
	Lock Side	cm^3	15.6
Maximum Operating Pressure		MPa	0.5
Minimum Releasing Pressure		MPa	0.25
Withstanding Pressure		MPa	0.75
Usable Fluid			Dry Air
Operating Temperature Range		℃	0 ~ 70

Notes :

※1. Repeatability under the same condition (no load).

1. 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

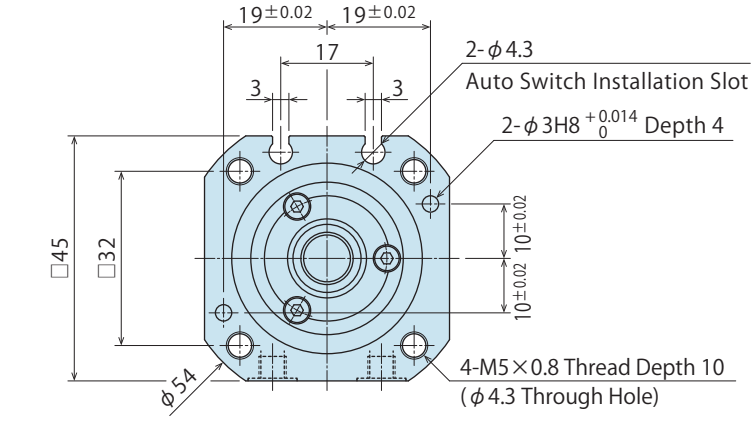


Notes :

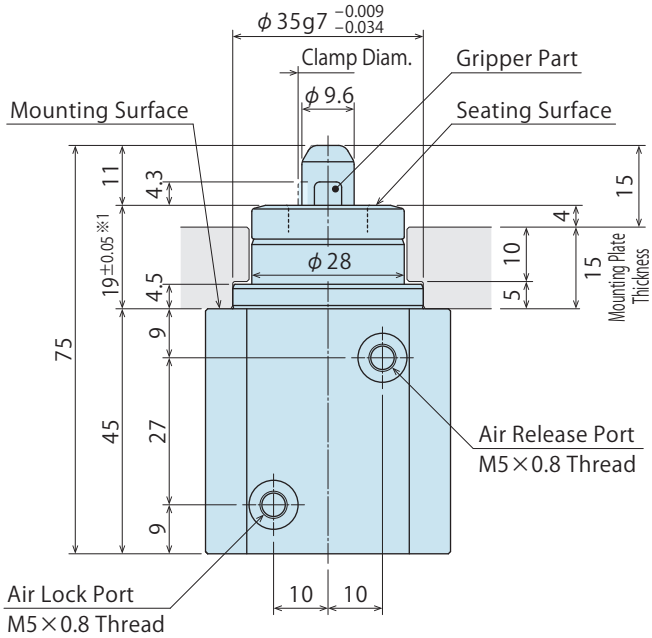
1. The gripping force shows the expanding force that holds the workpiece hole acting perpendicular to the clamp's center axis. The clamping force shows the pressing force against the seating surface.
2. The performance curve (of Gripping Force and Clamping Force) shows the calculated value.
3. Each gripping 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.

External Dimensions：SWJ2000-S10 (for ϕ10 Hole)

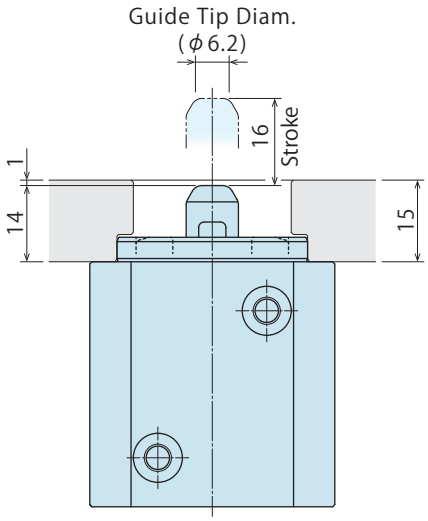
This drawing shows the external dimensions of SWJ2000-S10.

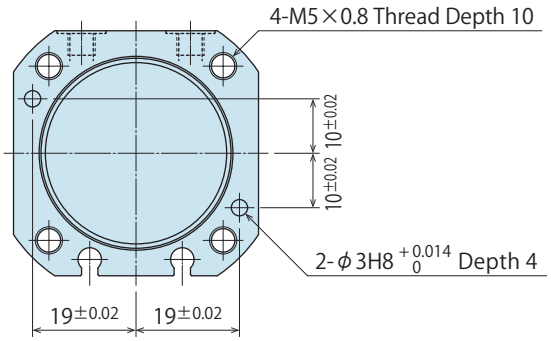


Lock



Release





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).

MEMO

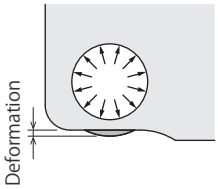
Cautions

Notes for Design

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.308).

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) Installation of the Product
- 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.

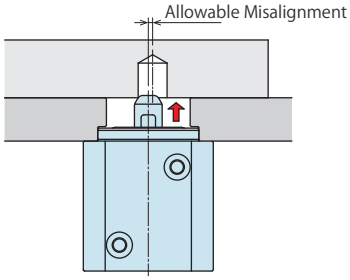
5) Gripping Force and Clamping Force
- Gripping force is the expanding force that holds the workpiece hole acting perpendicular to the clamp's center axis.
Clamping force is the pressing force against the seating surface.
- Each gripping force and clamping force varies according to workpiece material 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.

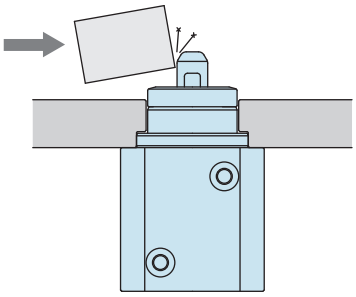
7) Pallet Holding Position
- Variance of holding position while pallet loading should be less than the allowable misalignment shown below.

$$\text{Allowable Misalignment} = \frac{\text{Min. Workpiece Hole Diam.} - \text{Guide Tip Diam.}}{2}$$

(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.

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

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・High-Accuracy Sensor for Air Cylinder
- ・JEP Series, JES Series (Kosmek)
Refer to the instruction manual of JEP and JES for detailed specifications.
- ・Magnetic Field Resistant Model：D-P3DWA (Made by SMC)

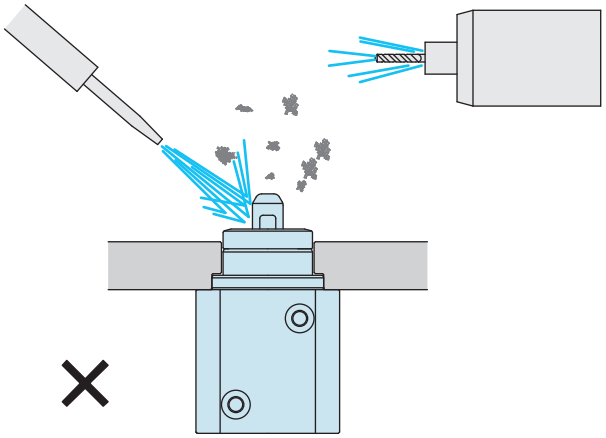
The detection part (magnet) of the auto switch of SWJ operates according to the internal piston movement, so it does not detect the gripper movement directly.

- Select an auto switch depending on the environment.
- An auto switch may be stuck out of the clamp depending on the installation position and direction.
- 2-wire reed auto switch cannot be used.

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 contaminants. Do not use under environment with coolant and cutting chips.



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) Preparation for 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.)

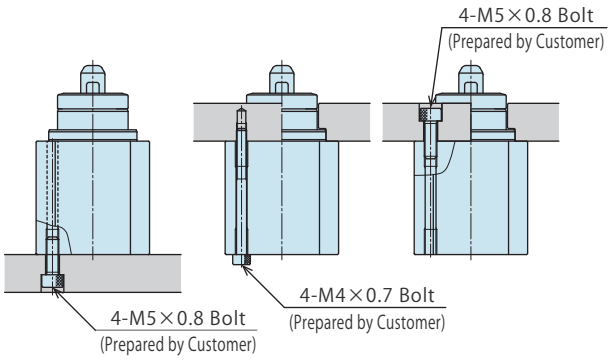
3) Applying Sealing Tape

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

4) Product Installation

- Please use four hexagonal 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 thread, dent the seating surface and/or seize the bolt.

Model No.	Bolt Size	Tightening Torque (N·m)
SWJ2000	M4×0.7	2.5
	M5×0.8	5.0



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)

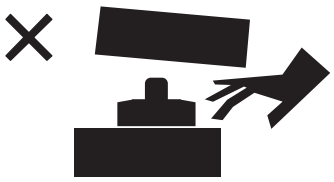
Cautions

Notes on Handling

1) It should be 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 a pallet or a clamp while they are operating.
- Otherwise, your hands may be injured.



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

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

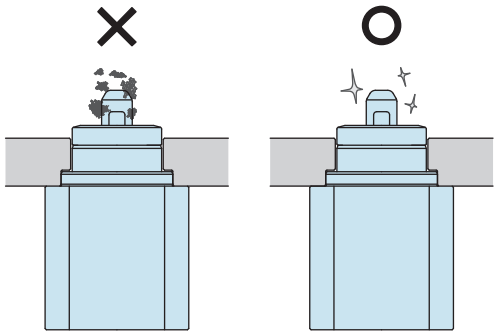
Maintenance and Inspection

1) Removal of the Product and Shut-off of Pressure Source

- Before removing the product, make sure that the safety devices are in place. Shut off pressure and power sources and make sure no pressure exists in hydraulic and air circuits.
- Make sure there is no trouble/issue in the bolts and respective parts before restarting.

2) Regularly clean the clamping part and the seating surface.

- 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.



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 pipe, mounting bolt and others 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 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.

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.

※ Please refer to P.716 for common cautions. • Warranty

Model No. Indication

JEP 000 0 - A1 L

1 2 3

1 Design No.

0 : Revision Number

2 Switch Type

A1 : 2-Wire Reed Auto Switch
A2 : 2-Wire Reed Auto Switch
A2V : 2-Wire L-Shaped Reed Auto Switch
B1 : 3-Wire Solid State Auto Switch※2
B2 : 3-Wire Solid State Auto Switch※2
B3C : 3-Wire L-Shaped Solid State Auto Switch※2
B3B : 2-Wire L-Shaped Solid State Auto Switch
P : 3-Wire Proximity Switch for Gripping Detection (Length 32mm)※1
P2 : 3-Wire Proximity Switch for Gripping Detection (Length 16mm)※1

Notes :
※1. Please contact us for PNP output.
※2. Please consider using model JES for PNP output.

3 Electric Cable Length ※3

Blank : 1m
L : 3m

Note :
※3. 3 Electric Cable Length is chosen only for A□/B□ Auto Switch of 2 Switch Type.
For P□: Proximity Switch for Gripping Detection, electric cable length is all 2m.

Application Table

Switch Type	2-Wire Reed Auto Switch		3-Wire Solid State Auto Switch			2-Wire Solid State Auto Switch
Model No.	JEP0000-A1□	JEP0000-A2□ JEP0000-A2V□	JEP0000-B1□	JEP0000-B2□	JEP0000-B3C□	JEP0000-B3B□
SWJ2000				●	●	●
SWP050□				●	●	●
SWP100□				●	●	●
WCC□		●		●	●	●
WCG□-T				●	●	●
WFC□		●		●	●	●
WHC□		●		●	●	●
WHG□-T				●	●	●
WKH200□				●	●	●
WKK100□				●	●	●
WKK200□				●	●	●
WPA0120		●		●	●	●
WPA0160		●		●	●	●
WPA0200		●		●	●	●
WPA0250		●		●	●	●
WPB0160		●		●	●	●
WPB0200		●		●	●	●
WPB0250		●		●	●	●
WPE0160		●		●	●	●
WPE0200	●		●			
WPE0300	●		●			
WPE0400	●		●			
WPE0500	●		●			
WPE0800	●		●			
WPF0100	Not Applicable					
WPF0120		●		●	●	●
WPF0160		●		●	●	●
WPF0200	●		●			
WPF0300	●		●			
WPH0100		●		●	●	●
WPH0160		●		●	●	●
WPH0200	●		●			
WPJ0120	Not Applicable					
WPJ0160		●		●	●	●
WPJ0200	●		●			
WPJ0250	●		●			
WPJ0300	●		●			
WPJ0400	●		●			
WPS0160-C		●		●	●	●
WPS0200-C		●		●	●	●
WPW0500-C				●	●	●
WPW0600-C				●	●	●
WVGT□-T				●	●	●

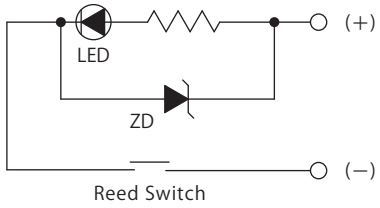
Switch Type	3-Wire Proximity Switch for Gripping Detection	
Model No.	JEP0000-P	JEP0000-P2
WPP0300	●	●
WPP0400	●	●
WPP0500	●	●
WPP0600	●	●
WPP0800	●	●
WPP1000	●	●
WPP1250	●	●
WPQ0200	●	●
WPQ0250	●	●
WPQ0300	●	
WPQ0400	●	
WPQ0500	●	
WPQ0600	●	
WPQ0800	●	
WPQ1000	●	

JEP0000-A□□ (2-Wire Reed Auto Switch)

Specifications

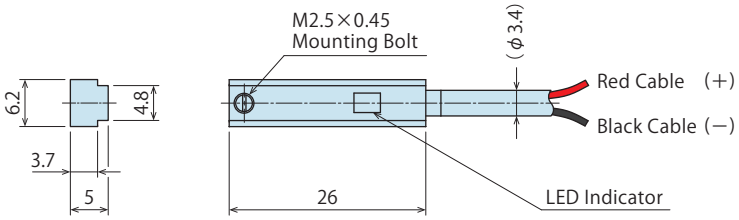
Model No.	JEP0000-A1	JEP0000-A1L	JEP0000-A2	JEP0000-A2L	JEP0000-A2V	JEP0000-A2VL
Name	Reed Auto Switch					
Wiring Type	2-Wire					
Applicable Load	Relay, Programmable Logic Controller (PLC)					
Load Voltage / Load Current	Less than DC24V / 40mA Less than AC100V / 20mA					
Internal Voltage Drop	Less than 3V					
Operating Time	1ms					
Ambient Temperature	-10 ~ 60℃					
Withstand Voltage	AC1500V (There should be no abnormalities in 1 min. application.)					
Leakage Current	0					
Shock Resistance	30G					
Protection Circuit	None					
Protection Grade	IP67 (IEC Standard)					
Indicator Light	Red LED illuminates when turned ON					
Electric Cable Length	1m	3m	1m	3m	1m	3m

Electric Circuit Diagram

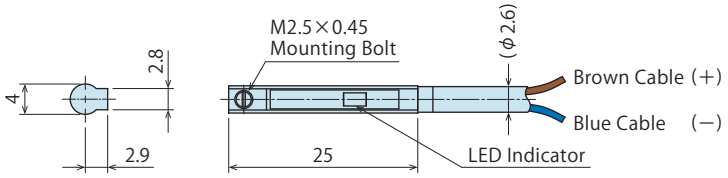


Note :
1. Auto switch will instantly break due to over loading current if turning on the auto switches without connecting the load. (Refer to Notes on Wiring 4) and 5) on P.413.)

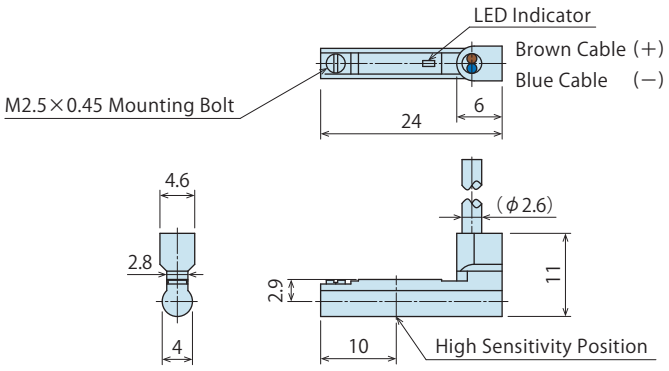
External Dimensions : JEP0000-A1 / A1L



External Dimensions : JEP0000-A2 / A2L



External Dimensions : JEP0000-A2V / A2VL

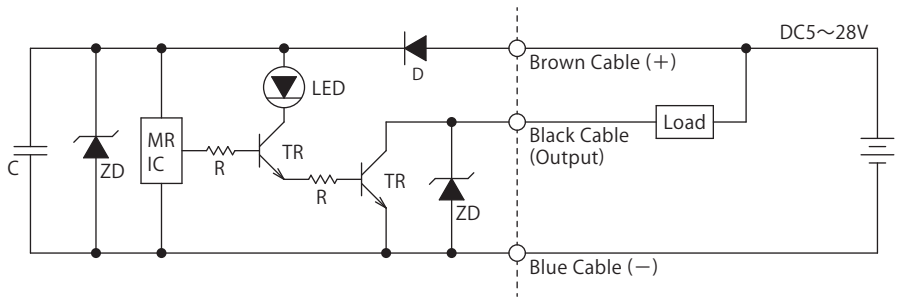


JEP0000-B1/B1L/B2/B2L (3-Wire Solid State Auto Switch)

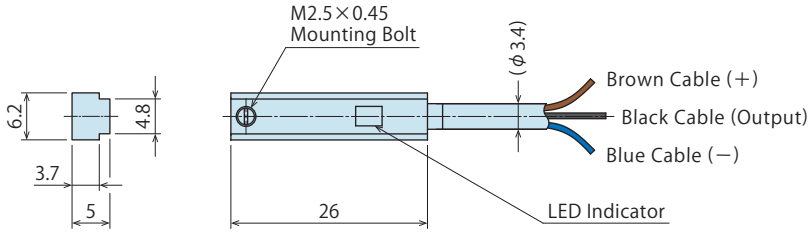
Specifications

Model No.	JEP0000-B1	JEP0000-B1L	JEP0000-B2	JEP0000-B2L
Name	Solid State Auto Switch			
Wiring Type	3-Wire			
Applicable Load	Relay, Programmable Logic Controller (PLC)			
Output Type	NPN			
Load Voltage / Load Current	Less than DC5 ~ 28V / 50mA			
Internal Voltage Drop	Less than 0.8V			
Leakage Current	Less than 0.1mA			
Current Consumption	Less than 10mA			
Operating Time	Less than 1ms			
Ambient Temperature	-10 ~ 60℃			
Withstand Voltage	AC1500V (There should be no abnormalities in 1 min. application.)			
Insulation Resistance	More than 50MΩ / DC500V (Between the Case and Signal Cable)			
Shock Resistance	30G			
Protection Grade	IP67 (IEC Standard)			
Indicator Light	Red LED illuminates when turned ON			
Electric Cable Length	**1m**	**3m**	**1m**	**3m**

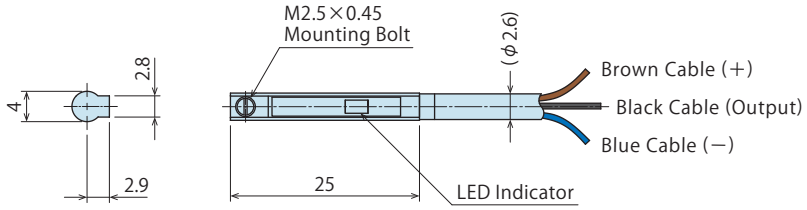
Electric Circuit Diagram



External Dimensions : JEP0000-B1/B1L



External Dimensions : JEP0000-B2/B2L

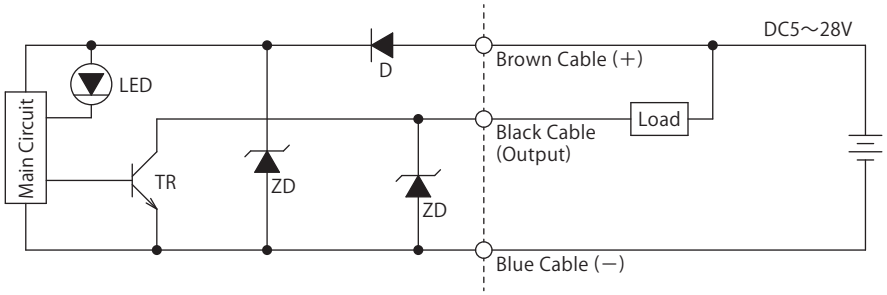


JEP0000-B3C / B3CL (3-Wire L-Shaped Solid State Auto Switch)

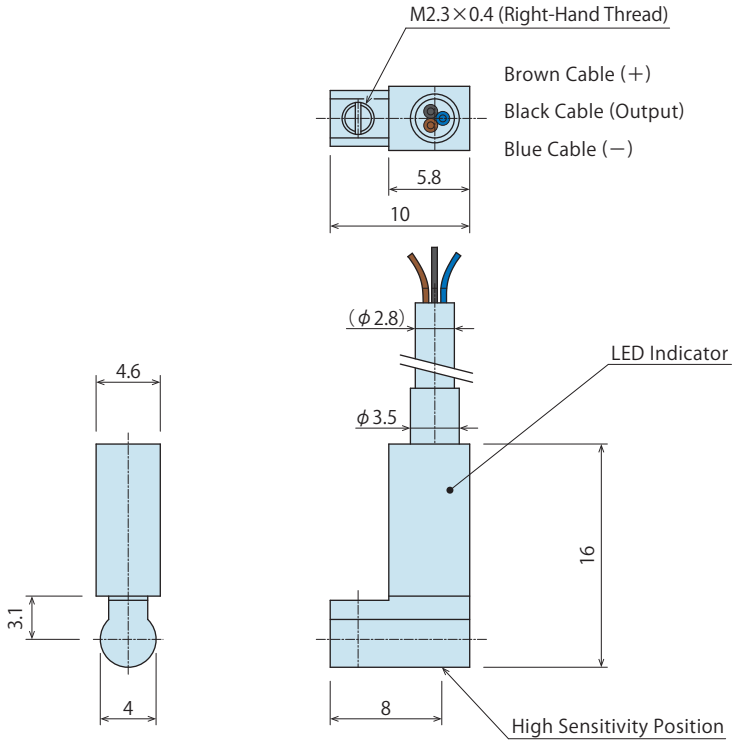
Specifications

Model No.	JEP0000-B3C	JEP0000-B3CL
Name	Solid State Auto Switch	
Wiring Type	3-Wire	
Applicable Load	Relay, Programmable Logic Controller (PLC)	
Output Type	NPN	
Load Voltage / Load Current	DC5 ~ 28V / 50mA	
Internal Voltage Drop	Less than 0.8V	
Leakage Current	Less than 0.1mA	
Current Consumption	Less than 10 mA	
Operating Time	Less than 1ms	
Ambient Temperature	−10 ~ 60℃	
Withstand Voltage	AC1500V (There should be no abnormalities in 1 min. application.)	
Insulation Resistance	More than 100MΩ / DC500V (Between the Case and Signal Cable)	
Shock Resistance	30G	
Protection Grade	IP67(IEC Standard)	
Indicator Light	Red LED illuminates when turned ON	
Electric Cable Length	**1m**	**3m**

Electric Circuit Diagram



External Dimensions : JEP0000-B3C / B3CL

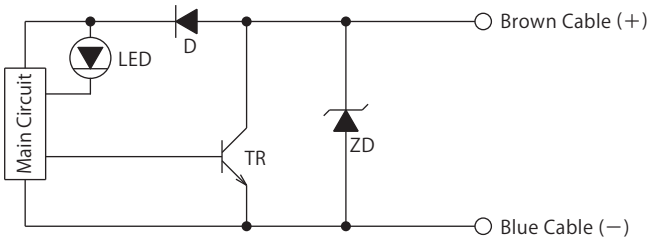


JEP0000-B3B/B3BL (2-Wire L-Shaped Solid State Auto Switch)

Specifications

Model No.	JEP0000-B3B	JEP0000-B3BL
Name	Solid State Auto Switch	
Wiring Type	2-Wire	
Applicable Load	Relay, Programmable Logic Controller (PLC)	
Load Voltage / Load Current	Less than DC10～28V / 50mA	
Internal Voltage Drop	Less than 5V	
Leakage Current	Less than 1mA	
Current Consumption	Less than 10 mA	
Operating Time	Less than 1ms	
Ambient Temperature	−10～60℃	
Withstand Voltage	AC1500V (There should be no abnormalities in 1 min. application.)	
Insulation Resistance	More than 50MΩ / DC500V (Between the Case and Signal Cable)	
Shock Resistance	30G	
Protection Grade	IP67 (IEC Standard)	
Indicator Light	Red LED illuminates when turned ON	
Electric Cable Length	**1m**	**3m**

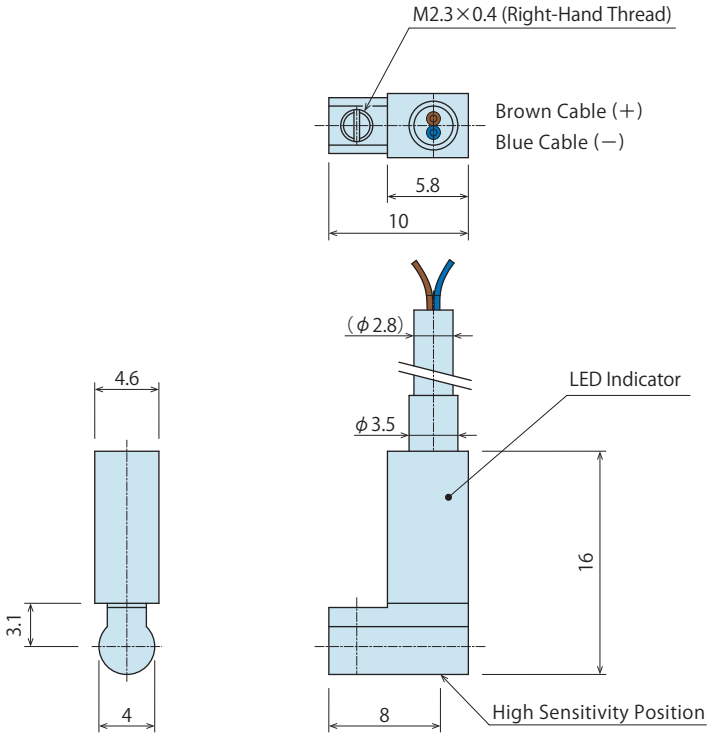
Electric Circuit Diagram



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-B3B/B3BL

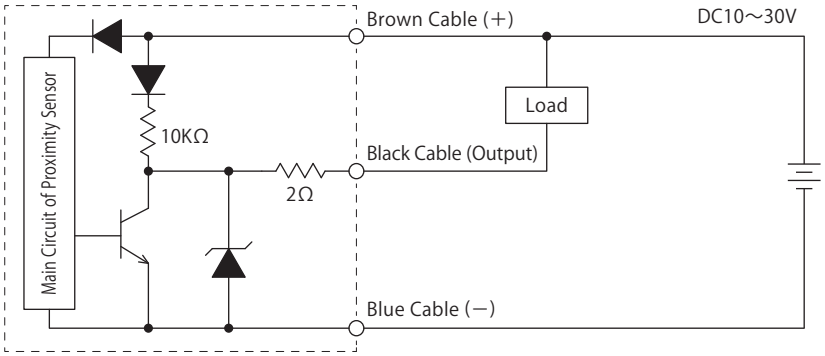


JEP0000-P / P2 (3-Wire Proximity Switch for Gripping Detection)

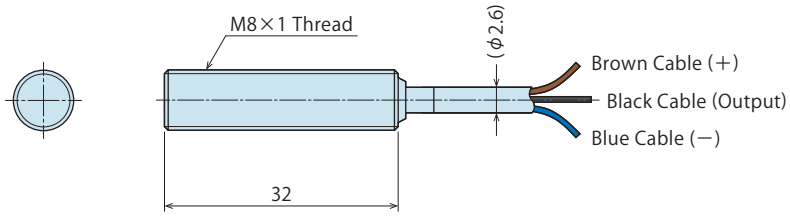
Specifications

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

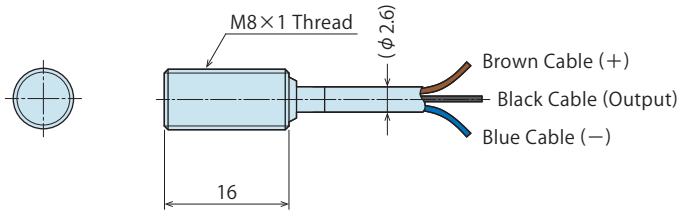
Electric Circuit Diagram



External Dimensions : JEP0000-P



External Dimensions : JEP0000-P2



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 safety 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 excessively long, inrush current to the auto switch increases and the operational 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) Notes when connecting to a load that generates surge voltage.
- When connecting a load that generates surge voltage such as relay, please use the auto switch equipped with junction protective circuit or use a junction protective element connecting to the auto switch in parallel.
- If surge voltage is repeatedly generated even with the auto switch equipped with junction protective circuit, it may damage the contact. In this case, please reduce the surge voltage by connecting a surge-absorption element to a surge-generating source (load) in parallel.

5) Notes when connecting auto switches in series.
- Due to voltage drop (refer to internal voltage drop on the specifications) caused by 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.

6) Be careful with the polarity when wiring.
- When connected reversely, the auto switch may malfunction or be damaged.

7) 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.

8) 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 sputters 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.

Mounting Screw Size	Tightening Torque (N·m)
M2.3×0.4	0.15
M2.5×0.45	0.25

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 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
- Before removing the product, 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.
- Make sure there is no trouble/issue in the bolts and respective parts before restarting.

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

3) Retightening of Mounting Screws
- Retighten 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.
- 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.
- Confirm the set position is stopped at the center of the detecting range (the area that red LED illuminates).

6) Cleaning Auto Switches
- 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
- 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. ・Warranty

Model No. Indication

JES 000 0 - 02L GN

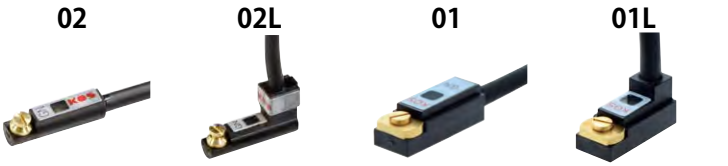
1 2 3

1 Design No.

0 : Revision Number

2 Shape

02 : Straight (Round Body)
02L : L Shaped (Round Body)
01 : Straight (Rectangular Body)
01L : L Shaped (Rectangular Body)



02	02L	01	01L
Straight (Round Body)	L Shaped (Round Body)	Straight (Rectangular Body)	L Shaped (Rectangular Body)

3 Output Format・Detection Polarity

GN : NPN Output N-Pole Sensor (Cable Color:Black) ※1
GS : NPN Output S-Pole Sensor (Cable Color:Gray)
GPN : PNP Output N-Pole Sensor (Cable Color:Black) ※1
GPS : PNP Output S-Pole Sensor (Cable Color:Gray)

※1. The N-pole sensor cannot be used for the models WCC, WFC and WHC (marked with ※2 in the application table).

For detecting both lock and release actions, both the N-pole sensor and the S-pole sensor are required.
However, for the models WCC, WFC and WHC (marked with ※2 in the application table), use two S-pole sensors.

Application Table ● = can be installed.

Shape	Round Body	Rectangular Body
Model No.	JES0000-02G□ JES0000-02GP□ JES0000-02LG□ JES0000-02LGP□	JES0000-01G□ JES0000-01GP□ JES0000-01LG□ JES0000-01LGP□
SWJ2000	●	Not Applicable
SWP050□	●	Not Applicable
SWP100□	●	Not Applicable
WCC□	●※2 (S-pole sensor only)	Not Applicable
WCG□-T	●	Not Applicable
WFC□	●※2 (S-pole sensor only)	Not Applicable
WHC□	●※2 (S-pole sensor only)	Not Applicable
WHG□-T	●	Not Applicable
WKH200□	●	Not Applicable
WKK100□	●	Not Applicable
WKK200□	●	Not Applicable
WPA0120	●	Not Applicable
WPA0160	●	Not Applicable
WPA0200	●	Not Applicable
WPA0250	●	Not Applicable
WPB0160	●	Not Applicable
WPB0200	●	Not Applicable
WPB0250	●	Not Applicable
WPE0160	●	Not Applicable
WPE0200	Not Applicable	●
WPE0300	Not Applicable	●
WPE0400	Not Applicable	●
WPE0500	Not Applicable	●
WPE0800	Not Applicable	●

Shape	Round Body	Rectangular Body
Model No.	JES0000-02G□ JES0000-02GP□ JES0000-02LG□ JES0000-02LGP□	JES0000-01G□ JES0000-01GP□ JES0000-01LG□ JES0000-01LGP□
WPF0100	Not Applicable	
WPF0120	●	Not Applicable
WPF0160	●	Not Applicable
WPF0200	Not Applicable	●
WPF0300	Not Applicable	●
WPH0100	●	Not Applicable
WPH0160	●	Not Applicable
WPH0200	Not Applicable	●
WPJ0120	Not Applicable	
WPJ0160	●	Not Applicable
WPJ0200	Not Applicable	●
WPJ0250	Not Applicable	●
WPJ0300	Not Applicable	●
WPJ0400	Not Applicable	●
WPS0160-C	●	Not Applicable
WPS0200-C	●	Not Applicable
WPT□	●	Not Applicable
WPW□-C	●	Not Applicable
WVA□-M	●	Not Applicable
WVB□-M	●	Not Applicable
WVGT□-T	●	Not Applicable

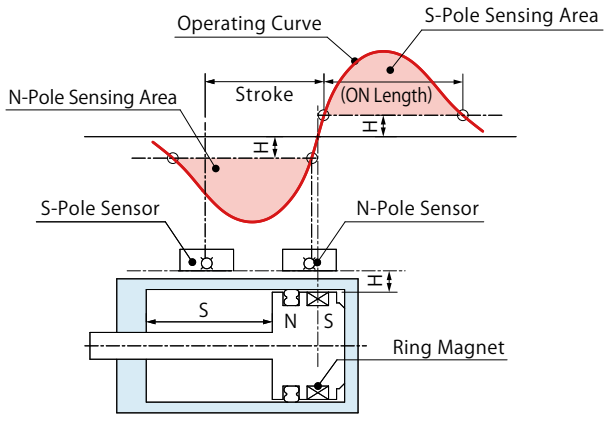
Note: ※2. Please use the S-pole sensor. (N-pole sensor cannot be used.)

Specifications

Model No.	JES0000-02G N S JES0000-02LG N S	JES0000-01G N S JES0000-01LG N S	JES0000-02GP N S JES0000-02LGP N S	JES0000-01GP N S JES0000-01LGP N S
Body Shape	Round	Rectangular	Round	Rectangular
Output Specification	NPN (ON when in proximity)		PNP (ON when in proximity)	
Output Current	20mA Max.		80mA Max.	
Current Consumption	8mA Max.		8mA Max.	
Wiring Method	3-Wire			
Applicable Load	Relay, Programmable Logic Controller (PLC)			
Voltage	DC 5 ~ 24V			
Response Speed	16 μ sec or less			
Material	Case：GF Reinforced PBT Black　Set Screw：Brass			
Indicator Light	Red			
Withstand Voltage	AC1000V (1 minute / Packaged Charging Part / between the Case)			
Insulation Resistance	DC250V (20MΩ or more in Megohms, between the Case)			
Operating Temperature	−20℃ ~ +85℃ (Make sure no condensation)			
Operating Humidity	20 ~ 95%RH			
Protection Grade	IP67			
Cable Length	1m			

Performance Curve

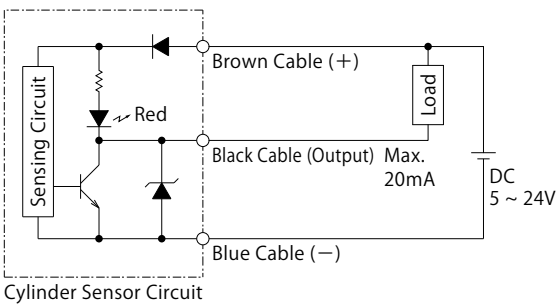
JES detects only the magnetic force that is vertical to the detection surface. The operating curve is shown below.
Operating point is on the steep part of the operating curve, so even small stroke can be surely detected.



Electric Circuit Diagram

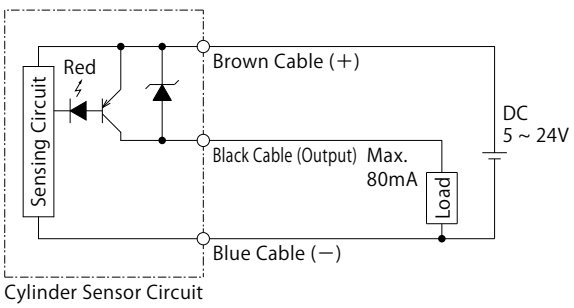
NPN Output

JES0000-02G□、JES0000-02LG□
JES0000-01G□、JES0000-01LG□



PNP Output

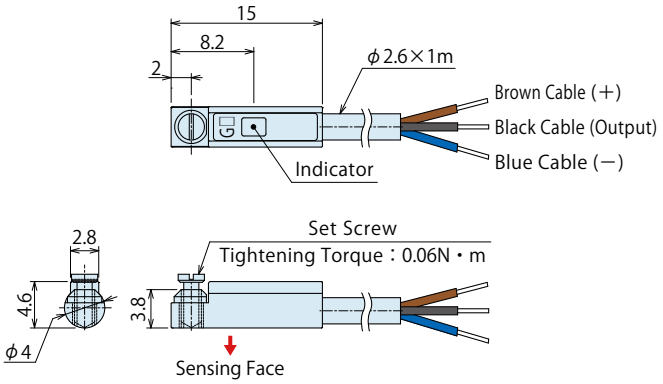
JES0000-02GP□、JES0000-02LGP□
JES0000-01GP□、JES0000-01LGP□



External Dimensions

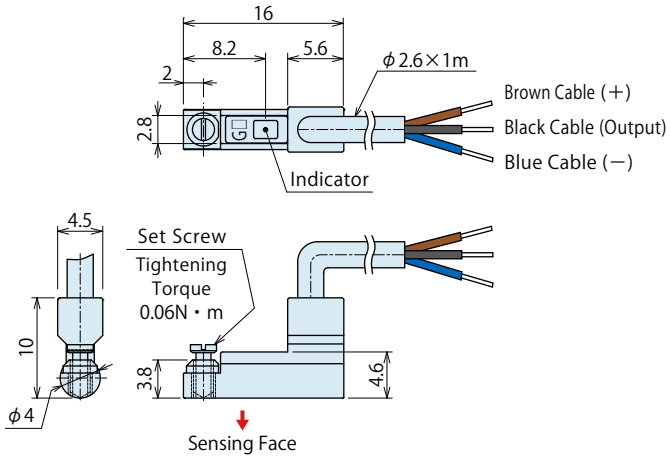
2 Shape 02 : Straight (Round Body)

JES0000-02G□ 、JES0000-02GP□



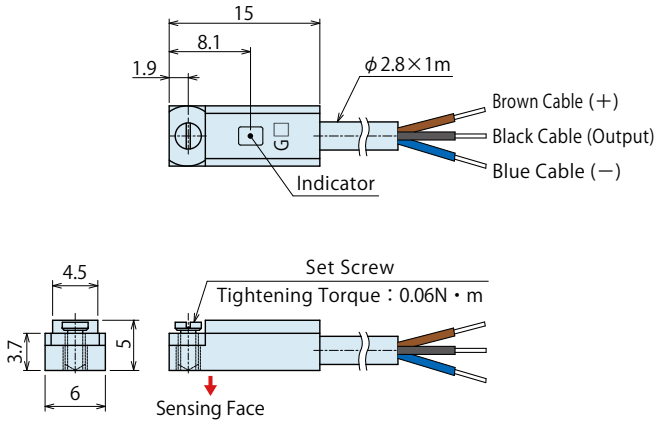
2 Shape 02L : L Shaped (Round Body)

JES0000-02LG□ 、JES0000-02LGP□



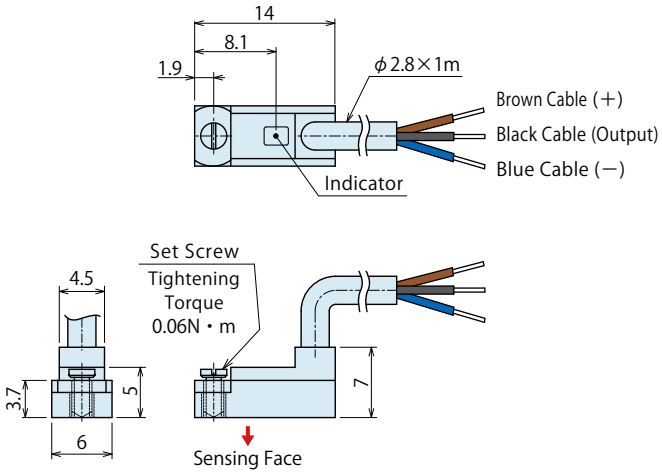
2 Shape 01 : Straight (Rectangular Body)

JES0000-01G□ 、JES0000-01GP□



2 Shape 01L : L Shaped (Rectangular Body)

JES0000-01LG□ 、JES0000-01LGP□



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 sensor 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 sensor together with the product. Also, please perform periodic maintenance and confirm proper operation.

3) Please avoid using loads that generate surge voltage.
- If driving a relay, put a Zener diode in parallel for surge protection.

Notes on Operating Environment

1) Never use the product in an atmosphere with explosive gases.
- Sensor for Air Cylinder is not designed to prevent explosion. Do not use the product in an atmosphere with explosive gases since it may cause serious explosions.

2) The product may malfunction if an intense magnetic field is applied to a pole body.

3) Make sure to prepare shield measures when using in the following environments.
- Where large current and/or strong magnetic field are generated.
- Where noise occurs due to static electricity, etc.
- Where magnetic powder or dust such as iron powder occurs or scatters.

4) Do not use the product in an environment where it is continuously exposed to coolant or chemical liquid.
- Although IEC standard IP67 structure is satisfied, please avoid using sensors in an environment where continuously exposed to coolant or chemical liquid. This may cause insulation failure or malfunction.

5) Do not use the product in an environment with oil or chemicals.
- If sensors 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.

6) Do not use the product in an environment with excessive vibrations or impacts.

Installation Notes

1) Electric Wiring Reverse Connection Protection
- Follow the electric circuit diagram on P.287 and make sure to connect properly. Never connect the power reversely.

2) Tighten sensors with appropriate tightening torque.
- Use the set screw mounted on the sensor body and tighten it with the following torque.
  JES0000：0.06N・m

3) Wiring
- Do not damage the cables. Damaged, forcibly bended, stretched, winded, load applied or pinched cables will cause fire, electric shock, and/or malfunction due to electric leakage and/or continuity failure.
- Do not apply excessive stress on the cable port of the sensor.
- Minimum bending radius of the cable port is R7.
- If cables are to move, fix the middle of the cables so that no stress is applied to the cable port.

4) Mounting position of the sensor should be adjusted by checking actual operating state.

Cautions

Notes on Handling

1) It should be operated by qualified personnel.
- The 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.
  Never modify the product as it contains a powerful magnet.

4) Keep more than one meter away from this product if you have a heart pacemaker, etc. It may be malfunctioned by strong magnetism.

5) This sensor is made by ASA Electronics Industry Co. Ltd.
  Please contact us or ASA Electronics Industry for further inquiries.

Maintenance and Inspection

1) Removal of the Product and Shut-off of Pressure Source
- Before removing the product, 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.
- Make sure there is no trouble/issue in the bolts and respective parts before restarting.

2) Never touch terminals while the power is on.
- Otherwise it will cause electric shock, malfunction and damage to the sensor for air cylinder.

3) Retightening of Set Screw
- When mounting position of the sensor for air cylinder is shifted due to looseness of set screw, retighten it after adjusting the mounting position.

4) Check if the electric cable is damaged or not.
- Damaged cables may cause insulation failure.
  Replace a sensor for air cylinder or repair the reed if the electric cable is damaged.

5) Product Storage
- The products should be stored in the cool and dark place without direct sunshine or moisture.

MEMO

※ Please refer to P.716 for common cautions. • Warranty

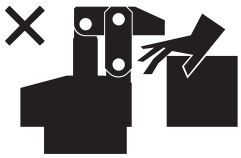
Cautions

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.

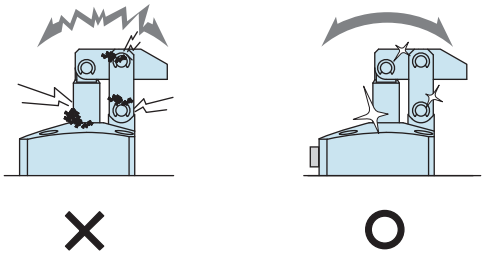


4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

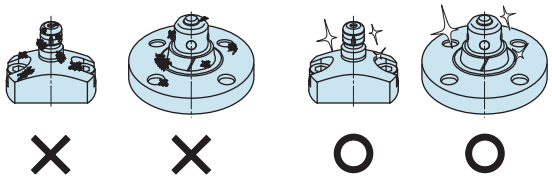
Maintenance and Inspection

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/VXF/WVS/VWH/VWM/VWK).
- Locating products (except VRA/VRC/VX/VXE/VXF 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 Overseas Sales	**TEL. +81-78-991-5162**	FAX. +81-78-991-8787 KOSMEK LTD. 1-5, 2-chome, Murotani, Nishi-ku, Kobe-city, Hyogo, Japan 651-2241 〒651-2241　兵庫県神戸市西区室谷2丁目1番5号
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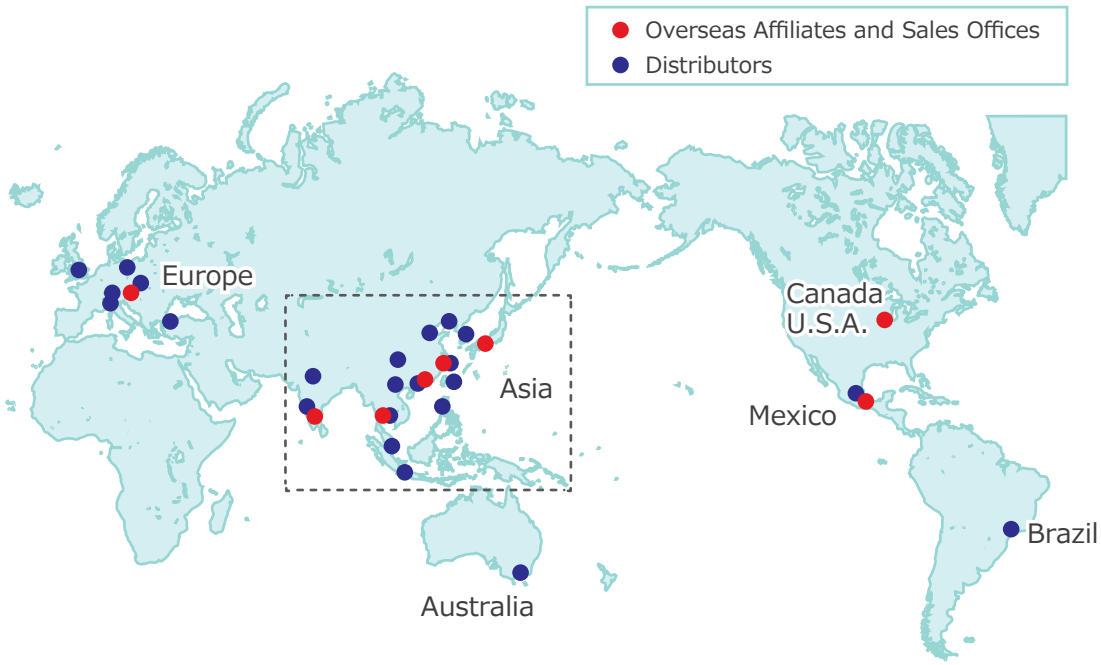
Nagoya Sales Office	**TEL. 0566-74-8778**	FAX. 0566-74-8808 〒446-0076　愛知県安城市美園町2丁目10番地1
Fukuoka Sales Office	**TEL. 092-433-0424**	FAX. 092-433-0426 〒812-0006　福岡県福岡市博多区上牟田1丁目8-10-101

Global Network



Asia Detailed Map

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