Location Clamp

Smart Series
Location Clamp

Model KSL



Powered by Third-Party Source: Smart Series

Enables easier pallet change and setup.

Locating Repeatability：0.010mm

Using Low-dust Grease for Clean Environments

Features

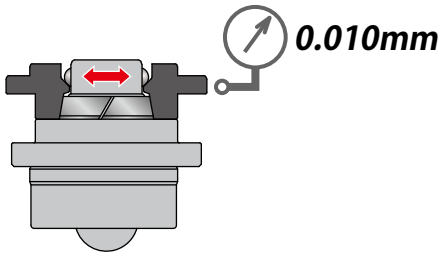
Locates and Clamps Simultaneously. Setup Improvement Enhances Productivity.



Location Clamp locates and clamps simultaneously with high accuracy. Fixture changeover becomes faster and easier, thus by eliminating alignment inspection for accuracy which is done in many different ways.

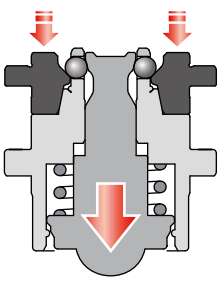
| Locating Repeatability |

Locating Repeatability：0.010mm
Used with a combination of the clamp and block.
Mount the block on the object for locating.



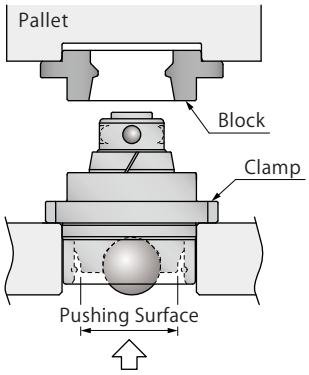
| Clamping Function |

Clamping Force : 50N
Clamped by the built-in spring.



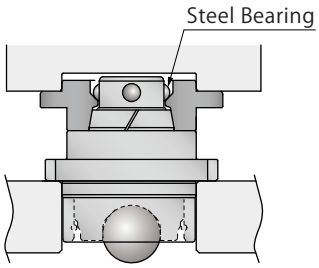
Action Description

Released by External Force



Released when the pushing surface is pushed in.

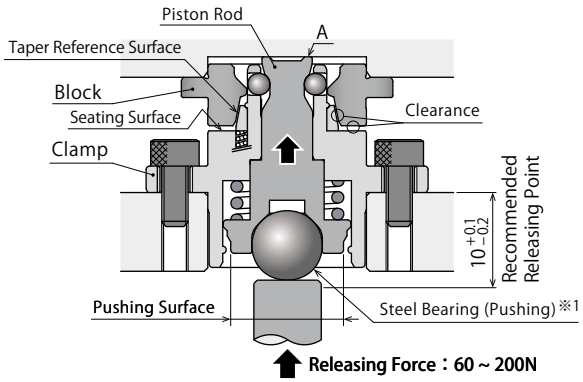
Locked by Spring

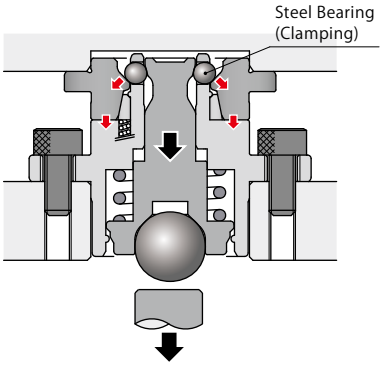


When the pushing surface is released, the block is clamped and located by the built-in spring.

Internal Structure Drawing

※ This is a simplified drawing. Actual components are different.





Released State

- The built-in spring is compressed to push the piston rod, and lift with Clamp Tip A. The gap is made between the taper reference surface and seating reference surface to shield the locating mechanism (scratch prevention).
- The Piston Rod A will contact while the pallet is loading.

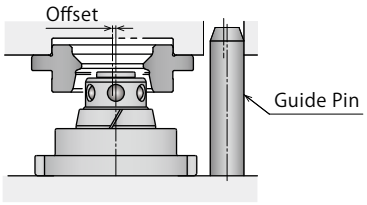
Warning : ※1. The steel bearing (Pushing) might come out.

Locked (Clamped) State

- The built-in spring lowers the piston rod and steel bearing (Clamping) forces to seating surface.
- The taper reference surface is made to contact for locating during the pushing process.

During Pallet Loading

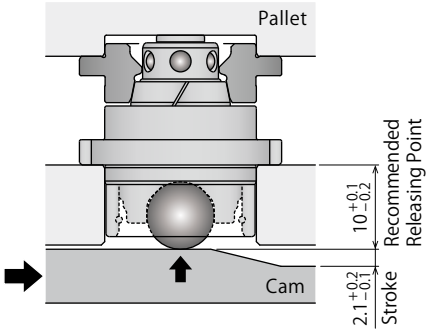
Load the pallet within the allowable offset. Recommended to add a guide pin to avoid allowable offset excess.



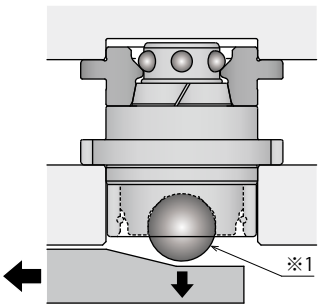
Application Examples

Operation by sliding cam

When Released



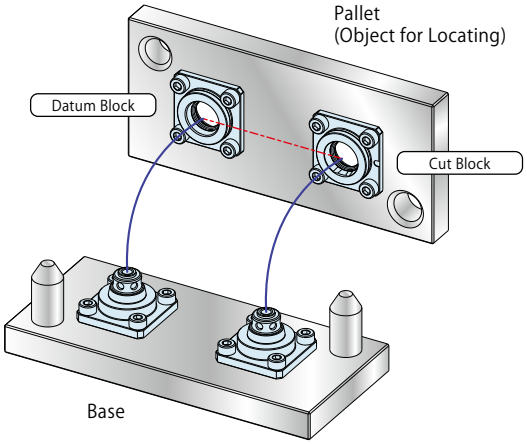
When Locked



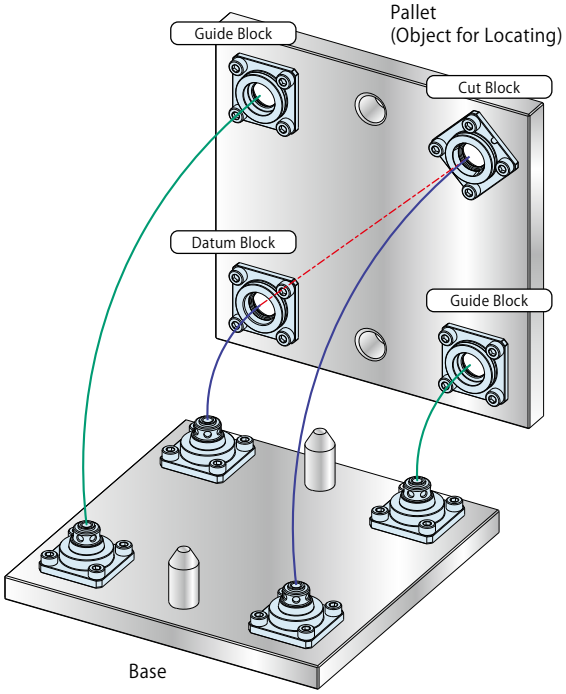
Note :
※1. The steel bearing (Pushing) might come out.

System References

When Using 2 Location Clamps

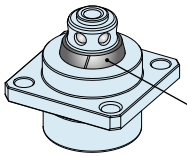


When Using 4 Location Clamps



Products and Functions

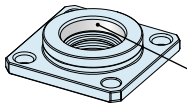
Datum Clamp



With Locating Function

Taper Sleeve

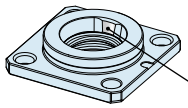
Datum Block



For Reference Locating

Taper Reference Surface (360°)

Cut Block

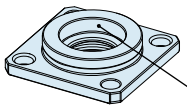


For One Direction Locating

Taper Reference Surface (Two Parts)

※ Only cut block requires attention in the mounting phase. For detail, please refer to 'mounting distance accuracy and phase of KSL-BC' on P.6.

Guide Block

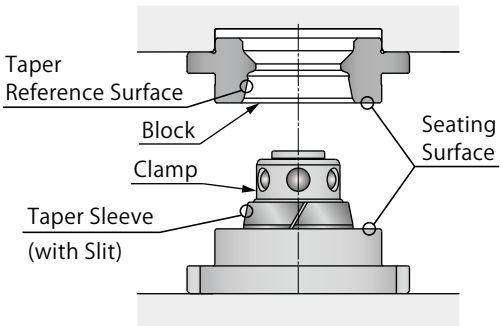


For Guide

Guide Part (Straight)

Description of Movable Taper Sleeve

Locating Method：Dual Surface with Movable Taper Sleeve



Advantages of Movable Taper Sleeve

With marginal error absorbed by the moveable taper sleeve, the clearance between the clamp unit, taper sleeve and block is eliminated enabling the repetitive location accuracy and stabilized clamping force.

① Absorbs tolerance variations in each location clamp and block.

② Absorbs wear of locating part due to long time use.

③ Absorbs space variations of mounting holes.

④ Absorbs space variations due to temperature change.

Model No. Indication (Clamp)



KSL005 0 -M D

1 2

1 Design No.

0 : Revision Number

2 Function

D : Datum Clamp

Model No. Indication (Block)



KSL005 0 -B D

1 2

1 Design No.

0 : Revision Number

2 Function

D : Datum Clamp (for Locating)
C : Cut Block (for One Direction Locating)
G : Guide Block (for Guide)

Combination of Clamp and Block

Clamp Model No.	Block Model No.	Function
KSL0050-MD (Datum Clamp)	KSL0050-BD (Datum Block)	Clamping + Locating at a Reference Point
KSL0050-MD (Datum Clamp)	KSL0050-BC (Cut Block)	Clamping + One Direction Locating
KSL0050-MD (Datum Clamp)	KSL0050-BG (Guide Block)	Clamping + Guide

Specifications

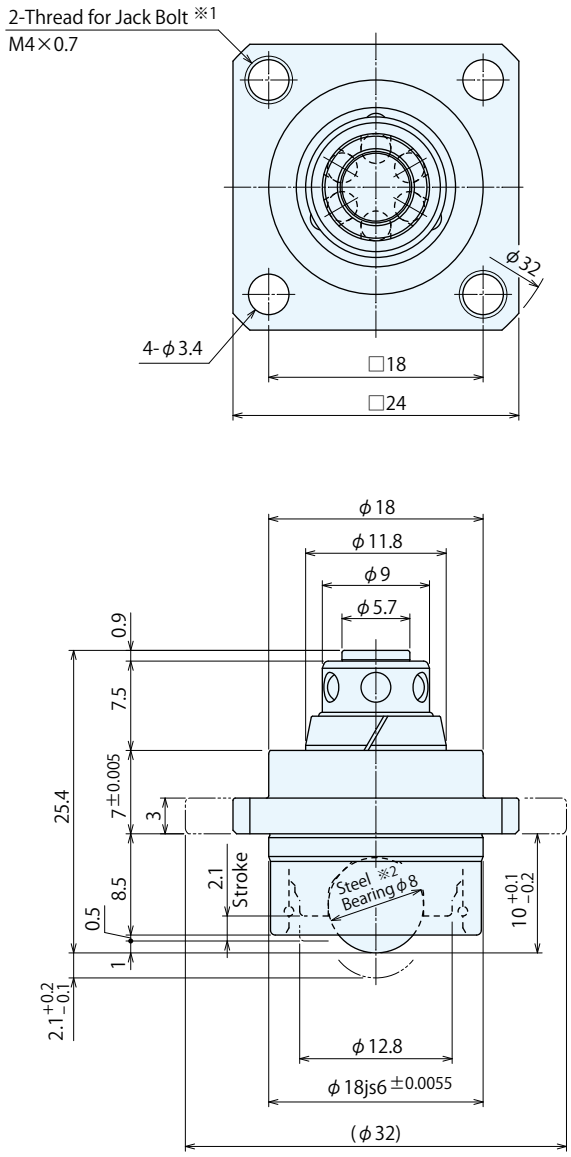
Model No.			**KSL0050-□**
Locating Repeatability		mm	0.010
Full Stroke		mm	2.1
Releasing Force ※1	Minimum	N	60
	Maximum	N	200
Lift Up Stroke		mm	0.4
Allowable Offset when a pallet is set		mm	0.8
Max. Loading Weight ※2		kg	5
Clamping Force ※1		N	About 50
Operating Temperature		℃	0 ~ 120 ※3
Grease			Low-dust Grease for Clean Environments : AFF manufactured by THK
Weight	Clamp	g	About 35
	Block	g	About 14

Notes :
※1. The specification indicates the value of one device.
※2. It indicates the weight of pallet in horizontal position (placed flat) that KSL can locate regardless of number of clamps. When using a pallet in vertical direction, please refer to P.7 'When Using a Pallet in Vertical Position' .
※3. The locating repeatability is not guaranteed due to thermal expansion when used under high temperature.

Clamp

External Dimensions

※ The drawing shows the released state of KSL.



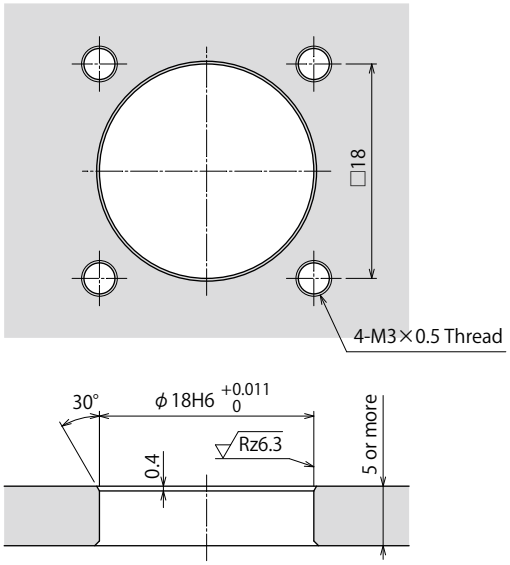
Notes :

1. Mounting bolts are not provided. Please prepare them separately. (Refer to P.8 'Installation of the Product' .)
2. This product is locked (diameter expanded) by spring and released (diameter retracted) by releasing force.

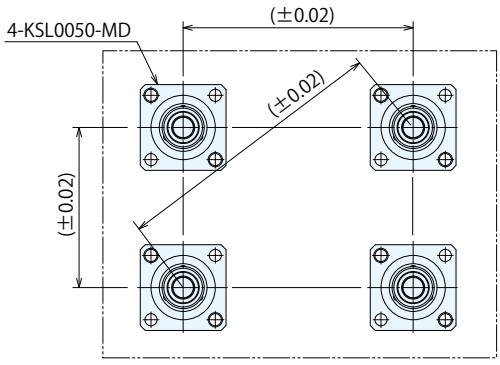
※1. The thread for jack bolt is used when removing the clamp. (Refer to P.8 'Removal of the Product' for usage.)

※2. The steel bearing φ8 might come out.

Machining Dimensions of Mounting Hole



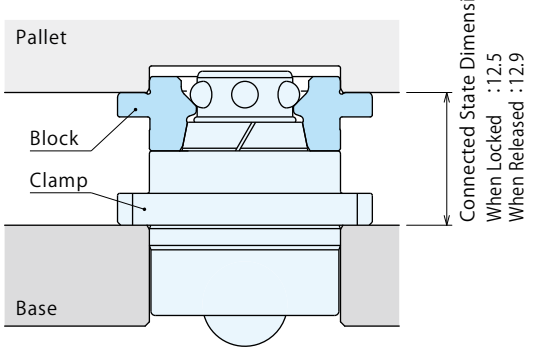
Distance Accuracy of Each Clamp



Note :

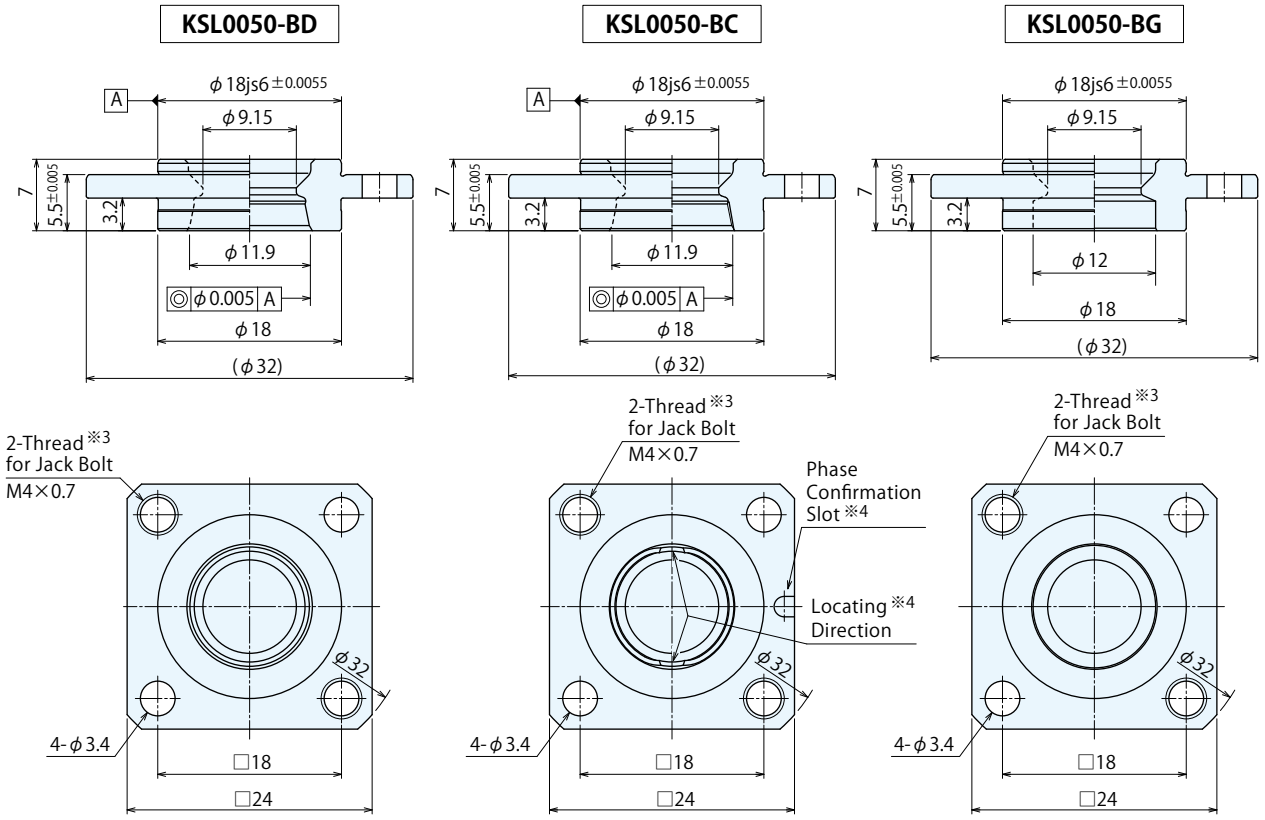
1. Please make sure the distance accuracy of each clamp is below ±0.02mm between the clamps with the longest distance.

Connected State Dimensions



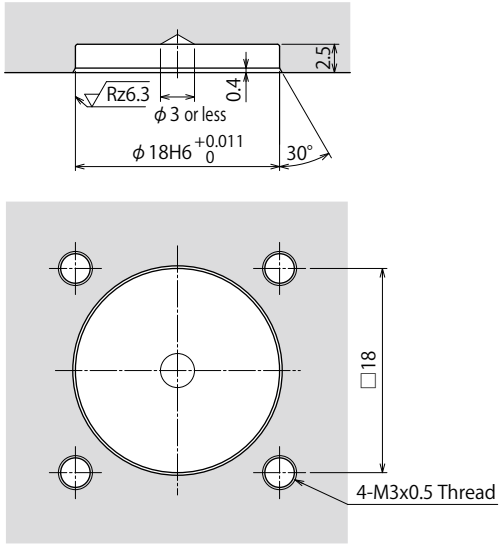
Block

External Dimensions



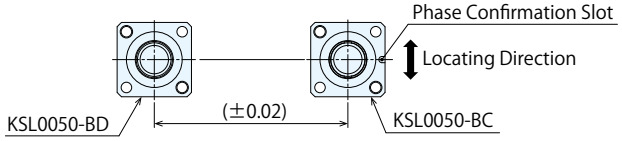
Notes :
1. Mounting bolts are not provided. Please prepare them separately. (Refer to P.8 'Installation of the Product' .)
※3. The thread for jack bolt is used when removing the clamp. (Refer to P.8 'Removal of the Product' for usage.)
※4. The Phase Confirmation Slot is to position the KSL-C.

Machining Dimensions of Mounting Hole

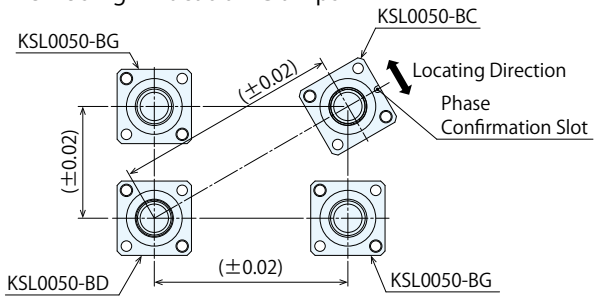


Mounting Distance Accuracy and Phase of KSL-BC

When Using 2 Location Clamps



When Using 4 Location Clamps



Notes :
1. Please align the phase confirmation slot of the "-C" cut block facing the line connecting the "-D" datum block and the center of the cut block.
2. Please make sure the distance accuracy of block is below ±0.02mm between the clamps with the longest distance.

Cautions

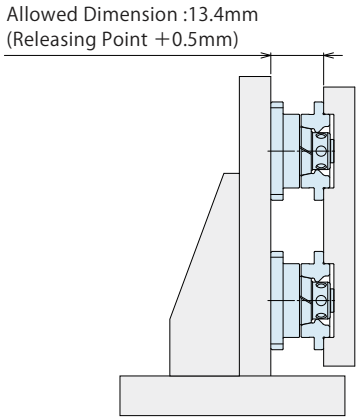
Notes for Design

1) Check Specifications

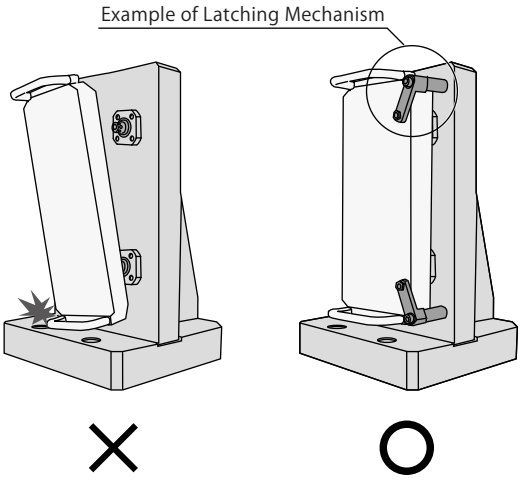
- This product is locked by the built-in spring and released by applying external force.
  Apply a force in the range shown in the specifications (refer to P.4 Releasing Force) to release. Applying excessive load on the cylinder leads to deformation and galling.
- Please use each product according to the specifications.

2) When Using a Pallet in Vertical Position

- Ensure that a workpiece/fixture plate does not lift or tilt when setting and that it is below the allowed dimension.
  If it is locked out of position, the clamps may be damaged.



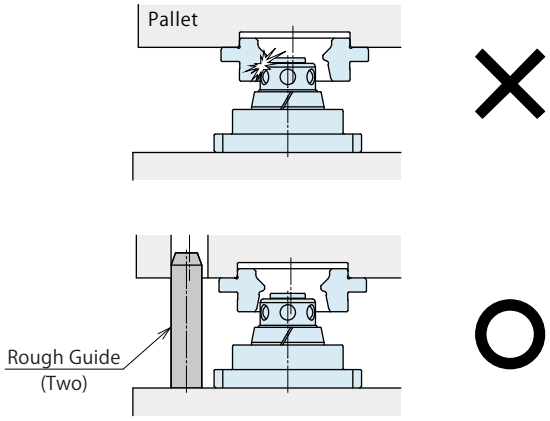
- As the workpiece/fixture plate may fall down when releasing, it is recommended to set up the latching mechanism for fall prevention.



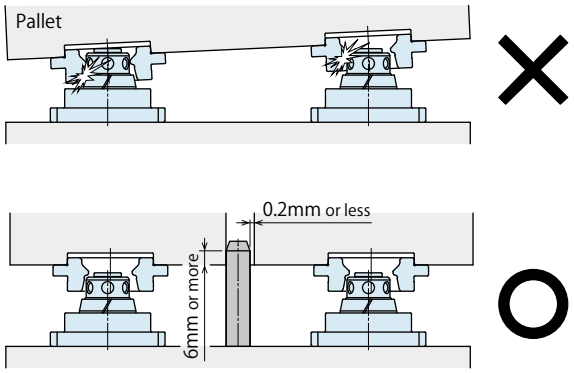
- When the pallet is used in vertical position (hanging on the wall), the internal moving parts tend to be worn out. Please check the locating accuracy on a regular basis, and replace the product in case the locating accuracy exceeds the allowable range.
- When the pallet is in horizontal position, make sure the weight of the workpiece fixture is less than the lifting force of the clamps and maximum load of the machine.
- When the pallet is in vertical position, make sure the weight of the workpiece fixture pallet is 10% of the clamping force.
- Please contact us in case the pallet is in other position.

3) Setting of Rough Guide

- If the position of the pallet (fixture) during loading is outside the allowable offset, the clamp may prematurely contact the seating/taper surface of the block causing damage affecting locating accuracy. It is recommended to use rough guides to load the pallet within the allowable offset.



- The clamps and blocks will be damaged if the pallet is tilted when loading/unloading (especially when unloading). If necessary, provide guide pins to keep the pallet level during loading and unloading.
  Recommended Guide Pin : Diameter Gap 0.2mm, Guide Length 6mm or more



4) Operating Environment

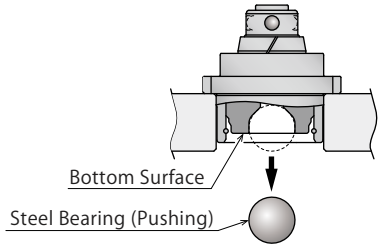
This product has no function that prevents foreign substances.
Do not use under environment with coolant and cutting chips.

5) Additional Bearing

The clamp and block can get damaged by lateral load and moment.
Adding a bearing to prevent any moment is recommended.

6) Steel Bearing (Pushing) might come out.

Push the bottom surface instead of steel bearing when the steel bearing is not used.



Installation Notes

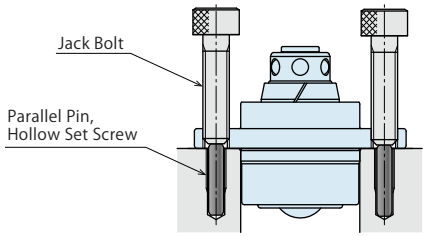
1) Installation of the Product

- When installing the product, use hexagonal socket bolts and tighten them with the torque shown in the list below.
  Also, tighten them evenly to prevent tilting of the product.

Model No.	Mounting Bolt Size	Tightening Torque (N·m)
KSL0050	M3×0.5	1.3

2) Removal of the Product

- Use jack bolts to remove the product, keeping it parallel to the mounting surface.
- Protect the thread part with parallel pins, etc. as shown in the below drawing not to damage the surface of mounting bolts.



3) Trial Operation Method

- Just after installation, extremely high operating speed may cause serious damage to the clamp.
  Make sure to check the operating speed while trial operation.

※ Please refer to P.45 for common cautions. ・Notes on Handling ・Maintenance and Inspection ・Warranty

Common Cautions

Notes on Handling

1) It should be operated by qualified personnel.
- Machines and devices should be operated and maintained by qualified personnel.

2) Do not operate or remove the product unless the safety protocols are ensured.
① Machines and devices 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 external force is applied to the product.
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 a machine or device.

3) Do not touch a cylinder or workpiece while it is working.
- Otherwise, your hands may be injured.

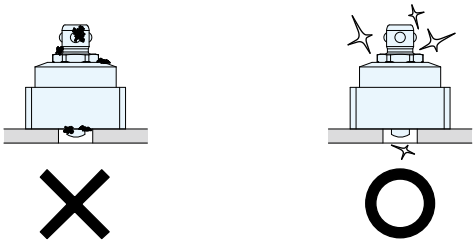


4) Do not disassemble or modify.
- Contains a powerful spring which is dangerous.
  If the product is taken apart or modified, the warranty will be voided even within the warranty period.

Maintenance and Inspection

1) Removal of the Product and Shut-off of Pressure Source
- Before the product is removed, make sure that safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no external force is applied to the product.
- Make sure there is no trouble/issue in the bolts and respective parts before restarting.

2) Regularly clean the moving parts and reference surfaces.
- Using the product contaminated with dirt may lead to malfunctioning.



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 mounting bolts 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 product should be stored in the cool and dark place without direct sunshine or moisture.

6) Please contact us for overhaul and repair.
- Contains a powerful spring which is dangerous.

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