



Safety Precautions

Always read this section before use.

When designing and manufacturing a device using CKD products, the manufacturer is obligated to check that device safety mechanism, pneumatic control circuit, or water control circuit and the system operated by electrical control that controls the devices is secured.


It is important to select, use, handle and maintain the product appropriately to ensure that the CKD product is used safely.

Observe warnings and precautions to ensure device safety.


Check that device safety is ensured, and manufacture a safe device.

WARNING

- 1** This product is designed and manufactured as a general industrial machine part.
It must be handled by an operator having sufficient knowledge and experience in handling.
 - 2** Use this product in accordance with specifications.
This product must be used within its stated specifications. In addition, never modify or additionally machine this product. This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors (except for products with outdoor specifications) or for use under the following conditions or environments.
(Note that this product can be used when CKD is consulted prior to use and the customer consents to CKD product specifications. The customer must provide safety measures to avoid risks in the event of problems.)
 - ①** Use for applications requiring safety, including nuclear energy, railways, aircraft, marine vessels, vehicles, medical devices, devices or applications in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.
 - ②** Use for applications where life or assets could be significantly affected, and special safety measures are required.
 - 3** Observe organization standards and regulations, etc. related to the safety of device design and control, etc.
ISO4414, JIS B 8370 (General rules for pneumatic systems)
JFPS2008 (Principles for pneumatic cylinder selection and use)
Including High Pressure Gas Safety Act, Industrial Safety and Health Act, other safety rules, body standards and regulations, etc.
 - 4** Do not handle, pipe, or remove devices before confirming safety.
 - ①** Inspect and service the machine and devices after confirming safety of all systems related to this product.
 - ②** Note that there may be hot or charged sections even after operation is stopped.
 - ③** When inspecting or servicing the device, turn OFF the energy source (air supply or water supply), and turn OFF power to the facility. Discharge any compressed air from the system, and pay attention to possible water leakage and leakage of electricity.
 - ④** When starting or restarting a machine or device that incorporates pneumatic components, make sure that the system safety is secured, such as through pop-out prevention measures.
 - 5** Observe warnings and cautions in the following pages to prevent accidents.
- The precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this section.

 **DANGER:** When a dangerous situation may occur if handling is mistaken leading to fatal or serious injuries, and when there is a high degree of emergency to a warning.

 **WARNING:** If handled incorrectly, a dangerous situation may occur, resulting in death or serious injury.

 **CAUTION:** When a dangerous situation may occur if handling is mistaken leading to minor injuries or physical damage.

Note that some items described as "CAUTION" may lead to serious results depending on the situation. Every item provides important information and must be observed.

Limited warranty and disclaimer

1 Warranty period

This warranty shall be valid for one year after delivery to the customer's designated site.

2 Scope of warranty

If any faults, found to be the responsibility of CKD, occur during the above warranty term, the product shall be replaced, the required replacement parts provided free of charge, or shall be repaired at the CKD factory free of charge.

This Limited Warranty will not apply to:

- (1) Failures due to use outside the conditions and environments set forth in the catalog or these specifications.
- (2) Failures resulting from factors other than this product.
- (3) Failures caused by improper use of the product.
- (4) Failures resulting from modifications or repairs made without CKD consent.
- (5) Failures caused by matters that could not be predicted with the technologies in practice when the product was delivered.
- (6) Failures resulting from natural disasters or accidents for which CKD is not liable.

The warranty covers the actually delivered product, and does not cover any damage resulting from losses induced by faults in the delivered product.

3 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.



Pneumatic components

Safety Precautions

Always read this section before use.

Refer to "Pneumatic Cylinders No.CB-030SA" for general information on the cylinder and information on the cylinder switch.

Product-specific cautions: Rotary clamp cylinder/single guide RCS2 Series

Design/selection

1. Common

WARNING

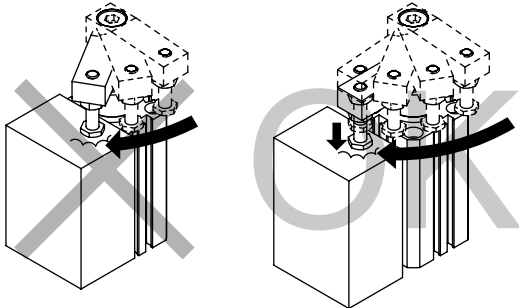
■ Precautions for operation

In this cylinder, the piston rod rotates 90° during its operation. Make sure that the clamp lever mounted to the piston rod end does not interfere with the exterior while rotating. If the rotation of the clamp lever could cause bodily injury, be sure to provide safety measures by installing a protective cover, etc. to the clamp lever's surroundings.

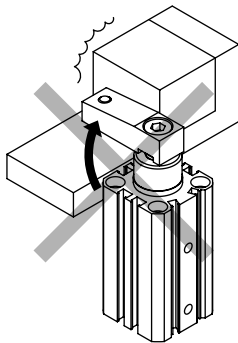
CAUTION

■ Using this product so as to apply rotation to the piston rod may lead to damage, faulty operation, or a reduction in non-rotating accuracy. Be sure to observe the following precautions.

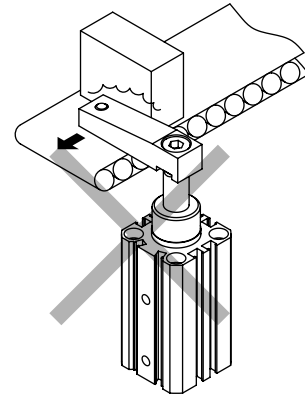
1. Do not clamp the product mid-rotary stroke. Adjust the clamping position to be approx. 3 mm or more before the stroke end position.



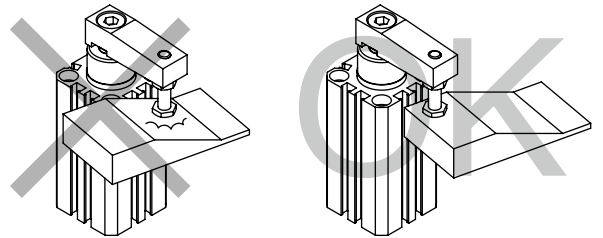
2. Do not clamp the product in the rotational direction.



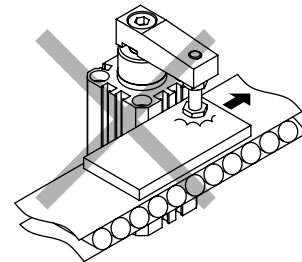
3. Do not use as a stopper.



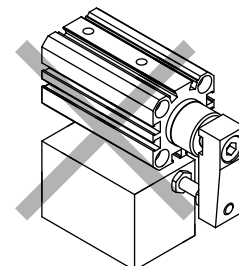
4. Do not clamp the inclined portion.



5. Do not move the workpiece with exterior power while clamping.

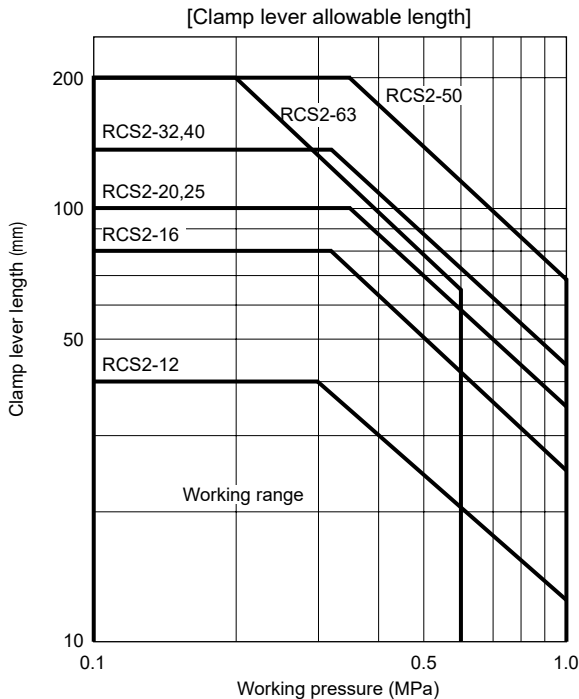
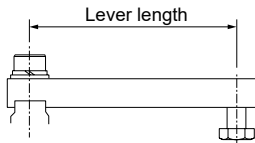


6. Do not install horizontally.



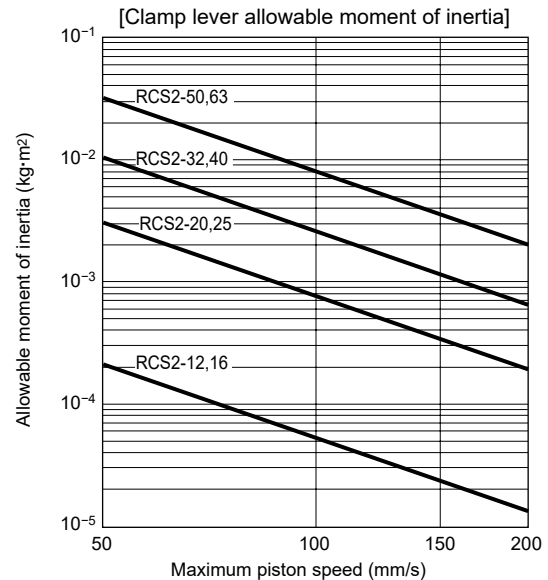
■ Clamp lever allowable length and working pressure

The upper limit of the clamp lever's allowable length differs depending on the working pressure. Set it to within the range shown below.



■ Clamp lever allowable moment of inertia and piston speed

The upper limit of the clamp lever's allowable moment of inertia differs depending on the piston speed. Set it to within the range shown below.



2. Anti-spatter adherence RCS2-G4

■ The durability of this cylinder is improved in comparison to standard cylinders when used in an atmosphere exposed to spatter. However, durability may be shorter than the standard cylinder when used other than in an atmosphere exposed to spatter. Do not use this cylinder in atmospheres other than those with spatter.

■ Anti-spatter adherence agent is volatile. If the anti-spatter adherence agent starts drying up on the rod surface, apply the agent to the rod surface again.

Mounting, installation and adjustment

⚠ WARNING

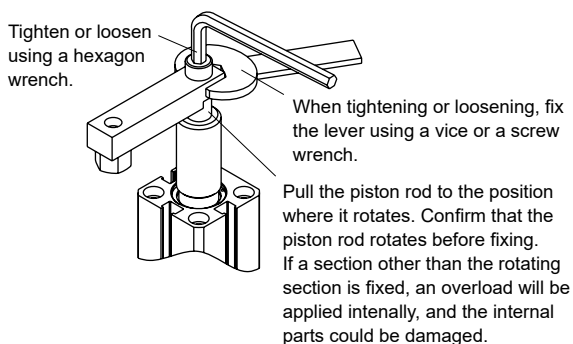
■ In this cylinder, the piston rod strokes while rotating (90°) during its operation.

As the lever mounted to the piston rod end rotates, do not insert your hands or enter the drive zone during operation.

⚠ CAUTION

■ Mounting and removing the lever

Use the following procedures to attach the lever. (Applying excessive rotational force to the piston rod may cause damage to the internal parts.)



■ Impact

Do not apply impact to the rod metal. There is a risk of damage.

