LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

CKL2
CKLG2
CKL2-HC
CKH2
CKLB2
CKG
CK
CKA
CKS
CKS-F
CKF
CKJ
CHC

Pneumatic components

# Safety Precautions

Be sure to read this section before use.

## Product-specific cautions: Chuck

## Design/selection

### ⚠ WARNING

■ If the moving workpiece poses a possible risk to personnel or if human fingers could be caught in the finger section, etc., install a protective cover, etc.

■ If the circuit pressure drops due to power failure or air source trouble, the gripping force may decrease and the workpiece may fall. Provide position locking measures, etc., so that personnel are not injured or machines damaged.
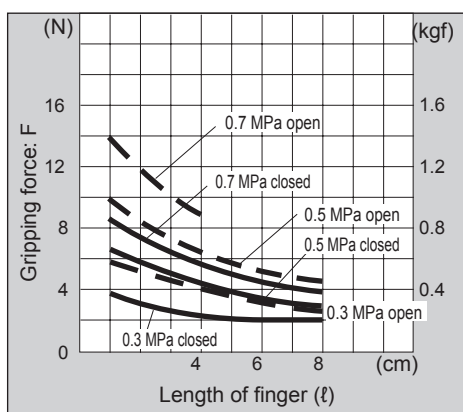
### ⚠ CAUTION

■ Precautions for gripping force
  ● Gripping force represents the force holding the workpiece, as shown in the figure below.
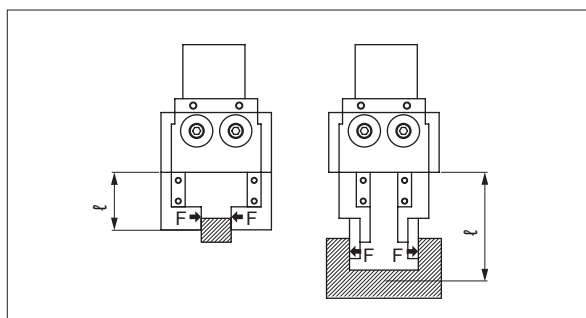


  ● Performance data indicates the gripping force at hand finger length ℓ at a supply pressure of 0.15 to 0.7MPa.



  ● To find the gripping force from performance data, if the distance from the attachment to the workpiece center of gravity when manufactured is ℓ, gripping force F is
      When ℓ=ℓ1   F = F1
      When ℓ=ℓ2   F = F2   Refer to the upper right figure
    is expressed as above.
  ● When mounting an L-shaped attachment, select length as shown below.
    Example:If the L-shape is 30mm in the finger direction and 30mm at a 90° angle, assume the attachment length is 60mm.
  ● Length of attachment should be within the numerical value given in the gripping force performance data table of each model.

  ● Max. working length of attachment should be within the performance data.
  ● Workpiece (weight $W_L$) with the following reference points.

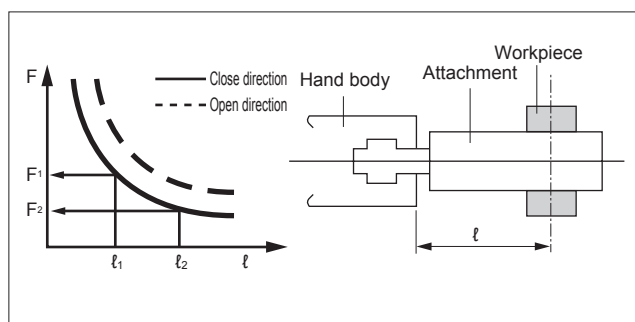$$W_L \times 9.8 \times 5 < (F \times N) \text{[Holding only]}$$
$$W_L \times 9.8 \times 10 < (F \times N) \text{[Normal transport]}$$
$$W_L \times 9.8 \times 20 < (F \times N) \text{[Sudden accelerated transport]}$$

  $W_L$: Weight of workpiece [kg]
    F: Gripping force [N]
    N: Number of fingers [pcs.]



■ Use attachments as short and lightweight as possible. If it is long or heavy, the inertial force during opening and closing will be large, which may cause the fingers to become loose or accelerate the wear of the finger sliding portion, which can have a negative impact on the lifespan.
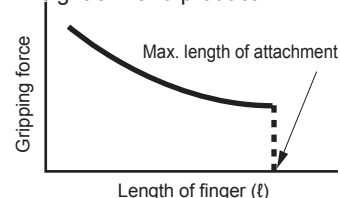  ● Length of attachment should be within the numerical values of performance data.
  ● The weight of the attachment affects durability, so check that the weight is less than the following value.
    W<1/4H(1 pc.) W: Weight of attachment
      H: Weight of Hand product



■ Avoid gripping the workpiece with single acting spring force as much as possible. The gripping force may become unstable, leading to operation failure.

■ With the single acting type, the spring force is minimized near the stroke end (open end for NO, closed end for NC).  Due to the structure operated by the spring force, it may not return when operated with a short stroke; take care of the attachment shape so that the workpiece can be gripped with a margin in the stroke.

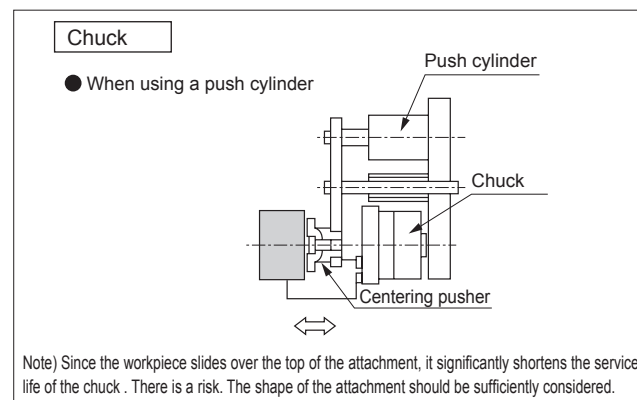**CKD**

■ Working environment

At cutting, casting, or welding plants, there is a risk of foreign matter, such as cutting fluid, chips, powder and dust, entering the equipment. Use covers and such to prevent this as much as possible. Do not use the equipment under the following environments.

● Exposed to cutting oil (because the sliding section is abraded by abrasive or polishing debris in the liquid)

● When the atmosphere contains organic solvents, chemicals, acids, alkalis, kerosene, etc.

● Exposed to water

■ When gripping long or large workpieces, stable gripping requires a grip on the center of gravity. Stability is a must when using larger or multiple workpieces as well.
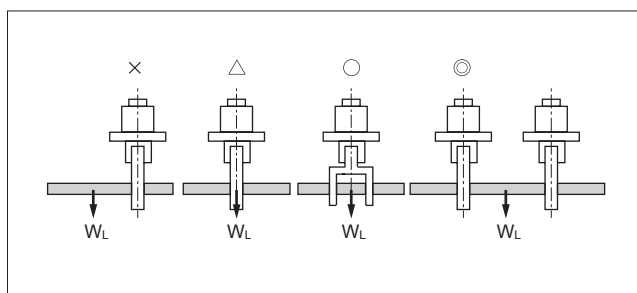


■ Select a model that has sufficient power to grip the workpiece weight.

■ Select a model that has sufficient opening/closing width for the workpiece size.

■ If directly installing the workpiece into the jig with a chuck, consider clearance during design. The chuck could be damaged.



Chuck

● When using a push cylinder

Push cylinder

Chuck

Centering pusher

Note) Since the workpiece slides over the top of the attachment, it significantly shortens the service life of the chuck . There is a risk. The shape of the attachment should be sufficiently considered.

■ The rubber cover is a consumable part. Replace if necessary.

## Mounting, installation and adjustment

### ⚠ CAUTION

■ If a lateral load or a load with large impact is applied to the finger, play or damage could occur. Adjust and check that external force is not applied to the finger.

■ Clamping operation is accurate when performed as softly as possible at a low speed. Repeatability is also stable.

■ Regularly grease the sliding section of the finger. Regular replenishment can extend service life further.

■ When installing the attachment, check that a lateral load is not applied to the finger.

■ Tighten with the following tightening torque when mounting.

| Thread nominal | M3 | M4 | M5 | M6 | M8 |
|---|---|---|---|---|---|
| Recommended tightening torque (N·m) | 0.59 | 1.4 | 2.8 | 4.8 | 12.0 |

## Use/maintenance

### ⚠ CAUTION

■ Do not disassemble or modify the body.

■ Repeatability

The repeatability here indicates the displacement of the finger in the case of repeated clamping and unclamping in the same conditions (chuck fixed, same attachment used: see below). Shock during opening and closing may lead to position misalignment of the workpiece and deterioration of repeatability. Note that wear to the attachment or insufficient rigidity may also decrease accuracy.

Conditions
・Attachment dimensions, shape, weight
・Attachment workpiece gripping position
・Clamp method, length
・Attachment and workpiece contact area resistance
・Shock-free opening and closing with speed controller
・Fluctuation of gripping force (air pressure), etc.



Base line

●: Base line