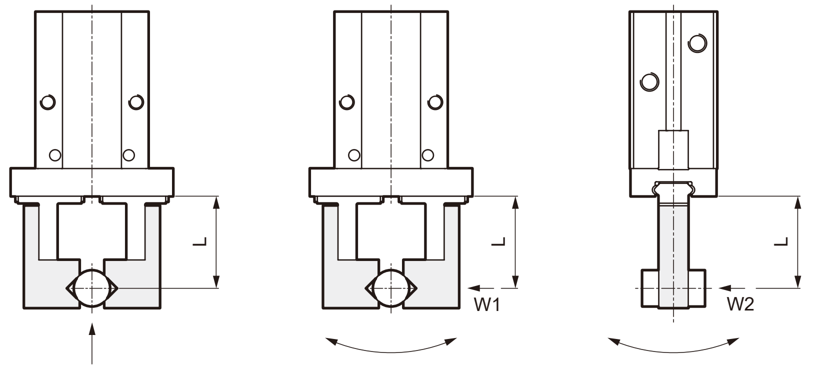
About Attachments

- Use attachments that are as lightweight and short as possible. If they are long and heavy, the inertial force during opening and closing will be large, which may cause play in the fingers or accelerate wear on the finger sliding parts, adversely affecting the service life.
- When attaching L-shaped attachments, select the length as shown below. Example: For an L-shape, 30 mm in the finger direction and 30 mm bent at 90 degrees, the attachment length is considered to be 60 mm.
- The length of the attachment must be within the gripping force performance data.
- The weight of the attachment affects its lifespan, so follow the table below.

Model	Weight per attachment W
RLSH	W < 80 g
RHLF	W < 100 g
RCKL	W < 95 g

About External Forces on Fingers

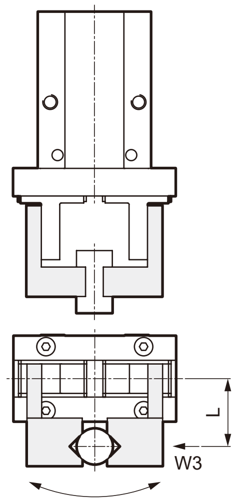
When external force is applied to the fingers, such as when transporting or inserting a workpiece, use within the range shown in [Table 1]. (* When used in transport, consider the impact at the end.)



Vertical load
W (N)

Bending moment
M1 (N·m) = W1 × L

Lateral bending moment
M2 (N·m) = W2 × L



Torsional Moment
M3 (N·m) = W3 × L

L: Distance to the point where the load is applied

[Table 1] Allowable Load Value

Model	Vertical load Wmax (N)	Bending moment M1 max (N·m)	Lateral bending moment M2 max (N·m)	Torsional Moment M3 max (N·m)
RLSH	198	1.8	3.6	1.8
RHLF	164	0.94	2	1.1

• Example of external force calculation on fingers

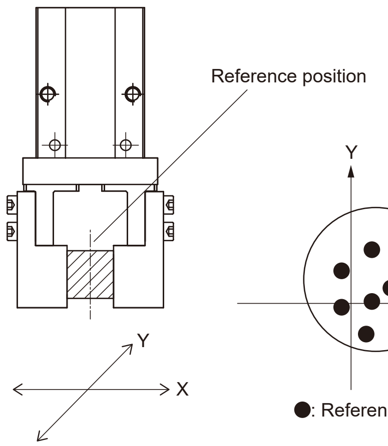
Calculation Example①: When conveying workpieces
Model No.: RLSH-A20D1N, attachment (weight m_k: When a workpiece (weight: m=0.8 kg, center of gravity: L=60 mm) is gripped and transported at 0.07 kg with center of gravity: L_k = 30 mm (g: Gravity acceleration 9.8 m/s^2, α: Assuming an impact factor of 3 at the end of the stroke)
$M_1=\alpha\times W_1\times L=\alpha\times(m_k\times g\times L_k\times 2+m\times g\times L)$
$= 3 \times (0.07 \times 9.8 \times 30 \times 10^{-3} \times 2 + 0.7 \times 9.8 \times 40 \times 10^{-3}) \approx 0.95$ N·m, and M1 max = 1.8 N·m or less, so it can be used.

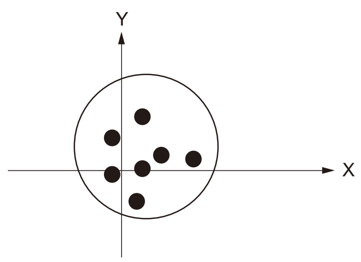
Calculation Example②: When inserting a workpiece
Model No.: When load W_1:30 N is applied to RLSH-A20D1N, L=40mm
$M_1 = W_1 \times L = 30 \times 40 \times 10^{-3} = 1.2$ N·m, and M1 max = 1.8 N·m or less, so it can be used.

Repeatability

Repeatability here refers to the workpiece position deviation when clamping and unclamping are repeated under the same conditions (gripper fixed, same workpiece used, etc., see right).

Condition
- Workpiece dimensions, shape, weight
- Workpiece transfer position
- Clamping method, length
- Resistance between workpiece and workpiece receiving surface
- Fluctuation of gripping force (air pressure), etc.





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