

Grippers for collaborative robots

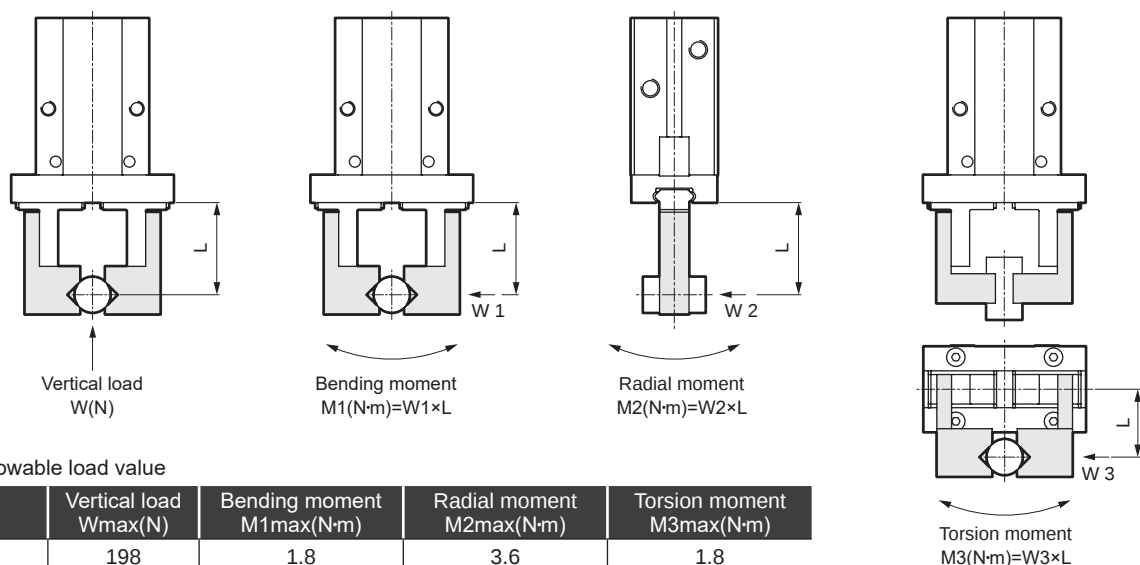
Attachments

- Use the attachments that are 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.
- When mounting an L-shaped attachment, select the length as shown below.
Example: For an L-shape, when the finger direction is 30 mm and 90 mm after bending 30 degrees, the length of the attachment should be 60 mm
- The length of the attachment should be within the value of the gripping force performance data.
- The weight of the attachment affects durability, so follow the table below.

Model	Attachment1Weight per unitW
RLSH	$W < 80\text{g}$
RHLF	$W < 100\text{g}$
RCKL	$W < 95\text{g}$

External forces applied to the fingers

When an external force is applied to a finger such as when conveying and inserting workpieces, use it within [Table 1] parameters.
(* When using it for conveying, consider the impact to the terminal.)



[Table1] Allowable load value

Model	Vertical load $W_{\text{max}}(\text{N})$	Bending moment $M1_{\text{max}}(\text{N}\cdot\text{m})$	Radial moment $M2_{\text{max}}(\text{N}\cdot\text{m})$	Torsion moment $M3_{\text{max}}(\text{N}\cdot\text{m})$
RLSH	198	1.8	3.6	1.8
RHLF	164	0.94	2	1.1

L: Distance to the point where load is applied

• Sample calculation for external forces applied to the fingers

Sample calculation (1): When conveying a workpiece

Model No.: RLSH-A20D1N, attachment (weight m_k : 0.07kg, center of gravity distance L_k : 40mm) When a workpiece (weight m : 0.7kg, center of gravity distance L : 40mm) is gripped and transported at $\alpha = 30^\circ$
(g : Gravity acceleration 9.8m/s^2 , α : Coefficient of impact generated at end = 3)

$$M_1 = \alpha \times W_1 \times L = \alpha \times (m_k \times g \times L_k \times 2 + m \times g \times L) \\ = 3 \times (0.07 \times 9.8 \times 30 \times 10^{-3} \times 2 + 0.7 \times 9.8 \times 40 \times 10^{-3}) \approx 0.95\text{N}\cdot\text{m}, M1_{\text{max}} \text{ can be used since it is } \max = 1.8\text{N}\cdot\text{m} \text{ or less}$$

Sample calculation (2): When inserting a workpiece

Model No.: RLSH-A20D1N, $L=40\text{mm}$ for load W_1 : When 30 N is added

$$M_1 = W_1 \times L = 30 \times 40 \times 10^{-3} = 1.2\text{N}\cdot\text{m} \text{ and } M1_{\text{max}} = 1.8\text{N}\cdot\text{m} \text{ or less, so use is possible}$$

Repeatability

The repeatability here indicates the displacement of the workpiece position deviation in the case of repeated clamping and unclamping under the same conditions (gripper fixed, same workpiece used, etc. Refer to right).

Conditions

- Workpiece dimensions, shape, weight
- Workpiece transfer position
- Clamp method, length
- Workpiece and workpiece receiving surface resistance
- Fluctuation of gripping power (air pressure), etc.

