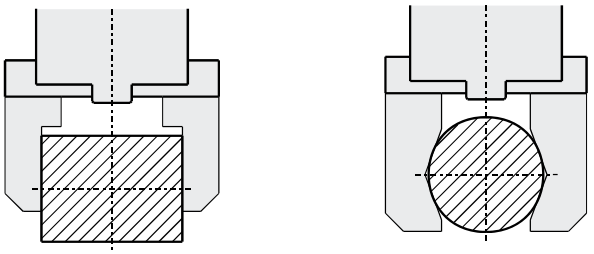
Gripper Basics

Call our EOAT Engineering Department for Sizing Assistance

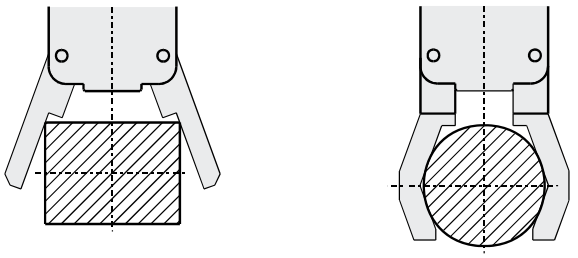
Parallel gripper

The jaws movement is on a straight line.



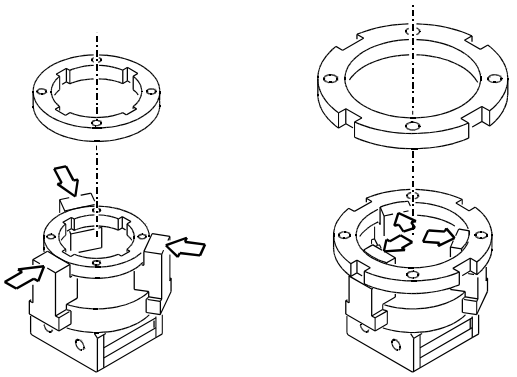
Angular gripper

The jaws are pivoted and move on an angular line with a 10° – 40° angle.



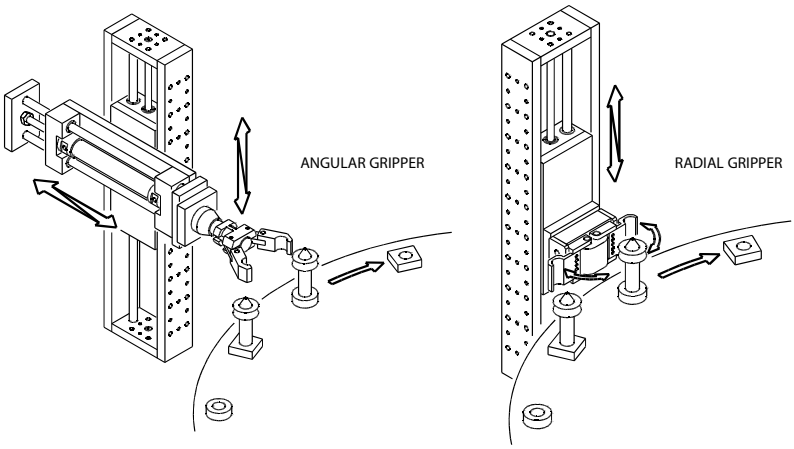
Three jaws gripper

Is generally used to handle loads of cylindrical shapes, maintaing the same axis, even if different diameter parts are being gripped.



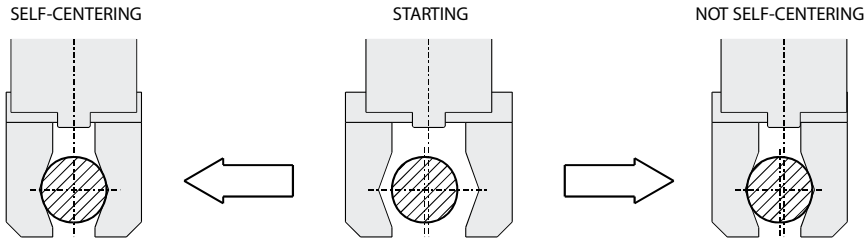
Radial gripper

The jaws move on an angular line with a 90° angle; because of this the moving back can be avoided in order to withdraw the gripping tools from the working plane.



Self-centering

On the pneumatic gripper generally the jaws are symmetrically moved, and because of this, the load is centered.



Gripper Basics

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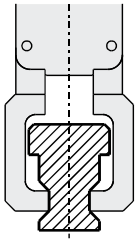
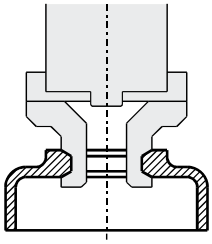
Gripping force

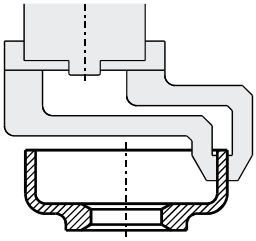
They must be built as short and light as possible, to reach the maximum gripping force, keeping the inertia to a minimum.



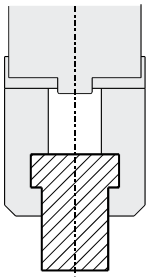
EXTERNAL GRIPPING



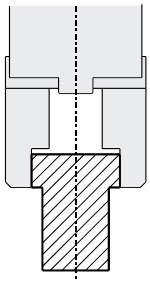
INTERNAL GRIPPING



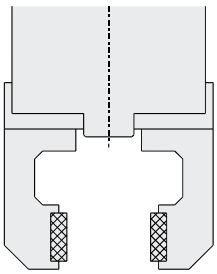
INTERNAL - EXTERNAL GRIPPING



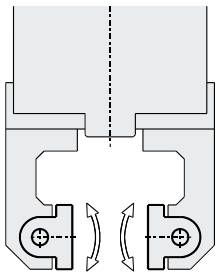
POSITIVE GRIPPING



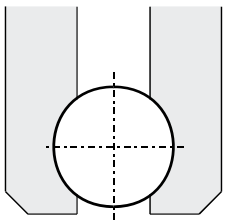
FORCE GRIPPING



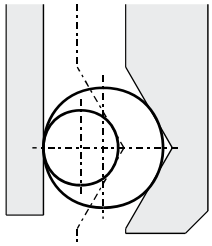
RUBBER



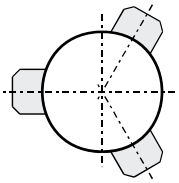
FLOATING HEAD



POSITIVE GRIPPING



3 POINT GRIPPING WITH 2 JAWS



3 POINT GRIPPING WITH 3 JAWS

Gripper Calculation Example

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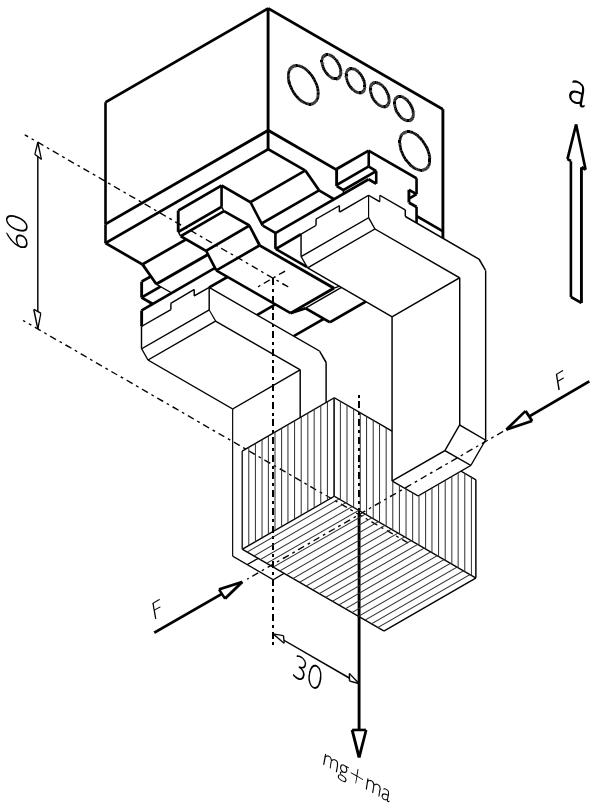
Calculation example:

A 1kg load is to handle as in the figure with a coefficient of friction μ = 0.1.
The gripper, Gimatic MG-0050, moves upward with acceleration a=4m/s^2.
Verify that the safety factor is at least η=1.5



m = *mass*

g = *acceleration of gravity*

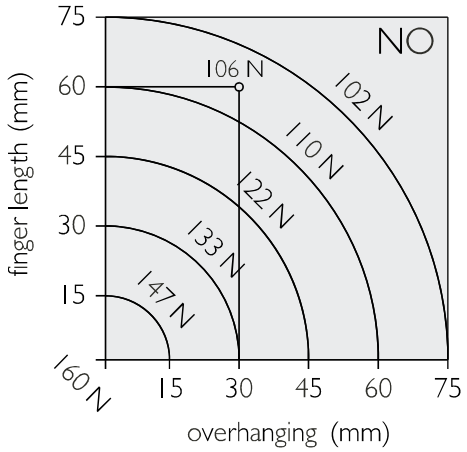
a = *acceleration of handling*

μ = *coefficient of friction*

η = *safety factor*

m = 1 kg
g = 9.8 m/s^2
a = 4 m/s^2
μ = 0.1
η = 1.5

MG-0050 (6 bar)



F = 106N

$\eta m(g+a) = 2\mu F$ ⟹

$$\eta = \frac{2\mu F}{m(g+a)} = \frac{2x0,1x106}{1(9,8+4)} = 1,536 \quad OK$$