Toggle clamps

Technical Information

Fig. 1:

Clamp in top dead centre position.
The self-locking of the clamp hinge prevents the clamping arm opening of its own accord during machining.

Fig. 2:

Clamp in intermediate position.
When closing the clamp, the holding arm rapidly approaches the top dead centre of the toggle lever (handle swing-angle << holding arm swing-angle).

Fig. 3:

Clamp open.
The large opening angle of the clamping arm ensures unhindered loading and unloading.

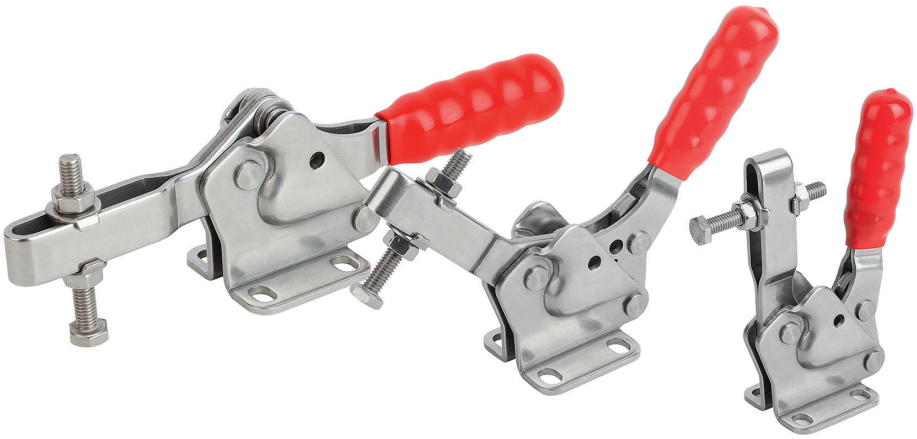
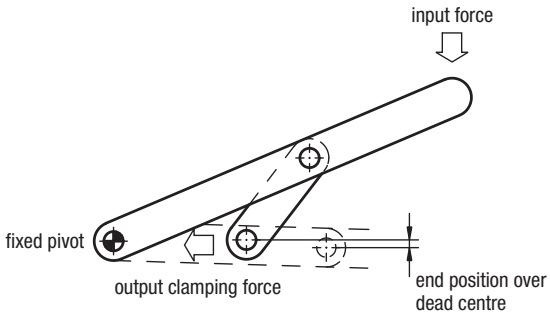
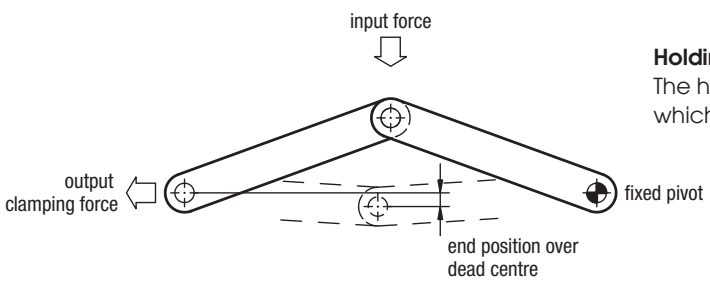


Fig. 1: Fig. 2: Fig. 3:



The clamps achieve maximum clamping force when the three pivot points lie in a straight line (dead centre position).
Locking occurs when the hinge is extended past the dead centre position. The distance past the dead centre position has been carefully designed to maintain maximum clamping without the clamp opening as the result of vibrations of alternating loads.
The force-amplifying action of the toggle system is used in straight-acting clamps to perform tasks such as light-duty drilling, boring, forming, gluing, joining, riveting, welding and sealing.



Holding force
The holding force is the force with which the closed clamping arm opposes the machining forces acting on the workpiece and which it resists with no permanent deformation.

clamping force
The clamping force is the force applied to the workpiece by the clamping arm when the clamp closes.
It is possible to achieve the clamping forces corresponding to the manual forces stated in the catalogue.