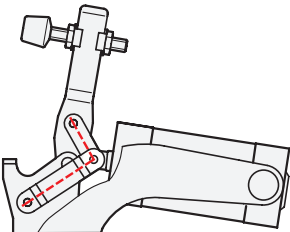
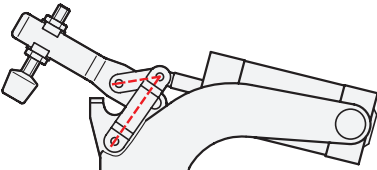
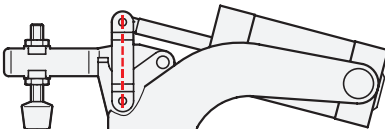
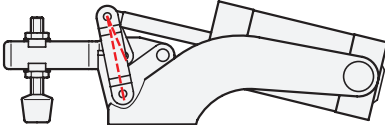


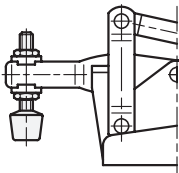
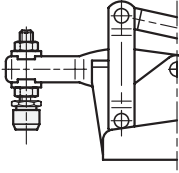
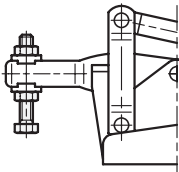
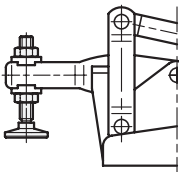
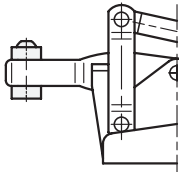
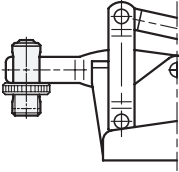
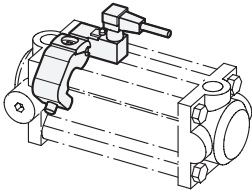
Pneumatic Toggle Clamps

Toggle Principle

Pneumatic toggle clamps combine the advantages of clamping according to the toggle principle (clamp remains closed even in the event of compressed air failure) with the possibilities of pneumatics.

Movement phase 1 The clamping arm opens wide enough that the the workpiece is exposed, allowing it to be removed or placed into the fixture without obstruction.	
Movement phase 2 Even the slightest forward movement of the clamping lever brings the clamping arm with the spindle assembly onto the workpiece. As indicated in the sketch, the arrangement of the three toggle links shows that the force applied on the lever will lead to a multiple force achieved on the clamping arm. However, the toggle clamp is not yet locked in this position, which means that opposing forces on the clamping arm would open it again.	
Movement phase 3 When all three toggle links are in alignment, the maximum clamping force F_S is achieved (lever dead point).	
Movement phase 4 In this position, i.e. the clamping position, the lever dead point is exceeded by a certain degree and the clamping lever is fixed in place by an end stop. With this, a secure locking (self-blocking) of the toggle clamp is achieved. The force that can be absorbed by the clamping element in this closed position without permanent deformation is referred to as the holding force F_H .	

Just as with the manually operated toggle clamps, the pneumatic toggle clamps can be fitted with a wide range of spindle assemblies. It is also possible to attach a sensor for end position detection.

	
Toggle clamp spindle assemblies GN 708.1 (→ page 858) can compensate for workpiece tolerances during clamping by means of the elastic tip.	Toggle clamp spindle assemblies GN 804 (→ page 856) with the spring-loaded thrust pad not only allow compensation of workpiece tolerances, they also permit presetting of the respective clamping force.
	
Toggle clamp spindle assemblies GN 807 (→ page 857) are available with or without elastic protective cap.	Toggle clamp spindle assemblies GN 903 (→ www.jwwinco.com) can distribute the force more evenly on the workpiece due to the larger contact surface of the thrust pad.
	
Clamp mounts GN 801 (→ www.jwwinco.com) are designed for toggle clamps with open clamping arm and can be moved to any position along the clamping arm.	Clamp mounts GN 809 (→ www.jwwinco.com) are designed for toggle clamps with solid clamping arm. The clamp mounts can be moved to any position along the clamping arm and can be adjusted in height.
	
Toggle clamps that are equipped with a magnetic piston (coding M) allow for end position detection in connection with sensors GN 3380 (→ page 888) for cylinders with T-slot.	