Technical Information TI-F10
Locking Units

☑ Precision locking
☑ Clamping in both load directions

Table of Contents

1 Where do I find what? 1
2 Purpose 1
3 Function 1
4 Clamping by springs - releasing by pressure 2
5 Clamping and releasing actuated by pressure ... 2
6 Overview of Locking Units 3

1 Where do I find what?

For technical data of the various series and accessories, refer to the corresponding Technical Data Sheets; for more information, see *Chapter 6 Overview of Locking Units* [▸ 3]

A detailed description of the control, mounting, and performance testing can be found in the corresponding Operating Manuals.

2 Purpose

Locking Units clamp a rod at any position without changing its position. They absorb axial forces in both load directions. Locking Units can be actuated with hydraulic or pneumatic pressure.

3 Function

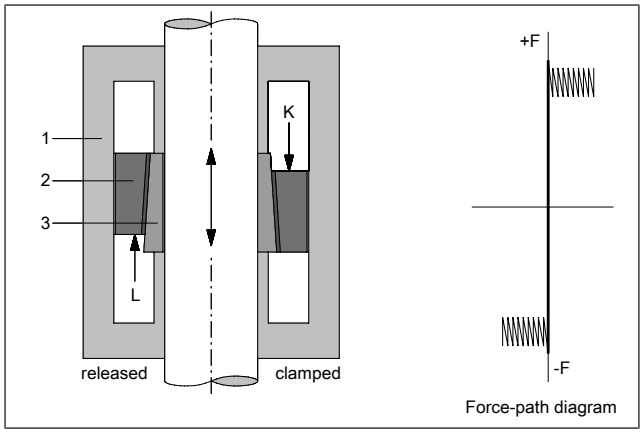

Fig. 1: Functional basics of a Locking Unit

The clamping system consists of a clamping sleeve (3) with an outer cone and a clamping ring (2) with an inner cone. The clamping sleeve is axially fixed in the housing and can move only in radial direction. This way the clamping is practically without play.

The clamping ring is guided by the housing and forced over the sleeve in axial direction to clamp the unit. The clamping force is generated by pressure or alternatively by spring action. It is intensified by the conical (or tilted) surfaces.

The clamping is released by hydraulic or pneumatic pressure. When the clamping is released or open, there is a defined air gap which ensures that the rod can move without friction.

A Locking Unit can absorb forces in both load directions. In case of overload, the rod slips which normally causes no damages.

An operation with recurring overloading (braking processes) should be avoided, unless the Locking Unit has been explicitly designed for this purpose. With recurring overload, abrasion can occur - depending on force level, rod quality, and slipping speed.

4 Clamping by springs - releasing by pressure

KFH, KFP series and others

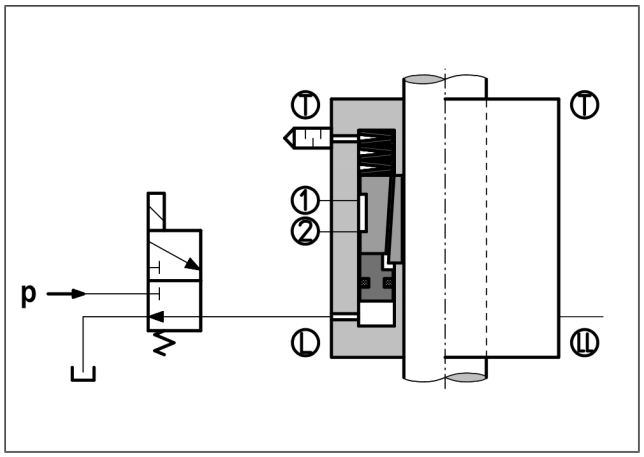

Fig. 2: Actuation of Locking Unit

This picture shows the unpressurized switching state The rod is clamped by spring force The Locking Unit can apply the full nominal holding force. Proximity switch 1 signals “rod clamped”.

During every operational cycle, the 3/2-way valve is actuated electrically which releases the clamping.

In any other operational condition, as well as in cases of power failure, emergency stop or similar, the Locking Unit engages, clamps the rod and brakes the load. The load is also secured if the supply pipe fails.

To prevent problems, a movement of the rod should only be permitted if proximity switch 2 signals "clamping released".

5 Clamping and releasing actuated by pressure

KB and KBP series

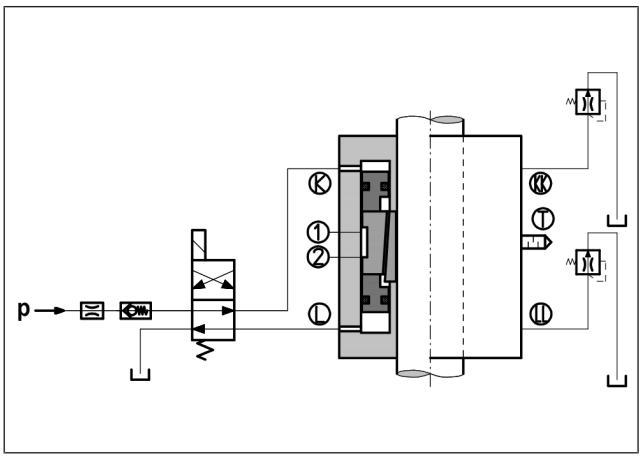

Fig. 3: Example of actuation of Locking Unit

In the switching state shown here, port K is pressurized The rod is clamped by pressure. The holding force is proportional to the pressure applied. Proximity switch 1 signals “rod clamped”.

The change of the valve position initiates the release of the clamping. A movement of the rod should only be permitted if proximity switch 2 signals "clamping released".

Overview of Locking Units

For detailed information on the Locking Units mentioned here, see the Technical Data Sheets.

Actuation	Series	Clamping by	Rod diameter (mm)	Holding force in kN	Special features	Technical Data Sheet
Hydraulic pressure	KFH	spring force	18 to 140	5 to 600	Standard	TI-F50
	KFHR	spring force	18 to 140	5 to 600	use in humid conditions	TI-F53
	KFHS	spring force	18 to 125	5 to 165*	DGUV Certificate	TI-F55
	KFHSR	spring force	18 to 125	5 to 165*	DGUV Certificate	TI-F57
	KFHA	spring force	18 to 70	9 to 125	for standard cylinders	TI-F60
	KB	Pressure	40 to 200	80 to 1500	clamping by hydraulic pressure	TI-F15
Pneumatic pressure	KFPC	spring force	20 to 40	11 to 44	Compact design	TI-F21
	KFPA	spring force	16 to 40	0.9 to 10.9	for standard cylinders	TI-F22
	KFPD	spring force	30 to 40	120 to 500 Nm**	torque absorption	TI-F23

***) admissible load M (F = 2 x M); **) at axial holding forces of 12 to 30 kN**

Subject to modification without prior notice