

Innovations Linear Technology

Clamping and braking elements



ROTARY CLAMPING ELEMENT DKHS1000

BACKLASH-FREE CLAMPING

Accuracy by prestress

The new rotary clamping element DKHS1000 enables the high accuracy fixture of the angular position of rotary axis in machine-tools. Through the elastic strain of the housing by hydraulic pressure, the element releases the rotary flange connection.

Elasticity induces longevity

Thanks to the dimensioning of the element in the elastic endurance range, the hydraulic series DKHS1000 exceeds the cycles of common pneumatic rotary clamping elements by far. This further increases the availability of the machine-tools.

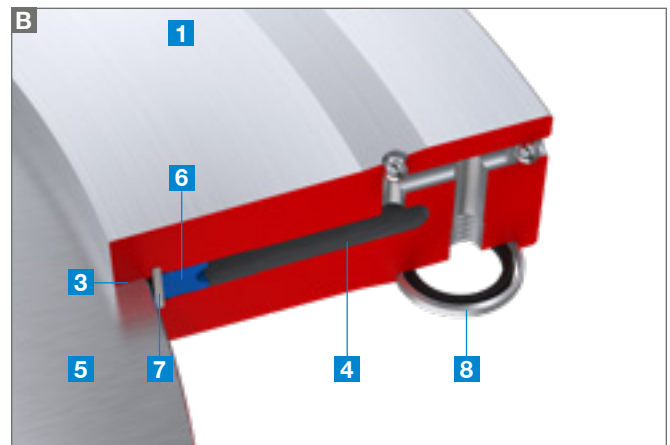
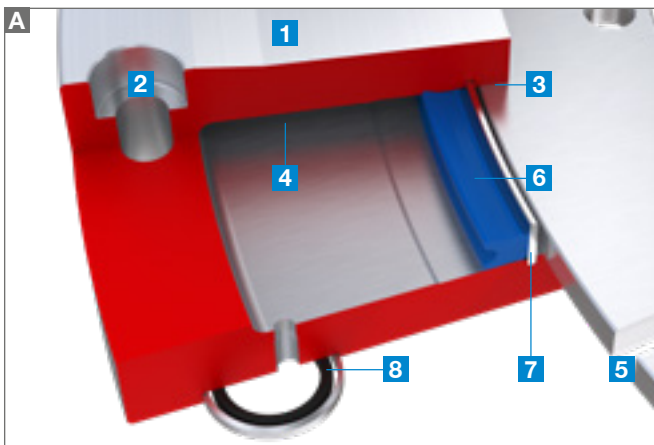
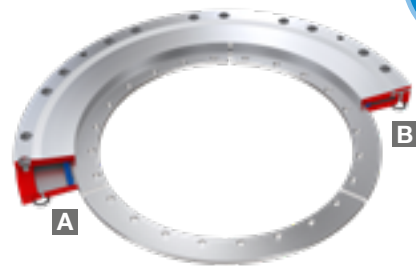
Inherent security

In case of an hydraulic pressure drop, the rotary shaft connection gets clamped by the prestressed housing and is held safe in position. By the low displacement volume and the prestressed housing the closing times stay unrivaled. Thanks to backlash-free functional parts extreme high accuracy is reached in the rotary axis, which undercuts the resolution of common rotary encoders.

PRODUCT ADVANTAGES

- ▶ Highest accuracy in rotary axis
- ▶ No functional parts with play and therefore backlash-free
- ▶ Drive can be taken out of the control loop
- ▶ Fastest reaction time and pressureless safety function due to prestressed housing
- ▶ Market leading cycles
- ▶ Housing strain in durable elastic range

A WORLD FIRST



1 Housing

Holding torque due to pre-stressed, high tensile tool steel

2 Housing connection

Screw connection to the connecting construction

3 Clamping area

Backlash-free Clamping of the rotary axis

4 Pressure chamber

Opens the element under pressure in the elastic range

5 Shaft connection

Connection with the rotary axis

6 Sealing

Prestressed and self-enforcing under pressure

7 Retain plate

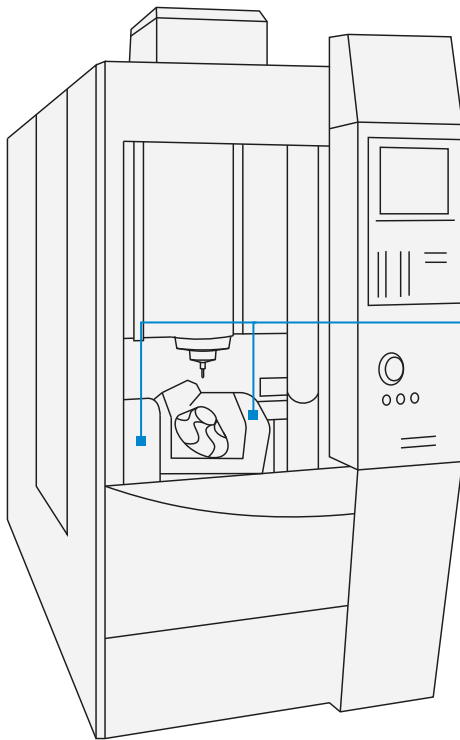
Secures and holds the sealing in position

8 Hydraulic connection

Sealing through O-Ring and surrounding cutting ring

ROTARY CLAMPING ELEMENT DKHS1000

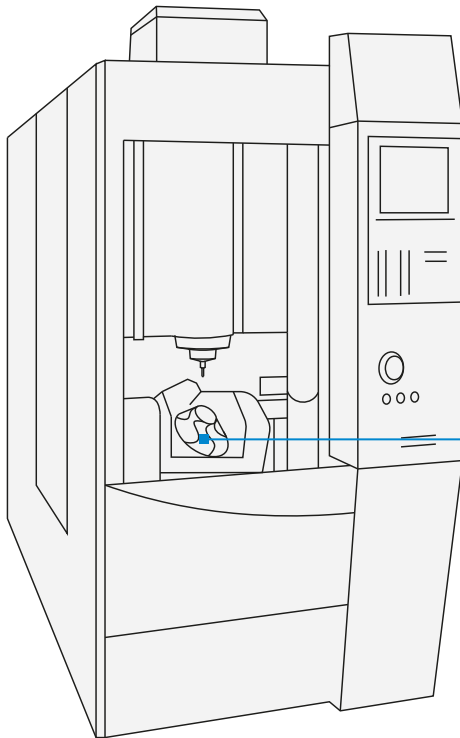
APPLICATION EXAMPLES



- ▶ Swivel rotary table clamping
- ▶ Safety clamping of torque-drive



- ▶ Highest accuracy in rotary axis
- ▶ Flat design
- ▶ Fastest reaction time and pressureless safety function due to prestressed housing



- ▶ C-Axis clamping
- ▶ Safety clamping of torque-drive

LBHS CLAMPING AND BRAKING ELEMENT

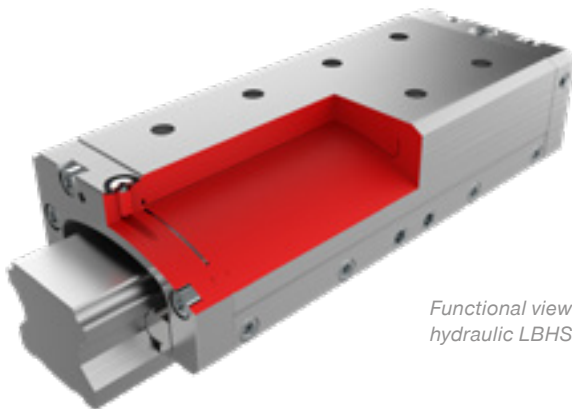
BRAKING THROUGH RESIDUAL STRESS

The LBHS series clamps and brakes without moving parts

Zimmer Group is the market and technology leader in clamping and braking elements and is now proving its technological expertise with an impressive innovation. Zimmer has developed a hydraulic braking element that consists, basically, of a single functional component, does not contain any moving parts and generates all braking and holding forces solely through the residual stress of the base body.

▶ PRODUCT ADVANTAGES

- ▶ A single functional component
- ▶ Hydraulic braking element in a narrow and low design
- ▶ Can be used for all carriage designs
- ▶ Maximum rigidity
- ▶ Brakes in case of drop in pressure (NC)
- ▶ Holding forces are generated through the residual stress of the base body



Functional view of the hydraulic LBHS series

Function

The new, extremely narrow LBHS series consists primarily of a patented unibody housing that does not contain any pistons, springs or other moving parts susceptible to wear. Oil ducts and cut-outs are created in the housing block with precision using only wire-cut electrical discharge machining.

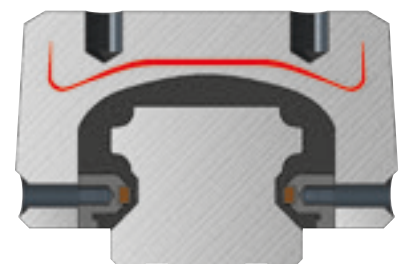
When this base body is pressurized with hydraulic fluid (S2), it opens slightly, releasing the slide on the linear axis (S3). When the hydraulic pressure drops, the element assumes its original shape again, which allows it to compress the two brake pads on the linear guidance (S1).



S1 closed



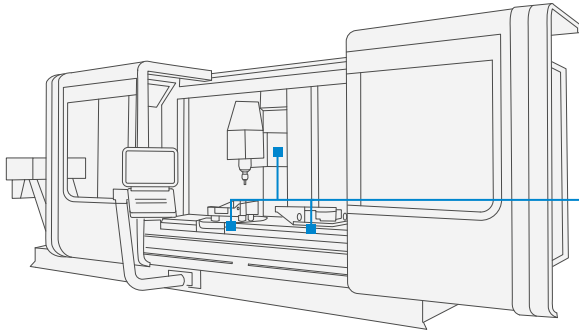
S2 opening



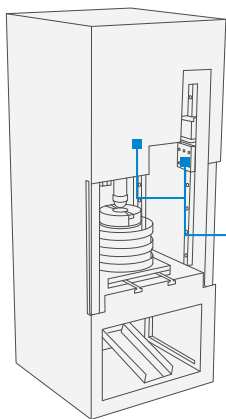
S3 opened

LBHS CLAMPING AND BRAKING ELEMENT

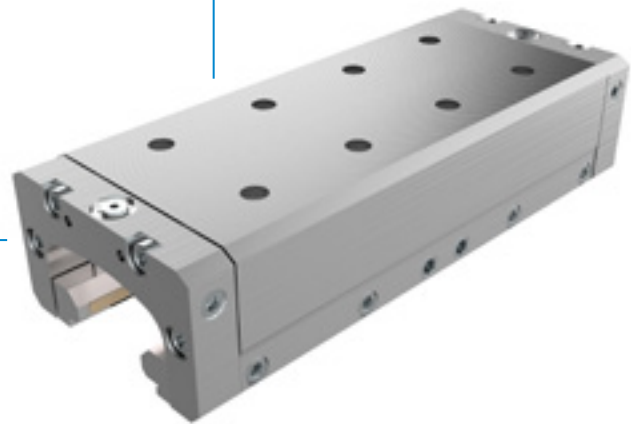
APPLICATION EXAMPLES



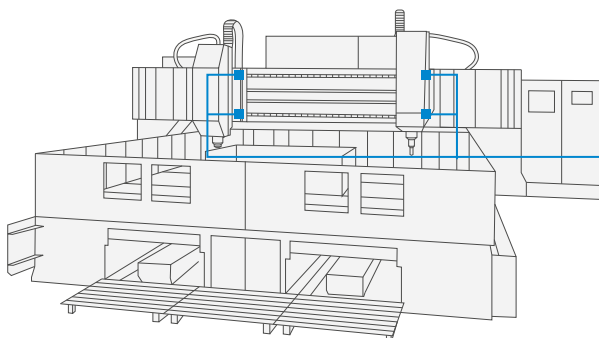
- ▶ Positioning vertical axes
- ▶ Braking linear motors thanks to the fastest closing time
- ▶ Setting vertical axes in the rest position
- ▶ Machine table clamping of machining centers
- ▶ Positioning axes



- ▶ Positioning vertical axes
- ▶ Setting vertical axes in the rest position
- ▶ Positioning lifting units
- ▶ Maintenance of the clamping force without the need to use power



- ▶ Precise positioning through maximum rigidity
- ▶ Safe braking in emergency situations
- ▶ Clamping measurement applications



- ▶ Positioning vertical axes
- ▶ Braking linear motors thanks to the fastest closing time
- ▶ Setting vertical axes in the rest position
- ▶ Positioning axes

LKE CLAMPING ELEMENT

FAST WHILE FEATURING A HIGH HOLDING FORCE

Independent from the pneumatic and hydraulic systems

Unlike a pneumatic solution, the new LKE series impresses most notably with its integrated status polling (open/closed), which is output by digital status signals. The kinematics are supplied by means of an eccentric shaft with a mechanical self-locking mechanism (bi-stable). Based on the self-locking functional principle, when closed, the full holding force is sustained in the event of a power drop or while in a currentless state (e.g. with a system that has been switched off) up to 1800 N.

Short switching times

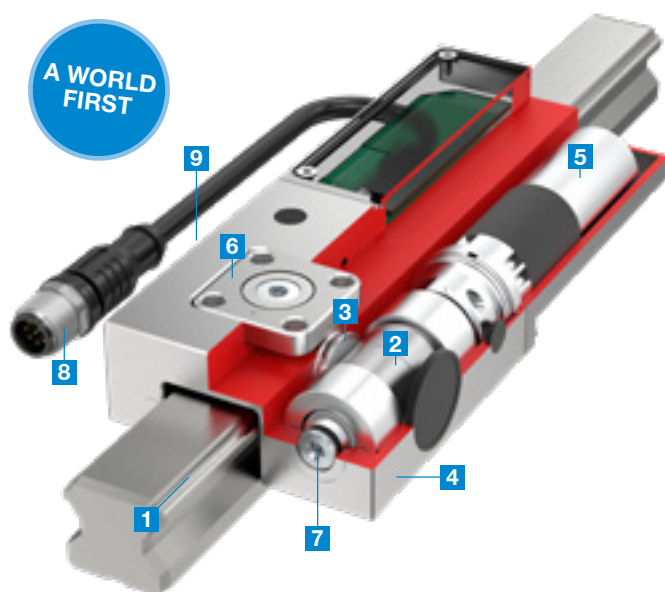
Closing time of the predecessor model improved by a factor of 7 to approx. 400 milliseconds. Opening and closing are achieved by 24 V DC voltage at a max. current draw of 1.5 A. Thanks to the integrated electronics, the element can be easily activated by means of digital signals. Electrically driven linear axes are the primary areas of application for clamping elements. Thus, by holding the axis via the clamping element, high process forces which exceed the forces of the linear

PRODUCT ADVANTAGES

- ▶ Fast closing time thanks to innovative eccentric gear
- ▶ Energy-efficient (bi-stable)
- ▶ Integrated electronics and status polling
- ▶ Sealed in accordance with IP64
- ▶ Compensation for rail tolerances
- ▶ Flexible cable outlet for maximum use of installation space

drive many times over can be absorbed while the clamping position is maintained. Further application areas include simple automation, mechanical engineering and the automotive industry (e.g. autonomous assembly islands).

Benefits in detail



1 Profile rail guide

Available for all common profile rail guides

2 Eccentric gear

Power transmission between motor and clamping jaw

3 Clamping jaws

Pressed onto the free surfaces of the profile rail guide

4 Housing

Made of chemically nickel-plated steel

5 Electric drive

For generating the clamping force

6 Sliding block

For floating bearing

7 Emergency actuation

Manual opening possible in case of power failure

8 Electrical connecting cable

Control and power supply

9 Adjustment screw

Correction of the rail tolerance

LKP(S)/LBPS CLAMPING AND BRAKING ELEMENTS RANGE FOR NARROW RAIL CARRIAGES

Diverse product range further enhanced

In addition to the spectacular innovation of the LBHS series, Zimmer Group offers its customers various other clamping and braking elements for narrow carriages.

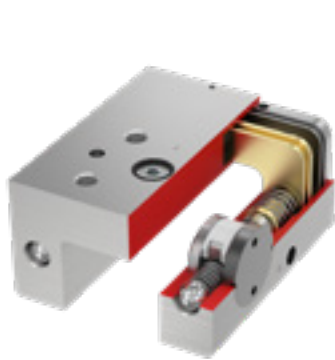
These traditional clamping and braking elements have been on the market for many years and have proven their value in countless industrial applications.

Now these series are further enhanced with a tubeless air connection and a space-neutral air filter. The biggest advantage and safety upgrade comes with the new sensor slot on both sides, which can detect the open as well as the closed state.

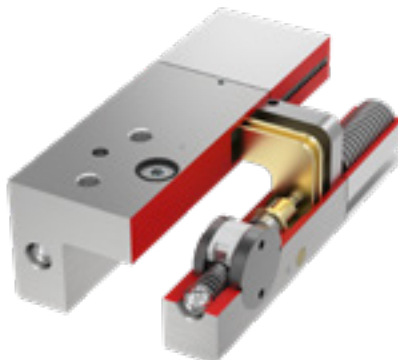
One of these traditional elements is the LKP series, a pneumatic clamping element for narrow linear axes. In the NC version (LKPS), this element features a flange-mounted spring storage that ensures the clamping force is maintained in the event of a power failure. In contrast, the LBPS series includes pneumatic braking elements with integrated spring storage that brake in the case of a drop in pressure.

▶ PRODUCT ADVANTAGES

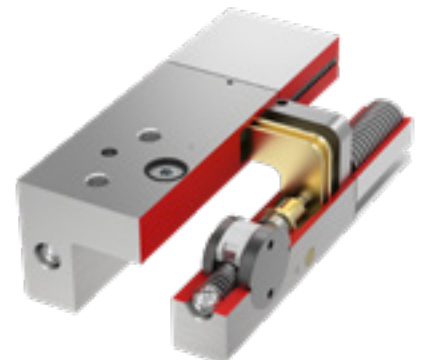
- ▶ LKP series: normally open (NO), closing with pressure
- ▶ LKPS/LBPS series: normally closed (NC) with spring storage
- ▶ **NEW** in LKPS/LBPS series: Status sensing via sensor slot on both-sides
- ▶ LBPS series: safety element for safe braking in case of power failure
- ▶ High service life of up to 5 million static clamping cycles
- ▶ Small and narrow design
- ▶ **NEW**: Tubeless air connection
- ▶ **NEW**: Air filter built-in space-neutral



LKP clamping element series (NO)



LKPS clamping element series (NC)



LBPS series clamping and braking elements (NC)

▶ PRODUCT FINDER

- ▶ **Select clamping and braking elements more quickly**
Suitable for over 20,000 rail and carriage combinations
- ▶ **Clearly arranged selection guide**
Direct access to technical data + CAD download
- ▶ **Smart solution—available on mobile devices**
Direct access anytime at www.zimmer-group.de/en/plt

