

# 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.

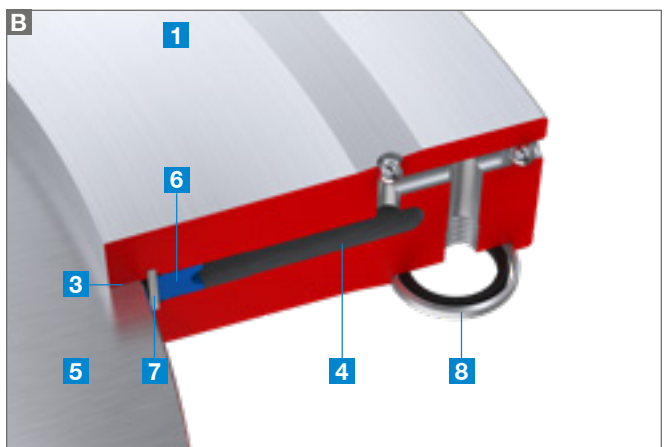
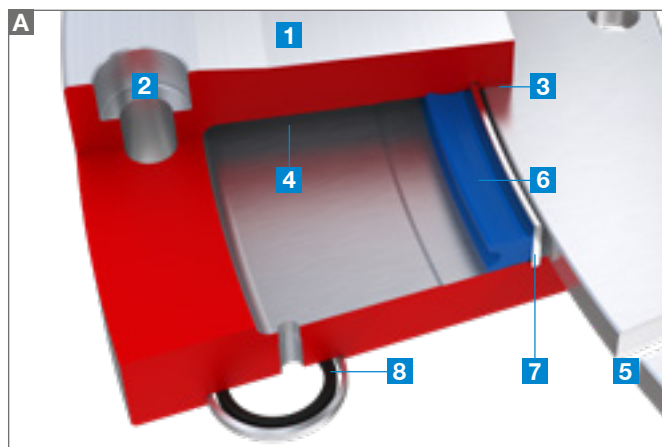
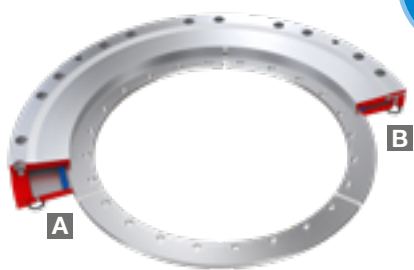
### Inherent security

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

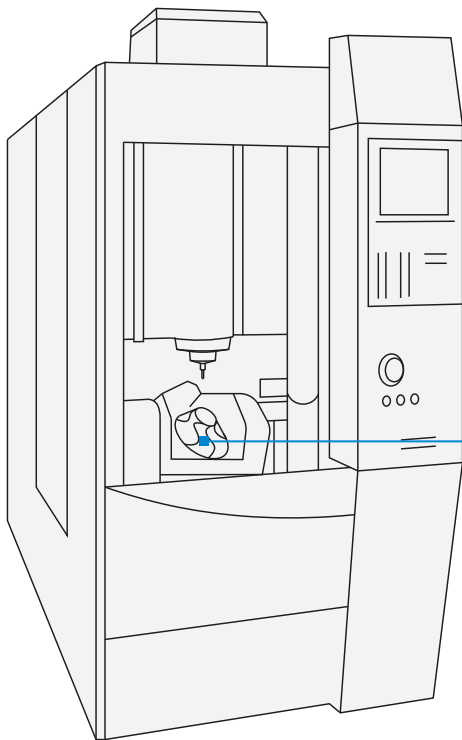
## APPLICATION EXAMPLES



- ▶ 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

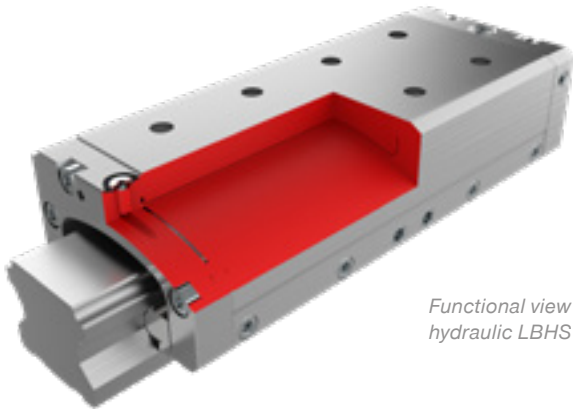
## BRAKING THROUGH RESIDUAL STRESS

### 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

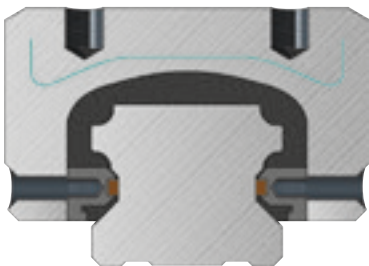


Functional view of the hydraulic LBHS series

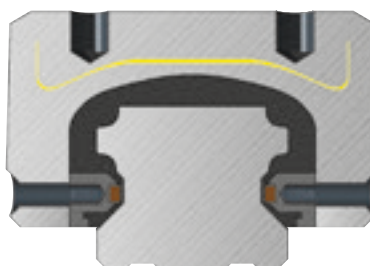
### Function

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.

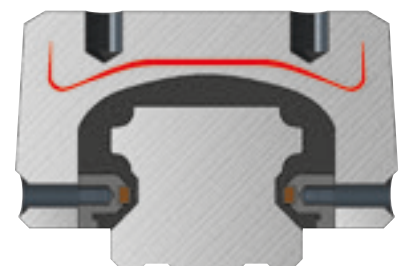
When this base body is pressurized with hydraulic fluid (S2), it opens slightly, releasing the slide on the linear axis (S3). When the hydraulic pressure drops, the element assumes its original shape again, which allows it to compress the two brake pads on the linear guidance (S1).



S1 closed



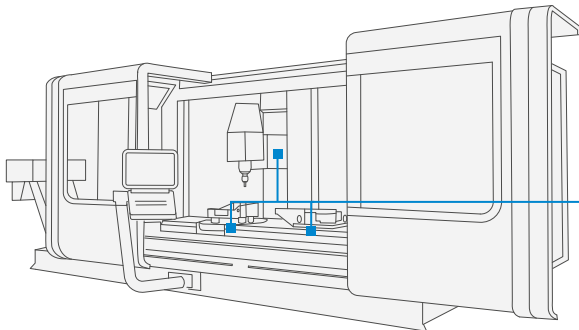
S2 opening



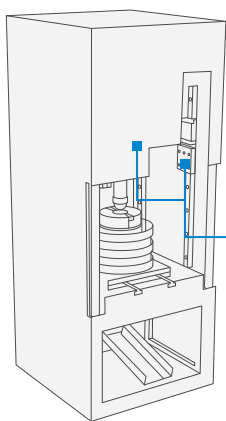
S3 opened

# LBHS CLAMPING AND BRAKING ELEMENT

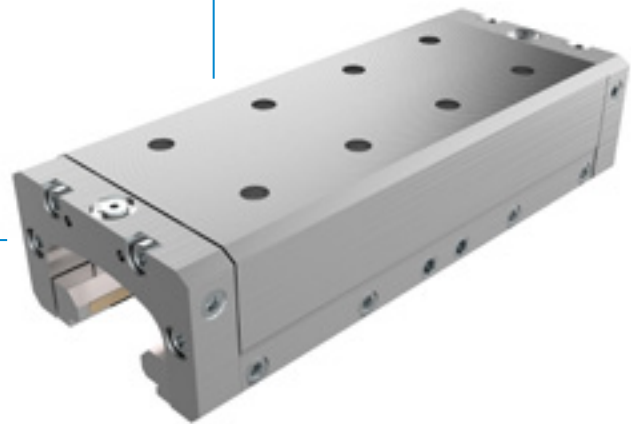
## APPLICATION EXAMPLES



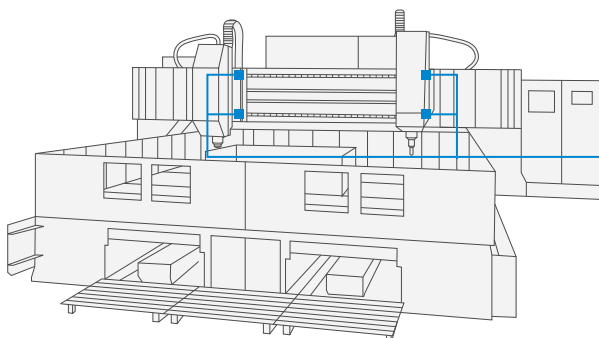
- ▶ Positioning vertical axes
- ▶ Braking linear motors thanks to the fastest closing time
- ▶ Setting vertical axes in the rest position
- ▶ Machine table clamping of machining centers
- ▶ Positioning axes



- ▶ 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

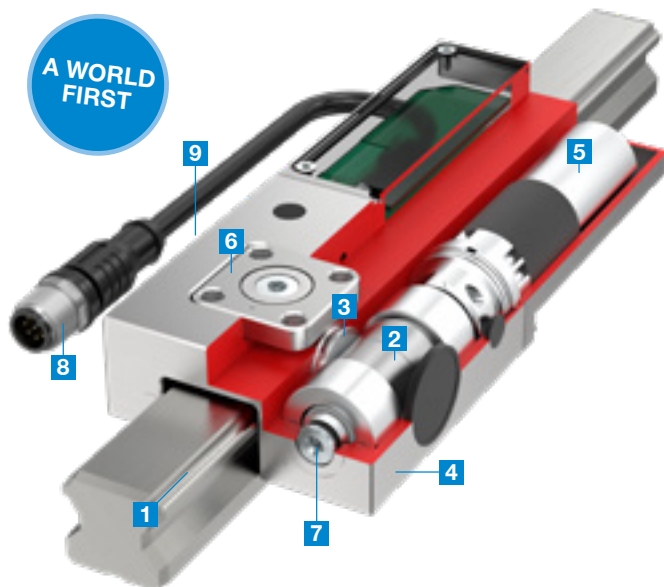
Closing time of the predecessor model improved by a factor of 7 to approx. 400 milliseconds. Opening and closing are achieved by 24 V DC voltage at a max. current draw of 1.5 A. Thanks to the integrated electronics, the element can be easily activated by means of digital signals. Electrically driven 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.

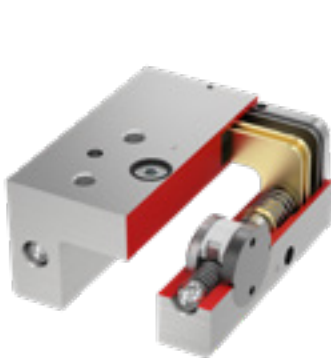
These traditional clamping and braking elements have been on the market for many years and have proven their value in countless industrial applications.

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.

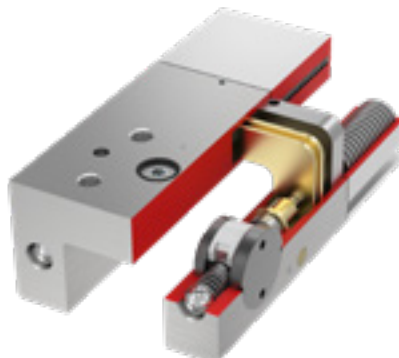
One of these traditional elements is the LKP series, a pneumatic clamping element for narrow linear axes. In the NC version (LKPS), this element features a flange-mounted spring storage that ensures the clamping force is maintained in the event of a power failure. In contrast, the LBPS series includes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

## ▶ PRODUCT ADVANTAGES

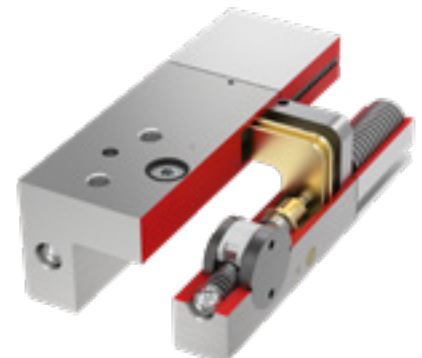
- ▶ LKP series: normally open (NO), closing with pressure
- ▶ LKPS/LBPS series: normally closed (NC) with spring storage
- ▶ **NEW** in LKPS/LBPS series: Status sensing via sensor slot on both-sides
- ▶ LBPS series: safety element for safe braking in case of power failure
- ▶ High service life of up 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](http://www.zimmer-group.de/en/plt)



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CHILE, ECUADOR, GUYANA, PARAGUAY,  
PERU, URUGUAY, VENEZUELA:**  
**ZIMMER GROUP SOUTH AMERICA  
IMP. EXP. LTDA**  
Rua Wolsir A. Antonini 120 Bairro Fenavinho  
BR 95703-362 Bento Goncalves – RS  
T +55 54 2102-5400  
F +55 54 3451-5494  
info.br@zimmer-group.com  
[www.zimmer-group.com.br](http://www.zimmer-group.com.br)

**CHINA:**  
**ZIMMER GROUP CHINA LTD.**  
Level 2-D3 Bldg 4 No. 526  
Fu-Te East 3rd Rd  
CN 200131 Pudong, Shanghai  
T +86 2161 630506  
F +86 2161 005672  
info.cn@zimmer-group.com  
[www.zimmer-group.cn](http://www.zimmer-group.cn)

**FRANCE:**  
**ZIMMER GROUP FRANCE SARL**  
8, Rue Sophie Germain  
FR 67720 Hoerdtt  
T +33 388 833896  
F +33 388 833975  
info.fr@zimmer-group.com  
[www.zimmer-group.fr](http://www.zimmer-group.fr)

**GREAT BRITAIN, IRELAND:**  
**ZIMMER GROUP (UK) LTD.**  
Bretby Business Park  
G05/G06 Repton House,  
Ashby Road, Bretby  
GB Burton on Trent, DE15 0YZ  
T +44 1283 542103  
F +44 5603 416852  
info.uk@zimmer-group.com  
[www.zimmer-group.co.uk](http://www.zimmer-group.co.uk)

**INDIA:**  
**ZIMMER AUTOMATION LLP**  
D 802, BRIZ  
Survey No. 451  
Kasar Amboli, Piragut  
IN 412108 Pune  
T + 91 91 30 083828  
info.in@zimmer-group.com  
[www.zimmer-group.in](http://www.zimmer-group.in)

**HEADQUARTER:**  
**ZIMMER GROUP**  
Am Glockenloch 2  
DE 77866 Rheinau  
T +49 7844 9139-0  
F +49 7844 9139-1199  
info.de@zimmer-group.com  
[www.zimmer-group.de](http://www.zimmer-group.de)

**ITALY:**  
**ZIMMER GROUP ITALIA S.R.L.**  
Viale Montegrappa, 7  
IT 27100 Pavia  
T +39 0382 571442  
F +39 0382 571473  
info.it@zimmer-group.com  
[www.zimmer-group.it](http://www.zimmer-group.it)

**CANADA:**  
**ZIMMER GROUP CANADA INC.**  
26 Saunders Road  
CA L4N 9A8 Barrie, ON  
T +1 416766-6371  
F +1 416766-6370  
info.ca@zimmer-group.com  
[www.zimmer-group.ca](http://www.zimmer-group.ca)

**POLAND:**  
**ZIMMER GROUP POLSKA SP.Z O.O.**  
Ul. Widok 5  
PL 43-300, Bielsko-Biala  
T +48 53 8316-332  
info.pl@zimmer-group.com  
[www.zimmer-group.pl](http://www.zimmer-group.pl)

**AUSTRIA:**  
**ZIMMER GROUP AUSTRIA GMBH**  
Dorf 23  
4751 Dorf an der Pram  
T +43 7764 21222  
F +43 7764 21222-22  
info.at@zimmer-group.com  
[www.zimmer-group.at](http://www.zimmer-group.at)

**SWITZERLAND, LIECHTENSTEIN:**  
**ZIMMER GMBH  
NIEDERLASSUNG SCHWEIZ**  
Westbahnhofstraße 2  
CH 4500 Solothurn  
T +41 32621-5152  
F +41 32621-5153  
info.ch@zimmer-group.com  
[www.zimmer-group.ch](http://www.zimmer-group.ch)

**SLOVAK REPUBLIC, CZECH REPUBLIC:**  
**ZIMMER GROUP SLOVENSKO S.R.O.**  
Centrum 1746/265  
SK Považská Bystrica 01706  
T +421 42 4331-788  
F +421 42 4331-266  
info.sk@zimmer-group.com  
[www.zimmer-group.sk](http://www.zimmer-group.sk)

**SPAIN, PORTUGAL:**  
**ZIMMER GROUP IBERIA S.L.U.**  
C./ Charles Darwin 5, Nave 11  
ES 28806 Alcalá de Henares/Madrid  
T +34 91 882 2623  
F +34 91 882 8201  
info.es@zimmer-group.com  
[www.zimmer-group.es](http://www.zimmer-group.es)

**SOUTH KOREA:**  
**ZIMMER GROUP ASIA LTD.  
KOREAN OFFICE**  
1301 Byucksan digital valley 5,  
Beotkkot-ro 244, Geumcheon-Gu,  
KR 08513 Seoul  
T +82 2 2082-5651  
F +82 2 2082-5650  
info.kr@zimmer-group.com  
[www.zimmer-group.kr](http://www.zimmer-group.kr)

**TAIWAN, SINGAPORE, BRUNEI,  
CAMBODIA, INDONESIA, LAOS,  
MALAYSIA, MYANMAR, PHILIPPINES,  
THAILAND, VIETNAM, AUSTRALIA,  
NEW ZEALAND:**  
**ZIMMER GROUP ASIA LTD.**  
9F-3, No. 15, Jingguo Rd.,  
Taoyuan Dist.,  
TW 330 Taoyuan City  
T +866 3 301 8829  
F +866 3 301 8929  
info.asia@zimmer-group.com  
[www.zimmer-group.com](http://www.zimmer-group.com)

**USA, COLOMBIA, MEXICO:**  
**ZIMMER GROUP US INC.**  
1095 6th Street Ct SE  
US Hickory, NC, 28602  
T +1 828 855 9722  
F +1 828 855 9723  
info.us@zimmer-group.com  
[www.zimmer-group.com](http://www.zimmer-group.com)