

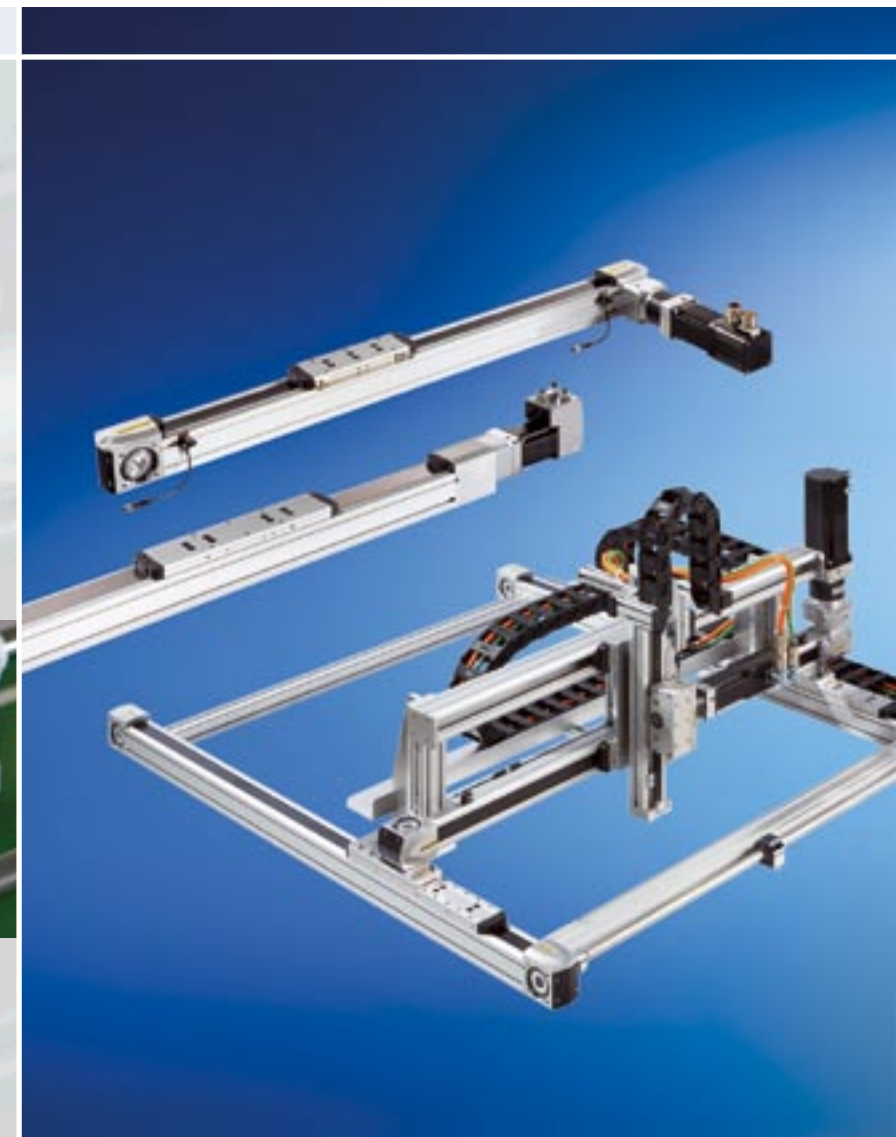
## Positioning and Automation with **Linear Motion Products**



Berger Lahr offers you the positioning and automation solutions you need, based on our tried and proven series of products. Our comprehensive engineering and consulting service is ready to support and advise you every step of the way. Berger Lahr is a member company of the Schneider Electric Group. With its Merlin Gerlin, Square D and Telemecanique brands, Schneider Electric is one of the leading providers of electrical and automation engineering solutions.

we control **motion**

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# Linear Motion. A Complete Product Range for all Motion Tasks

## Berger Lahr Product Range

Programming and HMI

Programming according to IEC 61131-3



Alphanumerical Terminal



Industrial PC



Graphical Terminal

RS232

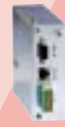
Modbus

Ethernet

Motion Controller



LMC



SMC



TLCC



TLM2



TLC6

CANopen

Profibus

Modbus

Pulse/Direction

DeviceNet

+/- 10 V

Drives + Motors



Stepper Drives



Brushless DC Drives



Servo Drives

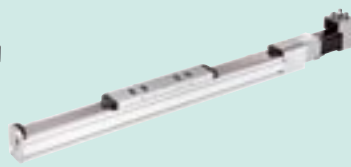


Intelligent Compact Drives

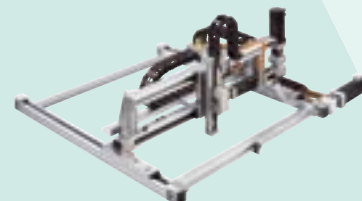
Linear Motion



Toothed Belt Axes



Ball screw Axes



Multi-Axis Systems



We offer cost-effective, flexible and future-proof complete solutions for machine automation and in-house automation. From motion controller to drives, stepper motors, brushless DC motors and AC servo motors – we are your one-stop-shopping partner. The product range comprises portal axes, linear tables, cantilever axes and telescopic axes.

The modular product programme allows you to build custom-solutions for all your linear motion tasks. The single-axis and multi-axis systems are adapted to your requirements in terms of length and stroke.



# Single-Axis Systems. A New Generation of Portal Axes

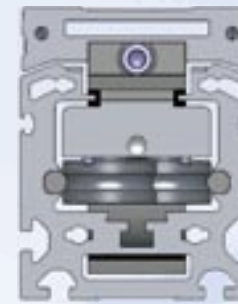
The **portal axes** are available with toothed belt or ballscrew drive in various sizes. They are designed for loads of up to 100 kg. The new generation of products is characterised by the fact that the same adaptation interfaces are used for all units, irrespective of the guide and drive system. Highly flexible drive interfaces ensure easy mounting and modifications as well as service. A metal cover reliably covers the inside of the axis body for application in rough environments.

**Advantages of the toothed belt drive:** great stroke lengths of up to 5500 mm, high dynamics, positioning speeds of up to 8 m/s.

**Advantages of the ballscrew drive:** stroke lengths of up to 3000 mm, ballscrew speeds of up to 3000 rpm, high feed forces and rigidity.

**Application areas:** feeding and positioning of parts and pieces, fast movements with suction and gripper tools, positioning of sensors, actuators, buttons and measuring facilities as well as flexible movements for cutting semi-finished products to size.

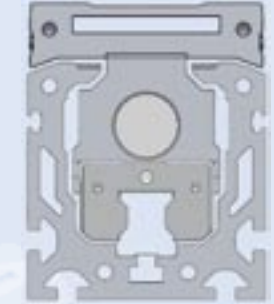
Toothed belt drive  
with roller guide



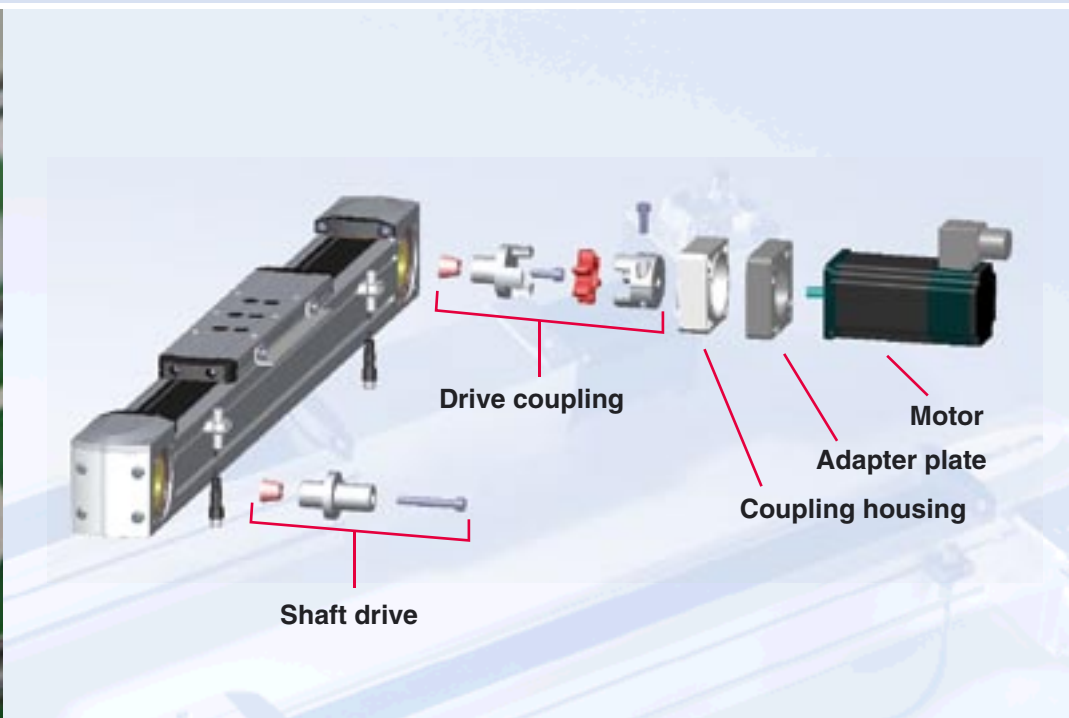
Toothed belt drive  
with recirculating ball bearing guide



Ballscrew drive  
with recirculating ball bearing guide



Portal axis	Toothed belt drive	Ballscrew drive
<b>Load</b>	up to 100 kg	up to 100 kg
<b>Stroke</b>	up to 5500 mm	up to 3000 mm
<b>Speed</b>	up to 8 m/s	up to 1.25 m/s
<b>Guides</b>	Roller / Ball	Ball





# Single-Axis Systems. Precise and Dynamic

Due to the integrated ball screw drive, **linear tables** enable precise and rigid feed motion with high feed forces. The axis body consists of an aluminium profile with superior torsional and flexural strength. The guide system consists of two guide rails. Each guide rail has two recirculating ball bearing elements with integrated ball chain.

**Advantages of the linear table:** high system rigidity, compact dimensions, high positioning and repeating accuracy, easy maintenance, easy integration.

**Applications:** automation systems requiring precise and backlash-free feed motion, pick & place of heavy parts, joining and clamping processes that require high feed forces.



Due to their moving axis body, **cantilever axes** can move dynamically into the working area. Cantilever axes in profile design are used with roller guides for high speeds and with recirculating ball bearing guides for greater loads and strokes. Cantilever axes in round bar design are used for small to medium loads and strokes. In both cases, the motor torque is transmitted by means of a toothed belt or a toothed rack, depending on the requirements. A mechanical interface or end plate is available at the profile end for the adaptation of suction, gripper or assembly tools.

**Telescopic axes** consist of a moving axis body, a moving carriage and a stationary motor. They are extremely space-saving and their stroke is considerably greater than their length. From the stationary motor, the carriage can move with the same stroke both in a positive as well as in a negative direction.

**Applications:** dynamic loading and unloading in work areas with limited space.



	Linear table LT	Cantilever axis LM-A		Telescope axis T
<b>Version</b>		Profile	Round bar	Profile
<b>Load</b>	up to 600 kg	up to 30 kg	up to 18 kg	up to 35 kg
<b>Stroke</b>	up to 1500 mm	up to 1200 mm	up to 500 mm	up to 2400 mm
<b>Speed</b>	up to 1 m/s	up to 5 m/s	up to 2 m/s	up to 5 m/s
<b>Guide</b>	Recirculating ball bearing	Rollers/Rec. ball bearing	Rec. ball bearing	Rollers/Rec. ball bearing
<b>Profile/Bars</b>	up to 200 x 80 mm	up to 120 x 120 mm	up to 25 mm	120 x 155 mm
<b>Drive element</b>	Ballscrew	Toothed belt / Toothed rack		Toothed belt



# Multi-Axis Systems. Multi-Dimensional Motion



The **MAXH multi-axis combination** consists of a driven toothed belt axis and a shaft-driven support axis.

**Applications:** Fast positioning of loads with larger surfaces in transfer or processing positions.

The **MAXS multi-axis combination** has a similar configuration. However, the support axis is also driven via a synchronous shaft.

**Applications:** The carriages are driven synchronously so that even loads with large surfaces such as containers for loading and unloading of parts can be precisely and dynamically positioned without deflection.

Dual-axis systems enable motion in a single plane, triple-axis systems allow for three-dimensional motion.

The **linear positioner MAXP** is used above or below the working area as an X/Z axis. It is particularly suitable for moving loads with long X and middle Z movements.

**Applications:** dynamic handling of parts from or to conveyor belts, loading and unloading of containers, sorting and arranging of parts from containers or into containers.



The **portal robot MAXR** is used for applications above the working area, either as an X/Y or an X/Y/Z motion unit, depending on the requirements. An additional rotational axis can be mounted to the Z axis, if required.

**Applications:** two-dimensional and three-dimensional movement of loads over great distances, aligning of parts in chaotic production processes, inspection or measuring of parts or bodies with large surfaces.



**Low-mass systems** have stationary motors. They are designed for highly dynamic movements. The **LP-A linear positioner** is mounted next to the working area. It is designed for fast movements with medium strokes in the X/Z plane. The **LP-P linear positioner** is designed like a portal axis with an additional Z axis. It is mounted at two points above the working area. It can dynamically move greater loads over greater distances.

**Applications:** fast and high-precision positioning of light-weight parts, highly dynamic commissioning of light-weight parts from or to a conveyor belt.

	Portal axis MAXH	Portal axis MAXS	Linear positioner MAXP	Portal robot MAXR		Linear positioner LP-A	Linear positioner LP-P	
<b>Axes</b>	1 axis	1 axis	2 axes	2 axes	3 axes	2 axes	2 axes	<b>Axes</b>
<b>Load</b>	up to 175 kg	up to 175 kg	up to 50 kg	up to 137 kg	up to 50 kg	up to 2 kg	up to 5 kg	<b>Load</b>
<b>Stroke in x</b>	up to 5500 mm	up to 5500 mm	up to 5500 mm	up to 5500 mm	up to 5500 mm	up to 300 mm	up to 700 mm	<b>Stroke in x</b>
<b>Stroke in y</b>				up to 1500 mm	up to 1500 mm			<b>Stroke in y</b>
<b>Stroke in z</b>			up to 1200 mm		up to 1200 mm	up to 150 mm	up to 300 mm	<b>Stroke in z</b>



# Solutions. Customised and Cost-Effective

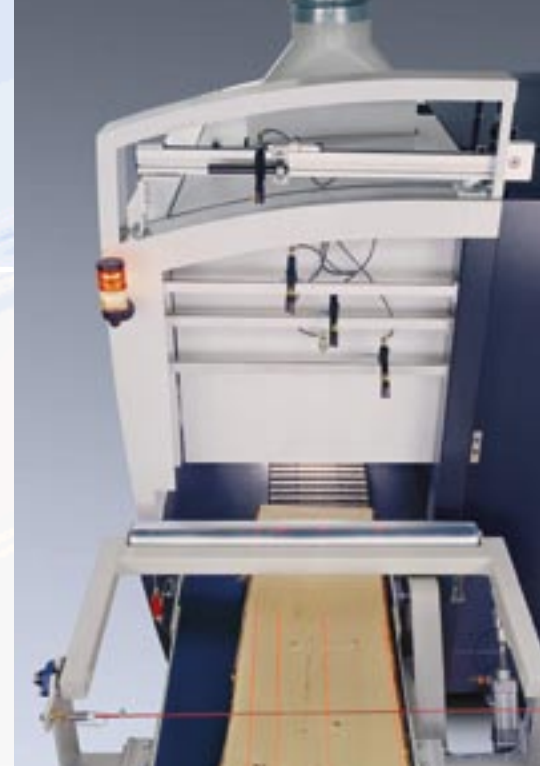
These application examples highlight the versatility of our single-axis and multi-axis systems.



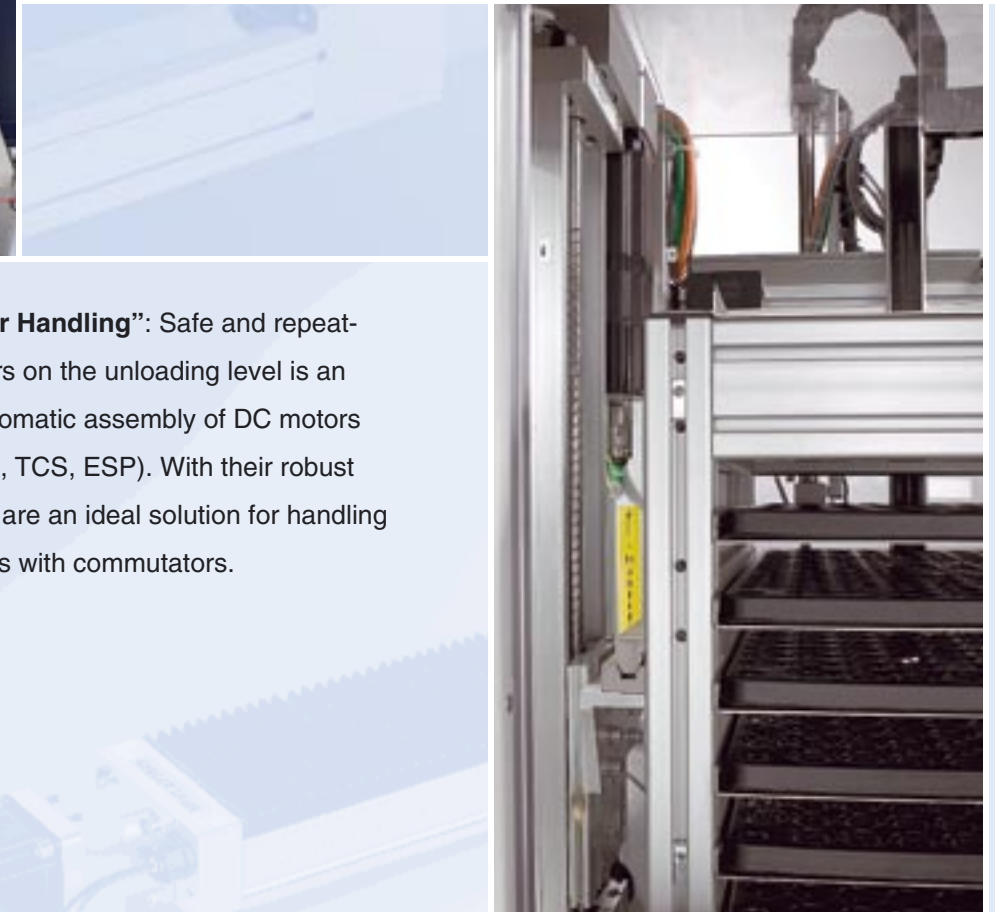
Application example **“Pick & Place”**: This application removes parts for cell phones from the conveyor belt and places them according to selectable patterns. A triple-axis portal robot with a parallel gripper system picks ceramic parts and places them onto plates which are moved to the oven.



Application example **“Assembly”**: This application assembles controls from three elements and stacks them. An empty container is positioned in the working area. A portal axis with multiple grippers gets the base parts from the conveyor belt and places them into the container until it is full. Then, the next group of parts is removed from the belt and assembled onto the base parts. Finally, the system places the covers onto the controls. The filled container with the assembled controls is then transported and stacked by a portal axis system.



Application example **“Measuring, Testing, Optimising”**: Circular saws with several adjustable blades allow for rational wood processing. Laser beams are used as optical extensions of the blades for the width measurement of boards and the subsequent sawing process. The lasers are positioned on intelligent linear axes.



Application example **“Container Handling”**: Safe and repeatable positioning of the containers on the unloading level is an essential requirement in the automatic assembly of DC motors for vehicle safety systems (ABS, TCS, ESP). With their robust base components, linear tables are an ideal solution for handling stacks of heavy piece containers with commutators.