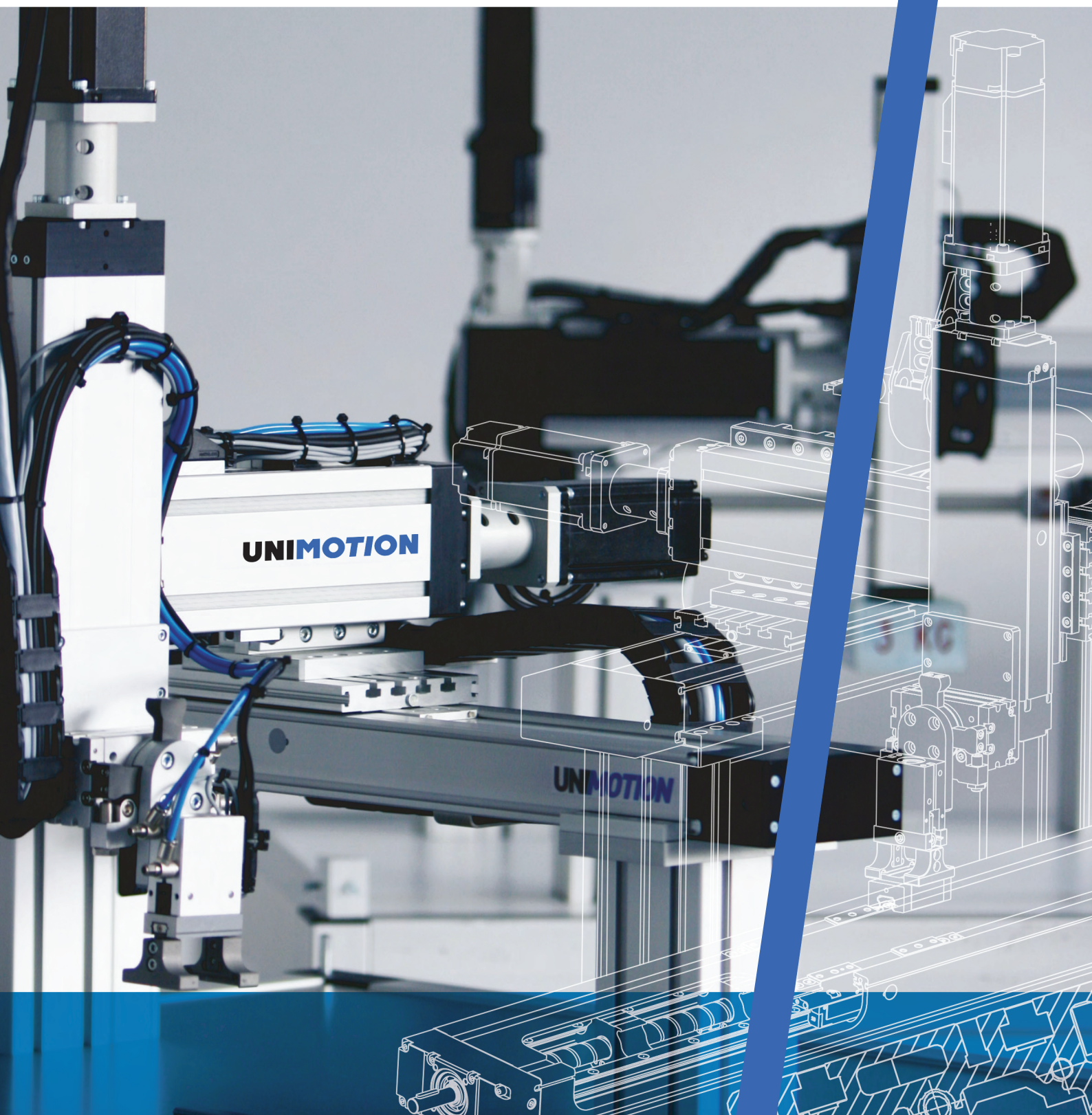
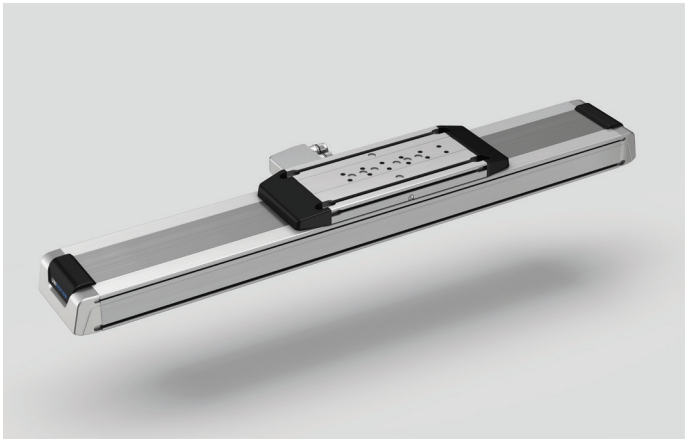
# UNIMOTION

## PRODUCT OVERVIEW



# NEW PRODUCTS

## UNIMOTION CTL LINEAR UNITS WITH DIRECT DRIVE



### UNIMOTION CTL linear units

**Excellent design**
The vision to offer not only the best but also excellent looking products, led us to the award pending design.

**Compact form**
CTL linear units are designed to be as compact as possible with no compromise to high performance.

**Linear motor drive**
Built-in high performance UNIMOTION linear motor drive.



### Protection system

**Dust protection**
The special protection system ensures that the linear unit is always perfectly sealed.

**Protection cover tensioning**
The innovative tensioning solution offers perfect alignment of protection cover even at long strokes and high acceleration.

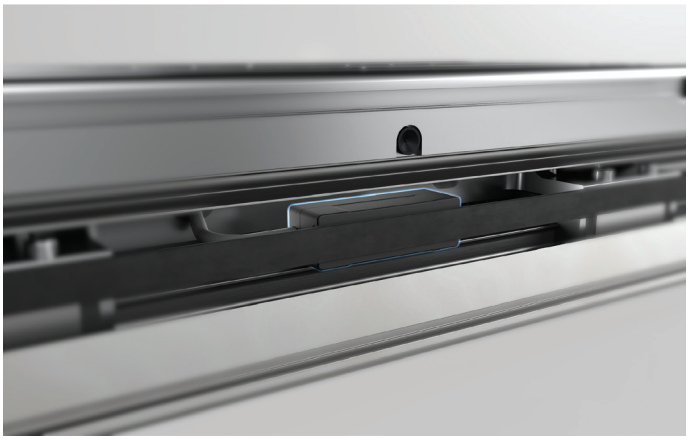
**High speed**
Using innovative UNIMOTION linear motor drive enables the unit to achieve speeds up to 5 m/s.

**High acceleration**
CTL linear units offer the highest acceleration among all UNIMOTION linear units.



### Optional Hall sensor

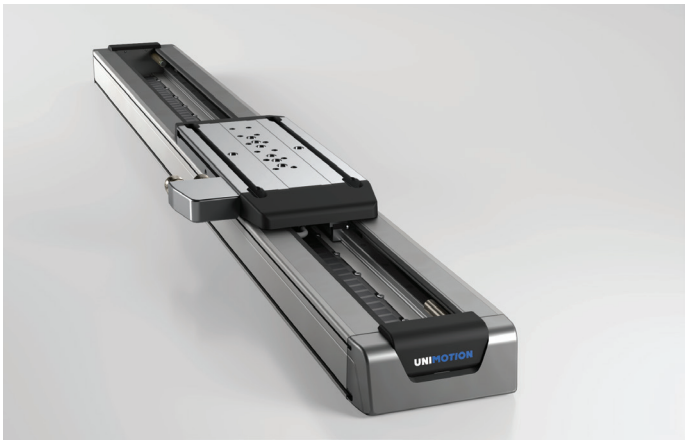
**AD Hall sensor**
Universal Hall sensor option with an integrated Analog and Digital output.



### Measurement system

**Measurement system**
CTL linear units offer a wide range of different built-in measurement systems.

**Repeatability precision**
The combination of linear motor drive and measurement system offer a repeatability precision up to ±0,001 mm.




### Optional cover

**Option without protection cover**
UNIMOTION CTL linear units can be supplied with or without the protection cover.

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# UNIMOTION LINEAR MOTORS

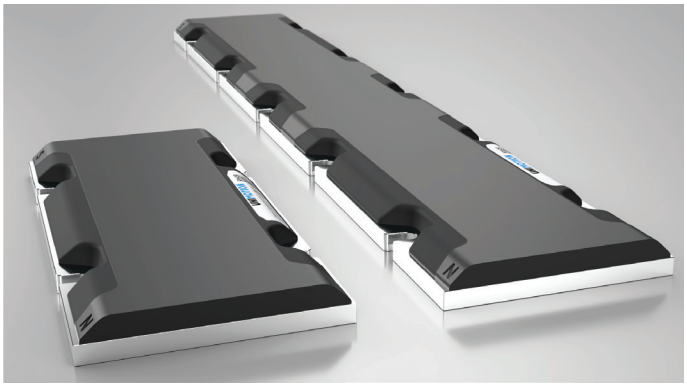


## UNIMOTION linear motors

**High force density**
Force density is up to 30 - 50 % higher in comparison to our competitors.

**Low cogging**
UNIMOTION linear motors boast themselves with a very low cogging.

**High and low speed**
High speed motors offer a nearly 230 % increase in maximum velocity compared to low speed.



## Magnet plates

**Magnet plate sizes**
UNIMOTION provides multiple different sizes of magnet plates for various mounting combinations.

**High performance**
High performance magnet plates offer an increase of maximum force up to 11 % compared to standard plates.



## Hall sensor

**Free wake & shake**
Innovative design of a Hall sensor enables a free wake & shake feature.

**AD Hall sensor**
Universal Hall sensor with an Analog and Digital output.



## Linear motors

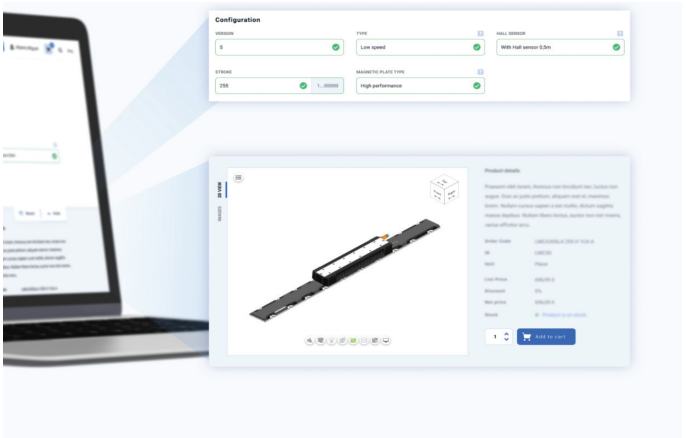
**Linear motor sizes**
UNIMOTION provides 11 different sizes of linear motors all in high and low speed versions.

**Multiple combination**
All UNIMOTION linear motors can be combined with the standard or high-performance magnet plates.



## Online sizing tool

**Online sizing tool**
A sophisticated sizing tool provides you with a solution in only a few minutes.




## Endless Configuration

**Configuration tool**
The linear motor system can be configurated through the easy to use, step-by-step configuration tool.

**3D model generation**
The integrated 3D generation solution allows instant preview and download of the configurated system in more than 50 formats.

**Online ordering**
The configured linear motor system can be easily purchased through the UNIMOTION online shop.

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# ELECTIRC CYLINDERS AND SLIDERS

## PNCE SERIES - 32, 40, 50, 63, 80, 100

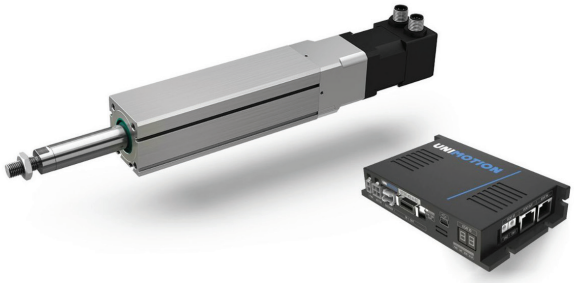



The PNCEs are electric cylinders with a precision ball screw drive. The electric cylinder is based on the standard ISO 15552. Its outer design and dimensions are very similar to pneumatic cylinders.
High performance features such as:
- high speeds,
- good positioning accuracy and
- high repeatability

are ensured through a precision ball screw with reduced backlash (preload on request) of the ball nut and non-rotating piston rod. For a long service life the relubrication can be done through a lubrication nipple.

**Maximum stroke: 1500 mm**
**Maximum travel speed: 2,5 m/s**
**Maximum axial load: 29000 N**
**Axial backlash: < 0,02 mm**

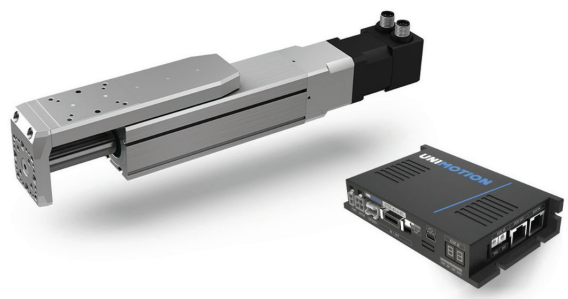
## MCE SERIES - 25, 32, 45




Mini electric cylinder MCE is a mini linear drive with a piston rod. By using an integrated precision ball screw drive, the rotary motion (rotation) of the drive shaft is converted to the linear motion (translation) of the piston rod with high mechanical efficiency and low internal friction.
High-performance features such as high speed, good positioning accuracy, and high repeatability are ensured through a precision ball screw drive and an anti-rotating piston rod device.
A preassembled standard motor (in-line with a motor adapter and a coupling or in-parallel with a motor side drive and a timing belt) together with the standard drive, makes the system plug and play ready. Compact dimensions and optimally selected motor combinations cover a widerange of applications.
The aluminium cylinder profile includes T-slots on the bottom for fixing the electric cylinder, as well as side slots for clamping fixtures and magnetic field sensors.
Options, such as female piston rod end and extended piston rod, together with a wide range of accessories make this product highly flexible.
There is also an option of the mini electric cylinder without the preassembled motor if an individual motor is required.
For applications, where higher resistance to lateral loads or torsional moments is required, a guiding unit GUC can be used. By using the guiding unit, which offers high precision guiding and positioning, the mini electric cylinders can easily be combined to the multi-axis systems.

**Travel speed: v ≤ 0,75 m/s**
**Repeatability precision: ±0,015**

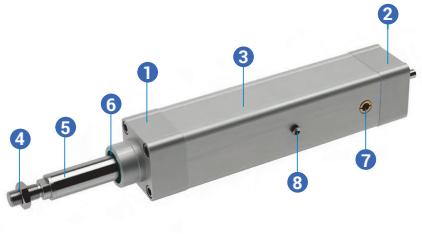
## MSCE SERIES - 25, 32, 45




Mini electric slider MSCE is a mini linear drive with an integrated linear guiding system and slide. By using an integrated precision ball screw drive, the rotary motion (rotation) of the drive shaft is converted to the linear motion (translation) of the slide with high mechanical efficiency and low internal friction.
High-performance features such as high speed, good positioning accuracy, and high repeatability are ensured through a precision ball screw drive and a linear guiding system.
A preassembled standard motor (in-line with a motor adapter and a coupling or in-parallel with a motor side drive and a timing belt) together with the standard drive, makes the system plug and play ready. Compact dimensions and optimally selected motor combinations cover a wide range of applications.
The aluminium base profile includes T-slots on the bottom for fixing the electric slider, as well as side slots for clamping fixtures and magnetic field sensors.
The aluminium slide and front plate of the electric slider allow a wide range of options for mounting the working tools and attaching additional accessories. There are prepared connection holes on the slide and front plate for an easy combination of the MSCEs to the multi-axis system, which makes this product highly flexible. There is also an option of the mini electric slider without the preassembled motor if an individual motor is required.

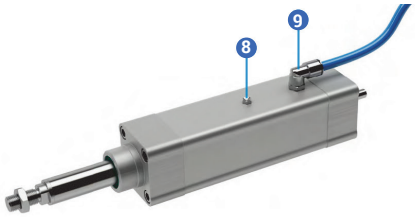
**Travel speed: v ≤ 0,75 m/s**
**Repeatability precision: ±0,015**

## STANDARD VERSION




**1 -** Front cap
**2 -** Drive cap
**3 -** Smooth cylinder profile
**4 -** Hex nut

## OPTIONS

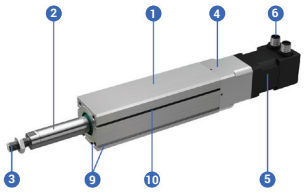



**5 -** Piston rod (stainless steel) with an antirotation device
**6 -** Piston rod seal
**7 -** Pressure compensation



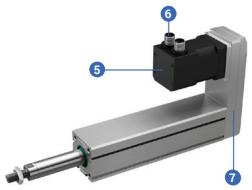

**8 -** Lubrication nipple
**9 -** Connection for pressure compensation

## COMBINATION WITH A STANDARD MOTOR AND A MOTOR ADAPTER VK



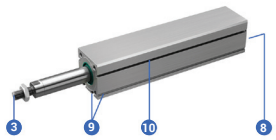

**1 -** Compact aluminium cylinder profile
**2 -** Piston rod (stainless steel) with an anti-rotation device
**3 -** Piston rod end (optionally a female thread is available)
**4 -** Motor adapter VK with a coupling

## COMBINATION WITH A STANDARD MOTOR AND A MOTOR SIDE DRIVE MSD



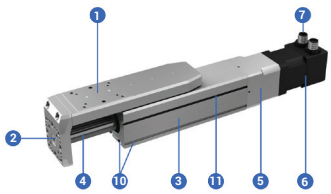

**5 -** Preassembled motor (with/without brake)
**6 -** Standard connectors (motor, encoder and brake - optionally)
**7 -** Motor side drive with a timing belt

## WITHOUT A MOTOR



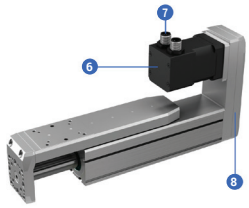

**8 -** Drive shaft of a precision ball screw drive
**9 -** Slots for mounting
**10 -** Slots for the magnetic field sensors size 32 and 45) or mounting the sensor holder (size 25)

## COMBINATION WITH A STANDARD MOTOR AND A MOTOR ADAPTER VK



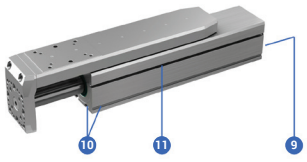

**1 -** Aluminium slide with an integrated linear guiding system
**2 -** Front plate
**3 -** Compact aluminium base profile
**4 -** Positioning rod
**5 -** Motor adapter VK with a coupling

## COMBINATION WITH A STANDARD MOTOR AND A MOTOR SIDE DRIVE MSD




**6 -** Preassembled motor (with/without a brake)
**7 -** Standard connectors (motor, encoder and a brake – optionally)
**8 -** Motor side drive with a timing belt

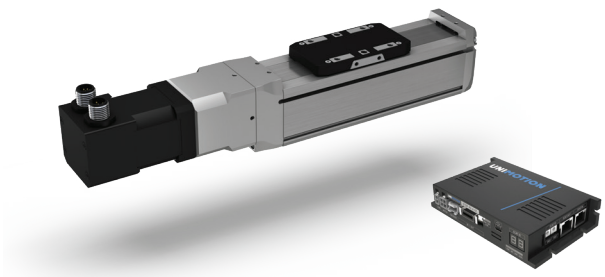
## WITHOUT A MOTOR




**9 -** Drive shaft of a precision ball screw drive
**10 -** Slots for mounting
**11 -** Slots for the magnetic field sensors (size 32 and 45) or mounting the sensor holder (size 25)

# MINI LINEAR UNITS

## MGBS SERIES - 32, 45, 60



The MGBS is a mini linear unit with an integrated precision ball screw drive that converts the rotary motion of the motor to the linear motion (translation) of the carriage with high mechanical efficiency and low friction.
High performance features such as high speed, good positioning accuracy and repeatability are achieved by using a precision ball screw drive and linear guide.
Preassembled standard motor (in-line with a motor adapter and coupling or in-parallel with motor side drive and timing belt) together with the standard drive makes the system plug and play ready. Compact dimensions and optimally selected motor combinations cover a wide range of applications. Optionally the MGBS without the preassembled motor and drive is also available when a combination with a different motor is required.
The anodized aluminium profile has side slots for clamps and a magnetic field sensor. The carriage is ready for attaching other MGBS, MGTB, MCE or MSCE units to crate modular multi-axis systems.
Each MGBS is pre-lubricated and ready for a maintenance-free operating process.

**Travel speed: v ≤ 0,97 m/s**
**Repeatability precision: ±0,015**

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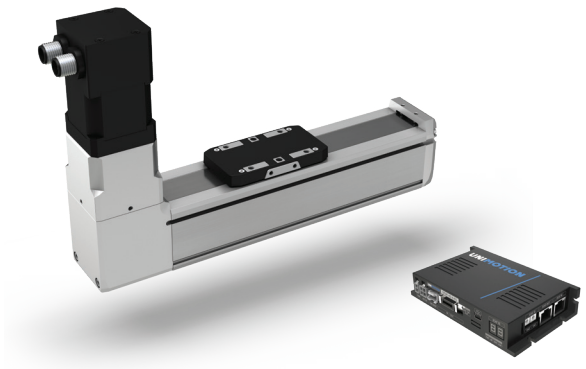
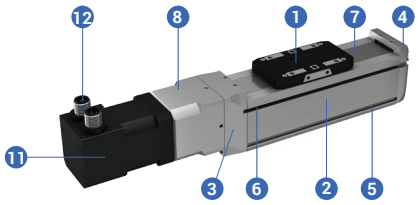
## MGTB SERIES - 32, 45, 60



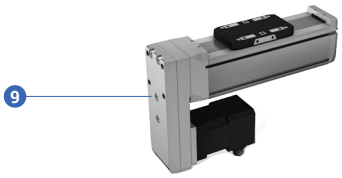
MGTB is a mini linear unit with a toothed belt drive.
High-performance features such as high speed, good positioning accuracy and high repeatability are ensured by using a zero-backlash toothed belt drive and a linear guide.
A Preassembled standard motor with a motor adapter and coupling, together with the standard drive makes the system plug and play ready.
Compact dimensions and optimally selected motor combinations cover a wide range of applications. Optionally the MGTB without the preassembled motor and drive is also available when a combination with a different motor is required.
The anodized aluminium profile has side slots for clamping fixtures and a magnetic field sensor.
Other MGBS, MGTB, MCE or MSCE units can be attached to the carriage to form a modular multi-axis system.
Each MGBS is pre-lubricated and ready for a maintenance-free operating process.

**Travel speed: v ≤ 1,5 m/s**
**Repeatability precision: ±0,08**

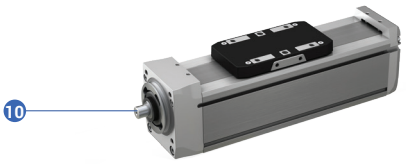
## COMBINATION WITH A STANDARD MOTOR AND A MOTOR ADAPTER VK




## COMBINATION WITH A STANDARD MOTOR AND A MOTOR SIDE DRIVE MSD




## WITHOUT A MOTOR

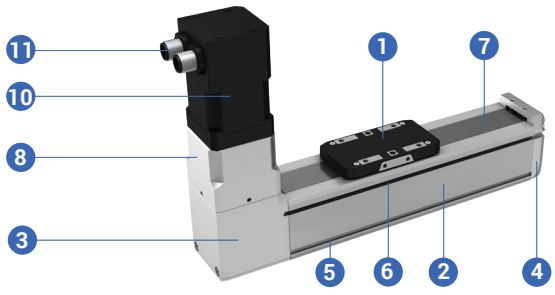



**1 -** Carriage
**2 -** Aluminium base profile
**3 -** Drive block
**4 -** End block

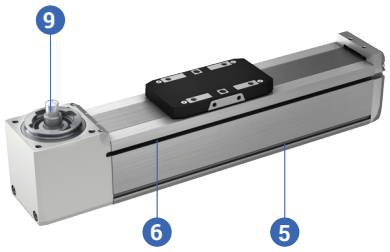
**5 -** Mounting slots
**6 -** Slot for magnetic field sensors
**7 -** Stainless steel protection strip
**8 -** Motor adapter VK with a coupling

**9 -** Motor side drive MSD with timing belt
**10 -** Driveshaft of the precision ball screw drive
**11 -** Preassembled motor (with/without brake)
**12 -** Standard connectors (motor, encoder and brake – optionally)

## COMBINATION WITH A STANDARD MOTOR AND A MOTOR ADAPTER VK




## WITHOUT A MOTOR




**1 -** Carriage
**2 -** Aluminium base profile
**3 -** Drive block with a pulley
**4 -** End block

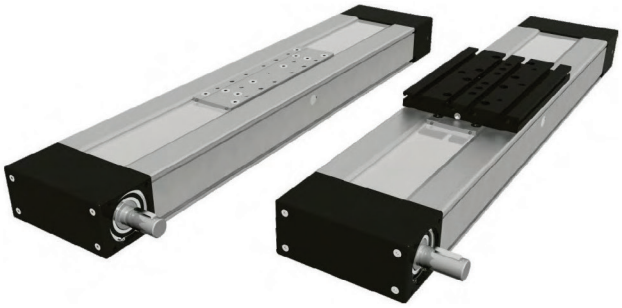
**5 -** Mounting slots
**6 -** Slot for magnetic field sensors
**7 -** Stainless steel protection strip
**8 -** Motor adapter VK with a coupling
**9 -** Driveshaft of the pulley

**10 -** Preassembled motor (with/without brake)
**11 -** Standard connectors (motor, encoder and brake – optionally)

# BELT DRIVEN LINEAR UNITS



## CTJ SERIES - 90, 110, 145, 200



## MTJ AND MRJ SERIES - 40, 65, 80, 110



## MTJ Z SERIES - 40, 65, 80, 110



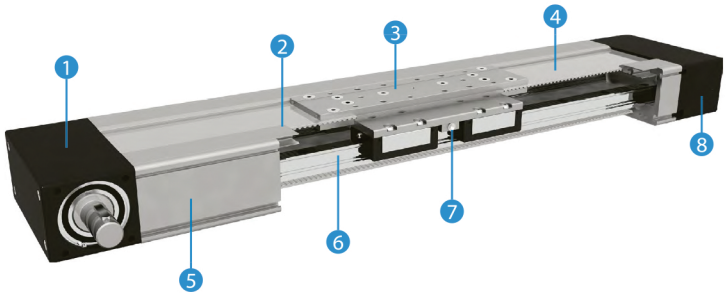
## MTJ ECO SERIES - 40





A compact linear unit with an AT toothed belt with steel cords and two parallel, integrated zero-clearance guide rail systems. A compact hard anodized aluminium profile with additionally in one-step machined internal surfaces for precise and optimal movements. The linear unit is driven by a zero-clearance drive pulley. The polyurethane timing belt is guided in the profile slot and protects all the parts in the profile from different contaminations. Lubrication ports for the central re-lubrication of the ball rail guide system.

**Travel speed: v ≤ 6 m/s**
**Repeatability precision: ± 0,08 mm**



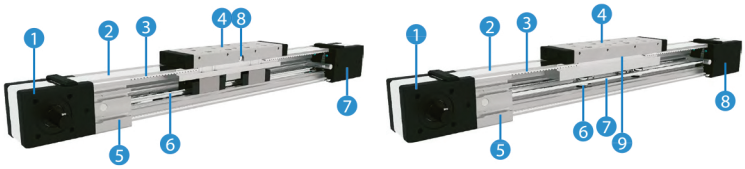
**1** - Drive block with pulley
**2** - Aluminium cover
**3** - Carriage; with built in Magnets
**4** - AT polyurethane toothed belt with steel tension cords
**5** - Aluminium profile-Hard anodized
**6** - Two integrated Linear Ball Guideways
**7** - Central lubrication port on both sides
**8** - Tension End with integrated belt tensioning system



A compact linear unit with a precision-extruded aluminium profile and AT toothed belt with steel cords and zero-clearance drive pulley. The polyurethane timing belt is guided in the profile slot and protects all the parts in the profile from different contaminations. For better protection of the internal parts, the linear unit can be sealed with a corrosion-resistant protection strip. A lubrication port for the central re-lubrication of the ball rail guide system.

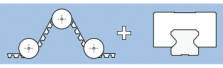
**MTJ 40, 65, 80, 110**
Linear unit with an integrated zero-clearance guide rail system inside the profile.
**Travel speed: v ≤ 6 m/s**
**Repeatability precision: ± 0,08 mm**

**MRJ 40, 65, 80, 110**
Linear unit with the integrated Track Rollers inside the profile.
**Travel speed: v ≤ 10 m/s**
**Repeatability precision: ± 0,08 mm**



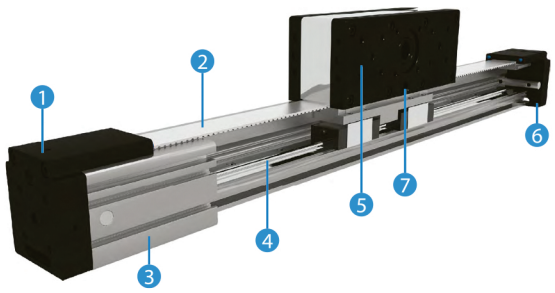
**1** - Drive block with pulley
**2** - Corrosion-resistant protection strip (available also without protection strip)
**3** - AT polyurethane toothed belt with steel tension cords
**4** - Carriage; with built in Magnets
**5** - Aluminium profile-Hard anodized
**6** - Linear Ball Guideway
**7** - Tension End with integrated belt tensioning system
**8** - One central lubrication

**1** - Drive block with pulley
**2** - Corrosion-resistant protection strip (available also without protection strip)
**3** - AT polyurethane toothed belt with steel tension cords
**4** - Carriage; with build in Magnets
**5** - Aluminium profile-Hard anodized
**6** - Track Roller (journal Bearing)
**7** - Two hardened steel Round guide (58/60 HRC)
**8** - Tension End with integrated belt tensioning system
**9** - One central lubrication port

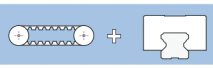


The Omega linear units with an AT toothed belt with steel cords and an integrated zero-clearance guide rail system inside the profile are suitable for vertical application. The drive carriage can be stationary mounted while the aluminium profile moves in the vertical directions. This enables its low travelling mass and makes the linear unit suitable for vertical movements. A lubrication port for the central re-lubrication of the ball rail guide system.

**Travel speed: v ≤ 6 m/s**
**Repeatability precision: ± 0,08 mm**

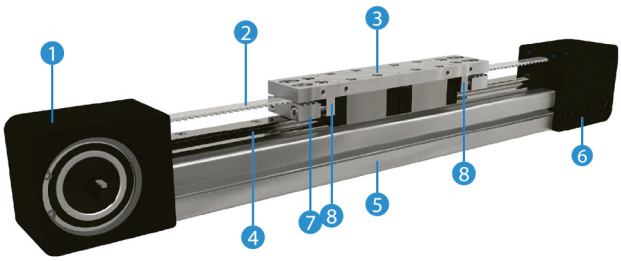


**1** - Tension End with integrated belt tensioning system
**2** - AT polyurethane toothed belt with steel tension cords
**3** - Aluminium profile-Hard anodized
**4** - Linear Ball Guideway
**5** - Drive block with pulley, Motor flange; with built in Magnets
**6** - Tension End with integrated belt tensioning system
**7** - Central lubrication port



The linear unit is a powerful and cost-effective version based on precision-extruded aluminium profile and equipped with an AT toothed belt with steel cords and an integrated zero-clearance guide rail system outside the profile. It makes for easy and accurate linear movements. Lubrication ports for the re-lubrication of the ball rail guide system.

**Travel speed: v ≤ 3 m/s**
**Repeatability precision: ± 0,1 mm**



**1** - Drive block with pulley
**2** - AT polyurethane toothed belt with steel tension cords
**3** - Carriage
**4** - Linear Ball Guideway
**5** - Aluminium profile-Hard anodized
**6** - End block
**7** - Belt Tension system
**8** - Lubrication port

# BALL SCREW DRIVEN LINEAR UNITS



## MTV SERIES - 65, 80, 110



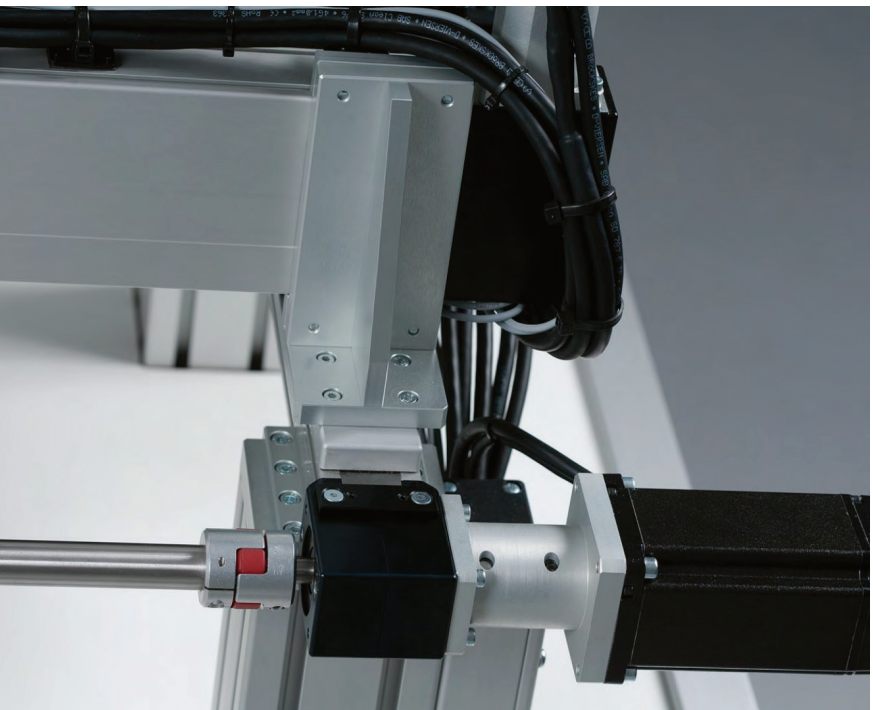
## CTV SERIES - 90, 110, 145, 200



Fraunhofer IPA TESTED® DEVICE Hypex d.o.o. CTV-CR110-1616-IGO9-0-S10-L-0-1 Report No. HY 1308-663

**AVAILABLE ALSO FOR CLEANROOM APPLICATION**

# ACCESSORIES



## FIXING ELEMENTS

### CLAMPING FIXTURES



The clamping fixtures are used for mounting the Linear units. They are placed in the slot on the side of the profile of the Linear unit.

### CONNECTION ELEMENTS



Fixing and connection elements to combine the Linear units to a multi-axis system.

### CENTRING RINGS



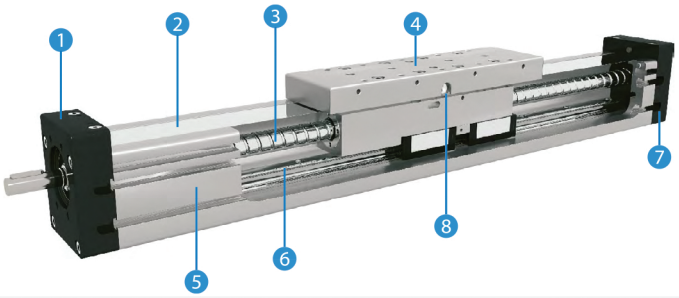
Centring rings are used to position a Linear unit on a connection plate or any customer's product on the Linear unit.



Linear units with a precision ball screw drive and integrated zero-clearance guide rail system inside the profile. A compact hard anodized aluminium profile with additionally in one-step machined internal surfaces for precise and smooth movements. The linear unit is sealed with a corrosion-resistant protection strip which protects all the parts in the profile from dust and other contaminations. A lubrication port for the central re-lubrication of the ball screw drive and the ball rail guide system.

**Repeatability precision ISO7: ± 0,02 mm**
**Repeatability precision ISO5: ± 0,01 mm**

Optional: Trapezoidal thread



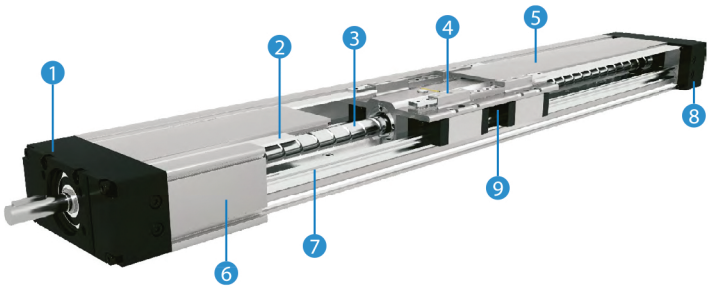

**1** - Drive block with floating bearing
**2** - Corrosion-resistant protection strip
**3** - Ball screw tolerance ISO 7 (ISO 5 available on request)
**4** - Carriage, with built in Magnets
**5** - Aluminium profile-Hard anodized
**6** - Integrated Linear Ball Guideway
**7** - End block with fixed bearing
**8** - One central lubrication port



A compact linear unit with precision ball screw drive and two parallel, integrated zero-clearance guide rail systems. A compact hard anodized aluminium profile with additionally in one-step machined internal surfaces for precise and smooth movements. Two parallel circulating sealing strips and an aluminium cover protects all the parts in the profile from dust and other contaminations.
Lubrication ports for a central re-lubrication of the ball screw drive and the ball rail guide system.

**Repeatability precision ISO7: ± 0,02 mm**
**Repeatability precision ISO5: ± 0,01 mm**

Optional: Trapezoidal thread




**1** - Drive block with floating bearing
**2** - Gap-type seal of antistatic PU strip (recirculating)
**3** - Ball screw tolerance ISO 7 (ISO 5 available on request)
**4** - Carriage; with built in Magnets
**5** - Aluminium cover
**6** - Aluminium profile-Hard anodized
**7** - Two integrated Linear Ball Guideways
**8** - End block with fixed bearing
**9** - Central lubrication port; both sides

## SENSORS



- Mechanical switch
- Induction switch
- Magnetic field sensor

## MOTOR SIDE DRIVE



- Mechanical switch
- Induction switch
- Magnetic field sensor

## SYNCHRONIZATION SHAFT

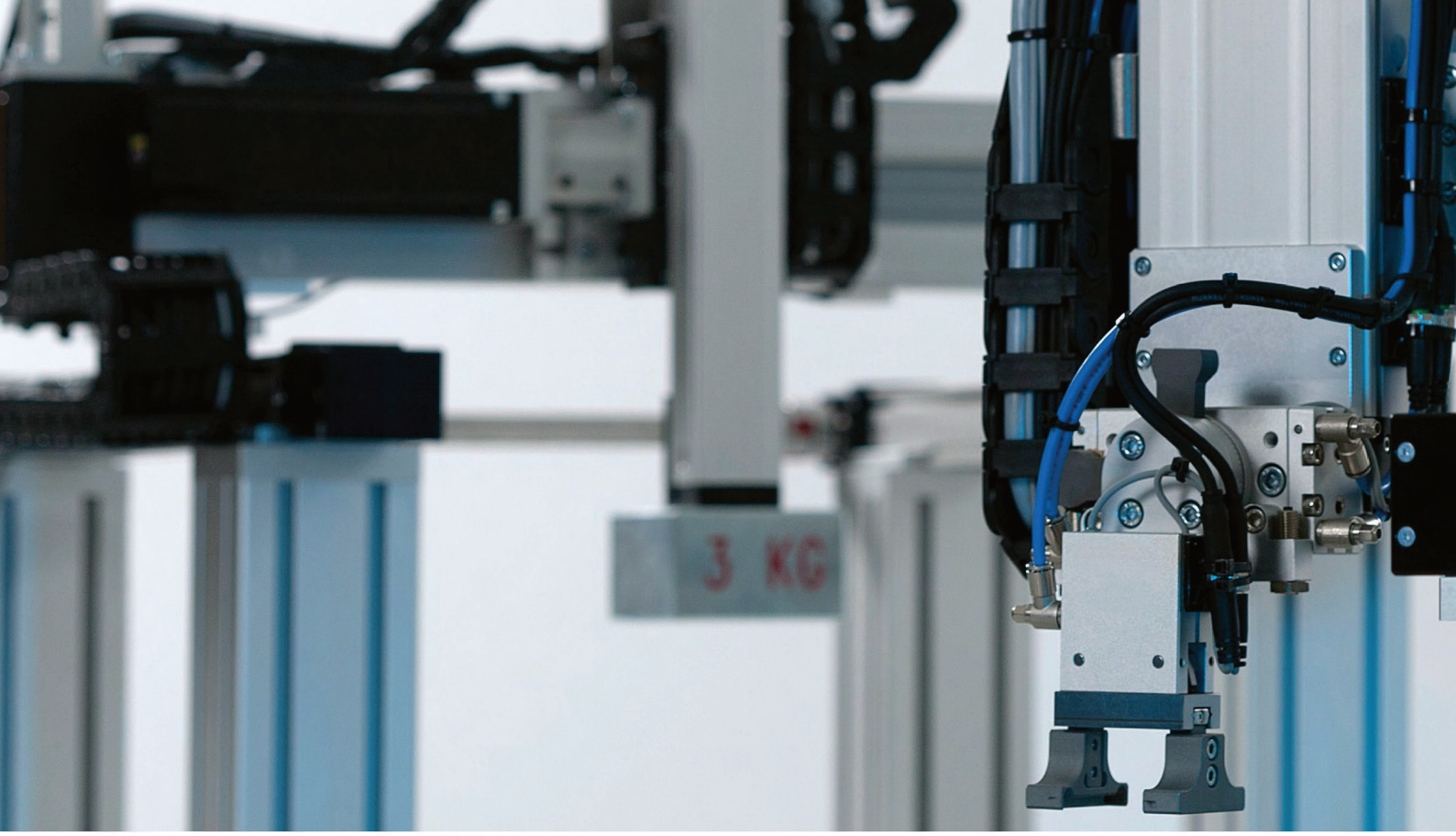


- For synchronizing two parallel linear units
- Backlash-free transmission and torsionally stiff
- Various executions: with an elastomer coupling or with a bellows coupling for compensation of misalignments.

## MOTOR ADAPTER



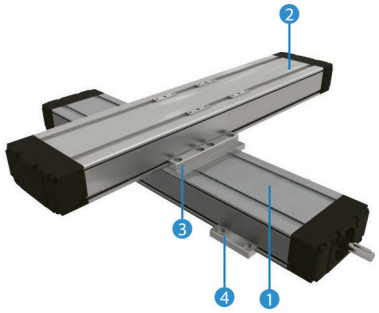
- For synchronizing two parallel linear units
- Backlash-free transmission and torsionally stiff
- Various executions: with an elastomer coupling or with a bellows coupling for compensation of misalignments.




# MULTI-AXIS SYSTEMS

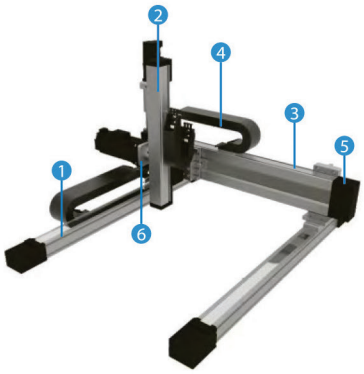
## FOR ENDLESS POSSIBILITIES.

The Linear units can be combined to various multi-axes linear systems and ensure an excellent price/performance ratio within a short delivery time. We offer a strong technical support in caculation and determination of individual multi-axis system solutions. A flexible combination of linear units with various kinds of switches, brackets, clamping fixtures and customized motor adapters provide a final multi-axis system solution available in 3D drawings.



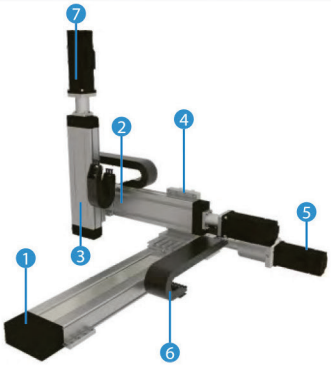

### X-Y CROSS TABLE SYSTEM

**1** - X-Axis: Ball screw driven Linear unit CTV
**2** - Y-Axis: Ball screw driven Linear unit CTV
**3** - Connection element with centring ring
**4** - Clamping fixture to attach the X-Y system



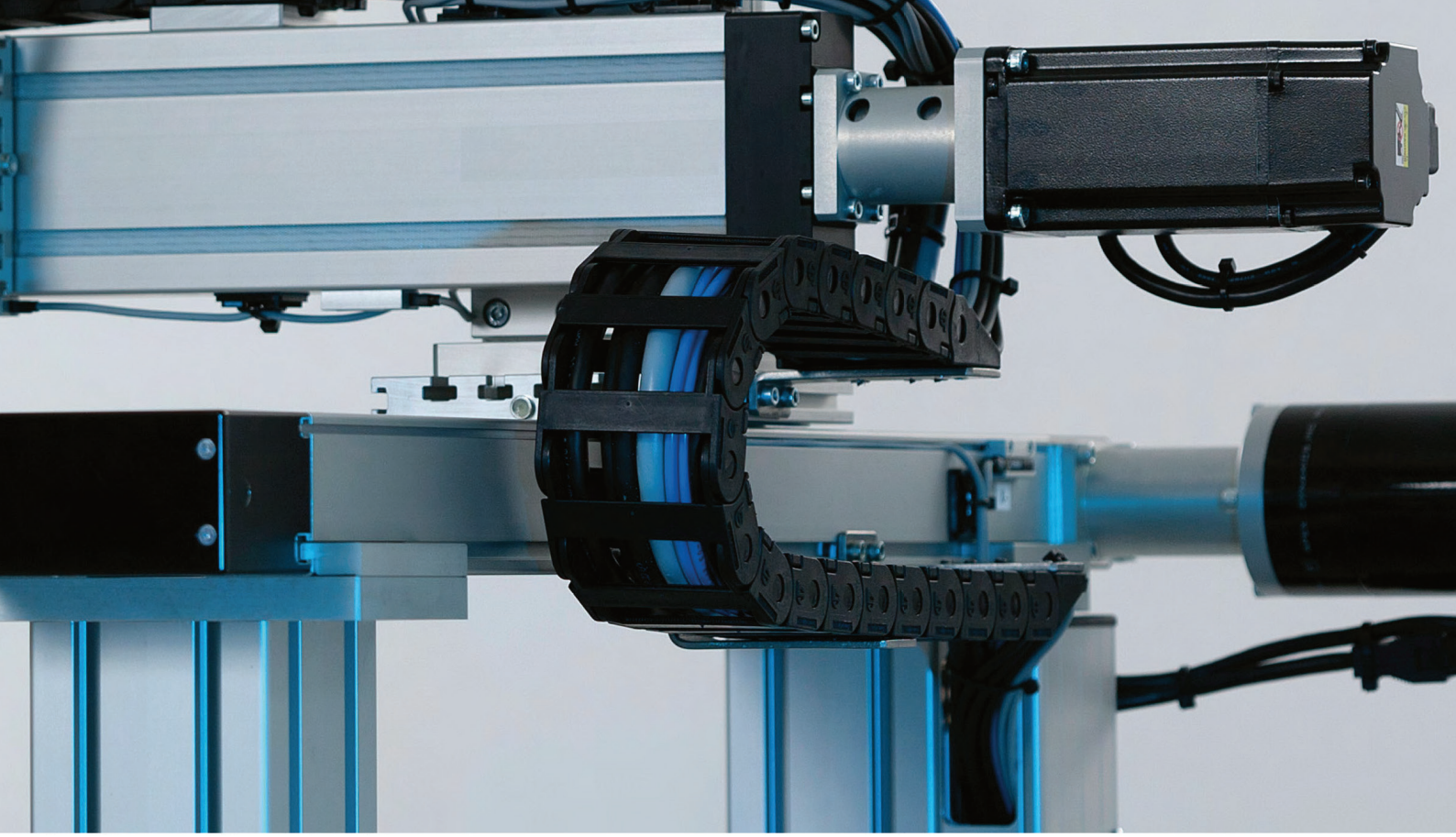

### 2X-Y-Z BRIDGE SYSTEM

**1** - X-Axis: Belt driven Linear unit MTJ
**2** - Z -Axis: Belt driven omega Linear unit MTJZ
**3** - Y-Axis: Belt driven Linear unit CTJ
**4** - Energy chain
**5** - Fixing bracket with centring rings and fixing elements
**6** - Motor adapter



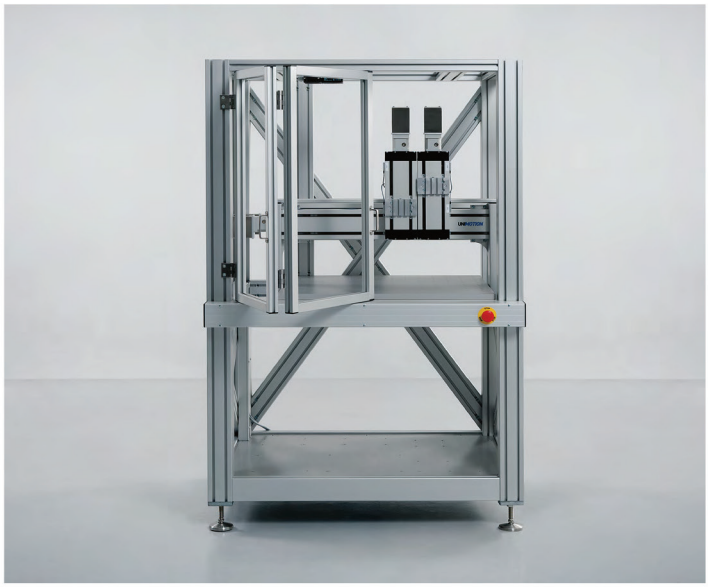

### X-Y-Z SYSTEM

**1** - X-Axis: Belt driven Linear unit CTJ
**2** - Y-Axis: Ball screw driven Linear unit CTV
**3** - Z-Axis: Ball screw driven Linear unit CTV
**4** - Fixing bracket with centring rings and fixing elements
**5** - Servo motor
**6** - Energy chain
**7** - Motor adapter



We can also build for you a gantry system or a portal as a complete assembled machine together with the frame, protections and other necessary elements to fit your exact requirements. You can use our Linear unit selection software or call our experts to save time and optimize your solution.



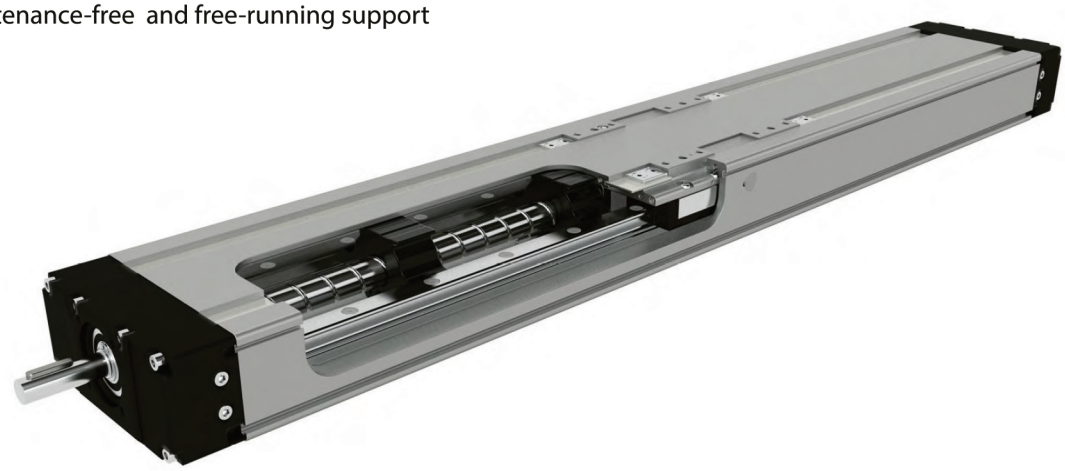


Selective Coating device from KC-Produkte for electronic circuit boards.




# SPECIAL PROJECT
## AT YOUR REQUEST

Ball screw supports for higher travel speed of linear unit at long stroke.
-Maintenance-free and free-running support



XYZ Portal with Flatbed equiped.

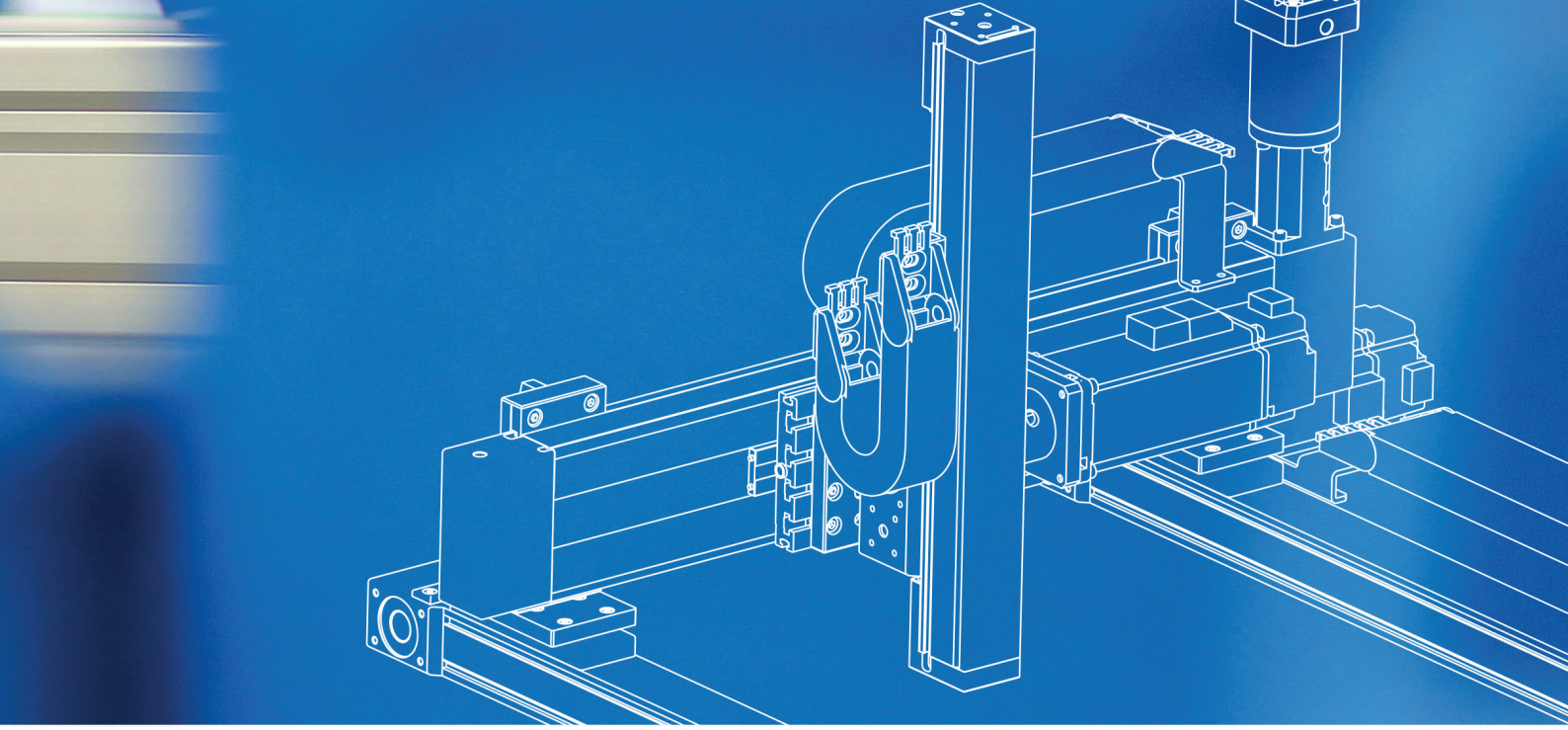


Ball screw driven linear unit with two at the same time driven carriages. Both carriages are driven by one ball screw with left and right-hand thread.



Linear unit with two separate trapezoidal screw drive. Each carriage can be moved individually by its own drive.





# SIZING SELECTION TOOL

## CALCULATE YOUR LINEAR UNIT OR ELECTRIC CYLINDER

We have many years of experience and are upgrading daily, so we can meet any challenge and can optimize the solutions for your projects.
Our staff is innovative and creative, we respond quickly and are available at any point of the process, from the concept to implementation.

## CALCULATE YOUR OWN PROJECT!

The calculation program "SIZING SELECTION TOOL" enables the fast and simple selection of a suitable linear axis or electric cylinder based on your application data. As a result of the interpretation of this data, the program provides you with diverse information, e.g. driving torque, rotation speed, maximal process speed, durability and other information about a particular product.



UNIMOTION



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