Toothed belt and spindle axes ELGA

Motion without compromise

ELGA – the perfect solution whenever you need a protected guide.
The complete series of linear axes with internal guides comes in many variants with toothed belt or spindle drive for impressive dynamic response, speed and power, while the different guides ensure it can be used in a multitude of applications. The ELGA is available as an individual axis or as a complete solution for standard handling systems.

**Highlights**

- Protected: insensitive to harsh ambient conditions
- Clean: virtually no particle emissions for use in cleanrooms
- Perfect fit: different guide variants
- Powerful: maximum feed force and maximum service life
- Efficient: optimally configured with PositioningDrives

**Versatile**

Simple, durable, highly dynamic – this large product range with three guide variants is suitable for many different applications. The scope of applications is extended even further by the numerous sizes, the large stroke range, optional second slide and various safety features.

**Protected**

The internal guide protects the ELGA when the going gets tough. The stainless steel cover band, its virtually gap-free design and guide pulley in the slide provide protection on the outside and inside, enabling it to be used in cleanrooms.

**Complete portfolio**

The ELGA and the electric axis series EGC complement one another perfectly. The ELGA can be used wherever there is a need for protected or high-performance axes. And the EGC can be used wherever a high level of rigidity and cost effectiveness are essential. This provides you with the correct linear motion in all applications. Added bonus: identical interfaces for slide, aluminium profile and motor.
The ELGA series at a glance

Designs, variants and technical features

**Spindle drive ELGA-BS-..**
- Precision positioning with ball screw
- Slide guide type: recirculating ball bearing guide -KF

**Motor positions**
- Freely selectable at both ends of the axis
- Rotated 4 x 90° (can be changed)

**Aluminium profile**
- Symmetrical profile design
- Optimised cross section and flow of forces

**Central lubrication with recirculating ball bearing guide -KF**
- 2 lubricating nipples for greasing the guide cassette and screw spindle
- Alternative connection to a central lubrication system
- Suitable for oils and greases

**Inductive proximity sensor**
- Easy to mount without protruding edges or additional mounting parts
- Up to 2 sensors per slot
- Can easily be added or repositioned at a later date

**Second slide for toothed belt drive**
- Additional, freely movable slide
- Able to absorb greater lateral and axial torques

**Incremental displacement encoder**
- For safety-oriented 2-channel solutions
- For increased positioning accuracy of the toothed belt axis
Connection for vacuum or sealing air
Greater protection thanks to an optional connection to prevent particles getting into or out of the internal space.

Toothed belt drive ELGA-TB-...
- Dynamic motion at up to 10 m/s
- Slide guide type:
  - Recirculating ball bearing guide -KF
  - Roller bearing guide -RF
  - Plain-bearing guide -G

Motor positions
- Freely selectable at both ends of the axis
- Can be changed at any time

Aluminium profile
- Wide toothed belt
- Symmetrical profile design
- Optimised cross section and flow of forces

Guide axis ELFA
- Without its own drive
- Freely movable, passive slide
- Guide variants:
  - Roller bearing guide -RF
  - Recirculating ball bearing guide -KF (new for 2016)

Axis for use in the food industry
- Clean look: smooth surfaces, no sensor slots
- FDA-compliant materials
- Guide variants:
  - Roller bearing guide -RF
  - Recirculating ball bearing guide -KF (new for 2016)

Toothed belt
- Easy to replace without the need to disassemble the drive rollers and guide pulleys
- Material: black Neoprene (optional: white polyurethane, FDA compliant)

Stainless steel cover band
- Permanently seated and virtually gap-free thanks to magnetic strip
- Guide pulley in the slide
The technology of the ELGA series in detail

Toothed belt axes ELGA-TB
The drives ELGA are extremely dynamic thanks to high speeds even with large loads and long strokes.

- Recirculating ball bearing guide -KF for absorbing high loads from slides and guides with lateral forces and torques, even during motion.
- Roller guide -RF for highly dynamic handling, even of medium and large-sized workpieces.
- Plain-bearing guide -G for simple positioning and handling tasks or as a drive axis for applications with external guides.

Note:
There is no need for additional gear units due to the small drive rollers and guide pulleys.

Spindle axes ELGA-BS
(new for 2016)
The drive for precise and smooth operation, even with high loads and long strokes.

Slide guide type: recirculating ball bearing guide -KF for absorbing high lateral forces and torques, even during motion.

Technical data

<table>
<thead>
<tr>
<th>Type</th>
<th>ELGA-TB-KF</th>
<th>ELGA-TB-RF</th>
<th>ELGA-TB-G</th>
<th>ELGA-BS-KF</th>
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<tr>
<td>Size (= profile width in mm)</td>
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<td>70 80 120 150</td>
<td>70 80 120</td>
<td>70 80 120 150</td>
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<td>Ball screw</td>
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<td>Guide type (slide)</td>
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<td>Roller bearing guide</td>
<td>Plain-bearing guide</td>
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<td>11 30 100 5 10 20</td>
<td>16 36 104</td>
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<td>Mz [Nm]</td>
<td>132 228 680 1150</td>
<td>40 180 640 10 20 40 132 228 680</td>
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</tr>
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</table>
**Motor positions**

**Toothed belt axis**  
ELGA-TB-G/-KF/-RF  
- Motor can be attached on 4 sides, freely selectable  
- Can be changed later at any time

**The benefits to you**  
Define an attachment variant with one part number as standard and modify the positions as and when needed.

**Spindle axis**  
ELGA-BS-KF  
- Freely selectable at both ends of the axis  
- Rotated 4 x 90°, can be changed later at any time

**The benefits to you**  
Choose an attachment variant with one part number as standard and modify the plug outlet direction as and when needed.

**Second slide**

For toothed belt axes with recirculating ball bearing guide -KF  
- 1 driven and 1 additional, freely movable slide  
- For higher axial and lateral forces and higher loads  
- Reduced, split guide loads for longer service life  
- Additional mounting options

**Sample application:**  
Simple and flexible double pick & place solution  
- Compact design  
- Both Z-axes move independently  
- Long Z-axis guide for high rigidity at high speeds and loads

**Right or left motor position?**  
Simply choose by rotating the symmetrically designed axis by 180°.

**Toothed belt axis for use in the food industry**

- FDA-compliant materials and food-industry approved NSF-H1 lubrication  
- Optional: FDA-compliant toothed belt made from white polyurethane (PU)  
- Easy-to-clean surfaces  
- Guide variants:  
  - Roller bearing guide -RF  
  - Recirculating ball bearing guide -KF (new for 2016)

- Freely positionable inductive proximity sensor for optional sensing  
- Optional connection of vacuum for reduced particle emissions  
- Optional connection of slight overpressure to prevent the ingress of dirt

**ELGA in clean look with smooth surfaces and no sensor slots, with white PU toothed belt**

**Freely positionable IP67 sensor**
Safety at a glance – sensors and safety solutions

Reliability thanks to optional sensing
Inductive proximity sensor SIES-8M
• Flush mounting of up to 2 sensors in the profile slot – no protruding edges outside of the drive cross section
Inductive proximity sensor SIEN-M8B
• Up to 2 sensors can be mounted on the side using optional sensor bracket
Both sensors as normally closed/normally open with PNP and NPN switching output - in protection class IP67.

Features SIES-8M
• Switching distance 1.5 mm
• Repetition accuracy ±50 µm (radial)
• Initial status display: 2 yellow LEDs for improved visibility – regardless of the direction of approach
• Max. cable length 7.5 m
• Electrical connection: 3-wire cable or 3-pin M8x1

SIEN-M8B features
• Switching distance 1.5 mm
• Repetition accuracy ±70 µm
• Switching status display: yellow LED
• Max. cable length 2.5 m
• Electrical connection: 3-wire cable or 3-pin M8x1

Displacement encoder for monitoring the linear axis
• Suitable for safety-oriented applications (2nd channel)

Drive mechanisms cannot be monitored exclusively by servo motors with encoders and safety functions in motor controllers or external monitoring systems.

However, with an external linear displacement encoder mounted directly on the drive, the axis slide position can be monitored for prompt, safety-oriented responses.

Greater positioning accuracy and maximum speed – toothed belt axes for positioning tasks
• Incremental displacement encoder for position detection
• Enhanced absolute accuracy with linear displacement encoder
• Detection of all drive train elasticity
• System-intrinsic inaccuracies can be optimally adjusted by the motor controller
• Minimum resolution: 2.5 µm at a maximum 4 m/s
Perfect fit: our range of motor controllers and motors

Controllers

**Servo motor controller CMMP-AS-M0/M3**

This range of servo motor controllers provides a highly functional solution for dynamic movements. It is ideally suited for the electronic control of cam discs. CMMP-AS-M0 as the basic variant with standard functions and CMMP-AS-M3 with expansion options, e.g. for Ethercat connection or safety module.

- Software tools from Festo: a universal concept for commissioning, programming and parameterisation
- Integrated safe stop with restart blocking for safety-oriented applications
- SD card for parameters and firmware
- Safe Torque Off (STO) up to category 4, PLe integrated
- Safe stop functions and dynamic safety functions up to category 4, PLe

**Stepper motor controller CMMx-ST**

Single-axis position controller CMMS-ST with optional closed-loop servo system via encoder. Alternatively, it can be used as a low-cost open-loop system with stepper motors without encoder.

CMMO-ST is a closed-loop servo controller for stepper motors – with “WebConfig” and “WebDiag”, the integrated HTML web server for configuration and diagnostics. Quick and easy to select with one order code and STO (Safe Torque Off) with category 3, PLe included.

Motors

**Servo motors EMMS/E-AS**

- Single-turn rotary encoder (standard), multi-turn rotary encoder (optional)
- Protection class IP65 for motor housing and power/encoder connection

**Stepper motors EMMS-ST**

- Encoder for closed-loop function (optional)
- Protection class IP65 for motor housing and plug connection
Faster configuration with PositioningDrives

PositioningDrives calculates the ideal combination from the widely coordinated range of electromechanical linear axes, motors, gear units and controllers after a few application data have been entered. By specifying various project parameters, the tool can also calculate the characteristic load values for the selected drive quickly and reliably. PositioningDrives prevents incorrect designs and energy waste by helping you to select the right components.

The ideal complement: toothed belt and spindle axes EGC/EGC-HD

The entire EGC range is available in various sizes and slide variants – either as a toothed belt or spindle axis. The heavy duty version EGC-HD with its dual guide and a very high load capacity rounds off the product range. It effectively absorbs lateral forces and torques and is optimally suited for gantry systems.

Common to all: specially developed profiles with an optimised cross section give the drives maximum rigidity and load capacity.

Slide variants
- Extended slide
- Second freely movable, passive slide
- Protected slide

Optional clamping unit
- Safe and reliable holding of loads and emergency brake directly on the guide

Technical data
- Max. speed: 10 m/s
- Max. stroke: 8.5 m
- Max. feed force: 3000 N
- Max. torque Mx lateral to axis: 900 Nm for HD axis

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- Efficiency
- Simplicity
- Competency

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