

## Toothed belt axes ELGR

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## Toothed belt axes ELGR

Key features

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### At a glance

- Ideal price/performance ratio
- Ready-to-install unit for quick and easy configuration
- Excellent reliability thanks to tested service life of 5,000 km
- Motor assembly possible on 4 sides with identical mounting accessories
- Complete kit for simple and space-saving solution for end-position sensing
- Plain-bearing guide
  - For small loads
  - Operating behaviour with torque load = Average
  - Guide backlash = 0.05 mm (on delivery)
- Recirculating ball bearing guide
  - For medium loads
  - Operating behaviour under torque load = Very good
  - Backlash-free guide (preloaded guide elements)

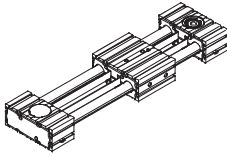
### Applications

- Pick & Place with effective loads of up to 15 kg
- Positioning and handling with low process forces
- Actuation of guard doors in processing machines

### Characteristic values of the axes

The specifications shown in the table are maximum values.

The precise values for each of the variants can be found in the relevant technical data.

| Version                                                                             | Size | Working stroke<br>[mm] | Speed<br>[m/s] | Repetition accuracy<br>[mm] | Feed force<br>[N] | Guide characteristics |                       |                        |                        |                        |
|-------------------------------------------------------------------------------------|------|------------------------|----------------|-----------------------------|-------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|
|                                                                                     |      |                        |                |                             |                   | Forces and torques    |                       |                        |                        |                        |
|                                                                                     |      |                        |                |                             |                   | F <sub>y</sub><br>[N] | F <sub>z</sub><br>[N] | M <sub>x</sub><br>[Nm] | M <sub>y</sub><br>[Nm] | M <sub>z</sub><br>[Nm] |
|  | 35   | 50 ... 800             | 3              | ±0.1                        | 50                | 50                    | 50                    | 2.5                    | 8                      | 8                      |
|                                                                                     | 45   | 50 ... 1,000           | 3              | ±0.1                        | 100               | 100                   | 100                   | 5                      | 16                     | 16                     |
|                                                                                     | 55   | 50 ... 1,500           | 3              | ±0.1                        | 350               | 300                   | 300                   | 15                     | 48                     | 48                     |

 Note

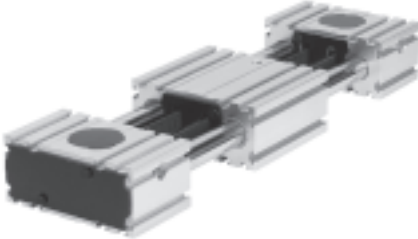
PositioningDrives  
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## Toothed belt axes ELGR

Key features

**Complete system comprising toothed belt axis, motor, motor controller and motor mounting kit**

Toothed belt axis with recirculating ball bearing or plain-bearing guide



### Motor

→ 16



1



2

- 1 Servo motor EMMS-AS
- 2 Stepper motor EMMS-ST



Note

A range of specially adapted complete solutions is available for the toothed belt axis ELGR and the motors.

### Motor controller

Technical data → Internet: motor controller



1



2

- 1 Servo motor controller CMMP-AS, CMMS-AS
- 2 Stepper motor controller EMMS-ST

### Motor mounting kit

→ 16

Axial kit



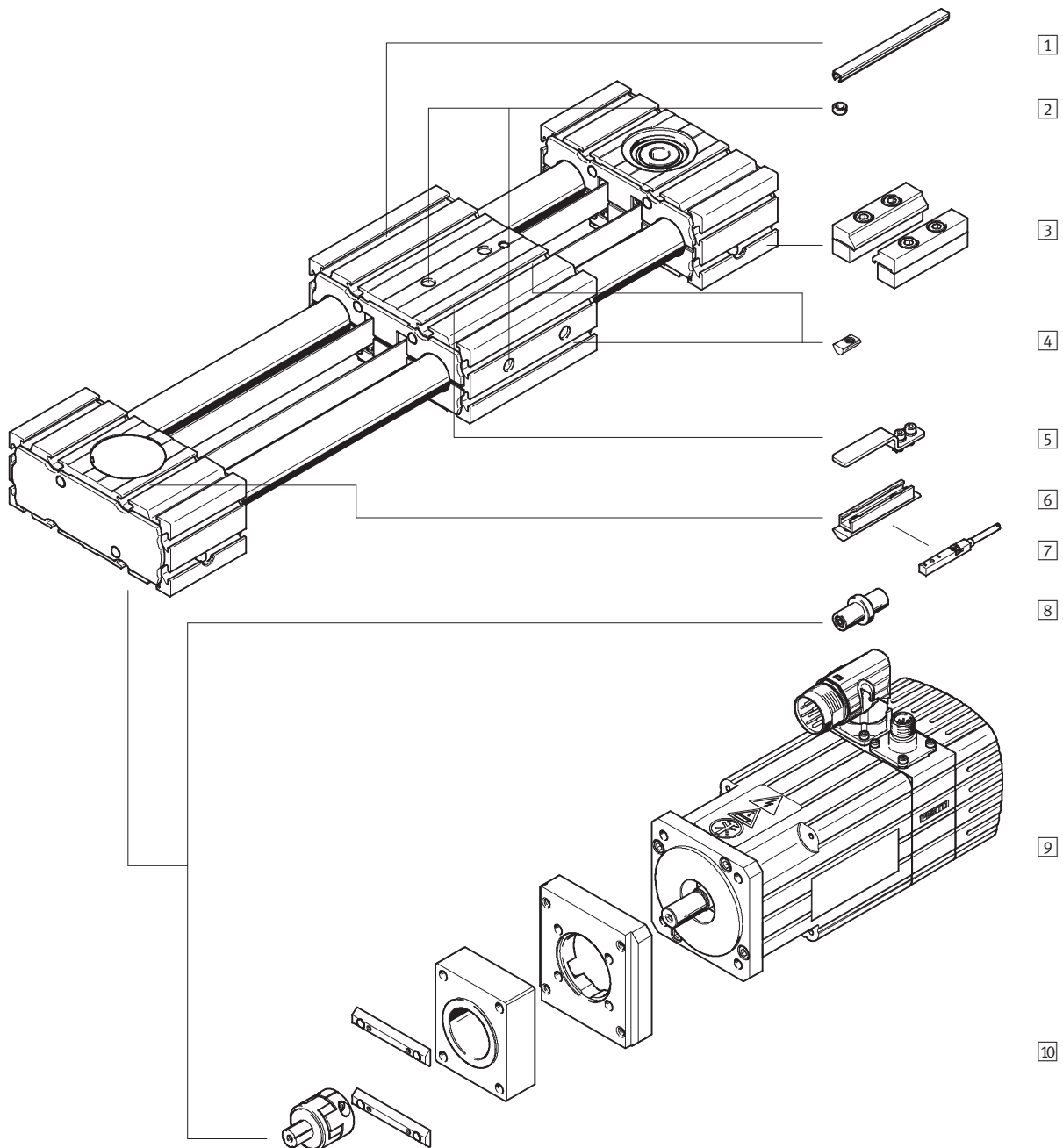
Kit comprising:

- Motor flange
- Coupling housing
- Coupling
- Screws
- Slot nuts

## Toothed belt axes ELGR

Peripherals overview

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## Toothed belt axes ELGR

Peripherals overview

| Variants and accessories                  |                                                                                                                                                                                                     |                 |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| Type                                      | Brief description                                                                                                                                                                                   | → Page/Internet |
| 1 Slot cover<br>NS                        | <ul style="list-style-type: none"> <li>For protecting against ingress of dirt</li> </ul>                                                                                                            | 19              |
| 2 Centring sleeve<br>ZBH                  | <ul style="list-style-type: none"> <li>For centring loads and attachments on the slide</li> <li>6 centring sleeves included in the scope of delivery of the axis</li> </ul>                         | 19              |
| 3 Profile mounting<br>MA                  | For mounting the axis on the bearing cap                                                                                                                                                            | 18              |
| 4 Slot nut<br>NM                          | For mounting attachments                                                                                                                                                                            | 19              |
| 5 Switching lug<br>SA, SB                 | For sensing the slide position                                                                                                                                                                      | 18              |
| 6 Sensor bracket<br>SA, SB                | Adapter for mounting the inductive proximity sensors on the axis                                                                                                                                    | 18              |
| 7 Proximity sensor, slot type 8<br>SA, SB | <ul style="list-style-type: none"> <li>Inductive proximity sensor, for slot type 8</li> <li>The order code SA, SB includes 1 switching lug and 1 sensor bracket in the scope of delivery</li> </ul> | 19              |
| 8 Drive shaft<br>EA                       | <ul style="list-style-type: none"> <li>Can be used as an alternative interface if required</li> <li>The axis/motor combinations → 16 do not require a drive shaft</li> </ul>                        | 19              |
| 9 Motor<br>EMMS                           | Motors specially matched to the axis, with or without brake                                                                                                                                         | 16              |
| 10 Axial kit<br>EAMM                      | For axial motor mounting (comprising: coupling, coupling housing and motor flange)                                                                                                                  | 16              |
| – Connecting cable<br>NEBU                | For proximity sensor (order code SA and SB)                                                                                                                                                         | 19              |

## Toothed belt axes ELGR

Type codes

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|                         |                                   |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
|-------------------------|-----------------------------------|------|---|----|---|--|---|----|---|-----|---|-----|---|---|---|--|
|                         |                                   | ELGR | - | TB | - |  | - | 45 | - | 500 | - | 30H | - | L | - |  |
| <b>Type</b>             |                                   |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| ELGR                    | Linear axis                       |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| <b>Drive function</b>   |                                   |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| TB                      | Toothed belt                      |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| <b>Guide</b>            |                                   |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
|                         | Recirculating ball bearing guide  |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| GF                      | Plain-bearing guide               |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| <b>Size</b>             |                                   |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| <b>Stroke [mm]</b>      |                                   |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| <b>Stroke reserve</b>   |                                   |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| <b>Slide</b>            |                                   |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
|                         | Standard slide                    |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| L                       | Slide, long                       |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| <b>Additional slide</b> |                                   |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
|                         | No additional slide               |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| ZR                      | 1 slide on right                  |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| ZL                      | 1 slide on left                   |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |
| ZB                      | 1 slide on right, 1 slide on left |      |   |    |   |  |   |    |   |     |   |     |   |   |   |  |

## Toothed belt axes ELGR

Type codes

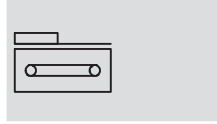
| →                       |                                                                                | 2SA |  | 4NM | EA | 2MA |
|-------------------------|--------------------------------------------------------------------------------|-----|--|-----|----|-----|
| <b>Proximity sensor</b> |                                                                                |     |  |     |    |     |
| ...SA                   | Proximity sensor (SIES), inductive, slot type 8, PNP, N/O contact, cable 7.5 m |     |  |     |    |     |
| ...SB                   | Proximity sensor (SIES), inductive, slot type 8, PNP, N/C contact, cable 7.5 m |     |  |     |    |     |
| <b>Cover</b>            |                                                                                |     |  |     |    |     |
| ...NS                   | For mounting slot                                                              |     |  |     |    |     |
| <b>Slot nut</b>         |                                                                                |     |  |     |    |     |
| ...NM                   | For mounting slot                                                              |     |  |     |    |     |
| <b>Drive shaft</b>      |                                                                                |     |  |     |    |     |
| ...EA                   | Drive shaft                                                                    |     |  |     |    |     |
| <b>Profile mounting</b> |                                                                                |     |  |     |    |     |
| ...MA                   | Profile mounting                                                               |     |  |     |    |     |

## Toothed belt axes ELGR

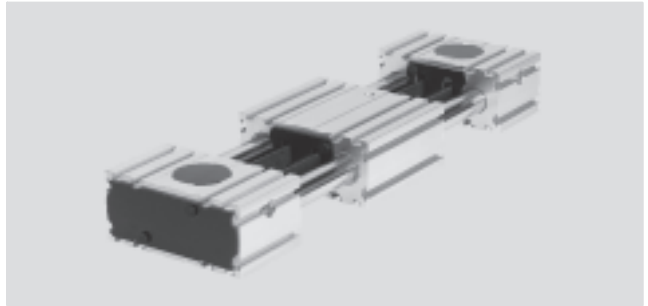
Technical data

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Function



-  - Size  
35 ... 55
-  - Stroke length  
50 ... 1,500 mm



| General technical data                  |                     |                                                 |              |              |
|-----------------------------------------|---------------------|-------------------------------------------------|--------------|--------------|
| Size                                    |                     | 35                                              | 45           | 55           |
| Constructional design                   |                     | Electromechanical linear axis with toothed belt |              |              |
| Guide                                   |                     | Recirculating ball bearing guide                |              |              |
|                                         |                     | Plain-bearing guide                             |              |              |
| Mounting position                       |                     | Any                                             |              |              |
| Working stroke                          | [mm]                | 50 ... 800                                      | 50 ... 1,000 | 50 ... 1,500 |
| Max. feed force $F_x$                   | [N]                 | 50                                              | 100          | 350          |
| Max. no-load torque                     | [Nm]                | 0.1                                             | 0.2          | 0.4          |
| Max. driving torque                     | [Nm]                | 0.46                                            | 1.24         | 5            |
| Max. no-load resistance to displacement | [N]                 | 10.8                                            | 16.1         | 27.9         |
| Max. speed                              | -                   | 3                                               |              |              |
|                                         | GF                  | 1                                               |              |              |
| Max. acceleration <sup>1)</sup>         | [m/s <sup>2</sup> ] | 50                                              |              |              |
| Repetition accuracy                     | [mm]                | ±0.1                                            |              |              |

1) The max. acceleration is dependent on the moving load, the driving torque and the max. feed force

| Operating and environmental conditions |    |      |             |
|----------------------------------------|----|------|-------------|
| Ambient temperature                    | -  | [°C] | -10 ... +50 |
|                                        | GF | [°C] | 0 ... +40   |
| Degree of protection                   |    | IP20 |             |
| Duty cycle                             |    | [%]  | 100         |

| Weight [kg]                                 |     |     |     |     |
|---------------------------------------------|-----|-----|-----|-----|
| Size                                        |     | 35  | 45  | 55  |
| Recirculating ball bearing guide            |     |     |     |     |
| Basic weight with 0 mm stroke <sup>1)</sup> | -   | 1.5 | 3.2 | 5.4 |
|                                             | L   | 1.9 | 4.3 | 7.4 |
| Additional weight per 1,000 mm stroke       | -/L | 2.5 | 5.0 | 7.8 |
| Moving load                                 | -   | 0.5 | 1.1 | 1.9 |
| Slide                                       | -   | 0.5 | 1.0 | 1.8 |
|                                             | L   | 0.8 | 1.7 | 3.0 |
| Additional slide                            | -   | 0.4 | 0.9 | 1.7 |

1) Incl. slide

## Toothed belt axes ELGR

Technical data

| Weight [kg]                                 |     |     |     |     |
|---------------------------------------------|-----|-----|-----|-----|
| Size                                        |     | 35  | 45  | 55  |
| Plain-bearing guide                         |     |     |     |     |
| Basic weight with 0 mm stroke <sup>1)</sup> | –   | 1.4 | 3.1 | 5.1 |
|                                             | L   | 1.9 | 4.3 | 7.3 |
| Additional weight per 1,000 mm stroke       | –/L | 2.5 | 5.0 | 7.8 |
| Moving load                                 | –   | 0.4 | 0.9 | 1.5 |
| Slide                                       | –   | 0.4 | 0.9 | 1.5 |
|                                             | L   | 0.7 | 1.6 | 2.8 |
| Additional slide                            | –   | 0.3 | 0.7 | 1.3 |

1) Incl. slide

| Toothed belt       |           |       |       |       |
|--------------------|-----------|-------|-------|-------|
| Size               |           | 35    | 45    | 55    |
| Pitch              | [mm]      | 2     | 3     | 3     |
| Tensile stress     | [%]       | 0.094 | 0.08  | 0.21  |
| Width              | [mm]      | 10    | 15    | 19.3  |
| Effective diameter | [mm]      | 18.46 | 24.83 | 28.65 |
| Feed constant      | [mm/rev.] | 58    | 78    | 90    |

| Mass moment of inertia    |                          |       |        |        |
|---------------------------|--------------------------|-------|--------|--------|
| Size                      |                          | 35    | 45     | 55     |
| $J_0$                     | – [kg mm <sup>2</sup> ]  | 40.26 | 155.13 | 360.48 |
|                           | L [kg mm <sup>2</sup> ]  | 66.50 | 271.52 | 638.74 |
| $J_S$ per metre stroke    | [kg mm <sup>2</sup> /m]  | 0.26  | 1.06   | 1.88   |
| $J_L$ per kg working load | [kg mm <sup>2</sup> /kg] | 85.19 | 154.13 | 205.21 |
| $J_W$ Additional slide    | [kg mm <sup>2</sup> ]    | 36.75 | 136.55 | 301.92 |

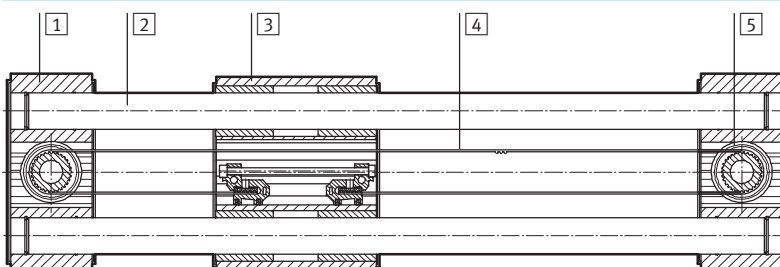
The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

$$J_A = J_0 + K \times J_W + J_S \times \text{working stroke [m]} + J_L \times m_{\text{effective load [kg]}}$$

$K$  = Number of additional slides

### Materials

Sectional view



| Axis              |                      |                                                     |
|-------------------|----------------------|-----------------------------------------------------|
| 1                 | Bearing cap, profile | Wrought aluminium alloy, anodised                   |
| 2                 | Guide rods           | Steel                                               |
| 3                 | Slide, profile       | Wrought aluminium alloy, anodised                   |
| 4                 | Toothed belt         | Polychloroprene with glass cord and nylon coating   |
| 5                 | Belt pulley          | High-alloy stainless steel                          |
| Note on materials |                      | RoHS-compliant                                      |
|                   |                      | Contains PWIS (paint-wetting impairment substances) |

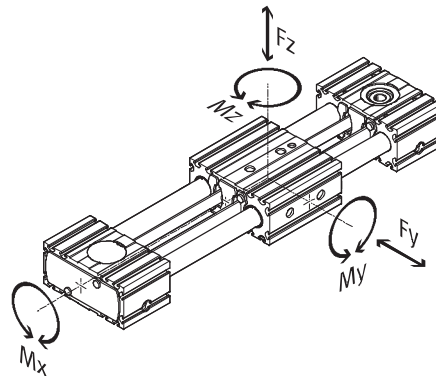
## Toothed belt axes ELGR

Technical data

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### Characteristic load values

The indicated forces and torques refer to the centre of the guide. The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect. These values must not be exceeded during dynamic operation. Special attention must be paid to the cushioning phase.



If the axis is subjected to more than two of the indicated forces and torques simultaneously, the following equation must be satisfied in addition to the indicated maximum loads:

Calculation of the guide comparison index:

$$f_v = \frac{|F_{y,dyn}|}{F_{y,max.}} + \frac{|F_{z,dyn}|}{F_{z,max.}} + \frac{|M_{x,dyn}|}{M_{x,max.}} + \frac{|M_{y,dyn}|}{M_{y,max.}} + \frac{|M_{z,dyn}|}{M_{z,max.}} \leq 1$$

| Permissible forces and torques for a service life of 5,000 km |        |    |     |     |     |     |     |
|---------------------------------------------------------------|--------|----|-----|-----|-----|-----|-----|
| Size                                                          |        | 35 |     | 45  |     | 55  |     |
| Guide                                                         |        | GF | –   | GF  | –   | GF  | –   |
| $F_{y,max.}, F_{z,max.}$                                      | [N]    | 50 | 50  | 100 | 100 | 300 | 300 |
| $M_{x,max.}$                                                  | – [Nm] | 1  | 2.5 | 2.5 | 5   | 5   | 15  |
|                                                               | L [Nm] | 1  | 2.5 | 2.5 | 5   | 5   | 15  |
| $M_{y,max.}$                                                  | – [Nm] | 4  | 8   | 8   | 16  | 16  | 48  |
|                                                               | L [Nm] | 10 | 20  | 20  | 40  | 40  | 124 |
| $M_{z,max.}$                                                  | – [Nm] | 4  | 8   | 8   | 16  | 16  | 48  |
|                                                               | L [Nm] | 10 | 20  | 20  | 40  | 40  | 124 |

### Service life

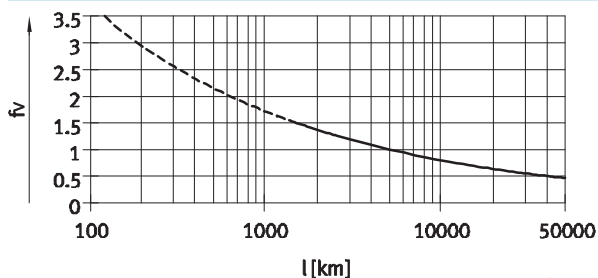
The service life of the guide depends on the load. To provide a rough indication of the service life of the guide, the

graph below plots the load comparison factor  $f_c$  against the service life.

This graph only shows theoretical values. Consultation with your local contact person at Festo is mandatory

for load comparison factors  $f_c$  greater than 1.5.

### Load comparison factor $f_c$ as a function of service life



Example:

A user wants to move an X kg load. Using the above calculation gives a value of 1.5 for the load comparison factor  $f_c$ . According to the graph, the guide would have a service life of

approx. 1,500 km. Reducing the acceleration reduces the  $M_z$  and  $M_y$  values. A load comparison factor of 1 now gives a service life of 5,000 km.

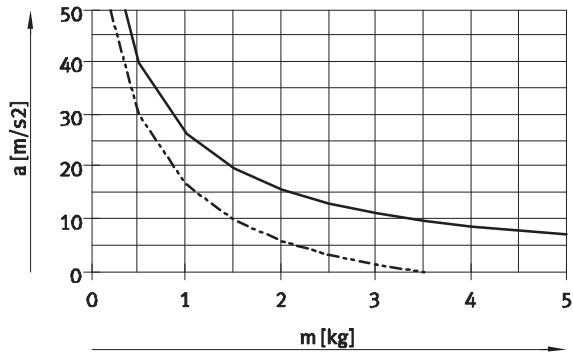
 **Note**  
PositioningDrives  
sizing software  
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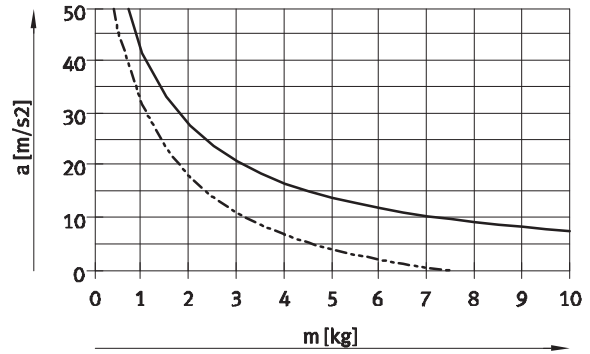
Technical data

Maximum acceleration  $a$  as a function of applied load  $m$

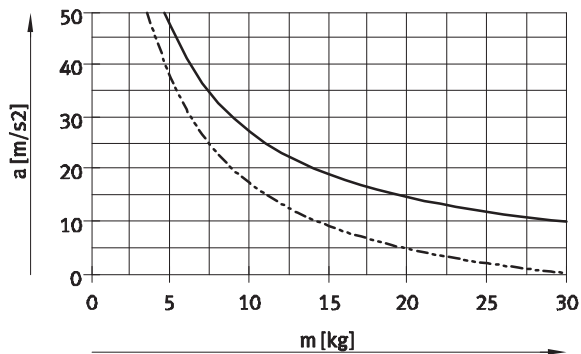
ELGR-35



ELGR-45



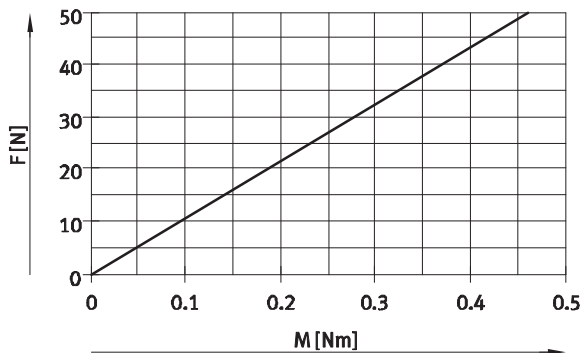
ELGR-55



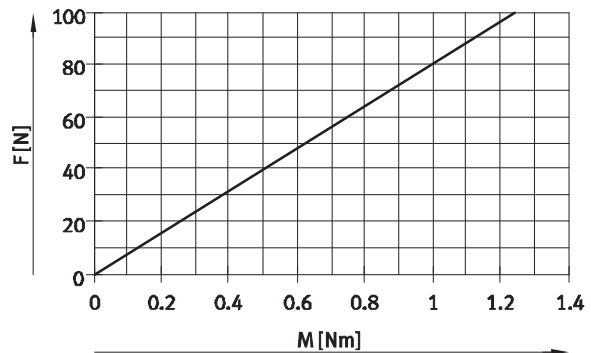
— Horizontal  
- - - Vertical

Feed force  $F_x$  as a function of input torque  $M$

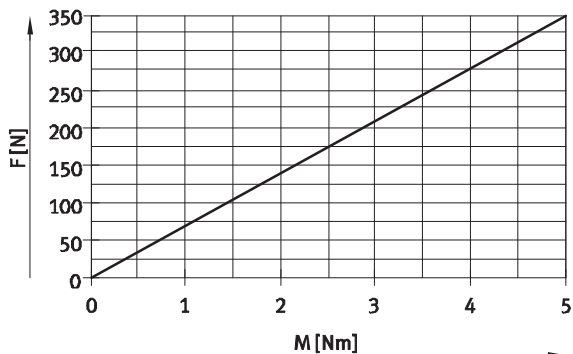
ELGR-35



ELGR-45



ELGR-55

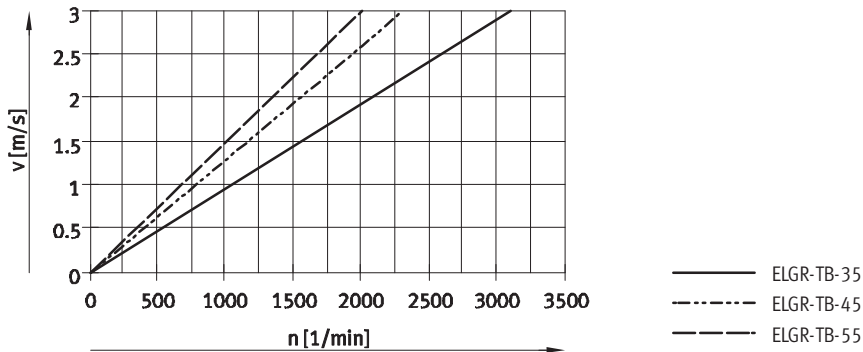


## Toothed belt axes ELGR

Technical data

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### Speed $v$ as a function of rotational speed $n$



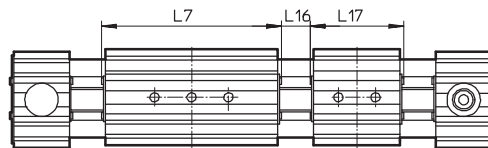
### Stroke reserve

- The stroke reserve is a safety distance available on both sides of the axis in addition to the nominal stroke
  - The sum of the stroke length and 2x the stroke reserve must not exceed the maximum working stroke
  - The stroke reserve length can be freely selected
  - The stroke reserve is defined in the modular product system using the "Stroke reserve" feature.
- Example:**  
 Type ELGR-TB-45-500-20H-...  
 Working stroke = 500 mm  
 2x stroke reserve = 40 mm  
 Total stroke = 540 mm  
 (540 mm = 500 mm + 2x 20 mm)

### Working stroke reduction

With standard slide or extra-long slide L with additional slide ZR/ZL/ZB

- L7 = Slide length
- L16 = Distance between both slides
- L17 = Additional slide length

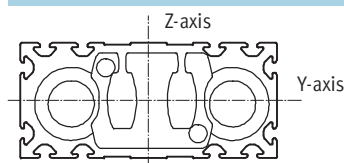


- For a toothed belt axis with additional slide, the working stroke is reduced by the length of the additional slide and the distance between both slides
  - When ordering the extra-long slide L variant, the additional slide is not extended
- Example:**  
 Type ELGR-TB-35-500-...-ZR  
 Working stroke without additional slide = 500 mm  
 L16 = 10 mm  
 L7, L17 = 76 mm  
 Working stroke with additional slide = 414 mm  
 (500 mm - 10 mm - 76 mm)

### Dimensions – Additional slide

| Size                                 | 35       | 45 | 55  |
|--------------------------------------|----------|----|-----|
| Length L17 [mm]                      | 76       | 96 | 116 |
| Distance between the slides L16 [mm] | $\geq 0$ |    |     |

### 2nd moment of area



| Size                     | 35                 | 45                 | 55                 |
|--------------------------|--------------------|--------------------|--------------------|
| $I_y$ [mm <sup>4</sup> ] | $3.77 \times 10^3$ | $1.57 \times 10^4$ | $3.83 \times 10^4$ |
| $I_z$ [mm <sup>4</sup> ] | $1.89 \times 10^5$ | $8.08 \times 10^5$ | $1.85 \times 10^6$ |

### Recommended deflection limits

Adherence to a maximum deflection of 0.5 mm is recommended so as not to impair the functional performance of the axes. Greater deformation can result in increased friction, greater wear and reduced service life.

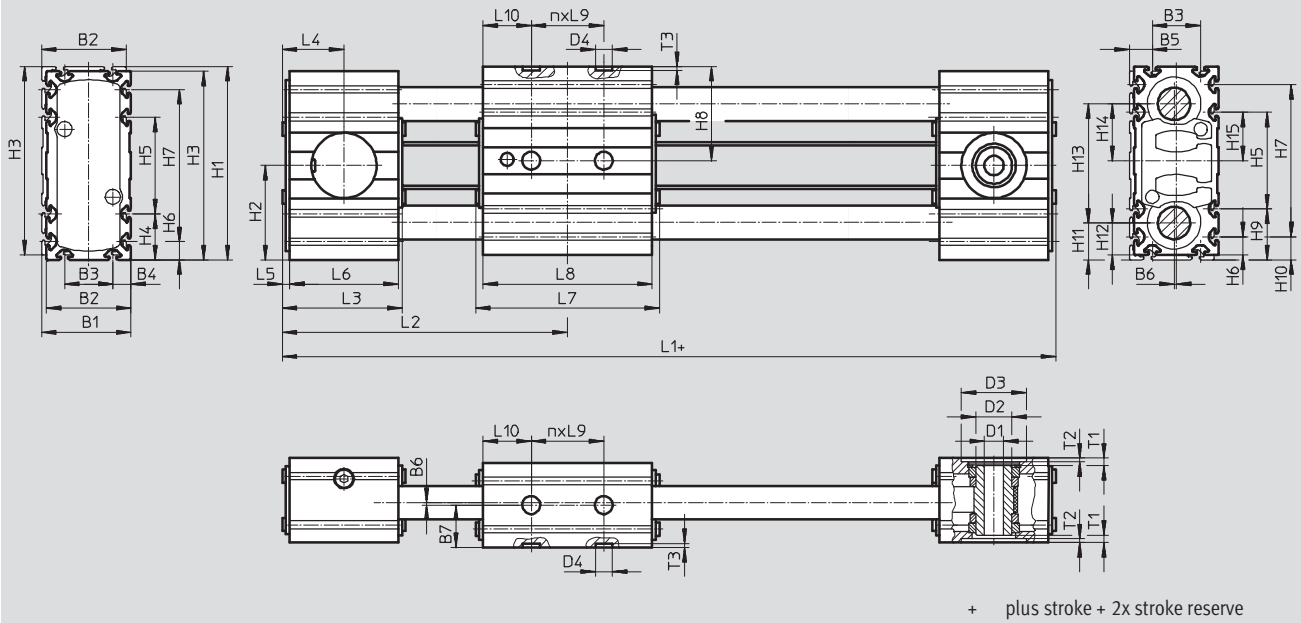
# Toothed belt axes ELGR

Technical data

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## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

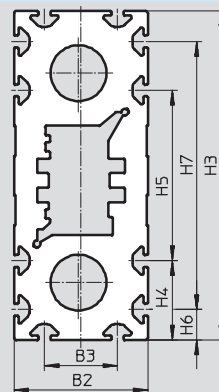
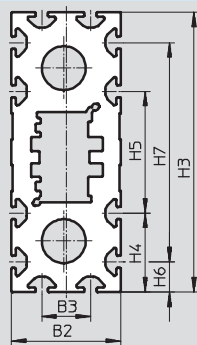
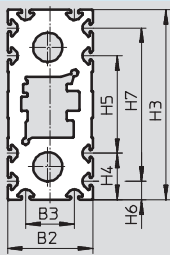


## Profile

ELGR-35

ELGR-45

ELGR-55



| Size      | B1 | B2 | B3 | B4   | B5   | B6 | B7   | D1<br>Ø<br>H7 | D2<br>Ø | D3<br>Ø<br>H7 | D4<br>Ø<br>H7 | H1  | H2   | H3  | H4   | H5 | H6   | H7  | H8   | H9   |
|-----------|----|----|----|------|------|----|------|---------------|---------|---------------|---------------|-----|------|-----|------|----|------|-----|------|------|
| ELGR-35   | 37 | 35 | 20 | 7.5  | 9.5  | 1  | 17.5 | 8             | 15      | 27            | 7             | 80  | 39   | 78  | 19   | 40 | 7.5  | 63  | 39   | 21   |
| ELGR-35-L |    |    |    |      |      |    |      |               |         |               |               |     |      |     |      |    |      |     |      |      |
| ELGR-45   | 47 | 45 | 20 | 12.5 | 14.5 |    | 22.5 | 10            | 20      | 38            |               | 117 | 57.5 | 115 | 32.5 | 50 | 12.5 | 90  | 57.5 | 34.5 |
| ELGR-45-L |    |    |    |      |      |    |      |               |         |               |               |     |      |     |      |    |      |     |      |      |
| ELGR-55   | 57 | 55 | 30 | 12.5 | 14.5 |    | 27.5 | 16            | 25      | 48            |               | 137 | 67.5 | 135 | 32.5 | 70 | 12.5 | 110 | 67.5 | 34.5 |
| ELGR-55-L |    |    |    |      |      |    |      |               |         |               |               |     |      |     |      |    |      |     |      |      |

| Size      | H10  | H11  | H12  | H13 | H14  | H15 | L1  | L2  | L3 | L4   | L5 | L6 | L7  | L8  | L9 | L10 | n | T1  | T2  | T3  |
|-----------|------|------|------|-----|------|-----|-----|-----|----|------|----|----|-----|-----|----|-----|---|-----|-----|-----|
| ELGR-35   | 9.5  | 15.5 | 13.5 | 49  | 23.5 | 20  | 178 | 89  | 51 | 25.5 | 3  | 45 | 76  | 70  | 30 | 20  | 1 | 3.1 | 1.6 | 1.6 |
| ELGR-35-L |      |      |      |     |      |     | 248 | 124 |    |      |    |    | 146 | 140 |    | 40  | 2 |     |     |     |
| ELGR-45   | 14.5 | 23   | 21   | 71  | 34.5 | 25  | 219 | 108 | 60 | 30   |    | 54 | 96  | 90  | 40 | 25  | 1 | 3   | 1.7 |     |
| ELGR-45-L |      |      |      |     |      |     | 309 | 153 |    |      |    |    | 186 | 180 |    | 50  | 2 |     |     |     |
| ELGR-55   | 14.5 | 25.5 | 23.5 | 86  | 42   | 35  | 243 | 120 | 62 | 31   | 3  | 56 | 116 | 110 | 40 | 35  | 1 | 4.5 | 2   |     |
| ELGR-55-L |      |      |      |     |      |     | 353 | 175 |    |      |    |    | 226 | 220 |    | 70  | 2 |     |     |     |

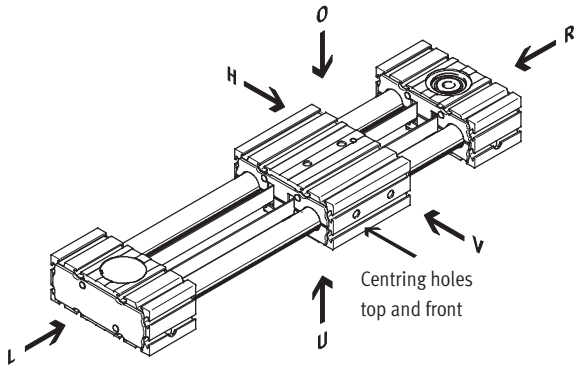
## Toothed belt axes ELGR

Ordering data – Modular products

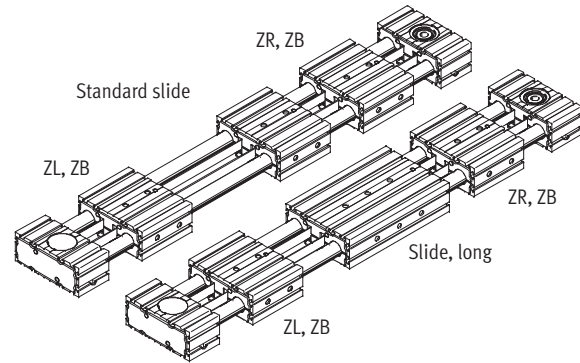
**FESTO**

### Order code

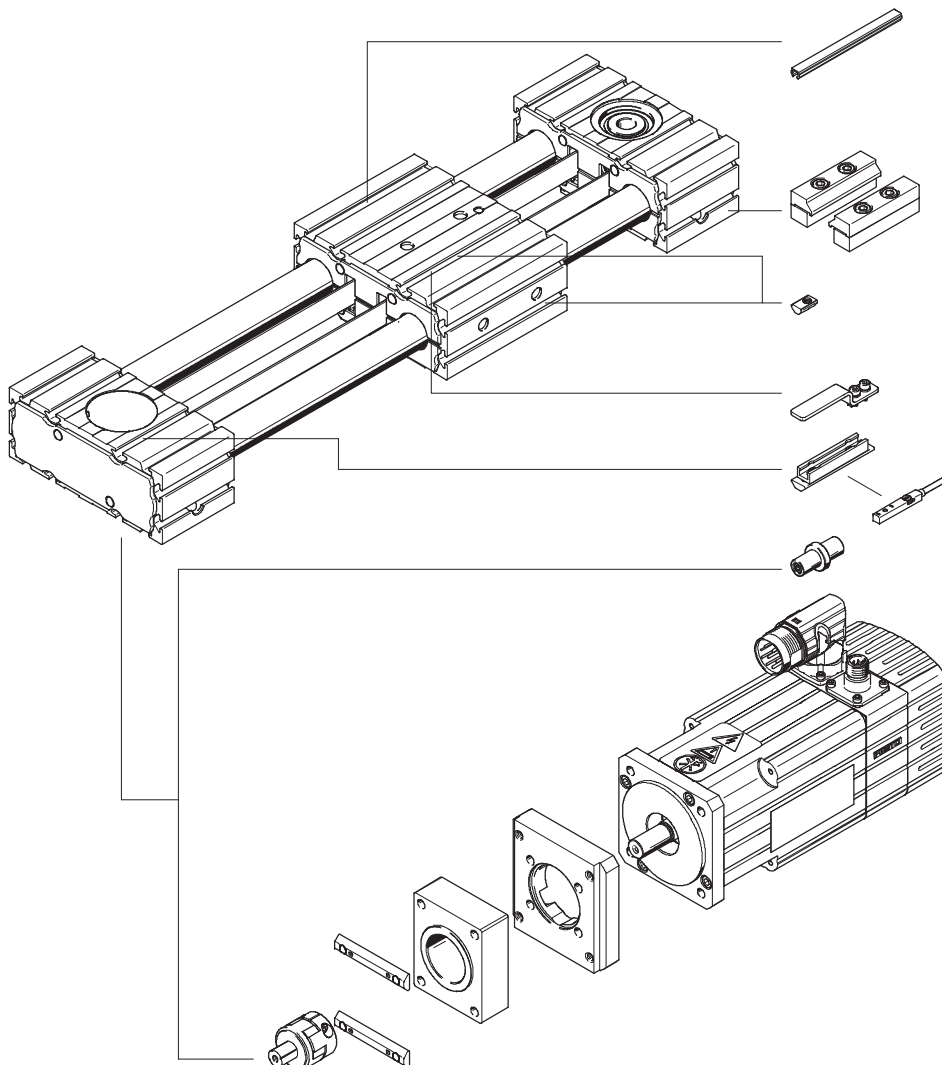
Mandatory data



O top      L left  
U underneath      V front  
R right      H rear



### Accessories



NS

MA

NM

SA, SB

SA, SB

EA

Servo motor EMMS-AS  
Stepper motor EMMS-ST  
→ 16

Axial kit  
→ 16

## Toothed belt axes ELGR

Ordering data – Modular products

| Ordering table |                                                                                                                                 |                                   |                                         |              |                 |        |               |      |
|----------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------|--------------|-----------------|--------|---------------|------|
| Size           |                                                                                                                                 | 35                                | 45                                      | 55           | Condi-<br>tions | Code   | Enter<br>code |      |
| M              | Module No.                                                                                                                      | 560505                            | 560506                                  | 560507       |                 |        |               |      |
|                | Design                                                                                                                          | Linear axis                       |                                         |              |                 | ELGR   |               | ELGR |
|                | Drive type                                                                                                                      | Toothed belt                      |                                         |              |                 | -TB    |               | -TB  |
| O              | Guide                                                                                                                           | Recirculating ball bearing guide  |                                         |              |                 |        |               |      |
|                |                                                                                                                                 | Plain-bearing guide               |                                         |              |                 | -GF    |               |      |
| M              | Sizes                                                                                                                           | 35                                | 45                                      | 55           |                 | -...   |               |      |
|                | Stroke length [mm]                                                                                                              | 50 ... 800                        | 50 ... 1,000                            | 50 ... 1,500 | 1               | -...   |               |      |
|                | Stroke reserve [mm]                                                                                                             | 0 ... 999 (0 = no stroke reserve) |                                         |              | 1               | -...H  |               |      |
| O              | Slide design                                                                                                                    | Standard slide                    |                                         |              |                 |        |               |      |
|                |                                                                                                                                 | Slide, long                       |                                         |              |                 | -L     |               |      |
|                | Additional slide                                                                                                                | No additional slide               |                                         |              |                 |        |               |      |
|                |                                                                                                                                 | 1 slide on right                  |                                         |              | 2               | -ZR    |               |      |
|                |                                                                                                                                 | 1 slide on left                   |                                         |              | 2               | -ZL    |               |      |
|                |                                                                                                                                 | 1 slide on right, 1 slide on left |                                         |              | 2               | -ZB    |               |      |
| Accessories    | Accessories enclosed separately                                                                                                 |                                   |                                         |              | +               | +      |               |      |
|                | Proximity sensor (SIES),<br>inductive, slot type 8, PNP,<br>N/O contact, cable 7.5 m, incl.<br>switching lug and sensor bracket | 1 ... 6                           |                                         |              |                 | ...SA  |               |      |
|                | Proximity sensor (SIES),<br>inductive, slot type 8, PNP,<br>N/C contact, cable 7.5 m, incl.<br>switching lug and sensor bracket | 1 ... 6                           |                                         |              |                 | ... SB |               |      |
|                | Mounting slot cover                                                                                                             | –                                 | 1 ... 50 (1=2 pieces, 500 mm in length) |              |                 | ...NS  |               |      |
|                | Slot nut for mounting slot                                                                                                      | 1 ... 99                          |                                         |              |                 | ...NM  |               |      |
|                | Drive shaft                                                                                                                     | 1 ... 4                           |                                         |              |                 | ...EA  |               |      |
|                | Profile mounting                                                                                                                | 1 ... 2                           |                                         |              |                 | ...MA  |               |      |

**[1]** -... The sum of the stroke length and 2x the stroke reserve in mm must not exceed the maximum stroke length

**[2]** Working stroke reduction → 12

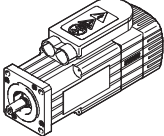
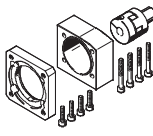
Transfer order code

|  |      |   |    |   |  |   |  |   |  |   |  |   |  |  |  |  |  |
|--|------|---|----|---|--|---|--|---|--|---|--|---|--|--|--|--|--|
|  | ELGR | - | TB | - |  | - |  | - |  | - |  | + |  |  |  |  |  |
|--|------|---|----|---|--|---|--|---|--|---|--|---|--|--|--|--|--|

## Toothed belt axes ELGR

Accessories

**FESTO**

| Permissible axis/motor combinations with axial kit – Without gear unit            |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Motor                                                                             | Axial kit                                                                         | Axial kit comprising:                                                             |                                                                                    |                                                                                     |
|                                                                                   |                                                                                   | Motor flange                                                                      | Coupling                                                                           | Coupling housing                                                                    |
|  |  |  |  |  |
| Type                                                                              | Part No.<br>Type                                                                  | Part No.<br>Type                                                                  | Part No.<br>Type                                                                   | Part No.<br>Type                                                                    |
| <b>ELGR-35</b>                                                                    |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| EMMS-AS-55-S-...                                                                  | 1133400<br>EAMM-A-R27-55A                                                         | 558176<br>EAMF-A-38A-55A                                                          | 557999<br>EAMD-19-15-9-8X10                                                        | 1133397<br>EAMK-A-R27-38A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| EMMS-ST-57-M-...                                                                  | 1133403<br>EAMM-A-R27-57A                                                         | 560692<br>EAMF-A-38A-57A                                                          | 561292<br>EAMD-16-15-6.35-8X10                                                     | 1133397<br>EAMK-A-R27-38A                                                           |
| <b>ELGR-45</b>                                                                    |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| EMMS-AS-70-M-...                                                                  | 1133401<br>EAMM-A-R38-70A                                                         | 558018<br>EAMF-A-38A-70A                                                          | 558000<br>EAMD-25-22-11-10X12                                                      | 1133398<br>EAMK-A-R38-38A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| EMMS-ST-87-M-...                                                                  | 1133404<br>EAMM-A-R38-87A                                                         | 560693<br>EAMF-A-38A-87A                                                          | 558000<br>EAMD-25-22-11-10X12                                                      | 1133398<br>EAMK-A-R38-38A                                                           |
| <b>ELGR-55</b>                                                                    |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| EMMS-AS-100-S-...                                                                 | 1133402<br>EAMM-A-R48-100A                                                        | 558020<br>EAMF-A-48A-100A                                                         | 558002<br>EAMD-42-40-19-16X25                                                      | 1133399<br>EAMK-A-R48-48A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |
| EMMS-ST-87-L-...                                                                  | 1133405<br>EAMM-A-R48-87A                                                         | 560695<br>EAMF-A-48A-87A                                                          | 558001<br>EAMD-32-32-11-16X20                                                      | 1133399<br>EAMK-A-R48-48A                                                           |

## Toothed belt axes ELGR

Accessories

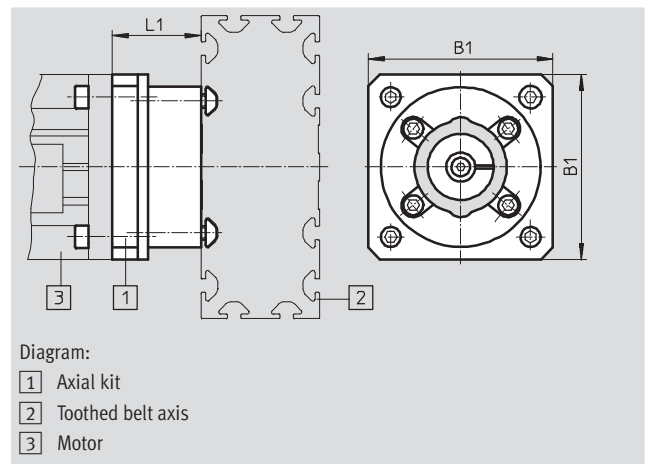
### Axial kit EAMM-A-...

Material:

Coupling housing, coupling hubs,

motor flange: Aluminium

Screws: Steel



| General technical data |                      |        |        |       |       |       |       |
|------------------------|----------------------|--------|--------|-------|-------|-------|-------|
| EAMM-A-...             |                      | R27-   |        | R38-  |       | R48-  |       |
|                        |                      | 55A    | 57A    | 70A   | 87A   | 87A   | 100A  |
| Transferable torque    | [Nm]                 | 2      | 1.6    | 4.4   | 4.4   | 12.5  | 17    |
| Mass moment of inertia | [kgmm <sup>2</sup> ] | 0.445  | 0.355  | 3.2   | 3.2   | 14.5  | 39    |
| Max. rotational speed  | [rpm]                | 10,000 | 10,000 | 8,000 | 8,000 | 8,000 | 6,000 |
| Mounting position      |                      | Any    |        |       |       |       |       |

| Operating and environmental conditions |      |             |
|----------------------------------------|------|-------------|
| Ambient temperature                    | [°C] | -10 ... +60 |
| Storage temperature                    | [°C] | -25 ... +60 |
| Protection class <sup>1)</sup>         |      | IP40        |
| Relative air humidity                  | [%]  | 0 ... 95    |

1) Only with combined attachment of motor and axis

| Dimensions and ordering data |       |       |            |          |                 |
|------------------------------|-------|-------|------------|----------|-----------------|
| Type                         | B1    | L1    | Weight [g] | Part No. | Type            |
| EAMM-A-R27-55A               | 55    | 26    | 170        | 1133400  | EAMM-A-R27-55A  |
| EAMM-A-R27-57A               | 56    | 26    | 170        | 1133403  | EAMM-A-R27-57A  |
| EAMM-A-R38-70A               | 70    | 33.75 | 350        | 1133401  | EAMM-A-R38-70A  |
| EAMM-A-R38-87A               | 85.8  | 38    | 530        | 1133404  | EAMM-A-R38-87A  |
| EAMM-A-R48-87A               | 85.8  | 44    | 590        | 1133405  | EAMM-A-R48-87A  |
| EAMM-A-R48-100A              | 100.5 | 59    | 970        | 1133402  | EAMM-A-R48-100A |

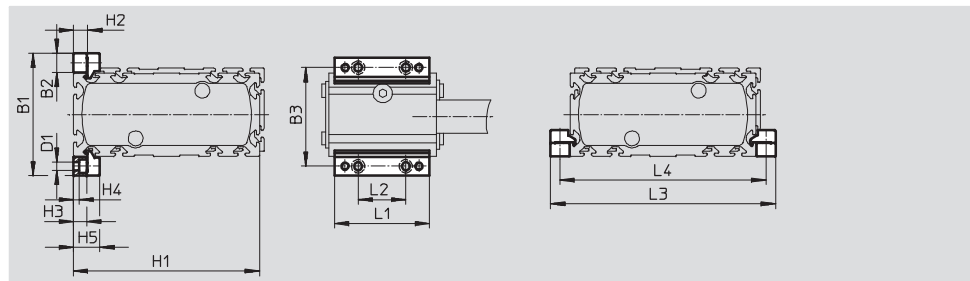
## Toothed belt axes ELGR

Accessories

**FESTO**

**Profile mounting MUE**  
(order code: MA)

Material:  
Anodised aluminium  
RoHS-compliant

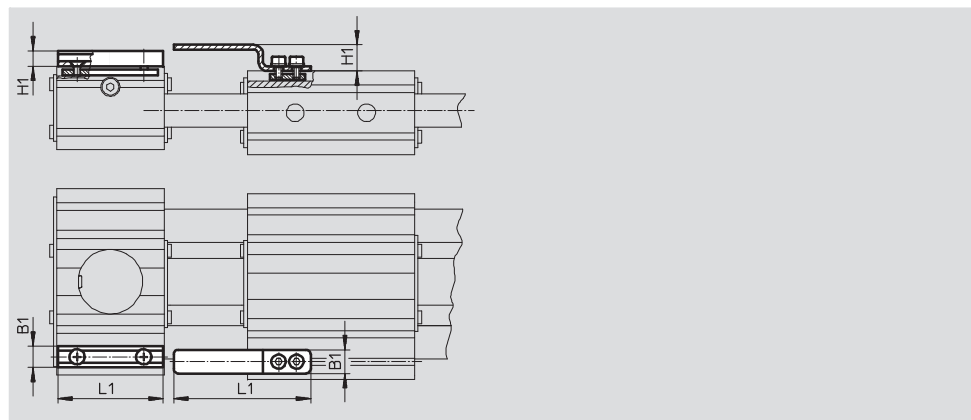


| Dimensions and ordering data |    |    |    |         |     |    |     |     |
|------------------------------|----|----|----|---------|-----|----|-----|-----|
| For size                     | B1 | B2 | B3 | D1<br>Ø | H1  | H2 | H3  | H4  |
| 35                           | 51 | 8  | 43 | 3.4     | 78  | 6  | 5.5 | 2.3 |
| 45                           | 69 | 12 | 57 | 5.5     | 115 | 10 | 9   | 3.2 |
| 55                           | 79 | 12 | 67 | 5.9     | 135 | 10 | 9   | 3.2 |

| For size | H5   | L1 | L2 | L3  | L4  | Weight<br>[g] | Part No. | Type   |
|----------|------|----|----|-----|-----|---------------|----------|--------|
| 35       | 11   | 40 | 20 | 104 | 96  | 20            | 558042   | MUE-50 |
| 45       | 17.5 | 52 | 40 | 139 | 127 | 32            | 562238   | MUE-45 |
| 55       | 17.5 | 52 | 40 | 159 | 147 | 32            | 562238   | MUE-45 |

**Sensor bracket EAPM-...-SHS,**  
**switching lug EAPM-...-SLS**  
(order code SA/SB)

Material:  
Switching lug: Galvanised steel  
Sensor bracket: Wrought aluminium  
alloy, anodised  
RoHS-compliant

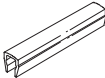


| Dimensions and ordering data |    |     |      |               |          |             |
|------------------------------|----|-----|------|---------------|----------|-------------|
| For size                     | B1 | H1  | L1   | Weight<br>[g] | Part No. | Type        |
| Sensor bracket               |    |     |      |               |          |             |
| 35, 45, 55                   | 9  | 6.5 | 44   | 20            | 567537   | EAPM-L4-SHS |
| Switching lug                |    |     |      |               |          |             |
| 35, 45, 55                   | 10 | 11  | 57.5 | 15            | 567538   | EAPM-L4-SLS |

## Toothed belt axes ELGR

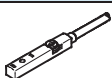
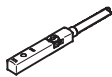
Accessories

**FESTO**

| Ordering data                                                                     |            |                               |            |          |                       |                  |
|-----------------------------------------------------------------------------------|------------|-------------------------------|------------|----------|-----------------------|------------------|
|                                                                                   | For size   | Comment                       | Order code | Part No. | Type                  | PU <sup>1)</sup> |
| Drive shaft EAMB                                                                  |            |                               |            |          |                       |                  |
|  | 35         | Alternative interface         | EA         | 558034   | EAMB-16-7-8X15-8X10   | 1                |
|                                                                                   | 45         |                               |            | 558035   | EAMB-18-9-8X16-10X12  |                  |
|                                                                                   | 55         |                               |            | 558036   | EAMB-24-6-15X21-16X20 |                  |
| Slot nut NST                                                                      |            |                               |            |          |                       |                  |
|  | 35         | For mounting slot             | NM         | 558045   | NST-3-M3              | 1                |
|                                                                                   | 45, 55     |                               |            | 150914   | NST-5-M5              | 1                |
| Centring sleeve ZBH <sup>2)</sup>                                                 |            |                               |            |          |                       |                  |
|  | 35, 45, 55 | For slide                     | –          | 186717   | ZBH-7                 | 10               |
| Slot cover ABP                                                                    |            |                               |            |          |                       |                  |
|  | 45, 55     | For mounting slot every 0.5 m | NS         | 151681   | ABP-5                 | 2                |

1) Packaging unit quantity

2) 6 centring sleeves included in the scope of delivery of the axis

| Ordering data – Proximity sensors for T-slot, inductive                             |                                                            |                  |                       |                  | Technical data → Internet: <a href="#">sies</a> |                          |
|-------------------------------------------------------------------------------------|------------------------------------------------------------|------------------|-----------------------|------------------|-------------------------------------------------|--------------------------|
|                                                                                     | Type of mounting                                           | Switching output | Electrical connection | Cable length [m] | Part No.                                        | Type                     |
| N/O contact                                                                         |                                                            |                  |                       |                  |                                                 |                          |
|  | Insertable in slot from above, flush with cylinder profile | PNP              | Cable, 3-wire         | 7.5              | 551386                                          | SIES-8M-PS-24V-K-7,5-OE  |
|                                                                                     |                                                            |                  | Plug, M8x1, 3-pin     | 0.3              | 551387                                          | SIES-8M-PS-24V-K-0,3-M8D |
|                                                                                     |                                                            | NPN              | Cable, 3-wire         | 7.5              | 551396                                          | SIES-8M-NS-24V-K-7,5-OE  |
|                                                                                     |                                                            |                  | Plug, M8x1, 3-pin     | 0.3              | 551397                                          | SIES-8M-NS-24V-K-0,3-M8D |
|                                                                                     |                                                            |                  |                       |                  |                                                 |                          |
| N/C contact                                                                         |                                                            |                  |                       |                  |                                                 |                          |
|  | Insertable in slot from above, flush with cylinder profile | PNP              | Cable, 3-wire         | 7.5              | 551391                                          | SIES-8M-PO-24V-K-7,5-OE  |
|                                                                                     |                                                            |                  | Plug, M8x1, 3-pin     | 0.3              | 551392                                          | SIES-8M-PO-24V-K-0,3-M8D |
|                                                                                     |                                                            | NPN              | Cable, 3-wire         | 7.5              | 551401                                          | SIES-8M-NO-24V-K-7,5-OE  |
|                                                                                     |                                                            |                  | Plug, M8x1, 3-pin     | 0.3              | 551402                                          | SIES-8M-NO-24V-K-0,3-M8D |

| Ordering data – Connecting cables                                                   |                              |                              |                  |          | Technical data → Internet: nebu |
|-------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------|----------|---------------------------------|
|                                                                                     | Electrical connection, left  | Electrical connection, right | Cable length [m] | Part No. | Type                            |
|  | Straight socket, M8x1, 3-pin | Cable, open end, 3-wire      | 2.5              | 541333   | NEBU-M8G3-K-2.5-LE3             |
|                                                                                     |                              |                              | 5                | 541334   | NEBU-M8G3-K-5-LE3               |
|  | Angled socket, M8x1, 3-pin   | Cable, open end, 3-wire      | 2.5              | 541338   | NEBU-M8W3-K-2.5-LE3             |
|                                                                                     |                              |                              | 5                | 541341   | NEBU-M8W3-K-5-LE3               |