

## Toothed belt axes ELGA-TB

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## Selection aid

## Overview of toothed belt and spindle axes

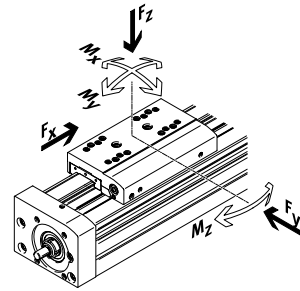
## Toothed belt axes

- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s<sup>2</sup>
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8500 mm (longer strokes on request)
- Flexible motor mountings

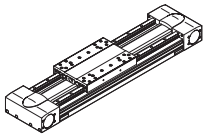
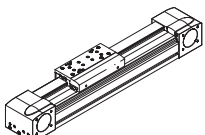
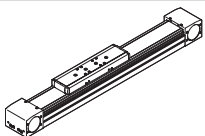
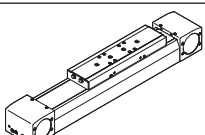
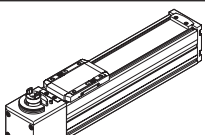
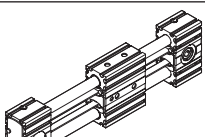
## Spindle axes

- Speeds of up to 2 m/s
- Acceleration of up to 20 m/s<sup>2</sup>
- Repetition accuracy of up to ±0.003 mm
- Strokes of up to 3000 mm

## Coordinate system



## Toothed belt axes

| Type  | F <sub>x</sub><br>[N] | v<br>[m/s] | M <sub>x</sub><br>[Nm] | M <sub>y</sub><br>[Nm] | M <sub>z</sub><br>[Nm] | Characteristics   |
|---|-----------------------|------------|------------------------|------------------------|------------------------|---|
| Heavy-duty recirculating ball bearing guide   |                       |            |                        |                        |                        |   |
| EGC-HD-TB   |                       |            |                        |                        |                        |   |
|    | 450                   | 3          | 140                    | 275                    | 275                    | <ul style="list-style-type: none"><li>• Flat drive unit with rigid, closed profile</li><li>• Precision DUO guide rail with high load capacity</li><li>• Ideal as a base axis for linear gantries and cantilever axes</li></ul>  |
|   | 1000                  | 5          | 300                    | 500                    | 500                    |   |
|   | 1800                  | 5          | 900                    | 1450                   | 1450                   |   |
| Recirculating ball bearing guide  |                       |            |                        |                        |                        |   |
| EGC-TB-KF   |                       |            |                        |                        |                        |   |
|  | 50                    | 3          | 3.5                    | 10                     | 10                     | <ul style="list-style-type: none"><li>• Rigid, closed profile</li><li>• Precision guide rail with high load capacity</li><li>• Small drive pinions reduce required driving torque</li><li>• Space-saving position sensing</li></ul>   |
|   | 100                   | 5          | 16                     | 132                    | 132                    |   |
|   | 350                   | 5          | 36                     | 228                    | 228                    |   |
|   | 800                   | 5          | 144                    | 680                    | 680                    |   |
|   | 2500                  | 5          | 529                    | 1820                   | 1820                   |   |
| ELGA-TB-KF  |                       |            |                        |                        |                        |   |
|  | 350                   | 5          | 16                     | 132                    | 132                    | <ul style="list-style-type: none"><li>• Internal guide and toothed belt</li><li>• Precision guide rail with high load capacity</li><li>• Guide and toothed belt protected by cover strip</li><li>• High feed forces</li></ul>   |
|   | 800                   | 5          | 36                     | 228                    | 228                    |   |
|   | 1300                  | 5          | 104                    | 680                    | 680                    |   |
|   | 2000                  | 5          | 167                    | 1150                   | 1150                   |   |
| ELGA-TB-KF-F1   |                       |            |                        |                        |                        |   |
|  | 260                   | 5          | 16                     | 132                    | 132                    | <ul style="list-style-type: none"><li>• Suitable for use in the food zone</li><li>• “Clean look”: smooth, easy-to-clean surfaces</li><li>• Internal guide and toothed belt</li><li>• Precision guide rail with high load capacity</li><li>• Guide and toothed belt protected by cover strip</li></ul> |
|   | 600                   | 5          | 36                     | 228                    | 228                    |   |
|   | 1000                  | 5          | 104                    | 680                    | 680                    |   |
| ELGC-TB-KF  |                       |            |                        |                        |                        |   |
|  | 75                    | 1.2        | 5.5                    | 4.7                    | 4.7                    | <ul style="list-style-type: none"><li>• Internal guide and toothed belt</li><li>• Precision guide rail with high load capacity</li><li>• Guide and toothed belt protected by cover strip</li></ul>  |
|   | 120                   | 1.5        | 29.1                   | 31.8                   | 31.8                   |   |
|   | 250                   | 1.5        | 59.8                   | 56.2                   | 56.2                   |   |
| ELGR-TB   |                       |            |                        |                        |                        |   |
|  | 50                    | 3          | 2.5                    | 20                     | 20                     | <ul style="list-style-type: none"><li>• Cost-optimised rod guide</li><li>• Ready-to-install unit</li><li>• Linear ball bearings with high load capacity for dynamic operation</li></ul>   |
|   | 100                   | 3          | 5                      | 40                     | 40                     |   |
|   | 350                   | 3          | 15                     | 124                    | 124                    |   |

## Selection aid

## Overview of toothed belt and spindle axes

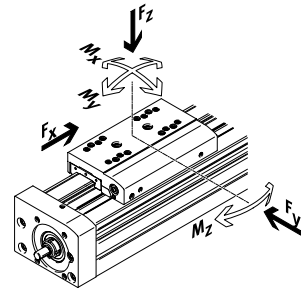
## Toothed belt axes

- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s<sup>2</sup>
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8500 mm (longer strokes on request)
- Flexible motor mountings

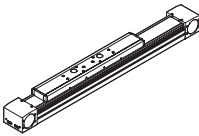
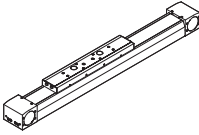
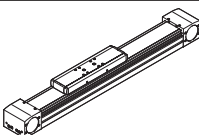
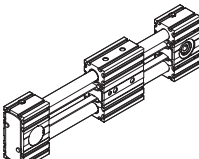
## Spindle axes

- Speeds of up to 2 m/s
- Acceleration of up to 20 m/s<sup>2</sup>
- Repetition accuracy of up to ±0.003 mm
- Strokes of up to 3000 mm

## Coordinate system



## Toothed belt axes

| Type  | F <sub>x</sub><br>[N] | v<br>[m/s] | M <sub>x</sub><br>[Nm] | M <sub>y</sub><br>[Nm] | M <sub>z</sub><br>[Nm] | Characteristics  |
|---|-----------------------|------------|------------------------|------------------------|------------------------|--|
| Roller bearing guide  |                       |            |                        |                        |                        |  |
| ELGA-TB-RF  |                       |            |                        |                        |                        |  |
|    | 350                   | 10         | 11                     | 40                     | 40                     | <ul style="list-style-type: none"><li>• Heavy-duty roller bearing guide</li><li>• Guide and toothed belt protected by cover strip</li><li>• Speeds of up to 10 m/s</li><li>• Lower weight than axes with guide rails</li></ul>   |
|   | 800                   | 10         | 30                     | 180                    | 180                    |  |
|   | 1300                  | 10         | 100                    | 640                    | 640                    |  |
| ELGA-TB-RF-F1   |                       |            |                        |                        |                        |  |
|   | 260                   | 10         | 8.8                    | 32                     | 32                     | <ul style="list-style-type: none"><li>• Suitable for use in the food zone</li><li>• “Clean look”: smooth, easy-to-clean surfaces</li><li>• Heavy-duty roller bearing guide</li><li>• Guide and toothed belt protected by cover strip</li><li>• Lower weight than axes with guide rails</li></ul> |
|   | 600                   | 10         | 24                     | 144                    | 144                    |  |
|   | 1000                  | 10         | 80                     | 512                    | 512                    |  |
| Plain-bearing guide   |                       |            |                        |                        |                        |  |
| ELGA-TB-G   |                       |            |                        |                        |                        |  |
|  | 350                   | 5          | 5                      | 30                     | 10                     | <ul style="list-style-type: none"><li>• Guide and toothed belt protected by cover strip</li><li>• For simple handling tasks</li><li>• As a drive component for external guides</li><li>• Insensitive to harsh ambient conditions</li></ul>   |
|   | 800                   | 5          | 10                     | 60                     | 20                     |  |
|   | 1300                  | 5          | 120                    | 120                    | 40                     |  |
| ELGR-TB-GF  |                       |            |                        |                        |                        |  |
|  | 50                    | 1          | 1                      | 10                     | 10                     | <ul style="list-style-type: none"><li>• Cost-optimised rod guide</li><li>• Ready-to-install unit</li><li>• Heavy-duty plain bearings for use in harsh ambient conditions</li></ul>   |
|   | 100                   | 1          | 2.5                    | 20                     | 20                     |  |
|   | 350                   | 1          | 1                      | 40                     | 40                     |  |

## Selection aid

## Overview of toothed belt and spindle axes

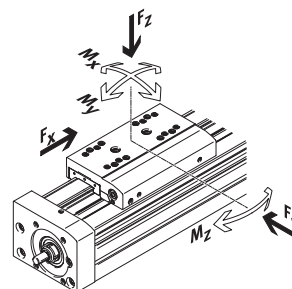
## Toothed belt axes

- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s<sup>2</sup>
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8500 mm (longer strokes on request)
- Flexible motor mountings

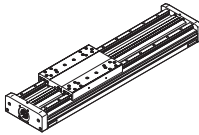
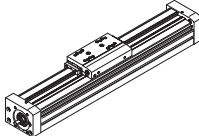
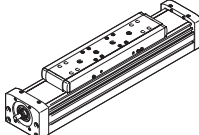
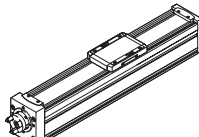
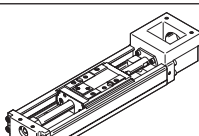
## Spindle axes

- Speeds of up to 2 m/s
- Acceleration of up to 20 m/s<sup>2</sup>
- Repetition accuracy of up to ±0.003 mm
- Strokes of up to 3000 mm

## Coordinate system



## Spindle axes

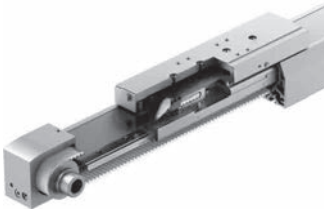
| Type  | $F_x$<br>[N] | $v$<br>[m/s] | $M_x$<br>[Nm] | $M_y$<br>[Nm] | $M_z$<br>[Nm] | Characteristics   |
|---|--------------|--------------|---------------|---------------|---------------|---|
| Heavy-duty recirculating ball bearing guide   |              |              |               |               |               |   |
| EGC-HD-BS   |              |              |               |               |               |   |
|    | 400          | 0.5          | 140           | 275           | 275           | <ul style="list-style-type: none"><li>• Flat drive unit with rigid, closed profile</li><li>• Precision DUO guide rail with high load capacity</li><li>• Ideal as a base axis for linear gantries and cantilever axes</li></ul>  |
|   | 650          | 1.0          | 300           | 500           | 500           |   |
|   | 1500         | 1.5          | 900           | 1450          | 1450          |   |
| Recirculating ball bearing guide  |              |              |               |               |               |   |
| EGC-BS-KF   |              |              |               |               |               |   |
|  | 400          | 0.5          | 16            | 132           | 132           | <ul style="list-style-type: none"><li>• Rigid, closed profile</li><li>• Precision guide rail with high load capacity</li><li>• For the highest requirements in terms of feed force and accuracy</li><li>• Space-saving position sensing</li></ul>   |
|   | 650          | 1.0          | 36            | 228           | 228           |   |
|   | 1500         | 1.5          | 144           | 680           | 680           |   |
|   | 3000         | 2.0          | 529           | 1820          | 1820          |   |
| ELGA-BS-KF  |              |              |               |               |               |   |
|  | 650          | 0.5          | 16            | 132           | 132           | <ul style="list-style-type: none"><li>• Internal guide and ball screw</li><li>• Precision guide rail with high load capacity</li><li>• For the highest requirements in terms of feed force and accuracy</li><li>• Guide and ball screw protected by cover strip</li><li>• Space-saving position sensing</li></ul> |
|   | 1600         | 1.0          | 36            | 228           | 228           |   |
|   | 3400         | 1.5          | 104           | 680           | 680           |   |
|   | 6400         | 2.0          | 167           | 1150          | 1150          |   |
| ELGC-BS-KF  |              |              |               |               |               |   |
|  | 40           | 0.6          | 1.3           | 1.1           | 1.1           | <ul style="list-style-type: none"><li>• Internal guide and ball screw</li><li>• Guide and ball screw protected by cover strip</li><li>• Space-saving position sensing</li></ul>   |
|   | 100          | 0.6          | 5.5           | 4.7           | 4.7           |   |
|   | 200          | 0.8          | 29.1          | 31.8          | 31.8          |   |
|   | 350          | 1.0          | 59.8          | 56.2          | 56.2          |   |
| EGSK  |              |              |               |               |               |   |
|  | 57           | 0.33         | 13            | 3.7           | 3.7           | <ul style="list-style-type: none"><li>• Spindle axes with maximum precision, compactness and rigidity</li><li>• Recirculating ball bearing guide and ball screw without caged ball bearings</li><li>• Standard designs in stock</li></ul>   |
|   | 133          | 1.10         | 28.7          | 9.2           | 9.2           |   |
|   | 184          | 0.83         | 60            | 20.4          | 20.4          |   |
|   | 239          | 1.10         | 79.5          | 26            | 26            |   |
|   | 392          | 1.48         | 231           | 77.3          | 77.3          |   |



## Key features

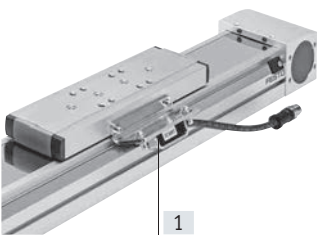
### At a glance

#### ELGA-TB-KF/-KF-F1 – Recirculating ball bearing guide



- Internal, precision recirculating ball bearing guide with high load capacity for high torque loads
- Stainless steel cover strip provides basic protection for guide and toothed belt
- Easy maintenance thanks to readily accessible lubrication connections
- One additional slide can be selected
- Suitable for use in the food zone (ELGA-...-F1)
- Toothed belt material can be selected from:
  - Chloroprene rubber for long service life

- Coated PU with steel reinforcement cords for long service life and resistance to certain cooling lubricants
- Uncoated PU, FDA-compliant



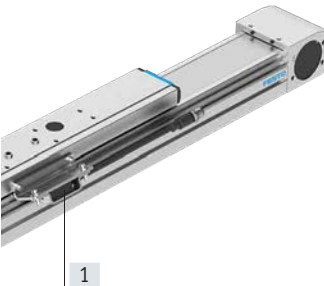
[1] Displacement encoder (optional)  
The position of the slide can be sensed directly when using the incremental displacement encoder. This means that all elasticities of the drive train can be detected and can be corrected by the motor controller (→ page 15)

#### ELGA-TB-RF/-RF-F1 – Roller bearing guide



- For high acceleration and speeds
- Guide backlash = 0 mm
- Very good operating behaviour under torque load
- Suitable for use in the food zone (ELGA-...-F1)
- Sturdy alternative to the recirculating ball bearing guide
- Drive for external guides, especially for high speeds
- Toothed belt material can be selected from:
  - Chloroprene rubber for long service life

- Coated PU with steel reinforcement cords for long service life and resistance to certain cooling lubricants
- Uncoated PU, FDA-compliant



[1] Displacement encoder (optional)  
The position of the slide can be sensed directly when using the incremental displacement encoder. This means that all elasticities of the drive train can be detected and can be corrected by the motor controller (→ page 51)

#### ELGA-TB-G – Plain-bearing guide



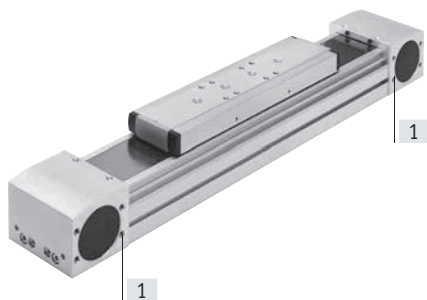
- For small and medium loads
- Low guide backlash
- Drive for external guides
- For simple handling tasks
- Toothed belt material can be selected from:
  - Chloroprene rubber for long service life
  - Coated PU with steel reinforcement cords for long service life and resistance to certain cooling lubricants

## Key features

### Sealing air connections

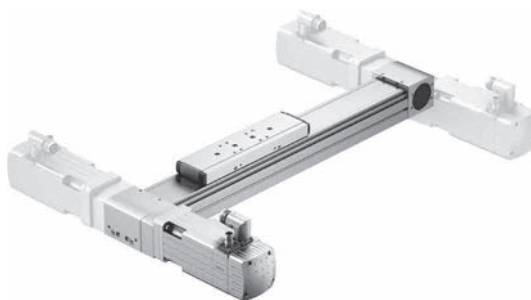
[1] Sealing air connections

- Application of negative pressure minimises the dispersal of abraded particles into the environment
- Application of gauge pressure prevents dirt from getting into the axis
- Provided at both ends



### Flexible motor connection

The motor position can be freely selected on 4 sides and can be changed at any time.



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



#### Motor

→ Page 94



Servo motor:  
EMMT-AS, EMME-AS, EMMS-AS  
Stepper motor:  
EMMS-ST



#### Note

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

#### Servo drives

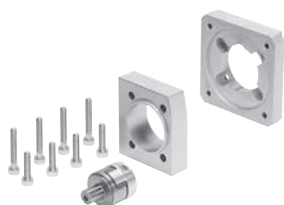


Servo drive:  
CMMT-AS  
Servo drive for extra-low voltage:  
CMMT-ST

#### Motor mounting kit

→ Page 94

##### Axial kit



Kit comprising:

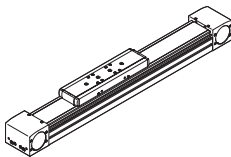
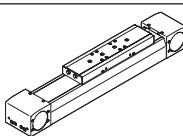
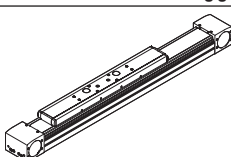
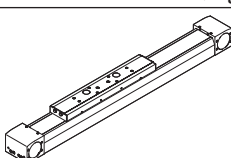
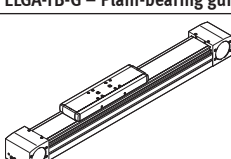
- Motor flange
- Coupling housing
- Coupling
- Screws

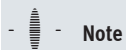
## Key features

## 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 data sheet in the catalogue.

| Design  | Size | Working stroke<br>[mm] | Speed<br>[m/s] | Repetition<br>accuracy<br>[mm] | Feed force<br>[N] | Guide characteristics |           |            |            |            | → Page/<br>Internet |
|---|------|------------------------|----------------|--------------------------------|-------------------|-----------------------|-----------|------------|------------|------------|---------------------|
|   |      |                        |                |                                |                   | Forces and torques    |           |            |            |            |                     |
|   |      |                        |                |                                |                   | Fy<br>[N]             | Fz<br>[N] | Mx<br>[Nm] | My<br>[Nm] | Mz<br>[Nm] |                     |
| ELGA-TB-KF – Recirculating ball bearing guide                                       |      |                        |                |                                |                   |                       |           |            |            |            |                     |
|    | 70   | 50 ... 5000            | 5              | ±0.08                          | 350               | 1500                  | 1850      | 16         | 132        | 132        | 10                  |
|   | 80   | 50 ... 8500            | 5              | ±0.08                          | 800               | 2500                  | 3050      | 36         | 228        | 228        |                     |
|   | 120  | 50 ... 8500            | 5              | ±0.08                          | 1300              | 5500                  | 6890      | 104        | 680        | 680        |                     |
|   | 150  | 50 ... 7000            | 5              | ±0.08                          | 2000              | 11000                 | 11000     | 167        | 1150       | 1150       |                     |
| ELGA-TB-KF-F1 – Recirculating ball bearing guide, suitable for use in the food zone |      |                        |                |                                |                   |                       |           |            |            |            |                     |
|    | 70   | 50 ... 5000            | 5              | ±0.08                          | 260               | 1500                  | 1850      | 16         | 132        | 132        | 30                  |
|   | 80   | 50 ... 8500            | 5              | ±0.08                          | 600               | 2500                  | 3050      | 36         | 228        | 228        |                     |
|   | 120  | 50 ... 8500            | 5              | ±0.08                          | 1000              | 5500                  | 6890      | 104        | 680        | 680        |                     |
| ELGA-TB-RF – Roller bearing guide   |      |                        |                |                                |                   |                       |           |            |            |            |                     |
|   | 70   | 50 ... 7000            | 10             | ±0.08                          | 350               | 500                   | 500       | 11         | 40         | 40         | 46                  |
|   | 80   | 50 ... 7000            | 10             | ±0.08                          | 800               | 800                   | 800       | 30         | 180        | 180        |                     |
|   | 120  | 50 ... 7400            | 10             | ±0.08                          | 1300              | 2000                  | 2000      | 100        | 640        | 640        |                     |
| ELGA-TB-RF-F1 – Roller bearing guide, suitable for use in the food zone             |      |                        |                |                                |                   |                       |           |            |            |            |                     |
|  | 70   | 50 ... 7000            | 10             | ±0.08                          | 260               | 400                   | 400       | 8.8        | 32         | 32         | 64                  |
|   | 80   | 50 ... 7000            | 10             | ±0.08                          | 600               | 640                   | 640       | 24         | 144        | 144        |                     |
|   | 120  | 50 ... 7400            | 10             | ±0.08                          | 1000              | 1600                  | 1600      | 80         | 512        | 512        |                     |
| ELGA-TB-G – Plain-bearing guide   |      |                        |                |                                |                   |                       |           |            |            |            |                     |
|  | 70   | 50 ... 8500            | 5              | ±0.08                          | 350               | 80                    | 400       | 5          | 30         | 10         | 80                  |
|   | 80   | 50 ... 8500            | 5              | ±0.08                          | 800               | 200                   | 800       | 10         | 60         | 20         |                     |
|   | 120  | 50 ... 8500            | 5              | ±0.08                          | 1300              | 380                   | 1600      | 20         | 120        | 40         |                     |



## Note

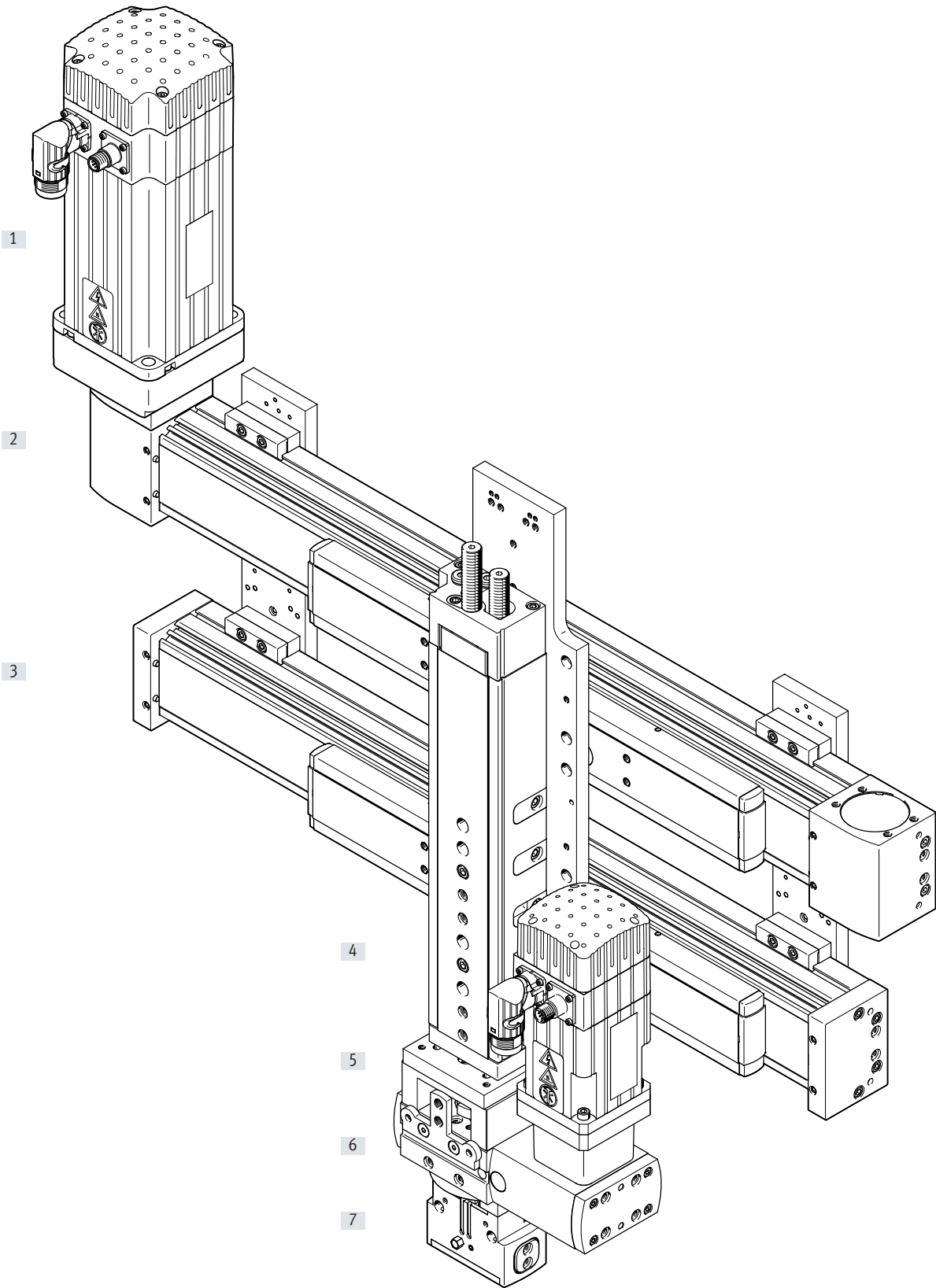
Engineering software

Electric Motion Sizing

[www.festo.com/x/electric-motion-sizing](http://www.festo.com/x/electric-motion-sizing)

Key features

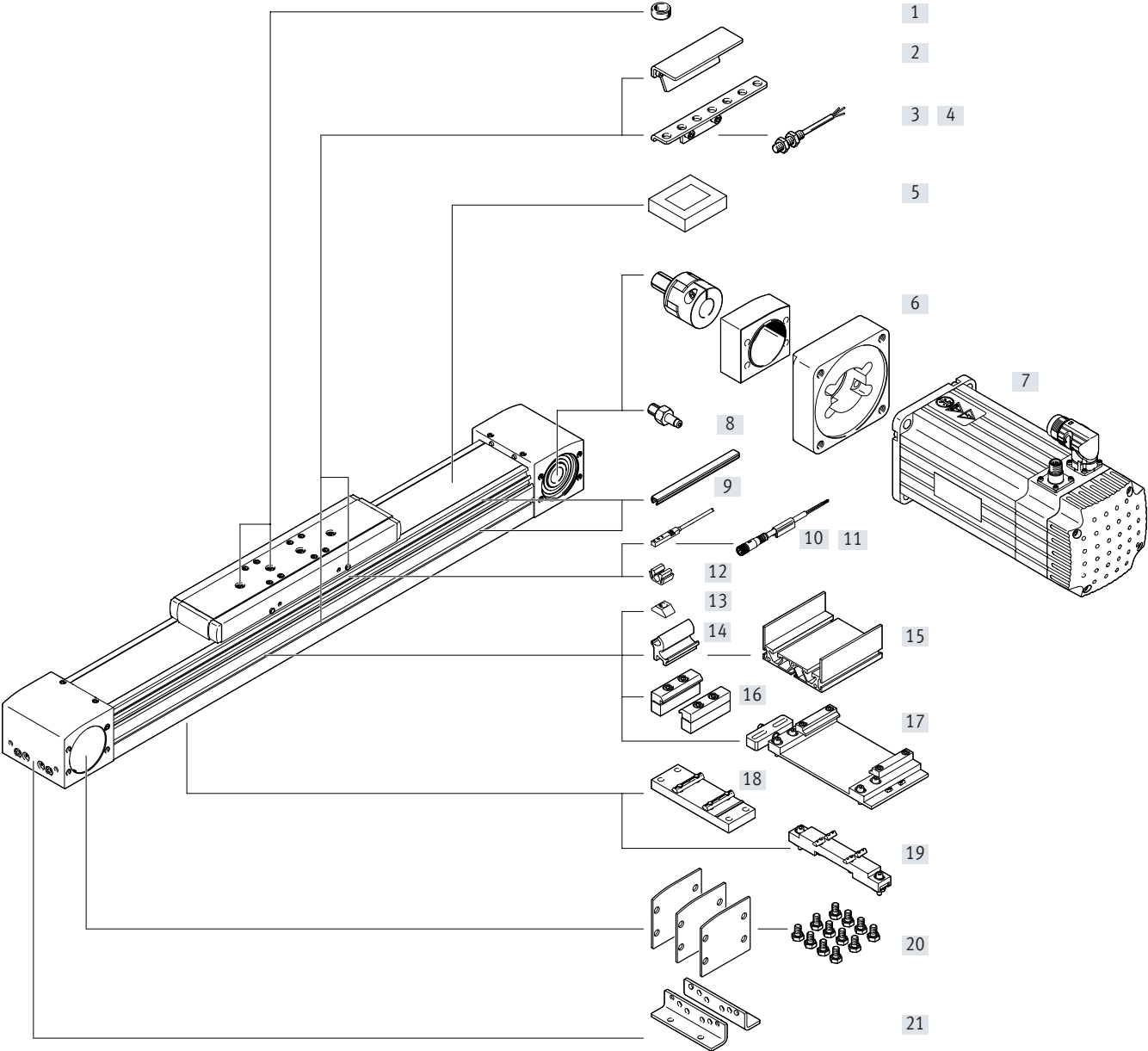
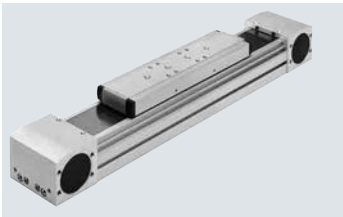
System product for handling and assembly technology



## Key features

| System components and accessories |                    |   | → Internet        |
|-----------------------------------|--------------------|---|-------------------|
| [1]                               | Motors             | Servo and stepper motors, with or without gearbox                           | motor             |
| [2]                               | Axes               | Wide range of combinations possible within handling and assembly technology | axis              |
| [3]                               | Guide axes         | For supporting forces and torques in multi-axis applications                | guide axis        |
| [4]                               | Drives             | Wide range of combinations possible within handling and assembly technology | drive             |
| [5]                               | Adapter            | For drive/drive and drive/gripper connections                               | gripper           |
| [6]                               | Semi-rotary drives | Wide range of variations possible within handling and assembly technology   | semi-rotary drive |
| [7]                               | Grippers           | Wide range of variations possible within handling and assembly technology   | gripper           |

Peripherals overview



## Peripherals overview

| Accessories                              |   |                 |  |
|--|---|-----------------|--|
| Type                                     | Description   | → Page/Internet |  |
| [1] Centring pin/sleeve<br>ZBS, ZBH      | <ul style="list-style-type: none"> <li>For centring loads and attachments on the slide</li> <li>Included in the scope of delivery: <ul style="list-style-type: none"> <li>With size 70: 2x ZBS-5</li> <li>With size 80, 120, 150: 2x ZBH-9</li> </ul> </li> </ul> | 108             |  |
| [2] Switch lug<br>SF-EGC                 | For sensing the slide position  | 105             |  |
| [3] Sensor bracket<br>HWS-EGC            | For mounting the inductive proximity switches (round design) on the axis  | 106             |  |
| [4] Proximity switch, M8<br>SIEN-M8      | Inductive proximity switch, round design  | 110             |  |
| [5] Clamping element<br>EADT             | Tool for retensioning the cover strip   | 108             |  |
| [6] Axial kit<br>EAMM                    | For axial motor mounting (comprising: coupling, coupling housing and motor flange)  | 94              |  |
| [7] Motor<br>EMME, EMMS                  | Motors specially matched to the axis, with or without gear unit, with or without brake  | 94              |  |
| [8] Drive shaft<br>EAMB                  | <ul style="list-style-type: none"> <li>Can, if required, be used as an alternative interface</li> <li>No drive shaft is required for the axis/motor combinations → page 94</li> </ul>   | 99              |  |
| [9] Slot cover<br>ABP                    | For protection against contamination  | 108             |  |
| [10] Proximity switch, T-slot<br>SIES-8M | <ul style="list-style-type: none"> <li>Inductive proximity switch, for T-slot</li> <li>The order code SA, SB includes 1 switch lug in the scope of delivery</li> </ul>  | 109             |  |
| [11] Connecting cable<br>NEBU, SIM       | Via proximity switch  | 110             |  |
| [12] Clip<br>SMBK                        | For mounting the proximity switch cable in the slot   | 108             |  |
| [13] Slot nut<br>NST                     | For mounting attachments  | 108             |  |
| [14] Adapter kit<br>DHAM                 | For mounting the support profile on the axis  | 109             |  |
| [15] Support profile<br>HMIA             | For mounting and guiding an energy chain  | 109             |  |
| [16] Profile mounting<br>MUE             | For mounting the axis on the side of the profile  | 101             |  |
| [17] Adjusting kit<br>EADC-E16           | For mounting the axis on a vertical surface. Once mounted, the axis can be aligned horizontally   | 104             |  |
| [18] Central support<br>EAHF-L5          | For mounting the axis on the profile from underneath  | 102             |  |
| [19] Adjusting kit<br>EADC-E15           | Height-adjustable. Can be used to easily compensate for any unevenness in the bearing surface   | 103             |  |
| [20] Cover kit<br>EASC-L5                | For covering the sides of the drive cover   | 108             |  |
| [21] Foot mounting<br>HPE                | <ul style="list-style-type: none"> <li>For mounting the axis on the end cap</li> <li>With higher forces and torques, the axis should be mounted using the profile</li> </ul>  | 100             |  |

## Type codes

|             |               |  |
|-------------|---------------|--|
| <b>001</b>  | <b>Series</b> |  |
| <b>ELGA</b> | Gantry axis   |  |

|            |                     |  |
|------------|---------------------|--|
| <b>002</b> | <b>Drive system</b> |  |
| <b>TB</b>  | Toothed belt        |  |

|            |                                  |  |
|------------|----------------------------------|--|
| <b>003</b> | <b>Guide</b>                     |  |
| <b>KF</b>  | Recirculating ball bearing guide |  |

|            |             |  |
|------------|-------------|--|
| <b>004</b> | <b>Size</b> |  |
| <b>70</b>  | 70          |  |
| <b>80</b>  | 80          |  |
| <b>120</b> | 120         |  |
| <b>150</b> | 150         |  |

|            |               |  |
|------------|---------------|--|
| <b>005</b> | <b>Stroke</b> |  |
| <b>...</b> | 50 ... 8500   |  |

|             |                       |  |
|-------------|-----------------------|--|
| <b>006</b>  | <b>Stroke reserve</b> |  |
| <b>...H</b> | 0 ... 999             |  |

|            |                         |  |
|------------|-------------------------|--|
| <b>007</b> | <b>Additional slide</b> |  |
|            | None                    |  |
| <b>ZR</b>  | 1 slide right           |  |
| <b>ZL</b>  | 1 slide left            |  |

|            |   |  |
|------------|---|--|
| <b>008</b> | <b>Additional characteristics</b>                             |  |
|            | None  |  |
| <b>F1</b>  | Food-safe according to supplementary information on materials |  |

|            |   |  |
|------------|---|--|
| <b>009</b> | <b>Displacement encoder</b>                               |  |
|            | None  |  |
| <b>M1</b>  | With displacement encoder, incremental, resolution 2.5 µm |  |
| <b>M2</b>  | With displacement encoder, incremental, resolution 10 µm  |  |

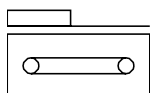
|            |   |  |
|------------|---|--|
| <b>010</b> | <b>Displacement encoder attachment position</b> |  |
|            | None  |  |
| <b>F</b>   | Front   |  |
| <b>B</b>   | Rear  |  |




|            |                              |  |
|------------|------------------------------|--|
| <b>011</b> | <b>Toothed belt material</b> |  |
|            | Standard                     |  |
| <b>PU1</b> | Uncoated PU, FDA-compliant   |  |
| <b>PU2</b> | Coated PU                    |  |

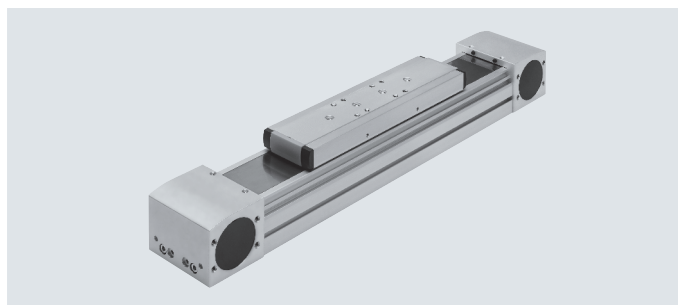
|            |                                |  |
|------------|--------------------------------|--|
| <b>012</b> | <b>Operating instructions</b>  |  |
|            | With operating instructions    |  |
| <b>DN</b>  | Without operating instructions |  |



## Data sheet



-  Size  
70 ... 150
-  Stroke length  
50 ... 8500 mm
-  [www.festo.com](http://www.festo.com)



| General technical data                                |  |             |             |             |
|---|--|-------------|-------------|-------------|
| Size  | 70                                       | 80          | 120         | 150         |
| Design  | Electromechanical axis with toothed belt |             |             |             |
| Guide   | Recirculating ball bearing guide         |             |             |             |
| Mounting position                                     | Any                                      |             |             |             |
| Working stroke [mm]                                   | 50 ... 5000                              | 50 ... 8500 | 50 ... 8500 | 50 ... 7000 |
| Max. feed force $F_x$ [N]                             | 350                                      | 800         | 1300        | 2000        |
| Max. no-load torque <sup>1)</sup> [Nm]                | 0.6                                      | 1           | 2.8         | 4           |
| Max. no-load resistance to shifting <sup>1)</sup> [N] | 41.9                                     | 50.3        | 76.2        | 108.3       |
| Max. driving torque [Nm]                              | 5.02                                     | 15.92       | 34.1        | 73.85       |
| Max. speed [m/s]                                      | 5  |             |             |             |
| Max. acceleration [m/s <sup>2</sup> ]                 | 50                                       |             |             |             |
| Repetition accuracy [mm]                              | ±0.08                                    |             |             |             |

1) At 0.2 m/s

| Operating and environmental conditions |             |  |
|--|-------------|--|
| Ambient temperature <sup>1)</sup> [°C] | -10 ... +60 |  |
| Degree of protection                   | IP40        |  |
| Duty cycle [%]                         | 100         |  |

1) Note operating range of proximity switches

| Weight [kg]                                 |      |      |       |       |
|---|------|------|-------|-------|
| Size  | 70   | 80   | 120   | 150   |
| Basic weight with 0 mm stroke <sup>1)</sup> | 2.97 | 4.70 | 15.68 | 32.83 |
| Additional weight per 1000 mm stroke        | 3.94 | 5.13 | 10.64 | 17.22 |
| Moving mass                                 |      |      |       |       |
| ELGA-...                                    | 0.90 | 1.90 | 4.19  | 7.24  |
| ELGA-...-ZL/ZR                              | 0.74 | 1.53 | 3.24  | 5.84  |

1) Incl. slide

| Toothed belt             |       |       |       |       |
|--------------------------|-------|-------|-------|-------|
| Size                     | 70    | 80    | 120   | 150   |
| Pitch [mm]               | 3     | 5     | 5     | 8     |
| Elongation <sup>1)</sup> |       |       |       |       |
| ELGA-...                 | 0.213 | 0.168 | 0.21  | 0.258 |
| ELGA-...-PU2             | 0.105 | 0.1   | 0.122 | 0.083 |
| Effective diameter [mm]  | 28.65 | 39.79 | 52.52 | 73.85 |
| Feed constant [mm/rev]   | 90    | 125   | 165   | 232   |

1) At max. feed force

## Data sheet

| Mass moments of inertia    |                          | 70  | 80  | 120  | 150   |
|----------------------------|--------------------------|-----|-----|------|-------|
| Size                       |                          |     |     |      |       |
| $J_O$                      | [kg mm <sup>2</sup> ]    | 243 | 982 | 4099 | 15426 |
| $J_H$ per metre stroke     | [kg mm <sup>2</sup> /m]  | 19  | 93  | 215  | 586   |
| $J_L$ per kg payload       | [kg mm <sup>2</sup> /kg] | 205 | 396 | 690  | 1363  |
| $J_W$ for additional slide | [kg mm <sup>2</sup> ]    | 186 | 761 | 2891 | 9869  |

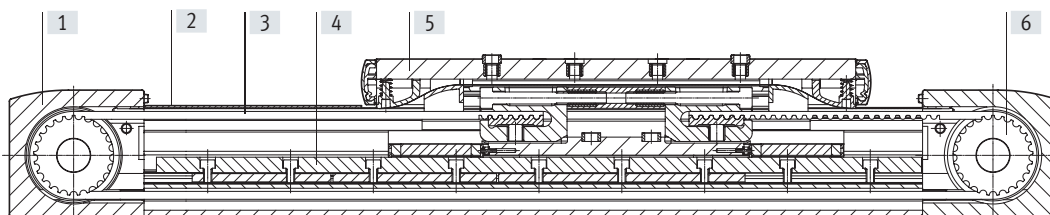
The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

$$J_A = J_O + K \times J_W + J_H \times \text{working stroke [m]} + J_L \times m_{\text{payload [kg]}}$$

$K$  = Number of additional slides

## Materials

## Sectional view



| Axis<br>Size |                   | 70  | 80 | 120            | 150 |
|--------------|-------------------|---|----|----------------|-----|
| [1]          | Drive cover       | Anodised wrought aluminium alloy                  |    |                |     |
| [2]          | Cover strip       | Stainless steel strip, non-corroding              |    |                |     |
| [3]          | Toothed belt      |   |    |                |     |
|              | ELGA-...          | Polychloroprene with glass cord and nylon coating |    |                |     |
|              | ELGA-...-PU2      | Polyurethane with steel cord and nylon cover      |    |                |     |
| [4]          | Guide rail        | Stainless steel                                   |    | Tempered steel |     |
| [5]          | Slide             | Anodised wrought aluminium alloy                  |    |                |     |
| [6]          | Belt pulley       | High-alloy stainless steel                        |    |                |     |
|              | Note on materials | RoHS-compliant                                    |    |                |     |
|              |                   | Contains paint-wetting impairment substances      |    |                |     |

## Data sheet

| Technical data – Displacement encoder                                |       |  | Dimensions → page 26 |
|--|-------|--|----------------------|
| Type   |       | ELGA-...-M1  | ELGA-...-M2          |
| Resolution   | [μm]  | 2.5  | 10                   |
| Max. travel speed<br>with displacement encoder                       | [m/s] | 4  | 4                    |
| Encoder signal   |       | 5 V TTL; A/A, B/B; reference signal (N/N) cyclically every 5 mm (zero pulse) |                      |
| Signal output  |       | Line driver, alternating, resistant to sustained short circuit               |                      |
| Electrical connection  |       | 8-pin plug, round design, M12  |                      |
| Cable length   | [mm]  | 160  |                      |
|  |       |  |                      |
| Operating and environmental conditions – Displacement encoder system |       |  |                      |
| Ambient temperature  | [°C]  | −10 ... +70  |                      |
| Degree of protection   |       | IP64   |                      |
| CE marking (see declaration of conformity)                           |       | To EU EMC Directive <sup>1)</sup>  |                      |

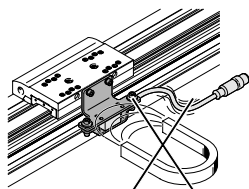
1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

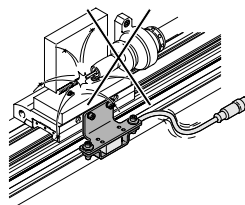
## Application information

The spindle axis with displacement encoder is not designed for the following application examples:

- Magnetic field



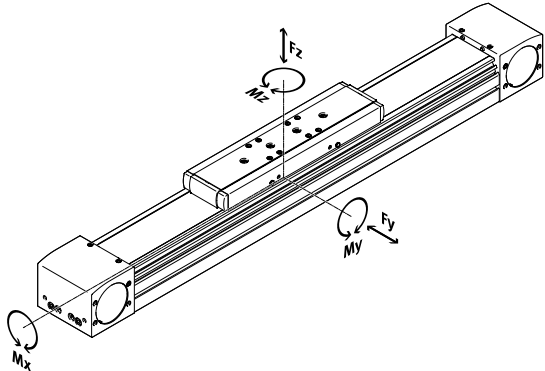
- Welding application



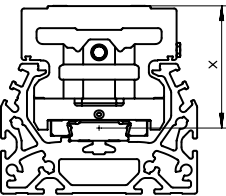
Data sheet

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.




Distance from the slide surface to the centre of the guide



| Distance from the slide surface to the centre of the guide |      |    |    |     |     |
|--|------|----|----|-----|-----|
| Size   |      | 70 | 80 | 120 | 150 |
| Dimension x  | [mm] | 37 | 50 | 70  | 86  |

| Max. permissible forces and torques for a service life of 5000 km |      |      |      |      |       |
|---|------|------|------|------|-------|
| Size  |      | 70   | 80   | 120  | 150   |
| F <sub>y</sub> max.   | [N]  | 1500 | 2500 | 5500 | 11000 |
| F <sub>z</sub> max  | [N]  | 1850 | 3050 | 6890 | 11000 |
| M <sub>x</sub> max.   | [Nm] | 16   | 36   | 104  | 167   |
| M <sub>y</sub> max.   | [Nm] | 132  | 228  | 680  | 1150  |
| M <sub>z</sub> max.   | [Nm] | 132  | 228  | 680  | 1150  |

 **Note**

For a guide system to have a service life of 5000 km, the load comparison factor must have a value of  $f_v \leq 1$ , based on the maximum permissible forces and torques for a service life of 5000 km.

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

Calculating the load comparison factor:

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

F<sub>1</sub>/M<sub>1</sub> = dynamic value  
F<sub>2</sub>/M<sub>2</sub> = maximum value

## Data sheet

### Calculating the service life

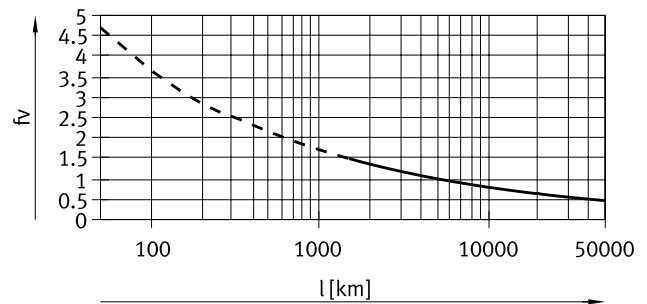
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor  $f_v$  against the service life.

These values are only theoretical. You must consult your local Festo contact for a load comparison factor  $f_v$  greater than 1.5.

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

Example:

A user wants to move an X kg load. Using the formula (→ page 16) gives a value of 1.5 for the load comparison factor  $f_v$ . According to the graph, the guide would have a service life of approx. 1500 km. Reducing the acceleration reduces the  $M_z$  and  $M_y$  values. A load comparison factor  $f_v$  of 1 now gives a service life of 5000 km.



#### Note

Engineering software  
Electric Motion Sizing  
[www.festo.com/x/electric-motion-sizing](http://www.festo.com/x/electric-motion-sizing)

The engineering software can be used to calculate the guide workload for a service life of 5000 km.

$f_v > 1.5$  are only theoretical comparison values for the recirculating ball bearing guide.

### Comparison of the characteristic load values for 5000 km with dynamic forces and torques of recirculating ball bearing guides

The characteristic load values of bearing guides are standardised to ISO and JIS using dynamic and static forces and torques. These forces and torques are based on an expected service life of the guide system of 100 km to ISO or 50 km to JIS. As the characteristic load values are dependent on the service life, the maximum permissible forces and torques for a 5000 km service life cannot be compared with the dynamic forces and torques of bearing guides to ISO/JIS.

To make it easier to compare the guide capacity of linear axes ELGA with bearing guides, the table below lists the theoretically permissible forces and torques for a calculated service life of 100 km. This corresponds to the dynamic forces and torques to ISO.

These 100 km values have been calculated mathematically and are only to be used for comparing with dynamic forces and torques to ISO. The drives must not be loaded with these characteristic values as this could damage the axes.

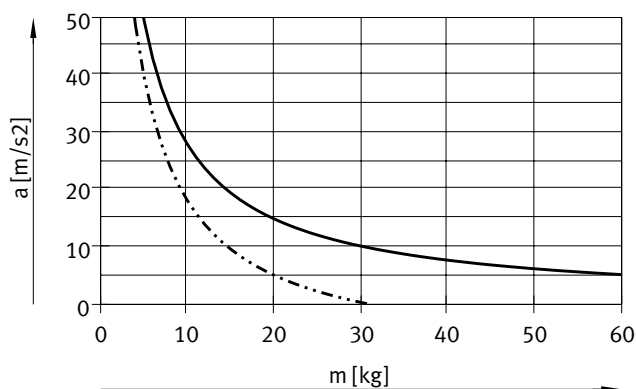
#### Max. permissible forces and torques for a theoretical service life of 100 km (from a guide perspective only)

| Size          |      | 70   | 80    | 120   | 150   |
|---------------|------|------|-------|-------|-------|
| $F_{y_{max}}$ | [N]  | 5520 | 9200  | 20240 | 40480 |
| $F_{z_{max}}$ | [N]  | 6808 | 11224 | 25355 | 40480 |
| $M_{x_{max}}$ | [Nm] | 59   | 132   | 383   | 615   |
| $M_{y_{max}}$ | [Nm] | 486  | 839   | 2502  | 4232  |
| $M_{z_{max}}$ | [Nm] | 486  | 839   | 2502  | 4232  |

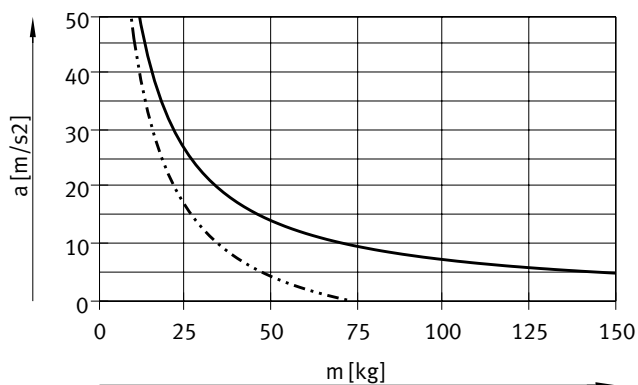
## Data sheet

### Max. acceleration $a$ as a function of payload $m$

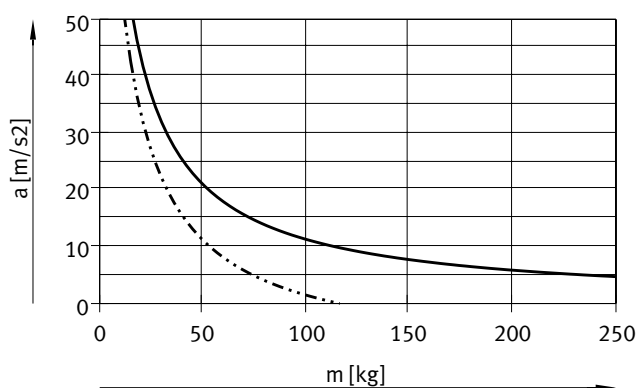
Size 70



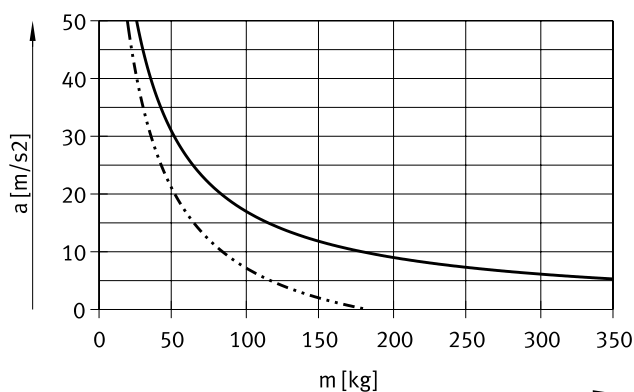
Size 80



Size 120

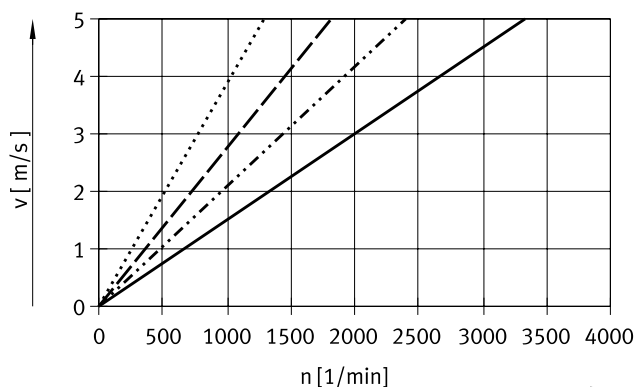


Size 150



— Horizontal mounting position  
 - - - Vertical mounting position

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

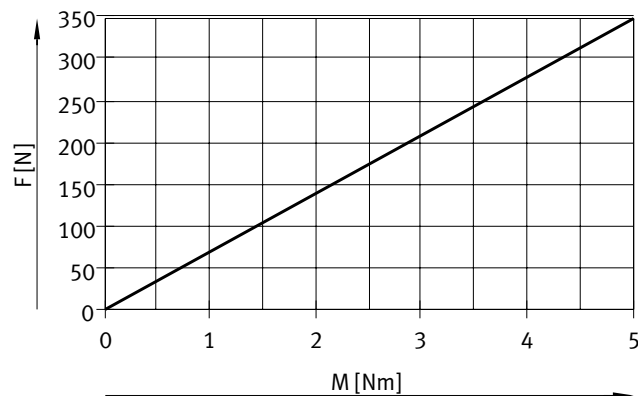


— ELGA-TB-KF-70  
 ..... ELGA-TB-KF-80  
 - - - ELGA-TB-KF-120  
 - · - · - ELGA-TB-KF-150

## Data sheet

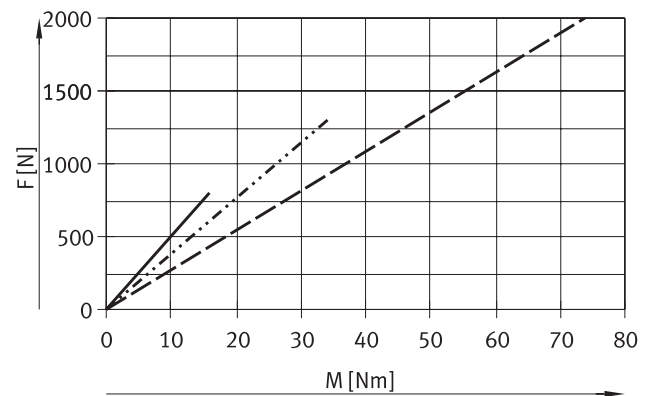
## Theoretical feed force F as a function of input torque M

Size 70



— ELGA-TB-KF-70

Size 80/120/150

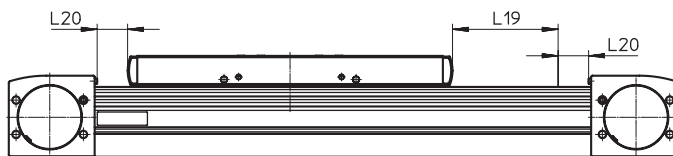


— ELGA-TB-KF-80

····· ELGA-TB-KF-120

- - - ELGA-TB-KF-150

## Stroke reserve



L19 = Nominal stroke

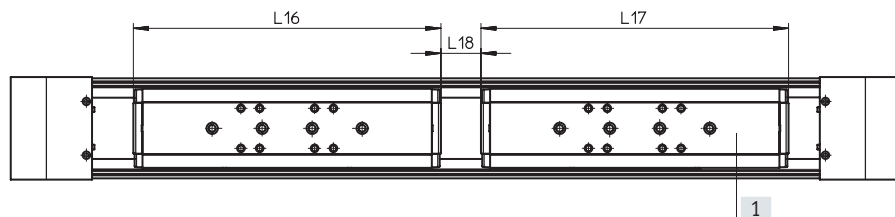
L20 = Stroke reserve

- The stroke reserve is a safety distance from the mechanical end position and is not used in normal operation
  - The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum permissible working stroke
  - The stroke reserve length can be freely selected
  - The stroke reserve is defined via the "stroke reserve" characteristic in the modular product system.
- Example:**  
 Type ELGA-TB-KF-70-500-20H-...  
 Nominal stroke = 500 mm  
 2x stroke reserve = 40 mm  
 Working stroke = 540 mm  
 (540 mm = 500 mm + 2x 20 mm)

## Working stroke reduction

With axis ELGA with additional slide ZL/ZR

For a toothed belt axis with additional slide, the working stroke is reduced by the length of the additional slide and the distance between the two slides



- L16 = Slide length  
 L17 = Additional slide length  
 L18 = Distance between both slides  
 [1] Additional slide

## Example:

Type ELGA-TB-KF-70-500-...-ZL/ZR

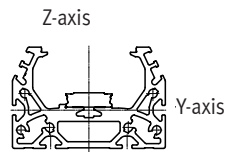
- Working stroke without additional slide = 500 mm  
 L18 = 50 mm  
 L16, L17 = 221 mm  
 Working stroke with additional slide = 229 mm  
 (500 mm – 50 mm – 221 mm)

## Dimensions – Additional slide

| Size                                      | 70   | 80   | 120  | 150   |
|---|------|------|------|-------|
| Length L17 [mm]                           | 221  | 246  | 335  | 378.4 |
| Min. distance between the slides L18 [mm] | ≥ 50 | ≥ 50 | ≥ 50 | ≥ 50  |

Data sheet

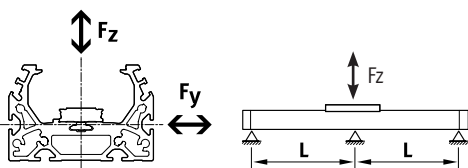
2nd moments of area



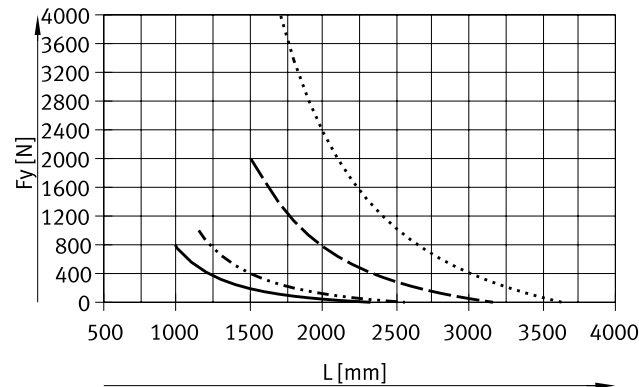
| Size           |                    | 70                   | 80                   | 120                  | 150                   |
|----------------|--------------------|----------------------|----------------------|----------------------|-----------------------|
| I <sub>y</sub> | [mm <sup>4</sup> ] | 1.46x10 <sup>5</sup> | 2.57x10 <sup>5</sup> | 1.26x10 <sup>6</sup> | 4.62x10 <sup>6</sup>  |
| I <sub>z</sub> | [mm <sup>4</sup> ] | 4.59x10 <sup>5</sup> | 9.14x10 <sup>5</sup> | 4.37x10 <sup>6</sup> | 12.32x10 <sup>6</sup> |

Maximum permissible support spacing L (without profile mounting MUE/central support EAHF) as a function of force F

In order to limit deflection in the case of large strokes, the axis may need to be supported.  
The following graphs can be used to determine the maximum permissible support spacing l as a function of force F acting on the axis. The deflection is f = 0.5 mm.

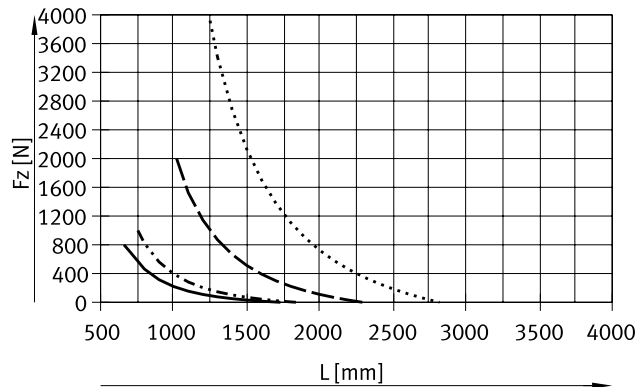


Force F<sub>y</sub>



- ELGA-TB-KF-70
- ELGA-TB-KF-80
- ELGA-TB-KF-120
- ELGA-TB-KF-150

Force F<sub>z</sub>



Recommended deflection limits

Adherence to the following deflection limits is recommended so as not to impair the functionality of the axes.  
Greater deformation can result in increased friction, greater wear and reduced service life.

| Size       | Dynamic deflection<br>(moving load)   | Static deflection<br>(stationary load) |
|------------|---------------------------------------|--|
| 70 ... 150 | 0.05% of the axis length, max. 0.5 mm | 0.1% of the axis length                |



## Data sheet

### Central lubrication

The lubrication connections enable the guide of the toothed belt axis ELGA-TB-KF to be permanently lubricated in applications in humid or wet ambient conditions using semi- or fully automatic relubrication devices.

- The connection options are already available in the standard design of the axes
- There is a dedicated lubrication connection for the spindle nut and the two ball cassettes

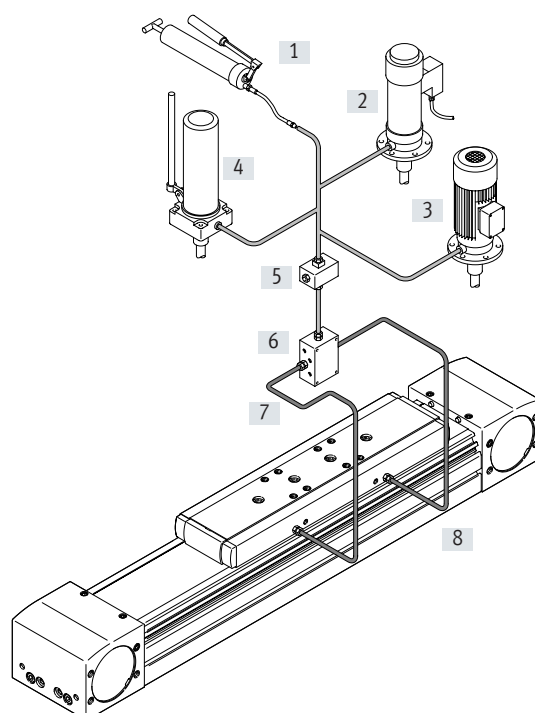
Slide dimensions  
→ page 24

### Design of a central lubrication system

A central lubrication system requires various additional components. The illustration shows different options (using a hand pump, pneumatic container pump or electric container pump) required as a minimum for designing a central lubrication system. Festo does not sell these additional components; however, they can be obtained from the following companies:

- Lincoln
- Bielomatik
- SKF (Vogel)

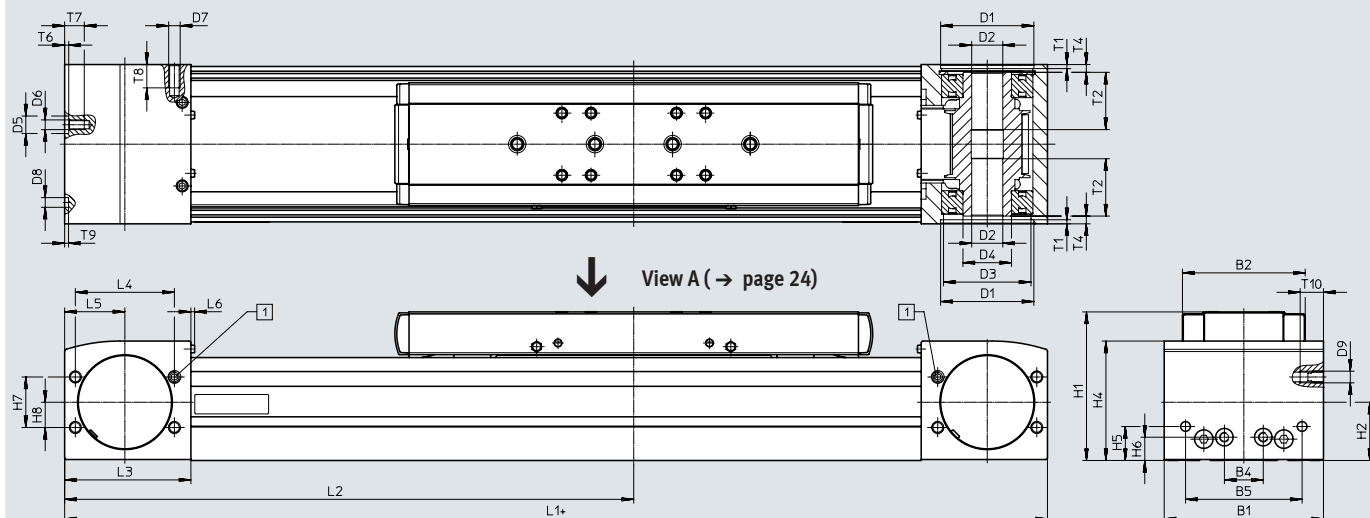
Festo recommends these companies because they can supply all the necessary components.



- [1] Hand pump
- [2] Pneumatic container pump
- [3] Electric container pump
- [4] Manually operated container pump
- [5] Nipple block
- [6] Distributor block
- [7] Tubing or piping
- [8] Fittings

## Data sheet

## Dimensions

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

+ = plus stroke length + 2x stroke reserve

[1] Sealing air connection

| Size | B1  | B2   | B4  | B5 | D1<br>Ø<br>H7 | D2<br>Ø<br>H7 | D3<br>Ø | D4<br>Ø | D5<br>Ø<br>H7 | D6 | D7 |
|------|-----|------|-----|----|---------------|---------------|---------|---------|---------------|----|----|
| 70   | 69  | 48.2 | 30  | 45 | 38            | 16            | 34      | 25      | –             | M5 | M6 |
| 80   | 82  | 63.2 | 20  | 60 | 48            | 16            | 45      | 25      | 9             | M5 | M6 |
| 120  | 120 | 95   | 80  | 40 | 80            | 23            | 72      | 45      | –             | M8 | M8 |
| 150  | 154 | 125  | 115 | 80 | 95            | 32            | 90      | 60      | –             | M8 | M8 |

| Size | D8<br>Ø<br>H7 | D9 | H1    | H2   | H4   | H5   | H6   | H7 | H8 | L1  | L2<br>min. |
|------|---------------|----|-------|------|------|------|------|----|----|-----|------------|
| 70   | 5             | M6 | 64    | 26.5 | 50.8 | 13   | 13   | 24 | 12 | 346 | 173        |
| 80   | 5             | M6 | 76.5  | 30   | 61.5 | 17.5 | 12   | 26 | 13 | 386 | 193        |
| 120  | 9             | M8 | 111.5 | 45   | 91   | 22   | 22   | 59 | 32 | 546 | 273        |
| 150  | 9             | M8 | 141.5 | 58.6 | 121  | 26.5 | 26.5 | 80 | 40 | 712 | 356        |

| Size | L3   | L4 | L5   | L6  | T1  | T2   | T4  | T6  | T7   | T8 | T9  | T10 |
|------|------|----|------|-----|-----|------|-----|-----|------|----|-----|-----|
| 70   | 57.5 | 42 | 27.5 | 2.3 | 2.1 | 18   | 7.2 | –   | 10   | 12 | 3.1 | 12  |
| 80   | 65   | 51 | 31   | 2.3 | 2.1 | 29.5 | 4   | 2.1 | 10.1 | 12 | 2   | 12  |
| 120  | 100  | 76 | 50   | 2.5 | 3.1 | 29.5 | 4   | –   | 16   | 16 | 2.1 | 16  |
| 150  | 140  | 80 | 70   | 2.5 | 2.8 | 32   | 4   | –   | 18   | 17 | 2.1 | 17  |

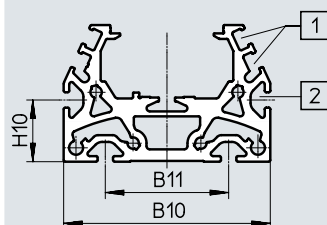
## Data sheet

## Dimensions

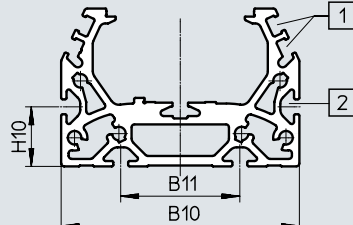
Download CAD data → [www.festo.com](http://www.festo.com)

## Profile

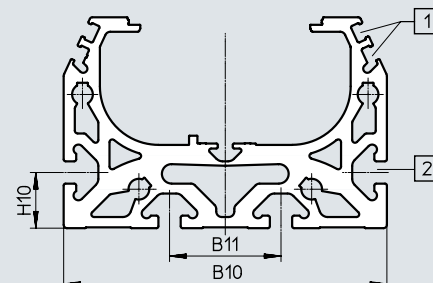
## Size 70



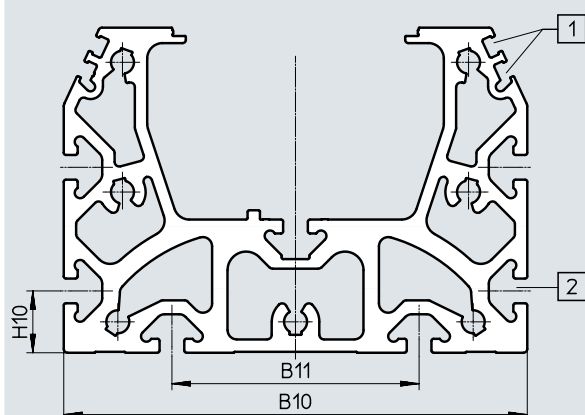
## Size 80



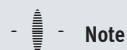
## Size 120



## Size 150



- [1] Sensor slot for proximity switch  
 [2] Mounting slot for slot nut  
 With size 70, 80: slot nut NST-5-M5  
 With size 120, 150: slot nut NST-8-M6

**Note**

Requirements for the evenness of the bearing surface and of attachments as well as for use in parallel structures

→ [www.festo.com/sp](http://www.festo.com/sp) User documentation.

| Size | B10 | B11 | H10 |
|------|-----|-----|-----|
| 70   | 67  | 40  | 20  |
| 80   | 80  | 40  | 20  |
| 120  | 116 | 40  | 20  |
| 150  | 150 | 80  | 20  |

## Data sheet

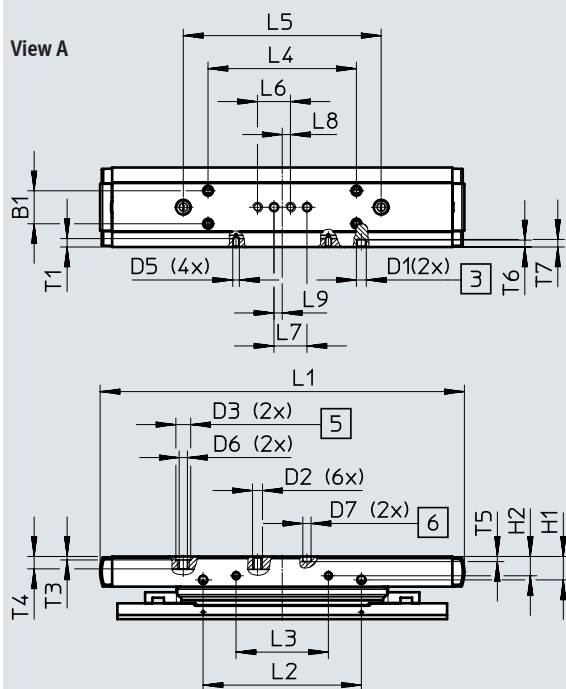
## Dimensions

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

Slide

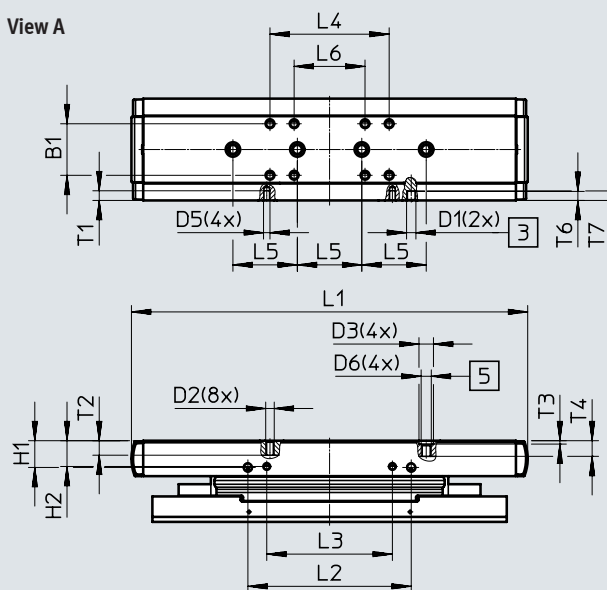
Size 70

View A



Size 80

View A



- [3] Lubrication connections  
 [5] Drilled hole for centring sleeve ZBH  
 [6] Drilled hole for centring pin ZBS

| Size | B1   | D1 | D2 | D3<br>Ø<br>H7 | D5 | D6 | D7<br>Ø<br>H7 | H1   | H2   | L1  | L2    | L3   |
|------|------|----|----|---------------|----|----|---------------|------|------|-----|-------|------|
|      | ±0.1 |    |    |               |    |    |               | ±0.1 | ±0.1 |     | ±0.1  | ±0.1 |
| 70   | 20   | M6 | M5 | 9             | M4 | M6 | 5             | 14.2 | 11.7 | 221 | 96    | 56   |
| 80   | 32   | M6 | M5 | 9             | M4 | M6 | –             | 16.6 | 16   | 246 | 101.4 | 78   |

| Size | L4   | L5    | L6   | L7    | L8 | L9   | T1  | T2 | T3   | T4                  | T5   | T6   | T7                  |
|------|------|-------|------|-------|----|------|-----|----|------|---------------------|------|------|---------------------|
|      | ±0.1 | ±0.03 | ±0.1 | ±0.03 |    | ±0.1 |     |    | +0.1 |                     | ±0.1 | min. | max.                |
| 70   | 90   | 120   | 20   | 20    | 5  | 10   | 5.1 | –  | 2.1  | 7.5                 | 3.1  | 4.2  | 4.6 <sub>-0.1</sub> |
| 80   | 74   | 40    | 44   | –     | –  | –    | 6   | 9  | 2.1  | 9.7 <sub>-0.2</sub> | –    | 5.6  | 5.9 <sub>-0.1</sub> |

## Data sheet

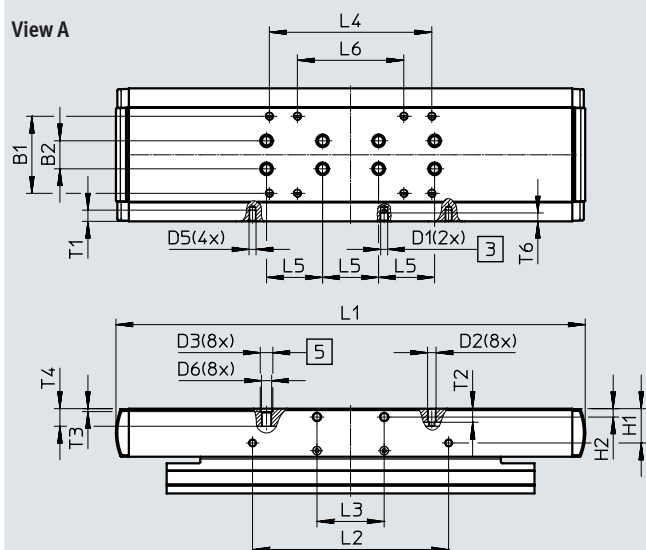
## Dimensions

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

Slide

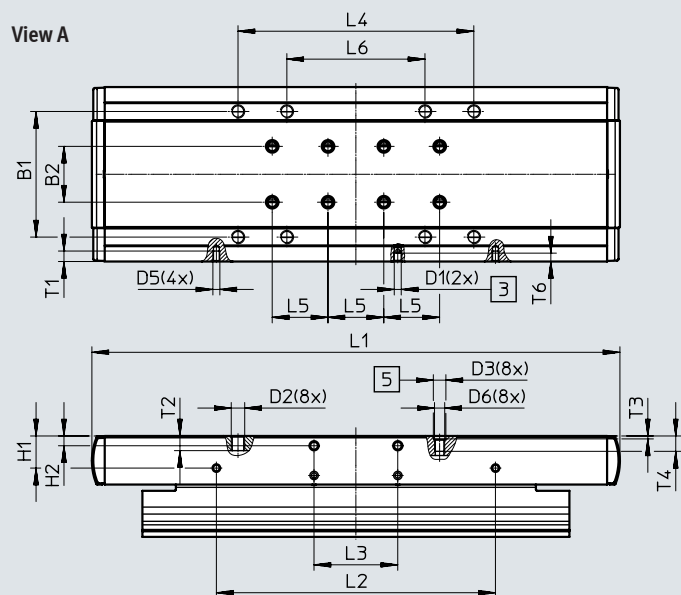
## Size 120

View A



## Size 150

View A



[3] Lubrication connections

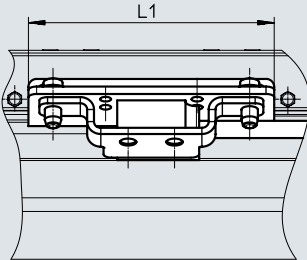
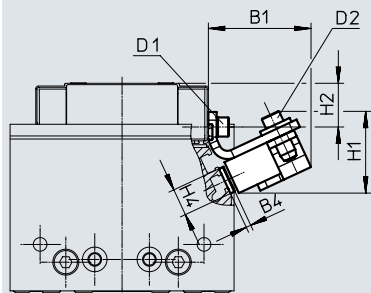
[5] Drilled hole for centring ZBH

| Size | B1   | B2    | D1 | D2 | D3<br>Ø<br>H7 | D5 | D6 | H1   | H2    | L1    |
|------|------|-------|----|----|---------------|----|----|------|-------|-------|
|      | ±0.2 | ±0.03 |    |    |               |    |    | ±0.1 |       |       |
| 120  | 55   | 20    | M6 | M5 | 9             | M5 | M6 | 24.5 | 6     | 335   |
| 150  | 90   | 40    | M6 | M8 | 9             | M5 | M6 | 23   | 7±0.1 | 378.4 |

| Size | L2   | L3   | L4   | L5    | L6   | T1  | T2   | T3   | T4                   | T6 |
|------|------|------|------|-------|------|-----|------|------|----------------------|----|
|      | ±0.1 | ±0.1 | ±0.2 | ±0.03 | ±0.2 |     |      | +0.1 |                      |    |
| 120  | 140  | 48   | 116  | 40    | 76   | 8   | 9.7  | 2.1  | 12.6 <sub>-0.3</sub> | 6  |
| 150  | 200  | 60   | 169  | 40    | 99   | 7.5 | 10.7 | 2.1  | 11                   | 7  |

Data sheet

**Dimensions**  
ELGA-...-M1/M2 – With incremental displacement encoder



Encoder cable  
(connection to motor controller/  
safety system)  
→ Page 110

| Size | B1 | B4  | D1    | D2    | H1 | H2   | H4 | L1  |
|------|----|-----|-------|-------|----|------|----|-----|
| 70   | 40 | 1.8 | M4x8  | M4x14 | 35 | 11.7 | 10 | 86  |
| 80   | 40 | 1.8 | M4x14 | M4x14 | 35 | 16   | 10 | 90  |
| 120  | 41 | 1.8 | M5x10 | M4x14 | 35 | 24.5 | 10 | 170 |
| 150  | 42 | 1.8 | M5x10 | M4x14 | 35 | 23   | 10 | 220 |

## Data sheet

## Ordering data

Key features:

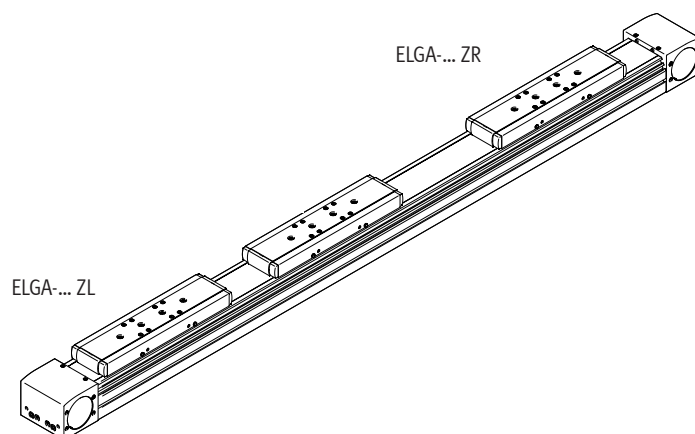
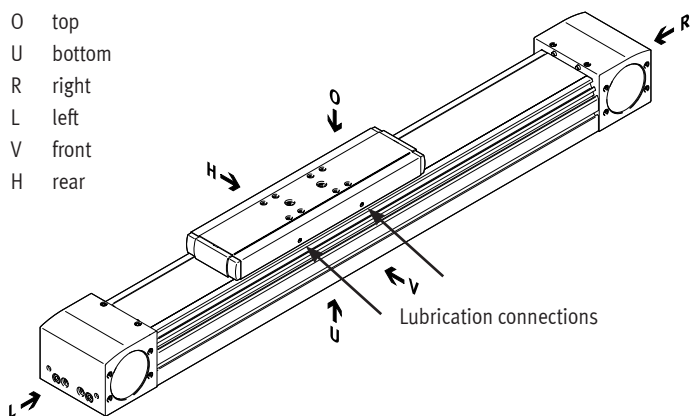
- Stroke reserve: 0 mm
- Standard slide

| Size | Stroke<br>[mm] | Part no. | Type                   |
|------|----------------|----------|------------------------|
| 70   | 300            | 8041851  | ELGA-TB-KF-70-300-0H   |
|      | 400            | 8041852  | ELGA-TB-KF-70-400-0H   |
|      | 500            | 8041853  | ELGA-TB-KF-70-500-0H   |
|      | 600            | 8041854  | ELGA-TB-KF-70-600-0H   |
|      | 800            | 8041855  | ELGA-TB-KF-70-800-0H   |
|      | 1000           | 8041856  | ELGA-TB-KF-70-1000-0H  |
|      | 1200           | 8041857  | ELGA-TB-KF-70-1200-0H  |
| 80   | 400            | 8041858  | ELGA-TB-KF-80-400-0H   |
|      | 500            | 8041859  | ELGA-TB-KF-80-500-0H   |
|      | 600            | 8041860  | ELGA-TB-KF-80-600-0H   |
|      | 800            | 8041861  | ELGA-TB-KF-80-800-0H   |
|      | 1000           | 8041862  | ELGA-TB-KF-80-1000-0H  |
|      | 1200           | 8041863  | ELGA-TB-KF-80-1200-0H  |
| 120  | 400            | 8041864  | ELGA-TB-KF-120-400-0H  |
|      | 500            | 8041865  | ELGA-TB-KF-120-500-0H  |
|      | 600            | 8041866  | ELGA-TB-KF-120-600-0H  |
|      | 800            | 8041867  | ELGA-TB-KF-120-800-0H  |
|      | 1000           | 8041868  | ELGA-TB-KF-120-1000-0H |
|      | 1200           | 8041869  | ELGA-TB-KF-120-1200-0H |
|      | 1500           | 8041870  | ELGA-TB-KF-120-1500-0H |

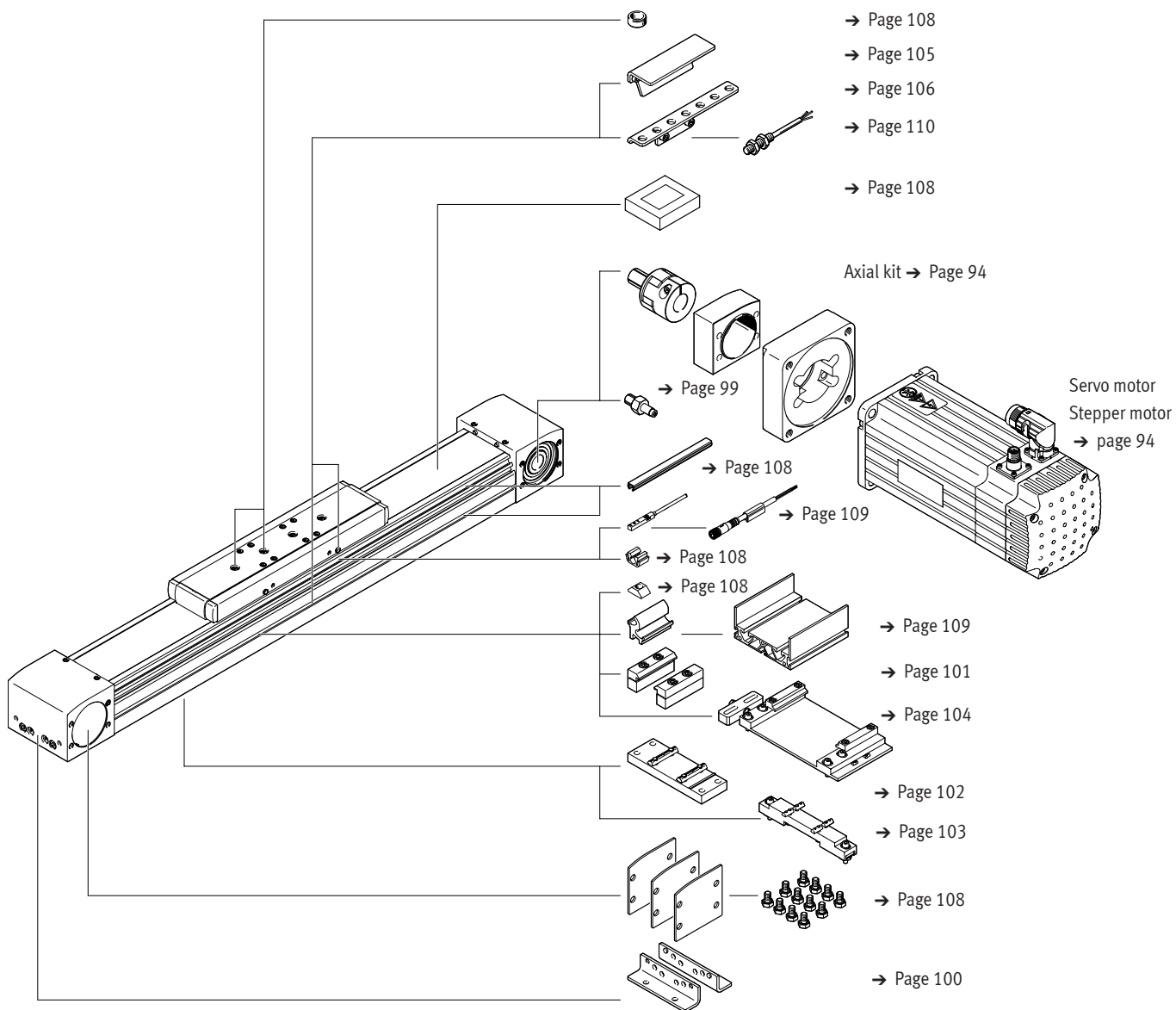
## Ordering data – Modular product system

### Orientation guide

- O top
- U bottom
- R right
- L left
- V front
- H rear



### Accessories





## Ordering data – Modular product system

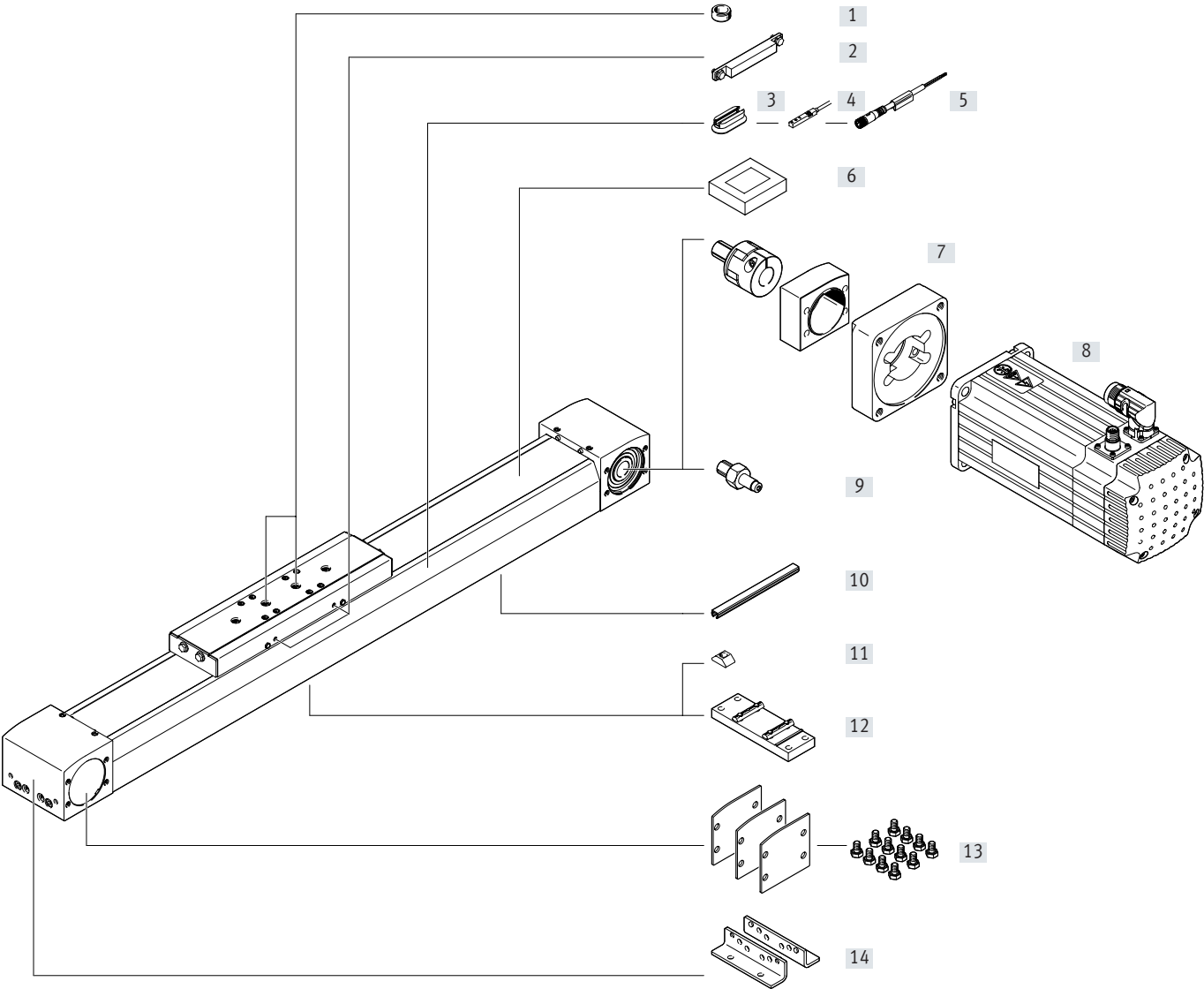
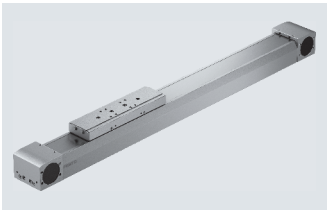
| Ordering table                           |                                   |                |                |                |            |         |  |            |
|--|-----------------------------------|----------------|----------------|----------------|------------|---------|--|------------|
| Size                                     | 70                                | 80             | 120            | 150            | Conditions | Code    |  | Enter code |
| Module no.                               | <b>8024914</b>                    | <b>8024915</b> | <b>8024916</b> | <b>8024917</b> |            |         |  |            |
| Design                                   | Linear axis                       |                |                |                |            | ELGA    |  | ELGA       |
| Function                                 | Toothed belt                      |                |                |                |            | ★ -TB   |  | -TB        |
| Guide                                    | Recirculating ball bearing guide  |                |                |                |            | ★ -KF   |  | -KF        |
| Size [mm]                                | 70                                | 80             | 120            | 150            |            | ★ -...  |  |            |
| Stroke length [mm]                       | 1 ... 5000                        | 1 ... 8500     | 1 ... 8500     | 1 ... 7000     |            | ★ -...  |  |            |
| Stroke reserve [mm]                      | 0 ... 999 (0 = no stroke reserve) |                |                |                | [1]        | ★ -...H |  |            |
| Additional slide                         | Without                           |                |                |                |            | ★       |  |            |
|  | 1 slide left                      |                |                |                |            | ★ -ZL   |  |            |
|  | 1 slide right                     |                |                |                |            | ★ -ZR   |  |            |
| Displacement encoder, incremental        | Without                           |                |                |                |            | ★       |  |            |
|  | Resolution 2.5 µm                 |                |                |                |            | -M1     |  |            |
|  | Resolution 10 µm                  |                |                |                |            | -M2     |  |            |
| Displacement encoder attachment position | Without                           |                |                |                |            | ★       |  |            |
|  | Rear                              |                |                |                | [2]        | B       |  |            |
|  | Front                             |                |                |                | [2]        | F       |  |            |
| Material of toothed belt                 | Chloroprene rubber                |                |                |                |            |         |  |            |
|  | Coated PU                         |                |                |                |            | -PU2    |  |            |
| Operating instructions                   | With operating instructions       |                |                |                |            | ★       |  |            |
|  | Without operating instructions    |                |                |                |            | ★ -DN   |  |            |

[1] ... H The sum of the nominal stroke and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length

[2] B, F Only with displacement encoder M1, M2



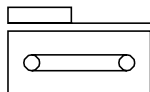
Peripherals overview – For the food zone






## Peripherals overview – For the food zone

| Accessories |                                    |   |                 |
|-------------|------------------------------------|---|-----------------|
|             | Type                               | Description   | → Page/Internet |
| [1]         | Centring pin/sleeve<br>ZBS, ZBH    | <ul style="list-style-type: none"> <li>For centring loads and attachments on the slide</li> <li>Included in the scope of delivery:               <ul style="list-style-type: none"> <li>With size 70: 2x ZBS-5</li> <li>With size 80, 120, 150: 2x ZBH-9</li> </ul> </li> </ul> | 108             |
| [2]         | Switch lug<br>EAPM                 | For sensing the slide position  | 107             |
| [3]         | Mounting kit<br>CRSMB              | For mounting the inductive proximity switches (round design) on the axis  | 107             |
| [4]         | Proximity switch, T-slot<br>SME-8M | For sensing the slide position  | 110             |
| [5]         | Connecting cable<br>NEBU           | Via proximity switch  | 110             |
| [6]         | Clamping element<br>EADT           | Tool for retensioning the cover strip   | 108             |
| [7]         | Axial kit<br>EAMM                  | For axial motor mounting (comprising: coupling, coupling housing and motor flange)  | 94              |
| [8]         | Motor<br>EMME, EMMS                | Motors specially matched to the axis, with or without gear unit, with or without brake  | 94              |
| [9]         | Drive shaft<br>EAMB                | <ul style="list-style-type: none"> <li>Can, if required, be used as an alternative interface</li> <li>No drive shaft is required for the axis/motor combinations → page 100</li> </ul>  | 99              |
| [10]        | Slot cover<br>ABP                  | For protection against contamination  | 108             |
| [11]        | Slot nut<br>NST                    | For mounting attachments  | 108             |
| [12]        | Central support<br>EAHF-L5         | For mounting the axis on the profile from underneath  | 102             |
| [13]        | Cover kit<br>EASC-L5               | For covering the sides of the drive cover   | 108             |
| [14]        | Foot mounting<br>HPE               | <ul style="list-style-type: none"> <li>For mounting the axis on the end cap</li> <li>With higher forces and torques, the axis should be mounted using the profile</li> </ul>  | 100             |

## Data sheet – For the food zone



-  - Size  
70 ... 120
-  - Stroke length  
50 ... 8500 mm
-  - [www.festo.com](http://www.festo.com)

**General technical data**

| Size  | 70                                       | 80          | 120         |
|---|--|-------------|-------------|
| Design  | Electromechanical axis with toothed belt |             |             |
| Guide   | Recirculating ball bearing guide         |             |             |
| Mounting position                                     | Any                                      |             |             |
| Working stroke [mm]                                   | 50 ... 5000                              | 50 ... 8500 | 50 ... 8500 |
| Max. feed force $F_x$ [N]                             | 260                                      | 600         | 1000        |
| Max. no-load torque <sup>1)</sup> [Nm]                | 0.8                                      | 1.5         | 4.5         |
| Max. no-load resistance to shifting <sup>1)</sup> [N] | 55.8                                     | 75.4        | 122         |
| Max. driving torque [Nm]                              | 3.72                                     | 11.9        | 26.2        |
| Max. speed [m/s]                                      | 5  |             |             |
| Max. acceleration [m/s <sup>2</sup> ]                 | 50                                       |             |             |
| Repetition accuracy [mm]                              | ±0.08                                    |             |             |

1) At 0.2 m/s

**Operating and environmental conditions**

|  |                                      |
|--|--------------------------------------|
| Ambient temperature <sup>1)</sup> [°C] | -10 ... +60                          |
| Degree of protection                   | IP40                                 |
| Duty cycle [%]                         | 100                                  |
| Food-safe <sup>2)</sup>                | → Supplementary material information |

1) Note operating range of proximity switches.

2) Additional information is available at [www.festo.com/sp](http://www.festo.com/sp) → Certificates.**Weight [kg]**

| Size  | 70   | 80   | 120   |
|---|------|------|-------|
| Basic weight with 0 mm stroke <sup>1)</sup> | 3.01 | 4.70 | 15.68 |
| Additional weight per 1000 mm stroke        | 4.00 | 5.13 | 10.64 |
| Moving mass                                 |      |      |       |
| ELGA-...                                    | 0.9  | 1.9  | 4.19  |
| ELGA-...ZL/ZR                               | 0.74 | 1.53 | 3.24  |

1) Incl. slide

## Data sheet – For the food zone

| Toothed belt             |          |       |       |       |
|--------------------------|----------|-------|-------|-------|
| Size                     |          | 70    | 80    | 120   |
| Pitch                    | [mm]     | 3     | 5     | 5     |
| Elongation <sup>1)</sup> | [%]      | 0.105 | 0.1   | 0.122 |
| Effective diameter       | [mm]     | 28.65 | 39.79 | 52.52 |
| Feed constant            | [mm/rev] | 90    | 125   | 165   |

1) At max. feed force

| Mass moments of inertia             |                          |      |      |       |
|-------------------------------------|--------------------------|------|------|-------|
| Size                                |                          | 70   | 80   | 120   |
| J <sub>0</sub>                      | [kg mm <sup>2</sup> ]    | 245  | 976  | 4065  |
| J <sub>H</sub> per metre stroke     | [kg mm <sup>2</sup> /m]  | 24.4 | 76.8 | 176.5 |
| J <sub>L</sub> per kg payload       | [kg mm <sup>2</sup> /kg] | 205  | 396  | 690   |
| J <sub>W</sub> for additional slide | [kg mm <sup>2</sup> ]    | 186  | 761  | 2891  |

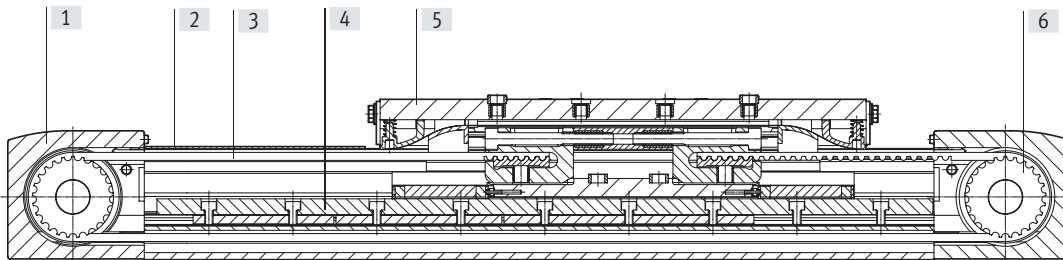
The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

$$J_A = J_O + K \times J_W + J_H \times \text{working stroke [m]} + J_L \times m_{\text{payload [kg]}}$$

K = Number of additional slides

## Materials

## Sectional view

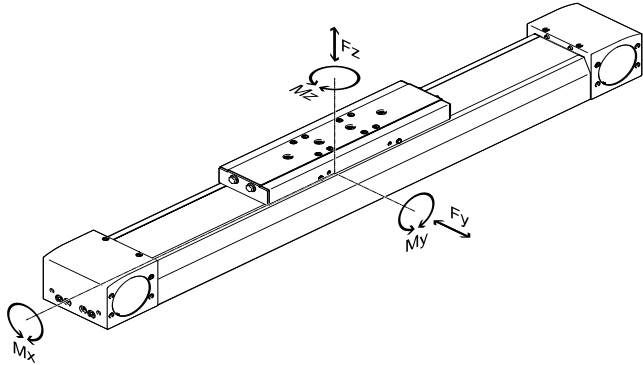


| Axis              |  | 70   | 80 | 120            |
|-------------------|--|--|----|----------------|
| Size              |  |  |    |                |
| [1] Drive cover   |  | Anodised wrought aluminium alloy             |    |                |
| [2] Cover strip   |  | Stainless steel strip, non-corroding         |    |                |
| [3] Toothed belt  |  | Polyurethane with steel cord                 |    |                |
| [4] Guide rail    |  | Stainless steel                              |    | Tempered steel |
| [5] Slide         |  | Anodised wrought aluminium alloy             |    |                |
| [6] Belt pulley   |  | High-alloy stainless steel                   |    |                |
| Note on materials |  | RoHS-compliant                               |    |                |
|                   |  | Contains paint-wetting impairment substances |    |                |

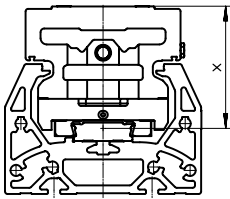
Data sheet – For the food zone

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.




Distance from the slide surface to the centre of the guide



| Distance from the slide surface to the centre of the guide |      |    |    |
|--|------|----|----|
| Size   |      | 70 | 80 |
| Dimension x  | [mm] | 37 | 50 |

| Max. permissible forces and torques for a service life of 5000 km |      |      |      |
|---|------|------|------|
| Size  |      | 70   | 80   |
| Fy <sub>max.</sub>  | [N]  | 1500 | 2500 |
| Fz <sub>max.</sub>  | [N]  | 1850 | 3050 |
| Mx <sub>max.</sub>  | [Nm] | 16   | 36   |
| My <sub>max.</sub>  | [Nm] | 132  | 228  |
| Mz <sub>max.</sub>  | [Nm] | 132  | 228  |

 **Note**

For a guide system to have a service life of 5000 km, the load comparison factor must have a value of  $f_v \leq 1$ , based on the maximum permissible forces and torques for a service life of 5000 km.

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

Calculating the load comparison factor:

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

F<sub>1</sub>/M<sub>1</sub> = dynamic value  
F<sub>2</sub>/M<sub>2</sub> = maximum value

## Data sheet – For the food zone

## Calculating the service life

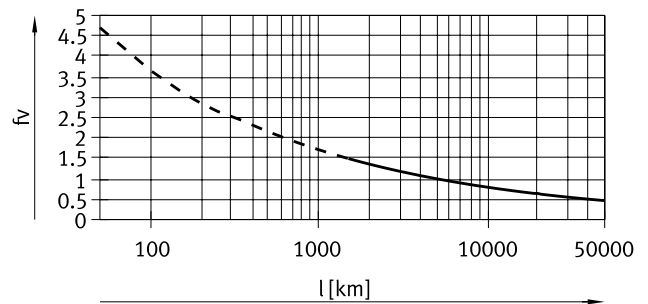
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor  $f_v$  against the service life.

These values are only theoretical. You must consult your local Festo contact for a load comparison factor  $f_v$  greater than 1.5.

Load comparison factor  $f_v$  as a function of service life

Example:

A user wants to move an X kg load. Using the formula (→ page 34) gives a value of 1.5 for the load comparison factor  $f_v$ . According to the graph, the guide would have a service life of approx. 1500 km. Reducing the acceleration reduces the  $M_z$  and  $M_y$  values. A load comparison factor  $f_v$  of 1 now gives a service life of 5000 km.



## Note

Engineering software  
Electric Motion Sizing  
[www.festo.com/x/electric-motion-sizing](http://www.festo.com/x/electric-motion-sizing)

The engineering software can be used to calculate the guide workload for a service life of 5000 km.

$f_v > 1.5$  are only theoretical comparison values for the recirculating ball bearing guide.

## Comparison of the characteristic load values for 5000 km with dynamic forces and torques of recirculating ball bearing guides

The characteristic load values of bearing guides are standardised to ISO and JIS using dynamic and static forces and torques. These forces and torques are based on an expected service life of the guide system of 100 km to ISO or 50 km to JIS. As the characteristic load values are dependent on the service life, the maximum permissible forces and torques for a 5000 km service life cannot be compared with the dynamic forces and torques of bearing guides to ISO/JIS.

To make it easier to compare the guide capacity of linear axes ELGA with bearing guides, the table below lists the theoretically permissible forces and torques for a calculated service life of 100 km. This corresponds to the dynamic forces and torques to ISO.

These 100 km values have been calculated mathematically and are only to be used for comparing with dynamic forces and torques to ISO. The drives must not be loaded with these characteristic values as this could damage the axes.

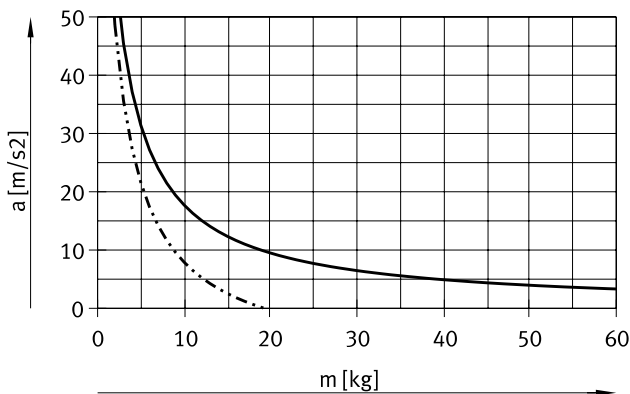
## Max. permissible forces and torques for a theoretical service life of 100 km (from a guide perspective only)

| Size          |      | 70   | 80    | 120   |
|---------------|------|------|-------|-------|
| $F_{y_{max}}$ | [N]  | 5520 | 9200  | 20240 |
| $F_{z_{max}}$ | [N]  | 6808 | 11224 | 25355 |
| $M_{x_{max}}$ | [Nm] | 59   | 132   | 383   |
| $M_{y_{max}}$ | [Nm] | 486  | 839   | 2502  |
| $M_{z_{max}}$ | [Nm] | 486  | 839   | 2502  |

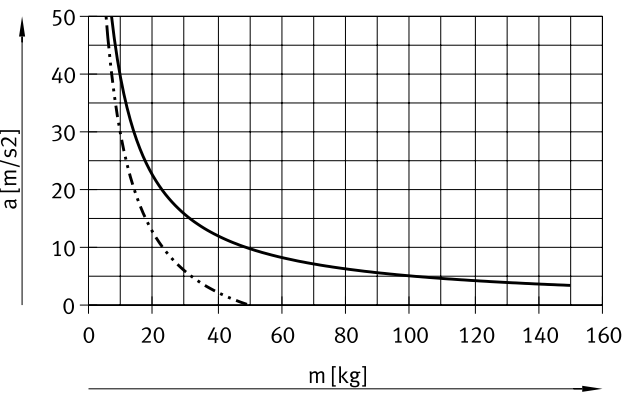
Data sheet – For the food zone

Max. acceleration  $a$  as a function of payload  $m$

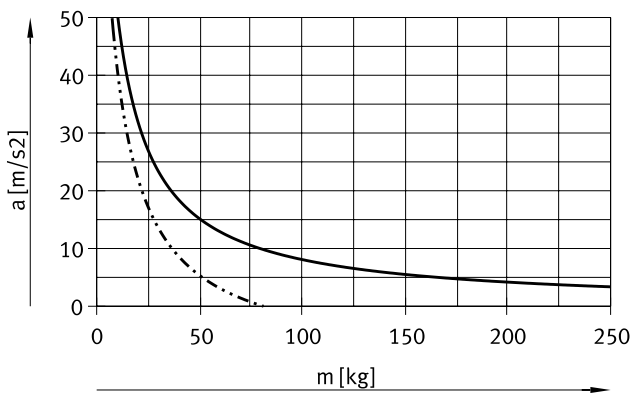
Size 70



Size 80

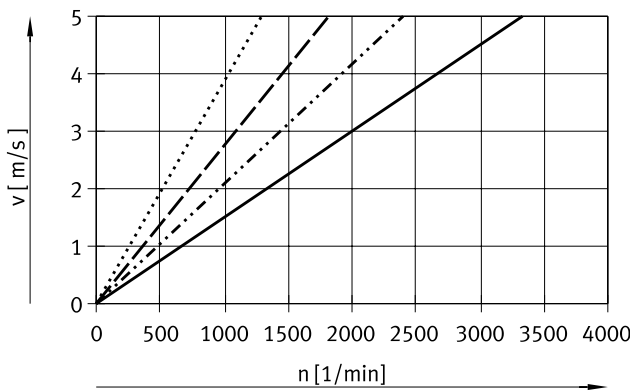


Size 120



— Horizontal mounting position  
- - - Vertical mounting position

Velocity  $v$  as a function of rotational speed  $n$



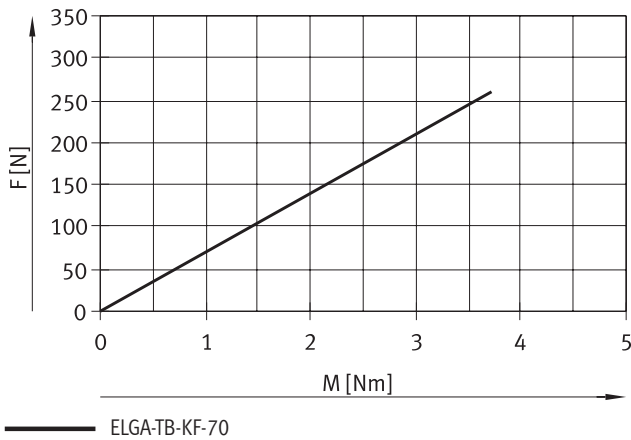
— ELGA-TB-KF-70  
..... ELGA-TB-KF-80  
- - - ELGA-TB-KF-120



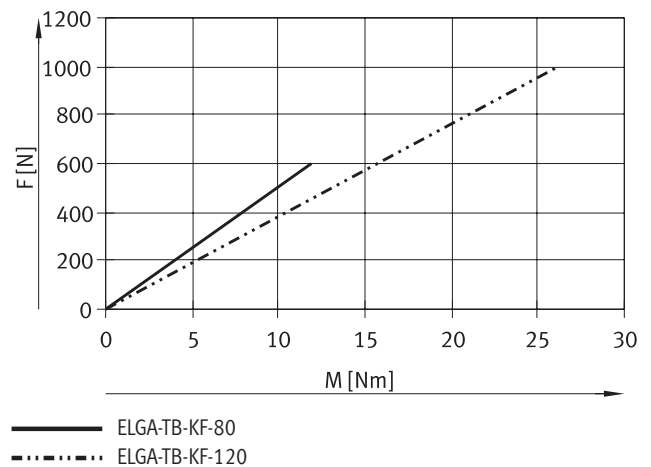
## Data sheet – For the food zone

## Theoretical feed force F as a function of input torque M

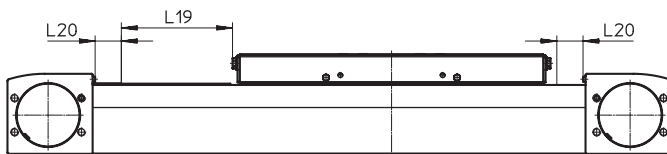
Size 70



Size 80/120



## Stroke reserve



L19 = Nominal stroke  
L20 = Stroke reserve

- The stroke reserve is a safety distance from the mechanical end position and is not used in normal operation
- The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum permissible working stroke
- The stroke reserve length can be freely selected
- The stroke reserve is defined via the "stroke reserve" characteristic in the modular product system.

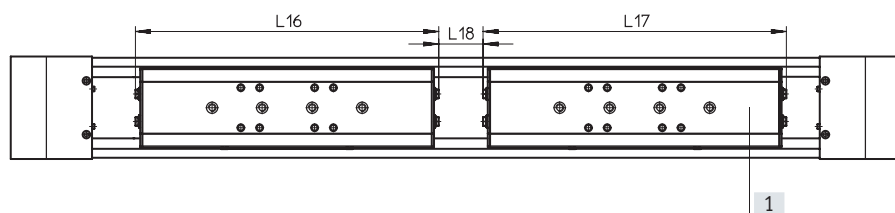
## Example:

Type ELGA-TB-KF-70-500-20H-...  
 Nominal stroke = 500 mm  
 2x stroke reserve = 40 mm  
 Working stroke = 540 mm  
 (540 mm = 500 mm + 2x 20 mm)

## Working stroke reduction

With axis ELGA with additional slide ZL/ZR

For a toothed belt axis with additional slide, the working stroke is reduced by the length of the additional slide and the distance between the two slides



L16 = Slide length  
 L17 = Additional slide length  
 L18 = Distance between both slides  
 [1] Additional slide

## Example:

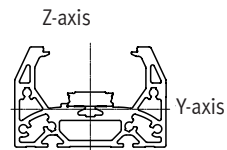
Type ELGA-TB-KF-70-500-...-ZL/ZR  
 Working stroke without additional slide = 500 mm  
 L18 = 50 mm  
 L16, L17 = 221 mm  
 Working stroke with additional slide = 229 mm  
 (500 mm – 50 mm – 221 mm)

## Dimensions – Additional slide

| Size                                      | 70   | 80   | 120  |
|---|------|------|------|
| Length L17 [mm]                           | 221  | 246  | 335  |
| Min. distance between the slides L18 [mm] | ≥ 50 | ≥ 50 | ≥ 50 |

Data sheet – For the food zone

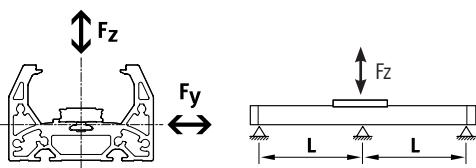
2nd moments of area



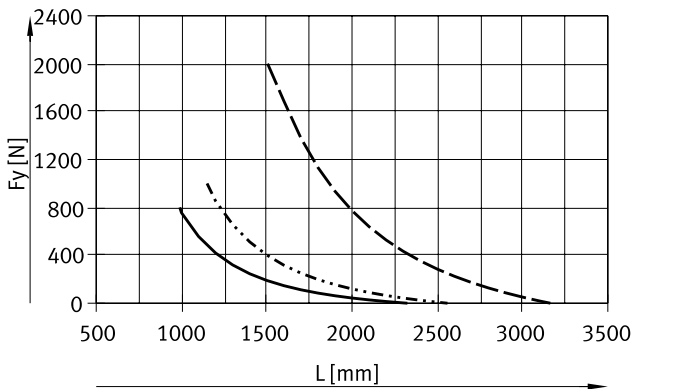
| Size           |                    | 70                   | 80                   | 120                  |
|----------------|--------------------|----------------------|----------------------|----------------------|
| I <sub>y</sub> | [mm <sup>4</sup> ] | 1.69x10 <sup>5</sup> | 2.95x10 <sup>5</sup> | 1.35x10 <sup>6</sup> |
| I <sub>z</sub> | [mm <sup>4</sup> ] | 4.84x10 <sup>5</sup> | 9.78x10 <sup>5</sup> | 4.50x10 <sup>6</sup> |

Maximum permissible support spacing L (without profile mounting MUE/central support EAHF) as a function of force F

In order to limit deflection in the case of large strokes, the axis may need to be supported.  
The following graphs can be used to determine the maximum permissible support spacing l as a function of force F acting on the axis. The deflection is f = 0.5 mm.

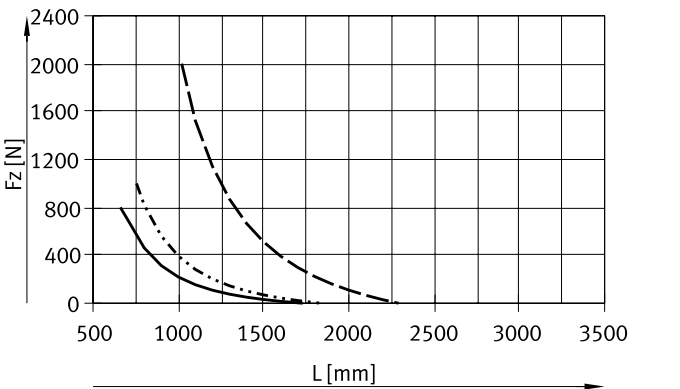


Force F<sub>y</sub>



- ELGA-TB-KF-70
- ELGA-TB-KF-80
- ELGA-TB-KF-120

Force F<sub>z</sub>



Recommended deflection limits

Adherence to the following deflection limits is recommended so as not to impair the functionality of the axes.  
Greater deformation can result in increased friction, greater wear and reduced service life.

| Size       | Dynamic deflection<br>(moving load)   | Static deflection<br>(stationary load) |
|------------|---------------------------------------|--|
| 70 ... 120 | 0.05% of the axis length, max. 0.5 mm | 0.1% of the axis length                |

## Data sheet – For the food zone

### Central lubrication

The lubrication connections enable the guide of the toothed belt axis ELGA-TB-KF-F1 to be permanently lubricated in applications in humid or wet ambient conditions using semi- or fully automatic relubrication devices.

- The connection options are already available in the standard design of the axes
- There is a dedicated lubrication connection for the spindle nut and the two ball cassettes

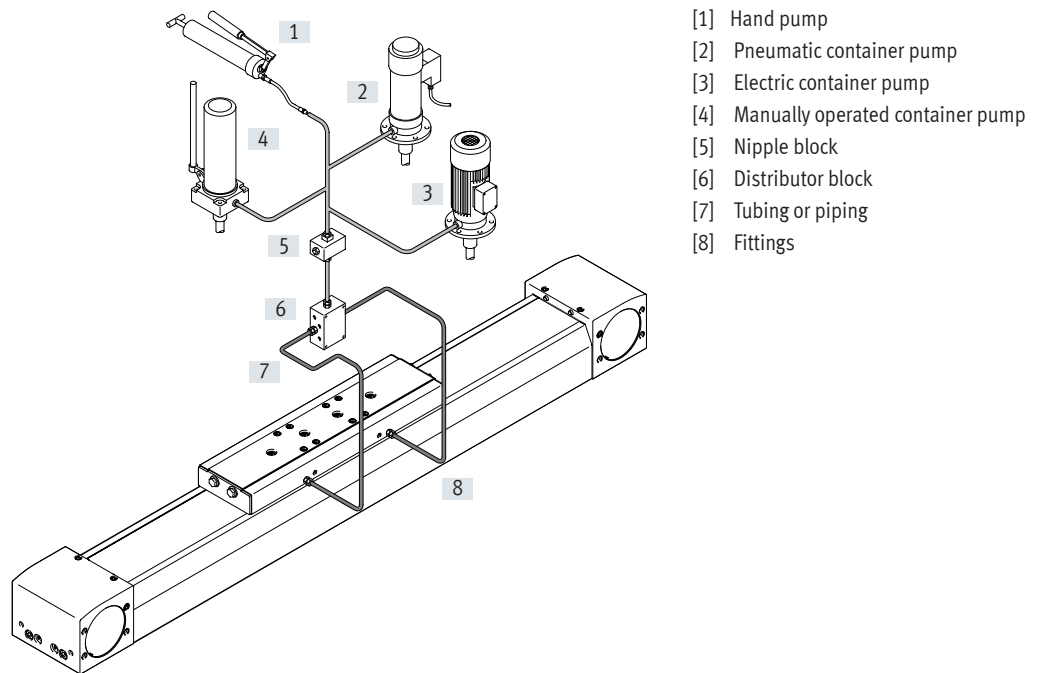
Slide dimensions  
→ page 42

### Design of a central lubrication system

A central lubrication system requires various additional components. The illustration shows different options (using a hand pump, pneumatic container pump or electric container pump) required as a minimum for designing a central lubrication system. Festo does not sell these additional components; however, they can be obtained from the following companies:

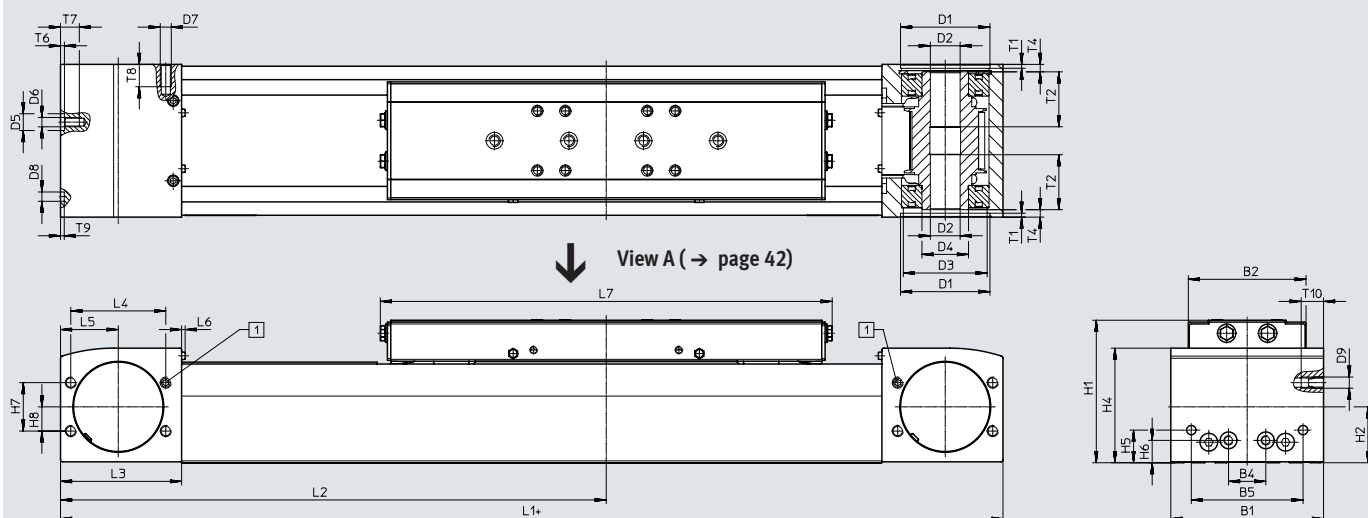
- Lincoln
- Bielomatik
- SKF (Vogel)

Festo recommends these companies because they can supply all the necessary components.



## Data sheet – For the food zone

## Dimensions

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

+ = plus stroke length + 2x stroke reserve

[1] Sealing air connection

| Size | B1  | B2   | B4 | B5 | D1<br>Ø<br>H7 | D2<br>Ø<br>H7 | D3<br>Ø | D4<br>Ø | D5<br>Ø<br>H7 | D6 | D7 | D8<br>Ø<br>H7 |
|------|-----|------|----|----|---------------|---------------|---------|---------|---------------|----|----|---------------|
| 70   | 69  | 48.2 | 30 | 45 | 38            | 16            | 34      | 25      | –             | M5 | M6 | 5             |
| 80   | 82  | 63.2 | 20 | 60 | 48            | 16            | 45      | 25      | 9             | M5 | M6 | 5             |
| 120  | 120 | 95   | 80 | 40 | 80            | 23            | 72      | 45      | –             | M8 | M8 | 9             |

| Size | D9 | H1    | H2   | H4   | H5   | H6 | H7 | H8 | L1  | L2<br>min. | L3   | L4 |
|------|----|-------|------|------|------|----|----|----|-----|------------|------|----|
| 70   | M6 | 64    | 26.5 | 50.8 | 13   | 13 | 24 | 12 | 346 | 178        | 57.5 | 42 |
| 80   | M6 | 76.5  | 30   | 61.5 | 17.5 | 12 | 26 | 13 | 386 | 193        | 65   | 51 |
| 120  | M8 | 111.5 | 45   | 91   | 22   | 22 | 59 | 32 | 546 | 273        | 100  | 76 |

| Size | L5   | L6  | L7  | T1  | T2   | T4  | T6  | T7   | T8 | T9  | T10 |
|------|------|-----|-----|-----|------|-----|-----|------|----|-----|-----|
| 70   | 27.5 | 2.3 | 218 | 2.1 | 18   | 7.2 | –   | 10   | 12 | 3.1 | 12  |
| 80   | 31   | 2.3 | 243 | 2.1 | 29.5 | 4   | 2.1 | 10.1 | 12 | 2   | 12  |
| 120  | 50   | 2.5 | 332 | 3.1 | 29.5 | 4   | –   | 16   | 16 | 2.1 | 25  |

**Note**

The standard roller carriages will be greased for the variant ELGA-TB-KF-F1. This will be done in accordance with the guidelines Doc.23 from EHEDG.

As part of this process, the standard grease except for small residual amounts will be replaced with a grease with NSF H1 approval

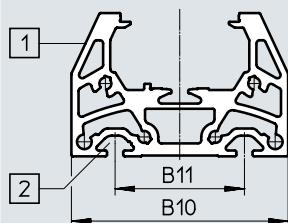
## Data sheet – For the food zone

## Dimensions

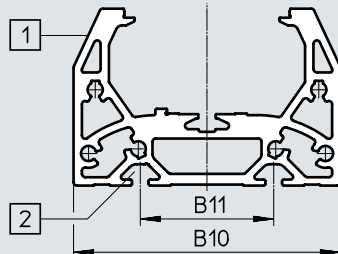
Download CAD data → [www.festo.com](http://www.festo.com)

## Profile

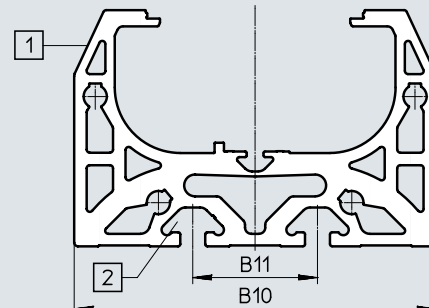
## Size 70



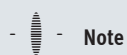
## Size 80



## Size 120



- [1] Sensor slot for proximity switch  
 [2] Mounting slot for slot nut  
 With size 70, 80: slot nut NST-5-M5  
 With size 120: slot nut NST-8-M6



## Note

Requirements for the evenness of the bearing surface and of attachments as well as for use in parallel structures  
 → [www.festo.com/sp](http://www.festo.com/sp) User documentation.

| Size | B10 | B11 |
|------|-----|-----|
| 70   | 67  | 40  |
| 80   | 80  | 40  |
| 120  | 116 | 40  |

## Data sheet – For the food zone

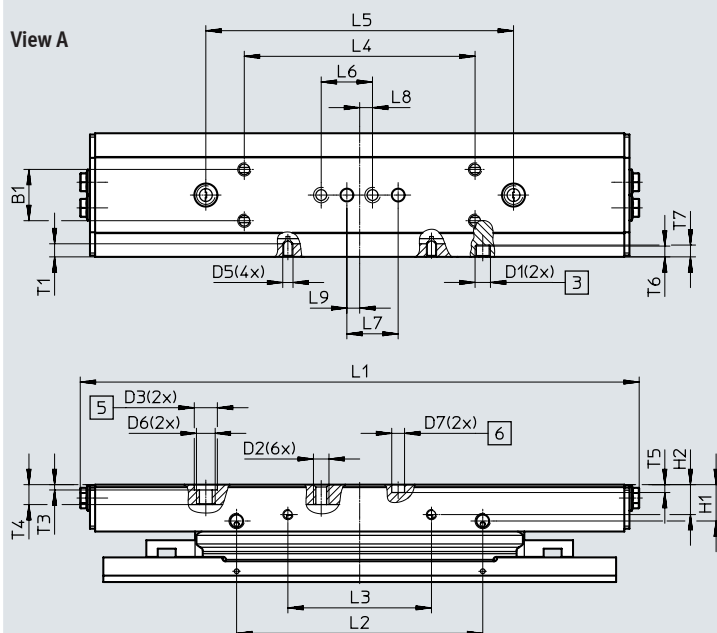
## Dimensions

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

Slide

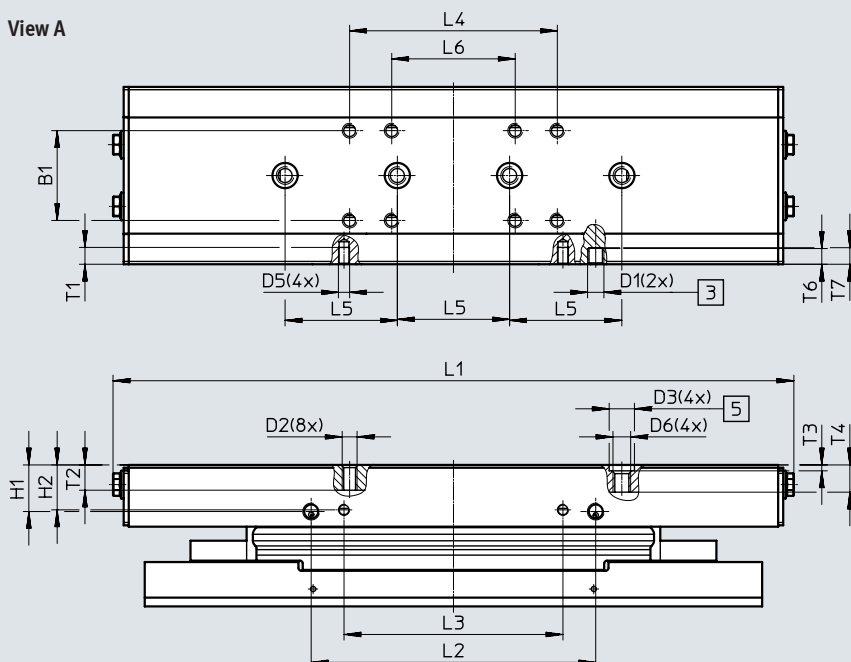
## Size 70

## View A



## Size 80

## View A



- [3] Lubrication connections  
 [5] Drilled hole for centring sleeve ZBH  
 [6] Drilled hole for centring pin ZBS

| Size | B1   | D1 | D2 | D3<br>∅<br>H7 | D5 | D6 | D7<br>∅<br>H7 | H1   | H2   | L1  | L2    | L3   |
|------|------|----|----|---------------|----|----|---------------|------|------|-----|-------|------|
|      | ±0.1 |    |    |               |    |    |               | ±0.1 | ±0.1 |     | ±0.1  | ±0.1 |
| 70   | 20   | M6 | M5 | 9             | M4 | M6 | 5             | 14.2 | 11.7 | 218 | 96    | 56   |
| 80   | 32   | M6 | M5 | 9             | M4 | M6 | –             | 16.6 | 16   | 243 | 101.4 | 78   |

| Size | L4   | L5    | L6   | L7    | L8 | L9   | T1  | T2 | T3   | T4                  | T5   | T6   | T7                  |
|------|------|-------|------|-------|----|------|-----|----|------|---------------------|------|------|---------------------|
|      | ±0.1 | ±0.03 | ±0.1 | ±0.03 |    | ±0.1 |     |    | +0.1 |                     | ±0.1 | min. | max.                |
| 70   | 90   | 120   | 20   | 20    | 5  | 10   | 5.1 | –  | 2.1  | 7.5                 | 3.1  | 4.2  | 4.6 <sub>-0.1</sub> |
| 80   | 74   | 40    | 44   | –     | –  | –    | 6   | 9  | 2.1  | 9.7 <sub>-0.2</sub> | –    | 5.6  | 5.9 <sub>-0.1</sub> |

## Data sheet – For the food zone

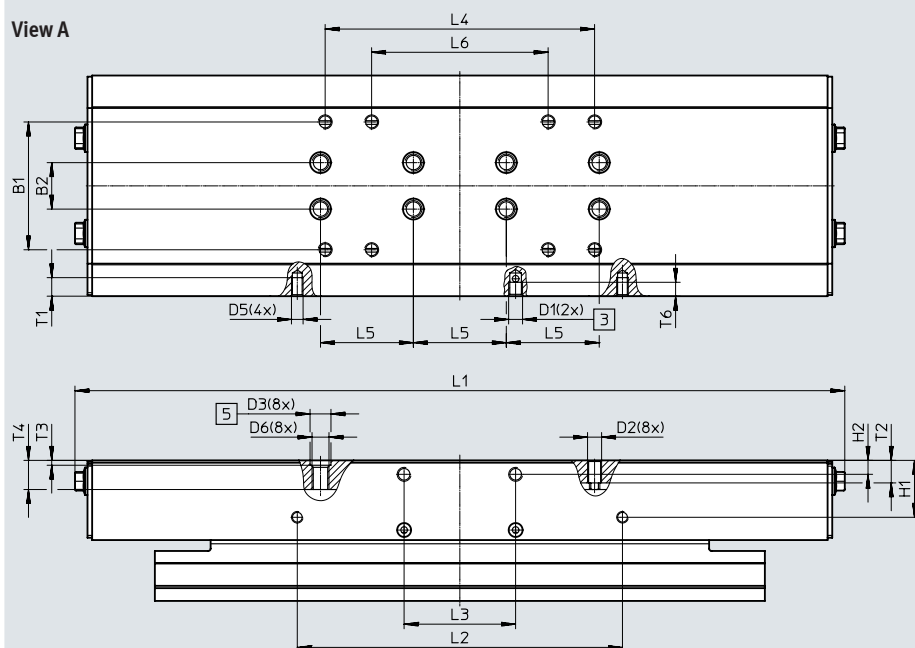
## Dimensions

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

Slide

Size 120

View A



[3] Lubrication connections

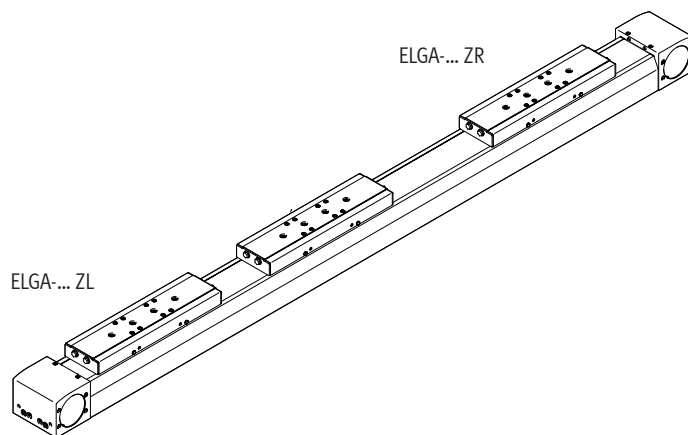
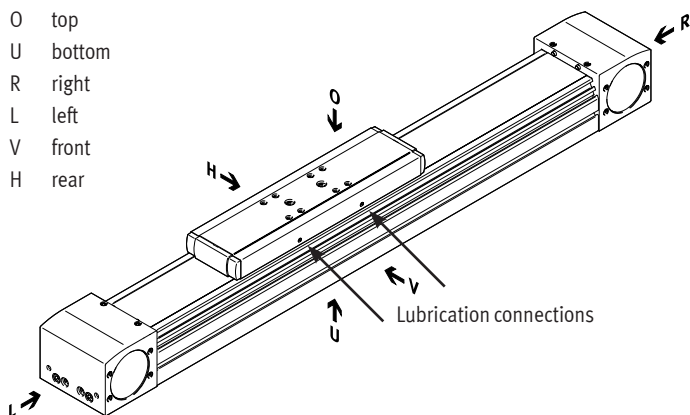
[5] Drilled hole for centring sleeve ZBH

| Size | B1         | B2          | D1 | D2 | D3<br>Ø<br>H7 | D5 | D6 | H1           | H2 | L1  |
|------|------------|-------------|----|----|---------------|----|----|--------------|----|-----|
| 120  | 55<br>±0.2 | 20<br>±0.03 | M6 | M5 | 9             | M5 | M6 | 24.5<br>±0.1 | 6  | 332 |

| Size | L2          | L3         | L4          | L5          | L6         | T1 | T2  | T3          | T4           | T6 |
|------|-------------|------------|-------------|-------------|------------|----|-----|-------------|--------------|----|
| 120  | 140<br>±0.1 | 48<br>±0.1 | 116<br>±0.2 | 40<br>±0.03 | 76<br>±0.2 | 8  | 9.7 | 2.1<br>+0.1 | 12.6<br>-0.3 | 6  |

|   |        |
|---|--------|
| O | top    |
| U | bottom |
| R | right  |
| L | left   |
| V | front  |
| H | rear   |



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→ Page 107

→ Page 110

→ Page 110

→ Page 108

Axial kit → Page 94

Servo motor  
Stepper motor  
→ page 94

→ Page 99

→ Page 108

→ Page 108

→ Page 102

→ Page 108

→ Page 100

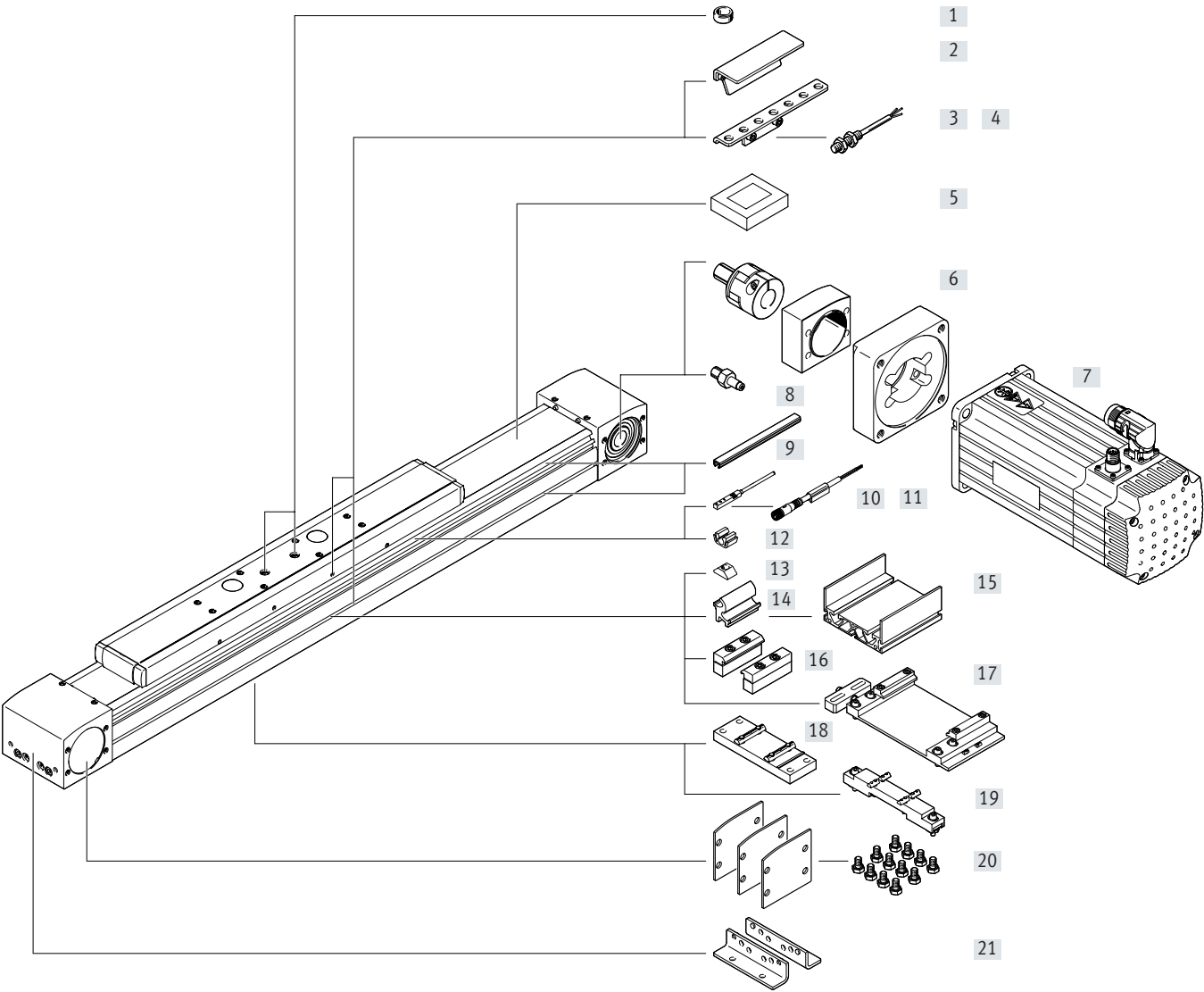
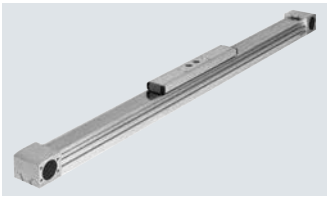


## Ordering data – Modular products – For the food zone

| Ordering table           |  |                |                |            |              |  |            |
|--------------------------|--|----------------|----------------|------------|--------------|--|------------|
| Size                     | 70   | 80             | 120            | Conditions | Code         |  | Enter code |
| Module no.               | <b>8024914</b>   | <b>8024915</b> | <b>8024916</b> |            |              |  |            |
| Design                   | Linear axis  |                |                |            | <b>ELGA</b>  |  | ELGA       |
| Function                 | Toothed belt   |                |                |            | <b>-TB</b>   |  | -TB        |
| Guide                    | Recirculating ball bearing guide   |                |                |            | <b>-KF</b>   |  | -KF        |
| Size [mm]                | 70   | 80             | 120            |            | <b>-...</b>  |  |            |
| Stroke length [mm]       | 1 ... 5000   | 1 ... 8500     | 1 ... 8500     |            | <b>-...</b>  |  |            |
| Stroke reserve [mm]      | 0 ... 999 (0 = no stroke reserve)  |                |                | [1]        | <b>-...H</b> |  |            |
| Additional slide         | Without  |                |                |            |              |  |            |
|                          | 1 slide left   |                |                |            | <b>-ZL</b>   |  |            |
|                          | 1 slide right  |                |                |            | <b>-ZR</b>   |  |            |
| Additional features      | Suitable for use in the food industry as per extended information on materials |                |                |            | <b>-F1</b>   |  | -F1        |
| Material of toothed belt | Uncoated PU  |                |                |            | <b>-PU1</b>  |  | -PU1       |
| Operating instructions   | With operating instructions  |                |                |            |              |  |            |
|                          | Without operating instructions   |                |                |            | <b>-DN</b>   |  |            |

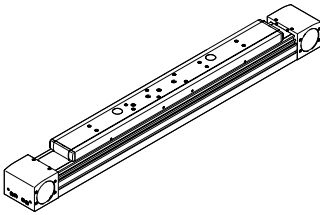
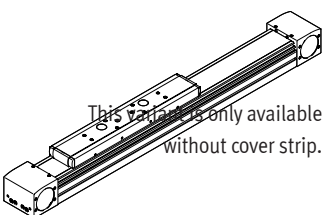
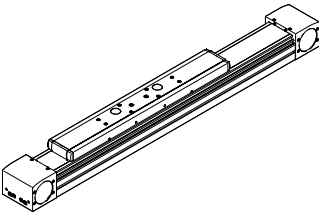
[1] ... H The sum of the nominal stroke and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length

Peripherals overview



Slide variants

| ELGA-...<br>Standard slide | ELGA-...-S<br>Slide, short | ELGA-...-L<br>Long slide |
|----------------------------|----------------------------|--------------------------|
|----------------------------|----------------------------|--------------------------|



## Peripherals overview

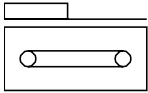
| Accessories |  |  |                 |
|-------------|--|--|-----------------|
|             | Type/order code                        | Description  | → Page/Internet |
| [1]         | Centring pin/sleeve<br>ZBS, ZBH        | <ul style="list-style-type: none"> <li>For centring loads and attachments on the slide</li> <li>Included in the scope of delivery: <ul style="list-style-type: none"> <li>With size 70, 80, 120: 2x ZBH-9</li> </ul> </li> </ul> | 108             |
| [2]         | Switch lug<br>SA, SB, SC, SD, SE, SF   | For sensing the slide position   | 105             |
| [3]         | Sensor bracket<br>SC, SD, SE, SF       | For mounting the inductive proximity switches (round design) on the axis   | 106             |
| [4]         | Proximity switch, M8<br>SC, SD, SE, SF | <ul style="list-style-type: none"> <li>Inductive proximity switch, round design</li> <li>The order code SC, SD, SE, SF includes 1 switch lug and max. 2 sensor brackets in the scope of delivery</li> </ul>                      | 110             |
| [5]         | Clamping element<br>EADT               | Tool for retensioning the cover strip  | 108             |
| [6]         | Axial kit<br>EAMM                      | For axial motor mounting (comprising: coupling, coupling housing and motor flange)   | 94              |
| [7]         | Motor<br>EMME, EMMS                    | Motors specially matched to the axis, with or without gear unit, with or without brake   | 94              |
| [8]         | Drive shaft<br>EA                      | <ul style="list-style-type: none"> <li>Can, if required, be used as an alternative interface</li> <li>No drive shaft is required for the axis/motor combinations → page 94</li> </ul>  | 99              |
| [9]         | Slot cover<br>NS, NC                   | <ul style="list-style-type: none"> <li>For protection against contamination</li> </ul>   | 108             |
| [10]        | Proximity switch, T-slot<br>SA, SB     | <ul style="list-style-type: none"> <li>Inductive proximity switch, for T-slot</li> <li>The order code SA, SB includes 1 switch lug in the scope of delivery</li> </ul>   | 109             |
| [11]        | Connecting cable<br>CA                 | For proximity switch (order code SE and SF)  | 110             |
| [12]        | Clip<br>CM                             | For mounting the proximity switch cable in the slot  | 108             |
| [13]        | Slot nut<br>NM                         | For mounting attachments   | 108             |
| [14]        | Adapter kit<br>DHAM                    | For mounting the support profile on the axis   | 109             |
| [15]        | Support profile<br>HMIA                | For mounting and guiding an energy chain   | 109             |
| [16]        | Profile mounting<br>MA                 | For mounting the axis on the side of the profile   | 101             |
| [17]        | Adjusting kit<br>EADC-E16              | For mounting the axis on a vertical surface. Once mounted, the axis can be aligned horizontally  | 104             |
| [18]        | Central support<br>EAHF-L5             | For mounting the axis on the profile from underneath   | 102             |
| [19]        | Adjusting kit<br>EADC-E15              | Height-adjustable. Can be used to easily compensate for any unevenness in the bearing surface  | 103             |
| [20]        | Cover kit<br>EASC-L5                   | For covering the sides of the drive cover  | 108             |
| [21]        | Foot mounting<br>MF                    | <ul style="list-style-type: none"> <li>For mounting the axis on the end cap</li> <li>With higher forces and torques, the axis should be mounted using the profile</li> </ul>   | 100             |




## Type codes

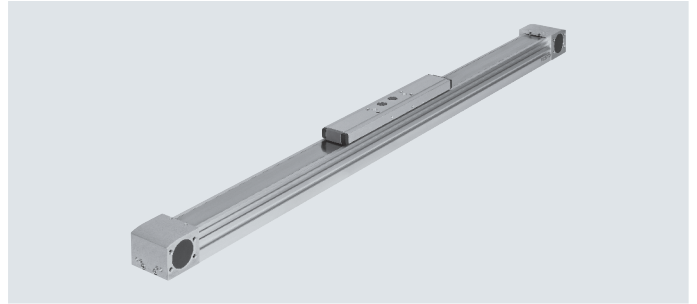
|             |   |  |
|-------------|---|--|
| <b>001</b>  | <b>Series</b>   |  |
| <b>ELGA</b> | Gantry axis   |  |
| <b>002</b>  | <b>Drive system</b>   |  |
| <b>TB</b>   | Toothed belt  |  |
| <b>003</b>  | <b>Guide</b>  |  |
| <b>RF</b>   | Roller bearing  |  |
| <b>004</b>  | <b>Size</b>   |  |
| <b>70</b>   | 70  |  |
| <b>80</b>   | 80  |  |
| <b>120</b>  | 120   |  |
| <b>005</b>  | <b>Stroke</b>   |  |
| <b>...</b>  | 50 ... 7400   |  |
| <b>006</b>  | <b>Stroke reserve [mm]</b>                                    |  |
| <b>...</b>  | 0 ... 999   |  |
| <b>007</b>  | <b>Slide design</b>   |  |
|             | Standard  |  |
| <b>S</b>    | Slide, short  |  |
| <b>L</b>    | Slide, long   |  |
| <b>008</b>  | <b>Protection against particles</b>                           |  |
|             | Standard  |  |
| <b>P0</b>   | Without strip cover   |  |
| <b>009</b>  | <b>Additional characteristics</b>                             |  |
|             | None  |  |
| <b>F1</b>   | Food-safe according to supplementary information on materials |  |
| <b>010</b>  | <b>Displacement encoder</b>                                   |  |
|             | None  |  |
| <b>M1</b>   | With displacement encoder, incremental, resolution 2.5 µm     |  |
| <b>M2</b>   | With displacement encoder, incremental, resolution 10 µm      |  |
| <b>011</b>  | <b>Displacement encoder attachment position</b>               |  |
|             | None  |  |
| <b>F</b>    | Front   |  |
| <b>B</b>    | Rear  |  |
| <b>012</b>  | <b>Toothed belt material</b>                                  |  |
|             | Chloroprene rubber  |  |
| <b>PU1</b>  | Uncoated PU, FDA-compliant                                    |  |
| <b>PU2</b>  | Coated PU   |  |

|              |   |  |
|--------------|---|--|
| <b>013</b>   | <b>Foot mounting [units]</b>  |  |
| <b>1</b>     | 1   |  |
| <b>...</b>   | 1   |  |
| <b>014</b>   | <b>Profile mounting</b>   |  |
| <b>...</b>   | 1 ... 50  |  |
| <b>015</b>   | <b>Proximity sensor, inductive, slot 8, N/O contact, cable 7.5 m</b>          |  |
|              | Without   |  |
| <b>...SA</b> | 1 ... 6 units   |  |
| <b>016</b>   | <b>Proximity sensor, inductive, slot 8, N/C contact, cable 7.5 m</b>          |  |
|              | Without   |  |
| <b>...SB</b> | 1 ... 6 units   |  |
| <b>017</b>   | <b>Proximity sensor, inductive, M8, PNP, N/O contact, cable 2.5 m [units]</b> |  |
| <b>...</b>   | 1 ... 99  |  |
| <b>018</b>   | <b>Proximity sensor, inductive, M8, PNP, N/C contact, cable 2.5 m [units]</b> |  |
| <b>...</b>   | 1 ... 99  |  |
| <b>019</b>   | <b>Proximity sensor, inductive, M8, PNP, N/O contact, plug M8 [units]</b>     |  |
| <b>...</b>   | 1 ... 99  |  |
| <b>020</b>   | <b>Proximity sensor, inductive, M8, PNP, N/C contact, plug M8 [units]</b>     |  |
| <b>...</b>   | 1 ... 99  |  |
| <b>021</b>   | <b>Connecting cable, M8, 2.5 m [units]</b>                                    |  |
| <b>...</b>   | 1 ... 99  |  |
| <b>022</b>   | <b>Cover, sensor slot [units]</b>   |  |
| <b>...</b>   | 1 ... 50  |  |
| <b>023</b>   | <b>Mounting slot covering</b>   |  |
|              | None  |  |
| <b>...NC</b> | 1 ... 50 units  |  |
| <b>024</b>   | <b>Slot nut for mounting slot</b>   |  |
|              | Without   |  |
| <b>...NM</b> | 1 ... 99 units  |  |
| <b>025</b>   | <b>Cable clip [units]</b>   |  |
| <b>...</b>   | 10 ... 100  |  |
| <b>026</b>   | <b>Drive shaft [units]</b>  |  |
| <b>...</b>   | 1 ... 4   |  |
| <b>027</b>   | <b>Operating instructions</b>   |  |
|              | With operating instructions   |  |
| <b>DN</b>    | Without operating instructions  |  |

## Data sheet



-  Size  
70 ... 120
-  Stroke length  
50 ... 7400 mm
-  [www.festo.com](http://www.festo.com)



| General technical data                            |                     |  |             |             |
|---|---------------------|--|-------------|-------------|
| Size  |                     | 70                                       | 80          | 120         |
| Design  |                     | Electromechanical axis with toothed belt |             |             |
| Guide   |                     | Roller bearing guide                     |             |             |
| Mounting position                                 |                     | Any                                      |             |             |
| Working stroke                                    |                     |  |             |             |
| ELGA-...  | [mm]                | 50 ... 7000                              | 50 ... 7000 | 50 ... 7400 |
| ELGA-...-S  | [mm]                | 50 ... 7000                              | 50 ... 7000 | 50 ... 7400 |
| ELGA-...-L  | [mm]                | 50 ... 6900                              | 50 ... 6900 | 50 ... 7200 |
| Max. feed force F <sub>x</sub>                    | [N]                 | 350                                      | 800         | 1300        |
| Max. no-load torque <sup>1)</sup>                 | [Nm]                | 0.66                                     | 1.35        | 3           |
| Max. no-load resistance to shifting <sup>1)</sup> | [N]                 | 46                                       | 68          | 114         |
| Max. driving torque                               | [Nm]                | 5  | 15.9        | 34.1        |
| Max. speed  | [m/s]               | 10                                       |             |             |
| Max. acceleration                                 | [m/s <sup>2</sup> ] | 50                                       |             |             |
| Repetition accuracy                               | [mm]                | ±0.08                                    |             |             |

1) At 0.2 m/s

| Operating and environmental conditions |      |             |
|--|------|-------------|
| Ambient temperature <sup>1)</sup>      | [°C] | -10 ... +60 |
| Degree of protection                   |      |             |
| ELGA-...                               |      | IP40        |
| ELGA-...-P0                            |      | IP00        |
| Duty cycle                             | [%]  | 100         |

1) Note operating range of proximity switches

| Weight [kg]                                 |      |      |       |
|---|------|------|-------|
| Size  | 70   | 80   | 120   |
| Basic weight with 0 mm stroke <sup>1)</sup> |      |      |       |
| ELGA-...                                    | 2.78 | 6.25 | 17.39 |
| ELGA-...-S                                  | 2.39 | 5.62 | 15.82 |
| ELGA-...-L                                  | 3.33 | 7.49 | 21.44 |
| Additional weight per 1000 mm stroke        |      |      |       |
| ELGA-...                                    | 3.29 | 5.17 | 10.81 |
| ELGA-...-P0                                 | 3.18 | 5.06 | 10.66 |
| Moving mass                                 |      |      |       |
| ELGA-...                                    | 0.80 | 2.01 | 5.08  |
| ELGA-...-S                                  | 0.70 | 1.85 | 4.65  |
| ELGA-...-L                                  | 1.03 | 2.53 | 6.63  |

1) Incl. slide

## Data sheet

| Toothed belt             |          |       |       |       |
|--------------------------|----------|-------|-------|-------|
| Size                     |          | 70    | 80    | 120   |
| Pitch                    | [mm]     | 3     | 5     | 5     |
| Elongation <sup>1)</sup> |          |       |       |       |
| ELGA-...                 | [%]      | 0.213 | 0.168 | 0.21  |
| ELGA-...-PU2             | [%]      | 0.105 | 0.1   | 0.122 |
| Effective diameter       | [mm]     | 28.65 | 39.79 | 52.52 |
| Feed constant            | [mm/rev] | 90    | 125   | 165   |

1) At max. feed force

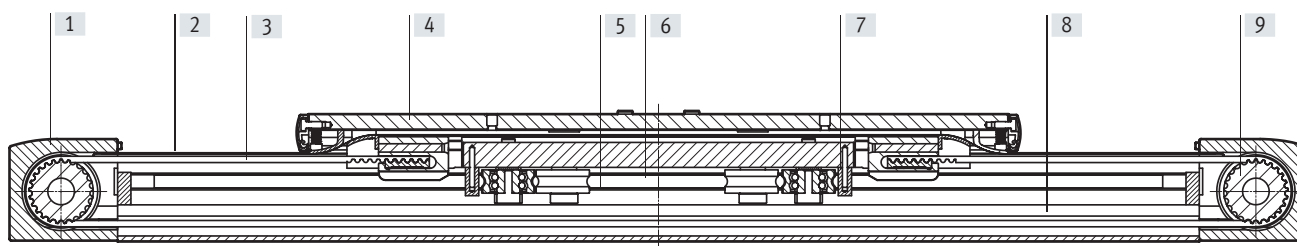
| Mass moments of inertia |                          |     |      |      |
|-------------------------|--------------------------|-----|------|------|
| Size                    |                          | 70  | 80   | 120  |
| $J_0$                   |                          |     |      |      |
| ELGA-...                | [kg mm <sup>2</sup> ]    | 232 | 1044 | 4935 |
| ELGA-...-S              | [kg mm <sup>2</sup> ]    | 207 | 968  | 4592 |
| ELGA-...-L              | [kg mm <sup>2</sup> ]    | 278 | 1247 | 6006 |
| $J_H$ per metre stroke  | [kg mm <sup>2</sup> /m]  | 19  | 97   | 221  |
| $J_L$ per kg payload    | [kg mm <sup>2</sup> /kg] | 205 | 396  | 690  |

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

$$J_A = J_0 + J_H \times \text{working stroke [m]} + J_L \times m_{\text{payload [kg]}}$$

## Materials

## Sectional view



| Axis |                     |   |
|------|---------------------|---|
| [1]  | Drive cover         | Anodised wrought aluminium alloy                  |
| [2]  | Cover strip         | Stainless steel strip, non-corroding              |
| [3]  | Toothed belt        |   |
|      | ELGA-...            | Polychloroprene with glass cord and nylon coating |
|      | ELGA-...-PU2        | Polyurethane with steel cord and nylon cover      |
| [4]  | Slide               | Anodised wrought aluminium alloy                  |
| [5]  | Roller              | Rolled steel, hardened                            |
| [6]  | Guide rod           | Hardened and hard-chromium plated tempered steel  |
| [7]  | Wiper seal          | Oil-impregnated felt                              |
| [8]  | Profile             | Anodised wrought aluminium alloy                  |
| [9]  | Toothed belt pulley | High-alloy stainless steel                        |
|      | Note on materials   | RoHS-compliant                                    |
|      |                     | Contains paint-wetting impairment substances      |

## Data sheet

| Technical data – Displacement encoder       |       | Dimensions → page 61   |             |
|---|-------|--|-------------|
| Type  |       | ELGA-...-M1  | ELGA-...-M2 |
| Resolution                                  | [μm]  | 2.5  | 10          |
| Max. travel speed with displacement encoder | [m/s] | 4  | 4           |
| Encoder signal                              |       | 5 V TTL; A/A, B/B; reference signal (N/N) cyclically every 5 mm (zero pulse) |             |
| Signal output                               |       | Line driver, alternating, resistant to sustained short circuit               |             |
| Electrical connection                       |       | 8-pin plug, round design, M12  |             |
| Cable length                                | [mm]  | 160  |             |

| Operating and environmental conditions – Displacement encoder system |                                   |
|--|-----------------------------------|
| Ambient temperature  | [°C] -10 ... +70                  |
| Degree of protection   | IP64                              |
| CE marking (see declaration of conformity)                           | To EU EMC Directive <sup>1)</sup> |

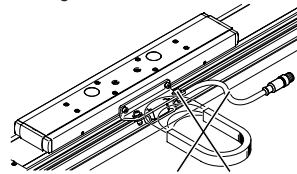
1) For information about the area of use, see the EC declaration of conformity at: [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

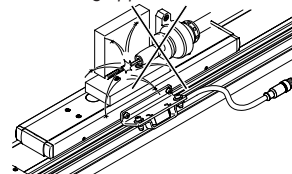
## Application information

The spindle axis with displacement encoder is not designed for the following application examples:

- Magnetic field

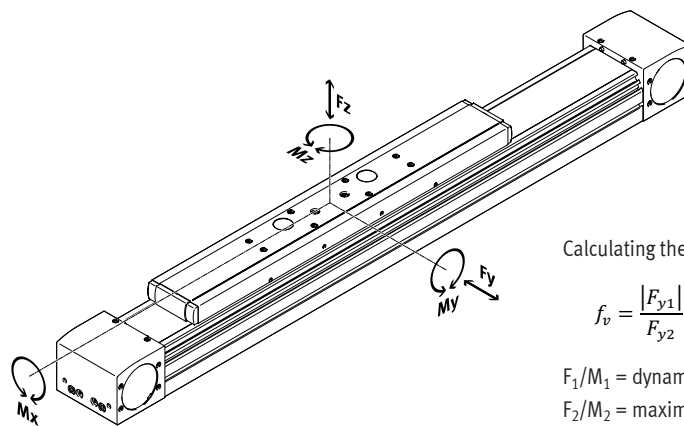


- Welding application



## Characteristic load values

The indicated forces and torques refer to the slide surface. 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 two or more of the indicated forces and torques simultaneously, the following equation must be satisfied in addition to the indicated maximum loads:

Calculating the load comparison factor:

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

$F_1/M_1$  = dynamic value

$F_2/M_2$  = maximum value

| Max. permissible forces and torques for a service life of 10000 km |      |     |     |      |
|--|------|-----|-----|------|
| Size   |      | 70  | 80  | 120  |
| $F_{y_{max}}$  | [N]  | 500 | 800 | 2000 |
| $F_{z_{max}}$  | [N]  | 500 | 800 | 2000 |
| $M_{x_{max}}$  | [Nm] | 11  | 30  | 100  |
| $M_{y_{max}}$  |      |     |     |      |
| ELGA-...   | [Nm] | 20  | 90  | 320  |
| ELGA-...-S   | [Nm] | 20  | 90  | 320  |
| ELGA-...-L   | [Nm] | 40  | 180 | 640  |
| $M_{z_{max}}$  |      |     |     |      |
| ELGA-...   | [Nm] | 20  | 90  | 320  |
| ELGA-...-S   | [Nm] | 20  | 90  | 320  |
| ELGA-...-L   | [Nm] | 40  | 180 | 640  |

Data sheet

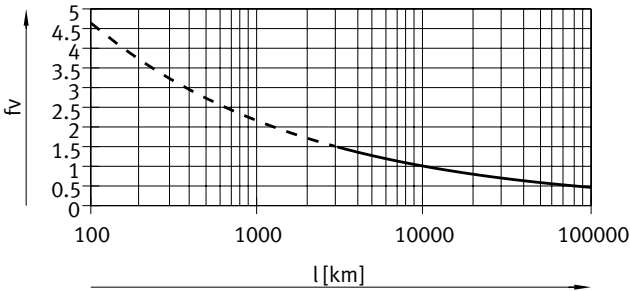
Calculating the service life


The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor  $f_v$  against the service life.

These values are only theoretical. You must consult your local Festo contact for a load comparison factor  $f_v$  greater than 1.5.

Load comparison factor  $f_v$  as a function of service life

Example:  
A user wants to move an X kg load. Using the formula (→ page 51) gives a value of 1.5 for the load comparison factor  $f_v$ . According to the graph, the guide would have a service life of approx. 3000 km. Reducing the acceleration reduces the  $M_z$  and  $M_y$  values. A load comparison factor  $f_v$  of 1 now gives a service life of 10000 km.



 **Note**

Engineering software  
Electric Motion Sizing  
[www.festo.com/x/electric-motion-sizing](http://www.festo.com/x/electric-motion-sizing)

The engineering software can be used to calculate the guide workload for a service life of 5000 km.

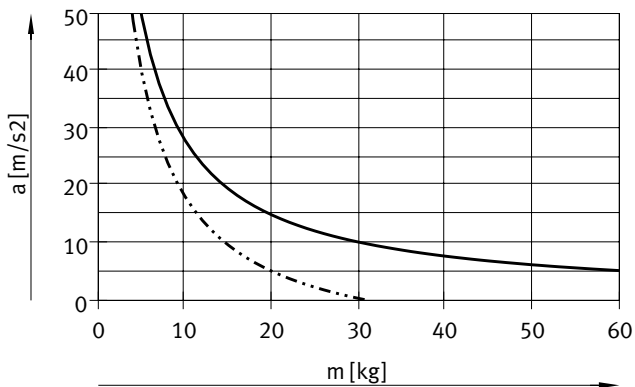
$f_v > 1.5$  are only theoretical comparison values for the recirculating ball bearing guide.



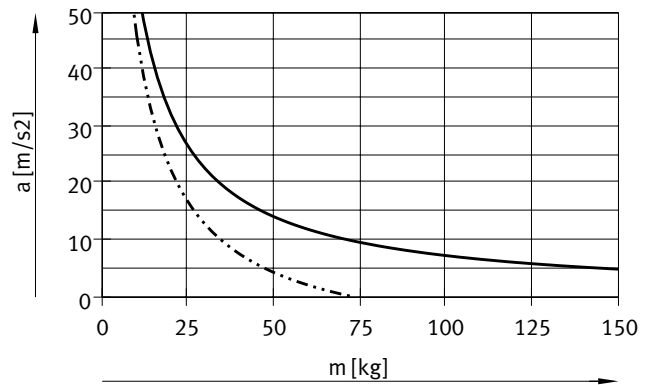
## Data sheet

Max. acceleration  $a$  as a function of payload  $m$ 

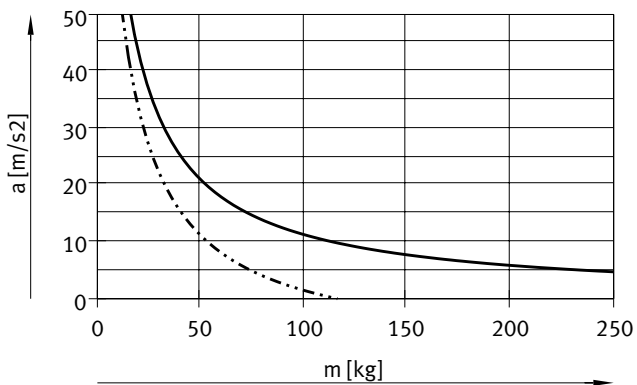
Size 70



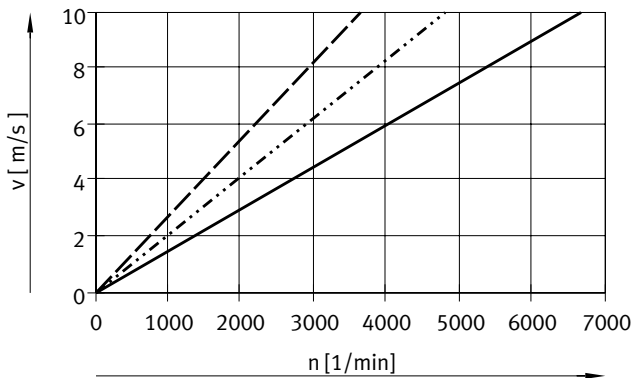
Size 80



Size 120



— Horizontal mounting position  
 - - - Vertical mounting position

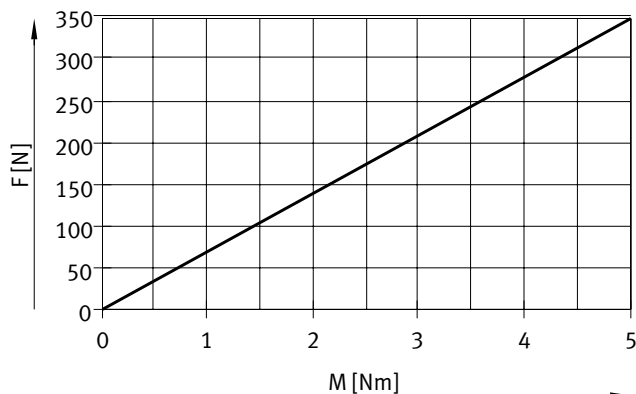
Velocity  $v$  as a function of rotational speed  $n$ 

— ELGA-TB-RF-70  
 ..... ELGA-TB-RF-80  
 - - - ELGA-TB-RF-120

## Data sheet

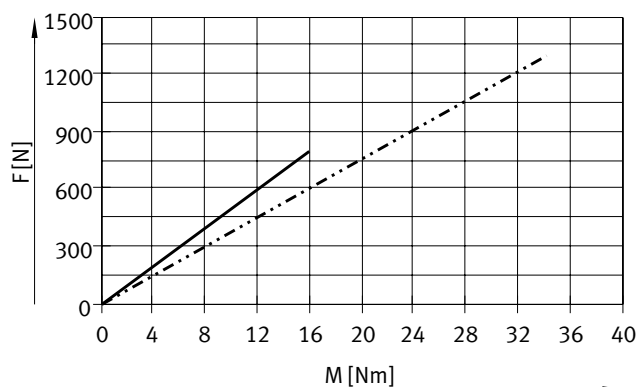
## Theoretical feed force F as a function of input torque M

Size 70



— ELGA-TB-RF-70

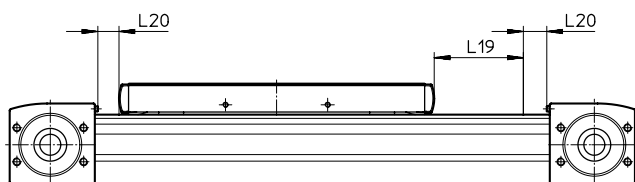
Size 80/120



— ELGA-TB-RF-80

- - - ELGA-TB-RF-120

## Stroke reserve



L19 = Nominal stroke

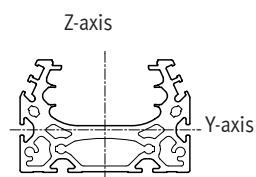
L20 = Stroke reserve

- The stroke reserve is a safety distance from the mechanical end position and is not used in normal operation
- The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum permissible working stroke
- The stroke reserve length can be freely selected
- The stroke reserve is defined via the "stroke reserve" characteristic in the modular product system.

## Example:

Type ELGA-TB-RF-70-500-20H-...  
 Nominal stroke = 500 mm  
 2x stroke reserve = 40 mm  
 Working stroke = 540 mm  
 (540 mm = 500 mm + 2x 20 mm)

## 2nd moments of area



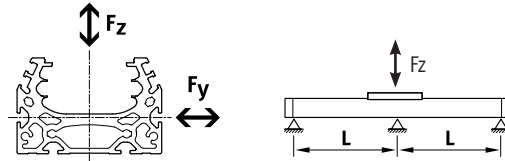
| Size           |                    | 70                   | 80                   | 120                  |
|----------------|--------------------|----------------------|----------------------|----------------------|
| I <sub>y</sub> | [mm <sup>4</sup> ] | 1.39x10 <sup>5</sup> | 2.70x10 <sup>5</sup> | 1.42x10 <sup>6</sup> |
| I <sub>z</sub> | [mm <sup>4</sup> ] | 4.33x10 <sup>5</sup> | 1.02x10 <sup>6</sup> | 5.02x10 <sup>6</sup> |

## Data sheet

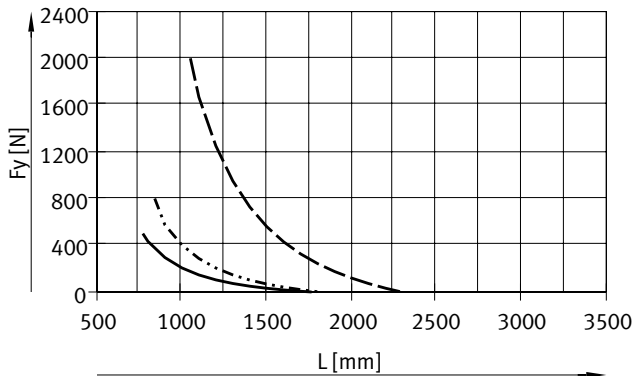
### Maximum permissible support spacing $L$ (without profile mounting MUE/central support EAHF) as a function of force $F$

In order to limit deflection in the case of large strokes, the axis may need to be supported.

The following graphs can be used to determine the maximum permissible support spacing  $L$  as a function of force  $F$  acting on the axis. The deflection is  $f = 0.5$  mm.

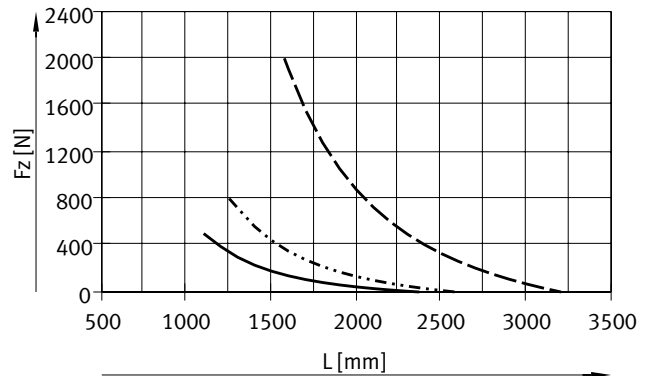


Force  $F_y$



- ELGA-TB-RF-70
- ELGA-TB-RF-80
- - - ELGA-TB-RF-120

Force  $F_z$



### Recommended deflection limits

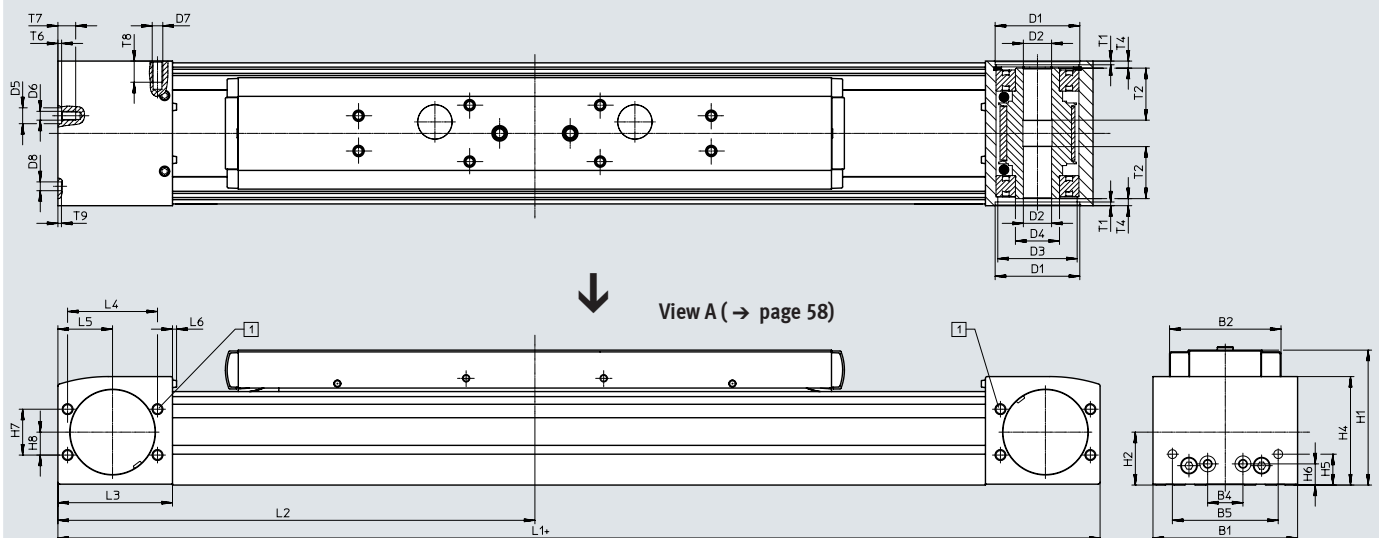
Adherence to the following deflection limits is recommended so as not to impair the functionality of the axes.

Greater deformation can result in increased friction, greater wear and reduced service life.

| Size       | Dynamic deflection<br>(moving load)   | Static deflection<br>(stationary load) |
|------------|---------------------------------------|--|
| 70 ... 120 | 0.05% of the axis length, max. 0.5 mm | 0.1% of the axis length                |

## Data sheet

## Dimensions

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

+ = plus stroke length + 2x stroke reserve

[1] Sealing air connection

| Size | B1  | B2   | B4 | B5 | D1<br>Ø<br>H7 | D2<br>Ø<br>H7 | D3<br>Ø | D4<br>Ø | D5<br>Ø<br>H7 | D6 |
|------|-----|------|----|----|---------------|---------------|---------|---------|---------------|----|
| 70   | 69  | 48.2 | 30 | 45 | 38            | 16            | 34      | 25      | –             | M5 |
| 80   | 82  | 63.2 | 20 | 60 | 48            | 16            | 45      | 25      | 9             | M5 |
| 120  | 120 | 95   | 80 | 40 | 80            | 23            | 72      | 45      | –             | M8 |

| Size | D7 | D8<br>Ø<br>H7 | H1    | H2   | H4   | H5   | H6 | H7 | H8 | L3   |
|------|----|---------------|-------|------|------|------|----|----|----|------|
| 70   | M6 | 5             | 64    | 26.5 | 50.8 | 13   | 13 | 24 | 12 | 57.5 |
| 80   | M6 | 5             | 76.5  | 30   | 61.5 | 17.5 | 12 | 26 | 13 | 65   |
| 120  | M8 | 9             | 111.5 | 45   | 91   | 22   | 22 | 59 | 32 | 100  |

| Size | L4 | L5   | L6  | T1  | T2   | T4   | T6  | T7   | T8 | T9  |
|------|----|------|-----|-----|------|------|-----|------|----|-----|
| 70   | 42 | 27.5 | 2.3 | 2.1 | 18   | 7.15 | –   | 10   | 12 | 3.1 |
| 80   | 51 | 31   | 2.3 | 2.1 | 29.5 | 4    | 2.1 | 10.1 | 12 | 2   |
| 120  | 76 | 50   | 2.5 | 3.1 | 29.5 | 4    | –   | 16   | 16 | 2.1 |

| Size<br>Slide design | L1       |            |            | L2               |                    |                    |
|----------------------|----------|------------|------------|------------------|--------------------|--------------------|
|                      | ELGA-... | ELGA-...-S | ELGA-...-L | ELGA-...<br>min. | ELGA-...-S<br>min. | ELGA-...-L<br>min. |
| 70                   | 420      | 342        | 520        | 210              | 171                | 260                |
| 80                   | 580      | 496        | 720        | 290              | 248                | 360                |
| 120                  | 775      | 673        | 1005       | 387.5            | 336.5              | 502.5              |

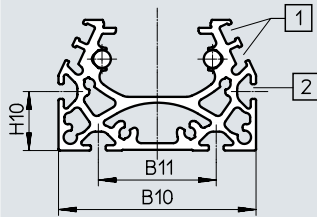
## Data sheet

## Dimensions

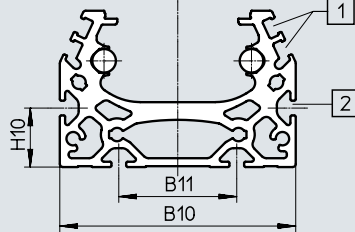
Download CAD data → [www.festo.com](http://www.festo.com)

## Profile

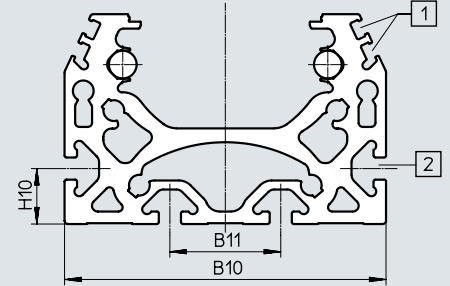
## Size 70



## Size 80



## Size 120



- [1] Sensor slot for proximity switch  
 [2] Mounting slot for slot nut  
 With size 70, 80: slot nut NST-5-M5  
 With size 120: slot nut NST-8-M6

| Size | B10 | B11 | H10 |
|------|-----|-----|-----|
| 70   | 67  | 40  | 20  |
| 80   | 80  | 40  | 20  |
| 120  | 116 | 40  | 20  |

**Note**

Requirements for the flatness of the bearing surface and of attachments as well as for use in parallel structures

→ [www.festo.com/sp](http://www.festo.com/sp)

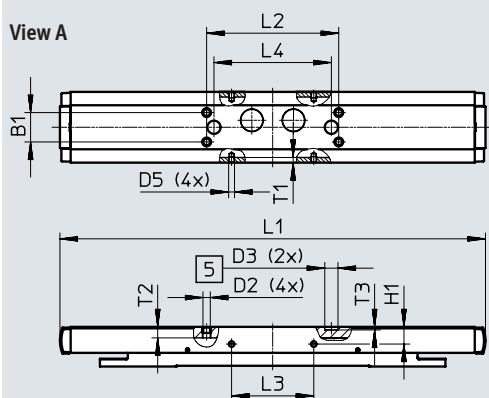
User documentation

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

ELGA-... – Standard slide

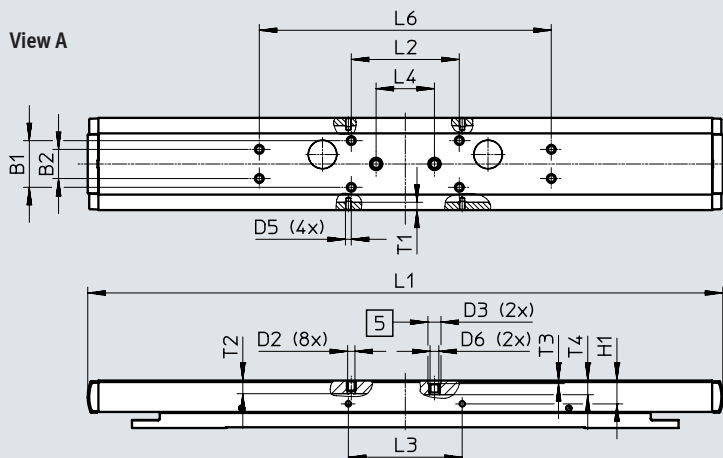
## Size 70

## View A



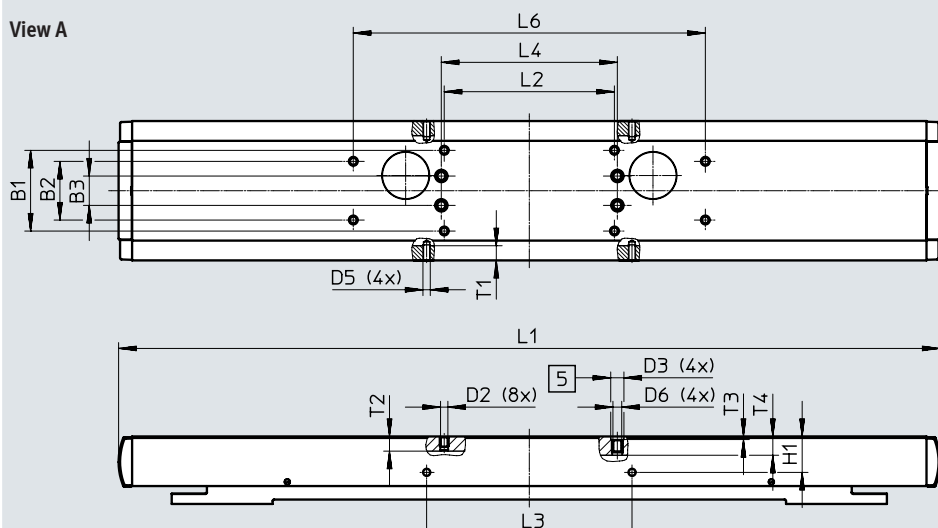
## Size 80

## View A



## Size 120

## View A



[5] Drilled hole for centring sleeve

| Size | B1   | B2   | B3   | D2 | D3<br>Ø<br>H7 | D5 | D6 | H1   |
|------|------|------|------|----|---------------|----|----|------|
|      | ±0.1 | ±0.1 | ±0.1 |    |               |    |    | ±0.1 |
| 70   | 20   | –    | –    | M5 | 9             | M4 | –  | 11.7 |
| 80   | 32   | 20   | –    | M5 | 9             | M4 | M6 | 16   |
| 120  | 55   | 40   | 20   | M5 | 9             | M5 | M6 | 24.5 |

| Size | L1  | L2   | L3   | L4    | L6   | T1  | T2  | T3  | T4   |
|------|-----|------|------|-------|------|-----|-----|-----|------|
|      |     | ±0.2 | ±0.1 | ±0.03 | ±0.2 |     |     |     |      |
| 70   | 290 | 90   | 56   | 80    | –    | 3.5 | 7.5 | 2.1 | –    |
| 80   | 435 | 74   | 78   | 40    | 200  | 5.1 | 9   | 2.1 | 9.7  |
| 120  | 560 | 116  | 140  | 120   | 240  | 10  | 10  | 2.1 | 12.8 |

## Data sheet

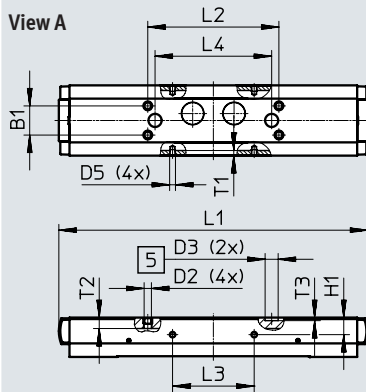
## Dimensions

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

ELGA-...S – Short slide

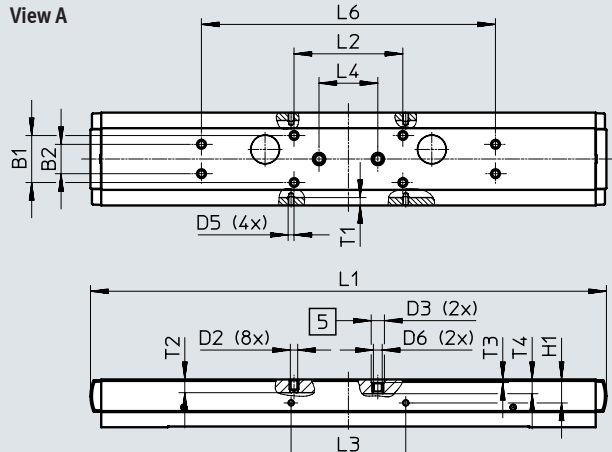
## Size 70

View A



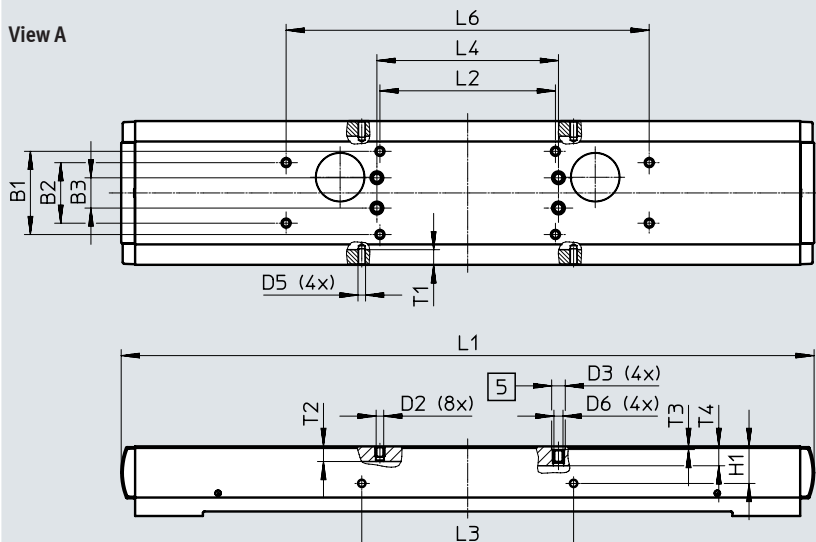
## Size 80

View A



## Size 120

View A



[5] Drilled hole for centring sleeve

| Size | B1   | B2   | B3   | D2 | D3<br>ø<br>H7 | D5 | D6 | H1   |
|------|------|------|------|----|---------------|----|----|------|
|      | ±0.1 | ±0.1 | ±0.1 |    |               |    |    | ±0.1 |
| 70   | 20   | –    | –    | M5 | 9             | M4 | –  | 11.7 |
| 80   | 32   | 20   | –    | M5 | 9             | M4 | M6 | 16   |
| 120  | 55   | 40   | 20   | M5 | 9             | M5 | M6 | 24.5 |

| Size | L1  | L2   | L3   | L4    | L6   | T1  | T2  | T3  | T4   |
|------|-----|------|------|-------|------|-----|-----|-----|------|
|      |     | ±0.2 | ±0.1 | ±0.03 | ±0.2 |     |     |     |      |
| 70   | 212 | 90   | 56   | 80    | –    | 3.5 | 7.5 | 2.1 | –    |
| 80   | 351 | 74   | 78   | 40    | 200  | 5.1 | 9   | 2.1 | 9.7  |
| 120  | 458 | 116  | 140  | 120   | 240  | 10  | 10  | 2.1 | 12.8 |

## Data sheet

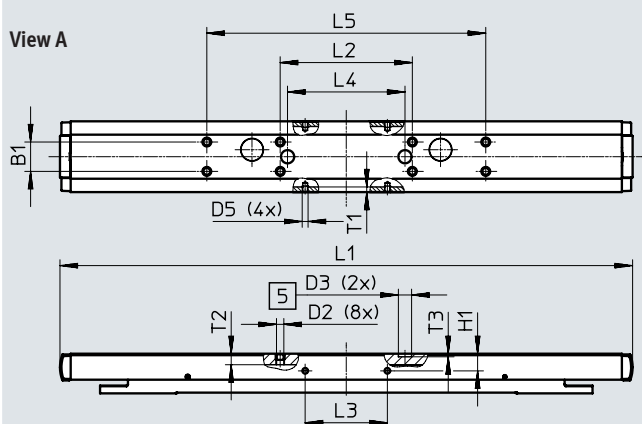
### Dimensions

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

ELGA-...-L – Long slide

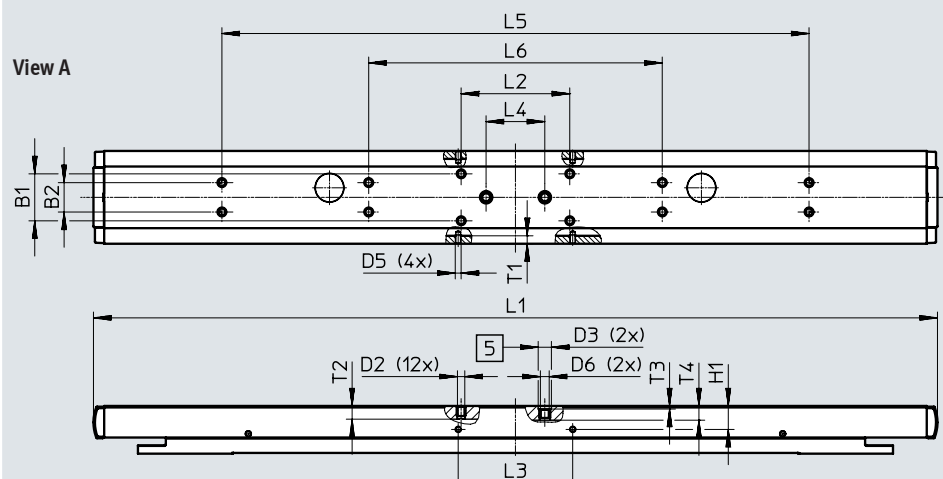
### Size 70

#### View A



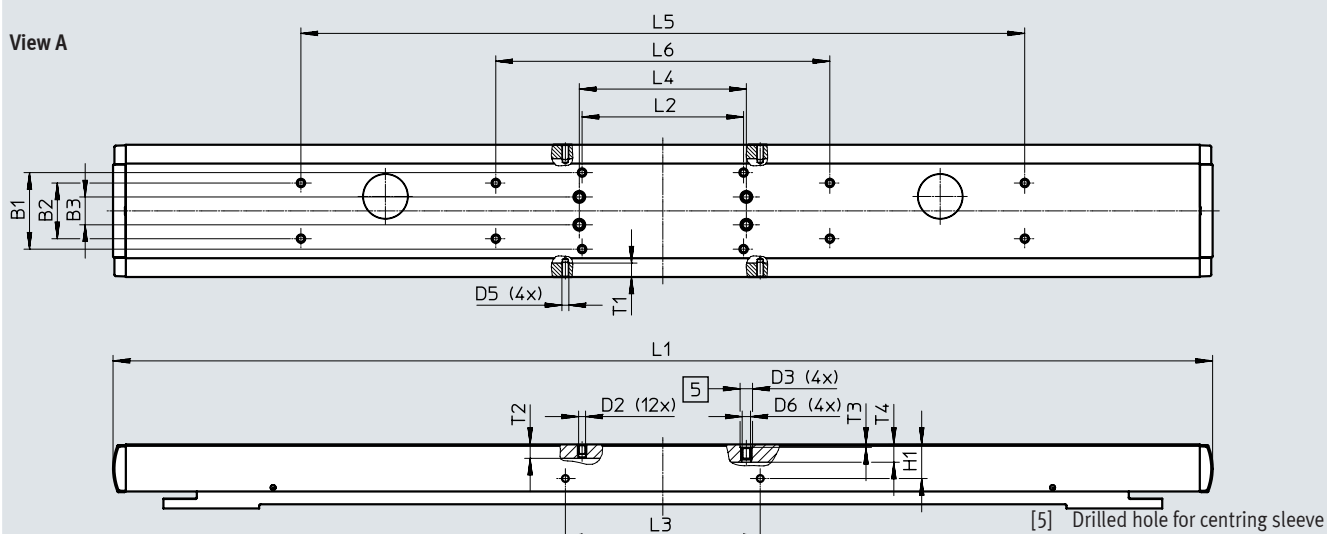
### Size 80

#### View A



### Size 120

#### View A





## Data sheet

| Size | B1<br>±0.1 | B2<br>±0.1 | B3<br>±0.1 | D2 | D3<br>Ø<br>H7 | D5 |
|------|------------|------------|------------|----|---------------|----|
| 70   | 20         | –          | –          | M5 | 9             | M4 |
| 80   | 32         | 20         | –          | M5 | 9             | M4 |
| 120  | 55         | 40         | 20         | M5 | 9             | M5 |

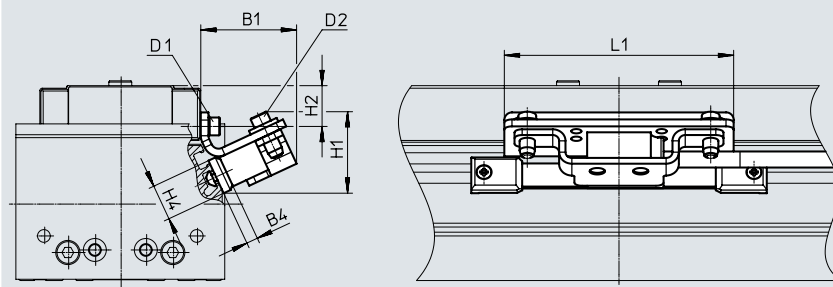
| Size | D6 | H1<br>±0.1 | L1  | L2<br>±0.2 | L3<br>±0.1 | L4<br>±0.03 |
|------|----|------------|-----|------------|------------|-------------|
| 70   | –  | 11.7       | 390 | 90         | 56         | 80          |
| 80   | M6 | 16         | 575 | 74         | 78         | 40          |
| 120  | M6 | 24.5       | 790 | 116        | 140        | 120         |

| Size | L5<br>±0.2 | L6<br>±0.2 | T1  | T2  | T3  | T4   |
|------|------------|------------|-----|-----|-----|------|
| 70   | 190        | –          | 3.5 | 7.5 | 2.1 | –    |
| 80   | 400        | 200        | 5.1 | 9   | 2.1 | 9.7  |
| 120  | 520        | 240        | 10  | 10  | 2.1 | 12.8 |

## Dimensions

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

ELGA-...-M1/M2 – With incremental displacement encoder

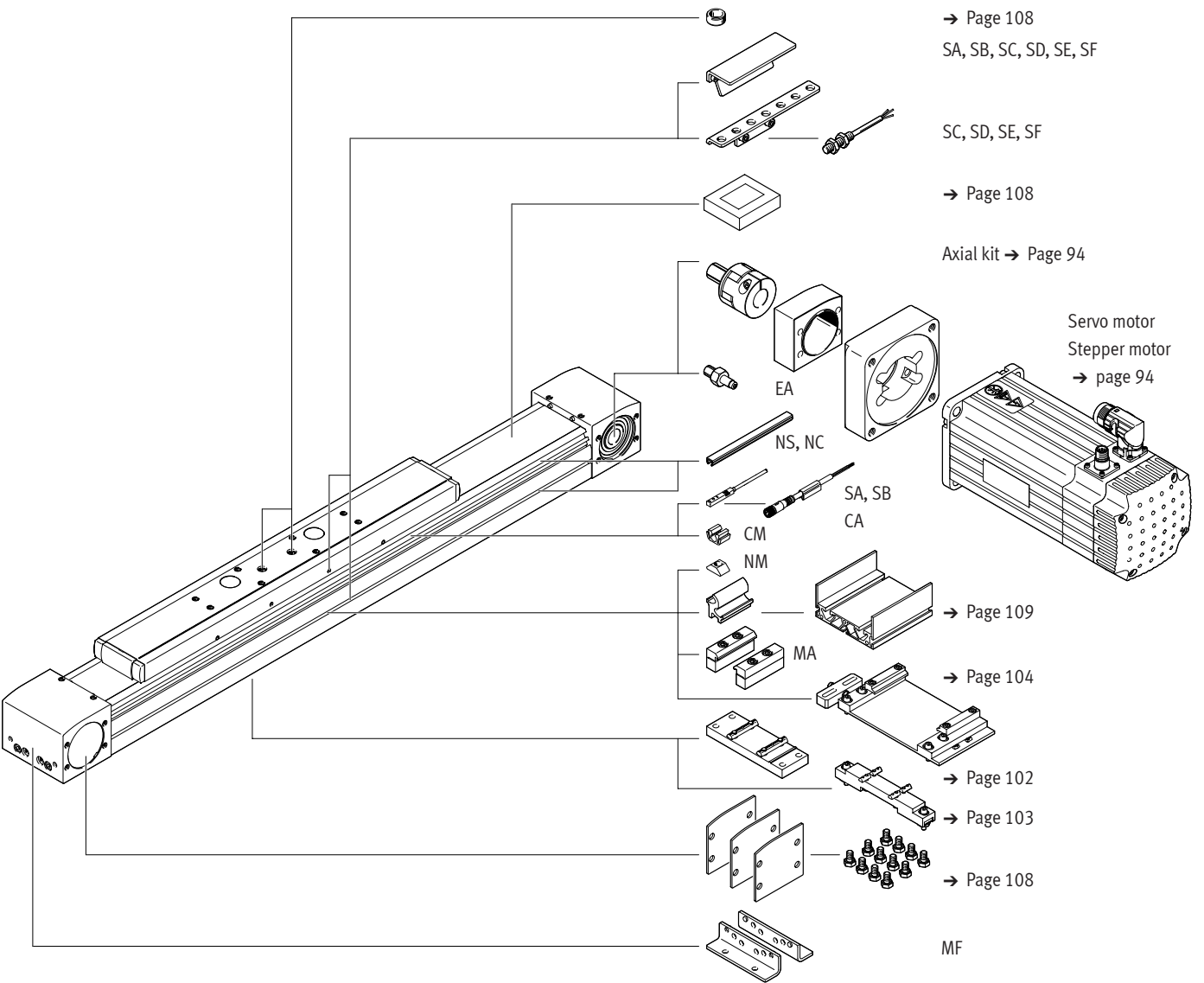


Encoder cable  
(connection to motor controller/  
safety system)  
→ Page 110

| Size | B1   | B4  | D1    | D2    | H1   | H2   | H4   | L1  |
|------|------|-----|-------|-------|------|------|------|-----|
| 70   | 37.6 | 4.5 | M4x8  | M4x14 | 37.9 | 11.7 | 14.1 | 86  |
| 80   | 37.6 | 4.5 | M4x8  | M4x14 | 32   | 16   | 14.1 | 90  |
| 120  | 38.5 | 4.5 | M5x10 | M4x14 | 37.7 | 24.5 | 14.1 | 170 |

Ordering data – Modular product system

Accessories



## Ordering data – Modular product system

| Ordering table   |                          |   |                |                | Conditions | Code           | Enter code |
|--|--------------------------|---|----------------|----------------|------------|----------------|------------|
| Size   |                          | 70  | 80             | 120            |            |                |            |
| Module no.   |                          | <b>1371245</b>  | <b>1371246</b> | <b>1371247</b> |            |                |            |
| Design   |                          | Linear axis   |                |                |            | <b>ELGA</b>    | ELGA       |
| Function   |                          | Toothed belt  |                |                |            | <b>★ -TB</b>   | -TB        |
| Guide  |                          | Roller bearing guide                                      |                |                |            | <b>★ -RF</b>   | -RF        |
| Size   | [mm]                     | 70  | 80             | 120            |            | <b>★ -...</b>  |            |
| Stroke length  | [mm]                     | 1 ... 7000  | 1 ... 7000     | 1 ... 7400     |            | <b>★ -...</b>  |            |
| Stroke reserve   | [mm]                     | 0 ... 999 (0 = no stroke reserve)                         |                |                | [1]        | <b>★ -...H</b> |            |
| Slide design   |                          | Standard slide  |                |                |            | <b>★</b>       |            |
|  |                          | 50 ... 7000   | 50 ... 7000    | 50 ... 7400    |            |                |            |
|  |                          | Slide, short  |                |                | [2]        | <b>★ -S</b>    |            |
|  |                          | 50 ... 7000   | 50 ... 7000    | 50 ... 7400    |            |                |            |
|  |                          | Long slide  |                |                |            | <b>★ -L</b>    |            |
|  |                          | 50 ... 6900   | 50 ... 6900    | 50 ... 7200    |            |                |            |
| Protection against particles   |                          | Standard  |                |                |            | <b>★</b>       |            |
|  |                          | Without cover strip                                       |                |                |            | <b>★ -P0</b>   |            |
| Measurement system   |                          | Without   |                |                |            |                |            |
|  |                          | With displacement encoder, incremental, resolution 2.5 µm |                |                |            | <b>-M1</b>     |            |
|  |                          | With displacement encoder, incremental, resolution 10 µm  |                |                |            | <b>-M2</b>     |            |
| Displacement encoder attachment position   |                          | Without   |                |                |            |                |            |
|  |                          | Rear  |                |                | [3]        | <b>-B</b>      |            |
|  |                          | Front   |                |                | [3]        | <b>-F</b>      |            |
| Material of toothed belt   |                          | Chloroprene rubber  |                |                |            |                |            |
|  |                          | Coated PU   |                |                |            | <b>-PU2</b>    |            |
| Accessories  |                          | Accessories enclosed separately                           |                |                |            | <b>+</b>       | +          |
| Foot mounting  |                          | 1   |                |                |            | <b>MF</b>      |            |
| Profile mounting   |                          | 1 ... 50  |                |                |            | <b>...MA</b>   |            |
| Proximity switch (SIES),<br>inductive, slot type 0, PNP,<br>incl. switch lug               | N/O contact, 7.5 m cable | 1 ... 6   |                |                |            | <b>...SA</b>   |            |
|  | N/C contact, 7.5 m cable | 1 ... 6   |                |                |            | <b>...SB</b>   |            |
| Proximity switch (SIEN),<br>inductive, M8, PNP,<br>incl. switch lug<br>with sensor bracket | N/O contact, 2.5 m cable | 1 ... 99  |                |                |            | <b>...SC</b>   |            |
|  | N/C contact, 2.5 m cable | 1 ... 99  |                |                |            | <b>...SD</b>   |            |
|  | N/O contact, M8 plug     | 1 ... 99  |                |                |            | <b>...SE</b>   |            |
|  | N/C contact, M8 plug     | 1 ... 99  |                |                |            | <b>...SF</b>   |            |
| Connecting cable 2.5 m M8, 3-wire  |                          | 1 ... 99  |                |                |            | <b>...CA</b>   |            |
| Sensor slot cover  |                          | 1 ... 50 (1 = 2 units, 500 mm)                            |                |                |            | <b>...NS</b>   |            |
| Mounting slot cover  |                          | 1 ... 50 (1 = 2 units, 500 mm)                            |                |                |            | <b>...NC</b>   |            |
| Slot nut for mounting slot   |                          | 1 ... 99  |                |                |            | <b>...NM</b>   |            |
| Clip for sensor slot   |                          | 10, 20, 30, 40, 50, 60, 70, 80, 90                        |                |                |            | <b>...CM</b>   |            |
| Drive shaft  |                          | 1 ... 4   |                |                |            | <b>...EA</b>   |            |
| Operating instructions   |                          | With operating instructions                               |                |                |            |                |            |
|  |                          | Without operating instructions                            |                |                |            | <b>-DN</b>     |            |

[1] ... **H** The sum of the nominal stroke and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length

[2] **S** Only with P0

[3] **B, F** Mandatory in combination with (measurement system) M1, M2  
Only in combination with (measurement system) M1, M2

**Note**

The code SA, SB includes a switch lug in the scope of delivery.

The code SC, SD, SE, SF includes one switch lug and max. two sensor brackets in the scope of delivery.

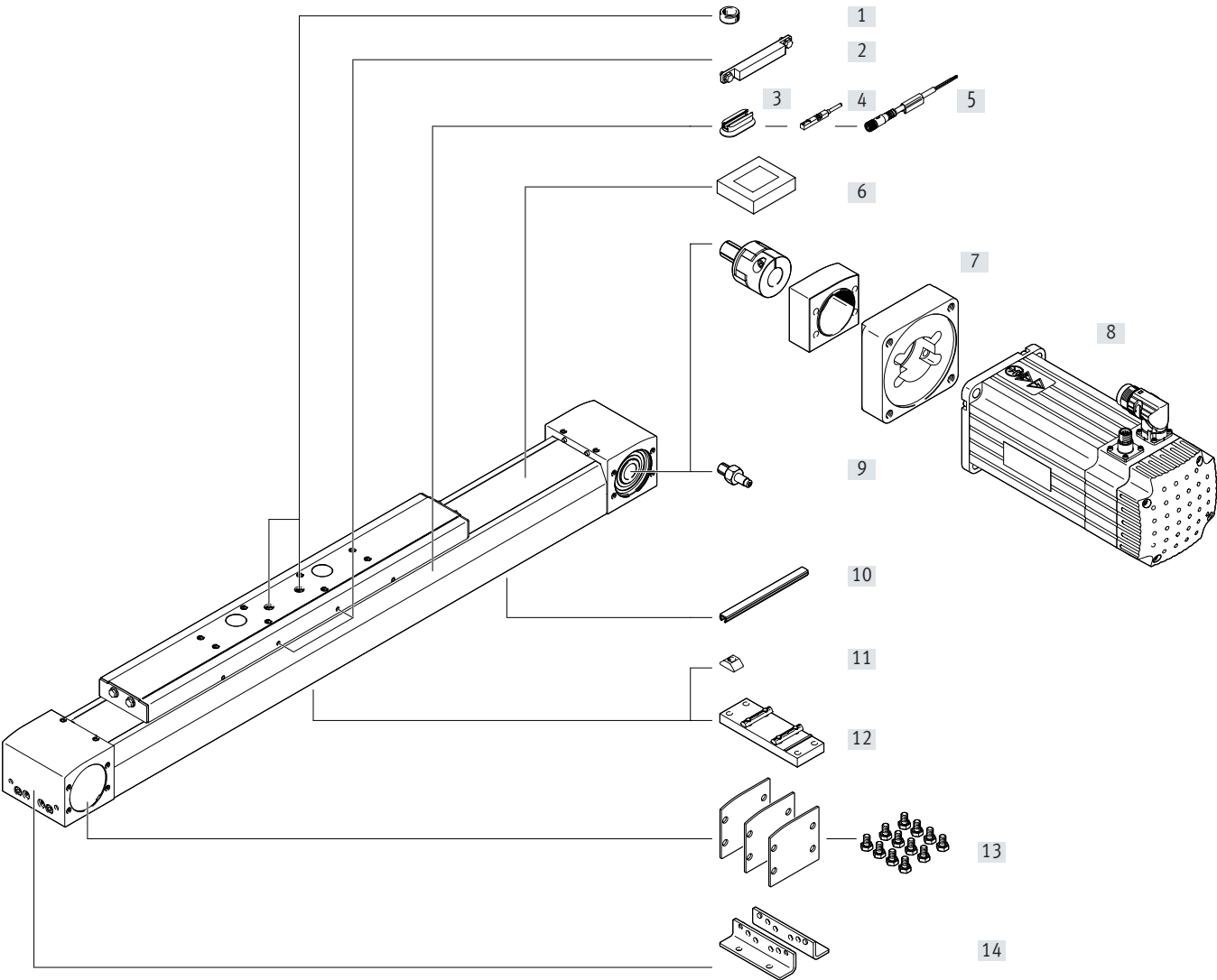
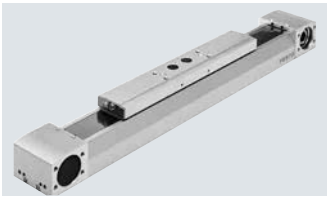
Festo core product range



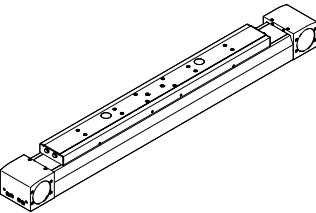
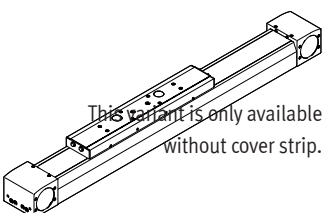
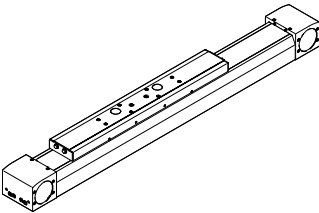
Generally ready for shipping ex works in 24 hours

Generally ready for shipping ex works in 5 days

Peripherals overview – For the food zone



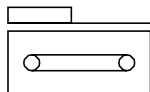
| Slide variants |               |               |
|----------------|---------------|---------------|
| ELGA-...-F1    | ELGA-...-S-F1 | ELGA-...-L-F1 |
| Standard slide | Slide, short  | Long slide    |






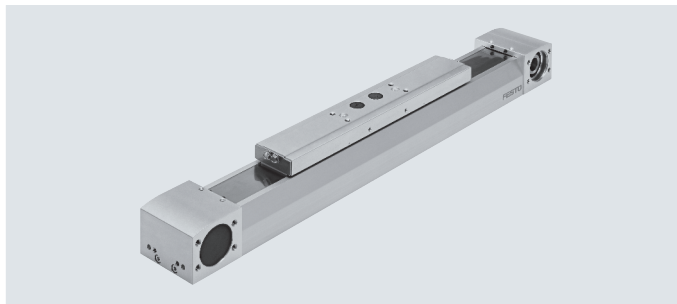
## Peripherals overview – For the food zone

| Accessories |                                    |  |                 |
|-------------|------------------------------------|--|-----------------|
|             | Type/order code                    | Description  | → Page/Internet |
| [1]         | Centring pin/sleeve<br>ZBS, ZBH    | <ul style="list-style-type: none"> <li>For centring loads and attachments on the slide</li> <li>Included in the scope of delivery:               <ul style="list-style-type: none"> <li>With size 70, 80, 120: 2x ZBH-9</li> </ul> </li> </ul> | 108             |
| [2]         | Switch lug<br>EAPM                 | For sensing the slide position   | 107             |
| [3]         | Mounting kit<br>CRSMB              | For mounting the proximity switches on the axis  | 107             |
| [4]         | Proximity switch, T-slot<br>SME-8M | For sensing the slide position   | 110             |
| [5]         | Connecting cable<br>NEBU           | Via proximity switch   | 110             |
| [6]         | Clamping element<br>EADT           | Tool for retensioning the cover strip  | 108             |
| [7]         | Axial kit<br>EAMM                  | For axial motor mounting (comprising: coupling, coupling housing and motor flange)   | 94              |
| [8]         | Motor<br>EMME, EMMS                | Motors specially matched to the axis, with or without gear unit, with or without brake   | 94              |
| [9]         | Drive shaft<br>EA                  | <ul style="list-style-type: none"> <li>Can, if required, be used as an alternative interface</li> <li>No drive shaft is required for the axis/motor combinations → page 94</li> </ul>  | 99              |
| [10]        | Slot cover<br>NC                   | <ul style="list-style-type: none"> <li>For protection against contamination</li> </ul>   | 108             |
| [11]        | Slot nut<br>NM                     | For mounting attachments   | 108             |
| [12]        | Central support<br>EAHF-L5         | For mounting the axis on the profile from underneath   | 102             |
| [13]        | Cover kit<br>EASC-L5               | For covering the sides of the drive cover  | 108             |
| [14]        | Foot mounting<br>MF                | For mounting the axis on the end cap.  | 100             |

## Data sheet – For the food zone



-  Size  
70 ... 120
-  Stroke length  
50 ... 7400 mm
-  [www.festo.com](http://www.festo.com)



| General technical data                            |        |  |             |             |
|---|--------|--|-------------|-------------|
| Size  |        | 70                                       | 80          | 120         |
| Design  |        | Electromechanical axis with toothed belt |             |             |
| Guide   |        | Roller bearing guide                     |             |             |
| Mounting position                                 |        | Any                                      |             |             |
| Working stroke                                    |        |  |             |             |
| ELGA-...  | [mm]   | 50 ... 7000                              | 50 ... 7000 | 50 ... 7400 |
| ELGA-...-S  | [mm]   | 50 ... 7000                              | 50 ... 7000 | 50 ... 7400 |
| ELGA-...-L  | [mm]   | 50 ... 6900                              | 50 ... 6900 | 50 ... 7200 |
| Max. feed force F <sub>x</sub>                    | [N]    | 260                                      | 600         | 1000        |
| Max. no-load torque <sup>1)</sup>                 | [Nm]   | 1.03                                     | 1.93        | 5.67        |
| Max. no-load resistance to shifting <sup>1)</sup> | [N]    | 72                                       | 97          | 216         |
| Max. driving torque                               | [Nm]   | 3.7                                      | 11.9        | 26.2        |
| Max. speed  | [m/s]  | 10                                       |             |             |
| Max. acceleration                                 | [m/s²] | 50                                       |             |             |
| Repetition accuracy                               | [mm]   | ±0.08                                    |             |             |

1) At 0.2 m/s

| Operating and environmental conditions |      |                                      |
|--|------|--------------------------------------|
| Ambient temperature <sup>1)</sup>      | [°C] | -10 ... +60                          |
| Degree of protection                   |      |                                      |
| ELGA-...                               |      | IP40                                 |
| ELGA-...-P0                            |      | IP00                                 |
| Duty cycle                             | [%]  | 100                                  |
| Food-safe <sup>2)</sup>                |      | → Supplementary material information |

1) Note operating range of proximity switches.

2) Additional information is available at [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

| Weight [kg]                                 |      |      |       |
|---|------|------|-------|
| Size  | 70   | 80   | 120   |
| Basic weight with 0 mm stroke <sup>1)</sup> |      |      |       |
| ELGA-...                                    | 2.81 | 6.17 | 17.17 |
| ELGA-...-S                                  | 2.43 | 5.56 | 15.65 |
| ELGA-...-L                                  | 3.38 | 7.36 | 21.11 |
| Additional weight per 1000 mm stroke        |      |      |       |
| ELGA-...                                    | 3.36 | 4.87 | 10.34 |
| ELGA-...-P0                                 | 3.24 | 4.77 | 10.19 |
| Moving mass                                 |      |      |       |
| ELGA-...                                    | 0.82 | 2.04 | 5.14  |
| ELGA-...-S                                  | 0.75 | 1.97 | 4.87  |
| ELGA-...-L                                  | 1.04 | 2.55 | 6.69  |

1) Incl. slide

## Data sheet – For the food zone

| Toothed belt             |          |       |       |       |
|--------------------------|----------|-------|-------|-------|
| Size                     |          | 70    | 80    | 120   |
| Pitch                    | [mm]     | 3     | 5     | 5     |
| Elongation <sup>1)</sup> | [%]      | 0.105 | 0.1   | 0.122 |
| Effective diameter       | [mm]     | 28.65 | 39.79 | 52.52 |
| Feed constant            | [mm/rev] | 90    | 125   | 165   |

1) At max. feed force

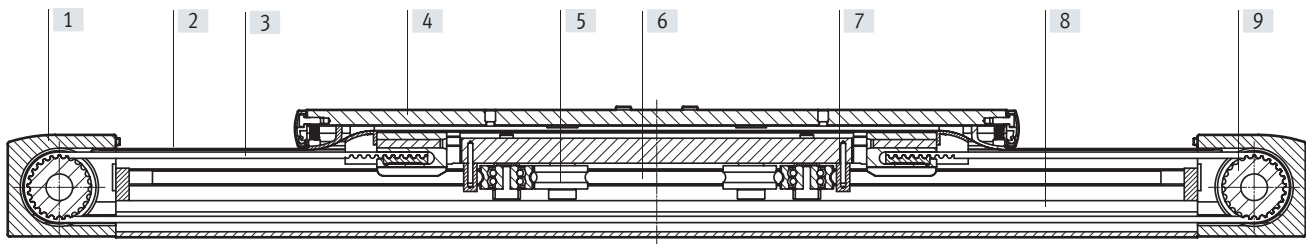
| Mass moments of inertia |                          |     |      |      |
|-------------------------|--------------------------|-----|------|------|
| Size                    |                          | 70  | 80   | 120  |
| $J_0$                   |                          |     |      |      |
| ELGA-...                | [kg mm <sup>2</sup> ]    | 237 | 1062 | 4937 |
| ELGA-...-S              | [kg mm <sup>2</sup> ]    | 209 | 975  | 4554 |
| ELGA-...-L              | [kg mm <sup>2</sup> ]    | 282 | 1265 | 6008 |
| $J_H$ per metre stroke  | [kg mm <sup>2</sup> /m]  | 23  | 110  | 264  |
| $J_L$ per kg payload    | [kg mm <sup>2</sup> /kg] | 205 | 396  | 690  |

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

$$J_A = J_0 + J_H \times \text{working stroke [m]} + J_L \times m_{\text{payload [kg]}}$$

## Materials

## Sectional view

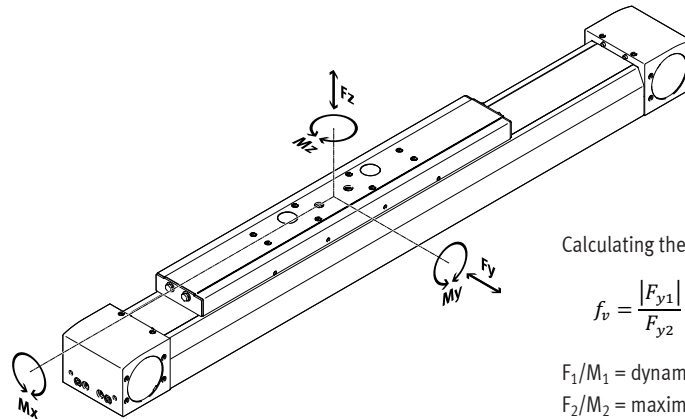


| Axis              |                     |   |
|-------------------|---------------------|---|
| [1]               | Drive cover         | Anodised wrought aluminium alloy                                  |
| [2]               | Cover strip         | Stainless steel strip, non-corroding                              |
| [3]               | Toothed belt        | Polyurethane with steel cord                                      |
| [4]               | Slide               | Anodised wrought aluminium alloy                                  |
| [5]               | Roller              | Hardened rolled steel (lubricant approved for the food zone)      |
| [6]               | Guide rod           | Tempered steel, hardened  |
| [7]               | Wiper seal          | Oil-impregnated felt (lubricating oil approved for the food zone) |
| [8]               | Profile             | Anodised wrought aluminium alloy                                  |
| [9]               | Toothed belt pulley | High-alloy stainless steel  |
| Note on materials |                     | RoHS-compliant  |
|                   |                     | Contains paint-wetting impairment substances                      |

## Data sheet – For the food zone

## Characteristic load values

The indicated forces and torques refer to the slide surface. 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 two or more of the indicated forces and torques simultaneously, the following equation must be satisfied in addition to the indicated maximum loads:

Calculating the load comparison factor:

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

$F_1/M_1$  = dynamic value

$F_2/M_2$  = maximum value

## Max. permissible forces and torques for a service life of 10000 km

| Size          |      | 70  | 80  | 120  |
|---------------|------|-----|-----|------|
| $F_{y_{max}}$ | [N]  | 400 | 640 | 1600 |
| $F_{z_{max}}$ | [N]  | 400 | 640 | 1600 |
| $M_{x_{max}}$ | [Nm] | 8.8 | 24  | 80   |
| $M_{y_{max}}$ |      |     |     |      |
| ELGA-...      | [Nm] | 16  | 72  | 256  |
| ELGA-...-S    | [Nm] | 16  | 72  | 256  |
| ELGA-...-L    | [Nm] | 32  | 144 | 512  |
| $M_{z_{max}}$ |      |     |     |      |
| ELGA-...      | [Nm] | 16  | 72  | 256  |
| ELGA-...-S    | [Nm] | 16  | 72  | 256  |
| ELGA-...-L    | [Nm] | 32  | 144 | 512  |

## Calculating the service life

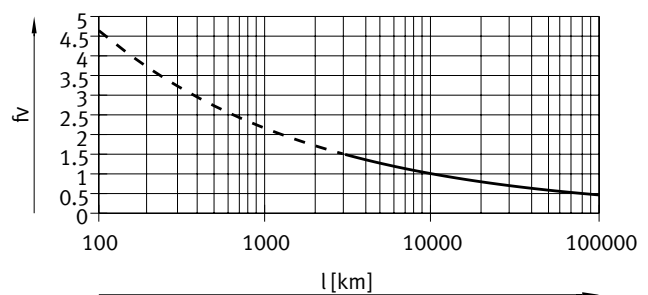
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor  $f_v$  against the service life.

These values are only theoretical. You must consult your local Festo contact for a load comparison factor  $f_v$  greater than 1.5.

Load comparison factor  $f_v$  as a function of service life

Example:

A user wants to move an X kg load. Using the formula (→ page 68) gives a value of 1.5 for the load comparison factor  $f_v$ . According to the graph, the guide would have a service life of approx. 3000 km. Reducing the acceleration reduces the  $M_z$  and  $M_y$  values. A load comparison factor  $f_v$  of 1 now gives a service life of 10000 km.



## - Note

Engineering software  
Electric Motion Sizing  
[www.festo.com/x/electric-motion-sizing](http://www.festo.com/x/electric-motion-sizing)

The engineering software can be used to calculate the guide workload for a service life of 10000 km.

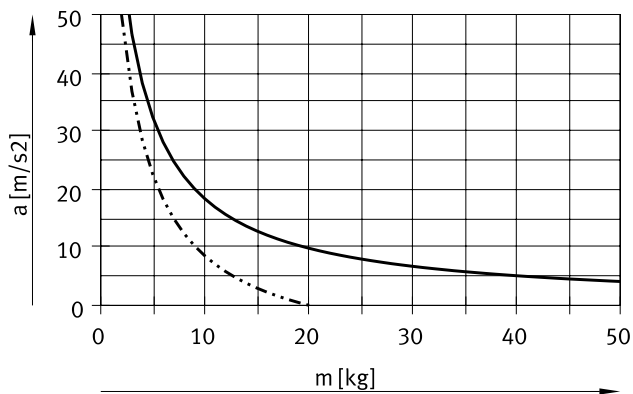
$f_v > 1.5$  are only theoretical comparison values for the roller bearing guide.



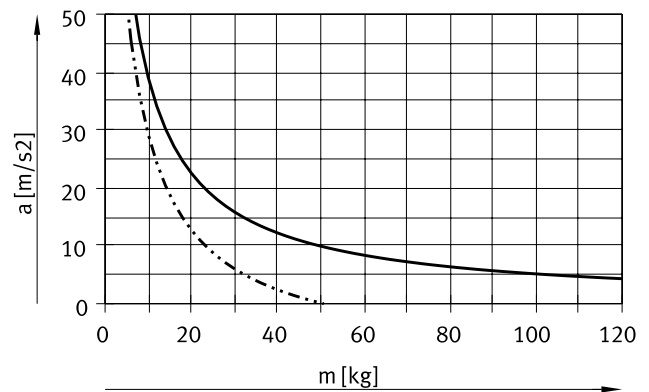
## Data sheet – For the food zone

Max. acceleration  $a$  as a function of payload  $m$ 

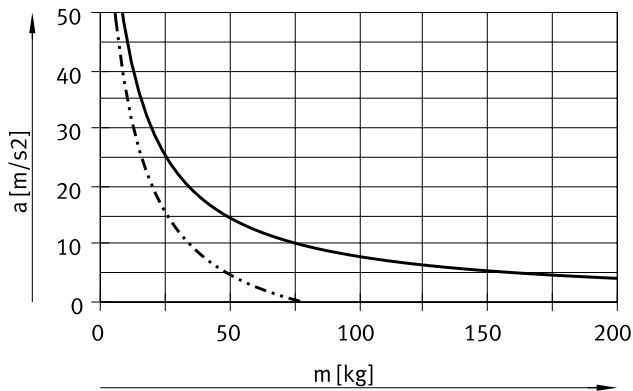
Size 70



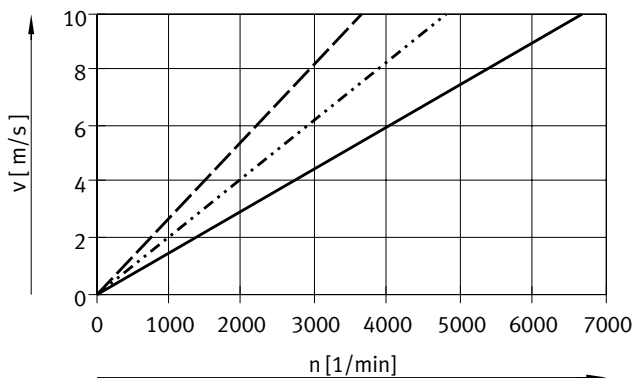
Size 80



Size 120



— Horizontal mounting position  
 - - - Vertical mounting position

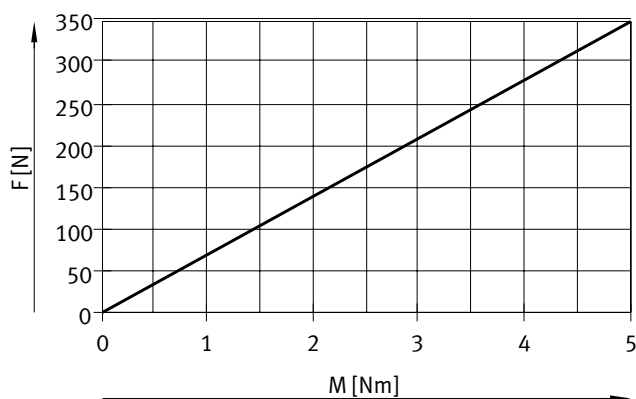
Velocity  $v$  as a function of rotational speed  $n$ 

— ELGA-TB-RF-70  
 ..... ELGA-TB-RF-80  
 - - - ELGA-TB-R-120

## Data sheet – For the food zone

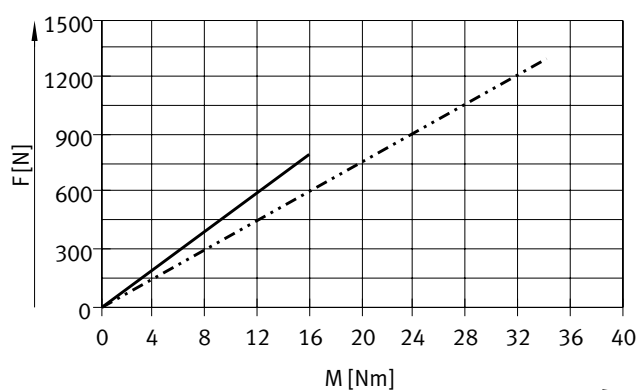
## Theoretical feed force F as a function of input torque M

Size 70



— ELGA-TB-RF-70

Size 80/120



— ELGA-TB-RF-80

- - - ELGA-TB-RF-120

## Stroke reserve



L19 = Nominal stroke

L20 = Stroke reserve

- The stroke reserve is a safety distance from the mechanical end position and is not used in normal operation
- The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum permissible working stroke

- The stroke reserve length can be freely selected
- The stroke reserve is defined via the "stroke reserve" characteristic in the modular product system.

**Example:**

Type ELGA-TB-RF-70-500-20H...

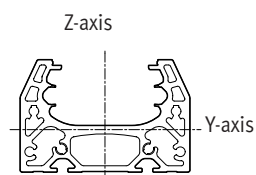
Nominal stroke = 500 mm

2x stroke reserve = 40 mm

Working stroke = 540 mm

(540 mm = 500 mm + 2x 20 mm)

## 2nd moments of area



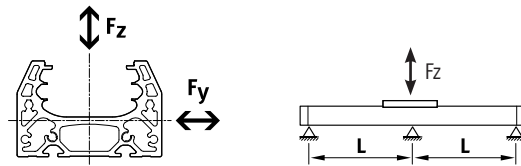
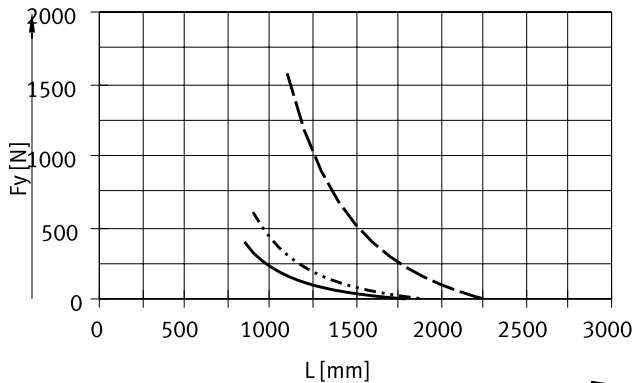
| Size           |                    | 70                   | 80                   | 120                  |
|----------------|--------------------|----------------------|----------------------|----------------------|
| I <sub>y</sub> | [mm <sup>4</sup> ] | 1.48x10 <sup>5</sup> | 2.77x10 <sup>5</sup> | 1.32x10 <sup>6</sup> |
| I <sub>z</sub> | [mm <sup>4</sup> ] | 4.52x10 <sup>5</sup> | 1.00x10 <sup>6</sup> | 4.74x10 <sup>6</sup> |

## Data sheet – For the food zone

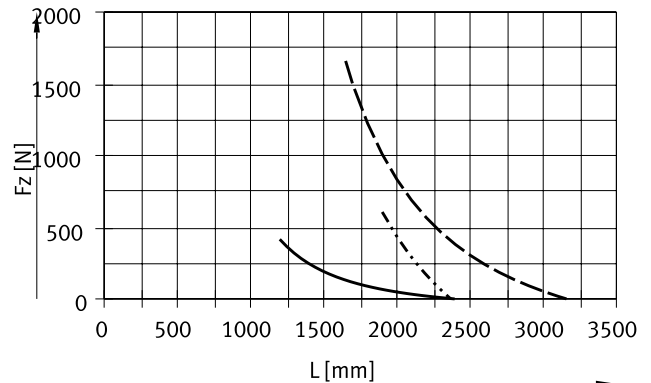
**Maximum permissible support span  $L$  (without central support EAHF) as a function of force  $F$** 

In order to limit deflection in the case of large strokes, the axis may need to be supported.

The following graphs can be used to determine the maximum permissible support span  $L$  as a function of force  $F$  acting on the axis. The deflection is  $f = 0.5$  mm.

Force  $F_y$ 

- ELGA-TB-RF-70
- ELGA-TB-RF-80
- - - ELGA-TB-RF-120

Force  $F_z$ **Recommended deflection limits**

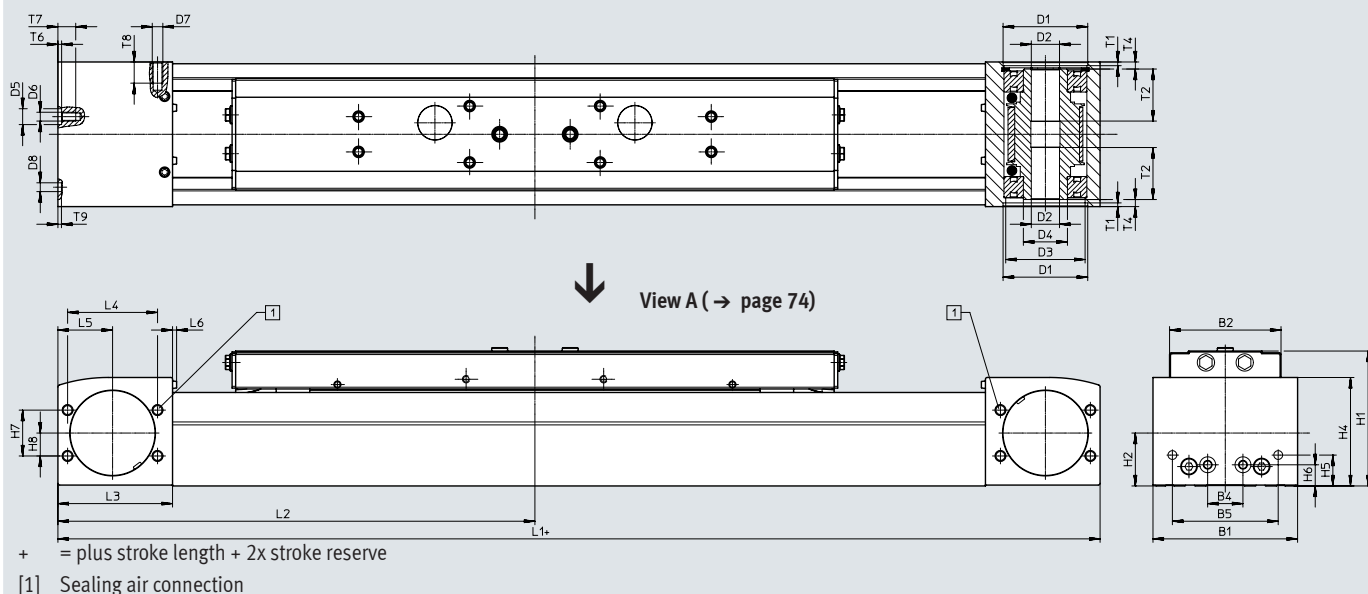
Adherence to the following deflection limits is recommended so as not to impair the functionality of the axes.

Greater deformation can result in increased friction, greater wear and reduced service life.

| Size       | Dynamic deflection<br>(moving load)   | Static deflection<br>(stationary load) |
|------------|---------------------------------------|--|
| 70 ... 120 | 0.05% of the axis length, max. 0.5 mm | 0.1% of the axis length                |

## Data sheet – For the food zone

## Dimensions

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

| Size | B1  | B2   | B4 | B5 | D1<br>Ø<br>H7 | D2<br>Ø<br>H7 | D3<br>Ø | D4<br>Ø | D5<br>Ø<br>H7 | D6 |
|------|-----|------|----|----|---------------|---------------|---------|---------|---------------|----|
| 70   | 69  | 48.2 | 30 | 45 | 38            | 16            | 34      | 25      | –             | M5 |
| 80   | 82  | 63.2 | 20 | 60 | 48            | 16            | 45      | 25      | 9             | M5 |
| 120  | 120 | 95   | 80 | 40 | 80            | 23            | 72      | 45      | –             | M8 |

| Size | D7 | D8<br>Ø<br>H7 | H1    | H2   | H4   | H5   | H6 | H7 | H8 | L3   |
|------|----|---------------|-------|------|------|------|----|----|----|------|
| 70   | M6 | 5             | 64    | 26.5 | 50.8 | 13   | 13 | 24 | 12 | 57.5 |
| 80   | M6 | 5             | 76.5  | 30   | 61.5 | 17.5 | 12 | 26 | 13 | 65   |
| 120  | M8 | 9             | 111.5 | 45   | 91   | 22   | 22 | 59 | 32 | 100  |

| Size | L4 | L5   | L6  | T1  | T2   | T4   | T6  | T7   | T8 | T9  |
|------|----|------|-----|-----|------|------|-----|------|----|-----|
| 70   | 42 | 27.5 | 2.3 | 2.1 | 18   | 7.15 | –   | 10   | 12 | 3.1 |
| 80   | 51 | 31   | 2.3 | 2.1 | 29.5 | 4    | 2.1 | 10.1 | 12 | 2   |
| 120  | 76 | 50   | 2.5 | 3.1 | 29.5 | 4    | –   | 16   | 16 | 2.1 |

| Size         | L1       |            |            | L2               |                    |                    |
|--------------|----------|------------|------------|------------------|--------------------|--------------------|
| Slide design | ELGA-... | ELGA-...-S | ELGA-...-L | ELGA-...<br>min. | ELGA-...-S<br>min. | ELGA-...-L<br>min. |
| 70           | 420      | 342        | 520        | 210              | 171                | 260                |
| 80           | 580      | 496        | 720        | 290              | 248                | 360                |
| 120          | 775      | 673        | 1005       | 387.5            | 336.5              | 502.5              |

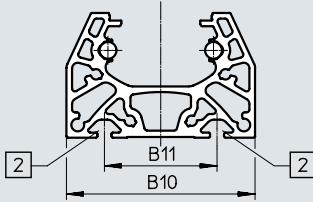
## Data sheet – For the food zone

## Dimensions

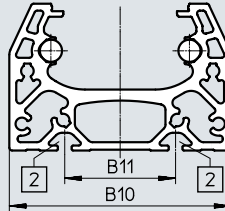
Download CAD data → [www.festo.com](http://www.festo.com)

## Profile

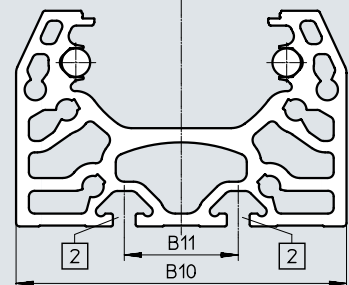
## Size 70



## Size 80



## Size 120



- [3] Mounting slot for slot nut  
 With size 70, 80: slot nut NST-5-M5  
 With size 120: slot nut NST-8-M6

| Size | B10 | B11 |
|------|-----|-----|
| 70   | 67  | 40  |
| 80   | 80  | 40  |
| 120  | 116 | 40  |



## Note

Requirements for the flatness of the bearing surface and of attachments as well as for use in parallel structures

→ [www.festo.com/sp](http://www.festo.com/sp)

User documentation

## Data sheet – For the food zone

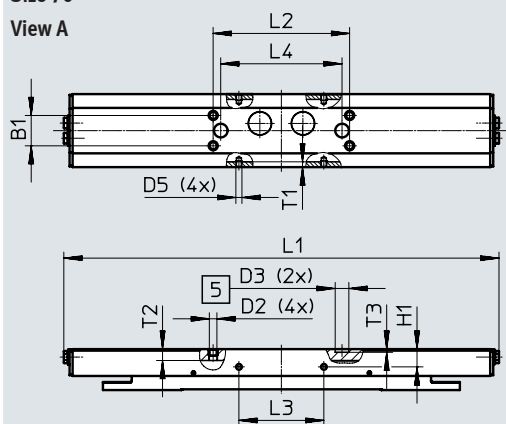
## Dimensions

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

ELGA-... – Standard slide

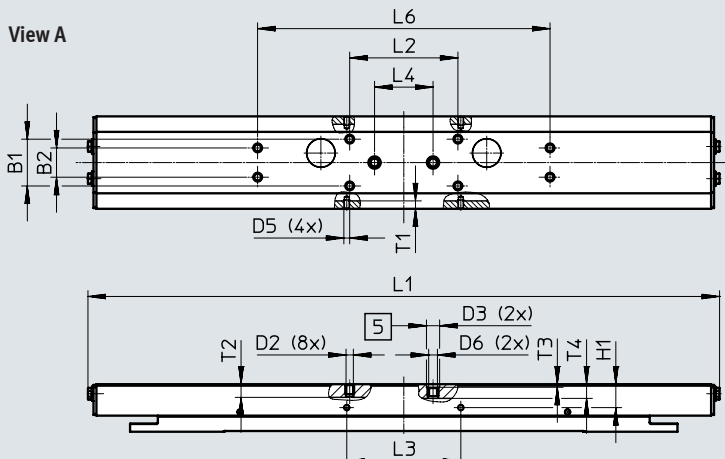
## Size 70

View A



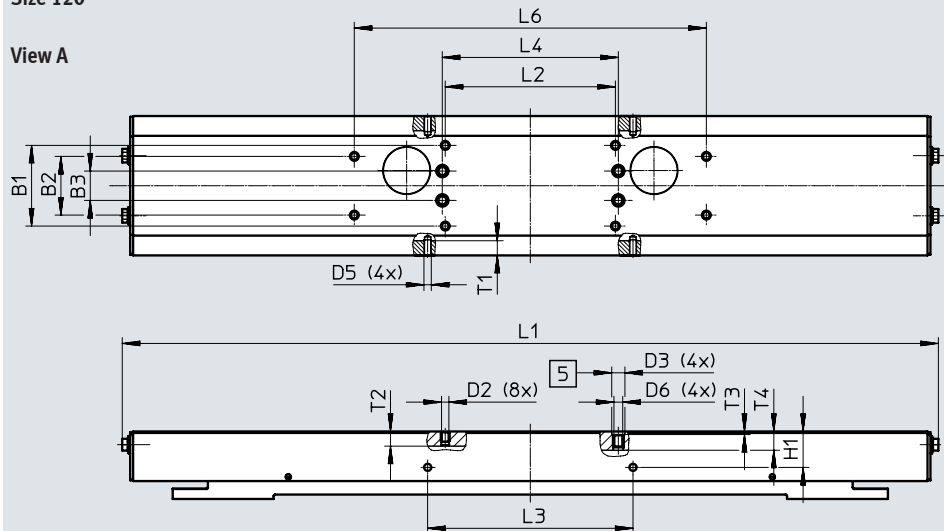
## Size 80

View A



## Size 120

View A



[5] Drilled hole for centring sleeve

| Size | B1   | B2   | B3   | D2 | D3<br>Ø<br>H7 | D5 | D6 | H1   |
|------|------|------|------|----|---------------|----|----|------|
|      | ±0.1 | ±0.1 | ±0.1 |    |               |    |    | ±0.1 |
| 70   | 20   | –    | –    | M5 | 9             | M4 | –  | 11.7 |
| 80   | 32   | 20   | –    | M5 | 9             | M4 | M6 | 16   |
| 120  | 55   | 40   | 20   | M5 | 9             | M5 | M6 | 24.5 |

| Size | L1    | L2   | L3   | L4    | L6   | T1  | T2  | T3  | T4   |
|------|-------|------|------|-------|------|-----|-----|-----|------|
|      |       | ±0.2 | ±0.1 | ±0.03 | ±0.2 |     |     |     |      |
| 70   | 287   | 90   | 56   | 80    | –    | 3.5 | 7.5 | 2.1 | –    |
| 80   | 432   | 74   | 78   | 40    | 200  | 5.1 | 9   | 2.1 | 9.7  |
| 120  | 556.4 | 116  | 140  | 120   | 240  | 10  | 10  | 2.1 | 12.8 |

## Data sheet – For the food zone

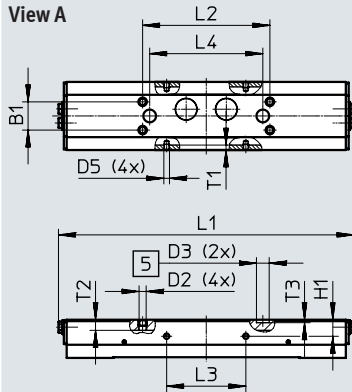
## Dimensions

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

ELGA-...-S – Short slide

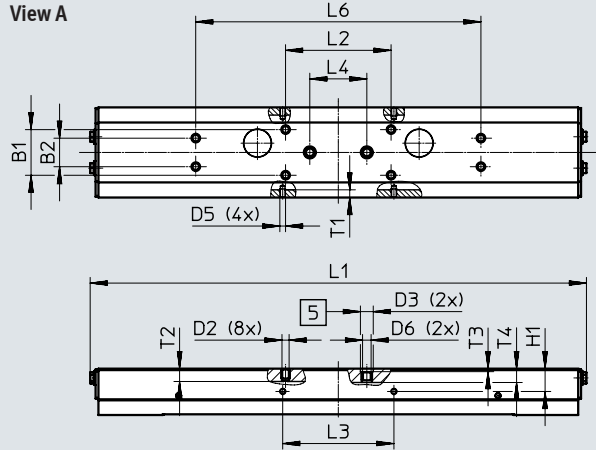
## Size 70

## View A



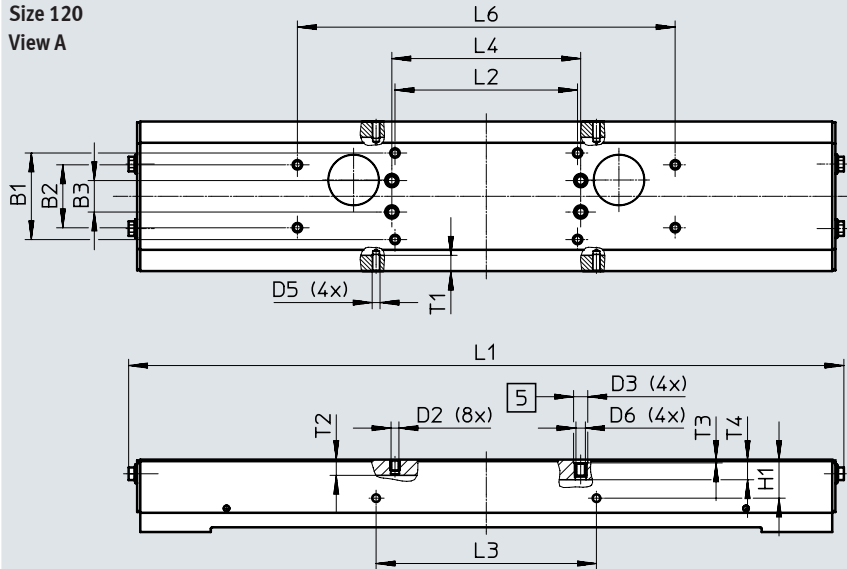
## Size 80

## View A



## Size 120

## View A



[5] Drilled hole for centring sleeve

| Size | B1   | B2   | B3   | D2 | D3<br>ø<br>H7 | D5 | D6 | H1   |
|------|------|------|------|----|---------------|----|----|------|
|      | ±0.1 | ±0.1 | ±0.1 |    |               |    |    | ±0.1 |
| 70   | 20   | –    | –    | M5 | 9             | M4 | –  | 11.7 |
| 80   | 32   | 20   | –    | M5 | 9             | M4 | M6 | 16   |
| 120  | 55   | 40   | 20   | M5 | 9             | M5 | M6 | 24.5 |

| Size | L1    | L2   | L3   | L4    | L6   | T1  | T2  | T3  | T4   |
|------|-------|------|------|-------|------|-----|-----|-----|------|
|      |       | ±0.2 | ±0.1 | ±0.03 | ±0.2 |     |     |     |      |
| 70   | 209   | 90   | 56   | 80    | –    | 3.5 | 7.5 | 2.1 | –    |
| 80   | 348   | 74   | 78   | 40    | 200  | 5.1 | 9   | 2.1 | 9.7  |
| 120  | 454.4 | 116  | 140  | 120   | 240  | 10  | 10  | 2.1 | 12.8 |

## Data sheet – For the food zone

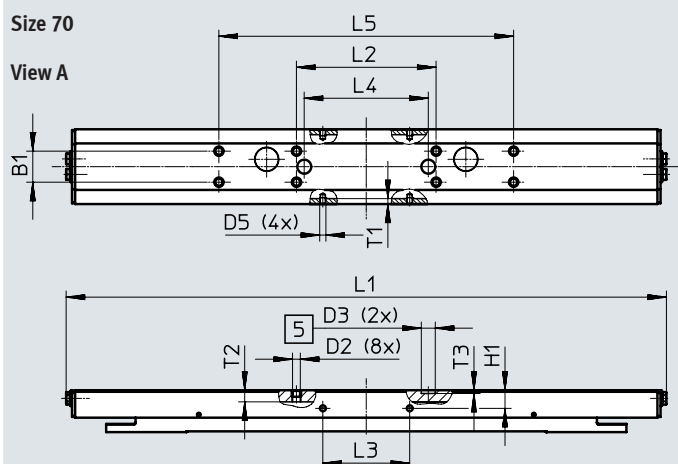
### Dimensions

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

ELGA-...-L – Long slide

#### Size 70

##### View A





## Data sheet – For the food zone

| Size | B1<br>±0.1 | B2<br>±0.1 | B3<br>±0.1 | D2 | D3<br>Ø<br>H7 | D5 |
|------|------------|------------|------------|----|---------------|----|
| 70   | 20         | –          | –          | M5 | 9             | M4 |
| 80   | 32         | 20         | –          | M5 | 9             | M4 |
| 120  | 55         | 40         | 20         | M5 | 9             | M5 |

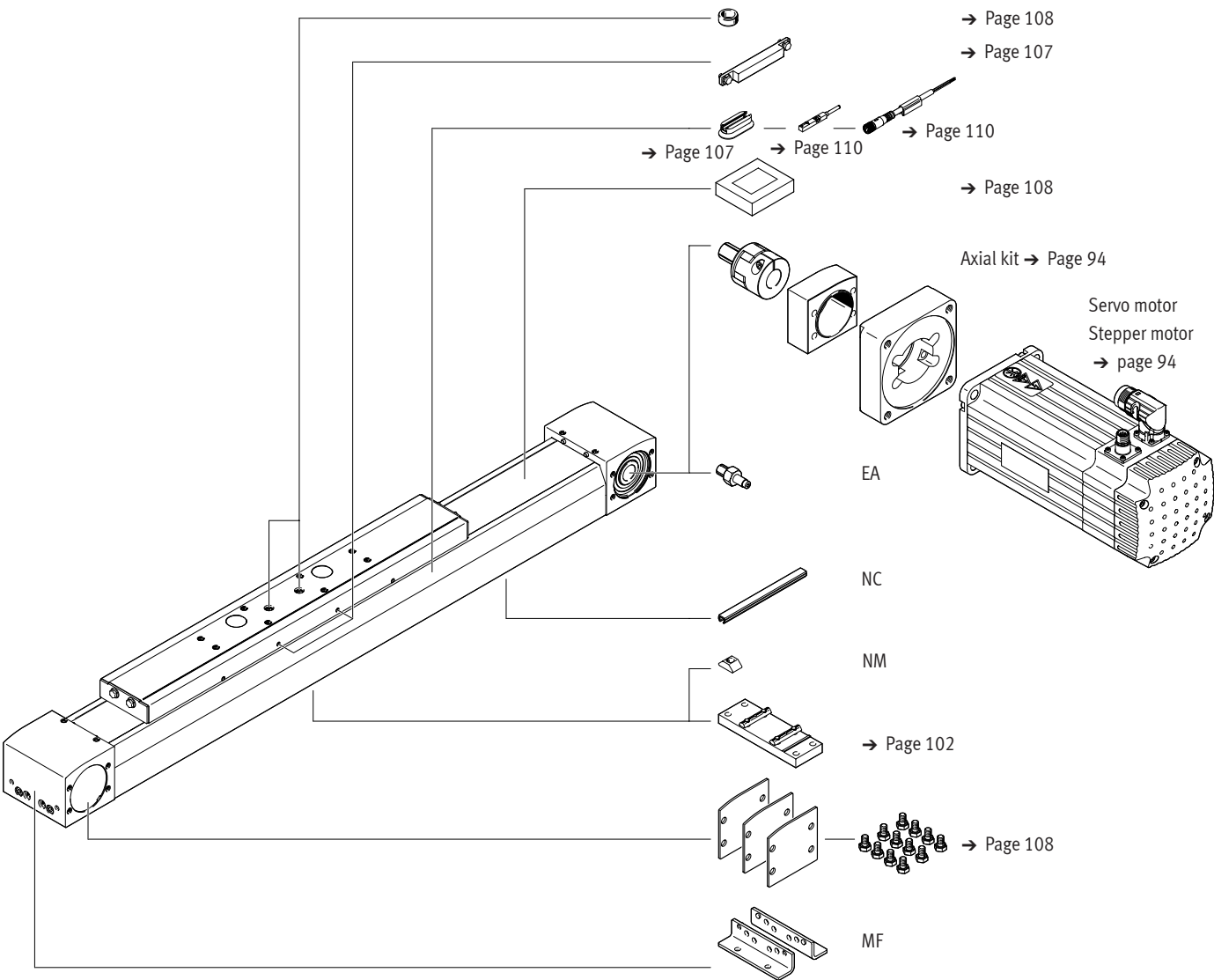
| Size | D6 | H1<br>±0.1 | L1    | L2<br>±0.2 | L3<br>±0.1 | L4<br>±0.03 |
|------|----|------------|-------|------------|------------|-------------|
| 70   | –  | 11.7       | 387   | 90         | 56         | 80          |
| 80   | M6 | 16         | 572   | 74         | 78         | 40          |
| 120  | M6 | 24.5       | 786.4 | 116        | 140        | 120         |

| Size | L5<br>±0.2 | L6<br>±0.2 | T1  | T2  | T3  | T4   |
|------|------------|------------|-----|-----|-----|------|
| 70   | 190        | –          | 3.5 | 7.5 | 2.1 | –    |
| 80   | 400        | 200        | 5.1 | 9   | 2.1 | 9.7  |
| 120  | 520        | 240        | 10  | 10  | 2.1 | 12.8 |

Ordering data – Modular products – For the food zone

Accessories



## Ordering data – Modular products – For the food zone

| Ordering table               |  |                |                |            |              |            |
|------------------------------|--|----------------|----------------|------------|--------------|------------|
| Size                         | 70   | 80             | 120            | Conditions | Code         | Enter code |
| Module no.                   | <b>1371245</b>   | <b>1371246</b> | <b>1371247</b> |            |              |            |
| Design                       | Linear axis  |                |                |            | <b>ELGA</b>  | ELGA       |
| Function                     | Toothed belt   |                |                |            | <b>-TB</b>   | -TB        |
| Guide                        | Roller bearing guide   |                |                |            | <b>-RF</b>   | -RF        |
| Size [mm]                    | 70   | 80             | 120            |            | <b>-...</b>  |            |
| Stroke length [mm]           | 1 ... 7000   | 1 ... 7000     | 1 ... 7400     |            | <b>-...</b>  |            |
| Stroke reserve [mm]          | 0 ... 999 (0 = no stroke reserve)  |                |                | [1]        | <b>-...H</b> |            |
| Slide design                 | Standard slide   |                |                |            |              |            |
|                              | 1 ... 7000   | 1 ... 7000     | 1 ... 7400     |            |              |            |
|                              | Slide, short   |                |                | [2]        | <b>-S</b>    |            |
|                              | 1 ... 7000   | 1 ... 7000     | 1 ... 7400     |            |              |            |
|                              | Long slide   |                |                |            | <b>-L</b>    |            |
|                              | 1 ... 6900   | 1 ... 6900     | 1 ... 7200     |            |              |            |
| Protection against particles | Standard   |                |                |            |              |            |
|                              | Without cover strip  |                |                |            | <b>-P0</b>   |            |
| Additional features          | Suitable for use in the food industry as per extended information on materials |                |                | [3]        | <b>-F1</b>   | -F1        |
| Material of toothed belt     | Uncoated PU  |                |                |            | <b>-PU1</b>  | -PU1       |
| Accessories                  | Accessories enclosed separately  |                |                |            | <b>+</b>     | +          |
| Foot mounting                | 1  |                |                |            | <b>MF</b>    |            |
| Mounting slot cover          | 1 ... 50 (1 = 2 units, 500 mm)   |                |                |            | <b>...NC</b> |            |
| Slot nut for mounting slot   | 1 ... 99   |                |                |            | <b>...NM</b> |            |
| Drive shaft                  | 1 ... 4  |                |                |            | <b>...EA</b> |            |
| Operating instructions       | With operating instructions  |                |                |            |              |            |
|                              | Without operating instructions   |                |                |            | <b>-DN</b>   |            |

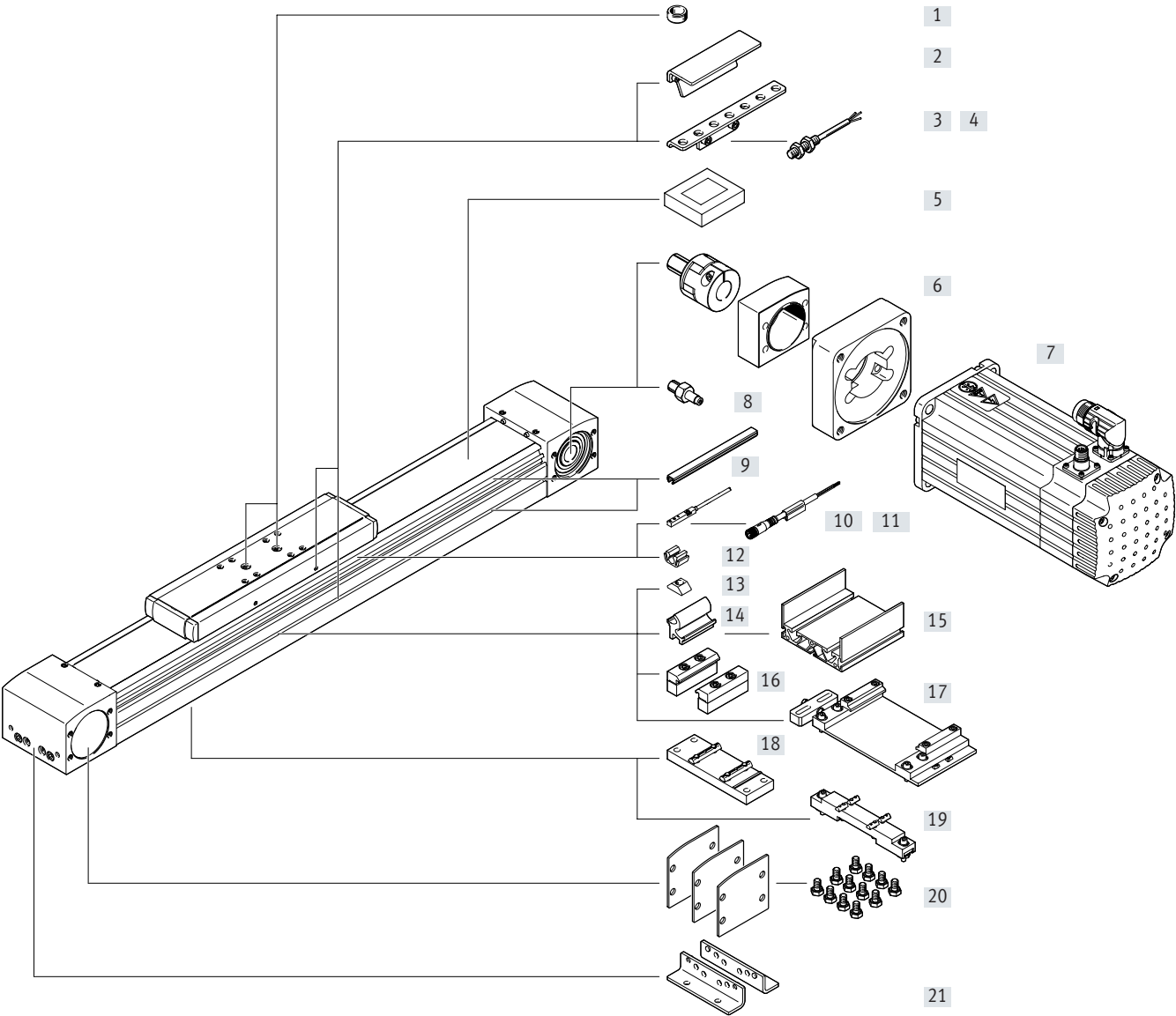
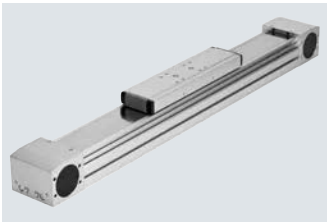
[1] ... **H** The sum of the nominal stroke and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length

[2] **S** Only with P0

[3] **F1** Not in combination with M1, M2

[4] **B, F** Mandatory in combination with (measurement system) M1, M2  
Only in combination with (measurement system) M1, M2

Peripherals overview



## Peripherals overview

| Accessories |  |  |                 |
|-------------|--|--|-----------------|
|             | Type/order code                        | Description  | → Page/Internet |
| [1]         | Centring pin/sleeve<br>ZBS, ZBH        | <ul style="list-style-type: none"> <li>For centring loads and attachments on the slide</li> <li>Included in the scope of delivery: <ul style="list-style-type: none"> <li>With size 70: 2x ZBS-5</li> <li>With size 80, 120: 2x ZBH-9</li> </ul> </li> </ul> | 108             |
| [2]         | Switch lug<br>SA, SB, SC, SD, SE, SF   | For sensing the slide position   | 105             |
| [3]         | Sensor bracket<br>SC, SD, SE, SF       | For mounting the inductive proximity switches (round design) on the axis   | 106             |
| [4]         | Proximity switch, M8<br>SC, SD, SE, SF | <ul style="list-style-type: none"> <li>Inductive proximity switch, round design</li> <li>The order code SC, SD, SE, SF includes 1 switch lug and max. 2 sensor brackets in the scope of delivery</li> </ul>  | 110             |
| [5]         | Clamping element<br>EADT               | Tool for retensioning the cover strip  | 108             |
| [6]         | Axial kit<br>EAMM                      | For axial motor mounting (comprising: coupling, coupling housing and motor flange)   | 94              |
| [7]         | Motor<br>EMME, EMMS                    | Motors specially matched to the axis, with or without gear unit, with or without brake   | 94              |
| [8]         | Drive shaft<br>EA                      | <ul style="list-style-type: none"> <li>Can, if required, be used as an alternative interface</li> <li>No drive shaft is required for the axis/motor combinations → page 94</li> </ul>  | 99              |
| [9]         | Slot cover<br>NS, NC                   | For protection against contamination   | 108             |
| [10]        | Proximity switch, T-slot<br>SA, SB     | <ul style="list-style-type: none"> <li>Inductive proximity switch, for T-slot</li> <li>The order code SA, SB includes 1 switch lug in the scope of delivery</li> </ul>   | 109             |
| [11]        | Connecting cable<br>CA                 | For proximity switch (order code SE and SF)  | 110             |
| [12]        | Clip<br>CM                             | For mounting the proximity switch cable in the slot  | 108             |
| [13]        | Slot nut<br>NM                         | For mounting attachments   | 108             |
| [14]        | Adapter kit<br>DHAM                    | For mounting the support profile on the axis   | 109             |
| [15]        | Support profile<br>HMIA                | For mounting and guiding an energy chain   | 109             |
| [16]        | Profile mounting<br>MA                 | For mounting the axis on the side of the profile   | 101             |
| [17]        | Adjusting kit<br>EADC-E16              | For mounting the axis on a vertical surface. Once mounted, the axis can be aligned horizontally  | 104             |
| [18]        | Central support<br>EAHF-L5             | For mounting the axis on the profile from underneath   | 102             |
| [19]        | Adjusting kit<br>EADC-E15              | Height-adjustable. Can be used to easily compensate for any unevenness in the bearing surface  | 103             |
| [20]        | Cover kit<br>EASC-L5                   | For covering the sides of the drive cover  | 108             |
| [21]        | Foot mounting<br>MF                    | <ul style="list-style-type: none"> <li>For mounting the axis on the end cap</li> <li>With higher forces and torques, the axis should be mounted using the profile</li> </ul>   | 100             |

## Type codes

|      |             |  |
|------|-------------|--|
| 001  | Series      |  |
| ELGA | Gantry axis |  |

|     |              |  |
|-----|--------------|--|
| 002 | Drive system |  |
| TB  | Toothed belt |  |

|     |               |  |
|-----|---------------|--|
| 003 | Guide         |  |
| G   | Basic variant |  |

|     |      |  |
|-----|------|--|
| 004 | Size |  |
| 70  | 70   |  |
| 80  | 80   |  |
| 120 | 120  |  |

|     |             |  |
|-----|-------------|--|
| 005 | Stroke      |  |
| ... | 50 ... 8500 |  |

|      |                     |  |
|------|---------------------|--|
| 006  | Stroke reserve [mm] |  |
| ...H | 0 ... 999           |  |

|     |                              |  |
|-----|------------------------------|--|
| 007 | Protection against particles |  |
|     | Standard                     |  |
| P0  | Without strip cover          |  |

|     |                       |  |
|-----|-----------------------|--|
| 008 | Toothed belt material |  |
|     | Standard              |  |
| PU2 | Coated PU             |  |

|     |                       |  |
|-----|-----------------------|--|
| 009 | Foot mounting [units] |  |
|     | None                  |  |
| MF  | 1                     |  |

|       |                  |  |
|-------|------------------|--|
| 010   | Profile mounting |  |
|       | None             |  |
| ...MA | 1 ... 50         |  |

|       |  |  |
|-------|--|--|
| 011   | Proximity sensor, inductive, slot 8, PNP, N/O contact, cable 7.5 m [units] |  |
|       | None   |  |
| ...SA | 1 ... 6  |  |

|       |  |  |
|-------|--|--|
| 012   | Proximity sensor, inductive, slot 8, PNP, N/C contact, cable 7.5 m [units] |  |
|       | None   |  |
| ...SB | 1 ... 6  |  |

|       |  |  |
|-------|--|--|
| 013   | Proximity sensor, inductive, M8, PNP, N/O contact, cable 2.5 m [units] |  |
|       | None   |  |
| ...SC | 1 ... 99   |  |

|       |  |  |
|-------|--|--|
| 014   | Proximity sensor, inductive, M8, PNP, N/C contact, cable 2.5 m [units] |  |
|       | None   |  |
| ...SD | 1 ... 99   |  |

|       |  |  |
|-------|--|--|
| 015   | Proximity sensor, inductive, M8, PNP, N/O contact, plug M8 [units] |  |
|       | None   |  |
| ...SE | 1 ... 99   |  |

|       |  |  |
|-------|--|--|
| 016   | Proximity sensor, inductive, M8, PNP, N/C contact, plug M8 [units] |  |
|       | None   |  |
| ...SF | 1 ... 99   |  |

|       |                                     |  |
|-------|-------------------------------------|--|
| 017   | Connecting cable, M8, 2.5 m [units] |  |
|       | None                                |  |
| ...CA | 1 ... 99                            |  |

|       |                            |  |
|-------|----------------------------|--|
| 018   | Cover, sensor slot [units] |  |
|       | None                       |  |
| ...NS | 1 ... 50                   |  |

|       |   |  |
|-------|---|--|
| 019   | Mounting slot cover, 2x, 500 mm [units] |  |
|       | None                                    |  |
| ...NC | 1 ... 50                                |  |

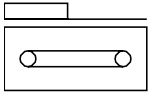
|       |                            |  |
|-------|----------------------------|--|
| 020   | Slot nut for mounting slot |  |
|       | None                       |  |
| ...NM | 1 ... 99                   |  |




|       |                                    |  |
|-------|------------------------------------|--|
| 021   | Cable clip [units]                 |  |
|       | None                               |  |
| ...CM | 10, 20, 30, 40, 50, 60, 70, 80, 90 |  |

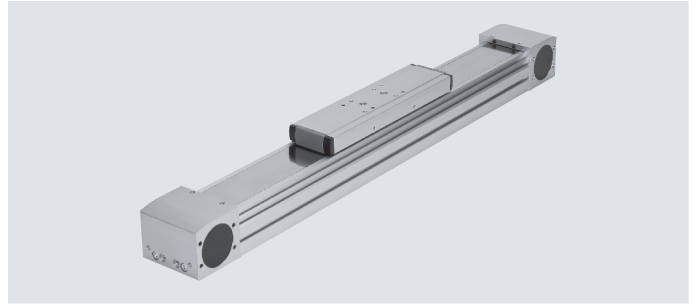
|       |                     |  |
|-------|---------------------|--|
| 022   | Drive shaft [units] |  |
|       | None                |  |
| ...EA | 1 ... 4             |  |

|     |                                |  |
|-----|--------------------------------|--|
| 023 | Operating instructions         |  |
|     | With operating instructions    |  |
| DN  | Without operating instructions |  |

## Data sheet



-  Size  
70 ... 120
-  Stroke length  
50 ... 8500 mm
-  [www.festo.com](http://www.festo.com)

**General technical data**

| Size  | 70                                       | 80          | 120         |
|---|--|-------------|-------------|
| Design  | Electromechanical axis with toothed belt |             |             |
| Guide   | Plain-bearing guide                      |             |             |
| Mounting position                                     | Any                                      |             |             |
| Working stroke [mm]                                   | 50 ... 8500                              | 50 ... 8500 | 50 ... 8500 |
| Max. feed force $F_x$ [N]                             | 350                                      | 800         | 1300        |
| Max. no-load torque <sup>1)</sup> [Nm]                | 0.5                                      | 1           | 3           |
| Max. no-load resistance to shifting <sup>1)</sup> [N] | 35                                       | 50          | 114         |
| Max. driving torque [Nm]                              | 5  | 15.9        | 34.1        |
| Max. speed <sup>2)</sup> [m/s]                        | 5  |             |             |
| Max. acceleration [m/s <sup>2</sup> ]                 | 50                                       |             |             |
| Repetition accuracy [mm]                              | ±0.08                                    |             |             |

1) At 0.2 m/s

2) At higher speeds, the wear on the guide will increase (→ page 85)

**Operating and environmental conditions**

|  |             |
|--|-------------|
| Ambient temperature <sup>1)</sup> [°C] | -10 ... +60 |
| Degree of protection                   |             |
| ELGA-...                               | IP40        |
| ELGA-...-P0                            | IP00        |
| Duty cycle [%]                         | 100         |

1) Note operating range of proximity switches

**Weight [kg]**

| Size  | 70   | 80   | 120  |
|---|------|------|------|
| Basic weight with 0 mm stroke (including slide) | 2.16 | 4    | 11.8 |
| Additional weight per 1000 mm stroke            | 2.64 | 3.56 | 7.45 |
| Moving mass                                     | 0.57 | 1.1  | 3.06 |

**Toothed belt**

| Size                     | 70    | 80    | 120   |
|--------------------------|-------|-------|-------|
| Pitch [mm]               | 3     | 5     | 5     |
| Elongation <sup>1)</sup> |       |       |       |
| ELGA-...                 | 0.213 | 0.168 | 0.21  |
| ELGA-...-PU2             | 0.105 | 0.1   | 0.122 |
| Effective diameter [mm]  | 28.65 | 39.79 | 52.52 |
| Feed constant [mm/rev]   | 90    | 125   | 165   |

1) At max. feed force

**Mass moments of inertia**

| Size   | 70  | 80  | 120  |
|--|-----|-----|------|
| $J_0$ [kg mm <sup>2</sup> ]                    | 175 | 666 | 3201 |
| $J_H$ per metre stroke [kg mm <sup>2</sup> /m] | 19  | 93  | 215  |
| $J_L$ per kg payload [kg mm <sup>2</sup> /kg]  | 205 | 396 | 690  |

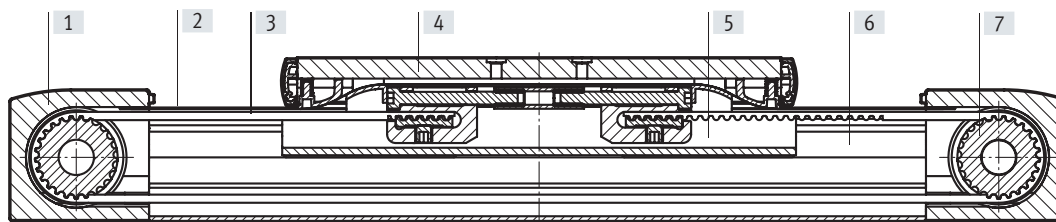
The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

$$J_A = J_0 + J_H \times \text{working stroke [m]} + J_L \times m_{\text{payload [kg]}}$$

## Data sheet

## Materials

## Sectional view



## Axis

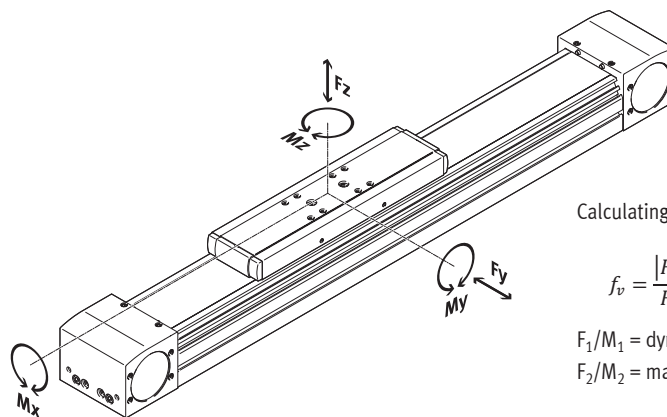
|     |                               |   |
|-----|-------------------------------|---|
| [1] | Drive cover                   | Anodised wrought aluminium alloy                  |
| [2] | Cover strip                   | Stainless steel strip, non-corroding              |
| [3] | Toothed belt                  |   |
|     | ELGA-...                      | Polychloroprene with glass cord and nylon coating |
|     | ELGA-...-PU2                  | Polyurethane with steel cord and nylon cover      |
| [4] | Slide                         | Anodised wrought aluminium alloy                  |
| [5] | Slide elements                | Polyacetal  |
| [6] | Profile with integrated guide | Anodised wrought aluminium alloy                  |
| [7] | Toothed belt pulley           | High-alloy stainless steel                        |
|     | Note on materials             | RoHS-compliant                                    |
|     |                               | Contains paint-wetting impairment substances      |

## Characteristic load values

The indicated forces and torques refer to the slide surface. 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 deceleration phase.

In the event of high torques  $M_y$  and  $M_z$ , the guide may lock automatically during dynamic operation. Therefore, make sure that the feed force is applied as close as possible to the slide.



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

Calculating the load comparison factor:

$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{x1}|}{M_{x2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

$F_1/M_1$  = dynamic value

$F_2/M_2$  = maximum value

## Permissible forces and torques

| Size          |      | 70  | 80  | 120  |
|---------------|------|-----|-----|------|
| $F_{y_{max}}$ | [N]  | 80  | 200 | 380  |
| $F_{z_{max}}$ | [N]  | 400 | 800 | 1600 |
| $M_{x_{max}}$ | [Nm] | 5   | 10  | 20   |
| $M_{y_{max}}$ | [Nm] | 30  | 60  | 120  |
| $M_{z_{max}}$ | [Nm] | 10  | 20  | 40   |

The plain-bearing guide is subject to wear. This depends on the load, on the travel speed and on the length of the pause between the cycles. A higher speed has a more critical effect on wear than a higher load. The values given above refer to a maximum travel speed of 0.5 m/s and a pause longer than 5 s.

The plain-bearing guide is not backlash-free. The toothed belt axis ELGA-TB-RF or ELGA-TB-KF is recommended for applications that need to be backlash-free, or applications involving high torque loads.

Engineering software

Electric Motion Sizing

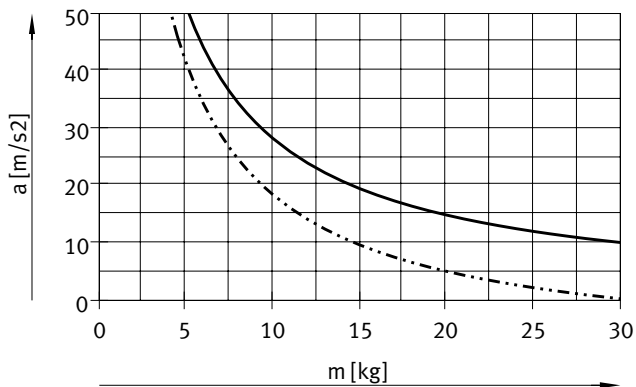
[www.festo.com/x/electric-motion-sizing](http://www.festo.com/x/electric-motion-sizing)



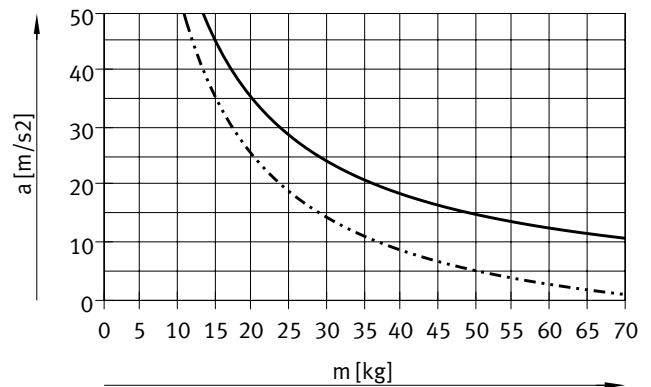
## Data sheet

Max. acceleration  $a$  as a function of payload  $m$ 

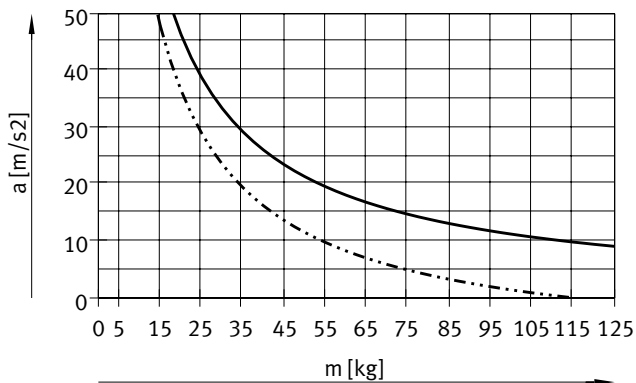
Size 70



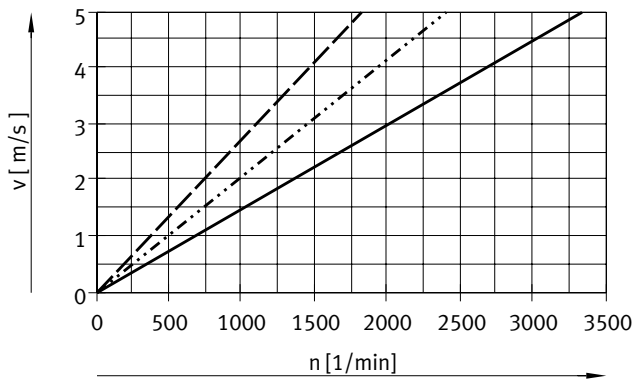
Size 80



Size 120



— Horizontal mounting position  
 - - - Vertical mounting position

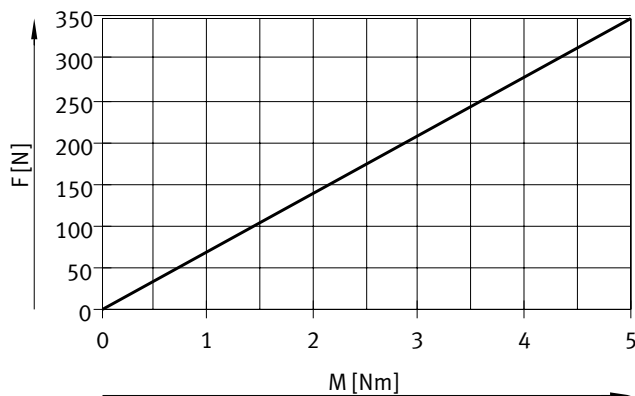
Velocity  $v$  as a function of rotational speed  $n$ 

— ELGA-TB-G-70  
 ..... ELGA-TB-G-80  
 - - - ELGA-TB-G-120

## Data sheet

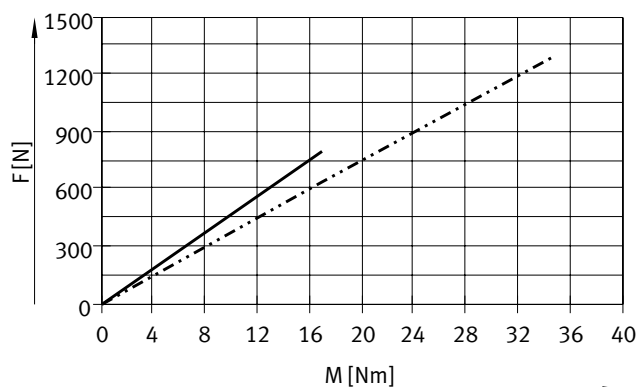
## Theoretical feed force F as a function of input torque M

Size 70



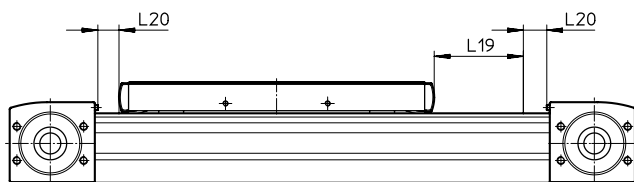
— ELGA-TB-G-70

Size 80/120



— ELGA-TB-G-80  
 - - - ELGA-TB-G-120

## Stroke reserve



L19 = Nominal stroke

L20 = Stroke reserve

- The stroke reserve is a safety distance from the mechanical end position and is not used in normal operation
- The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum permissible working stroke
- The stroke reserve length can be freely selected
- The stroke reserve is defined via the "stroke reserve" characteristic in the modular product system.

**Example:**

Type ELGA-TB-G-70-500-20H-...

Nominal stroke = 500 mm

2x stroke reserve = 40 mm

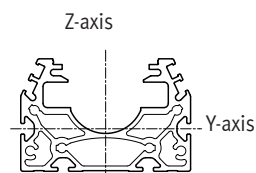
Working stroke = 540 mm

(540 mm = 500 mm + 2x 20 mm)

The toothed belt axis ELGA-TB-G features a safety distance to the end positions as standard.

| Size                                  | 70  | 80 | 120 |
|---------------------------------------|-----|----|-----|
| Safety distance per end position [mm] | 4.5 | 5  | 5   |

## 2nd moments of area



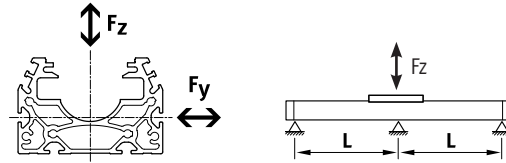
| Size                              | 70                   | 80                   | 120                  |
|-----------------------------------|----------------------|----------------------|----------------------|
| I <sub>y</sub> [mm <sup>4</sup> ] | 1.47x10 <sup>5</sup> | 2.77x10 <sup>5</sup> | 1.23x10 <sup>6</sup> |
| I <sub>z</sub> [mm <sup>4</sup> ] | 4.25x10 <sup>5</sup> | 9.07x10 <sup>5</sup> | 4.03x10 <sup>6</sup> |

## Data sheet

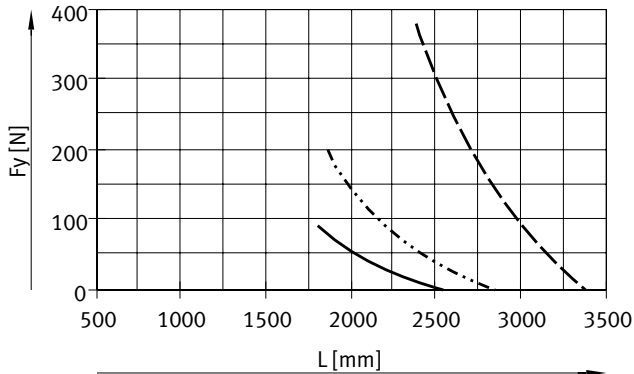
### Maximum permissible support spacing $L$ (without profile mounting MUE/central support EAHF) as a function of force $F$

In order to limit deflection in the case of large strokes, the axis may need to be supported.

The following graphs can be used to determine the maximum permissible support span  $l$  as a function of force  $F$  acting on the axis. The deflection is  $f = 0.5$  mm.

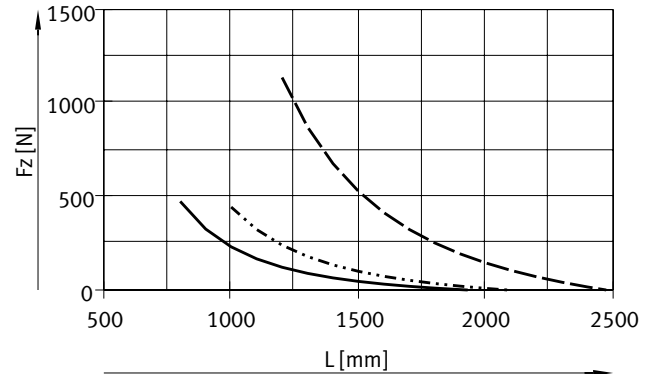


Force  $F_y$



- ELGA-TB-G-70
- ELGA-TB-G-80
- - - ELGA-TB-G-120

Force  $F_z$



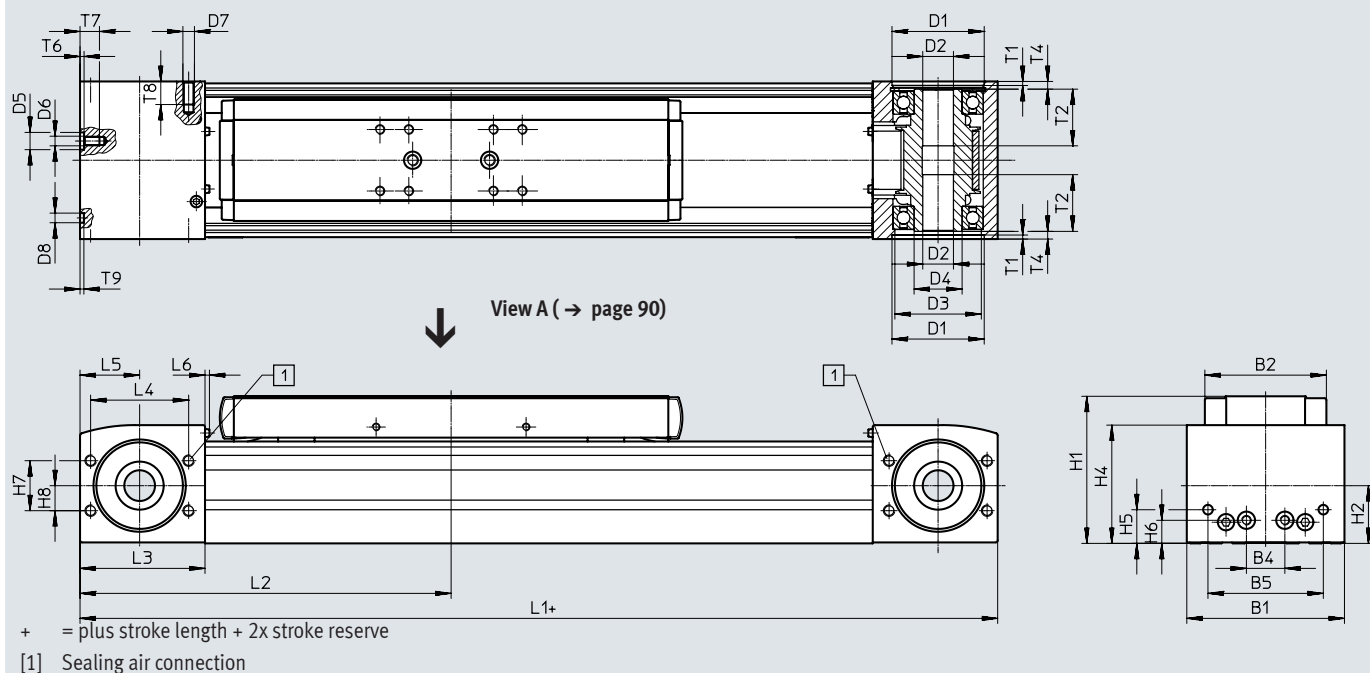
### Recommended deflection limits

Adherence to the following deflection limits is recommended so as not to impair the functionality of the axes. Greater deformation can result in increased friction, greater wear and reduced service life.

| Size       | Dynamic deflection<br>(moving load)   | Static deflection<br>(stationary load) |
|------------|---------------------------------------|--|
| 70 ... 120 | 0.05% of the axis length, max. 0.5 mm | 0.1% of the axis length                |

## Data sheet

## Dimensions

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

| Size | B1  | B2   | B4 | B5 | D1<br>Ø<br>H7 | D2<br>Ø<br>H7 | D3<br>Ø | D4<br>Ø | D5<br>Ø<br>H7 | D6 | D7 |
|------|-----|------|----|----|---------------|---------------|---------|---------|---------------|----|----|
| 70   | 69  | 48.2 | 30 | 45 | 38            | 16            | 34      | 25      | –             | M5 | M6 |
| 80   | 82  | 63.2 | 20 | 60 | 48            | 16            | 45      | 25      | 9             | M5 | M6 |
| 120  | 120 | 95   | 80 | 40 | 80            | 23            | 72      | 45      | –             | M8 | M8 |

| Size | D8<br>Ø<br>H7 | H1    | H2   | H4   | H5   | H6 | H7 | H8 | L1  | L2<br>min. | L3   |
|------|---------------|-------|------|------|------|----|----|----|-----|------------|------|
| 70   | 5             | 64    | 26.5 | 50.8 | 13   | 13 | 24 | 12 | 346 | 173        | 57.5 |
| 80   | 5             | 76.5  | 30   | 61.5 | 17.5 | 12 | 26 | 13 | 386 | 193        | 65   |
| 120  | 9             | 111.5 | 45   | 91   | 22   | 22 | 59 | 32 | 546 | 273        | 100  |

| Size | L4 | L5   | L6  | T1  | T2   | T4   | T6  | T7 | T8 | T9  |
|------|----|------|-----|-----|------|------|-----|----|----|-----|
| 70   | 42 | 27.5 | 2.3 | 2.1 | 18   | 7.15 | –   | 10 | 12 | 3.1 |
| 80   | 51 | 31   | 2.3 | 2.1 | 29.5 | 4    | 2.1 | 10 | 12 | 2   |
| 120  | 76 | 50   | 2.5 | 3.1 | 29.5 | 4    | –   | 16 | 16 | 2.1 |

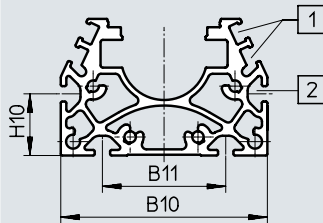
## Data sheet

## Dimensions

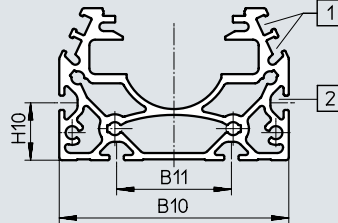
Download CAD data → [www.festo.com](http://www.festo.com)

## Profile

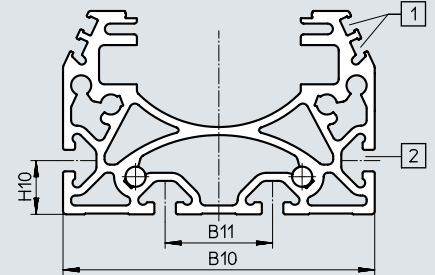
## Size 70



## Size 80



## Size 120



- [1] Sensor slot for proximity switch  
 [2] Mounting slot for slot nut  
 With size 70, 80: slot nut NST-5-M5  
 With size 120: slot nut NST-8-M6

| Size | B10 | B11 | H10 |
|------|-----|-----|-----|
| 70   | 67  | 40  | 20  |
| 80   | 80  | 40  | 20  |
| 120  | 116 | 40  | 20  |



## Note

Requirements for the evenness of the bearing surface and of attachments as well as for use in parallel structures

→ [www.festo.com/sp](http://www.festo.com/sp)  
 User documentation

## Data sheet

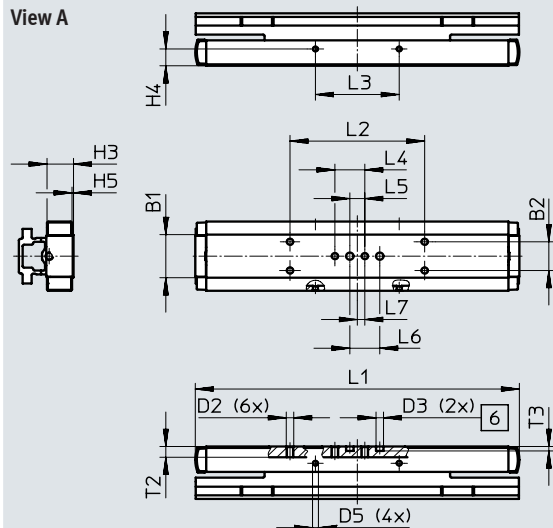
### Dimensions

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

Slide

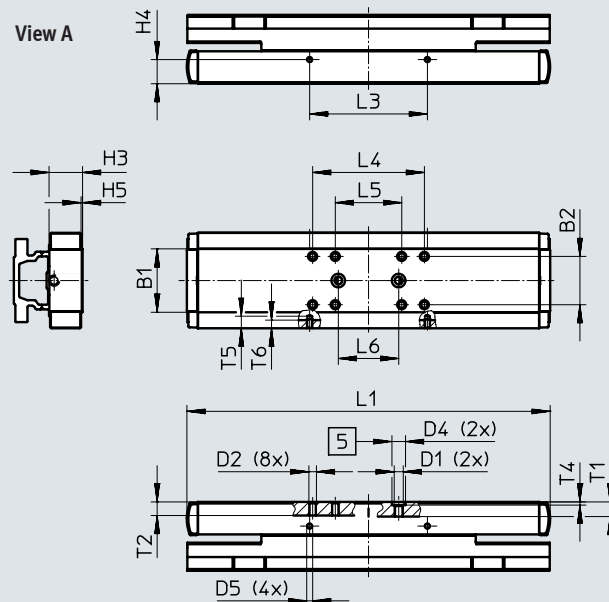
#### Size 70

View A



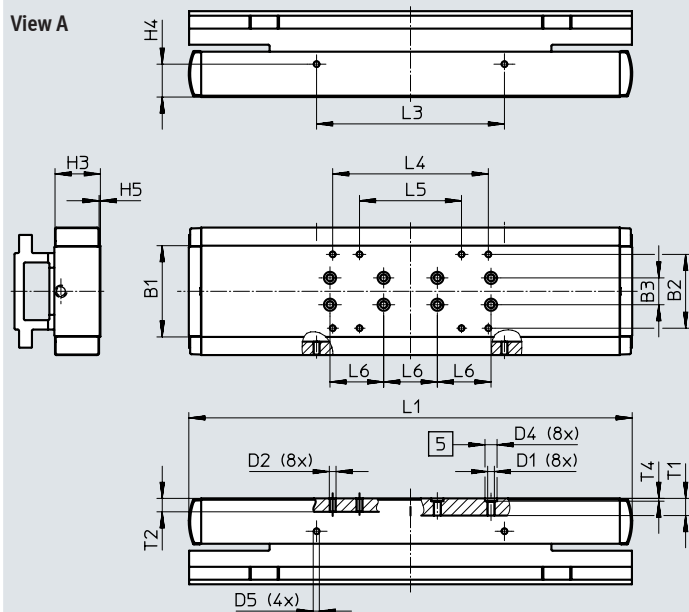
#### Size 80

View A



#### Size 120

View A



[5] Drilled hole for centring sleeve

[6] Drilled hole for centring pin

## Data sheet

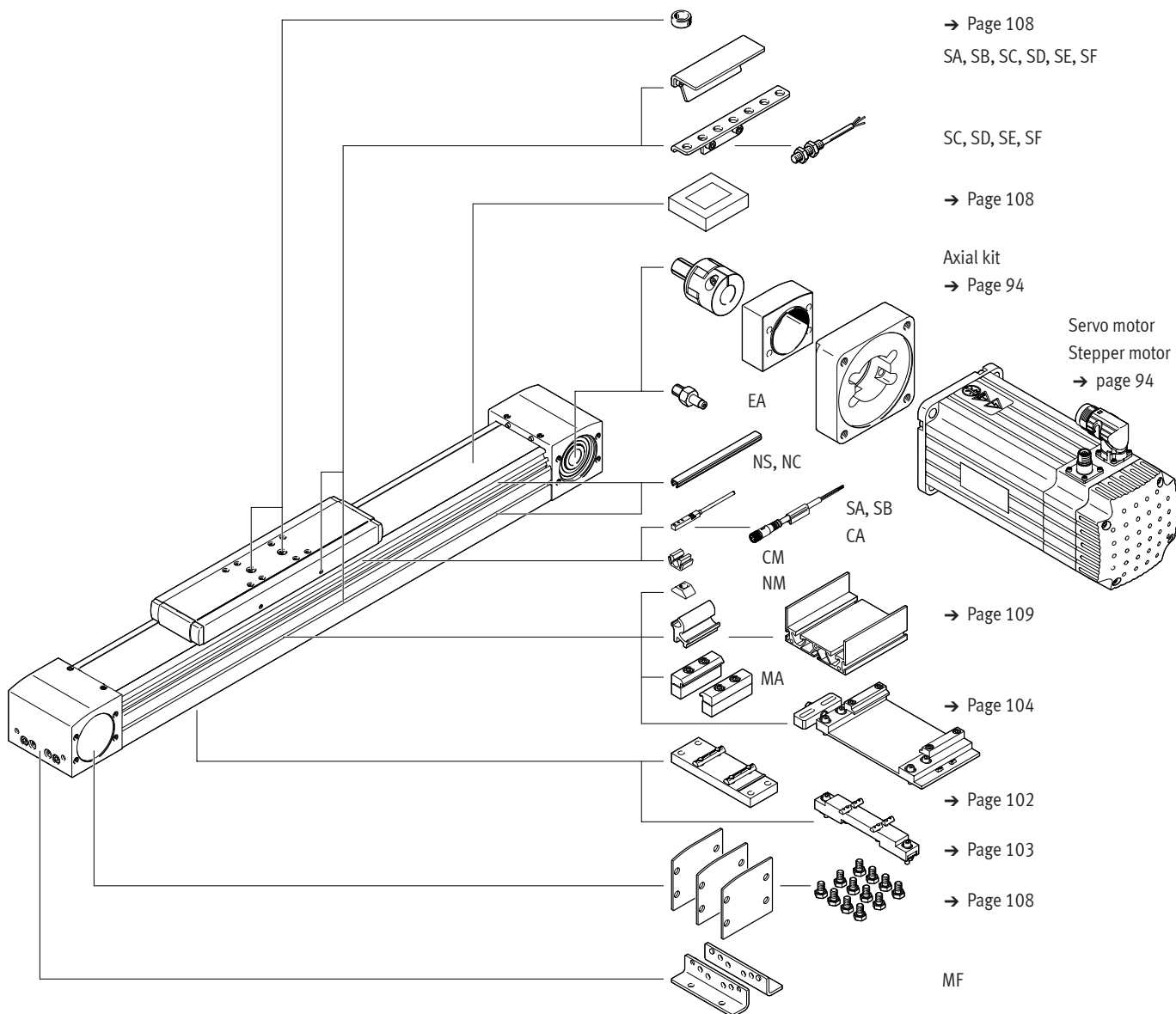
| Size | B1 | B2     | B3      | D1 | D2 | D3<br>ø         | D4<br>ø         | D5 |
|------|----|--------|---------|----|----|-----------------|-----------------|----|
| 70   | 30 | 20±0.1 | –       | –  | M5 | 5 <sup>H7</sup> | –               | M4 |
| 80   | 42 | 32±0.2 | –       | M6 | M5 | –               | 9 <sup>H7</sup> | M4 |
| 120  | 68 | 55±0.2 | 20±0.03 | M6 | M5 | –               | 9 <sup>H7</sup> | M5 |

| Size | H3   | H4<br>±0.1 | H5 | L1    | L2<br>±0.1 | L3<br>±0.1 | L4      | L5     |
|------|------|------------|----|-------|------------|------------|---------|--------|
| 70   | 17.7 | 11.7       | 1  | 216.6 | 90         | 56         | 20±0.1  | 10±0.1 |
| 80   | 22.2 | 16         | 1  | 240.6 | –          | 78         | 74±0.2  | 44±0.2 |
| 120  | 33.8 | 24.5       | 1  | 330.4 | –          | 140        | 116±0.2 | 76±0.2 |

| Size | L6<br>±0.03 | L7 | T1   | T2  | T3<br>+0.1 | T4<br>+0.1 | T5 | T6 |
|------|-------------|----|------|-----|------------|------------|----|----|
| 70   | 20          | 5  | –    | 7.5 | 3.1        | –          | –  | –  |
| 80   | 40          | –  | 9.7  | 9   | –          | 2.1        | 8  | 6  |
| 120  | 40          | –  | 12.8 | 10  | –          | 2.1        | –  | –  |

## Ordering data – Modular product system

### Accessories





## Ordering data – Modular product system

| Ordering table  |                          |                                    |               |               | Conditions | Code         | Enter code |
|---|--------------------------|------------------------------------|---------------|---------------|------------|--------------|------------|
| Size  |                          | 70                                 | 80            | 120           |            |              |            |
| Module no.  |                          | <b>570502</b>                      | <b>570503</b> | <b>570504</b> |            |              |            |
| Design  |                          | Linear axis                        |               |               |            | <b>ELGA</b>  | ELGA       |
| Function  |                          | Toothed belt                       |               |               |            | <b>-TB</b>   | -TB        |
| Guide   |                          | Plain-bearing guide                |               |               |            | <b>-G</b>    | -G         |
| Size  | [mm]                     | 70                                 | 80            | 120           |            | <b>-...</b>  |            |
| Stroke length   | [mm]                     | 1 ... 8500                         |               |               |            | <b>-...</b>  |            |
| Stroke reserve  | [mm]                     | 0 ... 999 (0 = no stroke reserve)  |               |               | [1]        | <b>-...H</b> |            |
| Protection against particles  |                          | Standard                           |               |               |            |              |            |
|   |                          | Without cover strip                |               |               |            | <b>-P0</b>   |            |
| Material of toothed belt  |                          | Chloroprene rubber                 |               |               |            |              |            |
|   |                          | Coated PU                          |               |               |            | <b>-PU2</b>  |            |
| Accessories   |                          | Accessories enclosed separately    |               |               |            | <b>+</b>     | +          |
| Foot mounting   |                          | 1                                  |               |               |            | <b>MF</b>    |            |
| Profile mounting  |                          | 1 ... 50                           |               |               |            | <b>...MA</b> |            |
| Proximity switch (SIES), inductive,<br>slot type 8, PNP,<br>incl. switch lug            | N/O contact, 7.5 m cable | 1 ... 6                            |               |               |            | <b>...SA</b> |            |
|   | N/C contact, 7.5 m cable | 1 ... 6                            |               |               |            | <b>...SB</b> |            |
| Proximity switch (SIEN), inductive,<br>M8, PNP,<br>incl. switch lug with sensor bracket | N/O contact, 2.5 m cable | 1 ... 99                           |               |               |            | <b>...SC</b> |            |
|   | N/C contact, 2.5 m cable | 1 ... 99                           |               |               |            | <b>...SD</b> |            |
|   | N/O contact, M8 plug     | 1 ... 99                           |               |               |            | <b>...SE</b> |            |
|   | N/C contact, M8 plug     | 1 ... 99                           |               |               |            | <b>...SF</b> |            |
| Connecting cable 2.5 m M8, 3-wire   |                          | 1 ... 99                           |               |               |            | <b>...CA</b> |            |
| Sensor slot cover   |                          | 1 ... 50 (1 = 2 units, 500 mm)     |               |               |            | <b>...NS</b> |            |
| Mounting slot cover   |                          | 1 ... 50 (1 = 2 units, 500 mm)     |               |               |            | <b>...NC</b> |            |
| Slot nut for mounting slot  |                          | 1 ... 99                           |               |               |            | <b>...NM</b> |            |
| Clip for sensor slot  |                          | 10, 20, 30, 40, 50, 60, 70, 80, 90 |               |               |            | <b>...CM</b> |            |
| Drive shaft   |                          | 1 ... 4                            |               |               |            | <b>...EA</b> |            |
| Operating instructions  |                          | With operating instructions        |               |               |            |              |            |
|   |                          | Without operating instructions     |               |               |            | <b>-DN</b>   |            |

[1] ... H The sum of the nominal stroke and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length

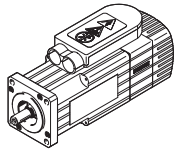
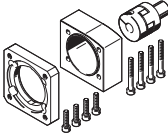
The code SA, SB includes a switch lug in the scope of delivery.  
The code SC, SD, SE, SF includes one switch lug and max. two sensor brackets in the scope of delivery.

## Accessories

**Note**

Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

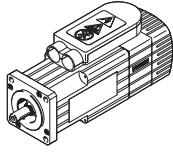
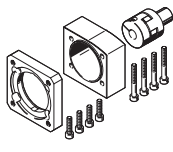
**Permissible axis/motor combinations with axial kit**

| Motor/gear unit <sup>1)</sup>   | Axial kit   |                | Data sheets → Internet: eamm-a                   |
|---|---|----------------|--|
|  |  |                | • Kits for third-party motors → Internet: eamm-a |
| Type  | Part no.  | Type           |  |
| <b>ELGA-TB-...-70</b>   |   |                |  |
| <b>With servo motor and gear unit</b>   |   |                |  |
| EMMT-AS-60-..., EMME-AS-60-...<br>EMGA-60-P-G...-EAS-60                           | 1456616   | EAMM-A-N38-60H |  |
| <b>With stepper motor</b>   |   |                |  |
| EMMS-ST-87-...  | ★ 3324111   | EAMM-A-N38-87A |  |
| <b>With stepper motor and gear unit</b>   |   |                |  |
| EMMS-ST-57-...<br>EMGA-60-P-G...-SST-57   | ★ 1202253   | EAMM-A-N38-60G |  |
| <b>With integrated drive and gear unit</b>  |   |                |  |
| EMCA-EC-67-...<br>EMGC-60-...   | 1456616   | EAMM-A-N38-60H |  |

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.



## Accessories

| Permissible axis/motor combinations with axial kit                                |  |                 |
|---|--|-----------------|
| Motor/gear unit <sup>1)</sup>   | Axial kit  |                 |
|  |  <ul style="list-style-type: none"> <li>Kits for third-party motors → Internet: eamm-a</li> </ul> |                 |
|   | Type   | Part no. Type   |
| <b>ELGA-TB-...-80</b>   |  |                 |
| <b>With servo motor</b>   |  |                 |
| EMMT-AS-100-..., EMME-AS-100-...  | 1201894  | EAMM-A-N48-100A |
| <b>With servo motor and gear unit</b>   |  |                 |
| EMMT-AS-60-..., EMME-AS-60-...<br>EMGA-60-P-G...-EAS-60                           | 1456618  | EAMM-A-N48-60H  |
| EMMT-AS-80-..., EMME-AS-80-...<br>EMGA-80-P-G...-EAS-80                           | ★ 1258793  | EAMM-A-N48-80G  |
| EMMT-AS-100-..., EMME-AS-100-...<br>EMGA-80-P-G...-SAS-100                        | ★ 1258793  | EAMM-A-N48-80G  |
| <b>With stepper motor and gear unit</b>   |  |                 |
| EMMS-ST-57-...<br>EMGA-60-P-G...-SST-57   | ★ 1972527  | EAMM-A-N48-60G  |
| EMMS-ST-87-...<br>EMGA-80-P-G...-SST-87   | ★ 1258793  | EAMM-A-N48-80G  |
| <b>With integrated drive and gear unit</b>  |  |                 |
| EMCA-EC-67-...<br>EMGC-60-...   | 1456618  | EAMM-A-N48-60H  |

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

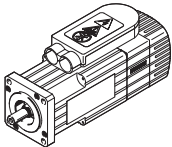
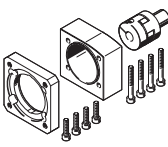
Festo core product range



Generally ready for shipping ex works in 24 hours

Generally ready for shipping ex works in 5 days

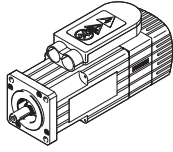
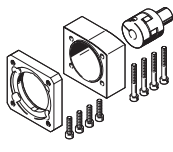
## Accessories

| Permissible axis/motor combinations with axial kit                                |   |  |
|---|---|--|
| Motor/gear unit <sup>1)</sup>   | Axial kit   |  |
|  |  | Data sheets → Internet: eamm-a<br><br>• Kits for third-party motors → Internet: eamm-a |
|   | Type  | Part no. Type  |
| <b>ELGA-TB-...-120</b>  |   |  |
| <b>With servo motor</b>   |   |  |
| EMMS-AS-140-...   | 1201691   | EAMM-A-N80-140A  |
| <b>With servo motor and gear unit</b>   |   |  |
| EMMT-AS-80-..., EMME-AS-80-...<br>EMGA-80-P-G...-EAS-80                           | ★ 2372096   | EAMM-A-N80-80G   |
| EMMT-AS-100-..., EMME-AS-100-...<br>EMGA-80-P-G...-SAS-100                        | ★ 2372096   | EAMM-A-N80-80G   |
| EMMT-AS-100-..., EMME-AS-100-...<br>EMGA-120-P-G...-SAS-100                       | ★ 1201695   | EAMM-A-N80-120G  |
| EMMS-AS-140-...<br>EMGA-120-P-G...-SAS-140  | ★ 1201695   | EAMM-A-N80-120G  |
| <b>With stepper motor and gear unit</b>   |   |  |
| EMMS-ST-87-...<br>EMGA-80-P-G...-SST-87   | ★ 2372096   | EAMM-A-N80-80G   |

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.



## Accessories

| Permissible axis/motor combinations with axial kit                                |   |                    |
|---|---|--------------------|
| Motor/gear unit <sup>1)</sup>   | Axial kit   |                    |
|  |  |                    |
|   | • Kits for third-party motors → Internet: eamm-a                                  |                    |
| Type  | Part no.  | Type               |
| <b>ELGA-TB-...-150</b>  |   |                    |
| <b>With servo motor</b>   |   |                    |
| EMMS-AS-140-...   | 3657226   | EAMM-A-L95-140A-G2 |
| EMMS-AS-190-...   | 3659562   | EAMM-A-L95-190A-G2 |
| <b>With servo motor and gear unit</b>   |   |                    |
| EMMT-AS-80-..., EMME-AS-80-...<br>EMGA-80-P-G-...-EAS-80                          | 3660191   | EAMM-A-L95-80G-G2  |
| EMMT-AS-100-..., EMME-AS-100-...<br>EMGA-80-P-G-...-SAS-100                       | 3660191   | EAMM-A-L95-80G-G2  |
| EMMT-AS-100-..., EMME-AS-100-...<br>EMGA-120-P-G-...-SAS-100                      | ★ 3659941   | EAMM-A-L95-120G-G2 |
| EMMS-AS-140-...<br>EMGA-120-P-G-...-SAS-140                                       | ★ 3659941   | EAMM-A-L95-120G-G2 |
| <b>With stepper motor and gear unit</b>   |   |                    |
| EMMS-ST-87-...<br>EMGA-80-P-G-...-SST-87  | 3660191   | EAMM-A-L95-80G2    |

1) The input torque must not exceed the max. permissible transferable torque of the axial kit.

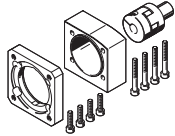
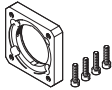
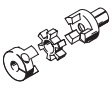


Festo core product range



Generally ready for shipping ex works in 24 hours

Generally ready for shipping ex works in 5 days

## Accessories

| Individual components of the axial kit  |   |   |   |   |
|---|---|---|---|---|
| Axial kit   | Comprising:<br>Motor flange   | Coupling  | Coupling housing  | Screw set   |
|  |  |  |  |  |
| Part no.<br>Type  | Part no.<br>Type  | Part no.<br>Type  | Part no.<br>Type  | Part no.<br>Type  |
| <b>ELGA-TB-...-70</b>   |   |   |   |   |
| ★ 1202253<br>EAMM-A-N38-60G   | 1190015<br>EAMF-A-38D-60G/H   | 558001<br>EAMD-32-32-11-16X20   | 1345947<br>EAMK-A-N38-38D   | 1202262<br>EAHM-L5-M6-40  |
| 1456616<br>EAMM-A-N38-60H   | 1190015<br>EAMF-A-38D-60G/H   | 1377840<br>EAMD-32-32-14-16X20  | 1345947<br>EAMK-A-N38-38D   | 1202262<br>EAHM-L5-M6-40  |
| 1202331<br>EAMM-A-N38-70A   | 1202337<br>EAMF-A-38D-70A   | 558001<br>EAMD-32-32-11-16X20   | 1345947<br>EAMK-A-N38-38D   | 1202288<br>EAHM-L5-M6-35  |
| ★ 3324111<br>EAMM-A-N38-87A   | 3319868<br>EAMF-A-38D-87A   | 558001<br>EAMD-32-32-11-16X20   | 1345947<br>EAMK-A-N38-38D   | 1202288<br>EAHM-L5-M6-35  |
| <b>ELGA-TB-...-80</b>   |   |   |   |   |
| ★ 1972527<br>EAMM-A-N48-60G   | 1460111<br>EAMF-A-48C-60G/H   | 558001<br>EAMD-32-32-11-16X20   | 1345949<br>EAMK-A-N48-48C   | 4984529<br>EAHM-L5-M6-45  |
| 1456618<br>EAMM-A-N48-60H   | 1460111<br>EAMF-A-48C-60G/H   | 1377840<br>EAMD-32-32-14-16X20  | 1345949<br>EAMK-A-N48-48C   | 4984529<br>EAHM-L5-M6-45  |
| ★ 1258793<br>EAMM-A-N48-80G   | 1190375<br>EAMF-A-48C-80G   | 1781043<br>EAMD-42-40-20-16X25-U  | 1345949<br>EAMK-A-N48-48C   | 1201874<br>EAHM-L5-M6-50  |
| 1201894<br>EAMM-A-N48-100A  | 1201924<br>EAMF-A-48C-100A  | 558002<br>EAMD-42-40-19-16X25   | 1345949<br>EAMK-A-N48-48C   | 1201874<br>EAHM-L5-M6-50  |
| <b>ELGA-TB-...-120</b>  |   |   |   |   |
| ★ 2372096<br>EAMM-A-N80-80G   | 2372201<br>EAMF-A-80A-80G   | 558004<br>EAMD-56-46-20-23X27   | 1345953<br>EAMK-A-N80-80A   | 1201712<br>EAHM-L5-M8-60  |
| ★ 1201695<br>EAMM-A-N80-120G  | 1190702<br>EAMF-A-80A-120G  | 1188801<br>EAMD-56-46-25-23X27  | 1345953<br>EAMK-A-N80-80A   | 1201712<br>EAHM-L5-M8-60  |
| 1201691<br>EAMM-A-N80-140A  | 1190796<br>EAMF-A-80A-140A  | 558005<br>EAMD-56-46-24-23X27   | 1345953<br>EAMK-A-N80-80A   | 1201751<br>EAHM-L5-M8-75  |
| <b>ELGA-TB-...-150</b>  |   |   |   |   |
| 3660191<br>EAMM-A-L95-80G-G2  | 3305700<br>EAMF-A-95B-80G   | 3717812<br>EAMD-67-51-20-32X32-U  | 3712650<br>EAMK-A-L95-95A/B-G2  | –   |
| ★ 3659941<br>EAMM-A-L95-120G-G2   | 3659724<br>EAMF-A-95A-120G-G2   | 558006<br>EAMD-67-51-25-32X32-U   | 3712650<br>EAMK-A-L95-95A/B-G2  | 567496<br>EAHM-L2-M8-70   |
| 3657226<br>EAMM-A-L95-140A-G2   | 558023<br>EAMF-A-95A-140A   | 558008<br>EAMD-67-51-24-32X32-U   | 3712650<br>EAMK-A-L95-95A/B-G2  | 567497<br>EAHM-L2-M8-80   |
| 3659562<br>EAMM-A-L95-190A-G2   | 1378473<br>EAMF-A-95A-190A  | 1379269<br>EAMD-67-51-32-32X32-U  | 3712650<br>EAMK-A-L95-95A/B-G2  | 567497<br>EAHM-L2-M8-80   |

**Note**

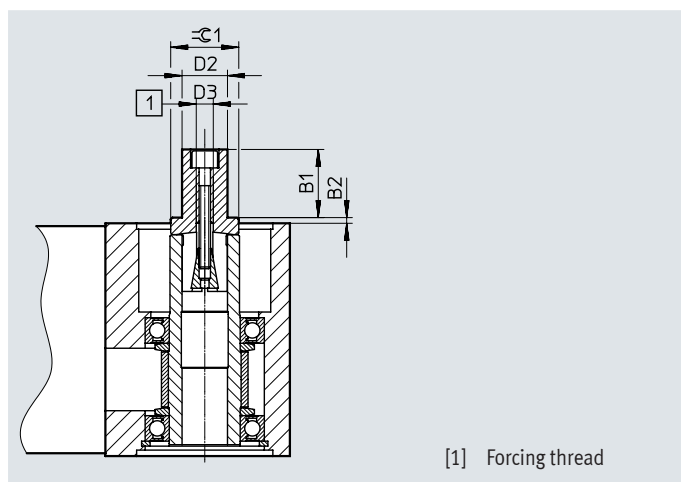
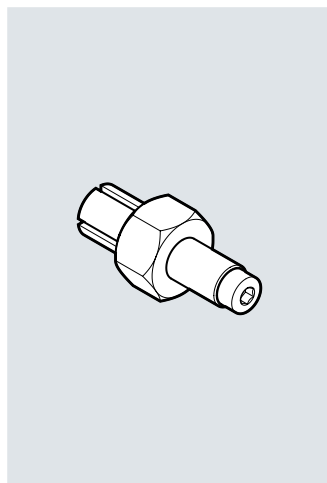
For the optimum selection of axis/  
motor combinations

→ Engineering software  
Electric Motion Sizing  
[www.festo.com/x/electric-motion-sizing](http://www.festo.com/x/electric-motion-sizing)

## Accessories

### Drive shaft EAMB

Alternative interface  
For ELGA-TB-KF/-KF-F1  
For ELGA-TB-RF/-RF-F1  
For ELGA-TB-G  
(order code EA)



| Dimensions and ordering data |    |      |         |     |                   |               |          |                       |
|------------------------------|----|------|---------|-----|-------------------|---------------|----------|-----------------------|
| For size                     | B1 | B2   | D2<br>ø | D3  | $\approx \zeta 1$ | Weight<br>[g] | Part no. | Type                  |
| 70                           | 21 | 1.85 | 15      | M6  | 21                | 70            | 1344642  | EAMB-24-9-15X21-16X20 |
| 80                           | 21 | 2    | 15      | M6  | 21                | 70            | 558036   | EAMB-24-6-15X21-16X20 |
| 120                          | 26 | 2    | 25      | M10 | 30                | 201           | 558037   | EAMB-34-6-25X26-23X27 |
| 150                          | 30 | 3    | 35      | M12 | 36                | 463           | 558038   | EAMB-44-7-35X30-32X32 |

## Accessories

**Foot mounting HPE**

For ELGA-TB-KF/-KF-F1

For ELGA-TB-RF/-RF-F1

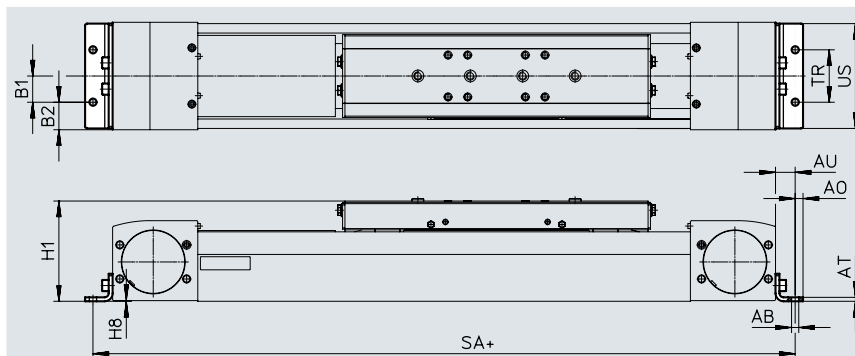
For ELGA-TB-G

(order code MF)

Material:

Galvanised steel

RoHS-compliant



+ = plus stroke length + 2x stroke reserve

**Dimensions and ordering data**

| For size | AB<br>Ø | A0 | AT | AU | B1 | B2   | H1    | H8  |
|----------|---------|----|----|----|----|------|-------|-----|
| 70       | 5.5     | 6  | 3  | 13 | 20 | 14.5 | 64    | 0.5 |
| 80       | 5.5     | 6  | 3  | 13 | 20 | 21   | 76.5  | 0.5 |
| 120      | 9       | 8  | 6  | 22 | 40 | 20   | 111.5 | 0.5 |
| 150      | 9       | 12 | 8  | 25 | 40 | 35   | 141.5 | 1   |

| For size | SA         |            |              |              |           | TR | US  |
|----------|------------|------------|--------------|--------------|-----------|----|-----|
|          | ELGA-TB-KF | ELGA-TB-RF | ELGA-TB-RF-S | ELGA-TB-RF-L | ELGA-TB-G |    |     |
| 70       | 372        | 446        | 368          | 546          | 372       | 40 | 67  |
| 80       | 416        | 610        | 526          | 750          | 416       | 40 | 80  |
| 120      | 590        | 819        | 717          | 1049         | 590       | 80 | 116 |
| 150      | 762        | –          | –            | –            | –         | 80 | 150 |

| For size | Weight<br>[g] | Part no. | Type    |
|----------|---------------|----------|---------|
| 70       | 115           | 558321   | HPE-70  |
| 80       | 150           | 558322   | HPE-80  |
| 120      | 578           | 558323   | HPE-120 |
| 150      | 1181          | 3002636  | HPE-150 |



## Accessories

### Profile mounting MUE

For ELGA-TB-KF

For ELGA-TB-RF

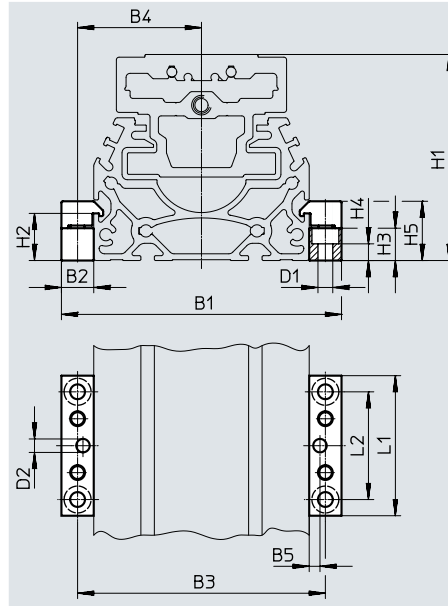
For ELGA-TB-G

(order code MA)

Material:

Anodised aluminium

RoHS-compliant



#### Dimensions and ordering data

| For size | B1  | B2 | B3  | B4   | B5 | D1<br>ø | D2<br>ø<br>H7 | H1    | H2   |
|----------|-----|----|-----|------|----|---------|---------------|-------|------|
| 70       | 91  | 12 | 79  | 39.5 | 4  | 5.5     | 5             | 64    | 17.5 |
| 80       | 104 | 12 | 92  | 46   | 4  | 5.5     | 5             | 76.5  | 17.5 |
| 120      | 154 | 19 | 135 | 67.5 | 4  | 9       | 5             | 111.5 | 16   |
| 150      | 188 | 19 | 169 | 84.5 | 4  | 9       | 5             | 141.5 | 16   |

| For size | H3 | H4  | H5   | L1 | L2 | Weight<br>[g] | Part no. | Type        |
|----------|----|-----|------|----|----|---------------|----------|-------------|
| 70       | 12 | 6.2 | 22   | 52 | 40 | 80            | ★ 558043 | MUE-70/80   |
| 80       | 12 | 6.2 | 22   | 52 | 40 | 80            | ★ 558043 | MUE-70/80   |
| 120      | 14 | 5.5 | 29.5 | 90 | 40 | 290           | ★ 558044 | MUE-120/185 |
| 150      | 14 | 5.5 | 29.5 | 90 | 40 | 290           | ★ 558044 | MUE-120/185 |



## Accessories

**Central support EAHF**

For ELGA-TB-KF/-KF-F1

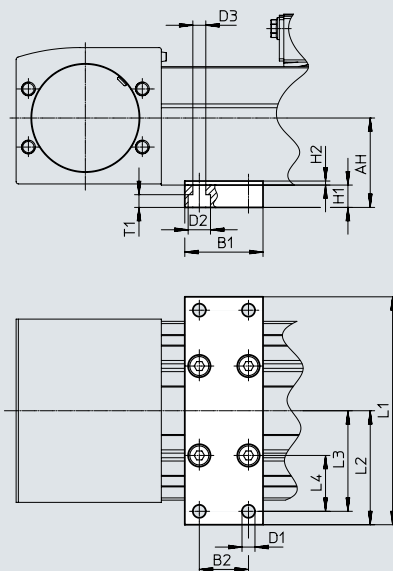
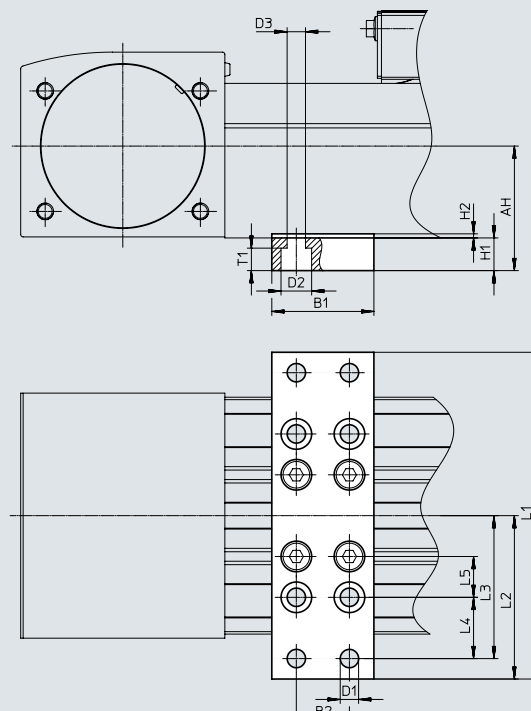
For ELGA-TB-RF/-RF-F1

For ELGA-TB-G

Material:

Anodised aluminium

RoHS-compliant

**Size 70, 80****Size 120, 150****Dimensions and ordering data**

| For size | AH   | B1 | B2 | D1<br>Ø | D2<br>Ø | D3<br>Ø | H1 | L1  |
|----------|------|----|----|---------|---------|---------|----|-----|
| 70       | 36.5 | 35 | 22 | 5.8     | 10      | 5.8     | 10 | 102 |
| 80       | 40   |    |    |         |         |         |    | 112 |
| 120      | 61   | 50 | 26 | 9       | 15      | 9       | 16 | 160 |
| 150      | 74.6 |    |    |         |         |         |    | 200 |

| For size | L2  | L3 | L4 | L5 | T1  | Weight<br>[g] | Part no. | Type          |
|----------|-----|----|----|----|-----|---------------|----------|---------------|
| 70       | 51  | 45 | 25 | -  | 5.7 | 113           | 2349256  | EAHF-L5-70-P  |
| 80       | 56  | 50 | 30 |    |     | 123           | 3535188  | EAHF-L5-80-P  |
| 120      | 80  | 70 | 30 | 20 | 11  | 384           | 2410274  | EAHF-L5-120-P |
| 150      | 100 | 90 | 50 | -  |     | 495           | 3535189  | EAHF-L5-150-P |

## Accessories

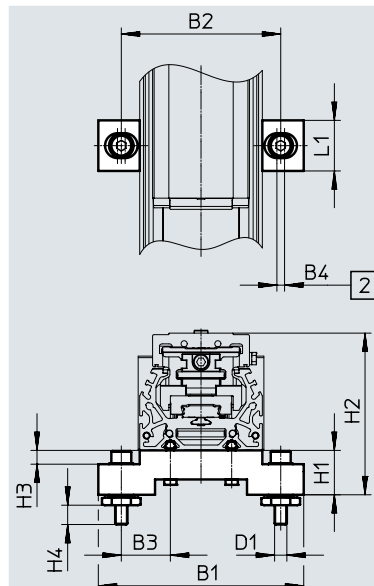
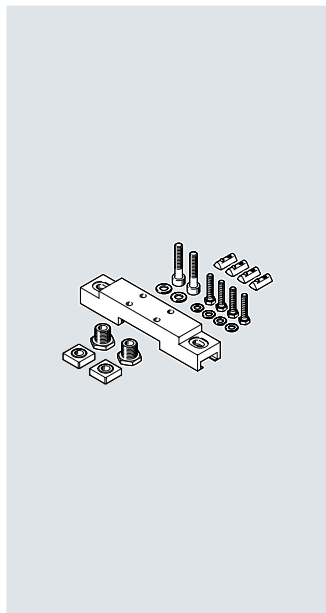
### Adjusting kit EADC-E15

Material:

EADC-E15-80/120: Wrought aluminium alloy

EADC-E15-185: Steel

RoHS-compliant



[2] Width of elongated hole

#### Dimensions and ordering data

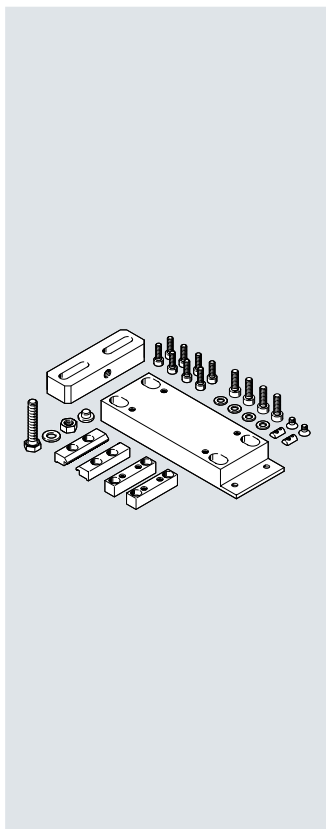
| For size | B1  | B2  | B3   | B4 | D1 | H1 |
|----------|-----|-----|------|----|----|----|
| 70       | 134 | 104 | 32   | 5  | M8 | 29 |
| 80       | 134 | 104 | 32   | 5  | M8 | 29 |
| 120      | 170 | 140 | 50   | 5  | M8 | 29 |
| 150      | 236 | 209 | 64.5 | 5  | M8 | 29 |

| For size | H2    | H3 | H4   | L1 | Weight<br>[g] | Part no. | Type            |
|----------|-------|----|------|----|---------------|----------|-----------------|
| 70       | 93    | 9  | 12.6 | 33 | 386           | 8047566  | EADC-E15-80-E7  |
| 80       | 105.5 | 9  | 12.6 | 33 | 386           | 8047566  | EADC-E15-80-E7  |
| 120      | 140.5 | 9  | 12.6 | 33 | 388           | 8047567  | EADC-E15-120-E7 |
| 150      | 170.5 | 9  | 12.6 | 33 | 569           | 8047568  | EADC-E15-185-E7 |

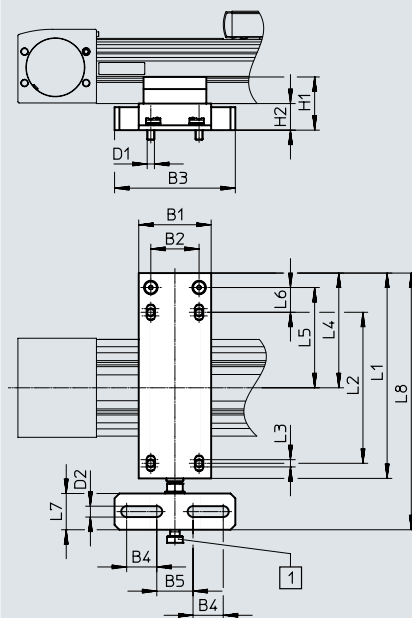
## Accessories

## Adjusting kit EADC-E16

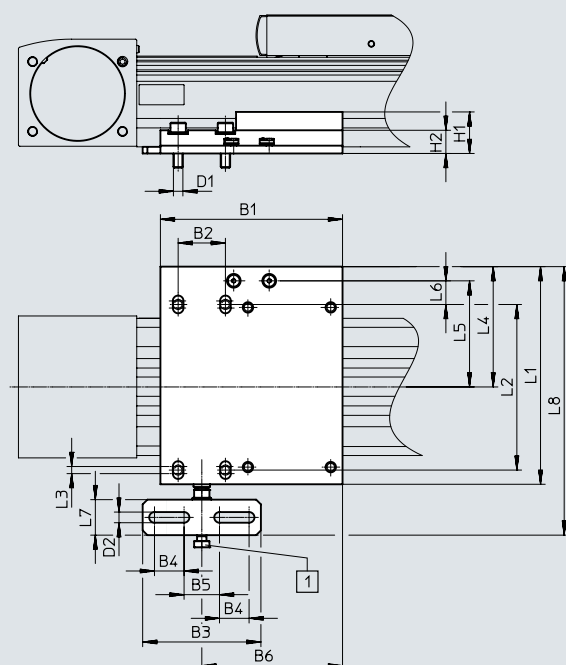
Material:  
Wrought aluminium alloy  
RoHS-compliant



Size 80



Size 120



[1] M8 screw

## Dimensions and ordering data

| For size | B1  | B2 | B3  | B4 | B5 | B6  | D1 | D2 | H1   | H2   | L1  | L2  |
|----------|-----|----|-----|----|----|-----|----|----|------|------|-----|-----|
| 80       | 60  | 40 | 100 | 25 | 30 | –   | M6 | 9  | 44   | 22   | 170 | 125 |
| 120      | 154 | 40 | 100 | 25 | 30 | 119 | M8 | 9  | 35.1 | 19.6 | 184 | 140 |

| For size | L3 | L4    | L5   | L6   | L7 | L8    | Weight<br>[g] | Part no. | Type            |
|----------|----|-------|------|------|----|-------|---------------|----------|-----------------|
| 80       | 6  | 95    | 83   | 20.5 | 30 | 212.5 | 828           | 8047577  | EADC-E16-80-E7  |
| 120      | 6  | 101.7 | 89.7 | 20   | 30 | 227   | 1134          | 8047578  | EADC-E16-120-E7 |

## Accessories

### Switch lug SF-EGC-1

For sensing via proximity switch  
SIES-8M

For ELGA-TB-KF

For ELGA-TB-RF

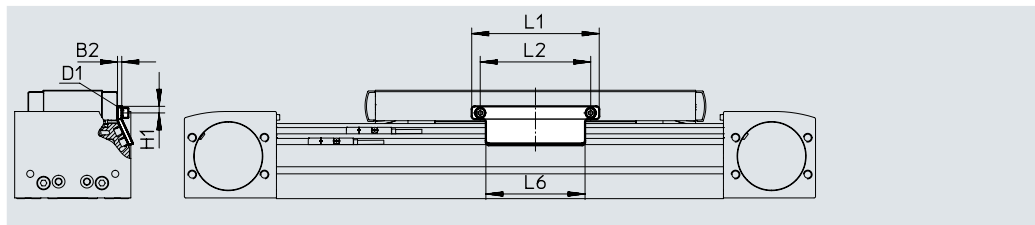
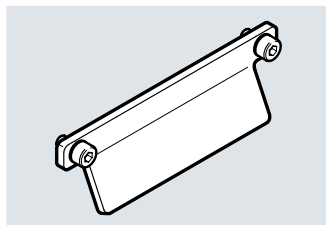
For ELGA-TB-G

(order code SA or SB)

Material:

Galvanised steel

RoHS-compliant



| Dimensions and ordering data |    |    |      |     |     |     |            |          |              |
|------------------------------|----|----|------|-----|-----|-----|------------|----------|--------------|
| For size                     | B2 | D1 | H1   | L1  | L2  | L6  | Weight [g] | Part no. | Type         |
| 70                           | 3  | M4 | 4.65 | 70  | 56  | 50  | 50         | ★ 558047 | SF-EGC-1-70  |
| 80                           | 3  | M4 | 4.65 | 90  | 78  | 70  | 63         | ★ 558048 | SF-EGC-1-80  |
| 120                          | 3  | M5 | 8    | 170 | 140 | 170 | 147        | ★ 558049 | SF-EGC-1-120 |
| 150                          | 3  | M5 | 10   | 230 | 200 | 230 | 246        | ★ 558051 | SF-EGC-1-185 |

Festo core product range



Generally ready for shipping ex works in 24 hours

Generally ready for shipping ex works in 5 days

## Accessories

**Switch lug SF-EGC-2**

For sensing via proximity switch  
SIEN-M8B (order code SC, SD, SE or SF)  
or SIES-8M  
For ELGA-TB-KF  
For ELGA-TB-RF  
For ELGA-TB-G

Material:

Galvanised steel  
RoHS-compliant

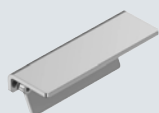
**Sensor bracket HWS-EGC**

For proximity switch SIEN-M8B (order  
code SC, SD, SE or SF)

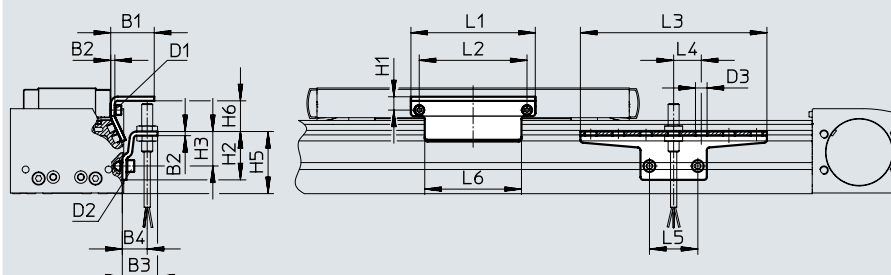
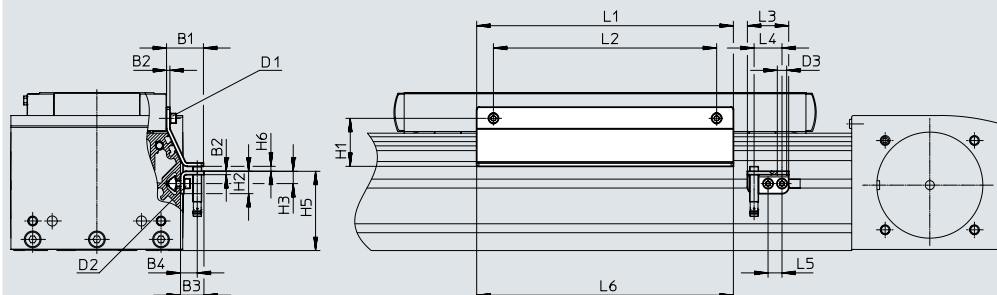
Material:

Galvanised steel  
RoHS-compliant

Switch lug SF-EGC-2



Sensor bracket HWS-EGC

**Size 70, 80, 120****Size 150****Dimensions and ordering data**

| For size | B1   | B2 | B3   | B4 | D1 | D2 | D3<br>ø | H1   | H2 |
|----------|------|----|------|----|----|----|---------|------|----|
| 70       | 31.5 | 3  | 25.5 | 18 | M4 | M5 | 8.4     | 9.5  | 35 |
| 80       | 31.5 | 3  | 25.5 | 18 | M4 | M5 | 8.4     | 9.5  | 35 |
| 120      | 32   | 3  | 25.5 | 18 | M5 | M5 | 8.4     | 13.2 | 65 |
| 150      | 33   | 3  | 21   | 15 | M5 | M5 | 8.4     | 43   | 20 |

| For size | H3 | H5 | H6<br>max. | L1  | L2  | L3  | L4 | L5   | L6  |
|----------|----|----|------------|-----|-----|-----|----|------|-----|
| 70       | 25 | 45 | 13.5       | 70  | 56  | 135 | 20 | 35   | 50  |
| 80       | 25 | 45 | 23.5       | 90  | 78  | 135 | 20 | 35   | 70  |
| 120      | 55 | 75 | 24         | 170 | 140 | 215 | 20 | 35   | 170 |
| 150      | 11 | 71 | 4.5        | 230 | 200 | 37  | 25 | 12.5 | 230 |

| For size          | Weight<br>[g] | Part no. | Type         |
|-------------------|---------------|----------|--------------|
| <b>Switch lug</b> |               |          |              |
| 70                | 100           | 558052   | SF-EGC-2-70  |
| 80                | 130           | 558053   | SF-EGC-2-80  |
| 120               | 277           | 558054   | SF-EGC-2-120 |
| 150               | 390           | 558056   | SF-EGC-2-185 |

| For size              | Weight<br>[g] | Part no. | Type                     |
|-----------------------|---------------|----------|--------------------------|
| <b>Sensor bracket</b> |               |          |                          |
| 70                    | 110           | 558057   | HWS-EGC-M5               |
| 80                    | 110           | 558057   | HWS-EGC-M5               |
| 120                   | 217           | 570365   | HWS-EGC-M8-B             |
| 150                   | 58            | 560517   | HWS-EGC-M8: KURZ (SHORT) |

**Note**

The proximity switches SIEN-M8B  
cannot be mounted in the area of the  
profile mounting MUE.

## Accessories

### Switch lug EAPM

For sensing via proximity switch  
SME-8M

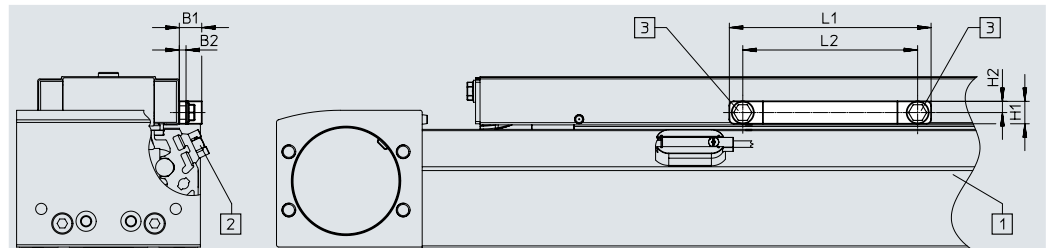
For ELGA-TB-KF-F1

For ELGA-TB-RF-F1

Material:

Wrought aluminium alloy

RoHS-compliant



[1] ELGA-TB-RF-70/80/120

[2] Proximity switch SIES

[3] Retaining screws



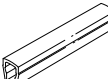
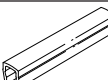


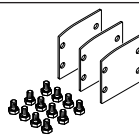
### Dimensions and ordering data

| For size | B1 | B2 | H1 | H2 | L1  | L2  | Weight<br>[g] | Part no. | Type            |
|----------|----|----|----|----|-----|-----|---------------|----------|-----------------|
| 70       | 10 | 3  | 10 | 5  | 70  | 56  | 46            | 2417032  | EAPM-L5-70-SLM  |
| 80       | 10 | 3  | 10 | 5  | 90  | 78  | 66            | 2671318  | EAPM-L5-80-SLM  |
| 120      | 10 | 3  | 16 | 8  | 170 | 140 | 146           | 2671326  | EAPM-L5-120-SLM |

### Ordering data

|   | For size   | Description   | Part no. | Type       |
|---|------------|---|----------|------------|
| Mounting kit CRSMB  |            |   |          |            |
|  | 70 ... 120 | <ul style="list-style-type: none"> <li>For proximity switches SME-8M/SME-8</li> <li>For ELGA-TB-KF-F1</li> <li>For ELGA-TB-RF-F1</li> </ul> | 525565   | CRSMB-8-32 |

## Accessories

| Ordering data  |                       |   |            |          |               |                  |
|--|-----------------------|---|------------|----------|---------------|------------------|
|  | For size              | Description   | Order code | Part no. | Type          | PJ <sup>1)</sup> |
| Slot nut NST   |                       |   |            |          |               |                  |
|    | 70, 80                | <ul style="list-style-type: none"><li>For mounting slot</li><li>For ELGA-TB-KF/-KF-F1</li><li>For ELGA-TB-RF/-RF-F1</li><li>For ELGA-TB-G</li></ul>                           | NM         | 150914   | NST-5-M5      | 1                |
|  |                       |   | –          | 8047843  | NST-5-M5-10   | 10               |
|  |                       |   | –          | 8047878  | NST-5-M5-50   | 50               |
|  | 120, 150              |   | NM         | 150915   | NST-8-M6      | 1                |
|  |                       |   | –          | 8047868  | NST-8-M6-10   | 10               |
|  |                       |   | –          | 8047869  | NST-8-M6-50   | 50               |
| Centring pin/sleeve ZBS/ZBH  |                       |   |            |          |               |                  |
|    | For ELGA-TB-KF/-KF-F1 |   |            |          |               |                  |
|  | 70                    | For slide   | –          | 150928   | ZBS-5         | 10               |
|  | 70, 80, 120, 150      |   |            | 8137184  | ZBH-9-B       |                  |
|  | For ELGA-TB-RF/-RF-F1 |   |            |          |               |                  |
|  | 70, 80, 120           | For slide   | –          | 8137184  | ZBH-9-B       | 10               |
|  | For ELGA-TB-G         |   |            |          |               |                  |
|  | 70                    | For slide   | –          | 150928   | ZBS-5         | 10               |
|  | 80, 120               |   |            | 8137184  | ZBH-9-B       |                  |
| Slot cover ABP   |                       |   |            |          |               |                  |
|    | 70, 80                | <ul style="list-style-type: none"><li>For mounting slot</li><li>Every 0.5 m</li><li>For ELGA-TB-KF/-KF-F1</li><li>For ELGA-TB-RF/-RF-F1</li><li>For ELGA-TB-G</li></ul>       | NC         | 151681   | ABP-5         | 2                |
|  | 120, 150              |   |            | 151682   | ABP-8         |                  |
| Slot cover ABP-S   |                       |   |            |          |               |                  |
|  | 70 ... 150            | <ul style="list-style-type: none"><li>For sensor slot</li><li>Every 0.5 m</li><li>For ELGA-TB-KF</li><li>For ELGA-TB-RF</li><li>For ELGA-TB-G</li></ul>                       | NS         | 563360   | ABP-5-S1      | 2                |
| Clip SMBK  |                       |   |            |          |               |                  |
|  | 70 ... 150            | <ul style="list-style-type: none"><li>For sensor slot, for mounting the proximity switch cables</li><li>For ELGA-TB-KF</li><li>For ELGA-TB-RF</li><li>For ELGA-TB-G</li></ul> | CM         | 534254   | SMBK-8        | 10               |
| Clamping element EADT  |                       |   |            |          |               |                  |
|  | 70, 80                | Tool for retensioning the cover strip   | –          | 8058451  | EADT-S-L5-70  | 1                |
|  | 120, 150              |   |            | 8058450  | EADT-S-L5-120 |                  |
| Cover kit EASC   |                       |   |            |          |               |                  |
|  | 70                    | For covering the sides of the drive cover   | –          | 8049255  | EASC-L5-70    | 3                |
|  | 80                    |   |            | 8049254  | EASC-L5-80    |                  |
|  | 120                   |   |            | 8049253  | EASC-L5-120   |                  |
|  | 150                   |   |            | 8049244  | EASC-L5-150   |                  |
|  |                       |   |            |          |               |                  |

1) Packaging unit



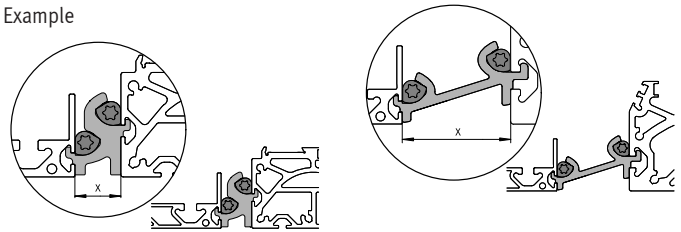
## Accessories

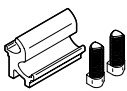
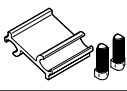
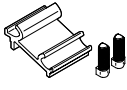
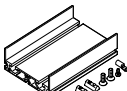
### Mounting options between axis and support profile

Depending on the adapter kit, the spacing between the axis and the support profile is:  
 $x = 20 \text{ mm}$  or  $50 \text{ mm}$

The support profile must be mounted using at least 2 adapter kits. For longer strokes, an adapter kit must be used every 500 mm.

Example



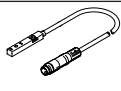
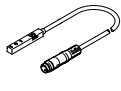
| Ordering data   |            |  |          |                  |                  |
|---|------------|--|----------|------------------|------------------|
|   | For size   | Description  | Part no. | Type             | PU <sup>1)</sup> |
| Adapter kit DHAM  |            |  |          |                  |                  |
|    | 80         | <ul style="list-style-type: none"><li>• For mounting the support profile on the axis</li><li>• Spacing between axis and profile is 20 mm</li><li>• For ELGA-TB-KF</li><li>• For ELGA-TB-RF</li><li>• For ELGA-TB-G</li></ul> | 562241   | DHAM-ME-N1-CL    | 1                |
|   | 120, 150   |  | 562242   | DHAM-ME-N2-CL    |                  |
|    | 70, 80     | <ul style="list-style-type: none"><li>• For mounting the support profile on the axis</li><li>• Spacing between axis and profile is 50 mm</li><li>• For ELGA-TB-KF</li><li>• For ELGA-TB-RF</li><li>• For ELGA-TB-G</li></ul> | 574560   | DHAM-ME-N1-50-CL |                  |
|   | 120, 150   |  | 574561   | DHAM-ME-N2-50-CL |                  |
| Support profile HMIA  |            |  |          |                  |                  |
|  | 70 ... 150 | <ul style="list-style-type: none"><li>• For guiding an energy chain</li><li>• For ELGA-TB-KF</li><li>• For ELGA-TB-RF</li><li>• For ELGA-TB-G</li></ul>  | 539379   | HMIA-E07-        | 1                |

1) Packaging unit

### Proximity switches for ELGA-TB-KF, ELGA-TB-RF, ELGA-TB-G

#### Ordering data – Proximity switches for T-slot, inductive

Data sheets → Internet: [sies](http://sies.festo.com)





|   | Type of mounting   | Electrical connection | Switching output | Cable length [m] | Order code | Part no. | Type                     |
|---|--|-----------------------|------------------|------------------|------------|----------|--------------------------|
| N/O contact   |  |                       |                  |                  |            |          |                          |
|  | Inserted in the slot from above, flush with the cylinder profile | Cable, 3-wire         | PNP              | 7.5              | SA         | 551386   | SIES-8M-PS-24V-K-7.5-OE  |
|   |  | Plug M8x1, 3-pin      |                  | 0.3              | –          | 551387   | SIES-8M-PS-24V-K-0.3-M8D |
|   |  | Cable, 3-wire         | NPN              | 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   |  |                       |                  |                  |            |          |                          |
|  | Inserted in the slot from above, flush with the cylinder profile | Cable, 3-wire         | PNP              | 7.5              | SB         | 551391   | SIES-8M-PO-24V-K-7.5-OE  |
|   |  | Plug M8x1, 3-pin      |                  | 0.3              | –          | 551392   | SIES-8M-PO-24V-K-0.3-M8D |
|   |  | Cable, 3-wire         | NPN              | 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 |

## Accessories

## Proximity switches for ELGA-TB-KF, ELGA-TB-RF, ELGA-TB-G

## Ordering data – Proximity switch M8 (round design), inductive



Data sheets → Internet: sien

|  | Electrical connection | LED | Switching output | Cable length [m] | Order code | Part no. | Type            |
|--|-----------------------|-----|------------------|------------------|------------|----------|-----------------|
| N/O contact  |                       |     |                  |                  |            |          |                 |
|  | Cable, 3-wire         | ■   | PNP              | 2.5              | SC         | ★ 150386 | SIEN-M8B-PS-K-L |
|  |                       |     | NPN              | 2.5              | –          | ★ 150384 | SIEN-M8B-NS-K-L |
|  | Plug M8x1, 3-pin      | ■   | PNP              | –                | SE         | ★ 150387 | SIEN-M8B-PS-S-L |
|  |                       |     | NPN              | –                | –          | ★ 150385 | SIEN-M8B-NS-S-L |
| N/C contact  |                       |     |                  |                  |            |          |                 |
|  | Cable, 3-wire         | ■   | PNP              | 2.5              | SD         | 150390   | SIEN-M8B-PO-K-L |
|  |                       |     | NPN              | 2.5              | –          | 150388   | SIEN-M8B-NO-K-L |
|  | Plug M8x1, 3-pin      | ■   | PNP              | –                | SF         | 150391   | SIEN-M8B-PO-S-L |
|  |                       |     | NPN              | –                | –          | 150389   | SIEN-M8B-NO-S-L |

## Proximity switches for ELGA-TB-KF-F1, ELGA-TB-RF-F1

## Ordering data – Proximity switch for T-slot, magnetic reed



Data sheets → Internet: sme

|  | Type of mounting                        | Switching output | Electrical connection | Cable length [m] | Part no. | Type                    |
|--|---|------------------|-----------------------|------------------|----------|-------------------------|
| N/O contact  |   |                  |                       |                  |          |                         |
|   | Inserted in the mounting kit from above | Contacting       | Cable, 3-wire         | 2.5              | ★ 543862 | SME-8M-DS-24V-K-2.5-OE  |
|  |   |                  |                       | 5.0              | ★ 543863 | SME-8M-DS-24V-K-5.0-OE  |
|  |   |                  | Cable, 2-wire         | 2.5              | ★ 543872 | SME-8M-ZS-24V-K-2.5-OE  |
|  |   |                  | Plug M8x1, 3-pin      | 0.3              | ★ 543861 | SME-8M-DS-24V-K-0.3-M8D |
| N/C contact  |   |                  |                       |                  |          |                         |
|  | Inserted in the mounting kit lengthwise | Contacting       | Cable, 3-wire         | 7.5              | 160251   | SME-8-O-K-LED-24        |

## Connecting cables for ELGA-TB-...

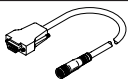
## Ordering data – Connecting cables

Data sheets → 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              | 159420   | SIM-M8-3GD-2.5-PU   |
|  |                              |                              | 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   |

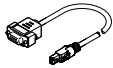
## Ordering data – Encoder cables for displacement encoder, ELGA-...-M1/-M2

Data sheets → Internet: nebm

|  | Electrical connection, left          | Electrical connection, right | Cable length [m] | Part no. | Type                     |
|--|--------------------------------------|------------------------------|------------------|----------|--------------------------|
|  | Displacement encoder ELGA-...-M1/-M2 | Motor controller CMMP-AS     | 5                | 1599105  | NEBM-M12G8-E-5-S1G9-V3   |
|  |                                      |                              | 10               | 1599106  | NEBM-M12G8-E-10-S1G9-V3  |
|  |                                      |                              | 15               | 1599107  | NEBM-M12G8-E-15-S1G9-V3  |
|  |                                      |                              | ∞ <sup>1)</sup>  | 1599108  | NEBM-M12G8-E-...-S1G9-V3 |

1) Max. cable length 25 m.

## Ordering data – Adapter

|  | Description   | Part no. | Type                 |
|--|---|----------|----------------------|
|  | Required in combination with the servo drive CMMT-AS as adapter between encoder cable NEBM-M12G8-...-V3 and interface X3 (position encoder 2) | 8106112  | NEFM-S1G9-K-0.5-R3G8 |



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