

Toothed belt axes ELGA-TB



# Electromechanical drives

Selection aid



## Overview of toothed belt and spindle axes

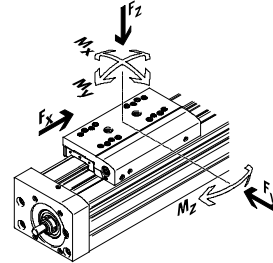
### Toothed belt axes

- 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 8,500 mm (longer strokes on request)
- Flexible motor mounting

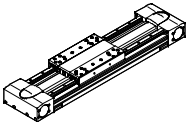
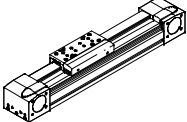
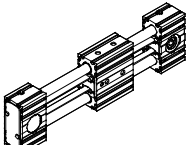
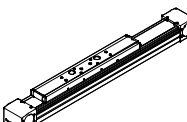
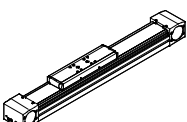
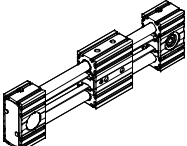
### Spindle axes

- 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 3,000 mm

### Coordinate system



## Toothed belt axes

Type	$F_x$ [N]	$v$ [m/s]	$M_x$ [Nm]	$M_y$ [Nm]	$M_z$ [Nm]	Properties
<b>Heavy-duty recirculating ball bearing guide</b>						
<b>EGC-HD-TB</b>						
	450	3	140	275	275	<ul style="list-style-type: none"> <li>• Flat drive unit with rigid, closed profile</li> <li>• Precision, resilient DUO guide rail</li> <li>• Ideal as a basic axis for linear gantries and cantilever axes</li> </ul>
	1,000	5	300	500	500	
	1,800	5	900	1,450	1,450	
<b>Recirculating ball bearing guide</b>						
<b>EGC-TB-KF</b>						
	50	3	3.5	10	10	<ul style="list-style-type: none"> <li>• Rigid, closed profile</li> <li>• Precision, resilient guide rail</li> <li>• Small drive pinions reduce necessary 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	
	2,500	5	529	1,820	1,820	
<b>ELGR-TB</b>						
	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>• Resilient ball bearings for dynamic operation</li> </ul>
	100	3	5	40	40	
	350	3	15	124	124	
<b>Roller bearing guide</b>						
<b>ELGA-TB-RF</b>						
	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	
	1,300	10	100	640	640	
<b>Plain-bearing guide</b>						
<b>ELGA-TB-G</b>						
	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 an actuator for external guides</li> <li>• Insensitive to harsh environmental conditions</li> </ul>
	800	5	10	60	20	
	1,300	5	120	120	40	
<b>ELGR-TB-GF</b>						
	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 environmental conditions</li> </ul>
	100	1	2.5	20	20	
	350	1	1	40	40	

# Electromechanical drives

Selection aid

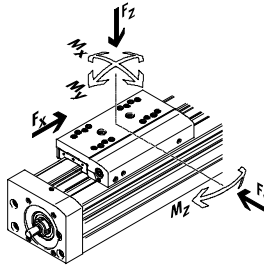
## Overview of toothed belt and spindle axes

### Toothed belt axes

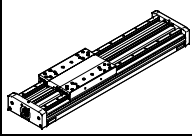
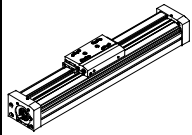
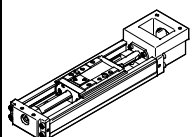
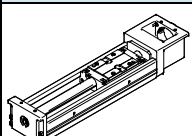
- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s<sup>2</sup>
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8,500 mm (longer strokes on request)
- Flexible motor mounting

### 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 3,000 mm



## Spindle axes

Type	$F_x$ [N]	$v$ [m/s]	$M_x$ [Nm]	$M_y$ [Nm]	$M_z$ [Nm]	Properties
<b>Heavy-duty recirculating ball bearing guide</b>						
<b>EGC-HD-BS</b>						
	300 600 1,300	0.5 1.0 1.5	140 300 900	275 500 1,450	275 500 1,450	<ul style="list-style-type: none"> <li>• Flat drive unit with rigid, closed profile</li> <li>• Precision, resilient DUO guide rail</li> <li>• Ideal as a basic axis for linear gantries and cantilever axes</li> </ul>
<b>Recirculating ball bearing guide</b>						
<b>EGC-BS-KF</b>						
	300 600 1,300 3,000	0.5 1.0 1.5 2.0	16 36 144 529	132 228 680 1,820	132 228 680 1,820	<ul style="list-style-type: none"> <li>• Rigid, closed profile</li> <li>• Precision, resilient guide rail</li> <li>• For extremely high requirements for speed, acceleration and torque resistance</li> <li>• Space-saving position sensing</li> </ul>
<b>EGSK</b>						
	57 133 184 239 392	0.33 1.10 0.83 1.10 1.48	13 28.7 60 79.5 231	3.7 9.2 20.4 26 77.3	3.7 9.2 20.4 26 77.3	<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>
<b>EGSP</b>						
	112 212 466 460	0.6 0.6 2.0 2.0	36.3 81.5 90.3 258	12.5 31.6 32.1 94	12.5 31.6 32.1 94	<ul style="list-style-type: none"> <li>• Spindle axes with maximum precision, compactness and rigidity</li> <li>• Recirculating ball bearing guide with caged ball bearings</li> <li>• Ball screw sizes 33, 46 with caged ball bearings</li> </ul>

## Toothed belt axes ELGA-TB

Key features

### At a glance

#### ELGA-TB-G – Plain-bearing guide

- For small and medium loads
- Low guide backlash
- Actuator for external guides
- For simple handling tasks

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

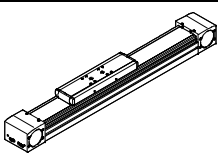
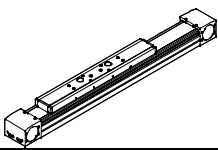
- For high acceleration and speeds
- Guide backlash = 0 mm
- Very good operating behaviour with torque load
- Heavy-duty alternative to the recirculating ball bearing guide
- Actuator for external guides, especially with high speeds



### Characteristic values of the axes

The specifications shown in the table are maximum values.

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

Version	Size	Working stroke [mm]	Speed [m/s]	Repetition accuracy [mm]	Feed force [N]	Guide characteristics					→ Page/Internet
						Forces and torques					
						Fy [N]	Fz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	
<b>ELGA-TB-G – Plain-bearing guide</b>											
	70	50 ... 8,500	5	±0.08	350	80	400	5	30	10	6
	80	50 ... 8,500	5	±0.08	800	200	800	10	60	20	
	120	50 ... 8,500	5	±0.08	1,300	380	1,600	20	120	40	
<b>ELGA-TB-RF – Roller bearing guide</b>											
	70	50 ... 7,000	10	±0.08	350	500	500	11	40	40	22
	80	50 ... 7,000	10	±0.08	800	800	800	30	180	180	
	120	50 ... 7,400	10	±0.08	1,300	2,000	2,000	100	640	640	

 Note

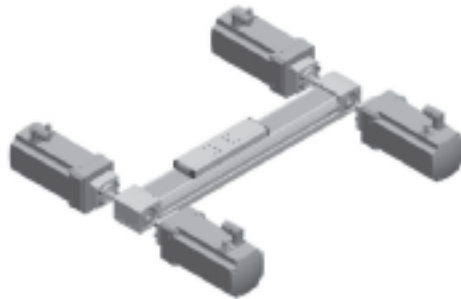
PositioningDrives  
sizing software  
[www.festo.com](http://www.festo.com)

## Toothed belt axes ELGA-TB

Key features

### Flexible motor mounting

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

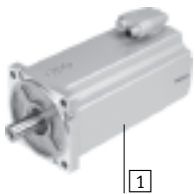


### Complete system comprising toothed belt axis, motor, motor controller and motor mounting kit



#### Motor

→ 40



1



2

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

 Note

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

#### Motor controller

Technical data → Internet: motor controller



1



2

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

#### Motor mounting kit

→ 40

##### Axial kit

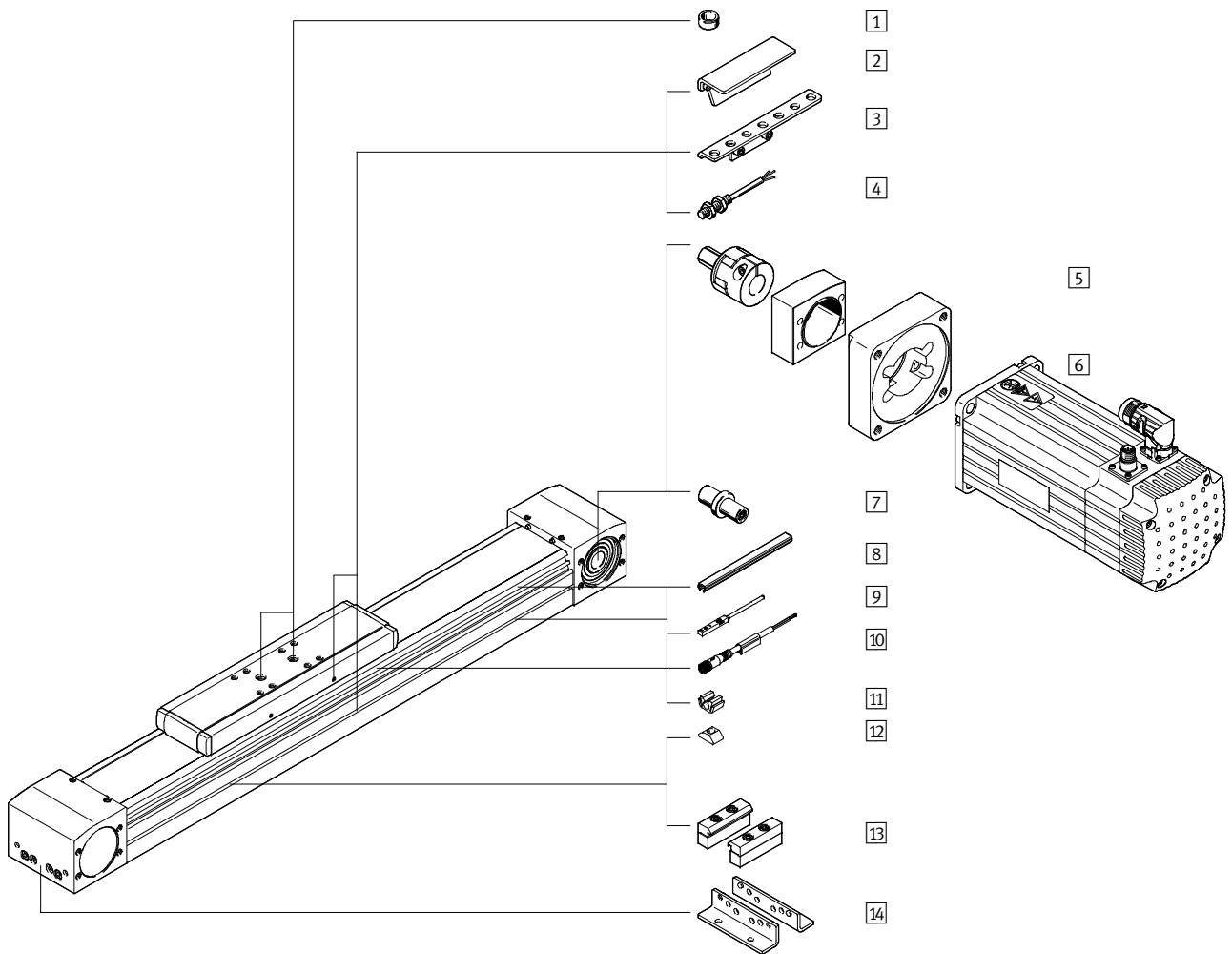


- Kit comprising:
- Motor flange
  - Coupling housing
  - Coupling
  - Screws

# Toothed belt axes ELGA-TB-G, plain-bearing guide

Peripherals overview

FESTO



# Toothed belt axes ELGA-TB-G, plain-bearing guide

Peripherals overview

Variants and accessories		
Type	Brief description	→ Page/Internet
1 Centring pin/sleeve ZBS, ZBH	<ul style="list-style-type: none"> <li>For centring loads and attachments on the slide</li> <li>2 centring pins/sleeves included in the scope of delivery of the axis</li> </ul>	45
2 Switch lug SA, SB, SC, SD, SE, SF	For sensing the slide position	43
3 Sensor bracket SC, SD, SE, SF	Adapter for mounting the inductive proximity sensors (round design) on the axis	44
4 Proximity sensor, M8 SC, SD, SE, SF	<ul style="list-style-type: none"> <li>Inductive proximity sensor, 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>	46
5 Axial kit EAMM	For axial motor mounting (comprising: coupling, coupling housing and motor flange)	40
6 Motor EMMS	Motors specially matched to the axis, with or without gear unit, with or without brake	40
7 Drive shaft 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 → 40</li> </ul>	45
8 Slot cover NS, NC	<ul style="list-style-type: none"> <li>For protecting against the ingress of dirt</li> </ul>	45
9 Proximity sensor, T-slot SA, SB	<ul style="list-style-type: none"> <li>Inductive proximity sensor, for T-slot</li> <li>The order code SA, SB includes 1 switch lug in the scope of delivery</li> </ul>	46
10 Connecting cable CA	For proximity sensor (order code SE and SF)	46
11 Clip CM	For mounting the proximity sensor cable in the slot	45
12 Slot nut NM	For mounting attachments	45
13 Profile mounting MA	For mounting the axis on the profile	43
14 Foot mounting 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>	42

# Toothed belt axes ELGA-TB-G, plain-bearing guide

Type codes

		ELGA	-	TB	-	G	-	70	-	800	-	20H	-	
<b>Type</b>														
ELGA	Toothed belt axis													
<b>Drive function</b>														
TB	Toothed belt													
<b>Guide</b>														
G	Plain-bearing guide													
<b>Size</b>														
<b>Stroke [mm]</b>														
<b>Stroke reserve</b>														
<b>Particle protection</b>														
-	Standard													
P0	Without strip cover													



# Toothed belt axes ELGA-TB-G, plain-bearing guide

Type codes

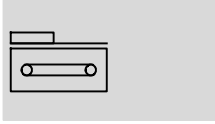
→	+	MF2SA	-	DN
<b>Accessories enclosed separately</b>				
MF	Foot mounting			
...MA	Profile mounting			
...SA	Proximity sensor (SIES), inductive, slot type 8, PNP, N/O contact, 7.5 m cable			
...SB	Proximity sensor (SIES), inductive, slot type 8, PNP, N/C contact, 7.5 m cable			
...SC	Proximity sensor (SIEN), inductive, M8, PNP, N/O contact, 2.5 m cable			
...SD	Proximity sensor (SIEN), inductive, M8, PNP, N/C contact, 2.5 m cable			
...SE	Proximity sensor (SIEN), inductive, M8, PNP, N/O contact, plug M8			
...SF	Proximity sensor (SIEN), inductive, M8, PNP, N/C contact, plug M8			
...CA	Connecting cable			
...NS	Sensor slot cover			
...NC	Mounting slot cover			
...NM	Slot nut for mounting slot			
...CM	Cable clip			
...EA	Drive shaft			
<b>Operating instructions</b>				
DN	None			




# Toothed belt axes ELGA-TB-G, plain-bearing guide

FESTO

Technical data

Function



-  Size  
70 ... 120
-  Stroke length  
50 ... 8,500 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 ... 8,500	50 ... 8,500	50 ... 8,500
Max. feed force $F_x$	[N]	350	800	1,300
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	[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	[°C]	-10 ... +60
Protection class		
ELGA-...		IP40
ELGA-...-PO		IP00
Duty cycle	[%]	100

Weight [kg]				
Size		70	80	120
Basic weight with 0 mm stroke <sup>1)</sup>		2.16	4	11.8
Additional weight per 1,000 mm stroke		2.64	3.56	7.45
Moving load		0.57	1.1	3.06

1) Incl. slide

Toothed belt				
Size		70	80	120
Pitch	[mm]	3	5	5
Expansion <sup>1)</sup>	[%]	0.31	0.19	0.23
Effective diameter	[mm]	28.65	39.79	52.52
Feed constant	[mm/rev.]	90	125	165

1) At max. feed force

# Toothed belt axes ELGA-TB-G, plain-bearing guide

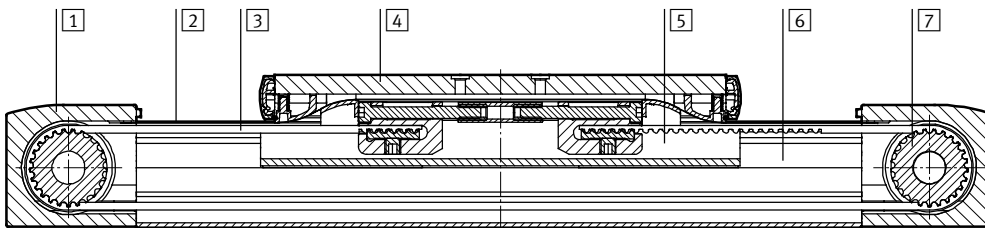
Technical data

Mass moment of inertia				
Size		70	80	120
$J_0$	[kg mm <sup>2</sup> ]	175	666	3,201
$J_S$ per metre stroke	[kg mm <sup>2</sup> /m]	19	93	215
$J_L$ per kg effective load	[kg mm <sup>2</sup> /Kg]	205	396	690

The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:  $J_A = J_0 + J_S \times \text{working stroke [m]} + J_L \times m_{\text{effective load [kg]}}$

## Materials

Sectional view



Axis		
1	Drive cover	Anodised wrought aluminium alloy
2	Cover strip	Steel
3	Toothed belt	Polychloroprene with glass cord and nylon coating
4	Slide	Anodised wrought aluminium alloy
5	Slide elements	Polyacetal
6	Profile with integrated guide	Anodised wrought aluminium alloy
7	Toothed belt disc	High-alloy stainless steel
Note on materials		RoHS-compliant
		Contains PWIS (paint-wetting impairment substances)

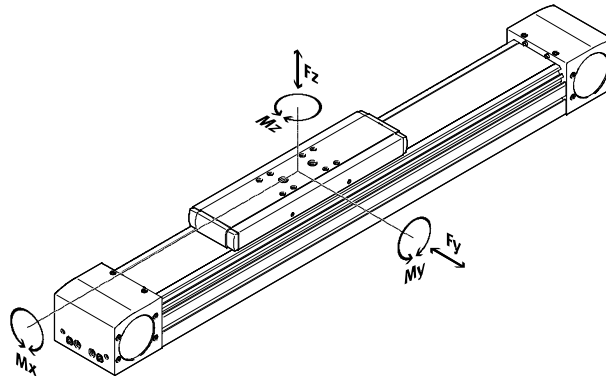
# Toothed belt axes ELGA-TB-G, plain-bearing guide

Technical data

## 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 more than two 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:

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

Permissible forces and torques				
Size		70	80	120
F <sub>y,max.</sub>	[N]	80	200	380
F <sub>z,max.</sub>	[N]	400	800	1,600
M <sub>x,max.</sub>	[Nm]	5	10	20
M <sub>y,max.</sub>	[Nm]	30	60	120
M <sub>z,max.</sub>	[Nm]	10	20	40

-  - Note

The plain-bearing guide is not backlash-free. The toothed belt axis ELGA-TB-RF is recommended for applications that require freedom from backlash or applications involving high torque loads.

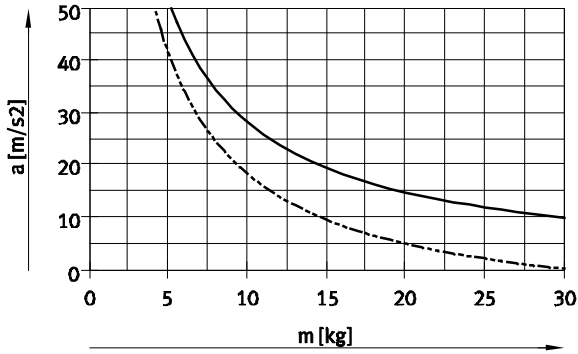
PositioningDrives  
sizing software  
[www.festo.com](http://www.festo.com)

# Toothed belt axes ELGA-TB-G, plain-bearing guide

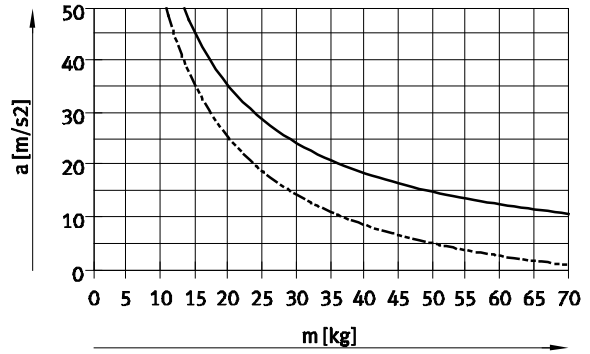
Technical data

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

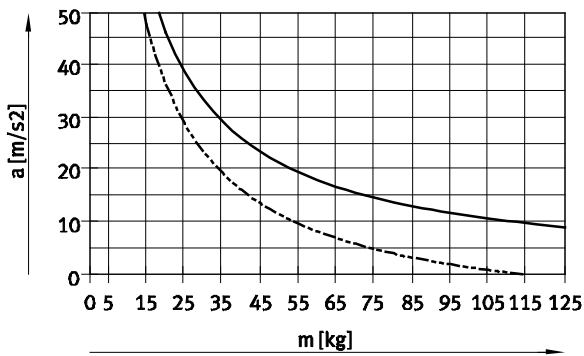
ELGA-TB-G-70



ELGA-TB-G-80

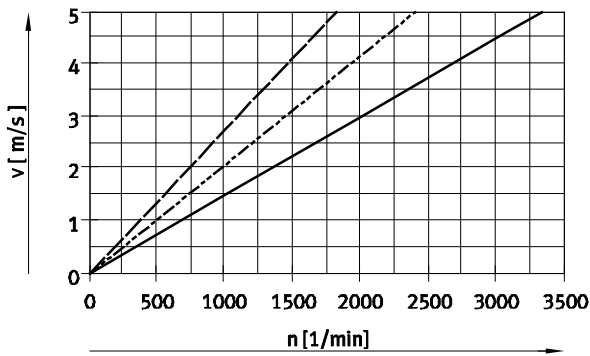


ELGA-TB-G-120



— horizontal  
- - - vertical

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



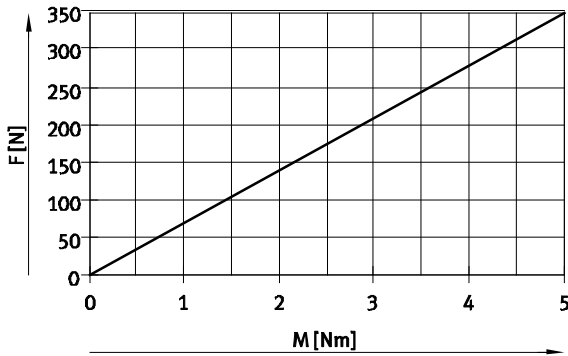
— ELGA-TB-G-70  
- - - ELGA-TB-G-80  
- · - ELGA-TB-G-120

# Toothed belt axes ELGA-TB-G, plain-bearing guide

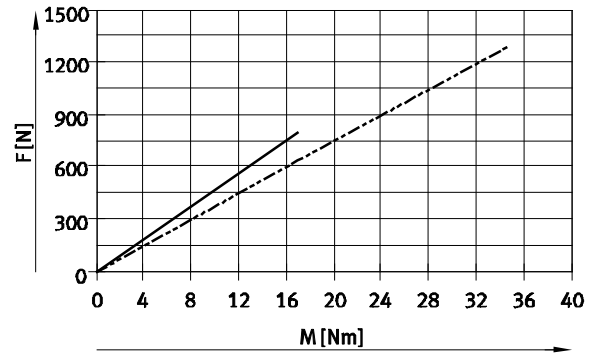
Technical data

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

ELGA-TB-G-70



ELGA-TB-G-80/120

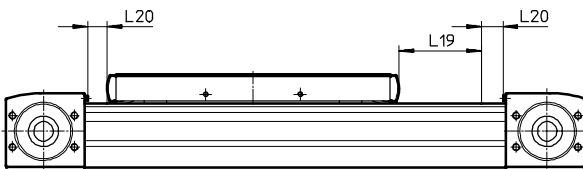


ELGA-TB-G-70

ELGA-TB-G-80

ELGA-TB-G-120

## Stroke reserve



L19 = Nominal stroke

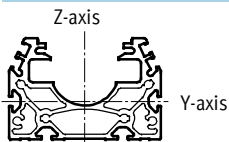
L20 = Stroke reserve

- The stroke reserve is a safety distance that can be available on both sides of the axis in addition to the nominal stroke
  - The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum working stroke
  - The stroke reserve length can be freely selected
  - The stroke reserve is defined via the "stroke reserve" attribute 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 moment of area



Size	70	80	120
$I_y$ [mm <sup>4</sup> ]	$1.47 \times 10^5$	$2.77 \times 10^5$	$1.23 \times 10^6$
$I_z$ [mm <sup>4</sup> ]	$4.25 \times 10^5$	$9.07 \times 10^5$	$4.03 \times 10^6$

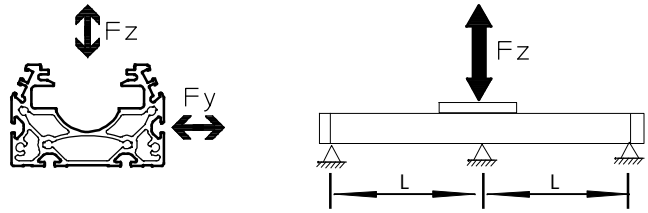
# Toothed belt axes ELGA-TB-G, plain-bearing guide

Technical data

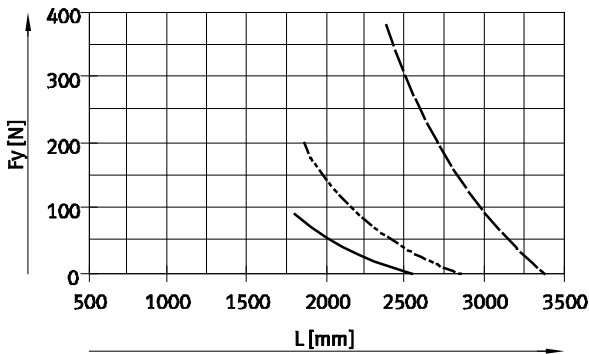
## Maximum permissible support span L (without profile mounting) as a function of force F

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

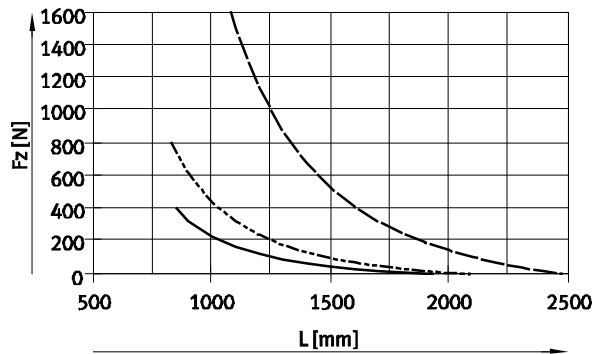
The following graphs serve to determine the maximum permissible support span L as a function of force F acting on the axis. The deflection is  $f = 0.5 \text{ mm}$ .



Force  $F_y$



Force  $F_z$



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

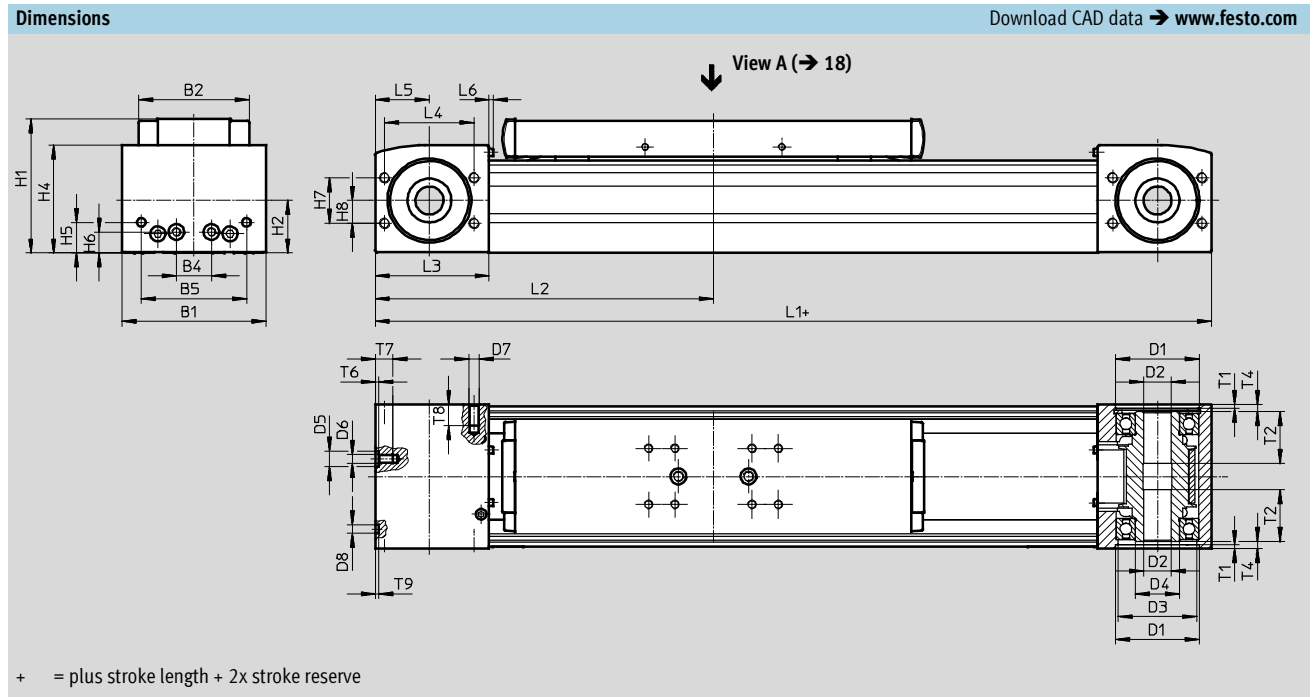
## Recommended deflection limits

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

Size	Dyn. deflection (load moving)	Stat. deflection (load stationary)
70 ... 120	0.05% of the axis length, max. 0.5 mm	0.1% of the axis length

# Toothed belt axes ELGA-TB-G, plain-bearing guide

Technical data



Size	B1	B2	B4	B5	D1 ∅	D2 ∅	D3 ∅	D4 ∅	D5 ∅	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 ∅	H1	H2	H4	H5	H6	H7	H8	L1	L2 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



# Toothed belt axes ELGA-TB-G, plain-bearing guide

Technical data

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

Profile

**Size 70**

**Size 80**

**Size 120**

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

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

- Note  
 To avoid distortions in the slide, the bearing surfaces of the attachments must maintain a flatness of at least 0.03 mm.

# Toothed belt axes ELGA-TB-G, plain-bearing guide

Technical data

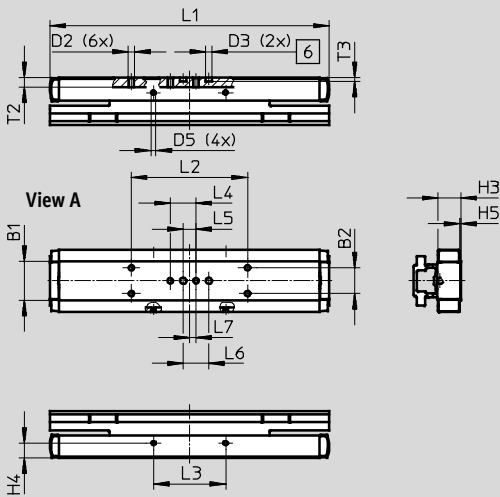
FESTO

## Dimensions

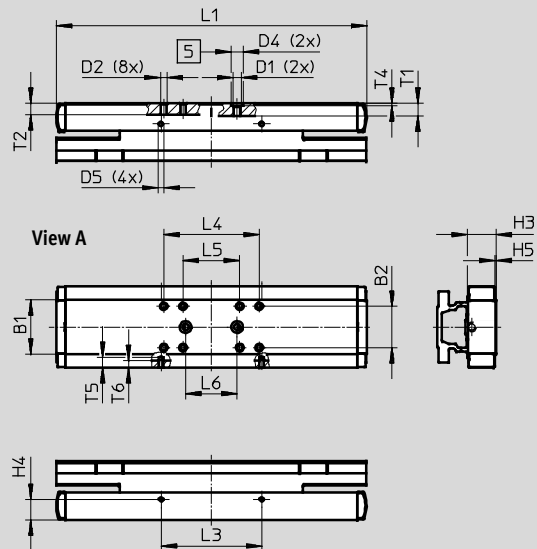
Download CAD data → [www.festo.com](http://www.festo.com)

### Slide

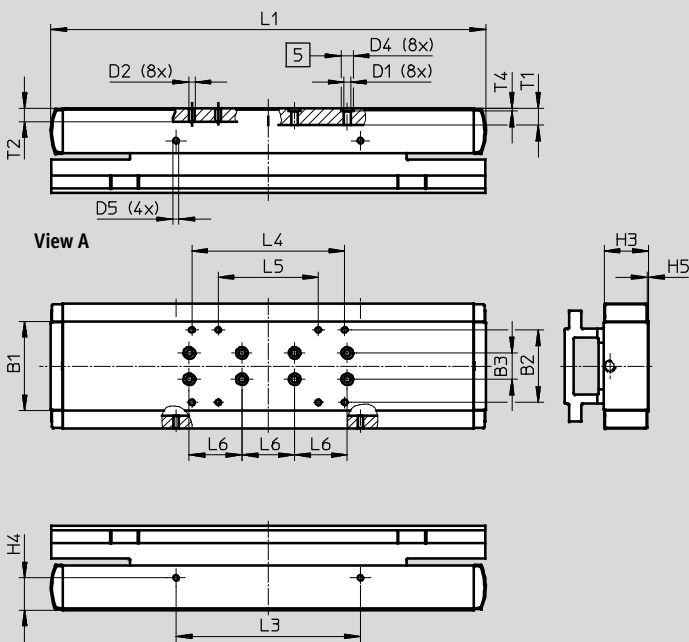
#### Size 70



#### Size 80



#### Size 120



- 5 Hole for centring sleeve
- 6 Hole for centring pin

# Toothed belt axes ELGA-TB-G, plain-bearing guide

Technical data

Size	B1	B2	B3	D1	D2	D3 ∅	D4 ∅	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 ±0.1	H5	L1	L2 ±0.1	L3 ±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

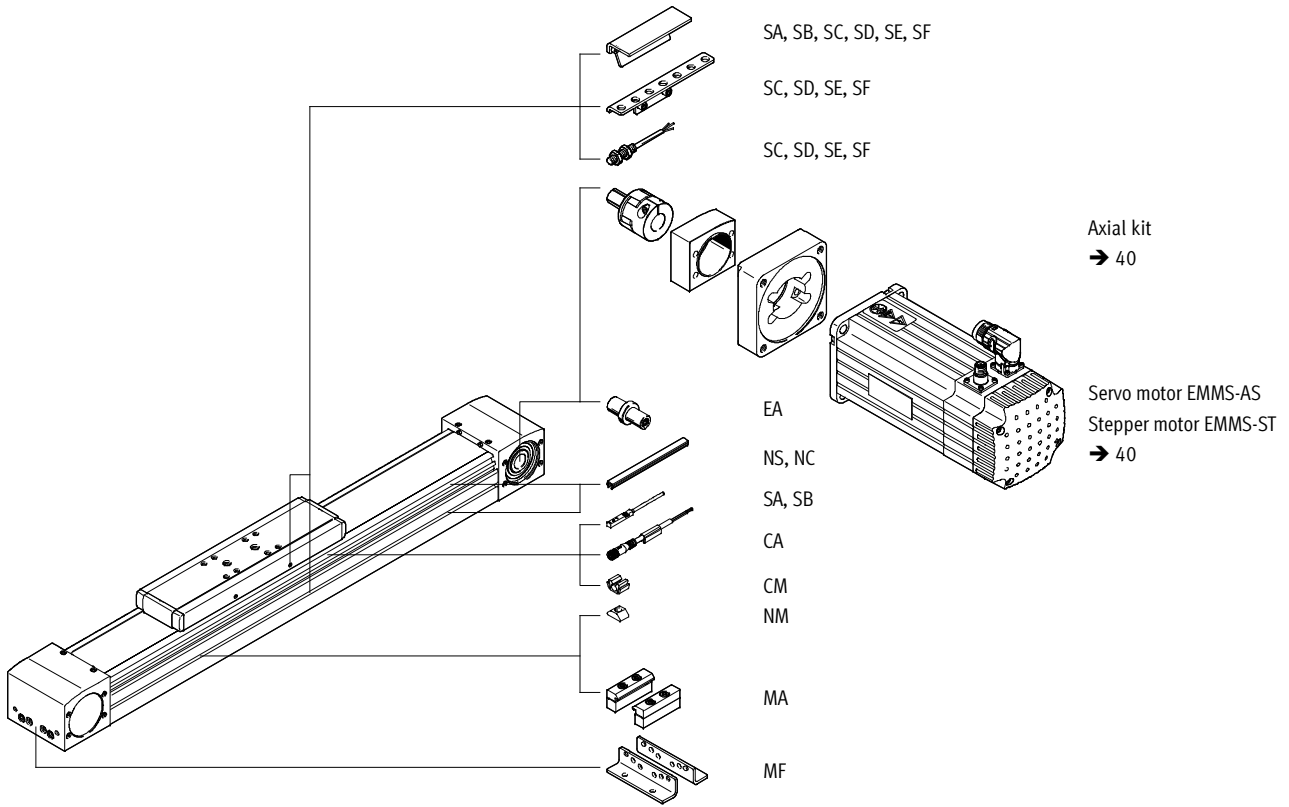
Size	L6 ±0.03	L7	T1	T2	T3 +0.1	T4 +0.1	T5	T6
70	20	5	–	7.5	3.1	–	–	–
80	40	–	9.7	9	–	2.1	8	6
120	40	–	12.8	10	–	2.1	–	–

# Toothed belt axes ELGA-TB-G, plain-bearing guide

Ordering data – Modular products

**Order code**

Accessories



# Toothed belt axes ELGA-TB-G, plain-bearing guide

Ordering data – Modular products

Ordering table		70	80	120	Conditions	Code	Enter code
Size		70	80	120			
<b>M</b>	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		-...	-...
	Stroke length [mm]	50 ... 8,500				-...	-...
	Stroke reserve	0 ...999 (0 = no stroke reserve)			<b>1</b>	<b>-...H</b>	
<b>O</b>	Particle protection	Standard					
		Without strip cover				<b>-PO</b>	
	Accessories	Accessories enclosed separately				<b>+</b>	+
	Foot mounting	1				<b>MF</b>	
	Profile mounting	1 ... 50				<b>...MA</b>	
	Proximity sensor (SIES), inductive, slot type 8, PNP, 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 sensor (SIEN), inductive, M8, PNP, 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, plug M8	1 ... 99			<b>...SE</b>	
		N/C contact, plug M8	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 length)				<b>...NS</b>	
	Mounting slot cover	1 ...50 (1 = 2 units, 500 mm length)				<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	Express waiver - no operating instructions to be included (already available) (operating instructions in PDF format are available free of charge on our website at <a href="http://www.festo.com">http://www.festo.com</a> )				<b>-DN</b>	

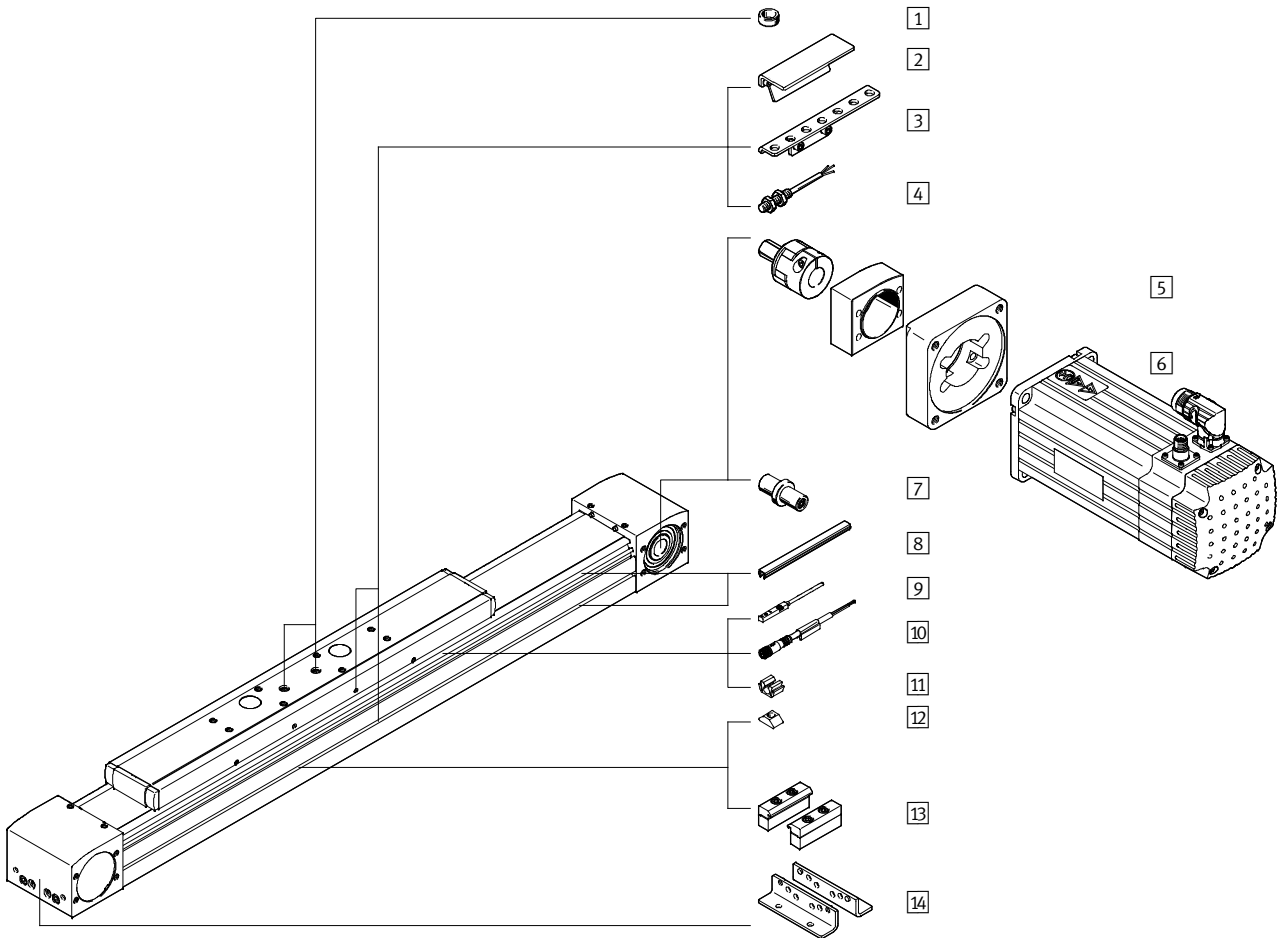
**1** The sum of the nominal stroke and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length.

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.

**Transfer order code**

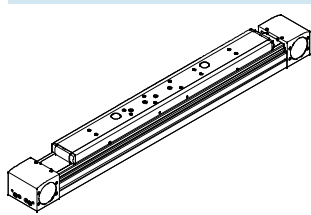
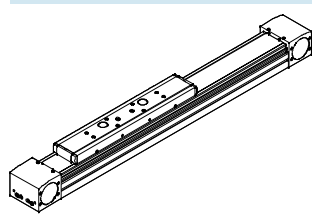
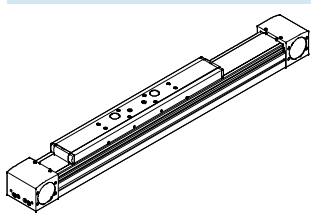
# Toothed belt axes ELGA-TB-RF, roller bearing guide

Peripherals overview



**Slide variants**

ELGA-... Standard slide	ELGA-...-S Short slide	ELGA-...-L Long slide
----------------------------	---------------------------	--------------------------



This variant is only available without cover strip.

## Toothed belt axes ELGA-TB-RF, roller bearing guide

Peripherals overview

Variants and accessories		
Type	Brief description	→ Page/Internet
1 Centring pin/sleeve ZBS, ZBH	<ul style="list-style-type: none"> <li>For centring loads and attachments on the slide</li> <li>2 centring pins/sleeves included in the scope of delivery of the axis</li> </ul>	45
2 Switch lug SA, SB, SC, SD, SE, SF	For sensing the slide position	43
3 Sensor bracket SC, SD, SE, SF	Adapter for mounting the inductive proximity sensors (round design) on the axis	44
4 Proximity sensor, M8 SC, SD, SE, SF	<ul style="list-style-type: none"> <li>Inductive proximity sensor, 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>	46
5 Axial kit EAMM	For axial motor mounting (comprising: coupling, coupling housing and motor flange)	40
6 Motor EMMS	Motors specially matched to the axis, with or without gear unit, with or without brake	40
7 Drive shaft 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 → 40</li> </ul>	45
8 Slot cover NS, NC	<ul style="list-style-type: none"> <li>For protecting against the ingress of dirt</li> </ul>	45
9 Proximity sensor, T-slot SA, SB	<ul style="list-style-type: none"> <li>Inductive proximity sensor, for T-slot</li> <li>The order code SA, SB includes 1 switch lug in the scope of delivery</li> </ul>	46
10 Connecting cable CA	For proximity sensor (order code SE and SF)	46
11 Clip CM	For mounting the proximity sensor cable in the slot	45
12 Slot nut NM	For mounting attachments	45
13 Profile mounting MA	For mounting the axis on the profile	43
14 Foot mounting 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>	42

# Toothed belt axes ELGA-TB-RF, roller bearing guide

Type codes

		ELGA	-	TB	-	RF	-	70	-	800	-	20H	-		-	
<b>Type</b>																
ELGA	Toothed belt axis															
<b>Drive function</b>																
TB	Toothed belt															
<b>Guide</b>																
RF	Roller bearing guide															
<b>Size</b>																
<b>Stroke [mm]</b>																
<b>Stroke reserve</b>																
<b>Slide design</b>																
-	Standard slide															
S	Short slide															
L	Long slide															
<b>Particle protection</b>																
-	Standard															
PO	Without strip cover															



## Toothed belt axes ELGA-TB-RF, roller bearing guide

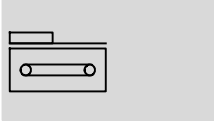
Type codes




→	+	MF2SA	-	DN
<b>Accessories enclosed separately</b>				
MF	Foot mounting			
...MA	Profile mounting			
...SA	Proximity sensor (SIES), inductive, slot type 8, PNP, N/O contact, 7.5 m cable			
...SB	Proximity sensor (SIES), inductive, slot type 8, PNP, N/C contact, 7.5 m cable			
...SC	Proximity sensor (SIEN), inductive, M8, PNP, N/O contact, 2.5 m cable			
...SD	Proximity sensor (SIEN), inductive, M8, PNP, N/C contact, 2.5 m cable			
...SE	Proximity sensor (SIEN), inductive, M8, PNP, N/O contact, plug M8			
...SF	Proximity sensor (SIEN), inductive, M8, PNP, N/C contact, plug M8			
...CA	Connecting cable			
...NS	Sensor slot cover			
...NC	Mounting slot cover			
...NM	Slot nut for mounting slot			
...CM	Cable clip			
...EA	Drive shaft			
<b>Operating instructions</b>				
DN	None			

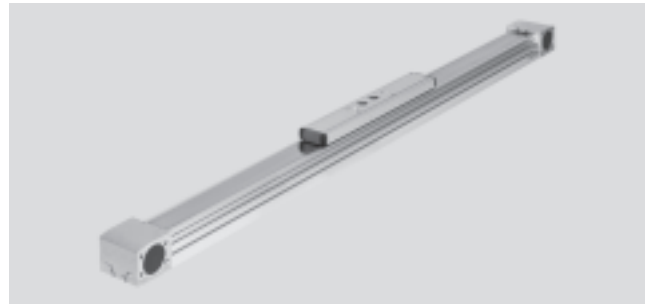
# Toothed belt axes ELGA-TB-RF, roller bearing guide

Technical data

Function



-  - Size  
70 ... 120
-  - Stroke length  
50 ... 7,400 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 ... 7,000	50 ... 7,000	50 ... 7,400
ELGA-...-S	[mm]	50 ... 7,000	50 ... 7,000	50 ... 7,400
ELGA-...-L	[mm]	50 ... 6,900	50 ... 6,900	50 ... 7,200
Max. feed force $F_x$	[N]	350	800	1,300
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	[°C]	-10 ... +60
Protection class		
ELGA-...		IP40
ELGA-...-P0		IP00
Duty cycle	[%]	100

Weight [kg]				
Size		70	80	120
Basic weight with 0 mm stroke <sup>1)</sup>		2.78	6.25	17.4
Additional weight per 1,000 mm stroke		3.29	5.17	10.8
Moving load				
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

Toothed belt				
Size		70	80	120
Pitch	[mm]	3	5	5
Expansion <sup>1)</sup>	[%]	0.31	0.19	0.23
Effective diameter	[mm]	28.65	39.79	52.52
Feed constant	[mm/rev.]	90	125	165

1) At max. feed force

# Toothed belt axes ELGA-TB-RF, roller bearing guide

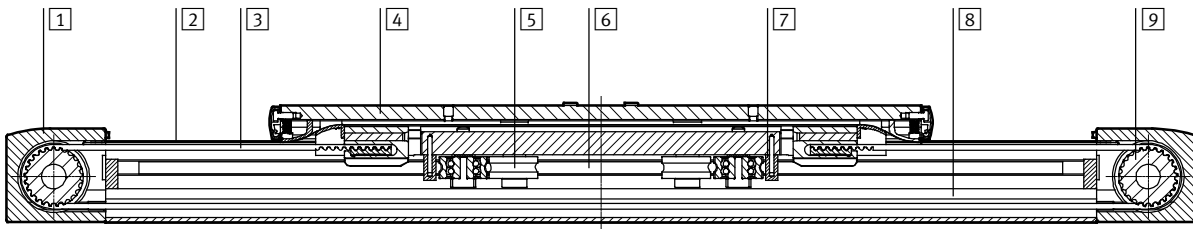
Technical data

Mass moment of inertia				
Size		70	80	120
$J_0$				
ELGA-...	[kg mm <sup>2</sup> ]	232	1,044	4,935
ELGA-...-S	[kg mm <sup>2</sup> ]	207	968	4,592
ELGA-...-L	[kg mm <sup>2</sup> ]	278	1,247	6,006
$J_S$ per metre stroke	[kg mm <sup>2</sup> /m]	19	97	221
$J_L$ per kg effective load	[kg mm <sup>2</sup> /kg]	205	396	690

The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:  $J_A = J_0 + J_S \times \text{working stroke [m]} + J_L \times m_{\text{effective load [kg]}}$

## Materials

Sectional view



Axis		
1	Drive cover	Anodised wrought aluminium alloy
2	Cover strip	Stainless strip steel
3	Toothed belt	Polychloroprene with glass cord and nylon coating
4	Slide	Anodised wrought aluminium alloy
5	Guide roller	Hardened roller bearing steel
6	Guide rod	Hardened tempered steel
7	Wiper seal	Oil-soaked felt
8	Profile	Anodised wrought aluminium alloy
9	Toothed belt disc	High-alloy stainless steel
Note on materials		RoHS-compliant
		Contains PWIS (paint-wetting impairment substances)

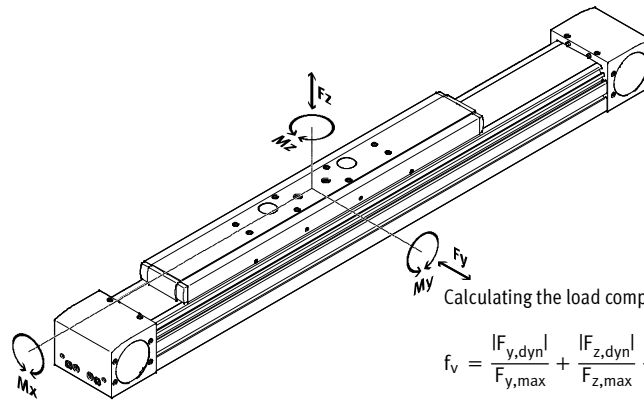
# Toothed belt axes ELGA-TB-RF, roller bearing guide

Technical data

## 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 more than two 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:

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

## Permissible forces and torques

Size	70	80	120
$F_{y,max}$ [N]	500	800	2,000
$F_{z,max}$ [N]	500	800	2,000
$M_{x,max}$ [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

## Calculating the service life

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

guide, the graph below plots the load comparison factor  $f_v$  against the service life.

These values are only theoretical. You must consult your local contact person

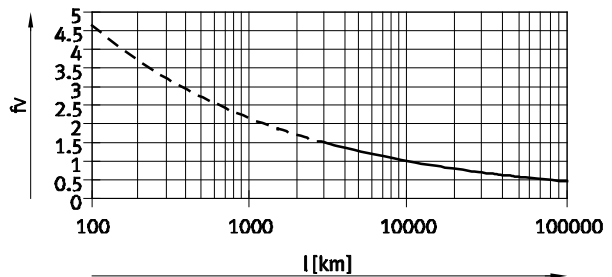
at Festo for load comparison factors  $f_v$  greater than 1.5.

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

Example:

A user wants to move an X kg load. Using the formula → 28 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. 3,000 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 10,000 km.



## Note

PositioningDrives sizing software [www.festo.com](http://www.festo.com)

The sizing software can be used to calculate a guide workload for a service life of 10,000 km.

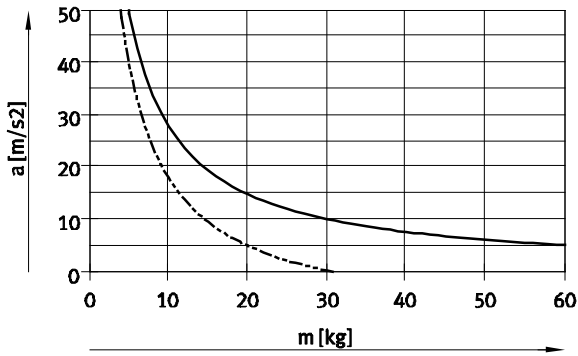
$f_v > 1.5$  are only theoretical comparison values for the roller bearing guide.

# Toothed belt axes ELGA-TB-RF, roller bearing guide

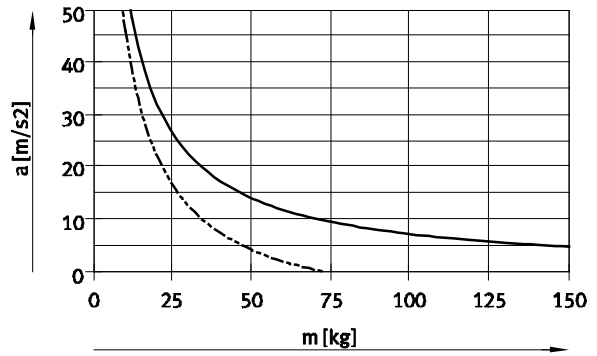
Technical data

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

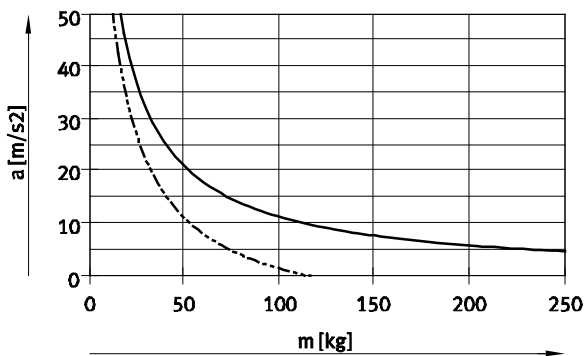
ELGA-TB-RF-70



ELGA-TB-RF-80

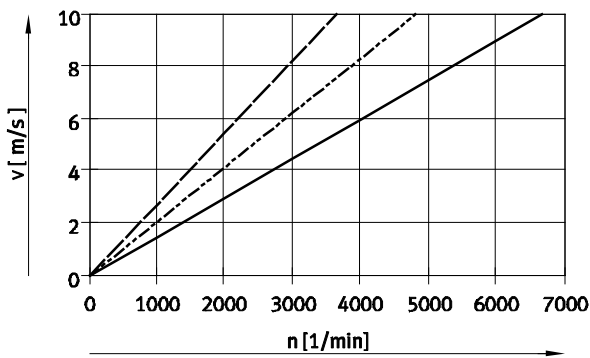


ELGA-TB-RF-120



— horizontal  
- - - vertical

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



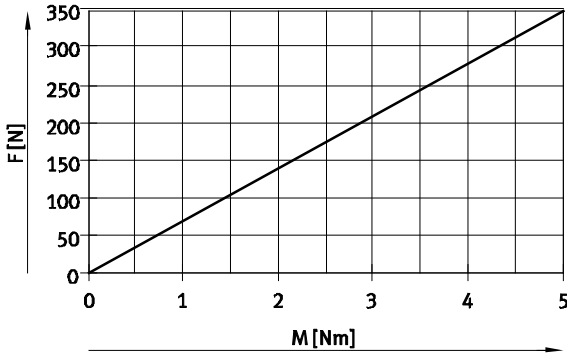
— ELGA-TB-RF-70  
- - - ELGA-TB-RF-80  
- · - ELGA-TB-RF-120

# Toothed belt axes ELGA-TB-RF, roller bearing guide

Technical data

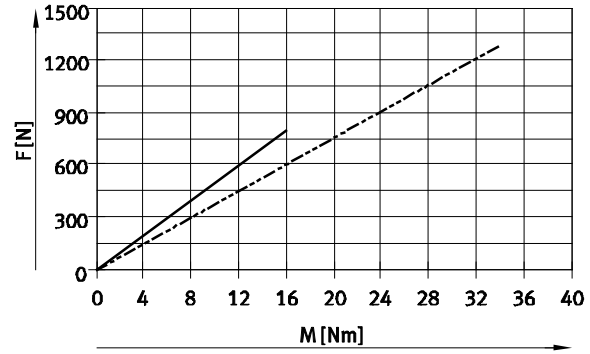
## Theoretical feed force F as a function of input torque M

ELGA-TB-RF-70



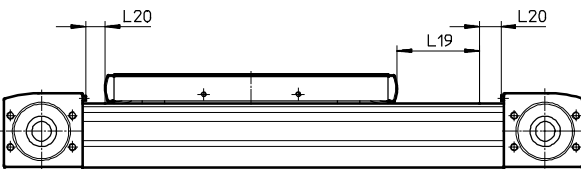
— ELGA-TB-RF-70

ELGA-TB-RF-80/120



— ELGA-TB-RF-80  
- - - ELGA-TB-RF-120

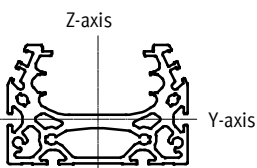
## Stroke reserve



L19 = Nominal stroke  
L20 = Stroke reserve

- The stroke reserve is a safety distance that can be available on both sides of the axis in addition to the nominal stroke
  - The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum working stroke
  - The stroke reserve length can be freely selected
  - The stroke reserve is defined via the "stroke reserve" attribute 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 moment of area



Size	70	80	120
ly [mm <sup>4</sup> ]	1.39x10 <sup>5</sup>	2.70x10 <sup>5</sup>	1.42x10 <sup>6</sup>
lz [mm <sup>4</sup> ]	4.33x10 <sup>5</sup>	1.02x10 <sup>6</sup>	5.02x10 <sup>6</sup>

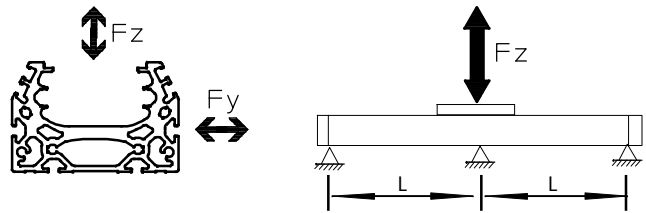
# Toothed belt axes ELGA-TB-RF, roller bearing guide

Technical data

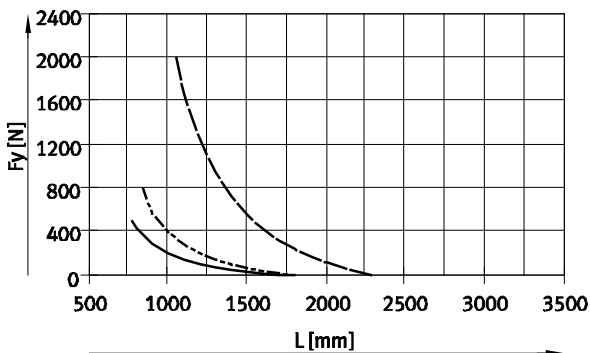
## Maximum permissible support span L (without profile mounting) as a function of force F

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

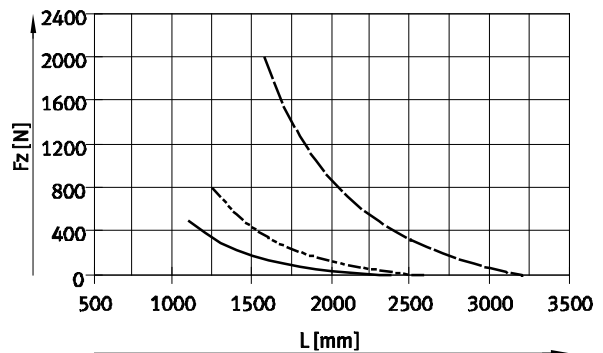
The following graphs serve to determine the maximum permissible support span L as a function of force F acting on the axis. The deflection is  $f = 0.5$  mm.



Force Fy



Force Fz



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

## Recommended deflection limits

Adherence to the following deflection limits is recommended so as not to impair the functional performance of

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

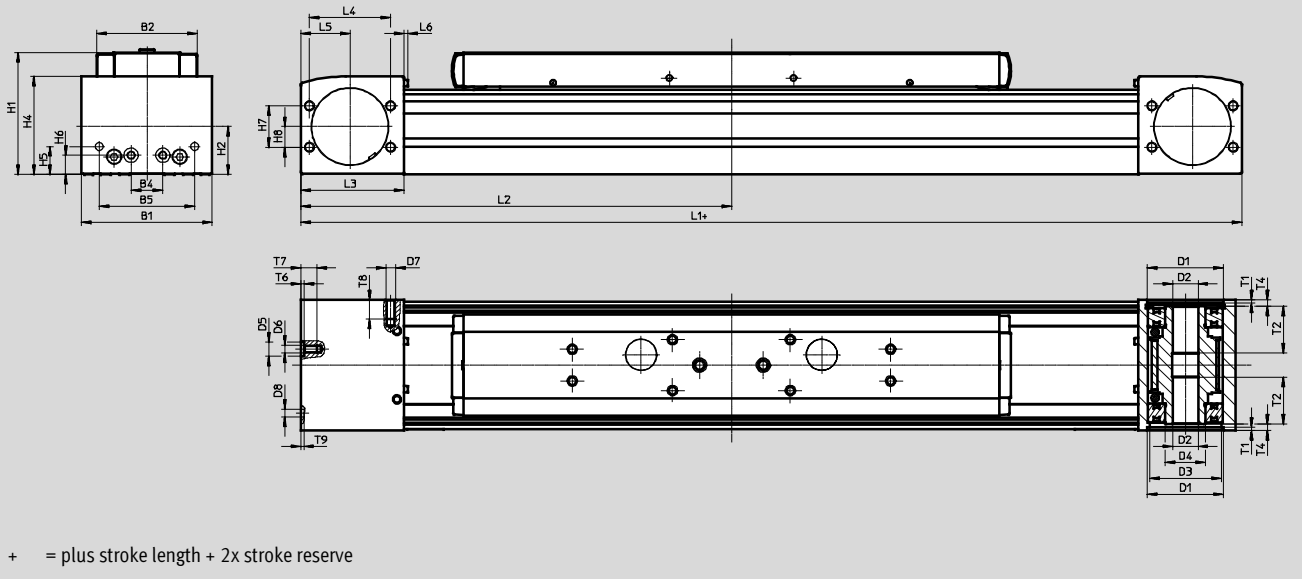
Size	Dyn. deflection (load moving)	Stat. deflection (load stationary)
70 ... 120	0.05% of the axis length, max. 0.5 mm	0.1% of the axis length

# Toothed belt axes ELGA-TB-RF, roller bearing guide

Technical data

**Dimensions**

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



Size	B1	B2	B4	B5	D1 ∅ H7	D2 ∅ H7	D3 ∅	D4 ∅	D5 ∅ 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 ∅ H7	D12	H1	H2	H4	H5	H6	H7	H8	L3
70	5	M4	64	26.5	50.8	13	13	24	12	57.5
80	5	M4	76.5	30	61.5	17.5	12	26	13	65
120	9	M5	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		
	ELGA-...-S	ELGA-...	ELGA-...-L	ELGA-...-S min.	ELGA-... min.	ELGA-...-L min.
70	342	420	520	171	210	260
80	496	580	720	248	290	360
120	673	775	1 005	336.5	387.5	502.5



# Toothed belt axes ELGA-TB-RF, roller bearing guide

Technical data

**Dimensions**

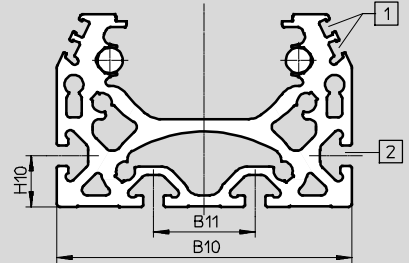
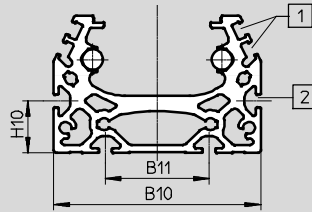
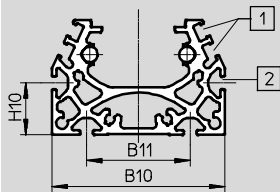
Download CAD data → [www.festo.com](http://www.festo.com)

Profile

Size 70

Size 80

Size 120



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

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

 Note

To avoid distortions in the slide, the bearing surfaces of the attachments must maintain a flatness of at least 0.01 mm.

# Toothed belt axes ELGA-TB-RF, roller bearing guide

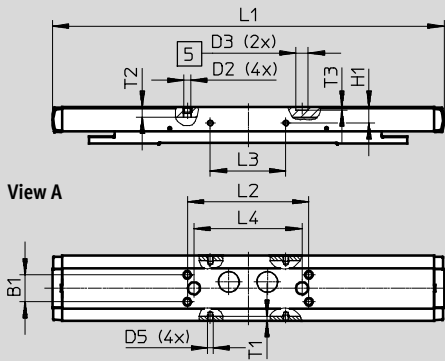
Technical data

**Dimensions**

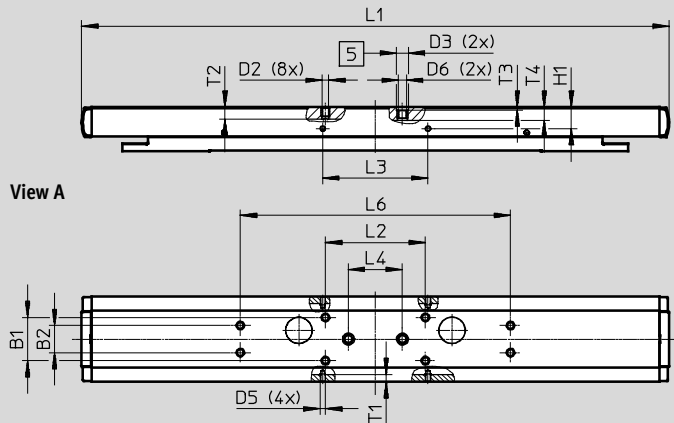
Download CAD data → [www.festo.com](http://www.festo.com)

ELGA... – Standard slide

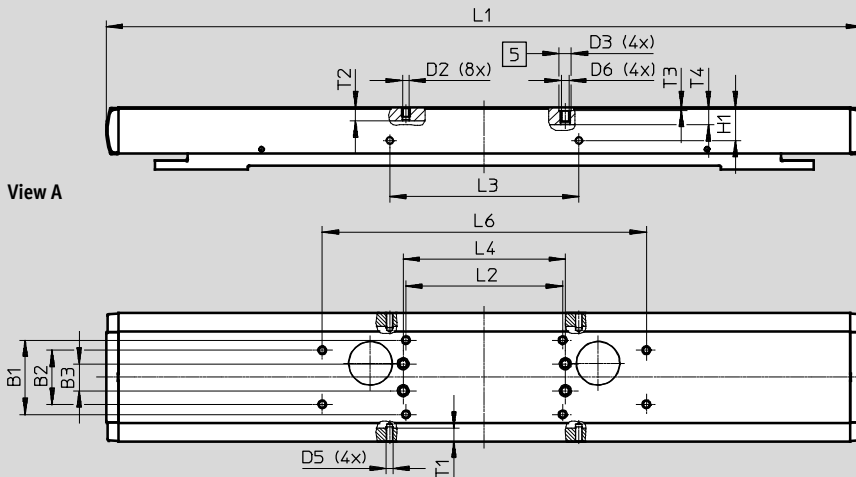
**Size 70**



**Size 80**



**Size 120**



5 Hole for centring sleeve

Size	B1	B2	B3	D2	D3	D5	D6	H1
	±0.1	±0.1	±0.1		∅ H7			±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

# Toothed belt axes ELGA-TB-RF, roller bearing guide

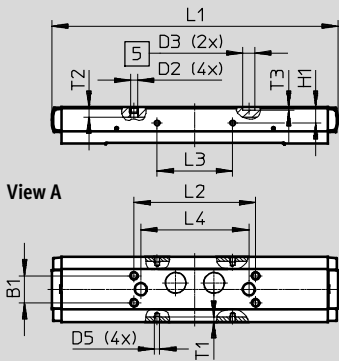
Technical data

**Dimensions**

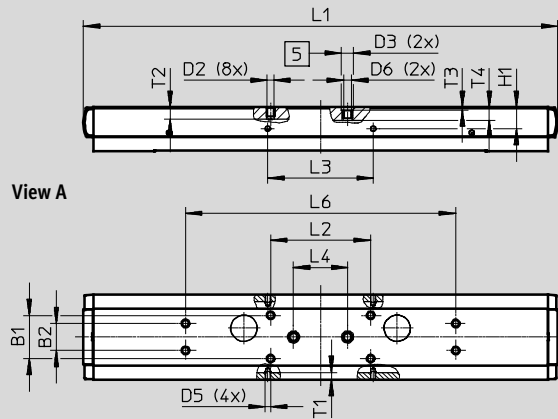
Download CAD data → [www.festo.com](http://www.festo.com)

ELGA-...-S – Short slide

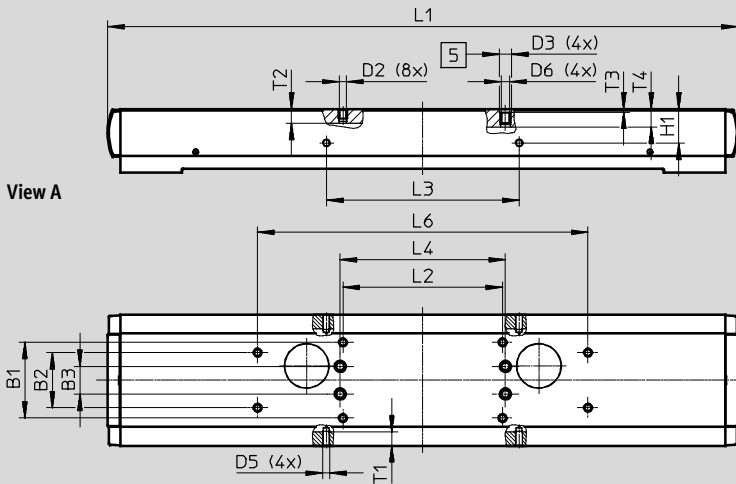
**Size 70**




**Size 80**



**Size 120**



 Hole for centring sleeve

Size	B1	B2	B3	D2	D3 ∅ 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

# Toothed belt axes ELGA-TB-RF, roller bearing guide

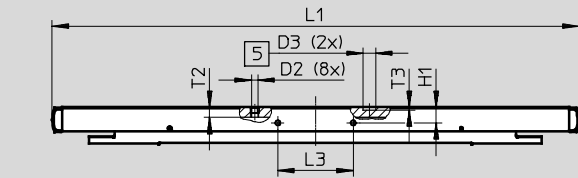
Technical data

**Dimensions**

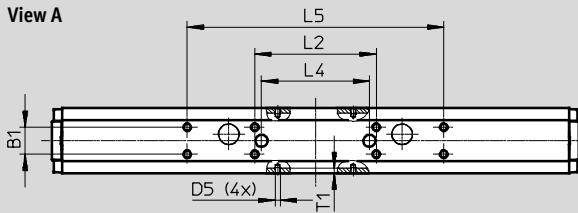
Download CAD data → [www.festo.com](http://www.festo.com)

ELGA-...-L – Long slide

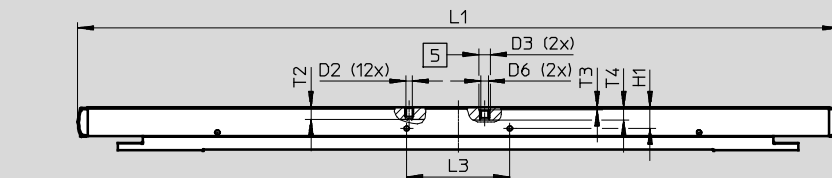
**Size 70**



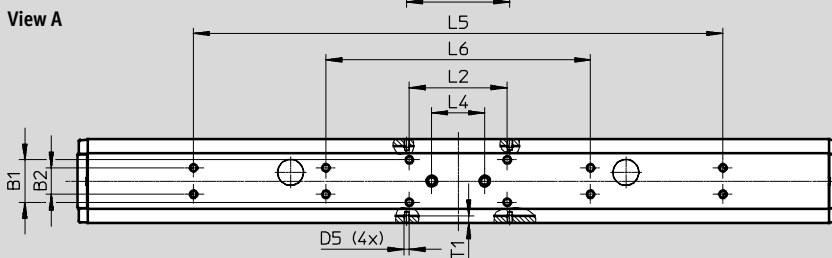
**View A**



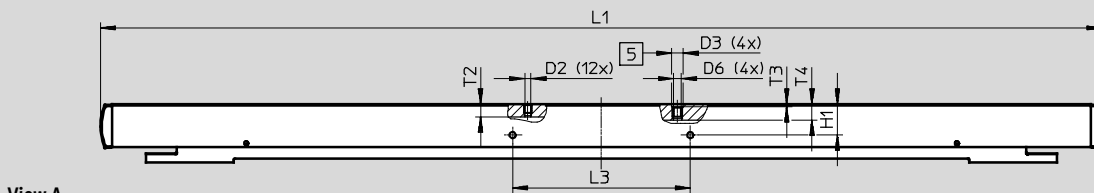
**Size 80**



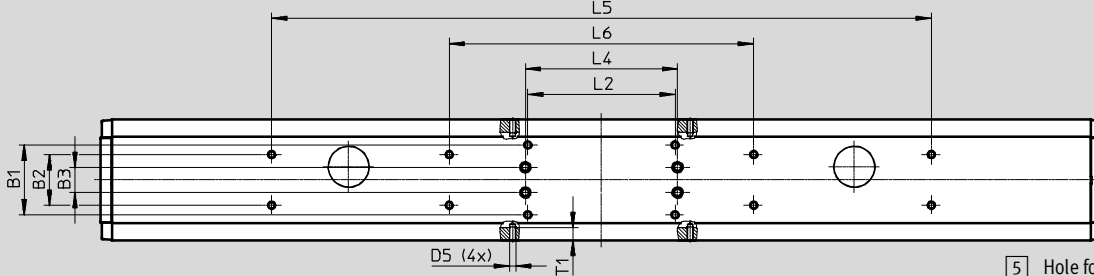
**View A**




**Size 120**



**View A**



 Hole for centring sleeve

## Toothed belt axes ELGA-TB-RF, roller bearing guide

Technical data

Size	B1 ±0.1	B2 ±0.1	B3 ±0.1	D2	D3 ∅ H7	D5
70	20	–	–	M5	9	M4
80	32	20	–	M5	9	M4
120	55	40	20	M5	9	M5

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

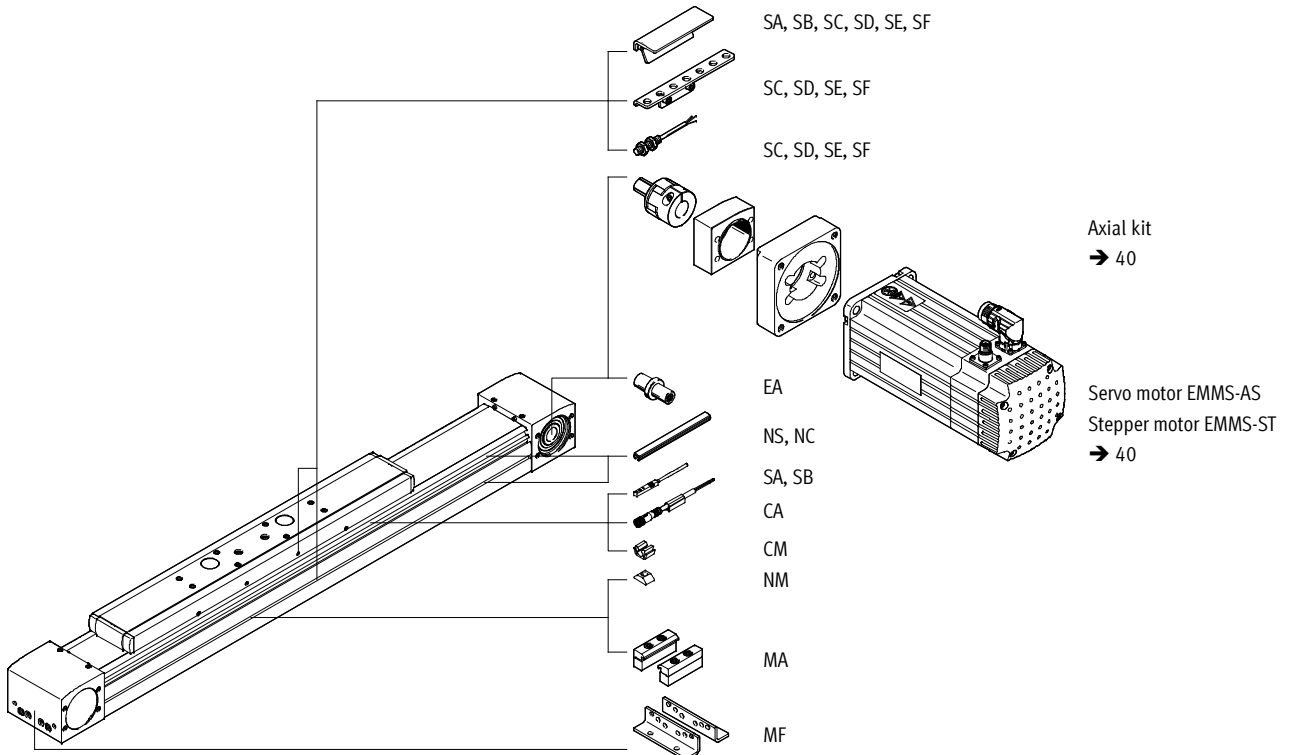
Size	L6 ±0.2	T1	T2	T3	T4
70	–	3.5	7.5	2.1	–
80	200	5.1	9	2.1	9.7
120	240	10	10	2.1	12.8

# Toothed belt axes ELGA-TB-RF, roller bearing guide

Ordering data – Modular products

**Order code**

Accessories



# Toothed belt axes ELGA-TB-RF, roller bearing guide

Ordering data – Modular products

Ordering table		70	80	120	Conditions	Code	Enter code
[M]	Module No.	1371245	1371246	1371247			
	Design	Linear axis				ELGA	ELGA
	Function	Toothed belt				-TB	-TB
	Guide	Roller bearing guide				-RF	-RF
	Size [mm]	70	80	120		-...	-...
	Stroke length [mm]	50 ... 7,000	50 ... 7,000	50 ... 7,400		-...	-...
	Stroke reserve	0 ...999 (0 = no stroke reserve)			[1]	-...H	
[O]	Slide design	Standard slide					
		50 ... 7,000	50 ... 7,000	50 ... 7,400			
		Short slide			[2]	-S	
		50 ... 7,000	50 ... 7,000	50 ... 7,400			
		Long slide				-L	
		50 ... 6,900	50 ... 6,900	50 ... 7,200			
	Particle protection	Standard					
		Without strip cover				-PO	
	Accessories	Accessories enclosed separately				+	+
	Foot mounting	1				MF	
	Profile mounting	1 ... 50				...MA	
	Proximity sensor (SIES), inductive, slot type 8, PNP, incl. switch lug	N/O contact, 7.5 m cable	1 ... 6			...SA	
		N/C contact, 7.5 m cable	1 ... 6			...SB	
	Proximity sensor (SIEN), inductive, M8, PNP, incl. switch lug with sensor bracket	N/O contact, 2.5 m cable	1 ... 99			...SC	
		N/C contact, 2.5 m cable	1 ... 99			...SD	
		N/O contact, plug M8	1 ... 99			...SE	
		N/C contact, plug M8	1 ... 99			...SF	
	Connecting cable 2.5 m, M8, 3-wire	1 ... 99				...CA	
	Sensor slot cover	1 ...50 (1 = 2 units, 500 mm length)				...NS	
	Mounting slot cover	1 ...50 (1 = 2 units, 500 mm length)				...NC	
	Slot nut for mounting slot	1 ... 99				...NM	
	Clip for sensor slot	10, 20, 30, 40, 50, 60, 70, 80, 90				...CM	
	Drive shaft	1 ... 4				...EA	
	Operating instructions	Express waiver - no operating instructions to be included (already available) (operating instructions in PDF format are available free of charge on our website at <a href="http://www.festo.com">http://www.festo.com</a> )				-DN	

[1] 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] Only with PO.

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

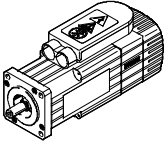
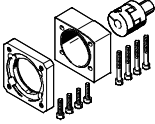
The code SC, SD, SE, SF includes one switch lug and max. two sensor brackets in the scope of delivery.

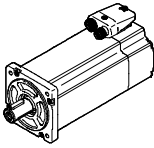
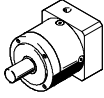
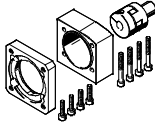
### Transfer order code

ELGA -  TB -  RF -  -  -  -  -  +  -

# Toothed belt axes ELGA-TB

Accessories

Permissible axis/motor combinations with axial kit – Without gear unit		Technical data → Internet: eamm-a	
Motor	Axial kit		
			
Type	Part No.	Type	
<b>ELGA-TB-...-70</b>			
With servo motor			
EMMS-AS-70-...	1202331	EAMM-A-N38-70A	
<b>ELGA-TB-...-80</b>			
With servo motor			
EMMS-AS-100-...	1201894	EAMM-A-N48-100A	
<b>ELGA-TB-...-120</b>			
With servo motor			
EMMS-AS-140-...	1201691	EAMM-A-N80-140A	

Permissible axis/motor combinations with axial kit – With gear unit			Technical data → Internet: eamm-a	
Motor	Gear unit	Axial kit		
				
Type	Type	Part No.	Type	
<b>ELGA-TB-...-70</b>				
With servo motor				
EMMS-AS-55-...	EMGA-60-P-G...-SAS-55	1202253	EAMM-A-N38-60G	
EMMS-AS-70-...	EMGA-60-P-G3-SAS-70	1202253	EAMM-A-N38-60G	
With stepper motor				
EMMS-ST-57-...	EMGA-60-P-G...-SST-57	1202253	EAMM-A-N38-60G	
<b>ELGA-TB-...-80</b>				
With servo motor				
EMMS-AS-70-...	EMGA-80-P-G3-SAS-70	1258793	EAMM-A-N48-80G	
EMME-AS-80-...	EMGA-80-P-G...-EAS-80	1258793	EAMM-A-N48-80G	
EMME-AS-100-...	EMGA-80-P-G...-SAS-100	1258793	EAMM-A-N48-80G	
EMMS-AS-100-...	EMGA-80-P-G3-SAS-100	1258793	EAMM-A-N48-80G	
With stepper motor				
EMMS-ST-87-...	EMGA-80-P-G...-SST-87	1258793	EAMM-A-N48-80G	
<b>ELGA-TB-...-120</b>				
With servo motor				
EMMS-AS-70-...	EMGA-80-P-G...-SAS-70	2372096	EAMM-A-N80-80G	
EMME-AS-80-...	EMGA-80-P-G...-EAS-80	2372096	EAMM-A-N80-80G	
EMME-AS-100-...	EMGA-80-P-G...-SAS-100	1201696	EAMM-A-N80-80G	
EMMS-AS-100-...	EMGA-80-P-G...-SAS-100	1201696	EAMM-A-N80-80G	
EMME-AS-100-...	EMGA-120-P-G...-SAS-100	1201695	EAMM-A-N80-120G	
EMMS-AS-100-...	EMGA-120-P-G...-SAS-100	1201695	EAMM-A-N80-120G	
EMMS-AS-140-...	EMGA-120-P-G3-SAS-140	1201695	EAMM-A-N80-120G	
With stepper motor				
EMMS-ST-87-...	EMGA-80-P-G...-SST-87	2372096	EAMM-A-N80-80G	



# Toothed belt axes ELGA-TB

Accessories

Component parts in the axial kit – Without gear unit				
Axial kit	Comprising:			
	Motor flange	Coupling	Coupling housing	Screw set
Part No. Type	Part No. Type	Part No. Type	Part No. Type	
<b>ELGA-TB-...-70</b>				
1202331 EAMM-A-N38-70A	1202337 EAMF-A-38D-70A	558001 EAMD-32-32-11-16X20	1345947 EAMK-A-N38-38D	1202288 EAHM-L5-M6-35
<b>ELGA-TB-...-80</b>				
1201894 EAMM-A-N48-100A	1201924 EAMF-A-48C-100A	558002 EAMD-42-40-19-16X25	1345949 EAMK-A-N48-48C	1201874 EAHM-L5-M6-50
<b>ELGA-TB-...-120</b>				
1201691 EAMM-A-N80-140A	1190796 EAMF-A-80A-140A	558005 EAMD-56-46-24-23X27	1345953 EAMK-A-N80-80A	1201751 EAHM-L5-M8-75

Component parts in the axial kit – With gear unit				
Axial kit	Comprising:			
	Motor flange	Coupling	Coupling housing	Screw set
Part No. Type	Part No. Type	Part No. Type	Part No. Type	
<b>ELGA-TB-...-70</b>				
1202253 EAMM-A-N38-60G	1190015 EAMF-A-38D-60G/H	558001 EAMD-32-32-11-16X20	1345947 EAMK-A-N38-38D	1202262 EAHM-L5-M6-40
<b>ELGA-TB-...-80</b>				
1258793 EAMM-A-N48-80G	1190375 EAMF-A-48C-80G	1188350 EAMD-42-40-20-16X25	1345949 EAMK-A-N48-48C	1201874 EAHM-L5-M6-50
<b>ELGA-TB-...-120</b>				
1201695 EAMM-A-N80-120G	1190702 EAMF-A-80A-120G	1188801 EAMD-56-46-25-23X27	1345953 EAMK-A-N80-80A	1201712 EAHM-L5-M8-60
2372096 EAMM-A-N80-80G	2372201 EAMF-A-80A-80G	558004 EAMD-56-46-20-23X27	1345953 EAMK-A-N80-80A	1201712 EAHM-L5-M8-60

Note  
 For the optimum selection of axis/  
 motor combinations → PositioningDrives  
 sizing software  
[www.festo.com](http://www.festo.com)

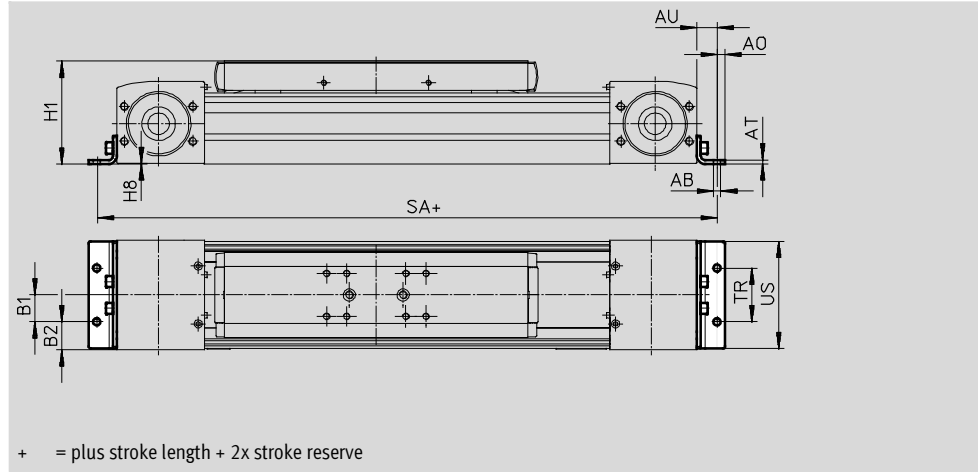
# Toothed belt axes ELGA-TB

Accessories

FESTO

**Foot mounting HPE**  
(order code MF)

Material:  
Galvanised steel  
RoHS-compliant



Dimensions and ordering data							
For size	AB Ø	A0	AT	AU	B1	B2	H1
70	5.5	6	3	13	20	14.5	64
80	5.5	6	3	15	20	21	76.5
120	9	8	6	22	40	20	111.5

For size	H8	SA				TR	US
		ELGA-TB-G-...	ELGA-TB-RF-...-S	ELGA-TB-RF-...	ELGA-TB-RF-...-L		
70	0.5	372	368	446	546	40	67
80	0.5	416	526	610	750	40	80
120	0.5	590	717	819	1,049	80	116

For size	Weight [g]	Part No.	Type
70	115	558321	HPE-70
80	150	558322	HPE-80
120	578	558323	HPE-120

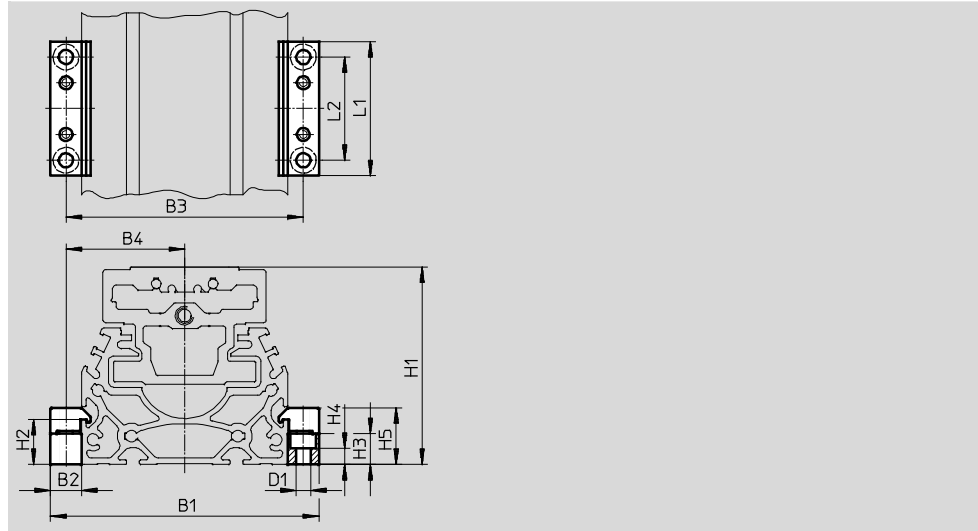
# Toothed belt axes ELGA-TB

Accessories



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

Material:  
Anodised aluminium  
RoHS-compliant

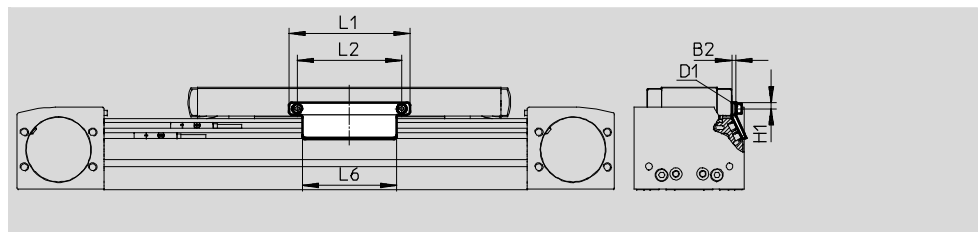


Dimensions and ordering data								
For size	B1	B2	B3	B4	D1 Ø	H1	H2	H3
70	91	12	79	39.5	5.5	64	17.5	12
80	104	12	92	46	5.5	76.5	17.5	12
120	154	19	135	67.5	9	111.5	16	14

For size	H4	H5	L1	L2	Weight [g]	Part No.	Type
70	6.2	22	52	40	80	558043	MUE-70/80
80	6.2	22	52	40	80	558043	MUE-70/80
120	5.5	29.5	90	40	290	558044	MUE-120/185

**Switch lug SF-EGC-1**  
for sensing with proximity sensor  
SIES-8M  
(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	60	558048 SF-EGC-1-80
120	3	M5	8	170	140	170	150	558049 SF-EGC-1-120

# Toothed belt axes ELGA-TB

Accessories



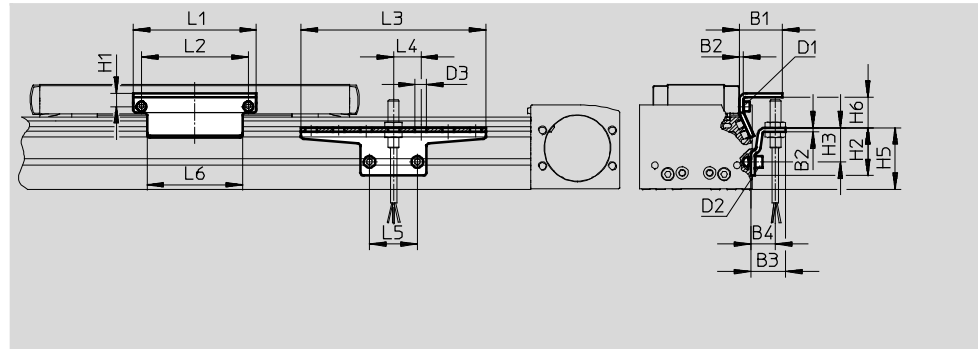
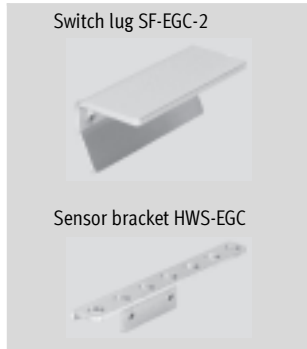
## Switch lug SF-EGC-2

for sensing with proximity sensor  
SIEN-M8B (order code SC, SD, SE or  
SF) or SIES-8M (order code SA or SB)

Material:  
Galvanised steel  
RoHS-compliant

**Sensor bracket HWS-EGC**  
for proximity sensor SIEN-M8B  
(order code SC, SD, SE or SF)

Material:  
Galvanised steel  
RoHS-compliant



Dimensions and ordering data									
For size	B1	B2	B3	B4	D1	D2	D3 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

For size	H3	H5	H6 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

For size	Weight [g]	Part No.	Type
Switch lug			
70	100	558052	SF-EGC-2-70
80	130	558053	SF-EGC-2-80
120	280	558054	SF-EGC-2-120

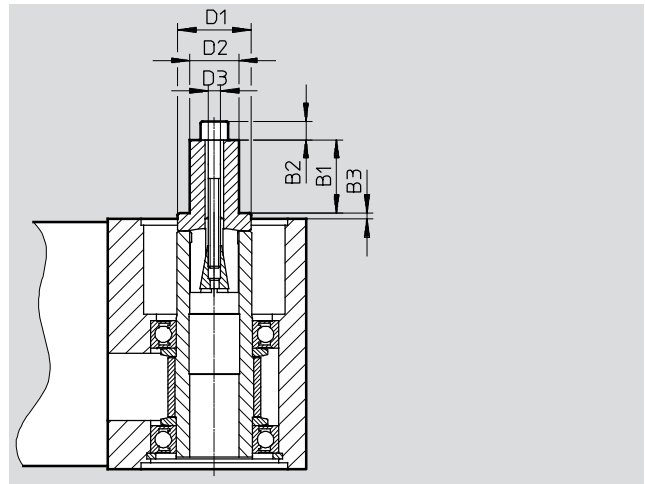
For size	Weight [g]	Part No.	Type
Sensor bracket			
70	110	558057	HWS-EGC-M5
80	110	558057	HWS-EGC-M5
120	200	570365	HWS-EGC-M8-B

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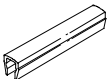
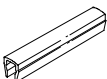

Accessories

## Drive shaft EAMB

Alternative interface  
(order code EA)



Dimensions and ordering data									
For size	B1	B2	B3	D1 Ø	D2 Ø	D3	Weight [g]	Part No.	Type
70	21	–	1.85	24	15	M6	70	1344642	EAMB-24-9-15X21-16X20
80	21	–	2	24	15	M6	70	558036	EAMB-24-6-15X21-16X20
120	26	–	2	34	25	M10	201	558037	EAMB-34-6-25X26-23X27

Ordering data						
	For size	Remark	Order code	Part No.	Type	PU <sup>1)</sup>
<b>Slot nut NST</b>						
	70, 80	For mounting slot	NM	150914	NST-5-M5	1
	120			150915	NST-8-M6	
<b>Centring pin/sleeve ZBS/ZBH<sup>2)</sup></b>						
	For ELGA-TB-G					
	70	For slide	–	150928	ZBS-5	10
	80, 120			150927	ZBH-9	
	For ELGA-TB-RF					
70, 80, 120	For slide	–	150927	ZBH-9	10	
<b>Slot cover ABP</b>						
	70, 80	For mounting slot every 0.5 m	NC	151681	ABP-5	2
	120			151682	ABP-8	
<b>Slot cover ABP-S</b>						
	70 ... 120	For sensor slot every 0.5 m	NS	563360	ABP-5-S1	2
<b>Clip SMBK</b>						
	70 ... 120	For sensor slot, for attaching the proximity sensor cables	CM	534254	SMBK-8	10

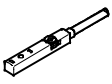
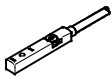
1) Packaging unit





2) 2 centring pins/sleeves included in the scope of delivery of the axis



# Toothed belt axes ELGA-TB

FESTO

Accessories

Ordering data – Proximity sensors for T-slot, inductive						Technical data → Internet: sies	
	Type of mounting	Electrical connection	Switching output	Cable length [m]	Order code	Part No.	Type
<b>N/O contact</b>							
	Insertable 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
<b>N/C contact</b>							
	Insertable 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

Ordering data – Proximity sensors M8 (round design), inductive						Technical data → Internet: sien	
	Electrical connection	LED	Switching output	Cable length [m]	Order code	Part No.	Type
<b>N/O contact</b>							
	Cable, 3-wire	■	PNP	2.5	SC	150386	SIEN-M8B-PS-K-L
	Plug M8x1, 3-pin	■	PNP	–	SE	150387	SIEN-M8B-PS-S-L
<b>N/C contact</b>							
	Cable, 3-wire	■	PNP	2.5	SD	150390	SIEN-M8B-PO-K-L
	Plug M8x1, 3-pin	■	PNP	–	SF	150391	SIEN-M8B-PO-S-L

Ordering data – Connecting cables					Technical data → Internet: nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type	
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	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	