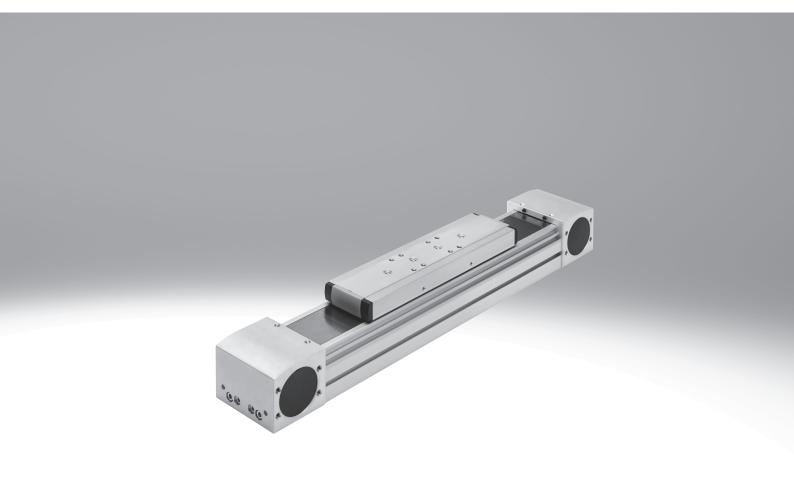
# **Toothed belt axes ELGA-TB**





# Selection aid

## Overview of toothed belt and ball screw axes

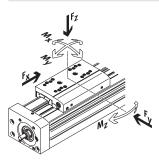
Toothed belt axes

- 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

### Ball screw axes

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

## Coordinate system



ype	F <sub>x</sub>	v	Mx	My	Mz	Characteristics
) F -	[N]	[m/s]	[Nm]	[Nm]	[Nm]	
eavy-duty recirculating b	all bearing gu	ide	· ·	`	·	
EGC-HD-TB						
	450	3	140	275	275	Flat drive unit with rigid, closed profile
	1000	5	300	500	500	Precision DUO guide rail with high load capacity
	1800	5	900	1450	1450	Ideal as a base axis for linear gantries and cantilever axes
						<u> </u>
tecirculating ball bearing EGC-TB-KF	guide					
LGC-1B-KI	50	3	3.5	10	10	Rigid, closed profile
	100	5	16	132	132	Precision guide rail with high load capacity
	350	5	36	228	228	Small drive pinions reduce required driving torque
	800	5	144	680	680	Space-saving position sensing
	2500	5	529	1820	1820	- Space-saving position sensing
CAP CAP	2,000		323	1620	1620	
ELGA-TB-KF						
	350	5	16	132	132	Internal guide and toothed belt
	800	5	36	228	228	Precision guide rail with high load capacity
	1300	5	104	680	680	Guide and toothed belt protected by cover strip
	2000	5	167	1150	1150	High feed forces
ELGA-TB-KF-F1					'	
	260	5	16	132	132	Suitable for use in the food zone
	600	5	36	228	228	"Clean look": smooth, easy-to-clean surfaces
	1000	5	104	680	680	Internal guide and toothed belt
						Precision guide rail with high load capacity
						Guide and toothed belt protected by cover strip
ELGC-TB-KF						
£20C-1D-KI	75	1.2	5.5	4.7	4.7	Internal guide and toothed belt
	120	1.5	29.1	31.8	31.8	Precision guide rail with high load capacity
	250	1.5	59.8	56.2	56.2	Guide and toothed belt protected by cover strip
	230	1.5	37.0	70.2	70.2	- duide and toothed best protected by cover strip
ELGR-TB						
	50	3	2.5	20	20	Cost-optimised rod guide
	100	3	5	40	40	Ready-to-install unit
	350	3	15	124	124	Linear ball bearings with high load capacity for dynamic operation.
	, ,,,,,		1,7	124	124	- Linear ball bearings with ingil load capacity for dynamic operation

# Selection aid

#### Overview of toothed belt and ball screw axes

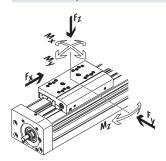
Toothed belt axes

- 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

### Ball screw 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 up to 3000 mm

## Coordinate system



F <sub>x</sub> [N]	[m/s]	[Nm]	My [Nm]	[Nm]	
n	10			i i	
n	10				
n	10				
800	1 10	11	40	40	Heavy-duty roller bearing guide
1000	10	30	180	180	Guide and toothed belt protected by cover strip
1300	10	100	640	640	Speeds of up to 10 m/s
					Lower weight than axes with guide rails
		l			
260	10	8.8	32	32	Suitable for use in the food zone
600	10	24	144	144	• "Clean look": smooth, easy-to-clean surfaces
1000	10	80	512	512	Heavy-duty roller bearing guide
					Guide and toothed belt protected by cover strip
					Lower weight than axes with guide rails
350	5	5	30	10	Guide and toothed belt protected by cover strip
800	5	10	60	20	For simple handling tasks
1300	5	20	120	40	As a drive component for external guides
					<ul> <li>Insensitive to harsh ambient conditions</li> </ul>
,	,	'	'	'	
50	1	1	10	10	Cost-optimised rod guide
100	1	2.5	20	20	Ready-to-install unit
350	1	1	40	40	Heavy-duty plain bearings for use in harsh ambient conditions
	260 600 1000 350 800 1300	350 5 800 5 1300 5	350 5 5 10 1300 5 20 5 10 100 1 1 2.5	260	260

# Selection aid

# Overview of toothed belt and ball screw axes

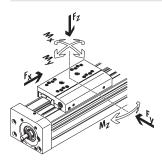
Toothed belt axes

- 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

### Ball screw axes

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

## Coordinate system



pe	F <sub>x</sub>	V	Mx	My	Mz	Characteristics
r -	[N]	[m/s]	[Nm]	[Nm]	[Nm]	
eavy-duty recirculat	ing ball bearing s	guide	· ·			
EGC-HD-BS						
4	400	0.5	140	275	275	Flat drive unit with rigid, closed profile
	650	1.0	300	500	500	Precision DUO guide rail with high load capacity
	1500	1.5	900	1450	1450	Ideal as a base axis for linear gantries and cantilever axes
circulating ball bea	ring guide					
EGC-BS-KF	<u> </u>	10.5	144	100	1400	B)
//	400	0.5	16	132	132	Rigid, closed profile
1.5	650	1.0	36	228	228	Precision guide rail with high load capacity
	1500	1.5	144	680	680	For the highest requirements in terms of feed force and accuracy
	3000	2.0	529	1820	1820	Space-saving position sensing
ELGA-BS-KF						
~	650	0.5	16	132	132	Internal guide and ball screw
	1600	1.0	36	228	228	Precision guide rail with high load capacity
	3400	1.5	104	680	680	For the highest requirements in terms of feed force and accuracy
	6400	2.0	167	1150	1150	Guide and ball screw protected by cover strip
						Space-saving position sensing
ELGC-BS-KF						
	40	0.6	1.3	1.1	1.1	Internal guide and ball screw
	100	0.6	5.5	4.7	4.7	Guide and ball screw protected by cover strip
	200	0.8	29.1	31.8	31.8	Space-saving position sensing
	350	1.0	59.8	56.2	56.2	
EGSK						
	57	0.33	13	3.7	3.7	Ball screw axes with maximum precision, compactness and rigidi
	133	1.10	28.7	9.2	9.2	Recirculating ball bearing guide and ball screw without caged ba
	184	0.83	60	20.4	20.4	bearings
	239	1.10	79.5	26	26	Standard designs in stock
	392	1.48	231	77.3	77.3	

#### At a glance

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



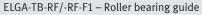
- Internal, precision recirculating ball bearing guide with high load capacity for high torque loads
- Stainless steel cover strip with magnetic seal provides basic protection for guide and toothed belt. This also makes it possible to reduce particulate emissions for use in clean environments.
- The optional magnetic reversal in the slide guides the stainless steel cover strip through the slide and back onto the profile. The magnets ensure there is no friction on the visible surface of the cover strip.
- [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)

- The magnetic belt reversal minimises particulate emissions for use in clean rooms.
- 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







- 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)
- [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)

- Sturdy alternative to the recirculating ball bearing guide
- As a 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



ELGA-TB-G - Plain-bearing guide



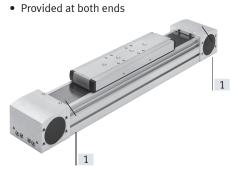
- For small and medium loads
- · Low guide backlash
- Drive component for external guides
- For simple handling tasks
- Toothed belt material can be selected from:
  - Chloroprene rubber for long service life
  - Coated PU with steel reinforcement cords for long service life and resistance to certain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

### Sealing air connections

- [1] Sealing air connections
- Application of negative pressure minimises the dispersal of abraded particles into the environment
- Application of positive pressure prevents dirt from getting into the axis

#### 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 → Page ⟨?⟩



Servo motor: EMMT-AS Stepper motor: EMMB-ST, EMMT-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 ⟨?⟩

Axial kit



Kit consists of:

- Motor flange
- Coupling housing
- Coupling
- Screws

## 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 datasheet in the catalogue.

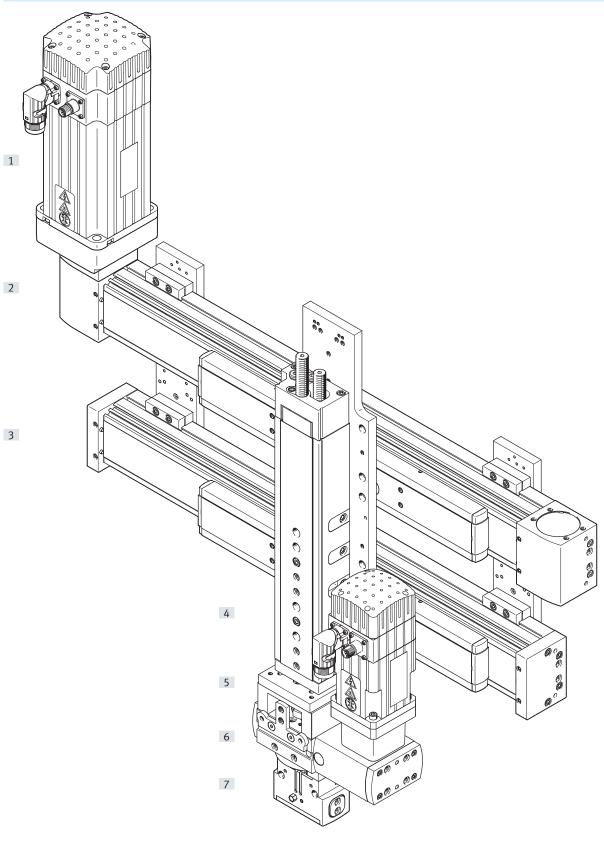
Version	Size	Working	Speed	Repetition accuracy	feed force	Guide characteristics					→ Page/ Internet
		stroke				Forces and torques					
						Fy	Fz	Mx	Му	Mz	
		[mm]	[m/s]	[mm]	[N]	[N]	[N]	[Nm]	[Nm]	[Nm]	
ELGA-TB-KF – Recirculating	ball bearing g	ıide									
	70	50 5000	5	±0.08	350	1500	1850	16	132	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 – Recirculati	ng ball bearing	guide, suitabl	e for use in th	e 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	
<u> </u>											
ELGA-TB-RF-F1 – Roller bea	1				70.00	1,00	1,00		100	00	
	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	zuide										
	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	1
	120	50 8500	5	±0.08	1300	380	1600	20	120	40	1
	120	33 0300			1500				120	130	



Engineering software Electric Motion Sizing

www.festo.com/x/electric-motion-sizing

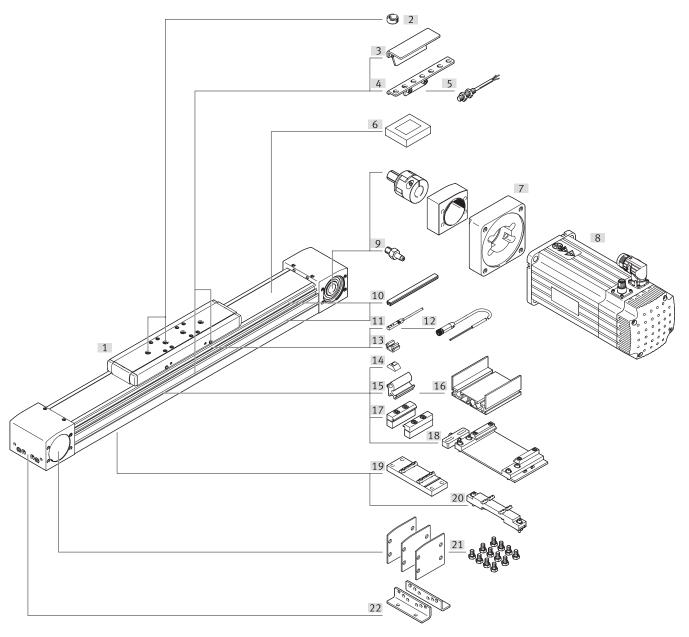
# System product for handling and assembly technology



Syste	System components and accessories							
		Description	→ Internet					
[1]	Motors	Servo and stepper motors, with or without gear unit	motor					
[2]	Axes	Wide range of combinations possible within handling and assembly systems	axis					
[3]	Guide axes	For absorbing forces and torques in multi-axis applications	guide axis					
[4]	Drives	Wide range of combinations possible within handling and assembly systems	drive					
[5]	Adapter	For drive/drive and drive/gripper connections	gripper					
[6]	Quarter turn actuator	Wide range of variations possible within handling and assembly technology	semi-rotary drive					
[7]	Gripper	Wide range of variations possible within handling and assembly technology	gripper					

# Peripherals overview





# Peripherals overview

Acces	Accessories						
	Туре	Description	→ Page/Internet				
1]	Toothed belt axis ELGA-TB-KF	Electric drive	12				
2]	Centring pin/sleeve ZBS, ZBH	<ul> <li>For centring loads and attachments on the slide</li> <li>Included in the scope of delivery: <ul> <li>With size 70: 2x ZBS-5</li> <li>With size 80, 120, 150: 2x ZBH-9</li> </ul> </li> </ul>	103				
3]	Switch lug SF-EGC	For sensing the slide position	100				
4]	Sensor bracket HWS-EGC	For mounting the inductive proximity switches (round design) on the axis	101				
5]	Proximity switch, M8 SIEN-M8	Inductive proximity switch, round design	105				
6]	Clamping component EADT	Tool for retensioning the cover strip	103				
7]	Axial kit EAMM	For axial motor mounting (comprising coupling, coupling housing and motor flange)	eamm-a				
8]	Motor EMMT	Motors specially matched to the axis, with or without gear unit, with or without brake	emmt				
9]	Drive shaft adapter EAMB	<ul> <li>Can be used as an alternative interface, as required</li> <li>No drive shaft adapter is required for the axis/motor combinations → page <? ></li> </ul>	94				
10]	Slot cover ABP	For protection against contamination	103				
[11]	Proximity switch, T-slot SIES-8M	<ul> <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>	104				
12]	Connecting cable NEBA	Via proximity switch	105				
13]	Clip SMBK	For mounting the proximity switch cable in the slot	103				
14]	Slot nut NST	For mounting attachments	103				
15]	Adapter kit DHAM	For mounting the support profile on the axis	104				
16]	Support profile HMIA	For mounting and guiding an energy chain	104				
17]	Profile mounting MUE	For mounting the axis on the side of the profile	96				
18	Adjusting kit EADC-E16	For mounting the axis on a vertical surface. Once mounted, the axis can be aligned horizontally	99				
19]	Central support EAHF-L5	For mounting the axis on the profile from underneath	97				
20]	Adjusting kit EADC-E15	Height-adjustable. Can be used to easily compensate for any unevenness in the bearing surface	98				
21]	Cover kit EASC-L5	For covering the sides of the drive cover	103				
22]	Foot mounting HPE	<ul> <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>	95				

# Toothed belt axes ELGA-TB-KF, with recirculating ball bearing guide

# Type codes

001	Series
ELGA	Gantry axis
002	Drive system
ТВ	Toothed belt
003	Guide
KF	Recirculating ball bearing guide
004	Size
70	70
80	80
120	120
150	150
005	Stroke range [mm]
•••	50 8500
006	Stroke reserve
Н	0 999 mm
007	Additional slide
	None
ZL	1 slide left
ZR	1 slide right

008	Protection against particles
	Standard
P11	Cover strip with magnetic deflection
009	Additional characteristics
	None
F1	Food-safe according to supplementary information on materials
010	Displacement encoder
	None
M1	With displacement encoder, incremental, resolution 2.5 μm
M2	With displacement encoder, incremental, resolution 10 µm
011	Displacement encoder attachment position
	None
F	Front
В	Rear
012	Material of toothed belt
CR	Chloroprene rubber
PU1	Uncoated PU, FDA-compliant
PU2	Coated PU



- **Ø** - Size

70 ... 150

Stroke length 50 ... 8500 mm



www.festo.com



Repair service



General technical data						
Size		70	80	120	150	
Design		Electromechanical axis	with toothed belt			
Guide		Recirculating ball beari	ng guide			
Mounting position		Any				
Working stroke	[mm]	50 5000	50 8500	50 8500	50 7000	
Max. feed force F <sub>x</sub>	[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				

<sup>1)</sup> At 0.2 m/s

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

<sup>1)</sup> 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
ELGAZL/ZR	0.74	1.53	3.24	5.84

<sup>1)</sup> Including 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
ELGAPU2	[%]	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

<sup>1)</sup> At max. feed force

# Toothed belt axes ELGA-TB-KF, with recirculating ball bearing guide

# Datasheet

Mass moments of inertia					
Size		70	80	120	150
$J_0$	[kg mm <sup>2</sup> ]	243	982	4099	15426
J <sub>H</sub> per metre stroke	[kg mm <sup>2</sup> /m]	19	93	215	586
J <sub>L</sub> per kg payload	[kg mm <sup>2</sup> /Kg]	205	396	690	1363
J <sub>W</sub> for additional slide	[kg mm <sup>2</sup> ]	186	761	2891	9869

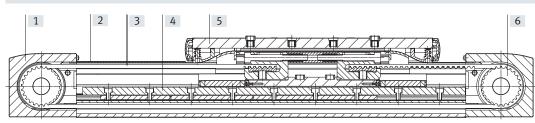
The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

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

K = Number of additional slides

# Materials

Sectional view



Axis					
Size		70	80	120	150
[1]	Drive cover	Anodised wrought alumin	nium alloy		
[2]	Cover strip	Stainless steel strip, non-	-corroding		
[3]	Toothed belt				
	ELGA	Polychloroprene or NBR with glass cord and nylon coating			
	ELGAPU2	Polyurethane with steel of	cord and nylon cover		
[4]	Guide rail	Stainless steel		Tempered steel	
[5]	Slide	Anodised wrought alumin	nium alloy		
[6]	Belt	High-alloy stainless steel			
	Note on materials	RoHs-compliant			
		Contains paint-wetting in	npairment substances		

Technical data – Displacement er	echnical data – Displacement encoder  Dimensions → page 26				
Туре		ELGAM1	ELGAM2		
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) cyclica	lly every 5 mm (zero pulse)		
Signal output		Line driver, alternating, resistant to sustained short circuit			
Electrical connection		8-pin plug connector, round design, M12			
Cable length [mm]		160			

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

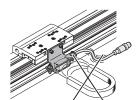
<sup>1)</sup> For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

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 note**

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

• Magnetic field

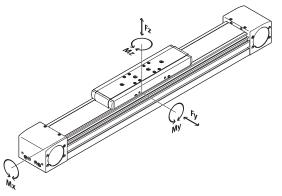


• Welding application

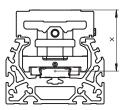


#### Characteristic load values

The indicated forces and torques refer to the 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
Fy <sub>max</sub> .	[N]	1500	2500	5500	11000
Fz <sub>max</sub>	[N]	1850	3050	6890	11000
Mx <sub>max</sub> .	[Nm]	16	36	104	167
My <sub>max</sub> .	[Nm]	132	228	680	1150
Mz <sub>max</sub> .	[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 fv  $\S$  1, based on the maximum permissible forces and torques for a service life of 5000 km.

If the axis is subjected to several of the indicated forces and torques at the same time, the following equation must be satisfied in addition to the indicated maximum loads:

Calculating the load comparison factor:

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

 $F_1/M_1 = dynamic value$ 

 $F_2/M_2 = maximum value$ 

#### Calculating the service life

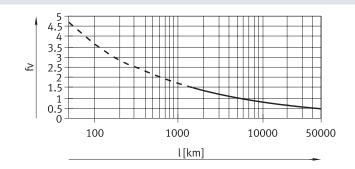
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor fv against the service life.

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

### Load comparison factor $f_{\nu}$ as a function of service life

#### Example:

A user wants to move an X kg load. Using the formula ( $\rightarrow$  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 Mz and My 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/electricmotion-sizing The engineering software can be used to calculate the guide workload for a service life of 5000 km.

 $f_{\nu}$  > 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 the 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.

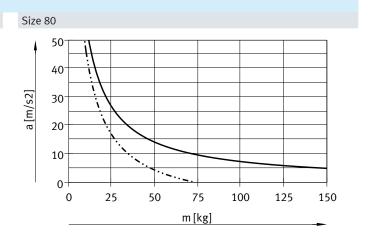
Max. permissible f	Max. permissible forces and torques for a theoretical service life of 100 km (from a guide perspective only)					
Size		70	80	120	150	
Fy <sub>max</sub> .	[N]	5520	9200	20240	40480	
Fz <sub>max</sub>	[N]	6808	11224	25355	40480	
Mx <sub>max</sub> .	[Nm]	59	132	383	615	
My <sub>max</sub> .	[Nm]	486	839	2502	4232	
Mz <sub>max.</sub>	[Nm]	486	839	2502	4232	

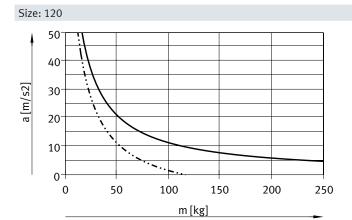
# Max. acceleration a as a function of payload m

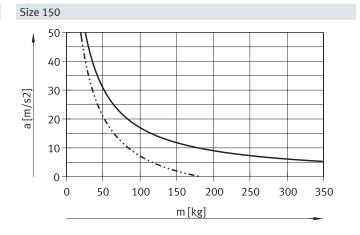
Size 70

50
40
30
20
10
0
10
20
30
40
50
60

m[kg]

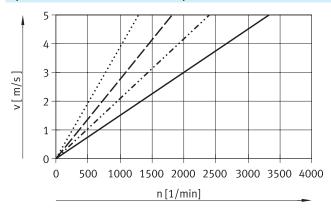






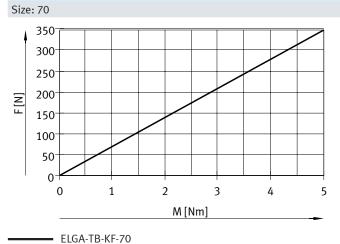
Horizontal mounting positionVertical mounting position

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





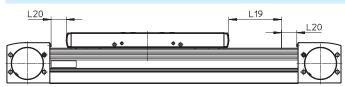
#### Theoretical feed force F as a function of the input torque M



### Size 80/120/150 2000 1500 **=**1000 500 10 20 30 40 50 60 70 80 M[Nm]

ELGA-TB-KF-80 ..... ELGA-TB-KF-120 ELGA-TB-KF-150

#### 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
- L19 = Nominal stroke Stroke reserve
- The stroke reserve length can be freely selected
- The stroke reserve is defined via the "stroke reserve" characteristic in the modular product system.

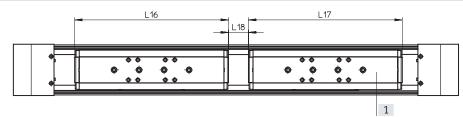
# Example:

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 the two 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

(500 mm - 50 mm - 221 mm)

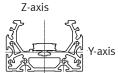
= 229 mm

Dimensions – Additional slid	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

## Toothed belt axes ELGA-TB-KF, with recirculating ball bearing guide

### Datasheet

#### Second moment of area

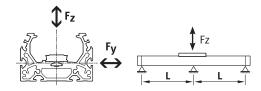


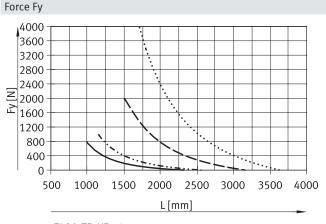
Size		70	80	120	150
ly [r	[mm <sup>4</sup> ]	1.46x10 <sup>5</sup>	2.57x10 <sup>5</sup>	1.26x10 <sup>6</sup>	4.62x10 <sup>6</sup>
Iz [1	[mm <sup>4</sup> ]	4.59x10 <sup>5</sup>	9.14x10 <sup>5</sup>	4.37x10 <sup>6</sup>	12.32x10 <sup>6</sup>

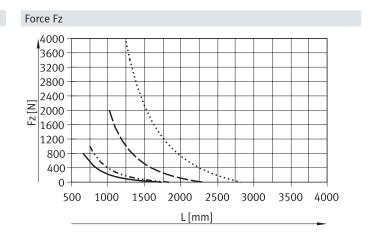
#### Maximum permissible support spacing L (without profile mounting MUE/central support EAHF) as a function of force F

The axis may need to be supported in order to limit deflection in the case of long strokes.

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  $f=0.5\ mm$ .







ELGA-TB-KF-70

ELGA-TB-KF-80

ELGA-TB-KF-120

ELGA-TB-KF-150

#### 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 (load moves)	Static deflection (stationary load)	
70 150	0.05% of the axis length, max. 0.5 mm	0.1% of the axis length	

#### Central lubrication system

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 ball screw nut and the two ball cassettes

Slide dimensions

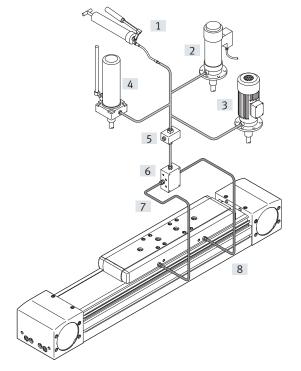
→ page 24

#### Design of a central lubrication system

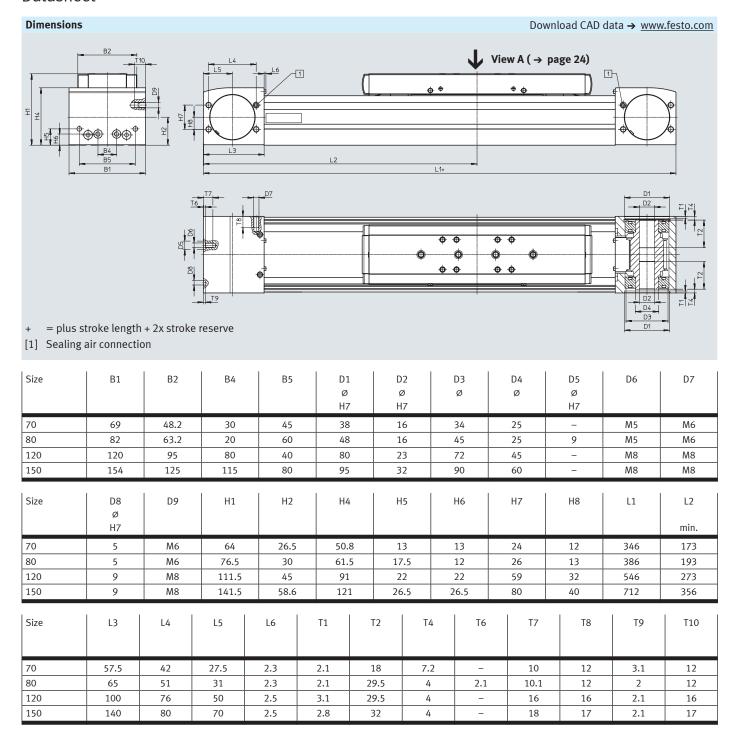
A central lubrication system requires various additional components. The illustration shows different options (using a hand pump, pneumatic container pump or electric container pump) required as a minimum for designing a central lubrication system. Festo does not sell these additional components; however,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



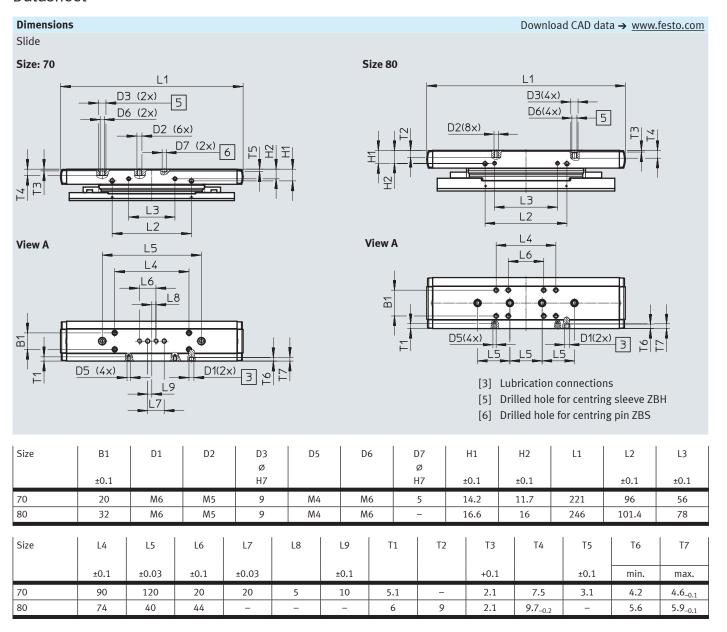
→ www.festo.com/sp User documentation.

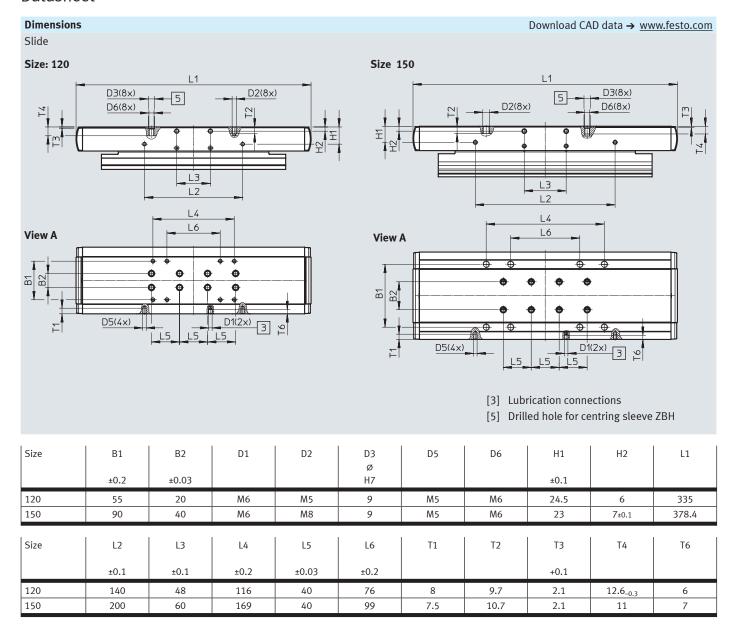
# Datasheet

# **Dimensions** Download CAD data → www.festo.com Profile Size 70 Size 80 Size: 120 1 2 B<sub>11</sub> B<sup>1</sup>11 B10 B10 B11 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 2 Requirements for the flatness of the bearing surface and of attachments as well as for use in parallel structures 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

B10





#### Download CAD data → www.festo.com **Dimensions** ELGA-...-M1/M2 – With incremental displacement encoder Encoder cable (connection to motor controller/ safety system) → page 105 Size В4 D1 D2 Н1 H2 Н4 L1 70 40 1.8 M4x8 M4x14 35 11.7 10 86 80 40 1.8 M4x14 M4x14 35 16 10 90 41 1.8 M5x10 M4x14 35 24.5 10 170 120 M4x14 150 42 1.8 M5x10 35 23 10 220

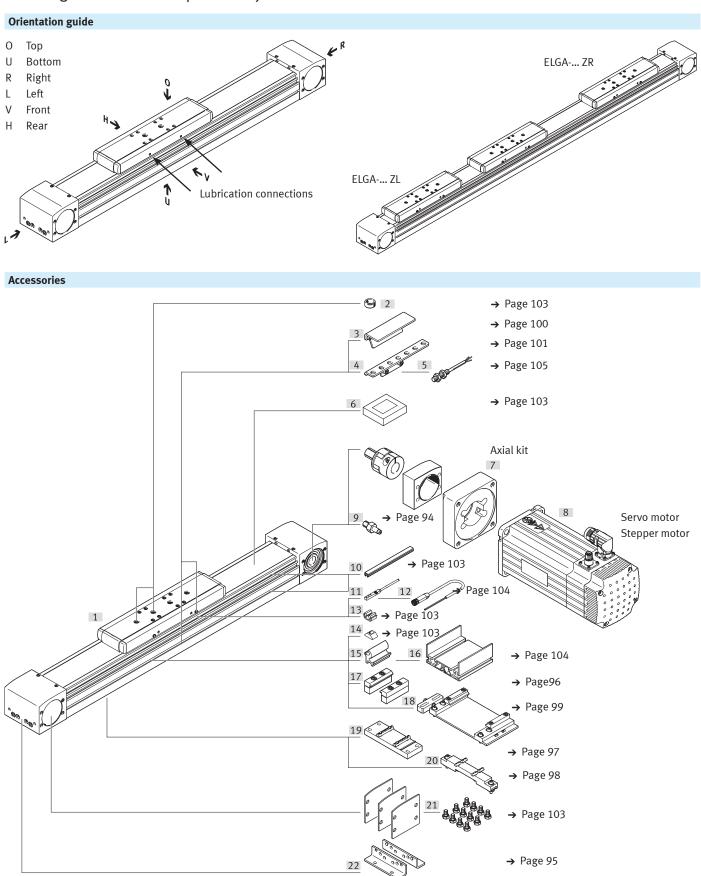
# Ordering data

Key features:

- Stroke reserve: 0 mm
- Standard slide

Size	Stroke	Part no.	Туре
	[mm]		
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
120	500	8041865	ELGA-TB-KF-120-900-0H
	600	8041866	ELGA-TB-KF-120-500-0H
	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



# Ordering data – Modular product system

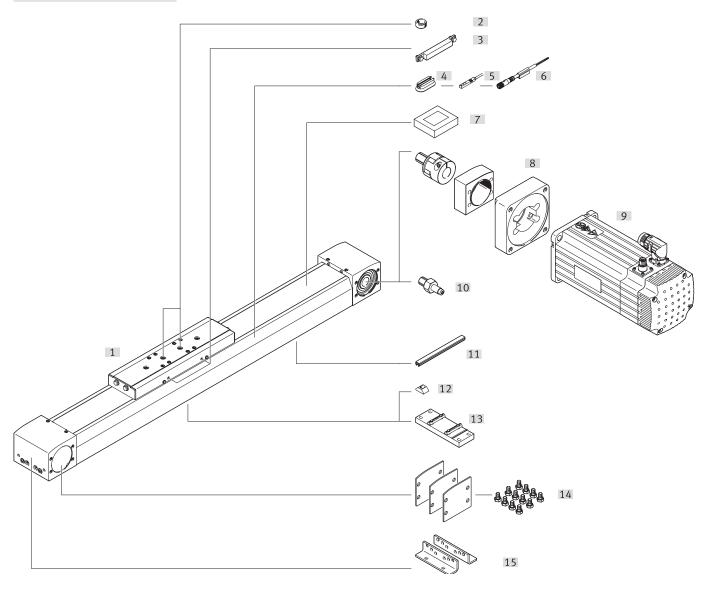
Ordering table Size		70	80	120	150	Conditions	Code	Enter code
Module no.		8024914	8024915	8024916	8024917			
Design		Linear axis					ELGA	ELGA
Function		Toothed belt					☆ -TB	-TB
Guide		Recirculating	ball bearing gui	de			☆ -KF	-KF
Size	[mm]	70	80	120	150		☆	
Stroke length	[mm]	1 5000	1 8500	1 8500	1 7000		☆	
Stroke reserve	[mm]	0 999 (0 = r	no stroke reserv	e)		[1]	<b>☆H</b>	
Additional slide		None				☆		
		1 slide on left					☆ -ZL	
		1 slide on righ	it				☆ -ZR	
Protection against particles		Standard						
		Cover strip wi	th magnetic def	lection			P11	
Displacement encoder, incremental		None					$\Rightarrow$	
		Resolution 2.5	μm				-M1	
		Resolution 10	μm				-M2	
Displacement encoder attachment position		None					☆	
		Rear				[2]	В	
		Advanced				[2]	F	
Toothed belt material		Chloroprene r	ubber					
		Coated PU					-PU2	

<sup>[1] ...</sup> 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

<sup>[2]</sup>  $\,$  B, F  $\,$  Only with displacement encoder M1, M2

# Peripherals overview – For the food zone





# Peripherals overview – For the food zone

	Ssories	Deceription	Dogo/Into
	Туре	Description	→ Page/Internet
[1]	Toothed belt axis ELGA-TB-KF-F1	Electric drive	32
[2]	Centring pin/sleeve ZBS, ZBH	<ul> <li>For centring loads and attachments on the slide</li> <li>Included in the scope of delivery:</li> <li>With size 70: 2x ZBS-5</li> <li>With size 80, 120, 150: 2x ZBH-9</li> </ul>	103
[3]	Switch lug EAPM	For sensing the slide position	102
[4]	Mounting kit CRSMB	For mounting the inductive proximity switches (round design) on the axis	102
[5]	Proximity switch, T-slot SME-8M	For sensing the slide position	105
[6]	Connecting cable NEBA	Via proximity switch	105
[7]	Clamping component EADT	Tool for retensioning the cover strip	103
[8]	Axial kit EAMM	For axial motor mounting (comprising coupling, coupling housing and motor flange)	eamm-a
[9]	Motor EMMT	Motors specially matched to the axis, with or without gear unit, with or without brake	<u>emmt</u>
[10]	Drive shaft adapter EAMB	<ul> <li>Can be used as an alternative interface, as required</li> <li>No drive shaft adapter is required for the axis/motor combinations → page 100</li> </ul>	94
[11]	Slot cover ABP	For protection against contamination	103
[12]	Slot nut NST	For mounting attachments	103
13]	Central support EAHF-L5	For mounting the axis on the profile from underneath	97
14]	Cover kit EASC-L5	For covering the sides of the drive cover	103
15]	Foot mounting HPE	For mounting the axis on the end cap     With higher forces and torques, the axis should be mounted using the profile	95

# Toothed belt axes ELGA-TB-KF-F1, with recirculating ball bearing guide

# Datasheet – For the food zone



- Ø -

- Size

70 ... 120



Stroke length 50 ... 8500 mm



www.festo.com



Repair service



General technical data	General technical data					
Size		70	80	120		
Design		Electromechanical axis with toothe	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 <sub>x</sub>	[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				

<sup>1)</sup> 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		

<sup>1)</sup> Note operating range of proximity switches.

More information 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	Moving mass					
ELGA	0.9	1.9	4.19			
ELGAZL/ZR	0.74	1.53	3.24			

<sup>1)</sup> Including slide

# Datasheet – 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		
Jo	[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		

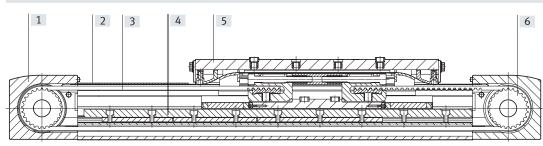
The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

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

K = Number of additional slides

# Materials

Sectional view

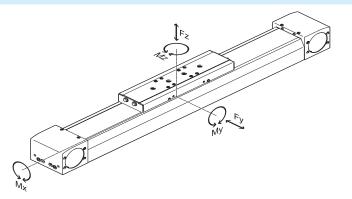


Axis				!	
Size		70	80	120	
[1]	Drive cover	Anodised wrought aluminium alloy			
[2]	Cover strip	Stainless steel strip, non-corroding			
[3]	Toothed belt	Polyurethane with steel cord			
[4]	Guide rail	Stainless steel Tempered steel			
[5]	Slide	Anodised wrought aluminium alloy			
[6]	Belt	High-alloy stainless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

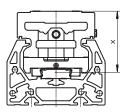
### Datasheet – For the food zone

#### 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	120		
Dimension x	[mm]	37	50	70		

Max. permissible forces and torques for a service life of 5000 km						
Size		70	80	120		
Fy <sub>max</sub> .	[N]	1500	2500	5500		
Fz <sub>max</sub>	[N]	1850	3050	6890		
Mx <sub>max</sub> .	[Nm]	16	36	104		
My <sub>max</sub> .	[Nm]	132	228	680		
Mz <sub>max</sub> .	[Nm]	132	228	680		



#### Note

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

If the axis is subjected to several of the indicated forces and torques at the same time, the following equation must be satisfied in addition to the indicated maximum loads:

Calculating the load comparison factor:

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

 $F_1/M_1 = dynamic value$ 

 $F_2/M_2 = maximum value$ 

### Datasheet - For the food zone

#### Calculating the service life

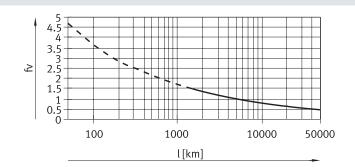
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor fv against the service life.

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

#### Load comparison factor f<sub>v</sub> as a function of service life

#### Example:

A user wants to move an X kg load. Using the formula ( $\rightarrow$  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 Mz and My 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/electricmotion-sizing The engineering software can be used to calculate the guide workload for a service life of 5000 km.

 $f_{\nu}$  > 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 the 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.

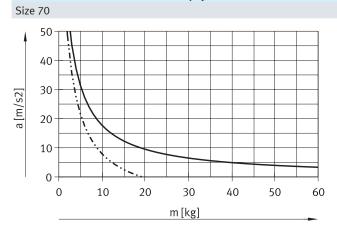
These 100 km values have been calculated mathematically and are only to be used for comparing with dynamic forces and torques to ISO. The drives must not be loaded with these characteristic values as this could damage the axes.

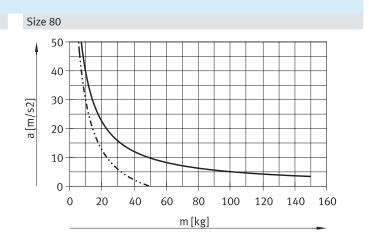
Max. permissible forces and torques for a theoretical service life of 100 km (from a guide perspective only)						
Size		70	80	120		
Fy <sub>max</sub> .	[N]	5520	9200	20240		
Fz <sub>max</sub>	[N]	6808	11224	25355		
Mx <sub>max</sub> .	[Nm]	59	132	383		
My <sub>max</sub> .	[Nm]	486	839	2502		
Mz <sub>max.</sub>	[Nm]	486	839	2502		

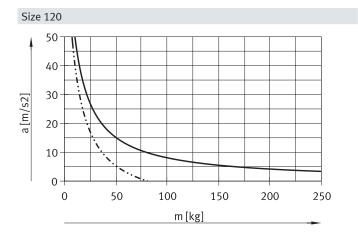
# Toothed belt axes ELGA-TB-KF-F1, with recirculating ball bearing guide

# Datasheet – For the food zone

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

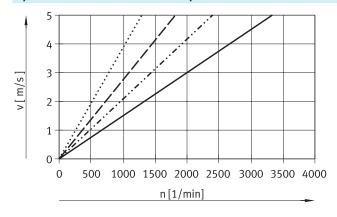




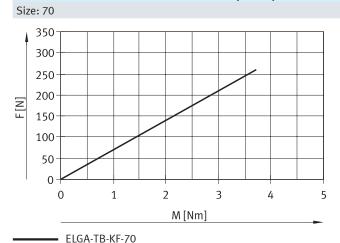


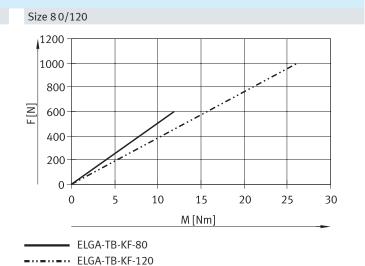
Horizontal mounting positionVertical mounting position

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

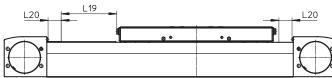


#### Theoretical feed force F as a function of the input torque M





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

Nominal stroke

Stroke reserve

L20 =

• The stroke reserve is defined via the "stroke reserve" characteristic in the modular product system.

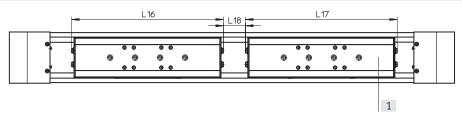
#### Example:

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 the two slides

Additional slide [1]

Example:

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

Working stroke without

additional slide = 500 mm L18 = 50 mm = 221 mm L16, L17

Working stroke with additional slide = 229 mm

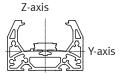
(500 mm - 50 mm - 221 mm)

Dimensions – Additional slide						
Size		70	80	120		
Length L17	[mm]	221	246	335		
Min. distance between the slides L18	[mm]	≥ 50	≥ 50	≥ 50		

## Toothed belt axes ELGA-TB-KF-F1, with recirculating ball bearing guide

## Datasheet – For the food zone

#### Second moment of area

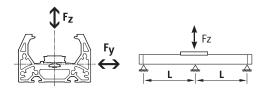


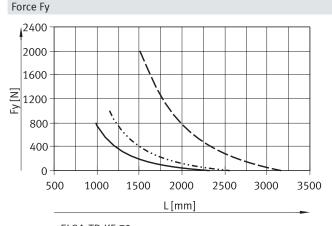
Size		70	80	120
ly	[mm <sup>4</sup> ]	1.69x10 <sup>5</sup>	2.95x10 <sup>5</sup>	1.35x10 <sup>6</sup>
Iz	[mm <sup>4</sup> ]	4.84x10 <sup>5</sup>	9.78x10 <sup>5</sup>	4.50x10 <sup>6</sup>

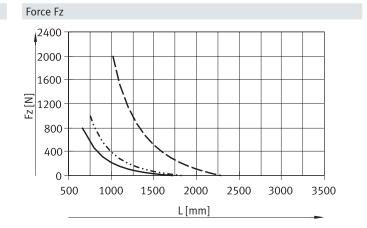
### Maximum permissible support spacing L (without profile mounting MUE/central support EAHF) as a function of force F

The axis may need to be supported in order to limit deflection in the case of long strokes.

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  $f=0.5\ mm$ .







ELGA-TB-KF-70

-----ELGA-TB-KF-80

----ELGA-TB-KF-120

#### 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 (load moves)	Static deflection (stationary load)
70 120	0.05% of the axis length, max. 0.5 mm	0.1% of the axis length

### Central lubrication system

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 ball screw nut and the two ball cassettes

Slide dimensions

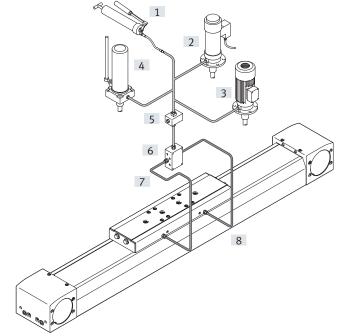
→ page 42

### Design of a central lubrication system

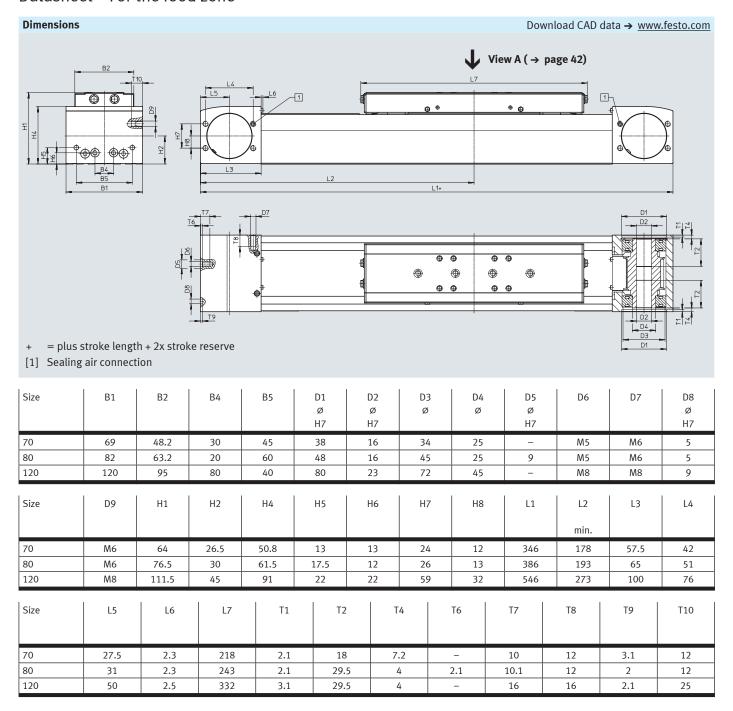
A central lubrication system requires various additional components. The illustration shows different options (using a hand pump, pneumatic container pump or electric container pump) required as a minimum for designing a central lubrication system. Festo does not sell these additional components; however,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

- Lincoln
- Bielomatik
- SKF (Vogel)

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



- [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





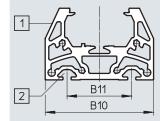
The standard roller carriages will be greased for the variant ELGA-TB-KF-F1. This will be done in accordance with the guidelines Doc.23 from EHEDG.

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

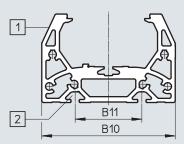
## Dimensions

Profile

### Size 70

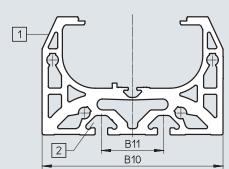


Size 80



Download CAD data → www.festo.com







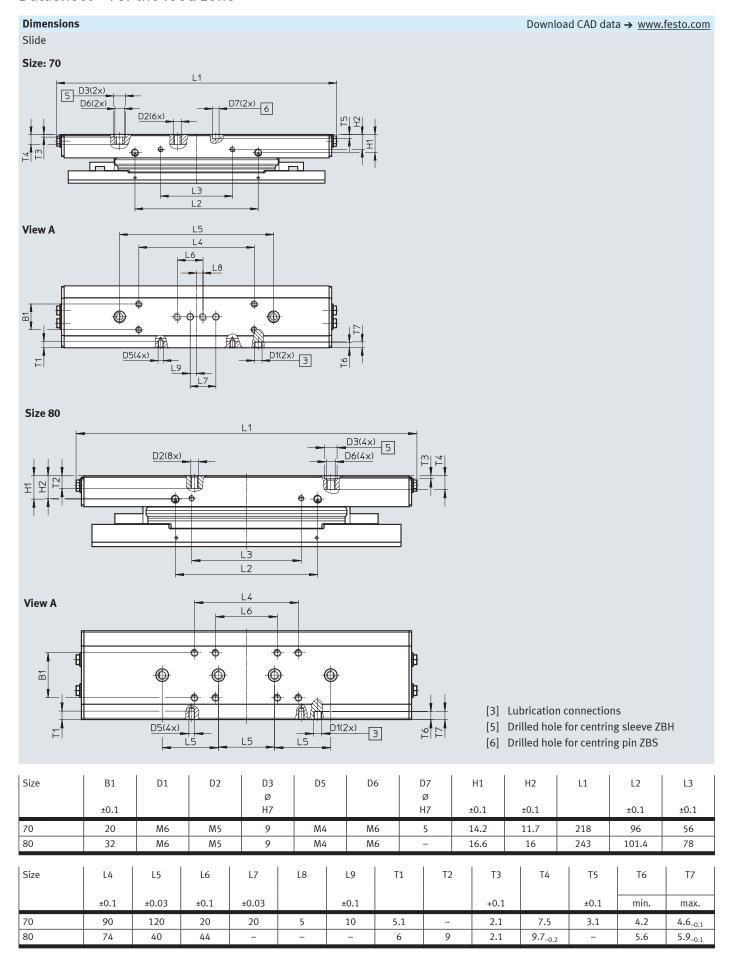
[1] Sensor slot for proximity switch

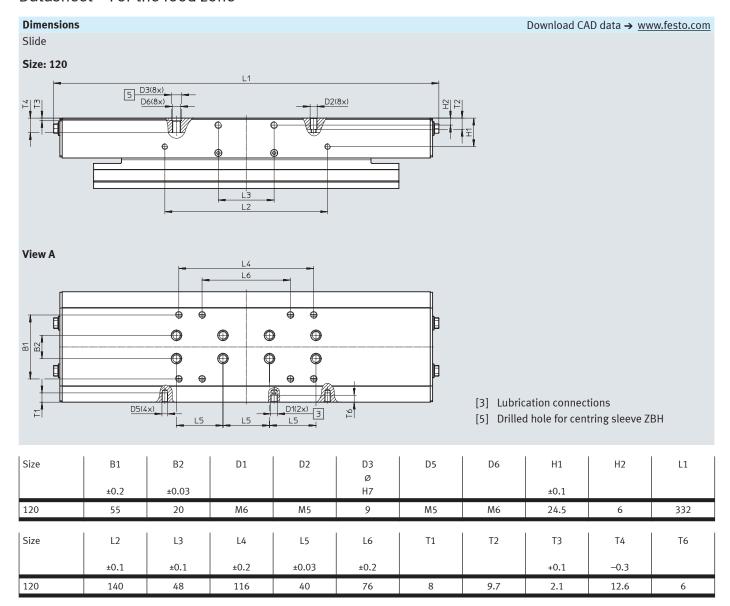
[2] Mounting slot for slot nut
With size 70, 80: slot nut NST-5-M5
With size 120: slot nut NST-8-M6

Requirements for the flatness of the bearing surface and of attachments as well as for use in parallel structures www.festo.com/sp User documentation.

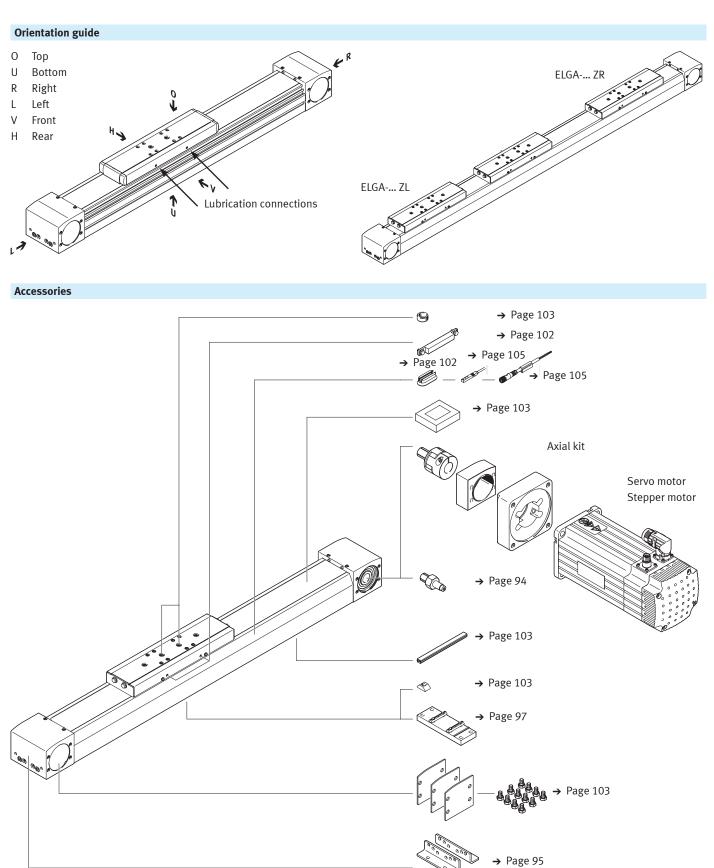
→ www.festo.com/sp User documentation.

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





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



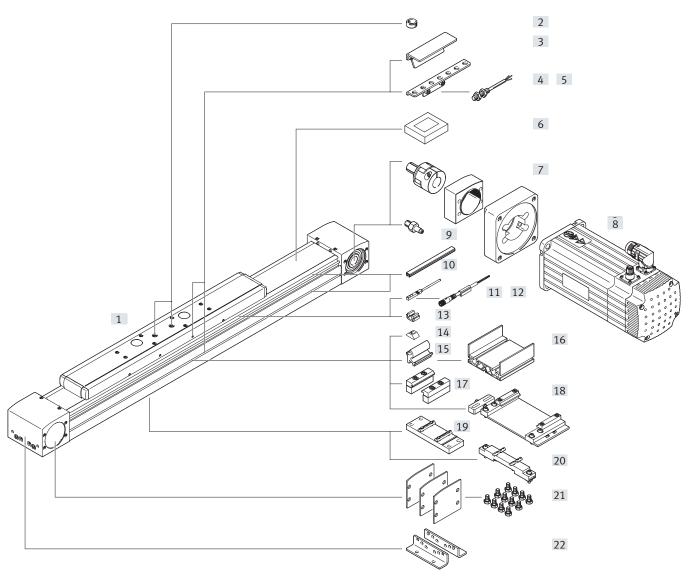
## Ordering data – Modular products – For the food zone

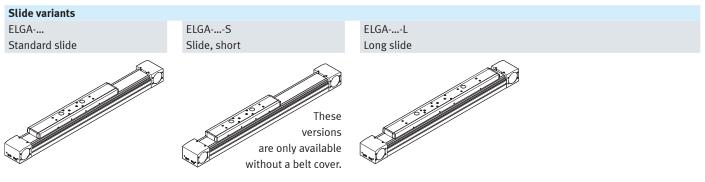
Ordering table							
Size		70	80	120	Conditions	Code	Enter code
Module no.		8024914	8024915	8024916			
Design		Linear axis				ELGA	ELGA
Function		Toothed belt				-TB	-TB
Guide		Recirculating b	all bearing guide			-KF	-KF
Size	[mm]	70	80	120			
Stroke length	[mm]	1 5000	1 8500	1 8500			
Stroke reserve	[mm]	0 999 (0 = no	o stroke reserve)		[1]	Н	
Additional slide		None					
		1 slide on left				-ZL	
		1 slide on right	1 slide on right			-ZR	
Protection against particles		Standard	Standard				
		Cover strip with	Cover strip with magnetic deflection			P11	
Additional features		Food-safe as pe	Food-safe as per supplementary material information			-F1	-F1
Toothed belt material		Uncoated PU	Uncoated PU			-PU1	-PU1

<sup>[1] ...</sup> 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







## Peripherals overview

Acces	Accessories						
	Type/order code	Description	→ Page/Internet				
[1]	Toothed belt axis ELGA-TB-RF	Electric drive	48				
[2]	Centring pin/sleeve ZBS, ZBH	<ul> <li>For centring loads and attachments on the slide</li> <li>Included in the scope of delivery:</li> <li>With size 70, 80, 120: 2x ZBH-9</li> </ul>	103				
[3]	Switch lug SA, SB, SC, SD, SE, SF	For sensing the slide position	100				
[4]	Sensor bracket SC, SD, SE, SF	For mounting the inductive proximity switches (round design) on the axis	101				
[5]	Proximity switch, M8 SC, SD, SE, SF	<ul> <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>	105				
[6]	Clamping component EADT	Tool for retensioning the cover strip	103				
[7]	Axial kit EAMM	For axial motor mounting (comprising coupling, coupling housing and motor flange)	eamm-a				
[8]	Motor EMMT	Motors specially matched to the axis, with or without gear unit, with or without brake	<u>emmt</u>				
[9]	Drive shaft adapter EA	<ul> <li>Can be used as an alternative interface, as required</li> <li>No drive shaft adapter is required for the axis/motor combinations → page <? ></li> </ul>	94				
[10]	Slot cover NS, NC	For protection against contamination	103				
[11]	Proximity switch, T-slot SA, SB	<ul> <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>	104				
[12]	Connecting cable CA	For proximity switch (order code SE and SF)	105				
[13]	Clip CM	For mounting the proximity switch cable in the slot	103				
[14]	Slot nut NM	For mounting attachments	103				
[15]	Adapter kit DHAM	For mounting the support profile on the axis	104				
[16]	Support profile HMIA	For mounting and guiding an energy chain	104				
[17]	Profile mounting MA	For mounting the axis on the side of the profile	96				
[18]	Adjusting kit EADC-E16	For mounting the axis on a vertical surface. Once mounted, the axis can be aligned horizontally	99				
[19]	Central support EAHF-L5	For mounting the axis on the profile from underneath	97				
[20]	Adjusting kit EADC-E15	Height-adjustable. Can be used to easily compensate for any unevenness in the bearing surface	98				
[21]	Cover kit EASC-L5	For covering the sides of the drive cover	103				
[22]	Foot mounting MF	<ul> <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>	95				

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

## Type codes

ELGA Gantry axis  OD2 Drive system  TB Toothed belt  OD3 Guide  RF Roller bearing  OD4 Size  70 70 80 80 80 120 120 120 120 120 120 120 120 120 12	TB Toothed belt  O03 Guide  RF Roller bearing  O04 Size  70 70  80 80  120 120  O05 Stroke range [mm] 50 7400  O06 Stroke reserve [mm] 0 999  O07 Slide design  Standard  S Slide, short L Slide, long  O08 Protection against particles  Standard  PO Without strip cover  O09 Additional characteristics  None  F1 Food-safe according to supplementary information on materials  O10 Displacement encoder, incremental, resolution 2.5 µm M1 With displacement encoder, incremental, resolution 10 µm  O11 Displacement encoder, incremental, resolution 10 µm  O11 Displacement encoder attachment position  None  F Front B Rear  O12 Toothed belt material Chloroprene rubber PU1 Uncoated PU, FDA-compliant	001	Series
TB   Toothed belt	TB Toothed belt  O03 Guide  RF Roller bearing  O04 Size  70 70 70 80 80 80 80 120 120 120 120 120 120 120 120 120 12	ELGA	Gantry axis
Guide RF Roller bearing  O04 Size  70 70 80 80 80 80 120 120  O05 Stroke range [mm] 50 7400  O06 Stroke reserve [mm] 0 999  O07 Slide design Standard S Slide, short L Slide, long  O08 Protection against particles Standard PO Without strip cover  O09 Additional characteristics None F1 Food-safe according to supplementary information on materials  O10 Displacement encoder None M1 With displacement encoder, incremental, resolution 2.5 µm M2 With displacement encoder, incremental, resolution 10 µm  O11 Displacement encoder attachment position None F Front B Rear  O12 Toothed belt material Chloroprene rubber PU1 Uncoated PU, FDA-compliant PU2 Coated PU	Guide  RF Roller bearing  004 Size  70 70 80 80 80 80 120 120 120 120 120 120 120 120 120 12	002	Drive system
RF Roller bearing  004 Size  70 70 80 80 80 80 120 120 120 120 120 120 120 120 120 12	RF Roller bearing  004 Size  70 70 70  80 80 80  120 120 120  005 Stroke range [mm] 50 7400  006 Stroke reserve [mm] 0 999  007 Slide design  Standard S Slide, short L Slide, long  008 Protection against particles  Standard PO Without strip cover  009 Additional characteristics None F1 Food-safe according to supplementary information on materials  010 Displacement encoder None M1 With displacement encoder, incremental, resolution 2.5 µm M2 With displacement encoder, incremental, resolution 10 µm  011 Displacement encoder attachment position None F Front B Rear  012 Toothed belt material Chloroprene rubber PU1 Uncoated PU, FDA-compliant PU2 Coated PU  013 Foot mounting None	ТВ	Toothed belt
RF Roller bearing  004 Size  70 70 80 80 80 80 120 120 120 120 120 120 120 120 120 12	RF Roller bearing  004 Size  70 70 70  80 80 80  120 120 120  005 Stroke range [mm] 50 7400  006 Stroke reserve [mm] 0 999  007 Slide design  Standard S Slide, short L Slide, long  008 Protection against particles  Standard PO Without strip cover  009 Additional characteristics None F1 Food-safe according to supplementary information on materials  010 Displacement encoder None M1 With displacement encoder, incremental, resolution 2.5 µm M2 With displacement encoder, incremental, resolution 10 µm  011 Displacement encoder attachment position None F Front B Rear  012 Toothed belt material Chloroprene rubber PU1 Uncoated PU, FDA-compliant PU2 Coated PU  013 Foot mounting None	003	Guide
To   To   To   To   To   To   To   To	To   To   To   To   To   To   To   To		
70 80 80 80 80 80 80 80 120 120 120  005 Stroke range [mm] 50 7400  006 Stroke reserve [mm] 0 999  007 Slide design Standard S Slide, short L Slide, long  008 Protection against particles Standard PO Without strip cover  009 Additional characteristics None F1 Food-safe according to supplementary information on materials  010 Displacement encoder None M1 With displacement encoder, incremental, resolution 2.5 µm M2 With displacement encoder, incremental, resolution 10 µm  011 Displacement encoder attachment position None F Front B Rear	70 70 80 80 80 80 120 120 120 120 120 120 120 120 120 12		Note: Dearing
80 80 120 120 120 120 120 120 120 120 120 12	80 80 80 120 120 120 120 120 120 120 120 120 12	004	Size
120   120	120  120  120  120  120  120  120  120		
Stroke range [mm]   So 7400   Stroke reserve [mm]   So 7400   Stroke reserve [mm]   So 999   Slide design   Standard   S   Slide, short   Slide, long   Standard   S   Slide, short   Standard   S   Slide, long   Standard   S   Standard   S   Standard   S   Standard   Standard   S   Standard	Stroke range [mm]   So 7400   Stroke reserve [mm]   So 7400   Stroke reserve [mm]   Stroke reserve [mm]   Stroke reserve [mm]   Standard   Standard   Standard   Standard   Standard   Stide, short   Stide, long   Standard		
50 7400    006   Stroke reserve [mm]      0 999    007   Slide design    Standard   S    Slide, short    L   Slide, long    008   Protection against particles    Standard    P0   Without strip cover    009   Additional characteristics    None    F1   Food-safe according to supplementary information on materials    010   Displacement encoder    None    M1   With displacement encoder, incremental, resolution 2.5 μm    M2   With displacement encoder, incremental, resolution 10 μm    011   Displacement encoder attachment position    None    F   Front    B   Rear    012   Toothed belt material    Chloroprene rubber    PU1   Uncoated PU, FDA-compliant    PU2   Coated PU	50 7400	120	120
Oct   Stroke reserve [mm]   Oct	Occord   Stroke reserve [mm]   Occord   Occor	005	Stroke range [mm]
0 999  007 Slide design  Standard  S Slide, short  L Slide, long  008 Protection against particles  Standard  PO Without strip cover  009 Additional characteristics  None  F1 Food-safe according to supplementary information on materials  010 Displacement encoder  None  M1 With displacement encoder, incremental, resolution 2.5 µm  M2 With displacement encoder, incremental, resolution 10 µm  011 Displacement encoder attachment position  None  F Front  B Rear  012 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	0 999  007 Slide design  Standard  S Slide, short L Slide, long  008 Protection against particles  Standard  PO Without strip cover  009 Additional characteristics  None  F1 Food-safe according to supplementary information on materials  010 Displacement encoder  None  M1 With displacement encoder, incremental, resolution 2.5 µm  M2 With displacement encoder, incremental, resolution 10 µm  011 Displacement encoder attachment position  None  F Front B Rear  012 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU  013 Foot mounting  None		50 7400
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L Slide, long  O08 Protection against particles  Standard  PO Without strip cover  O09 Additional characteristics  None  F1 Food-safe according to supplementary information on materials  O10 Displacement encoder  None  M1 With displacement encoder, incremental, resolution 2.5 μm  M2 With displacement encoder, incremental, resolution 10 μm  O11 Displacement encoder attachment position  None  F Front  B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	L Slide, long  O08 Protection against particles  Standard  PO Without strip cover  O09 Additional characteristics  None  F1 Food-safe according to supplementary information on materials  O10 Displacement encoder  None  M1 With displacement encoder, incremental, resolution 2.5 µm  M2 With displacement encoder, incremental, resolution 10 µm  O11 Displacement encoder attachment position  None  F Front  B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU  O13 Foot mounting  None		
Protection against particles	Protection against particles		
Standard  PO Without strip cover  O09 Additional characteristics  None  F1 Food-safe according to supplementary information on materials  O10 Displacement encoder  None  M1 With displacement encoder, incremental, resolution 2.5 µm  M2 With displacement encoder, incremental, resolution 10 µm  O11 Displacement encoder attachment position  None  F Front  B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	Standard  PO Without strip cover  O09 Additional characteristics  None  F1 Food-safe according to supplementary information on materials  O10 Displacement encoder  None  M1 With displacement encoder, incremental, resolution 2.5 µm  M2 With displacement encoder, incremental, resolution 10 µm  O11 Displacement encoder attachment position  None  F Front  B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU  O13 Foot mounting  None	L	Slide, long
PO       Without strip cover         009       Additional characteristics         None       F1         F1       Food-safe according to supplementary information on materials         010       Displacement encoder         None       M1         M1       With displacement encoder, incremental, resolution 2.5 μm         M2       With displacement encoder, incremental, resolution 10 μm         011       Displacement encoder attachment position         None       F         F Front       B         B       Rear         012       Toothed belt material         Chloroprene rubber       PU1         PU1       Uncoated PU, FDA-compliant         PU2       Coated PU	PO       Without strip cover         009       Additional characteristics         None       F1         F1       Food-safe according to supplementary information on materials         010       Displacement encoder         None       M1         M1       With displacement encoder, incremental, resolution 2.5 μm         M2       With displacement encoder, incremental, resolution 10 μm         011       Displacement encoder attachment position         None       F         F Front       B         B       Rear         012       Toothed belt material         Chloroprene rubber       PU1         PU2       Coated PU         013       Foot mounting         None	008	Protection against particles
None   F   Front   B   Rear	Additional characteristics		Standard
None F1 Food-safe according to supplementary information on materials  010 Displacement encoder  None M1 With displacement encoder, incremental, resolution 2.5 µm M2 With displacement encoder, incremental, resolution 10 µm  011 Displacement encoder attachment position  None F Front B Rear  012 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	None	P0	Without strip cover
F1 Food-safe according to supplementary information on materials  010 Displacement encoder  None  M1 With displacement encoder, incremental, resolution 2.5 μm  M2 With displacement encoder, incremental, resolution 10 μm  011 Displacement encoder attachment position  None  F Front  B Rear  012 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	F1 Food-safe according to supplementary information on materials  010 Displacement encoder  None  M1 With displacement encoder, incremental, resolution 2.5 μm  M2 With displacement encoder, incremental, resolution 10 μm  011 Displacement encoder attachment position  None  F Front  B Rear  012 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU  013 Foot mounting  None	009	Additional characteristics
Displacement encoder	Displacement encoder		
None  M1 With displacement encoder, incremental, resolution 2.5 μm  M2 With displacement encoder, incremental, resolution 10 μm  O11 Displacement encoder attachment position  None  F Front  B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	None   M1   With displacement encoder, incremental, resolution 2.5 μm   M2   With displacement encoder, incremental, resolution 10 μm	F1	Food-safe according to supplementary information on materials
M1 With displacement encoder, incremental, resolution 2.5 μm M2 With displacement encoder, incremental, resolution 10 μm  O11 Displacement encoder attachment position  None F Front B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	M1 With displacement encoder, incremental, resolution 2.5 μm M2 With displacement encoder, incremental, resolution 10 μm  O11 Displacement encoder attachment position  None  F Front B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU  O13 Foot mounting  None	010	Displacement encoder
M2 With displacement encoder, incremental, resolution 10 μm  O11 Displacement encoder attachment position  None  F Front  B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	M2 With displacement encoder, incremental, resolution 10 μm  O11 Displacement encoder attachment position  None  F Front  B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU  O13 Foot mounting  None		
Displacement encoder attachment position  None F Front B Rear  O12 Toothed belt material Chloroprene rubber PU1 Uncoated PU, FDA-compliant PU2 Coated PU	Displacement encoder attachment position  None F Front B Rear  O12 Toothed belt material Chloroprene rubber PU1 Uncoated PU, FDA-compliant PU2 Coated PU  O13 Foot mounting None	M1	With displacement encoder, incremental, resolution 2.5 µm
None  F Front  B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	None  F Front  B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU  O13 Foot mounting  None	M2	With displacement encoder, incremental, resolution 10 µm
F Front B Rear  012 Toothed belt material Chloroprene rubber PU1 Uncoated PU, FDA-compliant PU2 Coated PU	F Front B Rear  O12 Toothed belt material Chloroprene rubber PU1 Uncoated PU, FDA-compliant PU2 Coated PU  O13 Foot mounting None	011	Displacement encoder attachment position
B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	B Rear  O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU  O13 Foot mounting  None		None
O12 Toothed belt material  Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	012 Toothed belt material Chloroprene rubber PU1 Uncoated PU, FDA-compliant PU2 Coated PU  013 Foot mounting None		
Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU	Chloroprene rubber  PU1 Uncoated PU, FDA-compliant  PU2 Coated PU  013 Foot mounting  None	В	Rear
PU1 Uncoated PU, FDA-compliant PU2 Coated PU	PU1 Uncoated PU, FDA-compliant PU2 Coated PU  013 Foot mounting None	012	Toothed belt material
PU2 Coated PU	PU2 Coated PU  013 Foot mounting  None		1
	013 Foot mounting None		
	None	PU2	Coated PU
Poot mounting		013	Foot mounting
	MF 1 record		
ME 1 record		MF	1 record

014	Profile mounting	
	None	
MA	1 50 pieces	
015	Proximity sensor, inductive, slot 8, N/O contact, cable 7.5 m	
	Without	
SA	1 6 units	
016	Description and an industrial state O. N/C contest, solds 7.5 mg	
016	Proximity sensor, inductive, slot 8, N/C contact, cable 7.5 m	
	Without	
SB	1 6 units	
017	Proximity switch, inductive, M8, N/O contact, cable 2.5 m	
	None	
SC	1 99 pieces	
50	1 >> preces	
018	Proximity switch, inductive, M8, N/C contact, cable 2.5 m	
	Without	
SD	1 99 pieces	
019	Proximity switch, inductive, M8, N/O contact, M8 plug	
	Without	
SE	1 99 pieces	
020	Proximity switch, inductive, M8, N/C contact, M8 plug	
020	Floxifility Switch, inductive, Mo, N/C contact, Mo plug	
	1	
CE	None	
SF	None 1 99 pieces	
SF		
	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire	
	1 99 pieces	
021	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces	
021	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None	
CA	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces	
CA	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces  Cover, sensor slot	
021 CA 022	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces  Cover, sensor slot  None 1 50 pieces	
CA	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces  Cover, sensor slot  None 1 50 pieces  Mounting slot covering	
021CA 022NS	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces  Cover, sensor slot  None 1 50 pieces  Mounting slot covering  None	
021 CA 022	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces  Cover, sensor slot  None 1 50 pieces  Mounting slot covering	
021CA 022NS	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces  Cover, sensor slot  None 1 50 pieces  Mounting slot covering  None	
021CA  022NS  023	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces  Cover, sensor slot  None 1 50 pieces  Mounting slot covering  None 1 50 units  Slot nut for mounting slot	
021CA  022NS  023	Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces  Cover, sensor slot  None 1 50 pieces  Mounting slot covering  None 1 50 units	
021CA  022NS  023	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces  Cover, sensor slot  None 1 50 pieces  Mounting slot covering  None 1 50 units  Slot nut for mounting slot  Without	
021CA  022NS  023	1 99 pieces  Connecting cable 2.5 m, M8, 3-wire  None 1 99 pieces  Cover, sensor slot  None 1 50 pieces  Mounting slot covering  None 1 50 units  Slot nut for mounting slot  Without	
021CA  022NS  023NC	Connecting cable 2.5 m, M8, 3-wire  None  1 99 pieces  Cover, sensor slot  None  1 50 pieces  Mounting slot covering  None  1 50 units  Slot nut for mounting slot  Without  1 99 units  Drive shaft  None	
021CA  022NS  023NC	Connecting cable 2.5 m, M8, 3-wire  None  1 99 pieces  Cover, sensor slot  None  1 50 pieces  Mounting slot covering  None  1 50 units  Slot nut for mounting slot  Without  1 99 units  Drive shaft	
021CA  022NS  023NC  024NM	Connecting cable 2.5 m, M8, 3-wire  None  1 99 pieces  Cover, sensor slot  None  1 50 pieces  Mounting slot covering  None  1 50 units  Slot nut for mounting slot  Without  1 99 units  Drive shaft  None  1 4 pieces	
021CA  022NS  023NC  024NM	Connecting cable 2.5 m, M8, 3-wire  None  1 99 pieces  Cover, sensor slot  None  1 50 pieces  Mounting slot covering  None  1 50 units  Slot nut for mounting slot  Without  1 99 units  Drive shaft  None	



- **Ø** - Size

70 ... 120

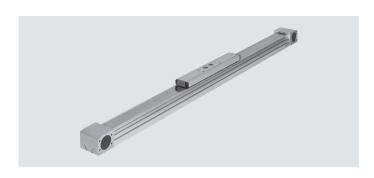
- Stroke length 50 ... 7400 mm



www.festo.com



Repair service



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		
ELGAS	[mm]	50 7000	50 7000	50 7400		
ELGAL	[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	10			
Max. acceleration [m/s <sup>2</sup> ]		50	50			
Repetition accuracy	[mm]	±0.08				

<sup>1)</sup> At 0.2 m/s

Operating and environmental conditions				
Ambient temperature <sup>1)</sup>	[°C]	-10 +60		
Degree of protection				
ELGA		IP40		
ELGAP0		IP00		
Duty cycle	[%]	100		

<sup>1)</sup> 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			
ELGAS	2.39	5.62	15.82			
ELGAL	3.33	7.49	21.44			
Additional weight per 1000 mm stroke						
ELGA	3.29	5.17	10.81			
ELGAP0	3.18	5.06	10.66			
Moving mass						
ELGA	0.80	2.01	5.08			
ELGAS	0.70	1.85	4.65			
ELGAL	1.03	2.53	6.63			

<sup>1)</sup> Including slide

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

## Datasheet

Toothed belt				
Size		70	80	120
Pitch	[mm]	3	5	5
Elongation <sup>1</sup> )				
ELGA	[%]	0.213	0.168	0.21
ELGAPU2	[%]	0.105	0.1	0.122
Effective diameter	[mm]	28.65	39.79	52.52
Feed constant	[mm/rev]	90	125	165

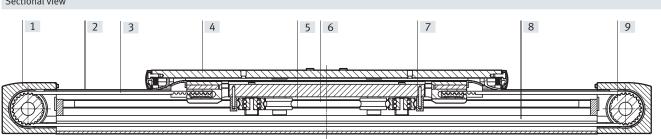
<sup>1)</sup> At max. feed force

Mas	Mass moments of inertia						
Size	9		70	80	120		
Jo							
	ELGA	[kg mm <sup>2</sup> ]	232	1044	4935		
-	ELGAS	[kg mm <sup>2</sup> ]	207	968	4592		
-	ELGAL	[kg mm <sup>2</sup> ]	278	1247	6006		
J <sub>H</sub> p	er metre stroke	[kg mm <sup>2</sup> /m]	19	97	221		
J <sub>L</sub> pe	er 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:

 $J_A = J_O + J_H x$  working stroke [m] +  $J_L x m_{payload}$  [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 or NBR with glass cord and nylon coating
	ELGAPU2	Polyurethane with steel cord and nylon cover
[4]	Slide	Anodised wrought aluminium alloy
[5]	Track roller	Hardened rolled steel
[6]	Guide rod	Tempered steel, hardened and hard chrome plated
[7]	Scraper	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

Technical data – Displacement encoder					
Туре		ELGAM1	ELGAM2		
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 sust	ained short circuit		
Electrical connection		8-pin plug connector, round design, M12	2		
Cable length	[mm]	160			

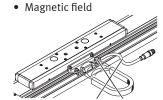
Operating and environmental conditions – Displacement encoder				
Ambient temperature	[°C]	−10 +70		
Degree of protection	,	IP64		
CE marking (see declaration of co	onformity)	To EU EMC Directive <sup>1</sup> )		

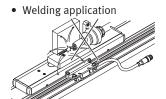
<sup>1)</sup> For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

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 note**

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

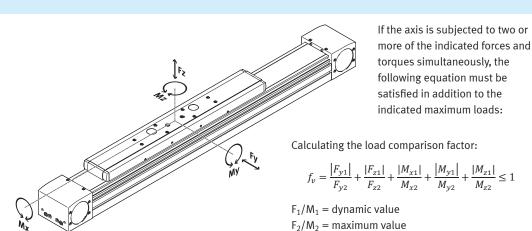




#### **Characteristic load values**

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.



Max. permissible force	Max. permissible forces and torques for a service life of 10000 km							
Size		70	80	120				
Fy <sub>max</sub> .	[N]	500	800	2000				
Fz <sub>max</sub>	[N]	500	800	2000				
Mx <sub>max</sub> .	[Nm]	11	30	100				
My <sub>max</sub> .								
ELGA	[Nm]	20	90	320				
ELGAS	[Nm]	20	90	320				
ELGAL	[Nm]	40	180	640				
Mz <sub>max</sub> .								
ELGA	[Nm]	20	90	320				
ELGAS	[Nm]	20	90	320				
ELGAL	[Nm]	40	180	640				

### Calculating the service life

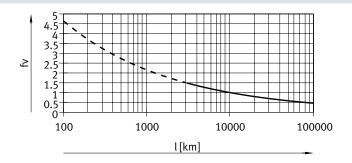
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor fv against the service life.

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

### Load comparison factor $f_{\nu}$ as a function of service life

#### Example:

A user wants to move an X kg load. Using the formula ( $\rightarrow$  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 Mz and My values. A load comparison factor  $f_v$  of 1 now gives a service life of 10000 km.



## · land - Note

Engineering software Electric Motion Sizing www.festo.com/x/electricmotion-sizing The engineering software can be used to calculate the guide workload for a service life of 5000 km.

 $f_{\nu}$  > 1.5 are only theoretical comparison values for the recirculating ball bearing guide.

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

Size 70

50
40
1
30
20
20
...

30

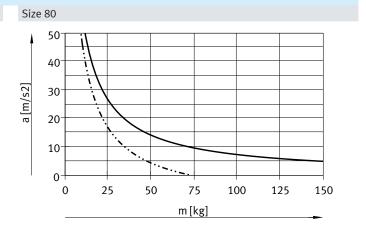
m [kg]

20

40

50

60



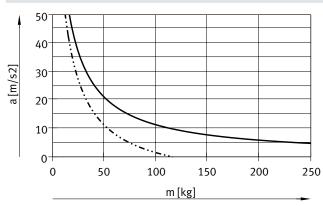
### Size 120

10

0-

0

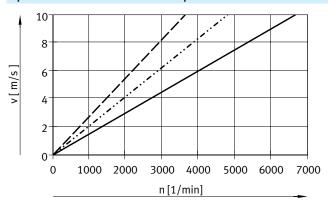
10



Horizontal mounting position

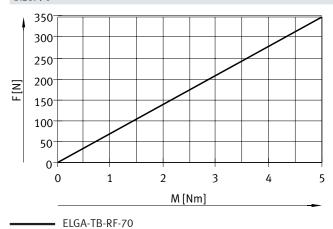
Vertical mounting position

## Speed v as a function of rotational speed n

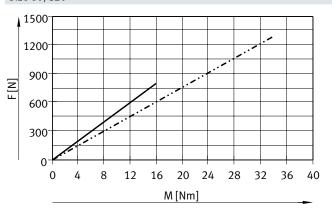


#### Theoretical feed force F as a function of the input torque M

Size: 70

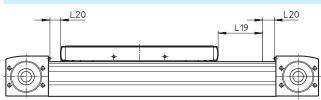


Size 80/120



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

### 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 L19 = Nominal stroke

L20 = Stroke reserve

- 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

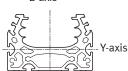
2x stroke reserve = 40 mm

Working stroke = 540 mm

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

### Second moment of area

Z-axis

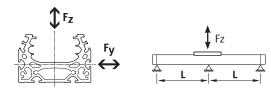


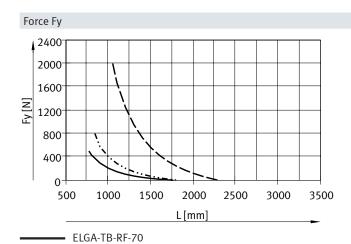
Size		70	80	120
ly	[mm <sup>4</sup> ]	1.39x10 <sup>5</sup>	2.70x10 <sup>5</sup>	1.42x10 <sup>6</sup>
Iz	[mm <sup>4</sup> ]	4.33x10 <sup>5</sup>	1.02x10 <sup>6</sup>	5.02x10 <sup>6</sup>

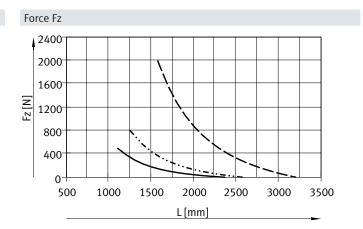
## Maximum permissible support spacing L (without profile mounting MUE/central support EAHF) as a function of force F

The axis may need to be supported in order to limit deflection in the case of long strokes.

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.







## **———** ELGA-TB-RF-120

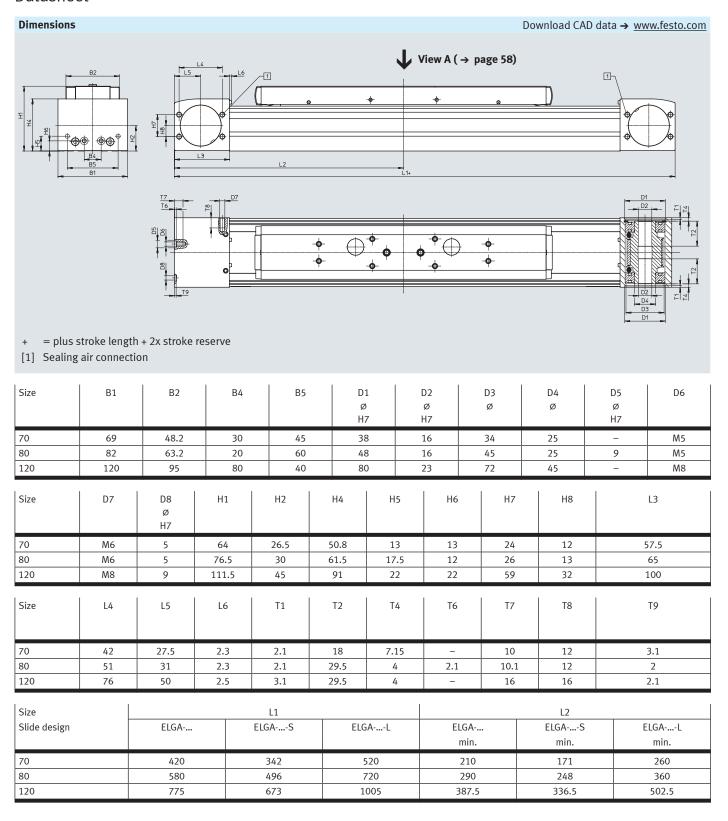
ELGA-TB-RF-80

#### 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.

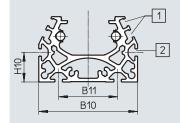
Size	Dynamic deflection (load moves)	Static deflection (stationary load)
70 120	0.05% of the axis length, max. 0.5 mm	0.1% of the axis length



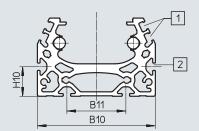
## Dimensions

Profile

### Size 70

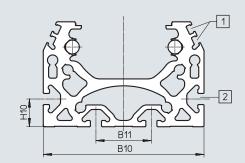


Size 80



Download CAD data → www.festo.com

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

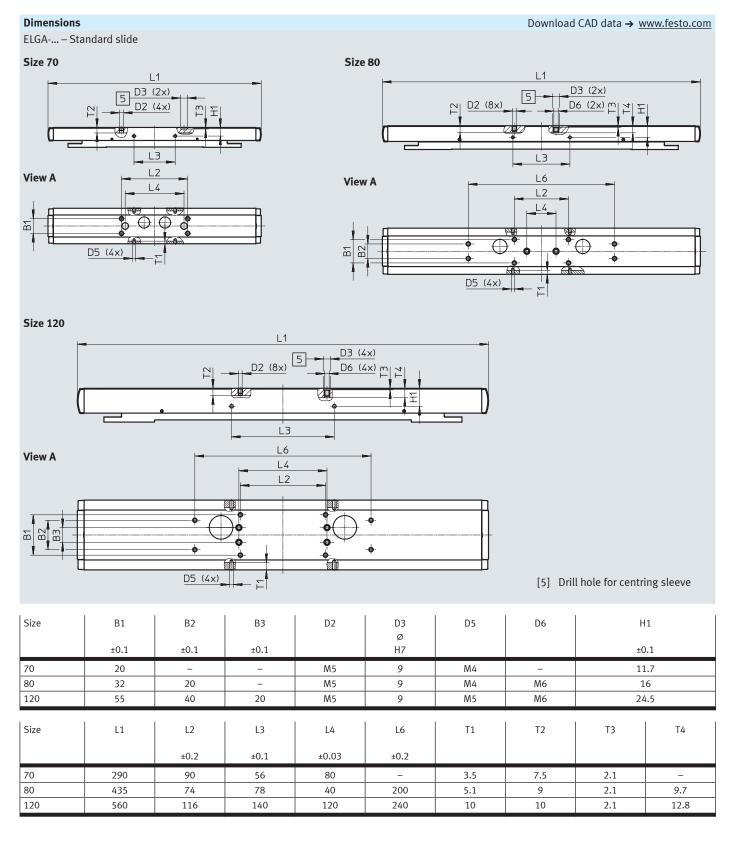
Size	B10	B11	H10
70	67	40	20
	σ,	40	20
80	80	40	20

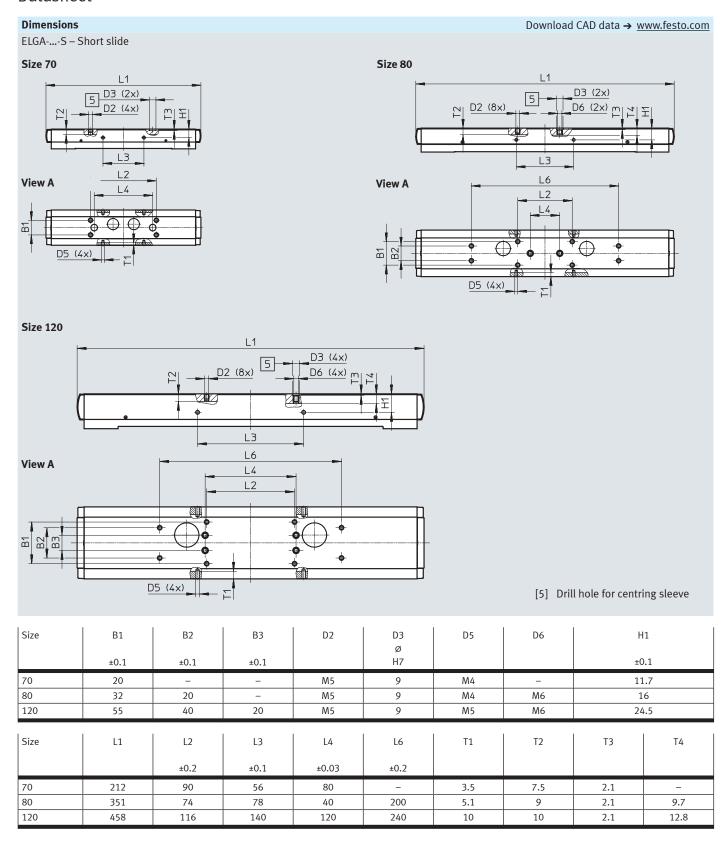


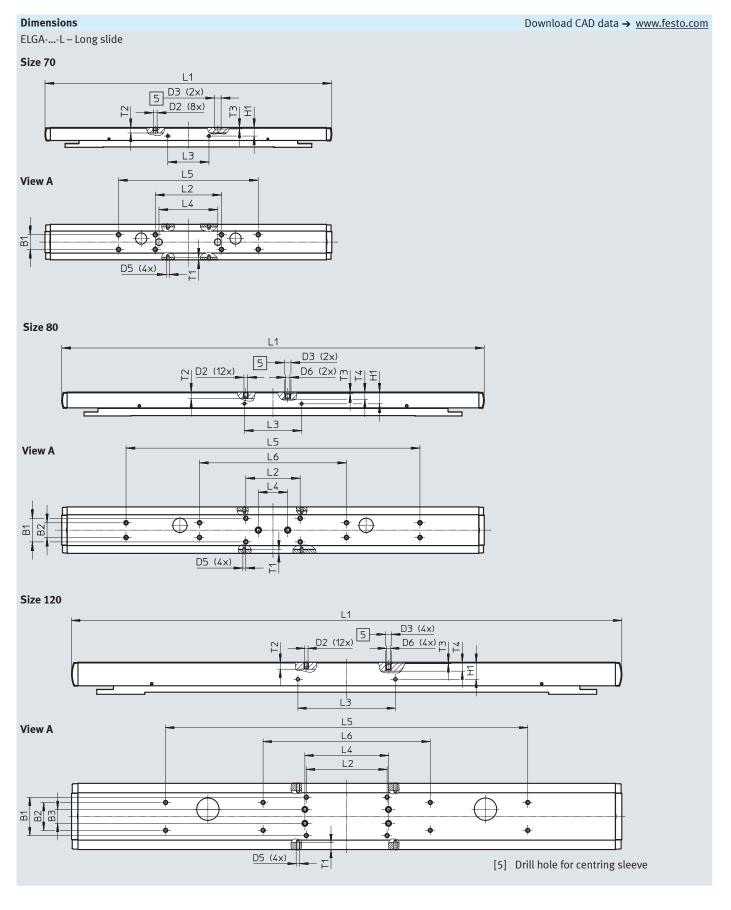
### Note

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

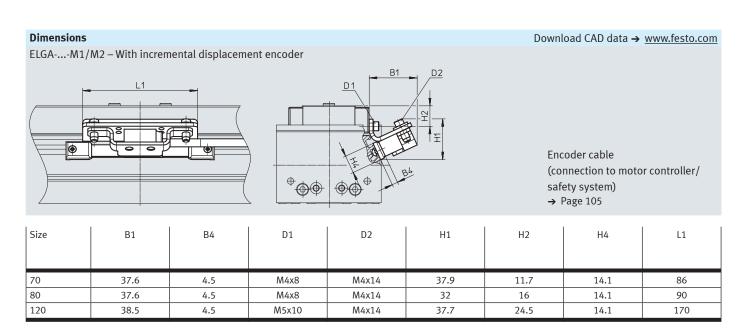
→ www.festo.com/sp User documentation



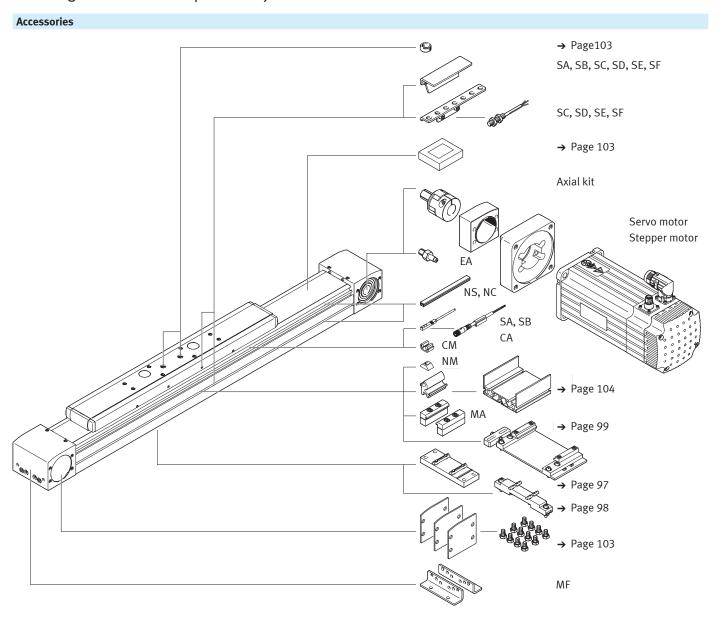




Size	B1	B2	В3	D2	D3	D5
					Ø	
	±0.1	±0.1	±0.1		H7	
70	20	-	_	M5	9	M4
80	32	20	-	M5	9	M4
120	55	40	20	M5	9	M5
Size	D6	H1	L1	L2	L3	L4
		±0.1		±0.2	±0.1	±0.03
70	_	11.7	390	90	56	80
70 80		11.7 16	390 575	90 74	56 78	80 40
80 120	M6 M6	16 24.5	575 790	74 116	78 140	40 120
80	M6	16	575	74	78	40
80 120	M6 M6	16 24.5	575 790	74 116	78 140	40 120
80 120	M6 M6	16 24.5 L6	575 790	74 116	78 140	40 120
80 120 Size	M6 M6 L5 ±0.2	16 24.5 L6 ±0.2	575 790 T1	74 116 T2	78 140 T3	40 120 T4



## Ordering data – Modular product system



## Ordering data – Modular product system

Ordering table Size		70	80	120	Conditions	Code	Enter code
Module no.	-:	1371245	1371246	1371247	Contactions		
Design		Linear axis		107.11		ELGA	ELGA
Function		Toothed belt				-TB	-TB
Guide		Roller bearing	a guide			-RF	-RF
		70	80	120			-KI
Stroke length	[mm] [mm]	17000	1 7000	17400			
Stroke leligili Stroke reserve		-	no stroke reserve)	1 / 400	[1]	H	
Stroke reserve	[mm]	0 999 (0 =	no stroke reserve)		[1]	П	
Slide design		Standard slid	e				
		50 7000	50 7000	50 7400			
		Slide, short	,	•	[2]	-S	
		50 7000	50 7000	50 7400			
		Long slide	,			-L	
		50 6900	50 6900	50 7200			
Protection against particles		Standard					
		Without cove	r strip			-P0	
Measurement system		None					
,		With displacement encoder, incremental, resolution 2.5 µm			1	-M1	
		With displacement encoder, incremental, resolution 10 µm				-M2	
Displacement encoder attachn	nent position	None					
'	'	Rear			[3]	-В	
		Advanced			[3]	-F	
Toothed belt material		Chloroprene	rubber		[-]		
		Coated PU				-PU2	
Accessories		Accessories enclosed separately				+	+
Foot mounting		1				MF	
Profile mounting		1 50				MA	
Proximity switch (SIES),	N/O contact, 7.5 m cable	1 6		,		SA	
inductive, slot type 0, PNP, incl. switch lug	N/C contact, 7.5 m cable	1 6				SB	
Proximity switch (SIEN),	N/O contact, 2.5 m cable	1 99				SC	
inductive, M8, PNP,	N/C contact, 2.5 m cable	1 99				SD	
incl. switch lug	N/O contact, M8 plug	1 99				SE	
with sensor bracket	N/C contact, M8 plug	1 99				SF	
Connecting cable 2.5 m, M8, 3-wire		199			CA		
Cover, sensor slot		1 50 (1 = 2 units, 500 mm)			NS		
Mounting slot covering		1 50 (1 = 2 units, 500 mm)			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 adapter		1 4			+	EA	

<sup>[1] ...</sup> 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

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

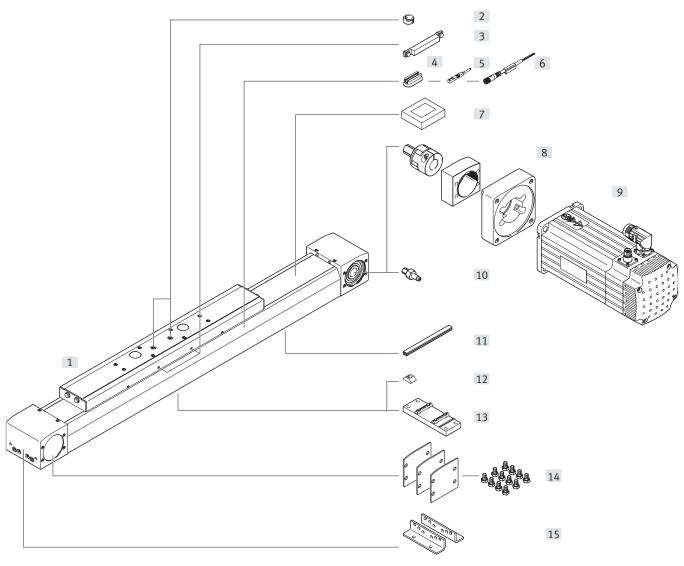


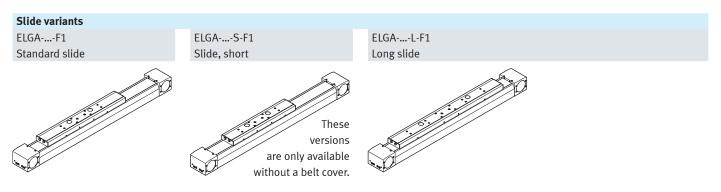
The code SA, SB includes a switch lug in the scope of delivery. The code SC, SD, SE, SF includes one switch lug and max. two sensor brackets in the scope of delivery.

<sup>[2]</sup> **S** Only with P0

## Peripherals overview – For the food zone







## Peripherals overview – For the food zone

	ssories Type/order code	Description	→ Page/Internet
	, // /	·	→ Page/Illiterilet
[1]	Toothed belt axis	Electric drive	66
	ELGA-TB-RF-F1		
[2]	Centring pin/sleeve	For centring loads and attachments on the slide	103
	ZBS, ZBH	Included in the scope of delivery:	
		- With size 70, 80, 120: 2x ZBH-9	
[3]	Switch lug EAPM	For sensing the slide position	102
4]	Mounting kit CRSMB	For mounting the proximity switches on the axis	102
5]	Proximity switch, T-slot SME-8M	For sensing the slide position	105
6]	Connecting cable NEBA	Via proximity switch	105
7]	Clamping component EADT	Tool for retensioning the cover strip	103
8]	Axial kit EAMM	For axial motor mounting (comprising coupling, coupling housing and motor flange)	eamm-a
9]	Motor EMMT	Motors specially matched to the axis, with or without gear unit, with or without brake	emmt
10]	Drive shaft adapter	Can be used as an alternative interface, as required	94
	EA	• No drive shaft adapter is required for the axis/motor combinations → page ‹?›	
11]	Slot cover NC	For protection against contamination	103
12]	Slot nut NM	For mounting attachments	103
13]	Central support EAHF-L5	For mounting the axis on the profile from underneath	97
14]	Cover kit EASC-L5	For covering the sides of the drive cover	103
15]	Foot mounting MF	For mounting the axis on the end cap	95

## Toothed belt axes ELGA-TB-RF-F1, with roller bearing guide

## Datasheet – For the food zone



- **Ø** -

Size

70 ... 120



Stroke length 50 ... 7400 mm



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Repair service



General technical data						
Size		70	80	120		
Design		Electromechanical axis with toothe	ed belt			
Guide		Roller bearing guide				
Mounting position		Any				
Working stroke						
ELGA	[mm]	50 7000	50 7000	50 7400		
ELGAS	[mm]	50 7000	50 7000	50 7400		
ELGAL	[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/s <sup>2</sup> ]	50				
Repetition accuracy	[mm]	±0.08				

<sup>1)</sup> At 0.2 m/s

Operating and environmental conditions			
Ambient temperature <sup>1)</sup>	[°C]	-10 +60	
Degree of protection			
ELGA	·	IP40	
ELGAP0		IP00	
Duty cycle	[%]	100	
Food safe <sup>2</sup> )		→ Supplementary material information	

<sup>1)</sup> Note operating range of proximity switches.

<sup>2)</sup> More information www.festo.com/sp  $\rightarrow$  Certificates.

Weight [kg]				
Size	70	80	120	
Basic weight with 0 mm stroke <sup>1</sup> )				
ELGA	2.81	6.17	17.17	
ELGAS	2.43	5.56	15.65	
ELGAL	3.38	7.36	21.11	
Additional weight per 1000 mm stroke				
ELGA	3.36	4.87	10.34	
ELGAP0	3.24	4.77	10.19	
Moving mass				
ELGA	0.82	2.04	5.14	
ELGAS	0.75	1.97	4.87	
ELGAL	1.04	2.55	6.69	

<sup>1)</sup> Including slide

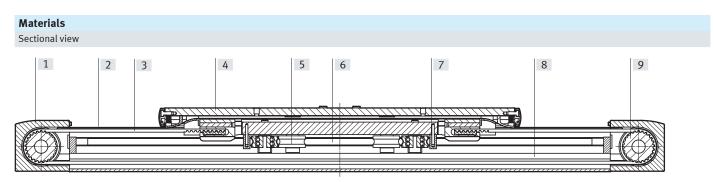
Toothed belt				
Size		70	80	120
Pitch	[mm]	3	5	5
Elongation <sup>1</sup> )	[%]	0.105	0.1	0.122
Effective diameter	[mm]	28.65	39.79	52.52
Feed constant	[mm/rev]	90	125	165

1) At max. feed force

Mass moments of inertia				
Size		70	80	120
Jo				
ELGA	[kg mm <sup>2</sup> ]	237	1062	4937
ELGAS	[kg mm <sup>2</sup> ]	209	975	4554
ELGAL	[kg mm <sup>2</sup> ]	282	1265	6008
J <sub>H</sub> per metre stroke	[kg mm <sup>2</sup> /m]	23	110	264
J <sub>L</sub> per kg payload	[kg mm²/Kg]	205	396	690

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

 $J_A = J_O + J_H x$  working stroke [m] +  $J_L x m_{payload}$  [kg]

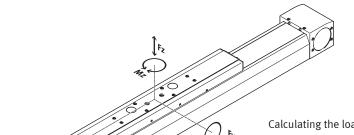


Axis				
[1]	Drive cover	Anodised wrought aluminium alloy		
[2]	Cover strip	Stainless steel strip, non-corroding		
[3]	Toothed belt	Polyurethane with steel cord		
[4]	Slide	Anodised wrought aluminium alloy		
[5]	Track roller	Hardened rolled steel (lubricant approved for the food zone)		
[6]	Guide rod	Hardened tempered steel		
[7]	Scraper	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		

#### **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:

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

 $F_1/M_1 = dynamic value$  $F_2/M_2 = maximum value$ 

Max. permissible forces and torques for a service life of 10000 km				
Size		70	80	120
Fy <sub>max</sub> .	[N]	400	640	1600
Fz <sub>max</sub>	[N]	400	640	1600
Mx <sub>max</sub> .	[Nm]	8.8	24	80
My <sub>max</sub> .				
ELGA	[Nm]	16	72	256
ELGAS	[Nm]	16	72	256
ELGAL	[Nm]	32	144	512
Mz <sub>max.</sub>				
ELGA	[Nm]	16	72	256
ELGAS	[Nm]	16	72	256
ELGAL	[Nm]	32	144	512

#### Calculating the service life

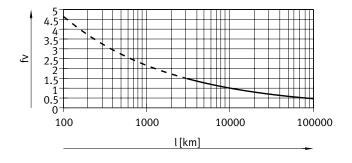
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor fv against the service life.

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

### Load comparison factor $f_{\nu}$ as a function of service life

### Example:

A user wants to move an X kg load. Using the formula ( $\rightarrow$  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 Mz and My values. A load comparison factor  $f_v$  of 1 now gives a service life of 10000 km.





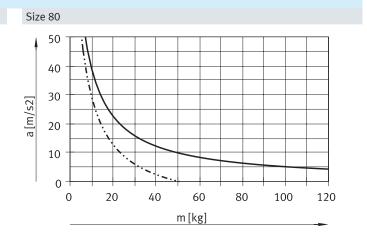
Engineering software Electric Motion Sizing www.festo.com/x/electricmotion-sizing The engineering software can be used to calculate the guide workload for a service life of 10000 km.

 $f_{\nu}$  > 1.5 are only theoretical reference values for the roller guide.

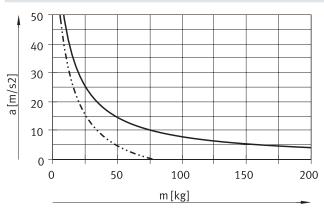
### Max. acceleration a as a function of payload m

Size 70

50
40
30
20
10
0
10
20
30
40
50
m [kg]



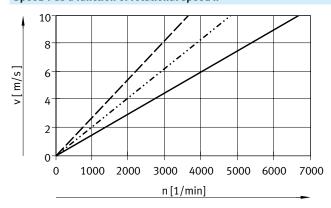
### Size 120



Horizontal mounting position

Vertical mounting position

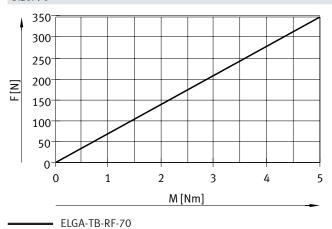
### Speed v as a function of rotational speed n



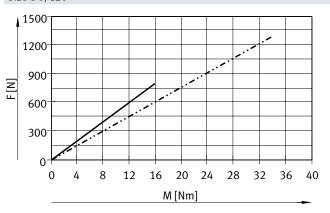
ELGA-TB-RF-70
ELGA-TB-RF-80
ELGA-TB-R-120

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

Size: 70

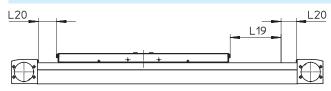


Size 8 0/120



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

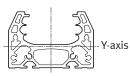
2x stroke reserve = 40 mm

Working stroke = 540 mm

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

### Second moment of area

Z-axis

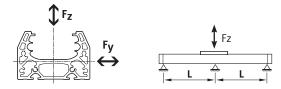


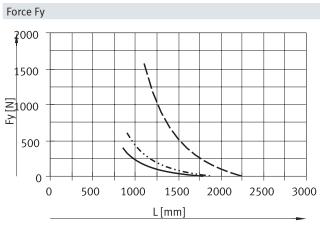
Size		70	80	120
ly [	[mm <sup>4</sup> ]	1.48x10 <sup>5</sup>	2.77x10 <sup>5</sup>	1.32x10 <sup>6</sup>
Iz [	[mm <sup>4</sup> ]	4.52x10 <sup>5</sup>	1.00x10 <sup>6</sup>	4.74x10 <sup>6</sup>

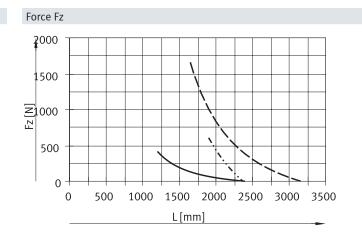
### Maximum permissible support span L (without central support EAHF) as a function of force F

The axis may need to be supported in order to limit deflection in the case of long strokes.

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.







ELGA-TB-RF-70

-----ELGA-TB-RF-80

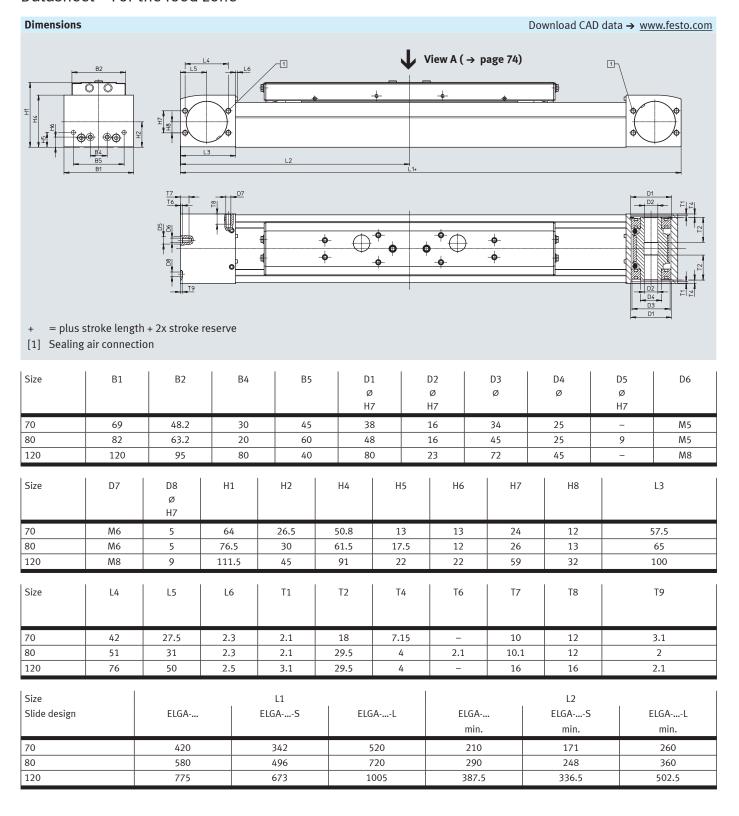
----ELGA-TB-RF-120

#### Recommended deflection limits

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

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

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

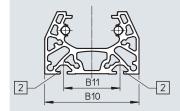


### Datasheet – For the food zone

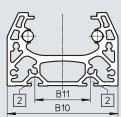
# Dimensions

Profile

#### Size 70

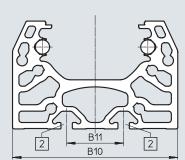


Size 80



Download CAD data → www.festo.com

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

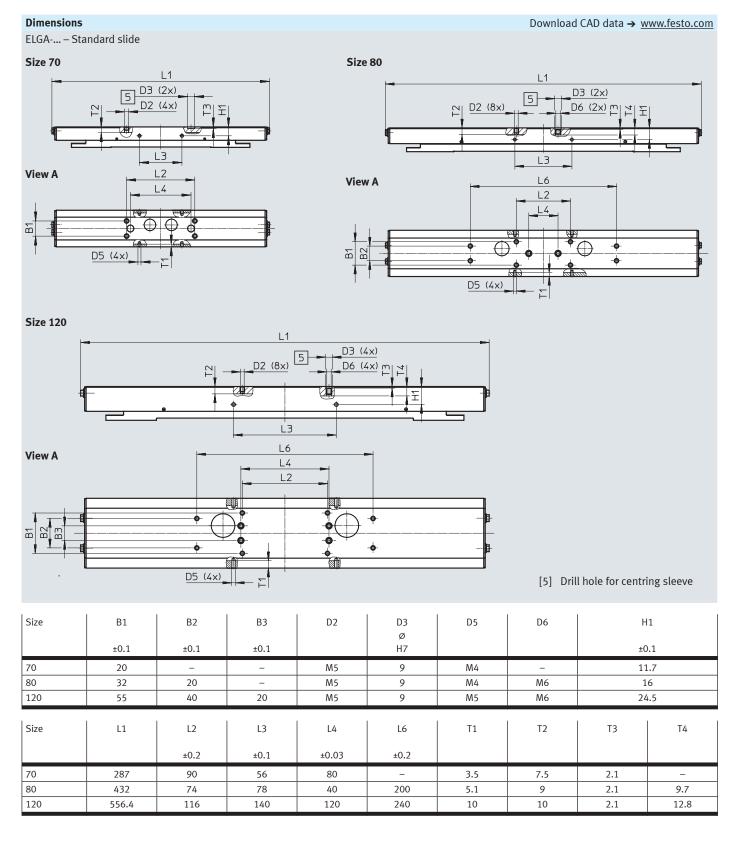


#### Note

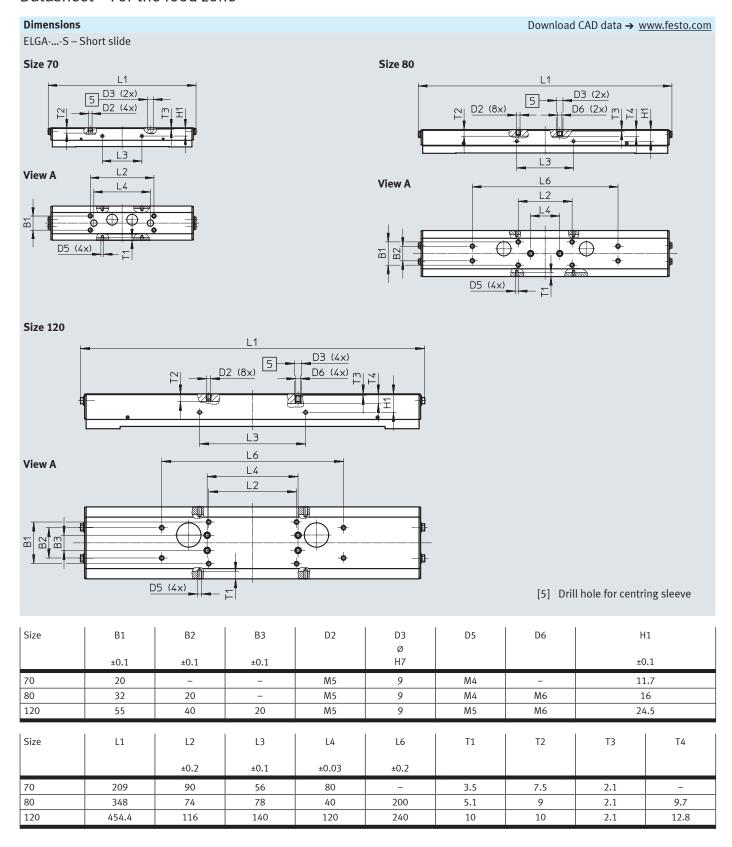
Requirements for the flatness of the bearing surface and of attachments as well as for use in parallel structures

→ www.festo.com/sp User documentation

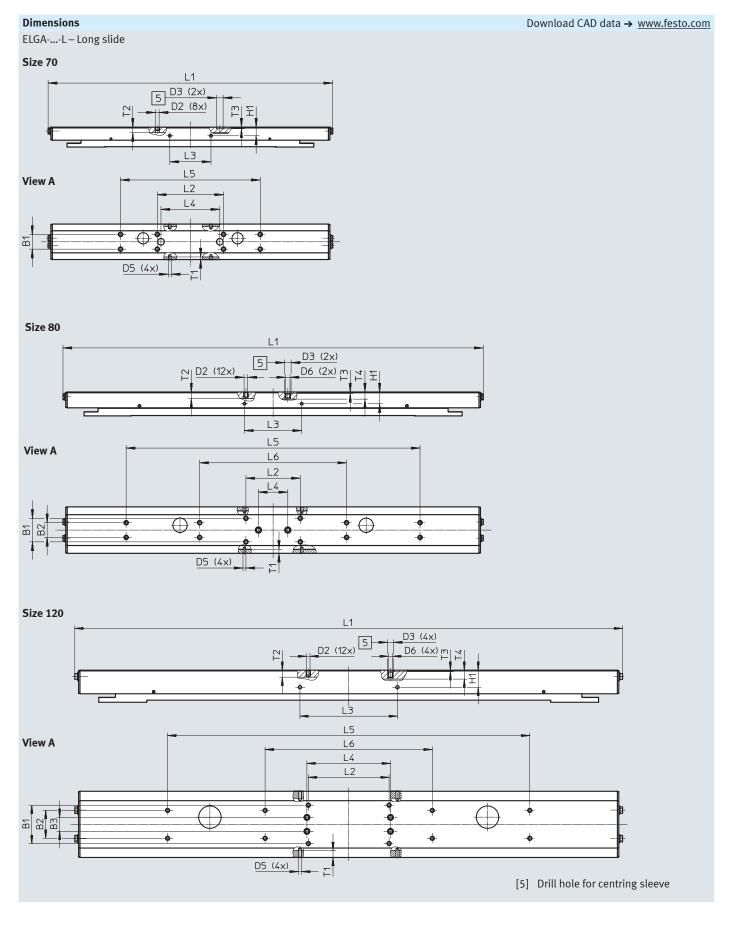
#### Datasheet – For the food zone



#### Datasheet - For the food zone



### Datasheet – For the food zone



# Datasheet – For the food zone

Size	B1	B2	В3	D2	D3 Ø	D5
	±0.1	±0.1	±0.1		H7	
70	20	_	_	M5	9	M4
80	32	20	-	M5	9	M4
120	55	40	20	M5	9	M5
Size	D6	H1	L1	L2	L3	L4
		±0.1		±0.2	±0.1	±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	L6	T1	T2	ТЗ	T4
	±0.2	±0.2				
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 → Page 103 → Page 102 → Page 105 → Page 105 → Page 102 → Page 103 Axial kit Servo motor Stepper motor EΑ NC NM → Page 97 Page 103 MF

# Ordering data – Modular products – For the food zone

Ordering table							
Size		70	80	120	Conditions	Code	Enter code
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]	1 7000	1 7000	1 7400			
Stroke reserve	[mm]	0 999 (0 = no	o stroke reserve)		[1]	Н	
Slide design		Standard slide	Standard slide				
		1 7000	1 7000	1 7400			
		Slide, short		[2]	-S		
		1 7000	1 7000	1 7400			
		Long slide				-L	
		1 6900	1 6900	1 7200			
Protection against particles		Standard					
		Without cover	strip			-P0	
Additional features		Food-safe as p	Food-safe as per supplementary material information		[3]	-F1	-F1
Toothed belt material		Uncoated PU	Uncoated PU			-PU1	-PU1
Accessories		Accessories en	Accessories enclosed separately			+	+
Foot mounting		1	1			MF	
Mounting slot covering		1 50 (1 = 2 ι	1 50 (1 = 2 units, 500 mm)			NC	
Slot nut for mounting slot		1 99	1 99			NM	
Drive shaft adapter		1 4				EA	

<sup>[1] ...</sup> 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

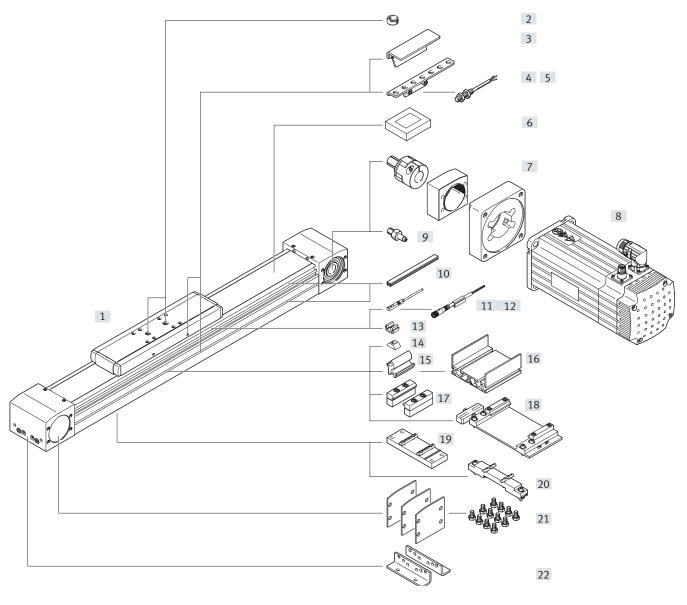
<sup>[2]</sup> **S** Only with P0

<sup>[3]</sup> **F1** Not in combination with M1, M2

<sup>[4]</sup> 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]	Toothed belt axis ELGA-TB-G	Electric drive	82			
2]	Centring pin/sleeve ZBS, ZBH	<ul> <li>For centring loads and attachments on the slide</li> <li>Included in the scope of delivery:</li> <li>With size 70: 2x ZBS-5</li> <li>With size 80, 120: 2x ZBH-9</li> </ul>	103			
3]	Switch lug SA, SB, SC, SD, SE, SF	For sensing the slide position	100			
4]	Sensor bracket SC, SD, SE, SF	For mounting the inductive proximity switches (round design) on the axis	101			
5]	Proximity switch, M8 SC, SD, SE, SF	<ul> <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>	105			
6]	Clamping component EADT	Tool for retensioning the cover strip	103			
7]	Axial kit EAMM	For axial motor mounting (comprising coupling, coupling housing and motor flange)	eamm-a			
8]	Motor EMMT	Motors specially matched to the axis, with or without gear unit, with or without brake	<u>emmt</u>			
9]	Drive shaft adapter EA	<ul> <li>Can be used as an alternative interface, as required</li> <li>No drive shaft adapter is required for the axis/motor combinations → page <? ></li> </ul>	94			
10]	Slot cover NS, NC	For protection against contamination				
[11]	Proximity switch, T-slot SA, SB	<ul> <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>	104			
12]	Connecting cable CA	For proximity switch (order code SE and SF)	105			
13]	Clip CM	For mounting the proximity switch cable in the slot	103			
14]	Slot nut NM	For mounting attachments	103			
15]	Adapter kit DHAM	For mounting the support profile on the axis	104			
16]	Support profile HMIA	For mounting and guiding an energy chain	104			
17]	Profile mounting MA	For mounting the axis on the side of the profile	96			
18]	Adjusting kit EADC-E16	For mounting the axis on a vertical surface. Once mounted, the axis can be aligned horizontally	99			
19]	Central support EAHF-L5	For mounting the axis on the profile from underneath	97			
20	Adjusting kit EADC-E15	Height-adjustable. Can be used to easily compensate for any unevenness in the bearing surface	98			
21]	Cover kit EASC-L5	For covering the sides of the drive cover	103			
22]	Foot mounting MF	<ul> <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>	95			

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

# Type codes

001	Series			
ELGA	Gantry axis			
002	Drive system			
ТВ	Toothed belt			
ID	Toothed bett			
003	Guide			
G	Basic variant			
004	Size			
70	70			
80	80			
120	120			
005	Stroke range [mm]			
003		_		
•••	50 8500			
006	Stroke reserve			
OH	None			
Н	0 999 mm			
007	Protection against particles			
	Standard			
P0	Without strip cover			
008	Material of toothed belt			
CR	Chloroprene rubber			
PU1	Uncoated PU, FDA-compliant			
PU2	Coated PU			
009	Foot mounting			
	None			
MF	1 record			
010	Profile mounting			
	None			
MA	1 2 units			
011	Proximity sensor, inductive, slot 8, N/O contact, cable 7.5 m			
		-		
	Without			

012	Proximity sensor, inductive, slot 8, N/C contact, cable 7.5 m
	Without
SB	1 6 units
013	Proximity switch, inductive, M8, N/O contact, cable 2.5 m
013	
SC	None 1 99 pieces
50	1 77 pieces
014	Proximity switch, inductive, M8, N/C contact, cable 2.5 m
	Without
SD	1 99 pieces
015	Proximity switch, inductive, M8, N/O contact, M8 plug
	Without
SE	1 99 pieces
016	Proximity switch, inductive, M8, N/C contact, M8 plug
	None
SF	1 99 pieces
017	Connecting cable 2.5 m, M8, 3-wire
	None
CA	1 99 pieces
018	Cover, sensor slot
	None
NS	1 50 pieces
019	Mounting slot covering
	None
NC	1 50 units
020	Slot nut for mounting slot
	Without
NM	1 99 units
021	Cable clip
321	None
CM	units
1	
022	Drive shaft
	None
EA	1 4 pieces



- **Ø** - Size

70 ... 120

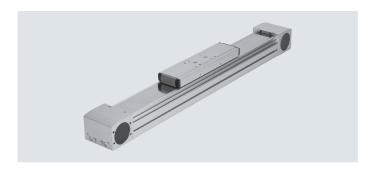
- Stroke length 50 ... 8500 mm



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Repair service



General technical data					
Size		70	80	120	
Design		Electromechanical axis with toothe	ed belt		
Guide		Plain-bearing guide			
Mounting position		Any			
Working stroke	[mm]	50 8500	50 8500	50 8500	
Max. feed force F <sub>x</sub>	[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	$[m/s^2]$	50			
Repetition accuracy	[mm]	±0.08			

<sup>1)</sup> At 0.2 m/s

<sup>2)</sup> 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			
ELGAP0		IP00			
Duty cycle	[%]	100			

<sup>1)</sup> 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	
ELGAPU2	[%]	0.105	0.1	0.122	
Effective diameter	[mm]	28.65	39.79	52.52	
Feed constant	[mm/rev]	90	125	165	

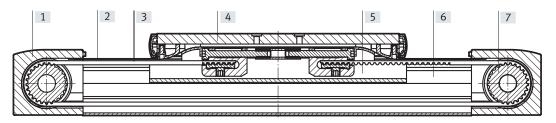
<sup>1)</sup> At max. feed force

Mass moments of inertia					
Size		70	80	120	
Jo	[kg mm <sup>2</sup> ]	175	666	3201	
J <sub>H</sub> per metre stroke	[kg mm <sup>2</sup> /m]	19	93	215	
J <sub>L</sub> 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:  $J_A = J_0 + J_H x$  working stroke [m] +  $J_L x$  m<sub>payload</sub> [kg]

#### Materials

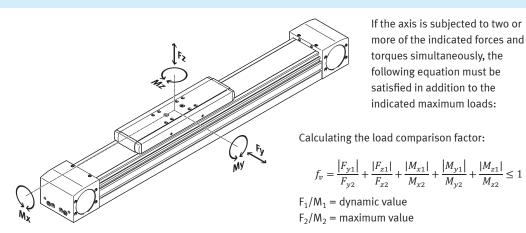
Sectional view



Axis		
[1]	Drive cover	Anodised wrought aluminium alloy
[2]	Cover strip	Stainless steel strip, non-corroding
[3]	Toothed belt	
	ELGA	Polychloroprene or NBR with glass cord and nylon coating
	ELGAPU2	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 My and Mz, the guide may lock automatically during dynamic operation. Therefore, make sure that the feed force is applied as close as possible to the slide.



Permissible forces an	nd torques			
Size		70	80	120
Fy <sub>max</sub> .	[N]	80	200	380
Fz <sub>max</sub>	[N]	400	800	1600
Mx <sub>max</sub> .	[Nm]	5	10	20
My <sub>max</sub> .	[Nm]	30	60	120
Mz <sub>max</sub> .	[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.

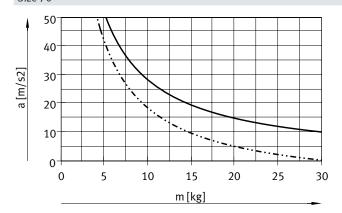
The plain-bearing guide is not backlash-free. The toothed belt axis ELGA-TB-RF or ELGA-TB-KF is recommended for applications that need to be backlash-free, or applications involving high torque loads.

Engineering software Electric Motion Sizing

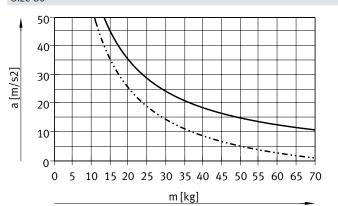
www.festo.com/x/electric-motion-sizing

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

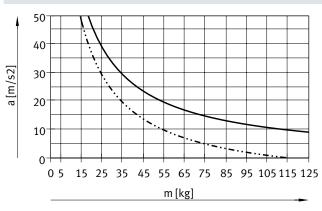
Size 70



#### Size 80



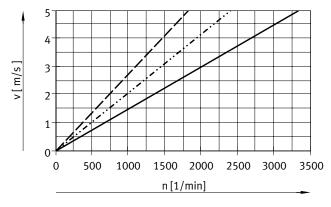
#### Size 120



Horizontal mounting position

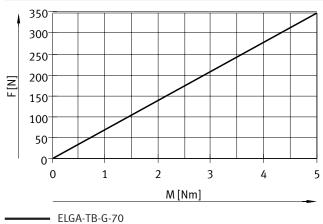
Vertical mounting position

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

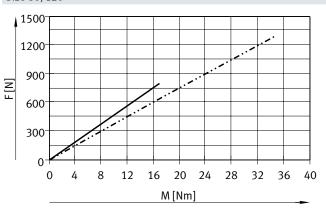


#### Theoretical feed force F as a function of the input torque M

Size: 70

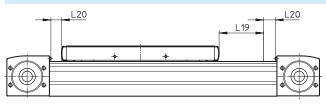


Size 80/120



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

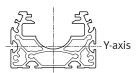
(540 mm = 500 mm + 2x 20 mm)

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 moment of area

Z-axis

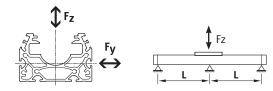


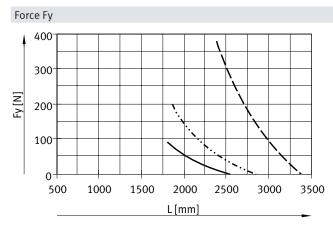
Size		70	80	120
ly	[mm <sup>4</sup> ]	1.47x10 <sup>5</sup>	2.77x10 <sup>5</sup>	1.23x10 <sup>6</sup>
Iz	[mm <sup>4</sup> ]	4.25x10 <sup>5</sup>	9.07x10 <sup>5</sup>	4.03x10 <sup>6</sup>

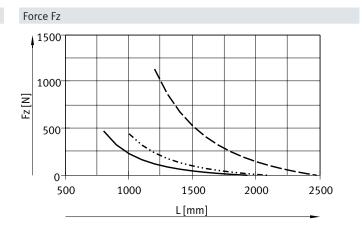
#### Maximum permissible support spacing L (without profile mounting MUE/central support EAHF) as a function of force F

The axis may need to be supported in order to limit deflection in the case of long strokes.

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.







ELGA-TB-G-70

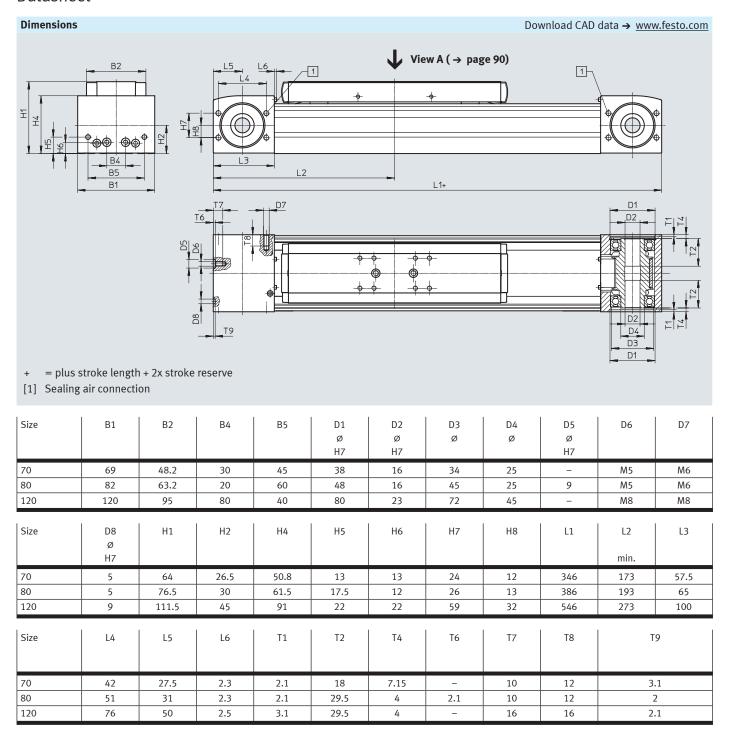
-----ELGA-TB-G-80

----ELGA-TB-G-120

#### Recommended deflection limits

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

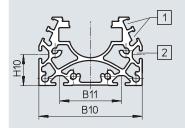
Size	Dynamic deflection (load moves)	Static deflection (stationary load)
70 120	0.05% of the axis length, max. 0.5 mm	0.1% of the axis length



# Dimensions

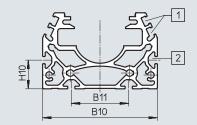
Profile

#### Size 70



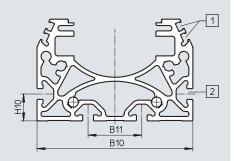
- [1] Sensor slot for proximity switch
- [2] Mounting slot for slot nut
  With size 70, 80: slot nut NST-5-M5
  With size 120: slot nut NST-8-M6

### Size 80



#### Download CAD data → www.festo.com

Size: 120



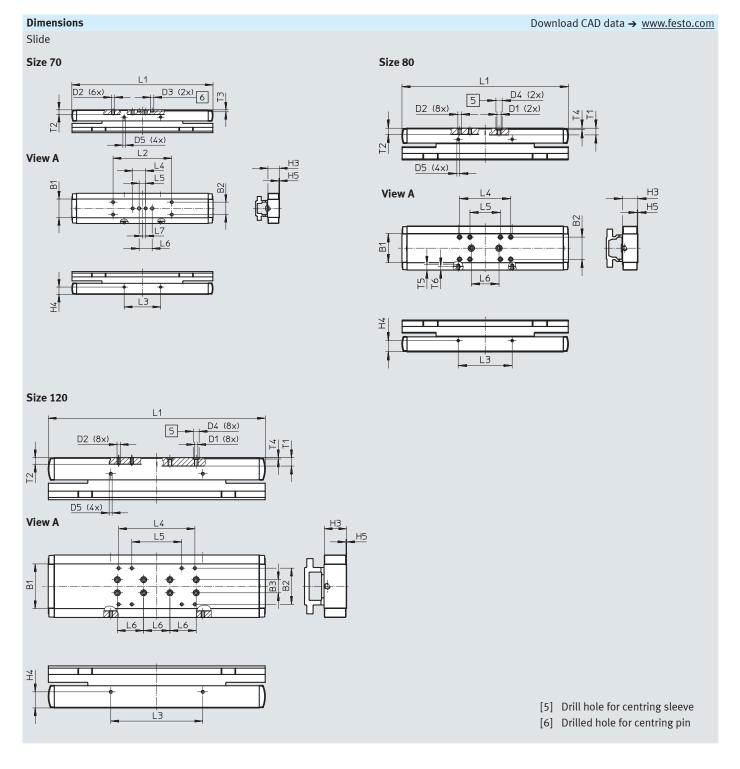
Size	B10	B11	H10
70	67	40	20
80	80	40	20



#### Note

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

→ www.festo.com/sp User documentation

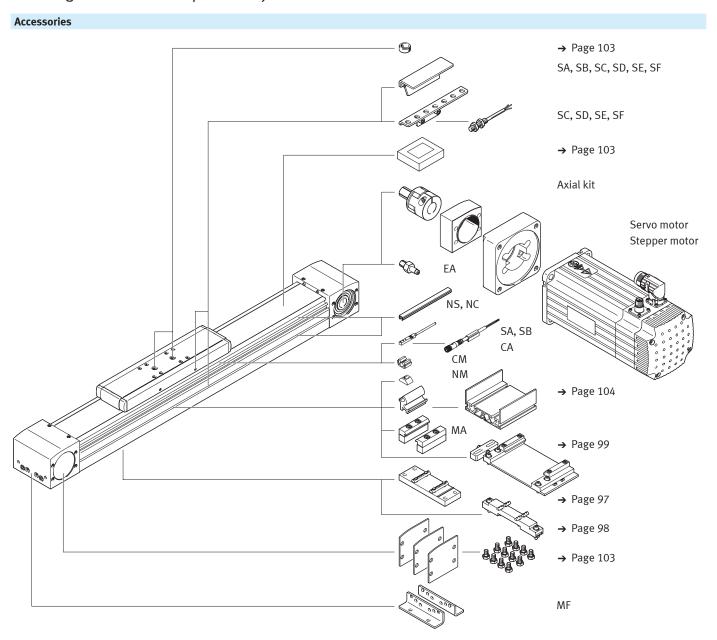


# Toothed belt axes ELGA-TB-G, with plain-bearing guide

# Datasheet

Size	B1	B2	В3	D1	D2	D3 Ø	D4 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	H5	L1	L2	L3	L4	L5
		±0.1			±0.1	±0.1		
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	L7	T1	T2	ТЗ	T4	T5	T6
	±0.03				+0.1	+0.1		
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



# Ordering data – Modular product system

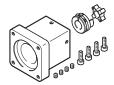
Ordering table							
Size		70	80	120	Conditions	Code	Enter code
Module no.		570502	570503	570504			
Design		Linear axis				ELGA	ELGA
Function		Toothed belt				-TB	-TB
Guide		Plain-bearing g	guide			-G	-G
Size	[mm]	70	80	120			
Stroke length	[mm]	1 8500					
Stroke reserve	[mm]	0 999 (0 = no	o stroke reserve)		[1]	Н	
Protection against particles		Standard					
		Without cover	strip			-P0	
Toothed belt material		Chloroprene ru	oroprene rubber				
		Coated PU				-PU2	
Accessories		Accessories enclosed separately				+	+
Foot mounting		1				MF	
Profile mounting		1 50				MA	
Proximity switch (SIES), inductive, slot type 8, PNP,	N/O contact, 7.5 m cable	1 6				SA	
incl. switch lug	N/C contact, 7.5 m cable	1 6				SB	
Proximity switch (SIEN),	N/O contact, 2.5 m cable	1 99				SC	
inductive, M8, PNP,	N/C contact, 2.5 m cable	1 99				SD	
incl. switch lug with sensor	N/O contact, M8 plug	1 99				SE	
bracket	N/C contact, M8 plug	1 99				SF	
Connecting cable 2.5 m, M8, 3	-wire	1 99				CA	
Cover, sensor slot		1 50 (1 = 2 t	ınits, 500 mm)			NS	
Mounting slot covering		1 50 (1 = 2 t	ınits, 500 mm)			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 adapter		1 4				EA	

<sup>[1] ...</sup> 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.

#### Permitted axis/motor combinations for axial kits



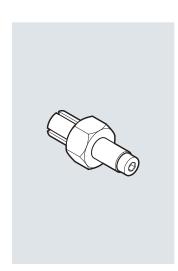
Under the following links you will find all information about:

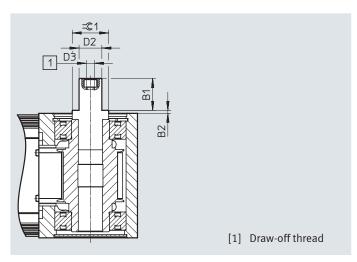
- Axis/motor combinations
- Permitted third-party motors
- Technical data
- Dimensions

For axial kits → Internet: eamm-a

#### Drive shaft EAMB

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



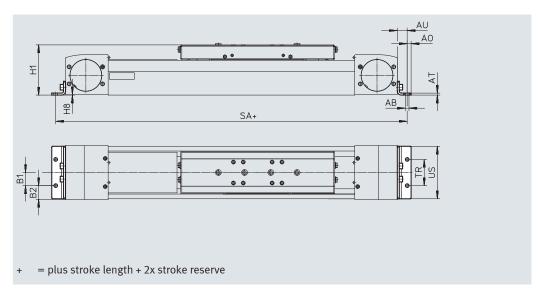


Dimensions and o	rdering data							
For size	B1	B2	D2 Ø h7	D3	<b>=</b> ©1	Weight [g]	Part no.	Туре
70	21	1.85	15	M6	21	70	1344642	EAMB-24-9-15X21-16X20
' \	21	1.05	1 17	1010	21	70	1344042	LAMD-24-9-13A21-10A20
80	21	2	15	M6	21	70	558036	EAMB-24-6-15X21-16X20
		2 2	_			1		

#### Foot mounting HPE

For ELGA-TB-KF/-KF-F1 For ELGA-TB-G (order code MF) Material: Galvanised steel RoHs-compliant





Dimensions and o	rdering data							
For size	AB	AO	AT	AU	B1	B2	H1	Н8
	Ø							
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

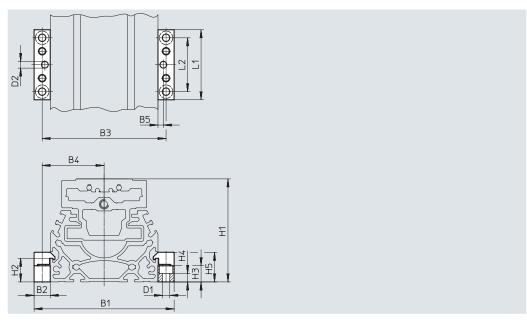
For size			SA			TR	US
	ELGA-TB-KF	ELGA-TB-RF	ELGA-TB-RF-S	ELGA-TB-RF-L	ELGA-TB-G		
70	372	446	368	546	372	40	67
80	416	610	526	750	416	40	80
120	590	819	717	1049	590	80	116
150	762	_	-	_	_	80	150

For size	Weight	Part no.	Туре
	[g]		
70	115	558321	HPE-70
80	150	558322	HPE-80
120	578	558323	HPE-120
150	1181	3002636	HPE-150

### Profile mounting MUE

For ELGA-TB-KF For ELGA-TB-RF For ELGA-TB-G (order code MA) Material: Anodised aluminium RoHs-compliant





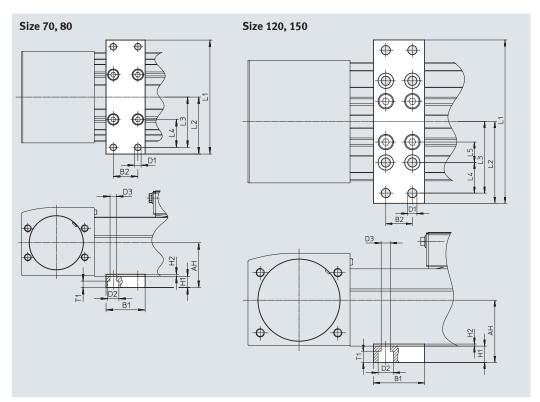
Dimensions and o	rdering data								
For size	B1	B2	В3	B4	B5	D1	D2	H1	H2
						Ø	Ø		
							H7		
70	91	12	79	39.5	4	5.5	5	64	17.5
70 80	91 104	12 12	79 92	39.5 46	4	5.5 5.5	5 5	64 76.5	17.5 17.5
	-						5 5 5		

For size	Н3	H4	H5	L1	L2	Weight	Part no.	Туре
						[g]		
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

#### Central support EAHF

For ELGA-TB-KF/-KF-F1 For ELGA-TB-RF/-RF-F1 For ELGA-TB-G Material: Anodised aluminium RoHs-compliant





Dimensions and o	imensions and ordering data									
For size	AH	B1	B2	D1	D2	D3	H1	L1		
				Ø	Ø	Ø				
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		

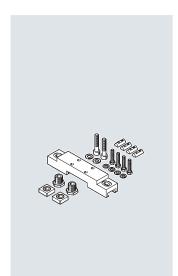
For size	L2	L3	L4	L5	T1	Weight	Part no.	Туре
						[g]		
70	51	45	25	-	5.7	113	2349256	EAHF-L5-70-P
80	56	50	30			123	3535188	EAHF-L5-80-P
120	80	70	30	20	11	384	2410274	EAHF-L5-120-P
150	100	90	50	-		495	3535189	EAHF-L5-150-P

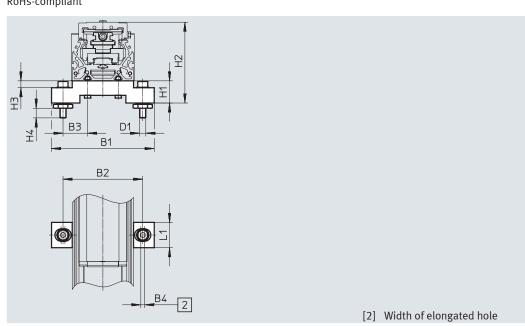
#### Adjusting kit EADC-E15

Material:

EADC-E15-80/120: Wrought aluminium alloy

EADC-E15-185: Steel RoHs-compliant



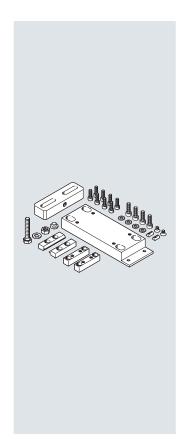


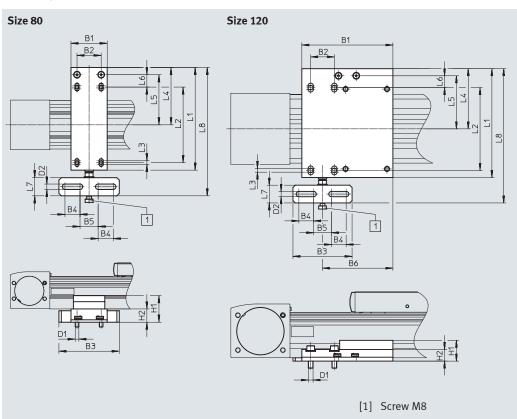
Dimensions and o	limensions and ordering data										
For size	B1	B2	В3	B4	D1	H1					
70	134	104	32	5	M8	29					
80	134	104	32	5	M8	29					
120	170	140	50	5	M8	29					
150	236	209	64.5	5	M8	29					

For size	H2	Н3	H4	L1	Weight	Part no.	Туре
					[g]		
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

#### Adjusting kit EADC-E16

Material: Wrought aluminium alloy RoHs-compliant





Dimensions and o	imensions and ordering data											
For size	B1	B2	B3	B4	B5	В6	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 [g]	Part no.	Туре
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

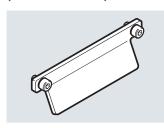
#### Toothed belt axes ELGA-TB

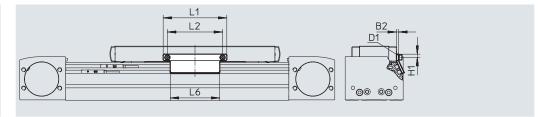
### Accessories

#### 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 o	Dimensions and ordering data									
For size	B2	D1	H1	L1	L2	L6	Weight	Part no.	Туре	
							[g]			
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	

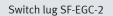
#### Switch lug SF-EGC-2

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)

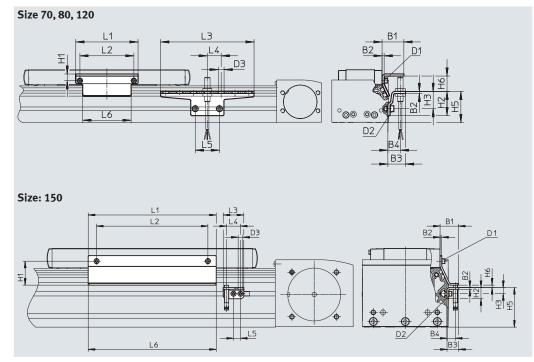
Material: Galvanised steel RoHS-compliant





Sensor bracket HWS-EGC





Dimensions and ordering data									
B1	B2	В3	B4	D1	D2	D3	H1	H2	
						Ø			
31.5	3	25.5	18	M4	M5	8.4	9.5	35	
31.5	3	25.5	18	M4	M5	8.4	9.5	35	
32	3	25.5	18	M5	M5	8.4	13.2	65	
33	3	21	15	M5	M5	8.4	43	20	
	B1 31.5 31.5 32	B1 B2 31.5 3 31.5 3 32 3	B1     B2     B3       31.5     3     25.5       31.5     3     25.5       32     3     25.5	B1     B2     B3     B4       31.5     3     25.5     18       31.5     3     25.5     18       32     3     25.5     18	B1     B2     B3     B4     D1       31.5     3     25.5     18     M4       31.5     3     25.5     18     M4       32     3     25.5     18     M5	B1     B2     B3     B4     D1     D2       31.5     3     25.5     18     M4     M5       31.5     3     25.5     18     M4     M5       32     3     25.5     18     M5     M5	B1     B2     B3     B4     D1     D2     D3       31.5     3     25.5     18     M4     M5     8.4       31.5     3     25.5     18     M4     M5     8.4       32     3     25.5     18     M5     M5     8.4	B1     B2     B3     B4     D1     D2     D3     H1       31.5     3     25.5     18     M4     M5     8.4     9.5       31.5     3     25.5     18     M4     M5     8.4     9.5       32     3     25.5     18     M5     M5     8.4     13.2	

For size	Н3	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
150	11	71	4.5	230	200	37	25	12.5	230

For size	Weight [g]	Part no.	Туре
	Switch lug		
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 [g]	Part no.	Туре
	Sensor bracke	t	
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

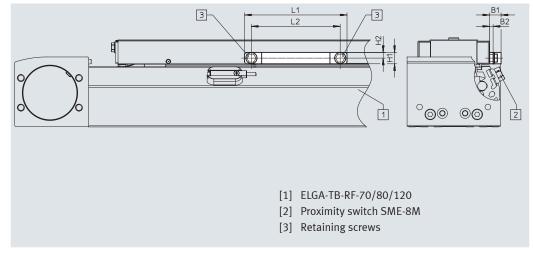
The proximity switches SIEN-M8B cannot be mounted in the area of the

profile mounting MUE.

#### Switch lug EAPM

For sensing via proximity switch SME-8M For ELGA-TB-KF-F1 Material: Wrought aluminium alloy RoHs-compliant





Dimensions and o	rdering data								
For size	B1	B2	H1	H2	L1	L2	Weight	Part no.	Туре
							[g]		
70	10	3	10	5	70	56	46	2417032	EAPM-L5-70-SLM
70 80	10 10	3	10 10	5	70 90	56 78	46 66	2417032 2671318	EAPM-L5-70-SLM EAPM-L5-80-SLM

Ordering data				
	For size	Description	Part no.	Туре
Mounting kit CRSMB				
	70 120	For proximity switches SME-8M/SME-8 For ELGA-TB-KF-F1 For ELGA-TB-RF-F1	525565	CRSMB-8-32

Ordering data						
	For size	Description	Order code	Part no.	Туре	PU <sup>1)</sup>
Slot nut NST	70.00	L. Franciscotto etal	LNIAA	150016	NCT F MF	
	70, 80	<ul><li>For mounting slot</li><li>For ELGA-TB-KF/-KF-F1</li></ul>	NM _	150914 8047843	NST-5-M5 NST-5-M5-10	1 10
		• For ELGA-TB-RF/-RF-F1	-	8047878	NST-5-M5-10	50
	120, 150	• For ELGA-TB-G	NM	150915	NST-8-M6	1
	120, 130		_	8047868	NST-8-M6-10	10
				8047869	NST-8-M6-50	50
Complete and ZDC	/					
Centring pin ZBS	/centring sleeve ZBI					
	70	For slide		150928	ZBS-5	10
	70, 80, 120, 150	Tot stide		8137184	ZBH-9-B	10
	For ELGA-TB-RF/			013/104	2011 7 0	
	70, 80, 120	For slide		8137184	ZBH-9-B	10
	For ELGA-TB-G	101 Stide		013/104	ZDII-7-D	10
	70	For slide		150928	ZBS-5	10
	80, 120	101 stide		8137184	ZBH-9-B	10
	80, 120			013/104	ZDII-7-D	
Slot cover ABP						
	70, 80	For mounting slot	NC	151681	ABP-5	2
	120, 150	• Every 0.5 m		151682	ABP-8	
		• For ELGA-TB-KF/-KF-F1				
<b>V</b>		• For ELGA-TB-RF/-RF-F1				
		For ELGA-TB-G				
Slot cover ABP-S						
Siot cover ABP-3	70 150	For sensor slot	NS	563360	ABP-5-S1	2
	70 130	• Every 0.5 m	N3	303300	ADI 9 31	2
		• For ELGA-TB-KF				
THE STATE OF THE S		• For ELGA-TB-RF				
		• For ELGA-TB-G				
Clip SMBK						
Clip SMBK	70 150	For sensor slot, for mounting the proximity switch	CM	534254	SMBK-8	10
		cables				
		• For ELGA-TB-KF				
		• For ELGA-TB-RF				
		• For ELGA-TB-G				
Clamping compo	nent FADT					
Ciamping compo	70, 80	Tool for retensioning the cover strip	_	8058451	EADT-S-L5-70	1
	120, 150	Took for recensioning the cover strip		8058450	EADT-S-L5-120	
<b>Y</b> /	120, 130			0030430	27.01.0 29.120	
Cover kit EASC						
COVER KIT EASC	70	For covering the cides of the drive sever		90/0255	EASC-LE-70	2
	70	For covering the sides of the drive cover	-	8049255	EASC-L5-70	3
	80	$\dashv$		8049254	EASC-L5-80	
	120 150	_		8049253 8049244	EASC-L5-120 EASC-L5-150	
	1.3.571			UN/107/1/1		

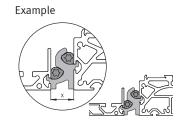
<sup>1)</sup> Packaging unit

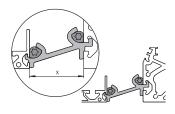
#### Mounting options between axis and support profile

Depending on the adapter kit, the spacing between the axis and the support profile is:

x = 20 mm or 50 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.





Ordering data						
	For size	Description	Part no	0.	Туре	PU <sup>1)</sup>
Adapter kit DHA	M					
	80	For mounting the support profile on the axis	562	2241	DHAM-ME-N1-CL	1
	120, 150	Spacing between axis and profile is 20 mm	562	2242	DHAM-ME-N2-CL	
		• For ELGA-TB-KF				
•		For ELGA-TB-RF				
		For ELGA-TB-G				
	70, 80	<ul> <li>For mounting the support profile on the axis</li> </ul>	574	4560	DHAM-ME-N1-50-CL	
		<ul> <li>Spacing between axis and profile is 50 mm</li> </ul>				
		For ELGA-TB-KF				
	120 150	• For ELGA-TB-RF	F 7/	4561	DHAM-ME-N2-50-CL	
	120, 150	For ELGA-TB-G	5/4	1961	DHAM-ME-NZ-3U-CL	
C			<u>'</u>		•	
Support profile					I	
	70 150	For guiding an energy chain	539	9379	HMIA-E07-	1
		For ELGA-TB-KF				
2 Sign		For ELGA-TB-RF				
- *		For ELGA-TB-G				

<sup>1)</sup> Packaging unit

Proximity switch	es for ELGA-TB-KF, E	LGA-TB-RF, ELGA-TB-G					
Ordering data – F	Proximity switches fo	or T-slot, inductive					Datasheets → Internet: sies
	Type of mounting	Electrical connection	Switching output	Cable length [m]	Order code	Part no.	Туре
N/O							
	Inserted in the	Cable, 3-core	PNP	7.5	SA	551386	SIES-8M-PS-24V-K-7.5-OE
SEE SEE	slot from above,	Plug M8x1, 3-pin	1	0.3	_	551387	SIES-8M-PS-24V-K-0.3-M8D
(M)	flush with the	Cable, 3-core	NPN	7.5	_	551396	SIES-8M-NS-24V-K-7.5-OE
	cylinder profile	Plug M8x1, 3-pin		0.3	_	551397	SIES-8M-NS-24V-K-0.3-M8D
N/C							
	Inserted in the	Cable, 3-core	PNP	7.5	SB	551391	SIES-8M-PO-24V-K-7.5-OE
EL SI	slot from above,	Plug M8x1, 3-pin	1	0.3	_	551392	SIES-8M-PO-24V-K-0.3-M8D
(M)	flush with the	Cable, 3-core	NPN	7.5	_	551401	SIES-8M-NO-24V-K-7.5-OE
	cylinder profile	Plug M8x1, 3-pin		0.3	-	551402	SIES-8M-NO-24V-K-0.3-M8D

Cable, 3-core Plug M8x1, 3-pin Cable, 3-core Plug M8x1, 3-pin		•		PNP NPN PNP NPN	2.5 2.5 - -	SC -	150386 150384	SIEN-M8B-PS-K-L
Plug M8x1, 3-pin Cable, 3-core				NPN PNP	2.5			SIEN-M8B-PS-K-L
Cable, 3-core			I	PNP		-	150384	0.2
Cable, 3-core			I				130304	SIEN-M8B-NS-K-L
Cable, 3-core						SE	150387	SIEN-M8B-PS-S-L
· 						_	150385	SIEN-M8B-NS-S-L
· 								
· 				,			,	
Plug M8x1, 3-pin				PNP	2.5	SD	150390	SIEN-M8B-PO-K-L
Plug M8x1, 3-pin			I	NPN	2.5	_	150388	SIEN-M8B-NO-K-L
				PNP	-	ST	150391	SIEN-M8B-PO-S-L
			1	NPN	-	_	150389	SIEN-M8B-NO-S-L
	•							
	r T-slot, magn	ı		lei			ъ.	Datasheets → Internet: si
Type of mounting			_	Electrical co	onnection	_	Part no.	Туре
		outpu				[m]		
Incorted in the clot	from above	Conta	cting	Cable 2 co	ro	2.5	E//2962	SME-8M-DS-24V-K-2.5-OE
	,	Conta	ctilig	Cable, 5-co	ie			SME-8M-DS-24V-K-5.0-OE
				Cable, 2-co	re		543872	SME-8M-ZS-24V-K-2.5-OE
				<u> </u>		0.3	543861	SME-8M-DS-24V-K-0.3-M8D
		Conta	cting	Cable, 3-co	re	7.5	160251	SME-8-O-K-LED-24
Electrical connection 1,	ELGA-TB Electrical connection 1			cal	Electrical	Cable length	Part no.	Datasheets → Internet: ne
connection technology	cable outlet		connector technology		connection 2, number of pins/ cores	[m]		
technology M8x1 A-coded to	cable outlet Straight		conne	ction ology	connection 2, number of pins/	[m]	8078223	NEBA-M8G3-U-2.5-N-LE3
technology			conne techno	ction ology	connection 2, number of pins/ cores		8078223 8078224	NEBA-M8G3-U-2.5-N-LE3 NEBA-M8G3-U-5-N-LE3
technology M8x1 A-coded to EN 61076-2-104	Straight		connectechno Open o	ction Ó ology end	connection 2, number of pins/ cores	2.5	8078224	NEBA-M8G3-U-5-N-LE3
technology M8x1 A-coded to EN 61076-2-104 M8x1 A-coded to			conne techno	ction Ó ology end	connection 2, number of pins/ cores	2.5 5.0 2.5	8078224 8078230	NEBA-M8G3-U-5-N-LE3
technology M8x1 A-coded to EN 61076-2-104	Straight		connectechno Open o	ction Ó ology end	connection 2, number of pins/ cores	2.5	8078224	NEBA-M8G3-U-5-N-LE3
technology M8x1 A-coded to EN 61076-2-104 M8x1 A-coded to	Straight Angled	coder,	Open 6	ction old	connection 2, number of pins/ cores 3	2.5 5.0 2.5	8078224 8078230	NEBA-M8G3-U-5-N-LE3 NEBA-M8W3-U-2.5-N-LE3 NEBA-M8W3-U-5-N-LE3
technology M8x1 A-coded to EN 61076-2-104  M8x1 A-coded to EN 61076-2-104  coder cables for dis Electrical connection	Angled  Splacement enon, left	coder,	Open 6  Open 6  ELGA	end	connection 2, number of pins/ cores  3  3	2.5 5.0 2.5 5.0	8078224 8078230 8078231	NEBA-M8G3-U-5-N-LE3  NEBA-M8W3-U-2.5-N-LE3  NEBA-M8W3-U-5-N-LE3  Datasheets → Internet: nel
M8x1 A-coded to EN 61076-2-104  M8x1 A-coded to EN 61076-2-104  coder cables for disclectrical connection	Angled  Splacement enon, left	coder,	Open 6  Open 6  ELGA	end M1/-M2 al connection	connection 2, number of pins/ cores  3  3	2.5 5.0 2.5 5.0 Cable length	8078224 8078230 8078231 Part no.	NEBA-M8G3-U-5-N-LE3  NEBA-M8W3-U-2.5-N-LE3  NEBA-M8W3-U-5-N-LE3  Datasheets → Internet: nel  Type
technology M8x1 A-coded to EN 61076-2-104  M8x1 A-coded to EN 61076-2-104  coder cables for dis Electrical connection	Angled  Splacement enon, left	coder,	Open 6  Open 6  ELGA	end M1/-M2 al connection	connection 2, number of pins/ cores  3  3	2.5 5.0 2.5 5.0 Cable length [m]	8078224 8078230 8078231 Part no.	NEBA-M8G3-U-5-N-LE3  NEBA-M8W3-U-2.5-N-LE3  NEBA-M8W3-U-5-N-LE3  Datasheets → Internet: nel Type  NEBM-M12G8-E-5-S1G9-V3
	Inserted in the slot flush with the cylin flush wit	Inserted in the slot from above, flush with the cylinder profile  Inserted in the slot lengthwise, flush with the cylinder profile  Inserted in the slot lengthwise, flush with the cylinder profile  Inserting cables for ELGA-TB  Electrical Electrical	Inserted in the slot from above, flush with the cylinder profile  Inserted in the slot lengthwise, flush with the cylinder profile  Inserted in the slot lengthwise, flush with the cylinder profile  Inserting cables for ELGA-TB  Electrical Electrical	Inserted in the slot lengthwise, flush with the cylinder profile  Inserted in the slot from above, flush with the cylinder profile  Inserted in the slot lengthwise, flush with the cylinder profile  Inserted in the slot lengthwise, flush with the cylinder profile	Inserted in the slot from above, flush with the cylinder profile  Inserted in the slot from above, flush with the cylinder profile  Cable, 2-co Plug M8x1,  Inserted in the slot lengthwise, flush with the cylinder profile  Cable, 3-co	Type of mounting  Switching output  Electrical connection  Inserted in the slot from above, flush with the cylinder profile  Inserted in the slot lengthwise, flush with the cylinder profile  Cable, 2-core Plug M8x1, 3-pin  Inserted in the slot lengthwise, flush with the cylinder profile  Inserted in the slot lengthwise, flush with the cylinder profile  Inserted in the slot lengthwise, flush with the cylinder profile	Type of mounting  Switching output  Electrical connection  Cable length [m]  Inserted in the slot from above, flush with the cylinder profile  Cable, 2-core Plug M8x1, 3-pin  Inserted in the slot lengthwise, flush with the cylinder profile  Cable, 3-core  Cable, 2-core Plug M8x1, 3-pin  7.5  Inserted in the slot lengthwise, flush with the cylinder profile  Electrical  Electrical  Electrical  Electrical  Cable length  Cable length  Cable length	Type of mounting  Switching output  Electrical connection  Cable length [m]  Part no.  Cable length [m]  Cable length [m]

NEBM-M12G8-...-V3 and interface X3 (position encoder 2)