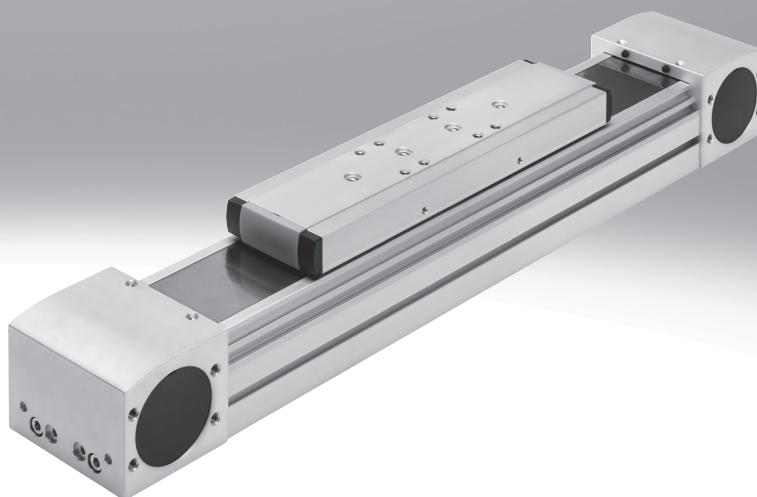


Toothed belt axes ELGA-TB

FESTO



Selection aid

Overview of toothed belt and ball screw axes

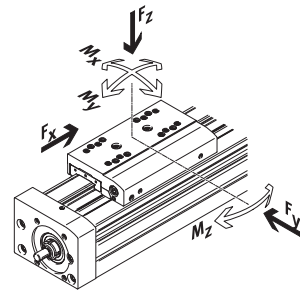
Toothed belt axes

- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s²
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8500 mm (longer strokes on request)
- Flexible motor mountings

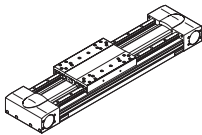
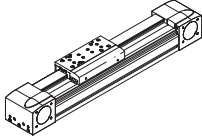
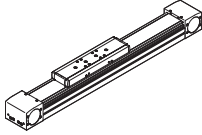
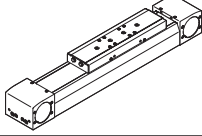
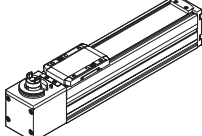
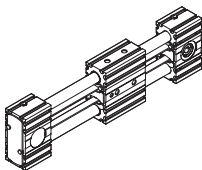
Ball screw axes

- Speeds of up to 2 m/s
- Acceleration of up to 20 m/s²
- Repetition accuracy of up to ±0.003 mm
- Strokes up to 3000 mm

Coordinate system



Toothed belt axes

Type	F _x [N]	v [m/s]	M _x [Nm]	M _y [Nm]	M _z [Nm]	Characteristics
Heavy-duty recirculating ball bearing guide						
EGC-HD-TB						
	450	3	140	275	275	• Flat drive unit with rigid, closed profile • Precision DUO guide rail with high load capacity • Ideal as a base axis for linear gantries and cantilever axes
	1000	5	300	500	500	
	1800	5	900	1450	1450	
Recirculating ball bearing guide						
EGC-TB-KF						
	50	3	3.5	10	10	• Rigid, closed profile • Precision guide rail with high load capacity • Small drive pinions reduce required driving torque • Space-saving position sensing
	100	5	16	132	132	
	350	5	36	228	228	
	800	5	144	680	680	
	2500	5	529	1820	1820	
ELGA-TB-KF						
	350	5	16	132	132	• Internal guide and toothed belt • Precision guide rail with high load capacity • Guide and toothed belt protected by cover strip • High feed forces
	800	5	36	228	228	
	1300	5	104	680	680	
	2000	5	167	1150	1150	
ELGA-TB-KF-F1						
	260	5	16	132	132	• Suitable for use in the food zone • "Clean look": smooth, easy-to-clean surfaces • Internal guide and toothed belt • Precision guide rail with high load capacity • Guide and toothed belt protected by cover strip
	600	5	36	228	228	
	1000	5	104	680	680	
ELGC-TB-KF						
	75	1.2	5.5	4.7	4.7	• Internal guide and toothed belt • Precision guide rail with high load capacity • Guide and toothed belt protected by cover strip
	120	1.5	29.1	31.8	31.8	
	250	1.5	59.8	56.2	56.2	
ELGR-TB						
	50	3	2.5	20	20	• Cost-optimised rod guide • Ready-to-install unit • Linear ball bearings with high load capacity for dynamic operation
	100	3	5	40	40	
	350	3	15	124	124	

Selection aid

Overview of toothed belt and ball screw axes

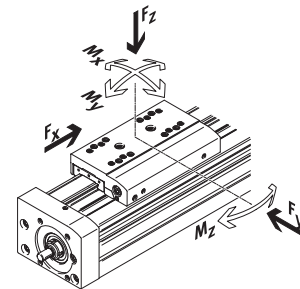
Toothed belt axes

- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s²
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8500 mm (longer strokes on request)
- Flexible motor mountings

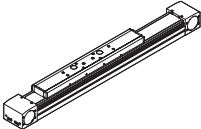
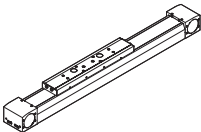
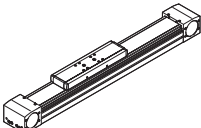
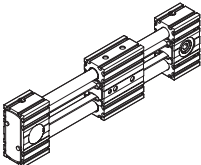
Ball screw axes

- Speeds of up to 2 m/s
- Acceleration of up to 20 m/s²
- Repetition accuracy of up to ±0.003 mm
- Strokes up to 3000 mm

Coordinate system



Toothed belt axes

Type	F _x [N]	v [m/s]	M _x [Nm]	M _y [Nm]	M _z [Nm]	Characteristics
Roller bearing guide						
ELGA-TB-RF						
	350 800 1300	10 10 10	11 30 100	40 180 640	40 180 640	• Heavy-duty roller bearing guide • Guide and toothed belt protected by cover strip • Speeds of up to 10 m/s • Lower weight than axes with guide rails
ELGA-TB-RF-F1						
	260 600 1000	10 10 10	8.8 24 80	32 144 512	32 144 512	• Suitable for use in the food zone • "Clean look": smooth, easy-to-clean surfaces • Heavy-duty roller bearing guide • Guide and toothed belt protected by cover strip • Lower weight than axes with guide rails
Plain-bearing guide						
ELGA-TB-G						
	350 800 1300	5 5 5	5 10 20	30 60 120	10 20 40	• Guide and toothed belt protected by cover strip • For simple handling tasks • As a drive component for external guides • Insensitive to harsh ambient conditions
ELGR-TB-GF						
	50 100 350	1 1 1	1 2.5 1	10 20 40	10 20 40	• Cost-optimised rod guide • Ready-to-install unit • Heavy-duty plain bearings for use in harsh ambient conditions

Selection aid

Overview of toothed belt and ball screw axes

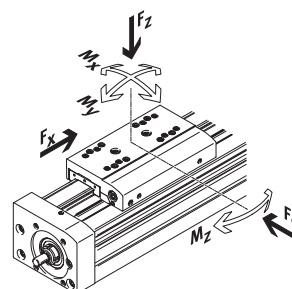
Toothed belt axes

- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s²
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8500 mm (longer strokes on request)
- Flexible motor mountings

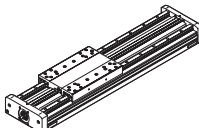
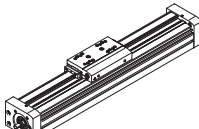
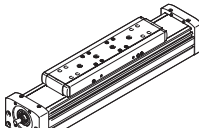
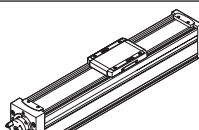
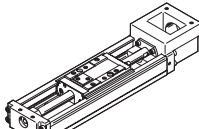
Ball screw axes

- Speeds of up to 2 m/s
- Acceleration of up to 20 m/s²
- Repetition accuracy of up to ±0.003 mm
- Strokes up to 3000 mm

Coordinate system



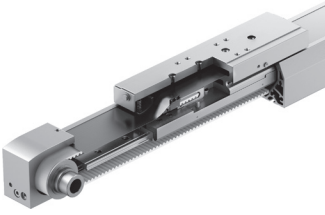
Ball screw axes

Type	F _x [N]	v [m/s]	M _x [Nm]	M _y [Nm]	M _z [Nm]	Characteristics
Heavy-duty recirculating ball bearing guide						
EGC-HD-BS						
	400	0.5	140	275	275	• Flat drive unit with rigid, closed profile • Precision DUO guide rail with high load capacity • Ideal as a base axis for linear gantries and cantilever axes
	650	1.0	300	500	500	
	1500	1.5	900	1450	1450	
Recirculating ball bearing guide						
EGC-BS-KF						
	400	0.5	16	132	132	• Rigid, closed profile • Precision guide rail with high load capacity • For the most demanding requirements on feed force and accuracy • Space-saving position sensing
	650	1.0	36	228	228	
	1500	1.5	144	680	680	
	3000	2.0	529	1820	1820	
ELGA-BS-KF						
	650	0.5	16	132	132	• Internal guide and ball screw • Precision guide rail with high load capacity • For the most demanding requirements on feed force and accuracy • Guide and ball screw protected by cover strip • Space-saving position sensing
	1600	1.0	36	228	228	
	3400	1.5	104	680	680	
	6400	2.0	167	1150	1150	
ELGC-BS-KF						
	40	0.6	1.3	1.1	1.1	• Internal guide and ball screw • Guide and ball screw protected by cover strip • Space-saving position sensing
	100	0.6	5.5	4.7	4.7	
	200	0.8	29.1	31.8	31.8	
	350	1.0	59.8	56.2	56.2	
EGSK						
	57	0.33	13	3.7	3.7	• Ball screw axes with maximum precision, compactness and rigidity • Recirculating ball bearing guide and ball screw without caged ball bearings • Standard designs in stock
	133	1.10	28.7	9.2	9.2	
	184	0.83	60	20.4	20.4	
	239	1.10	79.5	26	26	
	392	1.48	231	77.3	77.3	

Key features

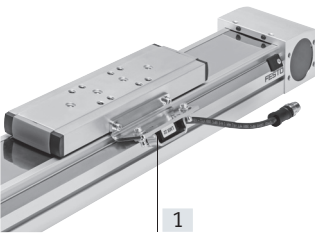
At a glance

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



- Internal, precision recirculating ball bearing guide with high load capacity for high torque loads
 - Stainless steel cover strip 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.
- 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

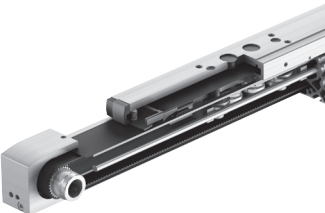
- Coated PU with steel reinforcement cords for long service life and resistance to certain cooling lubricants
- Uncoated PU, FDA-compliant



[1] Displacement encoder (optional)

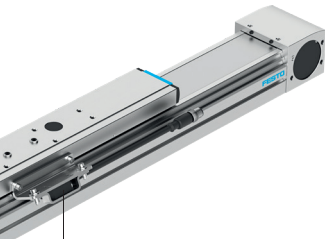
The position of the slide can be sensed directly when using the incremental displacement encoder. This means that all elasticities of the drive train can be detected and can be corrected by the motor controller (a page 15)

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



- For high acceleration and speeds
 - Guide backlash = 0 mm
 - Very good operating performance under torque load
 - Suitable for use in the food zone (ELGA-...-F1)
- Sturdy alternative to the recirculating ball bearing guide
 - Drive component for external guides, particularly at 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
- Low temperature application -30 ... +40 °C



[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 (a page 51)

ELGA-TB-G – Plain-bearing guide



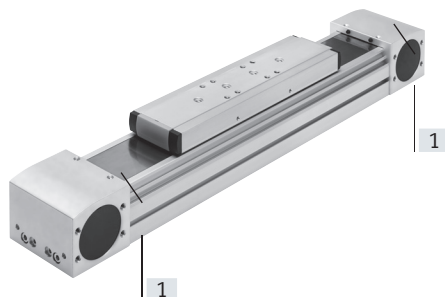
- For small and medium loads
 - Low guide backlash
 - Drive component for external guides
 - For simple handling tasks
- Toothed belt material can be selected from:
 - Chloroprene rubber for long service life
 - Coated PU with steel reinforcement cords for long service life and resistance to certain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

Key features

Sealing air connections

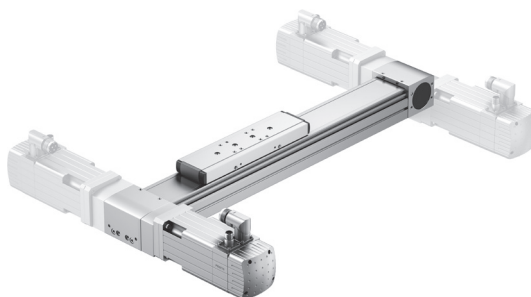
[1] Sealing air connections

- Application of negative pressure minimises the dispersal of abraded particles into the environment
- Provided at both ends
- 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 94



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 drive

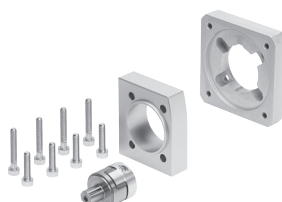


Servo drive:
CMMT-AS
Servo drive for extra-low voltage:
CMMT-ST

Motor mounting kit

→ page 96

Axial kit



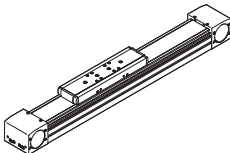
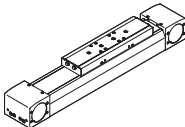
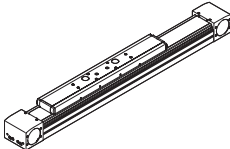
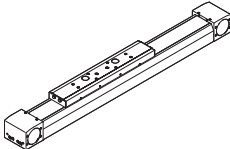
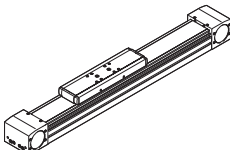
Kit consists of:

- Motor flange
- Coupling housing
- Coupling
- Screws

Key features

Characteristic values of the axes

The specifications shown in the table are maximum values.
The precise values for each of the variants can be found in the relevant datasheet in the catalogue.

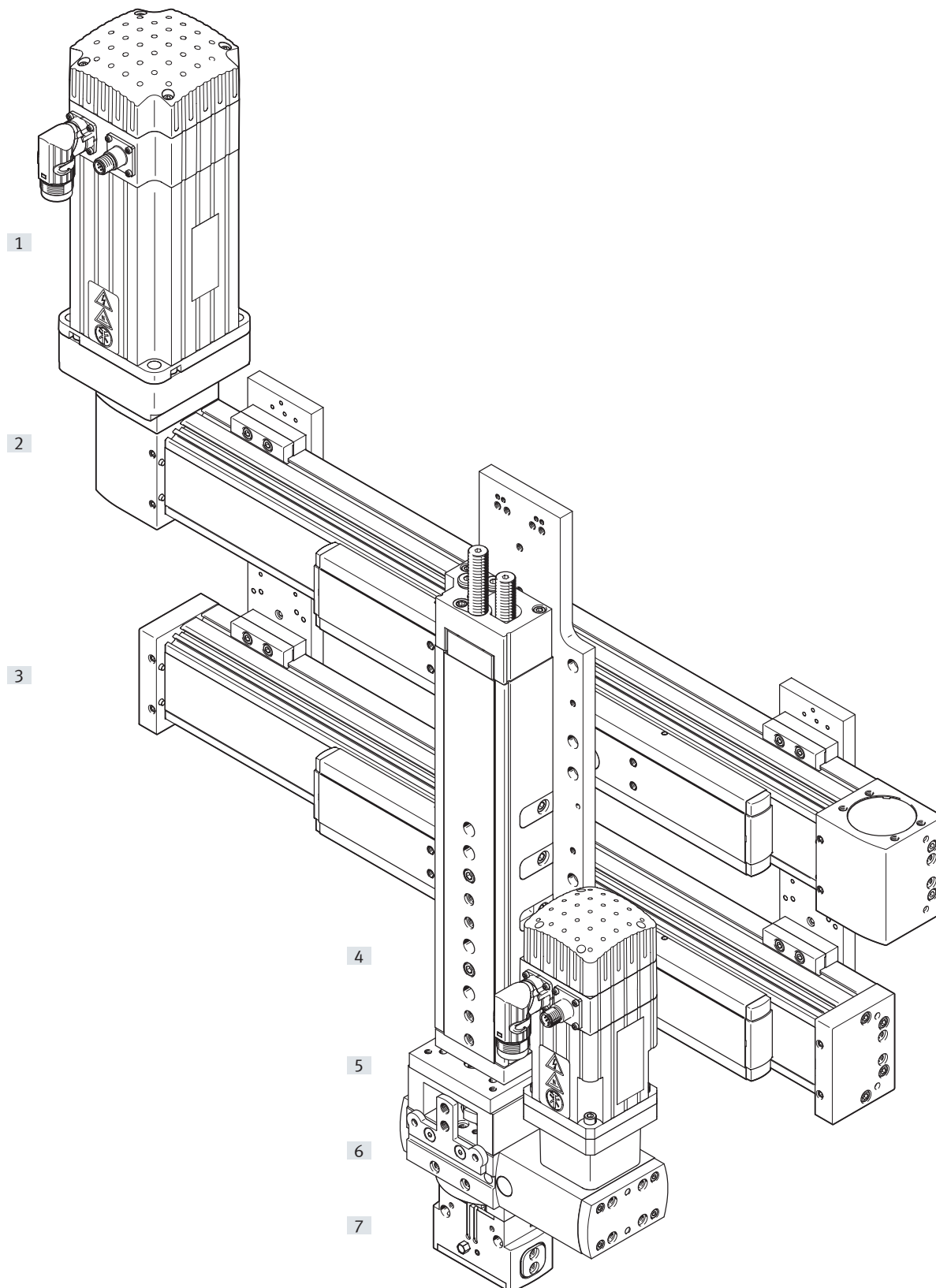
Version	Size	Working stroke	Speed	Repetition accuracy	Feed force	Guide characteristics					→ Page/ Internet
		[mm]	[m/s]	[mm]	[N]	Forces and torques					
						Fy [N]	Fz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	
ELGA-TB-KF – Recirculating ball bearing guide											
	70	50 ... 5000	5	±0.08	350	1500	1850	16	132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

Note

Engineering software
Electric Motion Sizing
www.festo.com/x/electric-motion-sizing

Key features

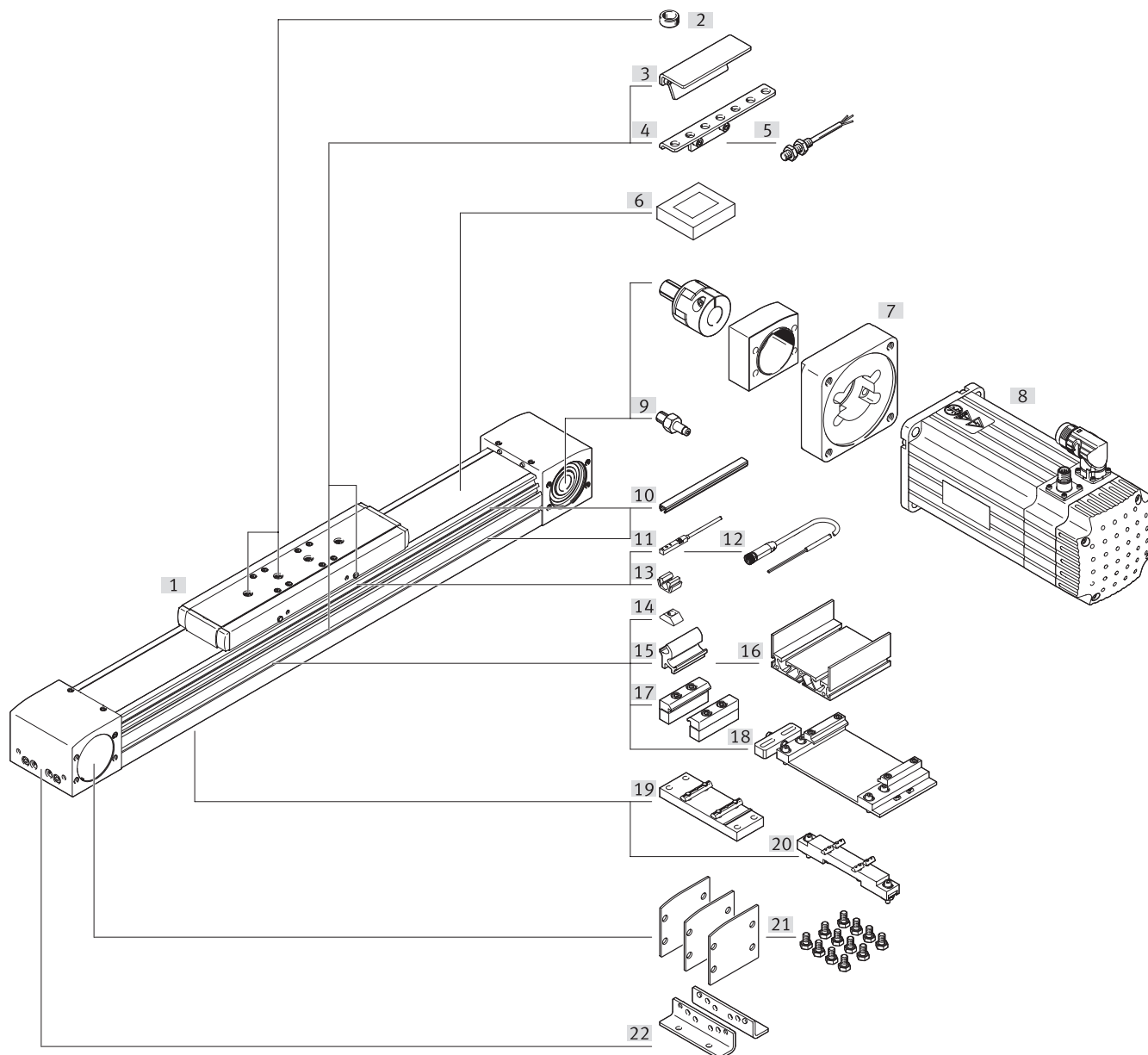
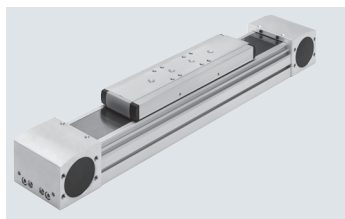
System product for handling and assembly technology



Key features

System components and accessories			→ Internet
	Description		
[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] Semi-rotary drive	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

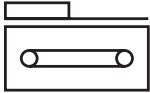
Accessories			
	Type	Description	→ Page/Internet
[1]	Toothed belt axis ELGA-TB-KF	Electric drive	12
[2]	Centring pin/sleeve ZBS, ZBH	- For centring loads and attachments on the slide - Included in the scope of delivery: - With size 70: 2x ZBS-5 - With size 80, 120, 150: 2x ZBH-9	103
[3]	Switch lug SF-EGC	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)	eammm-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	- Can be used as an alternative interface, as required - No drive shaft adapter is required for the axis/motor combinations a page <?>	94
[10]	Slot cover ABP	For protection against contamination	103
[11]	Proximity switch, T-slot SIES-8M	- Inductive proximity switch, for T-slot - The order code SA, SB includes 1 switch lug in the scope of delivery	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	- For mounting the axis on the end cap - With higher forces and torques, the axis should be mounted using the profile	95

Type codes

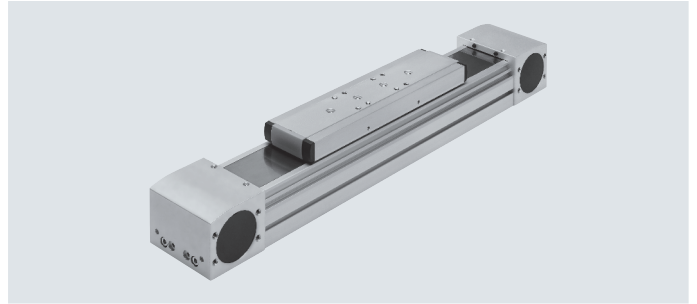
001	Series	
ELGA	Gantry axis	
002	Drive system	
TB	Toothed belt	
003	Guide	
KF	Recirculating ball bearing guide	
004	Size	
70	70	
80	80	
120	120	
150	150	
005	Stroke range [mm]	
...	50 ... 8500	
006	Stroke reserve	
...H	0 ... 999 mm	
007	Additional slide	
	None	
ZL	1 slide left	
ZR	1 slide right	

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	
B	Rear	
012	Material of toothed belt	
CR	Chloroprene rubber	
PU1	Uncoated PU, FDA-compliant	
PU2	Coated PU	

Datasheet



-  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 bearing guide			
Mounting position	Any			
Working stroke [mm]	50 ... 5000	50 ... 8500	50 ... 8500	50 ... 7000
Max. feed force F_x [N]	350	800	1300	2000
Max. no-load torque ¹⁾ [Nm]	0.6	1	2.8	4
Max. no-load resistance to shifting ¹⁾ [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 ²]	50			
Repetition accuracy [mm]	±0.08			

1) At 0.2 m/s

Operating and environmental conditions

Ambient temperature ¹⁾ [°C]	-10 ... +60
Degree of protection	IP40
Duty cycle [%]	100

1) Note operating range of proximity switches

Weight [kg]

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

1) Including slide

Toothed belt

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

1) At max. feed force

Datasheet

Mass moments of inertia		70	80	120	150
Size					
J_0	[kg mm ²]	243	982	4099	15426
JH per metre stroke	[kg mm ² /m]	19	93	215	586
JL per kg payload	[kg mm ² /Kg]	205	396	690	1363
JW for additional slide	[kg mm ²]	186	761	2891	9869

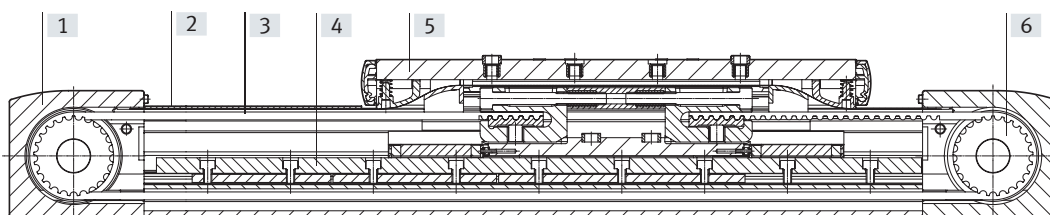
The mass moment of inertia JA of the entire axis is calculated as follows:

$$JA = J_0 + K \times JW + JH \times \text{working stroke [m]} + JL \times \text{mpayload [kg]}$$

K = Number of additional slides

Materials

Sectional view



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

Datasheet

Technical data – Displacement encoder			Dimensions → page 26
Type		ELGA-...-M1	ELGA-...-M2
Resolution	[μm]	2.5	10
Max. travel speed with displacement encoder	[m/s]	4	4
Encoder signal		5 V TTL; A/A, B/B; reference signal (N/N) cyclically every 5 mm (zero pulse)	
Signal output		Line driver, alternating, resistant to sustained short circuit	
Electrical connection		8-pin plug 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 ¹⁾

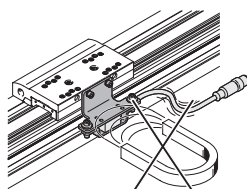
1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp d Certificates.

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.

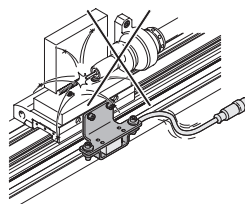
Application note

The toothed belt axis with displacement encoder is not designed for the following application examples

- Magnetic field



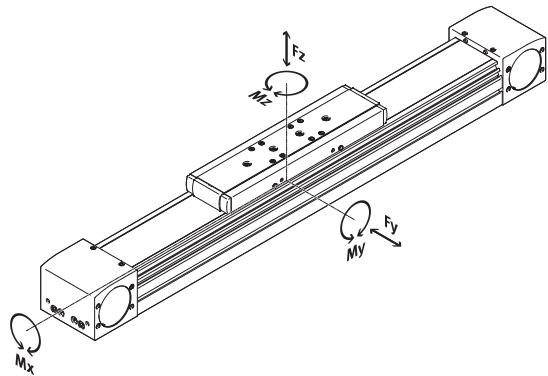
- Welding application



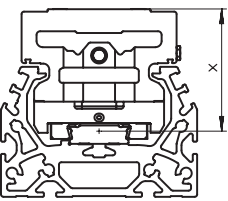
Datasheet

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 _{max.}	[N] 1500	2500	5500	11000
Fz _{max.}	[N] 1850	3050	6890	11000
Mx _{max.}	[Nm] 16	36	104	167
My _{max.}	[Nm] 132	228	680	1150
Mz _{max.}	[Nm] 132	228	680	1150

 **Note**

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

If the axis is subjected to 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:

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

F₁/M₁ = dynamic value

F₂/M₂ = maximum value

Datasheet

Calculating the service life

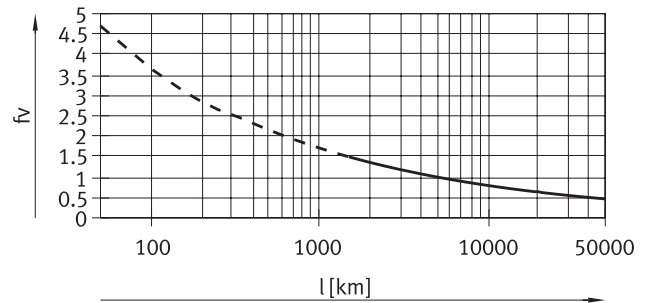
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor f_v against the service life.

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

Load comparison factor f_v as a function of service life

Example:

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



Note

Engineering software
Electric Motion Sizing
www.festo.com/x/electric-motion-sizing

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

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

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

The characteristic load values of 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.

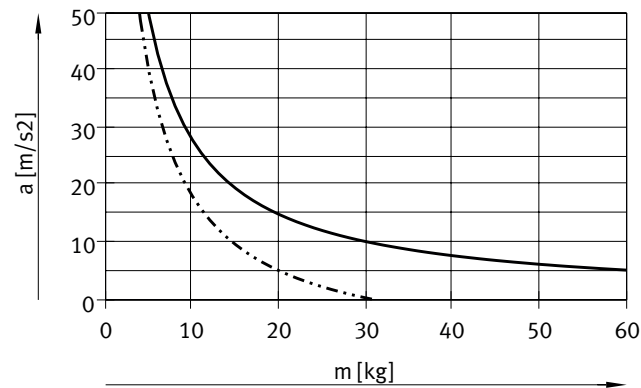
Max. permissible forces and torques for a theoretical service life of 100 km (from a guide perspective only)

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

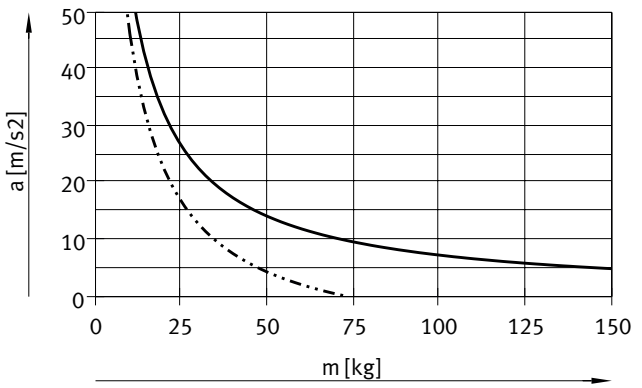
Datasheet

Max. acceleration a as a function of payload m

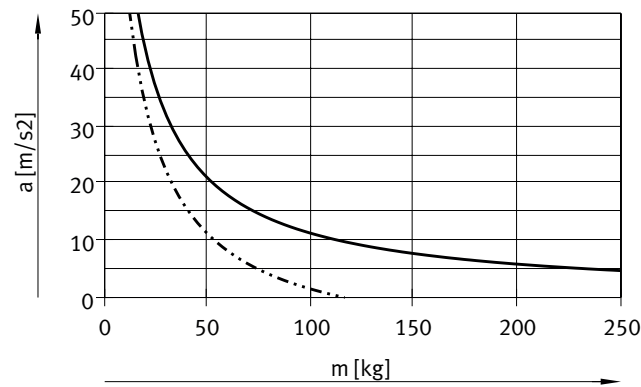
Size 70



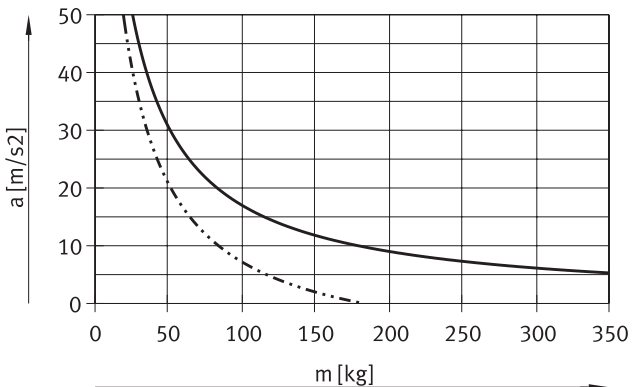
Size 80



Size: 120

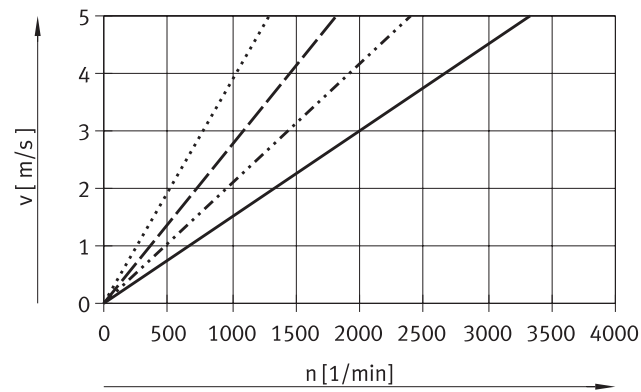


Size 150



— Horizontal mounting position
- - - Vertical mounting position

Speed v as a function of rotational speed n

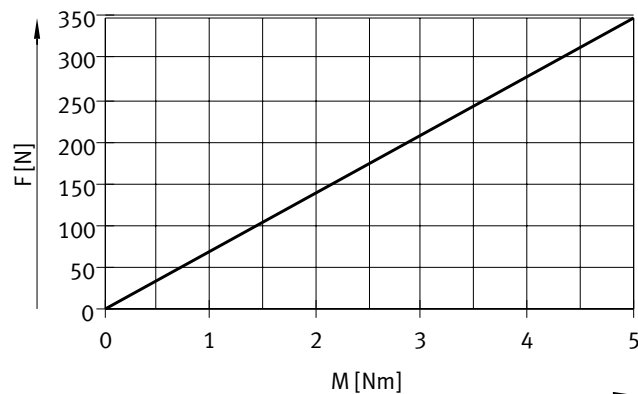


— ELGA-TB-KF-70
..... ELGA-TB-KF-80
- - - ELGA-TB-KF-120
- . . . ELGA-TB-KF-150

Datasheet

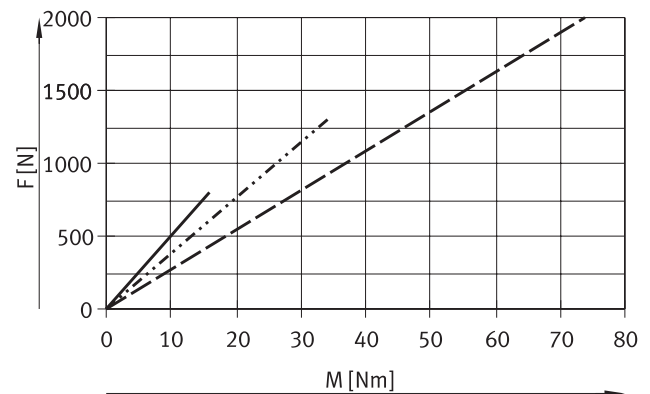
Theoretical feed force F as a function of the input torque M

Size: 70



— ELGA-TB-KF-70

Size 80/120/150

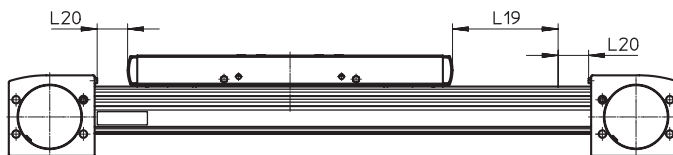


— ELGA-TB-KF-80

····· ELGA-TB-KF-120

--- ELGA-TB-KF-150

Stroke reserve



L19 = Nominal stroke

L20 = Stroke reserve

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

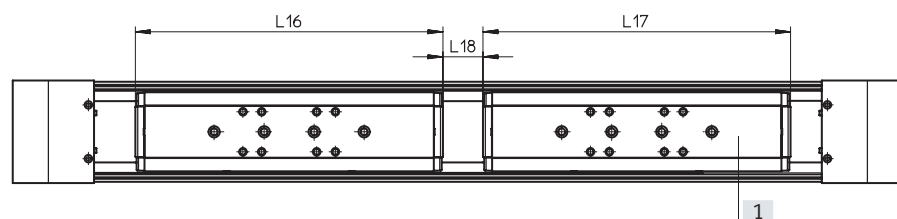
Example:

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

Working stroke reduction

With axis ELGA with additional slide ZL/ZR

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



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

Example:

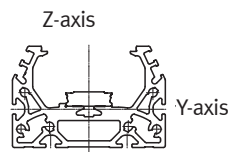
Type ELGA-TB-KF-70-500-...-ZL/ZR
 Working stroke without additional slide = 500 mm
 L18 = 50 mm
 L16, L17 = 221 mm
 Working stroke with additional slide = 229 mm
 (500 mm – 50 mm – 221 mm)

Dimensions – Additional slide

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

Datasheet

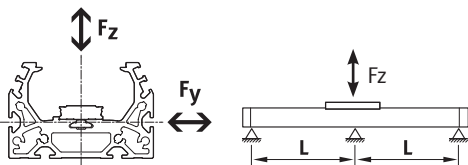
Second moment of area



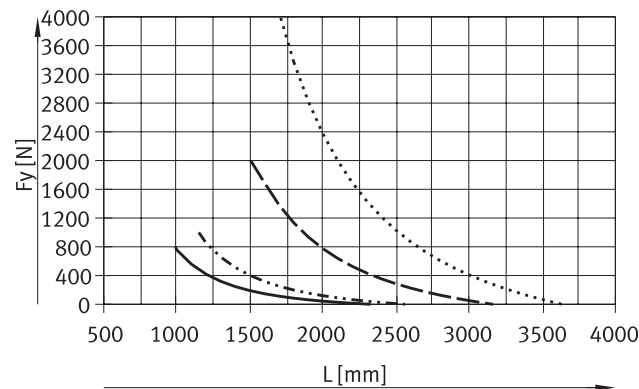
Size		70	80	120	150
I_y	[mm ⁴]	1.46×10^5	2.57×10^5	1.26×10^6	4.62×10^6
I_z	[mm ⁴]	4.59×10^5	9.14×10^5	4.37×10^6	12.32×10^6

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.

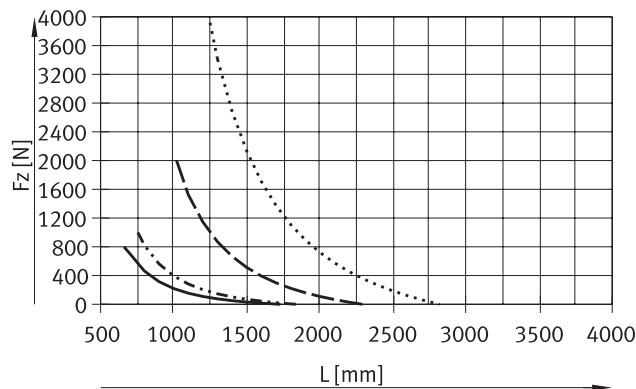


Force Fy



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

Force Fz



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

Datasheet

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

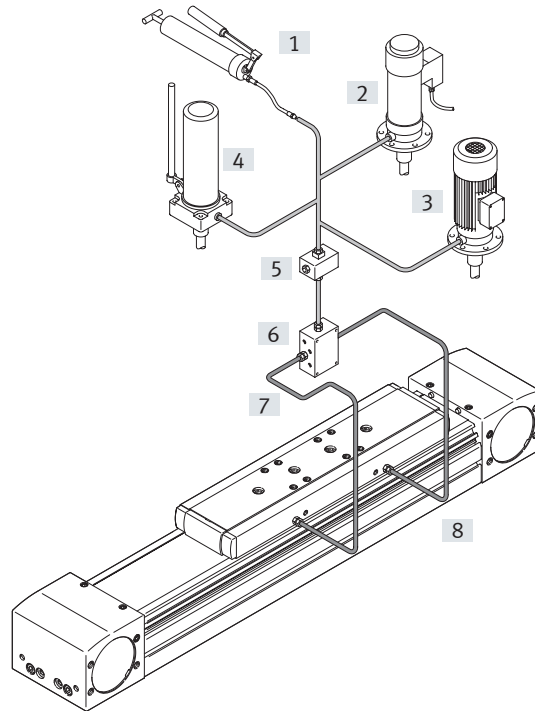
Slide dimensions
a page 24

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)

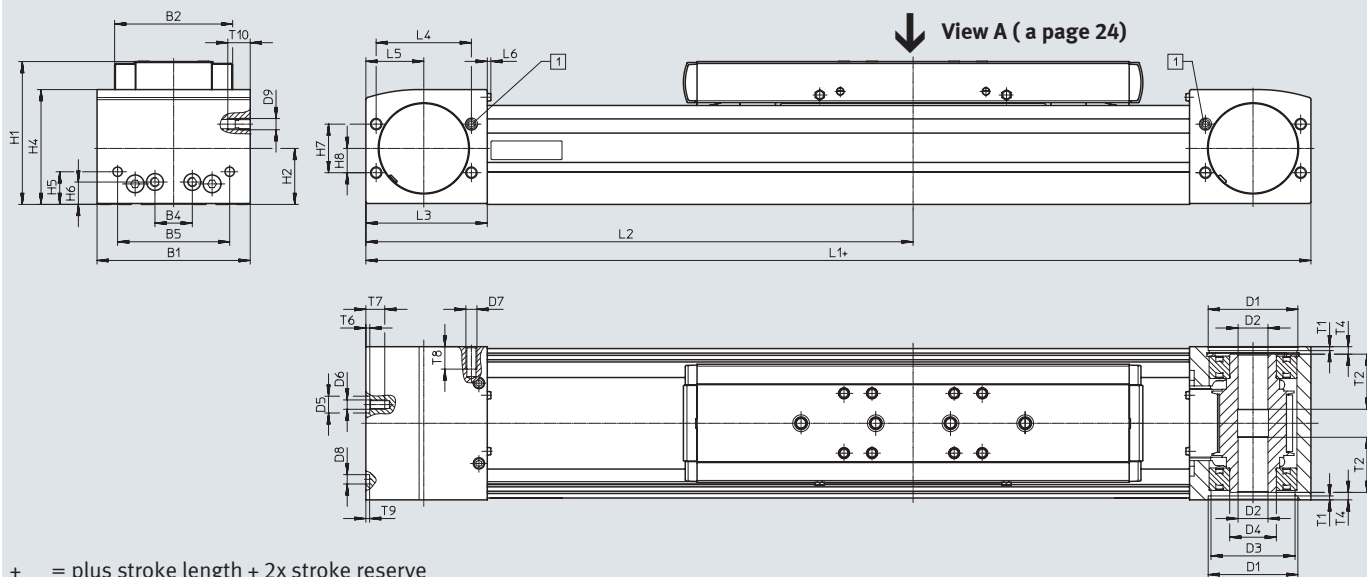
Festo recommends these companies because they can supply all the necessary components.



- [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

Datasheet

Dimensions

Download CAD data → www.festo.com

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

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

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

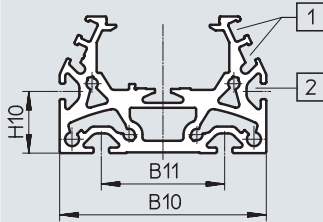
Datasheet

Dimensions

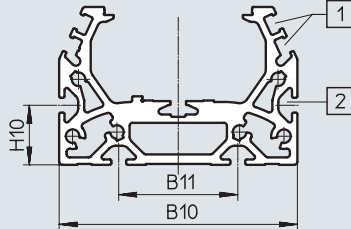
Download CAD data → www.festo.com

Profile

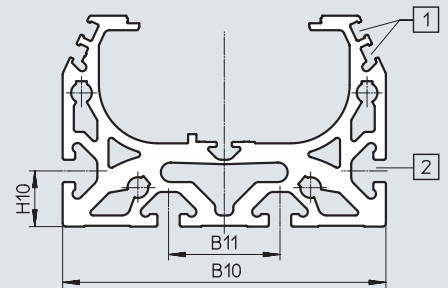
Size 70



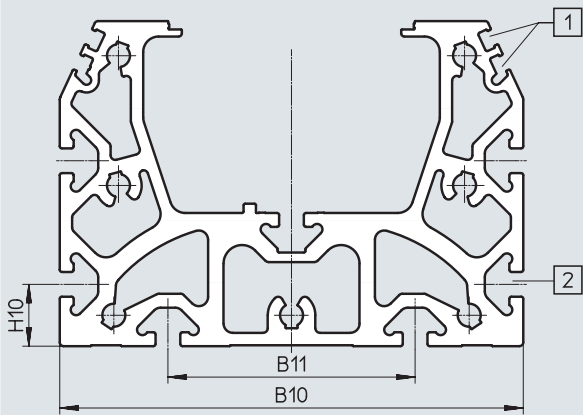
Size 80



Size: 120



Size: 150



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

 **Note**

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

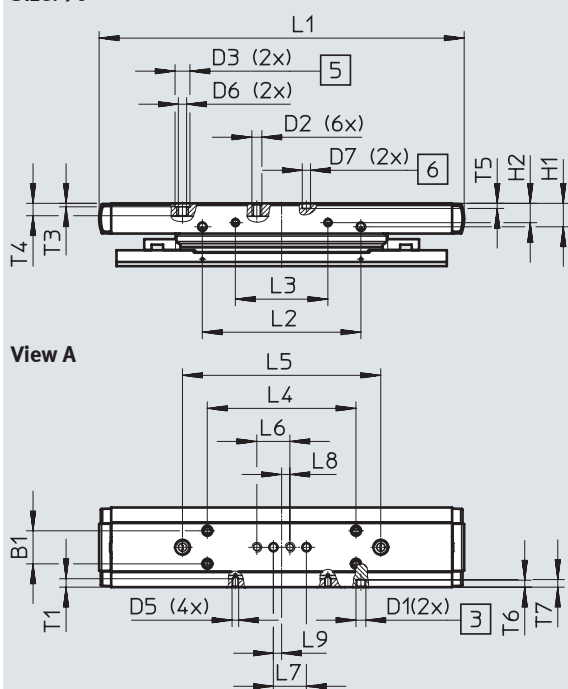
Datasheet

Dimensions

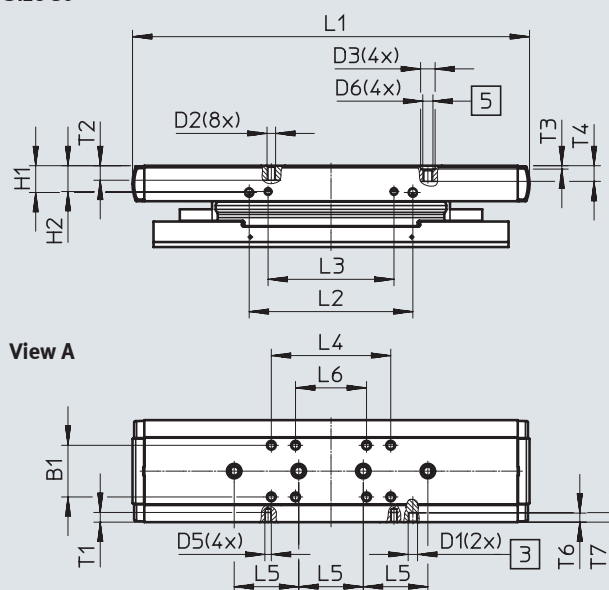
Download CAD data → www.festo.com

Slide

Size: 70



Size 80



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

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

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

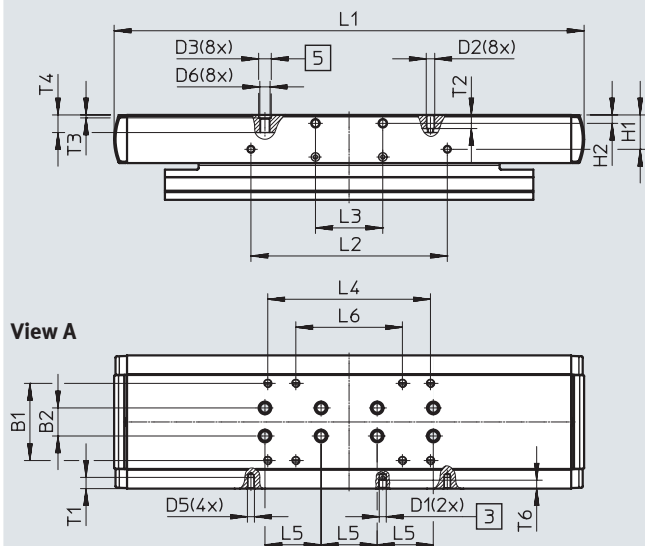
Datasheet

Dimensions

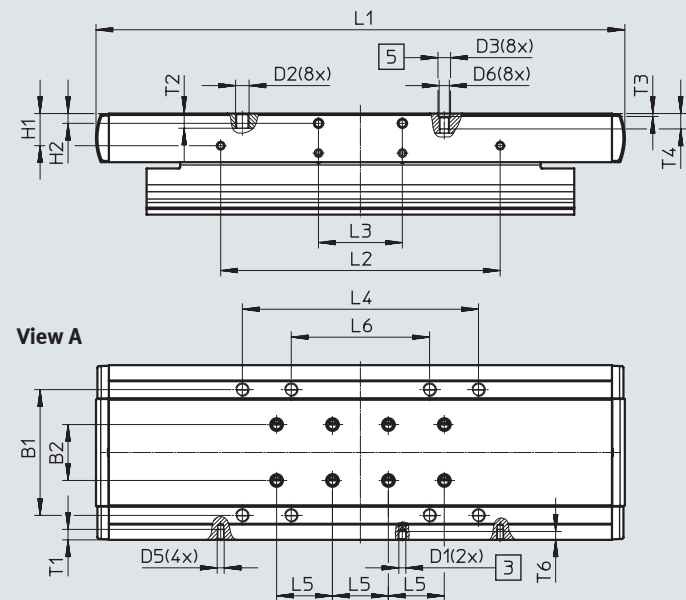
Download CAD data → www.festo.com

Slide

Size: 120



Size 150



[3] Lubrication connections

[5] Drilled hole for centring sleeve ZBH

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

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

Datasheet

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

[Download CAD data → www.festo.com](#)

Encoder cable
(connection to motor controller/
safety system)
→ page 105

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

Datasheet

Ordering data

Key features:

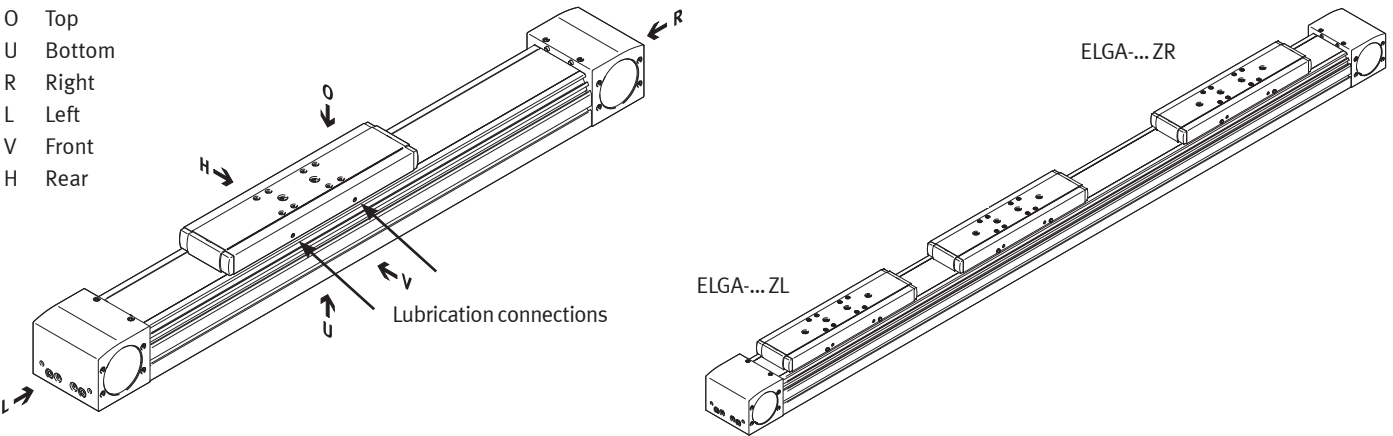
- Stroke reserve: 0 mm
- Standard slide

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

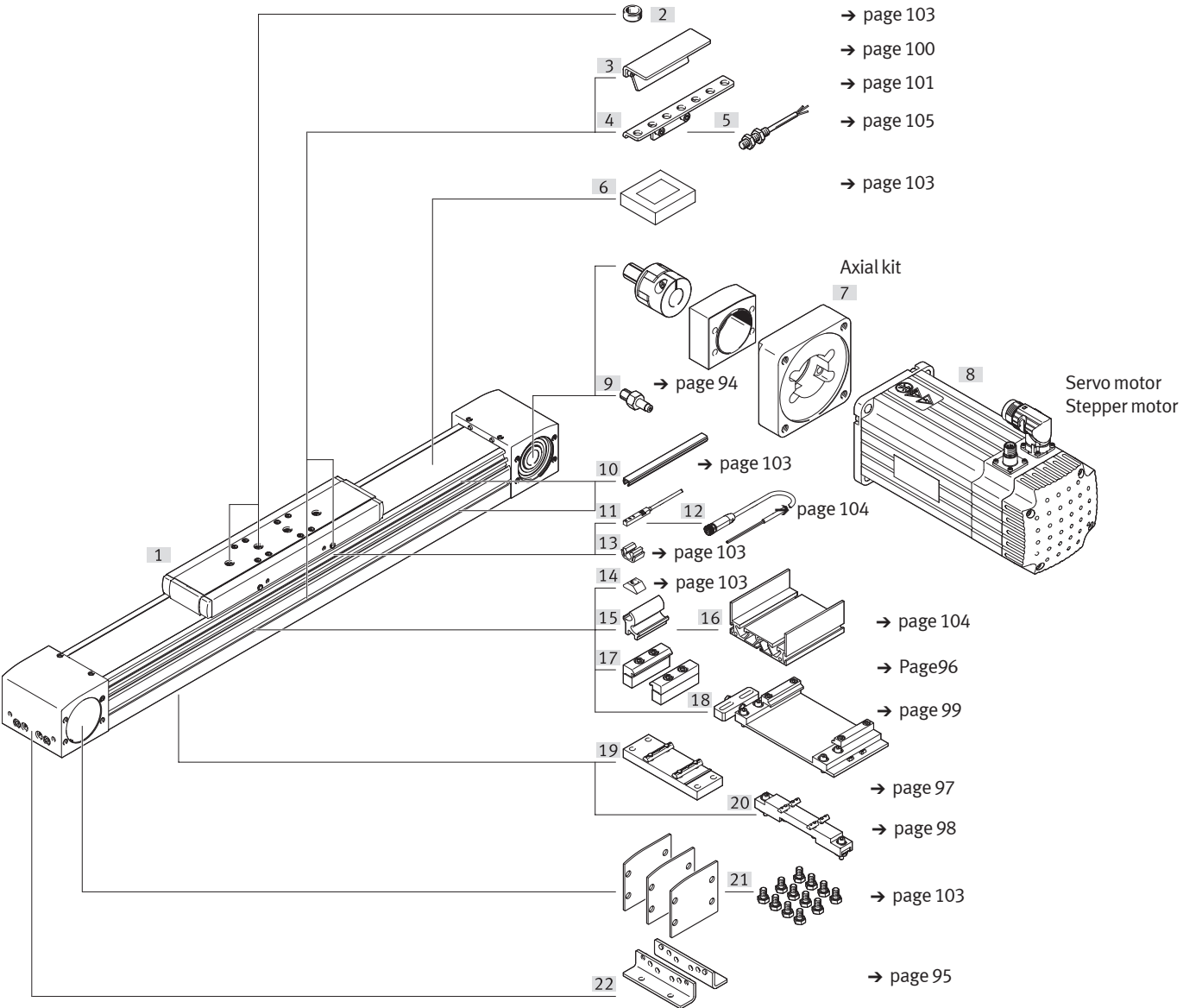
Ordering data – Modular product system

Orientation guide

- O Top
- U Bottom
- R Right
- L Left
- V Front
- H Rear



Accessories



Ordering data – Modular product system

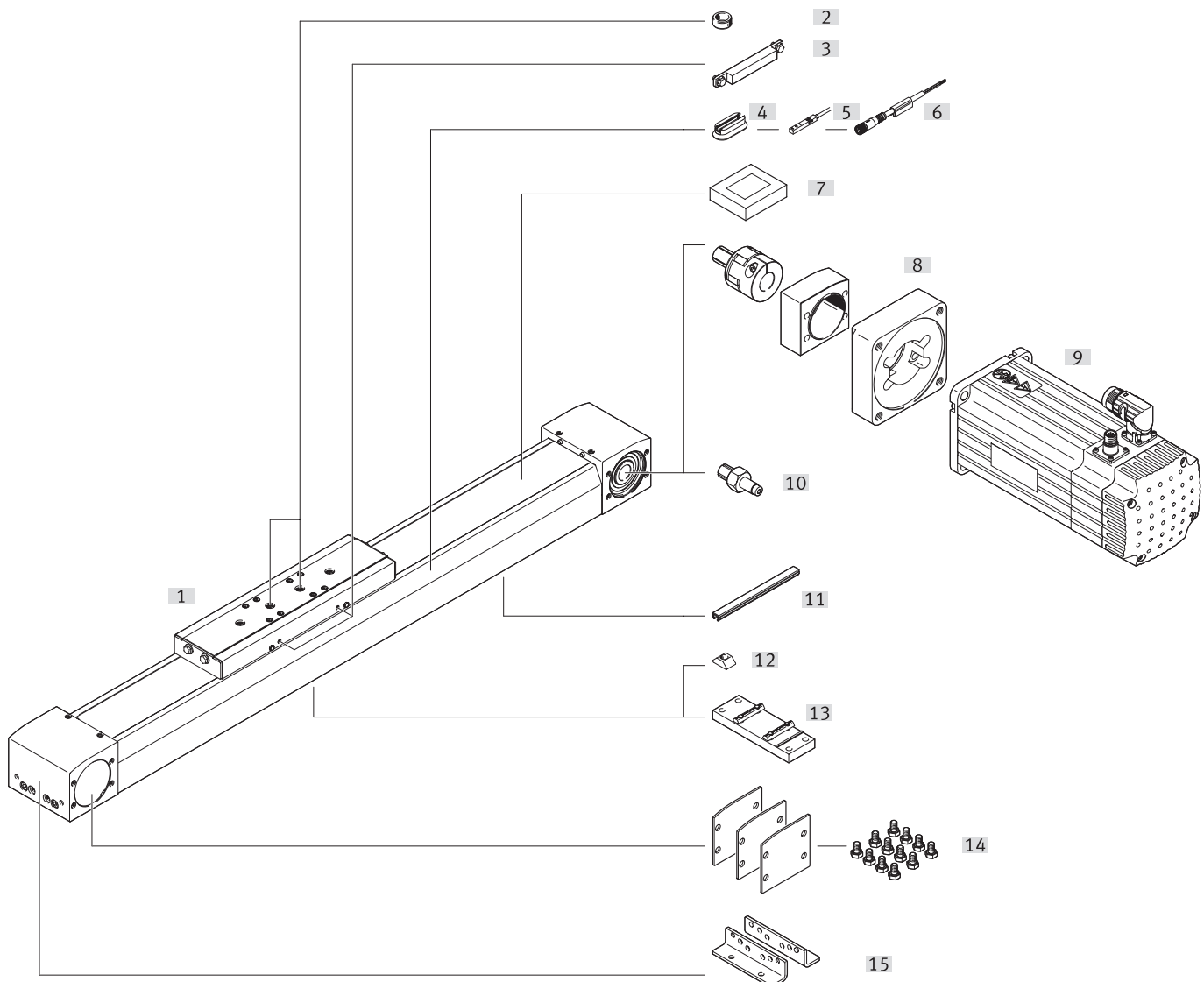
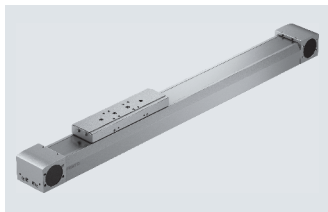
Ordering table								
Size	70	80	120	150	Conditions	Code		Enter code
Module no.	8024914	8024915	8024916	8024917				
Design	Linear axis					ELGA		ELGA
Function	Toothed belt					-TB		-TB
Guide	Recirculating ball bearing guide					-KF		-KF
Size [mm]	70	80	120	150		-...		
Stroke length [mm]	1 ... 5000	1 ... 8500	1 ... 8500	1 ... 7000		-...		
Stroke reserve [mm]	0 ... 999 (0 = no stroke reserve)				[1]	-...H		
Additional slide	None							
	1 slide on left					-ZL		
	1 slide on right					-ZR		
Protection against particles	Standard							
	Cover strip with magnetic deflection					P11		
Displacement encoder, incremental	None							
	Resolution 2.5 µm					-M1		
	Resolution 10 µm					-M2		
Displacement encoder attachment position	None							
	Rear				[2]	B		
	Advanced				[2]	F		
Toothed belt material	Chloroprene rubber							
	Coated PU					-PU2		

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

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



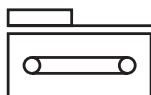
Peripherals overview – For the food zone



Peripherals overview – For the food zone

Accessories			
	Type	Description	→ Page/Internet
[1]	Toothed belt axis ELGA-TB-KF-F1	Electric drive	32
[2]	Centring pin/sleeve ZBS, ZBH	- For centring loads and attachments on the slide - Included in the scope of delivery: - With size 70: 2x ZBS-5 - With size 80, 120, 150: 2x ZBH-9	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)	eammm-a
[9]	Motor EMMT	Motors specially matched to the axis, with or without gear unit, with or without brake	emmt
[10]	Drive shaft adapter EAMB	- Can be used as an alternative interface, as required - No drive shaft adapter is required for the axis/motor combinations a page 100	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

Datasheet – For the food zone



-  Size
70 ... 120
-  Stroke length
50 ... 8500 mm
-  www.festo.com
-  Repair service



General technical data				
Size		70	80	120
Design		Electromechanical axis with toothed belt		
Guide		Recirculating ball bearing guide		
Mounting position		Any		
Working stroke	[mm]	50 ... 5000	50 ... 8500	50 ... 8500
Max. feed force F_x	[N]	260	600	1000
Max. no-load torque ¹⁾	[Nm]	0.8	1.5	4.5
Max. no-load resistance to shifting ¹⁾	[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 ²]	50		
Repetition accuracy	[mm]	±0.08		

1) At 0.2 m/s

Operating and environmental conditions		
Ambient temperature ¹⁾	[°C]	−10 ... +60
Degree of protection		IP40
Duty cycle	[%]	100
Food-safe ²⁾		→ Supplementary material information

1) Note operating range of proximity switches.

2) More information www.festo.com/sp d Certificates.

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

1) Including slide

Datasheet – For the food zone

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

1) At max. feed force

Mass moments of inertia				
Size		70	80	120
J_0	[kg mm ²]	245	976	4065
JH per metre stroke	[kg mm ² /m]	24.4	76.8	176.5
JL per kg payload	[kg mm ² /Kg]	205	396	690
JW for additional slide	[kg mm ²]	186	761	2891

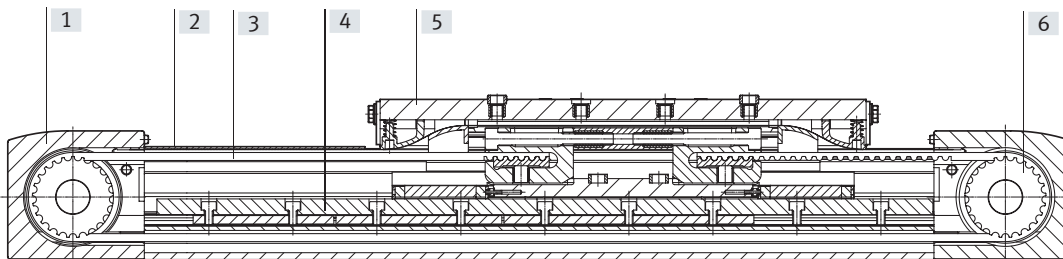
The mass moment of inertia JA of the entire axis is calculated as follows:

$$JA = J_0 + K \times JW + JH \times \text{working stroke [m]} + JL \times \text{mpayload [kg]}$$

K = Number of additional slides

Materials

Sectional view

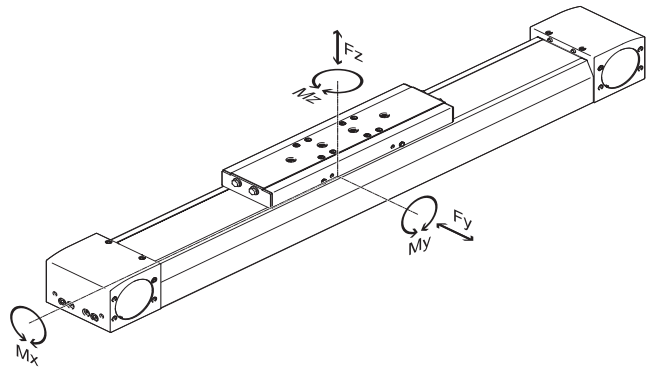


Axis				
Size		70	80	120
[1]	Drive cover	Anodised wrought aluminium alloy		
[2]	Cover strip	Stainless steel strip, non-corroding		
[3]	Toothed belt	Polyurethane with steel cord		
[4]	Guide rail	Stainless steel		Tempered steel
[5]	Slide	Anodised wrought aluminium alloy		
[6]	Belt	High-alloy stainless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

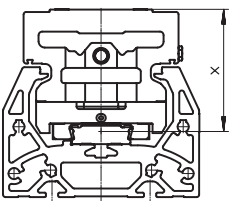
Datasheet – For the food zone

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
F _y _{max.}	[N] 1500	2500	5500
F _z _{max.}	[N] 1850	3050	6890
M _x _{max.}	[Nm] 16	36	104
M _y _{max.}	[Nm] 132	228	680
M _z _{max.}	[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 $f_v \leq 1$, based on the maximum permissible forces and torques for a service life of 5000 km.

If the axis is subjected to 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:

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

F₁/M₁ = dynamic value

F₂/M₂ = maximum value

Datasheet – For the food zone

Calculating the service life

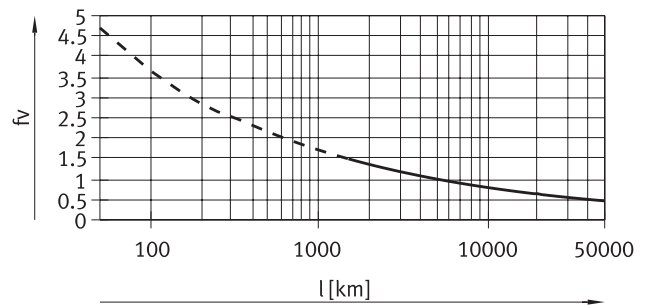
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor f_v against the service life.

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

Load comparison factor f_v as a function of service life

Example:

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



Note

Engineering software
Electric Motion Sizing
www.festo.com/x/electric-motion-sizing

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

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

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

The characteristic load values of 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.

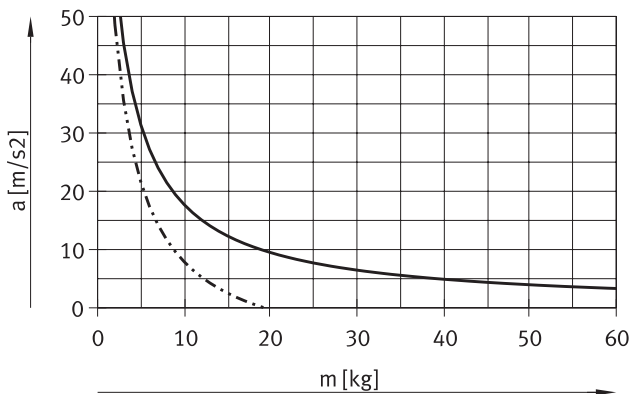
Max. permissible forces and torques for a theoretical service life of 100 km (from a guide perspective only)

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

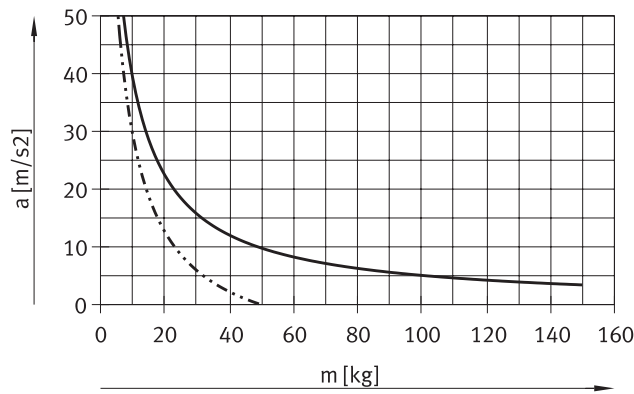
Datasheet – For the food zone

Max. acceleration a as a function of payload m

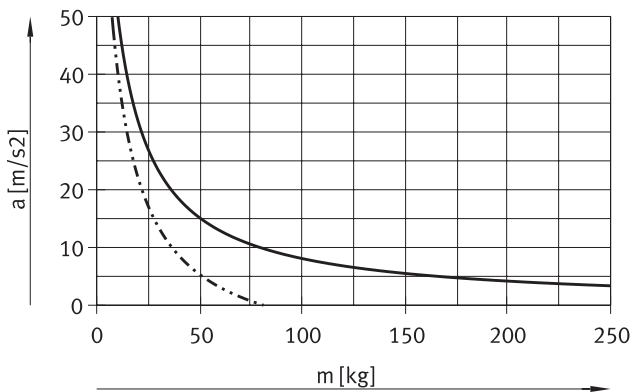
Size 70



Size 80

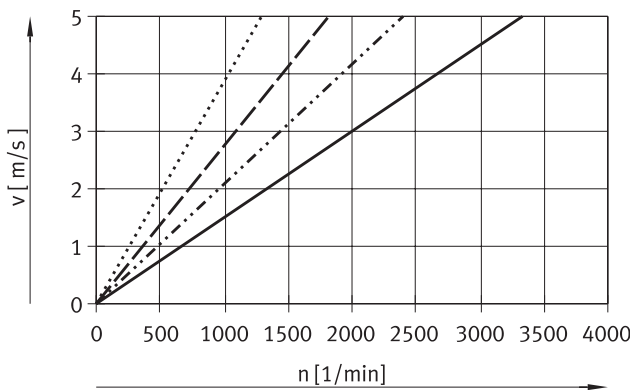


Size 120



— Horizontal mounting position
- - - Vertical mounting position

Speed v as a function of rotational speed n

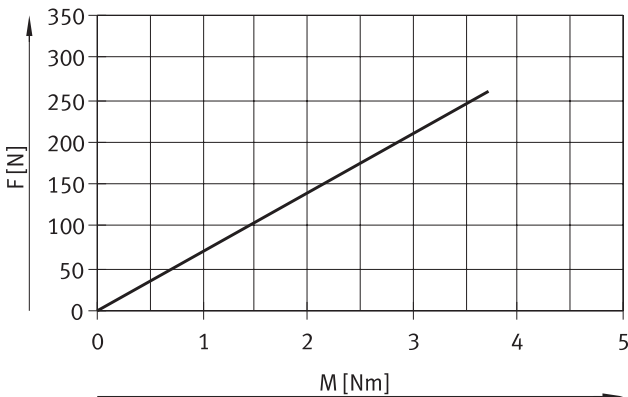


— ELGA-TB-KF-70
..... ELGA-TB-KF-80
- - - ELGA-TB-KF-120

Datasheet – For the food zone

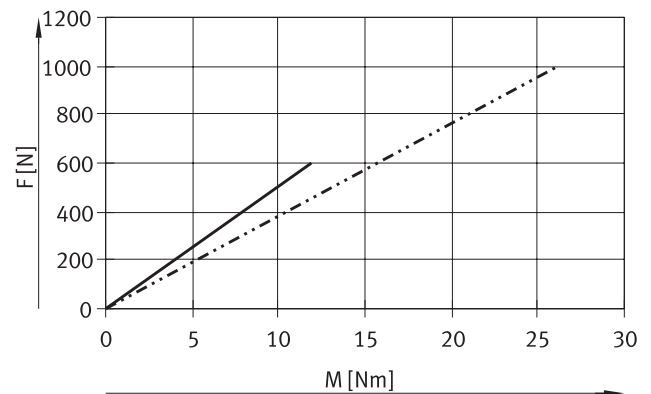
Theoretical feed force F as a function of the input torque M

Size: 70



— ELGA-TB-KF-70

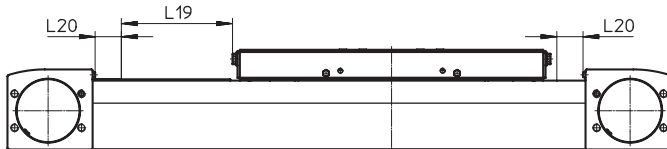
Size 80/120



— ELGA-TB-KF-80

- - - ELGA-TB-KF-120

Stroke reserve



L19 = Nominal stroke

L20 = Stroke reserve

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

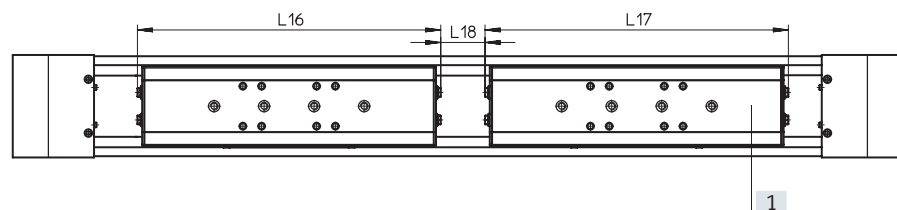
Example:

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

Working stroke reduction

With axis ELGA with additional slide ZL/ZR

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



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

Example:

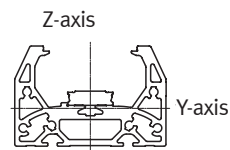
Type ELGA-TB-KF-70-500-...-ZL/ZR
 Working stroke without additional slide = 500 mm
 L18 = 50 mm
 L16, L17 = 221 mm
 Working stroke with additional slide = 229 mm
 (500 mm – 50 mm – 221 mm)

Dimensions – Additional slide

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

Datasheet – For the food zone

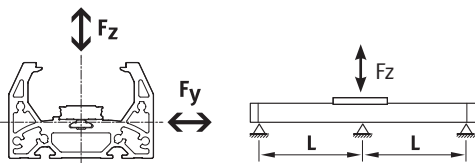
Second moment of area



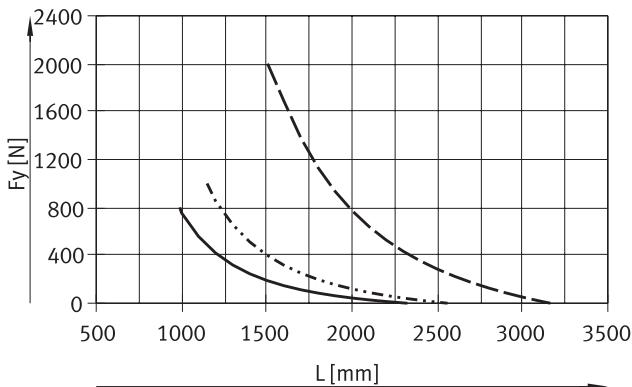
Size		70	80	120
ly	[mm ⁴]	1.69x10 ⁵	2.95x10 ⁵	1.35x10 ⁶
lz	[mm ⁴]	4.84x10 ⁵	9.78x10 ⁵	4.50x10 ⁶

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.

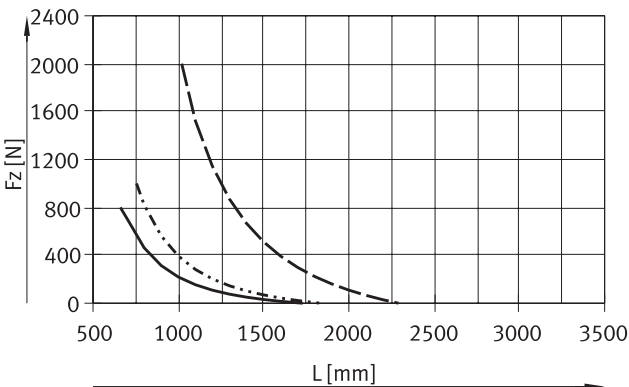


Force Fy



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

Force Fz



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

Datasheet – For the food zone

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

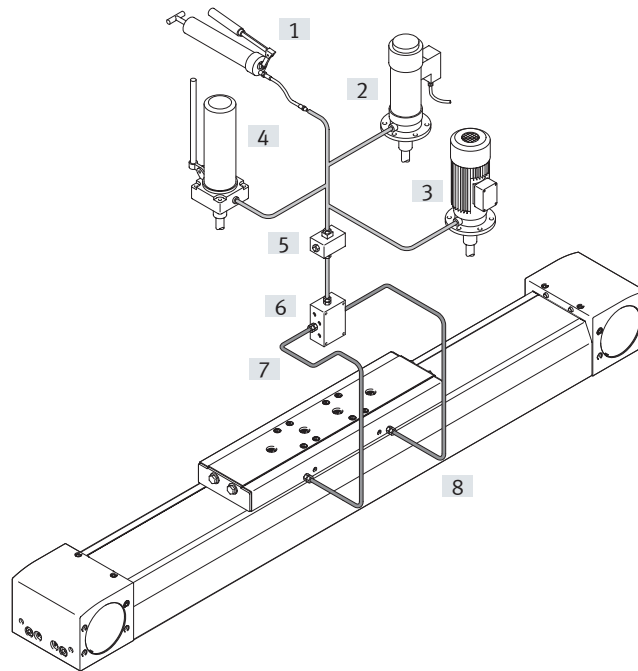
Slide dimensions
a page 42

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)

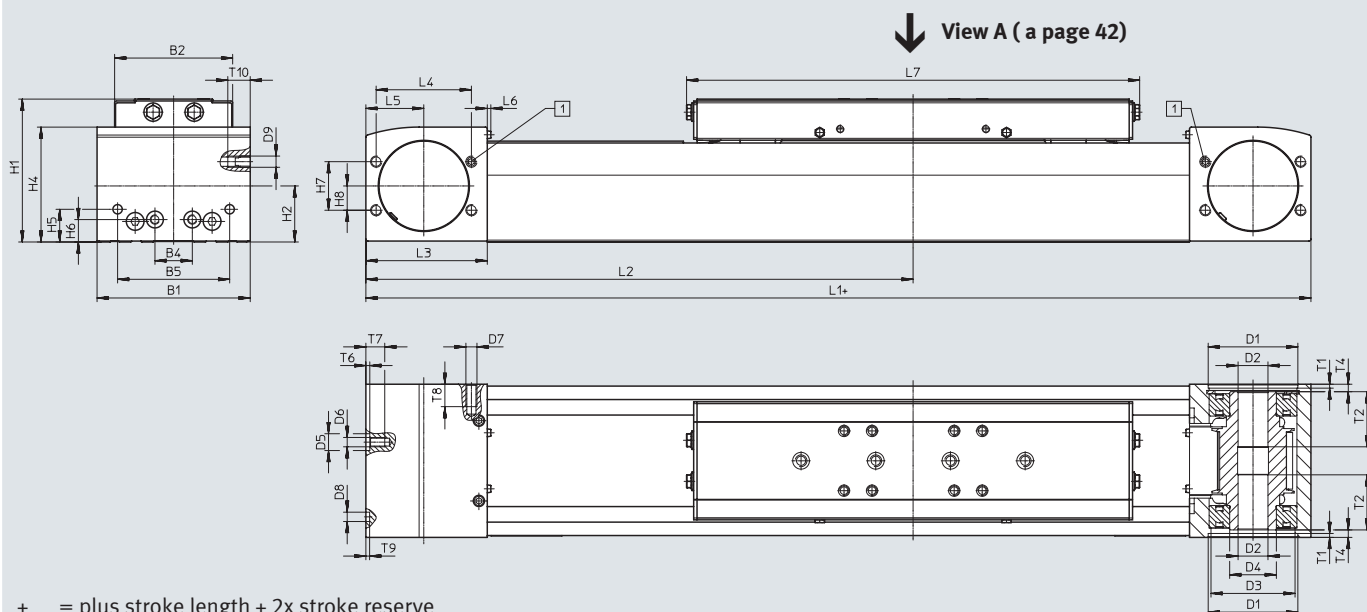
Festo recommends these companies because they can supply all the necessary components.



- [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

Datasheet – For the food zone

Dimensions

Download CAD data → www.festo.com

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

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

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

Note

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

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

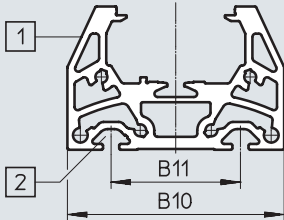
Datasheet – For the food zone

Dimensions

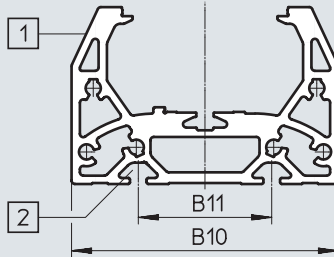
Download CAD data → www.festo.com

Profile

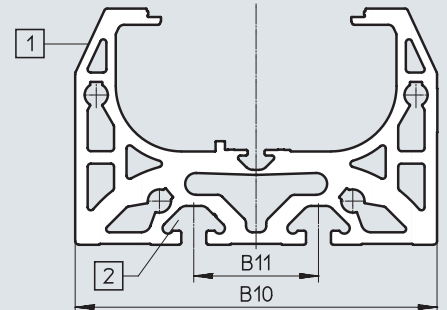
Size 70



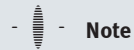
Size 80



Size: 120



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

**Note**

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

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

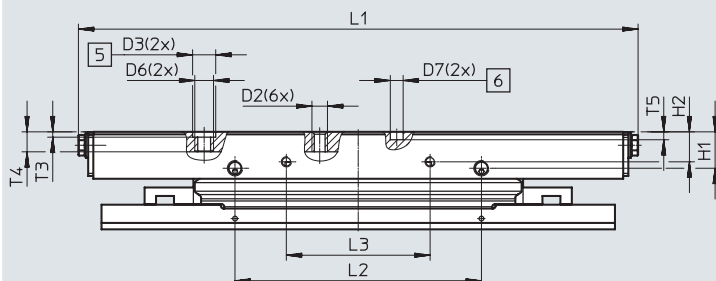
Datasheet – For the food zone

Dimensions

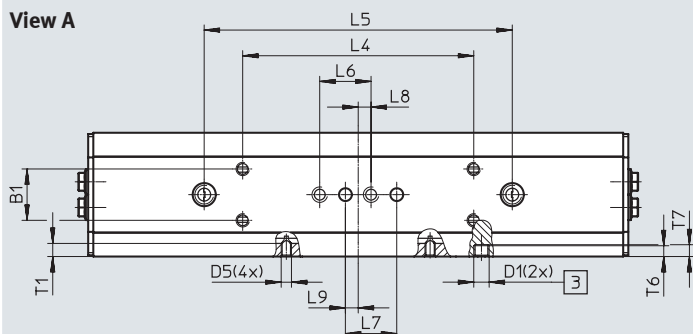
Download CAD data → www.festo.com

Slide

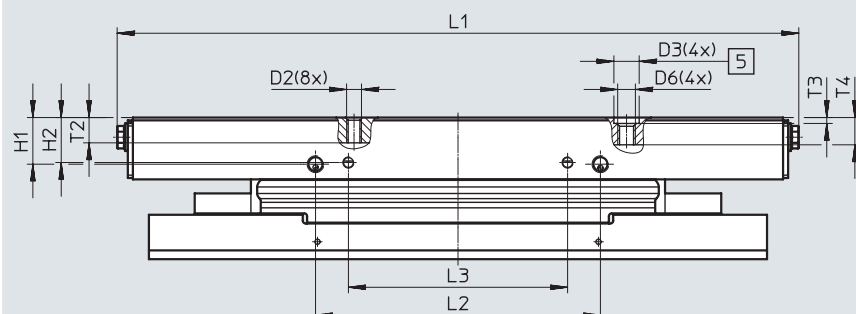
Size: 70



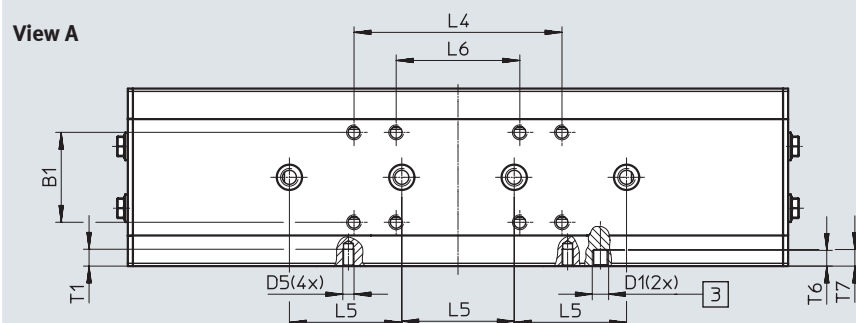
View A



Size 80



View A



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

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

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

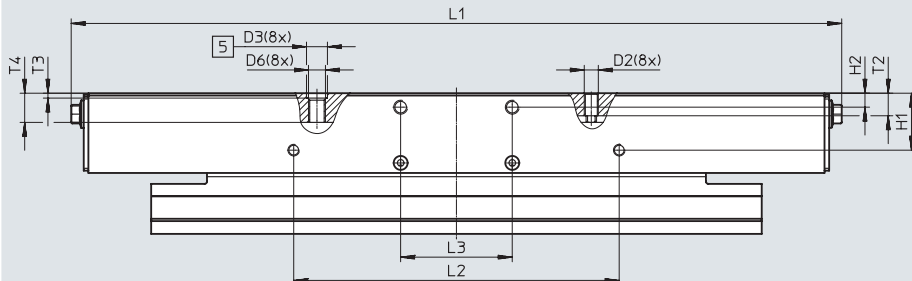
Datasheet – For the food zone

Dimensions

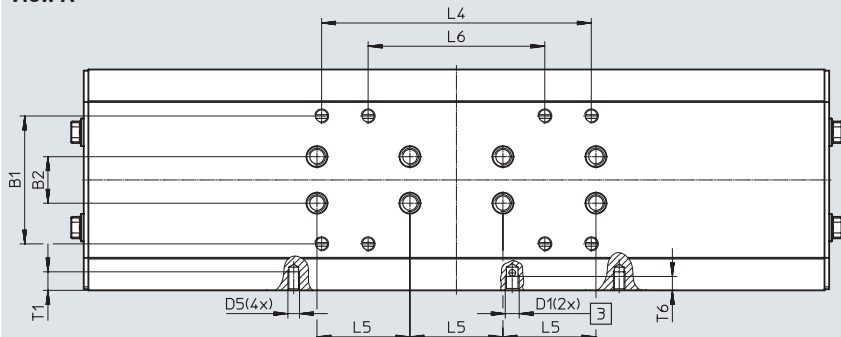
Download CAD data → www.festo.com

Slide

Size: 120



View A



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

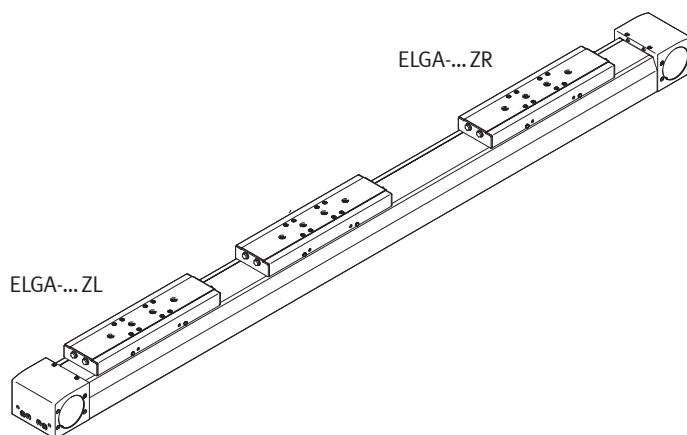
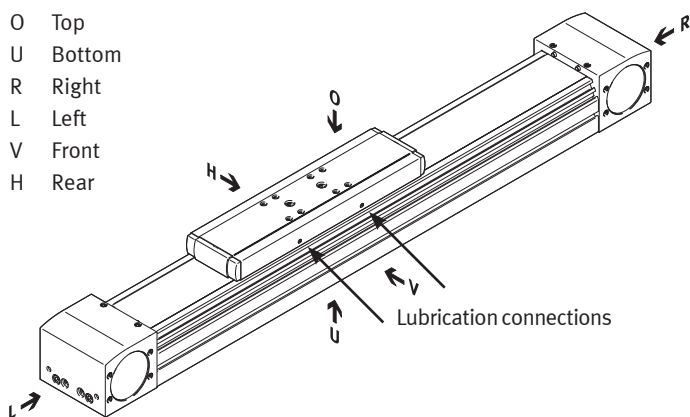
Size	B1	B2	D1	D2	D3 Ø H7	D5	D6	H1	H2	L1
	±0.2	±0.03						±0.1		
120	55	20	M6	M5	9	M5	M6	24.5	6	332

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

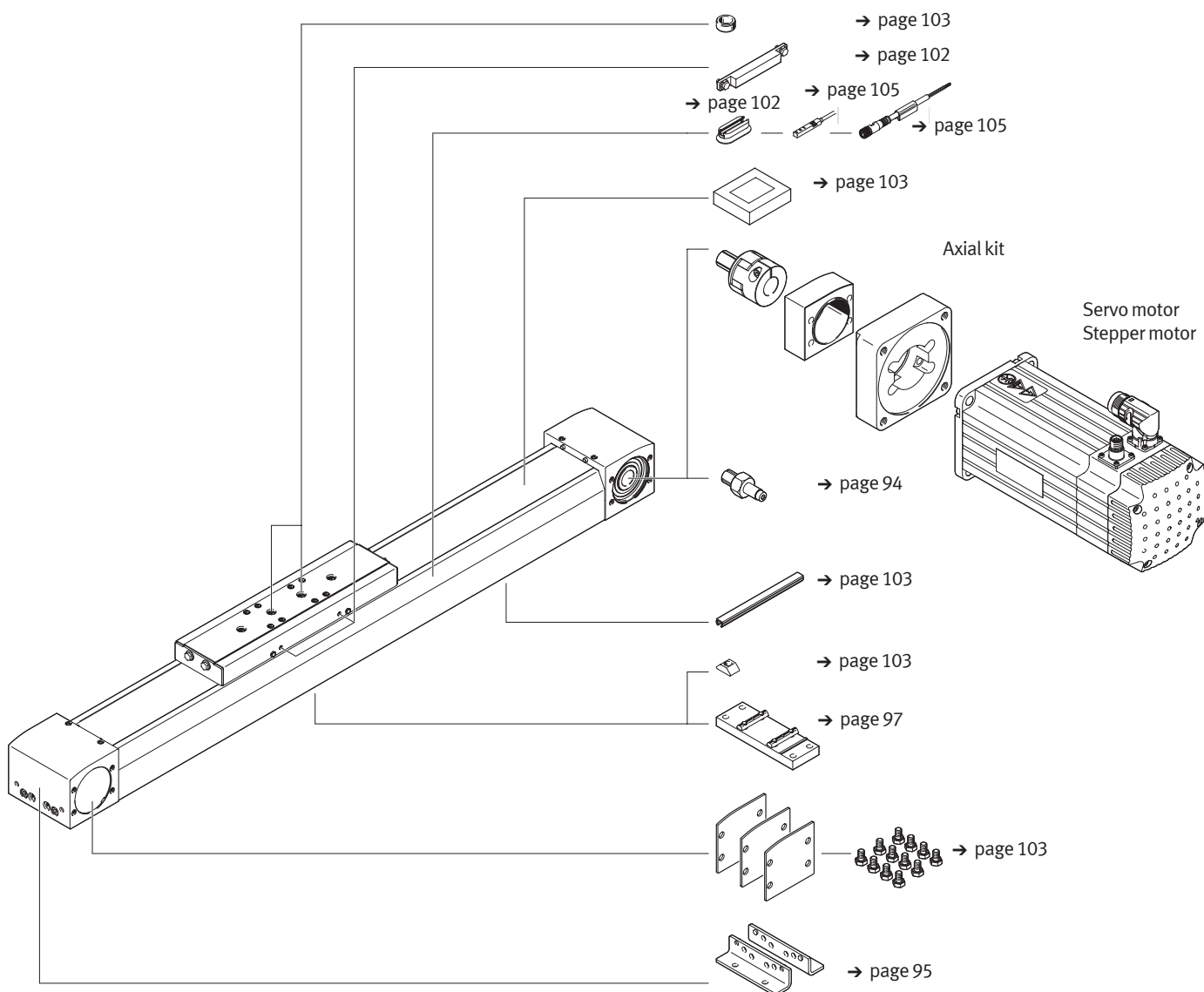
Ordering data – Modular products – For the food zone

Orientation guide

- O Top
- U Bottom
- R Right
- L Left
- V Front
- H Rear



Accessories

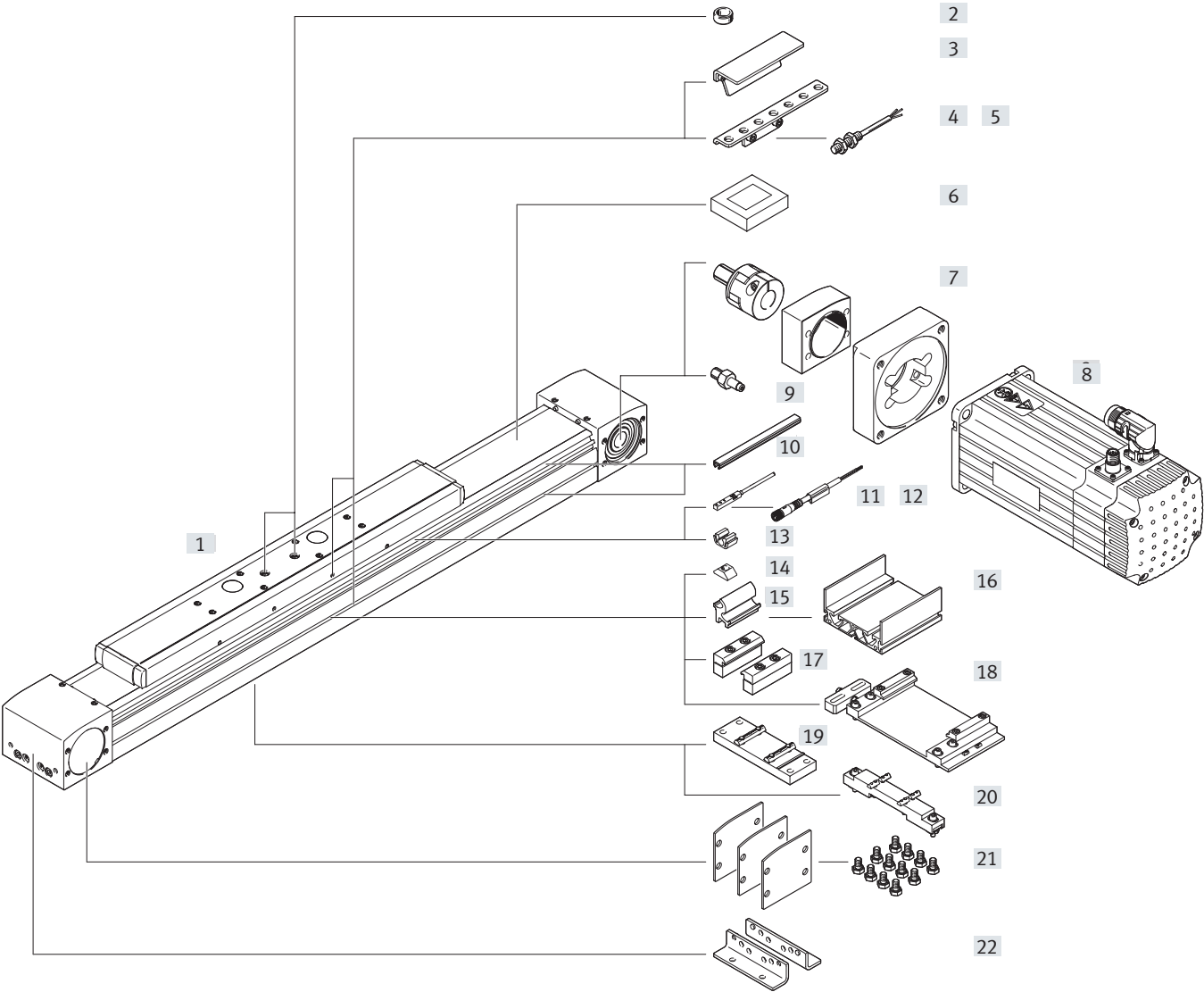
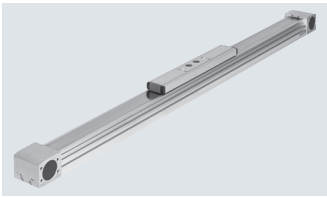


Ordering data – Modular products – For the food zone

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 ball 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 stroke reserve)			[1]	-...H	
Additional slide	None					
	1 slide on left				-ZL	
	1 slide on right				-ZR	
Protection against particles	Standard					
	Cover strip with magnetic deflection				P11	
Additional features	Food-safe as per supplementary material information				-F1	-F1
Toothed belt material	Uncoated PU, FDA-compliant				-PU1	-PU1

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

Peripherals overview

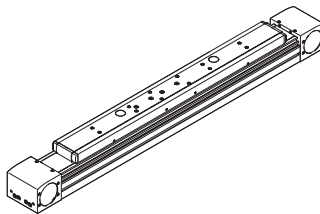
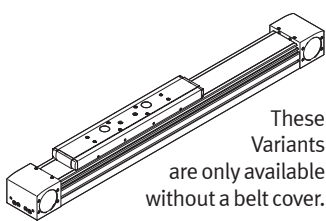
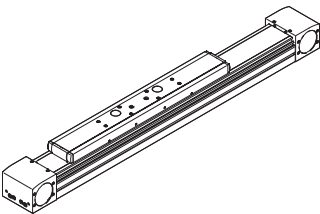


Slide variants

ELGA-...
Standard slide

ELGA-...-S
Slide, short

ELGA-...-L
Long slide



Peripherals overview

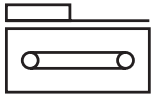
Accessories			
	Type/order code	Description	→ Page/Internet
[1]	Toothed belt axis ELGA-TB-RF	Electric drive	48
[2]	Centring pin/sleeve ZBS, ZBH	- For centring loads and attachments on the slide - Included in the scope of delivery: - With size 70, 80, 120: 2x ZBH-9	103
[3]	Switch lug SA, SB, SC, SD, SE, 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	- Inductive proximity switch, round design - The order code SC, SD, SE, SF includes 1 switch lug and max. 2 sensor brackets in the scope of delivery	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)	eammm-a
[8]	Motor EMMT	Motors specially matched to the axis, with or without gear unit, with or without brake	emmt
[9]	Drive shaft adapter EA	- Can be used as an alternative interface, as required - No drive shaft adapter is required for the axis/motor combinations a page <?>	94
[10]	Slot cover NS, NC	For protection against contamination	103
[11]	Proximity switch, T-slot SA, SB	- Inductive proximity switch, for T-slot - The order code SA, SB includes 1 switch lug in the scope of delivery	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	- For mounting the axis on the end cap - With higher forces and torques, the axis should be mounted using the profile	95

Type codes

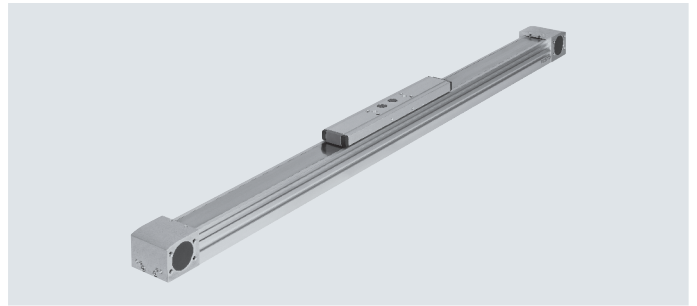
001	Series	
ELGA	Gantry axis	
002	Drive system	
TB	Toothed belt	
003	Guide	
RF	Roller bearing	
004	Size	
70	70	
80	80	
120	120	
005	Stroke range [mm]	
...	50 ... 7400	
006	Stroke reserve [mm]	
...	0 ... 999	
007	Slide design	
	Standard	
S	Slide, short	
L	Slide, long	
008	Protection against particles	
	Standard	
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	
013	Foot mounting	
	None	
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	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	
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	
	None	
...SF	1 ... 99 pieces	
021	Connecting cable 2.5 m, M8, 3-wire	
	None	
...CA	1 ... 99 pieces	
022	Cover, sensor slot	
	None	
...NS	1 ... 50 pieces	
023	Mounting slot covering	
	None	
...NC	1 ... 50 units	
024	Slot nut for mounting slot	
	Without	
...NM	1 ... 99 units	
025	Drive shaft	
	None	
...EA	1 ... 4 pieces	
026	Cable clip [units]	
...	10 ... 100	

Datasheet



-  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
ELGA-...-S	[mm]	50 ... 7000	50 ... 7000	50 ... 7400
ELGA-...-L	[mm]	50 ... 6900	50 ... 6900	50 ... 7200
Max. feed force F_x				
ELGA-...	[N]	350	800	1300
ELGA-...T8	[N]	–	600	1000
Max. no-load torque1)				
ELGA-...	[Nm]	0.7	1.4	3
ELGA-...T8 (at 25° C ²⁾)	[Nm]	–	1.4	3
Max. no-load resistance to shifting1)	[N]	46	68	114
Max. driving torque				
ELGA-...	[Nm]	5	15.9	34.1
ELGA-...T8	[Nm]	–	11.9	26.2
Max. speed	[m/s]	10		
Max. acceleration	[m/s ²]	50		
Repetition accuracy	[mm]	±0.08		

1) At 0.2 m/s

2) At low temperatures, the maximum idling torque can increase up to 2-fold.

Operating and environmental conditions

Ambient temperature ¹⁾		
ELGA-...	[°C]	–10 ... +60
ELGA-...T8	[°C]	–30 ... +40
Degree of protection		
ELGA-...		IP40
ELGA-...-P0		IP00
Duty cycle	[%]	100

1) Note operating range of proximity switches

Weight [kg]

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

1) Including slide

Datasheet

Toothed belt				
Size		70	80	120
Pitch	[mm]	3	5	5
Elongation1)				
ELGA-...	[%]	0.213	0.168	0.21
ELGA-...-PU2	[%]	0.105	0.1	0.122
Effective diameter	[mm]	28.65	39.79	52.52
Feed constant	[mm/rev]	90	125	165

1) At max. feed force

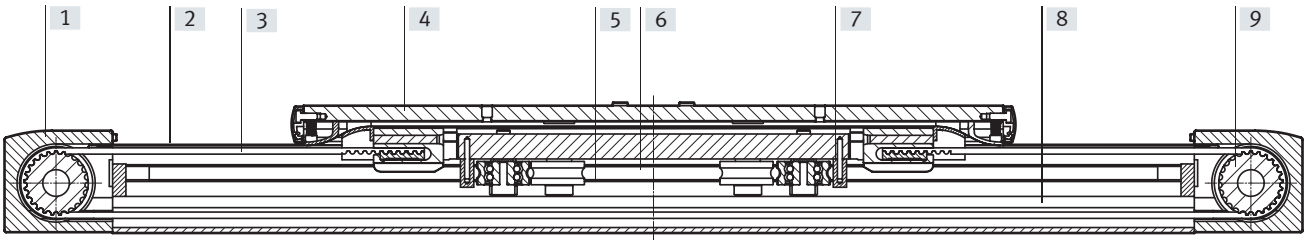
Mass moments of inertia				
Size		70	80	120
J ₀				
ELGA-...	[kg mm ²]	232	1044	4935
ELGA-...-S	[kg mm ²]	207	968	4592
ELGA-...-L	[kg mm ²]	278	1247	6006
JH per metre stroke	[kg mm ² /m]	19	97	221
JL per kg payload	[kg mm ² /Kg]	205	396	690

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

$JA = JO + JH \times \text{working stroke [m]} + JL \times \text{mpayload [kg]}$

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
	ELGA-...-PU2	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

Datasheet

Technical data – Displacement encoder		Dimensions → page 61	
Type		ELGA-...-M1	ELGA-...-M2
Resolution	[μm]	2.5	10
Max. travel speed with displacement encoder	[m/s]	4	4
Encoder signal		5 V TTL; A/A, B/B; reference signal (N/N) cyclically every 5 mm (zero pulse)	
Signal output		Line driver, alternating, resistant to sustained short circuit	
Electrical connection		8-pin plug 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 ¹⁾

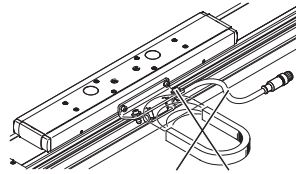
1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/spd/Certificates.

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.

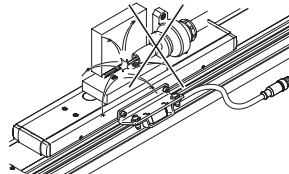
Application note

The toothed belt axis with displacement encoder is not designed for the following application examples

- Magnetic field



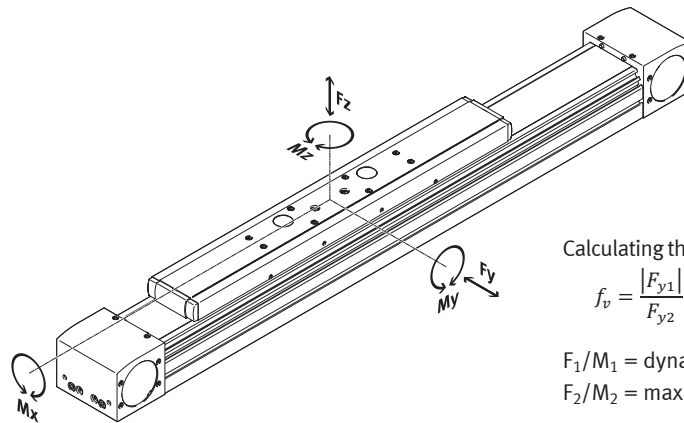
- Welding application



Load values

The indicated forces and torques refer to the slide surface. The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect.

These values must not be exceeded during dynamic operation. Special attention must be paid to the cushioning phase.



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

Calculating the load comparison factor:

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

F_1/M_1 = dynamic value

F_2/M_2 = maximum value

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

Datasheet

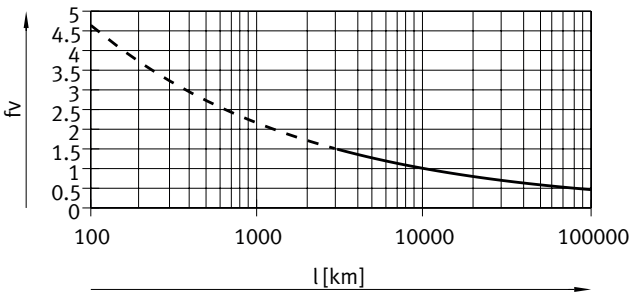
Calculating the service life

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

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

Load comparison factor f_v as a function of service life

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

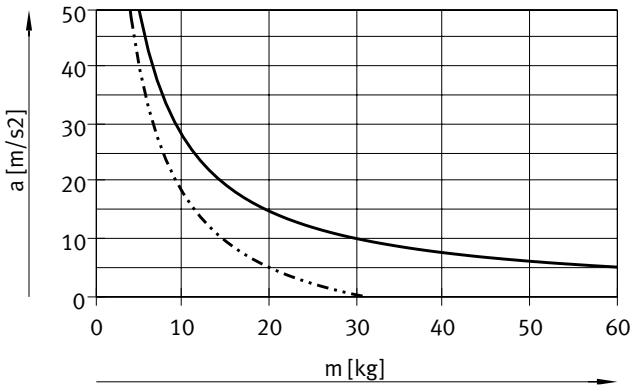


Note		
Engineering software Electric Motion Sizing www.festo.com/x/electric-motion-sizing	The engineering software can be used to calculate the guide workload for a service life of 5000 km.	$f_v > 1.5$ are only theoretical comparison values for the recirculating ball bearing guide.

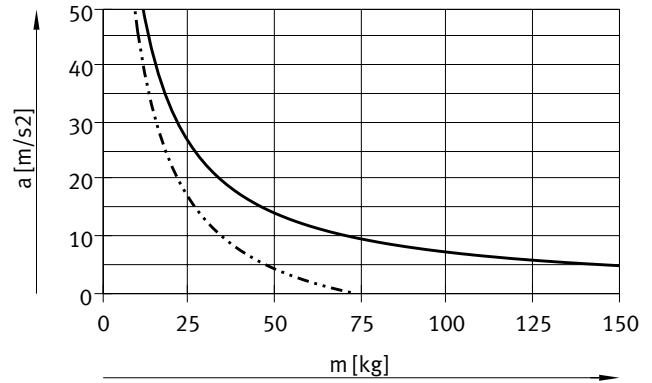
Datasheet

Max. acceleration a as a function of payload m

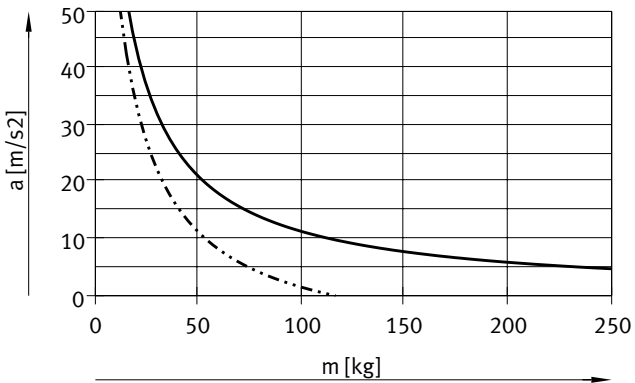
Size 70



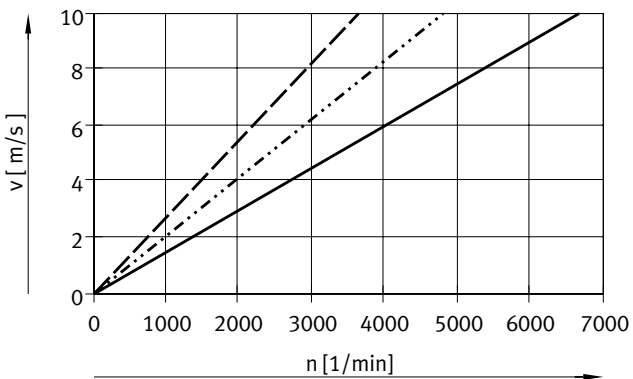
Size 80



Size 120



— Horizontal mounting position
 - - - Vertical mounting position

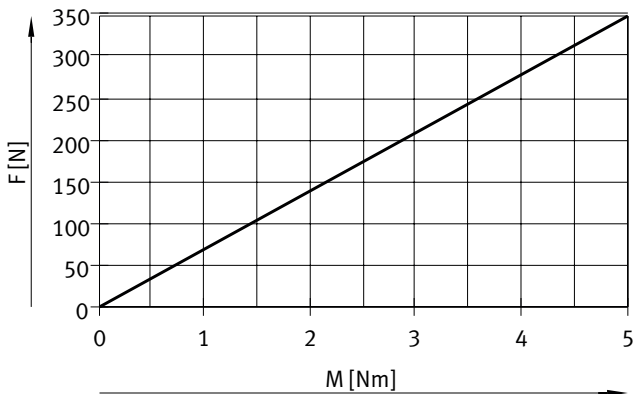
Speed v as a function of rotational speed n 

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

Datasheet

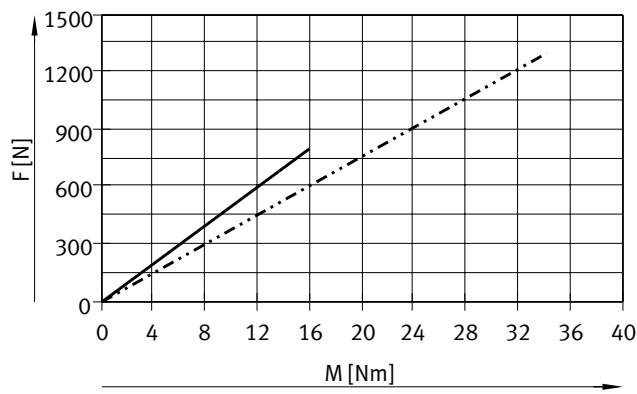
Theoretical feed force F as a function of the input torque M

Size: 70



ELGA-TB-RF-70

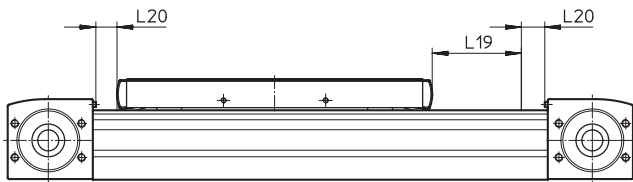
Size 80/120



ELGA-TB-RF-80

ELGA-TB-RF-120

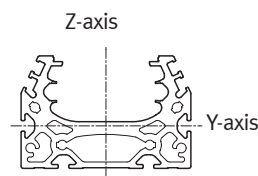
Stroke reserve



L19 = Nominal stroke
L20 = Stroke reserve

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

Second moment of area



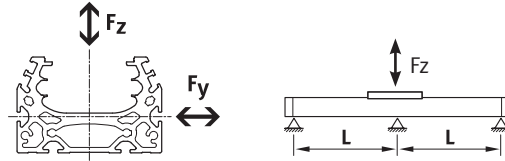
Size		70	80	120
ly	[mm ⁴]	1.39x10 ⁵	2.70x10 ⁵	1.42x10 ⁶
lz	[mm ⁴]	4.33x10 ⁵	1.02x10 ⁶	5.02x10 ⁶

Datasheet

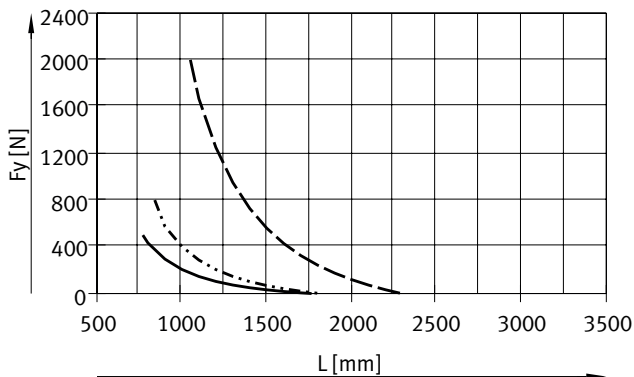
Maximum permissible support spacing L (without profile mounting MUE/central support EAHF) as a function of force F

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 $f = 0.5 \text{ mm}$.

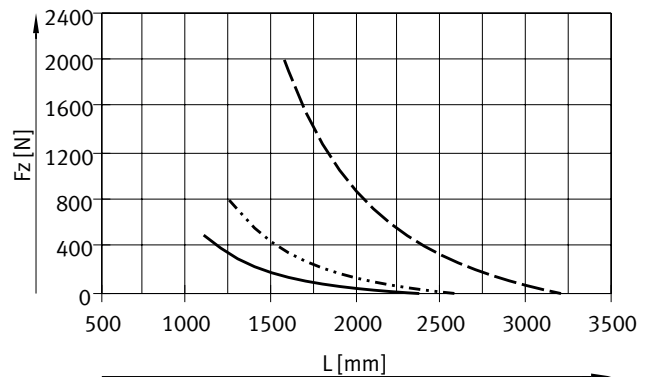


Force F_y



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

Force F_z



Recommended deflection limits

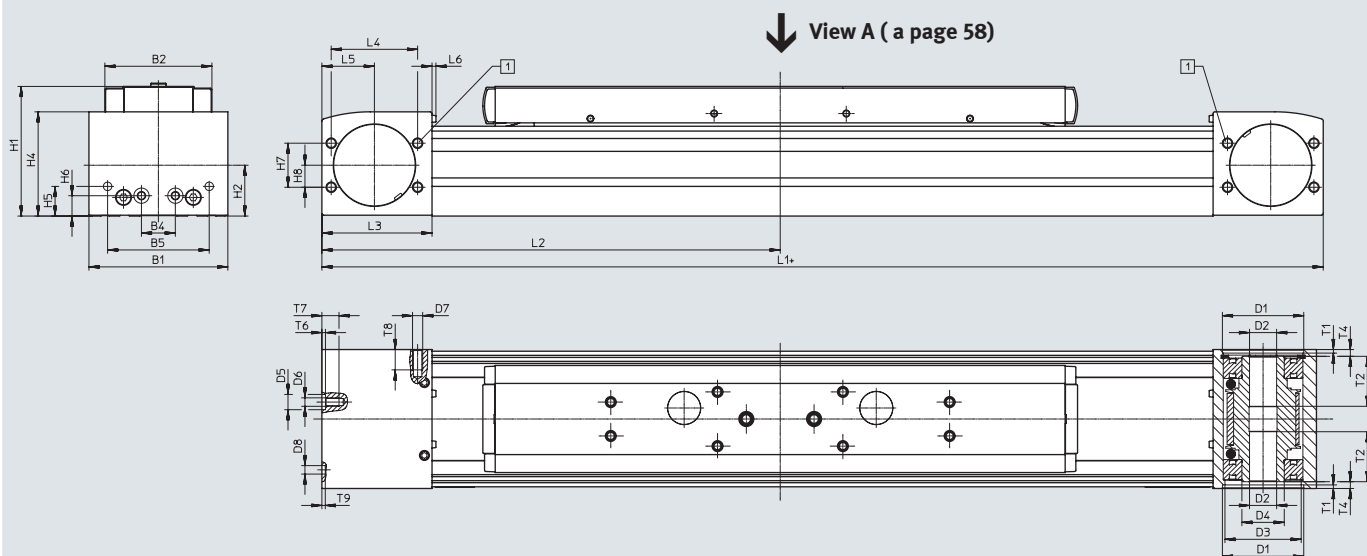
Adherence to the following deflection limits is recommended so as not to impair the functionality of the axes.

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

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

Datasheet

Dimensions

Download CAD data → www.festo.com

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

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

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

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

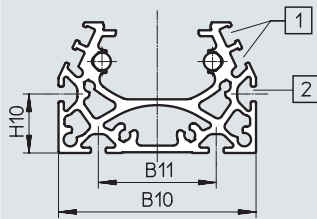
Datasheet

Dimensions

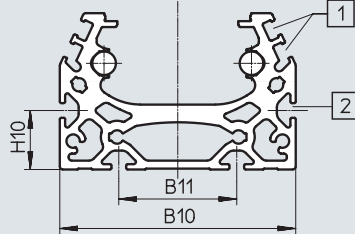
Download CAD data → www.festo.com

Profile

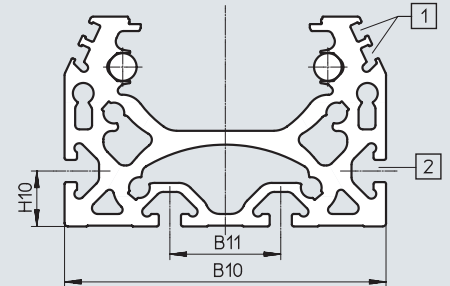
Size 70



Size 80



Size: 120



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

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



Note

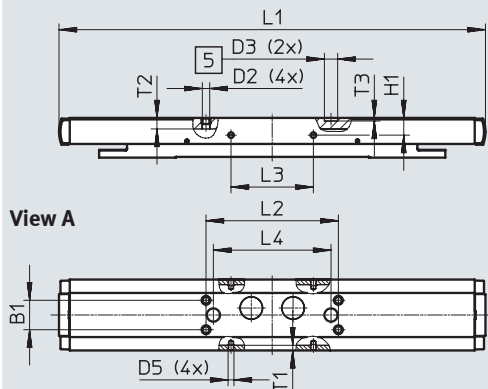
Requirements for the flatness of the bearing surface and of attachments as well as for use in parallel structures
www.festo.com/sp
 User documentation

Datasheet

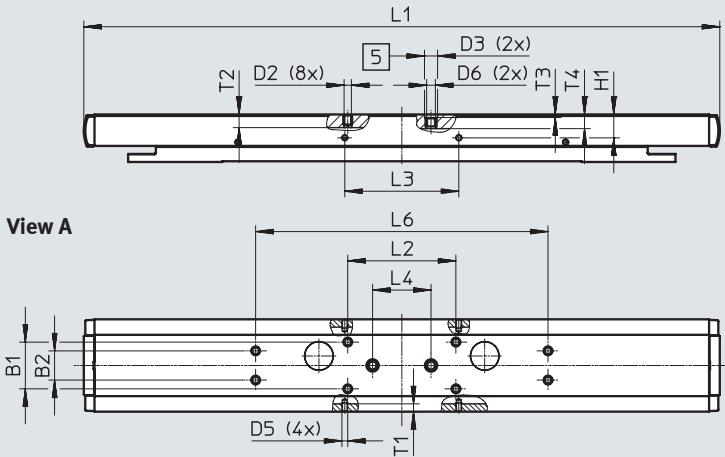
Dimensions Download CAD data → www.festo.com

ELGA-... – Standard slide

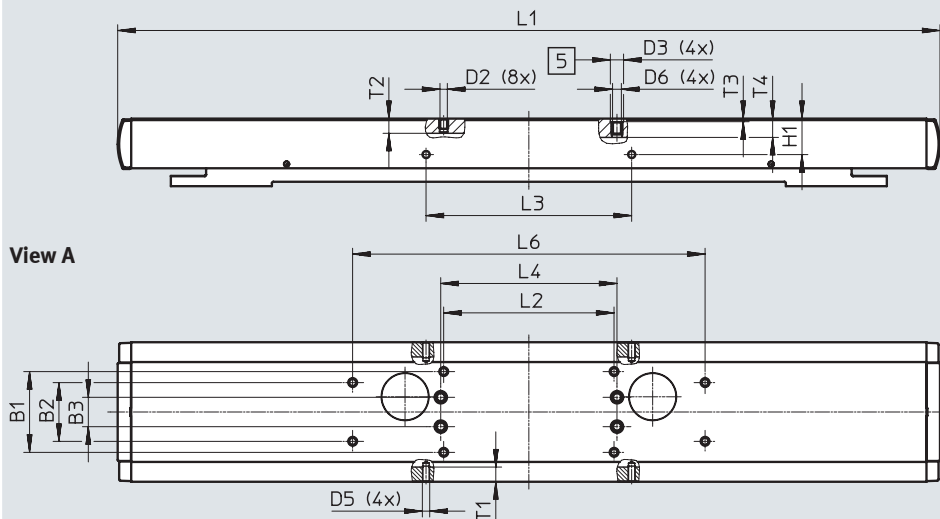
Size 70



Size 80



Size 120



[5] Drill hole for centring sleeve

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

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

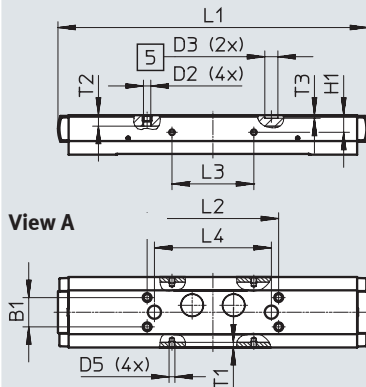
Datasheet

Dimensions

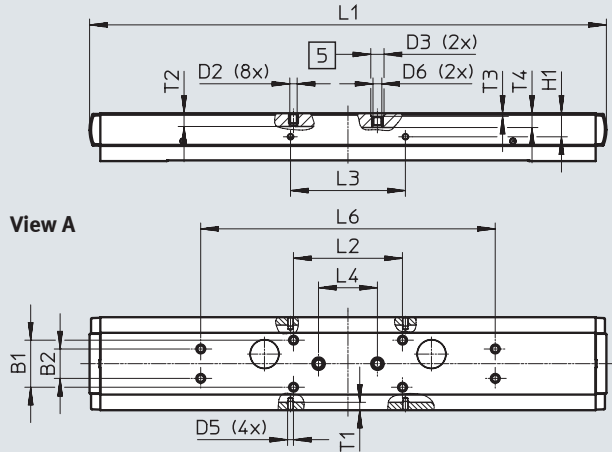
Download CAD data → www.festo.com

ELGA-...-S – Short slide

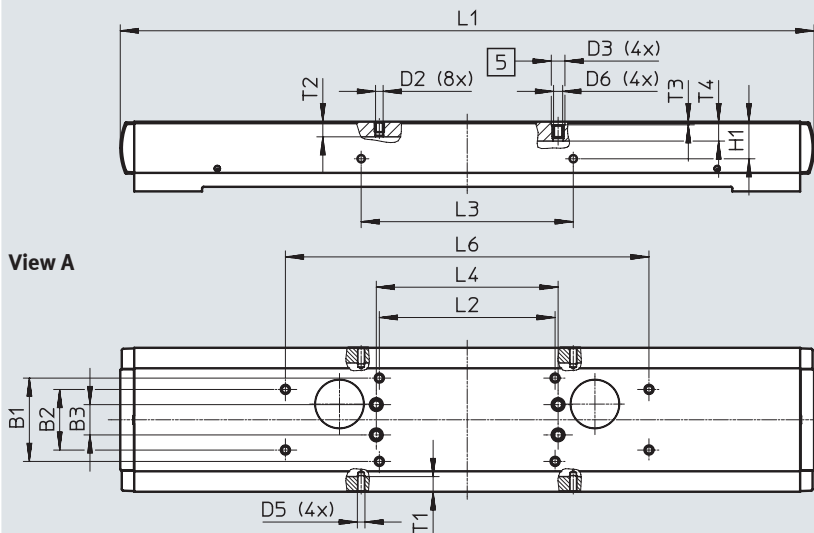
Size 70



Size 80



Size 120



[5] Drill hole for centring sleeve

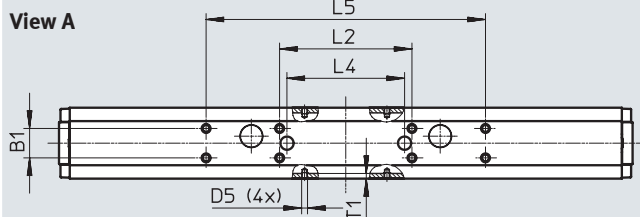
Size	B1	B2	B3	D2	D3 ø H7	D5	D6	H1
	±0.1	±0.1	±0.1					±0.1
70	20	–	–	M5	9	M4	–	11.7
80	32	20	–	M5	9	M4	M6	16
120	55	40	20	M5	9	M5	M6	24.5

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

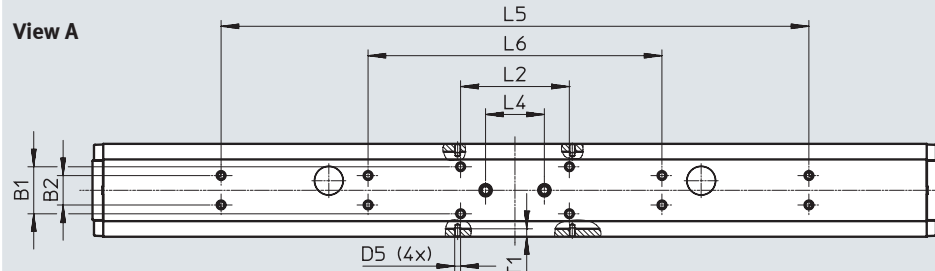
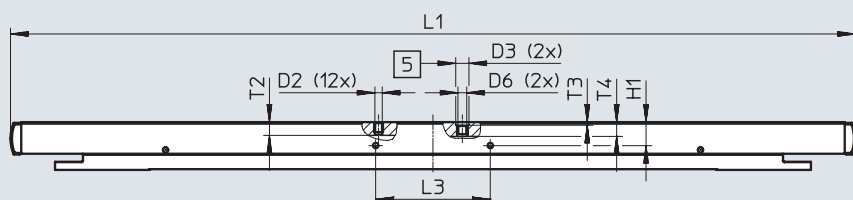
ELGA-...-L – Long slide

Download CAD data → www.festo.com

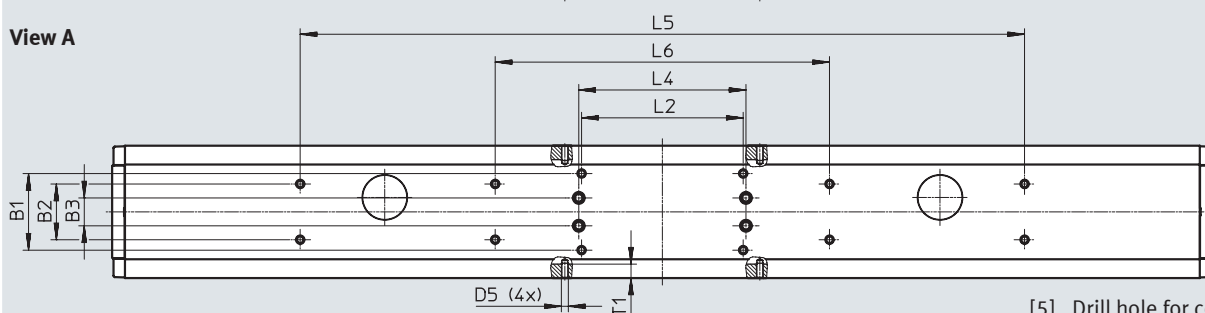
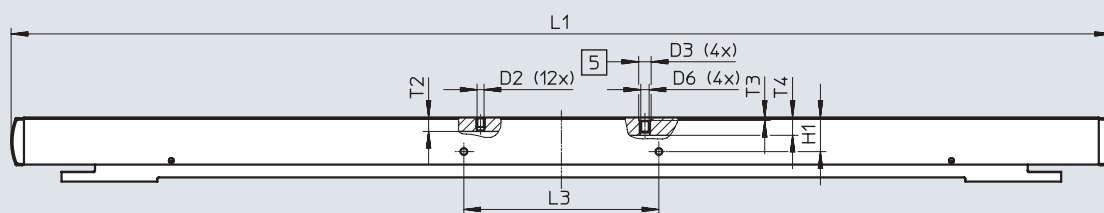
Size 70



Size 80



Size 120



[5] Drill hole for centring sleeve

Datasheet

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

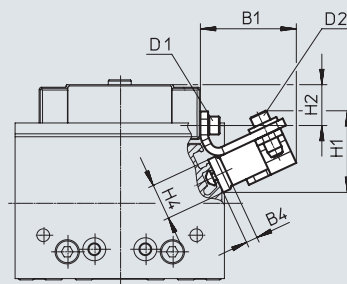
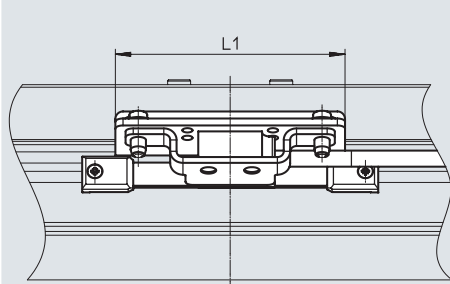
Size	D6	H1 ±0.1	L1	L2 ±0.2	L3 ±0.1	L4 ±0.03
70	–	11.7	390	90	56	80
80	M6	16	575	74	78	40
120	M6	24.5	790	116	140	120

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

Dimensions

Download CAD data → www.festo.com

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

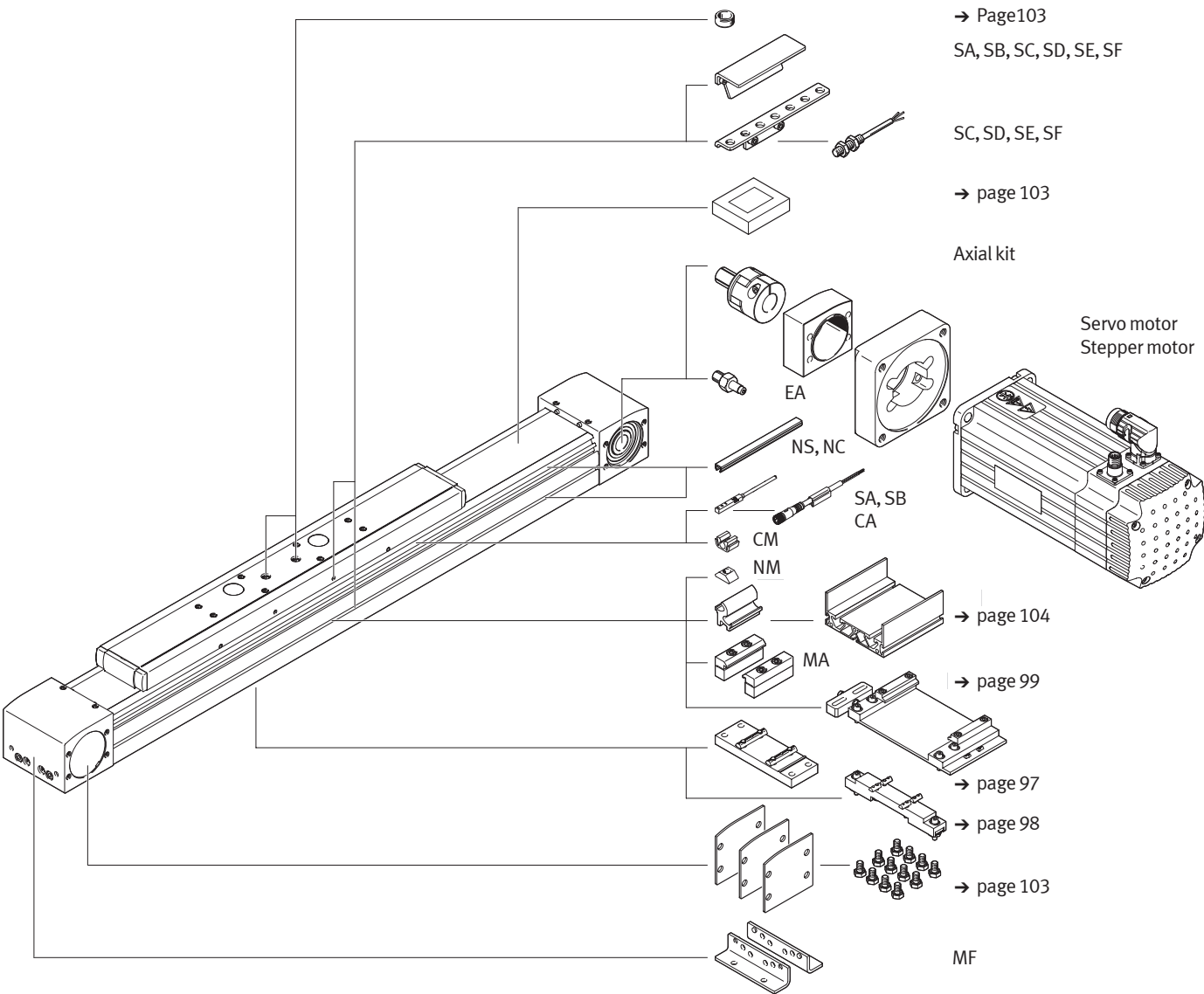


Encoder cable
(connection to motor controller/
safety system)
→ page 105

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

Ordering data – Modular product system

Accessories



Ordering data – Modular product system

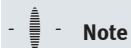
Ordering table							
Size	70	80	120	Conditions	Code		Enter code
Module no.	1371245	1371246	1371247				
Design	Linear axis				ELGA		ELGA
Function	Toothed belt				-TB		-TB
Guide	Roller bearing guide				-RF		-RF
Size [mm]	70	80	120		-...		
Stroke length [mm]	1 ... 7000	1 ... 7000	1 ... 7400		-...		
Stroke reserve [mm]	0 ... 999 (0 = no stroke reserve)			[1]	-...H		
Slide design	Standard slide						
	50 ... 7000	50 ... 7000	50 ... 7400				
	Slide, short			[2]	-S		
	50 ... 7000	50 ... 7000	50 ... 7400				
Protection against particles	Long slide				-L		
	50 ... 6900	50 ... 6900	50 ... 7200				
Temperature range	Standard						
	Without cover strip				-P0		
Measurement system	None						
	With displacement encoder, incremental, resolution 2.5 µm			[3]	-M1		
Displacement encoder attachment position	With displacement encoder, incremental, resolution 10 µm			[3]	-M2		
	None						
	Rear			[4]	-B		
Toothed belt material	Advanced			[4]	-F		
	Chloroprene rubber						
	-	Chloroprene rubber for low temperatures			-CR1		
	Uncoated PU, FDA-compliant				-PU1		
Accessories	Coated PU				-PU2		
	Accessories enclosed separately				+		+
Foot mounting	1				MF		
Profile mounting	1 ... 50				...MA		
Proximity switch (SIES), inductive, slot type 0, PNP, incl. switch lug	N/O contact, 7.5 m cable	1 ... 6		[4]	...SA		
	N/C contact, 7.5 m cable	1 ... 6		[4]	...SB		
Proximity switch (SIEN), inductive, M8, PNP, incl. switch lug with sensor bracket	N/O contact, 2.5 m cable	1 ... 99		[4]	...SC		
	N/C contact, 2.5 m cable	1 ... 99		[4]	...SD		
	N/O contact, M8 plug	1 ... 99		[4]	...SE		
	N/C contact, M8 plug	1 ... 99		[4]	...SF		
Connecting cable 2.5 m, M8, 3-wire	1 ... 99			[4]	...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		

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

[2] S Only with P0

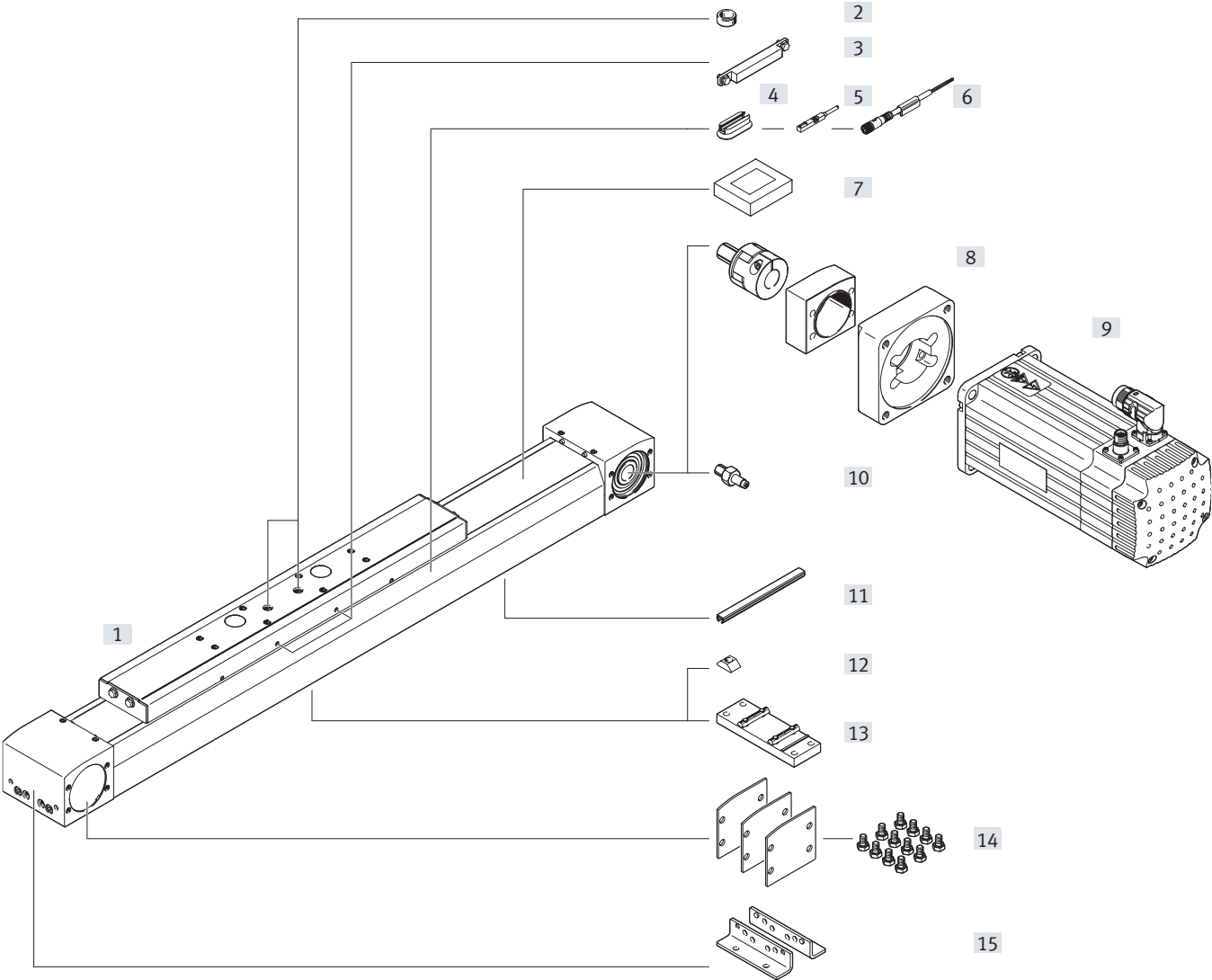
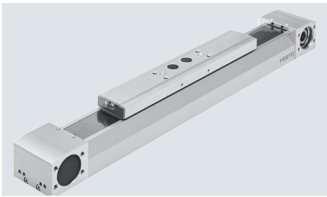
[3] M1, M2, SA, SB, SC, SD, SE, SF, CA Not with T8

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

**Note**

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

Peripherals overview – For the food zone

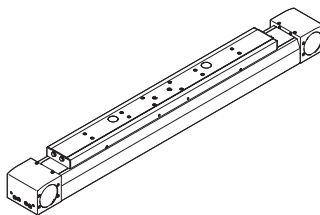
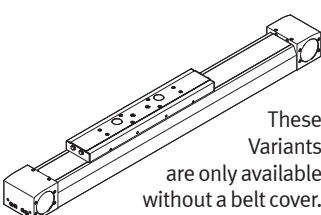
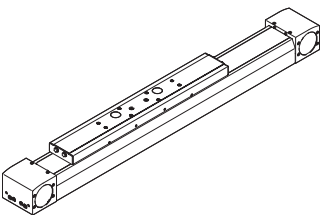


Slide variants

ELGA-...-F1
Standard slide

ELGA-...-S-F1
Slide, short

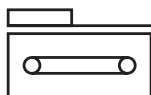
ELGA-...-L-F1
Long slide



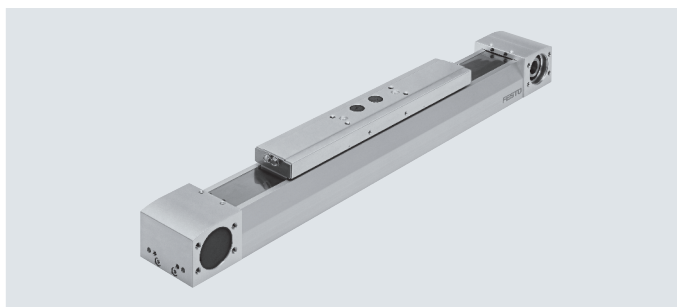
Peripherals overview – For the food zone

Accessories			
	Type/order code	Description	→ Page/Internet
[1]	Toothed belt axis ELGA-TB-RF-F1	Electric drive	66
[2]	Centring pin/sleeve ZBS, ZBH	- For centring loads and attachments on the slide - Included in the scope of delivery: - With size 70, 80, 120: 2x ZBH-9	103
[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)	eammm-a
[9]	Motor EMMT	Motors specially matched to the axis, with or without gear unit, with or without brake	emmt
[10]	Drive shaft adapter EA	- Can be used as an alternative interface, as required - No drive shaft adapter is required for the axis/motor combinations a page <?>	94
[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

Datasheet – For the food zone



-  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
ELGA-...-S [mm]	50 ... 7000	50 ... 7000	50 ... 7400
ELGA-...-L [mm]	50 ... 6900	50 ... 6900	50 ... 7200
Max. feed force F_x [N]	260	600	1000
Max. no-load torque ¹⁾ [Nm]	1.03	1.93	5.67
Max. no-load resistance to shifting ¹⁾ [N]	72	97	216
Max. driving torque [Nm]	3.7	11.9	26.2
Max. speed [m/s]	10		
Max. acceleration [m/s ²]	50		
Repetition accuracy [mm]	±0.08		

1) At 0.2 m/s

Operating and environmental conditions

Ambient temperature ¹⁾ [°C]	-10 ... +60
Degree of protection	
ELGA-...	IP40
ELGA-...-P0	IP00
Duty cycle [%]	100
Food-safe ²⁾	→ Supplementary material information

1) Note operating range of proximity switches.

2) More information www.festo.com/sp d Certificates.**Weight [kg]**

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

1) Including slide

Datasheet – For the food zone

Toothed belt				
Size		70	80	120
Pitch	[mm]	3	5	5
Elongation1)	[%]	0.105	0.1	0.122
Effective diameter	[mm]	28.65	39.79	52.52
Feed constant	[mm/rev]	90	125	165

1) At max. feed force

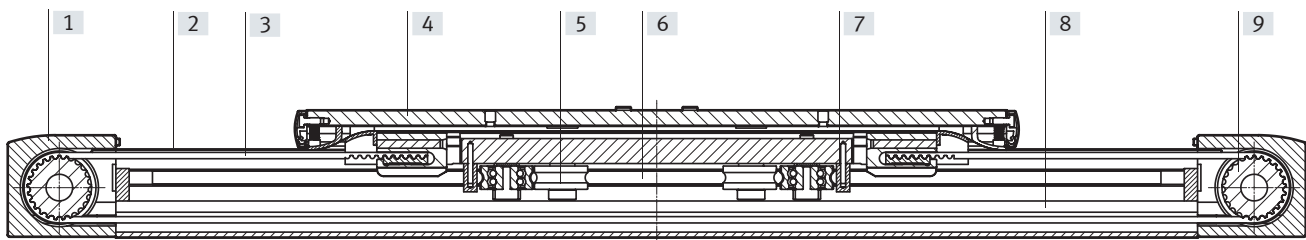
Mass moments of inertia				
Size		70	80	120
J ₀				
ELGA-...	[kg mm ²]	237	1062	4937
ELGA-...-S	[kg mm ²]	209	975	4554
ELGA-...-L	[kg mm ²]	282	1265	6008
JH per metre stroke	[kg mm ² /m]	23	110	264
JL per kg payload	[kg mm ² /Kg]	205	396	690

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

$$JA = JO + JH \times \text{working stroke [m]} + JL \times \text{mpayload [kg]}$$

Materials

Sectional view



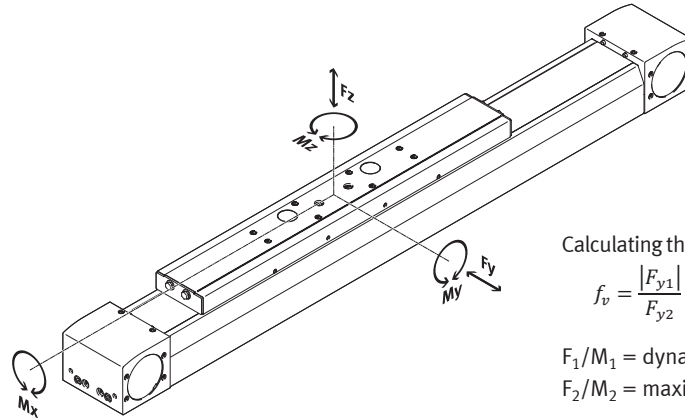
Axis		
[1]	Drive cover	Anodised wrought aluminium alloy
[2]	Cover strip	Stainless steel strip, non-corroding
[3]	Toothed belt	Polyurethane with steel cord
[4]	Slide	Anodised wrought aluminium alloy
[5]	Track roller	Hardened rolled steel (lubricant approved for the food zone)
[6]	Guide rod	Hardened tempered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

Datasheet – For the food zone

Load values

The indicated forces and torques refer to the slide surface. The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect.

These values must not be exceeded during dynamic operation. Special attention must be paid to the cushioning phase.



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

Calculating the load comparison factor:

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

F_1/M_1 = dynamic value

F_2/M_2 = maximum value

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

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

Calculating the service life

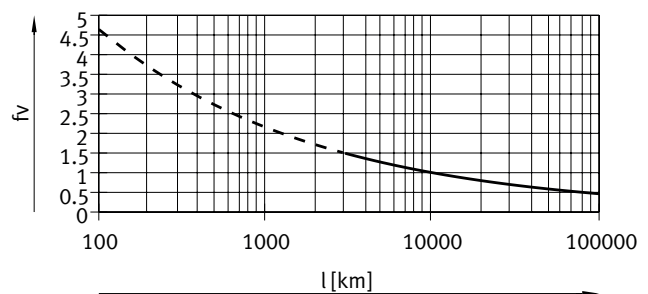
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor f_v against the service life.

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

Load comparison factor f_v as a function of service life

Example:

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



Note

Engineering software
Electric Motion Sizing
www.festo.com/x/electric-motion-sizing

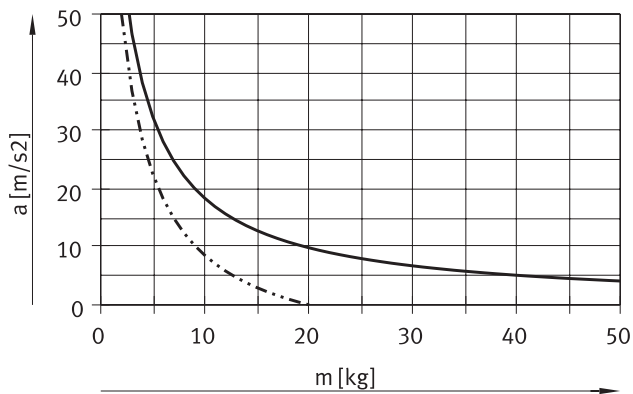
The engineering software can be used to calculate the guide workload for a service life of 10000 km.

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

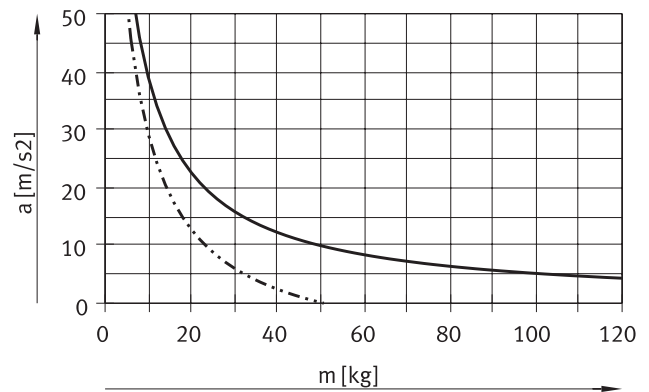
Datasheet – For the food zone

Max. acceleration a as a function of payload m

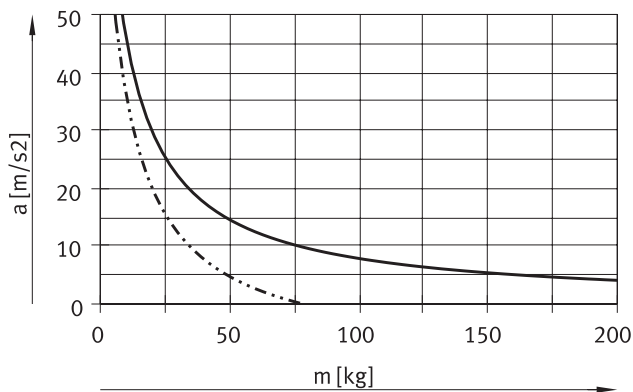
Size 70



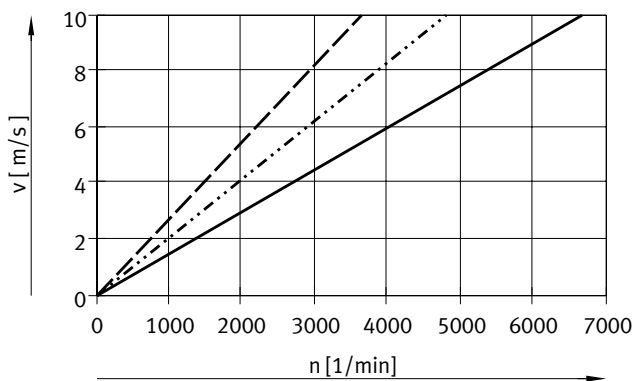
Size 80



Size 120



— Horizontal mounting position
 - - - Vertical mounting position

Speed v as a function of rotational speed n 

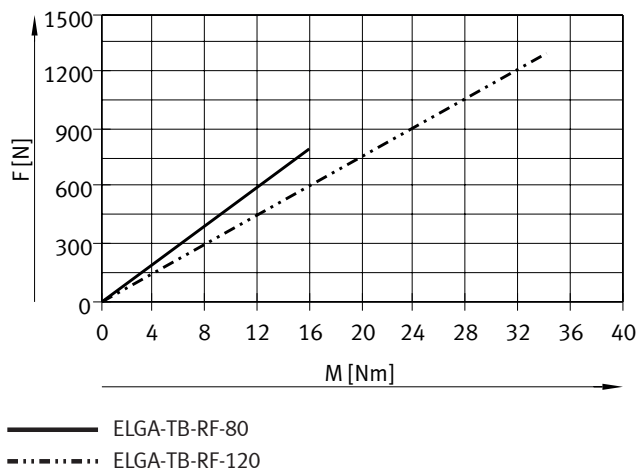
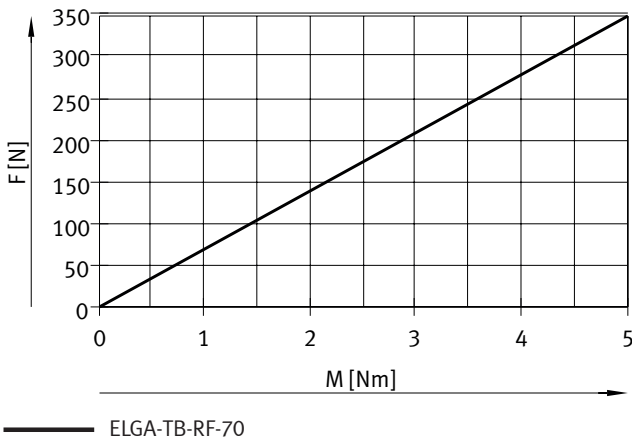
— ELGA-TB-RF-70
 - · - · - ELGA-TB-RF-80
 - - - ELGA-TB-R-120

Datasheet – For the food zone

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

Size: 70

Size 80/120



Stroke reserve

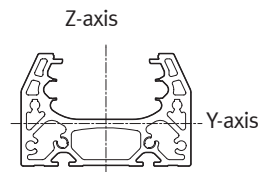


- The stroke reserve is a safety distance from the mechanical end position and is not used in normal operation
- The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum permissible working stroke
- The stroke reserve length can be freely selected
 - The stroke reserve is defined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

L19 = Nominal stroke
L20 = Stroke reserve

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

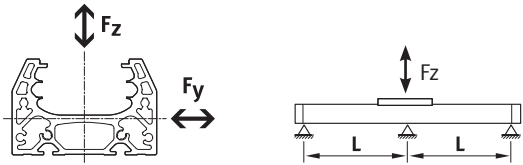


Size		70	80	120
Iy	[mm ⁴]	1.48x10 ⁵	2.77x10 ⁵	1.32x10 ⁶
Iz	[mm ⁴]	4.52x10 ⁵	1.00x10 ⁶	4.74x10 ⁶

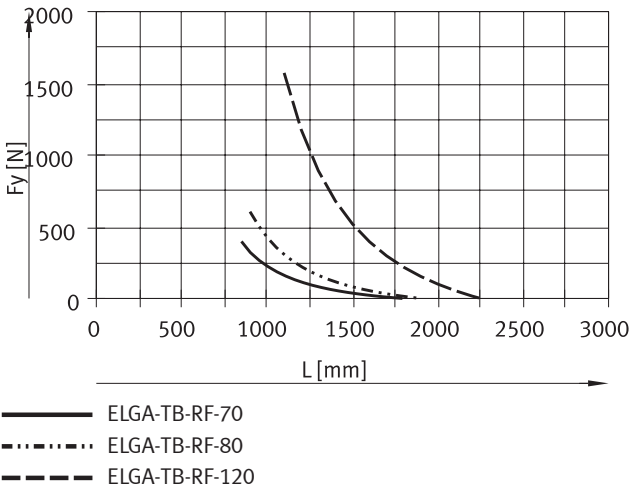
Datasheet – For the food zone

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

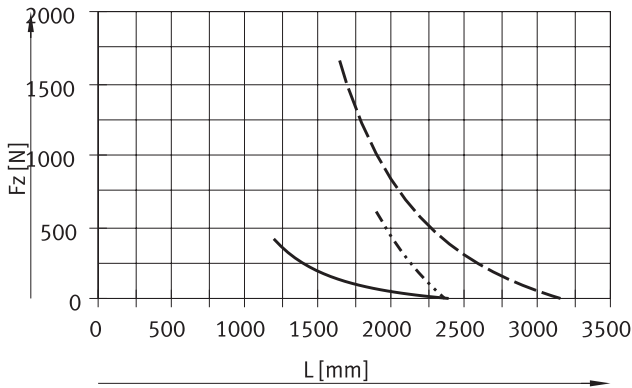
The axis may need to be supported in order to limit deflection in the case of long strokes.
 The following graphs can be used to determine the maximum permissible support spacing l as a function of force F acting on the axis. The deflection is $f = 0.5 \text{ mm}$.



Force Fy



Force Fz



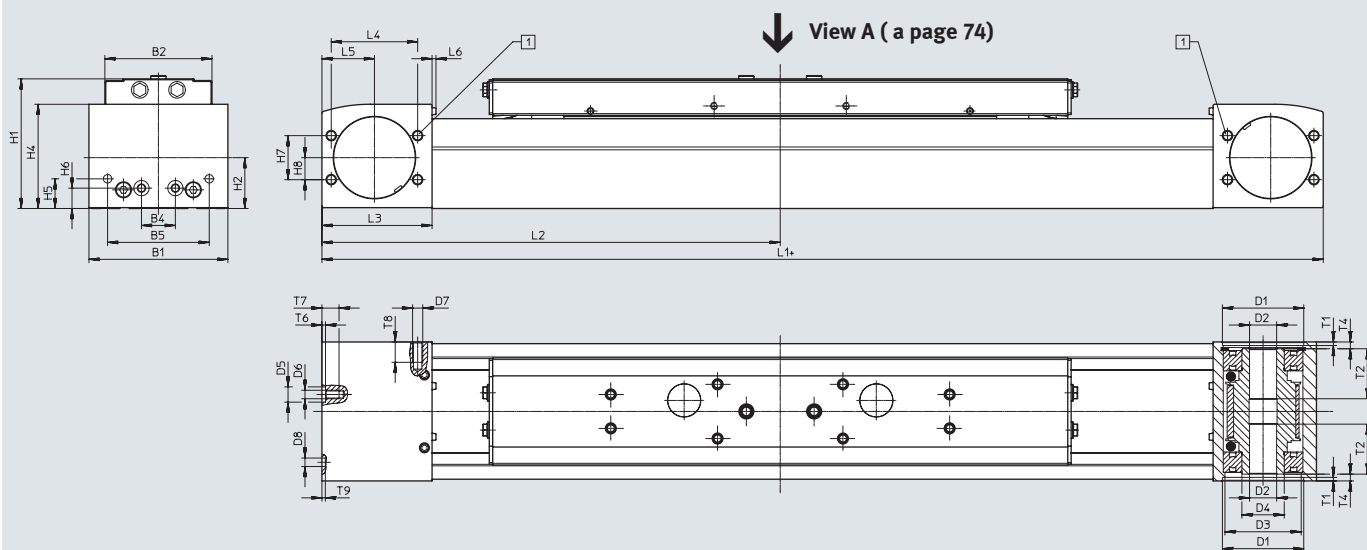
Recommended deflection limits

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

Datasheet – For the food zone

Dimensions

Download CAD data → www.festo.com

+ = plus stroke length + 2x stroke reserve

[1] Sealing air connection

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

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

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

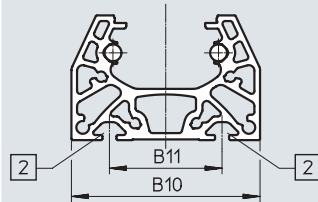
Size Slide design	ELGA-...	L1 ELGA-...-S	ELGA-...-L	ELGA-... min.	L2 ELGA-...-S min.	ELGA-...-L min.
70	420	342	520	210	171	260
80	580	496	720	290	248	360
120	775	673	1005	387.5	336.5	502.5

Datasheet – For the food zone

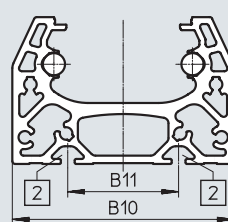
Dimensions

Profile

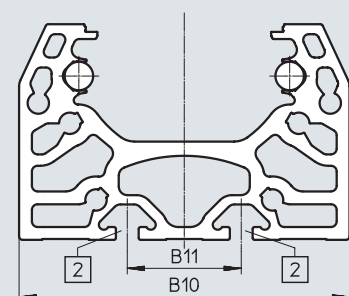
Size 70



Size 80



Size: 120



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

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

 Note

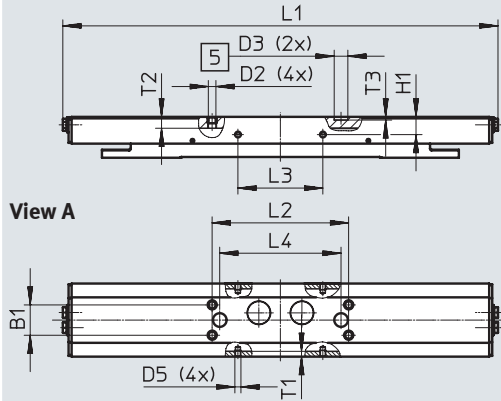
Requirements for the flatness of the bearing surface and of attachments as well as for use in parallel structures
a www.festo.com/sp
User documentation

Datasheet – For the food zone

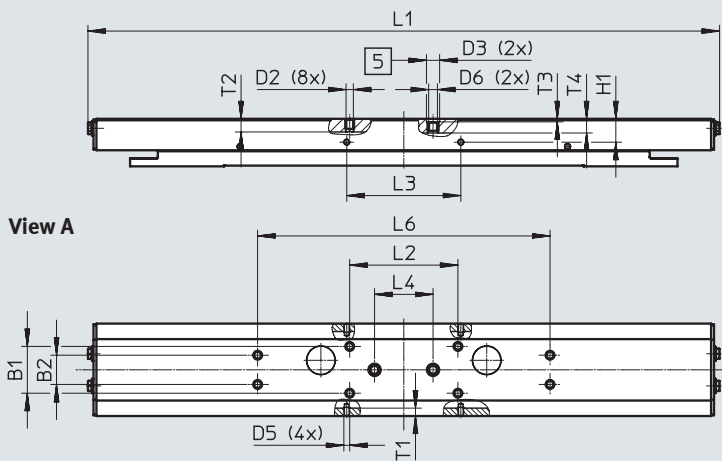
Dimensions Download CAD data → www.festo.com

ELGA-... – Standard slide

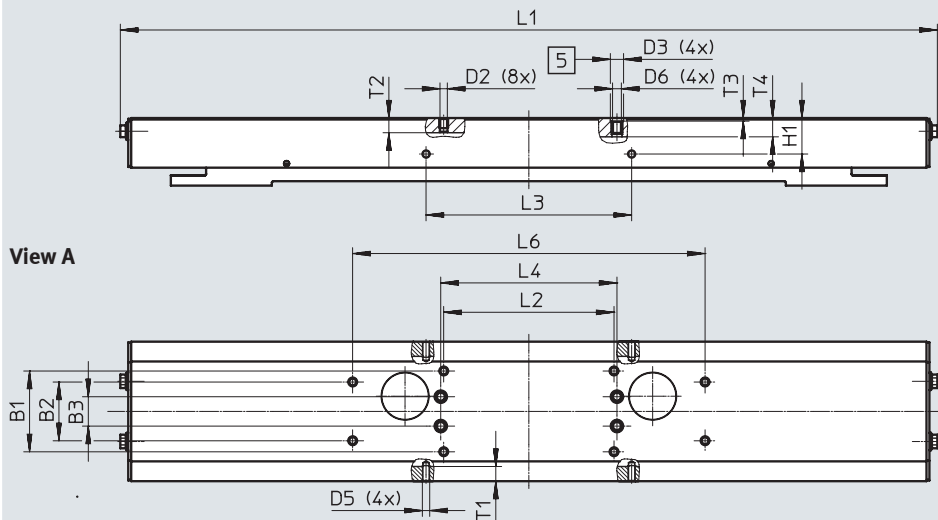
Size 70



Size 80



Size 120



[5] Drill hole for centring sleeve

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

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

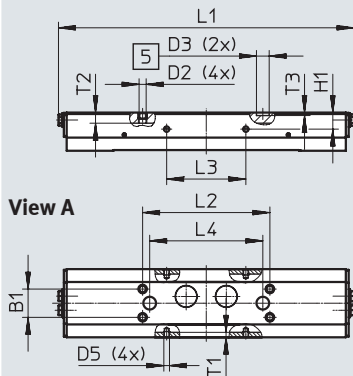
Datasheet – For the food zone

Dimensions

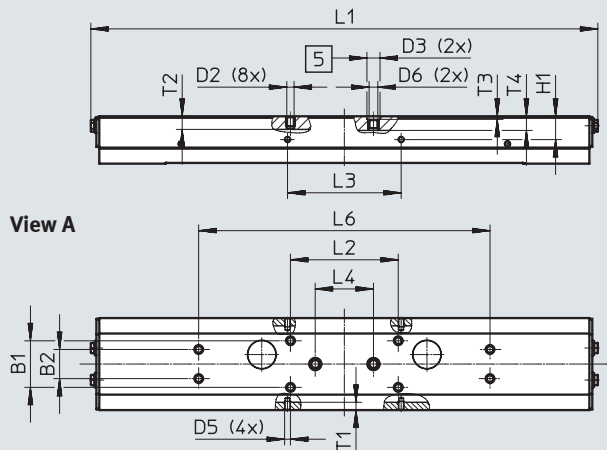
Download CAD data → www.festo.com

ELGA-...-S – Short slide

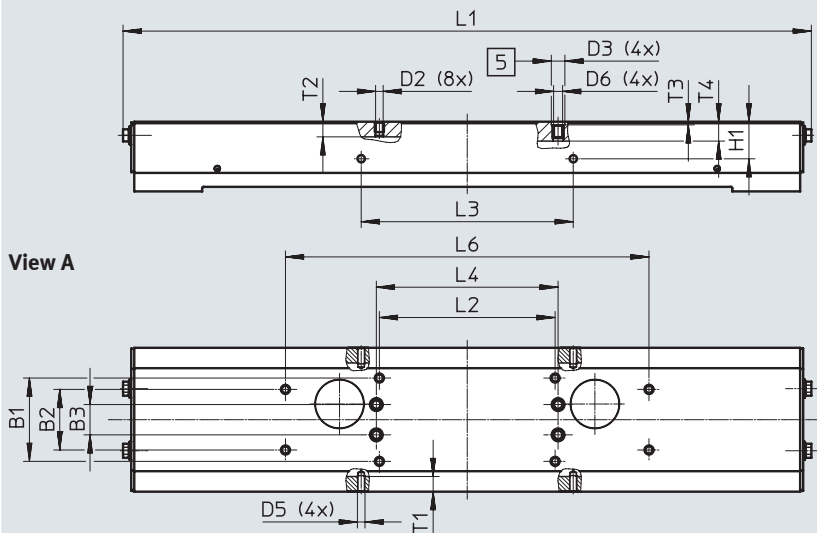
Size 70



Size 80



Size 120



[5] Drill hole for centring sleeve

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

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

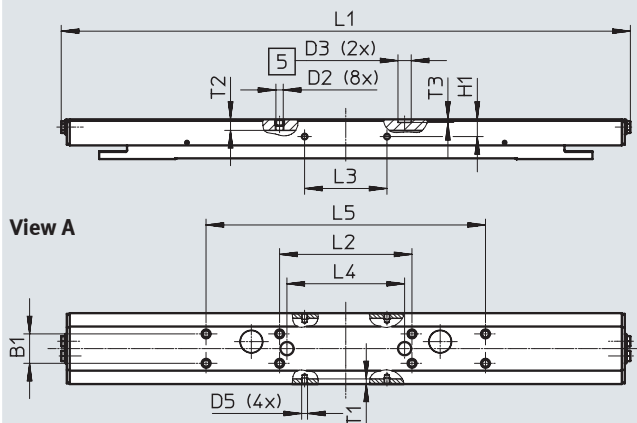
Datasheet – For the food zone

Dimensions

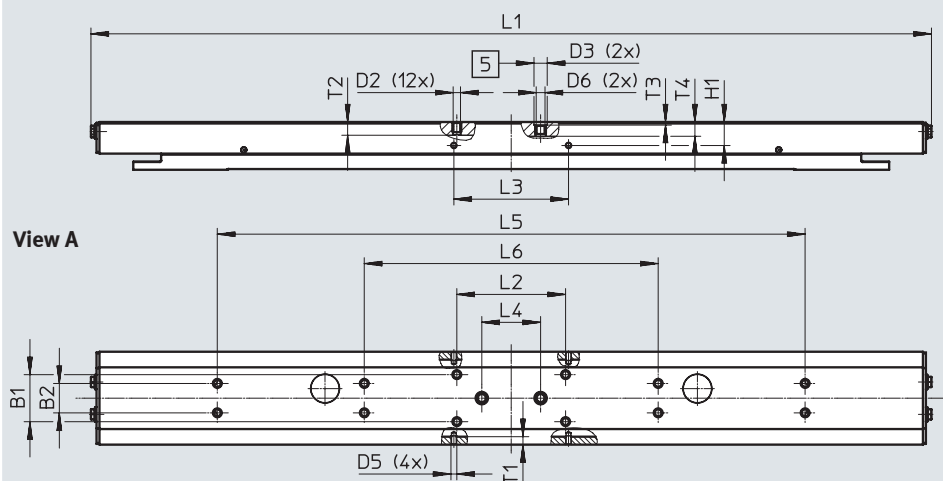
Download CAD data → www.festo.com

ELGA-...-L – Long slide

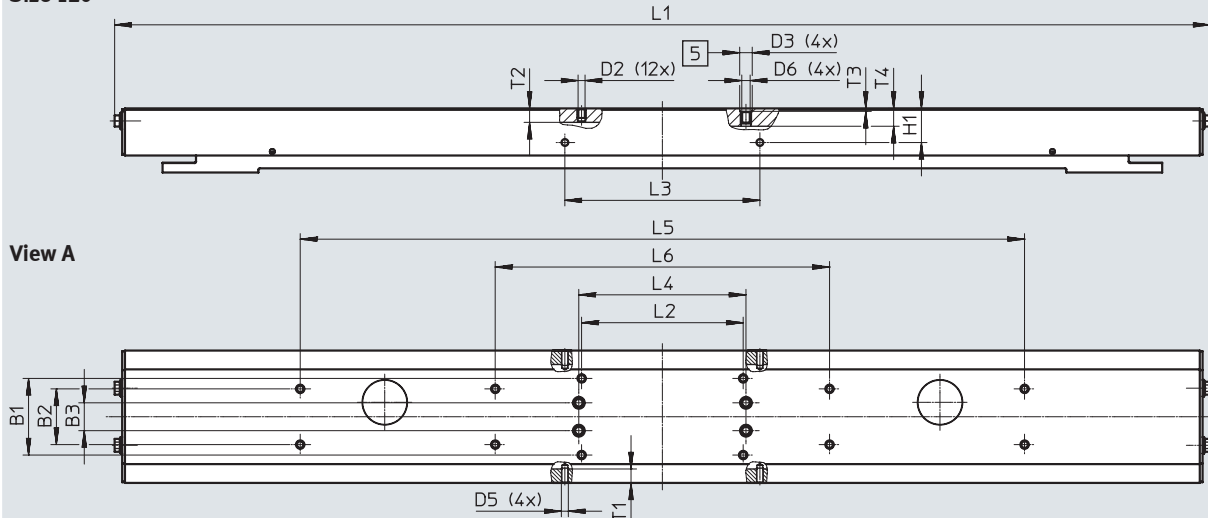
Size 70



Size 80



Size 120



[5] Drill hole for centring sleeve

Datasheet – For the food zone

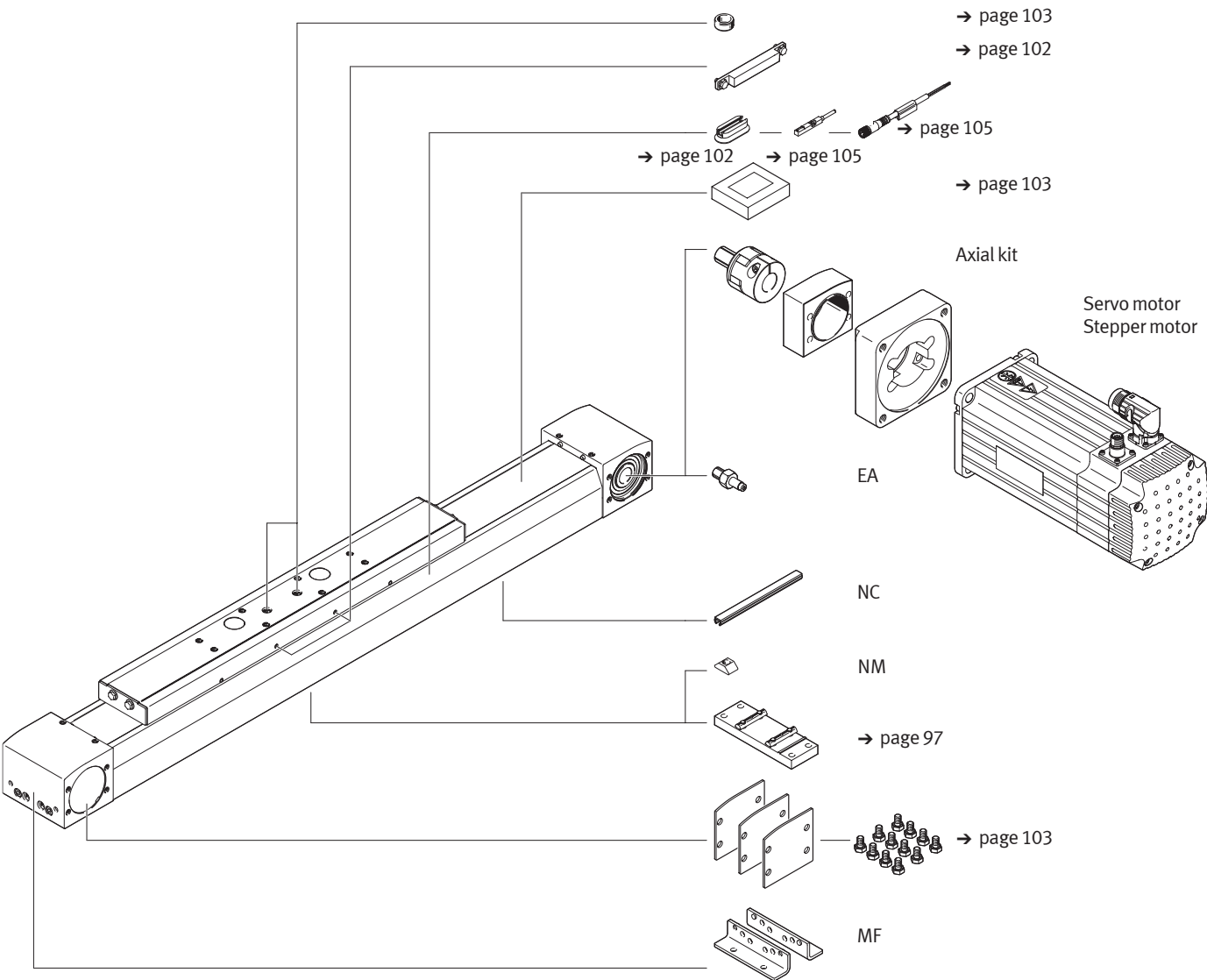
Size	B1 ±0.1	B2 ±0.1	B3 ±0.1	D2	D3 Ø H7	D5
70	20	–	–	M5	9	M4
80	32	20	–	M5	9	M4
120	55	40	20	M5	9	M5

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

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

Ordering data – Modular products – For the food zone

Accessories



Ordering data – Modular products – For the food zone

Ordering table							
Size	70	80	120	Conditions	Code	Enter code	
Module no.	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 stroke reserve)			[1]	-...H		
Slide design	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 per supplementary material information			[3]	-F1		-F1
Toothed belt material	Uncoated PU, FDA-compliant				-PU1		-PU1
Accessories	Accessories enclosed separately				+		+
Foot mounting	1				MF		
Mounting slot covering	1 ... 50 (1 = 2 units, 500 mm)				...NC		
Slot nut for mounting slot	1 ... 99				...NM		
Drive shaft adapter	1 ... 4				...EA		

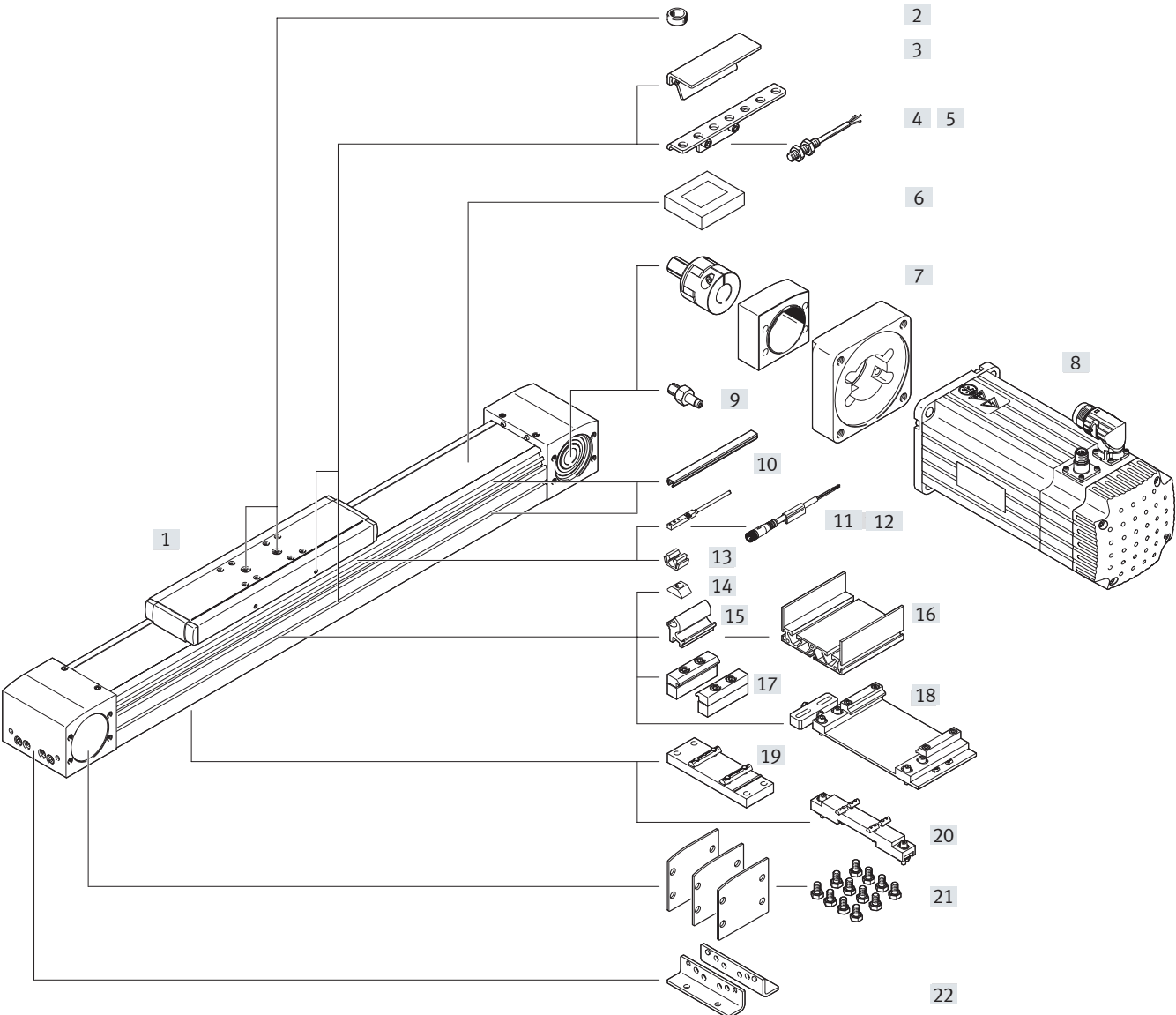
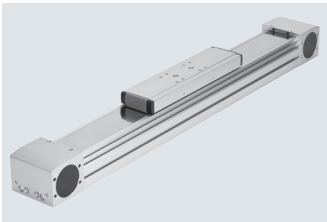
[1] ... H The sum of the nominal stroke and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length

[2] S Only with P0

[3] F1 Not in combination with M1, M2

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

Peripherals overview



Peripherals overview

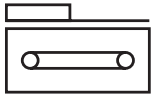
Accessories			
	Type/order code	Description	→ Page/Internet
[1]	Toothed belt axis ELGA-TB-G	Electric drive	82
[2]	Centring pin/sleeve ZBS, ZBH	- For centring loads and attachments on the slide - Included in the scope of delivery: - With size 70: 2x ZBS-5 - With size 80, 120: 2x ZBH-9	103
[3]	Switch lug 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	- Inductive proximity switch, round design - The order code SC, SD, SE, SF includes 1 switch lug and max. 2 sensor brackets in the scope of delivery	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)	eammm-a
[8]	Motor EMMT	Motors specially matched to the axis, with or without gear unit, with or without brake	emmt
[9]	Drive shaft adapter EA	- Can be used as an alternative interface, as required - No drive shaft adapter is required for the axis/motor combinations a page <?>	94
[10]	Slot cover NS, NC	For protection against contamination	103
[11]	Proximity switch, T-slot SA, SB	- Inductive proximity switch, for T-slot - The order code SA, SB includes 1 switch lug in the scope of delivery	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	- For mounting the axis on the end cap - With higher forces and torques, the axis should be mounted using the profile	95

Type codes

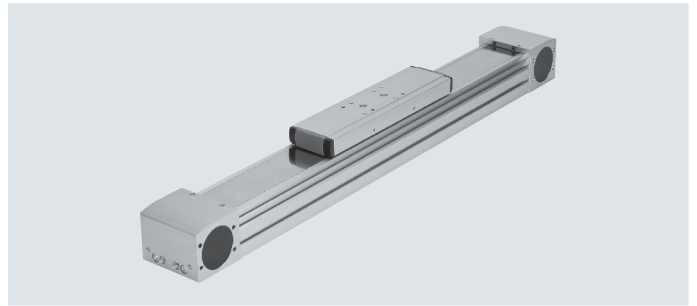
001	Series	
ELGA	Gantry axis	
002	Drive system	
TB	Toothed belt	
003	Guide	
G	Basic variant	
004	Size	
70	70	
80	80	
120	120	
005	Stroke range [mm]	
...	50 ... 8500	
006	Stroke reserve	
OH	None	
...H	0 ... 999 mm	
007	Protection against particles	
	Standard	
P0	Without strip cover	
008	Material of toothed 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	
...SA	1 ... 6 units	

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	
	None	
...SC	1 ... 99 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	
	None	
...CM	... units	
022	Drive shaft	
	None	
...EA	1 ... 4 pieces	

Datasheet



-  Size
70 ... 120
-  Stroke length
50 ... 8500 mm
-  www.festo.com
-  Repair service

**General technical data**

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

1) At 0.2 m/s

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

Operating and environmental conditions

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

1) Note operating range of proximity switches

Weight [kg]

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

Toothed belt

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

1) At max. feed force

Mass moments of inertia

Size	70	80	120
J_0 [kg mm ²]	175	666	3201
JH per metre stroke [kg mm ² /m]	19	93	215
JL per kg payload [kg mm ² /Kg]	205	396	690

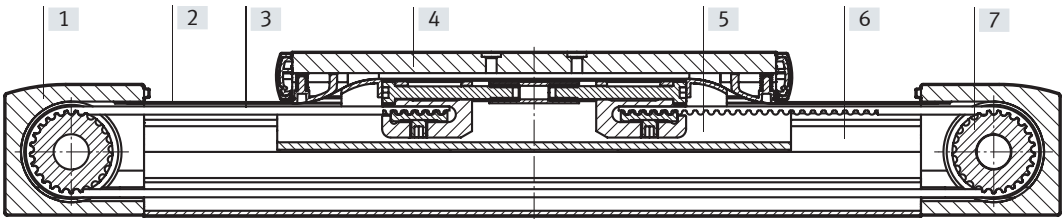
The mass moment of inertia JA of the entire axis is calculated as follows:

$$JA = J_0 + JH \times \text{working stroke [m]} + JL \times \text{mpayload [kg]}$$

Datasheet

Materials

Sectional view



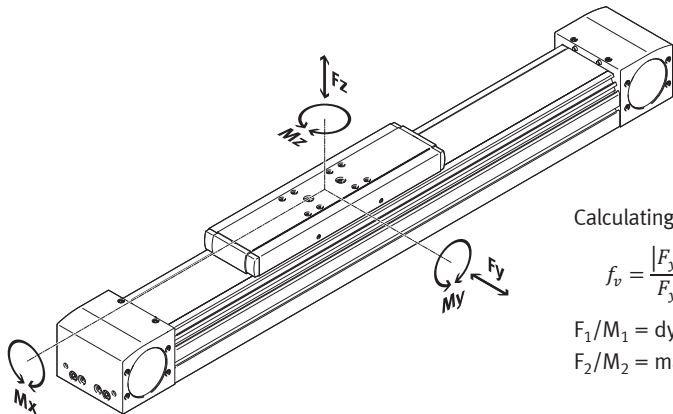
Axis		
[1]	Drive cover	Anodised wrought aluminium alloy
[2]	Cover strip	Stainless steel strip, non-corroding
[3]	Toothed belt	
	ELGA-...	Polychloroprene or NBR with glass cord and nylon coating
	ELGA-...-PU2	Polyurethane with steel cord and nylon cover
[4]	Slide	Anodised wrought aluminium alloy
[5]	Slide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

Load values

The indicated forces and torques refer to the slide surface. The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect.

These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.

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



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

Calculating the load comparison factor:

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

F_1/M_1 = dynamic value

F_2/M_2 = maximum value

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

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

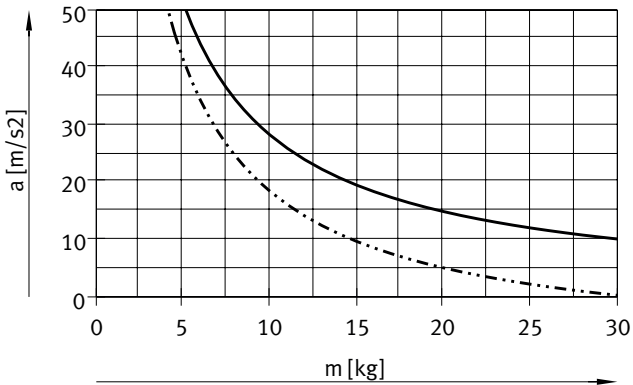
The plain-bearing guide is not backlash-free. The toothed belt axis ELGA-TB-RF or ELGA-TB-KF is recommended for applications that need to be backlash-free, or applications involving high torque loads.

Engineering software
Electric Motion Sizing
www.festo.com/x/electric-motion-sizing

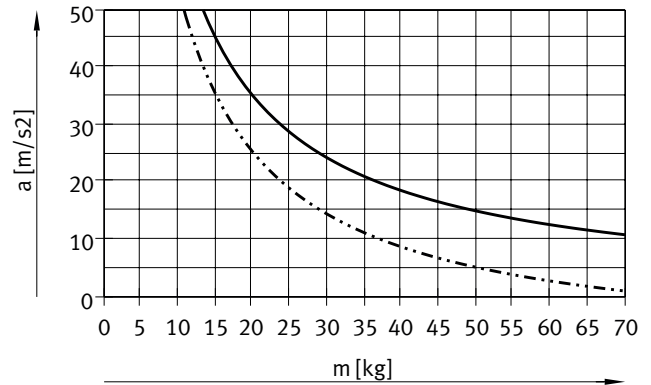
Datasheet

Max. acceleration a as a function of payload m

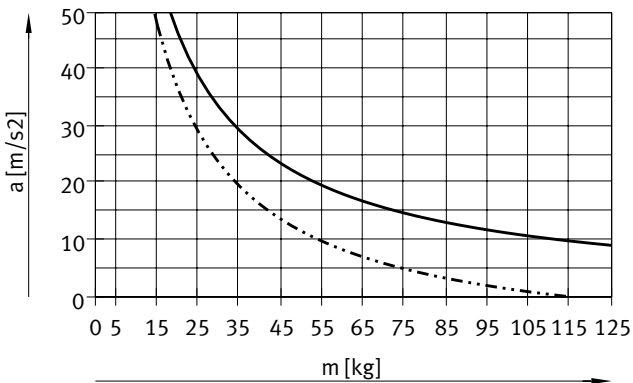
Size 70



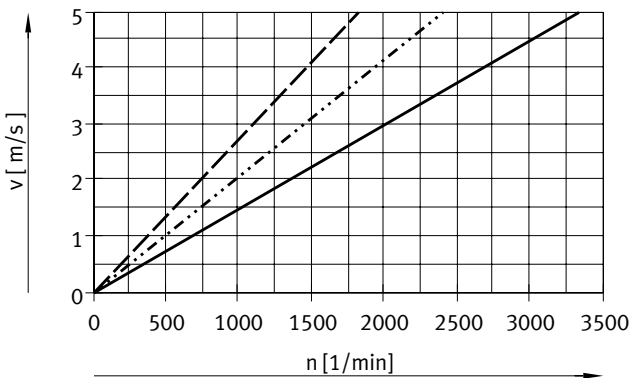
Size 80



Size 120



— Horizontal mounting position
 - - - Vertical mounting position

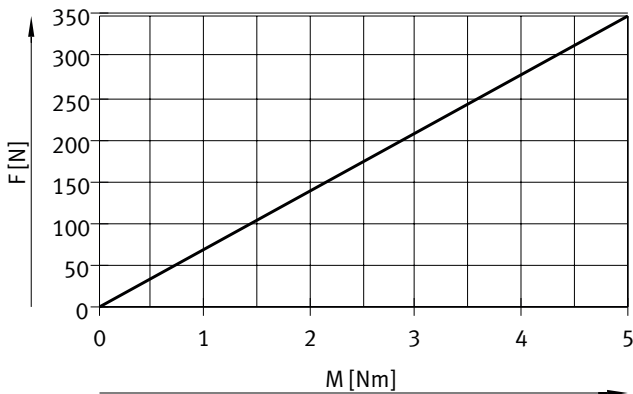
Speed v as a function of rotational speed n 

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

Datasheet

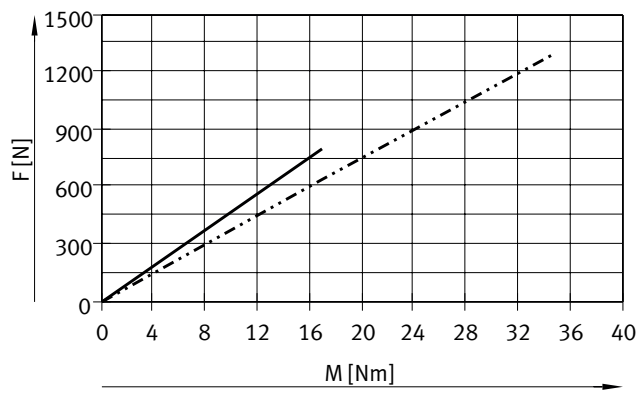
Theoretical feed force F as a function of the input torque M

Size: 70



ELGA-TB-G-70

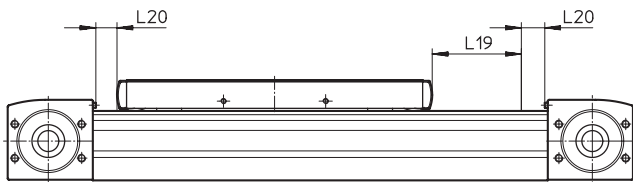
Size 80/120



ELGA-TB-G-80

ELGA-TB-G-120

Stroke reserve

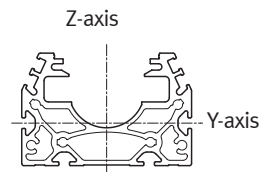


- The stroke reserve is a safety distance from the mechanical end position and is not used in normal operation
 - The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum permissible working stroke
 - The stroke reserve length can be freely selected
 - The stroke reserve is defined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



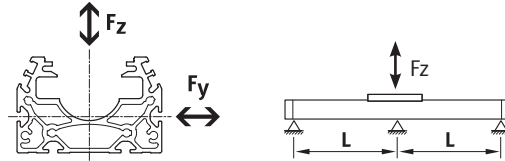
Size	70	80	120
Iy [mm ⁴]	1.47x10 ⁵	2.77x10 ⁵	1.23x10 ⁶
Iz [mm ⁴]	4.25x10 ⁵	9.07x10 ⁵	4.03x10 ⁶

Datasheet

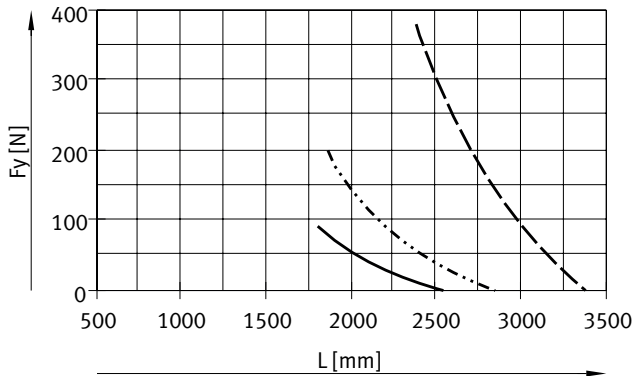
Maximum permissible support spacing L (without profile mounting MUE/central support EAHF) as a function of force F

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 $f = 0.5 \text{ mm}$.

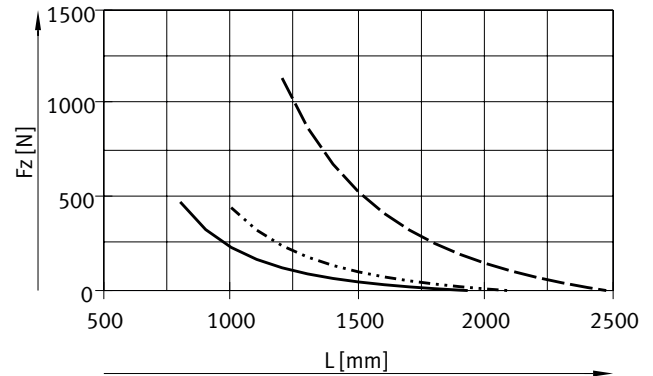


Force F_y



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

Force F_z

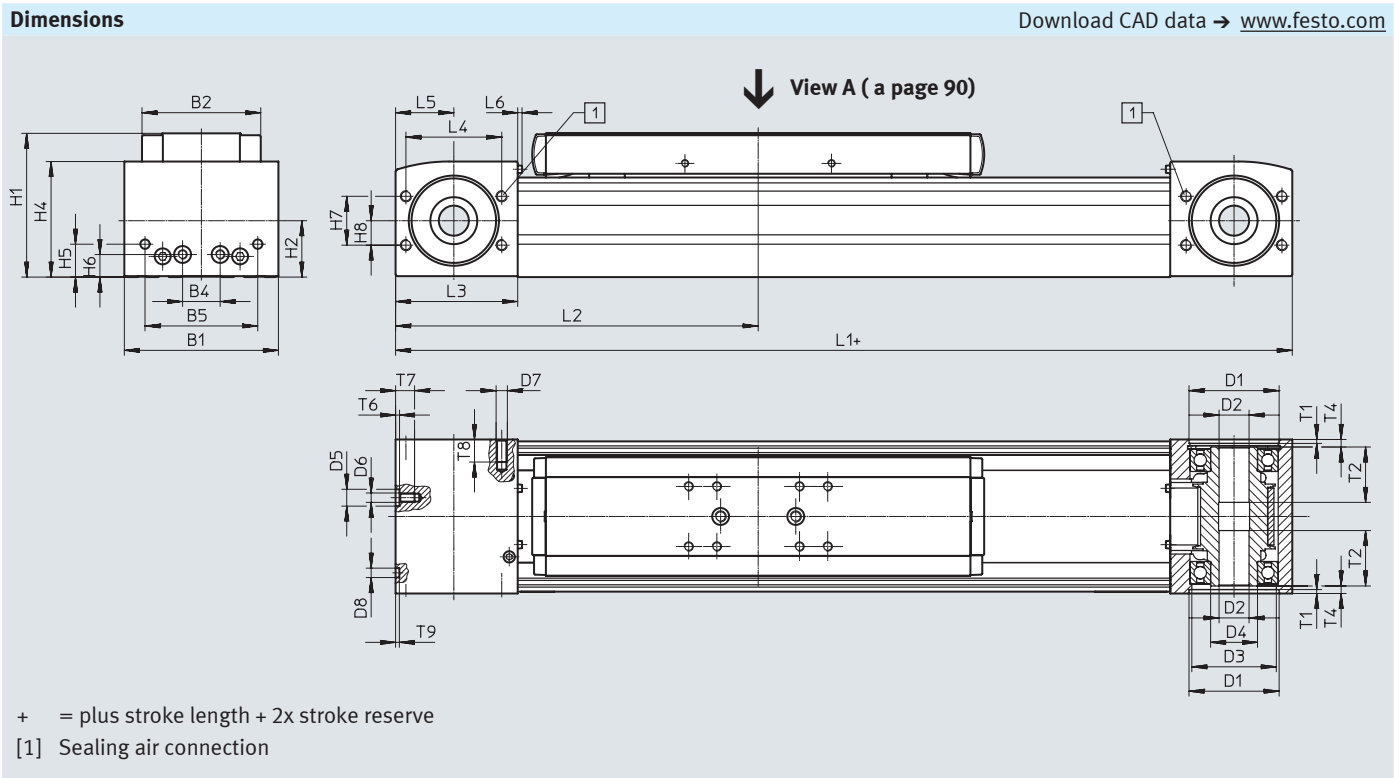


Recommended deflection limits

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

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

Datasheet



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

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

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

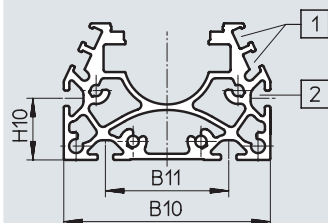
Datasheet

Dimensions

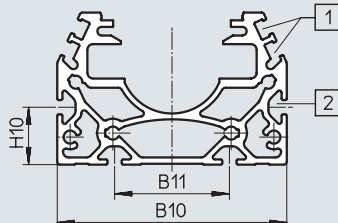
Download CAD data → www.festo.com

Profile

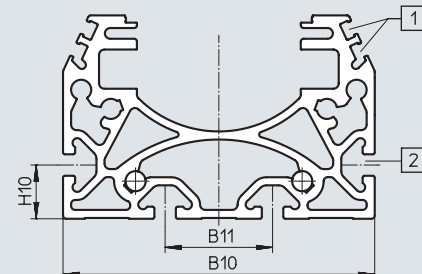
Size 70



Size 80



Size: 120



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

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

Note

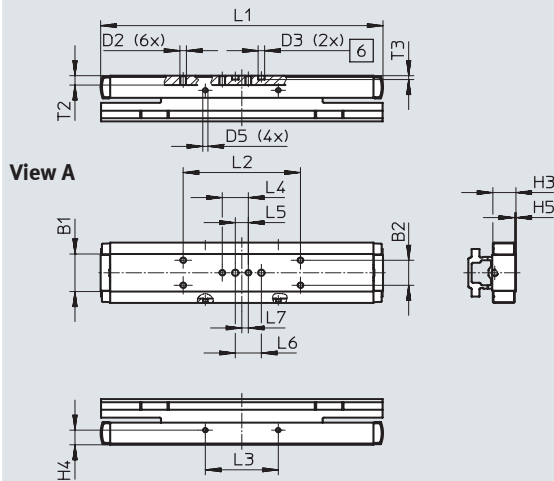
Requirements for the flatness of the bearing surface and of attachments as well as for use in parallel structures
www.festo.com/sp User documentation

Datasheet

Dimensions Download CAD data → www.festo.com

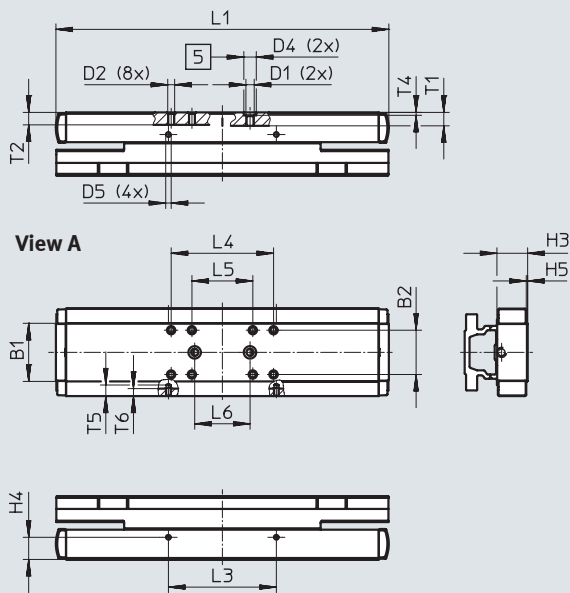
Slide

Size 70



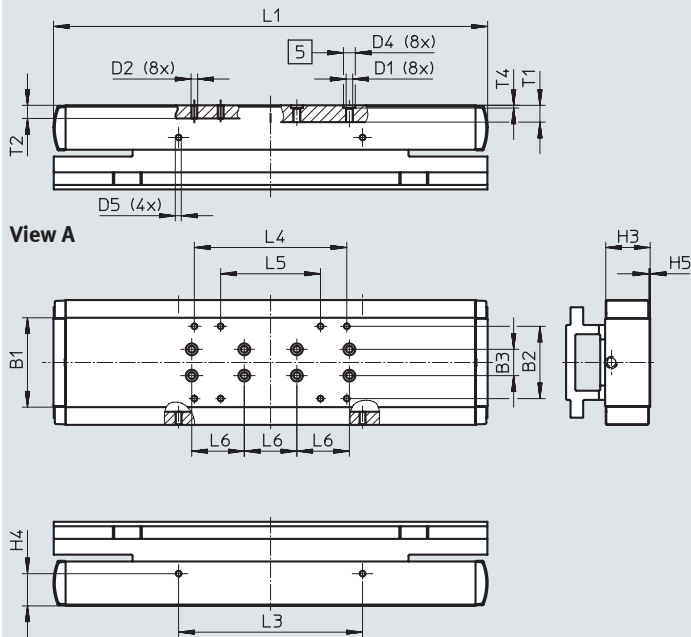
View A

Size 80



View A

Size 120



View A

- [5] Drill hole for centring sleeve
- [6] Drilled hole for centring pin

Datasheet

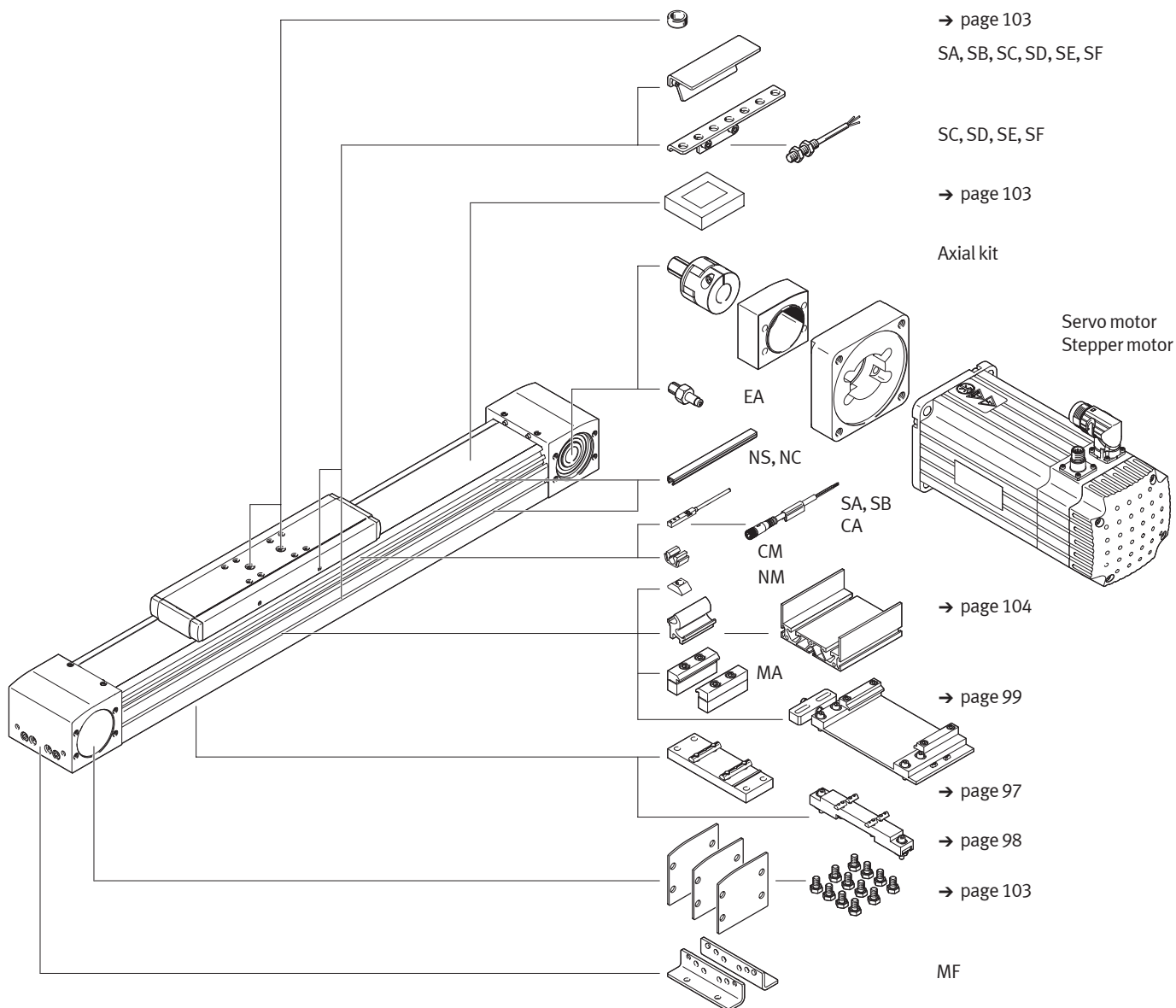
Size	B1	B2	B3	D1	D2	D3 ø	D4 ø	D5
70	30	20±0.1	–	–	M5	5 ^{H7}	–	M4
80	42	32±0.2	–	M6	M5	–	9 ^{H7}	M4
120	68	55±0.2	20±0.03	M6	M5	–	9 ^{H7}	M5

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

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

Ordering data – Modular product system

Accessories



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 guide				-G		-G
Size	[mm]	70	80	120		-...		
Stroke length	[mm]	1 ... 8500				-...		
Stroke reserve	[mm]	0 ... 999 (0 = no stroke reserve)			[1]	-...H		
Protection against particles		Standard						
		Without cover strip				-P0		
Toothed belt material		Chloroprene 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, incl. switch lug	N/O contact, 7.5 m cable	1 ... 6				...SA		
	N/C contact, 7.5 m cable	1 ... 6				...SB		
Proximity switch (SIEN), inductive, M8, PNP, incl. switch lug with sensor bracket	N/O contact, 2.5 m cable	1 ... 99				...SC		
	N/C contact, 2.5 m cable	1 ... 99				...SD		
	N/O contact, M8 plug	1 ... 99				...SE		
	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 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		

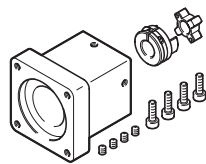
[1] ... H The sum of the nominal stroke and 2x stroke reserve must be at least 50 mm and must not exceed the maximum stroke length

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

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

Accessories

Permitted axis/motor combinations for axial kits

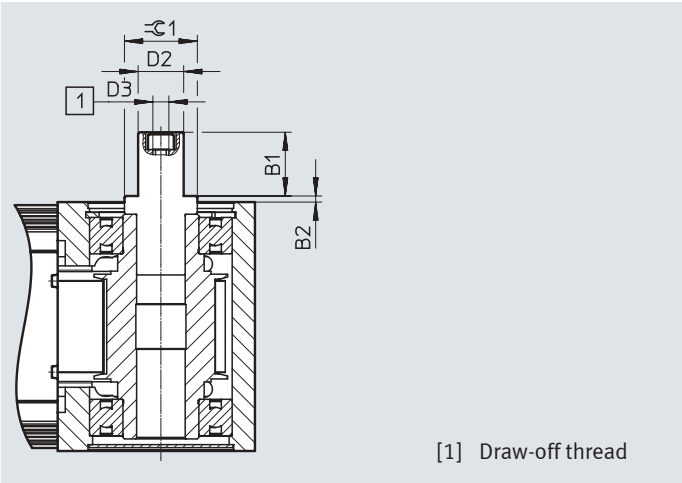
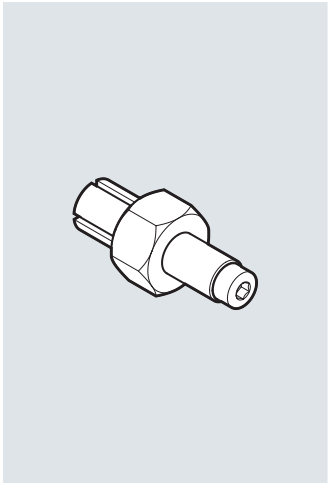


Under the following links you will find all information about:

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

For axial kits d 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)



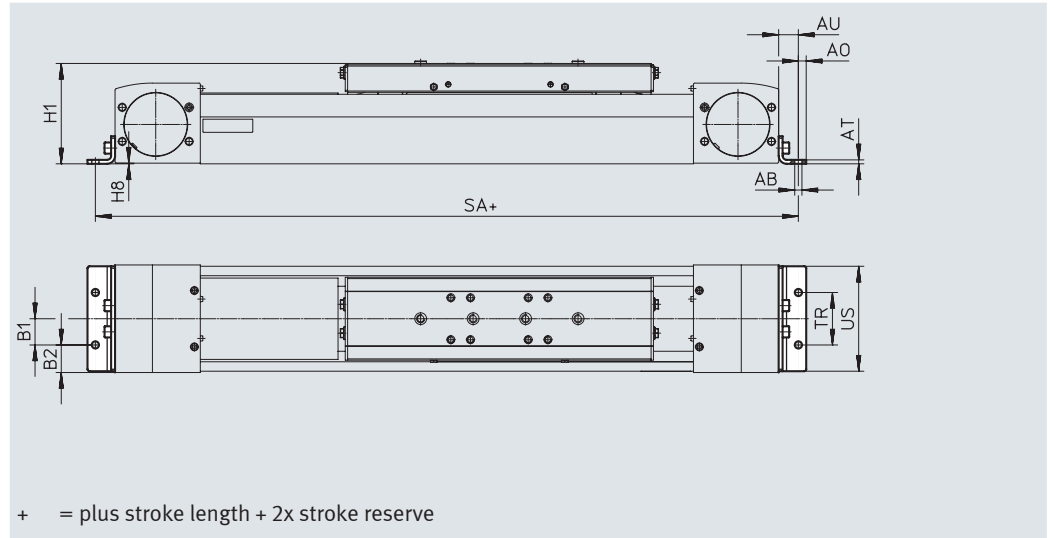
Dimensions and ordering data								
For size	B1	B2	D2 ø h7	D3	≅D1	Weight [g]	Part no.	Type
70	21	1.85	15	M6	21	70	1344642	EAMB-24-9-15X21-16X20
80	21	2	15	M6	21	70	558036	EAMB-24-6-15X21-16X20
120	26	2	25	M10	30	201	558037	EAMB-34-6-25X26-23X27
150	30	3	35	M12	36	463	558038	EAMB-44-7-35X30-32X32

Accessories

Foot mounting HPE

For ELGA-TB-KF/-KF-F1
For ELGA-TB-RF/-RF-F1
For ELGA-TB-G
(order code MF)

Material:
Galvanised steel
RoHS-compliant



Dimensions and ordering data

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

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

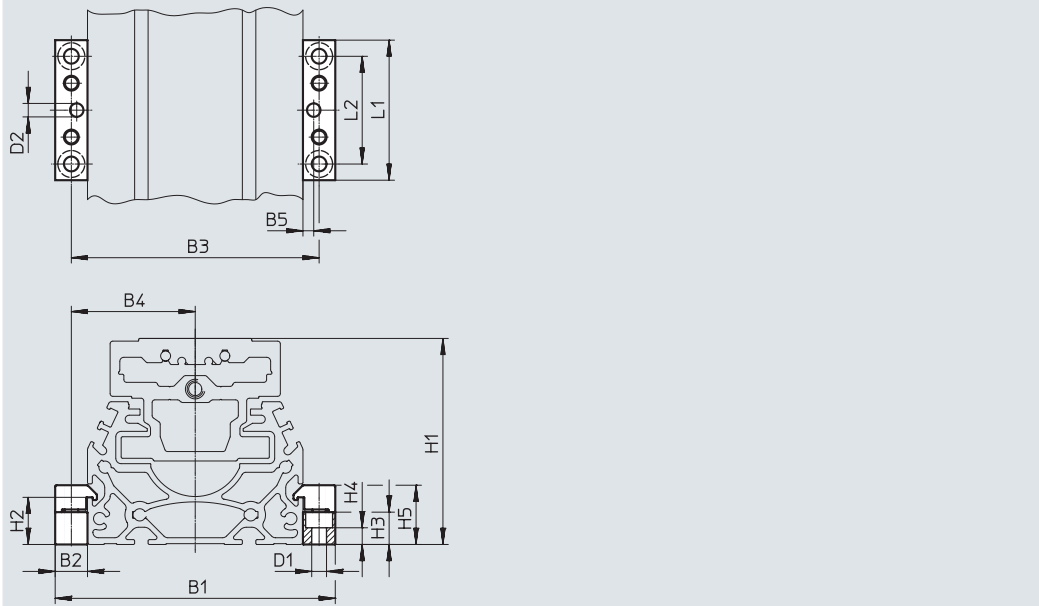
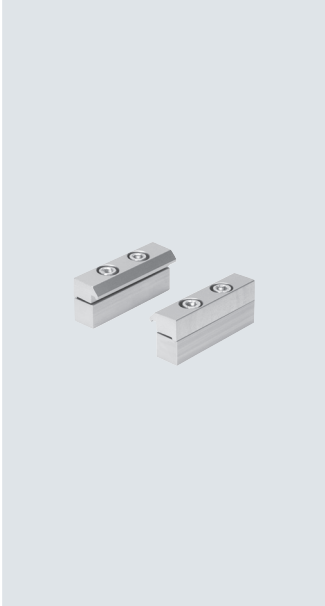
For size	Weight [g]	Part no.	Type
70	115	558321	HPE-70
80	150	558322	HPE-80
120	578	558323	HPE-120
150	1181	3002636	HPE-150

Accessories

Profile mounting MUE

For ELGA-TB-KF
For ELGA-TB-RF
For ELGA-TB-G
(order code MA)

Material:
Anodised aluminium
RoHS-compliant



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

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

Accessories

Central support EAHF

For ELGA-TB-KF/-KF-F1

For ELGA-TB-RF/-RF-F1

For ELGA-TB-G

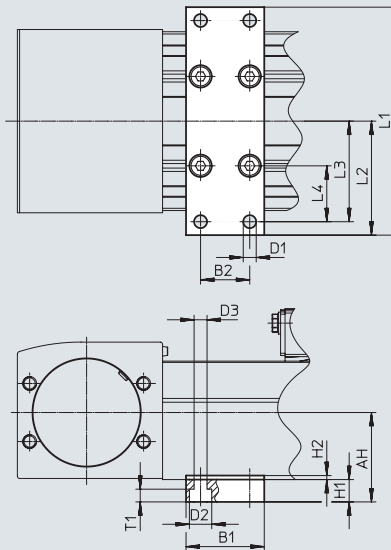
Material:

Anodised aluminium

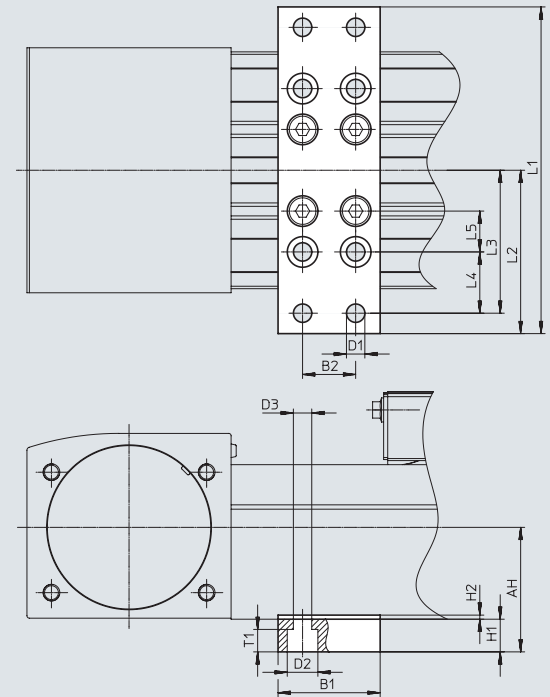
RoHS-compliant



Size 70, 80



Size 120, 150



Dimensions and ordering data

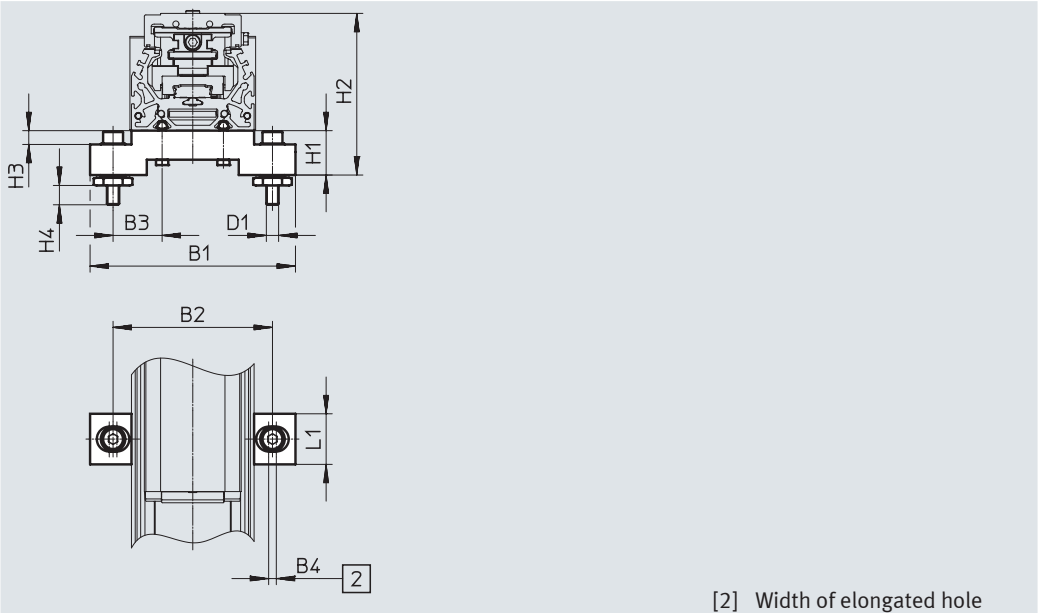
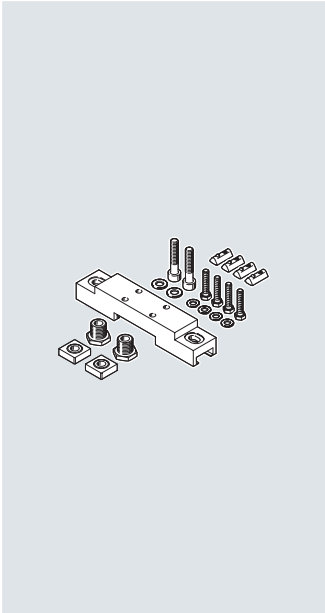
For size	AH	B1	B2	D1 ø	D2 ø	D3 ø	H1	L1
70	36.5	35	22	5.8	10	5.8	10	102
80	40							112
120	61	50	26	9	15	9	16	160
150	74.6							200

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

Accessories

Adjusting kit EADC-E15

Material:
EADC-E15-80/120: Wrought aluminium alloy
EADC-E15-185: Steel
RoHS-compliant



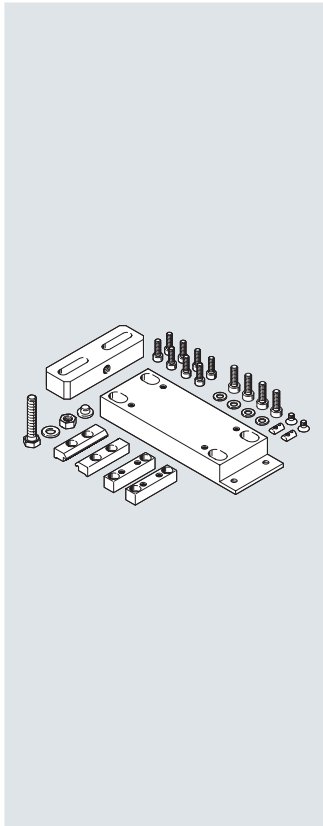
Dimensions and ordering data							
For size	B1	B2	B3	B4	D1	H1	
70	134	104	32	5	M8	29	
80	134	104	32	5	M8	29	
120	170	140	50	5	M8	29	
150	236	209	64.5	5	M8	29	

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

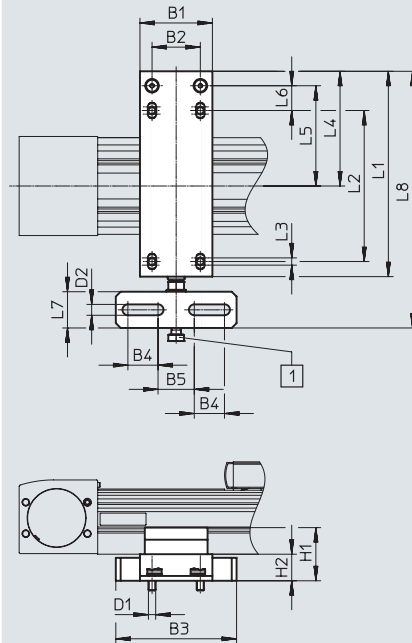
Accessories

Adjusting kit EADC-E16

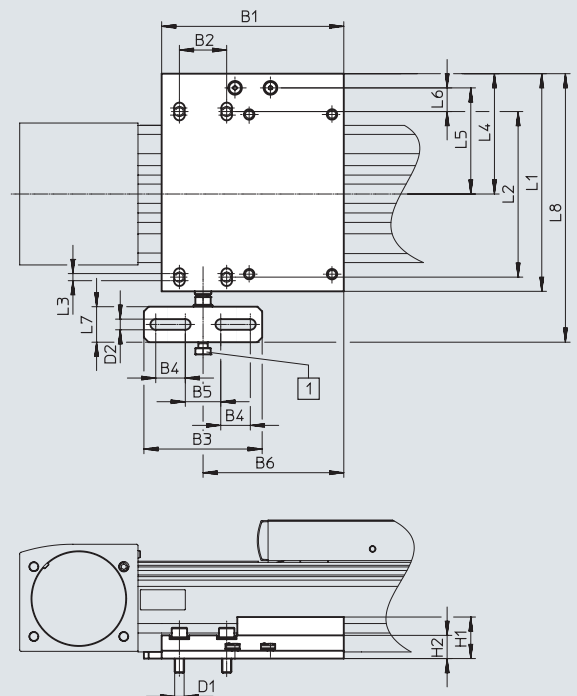
Material:
Wrought aluminium alloy
RoHS-compliant



Size 80



Size 120



[1] Screw M8

Dimensions and ordering data

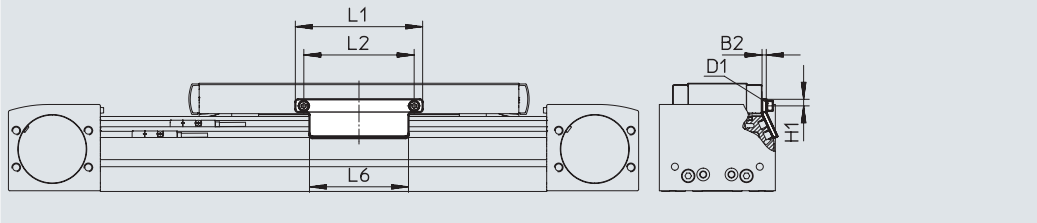
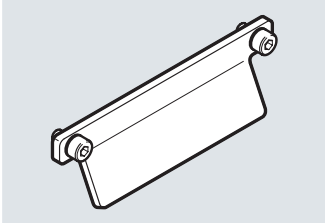
For size	B1	B2	B3	B4	B5	B6	D1	D2	H1	H2	L1	L2
80	60	40	100	25	30	–	M6	9	44	22	170	125
120	154	40	100	25	30	119	M8	9	35.1	19.6	184	140

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

Accessories

Switch lug SF-EGC-1
For sensing via proximity switch
SIES-8M
For ELGA-TB-KF
For ELGA-TB-RF
For ELGA-TB-G
(order code SA or SB)

Material:
Galvanised steel
RoHS-compliant



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

Accessories

Switch lug SF-EGC-2

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

Material:

Galvanised steel
RoHS-compliant

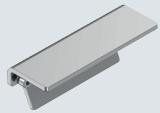
Sensor bracket HWS-EGC

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

Material:

Galvanised steel
RoHS-compliant

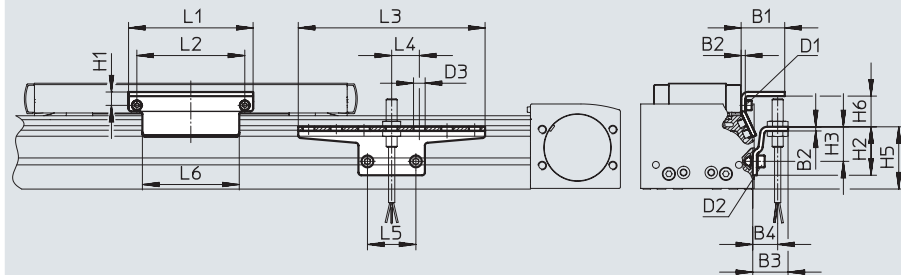
Switch lug SF-EGC-2



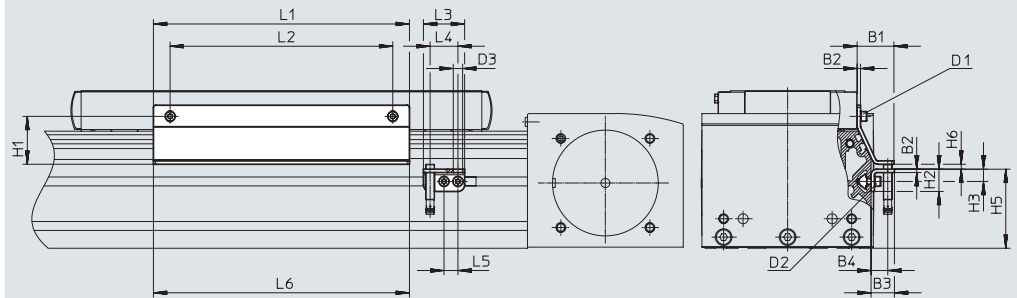
Sensor bracket HWS-EGC



Size 70, 80, 120



Size: 150



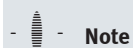
Dimensions and ordering data

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

For size	H3	H5	H6 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.	Type
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.	Type
Sensor bracket			
70	110	558057	HWS-EGC-M5
80	110	558057	HWS-EGC-M5
120	217	570365	HWS-EGC-M8-B
150	58	560517	HWS-EGC-M8: KURZ (SHORT)



Note

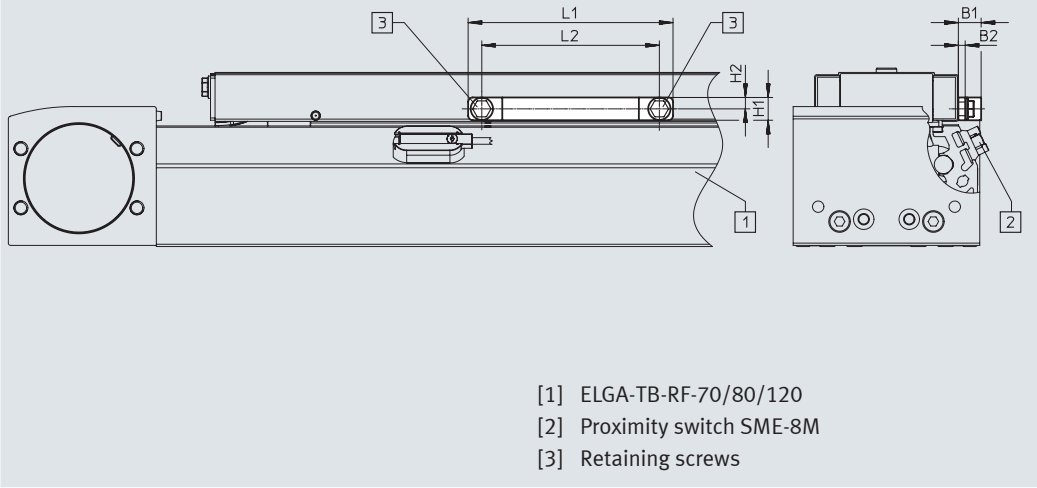
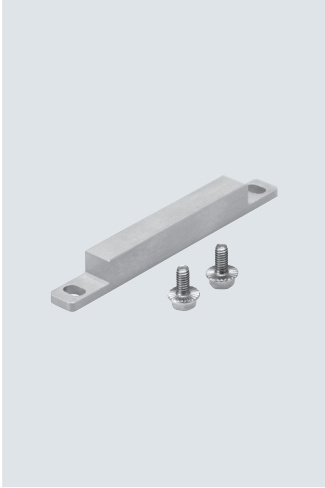
The proximity switches SIEN-M8B cannot be mounted in the area of the

profile mounting MUE.

Accessories

Switch lug EAPM
For sensing via proximity switch
SME-8M
For ELGA-TB-KF-F1
For ELGA-TB-RF-F1

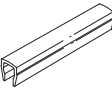
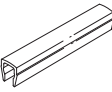
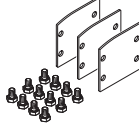
Material:
Wrought aluminium alloy
RoHS-compliant



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

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

Accessories

Ordering data							
	For size	Description	Order code	Part no.	Type	PU ¹⁾	
Slot nut NST							
	70, 80	• For mounting slot • For ELGA-TB-KF/-KF-F1 • For ELGA-TB-RF/-RF-F1 • For ELGA-TB-G	NM	150914	NST-5-M5	1	
			–	8047843	NST-5-M5-10	10	
				8047878	NST-5-M5-50	50	
	120, 150		NM	150915	NST-8-M6	1	
			–	8047868	NST-8-M6-10	10	
				8047869	NST-8-M6-50	50	
Centring pin ZBS/centring sleeve ZBH							
	For ELGA-TB-KF/-KF-F1						
	70	For slide	–	150928	ZBS-5	10	
	70, 80, 120, 150			8137184	ZBH-9-B		
	For ELGA-TB-RF/-RF-F1						
	70, 80, 120	For slide	–	8137184	ZBH-9-B	10	
	For ELGA-TB-G						
	70	For slide	–	150928	ZBS-5	10	
	80, 120			8137184	ZBH-9-B		
Slot cover ABP							
	70, 80	• For mounting slot • Every 0.5 m • For ELGA-TB-KF/-KF-F1 • For ELGA-TB-RF/-RF-F1 • For ELGA-TB-G	NC	151681	ABP-5	2	
	120, 150			151682	ABP-8		
Slot cover ABP-S							
	70 ... 150	• For sensor slot • Every 0.5 m • For ELGA-TB-KF • For ELGA-TB-RF • For ELGA-TB-G	NS	563360	ABP-S-S1	2	
Clip SMBK							
	70 ... 150	• For sensor slot, for mounting the proximity switch cables • For ELGA-TB-KF • For ELGA-TB-RF • For ELGA-TB-G	CM	534254	SMBK-8	10	
Clamping component EADT							
	70, 80	Tool for retensioning the cover strip	–	8058451	EADT-S-L5-70	1	
	120, 150			8058450	EADT-S-L5-120		
Cover kit EASC							
	70	For covering the sides of the drive cover	–	8049255	EASC-L5-70	3	
	80			8049254	EASC-L5-80		
	120			8049253	EASC-L5-120		
	150			8049244	EASC-L5-150		

1) Packaging unit

Accessories

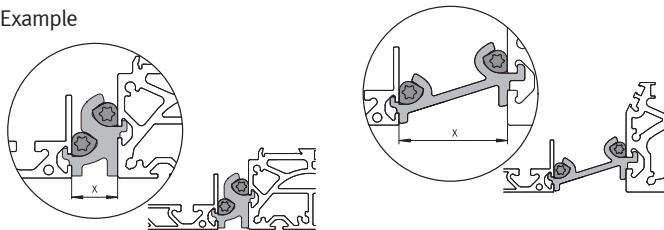
Mounting options between axis and support profile

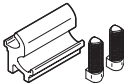
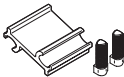
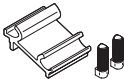
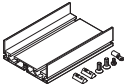
Depending on the adapter kit, the spacing between the axis and the support profile is:

$x = 20 \text{ mm}$ or 50 mm

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

Example



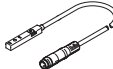
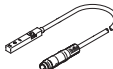
Ordering data					
	For size	Description	Part no.	Type	PU ¹⁾
Adapter kit DHAM					
	80	• For mounting the support profile on the axis • Spacing between axis and profile is 20 mm • For ELGA-TB-KF • For ELGA-TB-RF • For ELGA-TB-G	562241	DHAM-ME-N1-CL	1
	120, 150		562242	DHAM-ME-N2-CL	
	70, 80	• For mounting the support profile on the axis • Spacing between axis and profile is 50 mm • For ELGA-TB-KF • For ELGA-TB-RF • For ELGA-TB-G	574560	DHAM-ME-N1-50-CL	
	120, 150		574561	DHAM-ME-N2-50-CL	
Support profile HMIA					
	70 ... 150	• For guiding an energy chain • For ELGA-TB-KF • For ELGA-TB-RF • For ELGA-TB-G	539379	HMIA-E07-	1

1) Packaging unit

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

Ordering data – Proximity switches for T-slot, inductive

Datasheets → Internet: sies

	Type of mounting	Electrical connection	Switching output	Cable length [m]	Order code	Part no.	Type
N/O							
	Inserted in the slot from above, flush with the cylinder profile	Cable, 3-core	PNP	7.5	SA	551386	SIES-8M-PS-24V-K-7.5-OE
		Plug M8x1, 3-pin		0.3	–	551387	SIES-8M-PS-24V-K-0.3-M8D
		Cable, 3-core	NPN	7.5	–	551396	SIES-8M-NS-24V-K-7.5-OE
		Plug M8x1, 3-pin		0.3	–	551397	SIES-8M-NS-24V-K-0.3-M8D
N/C							
	Inserted in the slot from above, flush with the cylinder profile	Cable, 3-core	PNP	7.5	SB	551391	SIES-8M-PO-24V-K-7.5-OE
		Plug M8x1, 3-pin		0.3	–	551392	SIES-8M-PO-24V-K-0.3-M8D
		Cable, 3-core	NPN	7.5	–	551401	SIES-8M-NO-24V-K-7.5-OE
		Plug M8x1, 3-pin		0.3	–	551402	SIES-8M-NO-24V-K-0.3-M8D

Accessories

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

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

Datasheets → Internet: sien

	Electrical connection	LED	Switching output	Cable length [m]	Order code	Part no.	Type
N/O							
	Cable, 3-core	■	PNP	2.5	SC	150386	SIEN-M8B-PS-K-L
			NPN	2.5	–	150384	SIEN-M8B-NS-K-L
	1x M8 plug, 3-pin	■	PNP	–	SE	150387	SIEN-M8B-PS-S-L
			NPN	–	–	150385	SIEN-M8B-NS-S-L
N/C							
	Cable, 3-core	■	PNP	2.5	SD	150390	SIEN-M8B-PO-K-L
			NPN	2.5	–	150388	SIEN-M8B-NO-K-L
	1x M8 plug, 3-pin	■	PNP	–	ST	150391	SIEN-M8B-PO-S-L
			NPN	–	–	150389	SIEN-M8B-NO-S-L

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

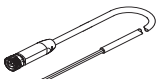
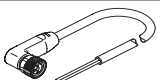
Ordering data – Proximity switches for T-slot, magnetic reed

Datasheets → Internet: sme

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

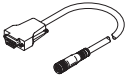
Ordering data – Connecting cables for ELGA-TB-...

Datasheets → Internet: neba

	Electrical connection 1, connection technology	Electrical connection 1, cable outlet	Electrical connection 2, connection technology	Electrical connection 2, number of pins/cores	Cable length [m]	Part no.	Type
	M8x1 A-coded to EN 61076-2-104	Straight	Open end	3	2.5	8078223	NEBA-M8G3-U-2.5-N-LE3
					5.0	8078224	NEBA-M8G3-U-5-N-LE3
	M8x1 A-coded to EN 61076-2-104	Angled	Open end	3	2.5	8078230	NEBA-M8W3-U-2.5-N-LE3
					5.0	8078231	NEBA-M8W3-U-5-N-LE3

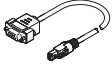
Ordering data – Encoder cables for displacement encoder, ELGA-...-M1/-M2

Datasheets → Internet: nebm

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

1) Max. cable length: 25 m.

Ordering data – Adapter

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