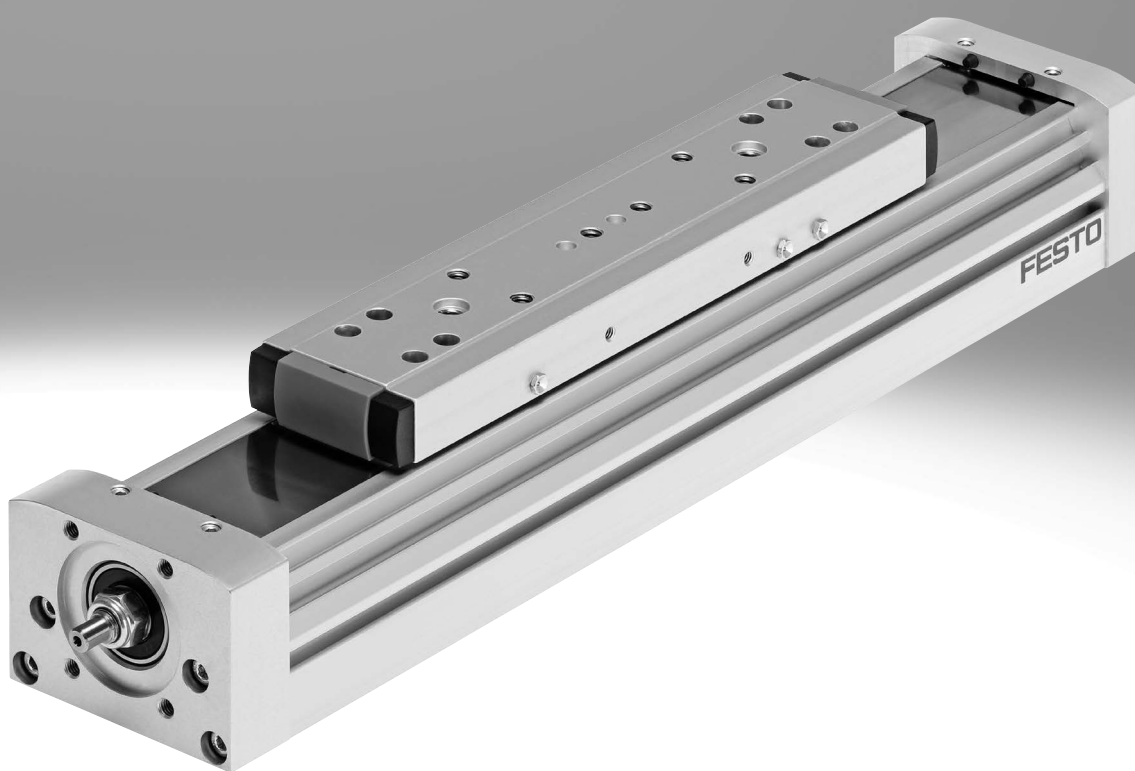


Ball screw axes ELGA-BS

FESTO



Selection aid

Overview of toothed belt and ball screw axes

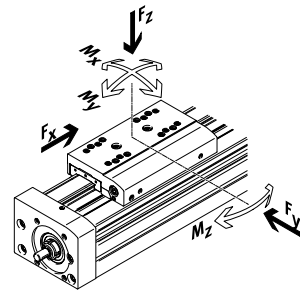
Toothed belt axes

- 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

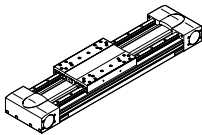
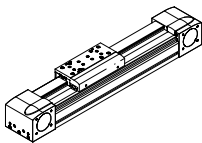
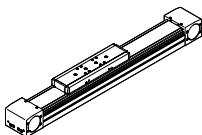
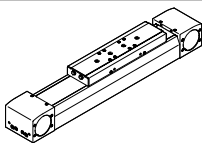
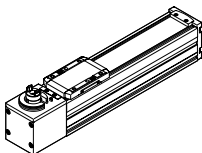
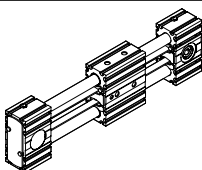
Ball screw axes

- 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

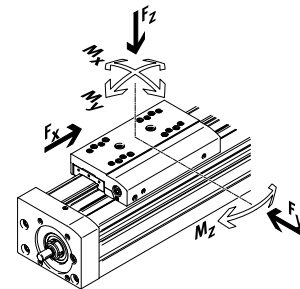
Toothed belt axes

- 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

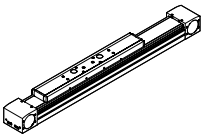
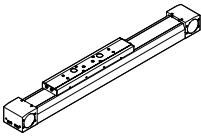
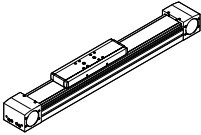
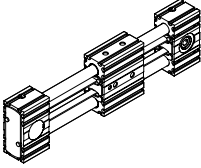
Ball screw axes

- 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	10	11	40	40	• 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
	800	10	30	180	180	
	1300	10	100	640	640	
ELGA-TB-RF-F1						
	260	10	8.8	32	32	• 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
	600	10	24	144	144	
	1000	10	80	512	512	
Plain-bearing guide						
ELGA-TB-G						
	350	5	5	30	10	• Guide and toothed belt protected by cover strip • For simple handling tasks • As a drive component for external guides • Insensitive to harsh ambient conditions
	800	5	10	60	20	
	1300	5	120	120	40	
ELGR-TB-GF						
	50	1	1	10	10	• Cost-optimised rod guide • Ready-to-install unit • Heavy-duty plain bearings for use in harsh ambient conditions
	100	1	2.5	20	20	
	350	1	1	40	40	

Selection aid

Overview of toothed belt and ball screw axes

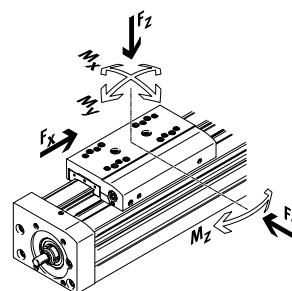
Toothed belt axes

- 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

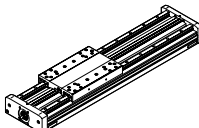
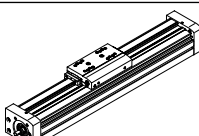
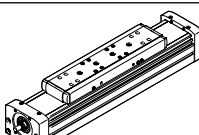
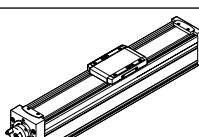
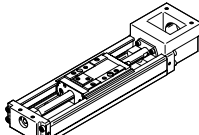
Ball screw axes

- 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

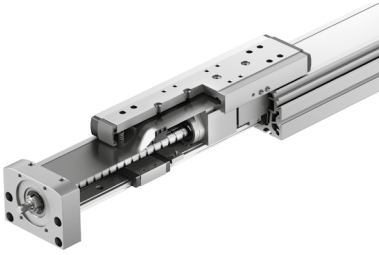


Ball screw axes

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 highest requirements in terms of 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 highest requirements in terms of 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	

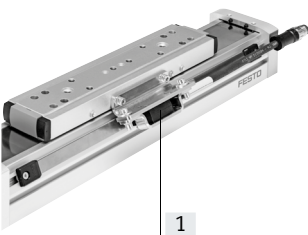
Key features

At a glance



- Stainless steel cover strip with magnetic seal provides basic protection for guide and ball screw. 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.
- Internal, precision recirculating ball bearing guide with high load capacity for high torque loads
- Easy maintenance thanks to easily accessible lubrication connections

Displacement encoder (optional)



[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 drivetrain can be detected and can be adjusted by the motor controller (→ page 13)

Sealing air connections



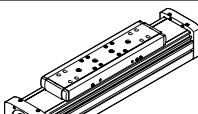
[1] Sealing air connections

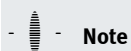
- Application of negative pressure minimises the dispersal of abraded particles into the environment
- Application of positive pressure prevents dirt from getting into the axis

Characteristic values of the axes

The specifications shown in the table are maximum values.

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

Version	Size	Working stroke	Speed	Repetition accuracy	Max. feed force	Guide characteristics				
		[mm]	[m/s]	[mm]	[N]	Forces and torques				
						F _y	F _z	M _x	M _y	M _z
						[N]	[N]	[Nm]	[Nm]	[Nm]
Recirculating ball bearing guide										
	70	50 ... 900	0.5	±0.02	650	1500	1850	16	132	132
	80	50 ... 1940	1.0	±0.02	1600	2500	3050	36	228	228
	120	50 ... 2460	1.5	±0.02	3400	5500	6890	104	680	680
	150	50 ... 3000	2.0	±0.02	6400	5500	11000	167	1150	1150

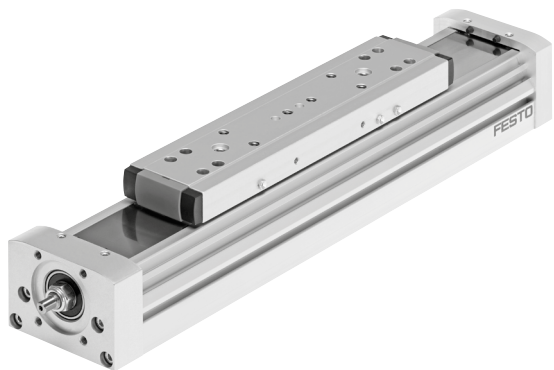


Note

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

Key features

Complete system comprising ball screw axis, motor, motor controller and motor mounting kit



Motor



Servo motor:
EMMT-AS
Stepper motor:
EMMB-ST, EMMT-ST



Note

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

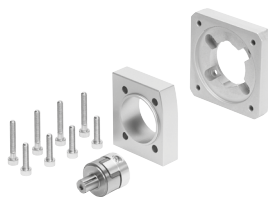
Servo drives



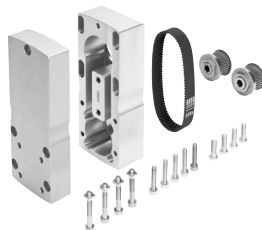
Servo drive:
CMMT-AS
Servo drive for extra-low voltage:
CMMT-ST

Motor mounting kit

Axial kit



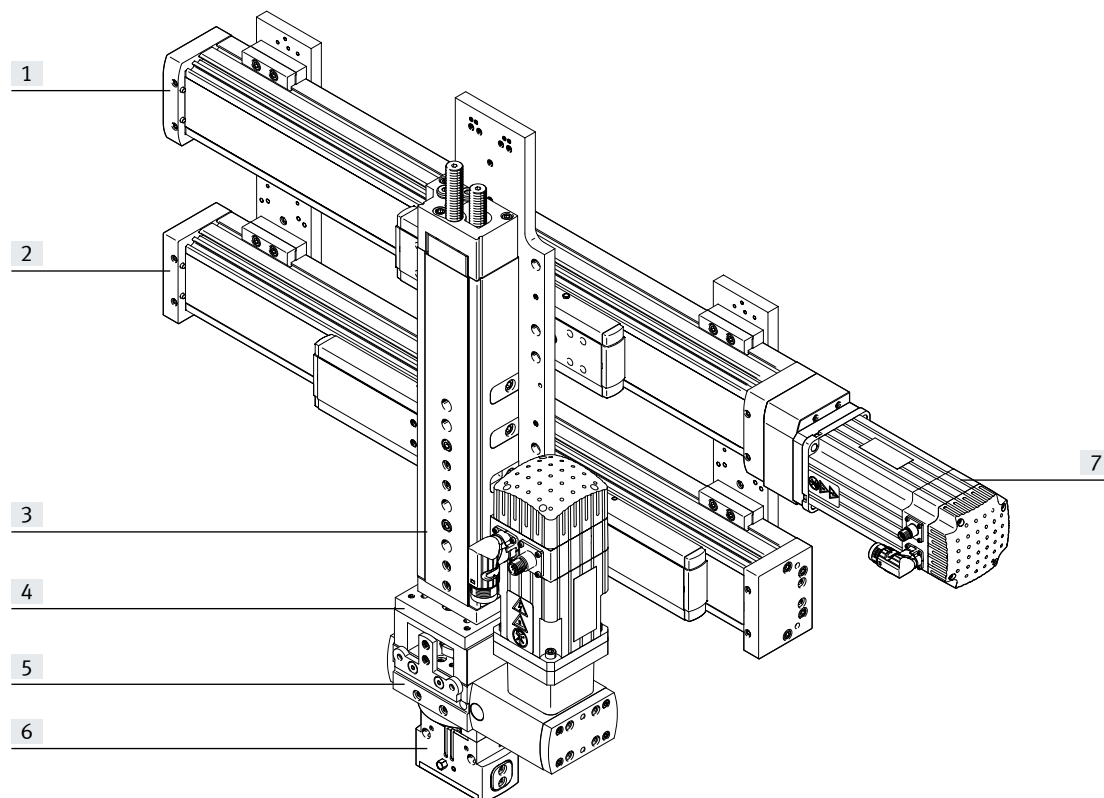
Parallel kit



Complete kits are available for both parallel and axial motor mounting.

Key features

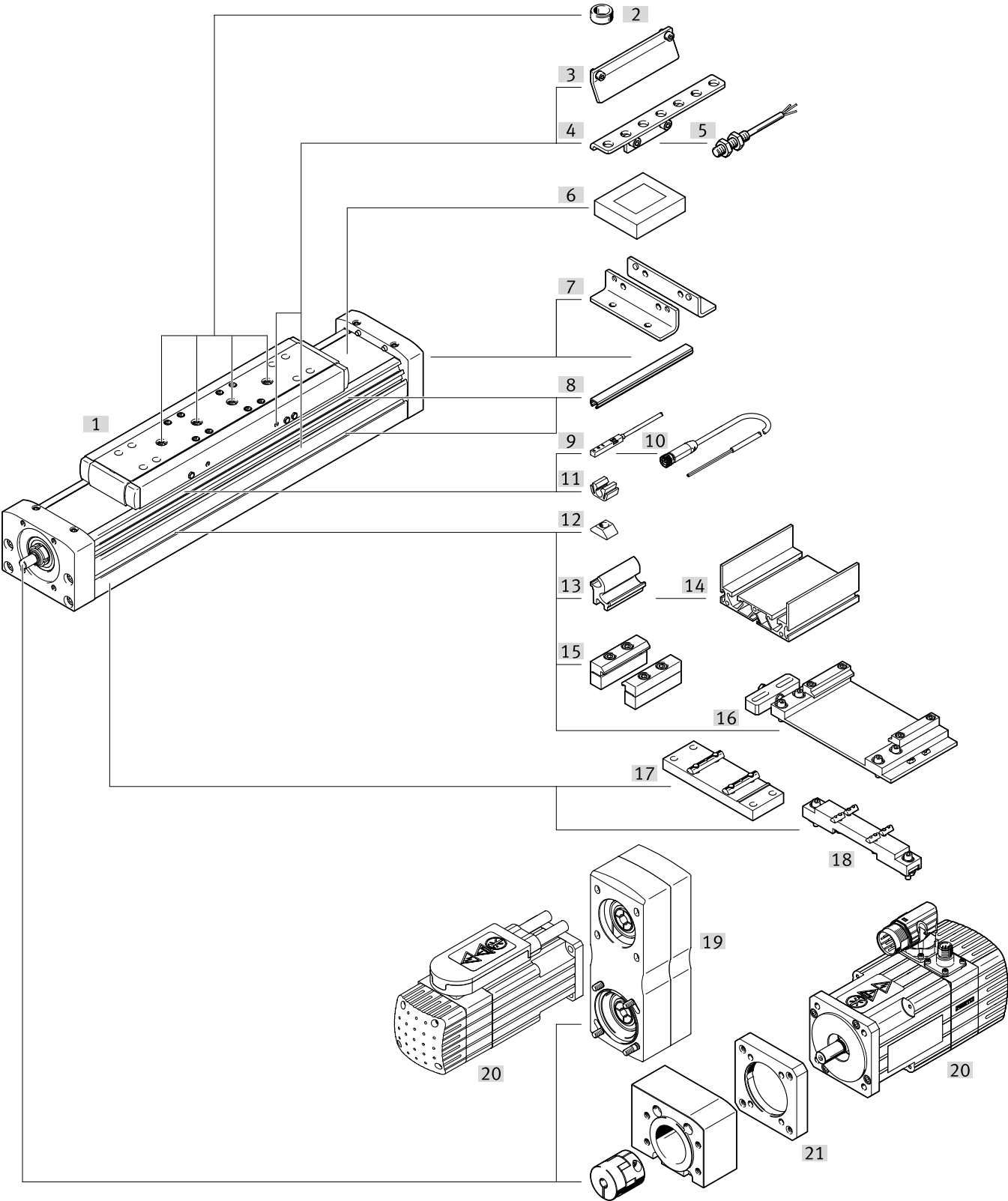
System product for handling and assembly technology



System components and accessories

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

Peripherals overview



Peripherals overview

Accessories			
	Type	Description	→ Page/Internet
[1]	Ball screw axis ELGA-BS-KF	Electric drive	10
[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	40
[3]	Switch lug SF-EGC	For sensing the slide position	38
[4]	Sensor bracket HWS-EGC	For mounting the inductive proximity switches (round design) on the axis	39
[5]	Proximity switch, M8 SIEN-M8	Inductive proximity switch, round design	42
[6]	Clamping component EADT	Tool for retensioning the cover strip	40
[7]	Foot mounting HPE	- For mounting the axis on the end cap - With higher forces and torques, the axis should be mounted using the profile	33
[8]	Slot cover ABP	For protection against contamination	40
[9]	Proximity switch, T-slot SIES-8M	Inductive proximity switch, for T-slot	41
[10]	Connecting cable NEBA	Via proximity switch	42
[11]	Clip SMBK	For mounting the proximity switch cable in the slot	40
[12]	Slot nut NST	For mounting attachments	40
[13]	Adapter kit DHAM	For mounting the support profile on the axis	41
[14]	Support profile HMIA	For mounting and guiding an energy chain	41
[15]	Profile mounting MUE	For mounting the axis on the side of the profile	34
[16]	Adjusting kit EADC-E16	For mounting the axis on a vertical surface. Once mounted, the axis can be aligned horizontally	37
[17]	Central support EAHF-L5	For mounting the axis on the profile from underneath	35
[18]	Adjusting kit EADC-E15	Height-adjustable. Can be used to easily compensate for any unevenness in the bearing surface	36
[19]	Parallel kit EAMM-U	For parallel motor mounting (comprising: housing, clamping sleeve, toothed belt pulley, toothed belt)	eammm-u
[20]	Motor EMMT	Motors specially matched to the axis, with or without gear unit, with or without brake	emmt
[21]	Axial kit EAMM-A	For axial motor mounting (consisting of: coupling, coupling housing and motor flange)	eammm-a

Ball screw axes ELGA-BS-KF, with recirculating ball bearing guide

Type codes

001	Series	
ELGA	Gantry axis	

002	Drive system	
BS	Ball screw drive	

003	Guide	
KF	Recirculating ball bearing guide	

004	Size	
70	70	
80	80	
120	120	
150	150	

005	Stroke range [mm]	
...	50 ... 3000	

006	Stroke reserve	
...H	0 ... 999 mm	

007	Spindle pitch	
10P	10 mm	
20P	20 mm	
25P	25 mm	
40P	40 mm	

008	Motor attachment position	
ML	Left	
MR	Right	

009	Additional slide	
	None	
ZL	1 slide left	
ZR	1 slide right	

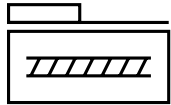
010	Protection against particles	
	Standard	
P11	Cover strip with magnetic deflection	

011	Displacement encoder	
	None	
M1	With displacement encoder, incremental, resolution 2.5 µm	
M2	With displacement encoder, incremental, resolution 10 µm	

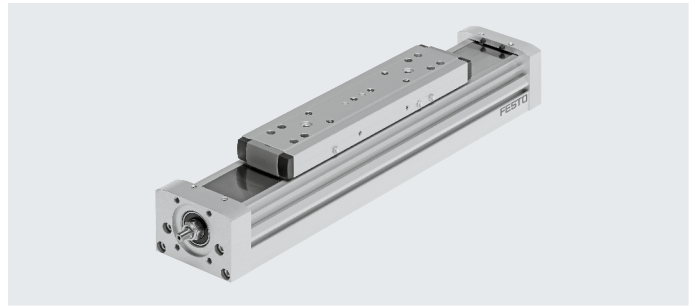
012	Displacement encoder attachment position	
	None	
F	Front	
B	Rear	

Datasheet

Function



-  Size
70 ... 150
-  Stroke length
50 ... 3000 mm
-  www.festo.com
-  Repair service



General technical data

Size	70	80	120	150
Screw pitch [mm/rev]	10	10 20	10 25	40
Design	Electromechanical axis with ball screw			
Guide	Recirculating ball bearing guide			
Mounting position	Any			
Working stroke [mm]	50 ... 900	50 ... 1940	50 ... 2460	50 ... 3000
Max. feed force $F_x^{1)}$ [N]	650	1600	3400	6400
No-load torque at low travel speed [Nm]	0.17	0.3 0.35	1.0 1.0	2.2
No-load torque at max. travel speed [Nm]	0.45	0.75 0.75	2.25 2.25	6.5
At max. travel speed [m/s]	0.5	0.5 1	0.6 1.5	2
Max. radial force ²⁾ [N]	220	250	500	4000
Max. speed [m/s]	0.5	0.5 1	0.6 1.5	2
Max. rotational speed ³⁾ [rpm]	3000	3000	3600	3000
Max. acceleration [m/s ²]	15			
Repetition accuracy [mm]	±0.02			

1) The feed force affects the service life. (→ Page 16)

2) At the drive shaft

3) Rotational speed and velocity are stroke-dependent

Operating and environmental conditions

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

Weight [g]

Size	70	80	120	150
Basic weight with 0 mm stroke ¹⁾	2160	3800	10500	25100
Additional weight per 10 mm stroke	33	46	99	210
Moving mass				
ELGA-...	804	1370	4459	10514
ELGA-...-ZL/ZR	620	1110	3600	5900

1) Including slide

Ball screw

Size	70	80	120	150
Diameter [mm]	12	15	25	40
Pitch [mm/rev]	10	10 20	10 25	40

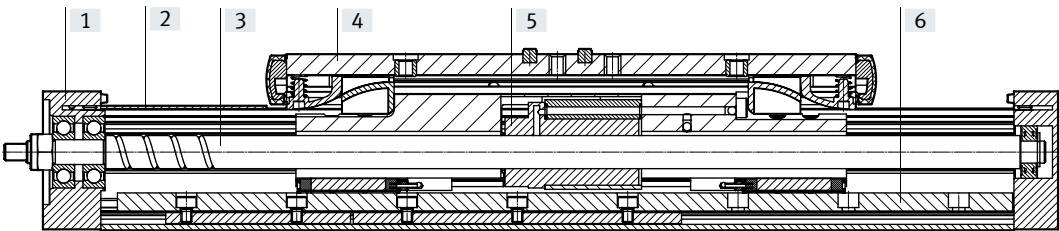
Datasheet

Mass moment of inertia							
Size		70	80		120		150
Screw pitch	[mm/rev]	10	10	20	10	25	40
J_0	[kg mm ²]	3.8	9.7	9.7	103.8	103.8	863
J_H per metre stroke	[kg mm ² /m]	14.2	34.6	34.6	275.6	275.6	1803.1
J_L per kg payload	[kg mm ² /kg]	2.53	2.53	10.13	2.53	15.83	40.53

The mass moment of inertia J_A of the rotating parts of the axis is calculated as follows:

Materials

Sectional view



Axis		
[1]	Drive cover	Anodised wrought aluminium alloy
[2]	Cover strip	Stainless steel strip, non-corroding
[3]	Ball screw	Steel
[4]	Slide	Anodised wrought aluminium alloy
[5]	Ball screw nut	Steel
[6]	Profile with integrated guide	Anodised wrought aluminium alloy
Note on materials		RoHs-compliant
		Contains paint-wetting impairment substances

Datasheet

Dimensions → page 29

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

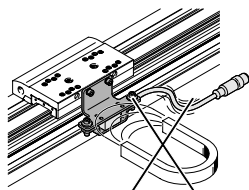
1) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

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

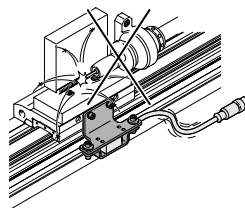
Application note

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

- Magnetic field



- Welding application



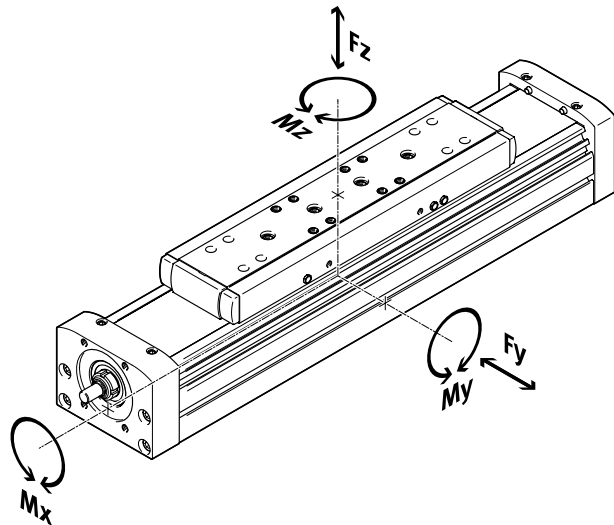
Datasheet

Characteristic load values

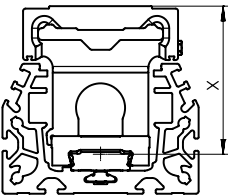
The indicated forces and torques refer to the centre of the guide.

The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect.

These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration 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]	51	60	87	111	

Max. permissible forces and torques for a service life of 5000 km						
Size		70	80	120	150	
F _y _{max.}	[N]	1500	2500	5500	5500	
F _z _{max.}	[N]	1850	3050	6890	11000	
M _x _{max.}	[Nm]	16	36	104	167	
M _y _{max.}	[Nm]	132	228	680	1150	
M _z _{max.}	[Nm]	132	228	680	1150	

Basic load ratings							
Size		70	80		120		150
Screw pitch	[mm/rev]	10	10	20	10	25	40
Ball screw							
Dynamic c _{dyn,KGT}	[N]	4000	6800	5700	14100	12700	25000

Note

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

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

Calculating the load comparison factor:

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

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

Datasheet

Service life of the guide

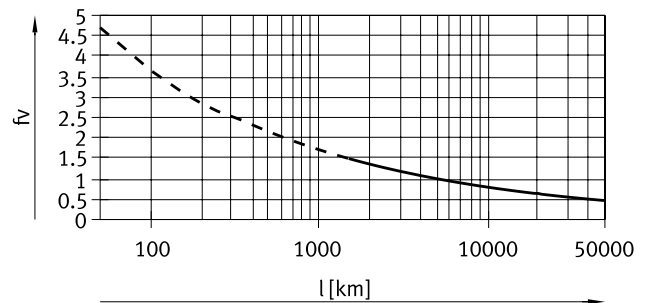
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor f_v against the service life.

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 (→ Seite 14) 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_y and M_z 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	20240
$F_{z_{max}}$	[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

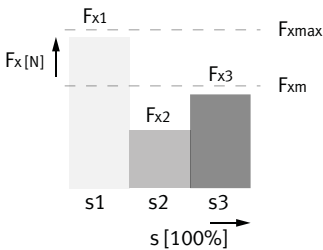
Service life of the ball screw

- The service life of the ball screw axis depends on the service life of the guide (→ Page 15) also depends on that of the screw drive. The operating coefficient plays a considerable role in determining the possible service life. It can be determined with the help of the table (→ page 17)
- The service life ends when the maximum number of switching cycles or maximum running performance has been reached:
 - 5 million switching cycles or 5000 km running performance
- The distance between the foremost and rearmost positions must be at least 2.5 times the screw pitch per travel cycle
- The specifications for the running performance are based on experimentally determined and theoretically calculated data (at room temperature). The running performance that can be achieved in practice can deviate considerably from the specified curves under different parameters

Calculation of the mean feed force F_{xm} with ball screw

$$F_{xm} = \sqrt[3]{\frac{F_{x1}^3 \cdot s_1 + \dots + F_n^3 \cdot s_n}{s_1 + \dots + s_n}}$$

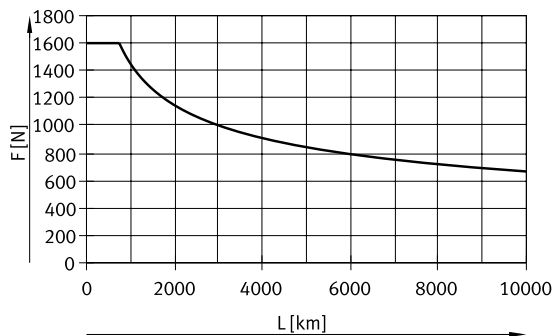
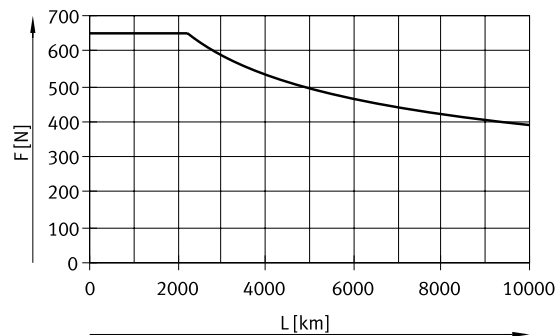
- F_{xm} = Mean feed force
- $F_{x1/n}$ = Feed force of section
- $s_{1/n}$ = Part of the movement cycle that is travel



Mean feed force F_{xm} as a function of running performance L, with an operating coefficient f_B of 1.0, at room temperature

Size 70

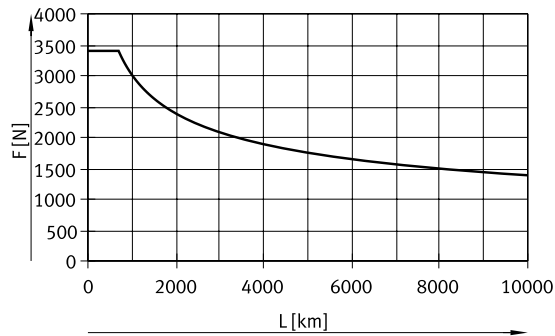
Size 80



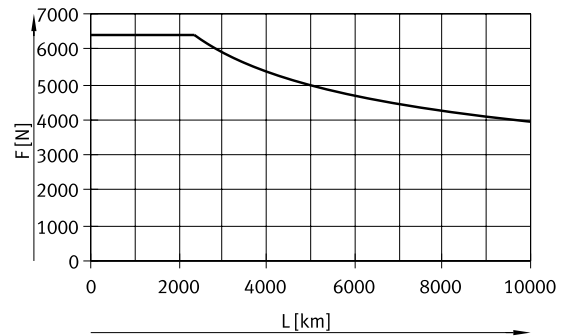
Datasheet

Mean feed force F_{xm} as a function of running performance L, with an operating coefficient f_B of 1.0, at room temperature

Size 120



Size 150



Service life taking into account the operating coefficient

$$L_1 = \frac{L}{f_B^3}$$

L_{ist} = Actual service life

L = Target service life

(→ diagrams)

f_B = Operating coefficient

Load ¹⁾	Operating coefficient f_B	Application example
None	1.0 ... 1.2	Measuring machine
Light	1.2 ... 1.4	Handling, robot technology
Medium	1.4 ... 1.6	Press-in operations
High	1.6 ... 2.0	Construction, agriculture

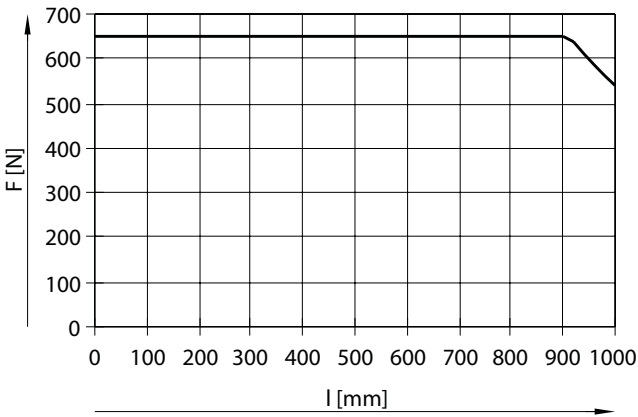
1) Loads caused by impact, temperature, contamination, shock and vibrations

Datasheet

Max. feed force F as a function of the working stroke l

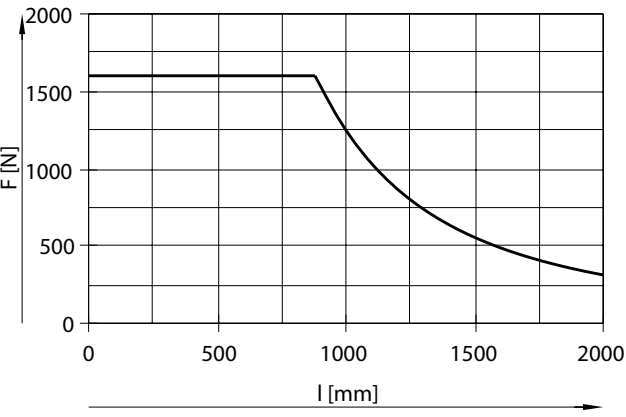
The feed force that pushes the ball screw in the direction of the motor must be limited depending on the stroke due to possible buckling (e.g. acceleration of a load mass away from the motor, deceleration of a load moving towards the motor). The feed force in the opposite direction is not affected by this.

Size 70



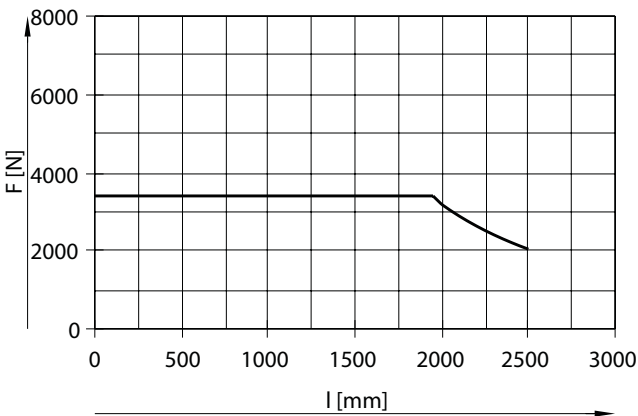
ELGA-70

Size 80



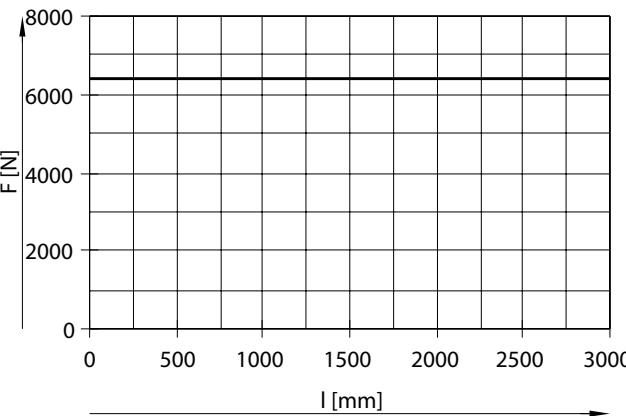
ELGA-80

Size 120



ELGA-120

Size 150

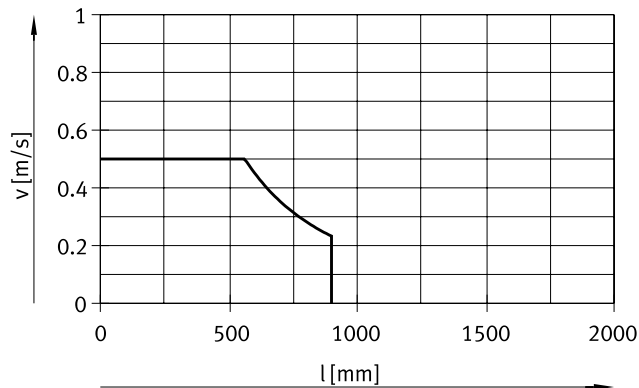


ELGA-150

Datasheet

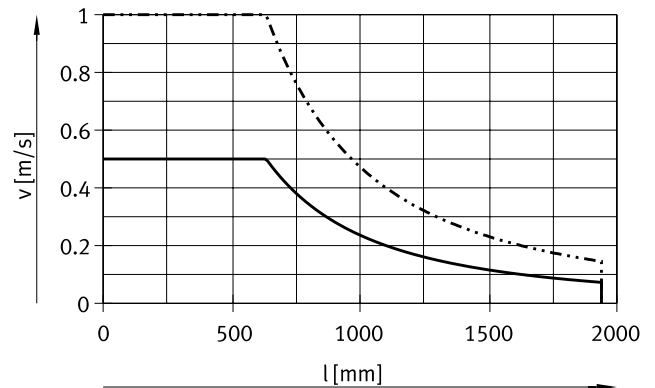
Speed v as a function of working stroke l

Size 70



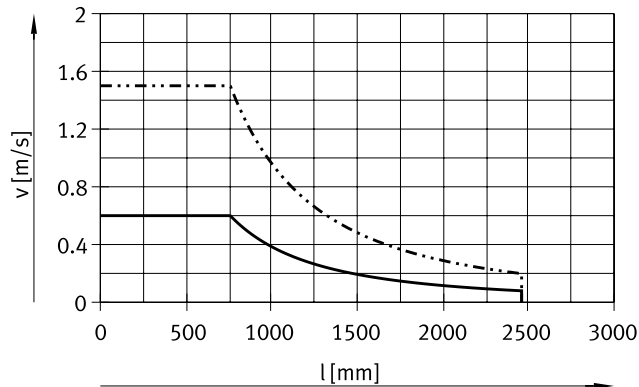
— ELGA-70-10P

Size 80



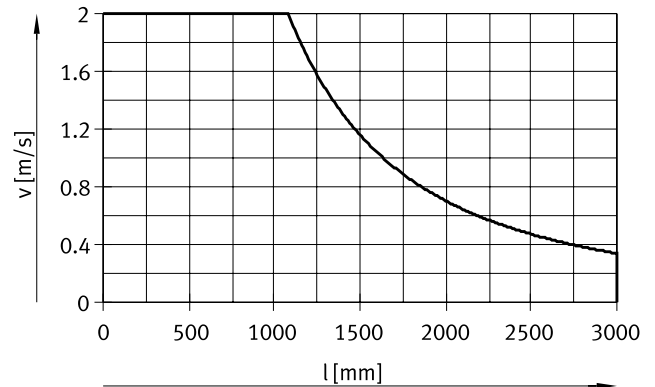
— ELGA-80-10P
- - - ELGA-80-20P

Size 120



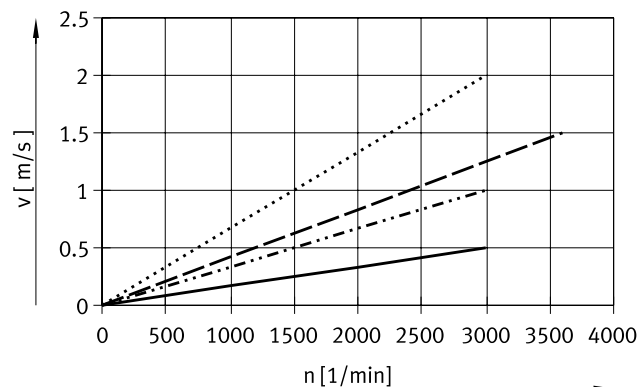
— ELGA-120-10P
- - - ELGA-120-25P

Size 150



— ELGA-150-40P

Speed v as a function of rotational speed n



Note

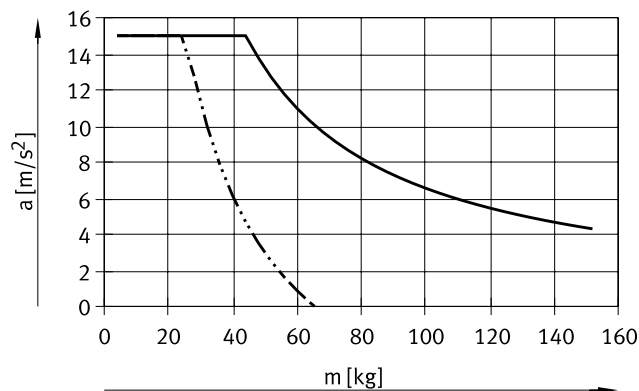
Rotational speed is stroke-dependent. Note maximum rotational speed.

— ELGA-70-10P/-80-10P/-120-10P
- - - ELGA-80-20P
- · - ELGA-120-25P
····· ELGA-150-40P

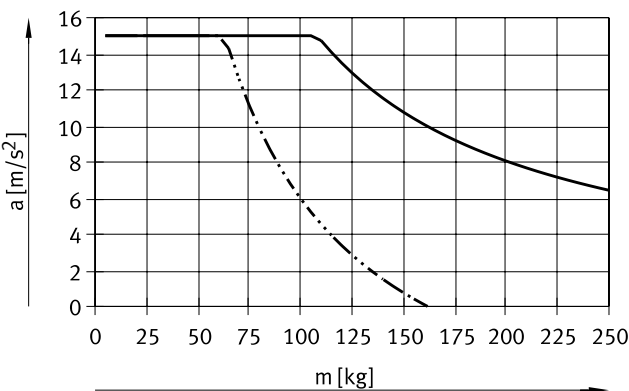
Datasheet

Max. acceleration a as a function of payload m

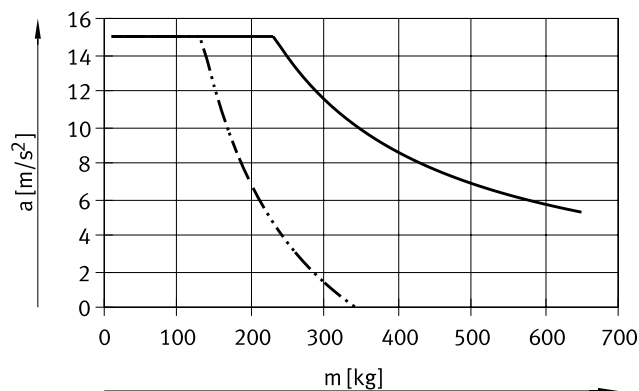
Size: 70



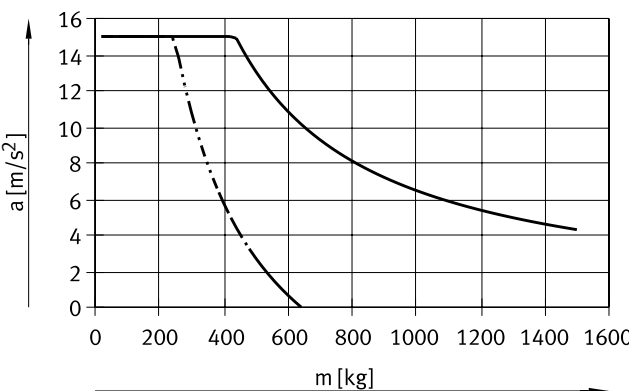
Size: 80



Size: 120

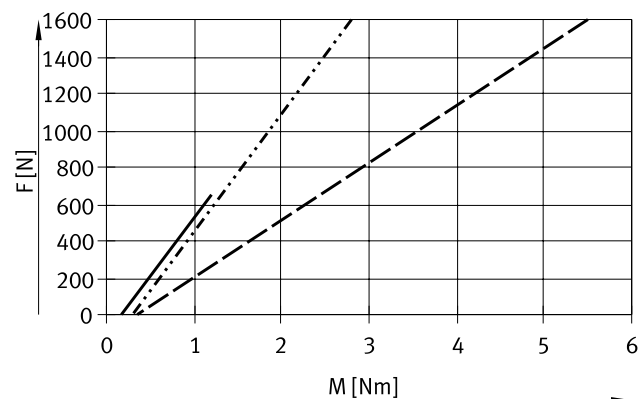


Size: 150

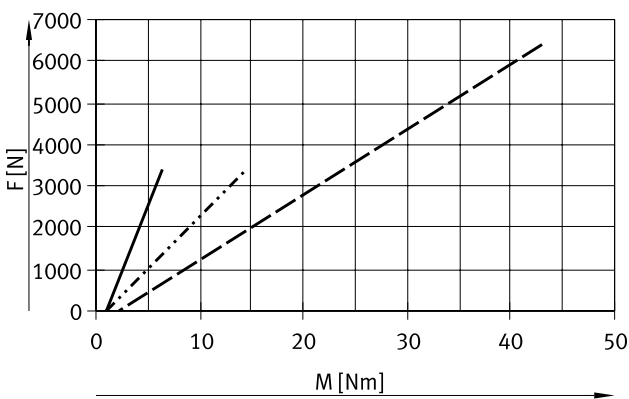


— Horizontal mounting position
- - - Vertical mounting position

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



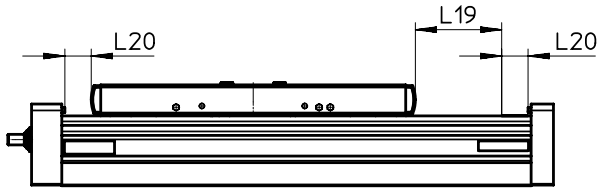
— ELGA-70-10P
- - - ELGA-80-10P
- - - ELGA-80-20P



— ELGA-120-10P
- - - ELGA-120-25P
- . - ELGA-150-40P

Datasheet

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

Example:

Type ELGA-BS-KF-70-500-20H-...

Nominal stroke = 500 mm

2x stroke reserve = 40 mm

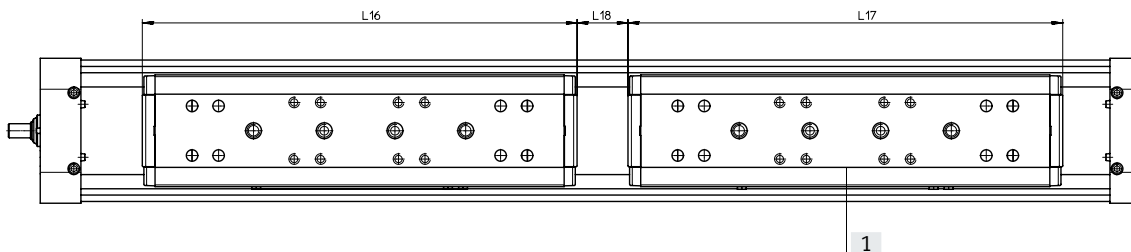
Working stroke = 540 mm

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

Working stroke reduction

With axis ELGA with additional slide ZL/ZR

For a ball screw axis with additional slide, the working stroke is reduced by the length of the additional slide and the distance between both slides



L16 = Slide length

L17 = Additional slide length

L18 = Distance between the two slides

[1] Additional slide

Example:

Type ELGA-BS-KF-70-500-...-ZR

Working stroke without additional slide

= 500 mm

L18

= 50 mm

L16, L17

= 221 mm

Working stroke with additional slide

= 229 mm

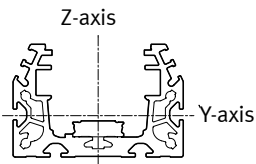
(500 mm – 50 mm – 221 mm)

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



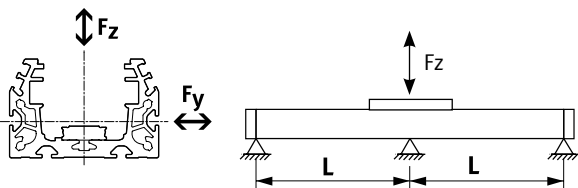
Size	70	80	120	150
I_y [mm ⁴]	165x10 ³	310x10 ³	1.24x10 ⁶	4.70x10 ⁶
I_z [mm ⁴]	472x10 ³	977x10 ³	3.80x10 ⁶	11.81x10 ⁶

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

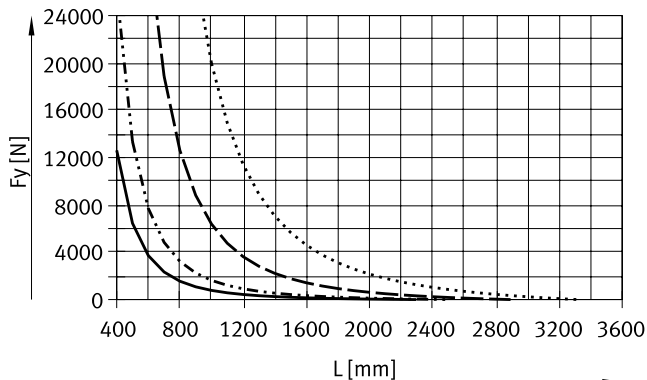
The axis may need to be supported in order to limit deflection in the case of long strokes.

The following graphs can be used to determine the maximum permissible support spacing L as a function of force F acting on the axis.

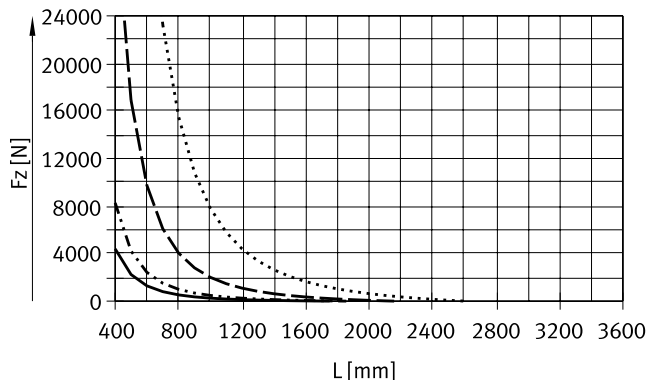
The deflection is $f = 0.5$ mm.



Force Fy



Force Fz



- ELGA-70
- ELGA-80
- ELGA-120
- ELGA-150

Recommended deflection limits

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

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

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

Datasheet

Central lubrication system

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

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

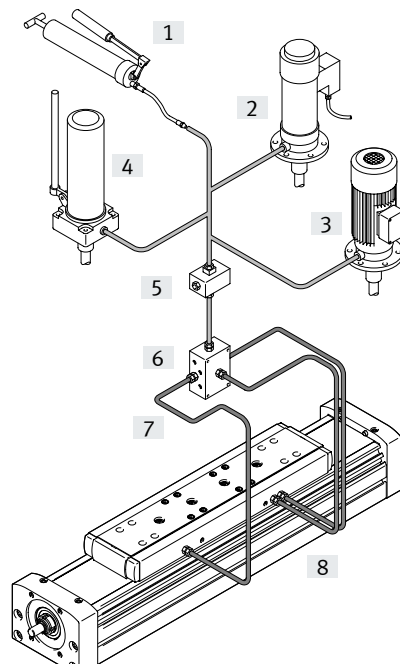
Slide dimensions
→ page 24

Design of a central lubrication system

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

- Lincoln
- Bielomatik
- SKF (Vogel)

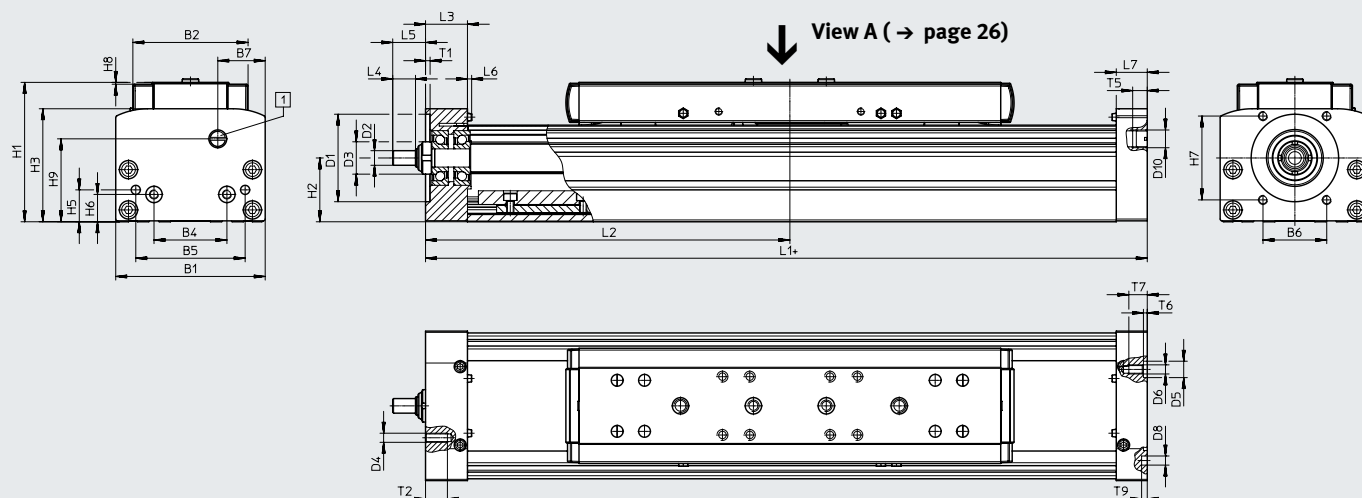
Festo recommends these companies because they can supply all the necessary components.



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

Datasheet

Dimensions

Download CAD data → www.festo.com


+ = plus stroke length + 2x stroke reserve

[1] Sealing air connection

Size	B1	B2	B4	B5	B6	B7	D1 Ø	D2 Ø	D3 Ø	D4	D5 Ø H7
70	69	48.2	30	45	29	21.5	38	6	Width across flats 13	M5	–
80	82	63.2	40	60	35	26	48	8	18	M5	9
120	120	95	80	40	64	35	62	12	28	M6	–
150	154	125	40	80	80	42	95	25	44	M8	–

Size	D6	D8 Ø H7	D10	H1	H2	H3	H5	H6	H7	H8	H9	L1
70	M5	5	G1/8	64	28.5	50.5	13	13	36	1	37.5	268
80	M5	5	G1/8	76.5	35	62	17.5	15	46	1	45.5	296
120	M8	9	G1/8	111.5	54	89	22	22	54	1	65.5	409
150	M8	9	G1/8	141.5	72.5	122	26.5	26.5	80	1	91	512

Size	L2 min.	L3	L4	L5	L6	L7	T1	T2	T5	T6	T7	T9
70	133.5	21	8	14	2.3	16	2.5	12	8	–	10	3.1
80	148.2	23	12.5	18	2.3	17	2.5	12	8	2.1	10.1	3.1
120	202.3	33	17.5	25.5	1.8	30	3	15	8	–	16	2.1
150	235.7	43	23	30.5	3.5	37	3	20	8	–	16	2.1

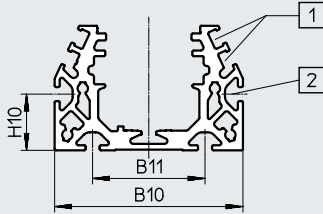
Datasheet

Dimensions

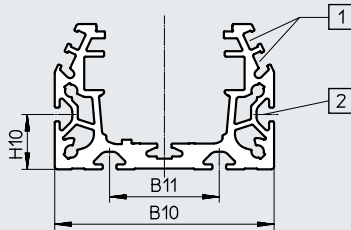
Profile

Download CAD data → www.festo.com

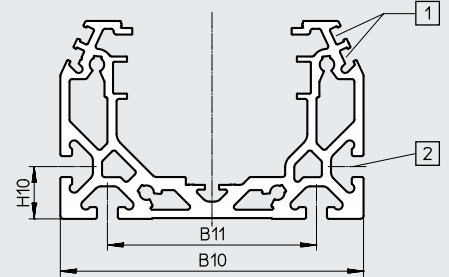
Size 70



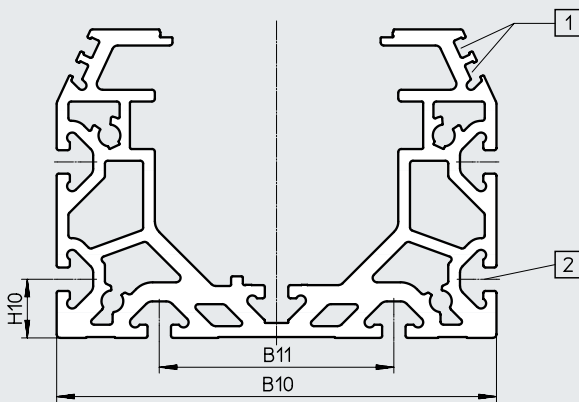
Size 80



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
→ www.festo.com/sp User documentation.

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

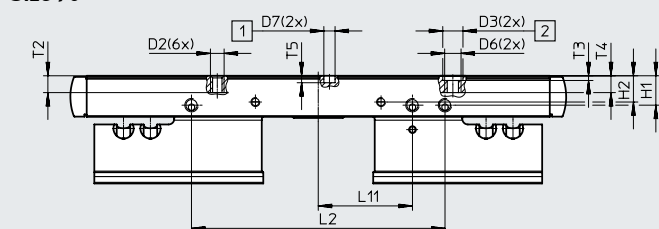
Datasheet

Dimensions

Download CAD data → www.festo.com

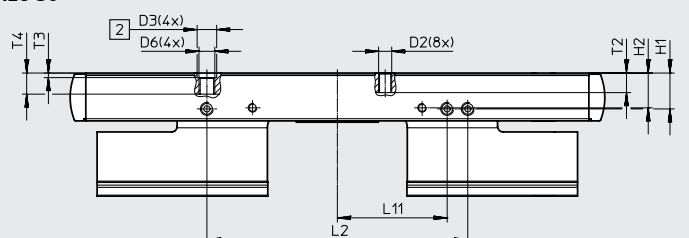
Slide

Size 70



View A

Size 80



View A

- [1] Drilled hole for centring pin ZBS
- [2] Drilled hole for centring sleeve ZBH
- [3] Lubrication connections

Size	B1	B2	B3	D1	D2	D3 ø H7	D5	D6	D7 ø H7
70	±0.1	±0.2	±0.1	M6	M5	9	M4	M6	5
80	32	42	28	M6	M5	9	M4	M6	–

Size	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8
	±0.1			±0.1	±0.1	±0.1	±0.03	±0.1	±0.03	
70	13.1	11.7	221	113	56	90	120	20	20	5
80	16.5	16	246	120	78	74	40	44	–	–

Size	L9	L11	T1	T2	T3	T4	T5	T6		T7
					+0.1		+0.1	min.	max.	–0.1
70	5	42	6	7.5	2.1	7.5	3.1	4.2	4.6 _{–0.1}	–
80	–	50.5	8	9	2.1	9.7	–	5.6	5.9 _{–0.1}	5.9

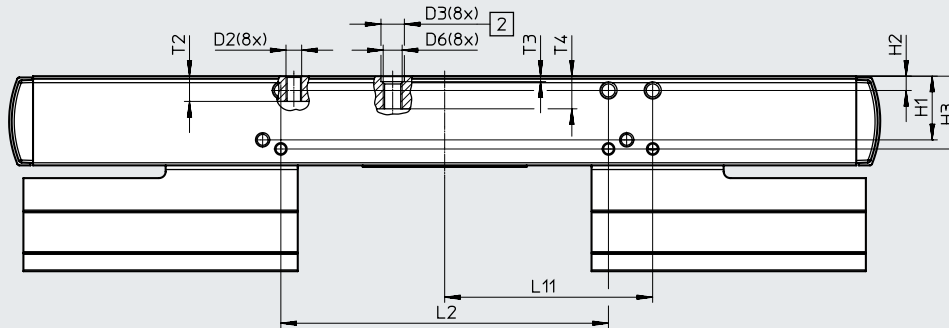
Datasheet

Dimensions

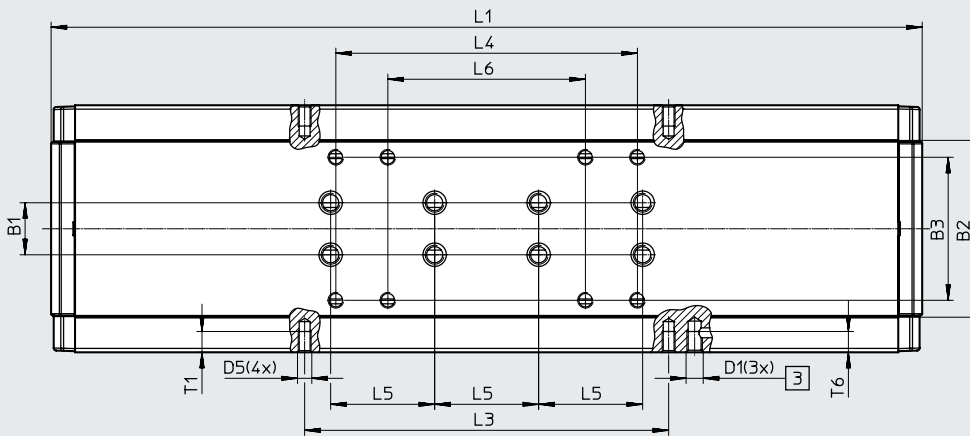
Download CAD data → www.festo.com

Slide

Size 120



View A



[2] Drilled hole for centring sleeve
ZBH

[3] Lubrication connections

Size	B1	B2	B3	D1	D2	D3 ∅ H7	D5	D6	H1	H2	H3	L1
120	±0.03 20	±0.2 68	±0.1 55	M6	M5	9	M5	M6	24.5	5.5	28	335

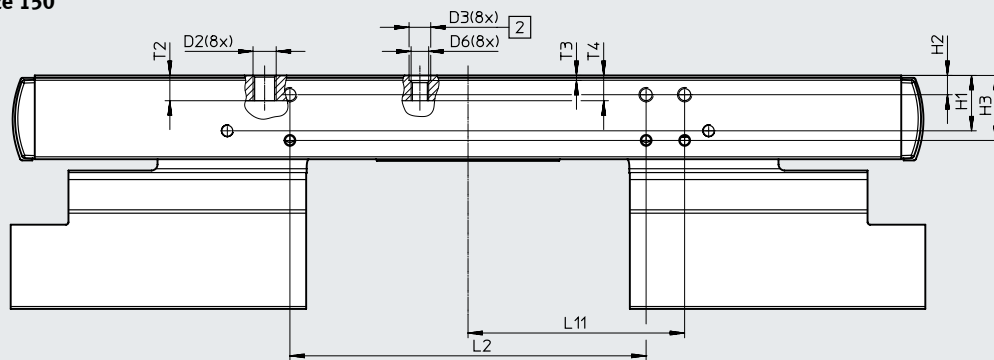
Size	L2	L3	L4	L5	L6	L11	T1	T2	T3	T4	T6
120	±0.1 126	±0.1 140	±0.2 116	±0.03 40	±0.2 76	80	8	9.7	+0.1 2.1	12.55	8

Datasheet

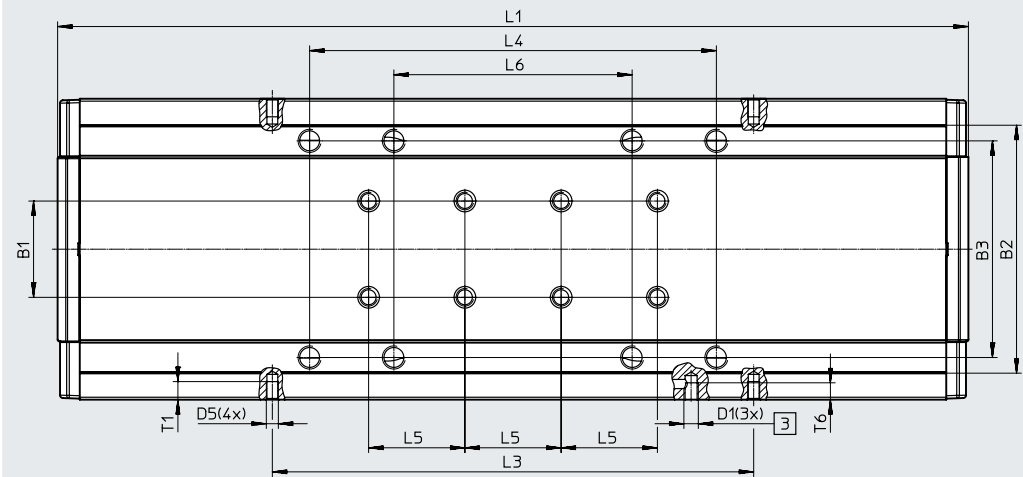
Dimensions Download CAD data → www.festo.com

Slide

Size 150



View A



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

Size	B1	B2	B3	D1	D2	D3 ø H7	D5	D6	H1	H2	H3	L1
150	40 ±0.03	103 ±0.2	90 ±0.1	M6	M8	9	M5	M6	23	8	27	378.4

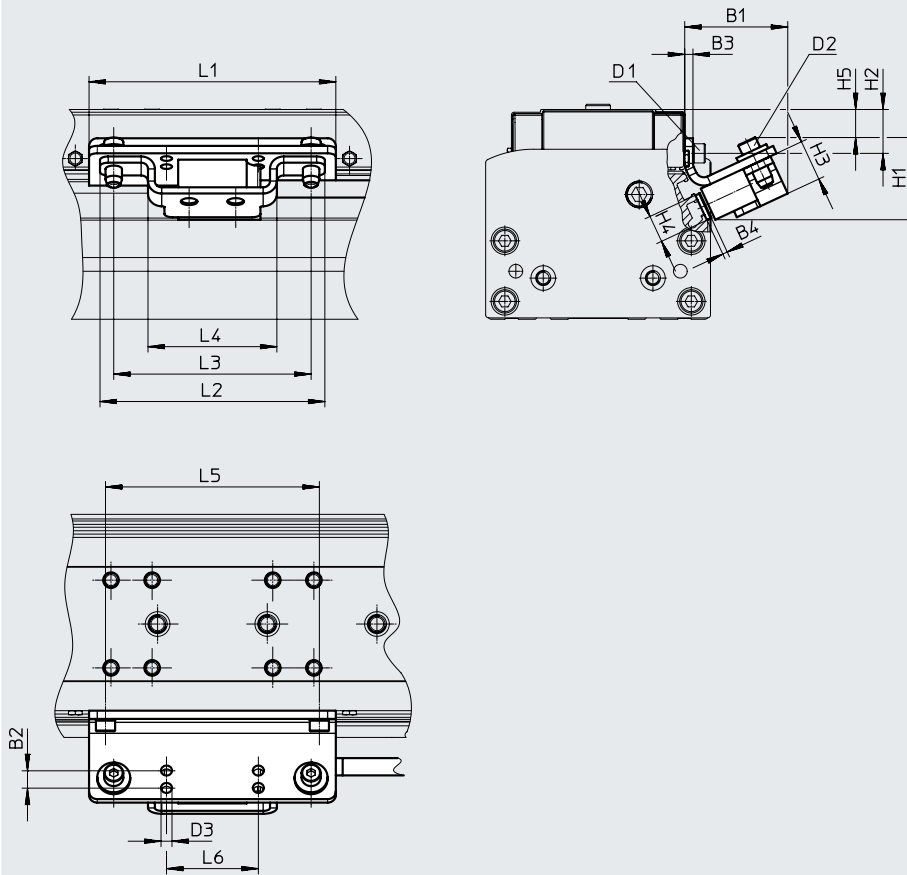
Size	L2	L3	L4	L5	L6	L11	T1	T2	T3	T4	T6
150	148 ±0.1	200 ±0.1	169 ±0.2	40 ±0.03	99 ±0.2	90	7.5	10.7	2.1	14	7

Datasheet

Dimensions

Download CAD data → www.festo.com

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



Encoder cable
(connection to motor controller/
safety system)
→ Page 42

Size	B1	B2	B3	B4	D1	D2	D3 ø	H1	H2
70	40	7	3	1.8	M4x8	M4x14	4	35	11.7
80	40	7	3	1.8	M4x14	M4x14	4	35	16
120	41	7	3	1.8	M4x14	M4x14	4	35	24.5
150	42	7	3	1.8	M5x10	M4x14	4	35	23

Size	H3	H4	H5	L1	L2	L3	L4	L5	L6
70	15	10	3.5	86	82	72	47	56	33.5
80	15	10	9	90	82	72	47	78	33.5
120	15	10	21	170	82	72	47	140	33.5
150	15	10	22.4	220	82	72	47	200	33.5

Datasheet

Ordering data – Standard design

Key features:

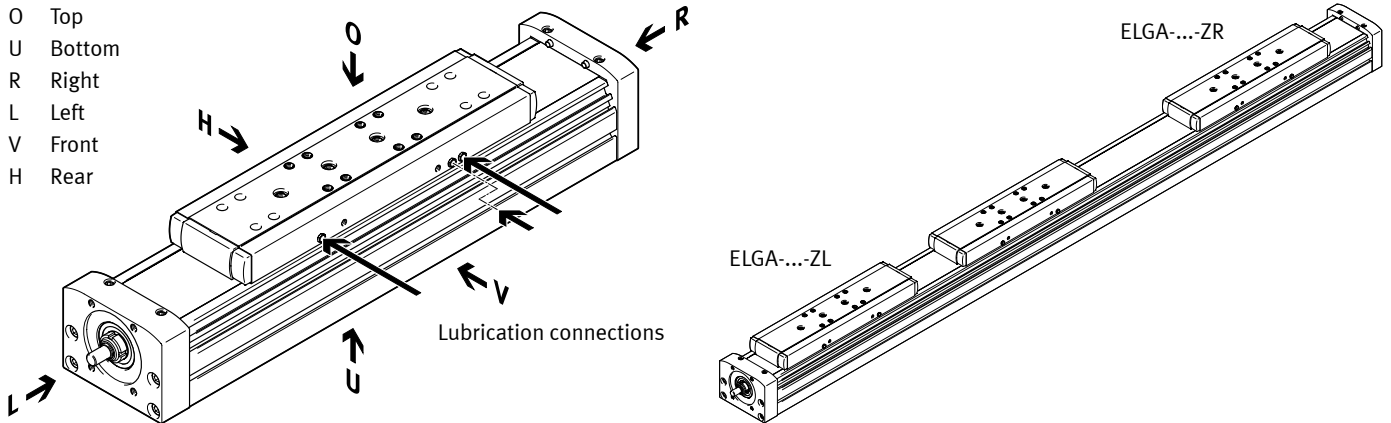
- Stroke reserve: 0 mm
- Motor attachment position: left

Size	Pitch [mm/rev]	Stroke [mm]	Part no.	Type
70	10	100	8041816	ELGA-BS-KF-70-100-0H-10P-ML
		200	8041817	ELGA-BS-KF-70-200-0H-10P-ML
		300	8041818	ELGA-BS-KF-70-300-0H-10P-ML
		400	8041819	ELGA-BS-KF-70-400-0H-10P-ML
		500	8041820	ELGA-BS-KF-70-500-0H-10P-ML
		600	8041821	ELGA-BS-KF-70-600-0H-10P-ML
80	10	100	8041822	ELGA-BS-KF-80-100-0H-10P-ML
		200	8041823	ELGA-BS-KF-80-200-0H-10P-ML
		300	8041824	ELGA-BS-KF-80-300-0H-10P-ML
		400	8041825	ELGA-BS-KF-80-400-0H-10P-ML
		500	8041826	ELGA-BS-KF-80-500-0H-10P-ML
		600	8041827	ELGA-BS-KF-80-600-0H-10P-ML
		800	8041828	ELGA-BS-KF-80-800-0H-10P-ML
	20	100	8041829	ELGA-BS-KF-80-100-0H-20P-ML
		200	8041830	ELGA-BS-KF-80-200-0H-20P-ML
		300	8041831	ELGA-BS-KF-80-300-0H-20P-ML
		400	8041832	ELGA-BS-KF-80-400-0H-20P-ML
		500	8041833	ELGA-BS-KF-80-500-0H-20P-ML
		600	8041834	ELGA-BS-KF-80-600-0H-20P-ML
		800	8041835	ELGA-BS-KF-80-800-0H-20P-ML
120	10	100	8041836	ELGA-BS-KF-120-100-0H-10P-ML
		200	8041837	ELGA-BS-KF-120-200-0H-10P-ML
		300	8041838	ELGA-BS-KF-120-300-0H-10P-ML
		400	8041839	ELGA-BS-KF-120-400-0H-10P-ML
		500	8041840	ELGA-BS-KF-120-500-0H-10P-ML
		600	8041841	ELGA-BS-KF-120-600-0H-10P-ML
		800	8041842	ELGA-BS-KF-120-800-0H-10P-ML
	25	100	8041843	ELGA-BS-KF-120-100-0H-25P-ML
		200	8041844	ELGA-BS-KF-120-200-0H-25P-ML
		300	8041845	ELGA-BS-KF-120-300-0H-25P-ML
		400	8041846	ELGA-BS-KF-120-400-0H-25P-ML
		500	8041847	ELGA-BS-KF-120-500-0H-25P-ML
		600	8041848	ELGA-BS-KF-120-600-0H-25P-ML
		800	8041849	ELGA-BS-KF-120-800-0H-25P-ML

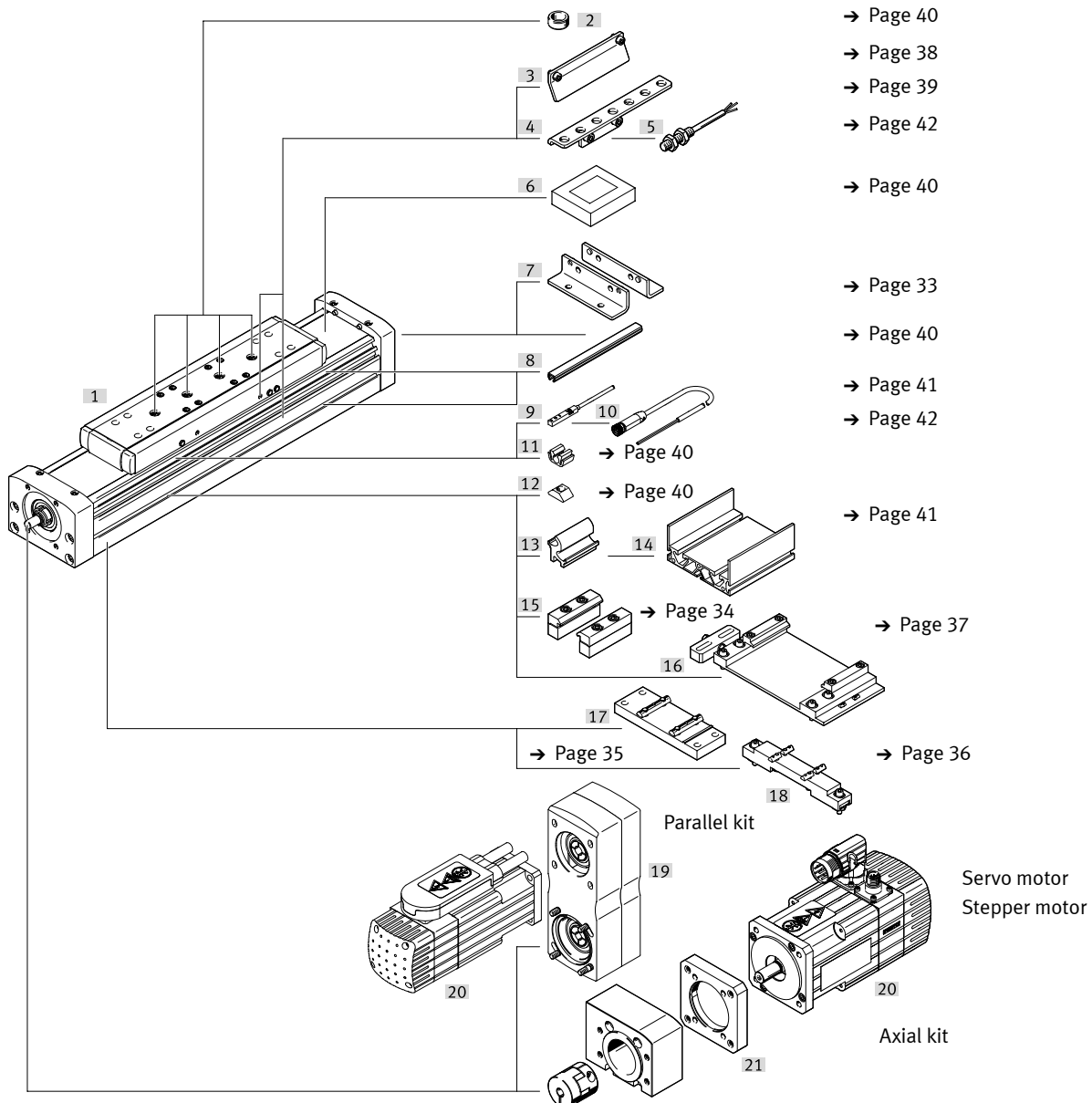
Ordering data – Modular product system

Orientation guide

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



Accessories



Ordering data – Modular product system

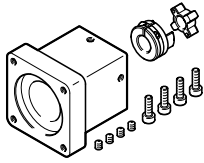
Ordering table								
Size	70	80	120	150	Conditions	Code		Enter code
Module no.	8024918	8024919	8024920	8024921				
Design	Linear axis					ELGA		ELGA
Function	Ball screw					-BS		-BS
Guide	Recirculating ball bearing guide					-KF		-KF
Size [mm]	70	80	120	150		-...		
Stroke length (without stroke reserve) Standard [mm]	100, 200, 300, 400, 500, 600, 700, 900	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1440, 1740, 1940	100, 200, 300, 400, 500, 600, 700, 800, 900, 1300, 1400, 1960, 2460	200, 400, 500, 900, 1400, 1900, 2500, 3000				
Variable [mm]	50 ... 880	50 ... 1920	50 ... 2440	50 ... 2980		-...		
Stroke reserve [mm]	0 ... 999 (0 = no stroke reserve)				[1]	-...H		
Screw pitch	10	10	10	–		-10P		
	–	20	–	–		-20P		
	–	–	25	–		-25P		
	–	–	–	40		-40P		
Motor attachment position	Left					-ML		
	Right					-MR		
Additional slide	None							
	1 slide on the left					-ZL		
	1 slide on the 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		

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

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

Accessories

Permitted axis/motor combinations for axial and parallel kits



Under the following links you will find all information about:

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

For axial kits → Internet: eamm-a

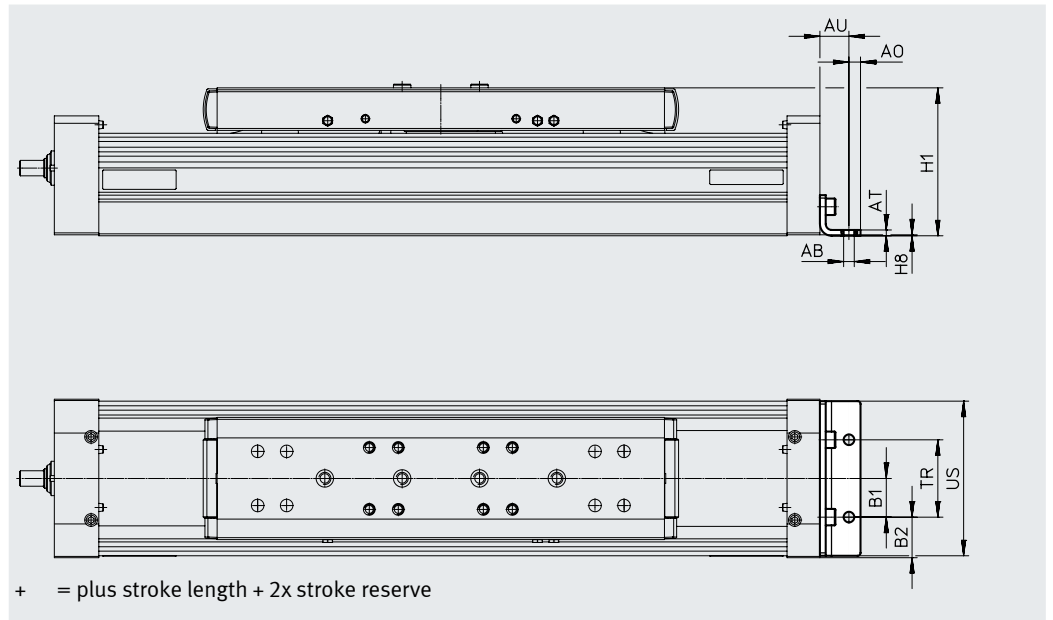
For parallel kits → Internet: eamm-u

Foot mounting HPE

Material:

Galvanised steel

RoHS-compliant



Dimensions and ordering data

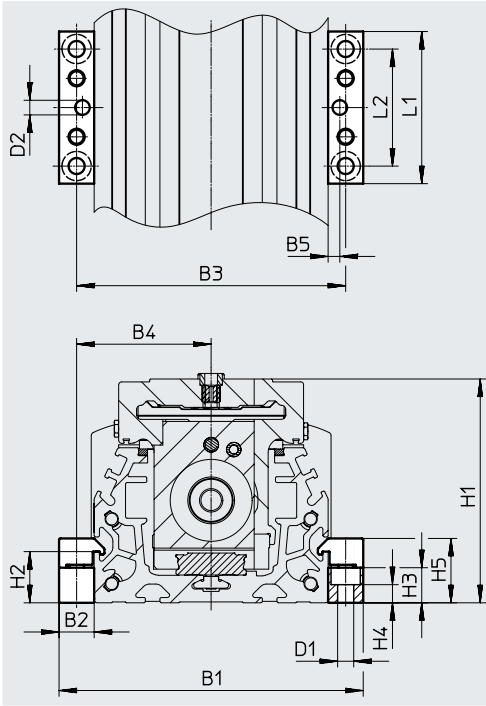
For size	AB Ø	A0	AT	AU	B1	B2	H1	H8
70	5.5	6	3	13	20	14.5	64	0.5
80	5.5	6	3	15	20	21	76.5	0.5
120	9	8	6	22	40	20	111.5	1
150	9	12	8	25	40	35	141.5	1

For size	TR	US	Weight [g]	Part no.	Type
70	40	67	115	558321	HPE-70
80	40	80	150	558322	HPE-80
120	80	116	578	558323	HPE-120
150	80	150	1181	3002636	HPE-150

Accessories

Profile mounting MUE

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

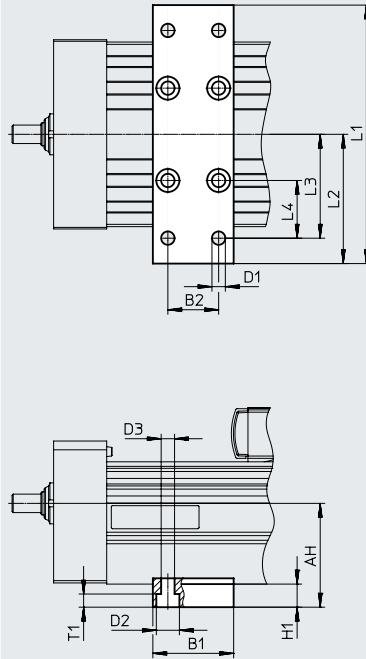
Accessories

Central support EAHF

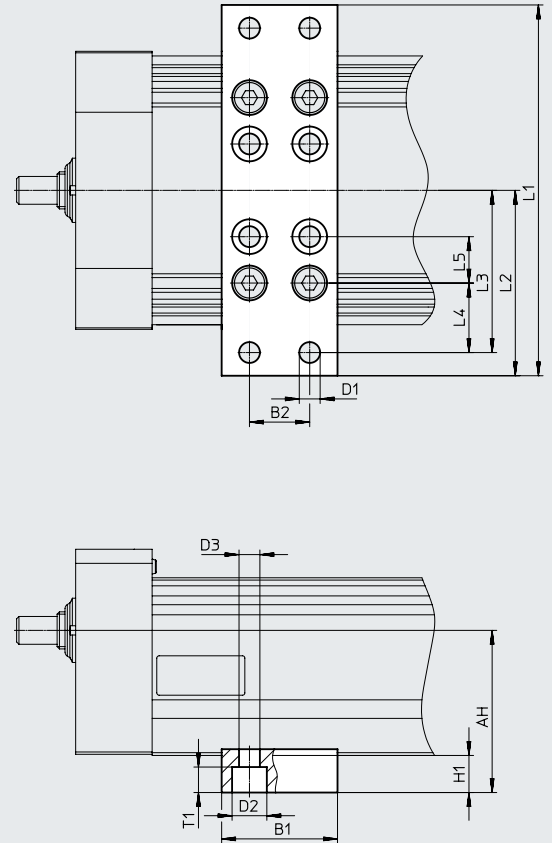
Material:
Anodised aluminium
RoHS-compliant



Size 70, 80



Size 120, 150



Dimensions and ordering data

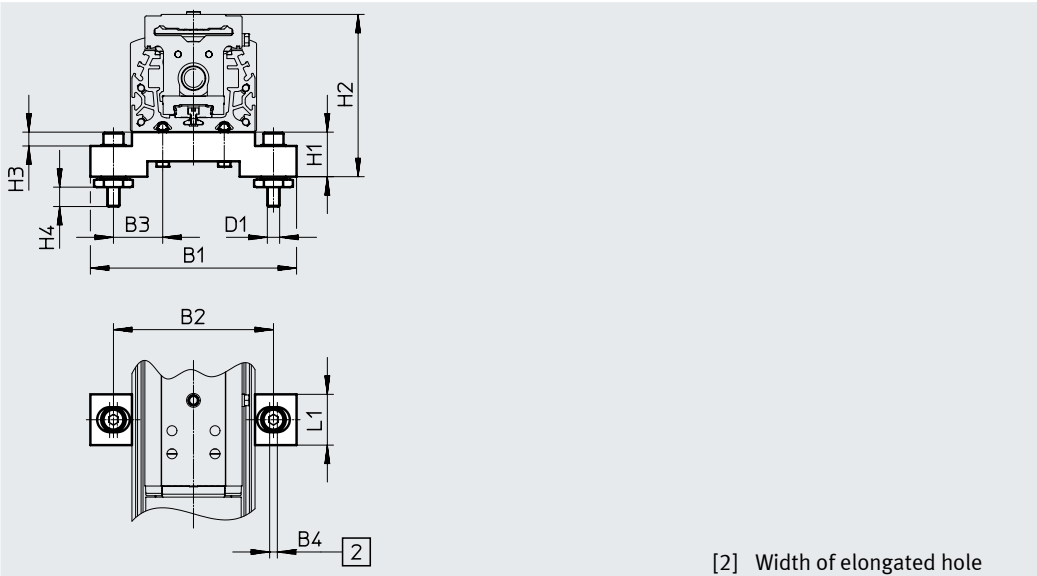
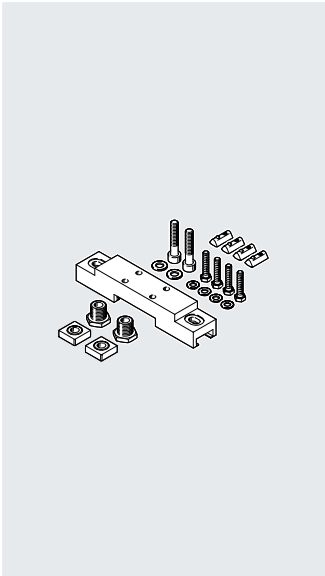
For size	AH	B1	B2	D1 ø	D2 ø	D3 ø	H1	L1
70	38.5	35	22	5.8	10	5.8	10	102
80	45							112
120	70	50	26	9	15	9	16	160
150	88.5							200

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	62	50		–		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: wrought aluminium alloy
EADC-E15-185: Steel
RoHs-compliant



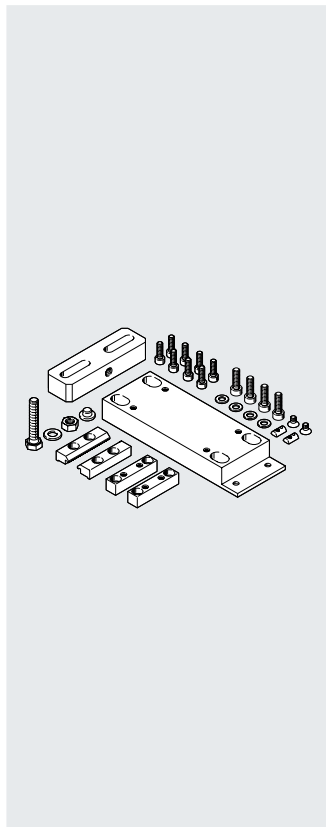
Dimensions and ordering data							
For size	B1	B2	B3	B4	D1	H1	
70	134	104	32	5	M8	29	
80	134	104	32	5	M8	29	
120	236	209	64.5	5	M8	29	
150	236	209	64.5	5	M8	29	

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	569	8047568	EADC-E15-185-E7
150	170.5	9	12.6	33	569	8047568	EADC-E15-185-E7

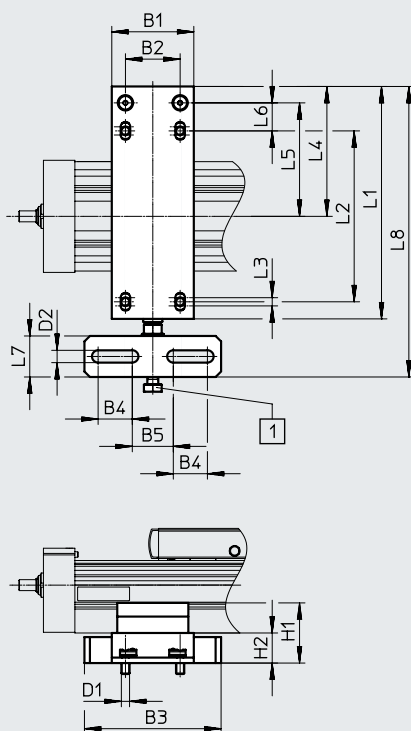
Accessories

Adjusting kit EADC-E16

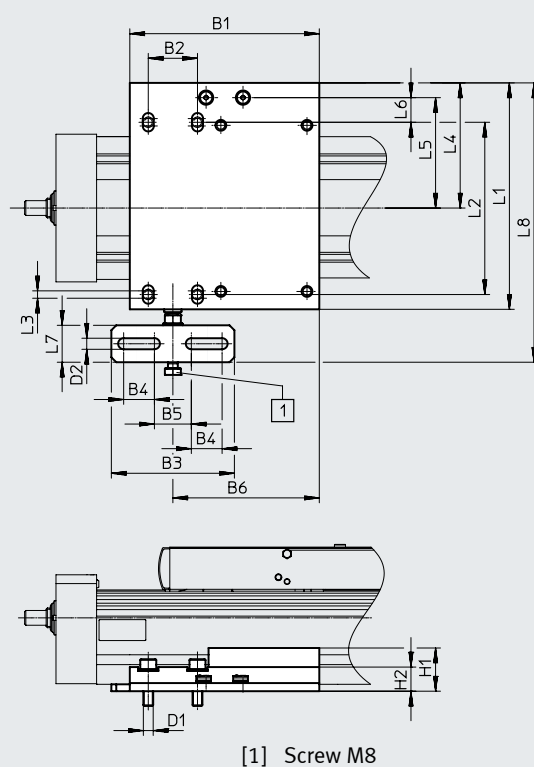
Material:
Wrought aluminium alloy
RoHS-compliant



Size 80



Size 120



[1] Screw M8

Dimensions and ordering data

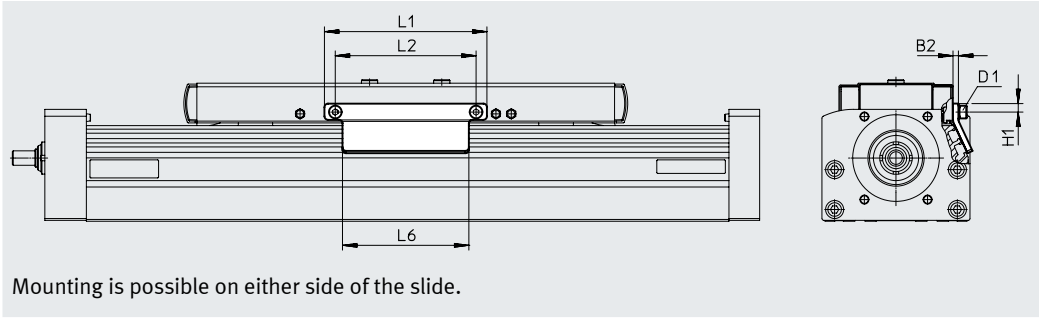
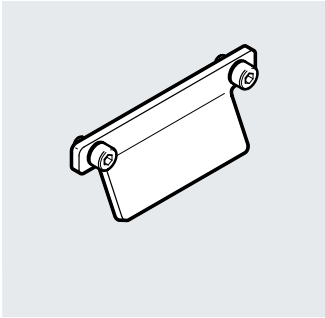
For size	B1	B2	B3	B4	B5	B6	D1	D2	H1	H2	L1	L2
80	60	40	100	25	30	–	M6	9	44	22	170	125
120	154	40	100	25	30	119	M8	9	35.1	19.6	184	140

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

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

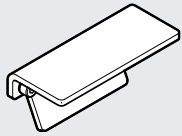
Accessories

Switch lug SF-EGC-2

For sensing with proximity sensor
SIEN-M8B or SIES-8M

Material:
Galvanised steel
RoHS-compliant

Switch lug SF-EGC-2

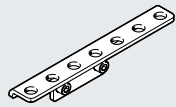


Sensor bracket HWS-EGC

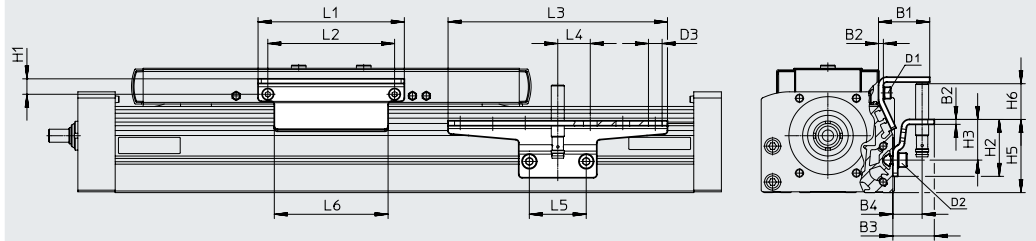
For proximity switch SIEN-M8B

Material:
Galvanised steel
RoHS-compliant

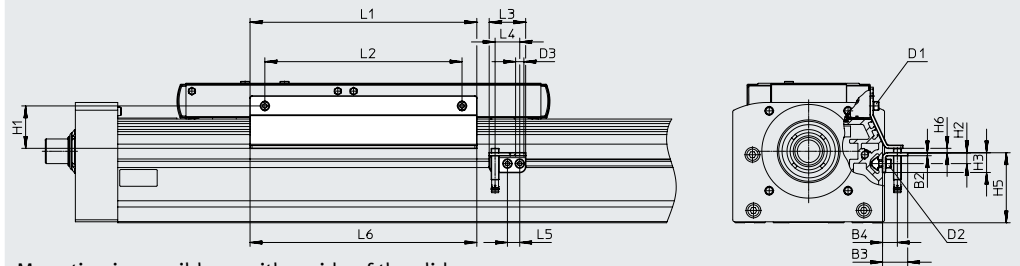
Sensor bracket HWS-EGC



Size 70, 80, 120



Size 150



Mounting is possible on either side of the slide.

Dimensions and ordering data

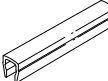
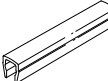
For size	B1	B2	B3	B4	D1	D2	D3 ø	H1	H2
70	31.5	3	25.5	18	M4	M5	8.4	9.5	35
80	31.5	3	25.5	18	M4	M5	8.4	9.5	35
120	32	3	25.5	18	M5	M5	8.4	13.2	65
150	33	3	25.5	15	M5	M5	8.4	43	20

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)

Accessories

Ordering data					
	For size	Description	Part no.	Type	PU ¹⁾
Slot nut NST					
	70, 80	For mounting slot	150914	NST-5-M5-1	1
			8047843	NST-5-M5-10	10
			8047878	NST-5-M5-50	50
	120, 150	For mounting slot	150915	NST-8-M6-1	1
			8047868	NST-8-M6-10	10
			8047869	NST-8-M6-50	50
Centring pin ZBS/centring sleeve ZBH					
	70	For slide	150928	ZBS-5	10
	70, 80, 120, 150		8137184	ZBH-9-B	
Slot cover ABP					
	70, 80	• For mounting slot • Every 0.5 m	151681	ABP-5	2
	120, 150		151682	ABP-8	
Slot cover ABP-S					
	70 ... 150	• For sensor slot • Every 0.5 m	563360	ABP-5-S1	2
Clip SMBK					
	70 ... 150	For sensor slot, for mounting the proximity switch cables	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	

1) Packaging unit

Accessories

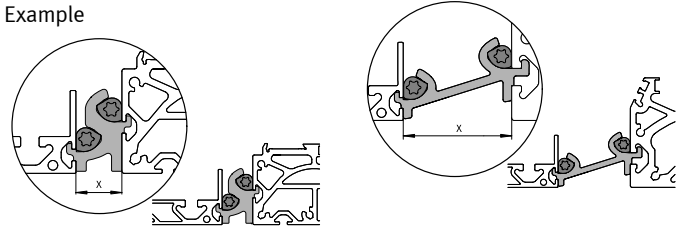
Mounting options between axis and support profile

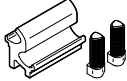
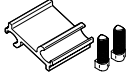
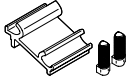
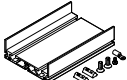
Depending on the adapter kit, the spacing between the axis and the support profile is:

$x = 20 \text{ mm}$ 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

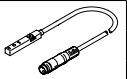
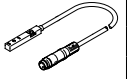


Ordering data					
	For size	Description	Part no.	Type	PU ¹⁾
Adapter kit DHAM					
	80	• For mounting the support profile on the axis • Spacing between axis and profile is 20 mm	562241	DHAM-ME-N1-CL	1
	120, 150		562242	DHAM-ME-N2-CL	
	70, 80	• For mounting the support profile on the axis • Spacing between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

1) Packaging unit

Ordering data – Proximity switches for T-slot, inductive

Datasheets → Internet: [sies](https://www.festo.com/catalogue/...)

	Type of mounting	Electrical connection	Switching output	Cable length [m]	Part no.	Type
N/O						
	Inserted in the slot from above, flush with the cylinder profile	Cable, 3-core	PNP	7.5	551386	SIES-8M-PS-24V-K-7.5-OE
		Plug M8x1, 3-pin		0.3	551387	SIES-8M-PS-24V-K-0.3-M8D
		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	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

Ordering data – Proximity switch M8 (round design), inductive						Datasheets → Internet: sien	
	Electrical connection	LED	Switching output	Cable length [m]	Part no.	Type	
N/O							
	Cable, 3-core	■	PNP	2.5	150386	SIEN-M8B-PS-K-L	
			NPN	2.5	150384	SIEN-M8B-NS-K-L	
	Plug M8x1, 3-pin	■	PNP	–	150387	SIEN-M8B-PS-S-L	
			NPN	–	150385	SIEN-M8B-NS-S-L	
N/C							
	Cable, 3-core	■	PNP	2.5	150390	SIEN-M8B-PO-K-L	
			NPN	2.5	150388	SIEN-M8B-NO-K-L	
	Plug M8x1, 3-pin	■	PNP	–	150391	SIEN-M8B-PO-S-L	
			NPN	–	150389	SIEN-M8B-NO-S-L	

Ordering data – Connecting cables						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 and CMMT-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 CMMT-AS as adapter between encoder cable NEBM-M12G8-...-V3 and interface X3 (position encoder 2)	8106112	NEFM-S1G9-K-0.5-R3G8