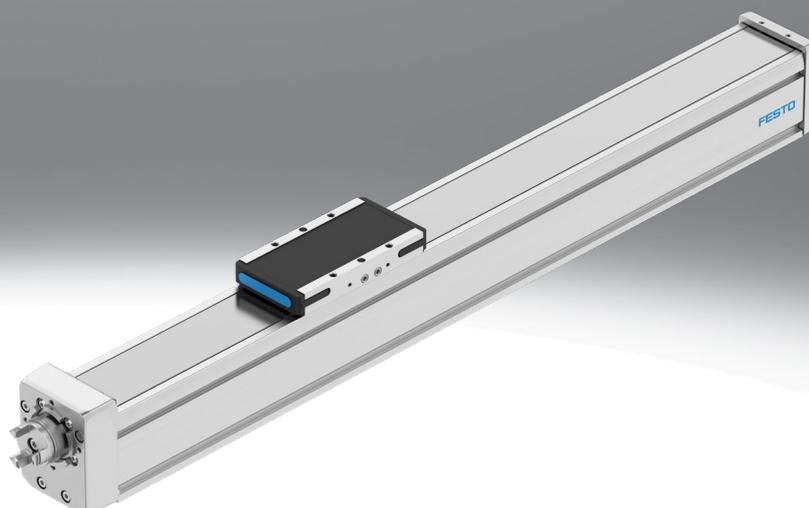


Ball screw axes ELGD-BS

FESTO



Key features

At a glance

ELGD-BS (standard design)

- Profile with a square cross-section and sturdy drive elements for high feed forces
- With NSF-H1 lubricant for the food zone
- Suitable for the production of Li-ion batteries

ELGD-BS-WD (wide design)

- Reduced profile height offers smaller installation dimensions for handling systems and applications that do not require such high feed forces
- 30% lighter, while rigidity and guide load capacity are still similar to the axis in the standard design
- With NSF-H1 lubricant for the food zone
- Suitable for the production of Li-ion batteries

Innovative guide technology

- Excellent rigidity and load capacity of the guide for greater loads in the same installation space
- Less vibration and smoother slide movement protect sensitive workpieces
- High speeds ensure short cycle times and a very long service life minimises downtime

Powerful drive elements

- High feed forces and acceleration for shorter process times
- Long service life and increased reliability reduce TCO

Innovative stainless steel cover strip solution

- Abrasion-free and clean surface protects workpieces from particles
- Minimised number of particles for use in cleanrooms
- Reduced ingress of dirt for use in harsh ambient conditions

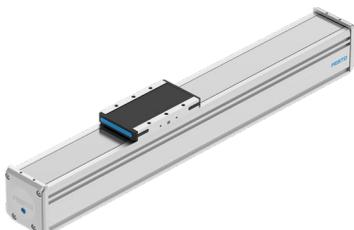
Options:

- Extended or additional slide for higher axial and lateral torques and higher loads

Sealing air connection:

- Air is exchanged between the interior of the cylinder and the environment via the sealing air connection. This prevents negative pressure or excess pressure from building up inside the cylinder.
- Application of slight negative pressure prevents the emission of particles
- Application of slight excess pressure prevents the ingress of particles

Guide axis ELFD



- Driveless linear guide units with guide and freely movable slide
- The guide axis is designed to support forces and torques in multi-axis applications

Key features

Engineering tools

More information → [electric-motion-sizing](#)



Save time with smart engineering tools for the optimal solution. Our goal is to increase your productivity. Our engineering tools play an integral part in achieving this goal. They help you size your system correctly, tap into unimagined productivity reserves and generate additional productivity along the entire value chain. In every phase of your project, from the initial contact to the modernisation of your machine, you will come across a number of different tools which will be of use to you.

Electric Motion Sizing

- Create the optimum drive package quickly and reliably. Electric Motion Sizing calculates suitable combinations of electric axis, electric motor and servo drive using just a few application details. It provides you with all the relevant data including the bill of materials and documentation for the selected combination. This avoids design errors and results in significantly improved energy efficiency for the system. A smooth connection to the Festo Automation Suite also makes commissioning easier for you.

Graphs

More information → [elgd-bs](#)



The graphs shown in this document are also available online. There, precise values can be displayed.

Drive system

[BS] Ball screw

- For applications requiring precision
- High reliability and long service life
- For high loads

Stroke reserve

[...H] 0 ... 999 mm

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

Screw pitch

- The screw pitch describes the distance travelled by the ball screw nut per revolution of the ball screw in millimetres.
- Thanks to the different screw pitches, it is possible to choose the smallest possible motor for the required speed and feed force.

Ball screw support

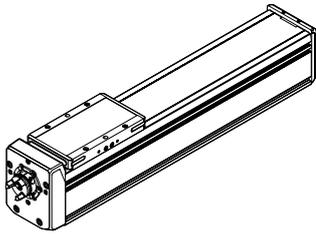
[SU] With ball screw support

The ball screw support enables maximum travel speed with all stroke lengths.

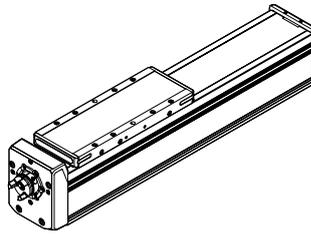
Key features

Slide design

[] Standard

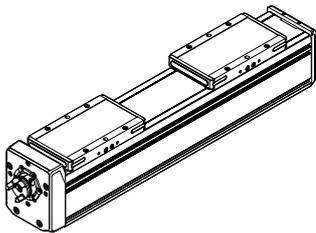


[L] Long

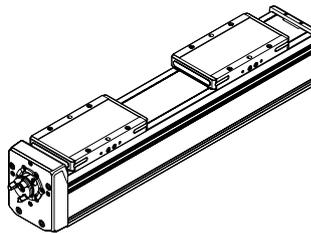


Additional slide

[ZR] Right



[ZL] Left



- The side on which the labelling is applied is defined as the front.
- The additional slide is always a standard slide

Lubrication

[] Standard

- Lubricated for life (the specification applies under standard conditions. For special applications, please refer to the operating manual for the maintenance intervals)
- Supplied without lubrication nipple

[GN] Lubrication nipple

- The lubrication adapters enable the guide to be permanently lubricated using semi- or fully automatic relubrication devices
- The adapters are suitable for oils and greases

Type of mounting

[M] Direct mounting

- If direct mounting is selected, the axis is supplied with threads in the bottom of the profile. This means it can be installed without a profile mounting, thus saving space
- Additional centring holes allow the axis to be easily positioned in the machine

Measurement system

[M3] With displacement encoder

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 corrected by the motor controller.

Type codes

001		Series
ELGD		Gantry axis
002		Drive system
BS		Ball screw drive
003		Guide
KF		Recirculating ball bearing guide
004		Size
60		60
80		80
120		120
005		Stroke [mm]
100		100
200		200
300		300
400		400
500		500
600		600
800		800
1000		1000
...		50 ... 2500
006		Stroke reserve
OH		None
...H		0 ... 999 mm
007		Spindle pitch
5P		5 mm
10P		10 mm
20P		20 mm
30P		30 mm

008		Spindle support
		None
SU		With
009		Slide design
		Standard
L		Slide, long
010		Additional slide
		None
ZL		1 slide left
ZR		1 slide right
011		Lubrication
		Standard
GN		Lubrication nipple
012		Type of mounting
		Profile slots with clamping jaws
M		Direct mounting
013		Displacement encoder
		None
M3		With displacement encoder, incremental, resolution 2.5 µm, 10... 30 V
014		Displacement encoder attachment position
		None
B		Rear
F		Front

Datasheet

General technical data										
Size		60			80			120		
Screw pitch	[mm/rev]	5	10	5	10	20	5	10	30	
Design		Electromechanical axis with ball screw								
Guide		Recirculating ball bearing guide								
Mounting position		Any								
Working stroke										
ELGD-...	[mm]	50 ... 1000			50 ... 2000			50 ... 2500		
ELGD-...-M	[mm]	50 ... 1000			50 ... 1400			50 ... 1400		
ELGD-...-L-M	[mm]	50 ... 1000			50 ... 1400			50 ... 1370		
Max. feed force F_x										
With axial kit	[N]	1550	1550	2650	2650	2650	3520	3520	3520	
With parallel kit	[N]	1550	1550	2650	1771	873	2520	2520	2520	
No-load torque at low travel speed:	[Nm]	0.089	0.092	0.127	0.127	0.147	0.419	0.332	0.495	
	[m/s]	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.1	
No-load torque at travel speed:	[Nm]	0.209	0.27	0.37	0.35	0.425	0.957	1.071	1.805	
	[m/s]	0.25	0.5	0.25	0.5	1	0.25	0.5	1.5	
Max. radial force ¹⁾	[N]	230	230	500	500	500	750	750	750	
Max. rotational speed ²⁾	[1/min]	6667	6667	5000	5000	5000	3200	3200	3200	
Max. speed	[m/s]	0.56	1.11	0.42	0.83	1.67	0.27	0.53	1.6	
Max. acceleration	[m/s ²]	15								
Repetition accuracy	[mm]	±0.01								
Reversing backlash	[mm]	0.15								
Position sensing		Via proximity switch								

1) On the drive shaft

2) Rotational speed and speed are stroke-dependent

Operating and environmental conditions		
Ambient temperature ¹⁾	[°C]	0 ... +60
Degree of protection		IP40
Duty cycle	[%]	100
Maintenance interval ²⁾		Lifetime lubrication

1) Note the application range of the proximity switches

2) The specification applies under standard conditions. For special applications, please refer to the operating manual for the maintenance intervals.

Weight [g]						
Size	60		80		120	
Slide design		L		L		L
Basic weight with 0 mm stroke ¹⁾	1774	2286	3147	4533	6087	9079
Additional weight per 10 mm stroke	54	54	90	90	147	147
Moving mass	555	810	990	1671	1814	3327

1) Incl. slide

Ball screw							
Size	60		80		120		
Diameter	[mm]	12		16		25	
Pitch	[mm/rev]	5/10		5/10/20		5/10/30	

Datasheet

Mass moment of inertia					
Size		60			
Screw pitch	[mm/rev]	5		10	
Slide design		L		L	
J_0	[kg mm ²]	6.350	6.995	6.350	6.995
J_H per metre stroke	[kg mm ² /m]	15.716	15.716	15.716	15.716
J_L per kg payload	[kg mm ² /kg]	0.633	0.633	2.533	2.533

Mass moment of inertia							
Size		80					
Screw pitch	[mm/rev]	5		10		20	
Slide design		L		L		L	
J_0	[kg mm ²]	10.619	13.662	10.619	13.662	10.619	13.662
J_H per metre stroke	[kg mm ² /m]	39.016	39.016	39.016	39.016	39.016	39.016
J_L per kg payload	[kg mm ² /kg]	0.633	0.633	2.533	2.533	10.1	10.1

Mass moment of inertia							
Size		120					
Screw pitch	[mm/rev]	5		10		30	
Slide design		L		L		L	
J_0	[kg mm ²]	76.031	102.36	76.031	102.36	76.188	103.38
J_H per metre stroke	[kg mm ² /m]	263.3	263.3	263.3	263.3	271.9	271.9
J_L per kg payload	[kg mm ² /kg]	0.633	0.633	2.533	2.533	22.82	22.82

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

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

Homing

Homing can be carried out in two ways:

- Against a fixed stop
- Using a reference switch

The following values must be observed:

Size		60	80	120
Max. impact energy	[mJ]	1	2	1
Note on the impact energy in the end positions	[m/s]	At maximum homing speed of 0.01 m/s		

Datasheet

Materials

Axis	
Drive cover	Gravity die-cast aluminium, painted
Spindle nut	Steel
Ball screw	Steel
Slide	Wrought aluminium alloy
Cover strip	High-alloy stainless steel
Guide	Steel
Profile	Anodised wrought aluminium alloy
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364 zone III
Suitable for the production of Li-ion batteries	Suitable for battery production with reduced Cu/Zn/Ni values (F1a)

Technical data – Displacement encoder

Type		ELGD-...-M3
Resolution	[µm]	2.5
Max. travel speed with displacement encoder	[m/s]	7
Supply voltage	[VDC]	10 - 30 (±10%)
Current	[mA]	Max. 150
Encoder signal		5 V TTL; A/A, B/B; reference signal (N/N) cyclic 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 →Certificates.

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

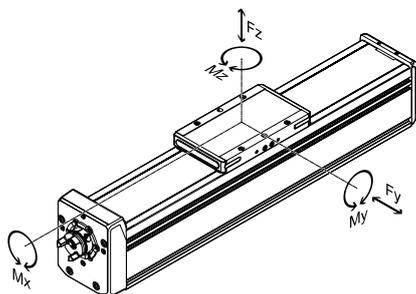
Datasheet

Load values

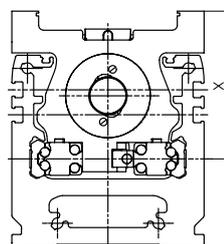
The indicated forces and torques refer to the centre of the guide.
The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect.

The appropriate size is selected using the following three steps:

1. Check the maximum permissible values (must not be exceeded)
2. Calculate the load comparison factor
3. Determine the service life



Distance from the slide surface to the centre of the guide



Distance from the slide surface to the centre of the guide

Size	60	80	120
Dimension x [mm]	60	62	80

1. Check the maximum permissible values

Max. permissible forces and torques for the overall axis (strength limits)

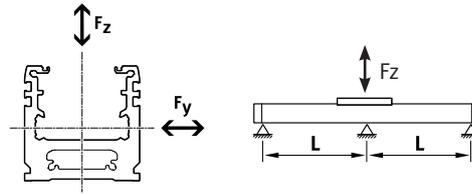
Size	60		80		120	
		L		L		L
Max. force F_y , overall axis [N]	930	1650	2291	4581	2957	5914
Max. force F_z , overall axis [N]	1300	2750	2500	4000	4300	8400
Max. torque M_x , overall axis [Nm]	36	65	95	160	170	350
Max. torque M_y , overall axis [Nm]	15	85	42	335	42	501
Max. torque M_z , overall axis [Nm]	15	45	42	275	42	501

Datasheet

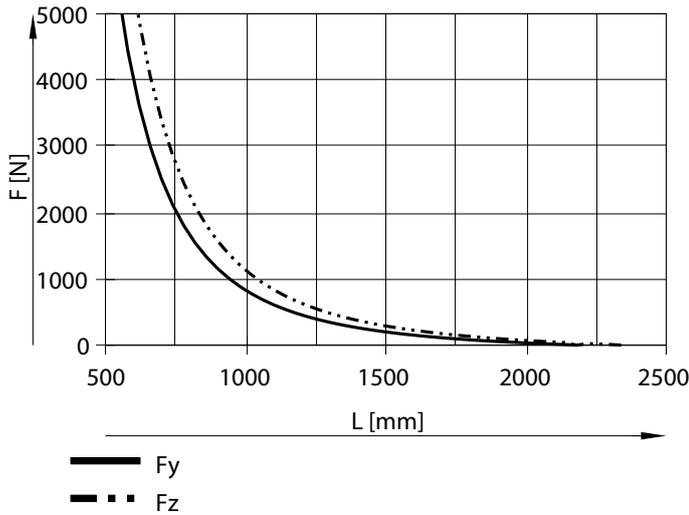
Maximum permissible support spacing L as a function of force F

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

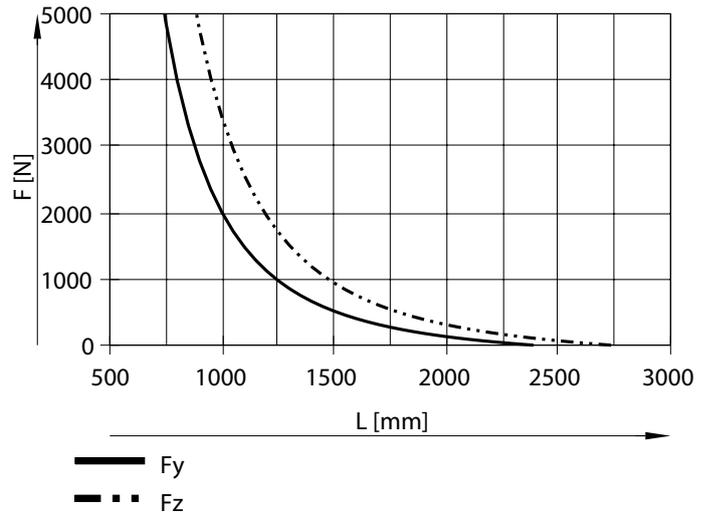
The following graphs can be used to determine the maximum permissible support spacing L as a function of force F acting on the axis. The deflection is $f = 0.5 \text{ mm}$.



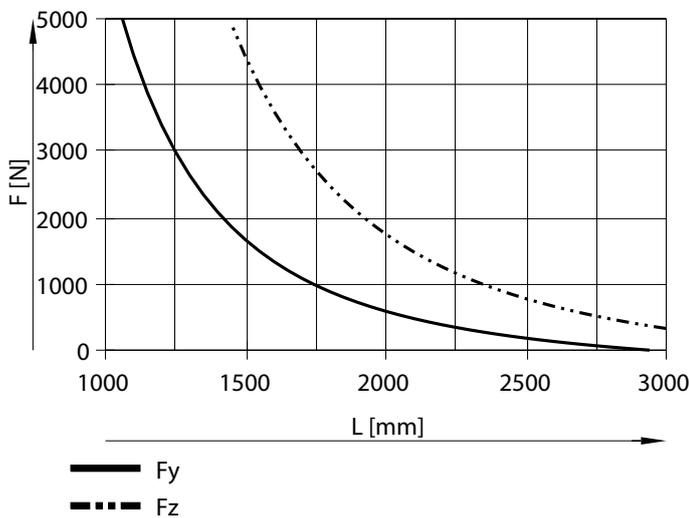
Size: 60



Size: 80



Size: 120



Datasheet

2. Calculate the load comparison factor

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. This formula can be used to calculate a guide value. The engineering software "Electric Motion Sizing" is available for more precise calculations → www.festo.com/x/electric-motion-sizing

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:

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

F_1/M_1 = values occurring in the application

F_2 = permissible values at 5000 km from the graph "support spacing over load"

M_2 = maximum permissible values (see table)

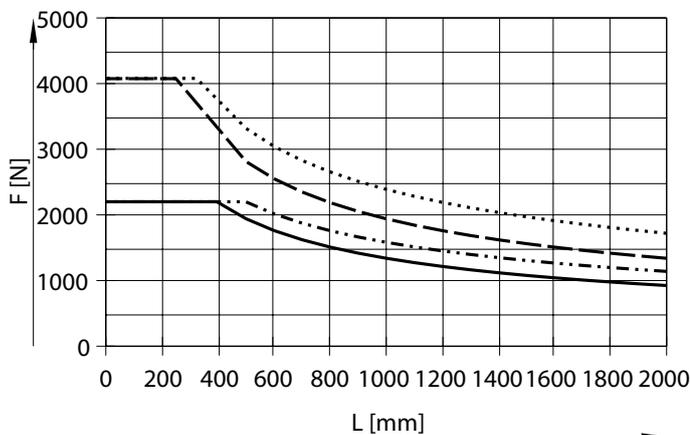
Max. permissible torques for the guide calculation with reference service life

Size	60		80		120	
Slide design		L		L		L
Reference service life [km]	5000					
Max. torque Mx [Nm]	37	65	95	180	170	350
Max. torque My [Nm]	15	141	42	390	50	620
Max. torque Mz [Nm]	15	139	42	390	60	580

Max. permissible support spacing L as a function of the force F

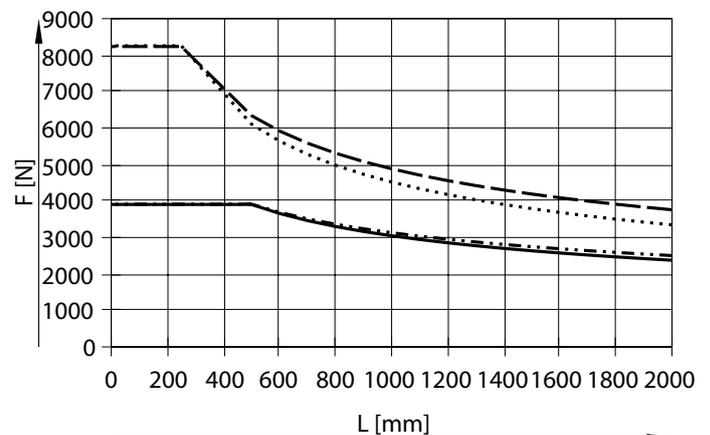
Depending on how firmly the axis is supported, the maximum permissible forces vary due to the design of the guide system. If the axis is used as a cantilever or in yoke operation, the values for a support spacing of 2000 mm can be selected.

Size: 60



- Fy - ELGD-60
- - Fz - ELGD-60
- · Fy - ELGD-60-L
- · Fz - ELGD-60-L

Size: 80



- Fy - ELGD-80
- - Fz - ELGD-80
- · Fy - ELGD-80-L
- · Fz - ELGD-80-L

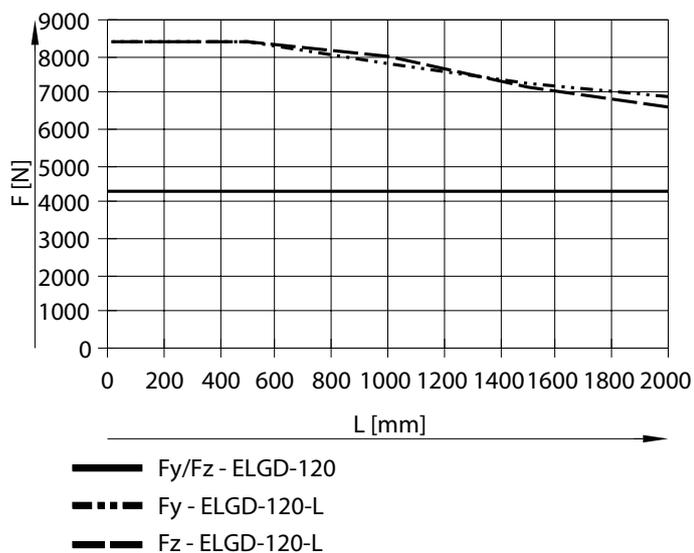
Datasheet

Max. permissible support spacing L as a function of the force F

Depending on how firmly the axis is supported, the maximum permissible forces vary due to the design of the guide system.

If the axis is used as a cantilever or in yoke operation, the values for a support spacing of 2000 mm can be selected.

Size: 120



Datasheet

3. Determine the service life

The service life of the guide depends on the load. To be able to provide an indication of the service life, the graph below plots the load comparison factor f_v against the service life.

These values are only theoretical. You must consult your local contact at Festo for load comparison factors f_v greater than 1.3.

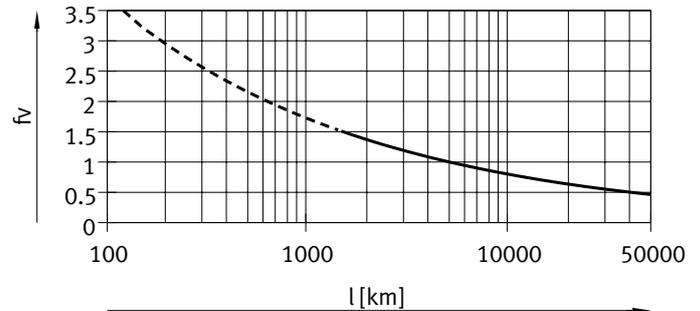
Load comparison factor f_v as a function of service life l

Example:

A user wants to move an x kg load. Using the formula (→ page 1) results in a value of 1.3 for the load comparison factor f_v . According to the graph, the guide would have a service life of approx. 2500 km. Reducing the acceleration reduces the M_z and M_y values. A load comparison factor f_v of 1 now results in a service life of 5000 km.

Note:

If the application has been calculated using “Electric Motion Sizing”, the average guide comparison index represents the workload of the guide. (100% average guide comparison index corresponds to $f_v = 1$). With this value, the service life can be estimated using the service life graph



Comparison of the characteristic load values for 100 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 moments are based on an expected service life of the guide system of 100 km according to ISO or 50 km according 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 ELGD 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	60		80		120		
		L		L		L	
$F_{y_{max}}$	[N]	9208	18415	17576	35153	17576	35153
$F_{z_{max}}$	[N]	9208	18415	17576	35153	17576	35153
$M_{x_{max}}$	[Nm]	157	314	422	844	730	1459
$M_{y_{max}}$	[Nm]	60	500	162	1356	162	1920
$M_{z_{max}}$	[Nm]	60	500	162	1356	162	1920

Datasheet

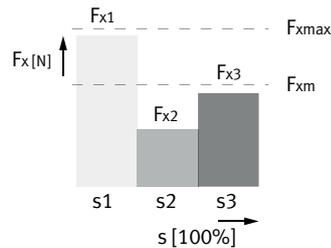
Service life of the ball screw

- The service life of the ball screw axis depends on the service life of the guide as well as 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.
- 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

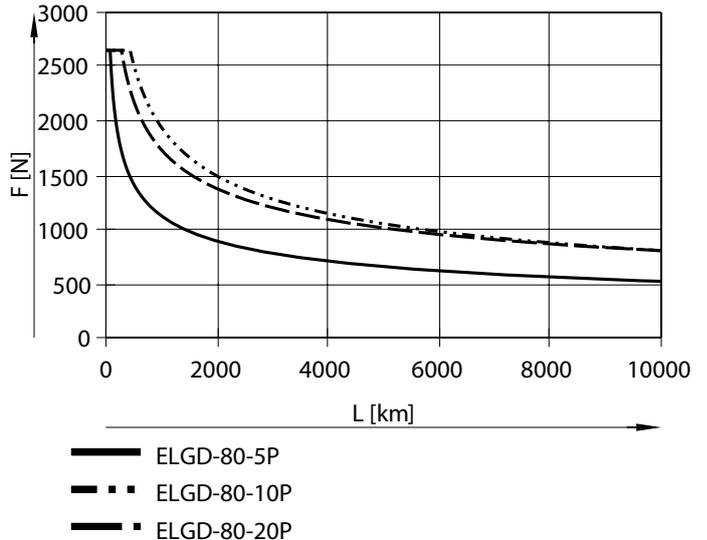
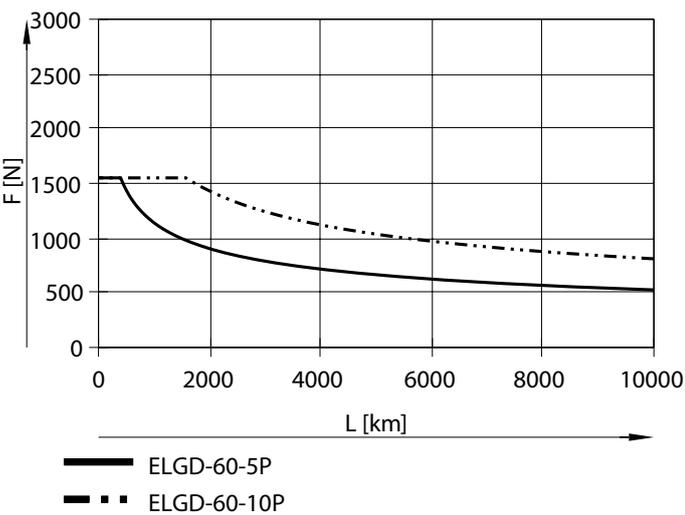
Calculation of the mean feed force F_{xm} with ball screw

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

- F_{xm} = mean feed force
- $F_{x1/n}$ = feed force of the section
- $s_{1/n}$ = travel part of the movement cycle



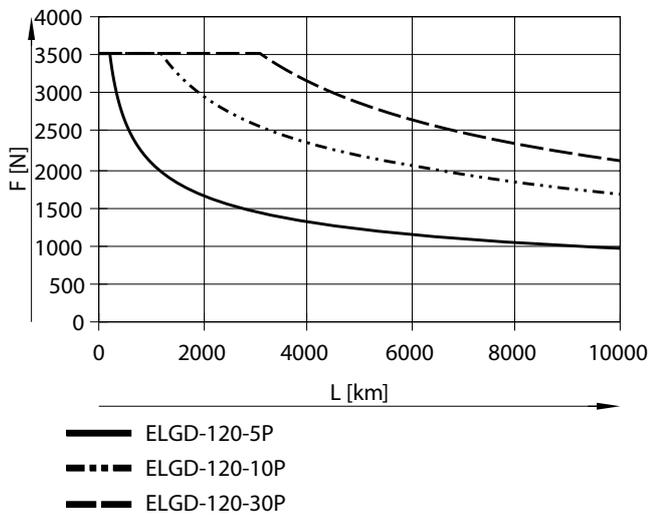
Mean feed force F_{xm} as a function of running performance L, with an operating coefficient f_B of 1.0 at room temperature



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



Service life taking into account the operating coefficient

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

L_{ist} = actual service life

L = target service life

(→ graphs)

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

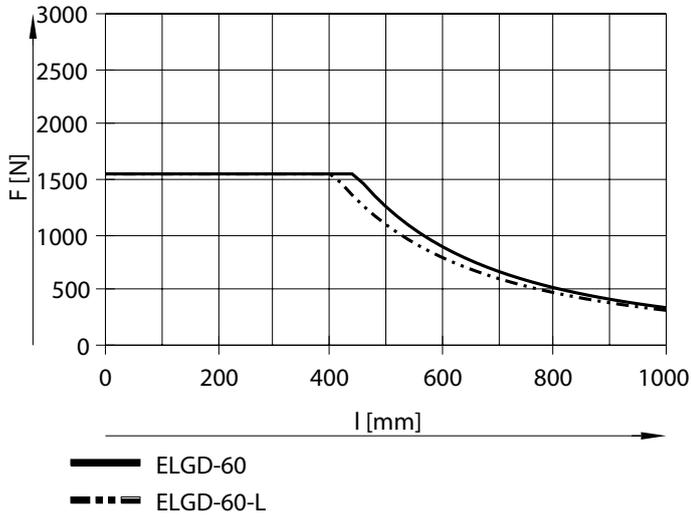
Datasheet

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

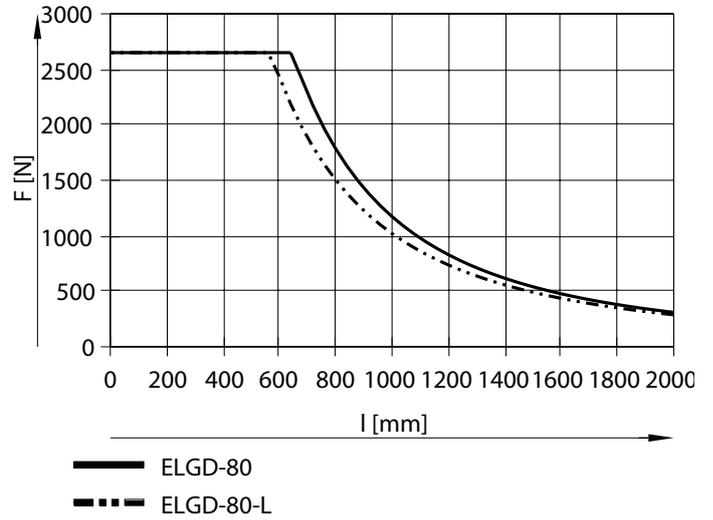
The feed force that pushes the ball screw in the direction of the motor must be limited depending on the stroke due to possible buckling (e.g. acceleration of a load mass away from the motor, deceleration of a load moving towards the motor).

The feed force in the opposite direction is not affected by this.

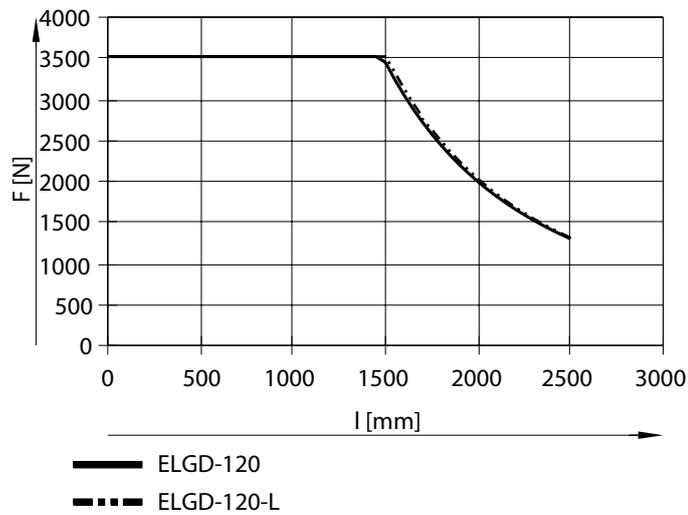
Size: 60



Size: 80



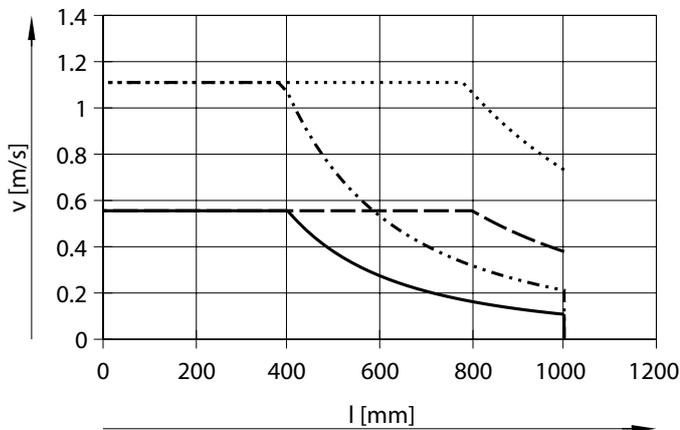
Size: 120



Datasheet

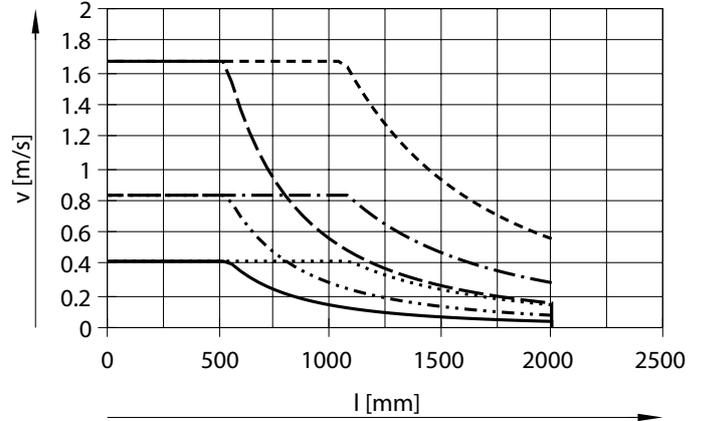
Speed v as a function of working stroke l

Size: 60



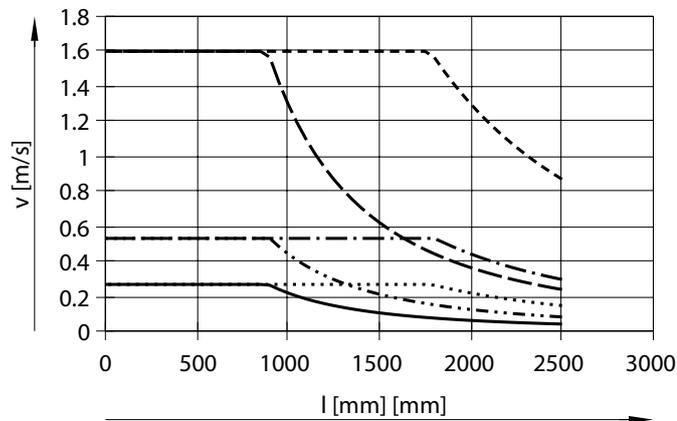
- ELGD-60-5P
- ELGD-60-10P
- - - ELGD-60-5P-SU
- · - · ELGD-60-10P-SU

Size: 80



- ELGD-80-5P
- ELGD-80-10P
- - - ELGD-80-20P
- ELGD-80-5P-SU
- · - · ELGD-80-10P-SU
- · - · ELGD-80-20P-SU

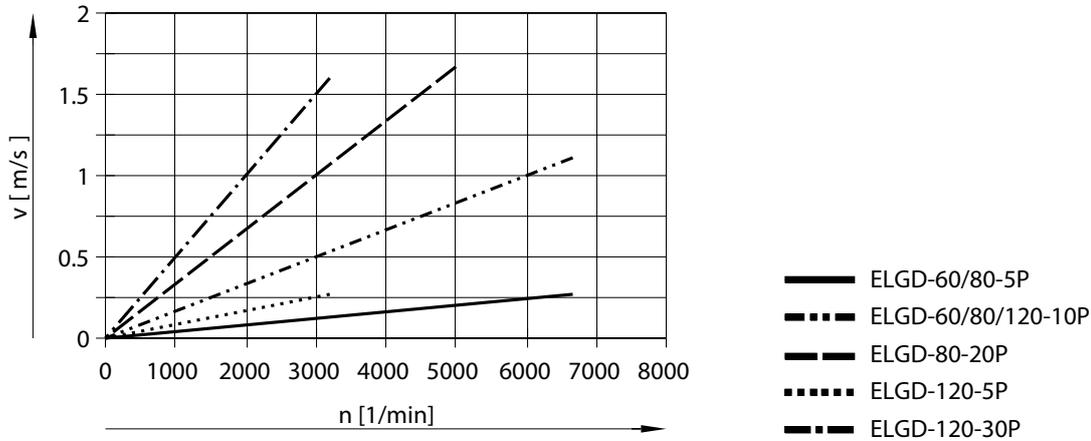
Size: 120



- ELGD-120-5P
- ELGD-120-10P
- - - ELGD-120-30P
- ELGD-120-5P-SU
- · - · ELGD-120-10P-SU
- · - · ELGD-120-30P-SU

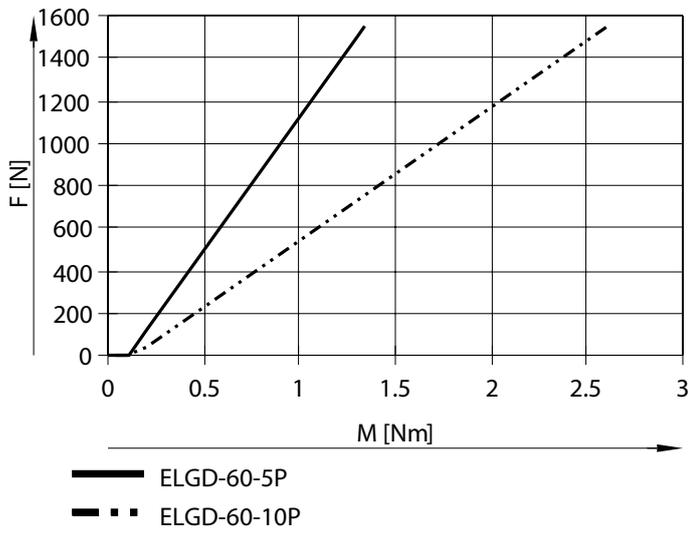
Datasheet

Speed v as a function of rotational speed n

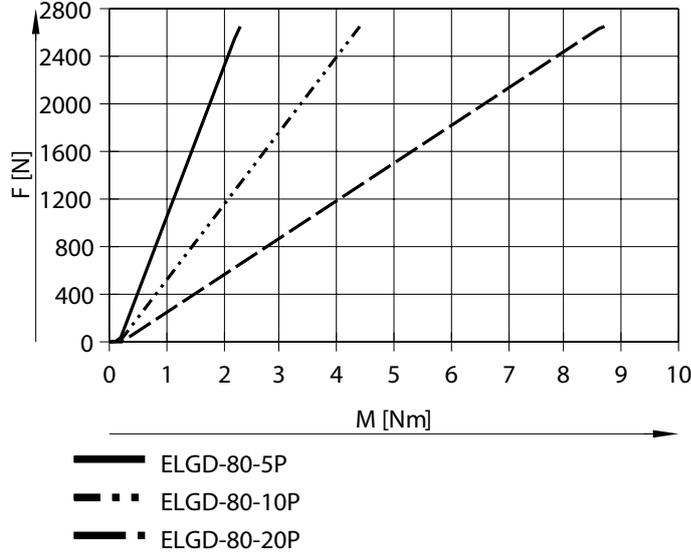


Feed force F as a function of input torque M

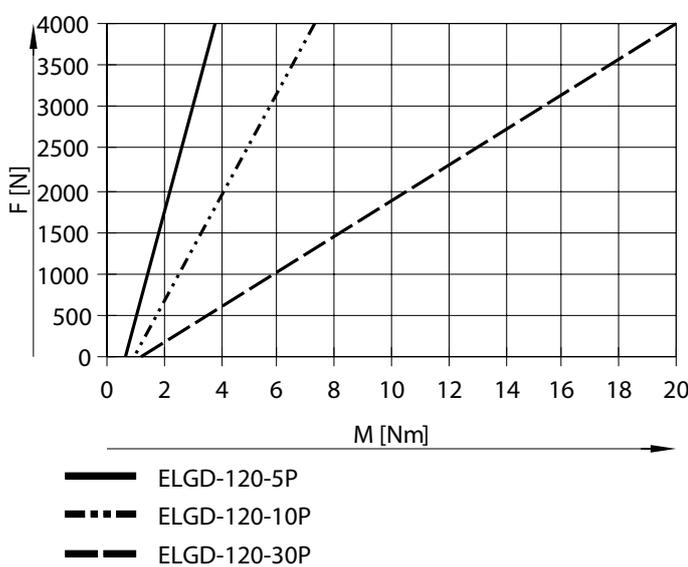
Size: 60



Size: 80

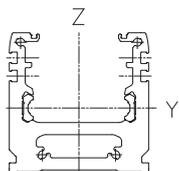


Size: 120



Datasheet

2nd moment of area



Size		60	80	120
I_y	[mm ⁴]	0.509x10 ⁶	1.213x10 ⁶	3.55x10 ⁶
I_z	[mm ⁴]	0.686x10 ⁶	2.052x10 ⁶	8.985x10 ⁶

Recommended deflection limits

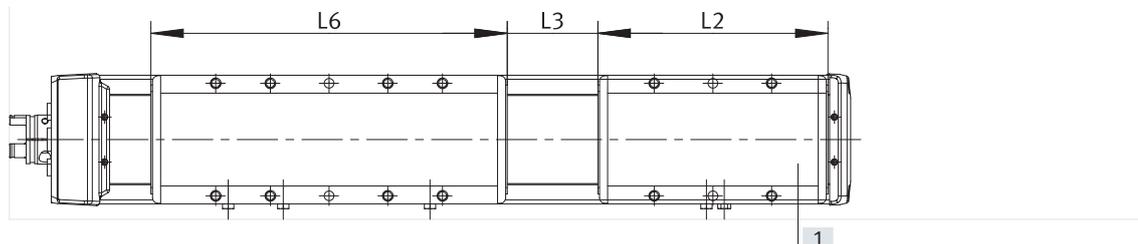
Compliance with the following critical limits for deflection is recommended to ensure the continuing functionality of the axes. Greater deformation can result in increased friction, greater wear and reduced service life.

Size	Dynamic deflection (load moves)	Static deflection (stationary load)
60, 80, 120	0.05% of the length of the axis, max. 0.5 mm	0.1% of the axis length

Working stroke reduction

For axis ELGT 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



L6 = slide length
L2 = additional slide length
L3 = distance between the two slides
[1] additional slide

Example:

Type ELGD-BS-KF-60-500-...-ZR

Working stroke without

Additional slide = 500 mm

L3 = 50 mm

L2 = 118 mm

Working stroke with additional slide = 332 mm

(500 mm – 50 mm – 118 mm)

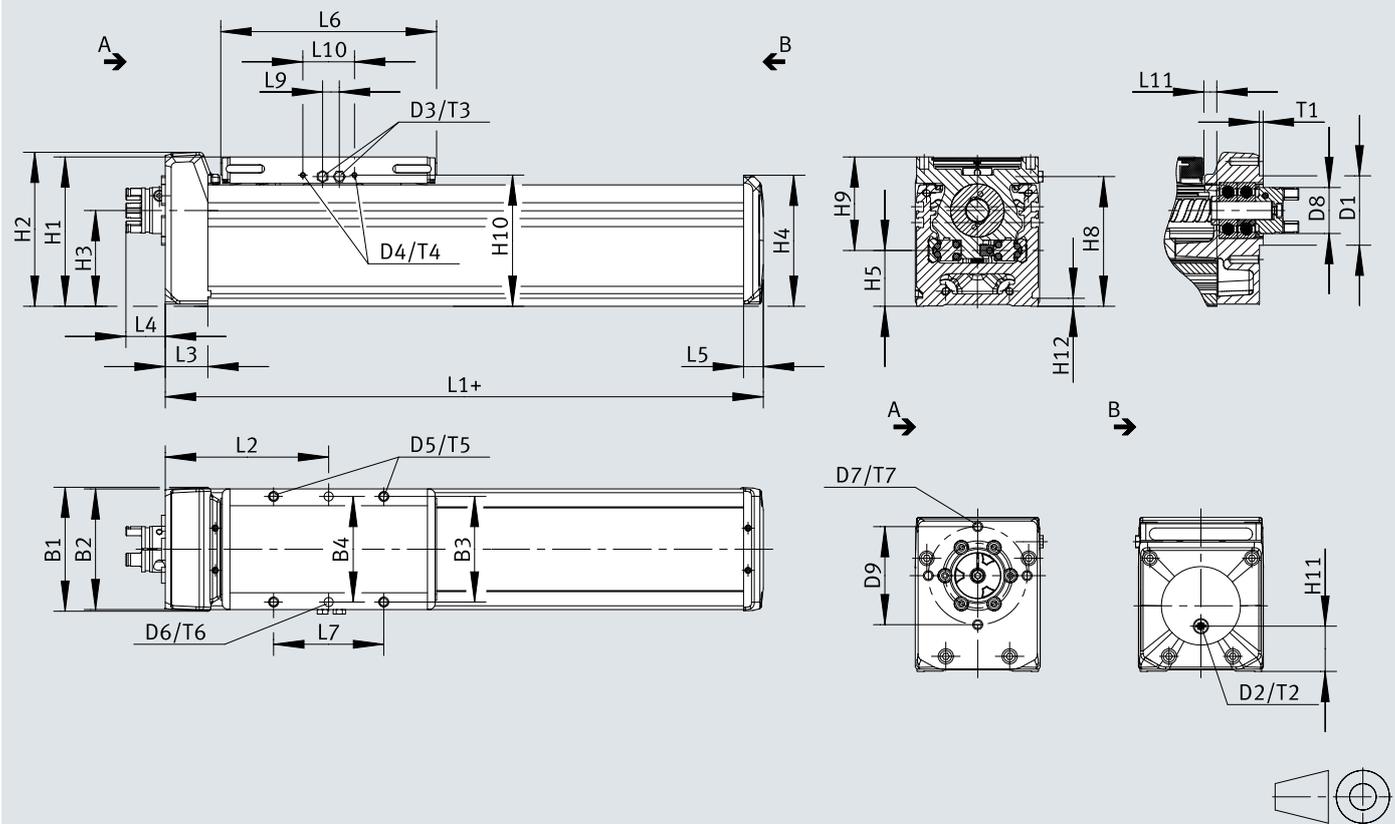
Dimensions – Additional slide

Size		60	80	120
Length L2	[mm]	118	142	162
Min. distance between the slides L3	[mm]	≥ 50	≥ 50	≥ 50

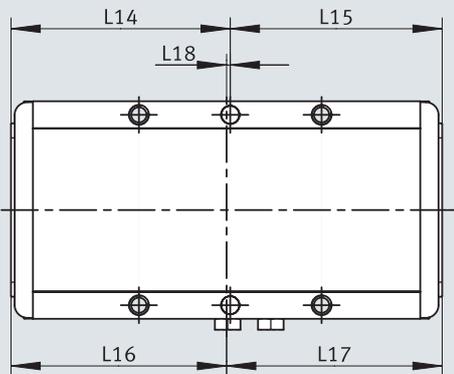
Datasheet

Ordering data – ELGD-BS-60/80...

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ELGD-BS-60



+ = plus stroke length + 2x stroke reserve

Datasheet

	B1	B2	B3	B4 ±0.03	D1 ∅ f7	D2	D3	D4	D5	D6 ∅ H7	D7	D8 ∅
ELGD-BS-60	62	60	52.5	52.5	42	G1/8	M6	M3	M5	5	M4	30.5
ELGD-BS-60-SU												
ELGD-BS-80	82.2	80	70	70	46	G1/8	M6	M3	M6	6	M6	30.5
ELGD-BS-80-SU												

	D9 ∅	H1	H2	H3	H4	H5	H8	H9	H10	H11	H12	L1
ELGD-BS-60	48	82	79	49.4	69.9	22	70	60	71	23.4	5.3	170.5
ELGD-BS-60-SU												178
ELGD-BS-80	65	99	102.2	63.5	86.9	37	86	62	87	30	5.3	193.5
ELGD-BS-80-SU												199

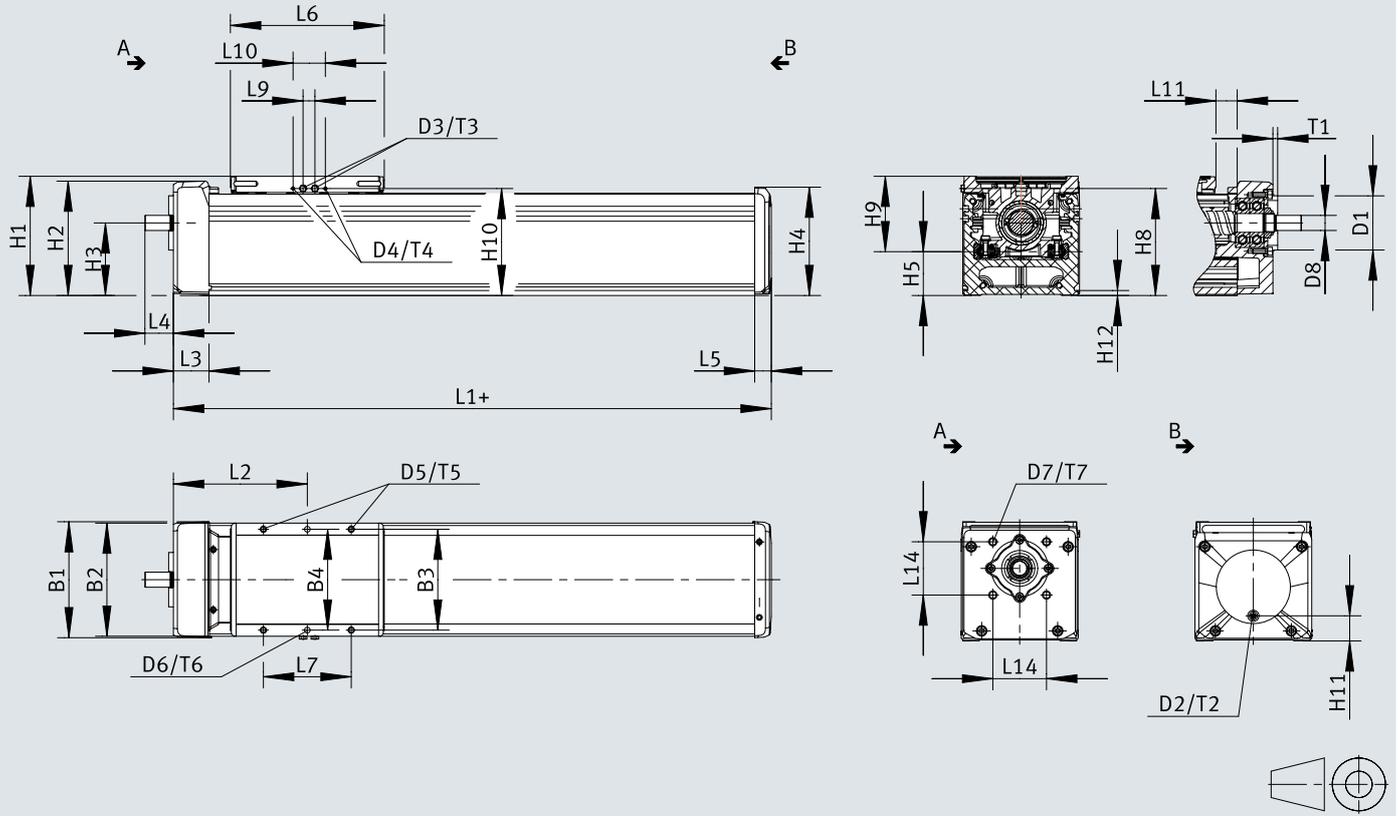
	L2	L3	L4	L5	L6	L7	L9	L10	L11		L14
	min.					±0.1			min.	max.	
ELGD-BS-60	95	26.5	26.9	15.5	118	50	11.8	34	9	9.5	60
ELGD-BS-60-SU	95										
ELGD-BS-80	108	28	25.9	13	142	72.5	11	34	9	9.5	-
ELGD-BS-80-SU	108										

	L15	L16	L17	L18	T1	T2	T3	T4	T5	T6 ±0.05	T7
ELGD-BS-60	58	59	59	1	2.5	6	6	7	16.5	6	8
ELGD-BS-60-SU											
ELGD-BS-80	-	-	-	-	2.5	6	6	7	17.5	8	15
ELGD-BS-80-SU											

Datasheet

Dimensions – ELGD-BS-120...

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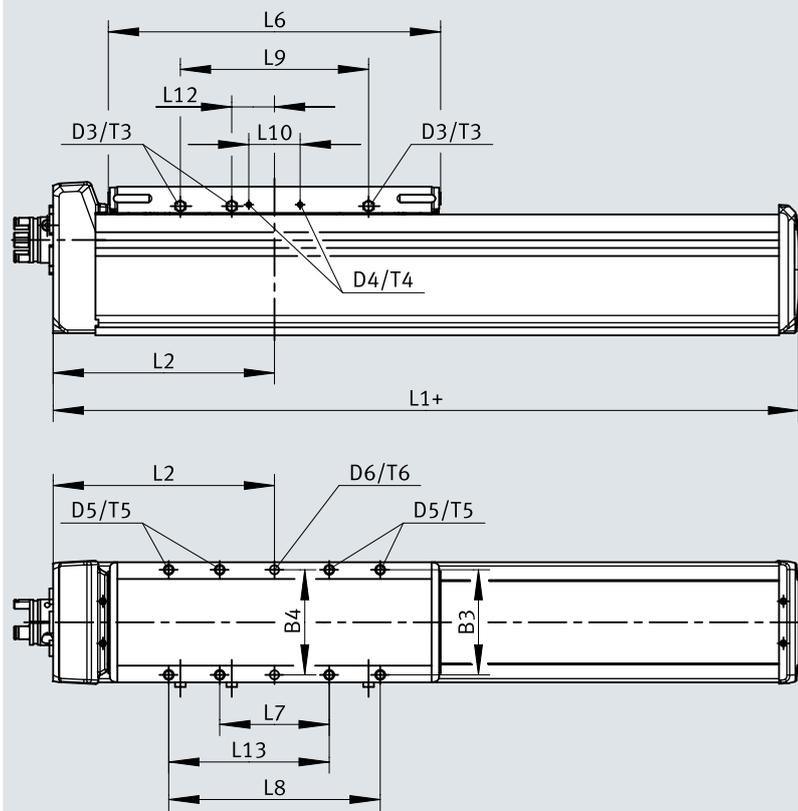
+ = plus stroke length + 2x stroke reserve

	B1	B2	B3	B4	D1	D2	D3	D4	D5	D6	D7	D8	H1	H2
		min.		±0.03	∅ f7					∅ H7		∅ h7		
ELGD-BS-120	123	120	107	107	60	G1/8	M6	M3	M6	6	M8	16	126.5	121.4
ELGD-BS-120-SU														
	H3	H4	H5	H8	H9	H10	H11	H12	L1	L2	L3	L4	L5	L6
										min.				
ELGD-BS-120	77	115	46.5	113.5	80	113.5	26.7	5.3	229.5	129	37.5	30	17.5	162
ELGD-BS-120-SU									253.5	141				
	L7	L9	L10	L11		L14	T1	T2	T3	T4	T5	T6	T7	
	±0.1			min.	max.							±0.1		
ELGD-BS-120	92.5	12.5	34	10.5	22.5	56.5	5	6	6	7	17.5	8	18	
ELGD-BS-120-SU														

Datasheet

Dimensions – ELGD-BS-60/80-...-L (with long slide)

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+ = plus stroke length + 2x stroke reserve

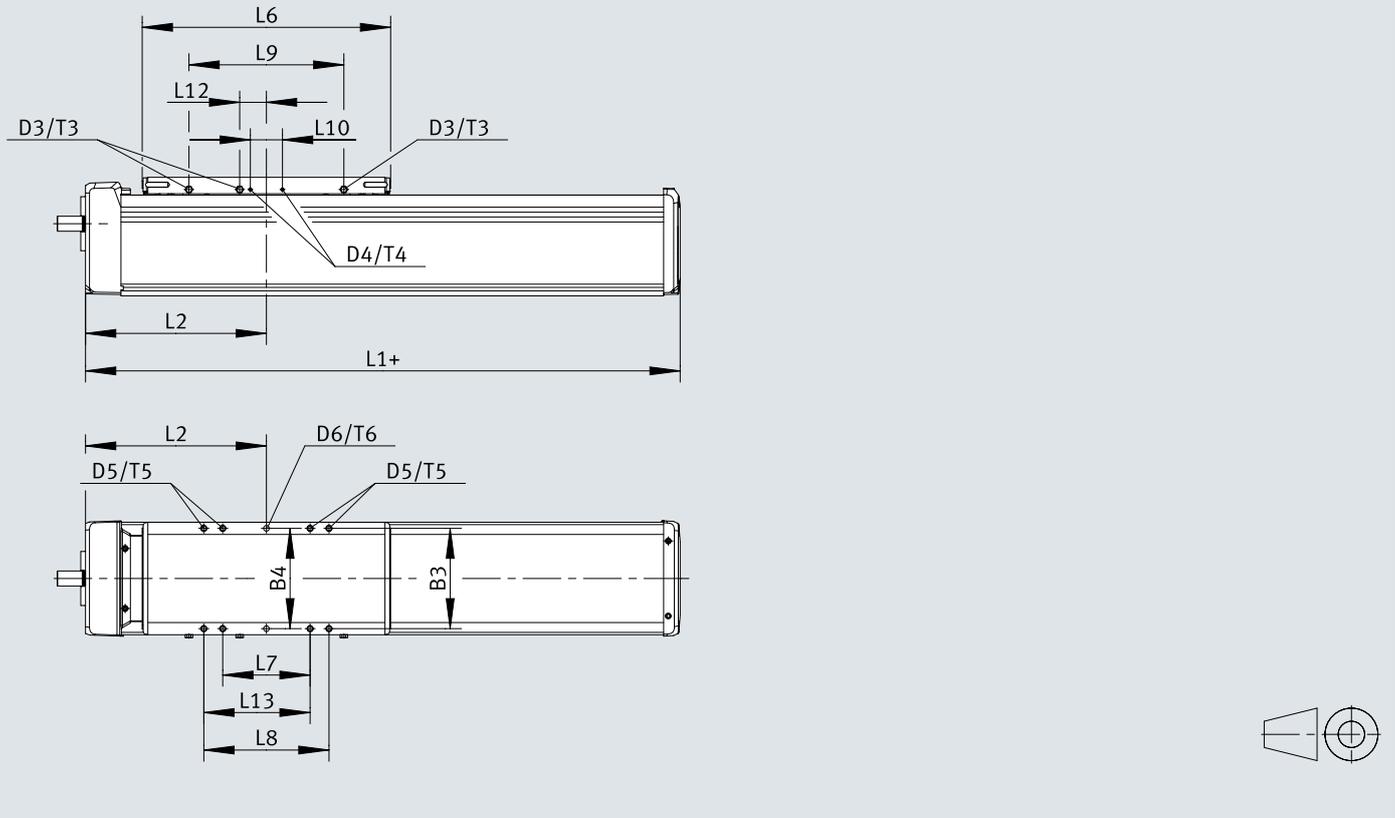
	B3	B4	D3	D4	D5	D6 ∅ H7	L1	L2	L6
		±0.03						min.	
ELGD-BS-60-L	52.5	52.5	M6	M3	M5	5	211.5	116.5	159
ELGD-BS-60-SU-L							226	116.5	
ELGD-BS-80-L	70	70	M6	M3	M6	6	271.5	147.5	220
ELGD-BS-80-SU-L							271.5	147.5	

	L7	L8	L9	L10	L12	L13	T3	T4	T5	T6
	±0.1	±0.1								±0.05
ELGD-BS-60-L	50	95	79	34	5.9	72.5	6	7	16.5	6
ELGD-BS-60-SU-L										
ELGD-BS-80-L	72.5	140	124.6	34	28.3	106.3	6	7	17.5	8
ELGD-BS-80-SU-L										

Datasheet

Dimensions – ELGD-BS-120-...-L (with long slide)

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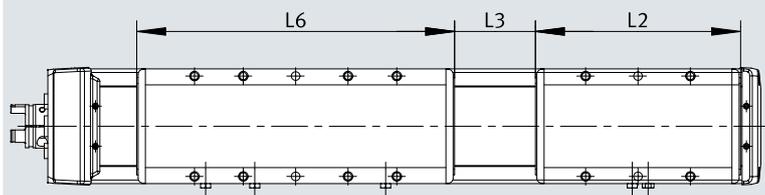
+ = plus stroke length + 2x stroke reserve

	B3	B4	D3	D4	D5	D6 ∅ H7	L1	L2 min.	L6	
ELGD-BS-120-L	107	107	M6	M3	M6	6	330.5	179.5	263	
ELGD-BS-120-SU-L							330.5	179.5		
	L7	L8	L9	L10	L12	L13	T3	T4	T5	T6
	±0.1	±0.1				±0.1				±0.1
ELGD-BS-120-L	92.5	132.5	164	34	28.3	112.5	6	7	17.5	8
ELGD-BS-120-SU-L										

Datasheet

Dimensions – ELGD-BS-...-ZR (with additional slide)

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	L2	L3 (Minimum distance)	L6
ELGD-BS-60	118	50	118
ELGD-BS-80	142	50	142
ELGD-BS-120	162	50	162
ELGD-BS-60-L	118	50	159
ELGD-BS-80-L	142	50	220
ELGD-BS-120L	162	50	263

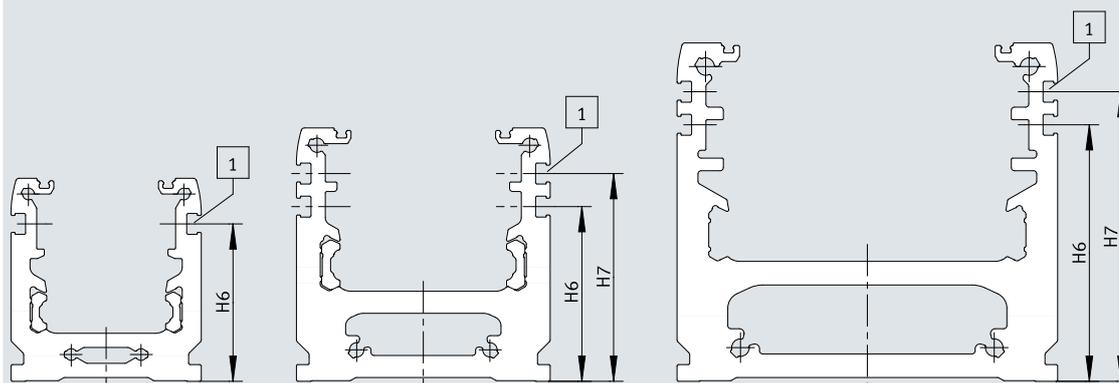
Dimensions – ELGD-BS-...- (profile)

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ELGD-BS-60

ELGD-BS-80

ELGD-BS-120



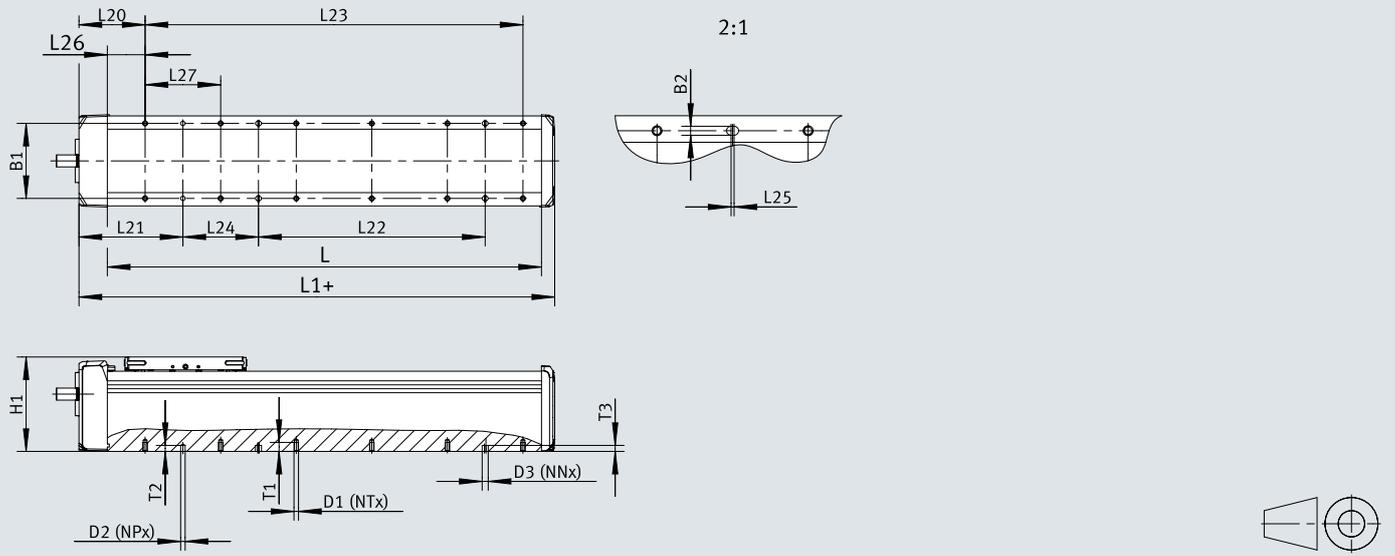
[1] Sensor slot for proximity switch

	H6	H7
ELGD-BS-60	50	–
ELGD-BS-80	55.5	66
ELGD-BS-120	81.5	92

Datasheet

Dimensions – ELGD-BS-...-M (for direct mounting)

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+ = plus stroke length + 2x stroke reserve

$L23 = (NT/2-1) \times 100$

	B1	B2 H7	D1	D2 ∅ H7	H1	L (at zero stroke)	L20	L21
ELGD-BS-60-...-M	43	6	M5	6	81.4	128.5	76.5	126.5
ELGD-BS-60-...-SU-M						136		
ELGD-BS-60-...-L-M						169.5		
ELGD-BS-60-...-L-SU-M						184		
ELGD-BS-80-...-M	61	6	M6	6	98.4	152.5	78	128
ELGD-BS-80-...-SU-M						158		
ELGD-BS-80-...-L-M						230.5		
ELGD-BS-120-...-M	100	6	M6	6	125.9	174.5	87.5	137.5
ELGD-BS-120-...-SU-M						198.5		
ELGD-BS-120-...-L-M						275.5		

	L25	L26	L27	T1	T2	T3
ELGD-BS-60-...-M	2	50	100	10.5	8	8
ELGD-BS-60-...-SU-M						
ELGD-BS-60-...-L-M						
ELGD-BS-60-...-L-SU-M				12.5		
ELGD-BS-80-...-M						
ELGD-BS-80-...-SU-M						
ELGD-BS-80-...-L-M				12.5		
ELGD-BS-120-...-M						
ELGD-BS-120-...-SU-M						
ELGD-BS-120-...-L-M						

Datasheet

L	D1 ¹⁾		D2 ²⁾	D3 ³⁾		L24
	NT	L23	NP	NN	L22	
<270	4	100	2	–	–	100
≥270	6	200		2	–	
≥370	8	300		4	100	
≥470	10	400			200	
≥570	12	500			300	
≥670	14	600			400	
≥770	16	700			500	
≥870	18	800			600	
≥970	20	900			700	
≥1070	22	1000			800	
≥1170	24	1100			900	
≥1270	26	1200			1000	
≥1370	28	1300			1100	
≥1470	30	1400			1200	
≥1570	32	1500			1300	
≤1650						

1) Threaded hole

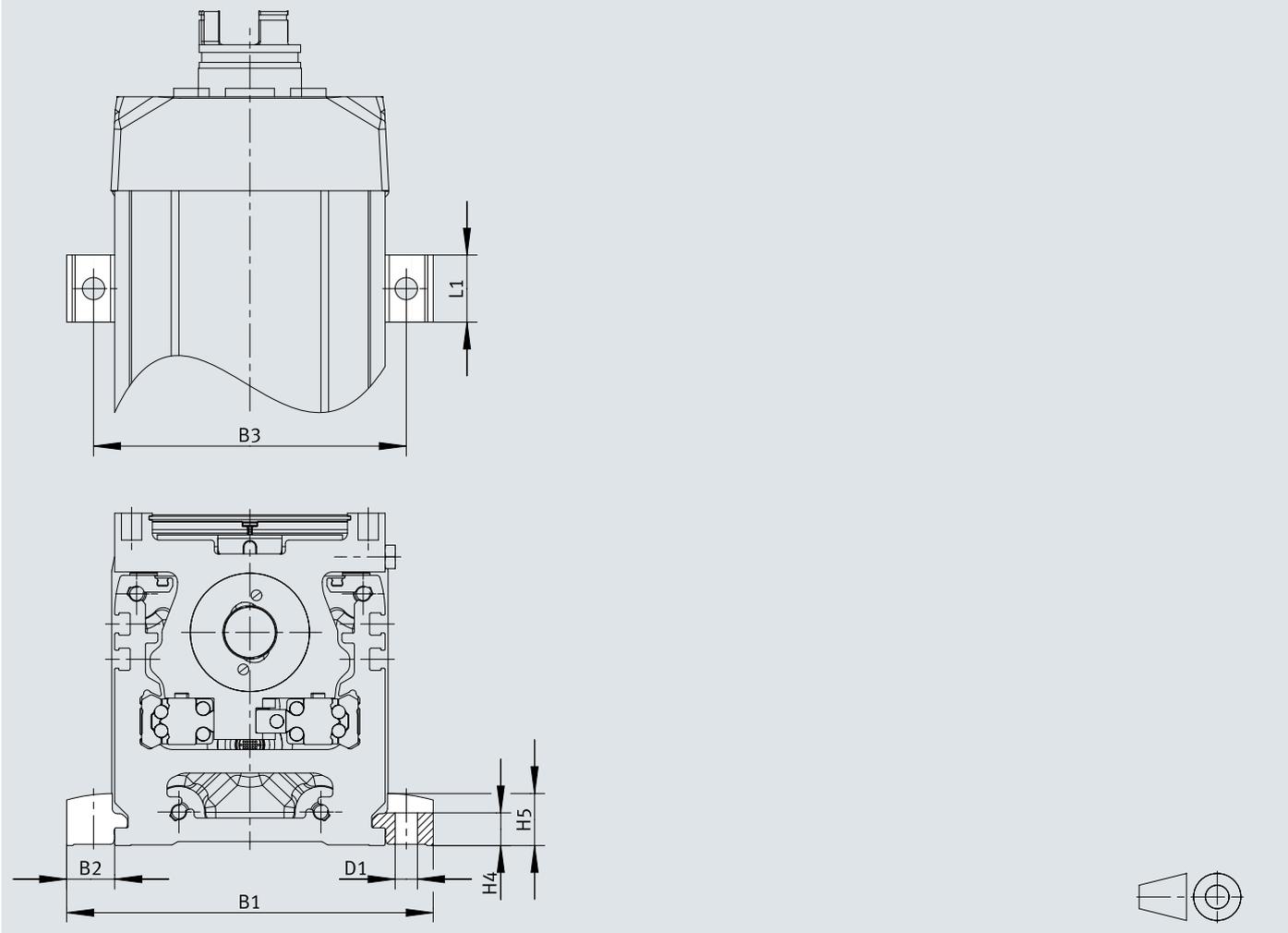
2) Pin hole

3) Slotted hole

Datasheet

Dimensions – Profile mounting EAHF-E24-60-P-S

Download CAD data → www.festo.com

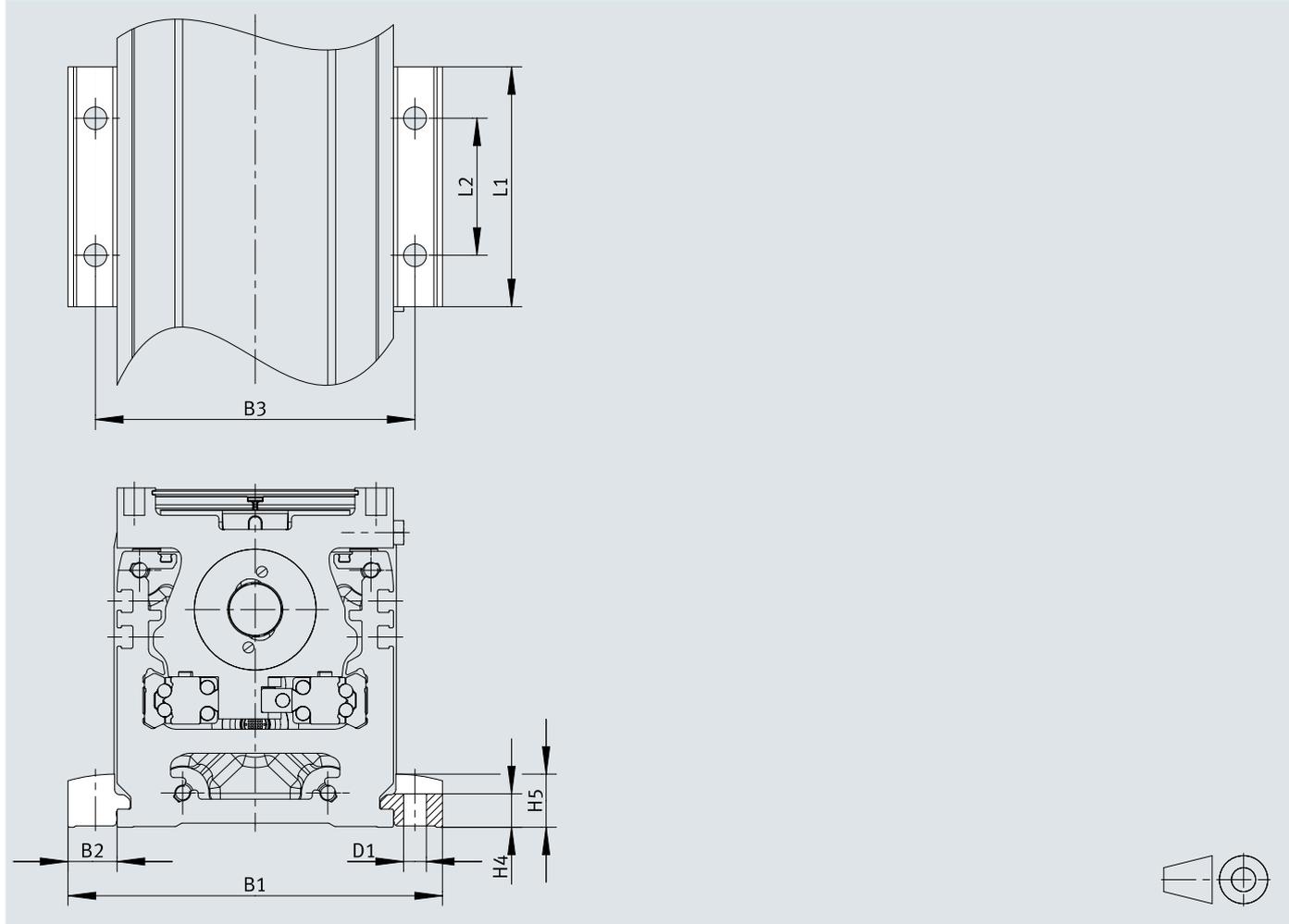


		B1	B2	B3	D1 ∅ H13	H4 ±0.1	H5	L1
EAHF-E24-60-P-S	ELGD-BS-60	88.4	14.2	72.5	6.6	10.3	16.5	20
	ELGD-BS-80	108.4	14.2	92.5	6.6	10.3	16.5	20
	ELGD-BS-120	148.4	14.2	132.5	6.6	10.3	16.5	20

Datasheet

Dimensions – Profile mounting EAHF-E24-60-P
(standard mounting)

Download CAD data → www.festo.com

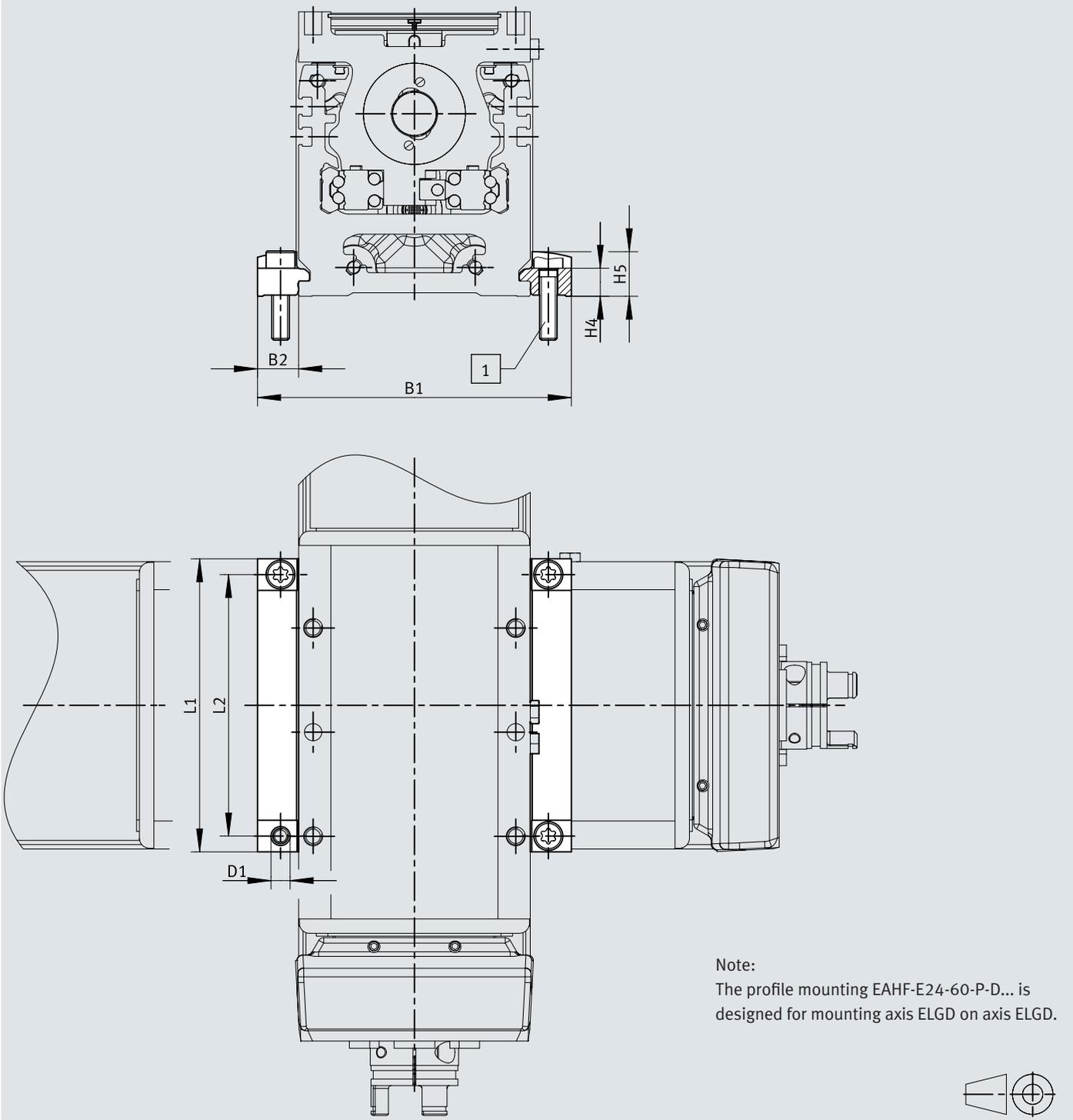


		B1	B2	B3	D1 ∅ H13	H4 ±0.1	H5	L1	L2
EAHF-E24-60-P	ELGD-BS-60	88.4	14.2	72.5	6.6	10.3	16.5	70	40
	ELGD-BS-80	108.4	14.2	92.5	6.6	10.3	16.5	70	40
	ELGD-BS-120	148.4	14.2	132.5	6.6	10.3	16.5	70	40

Datasheet

Dimensions – Profile mounting EAHF-E24-60-P-D

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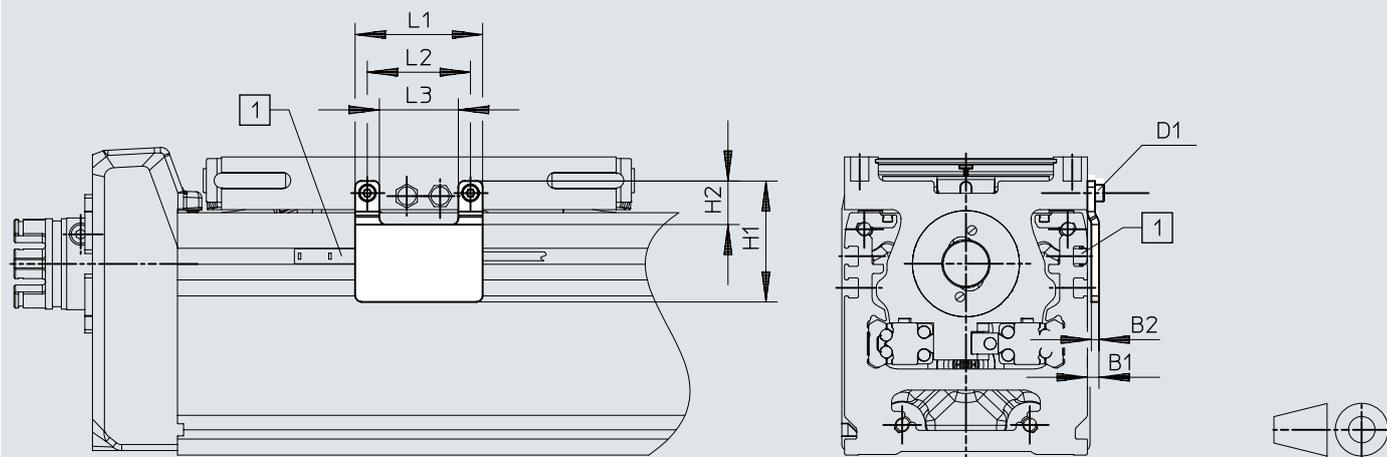
[1] Screws are included in the scope of delivery

		B1	B2	D1 ∅ H13	H4 ±0.1	H5	L1	L2
EAHF-E24-60-P-D5	ELGD-BS-60	88.4	14.2	5.5	10.3	16.5	62	52.5
EAHF-E24-60-P-D4	ELGD-BS-80	108.4	14.2	6.6	10.3	16.5	81	70
EAHF-E24-60-P-D7	ELGD-BS-120	148.4	14.2	6.6	10.3	16.5	120	107

Datasheet

Dimensions – Switch lug EAPM-E24-60-SLS

Download CAD data → www.festo.com



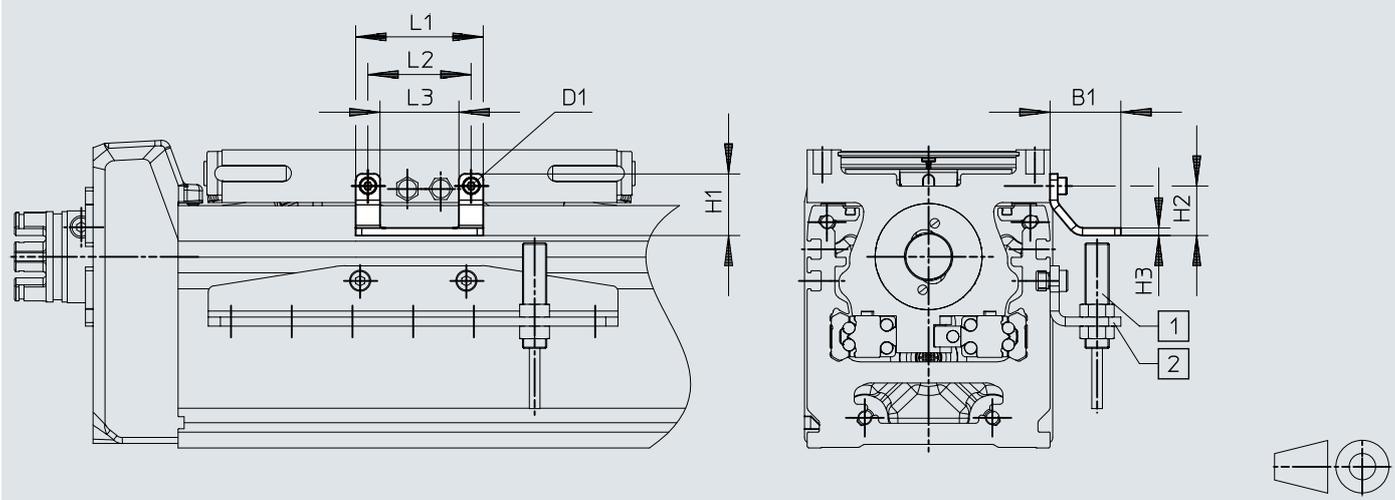
[1] Sensor slot for proximity switch SIES-8M

		B1	B2	D1	H1	H2	L1	L2	L3
EAPM-E24-60-SLS	ELGD-BS-60	3.8	2.5	M3x8	40.2	14.5	42	34	26
	ELGD-BS-80								
	ELGD-BS-120								

Datasheet

Dimensions – Switch lug EAPM-E24-...-SLE

Download CAD data → www.festo.com



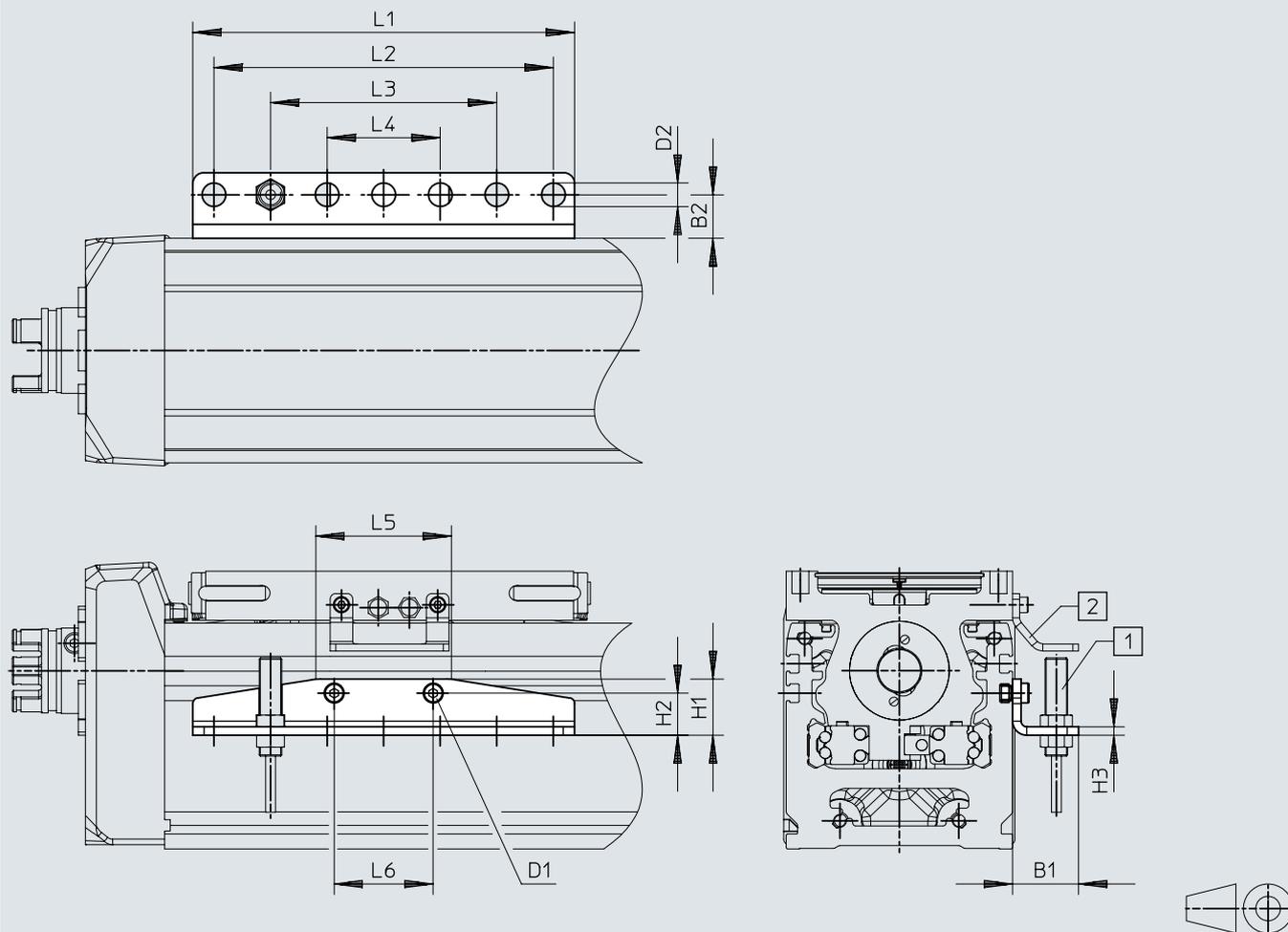
- [1] Proximity switch SIEN-M8
- [2] Sensor bracket EAPM-E24-60-SHE

		B1	D1	H1	H2	H3	L1	L2	L3
EAPM-E24-60-SLE	ELGD-BS-60	23.4	M3	20.5	16.5	2.5	42	34	26
	ELGD-BS-80								
	ELGD-BS-120								

Datasheet

Dimensions – Sensor bracket EAPM-E24-60-SHE

Download CAD data → www.festo.com



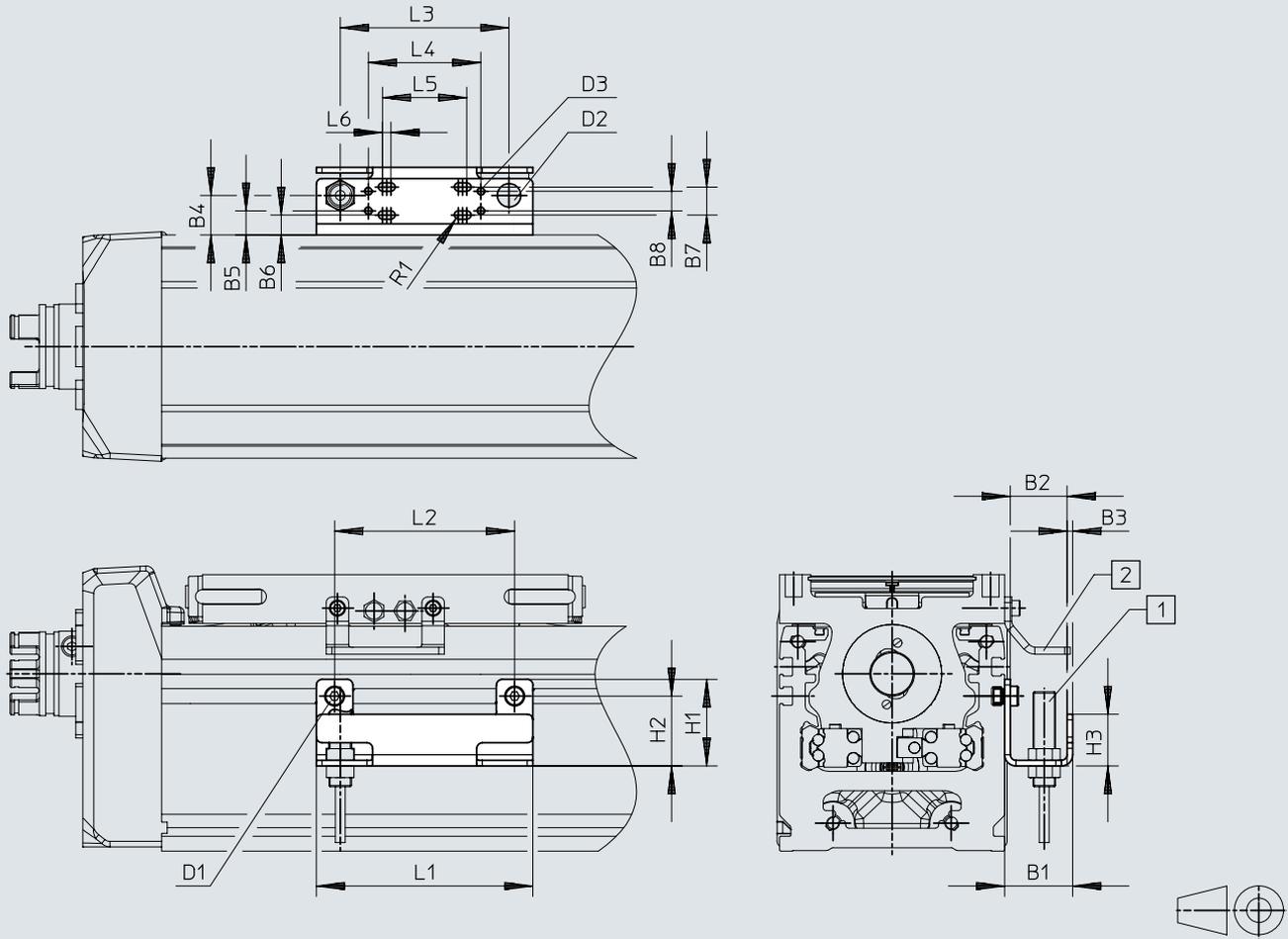
- [1] Proximity switch SIEN-8M
- [2] Switch lug EAPM-E24-60-SLE

		B1	B2	D1	D2	H1	H2	H3
		±0.3			∅ H13	±0.3		
EAPM-E24-60-SHE	ELGD-BS-60	23.4	15.5	M4x6	8.4	20	15	3
	ELGD-BS-80							
	ELGD-BS-120							
		L1	L2	L3	L4	L5	L6	
		±0.2						
EAPM-E24-60-SHE	ELGD-BS-60	135	120	80	40	48	35	
	ELGD-BS-80							
	ELGD-BS-120							

Datasheet

Dimensions – Sensor bracket EAPM-E24-60-SHO

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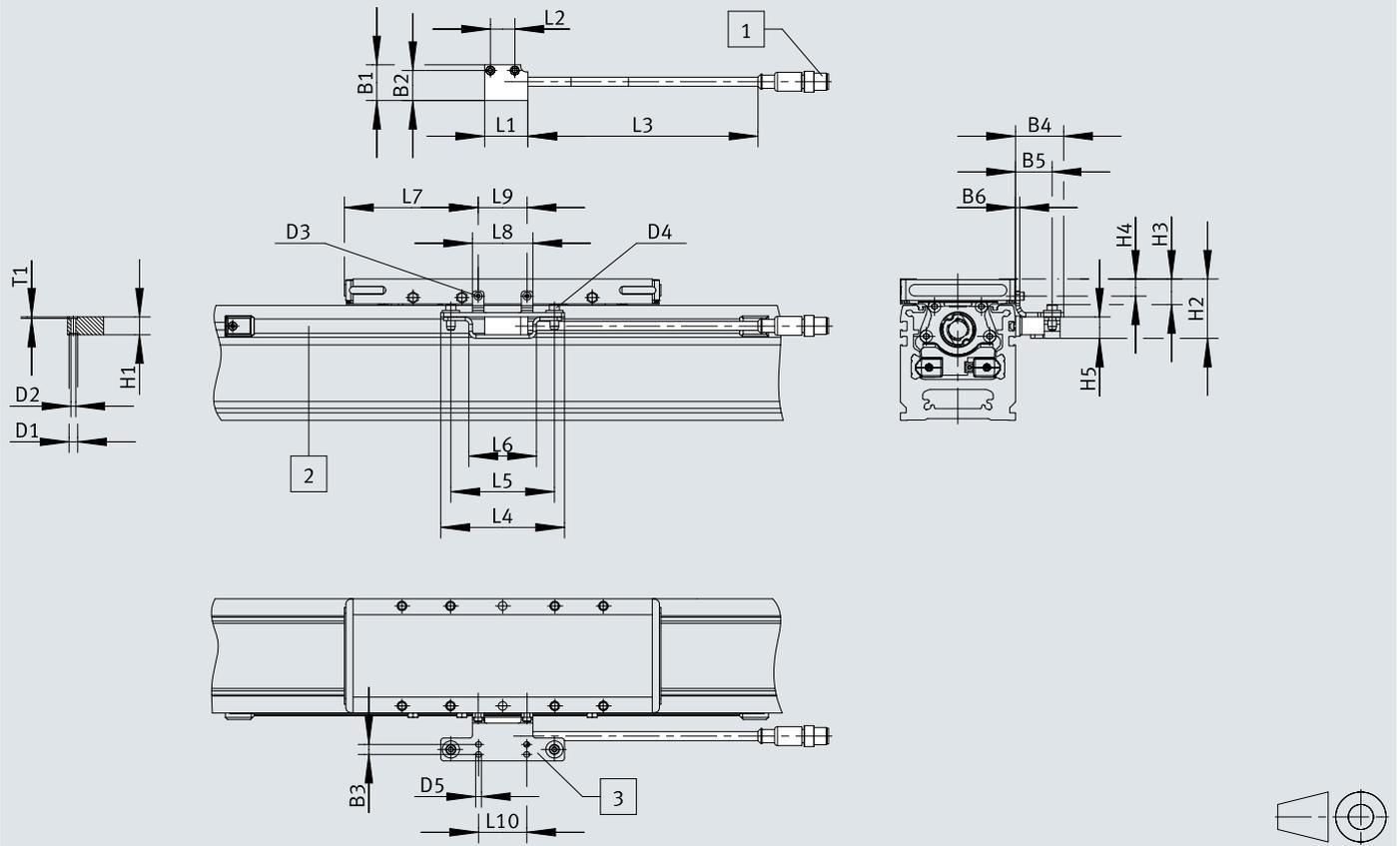
- [1] Inductive sensor (Omron)
- [2] Switch lug EAPM-E24-60-SLE

		B1	B2	B3	B4	B5	B6	B7
EAPM-E24-60-SHO	ELGD-BS-60							
	ELGD-BS-80	24.2	20.2	2	14.1	8.6	7.1	10
	ELGD-BS-120							
		B8	D1	D2 ∅	D3	H1	H2	H3
EAPM-E24-60-SHO	ELGD-BS-60							
	ELGD-BS-80	7	M3	8.4	M3	31	25	18.5
	ELGD-BS-120							
		L1	L2	L3	L4	L5	L6	R1
EAPM-E24-60-SHO	ELGD-TB-60							
	ELGD-TB-80	77	64	60	40	24	3	1.5
	ELGD-BS-120							

Datasheet

Dimensions – ELGD-...-M3 with incremental displacement encoder

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- [1] Plug M12 (8-pin)
- [2] Displacement encoder
- [3] Switch lug

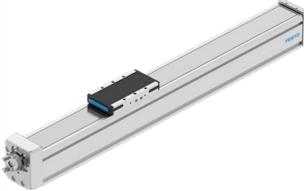
	B1	B2	B3	B4	B5	B6	D1 ø
ELGD-BS-60	25	21	7	33.5	25.5	3	6
ELGD-BS-80							
ELGD-BS-120							

	D2 ø	D3	D4	D5 ø	H1 ±0.1	H2	H3
ELGD-BS-60	3.4	M2x10	M4x14	4	12.5	40.6	17
ELGD-BS-100						41.6	18
ELGD-BS-120						42.6	19

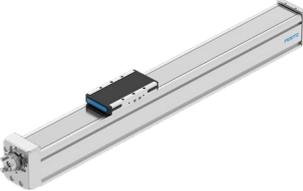
	H4	H5	L1	L2	L3	L4	L5
ELGD-BS-60	11	15	30	17	160	86	72
ELGD-BS-100	12						
ELGD-BS-120	13						

	L6	L7 ELGD-... ELGD-...L	L8	L9	L10	T1
ELGD-BS-60	47	42	62.5	42	34	33.5
ELGD-BS-100		54	93			
ELGD-BS-120		64	114.5			

Datasheet

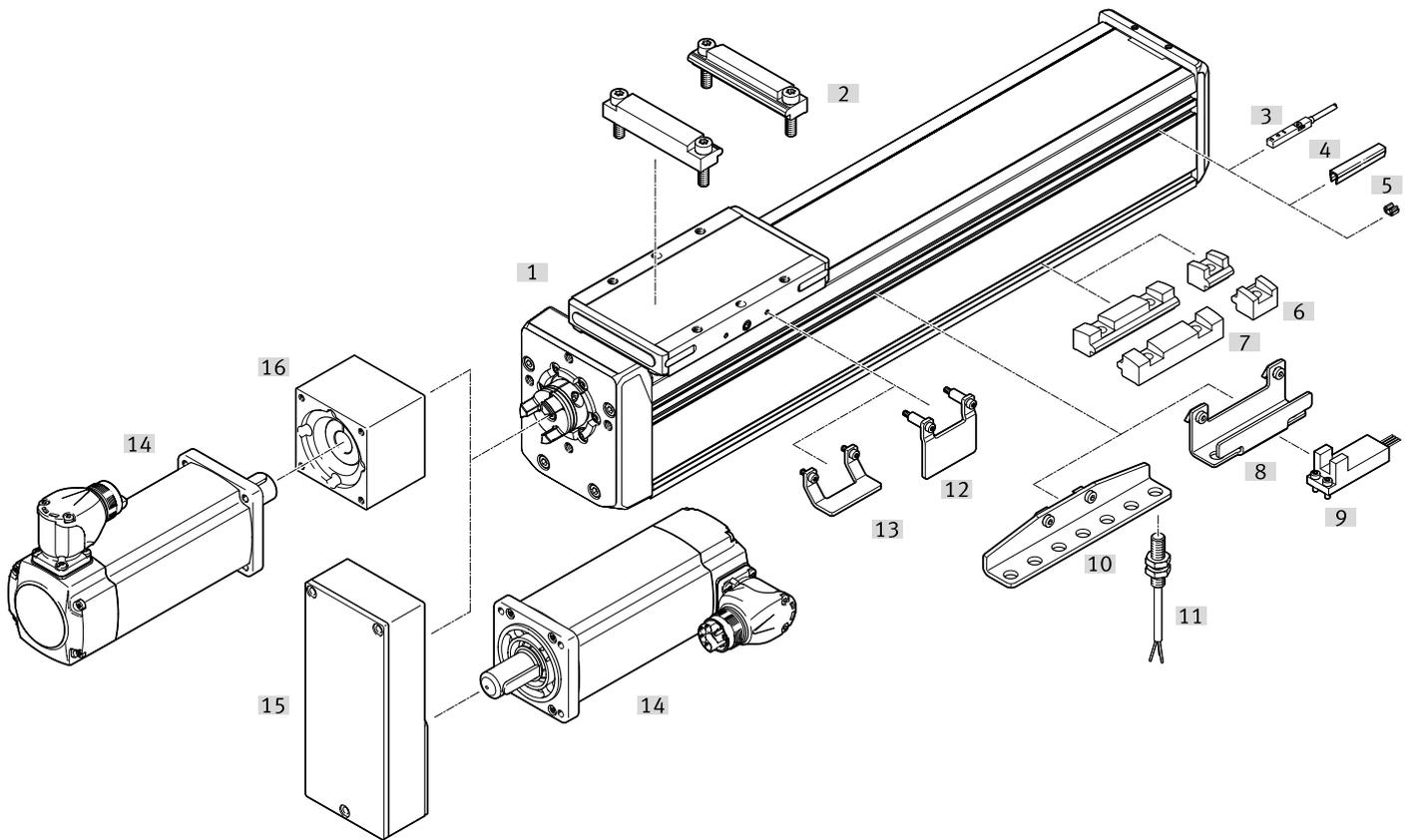
Ordering data	Size	Screw pitch [mm]	Stroke [mm]	Part no.	Type
	60	5	100	8192253	ELGD-BS-KF-60-100-0H-5P
			200	8192254	ELGD-BS-KF-60-200-0H-5P
			300	8192255	ELGD-BS-KF-60-300-0H-5P
			400	8192256	ELGD-BS-KF-60-400-0H-5P
			500	8192257	ELGD-BS-KF-60-500-0H-5P
			600	8192258	ELGD-BS-KF-60-600-0H-5P
			800	8192259	ELGD-BS-KF-60-800-0H-5P
		10	100	8192260	ELGD-BS-KF-60-100-0H-10P
			200	8192261	ELGD-BS-KF-60-200-0H-10P
			300	8192262	ELGD-BS-KF-60-300-0H-10P
			400	8192263	ELGD-BS-KF-60-400-0H-10P
			500	8192264	ELGD-BS-KF-60-500-0H-10P
			600	8192265	ELGD-BS-KF-60-600-0H-10P
			800	8192266	ELGD-BS-KF-60-800-0H-10P
	80	5	100	8192267	ELGD-BS-KF-80-100-0H-5P
			200	8192268	ELGD-BS-KF-80-200-0H-5P
			300	8192269	ELGD-BS-KF-80-300-0H-5P
			400	8192270	ELGD-BS-KF-80-400-0H-5P
			500	8192271	ELGD-BS-KF-80-500-0H-5P
			600	8192272	ELGD-BS-KF-80-600-0H-5P
			800	8192273	ELGD-BS-KF-80-800-0H-5P
			1000	8192274	ELGD-BS-KF-80-1000-0H-5P
		10	100	8192275	ELGD-BS-KF-80-100-0H-10P
			200	8192276	ELGD-BS-KF-80-200-0H-10P
			300	8192277	ELGD-BS-KF-80-300-0H-10P
			400	8192278	ELGD-BS-KF-80-400-0H-10P
			500	8192279	ELGD-BS-KF-80-500-0H-10P
			600	8192280	ELGD-BS-KF-80-600-0H-10P
800			8192281	ELGD-BS-KF-80-800-0H-10P	
1000			8192282	ELGD-BS-KF-80-1000-0H-10P	
20		100	8192283	ELGD-BS-KF-80-100-0H-20P	
		200	8192284	ELGD-BS-KF-80-200-0H-20P	
		300	8192285	ELGD-BS-KF-80-300-0H-20P	
		400	8192286	ELGD-BS-KF-80-400-0H-20P	
	500	8192287	ELGD-BS-KF-80-500-0H-20P		
	600	8192288	ELGD-BS-KF-80-600-0H-20P		
	800	8192289	ELGD-BS-KF-80-800-0H-20P		
	1000	8192290	ELGD-BS-KF-80-1000-0H-20P		

Datasheet

Ordering data	Size	Screw pitch [mm]	Stroke [mm]	Part no.	Type
	120	5	200	8192291	ELGD-BS-KF-120-200-0H-5P
			300	8192292	ELGD-BS-KF-120-300-0H-5P
			400	8192293	ELGD-BS-KF-120-400-0H-5P
			500	8192294	ELGD-BS-KF-120-500-0H-5P
			600	8192295	ELGD-BS-KF-120-600-0H-5P
			800	8192296	ELGD-BS-KF-120-800-0H-5P
			1000	8192297	ELGD-BS-KF-120-1000-0H-5P
	10	10	200	8192298	ELGD-BS-KF-120-200-0H-10P
			300	8192299	ELGD-BS-KF-120-300-0H-10P
			400	8192300	ELGD-BS-KF-120-400-0H-10P
			500	8192301	ELGD-BS-KF-120-500-0H-10P
			600	8192302	ELGD-BS-KF-120-600-0H-10P
			800	8192303	ELGD-BS-KF-120-800-0H-10P
	30	30	200	8192305	ELGD-BS-KF-120-200-0H-30P
			300	8192306	ELGD-BS-KF-120-300-0H-30P
			400	8192307	ELGD-BS-KF-120-400-0H-30P
			500	8192308	ELGD-BS-KF-120-500-0H-30P
			600	8192309	ELGD-BS-KF-120-600-0H-30P
			800	8192310	ELGD-BS-KF-120-800-0H-30P
			1000	8192311	ELGD-BS-KF-120-1000-0H-30P

Ordering data – Modular product system	Size	Stroke [mm]	Part no.	Type	More information → elgd-bs
	60	50 ... 1000	8176874	ELGD-BS-KF-60-...	
	80	50 ... 2000	8176875	ELGD-BS-KF-80-...	
	120	50 ... 2500	8176876	ELGD-BS-KF-120-...	

Peripherals overview

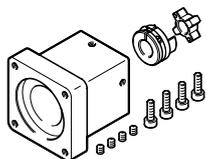


Peripherals overview

Accessories		
Type	Description	→ Page/Internet
[1] Ball screw axis ELGD-BS	Electric drive	elgd-bs
[2] Profile mounting EAHF-E24-...-D...	For axis/axis mounting with adapter plate	40
[3] Proximity switch, T-slot SIES-8M	Inductive proximity switch, for T-slot	41
[4] Slot cover ABP-S	For protection against contamination	42
[5] Clip SMBK	For mounting the proximity switch cable in the slot	42
[6] Profile mounting EAHF-E24-...-S	For mounting the axis on the side of the profile	40
[7] Profile mounting EAHF-E24-...	For mounting the axis on the side of the profile (standard mounting)	40
[8] Sensor bracket EAPM-E24-SHO	For mounting third-party sensors on the axis	41
[9] Sensor OMRON	Third-party sensor OMRON, EE-SX674 series	–
[10] Sensor bracket EAPM-E24-SHE	For mounting the inductive proximity switches SIEN-M8 (round design) on the axis	41
[11] Proximity switch, M8 SIEN-M8	Inductive proximity switch, round design	41
[12] Switch lug EAPM-E24-SLS	For sensing the slide position using inductive proximity switch SIES-8M or for optical sensors (Omron) with sensor bracket EAPM-E24-SHO	40
[13] Switch lug EAPM-E24-SLE	For sensing the slide position using inductive proximity switch SIEN-M8 (round design) and sensor bracket EAPM-E24-SHE	41
[14] Motor EMMT	Motors and kits specially matched with the axis Detailed information: www.festo.com/catalogue/eamm Engineering tool: www.festo.com/x/electric-motion-sizing	emmt
[15] Parallel kit EAMM	For parallel motor mounting	eamm-u
[16] Axial kit EAMM	For axial motor mounting	eamm-a

Accessories

Permitted axis/motor combinations for axial and parallel kits

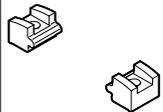


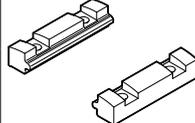
Follow these links to find all the information you need on:

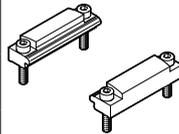
- Axis/motor combinations
- Permitted third-party motors
- Technical data
- Dimensions

Axial kits → Internet: eamm-a

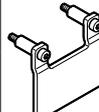
Parallel kits → Internet: eamm-u

Profile mounting EAHF-E24-...-P-S						
	Description	Suitable for the production of Li-ion batteries	Material	Product weight	Part no.	Type
	For sizes 60, 80, 120	F1a	Anodised wrought aluminium alloy	18 g	8197128	EAHF-E24-60-P-S

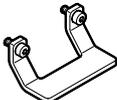
Profile mounting EAHF-E24-...-P (standard mounting)						
	Description	Suitable for the production of Li-ion batteries	Material	Product weight	Part no.	Type
	For sizes 60, 80, 120	F1a	Anodised wrought aluminium alloy	71 g	8197132	EAHF-E24-60-P

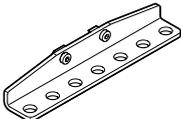
Profile mounting EAHF-E24-...-P-D...						
	Description	Suitable for the production of Li-ion batteries	Material	Product weight	Part no.	Type
	ELGD-60 to ELGD-60-L ¹⁾	F1a	Anodised wrought aluminium alloy	87 g	8197131	EAHF-E24-60-P-D5
	ELGD-60 to ELGD-80			119 g	8197129	EAHF-E24-60-P-D4
	ELGD-60 on ELGD-100-L ¹⁾			133 g	8197130	EAHF-E24-60-P-D6
	ELGD-80 to ELGD-100-L			133 g	8197130	EAHF-E24-60-P-D6
	ELGD-80 on ELGD-120-L			165 g	8229954	EAHF-E24-60-P-D7
	ELGD-100-L on ELGD-120-L			165 g	8229954	EAHF-E24-60-P-D7

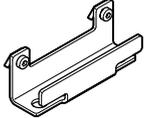
1) With these combinations, the axis is mounted off-centre on the slide (see dimension L13 on the dimensional drawing with long slide).

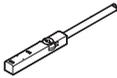
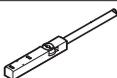
Switch lug EAPM-E24-...-SLS						
	Description	Suitable for the production of Li-ion batteries	Material	Product weight	Part no.	Type
	For sizes 60, 80, 120	F1a	Steel	32 g	8197117	EAPM-E24-60-SLS

Accessories

Switch lug EAPM-E24-...-SLE						
	Description	Suitable for the production of Li-ion batteries	Material	Product weight	Part no.	Type
	For sizes 60, 80, 120	F1a	Steel	20 g	8197116	EAPM-E24-60-SLE

Sensor bracket EAPM-E24-...-SHE						
	Description	Suitable for the production of Li-ion batteries	Material	Product weight	Part no.	Type
	For sizes 60, 80, 120	F1a	Steel	103 g	8197123	EAPM-E24-60-SHE

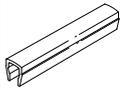
Sensor bracket EAPM-E24-...-SHO						
	Description	Suitable for the production of Li-ion batteries	Material	Product weight	Part no.	Type
	For sizes 60, 80, 120	F1a	Steel	67 g	8197121	EAPM-E24-60-SHO

Proximity switch for T-slot, inductive						Datasheets → Internet: sies
	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	PNP	Cable, 3-core	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
		NPN	Cable, 3-core	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	PNP	Cable, 3-core	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
		NPN	Cable, 3-core	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

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

Accessories

Slot cover ABP-5-S1

	Description	Material	Pack size	Product weight	Part no.	Type
	For sizes 60, 80, 120	ABS	2 each 0.5m	13 g	563360	ABP-5-S1

Clip SMBK

	Description	Pack size	Product weight	Part no.	Type
	For sizes 60, 80, 120	10	1g	534254	SMBK-8

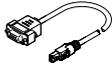
Ordering data – Encoder cables for displacement encoder system, ELGD-...-M3

Datasheets → Internet: nebm

	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
	Displacement encoder ELGD-...-M3	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 CMMP-AS as adapter between encoder cable NEBM-M12G8-...-V3 and interface X3 (position encoder 2)	8106112	NEFM-S1G9-K-0.5-R3G8