

Linear drives ELGL-LAS, with air bearing and linear motor



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Key features

At a glance

The electric linear drive ELGL is a handling axis with air-bearing guide and integrated linear motor. The drive elements and the air bearing form a single unit. The slide moves on the stator rail. An integrated displacement encoder sends signals to the controller.

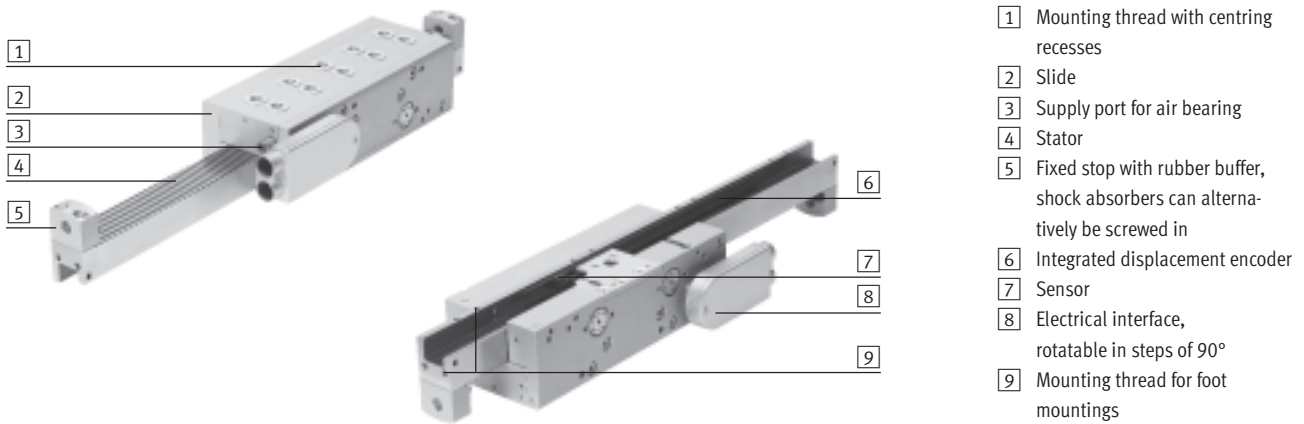
The displacement encoder, controller and motor operate in a closed-loop control circuit.

This enables the motor to regulate to specified set values for speed and position within the permitted stroke range with a high degree of accuracy.

Advantages

- Highly accurate positioning and very good linearity thanks to the air bearing
- Integrated locking brake function through magnetic pretensioning of the air bearing
- Multiple carriages possible on one axis
- Opposing and synchronous movements possible
- No friction on the guide parts
- Maintenance and wear-free
- Insensitive to dirt thanks to air bearing

The technology in detail



Complete system consisting of linear drive and motor controller

Linear axis ELGL



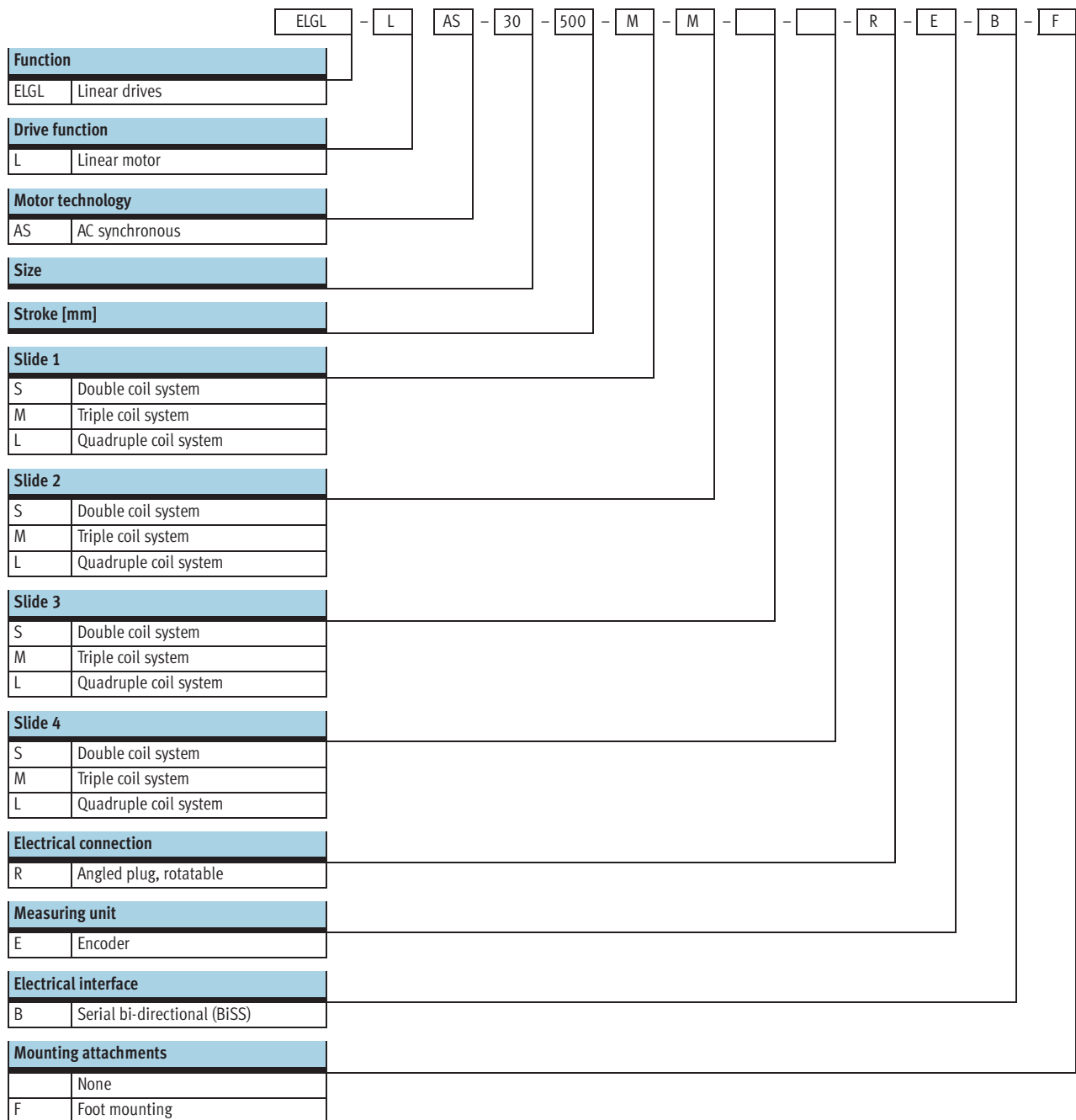
Servo motor controller CMMP-AS

→ Internet: motor controller



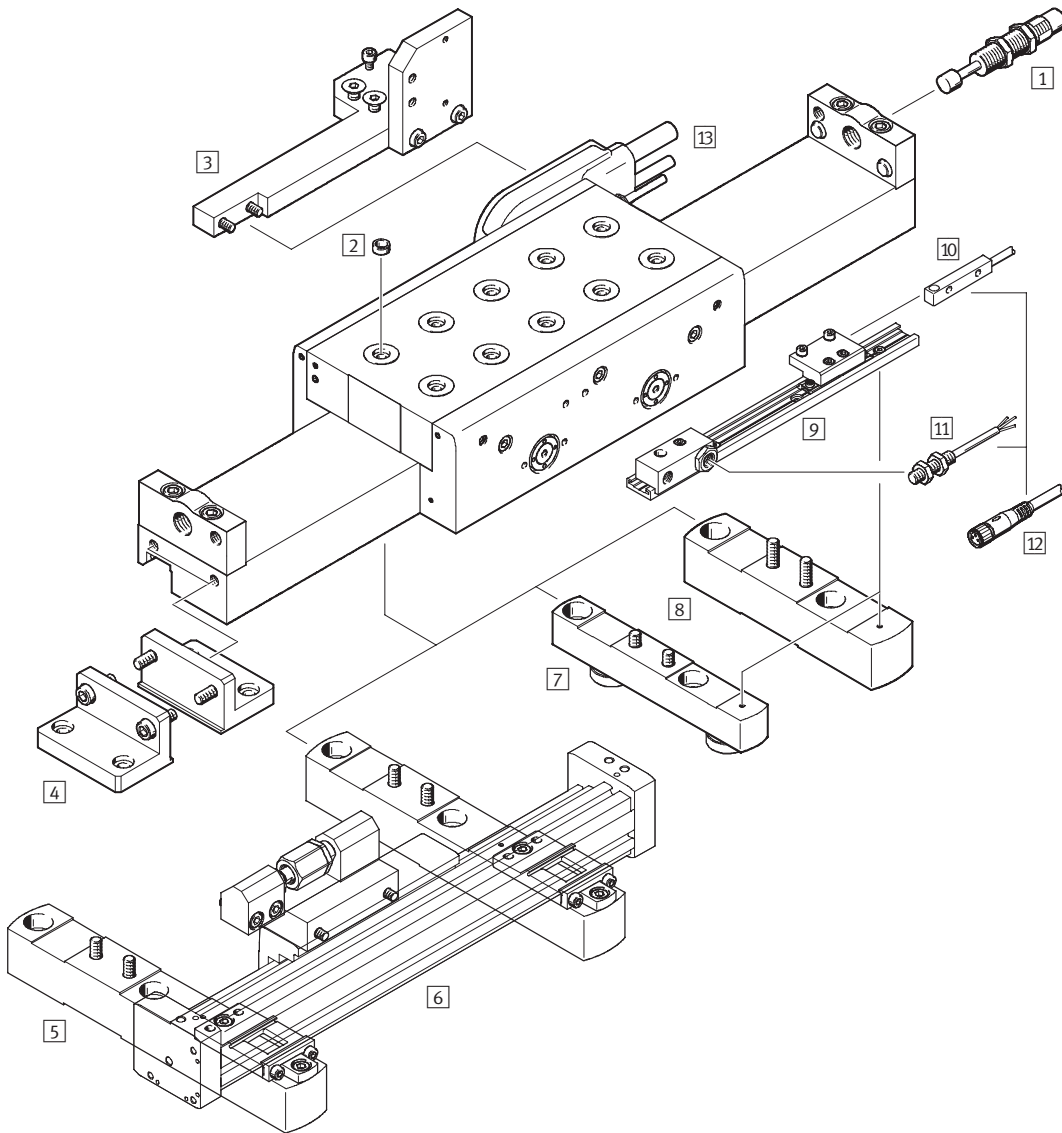
Linear drives ELGL-LAS, with air bearing and linear motor

Type codes



Linear drives ELGL-LAS, with air bearing and linear motor

Peripherals overview



Linear drives ELGL-LAS, with air bearing and linear motor

Peripherals overview

Accessories			
	Type	Brief description	→ Page/Internet
1	Shock absorber YSRW	For avoiding damage at the end stop in the event of malfunction	18
2	Centring sleeve ZBH	<ul style="list-style-type: none"> For centring loads and attachments on the slide Centring sleeves are not included in the scope of delivery of the drive 	18
3	Mounting kit EAHT	For mounting an energy chain (type: E6.29 or E6.40) on the linear drive ELGL	16
4	Foot mounting EAHF	<ul style="list-style-type: none"> For mounting the axis on the end cap 2 included in the scope of delivery 	13
5	Mounting kit EAHC	<ul style="list-style-type: none"> For mounting a pneumatic linear drive DGC on the linear drive ELGL The slides are connected to each other via a self-aligning rod coupler 	17
6	Linear drive DGC-18-...	For relieving the load on the linear motor when used vertically (→ below)	dgc
7	Adjustable foot mounting EAHF-...-PJ	<ul style="list-style-type: none"> For mounting the axis on the stator Height-adjustable foot mounting, compensates for unevenness of the mounting surface 1 included in the scope of delivery 	14
8	Foot mounting EAHF-...-P	<ul style="list-style-type: none"> For mounting the axis on the stator 2 included in the scope of delivery 	13
9	Sensor bracket EAPR	For attaching the inductive proximity sensors to the foot mountings EAHF-...-P or EAHF-...-PJ	15
10	Proximity sensor SIES	Inductive proximity sensor, square design	18
11	Proximity sensor SIEN	Inductive proximity sensor, round design	19
12	Connecting cable NEBU	For connecting the proximity sensor with plug connection to the controller	19
13	Motor cable NEBM	<ul style="list-style-type: none"> For connecting the motor and controller Connection can be rotated in steps of 90° 	18
13	Encoder cable NEBM	<ul style="list-style-type: none"> For connecting the displacement encoder and controller Connection can be rotated in steps of 90° 	18

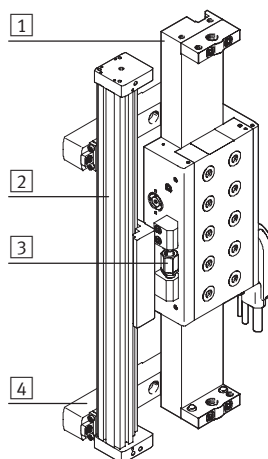
Compressed air backup for vertical operation

A pneumatic linear drive DGC-18 can be attached to the linear drive ELGL to protect the linear motor from overheating. The effective load is additionally held by the DGC when approaching the position by means of an appropriate backpressure in the DGC.

Ordering aid:

Part number: 532446

Type: DGC-18-...-G-...

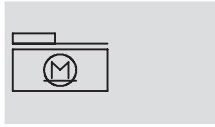


- 1 Linear drive ELGL
- 2 Linear drive DGC
- 3 Self-aligning rod coupler FK
- 4 Mounting kit EAHC

Linear drives ELGL-LAS, with air bearing and linear motor


Technical data

Function



 Size
30 ... 120

 Stroke length
1 ... 5,750 mm

 Note
All values are based on a normal temperature of 23 °C. Dynamic response and accuracy depend on the mounting (rigidity) and temperature stresses (heat concentration).



General technical data								
Size		30	64		120			
Coil system		S	S	M	S	M	L	
Mechanical								
Constructional design		Electric linear direct drive						
		Guide with integrated displacement encoder						
Guide		Air bearing						
Type of mounting		Via accessories						
Mounting position		Horizontal		Any				
Effective stroke	[mm]	1 ... 740	1 ... 1,750 ¹⁾	1 ... 1,650 ¹⁾	1 ... 1,750 ¹⁾	1 ... 1,650 ¹⁾	1 ... 1,550 ¹⁾	
Max. feed force F _x	[N]	44	119	164	240	310	450	
Continuous feed force F _x	[N]	44	110	160	217	282	330	
Max. speed	[m/s]	4			3.4	3.2	2	
Max. acceleration	[m/s ²]	15.4	29.4	29.1	47.6	40.4	50.2	
Repetition accuracy	[mm]	±0.01						
Locking brake		Integrated by means of air bearing						
Pneumatic								
Operating pressure	[bar]	5					6	
Air consumption	[l/min]	15	15	20	15	20	40	
Electric								
Type of motor		Linear AC servo motor						
Displacement encoder		Magnetic						
Intermediate circuit voltage	[V]	600						
Peak current	[A]	4.0	4.0	4.0	4.5	4.5	4.5	
Nominal current	[A]	3.5	3.5	3.0	3.5	3.0	2.75	
Magnetic radiation		None						

1) Effective strokes up to 5,750 mm on request

Operating and environmental conditions		
Ambient temperature ¹⁾	[°C]	0 ... +40
Max. motor temperature	[°C]	70
Normal temperature ²⁾	[°C]	23
Temperature monitoring		Automatic switch-off in event of over-temperature (PTC resistor)
Degree of protection		IP65
Relative air humidity (non-condensing)	[%]	20 ... 80
CE mark (see declaration of conformity)		To EU EMC Directive To EU Low Voltage Directive
Certification		C-Tick

1) Note operating range of proximity sensors

2) Unless otherwise stated, all values are based on normal temperature

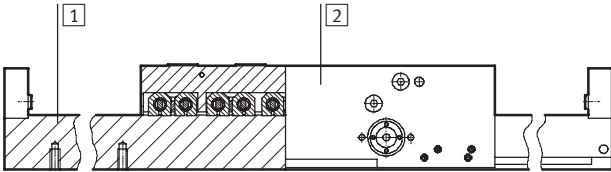
Linear drives ELGL-LAS, with air bearing and linear motor

Technical data

Weight							
Size	30		64		120		
Coil system	S		S	M	S	M	L
Slide	[kg]	2.8	3.8	5.0	4.7	6.8	8.7
Stator	[kg/m]	4.9	13.3		27.0		

Materials

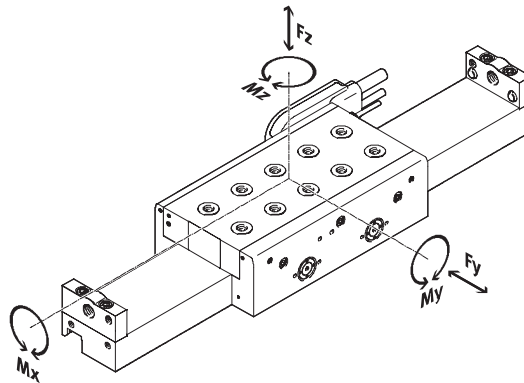
Sectional view



Linear drive		
1	Stator	Steel
2	Housing	Wrought aluminium alloy, anodised
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

Static characteristic load values

The indicated forces and torques refer to the slide surface. The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect. These values must not be exceeded during dynamic operation. Attention must be paid to the acceleration and braking.




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

$$\frac{|F_{y1}|}{F_{y_{max.}}} + \frac{|F_{z1}|}{F_{z_{max.}}} + \frac{|M_{x1}|}{M_{x_{max.}}} + \frac{|M_{y1}|}{M_{y_{max.}}} + \frac{|M_{z1}|}{M_{z_{max.}}} \leq 1$$

Permissible forces and torques

Size	30		64		120		
Coil system							
F _y _{max.}	[N]	600	600	600	600	600	600
Limit load F _z _{max.}	[N]	160	700	1,000	1,300	1,700	2,500
Tensile load F _z _{max.}	[N]	35	140	220	260	300	400
M _x _{max.}	[Nm]	1.2	8	10	14	21	28
M _y _{max.}	[Nm]	7	20	28	45	60	80
M _z _{max.}	[Nm]	20	20	30	20	30	50

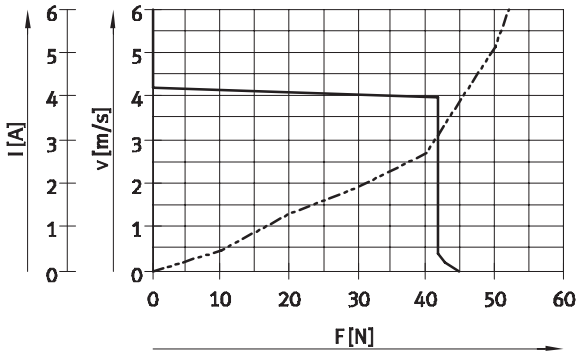
 Note
Positioning Drives
sizing software
→ www.festo.com

Linear drives ELGL-LAS, with air bearing and linear motor

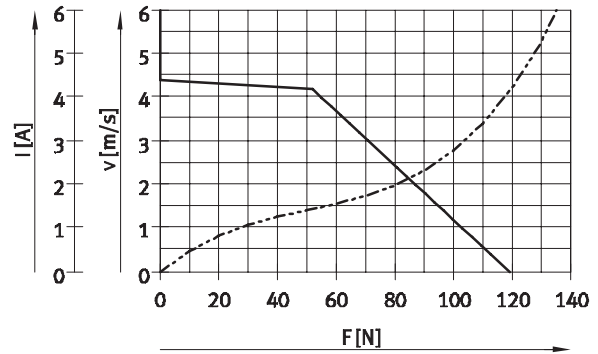
Technical data

Speed v and current I as a function of feed force F

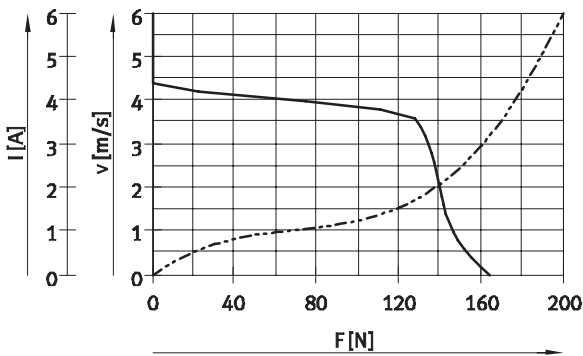
ELGL-LAS-30-...-S



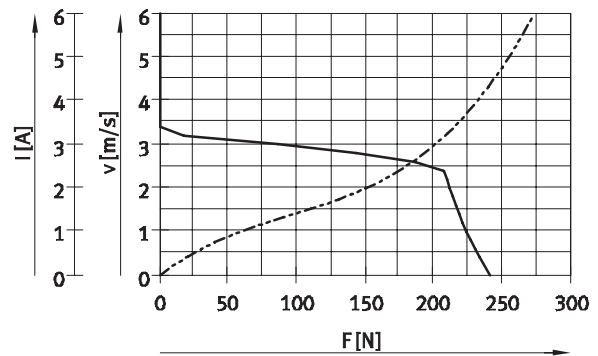
ELGL-LAS-64-...-S



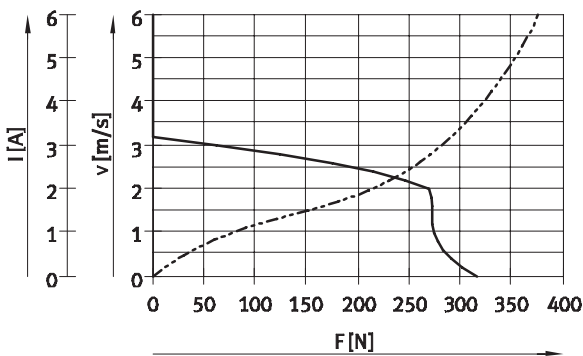
ELGL-LAS-64-...-M



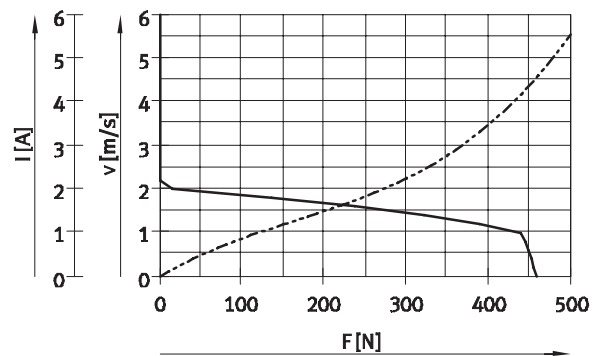
ELGL-LAS-120-...-S



ELGL-LAS-120-...-M



ELGL-LAS-120-...-L



— Speed m/s
 - - - - - Current A

Linear drives ELGL-LAS, with air bearing and linear motor

Technical data

Mounting options

The stator has an evenness value of $7 \mu\text{m}/300 \text{ mm}$. To ensure the quality of the air bearing, the mounting surface must be correspondingly precise.

For points of support with smooth surfaces, the linear drive can be mounted directly at the stator **1** or with the help of the foot mountings **2**.

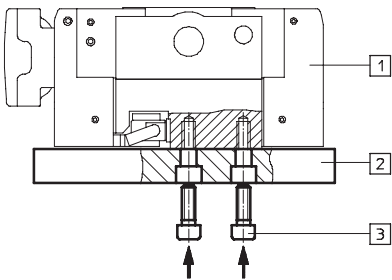
If the surface is not sufficiently even, the foot mounting **3** is used together with the adjustable foot mounting **4**.

A 3 or 4-point mounting is recommended to secure the load.

1 Direct mounting

Range of application:

- Only with smooth surface (e.g. granite table)

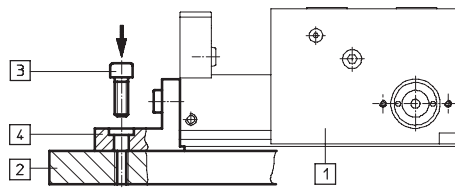


- 1** Linear drive
- 2** Mounting surface
- 3** Socket head screw

2 Angled foot mounting

Range of application:

- Only with smooth surface (e.g. granite table)
- Up to a stator length of max. 500 mm

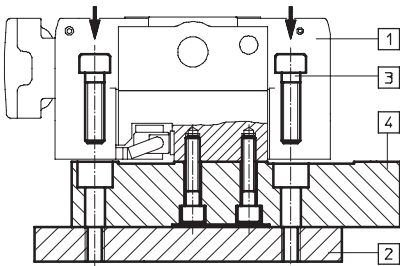


- 1** Linear drive
- 2** Mounting surface
- 3** Socket head screw
- 4** Foot mounting EAHF...

3 Foot mounting

Range of application:

- With milled surface (good evenness)
- Recommended support spacing: every 360 mm

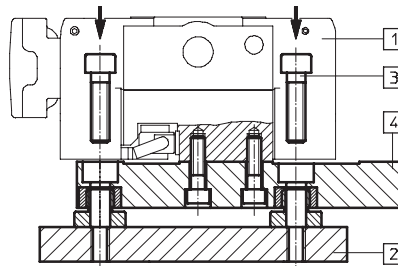


- 1** Linear drive
- 2** Mounting surface
- 3** Socket head screw
- 4** Foot mounting EAHF-...-P

4 Adjustable foot mounting

Range of application:

- With surface with low evenness
- Recommended support spacing: every 360 mm



- 1** Linear drive
- 2** Mounting surface
- 3** Socket head screw
- 4** Foot mounting EAHF-...-PJ

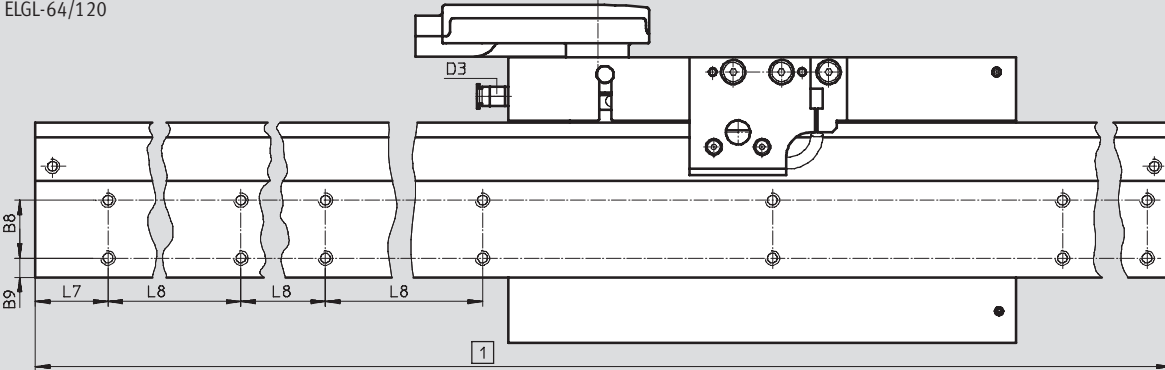
Linear drives ELGL-LAS, with air bearing and linear motor

Technical data

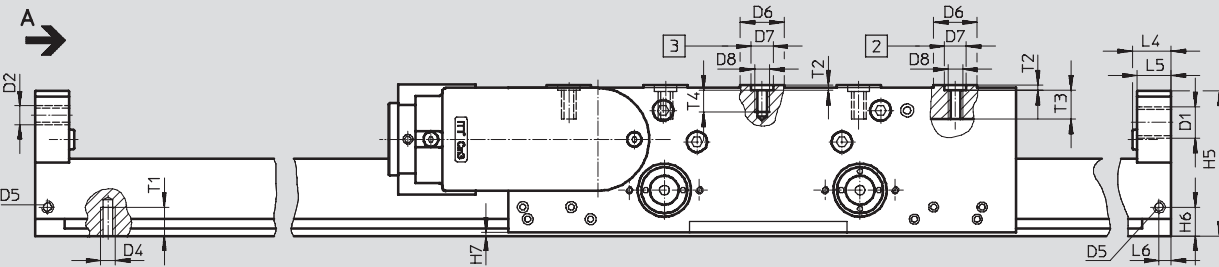
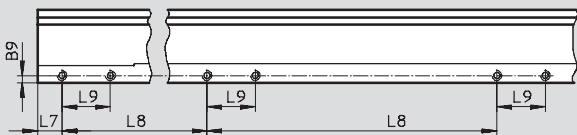
Dimensions

Download CAD data → www.festo.com

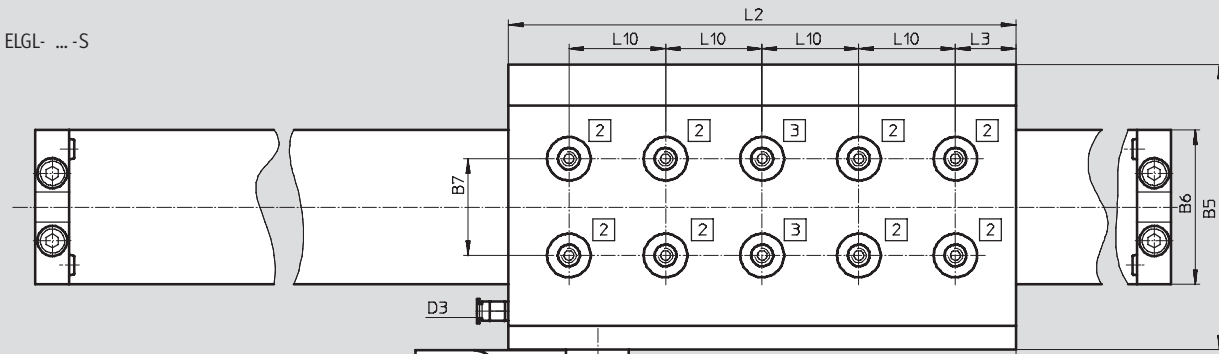
ELGL-64/120



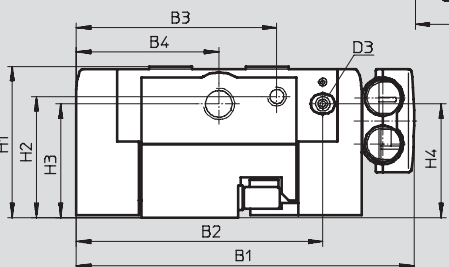
ELGL-30



ELGL- ... -S



View A



1 Profile length as required by customer

2 Hole for centring sleeve ZBH-9, thread depth 12 mm

3 Hole for centring sleeve ZBH-9, thread depth 9 mm

 Note

Use max. 4 screws to mount the effective load.

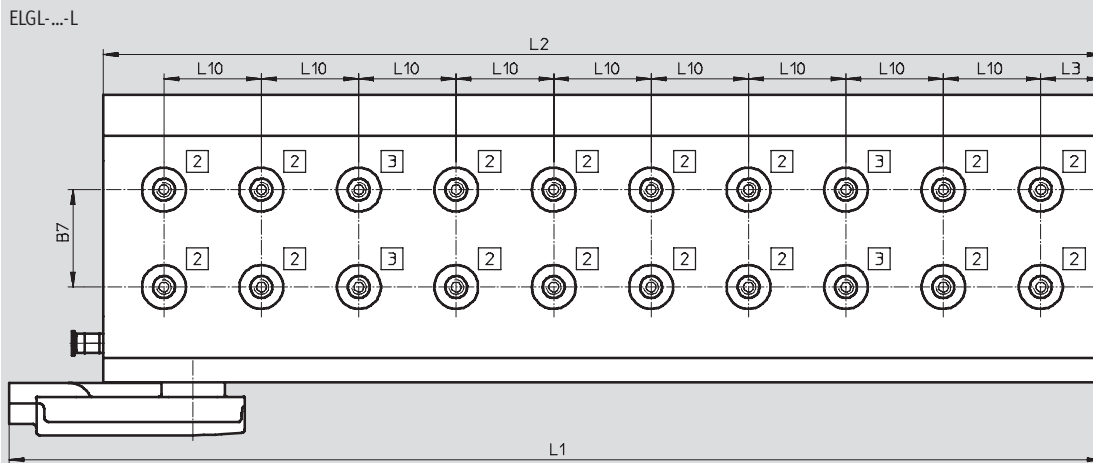
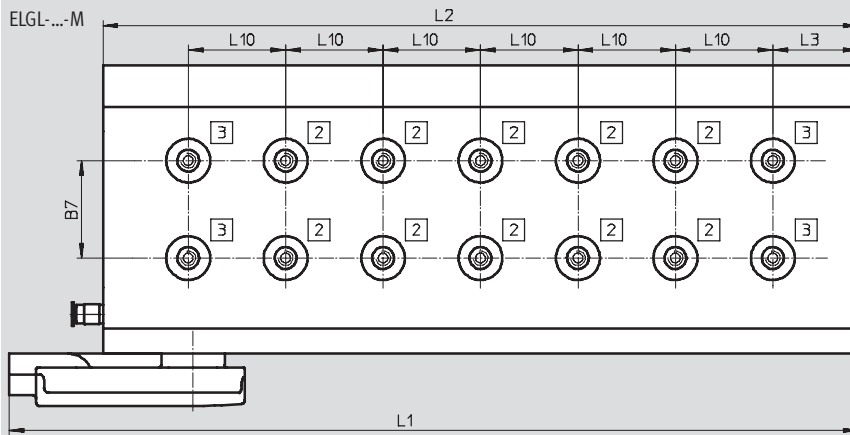
Linear drives ELGL-LAS, with air bearing and linear motor

Technical data

FESTO

Dimensions

Download CAD data → www.festo.com



Size	B1	B3	B4	B5	B6	B7	B8	B9	D1	D2	D4	D5	D6	D7	D8	H1
						±0.01								H7		
30	105.8	–	42	84	30	20	–	3	M10x1	–	M4	M5	18	9	M6	62
64	139.8	83.5	59	118	64	40	24	8	M14x1	M8x1	M6	M5	18	9	M6	62
120	195.8	111.5	87	174	120	80	72	12	M14x1	M8x1	M6	M5	18	9	M6	62

Size	H2	H3	H4	H5	H6	H7	L4	L5	L6	L7	L8	L9	L10	T1	T2	T3	T4
													±0.01		+0.1		
30	–	46.5	47	58	12	1	20	17	5	10	120	20	40	10	2.1	12	9
64	50	47	47	60	12	1	16	14	5	30	120	–	40	12	2.1	12	9
120	50	47	52	60	12	1	16	14	5	30	120	–	40	12	2.1	12	9

Size	Rotor variant	B2	D3	L1	L2	L3
						±0.01
30	S	68	M5	248.6	210	25
64	S	102	M5	248.6	210	25
	M	102	M5	348.6	310	35
120	S	158	M5	248.6	210	25
	M	158	M5	348.6	310	35
	L	154	G1/8	453.1	410	25

Linear drives ELGL-LAS, with air bearing and linear motor

Accessories

Foot mounting EAHF

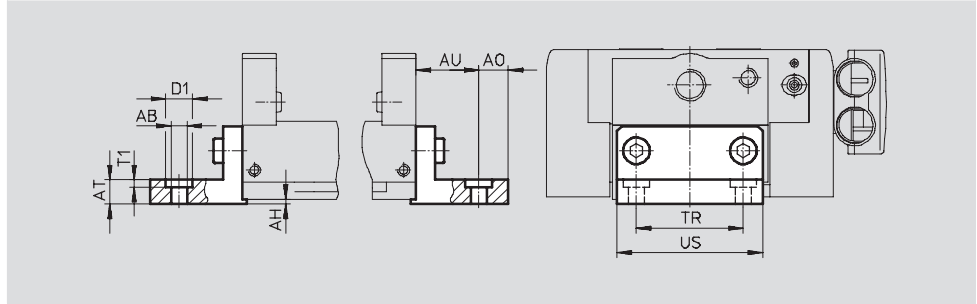
2 included in the scope of delivery

Material:

Aluminium

Contains PWIS (paint-wetting
impairment substances)

RoHS-compliant



Dimensions and ordering data													
For size	AB	AH -0.1	AO	AT	AU	D1	T1	TR	US	CRC ¹⁾	Weight [g]	Part No.	Type
30	5.5	2	10	10	18	10	3	18	29	1	180	564252	EAHF-L1-30
64	6.5	2	12	10	26	11	3	44	60	1	400	564253	EAHF-L1-64
120	6.5	2	12	10	26	11	3	78	94	1	600	564254	EAHF-L1-120

1) Corrosion resistance class 1 as per Festo standard 940 070
Components subject to low corrosion stress. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Foot mounting EAHF-...-P

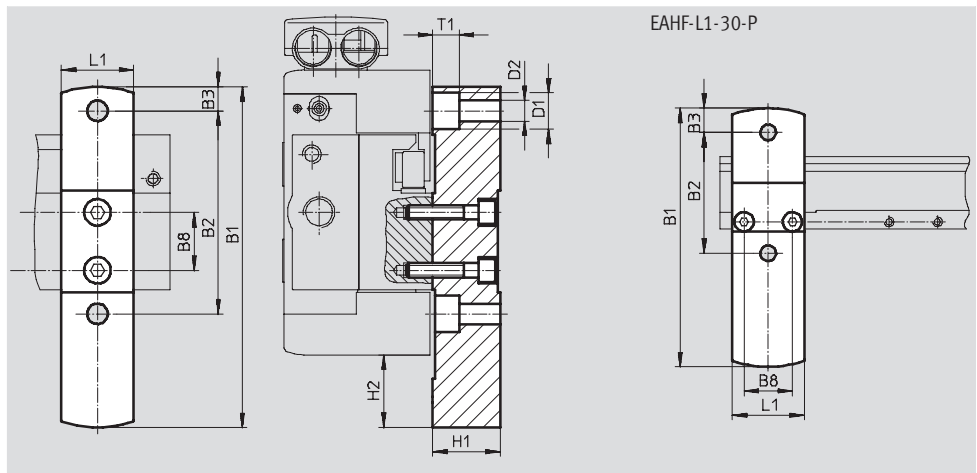
2 included in the scope of delivery

Material:

Aluminium

Contains PWIS (paint-wetting
impairment substances)

RoHS-compliant



Dimensions and ordering data													
For size	B1	B2	B3	B8	D1	D2	H1 -0.01	H2	L1	CRC ¹⁾	Weight [g]	Part No.	Type
30	107	50	10	20	11	6.5	28	30	30	1	250	564246	EAHF-L1-30-P
64	141	84	10	24	15	8.5	28	30	30	1	310	564247	EAHF-L1-64-P
120	197	140	10	72	15	8.5	28	30	30	1	450	564248	EAHF-L1-120-P

1) Corrosion resistance class 1 as per Festo standard 940 070
Components subject to low corrosion stress. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

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Accessories

Adjustable foot mounting

EAHF-...-PJ

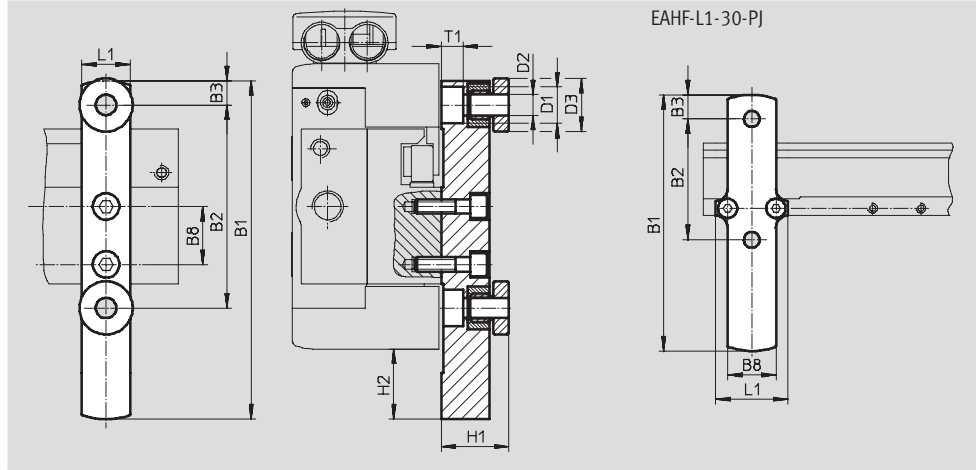
1 included in the scope of delivery

Material:

Aluminium

Contains PWIS (paint-wetting impairment substances)

RoHS-compliant



Dimensions and ordering data														
For size	B1	B2	B3	B8	D1	D2	D3	H1	H2	L1	CRC ¹⁾	Weight [g]	Part No.	Type
30	106	50	10	20	11	6.5	22	28	29	30	1	210	564249	EAHF-L1-30-PJ
64	140	84	10	24	15	8.5	22	28	29	20	1	230	564250	EAHF-L1-64-PJ
120	196	140	10	72	15	8.5	22	28	29	20	1	260	564251	EAHF-L1-120-PJ

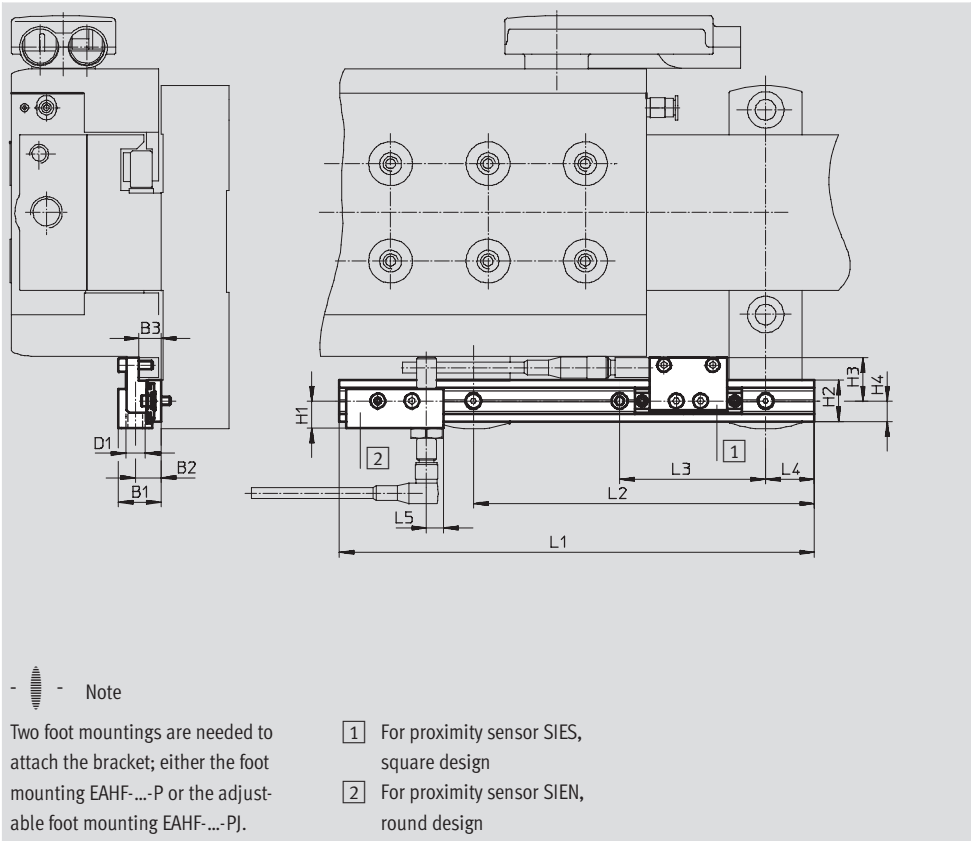
1) Corrosion resistance class 1 as per Festo standard 940 070
 Components subject to low corrosion stress. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Linear drives ELGL-LAS, with air bearing and linear motor

Accessories

Sensor bracket EAPR

Material:
Aluminium
Contains PWIS (paint-wetting
impairment substances)
RoHS-compliant



Dimensions and ordering data								
For size	B1	B2	B3	D1	H1	H2	H3	H4
30, 64, 120	17.5	10.5	9	M8	11.2	17	17.7	8.5

For size	L1	L2	L3	L4	L5	CRC ¹⁾	Weight [g]	Part No.	Type
30, 64, 120	195	140	60	20	7	1	75	564259	EAPR-L1-S

1) Corrosion resistance class 1 as per Festo standard 940 070
Components subject to low corrosion stress. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Linear drives ELGL-LAS, with air bearing and linear motor

Accessories

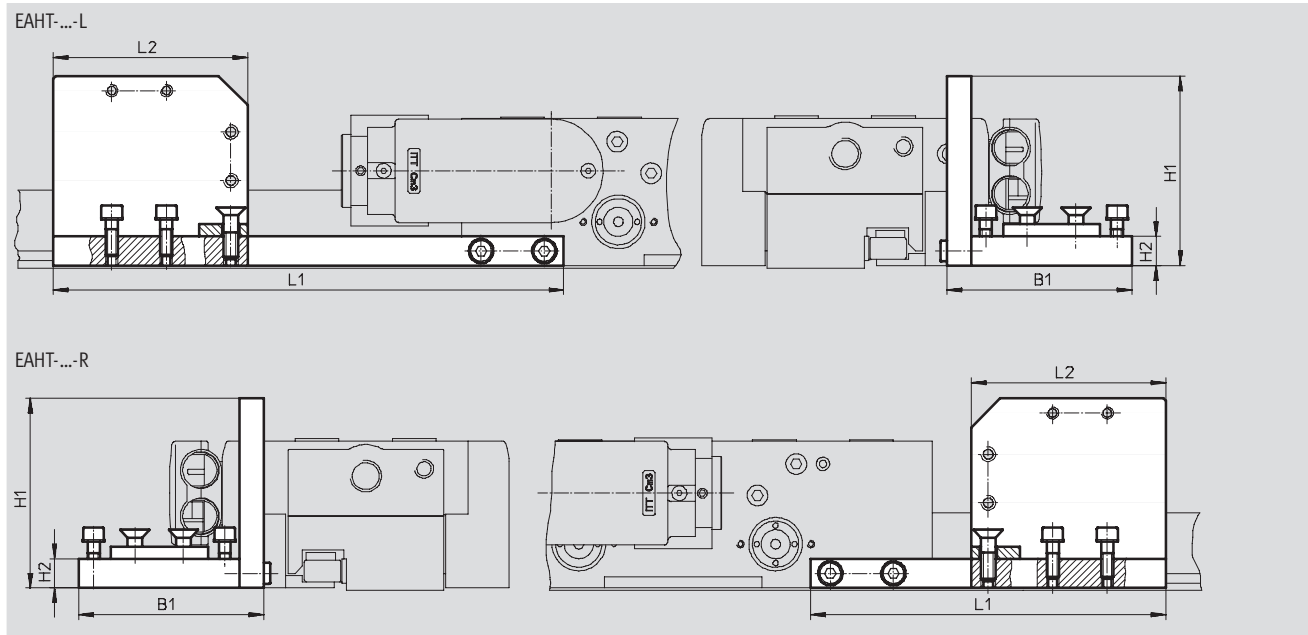
Mounting kit EAHT

Material:

Aluminium

Contains PWIS (paint-wetting impairment substances)

RoHS-compliant



Dimensions and ordering data									
For size	B1	H1	H2	L1	L2	CRC ¹⁾	Weight [g]	Part No.	Type
For energy chain type: E6.29									
30, 64, 120	60	62	12	170	50	1	300	564255	EAHT-L1-E6-29-L
	60	62	12	105	50	1	300	564256	EAHT-L1-E6-29-R
For energy chain type: E6.40									
30, 64, 120	76	78	12	210	80	1	400	564257	EAHT-L1-E6-40-L
	76	78	12	146	80	1	400	564258	EAHT-L1-E6-40-R

1) Corrosion resistance class 1 as per Festo standard 940 070
 Components subject to low corrosion stress. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Linear drives ELGL-LAS, with air bearing and linear motor

Accessories

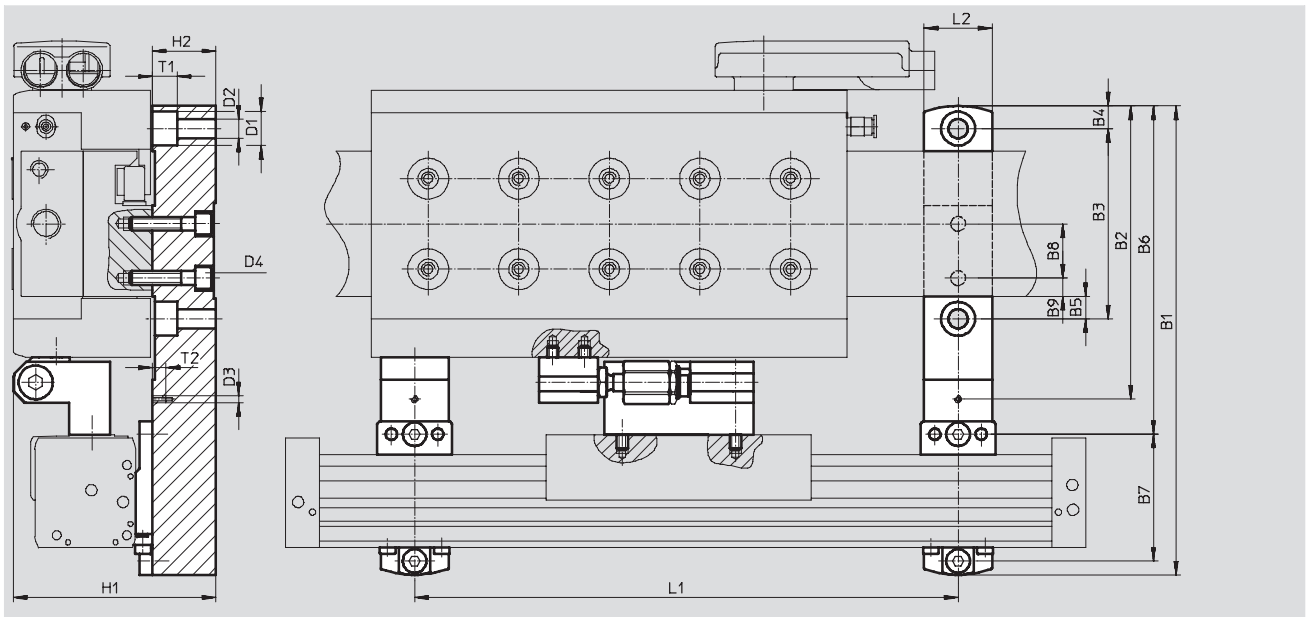
Mounting kit EAHC

Material:

Aluminium

Contains PWIS (paint-wetting impairment substances)

RoHS-compliant



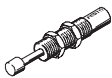

Dimensions and ordering data													
For size	B1	B2	B3	B4	B5	B6	B7	B8	B9	D1	D2	D3	D4
30	173	95.5	50	10	10	111	56	-	3	11	6.5	M3	M4
64	207	129.5	84	10	10	145	56	24	8	15	8.5	M3	M6
120	263	185.5	140	10	10	201	56	72	12	15	8.5	M3	M6

For size	H1	H2	L1	L2	L3	T1	T2	CRC ¹⁾	Weight [g]	Part No.	Type
30	89.6	28 -0.01	nx120	30	20	8	6	1	960	564260	EAHC-L1-30
64	89.6	28	nx120	30	-	11	6	1	1,100	564261	EAHC-L1-64
120	89.6	28	nx120	30	-	11	6	1	1,350	564262	EAHC-L1-120

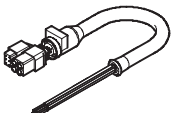
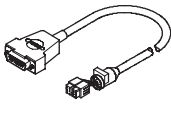
1) Corrosion resistance class 1 as per Festo standard 940 070
 Components subject to low corrosion stress. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Linear drives ELGL-LAS, with air bearing and linear motor

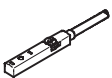
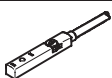
Accessories

Ordering data					
	For size	Comment	Part No.	Type	PU ¹⁾
Shock absorber YSRW			Technical data → Internet: ysrw		
	30	For avoiding damage at the end stop in the event of malfunction	191193	YSRW-7-10	1
	64, 120		191195	YSRW-10-17	
Centring sleeve ZBH					
	30, 64, 120	For slide	150927	ZBH-9	10

1) Packaging unit quantity









Ordering data – Cables					
	Brief description	Cable length [m]	Part No.	Type	
	Motor cable, for connecting motor and controller	5	550306	NEBM-T1G7-E-5-N-LE7	
		10	550307	NEBM-T1G7-E-10-N-LE7	
		15	550308	NEBM-T1G7-E-15-N-LE7	
		X length ¹⁾	550309	NEBM-T1G7-E- -N-LE7	
	Encoder cable, for connecting motor and controller	5	550314	NEBM-T1G8-E-5-N-S1G15	
		10	550315	NEBM-T1G8-E-10-N-S1G15	
		15	550316	NEBM-T1G8-E-15-N-S1G15	
		X length ¹⁾	550317	NEBM-T1G8-E- -N-S1G15	



1) Max. 25 m

Ordering data – Proximity sensors, inductive						
	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Is screwed on via mounting attachment	PNP	Cable, 3-wire	2.5	178294	SIES-Q8B-PS-K-L
			Plug M8x1, 3-pin	0.3	178295	SIES-Q8B-PS-S-L
N/C contact						
	Is screwed on via mounting attachment	PNP	Cable, 3-wire	2.5	174552	SIES-Q8B-PO-K-L
			Plug M8x1, 3-pin	0.3	174553	SIES-Q8B-PO-S-L

Linear drives ELGL-LAS, with air bearing and linear motor

Accessories

Ordering data – Inductive proximity sensors M8						Technical data → Internet: sien	
	Electrical connection		Switching output	LED	Cable length [m]	Part No.	Type
	Cable	Plug M8					
N/O contact							
	3-wire	–	PNP		2.5	150386	SIEN-M8B-PS-K-L
	–	3-pin	PNP				150387
N/C contact							
	3-wire	–	PNP		2.5	150390	SIEN-M8B-PO-K-L
	–	3-pin	PNP				150391

Ordering data – Connecting cables				Technical data → Internet: nebu	
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part No.	Type
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5	541334	NEBU-M8G3-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5	541341	NEBU-M8W3-K-5-LE3