

## Spindle axis units ELGS-BS-KF

**FESTO**



This product is also available as a modular mechanical system  
Spindle axis ELGC-BS-KF



## Key features

### At a glance

#### Plug and work with the Simplified Motion Series



The simplicity of pneumatics is now combined for the first time with the advantages of electric automation thanks to the Simplified Motion Series. These integrated drives are the perfect solution for all users who are looking for an electric alternative for very simple movement and positioning tasks between two mechanical end positions, but don't want the commissioning process for traditional electric drive systems that can often be quite complex.



There is no need for any software since operation is simply based on the "plug and work" principle. Digital I/O (DIO) and IO-Link are always automatically included – a product with two types of control as standard.

#### Integrated

The integrated electronics in the drive are at the heart of the Simplified Motion Series.

#### Easy

For commissioning, simply set all relevant parameters directly on the drive:

- Speed and force
- Reference end position and cushioning
- Manual operation

#### Standardised

Electrical connection via M12 plug design

- Power (4-pin): power supply for the motor
- Logic (8-pin): control signal, sensor signal and power for the integrated electronics

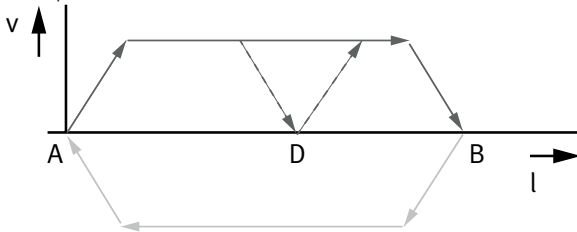
#### Connected

Use of extended functions possible via IO-Link:

- Remote configuration of motion parameters
- Copy and backup function for transferring parameters
- Read function for extended process parameters
- Freely definable intermediate position
- Firmware update

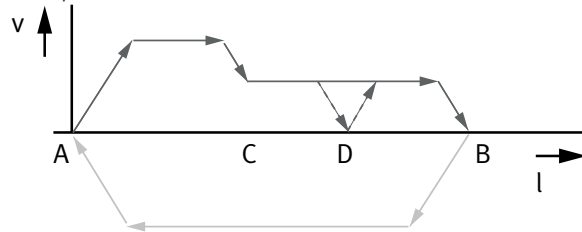
### The functions of the Simplified Motion Series

Basic profile for movement between two end positions: with speed control



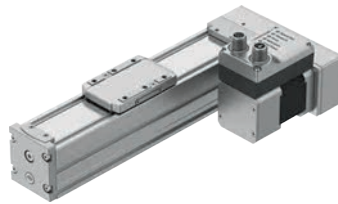
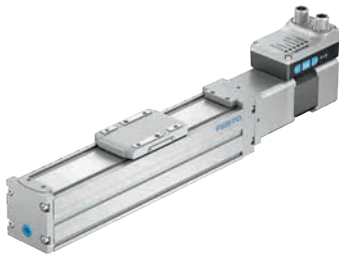
- These drives are designed for simple movements between two end positions.
- Proximity switches are required in order to implement any intermediate positions.
- With the intermediate position that can be freely configured via IO-Link, movements can be stopped at a freely defined point between the end positions, without the need for proximity switches or external stops

Extended motion profile for simplified press-fitting and clamping functions: with speed and force control



## Key features

## At a glance



- Without external servo drive: all the necessary electronic components are combined in the integrated drive
- Two control options integrated as standard: digital I/O and IO-Link
- Complete solution for simple movements between mechanical end positions
- Protected against external influences by internal guide
- Simplified commissioning: all parameters can be manually set directly on the drive
- No special expertise required for commissioning
- End-position feedback similar to that of a conventional proximity switch is integrated as standard
- Clean Look design: easy to clean and less prone to contamination

## The products in the Simplified Motion Series

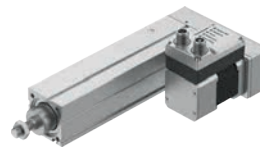
Electric cylinder unit  
EPCE



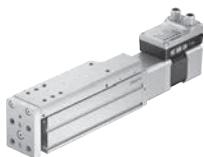
Electric cylinder unit  
EPCS



Electric cylinder unit with parallel  
motor mounting  
EPCS



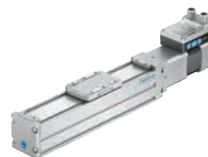
Mini slide unit  
EGSS-BS-KF



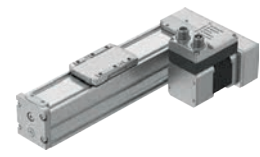
Mini slide unit with parallel motor  
mounting  
EGSS-BS-KF



Spindle axis unit  
ELGS-BS-KF



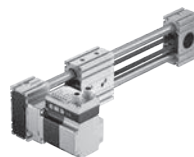
Spindle axis unit with parallel motor  
mounting  
ELGS-BS-KF



Toothed belt axis unit  
ELGS-TB-KF



Toothed belt axis unit  
ELGE



Rotary drive unit  
ERMS



## Modular and flexible with motor, motor mounting kit and servo drive

This product is also available as a modular mechanical system as spindle axis ELGC-BS-KF:



When compact dimensions and optimised installation space are important, e.g. for assembly systems, test and inspection systems, small parts handling, the electronics industry and desktop applications. Either as an individual axis or as a handling system.

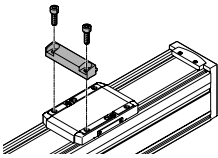
- Compact: optimum ratio of installation space to working space
- Unique: "one-size-down" mounting system
- Modular: individual combinations with motor, motor mounting kit and servo drive
- Flexible: wide range of mounting options for optimum machine integration

### Key features

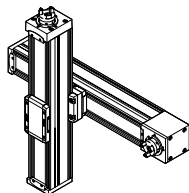
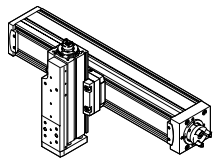
**Combination matrix between axis ELGC-TB/ELGS-TB, ELGC-BS/ELGS-BS, mini slide EGSC-BS/EGSS-BS, electric cylinder EPCC-BS/EPCS-BS and guide axis ELFC**  
 Mounting options with profile mounting and with angle kit

	Size	Assembly axis ELGC-BS/-TB; ELFC; EGSC-BS; EPCC-BS; ELGS-BS/-TB; EGSS-BS; EPCS-BS			
		25	32	45	60
Base axis	32	■	–	–	–
ELGC-BS/-TB; ELFC;	45	–	■	–	–
ELGS-BS/-TB	60	–	–	■	–
	80	–	–	–	■

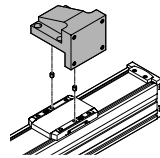
With profile mounting EAHF-L2-...-P-D...



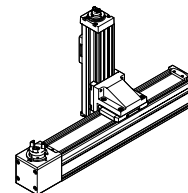
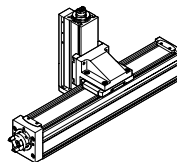
- Mounting option: base axis with one-size-down assembly axis



With angle kit EHAA-D-L2-...-AP



- Mounting option: base axis rotated through 90° with one-size-down assembly axis



## Key features

### Combination matrix between axis ELGC/ELGS-TB, ELGC/ELGS-BS, mini slide EGSC/EGSS-BS, electric cylinder EPCC/EPCS-BS and guide axis ELFC

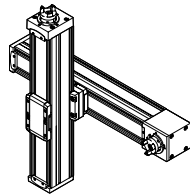
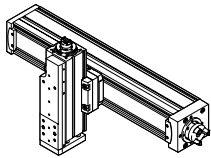
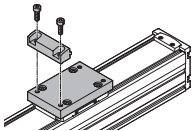
Mounting options with adapter kit or direct fastening

	Size	Assembly axis ELGC-BS/-TB; ELFC; EGSC-BS; EPCC-BS; ELGS-BS/-TB; EGSS-BS, EPCS-BS				
		25	32	45	60	80
Base axis	32		■	-	-	-
ELGC-BS/-TB; ELFC; ELGS-BS/-TB	45	-		■	-	-
	60	-	-		■	-
	80	-	-	-		■

	Size	Assembly axis EGSC-BS; EGSS-BS			
		25	32	45	60
Base axis	25		■	-	-
EGSC-BS; EGSS-BS	32	-		■	-
	45	-	-		■
	60	-	-	-	

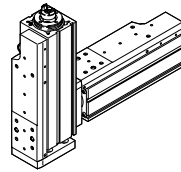
#### With adapter kit EHAA-D-L2

- Mounting option: base axis with the same size assembly axis
- Mounting option: base axis with height compensation for one-size-down assembly axis
- When motors are mounted using parallel kits, this may lead to interfering contours. In this case, the adapter plate is required for height compensation



#### With direct mounting

- Mounting option: base axis with the same size assembly axis

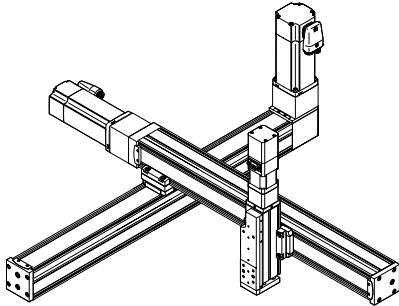


## Key features

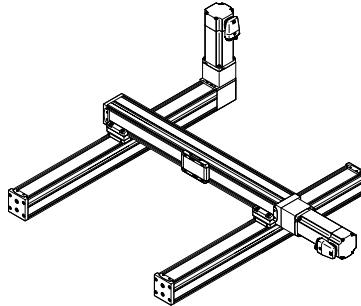
### Typical handling systems

For applications where compact dimensions are essential, the axes ELGC can be combined into very space-saving handling systems that are suitable for assembly systems, test and inspection systems, small parts handling, the electronics industry and desktop applications. Combining the very compact linear axes ELGC, mini slide EGSC and electric cylinder EPCC offers an optimum ratio of installation space to working space. These feature a common system approach and platform architecture and the connections are largely adapterless.

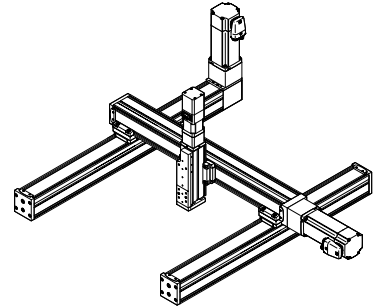
Cantilever system



Planar surface gantry



Three dimensional gantry

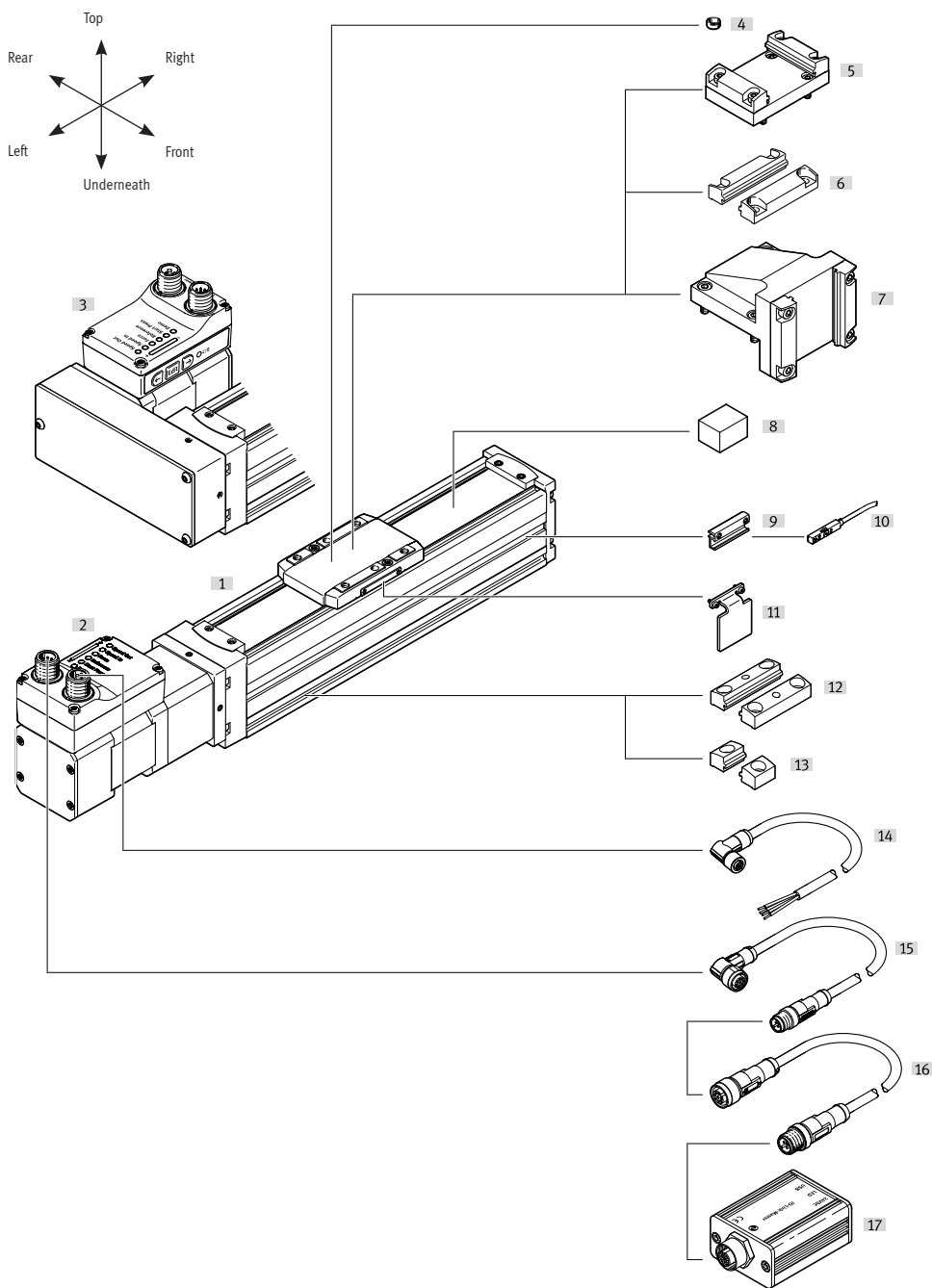


## Type codes

001	Series
ELGS	Gantry axis
002	Drive system
BS	Ball screw drive
003	Guide
KF	Recirculating ball bearing guide
004	Size
32	32
45	45
60	60
005	Stroke [mm]
100	100
200	200
300	300
400	400
500	500
600	600
800	800
006	Spindle pitch
	Standard
8P	8 mm
10P	10 mm
12P	12 mm
007	Motor type
ST	Stepper motor ST

008	Controller
M	Integrated
009	Control panel
H1	Integrated
010	Bus protocol/activation
PLK	PNP and IO-Link®
NLK	NPN and IO-Link®
011	End-position sensing
AA	With integrated end-position sensing
012	Cable outlet direction
	Standard
D	Underneath
F	Front
B	Rear
013	Motor attachment position
	Standard
PB	Parallel, rear
PF	Parallel, front
PD	Parallel, bottom
014	Electrical accessories
	None
L1	Adapter for operation as IO-Link® device

Peripherals overview



Accessories			
Type/order code	Description		→ Page/Internet
[1] Spindle axis unit ELGS-BS	Electric drive		8
[2] Axial kit	For axial motor mounting (included in the scope of delivery)		9
[3] Parallel kit	For parallel motor mounting (included in the scope of delivery)		9
[4] Centring pin/sleeve ZBS, ZBH	For centring loads and attachments on the slide		36
[5] Adapter kit EHAA-D-L2	<ul style="list-style-type: none"> <li>For axis/axis mounting with adapter plate</li> <li>Mounting option: base axis with the same size or one-size-down assembly axis</li> <li>When motors are mounted using parallel kits, this may lead to interfering contours. In this case, the adapter plate is required for height compensation (download CAD data → <a href="http://www.festo.com">www.festo.com</a>)</li> </ul>		33
[6] Profile mounting EAHF-L2-...-P-D	<ul style="list-style-type: none"> <li>For axis/axis mounting without adapter plate</li> <li>Mounting option: base axis with one-size-down assembly axis</li> </ul>		32

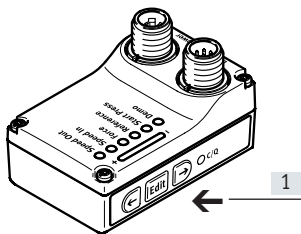


## Peripherals overview

Accessories			
Type/order code	Description		→ Page/Internet
[7] Angle kit EHAA-D-L2-...-AP	<ul style="list-style-type: none"> <li>For mounting one-size-down vertical axes (assembly axes) on base axes with mounting position "slide at top"</li> </ul>		34
[8] Clamping element EADT-S-L5-32	<ul style="list-style-type: none"> <li>Tool for retensioning the cover strip</li> </ul>		36
[9] Sensor bracket <sup>1)</sup> EAPM-L2-SH	For mounting the proximity switches on the axis. The proximity switches can only be mounted using the sensor bracket		35
[10] Proximity switches <sup>1)</sup> SIES-8M	Inductive proximity switches, for T-slot		36
Proximity switches <sup>1)</sup> SMT-8M	Magnetic proximity switches, for T-slot		36
[11] Switch lug <sup>1)</sup> EAPM-...-SLS	For sensing the slide position in conjunction with inductive proximity switches SIES-8M		35
[12] Profile mounting EAHF-L2-...-P	For mounting the axis on the side of the profile. The profile mounting can be attached to the mounting surface using the drill hole in the centre		31
[13] Profile mounting EAHF-L2-...-	For mounting the axis on the side of the profile		30
[14] Supply cable NEBL-T12	For connecting load and logic supply		37
[15] Connecting cable NEBC-M12	For connection to a controller		37
[16] Adapter NEFC-M12G8	Connection between the motor and the IO-Link master		37
[17] IO-Link master USB CDSU-1	For straightforward use of the mini slide unit via IO-Link		37

1) Proximity switches are optional and only required in order to sense any intermediate positions.

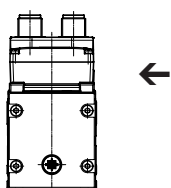
### Control elements



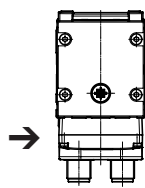
[1] Pushbutton actuators for parameterisation and control

### Cable outlet direction

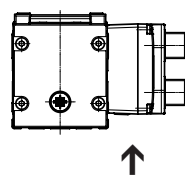
Standard



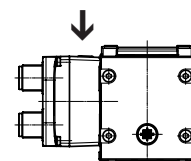
[D] Underneath



[B] Rear

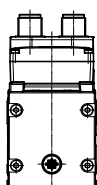


[F] Front

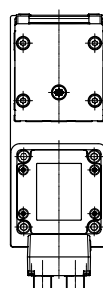


### Motor attachment variants

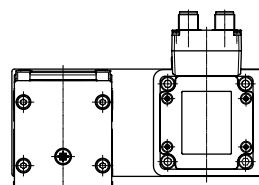
Standard



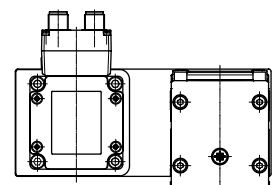
[PD] Underneath



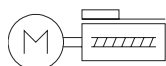
[PB] Rear





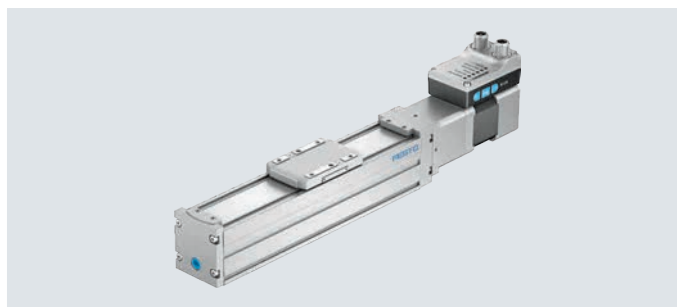
[PF] Front



## Datasheet



-  Size  
32 ... 60
-  Stroke length  
100 ... 800 mm



General technical data				
Size		32	45	60
Design		Electromechanical axis with ball screw and integrated drive		
Motor type		Stepper motor		
Guide		Recirculating ball bearing guide		
Mounting position		Any		
Working stroke	[mm]	100, 200, 300, 400, 500, 600, 800	100, 200, 300, 400, 500, 600, 800	100, 200, 300, 400, 500, 600, 800
Stroke reserve	[mm]	0		
Additional functions		Built-in end-position sensing		
		User interface		
Display		LED		
Homing		Positive fixed stop block		
		Negative fixed stop block		
Type of mounting		With female thread		
		With accessories		
		With centring pin, centring sleeve		
Max. cable length				
Inputs/outputs	[m]	15		
IO-Link operation	[m]	20		

Mechanical data				
Size		32	45	60
Max. payload				
Horizontal	[kg]	2	10	20
Vertical	[kg]	2	5	13
Max. feed force $F_x$	[N]	40	100	200
Repetition accuracy	[mm]	±0.015	±0.015	±0.01
Reversing backlash	[mm]	≤ 0.15		
Position sensing		Via proximity switch		
		Via IO-Link		
With axial motor mounting				
Max. speed <sup>1)</sup>	[m/s]	0.18	0.25	0.25
Speed "Speed Press" <sup>2)</sup>	[m/s]	0.01		
Max. acceleration <sup>2)</sup>	[m/s <sup>2</sup> ]	5		
With parallel motor mounting				
Max. speed <sup>1)</sup>	[m/s]	0.18	0.235	0.215
Speed "Speed Press" <sup>2)</sup>	[m/s]	0.01		
Max. acceleration <sup>2)</sup>	[m/s <sup>2</sup> ]	3		

1) Rotational speed and speed are stroke-dependent.  
Adjustable in increments of 10%

2) Unchangeable parameter

Spindle				
Size		32	45	60
Diameter	[mm]	8	10	12
Pitch	[mm/rev]	8	10	12

## Datasheet

Electrical data			
Size		32	45   60
Motor			
Nominal voltage DC	[V]	24 (±15%)	
Nominal current	[A]	3	3   5.3
Max. current consumption (load)	[A]	3	3   5.3
Max. current consumption (logic)	[mA]	300	
Encoder			
Rotor position sensor		Absolute encoder, single turn	
Rotor position sensor measuring principle		Magnetic	
Rotor position encoder resolution	[bit]	16	
Interfaces			
Size		32	45   60
Parameterisation interface			
IO-Link		Yes	
User interface		Yes	
Digital inputs			
Number		2	
Switching logic		PNP	
		NPN	
Characteristics		Not galvanically isolated	
		Configurable	
Specification		Based on IEC 61131-2, type 1	
Operating range	[V]	24	
Digital outputs			
Number		2	
Switching logic		PNP	
		NPN	
Rotor position sensor		Absolute encoder, single turn	
Characteristics		Not galvanically isolated	
		Configurable	
Max. current	[mA]	100	

## Datasheet

Technical data – IO-Link				
Size		32	45	60
SIO mode support		Yes		
Communication mode		COM3 (230.4 kBd)		
Connection technology		Plug		
Port class		A		
No. of ports		1		
Process data width OUT	[byte]	2		
Process data content OUT	[bit]	1 (Move in)		
	[bit]	1 (Move out)		
	[bit]	1 (Move Intermediate)		
	[bit]	1 (Quit Error)		
Process data width IN	[byte]	2		
Process data content IN	[bit]	1 (State Device)		
	[bit]	1 (State Move)		
	[bit]	1 (State in)		
	[bit]	1 (State out)		
	[bit]	1 (State Intermediate)		
Service data content IN	[bit]	32 (Force)		
	[bit]	32 (Position)		
	[bit]	32 (Speed)		
Minimum cycle time	[ms]	1		
Data memory required	[kilobyte]	0.5		
Protocol version		Device V 1.1		

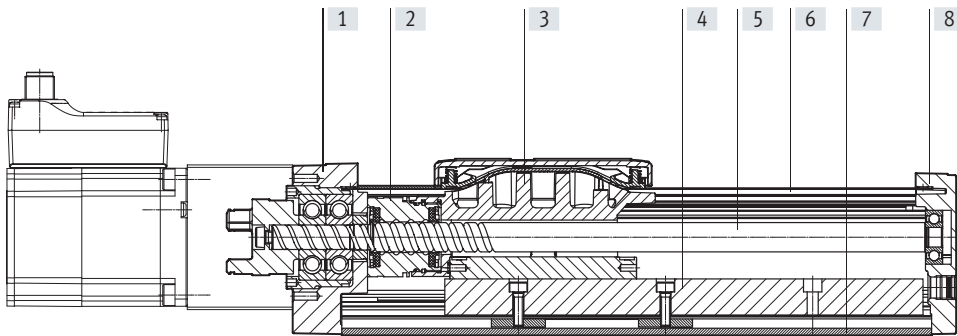
Operating and environmental conditions				
Size		32	45	60
Insulation class		B		
Ambient temperature	[°C]	0 ... +50		
Storage temperature	[°C]	-20 ... +60		
Note on ambient temperature		Above an ambient temperature of 30°C, the power must be reduced by 2% per K		
Temperature monitoring		Switch-off for excessive temperature		
		Integrated precise CMOS temperature sensor with analogue output		
Relative humidity	[%]	0 ... 90		
Protection class		III		
Degree of protection		IP40		
Duty cycle	[%]	100		
CE marking (see declaration of conformity)		To EU EMC Directive for EMCS-ST → festo.com/sp		
		To EU RoHS Directive		
UKCA marking (see declaration of conformity)		To UK instructions for EMC		
		To UK RoHS instructions		
KC mark		KC EMC		
Certification		RCM		
Vibration resistance		Transport application test with severity level 1 to FN 942017-4 and EN 61800-2 and EN 61800-5-1		
Shock resistance		Shock test with severity level 1 to FN 942017-5 and EN 61800-2		
Cleanroom class		Class 7 according to ISO 14644-1		
Maintenance interval		Lifetime lubrication		

Weight				
Size		32	45	60
With axial motor mounting				
Basic weight at 0 mm stroke	[g]	889	1354	2862
Additional weight per 10 mm stroke	[g]	18	36	51
Moving mass with 0 mm stroke	[g]	83	220	525
With parallel motor mounting				
Basic weight at 0 mm stroke	[g]	1053	1477	3126
Additional weight per 10 mm stroke	[g]	18	36	51
Moving mass with 0 mm stroke	[g]	83	220	525

# Datasheet

## Materials

Sectional view



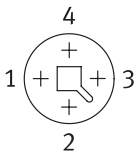
Axis		
[1]	Drive cover	Painted die-cast aluminium
[2]	Spindle nut	Steel
[3]	Slide	Die-cast aluminium
[4]	Guide	Steel
[5]	Spindle	Steel
[6]	Cover strip	High-alloy stainless steel
[7]	Profile	Anodised wrought aluminium alloy
[8]	End cap	Painted die-cast aluminium
	PWIS conformity	VDMA24364 zone III
	Note on materials	RoHS-compliant

## Pin allocation

Power supply

Plug

M12x1, 4-pin, T-coded to EN 61076-2-111

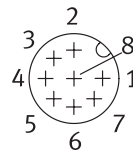


Pin	Function
1	Power voltage supply (24 V DC)
2	Reference potential, power voltage supply (GND)
3	Reserved, do not connect
4	Functional earth (FE)

Logic interface

Plug

M12x1, 8-pin, A-coded to EN 61076-2-101



When used with digital I/O

Pin	Function
1	Logic voltage supply (24 V DC)
2	Digital output 1 (State "In")
3	Digital output 2 (State "Out")
4	Reference potential, logic voltage supply (GND)
5	Digital input 1 (Move "In")
6	Digital input 2 (Move "Out")
7	Reserved, do not connect
8	Reference potential, logic voltage supply (GND)

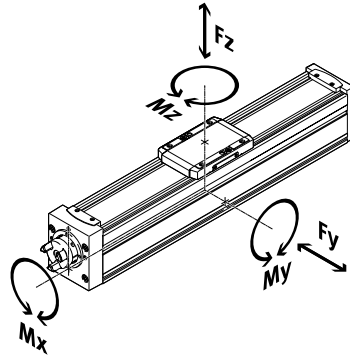
When used with IO-Link

Pin	Function
1	L+ IO-Link power supply (24 V DC)
2	Reserved, do not connect
3	C/Q communication with the IO-Link master
4	L – Reference potential, IO-Link power supply (0 V)
5	Reserved, do not connect
6	Reserved, do not connect
7	Reserved, do not connect
8	L – Reference potential, IO-Link power supply (0 V)

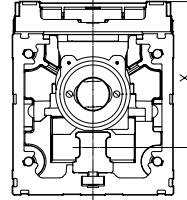
Datasheet

Load values

The indicated forces and torques refer to the centre of the guide. The point of application of force is the point where the centre of the guide and the longitudinal centre of the slide intersect. These values must not be exceeded during dynamic operation. Special attention must be paid to the deceleration phase.



Distance from the slide surface to the centre of the guide



Max. permissible forces and torques on the slide (strength limits)


Size		32	45	60
F <sub>y</sub> <sub>max.</sub>	[N]	150	300	600
F <sub>z</sub> <sub>max.</sub>	[N]	300	600	1800
M <sub>x</sub> <sub>max.</sub>	[Nm]	1.3	5.5	29.1
M <sub>y</sub> <sub>max.</sub>	[Nm]	1.1	4.7	31.8
M <sub>z</sub> <sub>max.</sub>	[Nm]	1.1	4.7	31.8

Distance from the slide surface to the centre of the guide

Size		32	45	60
Dimension x	[mm]	31.4	42.8	54.6

Max. permissible forces and torques for the guide calculation, for a service life of 5000 km or 5x 10<sup>6</sup> cycles

Size		32	45	60
F <sub>y</sub> <sub>max.</sub>	[N]	356	880	3641
F <sub>z</sub> <sub>max.</sub>	[N]	356	880	3641
M <sub>x</sub> <sub>max.</sub>	[Nm]	1.3	5.5	29.1
M <sub>y</sub> <sub>max.</sub>	[Nm]	1.1	4.7	31.8
M <sub>z</sub> <sub>max.</sub>	[Nm]	1.1	4.7	31.8

 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](http://www.festo.com)

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<sub>1</sub>/M<sub>1</sub> = dynamic value

F<sub>2</sub>/M<sub>2</sub> = maximum value

## Datasheet

### Calculating the service life

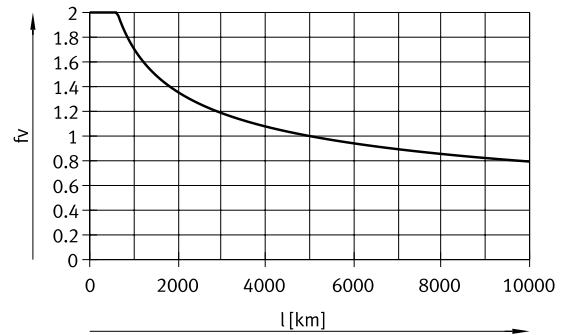
The service life of the guide depends on the load. To be able to make a statement as to the service life of the guide, the graph below plots the load comparison factor  $f_v$  against the service life.

These values are only theoretical. You must consult your local Festo contact for a load comparison factor  $f_v$  greater than 1.

#### 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 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.



### 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 ELGS 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		32	45	60
$F_{y_{max}}$	[N]	1310	3240	13400
$F_{z_{max}}$	[N]	1310	3240	13400
$M_{x_{max}}$	[Nm]	5	20	107
$M_{y_{max}}$	[Nm]	4	17	117
$M_{z_{max}}$	[Nm]	4	17	117

### Service life of the motor

The service life of the motor at nominal power is 20000 h.

## Datasheet

### Sizing example

Application data:

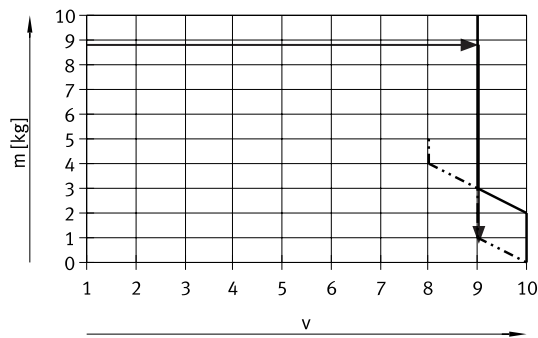
- Payload: 8 kg
- Mounting position: horizontal
- Motor mounting position: axial
- Stroke: 400 mm
- Max. permissible positioning time: 4 s (one direction)

Step 1: Selecting the possible size from the table → page 10

Mechanical data				
Size		32	45	60
Max. payload				
Horizontal	[kg]	2	10	20
Vertical	[kg]	2	5	13

→ Smallest possible size: ELGS-BS-KF-45

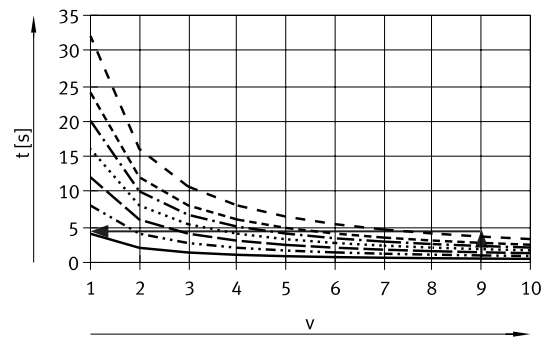
Step 2: Selecting the max. speed level v for payload m



— Horizontal  
- - - Vertical

→ Max. speed level for payload: level 9

Step 3: Reading off the min. positioning time t for stroke l



— l = 100 mm  
- - - l = 200 mm  
- - - l = 300 mm  
..... l = 400 mm  
- · - · l = 500 mm  
- - - l = 600 mm  
- - - l = 800 mm

→ Min. positioning time for 400 mm at level 9: 2 s

### Result

The application can be implemented using ELGS-BS-KF-45-400. A minimum positioning time (one direction) of 2 s is achieved. Longer positioning times can be selected at any time using a lower speed level.



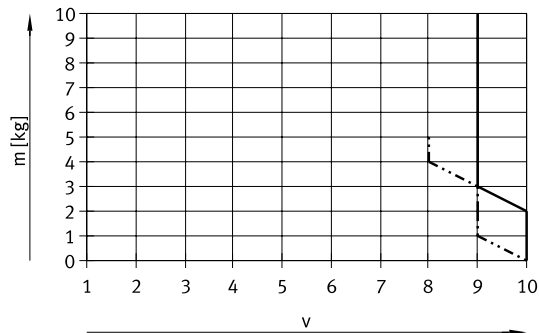
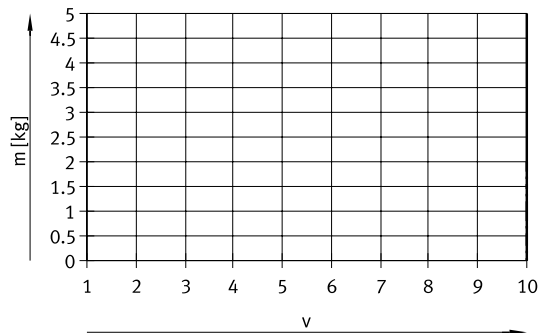
Datasheet

Mass  $m$  as a function of speed level  $v$

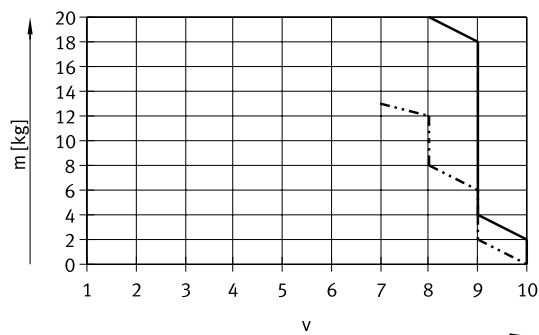
With axial kit

Size 32

Size 45



Size 60



Note:

The lines represent the maximum values. The lower speed levels can be set at any time.

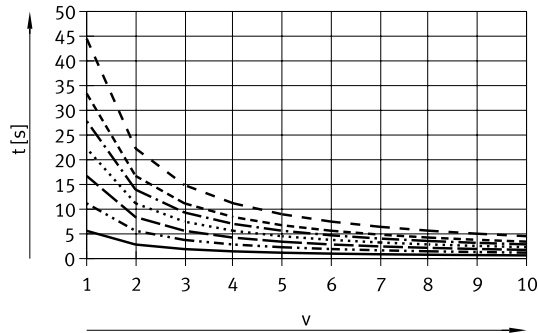
— Horizontal  
 - - - - - Vertical

Datasheet

Positioning time  $t$  as a function of speed level  $v$  and stroke  $l$

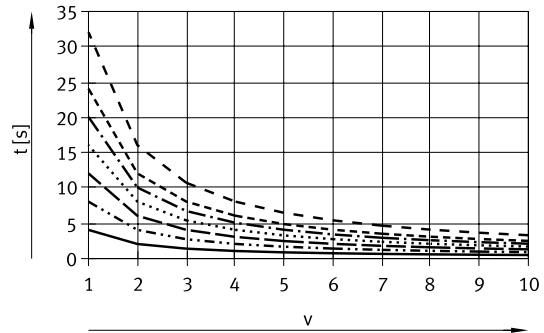
With axial kit

Size 32



- $l = 100$  mm
- · - · -  $l = 200$  mm
- - -  $l = 300$  mm
- · · · ·  $l = 400$  mm
- · - · -  $l = 500$  mm
- - -  $l = 600$  mm
- - -  $l = 800$  mm

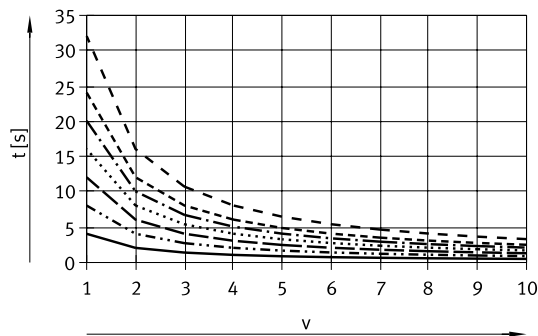
Size 45



- $l = 100$  mm
- · - · -  $l = 200$  mm
- - -  $l = 300$  mm
- · · · ·  $l = 400$  mm
- · - · -  $l = 500$  mm
- - -  $l = 600$  mm
- - -  $l = 800$  mm

Positioning time  $t$  as a function of speed level  $v$  and stroke  $l$

Size 60



- $l = 100$  mm
- · - · -  $l = 200$  mm
- - -  $l = 300$  mm
- · · · ·  $l = 400$  mm
- · - · -  $l = 500$  mm
- - -  $l = 600$  mm
- - -  $l = 800$  mm

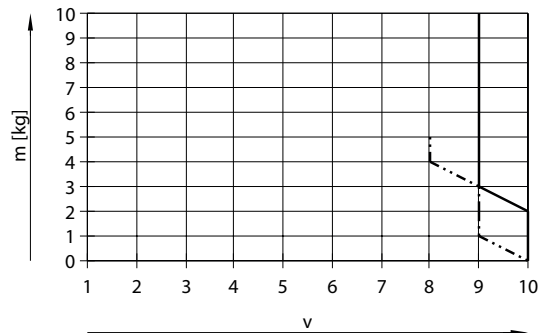
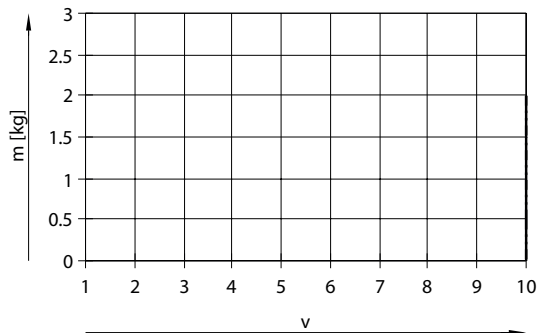
Datasheet

Mass  $m$  as a function of speed level  $v$

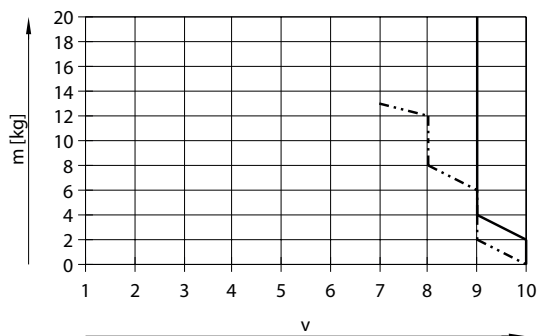
With parallel kit

Size 32

Size 45



Size 60



Note:

The lines represent the maximum values. The lower speed levels can be set at any time.

— Horizontal  
 - - - - - Vertical

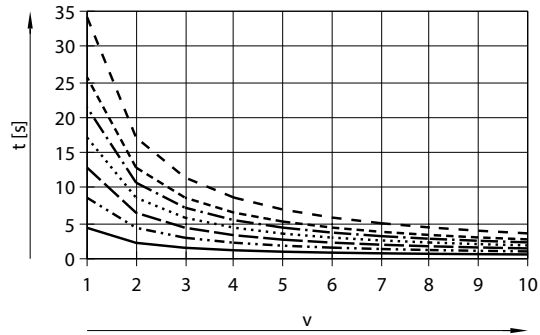
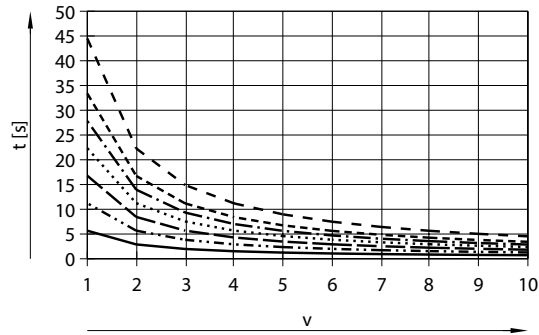
Datasheet

Positioning time  $t$  as a function of speed level  $v$  and stroke  $l$

With parallel kit

Size 32

Size 45

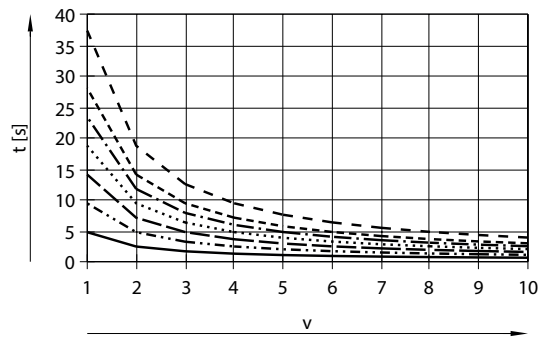


- $l = 100$  mm
- · - · -  $l = 200$  mm
- - -  $l = 300$  mm
- · · · ·  $l = 400$  mm
- · - · -  $l = 500$  mm
- - -  $l = 600$  mm
- - -  $l = 800$  mm

- $l = 100$  mm
- · - · -  $l = 200$  mm
- - -  $l = 300$  mm
- · · · ·  $l = 400$  mm
- · - · -  $l = 500$  mm
- - -  $l = 600$  mm
- - -  $l = 800$  mm

Positioning time  $t$  as a function of speed level  $v$  and stroke  $l$

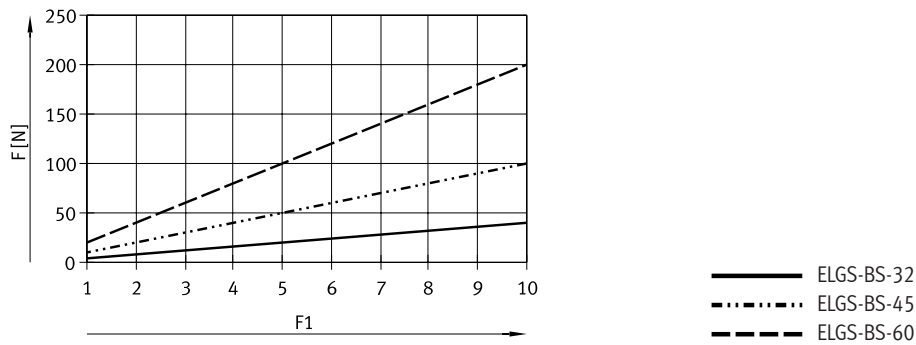
Size 60



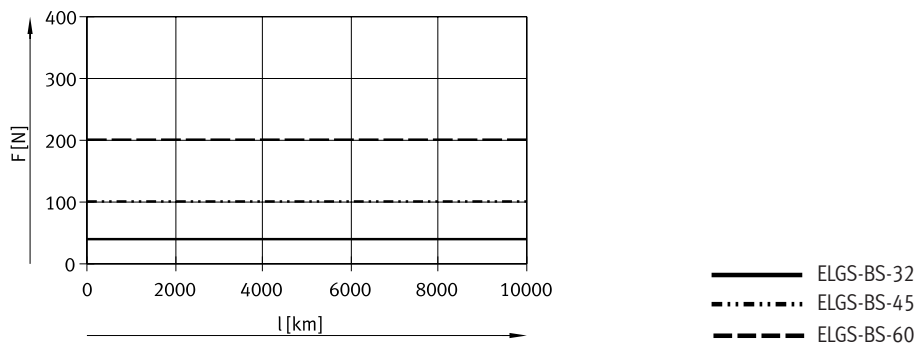
- $l = 100$  mm
- · - · -  $l = 200$  mm
- - -  $l = 300$  mm
- · · · ·  $l = 400$  mm
- · - · -  $l = 500$  mm
- - -  $l = 600$  mm
- - -  $l = 800$  mm

Datasheet

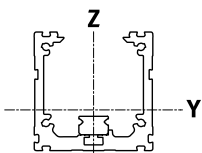
Feed force F as a function of force level F1



Feed force F as a function of service life l



2nd moments of area



Size		32	45	60
ly	[mm <sup>4</sup> ]	38x10 <sup>3</sup>	140x10 <sup>3</sup>	441x10 <sup>3</sup>
lz	[mm <sup>4</sup> ]	45x10 <sup>3</sup>	170x10 <sup>3</sup>	542x10 <sup>3</sup>

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.

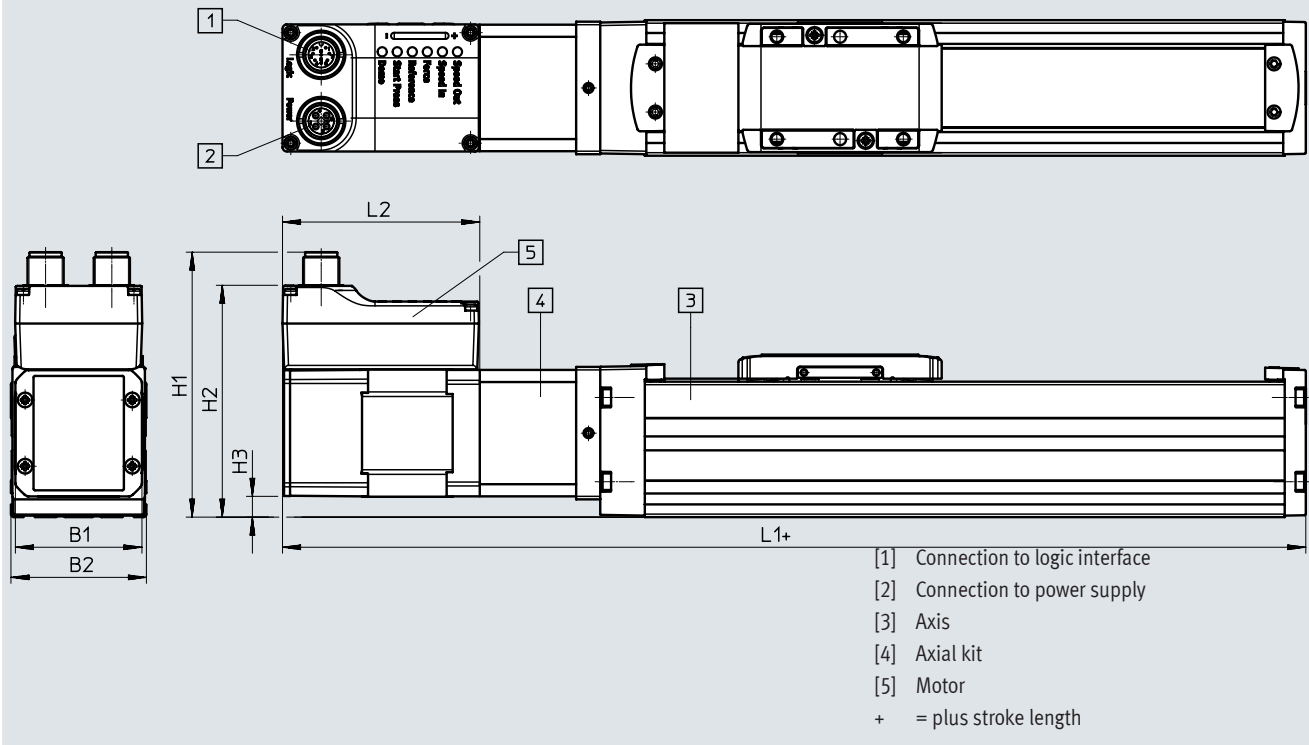
Size	Dynamic deflection (moving load)	Static deflection (stationary load)
32 ... 60	0.05% of the axis length, max. 0.5 mm	0.1% of the axis length

Datasheet

Dimensions – With axial motor mounting

Download CAD data → [www.festo.com](http://www.festo.com)

Size 32/45/60



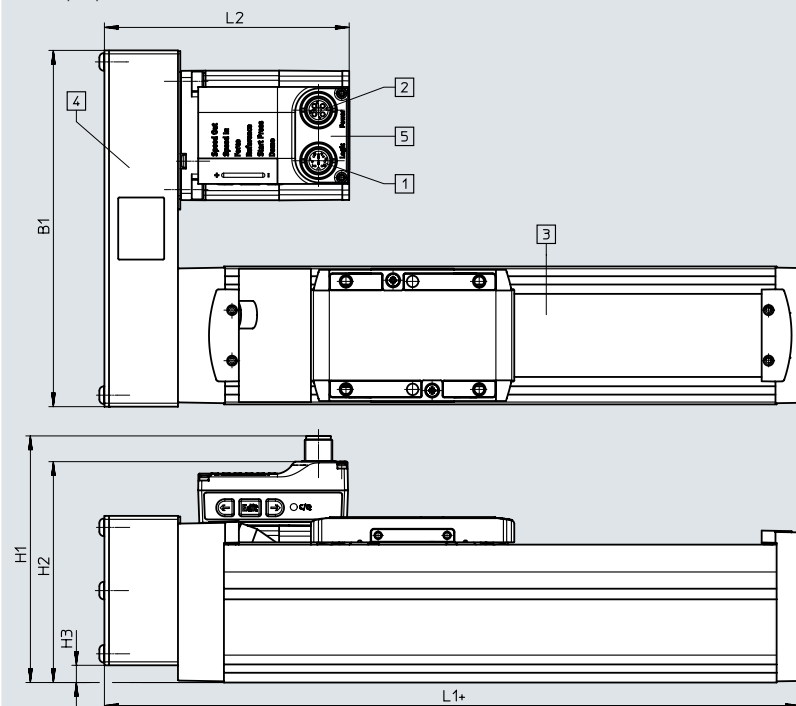
Size	B1	B2	H1	H2	H3	L1	L2
32	42.3	32	81.2	70	1.2	209.5	65
45	42.3	45	88	76.8	6.8	239.3	65
60	56.6	60	107.3	96.1	10.5	287	73.5

Datasheet

Dimensions – With parallel motor mounting

Download CAD data → [www.festo.com](http://www.festo.com)

Size 32/45/60



- [1] Connection to logic interface
- [2] Connection to power supply
- [3] Axis
- [4] Parallel kit
- [5] Motor
- + = plus stroke length

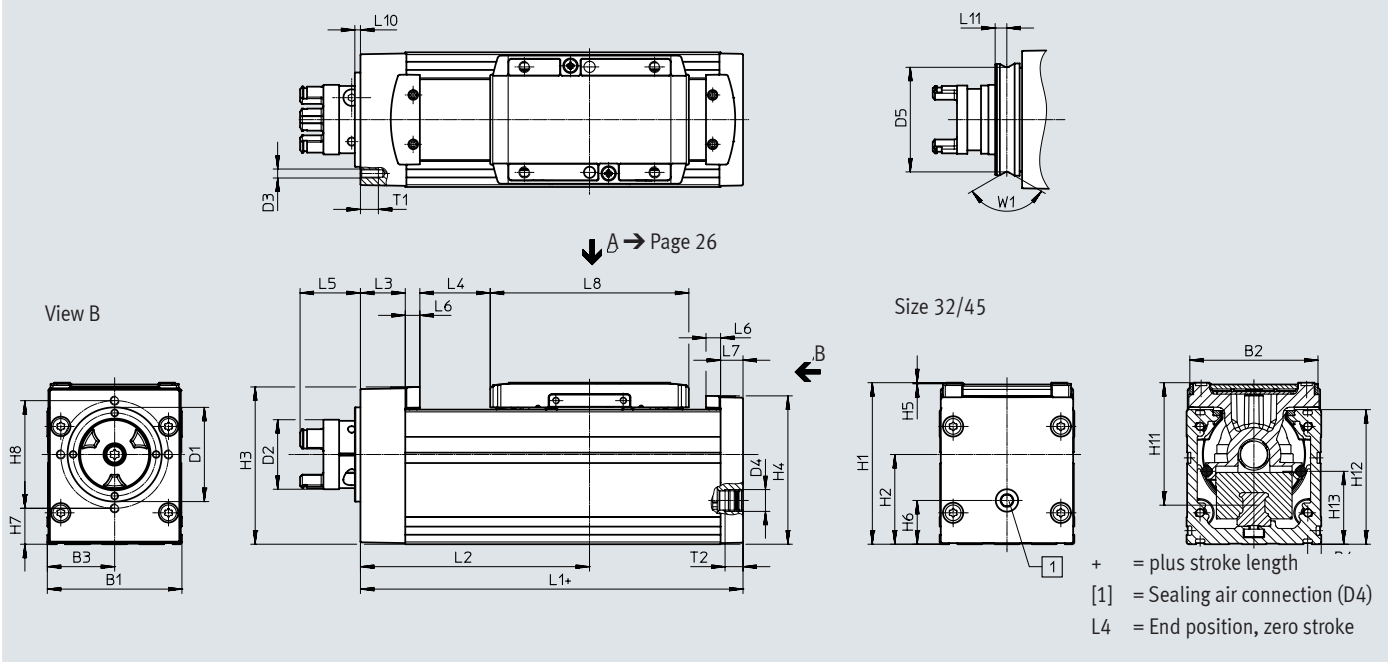
Dimensions for other motor mounting variants → CAD data.

Size	B1	H1	H2	H3	L1	L2
32	111	80	69	-2.5	128.5	93
45	111	88	76	5.4	158.3	93
60	155	107	96	7.5	202.5	106.5

Datasheet

Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)



Size	B1	B2	B3	B4	D1 ∅	D2 ∅	D3	D4	D5 ∅	H1	H2
32	32	29.6	16	4.9	25	16.5	-	M5	23	38.5	20
45	45	42.6	22.5	6.1	32	16.5	-	G1/8	29.6	54	27.9
60	60	57.1	30	6.1	42	31	M4	G1/8	-	72	40

Size	H3	H4	H5	H6	H7	H8	H11	H12	H13	L1	L2 min.
32	36.3	35.6	0.3	8	-	-	31.4	32	13.7	104.5	57.9
45	50.8	49.6	0.5	12.5	-	-	42.8	45	18.5	134.3	79.7
60	70.1	66.1	0.5	19.5	16	48	54.6	60	32.5	170.5	102.1

Size	L3	L4	L5	L6	L7	L8	L10	L11	T1	T2	W1
32	10.5	13.4	19.9	4.5	5	59	6	2.6	-	5.5	120°
45	14.8	24.6	19.9	6.5	7	67.5	6	2.9	-	8	90°
60	20	31.4	26.9	6.5	10	88.5	2.5	-	8	8	-



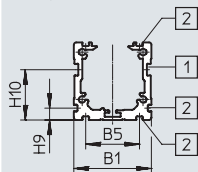
Datasheet

**Dimensions**

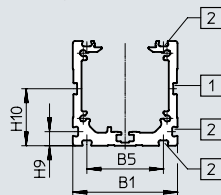
Download CAD data → [www.festo.com](http://www.festo.com)

Profile

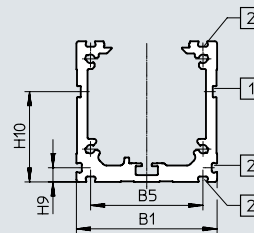
Size 32



Size 45



Size 60



- [1] = Slot for sensor bracket
- [2] = Mounting slot

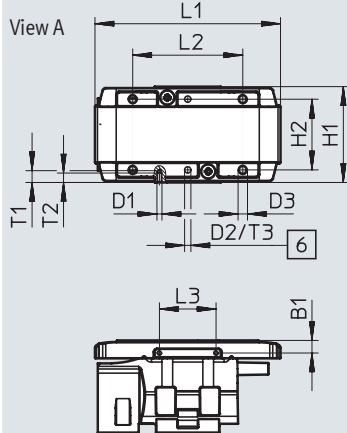
Size	B1	B5	H9	H10
32	32	22.2	4.9	20.8
45	45	32.9	6.1	24.5
60	60	47.9	6.1	38.5

Datasheet

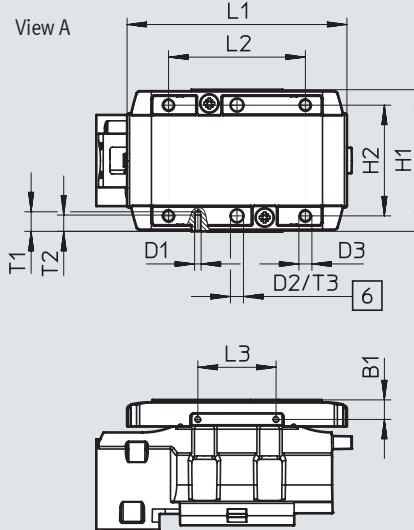
**Dimensions**

Download CAD data → [www.festo.com](http://www.festo.com)

Slide  
Size 32



Size 45



[6] Drilled hole for centring pin ZBS

Size	B1	D1	D2 ∅ H8	D3	H1	H2 ±0.1 For D2 ±0.03
32	4 ±0.1	M1.6	2	M3	30.5	22.5
45	6	M2	4	M4	43.5	34

Size	L1	L2	L3	T1	T2	T3	T4 <sup>1)</sup>
		±0.1	±0.1			+0.1	
32	59	35	18	3.8	3	3.1	4 ... 5
45	67.5	42	24	6	5	3.1	6 ... 7.5

1) Recommended screw-in depth

Datasheet

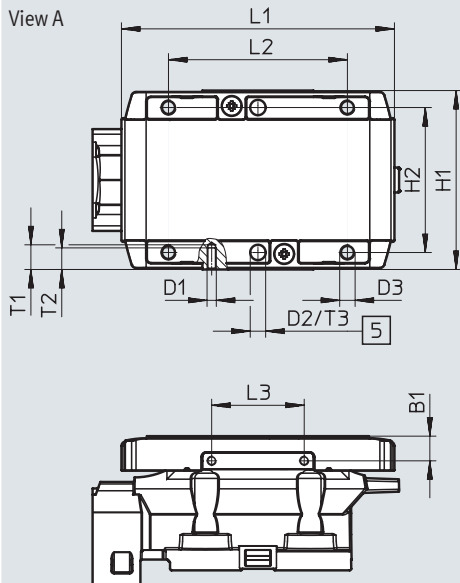
**Dimensions**

Download CAD data → [www.festo.com](http://www.festo.com)

Slide

Size 60

View A



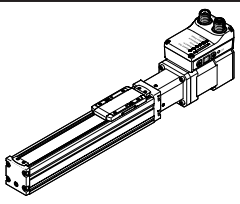
[5] Drilled hole for centring pin ZBH

Size	B1	D1	D2 ∅ H8	D3	H1	H2 ±0.1 For D2 ±0.03
60	8 ±0.1	M3	5	M5	58 ±0.1	47

Size	L1	L2 ±0.1	L3 ±0.1	T1	T2	T3 +0.1	T4 <sup>1)</sup>
60	88.5	58	30	9	7	1.3	8.5 ... 10

1) Recommended screw-in depth

## Datasheet

Ordering data	Size	Spindle pitch	Stroke	Part no.	Type
	32	8	100	8083424	ELGS-BS-KF-32-100-8P-ST-M-H1-PLK-AA
			200	8083425	ELGS-BS-KF-32-200-8P-ST-M-H1-PLK-AA
			300	8083426	ELGS-BS-KF-32-300-8P-ST-M-H1-PLK-AA
			400	8083427	ELGS-BS-KF-32-400-8P-ST-M-H1-PLK-AA
			500	8083428	ELGS-BS-KF-32-500-8P-ST-M-H1-PLK-AA
			600	8083429	ELGS-BS-KF-32-600-8P-ST-M-H1-PLK-AA
			800	8083430	ELGS-BS-KF-32-800-8P-ST-M-H1-PLK-AA
	45	10	100	8083470	ELGS-BS-KF-45-100-10P-ST-M-H1-PLK-AA
			200	8083471	ELGS-BS-KF-45-200-10P-ST-M-H1-PLK-AA
			300	8083472	ELGS-BS-KF-45-300-10P-ST-M-H1-PLK-AA
			400	8083473	ELGS-BS-KF-45-400-10P-ST-M-H1-PLK-AA
			500	8083474	ELGS-BS-KF-45-500-10P-ST-M-H1-PLK-AA
			600	8083475	ELGS-BS-KF-45-600-10P-ST-M-H1-PLK-AA
			800	8083476	ELGS-BS-KF-45-800-10P-ST-M-H1-PLK-AA
	60	12	100	8083383	ELGS-BS-KF-60-100-12P-ST-M-H1-PLK-AA
			200	8083384	ELGS-BS-KF-60-200-12P-ST-M-H1-PLK-AA
			300	8083385	ELGS-BS-KF-60-300-12P-ST-M-H1-PLK-AA
			400	8083386	ELGS-BS-KF-60-400-12P-ST-M-H1-PLK-AA
			500	8083387	ELGS-BS-KF-60-500-12P-ST-M-H1-PLK-AA
			600	8083388	ELGS-BS-KF-60-600-12P-ST-M-H1-PLK-AA
			800	8083389	ELGS-BS-KF-60-800-12P-ST-M-H1-PLK-AA

## Ordering data – Modular product system

Ordering table						
Size	32	45	60	Conditions	Code	Enter code
Module no.	8083433	8083493	8083398			
Series	ELGS				ELGS	ELGS
Drive system	Ball screw				-BS	-BS
Guide	Recirculating ball bearing guide				-KF	-KF
Size	32	45	60		-...	
Stroke [mm]	100, 200, 300, 400, 500, 600, 800	100, 200, 300, 400, 500, 600, 800	100, 200, 300, 400, 500, 600, 800		-...	
Spindle pitch [mm]	8P	10P	12P		-...	
Motor type	Stepper motor ST				-ST	-ST
Controller	Integrated				-M	-M
Operator panel	Integrated				-H1	-H1
Bus protocol/control	NPN and IO-Link				-NLK	
	PNP and IO-Link				-PLK	
End-position sensing	With integrated end-position sensing				-AA	-AA
Cable outlet direction	Standard			[1]		
	Underneath			[2]	-D	
	Rear			[2]	-B	
	Front			[3]	-F	
Motor attachment position	Axial (standard)					
	Parallel, rear			[4]	-PB	
	Parallel, front			[5]	-PF	
	Parallel, underneath			[6]	-PD	
Electrical accessories	None					
	Adapter for operation as IO device				+L1	

[1] Not with motor mounting position PB; PD

[2] Not with motor mounting position PF

[3] Not with motor mounting position PB

[4] Not in combination with cable outlet direction standard or F

[5] Not in combination with cable outlet direction B; D

[6] Only in combination with cable outlet direction standard

Accessories

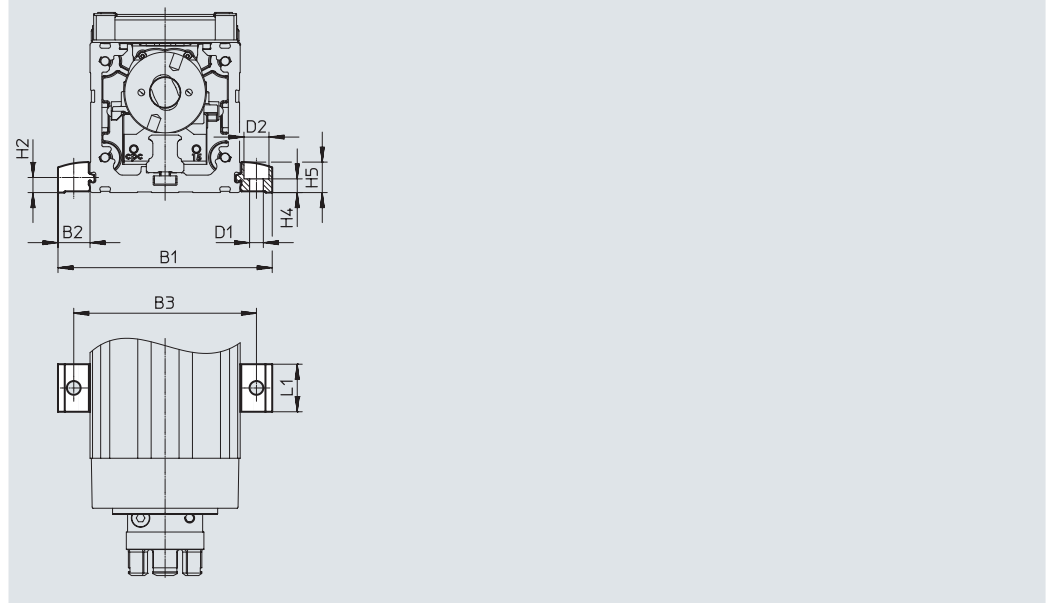
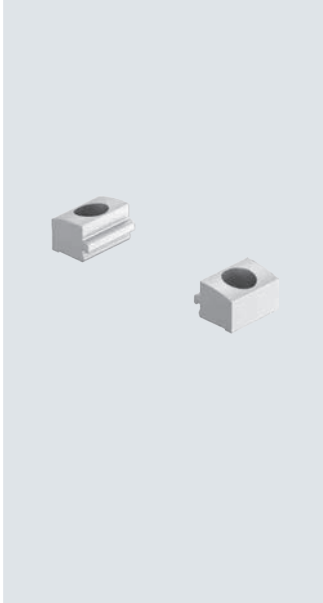
Profile mounting EAHF-L2-...-P-S

Material:

Anodised wrought aluminium alloy

RoHS-compliant

- For mounting the axis on the side of the profile



Dimensions and ordering data

For size	B1	B2	B3	D1 ∅ H13	D2 ∅ H13	H2
32	51.4	9.7	42	4.5	8	4.9
45	70.6	12.8	58	5.5	10	6.1
60	85.6	12.8	73	5.5	10	6.1

For size	H4 ±0.1	H5	L1	Weight [g]	Part no.	Type
32	4.2	9	19	4	5183153	EAHF-L2-25-P-S
45	5.5	12.2	19	6	5184133	EAHF-L2-45-P-S
60	5.5	12.2	19	6	5184133	EAHF-L2-45-P-S

## Accessories

### Profile mounting EAHF-L2-...-P

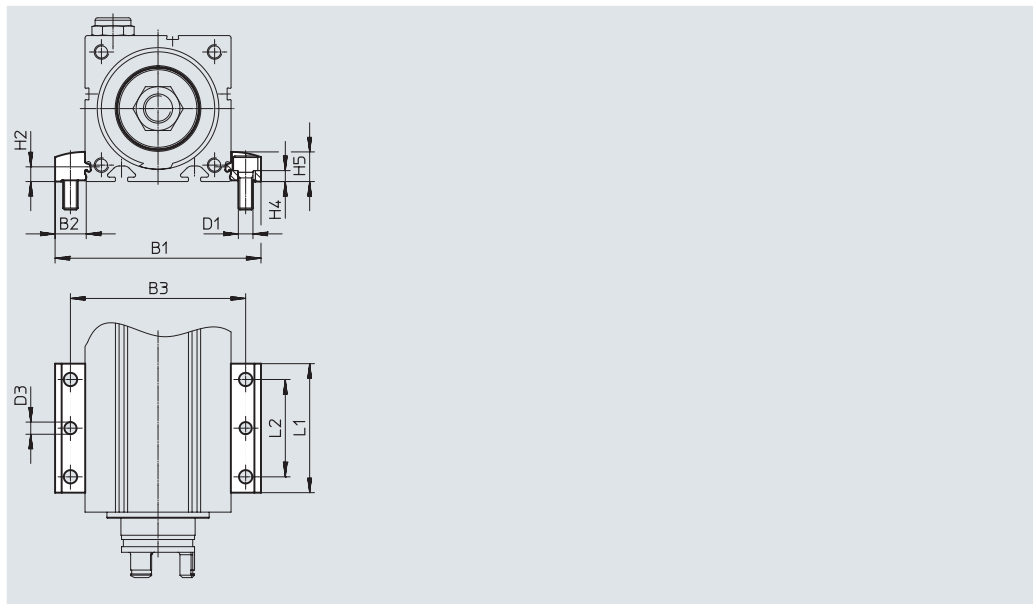
Material:

Anodised wrought aluminium alloy

RoHS-compliant

- For mounting the axis on the side of the profile.

The profile mounting can be attached to the mounting surface using the drilled hole in the centre.



Dimensions and ordering data							
For size	B1	B2	B3	D1 ∅ H13	D2 ∅ H13	D3 ∅	H2
32	51.4	9.7	42	4.5	8	4	4.9
45	70.6	12.8	58	5.5	10	5	6.1
60	85.6	12.8	73	5.5	10	5	6.1

For size	H4 ±0.1	H5	L1	L2	Weight [g]	Part no.	Type
32	4.2	9	53	40	19	4835684	EAHF-L2-25-P
45	5.5	12.2	53	40	35	4835728	EAHF-L2-45-P
60	5.5	12.2	53	40	35	4835728	EAHF-L2-45-P

## Accessories

### Profile mounting EAHF-L2-...-P-D...

Material:

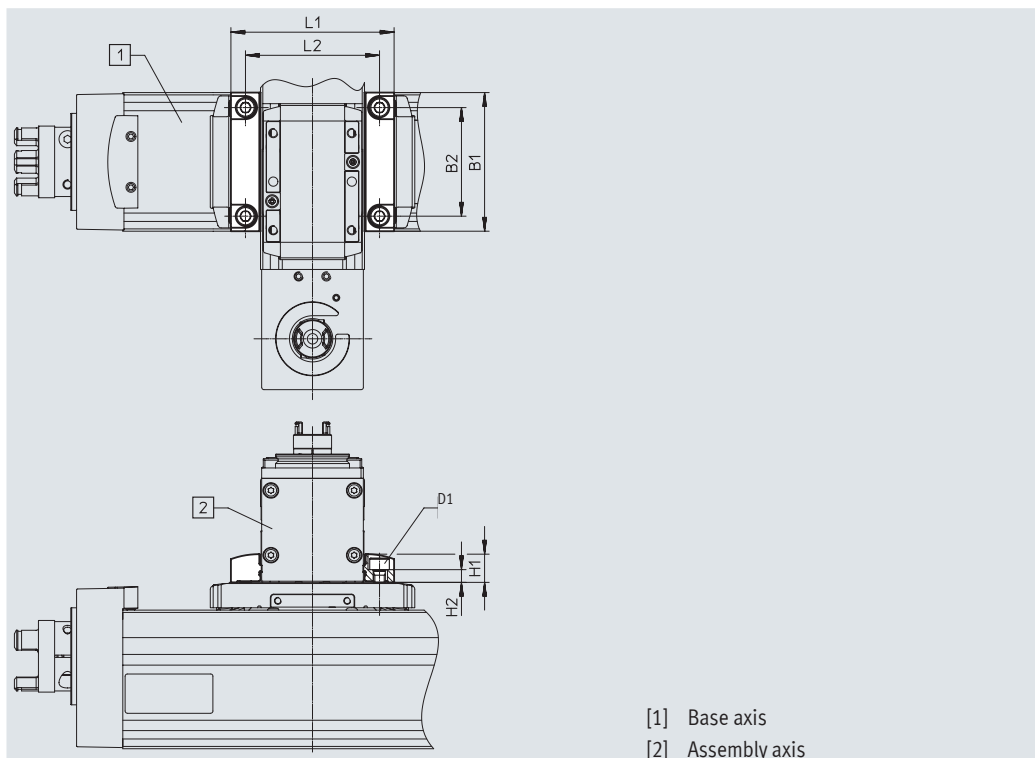
Anodised wrought aluminium alloy

RoHS-compliant

- For axis/axis mounting without adapter plate
- Mounting option: base axis with one-size-down assembly axis (→ page 4)

#### Combination matrix

[1] Base axis ELGC-BS/-TB; ELFC	Size	[2] Assembly axis ELGC-BS/-TB; ELFC; EGSC-BS			
		25	32	45	60
	32	4759753	-	-	-
	45	-	4759748	-	-
	60	-	-	4759739	-



[1] Base axis  
[2] Assembly axis

#### Dimensions and ordering data

For combination (size)	B1	B2	D1	H1
45/32	45	34	M4	9
60/45	60	47	M5	12.2

For combination (size)	H2 ±0.1	L1	L2	Weight [g]	Part no.	Type
45/32	3.7	51.4	42	24	4759748	EAHF-L2-25-P-D2
60/45	5.5	70.6	58	56	4759739	EAHF-L2-45-P-D3



## Accessories

### Adapter kit EHAA-D-L2

Material:

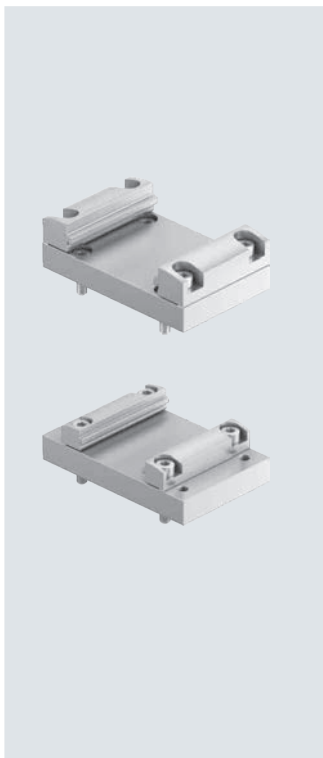
Anodised wrought aluminium alloy

RoHS-compliant

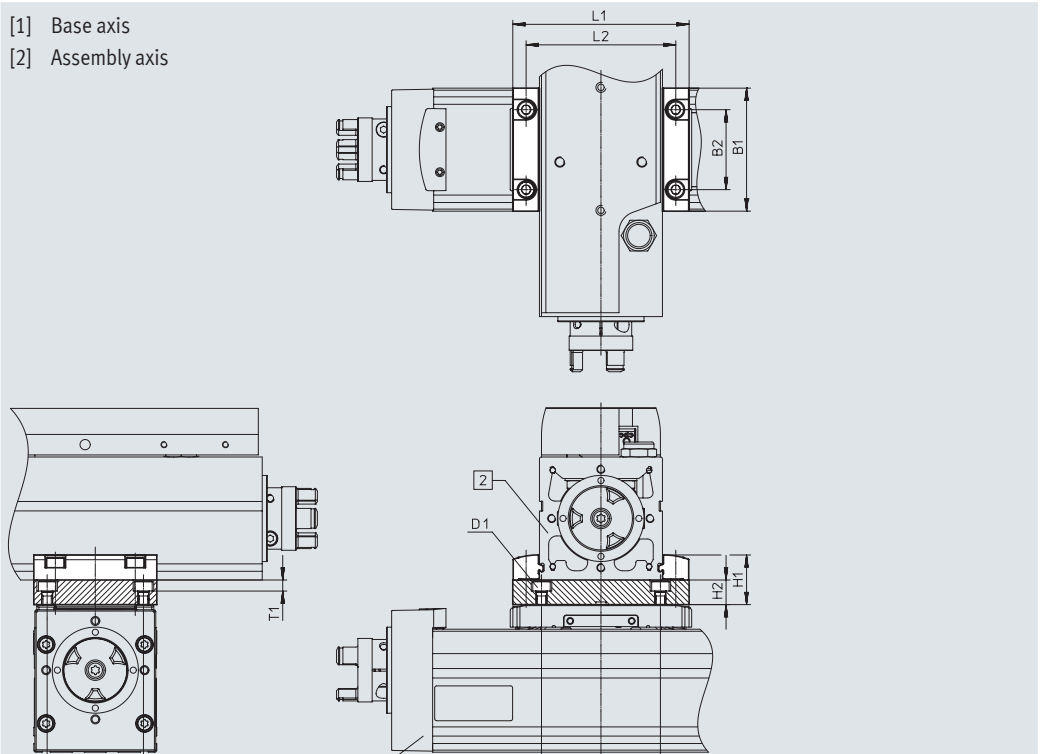
- For axis/axis mounting with adapter plate
- Mounting option: base axis with same size or one-size-down assembly axis (→ page 4)

#### Combination matrix

		[2] Assembly axis ELGC-BS/-TB; ELFC; EGSC-BS				
Size		25	32	45	60	80
[1] Base axis ELGC-BS/-TB; ELFC	32	8066713		-	-	-
	45	-	8066714		-	-
	60	-	-	8066715		-



[1] Base axis  
[2] Assembly axis



#### Dimensions and ordering data

For combination (size)	B1	B3 ±0.05	D1	H1	H2	L1	L2	L3	T1	Weight [g]	Part no.	Type
45/32	45	34	M4	19	10	51.4	42	42	5.4	136	<b>8066714</b>	<b>EHAA-D-L2-45-L2-45</b>
60/45	60	47	M5	24.2	12	70.6	58	58	5.4	205	<b>8066715</b>	<b>EHAA-D-L2-60-L2-60</b>

For combination (size)	B1	B2	B3 ±0.05	D1	H1	H2	L1	L2	L3	T1	Weight [g]	Part no.	Type
45/45	45	32	34	M4	22.2	10	71	58	42	5.4	136	<b>8066714</b>	<b>EHAA-D-L2-45-L2-45</b>
60/60	60	39	47	M5	24.2	12	86	73	58	5.4	205	<b>8066715</b>	<b>EHAA-D-L2-60-L2-60</b>

## Accessories

### Angle kit EHAA-D-L2-...-AP

Material:

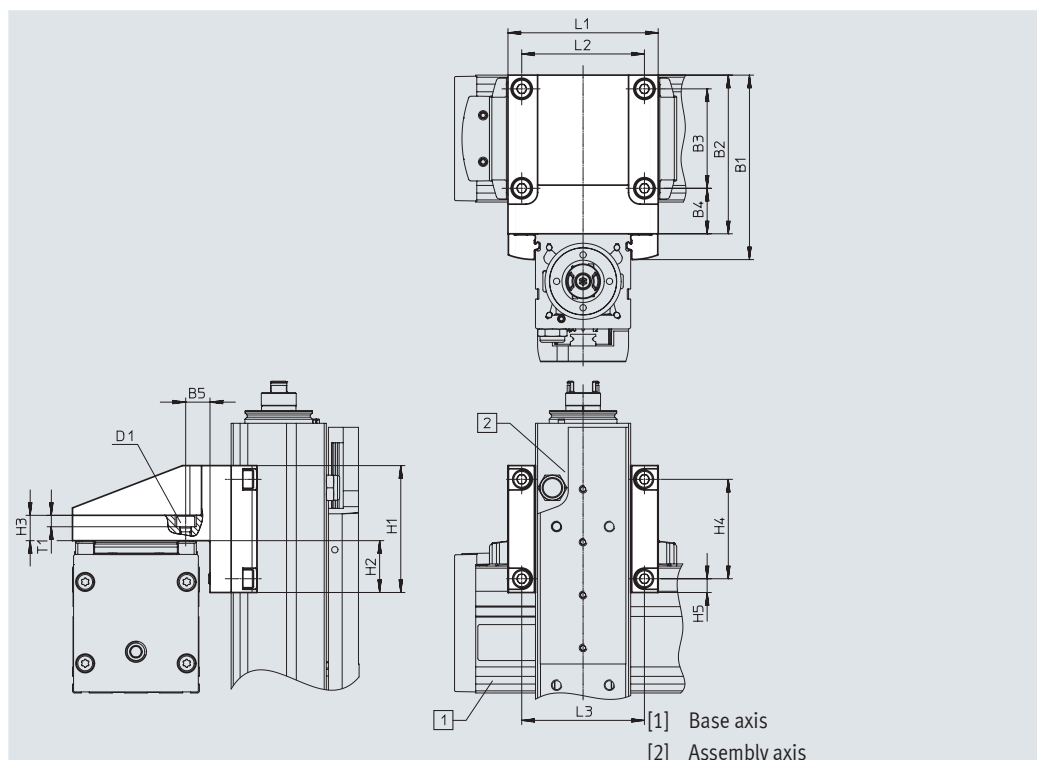
Anodised wrought aluminium alloy

RoHS-compliant

- For mounting one-size-down vertical axes (assembly axes) on base axes with mounting position "slide at top" (→ page 4)

#### Combination matrix

[1] Base axis ELGC-BS/-TB; ELFC	Size	[2] Assembly axis ELGC-BS/-TB; ELFC; EGSC-BS			
		25	32	45	60
32	8066717	-	-	-	-
45	-	-	8066718	-	-
60	-	-	-	8066719	-



#### Dimensions and ordering data

For combination (size)	B1	B2	B3	B4	B5	D1	H1	H2	H3	H4
45/32	69	60	34	20.5	11.5	M4	45	17.5	10	34
60/45	87.2	75	47	21.5	11.5	M5	60	24.5	12	47

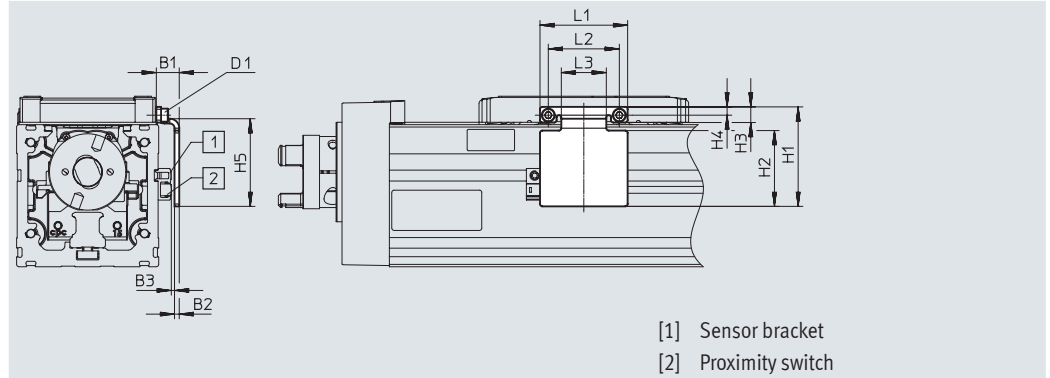
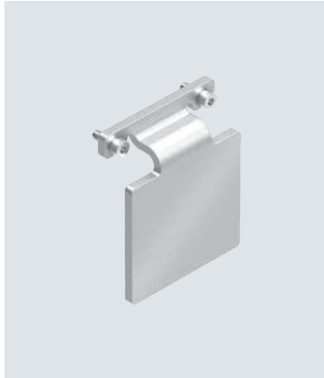
For combination (size)	H5	L1	L2	L3	T1	Weight [g]	Part no.	Type
45/32	5.5	52	42	42	5.4	222	<b>8066718</b>	<b>EHAA-D-L2-45-L2-32-AP</b>
60/45	6.5	71	58	58	5.4	433	<b>8066719</b>	<b>EHAA-D-L2-60-L2-45-AP</b>

**Accessories**

**Switch lug EAPM-L2-SLS**

For sensing using inductive proximity switches SIES-8M

Material:  
Galvanised steel  
RoHS-compliant

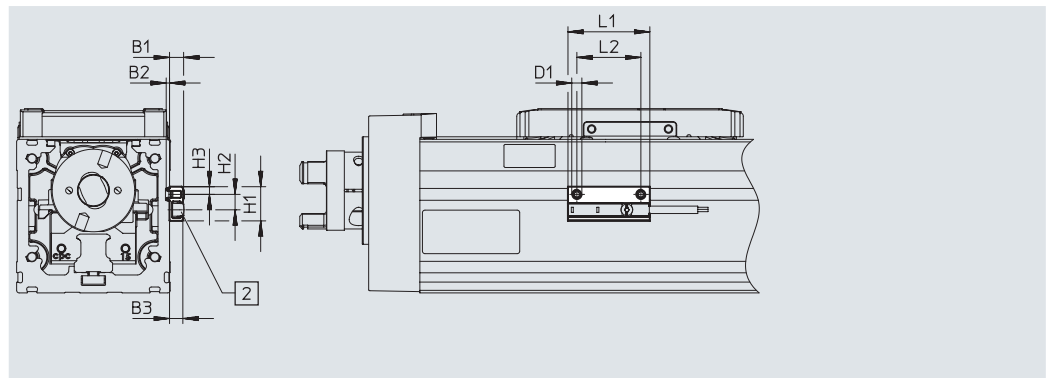
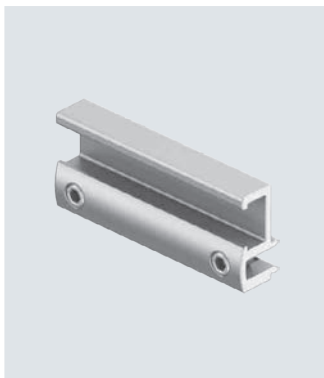


Dimensions and ordering data								
For size	B1	B2	B3	D1	H1 ±0.2	H2	H3	H4
32	9.2	2	1.0±0.31	M1.6	27	19	4.3	2.5
45	9.4	2	1.2±0.31	M2	37	28	5.5	3.3
60	9.7	2	1.3±0.31	M3	37	32	6.6	3.5

For size	H5 ±0.2	L1 ±0.2	L2 ±0.15	L3	Weight [g]	Part no.	Type
32	24	22	18	10	10	8067259	EAPM-L2-32-SLS
45	33	30	24	14	18	8067260	EAPM-L2-45-SLS
60	37	42	30	19	27	8067261	EAPM-L2-60-SLS

**Sensor bracket EAPM-L2-SH**




Material:  
Anodised wrought aluminium alloy  
RoHS-compliant



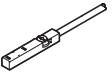
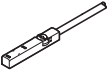
Dimensions and ordering data						
For size	B1	B2	D1	H1	H2	
32, 45, 60	5.5	1.3	M4	13.4	6	

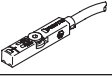
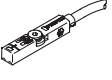
For size	H3	L1	L2	Weight [g]	Part no.	Type
32, 45, 60	3	32	25	4	4759852	EAPM-L2-SH



## Accessories


Ordering data		For size	Description	Part no.	Type	PU <sup>1)</sup>
Centring pin ZBS/centring sleeve ZBH						
	32	For slide		525273	ZBS-2	10
	45			562959	ZBS-4	
	60			8146543	ZBH-5-B	
Clamping element EADT						
	32, 45	Tool for retensioning the cover strip		8065818	EADT-S-L5-32	1
	60			8058451	EADT-S-L5-70	
Push-in fitting						
	32	for sealing air connection		133003	QSM-M5-3-I-R	10
	45, 60			133004	QSM-M5-4-I-R	
				186266	QSM-G1/8-4-I	
				186267	QSM-G1/8-6-I	

1) Packaging unit

Ordering data – Proximity switches 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-wire	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-wire	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-wire	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-wire	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


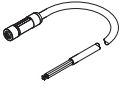
Ordering data – Proximity switch for T-slot, magneto-resistive						Datasheets → Internet: smt
Type of mounting	Switching output	Electrical connection	Cable length [m]	Part no.	Type	
N/O						
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	2.5	574335	SMT-8M-A-PS-24V-E-2.5-OE
			Plug M8x1, 3-pin	0.3	574334	SMT-8M-A-PS-24V-E-0.3-M8D
N/C						
	Inserted in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	7.5	574340	SMT-8M-A-PO-24V-E-7.5-OE



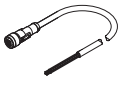
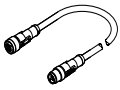
Ordering data – Connecting cables					Datasheets → Internet: nebu
Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type	
	Straight socket, M8x1, 3-pin	Cable, open end, 3-wire	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5	541334	NEBU-M8G3-K-5-LE3
	Angled socket, M8x1, 3-pin	Cable,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

 **Note**

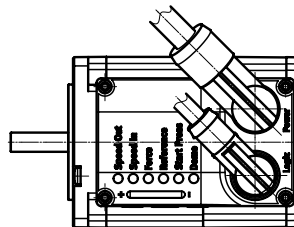
Proximity switches are optional and only required in order to sense any intermediate positions.


Accessories


Ordering data – Supply cables					Datasheets → Internet: nebl
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
	Angled socket, M12x1, 4-pin	Cable, open end, 4-wire	2	8080778	NEBL-T12W4-E-2-N-LE4
			5	8080779	NEBL-T12W4-E-5-N-LE4
			10	8080780	NEBL-T12W4-E-10-N-LE4
			15	8080781	NEBL-T12W4-E-15-N-LE4
	Straight socket, M12x1, 4-pin	Cable, open end, 4-wire	2	8080790	NEBL-T12G4-E-2-N-LE4
			5	8080791	NEBL-T12G4-E-5-N-LE4
			10	8080792	NEBL-T12G4-E-10-N-LE4
			15	8080793	NEBL-T12G4-E-15-N-LE4

Ordering data – Connecting cables					Datasheets → Internet: nebc
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
	Angled socket, M12x1, 8-pin	Cable, open end, 8-wire	2	8094476	NEBC-M12W8-E-2-N-B-LE8
			5	8094478	NEBC-M12W8-E-5-N-B-LE8
			10	8094481	NEBC-M12W8-E-10-N-B-LE8
			15	8094479	NEBC-M12W8-E-15-N-B-LE8
	Straight plug, M12x1, 8-pin	Cable, open end, 8-wire	2	8080786	NEBC-M12W8-E-2-N-M12G8
			5	8080787	NEBC-M12W8-E-5-N-M12G8
			10	8080788	NEBC-M12W8-E-10-N-M12G8
			15	8080789	NEBC-M12W8-E-15-N-M12G8
	Straight socket, M12x1, 8-pin	Cable, open end, 8-wire	2	8094480	NEBC-M12G8-E-2-N-B-LE8
			5	8094477	NEBC-M12G8-E-5-N-B-LE8
			10	8094482	NEBC-M12G8-E-10-N-B-LE8
			15	8094475	NEBC-M12G8-E-15-N-B-LE8
	Straight plug, M12x1, 8-pin	Cable, open end, 8-wire	2	8080782	NEBC-M12G8-E-2-N-M12G8
			5	8080783	NEBC-M12G8-E-5-N-M12G8
			10	8080784	NEBC-M12G8-E-10-N-M12G8
			15	8080785	NEBC-M12G8-E-15-N-M12G8

**Note**  
The cables are positioned at a 45° angle to the axis.



Ordering data – IO-Link master USB				Datasheets → Internet: cdsu
	Description	Cable length [m]	Part no.	Type
	<ul style="list-style-type: none"> <li>For using the unit with IO-Link</li> <li>An external power supply plug is also required (not included in the scope of delivery)</li> </ul>	0.3	8091509	CDSU-1

Ordering data – Adapter					Datasheets → Internet: nefc
	Electrical connection, left	Electrical connection, right	Cable length [m]	Part no.	Type
	Straight socket, M12x1, 8-pin	Straight plug, M12x1, 5-pin	0.3	8080777	NEFC-M12G8-0.3-M12G5-LK

# Festo - Your Partner in Automation



**1 Festo Inc.**  
5300 Explorer Drive  
Mississauga, ON L4W 5G4  
Canada

**Festo Customer Interaction Center**  
Tel: 1 877 463 3786  
Fax: 1 877 393 3786  
Email: [customer.service.ca@festo.com](mailto:customer.service.ca@festo.com)



**2 Festo Pneumatic**  
Av. Ceylán 3,  
Col. Tequesquináhuac  
54020 Tlalnepantla,  
Estado de México

**Multinational Contact Center**  
01 800 337 8669  
[ventas.mexico@festo.com](mailto:ventas.mexico@festo.com)



**3 Festo Corporation**  
1377 Motor Parkway  
Suite 310  
Islandia, NY 11749

**Festo Customer Interaction Center**  
1 800 993 3786  
1 800 963 3786  
[customer.service.us@festo.com](mailto:customer.service.us@festo.com)



**4 Regional Service Center**  
7777 Columbia Road  
Mason, OH 45040

Connect with us



[www.festo.com/socialmedia](http://www.festo.com/socialmedia)



[www.festo.com](http://www.festo.com)

Subject to change