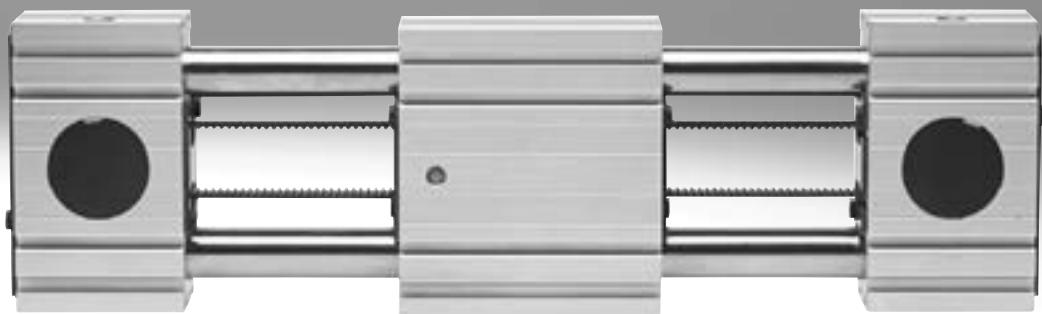


## Toothed belt axes ELGR

FESTO

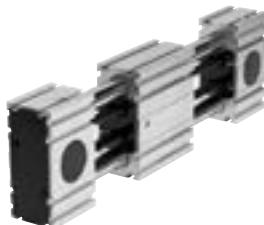


## Key features

At a glance		
General	Properties	Range of applications
<ul style="list-style-type: none"> <li>Optimum price/performance ratio</li> <li>Ready-to-install unit for quick and easy design</li> <li>High reliability thanks to tested service life of 5000 km</li> <li>Complete module for a simple and space-saving solution for end-position sensing</li> </ul>	<ul style="list-style-type: none"> <li>Plain-bearing guide <ul style="list-style-type: none"> <li>For small loads</li> <li>Restricted operating behaviour with torque load</li> <li>Guide not backlash-free</li> </ul> </li> <li>Recirculating ball bearing guide <ul style="list-style-type: none"> <li>For medium loads</li> <li>Very good operating behaviour with torque load</li> <li>Backlash-free guide (preloaded guide elements)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Pick &amp; place with payloads of up to 15 kg</li> <li>Positioning and handling with low process forces</li> <li>Actuation of guard doors in processing machines</li> </ul>

### Modular axis system with open motor interface → page 6

- Variable strokes
- Two guide variants
- Axial kits for servo and stepper motors
- The motor position can be freely selected on 4 sides and can be changed at any time



### Optimised Motion Series (OMS) – Package solution with motor and motor controller → page 18

A package that makes positioning easier than ever before.

The Optimised Motion Series is as easy to handle as a pneumatic cylinder, but with the functionality of an electric drive.



#### Simple selection

- Easy sizing and selection using cycle time charts
- No special knowledge of electric drive technology required

#### Ordering and logistics

- All the necessary individual parts under a single part number
- Motors pre-assembled on the axis mechanism

#### Quick to configure

- Parameterisation and commissioning via web server/browser
- Parameterise up to 7 freely definable positions directly on the PC

#### For simple positioning tasks

Toothed belt axis ELGR



Controller CMMO-ST



## Key features

### Combination options within the Optimised Motion Series (OMS)

Electric cylinder EPCO on toothed belt axis ELGR

Size	Accessories				
[1] EPCO	[2] ELGR	Slot nut	Centring sleeve	Screw	Washer
16	35	NST-3-M3 (x4)	ZBH-7 (x2)	M3x10 (x4)	–
25	45	NST-5-M5 (x4)	ZBH-7 (x2)	M5x50 (x4)	DIN125-A5.3 (x4)
40	55	NST-5-M5 (x4)	ZBH-7 (x2)	M5x65 (x4)	DIN125-A5.3 (x4)

Rotary drive ERMO on electric cylinder EPCO

Size	Accessories		
[1] ERMO	[2] EPCO	Centring sleeve	Screw
12	16	ZBH-7 (x2)	M4x16 (x2)
16	25	ZBH-7 (x2)	M5x18 (x2)
25	40	ZBH-7 (x2)	M5x20 (x2)

Rotary drive ERMO on mini slide DGSL

When combining ERMO-12 with DGSL-12, the proximity sensor SIEN cannot be used as a homing sensor for ERMO.

Size	Accessories		
[1] ERMO	[2] DGSL	Centring sleeve	Screw
12	12	ZBH-7 (x2)	M4x18 (x2)
25	20	ZBH-9-7 (x2)	M5x22 (x2)
25	25	ZBH-9-7 (x2)	M5x22 (x2)

Rotary drive ERMO on mini slide EGSL

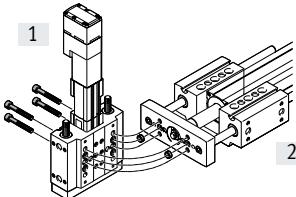
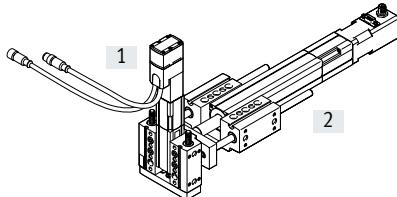
Size	Accessories		
[1] ERMO	[2] EGSL	Centring sleeve	Screw
12	35	ZBH-7 (x2)	M4x12 (x2)
16	45	ZBH-7 (x2)	M5x12 (x2)
25	55	ZBH-7 (x2)	M5x14 (x2)
32	55	ZBH-7 (x2)	M5x14 (x2)

## Toothed belt axes ELGR

### Key features

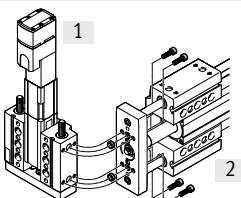
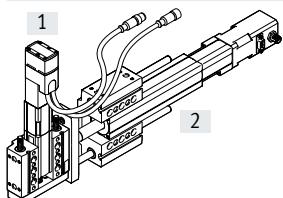
#### Combination options within the Optimised Motion Series (OMS)

Electric cylinder EPCO on electric cylinder EPCO, horizontal



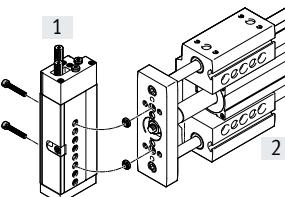
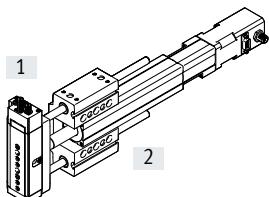
Size		Accessories	
[1] EPCO	[2] EPCO	Centring sleeve	Screw
16	25	ZBH-9 (x2)	M6x40 (x4)
25	40	ZBH-9 (x2)	M6x55 (x4)

Electric cylinder EPCO on electric cylinder EPCO, vertical



Size		Accessories	
[1] EPCO	[2] EPCO	Centring sleeve	Screw
16	25	ZBH-9 (x2)	M5x18 (x4)
25	40	ZBH-9 (x2)	M5x22 (x4)

Mini slide DGSL on electric cylinder EPCO



Size		Accessories	
[1] DGSL	[2] EPCO	Centring sleeve	Screw
8 (40 mm) <sup>1)</sup>	16	ZBV-9-7 (x2)	M4x16 (x2)
10 (30mm) <sup>1)</sup>	25	ZBV-9-7 (x2)	M4x20 (x2)
12 (40mm) <sup>1)</sup>	40	ZBV-9-7 (x2)	M5x20 (x2)

1) Minimum stroke

## Key features

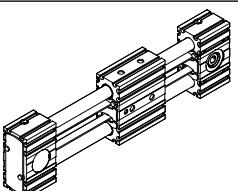
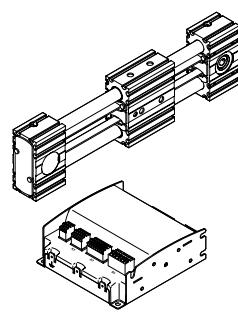
### Characteristic values of the axes

The specifications shown in the table are maximum values.

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

### Note

Engineering software  
PositioningDrives  
[www.festo.com](http://www.festo.com)

Version	Size	Working stroke	Speed	Repetition accuracy	Feed force	Guide characteristics Forces and torques					→ Page
		[mm]	[m/s]	[mm]	[N]	Fy [N]	Fz [N]	Mx [Nm]	My [Nm]	Mz [Nm]	
<b>Toothed belt axis ELGR</b>											
	35	50 ... 800	3	±0.1	50	50	50	2.5	20	20	6
	45	50 ... 1000	3	±0.1	100	100	100	5	40	40	
	55	50 ... 1500	3	±0.1	350	300	300	15	124	124	
<b>Toothed belt axis ELGR in combination with Optimised Motion series (OMS)</b>											
	35	50 ... 800 <sup>1)</sup>	1.1	±0.1	50	20	20	2.5	20	20	18
	45	50 ... 1000 <sup>1)</sup>	1.1	±0.1	100	50	50	5	40	40	
	55	50 ... 1500 <sup>1)</sup>	0.35	±0.1	350	90	90	15	124	124	

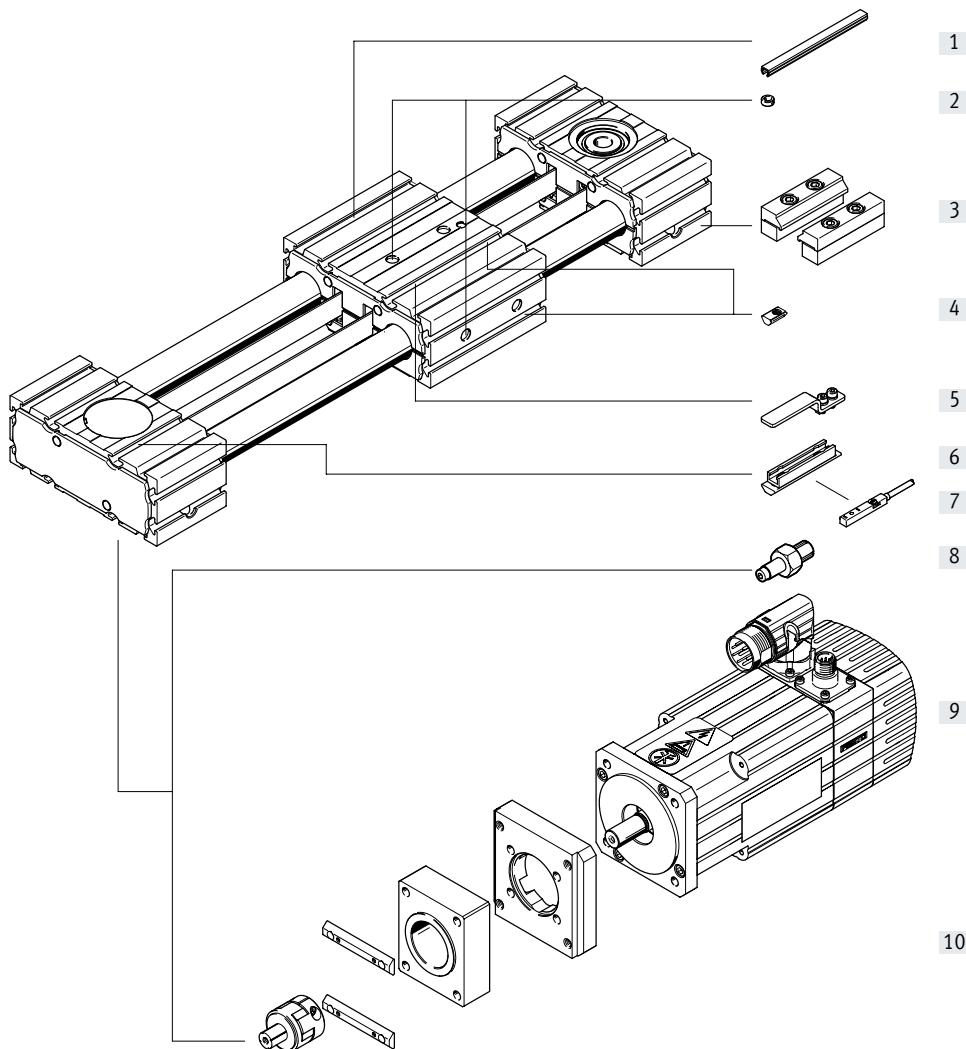
1) Only standard strokes can be ordered → page 32

## Toothed belt axes ELGR

### Type codes

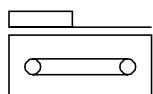
<b>001</b>	<b>Series</b>		<b>013</b>	<b>Motor position</b>	
<b>ELGR</b>	Linear axis			Standard	
<b>002</b>	<b>Drive system</b>		<b>FR</b>	Front right	
<b>TB</b>	Toothed belt		<b>FL</b>	Front left	
<b>003</b>	<b>Guide</b>		<b>RR</b>	Rear right	
<b>004</b>	<b>Size</b>		<b>RL</b>	Rear left	
<b>35</b>	35		<b>014</b>	Proximity sensor, inductive, slot 8, PNP, N/C contact, cable 7.5 m [units]	
<b>45</b>	45		<b>...</b>	1 ... 6	
<b>55</b>	55		<b>015</b>	Proximity sensor, inductive, slot 8, PNP, N/O contact, cable 7.5 m [units]	
<b>005</b>	<b>Stroke</b>		<b>...</b>	1 ... 6	
<b>100</b>	100		<b>016</b>	Mounting slot cover, 2x, 500 mm [units]	
<b>200</b>	200		<b>...</b>	1 ... 50	
<b>300</b>	300		<b>017</b>	Slot nut for mounting slot [units]	
<b>400</b>	400		<b>...</b>	1 ... 99	
<b>500</b>	500		<b>018</b>	Drive shaft [units]	
<b>600</b>	600		<b>...</b>	1 ... 4	
<b>800</b>	800		<b>019</b>	Profile mounting	
<b>1000</b>	1000		<b>...</b>	1 ... 2	
<b>1200</b>	1200		<b>020</b>	Connecting cable to motor controller	
<b>1500</b>	1500			None	
<b>...</b>	100 ... 1500		<b>1.5E</b>	1.5 m, suitable for energy chains, straight plug	
<b>006</b>	<b>Stroke reserve</b>		<b>2.5E</b>	2.5 m, suitable for energy chains, straight plug	
<b>007</b>	<b>Slide design</b>		<b>5E</b>	5 m, suitable for energy chains, straight plug	
	Standard		<b>7E</b>	7 m, suitable for energy chains, straight plug	
<b>L</b>	Slide, long		<b>10E</b>	10 m, suitable for energy chains, straight plug	
<b>008</b>	<b>Additional slide</b>		<b>021</b>	<b>Controller type</b>	
	None			None	
<b>ZR</b>	1 slide right		<b>C5</b>	CMMO, 5 A	
<b>ZL</b>	1 slide left		<b>022</b>	<b>Bus protocol/activation</b>	
<b>ZB</b>	Additional slide 1x left, 1x right			None	
<b>009</b>	<b>Motor type</b>		<b>DIO</b>	Digital I/O interface	
	Without motor		<b>LK</b>	IO-Link®	
<b>ST</b>	Stepper motor ST		<b>PP</b>	Pulse sequence interface	
<b>010</b>	<b>Measuring unit</b>		<b>023</b>	<b>Switching input/output</b>	
	None			None	
<b>E</b>	Encoder		<b>P</b>	PNP	
<b>011</b>	<b>Brake</b>		<b>N</b>	NPN	
	None		<b>024</b>	<b>Operating instructions</b>	
<b>B</b>	With brake			With operating instructions	
<b>012</b>	<b>Cable outlet direction</b>		<b>DN</b>	No operating instructions	
<b>AT</b>	Top				
<b>AD</b>	Underneath				
<b>AL</b>	Left				
<b>AR</b>	Right				

## Peripherals overview



Accessories		→ Page/Internet
Type/order code	Description	
[1] Slot cover NC	• For protecting against contamination	37
[2] Centring sleeve ZBH	• For centring loads and attachments on the slide • 2 centring sleeves included in the scope of delivery of the axis	37
[3] Profile mounting MA	For mounting the axis on the bearing cap	36
[4] Slot nut NM	For mounting attachments	37
[5] Switch lug SA, SB	For sensing the slide position	36
[6] Sensor bracket SA, SB	Adapter for mounting the inductive proximity sensors on the axis	36
[7] Proximity sensor, T-slot SA, SB	• Inductive proximity sensor, for T-slot • 1 switch lug and 1 sensor bracket are included in the scope of delivery with the order code SA, SB	38
[8] Drive shaft EA	• Can, if required, be used as an alternative interface • No drive shaft is required for the axis/motor combinations → Page 32	37
[9] Motor EMME, EMMS	Motors specially matched to the axis, with or without brake	32
[10] Axial kit EAMM	For axial motor mounting (comprises: coupling, coupling housing and motor flange)	32
– Connecting cable NEBU	For proximity sensor (order code SA and SB)	38

## Data sheet



- - Size  
35 ... 55
- - Stroke length  
50 ... 1500 mm
- - [www.festo.com](http://www.festo.com)



<b>General technical data</b>			
Size	35	45	55
Design	Electromechanical linear axis with toothed belt		
Guide	Recirculating ball bearing guide Plain-bearing guide		
Mounting position	Any		
Working stroke [mm]	50 ... 800	50 ... 1000	50 ... 1500
Max. feed force $F_x$ [N]	50	100	350
Max. no-load torque [Nm]	0.1	0.2	0.4
Max. driving torque [Nm]	0.46	1.24	5
Max. no-load resistance to shifting [N]	10.8	16.1	27.9
Max. speed			
Recirculating ball bearing guide [m/s]	3		
Plain-bearing guide [m/s]	1		
Max. acceleration <sup>1)</sup> [m/s <sup>2</sup> ]	50		
Repetition accuracy [mm]	±0.1		

1) The max. acceleration is dependent on the payload, the driving torque and the max. feed force → page 11

<b>Operating and environmental conditions</b>			
Ambient temperature			
Recirculating ball bearing guide [°C]	-10 ... +50		
Plain-bearing guide [°C]	0 ... +40		
Degree of protection	IP20		
Duty cycle [%]	100		

<b>Weight [kg]</b>			
Size	35	45	55
<b>Recirculating ball bearing guide</b>			
Basic weight with 0 mm stroke <sup>1)</sup>			
Standard slide	1.5	3.2	5.4
Long slide	1.9	4.3	7.4
Additional weight per 1000 mm stroke	2.5	5.0	7.8
Moving mass	0.5	1.1	1.9
Slide			
Standard slide	0.5	1.0	1.8
Long slide	0.8	1.7	3.0
Additional slide	0.4	0.9	1.7

1) Incl. slide

## Data sheet

Weight [kg]			
Size	35	45	55
<b>Plain-bearing guide</b>			
Basic weight with 0 mm stroke <sup>1)</sup>			
Standard slide	1.4	3.1	5.1
Long slide	1.9	4.3	7.3
Additional weight per 1000 mm stroke	2.5	5.0	7.8
Moving mass	0.4	0.9	1.5
Slide			
Standard slide	0.4	0.9	1.5
Long slide	0.7	1.6	2.8
Additional slide	0.3	0.7	1.3

1) Incl. slide

<b>Toothed belt</b>			
Size	35	45	55
Pitch [mm]	2	3	3
Expansion <sup>1)</sup> [%]	0.094	0.08	0.21
Width [mm]	10	15	19.3
Effective diameter [mm]	18.46	24.83	28.65
Feed constant [mm/rev.]	58	78	90

1) At max. feed force

<b>Mass moment of inertia</b>			
Size	35	45	55
$J_0$			
Standard slide [kg mm <sup>2</sup> ]	40.26	155.13	360.48
Long slide [kg mm <sup>2</sup> ]	66.50	271.52	638.74
$J_S$ per metre stroke [kg mm <sup>2</sup> /m]	0.26	1.06	1.88
$J_L$ per kg payload [kg mm <sup>2</sup> /Kg]	85.19	154.13	205.21
$J_W$ additional slide [kg mm <sup>2</sup> ]	36.75	136.55	301.92

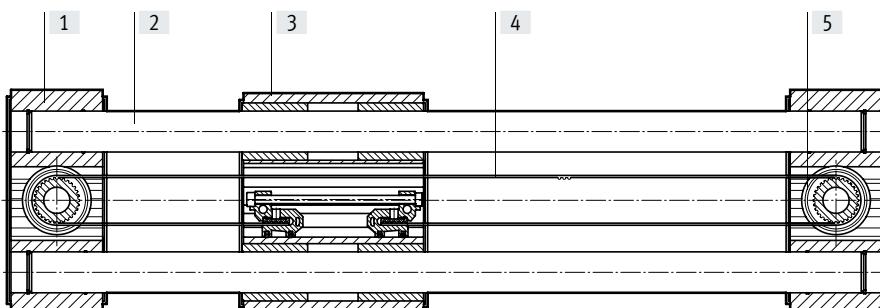
The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

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

K = Number of additional slides

### Materials

#### Sectional view



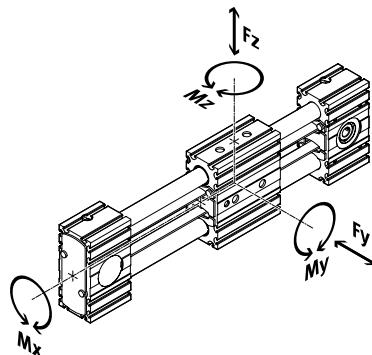
#### Axis

[1] Bearing cap, profile	Anodised wrought aluminium alloy
[2] Guide rods	Hardened and hard-chromium plated tempered steel
[3] Slide, profile	Anodised wrought aluminium alloy
[4] Toothed belt	Polychloroprene with glass cord and nylon coating
[5] Belt pulley	High-alloy stainless steel
Note on materials	RoHS-compliant Contains paint-wetting impairment substances

## Data sheet

### Characteristic load values

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



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

Calculating the load comparison factor:

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

$F_1/M_1$  = dynamic value

$F_2/M_2$  = maximum value

### Permissible forces and torques for a service life of 5000 km

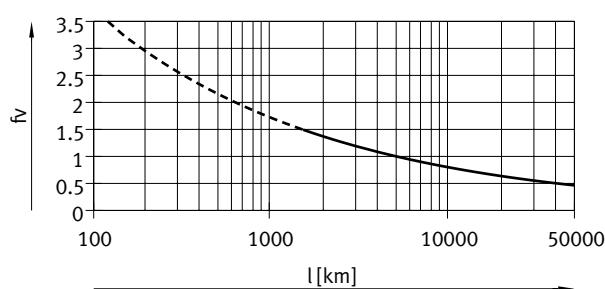
Guide	Plain-bearing guide			Recirculating ball bearing guide			
Size	35	45	55	35	45	55	
$F_{y\max}, F_{z\max}$	[N]	50	100	300	50	100	300
<b>Standard slide</b>							
$M_{x\max}$	[Nm]	1	2.5	5	2.5	5	15
$M_{y\max}$	[Nm]	4	8	16	8	16	48
$M_{z\max}$	[Nm]	4	8	16	8	16	48
<b>Long slide</b>							
$M_{x\max}$	[Nm]	1	2.5	5	2.5	5	15
$M_{y\max}$	[Nm]	10	20	40	20	40	124
$M_{z\max}$	[Nm]	10	20	40	20	40	124

### Service life

The service life of the guide depends on the load. To provide a rough indication of 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 contact person at Festo for load comparison factors  $f_v$  greater than 1.5.

### Load comparison factor $f_v$ as a function of service life



### Example:

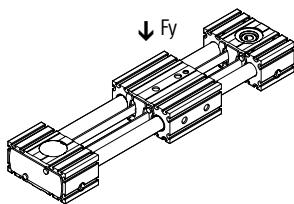
A user wants to move an X kg load. Using the above formula gives a value of 1.5 for the load comparison factor  $f_v$ . According to the graph, the guide would have a service life of approx. 1500 km. Reducing the acceleration reduces the  $M_z$  and  $M_y$  values. A load comparison factor of 1 now gives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

### Note

Engineering software  
PositioningDrives  
[www.festo.com](http://www.festo.com)

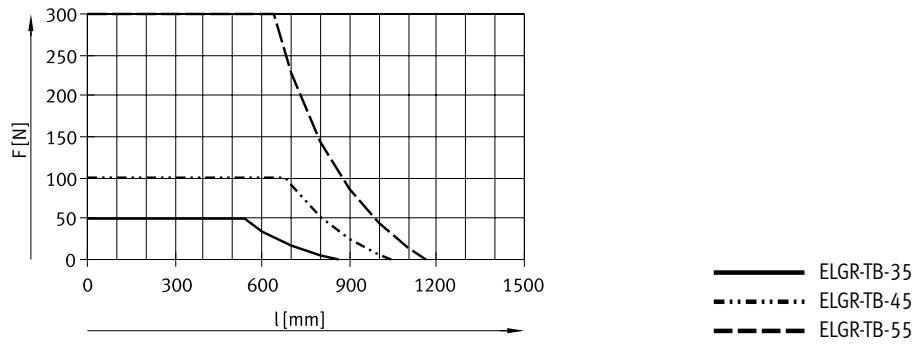
## Data sheet

### Max. load with flat mounting position



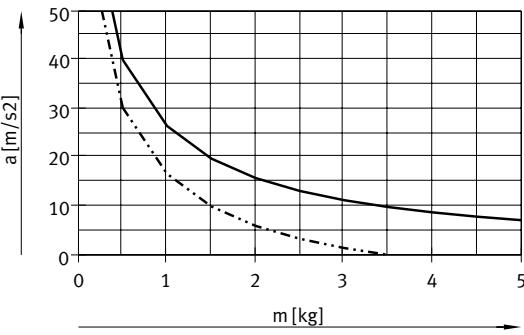
The characteristic curves in the graph correspond to the max. recommended deflection of 0.5 mm.

In this case, the axis can no longer support the maximum load past a certain stroke length.

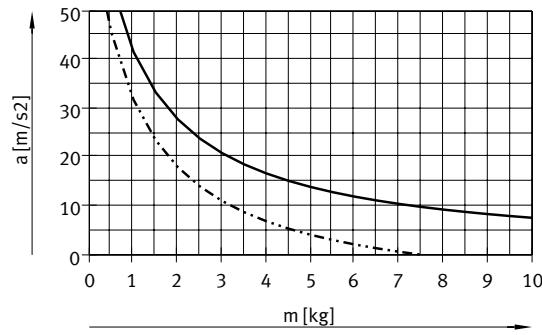


### Max. acceleration $a$ as a function of payload $m$

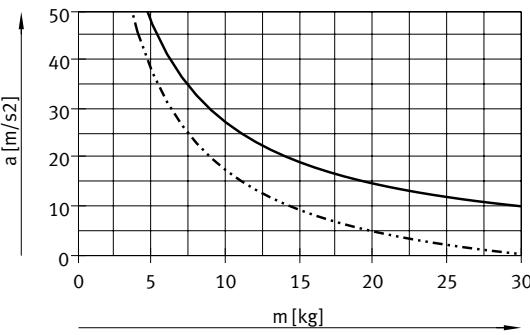
ELGR-35



ELGR-45



ELGR-55



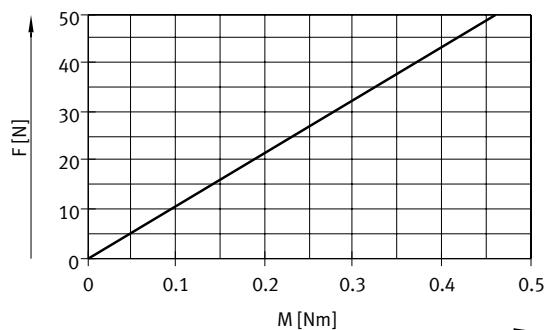
Horizontal  
Vertical

# Toothed belt axes ELGR

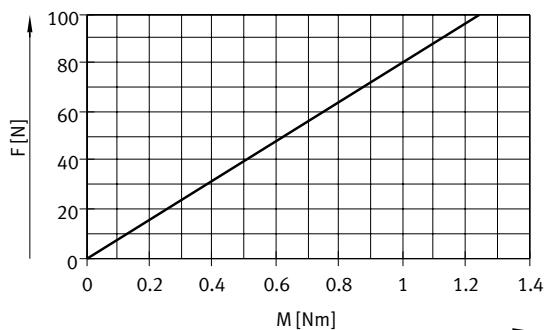
## Data sheet

### Feed force $F_x$ as a function of input torque M

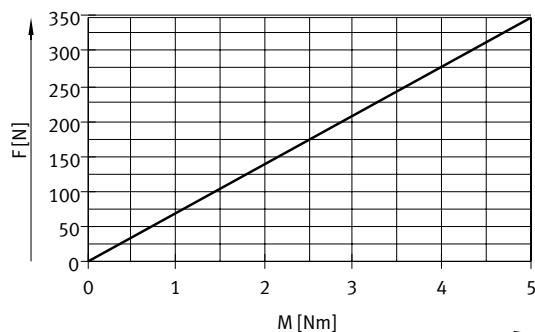
ELGR-35



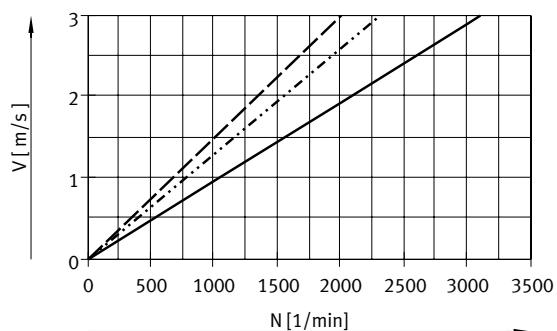
ELGR-45



ELGR-55



### Speed v as a function of rotational speed n



— ELGR-TB-35  
 - - - ELGR-TB-45  
 - · - ELGR-TB-55

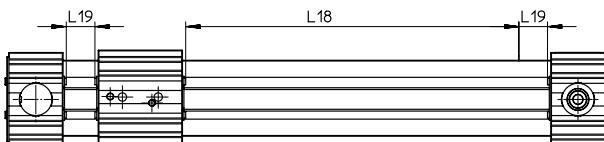
## Data sheet

### Minimum nominal stroke

For variant with additional slide ELGR-...-ZR/ZL-ZB

Size ELGR-	35 ZR/ZL	ZB	45 ZR/ZL	ZB	55 ZR/ZL	ZB
Min. nominal stroke [mm]	126	202	146	242	166	282

### Stroke reserve



L18 = Nominal stroke

L19 = Stroke reserve

- The stroke reserve is a safety distance from the mechanical end position and is not used in normal operation

- The sum of the nominal stroke and 2x stroke reserve must not exceed the maximum permissible working stroke

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

#### Example:

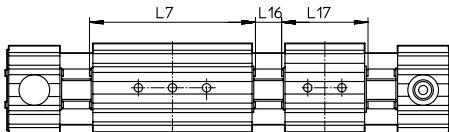
Type ELGR-TB-45-500-20H...

Nominal stroke	= 500 mm
2x stroke reserve	= 40 mm

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

### Working stroke reduction

For standard slide or long slide with additional slide ELGR-...-ZR/ZL/ZB



L7 = Slide length

L16 = Distance between the two slides

L17 = Additional slide length

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

- If the long slide variant L is ordered, the additional slide is not extended

#### Example:

Type ELGR-TB-35-500-...-ZR

Working stroke	=	Working stroke with additional slide	=	414 mm
500 mm		(500 mm - 10 mm - 76 mm)		

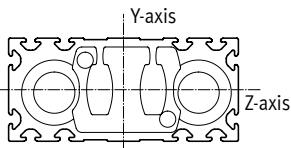
L16 = 10 mm

L7, L17 = 76 mm

### Dimensions – Additional slide

Size	35	45	55
Length L17 [mm]	76	96	116
Distance between the slides L16 [mm]	$\geq 0$		

### 2nd moment of area



Size	35	45	55
Iy [mm <sup>4</sup> ]	$4.19 \times 10^3$	$17.95 \times 10^3$	$41.18 \times 10^3$
Iz [mm <sup>4</sup> ]	$3.77 \times 10^3$	$15.71 \times 10^3$	$38.35 \times 10^3$

### Recommended deflection limits

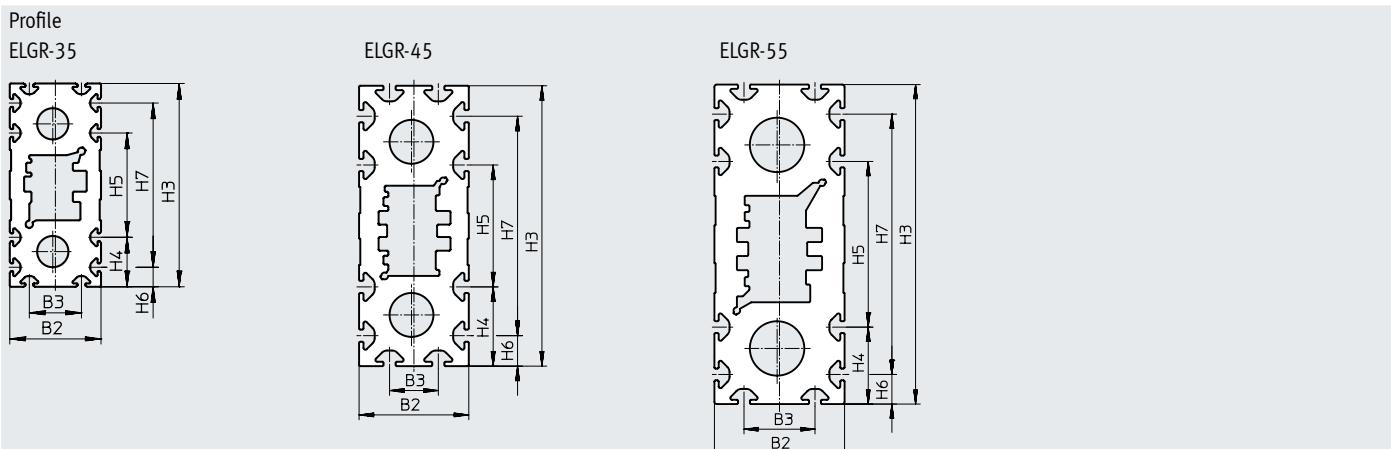
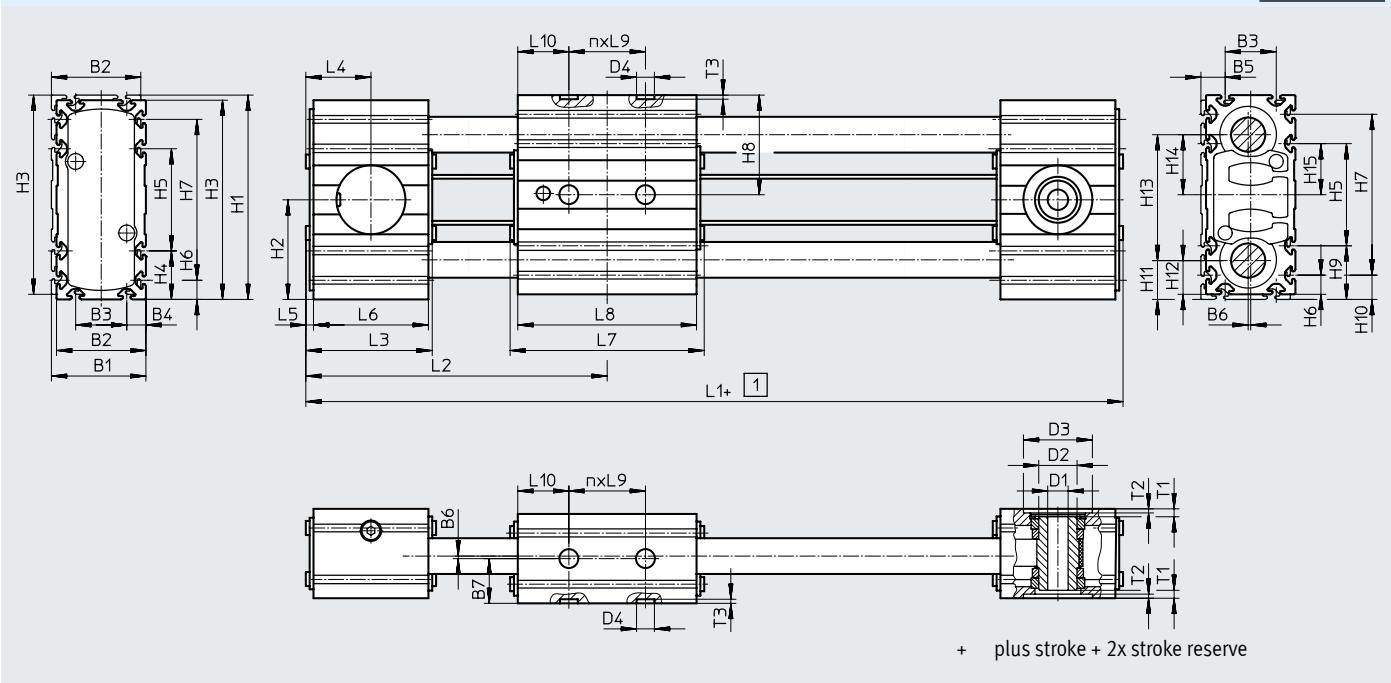
Adherence to a maximum deflection of 0.5 mm is recommended so as not to impair the functional performance of the axes. Greater deformation can result in increased friction, greater wear and reduced service life.

# Toothed belt axes ELGR

## Data sheet

### Dimensions

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



Size	B1	B2	B3	B4	B5	B6	B7	D1 Ø H7	D2 Ø H7	D3 Ø H7	D4 Ø H7	H1	H2	H3	H4	H5	H6
35	37	35	20	7.5	9.5	1	17.5	8	15	27	7	80	39	78	19	40	7.5
45	47	45	20	12.5	14.5		22.5	10	20	38		117	57.5	115	32.5	50	12.5
55	57	55	30	12.5	14.5		27.5	16	25	48		137	67.5	135	32.5	70	12.5

Size	H7	H8	H9	H10	H11	H12	H13	H14	H15	L3	L4	L5	L6	L9	T1	T2	T3 +0.1
35	63	39	21	9.5	15.5	13.5	49	23.5	20	51	25.5	3	45	30	3.1	1.6	1.6
45	90	57.5	34.5	14.5	23	21	71	34.5	25	60	30		54	40	3	1.7	
55	110	67.5	34.5	14.5	25.5	23.5	86	42	35	62	31		56	40	4.5	2	

Size ELGR-...	L1		L2		L7		L8		L10		n	
		-L		-L		-L		-L		-L		-L
35	178	248	89	124	76	146	70	140	20	40	1	2
45	219	309	108	153	96	186	90	180	25	50	1	2
55	243	353	120	175	116	226	110	220	35	70	1	2

## Data sheet

### Ordering data – Standard version

Key features:

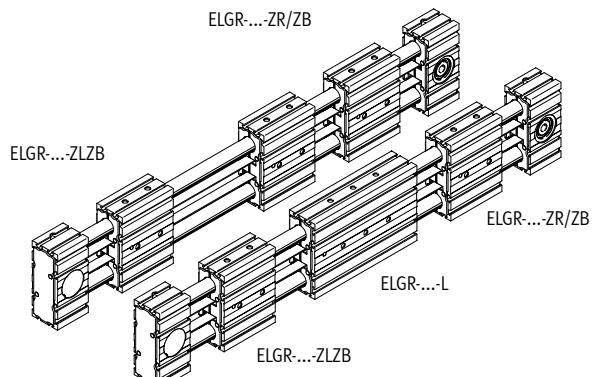
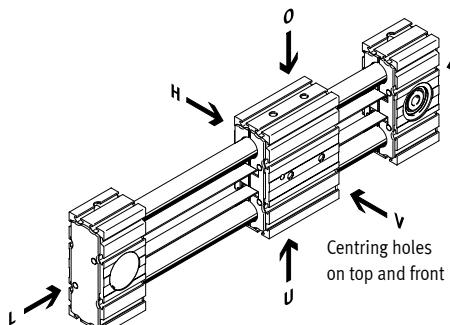
- Stroke reserve: 0 mm
- Standard slide

Size	Stroke [mm]	Part no.	Type
35	100	8083770	ELGR-TB-35-100-0H
	200	8083771	ELGR-TB-35-200-0H
	300	8083772	ELGR-TB-35-300-0H
	400	8083773	ELGR-TB-35-400-0H
	500	8083774	ELGR-TB-35-500-0H
	600	8083775	ELGR-TB-35-600-0H
45	100	8083776	ELGR-TB-45-100-0H
	200	8083777	ELGR-TB-45-200-0H
	300	8083778	ELGR-TB-45-300-0H
	400	8083779	ELGR-TB-45-400-0H
	500	8083780	ELGR-TB-45-500-0H
	600	8083781	ELGR-TB-45-600-0H
	800	8083782	ELGR-TB-45-800-0H
	1000	8083783	ELGR-TB-45-1000-0H
55	100	8083784	ELGR-TB-55-100-0H
	200	8083785	ELGR-TB-55-200-0H
	300	8083786	ELGR-TB-55-300-0H
	400	8083787	ELGR-TB-55-400-0H
	500	8083788	ELGR-TB-55-500-0H
	600	8083789	ELGR-TB-55-600-0H
	800	8083790	ELGR-TB-55-800-0H
	1000	8083791	ELGR-TB-55-1000-0H
	1200	8083792	ELGR-TB-55-1200-0H
	1500	8083793	ELGR-TB-55-1500-0H

## Toothed belt axes ELGR

### Ordering data – Modular product system

#### Orientation guide

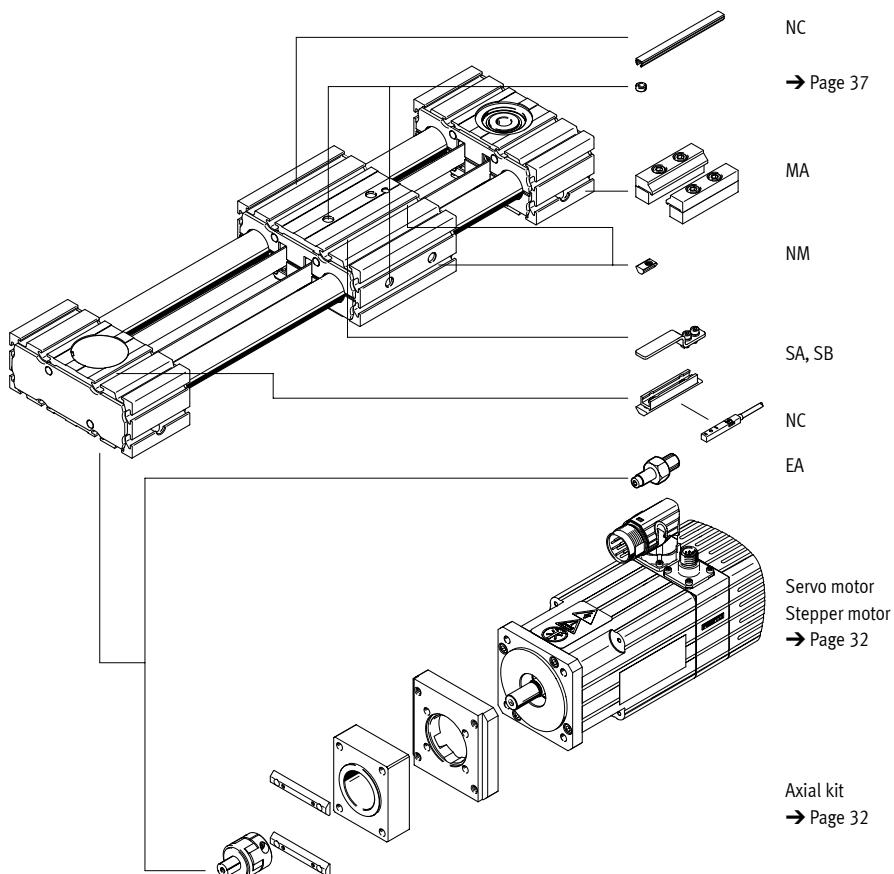


O top  
U underneath  
R right  
L left  
V front  
H rear

Minimum order stroke in combination with additional slide ELGR...-ZR/ZL/ZB

Size ELGR...	35 -ZR/ZL	45 -ZR/ZL	55 -ZR/ZL
Min. nominal stroke [mm]	126	202	146
	-ZB	-ZB	-ZB

#### Accessories



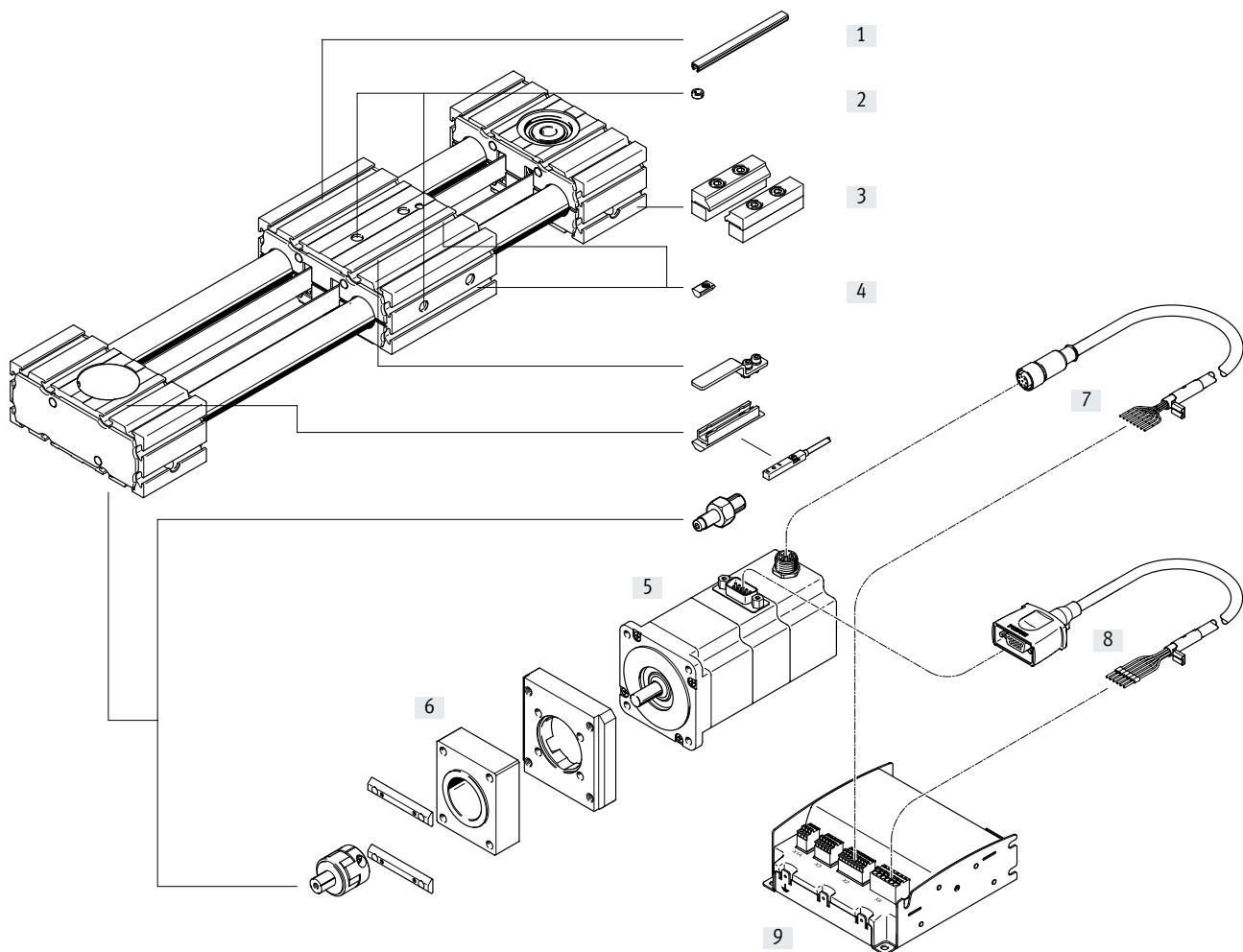
## Ordering data – Modular product system

Ordering table	35	45	55	Conditions	Code	Enter code
Module no.	<b>560505</b>	<b>560506</b>	<b>560507</b>			
Design	Linear axis				<b>ELGR</b>	ELGR
Drive system	Toothed belt				<b>-TB</b>	-TB
Guide	Recirculating ball bearing guide					
	Plain-bearing guide				<b>-GF</b>	
Sizes	<b>35</b>	<b>45</b>	<b>55</b>		<b>...</b>	
Stroke length [mm]	1 ... 800	1 ... 1000	1 ... 1500	[1]	<b>...</b>	
Stroke reserve [mm]	0 ... 999 (0 = no stroke reserve)			[1]	<b>...H</b>	
Slide design	Standard slide					
	Long slide				<b>-L</b>	
Additional slide	No additional slide					
	1 slide right			[2]	<b>-ZR</b>	
	1 slide left			[2]	<b>-ZL</b>	
	1 slide right, 1 slide left			[2]	<b>-ZB</b>	
Accessories	Accessories enclosed separately				<b>+</b>	+
Proximity sensor (SIES), inductive, slot type 8, PNP, N/O contact, cable 7.5 m, incl. switch lug and sensor bracket	1 ... 6				<b>...SA</b>	
Proximity sensor (SIES), inductive, slot type 8, PNP, N/C contact, cable 7.5 m, incl. switch lug and sensor bracket	1 ... 6				<b>... SB</b>	
Mounting slot cover	–	1 ... 50 (1=2 pcs. 500 mm long)			<b>...NC</b>	
Slot nut for mounting slot	1 ... 99				<b>...NM</b>	
Drive shaft	1 ... 4				<b>...EA</b>	
Profile mounting	1 ... 2				<b>...MA</b>	
Operating instructions	With operating instructions					
	Without operating instructions				<b>+DN</b>	

[1] ... The sum of the stroke length and 2x the stroke reserve must not exceed the maximum stroke length or be less than the minimum stroke length of 50 mm

[2] ZR, ZL, ZB Working stroke reduction → page 13

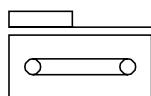
## Peripherals overview



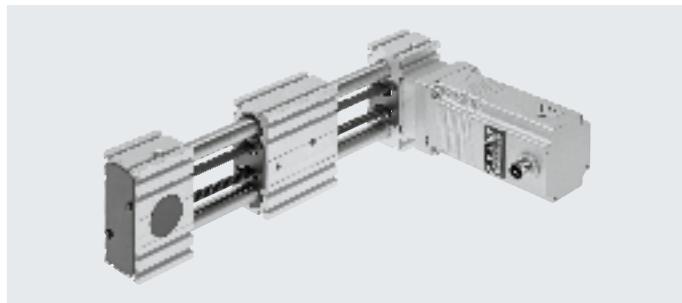
## Peripherals overview

<b>Accessories</b>		
Type/order code	Description	→ Page/Internet
[1] Slot cover NC	• For protecting against contamination	37
[2] Centring sleeve ZBH	• For centring loads and attachments on the slide • 2 centring sleeves included in the scope of delivery of the axis	37
[3] Profile mounting MA	For mounting the axis on the bearing cap	36
[4] Slot nut NM	For mounting attachments	37
[5] Motor EMMS-ST	Motors specially matched to the axis, with or without brake	32
[6] Axial kit EAMM	For axial motor mounting (comprises: coupling, coupling housing and motor flange)	32
[7] Encoder cable NEBM	For connecting encoder and controller	38
[8] Motor cable NEBM	For connecting motor and controller	38
[9] Motor controller CMMO	For parameterising and positioning the toothed belt axis	38

## Data sheet



- - Size  
35 ... 55
- - Stroke length  
50 ... 1500 mm
- - [www.festo.com](http://www.festo.com)



<b>General technical data</b>			
Size	35	45	55
Design	Electromechanical linear axis with toothed belt		
Guide	Recirculating ball bearing guide		
Mounting position	Any		
Standard stroke [mm]	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800		
Max. payload [kg]	2.8	5.0	6.8
Max. feed force $F_x$ [N]	50	100	350
Max. driving torque [Nm]	0.46	1.24	5
Max. speed [m/s]	1.1	1.1	0.35
Max. acceleration <sup>1)</sup> [m/s <sup>2</sup> ]	15		
Repetition accuracy [mm]	±0.1		

1) In combination with Optimised Motion Series (OMS).

The max. acceleration is dependent on the payload, the driving torque and the max. feed force → page 23

## Operating and environmental conditions

Ambient temperature	[°C]	-10 ... +50
Degree of protection		IP20
Duty cycle	[%]	100

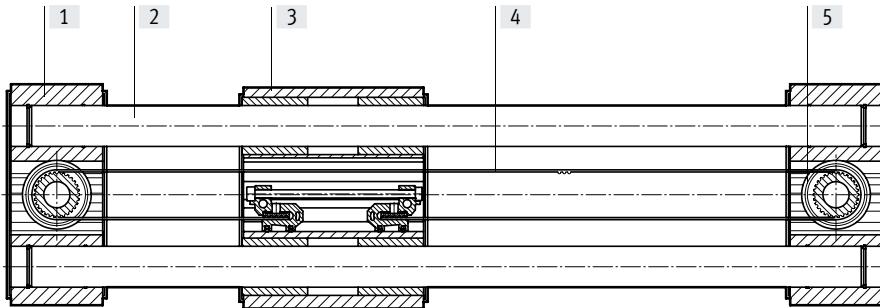
## Data sheet

Weight of axis/axial kit/motor [kg]			
Size	35	45	55
Basic weight with 0 mm stroke <sup>1)</sup>			
Axis/axial kit/motor	3.9	8.0	13.2
Additional weight per 1000 mm stroke	2.5	5.0	7.8
Moving mass	0.5	1.1	1.9
Slide			
Standard slide	0.5	1.0	1.8

1) Incl. slide

## Materials

### Sectional view

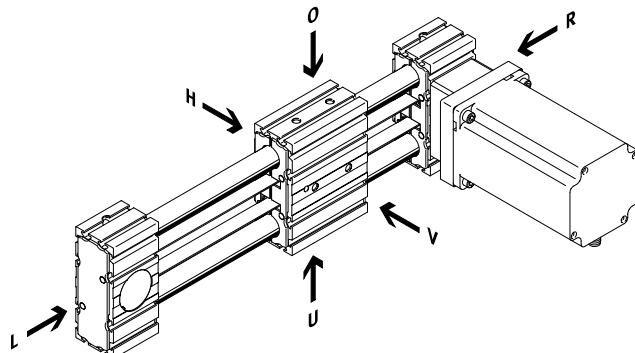


Axis	
[1] Bearing cap, profile	Anodised wrought aluminium alloy
[2] Guide rods	Hardened and hard-chromium plated tempered steel
[3] Slide, profile	Anodised wrought aluminium alloy
[4] Toothed belt	Polychloroprene with glass cord and nylon coating
[5] Belt pulley	High-alloy stainless steel
Note on materials	RoHS-compliant Contains paint-wetting impairment substances

## Data sheet

### Characteristic load values

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



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

Calculating the load comparison factor:

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

$F_1/M_1$  = dynamic value

$F_2/M_2$  = maximum value

### Permissible forces and torques for a service life of 5000 km

Guide	Recirculating ball bearing guide			
Size	35	45	55	
$F_{y\max}, F_{z\max}$ <sup>1)</sup>	[N]	50	100	300
<b>Standard slide</b>				
$M_{x\max}$	[Nm]	2.5	5	15
$M_{y\max}$	[Nm]	8	16	48
$M_{z\max}$	[Nm]	8	16	48

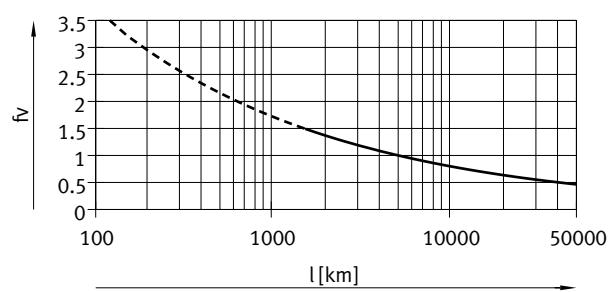
1) Max. payload restricted by drive system in combination with Optimised Motion Series (OMS)

### Service life

The service life of the guide depends on the load. To provide a rough indication of 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 contact person at Festo for load comparison factors  $f_v$  greater than 1.5.

### Load comparison factor $f_v$ as a function of service life



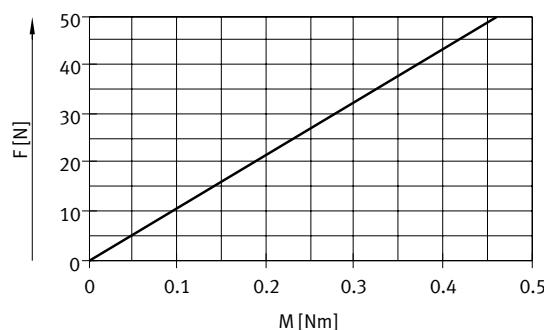
#### Example:

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

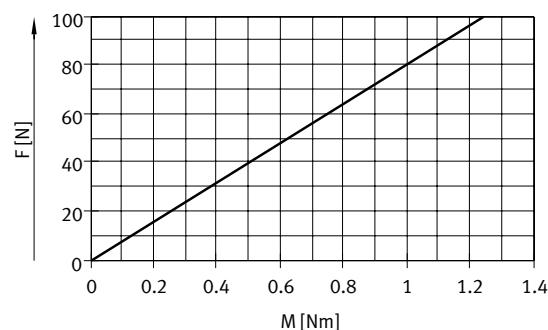
## Data sheet

### Feed force $F_x$ as a function of input torque $M$

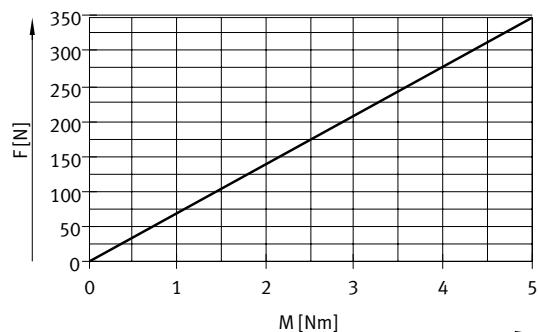
ELGR-35



ELGR-45



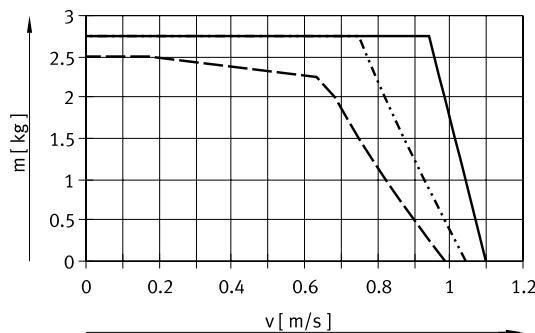
ELGR-55



### Max. payload $m$ as a function of acceleration $a$ and speed $v^1$

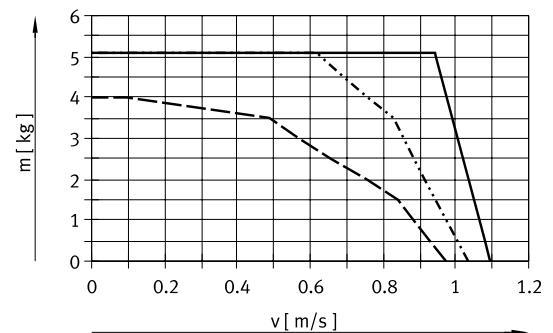
ELGR-35

ELGR-35 (OMS)



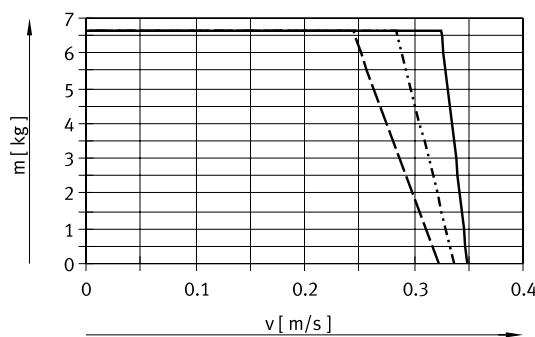
ELGR-45

ELGR-45 (OMS)



ELGR-55

ELGR-55 (OMS)



- $5 \text{ m/s}^2$
- $10 \text{ m/s}^2$
- - -  $15 \text{ m/s}^2$

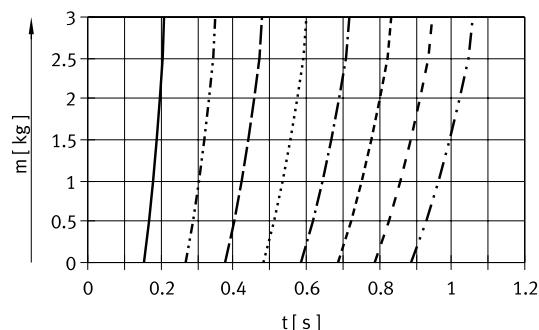
1) In combination with Optimised Motion Series (OMS)

## Data sheet

### Max. payload m as a function of stroke l and positioning time t<sup>1)</sup>

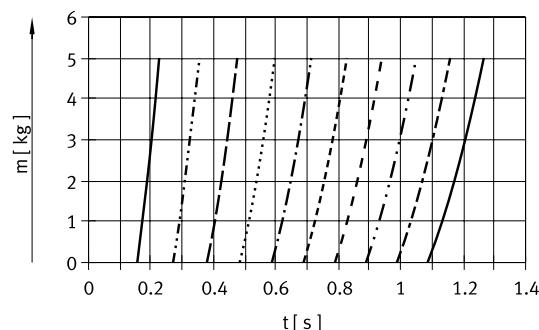
ELGR-35

ELGR-35 (OMS)



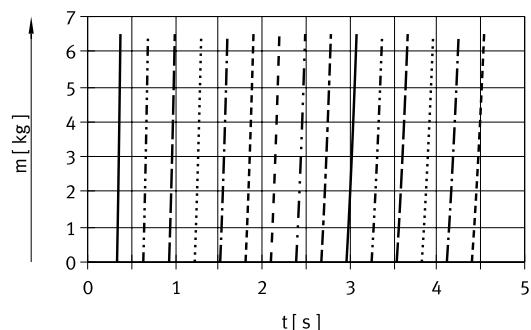
ELGR-45

ELGR-45 (OMS)



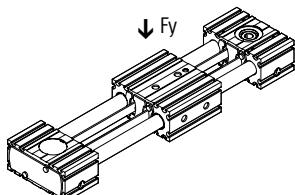
ELGR-55

ELGR-55 (OMS)



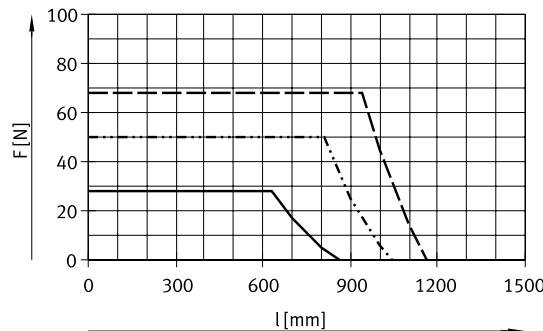
- 0.1 m
- - - 0.2 m
- · - 0.3 m
- · · 0.4 m
- - - 0.5 m
- - - 0.6 m
- · - 0.7 m
- - - 0.8 m
- - - 0.9 m
- - - - 1.0 m
- · - - 1.1 m
- - - - 1.2 m
- - - - 1.3 m
- - - - 1.4 m
- · - - 1.5 m

### Max. load with flat mounting position<sup>1)</sup>



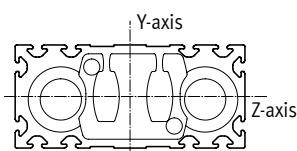
The characteristic curves in the graph correspond to the max. recommended deflection of 0.5 mm. In this case, the axis can no longer support the maximum load past a certain stroke length.

ELGR-TB-35/45/55 OMS



- ELGR-TB-35
- - - ELGR-TB-45
- · - - ELGR-TB-55

<sup>1)</sup> Max. payload restricted by drive system in combination with Optimised Motion Series (OMS)



Second moment of area

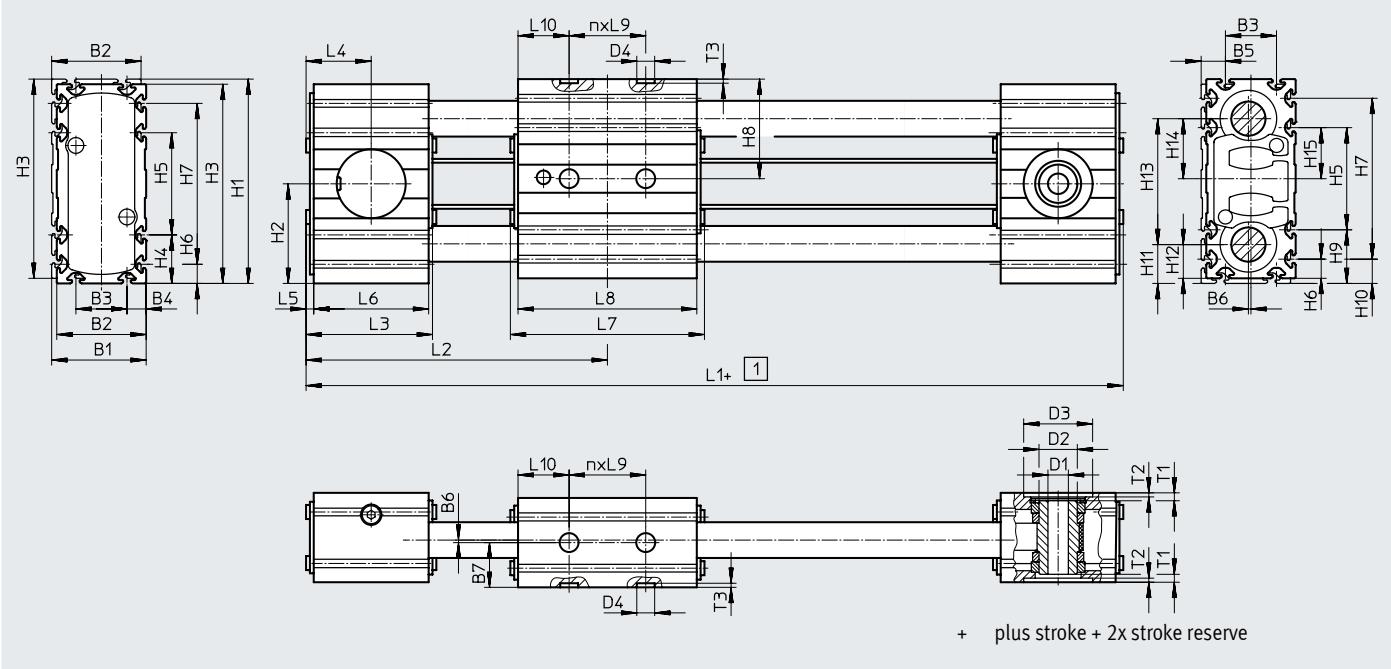
Size	35	45	55
I <sub>y</sub> [mm <sup>4</sup> ]	4.19x10 <sup>3</sup>	17.95x10 <sup>3</sup>	41.18x10 <sup>3</sup>
I <sub>z</sub> [mm <sup>4</sup> ]	3.77x10 <sup>3</sup>	15.71x10 <sup>3</sup>	38.35x10 <sup>3</sup>

### Recommended deflection limits

Adherence to a maximum deflection of 0.5 mm is recommended so as not to impair the functional performance of the axes. Greater deformation can result in increased friction, greater wear and reduced service life.

## Data sheet

## Dimensions

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

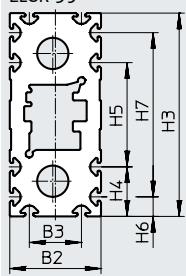
Size	B1	B2	B3	B4	B5	B6	B7	D1 Ø H7	D2 Ø	D3 Ø H7
35	37	35	20	7.5	9.5		17.5	8	15	27
45	47	45	20	12.5	14.5		22.5	10	20	38
55	57	55	30	12.5	14.5		27.5	16	25	48
Size	D4 Ø H7	H1	H2	H3	H4	H5	H6	H7	H8	H9
35	7	80	39	78	19	40	7.5	63	39	21
45		117	57.5	115	32.5	50	12.5	90	57.5	34.5
55		137	67.5	135	32.5	70	12.5	110	67.5	34.5
Size	H10	H11	H12	H13	H14	H15	L1	L2	L3	L4
35	9.5	15.5	13.5	49	23.5	20	178	89	51	25.5
45	14.5	23	21	71	34.5	25	219	108	60	30
55	14.5	25.5	23.5	86	42	35	243	120	62	31
Size	L5	L6	L7	L8	L9	L10	T1	T2	T3	n
									+0.1	
35	3	45	76	70	30	20	3.1	1.6	1.6	1
45		54	96	90	40	25	3	1.7		1
55		56	116	110	40	35	4.5	2		1

## Data sheet

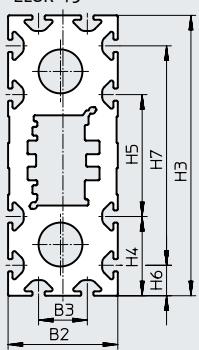
### Dimensions

#### Profile

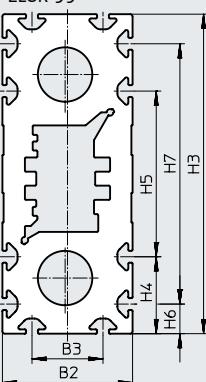
ELGR-35



ELGR-45



ELGR-55



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

Size	B2	B3	H3	H4
35	35	20	78	19
45	45	20	115	32.5
55	55	30	135	32.5

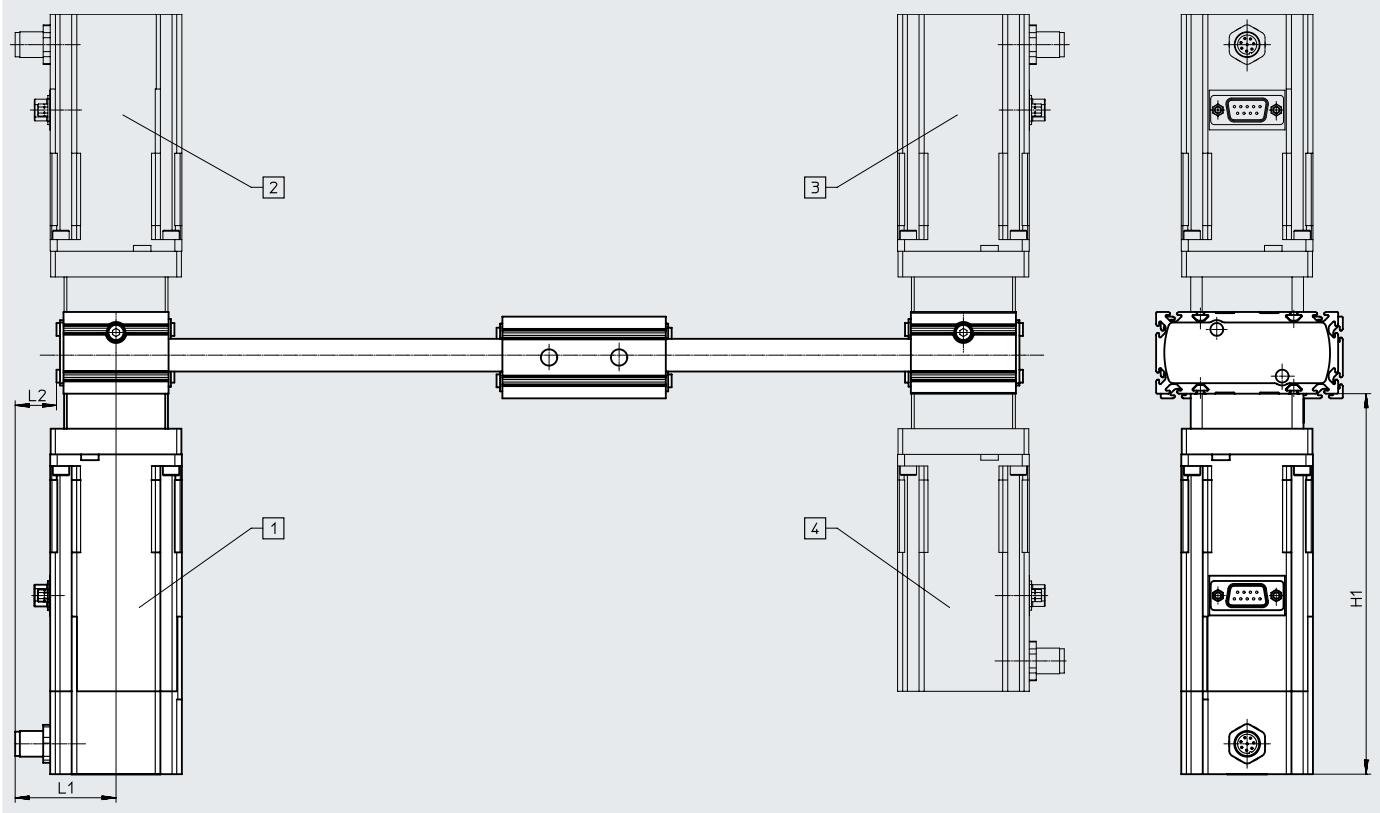
Size	H5	H6	H7
35	40	7.5	63
45	50	12.5	90
55	70	12.5	110

## Data sheet

## Dimensions

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

## Motor attachment variants



[1] ELGR-...-FL (motor at front left)

[2] ELGR-...-RL (motor at rear left)

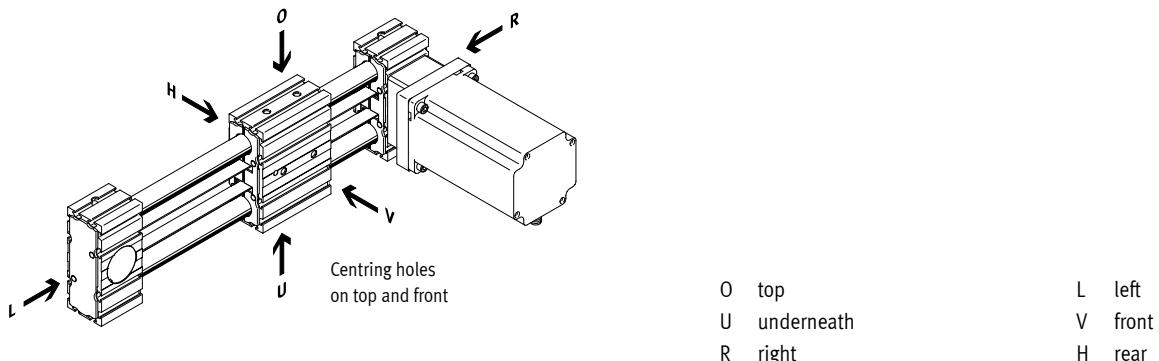
[3] ELGR-...-RR (motor at rear right)

[4] ELGR-...-FR (motor at front right)

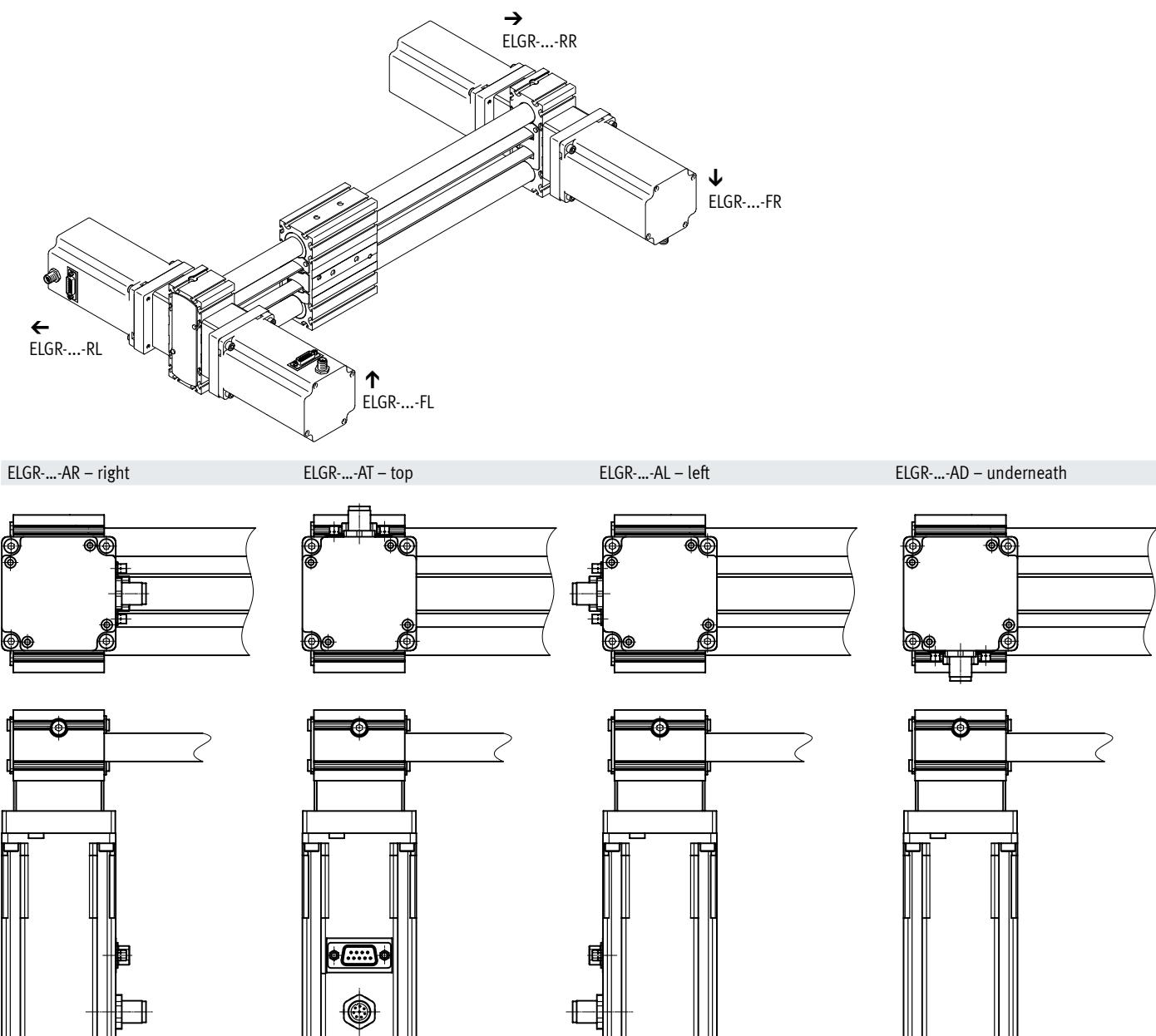
Size	H1		L1		L2	
	ELGR-...	-B	ELGR-...	-B	ELGR-...	-B
35	127.5	163	43.2	44	17.7	18
45	152.4	192.5	58	58	28	28
55	190	230	58	58	27	27

## Ordering data – Modular product system

### Orientation guide

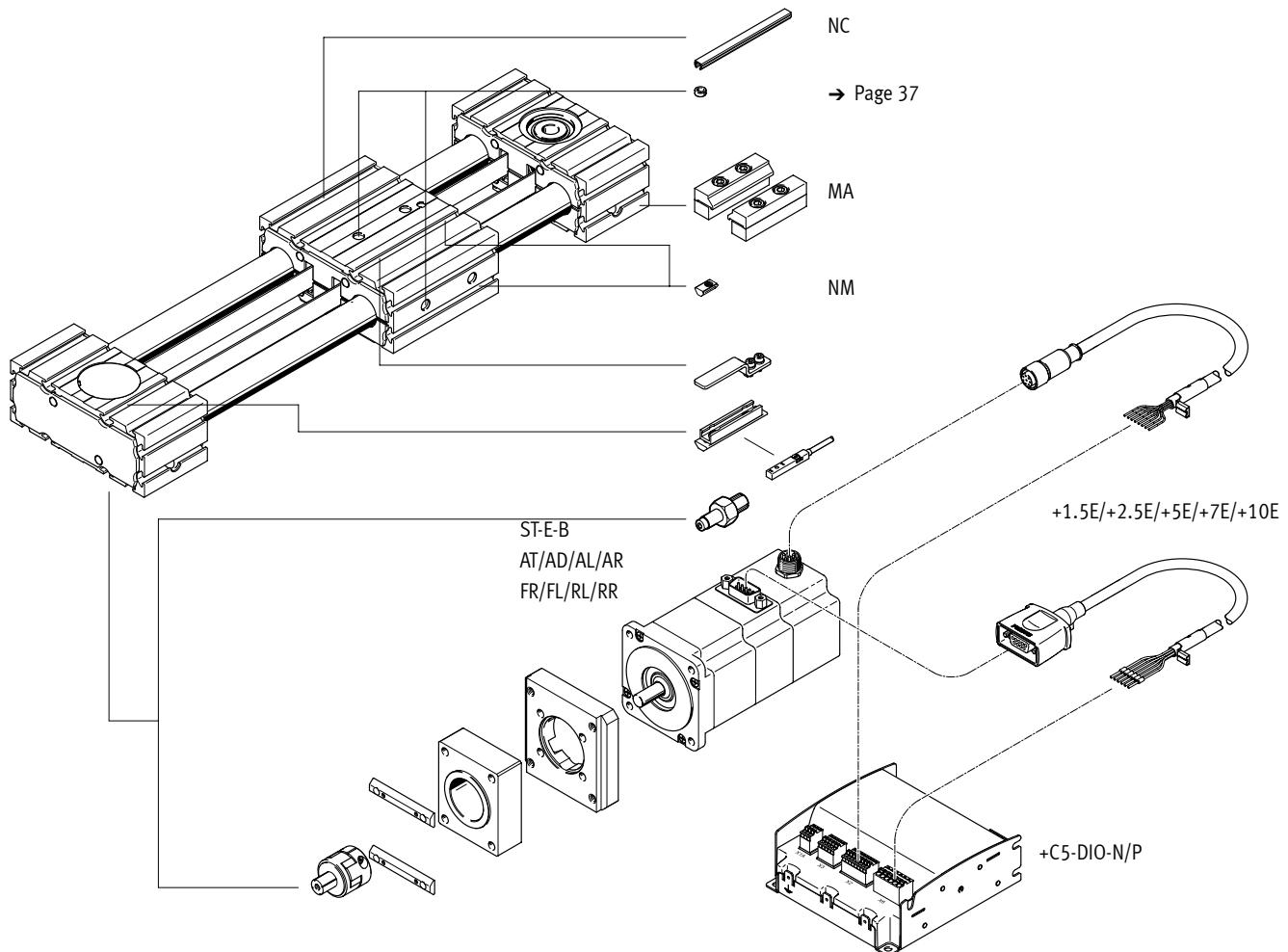


### Motor attachment variants



## Ordering data – Modular product system

## Accessories



 **Note**

The associated axial kit ([→ Page 32](#)) is automatically included in the scope of delivery.  
Motor and axial kits are installed on delivery.

## Ordering data – Modular product system

	35	45	55	Conditions	Code	Enter code
Module no.	<b>560505</b>	<b>560506</b>	<b>560507</b>			
Design	Linear axis				<b>ELGR</b>	
Drive system	Toothed belt				<b>-TB</b>	
Sizes	<b>35</b>	<b>45</b>	<b>55</b>		---	
Standard stroke [mm]	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 900, 1000	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500			
Stroke reserve [mm]	0 mm				<b>-OH</b>	
Slide design	Standard slide					
Motor type	Stepper motor				<b>-ST</b>	
Measuring unit	Encoder				<b>-E</b>	
Brake	None					
	With brake				<b>B</b>	
Cable outlet direction	Top (standard)				<b>-AT</b>	
	Underneath				<b>-AD</b>	
	Left				<b>-AL</b>	
	Right				<b>-AR</b>	
Motor position	Front right (standard)				<b>-FR</b>	
	Front left				<b>-FL</b>	
	Rear left				<b>-RL</b>	
	Rear right				<b>-RR</b>	

## Ordering data – Modular product system

	35	45	55	Conditions	Code	Enter code
Accessories	Accessories enclosed separately			+	+	+
Mounting slot cover	–	1 ... 50 (1=2 pcs. 500 mm long)			...NC	
Slot nut for mounting slot	1 ... 99				...NM	
Profile mounting	1 ... 2				...MA	
Connecting cable to motor controller, suitable for use with energy chains	None 1.5 m, straight plug 2.5 m, straight plug 5 m, straight plug 7 m, straight plug 10 m, straight plug				+1.5E +2.5E +5E +7E +10E	
Controller type	CMMO, 5 A				+C5	+C5
Bus protocol/control	Digital I/O interface IO-Link				DIO LK	
Switching input/output	NPN PNP		[1]		N P	
Operating instructions	With operating instructions Without operating instructions				+DN	

[1] N Not with LK

## Accessories

**Note**

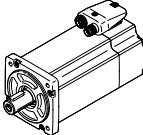
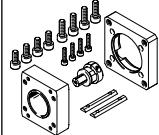
Depending on the combination of motor and drive, it may not be possible to reach the maximum feed force of the drive.

Permissible axis/motor combinations with axial kit		Data sheets → Internet: eamm-a
Motor/gear unit <sup>1)</sup>	Axial kit	
Type	Part no.	Type
<b>ELGR-35</b>		
With servo motor		
EMMS-AS-55-...	1133400	EAMM-A-R27-55A
With servo motor and gear unit		
EMME-AS-40-... EMGA-40-P-G...-EAS-40	1456622	EAMM-A-R27-40G
EMMS-AS-40-... EMGA-40-P-G...-SAS-40	1456622	EAMM-A-R27-40G
With servo motor and angled gear unit		
EMME-AS-40-... EMGA-40-A-G...-40P	1456622	EAMM-A-R27-40G
With stepper motor		
EMMS-ST-57-... <sup>2)</sup>	1133403	EAMM-A-R27-57A
With stepper motor and gear unit		
EMMS-ST-42-... EMGA-40-P-G...-SST-42	1456622	EAMM-A-R27-40G
With integrated drive		
EMCA-EC-67-...	1456619	EAMM-A-R27-67A
With integrated drive and gear unit		
EMCA-EC-67-... EMGC-40-...	1456622	EAMM-A-R27-40G

1) The input torque must not exceed the maximum permissible transferable torque of the axial kit

2) Motors used in combination with Optimised Motion Series (OMS)

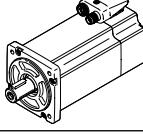
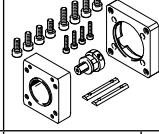
## Accessories

Permissible axis/motor combinations with axial kit		Data sheets → Internet: eamm-a
Motor/gear unit <sup>1)</sup>	Axial kit	
		
Type	Part no.	Type
<b>ELGR-45</b>		
EMMT-AS-60-...	2224996	EAMM-A-R38-60P
EMME-AS-60-...	2224996	EAMM-A-R38-60P
EMMS-AS-70-...	1133401	EAMM-A-R38-70A
<b>With servo motor and gear unit</b>		
EMME-AS-40-...	1456623	EAMM-A-R38-40G
EMGA-40-P-G-...-EAS-40		
EMMS-AS-40-...	1456623	EAMM-A-R38-40G
EMGA-40-P-G-...-SAS-40		
EMMS-AS-55-...	2310075	EAMM-A-R38-60G
EMGA-60-P-G-...-SAS-55		
EMMT-AS-60-...	1456630	EAMM-A-R38-60H
EMGA-60-P-G-...-EAS-60		
EMME-AS-60-...	1456630	EAMM-A-R38-60H
EMGA-60-P-G-...-EAS-60		
EMMS-AS-70-...	2310075	EAMM-A-R38-60G
EMGA-60-P-G-...-SAS-70		
<b>With servo motor and angled gear unit</b>		
EMME-AS-40-...	1456623	EAMM-A-R38-40G
EMGA-40-A-G-...-40P		
EMMT-AS-60-...	1456630	EAMM-A-R38-60H
EMGA-60-A-G-...-60P		
EMME-AS-60-...	1456630	EAMM-A-R38-60H
EMGA-60-A-G-...-60P		
<b>With stepper motor</b>		
EMMS-ST-57-...	1578138	EAMM-A-R38-57A
EMMS-ST-87-... <sup>2)</sup>	1133404	EAMM-A-R38-87A
<b>With stepper motor and gear unit</b>		
EMMS-ST-42-...	1456623	EAMM-A-R38-40G
EMGA-40-P-G-...-SST-42		
EMMS-ST-57-...	2310075	EAMM-A-R38-60G
EMGA-60-P-G-...-SST-57		
<b>With integrated drive and gear unit</b>		
EMCA-EC-67-...	1456623	EAMM-A-R38-40G
EMGC-40-...		
EMCA-EC-67-...	1456630	EAMM-A-R38-60H
EMGC-60-...		

1) The input torque must not exceed the maximum permissible transferable torque of the axial kit

2) Motors used in combination with Optimised Motion Series (OMS)

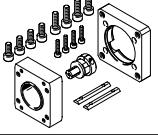
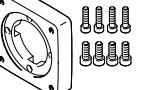
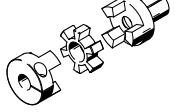
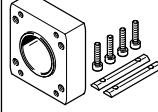
## Accessories

Permissible axis/motor combinations with axial kit		Data sheets → Internet: eamm-a
Motor/gear unit <sup>1)</sup>	Axial kit	
		
Type	Part no.	Type
<b>ELGR-55</b>		
<b>With servo motor</b>		
EMMS-AS-70-...	1578139	EAMM-A-R48-70A
EMME-AS-80-...	2225090	EAMM-A-R48-80P
EMMS-AS-100-...	1133402	EAMM-A-R48-100A
<b>With servo motor and gear unit</b>		
EMMS-AS-55-... EMGA-60-P-G...-SAS-55	2374780	EAMM-A-R48-60G
EMMT-AS-60-... EMGA-60-P-G...-EAS-60	1456633	EAMM-A-R48-60H
EMME-AS-60-... EMGA-60-P-G...-EAS-60	1456633	EAMM-A-R48-60H
EMMS-AS-70-... EMGA-60-P-G...-SAS-70	2374780	EAMM-A-R48-60G
<b>With servo motor and angled gear unit</b>		
EMMT-AS-60-... EMGA-60-A-G...-60P	1456633	EAMM-A-R48-60H
EMME-AS-60-... EMGA-60-A-G...-60P	1456633	EAMM-A-R48-60H
<b>With stepper motor</b>		
EMMS-ST-87-... <sup>2)</sup>	1133405	EAMM-A-R48-87A
<b>With stepper motor and gear unit</b>		
EMMS-ST-57-... EMGA-60-P-G...-SST-57	2374780	EAMM-A-R48-60G
<b>With integrated drive and gear unit</b>		
EMCA-EC-67-... EMGC-60-...	1456633	EAMM-A-R48-60H

1) The input torque must not exceed the maximum permissible transferable torque of the axial kit

2) Motors used in combination with Optimised Motion Series (OMS)

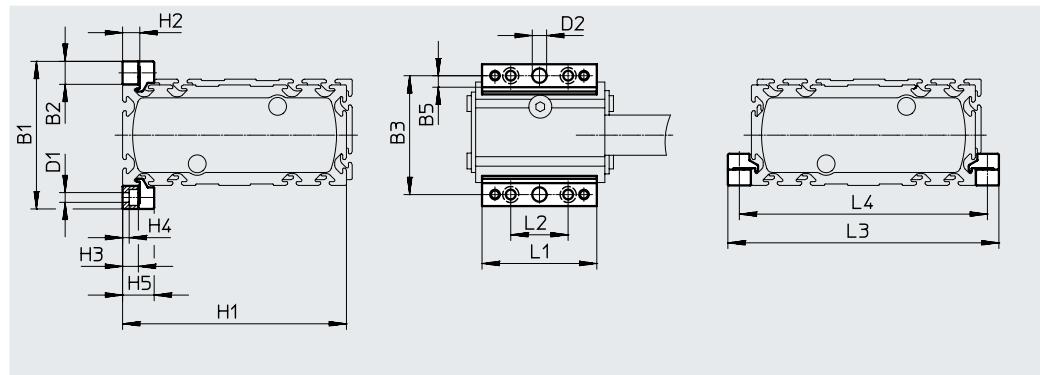
## Accessories

Permissible axis/motor combinations with axial kit			
Axial kit	Comprising: Motor flange	Coupling	Coupling housing
			
Part no. Type	Part no. Type	Part no. Type	Part no. Type
ELGR-35			
1456622 EAMM-A-R27-40G	1460097 EAMF-A-38A-40G	557998 EAMD-19-15-10-8X10	1133397 EAMK-A-R27-38A
1133400 EAMM-A-R27-55A	558176 EAMF-A-38A-55A	557999 EAMD-19-15-9-8X10	1133397 EAMK-A-R27-38A
1133403 EAMM-A-R27-57A	560692 EAMF-A-38A-57A	561292 EAMD-16-15-6.35-8X10	1133397 EAMK-A-R27-38A
1456619 EAMM-A-R27-67A	1490100 EAMF-A-38A-67A	557999 EAMD-19-15-9-8X10	1133397 EAMK-A-R27-38A
ELGR-45			
1456623 EAMM-A-R38-40G	1460097 EAMF-A-38A-40G	1453860 EAMD-25-22-10-10X12	1133398 EAMK-A-R38-38A
1578138 EAMM-A-R38-57A	560692 EAMF-A-38A-57A	561293 EAMD-25-22-6.35-10X12	1133398 EAMK-A-R38-38A
2310075 EAMM-A-R38-60G	558017 EAMF-A-38A-60G/H	558000 EAMD-25-22-11-10X12	1133398 EAMK-A-R38-38A
1456630 EAMM-A-R38-60H	558017 EAMF-A-38A-60G/H	1453861 EAMD-28-22-14-10X12	1133398 EAMK-A-R38-38A
2224996 EAMM-A-R38-60P	1987412 EAMF-A-38A-60P	1453861 EAMD-28-22-14-10X12	1133398 EAMK-A-R38-38A
1133401 EAMM-A-R38-70A	558018 EAMF-A-38A-70A	558000 EAMD-25-22-11-10X12	1133398 EAMK-A-R38-38A
1133404 EAMM-A-R38-87A	560693 EAMF-A-38A-87A	558000 EAMD-25-22-11-10X12	1133398 EAMK-A-R38-38A
ELGR-55			
2374780 EAMM-A-R48-60G	558019 EAMF-A-48A-60G/H	558001 EAMD-32-32-11-16X20	1133399 EAMK-A-R48-48A
1456633 EAMM-A-R48-60H	558019 EAMF-A-48A-60G/H	1377840 EAMD-32-32-14-16X20	1133399 EAMK-A-R48-48A
1578139 EAMM-A-R48-70A	558025 EAMF-A-48A-70A	558001 EAMD-32-32-11-16X20	1133399 EAMK-A-R48-48A
2225090 EAMM-A-R48-80P	2043427 EAMF-A-48A-80P	558002 EAMD-42-40-19-16X25	1133399 EAMK-A-R48-48A
1133405 EAMM-A-R48-87A	560695 EAMF-A-48A-87A	558001 EAMD-32-32-11-16X20	1133399 EAMK-A-R48-48A
1133402 EAMM-A-R48-100A	558020 EAMF-A-48A-100A	558002 EAMD-42-40-19-16X25	1133399 EAMK-A-R48-48A

## Accessories

**Profile mounting MUE**  
(order code MA)

Material:  
Anodised aluminium  
RoHS-compliant



### Dimensions and ordering data

For size	B1	B2	B3	B5	D1 Ø	D2 Ø H7	H1	H2	H3	H4
35	51	8	43	4	3.4	5	78	6	5.5	2.3
45	69	12	57	4	5.5	5	115	10	9	3.2
55	79	12	67	4	5.5	5	135	10	9	3.2

For size	H5	L1	L2	L3	L4	Weight [g]	Part no.	Type
35	11	40	20	94	86	20	558042	MUE-50
45	17.5	52	40	139	127	32	562238	MUE-45
55	17.5	52	40	159	147	32	562238	MUE-45

**Sensor bracket EAPM-...-SHS,**

Material:

**Switch lug EAPM-...-SLS**

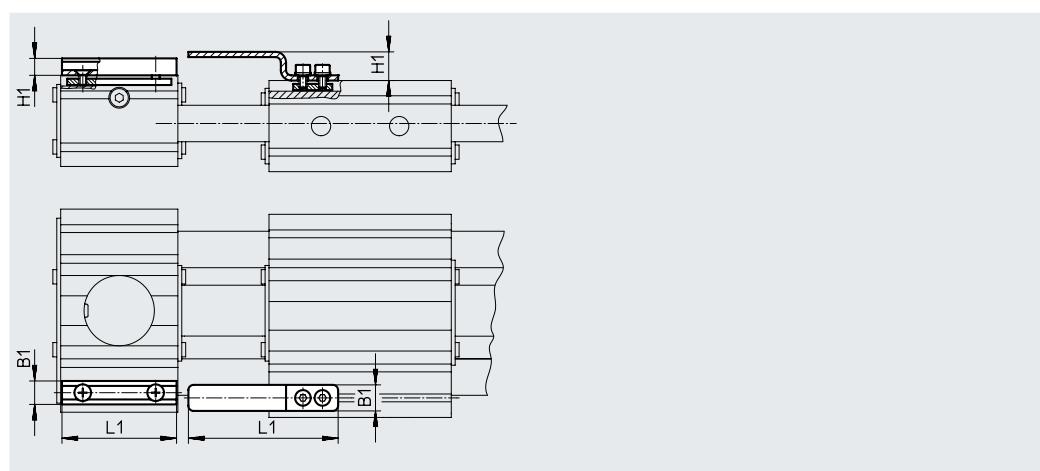
Switch lug: Galvanised steel

(order code SA/SB)

Sensor bracket: Anodised wrought

aluminium alloy

RoHS-compliant



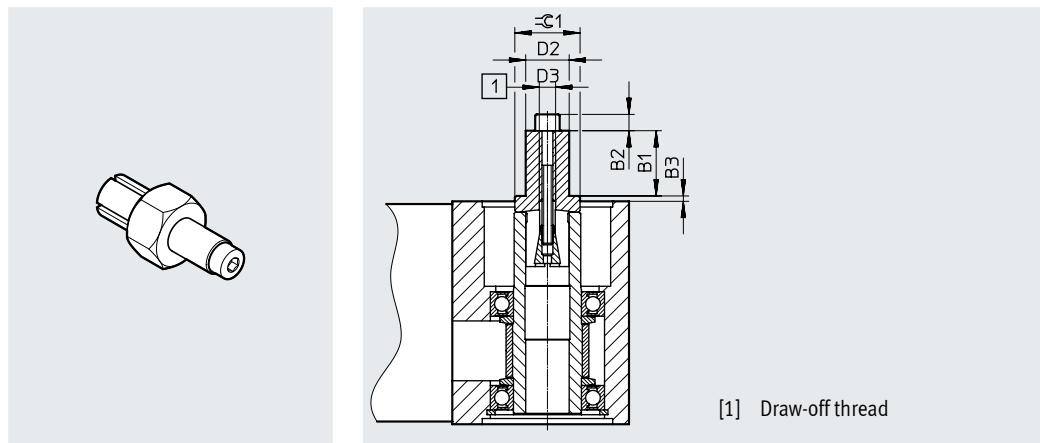
### Dimensions and ordering data

For size	B1	H1	L1	Weight [g]	Part no.	Type
<b>Sensor bracket</b>						
35, 45, 55	9	6.5	44	20	567537	EAPM-L4-SHS
<b>Switch lug</b>						
35, 45, 55	10	11	57.5	15	567538	EAPM-L4-SLS

## Accessories

### Drive shaft EAMB

Alternative interface  
(order code EA)



Dimensions and ordering data									
For size	B1	B2	B3	D2 ∅	D3	=C1	Weight [g]	Part no.	Type
35	12	3	3.9	8	M4	12	20	558034	EAMB-16-7-8X15-8X10
45	12	4	6	8	M5	15	29	558035	EAMB-18-9-8X16-10X12
55	21	—	1.5	15	M6	21	70	558036	EAMB-24-6-15X21-16X20

Ordering data		For size	Comment	Order code	Part no.	Type	PE <sup>1)</sup>
<b>Slot nut NST</b>							
	35	For mounting slot	NM	558045	NST-3-M3	1	
	45, 55			150914	NST-5-M5		
			—	8047843	NST-5-M5-10	10	
				8047878	NST-5-M5-50	50	
<b>Centring sleeve ZBH<sup>2)</sup></b>							
	35, 45, 55	For slide	—	186717	ZBH-7	10	
<b>Slot cover ABP</b>							
	45, 55	For mounting slot Every 0.5 m	NC	151681	ABP-5	2	

1) Packaging unit

2) 2 centring sleeves included in the scope of delivery of the axis

