Electric slides EGSK/EGSP

FESTO

Electromechanical drives

Selection aid

Overview of toothed belt and spindle axes

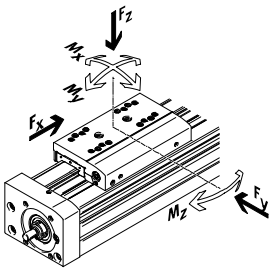
Toothed belt axes

- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s²
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8500 mm (longer strokes on request)
- Flexible motor mounting

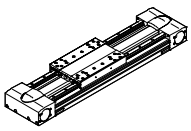
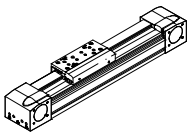
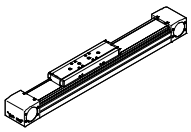
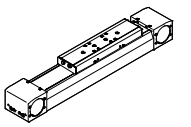
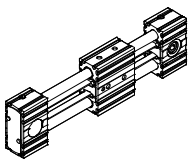
Spindle axes

- Speeds of up to 2 m/s
- Acceleration of up to 20 m/s²
- Repetition accuracy of up to ±0.003 mm
- Strokes of up to 3000 mm

Coordinate system



Toothed belt axes

Type	F_x [N]	v [m/s]	Mx [Nm]	My [Nm]	Mz [Nm]	Key features
Heavy-duty recirculating ball bearing guide						
EGC-HD-TB						
	450 1000 1800	3 5 5	140 300 900	275 500 1450	275 500 1450	• Flat drive unit with rigid, closed profile • Precision DUO guide rail with high load capacity • Ideal as a basic axis for linear gantries and cantilever axes
Recirculating ball bearing guide						
EGC-TB-KF						
	50 100 350 800 2500	3 5 5 5 5	3.5 16 36 144 529	10 132 228 680 1820	10 132 228 680 1820	• Rigid, closed profile • Precision guide rail with high load capacity • Small drive pinions reduce required driving torque • Space-saving position sensing
ELGA-TB-KF						
	350 800 1300 2000	5 5 5 5	16 36 104 167	132 228 680 1150	132 228 680 1150	• Internal guide and toothed belt • Precision guide rail with high load capacity • Guide and toothed belt protected by cover strip • High feed forces
ELGA-TB-KF-F1						
	260 600 1000	5 5 5	16 36 104	132 228 680	132 228 680	• Suitable for use in the food zone • “Clean Look”: smooth, easy to clean surfaces • Internal guide and toothed belt • Precision guide rail with high load capacity • Guide and toothed belt protected by cover strip
ELGR-TB						
	50 100 350	3 3 3	2.5 5 15	20 40 124	20 40 124	• Cost-optimised rod guide • Ready-to-install unit • Ball bearings with high load capacity for dynamic operation

Electromechanical drives

Selection aid

Overview of toothed belt and spindle axes

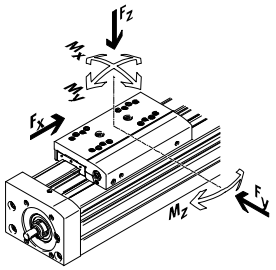
Toothed belt axes

- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s^2
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8500 mm (longer strokes on request)
- Flexible motor mounting

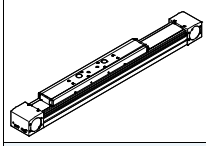
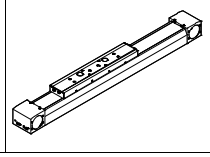
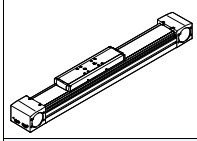
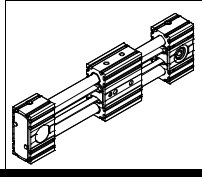
Spindle axes

- Speeds of up to 2 m/s
- Acceleration of up to 20 m/s^2
- Repetition accuracy of up to ±0.003 mm
- Strokes of up to 3000 mm

Coordinate system



Toothed belt axes

Type	F_x [N]	v [m/s]	Mx [Nm]	My [Nm]	Mz [Nm]	Key features
Roller bearing guide						
ELGA-TB-RF						
	350 800 1300	10 10 10	11 30 100	40 180 640	40 180 640	• Heavy-duty roller bearing guide • Guide and toothed belt protected by cover strip • Speeds of up to 10 m/s • Lower weight than axes with guide rails
ELGA-TB-RF-F1						
	260 600 1000	10 10 10	8.8 24 80	32 144 512	32 144 512	• Suitable for use in the food zone • “Clean Look”: smooth, easy to clean surfaces • Heavy-duty roller bearing guide • Guide and toothed belt protected by cover strip • Lower weight than axes with guide rails
Plain-bearing guide						
ELGA-TB-G						
	350 800 1300	5 5 5	5 10 120	30 60 120	10 20 40	• Guide and toothed belt protected by cover strip • For simple handling tasks • As a drive component for external guides • Insensitive to harsh operating conditions
ELGR-TB-GF						
	50 100 350	1 1 1	1 2.5 1	10 20 40	10 20 40	• Cost-optimised rod guide • Ready-to-install unit • Heavy-duty plain bearings for use in harsh operating conditions

Electromechanical drives

Selection aid

Overview of toothed belt and spindle axes

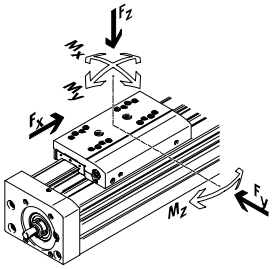
Toothed belt axes

- Speeds of up to 10 m/s
- Acceleration of up to 50 m/s^2
- Repetition accuracy of up to ±0.08 mm
- Strokes of up to 8500 mm (longer strokes on request)
- Flexible motor mounting

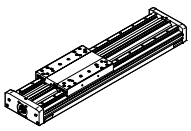
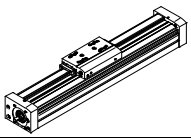
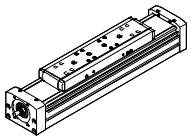
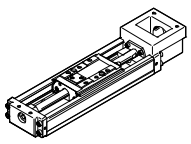
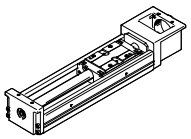
Spindle axes

- Speeds of up to 2 m/s
- Acceleration of up to 20 m/s^2
- Repetition accuracy of up to ±0.003 mm
- Strokes of up to 3000 mm

Coordinate system



Spindle axes

Type	F_x [N]	v [m/s]	Mx [Nm]	My [Nm]	Mz [Nm]	Key features
Heavy-duty recirculating ball bearing guide						
EGC-HD-BS						
	300 600 1300	0.5 1.0 1.5	140 300 900	275 500 1450	275 500 1450	• Flat drive unit with rigid, closed profile • Precision DUO guide rail with high load capacity • Ideal as a basic axis for linear gantries and cantilever axes
Recirculating ball bearing guide						
EGC-BS-KF						
	300 600 1300 3000	0.5 1.0 1.5 2.0	16 36 144 529	132 228 680 1820	132 228 680 1820	• Rigid, closed profile • Precision guide rail with high load capacity • For the highest requirements in terms of feed force and accuracy • Space-saving position sensing
ELGA-BS-KF						
	300 600 1300 3000	0.5 1.0 1.5 2.0	16 36 104 167	132 228 680 1150	132 228 680 1150	• Internal guide and ball screw • Precision guide rail with high load capacity • For the highest requirements in terms of feed force and accuracy • Guide and ball screw protected by cover strip • Space-saving position sensing
EGSK						
	57 133 184 239 392	0.33 1.10 0.83 1.10 1.48	13 28.7 60 79.5 231	3.7 9.2 20.4 26 77.3	3.7 9.2 20.4 26 77.3	• Spindle axes with maximum precision, compactness and rigidity • Recirculating ball bearing guide and ball screw without caged ball bearings • Standard designs in stock
EGSP						
	112 212 466 460	0.6 0.6 2.0 2.0	36.3 81.5 90.3 258	12.5 31.6 32.1 94	12.5 31.6 32.1 94	• Spindle axes with maximum precision, compactness and rigidity • Recirculating ball bearing guide with caged ball bearings • Ball screw sizes 33, 46 with caged ball bearings

Electric slides EGSK/EGSP

Key features

At a glance

Precision embedded in steel

The new generation of electric slide axes EGSK and EGSP impresses with its precision, repetition accuracy, compactness and rigidity.
The two axis series form a complete range with a uniform design, long service life and standardised mounting interfaces. The U-shaped steel housing serves simultaneously as a guide rail. The slide combines linear guide elements and the spindle nuts of the ball screw in one component, thus avoiding the accumulation of production tolerances.
Both series come in three accuracy classes with the option of an additional slide (series 33 and 46 are also available in a short-slide design).

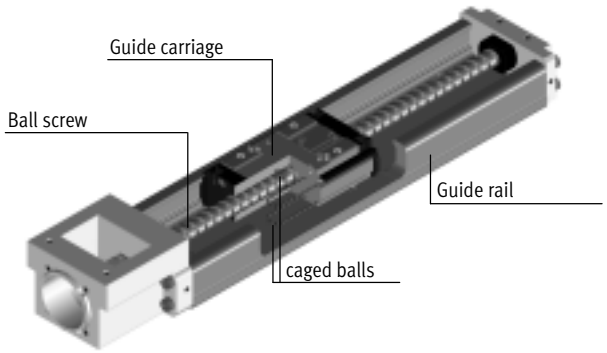
Electric slide EGSK

- Recirculating ball bearing guide and ball screw without caged balls
- Standard designs available ex-stock

Electric slide EGSP

- Recirculating ball bearing guide with caged balls
- Size 33, 46 features a ball screw with caged balls
- Low-maintenance
- Uniform operating behaviour with very low noise levels

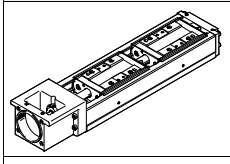
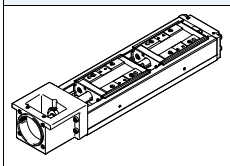
Linear guide with caged balls



The linear guide features four rows of balls circulating within the guide carriage. In the loaded area, the balls run between the honed grooves of the guide carriage and guide rail until they are returned by means of the reversers in the end plates and the return channels. The very rigid design of the guide carriage enables precision linear movements to be executed with impressive dynamism. The four rows of balls are arranged at a contact angle of 45°, giving the guide carriage the same basic load ratings in both radial coordinate directions. This type of guide can therefore be used in any mounting position for a wide range of load directions.

Axis characteristics

The specifications shown in the table are maximum values.
The precise values for each of the variants can be found in the relevant technical data section.

Design	Size	Working stroke	Speed	Repetition accuracy	Feed force	Guide characteristics				
						Forces and torques				
		[mm]	[m/s]	[µm]	[N]	Fy [N]	Fz [N]	Mx [Nm]	My [Nm]	Mz [Nm]
Electric slide EGSK										→ 8
	15	25 … 100	0.33	±3	57	1185	1185	13	3.7	3.7
	20	25 … 125	1.10	±3	133	2204	2204	28.7	9.2	9.2
	26	50 … 200	0.83	±3	184	3528	3528	60	20.4	20.4
	33	100 … 630	1.10	±3	239	3920	3920	79.5	26	26
	46	200 … 840	1.48	±3	392	7809	7809	231	77.3	77.3
Electric slide EGSP										→ 24
	20	25 … 125	0.6	±3	112	2929	2929	36.3	12.5	12.5
	26	50 … 200	0.6	±3	212	5028	5028	81.5	31.6	31.6
	33	100 … 630	2	±3	466	4559	4559	90.3	32.1	32.1
	46	200 … 840	2	±3	460	8935	8935	258	94	94

Electric slides EGSK/EGSP

Key features

Complete system comprising electric slide, motor, motor controller and motor mounting kit

Electric slide with recirculating ball bearing guide

Motor ➔ 37

1 Servo motor EMME-AS, EMMS-AS
2 Stepper motor EMMS-ST

Note

A range of specially matched complete solutions is available for the electric slides EGSK, EGSP and the motors.

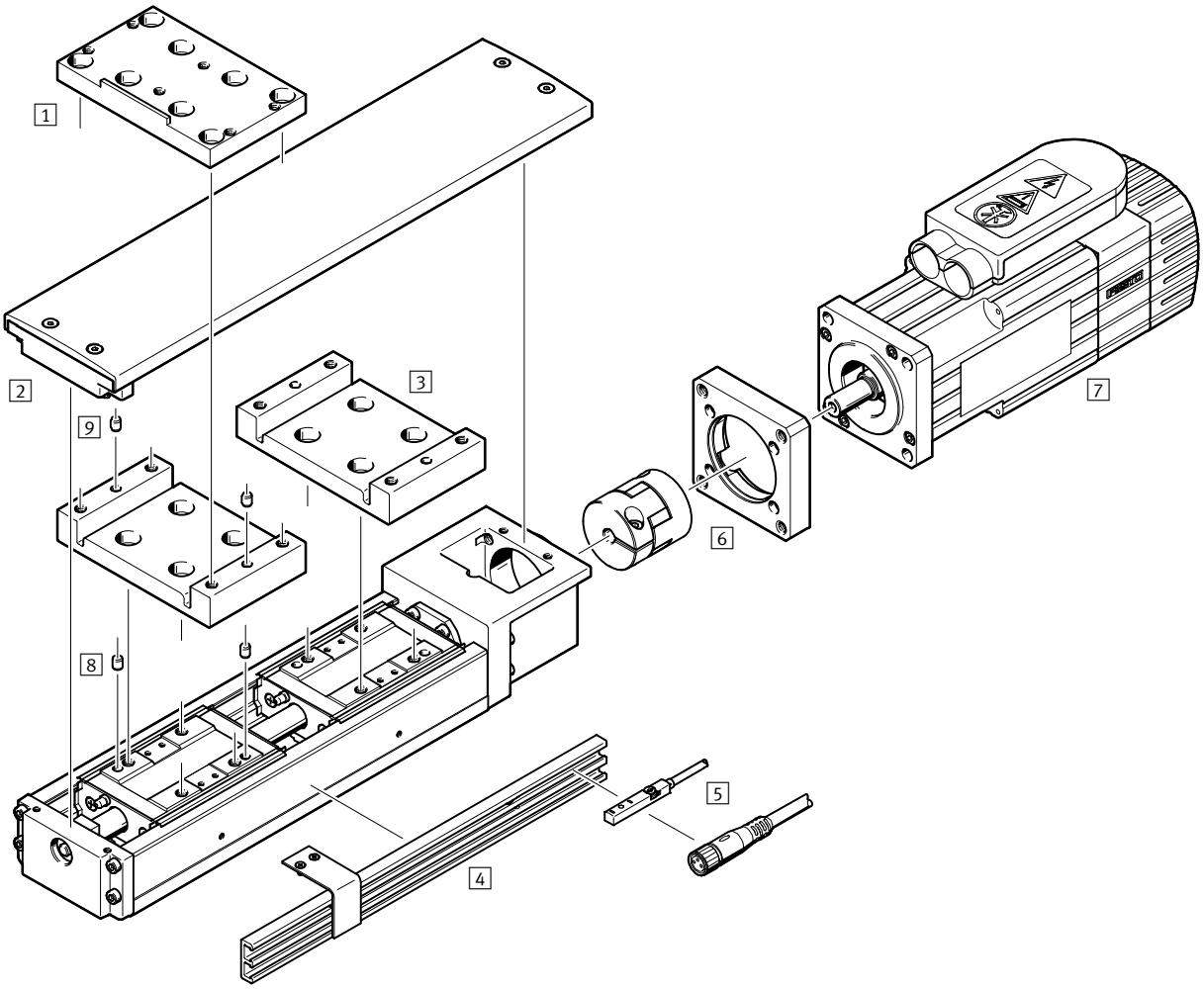
Motor controller Technical data ➔ Internet: motor controller

1 Servo motor controller CMMP-AS
2 Stepper motor controller CMMS-ST

Motor mounting kit ➔ 37

Axial kit

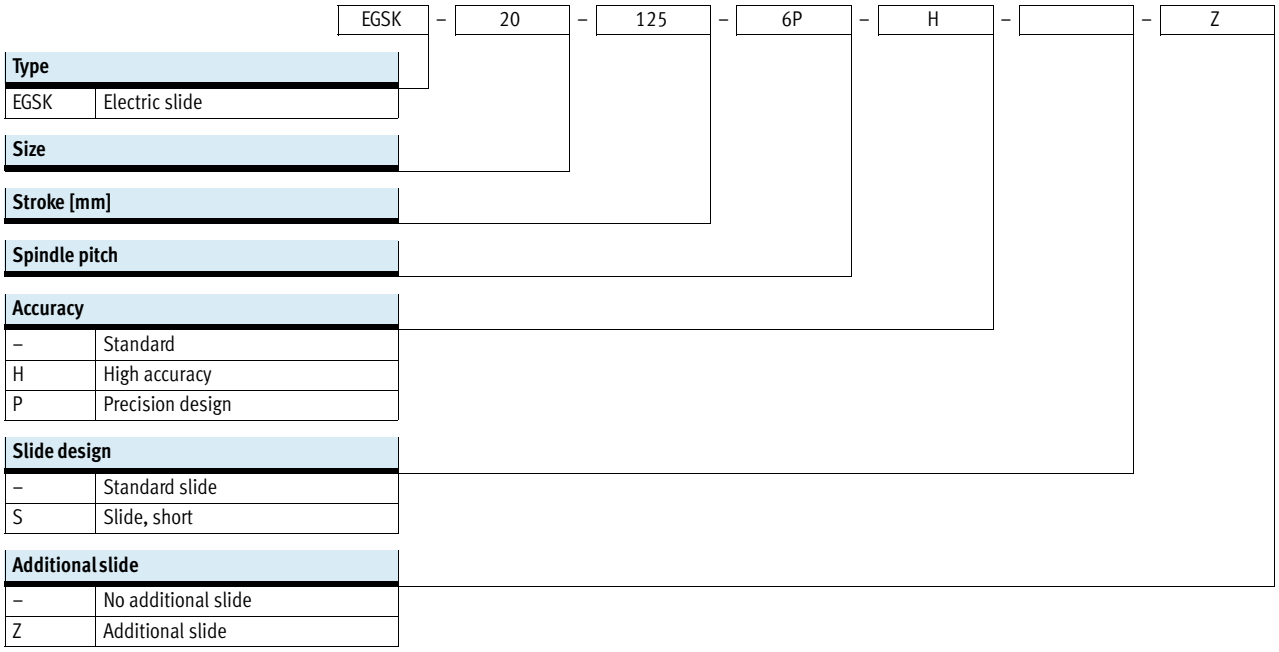
Kit comprising:
- Motor flange
- Coupling
- Screws



Accessories			
	Type	**Brief description**	**➔ Page/Internet**
1	Cross connecting kit EHAM-S1	For mounting an assembly axis EGSK/EGSP at right angles on the slide of a basic axis EGSK/EGSP. The assembly axis is one size smaller than the respective basic axis.	40
2	Covering kit EASC-S1	For covering the axis profile that is open at the top. The kit includes a slide adapter EASA-S1.	42
3	Slide adapter EASA-S1	Required to mount the effective load in combination with the covering kit for axis variants with additional slide.	41
4	Sensor strip EAPR-S1-S	• For mounting the inductive proximity sensor SIES-8M on the electric slide. • Switching lugs are included in the scope of delivery.	44
5	Proximity sensor SIES-8M	Inductive proximity sensor, for T-slot.	45
6	Axial kit EAMM-A	For axial motor mounting (comprising: coupling and motor flange).	37
7	Motor EMME, EMMS	Motors specially matched to the axis, with or without brake.	37
8	Centring pin ZBS	For centring loads and attachments on the slide.	45
9	Centring pin ZBS	For centring loads and attachments on the slide adapter.	45

Electric slides EGSK

Type codes



Type	
EGSK	Electric slide

Size

Stroke [mm]

Spindle pitch

Accuracy	
–	Standard
H	High accuracy
P	Precision design

Slide design	
–	Standard slide
S	Slide, short

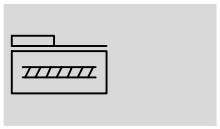
Additional slide	
–	No additional slide
Z	Additional slide

Electric slides EGSK

Technical data

FESTO

Function



- Ø - Size
  15 … 46
- I - Stroke length
  25 … 840 mm

General technical data												
Size			15[2]		20		26		33		46	
Spindle pitch			1	2	1	6	2	6	6	10	10	20
	Code[1]											
Constructional design			Electromechanical linear axis with recirculating ball bearing spindle									
Guide			Recirculating ball bearing guide									
Installation position			Any									
Type of mounting for effective load			Female thread									
			Centring sleeve		Locating pin							
Working stroke[3]	–	[mm]	25 … 100		25 … 125		50 … 200		100 … 600		200 … 800	
	S	[mm]	–		–		–		130 … 630		240 … 840	
Max. feed force	–/H[4]	[N]	36	19	69	72	116	116	150	148	264	192
$F_{x,max}$	P[5]	[N]	57	31	110	133	184	184	239	183	392	343
Max. driving torque	–/H[4]	[Ncm]	0.6	0.6	1.1	6.9	3.7	11	14	24	42	61
$M_{Driving,max}$	P[5]	[Ncm]	0.9	1.0	1.8	13	5.9	18	23	29	62	109
No-load torque	–/H	[Ncm]	0.4	0.4	0.5	0.5	1.5	1.5	7	7	10	10
$M_{No-load}$	P	[Ncm]	0.8	0.8	1.2	1.2	4.0	4.0	15	15	17	17
Max. rotational speed[6]		[1/min]	9600	9900	11400	7900	8400	5900	4700	4700	3100	3100
Max. speed[6]	–/H	[m/s]	0.16	0.33	0.19	0.79	0.28	0.59	0.47	0.79	0.52	1.05
	P	[m/s]	0.16	0.33	0.19	1.10	0.28	0.83	0.66	1.10	0.74	1.48
Max. acceleration		[m/s²]	10		10		10		20		20	
Homing			Inductive proximity sensor SIES-8M									

1) Variant code ➔ 8
2) Size 15 only comes in the accuracy classes H and P
3) Maximum travel distance ➔ 17
   In combination with an additional slide, the working stroke is reduced by the length of the additional slide and the distance between the two slides
4) Loads are based on a service life specification of 5 x 10^8 rotations
5) Loads are based on a service life specification of 1.25 x 10^8 rotations
6) Reduced speeds with sizes 33 and 46 with long strokes ➔ 11

Operating and environmental conditions		
Ambient temperature	[°C]	0 … +40
Relative air humidity	[%]	0 … 95 (non-condensing)

Weight [kg]						
Size		15	20	26	33	46
	Code[1]					
Basic weight with 0 mm stroke[2]	–	0.16	0.38	0.78	1.38	5.17
	S	–	–	–	1.28	4.77
Additional weight per 100 mm stroke	–	0.12	0.27	0.42	0.63	1.27
Moving load		0.04	0.07	0.15	0.31	0.91
	S	–	–	–	0.17	0.57
Additional slide Z	–	0.04	0.07	0.15	0.31	0.91
	S	–	–	–	0.17	0.57

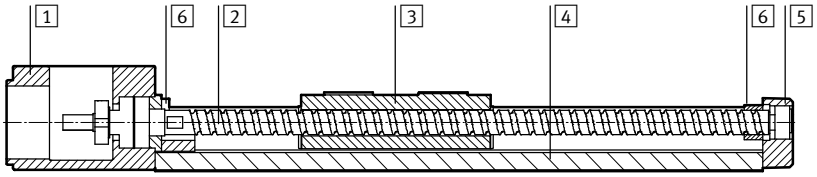
1) Variant code ➔ 8
2) Including slide, without additional slide

Accuracy data [µm]							
Size			15	20	26	33	46
	Stroke	Code[1]					
Repetition accuracy[2]		–	–	±10	±10	±10	±10
		H	±4	±5	±5	±5	±5
		P	±3	±3	±3	±3	±3
Operating parallelism	25 … 340	H	20	25	25	25	35
	400 … 540	H	–	–	–	35	35
	600 … 640	H	–	–	–	40	40
	800 … 840	H	–	–	–	–	50
	25 … 340	P	10	10	10	10	15
	400 … 540	P	–	–	–	15	15
	600 … 640	P	–	–	–	20	20
Max. reversing play		–	–	20	20	20	20
		H	10	10	10	20	20
		P	2	3	3	3	3

1) Variant code ➔ 8
2) The repetition accuracy that can be achieved with a motor/axis system is also influenced by the angle resolution of the motor and the chosen control parameters. The specified repetition accuracy cannot, therefore, be achieved with all motors.

Materials

Sectional view



Electric slide		
1	Drive cover	Die-cast aluminium, coated
2	Spindle	Steel
3	Slide	Steel
4	Profile	High-alloy steel
5	End cap	Die-cast aluminium, coated
6	Buffer	Ethylene vinyl acetate copolymer
	Note on materials	RoHS-compliant
		Contains PWIS (paint-wetting impairment substances)

Mass moment of inertia												
Size			15		20		26		33		46	
Spindle pitch			1	2	1	6	2	6	6	10	10	20
	Code[1]											
J_O		[kg mm²]	0.030	0.033	0.087	0.144	0.357	0.481	1.15	1.66	8.47	15.4
	S	[kg mm²]	–	–	–	–	–	–	0.795	1.07	6.04	10.4
J_S per 100 mm stroke		[kg mm²/100 mm]	0.048		0.100		0.316		0.771		3.902	
J_L per kg effective load		[kg mm²/kg]	0.03	0.10	0.03	0.91	0.10	0.91	0.91	2.53	2.53	10.13
J_W per additional slide		[kg mm²]	0.001	0.004	0.002	0.058	0.016	0.14	0.28	0.79	2.31	9.22
	S	[kg mm²]	–	–	–	–	–	–	0.16	0.43	1.44	5.78

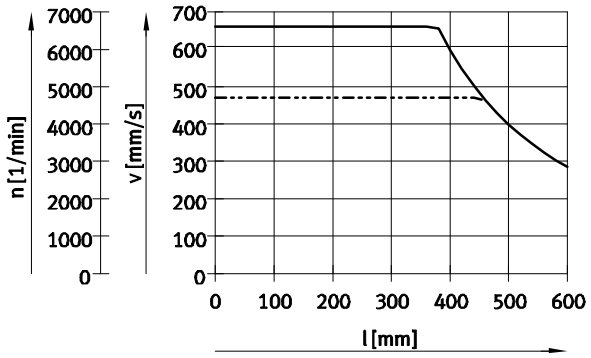
1) Variant code ➔ 8

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

$$J_A = J_O + J_W + J_S \times \text{working stroke} + J_L \times m_{\text{Effective load}}$$

Speed v, rotational speed n as a function of working stroke l

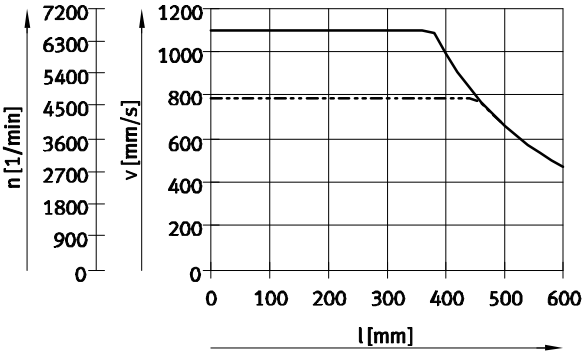
EGSK-33-...-6P



EGSK-33-...-6P-P

EGSK-33-...-6P, EGSK-33-...-6P-H

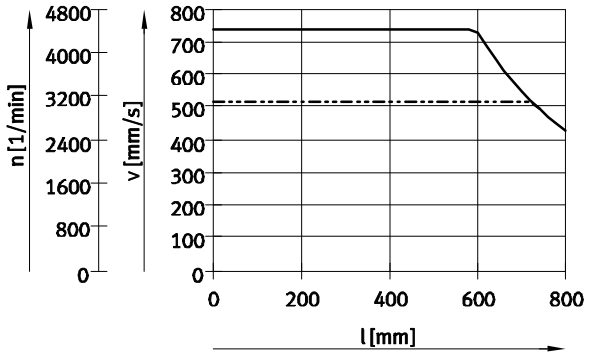
EGSK-33-...-10P



EGSK-33-...-10P-P

EGSK-33-...-10P, EGSK-33-...-10P-H

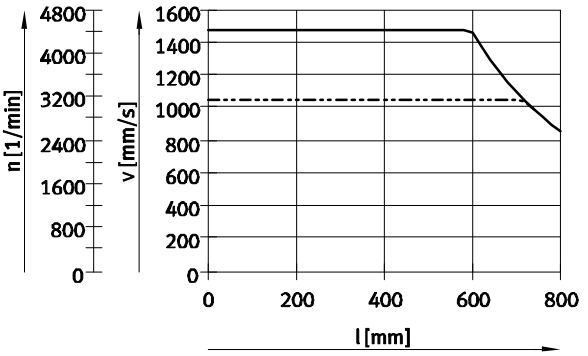
EGSK-46-...-10P



EGSK-46-...-10P-P

EGSK-46-...-10P, EGSK-46-...-10P-H

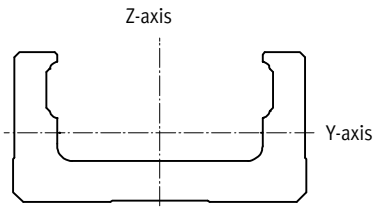
EGSK-46-...-20P



EGSK-46-...-20P-P

EGSK-46-...-20P, EGSK-46-...-20P-H

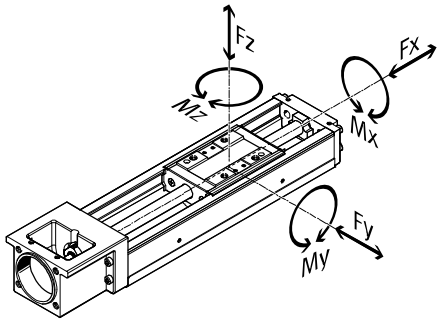
2nd moment of area



Size		15	20	26	33	46
Iy	[mm^4]	908	6100	17000	62000	240000
Iz	[mm^4]	14200	62000	150000	380000	1500000

Characteristic load values

The indicated forces and torques refer to the centre axis of the spindle.
The coordinate zero point is the point where the centre of the guide and the longitudinal centre of the slide intersect.



- Note

PositioningDrives sizing software www.festo.com

Permissible dynamic forces and torques[1)]

Size				15[3)]		20		26		33		46	
Spindle pitch				1	2	1	6	2	6	6	10	10	20
	Code[2)]												
$Fy_{max.}$, $Fz_{max.}$	–/H[4)]	–	[N]	747	593	1389	764	2223	1541	2469	2083	4919	3904
	P[5)]	–	[N]	1185	941	2204	1213	3528	2446	3920	3306	7809	6198
	–/H[4)]	S	[N]	–	–	–	–	–	–	1043	880	2514	1995
	P[5)]	S	[N]	–	–	–	–	–	–	1656	1396	3990	3167
$Mx_{max.}$	–/H[4)]	–	[Nm]	8.2	6.5	18.1	9.9	37.8	26.2	50.1	42.2	145	115
	P[5)]	–	[Nm]	13	10.3	28.7	15.8	60	41.6	79.5	67.1	231	183
	–/H[4)]	S	[Nm]	–	–	–	–	–	–	21.2	17.8	74.4	59
	P[5)]	S	[Nm]	–	–	–	–	–	–	33.6	28.3	118	93.7
$My_{max.}$, $Mz_{max.}$	–/H[4)]	–	[Nm]	2.3	1.9	5.8	3.2	12.9	8.9	16.4	13.8	48.7	38.7
	P[5)]	–	[Nm]	3.7	2.9	9.2	5.1	20.4	14.1	26	21.9	77.3	61.4
	–/H[4)]	S	[Nm]	–	–	–	–	–	–	3.8	3.2	13.6	10.8
	P[5)]	S	[Nm]	–	–	–	–	–	–	6	5	21.6	17.1

1) Calculated with a speed-dependent load factor f_w of 1.2
2) Variant code → 8
3) Size 15 only comes in the accuracy classes H and P
4) Loads are based on a service life specification of 5 x 10^8 rotations and a load factor f_w of 1.2
5) Loads are based on a service life specification of 1.25 x 10^8 rotations and a load factor f_w of 1.2

Basic load ratings

Size			15[2)]		20		26		33		46	
Spindle pitch			1	2	1	6	2	6	6	10	10	20
	Code[1)]											
Ball screw												
Static $c_{o,ball\ screw}$	–/H	[N]	660	410	1170	1450	4020	3510	4900	2840	6760	7150
	P	[N]	660	410	1170	1600	4020	3900	2740	1570	3720	5290
Dynamic $c_{dyn,ball\ screw}$	–/H[3)]	[N]	340	230	660	860	2350	1950	2840	1760	3140	3040
	P[3)]	[N]	340	230	660	1060	2350	2390	2250	1370	2940	3430
Fixed bearing												
Static $c_{o,bearing}$		[N]	290		1240		1760		2590		3240	
Dynamic $c_{dyn,bearing}$[3)]		[N]	590		1000		1380		1790		6660	

1) Variant code → 8
2) Size 15 only comes in the accuracy classes H and P
3) Dynamic basic load ratings are based on a basic service life of 10^6 rotations

Basic load ratings												
Size			15[2]		20		26		33		46	
Spindle pitch			1	2	1	6	2	6	6	10	10	20
	Code[1]											
Linear guide												
Static $c_{o,guide}$	–	[N]	3450		6300		12150		20200		45500	
	S	[N]	–		–		–		10000		22700	
Dynamic $c_{dyn,guide}$[3]	–	[N]	1532		2849		5746		9207		21747	
	S	[N]	–		–		–		3889		11112	
Torque equivalence factors												
k_x	–	[1/m]	90.9		76.9		58.8		49.3		33.8	
	S	[1/m]	–		–		–		49.3		33.8	
k_y, k_z	–	[1/m]	319.9		238.7		172.9		151		101	
	S	[1/m]	–		–		–		277.1		185	

1) Variant code ➔ 8
2) Size 15 only comes in the accuracy classes H and P
3) Dynamic basic load ratings are based on a basic service life of 100 km

Speed-dependent load factor fw

fw = 1.0 ... 1.2 (v ≤ 0.25 m/s)
fw = 1.2 ... 1.5 (0.25 m/s ≤ v ≤ 1.0 m/s)
fw = 1.5 ... 2.0 (1.0 m/s ≤ v ≤ 2.0 m/s)
fw = 2.0 ... 3.5 (v ≥ 2.0 m/s)

Calculation of the maximum feed force F_x

$$F_{x,max} = \frac{1}{f_w} \times \frac{Min[C_{dyn,KGT}; C_{dyn,bearing}]}{\sqrt[3]{\frac{L_{ref,rot}}{10^6}}}$$

Calculation of the maximum forces $F_{y/z}$ and torques $M_{x/y/z}$

$$F_{y/z,max} = \frac{1}{f_w} \times \frac{C_{dyn,guide}}{\sqrt[3]{\frac{L_{ref,km}}{100km}}}$$

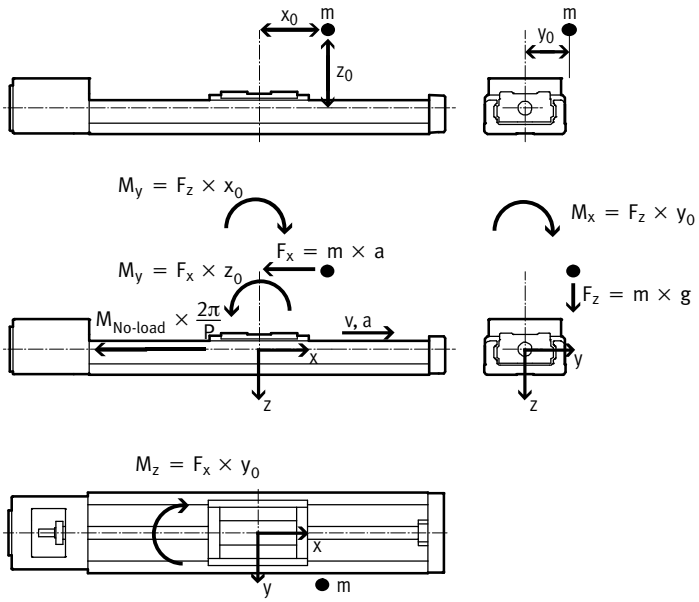
$$M_{x/y/z,max} = \frac{1}{k_{x/y/z}} \times \frac{1}{f_w} \times \frac{C_{dyn,guide}}{\sqrt[3]{\frac{L_{ref,km}}{100km}}}$$

Calculation of the service life

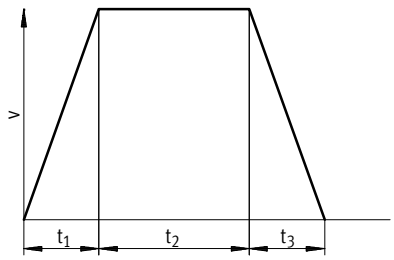
Size			15		20		26		33		46	
Spindle pitch P			1	2	1	6	2	6	6	10	10	20
	Code[1]											
Reference service life in rotations, $L_{ref,rot}$	–/H		5×10^8									
	P		1.25×10^8									
Reference service life in kilometres, $L_{ref,km}$	–/H	[km]	500	1000	500	3000	1000	3000	3000	5000	5000	10000
	P	[km]	125	250	125	750	250	750	750	1250	1250	2500

1) Variant code ➔ 8

1 Representation of the loads



2 Determination of the loads over the travel cycle



$$q_1 = \frac{t_1}{t_{tot}} \qquad q_2 = \frac{t_2}{t_{tot}} \qquad q_3 = \frac{t_3}{t_{tot}}$$

$$t_{tot} = t_1 + t_2 + t_3$$

v	Speed
t_1	Acceleration time
t_2	Constant travel time
t_3	Deceleration time
$q_{1/2/3}$	Relative time of the cycle phases
t_{tot}	Cycle time

Ball screw

For t_1: $F_{x1} = -(m \times a) - (M_{No\text{-}load} \times \frac{2\pi}{P})$

For t_2: $F_{x2} = -(M_{No\text{-}load} \times \frac{2\pi}{P})$

For t_3: $F_{x3} = m \times a - (M_{No\text{-}load} \times \frac{2\pi}{P})$

$$F_{x,dyn} = \sqrt[3]{q_1 \times |F_{x1}|^3 + q_2 \times |F_{x2}|^3 + q_3 \times |F_{x3}|^3}$$

$F_{x1/2/3}$	Calculated force load per cycle phase
$F_{x,dyn}$	Calculated average force load
m	Effective load (centre of gravity)
a	Acceleration
$M_{No\text{-}load}$	No-load torque ➔ 9
P	Spindle pitch ➔ 9
$q_{1/2/3}$	Relative time of the cycle phases

2 Determination of the loads over the travel cycle

Linear guide

For t_1: a ⟶, v ⟶

$F_{y1} = 0$

$F_{z1} = m \times g$

$M_{x1} = F_z \times y_0 = m \times g \times y_0$

$M_{y1} = -F_z \times x_0 + F_x \times z_0 = -m \times g \times x_0 + m \times a \times z_0$

$M_{z1} = F_x \times y_0 = m \times a \times y_0$

For t_2: a = 0 , v ⟶

$F_{y2} = 0$

$F_{z2} = m \times g$

$M_{x2} = F_z \times y_0 = m \times g \times y_0$

$M_{y2} = -F_z \times x_0 = -m \times g \times x_0$

$M_{z2} = 0$

For t_3: a ⟵, v ⟶

$F_{y3} = 0$

$F_{z3} = m \times g$

$M_{x3} = F_z \times y_0 = m \times g \times y_0$

$M_{y3} = -F_z \times x_0 - F_x \times z_0 = -m \times g \times x_0 - m \times a \times z_0$

$M_{z3} = -F_x \times y_0 = -m \times a \times y_0$

$$F_{y,dyn} = \sqrt[3]{q_1 \times |F_{y1}|^3 + q_2 \times |F_{y2}|^3 + q_3 \times |F_{y3}|^3}$$

$$F_{z,dyn} = \sqrt[3]{q_1 \times |F_{z1}|^3 + q_2 \times |F_{z2}|^3 + q_3 \times |F_{z3}|^3}$$

$$M_{x,dyn} = \sqrt[3]{q_1 \times |M_{x1}|^3 + q_2 \times |M_{x2}|^3 + q_3 \times |M_{x3}|^3}$$

$$M_{y,dyn} = \sqrt[3]{q_1 \times |M_{y1}|^3 + q_2 \times |M_{y2}|^3 + q_3 \times |M_{y3}|^3}$$

$$M_{z,dyn} = \sqrt[3]{q_1 \times |M_{z1}|^3 + q_2 \times |M_{z2}|^3 + q_3 \times |M_{z3}|^3}$$

$F_{y1/2/3}$, $F_{z1/2/3}$	Calculated force load per cycle phase
$M_{x1/2/3}$, $M_{y1/2/3}$, $M_{z1/2/3}$	Calculated torque load per cycle phase
$F_{y/z,dyn}$	Calculated average force load
$M_{x/y/z,dyn}$	Calculated average torque load
m	Effective load (centre of gravity)
g	Gravitational acceleration
a	Acceleration
x_0, y_0, z_0	Distances between the centre of gravity of the effective load and the slide centre point
$q_{1/2/3}$	Relative time of the cycle phases

3 Total load

Ball screw

$$\frac{|F_{x,dyn}|}{F_{x,max}} \leq f_v$$

$F_{x,dyn}$	Calculated average force load
$F_{x,max}$	Max. permissible force load ➔ 9
f_v	Load comparison factor ➔ 16

Linear guide

$$\frac{|F_{y,dyn}|}{F_{y,max}} + \frac{|F_{z,dyn}|}{F_{z,max}} + \frac{|M_{x,dyn}|}{M_{x,max}} + \frac{|M_{y,dyn}|}{M_{y,max}} + \frac{|M_{z,dyn}|}{M_{z,max}} \leq f_v$$

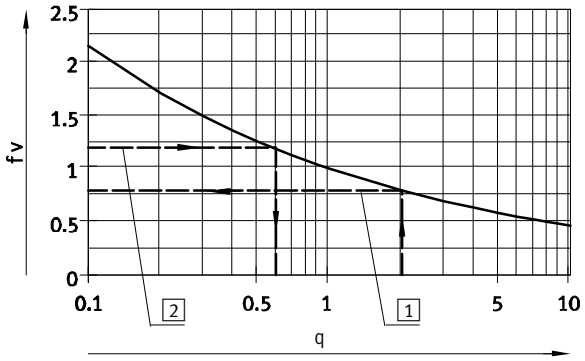
$F_{y/z,dyn}$	Calculated average force load
$F_{y/z,max}$	Max. permissible force load ➔ 12
$M_{x/y/z,dyn}$	Calculated average torque load
$M_{x/y/z,max}$	Max. permissible torque load ➔ 12
f_v	Load comparison factor ➔ 16

4 Determination of the load comparison factor f_v

$$f_v = \frac{1}{\sqrt[3]{q}} \quad \text{with} \quad q = \frac{L_{calc,km}}{L_{ref,km}} = \frac{L_{calc,rot}}{L_{ref,rot}}$$

for q = 1:
Calculated service life (here desired service life) $L_{calc,km}$ = 1 x reference service life $L_{ref,km}$ gives f_v = 1

for q ≠ 1:
Calculated service life (here desired service life) $L_{calc,km}$ = q x reference service life $L_{ref,km}$ read off (➔ graph) or calculate f_v



1 ➔ Example 1
2 ➔ Example 2

f_v	Load comparison factor
q	Quotient of desired service life divided by reference service life
$L_{calc, km}$	Calculated service life in km
$L_{ref, km}$	Reference service life in km ➔ 14
$L_{calc, rot}$	Calculated service life in rotations
$L_{ref, rot}$	Reference service life in rotations ➔ 14

5 Calculation examples

Example 1:

EGSK-26-...-2P-H-...

$L_{ref,km}$ = 1000 km
$L_{calc,km}$ = 2000 km

$$q = \frac{2000km}{1000km} = 2.0$$

$$f_v = \frac{1}{\sqrt[3]{q}} = 0.79$$

Result:
A desired service life of 200% of the reference service life means that the permissible total load must be 21% lower.

Example 2:

If the total load calculation gives a load comparison factor f_v of 1.2, the mathematical service life is only approx. 60% (x = 0.6 ➔ graph) of the reference service life.

$$q = \frac{1}{f_v^3} = 0.58$$

6 Static sizing

Ball screw

$$F_{x,stat} = Max[F_{x1}, F_{x2}, F_{x3}] \leq \frac{c_{o,KGT}}{f_s}$$

$F_{x,stat}$	Maximum value of the calculated force load per cycle phase	$c_{o,KGT}$	Static basic load rating of ball screw ➔ 12
$F_{x1/2/3}$	Calculated force load per cycle phase	f_s	Safety factor against static overload f_s = 1.0 ... 3.0

Linear guide

$$F_{y,stat} = Max[F_{y1}, F_{y2}, F_{y3}] \leq \frac{c_{o,guide}}{f_s}$$

$$F_{z,stat} = Max[F_{z1}, F_{z2}, F_{z3}] \leq \frac{c_{o,guide}}{f_s}$$

$$M_{x,stat} = Max[M_{x1}, M_{x2}, M_{x3}] \leq \frac{1}{k_x} \times \frac{c_{o,guide}}{f_s}$$

$$M_{y,stat} = Max[M_{y1}, M_{y2}, M_{y3}] \leq \frac{1}{k_y} \times \frac{c_{o,guide}}{f_s}$$

$$M_{z,stat} = Max[M_{z1}, M_{z2}, M_{z3}] \leq \frac{1}{k_z} \times \frac{c_{o,guide}}{f_s}$$

$F_{y/z,stat}$	Maximum value of the calculated force load per cycle phase	$M_{x1/2/3}$, $M_{y1/2/3}$, $M_{z1/2/3}$	Calculated torque load per cycle phase
$M_{x/y/z,stat}$	Maximum value of the calculated torque load per cycle phase	$c_{o,guide}$	Static basic load rating of ball screw ➔ 13
$F_{y1/2/3}$, $F_{z1/2/3}$	Calculated force load per cycle phase	$k_{x/y/z}$	Torque equivalence factors ➔ 13
		f_s	Safety factor against static overload f_s = 1.0 ... 3.0

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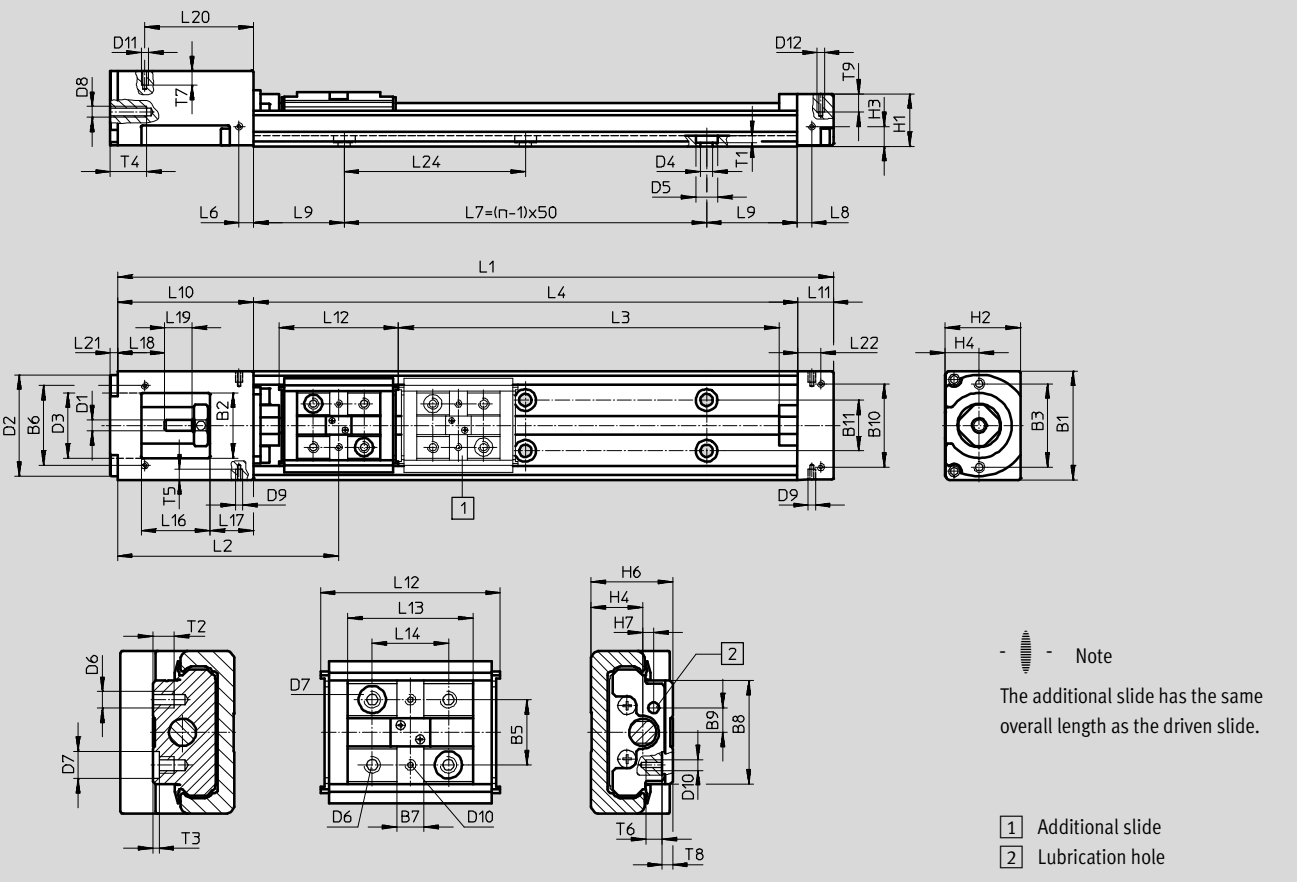
EGSK-15



Size	Stroke	L1	L3 +4	L4	L7	L9	n
15	25	122.5	30	75	50	12.5	2
	50	147.5	55	100	50	25	2
	75	172.5	80	125	100	12.5	3
	100	197.5	105	150	100	25	3

Size	B1	B2	B3 ±0.1	B5 ±0.02	B6 ±0.1	B7	B8	B9	B11	B10 ±0.1	D1 ∅ h6	D2 ∅ g7	D3 ∅	D4 ∅	D5 ∅	D6	D7 ∅ H7	D8
15	30	18	23	12	22	5	19	4.5	14	23	3	28	18	3.4	6	M3	5	M3

Size	D9	D10	D11	D12	H1	H2	H3	H4	H6	H7	L2	L6	L8	L10	L11	L12	L13	L14 ±0.02
15	M2	M2	M2	M2	14.5	20.9	5.5	9.5	15	2	60.3	4	4	37.5	10	33	23	14

Size	L16	L17	L18	L19	L20 ±0.1	L21	L22 ±0.1	L24	T1	T2	T3 +0.1	T4	T5	T6	T7	T8	T9
15	19	12	13	7.5	30	2	6.5	50	2	4	1.2	10	3	3	4	1.9	5

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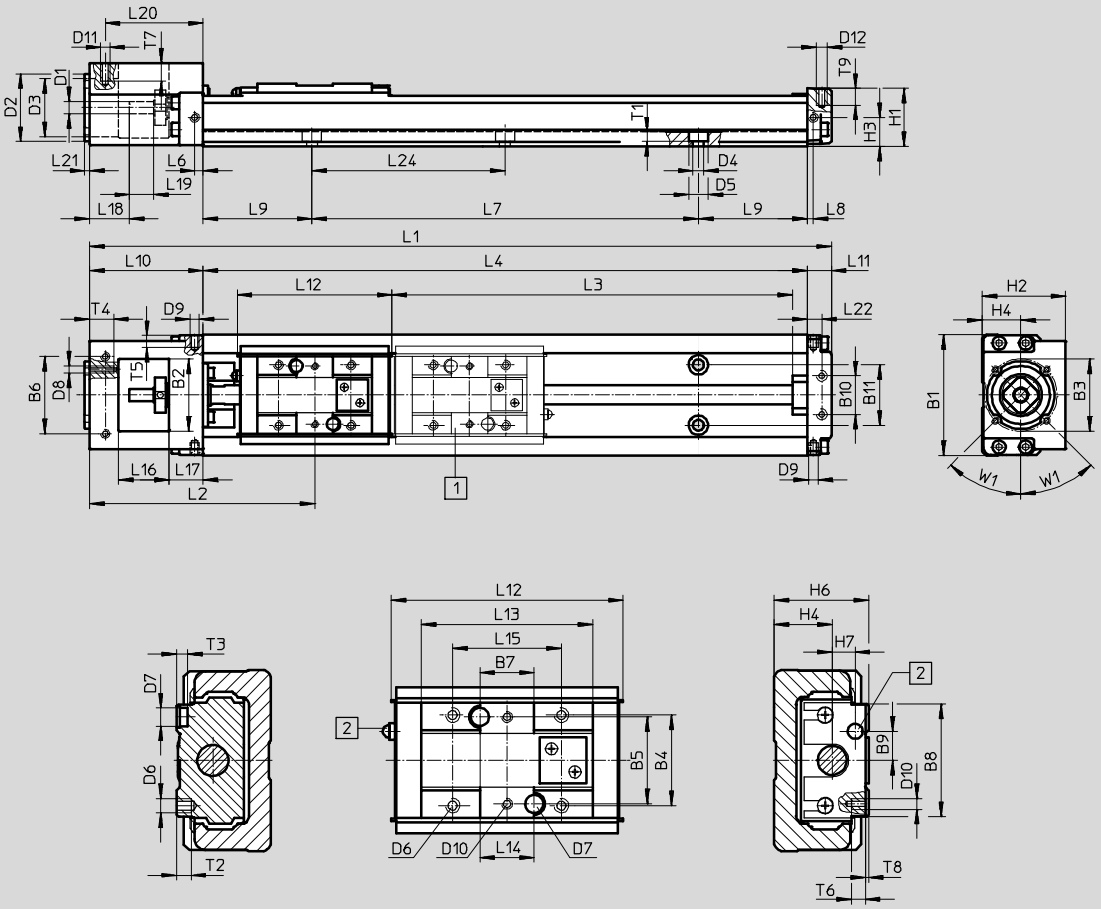
EGSK-20/26



Note

The additional slide has the same overall length as the driven slide.

1 Additional slide

2 Lubrication nipple

Size	Stroke	L1	L3 +4	L4	L7= (n−1)x60	L9	n
20	25	152	40	100	60	20	2
	75	202	90	150	120	15	3
	125	252	140	200	120	40	3

Size	Stroke	L1	L3 +4	L4	L7= (n−1)x80	L9	n
26	50	207	67	150	80	35	2
	100	257	117	200	160	20	3
	150	307	167	250	160	45	3
	200	357	217	300	240	30	4

Electric slides EGSK

Technical data

Size	B1	B2	B3 ∅	B4	B5 ±0.02	B6 ±0.1	B7	B8	B9	B10 ±0.1	B11	D1 ∅ h7	D2 ∅ g7	D3 ∅
20	40	22	30	18	18	29	10	23	5	18	18	4	28	22
26	50	30	30	25	24	32	15	31	8	16	25	5	28	24

Size	D4 ∅	D5 ∅	D6	D7 ∅ H7	D8	D9	D10	D11	D12	H1	H2	H3	H4	H6
20	3.4	6.5	M3	2	M3	M2.6	M2	M2.5	M2.5	19	28	10	13	20
26	4.5	8	M4	5	M3	M2.6	M3	M2.5	M3	24	34.5	12	16	26

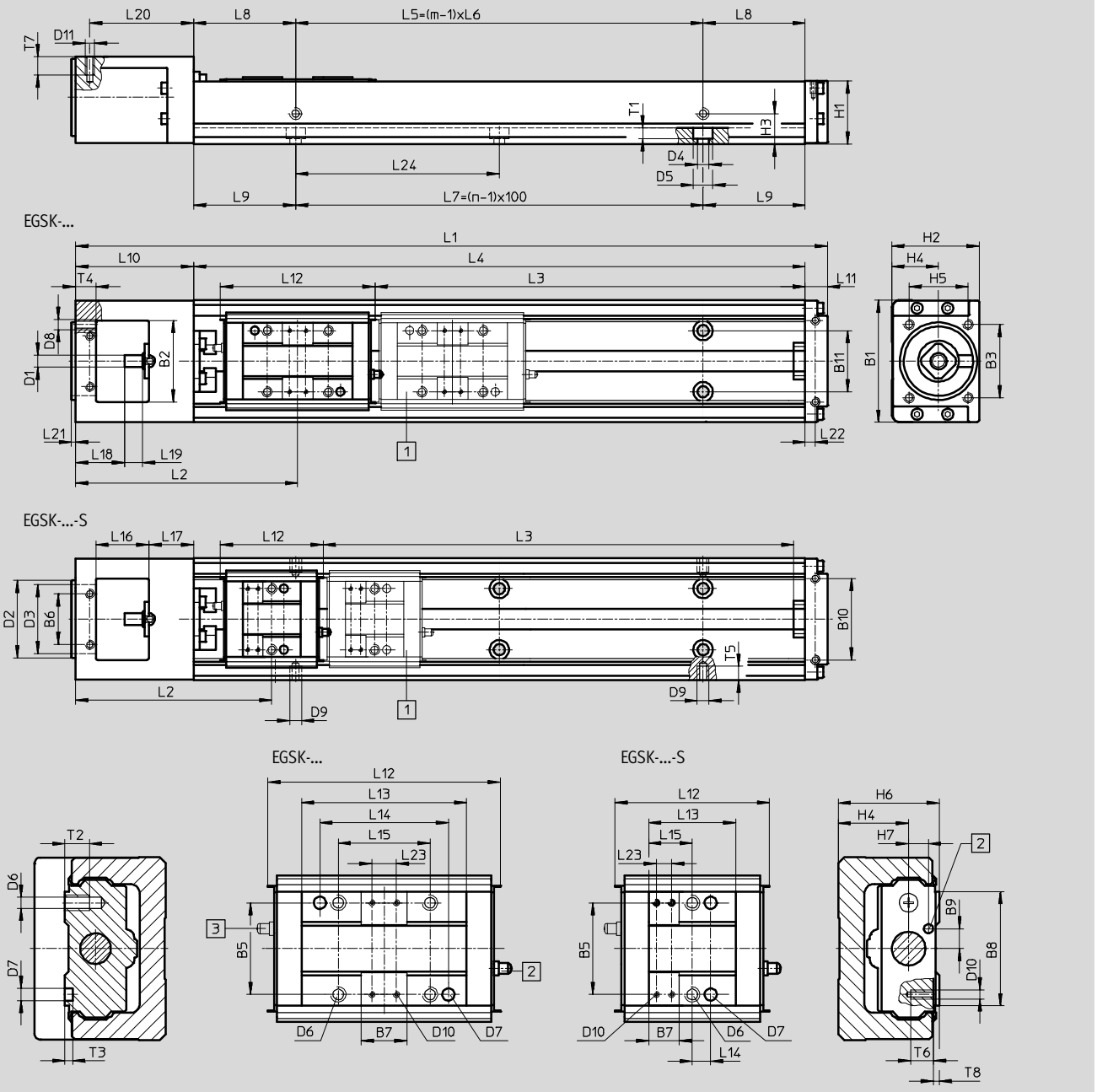
Size	H7	L2	L6	L8	L10	L11	L12	L13	L14[1)] ±0.02	L15	L16	L17	L18	L19
20	3.4	72.5	3.5	2.5	42	10	46	33.2	10	20	18	12	16	8
26	6	91	3.5	2.5	47	10	64	47.4	15	30	21	14	16.5	10

Size	L20 ±0.1	L21	L22 ±0.1	L24	T1	T2	T3	T4	T5	T6	T7	T8	T9	W1
20	34.5	2	6.5	60	3	4.5	3	10	4	5	5	0.9	5	45°
26	40.5	2	6	80	4	6.5	3	10	4	6	5	0.9	6	45°

1) Distance between the locating holes

Dimensions Download CAD data ➔ **www.festo.com**

EGSK-33/46



Note

The additional slide has the same overall length as the driven slide.

1 Additional slide
2 Lubrication nipple

3 The lubrication nipple is in the direction of the drive cover on the version with additional slide (EGSK-...-Z)

Electric slides EGSK

Technical data

Size	Stroke	L1	L3 +4		L4	L5	L6	L7	L8	m	n
				S							
33	100	269	110	135	200	100	100	100	50	2	2
	200	369	210	235	300	200	200	200	50	2	3
	300	469	310	335	400	200	200	300	100	2	4
	400	569	410	435	500	400	200	400	50	3	5
	500	669	510	535	600	400	200	500	100	3	6
	600	769	610	635	700	600	200	600	50	4	7

Size	Stroke	L1	L3 +4		L4	L5	L6	L7	L8	m	n
				S							
46	200	425.5	206	244	340	200	200	200	70	2	3
	300	525.5	306	344	440	400	200	300	20	3	4
	400	625.5	406	444	540	400	200	400	70	3	5
	500	725.5	506	544	640	600	200	500	20	4	6
	600	825.5	606	644	740	600	200	600	70	4	7
	800	1025.5	806	844	940	800	200	800	70	5	9

Size	B1	B2	B3 ±0.1	B5 ±0.04	B6 ±0.1	B7	B8	B9	B10 ±0.1	B11	D1 ∅ h7	D2 ∅ g7	D3 ∅	D4 ∅	D5 ∅
33	60	40	36	30	25	15	37.4	6.5	40	30	6	38	34	5.5	9.5
46	86	48	36	46	42	15	54.4	10	58	46	8	38	34	6.6	11

Size	D6	D7 ∅ H7	D8	D9	D10	D11	H1	H2	H3	H4	H5 ±0.1	H6	H7	L2	
															S
33	M5	4	M5	M2.6	M2	M3	31	43	15	23	29	33	6.5	105	92.3
46	M6	5	M5	M2.6	M2	M4	43.5	60	28	32	29	46	9	142.5	123.8

Size	L9	L10	L11	L12		L13		L14		L15		L16	L17	L18	L19
					S		S	±0.04	S ±0.1		S				
33	50	58	11	76	50.5	54	28.5	42	6	30	14.25	26	22	24	9
46	70	72.5	13	110	72.5	81	43.5	28	11	46	21.75	33.5	25	21.5	18

Size	L20 ±0.1	L21	L22 ±0.1	L23		L24	T1	T2	T3	T4	T5	T6	T7	T8
					S									
33	51	2	5	8	5	100	5.4	8	2.5	10	4	5	6	1
46	65.5	2	3.5	8	8	100	6.5	12	2.5	10	4	5	8	1

Ordering data – Electric slides with standard slide

Size	Stroke [mm]	Part No.	Type	Part No.	Type
		Spindle pitch 1 mm		Spindle pitch 6 mm	
20	25	**562758**	**EGSK-20-25-1P**	**562761**	**EGSK-20-25-6P**
	75	**562759**	**EGSK-20-75-1P**	**562762**	**EGSK-20-75-6P**
	125	**562760**	**EGSK-20-125-1P**	**562763**	**EGSK-20-125-6P**

Size	Stroke [mm]	Part No.	Type	Part No.	Type
		Spindle pitch 2 mm		Spindle pitch 6 mm	
26	50	**562764**	**EGSK-26-50-2P**	**562768**	**EGSK-26-50-6P**
	100	**562765**	**EGSK-26-100-2P**	**562769**	**EGSK-26-100-6P**
	150	**562766**	**EGSK-26-150-2P**	**562770**	**EGSK-26-150-6P**
	200	**562767**	**EGSK-26-200-2P**	**562771**	**EGSK-26-200-6P**

Size	Stroke [mm]	Part No.	Type	Part No.	Type
		Spindle pitch 6 mm		Spindle pitch 10 mm	
33	100	**562772**	**EGSK-33-100-6P**	**562778**	**EGSK-33-100-10P**
	200	**562773**	**EGSK-33-200-6P**	**562779**	**EGSK-33-200-10P**
	300	**562774**	**EGSK-33-300-6P**	**562780**	**EGSK-33-300-10P**
	400	**562775**	**EGSK-33-400-6P**	**562781**	**EGSK-33-400-10P**
	500	**562776**	**EGSK-33-500-6P**	**562782**	**EGSK-33-500-10P**
	600	**562777**	**EGSK-33-600-6P**	**562783**	**EGSK-33-600-10P**

Size	Stroke [mm]	Part No.	Type	Part No.	Type
		Spindle pitch 10 mm		Spindle pitch 20 mm	
46	200	**562784**	**EGSK-46-200-10P**	**562790**	**EGSK-46-200-20P**
	300	**562785**	**EGSK-46-300-10P**	**562791**	**EGSK-46-300-20P**
	400	**562786**	**EGSK-46-400-10P**	**562792**	**EGSK-46-400-20P**
	500	**562787**	**EGSK-46-500-10P**	**562793**	**EGSK-46-500-20P**
	600	**562788**	**EGSK-46-600-10P**	**562794**	**EGSK-46-600-20P**
	800	**562789**	**EGSK-46-800-10P**	**562795**	**EGSK-46-800-20P**

Electric slides EGSK

Ordering data – Modular products

FESTO

Ordering table

	Size	15	20	26	33	46	Condi-tions	Code		Enter code
M	Module No.	**562749**	**562750**	**562751**	**562752**	**562753**				
	Drive function	Electric slide drive						**EGSK**		EGSK
	Size	15	20	26	33	46		**-...**		-...
	Standard stroke [mm] for standard slide	25		–				**-25**		-...
		50	–	50	–			**-50**		
		75		–				**-75**		
		100	–	100		–		**-100**		
		–	125	–				**-125**		
		–		150	–			**-150**		
		–		200				**-200**		
		–			300			**-300**		
		–			400			**-400**		
		–			500			**-500**		
		–			600			**-600**		
		–				800		**-800**		
	Standard stroke [mm] for slide, short	–			130	–		**-130**		-...
		–			230	–		**-230**		
		–				240		**-240**		
		–			330	–		**-330**		
		–				340		**-340**		
		–			430	–		**-430**		
		–				440		**-440**		
		–			530	–		**-530**		
		–				540		**-540**		
		–			630	–		**-630**		
		–				640		**-640**		
		–				840		**-840**		
	Spindle pitch [mm]	1		–				**-1P**		-...
		2	–	2	–			**-2P**		
		–	6			–		**-6P**		
		–	–	–	10			**-10P**		
		–				20		**-20P**		
O	Accuracy	–	Standard accuracy					**-_**		
		Greater accuracy						**-H**		
		Precision accuracy					1	**-P**		
	Slide design	Standard slide						**-_**		
		–			Slide, short			**-S**		
	Additional slide	No additional slide						**-_**		
		Additional slide (additional slide Z in combination with slide design S also results in a short slide)					2	**-Z**		

1 **P** With size 33 not in combination with stroke for standard slide 600 and stroke for slide, short 630
With size 46 not in combination with stroke for standard slide 800 and stroke for slide, short 840

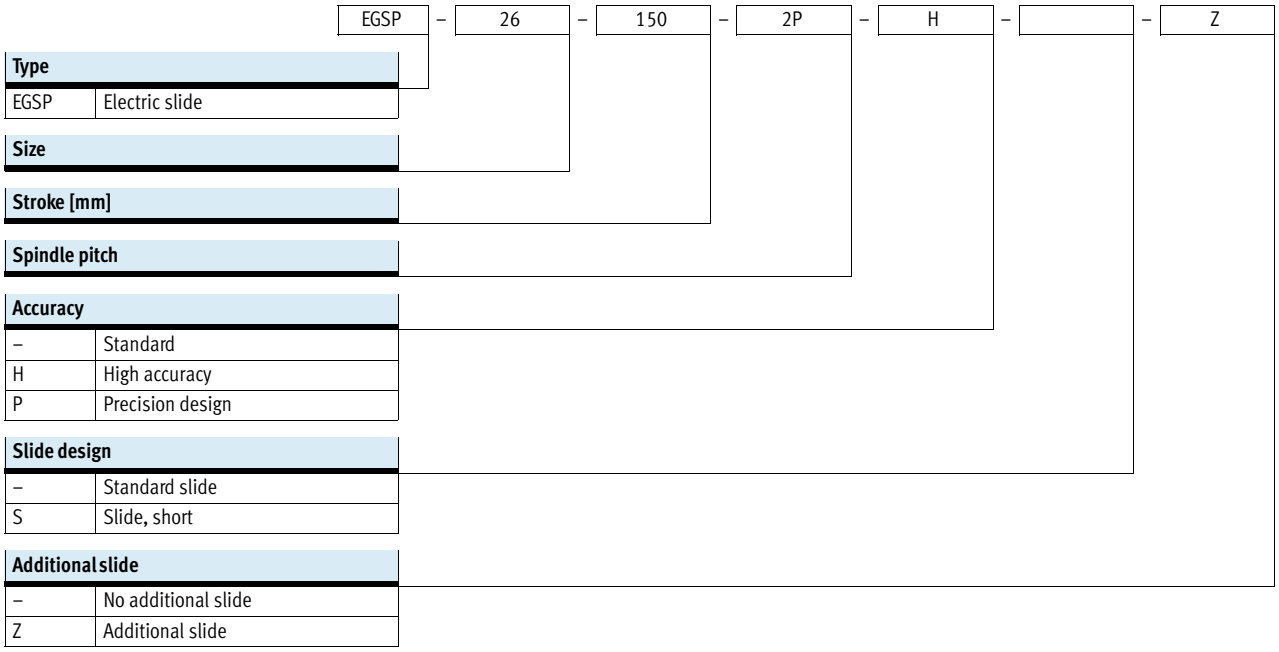
2 **Z** With size 15 not in combination with stroke for standard slide 25 and stroke for standard slide 50
With size 20 not in combination with stroke for standard slide 25
With size 26 not in combination with stroke for standard slide 50
With size 33 not in combination with stroke for standard slide 100

Transfer order code

	EGSK	–		–		–		–		–		–		–		

Electric slides EGSP

Type codes



Type	
EGSP	Electric slide

Size

Stroke [mm]

Spindle pitch

Accuracy	
–	Standard
H	High accuracy
P	Precision design

Slide design	
–	Standard slide
S	Slide, short

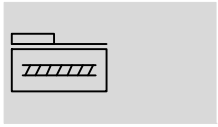
Additional slide	
–	No additional slide
Z	Additional slide

Electric slides EGSP

Technical data

FESTO

Function



- Ø - Size
  20 ... 46
- I - Stroke length
  25 ... 840 mm

General technical data											
Size			20		26		33			46	
Spindle pitch			1	6	2	6	6	10	20	10	20
	Code[1]										
Constructional design			Electromechanical linear axis with recirculating ball bearing spindle								
Guide			Recirculating ball bearing guide								
Installation position			Any								
Type of mounting for effective load			Female thread								
			Locating pin								
Working stroke[2]	–	[mm]	25 ... 125		50 ... 200		100 ... 600			200 ... 800	
	S	[mm]	–		–		130 ... 630			240 ... 840	
Max. feed force	–/H[3]	[N]	69	72	168	164	370	227	165	365	267
$F_{x,max}$	P[4]	[N]	87	112	212	212	466	286	208	460	337
Max. driving torque	–/H[3]	[Ncm]	1.1	6.9	5.3	16	35	36	53	58	85
$M_{Driving,max}$	P[4]	[Ncm]	1.4	11	6.7	20	45	46	66	73	107
No-load torque	–/H	[Ncm]	0.5	0.5	1.5	1.5	7	7	7	10	10
$M_{No-load}$	P	[Ncm]	1.2	1.2	4.0	4.0	15	15	15	17	17
Max. rotational speed[5]		[1/min]	6000	6000	6000	6000	6000	6000	6000	6000	6000
Max. speed[5]	–/H	[m/s]	0.1	0.6	0.2	0.6	0.6	1	2	1	2
	P	[m/s]	0.1	0.6	0.2	0.6	0.6	1	2	1	2
Max. acceleration		[m/s²]	10		10		20			20	
Homing			Inductive proximity sensor SIES-8M								

1) Variant code ➔ 24
2) Maximum travel distance ➔ 33
   In combination with an additional slide, the working stroke is reduced by the length of the additional slide and the distance between the two slides
3) Loads are based on a service life specification of 5 x 10^8 rotations
4) Loads are based on a service life specification of 2.5 x 10^8 rotations
5) Reduced speeds with sizes 33 and 46 with long strokes ➔ 27

Operating and environmental conditions		
Ambient temperature	[°C]	0 ... +40
Relative air humidity	[%]	0 ... 95 (non-condensing)

Weight [kg]					
Size		20	26	33	46
	Code[1]				
Basic weight with 0 mm stroke[2]	–	0.38	0.78	1.38	3.60
	S	–	–	1.30	3.30
Additional weight per 100 mm stroke	–	0.27	0.42	0.72	1.40
Moving load		0.07	0.15	0.31	0.91
	S	–	–	0.17	0.57
Additional slide Z	–	0.07	0.15	0.31	0.91
	S	–	–	0.17	0.57

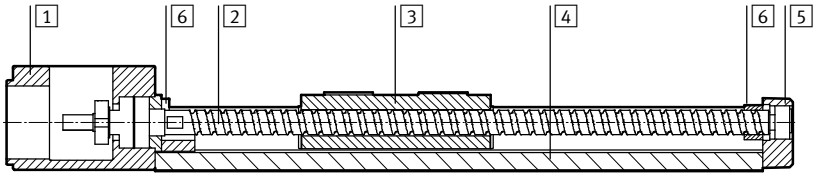
1) Variant code ➔ 24
2) Including slide, without additional slide

Accuracy data [µm]						
Size			20	26	33	46
	Stroke	Code[1]				
Repetition accuracy[2]		–	±10	±10	±10	±10
		H	±5	±5	±5	±5
		P	±3	±3	±3	±3
Running parallelism	25 … 340	H	25	25	25	35
	400 … 540	H	–	–	35	35
	600 … 640	H	–	–	40	40
	800 … 840	H	–	–	–	50
	25 … 340	P	10	10	10	15
	400 … 540	P	–	–	15	15
	600 … 640	P	–	–	20	20
Max. reversing play		–	20	20	20	20
		H	10	10	20	20
		P	3	3	3	3

1) Variant code ➔ 24
2) The repetition accuracy that can be achieved with a motor/axis system is also influenced by the angle resolution of the motor and the chosen control parameters. The specified repetition accuracy cannot, therefore, be achieved with all motors.

Materials

Sectional view



Electric slide		
1	Drive cover	Die-cast aluminium, coated
2	Spindle	Steel
3	Slide	Steel
4	Profile	High-alloy steel
5	End cap	Die-cast aluminium, coated
6	Buffer	Ethylene vinyl acetate copolymer
	Note on materials	RoHS-compliant
		Contains PWIS (paint-wetting impairment substances)

Mass moment of inertia											
Size			20		26		33			46	
Spindle pitch			1	6	2	6	6	10	20	10	20
	Code[1]										
J_O		[kg mm²]	0.087	0.144	0.357	0.481	2.73	3.23	5.59	8.55	15.46
	S	[kg mm²]	–	–	–	–	1.94	2.22	–	6.13	10.46
J_S per 100 mm stroke		[kg mm²/100 mm]	0.100		0.316		2.201			3.902	
J_L per kg effective load		[kg mm²/kg]	0.03	0.91	0.10	0.91	0.91	2.53	10.13	2.53	10.13
J_W per additional slide		[kg mm²]	0.002	0.058	0.016	0.14	0.28	0.79	3.14	2.31	9.22
	S	[kg mm²]	–	–	–	–	0.16	0.43	–	1.44	5.78

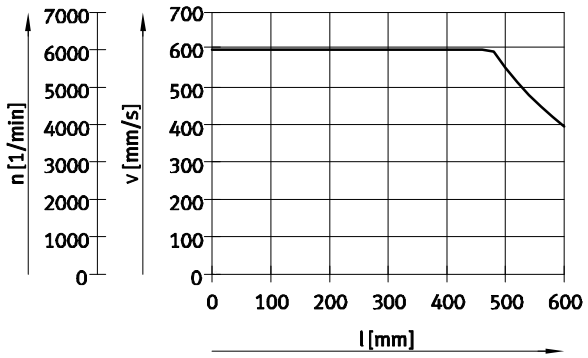
1) Variant code ➔ 24

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

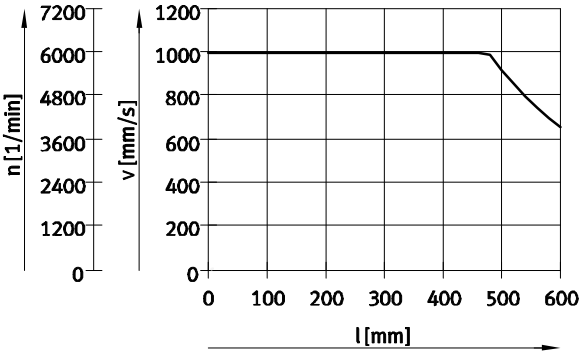
$$J_A = J_O + J_W + J_S \times \text{working stroke} + J_L \times m_{\text{effective load}}$$

Speed v, rotational speed n as a function of working stroke l

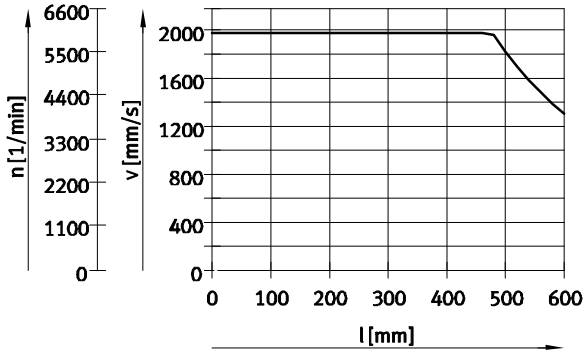
EGSP-33-...-6P



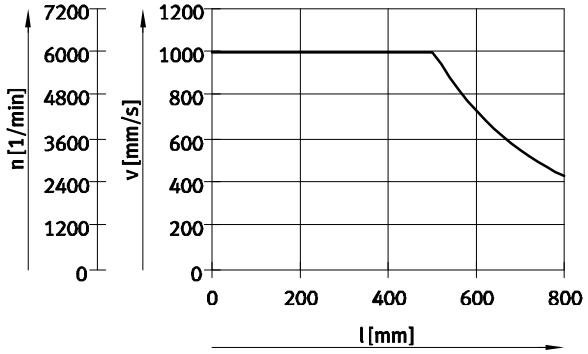
EGSP-33-...-10P



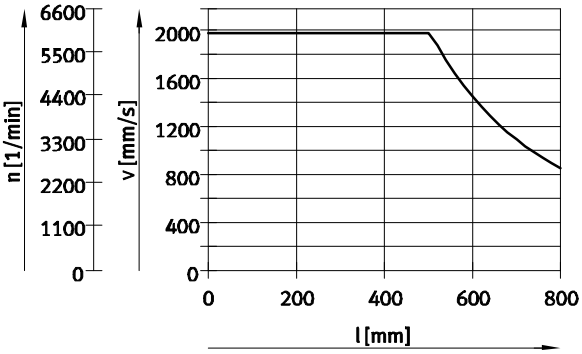
EGSP-33-...-20P



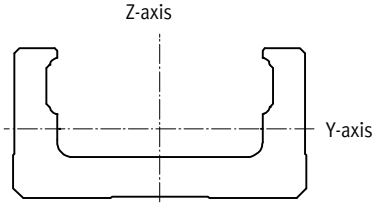
EGSP-46-...-10P



EGSP-46-...-20P



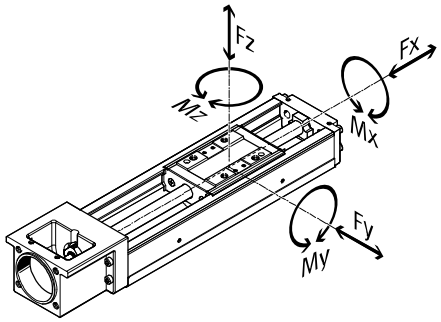
2nd moment of area



Size		20	26	33	46
Iy	[mm^4]	6000	16600	53500	205000
Iz	[mm^4]	61400	148000	352000	1450000

Characteristic load values

The indicated forces and torques refer to the centre axis of the spindle.
The coordinate zero point is the point where the centre of the guide and the longitudinal centre of the slide intersect.



- Note

PositioningDrives sizing software www.festo.com

Permissible dynamic forces and torques[1)]

Size				20		26		33			46	
Spindle pitch				1	6	2	6	6	10	20	10	20
	Code[2)]											
$Fy_{max.}$, $Fz_{max.}$	–/H[3)]	–	[N]	2325	1279	3991	2767	3619	3052	2422	7092	5629
	P[4)]	–	[N]	2929	1612	5028	3486	4559	3845	3052	8935	7092
	–/H[3)]	S	[N]	–	–	–	–	2405	2029	–	5099	4047
	P[4)]	S	[N]	–	–	–	–	3031	2556	–	6424	5099
$Mx_{max.}$	–/H[3)]	–	[Nm]	28.8	15.9	64.7	44.8	71.7	60.4	48.0	205	163
	P[4)]	–	[Nm]	36.3	20.0	81.5	56.5	90.3	76.1	60.4	258	205
	–/H[3)]	S	[Nm]	–	–	–	–	47.6	40.2	–	147	117
	P[4)]	S	[Nm]	–	–	–	–	60.0	50.6	–	186	147
$My_{max.}$, $Mz_{max.}$	–/H[3)]	–	[Nm]	9.9	5.5	25.1	17.4	25.5	21.5	17.1	74.6	59.2
	P[4)]	–	[Nm]	12.5	6.9	31.6	21.9	32.1	27.1	21.5	94.0	74.6
	–/H[3)]	S	[Nm]	–	–	–	–	10.1	8.5	–	34.9	27.7
	P[4)]	S	[Nm]	–	–	–	–	12.7	10.7	–	44.0	34.9

1) Calculated with a speed-dependent load factor f_w of 1.2
2) Variant code ➔ 24
3) Loads are based on a service life specification of 5×10^8 rotations and a load factor f_w of 1.2
4) Loads are based on a service life specification of 2.5×10^8 rotations and a load factor f_w of 1.2

Basic load ratings

Size			20		26		33			46	
Spindle pitch			1	6	2	6	6	10	20	10	20
	Code[1)]										
Ball screw											
Static $c_{o,ball\ screw}$	–/H	[N]	1170	1450	4020	3510	6290	3780	3770	6990	7040
	P	[N]	1170	1600	4020	3900	6290	3780	3770	6990	7040
Dynamic $c_{dyn,ball\ screw}$	–/H[2)]	[N]	660	860	2350	1950	4400	2700	2620	4350	4240
	P[2)]	[N]	660	1060	2350	2390	4400	2700	2620	4350	4240
Fixed bearing											
Static $c_{o,bearing}$		[N]	735		1230		2700			3330	
Dynamic $c_{dyn,bearing}$[2)]		[N]	1150		2000		6250			6700	

1) Variant code ➔ 24
2) Dynamic basic load ratings are based on a basic service life of 10^6 rotations

Basic load ratings											
Size			20		26		33			46	
Spindle pitch			1	6	2	6	6	10	20	10	20
	Code[1]										
Linear guide											
Static $c_{o,guide}$	–	[N]	8030		16500		20400			45900	
	S	[N]	–		–		11500		–	28700	
Dynamic $c_{dyn,guide}$[2]	–	[N]	4770		10318		13493			31351	
	S	[N]	–		–		8969		–	22541	
Torque equivalence factors											
k_x	–	[1/m]	80.7		61.7		50.5			34.6	
	S	[1/m]	–		–		50.5		–	34.6	
k_y, k_z	–	[1/m]	234.4		159.1		142			95.1	
	S	[1/m]	–		–		239.1		–	146.1	

1) Variant code ➔ 24
2) Dynamic basic load ratings are based on a basic service life of 100 km

Speed-dependent load factor fw

fw = 1.0 ... 1.2 (v ≤ 0.25 m/s)
fw = 1.2 ... 1.5 (0.25 m/s ≤ v ≤ 1.0 m/s)
fw = 1.5 ... 2.0 (1.0 m/s ≤ v ≤ 2.0 m/s)
fw = 2.0 ... 3.5 (v ≥ 2.0 m/s)

Calculation of the maximum feed force F_x

$$F_{x,max} = \frac{1}{f_w} \times \frac{Min[C_{dyn,KGT}; C_{dyn,bearing}]}{\sqrt[3]{\frac{L_{ref,rot}}{10^6}}}$$

Calculation of the maximum forces $F_{y/z}$ and torques $M_{x/y/z}$

$$F_{y/z,max} = \frac{1}{f_w} \times \frac{C_{dyn,guide}}{\sqrt[3]{\frac{L_{ref,km}}{100km}}}$$

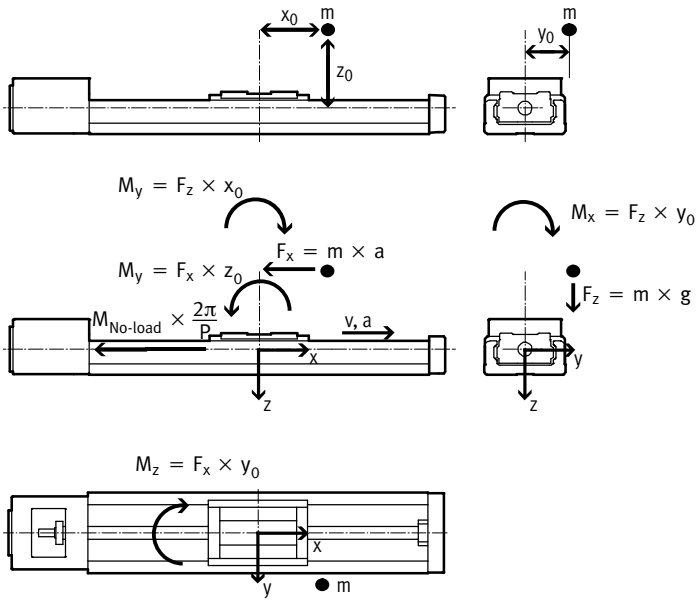
$$M_{x/y/z,max} = \frac{1}{k_{x/y/z}} \times \frac{1}{f_w} \times \frac{C_{dyn,guide}}{\sqrt[3]{\frac{L_{ref,km}}{100km}}}$$

Calculation of the service life

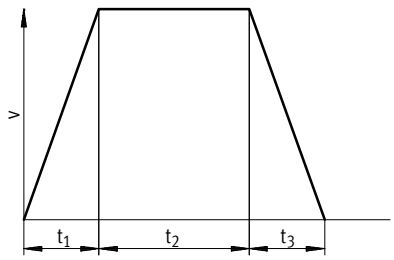
Size			20		26		33			46	
Spindle pitch P			1	6	2	6	6	10	20	10	20
	Code[1]										
Reference service life in rotations, $L_{ref,rot}$	–/H		5 x 10^8								
	P		2.5 x 10^8								
Reference service life in kilometres, $L_{ref,km}$	–/H	[km]	500	3000	1000	3000	3000	5000	10000	5000	10000
	P	[km]	250	1500	500	1500	1500	2500	5000	2500	5000

1) Variant code ➔ 24

1 Representation of the loads



2 Determination of the loads over the travel cycle



$$q_1 = \frac{t_1}{t_{tot}} \qquad q_2 = \frac{t_2}{t_{tot}} \qquad q_3 = \frac{t_3}{t_{tot}}$$

$$t_{tot} = t_1 + t_2 + t_3$$

v	Speed
t_1	Acceleration time
t_2	Constant travel time
t_3	Deceleration time
$q_{1/2/3}$	Relative time of the cycle phases
t_{tot}	Cycle time

Ball screw

For t_1: $F_{x1} = -(m \times a) - (M_{No\text{-}load} \times \frac{2\pi}{P})$

For t_2: $F_{x2} = -(M_{No\text{-}load} \times \frac{2\pi}{P})$

For t_3: $F_{x3} = m \times a - (M_{No\text{-}load} \times \frac{2\pi}{P})$

$$F_{x,dyn} = \sqrt[3]{q_1 \times |F_{x1}|^3 + q_2 \times |F_{x2}|^3 + q_3 \times |F_{x3}|^3}$$

$F_{x1/2/3}$	Calculated force load per cycle phase
$F_{x,dyn}$	Calculated average force load
m	Effective load (centre of gravity)
a	Acceleration
$M_{No\text{-}load}$	No-load torque ➔ 25
P	Spindle pitch ➔ 25
$q_{1/2/3}$	Relative time of the cycle phases

2 Determination of the loads over the travel cycle

Linear guide

For t_1: a ⟶, v ⟶

$F_{y1} = 0$

$F_{z1} = m \times g$

$M_{x1} = F_z \times y_0 = m \times g \times y_0$

$M_{y1} = -F_z \times x_0 + F_x \times z_0 = -m \times g \times x_0 + m \times a \times z_0$

$M_{z1} = F_x \times y_0 = m \times a \times y_0$

For t_2: a = 0 , v ⟶

$F_{y2} = 0$

$F_{z2} = m \times g$

$M_{x2} = F_z \times y_0 = m \times g \times y_0$

$M_{y2} = -F_z \times x_0 = -m \times g \times x_0$

$M_{z2} = 0$

For t_3: a ⟵, v ⟶

$F_{y3} = 0$

$F_{z3} = m \times g$

$M_{x3} = F_z \times y_0 = m \times g \times y_0$

$M_{y3} = -F_z \times x_0 - F_x \times z_0 = -m \times g \times x_0 - m \times a \times z_0$

$M_{z3} = -F_x \times y_0 = -m \times a \times y_0$

$$F_{y,dyn} = \sqrt[3]{q_1 \times |F_{y1}|^3 + q_2 \times |F_{y2}|^3 + q_3 \times |F_{y3}|^3}$$

$$F_{z,dyn} = \sqrt[3]{q_1 \times |F_{z1}|^3 + q_2 \times |F_{z2}|^3 + q_3 \times |F_{z3}|^3}$$

$$M_{x,dyn} = \sqrt[3]{q_1 \times |M_{x1}|^3 + q_2 \times |M_{x2}|^3 + q_3 \times |M_{x3}|^3}$$

$$M_{y,dyn} = \sqrt[3]{q_1 \times |M_{y1}|^3 + q_2 \times |M_{y2}|^3 + q_3 \times |M_{y3}|^3}$$

$$M_{z,dyn} = \sqrt[3]{q_1 \times |M_{z1}|^3 + q_2 \times |M_{z2}|^3 + q_3 \times |M_{z3}|^3}$$

$F_{y1/2/3}$, $F_{z1/2/3}$ Calculated force load per cycle phase

$M_{x1/2/3}$, $M_{y1/2/3}$, $M_{z1/2/3}$ Calculated torque load per cycle phase

$F_{y/z,dyn}$ Calculated average force load

$M_{x/y/z,dyn}$ Calculated average torque load

m Effective load (centre of gravity)

g Gravitational acceleration

a Acceleration

x_0, y_0, z_0 Distances between the centre of gravity of the effective load and the slide centre point

$q_{1/2/3}$ Relative time of the cycle phases

3 Total load

Ball screw

$$\frac{|F_{x,dyn}|}{F_{x,max}} \leq f_v$$

$F_{x,dyn}$ Calculated average force load

$F_{x,max}$ Max. permissible force load ➔ 25

f_v Load comparison factor ➔ 32

Linear guide

$$\frac{|F_{y,dyn}|}{F_{y,max}} + \frac{|F_{z,dyn}|}{F_{z,max}} + \frac{|M_{x,dyn}|}{M_{x,max}} + \frac{|M_{y,dyn}|}{M_{y,max}} + \frac{|M_{z,dyn}|}{M_{z,max}} \leq f_v$$

$F_{y/z,dyn}$ Calculated average force load

$F_{y/z,max}$ Max. permissible force load ➔ 28

$M_{x/y/z,dyn}$ Calculated average torque load

$M_{x/y/z,max}$ Max. permissible torque load ➔ 28

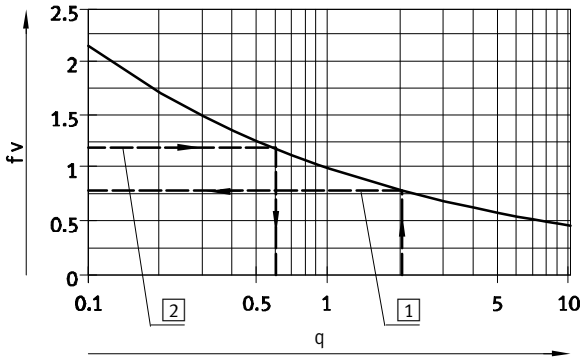
f_v Load comparison factor ➔ 32

4 Determination of the load comparison factor f_v

$$f_v = \frac{1}{\sqrt[3]{q}} \quad \text{with} \quad q = \frac{L_{calc,km}}{L_{ref,km}} = \frac{L_{calc,rot}}{L_{ref,rot}}$$

for q = 1:
Calculated service life (here desired service life) $L_{calc,km}$ = 1 x reference service life $L_{ref,km}$ gives f_v = 1

for q ≠ 1:
Calculated service life (here desired service life) $L_{calc,km}$ = q x reference service life $L_{ref,km}$ read off (➔ graph) or calculate f_v



1 ➔ Example 1
2 ➔ Example 2

f_v	Load comparison factor
q	Quotient of desired service life divided by reference service life
$L_{calc, km}$	Calculated service life in km
$L_{ref, km}$	Reference service life in km ➔ 30
$L_{calc, rot}$	Calculated service life in rotations
$L_{ref, rot}$	Reference service life in rotations ➔ 30

5 Calculation examples

Example 1:

EGSP-26-...-2P-H-...

$L_{ref,km}$ = 1000 km
$L_{calc,km}$ = 2000 km

$$q = \frac{2000km}{1000km} = 2.0$$

$$f_v = \frac{1}{\sqrt[3]{q}} = 0.79$$

Result:
A desired service life of 200% of the reference service life means that the permissible total load must be 21% lower.

Example 2:

If the total load calculation gives a load comparison factor f_v of 1.2, the mathematical service life is only approx. 60% (x = 0.6 ➔ graph) of the reference service life.

$$q = \frac{1}{f_v^3} = 0.58$$

6 Static sizing

Ball screw

$$F_{x,stat} = Max[F_{x1}, F_{x2}, F_{x3}] \leq \frac{c_{o,KGT}}{f_s}$$

$F_{x,stat}$	Maximum value of the calculated force load per cycle phase	$c_{o,KGT}$	Static basic load rating of ball screw ➔ 28
$F_{x1/2/3}$	Calculated force load per cycle phase	f_s	Safety factor against static overload f_s = 1.0 ... 3.0

Linear guide

$$F_{y,stat} = Max[F_{y1}, F_{y2}, F_{y3}] \leq \frac{c_{o,guide}}{f_s}$$

$$F_{z,stat} = Max[F_{z1}, F_{z2}, F_{z3}] \leq \frac{c_{o,guide}}{f_s}$$

$$M_{x,stat} = Max[M_{x1}, M_{x2}, M_{x3}] \leq \frac{1}{k_x} \times \frac{c_{o,guide}}{f_s}$$

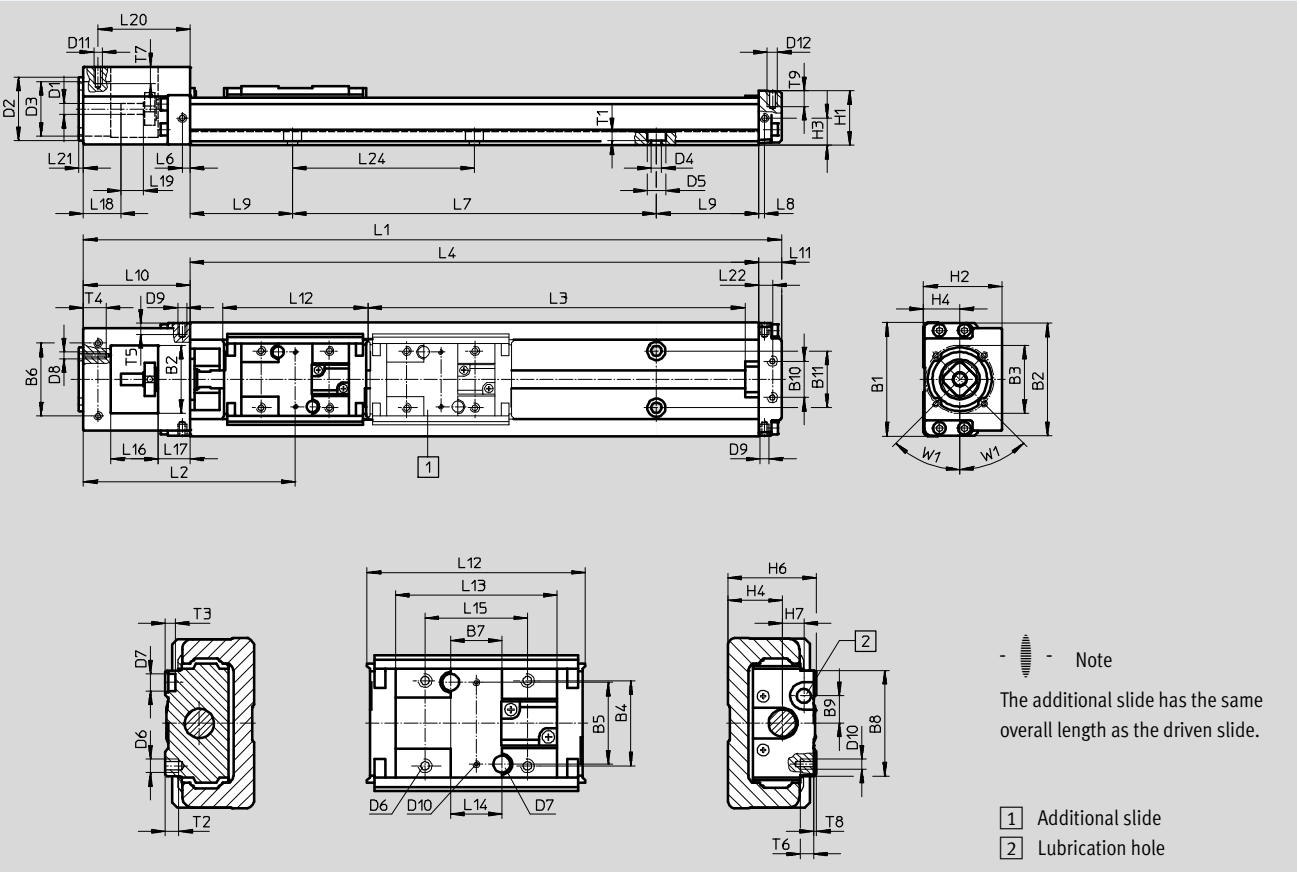
$$M_{y,stat} = Max[M_{y1}, M_{y2}, M_{y3}] \leq \frac{1}{k_y} \times \frac{c_{o,guide}}{f_s}$$

$$M_{z,stat} = Max[M_{z1}, M_{z2}, M_{z3}] \leq \frac{1}{k_z} \times \frac{c_{o,guide}}{f_s}$$

$F_{y/z,stat}$	Maximum value of the calculated force load per cycle phase	$M_{x1/2/3}$, $M_{y1/2/3}$, $M_{z1/2/3}$	Calculated torque load per cycle phase
$M_{x/y/z,stat}$	Maximum value of the calculated torque load per cycle phase	$c_{o,guide}$	Static basic load rating of ball screw ➔ 29
$F_{y1/2/3}$, $F_{z1/2/3}$	Calculated force load per cycle phase	$k_{x/y/z}$	Torque equivalence factors ➔ 29
		f_s	Safety factor against static overload f_s = 1.0 ... 3.0

Dimensions Download CAD data ➔ **www.festo.com**

EGSP-20/26



Size	Stroke	L1	L3 +4	L4	L7= (n−1)x60	L9	n
20	25	152	39	100	60	20	2
	75	202	89	150	120	15	3
	125	252	139	200	120	40	3

Size	Stroke	L1	L3 +4	L4	L7= (n−1)x80	L9	n
26	50	207	67	150	80	35	2
	100	257	117	200	160	20	3
	150	307	167	250	160	45	3
	200	357	217	300	240	30	4

Size	B1	B2	B3 ∅	B4	B5 ±0.02	B6 ±0.1	B7	B8	B9	B10 ±0.1	B11	D1 ∅ h7	D2 ∅ g7	D3 ∅	D4 ∅	D5 ∅	D6	D7 ∅ H7	D8
20	40	22	30	18	18	29	10	23	5.5	18	18	4	28	22	3.4	6.5	M3	2	M3
26	50	30	30	25	24	32	15	31	8	16	25	5	28	24	4.5	8	M4	5	M3

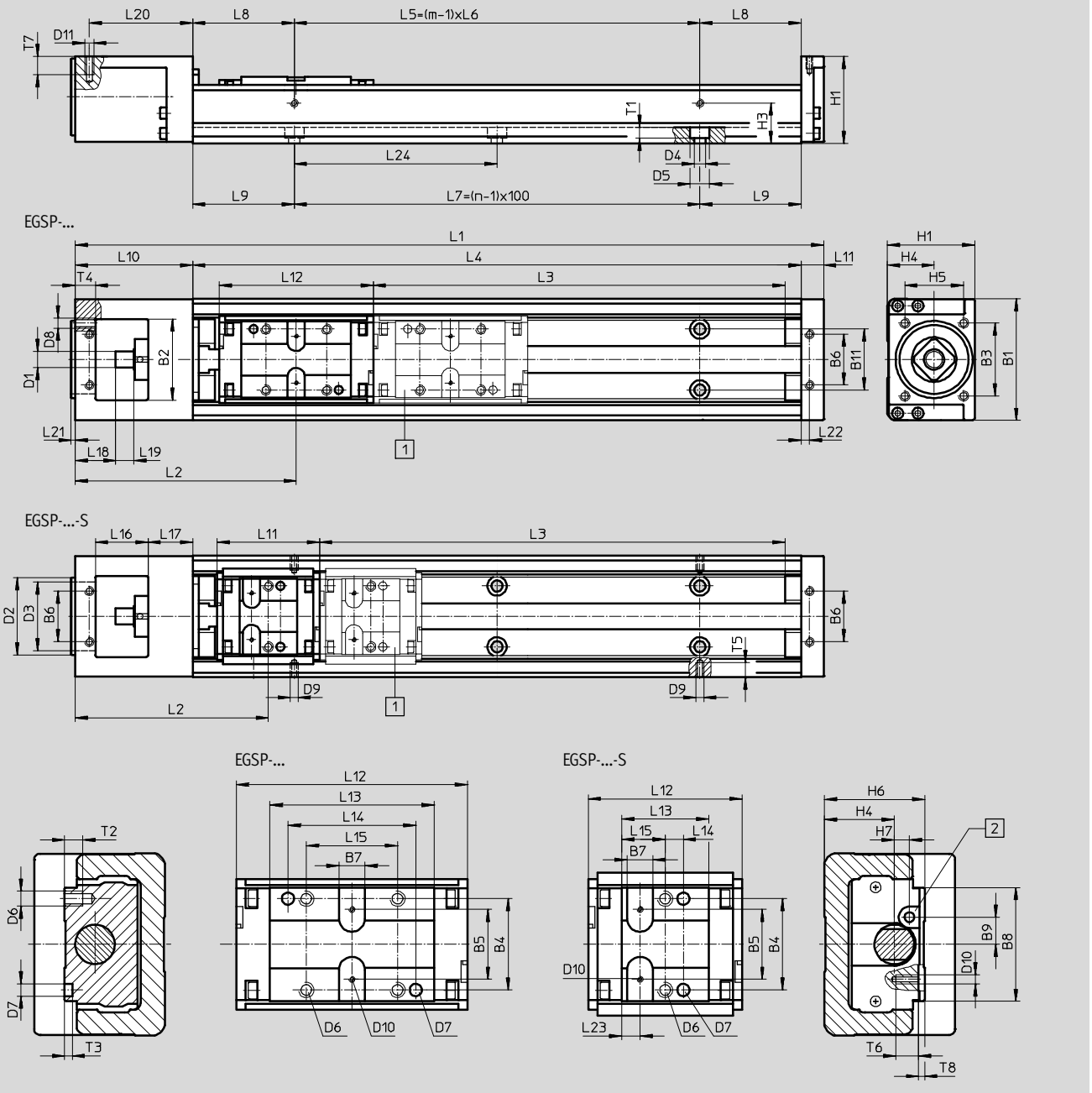
Size	D9	D10	D11	D12	H1	H2	H3	H4	H6	H7	L2	L6	L8	L10	L11	L12	L13	L14[1] ±0.02
20	M2.6	M1.6	M2.5	M2.5	19	28	10	13	20	4	72.8	3.5	2.5	42	10	46	33.2	10
26	M2.6	M2	M2.5	M3	24	34.5	12	16	26	6.3	91.3	3.5	2.5	47	10	64	47.4	15

Size	L15	L16	L17	L18	L19	L20 ±0.1	L21	L22 ±0.1	L24	T1	T2	T3	T4	T5	T6	T7	T8	T9	W1
20	20	18	12	16	8	34.5	2	6.5	60	3	3	3	10	4	2.4	5	0.9	5	45°
26	30	21	14	16.5	10	40.5	2	6	80	4	4	3	10	4	3	5	0.9	6	45°

1) Distance between the locating holes

Dimensions Download CAD data ➔ **www.festo.com**

EGSP-33/46



- Note

The additional slide has the same overall length as the driven slide.

1 Additional slide
2 Lubrication hole

Electric slides EGSP

Technical data

Size	Stroke	L1	L3 +4		L4	L5	L6	L7	L8	m	n
				S							
33	100	269	103	130	200	100	100	100	50	2	2
	200	369	203	230	300	200	200	200	50	2	3
	300	469	303	330	400	200	200	300	100	2	4
	400	569	403	430	500	400	200	400	50	3	5
	500	669	503	530	600	400	200	500	100	3	6
	600	769	603	630	700	600	200	600	50	4	7

Size	Stroke	L1	L3 +4		L4	L5	L6	L7	L8	m	n
				S							
46	200	425.5	206	240	340	200	200	200	70	2	3
	300	525.5	306	340	440	400	200	300	20	3	4
	400	625.5	406	440	540	400	200	400	70	3	5
	500	725.5	506	540	640	600	200	500	20	4	6
	600	825.5	606	640	740	600	200	600	70	4	7
	800	1025.5	806	840	940	800	200	800	70	5	9

Size	B1	B2	B3 ±0.1	B4	B5 ±0.04	B6 ±0.1	B7	B8	B9	B10	B11	D1 ∅ h7	D2 ∅ g7	D3 ∅	D4 ∅
33	60	40	36	30	30	25	8.5	37.4	8.9	23	30	8	38	34	5.5
46	86	48	36	46	46	42	10	54.4	10	46	46	10	38	34	6.6

Size	D5 ∅	D6	D7 ∅ H7	D8	D9	D10	D11	H1	H3	H4	H5 ±0.1	H6	H7	L2	
															S
33	9.5	M5	4	M5	M2.6	M2	M3	43	20	23	29	33	5	107	94.3
46	11	M6	5	M5	M2.6	M2	M4	60	29	32	29	46	8	140	123.5

Size	L9	L10	L11	L12		L13		L14		L15		L16	L17	L18	L19
					S		S	±0.04	S ±0.1		S				
33	50	58	11	76	50.5	54	28.5	42	6	30	14.25	26	22	20	9
46	70	72.5	13	110	77	81	48	28	11	46	24	33.5	25	19.5	18

Size	L20 ±0.1	L21	L22 ±0.1	L24	T1	T2	T3	T4	T5	T6	T7	T8
33	51	2	4	100	5.4	6	2.5	10	3.5	5	6	2
46	65.5	2	6	100	6.5	9	2.5	10	4	5	8	2

Electric slides EGSP

Ordering data – Modular products

FESTO

Ordering table

Size		20	26	33	46	Condi-tions	Code	Enter code
M	Module No.	**562754**	**562755**	**562756**	**562757**			
	Drive function	Electric slide drive, with caged balls					**EGSP**	EGSP
	Size	20	26	33	46		**-...**	-...
	Standard stroke [mm] for standard slide	25	–				**-25**	-...
		–	50	–			**-50**	
		75	–				**-75**	
		–	100		–		**-100**	
		125	–				**-125**	
		–	150	–			**-150**	
		–	200				**-200**	
		–		300			**-300**	
		–		400			**-400**	
		–		500			**-500**	
		–		600			**-600**	
		–			800		**-800**	
	Standard stroke [mm] for slide, short	–		130	–		**-130**	-...
		–		230	–		**-230**	
		–			240		**-240**	
		–		330	–		**-330**	
		–			340		**-340**	
		–		430	–		**-430**	
		–			440		**-440**	
		–		530	–		**-530**	
		–			540		**-540**	
		–		630	–		**-630**	
		–			640		**-640**	
		–			840		**-840**	
	Spindle pitch [mm]	1	–				**-1P**	-...
		–	2	–			**-2P**	
		6			–		**-6P**	
		–	–	10			**-10P**	
		20		20			**-20P**	
O	Accuracy	Standard accuracy						
		Greater accuracy					**-H**	
		Precision accuracy				1	**-P**	
	Slide design	Standard slide					**-_**	
		–		Slide, short		2	**-S**	
	Additional slide	No additional slide					**-_**	
		Additional slide (additional slide Z in combination with slide design S also results in a short slide)				3	**-Z**	

1 **P** With size 46 not in combination with stroke for standard slide 800 and stroke for slide, short 840

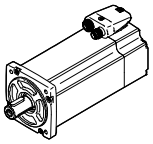
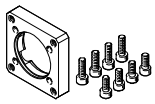
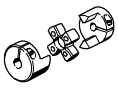
2 **S** With size 33 not in combination with spindle pitch 20

3 **Z** With size 20 not in combination with stroke for standard slide 25
With size 26 not in combination with stroke for standard slide 50
With size 33 not in combination with stroke for standard slide 100

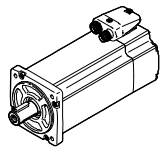
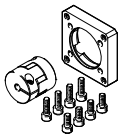
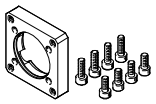
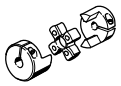
Transfer order code

	EGSP	–		–		–		–		–		–		–	

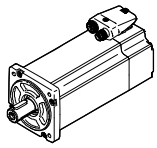
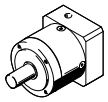
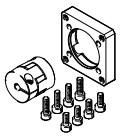
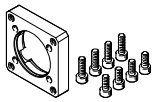
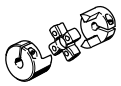
Permissible axis/motor combinations with axial kit – Without gear unit Technical data ➔ Internet: eamm-a

Motor	Axial kit	Axial kit consisting of:	
		Motor flange	Coupling
			
Type	Part No. Type	Part No. Type	Part No. Type
EGSK-15			
With servo motor			
EMME-AS-40-...	**1982886** **EAMM-A-P3-28D-40P**	**1982014** **EAMF-A-28D-40P**	**2310368** **EAMC-16-20-3-8**
With stepper motor			
EMMS-ST-28-...	**1703478** **EAMM-A-P3-28D-28A**	**1087613** **EAMF-A-28D-28A**	**562672** **EAMC-16-20-3-5**
EGSK-20/EGSP-20			
With servo motor			
EMME-AS-40-...	**1983071** **EAMM-A-P4-28B-40P**	**1976704** **EAMF-A-28B-40P**	**562675** **EAMC-16-20-4-8**
EMMS-AS-40-...	**562637** **EAMM-A-P4-28B-40A**	**552163** **EAMF-A-28B-40A**	**562673** **EAMC-16-20-4-6**
With stepper motor			
EMMS-ST-28-...	**1731466** **EAMM-A-P4-28B-28A**	**1704476** **EAMF-A-28B-28A**	**562674** **EAMC-16-20-4-5**
EMMS-ST-42-...	**562636** **EAMM-A-P4-28B-42A**	**552164** **EAMF-A-28B-42A**	**562674** **EAMC-16-20-4-5**
EGSK-26/EGSP-26			
With servo motor			
EMME-AS-40-...	**1983122** **EAMM-A-P5-28B-40P**	**1976704** **EAMF-A-28B-40P**	**562677** **EAMC-16-20-5-8**
EMMS-AS-40-...	**562641** **EAMM-A-P5-28B-40A**	**552163** **EAMF-A-28B-40A**	**543419** **EAMC-16-20-5-6**
With stepper motor			
EMMS-ST-28-...	**1731474** **EAMM-A-P5-28B-28A**	**1704476** **EAMF-A-28B-28A**	**562676** **EAMC-16-20-5-5**
EMMS-ST-42-...	**562640** **EAMM-A-P5-28B-42A**	**552164** **EAMF-A-28B-42A**	**562676** **EAMC-16-20-5-5**
EGSK-33			
With servo motor			
EMME-AS-40-...	**1983450** **EAMM-A-P6-38A-40P**	**1984478** **EAMF-A-38A-40P**	**533708** **EAMC-30-32-6-8**
EMMS-AS-40-...	**562646** **EAMM-A-P6-38A-40A**	**562667** **EAMF-A-38A-40A**	**558312** **EAMC-30-32-6-6**
EMMS-AS-55-...	**562647** **EAMM-A-P6-38A-55A**	**558176** **EAMF-A-38A-55A**	**551003** **EAMC-30-32-6-9**
EMME-AS-60-...	**2264375** **EAMM-A-P6-38A-60P**	**1987412** **EAMF-A-38A-60P**	**1233256** **EAMC-30-32-6-14**
With stepper motor			
EMMS-ST-42-...	**562644** **EAMM-A-P6-38A-42A**	**562668** **EAMF-A-38A-42A**	**561333** **EAMC-30-32-5-6**
EMMS-ST-57-...	**562645** **EAMM-A-P6-38A-57A**	**560692** **EAMF-A-38A-57A**	**551002** **EAMC-30-32-6-6.35**
With integrated driver			
EMCA-EC-67-...	**2297641** **EAMM-A-P6-38A-67A**	**1490100** **EAMF-A-38A-67A**	**551003** **EAMC-30-32-6-9**

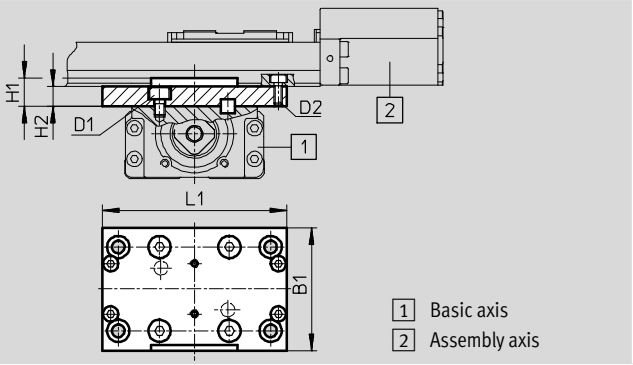
Permissible axis/motor combinations with axial kit – Without gear unit Technical data ➔ Internet: eamm-a

Motor	Axial kit	Axial kit consisting of:	
		Motor flange	Coupling
			
Type	Part No. Type	Part No. Type	Part No. Type
EGSK-46/EGSP-33			
With servo motor			
EMME-AS-40-...	**1986292** **EAMM-A-P8-38A-40P**	**1984478** **EAMF-A-38A-40P**	**543422** **EAMC-30-32-8-8**
EMMS-AS-40-...	**562652** **EAMM-A-P8-38A-40A**	**562667** **EAMF-A-38A-40A**	**533708** **EAMC-30-32-6-8**
EMMS-AS-55-...	**562653** **EAMM-A-P8-38A-55A**	**558176** **EAMF-A-38A-55A**	**543423** **EAMC-30-32-8-9**
EMME-AS-60-...	**1987308** **EAMM-A-P8-38A-60P**	**1987412** **EAMF-A-38A-60P**	**562682** **EAMC-30-32-8-14**
EMMS-AS-70-...	**564996** **EAMM-A-P8-38A-70A**	**558018** **EAMF-A-38A-70A**	**551004** **EAMC-30-32-8-11**
With stepper motor			
EMMS-ST-42-...	**562650** **EAMM-A-P8-38A-42A**	**562668** **EAMF-A-38A-42A**	**562678** **EAMC-30-32-5-8**
EMMS-ST-57-...	**562651** **EAMM-A-P8-38A-57A**	**560692** **EAMF-A-38A-57A**	**543421** **EAMC-30-32-6.35-8**
EMMS-ST-87-...	**564998** **EAMM-A-P8-38A-87A**	**560693** **EAMF-A-38A-87A**	**551004** **EAMC-30-32-8-11**
With integrated driver			
EMCA-EC-67-...	**2297643** **EAMM-A-P8-38A-67A**	**1490100** **EAMF-A-38A-67A**	**543423** **EAMC-30-32-8-9**
EGSP-46			
With servo motor			
EMMS-AS-55-...	**562659** **EAMM-A-P10-38A-55A**	**558176** **EAMF-A-38A-55A**	**562680** **EAMC-30-32-9-10**
EMME-AS-60-...	**2036017** **EAMM-A-P10-38A-60P**	**1987412** **EAMF-A-38A-60P**	**562683** **EAMC-30-32-10-14**
EMMS-AS-70-...	**564997** **EAMM-A-P10-38A-70A**	**558018** **EAMF-A-38A-70A**	**565008** **EAMC-30-32-10-11**
With stepper motor			
EMMS-ST-57-...	**562658** **EAMM-A-P10-38A-57A**	**560692** **EAMF-A-38A-57A**	**562679** **EAMC-30-32-6.35-10**
EMMS-ST-87-...	**564999** **EAMM-A-P10-38A-87A**	**560693** **EAMF-A-38A-87A**	**565008** **EAMC-30-32-10-11**
With integrated driver			
EMCA-EC-67-...	**2297644** **EAMM-A-P10-38A-67A**	**1490100** **EAMF-A-38A-67A**	**562680** **EAMC-30-32-9-10**

Permissible axis/motor combinations with axial kit – Without gear unit Technical data ➔ Internet: eamm-a

Motor	Gear unit	Axial kit	Axial kit consisting of:	
			Motor flange	Coupling
				
Type		Part-No. Type	Part-No. Type	Part-No. Type
EGSK-33				
With servo motor				
EMME-AS-40-...	**EMGA-40-P-G...-EAS-40**	**2297645** **EAMM-A-P6-38A-40G**	**1460097** **EAMF-A-38A-40G**	**562681** **EAMC-30-32-6-10**
EMMS-AS-40-...	**EMGA-40-P-G...-SAS-40**	**2297645** **EAMM-A-P6-38A-40G**	**1460097** **EAMF-A-38A-40G**	**562681** **EAMC-30-32-6-10**
With stepper motor				
EMMS-ST-42-...	**EMGA-40-P-G...-SST-42**	**2297645** **EAMM-A-P6-38A-40G**	**1460097** **EAMF-A-38A-40G**	**562681** **EAMC-30-32-6-10**
With integrated drive				
EMCA-EC-67-...	**EMGC-40-...**	**2297645** **EAMM-A-P6-38A-40G**	**1460097** **EAMF-A-38A-40G**	**562681** **EAMC-30-32-6-10**
EGSK-46/EGSP-33				
With servo motor				
EMME-AS-40-...	**EMGA-40-P-G...-EAS-40**	**2297646** **EAMM-A-P8-38A-40G**	**1460097** **EAMF-A-38A-40G**	**558029** **EAMC-30-32-8-10**
EMMS-AS-40-...	**EMGA-40-P-G...-SAS-40**	**2297646** **EAMM-A-P8-38A-40G**	**1460097** **EAMF-A-38A-40G**	**558029** **EAMC-30-32-8-10**
With stepper motor				
EMMS-ST-42-...	**EMGA-40-P-G...-SST-42**	**2297646** **EAMM-A-P8-38A-40G**	**1460097** **EAMF-A-38A-40G**	**558029** **EAMC-30-32-8-10**
With integrated drive				
EMCA-EC-67-...	**EMGC-40-...**	**2297646** **EAMM-A-P8-38A-40G**	**1460097** **EAMF-A-38A-40G**	**558029** **EAMC-30-32-8-10**
EGSP-46				
With servo motor				
EMME-AS-40-...	**EMGA-40-P-G...-EAS-40**	**2297648** **EAMM-A-P10-38A-40G**	**1460097** **EAMF-A-38A-40G**	**2310372** **EAMC-30-32-10-10**
EMMS-AS-40-...	**EMGA-40-P-G...-SAS-40**	**2297648** **EAMM-A-P10-38A-40G**	**1460097** **EAMF-A-38A-40G**	**2310372** **EAMC-30-32-10-10**
With stepper motor				
EMMS-ST-42-...	**EMGA-40-P-G...-SST-42**	**2297648** **EAMM-A-P10-38A-40G**	**1460097** **EAMF-A-38A-40G**	**2310372** **EAMC-30-32-10-10**
With integrated drive				
EMCA-EC-67-...	**EMGC-40-...**	**2297648** **EAMM-A-P10-38A-40G**	**1460097** **EAMF-A-38A-40G**	**2310372** **EAMC-30-32-10-10**

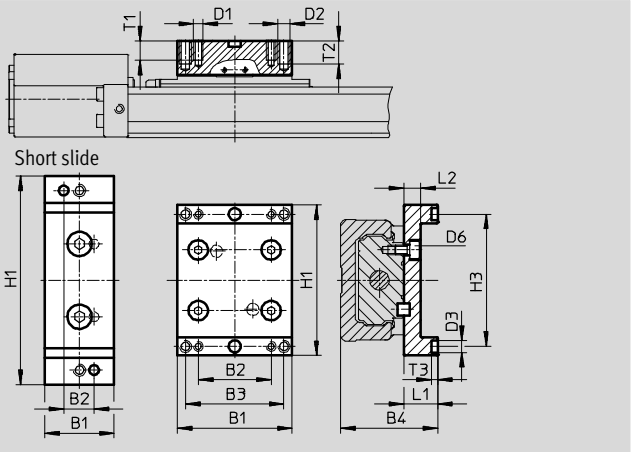
Cross connecting kit EHAM
Materials:
Adapter plate: Anodised aluminium
Screws, locating pins: Steel
Conforms to RoHS



Dimensions and ordering data

For size		B1	D1	D2	H1	H2	L1	Weight	Part No.	Type
Basic axis [1]	Assembly axis [2]	±0.2					±0.2	[g]		
20	15	33.2	M3	M3	7	5	56	27	**563747**	**EHAM-S1-20-15**
26	20	44	M4	M3	10	7	66	59	**563748**	**EHAM-S1-26-20**
33	26	54	M5	M4	12	9	86	124	**563749**	**EHAM-S1-33-26**
46	33	65	M6	M5	15	10	112	216	**563750**	**EHAM-S1-46-33**

Slide adapter EASA
Materials:
Adapter plate: Anodised aluminium
Screws, locating pins: Steel
Conforms to RoHS



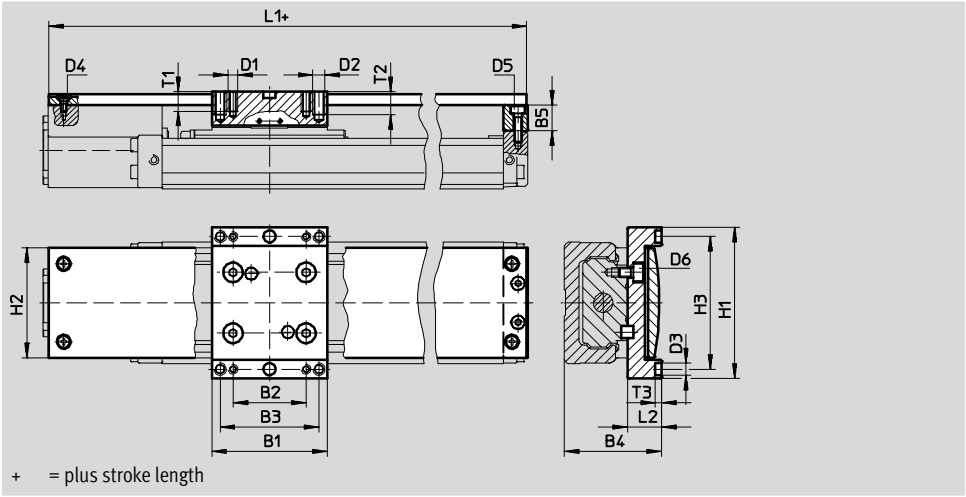
Dimensions and ordering data

For size	B1 ±0.2	B2	B3	B4	D1	D2	D3 ∅ H7	D6	H1 ±0.2	H3 +0.04
With standard slide										
15	23	14	–	25	M3	–	4	M3	44	38
20	33.2	23		32	M3		2	M3	52	44.5
26	47.4	30		40	M4		5	M4	62	54.5
33	54	40		48	M5		4	M5	86	74
46	81	30	48	68	M5	M6	5	M6	112	100
With short slide										
33	28.5	12.5	–	48	M5	–	4	M5	86	74
46	48	22		68	M6		5	M6	112	100

For size	L1 +0.05	L2	T1	T2	T3 +0.1	Weight [g]	Part No.	Type
With standard slide								
15	10	5.4	6	–	2.5	20	**562742**	**EASA-S1-15**
20	12	6	6		2.5	38	**562743**	**EASA-S1-20**
26	14	7	8		2.5	74	**562744**	**EASA-S1-26**
33	15	9	15		2.6	130	**562745**	**EASA-S1-33**
46	22	10	10	12	2.6	310	**562746**	**EASA-S1-46**
With short slide								
33	15	9	15	–	2.6	70	**562747**	**EASA-S1-33-S**
46	22	10	12		2.6	180	**562748**	**EASA-S1-46-S**

Cover kit EASC
for standard slide

Materials:
Cover profile, adapter plate, adapter:
Anodised aluminium
Screws, locating pins: Steel
Conforms to RoHS



\+ = plus stroke length

Dimensions

For size	B1 ±0.2	B2	B3	B4	B5	D1	D2	D3 ∅ H7	D4	D5
15	23	14	–	25	6.5	M3	–	4	M2	M2
20	33.2	23		32	9	M3		2	M2.5	M2.5
26	47.4	30		40	10.5	M4		5	M2.5	M3
33	54	40		48	7	M5		4	M3	M3
46	81	30	48	68	10	M5	M6	5	M4	M4

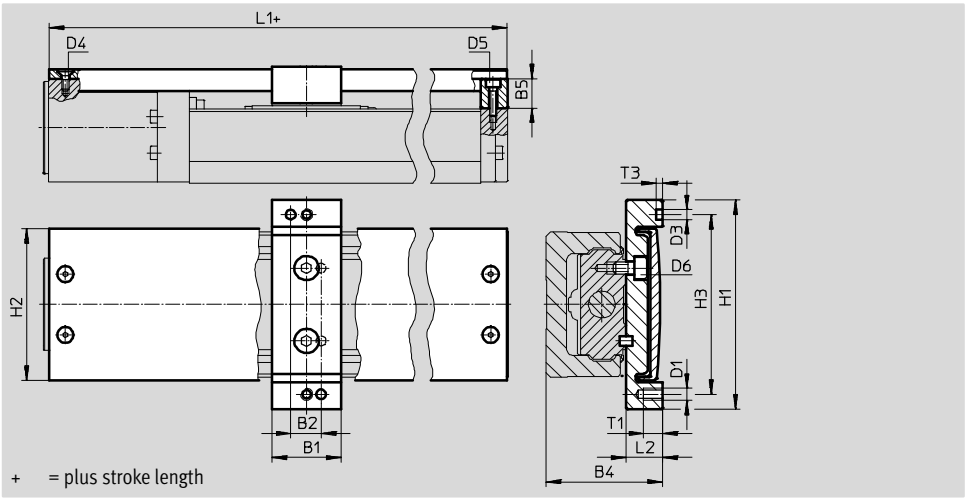
For size	D6	H1 ±0.2	H2 ±0.2	H3 ±0.04	L1 −0.3	L2	T1	T2	T3 +0.1
15	M3	44	30	38	96.7	10	6	–	2.5
20	M3	52	35.6	44.5	126.2	12	6		2.5
26	M4	62	45	54.5	156.2	14	8		2.5
33	M5	86	62.5	74	168.2	15	15		2.6
46	M6	112	82.4	100	224.7	22	10	12	2.6

Ordering data

For size	Stroke [mm]	Weight [g]	Part No.	Type
15	25	51	**562707**	**EASC-S1-15-25**
	50	57	**562708**	**EASC-S1-15-50**
	75	62	**562709**	**EASC-S1-15-75**
	100	67	**562710**	**EASC-S1-15-100**
20	25	92	**562711**	**EASC-S1-20-25**
	75	107	**562712**	**EASC-S1-20-75**
	125	121	**562713**	**EASC-S1-20-125**
26	50	187	**562714**	**EASC-S1-26-50**
	100	211	**562715**	**EASC-S1-26-100**
	150	234	**562716**	**EASC-S1-26-150**
	200	258	**562717**	**EASC-S1-26-200**
33	100	327	**562718**	**EASC-S1-33-100**
	200	391	**562719**	**EASC-S1-33-200**
	300	454	**562720**	**EASC-S1-33-300**
	400	518	**562721**	**EASC-S1-33-400**
	500	581	**562722**	**EASC-S1-33-500**
	600	645	**562723**	**EASC-S1-33-600**
46	200	850	**562724**	**EASC-S1-46-200**
	300	965	**562725**	**EASC-S1-46-300**
	400	1080	**562726**	**EASC-S1-46-400**
	500	1200	**562727**	**EASC-S1-46-500**
	600	1310	**562728**	**EASC-S1-46-600**
	800	1540	**562729**	**EASC-S1-46-800**

Cover kit EASC
for short slide

Materials:
Cover profile, adapter plate, adapter:
Anodised aluminium
Screws, locating pins: Steel
Conforms to RoHS



Dimensions

For size	B1 ±0.2	B2 ±0.04	B4	B5	D1	D3 ∅ H7	D4	D5
33	28.5	12.5	48	7	M5	4	M3	M3
46	48	22	68	10	M6	5	M4	M4

For size	D6	H1 ±0.2	H2 ±0.2	H3 ±0.04	L1 −0.3	L2	T1	T3 +0.1
33	M5	86	62.5	74	138.2	15	15	2.6
46	M6	112	82.4	100	184.7	22	12	2.6

Ordering data

For size	Stroke [mm]	Weight [g]	Part No.	Type
33	130	263	**562730**	**EASC-S1-33-130-S**
	230	328	**562731**	**EASC-S1-33-230-S**
	330	391	**562732**	**EASC-S1-33-330-S**
	430	454	**562733**	**EASC-S1-33-430-S**
	530	518	**562734**	**EASC-S1-33-530-S**
	630	581	**562735**	**EASC-S1-33-630-S**
46	240	724	**562736**	**EASC-S1-46-240-S**
	340	840	**562737**	**EASC-S1-46-340-S**
	440	955	**562738**	**EASC-S1-46-440-S**
	540	1070	**562739**	**EASC-S1-46-540-S**
	640	1190	**562740**	**EASC-S1-46-640-S**
	840	1420	**562741**	**EASC-S1-46-840-S**

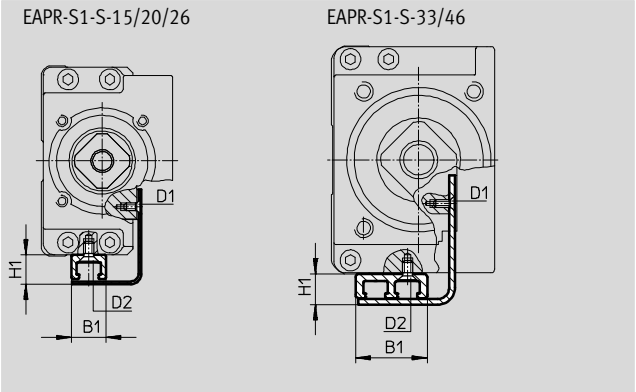
Sensor rail EAPR

Materials:

Sensor bracket: Anodised aluminium

Switch lug, screws: Galvanised steel

Conforms to RoHS



Dimensions						
For size / For type	B1	H1		D1		D2
		EGSK	EGSP	EGSK	EGSP	
With standard slide						
15	9	8.5	–	M2	–	M2
20		7.75	7.75		M1.6	M2.5
26				M3	M2	
33	19	7.75	8.5	M2	M2	M2.5
46						
With short slide						
33	19	7.5	8.5	M2	M2	M2.5
46		8.5				

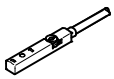
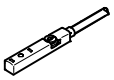
Ordering data				
For size / For type	Stroke [mm]	Weight [g]	Part No.	Type
With standard slide				
15	25	10	**562611**	**EAPR-S1-S-15-25**
	50	12	**562612**	**EAPR-S1-S-15-50**
	75	14	**562613**	**EAPR-S1-S-15-75**
	100	16	**562614**	**EAPR-S1-S-15-100**
20	25	14	**562615**	**EAPR-S1-S-20-25**
	75	18	**562616**	**EAPR-S1-S-20-75**
	125	22	**562617**	**EAPR-S1-S-20-125**
26	50	24	**562618**	**EAPR-S1-S-26-50**
	100	28	**562619**	**EAPR-S1-S-26-100**
	150	32	**562620**	**EAPR-S1-S-26-150**
	200	37	**562621**	**EAPR-S1-S-26-200**
With standard slide or short slide				
33	100/130-S	51	**562622**	**EAPR-S1-S-33-100/130-S**
	200/230-S	69	**562623**	**EAPR-S1-S-33-200/230-S**
	300/330-S	88	**562624**	**EAPR-S1-S-33-300/330-S**
	400/430-S	106	**562625**	**EAPR-S1-S-33-400/430-S**
	500/530-S	125	**562626**	**EAPR-S1-S-33-500/530-S**
	600/630-S	144	**562627**	**EAPR-S1-S-33-600/630-S**
46	200/240-S	78	**562628**	**EAPR-S1-S-46-200/240-S**
	300/340-S	97	**562629**	**EAPR-S1-S-46-300/340-S**
	400/440-S	115	**562630**	**EAPR-S1-S-46-400/440-S**
	500/540-S	134	**562631**	**EAPR-S1-S-46-500/540-S**
	600/640-S	153	**562632**	**EAPR-S1-S-46-600/640-S**
	800/840-S	190	**562633**	**EAPR-S1-S-46-800/840-S**

Ordering data – Centring pins, centring sleeves

	For size	Comment	Part No.	Type	PU[1]
	15	For slide	**189652**	**ZBH-5**	10
	20		**525273**	**ZBS-2**	
	26, 46		**150928**	**ZBS-5**	
	33		**562959**	**ZBS-4**	
	15, 33	For slide adapter	**562959**	**ZBS-4**	
	20		**525273**	**ZBS-2**	
	26, 46		**150928**	**ZBS-5**	

1) Packaging unit

Ordering data – Proximity sensors for T-slot, inductive Technical data ➔ Internet: sies

	Type of mounting	Switching output	Electrical connection	Cable length [m]	Part No.	Type
N/O contact						
	Insertable in the slot from above, flush with the sensor rail	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 contact						
	Insertable in the slot from above, flush with the sensor rail	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**

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	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**