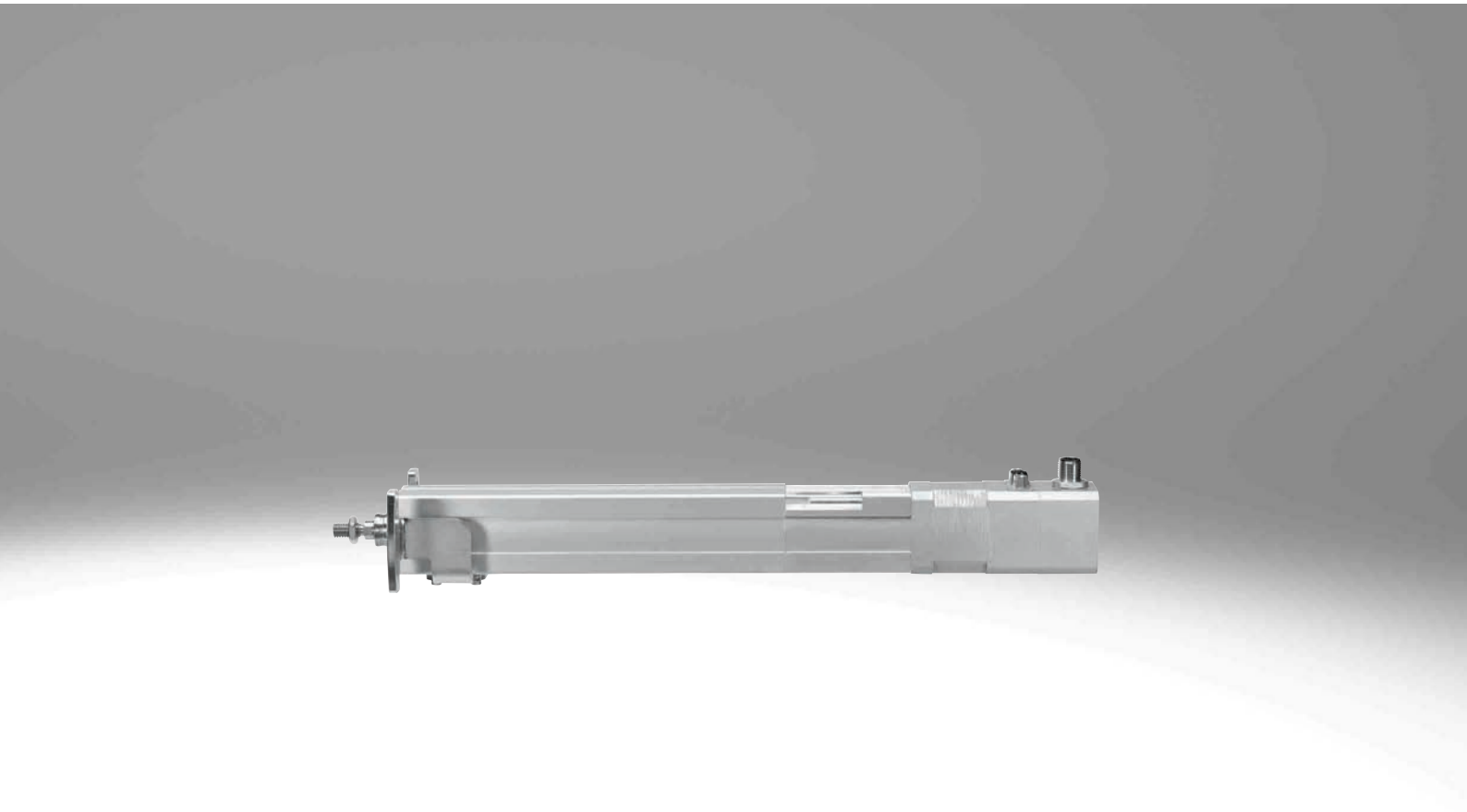
Electric cylinders EPCO, with spindle drive

FESTO



Characteristics

At a glance

General information

The electric cylinder EPCO is a mechanical linear drive with piston rod and permanently attached motor. The driving component consists of an electrically actuated spindle that converts the rotary motion of the motor into linear motion of the piston rod.

Features

- With ball screw
- Available with female thread
- Available with holding brake
- Degree of protection IP40
- Compact dimensions
- Extensive mounting accessories for various installation situations

Application areas

- Suitable for simple applications in factory automation that in the past were mostly carried out using pneumatic solutions

Optimised Motion Series (OMS)

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 mounted on electric cylinders

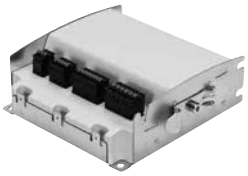
Quick to configure

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

For simple positioning tasks

Electric cylinder EPCO

Motor controller CMMO-ST

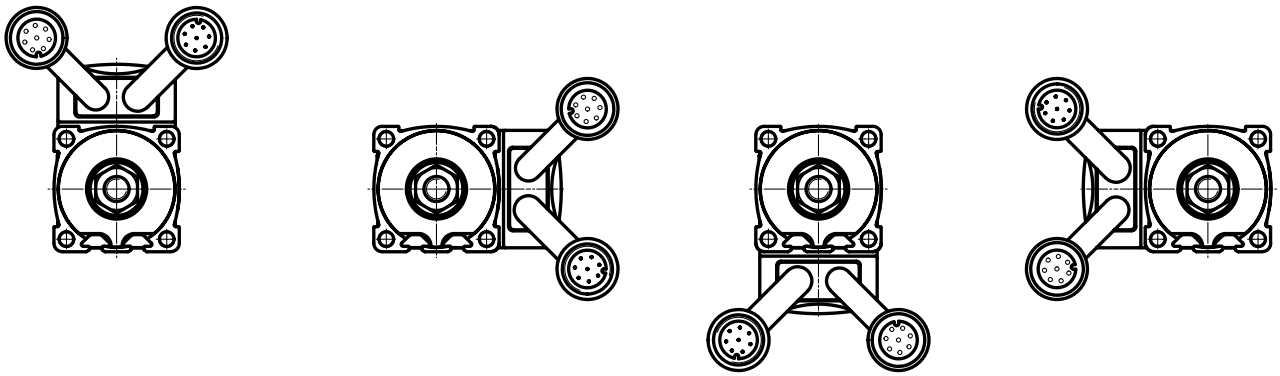


Characteristics

Motor mounting variants

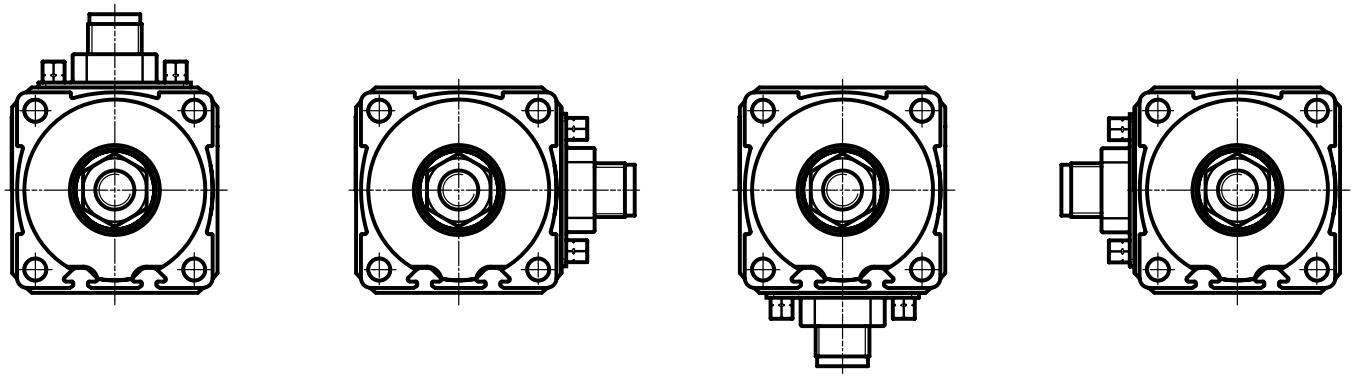
EPCO-16

Standard	Right (characteristic R)	Underneath (characteristic D)	Left (characteristic L)



EPCO-25/-40

Standard	Right (characteristic R)	Underneath (characteristic D)	Left (characteristic L)



Electric cylinder EPCO with guide unit EAGF-P1

The guide unit provides protection from torsion in the case of high torque loads. It offers a high level of guide precision for workpiece handling and other applications.
The guide unit can optionally be ordered via the modular product system.
Integrated mounting interfaces permit direct mounting with numerous multi-axis combinations, such as with:

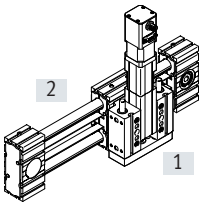
- Toothed belt axis ELGR
- Rotary drive ERMO
- Mini slide DGSL

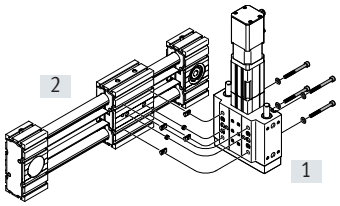
Technical data
➔ Page 15
Ordering data
EPCO with guide unit EAGF assembled ➔ page 26
Guide unit EAGF as an accessory ➔ page 35

Characteristics

Combination options within the Optimised Motion Series (OMS)

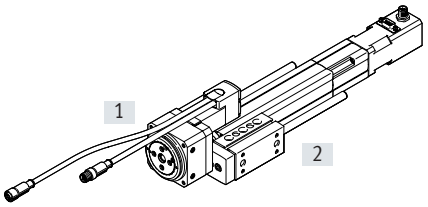
Electric cylinder EPCO on toothed belt axis ELGR

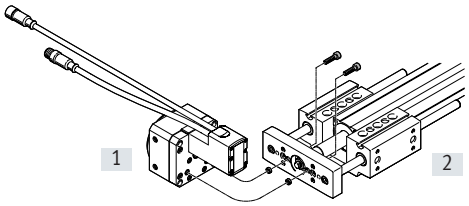




Size		Accessories			
[1] EPCO	[2] ELGR	Slot nut	Centring sleeve	Screw	Washer
16	35	NST-3-M3 (x4)	ZBH-7 (x2)	M3x10 (x4)	–
25	45	NST-5-M5 (x4)	ZBH-7 (x2)	M5x50 (x4)	DIN125-A5.3 (x4)
40	55	NST-5-M5 (x4)	ZBH-7 (x2)	M5x65 (x4)	DIN125-A5.3 (x4)

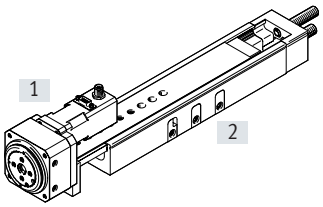
Rotary drive ERMO on electric cylinder EPCO

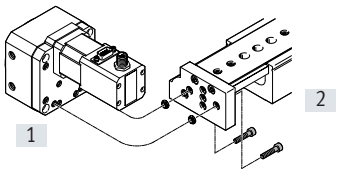




Size		Accessories	
[1] ERMO	[2] EPCO	Centring sleeve	Screw
12	16	ZBH-7 (x2)	M4x16 (x2)
16	25	ZBH-7 (x2)	M5x18 (x2)
25	40	ZBH-7 (x2)	M5x20 (x2)

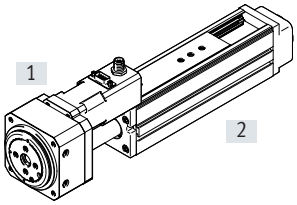
Rotary drive ERMO on mini slide DGSL

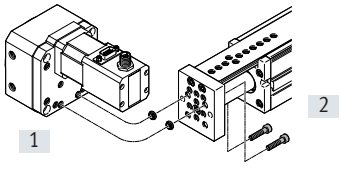




Size		Accessories	
[1] ERMO	[2] DGSL	Centring sleeve	Screw
12	12	ZBH-7 (x2)	M4x18 (x2)
25	20	ZBH-9-7 (x2)	M5x22 (x2)
25	25	ZBH-9-7 (x2)	M5x22 (x2)

Rotary drive ERMO on mini slide EGSL



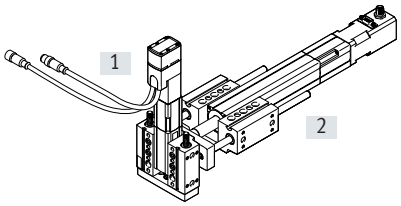


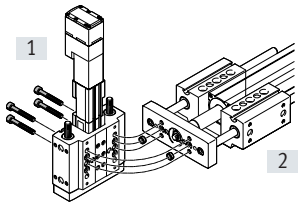
Size		Accessories	
[1] ERMO	[2] EGSL	Centring sleeve	Screw
12	35	ZBH-7 (x2)	M4x12 (x2)
16	45	ZBH-7 (x2)	M5x12 (x2)
25	55	ZBH-7 (x2)	M5x14 (x2)
32	55	ZBH-7 (x2)	M5x14 (x2)

Characteristics

Combination options within the Optimised Motion Series (OMS)

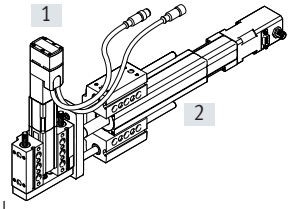
Electric cylinder EPCO on electric cylinder EPCO, horizontal

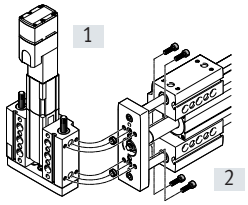




Size		Accessories	
[1] EPCO	[2] EPCO	Centring sleeve	Screw
16	25	ZBH-9 (x2)	M6x40 (x4)
25	40	ZBH-9 (x2)	M6x55 (x4)

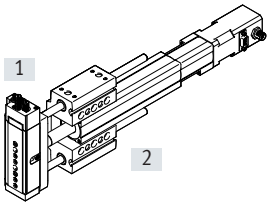
Electric cylinder EPCO on electric cylinder EPCO, vertical

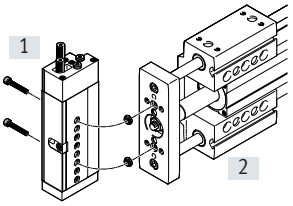




Size		Accessories	
[1] EPCO	[2] EPCO	Centring sleeve	Screw
16	25	ZBH-9 (x2)	M5x18 (x4)
25	40	ZBH-9 (x2)	M5x22 (x4)

Mini slide DGSL on electric cylinder EPCO

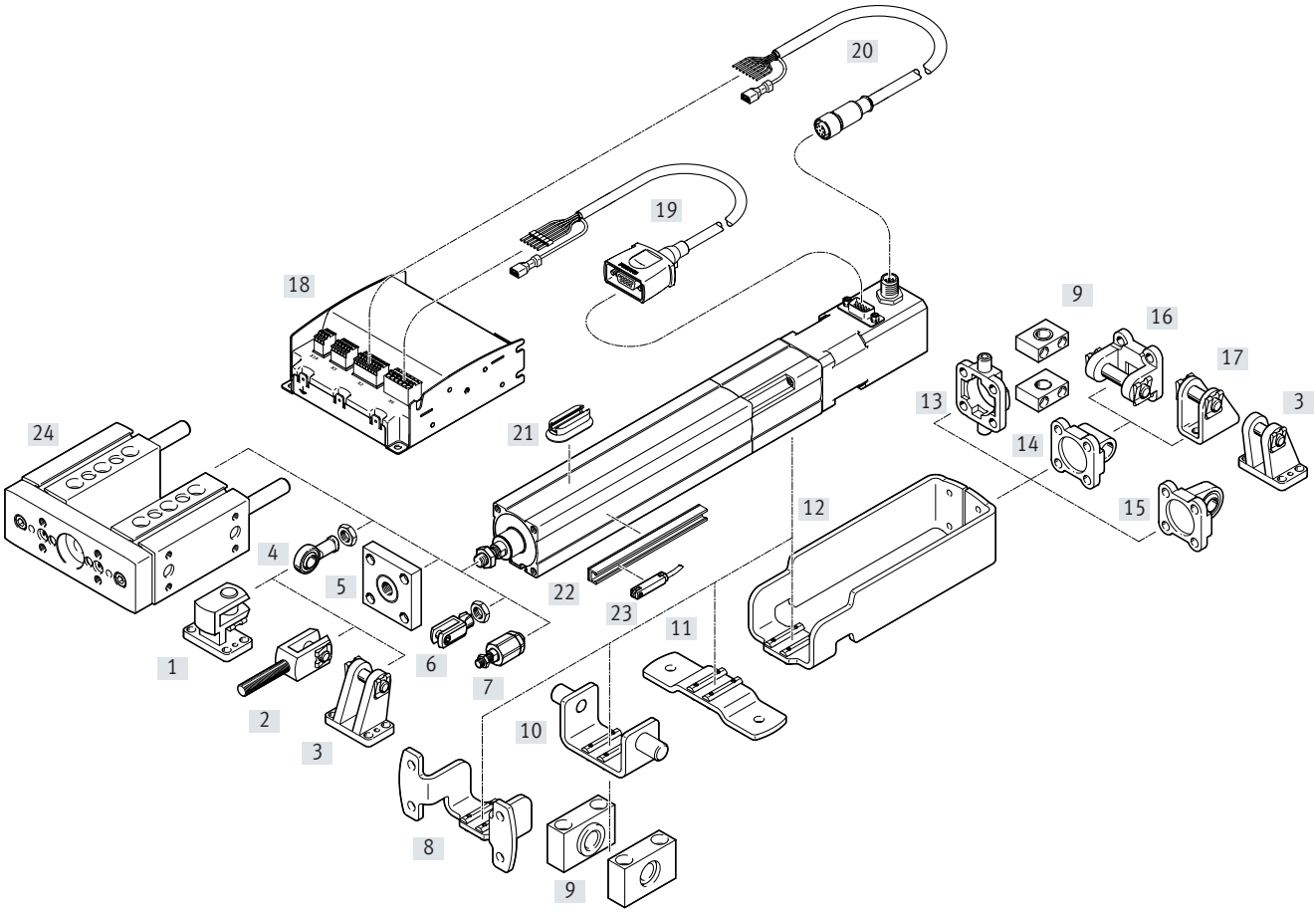




Size		Accessories	
[1] DGSL	[2] EPCO	Centring sleeve	Screw
8 (40 mm)[1)]	16	ZBV-9-7 (x2)	M4x16 (x2)
10 (30 mm)[1)]	25	ZBV-9-7 (x2)	M4x20 (x2)
12 (40 mm)[1)]	40	ZBV-9-7 (x2)	M5x20 (x2)

1) Minimum stroke

Peripherals overview



Mounting components and accessories

		Description	For size			→ Page/Internet
			16	25	40	
[1]	Right angle clevis foot LQG	For rod eye SGS	–	–	■	34
[2]	Rod clevis SGA	For rod eye SGS, for swivelling cylinder mounting	–	–	■	35
[3]	Clevis foot LBG	For rod eye SGS, for spherical bearing	–	–	■	34
[4]	Rod eye SGS/CRSGS	For spherical bearing	■	■	■	35
[5]	Coupling piece KSG	For compensating radial deviations	–	–	■	35
[6]	Rod clevis SG/CRSG	Permits a swivelling movement of the cylinder in one plane	■	■	■	35

Peripherals overview

Mounting components and accessories		Description	For size			→ Page/Internet
			16	25	40	
[7]	Self-aligning rod coupler FK	For compensating radial and angular deviations	■	■	■	35
[8]	Flange mounting EAHH	• For mounting the electric cylinder via the profile • Position freely selectable along the cylinder length	■	■	■	29
[9]	Trunnion support LNZG	For mounting the cylinder in combination with swivel mounting or trunnion flange	■	■	■	32
[10]	Swivel mounting EAHS	Position freely selectable along the cylinder length	■	■	■	30
[11]	Foot mounting EAHF	Position freely selectable along the cylinder length	■	■	■	28
[12]	Adapter kit EAHA	For mounting swivel flange and trunnion flange on the front side. When using the adapter kit, the motor connection must be mounted facing upwards or downwards.	■	■	■	31
[13]	Trunnion flange ZNCF	For spherical bearing. It cannot be mounted when turned by 90°.	–	–	■	32
[14]	Swivel flange SNCL	For spherical bearing	■	■	■	33
[15]	Swivel flange SNCS	For spherical bearing	–	–	■	33
[16]	Swivel flange SNCB/SNCB-...-R3	For spherical bearing	–	–	■	34
[17]	Clevis foot LBN	For spherical bearing	■	■	■	34
[18]	Motor controller CMMO	For parameterising and positioning the electric cylinder	■	■	■	38
[19]	Motor cable NEBM	For connecting motor and controller	■	■	■	38
[20]	Encoder cable NEBM	For connecting encoder and controller	■	■	■	38
[21]	Mounting kit CRSMB	For proximity switches SME/SMT-8	■	■	■	37
[22]	Sensor rail SAMH	• For proximity switches SME/SMT-8 • Size 25 only with proximity switch SMT-8	■	■	■	37
[23]	Proximity switches SME/SMT-8	For homing or position sensing	■	■	■	36
[24]	Guide unit EAGF-P1	For protecting electric cylinders against torsion at high torque loads	■	■	■	35

Note

In the case of high loads, mounting should not just be using the mounting threads on the front.

The mass of the motor, reinforced by the leverage effect, can lead to the mounting threads being torn out.

Type codes

001	Series	
EPCO	Electric cylinder, with spindle drive	

002	Size	
16	16	
25	25	
40	40	

003	Stroke	
50	50	
75	75	
100	100	
125	125	
150	150	
175	175	
200	200	
250	250	
300	300	
350	350	
400	400	

004	Spindle pitch	
3P	3 mm	
5P	5 mm	
8P	8 mm	
10P	10 mm	
12.7P	12.7 mm	

005	Piston rod thread type	
	Male thread	
F	Female thread	

006	Piston rod extension	
	None	
...E	1 ... 200 mm	

007	Position sensing	
	None	
A	For proximity sensor	

008	Motor type	
ST	Stepper motor ST	

009	Measuring unit	
	None	
E	Encoder	

010	Brake	
	None	
B	With brake	

011	Cable outlet direction	
	Standard	
D	Underneath	
L	Left	
R	Right	

012	Guide unit	
	None	
KF	Recirculating ball bearing with two guide rods	

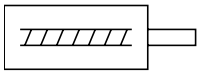
013	Connecting cable to motor controller	
	None	
1.5E	1.5 m, suitable for energy chains, straight plug	
2.5E	2.5 m, suitable for energy chains, straight plug	
5E	5 m, suitable for energy chains, straight plug	
7E	7 m, suitable for energy chains, straight plug	
10E	10 m, suitable for energy chains, straight plug	
1.5EA	1.5 m, suitable for energy chains, angled plug	
2.5EA	2.5 m, suitable for energy chains, angled plug	
5EA	5 m, suitable for energy chains, angled plug	
7EA	7 m, suitable for energy chains, angled plug	
10EA	10 m, suitable for energy chains, angled plug	

014	Controller type	
	None	
C5	CMMO, 5 A	

015	Bus protocol/activation	
	None	
DIO	Digital I/O interface	
LK	IO-Link®	

016	Switching input/output	
	None	
P	PNP	
N	NPN	

Data sheet



Size
16 ... 40

Stroke length
50 ... 400 mm

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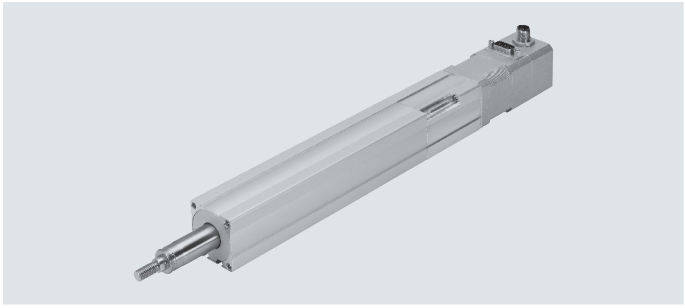


General technical data				
Size		16	25	40
Design		Electric cylinder with ball screw and motor		
Piston rod thread				
Male thread		M6	M8	M10x1.25
Female thread		M4	M6	M8
Working stroke	[mm]	50 ... 200	50 ... 300	50 ... 400
Stroke reserve	[mm]	0		
Max. angle of rotation at the piston rod	[°]	≤ ±2	≤ ±1.5	≤ ±1
Impact energy in the end positions	[J]	0.1×10^{-3}	0.2×10^{-3}	0.4×10^{-3}
Position sensing		Via proximity switch		
Type of mounting		With female thread		
		With accessories		
Mounting position		Any		

Mechanical data							
Size		16		25		40	
Spindle design		3P	8P	3P	10P	5P	12.7P
Spindle pitch[1]	[mm/rev]	3	8	3	10	5	12.7
Spindle diameter	[mm]	8	8	10	10	12	12.7
Guide value for payload							
Horizontal[2]	[kg]	24	8	60	20	120	40
Vertical	[kg]	12	4	30	10	60	20
Max. feed force F_x	[N]	125	50	350	105	650	250
Max. speed	[mm/s]	125	300	150	500	180	460
Max. acceleration	[m/s²]	10					
Reversing backlash[3]	[mm]	≤ 0.1					
Repetition accuracy	[mm]	±0.02					

1) Nominal value varies due to component tolerances
2) Note max. transverse load
3) In new condition

Data sheet

Electrical data				
Size		16	25	40
Motor				
Nominal voltage	[V DC]	24		
Nominal current	[A]	1.4	3	4.2
Holding torque	[Nm]	0.09	0.5	1.13
Brake				
Nominal voltage	[V DC]	24 ±10%		
Nominal power	[W]	8		
Holding torque	[Nm]	0.2	0.4	0.4
Mass moment of inertia	[kgmm^2]	1.8	8.2	29
Encoder				
Rotor position sensor		Incremental		
Rotor position sensor measuring principle		Optical		
Pulses/revolution	[1/rev]	500		
Interface		RS422, TTL, AB channel, zero index		
Operating voltage of encoder	[V DC]	5		

Operating and environmental conditions		
Ambient temperature[1]	[°C]	0 ... +50
Storage temperature	[°C]	–20 ... +60
Relative humidity	[%]	0 ... 85 (non-condensing)
Degree of protection to IEC 60529		IP40
Corrosion resistance CRC[2]		1
Duty cycle	[%]	100
CE marking (see declaration of conformity)		To EU EMC Directive[3]
UKCA marking (see declaration of conformity)		To UK instructions for EMC
Certification		c UL us - Recognized (OL)
		RCM compliance mark

1) Note operating range of proximity switches.
2) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
3) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Data sheet

Weight [kg]				
Size	16	25	40	
Basic weight with 0 mm stroke				
EPCO-...	0.62	1.04	2.49	
EPCO-...-E	0.62	1.13	2.59	
EPCO-...-B	0.68	1.22	2.71	
EPCO-...-EB	0.68	1.28	2.77	
EPCO-...-KF	1.22 ... 1.28	2.12 ... 2.36	4.40 ... 4.68	
Additional weight per 100 mm stroke				
EPCO-...	0.17	0.34	0.55	
EPCO-...-KF	0.25	0.46	0.73	
Moving mass with 0 mm stroke				
EPCO-...	0.07	0.15	0.42	
EPCO-...-KF	0.23	0.45	0.98	
Moving mass per 100 mm stroke				
EPCO-...	0.020	0.026	0.049	
EPCO-...-KF	0.100	0.146	0.229	

Mass moments of inertia							
Size		16		25		40	
Spindle design		3P	8P	3P	10P	5P	12.7P
J_0 with 0 mm stroke							
EPCO-...	[kg mm^2]	2.28	2.29	9.33	9.40	33.25	33.75
EPCO-...-B	[kg mm^2]	2.97	2.98	10.63	10.70	34.55	35.05
j_S per meter stroke	[kg mm^2/m]	2.53	2.65	4.87	5.78	11.66	16.70
j_L per kg payload	[kg mm^2/kg]	0.23	1.62	0.23	2.54	0.64	4.09

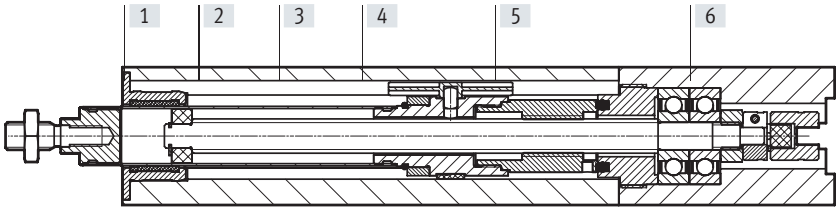
The mass moment of inertia J_A of the electric cylinder is calculated as follows:

$$J_A = J_0 + j_S \times \text{working stroke [m]} + j_L \times m_{\text{moving payload}} \text{ [kg]}$$

Data sheet

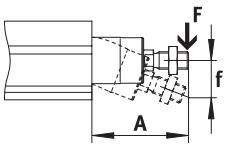
Materials

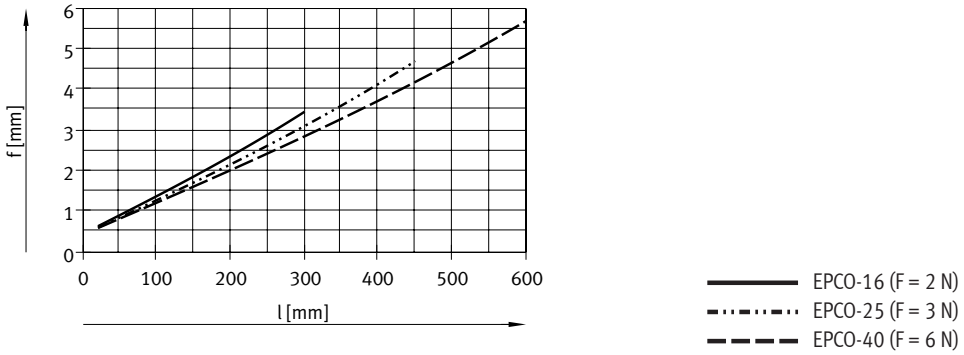
Sectional view



Electric cylinder		
[1]	Bearing cap	Smooth-anodised wrought aluminium alloy
[2]	Cylinder barrel	Smooth-anodised wrought aluminium alloy
[3]	Piston rod	High-alloy stainless steel
[4]	Spindle	Rolled steel
[5]	Spindle nut	Steel
[6]	Drive cover	Wrought aluminium alloy
	Note on materials	RoHS-compliant
	PWIS conformity	VDMA24364 zone III

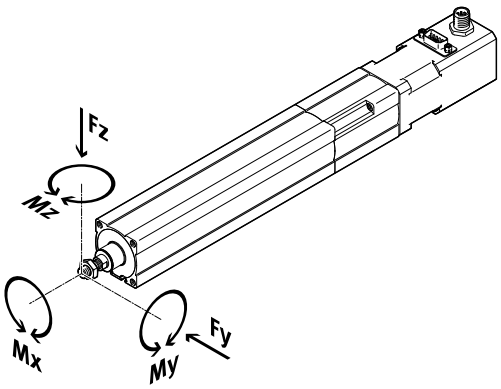
Piston rod deflection f as a function of projection A and transverse load F





Data sheet

Maximum permissible loads on the piston rod

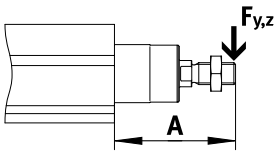


If there are several forces and torques simultaneously acting on the piston rod, the following equations must be satisfied:
F_1/M_1 = dynamic value
F_2/M_2 = maximum value

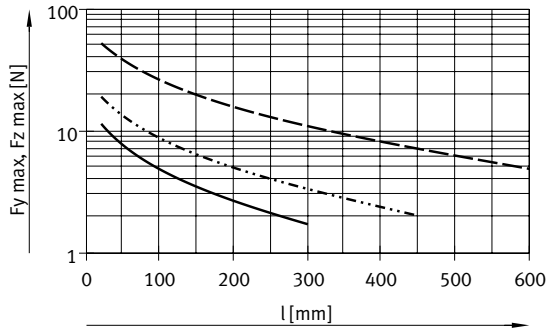
$$f_v = \frac{|F_{y1}|}{F_{y2}} + \frac{|F_{z1}|}{F_{z2}} + \frac{|M_{y1}|}{M_{y2}} + \frac{|M_{z1}|}{M_{z2}} \leq 1$$

$$|Fx| \leq Fx_{max}$$

$$|Fx| \leq Fx_{max}$$



Maximum permissible transverse loads Fy_{max} and Fz_{max} on the piston rod as a function of projection A



EPCO-16
EPCO-25
EPCO-40

Size		16		25		40	
Spindle design		3P	8P	3P	10P	5P	12.7P
Fx_{max} (static)	[N]	125	50	350	105	650	250
Mx_{max}	[Nm]	0		0		0	
My_{max}, Mz_{max}	[Nm]	0.6		1.0		3.3	

Note

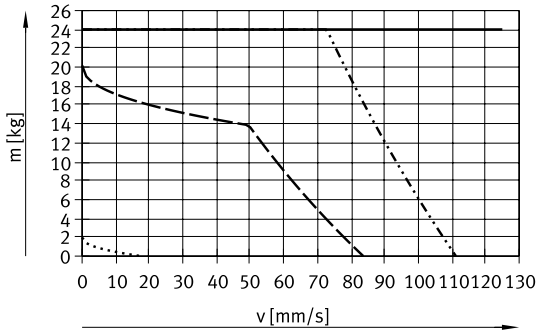
Engineering software
Electric Motion Sizing
→ www.festo.com/x/electric-motion-sizing

Data sheet

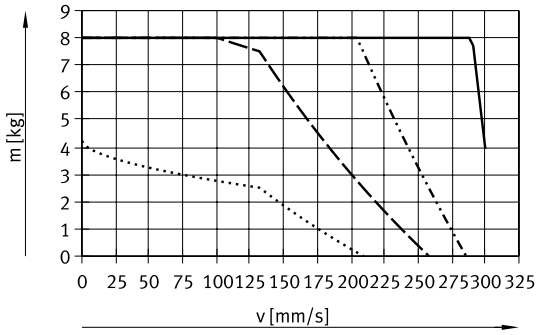
Payload m as a function of speed v and acceleration a

Horizontal mounting position

EPCO-16-3P



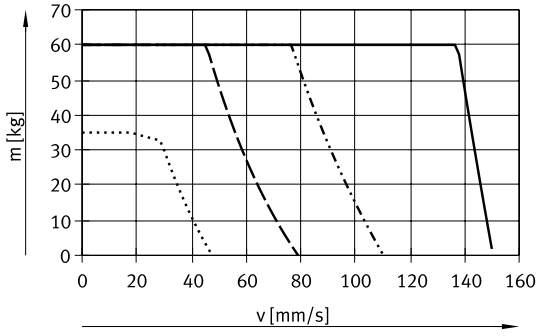
EPCO-16-8P



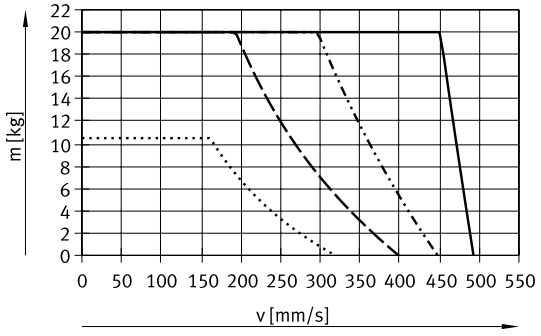
For EPCO-.../EPCO-...-KF

- a = 0.5 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

EPCO-25-3P



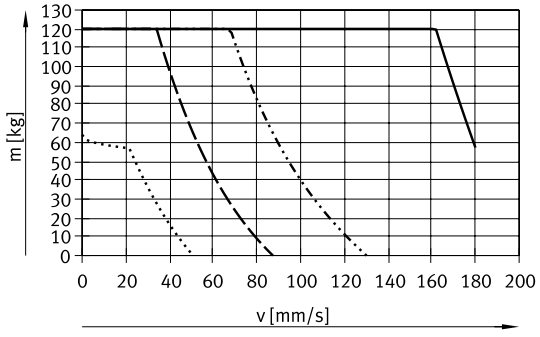
EPCO-25-10P



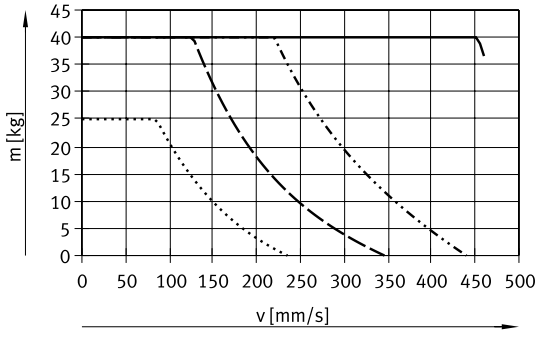
For EPCO-.../EPCO-...-KF

- a = 0.5 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

EPCO-40-5P



EPCO-40-12.7P



For EPCO-.../EPCO-...-KF

- a = 0.5 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

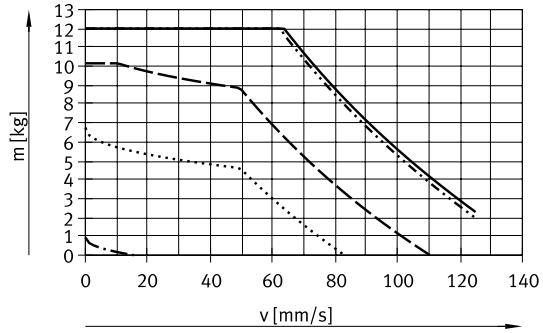
Data sheet

Payload m as a function of speed v and acceleration a

Vertical mounting position

The moving net mass of the guide unit (EPCO-...-KF) results in lower acceleration values with identical payload/speed.

EPCO-16-3P



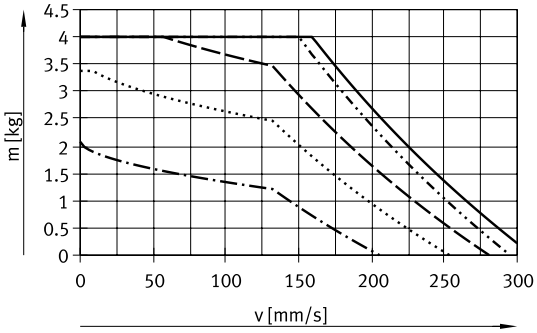
For EPCO-...

- a = 0 m/s²
- a = 0.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

For EPCO-...-KF

- a = 0 m/s²
- a = 2.3 m/s²
- a = 4.7 m/s²
- a = 9.6 m/s²

EPCO-16-8P



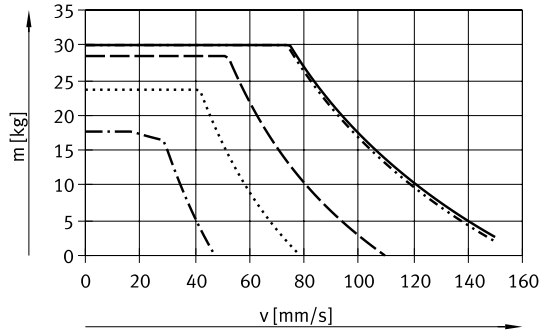
For EPCO-...

- a = 0 m/s²
- a = 1.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

For EPCO-...-KF

- a = 0 m/s²
- a = 1.2 m/s²
- a = 3.4 m/s²
- a = 7.8 m/s²

EPCO-25-3P



For EPCO-...

- a = 0 m/s²
- a = 0.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

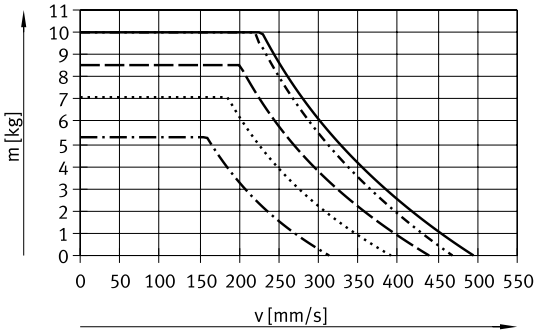
For EPCO-...-KF

- a = 0 m/s²
- a = 2.4 m/s²
- a = 4.9 m/s²
- a = 9.8 m/s²

Further technical data for the guide unit EAGF-P1

➔ www.festo.com/eagf-p1

EPCO-25-10P



For EPCO-...

- a = 0 m/s²
- a = 1.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

For EPCO-...-KF

- a = 0 m/s²
- a = 1.6 m/s²
- a = 3.9 m/s²
- a = 8.3 m/s²

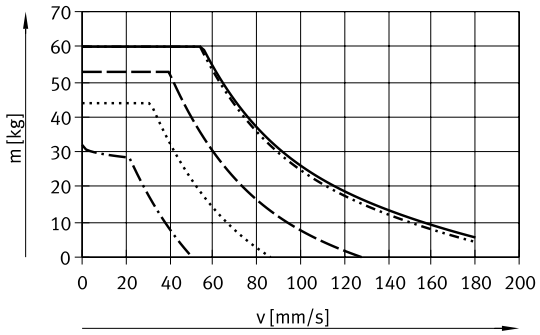
Data sheet

Payload m as a function of speed v and acceleration a

Vertical mounting position

The moving net mass of the guide unit (EPCO-...-KF) results in lower acceleration values with identical payload/speed.

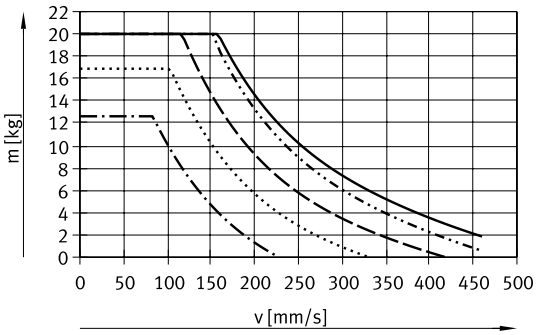
EPCO-40-5P



For EPCO-...
- a = 0 m/s²
- a = 0.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

For EPCO-...-KF
- a = 0 m/s²
- a = 2.4 m/s²
- a = 4.8 m/s²
- a = 9.7 m/s²

EPCO-40-12.7P



For EPCO-...
- a = 0 m/s²
- a = 1.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

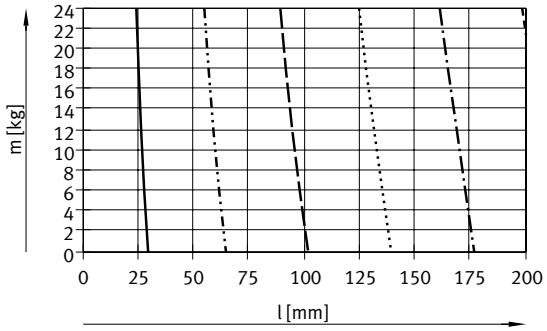
For EPCO-...-KF
- a = 0 m/s²
- a = 1.8 m/s²
- a = 4.0 m/s²
- a = 8.5 m/s²

Payload m as a function of travel distance l and positioning time t

Horizontal mounting position

The moving net mass of the guide unit (EPCO-...-KF) results in longer positioning times with identical payload/travel distance.

EPCO-16-3P

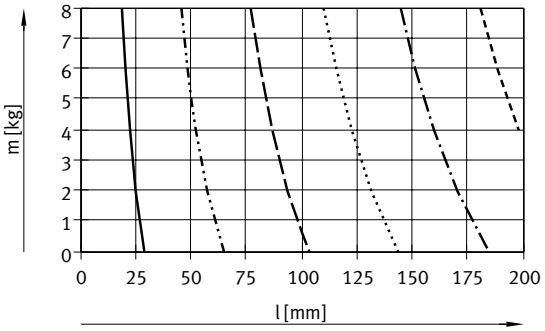


For EPCO-...
- t = 0.30 s
- t = 0.60 s
- t = 0.90 s
- t = 1.20 s
- t = 1.50 s
- t = 1.80 s

For EPCO-...-KF
- t = 0.30 s
- t = 0.60 s
- t = 0.90 s
- t = 1.20 s
- t = 1.55 s
- t = 1.85 s

Further technical data for the guide unit EAGF-P1
➔ www.festo.com/eagf-p1

EPCO-16-8P



For EPCO-...
- t = 0.15 s
- t = 0.30 s
- t = 0.45 s
- t = 0.60 s
- t = 0.75 s
- t = 0.90 s

For EPCO-...-KF
- t = 0.15 s
- t = 0.30 s
- t = 0.45 s
- t = 0.65 s
- t = 0.80 s
- t = 0.95 s

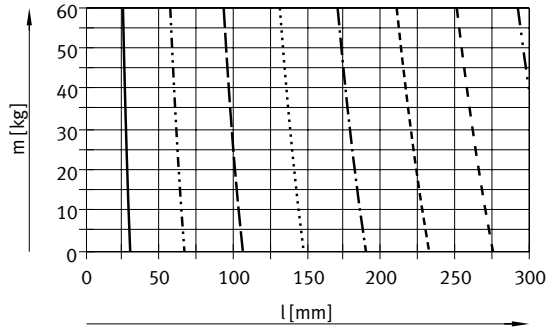
Data sheet

Payload m as a function of travel distance l and positioning time t

Horizontal mounting position

The moving net mass of the guide unit (EPCO-...-KF) results in longer positioning times with identical payload/travel distance.

EPCO-25-3P



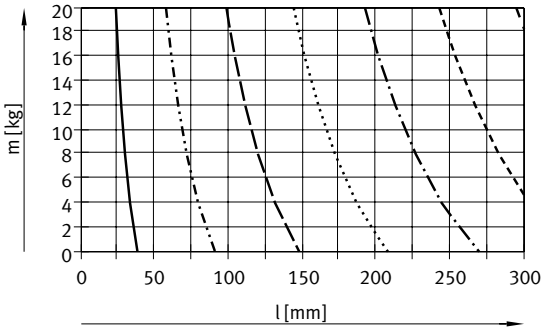
For EPCO-...

- t = 0.30 s
- t = 0.60 s
- t = 0.90 s
- t = 1.20 s
- t = 1.50 s
- t = 1.80 s
- t = 2.10 s
- t = 2.40 s

For EPCO-...-KF

t = 0.30 s
t = 0.60 s
t = 0.90 s
t = 1.20 s
t = 1.50 s
t = 1.80 s
t = 2.10 s
t = 2.40 s

EPCO-25-10P



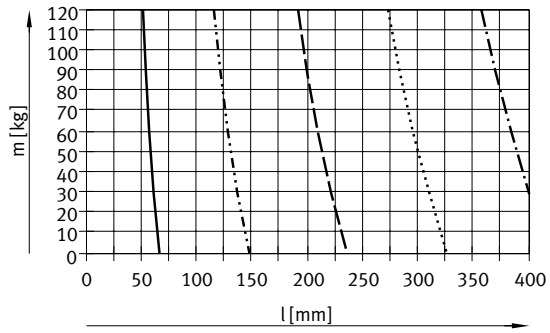
For EPCO-...

- t = 0.15 s
- t = 0.30 s
- t = 0.45 s
- t = 0.60 s
- t = 0.75 s
- t = 0.90 s
- t = 1.05 s

For EPCO-...-KF

t = 0.15 s
t = 0.30 s
t = 0.45 s
t = 0.60 s
t = 0.80 s
t = 0.95 s
t = 1.10 s

EPCO-40-5P



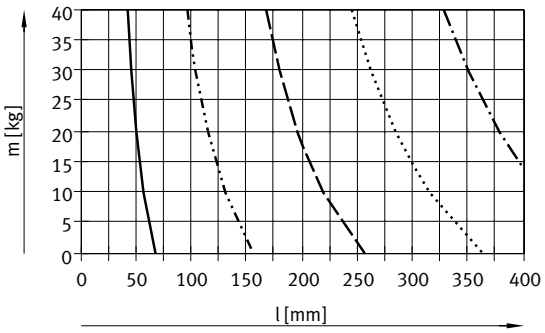
For EPCO-...

- t = 0.50 s
- t = 1.00 s
- t = 1.50 s
- t = 2.00 s
- t = 2.50 s

For EPCO-...-KF

t = 0.50 s
t = 1.00 s
t = 1.55 s
t = 2.05 s
t = 2.55 s

EPCO-40-12.7P



For EPCO-...

- t = 0.25 s
- t = 0.50 s
- t = 0.75 s
- t = 1.00 s
- t = 1.25 s

For EPCO-...-KF

t = 0.25 s
t = 0.50 s
t = 0.80 s
t = 1.05 s
t = 1.30 s

Further technical data for the guide unit EAGF-P1
→ www.festo.com/eagf-p1

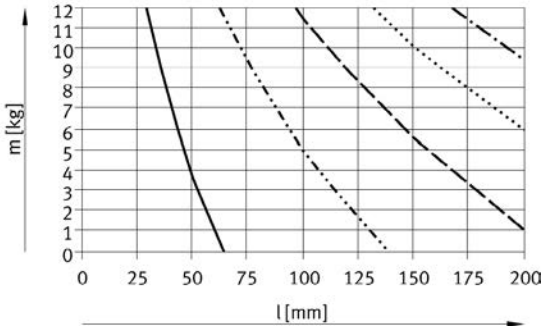
Data sheet

Payload m as a function of travel distance l and positioning time t

Vertical mounting position

The moving net mass of the guide unit (EPCO-...-KF) results in longer positioning times with identical payload/travel distance.

EPCO-16-3P



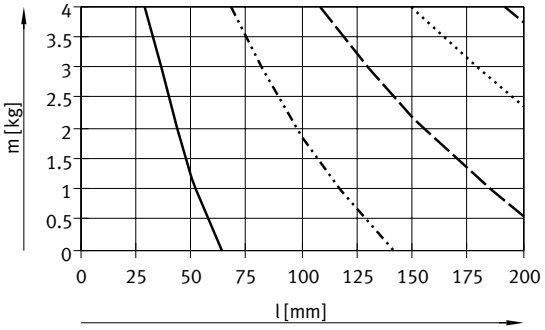
For EPCO-...

- t = 0.60 s
- t = 1.20 s
- t = 1.80 s
- t = 2.40 s
- t = 3.00 s

For EPCO-...-KF

t = 0.60 s
t = 1.25 s
t = 1.85 s
t = 2.50 s
t = 3.10 s

EPCO-16-8P



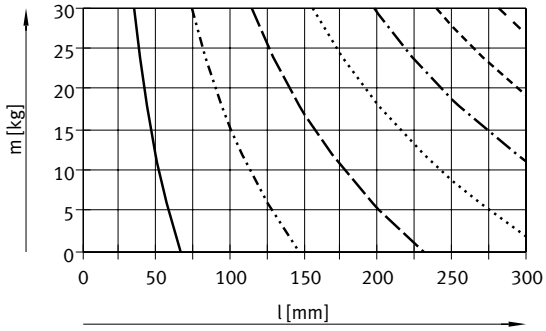
For EPCO-...

- t = 0.30 s
- t = 0.60 s
- t = 0.90 s
- t = 1.20 s
- t = 1.50 s

For EPCO-...-KF

t = 0.35 s
t = 0.65 s
t = 1.00 s
t = 1.30 s
t = 1.65 s

EPCO-25-3P



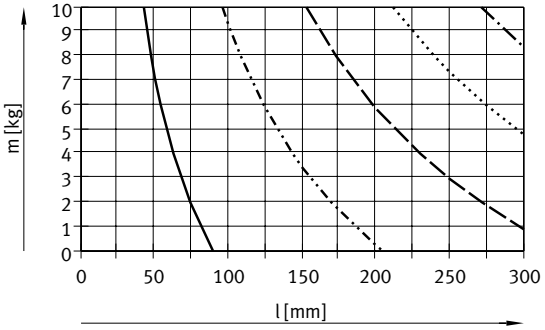
For EPCO-...

- t = 0.60 s
- t = 1.20 s
- t = 1.80 s
- t = 2.40 s
- t = 3.00 s
- t = 3.60 s
- t = 4.20 s

For EPCO-...-KF

t = 0.60 s
t = 1.20 s
t = 1.85 s
t = 2.45 s
t = 3.05 s
t = 3.70 s
t = 4.30 s

EPCO-25-10P



For EPCO-...

- t = 0.30 s
- t = 0.60 s
- t = 0.90 s
- t = 1.20 s
- t = 1.50 s

For EPCO-...-KF

t = 0.30 s
t = 0.65 s
t = 0.95 s
t = 1.25 s
t = 1.60 s

Further technical data for the guide unit EAGF-P1
➔ www.festo.com/eagf-p1

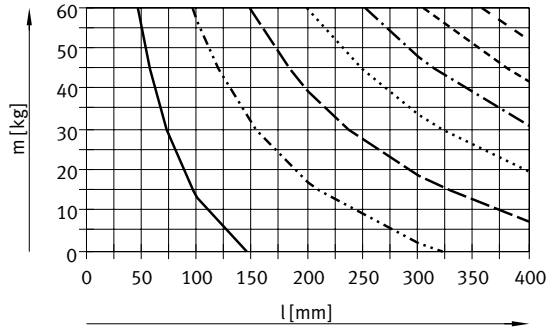
Data sheet

Payload m as a function of travel distance l and positioning time t

Vertical mounting position

The moving net mass of the guide unit (EPCO-...-KF) results in longer positioning times with identical payload/travel distance.

EPCO-40-5P



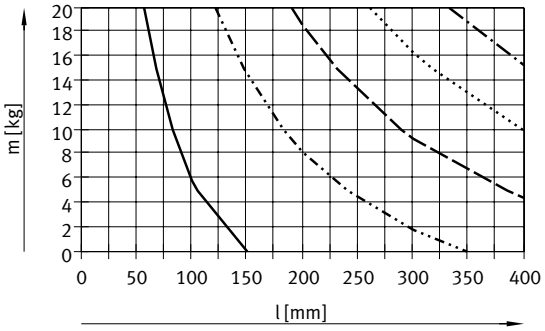
For EPCO-...

- t = 1.00 s
- t = 2.00 s
- t = 3.00 s
- t = 4.00 s
- t = 5.00 s
- t = 6.00 s
- t = 7.00 s

For EPCO-...-KF

t = 1.05 s
t = 2.05 s
t = 3.10 s
t = 4.10 s
t = 5.15 s
t = 6.20 s
t = 7.20 s

EPCO-40-12.7P



For EPCO-...

- t = 0.55 s
- t = 1.00 s
- t = 1.50 s
- t = 2.00 s
- t = 2.50 s

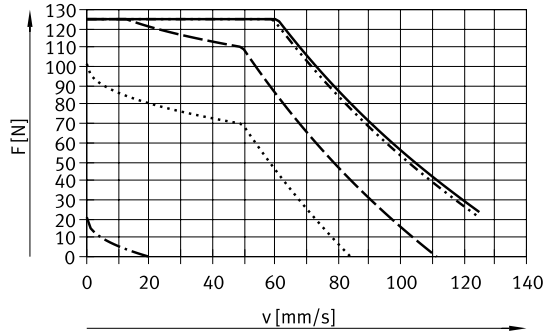
For EPCO-...-KF

t = 0.55 s
t = 1.10 s
t = 1.60 s
t = 2.15 s
t = 2.70 s

Feed force F as a function of speed v and acceleration a

The moving net mass of the guide unit (EPCO-...-KF) results in lower acceleration values with identical feed force/speed.

EPCO-16-3P



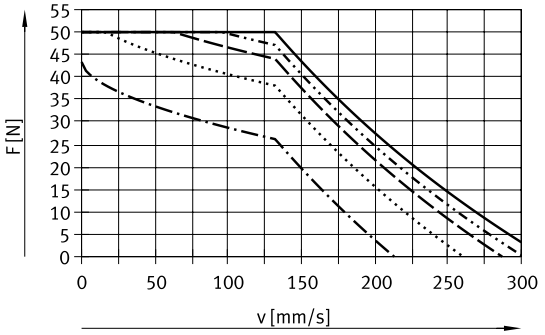
For EPCO-...

- a = 0 m/s²
- a = 0.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

For EPCO-...-KF

a = 0 m/s²
a = 2.3 m/s²
a = 4.7 m/s²
a = 9.6 m/s²

EPCO-16-8P



For EPCO-...

- a = 0 m/s²
- a = 1.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

For EPCO-...-KF

a = 0 m/s²
a = 1.2 m/s²
a = 3.4 m/s²
a = 7.8 m/s²

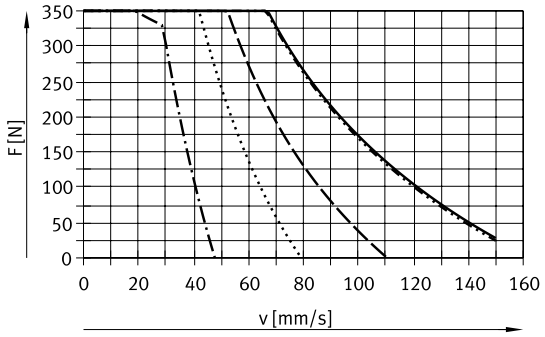
Further technical data for the guide unit EAGF-P1
→ www.festo.com/eagf-p1

Data sheet

Feed force F as a function of speed v and acceleration a

The moving net mass of the guide unit (EPCO-...-KF) results in lower acceleration values with identical feed force/speed.

EPCO-25-3P



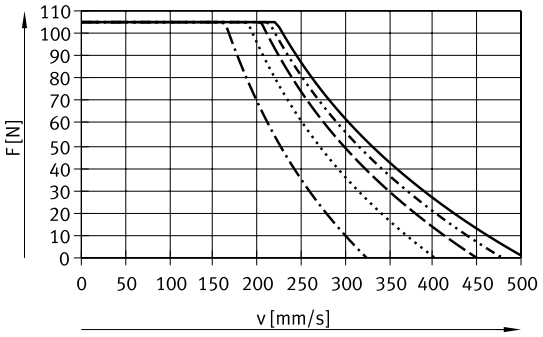
For EPCO-...

- a = 0 m/s²
- a = 0.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

For EPCO-...-KF

- a = 0 m/s²
- a = 2.4 m/s²
- a = 4.9 m/s²
- a = 9.8 m/s²

EPCO-25-10P



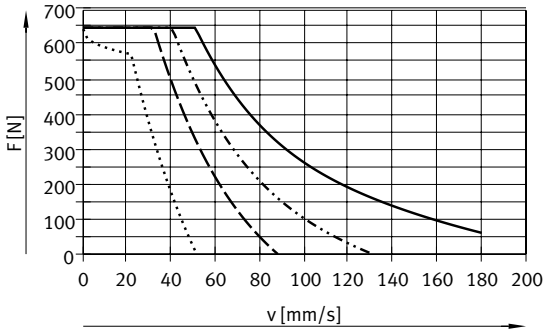
For EPCO-...

- a = 0 m/s²
- a = 1.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

For EPCO-...-KF

- a = 0 m/s²
- a = 1.6 m/s²
- a = 3.9 m/s²
- a = 8.3 m/s²

EPCO-40-5P



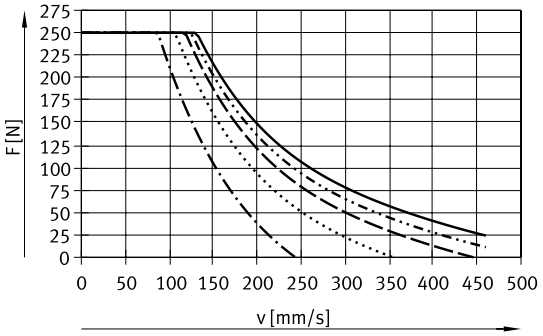
For EPCO-...

- a = 0 m/s²
- a = 0.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

For EPCO-...-KF

- a = 0 m/s²
- a = 2.4 m/s²
- a = 4.8 m/s²
- a = 9.7 m/s²

EPCO-40-12.7P



For EPCO-...

- a = 0 m/s²
- a = 1.2 m/s²
- a = 2.5 m/s²
- a = 5 m/s²
- a = 10 m/s²

For EPCO-...-KF

- a = 0 m/s²
- a = 1.8 m/s²
- a = 4.0 m/s²
- a = 8.5 m/s²

Further technical data for the guide unit EAGF-P1
→ www.festo.com/eagf-p1

Data sheet

Calculating the mean feed force F_{xm} with the electric cylinder EPCO

The peak feed force value must not exceed the maximum feed force within a movement cycle. The peak value is generally achieved in vertical operation during the acceleration phase of the upwards stroke. If the maximum feed force is exceeded, this can increase wear and thus shorten the service life of the ball screw. The maximum speed must likewise not be exceeded:

$F_x \leq F_{xmax.}$
and
$v_x \leq v_{xmax.}$

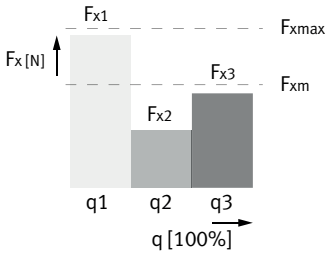
Mean feed force (to DIN 69051-4)

During operation, the continuous feed force may be briefly exceeded up to the maximum feed force. The continuous feed force must, however, be adhered to when averaged over a movement cycle:

$F_{xm} \leq F_{xcontinuous}$

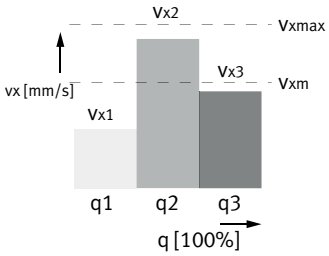
$$F_{xm} = \sqrt[3]{\sum F_x^3 \cdot \frac{v_x}{v_{xm}} \cdot \frac{q}{100}} =$$

$$F_{xm} = \sqrt[3]{F_{x1}^3 \cdot \frac{v_{x1}}{v_{xm}} \cdot \frac{q_1}{100} + F_{x2}^3 \cdot \frac{v_{x2}}{v_{xm}} \cdot \frac{q_2}{100} + F_{x3}^3 \cdot \frac{v_{x3}}{v_{xm}} \cdot \frac{q_3}{100} + \cdots}$$



Mean feed speed (to DIN 69051-4)

$$v_{xm} = \sum v_x \cdot \frac{q}{100} = v_{x1} \cdot \frac{q_1}{100} + v_{x2} \cdot \frac{q_2}{100} + v_{x3} \cdot \frac{q_3}{100} + \cdots$$

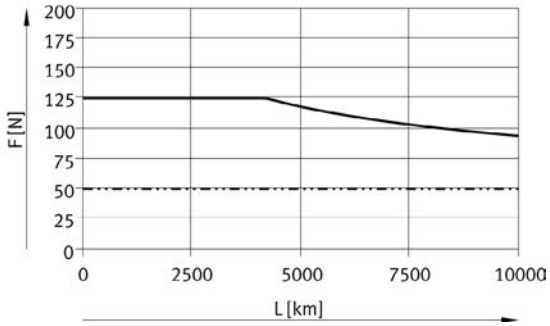


F_x	Feed force	v_x	Feed speed
F_{xm}	Mean feed force	v_{xm}	Mean feed speed
$F_{xmax.}$	Max. feed force	v_x	Max. feed speed
$F_{xcontinuous}$	Continuous feed force		

Data sheet

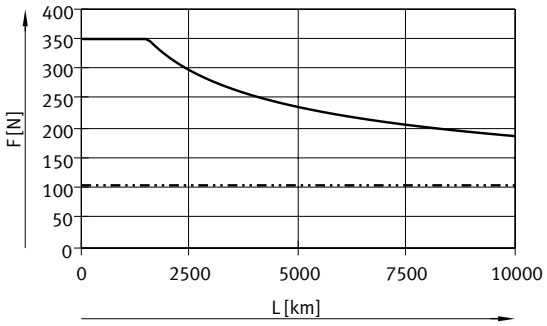
Mean feed force F as a function of running performance L (to DIN 69051-4)

EPCO-16



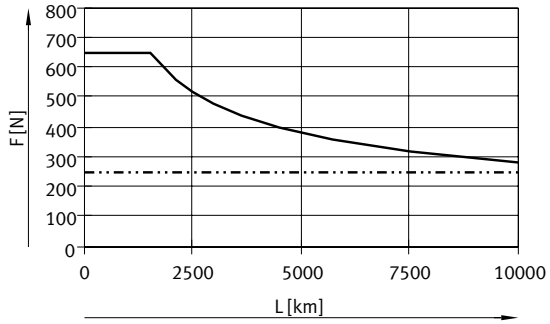
EPCO-16-3P
EPCO-16-8P

EPCO-25



EPCO-25-3P
EPCO-25-10P

EPCO-40



EPCO-40-5P
EPCO-40-12.7P

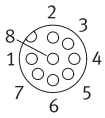
Note

The specifications for running performance are based on experimentally determined and theoretically calculated data. The running performance that can be achieved in practice can deviate considerably from the specified curves under different parameters.

Pin allocation

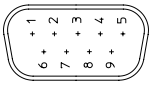
Motor

EPCO-16



PIN	Function
1	String A
2	String A/
3	String B
4	String B/
5	n.c.
6	n.c.
7	Brake +24 V DC[1]
8	Brake GND[1]
–	–

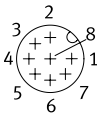
EPCO-25/-40



PIN	Function
1	String A
2	String A/
3	String B
4	String B/
5	n.c.
6	n.c.
7	Brake +24 V DC[1]
8	Brake GND[1]
9	n.c.

Encoder

EPCO-16/-25/-40



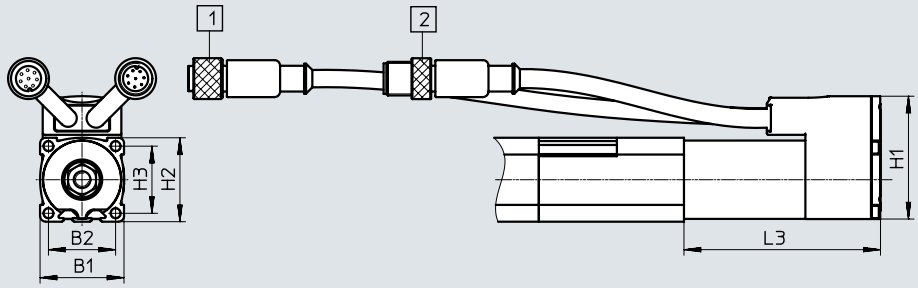
PIN	Function
1	Signal trace A
2	Signal trace A/
3	Signal trace B
4	Signal trace B/
5	Encoder GND
6	Signal trace N
7	Signal trace N/
8	VCC auxiliary supply +5 V
GND	Shielding on plug housing

1) Only on motors with brake.

Data sheet

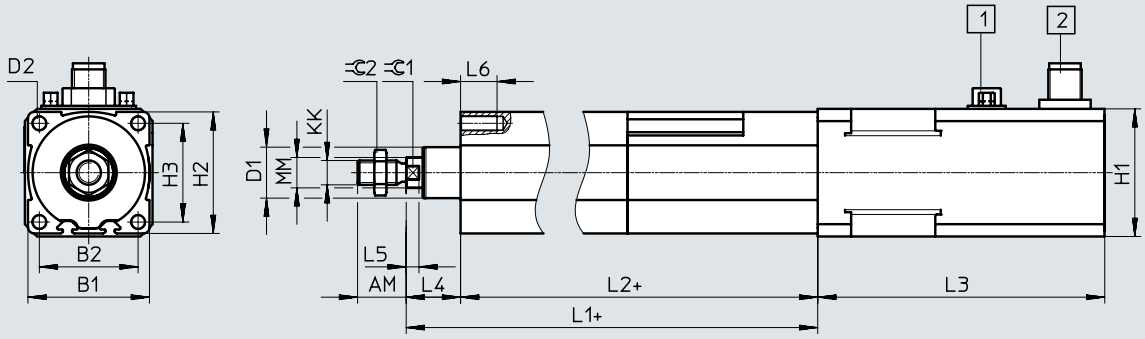
Dimensions Download CAD data ➔ www.festo.com

Size 16



[1] Motor connection: round plug M12, 8-pin, bushing (cable length: 350 mm)
[2] Encoder connection: round plug M12, 8-pin, pins (cable length: 250 mm)
[3] Min. bending radius of the cables: 60 mm

Size 25, 40



[1] Motor connection: SUB-D plug, 9-pin, pins
[2] Encoder connection: round plug M12, 8-pin, pins
\+ plus stroke length

Size	AM	B1	B2	D1	D2	H1	H2	H3	KK	L1	L2
	–0.5			⌀ ±0.05	⌀						±1
16	12	30	24	13.27	M4	44	30	24	M6	143	127
25	16	40	32.5	17.27	M5	$42^{+0.3}$	40	32.5	M8	174.6	156.6
40	19	55	42	26.52	M6	56.4	55	42	M10x1.25	214.2	192.7

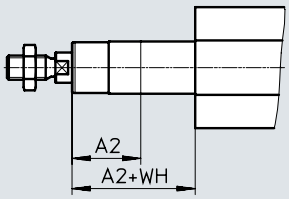
Size	L3				L4	L5	L6	MM	⌀C1	⌀C2
	EPCO-...									
		-E	-B	-EB		–0.15		–0.1		
16	70±1	70±1	96±1.5	96±1.5	16	3.7	10	8	7	10
25	66±1	94.4±1.2	114.4±1.3	127.4±1.3	18	4.2	12	10	9	13
40	73.5±0.8	102.5±1.1	123.5±1.1	138±1.1	21.5	4.7	14	12	10	17

Data sheet

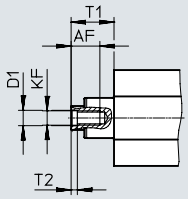
Dimensions Download CAD data ➔ www.festo.com

Variants

E – Extended piston rod



F – Female piston rod thread



Size	A2 max.	AF	KF	T1	T2	D1	WH
16	100	10	M4	16	1.5	4.3	16
25	150	12	M6	18	2.6	6.4	18
40	200	14	M8	21.5	3.3	8.4	21.5

Data sheet

Ordering data – EPCO-16

Stroke [mm]	Part no.	Type	Stroke [mm]	Part no.	Type
Spindle pitch 3 mm/rev, with encoder			**Spindle pitch 8 mm/rev, with encoder**		
50	**1476415**	**EPCO-16-50-3P-ST-E**	50	**1476522**	**EPCO-16-50-8P-ST-E**
100	**1476417**	**EPCO-16-100-3P-ST-E**	100	**1476524**	**EPCO-16-100-8P-ST-E**
150	**1476419**	**EPCO-16-150-3P-ST-E**	150	**1476526**	**EPCO-16-150-8P-ST-E**
200	**1476421**	**EPCO-16-200-3P-ST-E**	200	**1476528**	**EPCO-16-200-8P-ST-E**

Ordering data – EPCO-25

Stroke [mm]	Part no.	Type	Stroke [mm]	Part no.	Type
Spindle pitch 3 mm/rev, with encoder			**Spindle pitch 10 mm/rev, with encoder**		
50	**1470698**	**EPCO-25-50-3P-ST-E**	50	**1470769**	**EPCO-25-50-10P-ST-E**
100	**1470700**	**EPCO-25-100-3P-ST-E**	100	**1470771**	**EPCO-25-100-10P-ST-E**
150	**1470702**	**EPCO-25-150-3P-ST-E**	150	**1470773**	**EPCO-25-150-10P-ST-E**
200	**1470704**	**EPCO-25-200-3P-ST-E**	200	**1470775**	**EPCO-25-200-10P-ST-E**
300	**1470706**	**EPCO-25-300-3P-ST-E**	300	**1470777**	**EPCO-25-300-10P-ST-E**

Ordering data – EPCO-40

Stroke [mm]	Part no.	Type	Stroke [mm]	Part no.	Type
Spindle pitch 5 mm/rev, with encoder			**Spindle pitch 12.7 mm/rev, with encoder**		
50	**1472501**	**EPCO-40-50-5P-ST-E**	50	**1472617**	**EPCO-40-50-12.7P-ST-E**
100	**1472503**	**EPCO-40-100-5P-ST-E**	100	**1472619**	**EPCO-40-100-12.7P-ST-E**
150	**1472505**	**EPCO-40-150-5P-ST-E**	150	**1472621**	**EPCO-40-150-12.7P-ST-E**
200	**1472507**	**EPCO-40-200-5P-ST-E**	200	**1472623**	**EPCO-40-200-12.7P-ST-E**
300	**1472509**	**EPCO-40-300-5P-ST-E**	300	**1472625**	**EPCO-40-300-12.7P-ST-E**

Note

Variants ordered via modular product system ➔ page 26

Note

Position sensing is only possible in combination with characteristic "A" ➔ page 26 (modular product system)

Ordering data – Modular product system

Ordering table

Size	16	25	40	Conditions	Code	Enter code
Module no.	**1476585**	**1470874**	**1472887**			
Function	Electric cylinder				**EPCO**	EPCO
Size	16	25	40		**-...**	
Stroke [mm]	50				**-...**	
	75				**-...**	
	100				**-...**	
	125				**-...**	
	150				**-...**	
	175				**-...**	
	200				**-...**	
	–	250			**-...**	
	–	300			**-...**	
	–		350		**-...**	
	–		400		**-...**	
Spindle pitch	3	3			**-...P**	
	–	–	5			
	8	–	–			
	–	10	–			
	–	–	12.7			
Piston rod thread type	Male thread					
	Female thread				**-F**	
Piston rod extension [mm]	Without					
	1 ... 100	1 ... 150	1 ... 200		**-...E**	
Position sensing	Without					
	Via proximity switch			[1]	**-A**	
Motor type	Stepper motor				**-ST**	ST

[1] **A** Must be selected if encoder E is not selected.

Ordering data – Modular product system

Ordering table

Size	16	25	40	Conditions	Code		Enter code
Measuring unit	Without						
	Encoder				**-E**		
Brake	Without						
	Brake				**B**		
Cable outlet direction	Top (standard)						
	Underneath				**-D**		
	Left				**-L**		
	Right				**-R**		
Guide unit	Without						
	Recirculating ball bearing guide with 2 guide rods			[2]	**-KF**		
Connecting cable to motor controller, suitable for energy chains	Without						
	1.5 m, straight plug				**+1.5E**		
	1.5 m, angled plug			[3]	**+1.5EA**		
	2.5 m, straight plug			[3]	**+2.5E**		
	2.5 m, angled plug			[3]	**+2.5EA**		
	5 m, straight plug			[3]	**+5E**		
	5 m, angled plug			[3]	**+5EA**		
	7 m, straight plug			[3]	**+7E**		
	7 m, angled plug			[3]	**+7EA**		
	10 m, straight plug			[3]	**+10E**		
	10 m, angled plug			[3]	**+10EA**		
Controller type	Without						
	CMMO, 5 A				**+C5**		
Bus protocol/control	Without						
	Digital I/O interface			[4]	**DIO**		
	IO-Link			[4]	**LK**		
Switching input/output	Without						
	NPN			[4] [5]	**N**		
	PNP			[4]	**P**		

[2] **KF** Not with piston rod extension ...E

[3] **1.5E, 1.5EA, 2.5E, 2.5EA, 5E, 5EA, 7E, 7EA, 10E, 10EA, C5** Only with encoder E

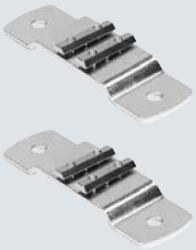
[4] **DIO, LK, N, P** Must be selected if controller type +C5 is selected

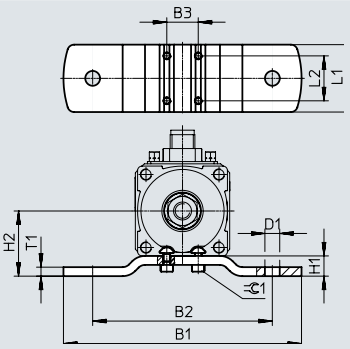
[5] **N** Not with IO-Link LK

Accessories

Foot mounting EAHF

Material:
Galvanised steel
RoHS-compliant





The position is freely selectable along the entire cylinder length L2.

Dimensions and ordering data

For size	B1	B2	B3	D1 ø	H1	H2	L1
16	86	60	10	5.5	7	22	30
25	106	80	14	6.6	9	29	30
40	130	100	18	9	10.5	38	40

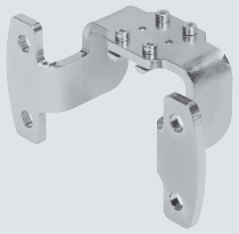
For size	L2	T1	⌯1	CRC[1)]	Weight [g]	Part no.	Type
16	20	3	2.5	1	60	**1434903**	**EAHF-P1-16**
25	20	4	2.5	1	100	**1434904**	**EAHF-P1-25**
40	20	4	4	1	160	**1434905**	**EAHF-P1-40**

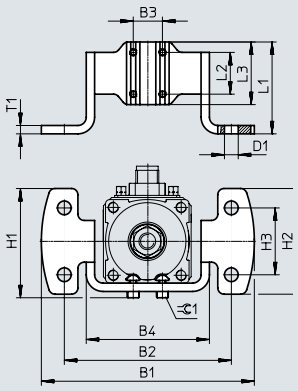
1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Accessories

Flange mounting EAHH

Material:
Galvanised steel
RoHS-compliant





The position is freely selectable along the entire cylinder length L2.

Dimensions and ordering data

For size	B1	B2	B3	B4	D1 ø	H1	H2	H3	L1
16	77.2	60	10	45	5.5	38.3	34.6	20	43
25	102	80	14	59	6.6	52.3	50.6	32	44
40	119	100	18	76	9	64.5	56	36	54

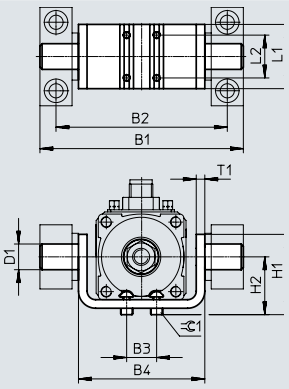
For size	L2	L3	T1	=C1	CRC[1]	Weight [g]	Part no.	Type
16	20	30	3	2.5	1	80	**1434906**	**EAHH-P1-16**
25	20	30	4	2.5	1	150	**1434907**	**EAHH-P1-25**
40	20	40	4	4	1	240	**1434908**	**EAHH-P1-40**

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Accessories

Swivel mounting EAHS

Material:
Galvanised steel
RoHS-compliant



The position is freely selectable along the entire cylinder length L2.

Dimensions and ordering data

For size	B1	B2	B3	B4	D1 ∅ e9	H1	H2
16	71	60	10	45	8	33	21
25	95	80	14	59	12	37.5	27
40	118	100	18	76	16	55	36.5

For size	L1	L2	T1	⌭1	CRC[1)]	Weight [g]	Part no.	Type
16	30	20	3	2.5	1	80	**1434909**	**EAHS-P1-16**
25	30	20	4	2.5	1	140	**1434910**	**EAHS-P1-25**
40	40	20	4	4	1	260	**1434911**	**EAHS-P1-40**

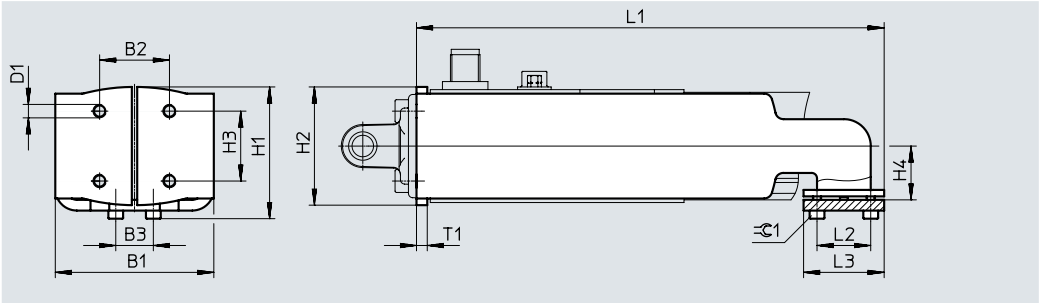
1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Accessories

Adapter kit EAHA

Material:
Galvanised steel

RoHS-compliant



Dimensions and ordering data

For size	B1	B2	B3	D1	H1	H2	H3	H4
16	45	18	10	M4	35.9	29.8	18	15
25	59	26	14	M5	49	44	26	20
40	76	38	18	M6	66.9	60.8	38	27.5

For size	L1	L2	L3	T1	⌀1	CRC[1)]	Weight [g]	Part no.	Type
16	139	20	30	3	2.5	1	210	**1434900**	**EAHA-P1-16**
25	174	20	30	4	2.5	1	480	**1434901**	**EAHA-P1-25**
40	193.4	20	40	4	4	1	770	**1434902**	**EAHA-P1-40**

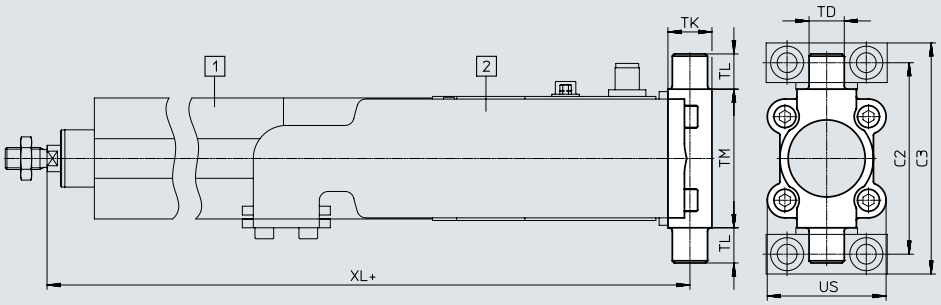
1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Accessories

Trunnion flange ZNCF

Material:
ZNCF: stainless steel casting

Free of copper and PTFE
RoHS-compliant



[1] Electric cylinder EPCO
[2] Adapter kit EAHA
\+ = plus stroke length

The trunnion flange ZNCF cannot be mounted when turned by 90°.

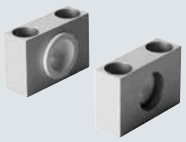
Dimensions and ordering data

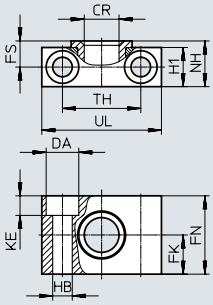
For size	C2	C3	TD ø e9	TK	TL	TM	US	XL EPCO-...				CRC[1]	Weight [g]	Part no.	Type
									-E	-B	-EB				
40	87	105	16	20	16	63	54	306.7	335.7	356.7	371.2	2	285	**174412**	**ZNCF-40**

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements in direct contact with a normal industrial environment.

Trunnion support LNZG

Material:
Trunnion support: anodised aluminium
Plain bearing: plastic
Free of copper and PTFE
RoHS-compliant





Dimensions and ordering data

For size	CR ø D11	DA ø H13	FK ø ±0.1	FN	FS	H1	HB ø H13	KE	NH	TH ±0.2	UL	CRC[1]	Weight [g]	Part no.	Type
16	8	8	10	20	7.5	11	4.5	4.6	13	20	30	2	26	**1434912**	**LNZG-16**
25	12	11	15	30	10.5	15	6.6	6.8	18	32	46	2	83	**32959**	**LNZG-32**
40	16	15	18	36	12	18	9	9	21	36	55	2	129	**32960**	**LNZG-40/50**

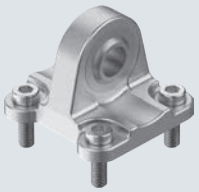
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements in direct contact with a normal industrial environment.

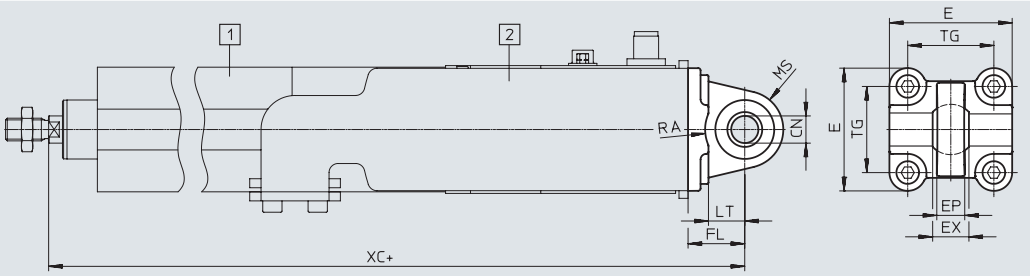
Accessories

Swivel flange SNCS

Material:
Die-cast aluminium

Free of copper and PTFE
RoHS-compliant





[1] Electric cylinder EPCO
[2] Adapter kit EAHA
\+ = plus stroke length

Dimensions and ordering data

For size	CN Ø	E	EP +0.2	EX	FL ±0.2	LT	MS	RA +1	TG
40	$12^{+0.015}$	$54_{-0.5}$	12	16	25	16	$17^{+0.5}$	17.5	38

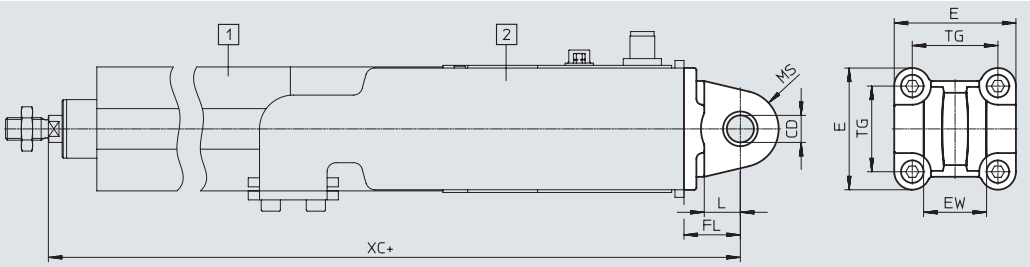
For size	XC EPCO-...				CRC[1]	Weight [g]	Part no.	Type
		-E	-B	-EB				
40	321.7	350.7	371.7	386.2	1	122	**174398**	**SNCS-40**

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Swivel flange SNCL

Material:
Wrought aluminium alloy

Free of copper and PTFE
RoHS-compliant



[1] Electric cylinder EPCO
[2] Adapter kit EAHA
\+ = plus stroke length

Dimensions and ordering data

For size	CD Ø H9	EW h12	FL ±0.2	L	MR –0.5	XC EPCO-...				CRC[1]	Weight [g]	Part no.	Type
							-E	-B	-EB				
16	6	12	16	10	6	237	237	263	263	2	21	**537791**	**SNCL-16**
25	8	16	20	14	8	269.6	298	318	331	2	41	**537793**	**SNCL-25**
40	12	28	25	16	12	321.7	350.7	371.7	386.2	1	95	**174405**	**SNCL-40**

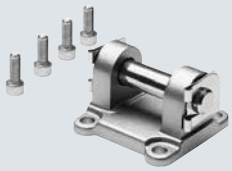
1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements in direct contact with a normal industrial environment.

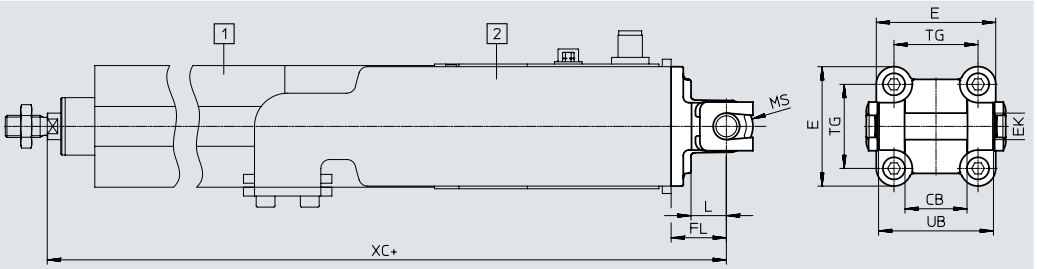
Accessories

Swivel flange SNCB

Material:
Die-cast aluminium

Free of copper and PTFE
RoHS-compliant





[1] Electric cylinder EPCO
[2] Adapter kit EAHA
\+ = plus stroke length

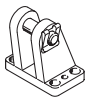
Dimensions and ordering data

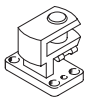
For size	CB	EK ⌀	FL	L	MR	UB	XC EPCO-...				CRC[1]	Weight	Part no.	Type
	H14	e8	±0.2			h14		-E	-B	-EB		[g]		
40	28	12	25	16	12	52	321.7	350.7	371.7	386.2	1	155	**174391**	**SNCB-40**

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Ordering data – Mounting components

Data sheets → Internet: clevis foot

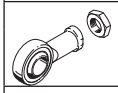
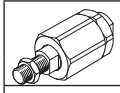
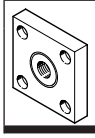
Designation	For size	Part no.	Type
Clevis foot LBG			
	40	**31762**	**LBG-40**
Clevis foot LBN			
	16	**6058**	**LBN-12/16**
	25	**6059**	**LBN-20/25**
	40	**195861**	**LBN-40**

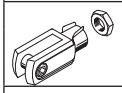
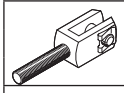
Designation	For size	Part no.	Type
Right angle clevis foot LQG			
	40	**31769**	**LQG-40**

Accessories

Ordering data – Piston rod attachments

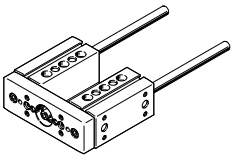
Data sheets → Internet: piston rod attachment

Designation	For size	Part no.	Type
Rod eye SGS			
	16	**9254**	**SGS-M6**
	25	**9255**	**SGS-M8**
	40	**9261**	**SGS-M10x1.25**
Self-aligning rod coupler FK			
	16	**2061**	**FK-M6**
	25	**2062**	**FK-M8**
	40	**6140**	**FK-M10x1.25**
Coupling piece KSG			
	40	**32963**	**KSG-M10x1.25**

Designation	For size	Part no.	Type
Rod clevis SG			
	16	**3110**	**SG-M6**
	25	**3111**	**SG-M8**
	40	**6144**	**SG-M10x1.25**
Rod clevis SGA			
	40	**32954**	**SGA-M10x1.25**

Ordering data – Guide unit

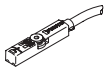
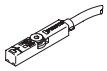
Data sheets → Internet: eagf

	For size	Stroke [mm]	Part no.	Type
	16	50	**3192932**	**EAGF-P1-KF-16-50**
		100	**3192934**	**EAGF-P1-KF-16-100**
		150	**3192936**	**EAGF-P1-KF-16-150**
		200	**3192938**	**EAGF-P1-KF-16-200**
		75, 125, 175	**3192939**	**EAGF-P1-KF-16-**
	25	50	**3192943**	**EAGF-P1-KF-25-50**
		100	**3192945**	**EAGF-P1-KF-25-100**
		150	**3192947**	**EAGF-P1-KF-25-150**
		200	**3192949**	**EAGF-P1-KF-25-200**
		300	**3192951**	**EAGF-P1-KF-25-300**
		75, 125, 175, 250	**3192952**	**EAGF-P1-KF-25-**
	40	50	**3192955**	**EAGF-P1-KF-40-50**
		100	**3192957**	**EAGF-P1-KF-40-100**
		150	**3192959**	**EAGF-P1-KF-40-150**
		200	**3192961**	**EAGF-P1-KF-40-200**
		300	**3192963**	**EAGF-P1-KF-40-300**
		75, 125, 175, 250 350, 400	**3192966**	**EAGF-P1-KF-40-**

Accessories

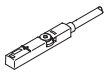
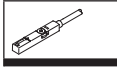
Ordering data – Proximity switches for T-slot, magneto-resistive

Data sheets → Internet: smt

	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 cylinder profile, short design	PNP	Cable, 3-wire	2.5	**574335**	**SMT-8M-A-PS-24V-E-2.5-OE**
			Plug M8x1, 3-pin	0.3	**574334**	**SMT-8M-A-PS-24V-E-0.3-M8D**
			Plug M12x1, 3-pin	0.3	**574337**	**SMT-8M-A-PS-24V-E-0.3-M12**
		NPN	Cable, 3-wire	2.5	**574338**	**SMT-8M-A-NS-24V-E-2.5-OE**
			Plug M8x1, 3-pin	0.3	**574339**	**SMT-8M-A-NS-24V-E-0.3-M8D**
N/C contact						
	Insertable in the slot from above, flush with the cylinder profile, short design	PNP	Cable, 3-wire	7.5	**574340**	**SMT-8M-A-PO-24V-E-7,5-OE**

Ordering data – Proximity switches for T-slot, magnetic reed

Data sheets → Internet: sme

	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 cylinder profile	Contacting	Cable, 3-wire	2.5	**543862**	**SME-8M-DS-24V-K-2.5-OE**
				5.0	**543863**	**SME-8M-DS-24V-K-5.0-OE**
			Cable, 2-wire	2.5	**543872**	**SME-8M-ZS-24V-K-2.5-OE**
			Plug M8x1, 3-pin	0.3	**543861**	**SME-8M-DS-24V-K-0.3-M8D**
N/C contact						
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	7.5	**160251**	**SME-8-O-K-LED-24**

Note

Position sensing is only possible in combination with characteristic "A" → page 26 (modular product system)

Ordering data – Connecting cable

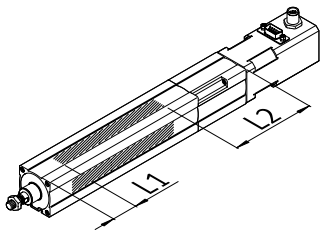
Data sheets → Internet: nebu

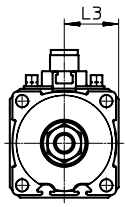
	Description	Connection	Cable length [m]	Part no.	Type
Straight socket					
	Union nut M8, both ends	3-pin	0.5	**541346**	**NEBU-M8G3-K-0.5-M8G3**
			1.0	**541347**	**NEBU-M8G3-K-1-M8G3**
			2.5	**541348**	**NEBU-M8G3-K-2.5-M8G3**
			5.0	**541349**	**NEBU-M8G3-K-5-M8G3**

Accessories

Sensor mounting

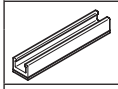
The sensor mountings can only be attached within the highlighted area due to the asymmetry of the internal magnet.
The proximity switches may not switch reliably if they are mounted outside of this area.
The overall length of the sensor rail SAMH corresponds to the length of the sensing range plus approx. 10 mm adjustment range on either side for the proximity switches.





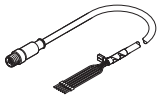
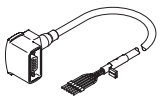
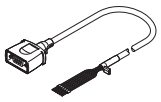
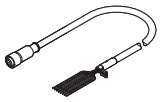
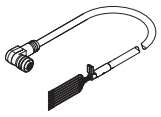
Size	L1	L2	L3
16	29	95	15
25	33	121	20
40	40	150	27.5

Ordering data – Sensor mounting for T-slot

	For size	Description	Length [mm]	Part no.	Type
Sensor rail					
	16, 25, 40	Size 25 can only be used with proximity switch SMT-8 (magneto-resistive).	50	**1600093**	**SAMH-N8-SR-50**
			100	**1600118**	**SAMH-N8-SR-100**
Mounting kit					
	16, 25, 40	–	35	**525565**	**CRSMB-8-32/100**

Accessories

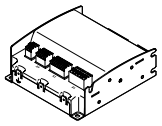
Ordering data – Cables[1)]

	For size	Description	Cable length [m]	Part no.	Type
Motor cable					
	16	**Straight plug**			
		• Min. bending radius: 62 mm • Suitable for energy chains • Ambient temp.: –40 ... +80°C	1.5	**1449600**	**NEBM-SM12G8-E-1.5-Q5-LE6**
			2.5	**1449601**	**NEBM-SM12G8-E-2.5-Q5-LE6**
			5.0	**1449602**	**NEBM-SM12G8-E-5-Q5-LE6**
			7.0	**1449603**	**NEBM-SM12G8-E-7-Q5-LE6**
			10.0	**1449604**	**NEBM-SM12G8-E-10-Q5-LE6**
	25/-40	**Angled plug**			
		• Min. bending radius: 62 mm • Suitable for energy chains • Ambient temp.: –40 ... +80°C	1.5	**1450736**	**NEBM-S1W9-E-1.5-Q5-LE6**
			2.5	**1450737**	**NEBM-S1W9-E-2.5-Q5-LE6**
			5.0	**1450738**	**NEBM-S1W9-E-5-Q5-LE6**
			7.0	**1450739**	**NEBM-S1W9-E-7-Q5-LE6**
			10.0	**1450740**	**NEBM-S1W9-E-10-Q5-LE6**
		**Straight plug**			
		• Min. bending radius: 62 mm • Suitable for energy chains • Ambient temp.: –40 ... +80°C	1.5	**1450368**	**NEBM-S1G9-E-1.5-Q5-LE6**
			2.5	**1450369**	**NEBM-S1G9-E-2.5-Q5-LE6**
			5.0	**1450370**	**NEBM-S1G9-E-5-Q5-LE6**
			7.0	**1450371**	**NEBM-S1G9-E-7-Q5-LE6**
			10.0	**1450372**	**NEBM-S1G9-E-10-Q5-LE6**
Encoder cable					
	16/-25/-40	**Straight plug**			
		• Min. bending radius: 68 mm • Suitable for energy chains • Ambient temp.: –40 ... +80°C	1.5	**1451586**	**NEBM-M12G8-E-1.5-LE8**
			2.5	**1451587**	**NEBM-M12G8-E-2.5-LE8**
			5.0	**1451588**	**NEBM-M12G8-E-5-LE8**
			7.0	**1451589**	**NEBM-M12G8-E-7-LE8**
			10.0	**1451590**	**NEBM-M12G8-E-10-LE8**
	25/-40	**Angled plug**			
		• Min. bending radius: 68 mm • Suitable for energy chains • Ambient temp.: –40 ... +80°C	1.5	**1451674**	**NEBM-M12W8-E-1.5-LE8**
			2.5	**1451675**	**NEBM-M12W8-E-2.5-LE8**
			5.0	**1451676**	**NEBM-M12W8-E-5-LE8**
			7.0	**1451677**	**NEBM-M12W8-E-7-LE8**
			10.0	**1451678**	**NEBM-M12W8-E-10-LE8**

1) Other cable lengths on request.

Ordering data – Motor controller

Data sheets → Internet: cmmo

	Description	Part no.	Type
	**With I/O interface**		
	Switching input/output PNP	**1512316**	**CMMO-ST-C5-1-DIOP**
	Switching input/output NPN	**1512317**	**CMMO-ST-C5-1-DION**
	With IO-Link		
	Switching input/output PNP	**1512320**	**CMMO-ST-C5-1-LKP**

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