

Electric cylinders EPCO, with spindle drive



Electric cylinders EPCO, with spindle drive

Key features



At a glance		
General	Properties	Range of applications
<p>The electric cylinder EPCO is a mechanical linear drive with piston rod and permanently attached motor. The driving component consists of an</p>	<p>electrically actuated spindle that converts the rotary motion of the motor into linear motion of the piston rod.</p> <ul style="list-style-type: none"> • With recirculating ball spindle • Optionally with female thread • Optionally with holding brake • Protection class IP40 • Compact dimensions • Extensive mounting accessories for various installation situations 	<ul style="list-style-type: none"> • Suitable for simple applications in factory automation that in the past were mostly realised with pneumatic solutions

Optimised Motion Series (OMS)

Electric cylinder
EPCO
→ 6



Controller
CMMO
→ Internet: cmmo

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

Included in the scope of delivery:

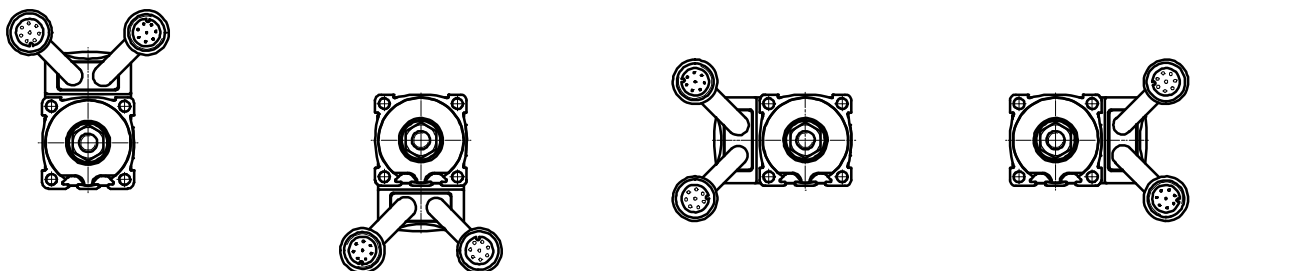
- Electric cylinder EPCO
- Controller CMMO
- Motor cable NEBM
- Encoder cable NEBM

Benefits:

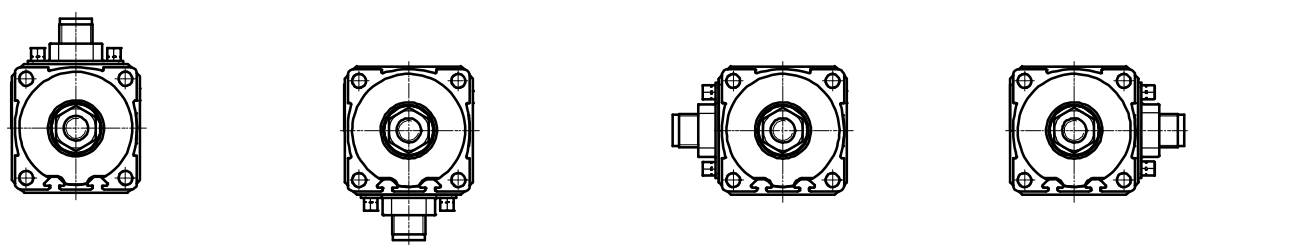
- All the components can be ordered easily using a modular product system
- Excellent value for money
- Quick parameterisation and commissioning via the web server/browser concept

Motor mounting variants

EPCO-16	Underneath (feature D)	Left (feature L)	Right (feature R)
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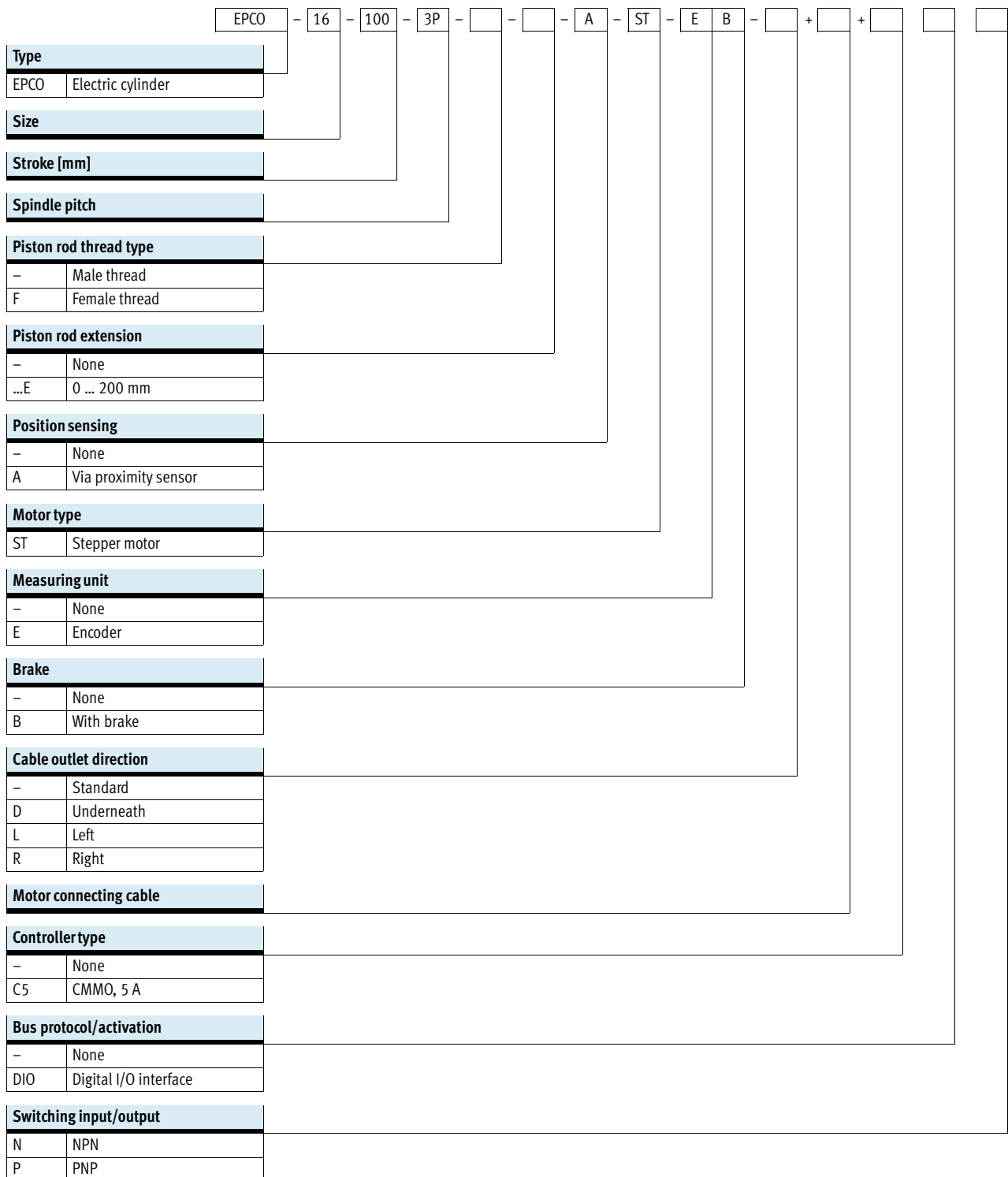


EPCO-25/-40	Underneath (feature D)	Left (feature L)	Right (feature R)
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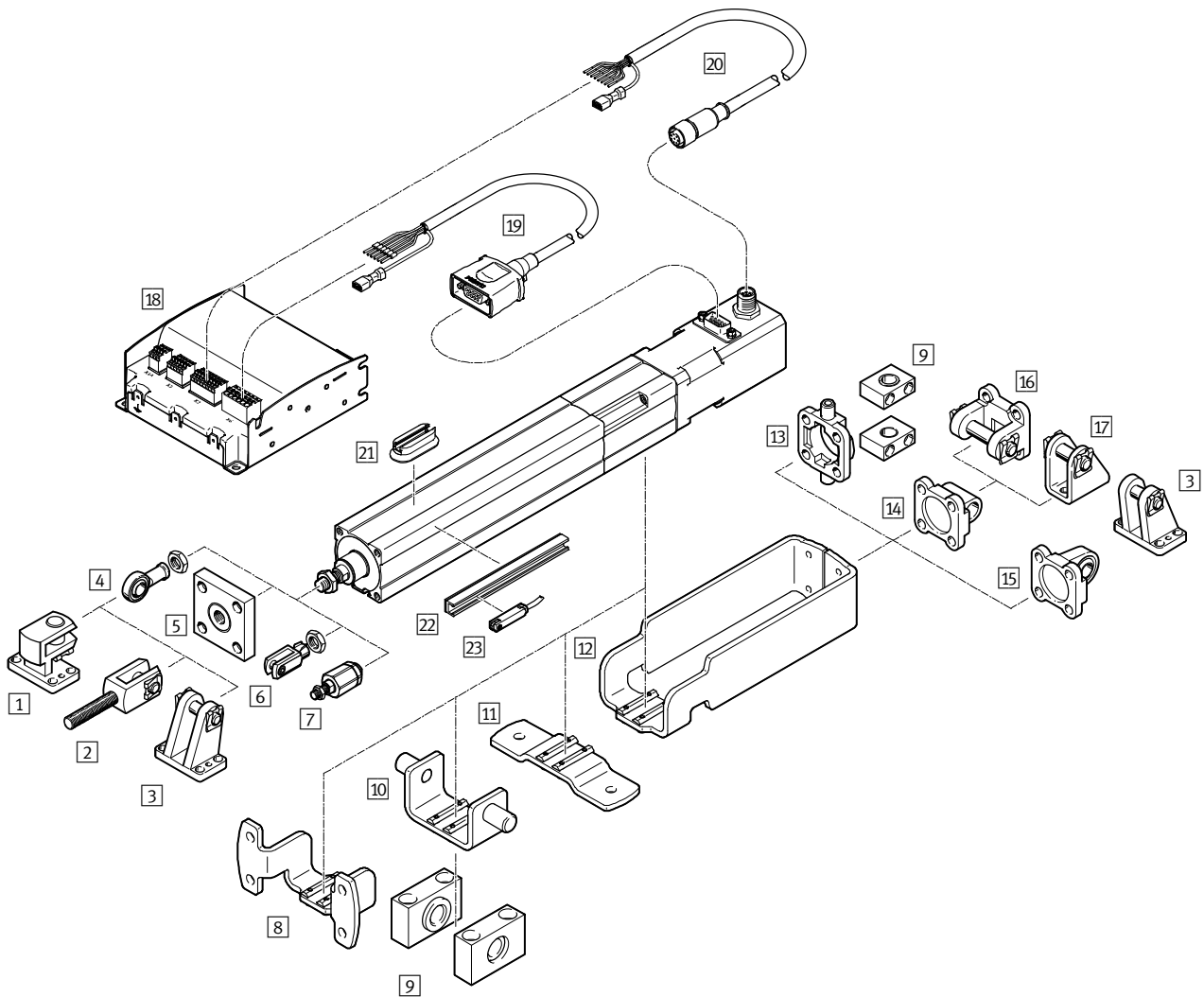
Type codes



Electric cylinders EPCO, with spindle drive

Peripherals overview

FESTO



Electric cylinders EPCO, with spindle drive

Peripherals overview

FESTO

Mounting attachments and accessories						
	Brief description	For size			→ Page/Internet	
		16	25	40		
1	Right-angle clevis foot LQG	For rod eye SGS	-	-	■	28
2	Rod clevis SGA	For rod eye SGS, for swivelling cylinder mounting	-	-	■	29
3	Clevis foot LBG	For rod eye SGS, for spherical bearing	-	-	■	28
4	Rod eye SGS/CRSGS	For spherical bearing	■	■	■	29
5	Coupling piece KSG	For compensating radial deviations	-	-	■	29
6	Rod clevis SG/CRSG	Permits a swivelling movement of the cylinder in one plane	■	■	■	29
7	Self-aligning rod coupler FK	For compensating radial and angular deviations	■	■	■	29
8	Flange mounting EAHH	- For mounting the electric cylinder via the profile - Position freely selectable along the cylinder length	■	■	■	23
9	Trunnion support LNZG	For mounting the cylinder in combination with swivel mounting or trunnion flange	■	■	■	26
10	Swivel mounting EAHS	Position freely selectable along the cylinder length	■	■	■	24
11	Foot mounting EAHF	Position freely selectable along the cylinder length	■	■	■	22
12	Adapter kit EAHA	For mounting swivel flange and trunnion flange on the front side. The only motor connection that can be ordered with this adapter kit is for top or bottom mounting.	■	■	■	25
13	Trunnion flange ZNCF	For spherical bearing. It cannot be mounted when turned by 90°.	-	-	■	26
14	Swivel flange SNCL	For spherical bearing	■	■	■	27
15	Swivel flange SNCS	For spherical bearing	-	-	■	27
16	Swivel flange SNCB/SNCB-...-R3	For spherical bearing	-	-	■	28
17	Clevis foot LBN	For spherical bearing	■	■	■	28
18	Controller CMMO	For parameterising and positioning the electric cylinder	■	■	■	cmmo
19	Motor cable NEBM	For connecting the motor and controller	■	■	■	31
20	Encoder cable NEBM	For connecting the encoder and controller	■	■	■	31
21	Mounting kit CRSMB	For proximity sensor SME/SMT-8	■	■	■	30
22	Sensor rail SAMH	- For proximity sensor SME/SMT-8 - Size 25 only with proximity sensor SMT-8	■	■	■	30
23	Proximity sensor SME/SMT-8	For homing or position sensing	■	■	■	29

 - Note

For applications involving high loads, the cylinder must not be mounted exclusively via the mounting thread on the front.

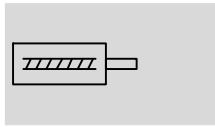
The mass of the motor can be amplified by the lever effect, which can result in the mounting thread being torn out.




Electric cylinders EPCO, with spindle drive

FESTO

Technical data

Function



-  Size
16 ... 40
-  Stroke length
1 ... 400 mm
-  www.festo.com



General technical data			
Size	16	25	40
Design	Electric cylinder with recirculating ball spindle 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. torsion angle of the piston rod [°]	≤ ±2	≤ ±1.5	≤ ±1
Impact energy at the end positions [J]	0.1x 10 ⁻³	0.2x 10 ⁻³	0.4x 10 ⁻³
Position sensing	Via proximity sensor		
Type of mounting	Via female thread Via 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
Max. effective load						
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/s ²]	10					
Reversing backlash ³⁾ [mm]	≤ 0.1					
Repetition accuracy [mm]	±0.02					

1) Nominal value varies due to component tolerances

2) Note max. lateral force

3) In new condition

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Technical data

Electrical data				
Size		16	25	40
Motor				
Nominal voltage	[V DC]	24		
Nominal current	[A]	1.4	3	4.2
Holding brake				
Nominal voltage	[V DC]	24 ±10%		
Rated output	[W]	8		
Encoder				
Rotary position encoder		Incremental		
Rotary position encoder measuring principle		Opto-electrical		
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 air humidity	[%]	0 ... 85 (non-condensing)
Protection class to IEC 60529		IP40
Corrosion resistance class CRC ²⁾		1
Duty cycle	[%]	100
CE mark (see declaration of conformity)		To EU EMC Directive ³⁾
Certification		c UL us - Recognized (OL) RCM trademark

- 1) Note operating range of proximity sensors
- 2) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
- 3) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → User documentation.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Weight [kg]				
Size		16	25	40
Basic weight with 0 mm stroke				
EPCO-...-ST		0.62	1.04	2.49
EPCO-...-ST-E		0.62	1.13	2.59
EPCO-...-ST-B		0.68	1.22	2.71
EPCO-...-ST-EB		0.68	1.28	2.77
Additional weight per 100 mm stroke		0.17	0.34	0.55
Moving load with 0 mm stroke		0.07	0.15	0.42
Moving load per 10 mm stroke		0.0020	0.0026	0.0049

Mass moment of inertia							
Size		16		25		40	
Spindle design		3P	8P	3P	10P	5P	12.7P
J ₀ with 0 mm stroke							
EPCO-...-ST	[kg mm ²]	2.28	2.29	9.33	9.40	33.25	33.75
EPCO-...-ST-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 effective load	[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:

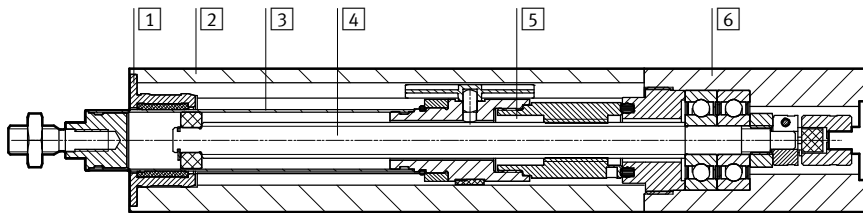
$$J_A = J_0 + j_S \times \text{working stroke [m]} + j_L \times m_{\text{moving effective load [kg]}}$$

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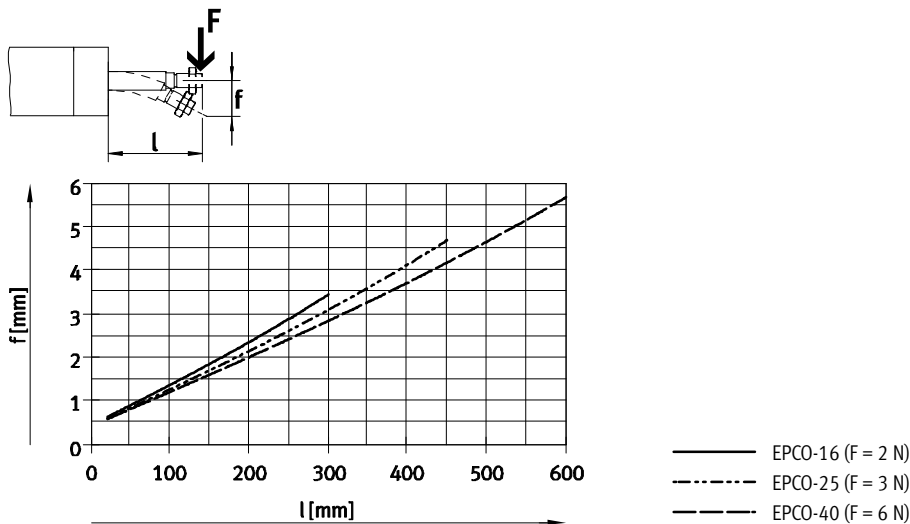
Materials

Sectional view



Electric cylinder		
1	Bearing cap	Wrought aluminium alloy
2	Cylinder barrel	Wrought aluminium alloy
3	Piston rod	High-alloy stainless steel
4	Spindle	Steel
5	Spindle nut	Steel
6	Drive cover	Wrought aluminium alloy
Note on materials		Contains PWIS (paint-wetting impairment substances)
		RoHS-compliant

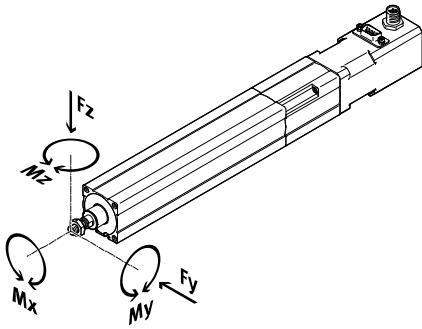
Piston rod deflection f as a function of projection l and lateral force F



Electric cylinders EPCO, with spindle drive

Technical data

Maximum permissible loads on the piston rod

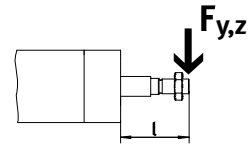


If there are two or more forces and torques simultaneously acting on the piston rod, the following equations must be satisfied:

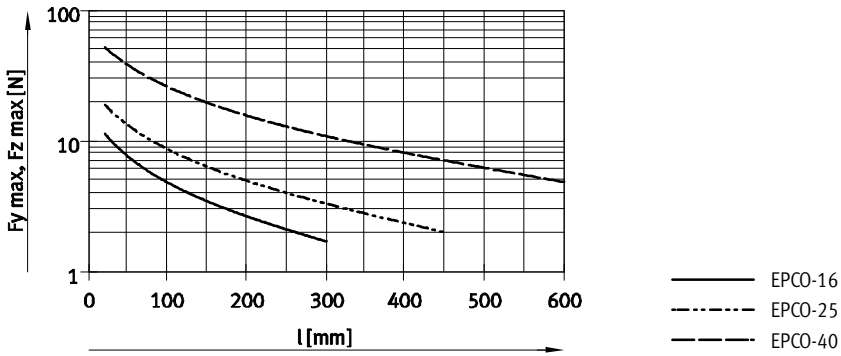
$$\frac{|F_y|}{F_{y_{max}}} + \frac{|F_z|}{F_{z_{max}}} + \frac{|M_y|}{M_{y_{max}}} + \frac{|M_z|}{M_{z_{max}}} \leq 1$$

$$|F_x| \leq F_{x_{max}}$$

$$|M_x| \leq M_{x_{max}}$$



Maximum permissible lateral forces $F_{y_{max}}$ and $F_{z_{max}}$ on the piston rod as a function of projection l



Size	16		25		40	
Spindle design	3P	8P	3P	10P	5P	12.7P
$F_{x_{max}}$ (static) [N]	125	50	350	105	650	250
$M_{x_{max}}$ [Nm]	0		0		0	
$M_{y_{max}}, M_{z_{max}}$ [Nm]	0.6		1.0		3.3	

Note
PositioningDrives
sizing software
→ www.festo.com

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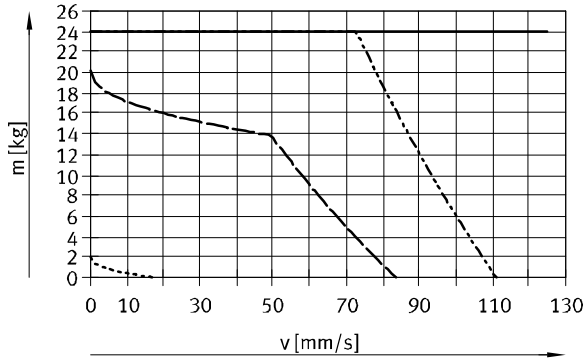
Technical data



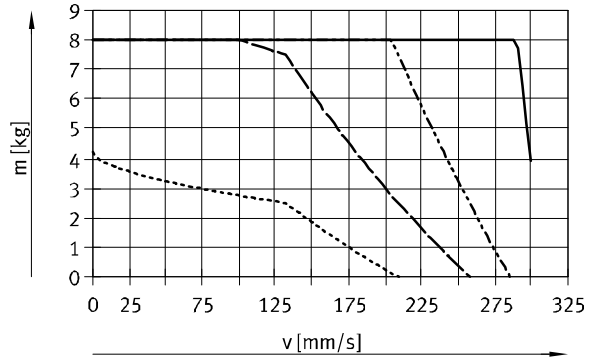
Effective load m as a function of speed v and acceleration a

Horizontal mounting position

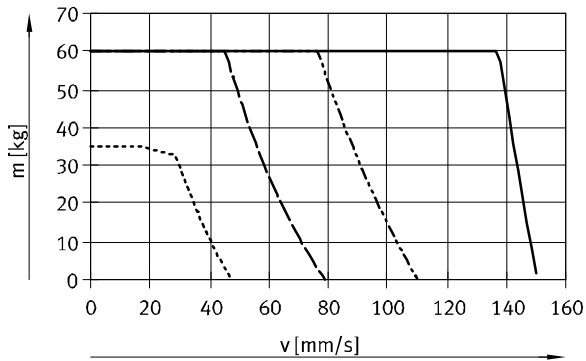
EPCO-16-3P



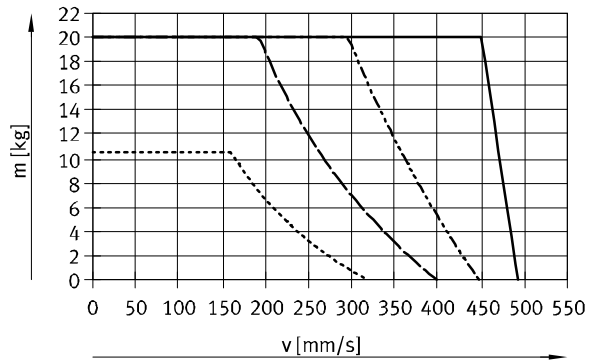
EPCO-16-8P



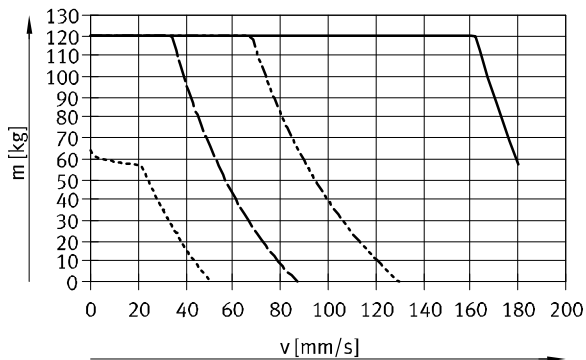
EPCO-25-3P



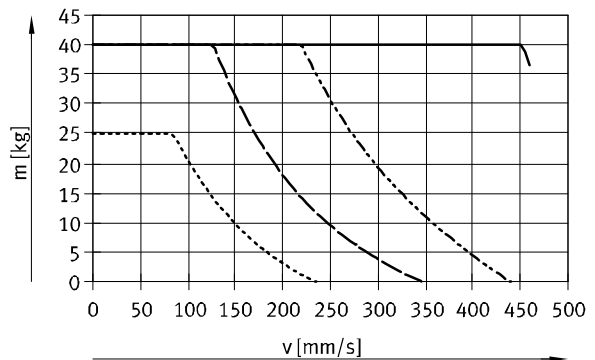
EPCO-25-10P



EPCO-40-5P



EPCO-40-12.7P



- $a = 0.5 \text{ m/s}^2$
- - - $a = 2.5 \text{ m/s}^2$
- · - $a = 5 \text{ m/s}^2$
- · · $a = 10 \text{ m/s}^2$

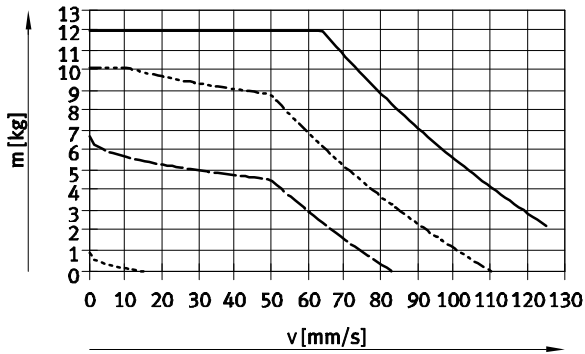
Electric cylinders EPCO, with spindle drive

Technical data

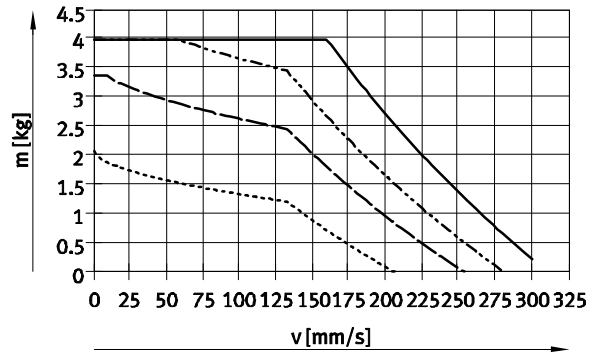
Effective load m as a function of speed v and acceleration a

Vertical mounting position

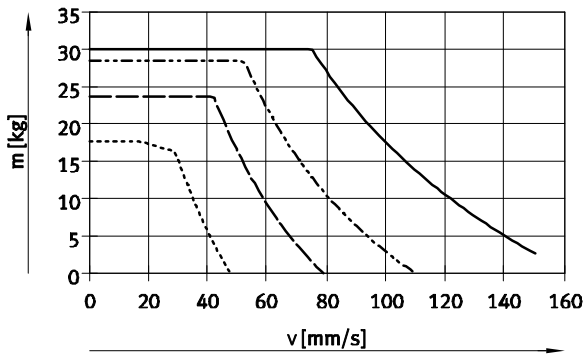
EPCO-16-3P



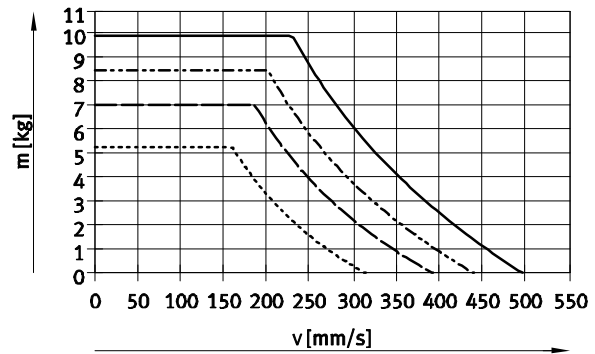
EPCO-16-8P



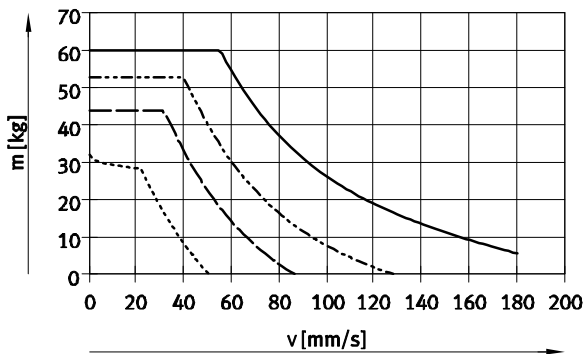
EPCO-25-3P



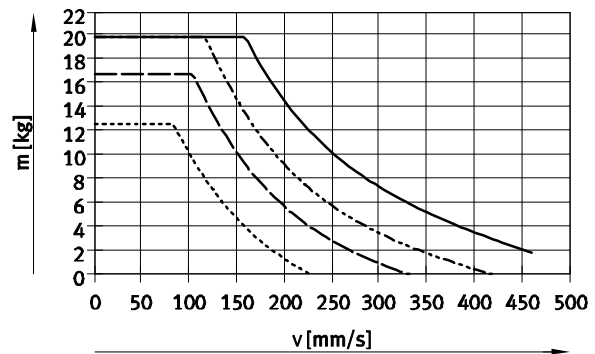
EPCO-25-10P



EPCO-40-5P



EPCO-40-12,7P



- $a = 0 \text{ m/s}^2$
- - - $a = 2.5 \text{ m/s}^2$
- · - $a = 5 \text{ m/s}^2$
- · · $a = 10 \text{ m/s}^2$

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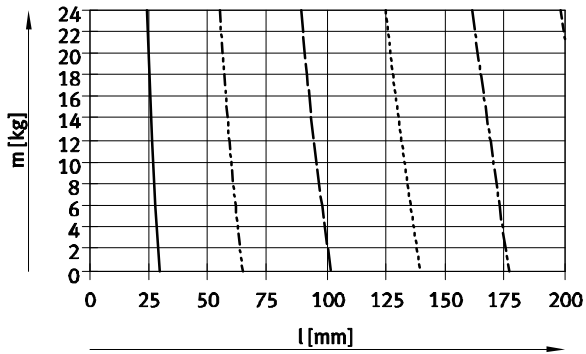
Technical data



Positioning time t as a function of effective load m and travel distance l

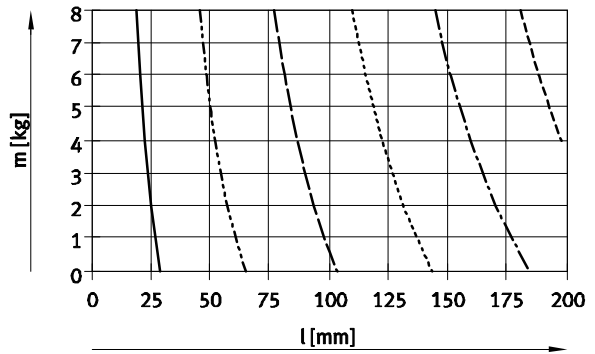
Horizontal mounting position

EPCO-16-3P



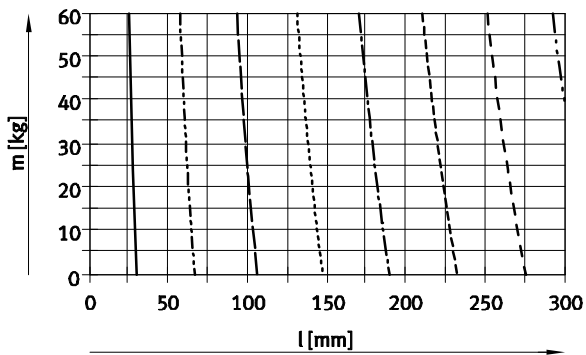
— $t = 0.3 \text{ s}$ - - - - - $t = 1.2 \text{ s}$
 - · - · - $t = 0.6 \text{ s}$ - - - - - $t = 1.5 \text{ s}$
 - - - - - $t = 0.9 \text{ s}$ - - - - - $t = 1.8 \text{ s}$

EPCO-16-8P



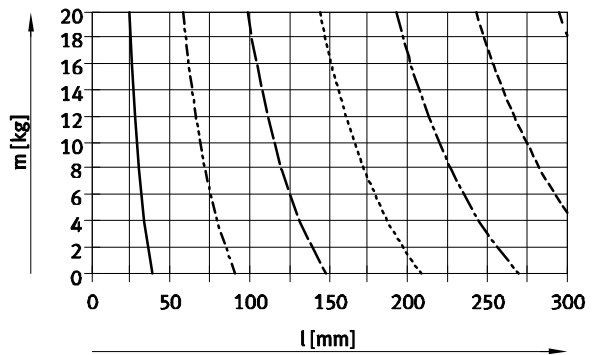
— $t = 0.15 \text{ s}$ - - - - - $t = 0.6 \text{ s}$
 - · - · - $t = 0.3 \text{ s}$ - - - - - $t = 0.75 \text{ s}$
 - - - - - $t = 0.45 \text{ s}$ - - - - - $t = 0.9 \text{ s}$

EPCO-25-3P



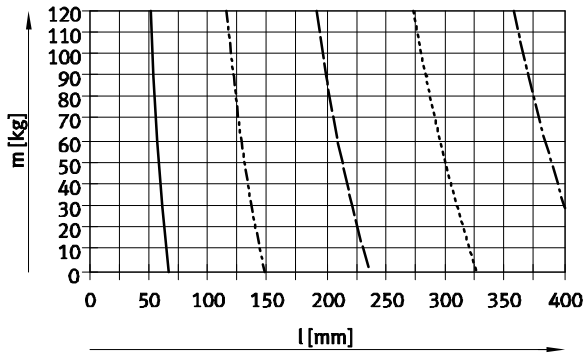
— $t = 0.3 \text{ s}$ - - - - - $t = 1.5 \text{ s}$
 - · - · - $t = 0.6 \text{ s}$ - - - - - $t = 1.8 \text{ s}$
 - - - - - $t = 0.9 \text{ s}$ - - - - - $t = 2.1 \text{ s}$
 - - - - - $t = 1.2 \text{ s}$ - - - - - $t = 2.4 \text{ s}$

EPCO-25-10P



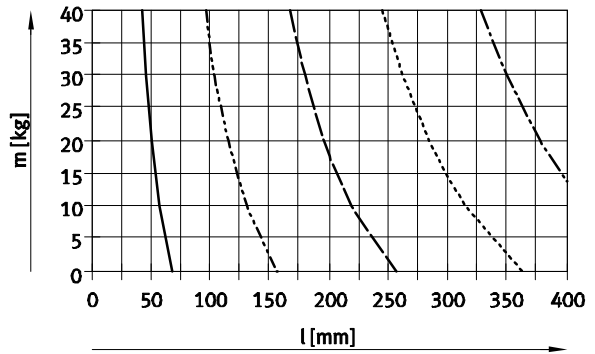
— $t = 0.15 \text{ s}$ - - - - - $t = 0.75 \text{ s}$
 - · - · - $t = 0.30 \text{ s}$ - - - - - $t = 0.90 \text{ s}$
 - - - - - $t = 0.45 \text{ s}$ - - - - - $t = 1.05 \text{ s}$
 - - - - - $t = 0.60 \text{ s}$

EPCO-40-5P



— $t = 0.5 \text{ s}$ - - - - - $t = 2.0 \text{ s}$
 - · - · - $t = 1.0 \text{ s}$ - - - - - $t = 2.5 \text{ s}$
 - - - - - $t = 1.5 \text{ s}$

EPCO-40-12,7P



— $t = 0.25 \text{ s}$ - - - - - $t = 1.00 \text{ s}$
 - · - · - $t = 0.50 \text{ s}$ - - - - - $t = 1.25 \text{ s}$
 - - - - - $t = 0.75 \text{ s}$

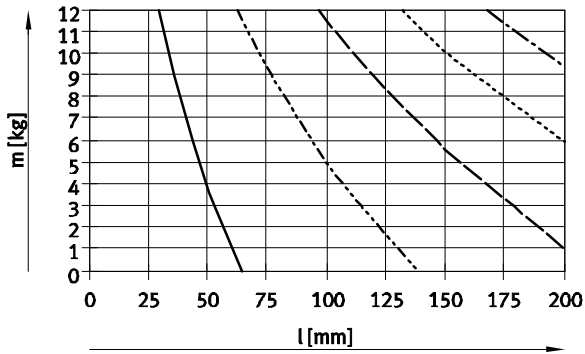
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Technical data

Positioning time t as a function of effective load m and travel distance l

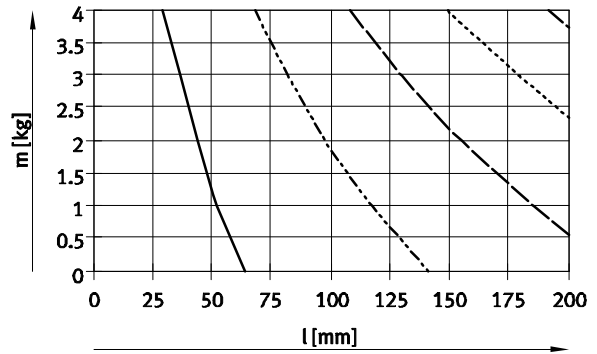
Vertical mounting position

EPCO-16-3P



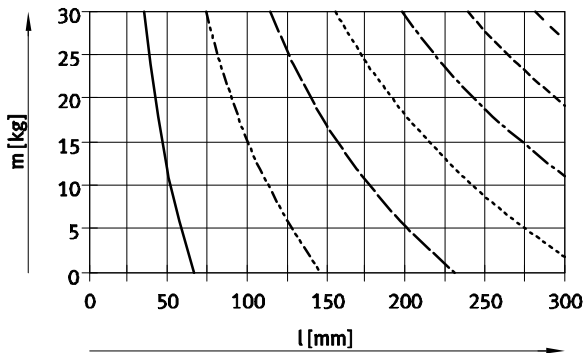
- $t = 0.6 \text{ s}$
- $t = 1.2 \text{ s}$
- - - $t = 1.8 \text{ s}$
- · - $t = 2.4 \text{ s}$

EPCO-16-8P



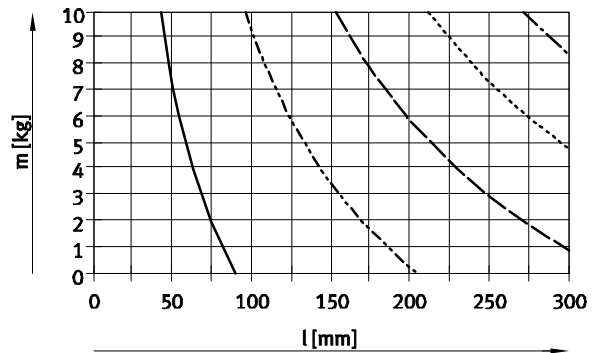
- $t = 0.3 \text{ s}$
- $t = 0.6 \text{ s}$
- - - $t = 0.9 \text{ s}$
- · - $t = 1.2 \text{ s}$

EPCO-25-3P



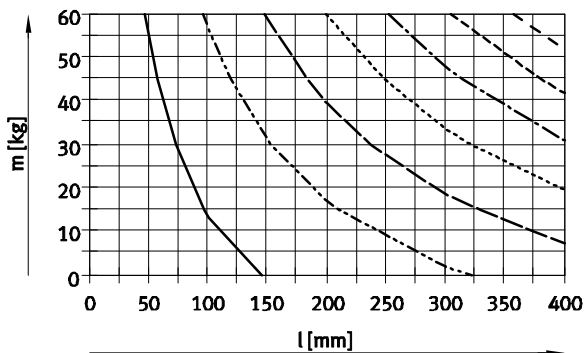
- $t = 0.6 \text{ s}$
- $t = 1.2 \text{ s}$
- - - $t = 1.8 \text{ s}$
- · - $t = 2.4 \text{ s}$
- · · $t = 3.0 \text{ s}$
- - - $t = 3.6 \text{ s}$

EPCO-25-10P



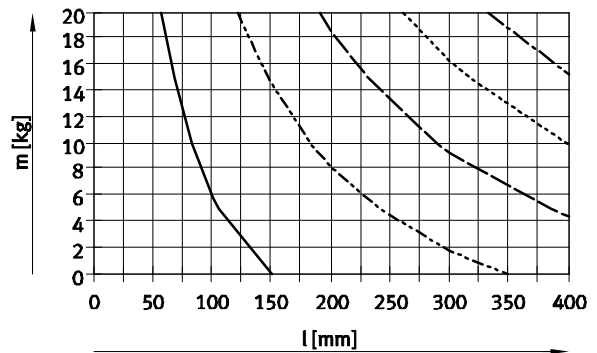
- $t = 0.3 \text{ s}$
- $t = 0.6 \text{ s}$
- - - $t = 0.9 \text{ s}$
- · - $t = 1.2 \text{ s}$

EPCO-40-5P



- $t = 1 \text{ s}$
- $t = 2 \text{ s}$
- - - $t = 3 \text{ s}$
- · - $t = 4 \text{ s}$
- · · $t = 5 \text{ s}$
- - - $t = 6 \text{ s}$

EPCO-40-12,7P



- $t = 0.5 \text{ s}$
- $t = 1.0 \text{ s}$
- - - $t = 1.5 \text{ s}$
- · - $t = 2.0 \text{ s}$
- · · $t = 2.5 \text{ s}$

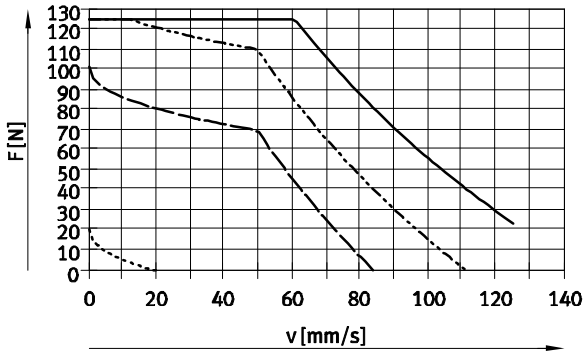
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Technical data

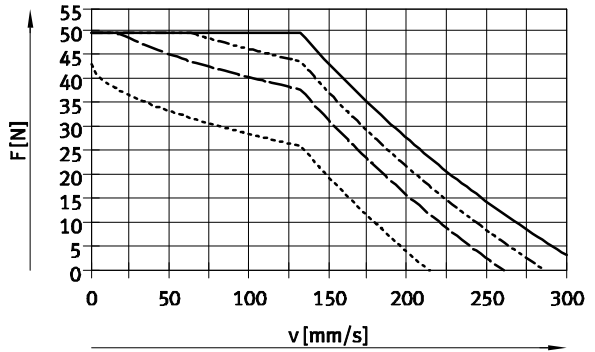


Feed force F as a function of speed v and acceleration a

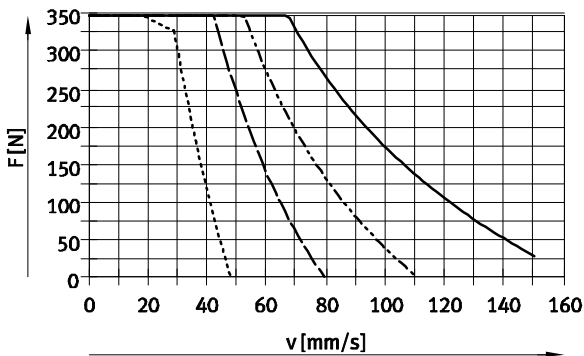
EPCO-16-3P



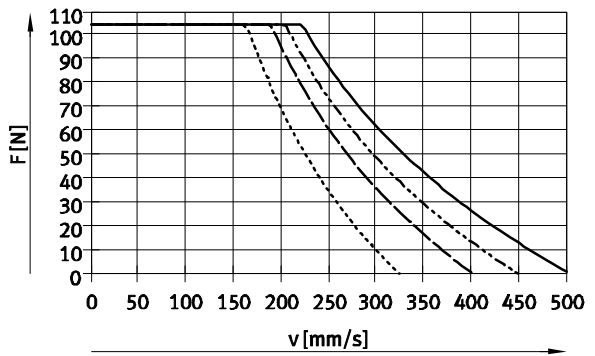
EPCO-16-8P



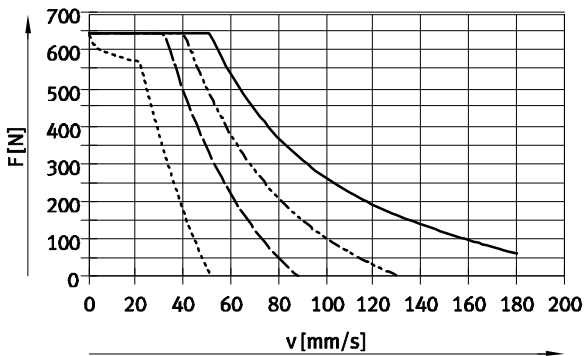
EPCO-25-3P



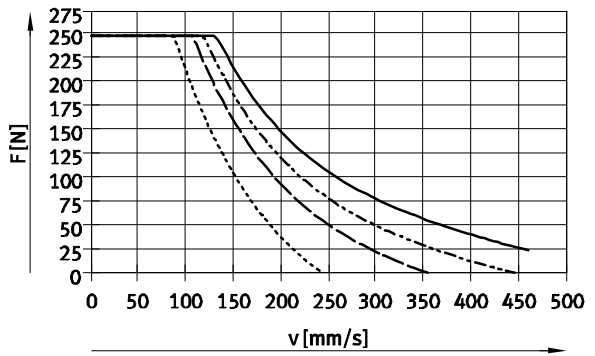
EPCO-25-10P



EPCO-40-5P



EPCO-40-12,7P



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

Electric cylinders EPCO, with spindle drive

Technical data

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 spindle. The maximum speed must likewise not be exceeded.

$$F_x \leq F_{x\max}$$

and

$$v_x \leq v_{x\max}$$

Mean feed force (to DIN 69 051-4)

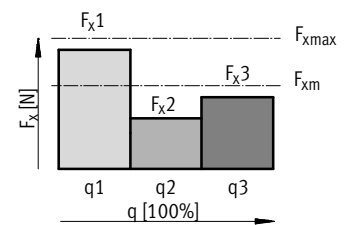
During operation, the continuous feed force may be briefly exceeded up to the maximum feed force. The continu-

ous feed force must, however, be adhered to when averaged over a movement cycle.

$$F_{xm} \leq F_{\text{continuous}}$$

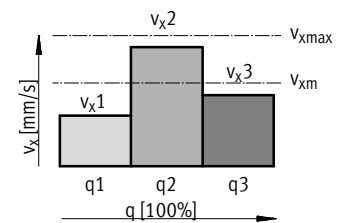
$$F_{xm} = \sqrt[3]{\sum F_x^3 \times \frac{v_x}{v_{xm}} \times \frac{q}{100}} =$$

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



Mean feed speed (to DIN 69 051-4)

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



F_x	Feed force	v_x	Feed speed
F_{xm}	Mean feed force	v_{xm}	Mean feed speed
$F_{x\max}$	Max. feed force	$v_{x\max}$	Max. feed speed
$F_{x\text{continuous}}$	Continuous feed force		
q	Time		

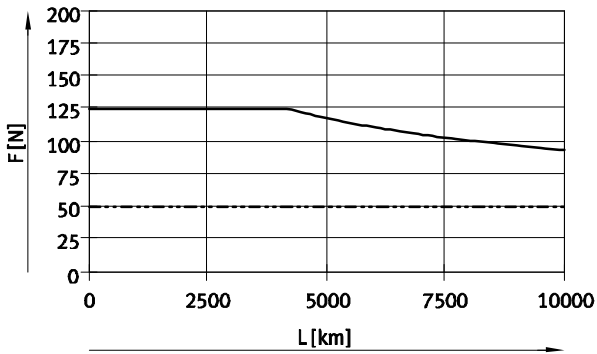
Electric cylinders EPCO, with spindle drive

Technical data



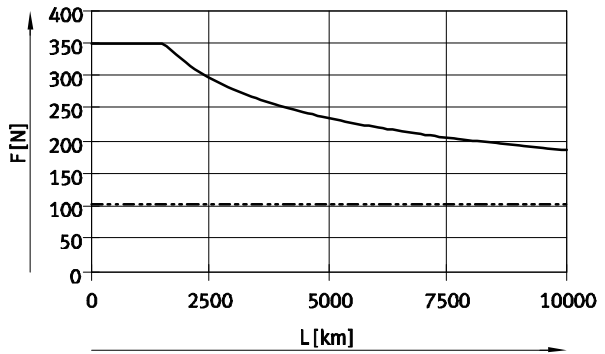
Mean feed force F as a function of running performance L (to DIN 69 051-4)

EPCO-16



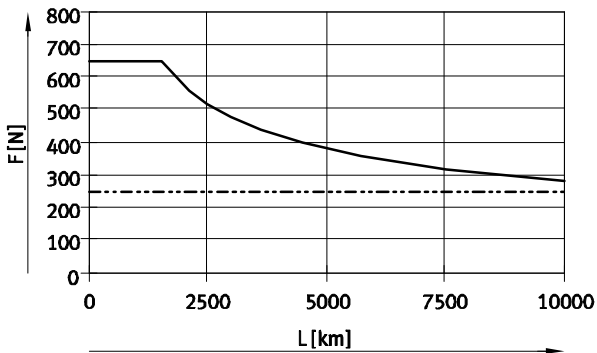
— EPCO-16-3P
- - - EPCO-16-8P

EPCO-25




— EPCO-25-3P
- - - EPCO-25-10P

EPCO-40



— EPCO-40-5P
- - - EPCO-40-12,7P

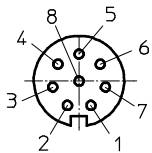
 Note

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

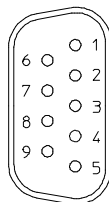
Pin allocation

Motor

EPCO-16

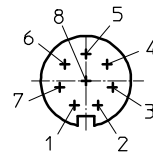


EPCO-25/-40



Encoder

EPCO-16/-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⁾
-	-

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.

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

1) Only on motors with brake.

Electric cylinders EPCO, with spindle drive

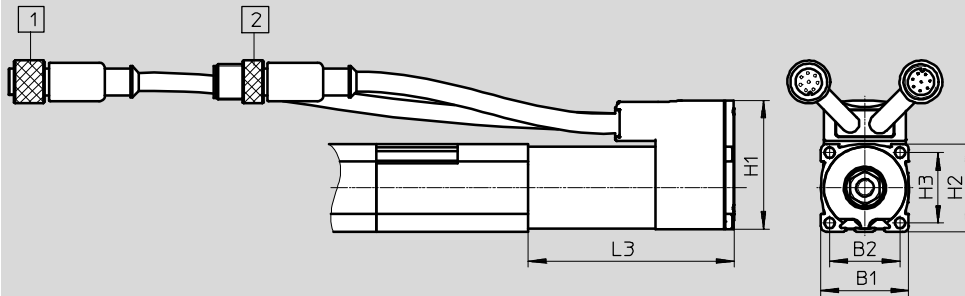
Technical data

FESTO

Dimensions

Download CAD data → www.festo.com

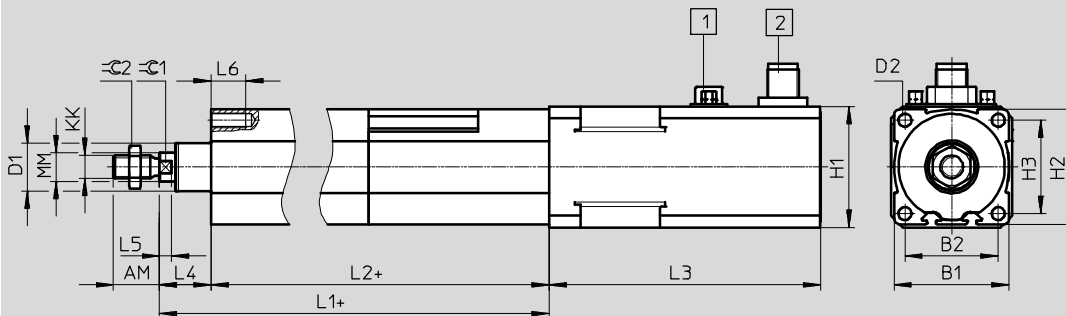
Size 16



1 Motor connection:
Round plug M12, 8-pin, socket
cable length: 350 mm

2 Encoder connection:
Round plug M12, 8-pin, pins
cable length: 250 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
[mm]	-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

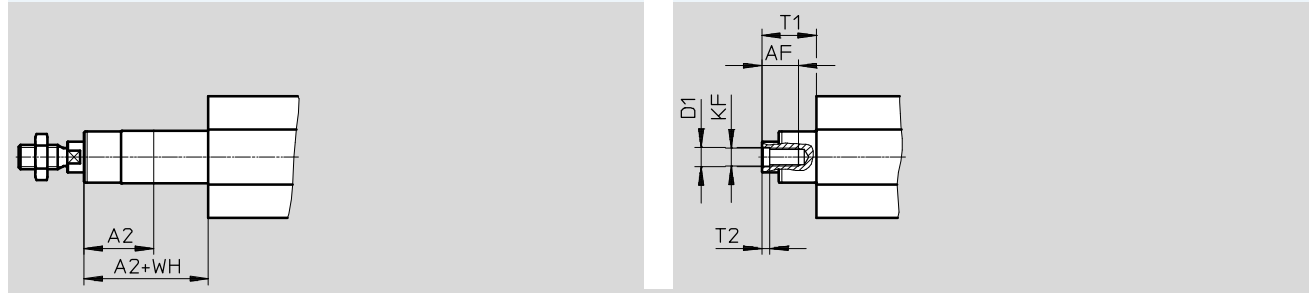
Size	L3				L4	L5	L6	MM	≈C1	≈C2
	EPCO-...									
[mm]	-E	-B	-EB		-0.15		-0.1			
16	70±1	70±1	96±1.5	96±1.5	16	3.7	10	8	7	10
25	66±1	94.4±1.2	114.4±1.3	127.4±1.3	18	4.2	12	10	9	13
40	73.5±0.8	102.5±1.1	123.5±1.1	138±1.1	21.5	4.7	14	12	10	17

Electric cylinders EPCO, with spindle drive

Technical data

Dimensions Download CAD data → www.festo.com

Variants
 E – Extended piston rod F – Female piston rod thread



Size [mm]	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


Electric cylinders EPCO, with spindle drive


Technical data

Ordering data – EPCO-16 (stock items)					
Stroke [mm]	Part No.	Type	Stroke [mm]	Part No.	Type
Spindle pitch 3 mm, with encoder			Spindle pitch 8 mm, 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 (stock items)					
Stroke [mm]	Part No.	Type	Stroke [mm]	Part No.	Type
Spindle pitch 3 mm, with encoder			Spindle pitch 10 mm, 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 (stock items)					
Stroke [mm]	Part No.	Type	Stroke [mm]	Part No.	Type
Spindle pitch 5 mm, with encoder			Spindle pitch 12.7 mm, 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 → 20

 - Note
 Position sensing is only possible in combination with feature "A" (position sensing) → 20 (modular product system)

Electric cylinders EPCO, with spindle drive

Ordering data – Modular products

Ordering table						
Size	16	25	40	Condi- tions	Code	Enter code
M 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 [mm]	3	3			-...P	
			5			
	8					
		10				
			12.7			
O Piston rod thread type	Male thread					
	Female thread				-F	
Piston rod extension [mm]	None					
	1 ... 100	1 ... 150	1 ... 200		-...E	
Position sensing	None					
	Via proximity sensor			1	-A	
M Motor type	Stepper motor				-ST	ST

1 A Must be selected if encoder E is not selected.

M Mandatory data

O Options

Transfer order code

Electric cylinders EPCO, with spindle drive

Ordering data – Modular products

Ordering table						
Size	16	25	40	Condi- tions	Code	Enter code
0 Measuring unit	None					
	Encoder				-E	
Brake	None					
	Brake				B	
Cable outlet direction	Standard					
	Underneath				-D	
	Left				-L	
	Right				-R	
Connecting cable to motor controller, suitable for use with energy chains	1.5 m, straight plug			2	+1.5E	
	1.5 m, angled plug			2	+1.5EA	
	2.5 m, straight plug			2	+2.5E	
	2.5 m, angled plug			2	+2.5EA	
	5 m, straight plug			2	+5E	
	5 m, angled plug			2	+5EA	
	7 m, straight plug			2	+7E	
	7 m, angled plug			2	+7EA	
	10 m, straight plug			2	+10E	
	10 m, angled plug			2	+10EA	
Controller type	None					
	CMMO, 5 A			2	+C5	
Bus protocol/activation	None					
	Digital I/O interface			3	DIO	
Switching input/output	NPN			3	N	
	PNP			3	P	

- 2 1.5E, 1.5EA, 2.5E, 2.5EA, 5E, 5EA, 7E, 7EA, 10E, 10EA, C5 Only with encoder E.
- 3 DIO, N, P Only in conjunction with CMMO, 5 A (controller type).

M Mandatory data
O Options

Transfer order code

- - + +

Electric cylinders EPCO, with spindle drive

Accessories

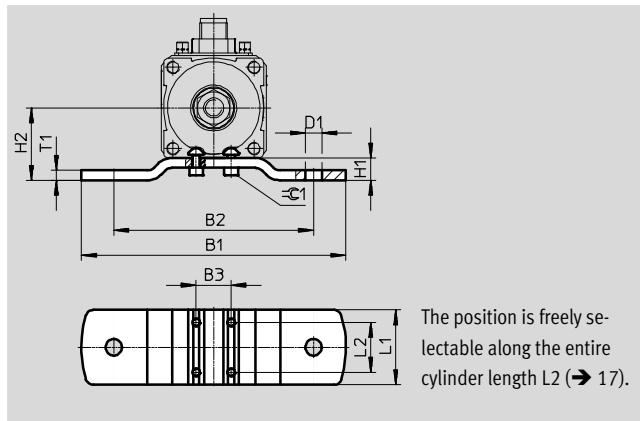
FESTO

Foot mounting EAHF

Material:

Galvanised steel

RoHS-compliant



Dimensions and ordering data							
For size	B1	B2	B3	D1 Ø	H1	H2	L1
[mm]							
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	≈C1	CRC ¹⁾	Weight	Part No.	Type
[mm]					[g]		
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. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Electric cylinders EPCO, with spindle drive

Accessories

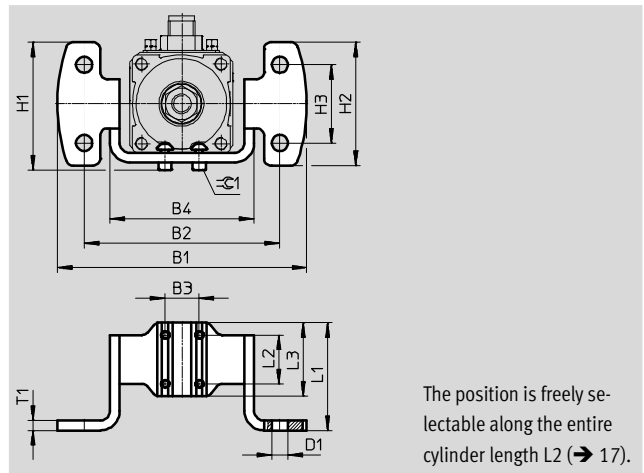


Flange mounting EAHH

Material:

Galvanised steel

RoHS-compliant



The position is freely selectable along the entire cylinder length L2 (→ 17).

Dimensions and ordering data									
For size	B1	B2	B3	B4	D1 ∅	H1	H2	H3	L1
[mm]									
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	≈∅1	CRC ¹⁾	Weight	Part No.	Type
[mm]						[g]		
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. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Electric cylinders EPCO, with spindle drive

Accessories

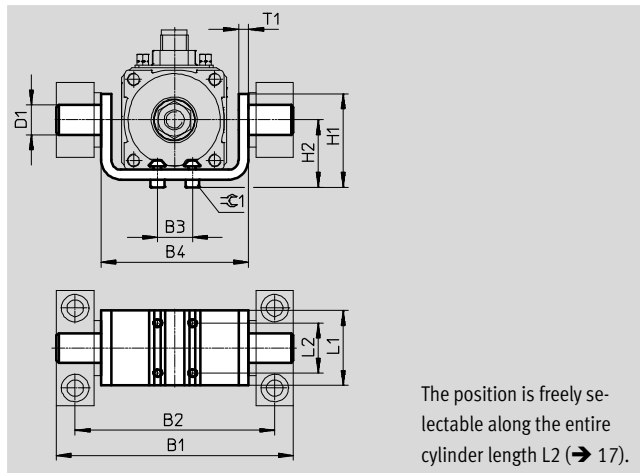


Swivel mounting EAHS

Material:

Galvanised steel

RoHS-compliant



The position is freely selectable along the entire cylinder length L2 (→ 17).

Dimensions and ordering data							
For size	B1	B2	B3	B4	D1	H1	H2
[mm]					∅ e9		
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	Part No.	Type
[mm]						[g]		
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. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Electric cylinders EPCO, with spindle drive

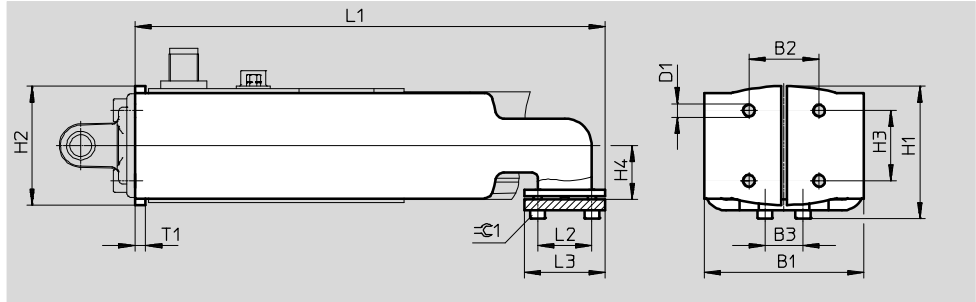
Accessories

Adapter kit EAHA

Material:

Galvanised steel

RoHS-compliant



Dimensions and ordering data								
For size	B1	B2	B3	D1	H1	H2	H3	H4
[mm]								
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	≈C1	CRC ¹⁾	Weight	Part No.	Type
[mm]							[g]		
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. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Electric cylinders EPCO, with spindle drive

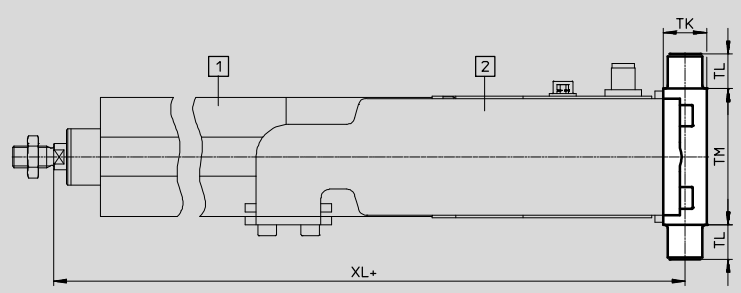
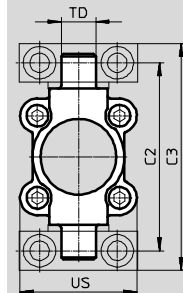
Accessories



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

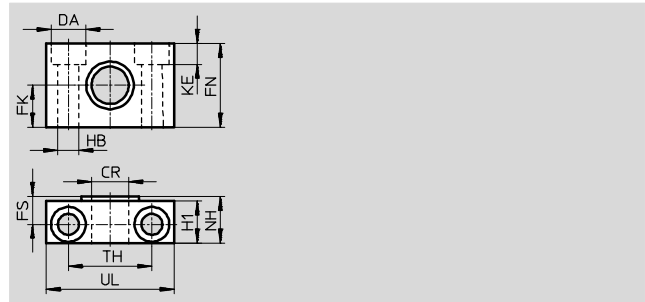
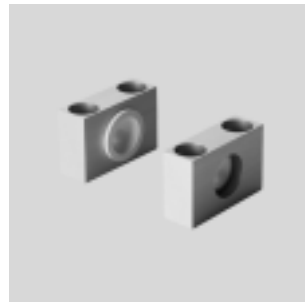
The trunnion flange ZNCF cannot be mounted when turned by 90°.

Dimensions and ordering data															
For size	C2	C3	TD ∅ e9	TK	TL	TM	US	XL				CRC ¹⁾	Weight [g]	Part No.	Type
								EPCO-...	-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 may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Trunnion support LNZG

Material:
Trunnion support: Anodised aluminium
Plain bearing: Plastic
Free of copper and PTFE
RoHS-compliant



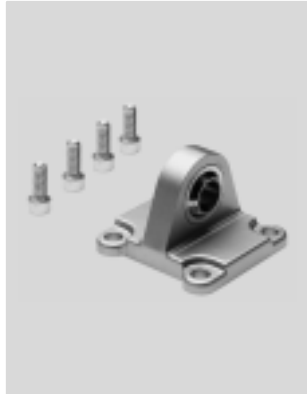
Dimensions and ordering data															
For size	CR	DA	FK	FN	FS	H1	HB	KE	NH	TH	UL	CRC ¹⁾	Weight [g]	Part No.	Type
	∅	∅	∅			∅				±0.2					
16	8	8	10	20	7.5	11	4.5	4.6	13	20	30	2	26	1434912	LNZG-16
25	12	11	15	30	10.5	15	6.6	6.8	18	32	46	2	83	32959	LNZG-32
40	16	15	18	36	12	18	9	9	21	36	55	2	129	32960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

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Electric cylinders EPCO, with spindle drive

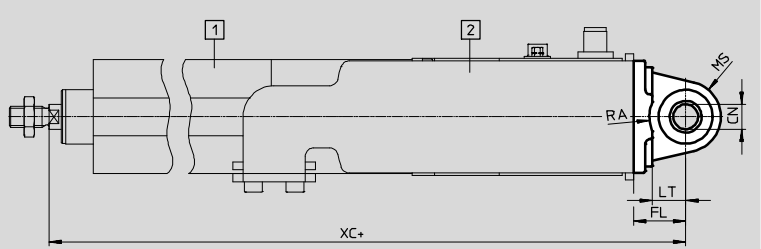
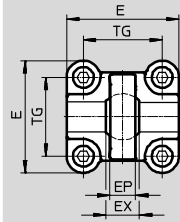
Accessories

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	E	EP	EX	FL	LT	MS	RA	TG
[mm]	∅		+0.2		±0.2			+1	
40	12 ^{+0.015}	54 _{-0.5}	12	16	25	16	17 ^{+0.5}	17.5	38

For size	XC				CRC ¹⁾	Weight	Part No.	Type
	EPCO-...	-E	-B	-EB				
[mm]						[g]		
40	321.7	350.7	371.7	386.2	2	122	174398	SNCS-40

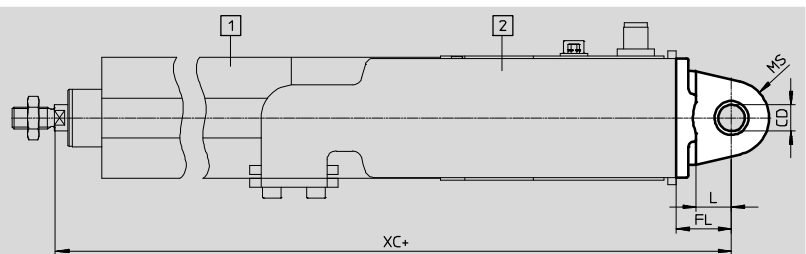
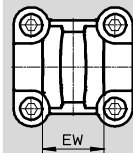
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

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	EW	FL	L	MR	XC				CRC ¹⁾	Weight	Part No.	Type
						EPCO-...	-E	-B	-EB				
[mm]	∅	h12	±0.2		-0.5						[g]		
16	6	12	16	10	6	237	237	263	263	2	25	537791	SNCL-16
25	8	16	20	14	8	269.6	298	318	331	2	45	537793	SNCL-25
40	12	28	25	16	12	321.7	350.7	371.7	386.2	2	100	174405	SNCL-40

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

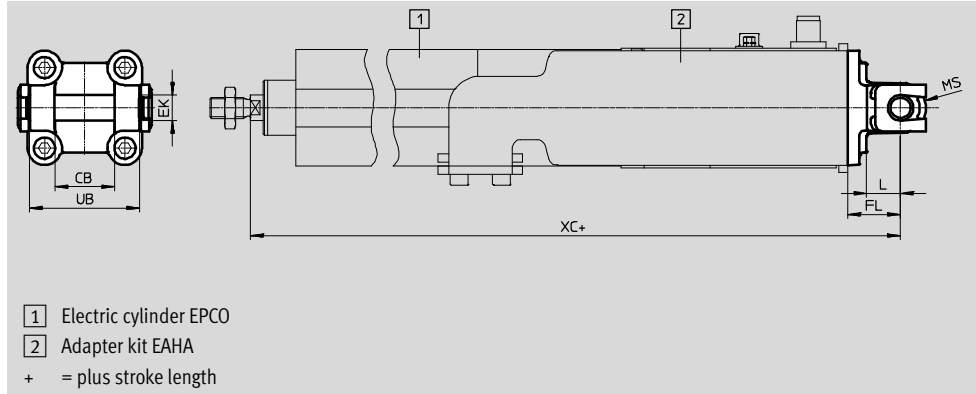
Electric cylinders EPCO, with spindle drive

Accessories

Swivel flange SNCB

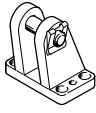
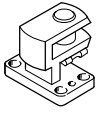
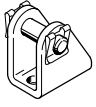
Material:
Die-cast aluminium

Free of copper and PTFE
RoHS-compliant








Dimensions and ordering data														
For size [mm]	CB	EK ∅	FL ±0.2	L	MR	UB h14	XC			CRC ¹⁾	Weight [g]	Part No.	Type	
							EPCO-...	-E	-B					-EB
40	28	12	25	16	12	52	321.7	350.7	371.7	386.2	2	155	174391	SNCB-40


1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.



Ordering data – Mounting attachments				Technical data → Internet: clevis foot			
Designation	For size	Part No.	Type	Designation	For size	Part No.	Type
Clevis foot LBG				Right-angle clevis foot LQG			
	40	31762	LBG-40		40	31769	LQG-40
Clevis foot LBN							
	16	6058	LBN-12/16				
	25	6059	LBN-20/25				
	40	195861	LBN-40				




Electric cylinders EPCO, with spindle drive

Accessories

Ordering data – Piston rod attachments				Technical data → Internet: piston rod attachment			
Designation	For size	Part No.	Type	Designation	For size	Part No.	Type
Rod eye SGS				Rod clevis SG			
	16	9254	SGS-M6		16	3110	SG-M6
	25	9255	SGS-M8		25	3111	SG-M8
	40	9261	SGS-M10x1,25		40	6144	SG-M10x1,25
Self-aligning rod coupler FK							
	16	2061	FK-M6				
	25	2062	FK-M8				
	40	6140	FK-M10x1,25				
Coupling piece KSG				Rod clevis SGA			
	40	32963	KSG-M10x1,25		40	32954	SGA-M10x1,25

 Note
 Position sensing is only possible in combination with feature "A" (position sensing) → 20 (modular product system)


Ordering data – Proximity sensors for T-slot, magneto-resistive				Technical data → Internet: smt			
	Type of mounting	Switch output	Electrical connection	Cable length [m]	Part No.	Type	
N/O contact							
	Insertable in the slot from above, flush with 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	
		NPN	Plug M12x1, 3-pin	0.3	574337	SMT-8M-A-PS-24V-E-0,3-M12	
			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 cylinder profile, short design	PNP	Cable, 3-wire	7.5	574340	SMT-8M-A-PO-24V-E-7,5-OE	

Ordering data – Proximity sensor for T-slot, magnetic reed				Technical data → 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	
	Insertable in the slot lengthwise, flush with the cylinder profile	Contacting	Cable, 3-wire	2.5	150855	SME-8-K-LED-24	
			Plug M8x1, 3-pin	0.3	150857	SME-8-S-LED-24	
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	

Electric cylinders EPCO, with spindle drive

Accessories

FESTO

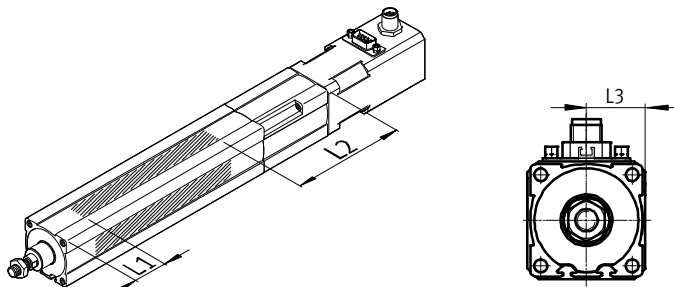
Ordering data – Connecting cable				Technical data → Internet: km8	
	Mounting	Connection	Cable length [m]	Part No.	Type
Straight socket					
	Union nut M8, both ends	3-pin	0.5	175488	KM8-M8-GSGD-0,5
			1	175489	KM8-M8-GSGD-1
			2.5	165610	KM8-M8-GSGD-2,5
			5	165611	KM8-M8-GSGD-5

Sensor mounting

The sensor mountings can only be attached within the highlighted area due to the asymmetry of the internal magnets.

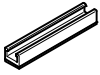

The proximity sensors may not switch reliably if they are mounted outside of this area.

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 sensors.



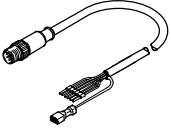
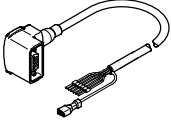
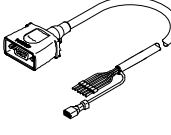
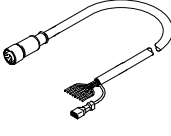
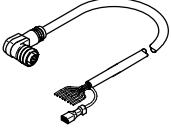
Size	L1	L2	L3
16	29	95	15
25	33	121	20
40	40	150	27.5

Ordering data – Sensor mounting for T-slot

	For size	Brief description	Length [mm]	Part No.	Type
Sensor rail¹⁾					
	16, 25, 40	Size 25 can only be used with proximity sensor 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

Electric cylinders EPCO, with spindle drive

Accessories

Ordering data – Cables ¹⁾					
	For type	Description	Cable length [m]	Part No.	Type
Motor cable					
	EPCO-16	Straight plug – Min. bending radius: 62 mm – Suitable for use with energy chains – Ambient temp.: –40 ... +80 °C	1.5	1449600	NEBM-M12G8-E-1.5-Q5-LE6
			2.5	1449601	NEBM-M12G8-E-2.5-Q5-LE6
			5	1449602	NEBM-M12G8-E-5-Q5-LE6
			7	1449603	NEBM-M12G8-E-7-Q5-LE6
			10	1449604	NEBM-M12G8-E-10-Q5-LE6
	EPCO-25/-40	Angled plug – Min. bending radius: 62 mm – Suitable for use with 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	1450738	NEBM-S1W9-E-5-Q5-LE6
			7	1450739	NEBM-S1W9-E-7-Q5-LE6
			10	1450740	NEBM-S1W9-E-10-Q5-LE6
	EPCO-16/-25/-40	Straight plug – Min. bending radius: 62 mm – Suitable for use with 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	1450370	NEBM-S1G9-E-5-Q5-LE6
			7	1450371	NEBM-S1G9-E-7-Q5-LE6
			10	1450372	NEBM-S1G9-E-10-Q5-LE6
Encoder cable					
	EPCO-16/-25/-40	Angled plug – Min. bending radius: 68 mm – Suitable for use with 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	1451588	NEBM-M12G8-E-5-LE8
			7	1451589	NEBM-M12G8-E-7-LE8
			10	1451590	NEBM-M12G8-E-10-LE8
	EPCO-25/-40	Straight plug – Min. bending radius: 68 mm – Suitable for use with 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	1451676	NEBM-M12W8-E-5-LE8
			7	1451677	NEBM-M12W8-E-7-LE8
			10	1451678	NEBM-M12W8-E-10-LE8

1) Other cable lengths on request.