

Electric cylinders CEMC



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Electric cylinders CEMC



Features

- Very compact, fully integrated design
- Inverted roller screw
- Lightweight material
- Highly efficient
- High-resolution position feedback system
- High-speed and acceleration capabilities
- Low maintenance requirements
- High quality

Benefits

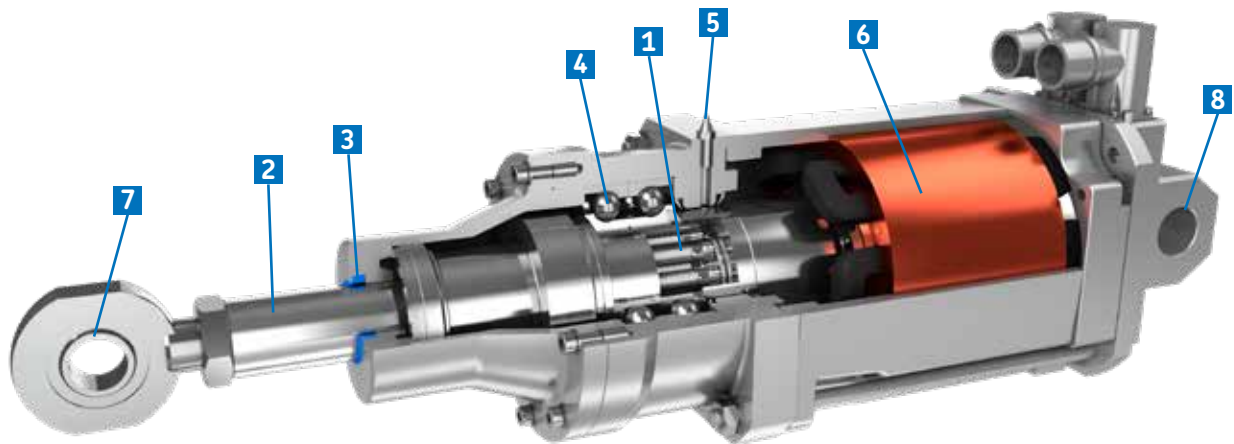
- Saves space
- Very high load capabilities compared to actuators with similar dimensions
- Allows for higher acceleration and higher speed of the robot arm
- Reduces energy consumption by 90% compared to pneumatic solutions
- Better quality through greater control of the process
- Faster production cycles
- Low noise

Product description

The CEMC actuators are based on inverted roller screw core technology that allows integration of the servo motor directly on the screw nut, resulting in a very compact yet powerful solution. Beside dimensions, this design also minimizes inertia, thus allowing excellent control, responsive performance, significantly improved cycle times, and high productivity.

This product range provides high power density in a small package. Approximately 40 % shorter than typical electromechanical cylinders, they are an ideal solution when compactness and power den-

sity are needed to replace fluid powered cylinders. Moreover, there is the added advantage of reduced weight, an important feature for robot arms installations. The automotive industry is a heavy user of industrial robots with an average of 300 welding robots in operation per production line. Even though the installed base of industrial welding robots uses pneumatic and hydraulic actuators, there is a growing trend toward the electromechanical process. This is not only because of the increased desire for energy savings but also because of the enhanced speed and quality of the welding operation that CEMC actuators can provide.



- 1** High quality SKF planetary and inverted roller screw for highest axial loads with low play and high efficiency
- 2** Push tube
- 3** Scraper to keep out contaminants
- 4** High quality angular contact ball bearings

- 5** Lubrication nipple
- 6** Integrated servo motor
- 7** Rod end
- 8** Back attachment (rear clevis)

Drive options

The performance attributes shown in the table on the previous page are the result of specific Lenze servo motor and drive combinations. The CEMC can be offered with or without the servodrive. The servodrive can be in the recommended configuration or any other configuration that fits your installation.

In the case of a different combination, please contact SKF to determine what effect the different configuration will have on the performance of the actuator.

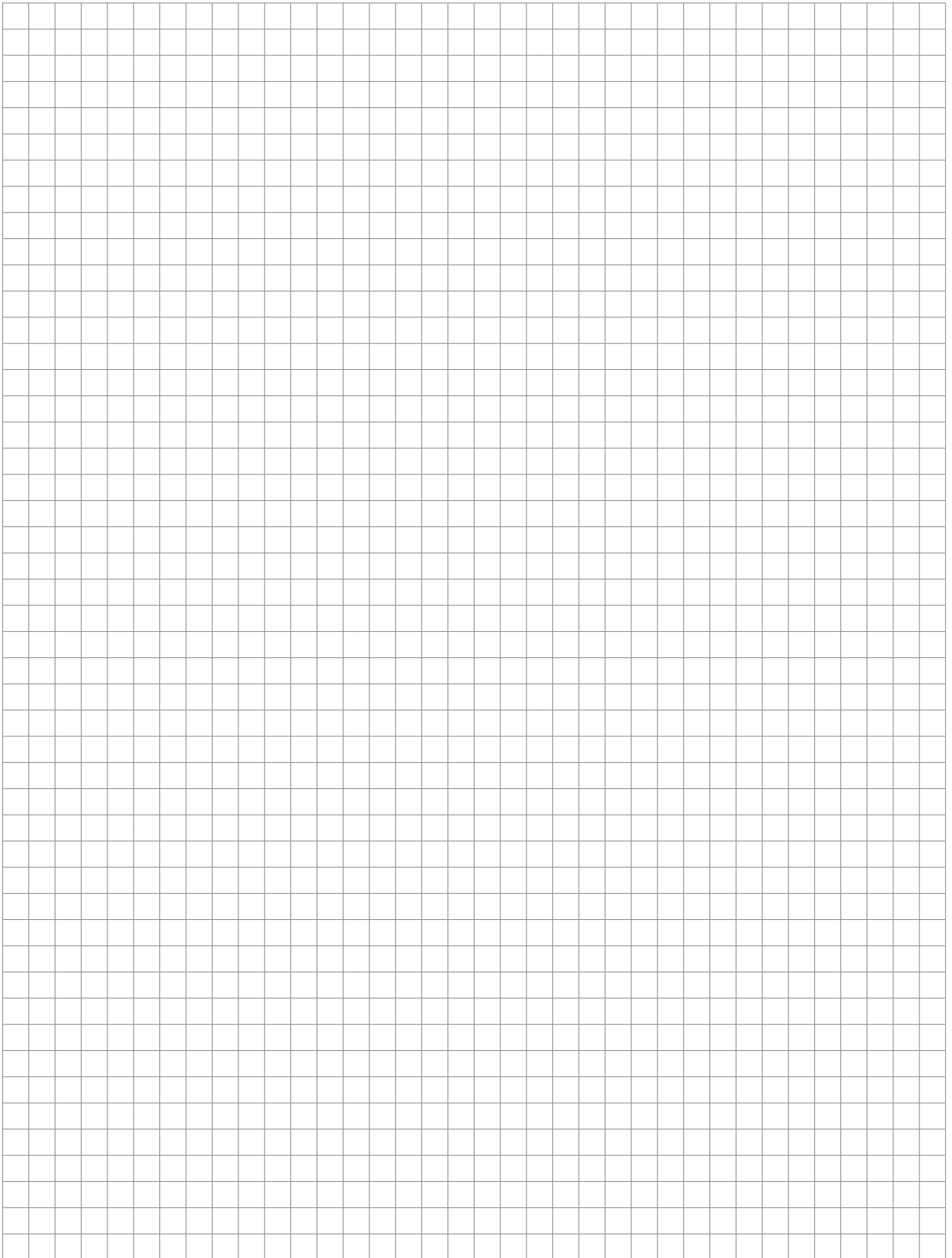
Performance overview of actuators							
Linear unit	Motor	SKF drive ref.	Lenze drive ref.	Housing	F _{c0}	F _{p0}	V _{max}
					kN		mm/s
CEMC-1804	42J	LC07	E94ASHE0074	Compact	4,7	10,3	350
CEMC-2404	62L	LC13	E94ASHE0134	Compact	8,8	23,8	333
CEMC-2404	63I	LC13	E94ASHE0134	Compact	13,2	28,0	333
CEMC-2406	62L	LC13	E94ASHE0134	Compact	5,8	15,9	500
CEMC-2406	63I	LC13	E94ASHE0134	Compact	8,8	18,6	500

3D models

Product configurators for 3D models download are available on skf.com/cemc



3D model configurator



CEMC-1804

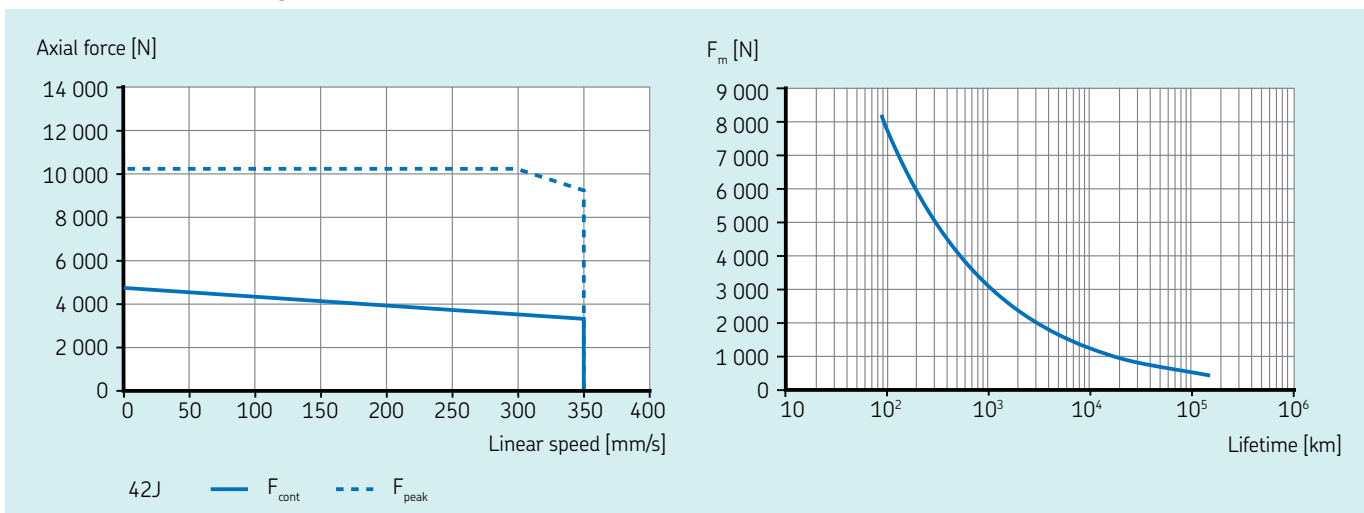
Electric cylinder



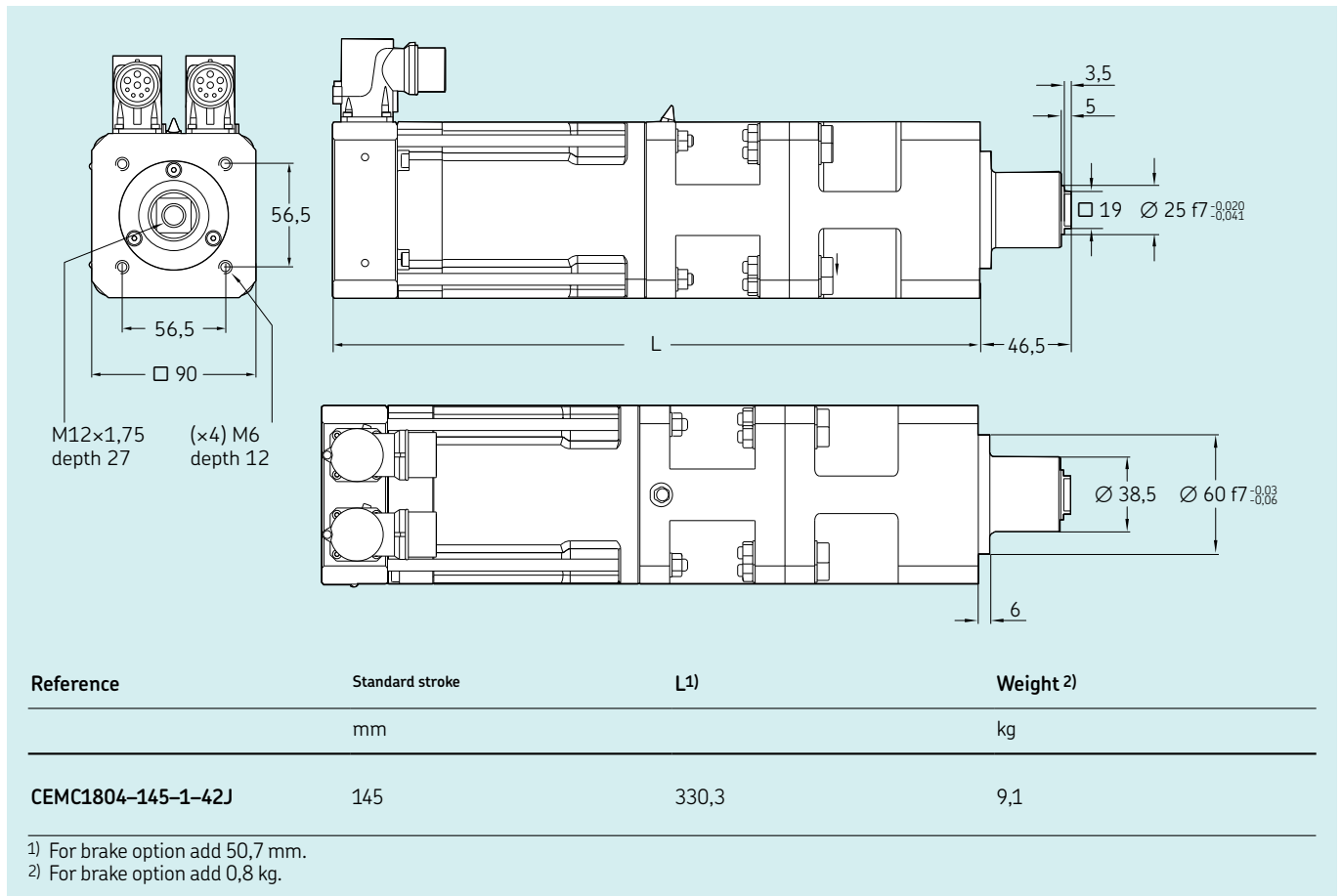
Technical data

Designation	Symbol	Unit	Motor 42J
Performance Data			
Continuous force @ zero speed	F_{c0}	kN	4,7
Continuous force @ max. speed	F_c	kN	3,3
Peak force @ zero speed	F_{p0}	kN	10,3
Peak force @ max. speed	F_p	kN	9,6
Dynamic load capacity	C	kN	26,6
Holding force (motorbrake option)	F_{Hold}	kN	12,9
Max. linear speed	v_{max}	mm/s	350
Max. acceleration	a_{max}	m/s ²	5,3
Duty cycle	D	%	100
Mechanical Data			
Screw type	—	—	IRS
Screw diameter	d_{screw}	mm	18
Screw lead	p_{screw}	mm	3,75
Lead accuracy	—	—	G5
Stroke	s	mm	145
Internal overstroke each side	s_0	mm	1
Backlash	$s_{backlash}$	mm	0,02
Gear reduction	i	—	Direct drive
Inertia	J	10 ⁻⁴ kgm ²	9,9
Inertia of optional brake	J_{brake}	10 ⁻⁴ kgm ²	0,2
Weight	m	kg	See dimensional drawing
Weight of optional brake	m_{brake}	kg	0,8
Electrical Data			
Motor type	—	—	Servo
Nominal voltage	U	VAC	400
Nominal current	I	A	3,6
Peak current	I_{peak}	A	11,3
Nominal power	P	kW	1,6
Environment			
Ambient temperature	$T_{ambient}$	°C	0...+40
Degree of protection	IP	—	54S

Performance diagrams



Dimensional drawing



Ordering key

See page 14

CEMC-2404

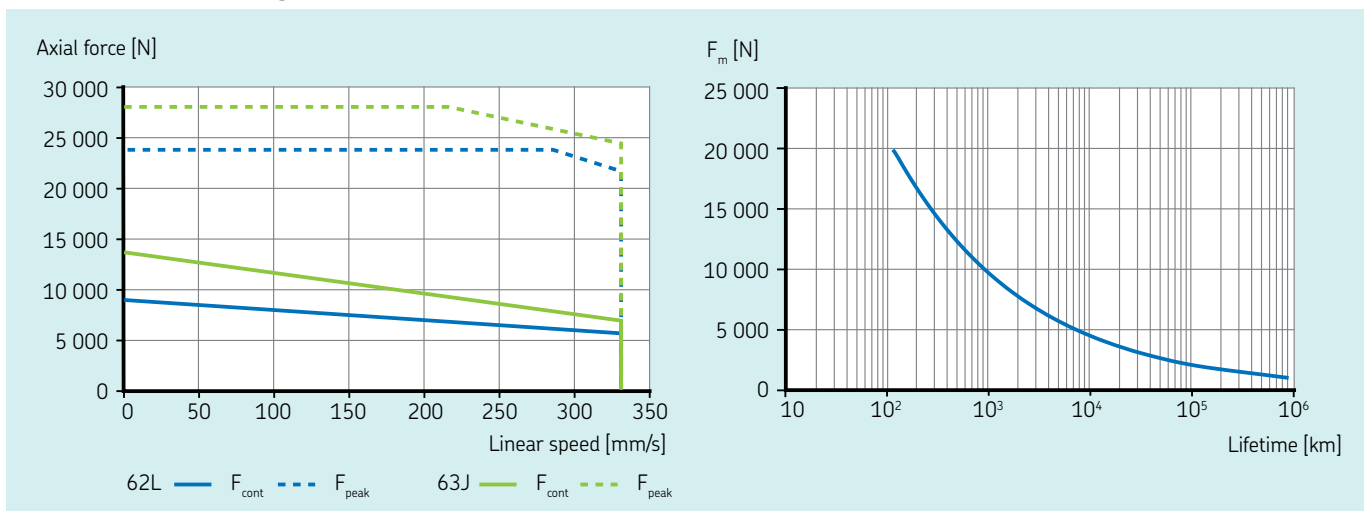
Electric cylinder



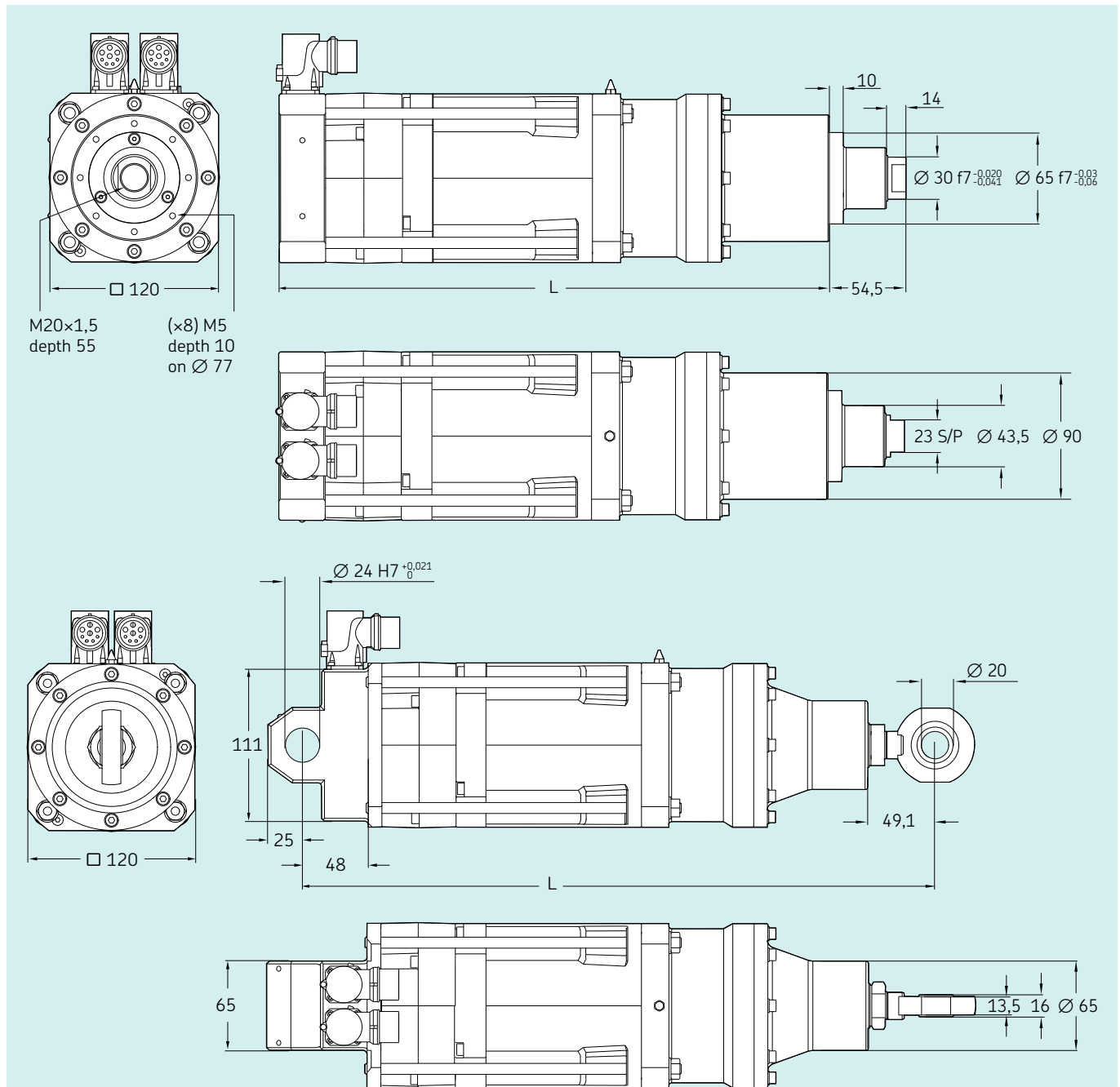
Technical data

Designation	Symbol	Unit	Motor 62L	63J
Performance Data				
Continuous force @ zero speed	F_{c0}	kN	8,8	13,2
Continuous force @ max. speed	F_c	kN	5,5	6,7
Peak force @ zero speed	F_{p0}	kN	23,8	28,0
Peak force @ max. speed	F_p	kN	22,1	24,7
Dynamic load capacity	C	kN	61,0	61,0
Holding force (motorbrake option)	F_{Hold}	kN	26,5	26,5
Max. linear speed	v_{max}	mm/s	333	333
Max. acceleration	a_{max}	m/s ²	5,8/ 5,7/ 5,4	5,6/ 5,5/ 5,3
Duty cycle	D	%	100	100
Mechanical Data				
Screw type	—	—	IRS	IRS
Screw diameter	d_{screw}	mm	24	24
Screw lead	p_{screw}	mm	4	4
Lead accuracy	—	—	G5	G5
Stroke	s	mm	125/ 135/ 170	125/ 135/ 170
Internal overstroke each side	s_0	mm	1	1
Backlash	$s_{backlash}$	mm	0,02	0,02
Gear reduction	i	—	Direct drive	Direct drive
Inertia	J	10 ⁻⁴ kgm ²	24,0/ 24,4/ 25,5	28,9/ 29,3/ 30,4
Inertia of optional brake	J_{brake}	10 ⁻⁴ kgm ²	0,6	0,6
Weight	m	kg	See dimensional drawing	See dimensional drawing
Weight of optional brake	m_{brake}	kg	2,5	2,5
Electrical Data				
Motor type	—	—	Servo	Servo
Nominal voltage	U	V AC	400	400
Nominal current	I	A	7,8	10,6
Peak current	I_{peak}	A	22,6	22,6
Nominal power	P	kW	2,6	3,3
Environment				
Ambient temperature	$T_{ambient}$	°C	0...+40	0...+40
Degree of protection	IP	—	54S	54S

Performance diagrams



Dimensional drawing



Reference	Standard stroke	L Design 1 ¹⁾	L Design 2 ¹⁾	Weight Design 1 ²⁾	Weight Design 2 ²⁾
	mm			kg	
CEMC2404-xxx-x-62L	125 / 135 / 170	336,9 / 344,9 / 379,9	408 / 416 / 451	13,8 / 13,9 / 14,6	12,6 / 12,7 / 13,1
CEMC2404-xxx-x-63I	125 / 135 / 170	365,9 / 373,9 / 408,9	437 / 445 / 480	15,8 / 15,9 / 16,6	14,6 / 14,7 / 15,1

1) For brake option add 54,2 mm.
 2) For brake option add 2,5 kg

Ordering key

See page 14

CEMC-2406

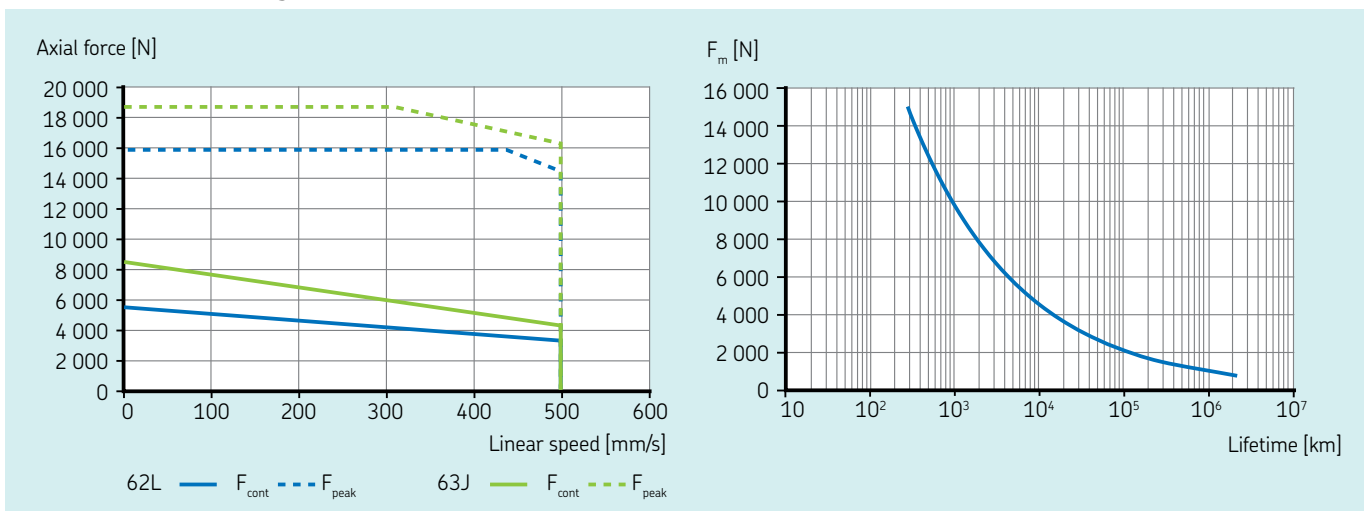
Electric cylinder



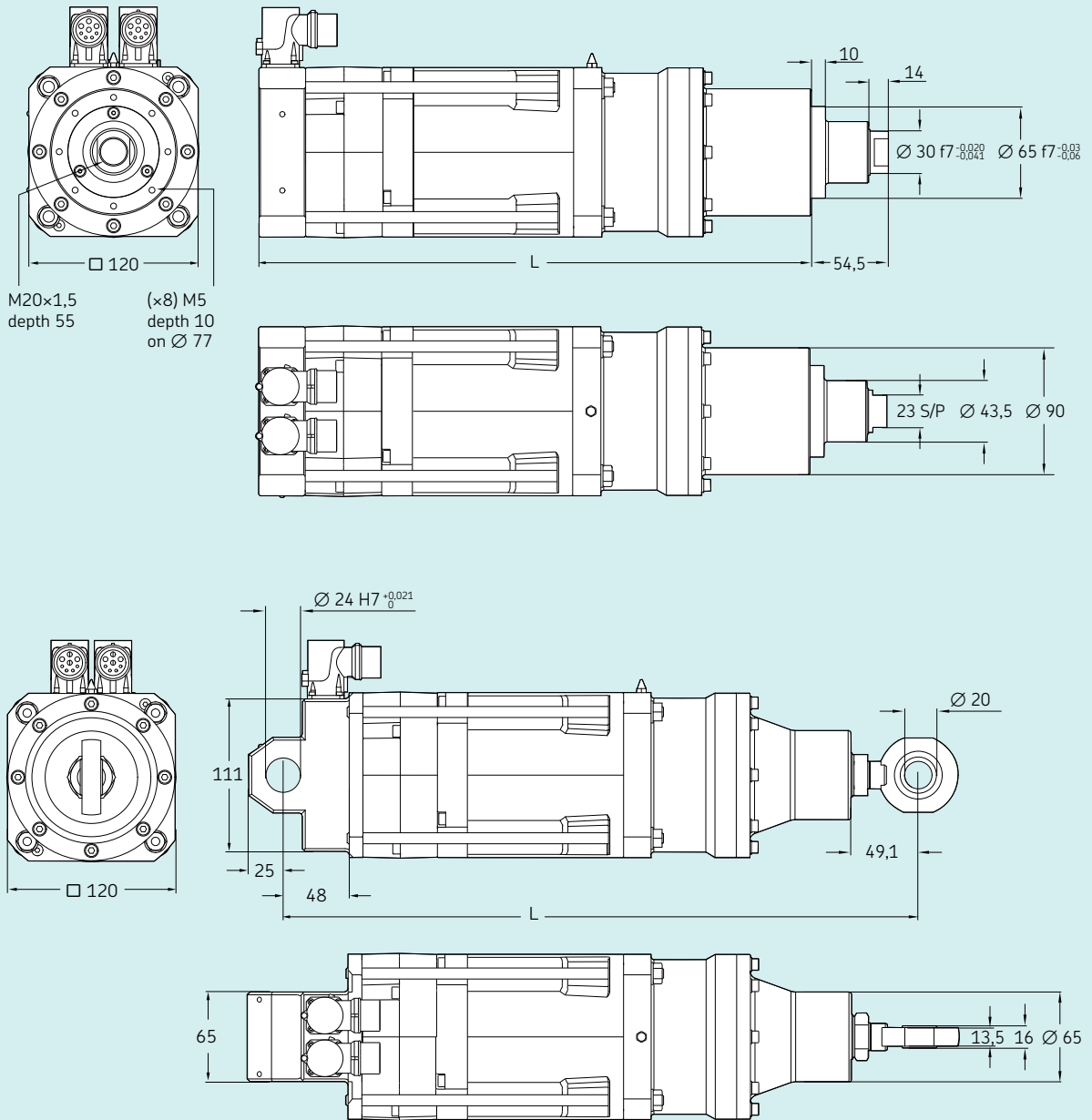
Technical data

Designation	Symbol	Unit	Motor 62L	63J
Performance Data				
Continuous force @ zero speed	F_{c0}	kN	5,8	8,8
Continuous force @ max. speed	F_c	kN	3,6	4,4
Peak force @ zero speed	F_{p0}	kN	15,9	18,6
Peak force @ max. speed	F_p	kN	14,7	16,5
Dynamic load capacity	C	kN	61,0	61,0
Holding force (motorbrake option)	F_{Hold}	kN	17,7	17,7
Max. linear speed	v_{max}	mm/s	500	500
Max. acceleration	a_{max}	m/s ²	8,6	8,4
Duty cycle	D	%	100	100
Mechanical Data				
Screw type	—	—	IRS	IRS
Screw diameter	d_{screw}	mm	24	24
Screw lead	p_{screw}	mm	6	6
Lead accuracy	—	—	G5	G5
Stroke	s	mm	125	125
Internal overstroke each side	s_0	mm	1	1
Backlash	$s_{backlash}$	mm	0,02	0,02
Gear reduction	i	—	Direct drive	Direct drive
Inertia	J	10 ⁻⁴ kgm ²	24,0	28,9
Inertia of optional brake	J_{brake}	10 ⁻⁴ kgm ²	0,6	0,6
Weight	m	kg	See dimensional drawing	See dimensional drawing
Weight of optional brake	m_{brake}	kg	2,5	2,5
Electrical Data				
Motor type	—	—	Servo	Servo
Nominal voltage	U	VAC	400	400
Nominal current	I	A	7,8	10,6
Peak current	I_{peak}	A	22,6	22,6
Nominal power	P	kW	2,6	3,3
Environment				
Ambient temperature	$T_{ambient}$	°C	0...+40	0...+40
Degree of protection	IP	—	54S	54S

Performance diagrams



Dimensional drawing



Reference	Standard stroke	L Design 1 ¹⁾	L Design 2 ¹⁾	Weight Design 1 ²⁾	Weight Design 2 ²⁾
	mm			kg	
CEMC2406-xxx-x-62L	125	336,9	408	13,8	12,6
CEMC2406-xxx-x-63I	125	365,9	437	15,8	14,6

1) For brake option add 54,2 mm.
 2) For brake option add 2,5 kg

Ordering key

See page 14

Ordering key

Actuators

C E M C - **2 4 0 4** - **1 2 5** - **1** - **6 2 L B** - **1 L C 1 3 A**

Cylinder type _____
CEMC Compact electromechanical cylinder

Screw diameter _____
18 18 mm diameter
24 24 mm diameter

Screw lead _____
04 3,75 or 4 mm lead
06 6 mm lead

Stroke _____
125 125 mm stroke
135 135 mm stroke
145 145 mm stroke (only for the CEMC1804)
170 170 mm stroke

Attachment _____
1 Front mount
2 Rod end + rear clevis

Motor _____
see page 6

Electromechanical brake _____
B Brake 24 VDC
N No brake

Power and signal cables _____
1 5 meters (standard)
2 10 meters
3 15 meters
4 20 meters
N No cable

Drive _____
LCxx Motion controller (see page 6 for drive size)
N No drive

Drive fieldbus _____
A CANopen
B Devicenet
C Ethercat
D Ethernet
E Powerlink MN/CN
F Powerlink CN
G Profibus
H Profinet
N No fieldbus



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