

Actuator range



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Principles of actuator and pillar selection and application	9
Telescopic pillars.	37
Linear actuators.	105
Rotary actuators.	299
Control units.	311
Hand, foot and desk switches	343
Customized projects	371
Drive by wire	381
Spare parts	387

1

2

3

4

5

6

7

8

9

Contents

Foreword.....	4	3 Linear actuators	105
SKF – the knowledge engineering company	6	AC versions	
1 Principles of actuator and pillar selection and application. . . .	9	SLS	108
Linear actuator definition & type	10	SKS/SKA	112
Definition	10	SKD	116
Ball screw vs acme screw	11	STD	120
Performance considerations	11	STW	124
Limit switch	11	MAX 6	128
Hall sensors	11	CAR 40	132
Potentiometer	11	CAHB–31	136
Friction clutch	11	SJ	140
Ball detent clutch	11	DSP	144
Back-up nut	11	CAP 32	148
Slip-stick effect	11	CAR 32	152
Selection criteria	12	CAT 32B	156
Force	12	CAT 33	160
Load capacity	12	WSP	164
Speed	12	CAHB–30	168
Stroke and retracted length	12	CAT 33H	172
Calculations	13	DC versions	
Duty cycle and duty factor	13	SKG	178
Lifetime calculation	13	STG	182
Application checklist	14	RU	186
Typical applications	15	MAX 3	190
Selection guide	16	CAJA 60	194
2 Telescopic pillars.	37	CAR 40	198
AC versions		ECO	202
TLC	40	FD	206
TFG	44	Magdrive	210
THC	48	CAHB–21	214
TXG	52	ASM	218
TGC	56	CAP 43B	222
DC versions		CAT 32B	226
CPI	62	MAX 1	230
TLG	66	CAJA 35C	234
TLT	70	CAR 32	238
TFG	74	CAJA 30	242
THG	78	CAP 32	246
TXG	82	CAP 43A	250
TMA	86	CAT 33	254
TMD	90	CAHB–20	258
No motor		CARE 33	262
FRE	96	CAR 22	266
TMS	100	CAT 33H	270
		CAHB–10	274
		CALA 36A	278
		CAT 21B	282
		No motor	
		CARN 32	290
		CCBR 32	294

4 Rotary actuators	299
CRAB 17	300
CRAB 05	306
5 Control units	311
SCU	312
VCU	316
BCU	320
CAJC	324
CB	326
MCU	328
LD	330
CAED ANR	334
CAED	336
CAEV	338
6 Accessories	343
Hand switches	
EHA 1	344
EHA 3	346
CAJH	348
EHE	350
HS	352
PHC	354
CAES	356
Foot switches	
ST	358
CAJF	360
PFP	362
Desk switches	
ST	364
LD	366
PAM	368
7 Customized projects only	371
Rotary actuators	372
CEMC actuator series	374
SRSA actuator series	378
8 Drive by wire	381
EPB	382
9 Spare parts	387



The SKF brand now stands for more than ever before, and means more to you as a valued customer.

While SKF maintains its leadership as the hallmark of quality bearings throughout the world, new dimensions in technical advances, product support and services have evolved SKF into a truly solutions-oriented supplier, creating greater value for customers.

These solutions encompass ways to bring greater productivity to customers, not only with breakthrough application-specific products, but also through leading-edge design simulation tools and consultancy services, plant asset efficiency maintenance programmes, and the industry's most advanced supply management techniques.

The SKF brand still stands for the very best in rolling bearings, but it now stands for much more.

SKF – the knowledge engineering company

Foreword

This publication provides information on all the SKF Actuation System products with clear tables to help the customer select and order the right product.

Structure of the catalogue

This catalogue is divided into nine main chapters, marked with numbered blue tabs in the right margin:

- Chapter 1 provides technical and application recommendations.
- Chapter 2 describes the different telescopic pillars.
- Chapter 3 presents the linear actuator series.
- Chapter 4 displays data about rotary actuators.
- Chapter 5 and 6 contain information about control units and accessories.
- Chapter 7 gives a brief description of products dedicated to project sales.
- Chapter 8 introduces the Electronic Parking Brake by Drive by Wire.
- Chapter 9 lists the different spare parts and accessories.

About the data in this catalogue

The data in this catalogue relate to SKF's state-of-the-art technology and production capabilities as of 2009. The data may differ from that presented in earlier catalogues because of redesign, technological developments, or revised methods of calculation. SKF reserves the right to make continuing improvements to SKF products regarding materials, design and manufacturing methods, as well as changes necessitated by technological developments.

How to use this catalogue

Each product is introduced by providing information such as technical data, dimensional drawings or connecting diagrams, in order to make it easy to select the right product.

At the end of each product information section, an ordering key is shown.

To determine the product code to be used on the order, examine the relevant pages containing the main data and prepare the order code. This may consist of pre-set options, ordering key boxes already filled in (for example: type, color, etc.) and options that can be selected from several empty boxes (for example: voltage and stroke length). In the ordering key, the options are set out under the associated subjects, with the code or the information to be entered indicated along with the measurement restrictions contained in the associated tables. The sequence of the ordering key is defined by the thin guiding lines that select the corres-

ponding box. The individual ordering key may contain indications or special notes.

For the CAT series, the selection of the item's dynamic load/speed and motor option should be made by use of an additional table with several options located above the ordering key.

An example is given below to show how to prepare the order code for a MAX 6 linear actuator.

NOTE: See product specific catalogues at www.actuators.skf.com for more complete information and descriptions of the various products briefly described in this catalogue.

Features for selection (highlighted in bold type)

Pre-selected type of actuator

Selection of voltage

Pre-selected option

Selection of the stroke and retracted length

Selection of orientation

Pre-selected options

Type

Motor voltage:
230 V AC/50 Hz, integrated low voltage
120 V AC/60 Hz, integrated low voltage

Stroke (S):
100 mm
150 mm
200 mm
300 mm
700 mm

Orientation of rear attachment:
Standard
Turned 90°

Options, alphanumeric identity code of the required item, are to be written in the corresponding box of the ordering key

Example

MAX 6 4 - A 1 0 0 3 1 5 A 0 1 0 - 0 0 0

Example of an ordering key that has been filled in

SKF – the knowledge engineering company

From the company that invented the self-aligning ball bearing more than 100 years ago, SKF has evolved into a knowledge engineering company that is able to draw on five technology platforms to create unique solutions for its customers. These platforms include bearings, bearing units and seals, of course, but extend to other areas including: lubricants and lubrication systems, critical for long bearing life in many applications; mechatronics that combine mechanical and electronics knowledge into systems for more effective linear motion and sensorized solutions; and a full range of services, from design and logistics support to conditioning monitoring and reliability systems.

Though the scope has broadened, SKF continues to maintain the world's leadership in the design, manufacture and marketing of rolling bearings, as well as complementary products such as radial seals. SKF also holds an increasingly important position in the market for linear motion products, high-precision aerospace bearings, machine tool spindles and plant maintenance services.

The SKF Group is globally certified to ISO 14001, the international standard for environmental management, as well as OHSAS 18001, the health and safety management standard. Individual divisions have been approved for quality certification in accordance with ISO 9001 and other customer specific requirements.

With over 100 manufacturing sites worldwide and sales companies in 70 countries, SKF is a truly international corporation. In addition, our distributors and dealers in some 15 000 locations around the world, an e-business marketplace and a global distribution system put SKF close to customers for the supply of both products and services. In essence, SKF solutions are available wherever and whenever customers need them. Overall, the SKF brand and the corporation are stronger than ever. As the knowledge engineering company, we stand ready to serve you with world-class product competencies, intellectual resources, and the vision to help you succeed.

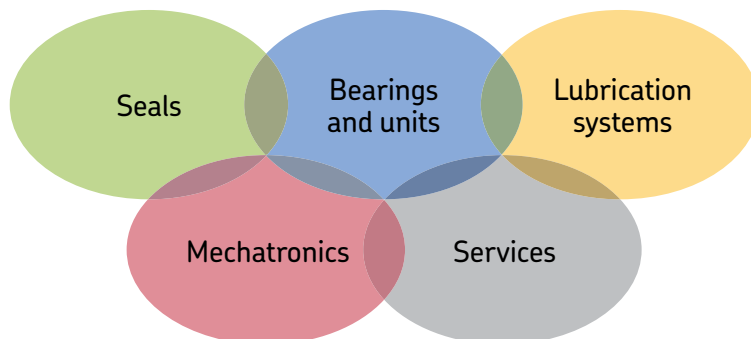


© Airbus – photo: e4m company, H. Goussé

Evolving by-wire technology

SKF has a unique expertise in fast-growing by-wire technology, from fly-by-wire, to drive-by-wire, to work-by-wire. SKF pioneered practical fly-by-wire technology and is a close working partner with all aerospace industry leaders. As an example, virtually all aircraft of the Airbus design use SKF by-wire systems for cockpit flight control.

SKF is also a leader in automotive by-wire technology, and has partnered with automotive engineers to develop two concept cars, which employ SKF mechatronics for steering and braking. Further by-wire development has led SKF to produce an all-electric forklift truck, which uses mechatronics rather than hydraulics for all controls.





Harnessing wind power

The growing industry of wind-generated electric power provides a source of clean, green electricity. SKF is working closely with global industry leaders to develop efficient and trouble-free turbines, providing a wide range of large, highly specialized bearings and condition monitoring systems to extend equipment life of wind farms located in even the most remote and inhospitable environments.



Working in extreme environments

In frigid winters, especially in northern countries, extreme sub-zero temperatures can cause bearings in railway axleboxes to seize due to lubrication starvation. SKF created a new family of synthetic lubricants formulated to retain their lubrication viscosity even at these extreme temperatures. SKF knowledge enables manufacturers and end user customers to overcome the performance issues resulting from extreme temperatures, whether hot or cold. For example, SKF products are at work in diverse environments such as baking ovens and instant freezing in food processing plants.



Developing a cleaner cleaner

The electric motor and its bearings are the heart of many household appliances. SKF works closely with appliance manufacturers to improve their products' performance, cut costs, reduce weight, and reduce energy consumption. A recent example of this cooperation is a new generation of vacuum cleaners with substantially more suction. SKF knowledge in the area of small bearing technology is also applied to manufacturers of power tools and office equipment.



Maintaining a 350 km/h R&D lab

In addition to SKF's renowned research and development facilities in Europe and the United States, Formula One car racing provides a unique environment for SKF to push the limits of bearing technology. For over 50 years, SKF products, engineering and knowledge have helped make Scuderia Ferrari a formidable force in F1 racing. (The average racing Ferrari utilizes more than 150 SKF components.) Lessons learned here are applied to the products we provide to automakers and the aftermarket worldwide.



Delivering Asset Efficiency Optimization

Through SKF Reliability Systems, SKF provides a comprehensive range of asset efficiency products and services, from condition monitoring hardware and software to maintenance strategies, engineering assistance and machine reliability programmes. To optimize efficiency and boost productivity, some industrial facilities opt for an Integrated Maintenance Solution, in which SKF delivers all services under one fixed-fee, performance-based contract.



Planning for sustainable growth

By their very nature, bearings make a positive contribution to the natural environment, enabling machinery to operate more efficiently, consume less power, and require less lubrication. By raising the performance bar for our own products, SKF is enabling a new generation of high-efficiency products and equipment. With an eye to the future and the world we will leave to our children, the SKF Group policy on environment, health and safety, as well as the manufacturing techniques, are planned and implemented to help protect and preserve the earth's limited natural resources. We remain committed to sustainable, environmentally responsible growth.

Principles of actuator and pillar selection and application

Linear actuator definition and type.	10
Performance considerations.	11
Selection criteria	12
Calculations	13
Application checklist.	14
Typical applications.	15
Selection guide.	16

Linear actuator definition and type

Definition: Electro-mechanical linear actuators enable precise, controlled, and repeatable push/pull movement in linear drive applications (see illustrations below).

Linear actuators serve as efficient, virtually maintenance-free, and environmentally friendly alternatives to hydraulic or pneumatic types.

Standard versions can handle loads as great as 12 kN, deliver speeds up to 150 mm/s, and travel as far as 1 500 mm. They can be self-contained in aluminum,

zinc, or polymer housings and ready-to-mount for easy plug-in operation.

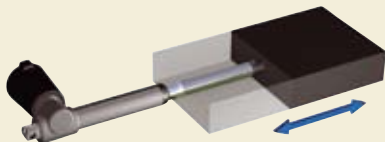
Actuators with modular design and open architecture offer opportunities to choose and integrate components to achieve customized solutions within existing envelopes. Application potential expands with the introduction of technologies for specific purposes, such as hall sensors, limit switches, potentiometers, friction clutches, or back-up nuts.

Screw-type linear actuators powered by an electric AC or DC motor basically consist of a lead screw (threaded shaft/spindle) with drive nut and push tube. In 90 % of the ca-

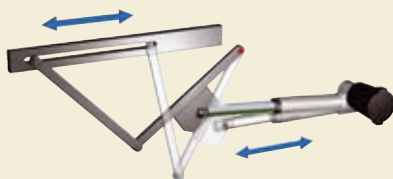
ses, a gearbox between the motor and the screw is also present.

When power is supplied, the motor rotates the lead screw, which causes the drive nut to travel and extend the push tube. Reversing the motor rotation retracts the push tube.

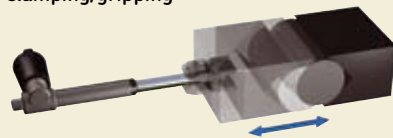
Pushing/pulling



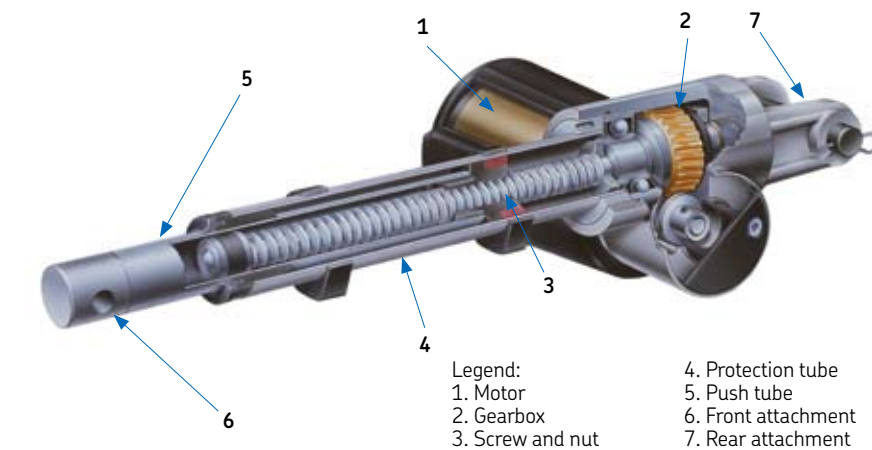
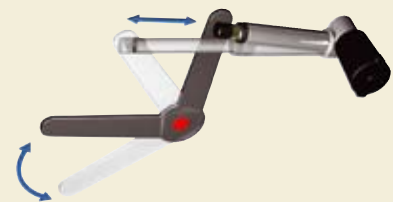
Opening/closing



Clamping/gripping



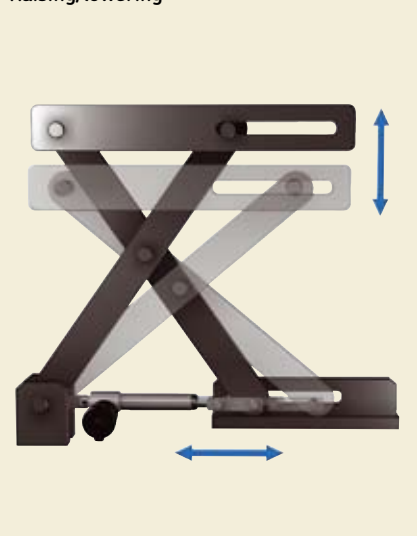
Tilting

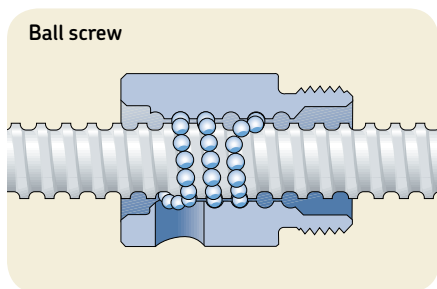


Legend:
1. Motor
2. Gearbox
3. Screw and nut

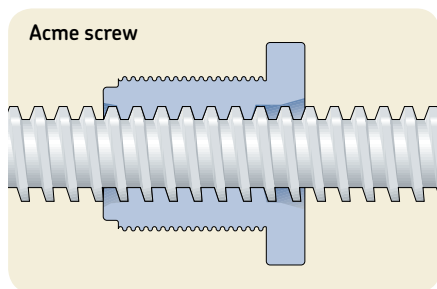
4. Protection tube
5. Push tube
6. Front attachment
7. Rear attachment

Raising/lowering

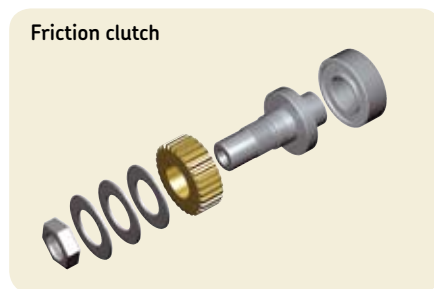




Ball screw



Acme screw



Friction clutch

Ball screw vs. acme screw: Traditional types of lead screws include ball screws and acme screws, whose specification will be influenced by an actuator's configuration and load requirements.

Ball screws: All-steel ball screws consist of a screw shaft, ball nut with a ball recirculation system to convert rotary motion into smooth, accurate, and reversible linear motion (or torque to thrust). The row of circular rolling elements is self-contained in a closed system between the nut and screw for a design exhibiting extremely low friction coefficients. The low frictional resistance minimizes wear, improves efficiency, and reduces operating temperature for longer service life.

Ball screws can handle extreme loads, achieve high duty cycles, operate over a wide temperature range, and deliver the precision necessary to equip actuators performing over long periods at high speeds and requiring high dynamic capability. Brakes usually will be specified for ball screw actuators to prevent back-drive.

Acme screws: These screws transmit torque into linear motion through direct sliding friction. A typical assembly consists of a steel screw and plastic nut.

Some of the products are equipped with acme screws with a relatively high friction coefficient that makes them well suited for self-locking application. Acme screw actuators accommodate high static load, withstand excessive vibration, operate quietly, and represent cost-effective solutions.

Performance considerations

Beyond the basic fundamentals of actuator operation, applications may require feedback on position and/or direction, limits on motion or travel in a particular direction, or protection against dynamic overload. Ena-

bling technologies have been developed for these purposes.

Limit switch: Its purpose is to limit actuator motion or travel in a particular direction. When activated, the switch opens or closes an electrical contact. When the contact is closed, current will flow through the switch; when the contact is open, no current will flow through the switch. These devices prevent actuators from running into the mechanical ends and may allow for the adjustment of stroke length.

Hall sensors: These rotary or linear sensing devices determine the relative position of an actuator. Two sensors detect the changing magnetic field created by a rotating magnet and then relay corresponding output pulses to a control unit to provide the position feedback.

Potentiometer: A potentiometer is an analogue feedback device. The potentiometer is considered as an absolute sensor with unique value in each position. Sometimes it is called a variable resistance that can be read and feed into a controller for positioning control of the application.

Friction clutch: This function will protect the actuator from mechanical damage when it reaches either of its mechanical end positions or when the maximum dynamic load is momentarily exceeded. A friction clutch consists of a series of steel plates engaging a hub and a series of friction rings engaging a housing. Pressure is exerted on the plates and rings by an adjuster acting through a spring and pressure plate. The friction clutch is not intended for use as a load limiter, but only for protection of the actuator and end-use equipment in the event of dynamic overload.

Ball detent clutch: A ball detent type clutch transmits force through hardened balls which rest in detents on the shaft and are held in place with springs. An overtorque/load condition pushes the balls out of their detents, thereby decoupling the lead-screw from the motor.

Back-up nut: This prevents an actuator from collapsing if a drive nut fails. The back-up nut is usually in metal, exhibits greater anti-shear strength than the drive nut, and only makes contact with the threads of the spindle when the threads of the drive nut fail. The back-up nut carries the load and may be able to lower the load (signaling need for repair). An actuator cannot operate with only a back-up nut.

Slip stick effect: The cycle of alternating slipping and sticking as two surfaces rub against each other. The effect is vibration and noise. Resonances within other materials can occur. This effect can sometimes be heard, felt or seen. With linear actuators, Slip stick has been witnessed between the Delrin and aluminum or steel, such as between drive nut and spindle, and glide pad and extrusion.

Selection criteria

An actuator's performance will be influenced by a variety of factors intrinsic to an application. An understanding of these factors can help you select the most suitable actuator design and solution. Relevant factors to evaluate include push/pull force, static and dynamic load capacity, speed, stroke and retracted length, duty cycle, and life calculation.

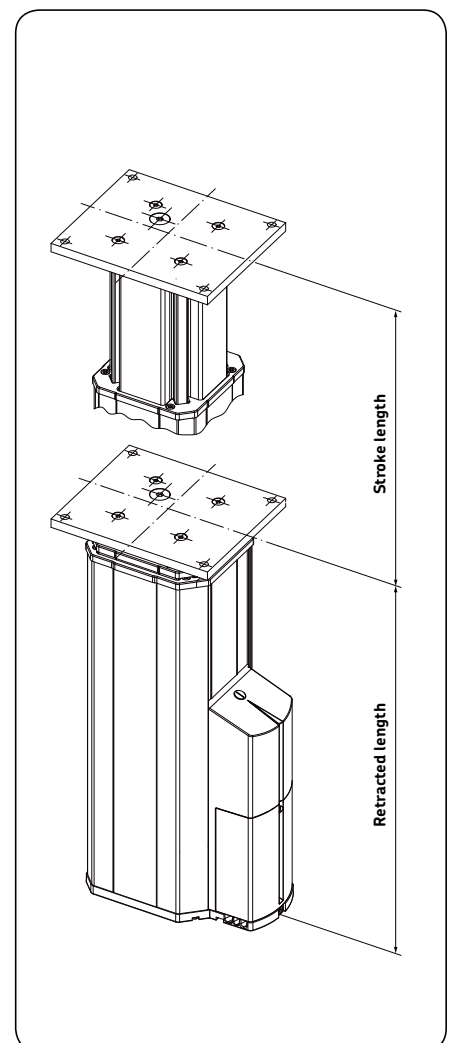
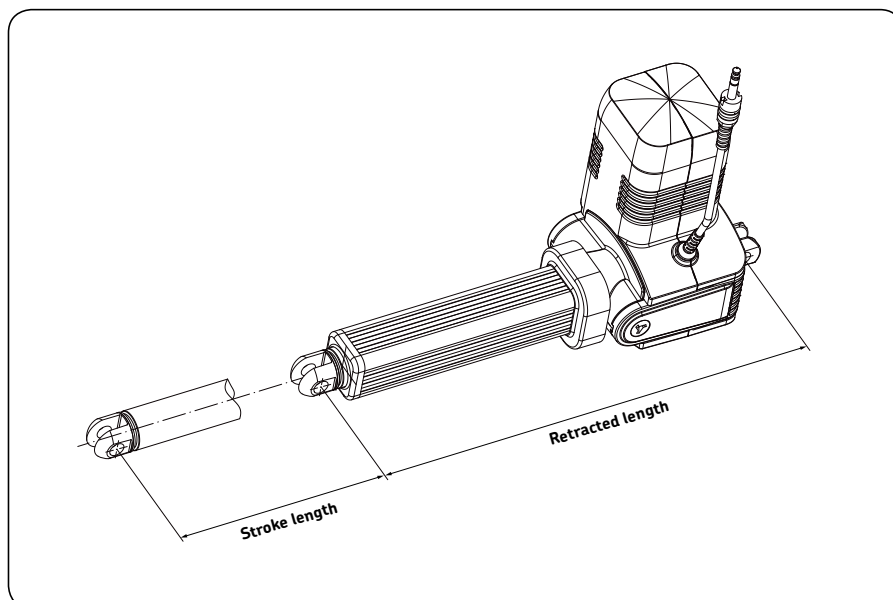
Force: Push force is the maximum extending force that an electric linear actuator can produce in Newtons (N). Pull force is the maximum retracting force. Some actuators do not produce equal push and pull forces, while others do not permit pull force.

Load capacity: Maximum static load refers to the weight or mass that an actuator can handle when standing still without causing permanent damage or causing the actuator to start "going backwards." (Subjecting an actuator to loads in excess of stated values can increase the risk of permanent deformation to some parts.) Maximum dynamic

load represents the maximum total weight or mass that the actuator can move. The decisive factor for this value is the size of the motor and the type of gearing. Some versions feature an integral mechanical safety device similar to a clutch to protect the motor and gears from damage.

Speed: This represents the rate of travel (when extending or retracting) and is usually measured in mm/s or in./s. Speed can vary under different loads, often depending on the motor. Actuators with DC motors exhibit a speed variation inversely proportional to the load. Actuators with AC motors move at more consistent speed, which is only slightly affected by the load. Other factors impacting the speed will include the magnitude and/or frequency of the applied voltage, the ambient temperature, and how well an actuator is integrated into the end-use application.

Stroke and retracted length: The stroke describes the length (in millimeters or inches) that an electro-mechanical linear actuator or telescopic pillar will extend or retract. The retracted length is the shortest distance between the two fixed points on an actuator when the actuator is in its innermost position. The dimensions reflect a measurement from the center of the rear and front mounting holes.



Calculations

Duty cycle and duty factor: This defines the maximum period during actuator operation without interruption. The corollary duty factor expresses how long an actuator can handle non-stop operation before it overheats or is otherwise damaged. Many variables will affect the duty cycle, including running time, application, design, installation, and components. It is necessary for you to assess the type of task, its duration, frequency, and repetitiveness when evaluating expected duty cycle.

SKF linear actuators are designed for intermittent operation. Permitted load is related to the duty factor i.e. load must be reduced, when the duty factor is increased. Duty cycle is defined as the relation between operational time, load and rest time. In the diagrams, maximum load is shown as a function of duty cycle. If the recommended duty factor is exceeded, the actuator may overheat and be damaged.

Permitted load for DC-actuators at a specific duty factor is expressed in percentage of maximum dynamic load capacity (→ fig. 1).

$$\text{Duty factor \%} = \frac{N}{N+R} 100$$

where

N = running period
under load

R = rest period

N+R = total cycle time

Example:

An actuator is running with the following cycle, 5 seconds running, 5 seconds rest, 5 seconds running, 15 seconds rest, and so on.

Calculate duty factor and maximum load for this working cycle.

$$\text{Duty factor} = \frac{5+5}{(5+5) + (5+15)} 100 = 33\%$$

Max. dynamic load = 5 000 N

Permitted load = $0,73 \times 5\,000 = 3\,650\text{ N}$

Life calculation: An actuator's life expectancy is divided into two types: its life and its service (or operational) life. The actuator's life is defined as the time the actuator can live without being derated due to age. The actuator's service life is defined as the time (or how many cycles) the actuator can operate. For example, an actuator is installed to operate once a day for 10 years. Its expected life is 10 years and its required service life is 10×365 cycles.

The service life of a ball screw actuator normally will be determined by the L_{10} life of the ball screw. In most cases, there is less wear on the worm gear and bearings than on the ball screw.

Under certain circumstances, the life of the motor is shorter than that of the ball screw. Generally, the life of DC-motors is reduced when load and number of starts/stops are increased.

To calculate the basic rating life L_{10} of a ball screw, all you need to know is the dynamic load and actual stroke. L_{10} is defined as the life that 90% of a sufficiently large group of apparently identical ball screws can be expected to attain or exceed.

$$L_{10ds} = \frac{500\,000 p}{S} \left(\frac{C}{F_M} \right)^3$$

where

L_{10ds} = basic rating life in double strokes
i.e. a stroke from one end position to the other and back again.

p = lead of the ball screw (mm).

S = actual stroke (mm).

C = ball screw basic dynamic load rating (N).

F_M = cubic mean load (N).

In many cases, the magnitude of the load fluctuates. In order to calculate the equivalent screw load, it is first necessary to determine a constant mean load F_m which would have the same influence on the ball screw as the actually fluctuating load. A constant mean load can be obtained from the formula below.

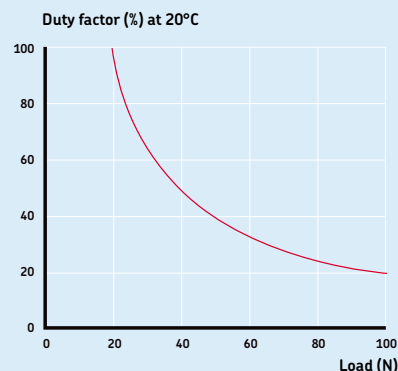
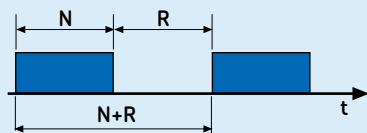
$$F_M = \sqrt[3]{\frac{F_1^3 S_1 + F_2^3 S_2 + F_3^3 S_3 + \dots}{S_1 + S_2 + S_3 + \dots}}$$

Example:

An actuator with a stroke of 500 mm has a load of 2 800 N in one direction of movement and 2 100 N in the other. The entire stroke of the actuator is utilized.

$$F_M = \sqrt[3]{\frac{2\,800^3 \times 500 + 2\,100^3 \times 500}{500 + 500}} = 2\,500$$

Fig. 1

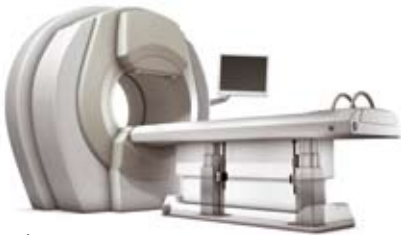


Application checklist

Designing and specifying an electro-mechanical linear actuator begins by assessing as many application factors as possible to make the most appropriate and educated technology choices.

- How much force and in what directions (push, pull, vertical, and/or horizontal) will the actuator need to move?
- How far and how fast will the actuator need to travel?
- How often will the actuator operate and how much time will elapse between operations?
- What is the desired lifetime for the application?
- How will the actuator be mounted and will front and/or back mounts require special configurations?
- Does the application suggest a need for safety mechanisms?
- Will environmental factors (temperature variations, moisture, or vibration) pose a challenge to operation?
- Is space limited?
- What are the power supply options?
- If a motor is used, what type (AC, DC, or special) and what voltage?
- Is feedback required for speed and/or position?
- Are revised specifications likely or anticipated in the future?

Typical applications

Off-highway	 <i>Hood lifter</i>	 <i>Highway mobile sign</i>
Food and beverage	 <i>Grill</i>	 <i>Tilting pan</i>
Medical	 <i>Imaging system</i>	 <i>Incubator</i>
Healthcare	 <i>Treadmill</i>	 <i>Massage table</i>
Solar tracking	 <i>Solar tracker</i>	
Factory automation	 <i>Adjustable workstation</i>	 <i>Frame gripper</i>

Selection guide

Telescopic pillars AC versions

	Type	Voltage	Max load push	pull	Max speed full load	no load	Stroke (S)	Page
	–	V	N	N	mm/s	mm/s	mm	No.
	TLC	120 or 230 AC	4 000	4 000	16	22	100 to 700	40
	TFG 50	120 AC	2 500	2 500	15	19	200 to 700	44
	TFG 90	230 AC	2 500	2 500	15	19	200 to 700	44
	THC	120 or 230 AC	1 800	1 800	15	20	200 to 700	48
	TXG	120 or 230 AC	1 500	0	17	23	200 to 600	52
	TGC	120 or 230 AC	1 000	1 000	11	12	200 to 700	56

Telescopic pillars
DC versions

	Type	Voltage	Max load		Max speed		Stroke (S)	Page
	–	V	push	pull	full load	no load	mm	No.
	CPI	24 DC	4 000	4 000	31	38	200 to 700	62
	TLG	24 DC	4 000	0	25	33	200 to 700	66
	TLT	24 DC	4 000	0	25	42	200 to 700	70
	TFG 10	24 DC	2 500	2500	15	19	200 to 700	74
	THG	24 DC	2 000	0	12	15	200 to 700	78
	TXG	24 DC	1 500	0	17	23	200 to 600	82

Selection guide

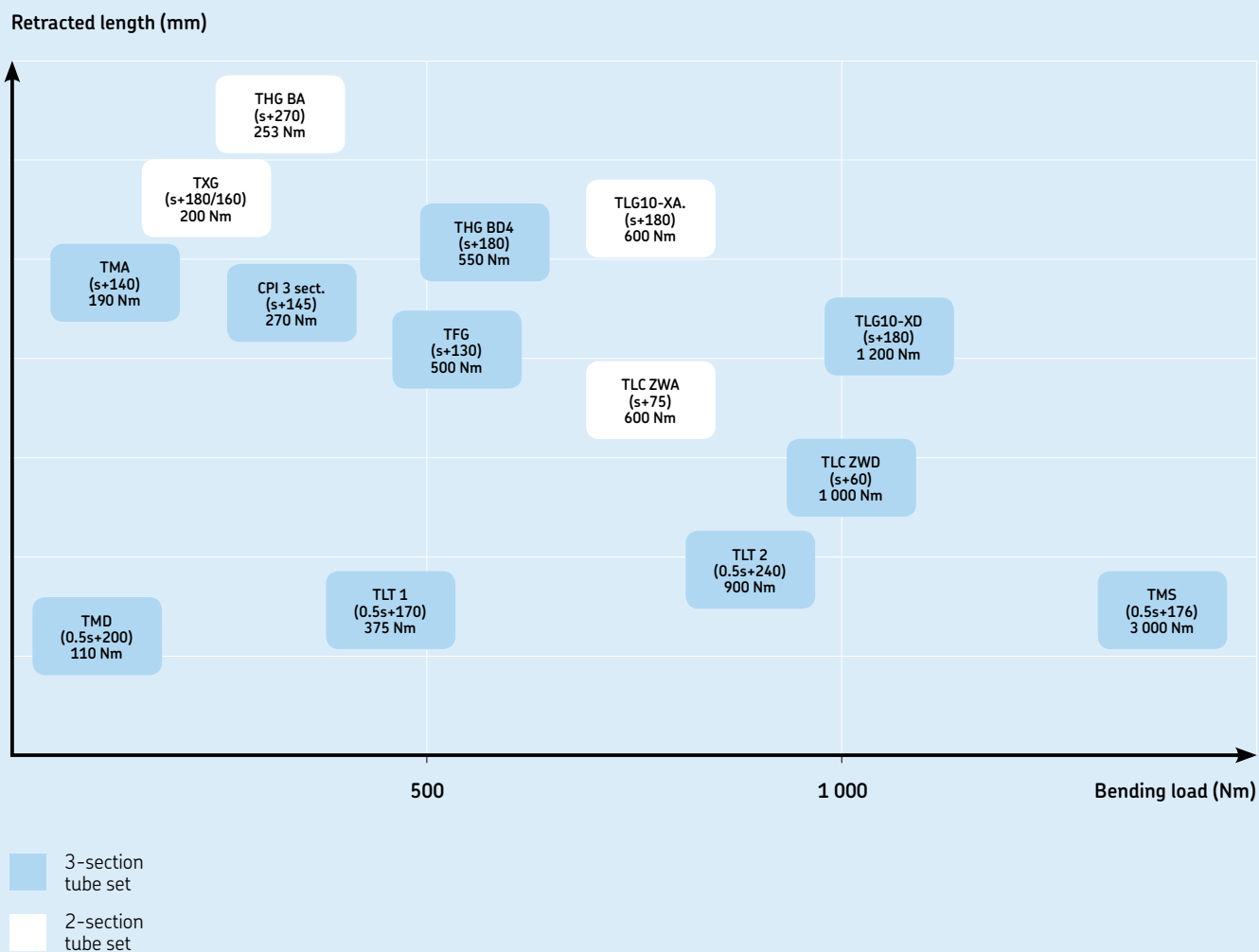
Telescopic pillars DC versions

	Type	Voltage	Max load push	pull	Max speed full load	no load	Stroke (S)	Page
	–	V	N	N	mm/s	mm/s	mm	No.
	TMA	24 DC	1 000	0	35	55	500	86
	TMD	24 DC	800	0	35	60	700	90

Telescopic pillars No motor

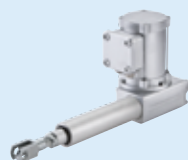
	Type	Voltage	Max load push	pull	Max speed full load	no load	Stroke (S)	Page
	–	V	N	N	mm/s	mm/s	mm	No.
	FRE	No motor	N/A	N/A	N/A	N/A	200 to 700	96
	TMS	No motor	4 000	4 000	N/A	N/A	250 to 700	100

Telescopic pillars - retracted length/bending load ratio

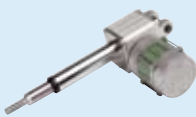


Selection guide

Linear actuators AC versions

	Type	Voltage	Max load		Max speed		Stroke (S)	Page
	–	V	push	pull	full load	no load	mm	No.
	SLS	3×400 AC	50 000	50 000	74	88	100 to 700	108
	SKS/SKA	3×400 AC	30 000	30 000	45	54	100 to 700	112
	SKD	3×400 AC	15 000	15 000	25	33	100 to 700	116
	STD	3×400 AC	15 000	15 000	10	14	100 to 700	120
	STW	230 AC	15 000	15 000	12	13	100 to 700	124
	MAX 6	120 or 230 AC	8 000	6 000	13	18	50 to 700	128

Linear actuators
AC versions

	Type	Voltage	Max load		Max speed		Stroke (S)	Page
	–	V	push	pull	full load	no load	mm	No.
	CAR 40	120 or 230 AC	6 000	6 000	40	40	100 to 700	132
	CAHB-31	115 or 230 AC	6 000	6 000	48	57	102 to 610	136
	SJ	115 or 230 AC	5 000	5 000	6,6	7,2	100 to 600	140
	DSP	3x400 AC	4 500	4 500	50	58	100 to 700	144
	CAP 32	120 or 230 AC	3 500	3 500	32	32	50 to 700	148
	CAR 32	120 or 230 AC	3 500	3 500	32	32	50 to 700	152

Selection guide

Linear actuators AC versions

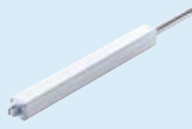
	Type	Voltage	Max load		Max speed		Stroke (S)	Page
	–	V	push	pull	full load	no load	mm	No.
	CAT 32B	120, 230 or 400 AC	3 500	3 500	32	32	50 to 700	156
	CAT 33	120, 230 or 400 AC	3 000	3 000	24	24	100 to 400	160
	WSP	230 AC	2 600	2 600	50	50	100 to 700	164
	CAHB-30	115 or 230 AC	2 300	2 300	25	26	102 to 610	168
	CAT 33H	120, 230 or 400 AC	1 200	1 200	90	90	100 to 400	172

Linear actuators
DC versions

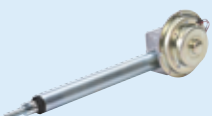
	Type	Voltage	Max load		Max speed		Stroke (S)	Page
	–	V	push	pull	full load	no load	mm	No.
	SKG	24 DC	15 000	15 000	55	73	100 to 700	178
	STG	24 DC	15 000	15 000	14	20	100 to 700	182
	RU	24 DC	12 000	8 000	8	15	100 to 700	186
	MAX3	12 or 24 DC	8 000	6 000	12,7	18	50 to 700	190
	CAJA 60	24-41 DC	6 000	4 000	4,6	7,8	30 to 300	194
	CAR 40	12 or 24 DC	6 000	6 000	40	60	100 to 700	198

Selection guide

Linear actuators DC versions

	Type	Voltage	Max load push	pull	Max speed full load	no load	Stroke (S)	Page
	–	V	N	N	mm/s	mm/s	mm	No.
	ECO	24 DC	6 000	4 000	9	13	50 to 300	202
	FD	24 DC	6 000	4 000	6,2	8,2	50 to 300	206
	Magdrive	24 DC	6 000	6 000	8,5	15	50 to 700	210
	CAHB-21	12 or 24 DC	4 500	4 500	45	65	102 to 610	214
	ASM	12 or 24 DC	4 000	4 000	50	70	100 to 700	218
	CAP 43B	24 DC	4 000	4 000	52	65	50 to 700	222

Linear actuators
DC versions

	Type	Voltage	Max load		Max speed		Stroke (S)	Page
	–	V	push	pull	full load	no load	mm	No.
	CAT 32B	12 or 24 DC	4 000	4 000	52	67	50 to 700	226
	MAX1	24 DC	4 000	4 000	12,7	18	50 to 700	230
	CAJA 35C	24-41 DC	3 500	3 500	7,5	10,5	30 to 250	234
	CAR 32	12 or 24 DC	3 500	3 500	40	60	50 to 700	238
	CAJA 30	24-40 DC	3 000	3 000	7,5	12,5	30 to 400	242
	CAP 32	12 or 24 DC	3 500	3 500	40	60	50 to 700	246

Selection guide

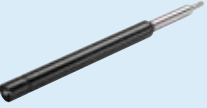
Linear actuators DC versions

	Type	Voltage	Max load push	pull	Max speed full load	no load	Stroke (S)	Page
	–	V	N	N	mm/s	mm/s	mm	No.
	CAP 43A	24 DC	3 000	3 000	40	52	100 to 400	250
	CAT 33	12 or 24 DC	3 000	3 000	40	52	100 to 400	254
	CAHB-20	12 or 24 DC	2 500	2 500	27	33	102 to 610	258
	CARE 33	12 or 24 DC	2 000	2 000	32	45	50 to 500	262
	CAR 22	12 or 24 DC	1 500	1 500	20	30	50 to 300	266
	CAT 33H	12 or 24 DC	1 200	1 200	150	190	100 to 400	270

Linear actuators
DC versions

	Type	Voltage	Max load		Max speed		Stroke (S)	Page
	–	V	push	pull	full load	no load	mm	No.
	CAHB-10	12 or 24 DC	1 000	1 000	45	56	50 to 300	274
	CALA 36A	12 or 24 DC	600	600	17	31	50 to 200	278
	CAT 21B	24 DC	600	600	8,1	9,7	50 to 300	282

Linear actuators
No motor

	Type	Voltage	Max load		Max speed		Stroke (S)	Page
	–	V	push	pull	full load	no load	mm	No.
	CARN 32	No motor	3 500	3 500	N/A	N/A	50 to 700	290
	CCBR 32	No motor	2 500	2 500	N/A	N/A	50 to 700	294

Selection guide

Rotary actuators

	Type	Max torque	Max speed	Size	Page
	–	Nm	rpm	mm	No.
	CRAB 17	70	8	125	300
	CRAB 17	105	20	125	300
	CRAB 05	100	3	86	306

Control units

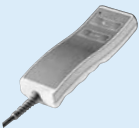
	Type	Control connections	Max motor	Input	Output	Page
	–	–	n°	V	V/A	No.
	SCU	Encoder processing	6	24 DC 120 or 230 AC	24/30 24/18	312
	VCU	Basic functions	5	120 or 230 AC	24/7 or 18	316
	BCU	Basic functions	3	120 or 230 AC	24/7	320
	CAJC 41	Basic functions	4	120 or 230 AC	40/5	324
	CB 200S	Basic functions	3	100 - 240 AC	24/3	326

Selection guide

Control units

	Type	Control connections	Max motor	Input	Output	Page
	—	—	n°	V	V/A	No.
	MCU	Basic functions	2	24 DC	24/7 or 18	328
	LD-014	Synchronous	4	120 or 230 AC	24/11	330
	LD-015	Synchronous	3	120 or 230 AC	24/11	332
	LD-015	Synchronous	2	120 or 230 AC	24/9	332
CAED ANR 	5-24R -PO	Analogical feedback	1	24 DC	24/5	334
	9-24R -PO	Analogical feedback	1	24 DC	24/9	334
CAED 	3-24R	Basic functions	1	24 DC	24/3	336
	5-24R	Basic functions	1	24 DC	24/5	336
	9-24R	Basic functions	1	24 DC	24/9	336
CAEV 	110/220	Basic functions	1	120 or 230 AC	120 or 230 AC	338

Hand switches

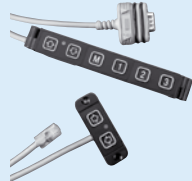
	Type	Operating power	Max operating channels	Type of protection	Color	Page
	–	V DC/mA	n°	IP	–	No.
EHA 	EHA 1	12/50	2	67	Grey	344
	EHA 3	12/50	5	67	Grey	346
	CAJH 1	12/50	4	66	Grey	348
	EHE 1	38/50	4	×7	Grey	350
HS 	HS 112	40/50	1	–	Black	352
	HS 124	40/50	2	–	Black	352
	HS 126	40/50	2	–	Black	352
	HS 138	40/50	3	–	Black	352
	PHC	–	4	66	Grey	354
	CAES 31C	30/33	1	54	Black	356

Selection guide

Foot switches

	Type	Operating power	Max operating channels	Type of protection	Color	Page
	–	V DC/mA	n°	IP	–	No.
	ST	12/50	3	×5	Blue/anthracite	358
	CAJF 1	12/50	3	×5	Anthracite	360
	PFP 1K PFP 1	– –	1 1	21 21	Grey Anthracite	362 362

Desk switches

	Type	Operating power	Max operating channels	Type of protection	Color	Page
	–	V DC/mA	n°	IP	–	No.
	ST	12/50	3	×0	Black	364
	LD	5/50	2	32	Black	366

Desk switch
(pneumatic)

Type	Max operating channels	Air tube	Color	Page
–	n°	–	–	No.



PAM

1

1,5 m straight

Anthracite

368

Project sales

Rotary actuators

Type	Torque	Max speed	Size	Features	Page
–	Nm	rpm	mm	–	No.

CRAB

CRAB 12
CRAB 20
CRAB 30
CRAB 40

200
400
1 000
1 700

20
15
10
8

120
155
228
286

Compact
Zero backlash
Zero backlash
Zero backlash

372
372
372
372



Selection guide

Compact electro-mechanical cylinder	Type	Screw lead	Nominal force ¹⁾	Speed	Stroke	Page
	–	mm	kN	mm/s	mm	No.
CEMC 	1804–145–1–42J	3,75	4,7	350	145	375
	2404–•••–•–62L	4,00	8,7	300	125-135-170	375
	2406–125–•–62L	6,00	5,8	450	125	375
	2404–•••–•–63I	4,00	13,1	300	125-135-170	375
	2406–125–•–63I	6,00	8,7	450	125	375
	2104–170–•–D63L	4	9,0	353	170	376
	2404–•••–2–D82P	4	14,1	320	90-170	376
	2406–•••–2–D82P	6	9,4	480	90-170	376
	3004–•••–2–D82P	4	14,1	266	90-170	376
	3006–•••–2–D82P	6	9,4	400	90-170	376
	3004–•••–2–D84H	4	27,4	266	90-170	376
	3006–•••–2–D84H	6	18,3	400	90-170	376
	3004–•••–2–D86F	4	39,5	266	90-170	376
	3006–•••–2–D86F	6	26,3	400	90-170	376

¹⁾ Nominal force: can be used 100 % of time at low speed (10 % of maximum speed)

Compact electro-mechanical cylinder	Type	Nominal force	Linear speed	Page
	–	kN	mm/s	No.
SRSA 	2505	40,7	333	378
	2510	37,5	450	378
	3005	52,9	325	378
	3010	49,9	650	378
	3905	63,3	279,2 ¹⁾	378
	3910	61,0	350	378
	3915	61,5	650	378
	4805	106,5	220,8 ¹⁾	378
	4810	95,3	350	378
	4815	130,4	412,5	378
	4820	86,3	550	378
	6010	161,9	275	378
	6015	162,3	462,5	378
	6020	142,7	666,7	378
	7510	255,5	250 ¹⁾	378
	7515	240,2	357 ¹⁾	378
	7520	199,4	466,7 ¹⁾	378
SVSA	3201	40,6	10,4 ¹⁾	378
	4001	62,3	8,3 ¹⁾	378
	5001	110,2	6,7 ¹⁾	378
SLSA	2525	8,2	1 500 ¹⁾	378
	4040	12,4	1 500 ¹⁾	378

¹⁾ Peak force to be used only in static phases. For dynamic ones, this value must be limited inside the motion controller at 80 % of the dynamic load by the user. Please contact SKF.

Drive by wire

	Type	Force	Stroke	Max. speed	Page
	–	N	mm	mm/s	No.
	EPB	4 000	65	18	382





Telescopic pillars

AC versions

TLC.....	40
TFG	44
THC	48
TXG	52
TGC	56

DC versions

CPI.....	62
TLG	66
TLT.....	70
TFG	74
THG	78
TXG	82
TMA.....	86
TMD.....	90

No motor

FRE	96
TMS.....	100



Telescopic pillars – AC versions

TLC.....	40
TFG	44
THC	48
TXG	52
TGC	56

Telescopic pillar Telemag TLC

Benefits

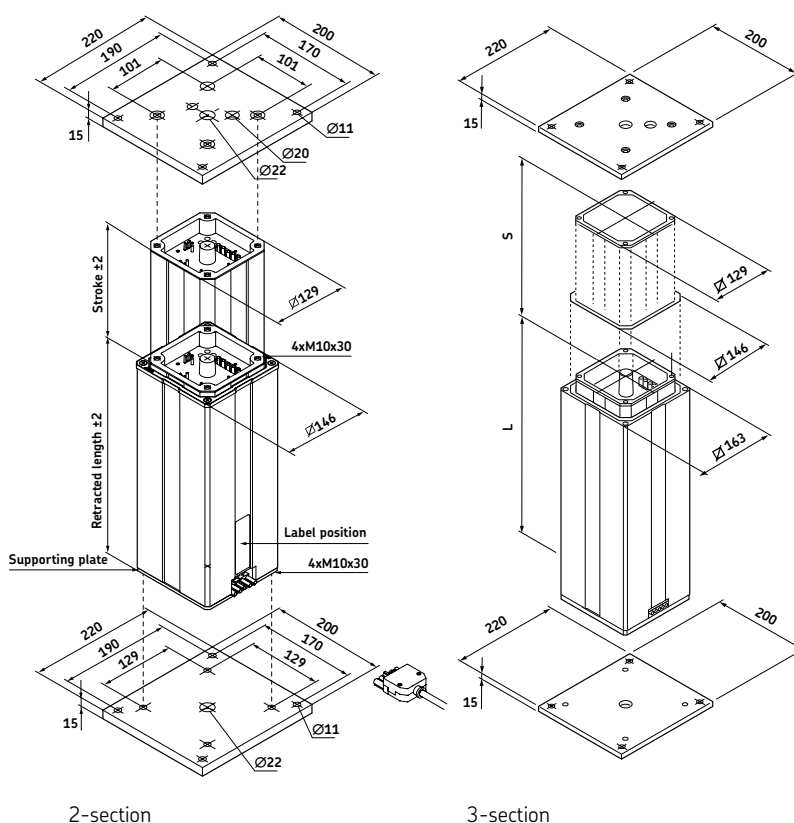
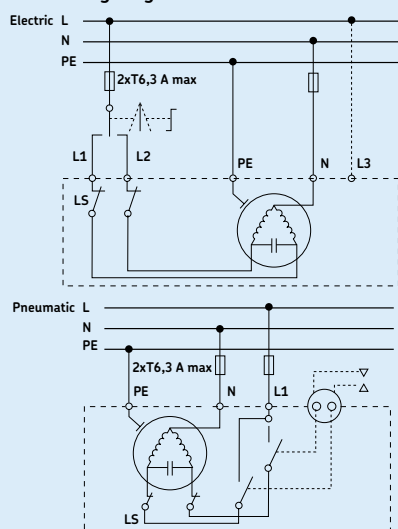
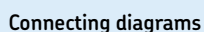
- High bending load
- Quiet
- Powerful
- Plug and play

Standards

- EN/IEC 60601-1
- UL 60601-1



Dimensional drawing



Legend:
S = stroke
L = retracted length

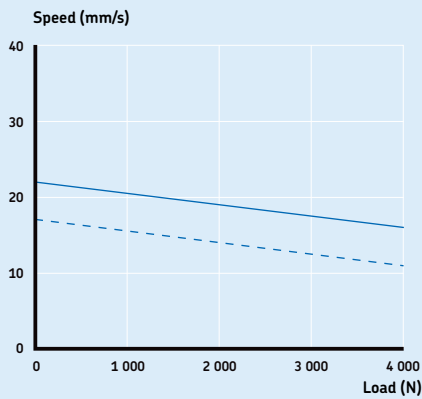
Note: mounting plates are not included.
To be ordered separately.

Technical data

		Unit	TLC 12ZWAS	TLC 12ZWAK	TLC 12ZWDS	TLC 12ZWDK
Push load		N	4 000	4 000	4 000	4 000
Pull load		N	4 000	4 000	4 000	4 000
Max. bending load		Nm	up to 630*	up to 630*	up to 2 100*	up to 2 100*
Speed (full load to no load)	120 VAC	mm/s	16 to 22	16 to 22	16 to 22	16 to 22
	230 VAC	mm/s	11 to 17	11 to 17	11 to 17	11 to 17
Telescopic pillar version		# of section	2-section	2-section	3-section	3-section
Stroke		mm	100 to 700	100 to 700	255 to 700	255/700
Retracted length		mm	S+175	S+175	S+60	S+60
Voltage		VAC	120 or 230	120 or 230	120 or 230	120 or 230
Power	120 VAC	W	1 200	1 200	1 200	1 200
	230 VAC	W	890	890	890	890
Current	120 VAC	A	10	10	10	10
	230 VAC	A	4,1	4,1	4,1	4,1
Duty cycle: intermittent operation	120 VAC	min.	0,8 min./37 min.	0,8 min./37 min.	0,8 min./37 min.	0,8 min./37 min.
	230 VAC	min.	1 min./37 min.	1 min./37 min.	1 min./37 min.	1 min./37 min.
Duty cycle: short-time operation	120 VAC	min.	1,2	1,2	1,2	1,2
	230 VAC	min.	2	2	2	2
Ambient temperature		°C	+10 to +40	+10 to +40	+10 to +40	+10 to +40
Type of protection		IP	20/30	20/30	20/30	20/30
Protection class		–	I	I	I	I
Type of control		–	electrical	pneumatic	electrical	pneumatic
Weight		kg	15,2–24,5	15,2–24,5	18,3–30,5	18,3–30,5

* For details, please see bending load diagrams

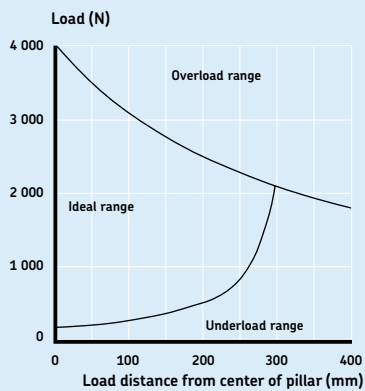
Performance diagram



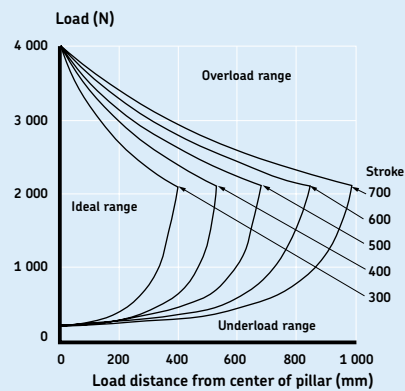
Speed-load diagram

— 120 V AC version
- - - 230 V AC version

Bending load diagrams

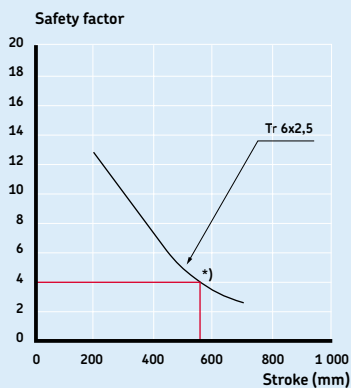


Bending load diagram 2-section



Bending load diagram 3-section

Safety factor load conditions



* Safety factor = 4

Ordering key

	T	L	C	12		W					-		0	
Type														
Load: 4 000 N 3 000 N 2 000 N	Z X S													
Tube set: Tube set 2× Tube set 3×	A D													
Control: Electrical control Pneumatic control <i>Low-voltage control</i>	S K N													
Voltage: 230 V AC/50 Hz (no code) 120 V AC/60 Hz <i>Special voltage</i>	2 9													
Type of protection/test: Standard IP30 (no code) UL approved	U													
Construction: Push load <i>Customer-specific</i> <i>Pull load</i>	0 1 3													
Stroke (S): 100 mm, only for tube set 2×, push 255 mm, only for tube set 3×, push 200 mm, only for tube set 2× 300 mm 400 mm 500 mm 600 mm 700 mm	1 1 2 3 4 5 6 7													

Options written in italic fonts are only available on demand. Please contact SKF

Accessories

Description	Designation	Order N°
Top mounting plate for 2 × tube set	SPL-290265	M/0125623
Bottom mounting plate for 2 × tube set	SPL-290351	M/0125625
Top mounting plate for 3 × tube set	SPL-290268	M/0125624
Bottom mounting plate for 3 × tube set	SPL-290265	M/0125623
Screw (4/plate) for mounting plate	ZBE-510707	M/0125360
Plug AC Telemag 3 pin	SEL-265518	M/0124866
Plug AC Telemag 5 pin	SEL-265519	M/0124864

Telescopic pillar Telemag TFG

Benefits

- Push or pull load
- Compact design
- Fast movement
- Powerful
- Plug and play

Standards

- EN/IEC 60601-1
- UL 60601-1

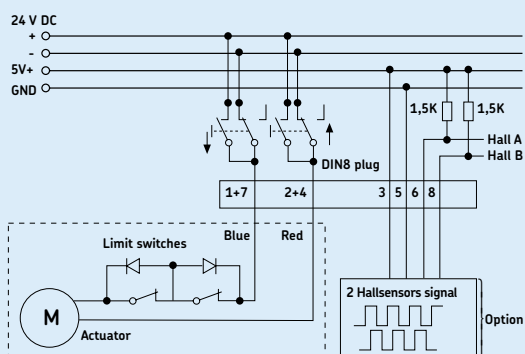


Suitable control units and accessories

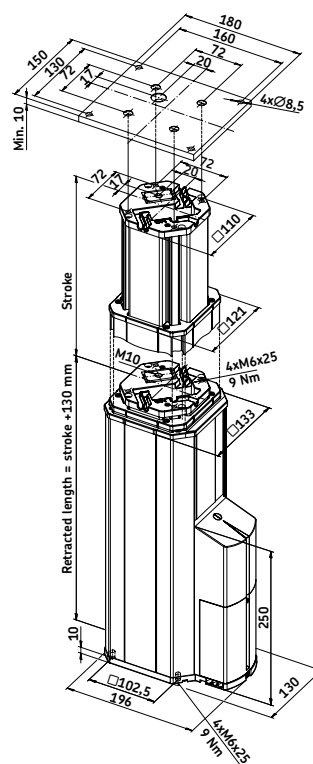
		  
		EHA 3 STJ STE
TFG 50	Integrated control unit	  
TFG 90	Integrated control unit	  

 Hand switch
 Foot switch
 Desk switch

Connecting diagram



Dimensional drawing



Legend:
S = stroke
L = retracted length

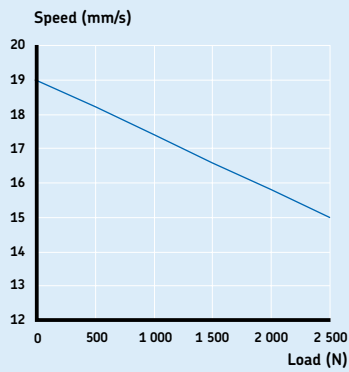
Note: mounting plates are not included.
To be ordered separately.

Technical data

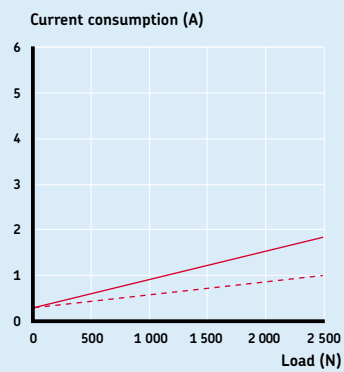
	Unit	TFG 50	TFG 90
Push load	N	2 500	2 500
Pull load	N	2 500	2 500
Max. bending load	Nm	up to 500*	up to 500*
Speed (full load to no load)	mm/s	15 to 19	15 to 19
Telescopic pillar version	# of section	3-section	3-section
Stroke	mm	200 to 700	200 to 700
Retracted length	mm	S+130	S+130
Voltage	VAC	120	230
Power	W	160	160
Current	A	1,8	1
Duty cycle: intermittent operation	min.	1 min./9 min.	1 min./9 min.
Duty cycle: short-time operation	min.	3	3
Ambient temperature	°C	+10 to +40	+10 to +40
Type of protection	IP	30	30
Protection class	–	1	1
Type of control	–	electrical	electrical
Weight	kg	8 to 19	8 to 19

* For details, please see bending load diagrams

Performance diagrams



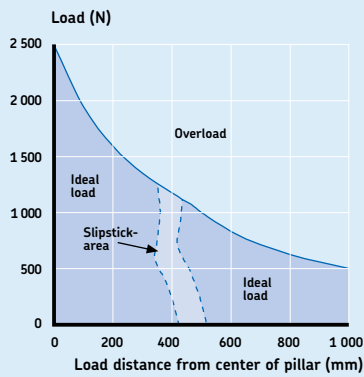
Speed-load diagram



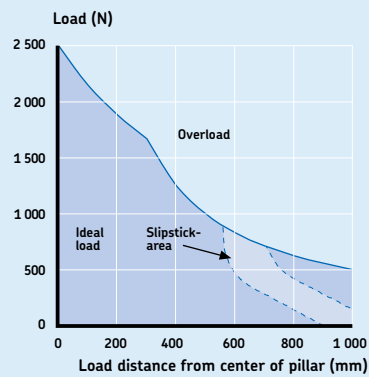
Current-load diagram

— TFG 50
- - - TFG 90

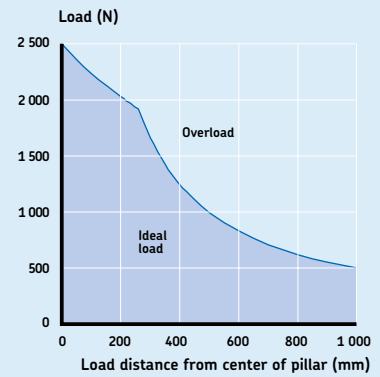
Bending load diagrams



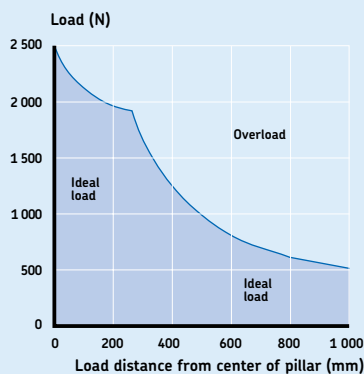
200 mm stroke



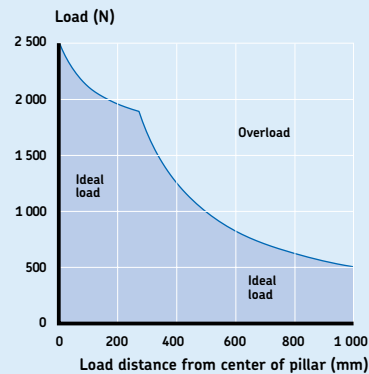
300 mm stroke



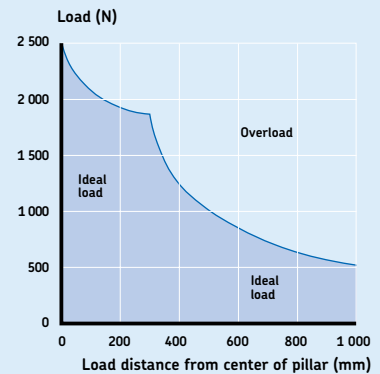
400 mm stroke



500 mm stroke



600 mm stroke



700 mm stroke

Telescopic pillar Telemag THC

Benefits

- Quiet
- Powerful
- Robust
- Plug and play

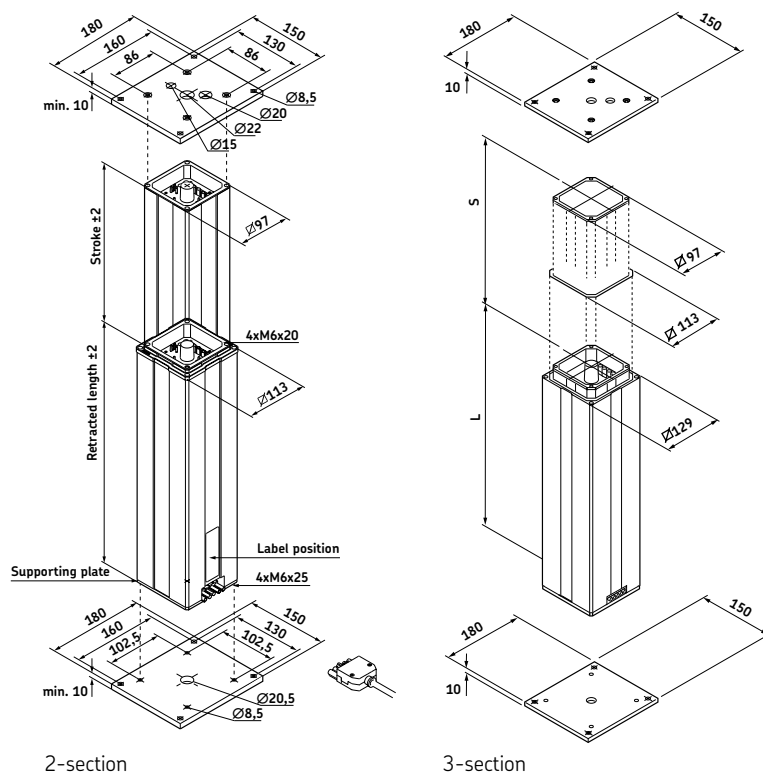
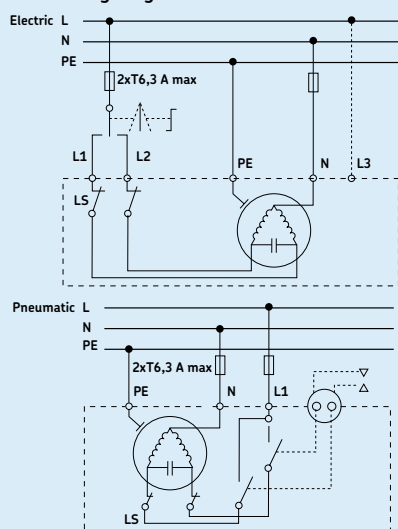
Standards

- EN/IEC 60601-1
- UL 60601-1



Dimensional drawing

Connecting diagrams



Legend:
S = stroke
L = retracted length

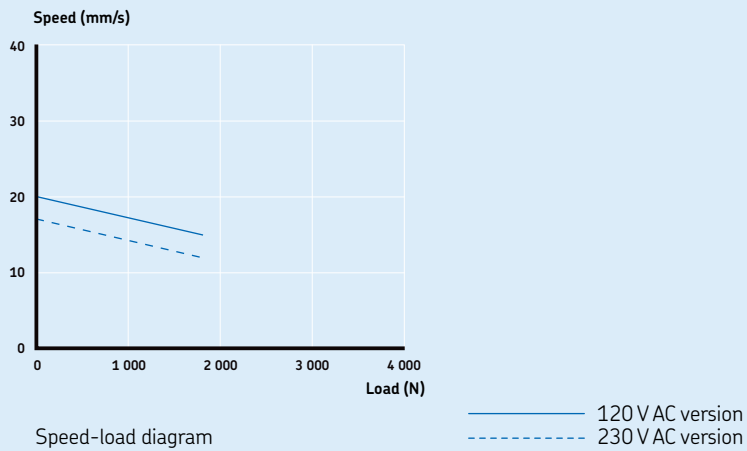
Note: mounting plates are not included.
To be ordered separately.

Technical data

		Unit	THC 8AWAS	THC 8AWAK	THC 8AWDS	THC 8AWDK
Push load		N	1 800	1 800	1 800	1 800
Pull load		N	1 800	1 800	1 800	1 800
Max. bending load		Nm	up to 250*	up to 250*	up to 900*	up to 900*
Speed (full load to no load)	120 VAC	mm/s	15 to 20	15 to 20	15 to 20	15 to 20
	230 VAC	mm/s	12 to 17	12 to 17	12 to 17	12 to 17
Telescopic pillar version		# of section	2-section	2-section	3-section	3-section
Stroke		mm	200 to 700	200 to 700	230 to 700	230 to 700
Retracted length		mm	S+155	S+155	S+60	S+60
Voltage		VAC	120 or 230	120 or 230	120 or 230	120 or 230
Power	120 VAC	W	750	750	750	750
	230 VAC	W	500	500	500	500
Current	120 VAC	A	6	6	6	6
	230 VAC	A	2,2	2,2	2,2	2,2
Duty cycle: intermittent operation	120 VAC	min.	0,7 min./30 min.	0,7 min./30 min.	0,7 min./30 min.	0,7 min./30 min.
	230 VAC	min.	1 min./27 min.	1 min./27 min.	1 min./27 min.	1 min./27 min.
Duty cycle: short-time operation	120 VAC	min.	1	1	1	1
	230 VAC	min.	2	2	2	2
Ambient temperature		°C	+10 to +40	+10 to +40	+10 to +40	+10 to +40
Type of protection		IP	20/30	20/30	20/30	20/30
Protection class		–	I	I	I	I
Type of control		–	electrical	pneumatic	electrical	pneumatic
Weight		kg	7,9 to 13,5	7,9 to 13,5	8,6 to 17,5	8,6 to 17,5

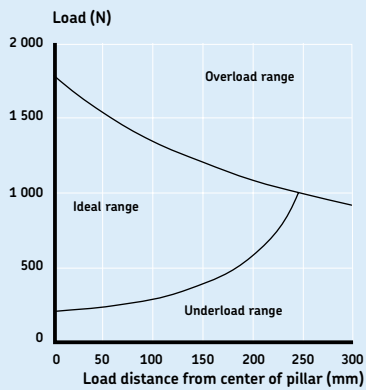
* For details, please see bending load diagrams

Performance diagram

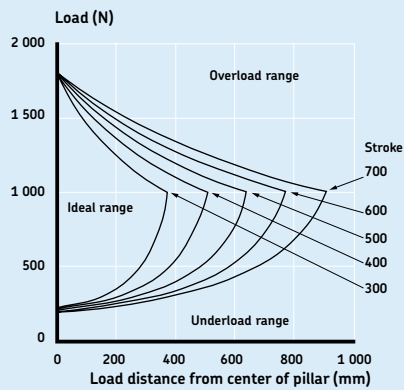


Speed-load diagram

Bending load diagrams

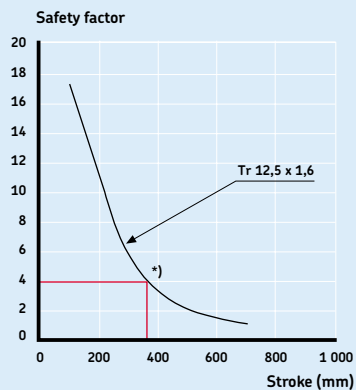


Bending load diagram 2-section



Bending load diagram 3-section

Safety factor load conditions



* Safety factor = 4

Ordering key

Type	THC	8		W					-	0	
Load: 1 800 N 1 500 N 1 300 N			A B C								
Tube set: Tube set 2× Tube set 3×				A D							
Control: Electrical control Pneumatic control <i>Low-voltage control</i>					S K N						
Voltage: 230 V AC/50 Hz, IP 30 (no code) 120 V AC/60 Hz, IP 20 <i>Special voltage</i>						2 9					
Type of protection /test: Standard IP30 (no code) UL test							U				
Construction: Push load <i>Customer-specific</i> <i>Pull load</i>									0 1 3		
Stroke (S): 200 mm (only for tube set 2×) 300 mm 400 mm 500 mm 600 mm 700 mm											2 3 4 5 6 7

Options written in italic fonts are only available on demand. Please contact SKF

Accessories

Description	Designation	Order N°
Top mounting plate for 2 × tube set	SPL-264265	M/0125688
Bottom mounting plate for 2 × tube set	SMT-264363	M/0124814
Top mounting plate for 3 × tube set	SPL-264265	M/0125688
Bottom mounting plate for 3 × tube set	SPL-264237	M/0125622
Screw (4/plate) for top mounting plate	ZBE-510671	M/0125628
Screw (4/plate) for bottom mounting plate	ZBE-510709	M/0125560
Plug AC Telemag 3 pin	SEL-265518	M/0124866
Plug AC Telemag 5 pin	SEL-265519	M/0124864

Telescopic pillar Telesmart TXG

Benefits

- Plug and play system
- Powerful and fast lifting
- Aesthetic design

Standards

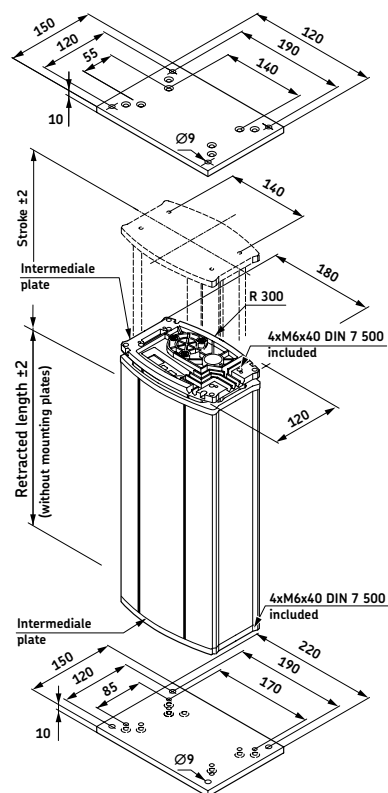
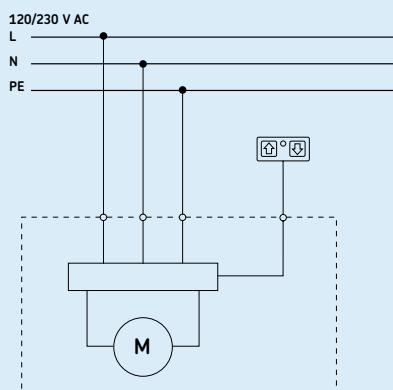
- EN/IEC 60601-1
- UL 60601-1



Dimensional drawing

- Hand switch
- Foot switch
- Desk switch

Connecting diagram



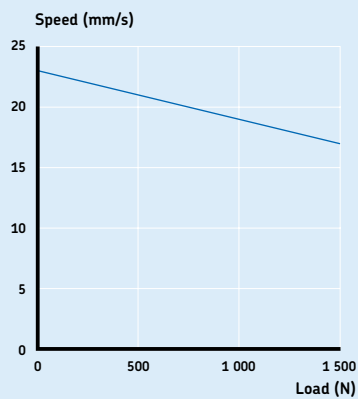
Note: mounting plates are not included.
To be ordered separately.

Technical data

	Unit	TXG4/5	TXG8/9
Push load	N	1 500	1 500
Pull load	N	0	0
Max. bending load	Nm	up to 210*	up to 210*
Speed (full load to no load)	mm/s	17 to 23	17 to 23
Telescopic pillar version	# of section	2-section	2-section
Stroke	mm	200 to 600	200 to 600
Retracted length	mm	S+180	S+180
Voltage	V AC	120	230
Power	W	N/A	N/A
Current	A	1,8	0,9
Duty cycle: intermittent operation	min.	1 min./9 min.	1 min./9 min.
Duty cycle: short-time operation	min.	N/A	N/A
Ambient temperature	°C	+10 to +40	+10 to +40
Type of protection	IP	30	30
Protection class	–	II/I	II/I
Type of control	–	electrical	electrical
Weight	kg	9 to 14	9 to 14

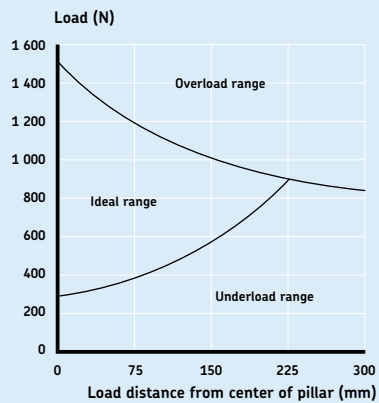
* For details, see bending load diagrams

Performance diagram

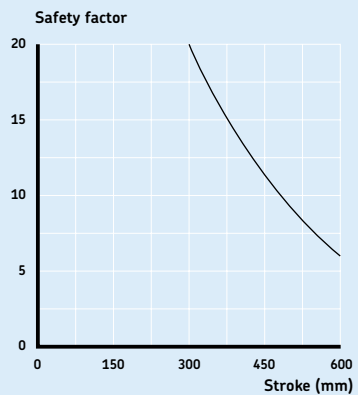


Speed-load diagram

Bending load diagram



Safety factor load conditions



2



120 V AC, 50/60 Hz, class II
120 V AC, 50/60 Hz, class I (mandatory for cable feedthrough option)
230 V AC, 50 Hz, class II
230 V AC, 50 Hz, class I (mandatory for cable feedthrough option)

Natural anodized coating
Customer-specific
Powder-coated white
Powder-coated grey

None
Control connection feedthrough
Mains cable feedthrough
Control connection feedthrough, mains cable feedthrough
Customer-specific

Stroke (S) / Retr. length (L=S+180 or L= S+160 mm)	L=S+180	L=S+160
200 mm	200	4CY
300 mm	300	4DY
400 mm	400	4EY
500 mm	500	4FY
600 mm	600	4GY

Options written in italic fonts are only available on demand. Please contact SKF

Mains cable	Plug	Country	Order number	Comment
Straight cable 3,5	Euro	General	M/0121730	2-pole/3-pole
Straight cable 3,5	Schuko	DE	M/0121760	2-pole/3-pole
Straight cable 3,5	UL	USA	M/0121757	2-pole/3-pole
Straight cable 3,5	British standard	UK	M/0121761	2-pole/3-pole
Top or bottom mounting plate			M/0124874	

Note: mounting screws are included in the TXG.

Telescopic pillar Telemag TGC

Benefits

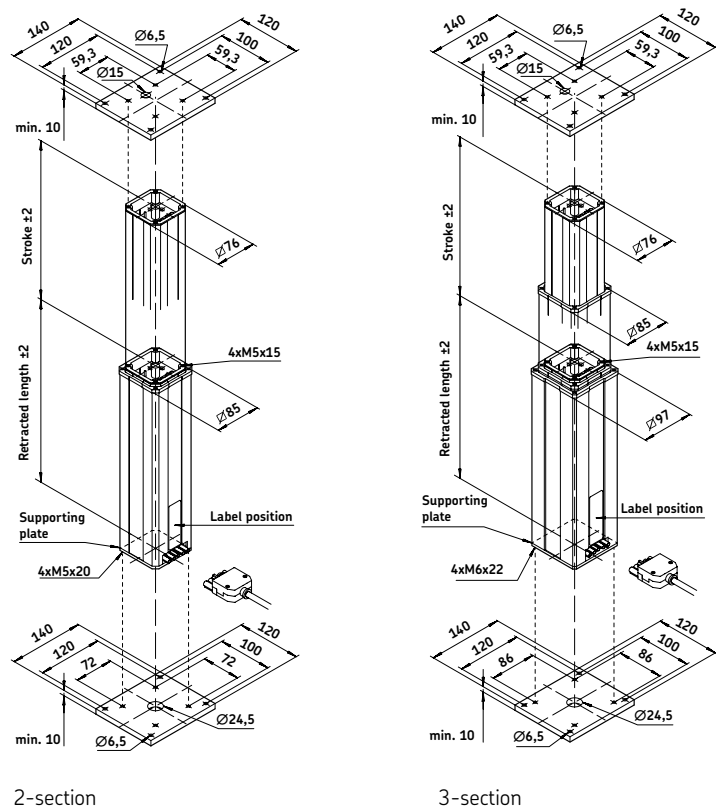
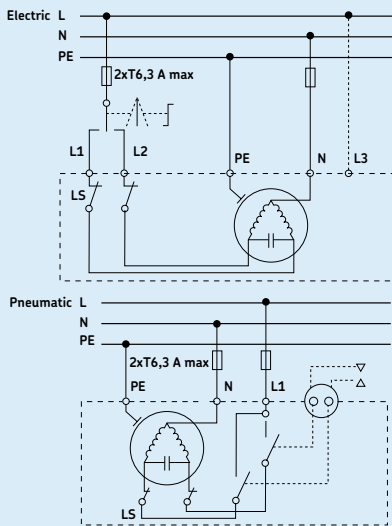
- Compact design
- Quiet
- Robust
- Plug and play

Standards

- EN/IEC 60601-1
- UL 60601-1

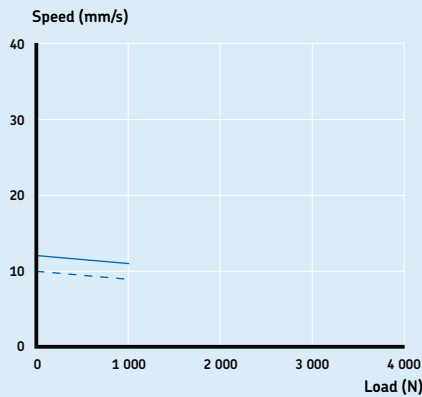


Dimensional drawing



Note: mounting plates are not included.
To be ordered separately.

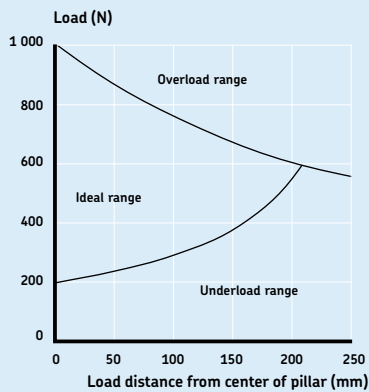
Performance diagram



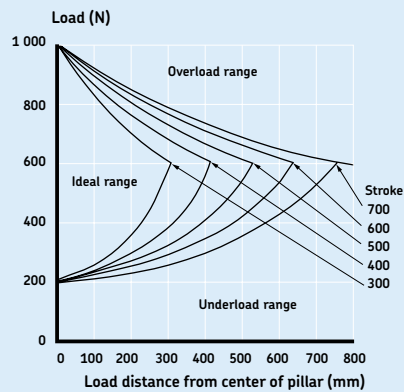
Speed-load diagram

— 120 VAC version
- - - 230 VAC version

Bending load diagrams

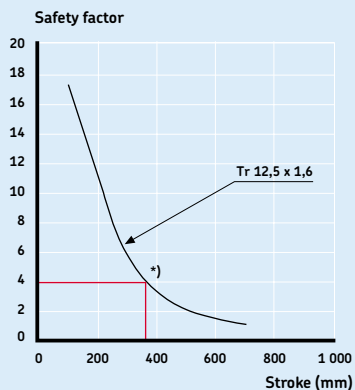


Bending load diagram 2-section



Bending load diagram 3-section

Safety factor load conditions



* Safety factor = 4

Ordering key

	T	G	C	8	A	W					-		0	
Type														
Tube set: Tube set 2× Tube set 3×	A D													
Control: Electrical control Pneumatic control <i>Low-voltage control</i>	S K N													
Voltage: 230 V AC/50 Hz, IP 30 (no code) 120 V AC/60 Hz, IP 20 <i>Special voltage</i>	2 9													
Type of protection /test: Standard IP30 (no code) UL test	U													
Construction: Push load <i>Customer-specific</i> <i>Pull load</i>	0 1 3													
Stroke (S): 200 mm (only for tube set 2×) 300 mm 400 mm 500 mm 600 mm 700 mm	2 3 4 5 6 7													

Options written in italic fonts are only available on demand. Please contact SKF

Accessories

Description	Designation	Order N°
Top mounting plate for 2 × tube set	SPL-964280	M/0125629
Bottom mounting plate for 2 × tube set	SPL-964281	M/0125630
Top mounting plate for 3 × tube set	SPL-964280	M/0125630
Bottom mounting plate for 3 × tube set	SPL-965121	M/0125631
Screw (4/plate), only for 2 × tube set, bottom plate	ZBE-510751	M/0125368
Screw (4/plate), only for 3 × tube set, bottom plate	ZBE-510709	M/0125560
Lock washer (4/plate)	ZBE-510024	M/0125339
Plug AC Telemag 3-pin	SEL-265518	M/0124866
Plug AC Telemag 5-pin	SEL-265519	M/0124864



Telescopic pillars – DC versions

CPI.....	62
TLG	66
TLT.....	70
TFG	74
THG	78
TXG	82
TMA.....	86
TMD.....	90

Telescopic pillar Telemag CPI

Benefits

- Push or pull load
- Fast movement
- Robust and stable design
- T-slotted outer tube

Standards

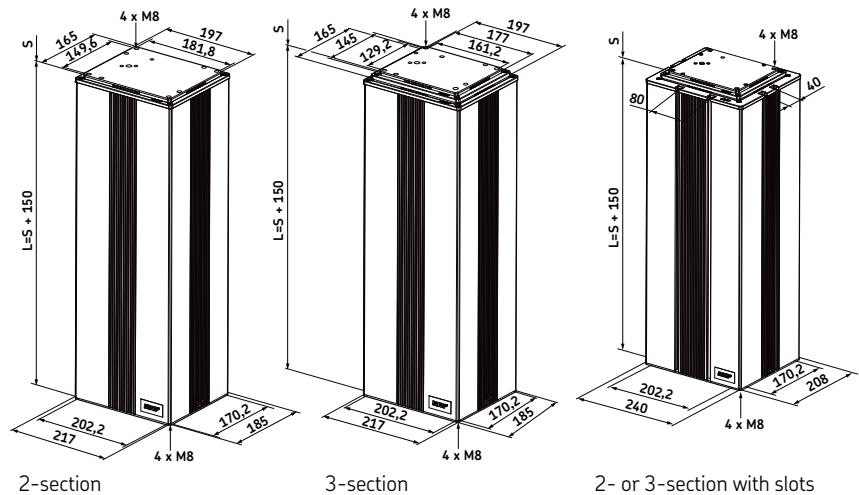
- EN 60950-1
- IEC 60950-1
- UL 60950-1



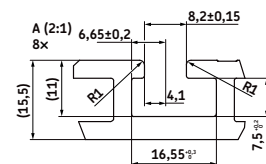
Suitable control units and accessories

Control units											
		LD	SCU 1	SCU 5	SCU 9	VCU 5	VCU 8	VCU 9	BCU 5	BCU 8	
	CPI	•	•	•	•	•	•	•	•	•	•
	EHA 3	•	•	•	•	•	•	•	•	•	•
	STJ	•	•	•	•	•	•	•	•	•	•
	STE	•	•	•	•	•	•	•	•	•	•
	LD-034.000.004	•									
	LD-011.031.000	•									
Hand switch											
Foot switch											
Desk switch											

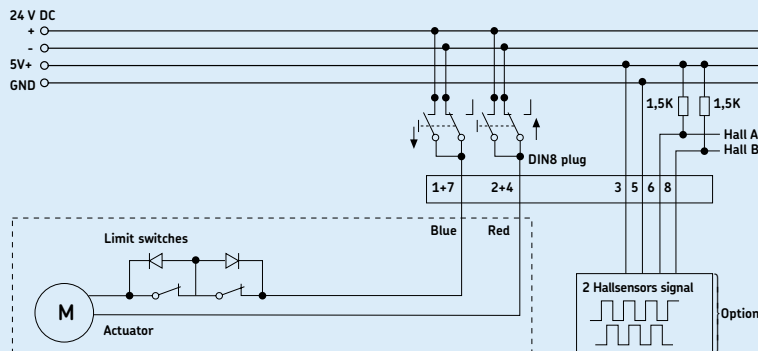
Dimensional drawing



Legend:
S = stroke
L = retracted length



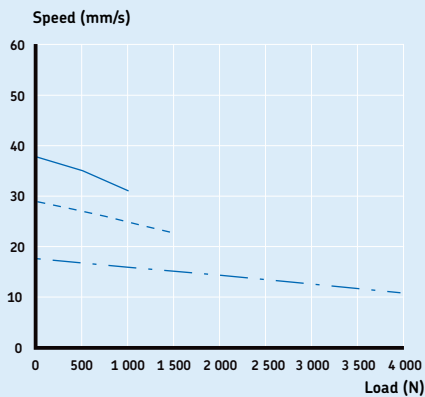
Connecting diagram



Technical data

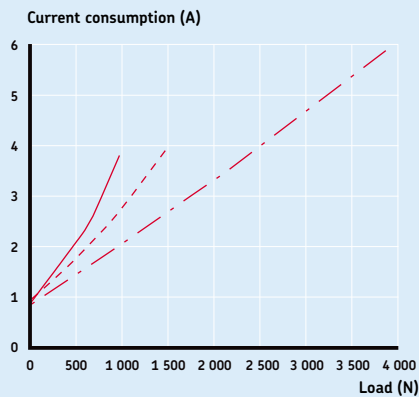
	Unit	CPI10-D	CPI10-E	CPI10-F
Max. push force	N	1 000	1 500	4 000
Max. pull force	N	1 000	1 500	4 000
Dynamic bending moment (2-section)	Nm	250	250	250
Dynamic bending moment (3-section)	Nm	max. 1 000	max. 1 000	max. 1 000
Speed (full load)	mm/s	31	22	11
Speed (no load)	mm/s	38	28	17
Stroke	mm	200 to 700	200 to 700	200 to 700
Retracted length	mm	S+150	S+150	S+150
Voltage	V DC	24	24	24
Power	W	91,2	96	144
Current	A	3,8	4	6
Duty cycle: intermittent operation	min.	2 min./8 min.	2 min./8 min.	1 min./9 min.
Ambient temperature	°C	+10 to +40	+10 to +40	+10 to +40
Type of protection	IP	30	30	30
Protection class	—	III/SELV	III/SELV	III/SELV
Type of control	—	electrical	electrical	electrical
Weight (2-section)	kg	10 to 21	10 to 21	10 to 21
Weight (3-section)	kg	11,5 to 25,5	11,5 to 25,5	11,5 to 25,5

Performance diagrams



Speed-load diagram

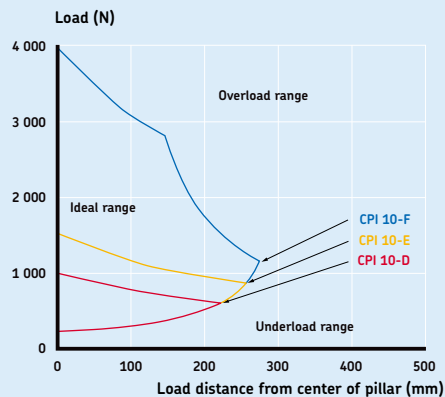
- CPI10-D
- - - CPI10-E
- . - CPI10-F



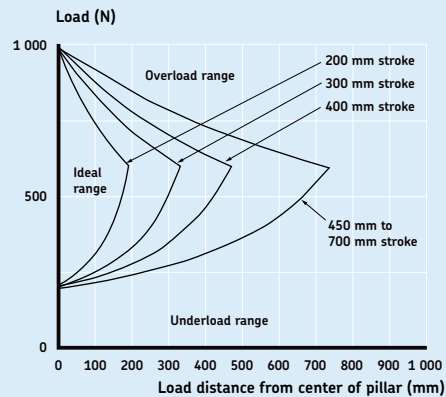
Current-load diagram

- CPI10-D
- - - CPI10-E
- . - CPI10-F

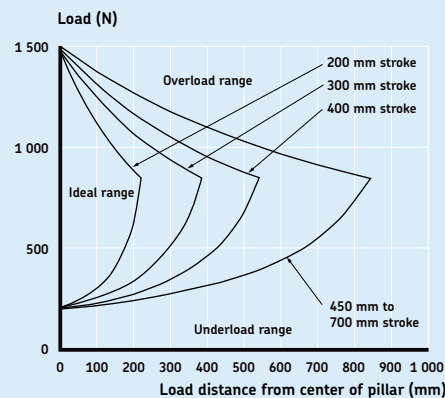
Bending load diagrams



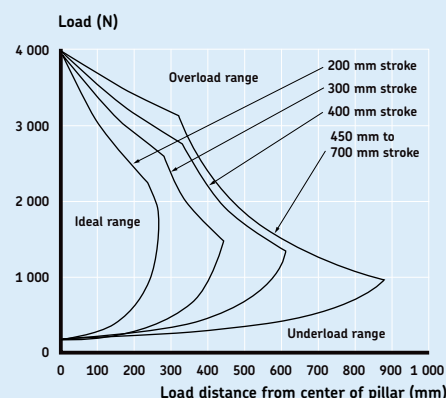
Load diagram 2-section



Load diagram 3-section CPI10-D



Load diagram 3-section CPI10-E



Load diagram 3-section CPI10-F

Ordering key

Type		Voltage:		Load:		Speed (mm/s)		Tube set:		Stroke (S):		Electrical options:		Cable through option:		Special:			
CPI 10 - T		24 V DC		Push (N) 1 000 1 500 4 000		Pull (N) 1 000 1 500 4 000		Speed (mm/s) 31 22 11		2-section 3-section 2-section T-slotted outer tube 3-section T-slotted outer tube		200 mm 250 mm 300 mm 350 mm 400 mm 450 mm 500 mm 550 mm 600 mm 650 mm 700 mm Other stroke lengths		None Encoder Lifetime monitoring Encoder and lifetime monitoring		None Mains cable feedthrough, protection class I (retracted length +30 mm)		None Back-up nut (only for 4 000 N version)	
						D E F		2 3 4 5		200 250 300 350 400 450 500 550 600 650 700 XXX		0 F M N		0 C		0 B			

Options written in italic fonts are not available as standard. Please contact SKF for verification.

Telescopic pillar Telemag TLG

Benefits

- High bending load
- Powerful

Standards

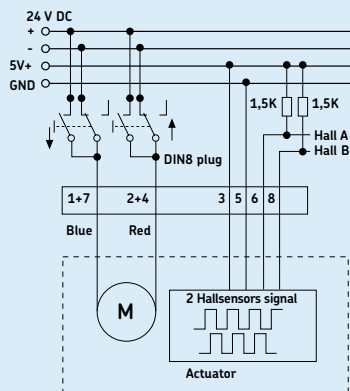
- EN/IEC 60601-1
- UL 60601-1



Suitable control units and accessories

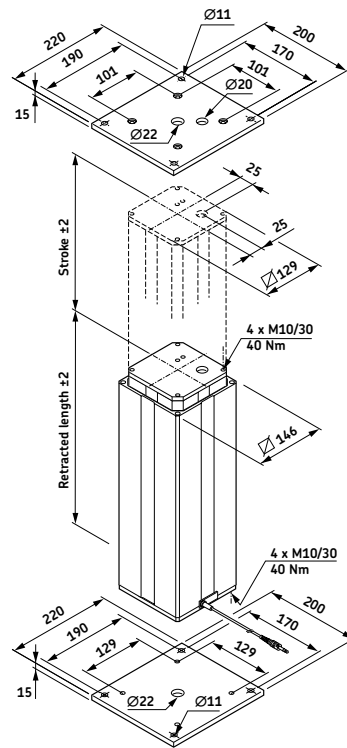
		Control units									
			SCU 1	SCU 5	SCU 9	VCU 5	VCU 8	VCU 9	BCU 5	BCU 8	MCU
	TLG	●	●	●	●	●	●	●	●	●	●
	EHA1										●
	EHA3	●	●	●	●	●	●	●	●	●	●
	STF										●
	STJ	●	●	●	●	●	●	●	●	●	
	STA										●
	STE	●	●	●	●	●	●	●	●	●	
 Hand switch											
 Foot switch											
 Desk switch											

Connecting diagram*

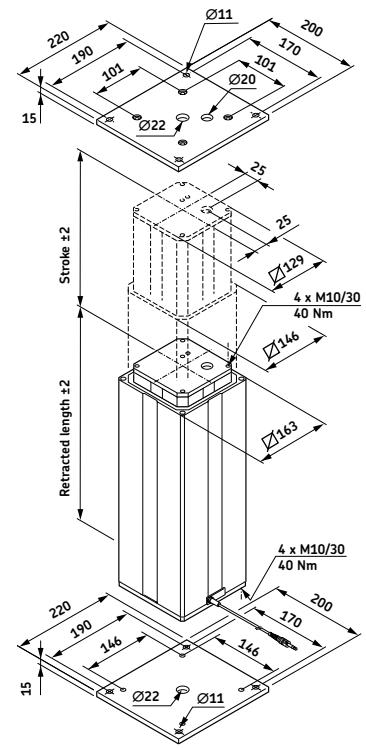


* Only valid with TLG11. TLG10 must be operated by a BCU, MCU, SCU or VCU control unit.

Dimensional drawing



2-section



3-section

Legend:
 S = stroke
 L = retracted length

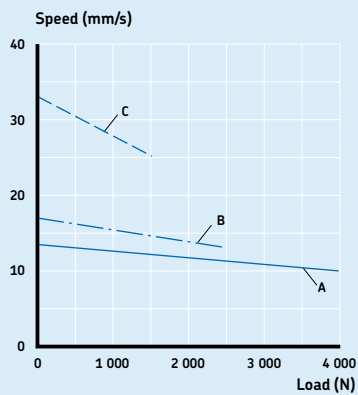
Note: mounting plates are not included.
 To be ordered separately.

Technical data

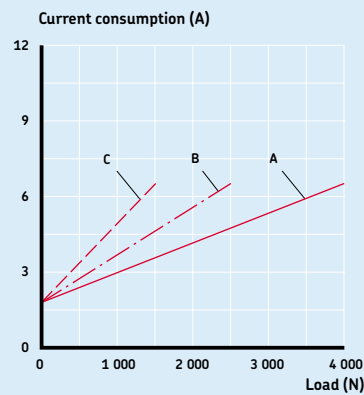
	Unit	TLG 10/11-A	TLG 10/11-B	TLG 10/11-C
Push load	N	4 000	2 500	1 500
Pull load	N	0	0	0
Max. bending load	Nm	up to 2 800*	up to 1 750*	up to 950*
Speed (full load to no load)	mm/s	10 to 14	13 to 17	25 to 33
Telescopic pillar version	# of section	2 or 3-section	2 or 3-section	2 or 3-section
Stroke	mm	200 to 700	200 to 700	200 to 700
Retracted length	mm	S+180	S+180	S+180
Voltage	V DC	24	24	24
Power	W	156	156	156
Current	A	6,5	6,5	6,5
Duty cycle: intermittent operation	min.	1 min./9 min	1 min./9 min	1 min./9 min
Duty cycle: short-time operation	min.	2,5	2,5	2,5
Ambient temperature	°C	+10 to +40	+10 to +40	+10 to +40
Type of protection	IP	30	30	30
Protection class	—	SELV	SELV	SELV
Type of control	—	electrical	electrical	electrical
Weight	kg	15-30	15-30	15-30

* For details, please see bending load diagrams

Performance diagrams

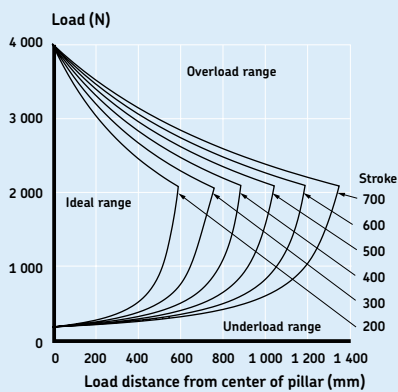


Speed-load diagram

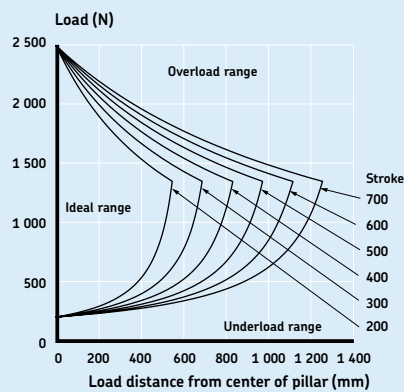


Current-load diagram

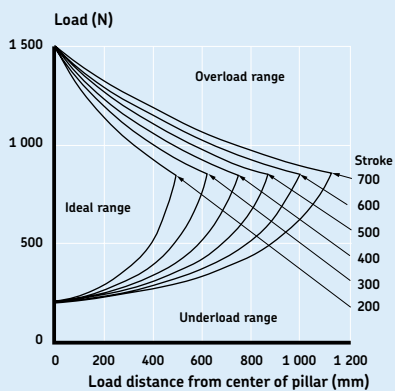
Bending load diagrams



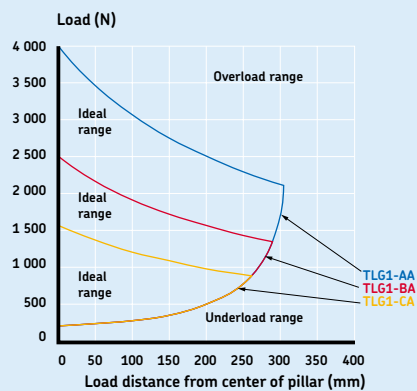
Bending load diagram TLG ...AD



Bending load diagram TLG ...BD



Bending load diagram TLG ...CD



Bending load diagram TLG...AA/BA/CA

Ordering key

TLG1 - - - - - 000

Type

Voltage:
24 V DC
24 V DC with integrated current cut-off

Load:
4 000 N
2 500 N
1 500 N

Tube set:
Tube set 2×
Tube set 3×

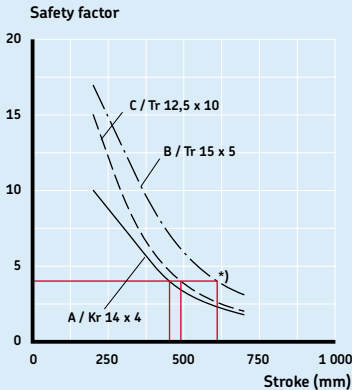
Stroke (S):
200 mm
300 mm
400 mm
500 mm
600 mm
700 mm

Cable / connecting plug:
Straight, 1,0 m / jack plug
Straight, 2,3 m / jack plug
Coiled, 0,6 m / jack plug
Straight, 1,0 m / DIN8 plug
Straight, 2,3 m / DIN8 plug
Coiled, 0,6 m / DIN8 plug

Option:
No option
Single encoder, 8 pulses, cable with jack plug
Potentiometer, 1 kΩ, 2 Watt, 0,25 % linearity, 10 turns
Cable feedthrough, 5 × 0,75 mm², led out, top +160 mm, bottom +800 mm
Cable feedthrough, single encoder
Cable feedthrough, potentiometer
Dual encoder, cable with DIN8 plug
Cable feedthrough, dual encoder, cable with DIN8 plug

Options written in italic fonts are only available on demand. Please contact SKF

Safety factor load conditions



* Safety factor = 4

Accessories

Description	Designation	Order N°
Top mounting plate for 2 × tube set	SPL-290268	M/0125624
Bottom mounting plate for 2 × tube set	SPL-290351	M/0125625
Top mounting plate for 3 × tube set	SPL-290268	M/0125624
Bottom mounting plate for 3 × tube set	SPL-290265	M/0125623
Screw (4/plate) for mounting plate	ZBE-510707	M/0125360

Telescopic pillar Telemag TLT

Benefits

- Very small built-in dimension
- Powerful

Standards

- EN/IEC 60601-1
- UL 60601-1



Dimensional drawing

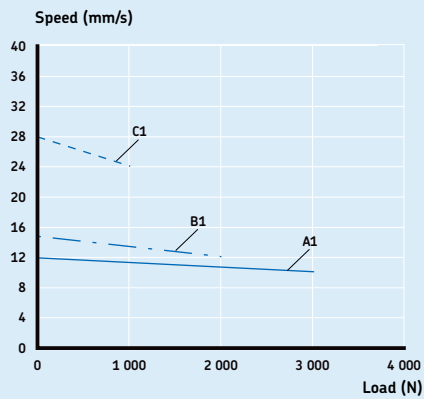
Technical drawing of the 200 mm stroke version of the 200 mm x 200 mm x 200 mm frame. The drawing shows the frame assembly with dimensions for the top plate, intermediate plate, and base plate. Key dimensions include: top plate (220x220 mm, 190x190 mm, 101x101 mm, 15 mm thick, Ø22 holes), intermediate plate (25 mm thick, 129 mm x 129 mm, 146 mm x 146 mm, 163 mm x 163 mm, 4xM10 30 mm deep), and base plate (200x200 mm, 170x170 mm, 146x146 mm, 15 mm thick, Ø22 holes). The total height is 24 mm. The maximum length is 2300 mm.

Legend:
S = stroke
L = retracted length

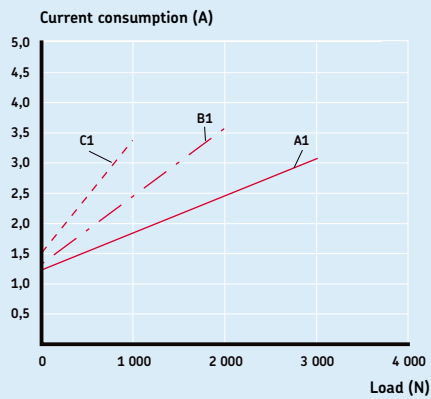
Note: mounting plates are not included.
To be ordered separately.

	Unit	TLT10-A1	TLT10-A2	TLT10-B1	TLT10-C1	TLT10-C2
Push load	N	3 000	4 000	2 000	1 000	2 000
Pull load	N	0	0	0	0	0
Max. bending load	Nm	up to 400*	up to 1 000*	up to 250*	up to 110*	up to 480*
Speed (full load to no load)	mm/s	11 to 16	13 to 19	13 to 19	25 to 36	25 to 42
Telescopic pillar version	# of section	3-section	3-section	3-section	3-section	3-section
Stroke	mm	200 to 700	200 to 700	200 to 700	200 to 700	200 to 700
Retracted length	mm	0,5 × S+170	0,5 × S+240	0,5 × S+170	0,5 × S+170	0,5 × S+240
Voltage	V DC	24	24	24	24	24
Power	W	168	168	192	192	216
Current	A	2×3,5	2×3,5	2×4,0	2×4,0	2×4,5
Duty cycle: intermittent operation	min..	1 min./9 min	1 min./9 min	1 min./9 min	1 min./9 min	1 min./9 min
Duty cycle: short-time operation	min.	N/A	N/A	N/A	N/A	N/A
Ambient temperature	°C	+10 to +40	+10 to +40	+10 to +40	+10 to +40	+10 to +40
Type of protection	IP	40	40	40	40	40
Protection class	–	SELV	SELV	SELV	SELV	SELV
Type of control	–	electrical	electrical	electrical	electrical	electrical
Weight	kg	15-30	15-30	15-30	15-30	15-30

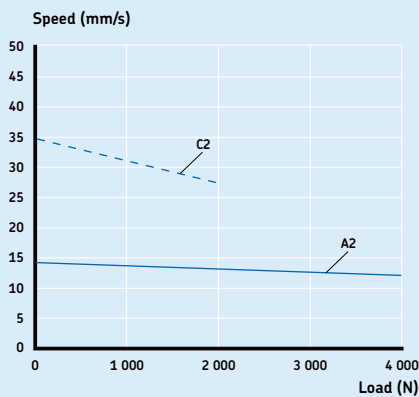
Performance diagrams



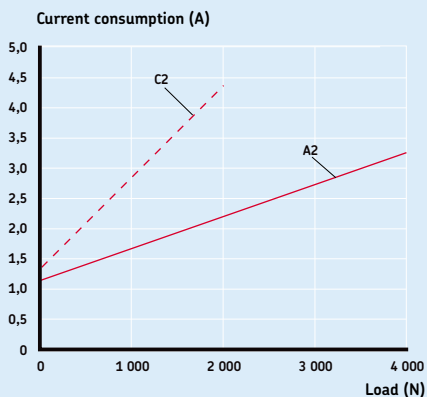
Speed-load diagram



Current-load diagram

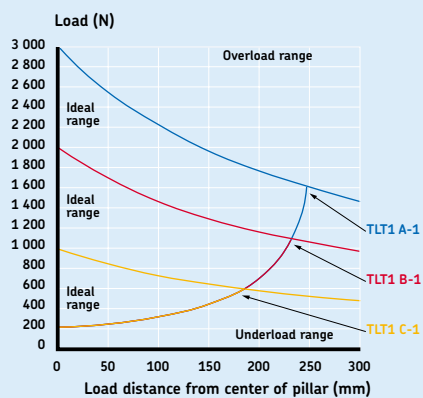


Current-load diagram

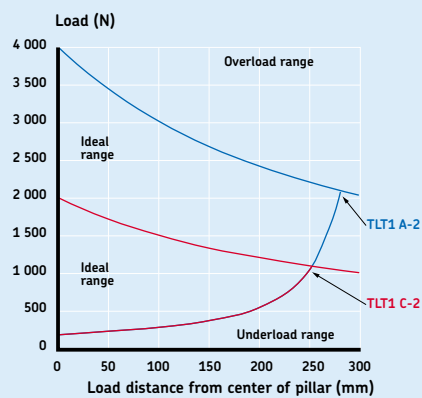


Current-load diagram

Bending load diagrams



Bending load diagram A1, B1, C1



Bending load diagram A2, C2

Ordering key

TLT1 - - - - - 000

Type

Voltage:

24 V DC

24 V DC with integrated current cut-off (only for A2 and C2)

0

1

Load / Speed:

4 000 N

3 000 N

2 000 N / 19 to 13 mm/s

2 000 N / 45 to 25 mm/s

1 000 N

A2

A1

B1

C2

C1

Stroke (S):

200 mm

300 mm

400 mm

500 mm

600 mm

700 mm

2

3

4

5

6

7

Cable / connecting plug:

*Straight, 1,0 m / jack plug**Straight, 2,3 m / jack plug**Coiled, 0,6 m / jack plug**Straight, 1,0 m / DIN8 plug**Straight, 2,3 m / DIN8 plug**Coiled, 0,6 m / DIN8 plug*

1

2

A

3

4

B

Option:

No option

Single encoder, 8 pulses, cable with jack plug

*Cable feedthrough, 3x1,5 mm², top +160 mm, bottom +800 mm**Cable feedthrough, single encoder**Dual encoder, cable with DIN8 plug*

0

A

C

D

F

Options written in italic fonts are only available on demand. Please contact SKF

Accessories

Description	Designation	Order N°
Top mounting plate	SPL-290268	M/0125624
Bottom mounting plate	SPL-290268	M/0125623
Screw (4/plate) for mounting plate	ZBE-510707	M/0125360

Telescopic pillar Telemag TFG

Benefits

- Push or pull load
- Compact design
- Fast movement
- Powerful
- Plug and play

Standards

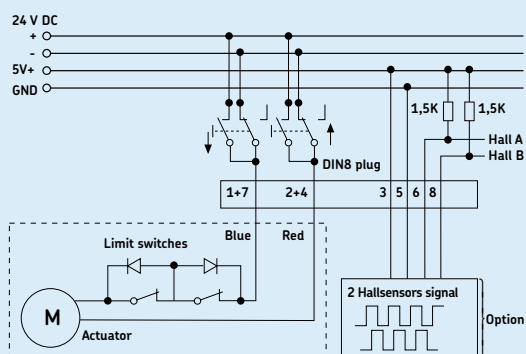
- EN/IEC 60601-1
- UL 60601-1



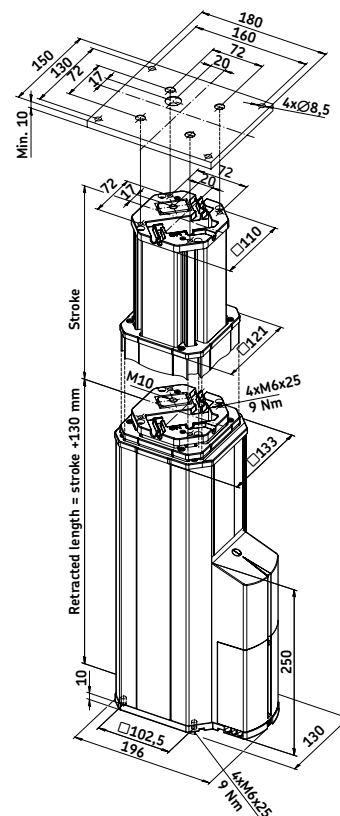
Suitable control units and accessories

[illegible]

Connecting diagram



Dimensional drawing



Legend:
S = stroke
L = retracted length

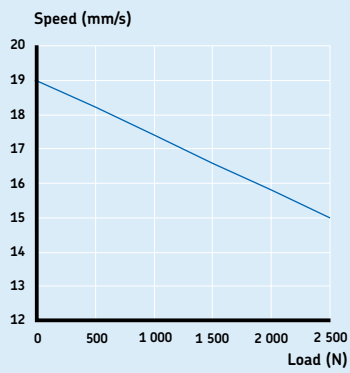
Note: mounting plates are not included.
To be ordered separately.

Technical data

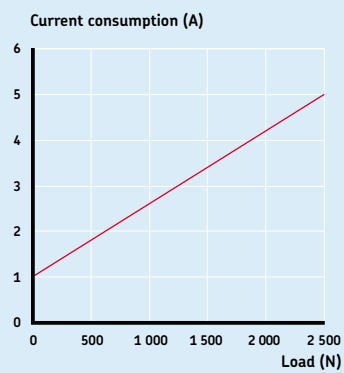
	Unit	TFG 10
Push load	N	2 500
Pull load	N	2 500
Max. bending load	Nm	up to 500*
Speed (full load to no load)	mm/s	15 to 19
Telescopic pillar version	# of section	3-section
Stroke	mm	200 to 700
Retracted length	mm	S+130
Voltage	V DC	24
Power	W	120
Current	A	5
Duty cycle: intermittent operation	min.	1 min./9 min.
Duty cycle: short-time operation	min.	3
Ambient temperature	°C	+10 to +40
Type of protection	IP	30
Protection class	–	SELV
Type of control	–	electrical
Weight	kg	8 to 19

* For details, please see bending load diagrams

Performance diagrams

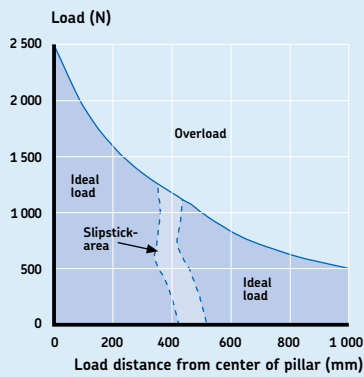


Speed-load diagram

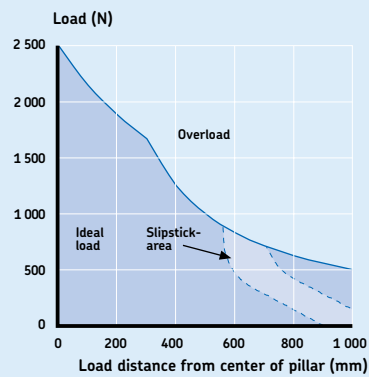


Current-load diagram

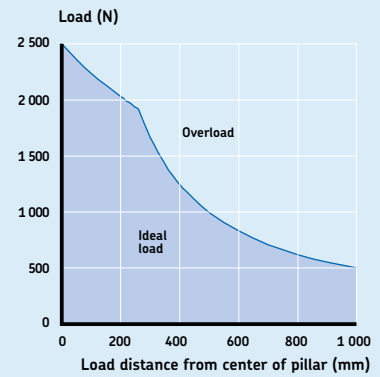
Bending load diagrams



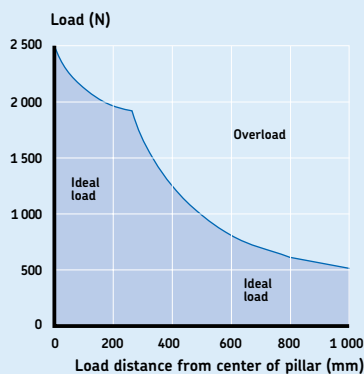
200 mm stroke



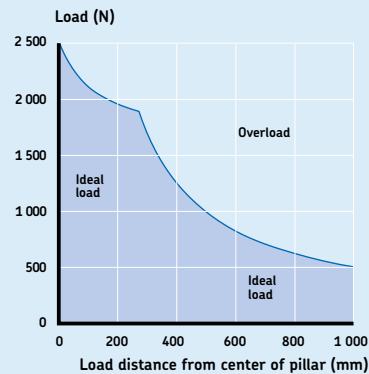
300 mm stroke



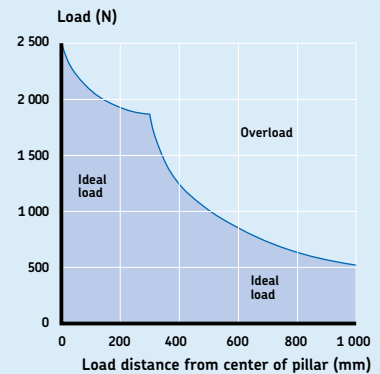
400 mm stroke



500 mm stroke



600 mm stroke



700 mm stroke

Ordering key

TFG 1 0 - 2 3 - 0 0 0

Type

Stroke (S):

200 mm
250 mm
300 mm
350 mm
400 mm
500 mm
700 mm

200
250
300
350
400
500
700

Option:

No option
With dual encoder, 14 pulses per 9 mm travel
With mains cable feedthrough (3×AWG16)
With control cable feedthrough (10×AWG28)

000
E
C
H

Accessories

Description	Designation	Order N°
Top mounting plate Bore 72 × 72 mm	SMT-333360	M/0124808
Bottom mounting plate Bore 102,5 × 102,5 mm	SMT-264363	M/0124814
Screw for top mounting plate M10 × 25 (1 screw required)	ZBE-510978	M/0125359
Screw for top mounting plate M6 × 30 (4 screws required)	ZBE-510709	M/0125560
Screw for bottom mounting plate M6 × 30 (4 screws required)	ZBE-510709	M/0125560
Mains cable SEV plug 3 000 mm, black, 3 × 0.75 mm ²	ZKA-304345	M/0125331
Mains cable Schuko plug 3 000 mm, black, 3 × 0.75 mm ²	ZKA-304346-3000	M/0121729
Mains cable US plug 3 000 mm, black, 3 × 0.75 mm ²	ZKA-304347-3000	M/0121762
Mains cable British Standard plug 3 000 mm, black, 3 × 0.75 mm ²	ZKA-304355-3000	M/0121755

Telescopic pillar Telemag THG

Benefits

- Compact design
- Robust

Standards

- EN/IEC 60601-1
- UL 60601-1

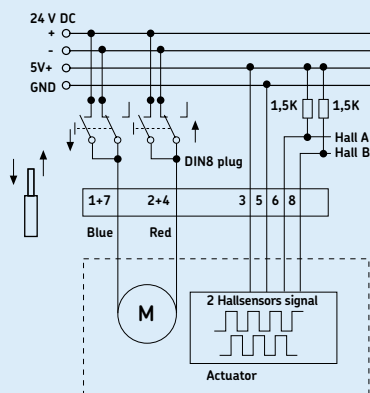


Suitable control units and accessories

Control units		SCU 1	SCU 5	SCU 9	VCU 5	VCU 8	VCU 9	BCU 5	BCU 8	MCU
THG		●	●	●	●	●	●	●	●	●
	EHA 1	●	●	●	●	●	●	●	●	●
	EHA 3	●	●	●	●	●	●	●	●	●
	STF	●	●	●	●	●	●	●	●	●
	STJ	●	●	●	●	●	●	●	●	●
	STA	●	●	●	●	●	●	●	●	●
	STE	●	●	●	●	●	●	●	●	●

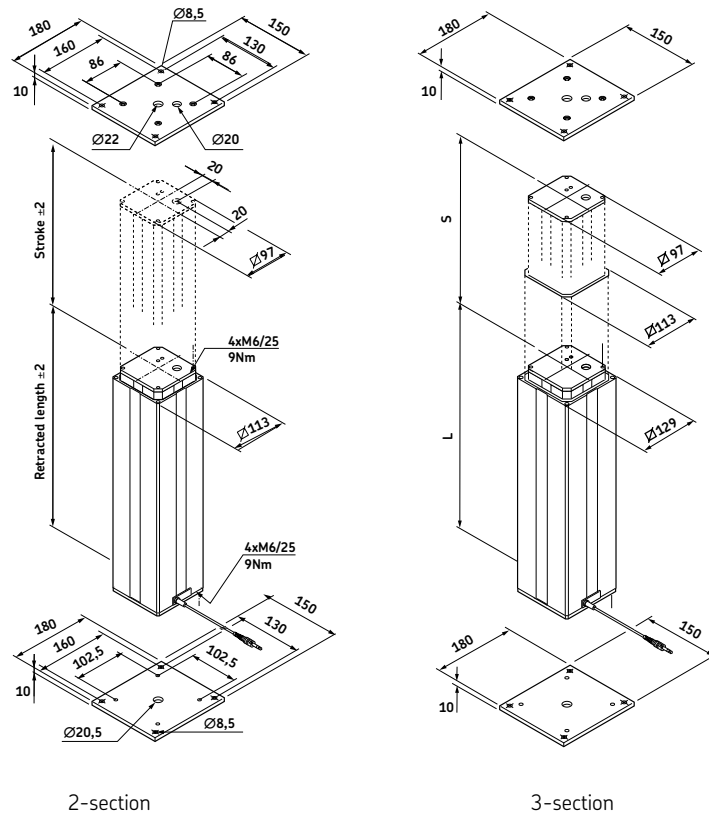
Hand switch
 Foot switch
 Desk switch

Connecting diagram*



* Only valid with THG11. THG10 must be operated by a BCU, SCU or VCU control unit.

Dimensional drawing



Legend:
S = stroke
L = retracted length

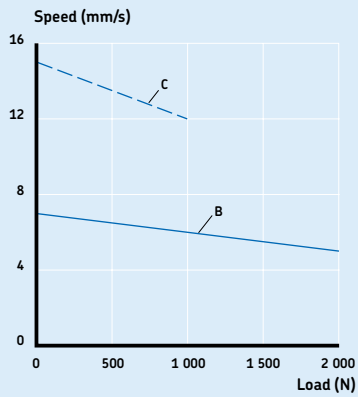
Note: mounting plates are not included.
To be ordered separately.

Technical data

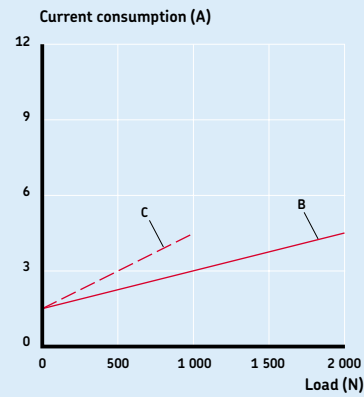
	Unit	THG 10/11-BA	THG 10/11-CA	THG 10/11-BD	THG 10/11-CD
Push load	N	2 000	1 000	2 000	1 000
Pull load	N	0	0	0	0
Max. bending load	Nm	up to 250*	up to 120*	up to 1 000*	up to 450*
Speed (full load to no load)	mm/s	5 to 7	12 to 15	5 to 7	12 to 15
Telescopic pillar version	# of section	2-section	2-section	3-section	3-section
Stroke	mm	200 to 700	200 to 700	200 to 700	200 to 700
Retracted length	mm	S+270	S+270	S+180	S+180
Voltage	V DC	24	24	24	24
Power	W	120	120	120	120
Current	A	5	5	5	5
Duty cycle: intermittent operation	min.	1 min./9 min.	1 min./9 min	1 min./9 min	1 min./9 min
Duty cycle: short-time operation	min.	2,5	2,5	2,5	2,5
Ambient temperature	°C	+10 to +40	+10 to +40	+10 to +40	+10 to +40
Type of protection	IP	30	30	30	30
Protection class	—	SELV	SELV	SELV	SELV
Type of control	—	electrical	electrical	electrical	electrical
Weight	kg	8 to 14	8 to 14	8 to 14	8 to 14

* for details, please see bending load diagrams

Performance diagrams

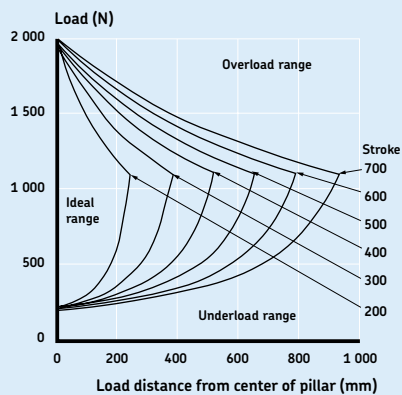


Speed-load diagram

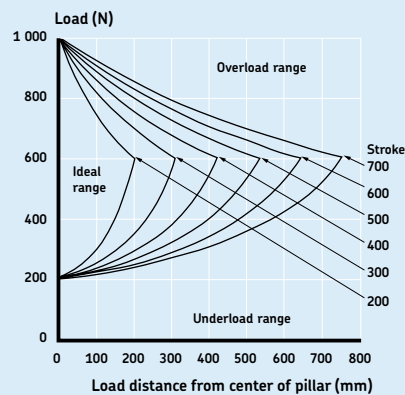


Current-load diagram

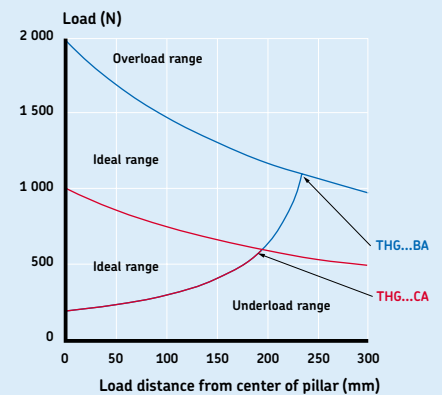
Bending load diagrams



Bending load diagram THG...BD

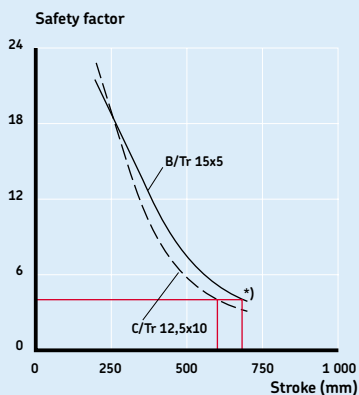


Bending load diagram THG...CD



Bending load diagram THG...BA/CA

Safety factor load conditions



* Safety factor = 4

Ordering key

	T	H	G	1		-						-	0	0	0
Type															
Voltage: 24 V DC 24 V DC with integrated current cut-off	0 1														
Load: 2 000 N 1 000 N	B C														
Tube set: Tube set 2× Tube set 3×	A D														
Stroke (S): 200 mm 300 mm 400 mm 500 mm 600 mm 700 mm	2 3 4 5 6 7														
Cable / connecting plug: Straight, 1,0 m / jack plug Straight, 2,3 m / jack plug Coiled, 0,6 m / jack plug Straight, 1,0 m / DIN8 plug Straight, 2,3 m / DIN8 plug Coiled, 0,6 m / DIN8 plug	1 2 A 3 4 B														
Option: No option Single encoder, 8 pulses, cable with jack plug <i>Potentiometer, 1 kΩ, 2 Watt, 0,25 % linearity, 10 turns (tube set 3× only)</i> <i>Cable feedthrough, 5 × 0,75 mm², top +160 mm, bottom +800 mm</i> <i>Cable feedthrough, single encoder</i> <i>Cable feedthrough, potentiometer (tube set 3× only)</i> <i>Dual encoder, cable with DIN8 plug</i> <i>Cable feedthrough, dual encoder, cable with DIN8 plug</i>	0 A B C D E F G														

Options written in italic fonts are not available as standard. Please contact SKF for verification.

Accessories

Description	Designation	Order N°
Top mounting plate for 2 × tube set	SPL-264265	M/0125688
Bottom mounting plate for 2 × tube set	SMT-264363	M/0124814
Top mounting plate for 3 × tube set	SPL-264265	M/0125688
Bottom mounting plate for 3 × tube set	SPL-264237	M/0125622
Screw (4/plate) for mounting plate (2 tube set)	ZBE-510709	M/0125560
Screw (4/plate) for mounting plate (3 tube set)	ZBE-510707	M/0125360

Telescopic pillar Telesmart TXG

Benefits

- Plug and play system
- Powerful and fast lifting
- Aesthetic design

Standards

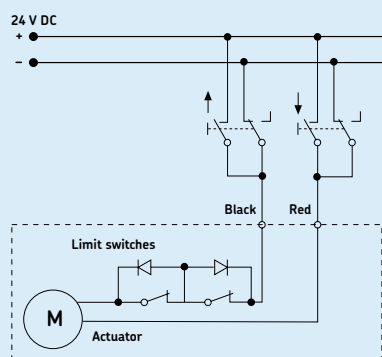
- EN/IEC 60601-1
- UL 60601-1



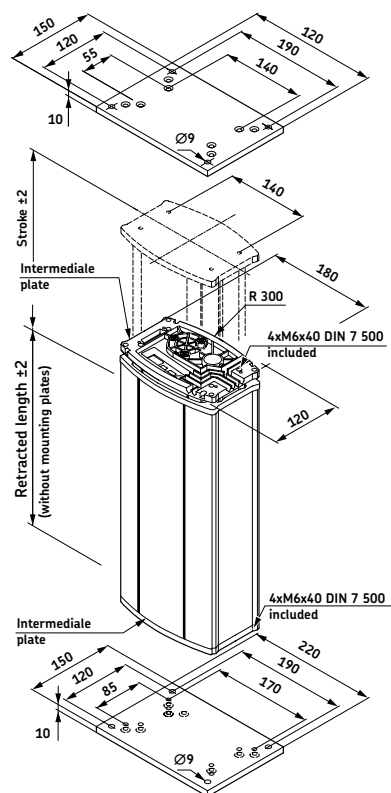
Suitable control units and accessories

		Control units						
		VCU 5	VCU 8	VCU 9	BCU 5	BCU 8	LD 014	LD 015
	TXG 1	●	●	●	●	●	●	●
	EHA3	●	●	●	●	●		
	STJ		●	●	●	●		
	STE	●	●	●	●	●		
	LD-034.000.004						●	●
	LD-011.031.000						●	●
								

Connecting diagram



Dimensional drawing



Legend:
S = stroke
L = retracted length

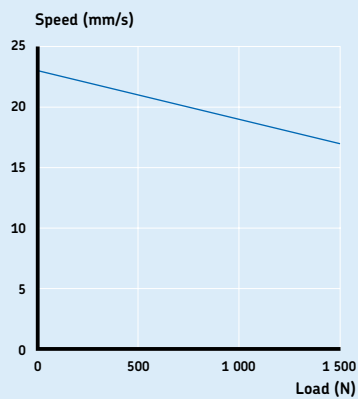
Note: mounting plates are not included.
To be ordered separately.

Technical data

	Unit	TXG1
Push load	N	1 500
Pull load	N	0
Max. bending load	Nm	up to 210*
Speed (full load to no load)	mm/s	17 to 23
Telescopic pillar version	# of section	2-section
Stroke	mm	200 to 600
Retracted length	mm	S+180
Voltage	V DC	24
Power	W	–
Current	A	5
Duty cycle: intermittent operation	min.	1 min./9 min.
Duty cycle: short-time operation	min.	–
Ambient temperature	°C	+10 to +40
Type of protection	IP	30
Protection class	–	SELV
Type of control	–	electrical
Weight	kg	8 to 13

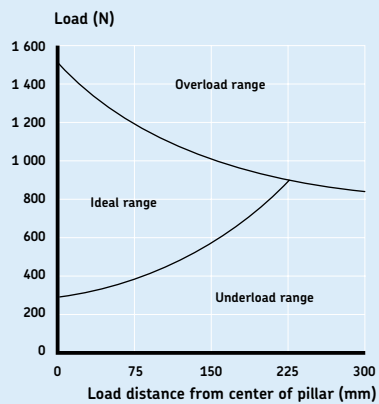
* For details, please see bending load diagrams

Performance diagram

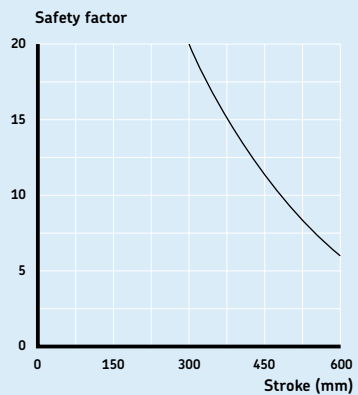


Speed-load diagram

Bending load diagram



Safety factor load conditions



Ordering key

		TXG		1	0	-	0	0				-				0	0
Type																	
Voltage: 24 V DC (slave actuator)		1															
Color: Natural anodized coating <i>Customer-specific</i> Powder-coated white Powder-coated grey		5 K 2 3															
Option: None 1-Hall encoder for LD/slave use Connection of TXG to BCU/VCU* <i>Customer-specific</i>		000 EYS EXG KKK															
Stroke (S) / Retr. length (L=S+180 or L= S+160 mm)		L=S+180 L=S+160															
200 mm		200 4CY															
300 mm		300 4DY															
400 mm		400 4EY															
500 mm		500 4FY															
600 mm		600 4GY															

Options written in italic fonts are only available on demand. Please contact SKF

* With current cut-off limit switch wiring

Accessories

# of channel	Control unit	Voltage	Frequency	Order number
2-channel	LD-014.255.000	230 V AC	50 Hz	M/0117115
2-channel	LD-015.255.500	120 V AC	60 Hz	M/0117116
4-channel	LD-014.178.000	230 V AC	50 Hz	M/0121090
4-channel	LD-014.178.500	120 V AC	60 Hz	M/0123336
Desk switch		Function	Order number	
LD-034.000.004		Up and down	M/0123247	
LD-011.031.000		Display and memory	M/0123246	
Cable		Length	Order number	
ZKA-306-355-1000		1 m	M/0121741	
ZKA-306-355-1500		1,5 m	M/0121726	
ZKA-306-355-2500		2,5 m	M/0121742	

Telescopic pillar Telesmart TMA

Benefits

- Plug and play system
- Powerful and fast lifting
- Aesthetic design

Standards

- EN 60335
- UL 60950

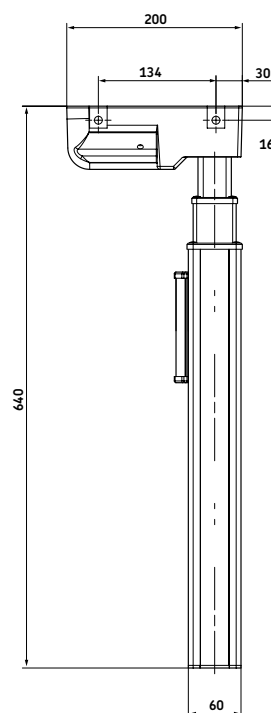


Suitable control units and accessories

Control units		
	LD 014	LD 015
	TMA	• •
	LD-034.000.004	• •
	LD-011.031.000	• •
		

TMA can only be operated with LD control units.

Dimensional drawing



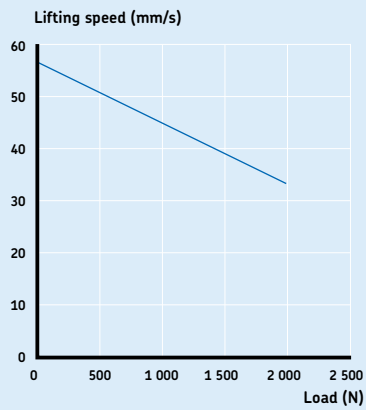
Legend:
S = stroke
L = retracted length

Technical data

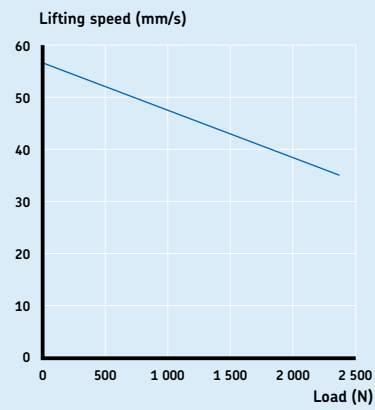
	Unit	TMA
Push load	N	1 000
Pull load	N	0
Max. bending load	Nm	up to 200*
Speed (full load to no load)	mm/s	35 to 55
Telescopic pillar version	# of section	3-section
Stroke	mm	500
Retracted length	mm	640
Voltage	V DC	24
Power	W	168
Current	A	7
Duty cycle: intermittent operation	min.	1 min./9 min.
Duty cycle: short-time operation	min.	N/A
Ambient temperature	°C	+5 to +40
Type of protection	IP	20
Protection class	–	SELV
Type of control	–	electrical
Weight	kg	8,5

* For details, please see bending load diagrams

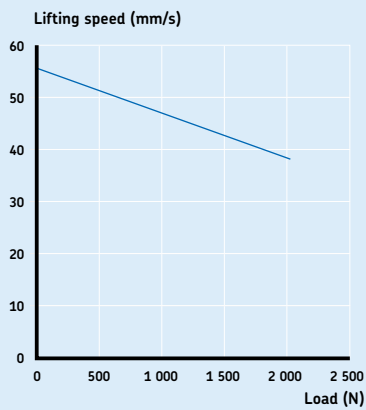
Performance diagrams



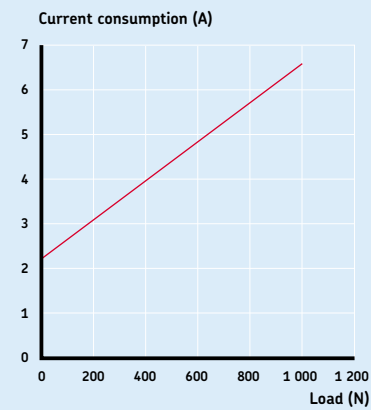
Lifting speed 2-channel control



Lifting speed 3-channel control

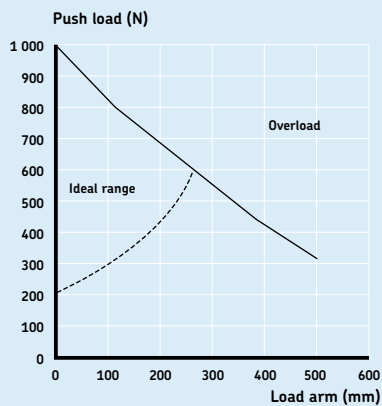


Lifting speed 4-channel control

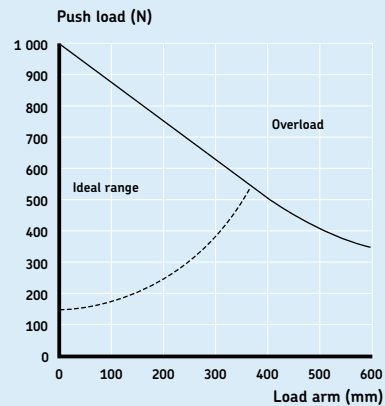


Current-load diagram

Bending load diagrams



Dynamic stress diagram on X axis with maximum lift*



Dynamic stress diagram on Y axis with maximum lift*

* The values given apply to single lifting pillars. With a stable table structure the ideal field of use can be enlarged.

Ordering key

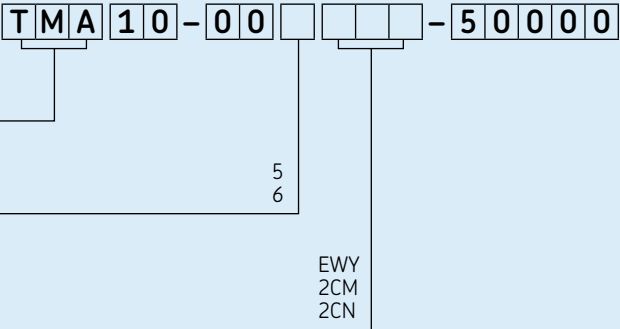
Type

Color:

Natural anodized coating
Black anodized coating

Options:

With flange for crossbar one side
With flange for crossbar two sides
No flange for crossbar



Accessories

Description	Designation	Order N°
Cable 1,0 m with DIN8–plug	ZKA–306355–1000	M/0121741
Cable 1,5 m with DIN8–plug	ZKA–306355–1500	M/0121726
Cable 2,5 m with DIN8–plug	ZKA–306355–2500	M/0121742

Telescopic pillar Telesmart TMD

Benefits

- Powerful and fast lifting
- Aesthetic design
- Efficient retracted length ratio

Standards

- EN 60335
- UL 60950



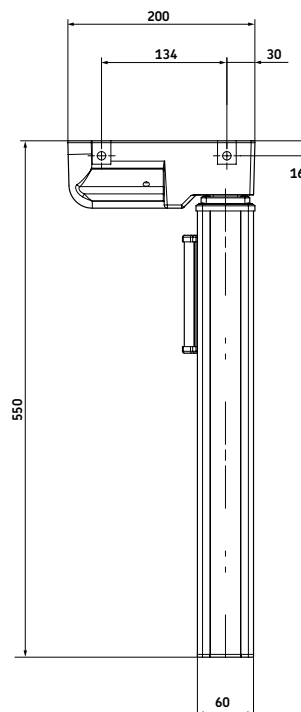
Suitable control units and accessories

Control units

		LD 014	LD 015
	TMD	•	•
	LD-034.000.004	•	•
	LD-011.031.000	•	•
			

TMD can only be operated with LD control units.

Dimensional drawing



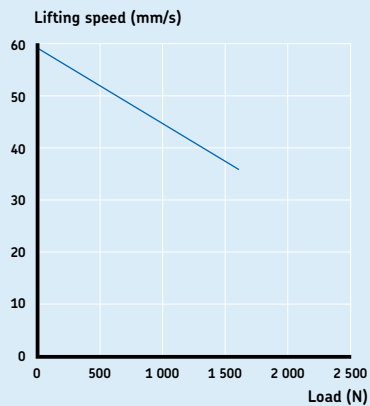
Legend:
S = stroke
L = retracted length

Technical data

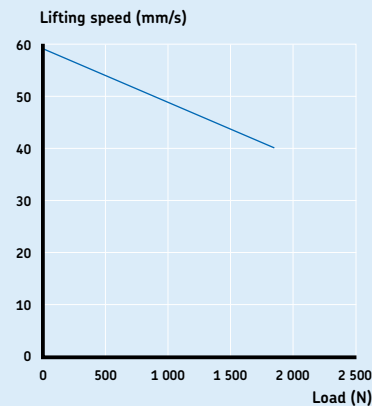
	Unit	TMD
Push load	N	800
Pull load	N	0
Max. bending load	Nm	up to 120*
Speed (full load to no load)	mm/s	35 to 60
Telescopic pillar version	# of section	3-section
Stroke	mm	700
Retracted length	mm	550
Voltage	V DC	24
Power	W	168
Current	A	7
Duty cycle: intermittent operation	min.	1 min./9 min.
Duty cycle: short-time operation	min.	N/A
Ambient temperature	°C	+5 to +40
Type of protection	IP	20
Protection class	–	SELV
Type of control	–	electrical
Weight	kg	8,5

* For details, please see bending load diagrams

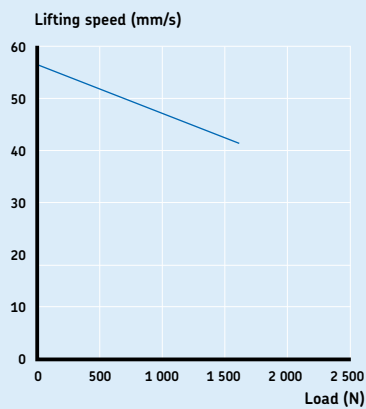
Performance diagrams



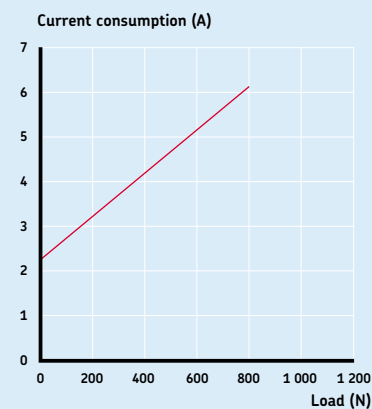
Lifting speed 2-channel control



Lifting speed 3-channel control

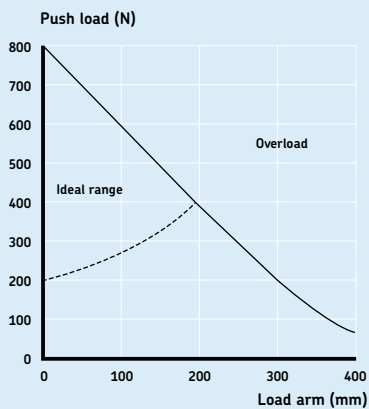
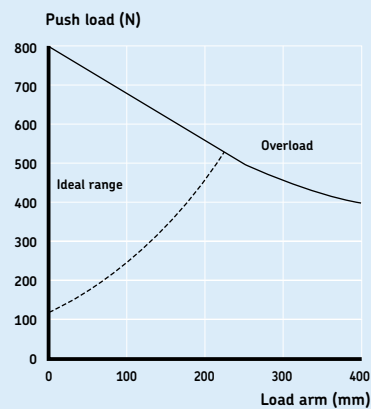


Lifting speed 4-channel control



Current-load diagram

Bending load diagrams

Dynamic stress diagram on X axis
with maximum lift*Dynamic stress diagram on Y axis
with maximum lift*

* The values given apply to single lifting pillars. With a stable table structure the ideal field of use can be enlarged.

Ordering key

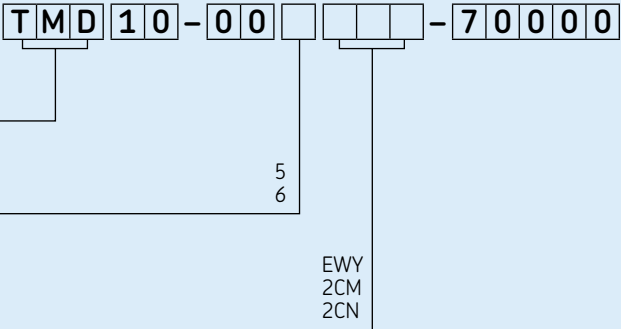
Type

Color:

Natural anodized coating
Black anodized coating

Options:

With flange for crossbar one side
With flange for crossbar two sides
No flange for crossbar



Accessories

Description	Designation	Order N°
Cable 1,0 m with DIN8–plug	ZKA–306355–1000	M/0121741
Cable 1,5 m with DIN8–plug	ZKA–306355–1500	M/0121726
Cable 2,5 m with DIN8–plug	ZKA–306355–2500	M/0121742

Telescopic pillars – No motor

FRE	96
TMS.....	100

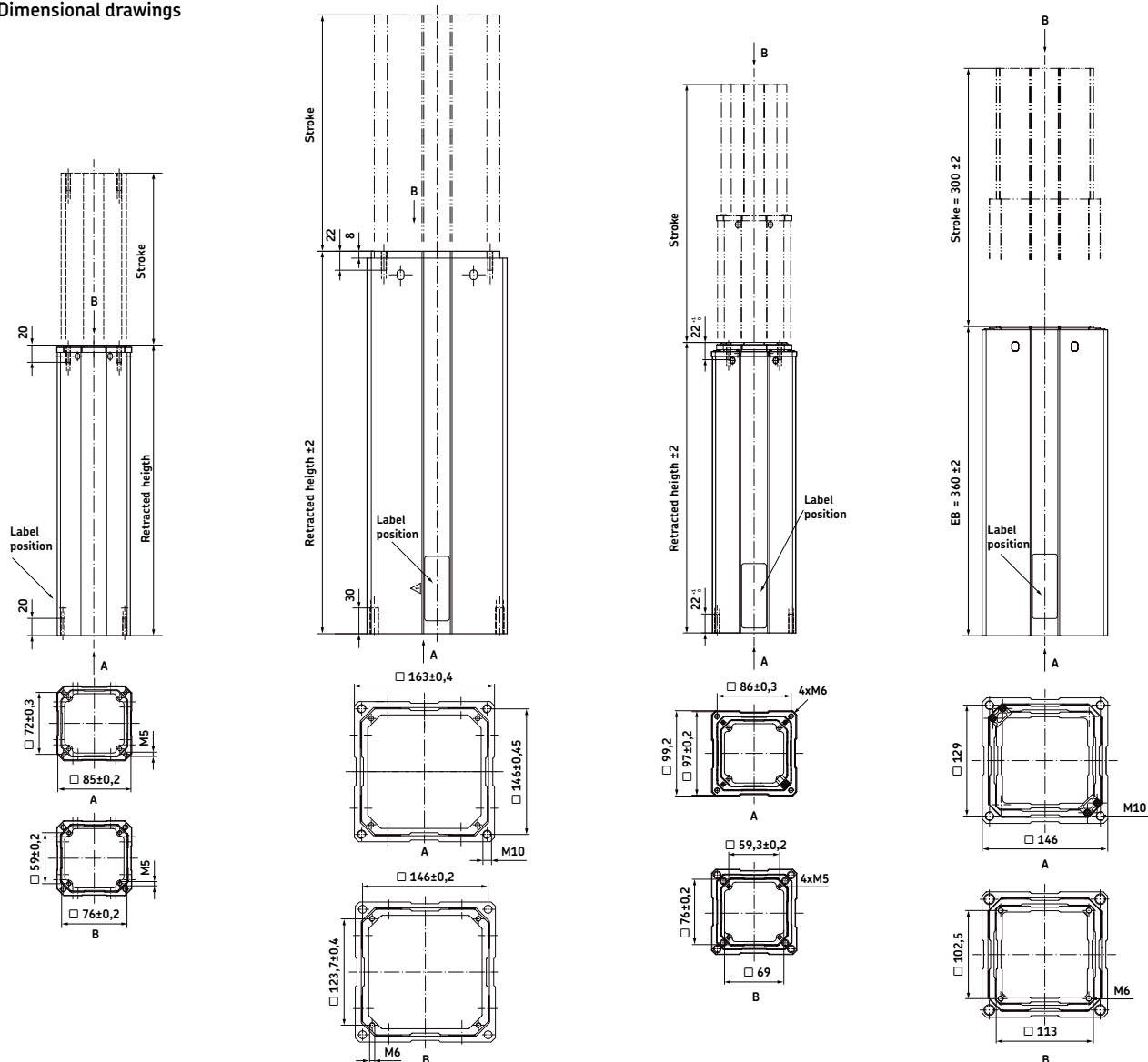
Telescopic pillar FRE

Benefits

- Attractive design
- Stable
- Universal use



Dimensional drawings



Type	Sections		Profile dimensions in mm							Retracted length in mm
	2 sections	3 sections	76 x 76	85 x 85	97 x 97	113 x 113	129 x 129	146 x 146	163 x 163	
FRE-A085	X									Stroke + 138
FRE-A113	X									Stroke + 148
FRE-A146	X									Stroke + 168
FRE-D097		X								Stroke + 38
FRE-D129		X								Stroke + 53
FRE-D163		X								Stroke + 53
<i>FRE-B097</i>	X									N/A
<i>FRE-B129</i>	X									N/A
<i>FRE-B163</i>	X									N/A
<i>FRE-E113</i>		X								N/A
<i>FRE-E146</i>		X								N/A

Options written in italic fonts are only available on demand. Please contact SKF

Ordering key



Type

Combination:

2 sections tube-set /Largest tube size

85×85 mm

113×113 mm

146×146 mm

97×97 mm

129×129 mm

163×163 mm

3 sections tube-set /Largest tube size

97×97 mm

129×129 mm

163×163 mm

113×113 mm

146×146 mm

4 sections tube-set (on request)

5 sections tube-set (on request)

6 sections tube-set (on request)

7 sections tube-set (on request)

A085

A113

A146

B097

B129

B163

D097

D129

D163

E113

E146

V₋

F₋

S₋

Z₋

Color:

Natural anodized

Black anodized

5

6

Option:

No option

Cover

Pull version

Pull version, with cover

000

MCM

MCN

2EA

Stroke:

200 mm

300 mm

400 mm

500 mm

600 mm

700 mm

Other stroke lengths

20

30

40

50

60

70

Options written in italic fonts are only available on demand. Please contact SKF

Telescopic pillar TMS

Benefits

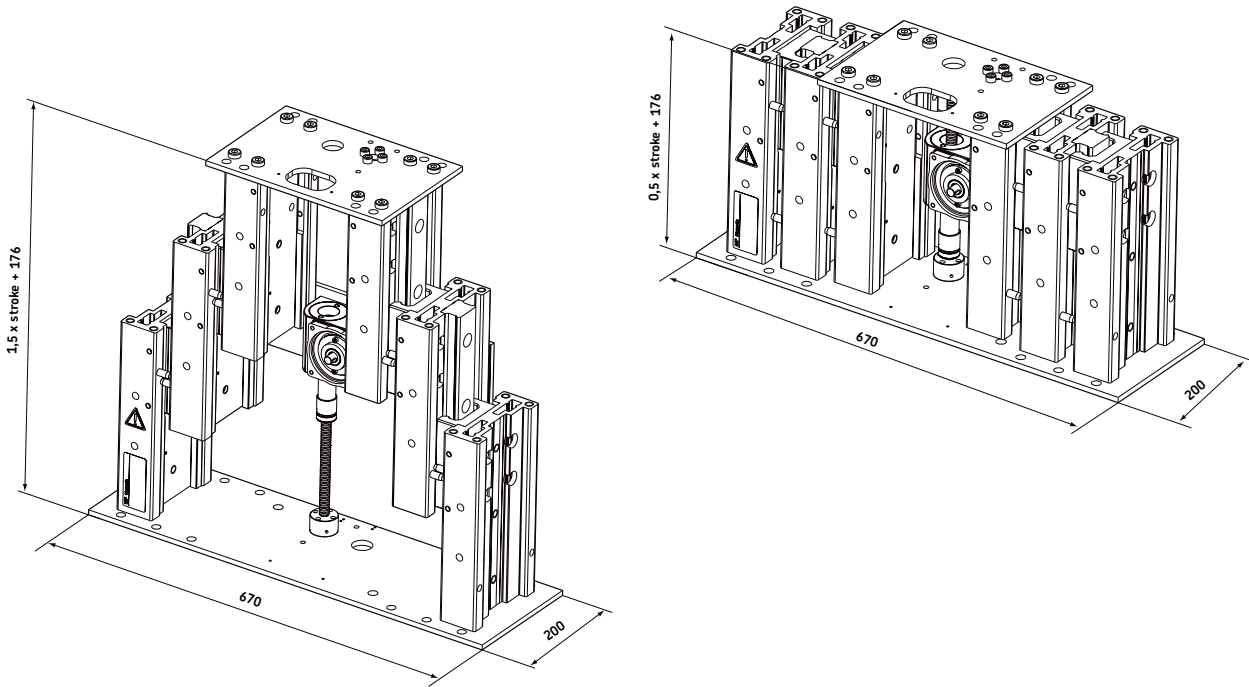
- High bending load

Standards

- EN/IEC 60601-1
- UL 60601-1



Dimensional drawing

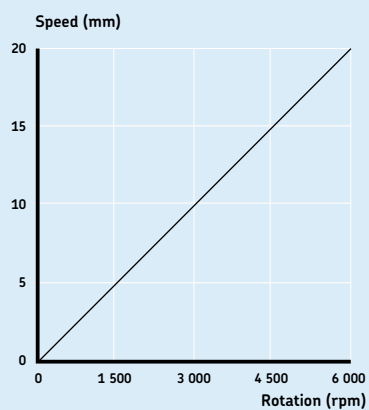


Legend:
S = stroke
L = retracted length

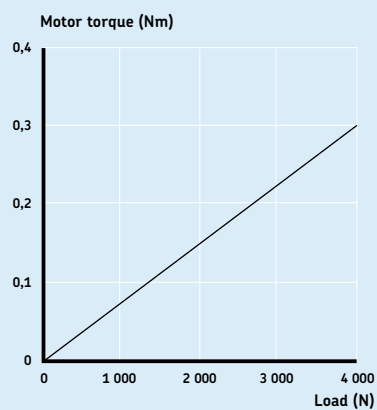
Technical data

	Unit	TMS 00
Push load	N	4 000
Pull load	N	4 000
Speed	mm/s	N/A
Stroke	mm	250 to 700
Retracted length	mm	$S \times 0,5 + 176$
Duty cycle: intermittent operation	min.	1 min./9 min.
Duty cycle: short-time operation	min.	N/A
Ambient temperature	°C	+10 to +40
Weight	kg	61 to 82

Performance diagrams

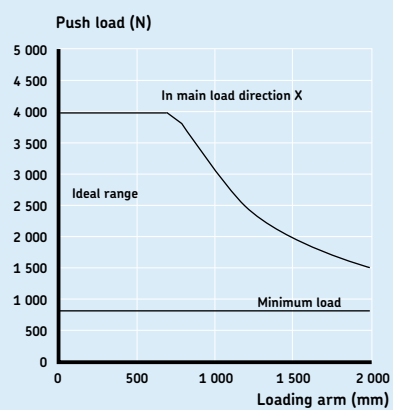


Speed-rotational diagram



Torque-load diagram

Bending load diagram



Ordering key

T	M	S	0	0	-	0	0	0	0	0	0	-				0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--	---	---

Type

Stroke (S):

250 mm
300 mm
350 mm
400 mm
450 mm
500 mm
550 mm
600 mm
650 mm
700 mm

250
300
350
400
450
500
550
600
650
700

Options written in italic fonts are only available on demand. Please contact SKF



Linear actuators

AC versions

SLS	108	ECO	202
SKS/SKA	112	FD	206
SKD	116	Magdrive	210
STD	120	CAHB-21.....	214
STW.....	124	ASM.....	218
MAX 6	128	CAP 43B	222
CAR 40.....	132	CAT 32B.....	226
CAHB-31.....	136	MAX 1	230
SJ.....	140	CAJA 35C.....	234
DSP	144	CAR 32.....	238
CAP 32.....	148	CAJA 30.....	242
CAR 32.....	152	CAP 32.....	246
CAT 32B.....	156	CAP 43A.....	250
CAT 33.....	160	CAT 33.....	254
WSP.....	164	CAHB-20.....	258
CAHB-30.....	168	CARE 33.....	262
CAT 33H.....	172	CAR 22.....	266

DC versions

SKG	178	CAHB-10.....	274
STG	182	CALA 36	278
RU	186	CAT 21B.....	282

MAX 3	190	No motor	
CAJA 60.....	194	CARN 32	290
CAR 40.....	198	CCBR 32.....	294



Linear actuators – AC version

SLS	108
SKS/SKA	112
SKD	116
STD	120
STW	124
MAX 6	128
CAR 40	132
CAHB-31	136
SJ	140
DSP	144
CAP 32	148
CAR 32	152
CAT 32B.....	156
CAT 33	160
WSP	164
CAHB-30	168
CAT 33H	172

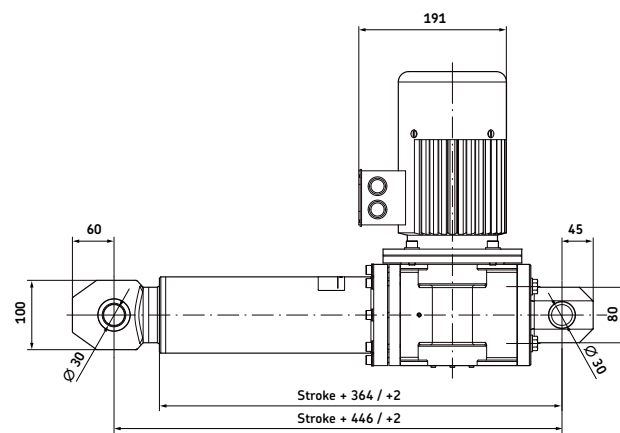
Linear actuator Magforce SLS

Benefits

- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Dimensional drawing



Technical drawing of a mechanical part showing two views: Side view and Top view.

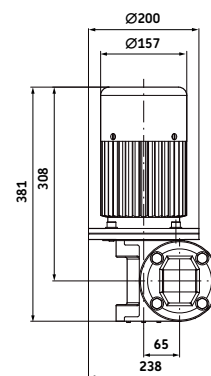
Side view dimensions:

- Overall length: 228
- Flange thickness: 90
- Shaft diameter: $\varnothing 80$
- Shaft length: 25
- Internal bore diameter: $\varnothing 110$
- Flange outer diameter: 62

Top view dimensions:

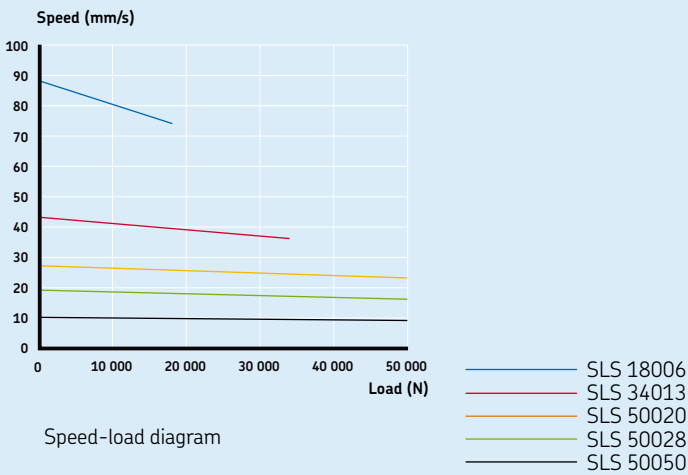
- Overall width: 62
- Internal bore diameter: $\varnothing 110$

Rear view



	Unit	SLS 18006	SLS 34013	SLS 50020	SLS 50028	SLS 50050
Push load	N	18 000	34 000	50 000	50 000	50 000
Pull load	N	18 000	34 000	50 000	50 000	50 000
Speed (at full load)	mm/s	74	36	23	16	9
Stroke	mm	100 to 700	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length	mm	S+446	S+446	S+446	S+446	S+446
Voltage	V AC	3×400	3×400	3×400	3×400	3×400
Power consumption	W	3 000	3 000	3 000	2 200	1 900
Current consumption	A	3,9	3,9	3,9	3,5	3,6
Duty cycle	%	10 (1/9)	10 (1/9)	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	−10 to +40	−10 to +40	−10 to +40	−10 to +40	−10 to +40
Type of protection	IP	54	54	54	54	54
Weight	kg	40	40	40	40	40
Color	–	Silver	Silver	Silver	Silver	Silver

Performance diagram



Ordering key

	SLS									
Type										
Load:										
18 000 N										
34 000 N										
50 000 N										
Speed at full load:										
74 mm/s, only for load version 180										
36 mm/s, only for load version 340										
23 mm/s, only for load version 500										
16 mm/s, only for load version 500										
9 mm/s, only for load version 500										
Stroke (S):										
100 mm										
200 mm										
300 mm										
400 mm										
500 mm										
600 mm										
700 mm										
Customer option:										
Standard										
Others (extended motor shaft, ...)										

Options written in italic fonts are only available on demand. Please contact SKF.

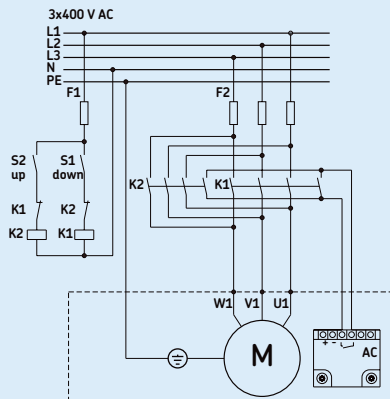
Linear actuator Magforce SKS/SKA

Benefits

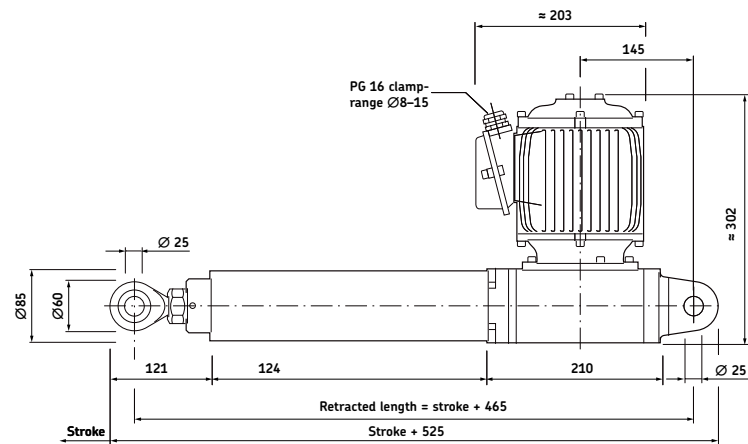
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



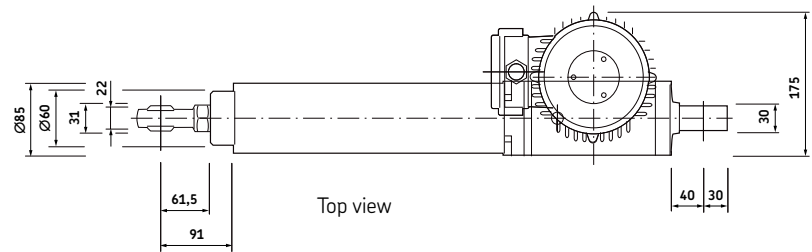
Connecting diagram



Dimensional drawing



Side view

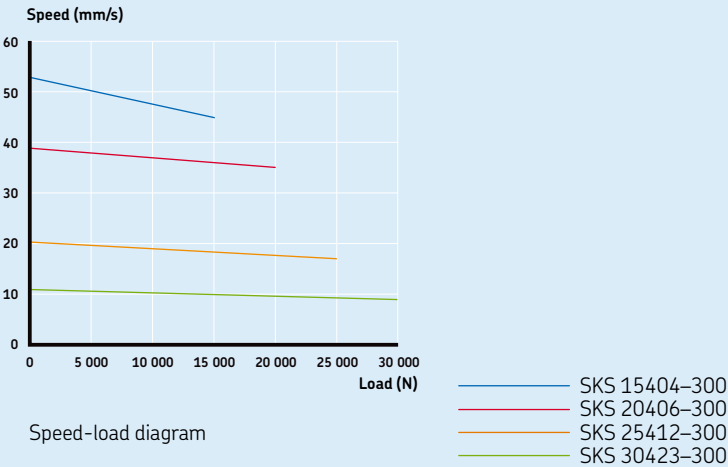


Top view

Technical data

	Unit	SKS/SKA 15404	SKS/SKA 20406	SKS/SKA 25412	SKS/SKA 30423
Push load	N	15 000	20 000	25 000	30 000
Pull load	N	15 000	20 000	25 000	30 000
Speed (at full load)	mm/s	45	35	17	9
Stroke	mm	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length	mm	S+465	S+465	S+465	S+465
Voltage	V AC	3x400	3x400	3x400	3x400
Power consumption	W	1 700	1 650	1 300	1 200
Current consumption	A	3,3	3,5	2,8	3,0
Duty cycle	%	10 (1/9)	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	-10 to +40	-10 to +40	-10 to +40	-10 to +40
Type of protection	IP	54	54	54	54
Weight (at 200 mm stroke)	kg	30	30	30	30
Color	—	Silver	Silver	Silver	Silver

Performance diagram



Type

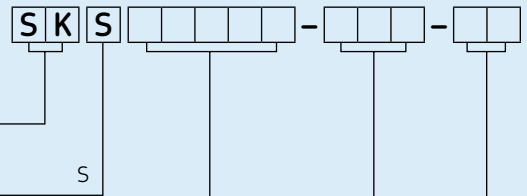
No option

15 000 N
20 000 N
25 000 N
30 000 N

100 mm
200 mm
300 mm
400 mm
500 mm
600 mm
700 mm

Others (extended motor shaft, back-up nut, ...)

Options written in italic fonts are only available on demand. Please contact SKF.



15404
20406
25412
30423

100
200
300
400
500
600
700

01
XX

Option:

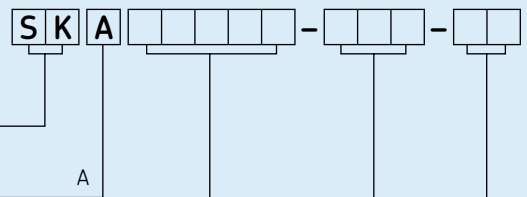
With limit switches and/or potentiometer

15 000 N
20 000 N
25 000 N
30 000 N

100 mm
200 mm
300 mm
400 mm
500 mm
600 mm
700 mm

Others (extended motor shaft, back-up nut, ...)

Options written in italic fonts are only available on demand. Please contact SKF.



15404
20406
25412
30423

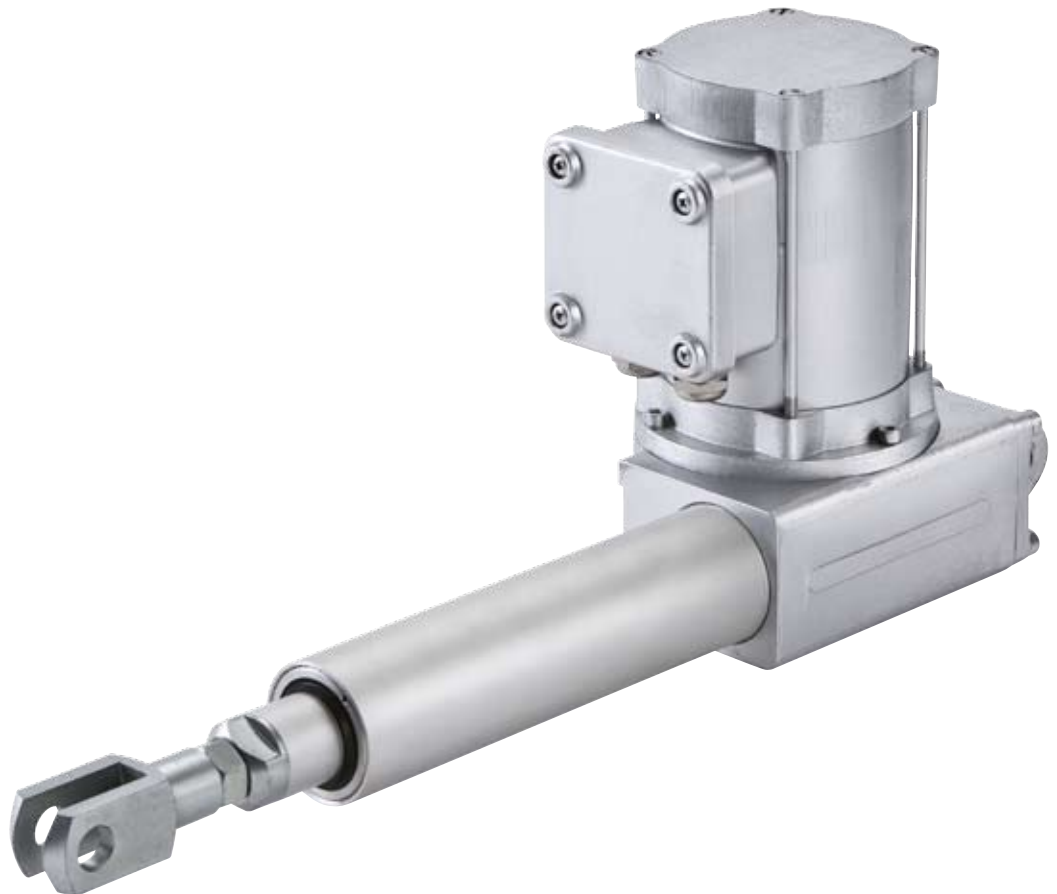
100
200
300
400
500
600
700

01	
02	
XX	

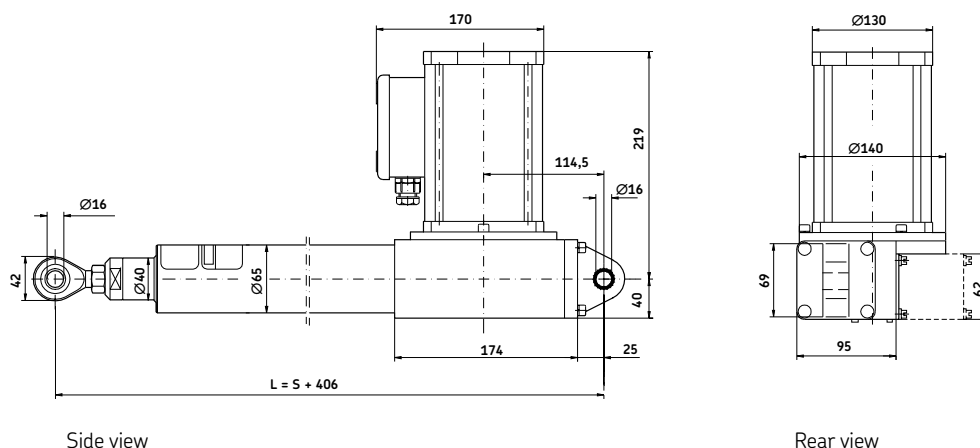
Linear actuator Magforce SKD

Benefits

- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design

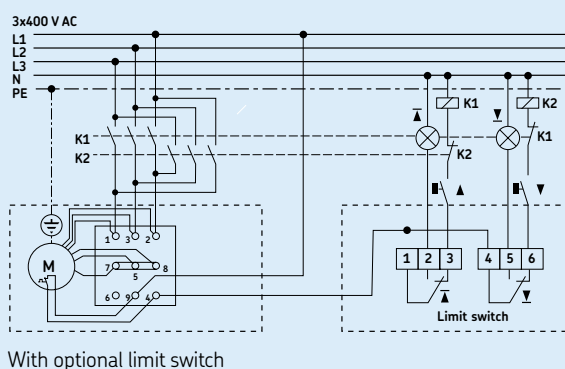
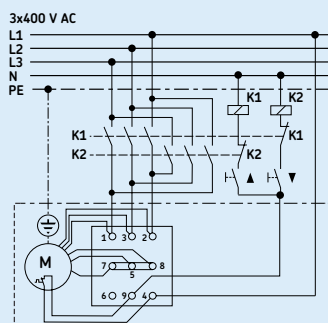


Dimensional drawing



Legend:
S = stroke
L = retracted length

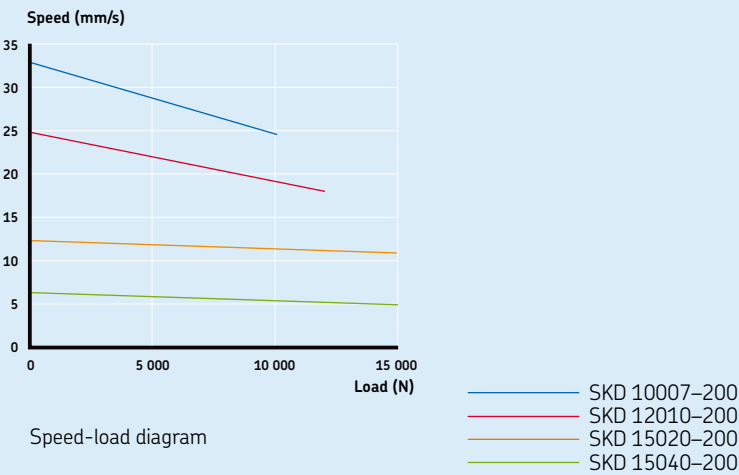
Connecting diagrams



Technical data

	Unit	SKD 10007	SKD 12010	SKD 15020	SKD 15040
Push load	N	10 000	12 000	15 000	15 000
Pull load	N	10 000	12 000	15 000	15 000
Speed (at full load)	mm/s	25	18	11	5
Stroke	mm	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length	mm	S+406	S+406	S+406	S+406
Voltage	VAC	3x400	3x400	3x400	3x400
Power consumption	W	920	800	750	600
Current consumption	A	1,8	1,7	1,6	1,5
Duty cycle	%	25 (2,5/7,25)	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	-10 to +40	-10 to +40	-10 to +40	-10 to +40
Type of protection	IP	54	54	54	54
Weight (at 200 mm stroke)	kg	14,6	14,6	14,6	14,6
Color	—	Silver	Silver	Silver	Silver

Performance diagram



Ordering key

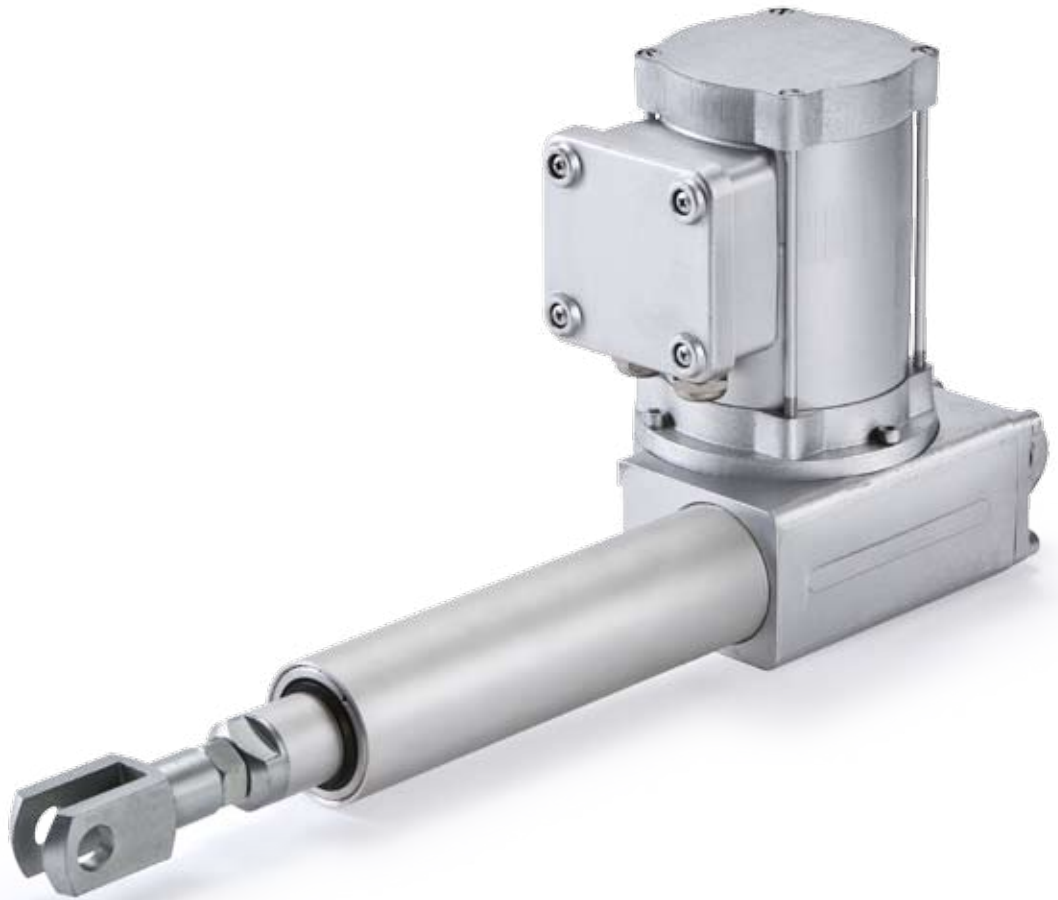
	S	K	D																
Type																			
Load:																			
10 000 N																			10007
12 000 N																			12010
15 000 N / 11 mm/s																			15020
15 000 N / 5 mm/s																			15040
Stroke (S):																			
100 mm																			100
200 mm																			200
300 mm																			300
400 mm																			400
500 mm																			500
600 mm																			600
700 mm																			700
Customer option:																			
Standard																			01
<i>Others (brake, limit switch, extended motor shaft, encoder, potentiometer, ...)</i>																			XX

Options written in italic fonts are only available on demand. Please contact SKF.

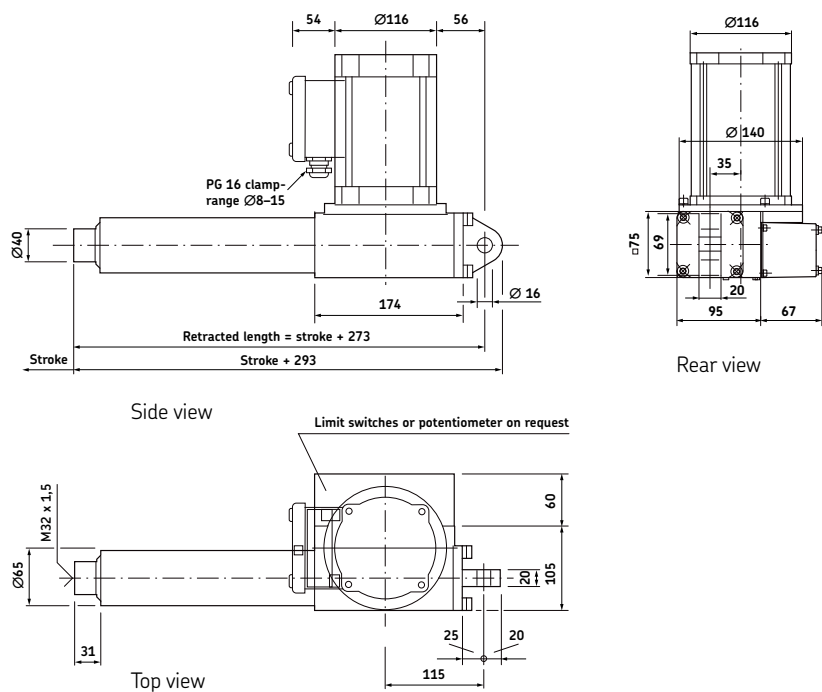
Linear actuator Magforce STD

Benefits

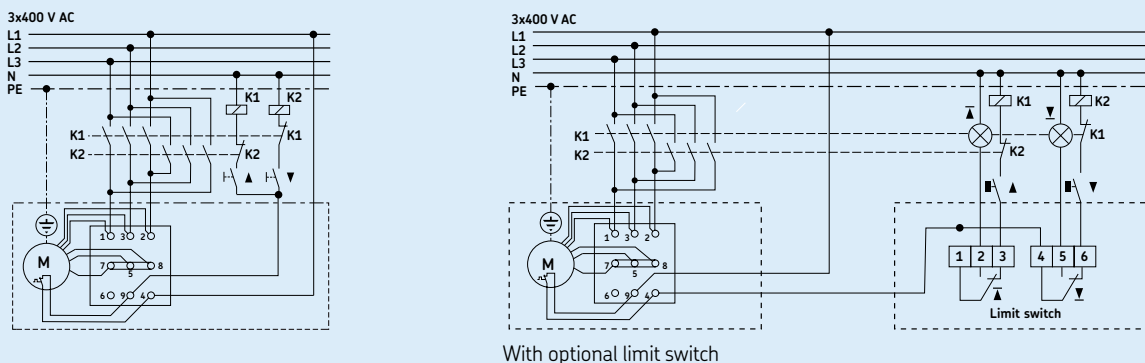
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Dimensional drawing



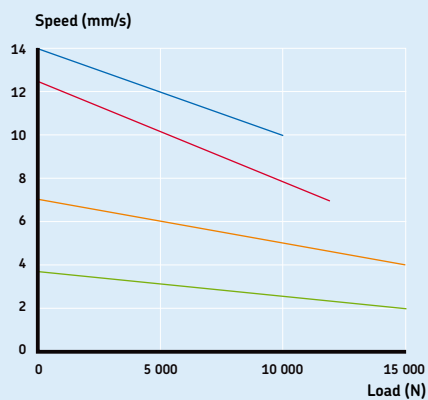
Connecting diagrams



Technical data

	Unit	STD 10007	STD 12010	STD 15020	STD 15040
Push load	N	10 000	12 000	15 000	15 000
Pull load	N	10 000	12 000	15 000	15 000
Speed (at full load)	mm/s	10	7	4	2
Stroke	mm	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length	mm	S+273	S+273	S+273	S+273
Voltage	V AC	3x400	3x400	3x400	3x400
Power consumption	W	920	800	700	500
Current consumption	A	1,8	1,7	1,6	1,4
Duty cycle	%	25 (2,5/7,5)	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	-10 to +40	-10 to +40	-10 to +40	-10 to +40
Type of protection	IP	54	54	54	54
Weight (at 200 mm stroke)	kg	14,6	14,6	14,6	14,6
Color	—	Silver	Silver	Silver	Silver

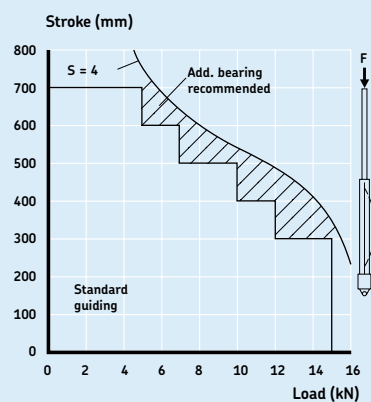
Performance diagram



Speed-load diagram

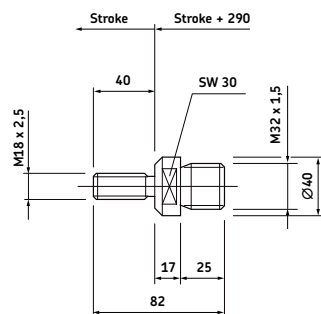
— STD 10007-200
— STD 12010-200
— STD 15020-200
— STD 15040-200

Safety load factor conditions

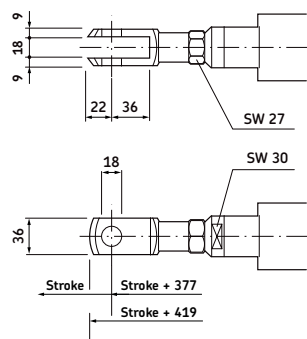


Bending of spindle
 S = safety factor Euler 3

Options



Adapter



Front attachment

S	T	D								-						-		
---	---	---	--	--	--	--	--	--	--	---	--	--	--	--	--	---	--	--

10007
12010
15020
15040

100
200
300
400
500
600
700

01
11
13
19
34
XX

3

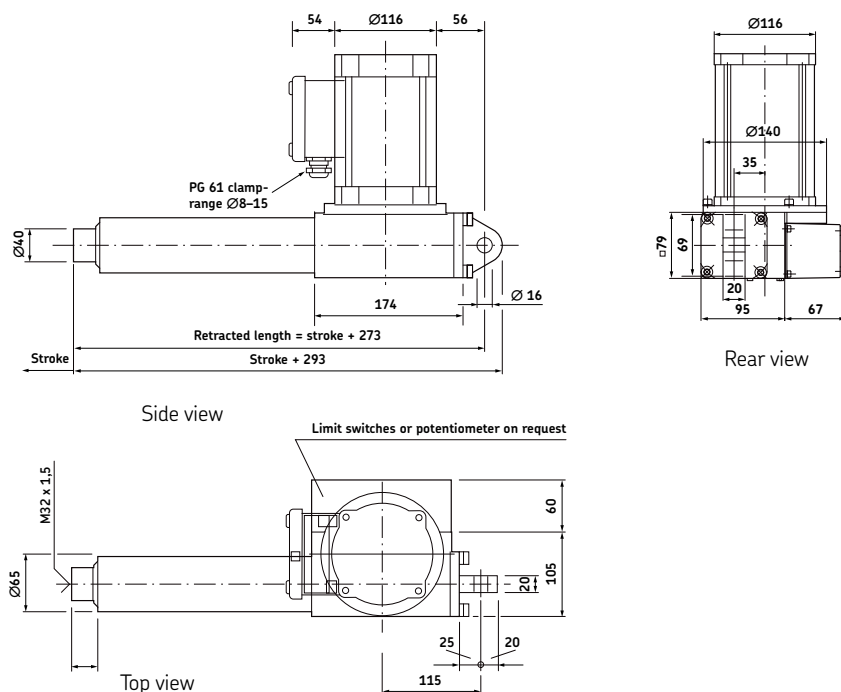
Linear actuator Magforce STW

Benefits

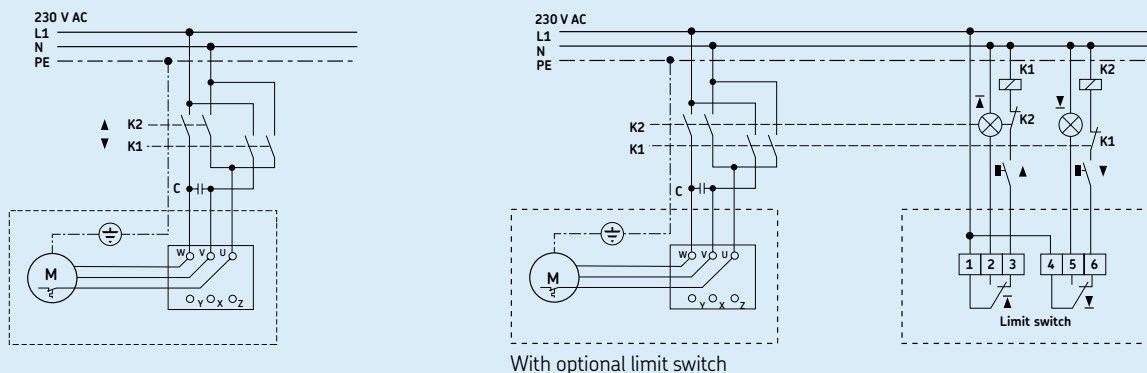
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Dimensional drawing



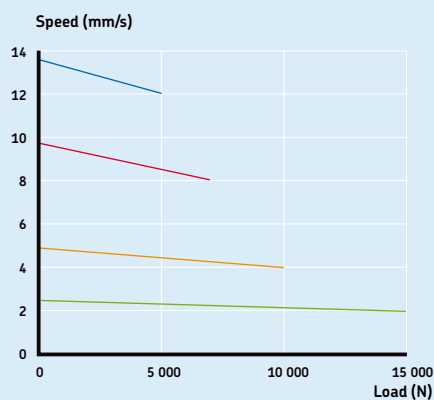
Connecting diagrams



Technical data

	Unit	STW 5007	STW 7010	STW 10020	STW 15040
Push load	N	5 000	7 000	10 000	15 000
Pull load	N	5 000	7 000	10 000	15 000
Speed (at full load)	mm/s	12	8	4	2
Stroke	mm	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length	mm	S+273	S+273	S+273	S+273
Voltage	V AC	230	230	230	230
Power consumption	W	700	710	710	750
Current consumption	A	3,3	3,5	3,5	3,5
Duty cycle	%	15 (1,5/8,5)	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	-10 to +40	-10 to +40	-10 to +40	-10 to +40
Type of protection	IP	54	54	54	54
Weight (at 200 mm stroke)	kg	14,6	14,6	14,6	14,6
Color	—	Silver	Silver	Silver	Silver

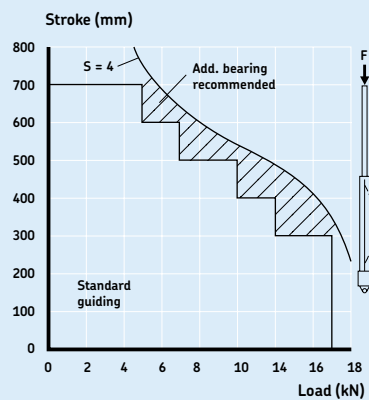
Performance diagram



Speed-load diagram

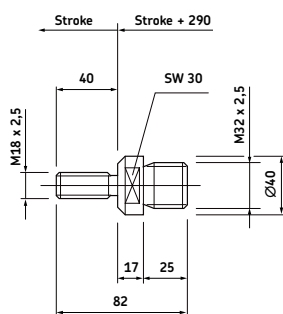
- STW 5007-200
- STW 7010-200
- STW 10020-200
- STW 15040-200

Safety load factor conditions

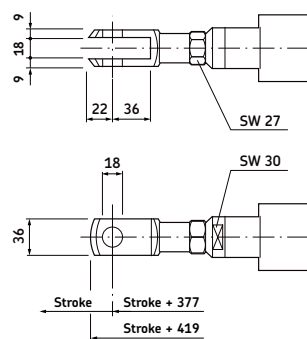


Bending of spindle
S = safety factor Euler 3

Options



Adapter



Front attachment

Type

5 000 N
7 000 N
10 000 N
15 000 N

05007
07010
10020
15040

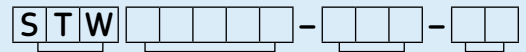
100 mm
200 mm
300 mm
400 mm
500 mm
600 mm
700 mm

100
200
300
400
500
600
700

- Standard
- Limit switch
- Low temperature grease
- Others (brake, limit switch, extended motor shaft, encoder, potentiometer, ...)

01	
05	
08	
XX	

Options written in italic fonts are only available on demand. Please contact SKF.



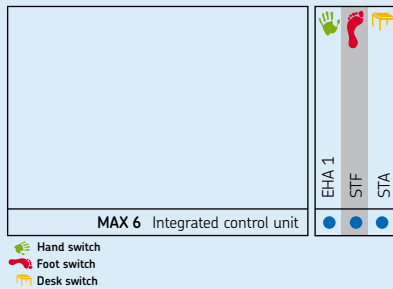
Linear actuator Matrix 6

Benefits

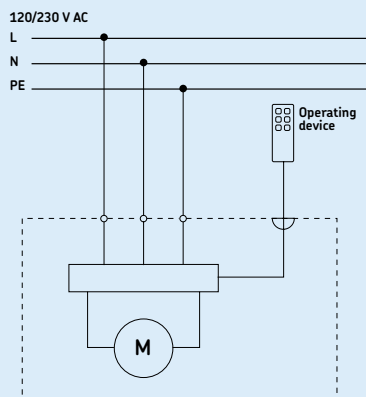
- Silent operation
- Full system with integrated control unit and accessories
- Synchronization possible
- Compact and aesthetic
- Back-up nut as standard



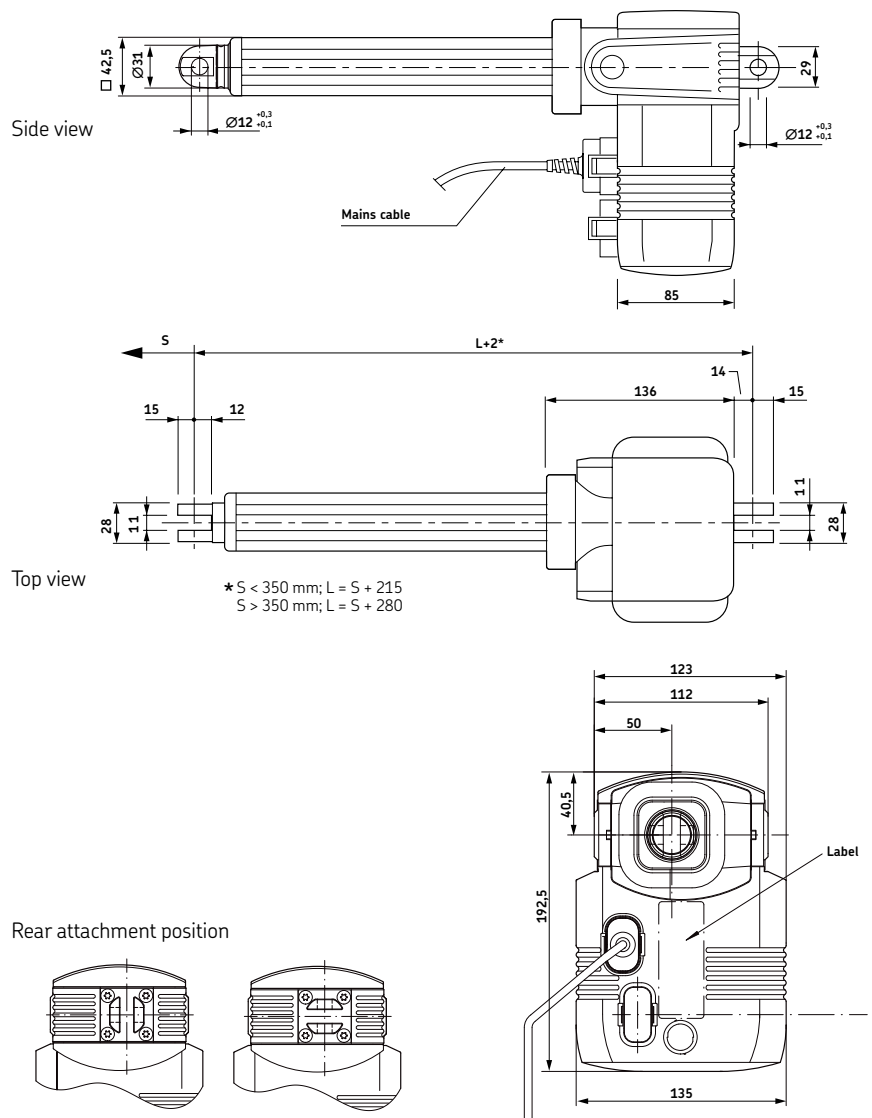
Suitable control units and accessories



Connecting diagram



Dimensional drawing



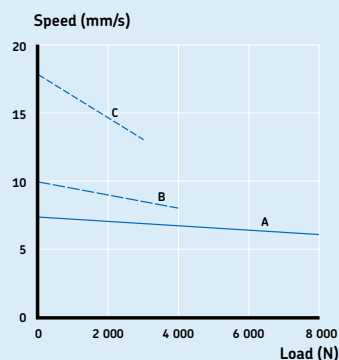
Technical data

	Unit	MAX 6..A..	MAX 6..B..	MAX 6..C..
Push load	N	8 000	4 000	3 000
Pull load	N	6 000 ¹⁾	4 000	3 000
Speed (full load to no load)	mm/s	5 to 7,5	8 to 10	13 to 18
Stroke	mm	50 to 700	50 to 700	50 to 700
Retracted length	mm	S + 215/280 ²⁾	S + 215/280 ²⁾	S + 215/280 ²⁾
Voltage	V AC	120 or 230	120 or 230	120 or 230
Power consumption	120 V AC 230 V AC	W W	150 145	150 145
Current consumption	120 V AC 230 V AC	A A	1,8 0,9	1,8 0,9
Duty cycle	%	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	0 to +40	0 to +40	0 to +40
Type of protection	IP	66S	66S	66S
Weight (at 200 mm stroke)	kg	4,8	4,5	4,2
Color	–	Grey	Grey	Grey

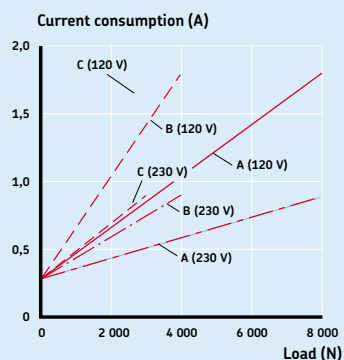
¹⁾ Max load for medical application is 5 000 N

²⁾ S < 350 mm; L = S + 215
S > 350 mm; L = S + 280

Performance diagrams

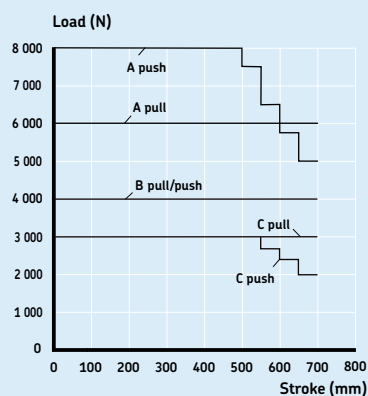
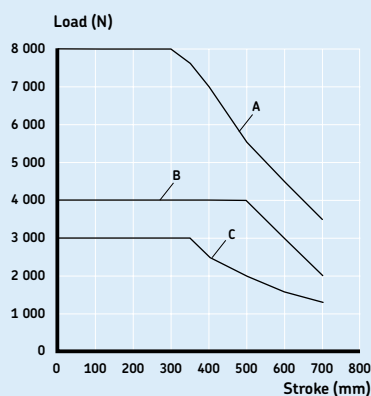
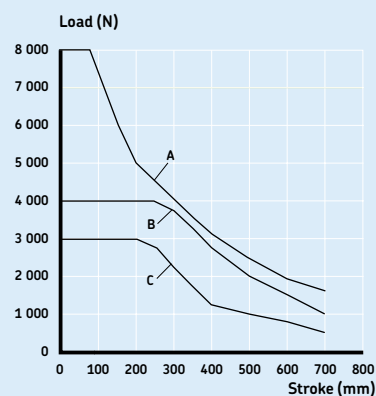


Speed-load diagram



Current-load diagram

Safety factor load conditions

Push load reduction static
Safety factor $S=1$ Push load reduction static
Safety factor $S=2$ Push load reduction static
Safety factor $S=4$ (EN60601)

Accessories

Description	Plug	Country	Designation	Order number
Straight cable 3,5 m	Schuko	DE	ZKA-140306-3500	M/0121723
Straight cable 3,5 m	SEV	CH	ZKA-140316-3500	M/0121737
Straight cable 3,5 m	UL	USA	ZKA-140355-3500	M/0121724
Straight cable 3,5 m	Hospital grade	USA	ZKA-140360-3500	M/0121732
Straight cable 3,5 m	British standard	UK	ZKA-140350-3500	M/0121743
Coiled cable 1,2 m / 2,2 m	Schuko	DE	ZKA-140342-1500	M/0121728
Coiled cable 1,2 m / 2,2 m	SEV	CH	ZKA-140378-1200	M/0121738
Straight polyurethane cable 3,5 m	SEV	CH	ZKA-140422-3500	M/0121739
Straight polyurethane cable 3,5 m	Schuko	DE	ZKA-140426-3500	M/0121740
Strain relief for mains cable			ZUB-952253	M/0102848
Tool for plugs (Jack/D-Sub/Mains)			ZWS-140375	M/0125322

Ordering key

M A X 6 - - - - A - - - - 0 0 0									
Type									
Voltage:									
230 V AC/50 Hz, integrated pneumatic control									0
120 V AC/60 Hz, integrated pneumatic control									1
230 V AC/50 Hz, integrated low voltage control with additional 24 V output									2
120 V AC/60 Hz, control +1 channel with additional 24 V output									3
230 V AC/50 Hz, integrated low voltage									4
120 V AC/60 Hz, integrated low voltage									5
Load:									
8 000 N									A
4 000 N									B
3 000 N									C
Stroke (S):									
50 mm									050 265
100 mm									100 315
150 mm									150 365
200 mm									200 415
250 mm									250 465
300 mm									300 515
350 mm									350 565
400 mm									400 680
450 mm									450 730
500 mm									500 780
550 mm									550 830
600 mm									600 880
650 mm									650 930
700 mm									700 980
Other stroke lengths; 50<S<700 mm									--- ---
Cable/Connecting plug:									
No cable									0
Orientation of rear attachment:									
No fork head (customized option)									0
Standard (as drawing)									1
Turned 90°									2
Option 1:									
No option, only valid for actuator "A"									0
Quick-release +EKZm, push, fork head bore parallel to button (for actuator design "C" is L= +115 mm)*									E
Quick-release +EKZm, push, fork head bore 90° to button (for actuator design "C" is L= +115 mm)*									F
Electrical anti-pinching protection, motor direction pull									K
Electrical anti-pinching protection, motor direction push									L
Push load, for actuator version "B" and "C"									M
Pull load, for actuator version "B" and "C" EKZm: mechanical anti-pinching *min. stroke 150 mm up to 300 mm									N
Option 2:									
No option									0
Lifetime monitoring									M
Option 3:									
No option									-
Emergency lowering, fork head bore parallel to clamping lever (for actuator design "A", L+30 mm)									V
Emergency lowering, fork head bore 90° to clamping lever (for actuator design "A", L+30 mm)									W

Options written in italic fonts are only available on demand. Please contact SKF.

Linear actuator CAR 40

Benefits

- Industrial reliable and robust actuator
- Wide range of components
- Right- and left-hand version



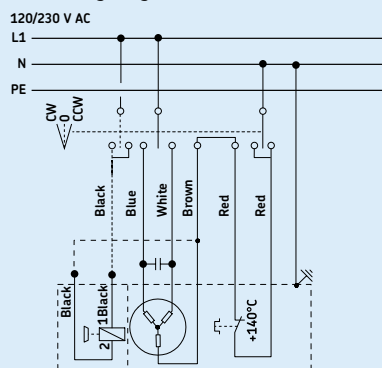
Suitable control units and accessories

	Control unit	Limit switch
	CAEV 110/220	CAXB 40*
E110D	•	•
E110DB	•	•
E220D	•	•
E220DB	•	•
CAES 31C	•	•

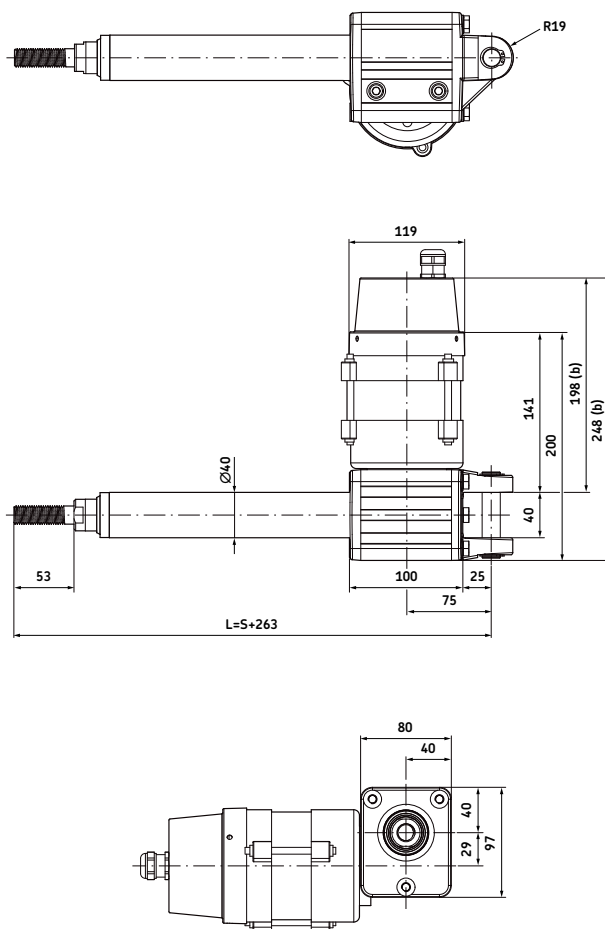
- Hand switch
- Foot switch
- Desk switch

* See page 395

Connecting diagram



Dimensional drawing



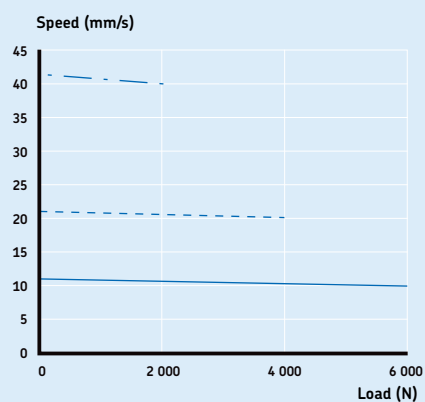
Legend:
S = stroke
L = retracted length
(b) = cover for brake (D24CB)

Technical data

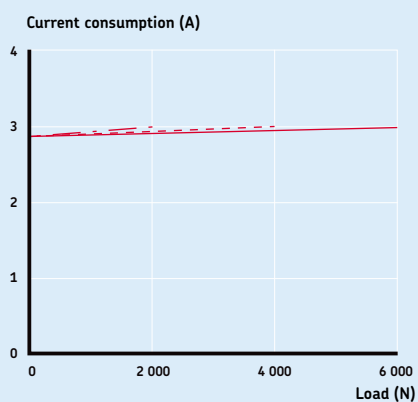
	Unit	CAR 40
Push load	N	2 000 to 6 000
Pull load	N	2 000 to 6 000
Speed (at full load)	mm/s	9 to 40*
Stroke	mm	100 to 700
Retracted length	mm	S+263
Voltage	VAC	120 or 230
Power consumption 120 V AC	W	360
230 V AC	W	299
Current consumption 120 V AC	A	3 (brake +0,29 A)
230 V AC	A	1,3 (brake +0,11 A)
Duty cycle	%	40
Ambient temperature	°C	-20 to +70
Type of protection	IP	20/54
Weight	kg	5,8 to 8,4

* Depending on selected motor

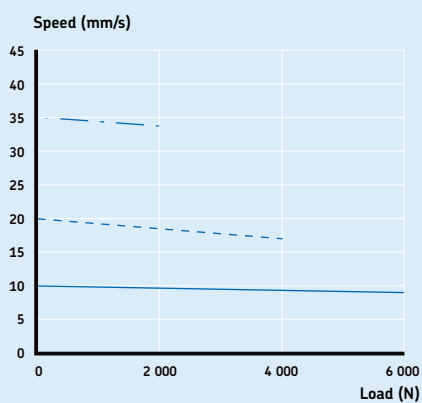
Performance diagrams



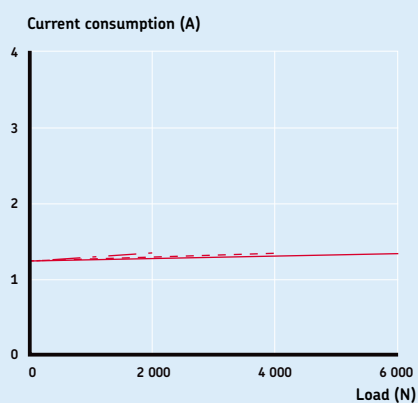
Speed-load diagram CAR 40 ... 120 V AC



Current-load diagram CAR 40 ... 120 V AC



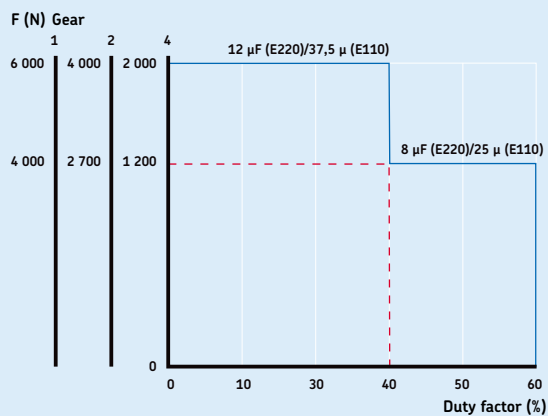
Speed-load diagram CAR 40 ... 230 V AC



Current-load diagram CAR 40 ... 230 V AC

Gear 1 — V (mm/s)
 — I (A)
 Gear 2 - - V (mm/s)
 - - I (A)
 Gear 4 ··· V (mm/s)
 ··· I (A)

Duty cycle



CAR 40 ... 120/230 V AC

Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
6 000/xx	4 000/xx	2 000/xx	No motor	0000
6 000/10	4 000/20	2 000/40	120 V AC/60 Hz, 1-phase, IP54	E110D
6 000/10	4 000/20	2 000/40	120 V AC/60 Hz, 1-phase, brake, IP20	E110DB
6 000/9	4 000/17	2 000/34	230 V AC/50 Hz, 1-phase, IP54	E220D
6 000/9	4 000/17	2 000/34	230 V AC/50 Hz, 1-phase, brake, IP20	E220DB
1	2	4		

Type

Motor assembly:

Right
Left

R
L

Stroke (S):

100 mm
300 mm
500 mm
700 mm
Other stroke lengths

100
300
500
700

Option:

Friction clutch
Back-up nut

F
S

Options written in italic fonts are only available on demand. Please contact SKF.

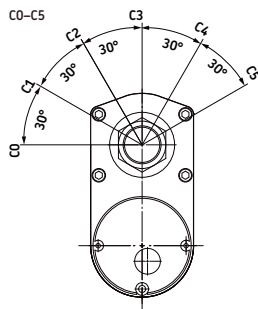
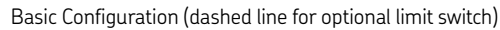
Linear actuator CAHB-31 series

Benefits

- High efficiency ball screw
- Extension tube (stainless steel)
- Protection tube (steel)
- Enhanced corrosion resistance
- Mechanical overload protection (clutch)
- Lubricated for service life
- Robust, designed for tough environment
- No back driving
- Motor with thermal protection



Dimensional drawing

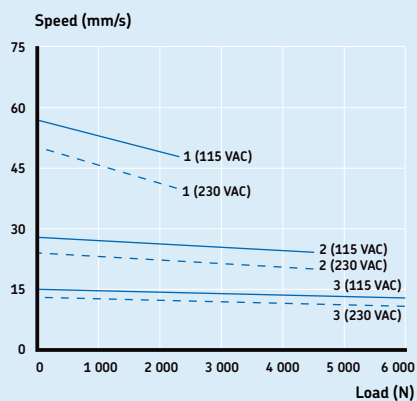


Legend:
L1 = retracted length
* 53 = dimension with limit switch

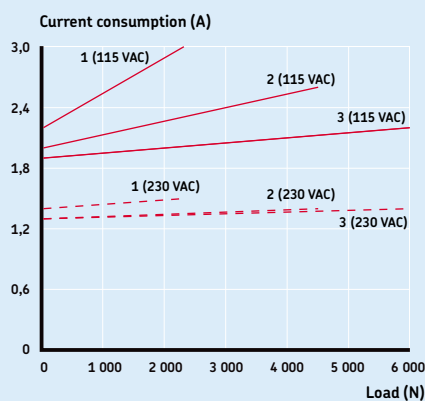
2) Tolerance: $S = \pm 2,5 \text{ mm}$ and $L1 = \pm 3,8 \text{ mm}$

* See above table
For outdoors application, please contact SKF.

Performance diagrams



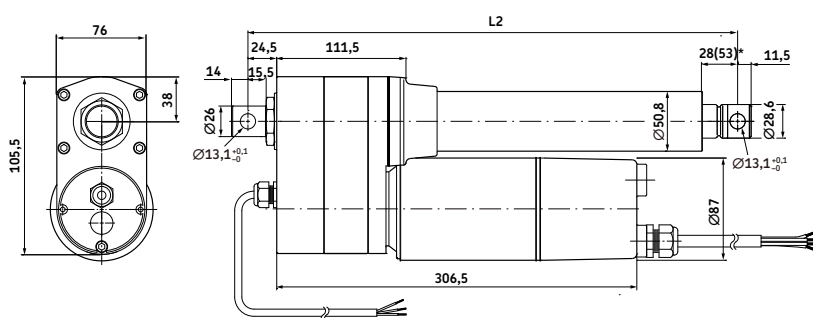
Speed-load diagram



Current-load diagram

Dimensional drawing

Optional potentiometer

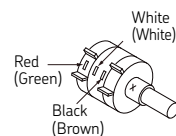
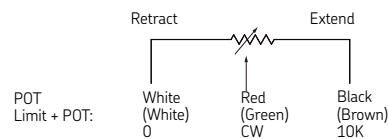
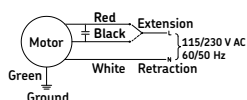


Without limit switch:
RED (+) & BLACK (-) = retraction
RED (-) & BLACK (+) = extension
With limit switch:
RED (+) & BLACK (-) = extension
RED (-) & BLACK (+) = retraction

Legend:

L2 = retracted length

* 53 = dimension with limit switch



Stroke (mm)	With limit switch ¹⁾						Without limit switch ²⁾					
	102	153	204	305	457	610	102	153	204	305	457	610
L2 Retracted length	482	482	533	697	849	1 002	418	457	457	559	773	926

¹⁾ Tolerance: S and L2 = ± 5,0 mm (If S ≥ 305 mm, S = ± 7,5 mm)²⁾ Tolerance: S = ± 2,5 mm and L2 = ± 3,8 mm

Potentiometer resolution

Stroke (mm)	102	153	204	305	457	610
Ohm/mm	59,0	59,0	29,5	29,5	9,84	9,84

Ordering key

CAHB-31-□□N-□□□□-A□□□□0-0000

Type

Voltage:

115 V AC
230 V AC

N
P

Load:

2 300 N
4 500 N
6 000 N

1
2
3

Screw:

Ball screw

N

Stroke:

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

102
153
204
305
457
610

Retracted length:

Stroke

with L.S.¹⁾

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

w/o POT²⁾

444 mm
444 mm
495 mm
659 mm
811 mm
964 mm

with POT²⁾

482 mm
482 mm
533 mm
697 mm
849 mm
A02 mm (1 002 mm)

w/o L.S.¹⁾

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

380 mm
419 mm
419 mm
521 mm
735 mm
888 mm

418 mm
457 mm
457 mm
559 mm
773 mm
926 mm

IP:

Standard (IP 65)

A

Front attachment:

Standard (hole: Ø 13 mm)
Customized

A
X

Rear attachment:

Standard (0° and hole: Ø 13 mm)

30°

60°

90°

120°

150°

Customized

A
B
C
D
E
F
X

Option 1:

None

Limit switch (only for load version 6 000 N)

0
L

Option 2:

None

Potentiometer

0
P

¹⁾ L.S. = Limit Switch

²⁾ POT = Potentiometer

Linear actuator SJ 25, 35, 45 series

Benefits

- Motor with thermal protection
(+120± 5°C)
- Acme screw
- Self-locking
- Integrated limit switches
- Potentiometer for feedback
- Gear box (metal)
- UL 1004/UL 60601-1* certification



*Only as an option for SJ35 and SJ45

3

Technical data

		Unit	SJ 255	SJ 256	SJ 258	SJ 355	SJ 356	SJ 358
Push load		N	2 000	2 500	3 000	3 000	3 500	4 000
Pull load		N	2 000	2 500	3 000	3 000	3 500	4 000
Speed (full load)	115 V AC	mm/s	6,6 to 7,2	5,5 to 6,0	4,0 to 4,5	6,6 to 7,2	5,5 to 6,0	4,5 to 3,7
to no load)	230 V AC	mm/s	5,4 to 5,9	4,4 to 4,9	3,3 to 3,7	5,4 to 5,9	4,4 to 4,9	3,3 to 3,7
Stroke ¹⁾		mm	100 to 600	100 to 600	100 to 600	100 to 600	100 to 600	100 to 600
Retracted length ²⁾		mm	S+190/200/215	S+190/200/215	S+190/200/215	S+190/200/215	S+190/200/215	S+190/200/215
Voltage		V AC	115 or 230	115 or 230	115 or 230	115 or 230	115 or 230	115 or 230
Power consumption		W	N/A	N/A	N/A	N/A	N/A	N/A
Current consumption	115 V AC	A	1,4	1,4	1,4	1,6	1,6	1,6
	230 V AC	A	0,8	0,8	0,8	1,0	1,0	1,0
Duty cycle		%	17	17	17	17	17	17
Ambient temperature		°C	+10 to +40	+10 to +40	+10 to +40	+10 to +40	+10 to +40	+10 to +40
Type of protection		IP	52	52	52	52	52	52
Weight		kg	4,0	4,0	4,0	4,5	4,5	4,5
Color		–	Black	Black	Black	Black	Black	Black

¹⁾ Max. stroke for the tube version "I" is 250 mm.

²⁾ For clevis mounting; "01" and "05" L=S+190 mm, "02" L=S+215 mm, "03" and "04" L=S+200 mm.

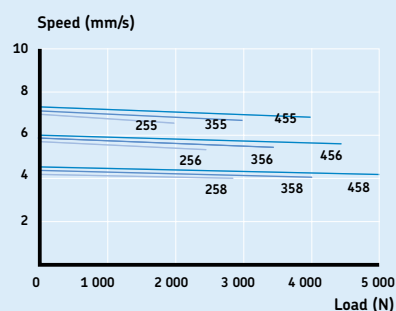
Technical data

		Unit	SJ 455	SJ 456	SJ 458
Push load		N	4 000	4 500	5 000
Pull load		N	4 000	4 500	5 000
Speed (full load)	115 V AC	mm/s	6,6 to 7,2	5,5 to 6,0	4,0 to 4,5
to no load)	230 V AC	mm/s	5,4 to 5,9	4,4 to 4,9	3,3 to 3,7
Stroke ¹⁾		mm	100 to 600	100 to 600	100 to 600
Retracted length ²⁾		mm	S+190/200/215	S+190/200/215	S+190/200/215
Voltage		V AC	115 or 230	115 or 230	115 or 230
Power consumption		W	N/A	N/A	N/A
Current consumption	115 V AC	A	1,8	1,8	1,8
	230 V AC	A	1,0	1,0	1,0
Duty cycle		%	17	17	17
Ambient temperature		°C	+10 to +40	+10 to +40	+10 to +40
Type of protection		IP	52	52	52
Weight		kg	5,0	5,0	5,0
Color		–	Black	Black	Black

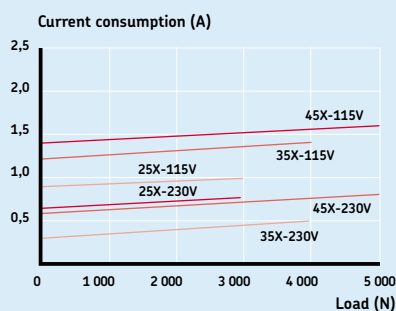
¹⁾ Max. stroke for the tube version "I" is 250 mm.

²⁾ For clevis mounting; "01" and "05" L=S+190 mm, "02" L=S+215 mm, "03" and "04" L=S+200 mm.

Performance diagrams



Speed-load diagram



Current-load diagram

3



2 000 N / 7,2 mm/s
2 500 N / 6,0 mm/s
3 000 N / 4,5 mm/s
3 000 N / 7,2 mm/s
3 500 N / 6,0 mm/s
4 000 N / 4,5 mm/s
4 000 N / 7,2 mm/s
4 500 N / 6,0 mm/s
5 000 N / 4,5 mm/s

255
256
258
355
356
358
455
456
458

115 V AC
230 V AC

115
230

With outer and inner tube
Inner tube with plastic dust protection cover
Inner tube only

B
I
Y

- Square mounting
- Tube mounting with 4 holes
- Clevis mounting
- Clevis mounting
- Square mounting

- 01
- 02
- 03
- 04
- 05

No connector
1x4C to control box
1x3C to AC plug, 1x3C to pedant
With one motor controller

N
C
P
L

Potentiometer
No sensor

P
N

100 mm
150 mm
200 mm
250 mm (250 mm is also the maximum stroke for tube versions "I" and "Y")
300 mm
350 mm
400 mm
450 mm
500 mm
550 mm
600 mm

100
150
200
250
300
350
400
450
500
550
600

Specify requested cable length in dm

XX

SKF

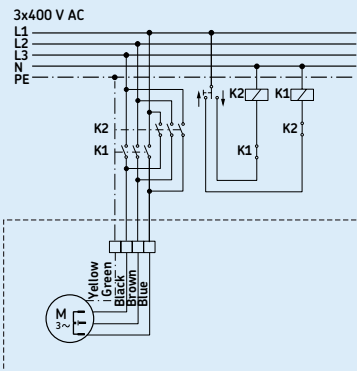
Linear actuator Magforce DSP

Benefits

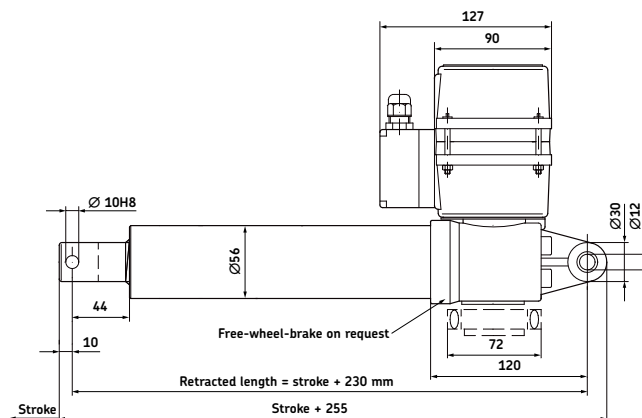
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



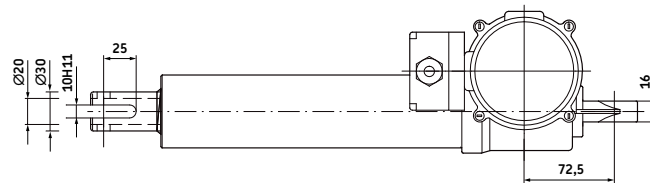
Connecting diagram



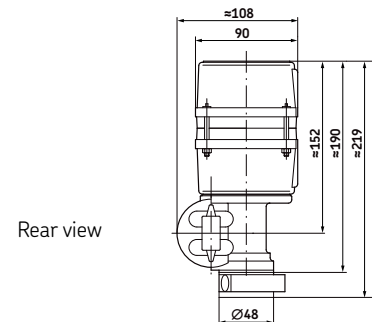
Dimensional drawing



Side view



Top view



Rear view

Technical data

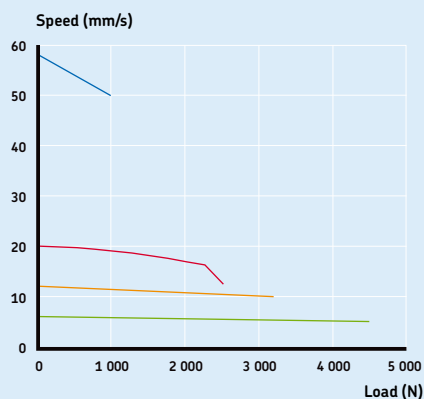
	Unit	DSP 1010	DSP 2530	DSP 3250	DSP 4550
Push load	N	1 000	2 500 ¹⁾	3 200 ²⁾	4 500 ³⁾
Pull load	N	1 000	2 500	3 200	4 500
Speed (at full load)	mm/s	50	15	10	5
Stroke	mm	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length	mm	S+230	S+230	S+230	S+230
Voltage	V AC	3x400	3x400	3x400	3x400
Power consumption	W	210	260	260	280
Current consumption	A	0,5	0,6	0,6	0,6
Duty cycle	%	40 (4/6)	40 (4/6)	40 (4/6)	40 (4/6)
Ambient temperature	°C	-10 to +40	-10 to +40	-10 to +40	-10 to +40
Type of protection	IP	54	54	54	54
Weight (at 200 mm stroke)	kg	5,6	5,6	5,6	5,6
Color	—	Silver	Silver	Silver	Silver

¹⁾Push load allowed up to 500 mm stroke (if S>500 mm, only pull load is allowed)

²⁾Push load allowed up to 450 mm stroke (if S>450 mm, only pull load is allowed)

³⁾Push load allowed up to 350 mm stroke (if S>350 mm, only pull load is allowed)

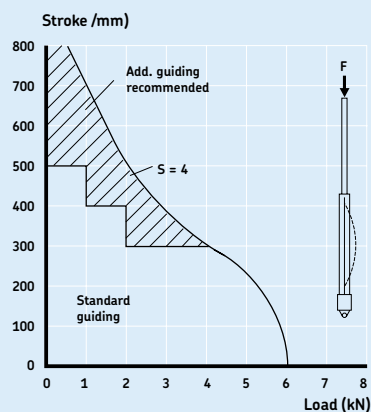
Performance diagram



Speed-load diagram

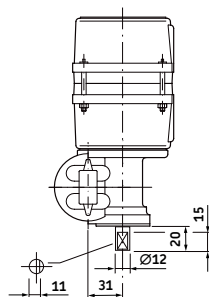
— DSP 1010-200
 — DSP 2530-200
 — DSP 3250-200
 — DSP 4550-200

Safety load factor conditions

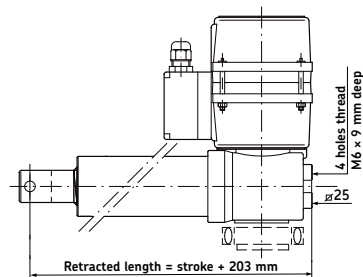


Bending of spindle
 S = safety factor Euler 3

Options



Extended motor shaft



Rear screw fixing

Ordering key

Type

Load:

1 000 N
2 500 N
3 200 N
4 500 N

1010
2530
3250
4550

Stroke (S):

100 mm
200 mm
300 mm
400 mm
500 mm
600 mm
700 mm

100
200
300
400
500
600
700

Customer option:

Standard

Bronze nut, special grease for -30°C

Additional bushing (L=S+280 mm)

Protection tube made out of stainless steel

Extended shaft

ATEX zone 22 (II 3 D T 150°C)

Others (rear attachment hole turned 90°, motor turned 90°, potentiometer, ...)

01
08
09
14
122
131
XX

Options written in italic fonts are only available on demand. Please contact SKF.

Accessories

Description	Designation	Order N°
Free wheel brake on push load	1028,6226	M/0200093
Free wheel brake on pull load	1028,0002	M/0201784
Friction brake for pull/push load	1028,7851	M/0201789
Limit switch 100 mm stroke	1043,0210-0100	M/0201853
Limit switch 200 mm stroke	1043,0210-0200	M/0200328
Limit switch 300 mm stroke	1043,0210-0300	M/0201856
Limit switch 400 mm stroke	1043,0210-0400	M/0201858
Limit switch 500 mm stroke	1043,0210-0500	M/0201859
Limit switch 600 mm stroke	1043,0210-0600	M/0125174

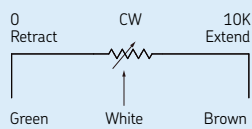
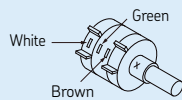
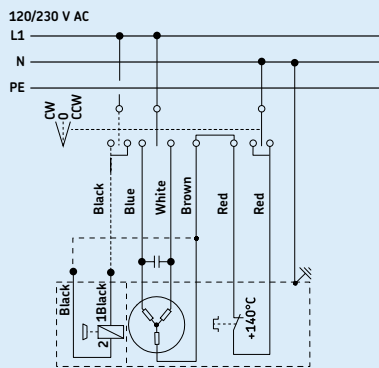
Linear actuator CAP 32

Benefits

- Easy to install
- Robust and reliable
- Lubricated for service life
- Right- and left-hand version

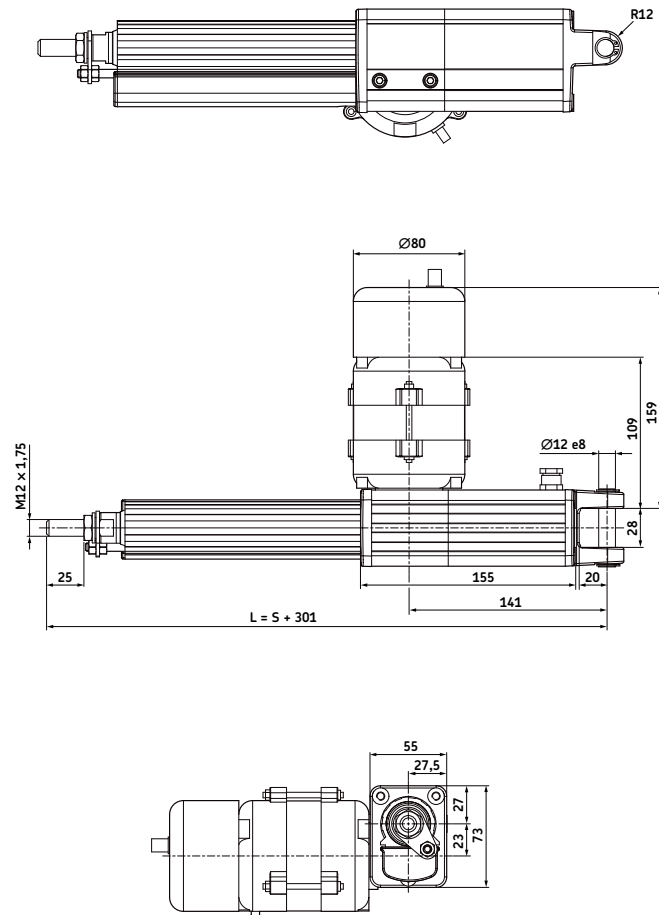


Connecting diagram



Connection diagram for rotating potentiometer.

Dimensional drawing

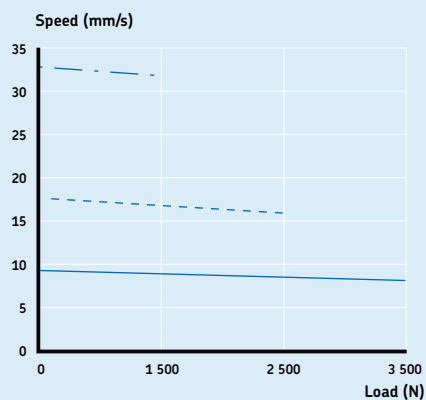


Technical data

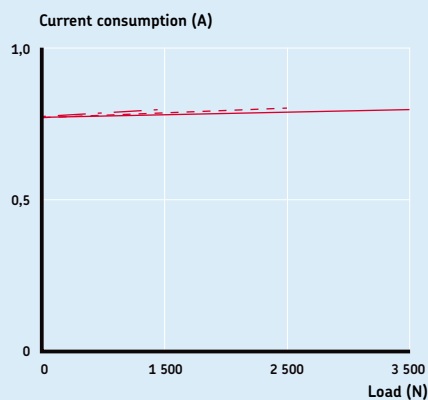
	Unit	CAP 32
Push load	N	1 500 to 3 500
Pull load	N	1 500 to 3 500
Speed (at full load)	mm/s	6 to 32*
Stroke	mm	50 to 700
Retracted length	mm	S+301
Voltage	VAC	120 or 230
Power consumption	120 VAC W	98 (brake 133,2 W)
	230 VAC W	92 (brake 117,3 W)
Current consumption	120 VAC A	0,82 (brake +0,29 A)
	230 VAC A	0,4 (brake + 0,11 A)
Duty cycle	%	30
Ambient temperature	°C	-20 to +50
Type of protection	IP	20/54
Weight	kg	2,9 to 5,0

* Depending on selected motor

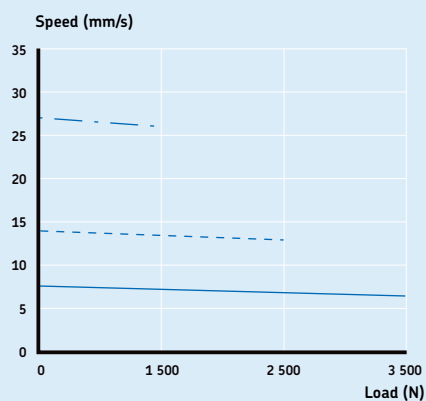
Performance diagrams



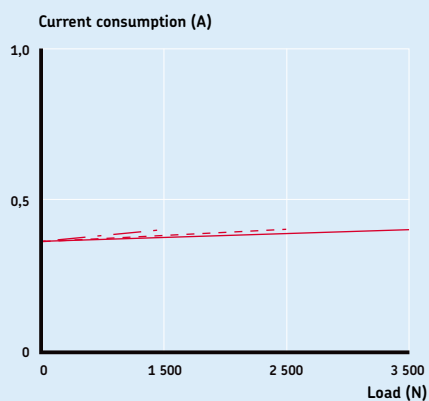
Speed-load diagram CAP 32 ... 120 V AC



Current-load diagram CAP 32 ... 120 V AC



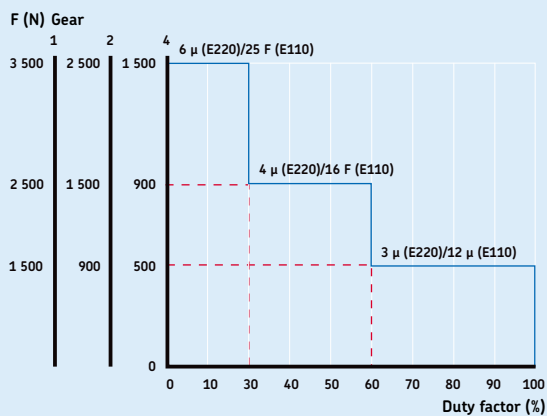
Speed-load diagram CAP 32 ... 230 V AC



Current-load diagram CAP 32 ... 230 V AC

Gear 1 — V (mm/s)
 — I (A)
 Gear 2 - - V (mm/s)
 - - I (A)
 Gear 4 ··· V (mm/s)
 ··· I (A)

Duty cycle



CAP 32 ... 230/120 V AC

Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
3 500xx	2 500/xx	1 500/xx	No motor	0000
3 500/8	2 500/16	1 500/32	120 V AC/60 Hz, 1-phase, IP54	E110C
3 500/8	2 500/16	1 500/32	120 V AC/60 Hz, 1-phase, brake, IP20	E110CB
3 500/6	2 500/13	1 500/26	230 V AC/50 Hz, 1-phase, IP54	E220C
3 500/6	2 500/13	1 500/26	230 V AC/50 Hz, 1-phase, brake, IP20	E220CB
1	2	4		

Type

Motor assembly:
Right
Left

Stroke (S):
50 mm
100 mm
200 mm
300 mm
500 mm
700 mm
Other stroke lengths

Option:
Back-up nut

CAP

32

X

X

/

R

L

S

Options written in italic fonts are only available on demand. Please contact SKF.

Linear actuator CAR 32

Benefits

- Industrial reliable and robust actuator
- Wide range of components
- Right- and left-hand version



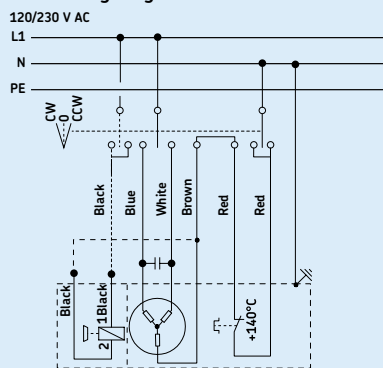
Suitable control units and accessories

	Control unit	Limit switch
	CAEV 110/220	CAXB 32*
E110C	●	●
E110CB	●	●
E220C	●	●
E220CB	●	●
CAES 31C	●	

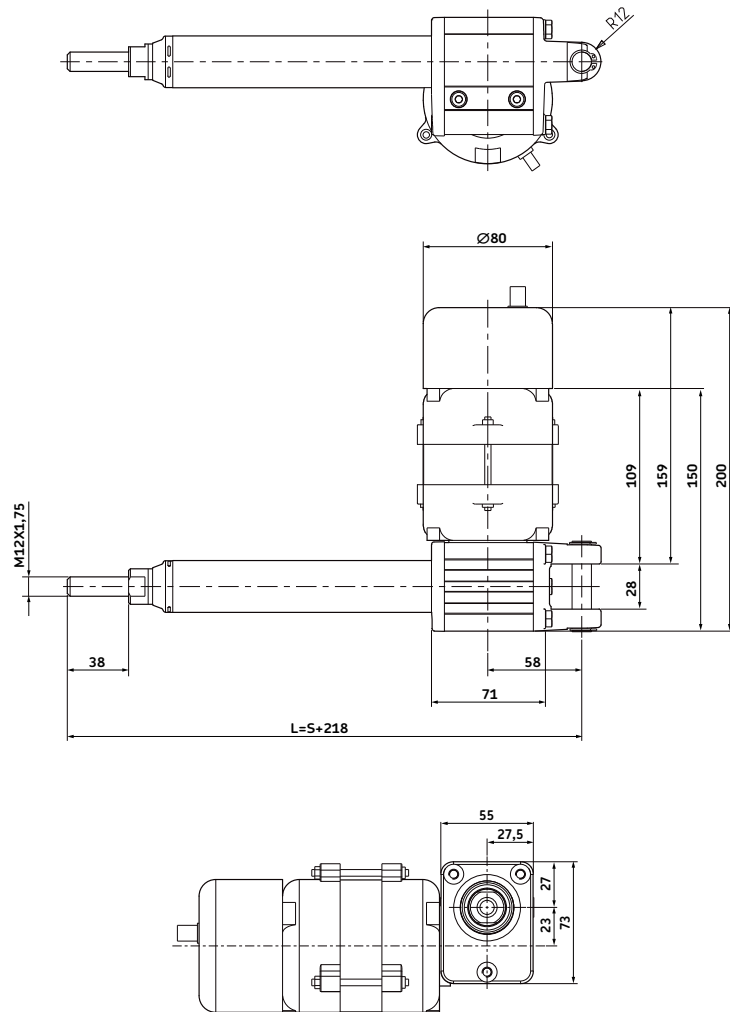
Hand switch
 Foot switch
 Desk switch

* See page 395

Connecting diagram



Dimensional drawing



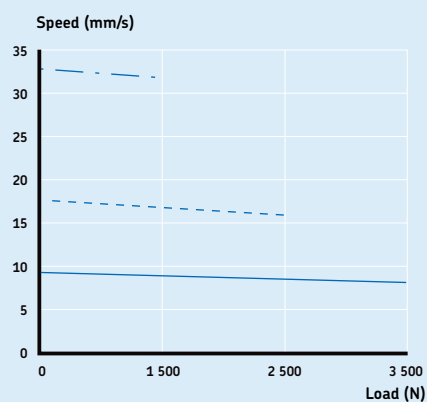
Legend:
 S = stroke
 L = retracted length

Technical data

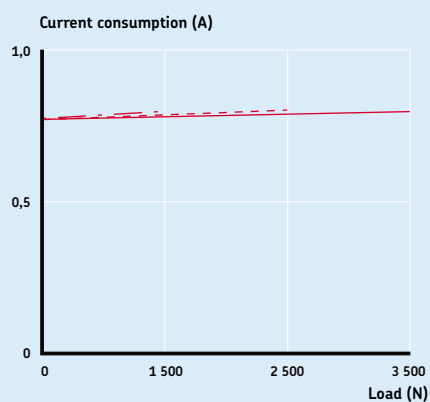
	Unit	CAR 32
Push load	N	1 500 to 3 500
Pull load	N	1 500 to 3 500
Speed (at full load)	mm/s	6 to 32*
Stroke	mm	50 to 700
Retracted length	mm	S + 218
Voltage	VAC	120 or 230
Power consumption	120 V AC W	98 (brake 133,2 W)
	230 V AC W	92 (brake 117,3 W)
Current consumption	120 V AC A	0,82 (brake +0,29 A)
	230 V AC A	0,4 (brake + 0,11 A)
Duty cycle	%	30
Ambient temperature	°C	-20 to +70
Type of protection	IP	20/54
Weight	kg	2,1 to 3,7

* Depending on selected motor

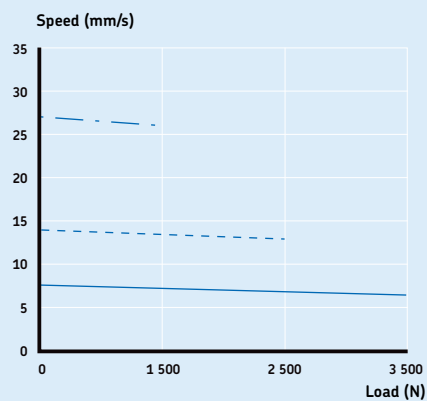
Performance diagrams



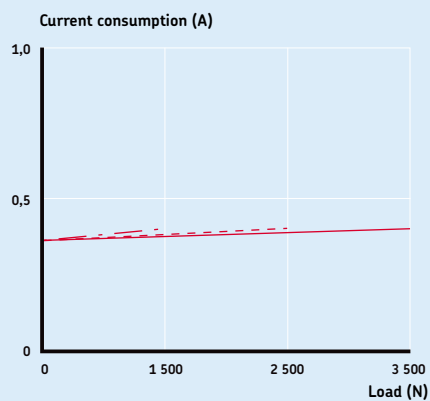
Speed-load diagram CAR 32 ... 120 V AC



Current-load diagram CAR 32 ... 120 V AC



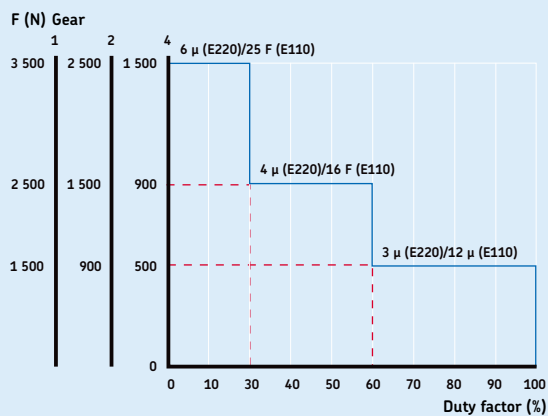
Speed-load diagram CAR 32 ... 230 V AC



Current-load diagram CAR 32 ... 230 V AC

Gear 1 — V (mm/s)
 — I (A)
 Gear 2 - - V (mm/s)
 - - I (A)
 Gear 4 - . V (mm/s)
 - . I (A)

Duty cycle



CAR 32 ... 230/120 V AC

Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
3 500/xx	2 500/xx	1 500/xx	No motor	0000
3 500/8	2 500/16	1 500/32	120 V AC/60 Hz, 1-phase, IP54	E110C
3 500/8	2 500/16	1 500/32	120 V AC/60 Hz, 1-phase, brake, IP20	E110CB
3 500/6	2 500/13	1 500/26	230 V AC/50 Hz, 1-phase, IP54	E220C
3 500/6	2 500/13	1 500/26	230 V AC/50 Hz, 1-phase, brake, IP20	E220CB
1	2	4		

Type

Motor assembly:

Right
Left

R
L

Stroke (S):

50 mm
100 mm
200 mm
300 mm
500 mm
700 mm
Other stroke lengths

50
100
200
300
500
700

Option:

Friction clutch
Back-up nut

F
S

Options written in italic fonts are only available on demand. Please contact SKF.

Linear actuator CAT 32B

Benefits

- Compact
- Robust
- Modular
- Lubricated for service life
- High efficiency
- Digital encoder feedback



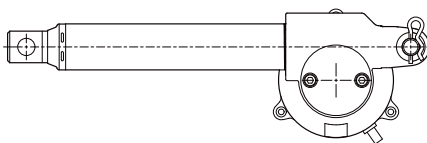
Suitable control units and accessories

	Control unit	Limit switch	Encoder
	CAEV 110/220	CAXB 32B ¹⁾	E2 ²⁾
E110C	•	•	•
E110CB	•	•	•
E220C	•	•	•
E220CB	•	•	•
E380C	•	•	•
CAES 31C	•		

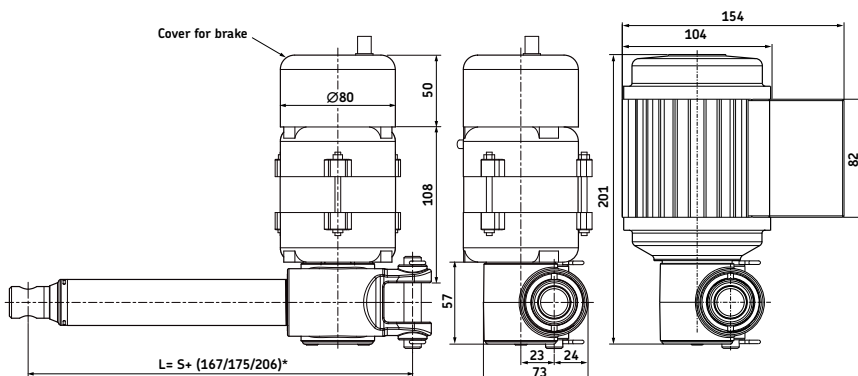
-  Hand switch
-  Foot switch
-  Desk switch

¹⁾See page 395
²⁾See page 396

Dimensional drawing



See drawings of front and rear attachments and motor options on page 286.



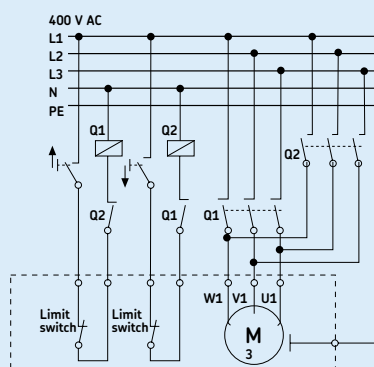
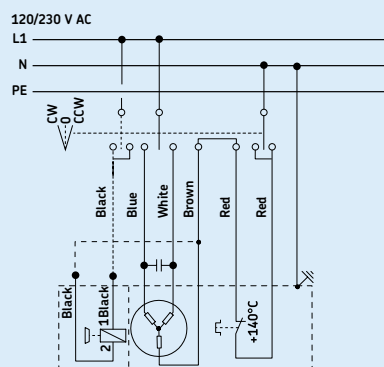
Legend:
S = stroke
L = retracted length

120 or 230 V AC
motor

400 V AC
motor

* Dimension depends on selected front attachment

Connecting diagrams



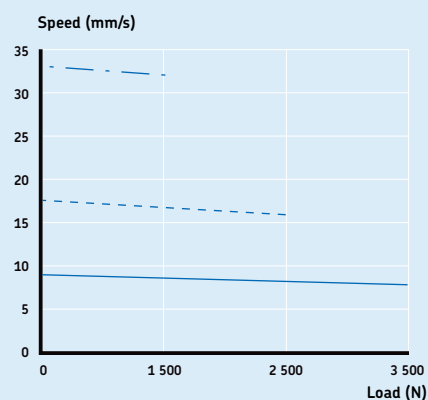
Technical data

	Unit	CAT 32B
Push load	N	1 500 to 3 500
Pull load	N	1 500 to 3 500
Speed (at full load)	mm/s	6,5 to 32 ¹⁾
Stroke	mm	50 to 700
Retracted length	mm	S+167/175/206 ²⁾
Voltage	V AC	120, 230 or 400
Power consumption	120 V AC W	98 (brake 133,2 W)
	230 V AC W	92 (brake 117,3 W)
	400 V AC W	80
Current consumption	120 V AC A	0,82 (brake +0,29 A)
	230 V AC A	0,4 (brake + 0,11 A)
	400 V AC A	0,2
Duty cycle	%	30
Ambient temperature	°C	-20 to +50
Type of protection	IP	20/54/55
Weight	kg	2 to 3,5

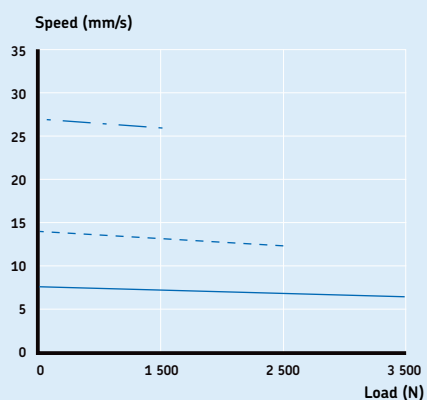
¹⁾Depending on selected motor

²⁾Dimension depends on selected front attachment

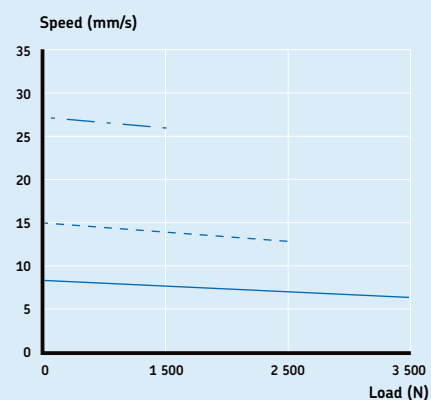
Performance diagrams



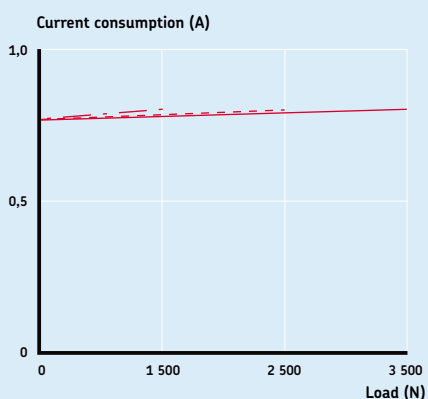
Speed-load diagram CAT 32B ... 120 V AC



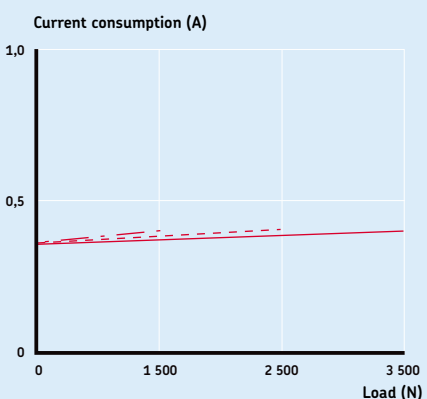
Speed-load diagram CAT 32B ... 230 V AC



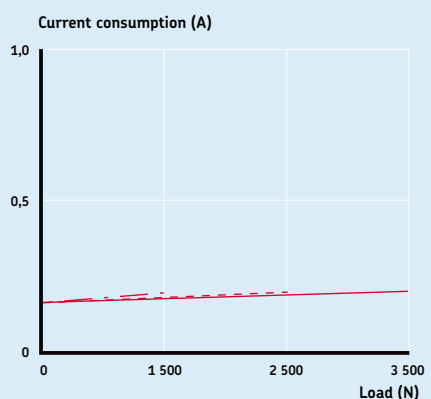
Speed-load diagram CAT 32B ... 400 V AC



Current-load diagram CAT 32B ... 120 V AC



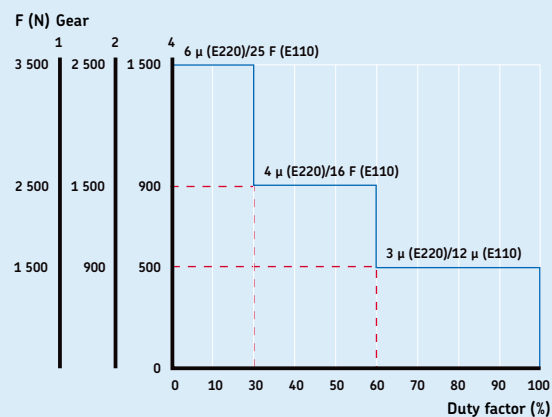
Current-load diagram CAT 32B ... 230 V AC



Current-load diagram CAT 32B ... 400 V AC

Gear 1 — V (mm/s)
 — I (A)
 Gear 2 - - - V (mm/s)
 - - - I (A)
 Gear 4 - . - V (mm/s)
 - . - I (A)

Duty cycle



CAT 32B ... 120/230/400 V AC

3

C	A	T		3	2	B	X				X					/					
---	---	---	--	---	---	---	---	--	--	--	---	--	--	--	--	---	--	--	--	--	--

L
R

50
100
200
300
400
500
700

— —

A1
A2
K1
K2

G1
G2
G3
G4
G5

E2

F
Z
S**SKF**

Linear actuator CAT 33

Benefits

- Small
- Robust
- Highly efficient
- Lubricated for service life
- Digital encoder feedback



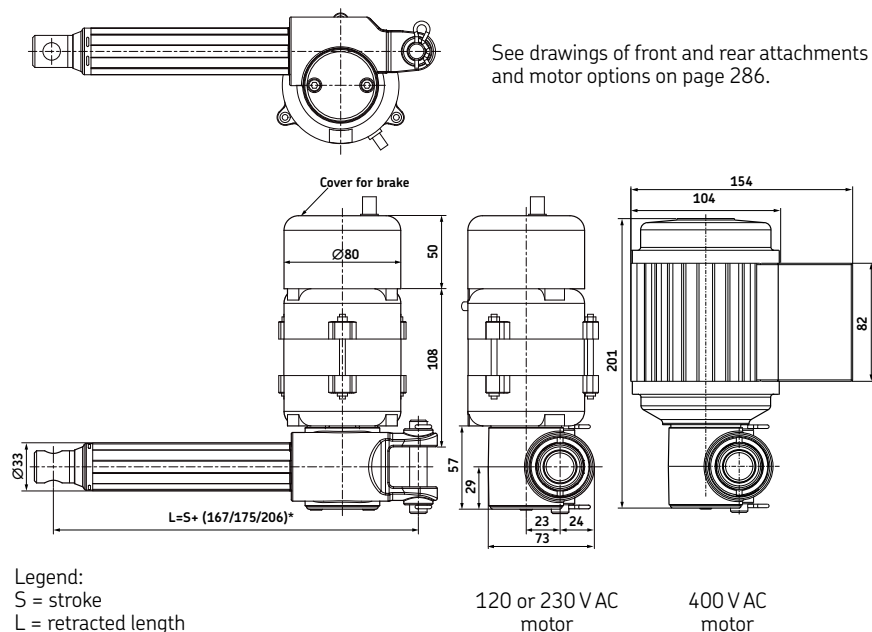
Suitable control units and accessories

	Control unit	Limit switch	Encoder
	CAEV 110/220	CAXC 33 ¹⁾	E2 ²⁾
E110C	•	•	•
E110CB	•	•	•
E220C	•	•	•
E220CB	•	•	•
E380C	•	•	•
CAES 31C	•		

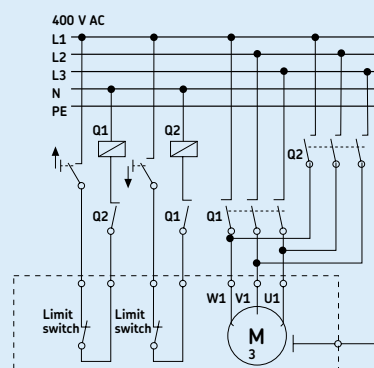
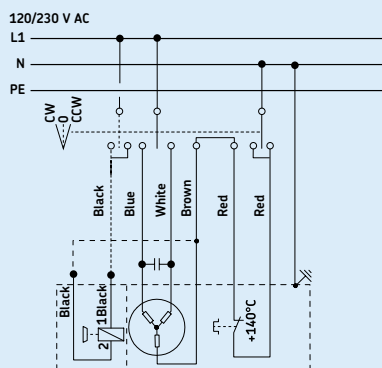
- Hand switch
- Foot switch
- Desk switch

¹⁾See page 394
²⁾See page 396

Dimensional drawing



Connecting diagrams



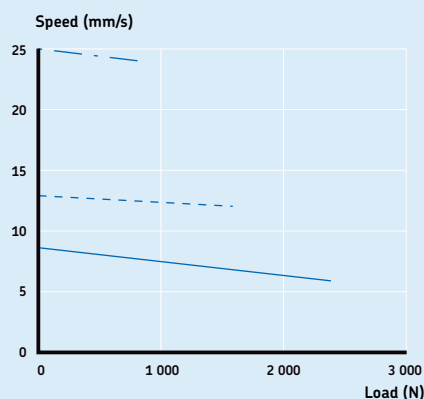
Technical data

	Unit	CAT 33
Push load	N	800 to 3 000
Pull load	N	800 to 3 000
Speed (at full load)	mm/s	5 to 24 ¹⁾
Stroke	mm	100 to 400
Retracted length	mm	S+150/158/189 ²⁾
Voltage	V AC	120, 230 or 400
Power consumption	120 V AC W	98 (brake 133,2W)
	230 V AC W	92 (brake 117,3W)
	400 V AC W	80
Current consumption	120 V AC A	0,82 (brake +0,29A)
	230 V AC A	0,4 (brake + 0,11A)
	400 V AC A	0,2
Duty cycle	%	30
Ambient temperature	°C	-20 to +50
Type of protection	IP	20/54/55
Weight	kg	2 to 2,7

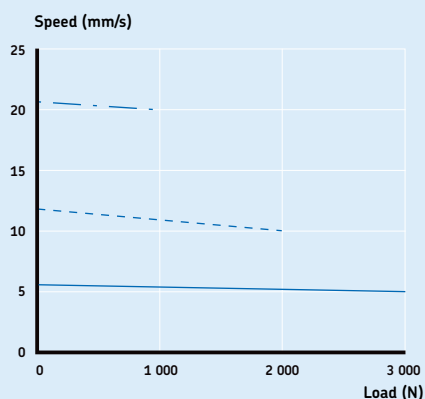
¹⁾Depending on selected motor

²⁾Dimension depends on selected front attachment

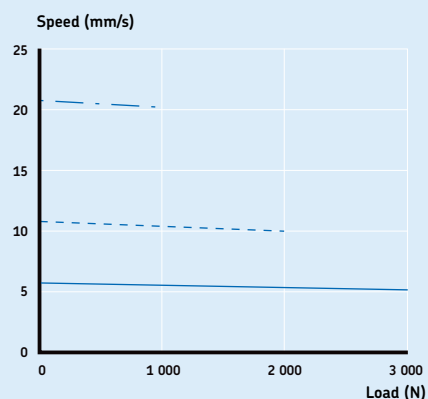
Performance diagrams



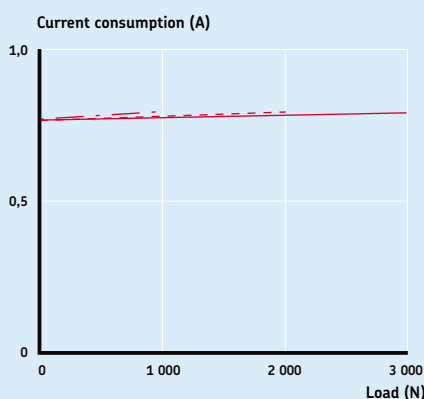
Speed-load diagram CAT 33 ... 120 V AC



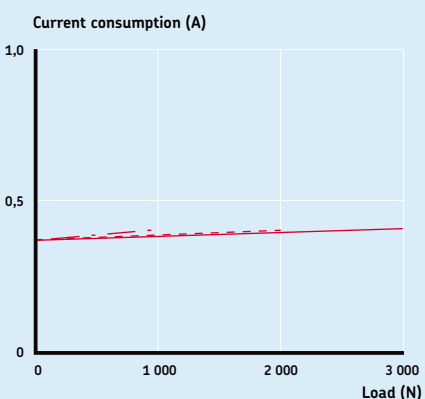
Speed-load diagram CAT 33 ... 230 V AC



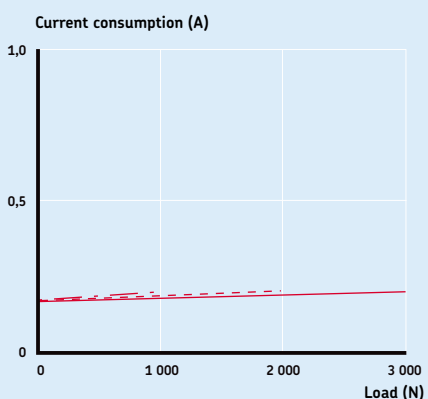
Speed-load diagram CAT 33 ... 400 V AC



Current-load diagram CAT 33 ... 120 V AC



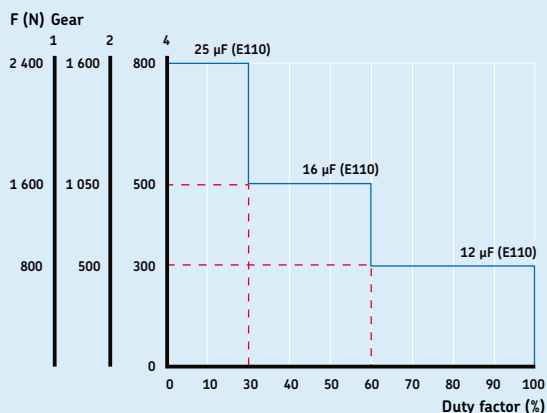
Current-load diagram CAT 33 ... 230 V AC



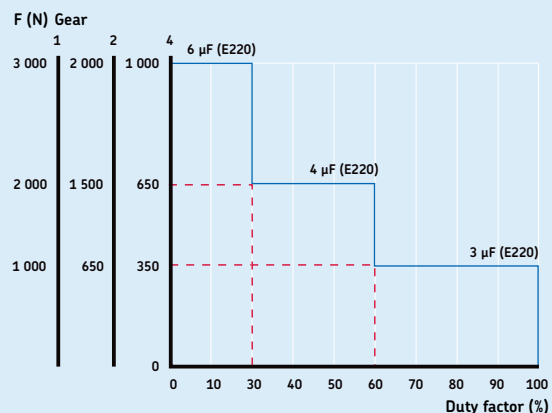
Current-load diagram CAT 33 ... 400 V AC

Gear 1 — V (mm/s)
 — I (A)
 Gear 2 - - - V (mm/s)
 - - - I (A)
 Gear 4 ··· V (mm/s)
 ··· I (A)

Duty cycle



CAT 33 ... 120 V AC



CAT 33 ... 230 V AC

Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
3 000/xx 2 400/6 2 400/6 3 000/5 3 000/5 3 000/5	2 000/xx 1 600/12 1 600/12 2 000/10 2 000/10 2 000/10	1 000/xx 800/24 800/24 1 000/20 1 000/20 1 000/20	No motor 120 V AC/60 Hz, 1-phase, IP54 120 V AC/60 Hz, 1-phase, brake, IP20 230 V AC/50 Hz, 1-phase, IP54 230 V AC/50 Hz, 1-phase, brake, IP20 400 V AC/50 Hz, 3-phase, IP55	0000 E110C E110CB E220C E220CB E380C
1	2	4		

C A T 3 3 X X /

Type**Motor assembly:**

Right
Left

L
R

Stroke (S):

100 mm
200 mm
300 mm
400 mm

100
200
300
400

Other stroke lengths

Rear attachment (see page 286):

Fork ear, Ø=12,0 mm
Fork ear, Ø=12,7 mm
Single ear, Ø=12,0 mm
Single ear, Ø=12,7 mm

A1
A2
K1
K2

Front attachment (see page 286):

Hole, Ø=12,0 mm
Hole, Ø=12,7 mm
Male thread, M12
Female thread, M12
Fork ear, Ø=10,1 mm

G1
G2
G3
G4
G5

Feedback:

No encoder (no code)
Encoder (for all standard motors)

E2

Option:

Friction clutch (not available with option encoder)
No friction clutch

F
Z

Options written in italic fonts are only available on demand. Please contact SKF.

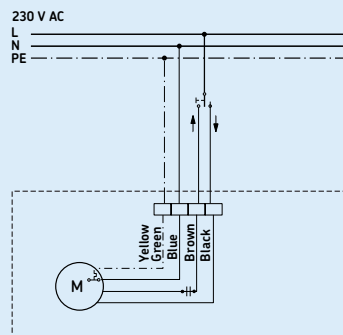
Linear actuator Magforce WSP

Benefits

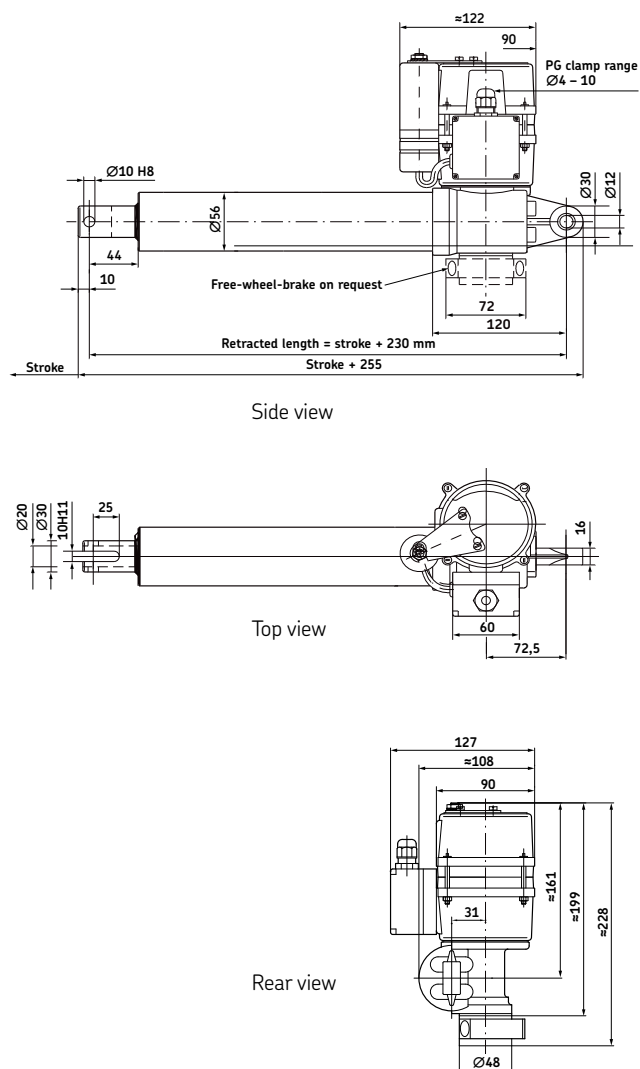
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Connecting diagram



Dimensional drawing



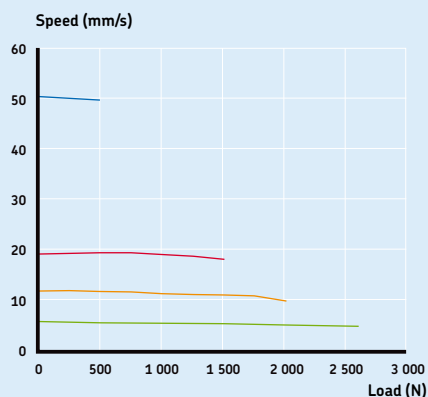
Technical data

	Unit	WSP 0510	WSP 1030	WSP 1550	WSP 2650
Push load	N	500	1 000	1 500 ¹⁾	2 600 ²⁾
Pull load	N	500	1 000	1 500	2 600
Speed (at full load)	mm/s	50	18	10	5
Stroke	mm	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length	mm	S+230	S+230	S+230	S+230
Voltage	V AC	230	230	230	230
Power consumption	W	230	200	200	230
Current consumption	A	1,1	1	1	1,1
Duty cycle	%	25 (2,5/7,5)	25 (2,5/7,5)	25 (2,5/7,5)	25 (2,5/7,5)
Ambient temperature	°C	-10 to +40	-10 to +40	-10 to +40	-10 to +40
Type of protection	IP	54	54	54	54
Weight (at 200 mm stroke)	kg	5,5	5,5	5,5	5,5
Color	—	Silver	Silver	Silver	Silver

¹⁾Push load allowed up to 650 mm stroke (if S>650 mm, only pull load is allowed)

²⁾Push load allowed up to 500 mm stroke (if S>500 mm, only pull load is allowed)

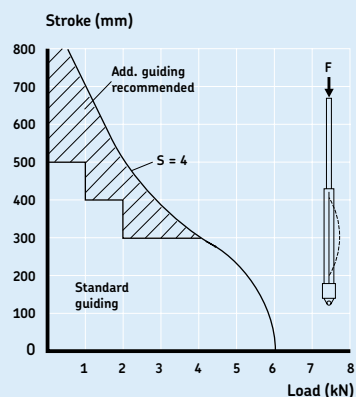
Performance diagram



Speed-load diagram

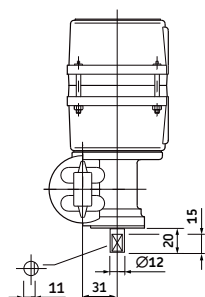
- WSP 0510-200
- WSP 1030-200
- WSP 1550-200
- WSP 2650-200

Safety load factor conditions

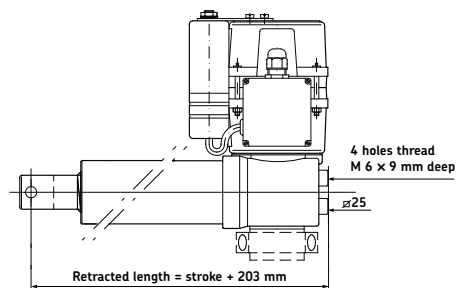


Bending of spindle
 S = safety factor Euler 3

Options



Extended motor shaft



Rear screw fixing

Ordering key

Type									
Load:									
500 N									
1 000 N									
1 500 N									
2 600 N									
Stroke (S):									
100 mm									
200 mm									
300 mm									
400 mm									
500 mm									
600 mm									
700 mm									
Customer option:									
Standard									01
<i>Additional bushing (L=S+280 mm)</i>									15
<i>Extended shaft</i>									16
<i>Protection tube made out of stainless steel</i>									30
<i>Bronze nut, special grease for -30°C</i>									91
<i>Others (rear attachment hole turned 90°, motor turned 90°, potentiometer, ...)</i>									XX

Options written in italic fonts are only available on demand. Please contact SKF.

Accessories

Description	Designation	Order N°
Free wheel brake on push load	1028,6226	M/0200093
Free wheel brake on pull load	1028,0002	M/0201784
Friction brake for pull/push load	1028,7851	M/0201789
Limit switch 100 mm stroke	1043,0209-100	M/0201848
Limit switch 200 mm stroke	1043,0209-200	M/0200402
Limit switch 300 mm stroke	1043,0209-300	M/0201849
Limit switch 400 mm stroke	1043,0209-400	M/0210758
Limit switch 500 mm stroke	1043,0209-500	M/0201850
Limit switch 600 mm stroke	1043,0209-600	M/0201851

Linear actuator CAHB-30 series

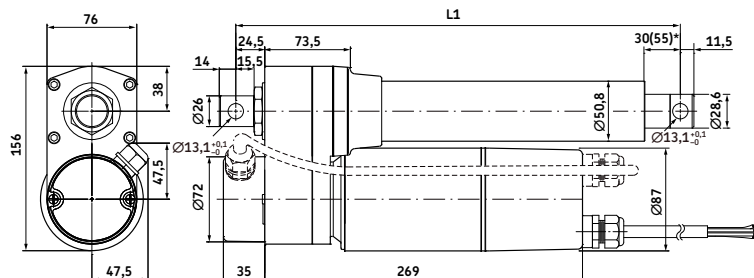
Benefits

- ACME screw drive
- Extension tube (stainless steel)
- Protection tube (steel)
- Enhanced corrosion resistance
- Mechanical overload protection (clutch)
- Lubricated for service life
- Robust, designed for tough environment
- Self-locking
- Motor with thermal protection



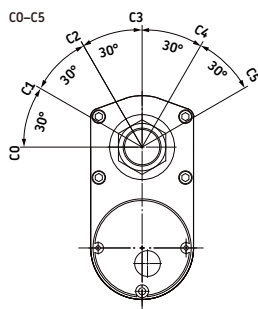
Dimensional drawing

Basic configuration (dashed line for optional limit switch)



Without limit switch:
 RED (+) & BLACK (-) = retraction
 RED (-) & BLACK (+) = extension
 With limit switch:
 RED (+) & BLACK (-) = extension
 RED (-) & BLACK (+) = retraction

Legend:
L1 = retracted length
* 55 = dimension with limit switch



	With limit switch ¹⁾						Without limit switch ²⁾					
Stroke (mm)	102	153	204	305	457	610	102	153	204	305	457	610
L1 Retracted length	440	440	440	592	744	897	380	415	415	465	668	821

1) Tolerance: S and L1 = $\pm 5,0$ mm (If $S \geq 305$ mm, S = $\pm 7,5$ mm)

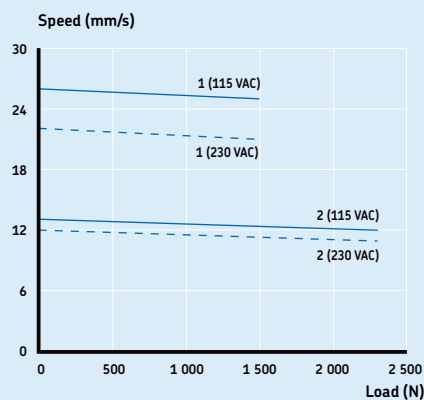
2) Tolerance: $S = \pm 2,5 \text{ mm}$ and $L1 = \pm 3,8 \text{ mm}$

Technical data

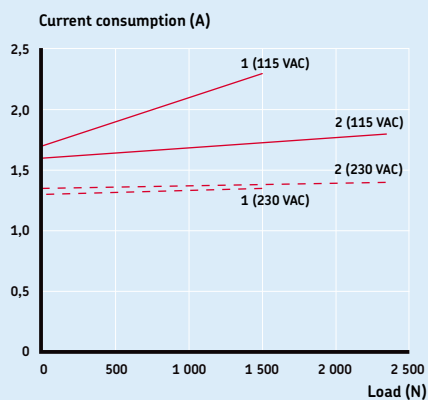
		Unit	CAHB-30... 1	CAHB-30... 2
Push load		N	1 500	2 300
Pull load		N	1 500	2 300
Speed (full load to no load)	115 VAC/60 Hz	mm/s	25 to 26	12 to 13
	230 VAC/50 Hz	mm/s	21 to 22	11 to 12
Stroke		mm	102 to 610	102 to 610
Retracted length		mm	—*	—*
Voltage		VAC	115 or 230	115 or 230
Power consumption		W	N/A	N/A
Current consumption	115 VAC/60 Hz	A	2,3	1,8
	230 VAC/50 Hz	A	1,35	1,4
Duty cycle		%	25	25
Ambient temperature		°C	–26 to +65	–26 to +65
Type of protection		IP	65	65
Weight (at 305 mm stroke)		kg	9	9
Color		—	Black	Black

* See above table
For outdoors application, please contact SKF.

Performance diagrams



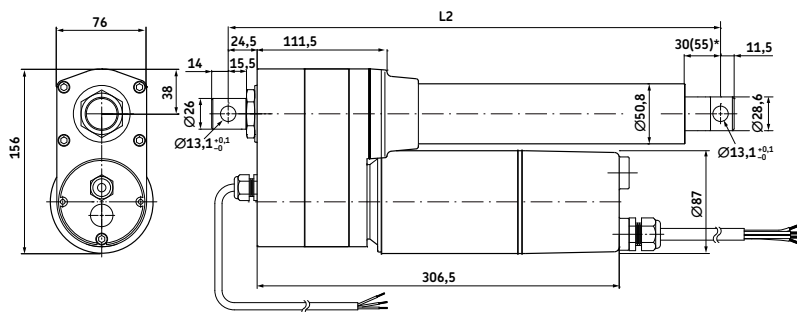
Speed-load diagram



Current-load diagram

Dimensional drawing

Optional potentiometer

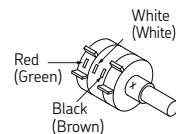
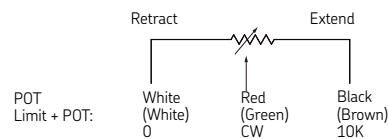
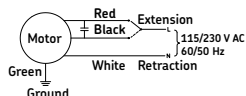


Without limit switch:
 RED (+) & BLACK (-) = retraction
 RED (-) & BLACK (+) = extension
 With limit switch:
 RED (+) & BLACK (-) = extension
 RED (-) & BLACK (+) = retraction

Legend

L2 = retracted length

* 55 = dimension with limit switch



	With limit switch ¹⁾						Without limit switch ²⁾					
Stroke (mm)	102	153	204	305	457	610	102	153	204	305	457	610
L2 Retracted length	478	478	478	630	782	935	418	453	453	503	706	859

1) Tolerance: S and L2 = $\pm 5,0$ mm (If $S \geq 305$ mm, S = $\pm 7,5$ mm)

2) Tolerance: $S = \pm 2,5 \text{ mm}$ and $L2 = \pm 3,8 \text{ mm}$

Potentiometer resolution

Stroke (mm)	102	153	204	305	457	610
Ohm/mm	59,0	59,0	29,5	29,5	9,84	9,84

Ordering key

C A H B - 3 0 - [] [] A - [] [] [] [] - A [] [] [] [] 0 - 0 0 0

Type

Voltage:

115 V AC
230 V AC

N
P

Load:

1 500 N
2 300 N

1
2

Screw:

Acme screw

A

Stroke:

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

102
153
204
305
457
610

Retracted length:

Stroke

with L.S.¹⁾

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

w/o POT²⁾

440 mm
440 mm
440 mm
592 mm
744 mm
897 mm

with POT²⁾

478 mm
478 mm
478 mm
630 mm
782 mm
935 mm

w/o L.S.¹⁾

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

380 mm
415 mm
415 mm
465 mm
668 mm
821 mm

418 mm
453 mm
453 mm
503 mm
706 mm
859 mm

IP:

Standard (IP 65)

A

Front attachment:

Standard (hole: Ø 13 mm)
Customized

A
X

Rear attachment:

Standard (0° and hole: Ø 13 mm)
30°
60°
90°
120°
150°
Customized

A
B
C
D
E
F
X

Option 1:

None
Limit switch (only for load version 2 300 N)

0
L

Option 2:

None
Potentiometer

0
P

¹⁾ L.S. = Limit Switch
²⁾ POT = Potentiometer

Linear actuator CAT 33H

Benefits

- Compact
- Robust
- Modular
- Lubricated for service life
- High speed
- Digital encoder feedback



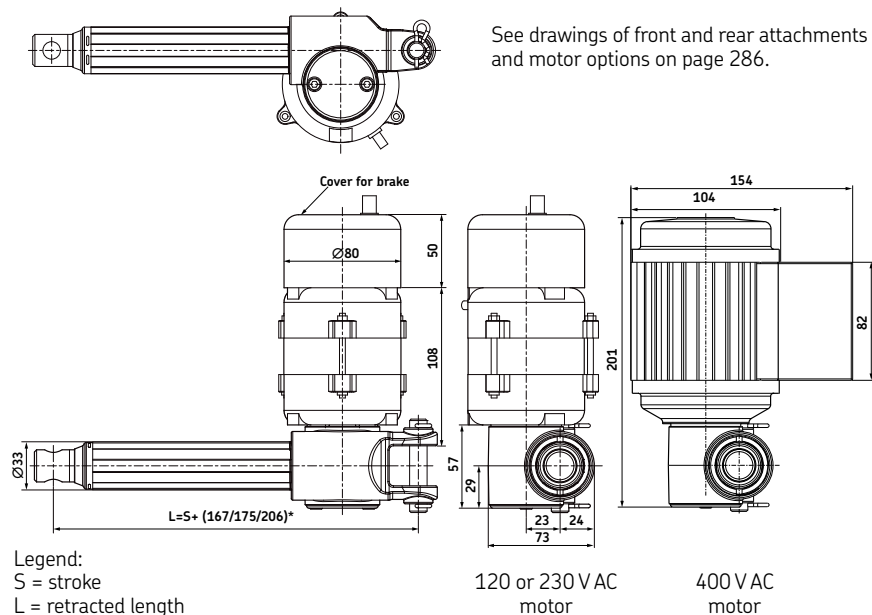
Suitable control units and accessories

Control unit		Encoder
	CAEV 110/220	E2 ¹⁾
E110C		
E110CB		
E220C		
E220CB		
E380C		
CAES 31C		

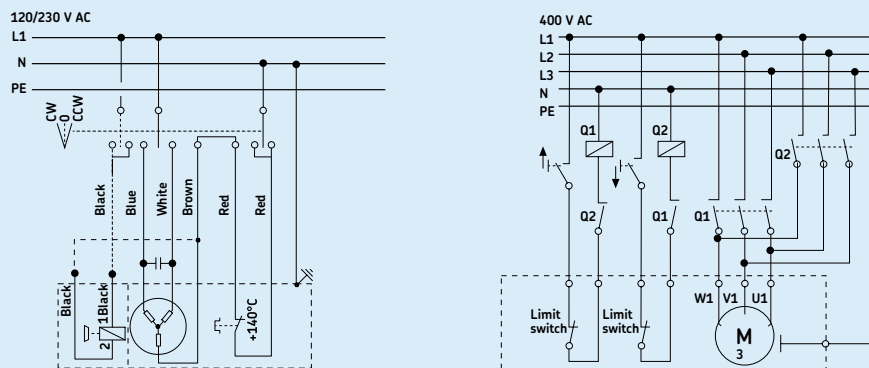
- Hand switch
- Foot switch
- Desk switch

¹⁾See page 396

Dimensional drawing



Connecting diagrams



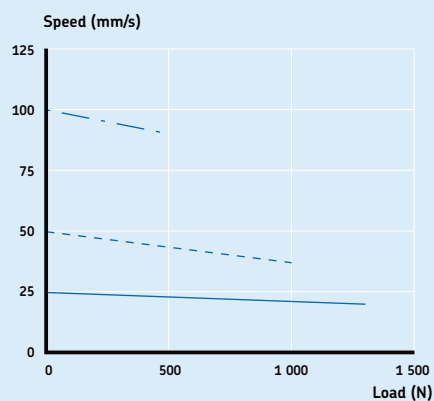
Technical data

	Unit	CAT 33H
Push load	N	500 to 1 200
Pull load	N	500 to 1 200
Speed (at full load)	mm/s	20 to 90 ¹⁾
Stroke	mm	100 to 400
Retracted length	mm	S+150/158/189 ²⁾
Voltage	V AC	120, 230 or 400
Power consumption	120 V AC W	98 (brake 133,2W)
	230 V AC W	92 (brake 117,3W)
	400 V AC W	80
Current consumption	120 V AC A	0,82 (brake +0,29A)
	230 V AC A	0,4 (brake + 0,11A)
	400 V AC A	0,2
Duty cycle	%	30
Ambient temperature	°C	-20 to +50
Type of protection	IP	20/54/55
Weight	kg	2 to 2,7

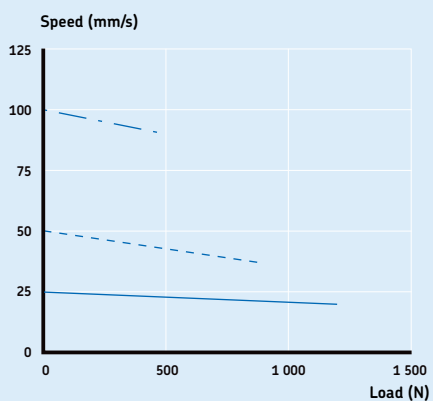
¹⁾Depending on selected motor

²⁾Dimension depends on selected front attachment

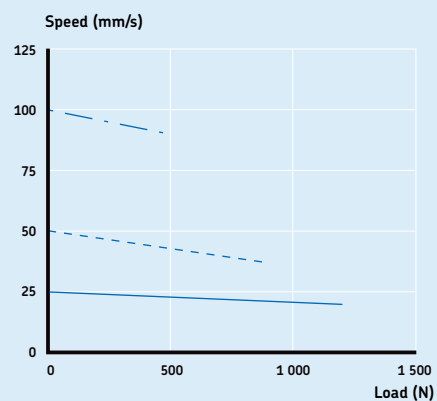
Performance diagrams



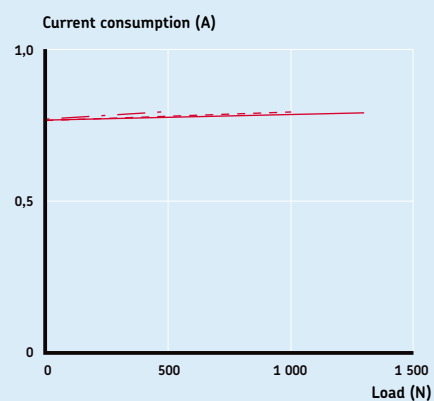
Speed-load diagram CAT 33H ... 120 V AC



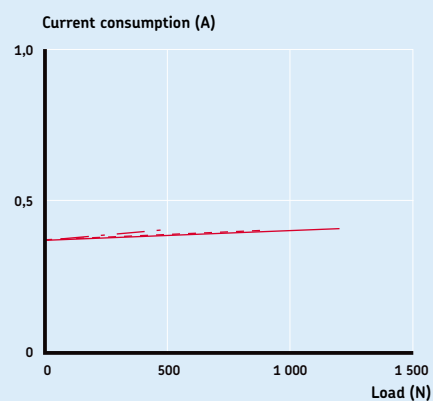
Speed-load diagram CAT 33H ... 230 V AC



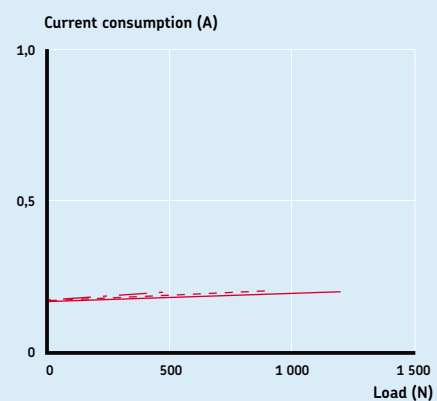
Speed-load diagram CAT 33H ... 400 V AC



Current-load diagram CAT 33H ... 120 V AC



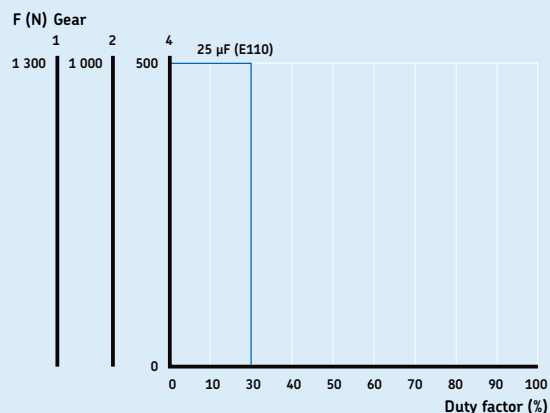
Current-load diagram CAT 33H ... 230 V AC



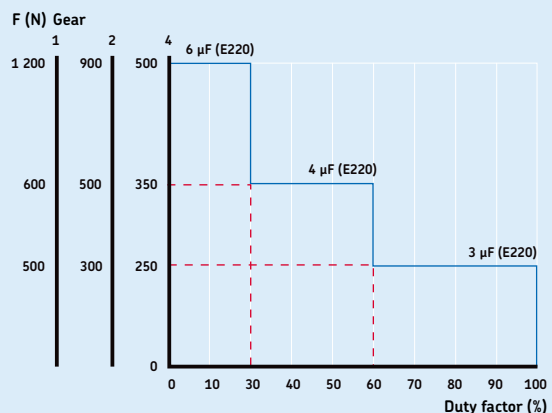
Current-load diagram CAT 33H ... 400 V AC

Gear 1 — V (mm/s)
 — I (A)
 Gear 2 - - - V (mm/s)
 - - - I (A)
 Gear 4 ··· V (mm/s)
 ··· I (A)

Duty cycle



CAT 33H ... 120 V AC



CAT 33H ... 230 V AC

Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
1 200/xx	900/xx	600/xx	No motor	0000
1 200/20	900/37	500/90	120 V AC/60 Hz, 1-phase, IP54	E110C
1 200/20	900/37	500/90	120 V AC/60 Hz, 1-phase, brake, IP20	E110CB
1 200/20	900/37	500/90	230 V AC/50 Hz, 1-phase, IP54	E220C
1 200/20	900/37	500/90	230 V AC/50 Hz, 1-phase, brake, IP20	E220CB
1 200/20	900/37	500/90	400 V AC/50 Hz, 3-phase, IP55	E380C
1	2	4		

C A T 3 3 H X X /

Type**Motor assembly:**

Right
Left

L
R

Stroke (S):

100 mm
200 mm
300 mm
400 mm

100
200
300
400

Other stroke lengths

- - -

Rear attachment (see page 286):

Fork ear, Ø=12,0 mm
Fork ear, Ø=12,7 mm
Single ear, Ø=12,0 mm
Single ear, Ø=12,7 mm

A1
A2
K1
K2

Front attachment (see page 286):

Hole, Ø=12,0 mm
Hole, Ø=12,7 mm
Male thread, M12
Female thread, M12
Fork ear, Ø=10,1 mm

G1
G2
G3
G4
G5

Feedback:

No encoder (no code)
Encoder (for all standard motors)

E2

Option:

Friction clutch (not available with option encoder)
No friction clutch

F
Z

Options written in italic fonts are only available on demand. Please contact SKF.



Linear actuators – DC version

SKG	178
STG	182
RU	186
MAX 3	190
CAJA 60	194
CAR 40	198
ECO	202
FD	206
Magdrive	210
CAHB-21	214
ASM	218
CAP 43B	222
CAT 32B	226
MAX 1	230
CAJA 35C	234
CAR 32	238
CAJA 30	242
CAP 32	246
CAP 43A	250
CAT 33	254
CAHB-20	258
CARE 33	262
CAR 22	266
CAT 33H	270
CAHB-10	274
CALA 36	278
CAT 21B	282

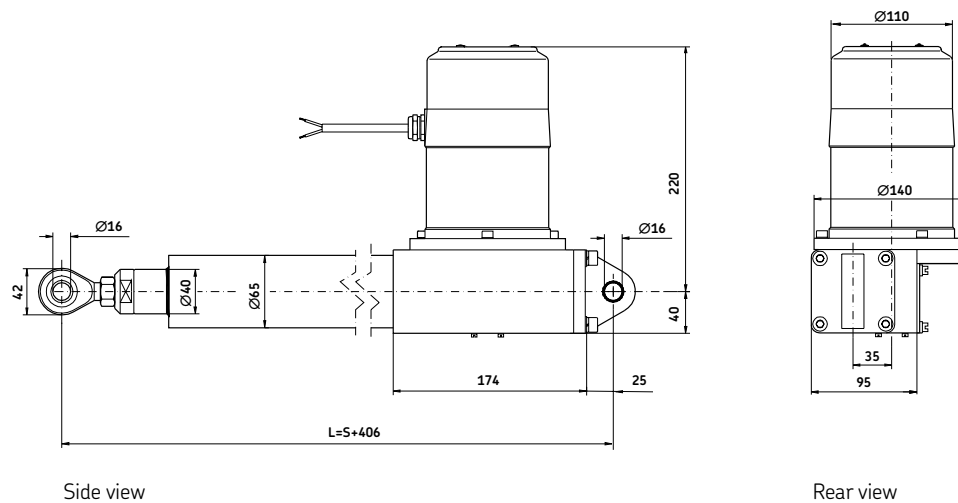
Linear actuator Magforce SKG

Benefits

- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design

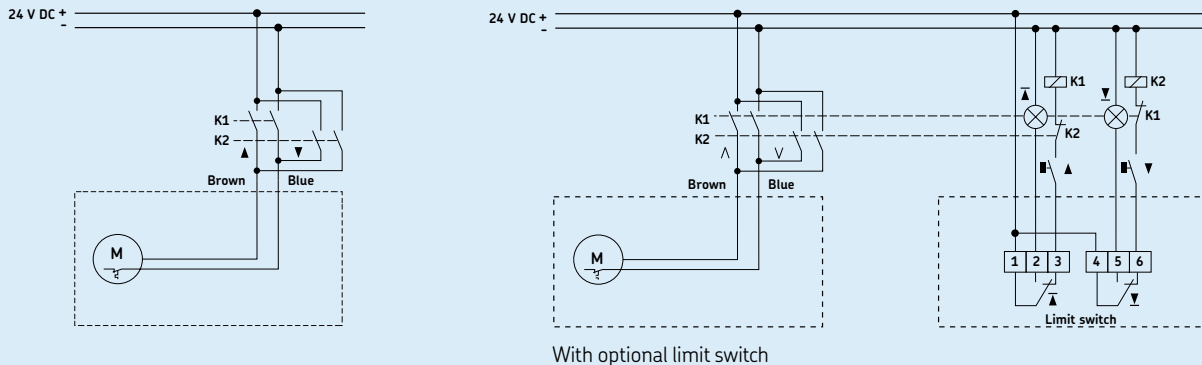


Dimensional drawing



Legend:
S = stroke
L = retracted length

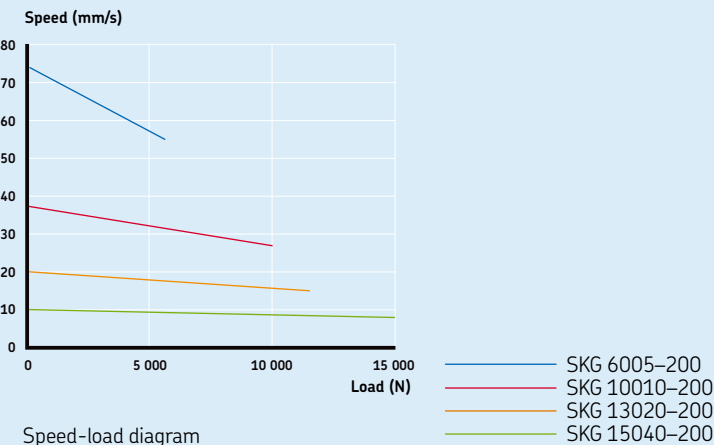
Connecting diagrams



Technical data

	Unit	SKG 6005	SKG 10010	SKG 13020	SKG 15040
Push load	N	6 000	10 000	13 000	15 000
Pull load	N	6 000	10 000	13 000	15 000
Speed (at full load)	mm/s	55	27	15	8
Stroke	mm	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length	mm	S+406	S+406	S+406	S+406
Voltage	V DC	24	24	24	24
Power consumption	W	N/A	720	672	—
Current consumption	A	N/A	30	28	—
Duty cycle	%	10 (1/9)	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	-10 to +40	-10 to +40	-10 to +40	-10 to +40
Type of protection	IP	54	54	54	54
Weight (at 200 mm stroke)	kg	14,6	14,6	14,6	14,6
Color	—	Silver	Silver	Silver	Silver

Performance diagram



Speed-load diagram

Ordering key

		S K G															
Type																	
Load:																	
6 000 N																	
10 000 N																	
13 000 N																	
15 000 N																	
Stroke (S):																	
100 mm																	
200 mm																	
300 mm																	
400 mm																	
500 mm																	
600 mm																	
700 mm																	
Customer option:																	
Standard																	
Others (brake, limit switch, extended motor shaft, encoder, potentiometer,...)																	

Options written in italic fonts are only available on demand. Please contact SKF.

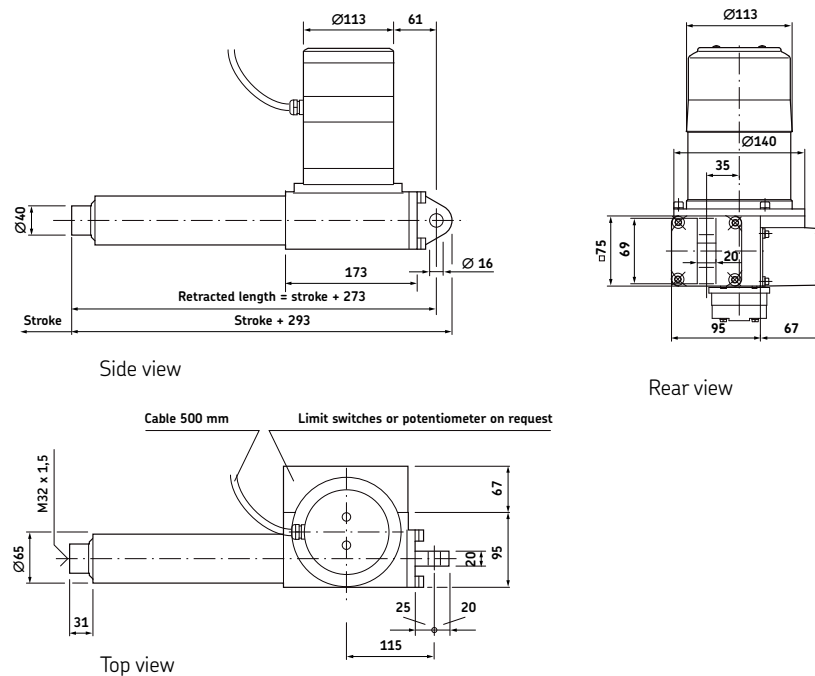
Linear actuator Magforce STG

Benefits

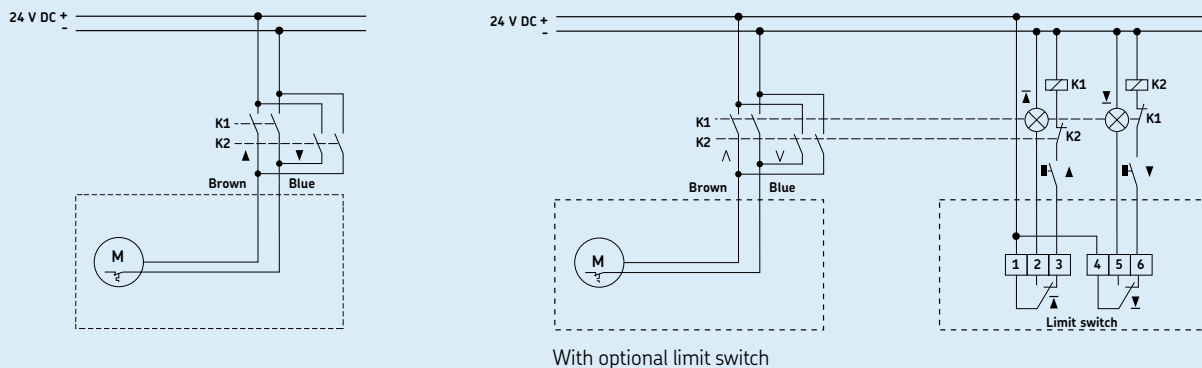
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Dimensional drawing



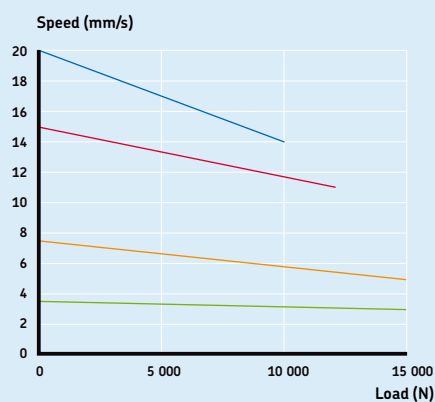
Connecting diagrams



Technical data

	Unit	STG 10007	STG 12010	STG 15020	STG 15040
Push load	N	10 000	12 000	15 000	15 000
Pull load	N	10 000	12 000	15 000	15 000
Speed (at full load)	mm/s	14	11	5	3
Stroke	mm	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length	mm	S+273	S+273	S+273	S+273
Voltage	V DC	24	24	24	24
Power consumption	W	840	840	768	528
Current consumption	A	35	35	32	22
Duty cycle	%	10 (1/9)	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	-10 to +40	-10 to +40	-10 to +40	-10 to +40
Type of protection	IP	54	54	54	54
Weight (at 200 mm stroke)	kg	14,6	14,6	14,6	14,6
Color	—	Silver	Silver	Silver	Silver

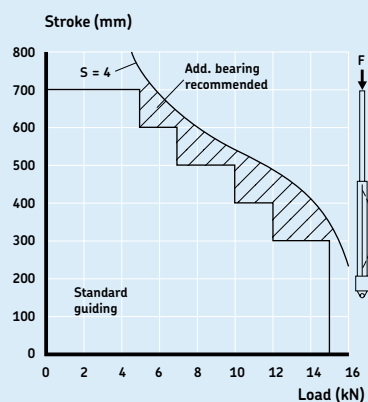
Performance diagram



Speed-load diagram

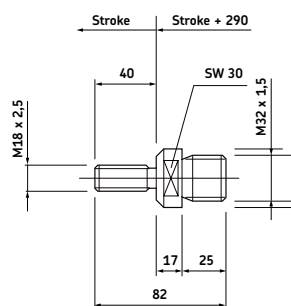
- STG 8007-300
- STG 12010-300
- STG 15020-300
- STG 15040-300

Safety load factor conditions

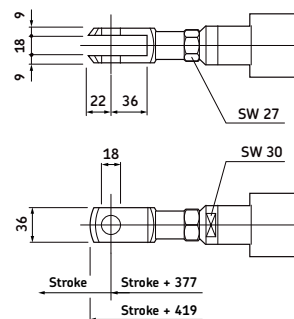


Bending of spindle
S = safety factor Euler 3

Options



Adapter



Front attachment

Type

10 000 N
12 000 N
15 000 N / 5 mm/s
15 000 N / 3 mm/s

S T G - -

10007
12010
15020
15040

100 mm
200 mm
300 mm
400 mm
500 mm
600 mm
700 mm

100
200
300
400
500
600
700

Standard
Others (brake, limit switch, extended motor shaft, encoder, potentiometer, ...)

01
XX

3

Linear actuator Runner

Benefits

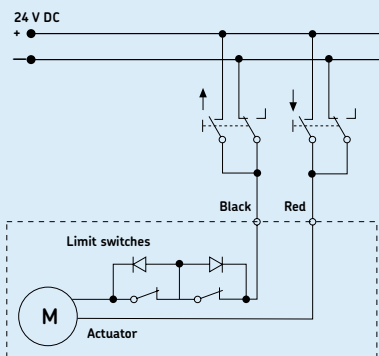
- High push/pull load
- Compact
- Back-up nut as standard
- High safety factor
- Silent operation



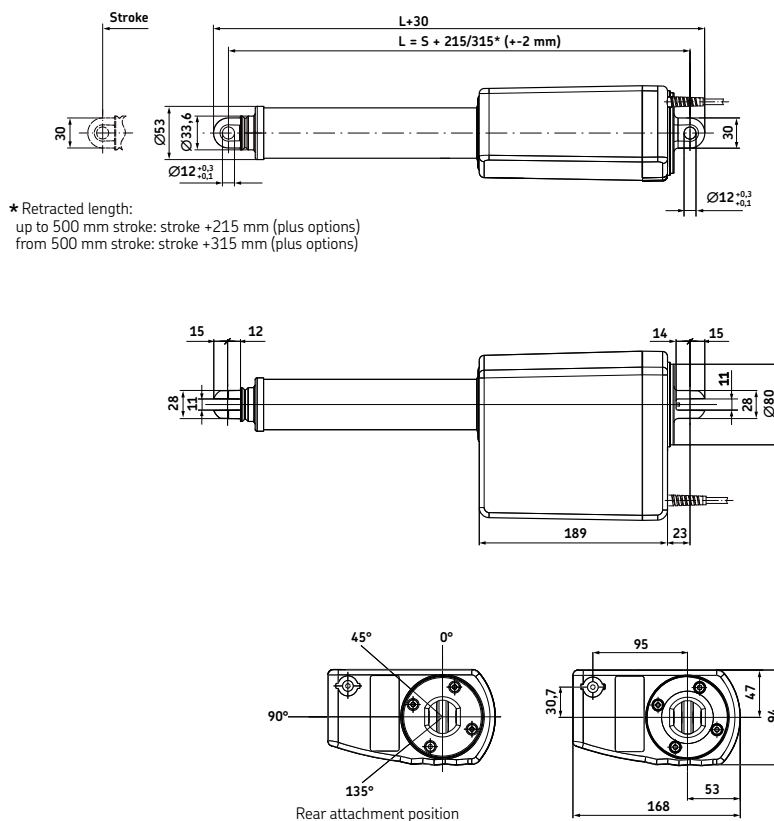
Suitable control units and accessories

Control units		SCU 1	SCU 5	SCU 9	VCU 5	VCU 8	VCU 9	BCU 5	BCU 8
RU20, RU21, RU22		•	•	•	•	•	•	•	•
RU23, RU24, RU25		•	•	•	•	•	•	•	•
EHA 3		•	•	•	•	•	•	•	•
STJ		•	•	•	•	•	•	•	•
STE		•	•	•	•	•	•	•	•
Hand switch		•	•	•	•	•	•	•	•
Foot switch		•	•	•	•	•	•	•	•
Desk switch		•	•	•	•	•	•	•	•

Connecting diagram



Dimensional drawing



Legend:
S = stroke
L = retracted length

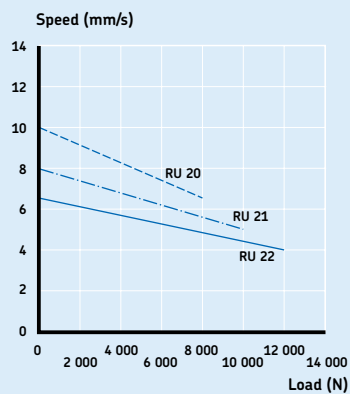
Technical data

	Unit	RU20	RU21	RU 22	RU23	RU24	RU25
Push load	N	8 000	10 000	12 000 ¹⁾	8 000	10 000	12 000 ¹⁾
Pull load	N	8 000	8 000	8 000	8 000	8 000	8 000
Speed (full load to no load)	mm/s	7 to 10	5 to 8	4 to 7	8 to 15	6 to 12	5 to 9
Stroke	mm	100 to 700	100 to 700	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length	mm	S+215/315 ²⁾	S+215/315 ²⁾	S+215/315 ²⁾	S+215/315 ²⁾	S+215/315 ²⁾	S+215/315 ²⁾
Voltage	V DC	24	24	24	24	24	24
Power consumption	W	N/A	N/A	N/A	N/A	N/A	N/A
Current consumption	A	7	7	7	10	10	10
Duty cycle	%	10 (1/9)	10 (1/9)	10 (1/9)	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	+10 to +40	+10 to +40	+10 to +40	+10 to +40	+10 to +40	+10 to +40
Type of protection	IP	x4/x6S	x4/x6S	x4/x6S	x4/x6S	x4/x6S	x4/x6S
Weight	kg	4,7	4,7	4,7	4,7	4,7	4,7
Color	—	Grey	Grey	Grey	Grey	Grey	Grey

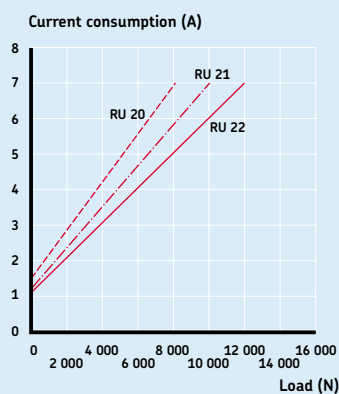
¹⁾ Safety working load for medical application is 10 000 N (EN 60601)

²⁾ S ≤ 500 mm; L = S + 215
S > 500 mm; L = S + 315

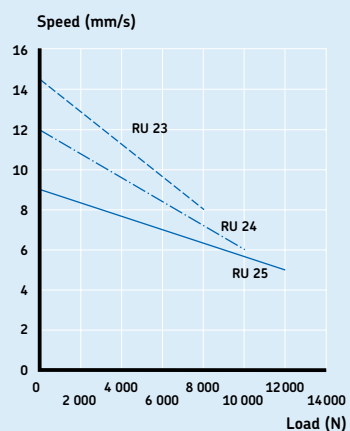
Performance diagrams



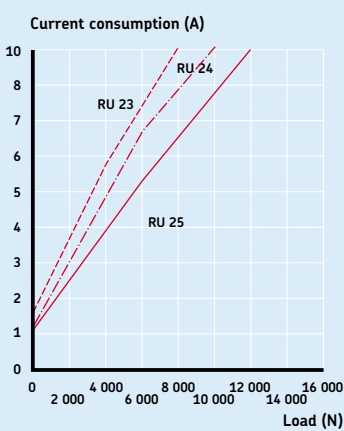
Speed-load diagram



Current-load diagram

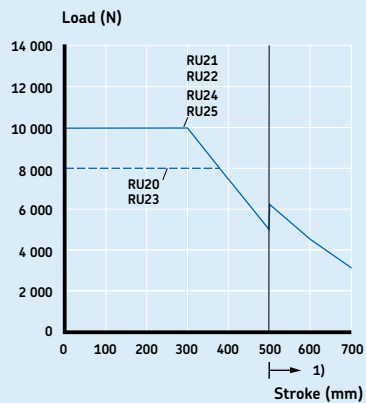


Speed-load diagram

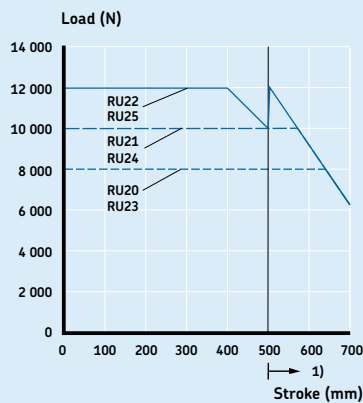


Current-load diagram

Safety factor load conditions



Push load limit, safety factor $S=4$
(EN 60601) 1) retracted length extension
at stroke >500 mm



Push load limit, safety factor $S=2$
1) retracted length extension
at stroke >500 mm

Ordering key

Ordering key	
Type	RU2
Voltage: 24 V DC	
Load / Speed: 8 000 N / 7-10 mm/s 8 000 N / 8-15 mm/s 10 000 N / 5-8 mm/s 10 000 N / 6-12 mm/s 12 000 N / 4-7 mm/s 12 000 N / 5-9 mm/s	0 3 1 4 2 5
Stroke (S) / Retracted length (L): 50 mm / 315 mm 100 mm / 315 mm 150 mm / 365 mm 200 mm / 415 mm 250 mm / 465 mm 300 mm / 515 mm 350 mm / 565 mm 400 mm / 615 mm 450 mm / 665 mm 500 mm / 715 mm 550 mm / 865 mm 600 mm / 915 mm 650 mm / 965 mm 700 mm / 1 015 mm 50<S<500 mm / S+215 500<S<700 mm / S+315 S>700 mm (customized)	050315 100315 150365 200415 250465 300515 350565 400615 450665 500715 550865 600915 650965 700 XXX ----- ----- XXXXXX
Type of protection / Color: IP×4S, grey IP×6S, grey	A B
Cable: Straight cable, 1,5 m, DIN8 plug Straight cable, 1,5 m, Jack plug 180°	15 0D
Rear attachment orientation / Hole diameter: 0° / Ø=12,0 mm 45° / Ø=12,0 mm 90° / Ø=12,0 mm 135° / Ø=12,0 mm	0 2 4 6
Option 1: No option Electrical anti-pinching (safety switch), pull load, L+20 mm Electrical anti-pinching (safety switch), push load, L+20 mm	0 K L
Option 2: No option Dual encoder, 14 pulses, DIN8 plug Lifetime monitoring Dual encoder, 14 pulses, DIN8 plug, lifetime monitoring	0 A M N
Option 3: No option Emergency lowering, L+53 mm	- V

Options written in italic fonts are only available on demand. Please contact SKF.

Linear actuator Matrix 3

Benefits

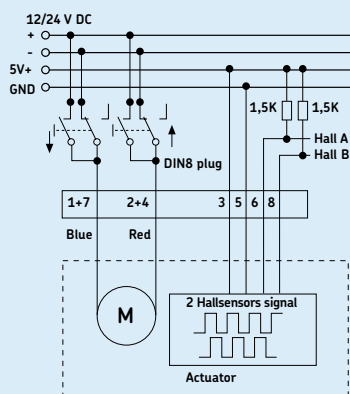
- Silent operation
- Full system with control unit, operating switch and accessories
- Synchronization possible
- Compact and aesthetic
- Back-up nut as standard



Suitable control units and accessories

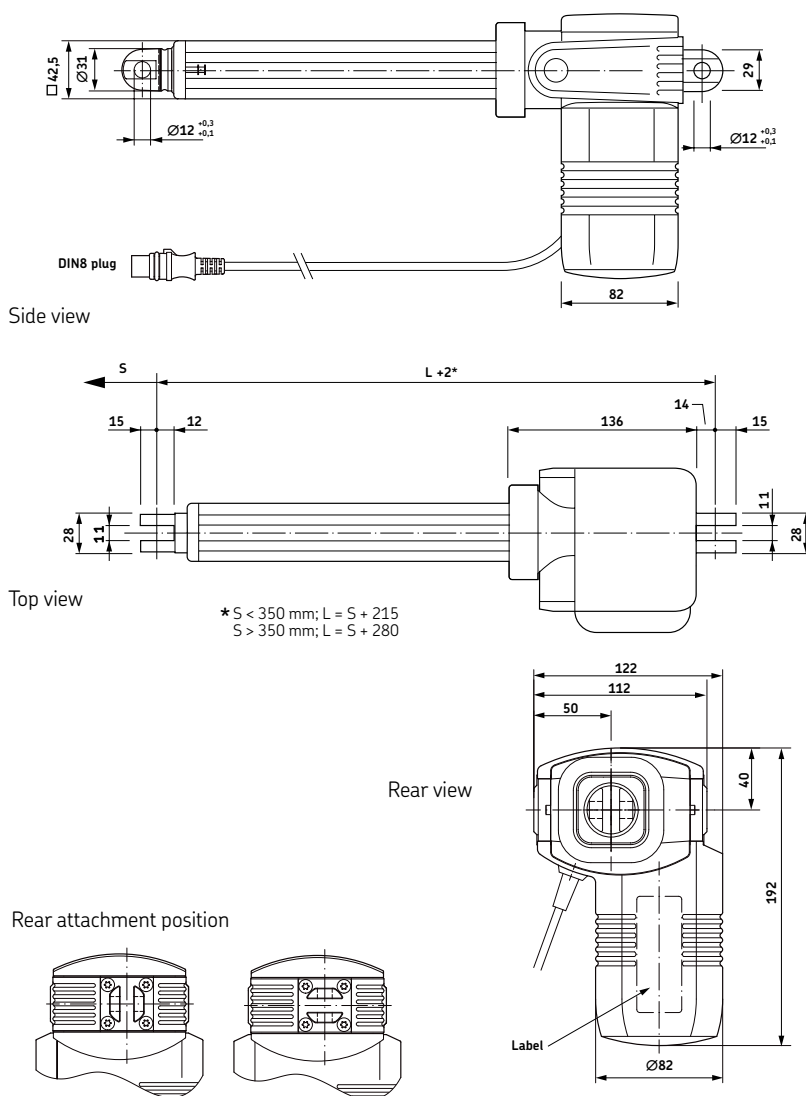
Control units		SCU 1	SCU 5	SCU 9	VCU 5	VCU 8	VCU 9	BCU 5	BCU 8	MCU
MAX 3		•	•	•	•	•	•	•	•	•
Hand switch	EHA1	•	•	•	•	•	•	•	•	•
Foot switch	EHA3	•	•	•	•	•	•	•	•	•
Desk switch	STJ	•	•	•	•	•	•	•	•	•
	STA	•	•	•	•	•	•	•	•	•
	STE	•	•	•	•	•	•	•	•	•

Connecting diagram*



* Only valid for MAX 31. MAX 30 must be operated by a BCU, MCU, SCU or VCU control unit.

Dimensional drawing



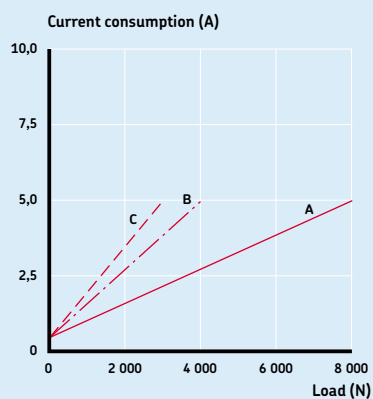
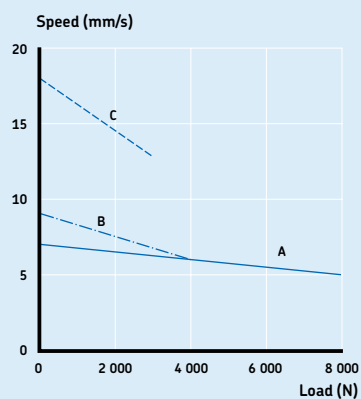
Technical data

	Unit	MAX 3..A..	MAX 3..B..	MAX 3..C..
Push load	N	8 000	4 000	3 000
Pull load	N	6 000 ¹⁾	4 000	3 000
Speed (full load to no load)	mm/s	5 to 7	6 to 9	12,7 to 18
Stroke	mm	50 to 700	50 to 700	50 to 700
Retracted length	mm	S + 215/280 ²⁾	S + 215/280 ²⁾	S + 215/280 ²⁾
Voltage	V DC	12 or 24	12 or 24	12 or 24
Power consumption	W	120	120	120
Current consumption	A	5,0	5,0	5,0
Duty cycle	%	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	0 to +40	0 to +40	0 to +40
Type of protection	IP	66S	66S	66S
Weight (at 200 mm stroke)	kg	4,5	4,2	4,0
Color	—	Grey	Grey	Grey

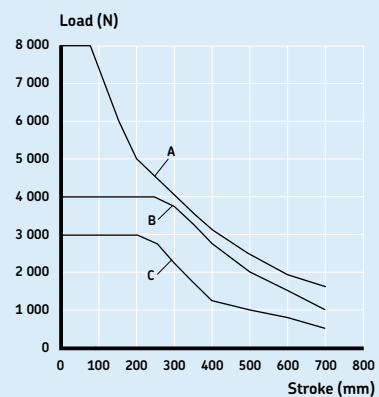
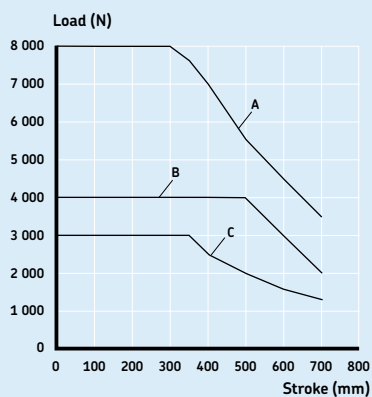
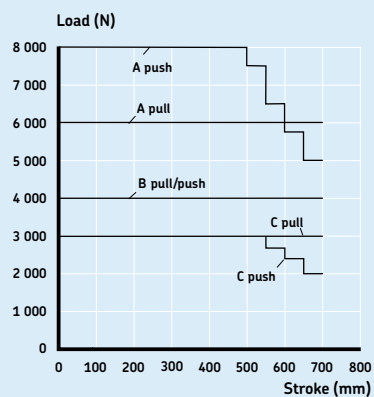
¹⁾ Max load for medical application is 5 000 N

²⁾ S ≤ 350 mm; L = S + 215
S > 350 mm; L = S + 280

Performance diagrams



Safety factor load conditions



Ordering key

MAX3		-						A						000
Type														
Voltage:														
24 V DC														0
24 V DC with integrated current cut-off														1
12 V DC														2
Load:														
8 000 N														A
4 000 N														B
3 000 N														C
Stroke (S):														
50 mm														050 265
100 mm														100 315
150 mm														150 365
200 mm														200 415
250 mm														250 465
300 mm														300 515
350 mm														350 565
400 mm														400 680
450 mm														450 730
500 mm														500 780
550 mm														550 830
600 mm														600 880
650 mm														650 930
700 mm														700 980
Other stroke lengths; 50<S<700 mm														--- ---
Cable / Connecting plug:														
Coiled, 0,75 m (not stretched) / DIN8 plug														0B
Straight, 2,5 m / DIN8 plug														C5
Straight, 0,1 m-2,5 m (select in 0.1 m steps) / DIN8 plug*														--
*First code: A for cables <1m / B for cables >=1 m, < 2m. Second code: dm in addition to first code E.g. B7 = 1,7 m														
Orientation of rear attachment:														
No fork head (customized option)														0
Standard (as drawing)														1
Turned 90°														2
Option 1:														
No option, only valid for actuator "A" (push and pull)														0
Quick-release +EKZm, push, fork head bore parallel to button (for actuator design "C" is L= +115 mm)*														E
Quick-release +EKZm, push, fork head bore 90° to button (for actuator design "C" is L= +115 mm)*														F
Electrical anti-pinching protection, motor direction pull														K
Electrical anti-pinching protection, motor direction push														L
Push load, for actuator version "B" and "C"														M
Pull load, for actuator version "B" and "C"														N
EKZm: mechanical anti-pinching *min. stroke 150 mm up to 300 mm														
Option 2:														
No option														0
Dual encoder, DIN8 plug														F
Lifetime monitoring														M
Lifetime monitoring, Dual encoder, DIN8 plug														P
Option 3:														
No option														-
Emergency lowering, fork head bore parallel to clamping lever (for actuator design "A", L+30 mm)														V
Emergency lowering, fork head bore 90° to clamping lever (for actuator design "A", L+30 mm)														W

Options written in italic fonts are only available on demand. Please contact SKF.

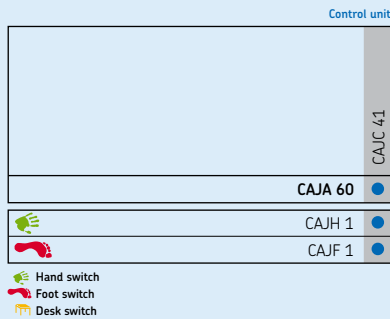
Linear actuator CAJA 60

Benefits

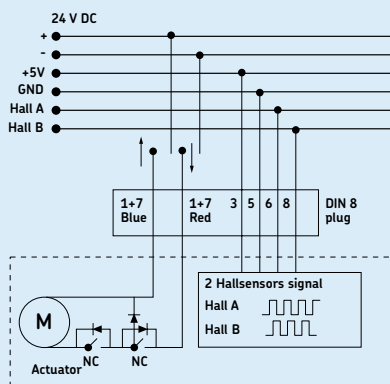
- Static load up to 15 000 N
- Detachable cable for quick assembly and service
- Integrated brake to maintain self-locking and stability under maximum static load



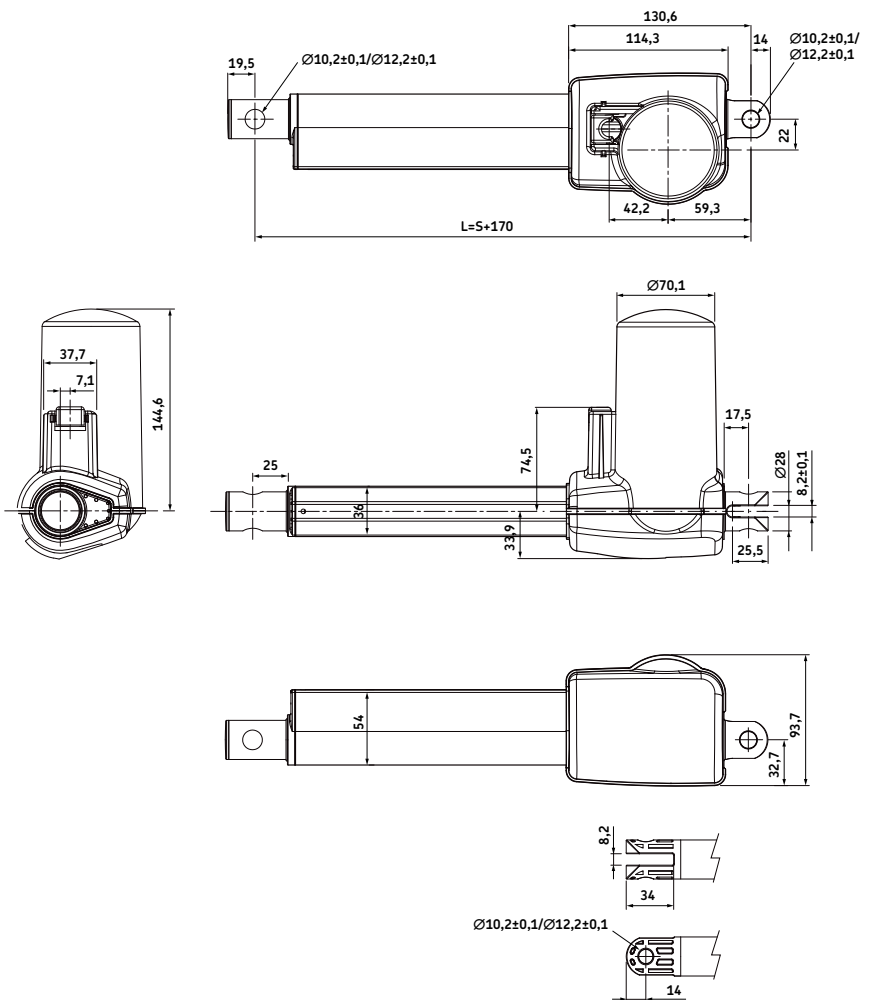
Suitable control units and accessories



Connecting diagram



Dimensional drawing



Legend:
S = stroke
L = retracted length

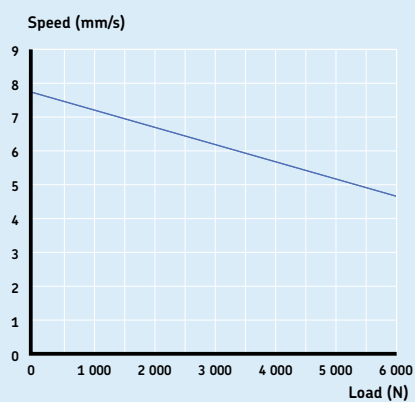
Technical data

	Unit	CAJA 60
Push load	N	6 000
Pull load	N	4 000
Speed (full load to no load)	mm/s	4,6 to 7,8
Stroke	mm	30 to 300
Retracted length ¹⁾	mm	S+170 ²⁾
Voltage	V DC	24-41
Power consumption	W	N/A
Current consumption	A	4,5
Duty cycle	%	10
Ambient temperature	°C	+10 to +40
Type of protection	IP	54
Weight (at 300 mm stroke)	kg	2,5
Color	-	Grey

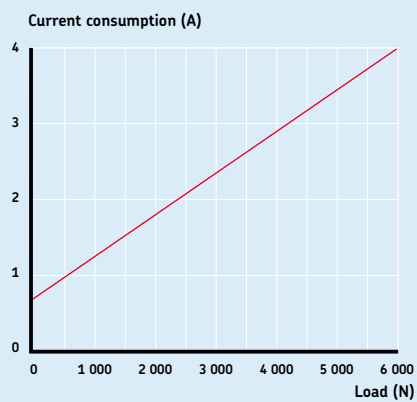
¹⁾Tolerance +/- 3 mm

²⁾Retracted length +3 mm if U fork used as front attachment (L= S+183)

Performance diagrams

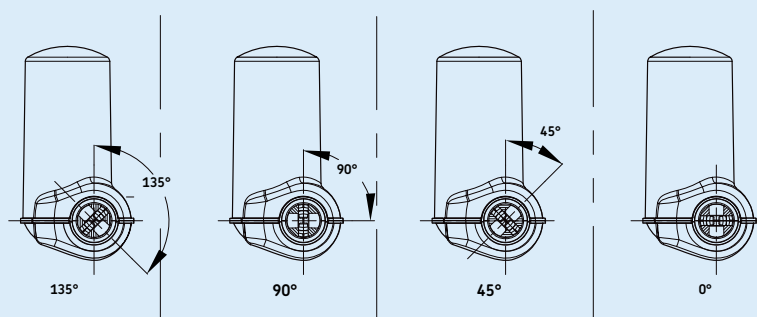


Speed-load diagram



Current-load diagram

Orientation



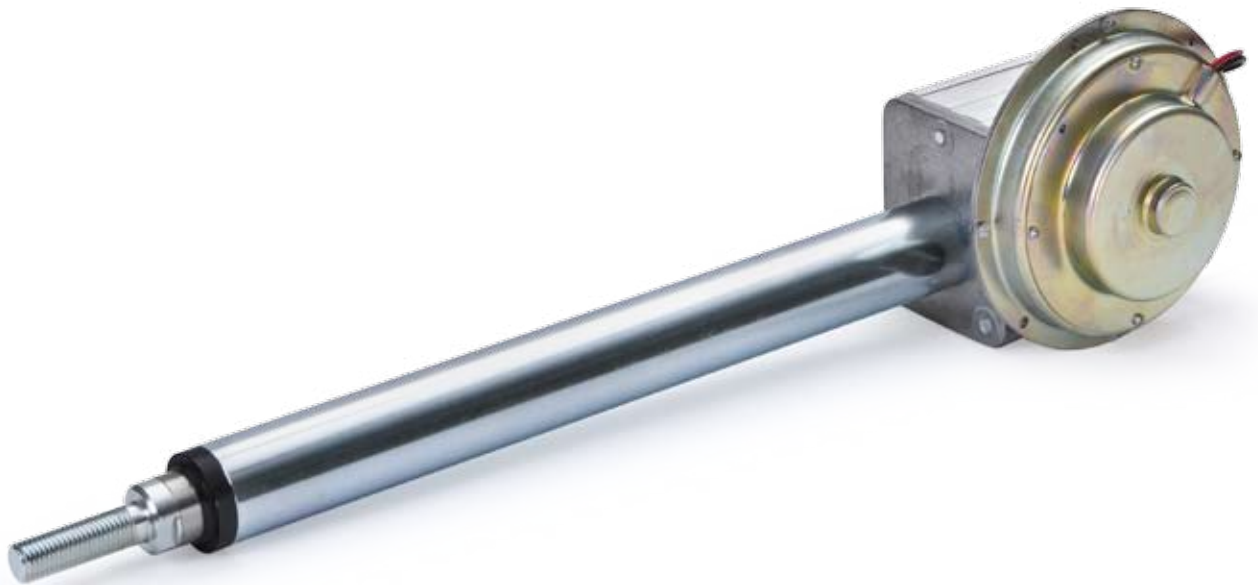
3

SKF

Linear actuator CAR 40

Benefits

- Industrial reliable and robust actuator
- Wide range of components
- Right- and left-hand version



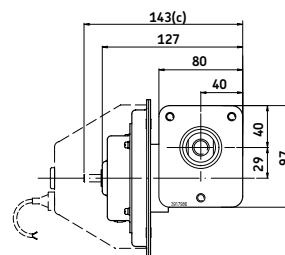
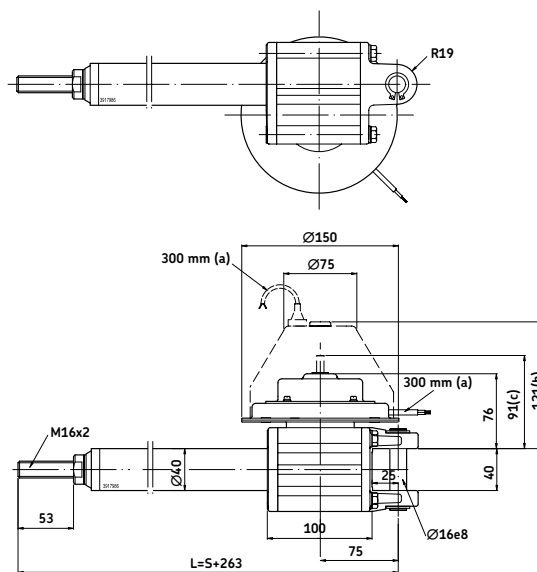
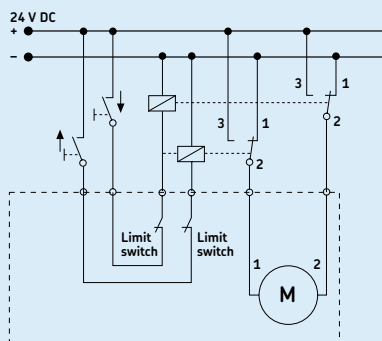
Suitable control units and accessories

	Limit switch
	CAXB 40+
	D24D
	D24DS
	D24DB

-  Hand switch
-  Foot switch
-  Desk switch

★ See page 395

Connecting diagram

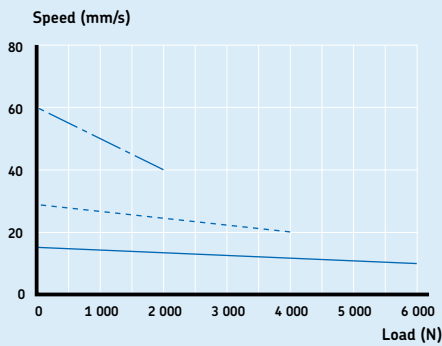


Legend:
S = stroke
L = retracted length
(a) = cable length
(b) = cover for brake (D24CB)
(c) = extended shaft (D24CS)

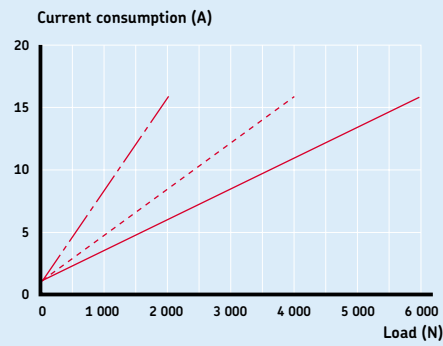
Technical data

	Unit	CAR 40
Push load	N	2 000 to 6 000
Pull load	N	2 000 to 6 000
Speed (full load to no load)	mm/s	10 to 60
Stroke	mm	100 to 700
Retracted length	mm	S+263
Voltage	V DC	24
Power consumption	W	N/A
Current consumption	A	16
Duty cycle	%	25
Ambient temperature	°C	-20 to +70
Type of protection	IP	20/44
Weight	kg	5,8 to 8,4

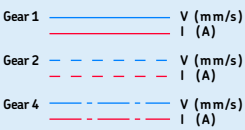
Performance diagrams



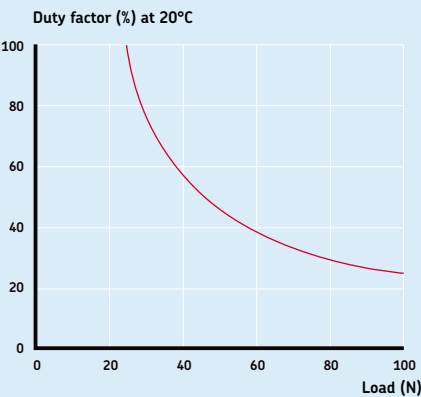
Speed-load diagram CAR 40 ... 24 V DC



Current-load diagram CAR 40 ... 24 V DC



Duty cycle



Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
6 000/xx 6 000/15-10 6 000/15-10 6 000/15-10	4 000/xx 4 000/30-20 4 000/30-20 4 000/30-20	2 000/xx 2 000/60-40 2 000/60-40 2 000/60-40	No motor 24 V DC, flat motor, IP44 24 V DC, flat motor, extended shaft, IP44 24 V DC, flat motor, brake, IP20	0000 D24D D24DS D24DB
1	2	4		

Type

Motor assembly:

Right
Left

R
L

Stroke (S):

100 mm
300 mm
500 mm
700 mm
Other stroke lengths

100
300
500
700

Option:

Friction clutch
Back-up nut

F
S

Options written in italic fonts are only available on demand. Please contact SKF.

Linear actuator Ecomag

Benefits

- Compact
- Cost effective
- Silent operation
- Control unit can be mounted to the actuator

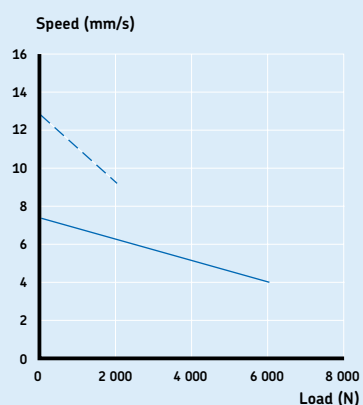


Dimensional drawing

Ecomag 2-3-6-7

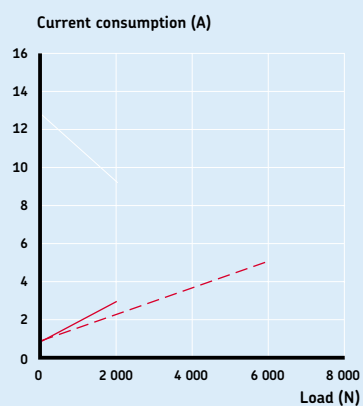
[illegible]

Performance diagrams



— ECO 20 / 30 / 40 / 50
 - - - ECO 60 / 70 / 80 / 90

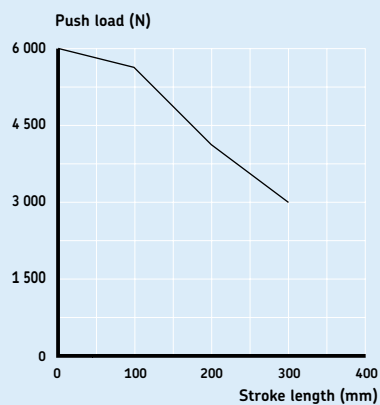
Speed-load diagram



— ECO 20 / 30 / 40 / 50
 - - - ECO 60 / 70 / 80 / 90

Current-load diagram

Safety factor load conditions



Push load reduction
 Safety factor=4

Ordering key

ECO - - 000											
Type											
Load /Housing:											
Push	Pull	Housing									
2 000 N	0	Large									2
2 000 N	2 000 N	Large									3
2 000 N	0	Small									4
2 000 N	2 000 N	Small									5
6 000 N	0	Large									6
6 000 N	4 000 N	Large									7
6 000 N	0	Small									8
6 000 N	4 000 N	Small									9
Encoder:											
No encoder, coiled cable, 2-pin Minifit plug or customization											0
No encoder, coiled cable, DIN8 plug or customization											9
Encoder, 8 pulses, 2-hall, straight cable, DIN8 plug/or customization											F
Current cut-off:											
No											0
Yes (not available for ECO4.-/ECO5.-/ECO8.-/ECO9.-)											1
Stroke (S):											
50 mm											05
100 mm											10
150 mm											15
200 mm											20
250 mm											25
300 mm											30
Other stroke lengths; 50<S<300 mm											00
Front attachment (groove depth 17 mm):											
Hole, Ø=10 mm, groove width 6 mm (Not available for ECO 3 - 5 - 7 - 9)											A
Hole, Ø=10 mm, groove width 8 mm											B
Hole, Ø=10 mm, groove width 10 mm											C
Hole, Ø=12 mm, groove width 6 mm (Not available for ECO 3 - 5 - 7 - 9)											K
Hole, Ø=12 mm, groove width 8 mm (Not available for ECO 3 - 5 - 7 - 9)											L
Hole, Ø=12 mm, groove width 10 mm											M
Customized											X
Rear attachment (groove depth 15 mm):											
Hole, Ø=12 mm, groove width 10 mm											M
Customized											X
Orientation of rear attachment:											
0°											1
45°											3
90°											5
135°											7
Color:											
Black											A
Grey											B
Option:											
No option											0
Back-up nut (available only for drives with 6 kN, mandatory for UL 2601) - only for ECO 7/9, L = +23 mm											A
FOR ECO3.-/ECO5.-ONLY (no back-up nut)											
Quick-release, push load, fork head bore parallel to lever, L = +40 mm, integrated anti-pinching protection.											B
Quick-release, push load, bore 90° to lever, L = +40 mm, integrated anti-pinching protection.											C
Quick-release, pull load, fork head bore parallel to lever, L = +40 mm, integrated anti-pinching protection.											F
Quick-release, pull load, fork head bore 90° to lever, L = +40 mm, integrated anti-pinching protection.											G
Mechanical anti-pinching protection pull, motor direction push, L = +13 mm.											K
Mechanical anti-pinching protection push, motor direction pull, L = +13 mm.											L

Options written in italic fonts are only available on demand. Please contact SKF.

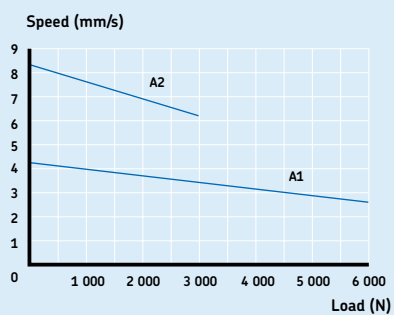
Linear actuator FD series

Benefits

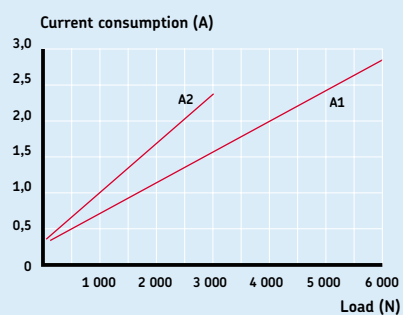
- Cost-effective actuator
- Hall effect sensors for feedback
- Rear clevis can be turned per step of 30°
- Built-in limit switches (factory pre-set)
- UL 1004 certification



Performance diagrams



Speed-load diagram



Current-load diagram

FD24A- - - - -

—

050
100
150
200
250
300
XXX

XXX

C1
C2

HS

ONC

- 1
- 2
- 3

XX

3

Linear actuator Magdrive

Benefits

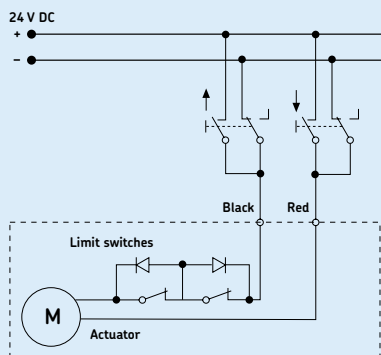
- Slim design
- Aluminium profile
- In-line actuator
- Quiet operation
- High push load



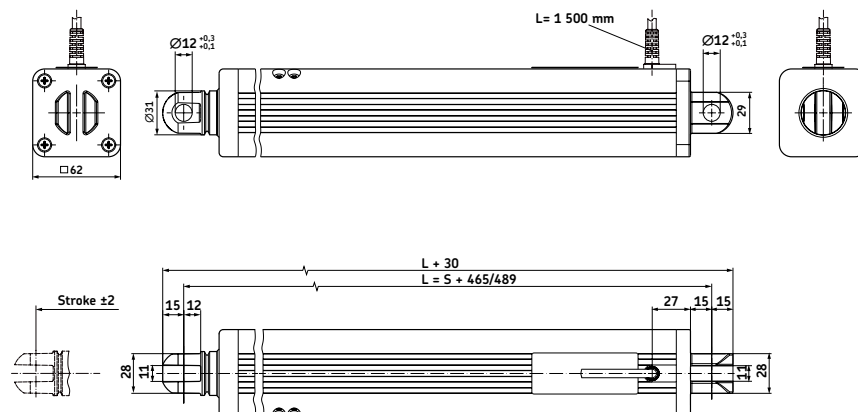
Suitable control units and accessories

Control units									
		SQU 1	SCU 5	SCU 9	VCU 5	VCU 8	VCU 9	BCU 5	BCU 8
MAGDRIVE		•	•	•	•	•	•	•	•
EHA 3		•	•	•	•	•	•	•	•
STJ		•	•	•	•	•	•	•	•
STE		•	•	•	•	•	•	•	•
Hand switch		•	•	•	•	•	•	•	•
Foot switch		•	•	•	•	•	•	•	•
Desk switch		•	•	•	•	•	•	•	•

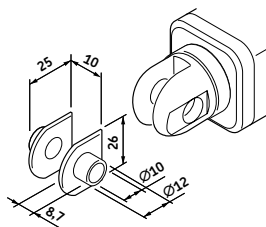
Connecting diagram



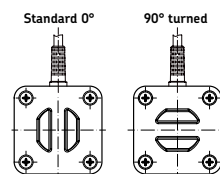
Dimensional drawing



Plastic bushing for forkhead
(hinge delivered separately)



Orientation of rear attachment

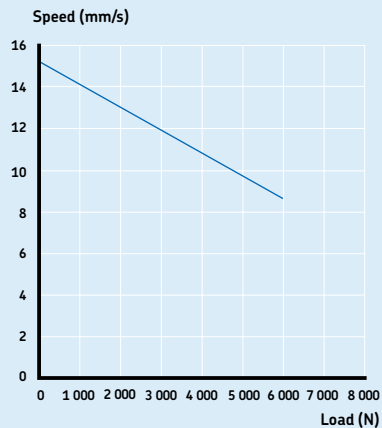


Legend:
S = stroke
L = retracted length

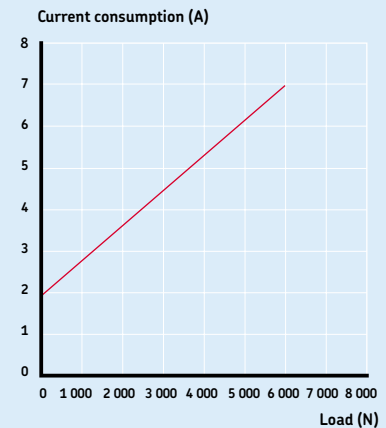
Technical data

	Unit	MD22/MD24	MD23/MD25
Push load	N	6 000	6 000
Pull load	N	200* (static only)	6 000
Speed (full load to no load)	mm/s	8,5 to 15	8,5 to 15
Stroke	mm	50 to 700	50 to 700
Retracted length	mm	S+465	S+489
Voltage	V DC	24	24
Power consumption	W	N/A	N/A
Current consumption	A	7	7
Duty cycle	%	10 (1/9)	10 (1/9)
Ambient temperature	°C	+10 to +40	+10 to +40
Type of protection	IP	x0/x4S	x0/x4S
Weight	kg	5,0	5,0
Color	—	Colorless anodized	Colorless anodized

Performance diagrams

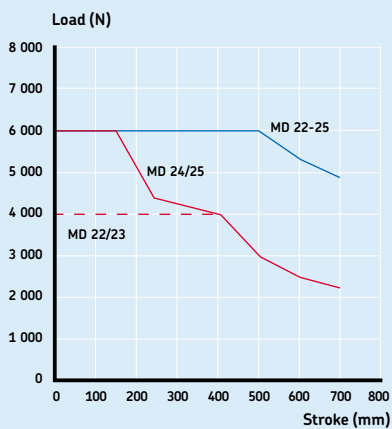


Speed-load diagram



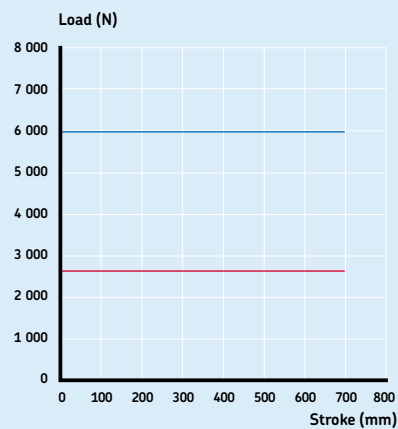
Current-load diagram

Safety factor load conditions



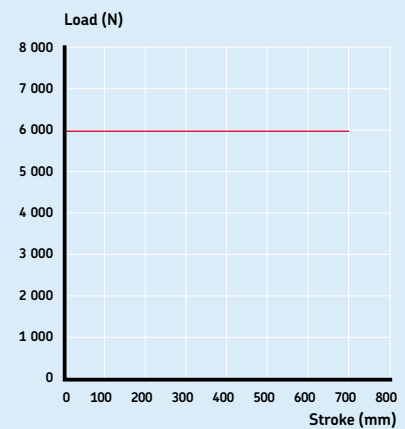
Push load diagram

— Safety factor $S=2$
 — Safety factor according
 UL60601-1, IEC60601-1
 — Safety factor according
 UL60601-1, IEC60601-1



Pull load diagram MD23

— Safety factor $S=4$
 — Safety factor according
 UL60601-1, IEC60601-1

Pull load diagram MD25 (6 000 N)
Safety factor according
UL60601-1, IEC60601-1

Ordering key

M D 2 - 0 0										
Type										
Push/pull force:										
6 000 N/200 N										2
6 000 N/6 000 N										3
6 000 N/200 N (recommended for medical applications- with alu. rear hinge)										4
6 000 N/6 000 N (recommended for medical applications- with alu. rear hinge)										5
Stroke:										
50 mm										050
100 mm										100
150 mm										150
200 mm										200
250 mm										250
300 mm										300
350 mm										350
400 mm										400
450 mm										450
500 mm										500
550 mm										550
600 mm										600
650 mm										650
700 mm										700
Other stroke lengths										---
Retracted length:										
MD22/24: S+465 mm										---
MD23/25: S+489 mm										---
Over 1 000 mm assembly length, use customer specific adaption										XXX
Others										---
Type of protection:										
IPX0										A
IPX4S										B
Motor cable:										
Straight, 1,5 m, DIN8 plug										15
Straight, 1,5m, jack plug 180°										0D
Rear attachment / Hole diameter:										
Standard 0° / Ø12 mm										0
Rotated 90° / Ø12 mm										4
Option 1:										
No option										0
Electrical anti-pinching protection, safety switch, motor direction push										L
Electrical anti-pinching protection, safety switch, motor direction pull										K
Option 2:										
No option										0
Dual encoder (only available with DIN8 plug) 2,15 impulse per turn/sensor (= 5,375 imp. per 1 mm.)										F
Option 3:										
No option										
Emergency lowering fork head bore (add 30 mm to retracted length "L")										V

Options written in italic fonts are only available on demand. Please contact SKF.

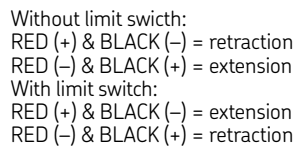
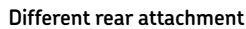
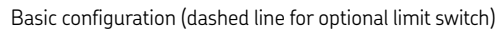
Linear actuator CAHB-21 series

Benefits

- High efficiency ball screw
- Extension tube (stainless steel)
- Protection tube (steel)
- Enhanced corrosion resistance
- Mechanical overload protection (clutch)
- Lubricated for service life
- Robust, designed for tough environment
- No back driving
- Certified (CE: EN 55011)



Dimensional drawing

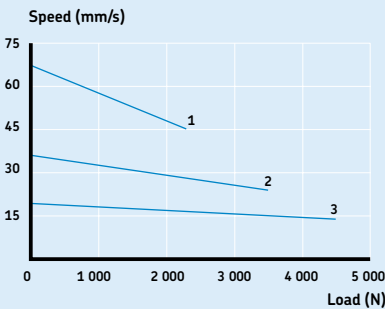


2) Tolerance: $S = \pm 2,5 \text{ mm}$ and $L1 = \pm 3,8 \text{ mm}$

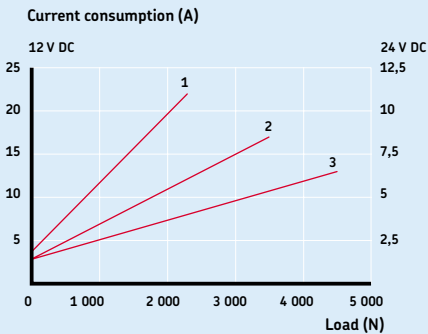
Technical data

* see above table

Performance diagrams



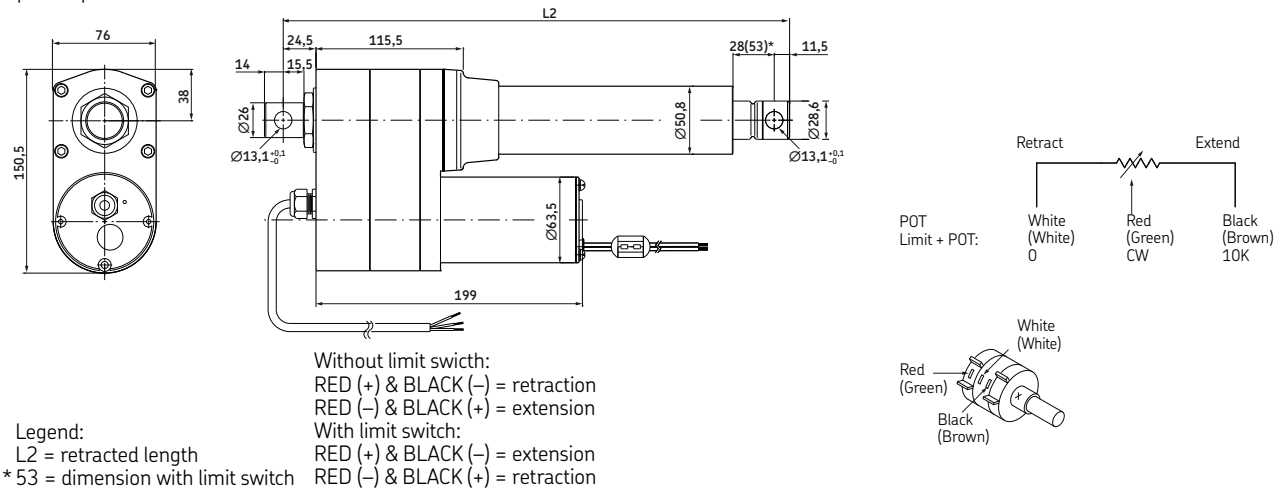
Speed-load diagram



Current-load diagram

Dimensional drawing

Optional potentiometer



Stroke (mm)	With limit switch ¹⁾						Without limit switch ²⁾					
	102	153	204	305	457	610	102	153	204	305	457	610
L2 Retracted length	431	482	533	697	849	1 002	355	406	457	559	773	926

¹⁾ Tolerance: S and L2 = ± 5,0 mm (If S ≥ 305 mm, S = ± 7,5 mm)

²⁾ Tolerance: S = ± 2,5 mm and L2 = ± 3,8 mm

Potentiometer resolution

Stroke (mm)	102	153	204	305	457	610
Ohm/mm	59,0	59,0	29,5	29,5	9,84	9,84

Ordering key

CAHB-21-□□N-□□□□-A□□□□□-000

Type

Voltage:

12 V DC
24 V DC

A
B

Load:

2 300 N
3 500 N
4 500 N

1
2
3

Screw:

Ball screw

N

Stroke:

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

102
153
204
305
457
610

Retracted length:

Stroke

with L.S.¹⁾

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

w/o POT²⁾

393 mm
444 mm
495 mm
659 mm
811 mm
964 mm

with POT²⁾

431 mm
482 mm
533 mm
697 mm
849 mm
A02 mm (1 002 mm)

w/o L.S.¹⁾

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

317 mm
368 mm
419 mm
521 mm
735 mm
888 mm

355 mm
406 mm
457 mm
559 mm
773 mm
926 mm

IP:

Standard (IP 66)

A

Front attachment:

Standard (hole: Ø 13 mm)
Customized

A
X

Rear attachment:

Standard (0° and hole: Ø 13 mm)

30°

60°

90°

120°

150°

Customized

A
B
C
D
E
F
X

Option 1:

None

Limit switch (only for load version 4 500 N)

0
L

Option 2:

None

Potentiometer

0
P

Option 3:

None

Thermal protection

0
T

¹⁾ L.S. = Limit Switch

²⁾ POT = Potentiometer

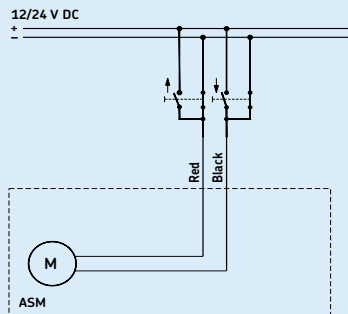
Linear actuator Magforce ASM

Benefits

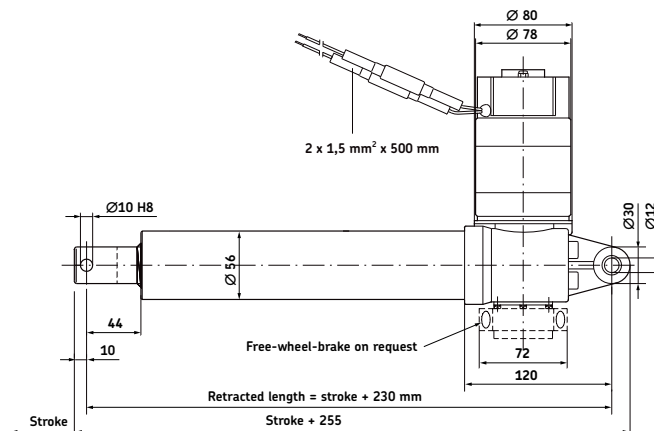
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



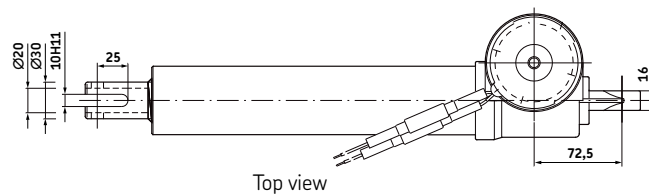
Connecting diagram



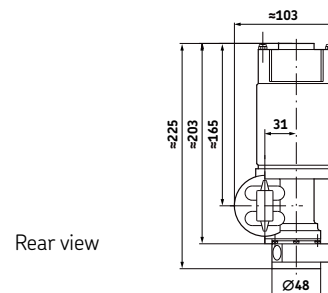
Dimensional drawing



Side view



Top view



Rear view

Technical data

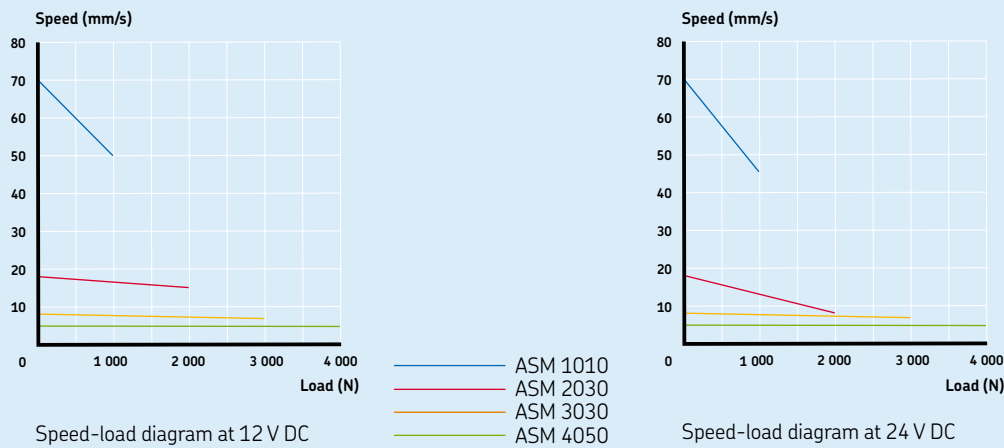
		Unit	ASM 1010	ASM 2030	ASM 3030	ASM 4050
Push load		N	1 000	2 000 ¹⁾	3 000 ²⁾	4 000 ³⁾
Pull load		N	1 000	2 000	3 000	4 000
Speed (at full load)	12 V DC	mm/s	50	17	8	5
	24 V DC	mm/s	45	18	8	5
Stroke		mm	100 to 700	100 to 700	100 to 700	100 to 700
Retracted length		mm	S+230	S+230	S+230	S+230
Voltage		V DC	12 or 24	12 or 24	12 or 24	12 or 24
Power consumption	12 V DC	W	192	168	168	168
	24 V DC	W	192	144	168	168
Current consumption	12 V DC	A	16	14	14	14
	24 V DC	A	8	6	7	7
Duty cycle		%	10 (1/9)	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature		°C	-10 to +40	-10 to +40	-10 to +40	-10 to +40
Type of protection		IP	44	44	44	44
Weight		kg	5	5	5	5
Color		—	Silver	Silver	Silver	Silver

¹⁾Push load allowed up to 600 mm stroke (if S>600 mm, only pull load is allowed)

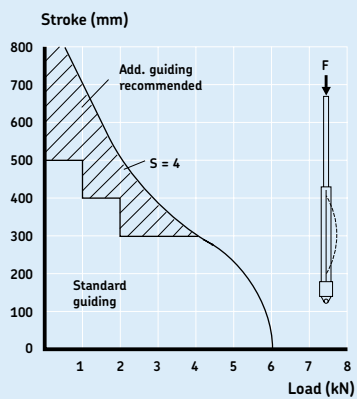
²⁾Push load allowed up to 450 mm stroke (if S>450 mm, only pull load is allowed)

³⁾Push load allowed up to 400 mm stroke (if S>400 mm, only pull load is allowed)

Performance diagrams



Safety factor load conditions



Bending of spindle
 S = safety factor Euler 3

Ordering key

Type	ASM								
Load:									
1 000 N									
2 000 N									
3 000 N									
4 000 N									
Stroke (S):									
100 mm									
200 mm									
300 mm									
400 mm									
500 mm									
600 mm									
700 mm									
Customer option:									
12 V DC, standard									01
24 V DC									02
24 V DC, additional bushing (L=S+280 mm)									05
24 V DC, bronze nut, special grease for -30°C									07
24 V DC, protection tube made out of stainless steel									12
24 V DC, extended shaft									16
12 V DC, additional bushing (L=S+280 mm)									19
Others (rear attachment hole turned 90°, motor turned 90°, potentiometer...)									XX

Options written in italic fonts are only available on demand. Please contact SKF.

Accessories

Description	Designation	Order N°
Free wheel brake on push load	1028,6226	M/0200093
Free wheel brake on pull load	1028,0002	M/0201784
Friction brake for pull/push load	1028,7851	M/0201789
Limit switch 100 mm stroke	1043,0210-0100	M/0201853
Limit switch 200 mm stroke	1043,0210-0200	M/0200328
Limit switch 300 mm stroke	1043,0210-0300	M/0201856
Limit switch 400 mm stroke	1043,0210-0400	M/0201858
Limit switch 500 mm stroke	1043,0210-0500	M/0201859
Limit switch 600 mm stroke	1043,0210-0600	M/0125174

Linear actuator CAP 43B

Benefits

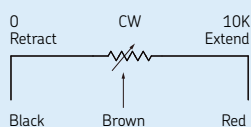
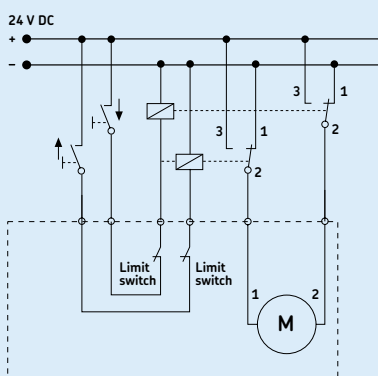
- Robust and reliable
- Long lifetime
- Wide range of components
- Right- and left- version
- Analogical feedback



Suitable control units and accessories

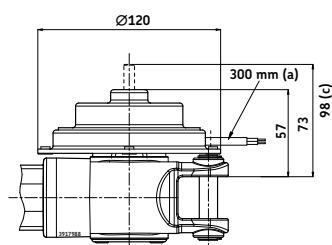
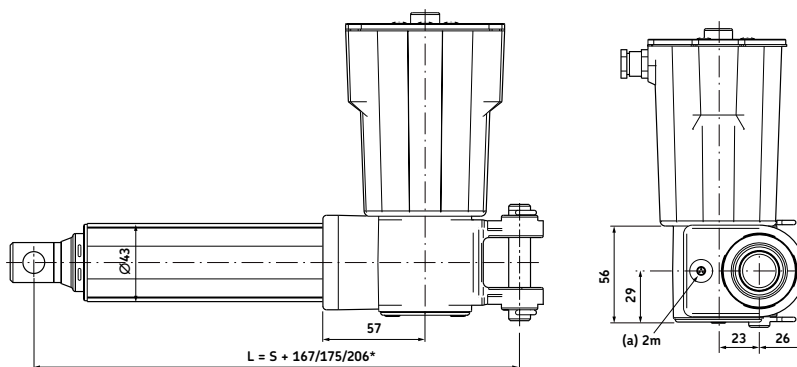
Control units	
	CAED ANR 5-24-PO
	CAED ANR 9-24-PO
C24C	●
C24CW	●
D24C	●
D24CW	●

Connecting diagram

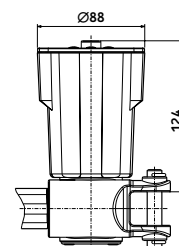


Connection diagram for linear potentiometer.

Dimensional drawing



D24C/D24CW



C24C/C24CW

Legend:
S = stroke
L = retracted length
(a) = cable length
(c) = extended shaft (D24CS)

See drawings of front and rear attachments on page 286.

* Dimension depends on selected front attachment

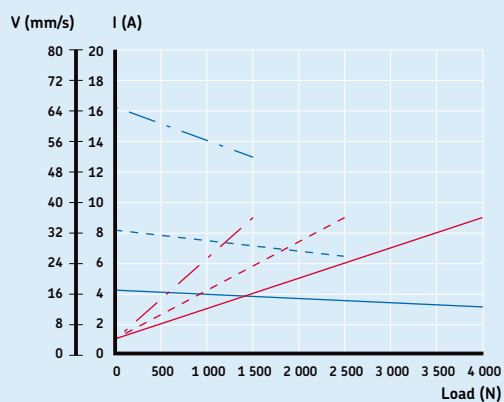
Technical data

	Unit	CAP 43B
Push load	N	1 500 to 4 000
Pull load	N	1 500 to 4 000
Speed (full load to no load)	mm/s	5 to 65 ¹⁾
Stroke	mm	50 to 700
Retracted length	mm	S+167/175/206 ²⁾
Voltage	V DC	24
Power consumption	W	N/A
Current consumption 24 V DC	A	9
Current consumption 24 V DC	A	5 (for motors C24CW and D24CW)
Duty cycle	%	20
Ambient temperature	°C	-20 to +50
Type of protection	IP	44
Weight	kg	2,0 to 2,7

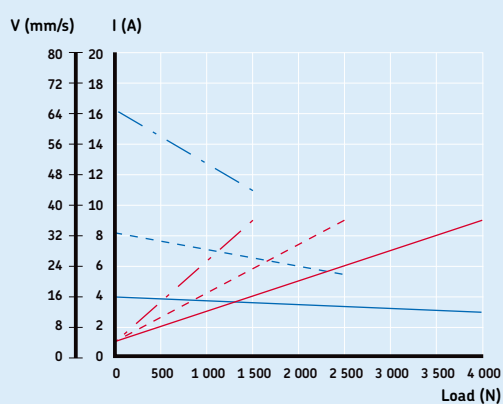
¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

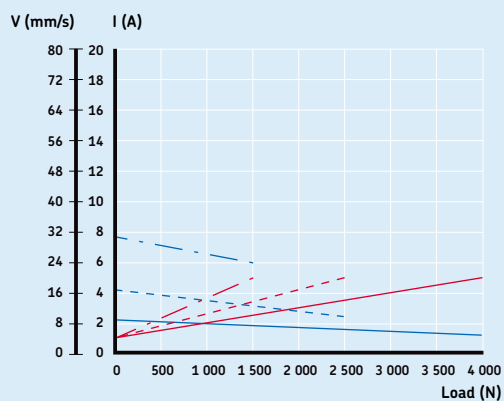
Performance diagrams



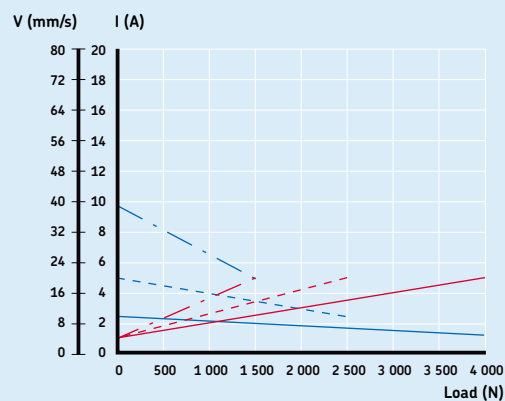
CAP 43B.../C24C



CAP 43B.../D24C



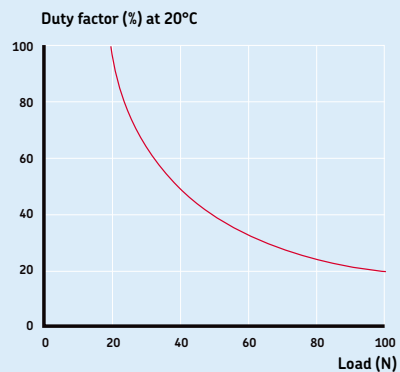
CAP 43B.../C24CW



CAP 43B.../D24CW

Gear 1 ——— V (mm/s)
 ——— I (A)
 Gear 2 - - - - V (mm/s)
 - - - - I (A)
 Gear 4 - · - · V (mm/s)
 - · - · I (A)

Duty cycle



Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
4 000/xx 4 000/17-13 4 000/9-5 4 000/16-12 4 000/10-5	2 500/xx 2 500/33-26 2 500/17-10 2 500/33-22 2 500/20-10	1 500/xx 1 500/65-52 1 500/31-24 1 500/65-44 1 500/39-20	No motor 24 V DC, IP44 24 V DC, low speed, IP44 24 V DC, flat motor, IP44 24 V DC, flat motor, low speed, IP44	0000 C24C C24CW D24C D24CW
1	2	4		

C	A	P		3	2	B	X			X				/									
Type																							
Motor assembly:																							
Right			R																				
Left			L																				
Stroke (S):																							
50 mm			050																				
100 mm			100																				
200 mm			200																				
300 mm			300																				
400 mm			400																				
500 mm			500																				
700 mm			700																				
Rear attachment (see page 286):																							
Fork ear, Ø=12,0 mm			A1																				
Fork ear, Ø=12,7 mm			A2																				
Single ear, Ø=12,0 mm			K1																				
Single ear, Ø=12,7 mm			K2																				
Front attachment (see page 286):																							
Hole, Ø=12,0 mm			G1																				
Hole, Ø=12,7 mm			G2																				
Male thread, M12			G3																				
Female thread, M12			G4																				
Fork ear, Ø=10,1 mm			G5																				
Option:																							
Friction clutch			F																				
Back-up nut			S																				
Option for motors C24C(W):																							
No cable			U																				
Straight, 2,0 m			T2																				
EMC filter			M																				
Motor without cover			N																				

Linear actuator CAT 32B

Benefits

- Small
- Robust
- Modular
- Lubricated for service life
- High efficiency
- Digital encoder feedback



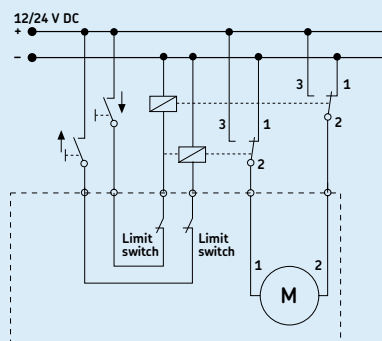
Suitable control units and accessories

	Control units	Limit switch	Encoder
	CAED 5-24R	CAED 9-24R	CAXB 32B ¹⁾
			E2 ²⁾
C12C		•	•
D12C		•	•
C24C	•	•	•
C24CW	•	•	•
D24C	•	•	•
D24CB		•	•
D24CS		•	•
D24CW	•	•	•
CAES 31C	•	•	

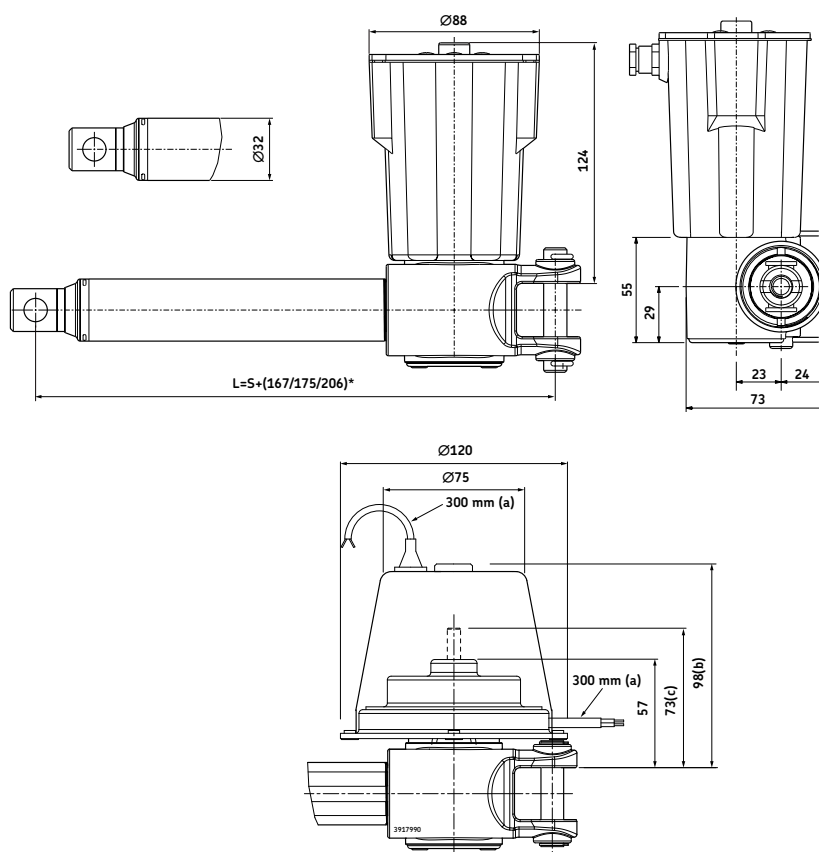
-  Hand switch
-  Foot switch
-  Desk switch

¹⁾See page 395
²⁾See page 396

Connecting diagram



Dimensional drawing



D12C, D24C, D24CB, D24CS, D24CW

Legend:
S = stroke
L = retracted length
(a) = cable length
(b) = cover for brake (D24CB)
(c) = extended shaft (D24CS)

See drawings of front and rear attachments and motor options on page 286.

* Dimension depends on selected front attachment

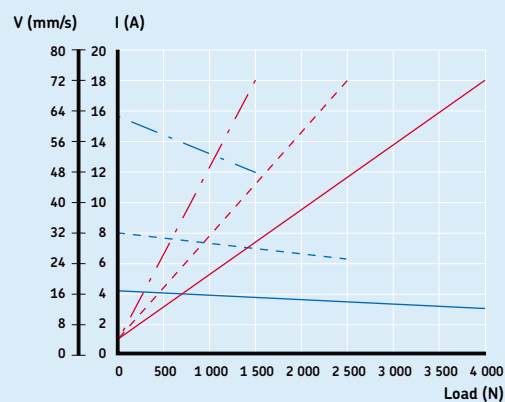
Technical data

	Unit	CAT 32B
Push load	N	1 000 to 4 000
Pull load	N	1 000 to 4 000
Speed (full load to no load)	mm/s	5 to 52 ¹⁾
Stroke	mm	50 to 700
Retracted length	mm	S+167/175/206 ²⁾
Voltage	V DC	12 or 24
Power consumption	W	N/A
Current consumption 12 V DC	A	18
24 V DC	A	9
24 V DC	A	5 (for motors C24CW and D24CW)
Duty cycle	%	20
Ambient temperature	°C	-20 to +50
Type of protection	IP	20/44/65
Weight	kg	2 to 3,5

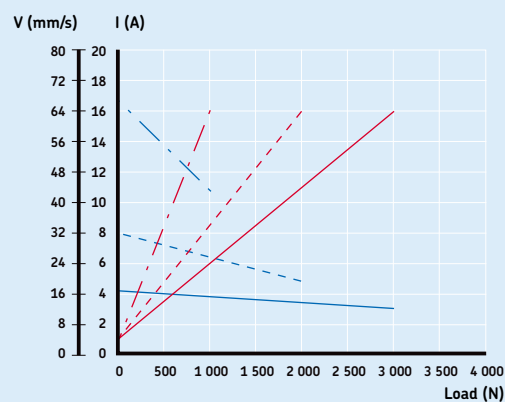
¹⁾Depending on selected motor

²⁾Dimension depends on selected front attachment

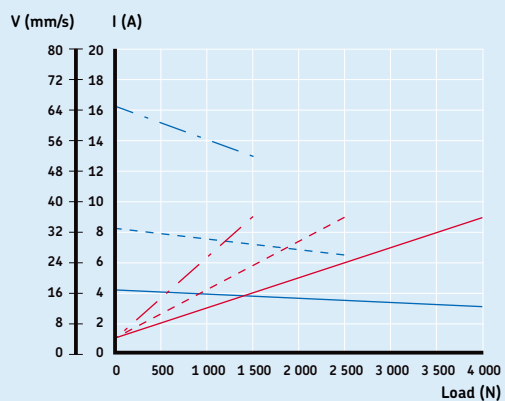
Performance diagrams



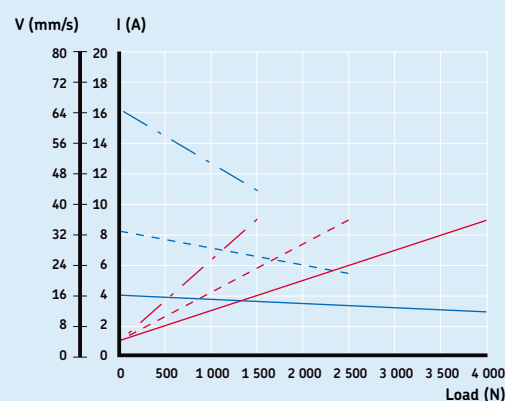
CAT 32B.../C12C



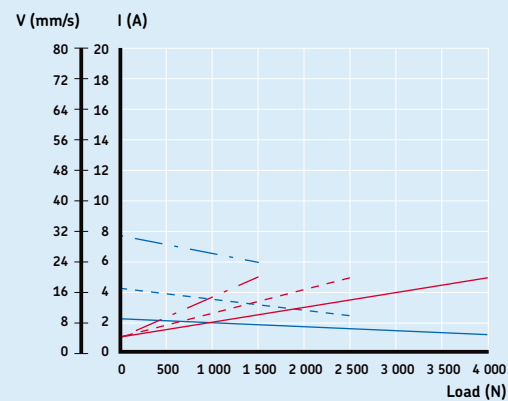
CAT 32B.../D12C



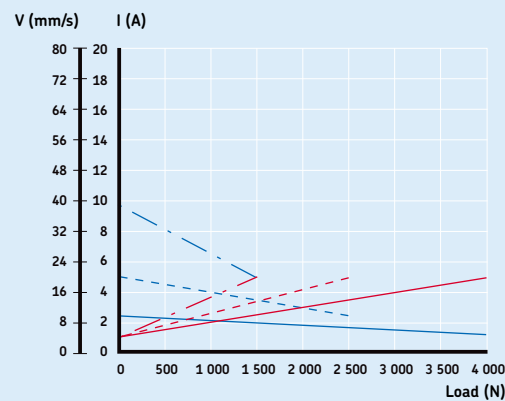
CAT 32B.../C24C



CAT 32B.../D24C/D24CB/D24CS



CAT 32B.../C24CW



CAT 32B.../D24CW

Gear 1 ——— V (mm/s)
 ——— I (A)
 Gear 2 - - - - V (mm/s)
 - - - - I (A)
 Gear 4 - - - - V (mm/s)
 - - - - I (A)

Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
4 000/xx	2 500/xx	1 500/xx	No motor	0000
4 000/17-12	2 500/32-25	1 500/63-48	12 V DC, IP44 (65)	C12C
3 000/17-11	2 000/34-19	1 000/67-43	12 V DC, flat motor, IP44	D12C
4 000/17-13	2 500/33-26	1 500/65-52	24 V DC, IP44 (65)	C24C
4 000/9-5	2 500/17-10	1 500/31-24	24 V DC, low speed motor, IP44 (IP65)	C24CW
4 000/16-12	2 500/33-22	1 500/65-44	24 V DC, flat motor, IP44	D24C
4 000/16-12	2 500/33-22	1 500/65-44	24 V DC, flat motor, brake, IP20	D24CB
4 000/16-12	2 500/33-22	1 500/65-44	24 V DC, flat motor, ext.shaft, IP44	D24CS
4 000/10-5	2 500/20-10	1 500/39-20	24 V DC, flat motor, low speed, IP44	D24CW
1	2	4		

C A T 3 2 B X X / U M N I T2 T2P

Type

Motor assembly:

Right
Left

L
R

Stroke (S):

50 mm
100 mm
200 mm
300 mm
400 mm
500 mm
700 mm

50
100
200
300
400
500
700

Other stroke lengths

Rear attachment (see page 286):

Fork ear, Ø=12,0 mm
Fork ear, Ø=12,7 mm
Single ear, Ø=12,0 mm
Single ear, Ø=12,7 mm

A1
A2
K1
K2

Front attachment (see page 286):

Hole, Ø=12,0 mm
Hole, Ø=12,7 mm
Male thread, M12
Female thread, M12
Fork ear, Ø=10,1 mm

G1
G2
G3
G4
G5

Feedback:

No encoder (no code)
Encoder (for all standard motors)

E2

Option:

Friction clutch (not available with option encoder)
No friction clutch
Back-up nut

F
Z
S

Option for CxxC motors:

No cable
EMC filter
Motor without cover
IP65 (mandatory to state type of cable T2 or T2P)
Straight cable, 2,0 m, no plug
Straight cable, 2,0 m, jack plug

U
M
N
I
T2
T2P

Options written in italic fonts are only available on demand. Please contact SKF.

Linear actuator Matrix 1

Benefits

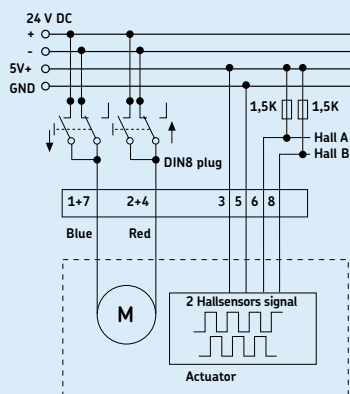
- Silent operation
- Full system with control unit, operating switch and accessories
- Synchronization possible
- Compact and aesthetic
- Back-up nut as standard



Suitable control units and accessories

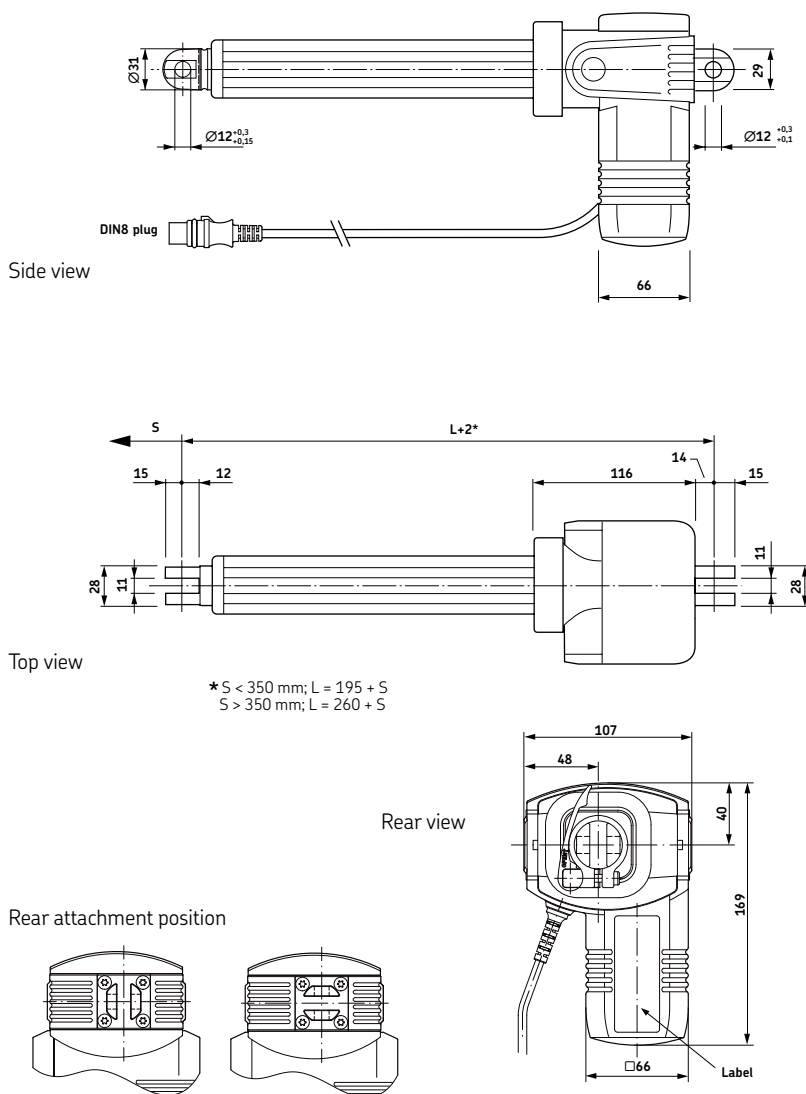
Control units									
		SCU 1	SCU 5	SCU 9	VCU 5	VCU 8	VCU 9	BCU 5	BCU 8
MAX 1		•	•	•	•	•	•	•	•
Hand switch	EHA 1	•	•	•	•	•	•	•	•
Foot switch	EHA 3	•	•	•	•	•	•	•	•
Desk switch	STJ	•	•	•	•	•	•	•	•
	STA	•	•	•	•	•	•	•	•
	STE	•	•	•	•	•	•	•	•
		MCU	•	•	•	•	•	•	•

Connecting diagram*



* Only valid for MAX 11. MAX 10 must be operated by a BCU, MCU, SCU or VCU control unit.

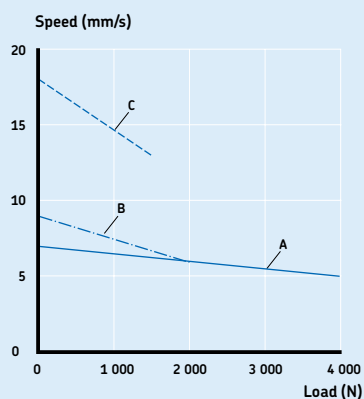
Dimensional drawing



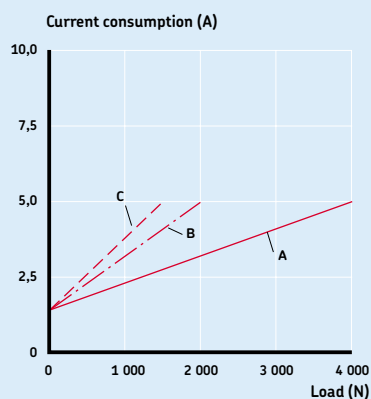
Technical data

	Unit	MAX 1..A..	MAX 1..B..	MAX 1..C..
Push load	N	4 000	2 000	1 500
Pull load	N	4 000	2 000	1 500
Speed (full load to no load)	mm/s	5 to 7	6 to 9	12,7 to 18
Stroke	mm	50 to 700	50 to 700	50 to 700
Retracted length	mm	S + 195	S + 195	S + 195
Voltage	V DC	24	24	24
Power consumption	W	120	120	120
Current consumption	A	5	5	5
Duty cycle	%	10 (1/9)	10 (1/9)	10 (1/9)
Ambient temperature	°C	0 to +40	0 to +40	0 to +40
Type of protection	IP	66S	66S	66S
Weight (at 200 mm stroke)	kg	4,0	3,7	3,6
Color	—	Grey	Grey	Grey

Performance diagrams

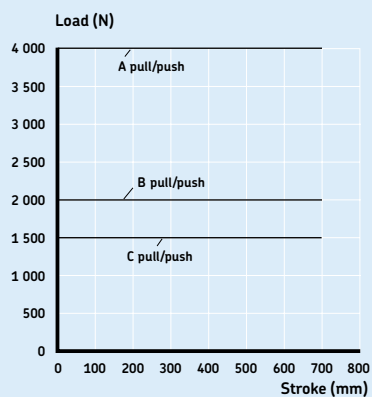
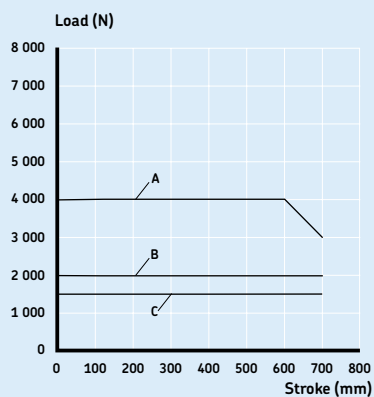
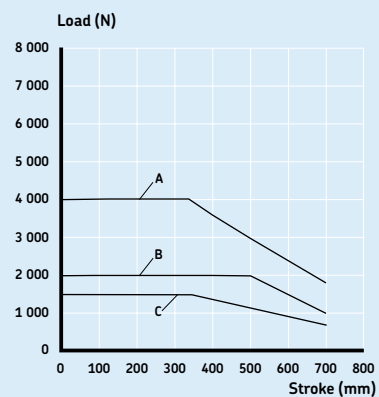


Speed-load diagram



Current-load diagram

Safety factor load conditions

Push load reduction static
Safety factor $S=1$ Push load reduction static
Safety factor $S=2$ Push load reduction static
Safety factor $S=4$ (EN60601)

M	A	X	1		-						A						0	0	0
---	---	---	---	--	---	--	--	--	--	--	---	--	--	--	--	--	---	---	---

C
1A
B
C

50 mm	050 245
100 mm	100 295
150 mm	150 345
200 mm	200 395
250 mm	250 445
300 mm	300 495
350 mm	350 545
400 mm	400 660
450 mm	450 710
500 mm	500 760
550 mm	550 810
600 mm	600 860
650 mm	650 910
700 mm	700 960
<i>Other stroke lengths: 50<S<700 mm</i>	<i>--- ---</i>

OB
C5
--

- 0
- 1
- 2

O
E
F
I
J
M
N

OFMP

$$\frac{V}{W}$$

3

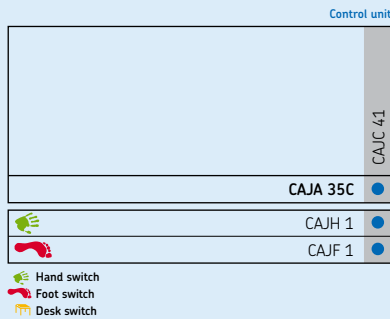
Linear actuator CAJA 35C

Benefits

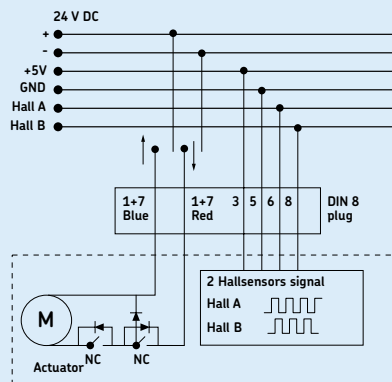
- Quick-release solution for fast CPR intervention
- Detachable cable for quick assembly and service
- Integrated brake to maintain self-locking and stability under maximum static load



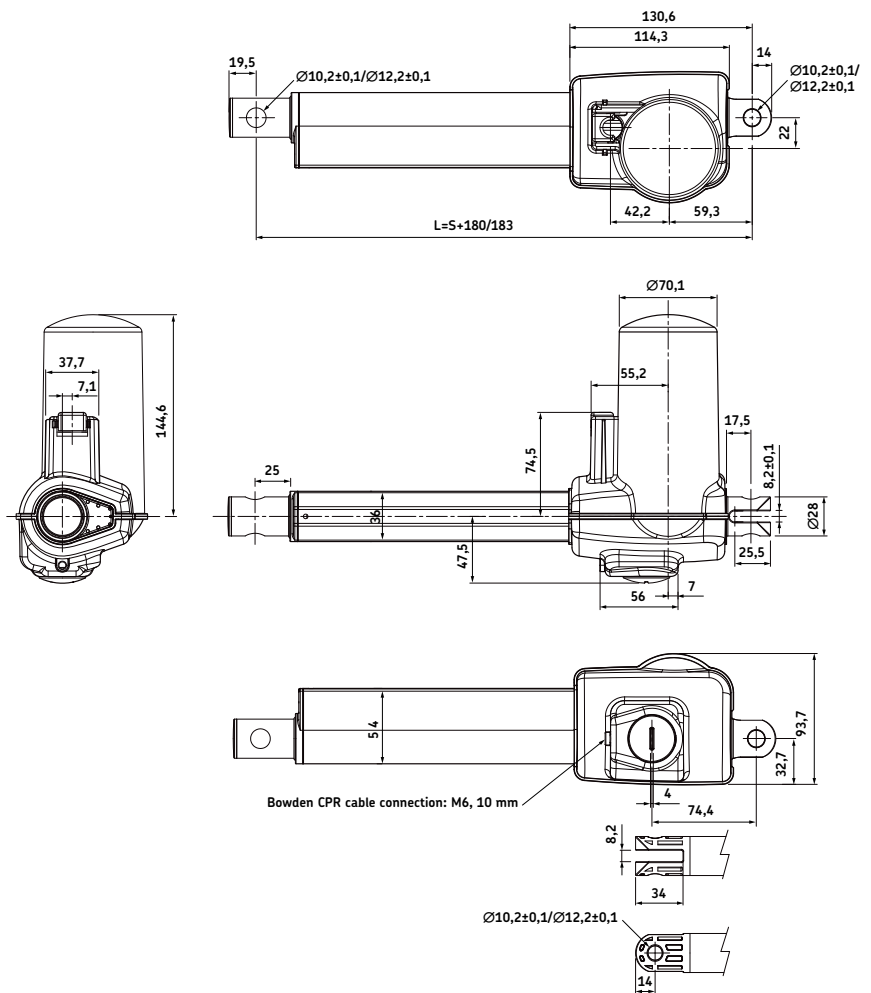
Suitable control units and accessories



Connecting diagram



Dimensional drawing



Legend:
S = stroke
L = retracted length

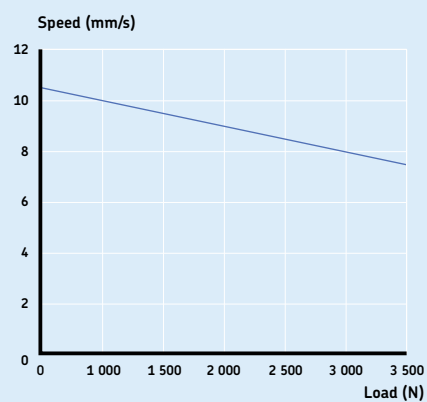
Technical data

	Unit	CAJA 35C
Push load	N	3 500
Pull load	N	3 500
Speed (full load to no load)	mm/s	7,5 to 10,5
Stroke	mm	30 to 250
Retracted length ¹⁾	mm	S+180 ²⁾
Voltage	V DC	24-41
Power consumption	W	N/A
Current consumption	A	4
Duty cycle	%	10
Ambient temperature	°C	+10 to +40
Type of protection	IP	54
Weight (at 250 mm stroke)	kg	2,5
Color	—	Grey

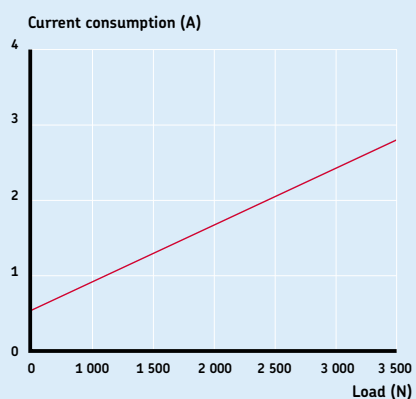
¹⁾Tolerance +/- 3 mm

²⁾Retracted length +3 mm if U fork used as front attachment (L= S+183)

Performance diagrams

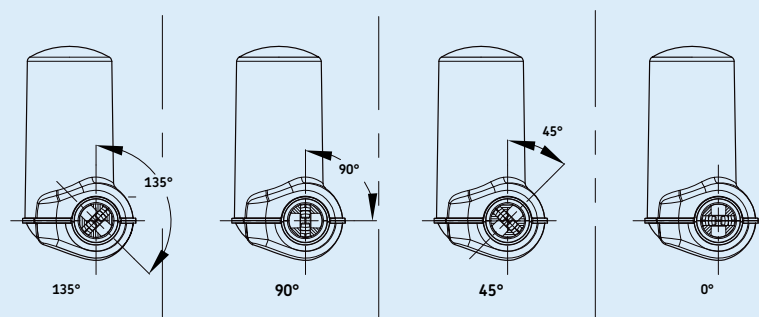


Speed-load diagram



Current-load diagram

Orientation



Linear actuator CAR 32

Benefits

- Industrial reliable and robust actuator
- Wide range of components
- Right- and left-hand version



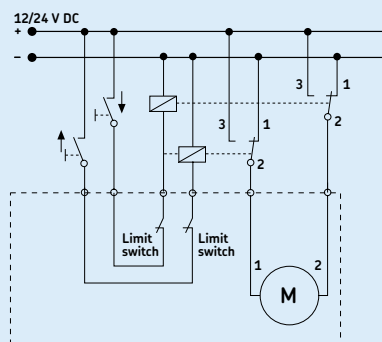
Suitable control units and accessories

	Control units	Limit switch
	CAED 5-24R	
	CAED 9-24R	
	CAXB 32*	
D12C		•
D24C	•	•
D24CW	•	•
D24CS	•	•
D24CB	•	•
CAES 31C	•	•

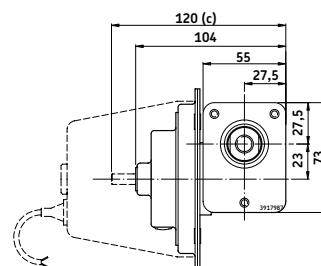
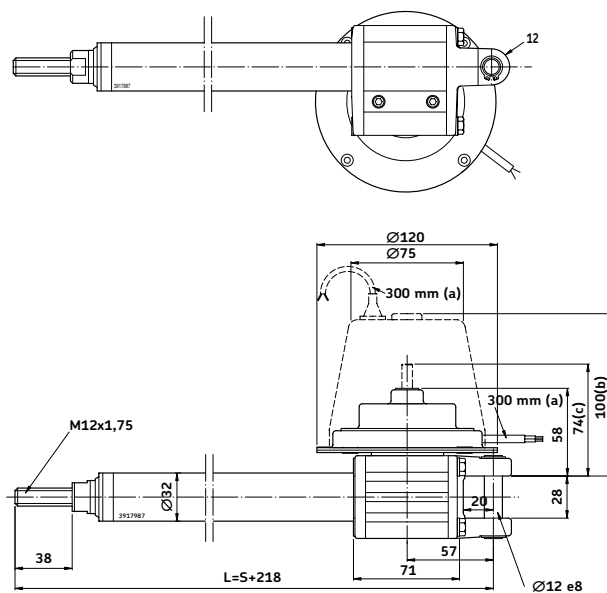
 Hand switch
 Foot switch
 Desk switch

* See page 395

Connecting diagram



Dimensional drawing

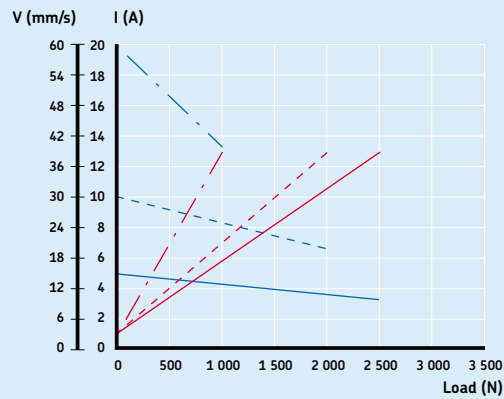


Legend:
 S = stroke
 L = retracted length
 (a) = cable length
 (b) = cover for brake (D24CB)
 (c) = extended shaft (D24CS)

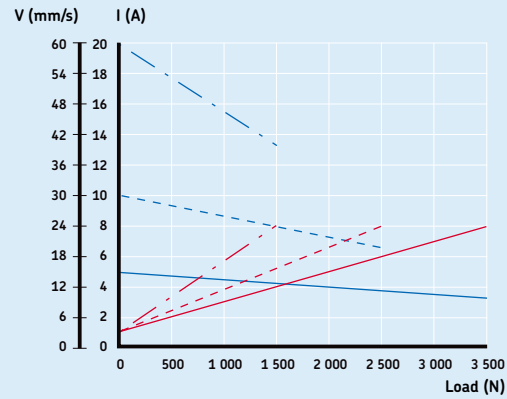
Technical data

	Unit	CAR 32
Push load	N	1 000 to 3 500
Pull load	N	1 000 to 3 500
Speed (full load to no load)	mm/s	5 to 60
Stroke	mm	50 to 700
Retracted length	mm	S+ 218
Voltage	V DC	12 or 24
Power consumption	W	N/A
Current consumption 12 V DC	A	13
24 V DC	A	8
24 V DC	A	5 (for motor D24CW)
Duty cycle	%	25
Ambient temperature	°C	-20 to +70
Type of protection	IP	20/44
Weight	kg	2,1 to 3,7

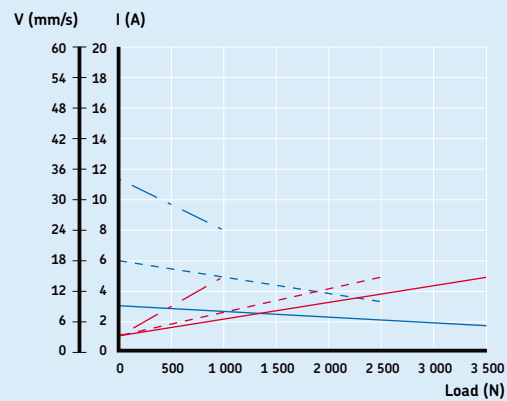
Performance diagrams



CAR 32.../D12C



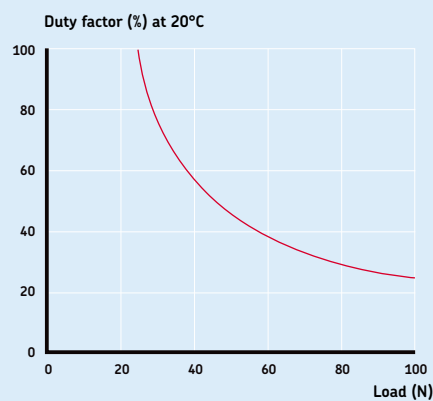
CAR 32.../D24C/D24CS/D24CB



CAR 32.../D24CW

Gear 1 — V (mm/s)
 — I (A)
 Gear 2 - - - V (mm/s)
 - - - I (A)
 Gear 4 - · - V (mm/s)
 · - - I (A)

Duty cycle



Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
3 500/xx	2 500/xx	1 500/xx	No motor	0000
2 500/15-10	2 000/30-20	1 000/60-40	12 V DC, flat motor, IP44	D12C
3 500/15-10	2 500/30-20	1 500/60-40	24 V DC, flat motor, IP44	D24C
3 500/9-5	2 500/18-10	1 500/34-24	24 V DC, flat motor, low speed, IP44	D24CW
3 500/15-10	2 500/30-20	1 500/60-40	24 V DC, flat motor, extended shaft, IP44	D24CS
3 500/15-10	2 500/30-20	1 500/60-40	24 V DC, flat motor, brake, IP20	D24CB
1	2	4		

C A R 3 2 X X /

Type

Motor assembly:

Right
Left

R
L

Stroke (S):

50 mm
100 mm
200 mm
300 mm
500 mm
700 mm
Other stroke lengths

50
100
200
300
500
700

Option:

Friction clutch
Back-up nut

F
S

Options written in italic fonts are only available on demand. Please contact SKF.

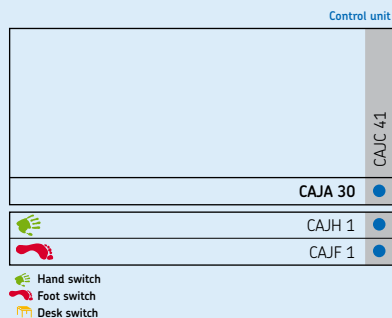
Linear actuator CAJA 30

Benefits

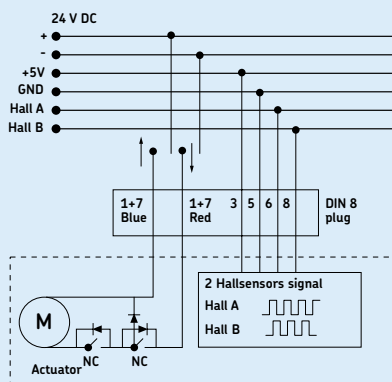
- Convenient stroke for bed elevation
- Fast
- Detachable cable for quick assembly and service
- Integrated brake to maintain self-locking and stability under maximum static load



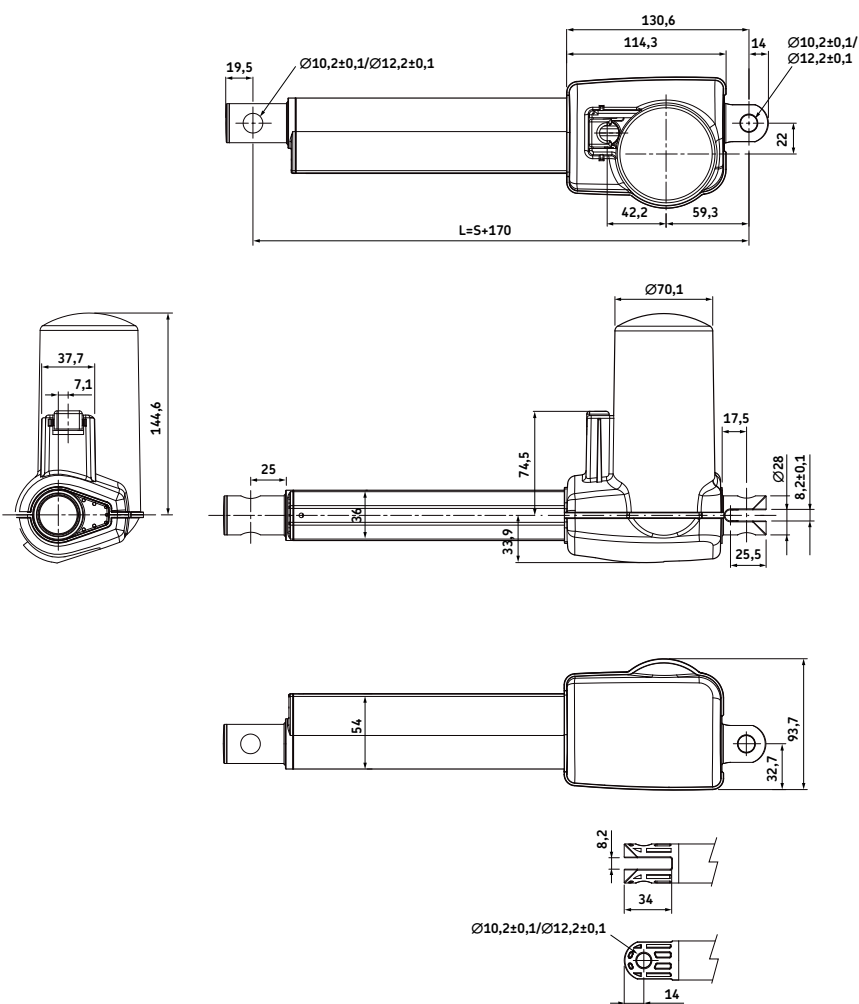
Suitable control units and accessories



Connecting diagram



Dimensional drawing



Legend:
S = stroke
L = retracted length

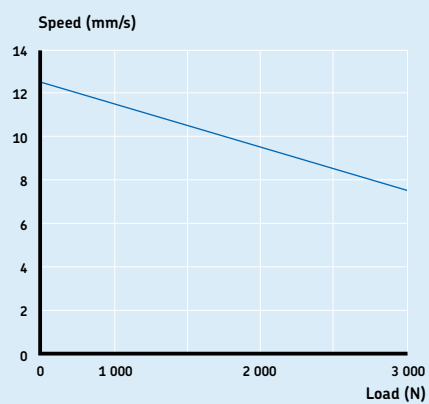
Technical data

	Unit	CAJA 30
Push load	N	3 000
Pull load	N	3 000
Speed (full load to no load)	mm/s	7,5 to 12,5
Stroke	mm	30 to 400
Retracted length ¹⁾	mm	S+167 ²⁾
Voltage	V DC	20-40
Power consumption	W	N/A
Current consumption	A	4
Duty cycle	%	10
Ambient temperature	°C	+10 to +40
Type of protection	IP	54
Weight (at 400 mm stroke)	kg	2,7
Color	-	Grey

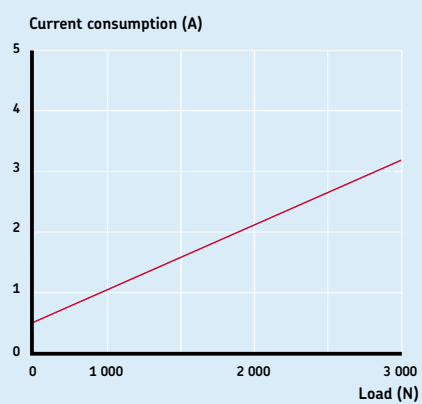
¹⁾Tolerance ±3 mm

²⁾Retracted length +3 mm if U fork used as front attachment (L= S+183)

Performance diagrams

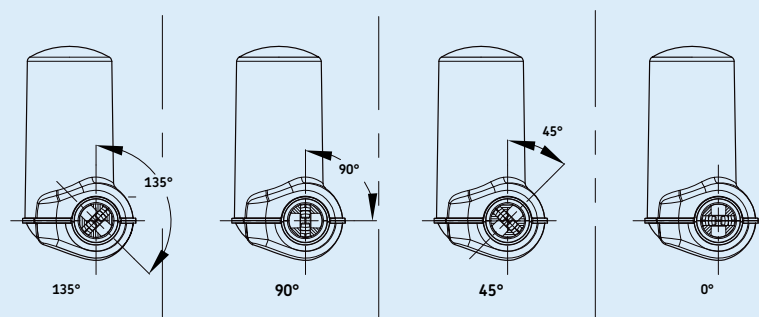


Speed-load diagram



Current-load diagram

Orientation



Ordering key

C A J A 3 0																						U	4							0
Type																														
Stroke:																														
100 mm												100																		
200 mm												200																		
300 mm												300																		
400 mm												400																		
All other customized strokes between 30-400 mm												XXX																		
Retracted length*:																														
Standard (L=S+167/170 mm)												000																		
Customized length >S+167/170 mm												XXX																		
* Minimum retracted length when used together with control unit CAJC 41=325 mm.																														
Rear attachment:																														
U-fork, metal, Ø 10,2 mm																A														
U-fork, metal, Ø 12,2 mm																B														
Front attachment:																														
Tube with hole and metal bushings, Ø 10,2 mm																A														
Tube with hole and metal bushings, Ø 12,2 mm																B														
U-fork end, metal, Ø 10,2 mm (increase "L" by 3 mm)																C														
U-fork end, metal, Ø 12,2 mm (increase "L" by 3 mm)																D														
Attachment orientation (clockwise):																														
0°																0														
45°																1														
90°																9														
135°																2														
Housing material:																														
ABS UL94 V0																														
Protection class (with power cable connected):																														
IP54																														
Option 1:																														
No option																0														
Anti-pinching solution ("push only" actuator)																1														
Option 2:																														
No option																0														
With back-up nut (for "push" load)																1														
Option 3:																														
No option																0														
Motor with thermoswitch																1														
Option 4:																														
No option																0														
With dual encoder																1														

Linear actuator CAP 32

Benefits

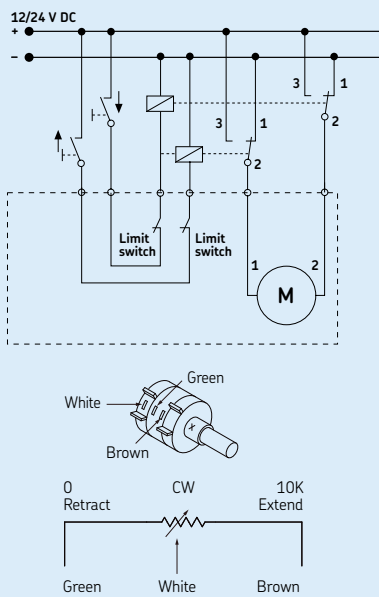
- Easy installation
- Robust and reliable
- Lubricated for service life
- Right- and left-hand version
- Analogical feedback



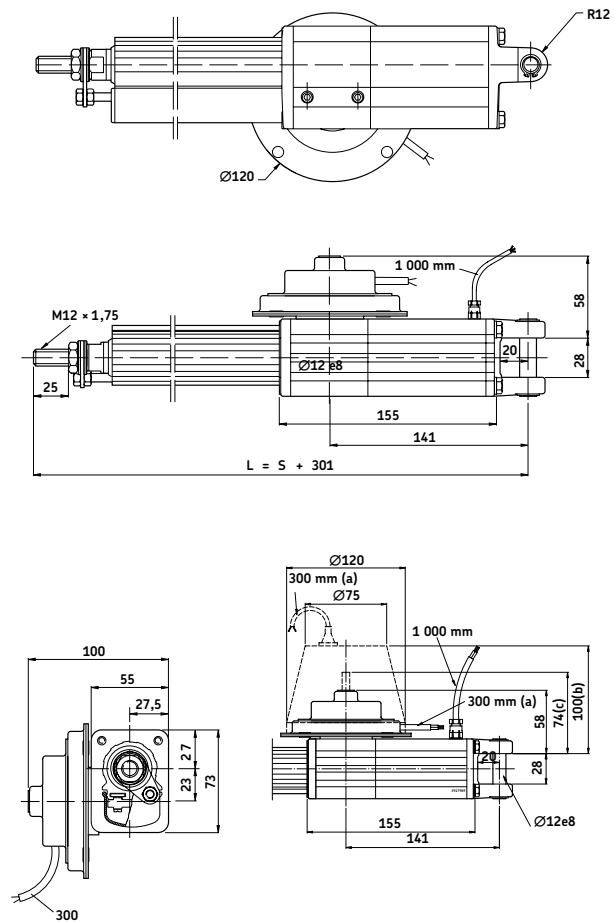
Suitable control units and accessories

Control units	
	CAED ANR 5-24-PO
	CAED ANR 9-24-PO
D12C	
D24C	●
D24CW	●
D24CS	●
D24CB	

Connecting diagram



Dimensional drawing



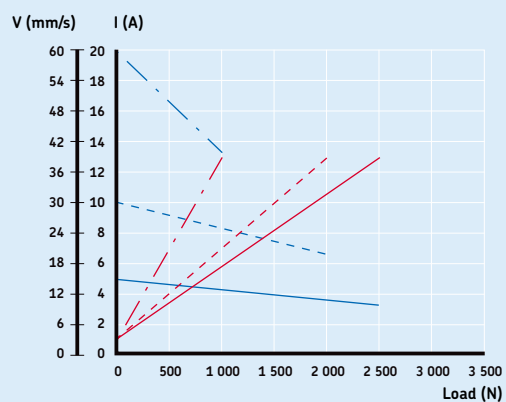
Legend:
S = stroke
L = retracted length
(a) = cable length
(b) = cover for brake (D24CB)
(c) = extended shaft (D24CS)

Technical data

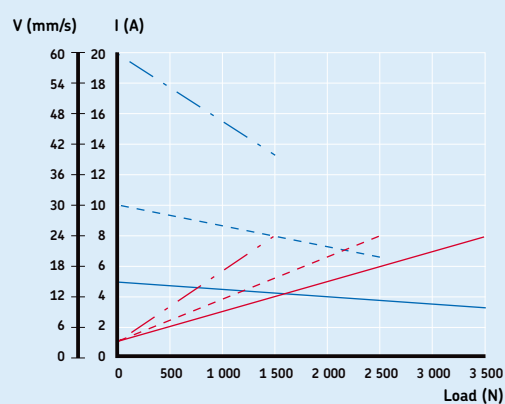
	Unit	CAP 32
Push load	N	1 000 to 3 500
Pull load	N	1 000 to 3 500
Speed (full load to no load)	mm/s	5 to 60*
Stroke	mm	50 to 700
Retracted length	mm	S+301
Voltage	V DC	12 or 24
Power consumption	W	N/A
Current consumption 12 V DC	A	13
24 V DC	A	8
24 V DC	A	5 (for motor D24CW)
Duty cycle	%	25
Ambient temperature	°C	-20 to +50
Type of protection	IP	20/44
Weight	kg	2,9 to 5,0

* Depending on selected motor

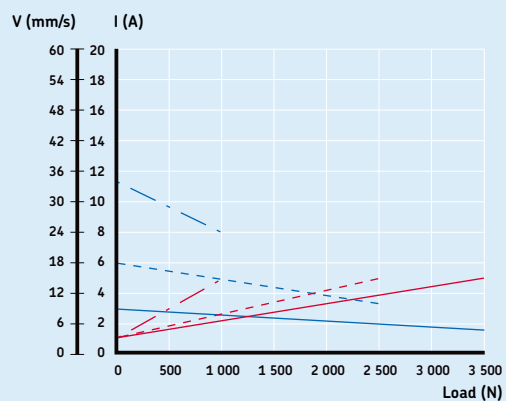
Performance diagrams



CAP 32.../D12C



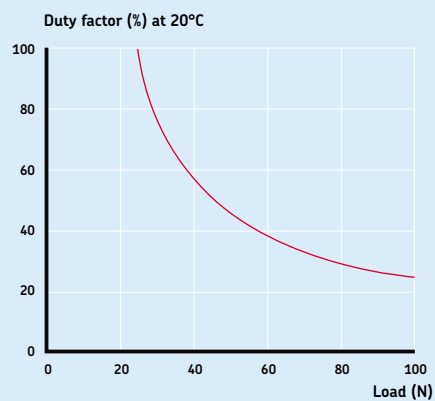
CAP 32.../D24C/D24CS/D24CB



CAP 32.../D24CW

Gear 1 ——— V (mm/s)
 ——— I (A)
 Gear 2 - - - - V (mm/s)
 - - - - I (A)
 Gear 4 ——— V (mm/s)
 - - - - I (A)

Duty cycle



Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
3 500/xx	2 500/xx	1 500/xx	No motor	0000
2 500/15-10	2 000/30-20	1 000/60-40	12 V DC, flat motor, IP44	D12C
3 500/15-10	2 500/30-20	1 500/60-40	24 V DC, flat motor, IP44	D24C
3 500/9-5	2 500/18-10	1 500/34-24	24 V DC, flat motor, low speed, IP44	D24CW
3 500/15-10	2 500/30-20	1 500/60-40	24 V DC, flat motor, extended shaft, IP44	D24CS
3 500/15-10	2 500/30-20	1 500/60-40	24 V DC, flat motor, brake, IP20	D24CB
1	2	4		

Type

Motor assembly:

Right
Left

R
L

Stroke (S):

50 mm
100 mm
200 mm
300 mm
500 mm
700 mm
Other stroke lengths

050
100
200
300
500
700

Option:

Back-up nut

S

Options written in italic fonts are only available on demand. Please contact SKF.

Linear actuator CAP 43A

Benefits

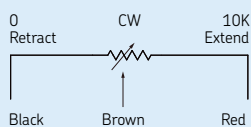
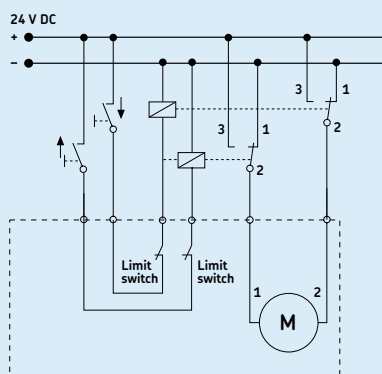
- Robust and reliable
- Long lifetime
- Wide range of components
- Right- and left-hand version
- Analogical feedback



Suitable control units and accessories

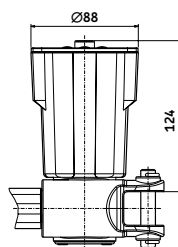
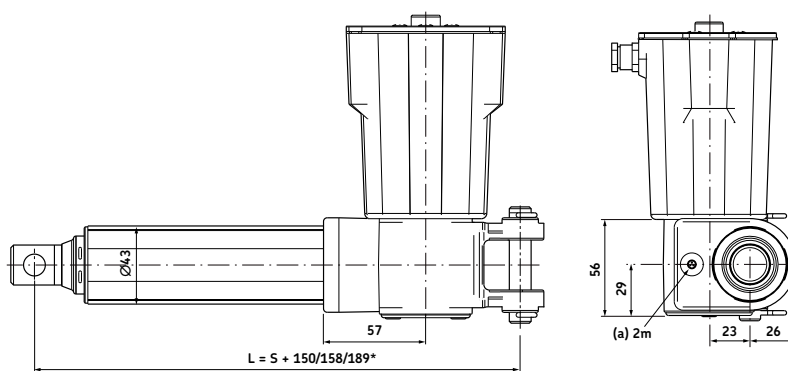
Control units	
	CAED ANR 5-24-PO
	CAED ANR 9-24-PO
C24C	●
C24CW	●
D24C	●
D24CW	●

Connecting diagram

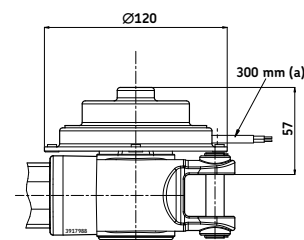


Connection diagram for linear potentiometer.

Dimensional drawing



C24C, C24CW



D24C, D24CW

Legend:

S = stroke
L = retracted length
(a) = cable length

See drawings of front and rear attachments on page 286.

* Dimension depends on selected front attachment

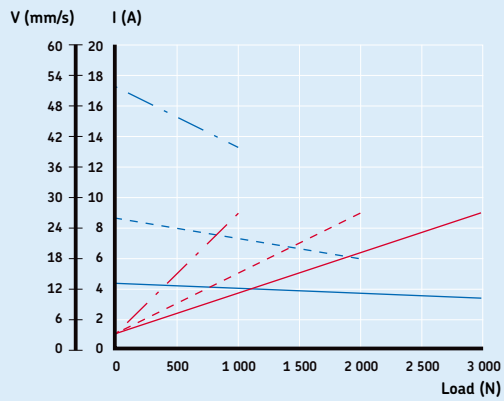
Technical data

	Unit	CAP 43A
Push load	N	1 000 to 3 000
Pull load	N	1 000 to 3 000
Speed (full load to no load)	mm/s	5 to 52 ¹⁾
Stroke	mm	100 to 400
Retracted length	mm	S+150/158/189 ²⁾
Voltage	V DC	24
Power consumption	W	N/A
Current consumption 24 V DC	A	9
24 V DCW	A	5
Duty cycle	%	15
Ambient temperature	°C	-20 to +50
Type of protection	IP	44
Weight	kg	2,0 to 2,7

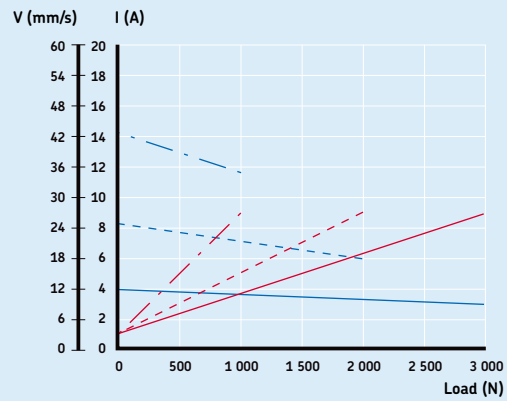
¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

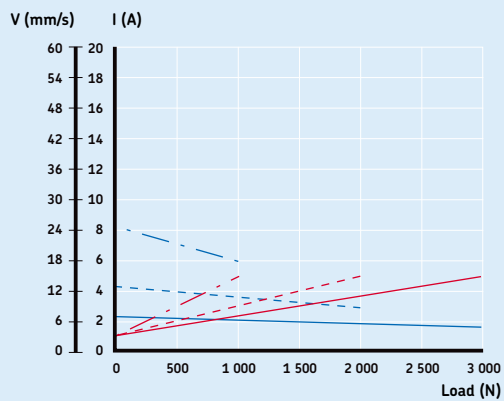
Performance diagrams



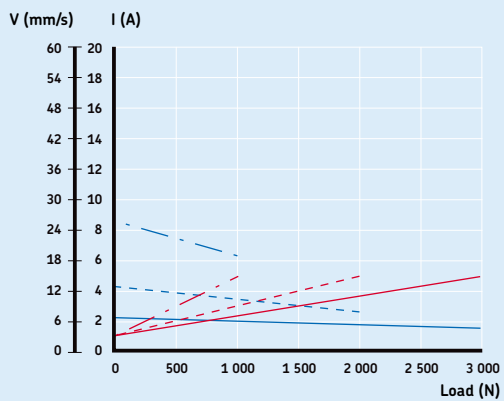
CAP 43A.../C24C



CAP 43A.../D24C



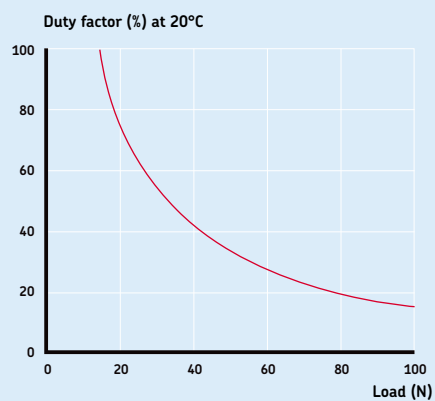
CAP 43A.../C24CW



CAP 43A.../D24CW

Gear 1 ——— V (mm/s)
 ——— I (A)
 Gear 2 - - - - V (mm/s)
 - - - - I (A)
 Gear 4 ····· V (mm/s)
 ····· I (A)

Duty cycle



Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
3 000/xx	2 000/xx	1 000/xx	No motor	0000
3 000/13-10	2 000/26-20	1 000/52-40	24 VDC, IP44	C24C
3 000/7-5	2 000/13-9	1 000/25-18	24 VDC, IP44	C24CW
3 000/12-9	2 000/25-18	1 000/43-35	24 VDC, flat motor, IP44	D24C
3 000/7-5	2 000/13-8	1 000/26-19	24 VDC, flat motor, low speed, IP44	D24CW
1	2	4		

Type

Motor assembly:

Right
Left

R
L

Stroke (S):

100 mm
200 mm
300 mm
400 mm

100
200
300
400

Rear attachment (see page 286):

Fork ear, Ø=12,0 mm
Fork ear, Ø=12,7 mm
Single ear, Ø=12,0 mm
Single ear, Ø=12,7 mm

A1
A2
K1
K2

Front attachment (see page 286):

Hole, Ø=12,0 mm
Hole, Ø=12,7 mm
Male thread, M12
Female thread, M12
Fork ear, Ø=10,1 mm

G1
G2
G3
G4
G5

Option:

Friction clutch

F

Cable option for C24C(W) motors:

No cable
Straight, 2,0 m

U
T2

EMC filter

M

Motor without cover

N

Linear actuator CAT 33

Benefits

- Compact
- Robust
- Lubricated for service life
- Modular
- Digital encoder feedback



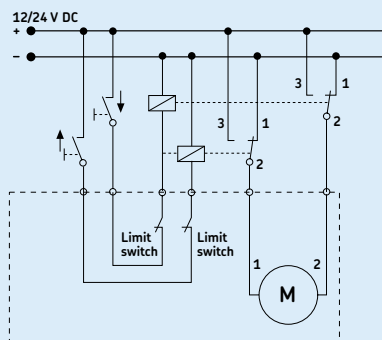
Suitable control units and accessories

Control units		Encoder
	CAED 5-24R	CAED 9-24R
		E2*
C12C		•
D12C		•
C24C	•	•
C24CW	•	•
D24C	•	•
D24CB	•	•
D24CS	•	•
D24CW	•	•
CAES 31C	•	•

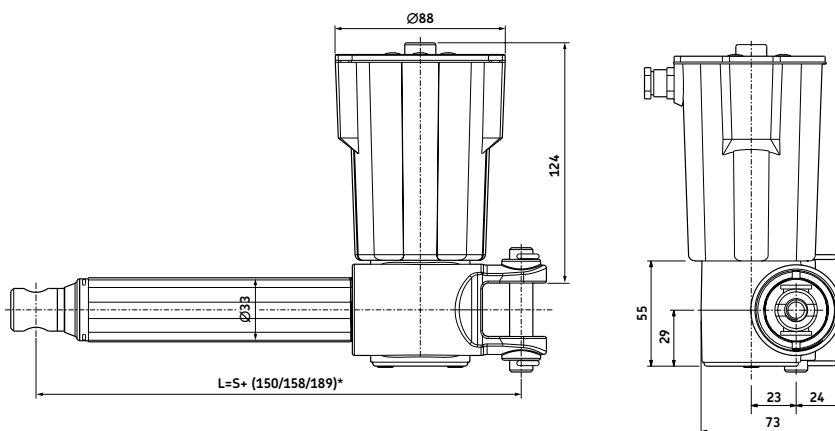
- Hand switch
- Foot switch
- Desk switch

* See page 396

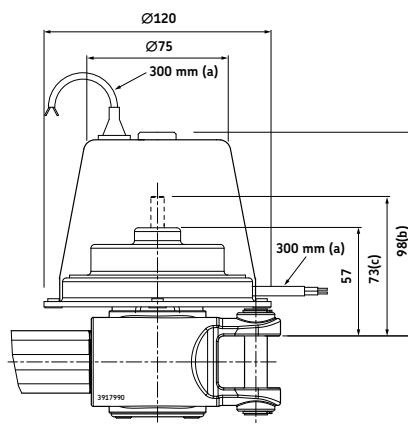
Connecting diagram



Dimensional drawing



* Dimension depends on selected front attachment



Legend:

- S = stroke
- L = retracted length
- (a) = cable length
- (b) = cover for brake (D24CB)
- (c) = extended shaft (D24CS)

D12C, D24C, D24CB, D24CS, D24CW

See drawings of front and rear attachments and motor options on page 286.

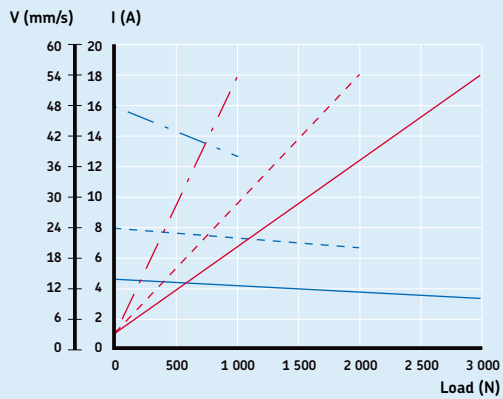
Technical data

	Unit	CAT 33
Push load	N	800 to 3 000
Pull load	N	800 to 3 000
Speed (full load to no load)	mm/s	5 to 52 ¹⁾
Stroke	mm	100 to 400
Retracted length	mm	S+150/158/189 ²⁾
Voltage	V DC	12 or 24
Power consumption	W	N/A
Current consumption 12 V DC	A	18
24 V DC	A	9
24 V DC	A	5 (for motors C24CW and D24CW)
Duty cycle	%	15
Ambient temperature	°C	-20 to +50
Type of protection	IP	20/44/65
Weight	kg	2 to 2,7

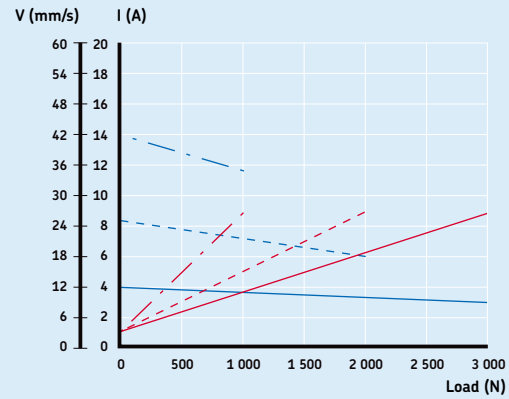
¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

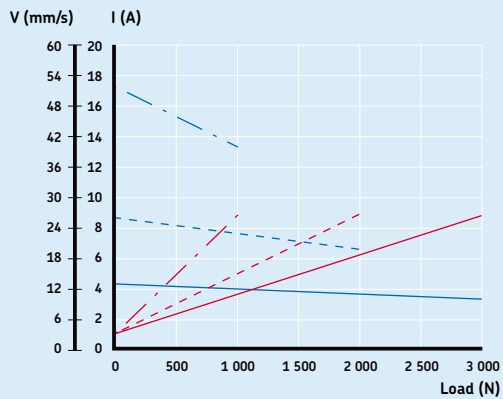
Performance diagrams



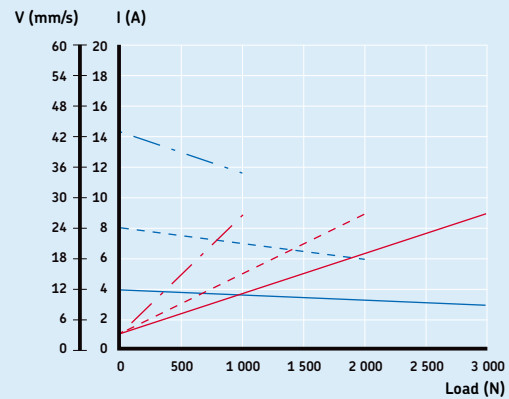
CAT 33.../C12C



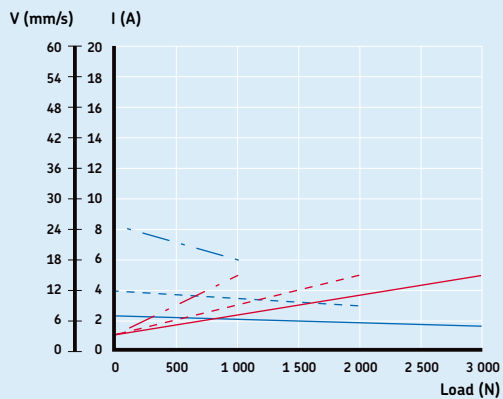
CAT 33.../D12C



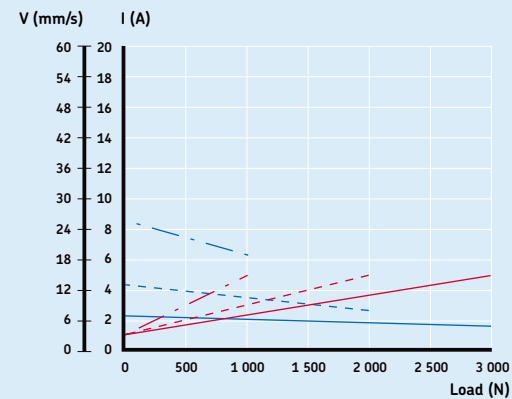
CAT 33.../C24C



CAT 33.../D24C/D24CB/D24CS



CAT 33.../C24CW



CAT 33.../D24CW

Gear 1 ——— V (mm/s)
 ——— I (A)
 Gear 2 - - - - V (mm/s)
 - - - - I (A)
 Gear 4 · · · · V (mm/s)
 · · · · I (A)

3

CAT 33X X /

L
R

100
200
300
400

— — —

A1
A2
K1
K2

G1
G2
G3
G4
G5

E2

F
Z

U
M
N
I
T2
T2P

SKF

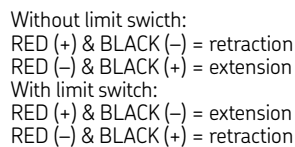
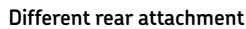
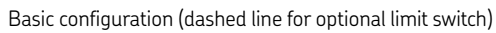
Linear actuator CAHB-20 series

Benefits

- ACME screw drive
- Extension tube (stainless steel)
- Protection tube (steel)
- Enhanced corrosion resistance
- Mechanical overload protection (clutch)
- Lubricated for service life
- Robust, designed for tough environment
- Self-locking
- Certified (CE: EN 55011)



Dimensional drawing



2) Tolerance: $S = \pm 2,5 \text{ mm}$ and $L1 = \pm 3,8 \text{ mm}$

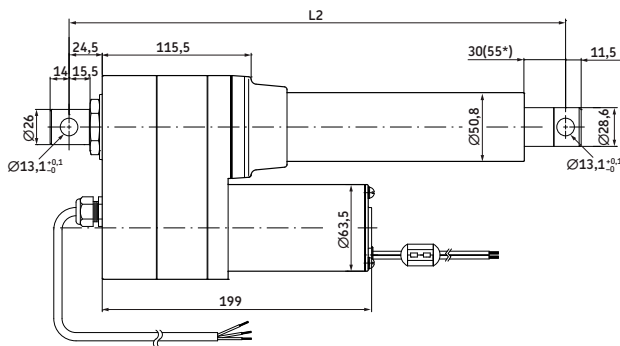
Technical data

* see above table

Load (N)	Speed (mm/s) - Line 1	Speed (mm/s) - Line 2
0	33	18
500	31	17
1000	29	16
1500	28	15
2000	-	14
2500	-	13

The graph shows the current consumption of two power supplies as a function of load. The x-axis represents Load (N) from 0 to 2500. The left y-axis represents Current (A) for 12 V DC (0 to 18), and the right y-axis represents Current (A) for 24 V DC (0 to 10). Line 1 (12 V DC) starts at approximately 3.5 A at 0 N and reaches 16 A at 1500 N. Line 2 (24 V DC) starts at approximately 2.5 A at 0 N and reaches 13 A at 2500 N.

Load (N)	Current (A) - 12 V DC (Line 1)	Current (A) - 24 V DC (Line 2)
0	3.5	2.5
500	7.0	3.5
1000	10.5	4.5
1500	16.0	5.5
2000	-	6.5
2500	-	13.0

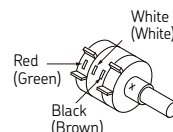


POT
Limit + POT:

Retract Extend

White (White) Red (Green) CW Black (Brown) 10K

0



2) Tolerance: $S = \pm 2,5 \text{ mm}$ and $L2 = \pm 3,8 \text{ mm}$

Ordering key

C A H B - 2 0 - [] [] A - [] [] [] [] - A [] [] [] [] [] - 0 0 0

Type

Voltage:

12 V DC
24 V DC

A
B

Load:

1 500 N
2 500 N

1
2

Screw:

Acme screw

A

Stroke:

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

102
153
204
305
457
610

Retracted length:

Stroke

with L.S.¹⁾

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

w/o POT²⁾

338 mm
389 mm
440 mm
592 mm
744 mm
897 mm

with POT²⁾

376 mm
427 mm
478 mm
630 mm
782 mm
935 mm

w/o L.S.¹⁾

102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

262 mm
313 mm
364 mm
465 mm
668 mm
821 mm

300 mm
351 mm
402 mm
503 mm
706 mm
859 mm

IP:

Standard (IP 66)

A

Front attachment:

Standard (hole: Ø 13 mm)
Customized

A
X

Rear attachment:

Standard (0° and hole: Ø 13 mm)
30°
60°
90°
120°
150°
Customized

A
B
C
D
E
F
X

Option 1:

None
Limit switch (only for load version 2 500 N)

0
L

Option 2:

None
Potentiometer

0
P

Option 3:

None
Thermal protection

0
T

¹⁾ L.S. = Limit Switch

²⁾ POT = Potentiometer

Linear actuator CARE 33

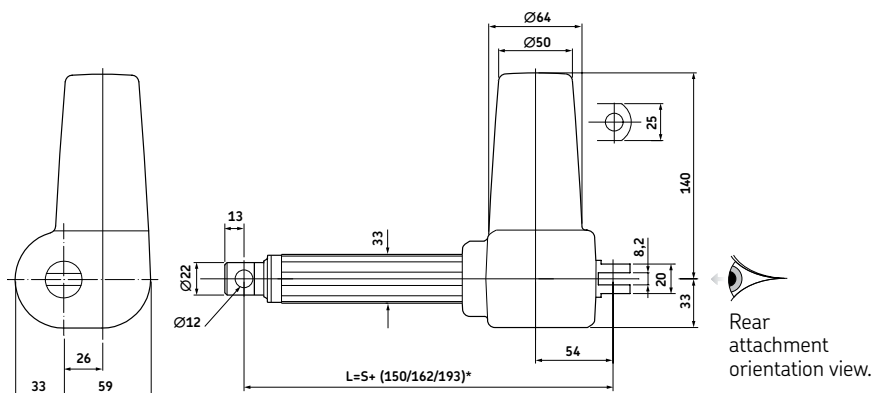
Benefits

- Silent operation
- Multiple speed/load variants
- Easy to adjust limit switches
- Different attachment options
- Digital encoder feedback

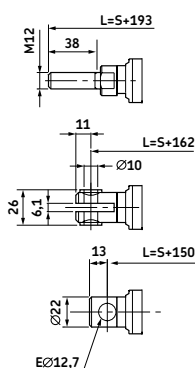


Dimensional drawing

1) See page 394
2) See page 397



* Dimension depends on selected front attachment

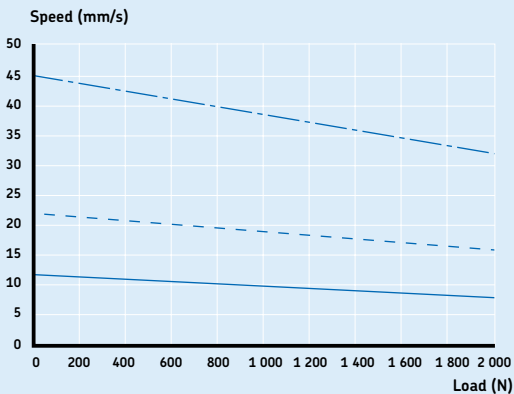


Legend:
S = stroke
L = retracted length

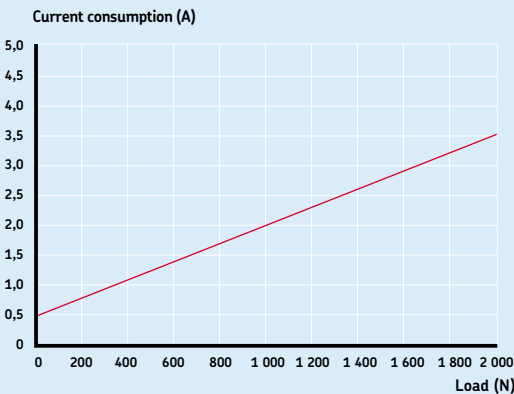
	Unit	CARE 33A	CARE 33M	CARE 33H
Push load	N	2 000	1 400	800
Pull load	N	2 000	1 400	800
Speed (full load to no load)	mm/s	8 to 12 ¹⁾	16 to 22 ¹⁾	32 to 45 ¹⁾
Stroke	mm	50 to 300	50 to 500	50 to 500
Retracted length	mm	S+150/162/193 ²⁾	S+150/162/193 ²⁾	S+150/162/193 ²⁾
Voltage	V DC	24	24	24
Power consumption	W	N/A	N/A	N/A
Current consumption	A	3,5	3,5	3,5
Duty cycle	%	15	20	30
Ambient temperature	°C	−10 to +50	−10 to +50	−10 to +50
Type of protection	IP	44/65	44/65	44/65
Weight	kg	1,5 to 2,0	1,5 to 2,0	1,5 to 2,0
Color	–	Black	Black	Black

1) Depending on selected motor
2) Dimension depends on selected front attachment

Performance diagrams



Speed-load diagram



Current-load diagram

A ——— V (mm/s)
M - - - - V (mm/s)
H · · · · V (mm/s)
— I (A)

Ordering key

C A R E 3 3													
Type													
Load:													
2 000 N													
1 400 N													
800 N													
Stroke (S):													
50 mm													
100 mm													
150 mm													
200 mm													
300 mm													
400 mm (not possible for CARE 33A)													
500 mm (not possible for CARE 33A)													
Other stroke lengths													
Front attachment:													
Hole, Ø=12,0 mm													
Hole, Ø=12,7 mm													
Hole 10 mm, slot 6,1 mm (retracted length, L=S+162 mm)													
Male thread M12 (retracted length, L=S+193 mm)													
Rear attachment:													
Hole, Ø=12,0 mm													
Hole, Ø=12,7 mm													
Hole, Ø=8,0 mm													
Hole, Ø=10,0 mm													
Type of protection:													
IP65													
IP44													
Feedback:													
No option													
Dual encoder													
Cable/Connection plug:													
Straight, 2,0 m, no plug													
Coiled, 2,0 m, jack plug													
Straight, 2,0 m, DIN 8 plug (for 2-channel encoder)													
Straight, 2,0 m, jack plug													
Straight, 2,5 m, DIN plug BCU/VCU (ONLY available for CARE 33A)													
Orientation of rear attachment:													
0°													
15° clockwise													
30° clockwise													
45° clockwise													
60° clockwise													
75° clockwise													
90° clockwise													
105° clockwise													
120° clockwise													
130° clockwise													
150° clockwise													
165° clockwise													
Voltage:													
24 V DC													
Self locking feature (mandatory when selecting load version "H" or "M"):													
No self locking required													
Self locking for pull load													
Self locking for push load													

Options written in italic fonts are only available on demand. Please contact SKF.

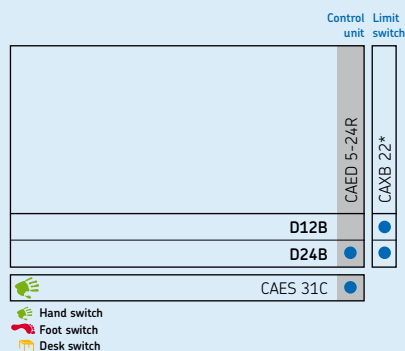
Linear actuator CAR 22

Benefits

- Industrial reliable and robust actuator
- Right- and left-hand version

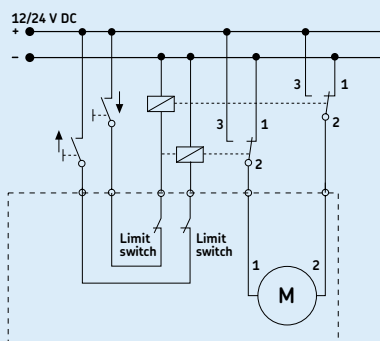


Suitable control units and accessories

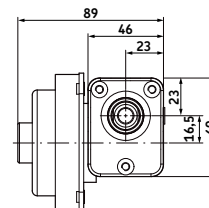
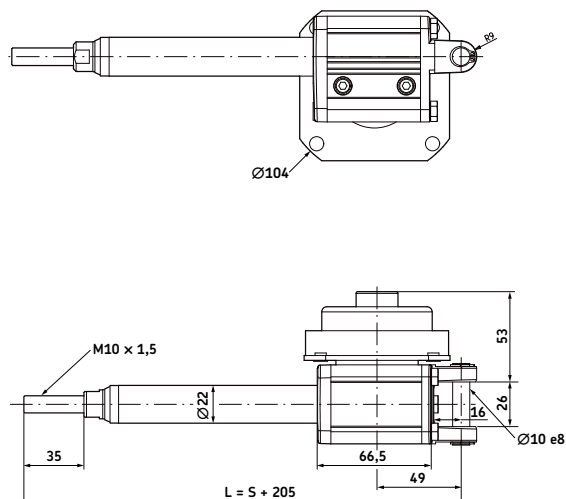


* See page 395

Connecting diagram



Dimensional drawing

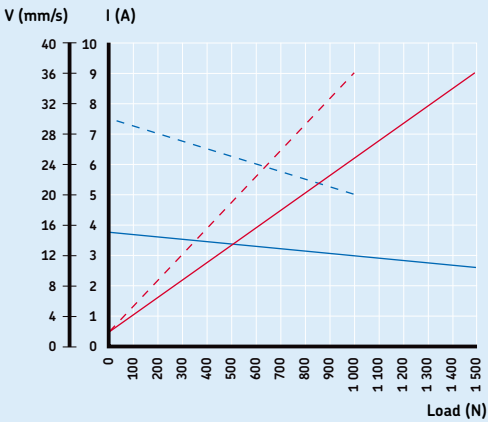


Legend:
 S = stroke
 L = retracted length

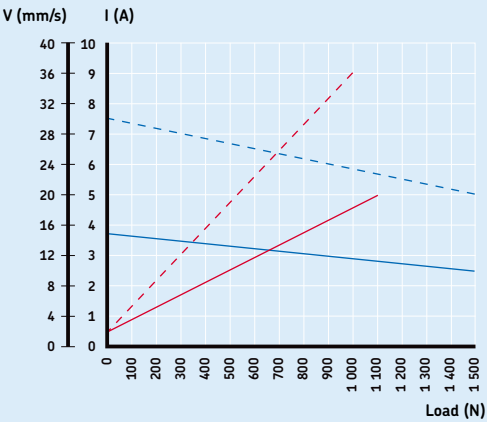
Technical data

	Unit	CAR 22
Push load	N	1 000 to 1 500
Pull load	N	1 000 to 1 500
Speed (full load to no load)	mm/s	10 to 30
Stroke	mm	50 to 300
Retracted length	mm	S+ 205
Voltage	V DC	12 or 24
Power consumption	W	9
Current consumption 12 V DC	A	9
24 V DC	A	5
Duty cycle	%	25
Ambient temperature	°C	-20 to +70
Type of protection	IP	44
Weight	kg	1,2 to 1,6

Performance diagrams



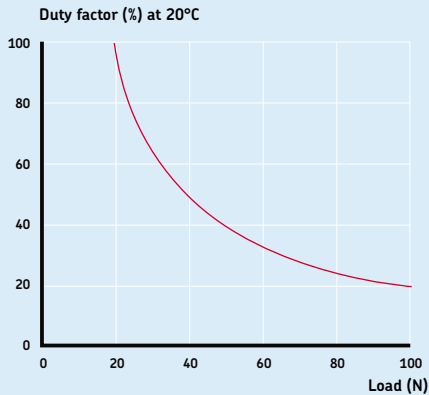
CAR 22.../D12B



CAR 22.../D24B

Gear 1 — V (mm/s)
— I (A)
Gear 2 - - - V (mm/s)
- - - I (A)

Duty cycle



Ordering key

Dynamic load (N) / Speed (mm/s)		Motor options	
1 500/xx	1 000/xx	No motor	0000
1 500/15-10	1 000/30-20	12 V DC, flat motor, IP44	D12B
1 500/15-10	1 000/30-20	24 V DC, flat motor, IP44	D24B

1

2

CAR

R

L

22X

050

100

150

200

300

Type

Motor assembly:

Right

Left

Stroke (S):

50 mm

100 mm

150 mm

200 mm

300 mm

Other stroke lengths

Options written in italic fonts are only available on demand. Please contact SKF.

Linear actuator CAT 33H

Benefits

- Small
- Compact
- Robust
- Lubricated for service life
- High speed
- Modular
- Digital encoder feedback



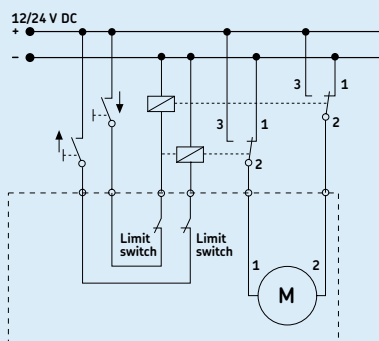
Suitable control units and accessories

Control units		Encoder
	CAED 5-24R	CAED 9-24R
	E2*	
	C12C	
	D12C	
	C24C	
	C24CW	
	D24C	
	D24CB	
	D24CS	
	D24CW	
	CAES 31C	

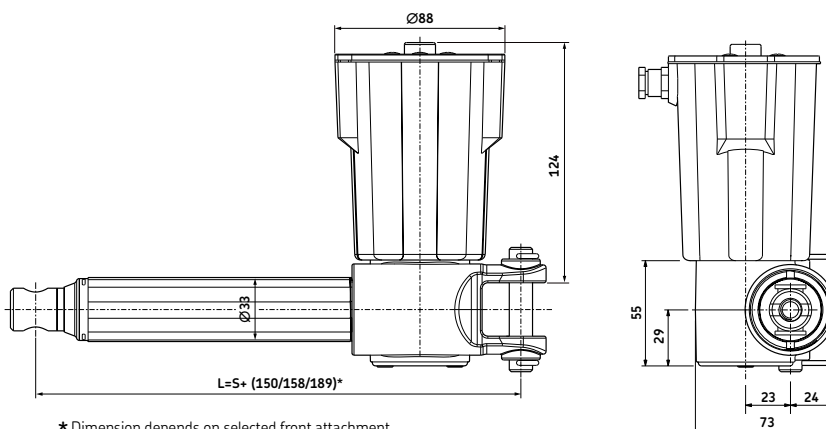
- Hand switch
- Foot switch
- Desk switch

* See page 396

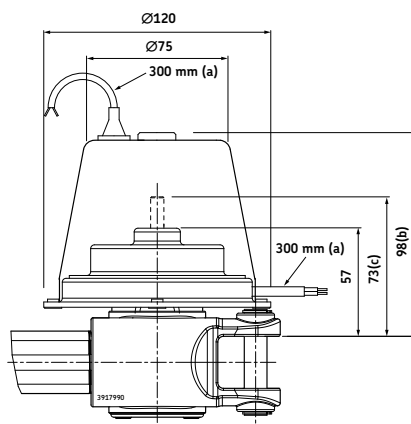
Connecting diagram



Dimensional drawing



* Dimension depends on selected front attachment



Legend:
S = stroke
L = retracted length
(a) = cable length
(b) = cover for brake (D24CB)
(c) = extended shaft (D24CS)

D12C, D24C, D24CB, D24CS, D24CW

See drawings of front and rear attachments and motor options on page 286.

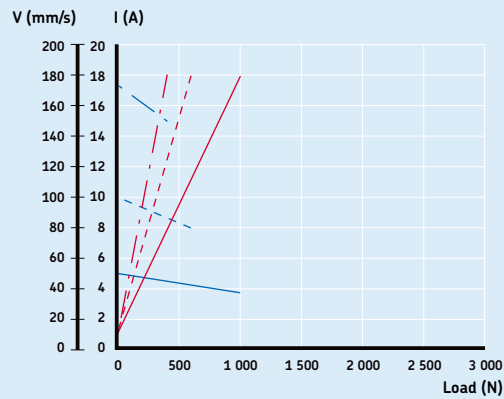
Technical data

Unit	CAT 33H
Push load	N
Pull load	N
Speed (full load to no load)	mm/s
Stroke	mm
Retracted length	mm
Voltage	V DC
Power consumption	W
Current consumption 12 V DC	A
24 V DC	A
24 V DC	A
Duty cycle	%
Ambient temperature	°C
Type of protection	IP
Weight	kg

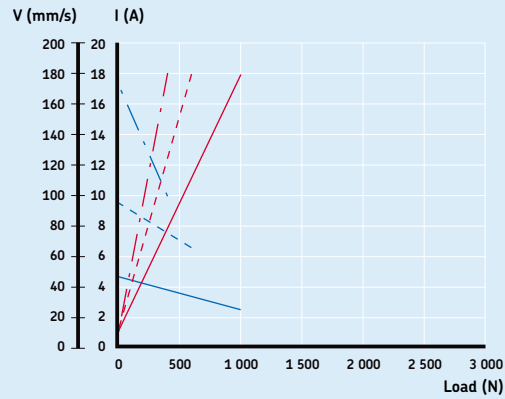
¹Depending on selected motor

²Dimension depends on selected front attachment

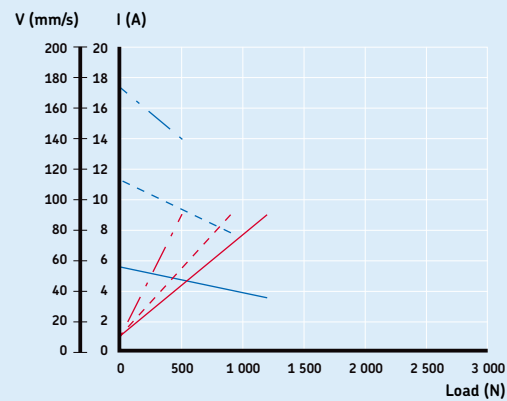
Performance diagrams



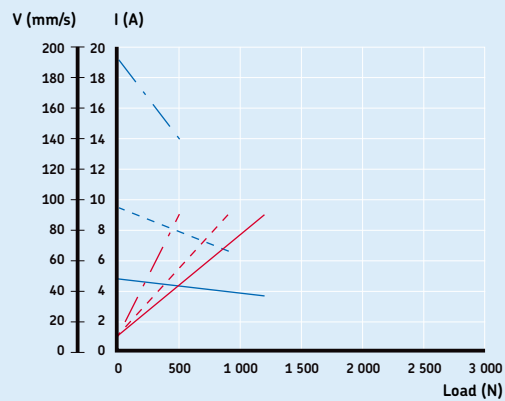
CAT 33H.../C12C



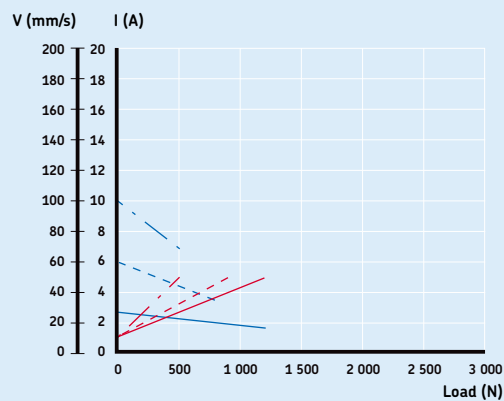
CAT 33H.../D12C



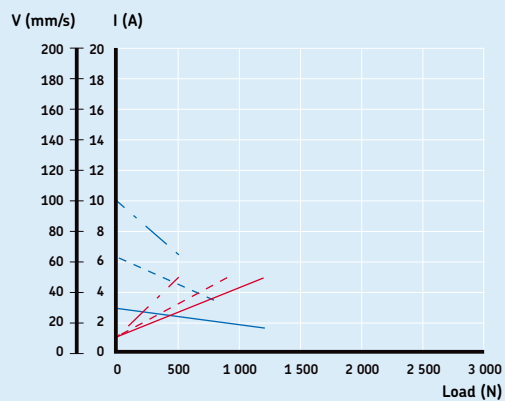
CAT 33H.../C24C



CAT 33H.../D24C/D24CB/D24CS



CAT 33H.../C24CW



CAT 33H.../D24CW

Gear 1 ——— V (mm/s)
 ——— I (A)
 Gear 2 - - - - V (mm/s)
 - - - - I (A)
 Gear 4 · · · · V (mm/s)
 · · · · I (A)

Ordering key

Dynamic load (N) / Speed (mm/s)			Motor options	
1 200/xx	900/xx	600/xx	No motor	0000
1 000/50-38	600/100-80	400/174-150	12 V DC, IP44 (65)	C12C
1 000/47-25	600/95-65	400/170-100	12 V DC, flat motor, IP44	D12C
1 200/56-36	900/113-79	500/174-140	24 V DC, IP44 (65)	C24C
1 200/27-17	800/60-35	500/100-69	24 V DC, low speed, IP44 (65)	C24CW
1 200/48-37	900/95-66	500/193-140	24 V DC, flat motor, IP44	D24C
1 200/48-37	900/95-66	500/193-140	24 V DC, flat motor, brake, IP20	D24CB
1 200/48-37	900/95-66	500/193-140	24 V DC, flat motor, ext. shaft, IP44	D24CS
1 200/30-17	800/63-35	500/100-65	24 V DC, flat motor, low speed, IP44	D24CW
1	2	4		

Type

Motor assembly:

Right
Left

L
R

Stroke (S):

100 mm
200 mm
300 mm
400 mm

100
200
300
400

Other stroke lengths

Rear attachment (see page 286):

Fork ear, Ø=12,0 mm
Fork ear, Ø=12,7 mm
Single ear, Ø=12,0 mm
Single ear, Ø=12,7 mm

A1
A2
K1
K2

Front attachment (see page 286):

Hole, Ø=12,0 mm
Hole, Ø=12,7 mm
Male thread, M12
Female thread, M12
Fork ear, Ø=10,1 mm

G1
G2
G3
G4
G5

Feedback:

No encoder (no code)
Encoder (for all standard motors)

E2

Option:

Friction clutch (not available with option encoder)
No friction clutch

F
Z

Option for CxxC motors:

No cable
EMC filter
Motor without cover
IP65 (mandatory to state type of cable T2 or T2P)
Straight cable, 2,0 m, no plug
Straight cable, 2,0 m, jack plug

U
M
N
I
T2
T2P

Options written in italic fonts are only available on demand. Please contact SKF.

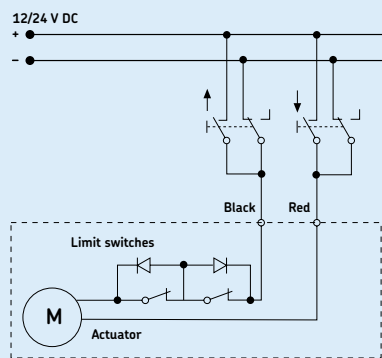
Linear actuator CAHB-10 series

Benefits

- ACME screw drive
- Extension tube (aluminium)
- Protection tube (aluminium)
- Zinc alloy gear housing
- Powder metal gears
- Self-locking

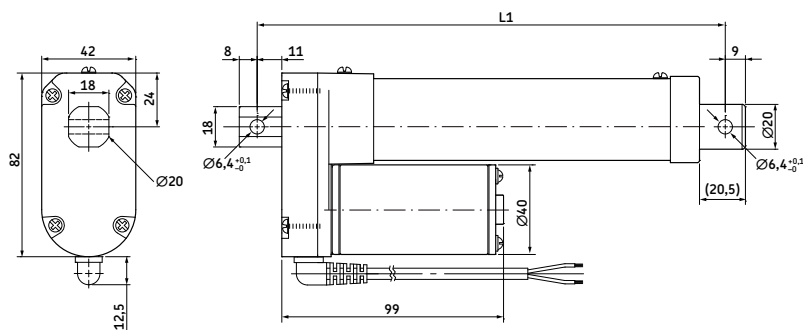


Connecting diagram



Dimensional drawing

Basic configuration



Legend:
L1 = retracted length

Stroke (mm)*	50	100	150	200	250	300
Retracted length (L1)	158	209	260	311	362	413

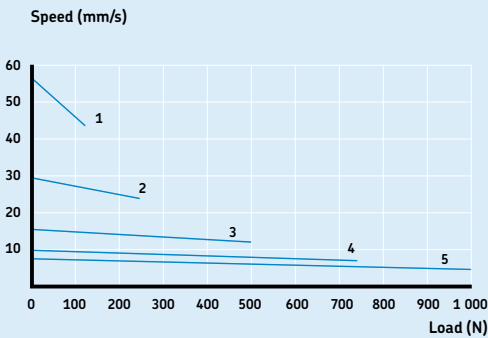
* Tolerance: S and L1: $\pm 2,0$ mm

Technical data

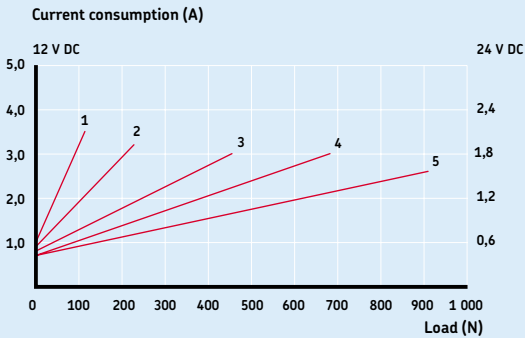
	Unit	CAHB-10... 1	CAHB-10... 2	CAHB-10... 3	CAHB-10... 4	CAHB-10... 5
Push load	N	120	240	500	750	1 000
Pull load	N	120	240	500	750	1 000
Speed (full load to no load)	mm/s	45 to 56	24 to 30	13 to 16	8 to 10	6 to 8
Stroke	mm	50 to 300	50 to 300	50 to 300	50 to 300	50 to 300
Retracted length	mm	—*	—*	—*	—*	—*
Voltage	V DC	12 or 24	12 or 24	12 or 24	12 or 24	12 or 24
Power consumption	W	N/A	N/A	N/A	N/A	N/A
Current consumption 12 V DC	A	3,5	3,2	3,0	2,8	2,6
Current consumption 24 V DC	A	2,2	2,0	1,8	1,8	1,6
Duty cycle	%	25	25	25	25	25
Ambient temperature	°C	–40 to +85	–40 to +85	–40 to +85	–40 to +85	–40 to +85
Type of protection	IP	66	66	66	66	66
Weight (at 300 mm stroke)	kg	1,5	1,5	1,5	1,5	1,5
Color	—	Silver	Silver	Silver	Silver	Silver

* see above table

Performance diagrams



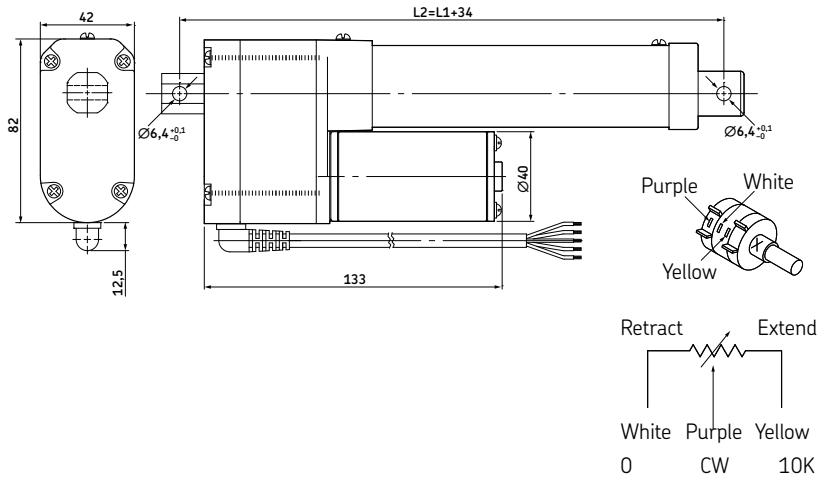
Speed-load diagram



Current-load diagram

Dimensional drawing

Optional potentiometer



Stroke (mm)*	50	100	150	200	250	300
Retracted length (L2)	192	243	294	345	396	447

* Tolerance: S and L2: $\pm 2,0$ mm

Potentiometer resolution

Stroke (mm)	50	100	150	200	250	300
Ohm/mm	94,4	94,4	47,2	47,2	15,72	15,72

Ordering key

C A H B - 1 0 - A - - - A - 0 - 0 0 0

Type

Voltage:

12 V DC
24 V DC

A
B

Load:

120 N
240 N
500 N
750 N
1 000 N

1
2
3
4
5

Screw:

ACME screw

A

Stroke:

50 mm
100 mm
150 mm
200 mm
250 mm
300 mm

050
100
150
200
250
300

Retracted length:

Stroke

50 mm
100 mm
150 mm
200 mm
250 mm
300 mm

w/o POT*
158 mm
209 mm
260 mm
311 mm
362 mm
413 mm

with POT*
192 mm
243 mm
294 mm
345 mm
396 mm
447 mm

IP:

Standard (IP 66)

A

Front attachment:

Standard (hole: Ø= 6,4 mm)
Customized

A
X

Rear attachment:

Standard (hole: Ø= 6,4 mm)
Customized

A
X

Option 1:

None
Potentiometer

0
P

Option 2:

None
Thermal protection

0
T

* POT= Potentiometer

Linear actuator CALA 36A

Benefits

- Compact
- Lubricated for service life
- Corrosion resistant
- High operating reliability
- Selection of front attachments
- Limit switches as accessories

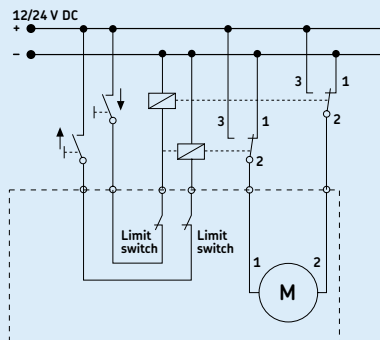


Suitable control units and accessories

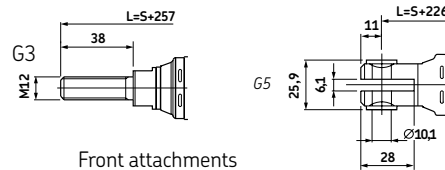
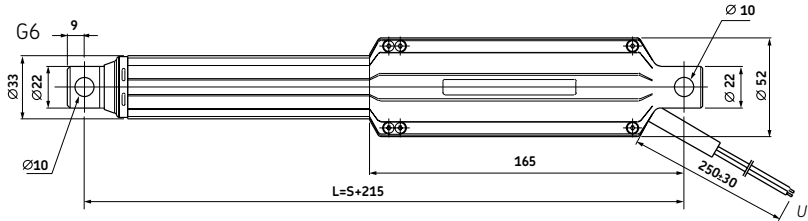
	Control units					Limit switch
	VCU 5	VCU 8	VCU 9	BCU 5	BCU 8	CAED 3-24R
CALA 36A 12V						
CALA 36A 24V						
CAES 31C						
EHA3						
STJ						
STE						
Hand switch						
Foot switch						
Desk switch						

★ See page 394

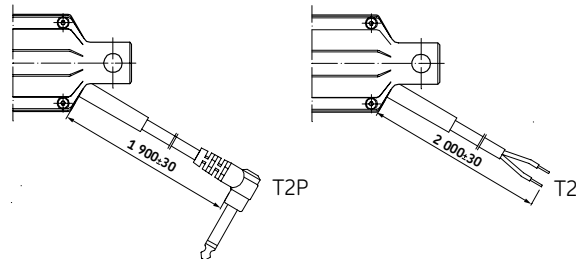
Connecting diagram



Dimensional drawing



Front attachments



Rear attachments

Legend:
S = stroke
L = retracted length

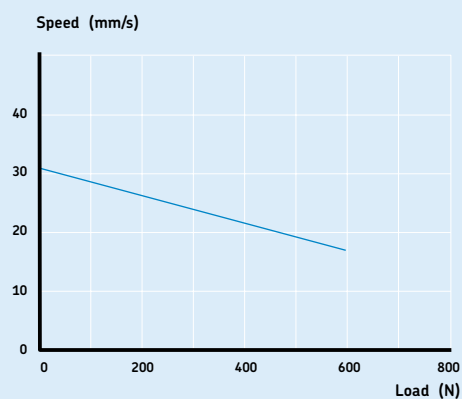
Technical data

	Unit	CALA 36A
Push load	N	600
Pull load	N	600
Speed (full load to no load)	mm/s	17 to 31 ¹⁾
Stroke	mm	50 to 200
Retracted length	mm	S+215/226/257 ²⁾
Voltage	V DC	12 or 24
Power consumption	W	N/A
Current consumption 12 V DC	A	4,4
24 V DC	A	2,2
Duty cycle	%	5
Ambient temperature	°C	0 to +50
Type of protection	IP	44
Weight	kg	0,9 to 1,4
Color	—	Black

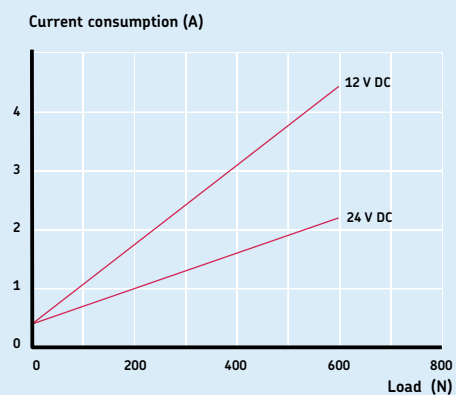
¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

Performance diagrams



Speed-load diagram



Current-load diagram

Ordering key

C A L A 3 6 A X			X 4	/		
Type						
Stroke (S):						
50 mm		050				
100 mm		100				
150 mm		150				
200 mm		200				
Other stroke lengths		---				
Front attachment:						
Male thread, M12				G3		
Fork end, Ø=10,1 mm				G5		
Hole, Ø=10,0 mm				G6		
Voltage:						
12 V DC					D12	
24 V DC					D24	
Cable:						
Straight 0,25 m, no plug						U
Straight 1,9 m, no plug						T2
Straight 1,9 m, jack plug						T2P
Straight, 2,5 m, DIN8 plug (for BCU/VCU)						C5

Options written in italic fonts are only available on demand. Please contact SKF.

Linear actuator CAT 21B

Benefits

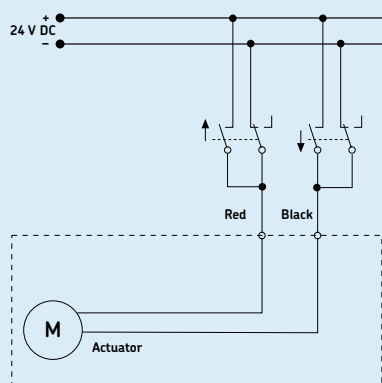
- Compact design (efficient and cost effective)
- Ball screw technology
- High operating reliability
- Low energy consumption
- Lubricated for service life
- Corrosion resistant
- Silent operation
- Range of front and rear attachments



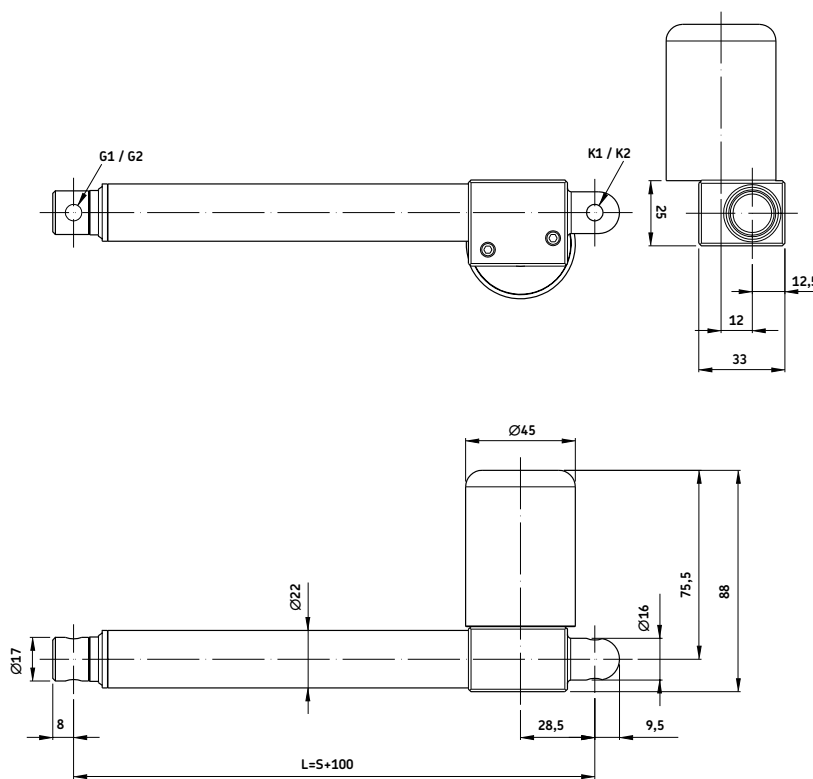
Suitable control units and accessories

Control units						
		VCU 5	VCU 8	VCU 9	BCU 5	BCU 8
CAT 21B		●	●	●	●	●
	EHA3	●	●	●	●	●
	STJ	●	●	●	●	●
	STE	●	●	●	●	●

Connecting diagram



Dimensional drawing

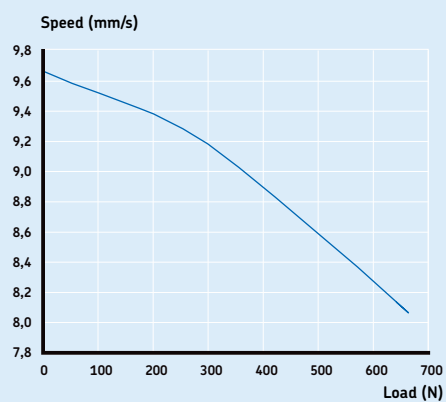


Legend:
S = stroke
L = retracted length

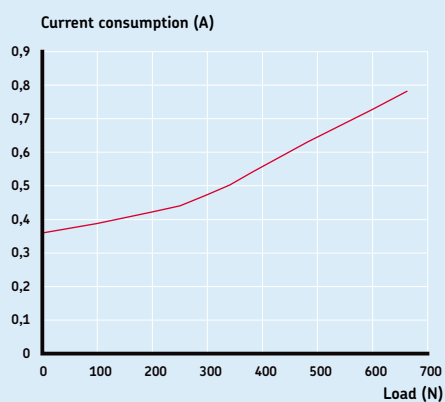
Technical data

	Unit	CAT 21B
Push load	N	600
Pull load	N	600
Speed (full load to no load)	mm/s	8,1 to 9,7
Stroke	mm	50 to 300
Retracted length	mm	S+100
Voltage	V DC	24
Power consumption	W	N/A
Current consumption	A	0,7
Duty cycle	%	see diagram on next page
Ambient temperature	°C	N/A
Type of protection	IP	×4
Weight	kg	0,7 to 1,5
Color	—	Black

Performance diagrams

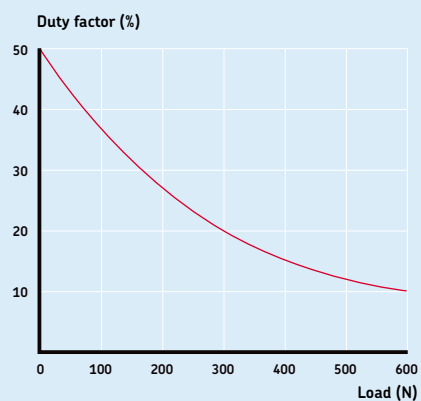


Speed-load diagram



Current-load diagram

Duty factor diagram



Ordering key

CAT

21B

X

X1

Z

/

Type

Motor assembly:
Right
Left

R
L

Stroke (S):
50 mm
100 mm
200 mm
250 mm
300 mm
Other stroke lengths

050
100
200
250
300

Rear attachment:
Single ear, hole diameter 6,35 mm
Single ear, hole diameter 8 mm

K1
K2

Front attachment:
Hole diameter 6,35 mm
Hole diameter 8 mm

G1
G2

Motor option:
24 V DC

G24C

Cable option for motors:
Straight cable 610 mm, without plug
Straight cable 2500 mm, DIN8 plug

06
C5

Options written in italic fonts are only available on demand. Please contact SKF.

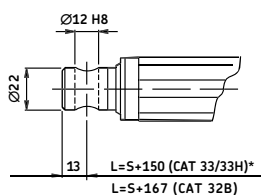
Options

Standard options	Customer options (available on request)
Right or left handed motor orientation. With or without motor cover.	Encoder and feedback options Adjustable or fixed position limit switches Special front and rear attachments Special colors and gear house engravings Special wiring and connectors Special lead screws and nut combinations 12 V DC motor in quantity of 100 pcs. or greater

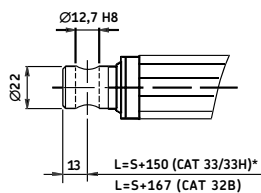
If in any application there is a risk that the actuator mechanically runs into the end stop, we recommend that you use the limit switch option.

Detailed drawings of front and rear attachments for CAT and CAP43 and motor options for CAT

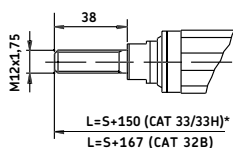
Front attachments and retracted length



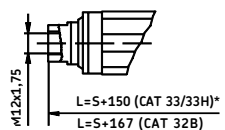
G1



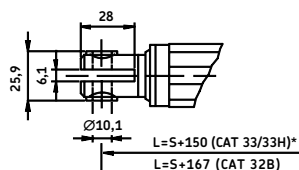
G2



G3



G4



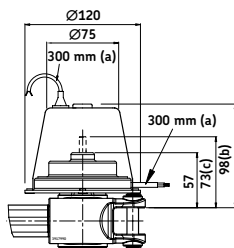
G5

Legend:

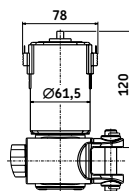
- (a) = cable length
- (b) = cover for brake
- (c) = extended shaft
- S = stroke
- L = retracted length

*If S = 400, add 50 mm to retracted length.

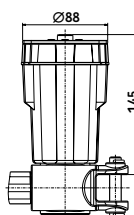
Motor options for CAT



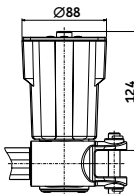
D12C, D24C, D24CB, D24CS, D24CW



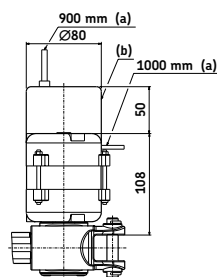
C12CN, C24CN, C24CWN



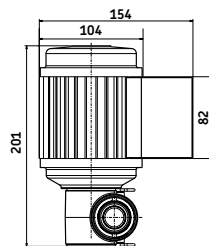
C12CM, C24CM, C24CWM



C12C, C24C, C24CW

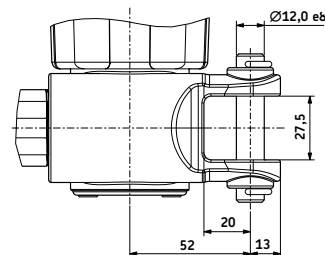


E110C, E110CB, E220C, E220CB

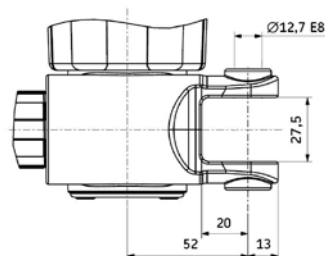


E380C

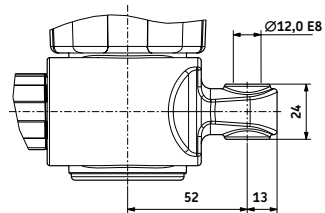
Rear attachments



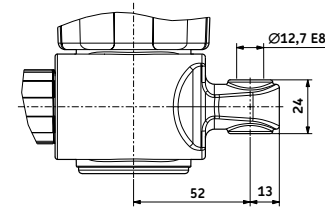
A1



A2



K1



K2

Linear actuators – No motor

CARN 32	290
CCBR 32	294

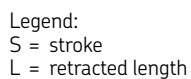
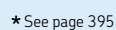
Linear actuator CARN 32

Benefits

- Industrial reliable and robust actuator



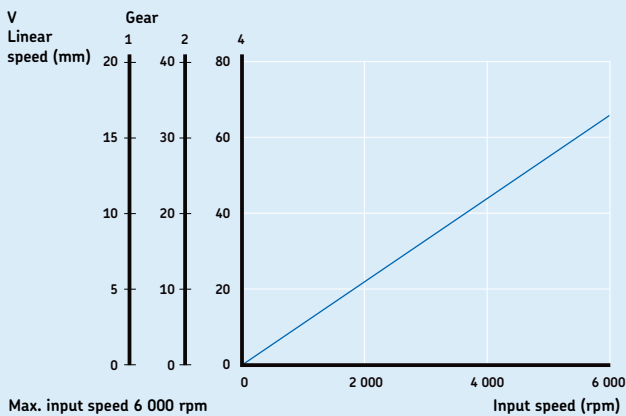
Dimensional drawing



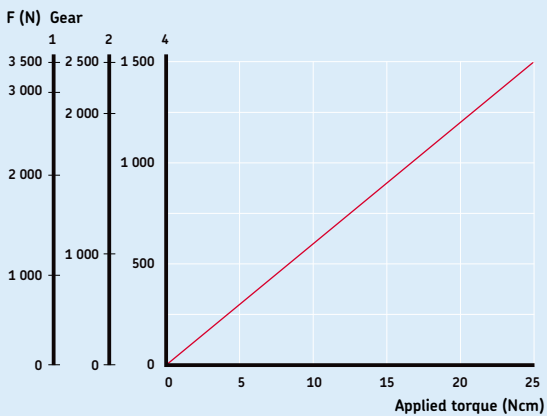
Unit CARN 32

Push load	N	3 500
Pull load	N	3 500
Stroke	mm	50 to 700
Retracted length	mm	S+218
Ambient temperature	°C	-20 to +70
Weight	kg	0.8 to 3.3

Performance diagrams



Linear speed "V" as a function of input speed



Available force "F" as a function of applied torque

Technical data

Designation type code	Gear ratio	Ball screw lead
	–	mm
CARN 32×S×1	1:25,0	4
CARN 32×S×2	1:12,5	4
CARN 32×S×4	1:6,25	4

Ordering key

		CARN32		X		X		/	
Type									
Stroke (S):									
50 mm	050								
100 mm	100								
200 mm	200								
300 mm	300								
500 mm	500								
700 mm	700								
Other stroke lengths	---								
Gear ratio:									
1:25	1								
1:12,5 (max. load 2 500 N)	2								
1:6,25 (max. load 1 500 N)	4								
Option:									
Friction clutch	F								
Back-up nut	S								

Options written in italic fonts are only available on demand. Please contact SKF.

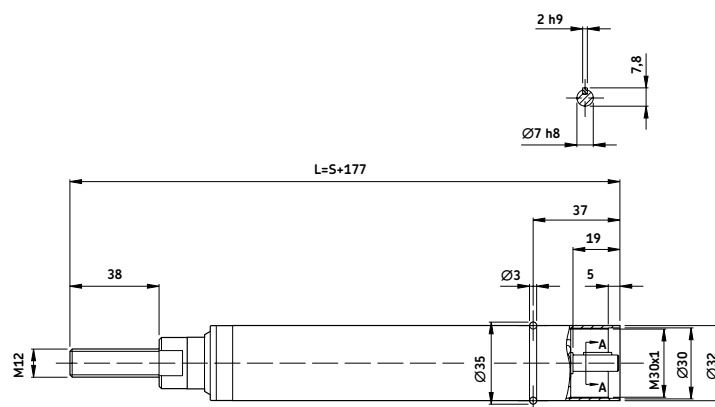
Linear actuator CCBR 32

Benefits

- Industrial reliable and robust actuator



Dimensional drawing

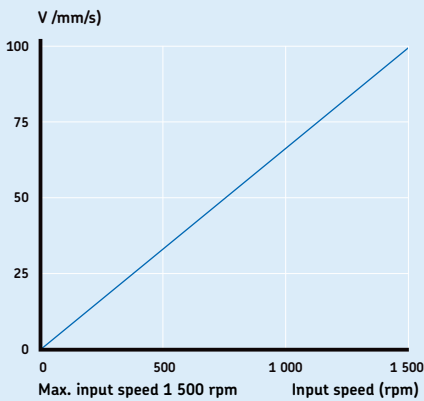


Legend:
S = stroke
L = retracted length

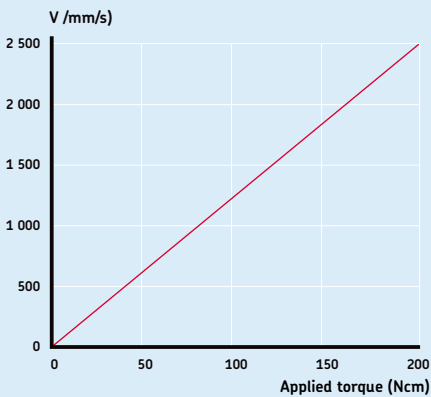
Technical data

	Unit	CCBR 32
Push load	N	2 500
Pull load	N	2 500
Stroke	mm	50 to 700
Retracted length	mm	S+177
Ambient temperature	°C	–20 to +70
Weight	kg	1,1 to 1,5

Performance diagrams



Linear speed “V” as a function of input speed

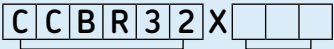


Available force “F” as a function of applied torque

Technical data

Designation type code	Max. dynamic load	Max. static load	Ball screw lead
	N	N	mm
CCBR 32XS	2 500	5 400	4

Ordering key



Type

Stroke (S):

50 mm	050
100 mm	100
200 mm	200
300 mm	300
500 mm	500
700 mm	700
50<S<700 mm (S>700 mm contact SKF)	---

Rotary actuators

CRAB 17	300
CRAB 05	306

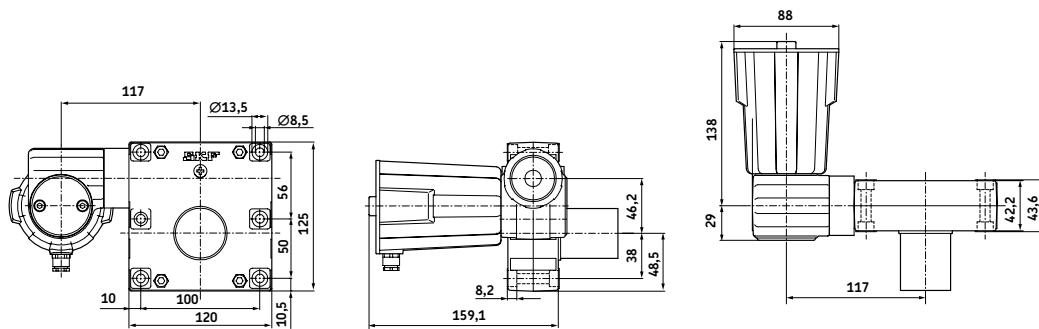
Rotary actuator CRAB 17

Benefits

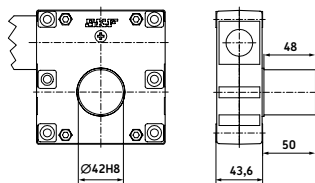
- Multiple output shafts
- Multiple motor options
- Small and compact



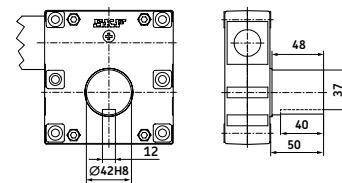
Dimensional drawing



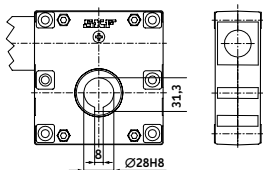
Standard shaft design



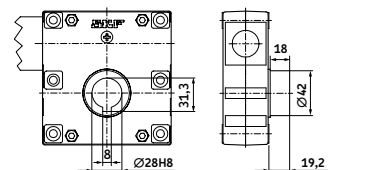
Type code 1: solid



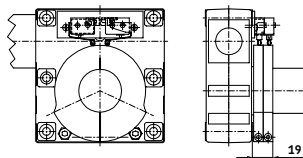
Type code 2: solid/keyway



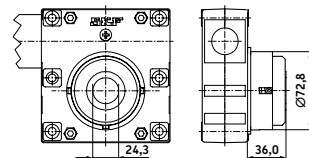
Type code 3: hollow/keyway



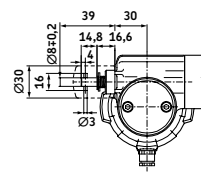
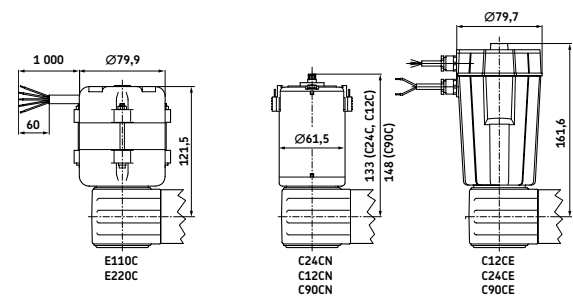
Type code 4: hollow/keyway for limit switch



S - Limit switch unit

Type code 5: hollow/spines
Emergency manoeuvring, release on shaft (push) hollow shaft with splines

Motor design

A - Emergency manoeuvring,
gearhouse for hand crank

Technical data

	Unit	CRAB 17
Max. angular working range	—	∞
Max. angular speed (theoretical)	°/s	180
Efficiency factor	%	50
Max. axial load	N	5 000
Max. tilt moment	Nm	100
Backlash	°	±0,25
Start torque	Nm	≈0,3 Nm
Temperature range	°C	−20 to +60
Weight	kg	3

Performance diagrams

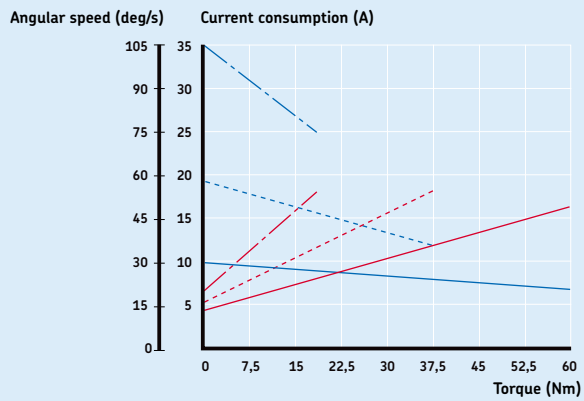


Diagram for motor C12C

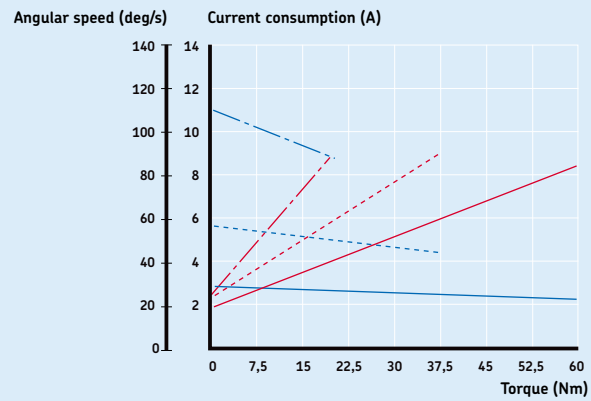


Diagram for motor C24C

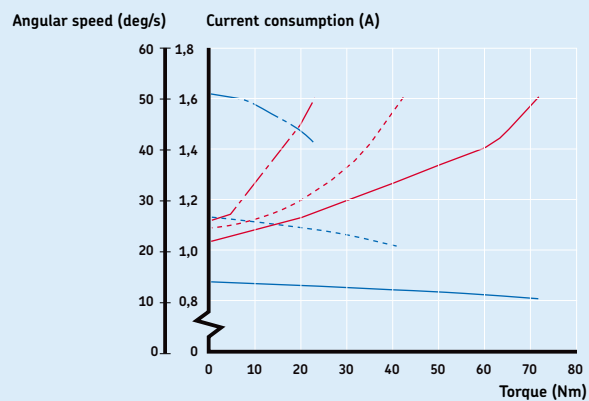


Diagram for motor E110C

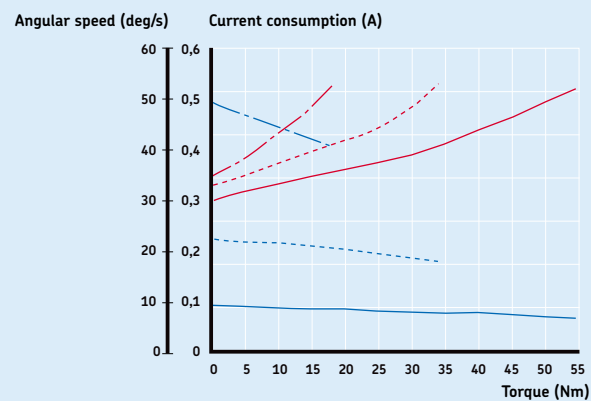


Diagram for motor E220C

Gear 1 — Angular speed (deg/s)
 — Current consumption (A)
 Gear 2 - - Angular speed (deg/s)
 - - Current consumption (A)
 Gear 4 ··· Angular speed (deg/s)
 ··· Current consumption (A)

Ordering key

Dynamic load (Nm) /Speed (deg/s)			Motor options	
60/30	38/58	19/110	12 V DC	C12C
60/30	38/58	19/110	24 V DC	C24C
105/30	53/55	38/110	90 V DC	C90C
70/13	40/27	22/52	120 V AC/60 Hz	E110C
55/13	34/27	18/52	230 V AC/50 Hz	E220C
1	2	4		

C R A B 1 7 X X X X /

Type

Emergency manoeuvre:

- None
- Hand crank
- Release on shaft (only with standard shaft N° 5)

-
A
B

Shaft design:

- Solid
- Solid / keyway
- Hollow / keyway
- Hollow / keyway for limit switch
- Hollow / splines
- Customer specification

1
2
3
4
5
6

Limit switch:

- No
- Yes (fits shaft N° 1, 2, 4 and 5)

-
S

Motor orientation:

- Rear
- Upwards
- Front
- Downwards

R
U
F
D

Motor assembly:

- Right
- Left

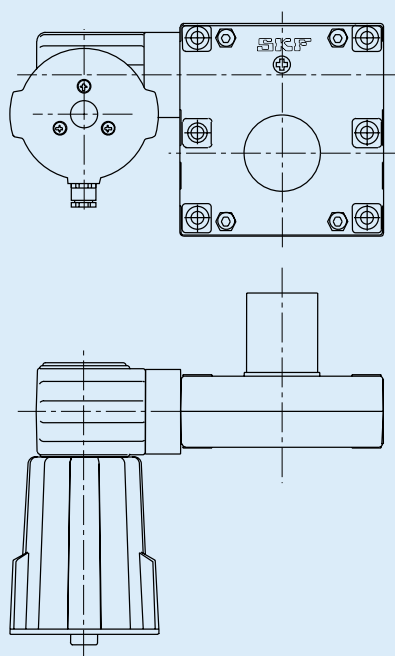
R
L

Option for CxxC motors:

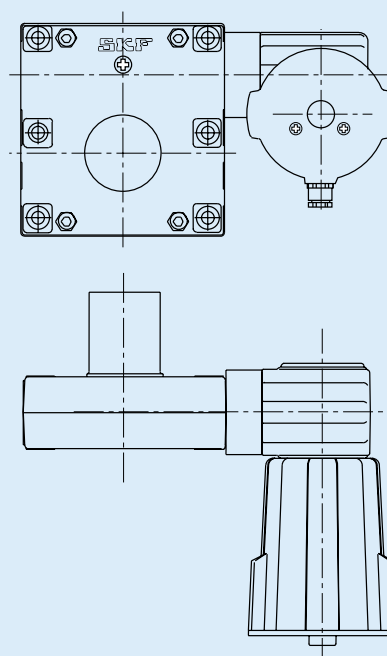
- No cable
- Encoder
- Motor without cover
- EMC filter
- Straight, 2,0 m
- Jack plug, 2,0 m

-
E2
N
M
T2
T2P

Motor assembly

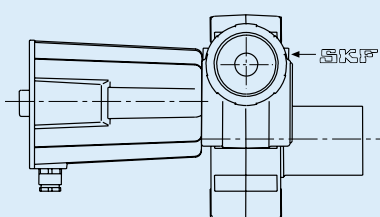


Left (L)

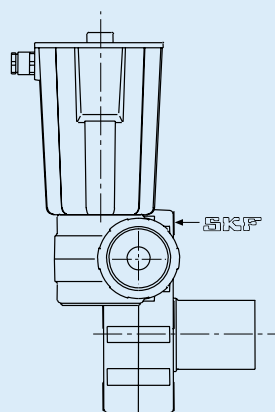


Right (R)

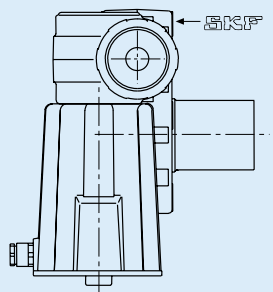
Motor direction



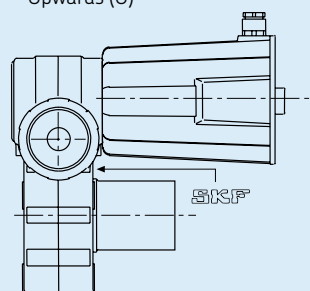
Rear (R)



Upwards (U)



Downwards (D)



Front (F)

A large rectangular area filled with a light blue grid pattern, intended for taking notes. The grid consists of small squares and covers most of the page area below the header and above the footer.

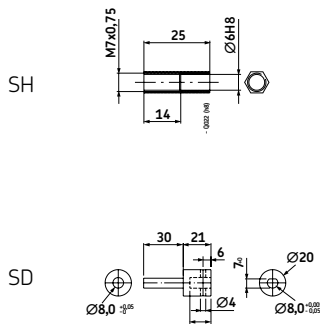
Rotary actuator CRAB 05

Benefits

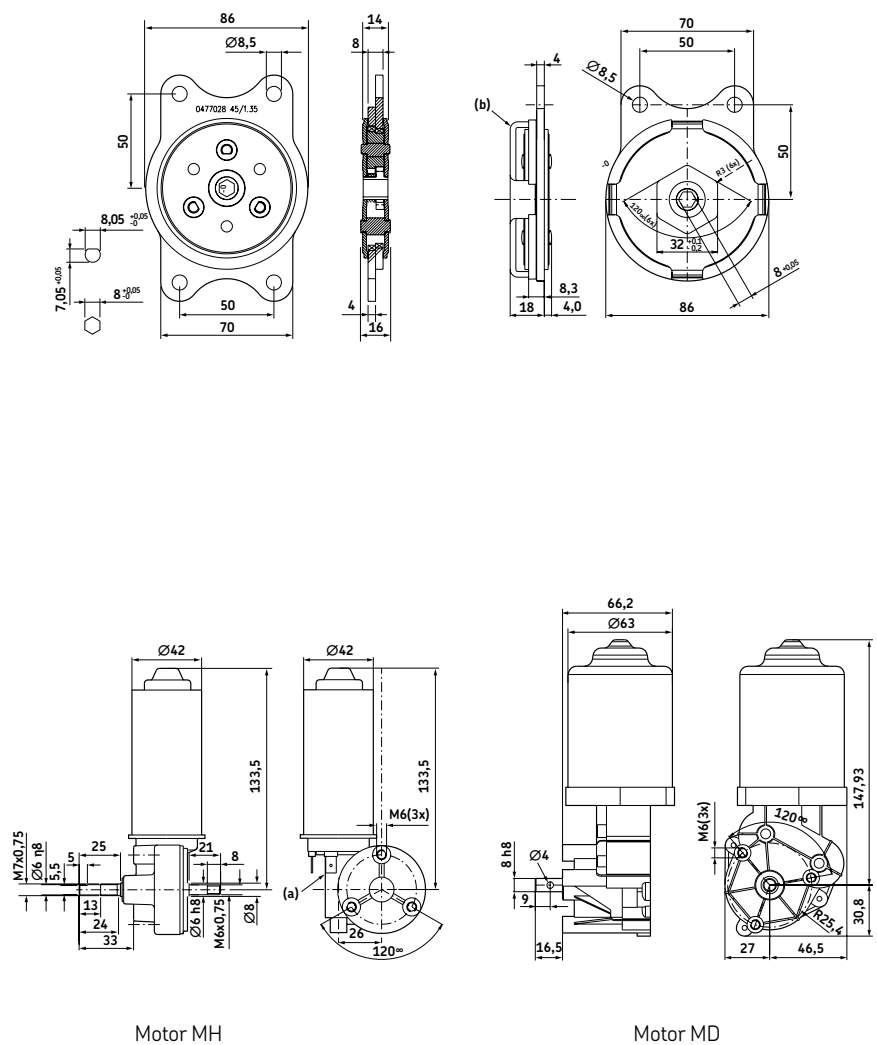
- Multiple output shafts
- Multiple motor options
- Small and compact



Connecting shafts



Dimensional drawing

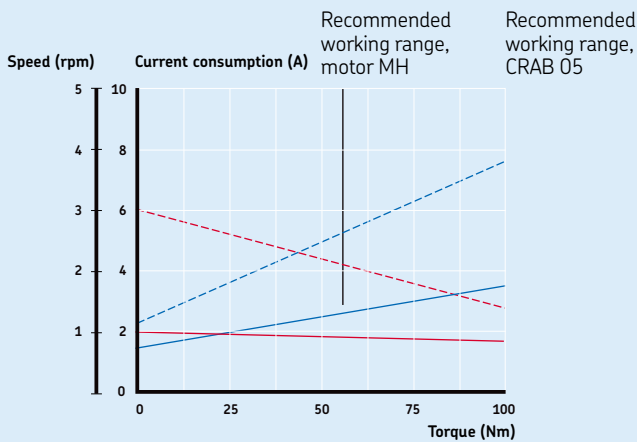


Legend:
 (a) = Blade terminal 6,3 × 0,8 DIN 46244
 (b) = Drive cross not fixed to gear. Hardened 45HRC

Technical data

	Unit	CRAB 05
Max. dynamic output torque	Nm	100
Max. dynamic input torque	Nm	4,4
Max. radial force	N	200
Efficiency	%	30 to 40
Service life		10 000 cycles at max. dynamic load
		10 000 cycles at max. dynamic load
Duty factor at max. dynamic force	%	50
Gear ratio	—	56:1 or 57:1
Max. input speed	rpm	300
Maintenance	—	Lubricated for life
Temperature (environment)	°C	+5 to +40
Temperature (product)	°C	max. +70

Performance diagram



Values given at 20°C and with tolerances of ±20%.

Ordering key

Type

Coating:

Black chromium-plated
Natural chromium-plated

Motor shaft connection:

D-hole
Hexagonal hole

Attachment/connection:

Outer connection ears (see Fig.A)
Centre connection hexagonal 32 mm (see Fig.B only option "C" and "H")

Motors:

No motor
24 V DC for motor shaft connection "D"
24 V DC for motor shaft connection "H"

Connection shaft:

No shaft
D-shaft
Hexagonal shaft

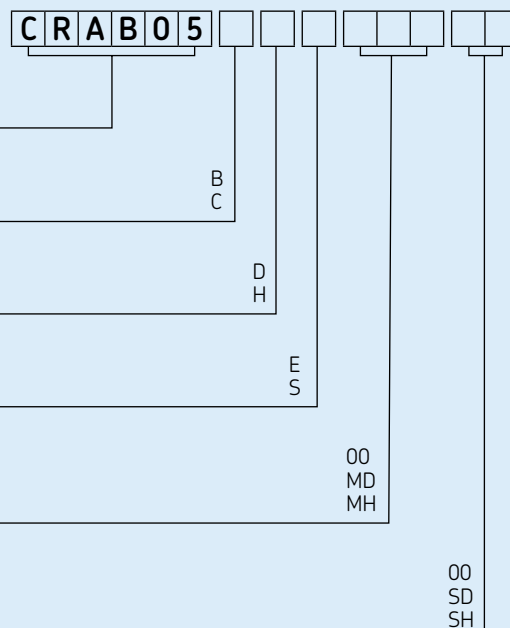


Fig. A

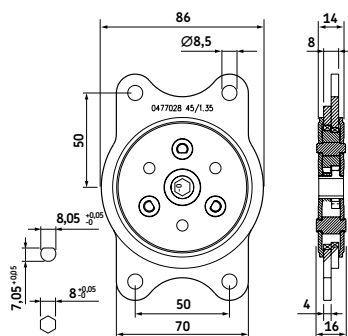
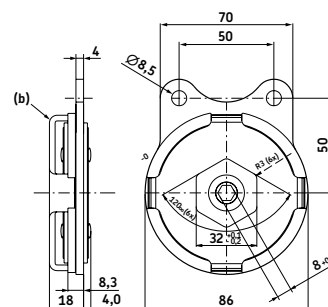


Fig. B





Control units

SCU	312
VCU	316
BCU	320
CAJC	324
CB	326
MCU.....	328
LD	330
CAED ANR	334
CAED	336
CAEV	338

Control unit SCU

Benefits

- Compact 6-channel actuator control unit
- Single fault safety
- Overload and over-temperature protection
- Approved for medical applications
- Easy to clean
- Low standby current
- Remote control RS232

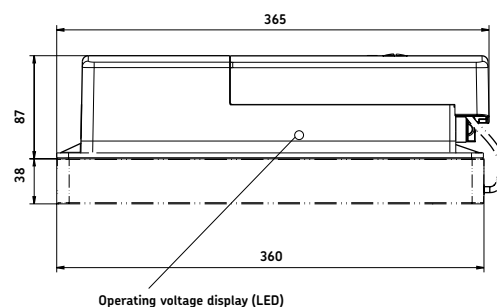


Suitable actuators, pillars and accessories

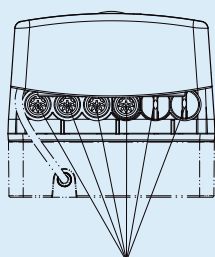
	Linear actuators						Pillars				
	Magdrive	RU20, RU21, RU22	RU23, RU24, RU25	MAX 1	MAX 3	ECOMAG	THG	TLG	TLT	TFG 10	
SCU 1	•	•	•	•	•	•	•	•	•	•	•
SCU 5	•	•	•	•	•	•	•	•	•	•	•
SCU 9	•	•	•	•	•	•	•	•	•	•	•

Hand switch
 Foot switch
 Desk switch

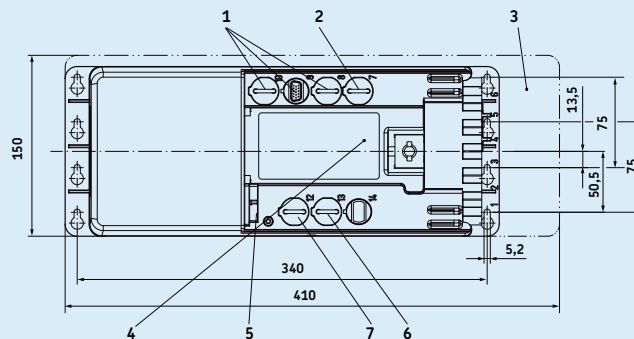
Dimensional drawing



Connecting diagram



Up to 6 connections
with DIN8 plug

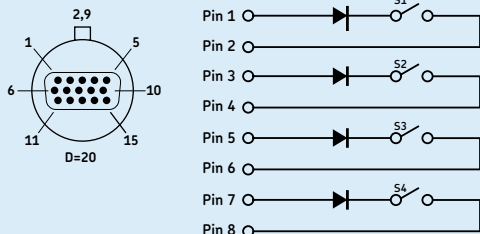


1. Two connections for HD15 operating devices
2. HD15 limit switch connection
3. Additional space for mounting
4. Data plate software
5. Mains connection
6. Communication interface (optional)
7. D-Sub 9 battery connection (optional)

Technical data

	Unit	SCU 1	SCU 5	SCU 9
Motor ports	#	6	3 or 6	3 or 6
Operating device ports	#	3	3	3
Battery ports	#	1	1	1
Limit switch ports	#	4	4	4
Single fault safety	yes/no	yes	yes	yes
Encoder processing	yes/no	yes	yes	yes
Input voltage	V	24 DC	120 AC	230 AC
Frequency	Hz	N/A	60	50
Input current (max)	A	30	6,5	3,3
Standby power	W	0,8	4,3	4,3
Output voltage	V DC	24	24	24
Output current (max)	A	30	18	18
Duty cycle: intermittent	min.	1 min./9 min.	1 min./9 min.	1 min./9 min.
Duty cycle: short time	min.	2	2	2
Ambient temperature	°C	+5 to +40	+5 to +40	+5 to +40
Humidity	%	5 to 85	5 to 85	5 to 85
Type of protection	IP	x4	x4	x4
Approvals	EN/UL	EN 60601-1 UL 60601-1	EN 60601-1 UL 60601-1	EN 60601-1 UL 60601-1
Weight without battery	kg	1,2	3,8	3,8
Weight with battery	kg	4,2	6,8	6,8

Pinning of HD15 limit switch connection

Function	Pin	Wire color (ZKA-160627-2500)	Connecting diagram
Switch 1	2	brown/green	
Switch 2	4	red/blue	
Switch 3	6	violet	
Switch 4	8	red	
24 V DC (com)	1, 3, 5, 7	white/yellow, white/green, grey/pink, black	
Optional external power supply for binary outputs	9	blue	
Binary output 1 (22-40 V DC/1 A)	10	pink	
Binary output 2 (22-40 V DC/1 A)	11	grey	
GND for binary outputs	12	yellow	
20-24 V DC, max. 50 mA	13	green	
5 V DC pulsed	14	brown	
GND	15	white	

Accessories			
Description	Plug	Designation	Order N°
Mains cable, 3 pole	SEV	ZKA-160638-3500	M/0118822
Mains cable, 3 pole	UL	ZKA-160639-3500	M/0105588
Mains cable, 3 pole	UK	ZKA-160609-3500	M/0105631
Mains cable, 3 pole	UL, hospital grade	ZKA-160640-3500	M/0118823
Battery pack 2,7 Ah		ZBA-160208-0400	M/0118806
Rack for 4,5 Ah battery		ZBA-160207-1000	M/0121266
Detachable battery 4,5 Ah		ZBA-160209	M/0119846

Ordering keys

Type

SCU control unit

Voltage:

24 V DC (only for 6-channel version)
 120 V AC, 60 Hz, class I
 230 V AC, 50 Hz, class I

1
 5
 9

Number of channels:

3 channels
 6 channels

3
 6

Battery:

None (only for SCU16)
 Prepared for adoption of battery

1
 2

Transformer:

None (only for SCU16)
 Standard (AC version)

0
 3

Interface:

Without RS232
 With RS232 (only for 6-channel version)

0
 1

SCU - 003 - 0000

EACH SCU NEEDS A SCP

Type

SCU parameterization

Functionality:

All channels individually
 Channel 2+1(+1+1+1)
 Six (6) channel version 2+2+1+1
 Three (3) channel version, all channels synchronously
 Six (6) channel version 3+1+1+1
 Six (6) channel version 4+1+1
 Six (6) channel version, all channels synchronously
 Trendelenburg T+1 (+1+1)

11
 21
 22
 30
 31
 41
 60
 T1

Actuators:

A Ecomag
C TLT 10
E TFG10
M MAX, TLG, THG
R R20, R21, R22, MD22, MD23
U R23, R24, R25

3,7 A
 4,7 A
 5,7 A
 6,7 A
 8,5 A
 11,7 A

Actuator 1
 Actuator 2
 Actuator 3
 Actuator 4
 Actuator 5
 Actuator 6

-
 -
 -
 -*
 -*
 -*

Softstart:

Hard, start 0 pulses, stop 0 pulses
 Medium, start 12 pulses, stop 6 pulses

0
 3

SCP - 0000

The SCU solution offers many more possibilities than those given in the type keys.

Please feel free to ask for more functions like "virtual limit switches", "external limit switches" and so on.

Control unit VCU

Benefits

- Compact 5-channel actuator control unit
- Single fault safety
- Overload and over-temperature protection
- Approved for medical applications
- Easy to clean
- Low standby current



Suitable actuators, pillars and accessories

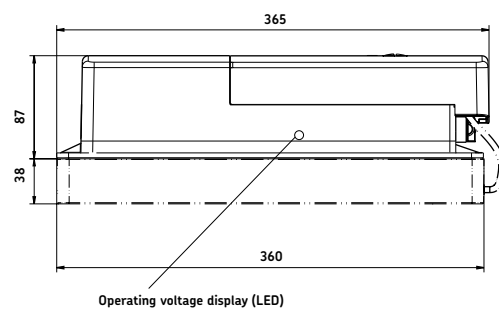
Linear actuators									Pillars								
		CALA 36A 24 V DC	CARE 33A 24 V DC	Magdrive	RU20, RU21, RU22	RU23, RU24, RU25	MAX 1	MAX 3	ECOMAG	THG	TLG	TLT	TFG 10	TXG 1	EHA 3	STJ	STE
VCU 5		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VCU 8		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
VCU 9		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

 Hand switch

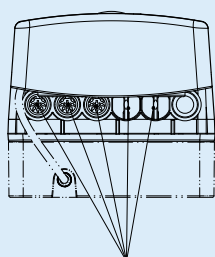
 Foot switch

 Desk switch

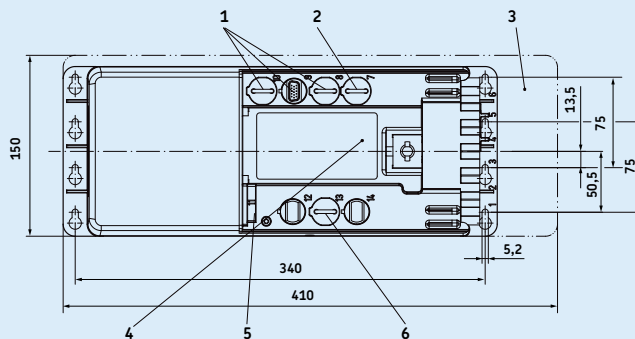
Dimensional drawing



Connecting diagram



Up to 5 connections
with DIN8 plug

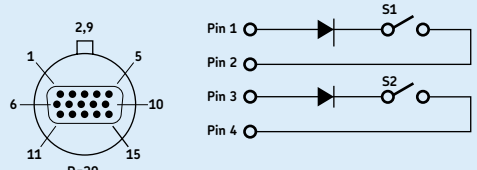


1. Two connections for HD15 operating devices
2. HD15 limit switch connection
3. Additional space for mounting
4. Data plate software
5. Mains connection
6. D-Sub 9 battery connection (optional)

Technical data

	Unit	VCU 5	VCU 8	VCU 9
Motor ports	#	3 or 5	3 or 5	3 or 5
Operating device ports	#	2	2	2
Battery ports	#	1	1	1
Limit switch ports	#	2	2	2
Single fault safety	yes/no	yes	yes	yes
Encoder processing	yes/no	no	no	no
Input voltage	V AC	120	230	230
Frequency	Hz	60	50	50
Input current (max)	A	2,5 resp. 6,5	1,3 resp. 3,3	1,3 resp. 3,3
Standby power	W	2,6 resp. 3,9	2,6 resp. 3,9	2,6 resp. 3,9
Output voltage	V DC	24	24	24
Output current (max)	A	7 resp. 18	7 resp. 18	7 resp. 18
Duty cycle: intermittent	min.	1 min./9 min.	1 min./9 min.	1 min./9 min.
Duty cycle: short time	min.	2	2	2
Ambient temperature	°C	+5 to +40	+5 to +40	+5 to +40
Humidity	%	5 to 85	5 to 85	5 to 85
Type of protection	IP	x4	x4	x4
Approvals	EN/UL	EN 60601-1 UL 60601-1	EN 60601-1 UL 60601-1	EN 60601-1 UL 60601-1
Weight without battery	kg	2,4 resp. 3,8	2,4 resp. 3,8	2,4 resp. 3,8
Weight with battery	kg	5,4 resp. 8,8	5,4 resp. 8,8	5,4 resp. 8,8

Pinning of HD15 limit switch connection

Function	Pin	Wire color (ZKA-160627-2500)	Connecting diagram
24 V DC (common)	1,3,5,7	white/yellow, white/green, grey-pink, black	
Switch 1	2	brown-green	
Switch 2	4	red-blue	
NC	6,8,10,11,12,14	violet, red, pink, grey, yellow, brown	
20-40 V DC, max. 500 mA	13	green	
GND	15	white	

Accessories

Description	Plug	Designation	Order N°
Mains cable, 2 pole	Euro	ZKA-160608-3500	M/0105726
Mains cable, 3 pole	Schuko	ZKA-160637-3500	M/0118821
Mains cable, 3 pole	SEV	ZKA-160638-3500	M/0118822
Mains cable, 3 pole	UL	ZKA-160639-3500	M/0105588
Mains cable, 3 pole	UK	ZKA-160609-3500	M/0105631
Mains cable, 3 pole	UL, hospital grade	ZKA-160640-3500	M/0118823
Battery pack 2,7 Ah		ZBA-160208-0400	M/0118806
Rack for 4,5 Ah battery		ZBA-160207-1000	M/0121266
Detachable battery 4,5 Ah		ZBA-160209	M/0119846

Ordering keys

Type

VCU control unit

Voltage:

120 V AC, 60 Hz, class I
 230 V AC, 50 Hz, class II
 230 V AC, 50 Hz, class I

Number of channels:

3 channels
 5 channels

Option 1:

No option (only VCU×3)
 Prepared for adoption of battery

Transformer:

7 A transformer
 18 A transformer (for 5-channel version only)

V C U - 0 0 3 - 0 - 0 0 0

5
 8
 9

3
 5

1
 2

1
 3

EACH VCU NEEDS A VCP

Type

VCU parameterization

Functionality:

All channels individually
 2 channels simultaneously + 1 or 3 individually
 2 + 2 channels simultaneously + 1 individually
 All channels simultaneously, only 3-channel version
 4 channels simultaneously + 1 individually, only 5-channel version
 All channels simultaneously, only 5-channel version
 Trendelenburg (2 channels) + 1 or 3 individually

11
 21
 22
 30
 41
 50
 T1

Actuators:

A	CALA 36A (24V DC), ECO30, ECO50	3,7 A	Actuator 1	-
C	CARE 33A (24 V DC), TLT10, TXG10 (EXG)	4,7 A	Actuator 2	-
E	TFG, ECO70, ECO90	5,7 A	Actuator 3	-
M	MAX, TLG, THG	6,7 A	Actuator 4	-*
R	RU20, RU21, RU22, MD22, MD23	8,5 A	Actuator 5	-*
U	RU23, RU24, RU25	11,7 A		

*for VCU×3: insert zero

Softstart:

Hard= start 0 ms, stop 0 ms
 Medium= start 400 ms, stop 200 ms

0
 3

V C P - - - - - - - - - 0 0 0

Control unit BCU

Benefits

- Compact 3-channel actuator control unit
- Single fault safety
- Overload and over-temperature protection
- Approved for medical applications
- Easy to clean
- Low standby current

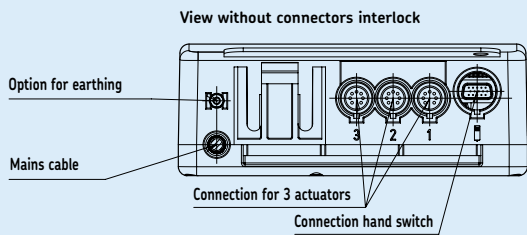


Suitable actuators, pillars and accessories

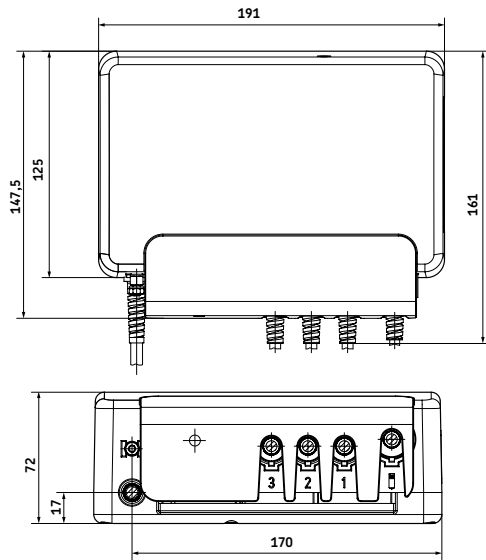
	Linear actuators							Pillars					
	CALA 36A 24 V DC	CARE 33A 24 V DC	Magdrive	RU20, RU21, RU22	MAX 1	MAX 3	ECOMAG	THG	TLG	TLT	TFG 10	TXG 1	
BCU 5	•	•	•	•	•	•	•	•	•	•	•	•	•
BCU 8	•	•	•	•	•	•	•	•	•	•	•	•	•

 Hand switch
 Foot switch
 Desk switch

Connecting diagram



Dimensional drawing



Technical data

	Unit	BCU 5	BCU 8
Motor ports	#	3	3
Operating device ports	#	1	1
Battery ports	#	0	0
Limit switch ports	#	0	0
Single fault safety	yes/no	yes	yes
Encoder processing	yes/no	no	no
Input voltage	V AC	120	230
Frequency	Hz	60	50
Input current (max)	A	2,5	1,3
Standby power	W	1,2	1,5
Output voltage	V DC	24	24
Output current (max)	A	7	7
Duty cycle: intermittent	min.	1 min./9 min.	1 min./9 min.
Duty cycle: short time	min.	2	2
Ambient temperature	°C	0 to +40	0 to +40
Humidity	%	5 to 85	5 to 85
Type of protection	IP	x4	x4
Approvals	EN/UL	EN 60601-1 UL 60601-1	EN 60601-1 UL 60601-1
Weight	kg	2,3	2,3

Ordering keys

BCU 3 - 3100 - 0000

Type

BCU control unit

Voltage:
120 V AC, 60 Hz, class I
230 V AC, 50 Hz, class II

5
8

Mains power supply cable:
Class II, straight 3,5 m, 2-pole plug, EU (for voltage type 8)
Class II, straight 3,5 m, 2-pole plug, UK (for voltage type 8)
Class I, straight 3,5 m, 3-pole plug, UL (for voltage type 5)

2J
2H
2L

EACH BCU NEEDS A BCP

BCP - 000 - 000

Type

BCU parameterization

Functionality:
All channels individually
Channel 2+1
All channels simultaneously
Trendelenburg

11
21
30
T1

Motors:
A CALA 36A (24V DC), ECO30, ECO50
C CARE 33A (24 V DC), TLT10, TXG10 (EXG)
E TFG, ECO70, ECO90
M MAX, TLG, THG
R R20, R21, R22, MD22, MD23

3,7 A Actuator 1 –
4,7 A Actuator 2 –
5,7 A Actuator 3 –
6,7 A
8,5 A

Soft start/stop:
Hard, start 0 ms, stop 0 ms
Medium, start 400 ms, stop 200 ms

0
3

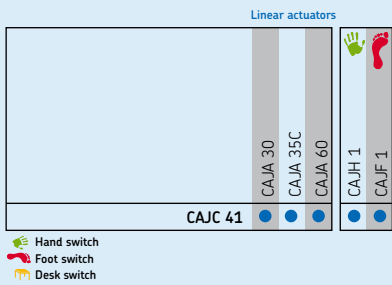
Control unit CAJC 41

Benefits

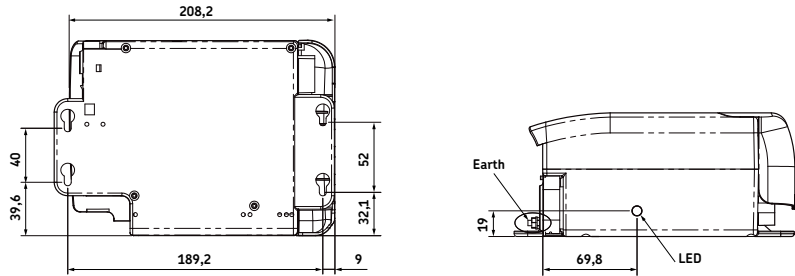
- Controls up to 4 actuators
- Suitable for homecare and nursing beds



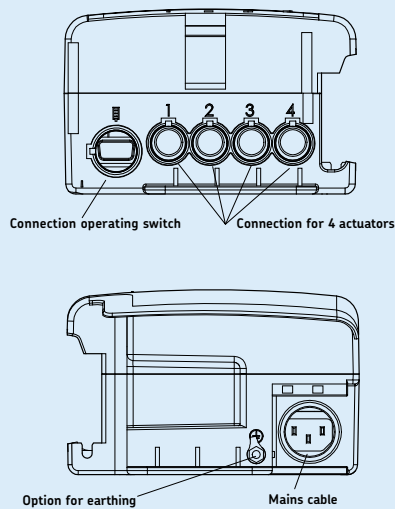
Suitable actuators and accessories



Dimensional drawing



Connecting diagram



Technical data

	Unit	CAJC 41
Motor ports	#	4
Operating device ports	#	1
Battery ports	#	0
Limit switch ports	#	0
Single fault safety	yes/no	no
Encoder processing	yes/no	no
Input voltage	V AC	120 or 230
Frequency	Hz	60
	Hz	60/50
Input current (max)	A	5
Standby power	W	N/A
Output voltage	V	Below 40 when input is 253 V AC
Output current (max)	A	5
Duty cycle: intermittent	min.	2 min./18 min.
Duty cycle: short time	min.	N/A
Ambient temperature	°C	+10 to +40
Humidity	%	80
Type of protection	IP	54/66
Approvals	EN/UL	UL 60601, IEC 60.601.1
Weight	kg	1,8

Ordering key

Type

Voltage:

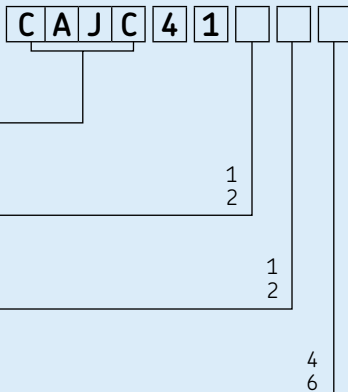
120 V AC 60 Hz
230 V AC 50 Hz

Class:

Class I (with earth terminal)
Class II

Type of protection:

IP54
IP66



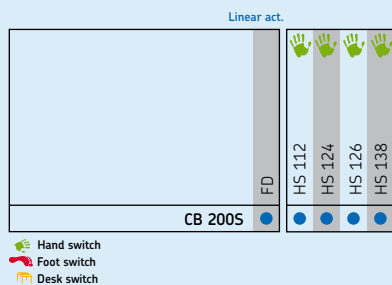
Control unit CB200

Benefits

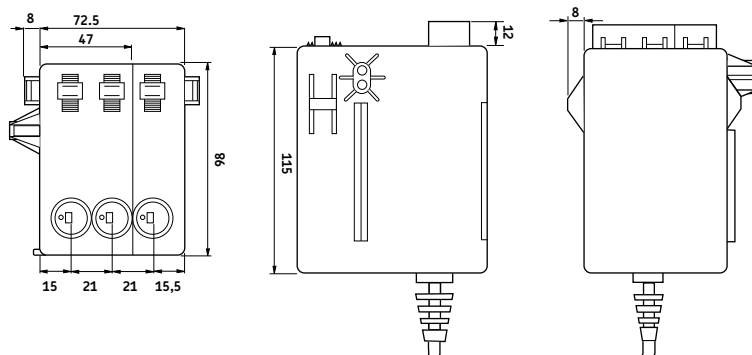
- Compact design
- Controls up to 3 actuators



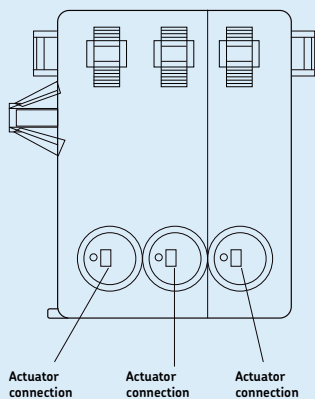
Suitable actuators and accessories



Dimensional drawing



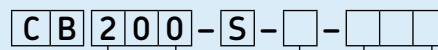
Connecting diagram



Technical data

	Unit	CB200S
Motor ports	#	3
Operating device ports	#	1 or 3
Battery ports	#	0
Limit switch ports	#	0
Single fault safety	yes/no	yes
Encoder processing	yes/no	no
Input voltage	V AC	100-240
Frequency	Hz	50/60
Input current (max)	A	N/A
Standby power	W	N/A
Output voltage	V DC	24
Output current (max)	A	3
Duty cycle: intermittent	min. on/off	N/A
Duty cycle: short time	min on	N/A
Ambient temperature	°C	N/A
Humidity	%	N/A
Type of protection	IP	51
Approvals	EN/UL	CE:EM/2004/30130 UL:E208367
Weight	kg	1,5

Ordering key



Type

Number of actuators:

1
2
3

- 1
- 2
- 3

Voltage (V AC):

100
110-115
230
240

100
120
230
240

Control unit MCU

Benefits

- Suitable for mobile applications
- LED indication for battery charge level
- Audible signal for low charge condition



Linear actuators Pillars

- Hand switch
- Foot switch
- Desk switch

	Unit	MCU
Motor ports	#	2
Operating device ports	#	1
Battery ports	#	1
Limit switch ports	#	0
Single fault safety	yes/no	no
Encoder processing	yes/no	no
Input voltage	V DC	24
Frequency	Hz	N/A
Input current (max)	A	15
Standby power	W	0
Output voltage	V DC	24
Output current (max)	A	6,3
Duty cycle: intermittent	min.	1 min./9 min.
Duty cycle: short time	min.	N/A
Ambient temperature	°C	+10 to +40
Humidity	%	85
Type of protection	IP	×4
Approvals	EN/UL	EN 60601-1/EN 60601-1-2/ UL 2601/EN ISO 10535
Weight	kg	4,9

M	C	U	1		-	0	0	3			-	0	0	0	0
---	---	---	---	--	---	---	---	---	--	--	---	---	---	---	---

1 channel
2 channels

Current cut-off 6 A
Current cut-off 9 A
Current cut-off 6 A, electric emergency lowering of channel 1
Current cut-off 9 A, electric emergency lowering of channel 1
Individual current cut-off 6 A (only for 2-channel version)

000
EXP
EYE
2AT
EYR

Description	Plug	Designation	Order N°
Battery unit 4,5 Ah		ZBA-142211	M/0100667
Mains adapter 230 V AC	Euro	ZDV-142331-2500	M/0100009
Mains adapter 120 V AC	UL	ZDV-142332-2500	M/0100060
Wall charging station		ZLA-142221	M/0100371
Tool for connectors (Jack/D-Sub/Mains)		ZWS-140375	M/0125322

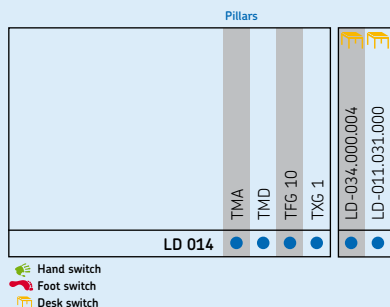
Control unit LD-014

Benefits

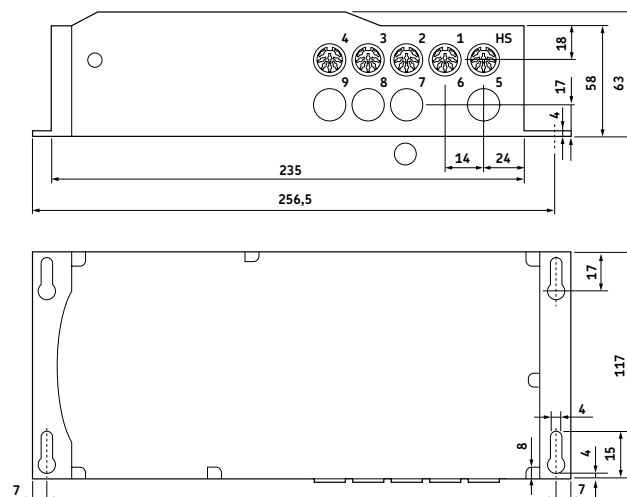
- Synchronized movement of 4 actuators possible
- Drive comfort
- Intelligent System Protection (ISP) - anti-pinching



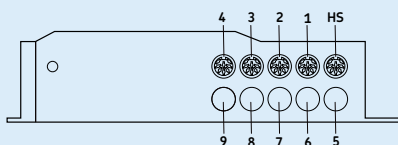
Suitable pillars and accessories



Dimensional drawing



Connecting diagram



1. Connection to actuator 1
2. Connection to actuator 2
3. Connection to actuator 3
4. Connection to actuator 4
5. Connection to desk switch

Technical data

	Unit	LD-014
Motor ports	#	4
Operating device ports	#	1
Battery ports	#	0
Limit switch ports	#	1
Single fault safety	yes/no	no
Encoder processing	yes/no	yes
Input voltage	V AC	120 or 230
Frequency	Hz	60 or 50
Input current (max)	120 V AC 230 V AC	A 6 2,5
Standby power	W	1
Output voltage	V DC	24
Output current (max)	A	11
Duty cycle: intermittent	min.	1 min./9 min.
Duty cycle: short time	min.	N/A
Ambient temperature	°C	+5 to +45
Humidity	%	5 to 85
Type of protection	IP	20
Approvals	EN/UL	EN 60335-1
Weight	kg	2,5

Product ordering keys

230 V AC
4 actuators
2+2 actuators

TMA
LD-014.208.000
LD-014.176.200

TMD
LD-014.208.200
LD-014.176.100

TFG
LD-014.177.100
LD-014.176.600

TXG
LD-014.178.000

120 V AC
4 actuators
2+2 actuators

TMA
LD-014.208.100
LD-014.176.400

TMD
LD-014.208.300
LD-014.176.300

TFG
LD-014.177.200
LD-014.176.700

TXG
LD-014.178.500

Control unit LD-015

Benefits

- Intelligent System Protection (ISP)
 - anti-pinch
- Drive comfort

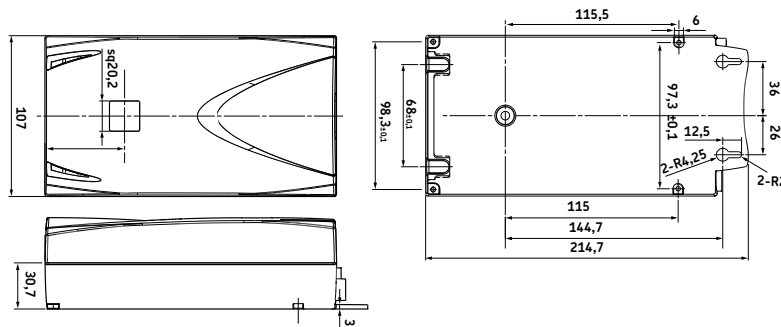


Suitable pillars and accessories

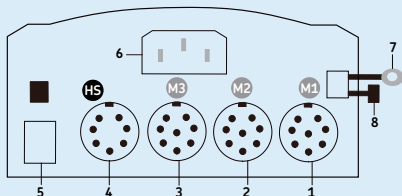
Pillars	
	TMA
	TMD
	TFG 10
	TXG 1
LD 015	LD-034.000.004
	LD-011.031.000

- Hand switch
- Foot switch
- Desk switch

Dimensional drawing



Connecting diagram



1. Connection to actuator 1 (M1)
2. Connection to actuator 2 (M2)
3. Connection to actuator 3 (M3)
4. Connection to desk switch (HS)
5. Connection to squeeze line
6. Mains supply
7. Cable plug for grounding the desk frame (optional)
8. Connector for mains cut-off (optional)

Technical data

	Unit	LD-015	LD-015
Motor ports	#	3	2
Operating device ports	#	1	1
Battery ports	#	0	0
Limit switch ports	#	1	1
Single fault safety	yes/no	no	no
Encoder processing	yes/no	yes	yes
Input voltage	V AC	120 or 230	120 or 230
Frequency	Hz	60 or 50	60 or 50
Input current (max)	120 V AC 230 V AC	A A	6 2,5
Standby power	W	1,1	1,1
Output voltage	V DC	24	24
Output current (max)	A	11	9
Duty cycle: intermittent	min.	1 min./9 min.	1 min./9 min.
Duty cycle: short time	min.	N/A	N/A
Ambient temperature	°C	+5 to +45	+5 to +45
Humidity	%	5 to 85	5 to 85
Type of protection	IP	20	20
Approvals	EN/UL	EN 60335-1	EN 60335-1
Weight	kg	2,2	1,9

Product ordering keys

230 V AC

- 1 actuator
- 2 actuators
- 3 actuators

TMA

- LD-015.342.000
- LD-015.342.200
- LD-015.342.400

TMD

- LD-015.343.000
- LD-015.343.200
- LD-015.343.400

TFG

- LD-015.357.100
- LD-015.357.000
- LD-015.357.400

TXG

- LD-015.255.000
- LD-015.258.000

120 V AC

- 1 actuator
- 2 actuators
- 3 actuators

TMA

- LD-015.342.100
- LD-015.342.300
- LD-015.342.500

TMD

- LD-015.343.100
- LD-015.343.300
- LD-015.343.500

TFG

- LD-015.357.300
- LD-015.357.200
- LD-015.357.500

TXG

- LD-015.255.500
- LD-015.258.500

Control unit CAED ANR

Benefits

- Compact potentiometer control unit
- Electronic overload protection
- LED indication for overload cut out
- Easy installation via front screw terminal

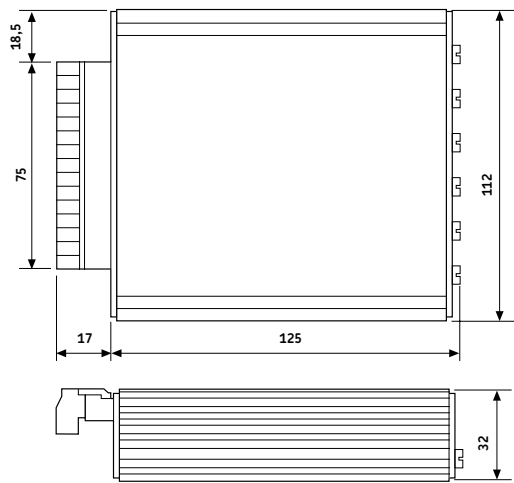


Suitable actuators

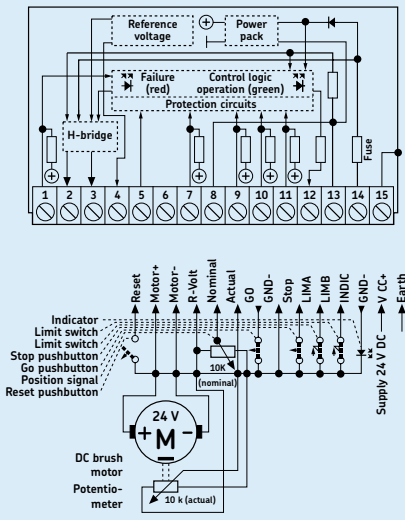
				Linear act.
				CAP 43 D24CW, C24CW
				CAP 43 D24C, C24C
				CAP 32 D24CW
				CAP 32 D24C
CAED ANR 5-24-PO	●	●	●	
CAED ANR 9-24-PO	●	●	●	

Hand switch
 Foot switch
 Desk switch

Dimensional drawing



Connecting diagram



RESET comander always NO contacts
 LIMIT comander always NO contacts
 LIMIT comander must be installed depend upon the motor revolution direction
 Motor revolution direction depend on the polarity of nominal and actual value

Technical data

	Unit	CAED ANR 5-24R-PO	CAED ANR 9-24R-PO
Motor ports	#	1	1
Operating device ports	#	1	1
Battery ports	#	0	0
Limit switch ports	#	1	1
Single fault safety	yes/no	no	no
Analogical processing	yes/no	yes	yes
Input voltage	V DC	22 – 28	22 – 28
Frequency	Hz	N/A	N/A
Input current (max)	A	10	10
Standby power	W	N/A	N/A
Output voltage	V DC	24	24
Output current (max)	A	5	10
Duty cycle: intermittent	min. on/off	2 min./8 min.	2 min./8 min.
Duty cycle: short time	min on	N/A	N/A
Ambient temperature	°C	0 to +50	0 to +50
Humidity	%	N/A	N/A
Type of protection	IP	40	40
Approvals	EN/UL	N/A	N/A
Weight	kg	0,36	0,36

Product ordering keys

CAED ANR 5-24R-PO
 CAED ANR 9-24R-PO

Control unit CAED

Benefits

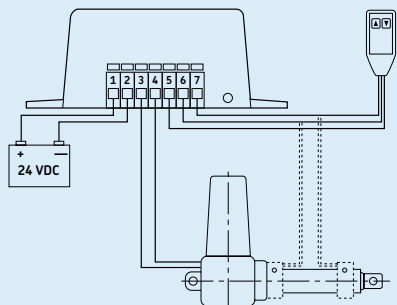
- Compact ON/OFF control unit
- Supply voltage 24 V DC
- Output voltage 24 V DC
- Electronic overload protection
- LED indication for overload cut out
- Easy installation via front screw terminal



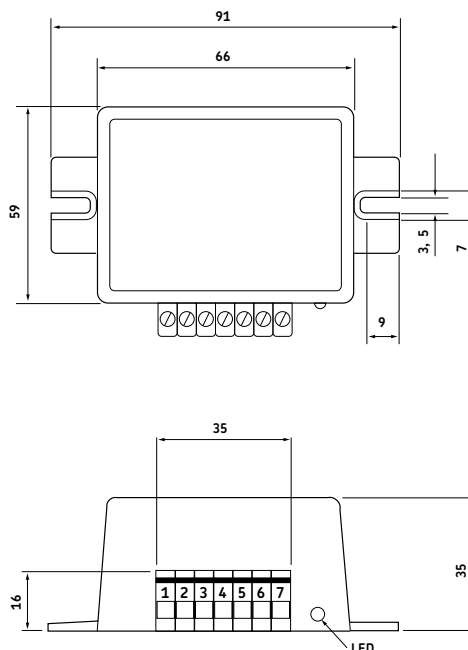
Suitable actuators and accessories

	CAR 24 V DC	CAT 24 V DC	CALA 36A 24 V DC	CARE 33 24 V DC	CAES 31 C
CAED 3-24R					
CAED 5-24R					
CAED 9-24R					

Connecting diagram



Dimensional drawing



Technical data

	Unit	CAED 3-24R	CAED 5-24R	CAED 9-24R
Motor ports	#	1	1	1
Operating device ports	#	1	1	1
Battery ports	#	0	0	0
Limit switch ports	#	1	1	1
Single fault safety	yes/no	yes	yes	yes
Encoder processing	yes/no	no	no	no
Input voltage	V DC	22 – 29	22 – 29	22 – 29
Frequency	Hz	N/A	N/A	N/A
Input current (max)	A	N/A	N/A	N/A
Standby power	W	stand by current <30 mA	stand by current <30 mA	stand by current <30 mA
Output voltage	V DC	24	24	24
Output current (max)	A	3	5	9
Duty cycle: intermittent	min.	2 min./8 min.	2 min./8 min.	2 min./8 min.
Duty cycle: short time	min.	2	2	2
Ambient temperature	°C	0 to +50	0 to +50	0 to +50
Humidity	%	N/A	N/A	N/A
Type of protection	IP	31	31	31
Approvals	EN/UL	EN 50081-1 EN 50082-1 EN 60601-1-2	EN 50081-1 EN 50082-1 EN 60601-1-2	EN 50081-1 EN 50082-1 EN 60601-1-2
Weight	kg	0,2	0,2	0,2

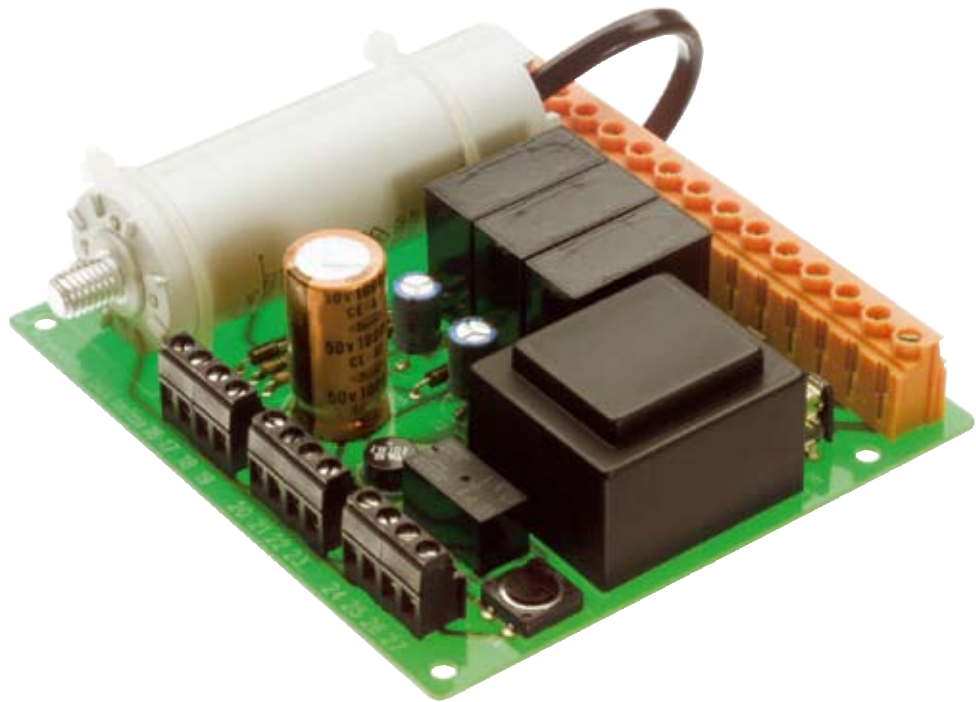
Product ordering keys

CAED 3-24R
CAED 5-24R
CAED 9-24R

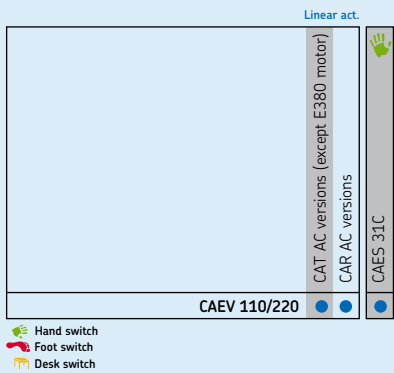
Control unit CAEV

Benefits

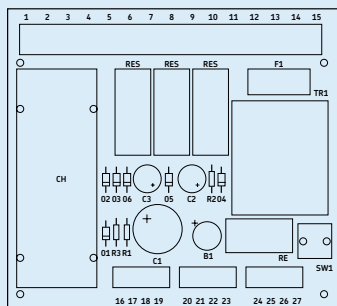
- Reliable pc board for single phase AC motors
- Can be used with both 120 V AC or 230 V AC
- Low voltage signal through cable handset
- Built-in option for limit switches
- Built-in option for thermal protection
- Easy installation via front screw terminals
- Compact design



Suitable actuators and accessories

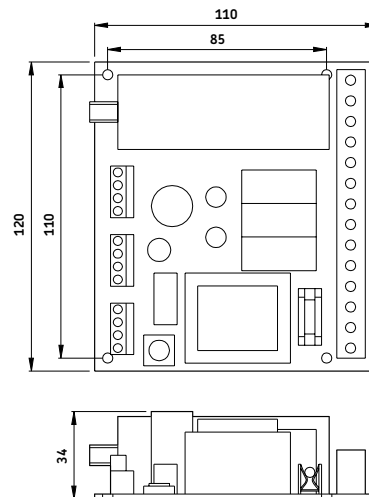


Connecting diagram*



* See next page for details

Dimensional drawing



Technical data

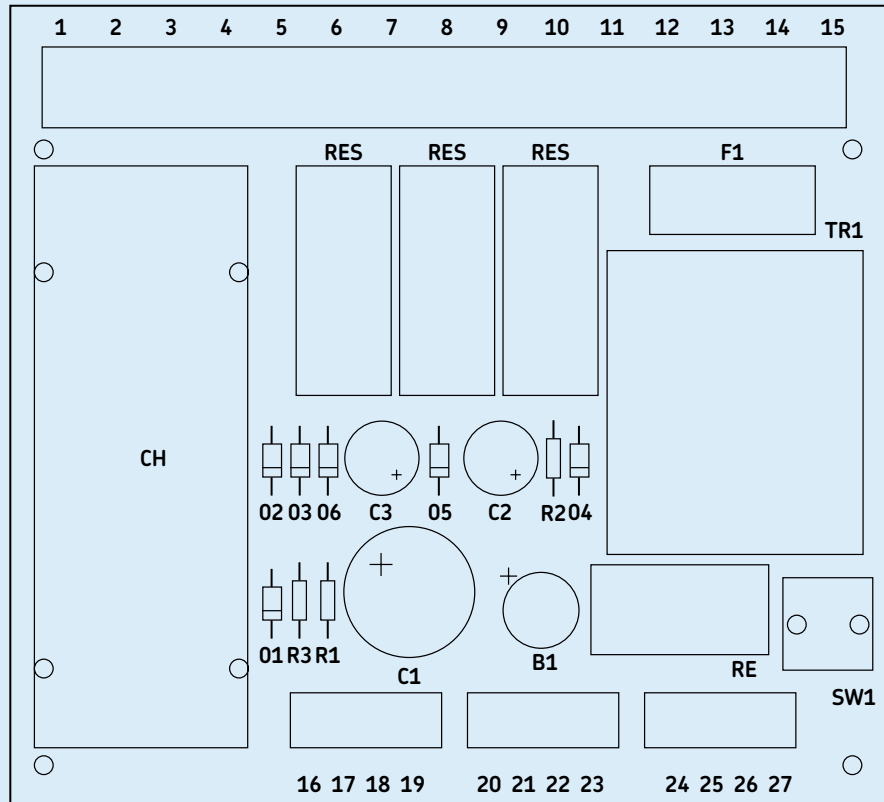
	Unit	CAEV 110/220
Motor ports	#	1
Operating device ports	#	1
Battery ports	#	0
Limit switch ports	#	1
Single fault safety	yes/no	no
Encoder processing	yes/no	no
Input voltage	V AC	120 or 230
Frequency	Hz	50/60
Input current (max)	A	N/A
Standby power	W	<15 VA
Output voltage	V AC	120 or 230
Output current (max)	A	N/A
Duty cycle: intermittent	min.	up to 100 %
Duty cycle: short time	min.	N/A
Ambient temperature	°C	0 to +50
Humidity	%	N/A
Type of protection	IP	N/A
Approvals	EN/UL	N/A
Weight	kg	0,4

* See duty factor diagram of relevant actuator

Product ordering key

CAEV 110/220

Connecting diagram



Terminal No. Connections at 230 V AC

Connections at 120 V AC

1	net supply, phase
2	net supply, phase, including fuse on p.c. board
3	short-circuit to terminal 4
4	short-circuit to terminal 3
5	net supply, zero
6	ground
7	motor: green/yellow wire
8	motor: braun wire
9	motor: black wire (only motor with brake)
10	motor: blue wire
11	motor: white wire
12	start capacitor, replace if needed, see table 2
13	start capacitor
14	motor: red wire, thermal switch, see note 1
15	motor: red wire, thermal switch, see note 1
16	limit switch, outer, see note 2 and 4
17	limit switch, outer, see note 2 and 4
18	limit switch, inner, see note 2 and 4
19	limit switch, inner, see note 2 and 4
20	op. device, outwards movement, see note 3 and 4
21	op. device, outwards movement, see note 3 and 4
22	op. device, inwards movement, see note 3 and 4
23	op. device, inwards movement, see note 3 and 4
24	no connection
25	no connection
26	external reset button, if wanted
27	external reset button, if wanted

net supply, phase, including fuse on p.c. board
short-circuit to terminal 1
short-circuit to terminal 5
net supply, zero, short-circuit to terminal 4
ground
motor: green/yellow wire
motor: braun wire
motor: black wire (only motor with brake)
motor: blue wire
motor: white wire
start capacitor, install correct capacitor, see table 2
start capacitor
motor: red wire, thermal switch, see note 1
motor: red wire, thermal switch, see note 1
limit switch, outer, see note 2 and 4
limit switch, outer, see note 2 and 4
limit switch, inner, see note 2 and 4
limit switch, inner, see note 2 and 4
op. device, outwards movement, see note 3 and 4
op. device, outwards movement, see note 3 and 4
op. device, inwards movement, see note 3 and 4
op. device, inwards movement, see note 3 and 4
no connection
no connection
external reset button, if wanted
external reset button, if wanted



Hand, foot, and desk switches

Hand switches

EHA 1	344
EHA 3	346
CAJH 1	348
EHE 1	350
HS	352
PHC	354
CAES	356

Foot switches

ST	358
CAJF 1	360
PFP	362

Desk switches

ST	364
LD	366
PAM	368

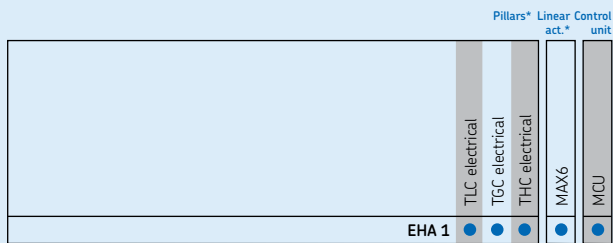
Hand switch EHA 1

Benefits

- Robust ergonomic design
- Tactile buttons, clearly marked
- Easy mountable fastening hook



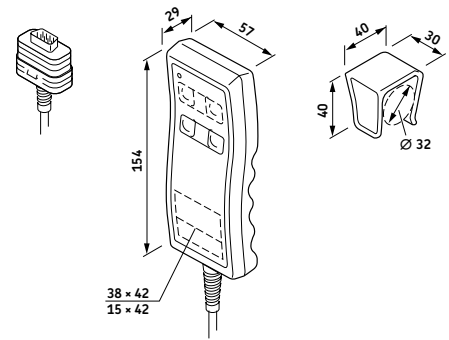
Suitable pillars, actuators and control units



* With integrated control units

Dimensional drawing

D-Sub 9



Technical data

	Unit	EHA 1
Max. operating channels	n°	2
Operating power	V DC/mA	12/50
Type of protection	IP	67
Color	—	Grey

Accessories

Description	Designation	Order N°
Hook with sticker	ZGB-145361-000	M/0125538

Ordering key

EHA1 - 1 N - 000

Type

Number of channels:

- 1 channel
- 2 channels

1
2

Hook:

- Yes mounted with hook
- Hook supplied separately

1
2

Cable / connecting plug:

- Coiled, 1,3 m/2,5 m / D-sub 9-pin plug
- Coiled 2,5 m/3,5 m / D-sub 9-pin plug

B
F

Symbols:

- None
- 1 channel: Arrow up/down
- Head
- 2 channels: Arrow up/down
- Head/foot
- Level/head

00
10
11
20
22
23

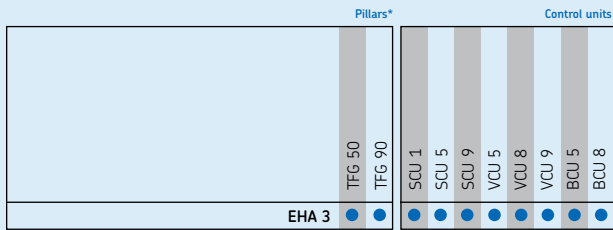
Hand switch EHA 3

Benefits

- Robust ergonomic design
- Tactile buttons, clearly marked
- Easy mountable fastening hook

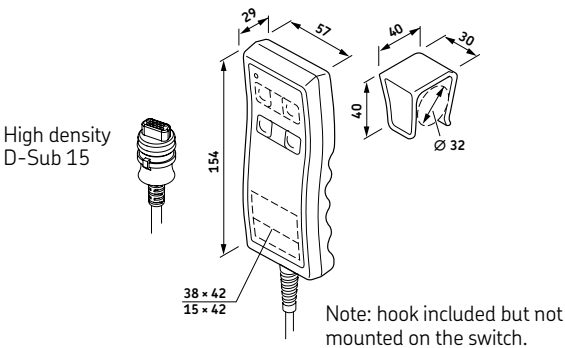


Suitable pillars and control units



* With integrated control units

Dimensional drawing



Technical data

	Unit	EHA 3
Max. operating channels	n°	5
Operating power	V DC/mA	12/50
Type of protection	IP	67
Color	—	Grey

Accessories

Description	Designation	Order N°
Hook with sticker	ZGB-145361-000	M/0125538

Ordering key

Type

Number of channels:

1 channel	1
2 channels	2
3 channels	3
4 channels	4
5 channels	5
1 channel with 3 memory positions (only for SCU)	A
2 channels with 3 memory positions (only for SCU)	B
3 channels with 3 memory positions (only for SCU)	C

Symbols:

None		00
1 channel: 2nd row from top	Arrow up/down	10
	Head	11
	Foot	12
	Level	13
	Anti-Trendelenburg	14
2 channels: 1st-2nd row from top	Arrow up/down	20
	Head/foot	21
	Head/level	22
	Level/head	23
	Level/Anti-Trendelenburg	29
3 channels: 1st-3rd row from top	Arrow up/down	30
	Head/foot/level	31
	Level/head/foot	32
	Level/Anti-Trendelenburg/Head	39
4 channels: 1st-4th row from top	Arrow up/down	40
	Level/Anti-Trendelenburg/Head/Foot	47
5 channels: 1st-5th row from top	Arrow up/down	50

Options written in italic fonts are only available on demand. Please contact SKF.

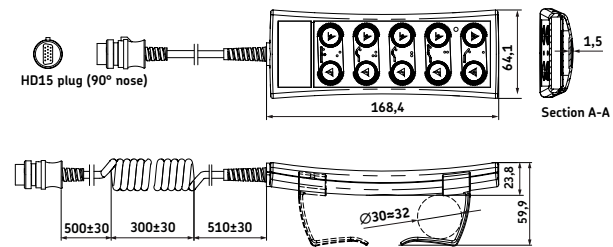
Hand switch CAJH 1

Benefits

- Easy and precise
- Controls as many as 5 functions of 4 different actuators
- Ergonomic design



Dimensional drawing



	Unit	CAJH 1
Max. operating channels	n°	4
Operating power	V DC/mA	12/50
Type of protection	IP	66
Color	—	Grey

[illegible]

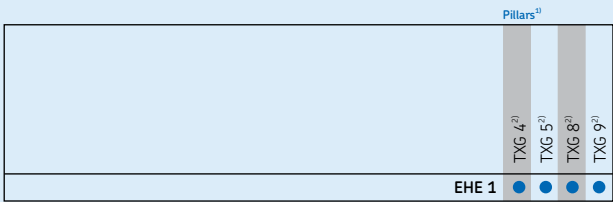
Hand switch EHE 1

Benefits

- Easy and precise
- Flexible and remote operation
- Ergonomic design

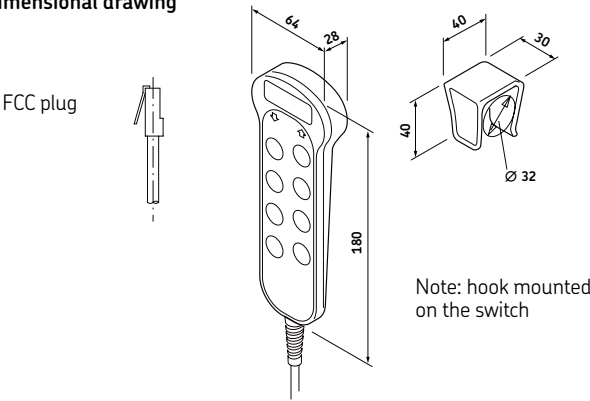


Suitable pillars and control unit



¹⁾With integrated control units
²⁾Only with FCC plug

Dimensional drawing



Technical data

	Unit	EHE 1
Max. operating channels	n°	4
Operating power	V DC/mA	38/50
Type of protection	IP	×7
Color	—	Grey

Accessories

Description	Designation	Order N°
Hook	ZGB-145361-000	M/0125538

Ordering key

E H E 1 - 1 B 1 B - 0 0 0

Type

Number of channels:

- 1 channel
- 2 channels
- 3 channels
- 4 channels

- 1
- 2
- 3
- 4

Symbols:

- 1 channel: Arrow up/down
- Head
- 2 channels: Arrow up/down
- Head/level
- Head/foot
- 3 channels: Arrow up/down
- Head/level/foot
- 4 channels: Arrow up/down

- 10
- 11
- 20
- 21
- 22
- 30
- 31
- 40

Hand switch HS

Benefits

- Robust ergonomic design
- Tactile buttons, clearly marked



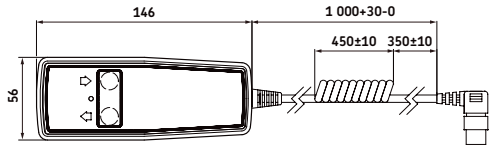
Suitable control unit

		Control unit
		CB 200S
	HS 112	●
	HS 124	●
	HS 126	●
	HS 138	●

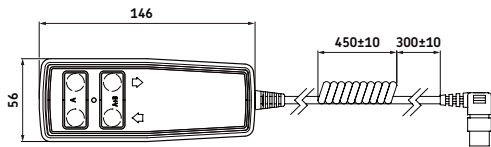
Technical data

	Unit	HS
Max. operating channels	n°	3
Operating power	V DC/mA	24
Type of protection	IP	—
Color	—	Black

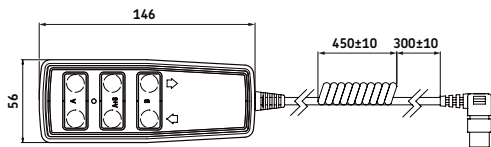
Dimensional drawing



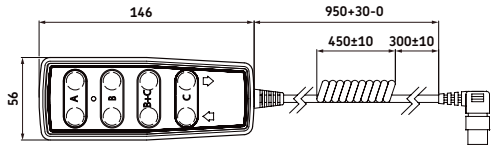
HS 112



HS 124



HS 126



HS 138

Product ordering keys

- HS 112
- HS 124
- HS 126
- HS 138

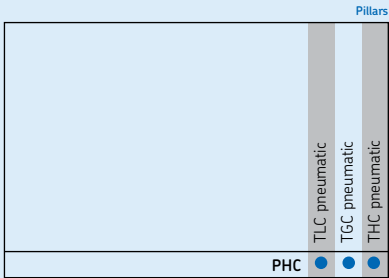
Hand switch PHC

Benefits

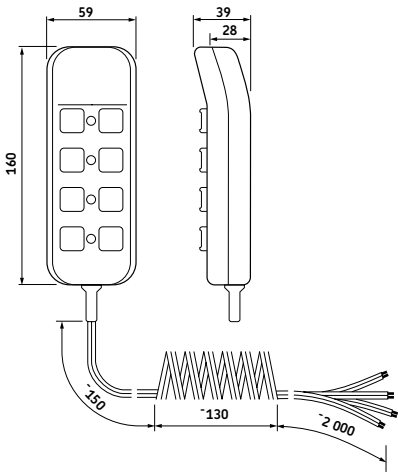
- Easy and precise
- Flexible and remote operation
- Ergonomic design



Suitable pillars



Dimensional drawing



Technical data

	Unit	PHC
Max. operating channels	n°	4
Operating power	V DC/mA	N/A
Type of protection	IP	66
Color	—	Grey

Product ordering keys

- PHC 1 – 130517 (1 channel with arrows up/down, without hook)
- PHC 2 – 130625 (2 channels with arrows up/down, without hook)
- PHC 3 – 130756 (3 channels with arrows up/down, without hook)
- PHC 4 – 130955 (4 channels with arrows up/down, without hook)

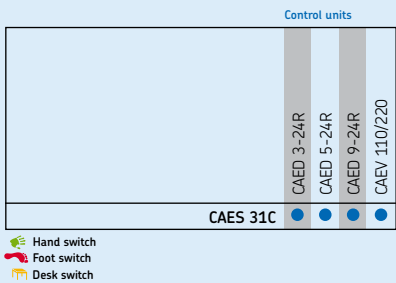
Hand switch CAES

Benefits

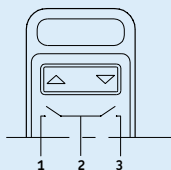
- Robust ergonomic design
- Membrane keyboard
- Clearly marked keys



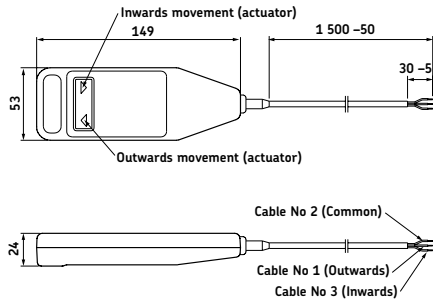
Suitable control units



Connecting diagram



Dimensional drawing



Technical data

	Unit	CAES 31C
Max. operating channels	n°	1
Operating power	V DC/mA	30/33
Type of protection	IP	54
Color	—	Black

Product ordering key

CAES 31C (No connector, 2 buttons)

Foot switch ST

Benefits

- Easy and precise
- Ergonomic design
- Different plug options



Suitable pillars, actuators and control units

		Pillars ¹⁾		Linear act. ²⁾	Control units									
		TFG 50/90	TXG 4/5/8/9 ²⁾	MAX 6		SCU 1	SCU 5	SCU 9	VCU 5	VCU 8	VCU 9	BCU 5	BCU 8	MCU
STJ		●			●	●	●	●	●	●	●	●	●	
STF		●		●										●

 Hand switch

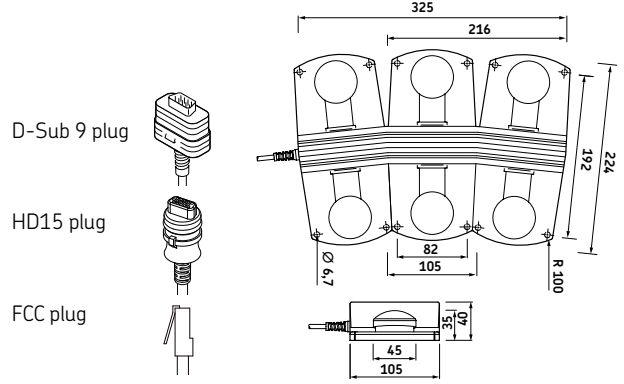
 Foot switch

 Desk switch

¹⁾With integrated control units

²⁾Only with FCC plug

Dimensional drawing



Technical data

	Unit	ST
Max. operating channels	n°	3
Operating power	V DC/mA	12/50
Type of protection	IP	x5
Color	—	Blue/anthracite

Accessories

Description	Designation	Order N°
Rubber feet (100 pcs.)	ZBE-135310	M/0102879
Sticker arrow up	ZFS-135309-0001	M/0125710
Sticker arrow down	ZFS-135309-0002	M/0125711
Sticker level up	ZFS-135309-0007	M/0125712
Sticker level down	ZFS-135309-0008	M/0125713
Sticker head up	ZFS-135309-0009	M/0125714
Sticker head down	ZFS-135309-0010	M/0125715
Sticker foot up	ZFS-135309-0011	M/0125716
Sticker foot down	ZFS-135309-0012	M/0125717

Ordering key

		S T		0		-		0 0	
Type		F		J					
Product group:	Classic, D-Sub9 or FCC plug								
	Standard, single-fault safety, HD15 plug								
Number of channels:									
One (1) channel									
Two (2) channels									
Three (3) channels									
Cable / connecting plug:									
Coiled cable 1,3-2,5 m / D-sub plug									
Coiled cable 1,3-2,5 m / HD15 plug									
Straight cable 2,5 m / D-sub plug									
Straight cable 2,5 m / FCC plug (only for STF01 and STF02)									
Straight cable 2,5 m / HD15 plug									
Color:									
Anthracite									
Blue									
Option:									
None									
Mounted with rubber feet									
Symbols:									
Arrow up/down (on each pair of buttons), 1-3 channels									
Arrow up/down, M/1, 2/3 (3 memory buttons) only for STJ03									

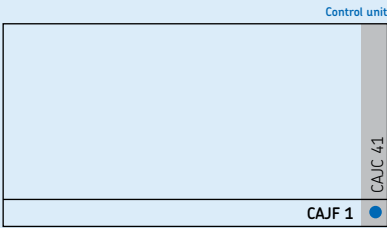
Foot switch CAJF 1

Benefits

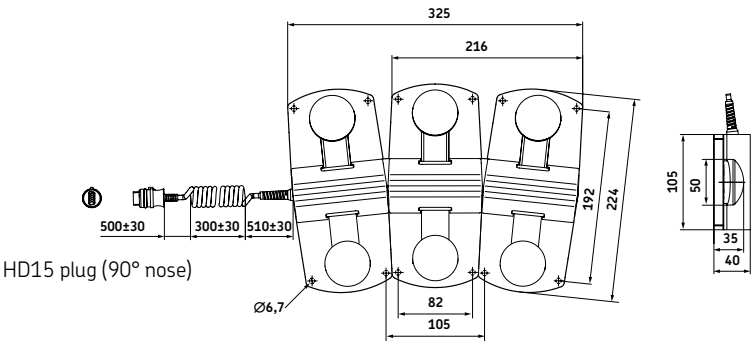
- Easy and precise
- Ergonomic design



Suitable control unit



Dimensional drawing



Technical data

	Unit	CAJF 1
Max. operating channels	n°	3
Operating power	V DC/mA	12/50
Type of protection	IP	×5
Color	—	Anthracite

Ordering key

C A J F 1 A 1 5 0

Type

Functions (function and channel):

1 Function

channel 1

channel 2

channel 3

channel 4

channel 1+2

channel 3+4

channel 3-4

2 functions (2 foot switches)

channel 1 and channel 2

3 functions (3 foot switches)

channel 1, channel 2, channel 3

101

102

103

104

112

134

143

201

301

Symbol logo:

With arrow (parallel to pedal)

Customized Logo

1

9

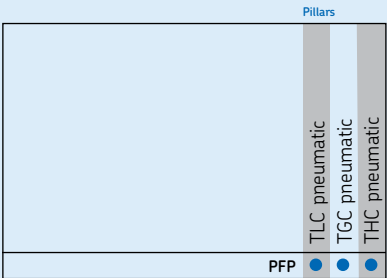
Foot switch PFP

Benefits

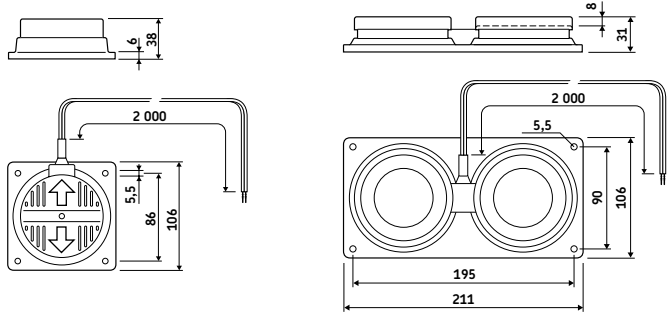
- Robust ergonomic design
- Easy and precise
- Flexible and remote operation



Suitable pillars



Dimensional drawing



PFP 1K-130652

PFP 1-121545

Technical data

	Unit	PFP 1K	PFP 1
Max. operating channels	n°	1	1
Operating power	V DC/mA	N/A	N/A
Type of protection	IP	21	21
Color	–	Grey	Anthracite

Product ordering keys

PFP 1K – 130652
PFP 1 – 121545

Other versions on request.

Desk switch ST

Benefits

- Easy and precise
- Stylish design
- Memory position

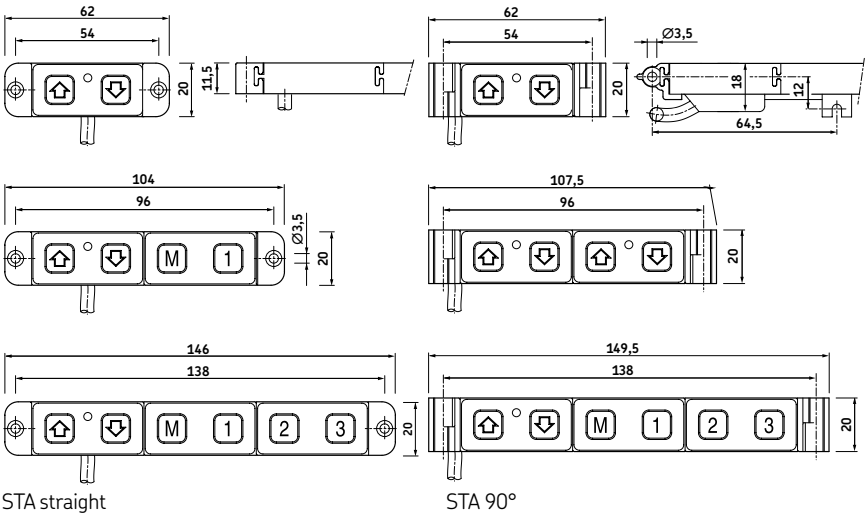


Suitable pillars, actuators and control units

		Pillars ¹⁾	Linear act. ²⁾	Control units
		TFG 50/90	TXG 4/5/8/9 ²⁾	MAX 6
STA		•	•	•
STE	•			

¹⁾With integrated control units
²⁾Only with FCC plug

Dimensional drawing



Technical data

	Unit	ST
Max. operating channels	n°	3
Operating power	V DC/mA	12/50
Type of protection	IP	x0
Color	—	Black

Ordering key

Type	ST	0	-	6	-	00
Product group:						
Classic, D-Sub9 or FCC plug	E					
Standard, single-fault safety wiring, HD15 plug	A					
Number of channels:						
One (1) channel		1				
Two (2) channels		2				
Three (3) channels		3				
Cable / connecting plug:						
Straight cable 2,5 m / D-sub plug				OU		
Straight cable 1,5 m / FCC plug				WV		
Straight cable 2,5 m / HD15 plug				OW		
Option:						
No option					000	
Mounted on or underneath desktop, at a 90° angle					MAU	
Symbols:						
Up/down arrow on each pair of keys (1-3 channels)						X1
Up/down arrow, 3 memory functions M/1, M/2, M/3 (3 channels)						37

Desk switch LD

Benefits

- Easy and precise
- Stylish design
- Different functions

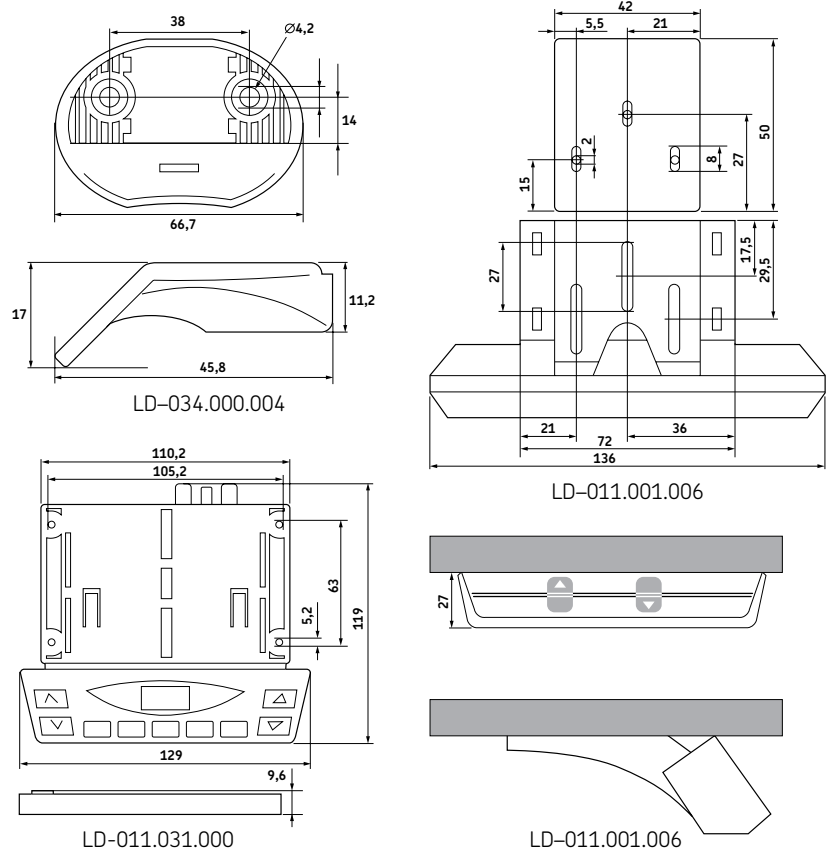


Suitable pillars and control units

	Pillars ¹⁾	Control units
	TXG 4/5/8/9 ²⁾	LD-014 LD-015
LD-034.000.004		● ●
LD-011.031.000		● ● ●
LD-011.001.006	●	● ● ●

¹⁾ With integrated control units
²⁾ Only with FCC plug

Dimensional drawing



Technical data

	Unit	LD-034.000.004	LD-011.031.000	LD-011.001.006
Max. operating channels	n°	1	1 or 2	1
Operating power	V DC/mA	5/50	5/50	5/50
Type of protection	IP	32	32	32
Color	–	Black	Black	Black

Product ordering keys

LD-031.000.004 (DIN7 plug)
LD-011.031.000 (DIN7 plug)
LD-011.001.006 (FCC plug, only for TXG)

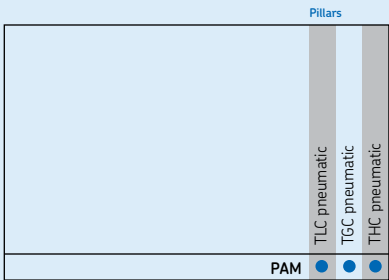
Desk switch PAM

Benefits

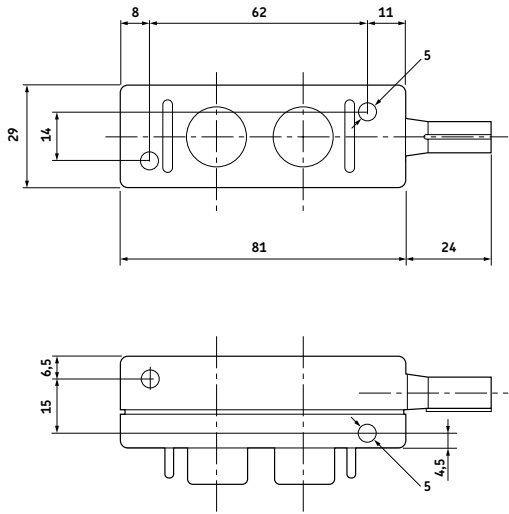
- Easy and precise
- Stylish design
- Different functions



Suitable pillars



Dimensional drawing



Technical data

	Unit	PAM -130256
Max. operating channels	n°	1
Operating power	V DC/ mA	N/A
Type of protection	IP	N/A
Tube	—	Straight, 1,50 m
Color	—	Anthracite

Product ordering key

PAM-130256

Customized projects

Rotary actuators.372

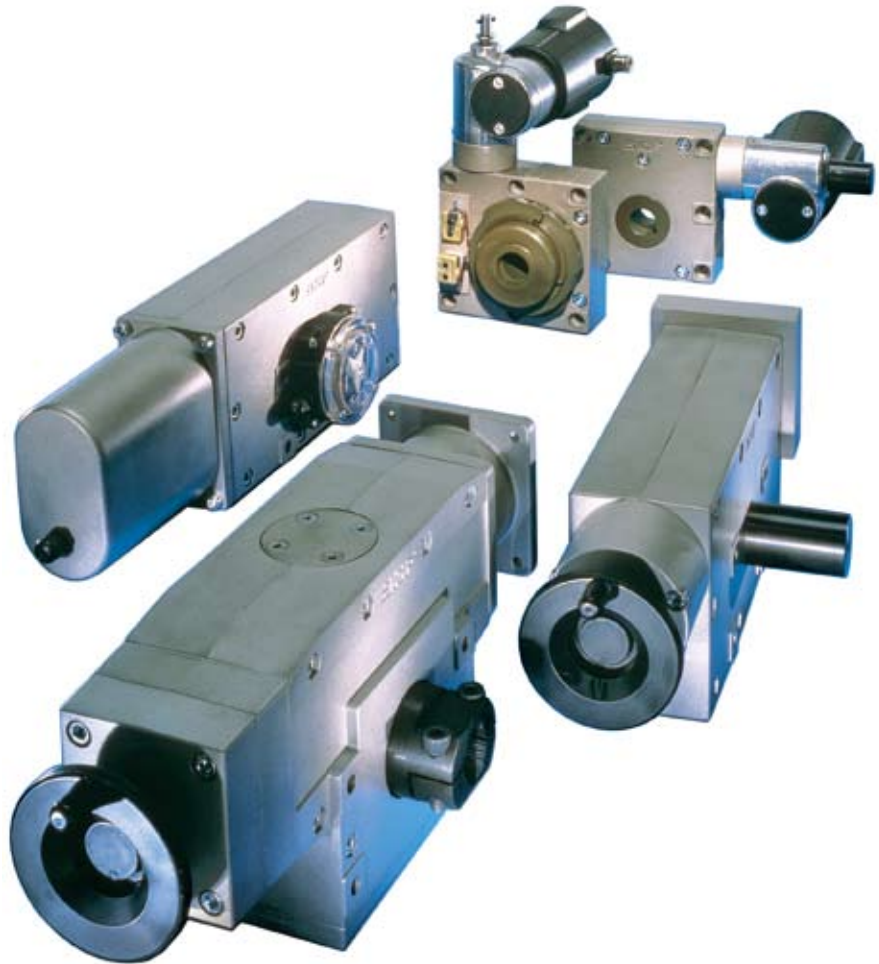
Compact electromechanical cylinder.374

Modular electromechanical cylinder378

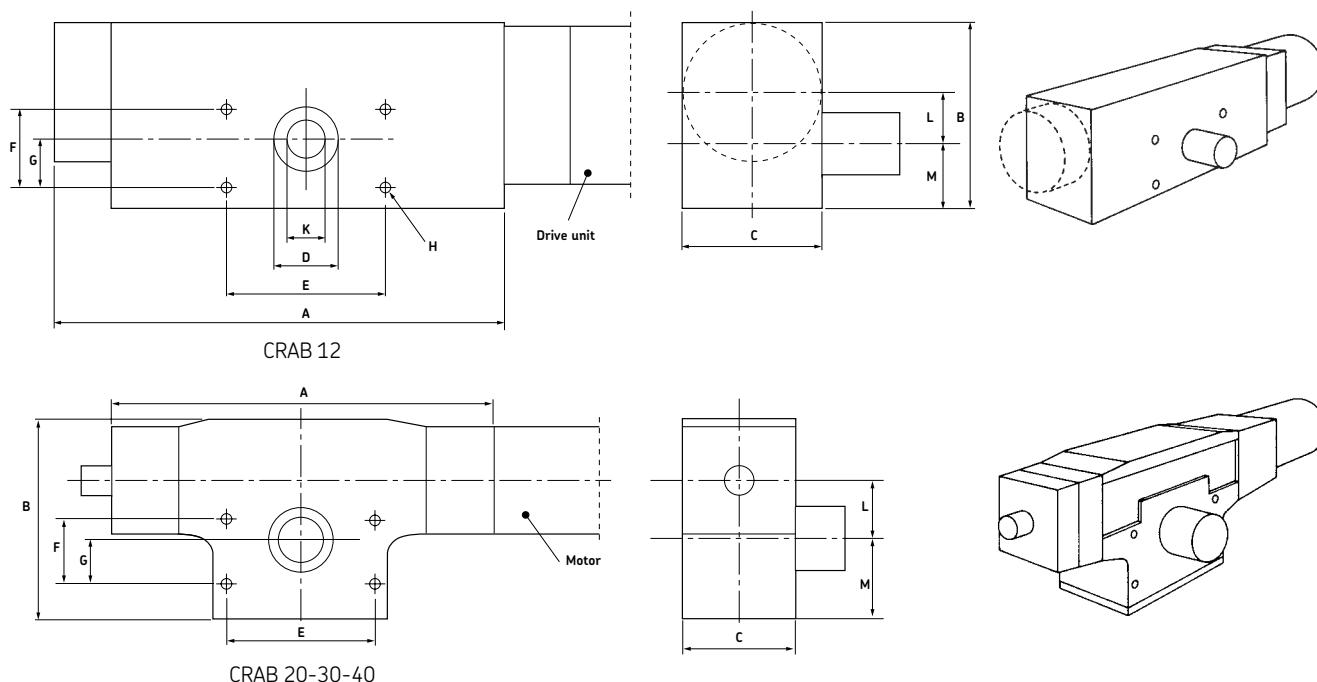
Rotary actuators

Benefits

- Outdoor application
- Elasticity negligible



Dimensional drawing



Actuator	"A" dimensions in mm					Actuator	Dimensions in mm						
	≤110°	125°	180°	270°	360°		B	C	E	F	G	L	M
CRAB 12	N/A	310	N/A	N/A	N/A	CRAB 12	120	76	100	50	38	36	48
CRAB 20	306	N/A	419	557	720	CRAB 20	155	90	120	50	35	46	63
CRAB 30	455	N/A	626	846	1 097	CRAB 30	228	122	176	85	60	72	92
CRAB 40	565	N/A	768	1 050	1 371	CRAB 40	286	134	230	115	80	92	116

Technical data

Actuator	Angular working range	Gear ratio Ball screw	Angular speed	Efficiency factor Ball screw	Instant output torque Max.	axial load Max.	tilting torque Max.	Backlash			Weight
								Ball screw	Start torque	Temp. range	
—	—	°	°/s	%	Nm	N	Nm	°	Nm	°C	kg
CRAB 12*	125	1:44	120	75	200	5 000	160	±0,05	≈0,3	-20 to +60	7
CRAB 20	360	1:56	90	75	400	10 000	1 120	0,0	≈0,5	-20 to +60	9
CRAB 30	360	1:88	65	75	1 000	15 000	3 465	0,0	≈1,0	-20 to +60	25
CRAB 40	360	1:113	45	75	1 700	20 000	6 240	0,0	≈2,0	-20 to +60	42

* Dimensions according to detailed drawings in publication 6358

Compact electromechanical cylinder

Benefits

- High power and reliable
- Compact and dynamic solution
- Low energy consumer



Compact design



Technical data

Type	Screw lead	Nominal force ¹⁾	Peak force ²⁾	Linear speed	Standard stroke	Over-stroke ⁴⁾	Dynamic load	Nominal power	Controller size ⁵⁾
	mm	kN	kN	mm/s	mm	mm	kN	kN	–
CEMC1804-145-1-42J	3,75	4,7	10,3	350	145	1 (x2)	26,6	1,6	08
CEMC2404-•••-•-62L	4,00	8,7	23,8	300	125-135-170	1 (x2)	61,0	2,6	16
CEMC2406-125-•-62L	6,00	5,8	15,9	450	125	1 (x2)	61,0	2,6	16
CEMC2404-•••-•-63I	4,00	13,1	26,0	300	125-135-170	1 (x2)	61,0	3,3	16
CEMC2406-125-•-63I	6,00	8,7	17,3	450	125	1 (x2)	61,0	3,3	16

¹⁾ Nominal force: can be used 100 % of time at low speed (10 % of maximum speed).

²⁾ Peak force: max force under short time (1 s max) at low speed with selected drive.

⁴⁾ Integrated at each end.

Ultra-compact design



Technical data

Type	Screw lead	Nominal force ¹⁾	Peak force ²⁾	Linear speed	Standard stroke	Over-stroke ⁴⁾	Dynamic load	Nominal power	Controller size ⁵⁾
	mm	kN	kN	mm/s	mm	mm	kN	kN	–
CEMC2104-170-•-D63L	4	9,0	17,9	353	170	1 (x2)	48,1	2,3	16
CEMC2404-•••-2-D82P	4	14,1	28,2	320	90-170	1 (x2)	61,0	4,7	16
CEMC2406-•••-2-D82P	6	9,4	18,8	480	90-170	1 (x2)	61,0	4,7	16
CEMC3004-•••-2-D82P	4	14,1	28,2	266	90-170	1 (x2)	105,0	3,9	16
CEMC3006-•••-2-D82P	6	9,4	18,8	400	90-170	1 (x2)	105,0	3,9	16
CEMC3004-•••-2-D84H	4	27,4	53,1	266	90-170	1 (x2)	105,0	6,2	32
CEMC3006-•••-2-D84H	6	18,3	35,4	400	90-170	1 (x2)	105,0	6,2	32
CEMC3004-•••-2-D86F	4	39,5	83,4	266	90-170	1 (x2)	105,0	6,6	50
CEMC3006-•••-2-D86F	6	26,3	55,6	400	90-170	1 (x2)	105,0	6,6	50

¹⁾ Nominal force: can be used 100 % of time at low speed (10 % of maximum speed).

²⁾ Peak force: max force under short time (1 s max) at low speed with selected drive.

⁴⁾ Integrated at each end.

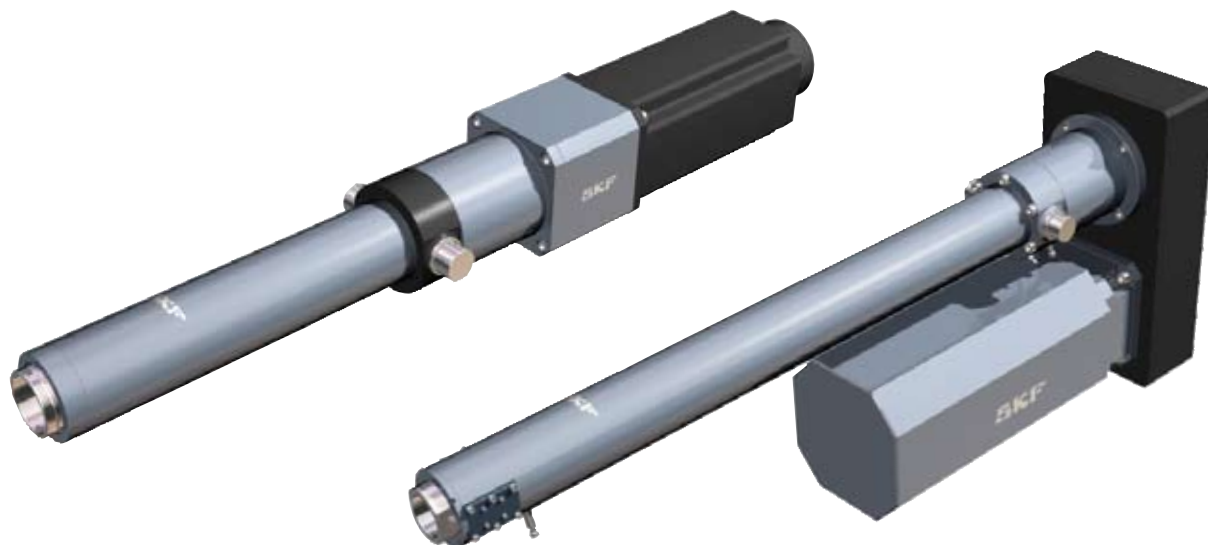
Modular electromechanical cylinder

Benefits

- The power of hydraulics
- The velocity of pneumatics



Dimensional drawing



Technical data

Designation	Screw lead	Nominal force Up to	Peak force Up to	Linear speed Up to	Standard stroke	Dynamic load
	mm	kN	kN	mm/s	mm	kN
SRSA 2505	5	40,7	81,7 ¹⁾	333	0 to 400	63,3
SRSA 2510	10	37,5	90,5 ¹⁾	450	0 to 400	72,6
SRSA 3005	5	52,9	102,8 ¹⁾	325	0 to 500	92
SRSA 3010	10	49,9	97,1 ¹⁾	650	0 to 500	97,6
SRSA 3905	5	63,3	123,1 ¹⁾	279,2 ²⁾	0 to 800	129,2
SRSA 3910	10	61	130,1 ¹⁾	350	0 to 800	138,5
SRSA 3915	15	61,5	141,7 ¹⁾	650	0 to 800	138,5
SRSA 4805	5	106,5	248 ¹⁾	220,8 ²⁾	0 to 1 000	198,1
SRSA 4810	10	95,3	187,2 ¹⁾	350	0 to 1 000	207,9
SRSA 4815	15	130,4	202,4 ¹⁾	412,5	0 to 1 000	207,9
SRSA 4820	20	86,3	169,6 ¹⁾	550	0 to 1 000	207,9
SRSA 6010	10	161,9	318,1 ¹⁾	275	0 to 1 300	303,9
SRSA 6015	15	162,3	318,7 ¹⁾	462,5	0 to 1 300	303,9
SRSA 6020	20	142,7	251,9 ¹⁾	666,7	0 to 1 300	303,9
SRSA 7510	10	255,5	451 ¹⁾	250 ²⁾	0 to 1 500	471,6
SRSA 7515	15	240,2	271,3	357 ²⁾	0 to 1 500	471,6
SRSA 7520	20	199,4	223,9	466,7	0 to 1 500	471,6
SVSA 3201	1	40,6	78,3 ¹⁾	10,4 ²⁾	0 to 1000	64,3
SVSA 4001	1	62,3	121,3 ¹⁾	8,3 ²⁾	0 to 1000	79,1
SVSA 5001	1	110,2	214,4 ¹⁾	6,7 ²⁾	0 to 1000	138,5
SLSA 2525	25	8,2	18,8	1500 ²⁾	0 to 500	22,6
SLSA 4040	40	12,4	18,7	1500 ²⁾	0 to 1 200	53,3

¹⁾Peak force to be used only in static phases. For dynamic ones, this value must be limited inside the motion controller at 80 % of the dynamic load by the user. Please contact SKF.

²⁾Maximum speed. This value must be limited inside the motion controller by the user. Please contact SKF.

Drive by wire

Electronic Parking Brake EPB.382

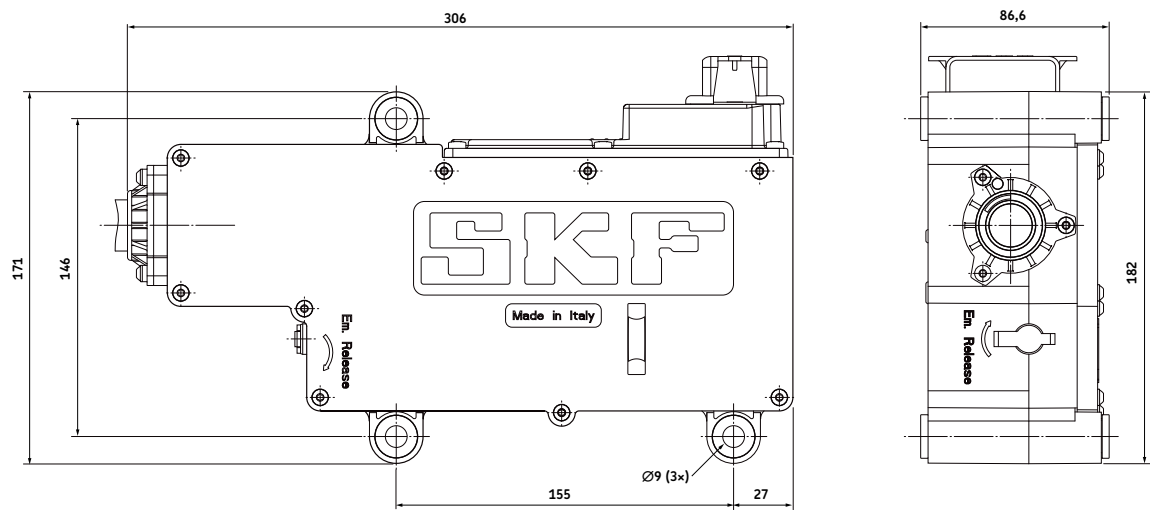
Electronic cable puller actuator for off-highway vehicles

Benefits

- Easy to install
- Compact
- Eco-friendly solution
- Enhanced comfort and safety for user



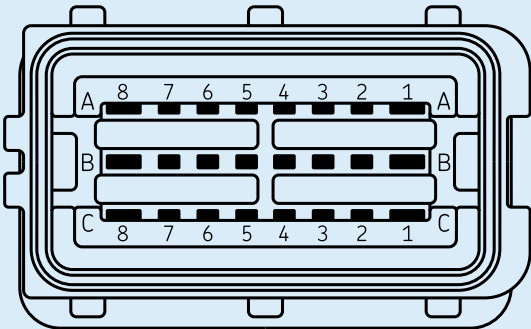
Dimensional drawing



Technical data

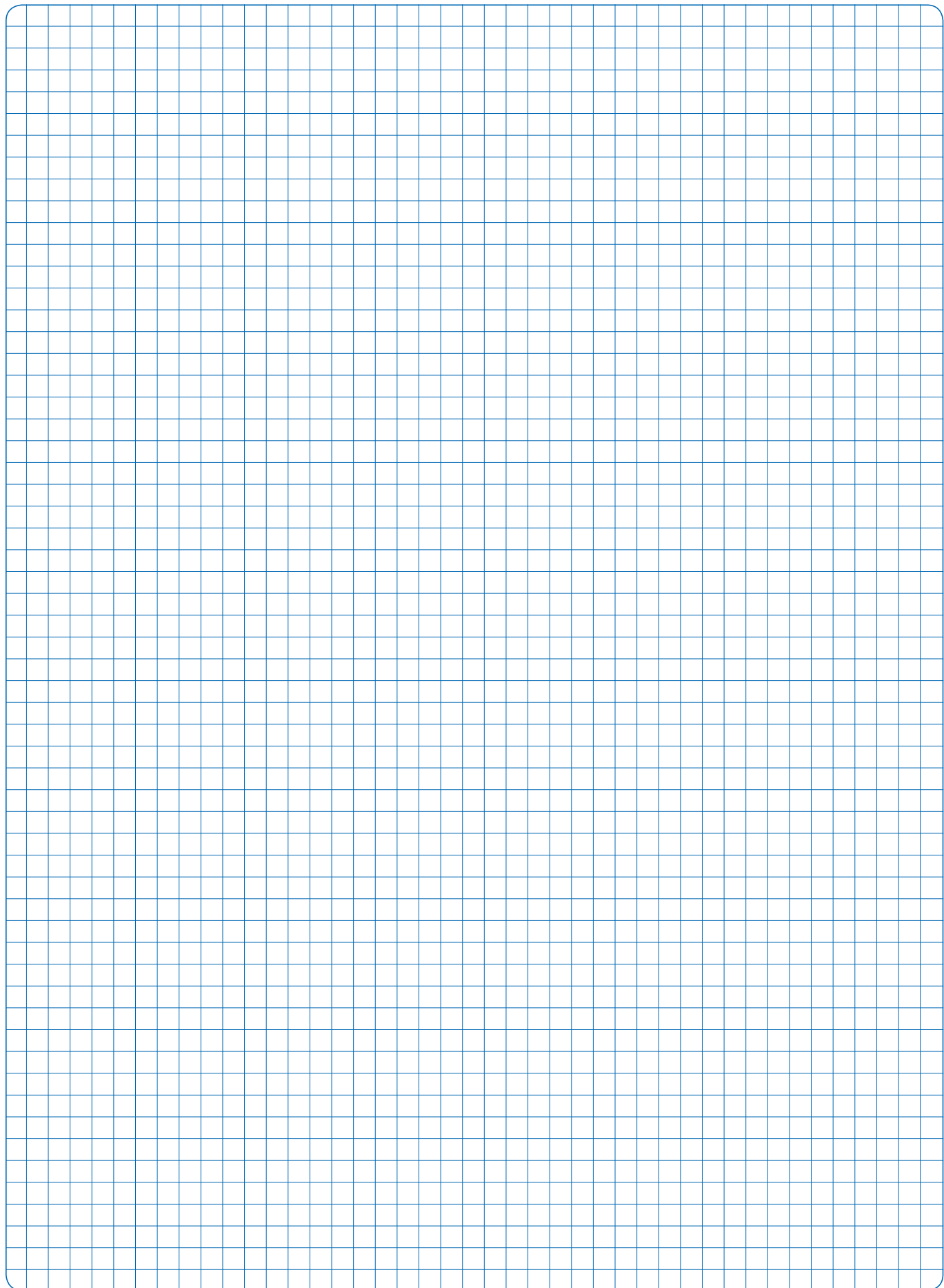
	Unit	ADW-0000
Max force	N	4 000
Stroke	mm	65
Max speed (without load)	mm/s	18
Endurance	Apply/release cycles	170 000
Supply voltage at full performance (range)	V	11,5 to 16
Supply voltage at longer apply/release time (range)	V	10 to 11,5
Supply voltage at at electronics full active (range)	V	9 to 16
Max current consumption (during actuations)	A	30
Max current consumption (only electronics)	A	0,2
Ambient temperature	°C	-40 to + 85
Humidity	%	20 to 80
Protection class	IP	67
Weight (without bowden cable)	kg	3

For more information about this product, please contact SKF.



Connections*

Pin #	Signal name	Function	Direction	Type of signal
A1	V_BATT_S12_M	Power supply main	IN	DC
A8	GND_POWER_M	Ground power supply main	GND	DC
A2	OUT1H_D0	1° High side output for relay	OUT	Digital
A3	OUT2H_D0	2° High side output for relay	OUT	Digital
A6	OUT3_D0	High side output for LED	OUT	Digital
A7	OUT4_D0	Low side output for LED	OUT	Digital/freq
C1	KEY_ON	Ignition Key	IN	Analog/Digital
C2	CAN_H_0	CAN_0 vehicle	BI	Standard protocol
C3	CAN_L_0	CAN_0 vehicle	BI	Standard protocol
C4	CAN_H_1	CAN_1 for development	BI	Standard protocol
C5	CAN_L_1	CAN_1 for development	BI	Standard protocol
B1	ASNS_S05	External + 5V supply output for potmeter	OUT	DC
C6	ASNS_AI_1	Analog input 1	IN	Analog
C7	ASNS_AI_2	Analog input 2	IN	Analog
B8	V_BATT_S12_S	Power supply for backup battery	IN	DC
C8	GND_POWER_S	Ground power supply for backup	GND	DC
A5	ASNS_GND_1	Analog input 1 ground	GND	DC
A4	ASNS_GND_2	Analog input 2 ground	GND	DC
B2	IN_H_SPARE 1	Digital spare input 1	IN	Digital/freq
B3	IN_H_SPARE 2	Digital spare input 2	IN	Digital/freq
B4	IN_L_SPARE 3	Digital spare input 3	IN	Digital/freq
B5	IN_L_SPARE 4	Digital spare input 4	IN	Digital/freq
B6	OUT1L_SPARE 1	Low side output 1	OUT	Digital
B7	OUT1L_SPARE 2	Low side output 2	OUT	Digital



Spare parts

CAR 22.....	388
CAR 32.....	388
CAR 40.....	389
CAP 32.....	389
CARN 32	390
CCBR 32.....	390
CAT 33.....	391
CAT 33H.....	391
CAT 32B.....	392
CAP 43.....	392

Item code	Type code	Order N°
12 VDC motor (flat motor)	D12B	M/0405516
24 VDC motor (flat motor)	D24B	M/0405517
Limit switch for stroke =50 mm	CAXB 22 × 50	M/0405137
Limit switch for stroke =100 mm	CAXB 22 × 100	M/0405138
Limit switch for stroke =150 mm	CAXB 22 × 150	M/0405139
Limit switch for stroke =200 mm	CAXB 22 × 200	M/0405140
Limit switch for stroke =300 mm	CAXB 22 × 300	M/0405141
Proximity switch for CAXB	CAXB Proximity switch	M/0431589
Front mounting attachments type Rod-end	575-22	M/0430575-22
Front mounting attachments type Clevis	576-22	M/0430576-22
Rear mounting attachments type Single ear bracket	580-22	M/0430580-22
Rear mounting attachments type Ball-joint bracket	581-22	M/0430581-22
Control unit (suitable for D24B motor)	CAED 5-24R	M/0420209
Handset matched for CAED	CAES 31C	M/0420213

CAR 32 – Type codes for accessories and spare parts

Item code	Type code	Order N°
12 V DC motor (flat motor)	D12C	M/0405518
24 V DC motor (flat motor)	D24C	M/0405519
24 V DC motor (flat motor with brake)	D24CB	M/0405523
24 V DC motor (flat motor with extended shaft)	D24CS	M/0405522
24 V DC motor (flat motor with low speed)	D24CW	M/0405521
120 V AC motor (cylindrical motor)	E110C	M/0405533
120 V AC motor (cylindrical motor with brake)	E110CB	M/0405534
230 V AC motor (cylindrical motor)	E220C	M/0405531
230 V AC motor (cylindrical motor with brake)	E220CB	M/0405532
Capacitor value 25 µF (120 V AC)	Capacitor 25 µF	M/0430670-06
Capacitor value 6 µF (230 V AC)	Capacitor 6 µF	M/0430670-03
Limit switch for stroke =50 mm	CAXB 32 × 50	M/0405142
Limit switch for stroke =100 mm	CAXB 32 × 100	M/0405143
Limit switch for stroke =200 mm	CAXB 32 × 200	M/0405146
Limit switch for stroke =300 mm	CAXB 32 × 300	M/0405148
Limit switch for stroke =500 mm	CAXB 32 × 500	M/0405150
Limit switch for stroke =700 mm	CAXB 32 × 700	M/0405153
Proximity switch for CAXB	CAXB Proximity switch	M/0431589
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32
Control unit (suitable for E110, E220 motors)	CAEV 110/220	M/0420097
Control unit (suitable for D24CW,C24CW motor)	CAED 5-24R	M/0420209
Control unit (suitable for D24C/CB/CS motors)	CAED 9-24R	M/0420210
Handset configured for CAED and CAEV units	CAES 31C	M/0420213

Item code	Type code	Order N°
Limit switch for stroke =100 mm	CAXB 40 × 100	M/0405163
Limit switch for stroke =300 mm	CAXB 40 × 300	M/0405165
Limit switch for stroke =500 mm	CAXB 40 × 500	M/0405173
Limit switch for stroke =700 mm	CAXB 40 × 700	M/0405174
Proximity switch for CAXB	CAXB Proximity switch	M/0431589
Front mounting attachments type Rod-end	575-40	M/0430575-40
Front mounting attachments type Clevis	576-40	M/0430576-40
Rear mounting attachments type Single ear bracket	580-40	M/0430580-40
Rear mounting attachments type Ball-joint bracket	581-40	M/0430581-40
24 V DC motor (flat motor)	D24D	M/0405524
24 V DC motor (flat motor with extended shaft)	D24DS	M/0405526
24 V DC motor (flat motor with brake)	D24DB	M/0405525
120 V AC motor (cylindrical motor)	E110D	M/0405529
120 V AC motor (cylindrical motor with brake)	E110DB	M/0405530
230 V AC motor (cylindrical motor)	E220D	M/0405527
230 V AC motor (cylindrical motor with brake)	E220DB	M/0405528
Capacitor value 12 µF (230 VAC-motor)	Capacitor 12 µF	M/0430670-04

CAP 32 – Type codes for accessories and spare parts

Item code	Type code	Order N°
12 V DC motor (flat motor)	D12C	M/0405518
24 V DC motor (flat motor)	D24C	M/0405519
24 V DC motor (flat motor with brake)	D24CB	M/0405523
24 V DC motor (flat motor with extended shaft)	D24CS	M/0405522
24 V DC motor (flat motor with low speed)	D24CW	M/0405521
120 V AC motor (cylindrical motor)	E110C	M/0405533
120 V AC motor (cylindrical motor with brake)	E110CB	M/0405534
230 V AC motor (cylindrical motor)	E220C	M/0405531
230 V AC motor (cylindrical motor with brake)	E220CB	M/0405532
Capacitor value 25 µF (120 V AC)	Capacitor 25 µF	M/0430670-06
Capacitor value 6 µF (230 V AC)	Capacitor 6 µF	M/0430670-03
Limit switch for stroke =50 mm	CAXB 32 × 50	M/0405142
Limit switch for stroke =100 mm	CAXB 32 × 100	M/0405143
Limit switch for stroke =200 mm	CAXB 32 × 200	M/0405146
Limit switch for stroke =300 mm	CAXB 32 × 300	M/0405148
Limit switch for stroke =500 mm	CAXB 32 × 500	M/0405150
Limit switch for stroke =700 mm	CAXB 32 × 700	M/0405153
Proximity switch for CAXB	CAXB Proximity switch	M/0431589
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32

Item code	Type code	Order N°
Limit switch for stroke =50 mm	CAXB 32 × 50	M/0405142
Limit switch for stroke =100 mm	CAXB 32 × 100	M/0405143
Limit switch for stroke =200 mm	CAXB 32 × 200	M/0405146
Limit switch for stroke =300 mm	CAXB 32 × 300	M/0405148
Limit switch for stroke =500 mm	CAXB 32 × 500	M/0405150
Limit switch for stroke =700 mm	CAXB 32 × 700	M/0405153
Proximity switch for CAXB	CAXB Proximity switch	M/0431589
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32

CCBR 32 – Type codes for accessories and spare parts

Item code	Type code	Order N°
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32

Item code	Type code	Order N°
12 V DC motor (cylindrical motor)	C12C	M/0405535
12 V DC motor (flat motor)	D12C	M/0405518
24 V DC motor (cylindrical motor)	C24C	M/0405536
24 V DC motor (cylindrical with low speed)	C24CW	M/0405537
24 V DC motor (flat motor)	D24C	M/0405519
24 V DC motor (flat motor with brake)	D24CB	M/0405523
24 V DC motor (flat motor with extended shaft)	D24CS	M/0405522
24 V DC motor (flat motor with low speed)	D24CW	M/0405521
120 V AC motor (cylindrical motor)	E110C	M/0405533
120 V AC motor (cylindrical motor with brake)	E110CB	M/0405534
230 V AC motor (cylindrical motor)	E220C	M/0405531
230 V AC motor (cylindrical motor with brake)	E220CB	M/0405532
400 V AC motor (cylindrical motor)	E380C	M/0411607
Capacitor value 25 µF (120 V AC)	Capacitor 25 µF	M/0430670–06
Capacitor value 6 µF (230 V AC)	Capacitor 6 µF	M/0430670–03
Limit switch for any stroke	CAXC33	M/0436029–0750
Front mounting attachments type Rod-end	575–32	M/0430575–32
Front mounting attachments type Clevis	576–32	M/0430576–32
Rear mounting attachments type Single ear bracket	580–32	M/0430580–32
Rear mounting attachments type Universal joint	582–32	M/0431780–32
Control unit (suitable for E110, E220 motors)	CAEV 110/220	M/0420097
Control unit (suitable for D24CW, C24CW motor)	CAED 5–24R	M/0420209
Control unit (suitable for D24C/CB/CS motors)	CAED 9–24R	M/0420210
Handset configured for CAED and CAEV units	CAES 31C	M/0420213

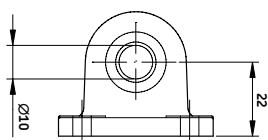
CAT 33H – Type codes for accessories and spare parts

Item code	Type code	Order N°
12 V DC motor (cylindrical motor)	C12C	M/0405535
12 V DC motor (flat motor)	D12C	M/0405518
24 V DC motor (cylindrical motor)	C24C	M/0405536
24 V DC motor (cylindrical with low speed)	C24CW	M/0405537
24 V DC motor (flat motor)	D24C	M/0405519
24 V DC motor (flat motor with brake)	D24CB	M/0405523
24 V DC motor (flat motor with extended shaft)	D24CS	M/0405522
24 V DC motor (flat motor with low speed)	D24CW	M/0405521
120 V AC motor (cylindrical motor)	E110C	M/0405533
120 V AC motor (cylindrical motor with brake)	E110CB	M/0405534
230 V AC motor (cylindrical motor)	E220C	M/0405531
230 V AC motor (cylindrical motor with brake)	E220CB	M/0405532
400 V AC motor (cylindrical motor)	E380C	M/0411607
Capacitor value 25 µF (120 V AC)	Capacitor 25 µF	M/0430670–06
Capacitor value 6 µF (230 V AC)	Capacitor 6 µF	M/0430670–03
Front mounting attachments type Rod-end	575–32	M/0430575–32
Front mounting attachments type Clevis	576–32	M/0430576–32
Rear mounting attachments type Single ear bracket	580–32	M/0430580–32
Rear mounting attachments type Universal joint	582–32	M/0431780–32
Control unit (suitable for E110, E220 motors)	CAEV 110/220	M/0420097
Control unit (suitable for D24CW, C24CW motor)	CAED 5–24R	M/0420209
Control unit (suitable for D24C/CB/CS motors)	CAED 9–24R	M/0420210
Handset configured for CAED and CAEV units	CAES 31C	M/0420213

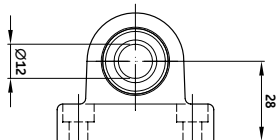
Item code	Type code	Order N°
12 V DC motor (cylindrical motor)	C12C	M/0405535
12 V DC motor (flat motor)	D12C	M/0405518
24 V DC motor (cylindrical motor)	C24C	M/0405536
24 V DC motor (cylindrical with low speed)	C24CW	M/0405537
24 V DC motor (flat motor)	D24C	M/0405519
24 V DC motor (flat motor with brake)	D24CB	M/0405523
24 V DC motor (flat motor with extended shaft)	D24CS	M/0405522
24 V DC motor (flat motor with low speed)	D24CW	M/0405521
120 V AC motor (cylindrical motor)	E110C	M/0405533
120 V AC motor (cylindrical motor with brake)	E110CB	M/0405534
230 V AC motor (cylindrical motor)	E220C	M/0405531
230 V AC motor (cylindrical motor with brake)	E220CB	M/0405532
400 V AC motor (cylindrical motor)	E380C	M/0411607
Capacitor value 25 µF (120 V AC)	Capacitor 25 µF	M/0430670-06
Capacitor value 6 µF (230 V AC)	Capacitor 6 µF	M/0430670-03
Limit switch for stroke =50 mm	CAXB 32B × 50	M/0405544
Limit switch for stroke =100 mm	CAXB 32B × 100	M/0405345
Limit switch for stroke =200 mm	CAXB 32B × 200	M/0405422
Limit switch for stroke =300 mm	CAXB 32B × 300	M/0405282
Limit switch for stroke =400 mm	CAXB 32B × 400	M/0405514
Limit switch for stroke =500 mm	CAXB 32B × 500	M/0402098
Limit switch for stroke =700 mm	CAXB 32B × 700	M/0402099
Proximity switch for CAXB	CAXB Proximity switch	M/0431589
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32
Control unit (suitable for E110, E220 motors)	CAEV 110/220	M/0420097
Control unit (suitable for D24CW, C24CW motor)	CAED 5-24R	M/0420209
Control unit (suitable for D24C/CB/CS, C24C motors)	CAED 9-24R	M/0420210
Handset configured for CAED and CAEV units	CAES 31C	M/0420213

CAP 43 – Type codes for accessories and spare parts

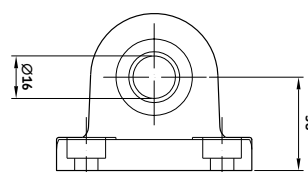
Item code	Type code	Order N°
24 V DC motor (cylindrical motor)	C24C	M/0405536
24 V DC motor (cylindrical with low speed)	C24CW	M/0405537
24 V DC motor (flat motor)	D24C	M/0405519
24 V DC motor (flat motor with low speed)	D24CW	M/0405521
Front mounting attachments type Rod-end	575-32	M/0430575-32
Front mounting attachments type Clevis	576-32	M/0430576-32
Rear mounting attachments type Single ear bracket	580-32	M/0430580-32
Rear mounting attachments type Universal joint	582-32	M/0431780-32
Control unit (suitable for D24CW, C24CW motors)	CAED-ANR 5-24R PO	M/0420215
Control unit (suitable for D24C, C24C motors)	CAED-ANR 9-24R PO	M/0420216



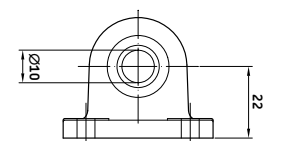
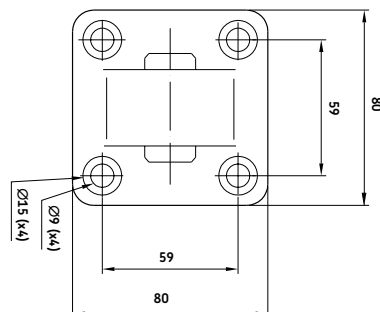
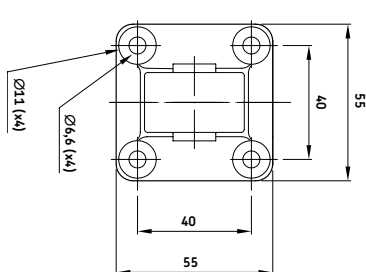
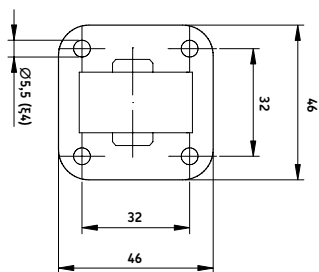
580-22



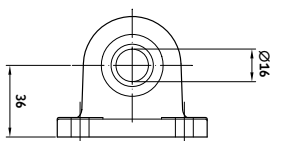
580-32



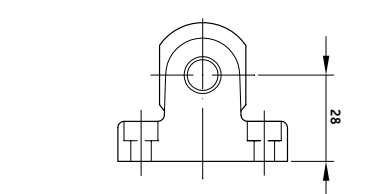
580-40



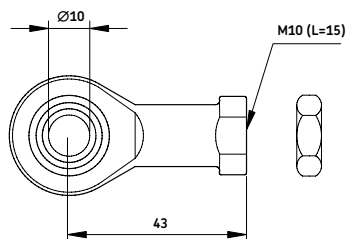
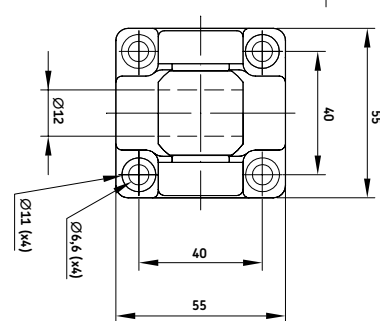
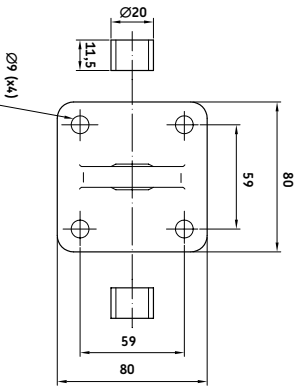
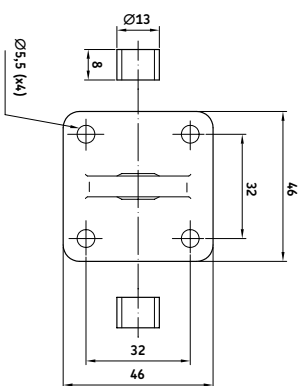
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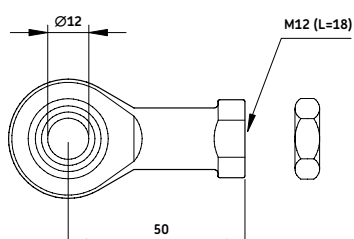
581-40



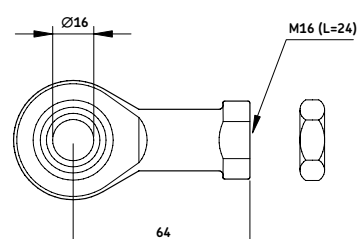
582-32



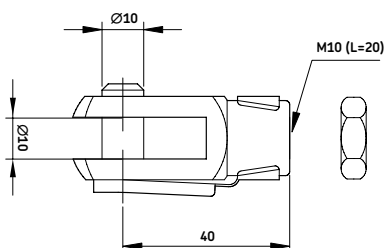
575-22



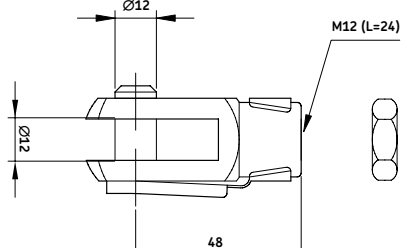
575-32



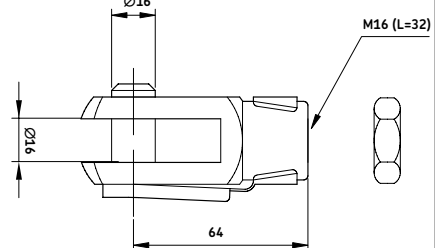
575-40



576-22



576-32



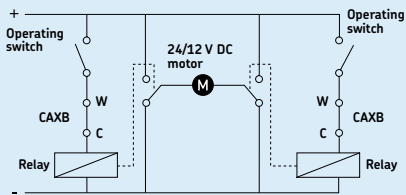
576-40

CAXC 33 limit switch

Limit switches, combined with SKF control units, make it possible to set the stroke to any desired length.

- CAXC 33 – designed for the following actuators:
CAT 33
CALA 36A
CARE 33A
CARE 33M
- Two CAXC needed for inner and outer limit
- Use of limit switches reduce the effective stroke by 20 mm (inner position is affected)

Connecting diagram



Technical data

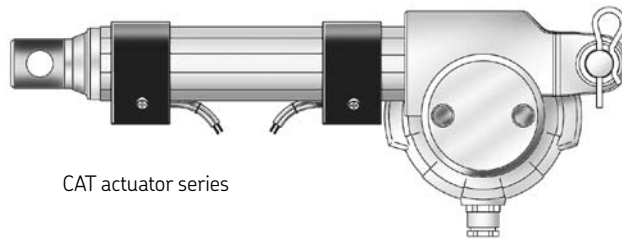
Permissible power: 3 W
Max. DC voltage: 200 V
Max. DC current: 200 mA

Ordering code

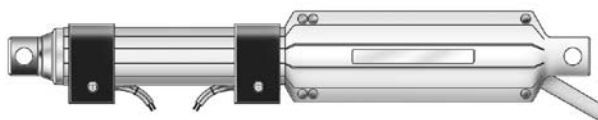
CAXC 33

NB! One CAXC is needed for each limit position.

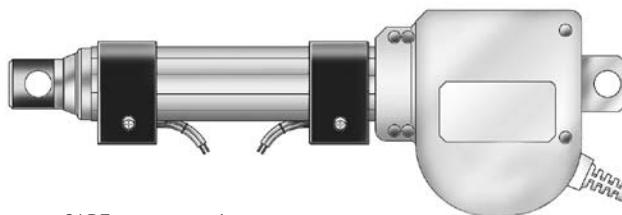
NB! Make sure you connect limit switches to a DC-supply.



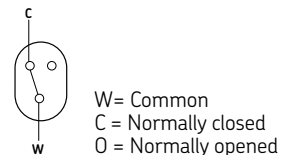
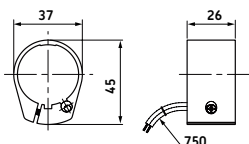
CAT actuator series



CALA actuator series



CARE actuator series

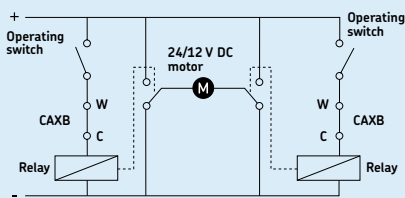


W = Common
C = Normally closed
O = Normally opened

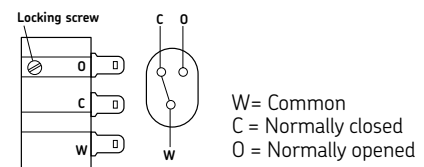
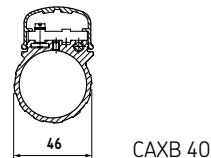
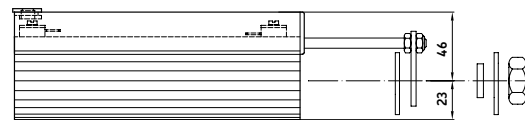
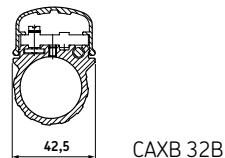
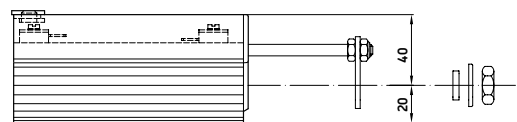
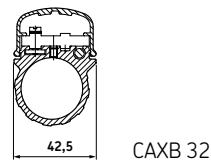
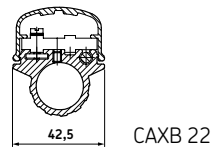
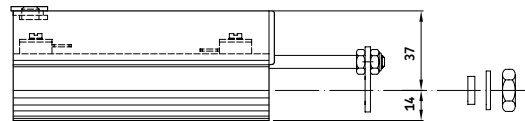
CAXB limit switch

Limit switches, combined with SKF control units, make it possible to set the stroke to any desired length.

- CAXB - designed for the following actuators:
CAR 22
CAR 32
CAR 40
CAT 32B
CARN 32
- To avoid running into mechanical end stop, the limit switches should be located approximately 10 mm from its respective end stop
- Front attachment G3 must be selected for this option

Connecting diagram**Technical data**

Permissible power: 3 W
Max. DC voltage: 200 V
Max. DC current: 200 mA

**Ordering key****Type**

CAXB 22 (CAR 22)
CAXB 32 (CAR 32, CARN)
CAXB 32B (CAT 32B)
CAXB 40 (CAR 40)

Actuator stroke

50 (for CAR 22, 32, CARN and CAT 32B)
100 (for CAR 22, 32, 40 and CARN)
150 (for CAR 22)
200 (for CAR 22, 32, CARN and CAT 32B)
300 (for CAR 22, 32, 40, CARN and CAT 32B)
400 (for CAT 32B)
500 (for CAR 32, 40, CARN and CAT 32B)
700 (for CAR 32, 40, CARN and CAT 32B)

C	A	X	B						
				22	32	32B	40		

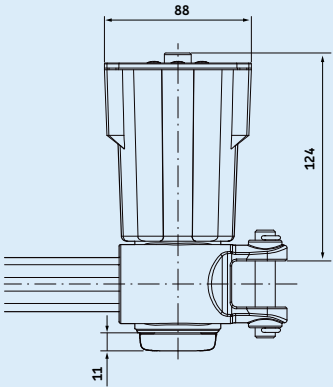
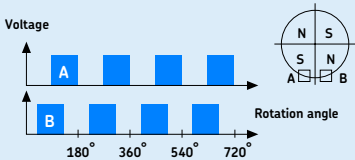
50
100
150
200
300
400
500
700

Encoder E2

- Can be fitted to all standard motors
- Hall effect, two channels with 90° displacement
- Located on gear housing, see drawing
- 2 pulses/channel and motor revolution
- Supply voltage: 5–24 V DC
- Final resolution according to gear ratio and actuator basic type (see table)

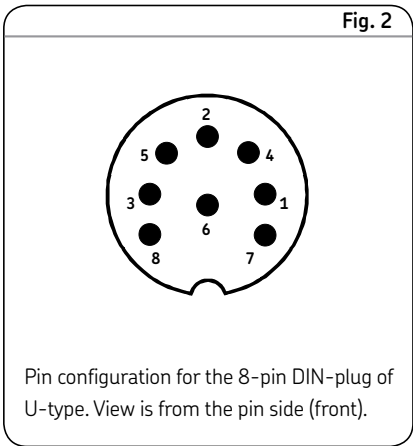
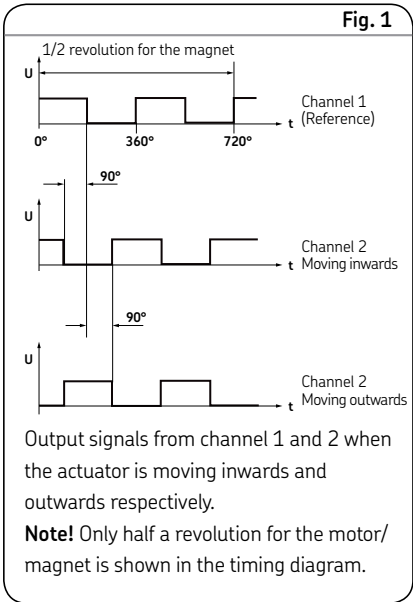
Feedback

	Gear	Pulses at 1mm stroke	Resolution (mm) per pulse
CAT 33	1	16,67	0,06
	2	8,33	0,12
	4	4,17	0,24
CAT 33H	1	4,00	0,25
	2	2,00	0,50
	4	1,00	1,00
CAT 32B	1	12,50	0,08
	2	6,25	0,16
	4	3,13	0,32



Encoder option E2

Dual encoder



Actuator version	Resolution/pulse
CARE 33A	0,75 mm
CARE 33H	3,175 mm
CARE 33M	1,50 mm

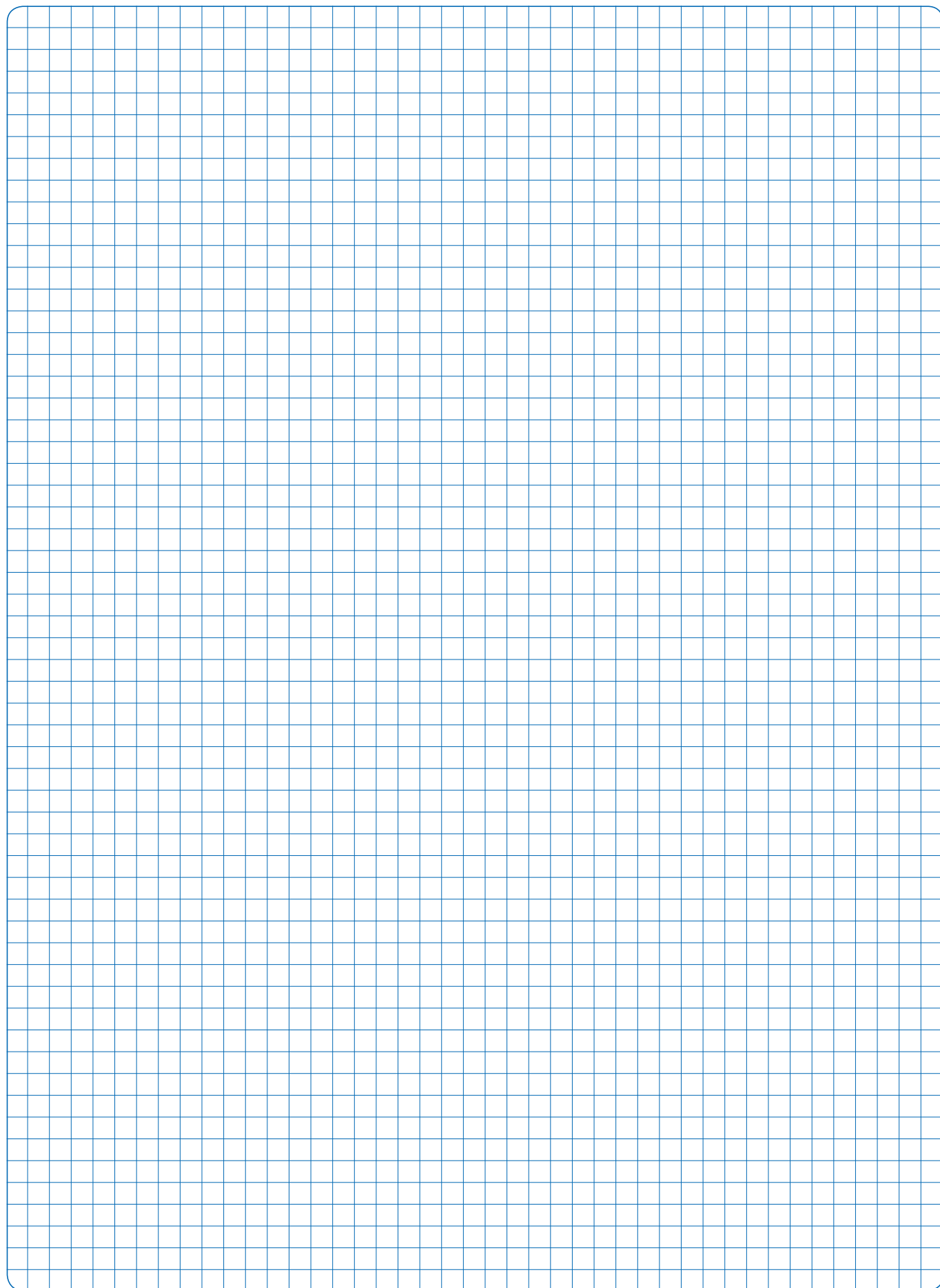
Table 2. Movement resolution.

Pin no	Color	Function
1	Green	Motor supply voltage +
2	Red	Motor supply voltage -
3	Black	Encoder supply voltage VCC
4	Red	Motor supply voltage -
5	Brown	Encoder supply voltage GND
6	White	Output channel 2
7	Green	Motor supply voltage +
8	Violet	Output channel 1

Table 3. Interface for the 8-pin DIN-plug. See figure 2 for pin configuration. Motor's voltage polarity is stated for outward movement.

Parameter	Value
Supply voltage range (VCC)	min 4,5 to max 24 V DC
Max continuous output current	22 mA (open collector)
Temperature range °C (°F)	-20 to +70

Table 1. Recommended operating ratings.



Not able to find your type in this catalogue?

Please fill in this application list and return it to your local sales representative OR by email to actuators@skf.com.

Company: Name of representative:

Tel.: Email:

Dimensions

*Type: ☐ Linear actuator ☐ Pillar

*Stroke length: mm

*Retracted length: mm

*Attachment: ☐ Front ☐ Rear ☐ Other ☐ Plate (only for pillars)

Mounting: ☐ Vertical ☐ Horizontal ☐ Diagonal

Performance

*Linear speed: mm/s at load N

*Dynamic load capacity: Pull N Push N

*Static load capacity: Pull N Push N at max. stroke: mm

*Eccentric load (only for pillars): Load offset mm

*Influence of lateral (side) force: ☐ No ☐ Yes

*Self-locking: ☐ None ☐ In & Out ☐ In ☐ Out

*Lifetime: cycles (in double stroke)

*Number of work cycles: cycle/hour hour/day day/year year

*Duty factor: % at load N

Motor type

*Motor voltage: ☐ 12/24V DC ☐ 230V AC/50Hz ☐ 120V AC/60Hz

Mode of control: ☐ Mains ☐ 24V DC ☐ Pneumatic

Overheating protection: ☐ Internal ☐ External ☐ No protection ☐ Self hold

Manual emergency operation: ☐ No ☐ Yes ☐ Quick-release

Miscellaneous

*Feedback: ☐ None ☐ Limit switches ☐ Potentiometer ☐ Encoder

Cable feedthrough (pillars): ☐ None ☐ Mains ☐ Other:

IP Protection: IP

*Ambient temperature: Lowest °C Highest °C

*Atmospheric-/ chemical influence: ☐ Indoor ☐ Outdoor ☐ Actuator is protected from rain

Humidity: %

Vibrations: ☐ No ☐ Yes If yes Amplitude mm Frequency Hz

Max. noise: dBa (distance 1 m)

Back-up nut: ☐ No ☐ Yes

Friction clutch: ☐ No ☐ Yes

Electrical protection class: ☐ I, grounded ☐ II, double isolation ☐ Safety low voltage

Quantity needed: Prototype pcs Pre-series pcs Series pcs

Other customer requirements that cannot be defined above:

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