

Actuator range



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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 2010. 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

| | | | | | | | | | | | | | | | | | | | | |
|--|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Type | MAX 6 | | | | | | | | | | | | | | | | | | | |
| 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 condition 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.

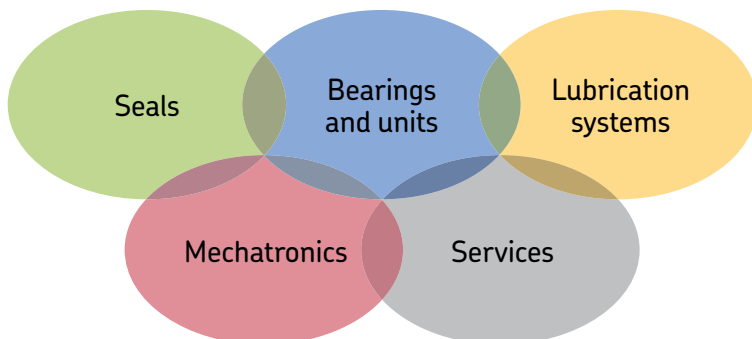


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Evolving by-wire technology

SKF has a unique expertise in the 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 60 years, SKF products, engineering and knowledge have helped make Scuderia Ferrari a formidable force in F1 racing. (The average racing Ferrari utilizes around 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

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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,

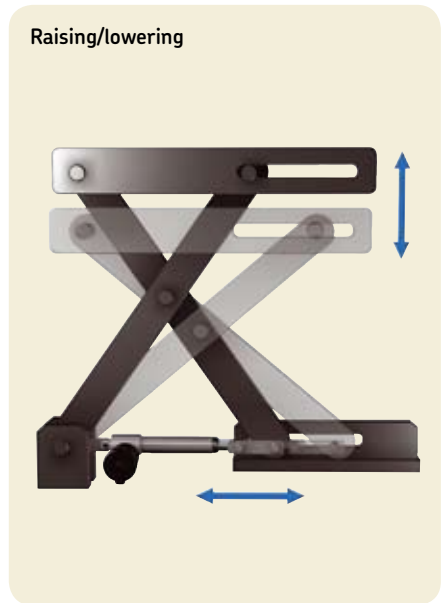
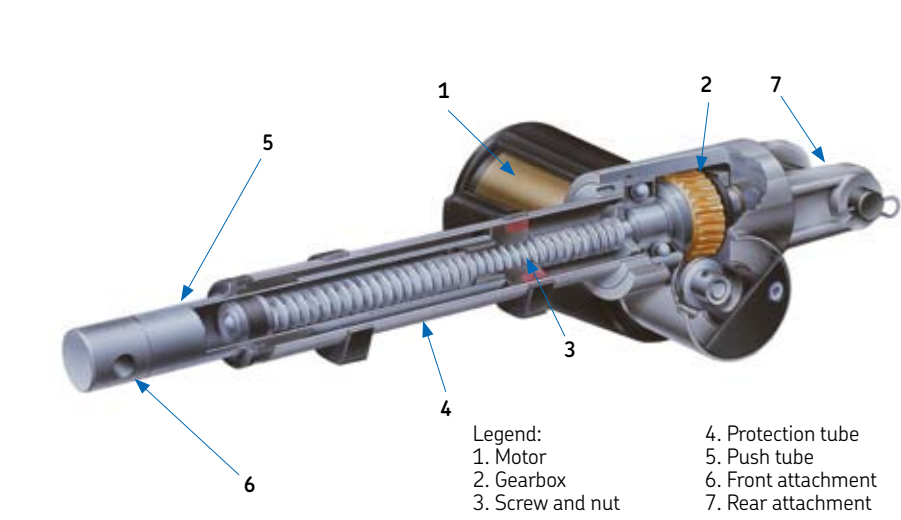
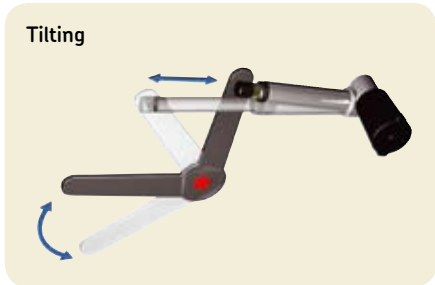
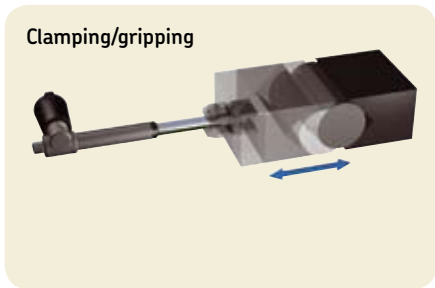
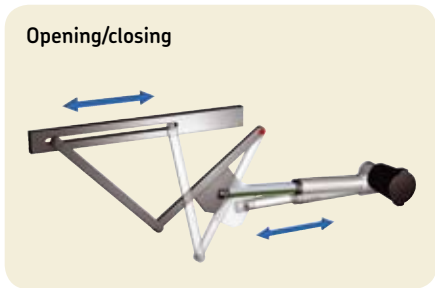
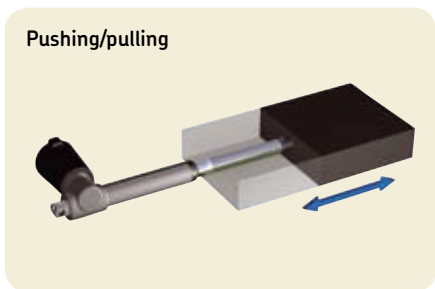
zinc, or polymer housings and ready-to-mount for easy plug-in operation.

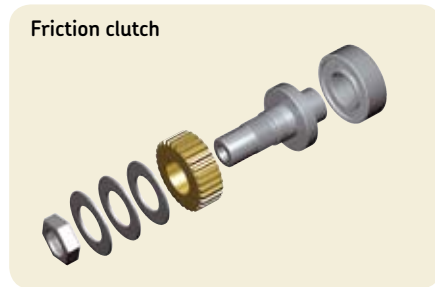
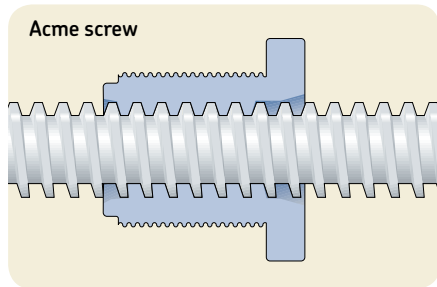
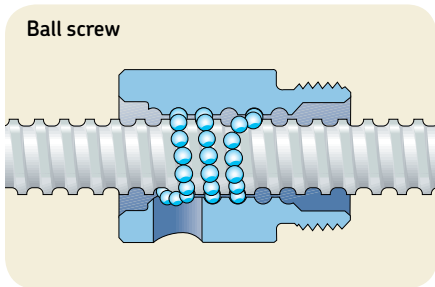
Actuators with modular design and open architecture offer opportunities to choose and integrate components to achieve customized solutions within existing envelopes. Application potential expands with the introduction of technologies for specific purposes, such as hall sensors, limit switches, potentiometers,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





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).

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.

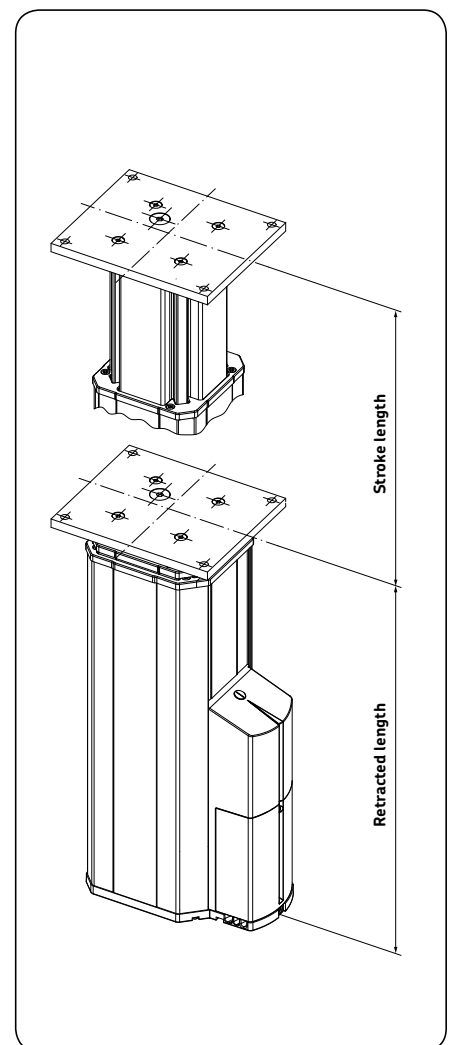
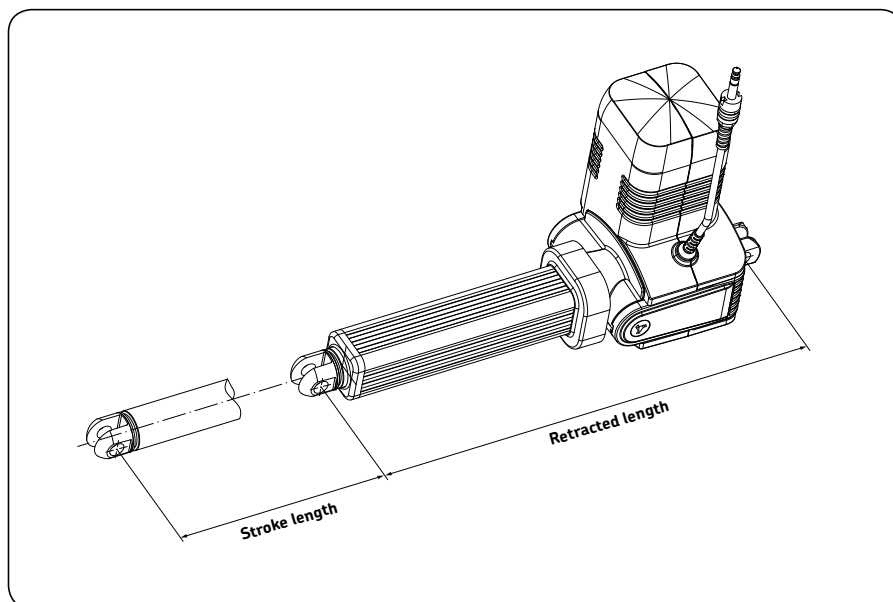
Force: Push force is the maximum extending force that an electric linear actuator can produce in Newtons (N). Pull force is the maximum retracting force. Some actuators do not produce equal push and pull forces, while others do not permit pull force.

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).

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

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.

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

Max. dynamic load = 5 000 N
Permitted load = 0,73 × 5 000 = 3 650 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 L₁₀ 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 L₁₀ of a ball screw, all you need to know is the dynamic load and actual stroke. L₁₀ 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.

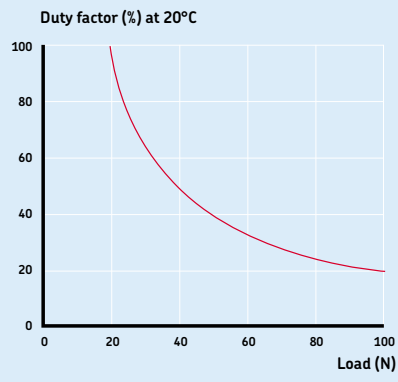
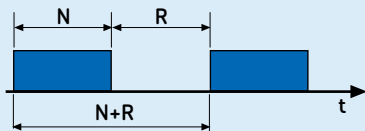
$$F_M = \sqrt[3]{\frac{F_1^3 S_1 + F_2^3 S_2 + F_3^3 S_3 + \dots}{S_1 + S_2 + S_3 + \dots}}$$

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

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

Selection guide

Telescopic pillars AC versions

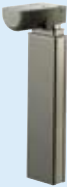
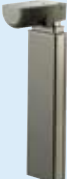
| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|---|---------------|---------------|----------------|-------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | – | V | N | N | mm/s | mm/s | mm | No. |
|  | TLC | 120 or 230 AC | 4 000 | 4 000 | 15 | 22 | 100 to 700 | 38 |
|  | TFG 50 | 120 AC | 2 500 | 2 500 | 15 | 19 | 200 to 700 | 42 |
|  | TFG 90 | 230 AC | 2 500 | 2 500 | 15 | 19 | 200 to 700 | 42 |
|  | THC | 120 or 230 AC | 1 800 | 1 800 | 15 | 20 | 200 to 700 | 46 |
|  | TXG | 120 or 230 AC | 1 500 | 0 | 17 | 23 | 200 to 600 | 50 |
|  | TGC | 120 or 230 AC | 1 000 | 1 000 | 11 | 12 | 200 to 700 | 54 |

Telescopic pillars
DC versions



| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|---|--------|---------|----------------|-------|-----------|---------|--------------|------|
| | | | push | pull | full load | no load | | |
| | – | V | N | N | mm/s | mm/s | mm | No. |
|  | CPI | 24 DC | 4 000 | 4 000 | 31 | 38 | 200 to 700 | 60 |
|  | TLG | 24 DC | 4 000 | 0 | 25 | 33 | 200 to 700 | 64 |
|  | TLT | 24 DC | 4 000 | 0 | 25 | 42 | 300 to 700 | 68 |
|  | TFG 10 | 24 DC | 2 500 | 2500 | 15 | 19 | 200 to 700 | 72 |
|  | THG | 24 DC | 2 000 | 0 | 12 | 15 | 200 to 700 | 76 |
|  | CAWA | 24 DC | 1 650 | 0 | 14 | 22 | 500 to 1 000 | 80 |

Selection guide

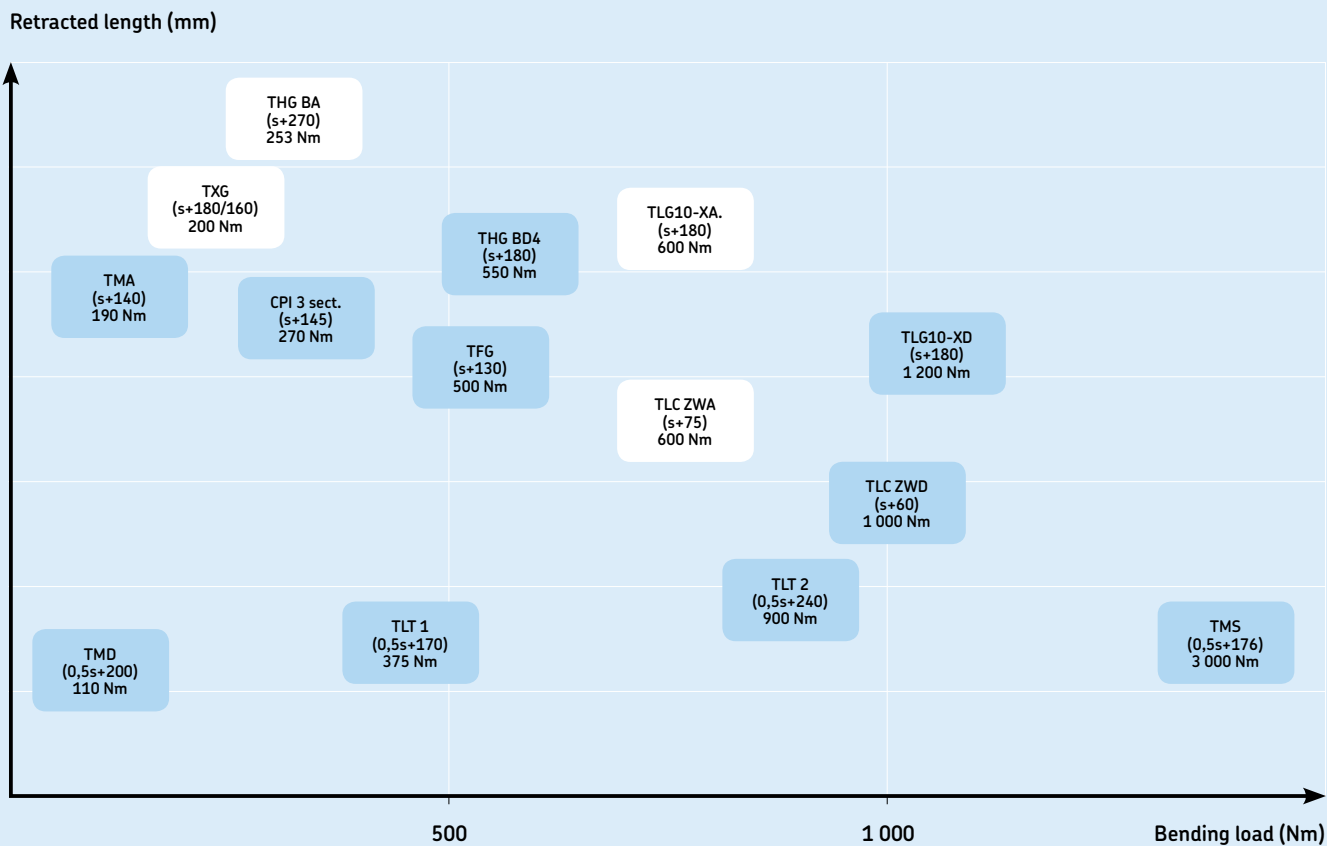
Telescopic pillars DC versions

| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|--|------|---------|----------------|------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | – | V | N | N | mm/s | mm/s | mm | No. |
|  | TXG | 24 DC | 1 500 | 0 | 17 | 23 | 200 to 600 | 84 |
|  | TMA | 24 DC | 1 000 | 0 | 35 | 55 | 500 | 88 |
|  | TMD | 24 DC | 800 | 0 | 35 | 60 | 700 | 92 |

Telescopic pillars No motor

| | Type | Voltage | Max load | | Max speed | | Stroke (S) | Page |
|---|------|----------|----------|-------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | – | V | N | N | mm/s | mm/s | mm | No. |
|  | FRE | No motor | N/A | N/A | N/A | N/A | 200 to 700 | 98 |
|  | TMS | No motor | 4 000 | 4 000 | N/A | N/A | 250 to 700 | 102 |

Telescopic pillars - retracted length/bending load ratio



- 3-section tube set
- 2-section tube set

Selection guide

Linear actuators AC versions

| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|---|---------|---------------|----------------|--------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | – | V | N | N | mm/s | mm/s | mm | No. |
|  | SLS | 3×400 AC | 50 000 | 50 000 | 74 | 88 | 100 to 700 | 110 |
|  | SKS/SKA | 3×400 AC | 30 000 | 30 000 | 45 | 54 | 100 to 700 | 114 |
|  | SKD | 3×400 AC | 15 000 | 15 000 | 25 | 33 | 100 to 700 | 118 |
|  | STD | 3×400 AC | 15 000 | 15 000 | 10 | 14 | 100 to 700 | 122 |
|  | STW | 230 AC | 15 000 | 15 000 | 12 | 13 | 100 to 700 | 126 |
|  | MAX 6 | 120 or 230 AC | 8 000 | 6 000 | 13 | 18 | 50 to 700 | 130 |

Linear actuators
AC versions

| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|---|----------------|---------------|----------------|-------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | – | V | N | N | mm/s | mm/s | mm | No. |
|  | CAR 40 | 120 or 230 AC | 6 000 | 6 000 | 40 | 40 | 100 to 700 | 134 |
|  | CAHB-31 | 115 or 230 AC | 6 000 | 6 000 | 48 | 57 | 102 to 610 | 138 |
|  | SJ | 115 or 230 AC | 5 000 | 5 000 | 6,6 | 7,2 | 100 to 600 | 142 |
|  | DSP | 3x400 AC | 4 500 | 4 500 | 50 | 58 | 100 to 700 | 146 |
|  | CAP 32 | 120 or 230 AC | 3 500 | 3 500 | 32 | 32 | 50 to 700 | 150 |
|  | CAR 32 | 120 or 230 AC | 3 500 | 3 500 | 32 | 32 | 50 to 700 | 154 |

Selection guide

Linear actuators AC versions

| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|---|----------------|--------------------|----------------|-------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | – | V | N | N | mm/s | mm/s | mm | No. |
|  | CAT 32B | 120, 230 or 400 AC | 3 500 | 3 500 | 32 | 32 | 50 to 700 | 158 |
|  | CAT 33 | 120, 230 or 400 AC | 3 000 | 3 000 | 24 | 24 | 100 to 400 | 162 |
|  | WSP | 230 AC | 2 600 | 2 600 | 50 | 50 | 100 to 700 | 166 |
|  | CAHB-30 | 115 or 230 AC | 2 300 | 2 300 | 25 | 26 | 102 to 610 | 170 |
|  | CAT 33H | 120, 230 or 400 AC | 1 200 | 1 200 | 90 | 90 | 100 to 400 | 174 |

Linear actuators
DC versions

| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|---|--------|-------------|----------------|--------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | - | V | N | N | mm/s | mm/s | mm | No. |
|  | SKG | 24 DC | 15 000 | 15 000 | 55 | 73 | 100 to 700 | 180 |
|  | STG | 24 DC | 15 000 | 15 000 | 14 | 20 | 100 to 700 | 184 |
|  | RU | 24 DC | 12 000 | 8 000 | 8 | 15 | 100 to 700 | 188 |
|  | MAX 3 | 12 or 24 DC | 8 000 | 6 000 | 12,7 | 18 | 50 to 700 | 192 |
|  | CAR 40 | 24 DC | 6 000 | 6 000 | 40 | 60 | 100 to 700 | 196 |
|  | ECO | 24 DC | 6 000 | 4 000 | 9 | 13 | 50 to 300 | 200 |

Selection guide

Linear actuators DC versions

| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|---|-----------------|-------------|----------------|-------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | – | V | N | N | mm/s | mm/s | mm | No. |
|  | FD | 24 DC | 6 000 | 4 000 | 6,2 | 8,2 | 50 to 300 | 204 |
|  | Magdrive | 24 DC | 6 000 | 6 000 | 8,5 | 15 | 50 to 700 | 208 |
|  | CAHB-21 | 12 or 24 DC | 4 500 | 4 500 | 45 | 65 | 102 to 610 | 212 |
|  | ASM | 12 or 24 DC | 4 000 | 4 000 | 50 | 70 | 100 to 700 | 216 |
|  | CAP 43B | 24 DC | 4 000 | 4 000 | 52 | 65 | 50 to 700 | 220 |
|  | CAT 32B | 12 or 24 DC | 4 000 | 4 000 | 52 | 67 | 50 to 700 | 224 |

Linear actuators
DC versions


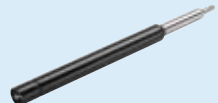
| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|---|---------|-------------|----------------|-------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | - | V | N | N | mm/s | mm/s | mm | No. |
|  | MAX 1 | 24 DC | 4 000 | 4 000 | 12,7 | 18 | 50 to 700 | 228 |
|  | CAR 32 | 12 or 24 DC | 3 500 | 3 500 | 40 | 60 | 50 to 700 | 232 |
|  | CAP 32 | 12 or 24 DC | 3 500 | 3 500 | 40 | 60 | 50 to 700 | 236 |
|  | CAP 43A | 24 DC | 3 000 | 3 000 | 40 | 52 | 100 to 400 | 240 |
|  | CAT 33 | 12 or 24 DC | 3 000 | 3 000 | 40 | 52 | 100 to 400 | 244 |
|  | CAHB-20 | 12 or 24 DC | 2 500 | 2 500 | 27 | 33 | 102 to 610 | 248 |

Selection guide



Linear actuators DC versions

| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|---|-----------------|-------------|----------------|-------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | – | V | N | N | mm/s | mm/s | mm | No. |
|  | CARE 33 | 24 DC | 2 000 | 2 000 | 32 | 45 | 50 to 500 | 252 |
|  | CAR 22 | 12 or 24 DC | 1 500 | 1 500 | 20 | 30 | 50 to 300 | 256 |
|  | CAT 33H | 12 or 24 DC | 1 200 | 1 200 | 150 | 190 | 100 to 400 | 260 |
|  | CAHB-10 | 12 or 24 DC | 1 000 | 1 000 | 45 | 56 | 50 to 300 | 264 |
|  | CALA 36A | 12 or 24 DC | 600 | 600 | 17 | 31 | 50 to 200 | 268 |
|  | CAT 21B | 24 DC | 600 | 600 | 8,1 | 9,7 | 50 to 300 | 272 |

**Linear actuators
No motor**

| | Type | Voltage | Max rated load | | Max speed | | Stroke (S) | Page |
|---|----------------|----------|----------------|-------|-----------|---------|------------|------|
| | | | push | pull | full load | no load | | |
| | – | V | N | N | mm/s | mm/s | mm | No. |
|  | CARN 32 | No motor | 3 500 | 3 500 | N/A | N/A | 50 to 700 | 280 |
|  | CCBR 32 | No motor | 2 500 | 2 500 | N/A | N/A | 50 to 700 | 284 |

Rotary actuators

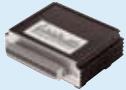


| | Type | Max torque | Max speed | Size | Page |
|---|----------------------------------|------------|-----------|------------|------------|
| | | | | | |
|  | CRAB 17 CRAB 17 | 70 105 | 8 20 | 125 125 | 290 290 |
|  | CRAB 05 | 100 | 3 | 86 | 296 |

Selection guide

Control units

| | Type | Functionality | Max motor | Input | Output | Page |
|---|----------------------------|---|-------------|---|------------------------|-------------------|
| | – | – | n° | V | V/A | No. |
|  | SCU | Encoder processing | 6 | 24 DC 120 or 230 AC | 24/30 24/18 | 302 |
|  | VCU | Basic functions | 5 | 120 or 230 AC | 24/7 or 18 | 306 |
|  | BCU | Basic functions | 3 | 120 or 230 AC | 24/7 | 310 |
|  | CB 200S | Basic functions | 3 | 100 - 240 AC | 24/3 | 314 |
|  | MCU | Basic functions | 2 | 24 DC | 24/7 or 18 | 316 |
|  | LD-014 LD-015 LD-015 | Synchronous Synchronous Synchronous | 4 3 2 | 120 or 230 AC 120 or 230 AC 120 or 230 AC | 24/11 24/11 24/9 | 318 320 320 |

Control units



| | Type | Functionality | Max motor | Input | Output | Page |
|--|------------------|---------------------|-----------|---------------|---------------|------|
| | – | – | n° | V | V/A | No. |
| CAED ANR  | 5-24R -PO | Analogical feedback | 1 | 24 DC | 24/5 | 322 |
| | 9-24R -PO | Analogical feedback | 1 | 24 DC | 24/9 | 322 |
| CAED  | 3-24R | Basic functions | 1 | 24 DC | 24/3 | 324 |
| | 5-24R | Basic functions | 1 | 24 DC | 24/5 | 324 |
| | 9-24R | Basic functions | 1 | 24 DC | 24/9 | 324 |
| CAEV  | 110/220 | Basic functions | 1 | 120 or 230 AC | 120 or 230 AC | 326 |

Selection guide

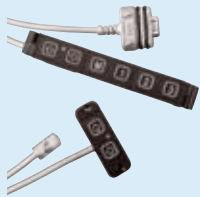

Hand switches

| | 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 | 332 |
| | EHA 3 | 12/50 | 5 | 67 | Grey | 334 |
|  | EHE 1 | 38/50 | 2 | ×7 | Grey | 336 |
| HS  | HS 112 | 40/50 | 1 | – | Black | 338 |
| | HS 124 | 40/50 | 2 | – | Black | 338 |
| | HS 126 | 40/50 | 2 | – | Black | 338 |
| | HS 138 | 40/50 | 3 | – | Black | 338 |
|  | PHC | – | 4 | 66 | Grey | 340 |
|  | CAES 31C | 30/33 | 1 | 54 | Black | 342 |

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 | 344 |
|  | PFP 1K | – | 1 | 21 | Grey | 346 |
| | PFP 1 | – | 1 | 21 | Anthracite | 346 |

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 | 348 |
|  | LD | 5/50 | 2 | 32 | Black | 350 |

Selection guide

Desk switch (pneumatic)

| Type | Max operating channels | Air tube | Color | Page |
|------|------------------------|----------------|------------|------|
| – | n° | – | – | No. |
| PAM | 1 | 1,5 m straight | Anthracite | 352 |



Project sales

Rotary actuators


| Type | Torque | Max speed | Size | Features | Page |
|------|---------|-----------|------|---------------|------|
| – | Nm | rpm | mm | – | No. |
| CRAB | CRAB 12 | 200 | 20 | Compact | 356 |
| | CRAB 20 | 400 | 15 | Zero backlash | 356 |
| | CRAB 30 | 1 000 | 10 | Zero backlash | 356 |
| | CRAB 40 | 1 700 | 8 | Zero backlash | 356 |



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 | 359 |
| | 2404–••••–2–62L | 4,00 | 8,7 | 300 | 125–135–170 | 359 |
| | 2406–125–•–62L | 6,00 | 5,8 | 450 | 125 | 359 |
| | 2404–••••–•–63I | 4,00 | 13,1 | 300 | 125–135–170 | 359 |
| | 2406–125–•–63I | 6,00 | 8,7 | 450 | 125 | 359 |
| | 2104–170–•–D63L | 4 | 9,0 | 353 | 170 | 360 |
| | 2404–••••–2–D82P | 4 | 14,1 | 320 | 90–170 | 360 |
| | 2406–••••–2–D82P | 6 | 9,4 | 480 | 90–170 | 360 |
| | 3004–••••–2–D82P | 4 | 14,1 | 266 | 90–170 | 360 |
| | 3006–••••–2–D82P | 6 | 9,4 | 400 | 90–170 | 360 |
| | 3004–••••–2–D84H | 4 | 27,4 | 266 | 90–170 | 360 |
| | 3006–••••–2–D84H | 6 | 18,3 | 400 | 90–170 | 360 |
| | 3004–••••–2–D86F | 4 | 39,5 | 266 | 90–170 | 360 |
| | 3006–••••–2–D86F | 6 | 26,3 | 400 | 90–170 | 360 |

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

| Modular electro-mechanical cylinder | Type | Nominal force | Linear speed | Page | |
|---|-------------|---------------|---------------------|---------------------|-----|
| | – | kN | mm/s | No. | |
|  | SRSA | 2505 | 40,7 | 333 | 362 |
| | | 2510 | 37,5 | 450 | 362 |
| | | 3005 | 52,9 | 325 | 362 |
| | | 3010 | 49,9 | 650 | 362 |
| | | 3905 | 63,3 | 279,2 ¹⁾ | 362 |
| | | 3910 | 61,0 | 350 | 362 |
| | | 3915 | 61,5 | 650 | 362 |
| | | 4805 | 106,5 | 220,8 ¹⁾ | 362 |
| | | 4810 | 95,3 | 350 | 362 |
| | | 4815 | 130,4 | 412,5 | 362 |
| | | 4820 | 86,3 | 550 | 362 |
| | | 6010 | 161,9 | 275 | 362 |
| | | 6015 | 162,3 | 462,5 | 362 |
| | | 6020 | 142,7 | 666,7 | 362 |
| | | 7510 | 255,5 | 250 ¹⁾ | 362 |
| | 7515 | 240,2 | 357 ¹⁾ | 362 | |
| | 7520 | 199,4 | 466,7 ¹⁾ | 362 | |
| SVSA | 3201 | 40,6 | 10,4 ¹⁾ | 362 | |
| | 4001 | 62,3 | 8,3 ¹⁾ | 362 | |
| | 5001 | 110,2 | 6,7 ¹⁾ | 362 | |
| SLSA | 2525 | 8,2 | 1 500 ¹⁾ | 362 | |
| | 4040 | 12,4 | 1 500 ¹⁾ | 362 | |

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 | 366 |



Telescopic pillars

AC versions

| | |
|----------|----|
| TLC..... | 38 |
| TFG..... | 42 |
| THC..... | 46 |
| TXG..... | 50 |
| TGC..... | 54 |

DC versions

| | |
|-----------|----|
| CPI..... | 60 |
| TLG..... | 64 |
| TLT..... | 68 |
| TFG..... | 72 |
| THG..... | 76 |
| CAWA..... | 80 |
| TXG..... | 84 |
| TMA..... | 88 |
| TMD..... | 92 |

No motor

| | |
|----------|-----|
| FRE..... | 98 |
| TMS..... | 102 |



Telescopic pillars – AC versions

| | |
|----------|----|
| TLC..... | 38 |
| TFG..... | 42 |
| THC..... | 46 |
| TXG..... | 50 |
| TGC..... | 54 |

Telescopic pillar Telemag TLC

Benefits

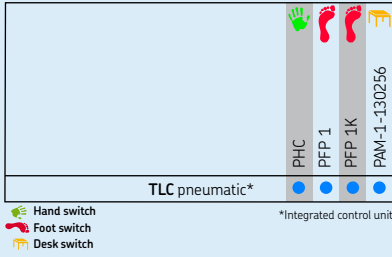
- Push or pull load
- High bending load
- Quiet
- Powerful
- Plug and play

Standards

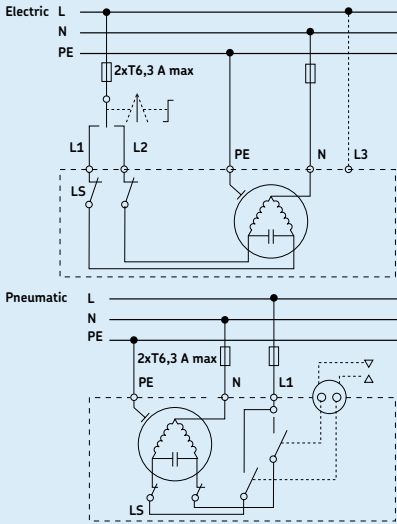
- EN/IEC 60601-1
- UL 60601-1



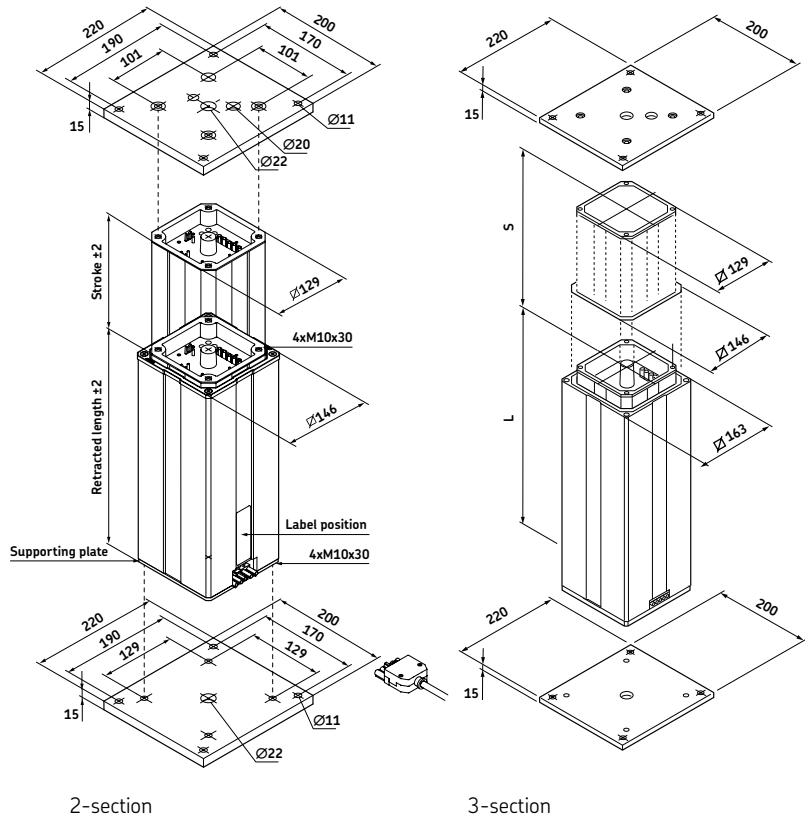
Suitable control units and accessories



Connecting diagrams



Dimensional drawing



Legend:
S = stroke
L = retracted length

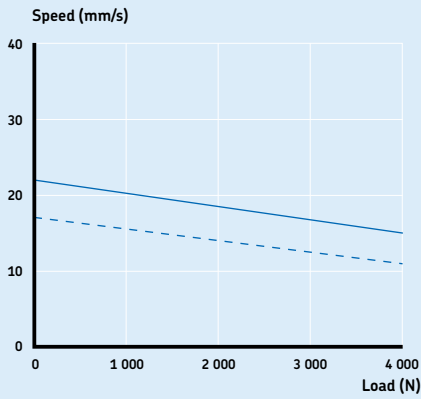
Note: mounting plates are not included.
To be ordered separately.

Technical data

| | Unit | TLC 12ZWAS | TLC 12ZWAK | TLC 12ZWDS | TLC 12ZWDK |
|------------------------------------|----------------------|------------------|------------------|------------------|------------------|
| Rated push load | N | 4 000 | 4 000 | 4 000 | 4 000 |
| Rated pull load | N | 4 000 | 4 000 | 4 000 | 4 000 |
| Bending load | Nm | up to 630* | up to 630* | up to 2 100* | up to 2 100* |
| Speed (full load to no load) | 120 V AC 230 V AC | mm/s 15 to 22 | mm/s 15 to 22 | mm/s 15 to 22 | mm/s 15 to 22 |
| Telescopic pillar version | | # of section | # of section | # of section | # of section |
| Stroke | | mm | mm | mm | mm |
| Retracted length (push version) | | mm | mm | mm | mm |
| Retracted length (pull version) | | mm | mm | mm | mm |
| Voltage | V AC | 120 or 230 | 120 or 230 | 120 or 230 | 120 or 230 |
| Power | 120 V AC 230 V AC | W | W | W | W |
| Current | 120 V AC 230 V AC | A | A | A | A |
| Duty cycle: intermittent operation | 120 V AC 230 V AC | min. | min. | min. | min. |
| Duty cycle: short-time operation | 120 V AC 230 V AC | min. | min. | min. | min. |
| 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

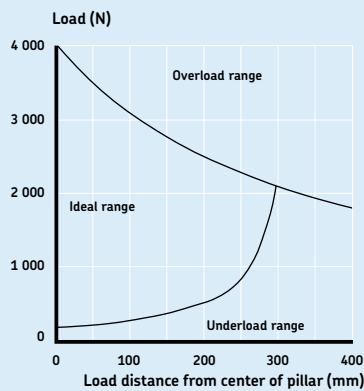
Performance diagram



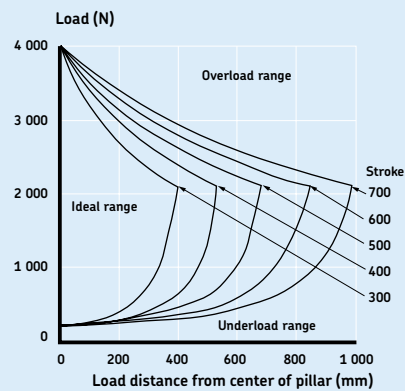
Speed-load diagram

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

Bending load diagrams

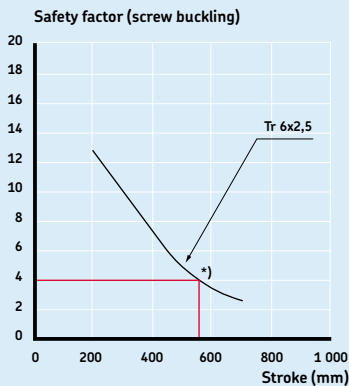


Bending load diagram 2-section



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 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Tube set: Tube set 2× Tube set 3× | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Control: Electrical control Pneumatic control <i>Low-voltage control</i> | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Voltage: 230 V AC/50 Hz (no code) 120 V AC/60 Hz <i>Special voltage</i> | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Type of protection/test: Standard IP30 (no code) <i>UL approved</i> | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Construction: Push load <i>Customer-specific</i> Pull load | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | 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 |
| 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

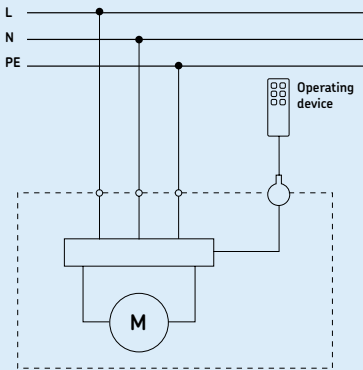


Suitable control units and accessories

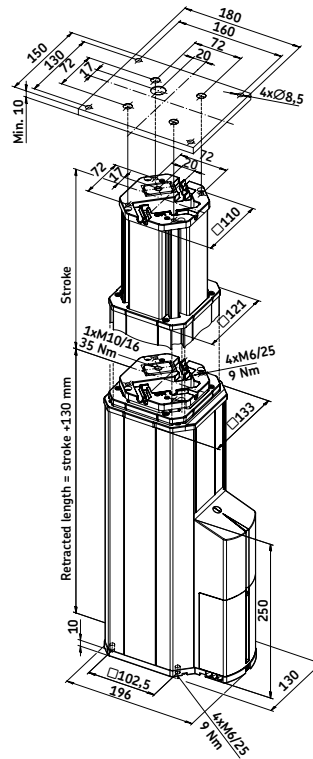
| | | | | |
|--------|-------------------------|---|---|---|
| | |  |  |  |
| | EHA 3 | | | |
| | STJ | | | |
| | STE | | | |
| TFG 50 | Integrated control unit | ● | ● | ● |
| TFG 90 | Integrated control unit | ● | ● | ● |

 Hand switch
 Foot switch
 Desk switch

Connecting diagram



Dimensional drawing



Legend:
 S = stroke
 L = retracted length

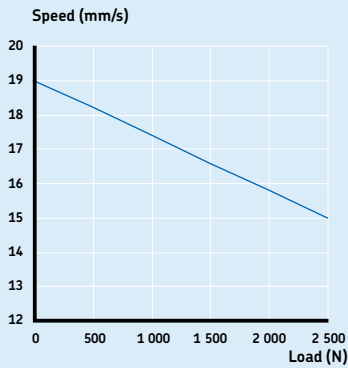
Note: mounting plates are not included.
 To be ordered separately.

Technical data

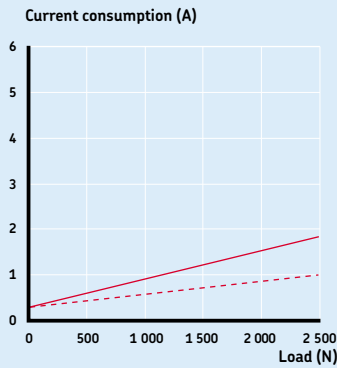
| | Unit | TFG 50 | TFG 90 |
|------------------------------------|--------------|---------------|---------------|
| Rated push load | N | 2 500 | 2 500 |
| Rated pull load | N | 2 500 | 2 500 |
| Bending load | Nm | up to 500* | up to 500* |
| Speed (full load to no load) | mm/s | 15 to 19 | 15 to 19 |
| 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 | V AC | 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



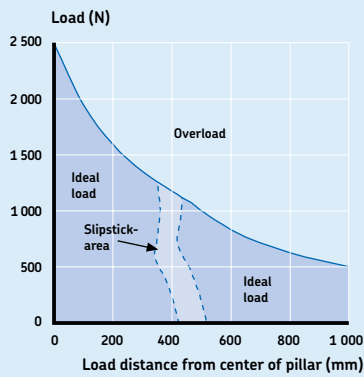
Speed-load diagram



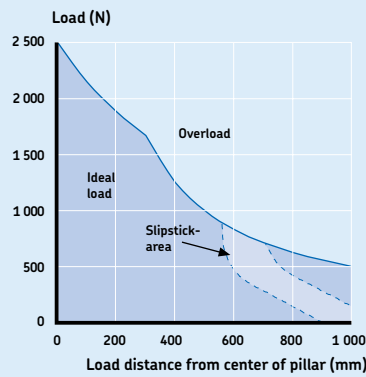
Current-load diagram

— TFG 50
- - - TFG 90

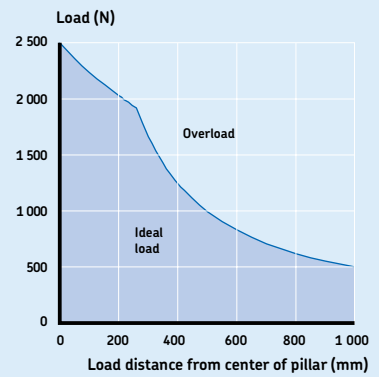
Bending load diagrams



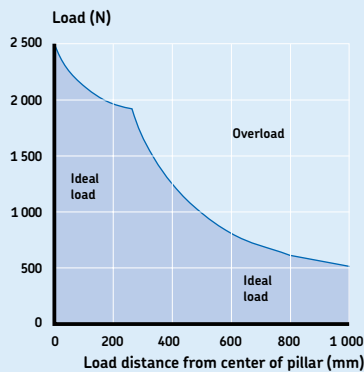
200 mm stroke



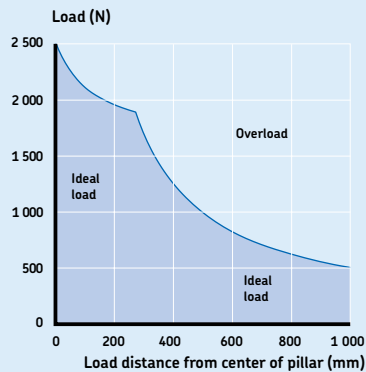
300 mm stroke



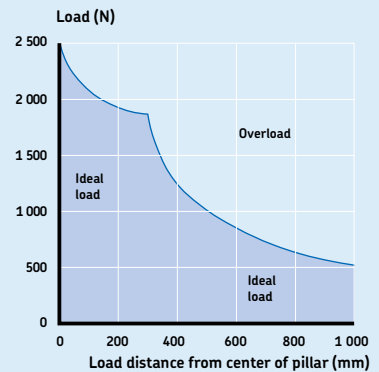
400 mm stroke



500 mm stroke



600 mm stroke



700 mm stroke

Ordering key

TFG 0 - 23 - 000

Type

Voltage:

120 V AC (50/60 Hz)

230 V AC (50 Hz)

5
9

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 2-Hall encoder, 14 pulses per 9 mm travel

With mains cable feedthrough (3xAWG16)

With control cable feedthrough (10xAWG28)

000
E
C
H

Accessories

| | 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 THC

Benefits

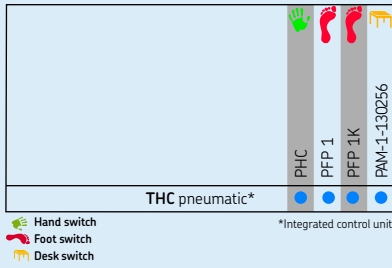
- Push or pull load
- Quiet
- Powerful
- Robust
- Plug and play

Standards

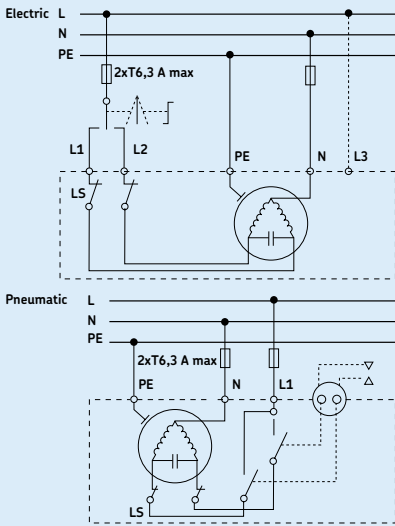
- EN/IEC 60601-1
- UL 60601-1



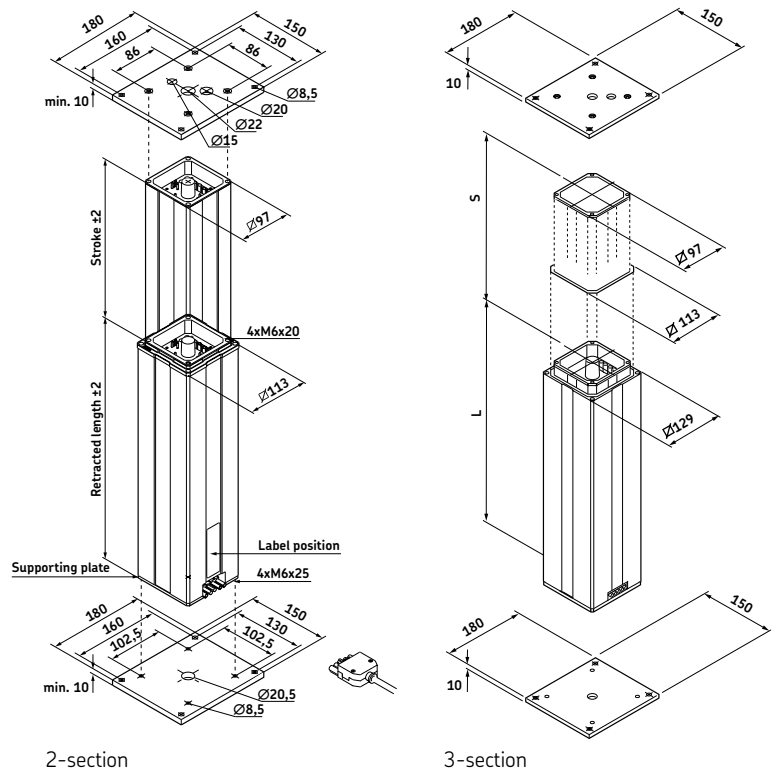
Suitable control units and accessories



Connecting diagrams



Dimensional drawing



Legend:
S = stroke
L = retracted length

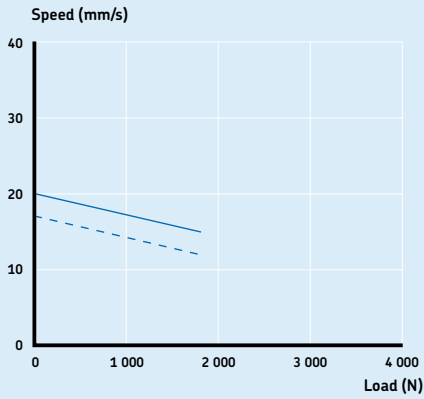
Note: mounting plates are not included.
To be ordered separately.

Technical data

| | Unit | THC 8AWAS | THC 8AWAK | THC 8AWDS | THC 8AWDK |
|------------------------------------|--------------|-------------|------------------|------------------|------------------|
| Rated push load | N | 1 800 | 1 800 | 1 800 | 1 800 |
| Rated pull load | N | 1 800 | 1 800 | 1 800 | 1 800 |
| Bending load | Nm | up to 250* | up to 250* | up to 900* | up to 900* |
| Speed (full load to no load) | 120 V AC | mm/s | 15 to 20 | 15 to 20 | 15 to 20 |
| | 230 V AC | mm/s | 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 (push version) | mm | S+155 | S+155 | S+60 | S+60 |
| Retracted length (pull version) | mm | S+160 | S+160 | S+65 | S+65 |
| Voltage | V AC | 120 or 230 | 120 or 230 | 120 or 230 | 120 or 230 |
| Power | 120 V AC | W | 720 | 720 | 720 |
| | 230 V AC | W | 500 | 500 | 500 |
| Current | 120 V AC | A | 6 | 6 | 6 |
| | 230 V AC | A | 2,2 | 2,2 | 2,2 |
| Duty cycle: intermittent operation | 120 V AC | min. | 0,7 min./30 min. | 0,7 min./30 min. | 0,7 min./30 min. |
| | 230 V AC | min. | 1 min./27 min. | 1 min./27 min. | 1 min./27 min. |
| Duty cycle: short-time operation | 120 V AC | min. | 1 | 1 | 1 |
| | 230 V AC | min. | 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

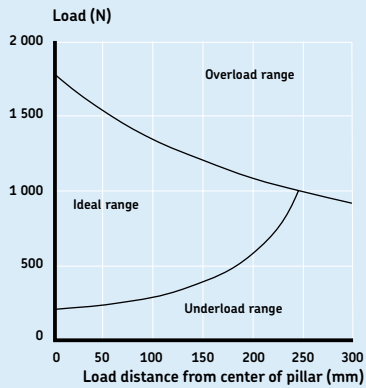
Performance diagram



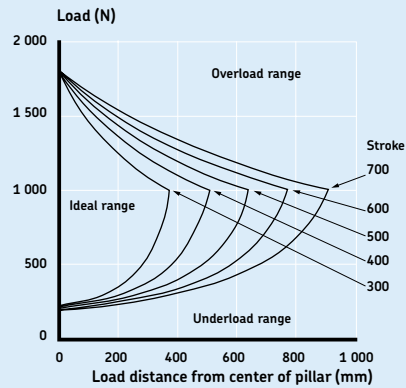
Speed-load diagram

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

Bending load diagrams

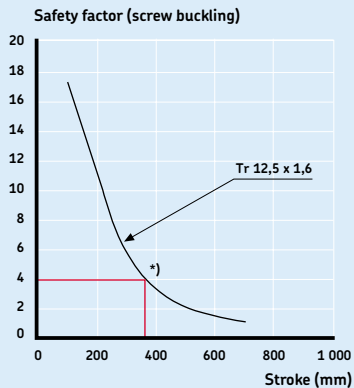


Bending load diagram 2-section



Bending load diagram 3-section

Safety factor load conditions



* Safety factor = 4

Ordering key

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

A
B
C

A
D

S
K
N

2
9

U

0
1
3

2
3
4
5
6
7

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | 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
- Powerful and fast lifting
- Aesthetic design

Standards

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



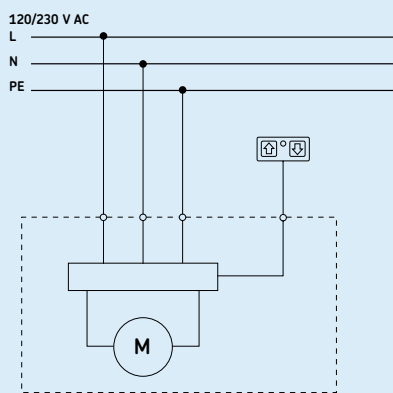
Suitable control units and accessories

| | | | | |
|-------|-------------------------|------|------|------|
| | | | | |
| | | EHE1 | STF* | STA* |
| TXG 4 | Integrated control unit | ● | ● | ● |
| TXG 5 | Integrated control unit | ● | ● | ● |
| TXG 8 | Integrated control unit | ● | ● | ● |
| TXG 9 | Integrated control unit | ● | ● | ● |

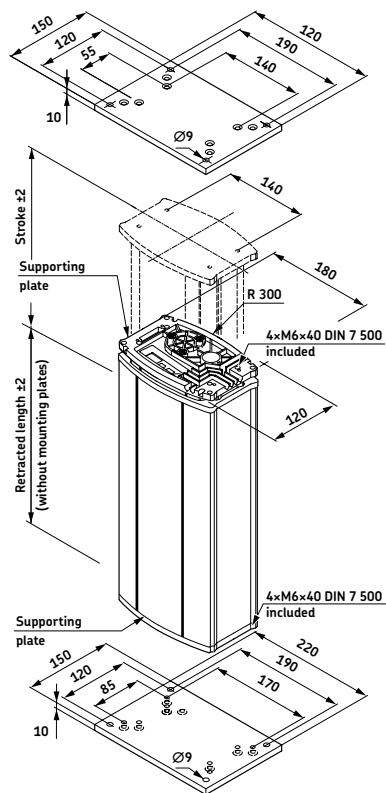
- Hand switch
- Foot switch
- Desk switch

* only with FCC plug

Connecting diagram



Dimensional drawing



Legend:
S = stroke
L = retracted length

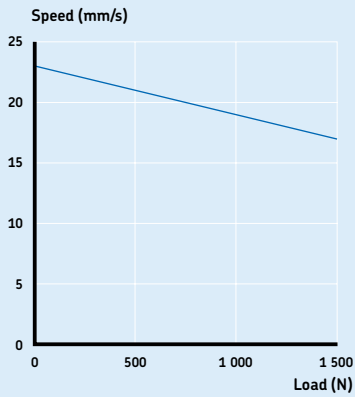
Note: mounting plates are not included.
To be ordered separately.

Technical data

| | Unit | TXG4/5 | TXG8/9 |
|------------------------------------|--------------|-------------------------|-------------------------|
| Rated push load | N | 1 500 | 1 500 |
| Rated pull load | N | 0 | 0 |
| Bending load | Nm | up to 210 ¹⁾ | up to 210 ¹⁾ |
| 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) ²⁾ | II/(I) ²⁾ |
| Type of control | - | electrical | electrical |
| Weight | kg | 9 to 14 | 9 to 14 |

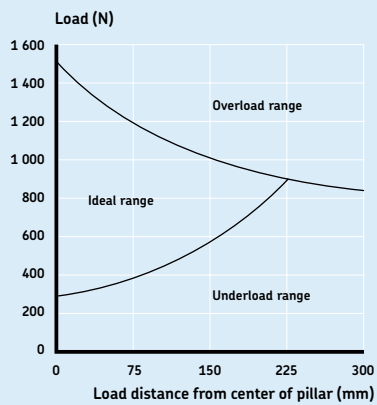
¹⁾ For details, see bending load diagrams
²⁾ Mandatory for cable feedthrough option

Performance diagram

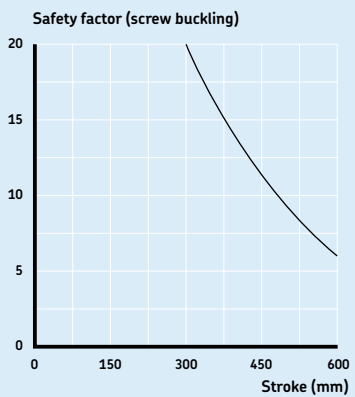


Speed-load diagram

Bending load diagram



Safety factor load conditions



Ordering key



Type

Voltage:

| | |
|--|---|
| 120 V AC, 50/60 Hz, class II | 4 |
| 120 V AC, 50/60 Hz, class I (mandatory for cable feedthrough option) | 5 |
| 230 V AC, 50 Hz, class II | 8 |
| 230 V AC, 50 Hz, class I (mandatory for cable feedthrough option) | 9 |

Color:

| | |
|----------------------------|----------|
| Natural anodized coating | 5 |
| <i>Customer-specific</i> | <i>K</i> |
| <i>Powder-coated white</i> | <i>2</i> |
| <i>Powder-coated grey</i> | <i>3</i> |

Option:

| | |
|---|------------|
| None | 000 |
| Control connection feedthrough | EYX |
| Mains cable feedthrough | EYF |
| Control connection feedthrough, mains cable feedthrough | 2AA |
| <i>Customer-specific</i> | <i>KKK</i> |

Stroke (S) / Retr. length (L=S+180 or L= S+160 mm)

| | L=S+180 | L=S+160 |
|--------|---------|------------|
| 200 mm | 200 | <i>4CY</i> |
| 300 mm | 300 | <i>4DY</i> |
| 400 mm | 400 | <i>4EY</i> |
| 500 mm | 500 | <i>4FY</i> |
| 600 mm | 600 | <i>4GY</i> |

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| Mains cable | Plug | Country | Order number | Comment |
|------------------------------|------------------|---------|--------------|---------------|
| Straight cable 3,5 | Euro | General | M/0121730 | 2-pole |
| Straight cable 3,5 | Schuko | General | M/0121760 | 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

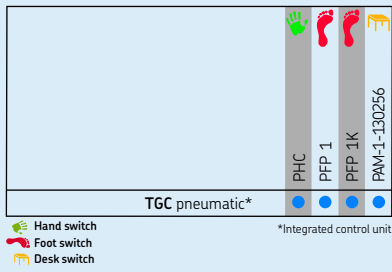
- Push or pull load
- Compact design
- Quiet
- Robust
- Plug and play

Standards

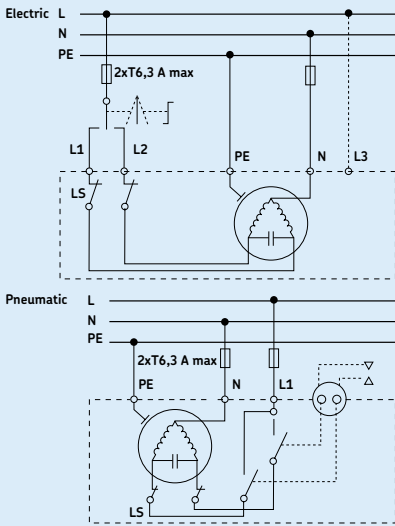
- EN/IEC 60601-1
- UL 60601-1



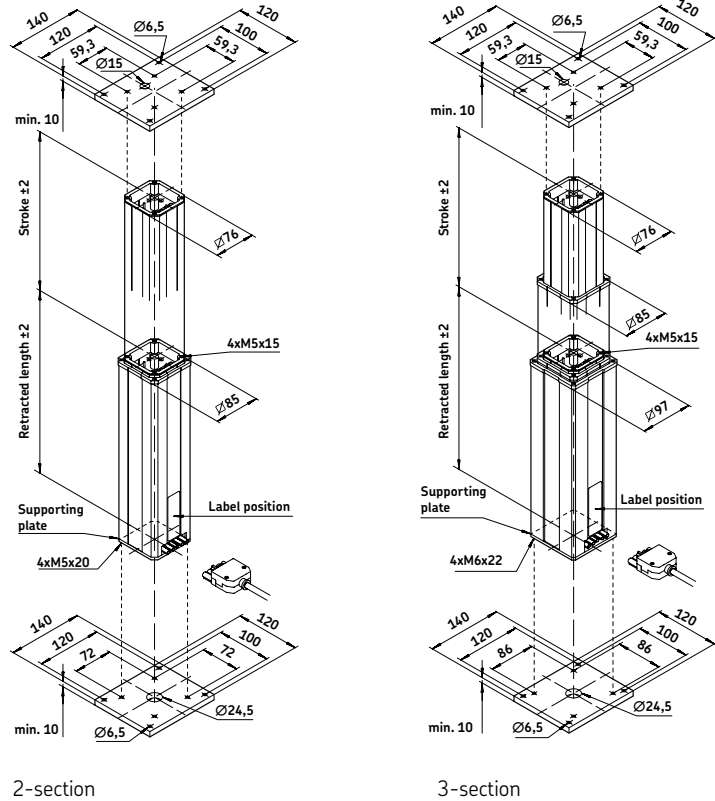
Suitable control units and accessories



Connecting diagrams



Dimensional drawing



Legend:
S = stroke
L = retracted length

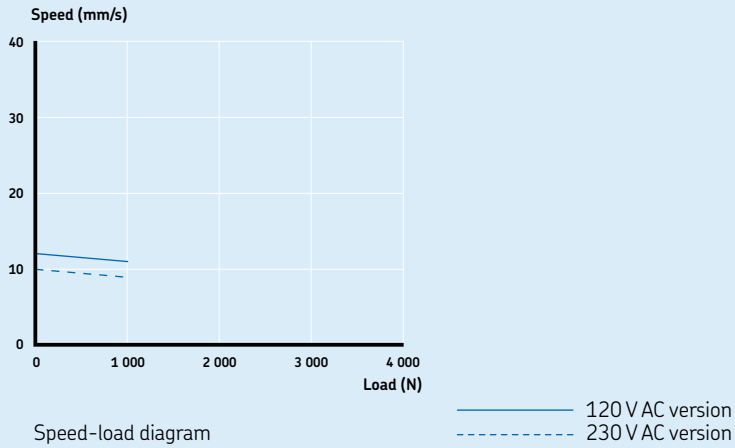
Note: mounting plates are not included.
To be ordered separately.

Technical data

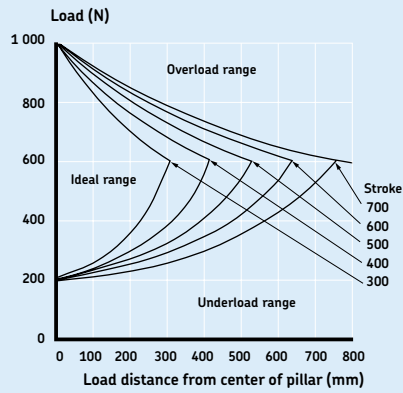
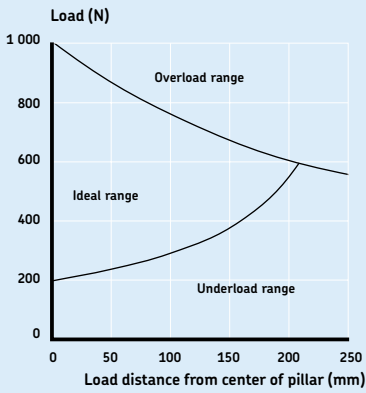
| | Unit | TGC 8AWAS | TGC 8AWAK | TGC 8AWDS | TGC 8AWDK |
|------------------------------------|----------------------|--------------|------------------------------------|------------------------------------|------------------------------------|
| Rated push load | N | 1 000 | 1 000 | 1 000 | 1 000 |
| Rated pull load | N | 1 000 | 1 000 | 1 000 | 1 000 |
| Bending load | Nm | up to 130* | up to 130* | up to 450* | up to 450* |
| Speed (full load to no load) | 120 V AC 230 V AC | mm/s mm/s | 11 to 12 9 to 10 | 11 to 12 9 to 10 | 11 to 12 9 to 10 |
| Telescopic pillar version | # of section | 2-section | 2-section | 3-section | 3-section |
| Stroke | mm | 200 to 700 | 200 to 700 | 300 to 700 | 300 to 700 |
| Retracted length (push version) | mm | S + 145 | S + 145 | S + 45 | S + 45 |
| Retracted length (pull version) | mm | S + 150 | S + 150 | S + 50 | S + 50 |
| Voltage | V AC | 120 or 230 | 120 or 230 | 120 or 230 | 120 or 230 |
| Power | 120 V AC 230 V AC | W W | 300 210 | 300 210 | 300 210 |
| Current | 120 V AC 230 V AC | A A | 2,5 0,95 | 2,5 0,95 | 2,5 0,95 |
| Duty cycle: intermittent operation | 120 V AC 230 V AC | min. min. | 0,8 min./21 min. 1 min./19 min. | 0,8 min./21 min. 1 min./19 min. | 0,8 min./21 min. 1 min./19 min. |
| Duty cycle: short-time operation | 120 V AC 230 V AC | min. min. | 1,5 2 | 1,5 2 | 1,5 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 | 4,5 to 7,5 | 4,5 to 7,5 | 5,9 to 9,5 | 5,9 to 9,5 |

* For details, please see bending load diagrams

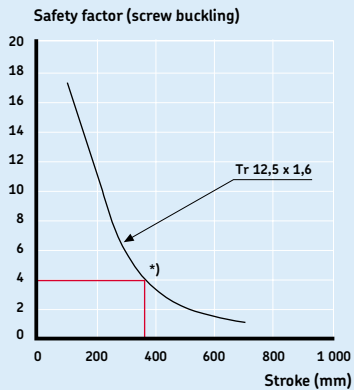
Performance diagram



Bending load diagrams



Safety factor load conditions



Ordering key



Type

Tube set:

Tube set 2×

Tube set 3×

A
D

Control:

Electrical control

Pneumatic control

Low-voltage control

S
K
N

Voltage:

230 V AC/50 Hz, IP 30 (no code)

120 V AC/60 Hz, IP 20

Special voltage

2
9

Type of protection /test:

Standard IP30 (no code)

UL test

U

Construction:

Push load

Customer-specific

Pull load

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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | 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/0125629 |
| 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..... | 60 |
| TLG..... | 64 |
| TLT..... | 68 |
| TFG..... | 72 |
| THG..... | 76 |
| CAWA..... | 80 |
| TXG..... | 84 |
| TMA..... | 88 |
| TMD..... | 92 |

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

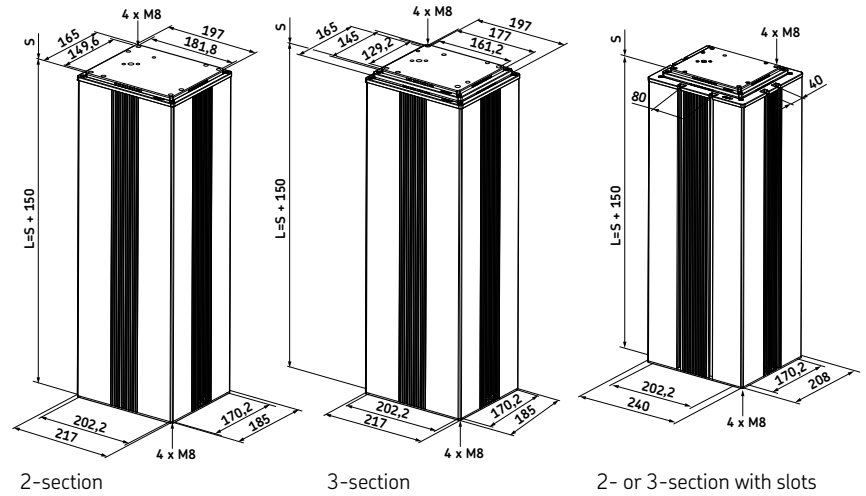


Suitable control units and accessories

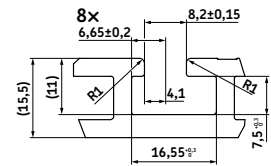
| Control units | | LD | SCU 1 | SCU 5 | SCU 9 | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 |
|----------------|--|----|-------|-------|-------|-------|-------|-------|-------|-------|
| CPI | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| EHA 3 | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| STJ | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| STE | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| LD-034.000.004 | | ● | | | | | | | | |
| LD-011.031.000 | | ● | | | | | | | | |

Hand switch
 Foot switch
 Desk switch

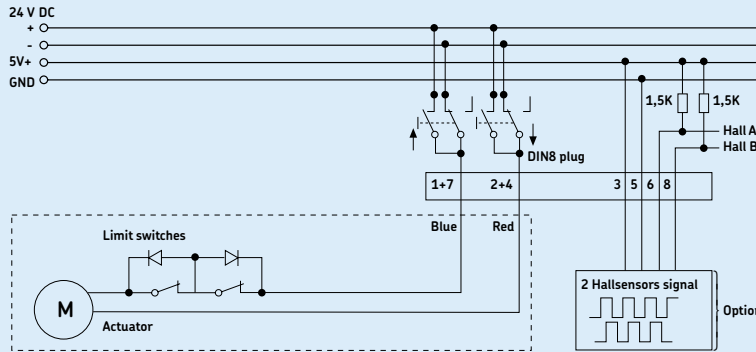
Dimensional drawing



Legend:
 S = stroke
 L = retracted length



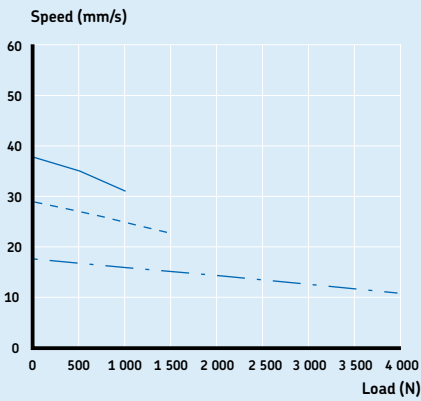
Connecting diagram



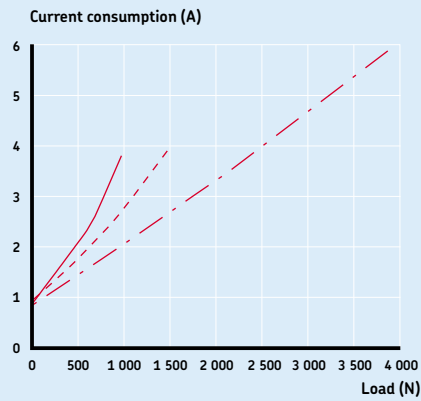
Technical data

| | 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 | 13 to 30 | 13 to 30 | 13 to 30 |
| Weight (3-section) | kg | 14 to 34 | 14 to 34 | 14 to 34 |

Performance diagrams

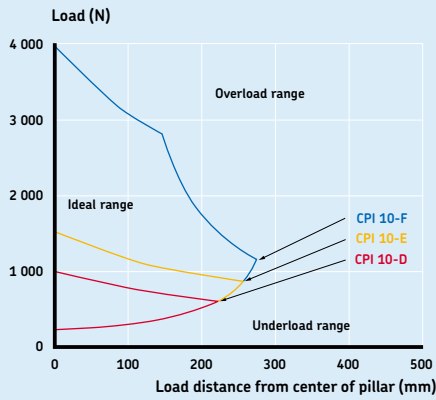


Speed-load diagram
 — CPI10-D
 - - - CPI10-E
 - · - CPI10-F

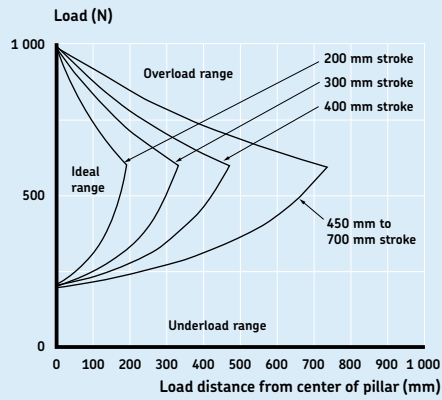


Current-load diagram
 — CPI10-D
 - - - CPI10-E
 - · - CPI10-F

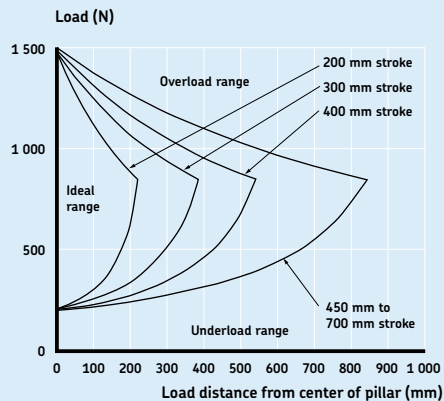
Bending load diagrams



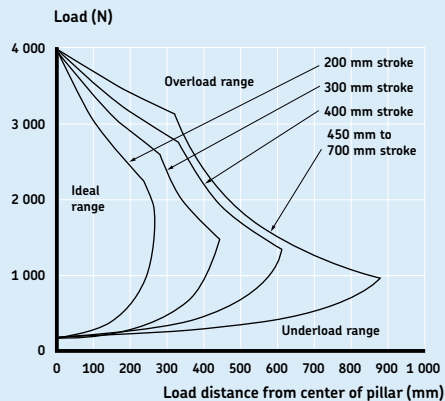
Load diagram 2-section



Load diagram 3-section CPI10-D



Load diagram 3-section CPI10-E



Load diagram 3-section CPI10-F

Ordering key



Type

Voltage:
24 V DC

| Load: Push (N) | Pull (N) | Speed (mm/s) |
|-------------------|----------|--------------|
| 1 000 | 1 000 | 31 |
| 1 500 | 1 500 | 22 |
| 4 000 | 4 000 | 11 |

D
E
F

Tube set:

- 2-section
- 3-section
- 2-section T-slotted outer tube
- 3-section T-slotted outer tube

2
3
4
5

Stroke (S):

- 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*

200
250
300
350
400
450
500
550
600
650
700
XXX

Electrical options:

- None
- 2-Hall encoder*
- Lifetime monitoring*
- 2-Hall encoder and lifetime monitoring*

0
F
M
N

Cable through option:

- None
- Mains cable feedthrough, protection class I (retracted length +30 mm) max 250 V AC, max 10 A

0
C

Special:

- None
- Back-up nut (only for 4 000 N version)

0
B

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | Designation | Order N° |
|---|-----------------|-----------|
| Top mounting plate (without T-slot), Bore 202,2×170,2 mm | ZBE-333426 | M/0126542 |
| Top mounting plate (with T-slot), Bore 202,2×170,2 | ZBE-333434 | M/0126543 |
| Bottom mounting plate 3-section, Bore 161,2×129,2 mm | ZBE-333428 | M/0126541 |
| Bottom mounting plate 2-section, Bore 181,8×149,6 mm | ZBE-333427 | M/0126540 |
| Screw for bottom mounting plates M10×25 (1 screw required) | ZBE-510978 | M/0125359 |
| Screw for top mounting plates M8×36 (4 screws required) | ZBE-530564 | M/0126539 |
| Screws for bottom mounting plates M8×35 (4 screws required) | ZBE-530564 | M/0126539 |
| Motor cable 2xDIN8, 1 000 mm, black | ZKA-306009-1000 | M/0105471 |
| Motor cable 2xDIN8, 1 500 mm, black | ZKA-306009-1500 | M/0105472 |
| Motor cable 2xDIN8, 2 500 mm, black | ZKA-306009-2500 | M/0105473 |

Telescopic pillar Telemag TLG

Benefits

- High bending load
- Powerful

Standards

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

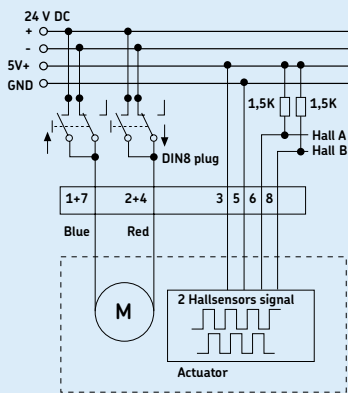


Suitable control units and accessories

| 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 | ● | ● | ● | ● | ● | ● | ● | ● | ● |

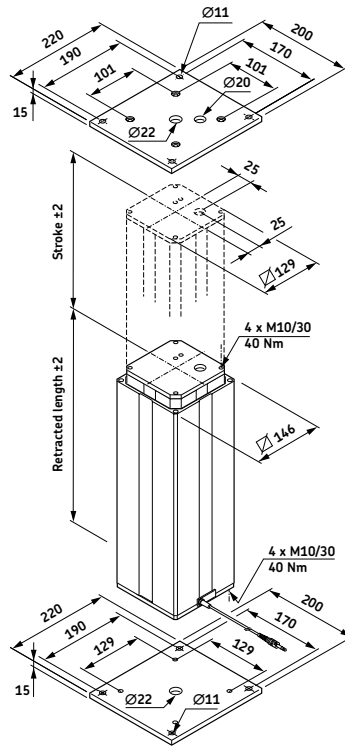
Hand switch
 Foot switch
 Desk switch

Connecting diagram*

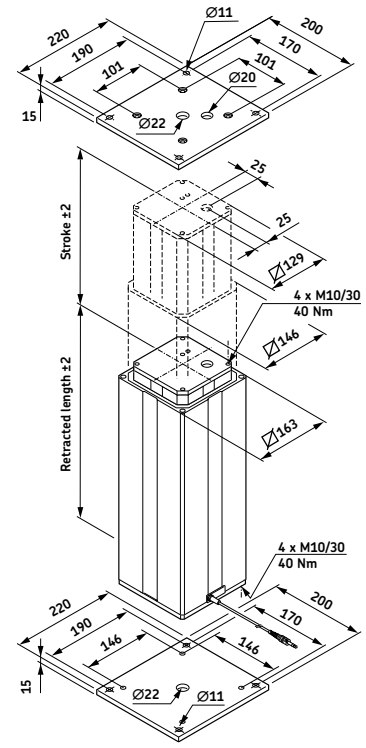


* Only valid with TLG11. TLG10 must be operated by a BCU, MCU, SCU or VCU control unit.

Dimensional drawing



2-section



3-section

Legend:
S = stroke
L = retracted length

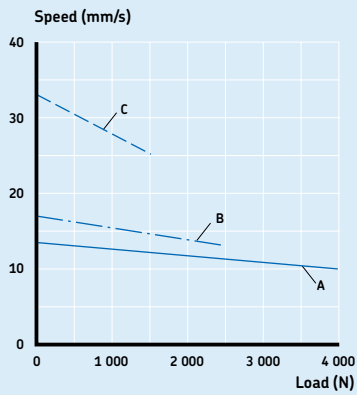
Note: mounting plates are not included.
To be ordered separately.

Technical data

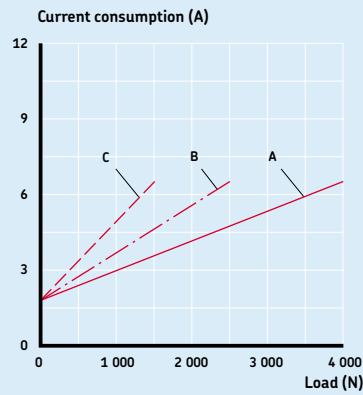
| | Unit | TLG 10/11-A | TLG 10/11-B | TLG 10/11-C |
|------------------------------------|--------------|----------------|----------------|----------------|
| Rated push load | N | 4 000 | 2 500 | 1 500 |
| Rated pull load | N | 0 | 0 | 0 |
| Bending load | Nm | up to 2 800* | up to 1 750* | up to 950* |
| 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 |
| 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 to 30 | 15 to 30 | 15 to 30 |

* For details, please see bending load diagrams

Performance diagrams

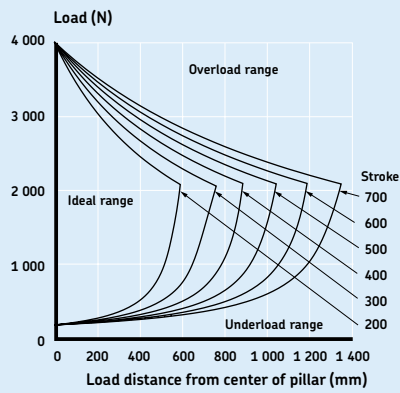


Speed-load diagram

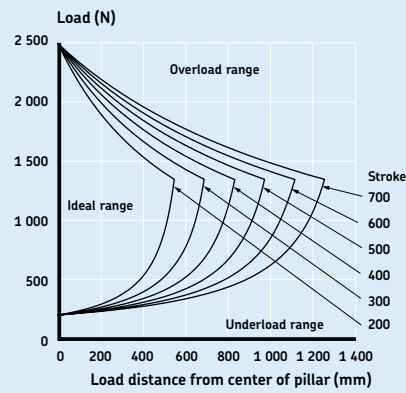


Current-load diagram

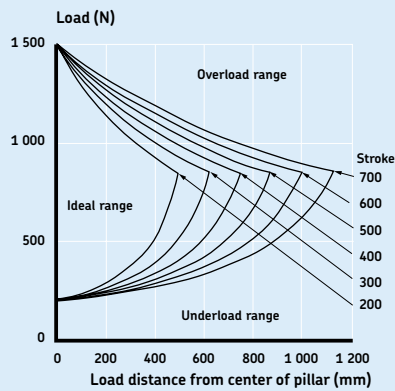
Bending load diagrams



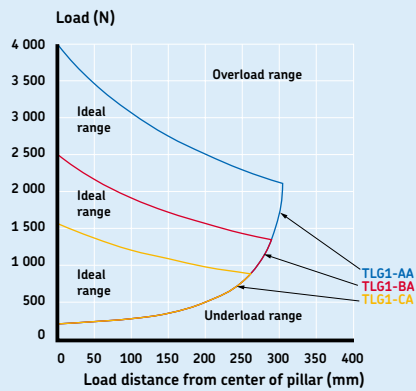
Bending load diagram TLG ...AD



Bending load diagram TLG ...BD



Bending load diagram TLG ...CD



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

Ordering key



Type

Voltage:

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

0
1

Load:

4 000 N
2 500 N
1 500 N

A
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

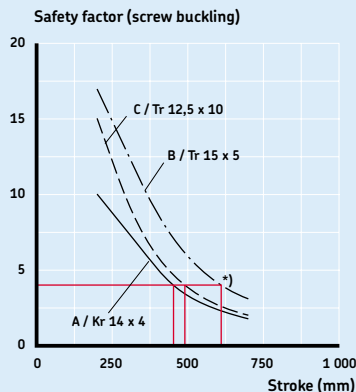
Option:

No option
1-Hall 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, 1-Hall encoder
Cable feedthrough, potentiometer
2-Hall encoder, cable with DIN8 plug
Cable feedthrough, 2-Hall encoder, cable with DIN8 plug

0
A
B
C
D
E
F
G

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Safety factor load conditions



* Safety factor = 4

Accessories

| | 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

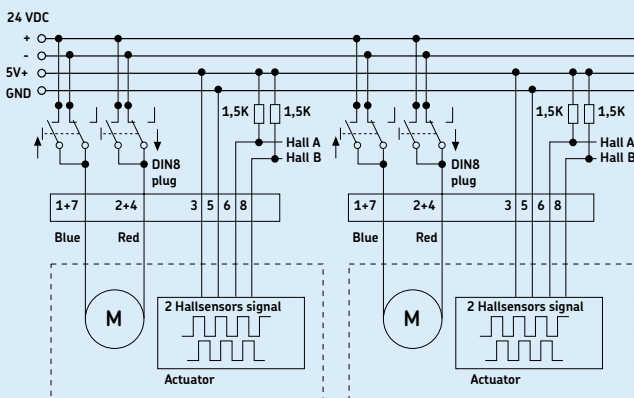


Suitable control units and accessories

| | | Control units | | | | | | | |
|--|------|---------------|-------|-------|-------|-------|-------|-------|-------|
| | | SCU 1 | SCU 5 | SCU 9 | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 |
| | TLT | ● | ● | ● | ● | ● | ● | ● | ● |
| | EHA3 | ● | ● | ● | ● | ● | ● | ● | ● |
| | STJ | ● | ● | ● | ● | ● | ● | ● | ● |
| | STE | ● | ● | ● | ● | ● | ● | ● | ● |

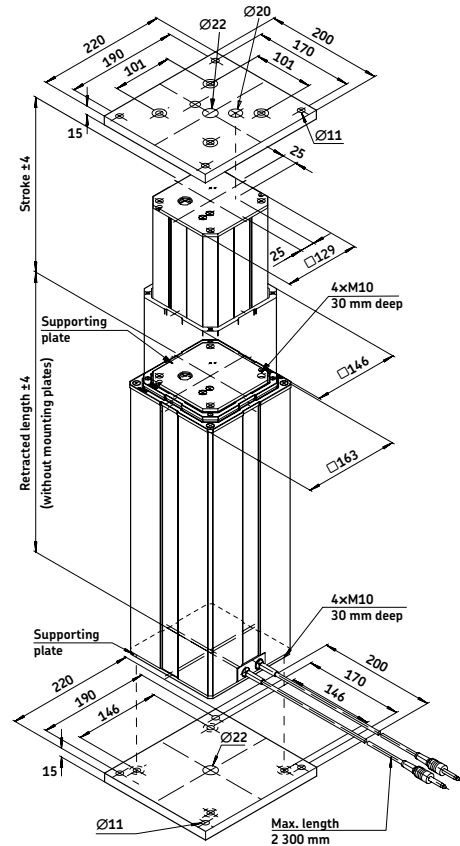
Hand switch
 Foot switch
 Desk switch

Connecting diagram*



* Only valid with TLT11. TLT10 must be operated by a BCU, SCU or VCU control unit.

Dimensional drawing



Legend:
 S = stroke
 L = retracted length

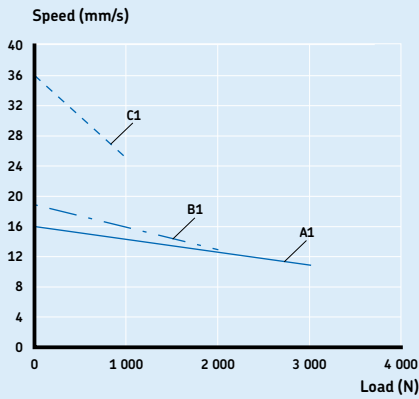
Note: mounting plates are not included.
 To be ordered separately.

Technical data

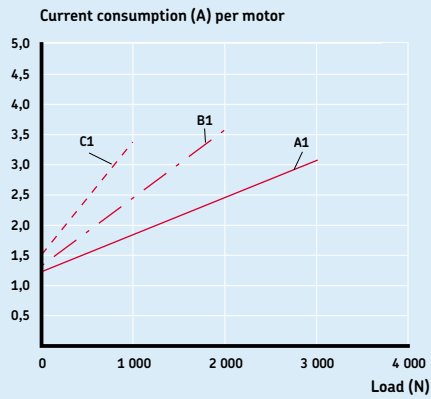
| | Unit | TLT10-A1 | TLT10-A2 | TLT10-B1 | TLT10-C1 | TLT10-C2 |
|------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Rated push load | N | 3 000 | 4 000 | 2 000 | 1 000 | 2 000 |
| Rated pull load | N | 0 | 0 | 0 | 0 | 0 |
| 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 | 300 to 700 | 300 to 700 | 300 to 700 | 300 to 700 | 300 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 |
| 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 to 30 | 15 to 30 | 15 to 30 | 15 to 30 | 15 to 30 |

* For details, please see bending load diagrams

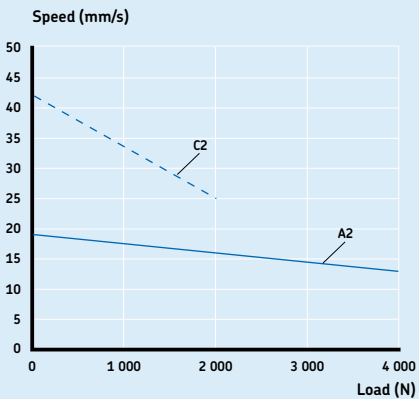
Performance diagrams



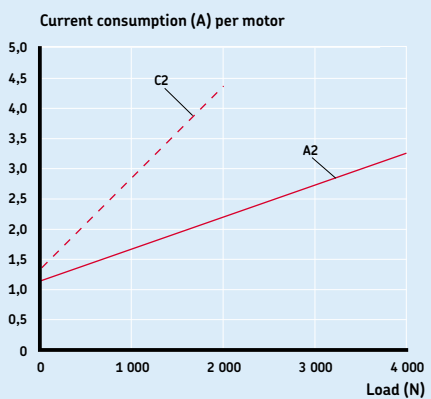
Speed-load diagram



Current-load diagram

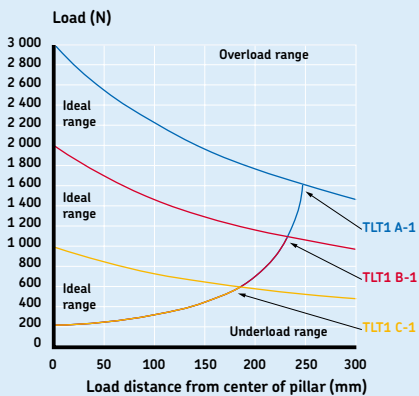


Speed-load diagram

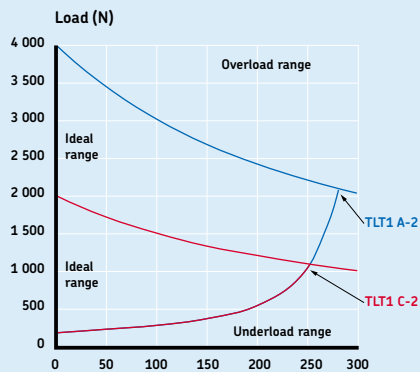


Current-load diagram

Bending load diagrams



Bending load diagram A1, B1, C1



Bending load diagram A2, C2

Ordering key



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):

300 mm
 400 mm
 500 mm
 600 mm*
 700 mm*

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
 1-Hall encoder, 8 pulses, cable with jack plug
Cable feedthrough, 3x1,5 mm², top +160 mm, bottom +800 mm
Cable feedthrough, 1-Hall encoder
 2-Hall encoder, cable with DIN8 plug

0
 A
 C
 D
 F

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

* Reduced safety factor

Accessories

| | Designation | Order N° |
|------------------------------------|-------------|-----------|
| Top mounting plate | SPL-290268 | M/0125624 |
| Bottom mounting plate | SPL-290265 | 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

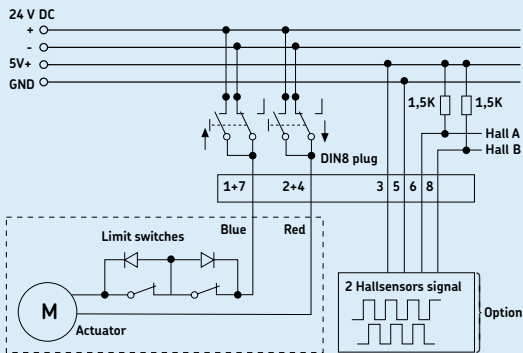


Suitable control units and accessories

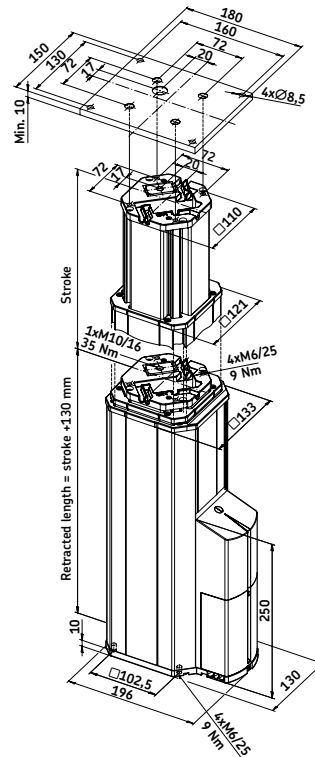
| | | Control units | | | | | | | | | |
|--------|----------------|---------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| | | SCU 1 | SCU 5 | SCU 9 | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 | LD 014 | LD 015 |
| TFG 10 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | EHA 3 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | STJ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | STE | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | LD-034.000.004 | | | | | | | | | ● | ● |
| | LD-011.031.000 | | | | | | | | | ● | ● |

Hand switch
 Foot switch
 Desk switch

Connecting diagram



Dimensional drawing



Legend:
 S = stroke
 L = retracted length

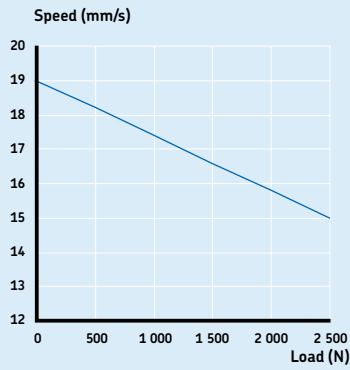
Note: mounting plates are not included.
 To be ordered separately.

Technical data

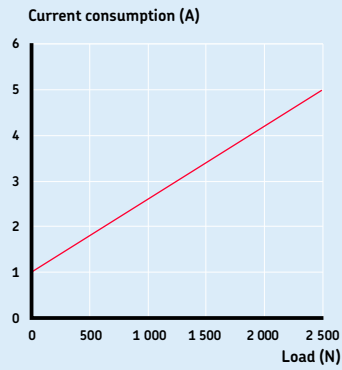
| | Unit | TFG 10 |
|------------------------------------|--------------|---------------|
| Rated push load | N | 2 500 |
| Rated pull load | N | 2 500 |
| Bending load | Nm | up to 500* |
| Speed (full load to no load) | mm/s | 15 to 19 |
| Telescopic pillar version | # of section | 3-section |
| Stroke | 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

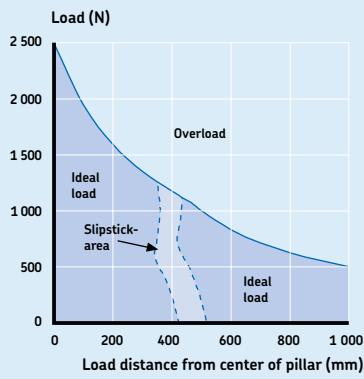


Speed-load diagram

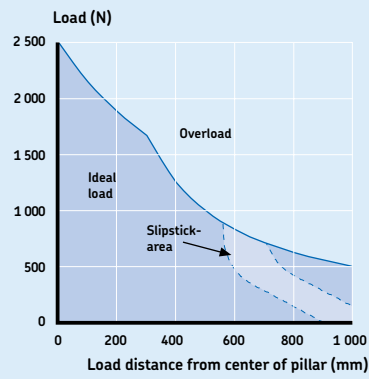


Current-load diagram

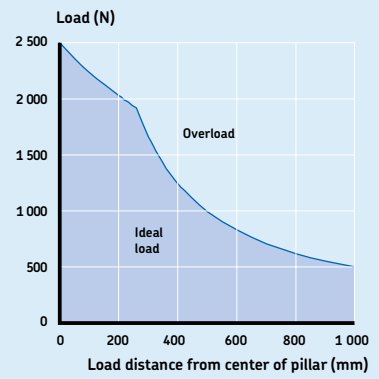
Bending load diagrams



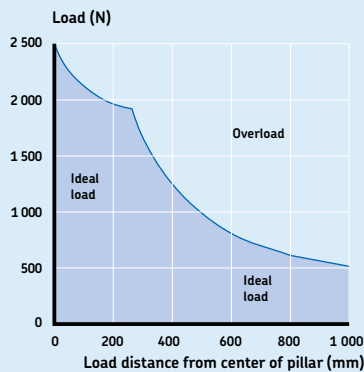
200 mm stroke



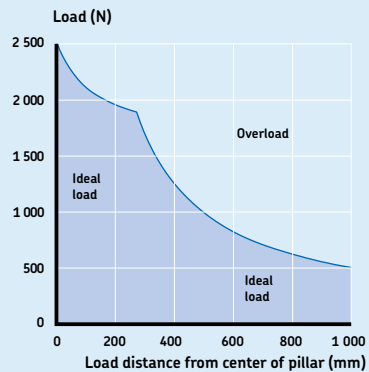
300 mm stroke



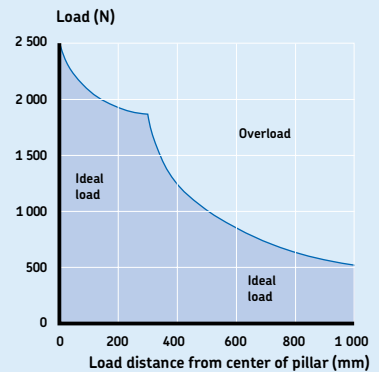
400 mm stroke



500 mm stroke



600 mm stroke



700 mm stroke

Ordering key



Type

Stroke (S):

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

Option:

| | |
|--|-----|
| No option | 000 |
| With 2-Hall encoder, 14 pulses per 9 mm travel | E |
| With mains cable feedthrough (3xAWG16) | C |
| With control cable feedthrough (10xAWG28) | H |

Accessories

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

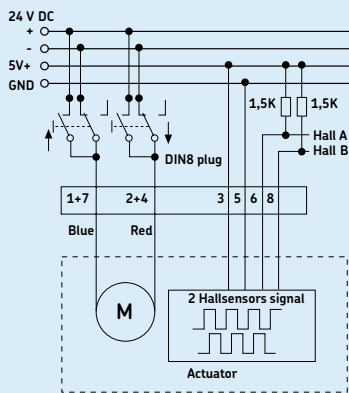


Suitable control units and accessories

| | | 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 | ● | ● | ● | ● | ● | ● | ● | ● | ● |

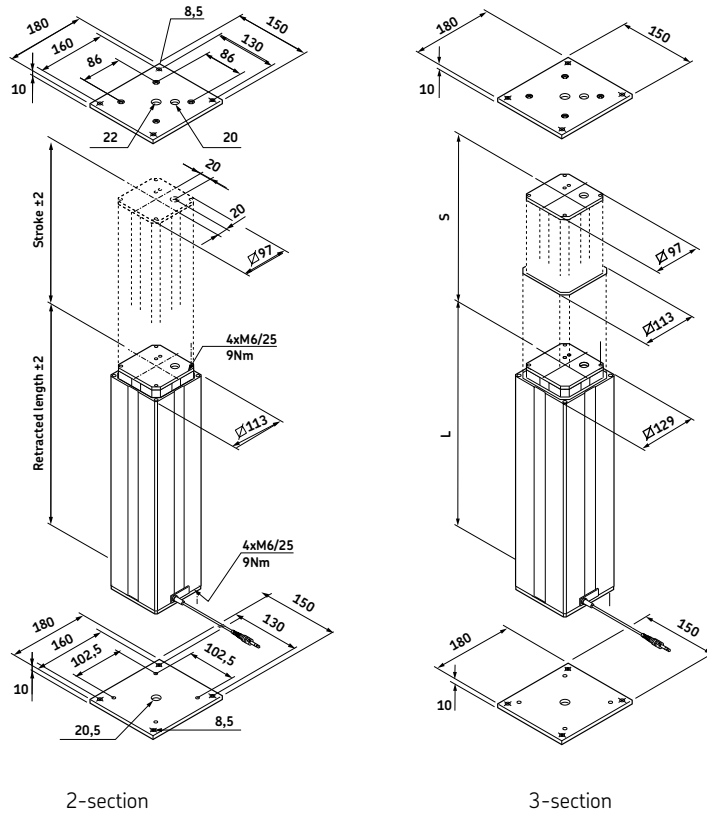
Hand switch
 Foot switch
 Desk switch

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

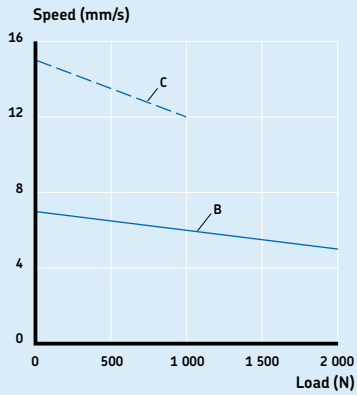
Note: mounting plates are not included.
To be ordered separately.

Technical data

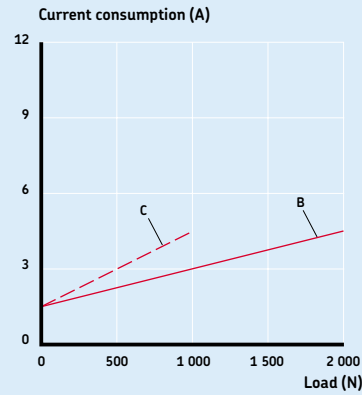
| | Unit | THG 10/11-BA | THG 10/11-CA | THG 10/11-BD | THG 10/11-CD |
|------------------------------------|--------------|---------------|--------------|--------------|--------------|
| Rated push load | N | 2 000 | 1 000 | 2 000 | 1 000 |
| Rated pull load | N | 0 | 0 | 0 | 0 |
| Bending load | Nm | 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 |
| 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

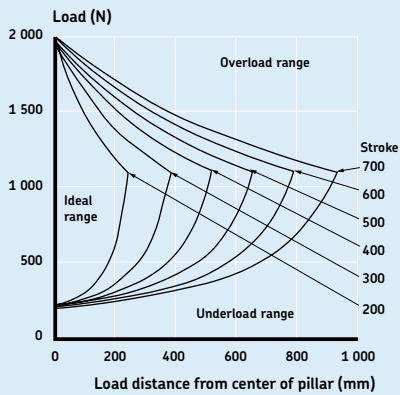


Speed-load diagram

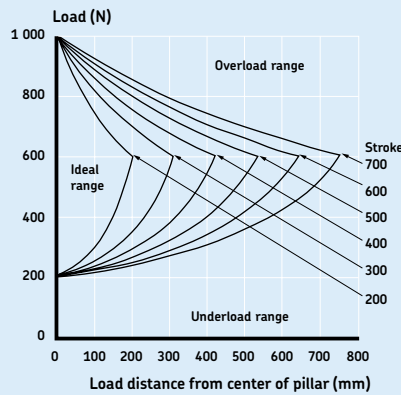


Current-load diagram

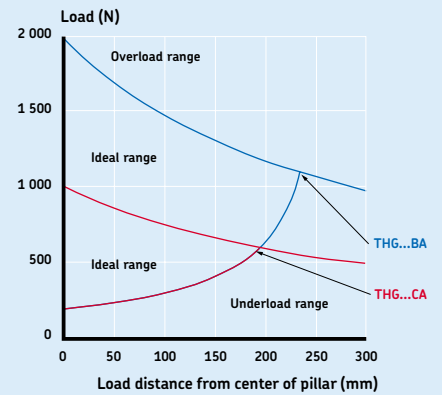
Bending load diagrams



Bending load diagram THG...BD

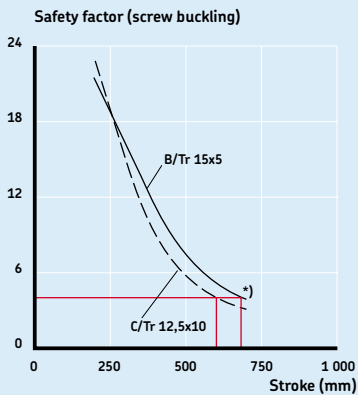


Bending load diagram THG...CD



Bending load diagram THG...BA/CA

Safety factor load conditions



* Safety factor = 4

Ordering key



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 2x
Tube set 3x

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
1-Hall encoder, 8 pulses, cable with jack plug
Potentiometer, 1 kΩ, 2 Watt, 0,25 % linearity, 10 turns (tube set 3x only)
Cable feedthrough, 5 x 0,75 mm², top +160 mm, bottom +800 mm
Cable feedthrough, 1-Hall encoder
Cable feedthrough, potentiometer (tube set 3x only)
2-Hall encoder, cable with DIN8 plug
Cable feedthrough, 2-Hall encoder, cable with DIN8 plug

0
A
B
C
D
E
F
G

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | Designation | Order N° |
|---|-------------|-----------|
| Top mounting plate for 2 x tube set | SPL-264265 | M/0125688 |
| Bottom mounting plate for 2 x tube set | SMT-264363 | M/0124814 |
| Top mounting plate for 3 x tube set | SPL-264265 | M/0125688 |
| Bottom mounting plate for 3 x 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 |

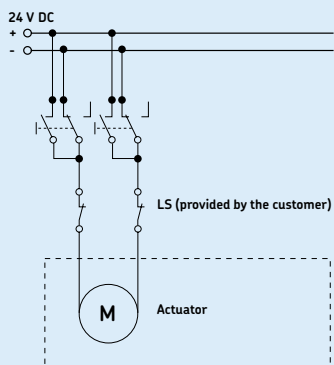
Telescopic pillar CAWA linear drive profile

Benefits

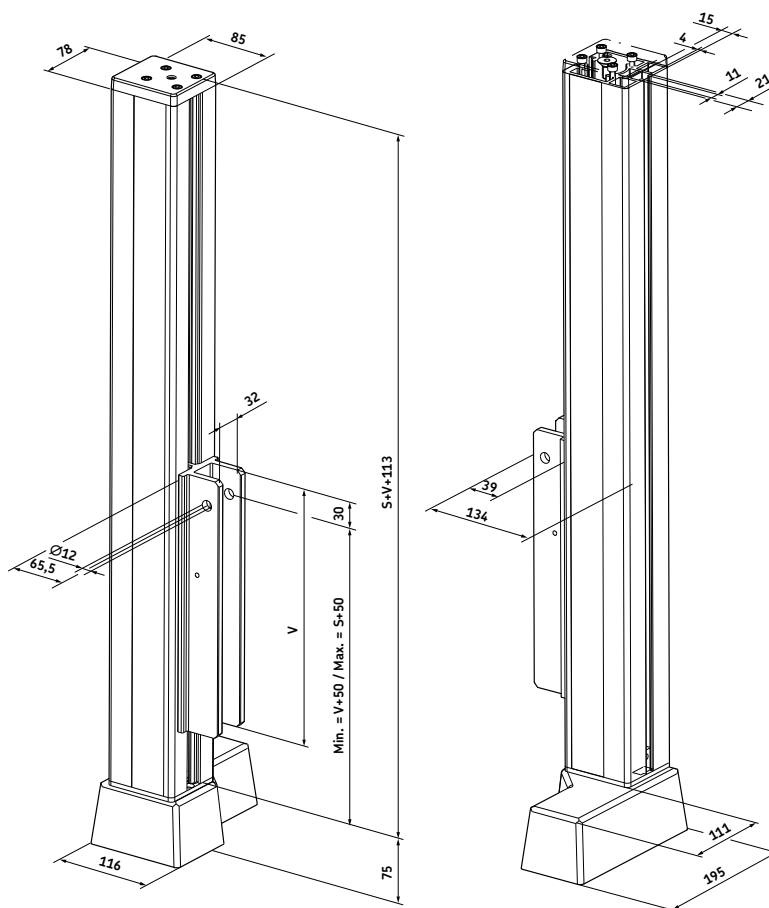
- Compact
- Lubricated for service life
- High operating reliability
- Selection of front attachments
- Powerful



Connecting diagram



Dimensional drawing

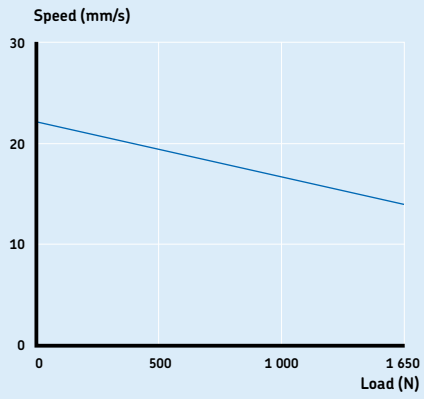


Legend:
 S = stroke
 L = retracted length
 V = carriage (295, 395 or 495 mm)

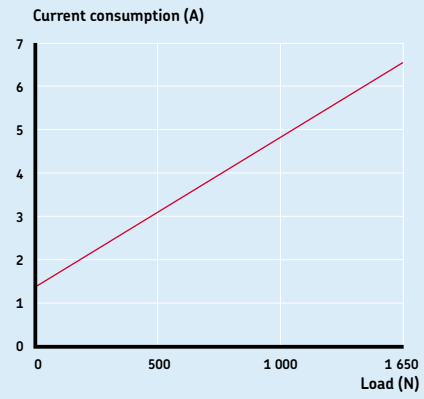
Technical data

| | Unit | CAWA |
|------------------------------------|-------------|---------------|
| Rated push load | N | 1 650 |
| Rated pull load | N | 0 |
| Speed (full load to no load) | mm/s | 14 to 22 |
| Telescopic pillar version | #of section | N/A |
| Stroke | mm | 500 to 1 000 |
| Retracted length | mm | $S+V+113+75$ |
| Voltage | V DC | 24 |
| Power | W | 132 |
| Current | A | 5,5 |
| Duty cycle: intermittent operation | min. | 1 min./9 min. |
| Ambient temperature | °C | +5 to +40 |
| Type of protection | IP | 20 |
| Protection class | - | SELV |
| Type of control | - | electrical |
| Weight | kg | 10 to 15 |

Performance diagrams

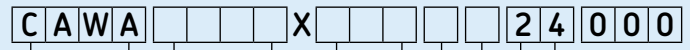


Speed-load diagram



Current-load diagram

Ordering key



Type

Stroke (S):

| | |
|----------|------|
| 500 mm | 0500 |
| 600 mm | 0600 |
| 700 mm | 0700 |
| 800 mm | 0800 |
| 900 mm | 0900 |
| 1 000 mm | 1000 |

Carriage (V):

| | |
|--------|-----|
| 295 mm | 295 |
| 395 mm | 395 |
| 495 mm | 495 |

Motor bracket:

| | |
|-----|---|
| Yes | K |
| No | 0 |

Cover:

| | |
|-----|---|
| Yes | F |
| No | 0 |

Voltage (V DC):

| | |
|----|--|
| 24 | |
|----|--|

Telescopic pillar Telesmart TXG

Benefits

- Powerful and fast lifting
- Aesthetic design

Standards

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

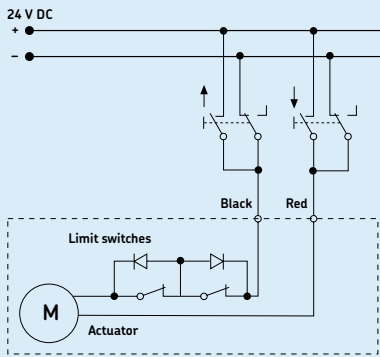


Suitable control units and accessories

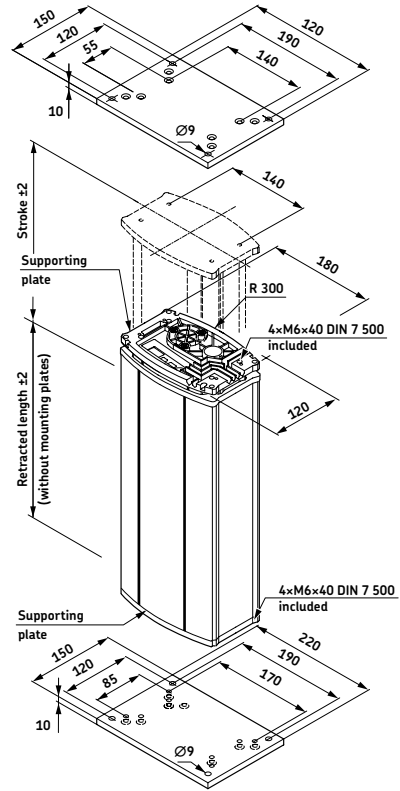
| | | Control units | | | | | | |
|-------|----------------|---------------|-------|-------|-------|-------|--------|--------|
| | | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 | LD 014 | LD 015 |
| TXG 1 | | ● | ● | ● | ● | ● | ● | ● |
| | EHA3 | ● | ● | ● | ● | ● | ● | ● |
| | STJ | ● | ● | ● | ● | ● | ●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

Hand switch
 Foot switch
 Desk switch

Connecting diagram



Dimensional drawing



Legend:
 S = stroke
 L = retracted length

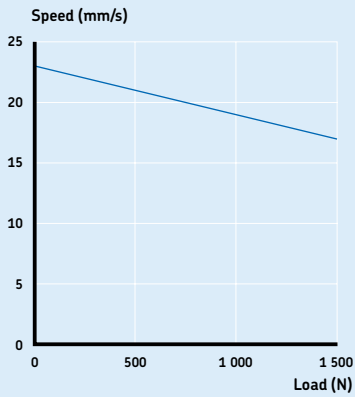
Note: mounting plates are not included.
 To be ordered separately.

Technical data

| | Unit | TXG1 |
|------------------------------------|--------------|---------------|
| Rated push load | N | 1 500 |
| Rated pull load | N | 0 |
| 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 |

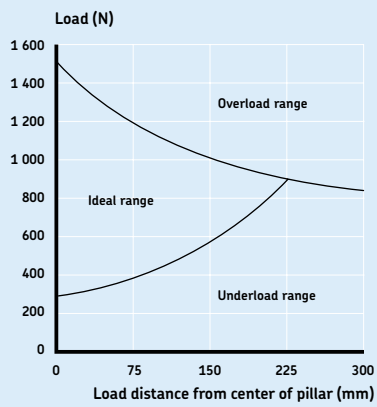
* For details, please see bending load diagrams

Performance diagram

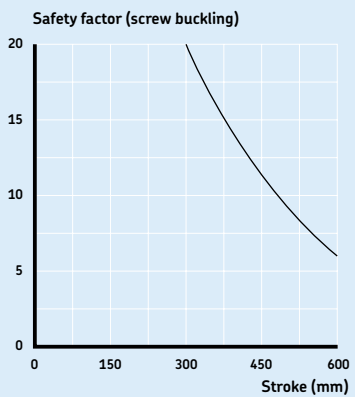


Speed-load diagram

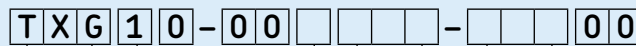
Bending load diagram



Safety factor load conditions



Ordering key



Type

Voltage:

24 V DC (slave actuator)

1

Color:

- Natural anodized coating
- Customer-specific*
- 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*
- Customer-specific*

- 000
- EYS
- EXG
- KKK*

Stroke (S) / Retr. length (L=S+180 or L= S+160 mm)

- 200 mm
- 300 mm
- 400 mm
- 500 mm
- 600 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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

* With current cut-off limit switch wiring

Accessories

| # of channel | Control unit | Voltage | Frequency | Order number |
|--------------|--------------------|--------------------|-----------|---------------------|
| 2-channel | LD-014.255.000 | 230 VAC | 50 Hz | M/0117115 |
| 2-channel | LD-015.255.500 | 120 VAC | 60 Hz | M/0117116 |
| 4-channel | LD-014.178.000 | 230 VAC | 50 Hz | M/0121090 |
| 4-channel | LD-014.178.500 | 120 VAC | 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

- Powerful and fast lifting
- Aesthetic design



Standards

- EN 60335
- UL 60950



Suitable control units and accessories

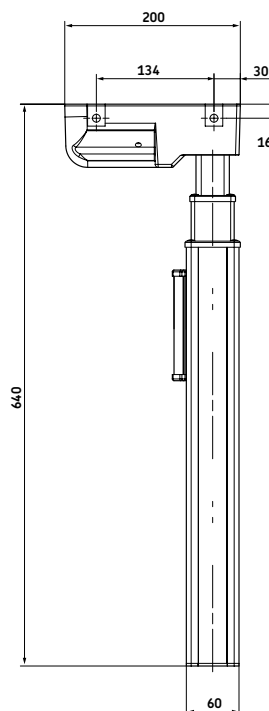
Control units

| | | | |
|---|----------------|--------|--------|
| | | LD 014 | LD 015 |
| | TMA | ● | ● |
|  | LD-034.000.004 | ● | ● |
|  | LD-011.031.000 | ● | ● |

-  Hand switch
-  Foot switch
-  Desk switch

TMA can only be operated with LD control units.

Dimensional drawing



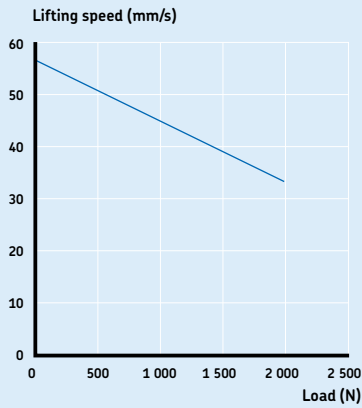
Legend:
S = stroke
L = retracted length

Technical data

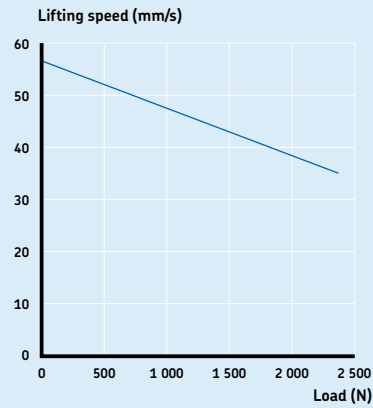
| | Unit | TMA |
|------------------------------------|--------------|---------------|
| Rated push load | N | 1 000 |
| Rated pull load | N | 0 |
| Bending load | Nm | up to 200* |
| Speed (full load to no load) | mm/s | 35 to 55 |
| Telescopic pillar version | # of section | 3-section |
| Stroke | 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

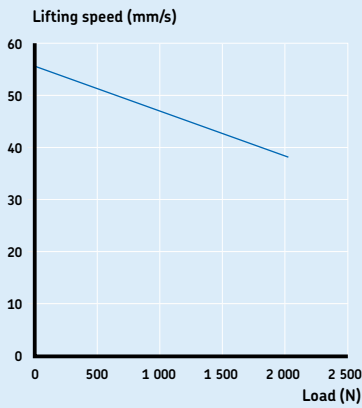
Performance diagrams



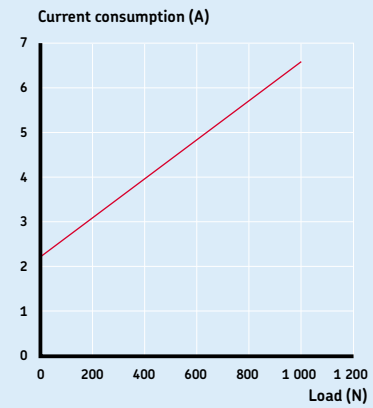
Lifting speed 2-channel control



Lifting speed 3-channel control

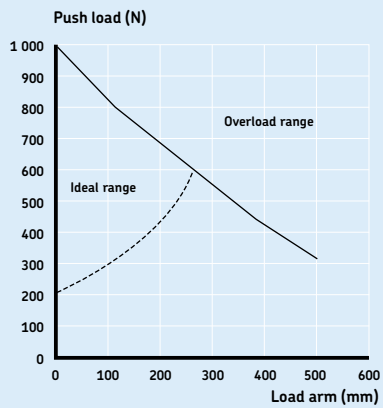


Lifting speed 4-channel control

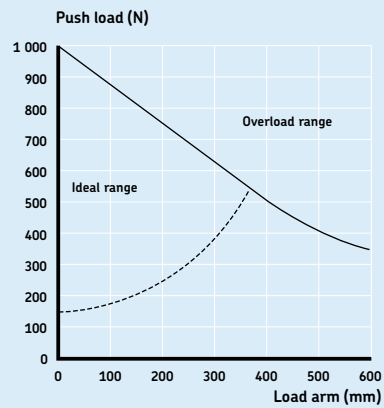


Current-load diagram

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

5
6

Options:

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

EWY
2CM
2CN

Accessories

| | 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



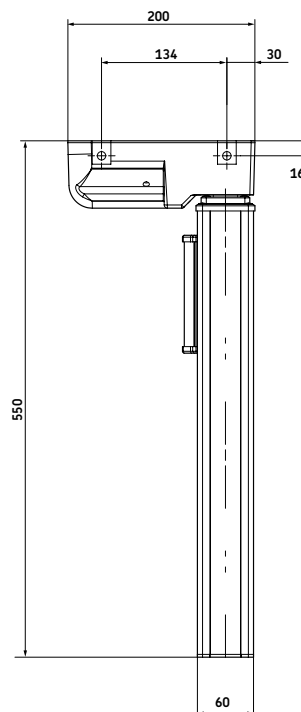
Suitable control units and accessories

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



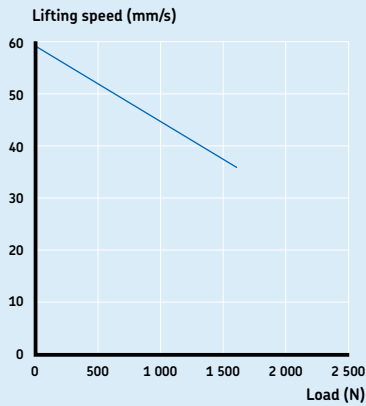
Legend:
S = stroke
L = retracted length

Technical data

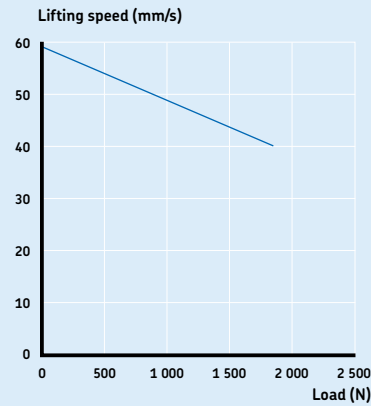
| | Unit | TMD |
|------------------------------------|--------------|---------------|
| Rated push load | N | 800 |
| Rated pull load | N | 0 |
| Bending load | Nm | up to 120* |
| Speed (full load to no load) | mm/s | 35 to 60 |
| Telesmart pillar version | # of section | 3-section |
| Stroke | mm | 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

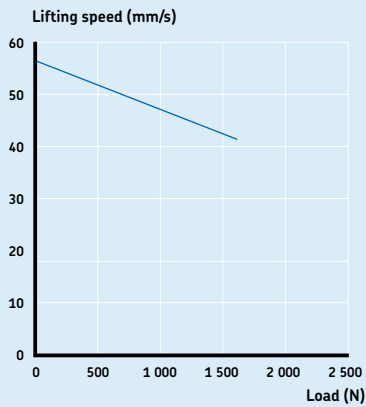
Performance diagrams



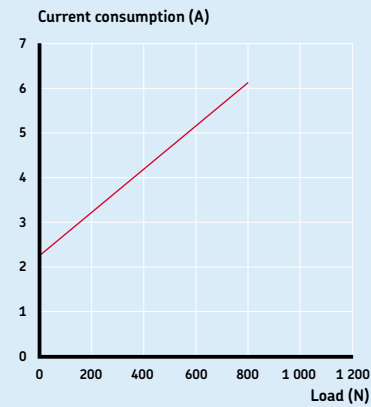
Lifting speed 2-channel control



Lifting speed 3-channel control

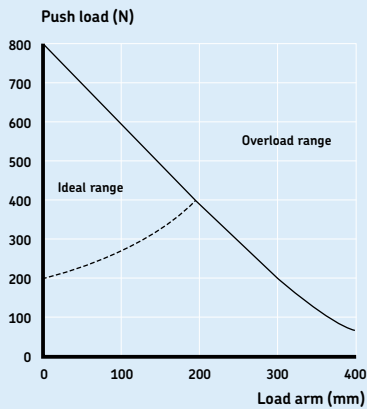


Lifting speed 4-channel control

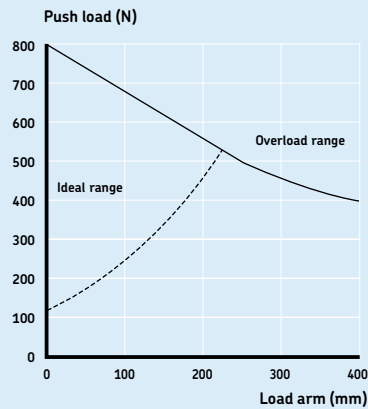


Current-load diagram

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

5
6

Options:

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

EWY
2CM
2CN

Accessories

| | 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 98

TMS.....102

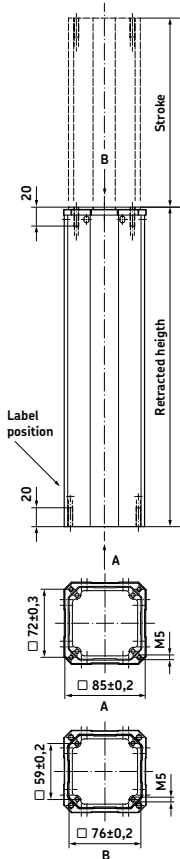
Telescopic pillar FRE guiding tube sets

Benefits

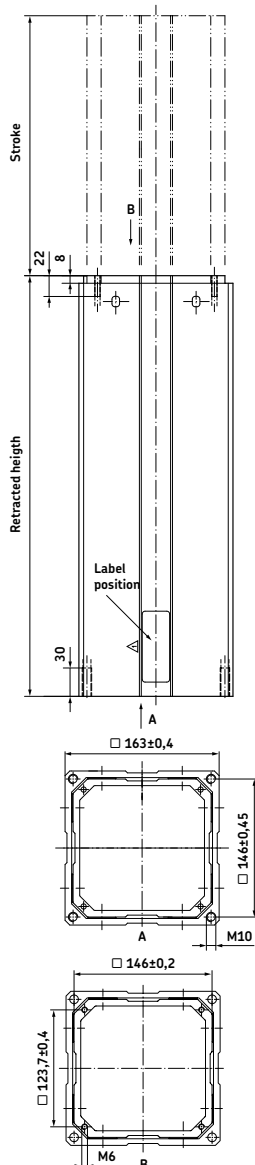
- Attractive design
- Stable
- Universal use



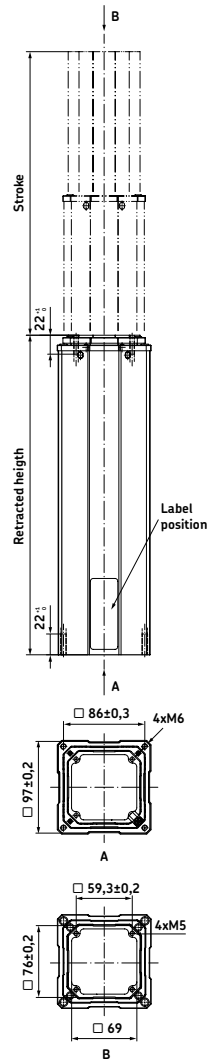
Dimensional drawings



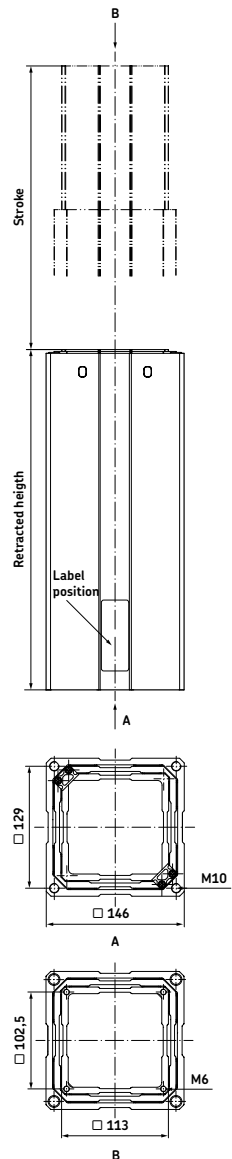
FRE-A085



FRE-B163



FRE-D097



FRE-E146

| Type | Sections | Profile dimensions in mm | Retracted length in mm |
|-----------------|------------|--------------------------|------------------------|
| | 2 sections | 76 × 76 | |
| | 3 sections | 85 × 85 | |
| | | 97 × 97 | |
| | | 113 × 113 | |
| | | 129 × 129 | |
| | | 146 × 146 | |
| | | 163 × 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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

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

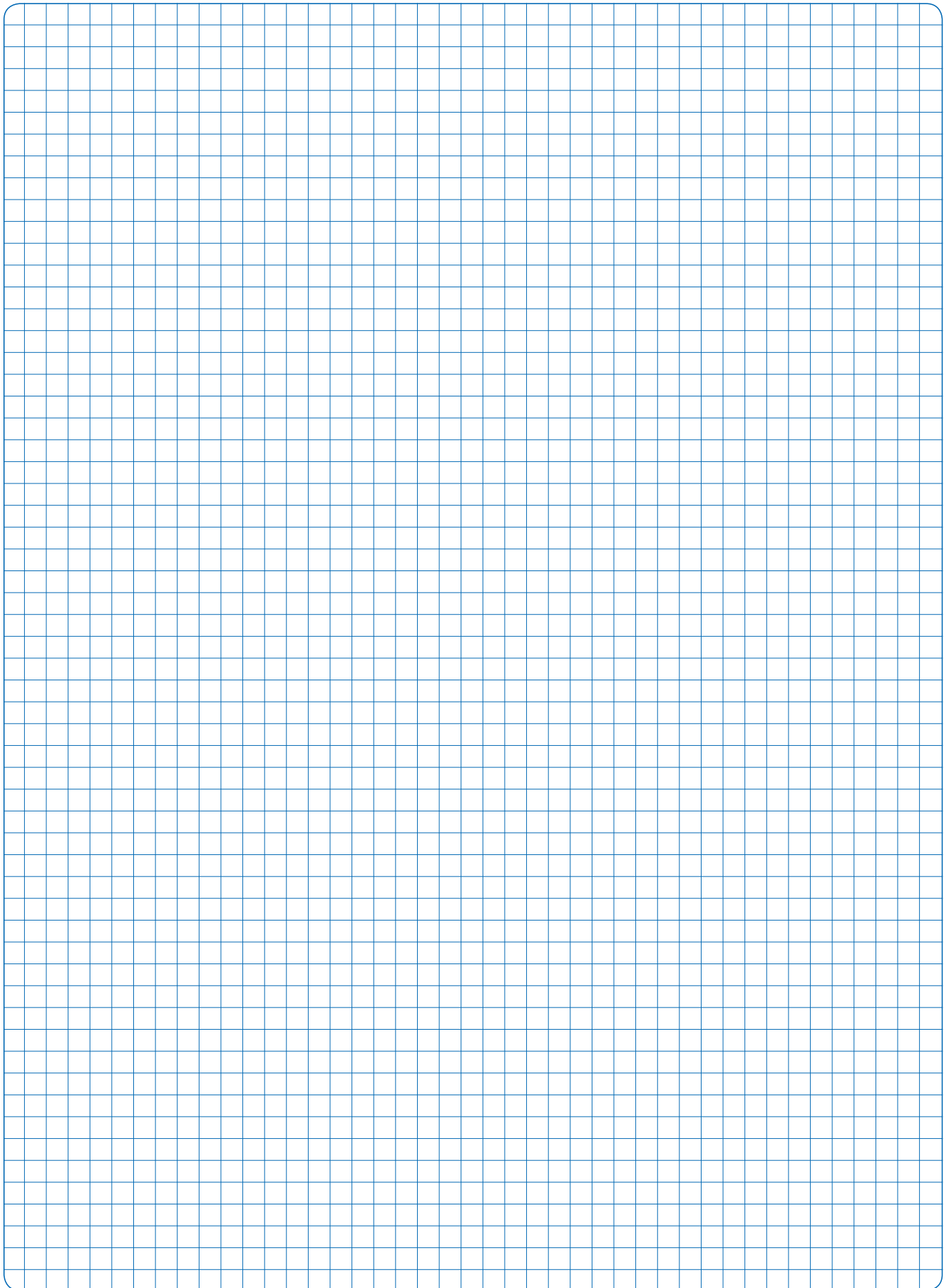
50

60

70

XX

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.



Telescopic pillar TMS

Benefits

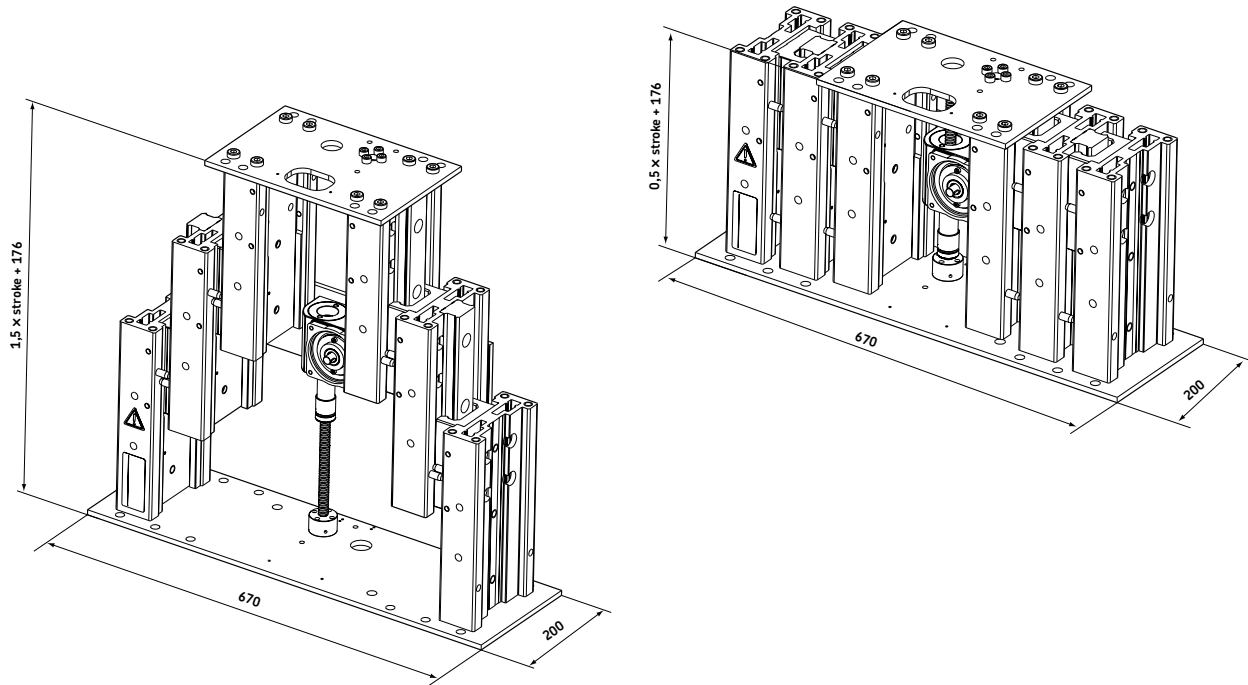
- High bending load

Standards

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



Dimensional drawing

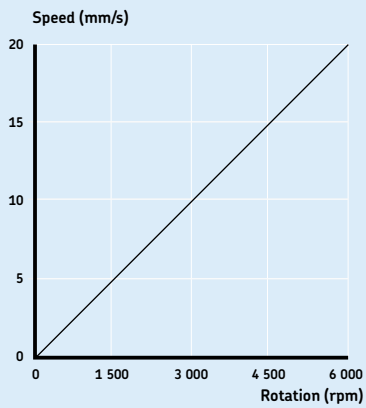


Legend:
 S = stroke
 L = retracted length

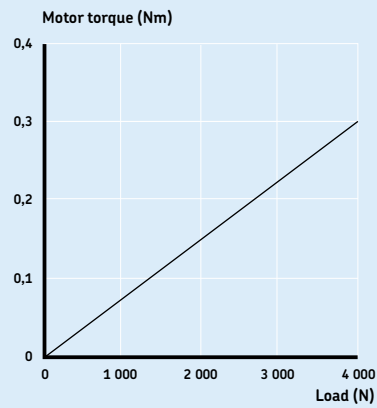
Technical data

| | Unit | TMS 00 |
|------------------------------------|------|----------------------|
| Rated push load | N | 4 000 |
| Rated 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

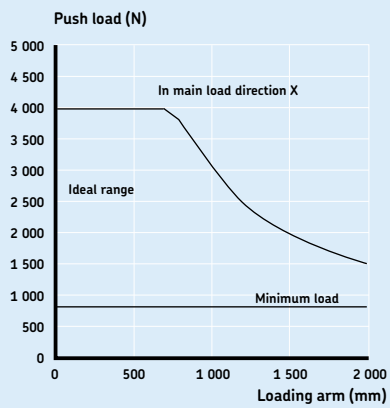


Speed-rotational diagram

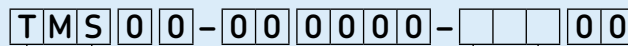


Torque-load diagram

Bending load diagram



Ordering key



Type

Stroke (S):

| | |
|--------|-----|
| 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 |

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.



Linear actuators

AC versions

| | | | |
|----------------|-----|----------------|-----|
| SLS | 110 | ECOMAG..... | 200 |
| SKS/SKA | 114 | FD | 204 |
| SKD | 118 | Magdrive | 208 |
| STD | 122 | CAHB-21..... | 212 |
| STW..... | 126 | ASM..... | 216 |
| MATRIX 6 | 130 | CAP 43B | 220 |
| CAR 40..... | 134 | CAT 32B..... | 224 |
| CAHB-31..... | 138 | MATRIX 1..... | 228 |
| SJ..... | 142 | CAR 32..... | 232 |
| DSP | 146 | CAP 32..... | 236 |
| CAP 32..... | 150 | CAP 43A..... | 240 |
| CAR 32..... | 154 | CAT 33..... | 244 |
| CAT 32B..... | 158 | CAHB-20..... | 248 |
| CAT 33..... | 162 | CARE 33..... | 252 |
| WSP..... | 166 | CAR 22..... | 256 |
| CAHB-30..... | 170 | CAT 33H..... | 260 |
| CAT 33H..... | 174 | CAHB-10..... | 264 |
| | | CALA 36 | 268 |
| | | CAT 21B..... | 272 |

DC versions

| | |
|----------------|-----|
| SKG | 180 |
| STG | 184 |
| RUNNER | 188 |
| MATRIX 3 | 192 |
| CAR 40..... | 196 |

No motor

| | |
|---------------|-----|
| CARN 32 | 280 |
| CCBR 32..... | 284 |



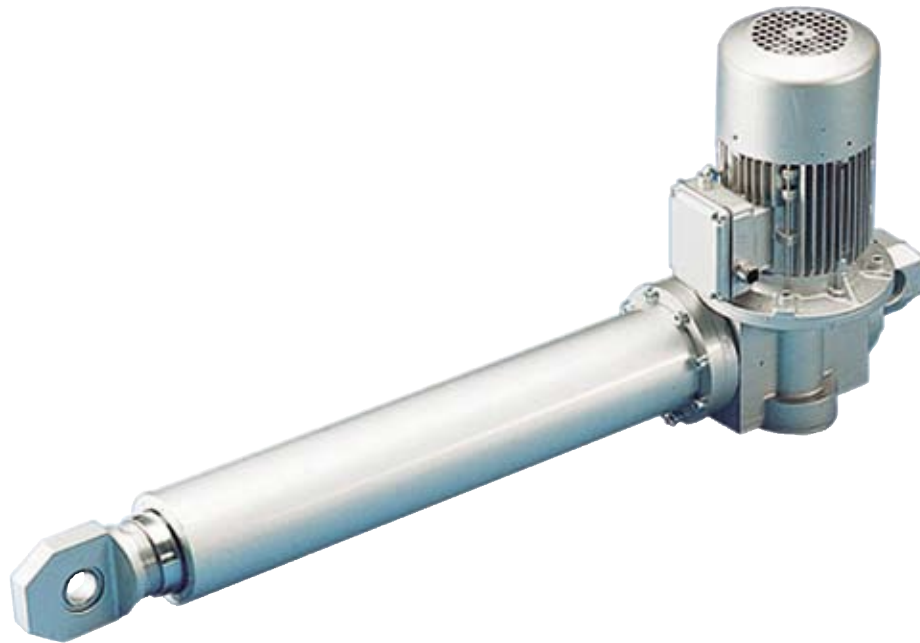
Linear actuators – AC version

| | |
|----------------|-----|
| SLS | 110 |
| SKS/SKA | 114 |
| SKD | 118 |
| STD | 122 |
| STW | 126 |
| MATRIX 6 | 130 |
| CAR 40 | 134 |
| CAHB-31 | 138 |
| SJ | 142 |
| DSP | 146 |
| CAP 32 | 150 |
| CAR 32 | 154 |
| CAT 32B..... | 158 |
| CAT 33 | 162 |
| WSP | 166 |
| CAHB-30 | 170 |
| CAT 33H | 174 |

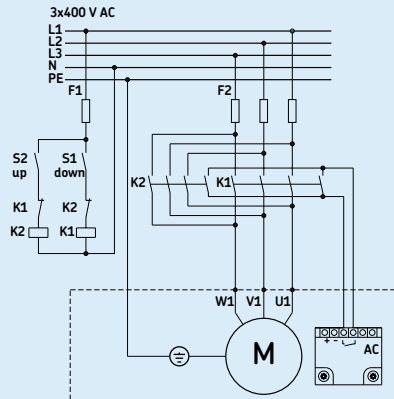
Linear actuator Magforce SLS

Benefits

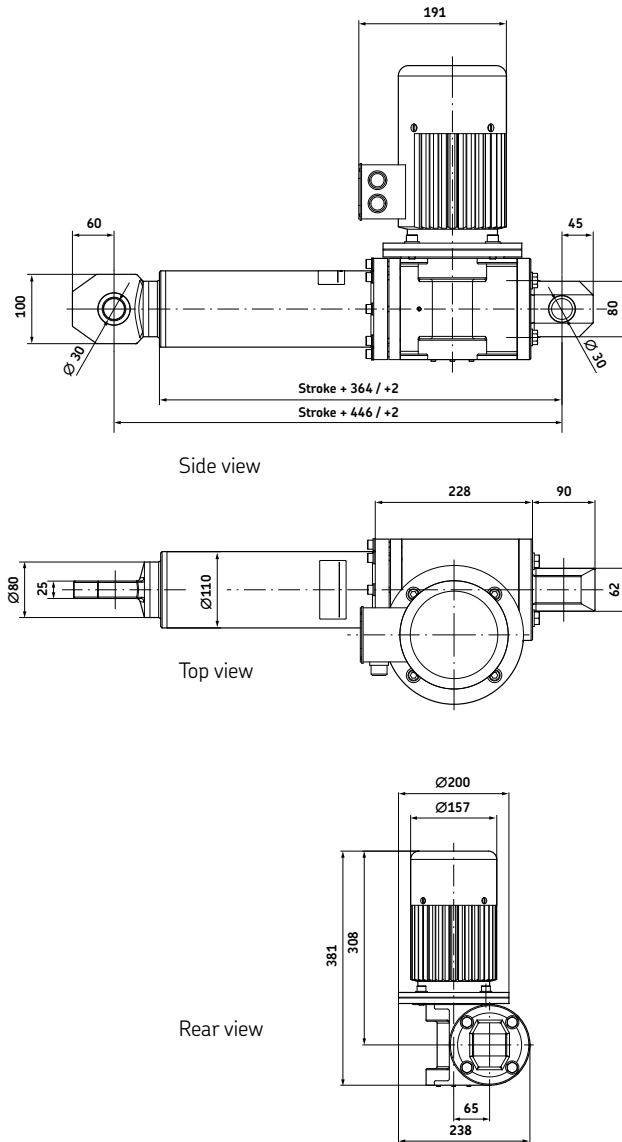
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Connecting diagram



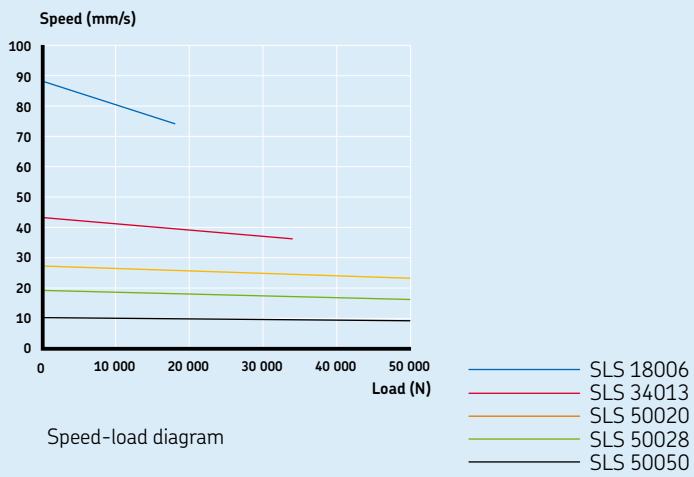
Dimensional drawing



Technical data

| | Unit | SLS 18006 | SLS 34013 | SLS 50020 | SLS 50028 | SLS 50050 |
|----------------------|------|------------|------------|------------|------------|------------|
| Rated push load | N | 18 000 | 34 000 | 50 000 | 50 000 | 50 000 |
| Rated 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 | 3x400 | 3x400 | 3x400 | 3x400 | 3x400 |
| 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



Speed-load diagram

Ordering key



Type

Load:

18 000 N
 34 000 N
 50 000 N / 23 mm/s
 50 000 N / 16 mm/s
 50 000 N / 9 mm/s

18006
 34013
 50020
 50028
 50050

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
Others (extended motor shaft, ...)

01
 XX

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

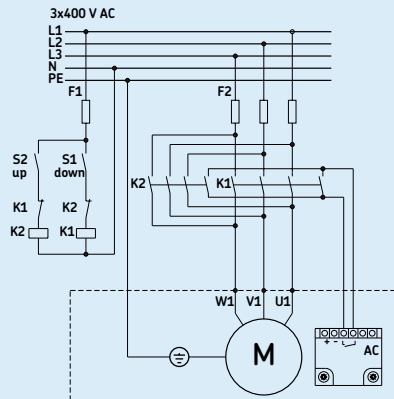
Linear actuator Magforce SKS/SKA

Benefits

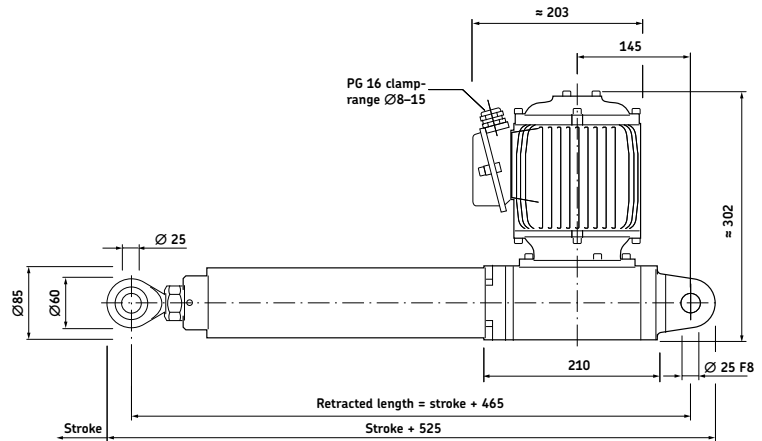
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



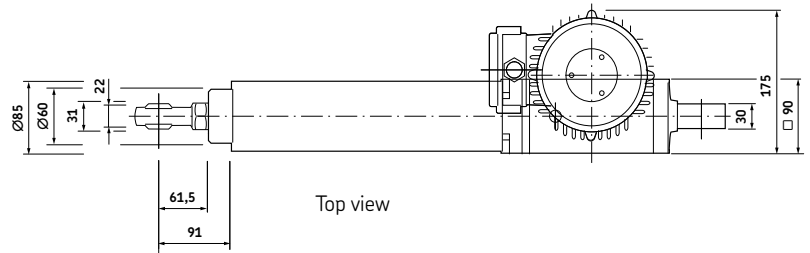
Connecting diagram



Dimensional drawing



Side view

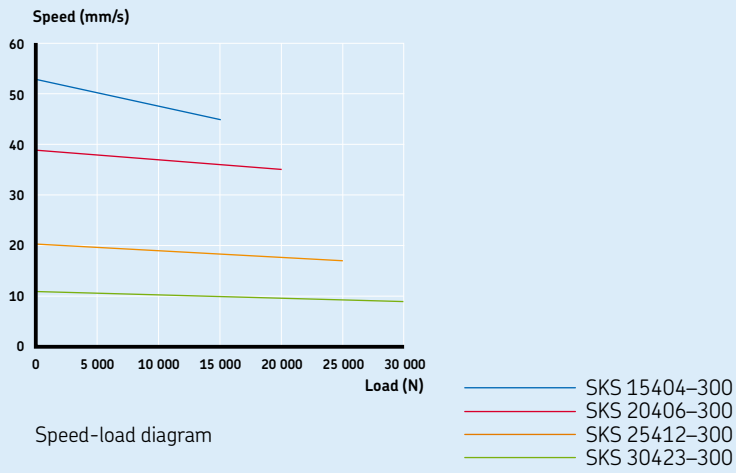


Top view

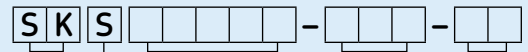
Technical data

| | Unit | SKS/SKA 15404 | SKS/SKA 20406 | SKS/SKA 25412 | SKS/SKA 30423 |
|---------------------------|------|---------------|---------------|---------------|---------------|
| Rated push load | N | 15 000 | 20 000 | 25 000 | 30 000 |
| Rated 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



Ordering key



Type

Option:

No option

S

Load:

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

- 15404
- 20406
- 25412
- 30423

Stroke (S):

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

- 100
- 200
- 300
- 400
- 500
- 600
- 700

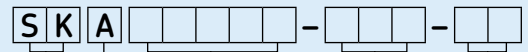
Customer option:

Standard

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

01
XX

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.



Type

Option:

With limit switches and/or potentiometer

A

Load:

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

- 15404
- 20406
- 25412
- 30423

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 with limit switch and potentiometer 1k-ohm

Standard with limit switch

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

01
02
XX

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

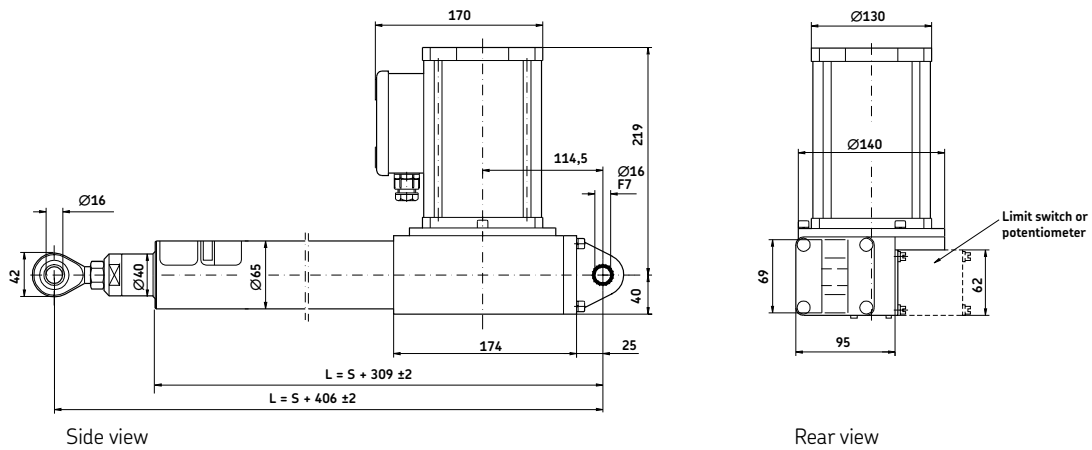
Linear actuator Magforce SKD

Benefits

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

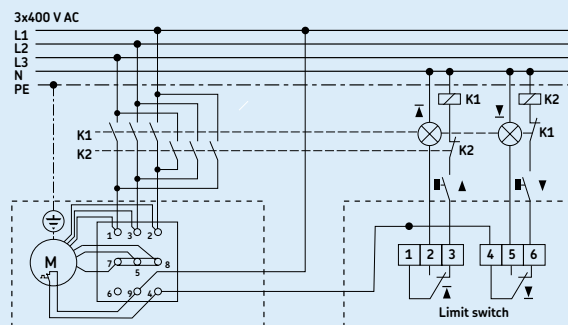
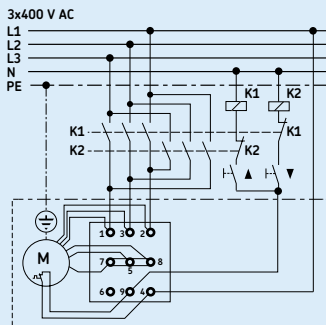


Dimensional drawing



Legend:
 S = stroke
 L = retracted length

Connecting diagrams

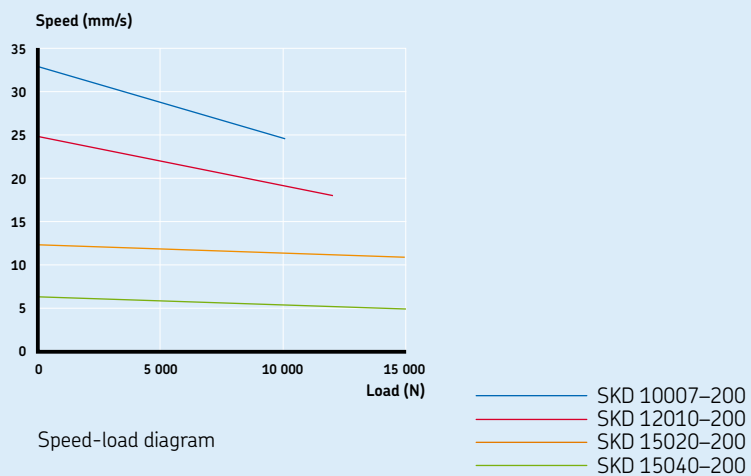


With optional limit switch

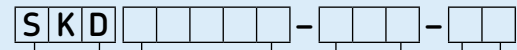
Technical data

| | Unit | SKD 10007 | SKD 12010 | SKD 15020 | SKD 15040 |
|---------------------------|------|---------------|------------|------------|------------|
| Rated push load | N | 10 000 | 12 000 | 15 000 | 15 000 |
| Rated 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 | V AC | 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



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> | <i>XX</i> |

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | Designation | Order N° |
|-------------------------|---------------|-----------|
| Magnetic brake (1,4 Nm) | ZAC-1031,0219 | M/0126957 |
| Potentiometer (1 000 Ω) | ZAC-1063,0011 | M/0126958 |
| Encoder | ZAC-1063,0020 | M/0126959 |

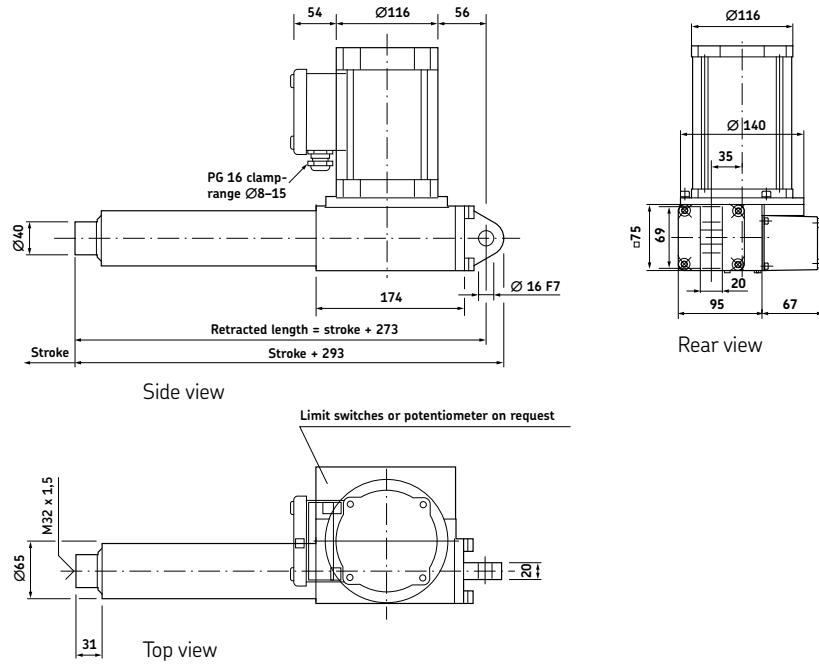
Linear actuator Magforce STD

Benefits

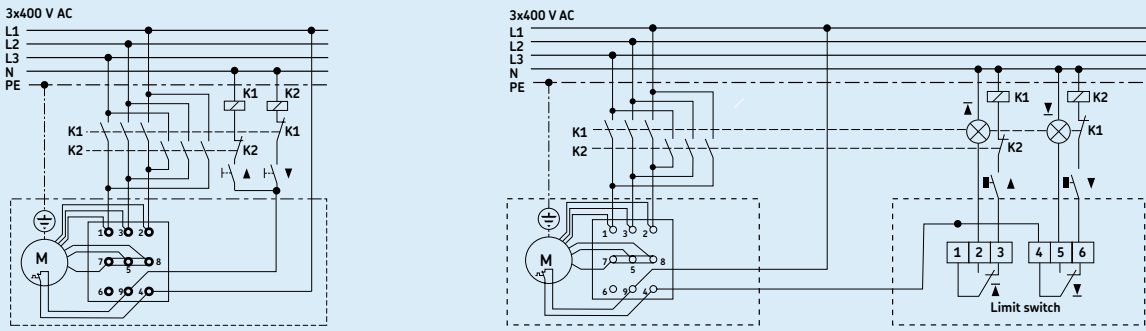
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Dimensional drawing



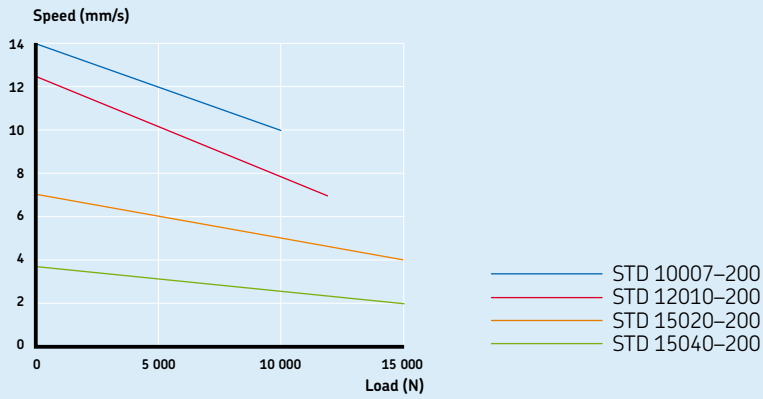
Connecting diagrams



Technical data

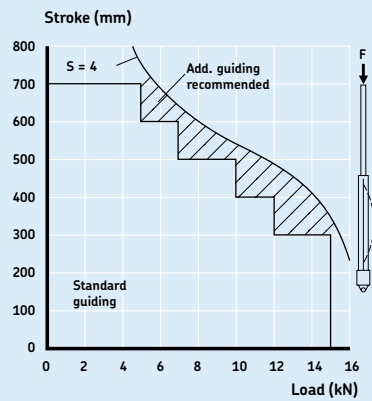
| | Unit | STD 10007 | STD 12010 | STD 15020 | STD 15040 |
|---------------------------|------|--------------|------------|------------|------------|
| Rated push load | N | 10 000 | 12 000 | 15 000 | 15 000 |
| Rated pull load | N | 10 000 | 12 000 | 15 000 | 15 000 |
| Speed (at full load) | mm/s | 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



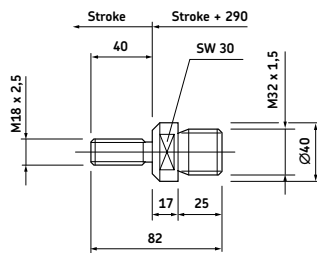
Speed-load diagram

Safety load factor conditions

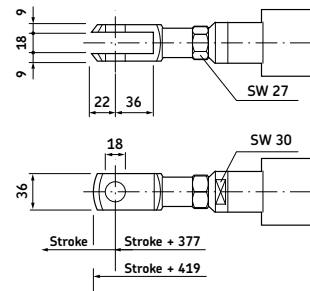


Bending of spindle
 $S =$ safety factor Euler 3

Options

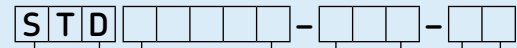


Adapter



Fork head

Ordering key



Type

Load:

| | |
|-------------------|-------|
| 10 000 N | 10007 |
| 12 000 N | 12010 |
| 15 000 N / 4 mm/s | 15020 |
| 15 000 N / 2 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>Extended shaft</i> | 11 |
| <i>Back-up nut on push</i> | 13 |
| <i>Low temperature grease</i> | 19 |
| <i>Back-up nut on push and pull</i> | 34 |
| <i>Others (brake, limit switch, extended motor shaft, encoder, potentiometer, ...)</i> | XX |

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | Designation | Order N° |
|--------------|---------------|-----------|
| Adapter bolt | ZBE-1031,0106 | M/0125265 |
| Fork head | ZBE-1051,9038 | M/0124705 |

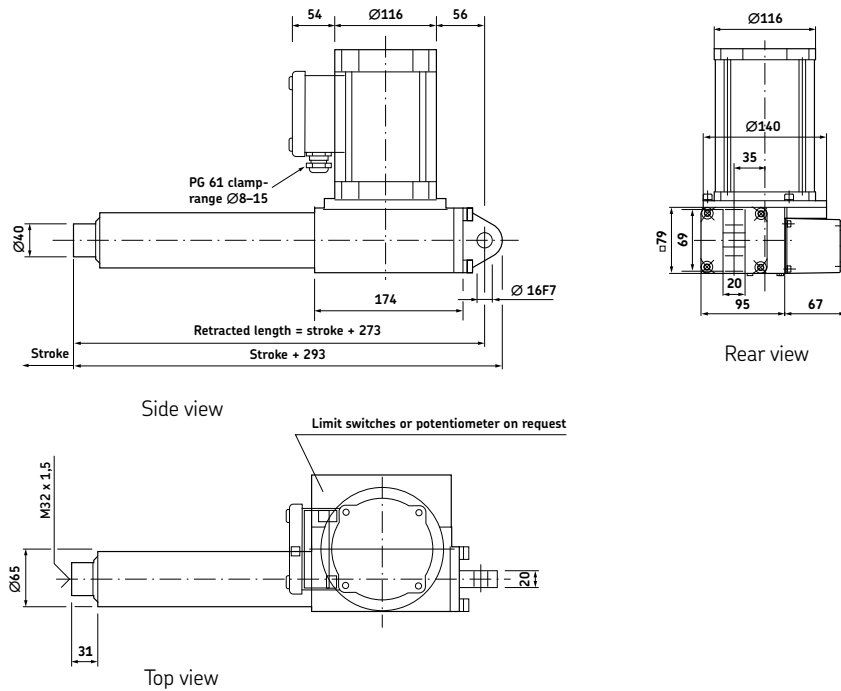
Linear actuator Magforce STW

Benefits

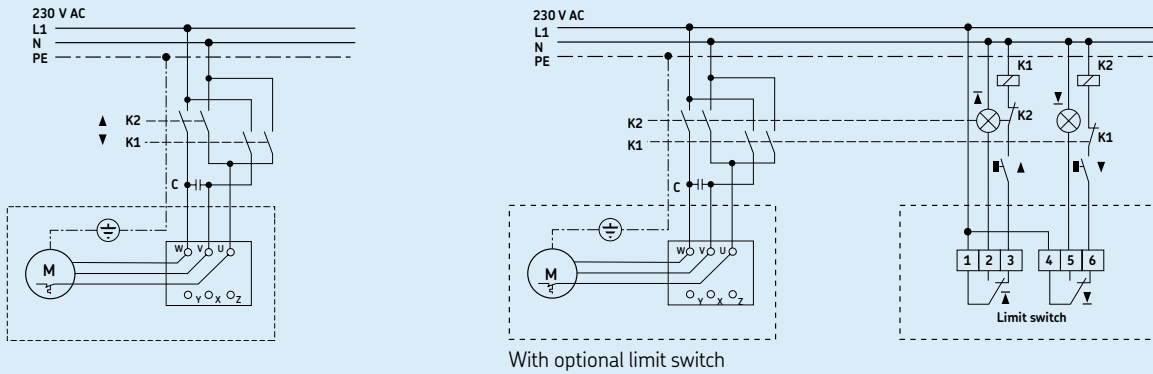
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Dimensional drawing



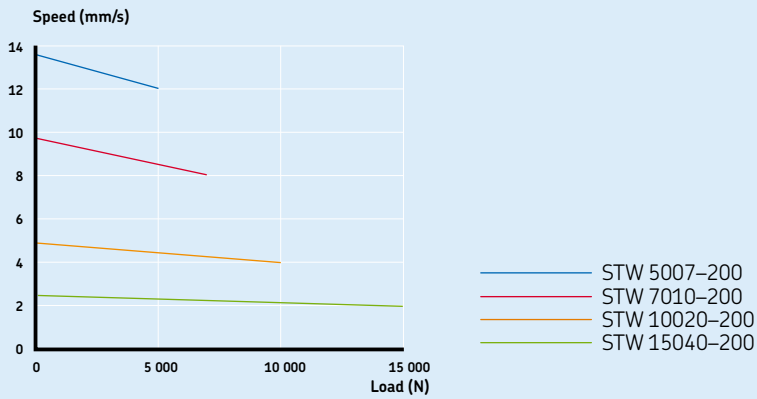
Connecting diagrams



Technical data

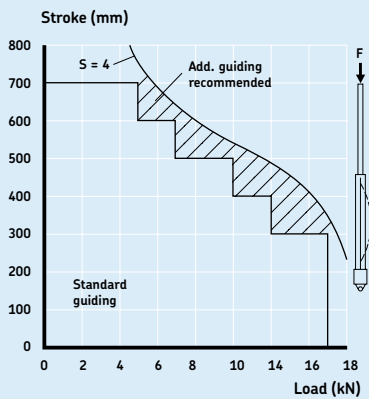
| | Unit | STW 5007 | STW 7010 | STW 10020 | STW 15040 |
|---------------------------|------|--------------|------------|------------|------------|
| Rated push load | N | 5 000 | 7 000 | 10 000 | 15 000 |
| Rated pull load | N | 5 000 | 7 000 | 10 000 | 15 000 |
| Speed (at full load) | mm/s | 12 | 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



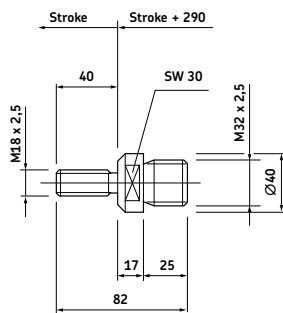
Speed-load diagram

Safety load factor conditions

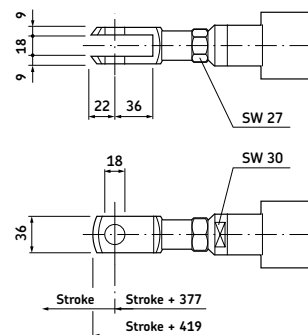


Bending of spindle $S =$ safety factor Euler 3

Options

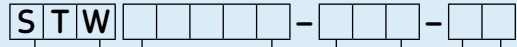


Adapter



Fork head

Ordering key



Type

Load:

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

- 05007
- 07010
- 10020
- 15040

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

- 01
- 05
- 08
- XX

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | Designation | Order N° |
|--------------|---------------|-----------|
| Adapter bolt | ZBE-1031,0106 | M/0125265 |
| Fork head | ZBE-1051,9038 | M/0124705 |

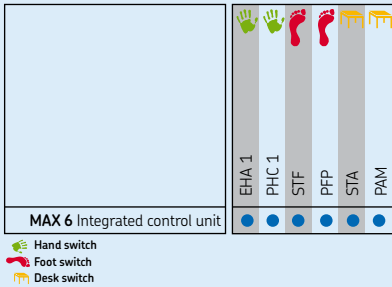
Linear actuator Matrix 6

Benefits

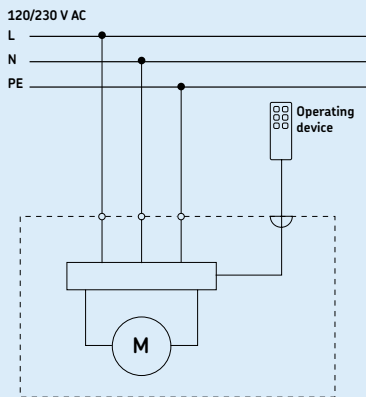
- Silent operation
- Full system with integrated control unit and accessories
- Synchronization possible
- Compact and aesthetic
- Back-up nut as standard



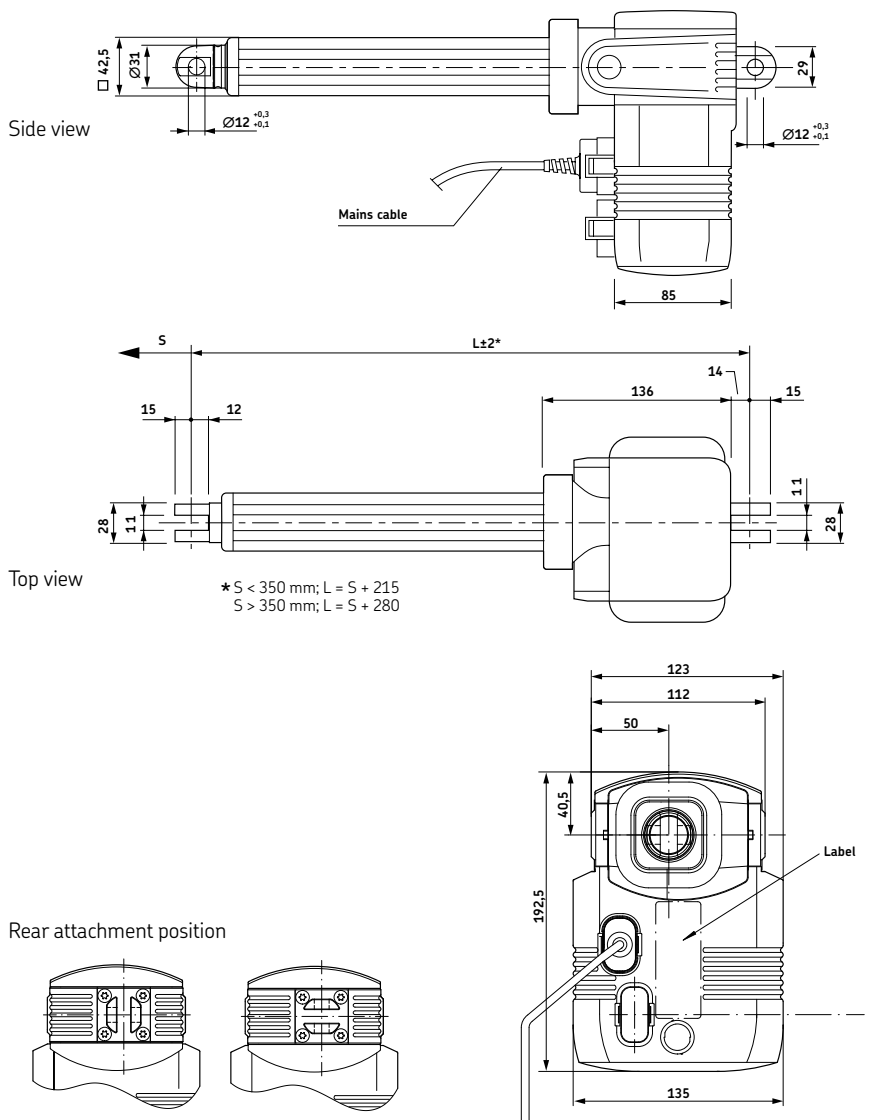
Suitable control units and accessories



Connecting diagram



Dimensional drawing



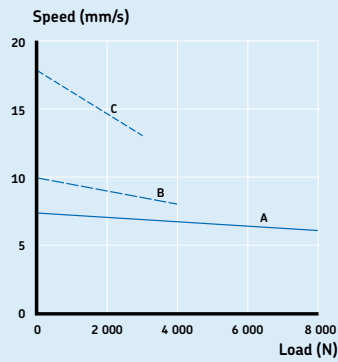
Technical data

| | Unit | MAX 6..A.. | MAX 6..B.. | MAX 6..C.. |
|------------------------------|----------|---------------------------|---------------------------|---------------------------|
| Rated push load | N | 8 000 | 4 000 | 3 000 |
| Rated pull load | N | 6 000 ¹⁾ | 4 000 | 3 000 |
| Speed (full load to no load) | mm/s | 6 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 | W | 150 | 150 |
| | 230 V AC | W | 145 | 145 |
| Current consumption | 120 V AC | A | 1,8 | 1,8 |
| | 230 V AC | A | 0,9 | 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 |

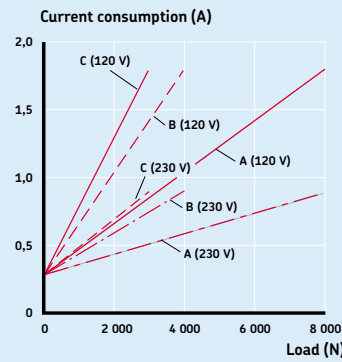
¹⁾ Max load for medical application is 5 000 N

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

Performance diagrams

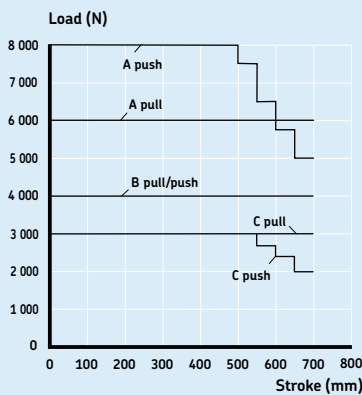


Speed-load diagram

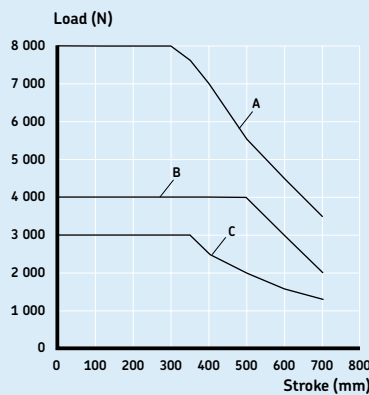


Current-load diagram

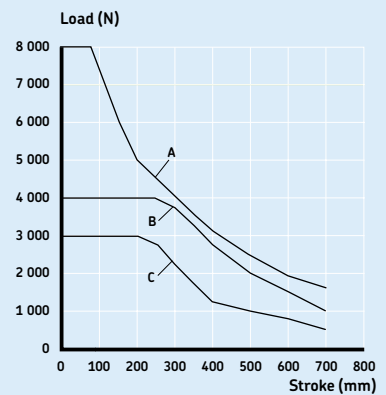
Safety factor load conditions



Push load reduction static
Safety factor S=1



Push load reduction static
Safety factor S=2

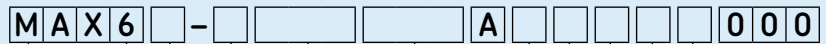


Push load reduction static
Safety factor S=4 (EN60601)

Accessories

| | 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



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 |
| <i>Other stroke lengths; 50<S<700 mm</i> | --- --- |

Cable/Connecting plug:

| | |
|----------|---|
| No cable | 0 |
|----------|---|

Orientation of rear attachment:

| | |
|----------------------------------|---|
| No fork head (customized option) | 0 |
| Standard (as drawing) | 1 |
| <i>Turned 90°</i> | 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 |
| <i>Electrical anti-pinching protection, motor direction pull</i> | K |
| <i>Electrical anti-pinching protection, motor direction push</i> | 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 |
| <i>Lifetime monitoring</i> | M |

Option 3:

| | |
|--|---|
| No option | - |
| Emergency lowering, fork head bore parallel to clamping lever (for actuator design "A", L+30 mm) | V |
| <i>Emergency lowering, fork head bore 90° to clamping lever (for actuator design "A", L+30 mm)</i> | W |

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator CAR 40

Benefits

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



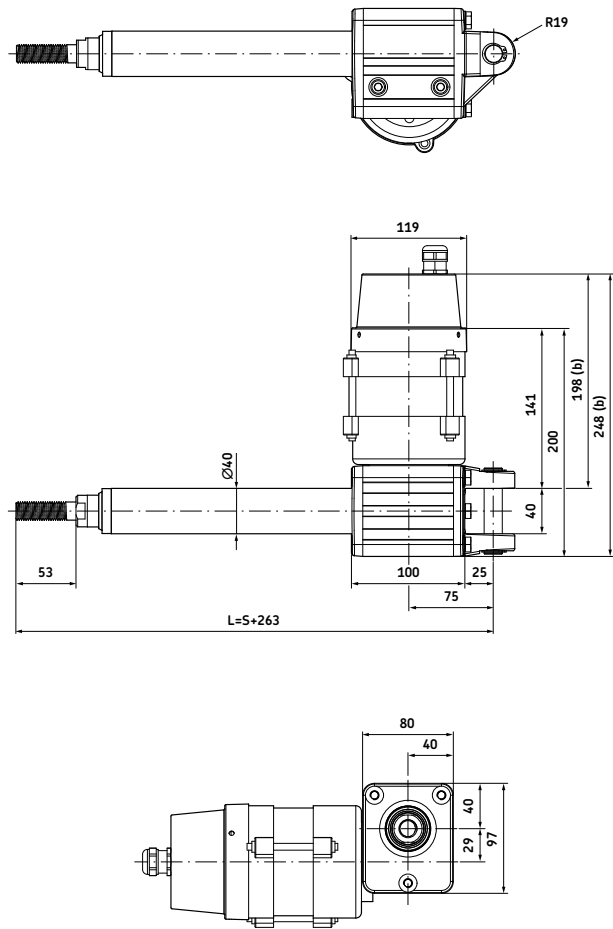
Suitable control units and accessories

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

- Hand switch
- Foot switch
- Desk switch

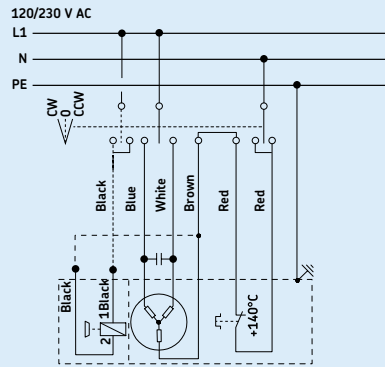
* See page 379

Dimensional drawing



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

Connecting diagram

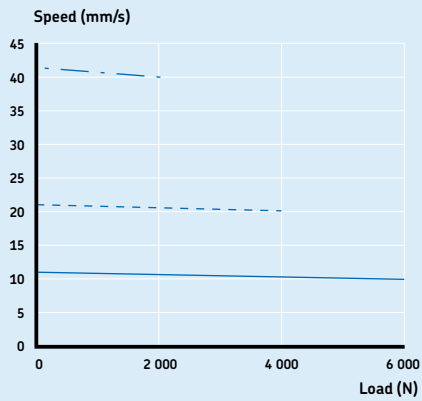


Technical data

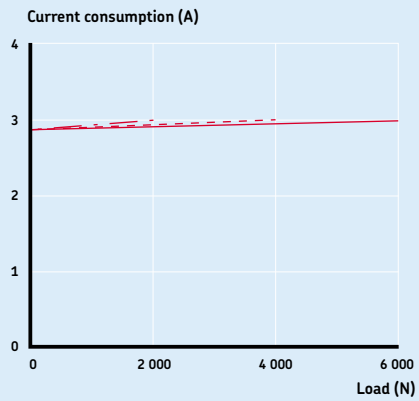
| | Unit | CAR 40 |
|----------------------|------------|---------------------|
| Rated push load | N | 2 000 to 6 000 |
| Rated pull load | N | 2 000 to 6 000 |
| Speed (at full load) | mm/s | 9 to 40* |
| Stroke | mm | 100 to 700 |
| Retracted length | mm | S+263 |
| Voltage | V AC | 120 or 230 |
| 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

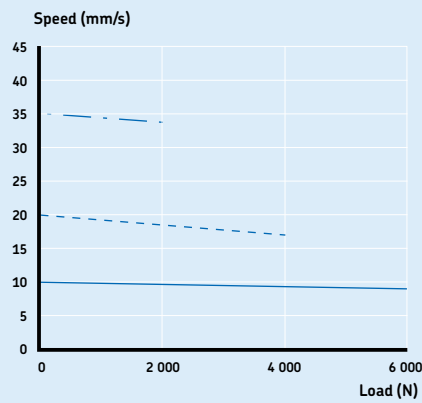
Performance diagrams



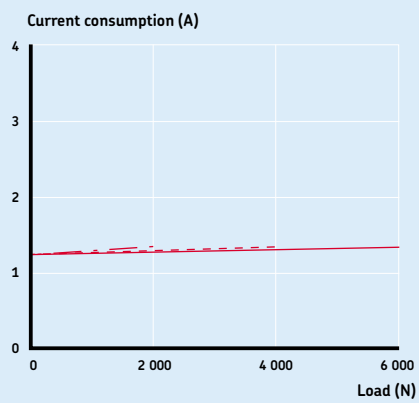
Speed-load diagram CAR 40 ... 120 V AC



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



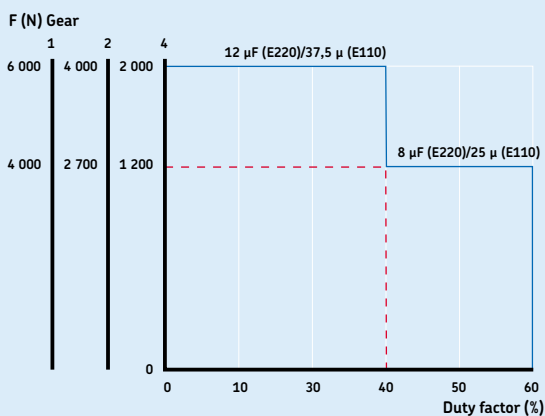
Speed-load diagram CAR 40 ... 230 V AC



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)

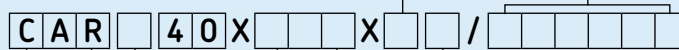
Duty cycle



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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

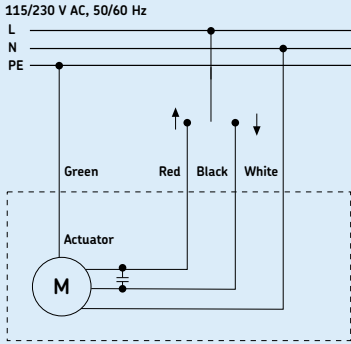
Linear actuator CAHB-31 series

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

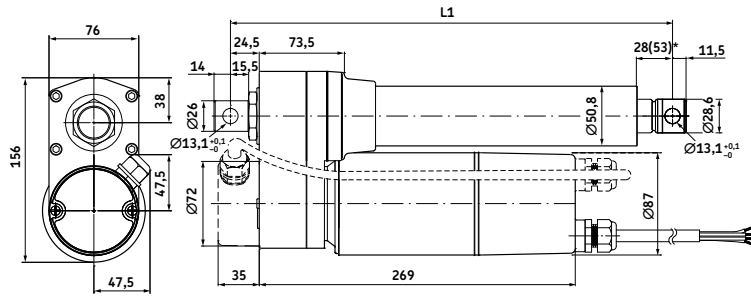


Connecting diagram



Dimensional drawing

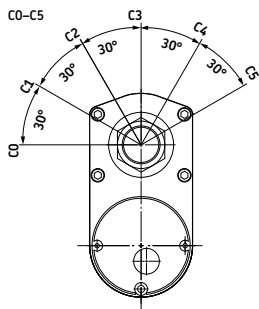
Basic Configuration (dashed line for optional limit switch)



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

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

Different rear attachment



| Stroke (mm) | With limit switch ¹⁾ | | | | | | Without limit switch ²⁾ | | | | | |
|---------------------|---------------------------------|-----|-----|-----|-----|-----|------------------------------------|-----|-----|-----|-----|-----|
| | 102 | 153 | 204 | 305 | 457 | 610 | 102 | 153 | 204 | 305 | 457 | 610 |
| L1 Retracted length | 444 | 444 | 495 | 659 | 811 | 964 | 380 | 419 | 419 | 521 | 735 | 888 |

¹⁾ Tolerance: S and L1 = ± 5,0 mm (If S ≥ 305 mm, S = ± 7,5 mm)

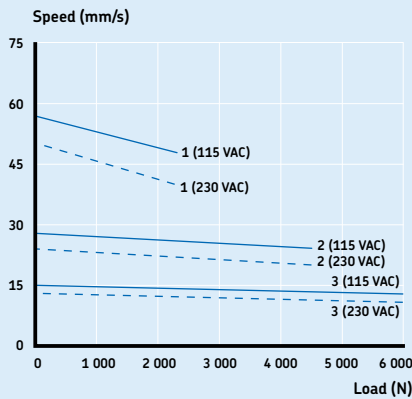
²⁾ Tolerance: S = ± 2,5 mm and L1 = ± 3,8 mm

Technical data

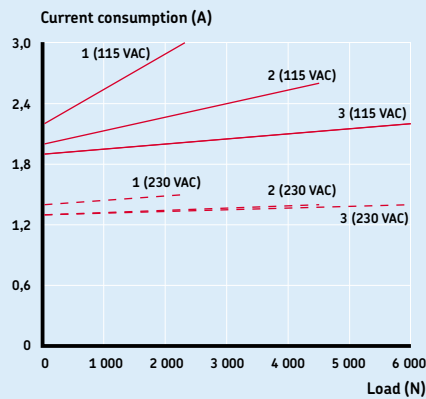
| | Unit | CAHB-31... 1 | CAHB-31... 2 | CAHB-31... 3 |
|------------------------------|--------------------------------|------------------|------------------|------------------|
| Rated push load | N | 2 300 | 4 500 | 6 000 |
| Rated pull load | N | 2 300 | 4 500 | 6 000 |
| Speed (full load to no load) | 115 VAC/60 Hz 230 VAC/50 Hz | mm/s 48 to 57 | mm/s 22 to 28 | mm/s 13 to 15 |
| Stroke | mm | 40 to 50 | 20 to 24 | 11 to 13 |
| Retracted length | mm | 102 to 610 | 102 to 610 | 102 to 610 |
| Voltage | VAC | —* | —* | —* |
| Power consumption | W | 115 or 230 | 115 or 230 | 115 or 230 |
| Current consumption | 115 VAC/60 Hz 230 VAC/50 Hz | N/A | N/A | N/A |
| | A | 3 | 2,6 | 2,2 |
| | A | 1,5 | 1,4 | 1,4 |
| Duty cycle | % | 25 | 25 | 25 |
| Ambient temperature | °C | 25 | 25 | 25 |
| Type of protection | IP | —26 to +65 | —26 to +65 | —26 to +65 |
| Weight (at 305 mm stroke) | kg | 65 | 65 | 65 |
| Color | — | 9,5 | 9,5 | 9,5 |
| | — | Black | Black | Black |

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

Performance diagrams



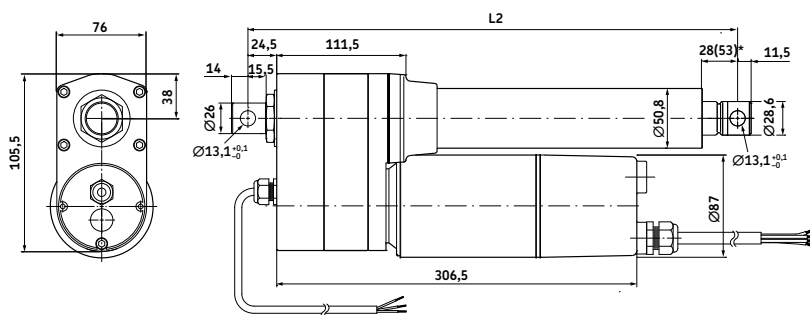
Speed-load diagram



Current-load diagram

Dimensional drawing

Optional potentiometer

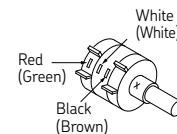
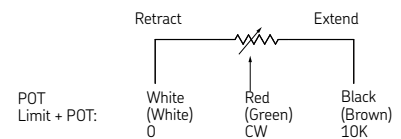
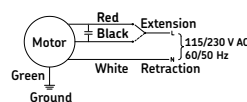


Without limit switch:
 RED (+) & BLACK (-) = retraction
 RED (-) & BLACK (+) = extension
 With limit switch:
 RED (+) & BLACK (-) = extension
 RED (-) & BLACK (+) = retraction

Legend:

L2 = retracted length

* 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



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

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

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

Linear actuator SJ 25, 35, 45 series

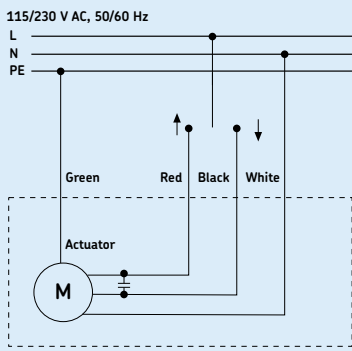
Benefits

- 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

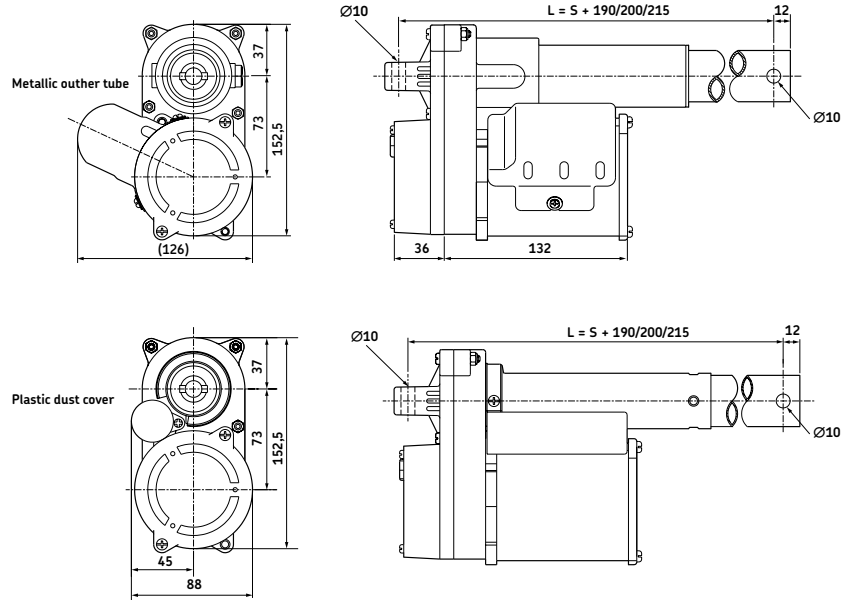


*Only as an option for SJ35 and SJ45

Connecting diagram

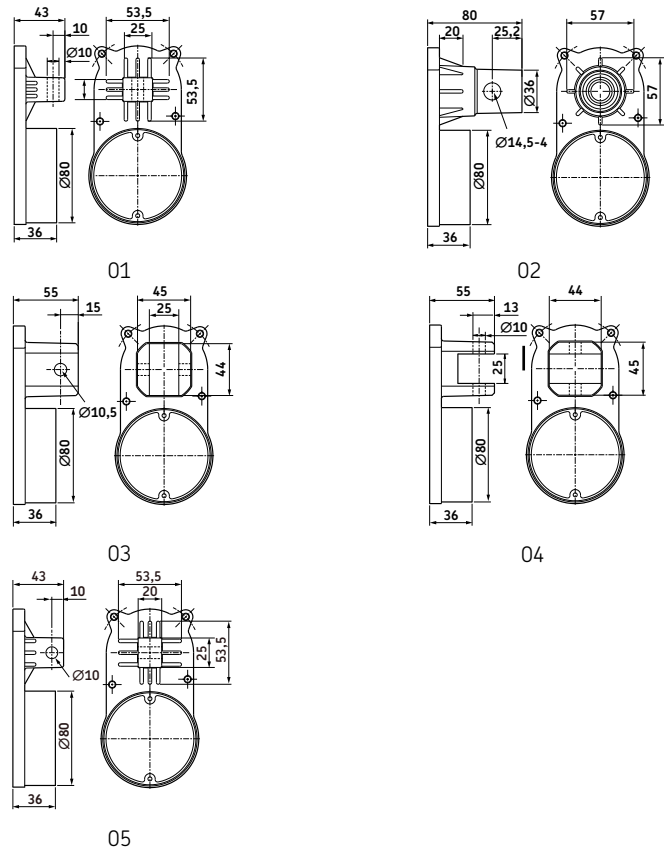


Dimensional drawing



Legend:
S = stroke
L = retracted length

Mountings



Technical data

| | Unit | SJ 255 | SJ 256 | SJ 258 | SJ 355 | SJ 356 | SJ 358 |
|--------------------------------|----------|--------|---------------|---------------|---------------|---------------|---------------|
| Rated push load | N | 2 000 | 2 500 | 3 000 | 3 000 | 3 500 | 4 000 |
| Rated 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 |
| 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 |
| Stroke ¹⁾ | | mm | 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 |
| Voltage | V AC | | 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 |
| Current consumption | 115 V AC | A | 1,4 | 1,4 | 1,4 | 1,6 | 1,6 |
| | 230 V AC | A | 0,8 | 0,8 | 0,8 | 1,0 | 1,0 |
| Duty cycle | % | | 17 | 17 | 17 | 17 | 17 |
| Ambient temperature | °C | | +10 to +40 | +10 to +40 | +10 to +40 | +10 to +40 | +10 to +40 |
| Type of protection | IP | | 52 | 52 | 52 | 52 | 52 |
| Weight | kg | | 4,0 | 4,0 | 4,0 | 4,5 | 4,5 |
| Color | – | | Black | Black | Black | Black | Black |

¹⁾ Max. stroke for the tube version "1" 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.

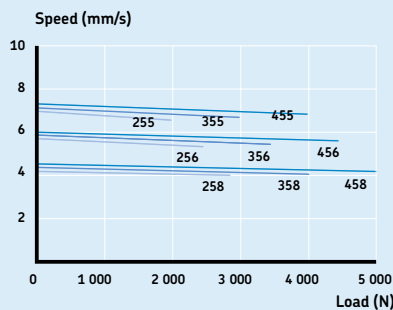
Technical data

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

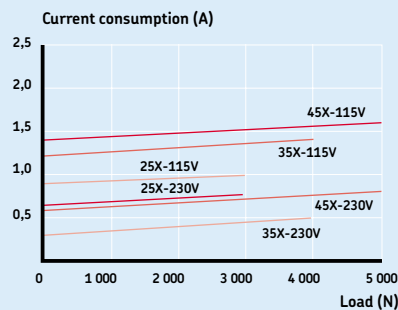
¹⁾ Max. stroke for the tube version "1" is 250 mm.

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

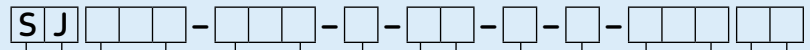


Speed-load diagram



Current-load diagram

Ordering key



Type

Load / Speed:

| | |
|--------------------|-----|
| 2 000 N / 7,2 mm/s | 255 |
| 2 500 N / 6,0 mm/s | 256 |
| 3 000 N / 4,5 mm/s | 258 |
| 3 000 N / 7,2 mm/s | 355 |
| 3 500 N / 6,0 mm/s | 356 |
| 4 000 N / 4,5 mm/s | 358 |
| 4 000 N / 7,2 mm/s | 455 |
| 4 500 N / 6,0 mm/s | 456 |
| 5 000 N / 4,5 mm/s | 458 |

Voltage:

| | |
|---------|-----|
| 115 VAC | 115 |
| 230 VAC | 230 |

Tube type:

| | |
|---|--------|
| With outer and inner tube | |
| Inner tube with plastic dust protection cover | B |
| Inner tube only | I Y |

Mounting (see illustrations on page 143):

| | |
|----------------------------|----|
| Square mounting | 01 |
| Tube mounting with 4 holes | 02 |
| Clevis mounting | 03 |
| Clevis mounting | 04 |
| Square mounting | 05 |

Cable connector:

| | |
|---------------------------------|--------|
| No connector | |
| 1x4C to control box | N |
| 1x3C to AC plug, 1x3C to pedant | C |
| With one motor controller | P L |

Feedback:

| | |
|---------------|---|
| Potentiometer | P |
| No sensor | N |

Stroke:

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

Customized cable length options:

Specify requested cable length in dm XX

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

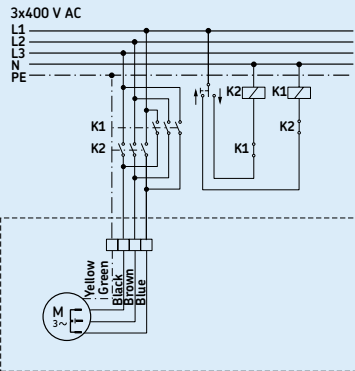
Linear actuator Magforce DSP

Benefits

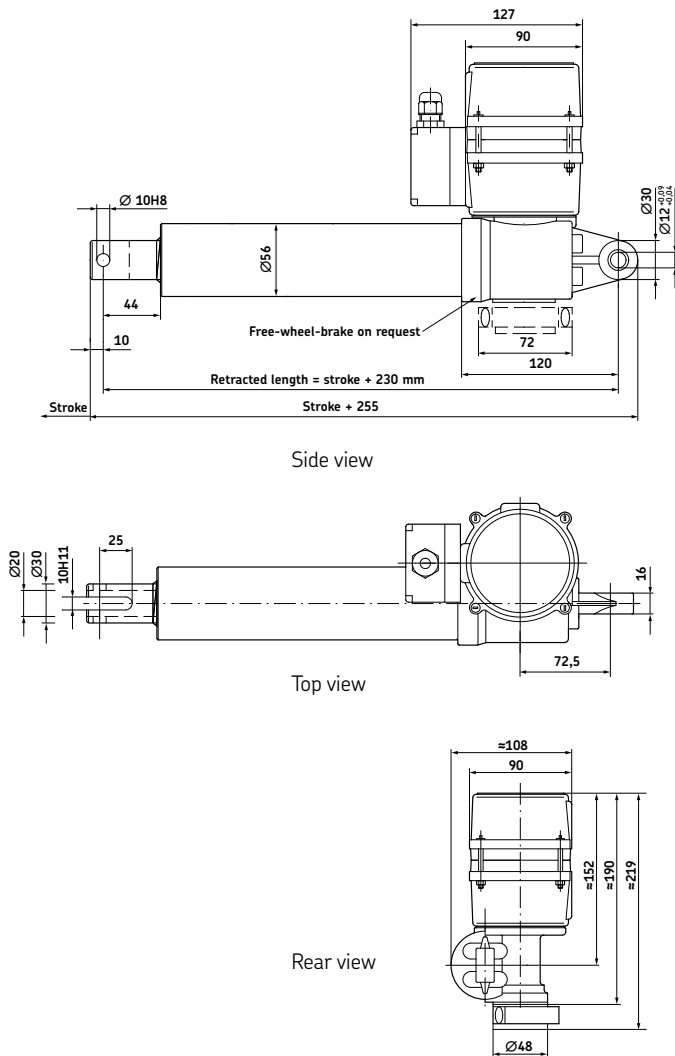
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Connecting diagram



Dimensional drawing

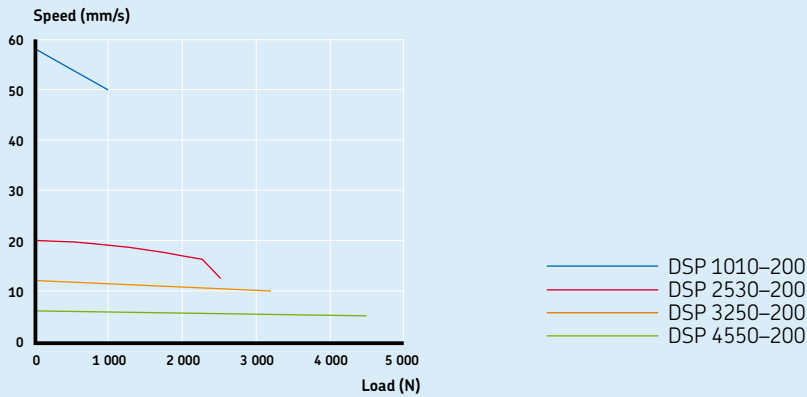


Technical data

| | Unit | DSP 1010 | DSP 2530 | DSP 3250 | DSP 4550 |
|---------------------------|------|------------|---------------------|---------------------|---------------------|
| Rated push load | N | 1 000 | 2 500 ¹⁾ | 3 200 ²⁾ | 4 500 ³⁾ |
| Rated 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 |

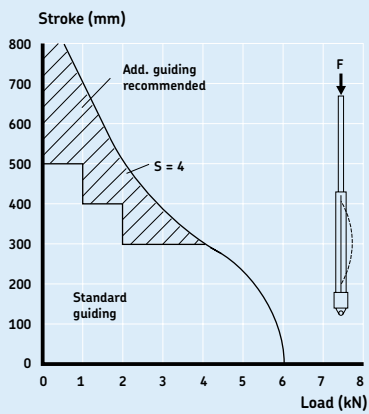
¹⁾ Push load allowed up to 500 mm stroke (if S>500 mm, only pull load is allowed)
²⁾ Push load allowed up to 450 mm stroke (if S>450 mm, only pull load is allowed)
³⁾ Push load allowed up to 350 mm stroke (if S>350 mm, only pull load is allowed)

Performance diagram



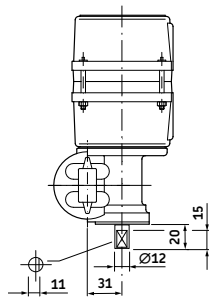
Speed-load diagram

Safety load factor conditions

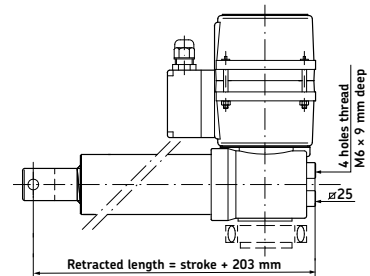


Bending of spindle $S =$ safety factor Euler 3

Options

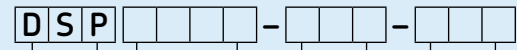


Extended motor shaft



Rear screw fixing

Ordering key



Type

Load:

| | |
|---------|------|
| 1 000 N | 1010 |
| 2 500 N | 2530 |
| 3 200 N | 3250 |
| 4 500 N | 4550 |

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>Bronze nut, special grease for -30°C</i> | 08 |
| <i>Additional bushing (L=S+280 mm)</i> | 09 |
| <i>Protection tube made out of stainless steel</i> | 14 |
| <i>Extended shaft</i> | 122 |
| <i>ATEX zone 22 (II 3 D T 150°C)</i> | 131 |
| <i>Others (rear attachment hole turned 90°, motor turned 90°, potentiometer, ...)</i> | XX |

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | Designation | Order N° |
|-----------------------------------|--------------------|-----------|
| Free wheel brake on push load | ZAC-1028,6226 | M/0124682 |
| Free wheel brake on pull load | ZAC-1028,0002 | M/0125632 |
| Friction brake for pull/push load | ZAC-1028,7851 | M/0124683 |
| Limit switch 100 mm stroke | ZAC-1043,0210-0100 | M/0126970 |
| Limit switch 200 mm stroke | ZAC-1043,0210-0200 | M/0126971 |
| Limit switch 300 mm stroke | ZAC-1043,0210-0300 | M/0126972 |
| Limit switch 400 mm stroke | ZAC-1043,0210-0400 | M/0126973 |
| Limit switch 500 mm stroke | ZAC-1043,0210-0500 | M/0126974 |
| Limit switch 600 mm stroke | ZAC-1043,0210-0600 | M/0126975 |

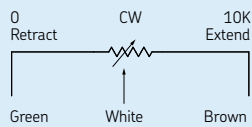
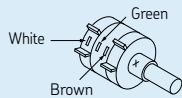
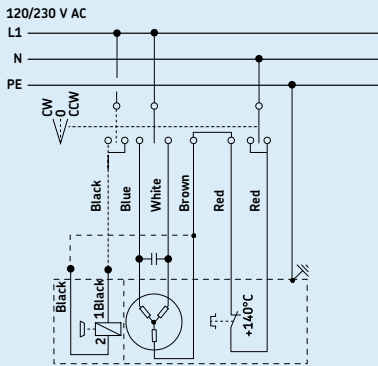
Linear actuator CAP 32

Benefits

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

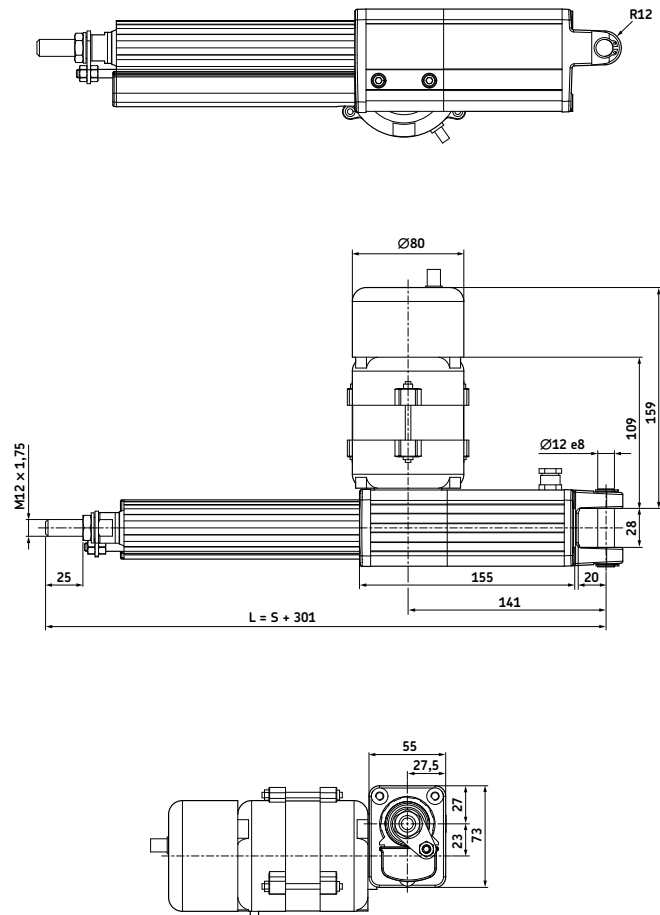


Connecting diagram



Connection diagram for rotating potentiometer.

Dimensional drawing

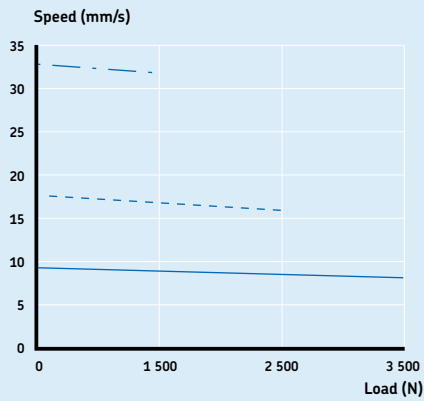


Technical data

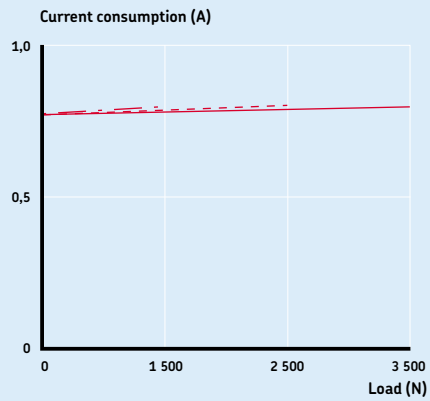
| | Unit | CAP 32 |
|----------------------|------------|----------------------|
| Rated push load | N | 1 500 to 3 500 |
| Rated pull load | N | 1 500 to 3 500 |
| Speed (at full load) | mm/s | 6 to 32* |
| Stroke | mm | 50 to 700 |
| Retracted length | mm | S+301 |
| Voltage | V AC | 120 or 230 |
| 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 +50 |
| Type of protection | IP | 20/54 |
| Weight | kg | 2,9 to 5,0 |

* Depending on selected motor

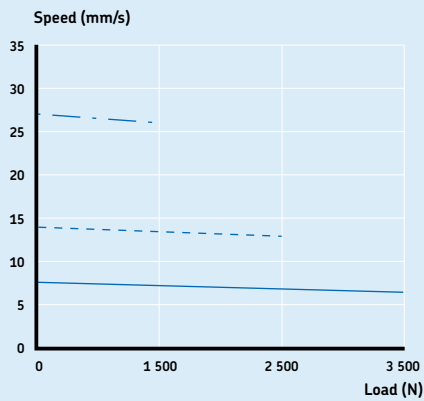
Performance diagrams



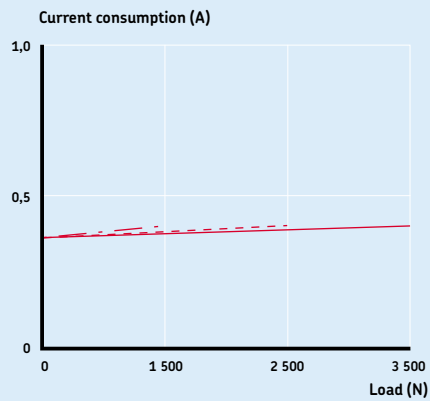
Speed-load diagram CAP 32 ... 120 VAC



Current-load diagram CAP 32 ... 120 VAC



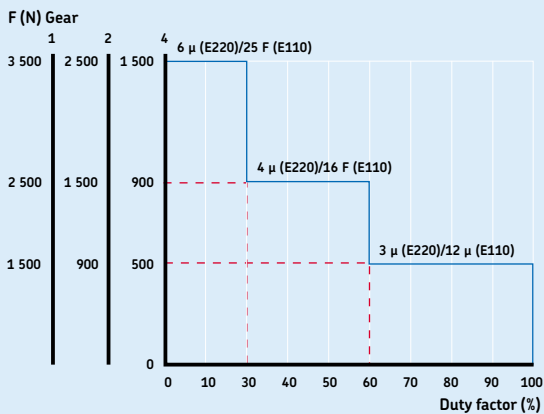
Speed-load diagram CAP 32 ... 230 VAC



Current-load diagram CAP 32 ... 230 VAC

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

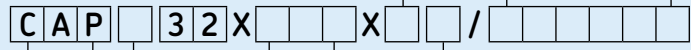
Duty cycle



CAP 32 ... 230/120 VAC

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

- 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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator CAR 32

Benefits

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



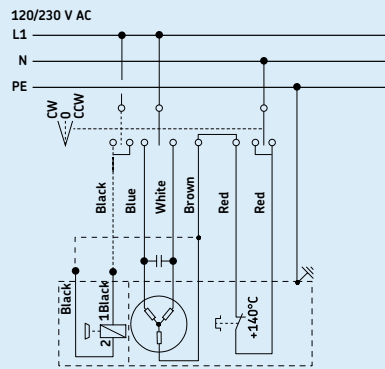
Suitable control units and accessories

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

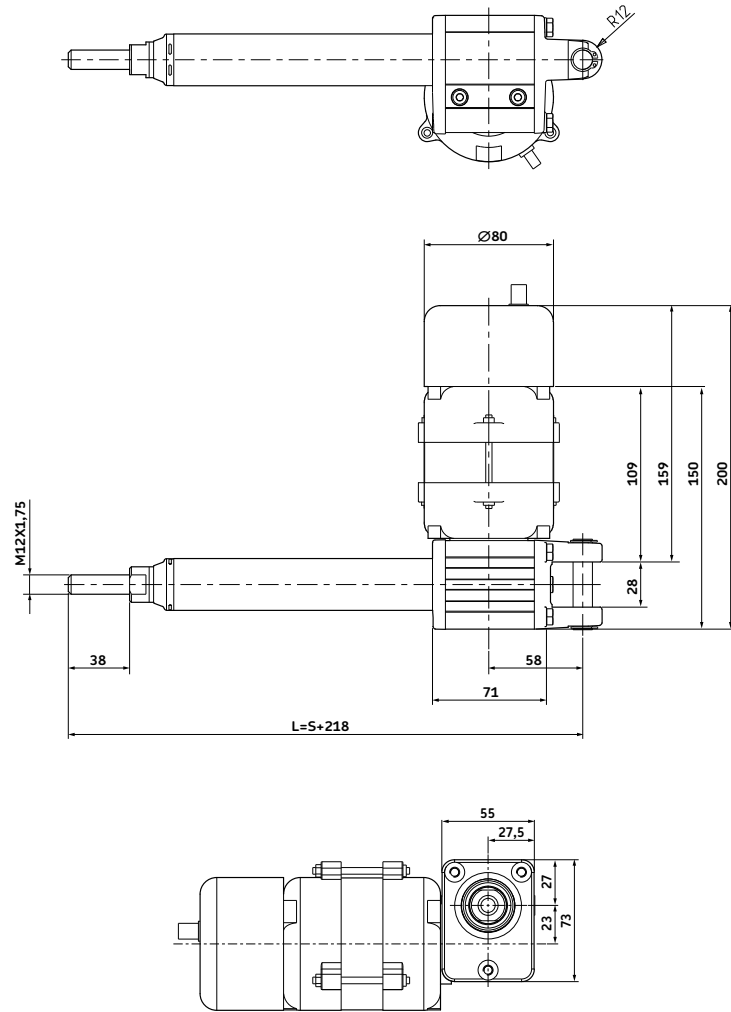
Hand switch
 Foot switch
 Desk switch

* See page 379

Connecting diagram



Dimensional drawing



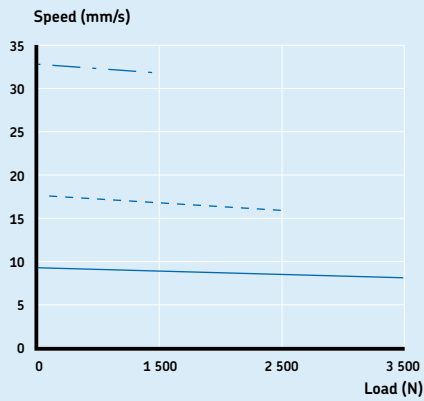
Legend:
 S = stroke
 L = retracted length

Technical data

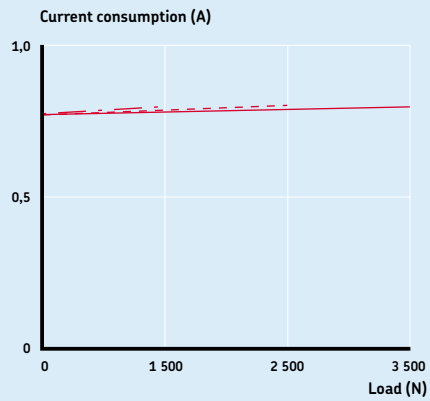
| | Unit | CAR 32 |
|----------------------|------------|----------------------|
| Rated push load | N | 1 500 to 3 500 |
| Rated pull load | N | 1 500 to 3 500 |
| Speed (at full load) | mm/s | 6 to 32* |
| Stroke | mm | 50 to 700 |
| Retracted length | mm | S + 218 |
| Voltage | V AC | 120 or 230 |
| 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

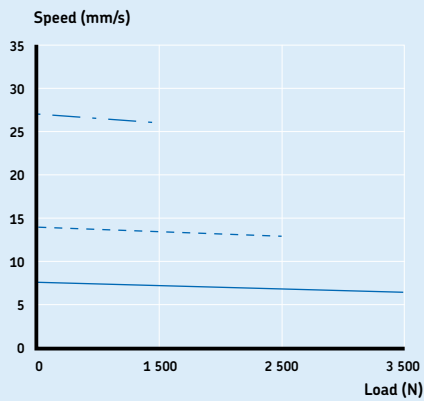
Performance diagrams



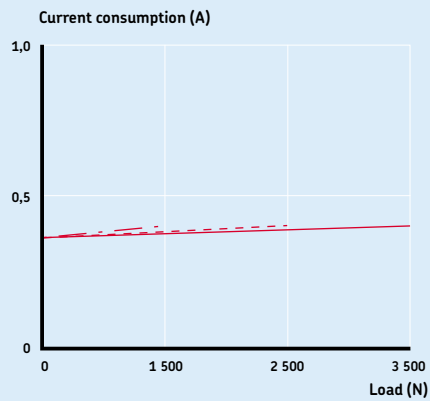
Speed-load diagram CAR 32 ... 120 VAC



Current-load diagram CAR 32 ... 120 VAC



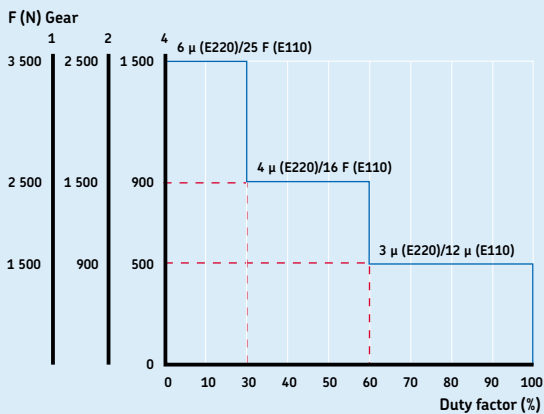
Speed-load diagram CAR 32 ... 230 VAC



Current-load diagram CAR 32 ... 230 VAC



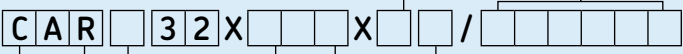
Duty cycle



CAR 32 ... 230/120 VAC

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*

- 050
- 100
- 200
- 300
- 500
- 700
-

Option:

- Friction clutch
- Back-up nut

- F
- S

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator CAT 32B

Benefits

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



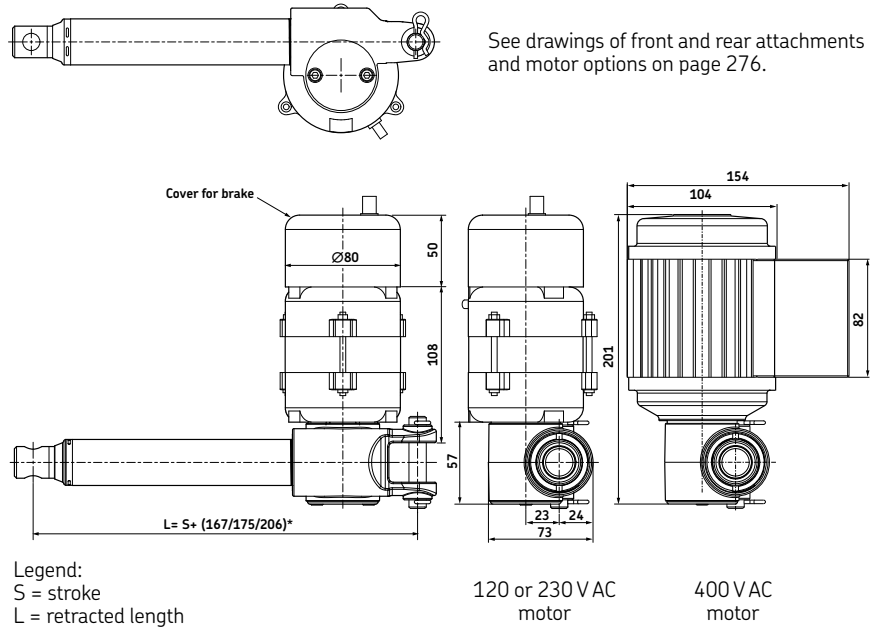
Suitable control units and accessories

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

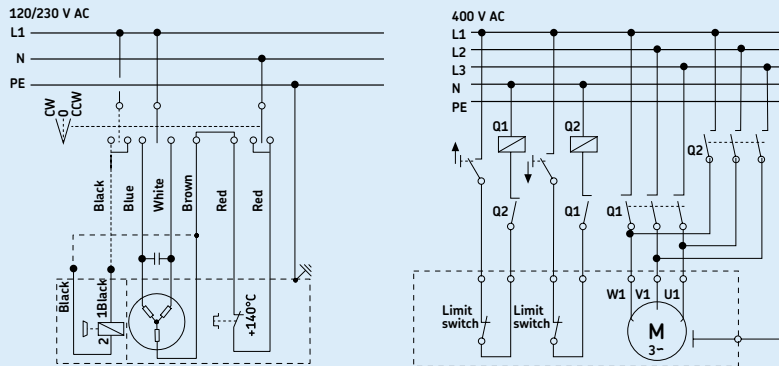
- Hand switch
- Foot switch
- Desk switch

¹⁾See page 379
²⁾See page 380

Dimensional drawing



Connecting diagrams

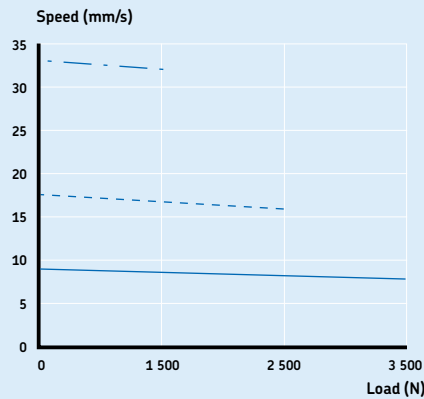


Technical data

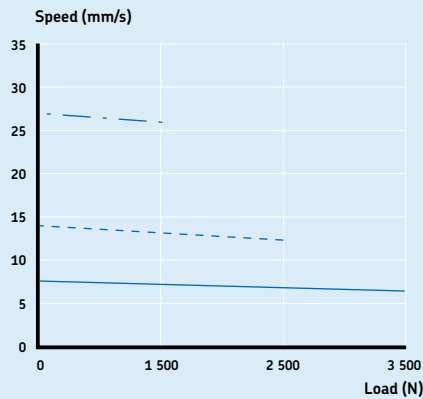
| | Unit | CAT 32B |
|----------------------|------------|-----------------------------|
| Rated push load | N | 1 500 to 3 500 |
| Rated pull load | N | 1 500 to 3 500 |
| Speed (at full load) | mm/s | 6,5 to 32 ¹⁾ |
| Stroke | mm | 50 to 700 |
| Retracted length | mm | S+167/175/206 ²⁾ |
| Voltage | 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

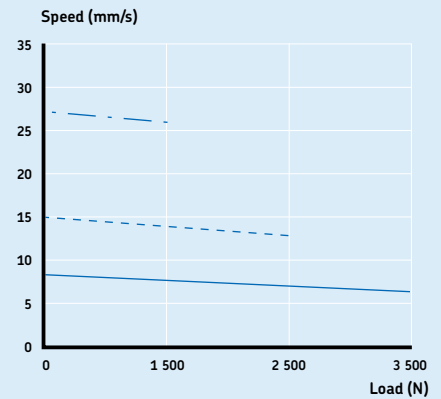
Performance diagrams



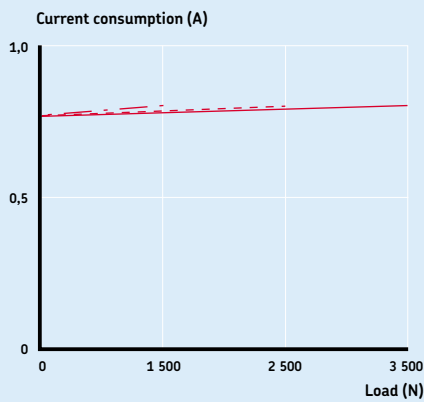
Speed-load diagram CAT 32B ... 120 VAC



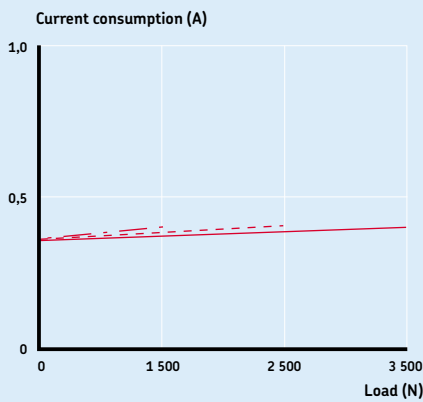
Speed-load diagram CAT 32B ... 230 VAC



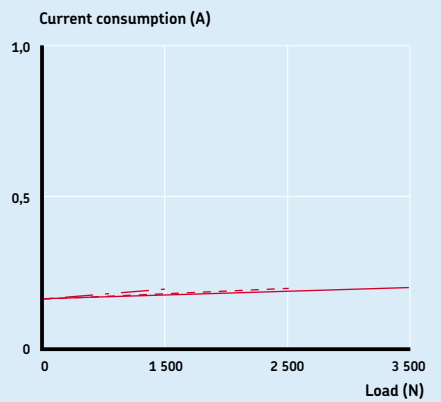
Speed-load diagram CAT 32B ... 400 VAC



Current-load diagram CAT 32B ... 120 VAC



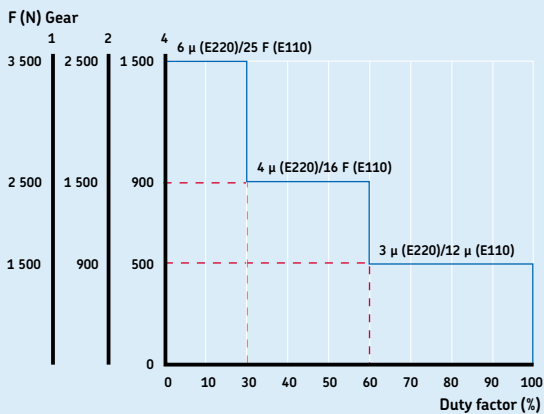
Current-load diagram CAT 32B ... 230 VAC



Current-load diagram CAT 32B ... 400 VAC

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

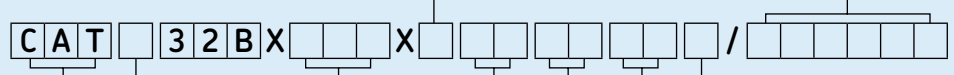
Duty cycle



CAT 32B ... 230/120 VAC

Ordering key

| Dynamic load (N) / Speed (mm/s) | | | Motor options | |
|---------------------------------|----------|----------|--------------------------------------|--------|
| 4 000/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 |
| 3 500/6,5 | 2 500/13 | 1 500/26 | 230 V AC/50 Hz, 1-phase, IP54 | E220C |
| 3 500/6,5 | 2 500/13 | 1 500/26 | 230 V AC/50 Hz, 1-phase, brake, IP20 | E220CB |
| 3 500/7 | 2 500/14 | 1 500/28 | 400 V AC/50 Hz, 3-phase, IP55 | E380C |
| 1 | 2 | 4 | | |



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 |
| <i>Other stroke lengths</i> | --- |

Rear attachment (see page 276):

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 276):

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

Feedback:

No encoder (no code)
Encoder (for all standard motors) E2

Option:

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

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator CAT 33

Benefits

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



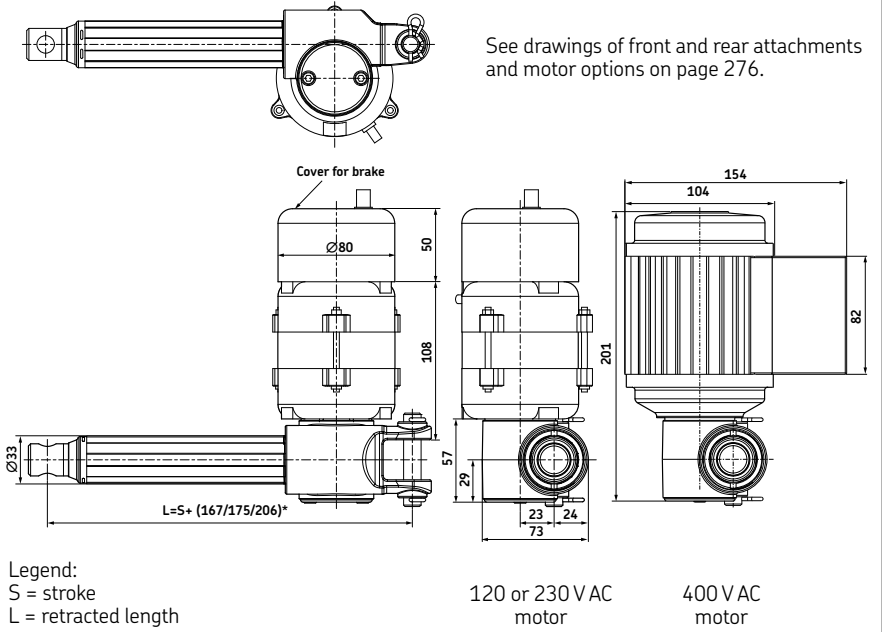
Suitable control units and accessories

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

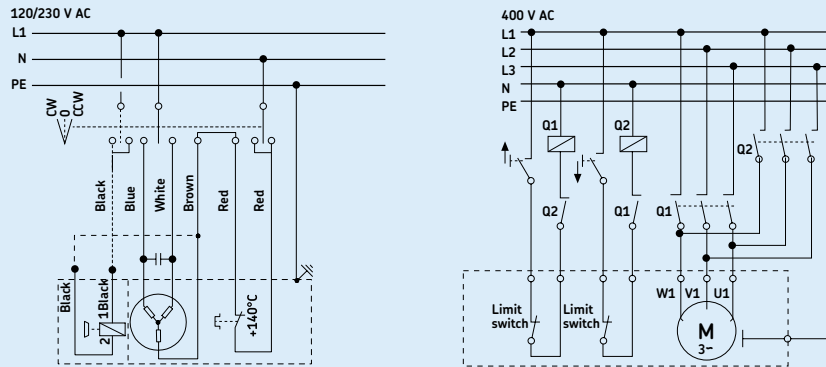
Hand switch
 Foot switch
 Desk switch

¹⁾See page 378
²⁾See page 380

Dimensional drawing



Connecting diagrams

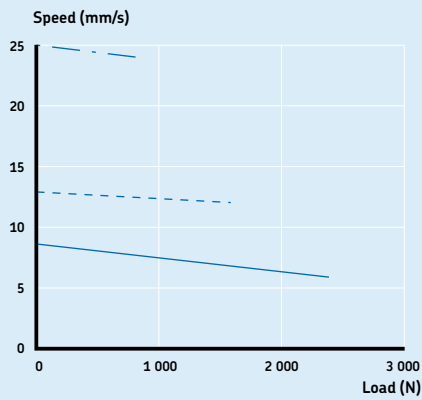


Technical data

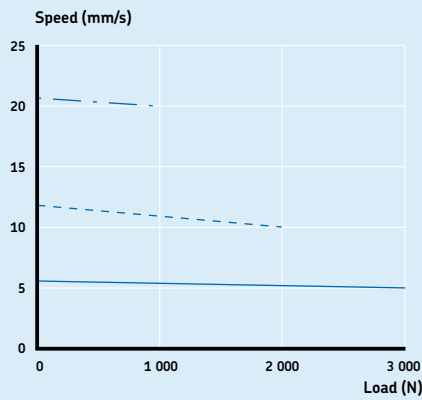
| | Unit | CAT 33 |
|----------------------|------------|-----------------------------|
| Rated push load | N | 800 to 3 000 |
| Rated pull load | N | 800 to 3 000 |
| Speed (at full load) | mm/s | 5 to 24 ¹⁾ |
| Stroke | mm | 100 to 400 |
| Retracted length | mm | S+150/158/189 ²⁾ |
| Voltage | V AC | 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

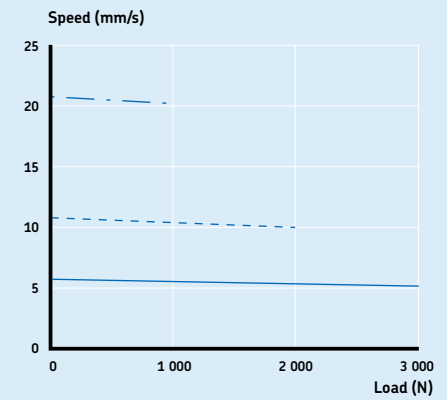
Performance diagrams



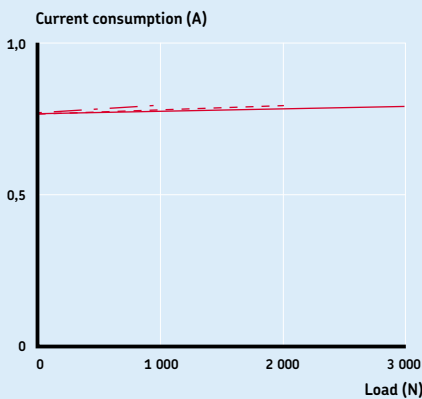
Speed-load diagram CAT 33 ... 120 V AC



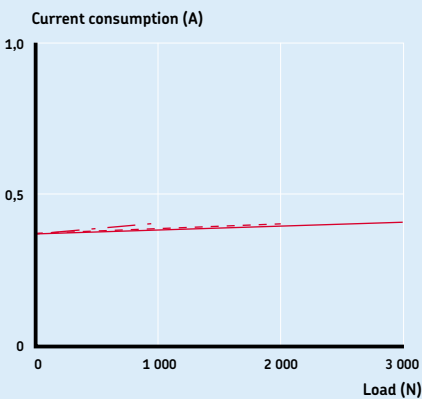
Speed-load diagram CAT 33 ... 230 V AC



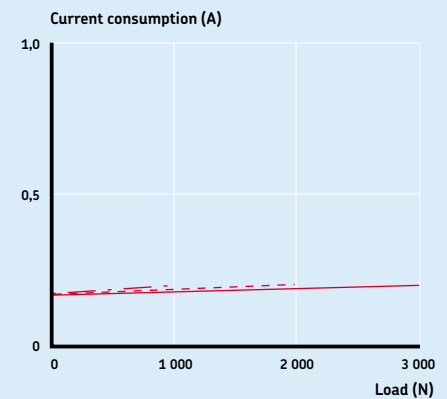
Speed-load diagram CAT 33 ... 400 V AC



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



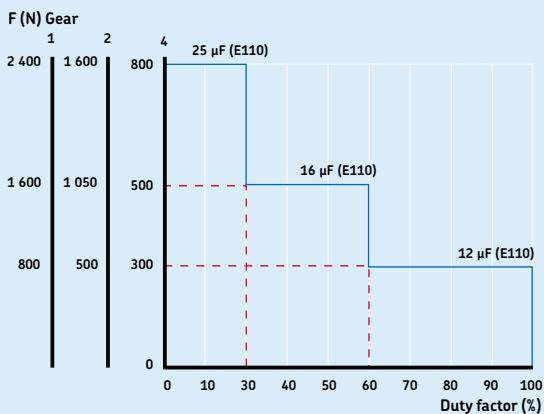
Current-load diagram CAT 33 ... 230 V AC



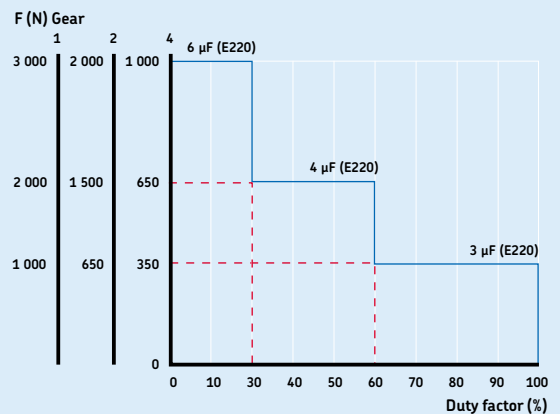
Current-load diagram CAT 33 ... 400 V AC

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

Duty cycle



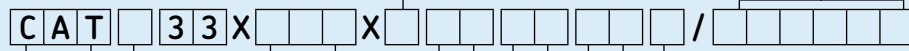
CAT 33 ... 120 V AC



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 | | |



Type

Motor assembly:

Right R
Left L

Stroke (S):

100 mm 100
200 mm 200
300 mm 300
400 mm 400
Other stroke lengths - - -

Rear attachment (see page 276):

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 276):

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

Feedback:

No encoder (no code)
Encoder (for all standard motors) E2

Option:

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

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

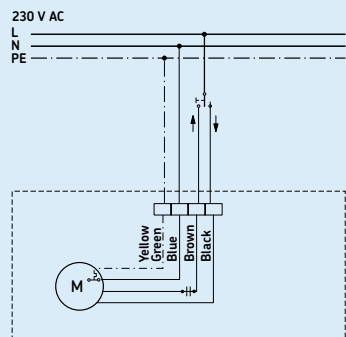
Linear actuator Magforce WSP

Benefits

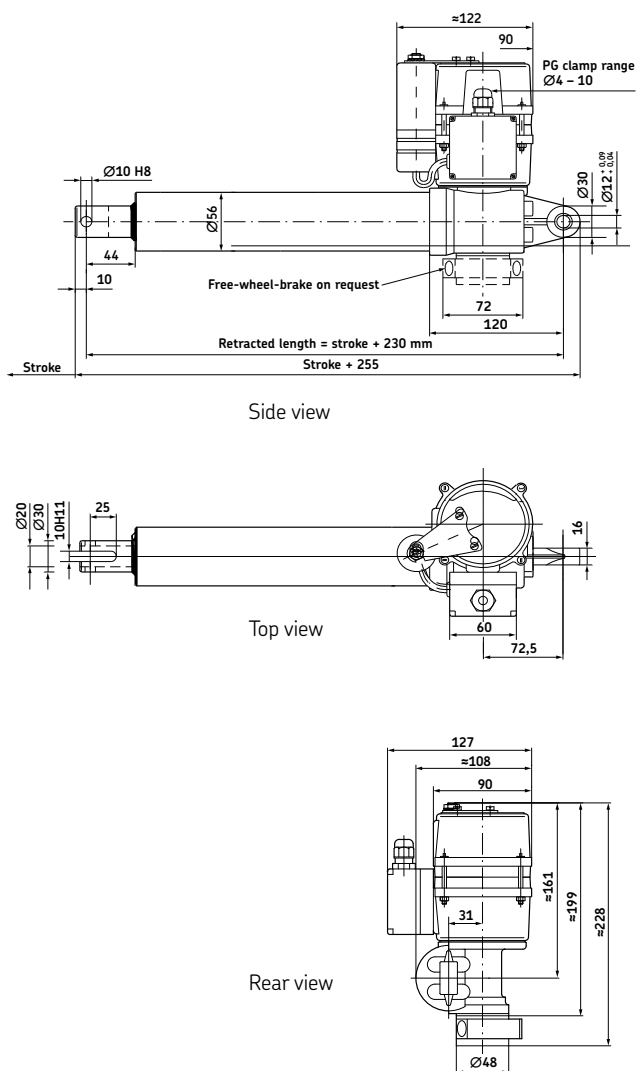
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Connecting diagram



Dimensional drawing



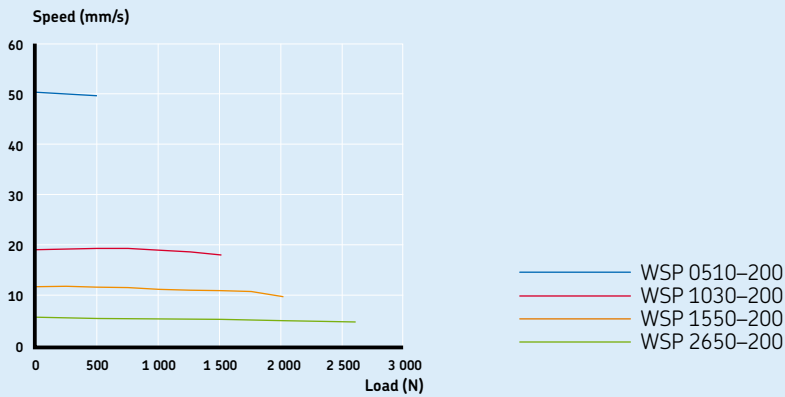
Technical data

| | Unit | WSP 0510 | WSP 1030 | WSP 1550 | WSP 2650 |
|---------------------------|------|--------------|--------------|---------------------|---------------------|
| Rated push load | N | 500 | 1 000 | 1 500 ¹⁾ | 2 600 ²⁾ |
| Rated 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)

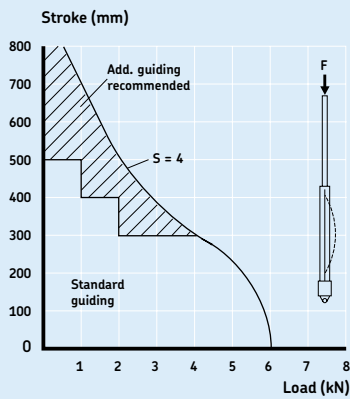
²⁾ Push load allowed up to 500 mm stroke (if S>500 mm, only pull load is allowed)

Performance diagram



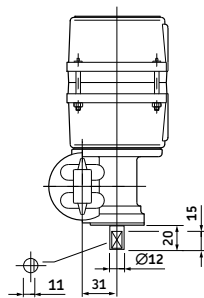
Speed-load diagram

Safety load factor conditions

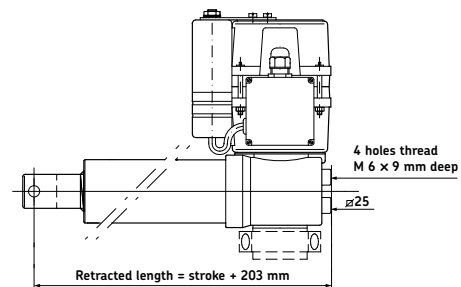


Bending of spindle $S =$ safety factor Euler 3

Options



Extended motor shaft



Rear screw fixing

Ordering key



Type

Load:

| | |
|---------|------|
| 500 N | 0510 |
| 1 000 N | 1030 |
| 1 500 N | 1550 |
| 2 600 N | 2650 |

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>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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | Designation | Order N° |
|-----------------------------------|-------------------|-----------|
| Free wheel brake on push load | ZAC-1028,6226 | M/0124682 |
| Free wheel brake on pull load | ZAC-1028,0002 | M/0125632 |
| Friction brake for pull/push load | ZAC-1028,7851 | M/0124683 |
| Limit switch 100 mm stroke | ZAC-1043,0209-100 | M/0126964 |
| Limit switch 200 mm stroke | ZAC-1043,0209-200 | M/0126965 |
| Limit switch 300 mm stroke | ZAC-1043,0209-300 | M/0126966 |
| Limit switch 400 mm stroke | ZAC-1043,0209-400 | M/0126967 |
| Limit switch 500 mm stroke | ZAC-1043,0209-500 | M/0126968 |
| Limit switch 600 mm stroke | ZAC-1043,0209-600 | M/0126969 |

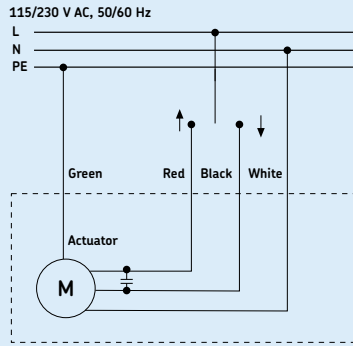
Linear actuator CAHB-30 series

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

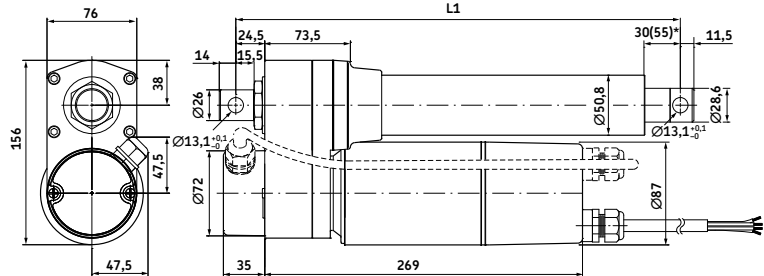


Connecting diagram



Dimensional drawing

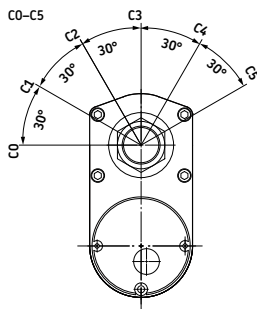
Basic configuration (dashed line for optional limit switch)



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

Different rear attachment



| Stroke (mm) | With limit switch ¹⁾ | | | | | | Without limit switch ²⁾ | | | | | |
|---------------------|---------------------------------|-----|-----|-----|-----|-----|------------------------------------|-----|-----|-----|-----|-----|
| | 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 = ± 5,0 mm (If S ≥ 305 mm, S = ± 7,5 mm)

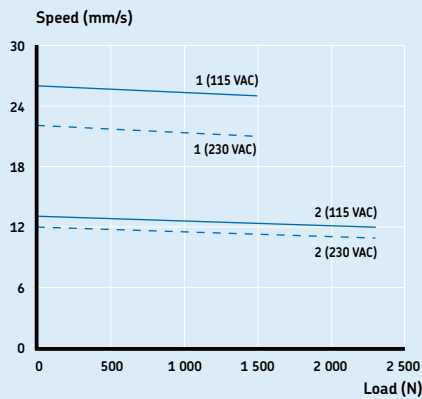
²⁾ Tolerance: S = ± 2,5 mm and L1 = ± 3,8 mm

Technical data

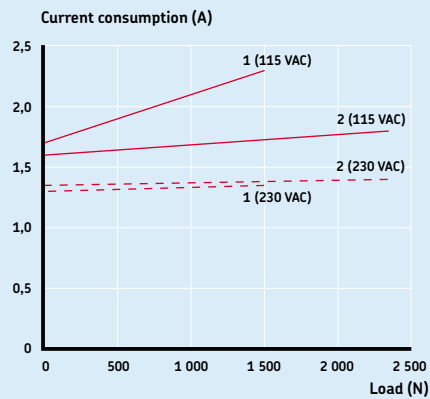
| | Unit | CAHB-30... 1 | CAHB-30... 2 |
|------------------------------|--------------------------------|------------------|------------------|
| Rated push load | N | 1 500 | 2 300 |
| Rated pull load | N | 1 500 | 2 300 |
| Speed (full load to no load) | 115 VAC/60 Hz 230 VAC/50 Hz | mm/s 25 to 26 | mm/s 12 to 13 |
| 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 230 VAC/50 Hz | A 2,3 1,35 | A 1,8 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



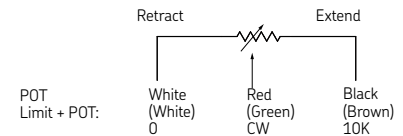
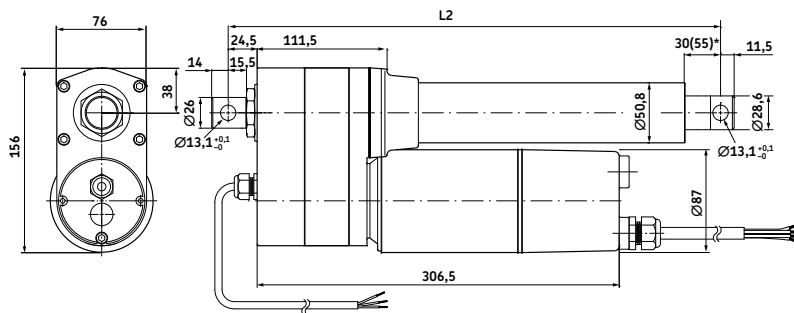
Speed-load diagram



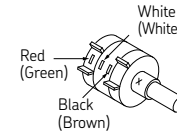
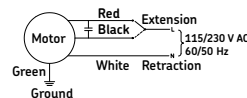
Current-load diagram

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

| 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 | 478 | 478 | 478 | 630 | 782 | 935 | 418 | 453 | 453 | 503 | 706 | 859 |

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



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 L.S.¹⁾
102 mm
153 mm
204 mm
305 mm
457 mm
610 mm

| | w/o POT ²⁾ | with POT ²⁾ |
|--------|-----------------------|------------------------|
| 102 mm | 440 mm | 478 mm |
| 153 mm | 440 mm | 478 mm |
| 204 mm | 440 mm | 478 mm |
| 305 mm | 592 mm | 630 mm |
| 457 mm | 744 mm | 782 mm |
| 610 mm | 897 mm | 935 mm |
| 102 mm | 380 mm | 418 mm |
| 153 mm | 415 mm | 453 mm |
| 204 mm | 415 mm | 453 mm |
| 305 mm | 465 mm | 503 mm |
| 457 mm | 668 mm | 706 mm |
| 610 mm | 821 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

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

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



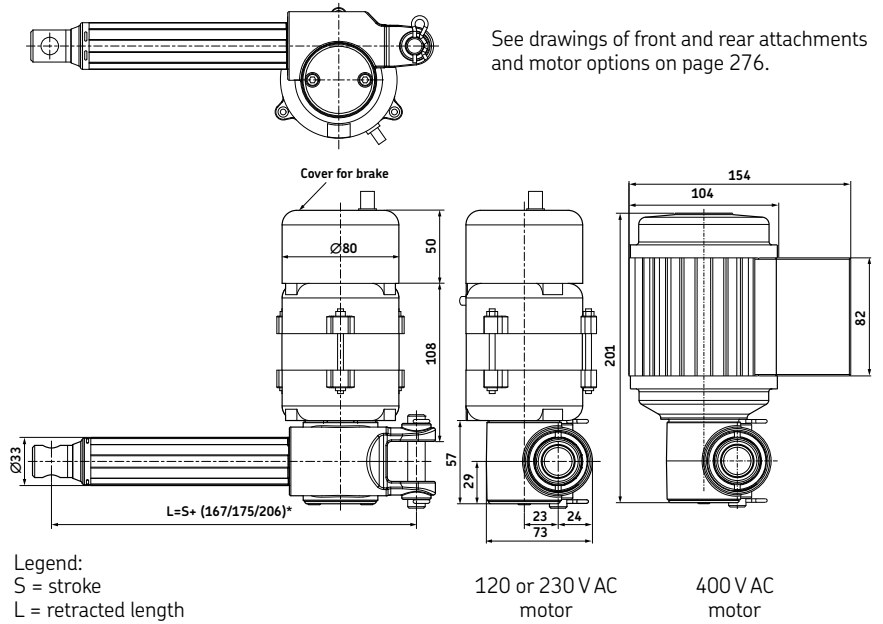
Suitable control units and accessories

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

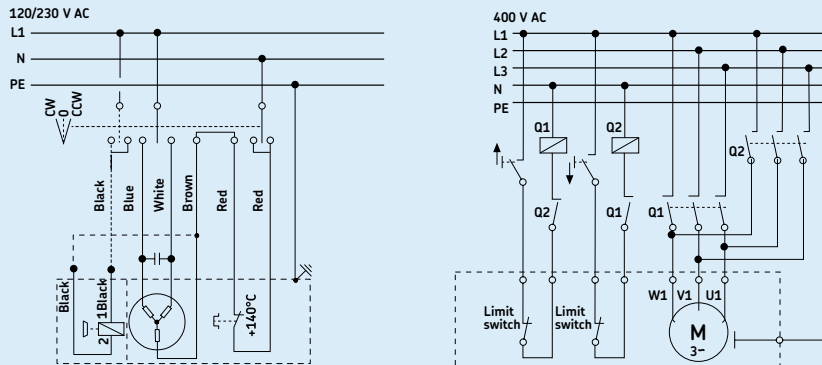
- Hand switch
- Foot switch
- Desk switch

¹⁾ See page 380

Dimensional drawing



Connecting diagrams



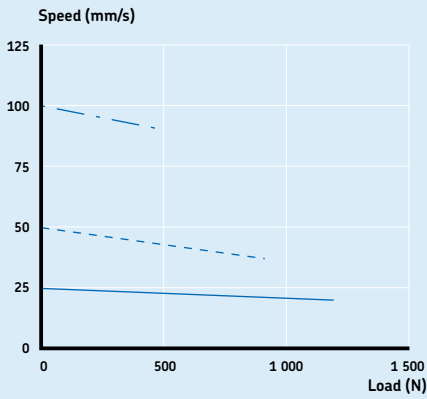
Technical data

| | Unit | CAT 33H |
|----------------------|------------|-----------------------------|
| Rated push load | N | 500 to 1 200 |
| Rated 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 |

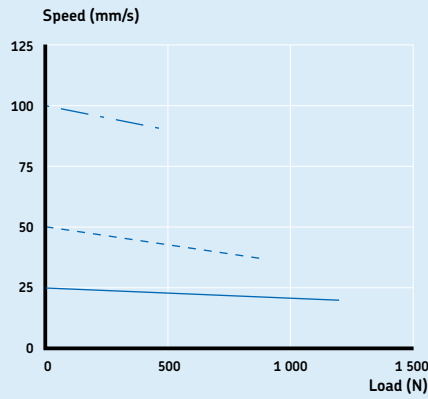
¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

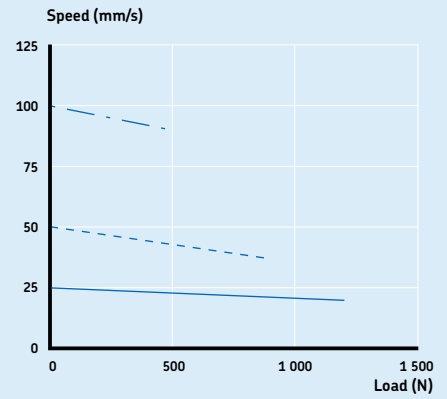
Performance diagrams



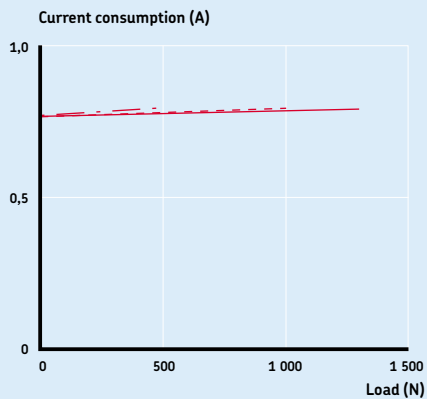
Speed-load diagram CAT 33H ... 120 V AC



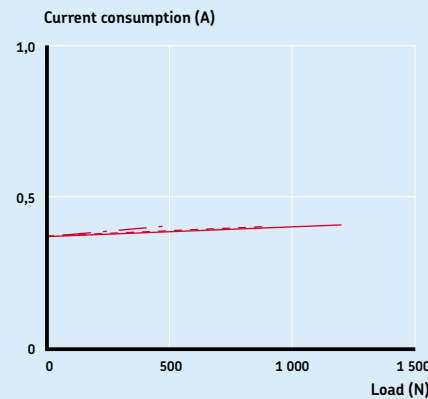
Speed-load diagram CAT 33H ... 230 V AC



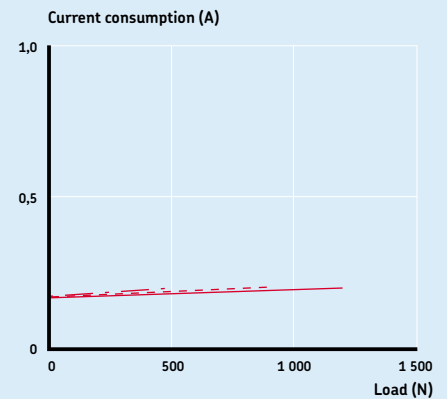
Speed-load diagram CAT 33H ... 400 V AC



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



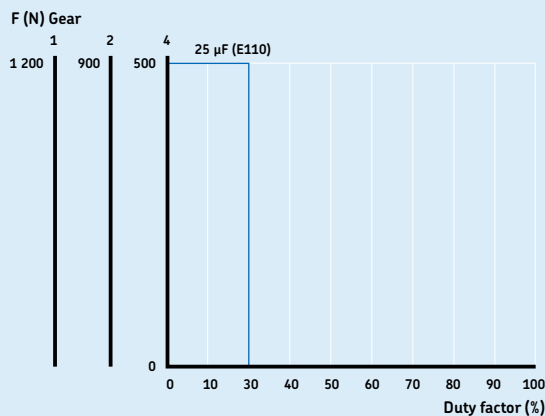
Current-load diagram CAT 33H ... 230 V AC



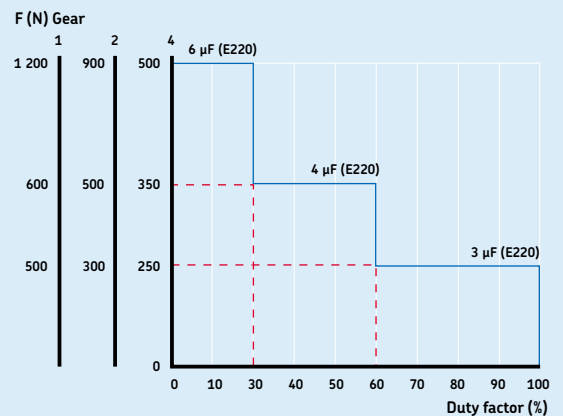
Current-load diagram CAT 33H ... 400 V AC

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 | | |



Type

Motor assembly:

Right
Left

R
L

Stroke (S):

100 mm
200 mm
300 mm
400 mm

100
200
300
400

Other stroke lengths

Rear attachment (see page 276):

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 276):

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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.



Linear actuators – DC version

| | |
|----------------|-----|
| SKG | 180 |
| STG | 184 |
| RUNNER | 188 |
| MATRIX 3 | 192 |
| CAR 40..... | 196 |
| ECOMAG..... | 200 |
| FD | 204 |
| Magdrive | 208 |
| CAHB-21..... | 212 |
| ASM..... | 216 |
| CAP 43B | 220 |
| CAT 32B..... | 224 |
| MATRIX 1 | 228 |
| CAR 32..... | 232 |
| CAP 32..... | 236 |
| CAP 43A..... | 240 |
| CAT 33..... | 244 |
| CAHB-20..... | 248 |
| CARE 33..... | 252 |
| CAR 22..... | 256 |
| CAT 33H..... | 260 |
| CAHB-10..... | 264 |
| CALA 36 | 268 |
| CAT 21B..... | 272 |

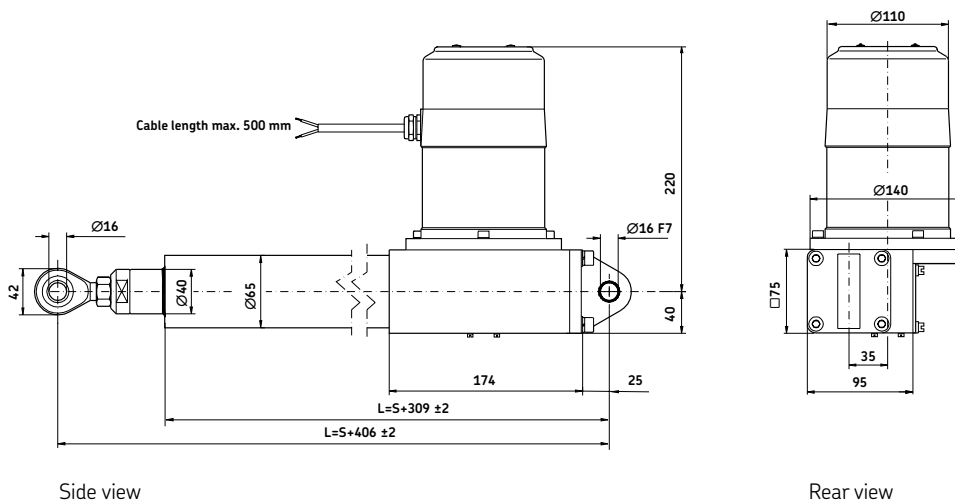
Linear actuator Magforce SKG

Benefits

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

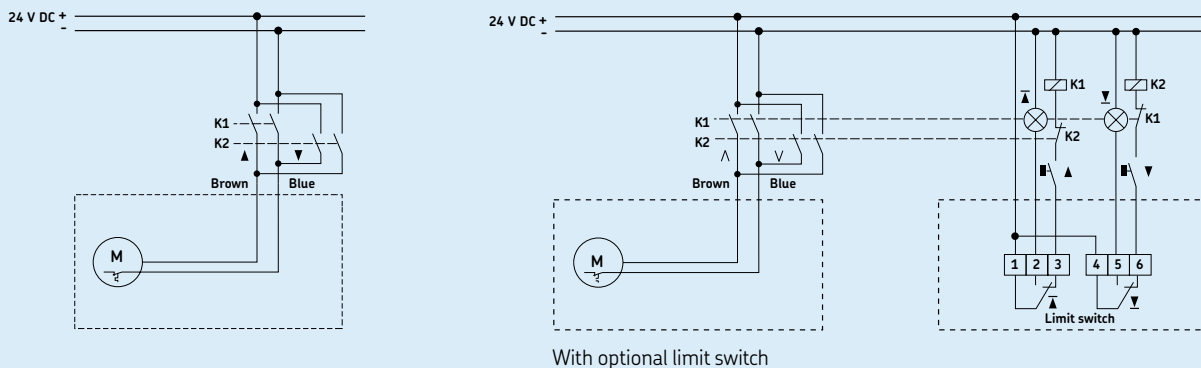


Dimensional drawing



Legend:
 S = stroke
 L = retracted length

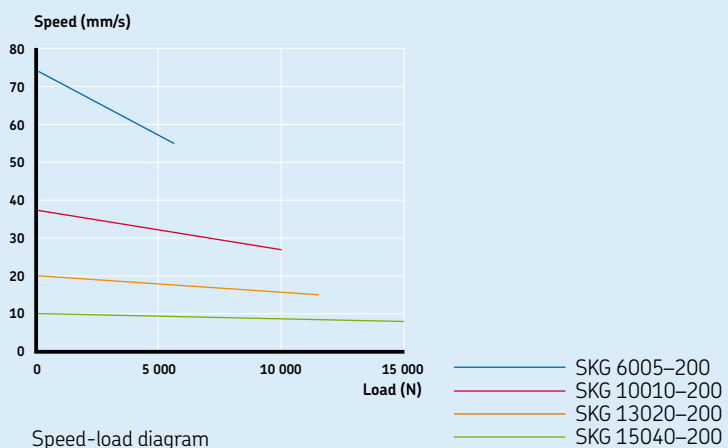
Connecting diagrams



Technical data

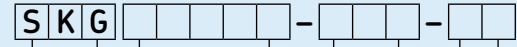
| | Unit | SKG 6005 | SKG 10010 | SKG 13020 | SKG 15040 |
|---------------------------|------|------------|------------|------------|------------|
| Rated push load | N | 6 000 | 10 000 | 13 000 | 15 000 |
| Rated pull load | N | 6 000 | 10 000 | 13 000 | 15 000 |
| Speed (at full load) | mm/s | 55 | 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



Type

Load:

- 6 000 N
- 10 000 N
- 13 000 N
- 15 000 N

- 06005
- 10010
- 13020
- 15040

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

- 01
- XX

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | Designation | Order N° |
|-------------------------|---------------|-----------|
| Magnetic brake (1,4 Nm) | ZAC-1031,0219 | M/0126957 |
| Potentiometer (1 000 Ω) | ZAC-1063,0011 | M/0126958 |
| Encoder | ZAC-1063,0020 | M/0126959 |

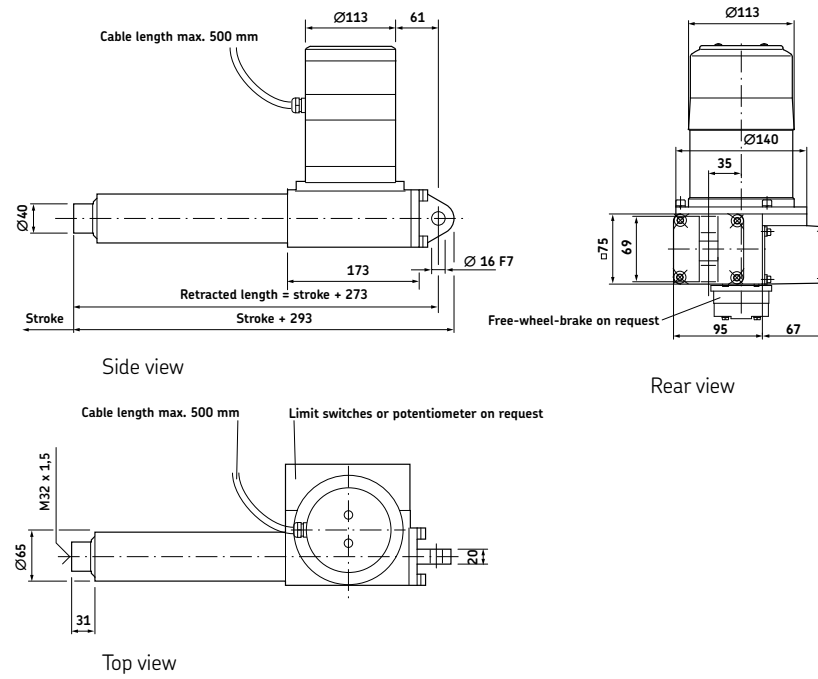
Linear actuator Magforce STG

Benefits

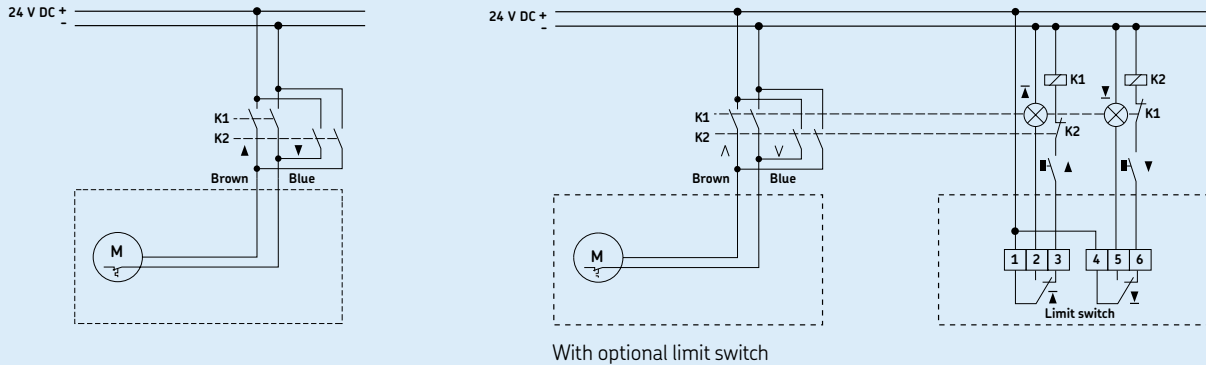
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



Dimensional drawing



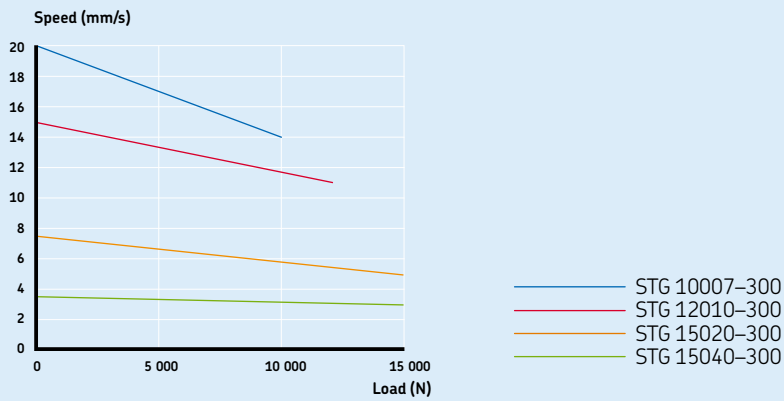
Connecting diagrams



Technical data

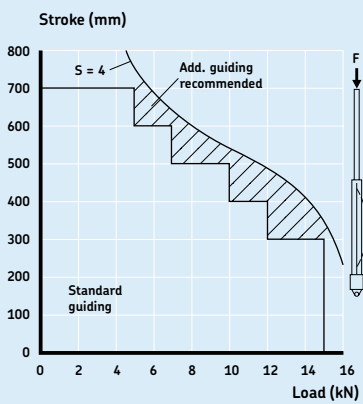
| | Unit | STG 10007 | STG 12010 | STG 15020 | STG 15040 |
|---------------------------|------|------------|------------|------------|------------|
| Rated push load | N | 10 000 | 12 000 | 15 000 | 15 000 |
| Rated pull load | N | 10 000 | 12 000 | 15 000 | 15 000 |
| Speed (at full load) | mm/s | 14 | 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



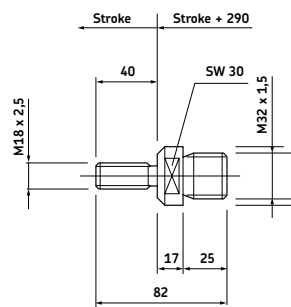
Speed-load diagram

Safety load factor conditions

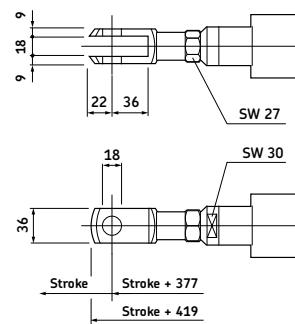


Bending of spindle $S =$ safety factor Euler 3

Options

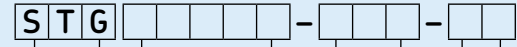


Adapter



Fork head

Ordering key



Type

Load :

| | |
|-------------------|-------|
| 10 000 N | 10007 |
| 12 000 N | 12010 |
| 15 000 N / 5 mm/s | 15020 |
| 15 000 N / 3 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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | Designation | Order N° |
|--------------|---------------|-----------|
| Adapter bolt | ZBE-1031,0106 | M/0125265 |
| Fork head | ZBE-1051,9038 | M/0124705 |

Linear actuator Runner

Benefits

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

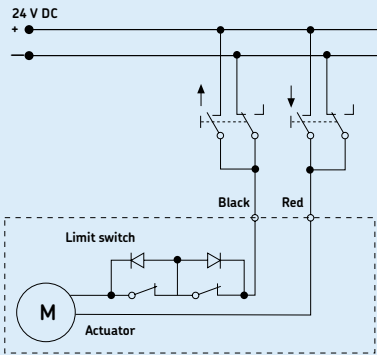


Suitable control units and accessories

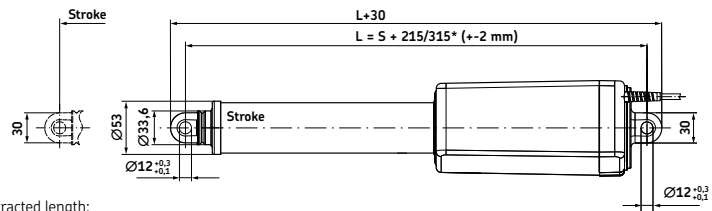
| Control units | | SCU 1 | SCU 5 | SCU 9 | VGU 5 | VGU 8 | VGU 9 | BCU 5 | BCU 8 |
|------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|
| RU20, RU21, RU22 | | ● | ● | ● | ● | ● | ● | ● | ● |
| RU23, RU24, RU25 | | ● | ● | ● | ● | ● | ● | ● | ● |
| EHA 3 | | ● | ● | ● | ● | ● | ● | ● | ● |
| STJ | | ● | ● | ● | ● | ● | ● | ● | ● |
| STE | | ● | ● | ● | ● | ● | ● | ● | ● |

Hand switch
 Foot switch
 Desk switch

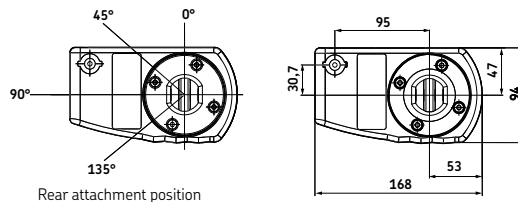
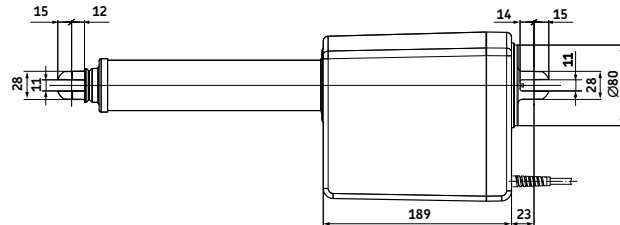
Connecting diagram



Dimensional drawing



* Retracted length:
 up to 500 mm stroke: stroke +215 mm (plus options)
 from 500 mm stroke: stroke +315 mm (plus options)



Legend:
 S = stroke
 L = retracted length

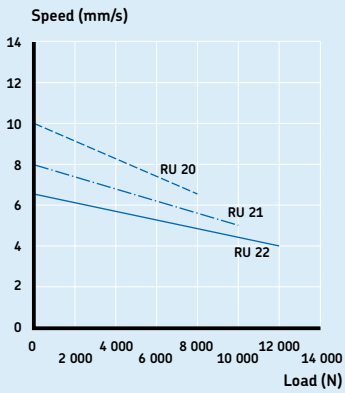
Technical data

| | Unit | RU20 | RU21 | RU 22 | RU23 | RU24 | RU25 |
|------------------------------|------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Rated push load | N | 8 000 | 10 000 | 12 000 ¹⁾ | 8 000 | 10 000 | 12 000 ¹⁾ |
| Rated 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 | ×4/×6S | ×4/×6S | ×4/×6S | ×4/×6S | ×4/×6S | ×4/×6S |
| Weight | kg | 4,7 | 4,7 | 4,7 | 4,7 | 4,7 | 4,7 |
| Color | – | Grey | Grey | Grey | Grey | Grey | Grey |

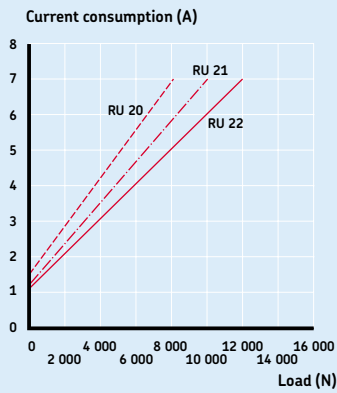
¹⁾ Safety working load for medical application is 10 000 N (EN 60601)

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

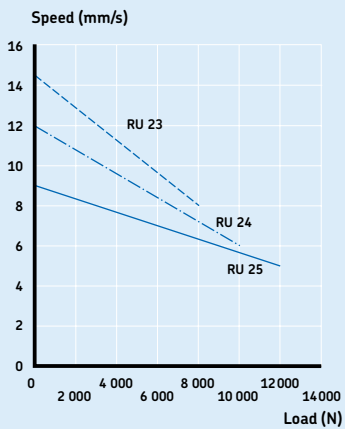
Performance diagrams



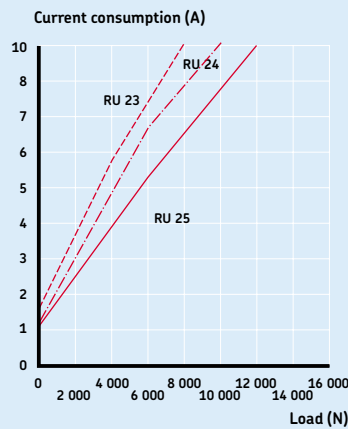
Speed-load diagram



Current-load diagram

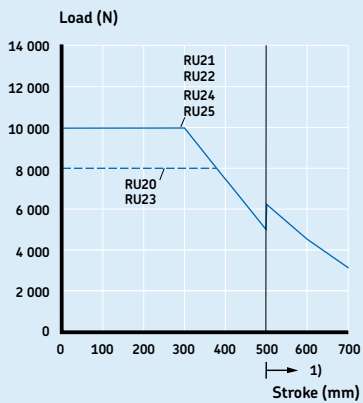


Speed-load diagram

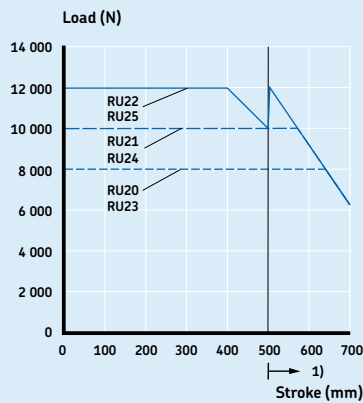


Current-load diagram

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



Type

Voltage:
24 V DC

Load / Speed:

| | |
|----------------------|---|
| 8 000 N / 7-10 mm/s | 0 |
| 8 000 N / 8-15 mm/s | 3 |
| 10 000 N / 5-8 mm/s | 1 |
| 10 000 N / 6-12 mm/s | 4 |
| 12 000 N / 4-7 mm/s | 2 |
| 12 000 N / 5-9 mm/s | 5 |

Stroke (S) / Retracted length (L):

| | |
|-----------------------------------|---------------|
| 50 mm / 315 mm | 050315 |
| 100 mm / 315 mm | 100315 |
| 150 mm / 365 mm | 150365 |
| 200 mm / 415 mm | 200415 |
| 250 mm / 465 mm | 250465 |
| 300 mm / 515 mm | 300515 |
| 350 mm / 565 mm | 350565 |
| 400 mm / 615 mm | 400615 |
| 450 mm / 665 mm | 450665 |
| 500 mm / 715 mm | 500715 |
| 550 mm / 865 mm | 550865 |
| 600 mm / 915 mm | 600915 |
| 650 mm / 965 mm | 650965 |
| 700 mm / 1 015 mm | 700 XXX |
| <i>50<S≤500 mm / S+215</i> | <i>-----</i> |
| <i>500<S<700 mm / S+315</i> | <i>-----</i> |
| <i>S>700 mm (customized)</i> | <i>XXXXXX</i> |

Type of protection / Color:

| | |
|-------------|---|
| IP×4S, grey | A |
| IP×6S, grey | B |

Cable:

| | |
|--|-----------|
| Straight cable, 1,5 m, DIN8 plug | 15 |
| <i>Straight cable, 1,5 m, Jack plug 180°</i> | <i>OD</i> |

Rear attachment orientation / Hole diameter:

| | |
|------------------|---|
| 0° / Ø=12,0 mm | 0 |
| 45° / Ø=12,0 mm | 2 |
| 90° / Ø=12,0 mm | 4 |
| 135° / Ø=12,0 mm | 6 |

Option 1:

| | |
|---|----------|
| No option | 0 |
| <i>Electrical anti-pinching (safety switch), pull load, L+20 mm</i> | <i>K</i> |
| <i>Electrical anti-pinching (safety switch), push load, L+20 mm</i> | <i>L</i> |

Option 2:

| | |
|---|---|
| No option | 0 |
| 2-Hall encoder, 14 pulses, DIN8 plug | A |
| Lifetime monitoring | M |
| 2-Hall encoder, 14 pulses, DIN8 plug, lifetime monitoring | N |

Option 3:

| | |
|------------------------------------|----------|
| No option | - |
| <i>Emergency lowering, L+53 mm</i> | <i>V</i> |

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

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



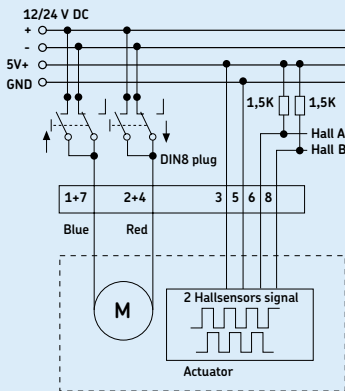
Suitable control units and accessories

Control units

| | SCU 1 | SCU 5 | SCU 9 | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 | MCU |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| MAX 3 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| EHA1 | | | | | | | | | ● |
| EHA3 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| STJ | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| STA | | | | | | | | | ● |
| STE | ● | ● | ● | ● | ● | ● | ● | ● | ● |

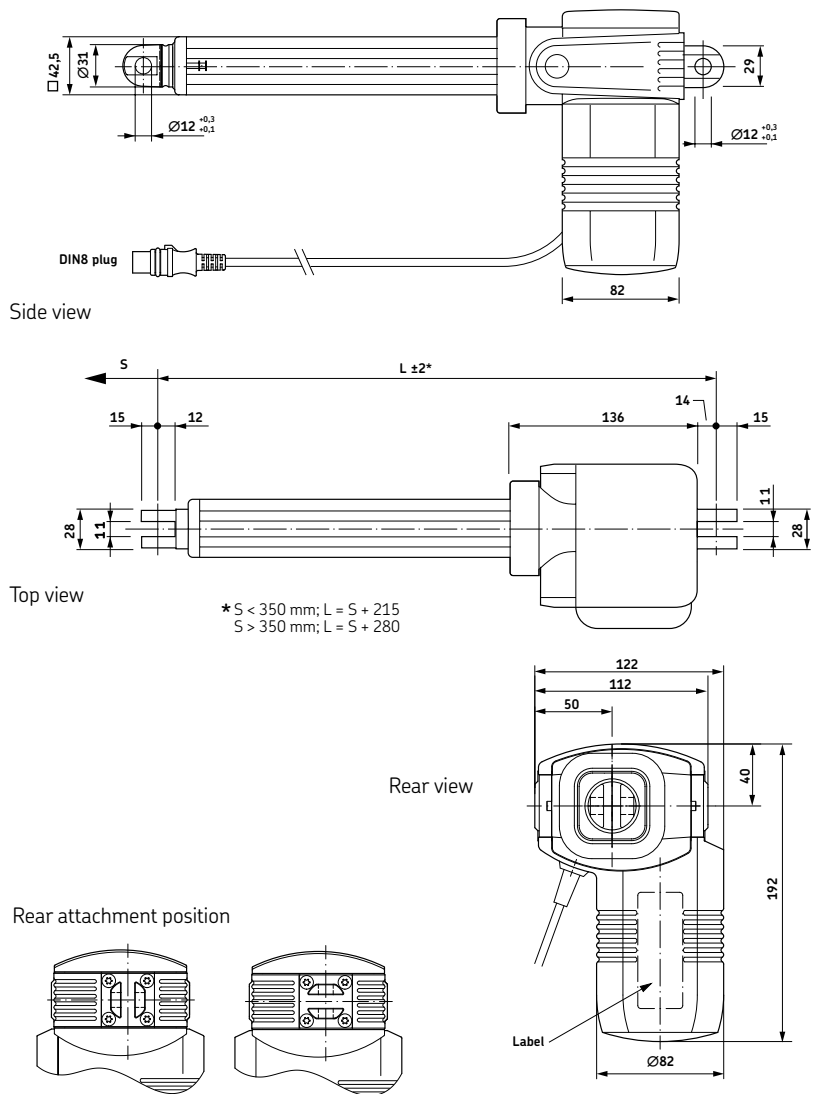
Hand switch
 Foot switch
 Desk switch

Connecting diagram*



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

Dimensional drawing



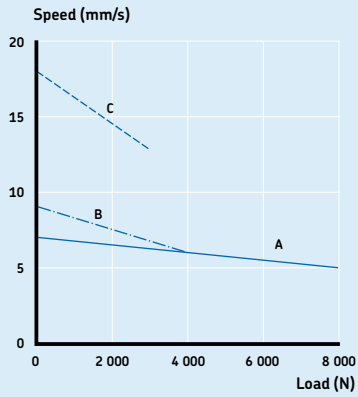
Technical data

| | Unit | MAX 3..A.. | MAX 3..B.. | MAX 3..C.. |
|------------------------------|------|---------------------|------------------|------------------|
| Rated push load | N | 8 000 | 4 000 | 3 000 |
| Rated 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 |

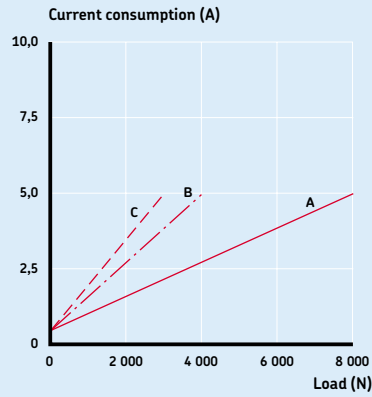
¹⁾ Max load for medical application is 5 000 N

²⁾ $S \leq 350$ mm; $L = S + 215$
 $S > 350$ mm; $L = S + 280$

Performance diagrams

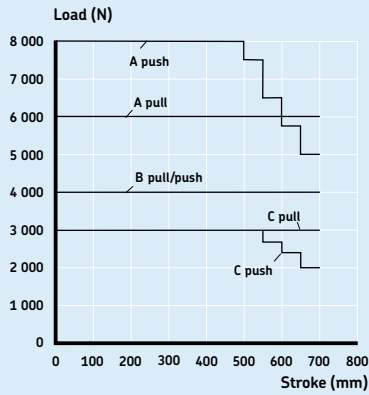


Speed-load diagram

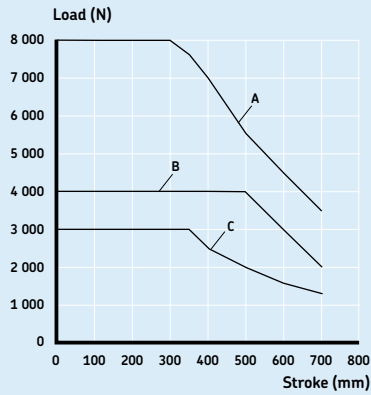


Current-load diagram

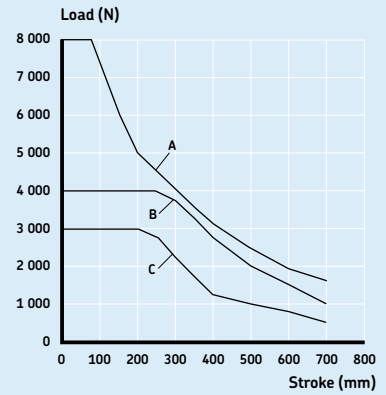
Safety factor load conditions



Push load reduction static
Safety factor S=1

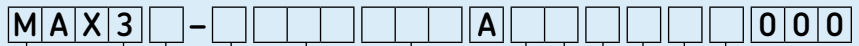


Push load reduction static
Safety factor S=2



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

Ordering key



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
- Special cable length on request* --

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
- 2-Hall encoder, DIN8 plug F
- Lifetime monitoring* M
- Lifetime monitoring, 2-Hall 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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator CAR 40

Benefits

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



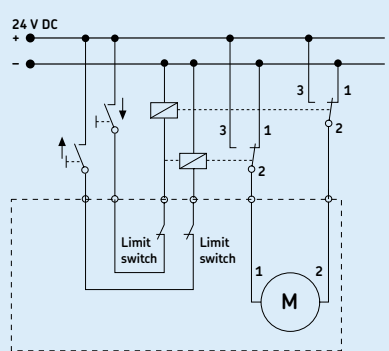
Suitable control units and accessories

| Limit switch | |
|-------------------------------------|-------|
| CAXB 40* | |
| <input checked="" type="checkbox"/> | D24D |
| <input checked="" type="checkbox"/> | D24DS |
| <input checked="" type="checkbox"/> | D24DB |

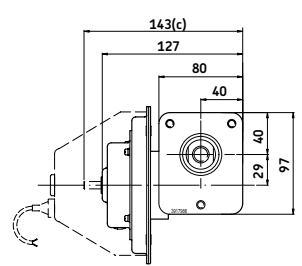
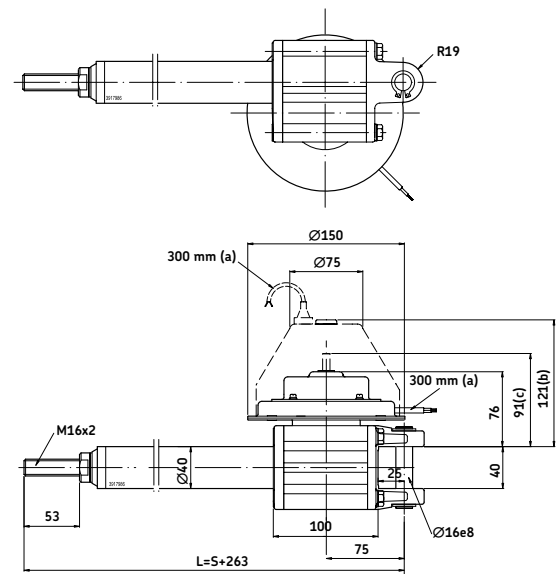
- Hand switch
- Foot switch
- Desk switch

* See page 379

Connecting diagram



Dimensional drawing

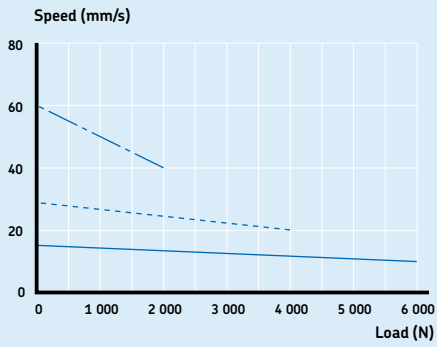


Legend:
 S = stroke
 L = retracted length
 (a) = cable length
 (b) = cover for brake (D24CB)
 (c) = extended shaft (D24CS)

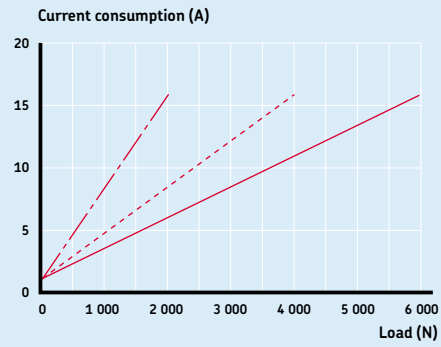
Technical data

| | Unit | CAR 40 |
|------------------------------|------|----------------|
| Rated push load | N | 2 000 to 6 000 |
| Rated 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



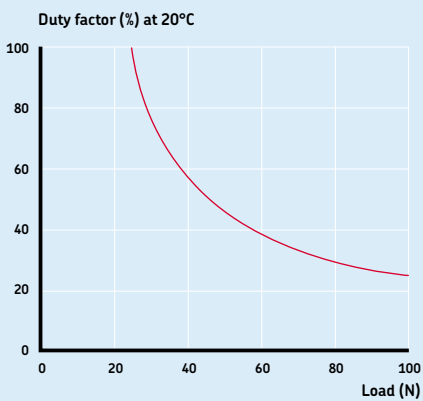
Speed-load diagram CAR 40 ... 24 V DC



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

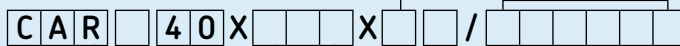


Duty cycle



Ordering key

| Dynamic load (N) / Speed (mm/s) | | | Motor options | |
|---------------------------------|-------------|-------------|---|-------|
| 6 000/xx | 4 000/xx | 2 000/xx | No motor | 0000 |
| 6 000/15-10 | 4 000/30-20 | 2 000/60-40 | 24 V DC, flat motor, IP44 | D24D |
| 6 000/15-10 | 4 000/30-20 | 2 000/60-40 | 24 V DC, flat motor, extended shaft, IP44 | D24DS |
| 6 000/15-10 | 4 000/30-20 | 2 000/60-40 | 24 V DC, flat motor, brake, IP20 | 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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator Ecomag

Benefits

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

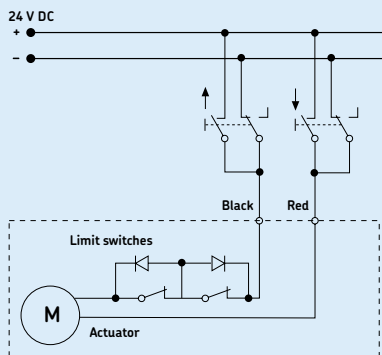


Suitable control units and accessories

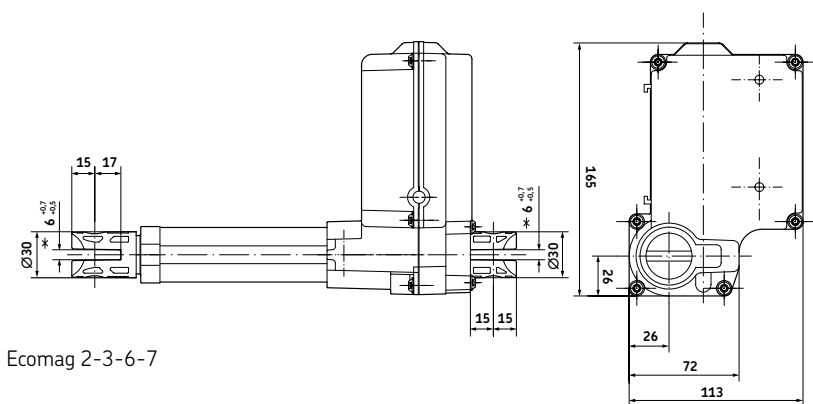
| Control units | | SCU 1 | SCU 5 | SCU 9 | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 | MCU |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| ECOMAG | | • | • | • | • | • | • | • | • | • |
| | EHA 1 | | | | | | | | | • |
| | EHA 3 | • | • | • | • | • | • | • | • | • |
| | STJ | • | • | • | • | • | • | • | • | • |
| | STA | | | | | | | | | • |
| | STE | • | • | • | • | • | • | • | • | • |

Hand switch
 Foot switch
 Desk switch

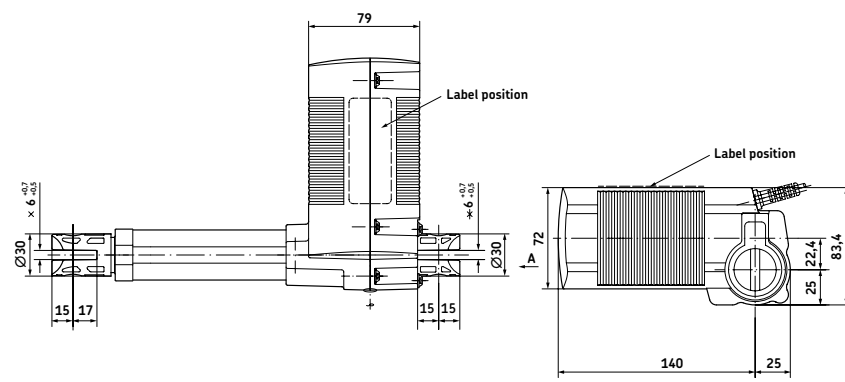
Connecting diagram



Dimensional drawing



Ecomag 2-3-6-7

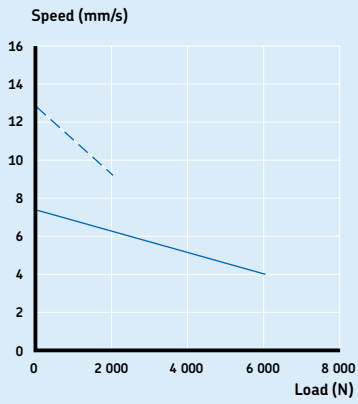


Ecomag 4-5-8-9

Technical data

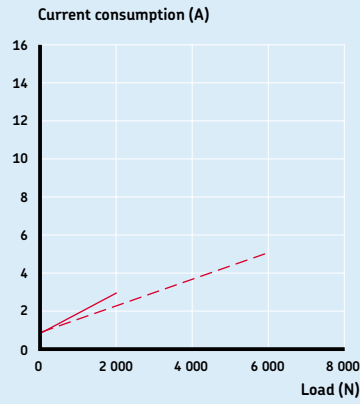
| | Unit | ECO 20/40 | ECO 60/80 | ECO 30/50 | ECO 70/90 |
|------------------------------|------|---------------|---------------|---------------|---------------|
| Rated push load | N | 2 000 | 6 000 | 2 000 | 6 000 |
| Rated pull load | N | 0 | 0 | 2 000 | 4 000 |
| Speed (full load to no load) | mm/s | 9 to 13 | 4 to 7 | 9 to 13 | 4 to 7 |
| Stroke | mm | 50 to 300 | 50 to 300 | 50 to 300 | 50 to 300 |
| Retracted length | mm | S+160 | S+160 | S+160 | S+160 |
| Voltage | V DC | 24 | 24 | 24 | 24 |
| Power consumption | W | 70 | 120 | 70 | 120 |
| Current consumption | A | 3 | 5 | 3 | 5 |
| 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 | x4S | x4S | x4S | x4S |
| Weight | kg | 2,1 | 2,1 | 2,5 | 2,5 |
| Color | - | Black or grey | Black or grey | Black or grey | Black or grey |

Performance diagrams



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

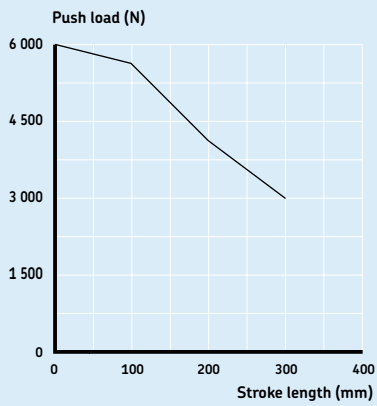
Speed-load diagram



— 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



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 |
| 2-Hall encoder, 8 pulses, 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=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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator FD series

Benefits

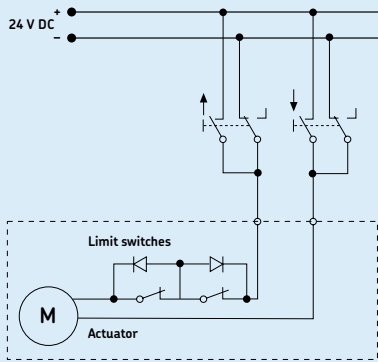
- Cost-effective actuator
- Hall effect sensors for feedback
- Rear clevis can be turned per step of 30°
- Built-in limit switches (factory pre-set)
- UL 1004 certification



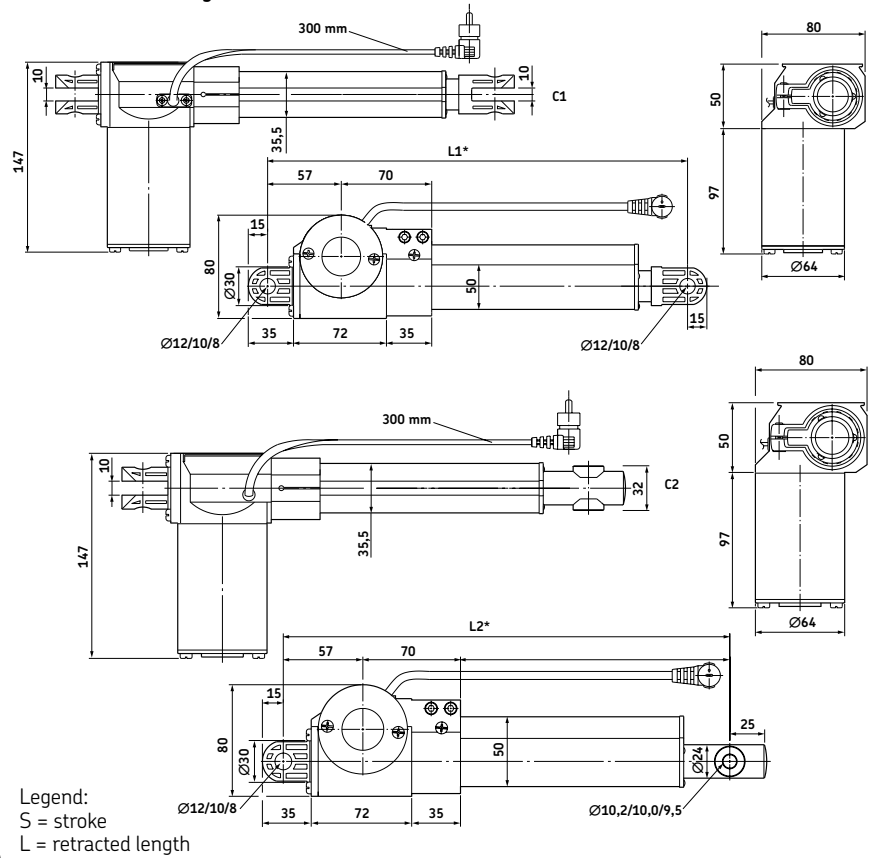
Suitable control units and accessories

| | |
|--------------|---------|
| Control unit | |
| | CB 2005 |
| | FD |
| | HS 112 |
| | HS 124 |
| | HS 126 |
| | HS 138 |

Connecting diagram



Dimensional drawing

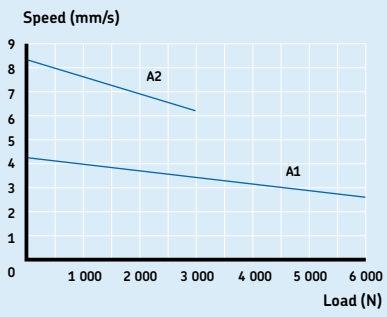


| Stroke (mm) | 50 | 100 | 150 | 200 | 250 | 300 |
|-----------------------|-----|-----|-----|-----|-----|-----|
| Retracted length (L1) | 250 | 300 | 360 | 410 | 470 | 520 |
| Retracted length (L2) | 210 | 260 | 320 | 370 | 430 | 480 |

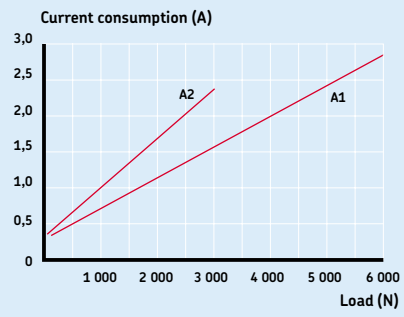
| Technical data | | Unit | FD A1 | FD A2 |
|------------------------------|------|------|-------------|------------|
| Rated push load | N | | 6 000 | 3 000 |
| Rated pull load | N | | 4 000 | 2 000 |
| Speed (full load to no load) | mm/s | | 2,67 to 4,2 | 6,2 to 8,2 |
| Stroke | mm | | 50 to 300 | 50 to 300 |
| Retracted length | mm | | —* | —* |
| Voltage | V DC | | 24 | 24 |
| Power consumption | W | | 72 | 60 |
| Current consumption | A | | 3 | 2,5 |
| Duty cycle | % | | 10 | 10 |
| Ambient temperature | °C | | +10 to +40 | +10 to +40 |
| Type of protection | IP | | 52 | 52 |
| Weight (at 300 mm stroke) | kg | | 2,5 | 2,5 |
| Color | — | | Black | Black |

* See above table

Performance diagrams

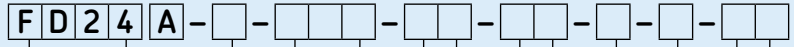


Speed-load diagram



Current-load diagram

Ordering key



Type

Load:

6 000 N
3 000 N

1
2

Stroke:

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

050
100
150
200
250
300
XXX

Other stroke lengths; 50<S<300 mm

Front attachment:

Plastic, Ø= 8,0, 10,0, or 12,0 mm
Metal, Ø=9,5, 10,0 or 10,2 mm

C1
C2

Option 1:

Hall effect sensor (resolution pulses/mm; A1=10, A2=5)

HS

Option 2:

Connector for CB200S
No connector, open wires
Customized connector

0
N
C

Option 3 (front attachment):

Attachment type C1 Ø=12,0 mm; type C2 Ø=10,2 mm
Attachment type C1 and C2 Ø=10,0 mm
Attachment type C1 Ø=8,0 mm; type C2 Ø=9,5 mm

1
2
3

Customized cable length options:

Specify requested cable length in dm

XX

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator Magdrive

Benefits

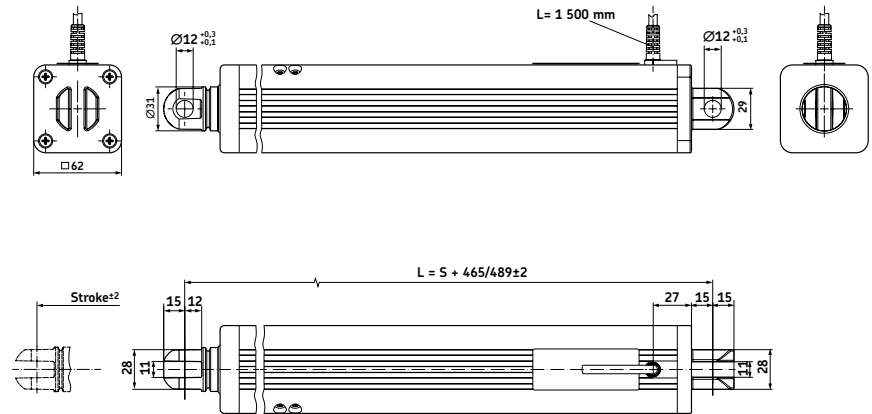
- Slim design
- Aluminium profile
- In-line actuator
- Quiet operation
- High push load



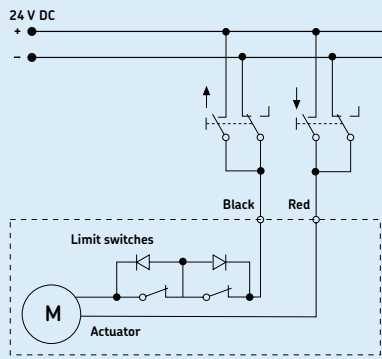
Suitable control units and accessories

| Control unit | | SCU 1 | SCU 5 | SCU 9 | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| MAGDRIVE | | ● | ● | ● | ● | ● | ● | ● | ● |
| Hand switch | EHA 3 | ● | ● | ● | ● | ● | ● | ● | ● |
| Foot switch | STJ | ● | ● | ● | ● | ● | ● | ● | ● |
| Desk switch | STE | ● | ● | ● | ● | ● | ● | ● | ● |

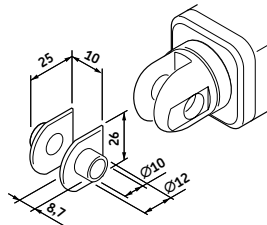
Dimensional drawing



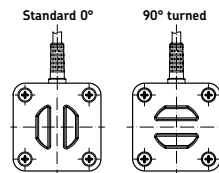
Connecting diagram



Plastic bushing for forkhead (hinge delivered separately)



Orientation of rear attachment

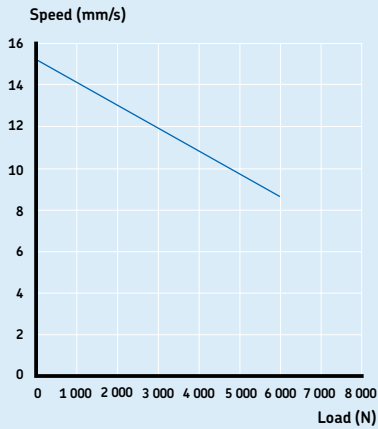


Legend:
S = stroke
L = retracted length

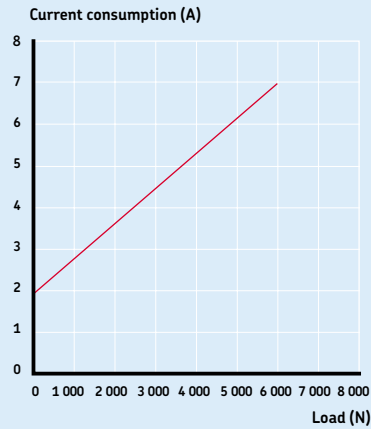
Technical data

| | Unit | MD22/MD24 | MD23/MD25 |
|------------------------------|------|--------------------|--------------------|
| Rated push load | N | 6 000 | 6 000 |
| Rated 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

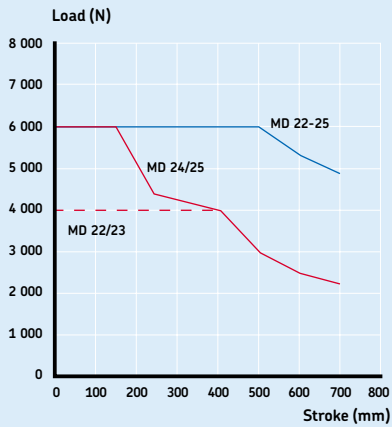


Speed-load diagram

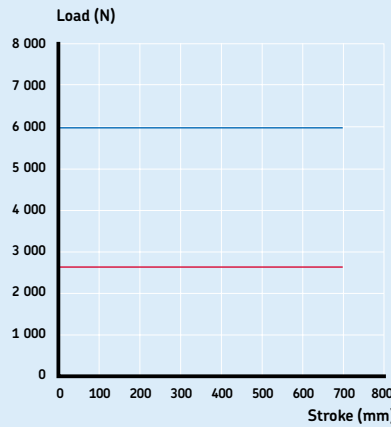


Current-load diagram

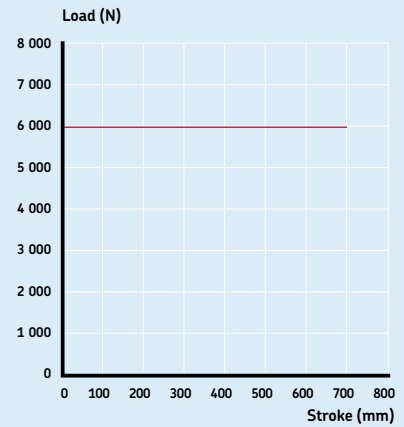
Safety factor load conditions



Push load diagram
 — Safety factor S=2
 — Safety factor according UL60601-1, IEC60601-1



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



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 |
| 2-Hall 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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

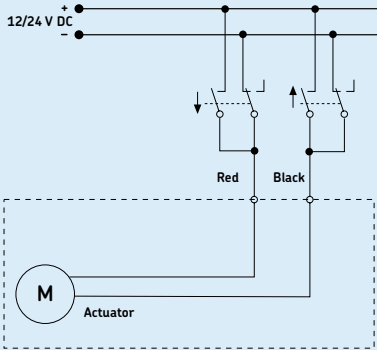
Linear actuator CAHB-21 series

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)

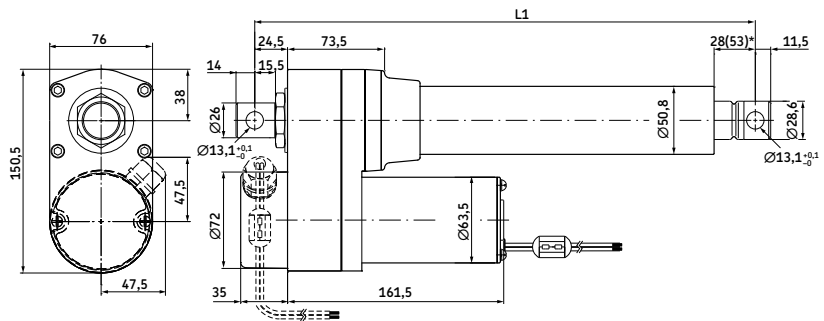


Connecting diagram



Dimensional drawing

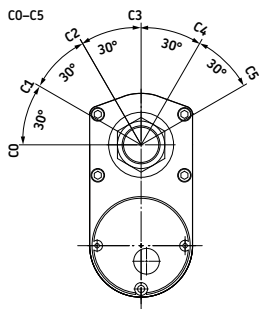
Basic configuration (dashed line for optional limit switch)



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

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

Different rear attachment



| Stroke (mm) | With limit switch ¹⁾ | | | | | | Without limit switch ²⁾ | | | | | |
|---------------------|---------------------------------|-----|-----|-----|-----|-----|------------------------------------|-----|-----|-----|-----|-----|
| | 102 | 153 | 204 | 305 | 457 | 610 | 102 | 153 | 204 | 305 | 457 | 610 |
| L1 Retracted length | 393 | 444 | 495 | 659 | 811 | 964 | 317 | 368 | 419 | 521 | 735 | 888 |

¹⁾ Tolerance: S and L1 = ± 5,0 mm (If S ≥ 305 mm, S = ± 7,5 mm)

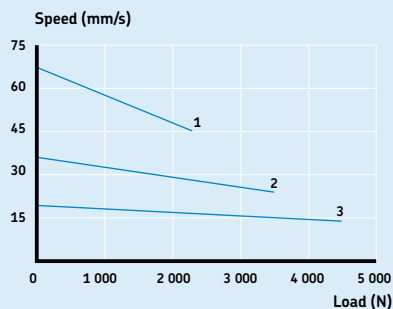
²⁾ Tolerance: S = ± 2,5 mm and L1 = ± 3,8 mm

Technical data

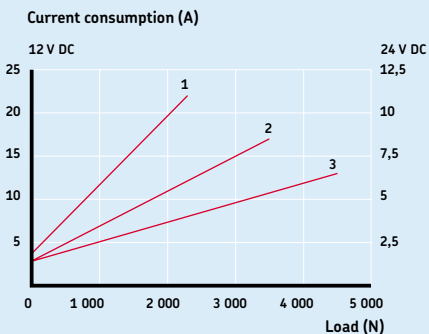
| | Unit | CAHB-21... 1 | CAHB-21... 2 | CAHB-21... 3 |
|------------------------------|--------------------|--------------|--------------|--------------|
| Rated push load | N | 2 300 | 3 500 | 4 500 |
| Rated pull load | N | 2 300 | 3 500 | 4 500 |
| Speed (full load to no load) | mm/s | 45 to 65 | 24 to 36 | 14 to 19 |
| Stroke | mm | 102 to 610 | 102 to 610 | 102 to 610 |
| Retracted length | mm | _* | _* | _* |
| Voltage | V DC | 12 or 24 | 12 or 24 | 12 or 24 |
| Power consumption | W | N/A | N/A | N/A |
| Current consumption | 12 V DC 24 V DC | A A | 22 17 | 13 13 |
| Duty cycle | % | 11 25 | 8,5 25 | 6,5 25 |
| Ambient temperature | °C | 25 | 25 | 25 |
| Type of protection | IP | -40 to +85 | -40 to +85 | -40 to +85 |
| Weight (at 305 mm stroke) | kg | 66 | 66 | 66 |
| Color | - | 6,5 | 6,5 | 6,5 |
| | | Black | Black | Black |

* see above table

Performance diagrams



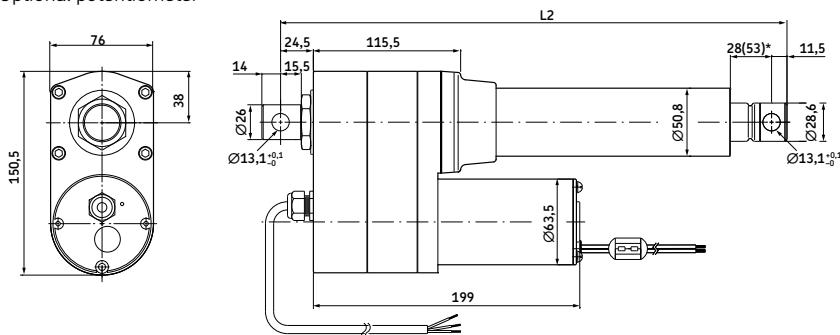
Speed-load diagram



Current-load diagram

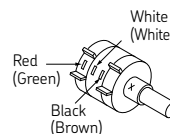
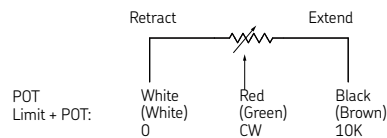
Dimensional drawing

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 | 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



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
811mm
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

317mm
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

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

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

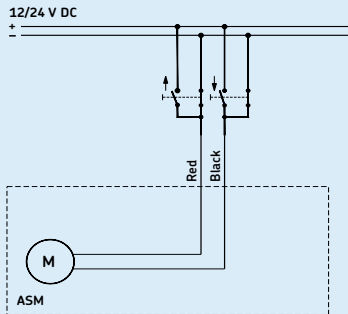
Linear actuator Magforce ASM

Benefits

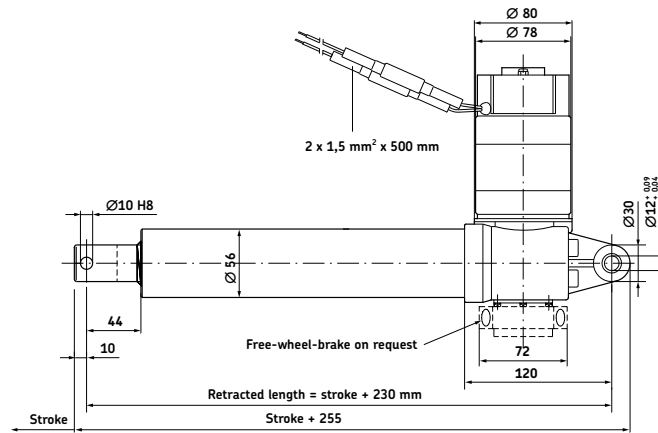
- Modular
- Robust
- Reliable
- High speed and/or high load
- All metal design



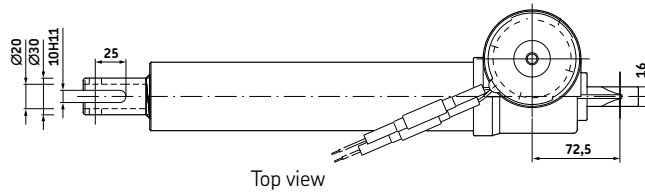
Connecting diagram



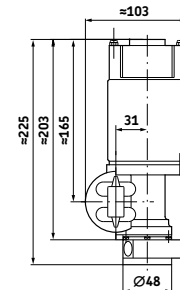
Dimensional drawing



Side view



Top view



Rear view

Technical data

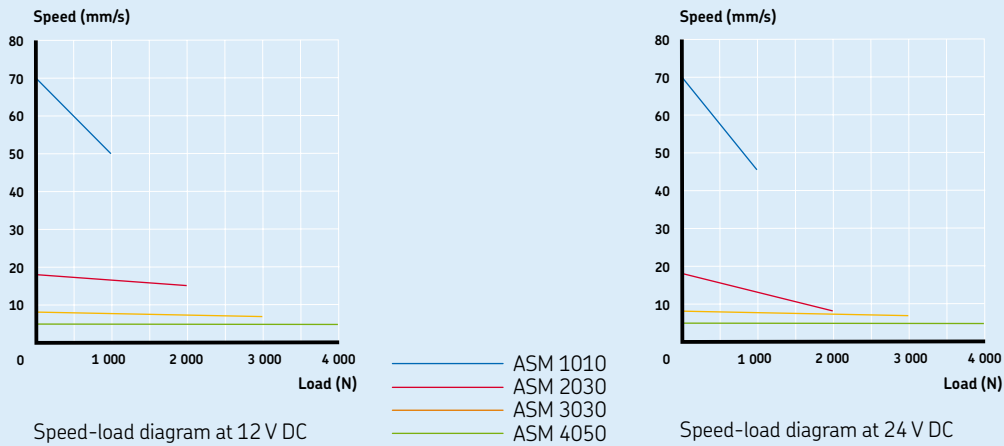
| | Unit | ASM 1010 | ASM 2030 | ASM 3030 | ASM 4050 | |
|----------------------|---------|------------|---------------------|---------------------|---------------------|-----|
| Rated push load | N | 1 000 | 2 000 ¹⁾ | 3 000 ²⁾ | 4 000 ³⁾ | |
| Rated pull load | N | 1 000 | 2 000 | 3 000 | 4 000 | |
| 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)

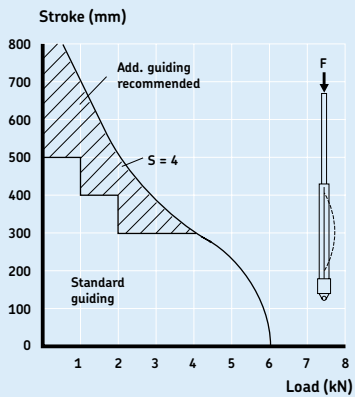
²⁾ Push load allowed up to 450 mm stroke (if S>450 mm, only pull load is allowed)

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

Performance diagrams



Safety factor load conditions



Ordering key



Type

Load:

- 1 000 N
- 2 000 N
- 3 000 N
- 4 000 N

- 1010
- 2030
- 3030
- 4050

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:

- 12 V DC, standard
- 24 V DC
- 24 V DC, additional bushing (L=S+280 mm)
- 24 V DC, bronze nut, special grease for -30°C
- 24 V DC, protection tube made out of stainless steel
- 24 V DC, extended shaft
- 12 V DC, additional bushing (L=S+280 mm)
- Others (rear attachment hole turned 90°, motor turned 90°, potentiometer...)

- 01
- 02
- 05
- 07
- 12
- 16
- 19
- XX

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Accessories

| | Designation | Order N° |
|-----------------------------------|--------------------|-----------|
| Free wheel brake on push load | ZAC-1028,6226 | M/0124682 |
| Free wheel brake on pull load | ZAC-1028,0002 | M/0125632 |
| Friction brake for pull/push load | ZAC-1028,7851 | M/0124683 |
| Limit switch 100 mm stroke | ZAC-1043,0210-0100 | M/0126970 |
| Limit switch 200 mm stroke | ZAC-1043,0210-0200 | M/0126971 |
| Limit switch 300 mm stroke | ZAC-1043,0210-0300 | M/0126972 |
| Limit switch 400 mm stroke | ZAC-1043,0210-0400 | M/0126973 |
| Limit switch 500 mm stroke | ZAC-1043,0210-0500 | M/0126974 |
| Limit switch 600 mm stroke | ZAC-1043,0210-0600 | M/0126975 |

Linear actuator CAP 43B

Benefits

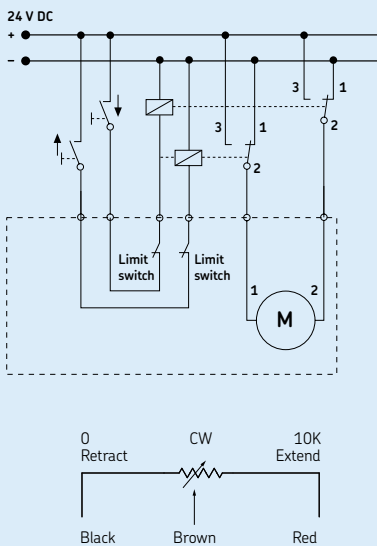
- Robust and reliable
- Long lifetime
- Wide range of components
- Right- and left- version
- Analogical feedback



Suitable control units and accessories

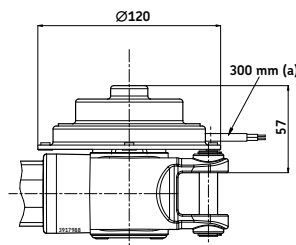
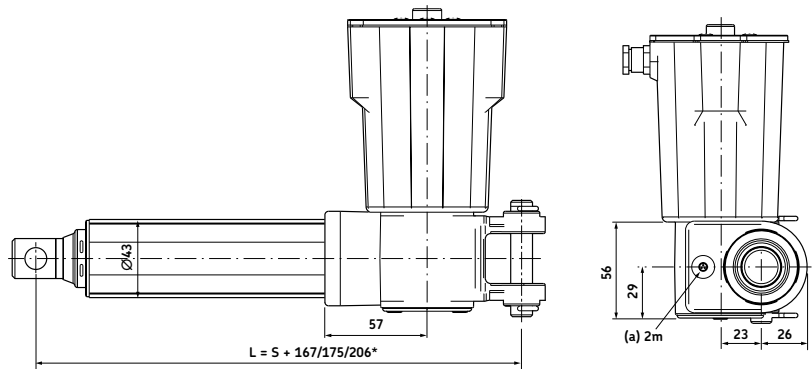
| | | Control units | |
|--|-------|------------------|--|
| | | CAED ANR 5-24-PO | |
| | | CAED ANR 9-24-PO | |
| | C24C | ● | |
| | C24CW | ● | |
| | D24C | ● | |
| | D24CW | ● | |

Connecting diagram

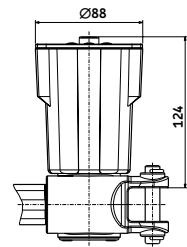


Connection diagram for linear potentiometer.

Dimensional drawing



D24C/D24CW



C24C/C24CW

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

See drawings of front and rear attachments on page 276.

* Dimension depends on selected front attachment

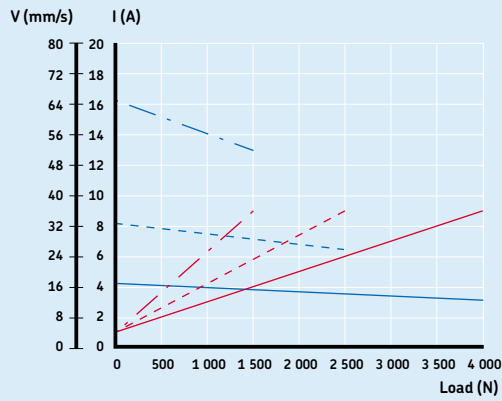
Technical data

| | Unit | CAP 43B |
|------------------------------|---------|-----------------------------|
| Rated push load | N | 1 500 to 4 000 |
| Rated 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 |
| | 24 V DC | A |
| Duty cycle | % | 20 |
| Ambient temperature | °C | -20 to +50 |
| Type of protection | IP | 44 |
| Weight | kg | 2,0 to 2,7 |

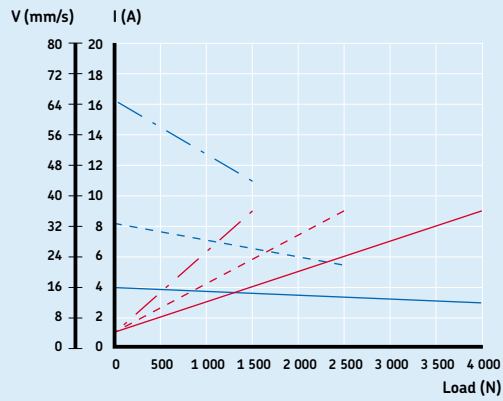
¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

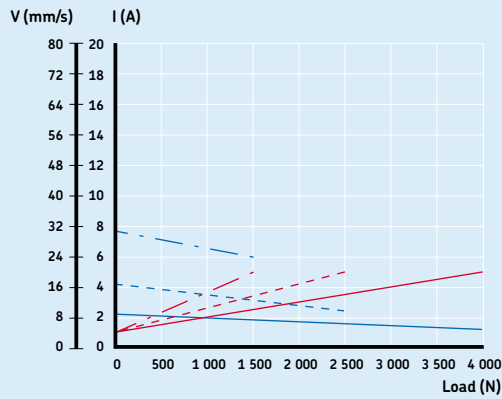
Performance diagrams



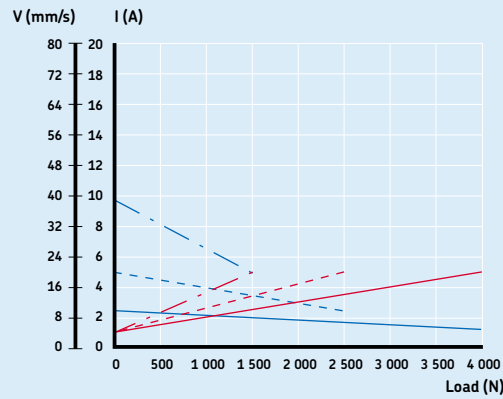
CAP 43B.../C24C



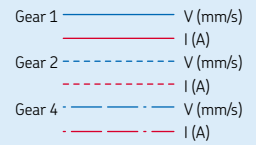
CAP 43B.../D24C



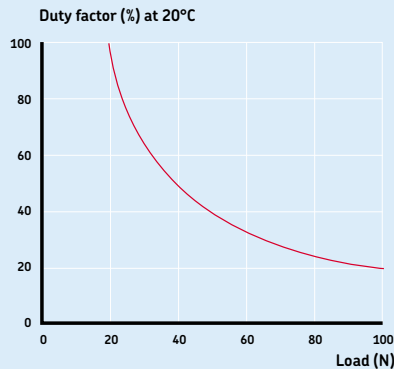
CAP 43B.../C24CW



CAP 43B.../D24CW

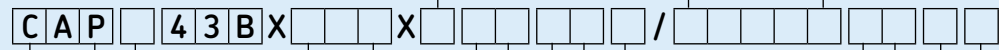


Duty cycle



Ordering key

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



Type

Motor assembly:

Right
Left

R
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 276):

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 276):

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
Back-up nut

F
S

Option for motors C24C(W):

No cable
Straight, 2,0 m

U
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



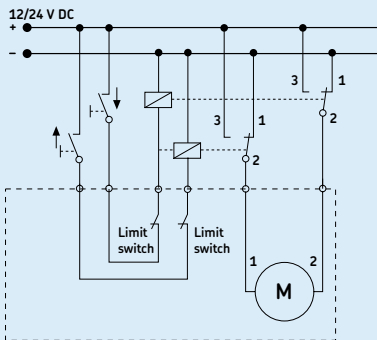
Suitable control units and accessories

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

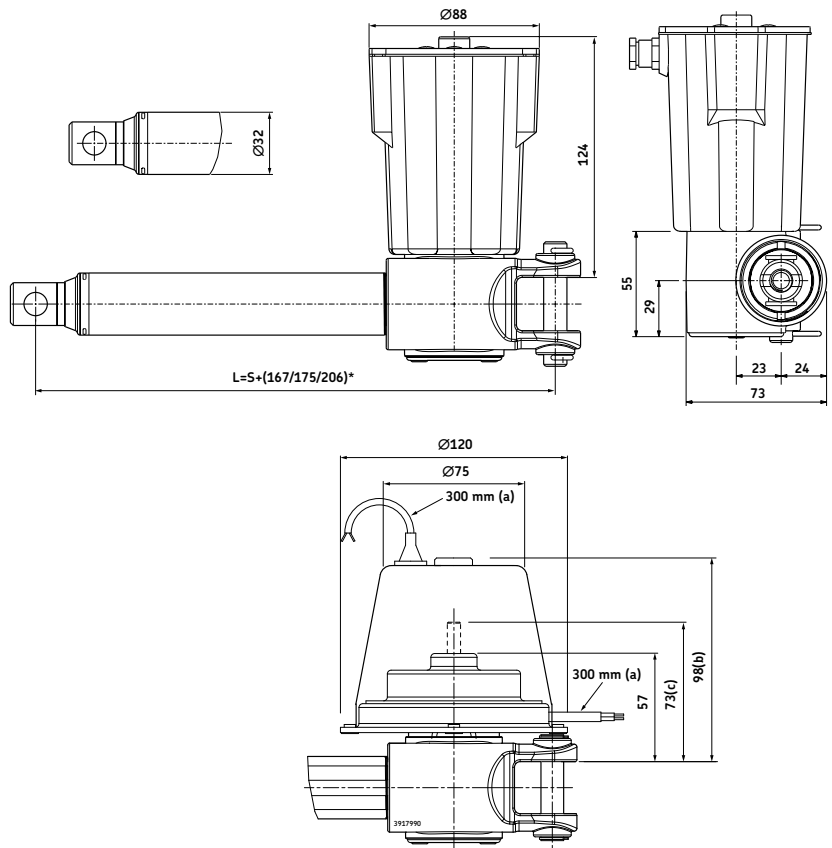
- Hand switch
- Foot switch
- Desk switch

¹⁾ See page 379
²⁾ See page 380

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 276.

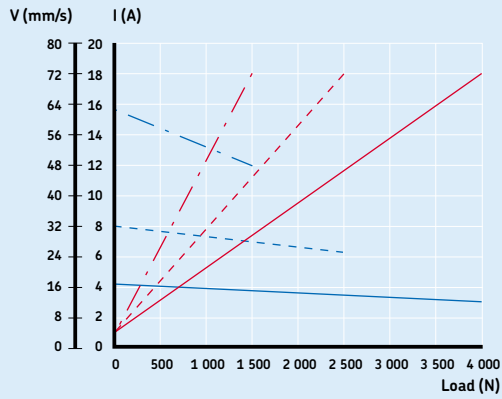
* Dimension depends on selected front attachment

Technical data

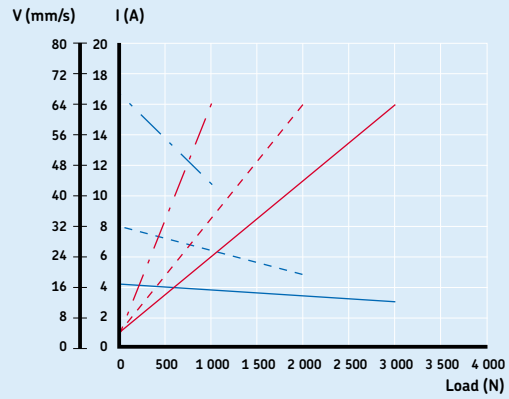
| | Unit | CAT 32B |
|------------------------------|---------|-----------------------------|
| Rated push load | N | 1 000 to 4 000 |
| Rated pull load | N | 1 000 to 4 000 |
| Speed (full load to no load) | mm/s | 5 to 52 ¹⁾ |
| Stroke | mm | 50 to 700 |
| Retracted length | mm | S+167/175/206 ²⁾ |
| Voltage | V DC | 12 or 24 |
| Power consumption | W | N/A |
| Current consumption | 12 V DC | A |
| | 24 V DC | A |
| | 24 V DC | A |
| 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

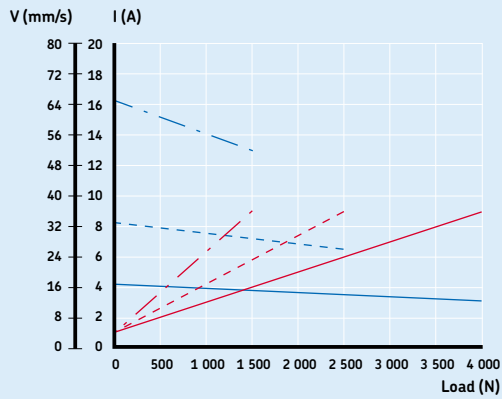
Performance diagrams



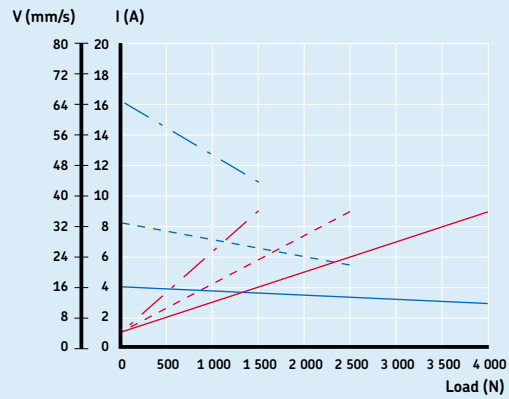
CAT 32B.../C12C



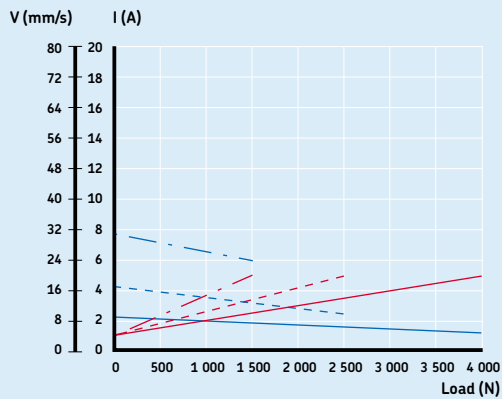
CAT 32B.../D12C



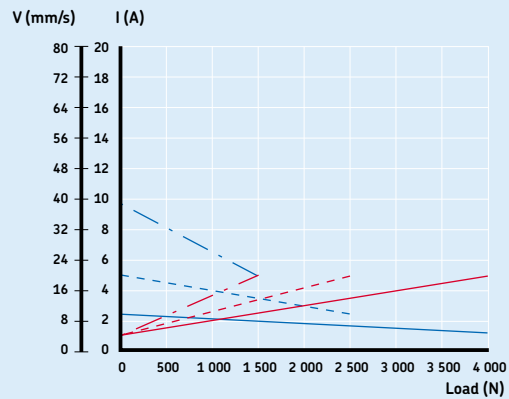
CAT 32B.../C24C



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



CAT 32B.../C24CW



CAT 32B.../D24CW



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 | | |



Type

Motor assembly:

Right
Left

R
L

Stroke (S):

| | |
|-----------------------------|-----|
| 50 mm | 050 |
| 100 mm | 100 |
| 200 mm | 200 |
| 300 mm | 300 |
| 400 mm | 400 |
| 500 mm | 500 |
| 700 mm | 700 |
| <i>Other stroke lengths</i> | --- |

Rear attachment (see page 276):

| | |
|-----------------------|----|
| 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 276):

| | |
|---------------------|----|
| 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 |

Feedback:

| | |
|-----------------------------------|----|
| No encoder (no code) | |
| Encoder (for all standard motors) | E2 |

Option:

| | |
|---|---|
| Friction clutch (not available with option encoder) | F |
| No friction clutch | Z |
| Back-up nut | S |

Option for CxxC motors:

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

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

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

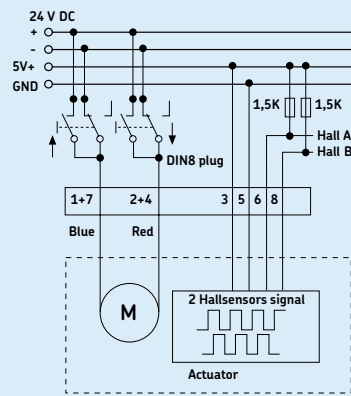


Suitable control units and accessories

| Control units | | SCU 1 | SCU 5 | SCU 9 | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 | MCU |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| MAX 1 | | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | EHA 1 | | | | | | | | | ● |
| | EHA 3 | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | STJ | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | STA | | | | | | | | | ● |
| | STE | ● | ● | ● | ● | ● | ● | ● | ● | ● |

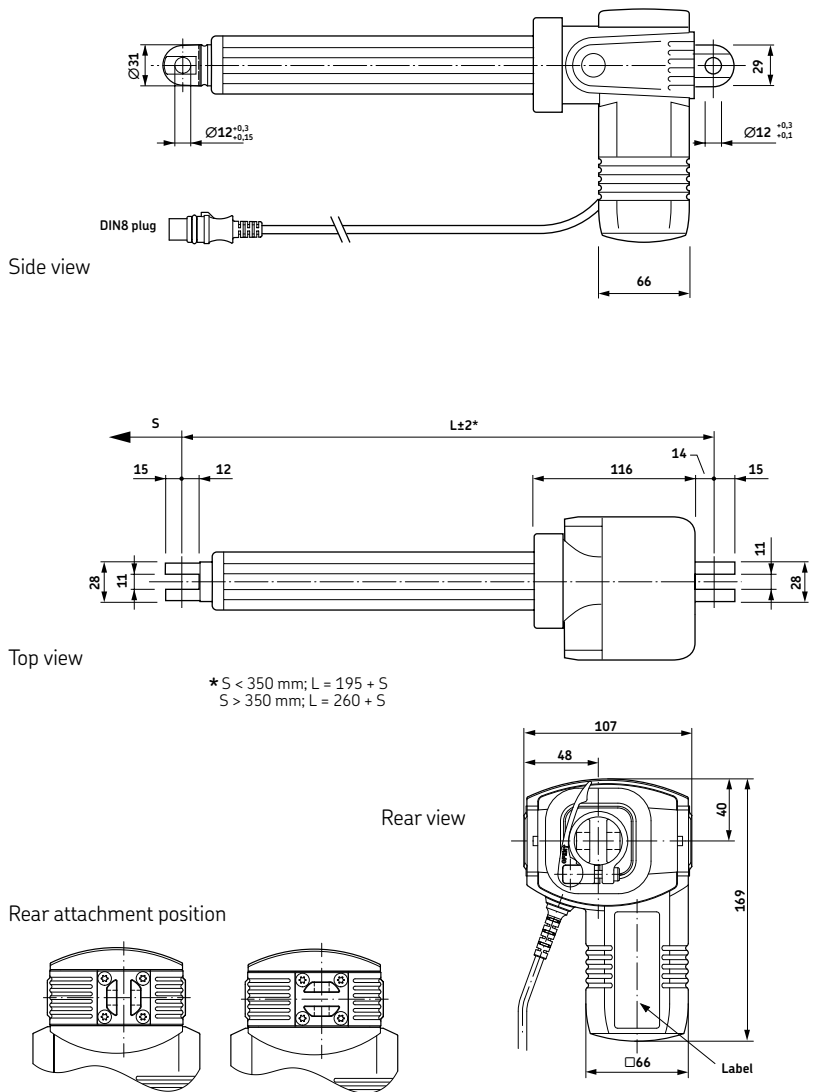
Hand switch
 Foot switch
 Desk switch

Connecting diagram*



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

Dimensional drawing

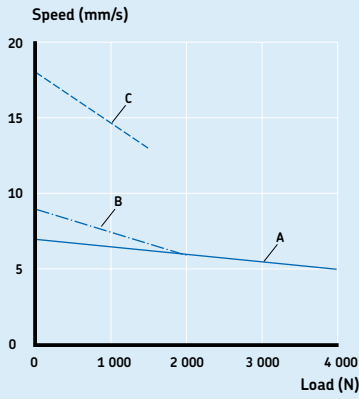


Technical data

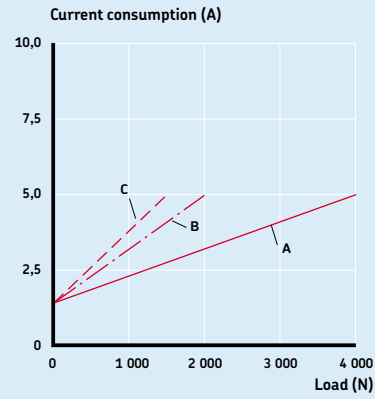
| | Unit | MAX 1..A.. | MAX 1..B.. | MAX 1..C.. |
|------------------------------|------|--------------|--------------|--------------|
| Rated push load | N | 4 000 | 2 000 | 1 500 |
| Rated pull load | N | 4 000 | 2 000 | 1 500 |
| Speed (full load to no load) | mm/s | 5 to 7 | 6 to 9 | 12,7 to 18 |
| Stroke | mm | 50 to 700 | 50 to 700 | 50 to 700 |
| Retracted length | mm | S + 195/260* | S + 195/260* | S + 195/260* |
| 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 |

* S < 350 mm, L = 195 + S
 S > 350 mm, L = 260 + S

Performance diagrams

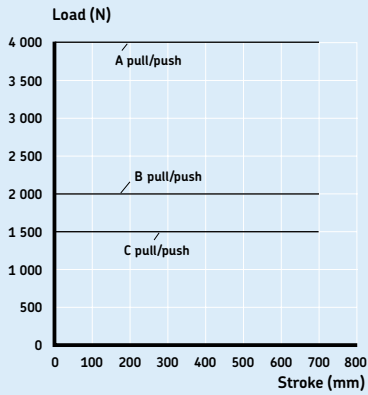


Speed-load diagram

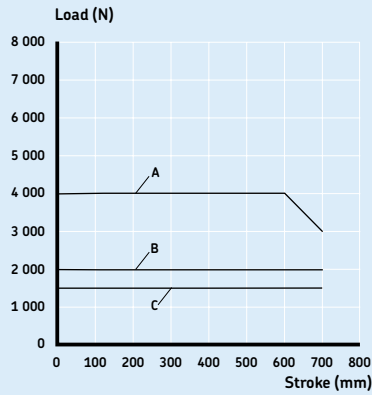


Current-load diagram

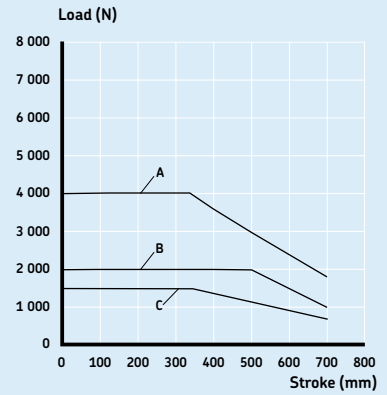
Safety factor load conditions



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)

Ordering key

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

Type

Voltage:

24 V DC 0
 24 V DC with integrated current cut-off 1

Load:

4 000 N A
 2 000 N B
 1 500 N C

Stroke (S):

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
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
Special cable length on request --

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
 Mechanical anti-pinching, motor direction pull, no fixing in term. position (for load "A", L= +45 mm; "B" and "C", L= +30 mm) I
 Mechanical anti-pinching, motor direction push, no fixing in term. position (for load "A", L= +45 mm; "B" and "C", L= +30 mm) J
 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
 2-Hall encoder, DIN8 plug F
 Lifetime monitoring M
 Lifetime monitoring, 2-Hall 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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator CAR 32

Benefits

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



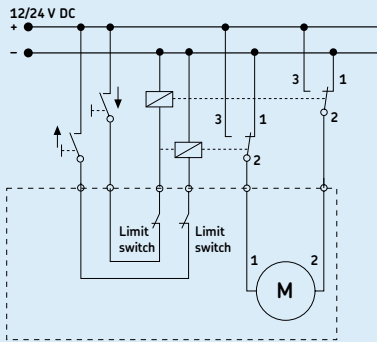
Suitable control units and accessories

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

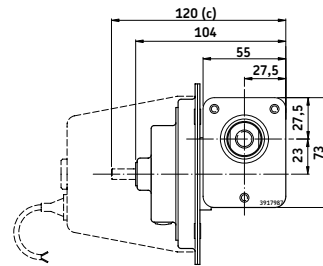
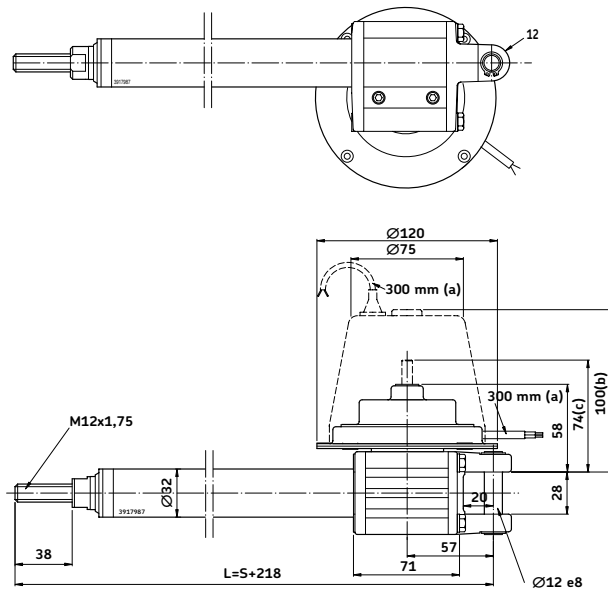
Hand switch
 Foot switch
 Desk switch

* See page 379

Connecting diagram



Dimensional drawing

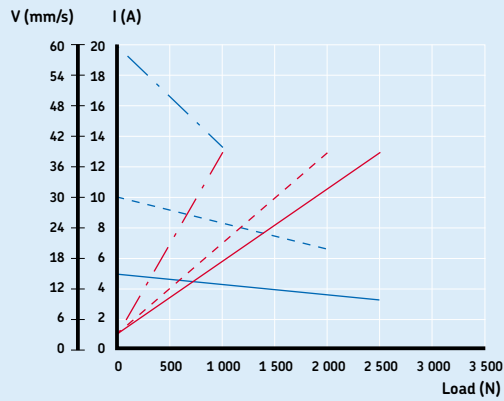


Legend:
 S = stroke
 L = retracted length
 (a) = cable length
 (b) = cover for brake (D24CB)
 (c) = extended shaft (D24CS)

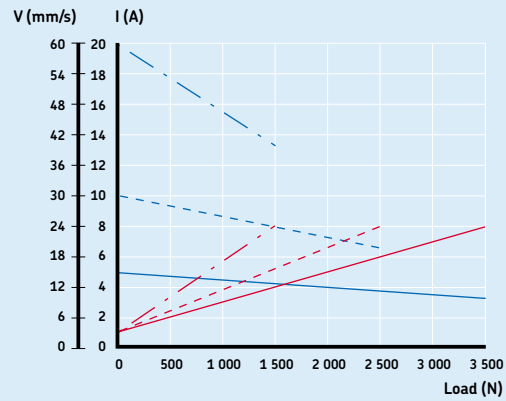
Technical data

| | Unit | CAR 32 | |
|------------------------------|---------|----------------|---------------------|
| Rated push load | N | 1 000 to 3 500 | |
| Rated 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 | |

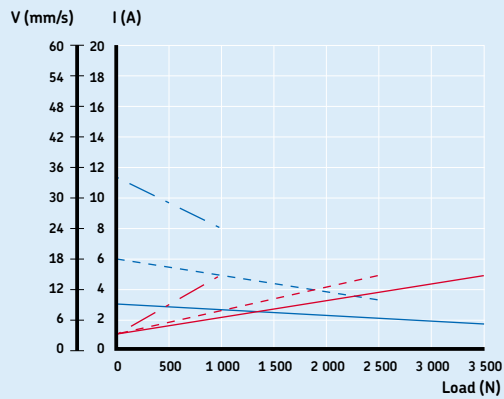
Performance diagrams



CAR 32.../D12C



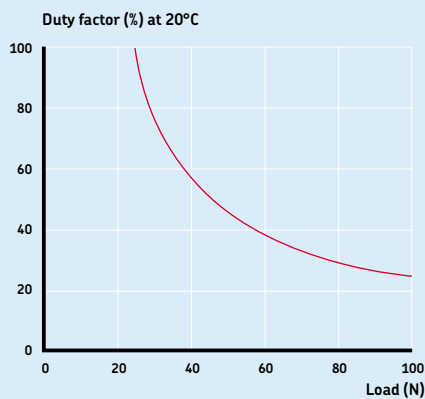
CAR 32.../D24C/D24CS/D24CB



CAR 32.../D24CW

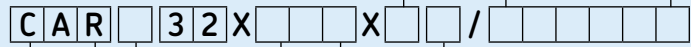
- Gear 1 ——— V (mm/s)
- I (A)
- Gear 2 - - - - - V (mm/s)
- - - - - I (A)
- Gear 4 - - - - - V (mm/s)
- - - - - I (A)

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 | | |



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:

- Friction clutch
- Back-up nut

F
S

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator CAP 32

Benefits

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

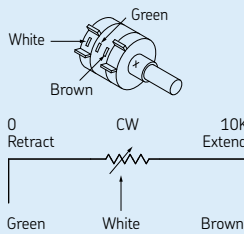
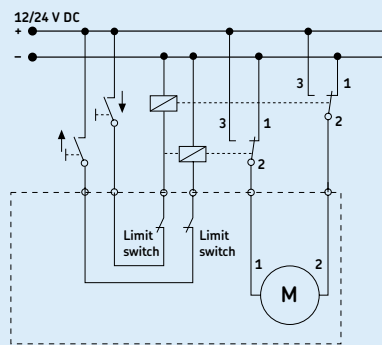


Suitable control units and accessories

Control units

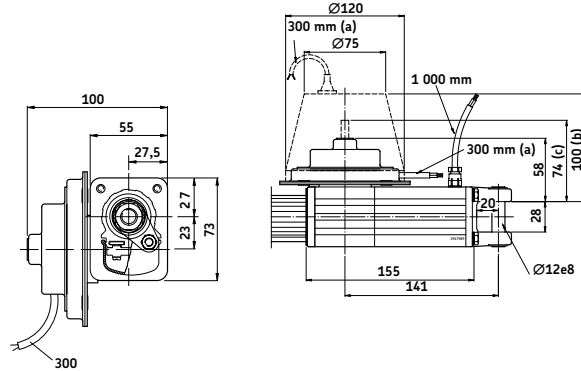
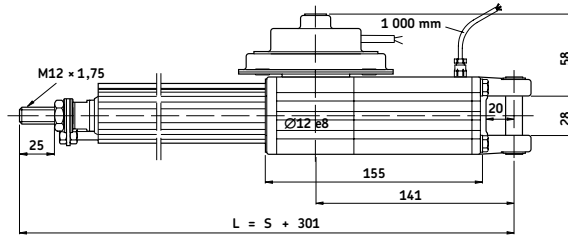
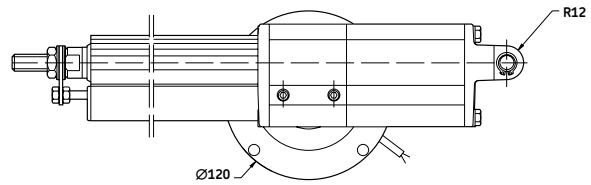
| | |
|-------|------------------|
| | CAED ANR 5-24-PO |
| | CAED ANR 9-24-PO |
| D12C | |
| D24C | ● |
| D24CW | ● |
| D24CS | ● |
| D24CB | |

Connecting diagram



Connection diagram for rotating potentiometer.

Dimensional drawing



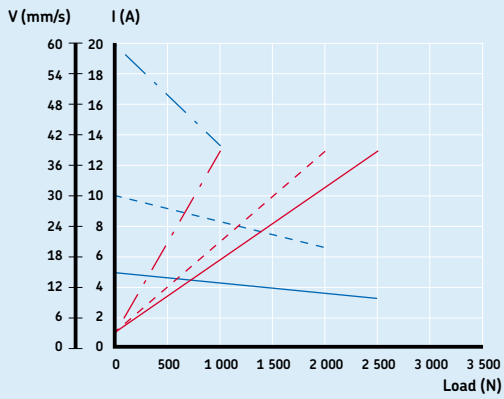
Legend:
 S = stroke
 L = retracted length
 (a) = cable length
 (b) = cover for brake (D24CB)
 (c) = extended shaft (D24CS)

Technical data

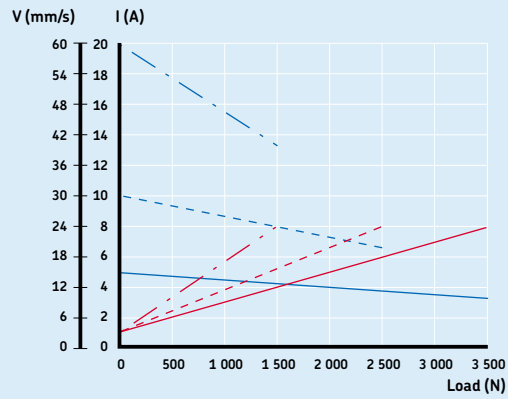
| | Unit | CAP 32 | |
|------------------------------|---------|----------------|---------------------|
| Rated push load | N | 1 000 to 3 500 | |
| Rated pull load | N | 1 000 to 3 500 | |
| Speed (full load to no load) | mm/s | 5 to 60* | |
| Stroke | mm | 50 to 700 | |
| Retracted length | mm | S+301 | |
| 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

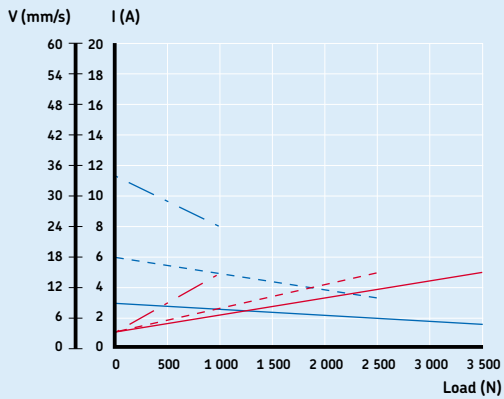
Performance diagrams



CAP 32.../D12C



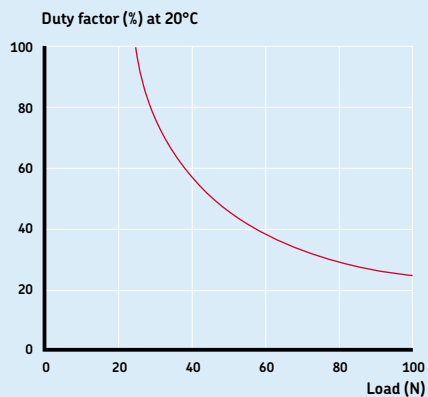
CAP 32.../D24C/D24CS/D24CB



CAP 32.../D24CW

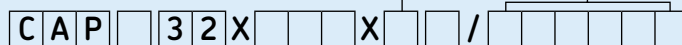
- Gear 1 — V (mm/s)
- I (A)
- Gear 2 - - - V (mm/s)
- - - I (A)
- Gear 4 — V (mm/s)
- - - I (A)

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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator CAP 43A

Benefits

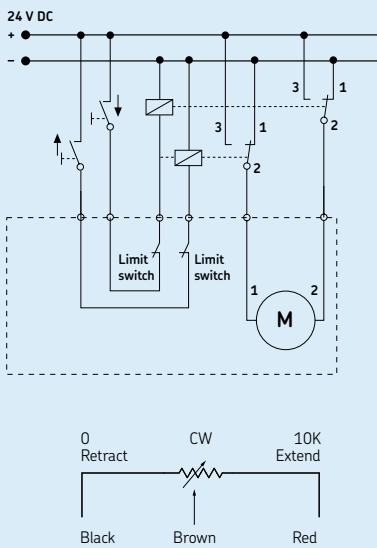
- Robust and reliable
- Long lifetime
- Wide range of components
- Right- and left-hand version
- Analogical feedback



Suitable control units and accessories

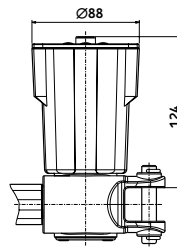
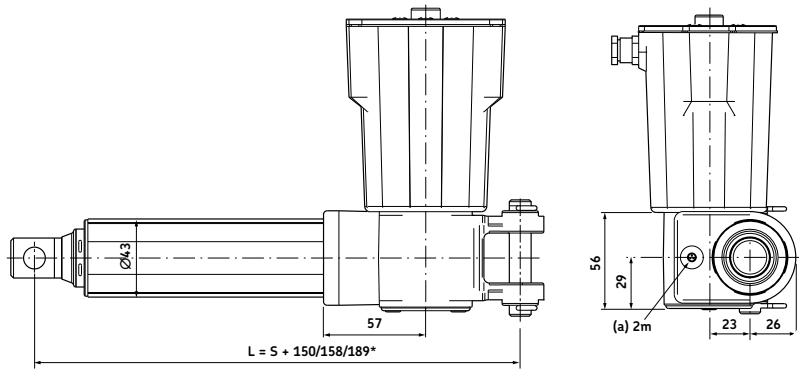
| | | Control units |
|--|-------|------------------|
| | | CAED ANR 5-24-PO |
| | | CAED ANR 9-24-PO |
| | C24C | ● |
| | C24CW | ● |
| | D24C | ● |
| | D24CW | ● |

Connecting diagram

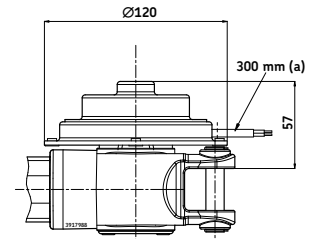


Connection diagram for linear potentiometer.

Dimensional drawing



C24C, C24CW



D24C, D24CW

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

See drawings of front and rear attachments on page 276.

* Dimension depends on selected front attachment

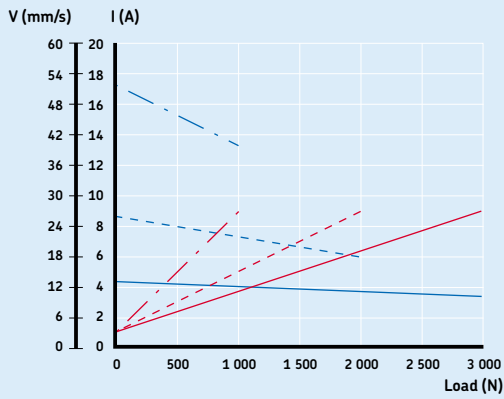
Technical data

| | | Unit | CAP 43A |
|------------------------------|----------|------|-----------------------------|
| Rated push load | | N | 1 000 to 3 000 |
| Rated 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 |

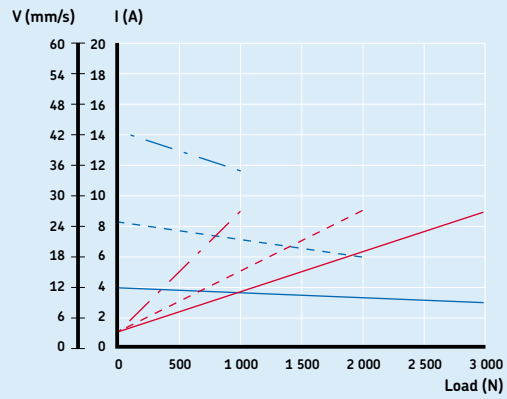
¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

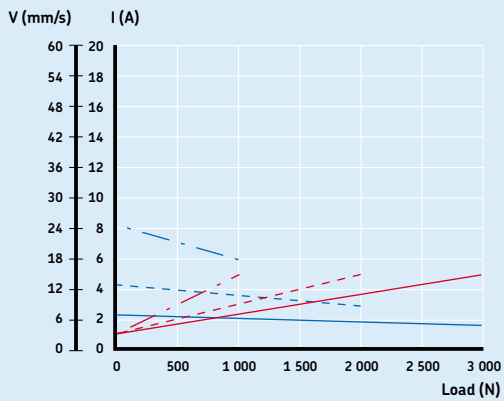
Performance diagrams



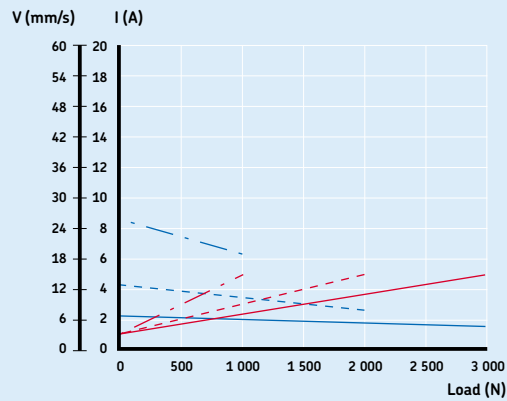
CAP 43A.../C24C



CAP 43A.../D24C



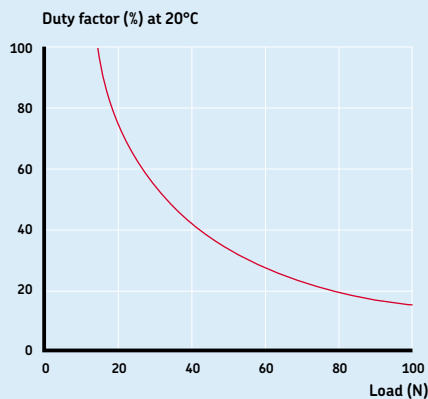
CAP 43A.../C24CW



CAP 43A.../D24CW



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 R
Left L

Stroke (S):

100 mm 100
200 mm 200
300 mm 300
400 mm 400

Rear attachment (see page 276):

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 276):

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

Cable option for C24C(W) motors:

No cable U
Straight, 2,0 m T2

EMC filter M

Motor without cover N

Linear actuator CAT 33

Benefits

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



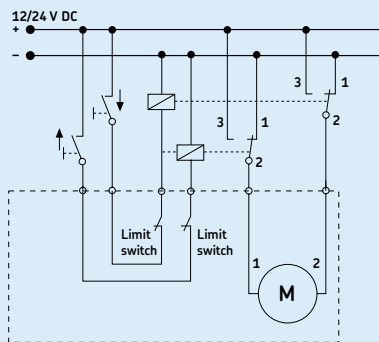
Suitable control units and accessories

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

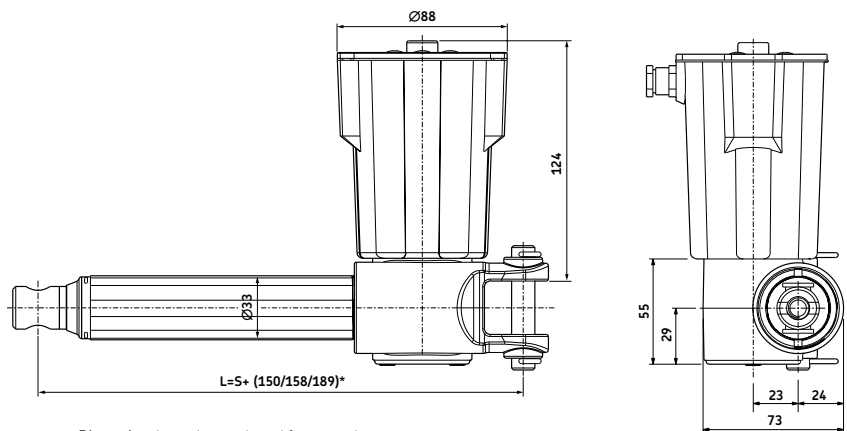
- Hand switch
- Foot switch
- Desk switch

1) See page 380
2) See page 378

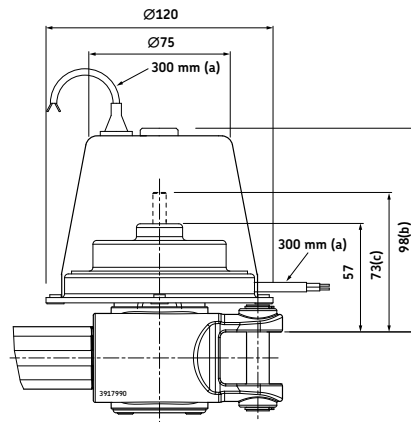
Connecting diagram



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

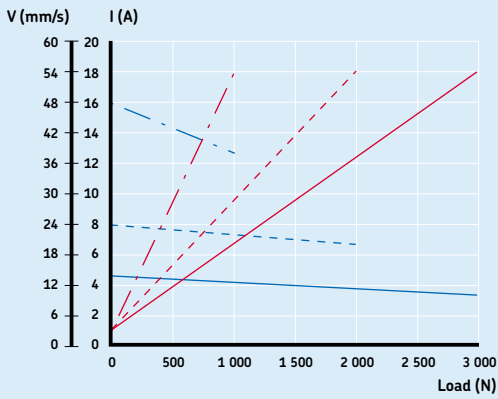
See drawings of front and rear attachments and motor options on page 276.

Technical data

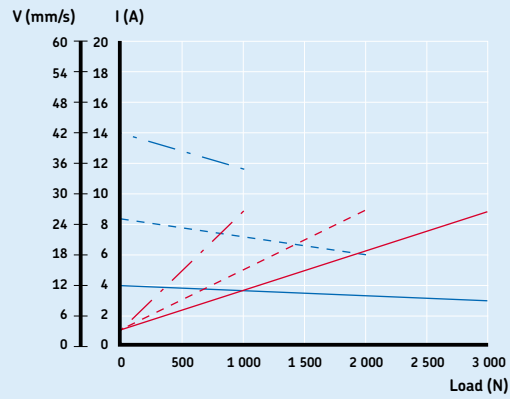
| | Unit | CAT 33 |
|------------------------------|-----------|--------------------------------|
| Rated push load | N | 800 to 3 000 |
| Rated pull load | N | 800 to 3 000 |
| Speed (full load to no load) | mm/s | 5 to 52 ¹⁾ |
| Stroke | mm | 100 to 400 |
| Retracted length | mm | S+150/158/189 ²⁾ |
| 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

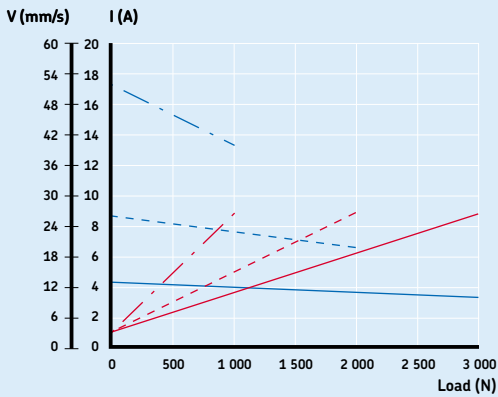
Performance diagrams



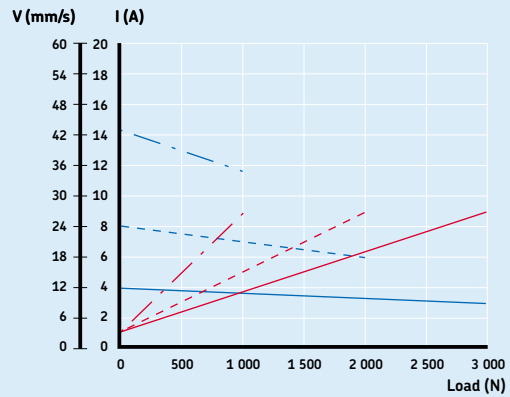
CAT 33.../C12C



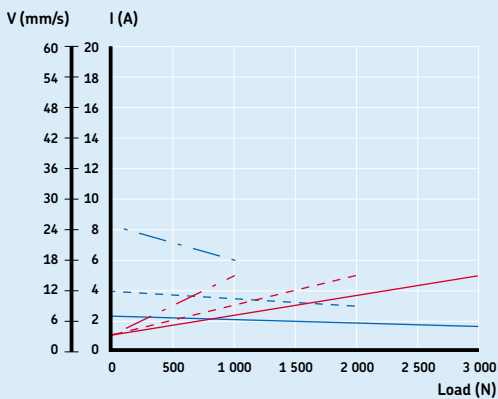
CAT 33.../D12C



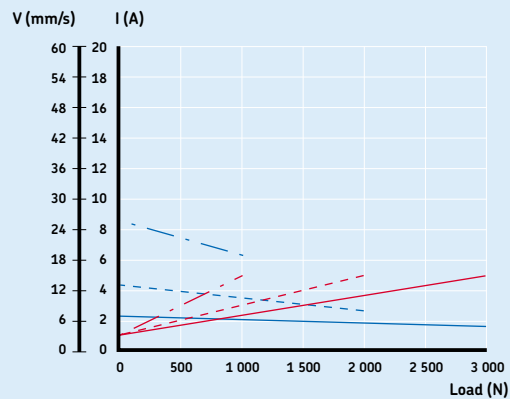
CAT 33.../C24C



CAT 33.../D24C/D24CB/D24CS



CAT 33.../C24CW



CAT 33.../D24CW



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 | 2 000/24-20 | 1 000/48-38 | 12 V DC, IP44 (65) | C12C |
| 2 400/11-7 | 1 600/21-15 | 800/39-21 | 12 V DC, flat motor, IP44 | D12C |
| 3 000/13-10 | 2 000/26-20 | 1 000/52-40 | 24 V DC, IP44 (65) | C24C |
| 3 000/7-5 | 2 000/13-9 | 1 000/25-18 | 24 V DC, low speed, IP44 (65) | C24CW |
| 3 000/12-9 | 2 000/25-18 | 1 000/43-35 | 24 V DC, flat motor, IP44 | D24C |
| 3 000/12-9 | 2 000/25-18 | 1 000/43-35 | 24 V DC, flat motor, brake, IP20 | D24CB |
| 3 000/12-9 | 2 000/25-18 | 1 000/43-35 | 24 V DC, flat motor, IP44, ext. shaft | D24CS |
| 3 000/7-5 | 2 000/13-8 | 1 000/26-19 | 24 V DC, flat motor, low speed, IP44 | D24CW |
| 1 | 2 | 4 | | |



Type

Motor assembly:

Right R
Left L

Stroke (S):

100 mm 100
200 mm 200
300 mm 300
400 mm 400
Other stroke lengths ---

Rear attachment (see page 276):

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 276):

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

Feedback:

No encoder (no code)
Encoder (for all standard motors) E2

Option:

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

Option for CxxC motors:

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

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

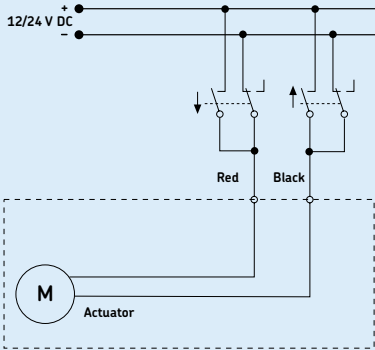
Linear actuator CAHB-20 series

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)

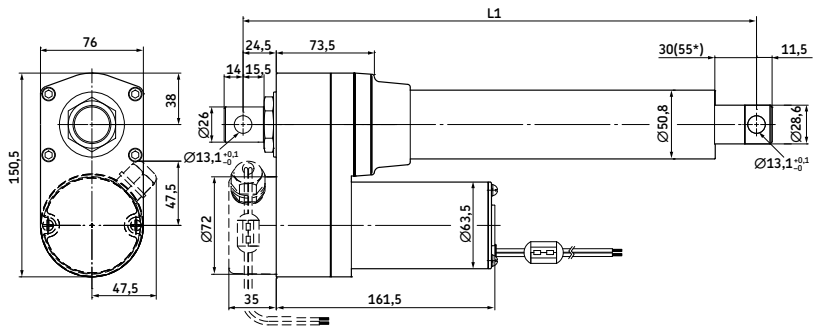


Connecting diagram



Dimensional drawing

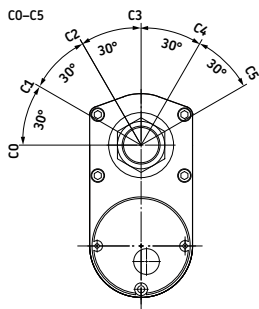
Basic configuration (dashed line for optional limit switch)



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

Different rear attachment



| Stroke (mm) | With limit switch ¹⁾ | | | | | | Without limit switch ²⁾ | | | | | |
|---------------------|---------------------------------|-----|-----|-----|-----|-----|------------------------------------|-----|-----|-----|-----|-----|
| | 102 | 153 | 204 | 305 | 457 | 610 | 102 | 153 | 204 | 305 | 457 | 610 |
| L1 Retracted length | 338 | 389 | 440 | 592 | 744 | 897 | 262 | 313 | 364 | 465 | 668 | 821 |

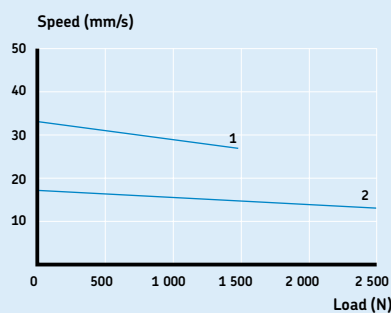
¹⁾ Tolerance: S and L1 = ± 5,0 mm (If S ≥ 305 mm, S = ± 7,5 mm)
²⁾ Tolerance: S = ± 2,5 mm and L1 = ± 3,8 mm

Technical data

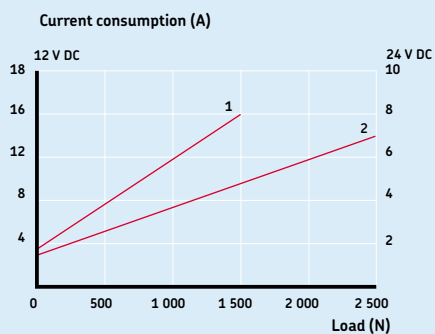
| | Unit | CAHB-20... 1 | CAHB-20... 2 |
|------------------------------|---------|--------------|--------------|
| Rated push load | N | 1 500 | 2 500 |
| Rated pull load | N | 1 500 | 2 500 |
| Speed (full load to no load) | mm/s | 27 to 33 | 13 to 17 |
| Stroke | mm | 102 to 610 | 102 to 610 |
| Retracted length | mm | —* | —* |
| Voltage | V DC | 12 or 24 | 12 or 24 |
| Power consumption | W | N/A | N/A |
| Current consumption | 12 V DC | A | 16 |
| | 24 V DC | A | 14 |
| Duty cycle | % | 25 | 25 |
| Ambient temperature | °C | -40 to +85 | -40 to +85 |
| Type of protection | IP | 66 | 66 |
| Weight (at 305 mm stroke) | kg | 5,5 | 5,5 |
| Color | — | Black | Black |

* see above table

Performance diagrams



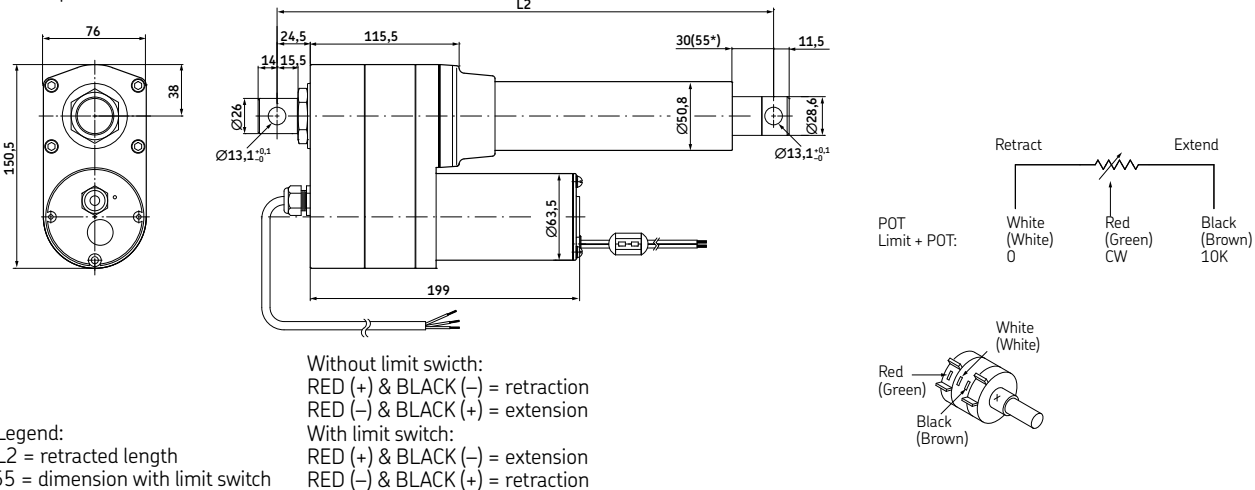
Speed-load diagram



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 | 376 | 427 | 478 | 630 | 782 | 935 | 300 | 351 | 402 | 503 | 706 | 859 |

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



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

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

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



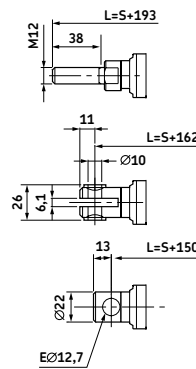
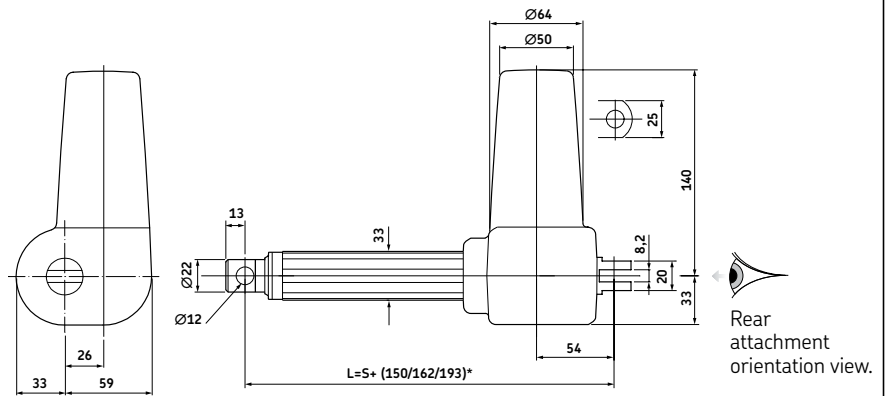
Suitable control units and accessories

| | Control units | | | | | | Limit switch | Feed-back |
|--------------|---------------|-------|-------|-------|-------|------------|-----------------------|------------------------------|
| | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 | CAED 5-24R | CAXC 33 ¹⁾ | 2-Hall encoder ²⁾ |
| CARE 33A 24V | • | • | • | • | • | • | • | • |
| CARE 33M 24V | | | | | | • | • | • |
| CARE 33H 24V | | | | | | • | | |
| CAES 31C | | | | | | | | • |
| EHA 3 | • | • | • | • | • | • | | |
| STJ | • | • | • | • | • | • | | |
| STE | • | • | • | • | • | • | | |

- Hand switch
- Foot switch
- Desk switch

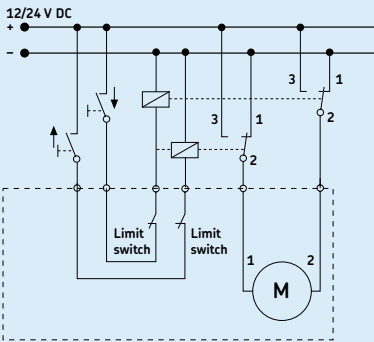
¹⁾ See page 378
²⁾ See page 381

Dimensional drawing



* Dimension depends on selected front attachment

Connecting diagram



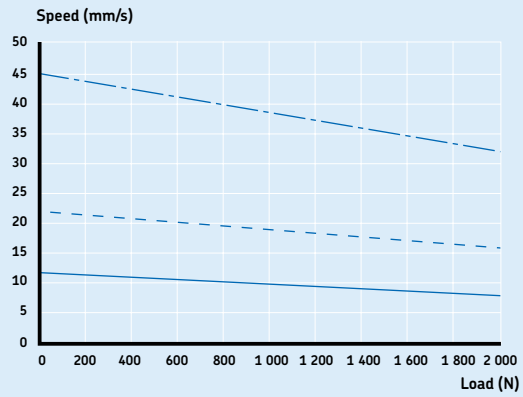
Legend:
 S = stroke
 L = retracted length

Technical data

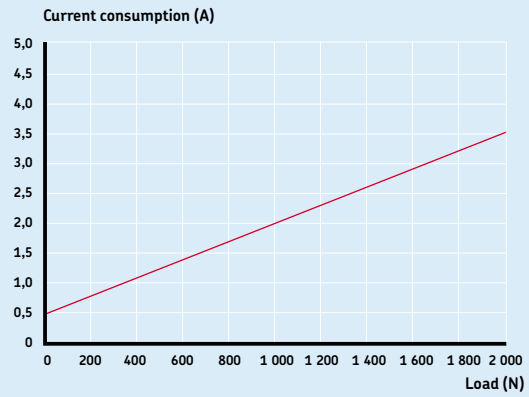
| | Unit | CARE 33A | CARE 33M | CARE 33H |
|------------------------------|------|-----------------------------|-----------------------------|-----------------------------|
| Rated push load | N | 2 000 | 1 400 | 800 |
| Rated pull load | N | 2 000 | 1 400 | 800 |
| Speed (full load to no load) | mm/s | 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



Type

Load:

2 000 N
1 400 N
800 N

A
M
H

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

050
100
150
200
300
400
500

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)

1
2
3
4

Rear attachment:

Hole, Ø=12,0 mm
Hole, Ø=12,7 mm
Hole, Ø=8,0 mm
Hole, Ø=10,0 mm

1
2
3
4

Type of protection:

IP65
IP44

1
2

Feedback:

No option
2-Hall encoder

0
1

Cable/Connection plug:

Straight, 2,0 m, no plug
Coiled, 2,0 m, jack plug
Straight, 2,0 m, DIN 8 plug (for 2-Hall encoder)
Straight, 2,0 m, jack plug
Straight, 2,5 m, DIN8 plug BCU/VCU (ONLY available for CARE 33A)

1
2
3
5
C5

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

000
015
030
045
060
075
090
105
120
130
150
165

Voltage:

24 V DC

24

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

0
1
2

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

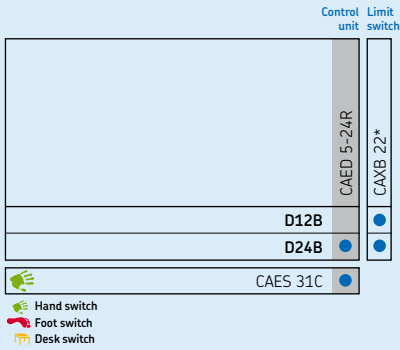
Linear actuator CAR 22

Benefits

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

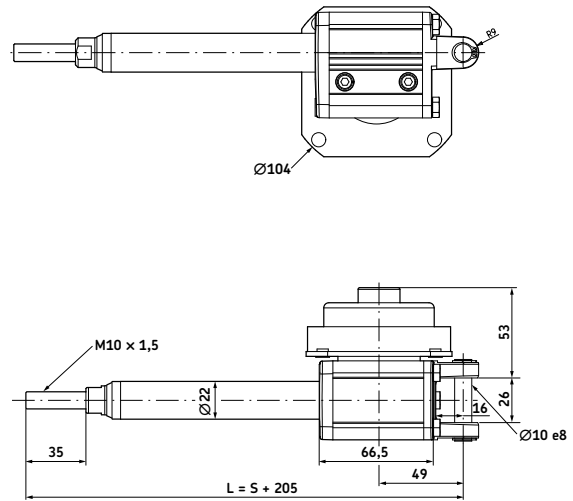


Suitable control units and accessories

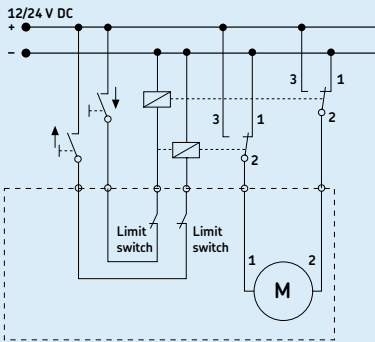


* See page 379

Dimensional drawing



Connecting diagram

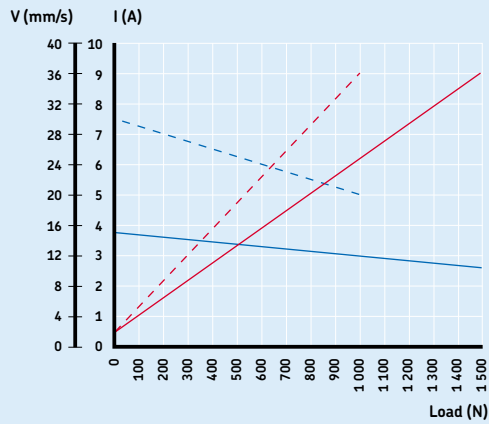


Legend:
 S = stroke
 L = retracted length

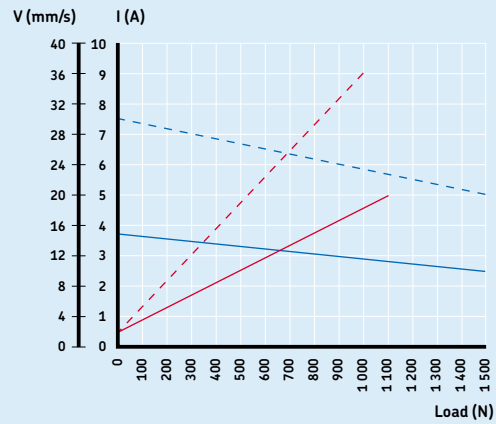
Technical data

| | Unit | CAR 22 |
|------------------------------|--------------------|----------------|
| Rated push load | N | 1 000 to 1 500 |
| Rated 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 | N/A |
| Current consumption | 12 V DC 24 V DC | A 9 5 |
| Duty cycle | % | 25 |
| Ambient temperature | °C | -20 to +70 |
| Type of protection | IP | 44 |
| Weight | kg | 1,2 to 1,6 |

Performance diagrams



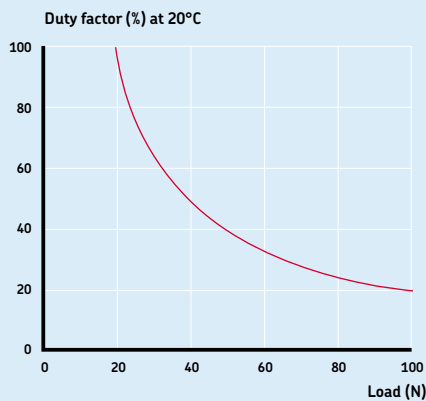
CAR 22.../D12B



CAR 22.../D24B



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 | | |



Type

Motor assembly:

- Right
- Left

- R
- L

Stroke (S):

- 50 mm
- 100 mm
- 150 mm
- 200 mm
- 300 mm

- 050
- 100
- 150
- 200
- 300

Other stroke lengths

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Linear actuator CAT 33H

Benefits

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



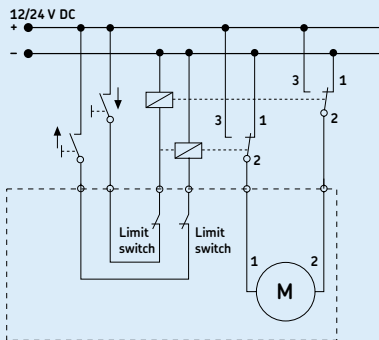
Suitable control units and accessories

| Control units | | Encoder |
|---------------|------------|------------------|
| | CAED 5-24R | E2 ¹⁾ |
| | CAED 9-24R | |
| C12C | | |
| D12C | | |
| C24C | | |
| C24CW | | |
| D24C | | |
| D24CB | | |
| D24CS | | |
| D24CW | | |
| CAES 31C | | |

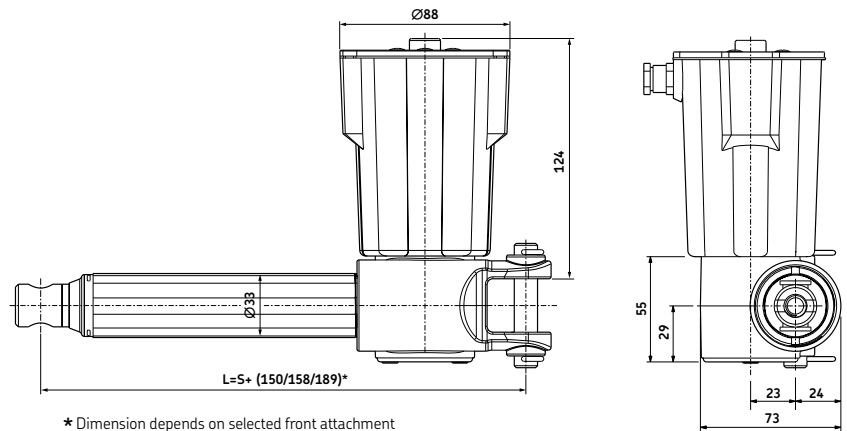
Hand switch
 Foot switch
 Desk switch

¹⁾ See page 380

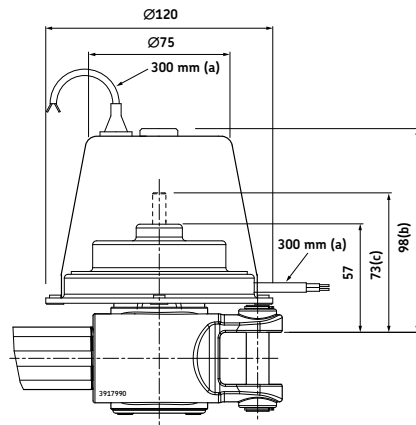
Connecting diagram



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 276.

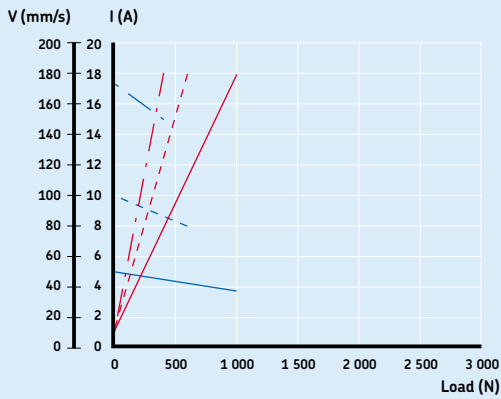
Technical data

| | Unit | CAT 33H |
|------------------------------|---------|-----------------------------|
| Rated push load | N | 400 to 1 200 |
| Rated pull load | N | 400 to 1 200 |
| Speed (full load to no load) | mm/s | 17 to 193 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 |
| | 24 V DC | A |
| | 24 V DC | A |
| Duty cycle | % | 20 |
| Ambient temperature | °C | -20 to +50 |
| Type of protection | IP | 20/44/65 |
| Weight | kg | 2 to 2,7 |

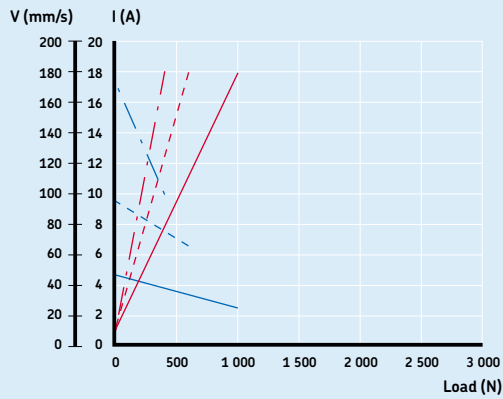
¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

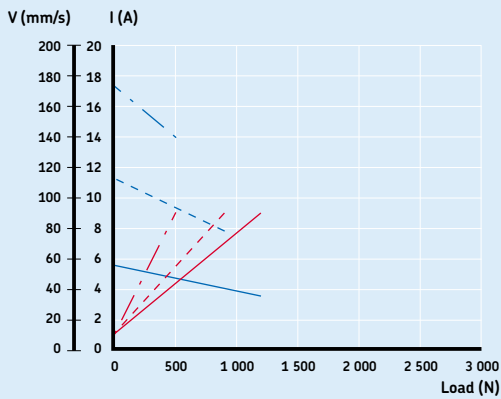
Performance diagrams



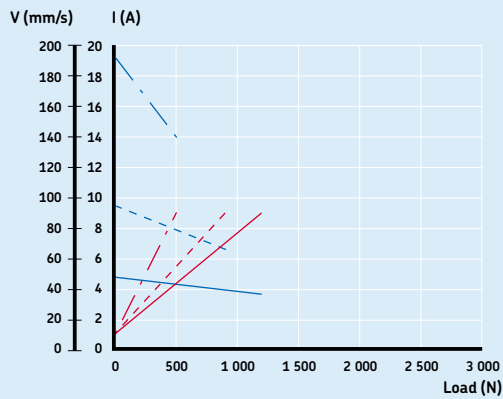
CAT 33H.../C12C



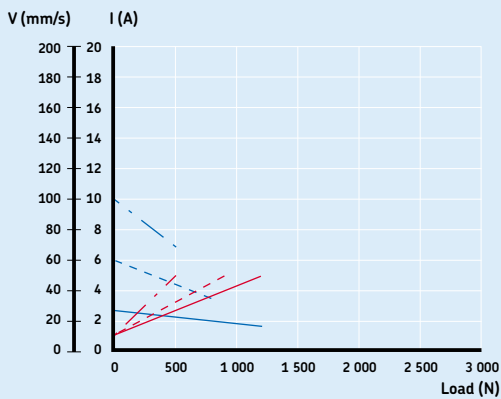
CAT 33H.../D12C



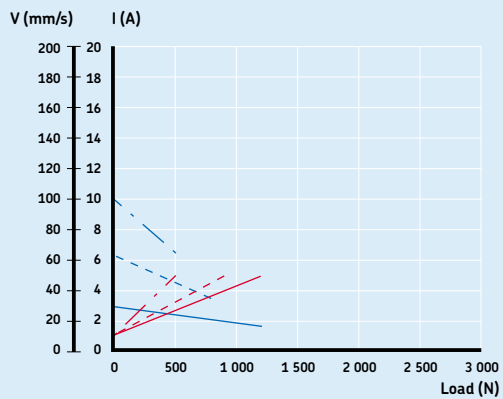
CAT 33H.../C24C



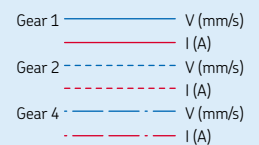
CAT 33H.../D24C/D24CB/D24CS



CAT 33H.../C24CW



CAT 33H.../D24CW



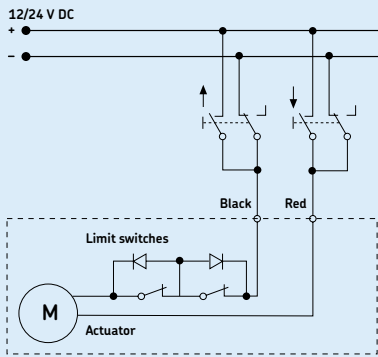
Linear actuator CAHB-10 series

Benefits

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

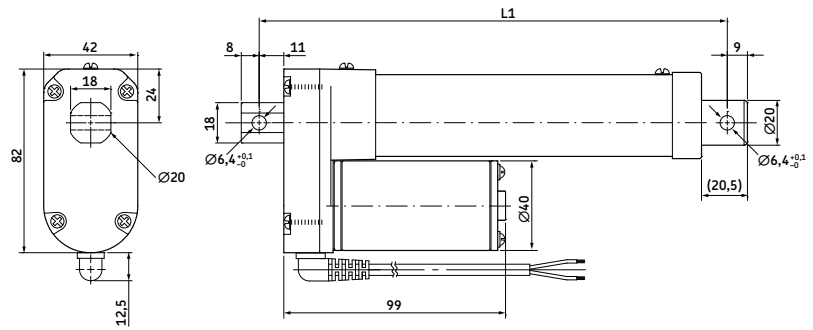


Connecting diagram



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 |

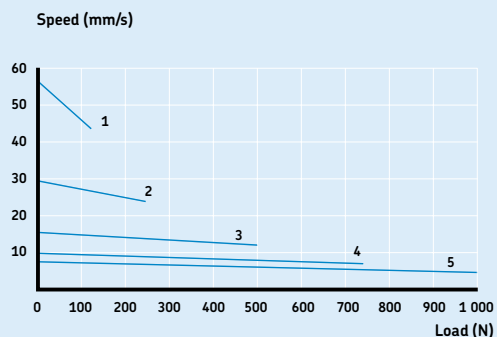
* Tolerance: S and L1: ± 2.0 mm

Technical data

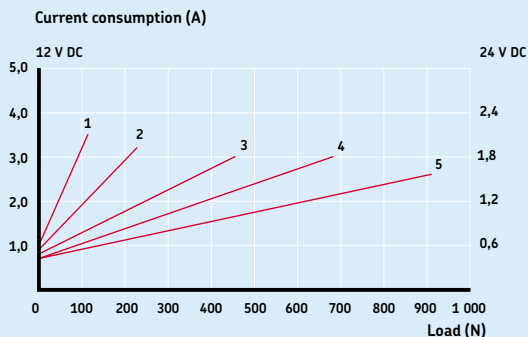
| | Unit | CAHB-10... 1 | CAHB-10... 2 | CAHB-10... 3 | CAHB-10... 4 | CAHB-10... 5 | |
|------------------------------|--------------------|--------------|--------------|--------------|--------------|--------------|------------|
| Rated push load | N | 120 | 240 | 500 | 750 | 1 000 | |
| Rated pull 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 24 V DC | A A | 3,5 2,2 | 3,2 2,0 | 3,0 1,8 | 2,8 1,8 | 2,6 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



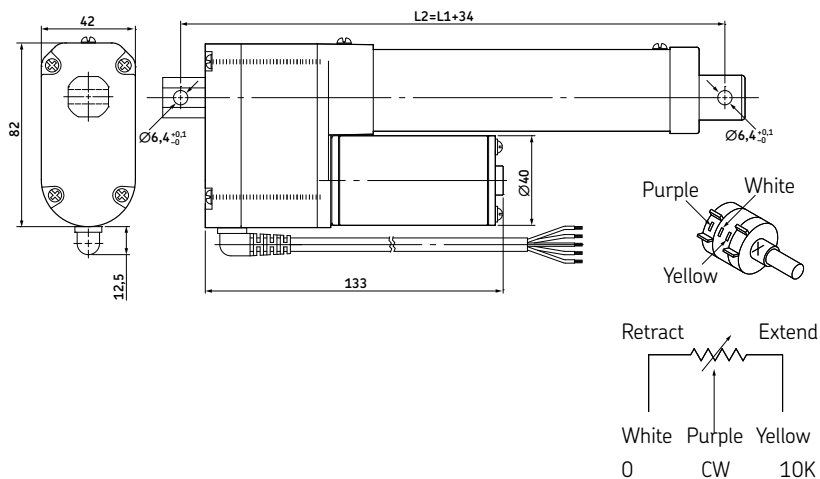
Speed-load diagram



Current-load diagram

Dimensional drawing

Optional potentiometer



Legend:
L1 and L2 = retracted length

| 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



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: $\varnothing=6,4$ mm)

Customized

A

X

Rear attachment:

Standard (hole: $\varnothing=6,4$ mm)

Customized

A

X

Option 1:

None

Potentiometer

0

P

Option 2:

None

Thermal protection

0

T

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

* 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



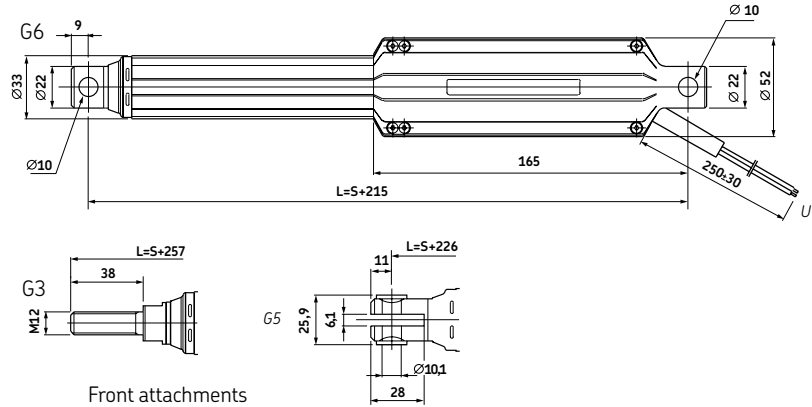
Suitable control units and accessories

| | Control units | | | | Limit switch | | |
|--------------|---------------|-------|-------|-------|--------------|------------|----------|
| | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 | CAED 3-24R | CAXC 33* |
| CALA 36A 12V | | | | | | | |
| CALA 36A 24V | • | • | • | • | • | • | • |
| CAES 31C | | | | | | | • |
| EHA3 | • | • | • | • | • | | |
| STJ | • | • | • | • | • | | |
| STE | • | • | • | • | • | | |

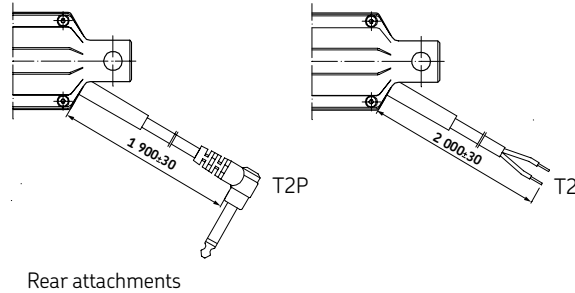
Hand switch
 Foot switch
 Desk switch

* See page 378

Dimensional drawing



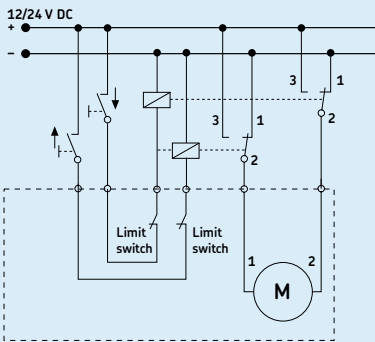
Front attachments



Rear attachments

Legend:
 S = stroke
 L = retracted length

Connecting diagram



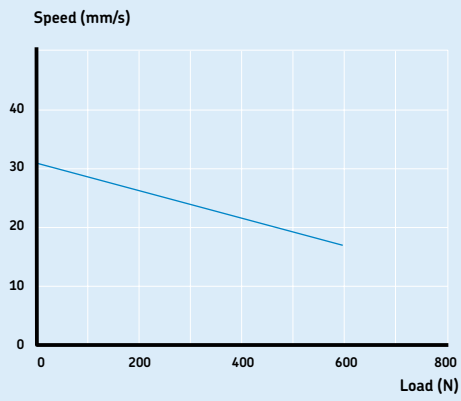
Technical data

| | Unit | CALA 36A |
|------------------------------|---------|-----------------------------|
| Rated push load | N | 600 |
| Rated 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 |
| | 24 V DC | A |
| Duty cycle | % | 5 |
| Ambient temperature | °C | 0 to +50 |
| Type of protection | IP | 44 |
| Weight | kg | 0,9 to 1,4 |
| Color | - | Black |

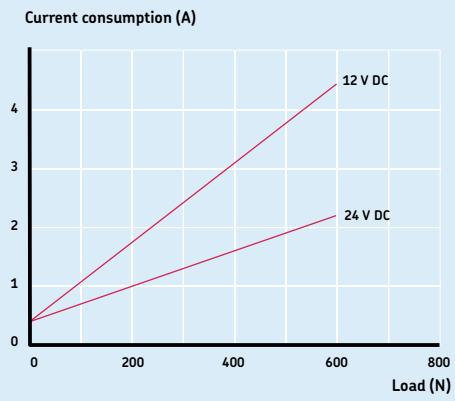
¹⁾ Depending on selected motor

²⁾ Dimension depends on selected front attachment

Performance diagrams

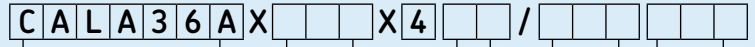


Speed-load diagram



Current-load diagram

Ordering key



Type

Stroke (S):

| | |
|-----------------------------|-----|
| 50 mm | 050 |
| 100 mm | 100 |
| 150 mm | 150 |
| 200 mm | 200 |
| <i>Other stroke lengths</i> | --- |

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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

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



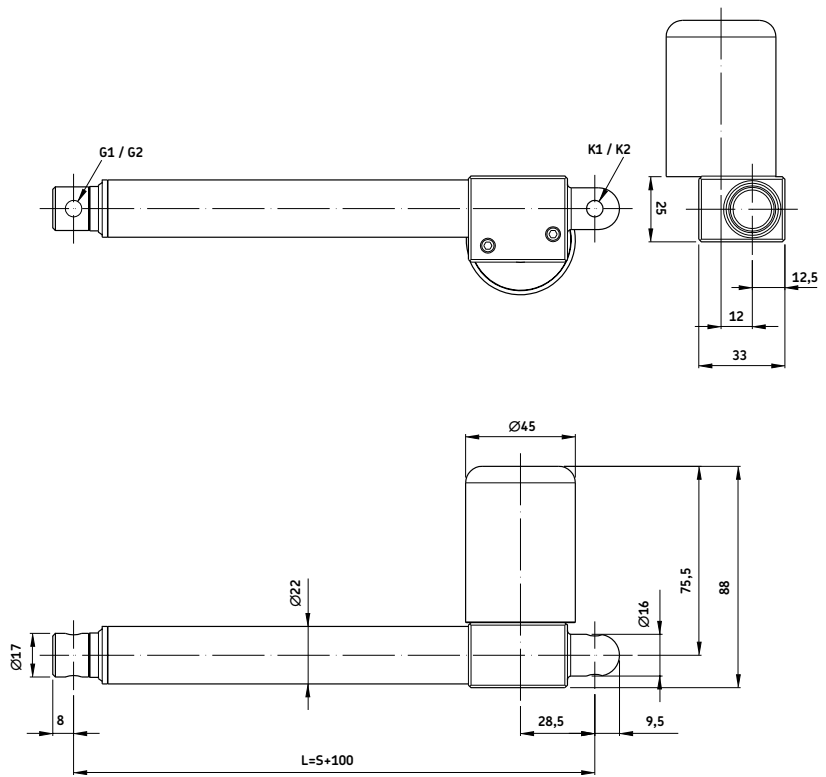
Suitable control units and accessories

Control units

| | | | | | |
|--|-------|-------|-------|-------|-------|
| | VCU 5 | VCU 8 | VCU 9 | BCU 5 | BCU 8 |
| CAT 21B | ● | ● | ● | ● | ● |
|  EHA3 | ● | ● | ● | ● | ● |
|  STJ | ● | ● | ● | ● | ● |
|  STE | ● | ● | ● | ● | ● |

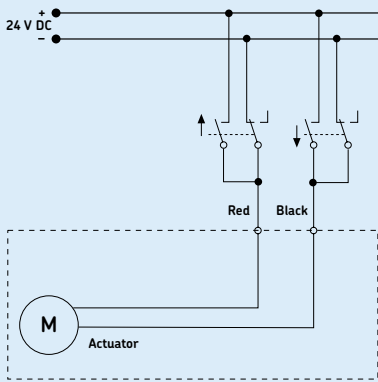
 Hand switch
 Foot switch
 Desk switch

Dimensional drawing



Legend:
 S = stroke
 L = retracted length

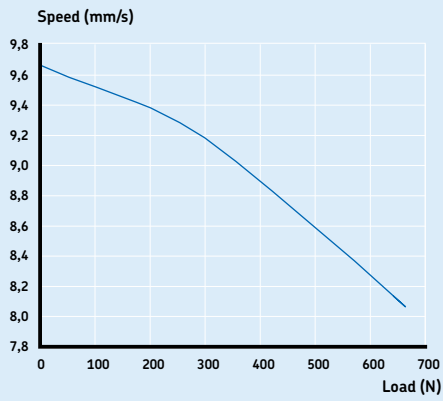
Connecting diagram



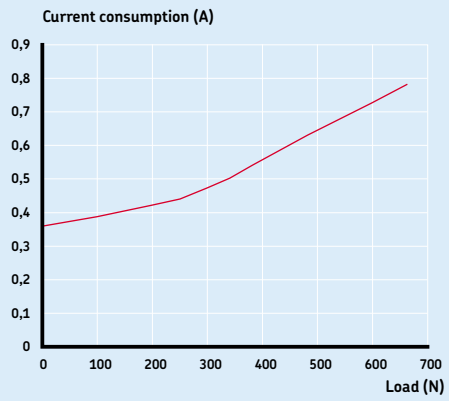
Technical data

| | Unit | CAT 21B |
|------------------------------|------|--------------------------|
| Rated push load | N | 600 |
| Rated 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 | x4 |
| Weight | kg | 0,7 to 1,5 |
| Color | - | Black |

Performance diagrams

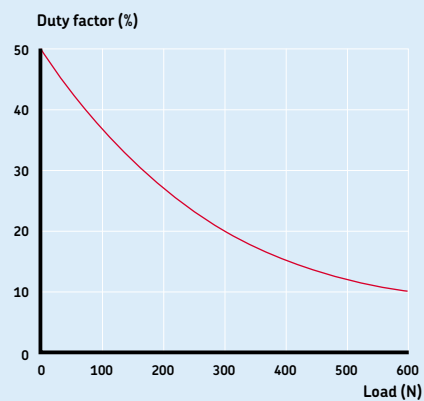


Speed-load diagram

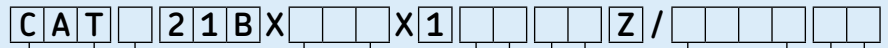


Current-load diagram

Duty factor diagram



Ordering key



Type

Motor assembly:

Right
Left

R
L

Stroke (S):

| | |
|-----------------------------|-----|
| 50 mm | 050 |
| 100 mm | 100 |
| 200 mm | 200 |
| 250 mm | 250 |
| 300 mm | 300 |
| <i>Other stroke lengths</i> | --- |

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

O6
C5

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Options

Standard options

Right or left handed motor orientation.
With or without motor cover.

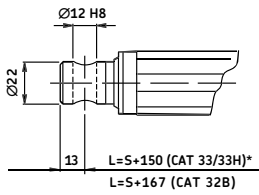
Customer options (available on request)

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

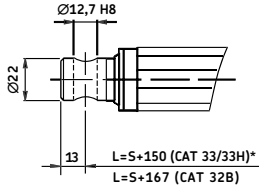
If in any application there is a risk that the actuator mechanically runs into the end stop, we recommend that you use the limit switch option.

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

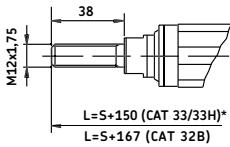
Front attachments and retracted length



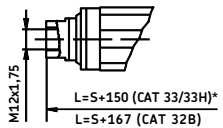
G1



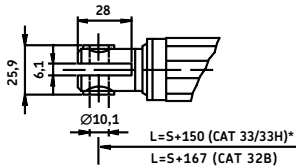
G2



G3



G4



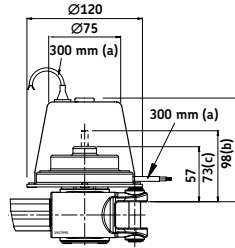
G5

Legend:

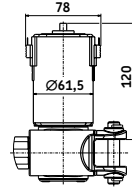
- (a) = cable length
- (b) = cover for brake
- (c) = extended shaft
- S = stroke
- L = retracted length

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

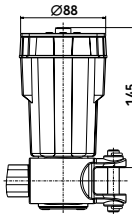
Motor options for CAT



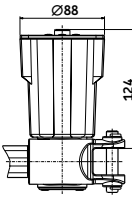
D12C, D24C, D24CB, D24CS, D24CW



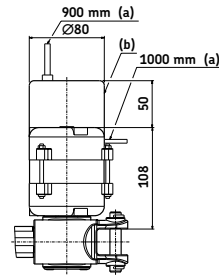
C12CN, C24CN, C24CWN



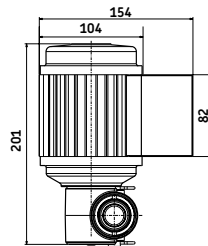
C12CM, C24CM, C24CWM



C12C, C24C, C24CW

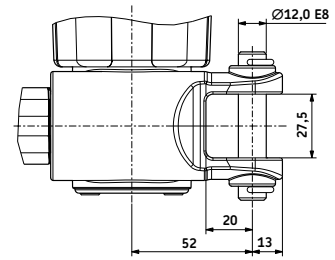


E110C, E110CB, E220C, E220CB

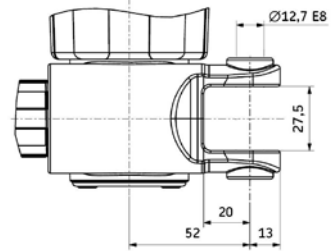


E380C

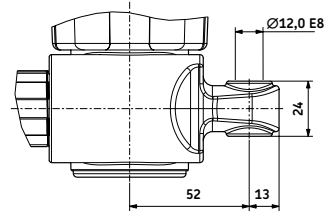
Rear attachments



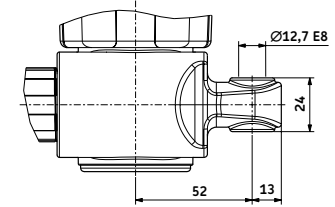
A1



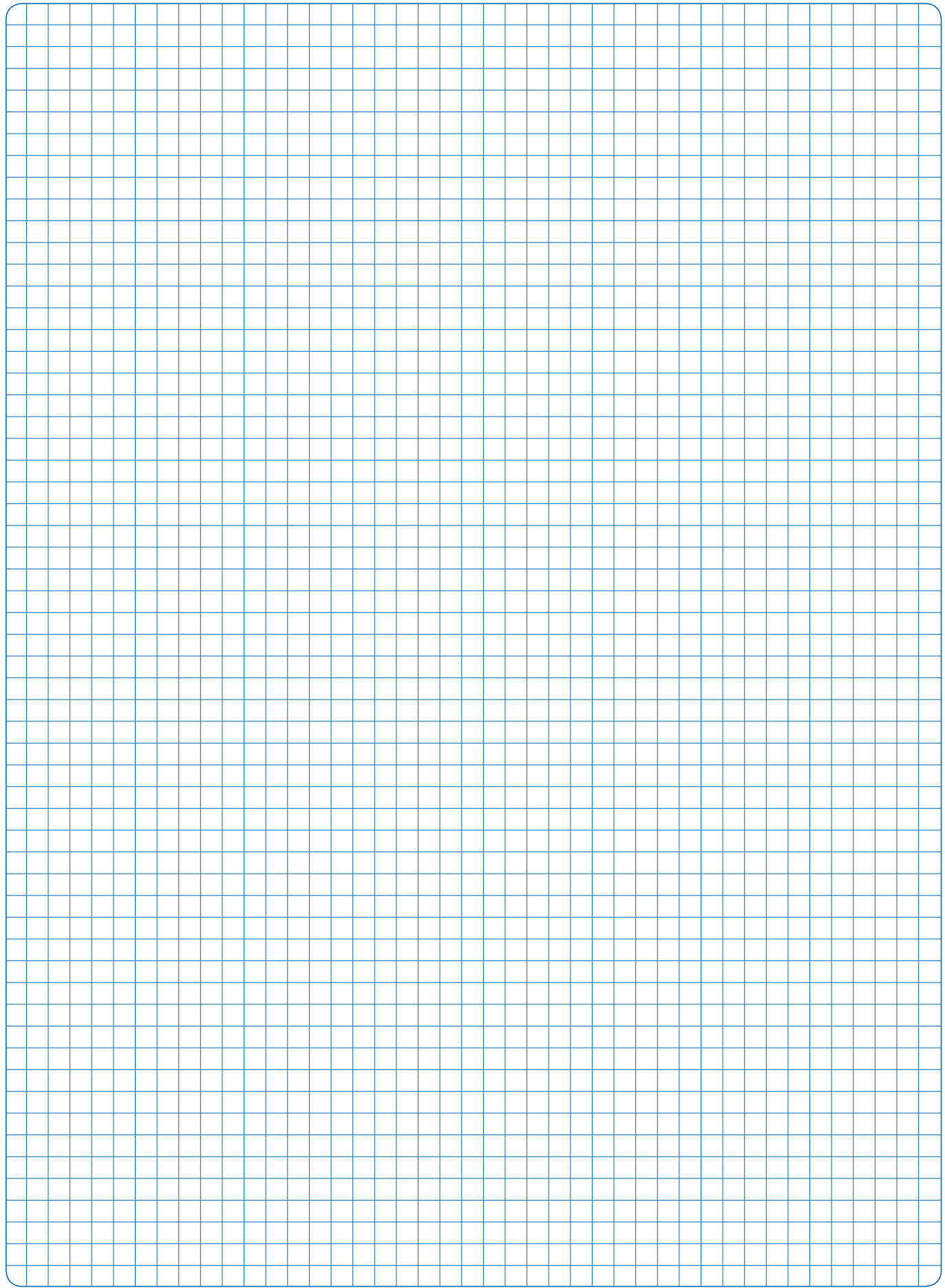
A2



K1



K2



Linear actuators - No motor

| | |
|---------------|-----|
| CARN 32 | 280 |
| CCBR 32 | 284 |

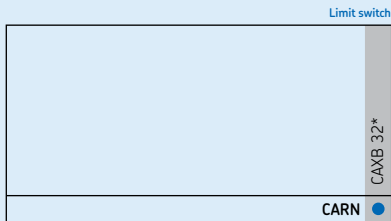
Linear actuator CARN 32

Benefits

- Industrial reliable and robust actuator

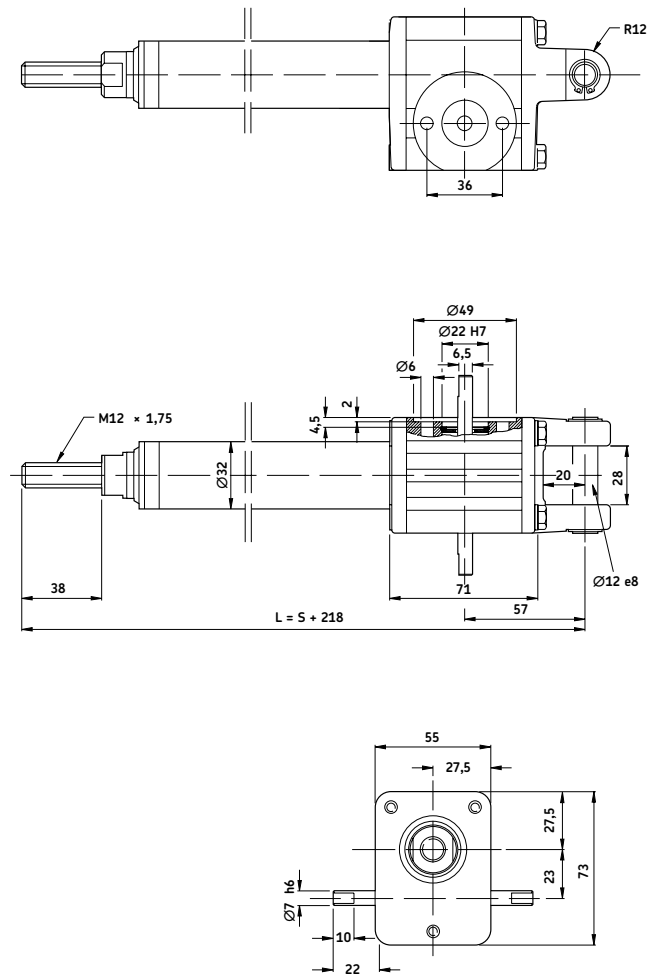


Suitable accessories



* See page 379

Dimensional drawing

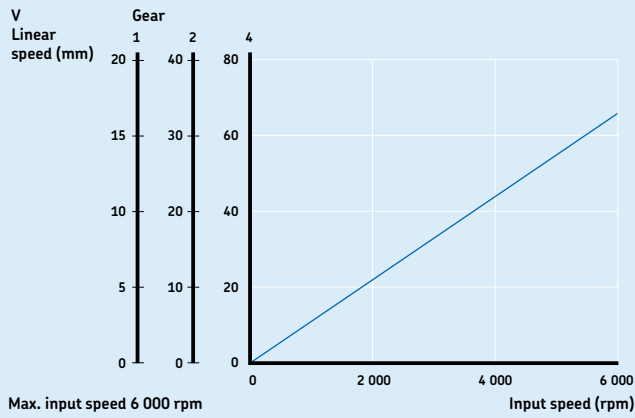


Legend:
S = stroke
L = retracted length

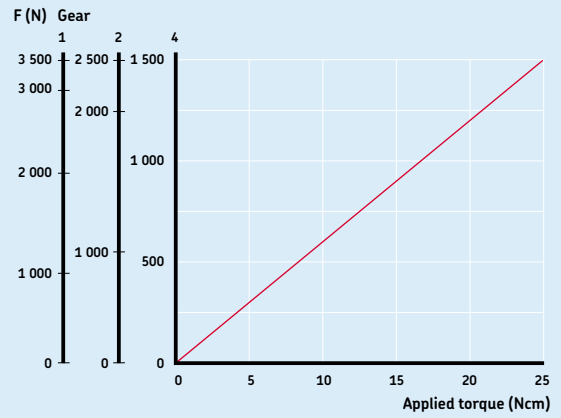
Technical data

| | Unit | CARN 32 |
|---------------------|------|------------|
| Rated push load | N | 3 500 |
| Rated 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 |
| <i>Other stroke lengths</i> | --- |

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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

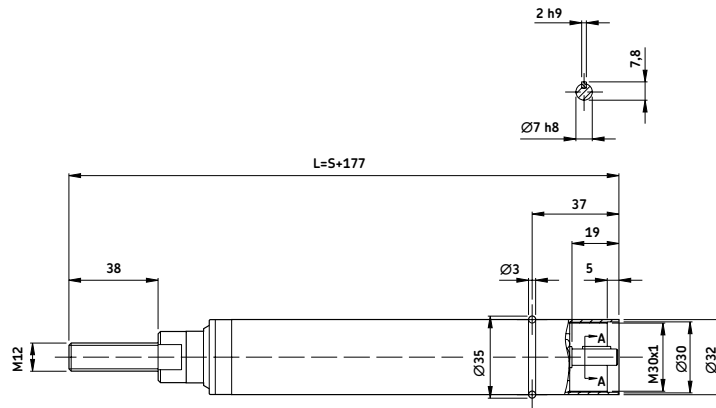
Linear actuator CCBR 32

Benefits

- Industrial reliable and robust actuator



Dimensional drawing

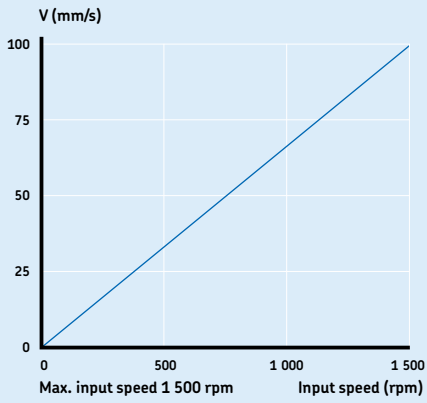


Legend:
 S = stroke
 L = retracted length

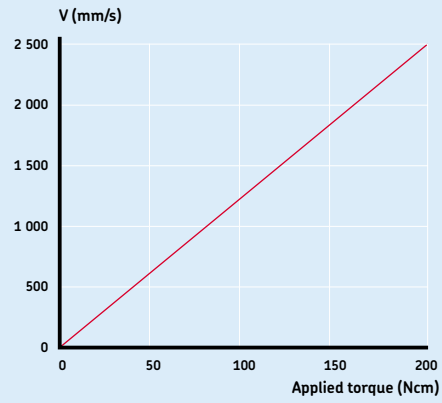
Technical data

| | Unit | CCBR 32 |
|---------------------|------|------------|
| Rated push load | N | 2 500 |
| Rated 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

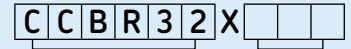


Available force "F" as a function of applied torque

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 |
| <i>50 < S < 700 mm (S > 700 mm contact SKF)</i> | --- |

Options shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

Rotary actuators

| | |
|---------------|-----|
| CRAB 17 | 290 |
| CRAB 05 | 296 |

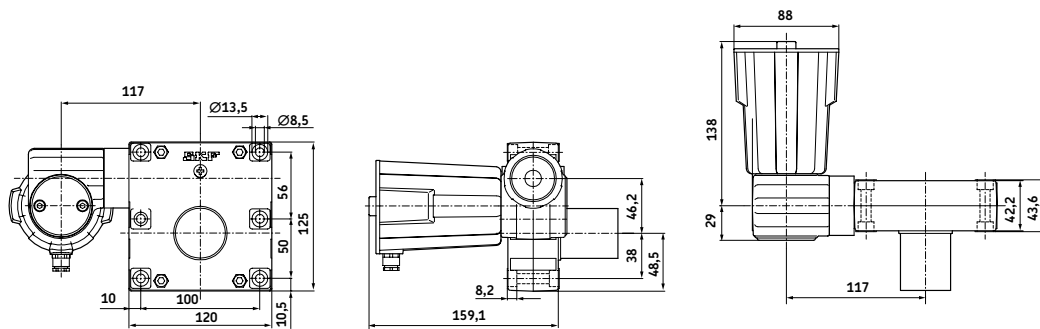
Rotary actuator CRAB 17

Benefits

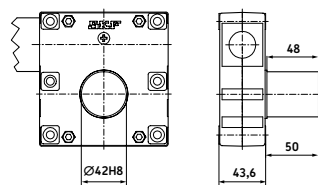
- Multiple output shafts
- Multiple motor options
- Small and compact



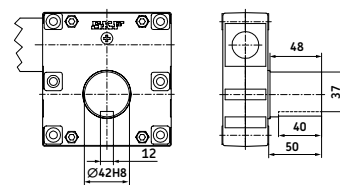
Dimensional drawing



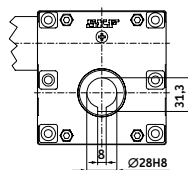
Standard shaft design



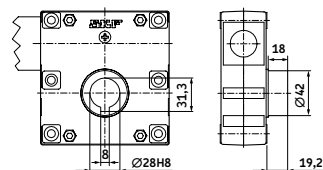
Type code 1: solid



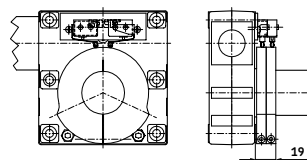
Type code 2: solid/keyway



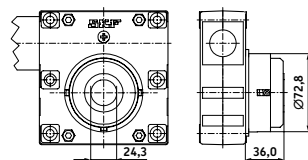
Type code 3: hollow/keyway



Type code 4: hollow/keyway for limit switch

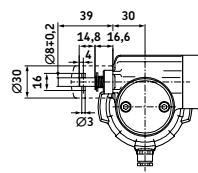
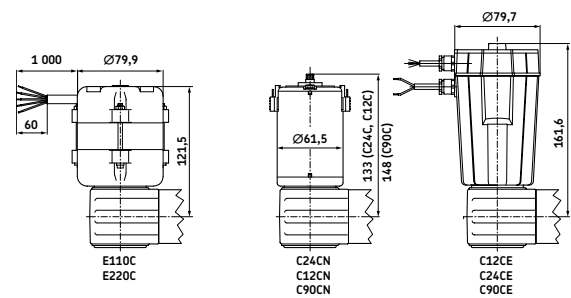


S - Limit switch unit



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

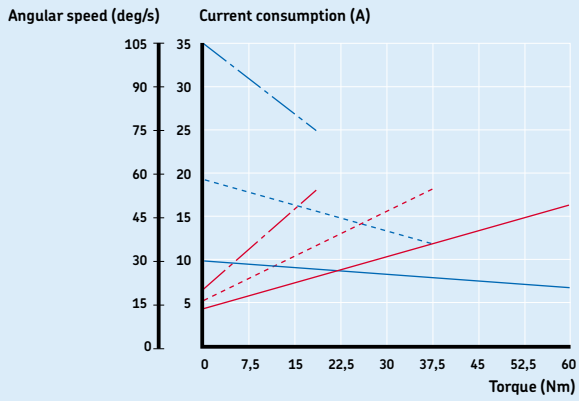


Diagram for motor C12C

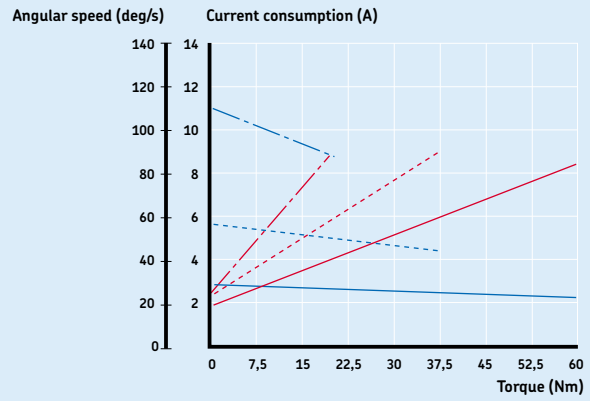


Diagram for motor C24C

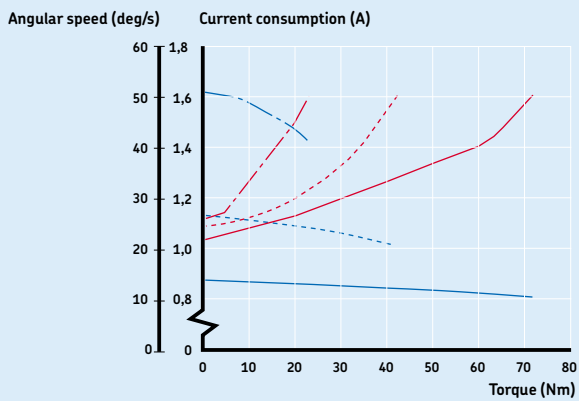


Diagram for motor E110C

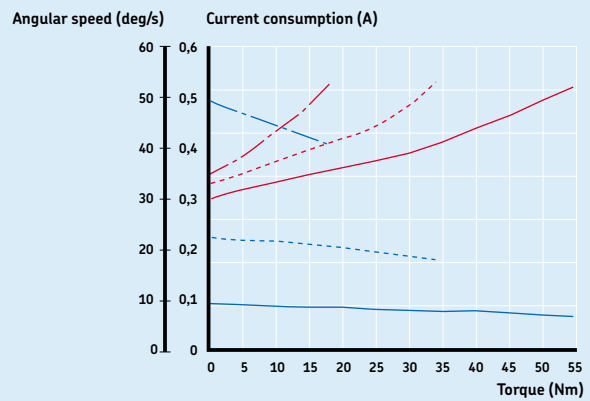
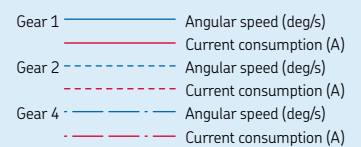


Diagram for motor E220C



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 | | |



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

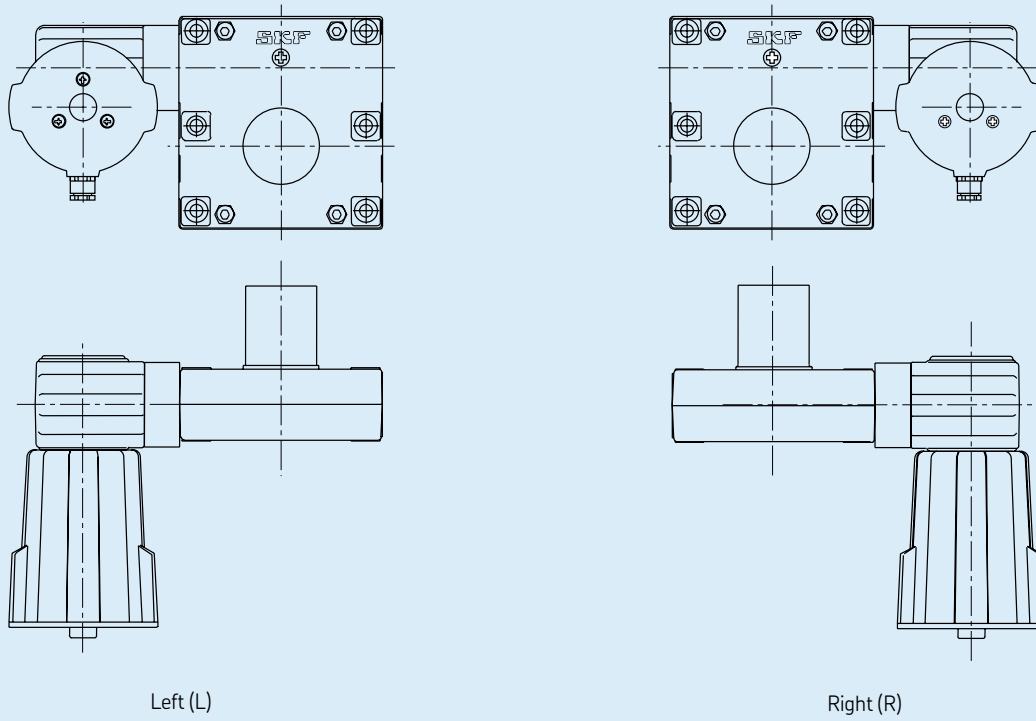
R
L

Option for CxxC motors:

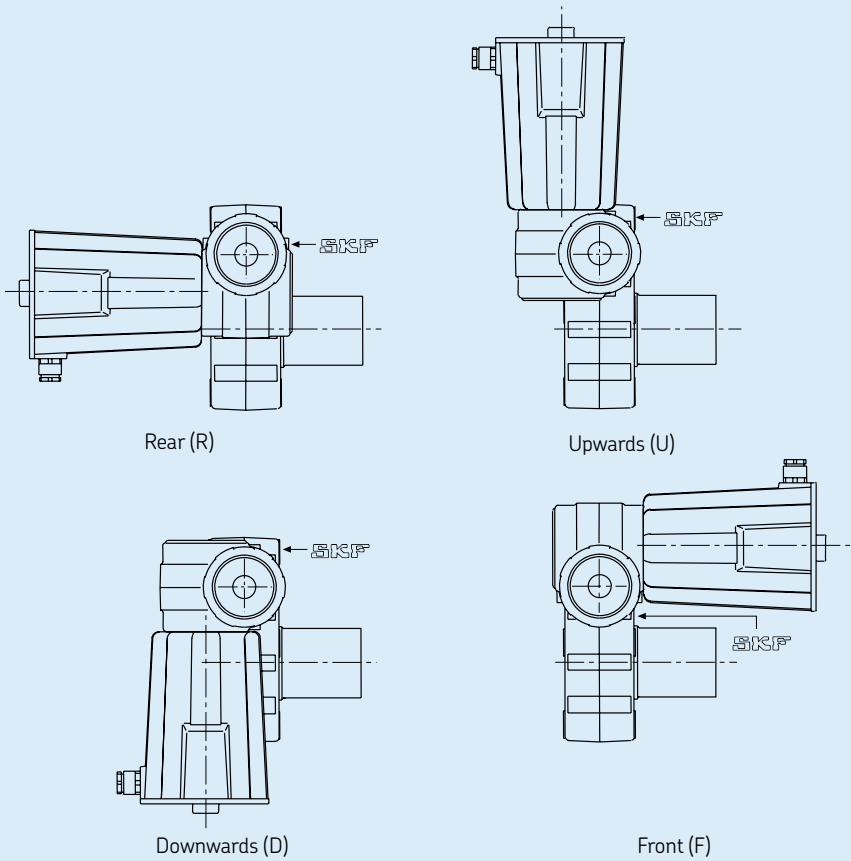
- No cable
- Encoder
- Motor without cover
- EMC filter
- Straight, 2,0 m
- Jack plug, 2,0 m

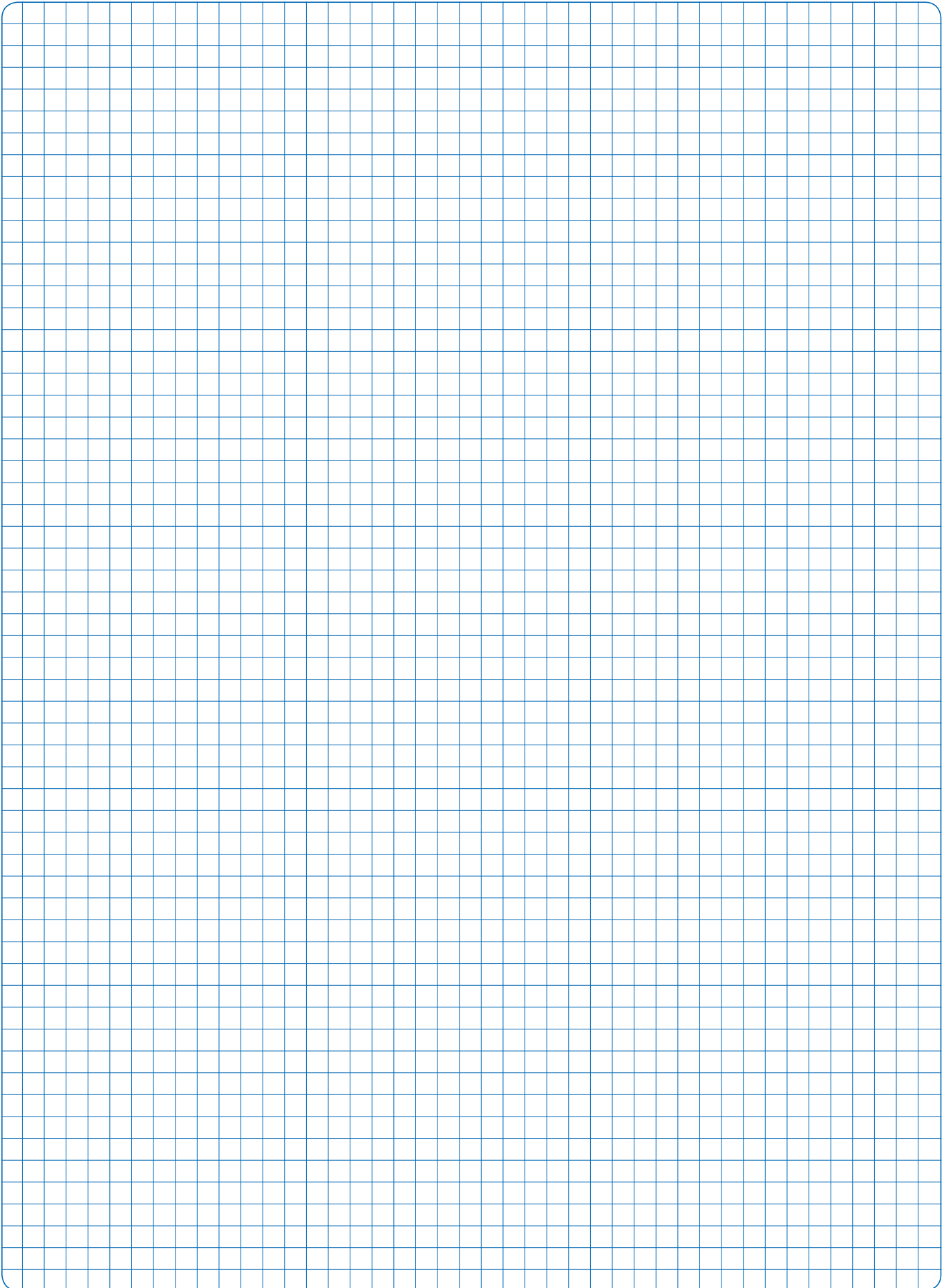
-
E2
N
M
T2
T2P

Motor assembly



Motor direction





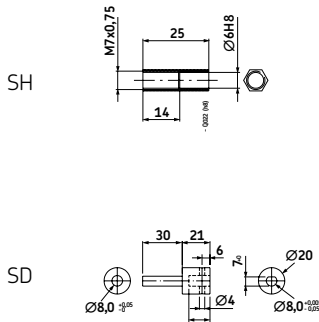
Rotary actuator CRAB 05

Benefits

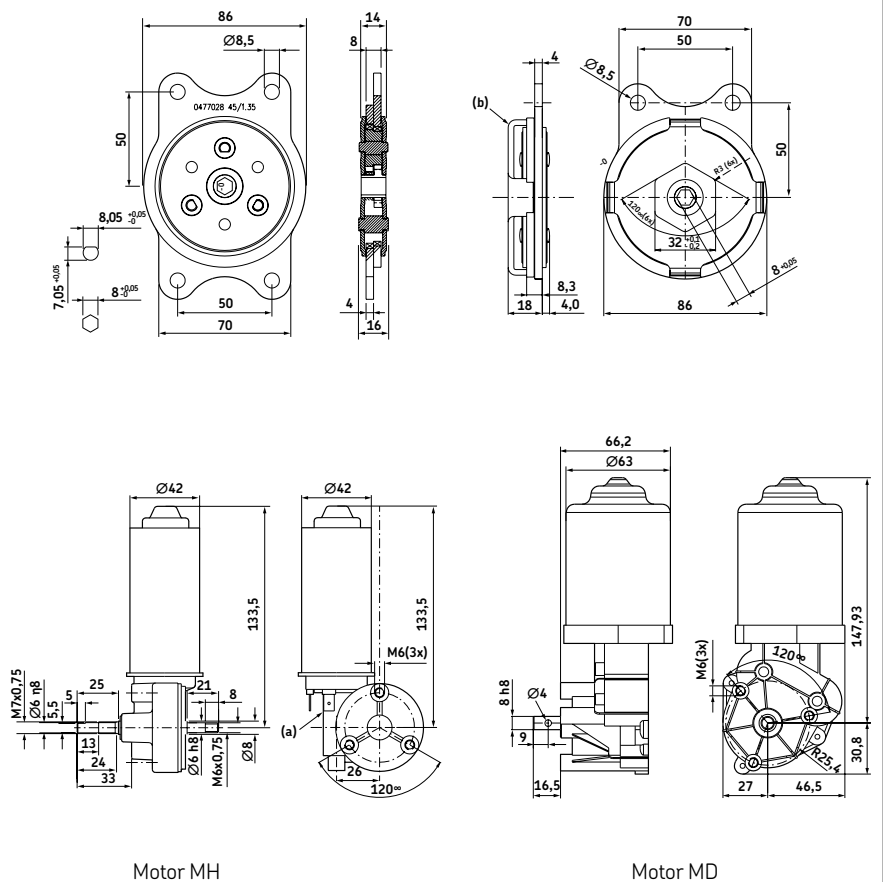
- Multiple output shafts
- Multiple motor options
- Small and compact



Connecting shafts



Dimensional drawing

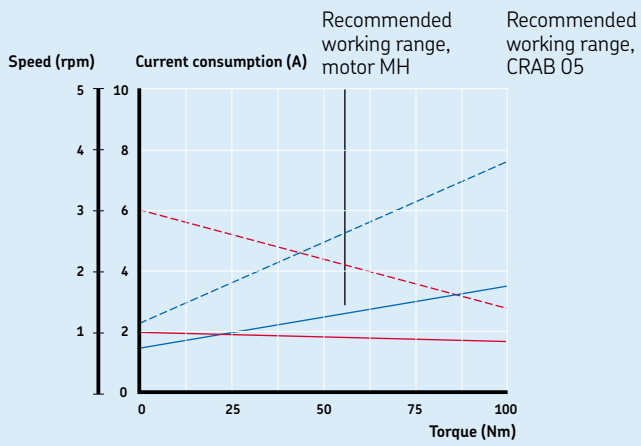


Legend:
 (a) = Blade terminal 6,3 × 0,8 DIN 46244
 (b) = Drive cross not fixed to gear. Hardened 45HRC

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 |
| | | 2×45° at 100 Nm 2×180° at 75 Nm |
| 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

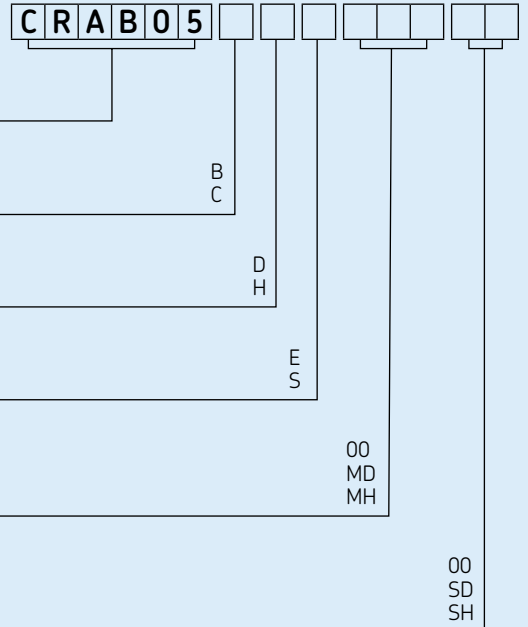


Fig. A

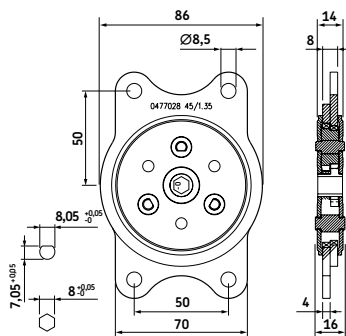
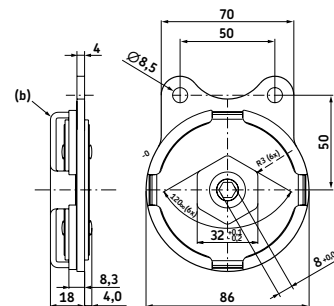


Fig. B





Control units

| | |
|----------------|-----|
| SCU | 302 |
| VCU | 306 |
| BCU | 310 |
| CB | 314 |
| MCU | 316 |
| LD | 318 |
| CAED ANR | 322 |
| CAED | 324 |
| CAEV | 326 |

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

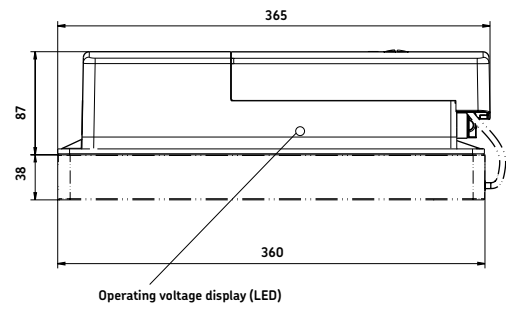


Suitable actuators, pillars and accessories

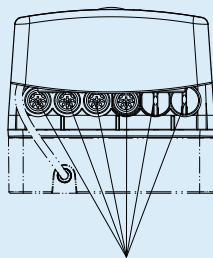
| | Linear actuators | | | | Pillars | | | Accessories | | | | |
|-------|---------------------|------------------|------------------|----------------|----------------------------|--------|--------|-------------|--------|-------|-----|-----|
| | Magdrive MD22, MD23 | RU20, RU21, RU22 | RU23, RU24, RU25 | MAX 10, MAX 30 | ECO4F, ECO5F, ECO8F, ECO9F | THG 10 | TLG 10 | TLT 10 | TFG 10 | EHA 3 | STJ | STE |
| SCU 1 | • | • | • | • | • | • | • | • | • | • | • | • |
| SCU 5 | • | • | • | • | • | • | • | • | • | • | • | • |
| SCU 9 | • | • | • | • | • | • | • | • | • | • | • | • |

 Hand switch
 Foot switch
 Desk switch

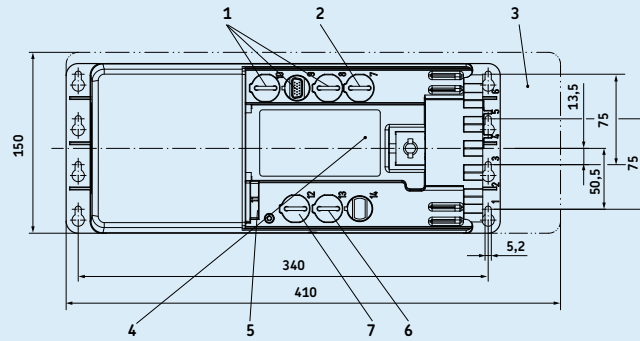
Dimensional drawing



Connecting diagram



Up to 6 connections with DIN8 plug



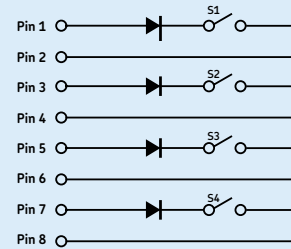
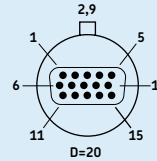
1. Three connections for HD15 operating devices
2. HD15 limit switch connection
3. Additional space for mounting
4. Data plate software
5. Mains connection
6. Communication interface (optional)
7. D-Sub 9 battery connection (optional)

Technical data

| | Unit | SCU 1 | SCU 5 | SCU 9 |
|-------------------------------|--------|--------------------------|--------------------------|--------------------------|
| Motor ports (DIN8) | # | 6 | 3 or 6 | 3 or 6 |
| Operating device ports (HD15) | # | 3 | 3 | 3 |
| Battery ports (DSub9) | # | 1 | 1 | 1 |
| Limit switch ports (HD15) | # | 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 | ×4 | ×4 | ×4 |
| 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) |
|---|------------|---|
| 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

| | 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

| | | S | C | U | | | - | 0 | 0 | 3 | | | | - | 0 | 0 | 0 | 0 | |
|---|--|---|---|---|--|--|---|---|---|---|--|--|--|---|---|---|---|---|--|
| 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 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Number of channels: | | | | | | | | | | | | | | | | | | | |
| 3 channels | | | | | | | | | | | | | | | | | | | |
| 6 channels | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Battery: | | | | | | | | | | | | | | | | | | | |
| None (only for SCU16) | | | | | | | | | | | | | | | | | | | |
| Prepared for mounting of battery | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Transformer: | | | | | | | | | | | | | | | | | | | |
| None (only for SCU16) | | | | | | | | | | | | | | | | | | | |
| Standard (AC version) | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Interface: | | | | | | | | | | | | | | | | | | | |
| Without RS232 | | | | | | | | | | | | | | | | | | | |
| With RS232 (only for 6-channel version) | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

EACH SCU NEEDS A SCP

| | | S | C | P | | | - | | | | | | | | - | | 0 | 0 | 0 | |
|---|--------|------------|---|---|--|--|---|--|--|--|--|--|--|--|---|--|---|---|---|--|
| 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) | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Actuators: | | | | | | | | | | | | | | | | | | | | |
| A ECO4F, ECO5F | 3,7 A | Actuator 1 | | | | | | | | | | | | | | | | | | |
| C TLT 10* | 4,7 A | Actuator 2 | | | | | | | | | | | | | | | | | | |
| E TFG10, ECO8F, ECO9F | 5,7 A | Actuator 3 | | | | | | | | | | | | | | | | | | |
| M MAX10, MAX30, TLG10, THG10 | 6,7 A | Actuator 4 | | | | | | | | | | | | | | | | | | |
| R RU20, RU21, RU22 | 8,5 A | Actuator 5 | | | | | | | | | | | | | | | | | | |
| D MD22, MD23 | 8,5 A | Actuator 6 | | | | | | | | | | | | | | | | | | |
| U RU23, RU24, RU25 | 11,7 A | | | | | | | | | | | | | | | | | | | |
| * for SCUx3: insert zero | | | | | | | | | | | | | | | | | | | | |
| Softstart: | | | | | | | | | | | | | | | | | | | | |
| Hard, start 0 pulses, stop 0 pulses | | | | | | | | | | | | | | | | | | | | |
| Medium, start 12 pulses, stop 6 pulses | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |

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.

* TLT is a 2-motor actuator. If simultaneous run is needed, SCP21-CC... is recommended

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

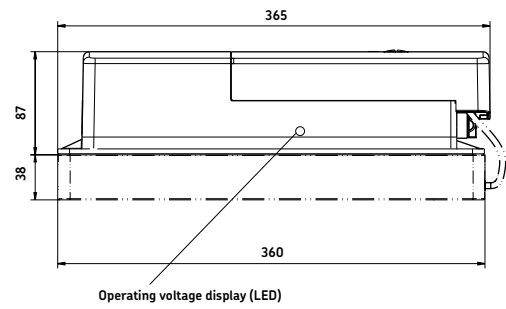


Suitable actuators, pillars and accessories

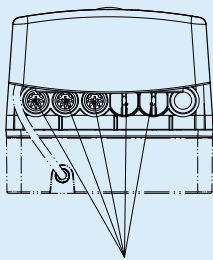
| | Linear actuators | | | | | Pillars | | | | Accessories | | | | | |
|-------|--------------------|----------|---------------------|------------------|------------------|----------------|--------|--------|--------|-------------|--------|--------|-------|-----|-----|
| | CALA 36A (24 V DC) | CARE 33A | Magdrive MD22, MD23 | RU20, RU21, RU22 | RU23, RU24, RU25 | MAX 10, MAX 30 | ECOMAG | THG 10 | TLG 10 | TLT 10 | TFG 10 | TXG 10 | EHA 3 | STJ | STE |
| VCU 5 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| VCU 8 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| VCU 9 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |

Hand switch
 Foot switch
 Desk switch

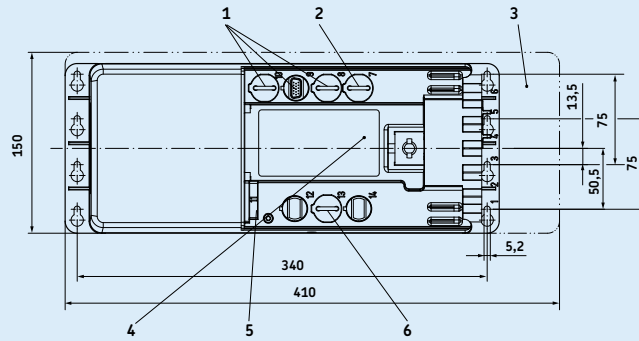
Dimensional drawing



Connecting diagram



Up to 5 connections with DIN8 plug



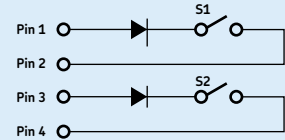
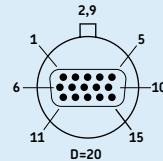
1. Two connections for HD15 operating devices
2. HD15 limit switch connection
3. Additional space for mounting
4. Data plate software
5. Mains connection
6. D-Sub 9 battery connection (optional)

Technical data

| | Unit | VCU 5 | VCU 8 | VCU 9 |
|-------------------------------|--------|--------------------------|--------------------------|--------------------------|
| Motor ports (DIN8) | # | 3 or 5 | 3 or 5 | 3 or 5 |
| Operating device ports (HD15) | # | 2 | 2 | 2 |
| Battery ports (DSub9) | # | 1 | 1 | 1 |
| Limit switch ports (HD15) | # | 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 | ×4 | ×4 | ×4 |
| 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

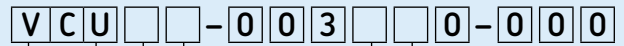
| Function | Pin | Wire color (ZKA-160627-2500) | Connecting diagram |
|------------------------|-----------------|---|--------------------|
| 24 V DC (common) | 1,3,5,7,9 | white/yellow, white/green, grey-pink, black, blue | |
| Switch 1 | 2 | brown-green | |
| Switch 2 | 4 | red-blue | |
| NC | 6,8,10,11,12,14 | violet, red, pink, grey, yellow, brown | |
| 20-40 V DC, max. 50 mA | 13 | green | |
| GND | 15 | white | |



Accessories

| | 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

5
8
9

Number of channels:

- 3 channels
- 5 channels

3
5

Option 1:

- No option (only VCUx3)
- Prepared for mounting of battery

1
2

Transformer:

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

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), ECO2, ECO3, ECO4, ECO5 | 3,7 A | Actuator 1 | - |
| C | CARE 33A, TLT10*, TXG10 (EXG) | 4,7 A | Actuator 2 | - |
| E | TFG, ECO6, ECO7, ECO8, ECO9 | 5,7 A | Actuator 3 | - |
| M | MAX10, MAX30, TLG10, THG10 | 6,7 A | Actuator 4 | -* |
| R | RU20, RU21, RU22 | 8,5 A | Actuator 5 | -* |
| D | MD22, MD23 | 8,5 A | | |
| U | RU23, RU24, RU25 | 11,7 A | | |

* for VCUx3: insert zero

Softstart:

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

0
3

* TLT is a 2-motor actuator. If simultaneous run is needed, VCP21-CC... is recommended

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

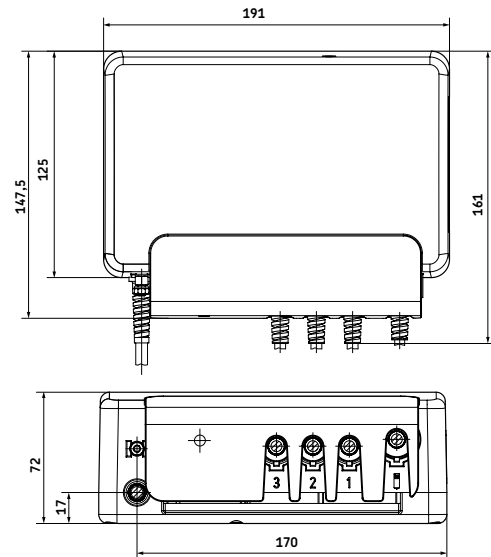


Suitable actuators, pillars and accessories

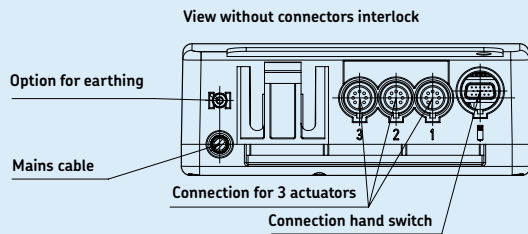
| | Linear actuators | | | | | Pillars | | | | | Accessories | | | |
|-------|--------------------|----------|---------------------|------------------|----------------|---------|--------|--------|--------|--------|-------------|-------|-----|-----|
| | CALA 36A (24 V DC) | CARE 33A | Magdrive MD22, MD23 | RU20, RU21, RU22 | MAX 10, MAX 30 | ECOMAG | THG 10 | TLG 10 | TLT 10 | TFG 10 | TXG 10 | EHA 3 | STJ | STE |
| BCU 5 | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| BCU 8 | • | • | • | • | • | • | • | • | • | • | • | • | • | • |

 Hand switch
 Foot switch
 Desk switch

Dimensional drawing



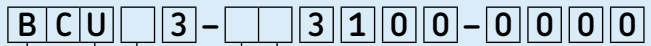
Connecting diagram



Technical data

| | Unit | BCU 5 | BCU 8 |
|-------------------------------|--------|--------------------------|--------------------------|
| Motor ports (DIN8) | # | 3 | 3 |
| Operating device ports (HD15) | # | 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



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



Type

BCP parameterization

Functionality:

All channels individually
Channel 2+1
All channels simultaneously
Trendelenburg

11
21
30
T1

Motors:

A CALA 36A (24V DC), ECO2, ECO3, ECO4, ECO5
C CARE 33A, TLT10*, TXG10 (EXG)
E TFG, ECO6, ECO8, ECO9
M MAX10, MAX30, THG10, TLG10
R RU20, RU21, RU22
D MD22, MD23

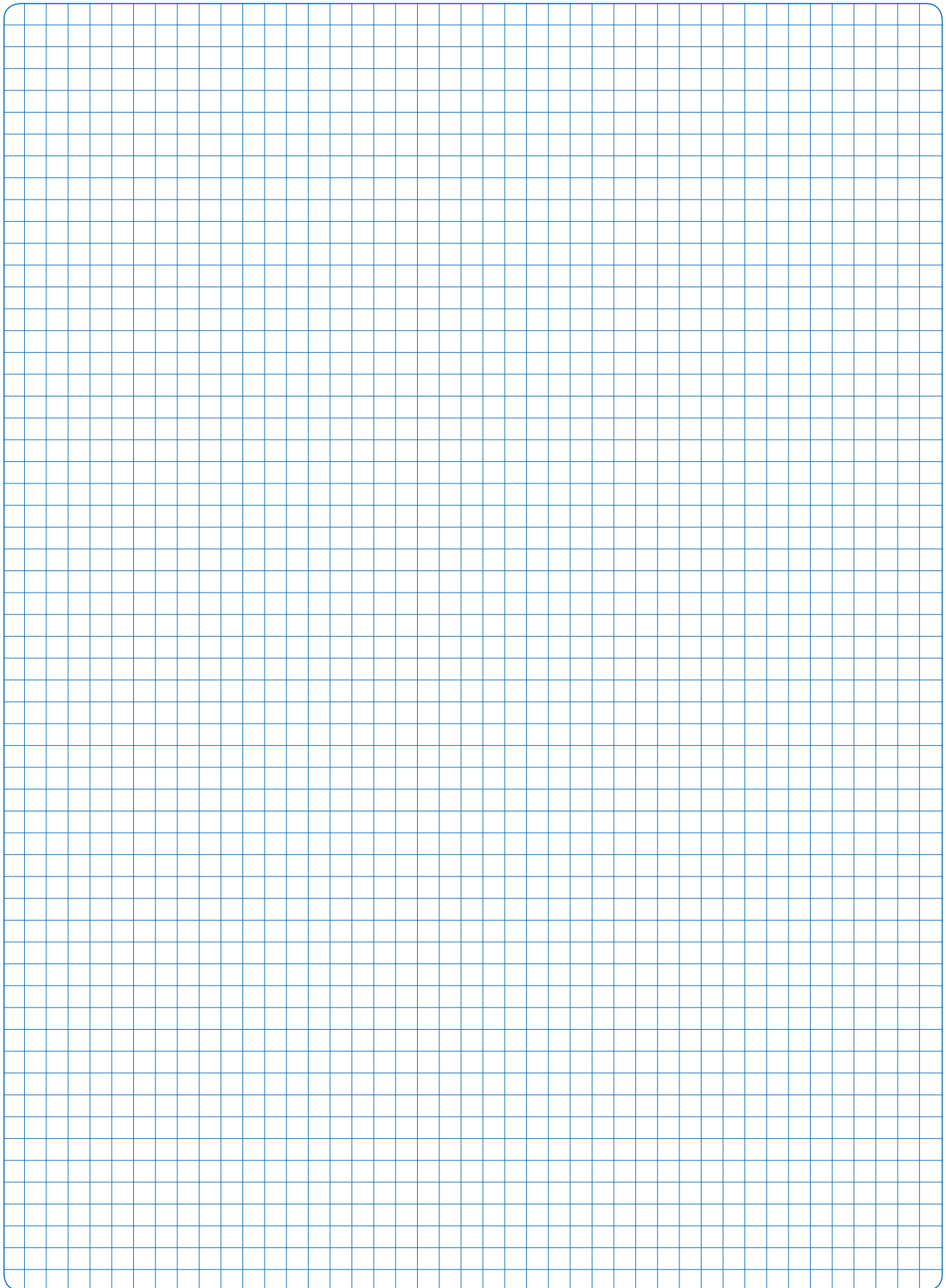
3,7 A Actuator 1 -
4,7 A Actuator 2 -
5,7 A Actuator 3 -
6,7 A
8,5 A
8,5 A

Soft start/stop:

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

0
3

* TLT is a 2-motor actuator. If simultaneous run is needed, BCP21-CC... is recommended



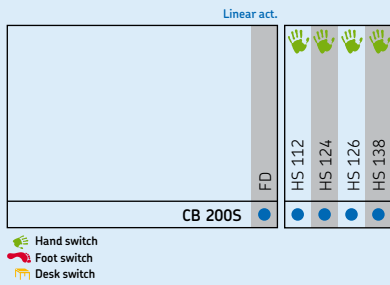
Control unit CB

Benefits

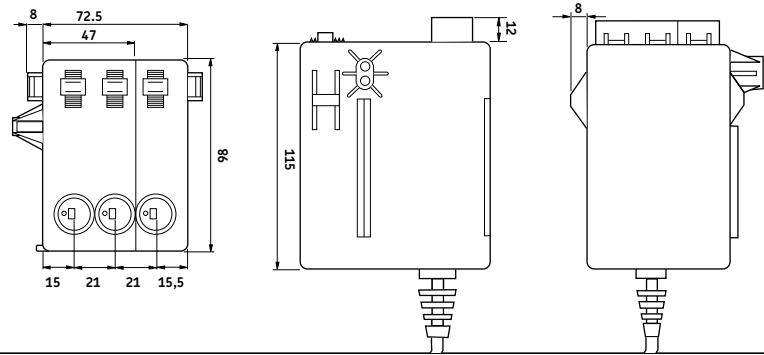
- Compact design
- Controls up to 3 actuators



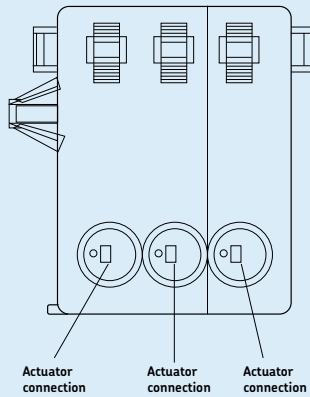
Suitable actuators and accessories



Dimensional drawing



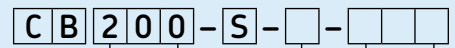
Connecting diagram



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 | 1 |
| 2 | 2 |
| 3 | 3 |

Voltage (V AC):

| | |
|---------|-----|
| 100 | 100 |
| 110-115 | 120 |
| 230 | 230 |
| 240 | 240 |

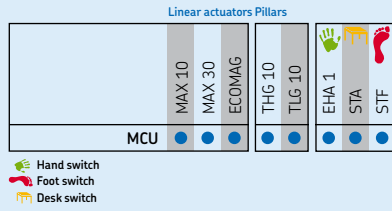
Control unit MCU

Benefits

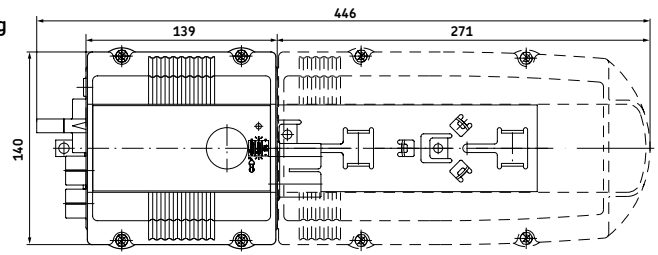
- Suitable for mobile applications
- LED indication for battery charge level
- Audible signal for low charge condition



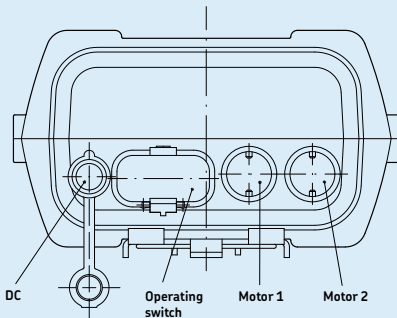
Suitable actuators, pillars and accessories



Dimensional drawing



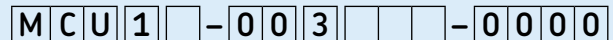
Connecting diagram



Technical data

| | Unit | MCU |
|--------------------------------|--------|--|
| Motor ports (Jack) | # | 2 |
| Operating device ports (DSub9) | # | 1 |
| Battery ports | # | 1 |
| Limit switch ports | # | 0 |
| Single fault safety | yes/no | no |
| Encoder processing | yes/no | no |
| Input voltage | V DC | 28 |
| Frequency | Hz | N/A |
| Input current (max) | A | 0,5 |
| Standby power | W | N/A |
| Output voltage | V DC | 24 |
| Output current (max) | A | 9,5 |
| 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 |

Ordering key



Type

Number of channels:

| | |
|------------|---|
| 1 channel | 1 |
| 2 channels | 2 |

Option:

| | |
|---|-----|
| Current cut-off 6 A | 000 |
| Current cut-off 9 A | EXP |
| Current cut-off 6 A, electric emergency lowering of channel 1 | EYE |
| Current cut-off 9 A, electric emergency lowering of channel 1 | 2AT |
| Individual current cut-off 6 A (only for 2-channel version) | EYR |

Accessories

| | Plug | Designation | Order N° |
|--|------|-----------------|-----------|
| Battery unit 4,5 Ah | | ZBA-142211 | M/0126153 |
| 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/0126159 |
| Tool for connectors (Jack/D-Sub/Mains) | | ZWS-140375 | M/0125322 |

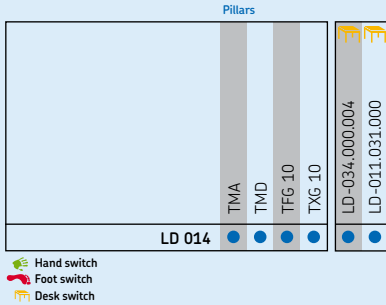
Control unit LD-014

Benefits

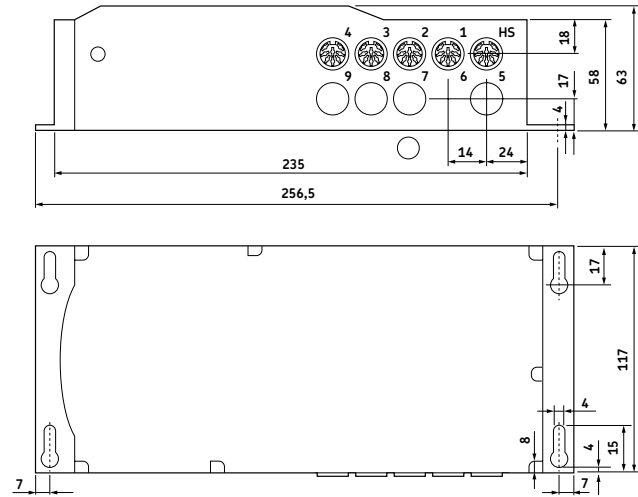
- Synchronized movement of 4 actuators possible
- Drive comfort
- Intelligent System Protection (ISP) - anti-pinching



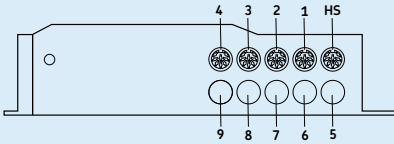
Suitable pillars and accessories



Dimensional drawing



Connecting diagram



1. Connection to actuator 1
2. Connection to actuator 2
3. Connection to actuator 3
4. Connection to actuator 4
- HS. Connection to desk switch

Technical data

| | Unit | LD-014 |
|-------------------------------|----------------------|--------------------|
| Motor ports (DIN8) | # | 4 |
| Operating device ports (DIN7) | # | 1 |
| Battery ports | # | 0 |
| Limit switch ports (FCC) | # | 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 A 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 | TMA | TMD | TFG | TXG |
|---------------|----------------|----------------|----------------|----------------|
| 4 actuators | LD-014.208.000 | LD-014.208.200 | LD-014.177.100 | LD-014.178.000 |
| 2+2 actuators | LD-014.176.200 | LD-014.176.100 | LD-014.176.600 | |
| 120 V AC | TMA | TMD | TFG | TXG |
| 4 actuators | LD-014.208.100 | LD-014.208.300 | LD-014.177.200 | LD-014.178.500 |
| 2+2 actuators | LD-014.176.400 | LD-014.176.300 | LD-014.176.700 | |

Control unit LD-015

Benefits

- Synchronized movement of 3 actuators possible
- Drive comfort
- Intelligent System Protection (IPS) - anti-pinch

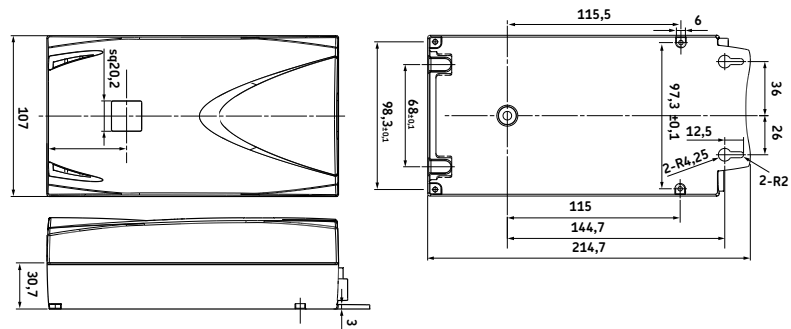


Suitable pillars and accessories

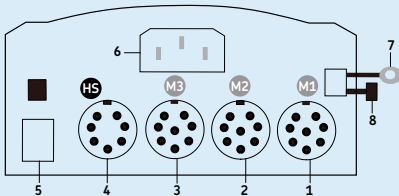
| Pillars | |
|---------|----------------|
| TMA | LD-034.000.004 |
| TMD | LD-011.031.000 |
| TFG 10 | |
| TXG 10 | |
| LD 015 | |

-  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 (DIN8) | # | 3 | 2 |
| Operating device ports (DIN7) | # | 1 | 1 |
| Battery ports | # | 0 | 0 |
| Limit switch ports (FCC) | # | 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 | TMA | TMD | TFG | TXG |
| 1 actuator | LD-015.342.000 | LD-015.343.000 | LD-015.357.100 | |
| 2 actuators | LD-015.342.200 | LD-015.343.200 | LD-015.357.000 | LD-015.255.000 |
| 3 actuators | LD-015.342.400 | LD-015.343.400 | LD-015.357.400 | LD-015.258.000 |
| 120 V AC | TMA | TMD | TFG | TXG |
| 1 actuator | LD-015.342.100 | LD-015.343.100 | LD-015.357.300 | |
| 2 actuators | LD-015.342.300 | LD-015.343.300 | LD-015.357.200 | LD-015.255.500 |
| 3 actuators | LD-015.342.500 | LD-015.343.500 | LD-015.357.500 | 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

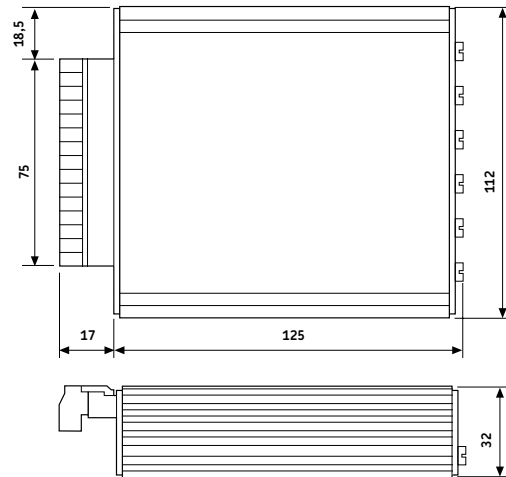


Suitable actuators

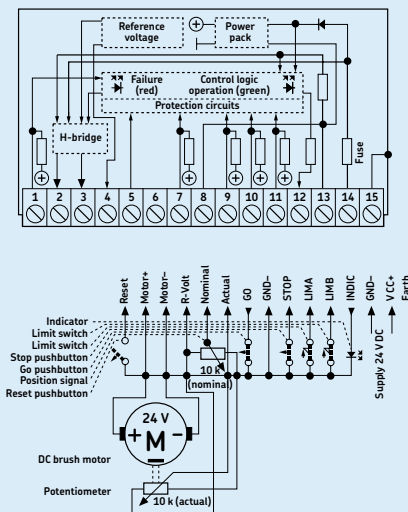
| | | Linear actuators | | | |
|------------------|--|---------------------|---|---|--|
| | | CAP 43 D24CW, C24CW | | | |
| | | CAP 43 D24C, C24C | | | |
| | | CAP 32 D24CW | | | |
| | | CAP 32 D24C | | | |
| CAED ANR 5-24-PO | | ● | ● | | |
| CAED ANR 9-24-PO | | ● | | ● | |

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

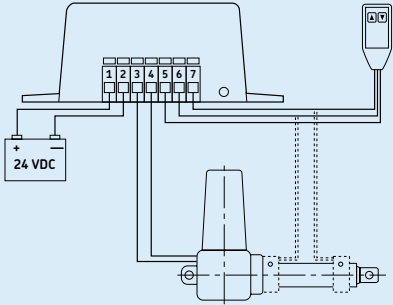
- Compact ON/OFF control unit
- Supply voltage 24 V DC
- Output voltage 24 V DC
- Electronic overload protection
- LED indication for overload cut out
- Easy installation via front screw terminal



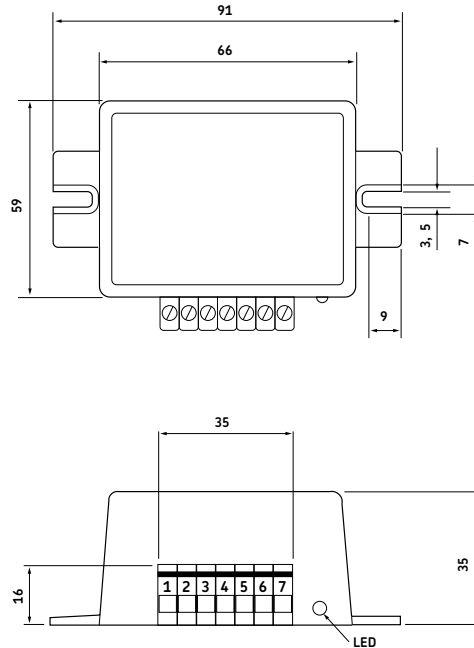
Suitable actuators and accessories

| | 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



5

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 | no | no | no |
| 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 |

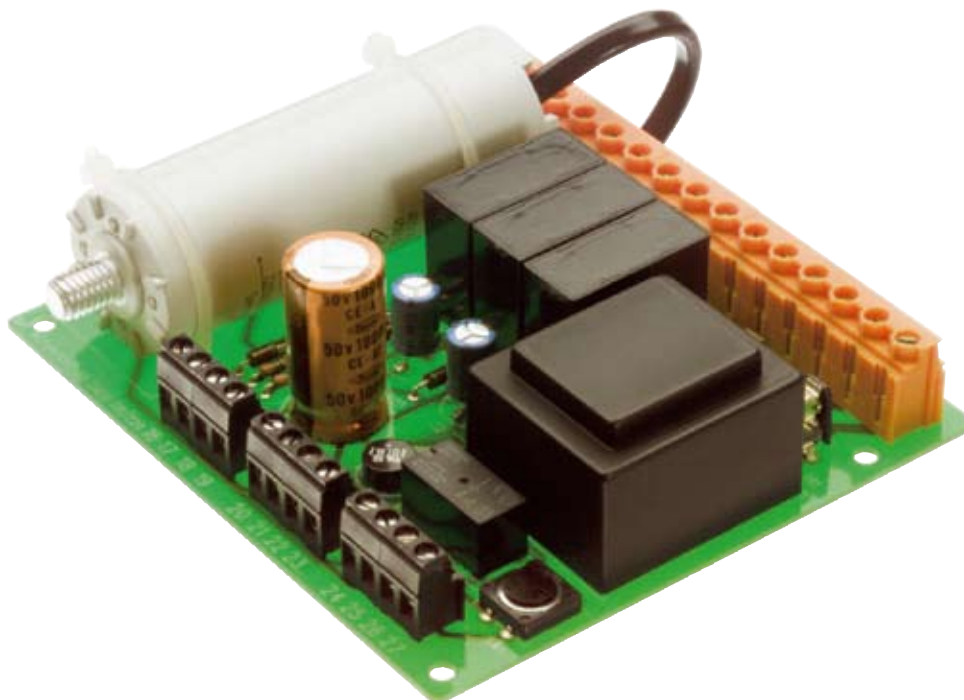
Product ordering keys

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

Control unit CAEV

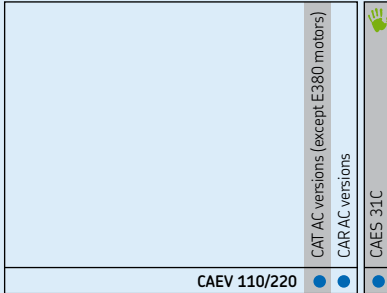
Benefits

- 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



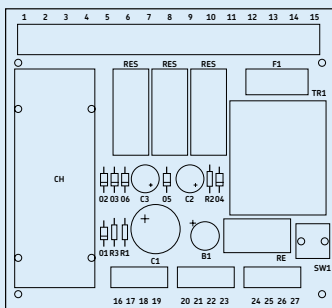
Suitable actuators and accessories

Linear actuators



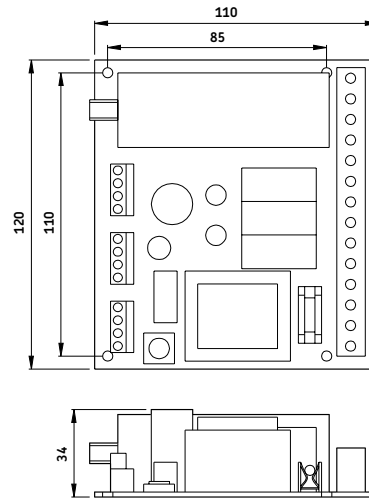
- Hand switch
- Foot switch
- Desk switch

Connecting diagram*



* See next page for details

Dimensional drawing



5

Technical data

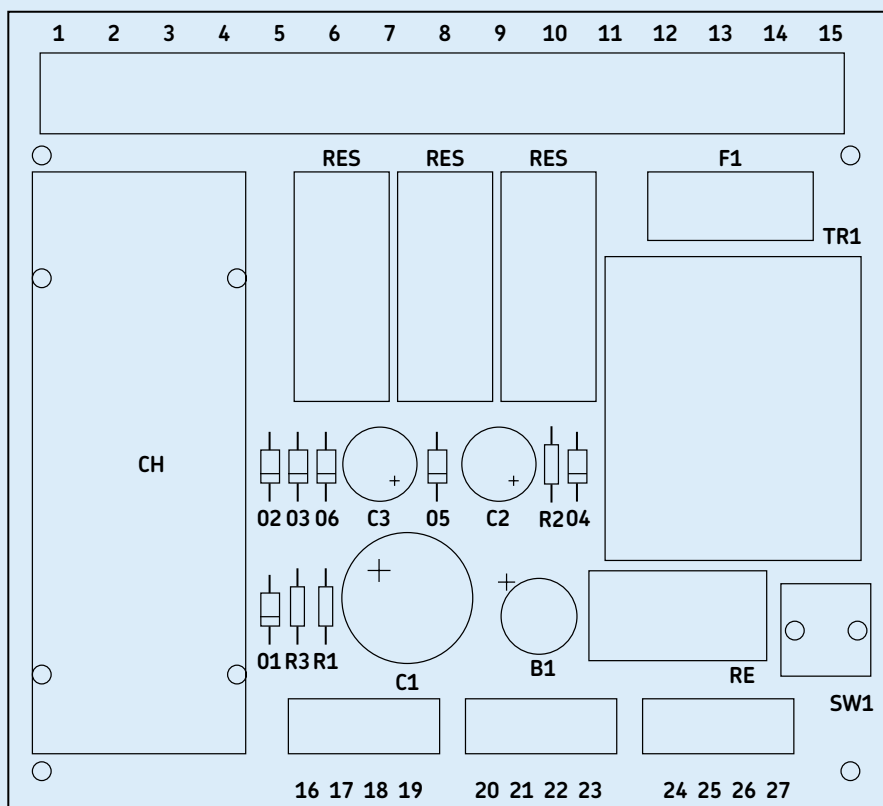
| | Unit | CAEV 110/220 |
|--------------------------|--------|--------------|
| Motor ports | # | 1 |
| Operating device ports | # | 1 |
| Battery ports | # | 0 |
| Limit switch ports | # | 1 |
| Single fault safety | yes/no | no |
| Encoder processing | yes/no | no |
| Input voltage | V AC | 120 or 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

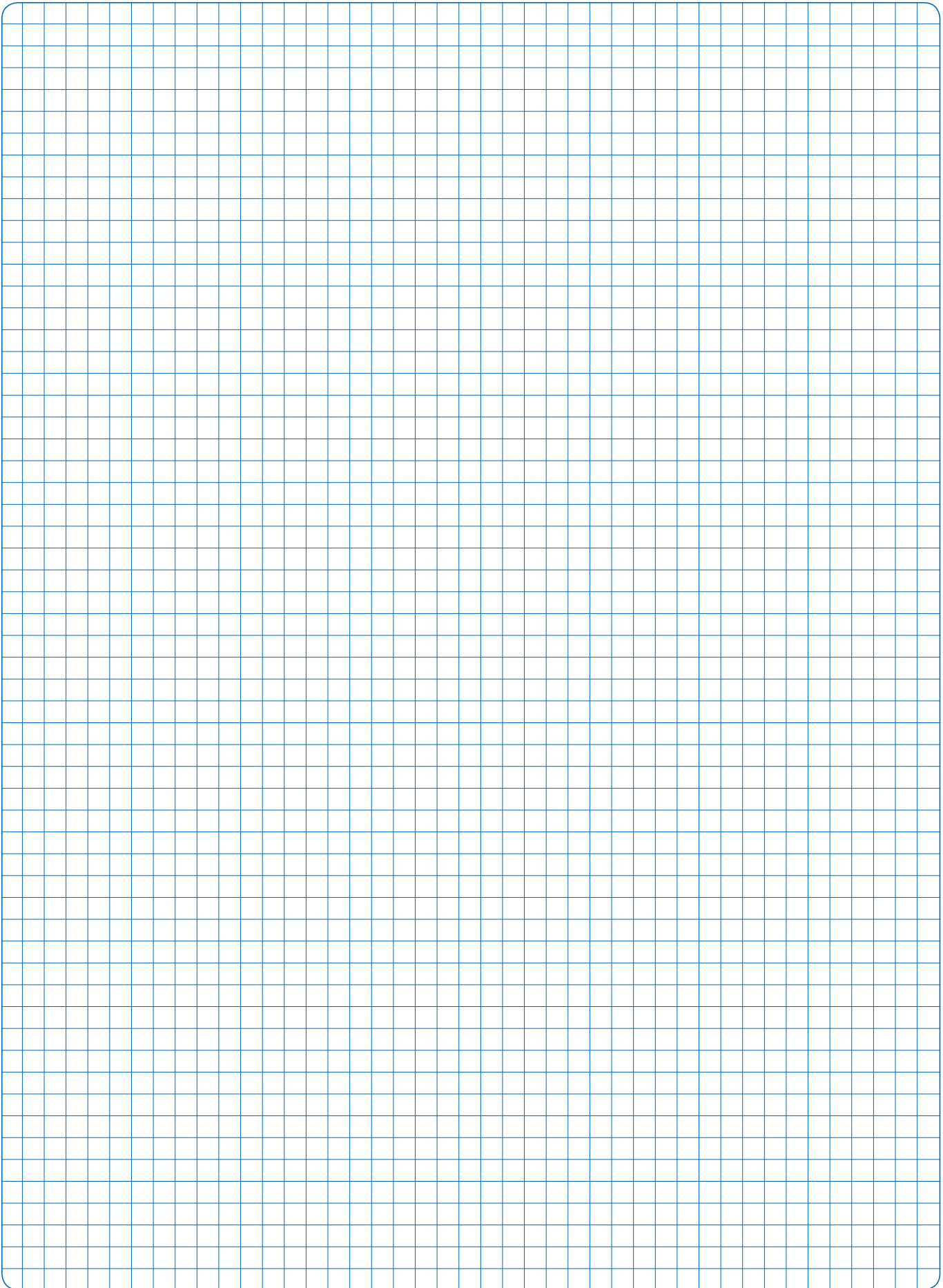
Product ordering key

CAEV 110/220

Connecting diagram



| Terminal No. | Connections at 230 V AC | Connections at 120 V AC |
|--------------|---|---|
| 1 | net supply, phase | net supply, phase, short-circuit to terminal 3 |
| 2 | net supply, phase, including fuse on p.c. board | net supply, phase, including fuse on p.c. board |
| 3 | short-circuit to terminal 4 | short-circuit to terminal 1 |
| 4 | short-circuit to terminal 3 | short-circuit to terminal 5 |
| 5 | net supply, zero | net supply, zero, short-circuit to terminal 4 |
| 6 | ground | ground |
| 7 | motor: green/yellow wire | motor: green/yellow wire |
| 8 | motor: braun wire | motor: braun wire |
| 9 | motor: black wire (only motor with brake) | motor: black wire (only motor with brake) |
| 10 | motor: blue wire | motor: blue wire |
| 11 | motor: white wire | motor: white wire |
| 12 | start capacitor, replace if needed, see table 2 | start capacitor, install correct capacitor, see table 2 |
| 13 | start capacitor | start capacitor |
| 14 | motor: red wire, thermal switch, see note 1 | motor: red wire, thermal switch, see note 1 |
| 15 | motor: red wire, thermal switch, see note 1 | motor: red wire, thermal switch, see note 1 |
| 16 | limit switch, outer, see note 2 and 4 | limit switch, outer, see note 2 and 4 |
| 17 | limit switch, outer, see note 2 and 4 | limit switch, outer, see note 2 and 4 |
| 18 | limit switch, inner, see note 2 and 4 | limit switch, inner, see note 2 and 4 |
| 19 | limit switch, inner, see note 2 and 4 | limit switch, inner, see note 2 and 4 |
| 20 | op. device, outwards movement, see note 3 and 4 | op. device, outwards movement, see note 3 and 4 |
| 21 | op. device, outwards movement, see note 3 and 4 | op. device, outwards movement, see note 3 and 4 |
| 22 | op. device, inwards movement, see note 3 and 4 | op. device, inwards movement, see note 3 and 4 |
| 23 | op. device, inwards movement, see note 3 and 4 | op. device, inwards movement, see note 3 and 4 |
| 24 | no connection | no connection |
| 25 | no connection | no connection |
| 26 | external reset button, if wanted | external reset button, if wanted |
| 27 | external reset button, if wanted | external reset button, if wanted |





Hand, foot, and desk switches

Hand switches

| | |
|-------------|-----|
| EHA 1..... | 332 |
| EHA 3 | 334 |
| EHE 1..... | 336 |
| HS | 338 |
| PHC | 340 |
| CAES | 342 |

Foot switches

| | |
|-----------|-----|
| ST | 344 |
| PFP | 346 |

Desk switches

| | |
|-----------|-----|
| ST | 348 |
| LD | 350 |
| PAM | 352 |

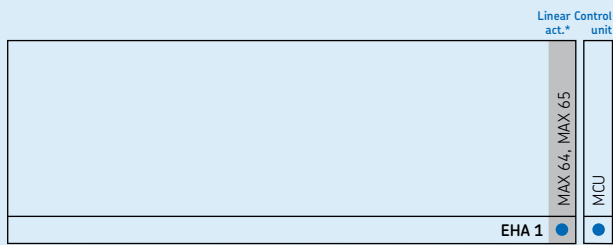
Hand switch EHA 1

Benefits

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



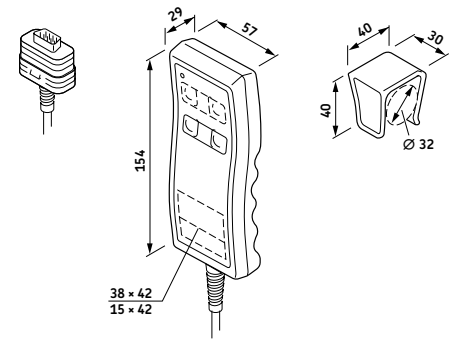
Suitable pillars, actuators and control units



* With integrated control units

Dimensional drawing

D-Sub 9



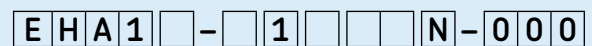
Technical data

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

Accessories

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

Ordering key



Type

Number of channels:

| | |
|------------|---|
| 1 channel | 1 |
| 2 channels | 2 |

Hook:

| | |
|--------------------------|---|
| Yes mounted with hook | 1 |
| Hook supplied separately | 2 |

Cable / connecting plug:

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

Symbols:

| | | |
|---------------------------|--|----|
| None | | 00 |
| 1 channel: Arrow up/down | | 10 |
| Head | | 11 |
| 2 channels: Arrow up/down | | 20 |
| Head/foot | | 22 |
| Level/head | | 23 |

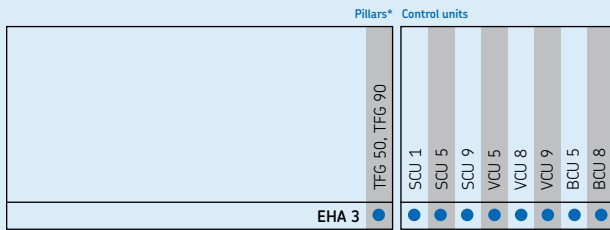
Hand switch EHA 3

Benefits

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

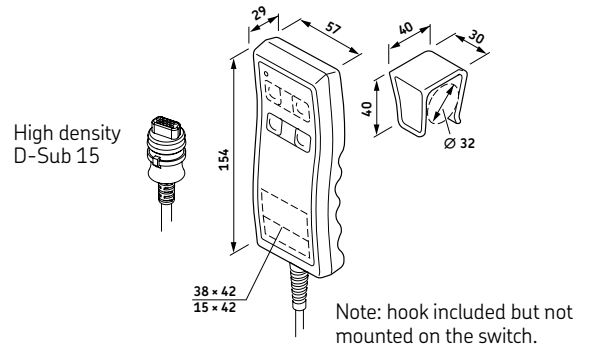


Suitable pillars and control units



* With integrated control units

Dimensional drawing



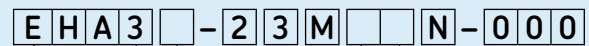
Technical data

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

Accessories

| | 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 shown in italics are only available on demand. Contact SKF for more information on minimum quantities and additional costs.

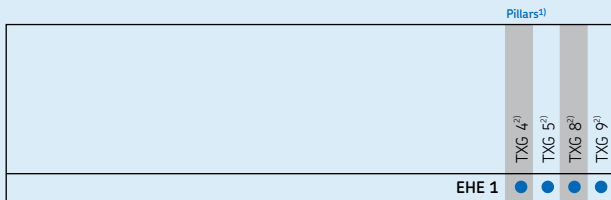
Hand switch EHE 1

Benefits

- Easy and precise
- Ergonomic design



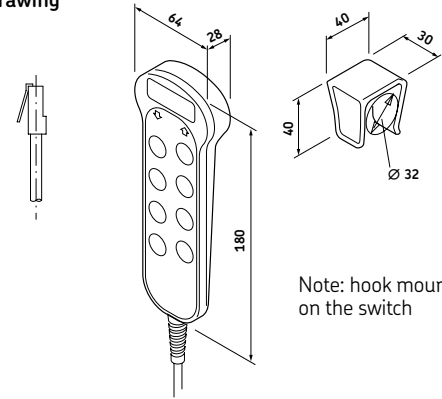
Suitable pillars and control unit



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

Dimensional drawing

FCC plug



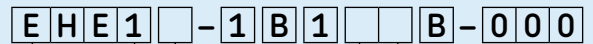
Technical data

| | Unit | EHE 1 |
|-------------------------|---------|-------|
| Max. operating channels | n° | 2 |
| Operating power | V DC/mA | 38/50 |
| Type of protection | IP | ×7 |
| Color | – | Grey |

Accessories

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

Ordering key



Type

Number of channels:

| | |
|------------|---|
| 1 channel | 1 |
| 2 channels | 2 |

Symbols:

| | | |
|-------------|---------------|----|
| 1 channel: | Arrow up/down | 10 |
| 2 channels: | Arrow up/down | 20 |

Hand switch HS

Benefits

- Robust ergonomic design
- Tactile buttons, clearly marked



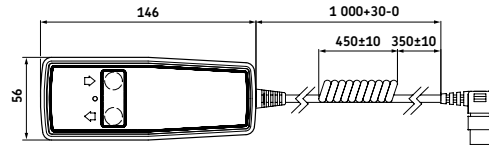
Suitable control unit

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

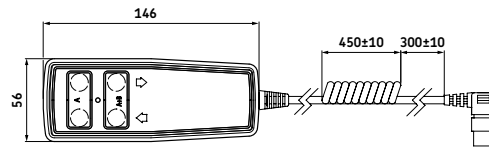
Technical data

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

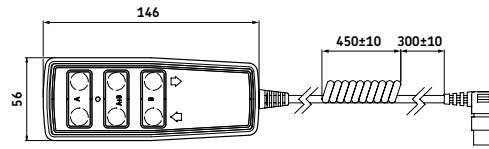
Dimensional drawing



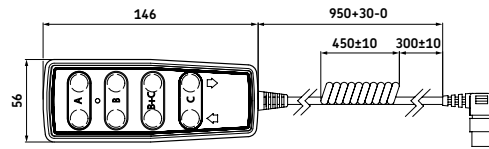
HS 112



HS 124



HS 126



HS 138

Product ordering keys

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

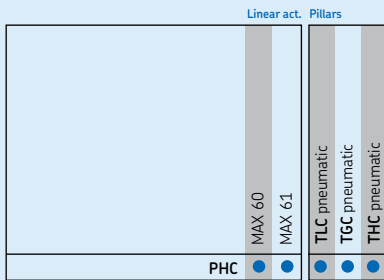
Pneumatic hand switch PHC

Benefits

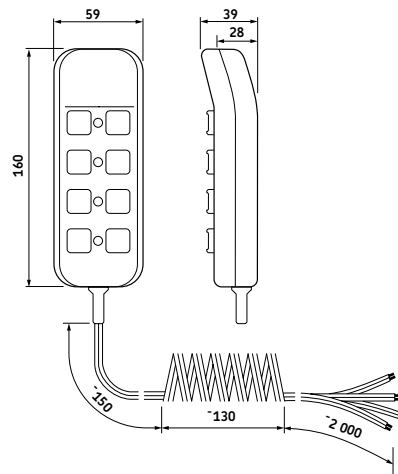
- Operation with air (no electricity)
- Ergonomic design



Suitable linear actuators and 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)

* Other symbols / with hook on demand

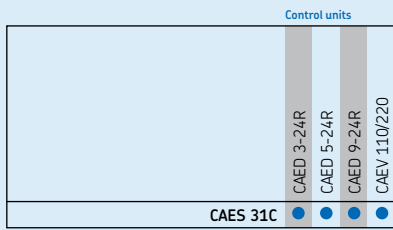
Hand switch CAES

Benefits

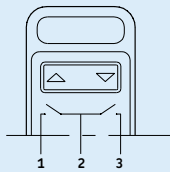
- Robust ergonomic design
- Membrane keyboard
- Clearly marked keys



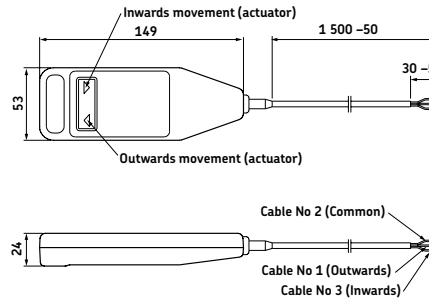
Suitable control units



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

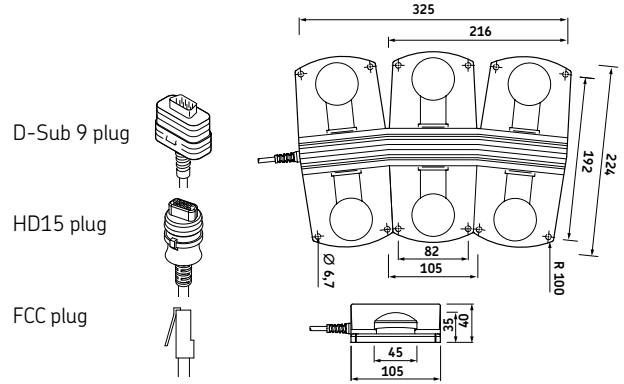


Suitable pillars, actuators and control units

| | | Pillars ¹⁾ | | Linear act. ²⁾ | Control units | | | | | | | | |
|-----|---|-----------------------|---------------------------|---------------------------|---------------|-------|-------|-------|-------|-------|-------|-------|-----|
| | | TFG 50/90 | TXG 4/5/8/9 ²⁾ | MAX 64, MAX 65 | SCU 1 | SCU 5 | SCU 6 | 5 NDA | 8 NDA | 6 NDA | 5 NCU | BCU 8 | MCU |
| STJ | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| STF | | | ● | ● | | | | | | | | | ● |

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

| | 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



Type

Product group:
 Classic, D-Sub9 or FCC plug
 Standard, 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:

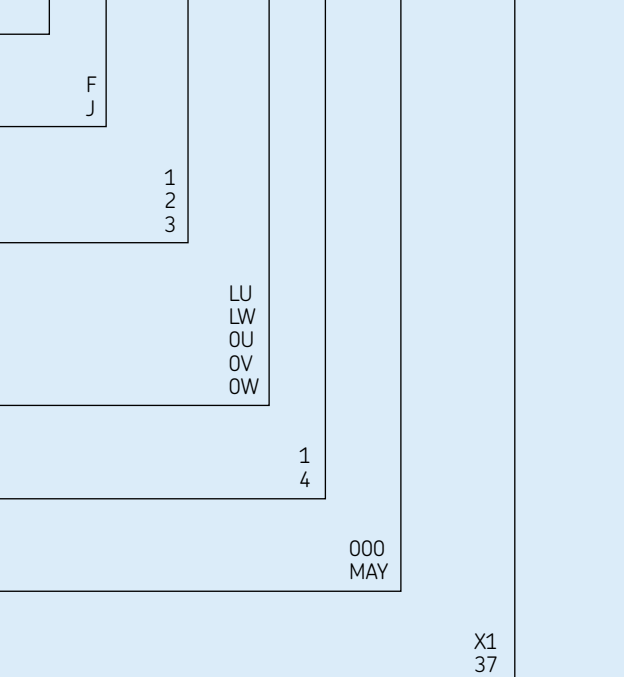
Anthracite
 Blue

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



Pneumatic foot switch PFP

Benefits

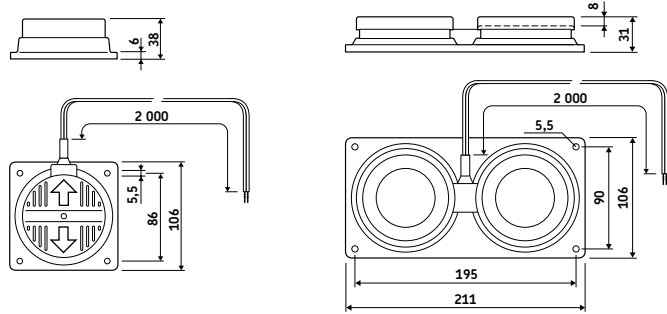
- Robust ergonomic design
- Operation with air (no electricity)



Suitable linear actuators and pillars

| | Linear act. | Pillars |
|-----|-------------|---------------|
| | MAX 60 | TLC pneumatic |
| | MAX 61 | T6C pneumatic |
| | | THC pneumatic |
| PFP | ● ● | ● ● ● |

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

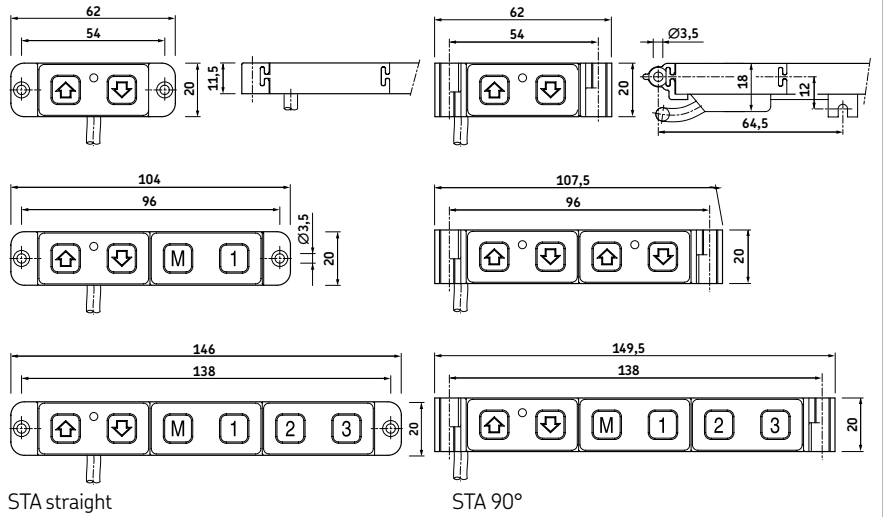


Suitable pillars, actuators and control units

| | Pillars ¹⁾ | Linear act. ²⁾ | Control units |
|-----|---|---------------------------|---|
| | TFG 50, TFG 90 TXG 4/5/8/9 ²⁾ | MAX 64, MAX 65 | SCU 1 SCU 5 SCU 9 VCU 5 VCU 8 VCU 9 BCU 5 BCU 8 MCU |
| STA | ● | ● | |
| STE | ● | | ● |

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

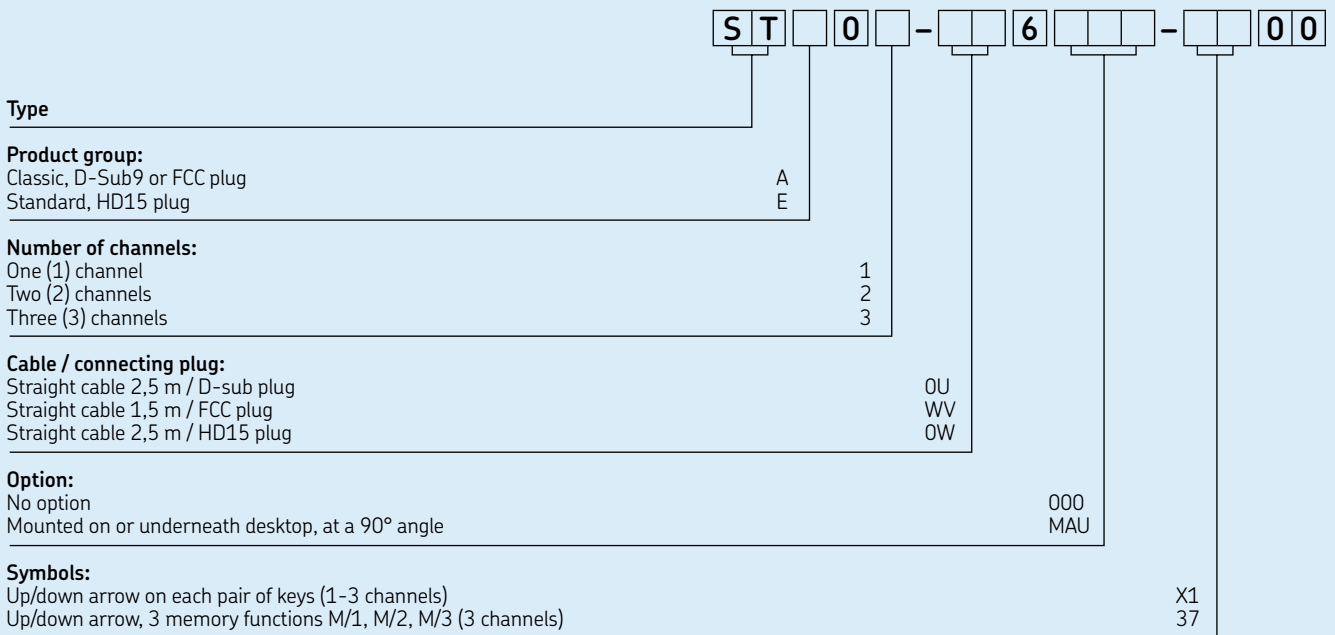
Dimensional drawing



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



Desk switch LD

Benefits

- Easy and precise
- Stylish design
- Different functions

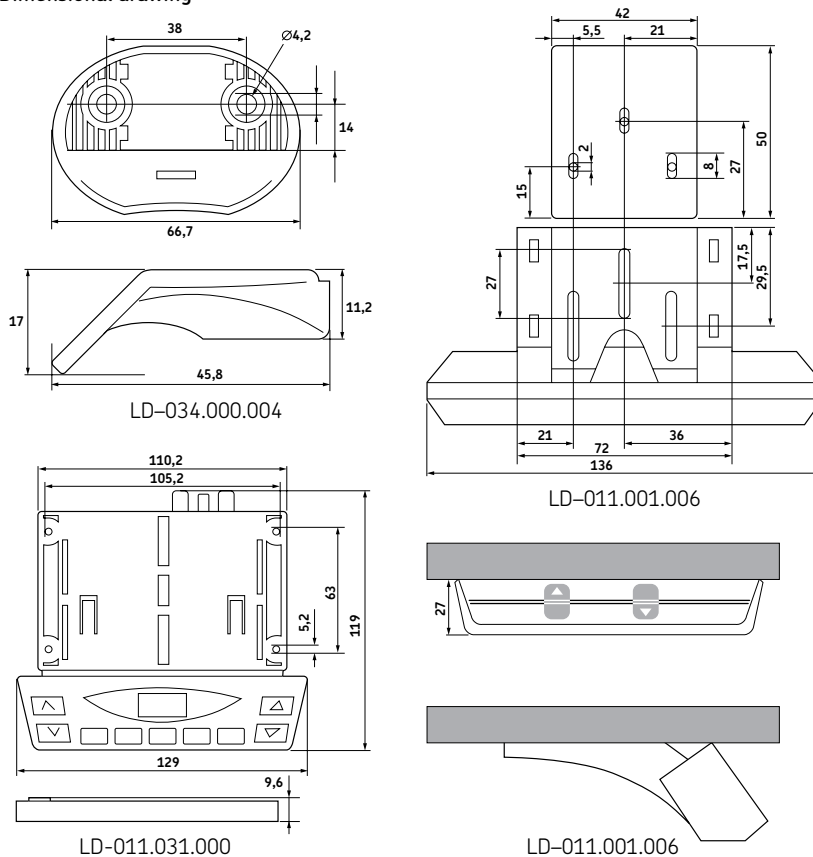


Suitable pillars and control units

| | 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-034.000.004 (DIN7 plug)
- LD-011.031.000 (DIN7 plug)
- LD-011.001.006 (FCC plug, only for TXG)

Pneumatic desk switch PAM

Benefits

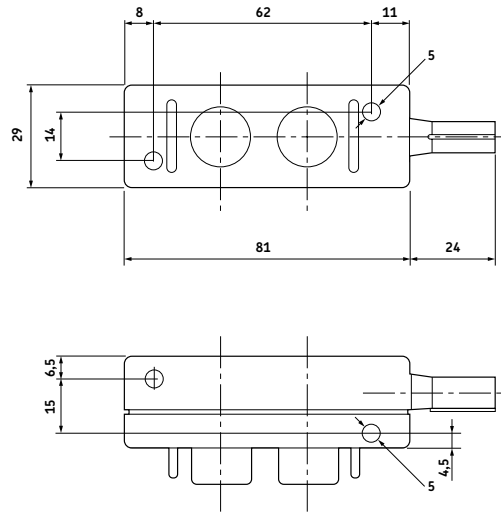
- Operation with air (no electricity)
- Stylish design



Suitable linear actuators and pillars

| | Linear act. | Pillars |
|-----|-------------|---------------|
| | MAX 60 | TLC pneumatic |
| | MAX 61 | TGC pneumatic |
| | | THC pneumatic |
| PAM | ● ● | ● ● ● |

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

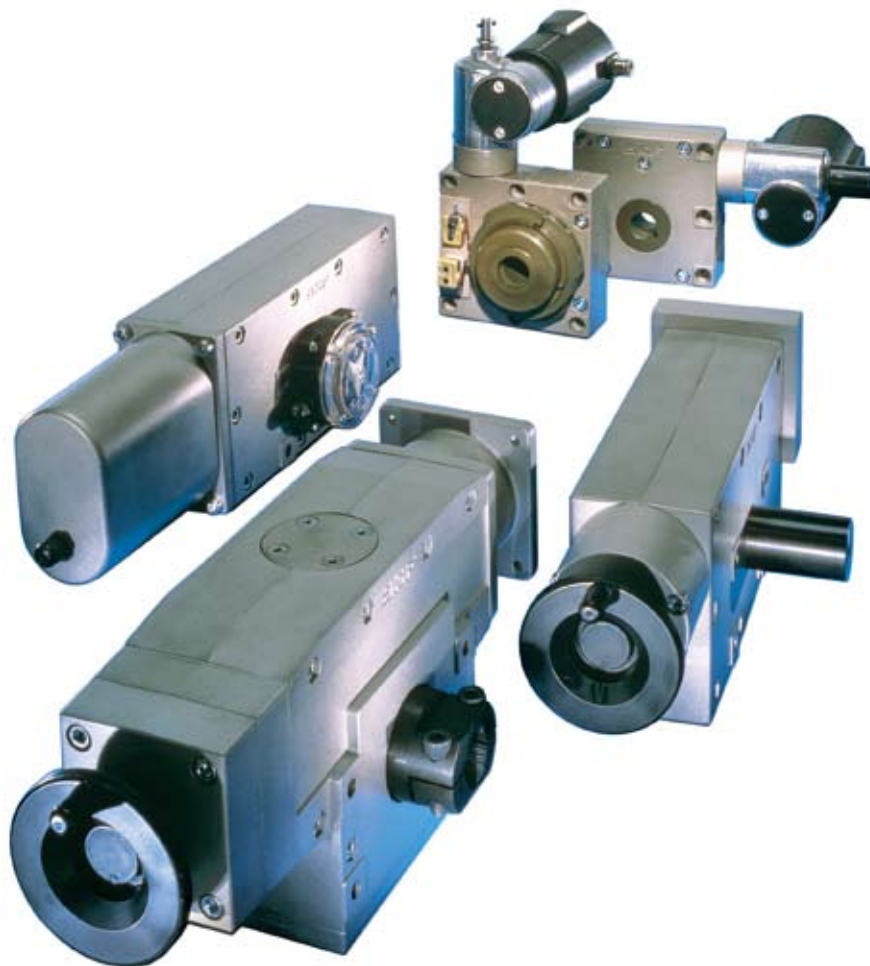
Customized projects

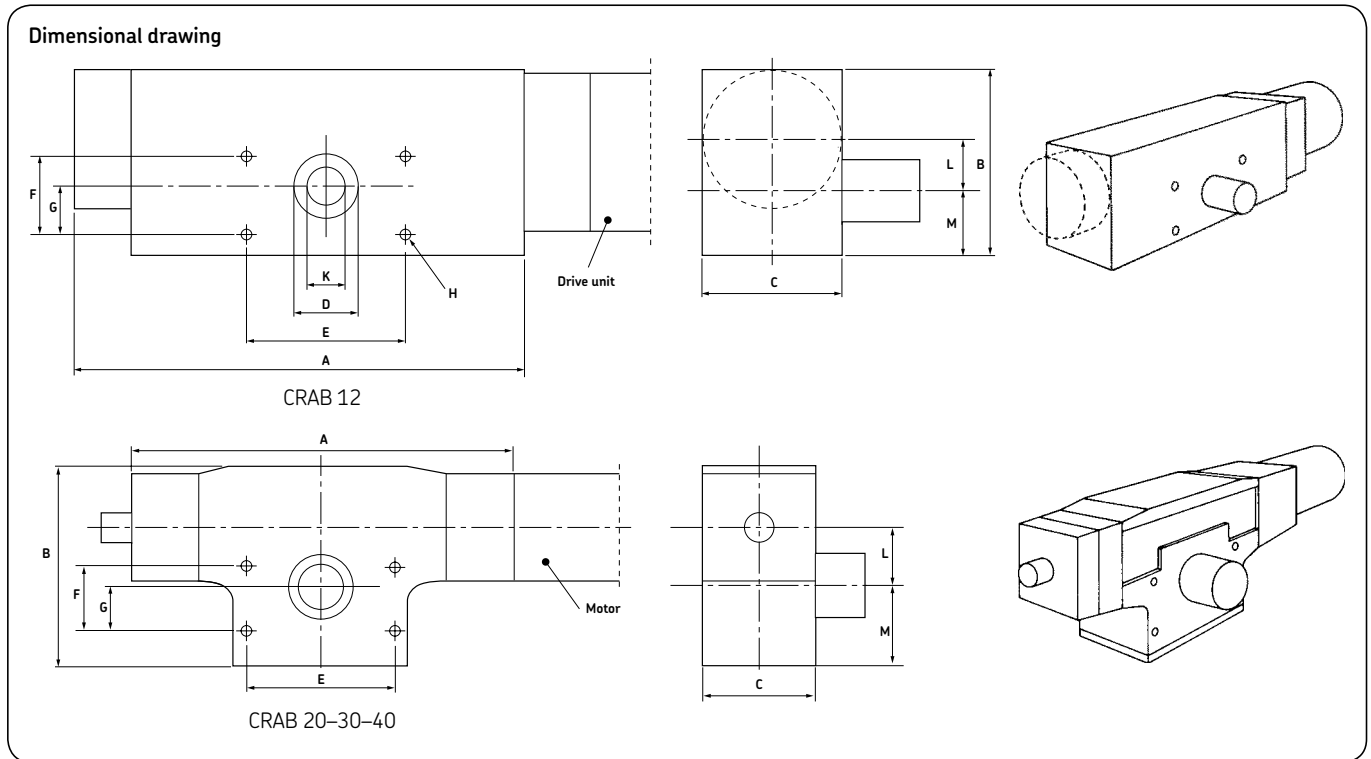
| | |
|--|-----|
| Rotary actuators. | 356 |
| Compact electromechanical cylinder. | 358 |
| Modular electromechanical cylinder | 362 |

Rotary actuators

Benefits

- Outdoor application
- Elasticity negligible





| 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 |

7

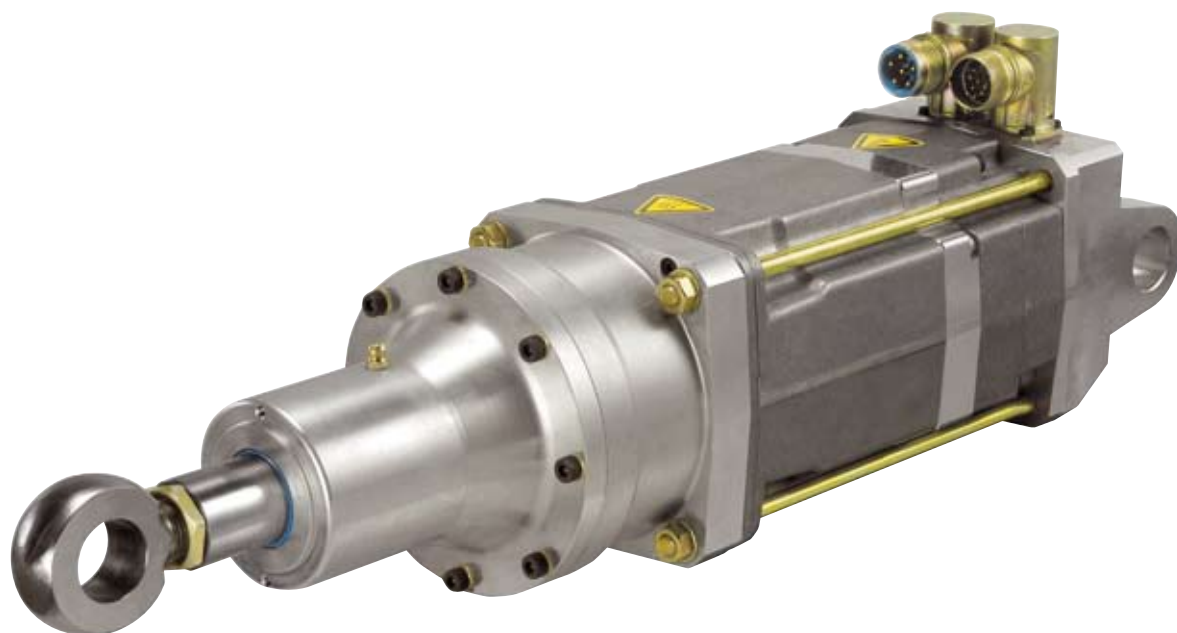
| Actuator | Angular working range | Gear ratio Ball screw | Angular speed | Efficiency factor Ball screw | Instant output torque Max. | axial load Max. | tilting torque Max. | Backlash | | | Weight |
|----------|-----------------------|--------------------------|---------------|---------------------------------|-------------------------------|--------------------|------------------------|------------|--------------|-------------|--------|
| | | | | | | | | 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



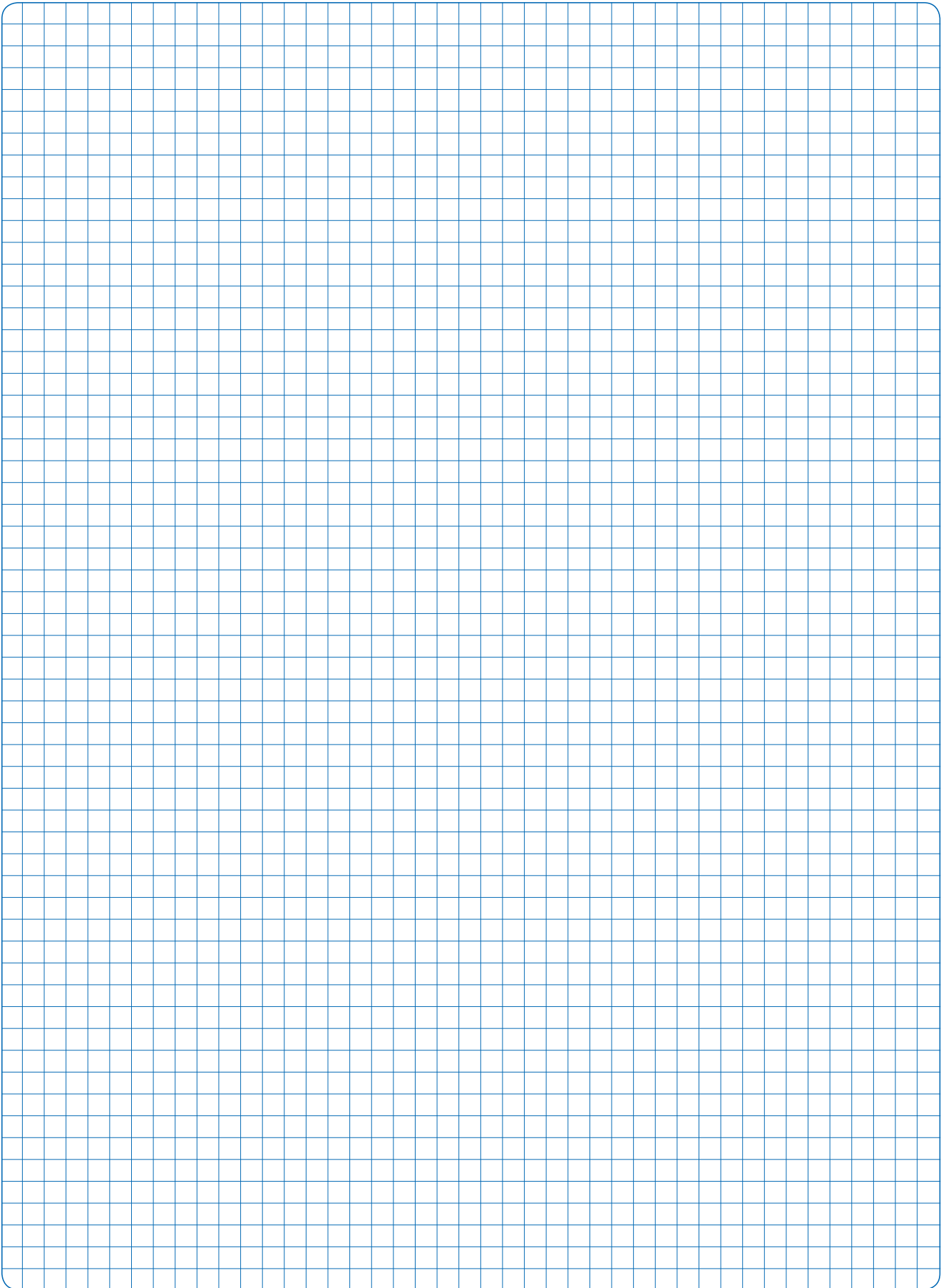
Technical data

| 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.



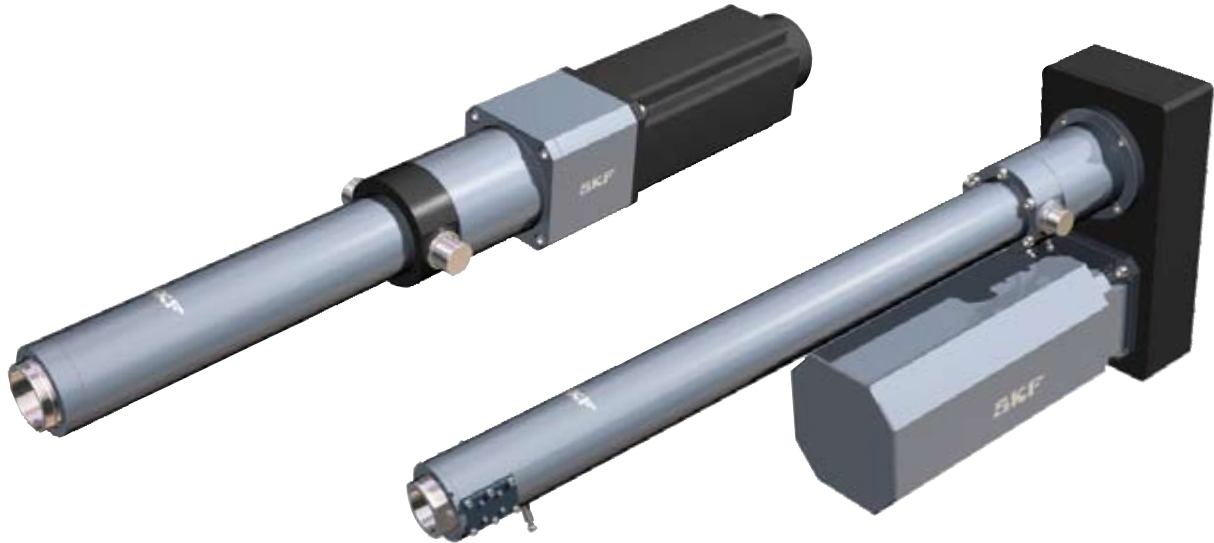
Modular electromechanical cylinder

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.

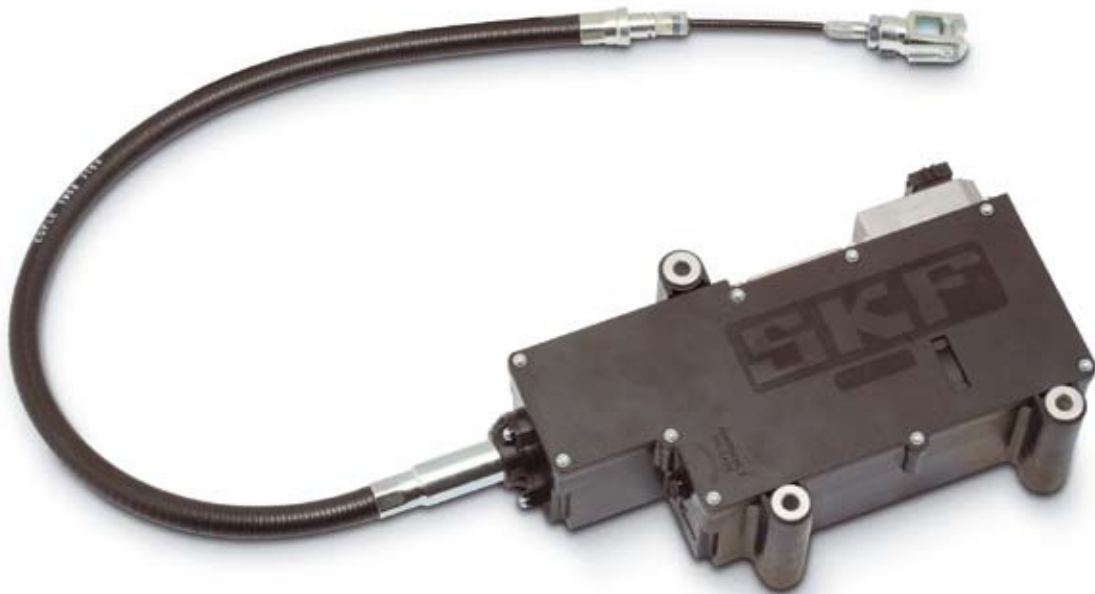
Drive by wire

Electronic Parking Brake EPB.....366

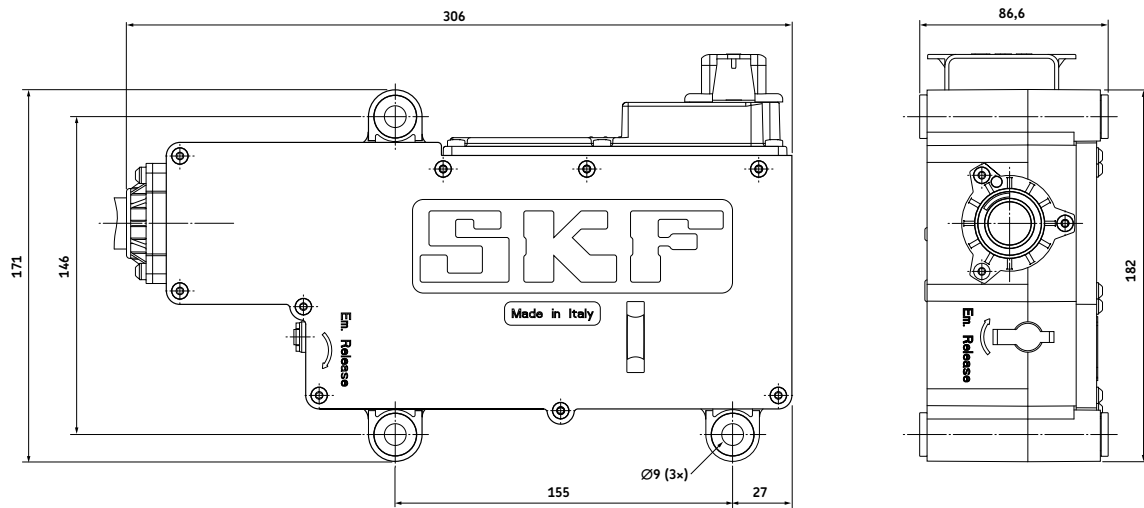
Electronic cable puller actuator for off-highway vehicles

Benefits

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



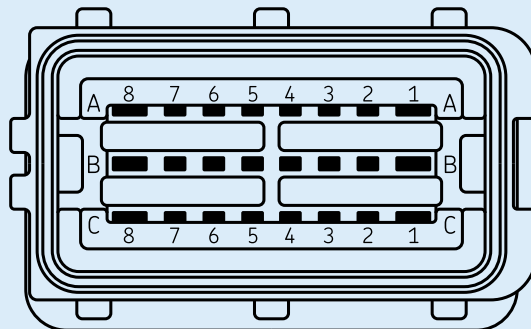
Dimensional drawing



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 |

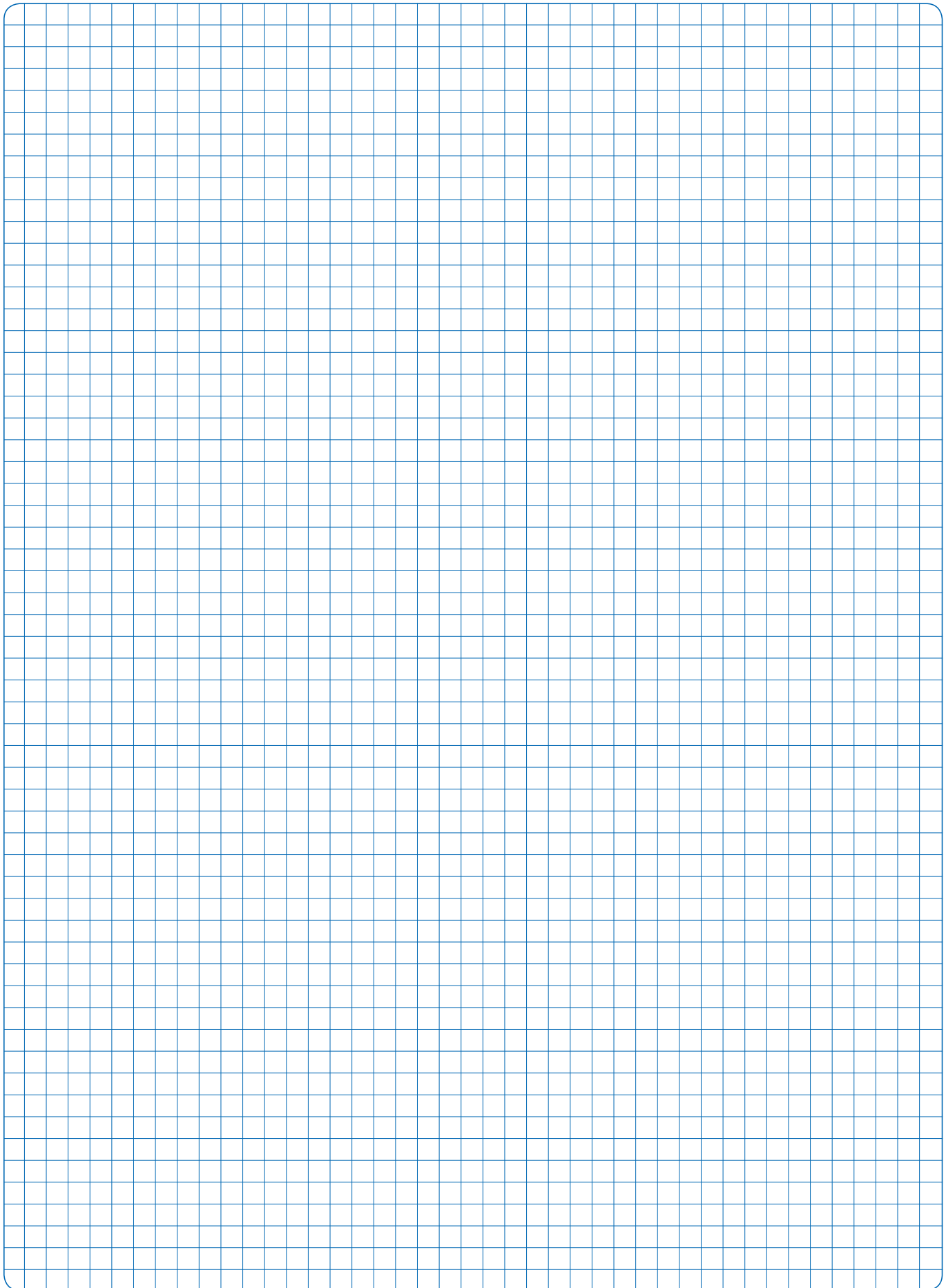
For more information about this product, please contact SKF.



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_DO | 1° High side output for relay | OUT | Digital |
| A3 | OUT2H_DO | 2° High side output for relay | OUT | Digital |
| A6 | OUT3_DO | High side output for LED | OUT | Digital |
| A7 | OUT4_DO | 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 |

* Connector type: 24 way sealed, SICMA type by FCI (p/n HCCBPE24BKA00F)



Spare parts

| | |
|-----------------------------------|-----|
| CAR 22..... | 372 |
| CAR 32..... | 372 |
| CAR 40..... | 373 |
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| CARN 32 | 374 |
| CCBR 32..... | 374 |
| CAT 33..... | 375 |
| CAT 33H..... | 375 |
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| Attachments..... | 377 |
| Limit switches..... | 378 |
| Feedback for CAT series | 380 |
| Feedback for CARE 33 series | 381 |

| 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 VAC) | Capacitor 25 µF | M/0430670-06 |
| Capacitor value 6 µF (230 VAC) | 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 |

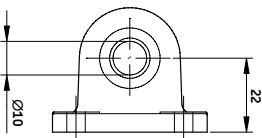
CAT 33H – Type codes for accessories and spare parts

| 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 |

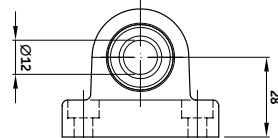
| Item code | Type code | Order N° |
|---|-----------------------|--------------|
| 12 V DC motor (cylindrical motor) | C12C | M/0405535 |
| 12 V DC motor (flat motor) | D12C | M/0405518 |
| 24 V DC motor (cylindrical motor) | C24C | M/0405536 |
| 24 V DC motor (cylindrical with low speed) | C24CW | 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/E220 | 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

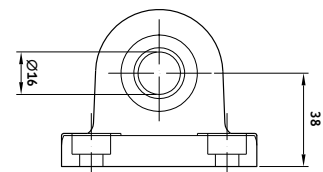
| Item code | Type code | Order N° |
|---|-------------------|--------------|
| 24 V DC motor (cylindrical motor) | C24C | M/0405536 |
| 24 V DC motor (cylindrical with low speed) | C24CW | M/0405537 |
| 24 V DC motor (flat motor) | D24C | M/0405519 |
| 24 V DC motor (flat motor with low speed) | D24CW | 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 |



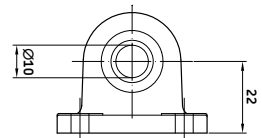
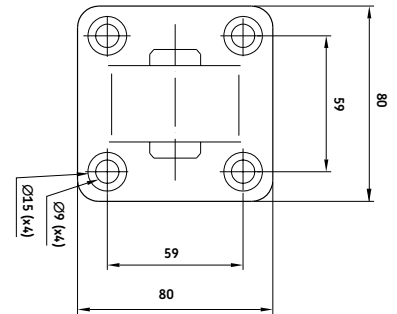
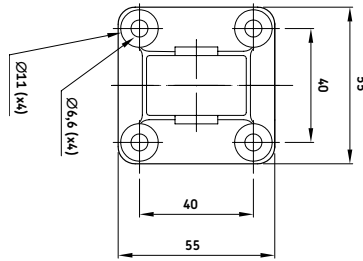
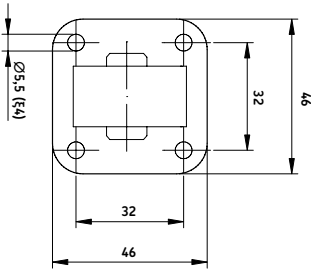
580-22



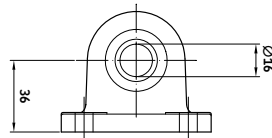
580-32



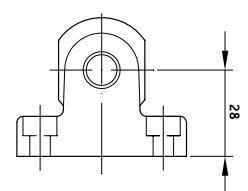
580-40



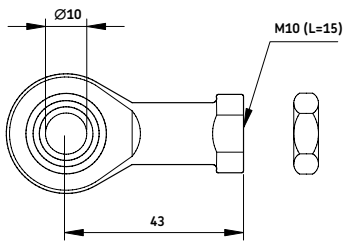
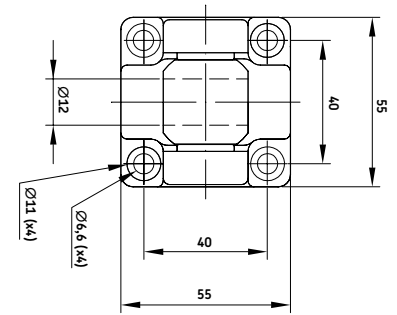
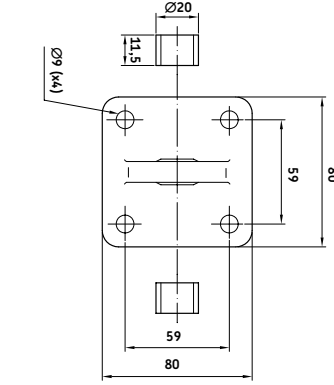
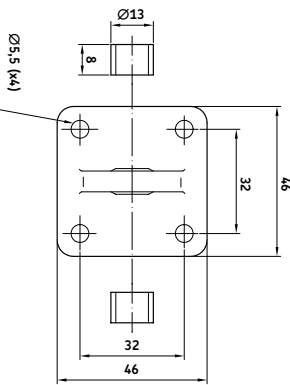
581-22



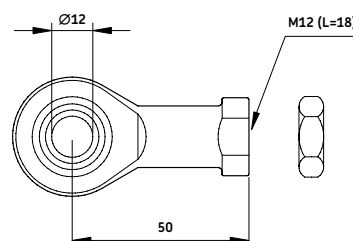
581-40



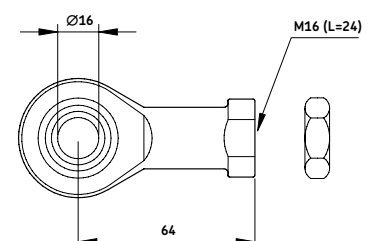
582-32



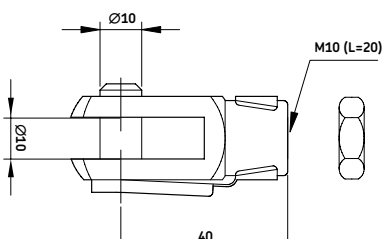
575-22



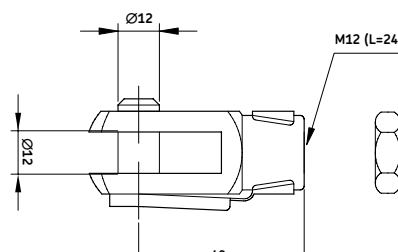
575-32



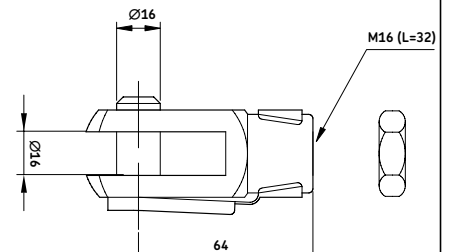
575-40



576-22



576-32



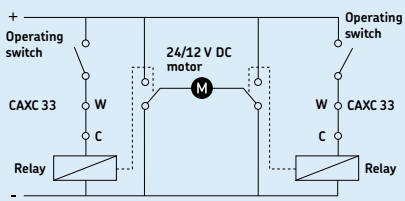
576-40

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 (retracted position is affected)

Connecting diagram

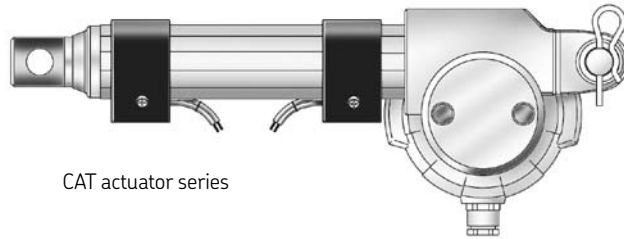


Technical data

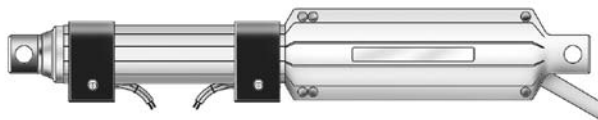
Permissible power: 3 W
 Max. DC voltage: 200 V
 Max. DC current: 200 mA

Ordering code

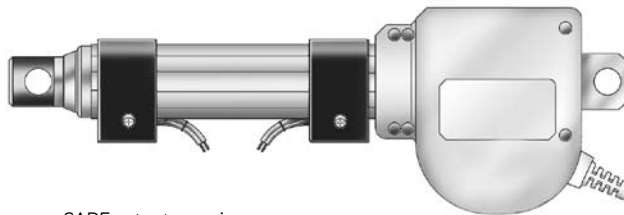
CAXC 33
 NB! One CAXC is needed for each limit position.
 NB! Make sure you connect limit switches to a DC-supply.



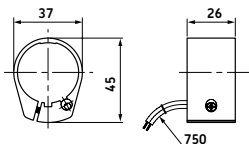
CAT actuator series



CALA actuator series



CARE actuator series



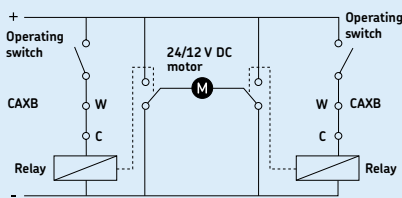
W = Common
 C = Normally closed
 O = Normally opened

CAXB limit switch

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

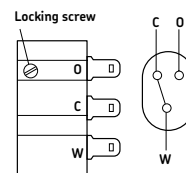
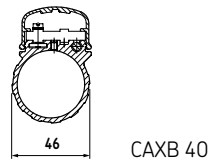
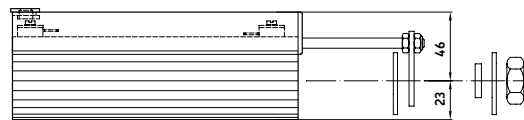
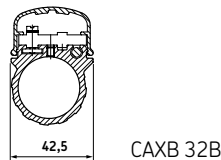
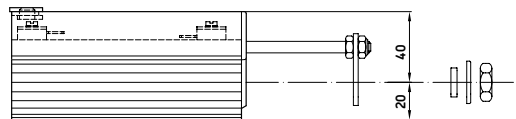
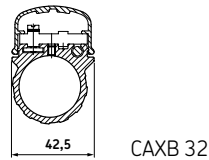
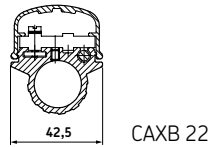
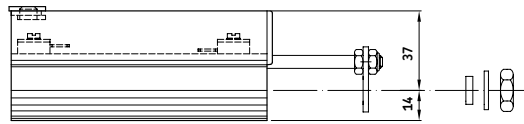
- CAXB - designed for the following actuators:
CAR 22
CAR 32
CAR 40
CAT 32B
CARN 32
- To avoid running into mechanical end stop, the limit switches should be located approximately 10 mm from its respective end stop
- Front attachment G3 must be selected for this option

Connecting diagram



Technical data

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



W = Common
C = Normally closed
O = Normally opened

Ordering key

Type

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

| | | | | | | | |
|----------|----------|----------|----------|-----|--|--|--|
| C | A | X | B | | | | |
| | | | | 22 | | | |
| | | | | 32 | | | |
| | | | | 32B | | | |
| | | | | 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)

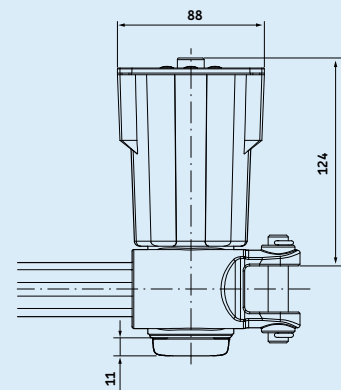
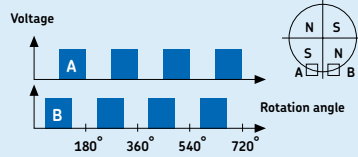
50
100
150
200
300
400
500
700

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)

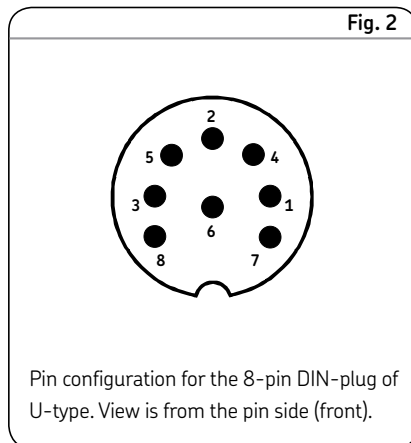
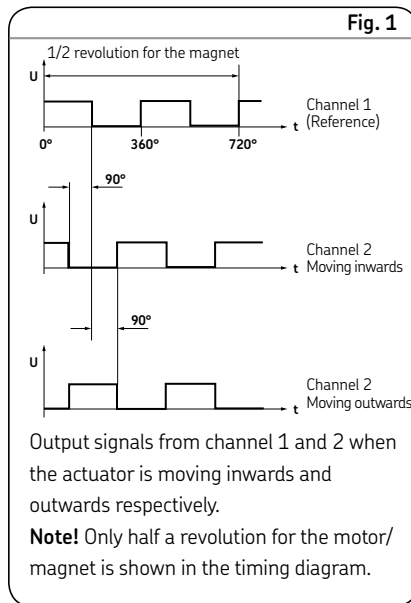
Feedback

| | 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

2-Hall encoder



| Actuator version | Resolution/pulse |
|------------------|------------------|
| CARE 33A | 0,75 mm |
| CARE 33H | 3,175 mm |
| CARE 33M | 1,50 mm |

Table 2. Movement resolution.

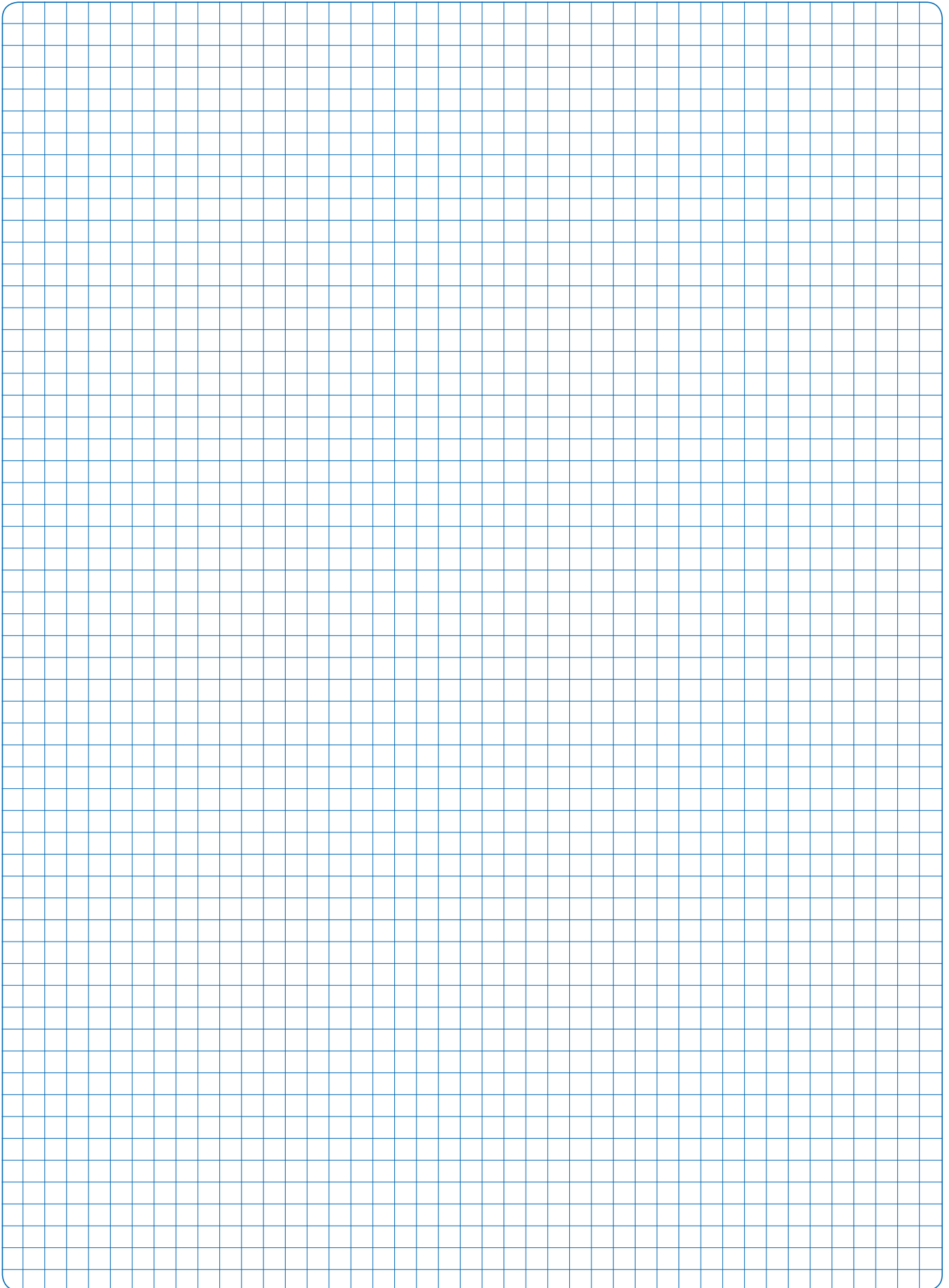
| Pin no | Color | Function |
|--------|--------|----------------------------|
| 1 | Green | Motor supply voltage + |
| 2 | Red | Motor supply voltage - |
| 3 | Black | Encoder supply voltage VCC |
| 4 | Red | Motor supply voltage - |
| 5 | Brown | Encoder supply voltage GND |
| 6 | White | Output channel 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 | -20 to +70 |

Table 1. Recommended operating ratings.

Notes





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:

.....
.....

* mandatory fields

Notes

