

# **CAS3• Cantilever axes - round bar version**

Lexium Linear Motion

Product Manual

28.05.2009





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## 1. Introduction

This document contains important notes on safety, installation and maintenance for Schneider Electric linear axes. Please have this documentation readily available during the entire product service life. In case your manual is lost, you can reorder a new copy from Schneider Electric using the data printed on the type label of your product.

Carefully read these instructions before installation and commissioning of the product. The notes and instructions in this documentation are the basis for safety of personnel, cost efficient operation and a long service life.

The diagrams and drawings are only given as examples. Our products are subject to technical modification and ongoing development. The manufacturer reserves the right to make product modifications without advance notice.

### 1.1 Device family

The Schneider Electric round bar cantilever axes are available in 5 sizes:

**CAS30RC (body width 66 mm)**

**CAS31BC (body width 80 mm)**

**CAS32BC (body width 100mm)**

**CAS33BC (body width 120mm)**

**CAS34BC (body width 160mm)**

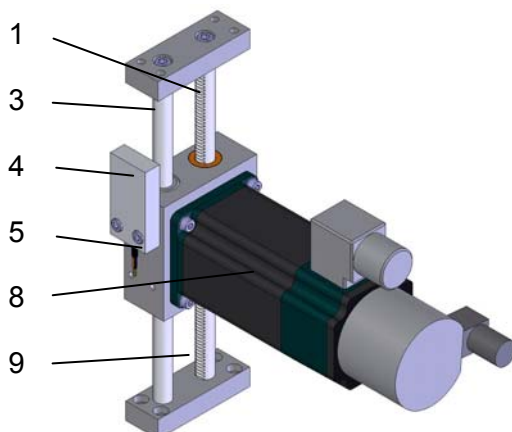
The sizes have different outer dimensions, pay loads and maximum strokes.

### 1.2 Components

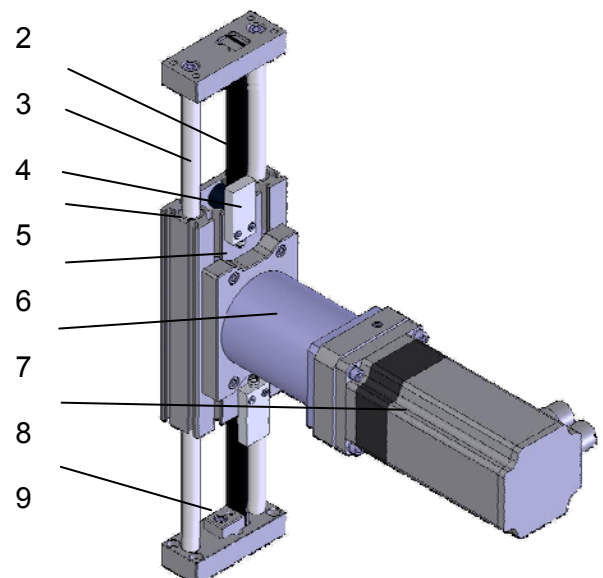
#### Round bar axis design

##### Axis with rack and pinion

1. rack
2. timing-belt
3. guide bar
4. inductive limit switch
5. axis body
6. adaptor plate
7. gearbox
8. motor
9. end plate



##### axis with belt drive

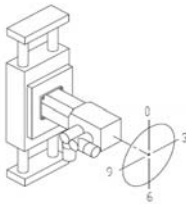
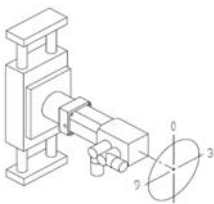
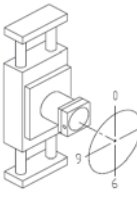
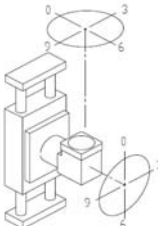


## 2. Technical Data

Technical Data													
Type designation	portal axis		CAS30RC	CAS31BC	CAS32BC	CAS33BC	CAS34BC						
Drive system			rack modul 0,636	tiring belt 10T5	tiring belt 20AT5	tiring belt 25AT5	tiring belt 32AT5						
Guide type			round bar (W10)	round bar (W10)	round bar (W14)	round bar (W20)	round bar (W25)						
Typical payload	kg	1	3	5	10	18							
Carriage type			Typ3	Typ3	Typ3	Typ3	Typ3						
Carriage length	mm	70	100	200	200	250	250						
Drive constant	mm/rev.	50	75	100	100	100	100						
Effective diameter toothed belt wheel	mm	15,915	23,873	31,831	31,831	31,831	31,831						
Max. force F <sub>max</sub> 4)	N	80	125	435	535	705	705						
Max. speed 3)	m/s	3	3	3	3	3	3						
Max. acceleration 3)	m/s <sup>2</sup>	20	20	20	20	20	20						
Max. drive torque M <sub>max</sub> 4)	Nm	0,6	1,5	7,0	8,5	11,5	11,5						
No load breakaway torque 0-stroke axis	Nm	0,10	0,15	0,30	0,45	0,60	0,60						
Moment of inertia 0-stroke axis	kgcm <sup>2</sup>	0,3	0,9	4,8	9,1	11,4	11,4						
Moment of inertia per m stroke	kgcm <sup>2</sup> /m	0,8	1,8	6,3	12,6	12,2	12,2						
Moment of inertia per kg payload	kgcm <sup>2</sup> /kg	0,65	1,45	2,55	2,55	2,55	2,55						
Max. force F <sub>dyn</sub> max 4)	N	160	210	290	460	950	950						
Max. force F <sub>z</sub> dynmax 4)	N	130	180	250	400	820	820						
Max. torque M <sub>dyn</sub> max 4)	Nm	2,8	6,7	21	34	85	85						
Max. torque M <sub>z</sub> dynmax 4)	Nm	3,5	7,8	25	39	100	100						
Max. torque M <sub>xdyn</sub> max 4)	Nm	1,9	5,1	9	16	45	45						
Mass of 0-stroke axis	kg	0,6	1,0	2,8	4,4	5,9	5,9						
Mass of per m stroke	kg/m	1,3	1,3	2,5	5,0	4,8	4,8						
Moving mass cantilever	kg	0,4	0,6	1,7	3,2	4,0	4,0						
Max. stroke 1)	mm	150	200	300	400	500	500						
Min. stroke 2)	mm	8	8	10	12	14	14						
Repeat accuracy 3)	mm	±0,05	±0,05	±0,05	±0,05	±0,05	±0,05						
Diameter motor shaft	mm	6...10	6,35...14	12...20	12...20	12...20	12...20						
Max. ambient temperature	°C	0...+50	0...+50	0...+50	0...+50	0...+50	0...+50						
Load ratings guide system (Cstat / Cdyn)	N	520 / 590	520 / 590	760 / 830	1010 / 1170	2130 / 2420	2130 / 2420						
Lifetime reference value	km	15000	15000	15000	15000	15000	15000						

### 3. Type Code

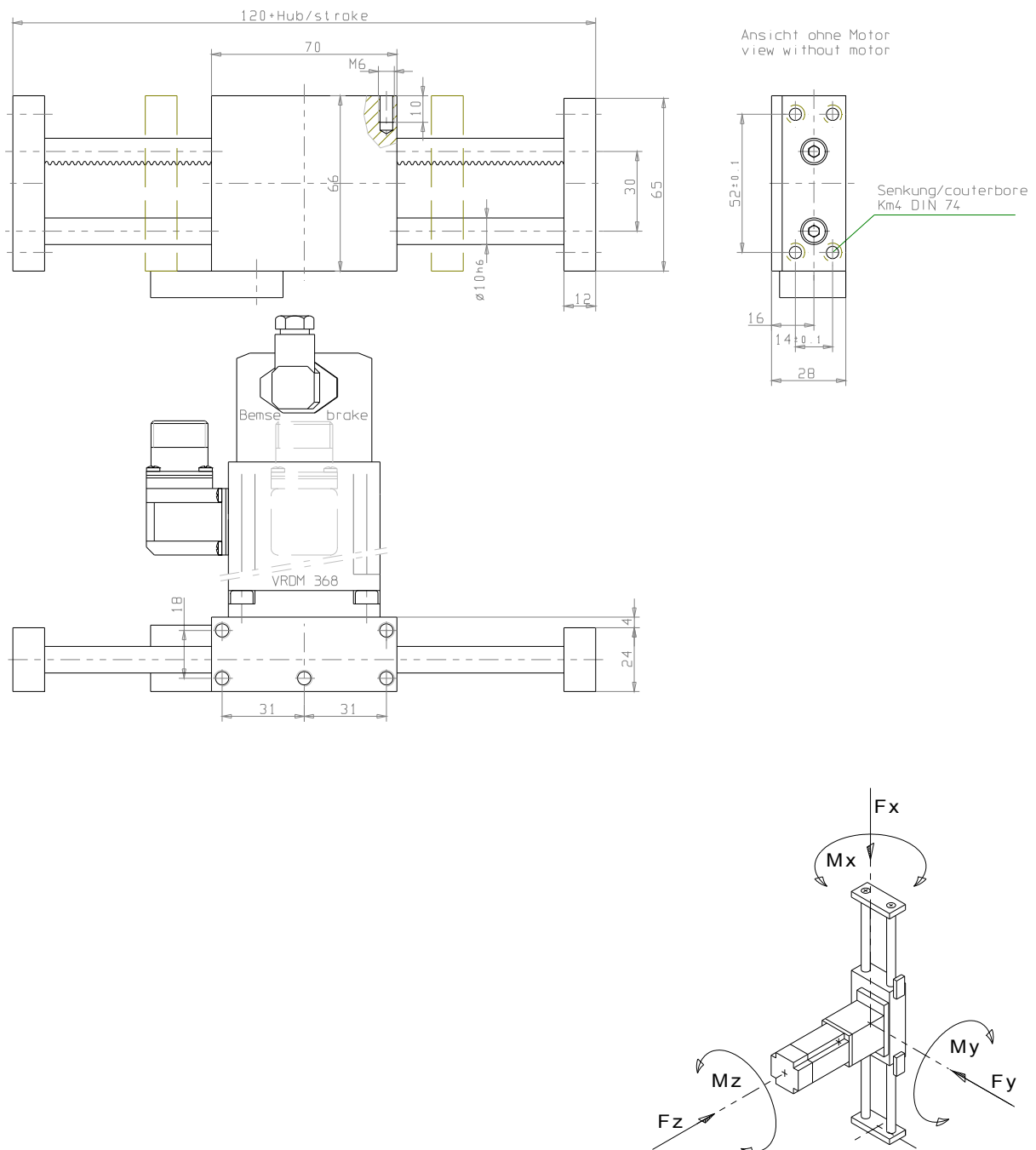
Typecode CASxx round bar									
<b>Example</b>	CAS	3	2	B	C	M	0300	A	1 N R / 1 XX 0 H7 9
<b>Product</b> CAS= cantilever axes (round bar)	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Product family</b> 3 = basic line	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Size</b> (cross-section of section) 0 = 66 x 28 mm (former LM-A0 BZ50) 1 = 80 x 30 mm (former LM-A108 BT75) 2 = 100 x 40 mm (former LM-A210 BT100) 3 = 120 x 50 mm (former LM-A212 BZ100) 4 = 160 x 50 mm (former LM-A316 BT100)	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Profile drive element</b> B = toothed belt (size 1, 2, 3 and 4) R = toothed rack (size 0)	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Type of guide</b> C = cylindrical ball guide	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Feed per revolution</b> M = 50 mm at size 0; 75 mm at size 1 100 mm at sizes 2, 3 and 4 Z = customised product (only for internal use not in catalogue)	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Stroke</b> xxxx = in mm (max. stroke per size see data sheet)	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Limit switches</b> A = 2 x PNP sensors normally closed with 0,2 m cable incl. connector B = 2 x PNP sensors as normally closed with 5 m cable and open end N = no	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Carriage</b> 1 = type 1	CAS	3	2	B	C	M	0300	A	1 N R / 1 XX 0 H7 9
<b>Options</b> N = without C = corrosion-resistant (not at size 0) A = antistatic toothed belt E = corrosion-resistant, antistatic toothed belt (not at size 0)	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Axis drive interface</b> R = right	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Gear / Motor interface</b> (see drawings 1 till 3) 1 = with motor, without gear (select motor type) 2 = with motor, with gear (select motor/gear type) 3 = without motor, with gear (select motor/gear type)	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9
<b>Gear</b> 0G = planetary gear (Neugart) - PLE 40 1G = planetary gear (Neugart) - PLE 60 3G = planetary gear (Neugart) - PLE 80 5G = planetary gear (Neugart) - PLE 120 0A = planetary gear (Neugart) - WPLE 40 1A = planetary gear (Neugart) - WPLE 60 3A = planetary gear (Neugart) - WPLE 80 5A = planetary gear (Neugart) - WPLE 120 7G = planetary gear (Neugart) - PLS 70 8G = planetary gear (Neugart) - PLS 90 9G = planetary gear (Neugart) - PLS 115 YY = third party gear without attachment by Schneider Electric Motion (gear drawing requirement) ZZ = third party gear with attachment by Schneider Electric Motion (gear drawing requirement; provide gear) XX = no gear	CAS	3	2	B	C	M	0300	A	3 N R / 1 XX 0 H7 9

Typecode CASxx round bar																														
Example																														
Direction of the gear (incl. the fixing screw of the adapterplate for the clamping hub)														CAS	3	2	B	C	M	0300	A	1	N	R	/	1	XX	0	H7	9
0 = 0 o'clock 3 = 3 o'clock 6 = 6 o'clock 9 = 9 o'clock X = without gear																														
Motor														CAS	3	2	B	C	M	0300	A	3	N	R	/	1	XX	0	H7	9
V6 = stepper motors BRS 364 / BRS 366 V8 = stepper motors BRS 368 V9 = stepper motors BRS 397 / BRS 39A V0 = stepper motors BRS 39B V1= stepper motors BRS 3AC / BRS 3AD I6 = ILS..571; ILS..572 with stepper motor I7 = ILS..573 with stepper motor I9 = ILS..851; ILS..852 with stepper motor I8 = ILS..853 with stepper motor E7 = DC-brushless ILExx66 S6 = servomotors SER 36* / BRH 057 S9 = servomotors SER 39* / BRH 058 S1 = servomotors SER 311* / BRH 110 A6 = ILA..57 with servo motor H5 = servomotors BSH 055* H7 = servomotors BSH 0701 / BSH 0702 / BMH 0701 / BMH 0702 H8 = servomotors BSH 0703 H1 = servomotors BSH 1001/ BSH 1002 / BSH 1003 BMH1001 / BMH 1002 / BMH 1003 H4 = servomotors BSH 1004 H2 = servomotors BSH 1401 / BSH 1402 / BSH 1403 / BSH 1404 BMH 1401 / BMH 1402 / BMH 1403 YY = third party motor without attachemend by Schneider Electric Motion.(motor drawing requiremend) ZZ = third party motor with attachement by Schneider Electric Motion (motor drawing requiremend; provide motor) XX = without motor attachment																														
Direction of the motor with the reference to the power conection (incl. the fixing screw of the adapterplate for the clamping hub)														CAS	3	2	B	C	M	0300	A	3	N	R	/	1	XX	0	H7	9
0 = 0 o'clock 3 = 3 o'clock 6 = 6 o'clock 9 = 9 o'clock X = without motor attachment																														
<div><div></div><div></div><div></div><div></div></div> <div>2/12/2</div> <div>Direction motor / gear</div>																														

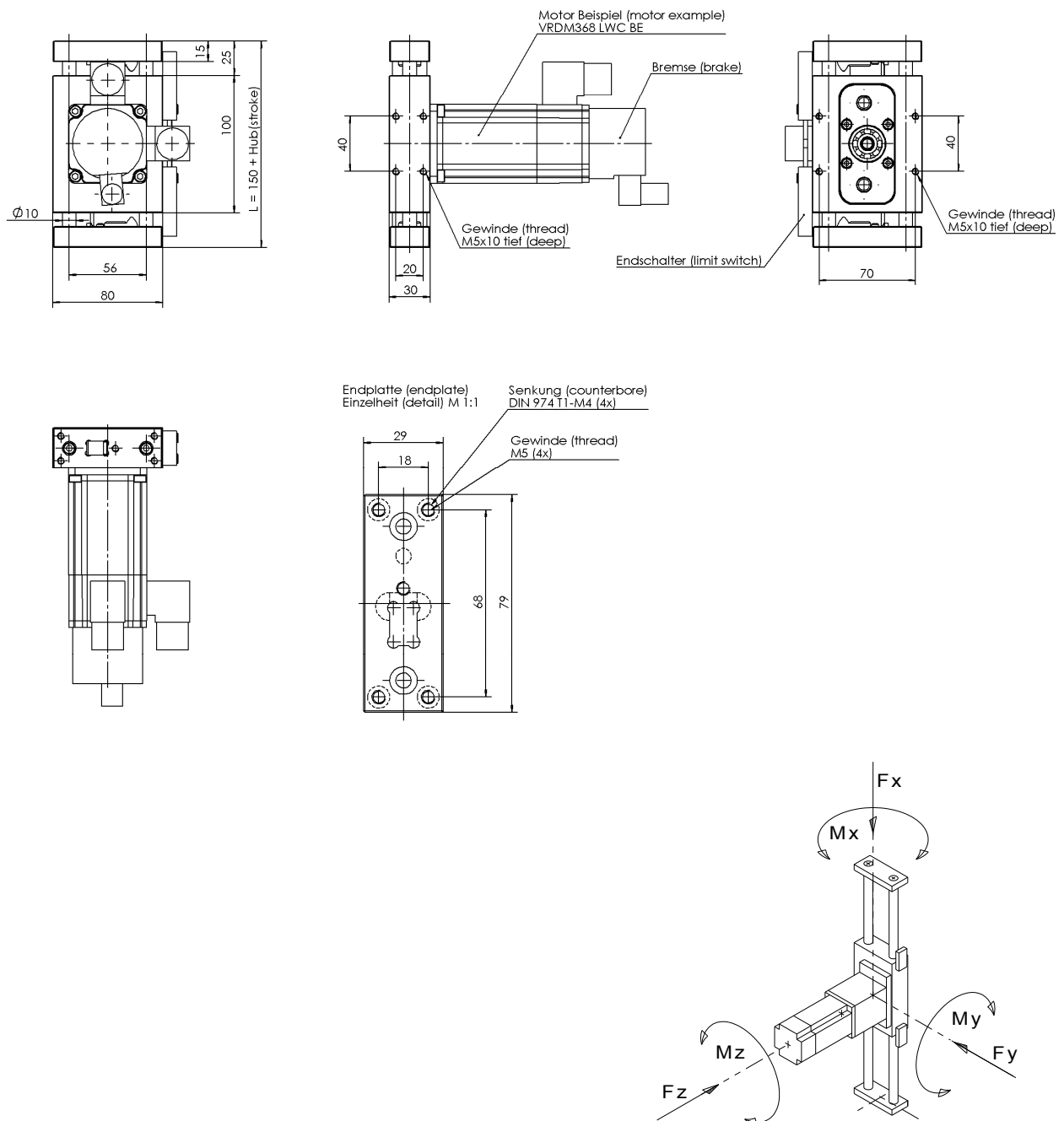


## 4. Dimensions sheets

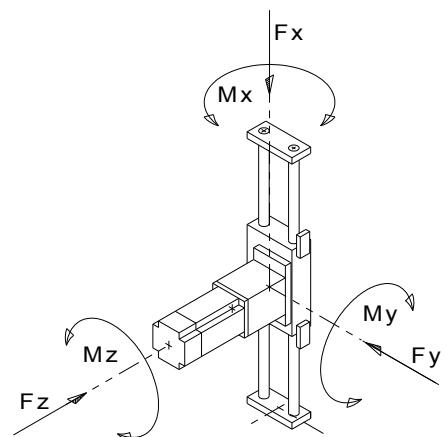
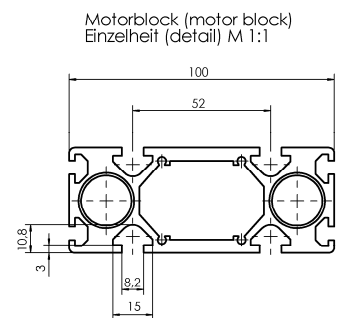
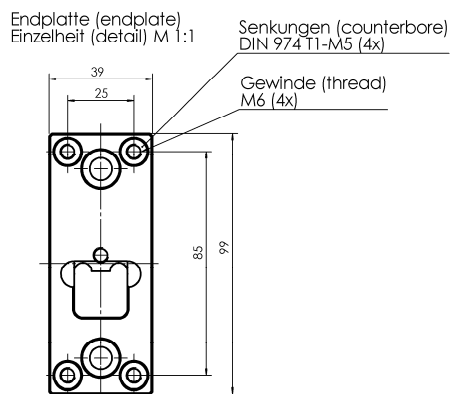
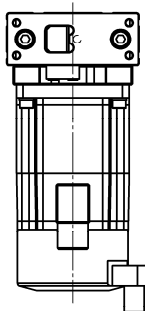
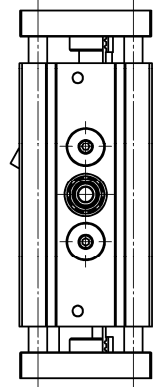
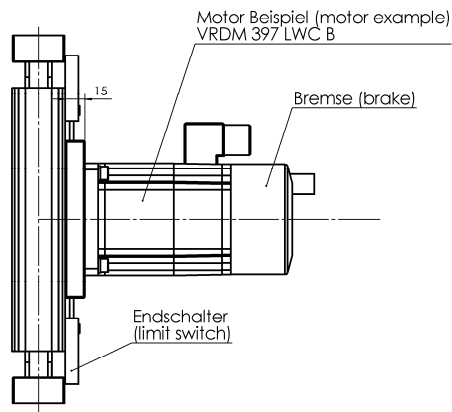
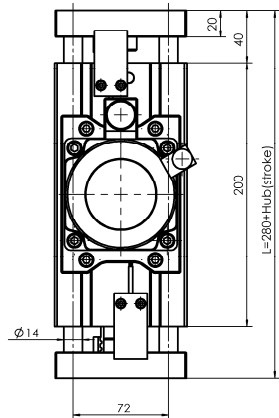
### 4.1 CAS30RC



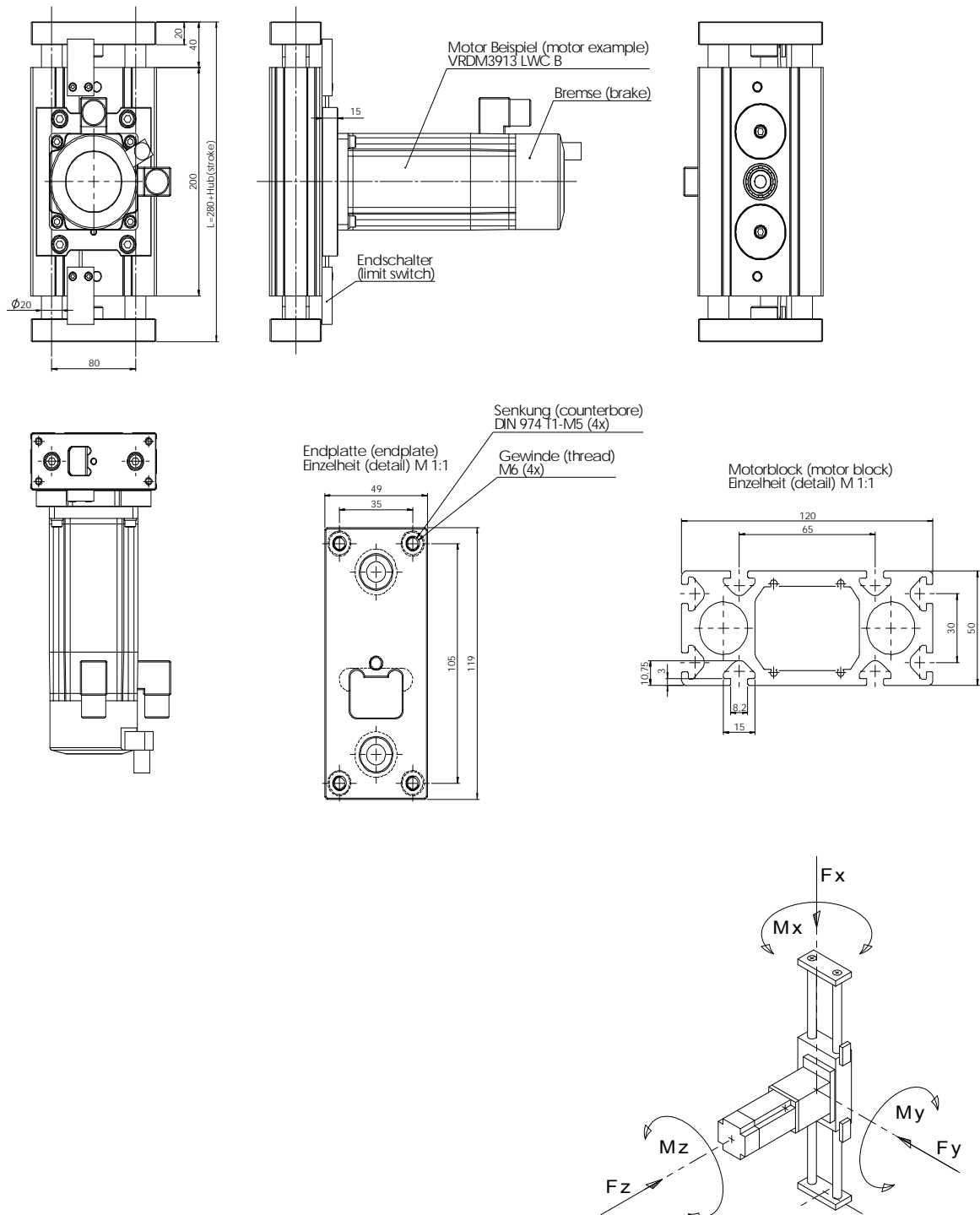
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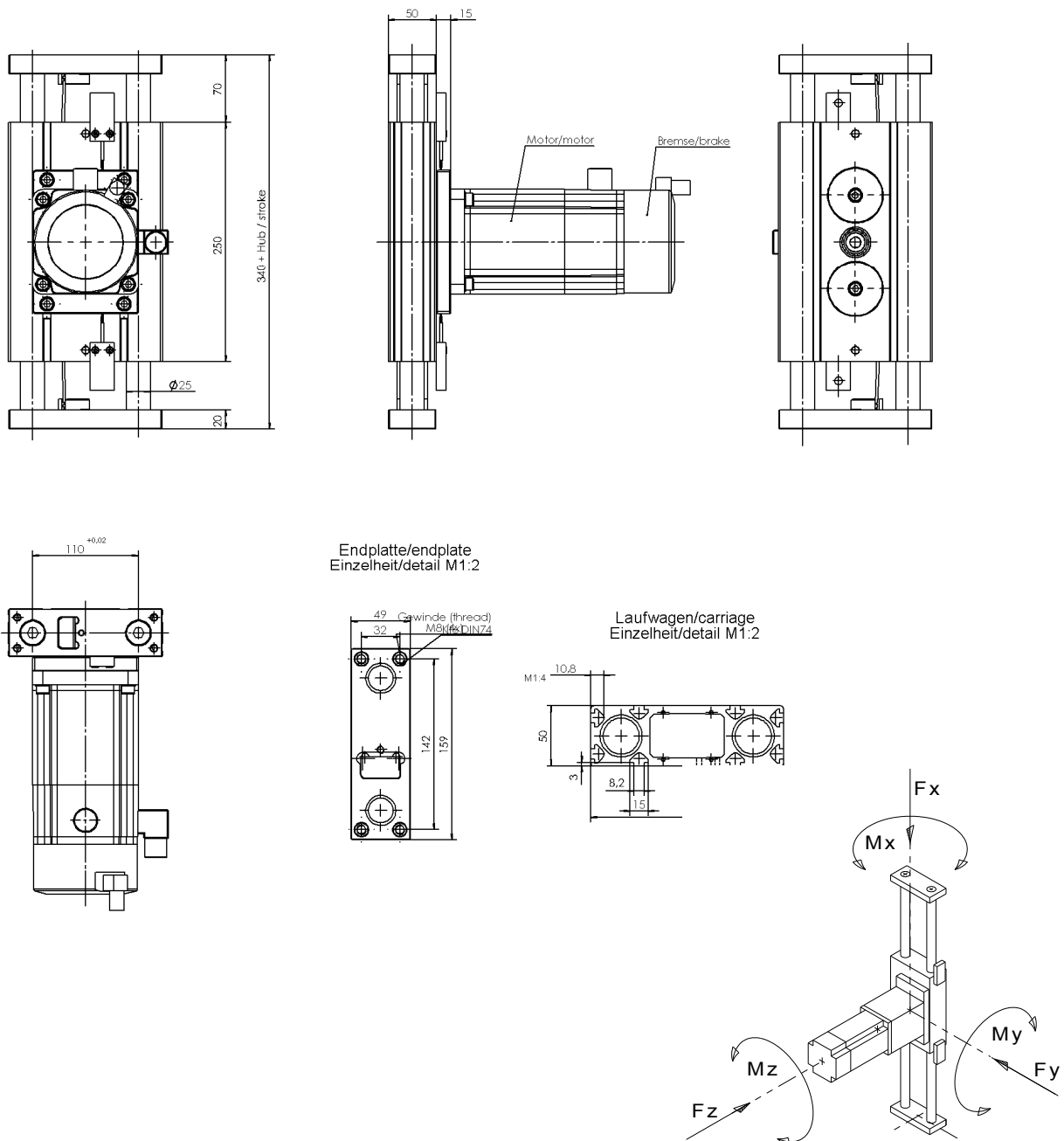
### 4.3 CAS32BC



## 4.4 CAS33BC



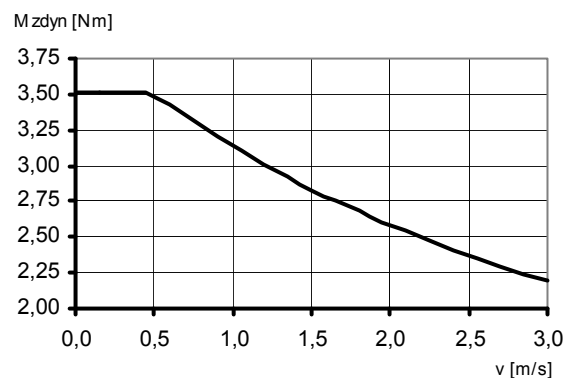
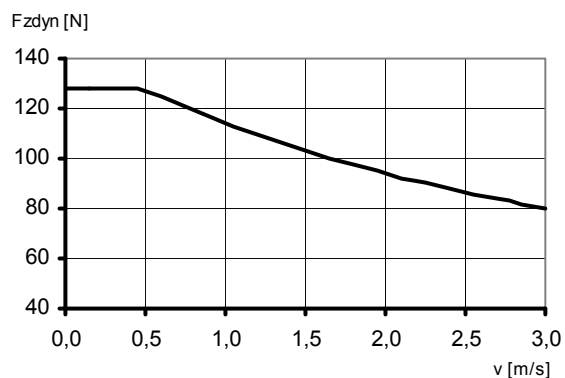
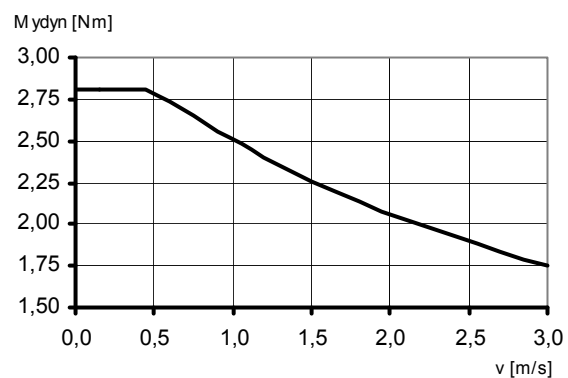
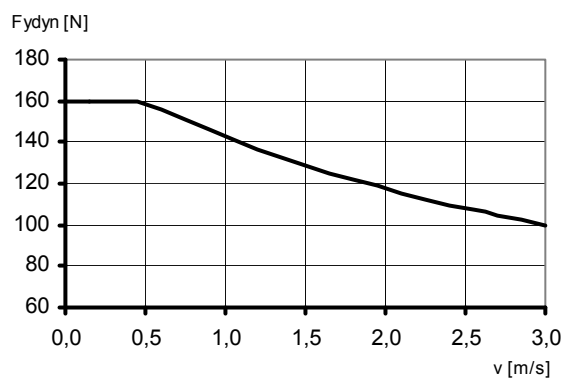
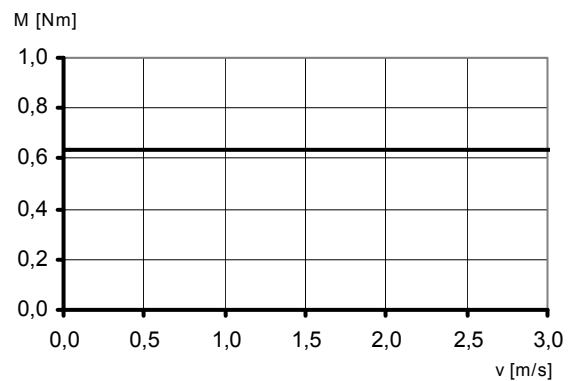
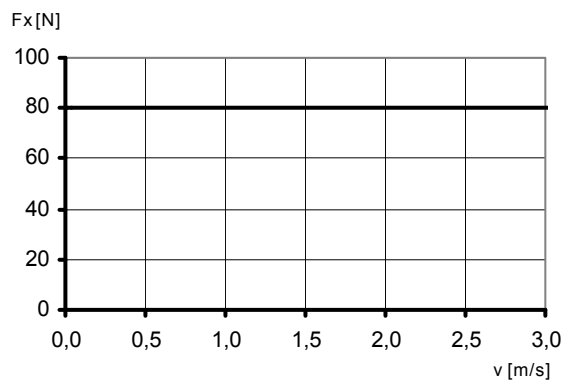
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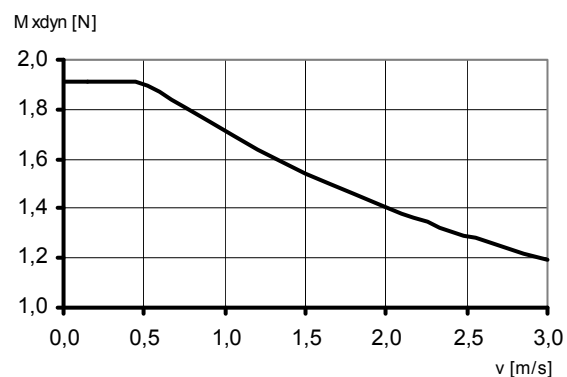
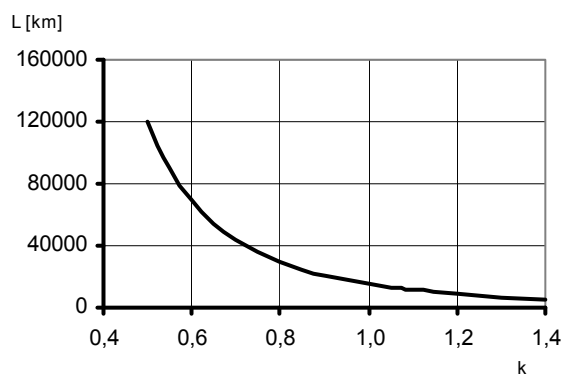


## 4.6

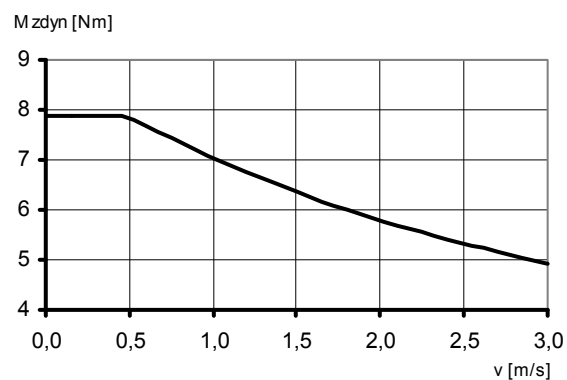
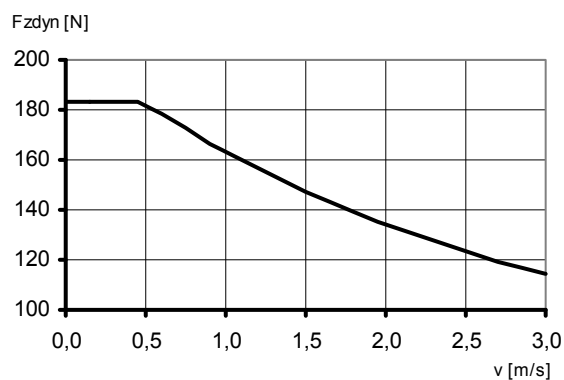
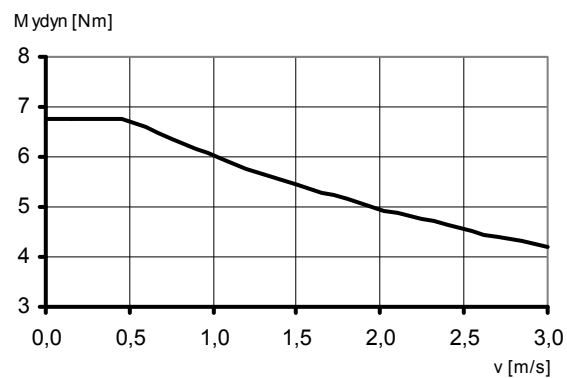
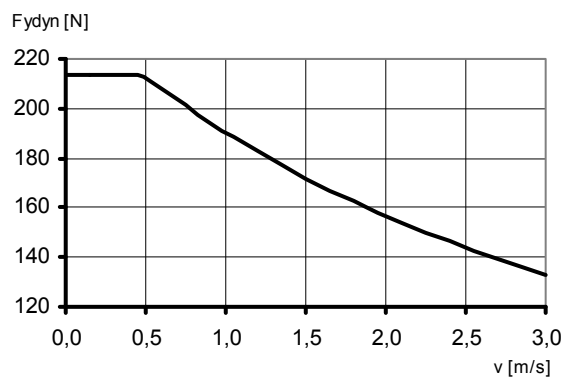
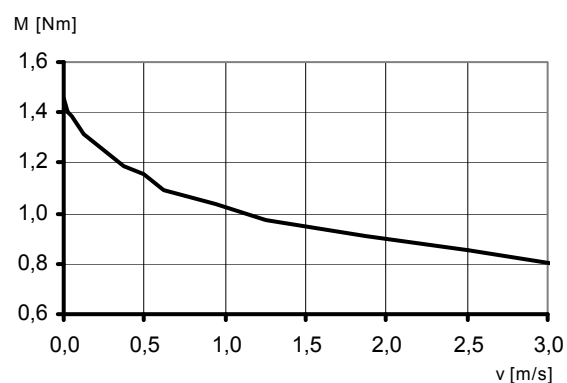
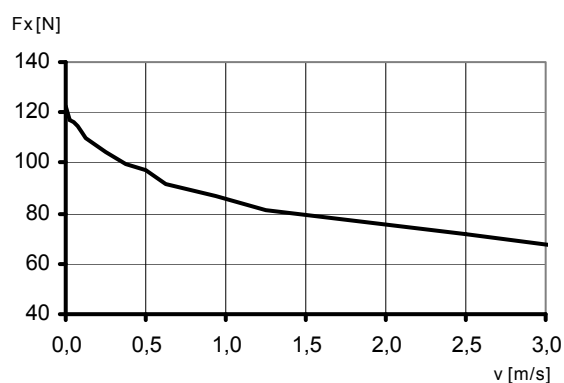
## 5. Curves

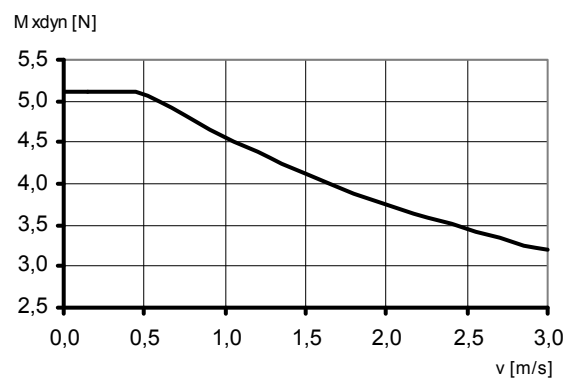
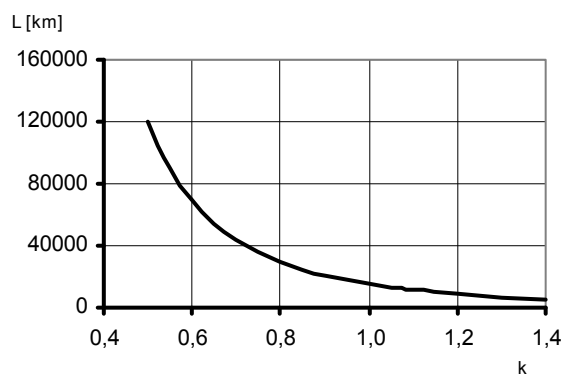
## 5.1 CAS30RC



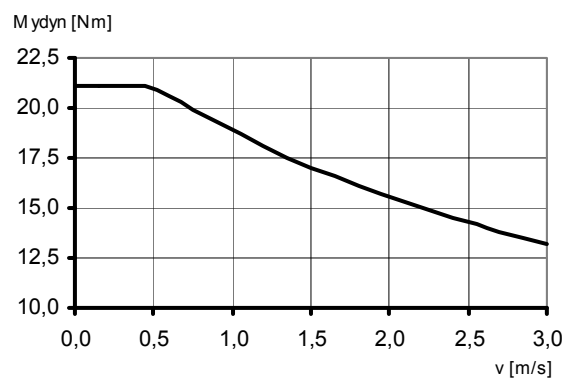
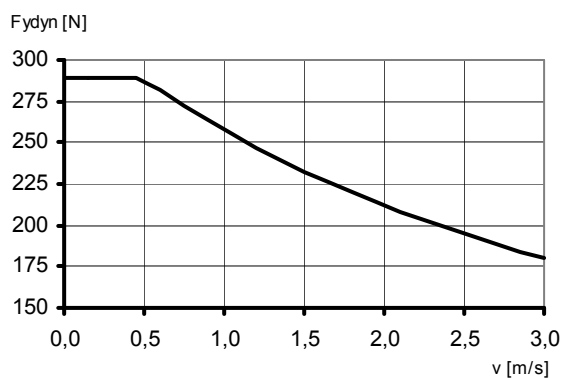
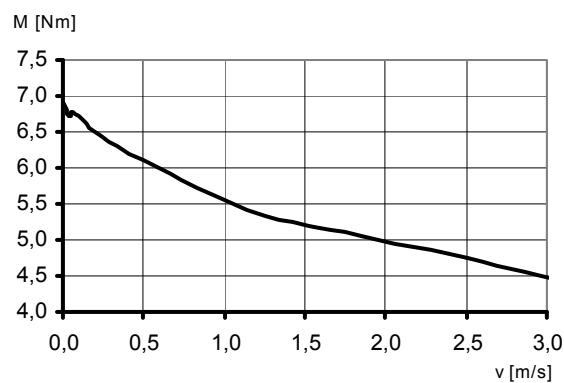
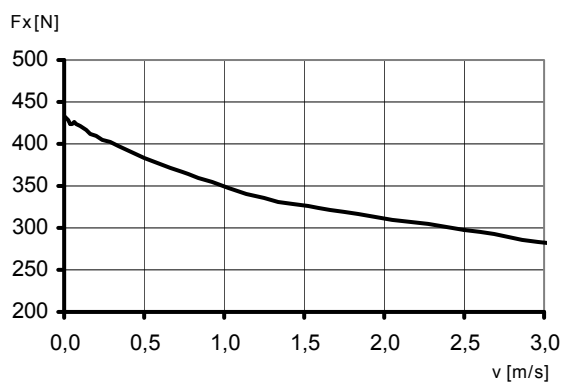


## 5.2 CAS31BC

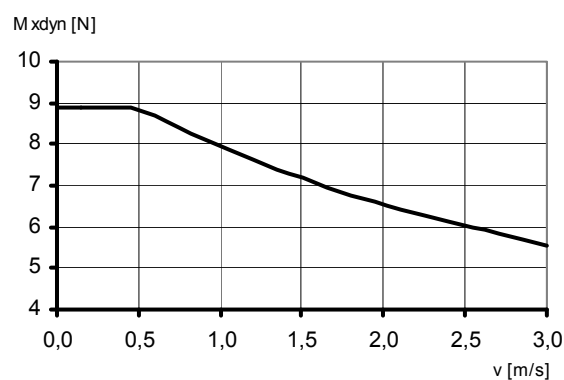
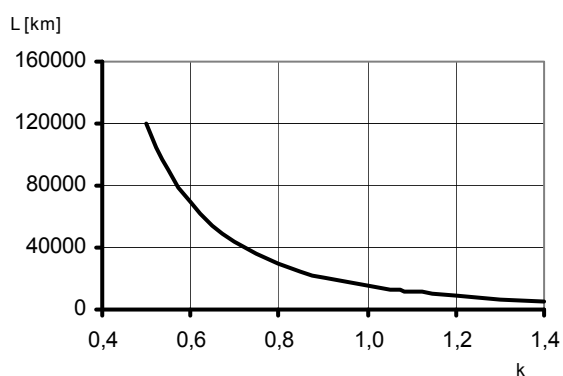
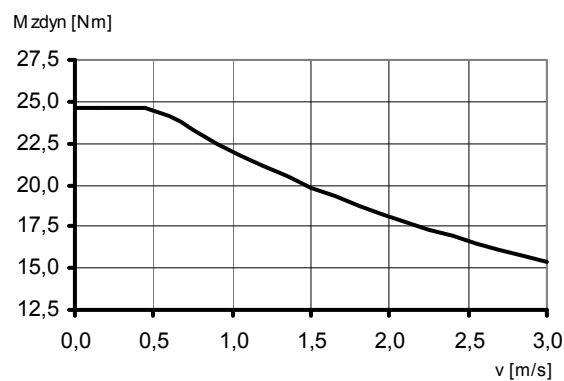
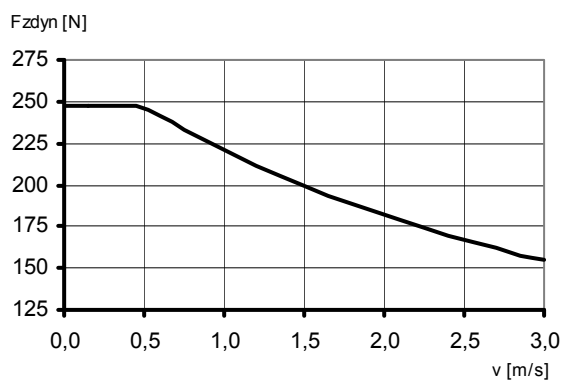




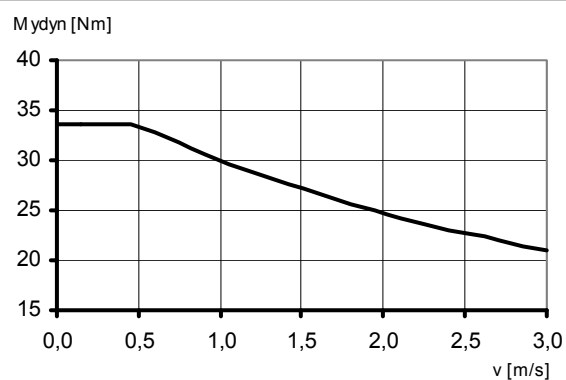
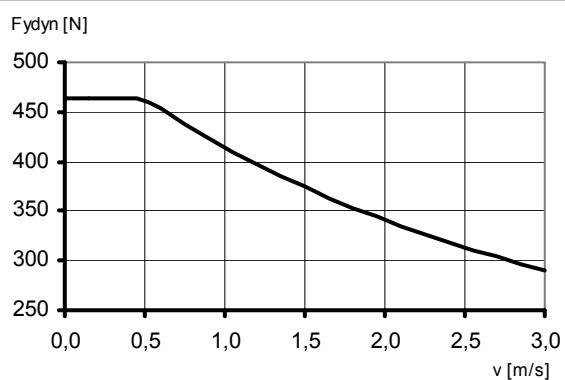
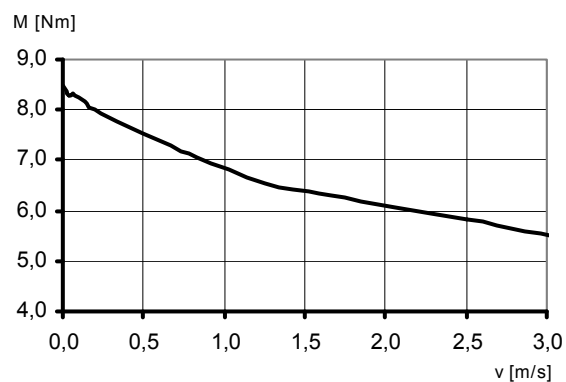
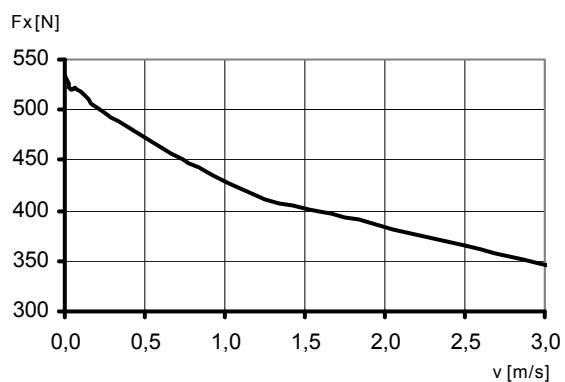
### 5.3 CAS32BC

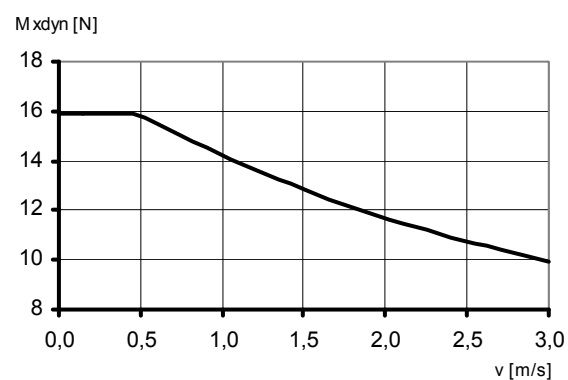
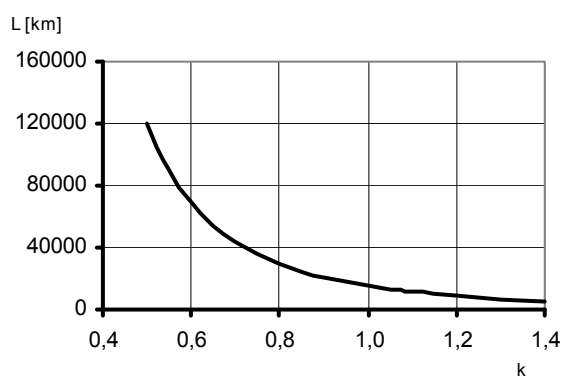
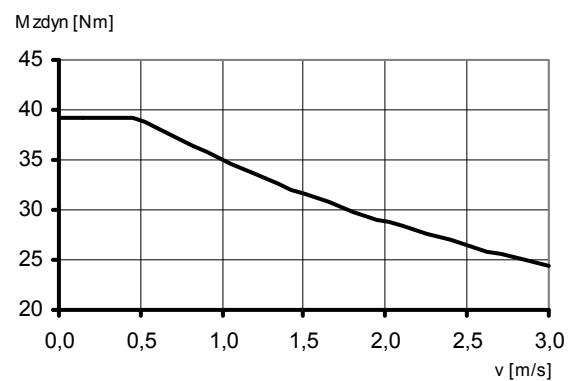
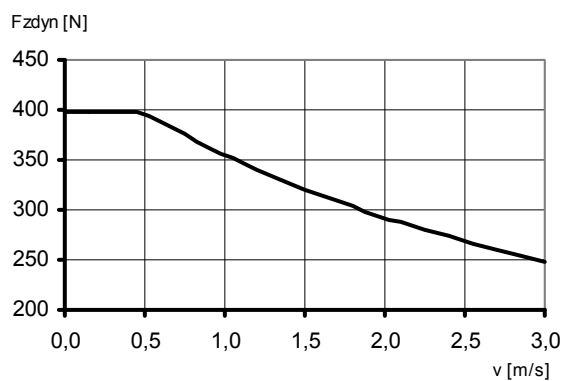




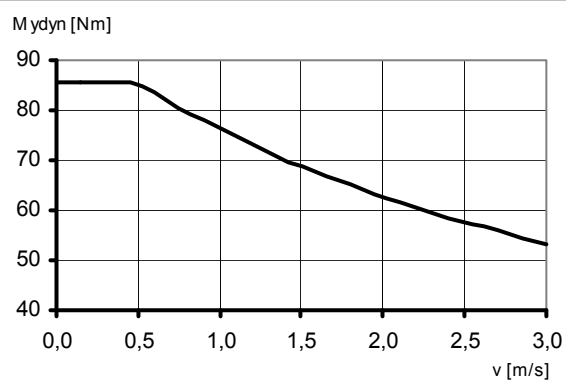
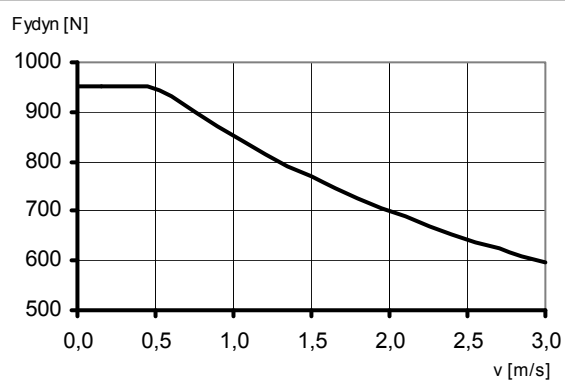
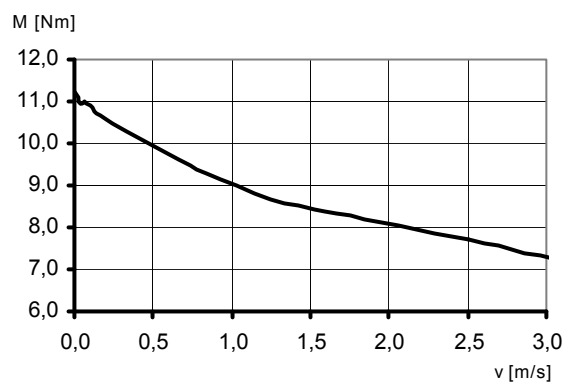
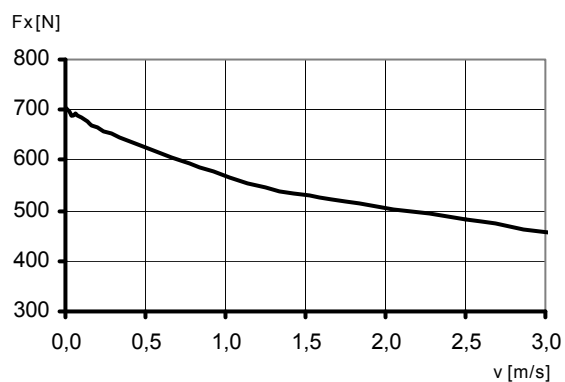


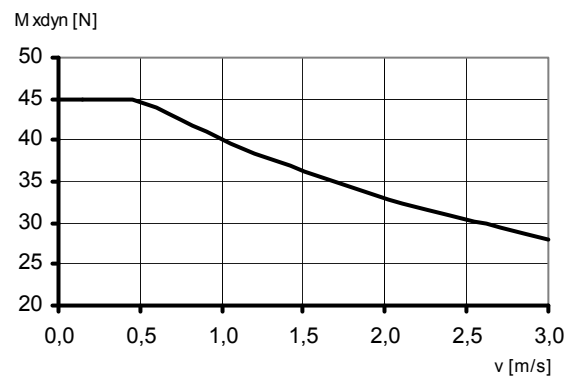
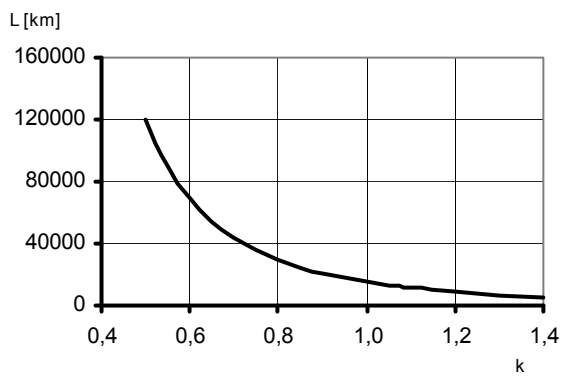
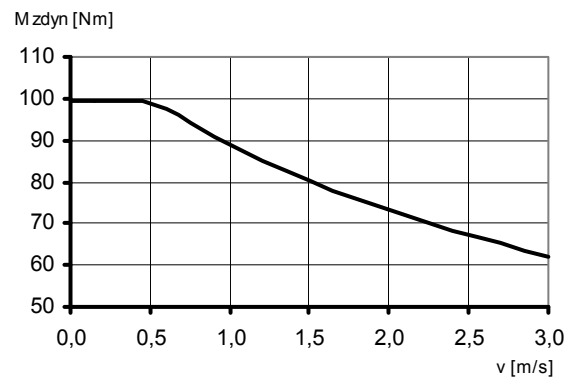
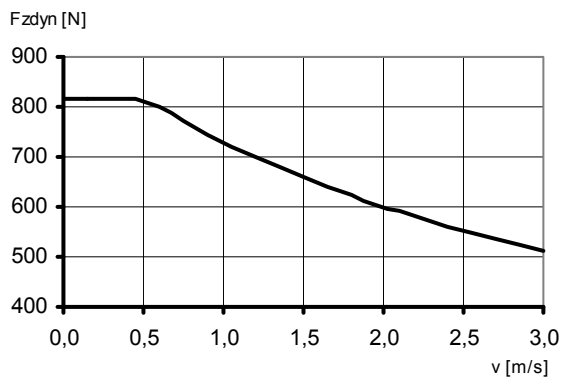
## 5.4 CAS33BC





## 5.5 CAS34BC





## 6. Safety

### 6.1 Qualification of the personnel

Qualified personnel are persons who, by technical training, knowledge and experience, are able to assess the work to be done and to recognize and avoid possible dangers. Qualified personnel must be familiar with the current standards, regulations, and accident prevention regulations, which have to be observed when working with linear tables.

According to the EC-machine directives the operator is obliged to instruct the personnel who are responsible for installation, dismantling, commissioning, operation, maintenance and repair.

The operator is obliged to check the entire machine or system after a repair or failure corrective action.

### 6.2 Intended use

The Schneider Electric linear axes described in this documentation are designed for system application in the industrial automation and are not understood as independently operating devices. Before operation and use of the linear axes, the operator must read all accompanying product documentations, as well as apply all relevant safety standards. Additional safety technology such as safety devices, barriers and emergency-stop systems that are not described in this documentation might be required to safely operate the linear table in a machine or system.

Round bar cantilever axes are used for example to:

- move small parts with low loads and low stroke
- perform exact movements
- position with a high dynamic

in processes such as: feeding, picking, positioning, moving, etc.

Any use apart from this is not considered as intended use. Schneider Electric is not liable for incurred damages. The respective operator takes the risk.

### 6.3 Safety notes

Our products are designed and manufactured according to state of the art technology. Unauthorized product modifications are prohibited. We exclude and decline any liability for personal injuries and damage to property, caused by modifications not authorized by the manufacturer in writing.





The operator has to take effective counter measures for DANGERS of our products to persons or property that emerge after installation.

Our instructions and notes must be observed for installation and operation. Furthermore all general safety technology directives do apply, as well as the accident prevention directives and the EC directives.

### 6.3.1 Symbol and notes explanation

The following special notes can appear anywhere in this documentation or on the product, to

- warn of potential DANGERS
- make aware of important notes

 <b>DANGER</b>	<b>Danger</b> indicates an immediate risky situation that can lead to <b>death</b> or <b>serious personal injury</b> if not observed.
 <b>DANGER</b>	<b>Danger</b> indicates an immediate electrical danger, that can lead to <b>death</b> or <b>serious injury</b> if not observed
 <b>WARNING</b>	<b>Warning</b> indicates a potentially risky situation that can lead to <b>serious personal injury</b> or <b>minor personal injury</b> if not observed.
<b>CAUTION</b>	<b>Caution</b> – used without the safety alarm symbol, indicates a potentially risky situation, that can lead to <b>minor personal injury</b> or <b>damage to the unit or system</b> if not observed.
 <b>NOTE</b>	<b>Note</b> gives important product and product handling information, or informs about <b>additional information</b> in the manual.

## 7. Calculation of service life

Please consult the product data sheets (see *Chapter 2 and 5*) for mechanical data on our linear axes

The external forces and torques listed in the product data sheet are maximum values for each specific part of the load. A maximum value must only be a single load and can't be combined with additional loads. If multiple loads are present at the same time (e.g.  $M_x$  and  $M_y$ ,  $F_y$  and  $M_z$ ) the entire complex load can be approximately estimated with the following formula:

$$\frac{F_y}{F_{y_{dynmax.}}} + \frac{F_z}{F_{z_{dynmax}}} + \frac{M_x}{M_{x_{dynmax.}}} + \frac{M_y}{M_{y_{dynmax.}}} + \frac{M_z}{M_{z_{dynmax.}}} = k = \text{load factor}$$

Please note that the maximum permissible dynamic forces and torques (in the denominator) decrease with increasing speed. Refer to the characteristic curves on the previous pages (chapter 5). The application specific values appear in the numerator.

The service life of the axis (in km) can be approximated using the load factor and the service life-load characteristics curve.

## 8. Accuracy

### 8.1.1 Positioning accuracy

The positioning accuracy describes the positioning deviation of the linear unit that is allowed for a positioning move to a set position.

The positioning accuracy is influenced by the following factors:

- The mechanics – manufacturing tolerances, ball screw, pitch, ..
- The drive – motor resolution, closed loop circuit, ...
- The motion profile – steep deceleration ramps, high speed,..
- Heat – environmental heat, internal friction heat

### 8.1.2 Repeatability

The repeatability describes the positioning deviation of the linear unit that is allowed for repeat positioning moves to the same position.

The repeatability is influenced by the following factors:

- Load change
- External temperature changes
- Internal temperature changes, at continuous operation the ball screw heats up through friction and expands
- Change of the motion profile (deceleration ramp, speed, ..)
- Accuracy of the trigger position of the inductive limit switch (signal evaluation)

## 9. Installation

### 9.1 Ambient conditions

The products were designed for operation under *normal* ambient conditions.

Ambient temperature: 0°C .....+ 50°C




Humidity: ≤75% relative humidity annual average / 95% relative humidity on 30 days no condensation.

Storage and transport temperature: - 25 .... + 70°C

Vacuum: not intended

### 9.2 Unloading of the product

Round bar cantilever axes are precision products and must be handled with care for this reason. Shocks and impacts to the carriage can destroy the guides, noise development and / or inaccuracies in the guides can be the consequence.

 <b>DANGER</b>	Do not step under suspended/hanging loads.
 <b>WARNING</b>	Secure the linear axis against sliding and tilting while lifting or during transport
 <b>NOTE</b>	Defects caused by handling errors are excluded from any warranty claims.



**9.3 Packaging material disposal**

Dispose the packaging material according to your local legal rules.

**9.4 Mechanical installation****9.4.1 Mounting position of the**

Schneider Electric round bar cantilever axes can be mounted in each position (horizontal, vertical, tilted,...).

**9.4.2 Mounting of the round bar cantilever axes**

The base of the linear axis CAS30 and CAS31 consists of an aluminum body that is manufactured with precise CNC-machines. The axis-body can be mounted to a stable frame by means of several threads, that are located on both sides

The base of the linear axis CAS32, CAS33 and CAS34 consists of an extruded aluminum-precision profile. T-slots are located on the small two sides of the profile. The T-slots offer ideal mounting and integration possibilities.

**NOTE**

Use at least 4 or 6 fixing points at one side of the body to have a good stability.

## 9.5 Electrical wiring

### 9.5.1 Motor wiring

If you received your linear axis complete with a Schneider Electric motor, please wire the motor according to the enclosed data sheet.

Please also note the supplementary data sheets:

- Safety notes on motors
- Notes on motor mounting and encoder connection

The current documents are available from your local Schneider Electric sales office or as a download at:

<http://www.schneider-electric-motion.com/://www.berger-lahr.com>




#### NOTE

Matching motor cables and encoder cables in a variety of lengths are available as accessories.

## 10. Commissioning

### 10.1 Preparation

 <b>DANGER</b>	Commissioning of the linear axes is only allowed after safety check was performed.
---	--

Check the following list items before the initial commissioning:

- Are all mechanical parts securely mounted?
- Are electrical connections correctly wired?
- Is the system in its home position?
- Do the limit switches function properly?
- Rotation of the motor (→ movement direction of the carriage)
- Are all objects removed from the working area of the linear axis?
- Is a collision of the cantilever with external objects impossible?
- Are all present persons on the outside of the DANGER zone?
- Is additional safety equipment (Emergency stop, guarding ...) active and functional?

### 10.2 Implementation


Please note that the maximum torque of servo motors is significantly higher than the nominal torque. The maximum torque of the motors must not exceed the permissible torque of the linear axis. If necessary the maximum torque must be limited.

Set the speed low for the first movements. Because of the high feed forces that the linear axis generates in combination with the servo motor, it is likely that the timing belt is damaged at a collision.

Run the entire motion profile multiple times with low speed to guarantee a safe operation.

## 11. Operation

### 11.1 Basics

 <b>NOTE</b>	For a safe and reliable continuous operation it is mandatory to keep the projected technical parameters and to follow the maintenance intervals.
---	--

Schneider Electric linear axes are designed for continuous operation applications. The service life must be calculated individually based on the application. Before operating the linear axis, please check again if the actual occurring loads match the required and projected data.

Contact your local Schneider Electric sales person if the load (forces, acceleration, speed, feed force, ..) was increased, so that the application can be checked again.

### 11.2 Function

Schneider Electric linear axes are made of high-strength aluminum material. The movement of the cantilever is transmitted via rack and pinion (CAS30) or timing belt (CAS31-34). This allows precise and stiff movements to achieve high feed forces with high positioning accuracy and repeatability.

For safety technology reasons an additional brake is required for self-locking functionality, when using in vertical direction.


The round bar cantilever axes are manufactured customized for stroke.

The stroke is the distance that the cantilever moves between the trigger points of the negative and positive limit switches. Beyond that, there is a safety distance, before the cantilever comes to its mechanical ends.

The safety distances vary depending on the stroke and total length of the linear axis:

CAS30RC:	13mm
CAS31BC :	10mm
CAS32BC :	20mm
CAS33BC :	20mm
CAS34BC :	25mm

## 12. Inspection

	<b>DANGER</b>	The power to all electrical device components must be disconnected before the beginning of inspection work.
---	---------------	---


### 12.1 Inspection after collision

Strong shocks or impacts as a result of a cantilever collision - or hard placement or acceleration of objects on the cantilever can damage or destroy components of the linear axis.

Therefore check the drive train and the guide system after a *Crash* for possible damage.

#### 12.1.1 Guides

- Visually inspect the guides for damage.
- Check the run off tolerance of the linear axes by using a dial gauge and moving the carriage in relation to the reference surface.
- Check the linear axis at commissioning for unusual noises and heat development.

	<b>NOTE</b>	Immediately contact your local Schneider Electric sales office when damages of the guiding system are detected.
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#### 12.1.2 Timing belt

- Visually inspect the timing belt for defects such as tooth deformation and side wear caused by friction.
- If its necessary to exchange the belt, please follow the instructions under Chapter 14.5 Timing belt exchange.

The timing belt must be replaced if damaged.

## 13. Maintenance

### 13.1 General information

 <b>DANGER</b>	The power to all electrical device components must be disconnected before the beginning of maintenance work.
---	--

In general Schneider Electric linear axes require low maintenance. Because of their enclosed design, they are resistant to penetrating dirt and foreign objects. The used guiding elements are sealed and protected from the outside environment.

### 13.2 Lubrication


Lubricant is continuously consumed during operating of the linear tables. Periodical lubrication intervals are prerequisite for reliable operation. Insufficient lubrication - or a wrong lubricant increase the wear and tear and reduce the service life. The following factors influence the lubrication intervals:

- Extreme operating temperatures
- High speeds
- High loads
- High vibration stress
- Permanent small strokes
- Air pollution

### 13.3 Cleaning

The external parts are manufactured out of high-strength aluminum alloys that are anodized to protect the surface.

To facilitate continuous functionality and reliability of operation, the linear axis and its parts should be inspected periodically and cleaned if necessary.



 <b>NOTE</b>	<ul style="list-style-type: none"> <li>- Do <b>not</b> use compressed air for cleaning</li> <li>- Vacuum coarse debris and dirt particles from the surface</li> <li>- Treat the surface only with a damp, soft and lint free cleaning cloth.</li> </ul>
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#### 13.3.1 Cleaning of aluminum parts

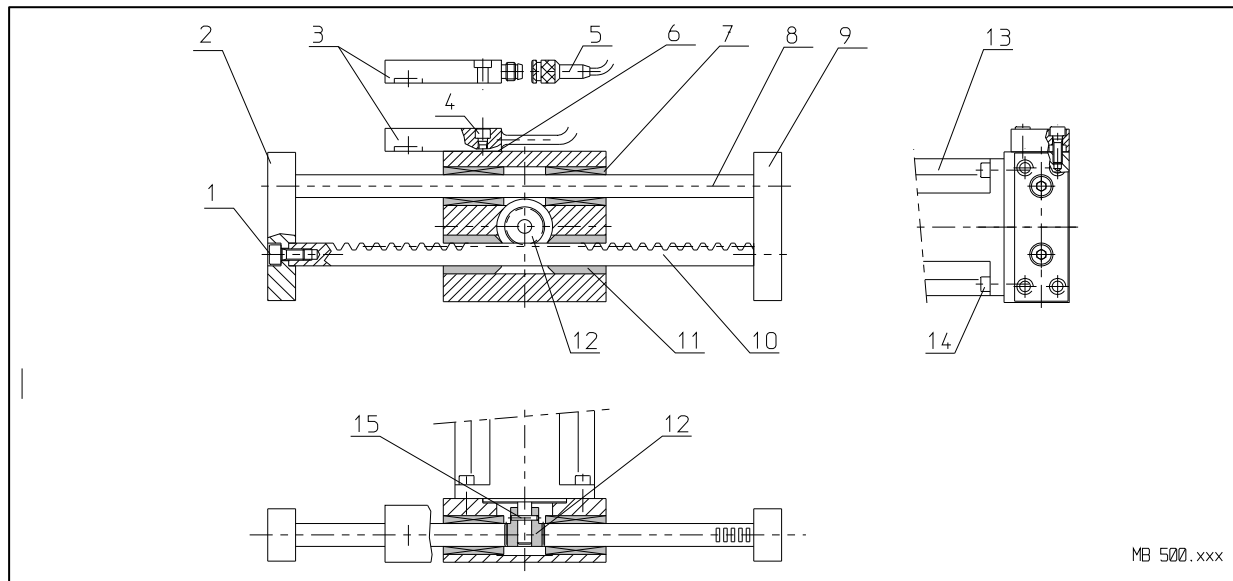
The anodized surface is limited resistant against alkaline detergents.

Please use exclusively neutral detergents for cleaning.

**14. Service / repair**

 <b>DANGER</b>	Only authorized professional personnel must conduct the exchange of defective parts.
 <b>DANGER</b>	Power to all electrical components of the device must be safely disconnected before any service work is carried out.

## 14.1 Maintenance of CAS30



### General

Due to the closed design of the cantilever axis, it is protected against dust and foreign particles. The ball bearings and slide bearings are fitted with sealing rings for additional protection. The utilised drive and guide elements have low maintenance requirements.

### Lubrication

The guide rods (8) and the rack (10) are permanently lubricated. A grease reservoir is placed between the ball bearings (7) and linear roll bearings (11). For normal ambient conditions, the guide rod (8) and rack (10) should be cleaned and lubricated with grease every month (e.g. Klüberplex BEM34-132 or lubrication grease according to DIN 51825 type KP HC 2 N-30). If the axis is used in harsh conditions e.g. high speed, short cycle time or impure ambient, we recommend to clean and lubricate the guide rod (8) and the rack (10) every week with grease.

### Rack and Pinion

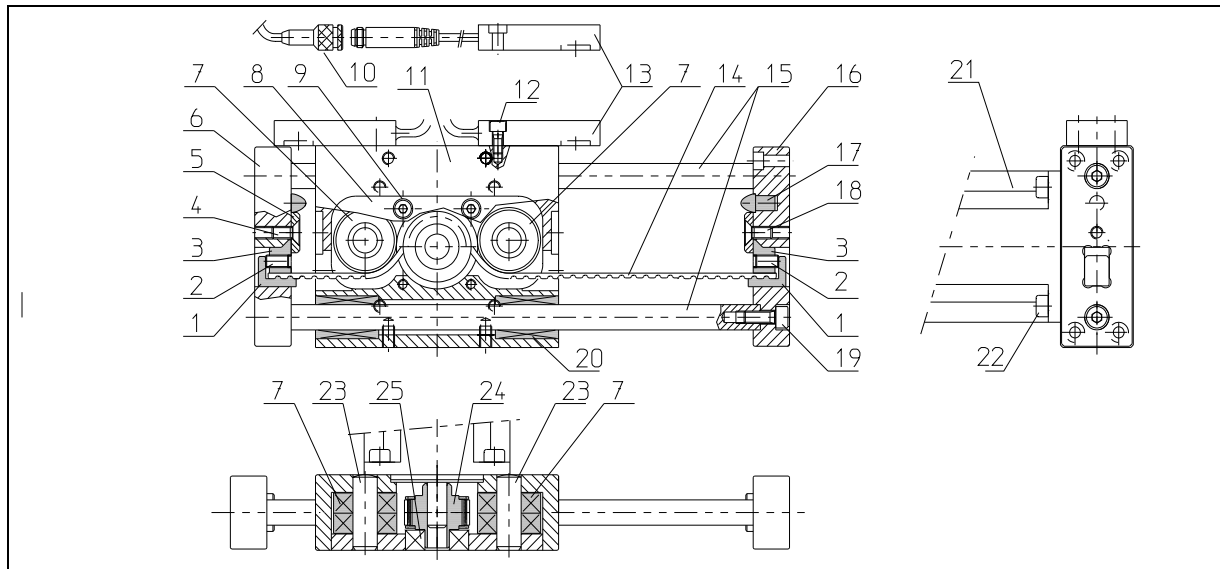
The mounted rack (10) and pinion (12) requires basically low maintenance. Should, in spite of this a rack and pinion change be necessary, the axis must be returned to BERGER LAHR for a complete service.

### Service

In case of spare part orders or service, please advise material and order number (located on axis name plate) of the axis or the axis system.



## 14.2 Maintenance of CAS31



### General

Due to the closed design of the cantilever axis, it is protected against dust and foreign particles. The linear roll bearings are fitted with sealing rings for additional protection. The utilised drive and guide elements have low maintenance requirements.

### Lubrication

The linear roll bearings (20) are lubricated for life by the factory. For normal ambient conditions, the guide rods (15) should be cleaned and lubricated with grease every month (e.g. Klüberplex BEM34-132 or grease according to DIN 51825, Type KP HC 2 N-30). ). If the axis is used in harsh conditions e.g. high speed, short cycle time or impure ambient, we recommend to clean the guide rods (15) every week and grease lightly.

### Belt Replacement

The timing belt requires basically low maintenance. Should, in spite of this, a belt change be necessary, the following procedure has to be performed:

1. Loosen and remove bolts (4, 18). Do not loosen the grubscrews (2)!
2. Remove both bolts (9).
3. Remove cover (8) carefully from motor block (don't damage bearing).
4. Remove both parts of belt take up (1, 3) from endplates (6, 16).
5. Remove old belt (14).
6. Put in new timing belt (14) with the same number of teeth. Pay attention, that the ends of timing belt are flush with the surface of belt take ups (1, 3).
7. Put the belt take up (1, 3) into the endplates (6, 16) and tighten the bolts (4, 18).
8. Attach cover (8) carefully and fix them. (don't damage bearing)
9. Control timing belt tension again. Normally it is not necessary to correct the belt tension after replacing it.
10. If the belt tension needs to be adjusted, adjust the tension with the grubscrews (2). The correct timing belt tension is 1‰ of the belt length. Mark the timing belt !.
11. Tension the timing belt with the grubscrews (2). Control timing belt tension again.

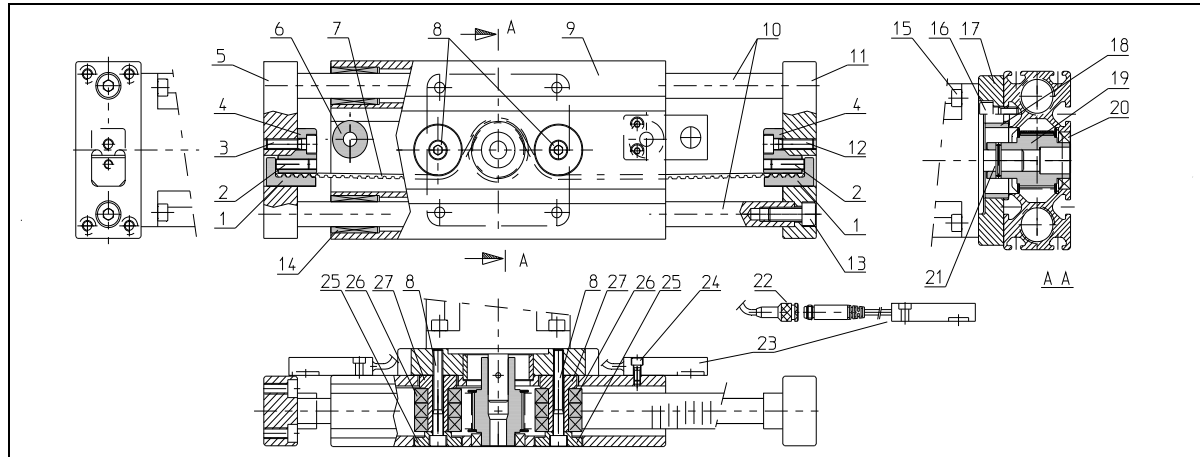
**Note:** Control and if necessary correct the positioning of the carriage.

If during operation, the belt is noisy, a standard PTFE spray can be used in order to reduce the noise.

### Service

In case of spare part orders or service , please advise material and order number (located on axis name plate) of the axis or the axis system.

### 14.3 Maintenance of CAS32



#### general

Because of the closed design of the cantilever axis, it is protected against dust and foreign particles. The ball bearings are protected by strippers against foreign matter. The utilised drive and guide elements have very low maintenance requirements.

#### lubrication

The guide rods (10) are permanently lubricated. A grease reservoir is placed between the ball bearings (14). If the axis is used in hard conditions e.g. high speed, short cycle time or impure ambient, we recommend to clean up both guide rods (10) every week and lubricate these thin with grease (e.g. grease Calypso SF3-097HT-T).

This can result in a extended lifetime of the axis.

#### belt replacement

The timing belt requires basically no maintainance and is wear free. Should, in spite of this, a belt change be necessary, the following procedure has to be performed:

1. Loosen screws (3, 12) and remove it. Setscrews (2) are not loosen !
2. Remove both screws (8). Remove covers (25).
3. Remove both belt pulley (26/27) from motor block.
4. Remove both parts of belt take up (1, 4) from endplates (5, 11).
5. Remove old belt (7).
6. Put in new timing belt (7) with same numbers of teeth.
7. Put the belt pulley (26/27) into the motorblock.
8. Put in covers (25) and screw down both screws (8).
9. Put the ends of timing belt into the belt take ups (1, 4). Pay attention, that the ends are conclusive to the surface of belt take ups. Put in the belt take ups into the endplates (5, 11) and screw down screws (3, 12).
10. Control timing belt tension again. Normally it is not necessary to correct the belt tension after repalce.
11. In case of not enough belt tension depended of divergence, adjust the tension by the setscrews (2). At first give to the belt less tension. The correct timing belt tension is 1‰ of the belt length. Mark the timing belt !
12. Put up timing belt with setscrews (2). Control timing belt tension again.

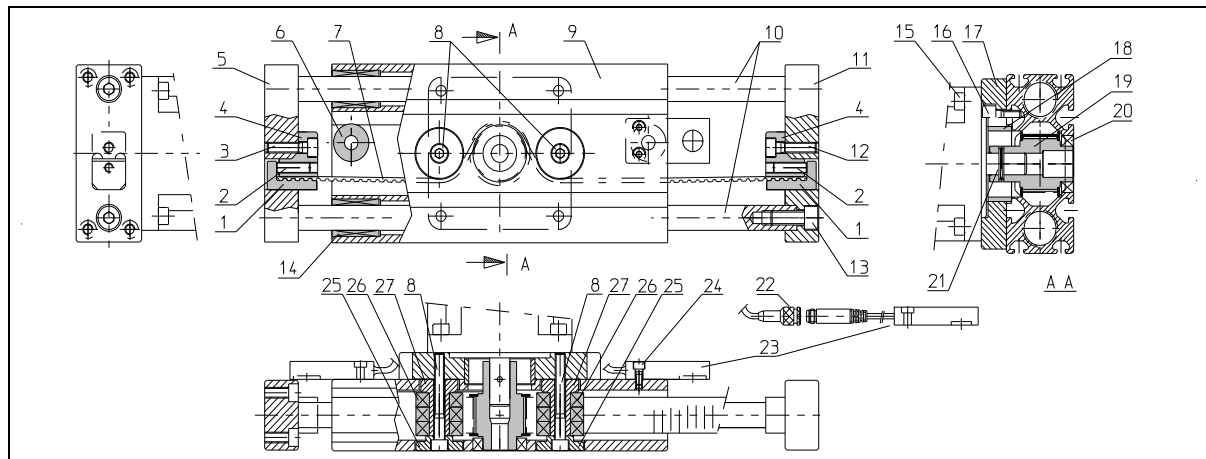
**Note:** Control and if necessary correct the positioning of the carriage.

If during operation, the belt is noisy, a standard PTFE spray can be used in order to reduce the noise.

#### Service

In case of spare part orders, service or changements on the product, please advise material and order number (->number plate) of the axis or the axis system.

## 14.4 Maintenance of CAS33



### General

Due to the closed design of the cantilever axis, it is protected against dust and foreign particles. The linear roll bearings are fitted with sealing rings for additional protection. The utilised drive and guide elements have very low maintenance requirements.

### Lubrication

The guide rods (5) are permanently lubricated by means of a grease reservoir that is located inside the ball bearings. If the axis is used in harsh conditions e.g. high speed, short cycle time or demanding environmental conditions, we recommend to clean both guide rods (5) weekly and lubricate them lightly with a lubricating grease e. g. Klüberplex BEM 34-132. When using other lubricants we recommend the minimum requirements in conformity with DIN:

### Belt Replacement

The timing belt requires basically no maintenance and is wear free. However, should a belt change become necessary, the following procedure has to be performed:

1. Loosen and remove bolts (16). Do not loosen grub screws (17)!
2. Remove both of the belt clamping pieces (14) and belt profile pieces (15) from endplates (6).
3. Remove both bolts (13). Also remove both cover discs (12).
4. Remove both pulleys (10) from the motor block.
5. Remove the old timing belt (22).
6. Put in a new timing belt (22) with the same number of teeth.
7. Insert the pulleys (10) back into the motor block.
8. Put in the cover discs (12) and tighten both bolts (13).
9. Put the ends of the timing belt flush between the belt profile pieces (15) and the belt clamping pieces (14), insert them into the endplates (6) and tighten the bolts (16).
10. Check the timing belt tension again. Normally it is not necessary to adjust the belt tension after a replacement. Nevertheless the timing belt has to be tensioned in some cases. Use the grub screws (17) to adjust the tension. At first apply only minimum belt tension. The correct timing belt tension is 1‰ of the belt length and can be measured by the variation of the belt profile pieces (15) in the end plates. Tension the timing belt with the grub screws (17). Check the timing belt tension again.

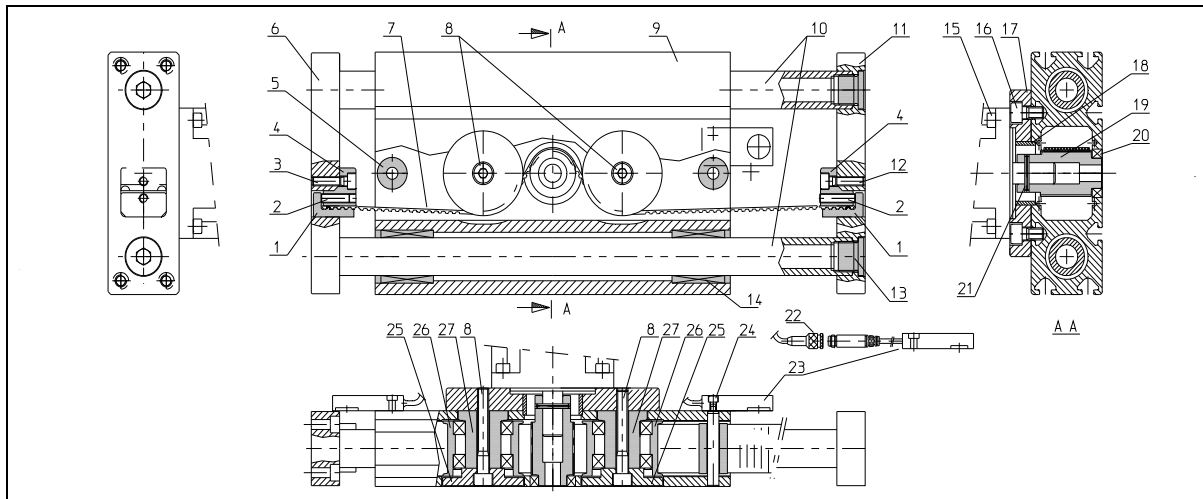
**Note:** Check and if necessary correct the axis movement positioning after a belt exchange.

If during operation, the belt is noisy, a standard PTFE spray can be used in order to reduce the noise.

### Service

In case of spare part orders or service, please advise material and order number (located on axis name plate) of the axis or the axis system.

## 14.5 Maintenance of CAS34



### General

Due to the closed design of the cantilever axis, it is protected against dust and foreign particles. The linear roll bearings are fitted with sealing rings for additional protection. The utilised drive and guide elements have low maintenance requirements.

### Lubrication

The linear roll bearings (14) are lubricated for life by the factory. For normal ambient conditions, the guide rods (10) should be cleaned and lubricated with grease every month (e.g. Klüberplex BEM34-132 or grease according to DIN 51825, Type KP HC 2 N-30). If the axis is used in harsh conditions e.g. high speed, short cycle time or impure ambient, we recommend to clean the guide rods (10) every week and grease lightly.

### Belt Replacement

The timing belt requires basically low maintenance. Should, in spite of this, a belt change be necessary, the following procedure has to be performed:

1. loosen and remove bolts (3, 12). Do not loosen the grub screws (2)!
2. Remove both bolts (8). Remove cover (25).
3. Remove both pulleys (26/27) from the motor block.
4. Remove both parts of belt take up (1, 4) from endplates (5, 11).
5. Remove old belt (7).
6. Put in new timing belt (7) with the same number of teeth.
7. Put both pulleys (26/27) back into the motor block.
8. Put in the cover discs (25) and tighten both bolts (8)
9. Put the ends of the timing belt flush between the belt take ups (1,4) and the insert them into the end plates (5, 11), and tighten the bolts (3, 12).
10. Control timing belt tension again. Normally it is not necessary to correct the belt tension after replacing it.
11. If the belt tension needs to be adjusted, adjust the tension with the grub screws (2). The correct timing belt tension is 1‰ of the belt length. Mark the timing belt !.
12. Tension the timing belt with the grub screws (2). Control timing belt tension again.

**Note:** Control and if necessary correct the positioning of the carriage.

If during operation, the belt is noisy, a standard PTFE spray can be used in order to reduce the noise.

### Service

In case of spare part orders or service, please advise material and order number (located on axis name plate) of the axis or the axis system.

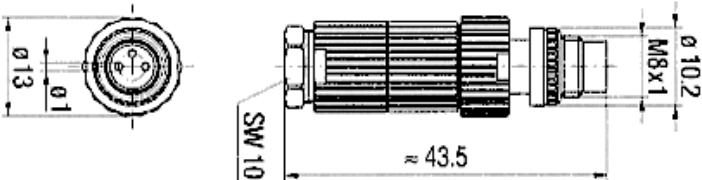
**Timing belt pre tensioning**

Normally the timing belt is maintenance free. The timing belts are correctly pre tensioned at the Schneider Electric factory to 30% of the maximum operating force. Only with a special belt tension measuring device the belt

**15. Accessories and spare parts****15.1 Accessories**

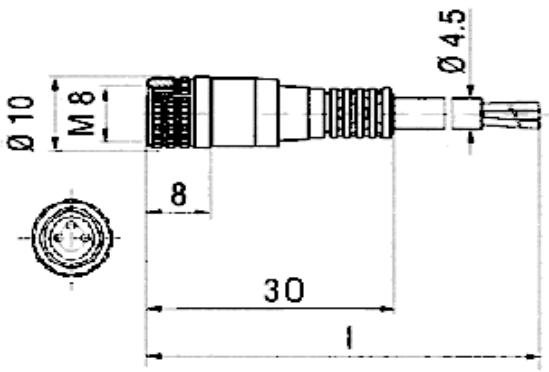
The following accessories are available for all round bar linear axes.

**Limit switch connectors**

Designation	
Limit switch connector - 3 pole	
	
Order number	
74080490005	

**15.1.1 Limit switch cable with receptacle**

Limit switch cables are available with 5m and 10m cable length, the opposite cable end is open.

Designation	Designation
Limit switch cable – 3-pole - 5m	Limit switch cable – 3-pole - 10m
	
Order number	Order number
74080490006	74080490007

**15.2 Spare parts**

with position numbering of all parts (see chapter 14)

**15.2.1 Spare parts for CAS30**

Pos.	Description	Quantity	Material No.
3	Limit switch, cable 5m (standard)	1 pc.	0052060002
	Limit switch, cable 10m		00052060004
	Limit switch, with connector, 3poles, M8x1		00052060007
5	Connector, 3 poles, M8x1, cable 5m (standard)	1 pc.	00052060005
	Connector, 3 poles, M8x1, cable 10m		00052060016

**15.2.2 Spare parts for CAS31**

Pos.	Designation	Quantity	Material No.
13	Limit switch, cable 5m (standard)	1 pc.	00052060002
	Limit switch, cable 10m		00052060004
	Limit switch, with connector, 3poles, M8x1		77040004000
10	Connector, 3 poles, M8x1, cable 5m (standard)	1 pc.	00052060005
	Connector, 3 poles, M8x1, cable 10m		00052060016
14	Timing Belt b10 T5, L = Stroke +170	x meter	00033550003

**15.2.3 Spare parts for CAS32**

Pos.	Description	Quantity	Best.Nr. / Material No.
23	Limit switch, cable 5m (standard)	1 pc.	00052060002
	Limit switch, cable 10m		00052060004
	Limit switch, with connector, 3poles, M8x1		77040004000
24	Connector, 3 poles, M8x1, cable 5m (standard)	1 pc.	00052060005
	Connector, 3 poles, M8x1, cable 10m		00052060016
7	Timing Belt b20 AT5, L = Stroke+ 380	x meter	00033550005

**15.2.4 Spare parts for CAS33**

Pos.:	Description:	Quantity:	Material No.:
23	Limit switch, cable 5m (standard)	pc.	00052060002
	Limit switch, cable 10m		00052060004
	Limit switch, cable 0,2m, with connector		77040004000
22	Timing Belt b25 AT5, L = Stroke +350 mm	x meter	00033550042

**15.2.5 Spare parts for CAS34**

Pos.	Description	Quantity	Material No.
23	Limit switch, cable 5m (standard)	1 pc.	00052060002
	Limit switch, cable 10m		00052060004
	Limit switch, with connector, 3poles, M8x1		77040004000
22	Connector, 3 poles, M8x1, cable 5m (standard)	1 pc.	00052060005
	Connector, 3 poles, M8x1, cable 10m		00052060016
7	Timing Belt b32 AT5, L = Stroke +400	x meter	00033550006

**SPARE PARTS - ORDER**

Linear table type: .....

Order No.: .....

ID - No. : .....

**List of order parts:**

Pos.	Order number	Designation	Amount

**Note:**Send your order to:

**Berger Lahr GmbH & Co. KG**  
**Spare part service, Breslauer Str. 7**  
**D-77933 Lahr**  
**Tel.: 0049-7821/946 606**  
**Fax: 0049-7821/946 202**  
**e-Mail: red@berger-lahr.com**

Shipping address for the spare parts:

Desired delivery date: \_\_\_\_\_

Date: \_\_\_\_\_ Signature \_\_\_\_\_